

ShirMaywa

PUMP

BLOWER

AERATOR

MIXER

WATER TREATMENT

HANDBOOK 20

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Submersible Pump for Water Treatment

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Floating Scum Pump	
FP	303

Lineup of Submersible Pump for Water Treatment

Features and Applications	Model
Features Provides high pump efficiency and achieves a high head with a small output Applications Transferring or discharging clear or wastewater containing less suspended solid ☐ Defoaming, backwashing or filtering septic tanks ☐ Discharging treated water from sewage treatment plants or septic tanks ☐ Simple agricultural or gardening use ☐ Draining rainwater, sewage water or spring water ☐ Draining rainwater or spring water from underpass or tunnels ☐ Effluent from buildings, factories, garages or basements	A AH CRC S3A
Features Provides high pump efficiency is applicable to wide range of flow rates varying and discharge heads. Applications Transferring or discharging sewage and filth containing a lot of uniformly shaped debris ☐ Treatment processes at various water treatment facilities ☐ Transfer pumping station in the sewerage system ☐ Effluent from building facilities as sanitary equipment ☐ Draining rainwater from roads or underpass ☐ Treatment processes at industrial water treatment facilities ☐ Kitchen drainage, agricultural water supply / drainage and other general drainage	CNWX CN · CNH CNX CNM CNL CNT S3N CJ CKM
Features Provides high throughput for debris but not suitable for large water volume due to its pump efficiency. Applications Transferring or discharging sewage water and filth containing fibrous debris ☐ Transferring raw water at transfer pumping station or manholes pumping station ☐ Transferring and discharging sludge and scum from Industrial water treatment facilities ☐ Transferring and discharging sludge, sewage water and filth from food facilities and dairy farms ☐ Transferring raw water or flow regulation at night-soil treatment plants ☐ Transferring raw water or flow regulation at septic tanks	CV · CVH CVS CVC CR CRS S3V
Features Provides high pump efficiency and high solid passage capability for debris. The screw effect makes it suitable for transferring highly concentrated sludge. Applications Transferring or discharging sewage and filth containing uniformly-shaped and fibrous debris ☐ Transferring or discharging filth and sludge from various processes of water treatment facilities ☐ Living drainage from household wastewater, apartments or buildings	CNWX CW · CWH CWT

Features and Applications	Model
Applications Handling corrosive liquid ☐ For drainage in food factories ☐ For drainage in hospitals and laboratories	S3A • S3N • S3V
Applications For preventing water hammer phenomenon ☐ For application where water hammer phenomenon may occur by transfer of sewage	CNF CWF CVF
Applications For collecting and transferring supernatant water and flotage on water surface ☐ For transferring floating scum in septic tank	FP
Applications Aeration and mixing ☐ Aeration and mixing in industrial water treatment facilities ☐ Aeration and mixing in building pits (Department stores, supermarkets, hotels and public facilities)	J • JF • JA • JAF JB • JBF • JSA

Features and Structure

Motor

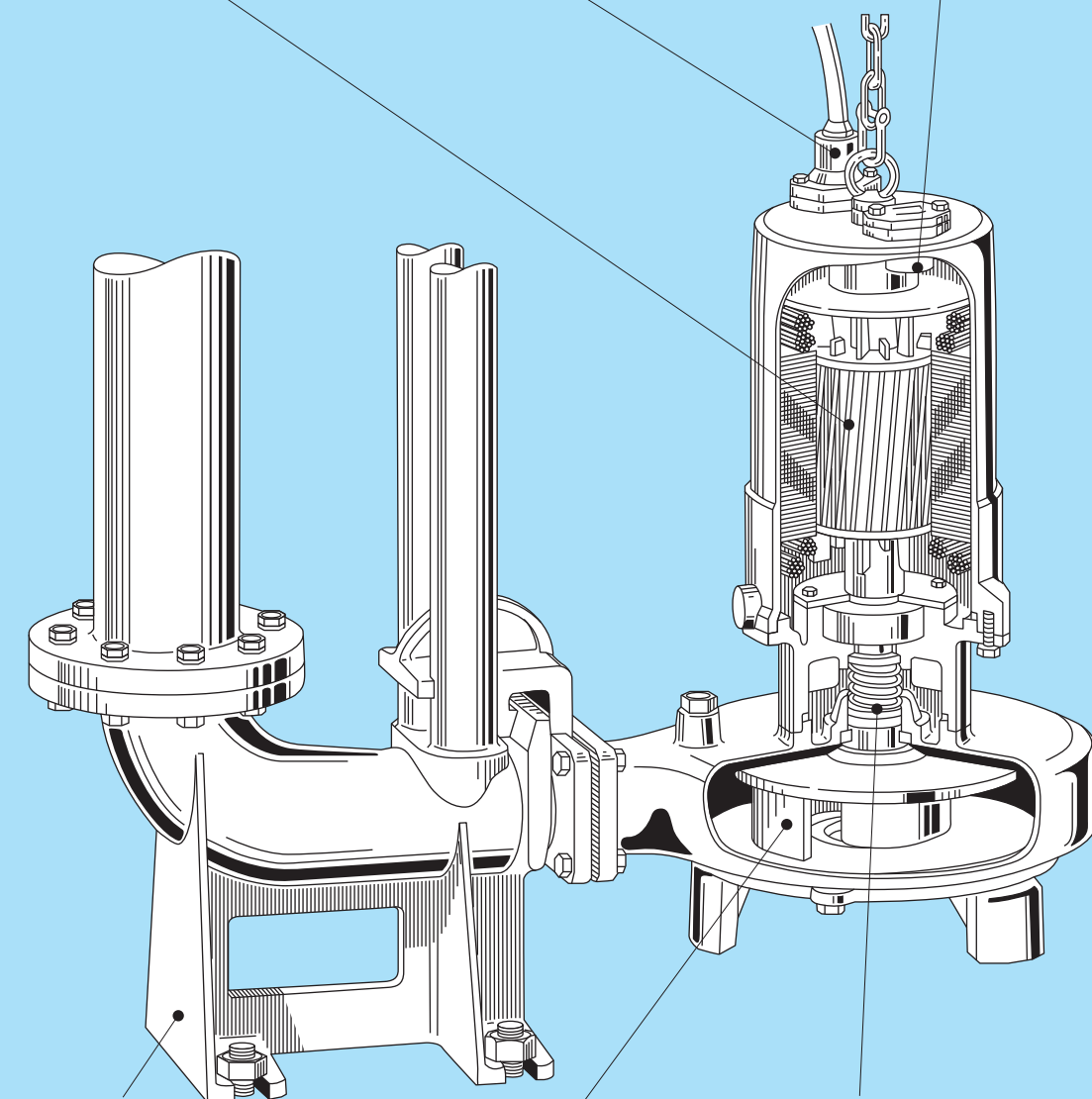
Uses Class E (or F) insulation which provides excellent insulation for air-filled type motors.

Cable Outlet with Core Sealer

The core sealer of the cable outlet shuts the water out from penetrating into the motor chamber through the core wire even if the cable tip is immersed in water or the sheath is damaged.

Motor Protector

Thermal protector (a built-in automatic or manual reset type motor protector) prevent motor burnout due to overload, impeller locking and open phase.



Discharge Connection

The pump is automatically connected to the discharge pipe with discharge connection.

Impeller

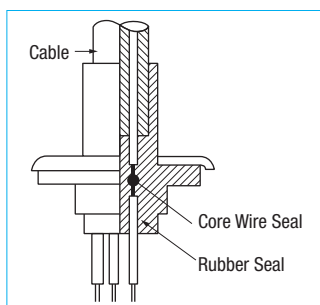
Can select an impeller suitable for each application.

Shaft Seal

A highly wear resistant double mechanical seal positively prevents the water from penetrating into the motor chamber. besides, combined use of an oil seal further extends the service life of the mechanical seal.

Motor Protector

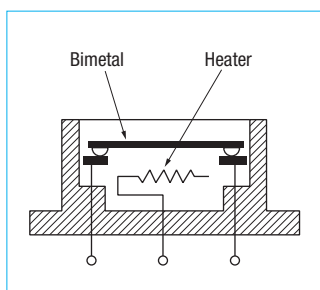
● Core Wire Seal



A core wire is processed by twisting thin wires together. If the cable sheath is broken or the tip of a cable is immersed in water, water may enter into the motor chamber through a small gap in the core wire.

To prevent water immersion, part of the core wire is peeled off, as shown in the left diagram, to seal the gap, and a rubber seal is also put on it to prevent water immersion into the motor chamber.

● Thermal Protector (Direct starting)

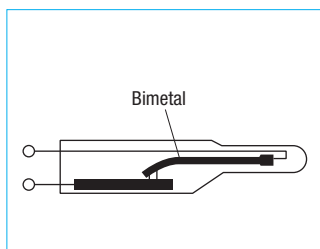


In case of overcurrent or abnormal motor heating up, Thermal Protector shut down the power circuit to prevent motor burnout.

Thermal Protector activates under the following conditions:

1. When jamming by debris causes a impeller lock (three phase restraint).
2. When disconnection, fuse meltdown or loosened connecting terminals results in open-phase operation (open-phase restraint).
3. Overload due to jamming by debris , high pumping liquid temperature, voltage drop or long time operation exposed in the air.

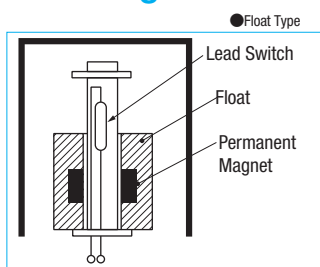
● Micro Thermal Protector (Star-Delta starting)



Micro Thermal Protector is embedded in the motor winding. If the winding temperature rises abnormally, the bimetal deflects to cut the circuit. The Micro Thermal Protector works in conjunction with a magnet switch in the control box to shut down the power circuit. Overcurrent should be detected using a thermal relay or a 3E or 2E relay in the control box.

- | | |
|--------------------------|---|
| (1) Max. Voltage: AC250V | (3) Contact Capacity: AC600VA |
| (2) Max. Current: AC3A | (4) Contact: NC contact (Automatic reset) |

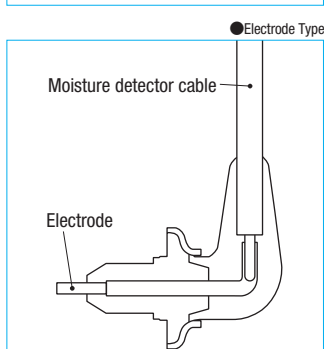
● Leakage Detector



● Float Type

Installed in the lower structure of the motor chamber. When oil containing water immerses in the motor chamber, the magnet float moves to the lead switch to detect and alert water moisture.

- | | |
|--------------------------|------------------------------|
| (1) Max. Voltage: AC250V | (3) Contact Capacity: AC12VA |
| (2) Max. Current: AC0.5A | (4) Contact: b contact |



● Electrode Type

Installed in the lower structure of the motor chamber. When oil containing water immerses in the motor chamber, the relay set of leakage detector detects electrification between the electrode and the pump body, the relay will activates to alert water moisture.

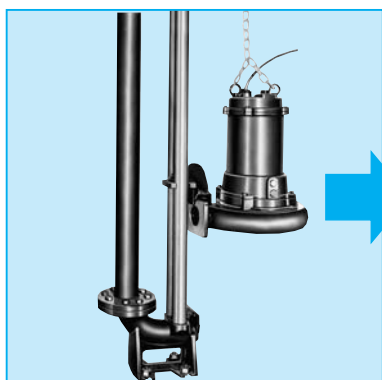
- | | |
|--|------------------------|
| (1) Rated Voltage: AC100 or 200V (Shared), | (3) Contact: c contact |
| (2) Contact Capacity: AC250V, 8A (Resistance Load) | |

: For availability of mounting Motor Protector, refer to the specifications (detail data) - App.1 before placing a special order .

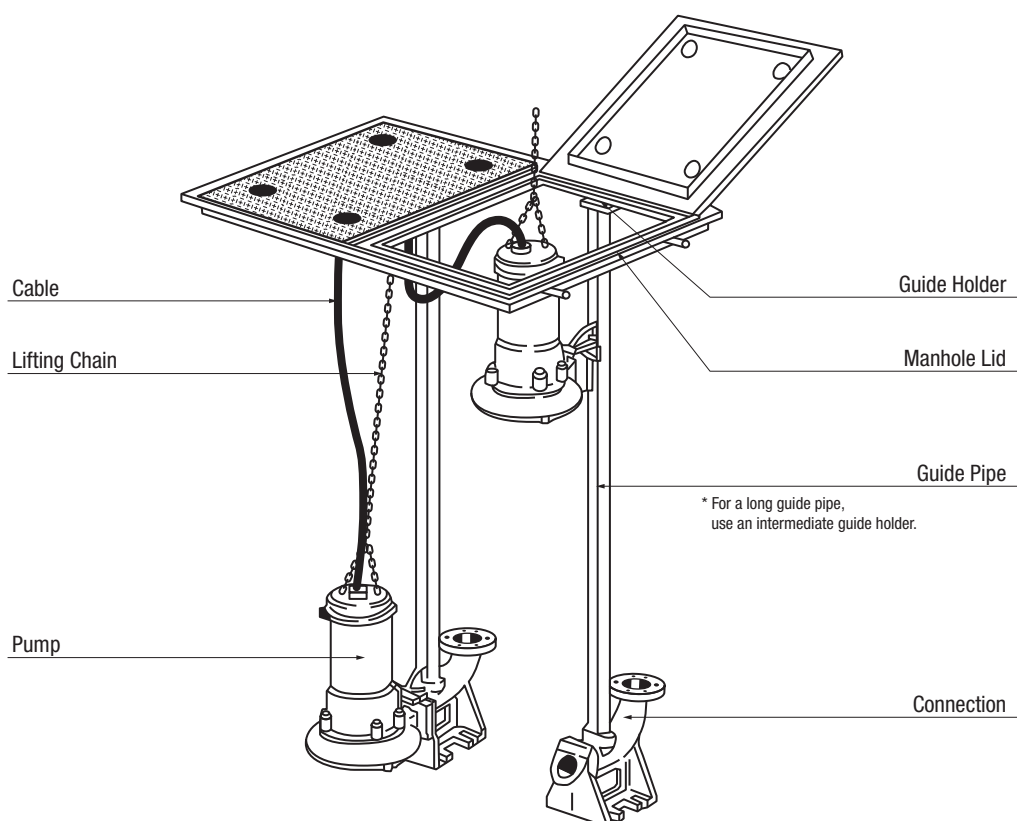
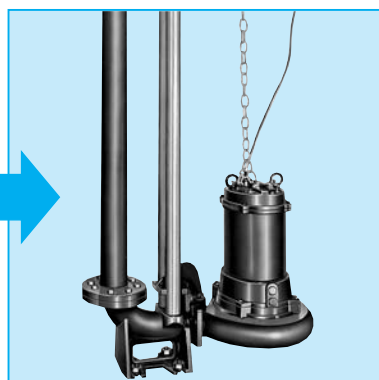
Removal-Type Auto-Connection Device that Facilitates Maintenance

One of the reasons why ShinMaywa submersible pumps are popular is the auto-connection device. When the pump is lowered along the guide pipe, the pump is connected with the discharge tube via the connection and can be taken out of the pump pit just by lifting it up. Bolts, nuts and packing are not used in the connected portion. This auto-connection facilitates maintenance, eliminating the need to enter the pump pit to lift the pump up, dipping out sewage water or tightening or loosening bolts.

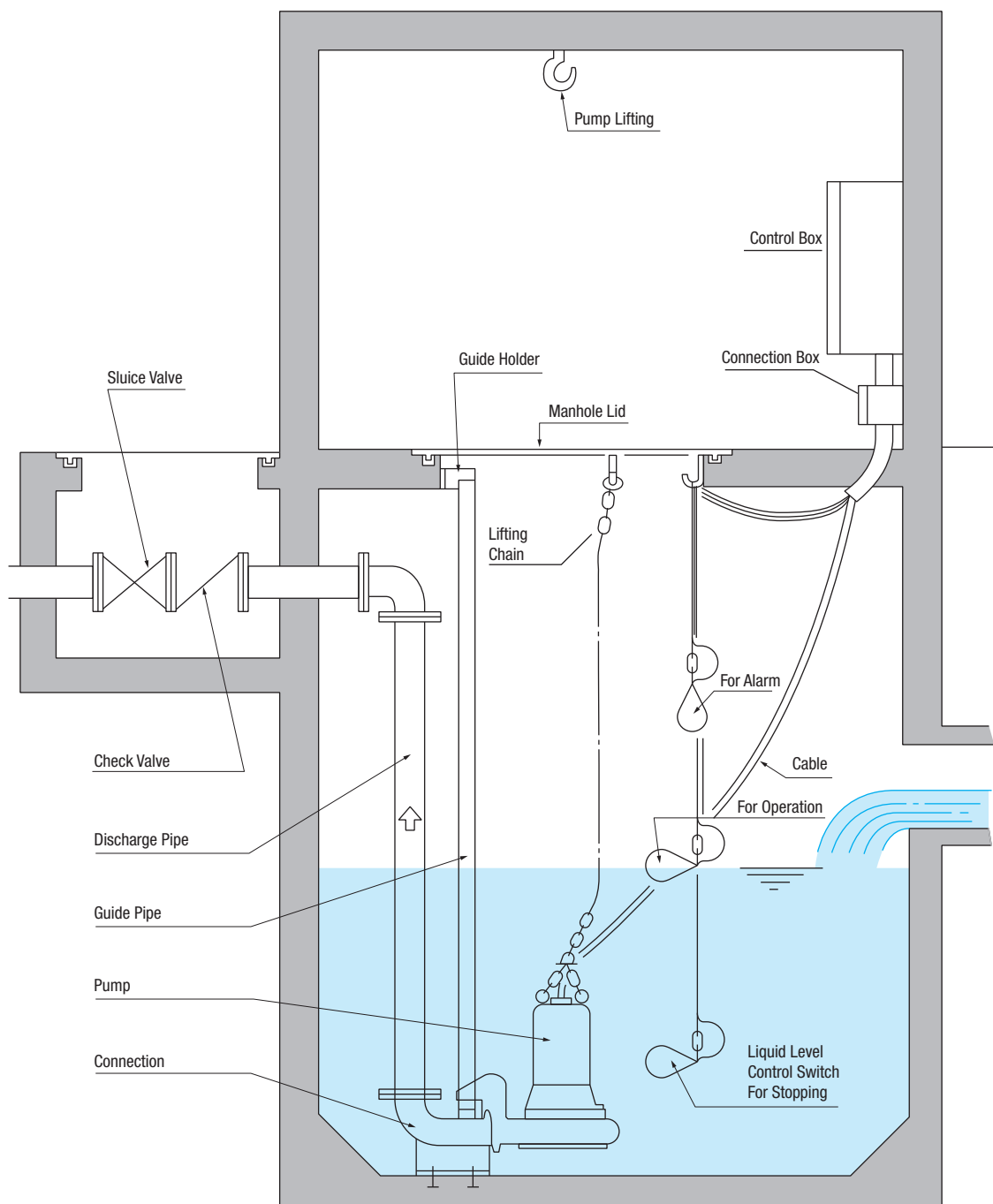
Before Connection



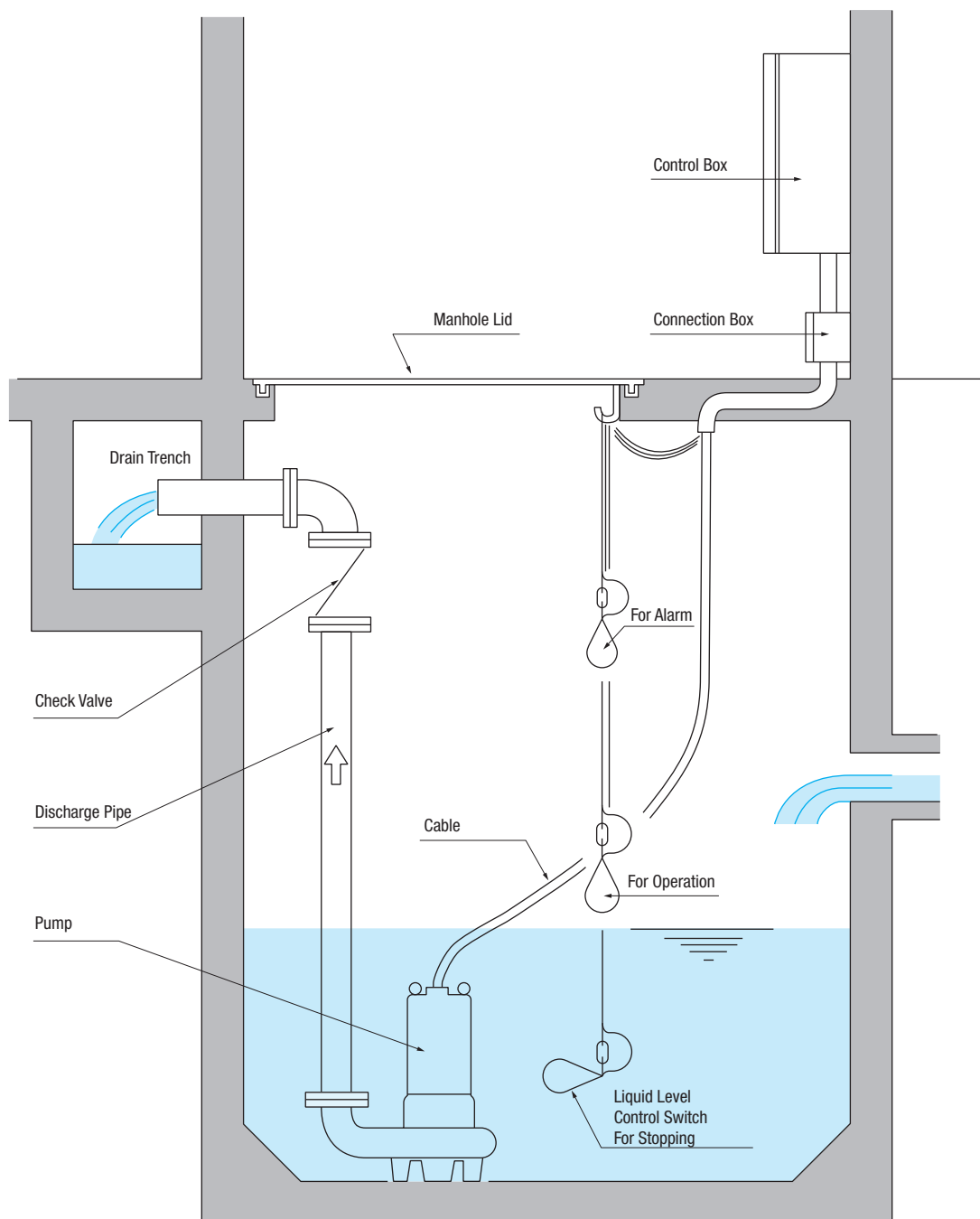
After Connection



Example Layout for an Auto-Connection Type Submersible Pump

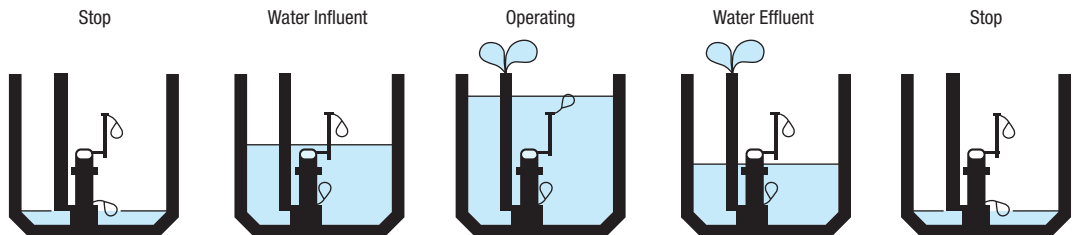


Example Layout for a Free Standing Type Submersible Pump

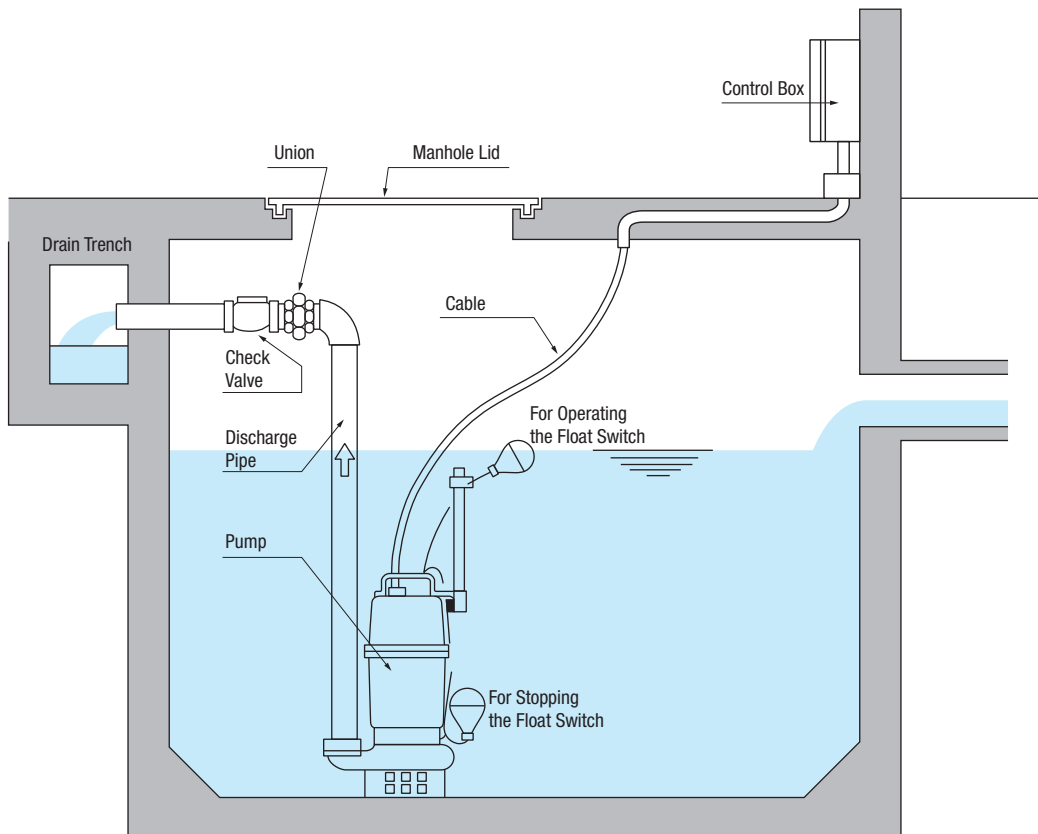


Example Layout for a Submersible Pump (Auto-Operation Type)

Operation Diagram

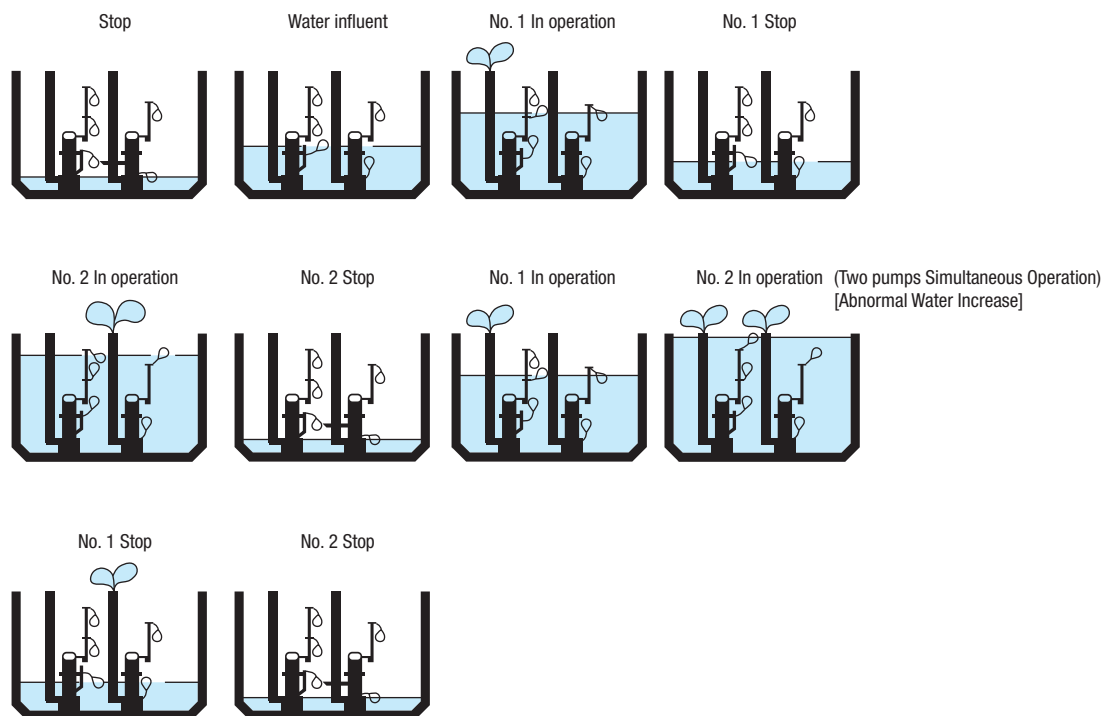


Example Layout

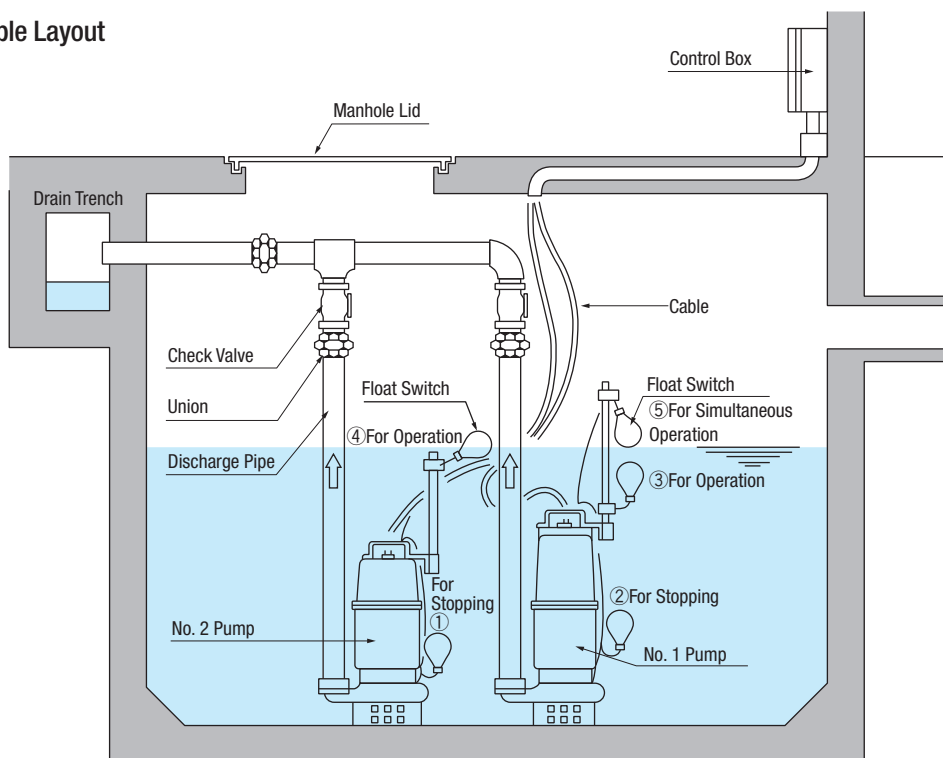


Example Layout for Submersible Pumps (Auto-Alternate Operation Type)

Operation Diagram



Example Layout



Volute Impeller Pump

Bore: 40 - 80 mm (1 1/2" - 3")

Output: 0.25 - 1.5 kW (1/3 - 2 HP)

A

A Series is a simple and convenient submersible pump for wastewater. The impeller has a volute shaped semi-open type, is equipped with an Automatic Float Switch and allows automatic alternate operation.

Bore mm (inch)	Output kW (HP)	Pump Model	Page
40 (1 1/2")	0.25 (1/3)	A401 (D • DW) T	14
50 • 65 (2" • 2 1/2")	0.4 • 0.75 (1/2 • 1)	A501 (D • DW)	16
65 • 80 (2 1/2" • 3")	1.5 (2)	A652 (D • DW)	18

D: Auto-operation

DW: Auto-alternate operation

Note: Since D and DW types with output not exceeding 0.75 kW are made-to-order products, please check the delivery time before placing an order.

A**Volute Impeller**Bore: **40 - 80 mm (1 1/2" - 3")**Output: **0.25 - 1.5 kW (1/3 - 2 HP)****■ Features**

- **A lightweight pump that is easy to handle**
- **Can be selected from abundant of model variation**
- **Prevents motor burnout**

An automatic-reset type motor protector (Thermal Protector) prevent the motor from burnout due to overload, impeller locking and open-phase. A core wire seal applied to a cable prevents water ingress into the motor chamber in case of breaking cable sheath or immersion of cable tip.

- **Extended service life**

Double mechanical seal and oil seal offering excellent wear resistance are employed for shaft seal mechanism.

■ Standard Specifications

Handling Liquid	Kind of Liquid	Wastewater
	Temperature	0 - 32°C
Material	Cable	VCT
	Motor Shaft	Stainless steel (SUS420J2)
	Pump Casing	Gray steel casting (FC200)
	Impeller	Gray steel casting (FC200)
Electric Motor	Name	Air-filled type Submersible Induction Motor
	Insulation Class	Class E
	Enclosure	IP68
	Phase	3-ph
	Voltage	200 - 480V

Note: Since D and DW types with output not exceeding 0.75 kW are made-to-order products, please check the delivery time before placing an order.

■ Applications

- Sewage treatment plant and Septic tank
 - Defoaming
 - Backwashing
 - Filteration
 - Effluent
- Road and Underpass
 - Rainwater and spring water
- Building, Factory, Basement or others
 - Sump water

■ Special Specifications

Motor Insulation	Class F
Cable Extension	Cable lengths: 10 - 30m (every 5m)
Material Changes	Impeller: SCS13, high-chrome cast iron Base Cover: SCS13, high-chrome cast iron Lifting Chain: SUS304
Others	Availability of mounting Motor Protector, please refer to the specifications (detail data) - App.1. For specifications other than the above, please contact us.

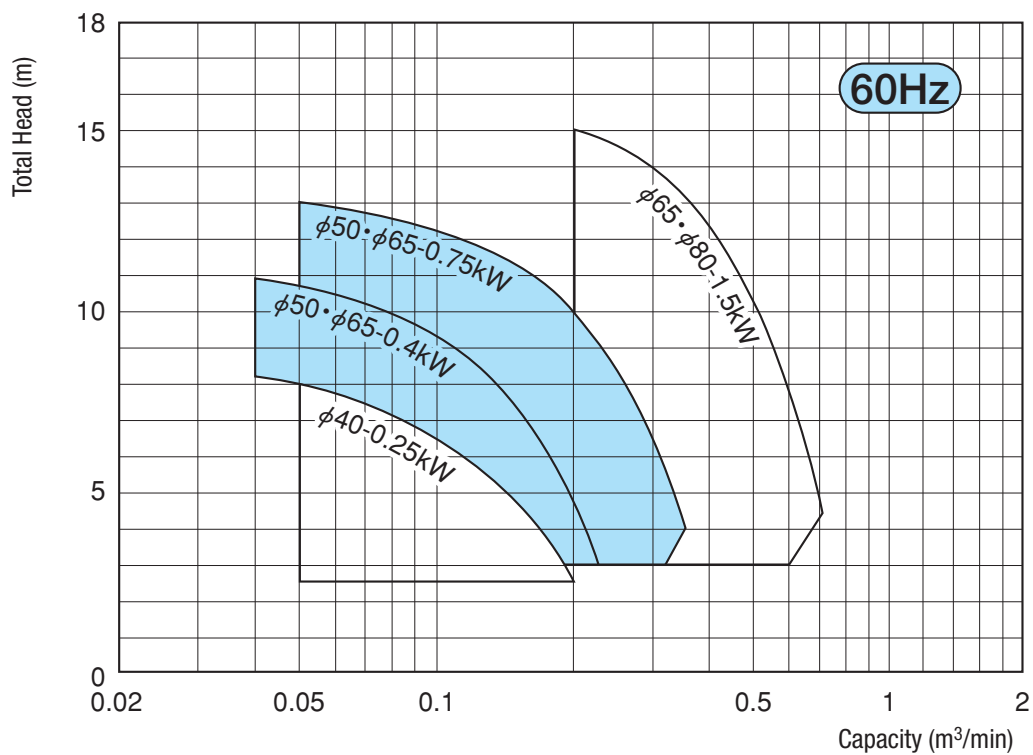
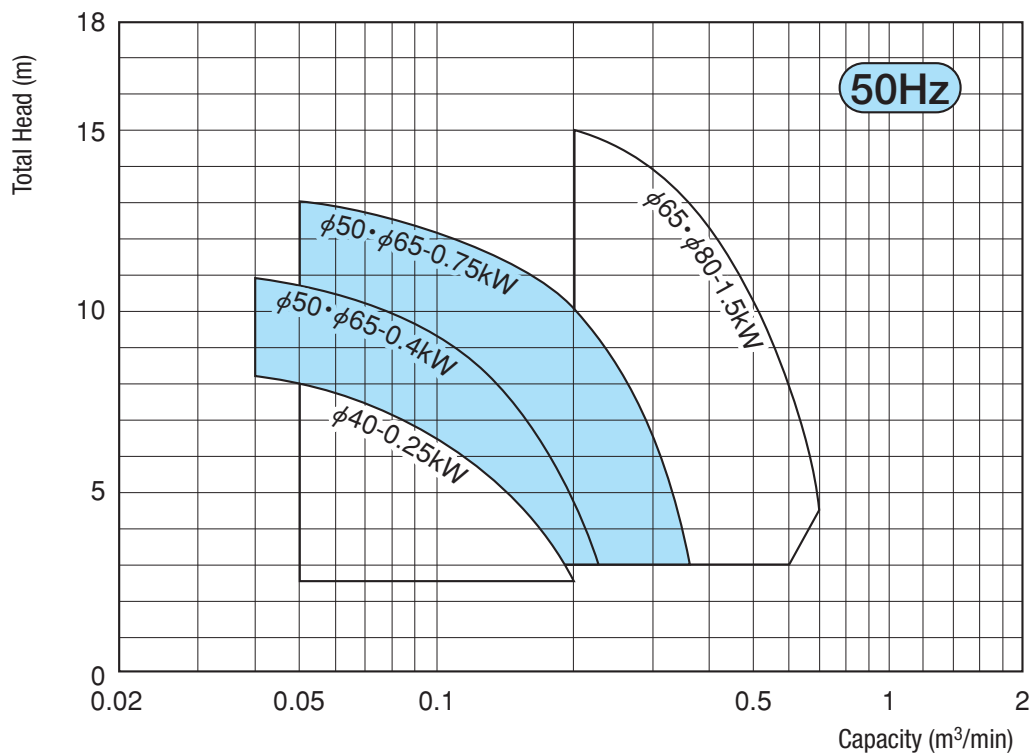
* The cable length should be limited due to voltage drop, see the specifications (detail data) - App.1.

* SCS: Stainless steel casting
SUS: Stainless steel

■ Pump-related products

- Liquid Level Control Switch
 - Level Regulator ⇒ See page 370
 - Mini Switch ⇒ See page 372
 - Oval Float ⇒ See page 373

Performance Curves



A
Volute Impeller

Bore: **40 mm (1 1/2")**

Output: **0.25 kW (1/3 HP)**

A401T-F40

A401T-P40

Standard Specifications

Bore mm (inch)	Pump Model				Connection Part No.		Output	Phase	Capacity – Total Head m³/min-m		No. of poles P	Weight (Bare Pump) (kg)	
	Non-Auto Operation	Auto- Operation	Auto-Alternate Operation		Auto- Connection	Free Standing	kW (HP)		50Hz	60Hz		A	A-D A-W
			Pair Name	Pump No. 1 and 2									
40 (1 1/2")	A401T	A401DT	A401DWT	A401WT + A401DT	P40	F40	0.25 (1/3)	3-ph	0.1 —6.5	0.1 —6.5	2	14.5	15.5

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Note: Since the items in the cells are made-to-order, please check the delivery time before placing an order.

Standard Accessories

- Cable (6m) 1 pc.
- Float Switch (for type D/W) ... 1 set

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

● Auto-connection type

- Connection (with bolts and packing)
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

● Free standing type

Connection Part No.	Set Weight
F40	Included in the body

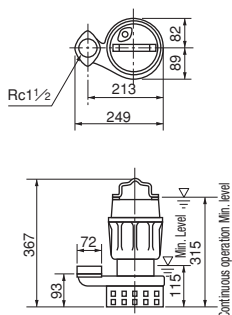
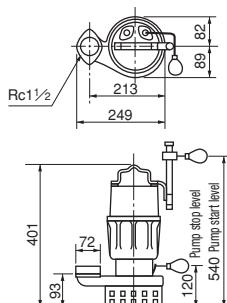
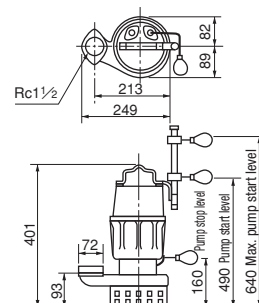
Connection Part No.	Set Weight	Connection Weight
P40	11kg	4.5kg

Part Specifications

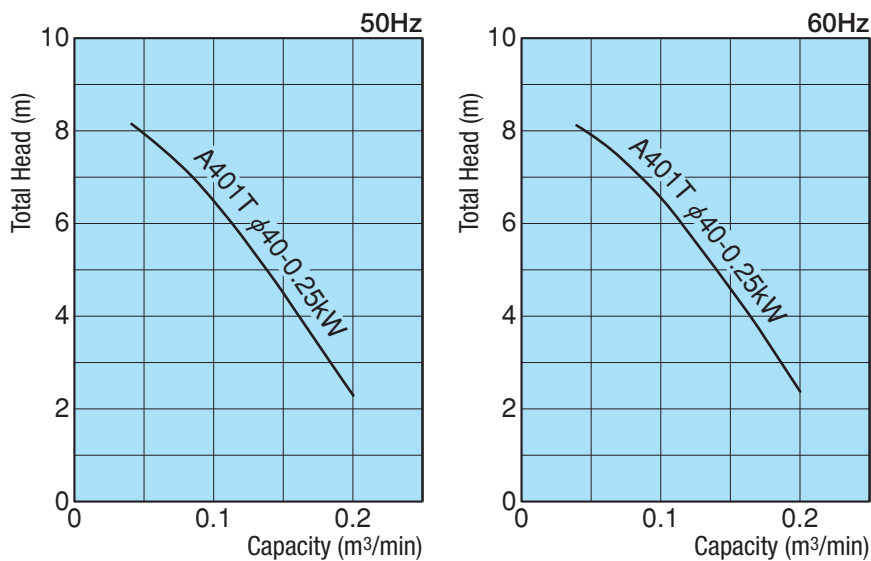
Applicable Model	Cable Specification				Starting Method	Mechanical seal		Solid Passage Dia. (mm)
	Type	Section Area (mm ²)	Cores	Outer Dia. (mm)		Lower	Upper	
A401T · A401DT · A401WT	VCT	1.25	4	φ 11.5	Direct	SiC/SiC	Carbon/Ceramic	9

Dimensions

Free standing type

A401T

A401DT

A401WT


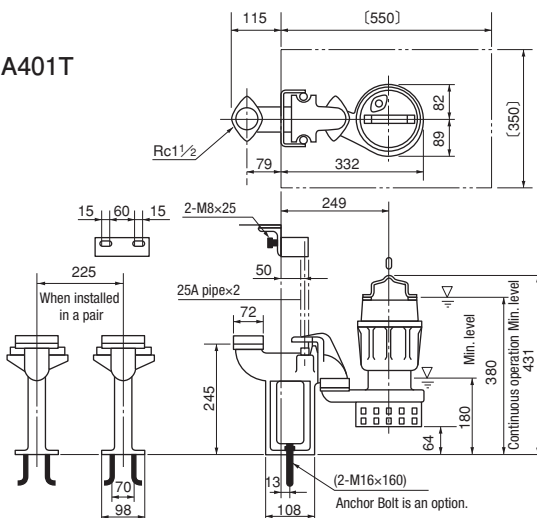
Performance Curves



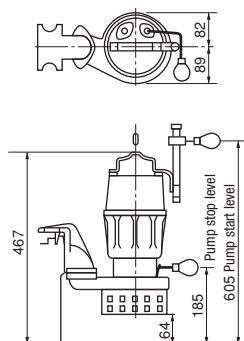
Unit: mm

Auto-connection type

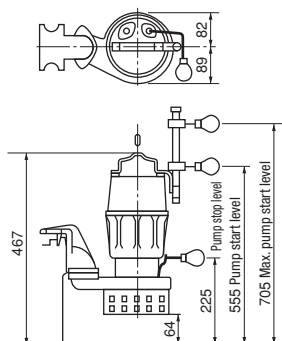
A401T



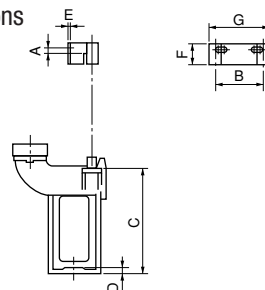
A401DT



A401WT



● Connection Dimensions



Connection Part No.	A	B	C	D	E	F	G
P40	11	100	223	12	3	44	125

A
Volute Impeller

Bore: **50・65 mm (2"・2 1/2")**

Output: **0.4・0.75 kW (1/2・1 HP)**

Standard Specifications

Bore mm (inch)	Pump Model				Connection Part No.		Output	Phase	Capacity – Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) (kg)	
	Non-Auto Operation	Auto- Operation	Auto-Alternate Operation		Auto- Connection	Free Standing	kW (HP)		50Hz	60Hz		A	A-D A-W
			Pair Name	Pump No. 1 and 2									
50 (2")	A501T	A501DT	A501DWT	A501WT + A501DT	P50	F50	0.4 (1/2)	3-ph	0.15–7.3	0.15–7.3	2	17.0	18.0
	A501	A501D	A501DW	A501W + A501D			0.75 (1)		0.2 –10	0.2 –10		18.0	19.0
65 (2 1/2")	A501T	A501DT	A501DWT	A501WT + A501DT	P65B	F65B	0.4 (1/2)	3-ph	0.15–7.3	0.15–7.3	2	17.0	18.0
	A501	A501D	A501DW	A501W + A501D			0.75 (1)		0.2 –10	0.2 –10		18.0	19.0

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Note: Since the items in the cells are made-to-order, please check the delivery time before placing an order.

Standard Accessories

- Cable (6m) 1 pc.
- Float Switch (for type D/W) ... 1 set

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

● Auto-connection type

- Connection (For P50 only, with bolts and packing)
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

Connection Part No.	Set Weight	Connection Weight
P50	11kg	4.5kg
P65B	20kg	14.5kg

● Free standing type (F65B)

- Elbow Flange
- Companion Flange (with bolts, nuts and packing)

Connection Part No.	Set Weight
F50	Included in the body
F65B	5.5kg

Part Specifications

Applicable Model	Cable Specification				Starting Method	Mechanical seal		Solid Passage Dia. (mm)
	Type	Section Area (mm ²)	Cores	Outer Dia. (mm)		Lower	Upper	
A501T・A501DT・A501WT A501・A501D・A501W	VCT	1.25	4	φ 11.5	Direct	SiC/SiC	Carbon/Ceramic	9

Dimensions

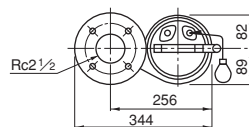
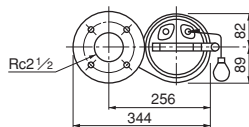
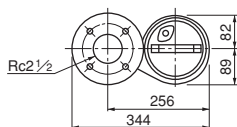
Free standing type

A501 (T)

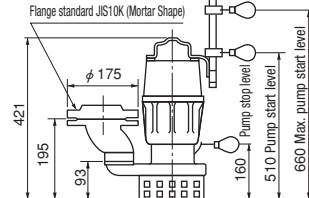
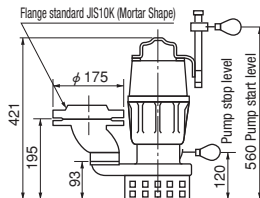
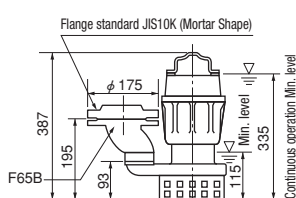
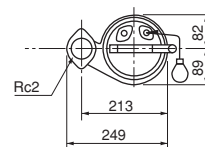
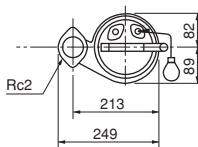
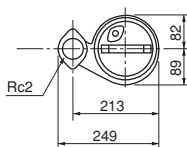
A501D (T)

A501W (T)

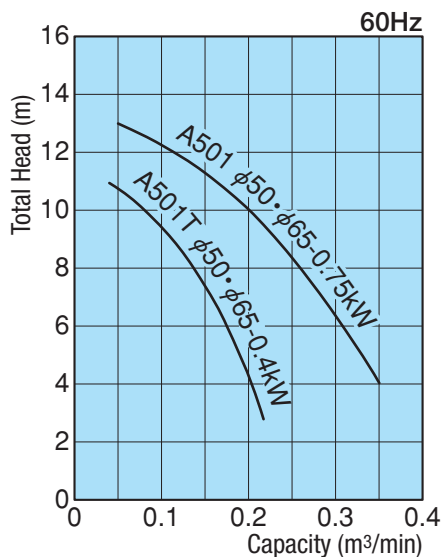
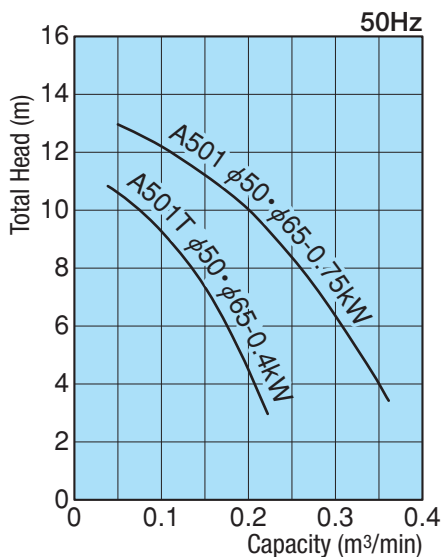
F65B



F50



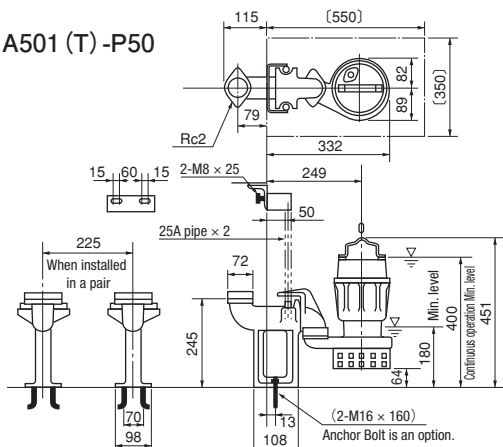
Performance Curves



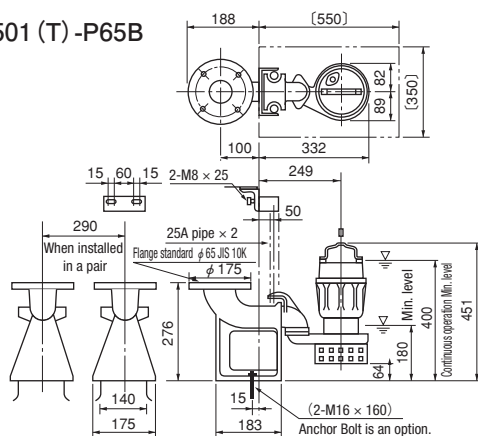
Unit: mm

Auto-connection type

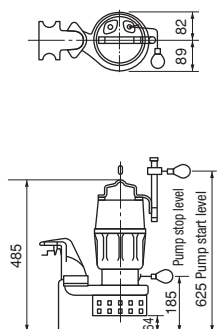
A501 (T) -P50



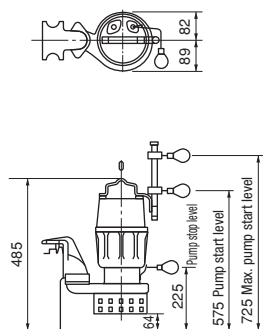
A501 (T) -P65B



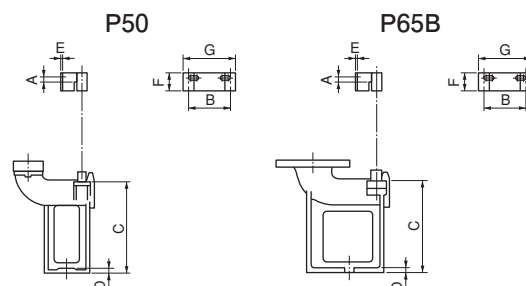
A501D (T)



A501W (T)



● Connection Dimensions



Connection Part No.	A	B	C	D	E	F	G
P50	11	100	223	12	3	44	125
P65B	11	100	224	12	3	44	125

A
Volute Impeller

Bore: **65 • 80 mm (2 1/2" • 3")**

Output: **1.5 kW (2 HP)**

A652-F65

A652-P65

A652DW-F65

Standard Specifications

Bore mm (inch)	Pump Model				Connection Part No.		Output kW (HP)	Phase	Capacity – Total Head m³/min-m		No. of poles P	Weight (Bare Pump) (kg)	
	Non-Auto Operation	Auto- Operation	Auto-Alternate Operation		Auto- Connection	Free Standing			50Hz	60Hz		A	A-D A-W
			Pair Name	Pump No. 1 and 2									
65 (2 1/2")	A652	A652D	A652DW	A652W + A652D	P65	F65	1.5 (2)	3-ph	0.4–12.3	0.4–12.3	2	27	29
80 (3")	A652	A652D	A652DW	A652W + A652D	P80	F80	1.5 (2)	3-ph	0.4–12.3	0.4–12.3	2	27	29

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (8m) 1 pc.
- Float Switch (for type D/W) ... 1 set

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

Auto-connection type

- Connection
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

Connection Part No.	Set Weight	Connection Weight
P65	24kg	15kg
P80	31.5kg	20.5kg

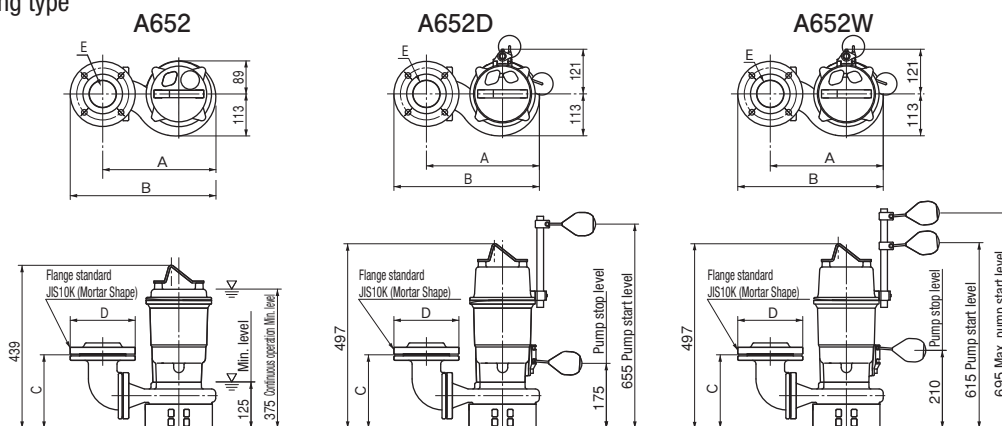
Free standing type

- Elbow Flange
- Companion Flange (with bolts, nuts and packing)

Connection Part No.	Set Weight
F65	7kg
F80	9.5kg

Part Specifications

Applicable Model	Cable Specification				Starting Method	Mechanical seal		Solid Passage Dia. (mm)	
	Type	Section Area (mm ²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz
A652 • A652D • A652W	VCT	1.25	4	φ 11.5	Direct	SiC/SiC	SiC/SiC	14	13

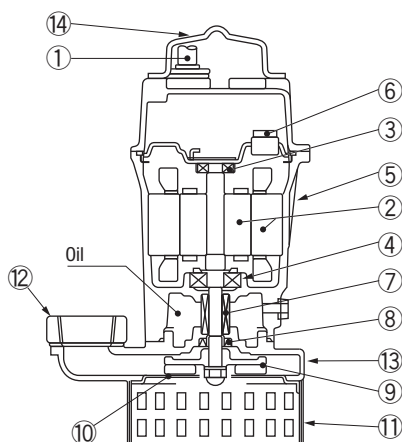
Dimensions
Free standing type


Pump Model	Connection Part No.	A	B	C	D	E
A652 • A652D • A652W	F65	305	393	198	φ175	Rc2 1/2
A652 • A652D • A652W	F80	315	408	228	φ185	Rc3

Sectional View

A401T

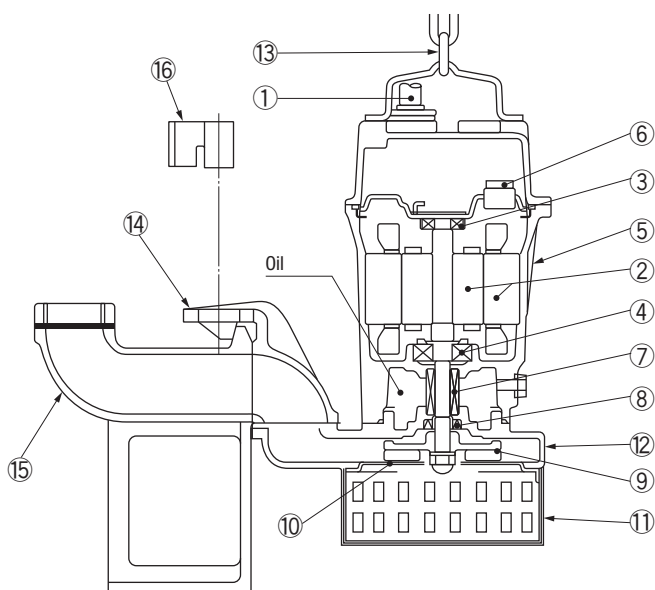
Free standing type



No.	Name	Material
1	Cable	VCT
2	Motor	Shaft: SUS420J2
3	Ball Bearing (Upper)	—
4	Ball Bearing (Lower)	—
5	Stator Casing	FC200
6	Thermal Protector	—
7	Mechanical Seal	—
8	Oil Seal	NBR
9	Impeller	FC200
10	Base Cover	SPCC
11	Strainer	SPCC
12	Screwed Coupling	PP
13	Pump Casing	FC200
14	Handle	SUS304

A501

Auto-connection type



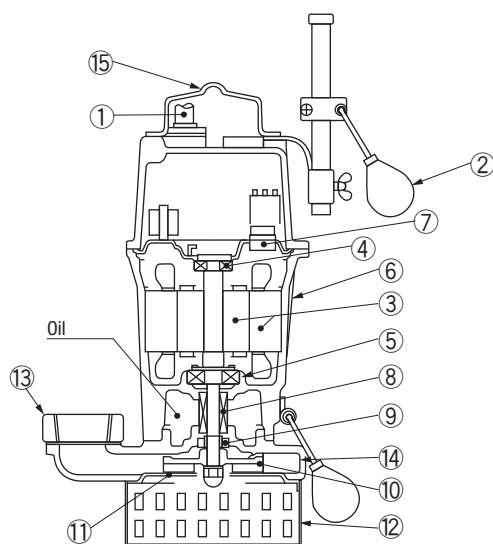
No.	Name	Material
1	Cable	VCT
2	Motor	Shaft: SUS420J2
3	Ball Bearing (Upper)	—
4	Ball Bearing (Lower)	—
5	Stator Casing	FC200
6	Thermal Protector	—
7	Mechanical Seal	—
8	Oil Seal	NBR
9	Impeller	FC200
10	Base Cover	SPCC
11	Strainer	SPCC
12	Pump Casing	FC200
13	Chain	SS400
14	Sliding Bracket	FC200
15	Discharge Connection	FC200
16	Guide Holder	SUS304

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel

SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitryl rubber

A501DT

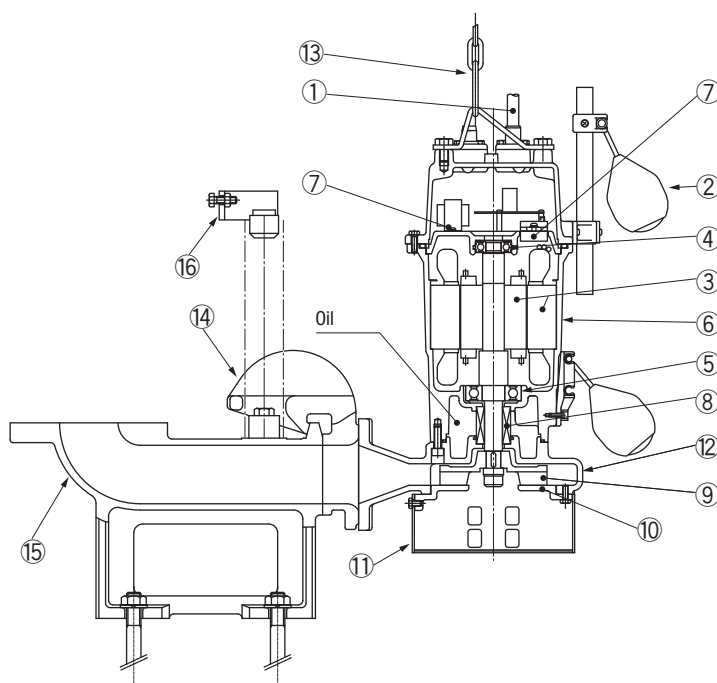
Free standing type



No.	Name	Material
1	Cable	VCT
2	Float Switch	—
3	Motor	Shaft: SUS420J2
4	Ball Bearing (Upper)	—
5	Ball Bearing (Lower)	—
6	Stator Casing	FC200
7	Thermal Protector	—
8	Mechanical Seal	—
9	Oil Seal	NBR
10	Impeller	FC200
11	Base Cover	SPCC
12	Strainer	SPCC
13	Screwed Coupling	PP
14	Pump Casing	FC200
15	Handle	SUS304

A652D

Auto-connection type



No.	Name	Material
1	Cable	VCT
2	Float Switch	—
3	Motor	Shaft: SUS420J2
4	Ball Bearing (Upper)	—
5	Ball Bearing (Lower)	—
6	Stator Casing	FC200
7	Thermal Protector	—
8	Mechanical Seal	—
9	Impeller	FC200
10	Base Cover	FC200
11	Strainer	SUS304
12	Pump Casing	FC200
13	Chain	SS400
14	Sliding Bracket	FC200
15	Discharge Connection	FC200
16	Guide Holder	SCS13

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

Volute Impeller (High Head Type)**Bore: 40 - 100 mm (1 1/2" - 4")****Output: 0.4 - 11 kW (1/2 - 15 HP)****AH**

AH Series is high discharge head type submersible pump for wastewater. The impeller is a volute shaped semi-open type, with an automatic float switch and automatic alternate operation type are also available.

Bore mm (inch)	Output kW (HP)	Pump Model	Page
40 (1 1/2")	0.4 (1/2)	AH401 (D·DW) T	26
50·65 (2"·2 1/2")	0.75 (1)	AH501 (D·W)	28
	1.5 (2)	AH502 (D·W)	
65·80 (2 1/2"·3")	2.2 (3)	AH651	30
65·80·100 (2 1/2"·3"·4")	3.7 (5)	AH801	32
80·100 (3"·4")	5.5 - 11 (7.5 - 15)	AH1001	34

D: Auto-operation

DW: Auto-alternate operation

Note: Since D and DW types with output not exceeding 0.75 kW are made-to-order products, please check the delivery time before placing an order.

AH**Volute Impeller
(High Head Type)**Bore: **40 - 100 mm (1 1/2" - 4")**Output: **0.4 - 11 kW (1/2 - 15 HP)**

■ Features

● Lightweight and compact design that are easy to handle

The series have many output variation, you can select the suitable model.

● Prevent motor burnout

An automatic-reset type motor protector (Thermal Protector) prevent the motor burnout due to overload, impeller locking and open-phase. A core wire seal applied to the cable prevents water ingress into the motor chamber in case of breaking cable sheath or immersion of cable tip.

● Extended service life

Double mechanical seal and oil seal offering excellent wear resistances are employed for shaft seal mechanism, and pressure relief mechanism is employed for models over 2.2 kW.

■ Standard Specifications

Handling Liquid	Kind of Liquid	Wastewater
	Temperature	0 - 32°C
Material	Cable	VCT (2PNCT for 11 kW only)
	Motor Shaft	Stainless steel (SUS420J2)
	Pump Casing	Gray steel casting (FC200)
	Impeller	Gray steel casting (FC200)
Electric Motor	Name	Air-filled type Submersible Induction Motor
	Insulation Class	Class E
	Enclosure	IP68
	Phase	3-ph
	Voltage	200 - 480V

Note: Since D and DW types with output not exceeding 0.75 kW are made-to-order products, please check the delivery time before placing an order.

■ Applications

- Sewage treatment plant and Septic tank
 - Defoaming
 - Backwashing
 - Filtration
 - Effluent
- Road and Underpass
 - Rainwater and spring water
- Building, Factory, Basement or others
 - Sump water

■ Special Specifications

Motor Insulation	Class F
Cable Extension	Cable lengths: 15 - 30m (every 5m)
Material Changes	Impeller: SCS13, high-chrome cast iron Base Cover: SCS13, high-chrome cast iron Lifting Chain: SUS304
Others	Availability of mounting motor protector, please refer to the specifications (detail data) - App.1. For specifications other than the above, please contact us.

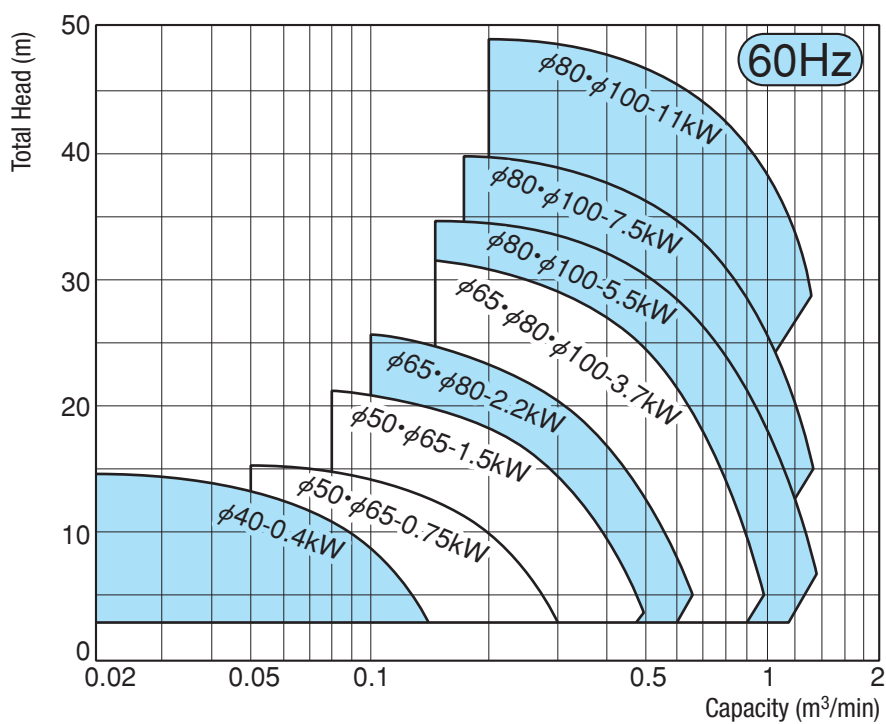
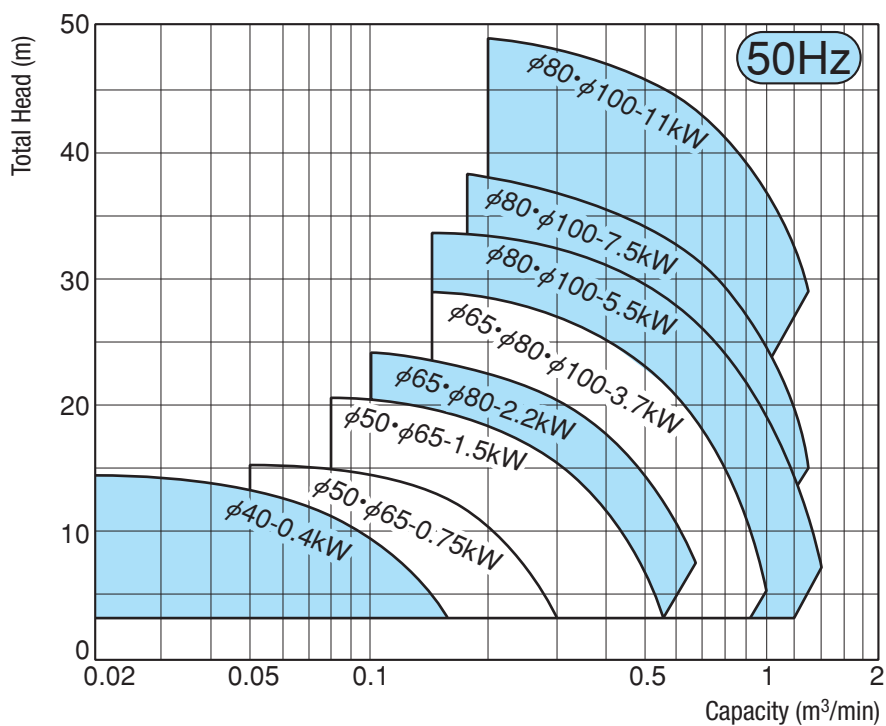
* Cable length should be limited due to voltage drop, see the specifications (detail data) - App.1.

* SCS: Stainless steel casting
SUS: Stainless steel

■ Pump-Related Products

- Liquid Level Control Switch
 - Level Regulator ⇒ See page 370
 - Mini Switch ⇒ See page 372
 - Oval Float ⇒ See page 373

Performance Curves



AH

**Volute Impeller
(High Head Type)**

Bore: **40 mm (1 1/2")**

Output: **0.4 kW (1/2 HP)**



AH401T-F40



AH401T-P40

Standard Specifications

Bore mm (inch)	Pump Model				Connection Part No.		Output kW (HP)	Phase	Capacity – Total Head m³/min-m		No. of poles P	Weight (Bare Pump) (kg)	
	Non-Auto Operation	Auto- Operation	Auto-Alternate Operation		Auto- Connection	Free Standing			50Hz	60Hz		AH	A-D AH-W
			Pair Name	Pump No. 1 and 2									
40 (1 1/2)	AH401T	AH401DT	AH401DWT	AH401WT + AH401DT	P40	F40	0.4 (1/2)	3-ph	0.05–13.4	0.05–13.2	2	17.0	18.0

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Note: Since the items in the cells are made-to-order, please check the delivery time before placing an order.

Standard Accessories

- Cable (6m)1 pc.
- Float Switch (for type D/W)1 set

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

- Auto-connection type
 - Connection (with bolts and packing)
 - Guide Holder (with bolts and nuts)
 - Sliding Bracket
 - Lifting Chain (6m)

- Free standing type

Connection Part No.	Set Weight
F40	Included in the body

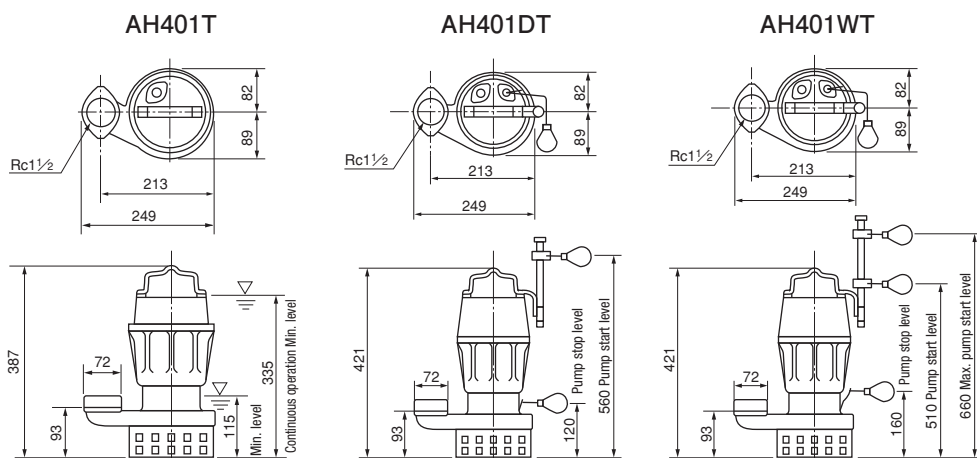
Connection Part No.	Set Weight	Connection Weight
P40	11kg	4.5kg

Part Specifications

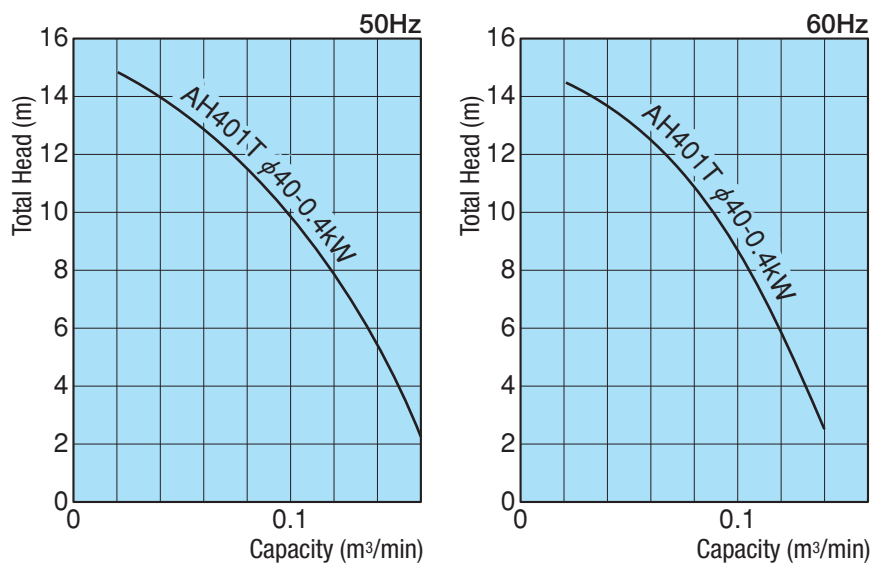
Applicable Model	Cable Specification			Starting Method	Mechanical seal		Solid Passage Dia. (mm)	
	Type	Section Area (mm ²)	Cores		Lower	Upper	50Hz	60Hz
AH401T・AH401DT・AH401WT	VCT	1.25	4	φ 11.5	Direct	SiC/SiC Carbon/Ceramic	5.5	6.5

Dimensions

Free standing type



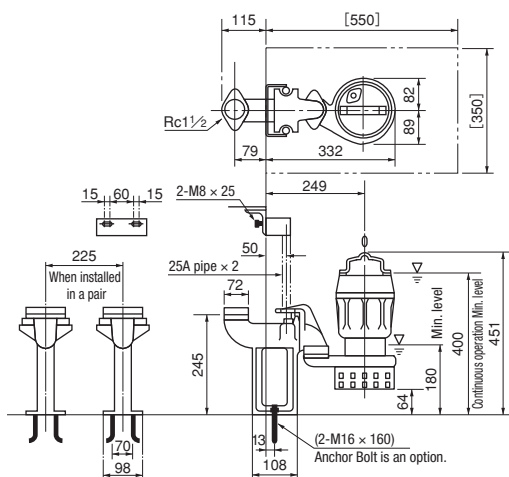
Performance Curves



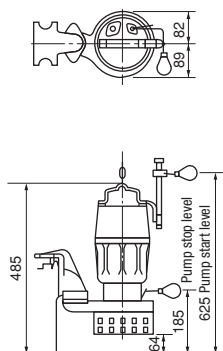
Unit: mm

Auto-connection type

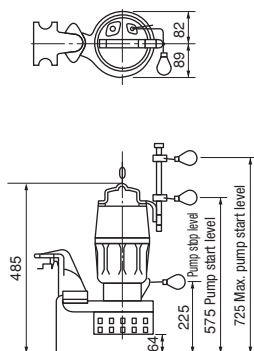
AH401T



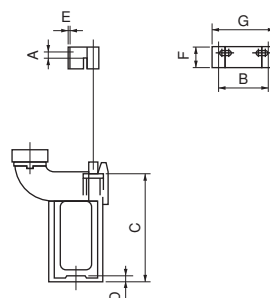
AH401DT



AH401WT



● Connection Dimensions



Connection Part No.	A	B	C	D	E	F	G
P40	11	100	223	12	3	44	125

Standard Specifications

Bore mm (inch)	Pump Model				Connection Part No.		Output	Phase	Capacity – Total Head m³/min-m		No. of poles P	Weight (Bare Pump) (kg)	
	Non-Auto Operation	Auto- Operation	Auto-Alternate Operation		Auto- Connection	Free Standing	kW (HP)		50Hz	60Hz		AH	A-D AH-W
			Pair Name	Pump No. 1 and 2									
50 (2")	AH501	AH501D	AH501DW	AH501W+AH501D	P50	F50	0.75 (1)	3-ph	0.1–14.0	0.1–14.8	2	18.0	19.0
	AH502	AH502D	AH502DW	AH502W+AH502D			1.5 (2)		0.2–18.4	0.2–18.2		25.5	27.5
65 (2 1/2")	AH501	AH501D	AH501DW	AH501W+AH501D	P65B	F65B	0.75 (1)	3-ph	0.1–14.0	0.1–14.8	2	18.0	19.0
	AH502	AH502D	AH502DW	AH502W+AH502D			1.5 (2)		0.2–18.4	0.2–18.2		25.5	27.5

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Note: Since the items in the cells are made-to-order, please check the delivery time before placing an order.

Standard Accessories

- Cable
(6m: 0.75 kW).....1 pc.
(8m: 1.5 kW).....1 pc.
- Float Switch (for type D/W)1 set

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

- Auto-connection type
 - Connection (with bolts and packing)
 - Guide Holder (with bolts and nuts)
 - Sliding Bracket
 - Lifting Chain (6m)

Connection Part No.	Set Weight	Connection Weight
P50	11kg	4.5kg
P65B	20kg	14.5kg

- Free standing type (F65B)
 - Elbow Flange
 - Companion Flange
(with bolts, nuts and packing)

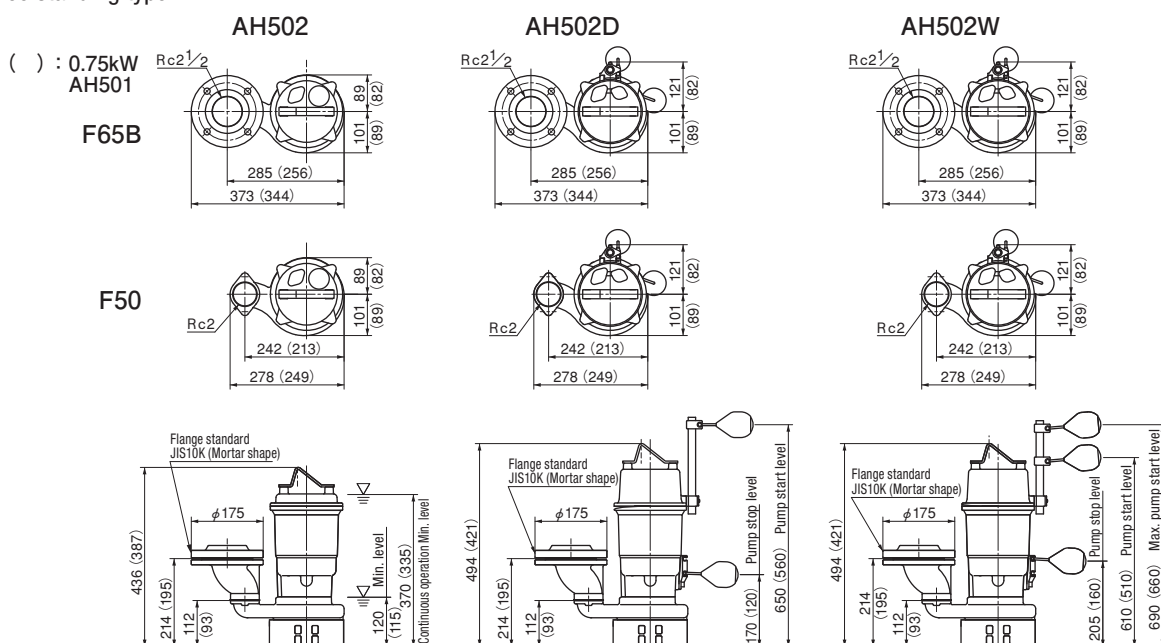
Connection Part No.	Set Weight
F50	Included in the body
F65B	5.5kg

Part Specifications

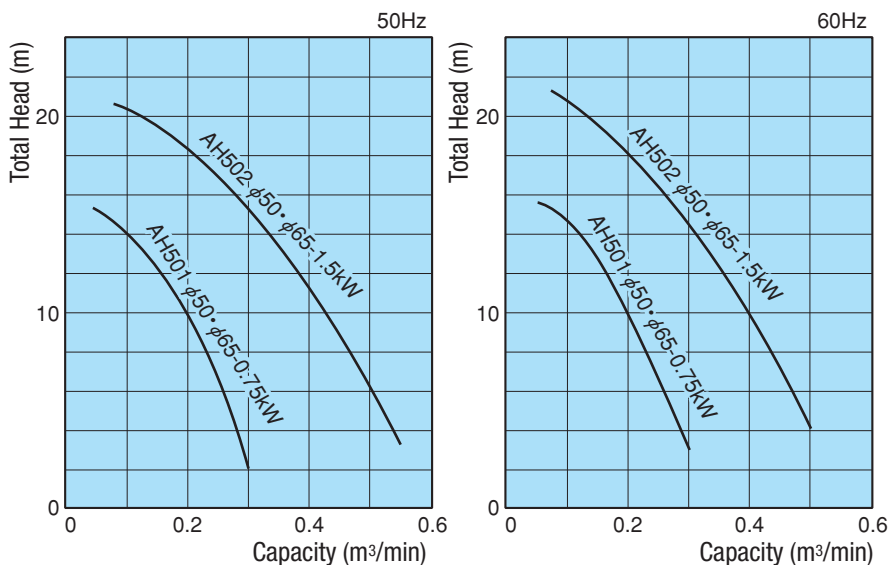
Applicable Model	Cable Specification			Starting Method	Mechanical seal		Solid Passage Dia. (mm)	
	Type	Section Area (mm ²)	Cores		Lower	Upper	50Hz	60Hz
AH501 • AH501D • AH501W	VCT	1.25	4	Direct	SiC/SiC	Carbon/Ceramic	7.5	9
AH502 • AH502D • AH502W						SiC/SiC	12.5	13.5

Dimensions

Free standing type



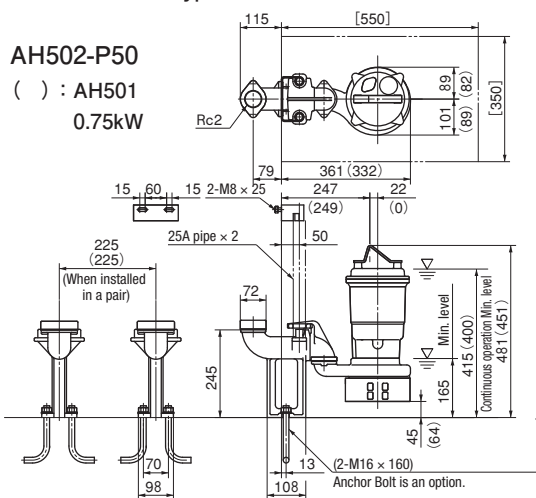
Performance Curves



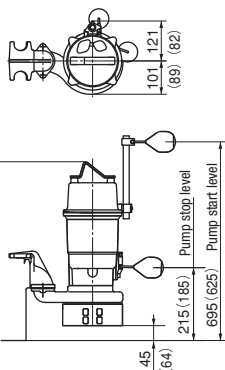
Unit: mm

Auto-connection type

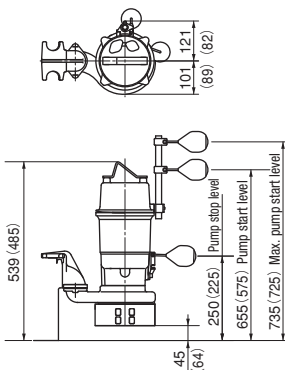
AH502-P50

() : AH501
0.75kW


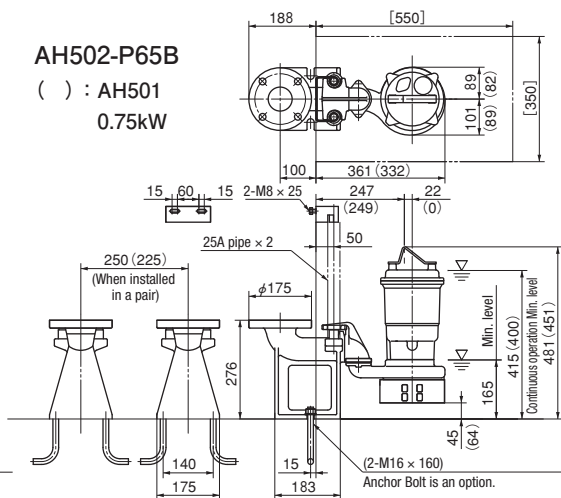
AH502D



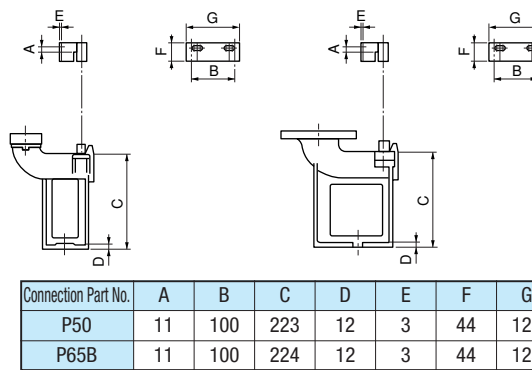
AH502W



AH502-P65B

() : AH501
0.75kW


Connection Dimensions



Connection Part No.	A	B	C	D	E	F	G
P50	11	100	223	12	3	44	125
P65B	11	100	224	12	3	44	125

AH

Volute Impeller (High Head Type)

Bore: 65 • 80 mm (2 1/2" • 3")

Output: 2.2 kW (3 HP)



AH651-F65



AH651-P65

Standard Specifications

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity – Total Head m³/min-m		No. of poles P	Weight (Bare Pump) (kg)
		Auto-Connection	Free Standing			50Hz	60Hz		
65 (2 1/2")	AH651	P65	F65	2.2 (3)	3-ph	0.3–20.3	0.3–20.3	2	46
80 (3")	AH651	P80	F80	2.2 (3)	3-ph	0.3–20.3	0.3–20.3	2	46

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (8m) 1 pc.

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

● Auto-connection type

- Connection
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

Connection Part No.	Set Weight	Connection Weight
P65	24kg	15kg
P80	31.5kg	20.5kg

● Free standing type

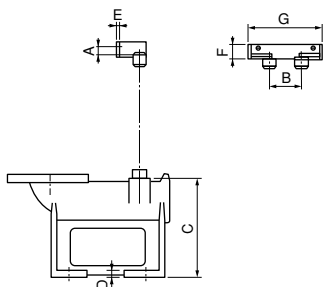
- Elbow Flange
- Companion Flange (with bolts, nuts and packing)

Connection Part No.	Set Weight
F65	7kg
F80	9.5kg

Part Specifications

Applicable Model	Cable Specification				Starting Method	Mechanical seal		Solid Passage Dia. (mm)	
	Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz
AH651	VCT	1.25	4	φ 11.5	Direct	SiC/SiC	SiC/SiC	10.5	12.5

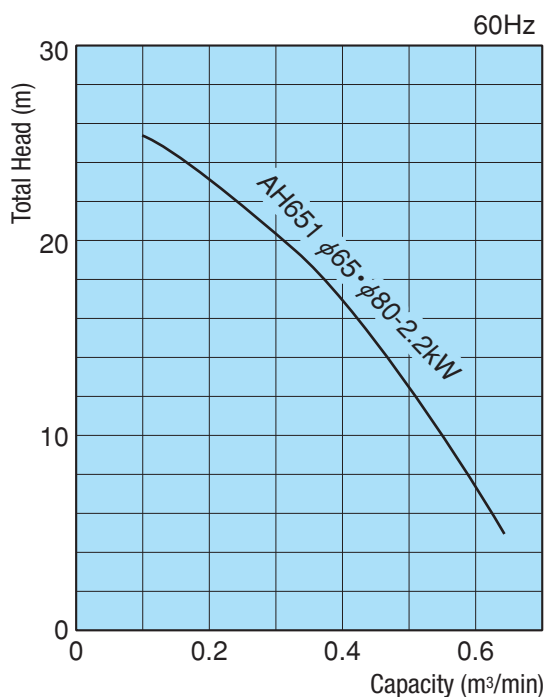
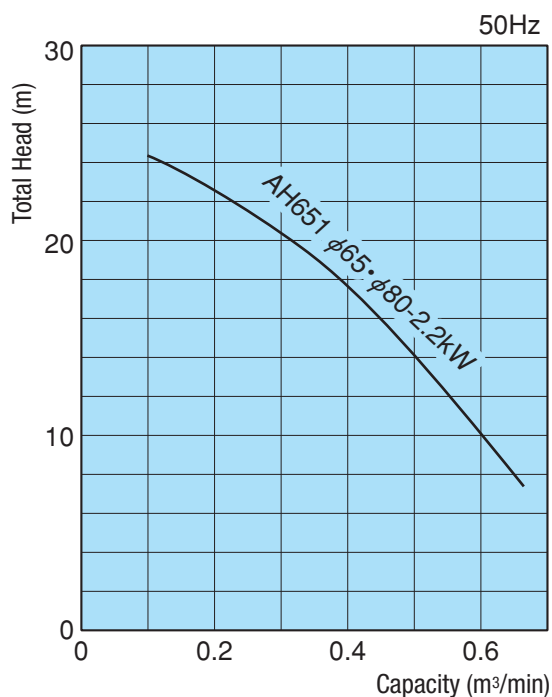
● Connection Dimensions



Unit: mm

Connection Part No.	A	B	C	D	E	F	G
P65	17	70	201	12	6	32	160
P80	25	100	262	12	6	44	210

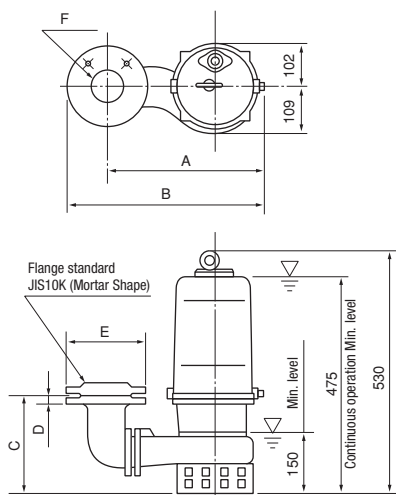
Performance Curves



Dimensions

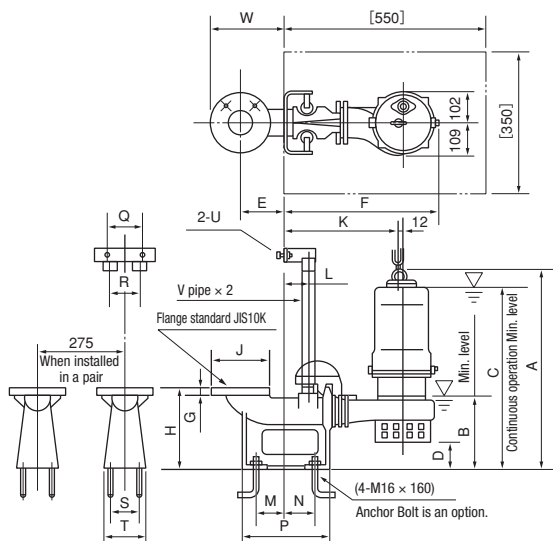
Unit: mm

Free standing type



Connection Part No.	A	B	C	D	E	F
F65	364	452	220	15	φ175	Rc2½
F80	372	465	250	18	φ185	Rc3

Auto-connection type



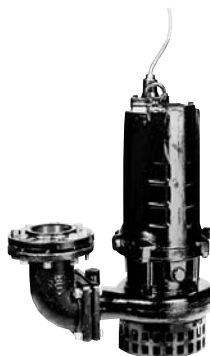
Connection Part No.	A	B	C	D	E	F	G	H	J	K
P65	580	200	525	50	145	462	22	218	φ175	328
P80	620	240	565	90	160	505	22	330	φ211	371

Connection Part No.	L	M	N	P	Q	R	S	T	U	V	W
P65	50	95	65	244	120	70	140	175	M8x25	32A	233
P80	80	107	103	302	180	100	120	150	M10x25	50A	266

AH

**Volute Impeller
(High Head Type)**

Bore: **65 - 100 mm (2 1/2" - 4")**

Output: **3.7 kW (5 HP)**

AH801-F80

AH801-P80

Standard Specifications

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity – Total Head m³/min-m		No. of poles P	Weight (Bare Pump) (kg)
		Auto-Connection	Free Standing			50Hz	60Hz		
65 (2 1/2")	AH801	P65	F65	3.7 (5)	3-ph	0.5–23.2	0.5–24.5	2	55
80 (3")	AH801	P80	F80	3.7 (5)	3-ph	0.5–23.2	0.5–24.5	2	55
100 (4")	AH801	P100	F100	3.7 (5)	3-ph	0.5–23.2	0.5–24.5	2	55

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (8m)1 pc.

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

● Auto-connection type

- Connection
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

Connection Part No.	Set Weight	Connection Weight
P65	24kg	15kg
P80	31.5kg	20.5kg
P100	40.5kg	27kg

● Free standing type

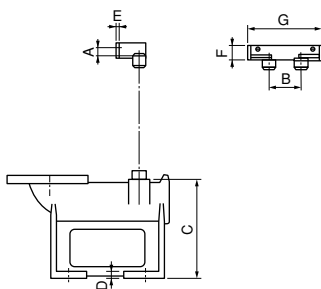
- Elbow Flange
- Companion Flange (with bolts, nuts and packing)

Connection Part No.	Set Weight
F65	7kg
F80	9.5kg
F100	11kg

Part Specifications

Applicable Model	Cable Specification				Starting Method	Mechanical seal		Solid Passage Dia. (mm)	
	Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz
AH801	VCT	2	4	φ 12	Direct	SiC/SiC	SiC/SiC	13.5	14

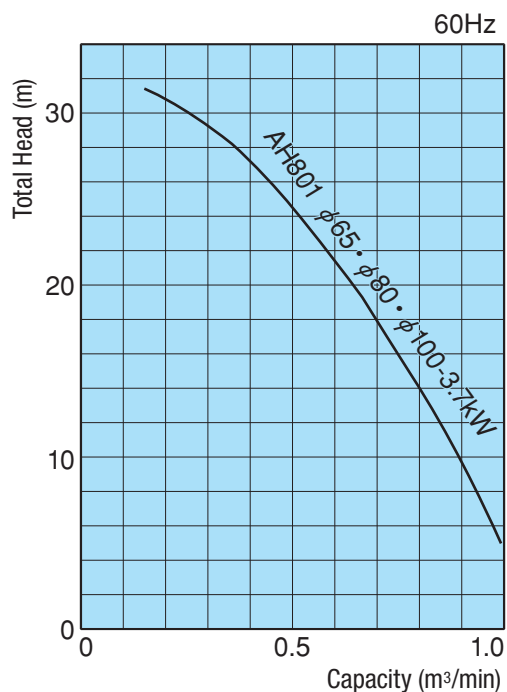
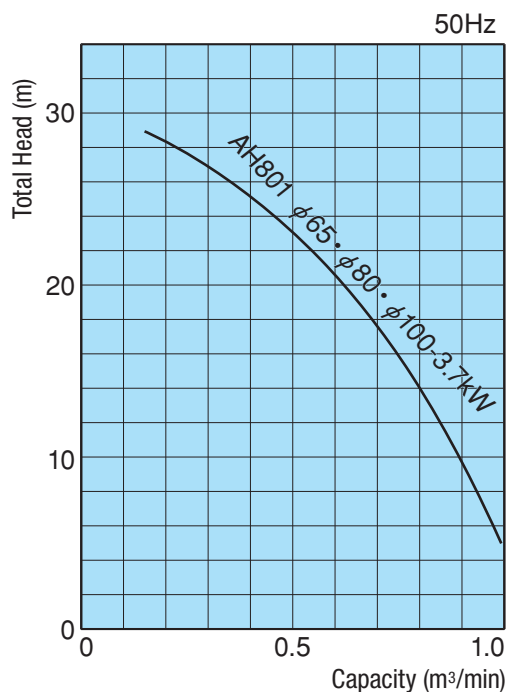
● Connection Dimensions



Unit: mm

Connection Part No.	A	B	C	D	E	F	G
P65	17	70	201	12	6	32	160
P80	25	100	262	12	6	44	210
P100	25	100	259	15	6	44	210

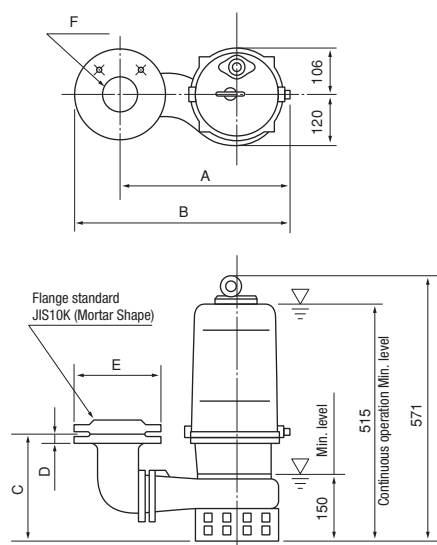
Performance Curves



Dimensions

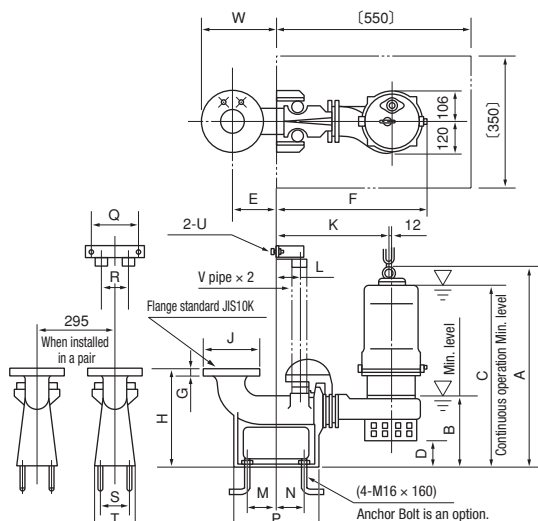
Unit: mm

Free standing type



Connection Part No.	A	B	C	D	E	F
F65	362	450	220	15	$\phi 175$	Rc2½
F80	372	465	250	18	$\phi 185$	Rc3
F100	377	482	260	18	$\phi 210$	Rc4

Auto-connection type



Connection Part No.	A	B	C	D	E	F	G	H	J	K	
P65	622	200	565	51	145	462	22	218	φ175	328	
P80	662	240	605	91	160	505	22	330	φ211	371	
P100							24		φ238		
Connection Part No.	L	M	N	P	Q	R	S	T	U	V	W
P65	50	95	65	244	120	70	140	175	M8×25	32A	233
P80	80	107	103	302	180	100	120	150	M10×25	50A	266
P100		114	115	308			210	238			279

AH

**Volute Impeller
(High Head Type)**

Bore: **80 • 100 mm (3" • 4")**

Output: **5.5 - 11 kW (7.5 - 15 HP)**



AH1001-F100



AH1001-P100

Standard Specifications

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity – Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) (kg)
		Auto-Connection	Free Standing			50Hz	60Hz		
80 (3")	AH1001	P80	F80	5.5 (7.5)	3-ph	0.6–28.0	0.6–28.6	2	82
				7.5 (10)		0.8–29.5	0.8–31.0		92
				11 (15)		1.0–37.4	1.0–38.8		120
100 (4")	AH1001	P100	F100	5.5 (7.5)	3-ph	0.6–28.0	0.6–28.6	2	82
				7.5 (10)		0.8–29.5	0.8–31.0		92
				11 (15)		1.0–37.4	1.0–38.8		120

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (8m) 5.5/7.5 kW1 pc.
11 kW3 pcs.

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

● Auto-connection type

- Connection
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

Connection Part No.	Set Weight	Connection Weight
P80	31.5kg	20.5kg
P100	40.5kg	27kg

● Free standing type

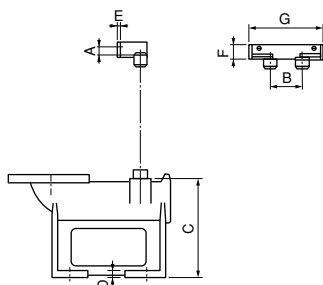
- Elbow Flange
- Companion Flange (with bolts, nuts and packing)

Connection Part No.	Set Weight
F80	9.5kg
F100	11kg

Part Specifications

Applicable Model		Cable Specification				Starting Method	Mechanical seal		Solid Passage Dia. (mm)
		Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	
AH1001	5.5kW (7.5HP)	VCT	3.5	4	ϕ 14	Direct	SiC/SiC	SiC/SiC	14
AH1001	7.5kW (10HP)	VCT	5.5	4	ϕ 16.5				
AH1001	11kW (15HP)	2PNCT	5.5	4	ϕ 17	Star-delta			
			5.5 1.25	3 2	ϕ 15.5 ϕ 9.8				

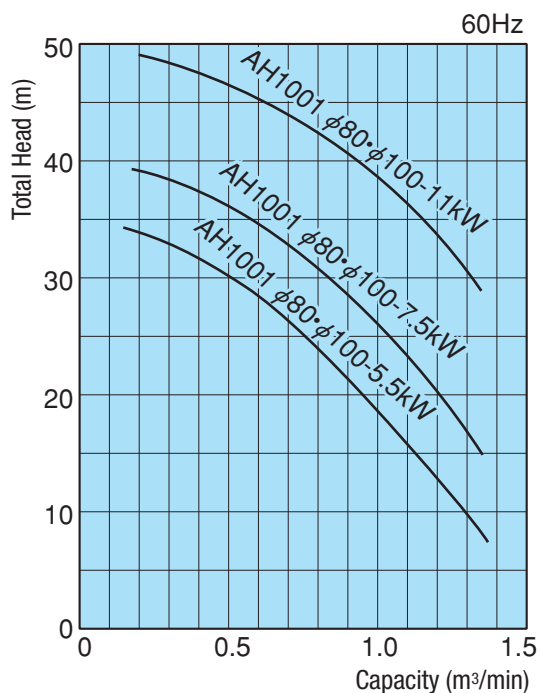
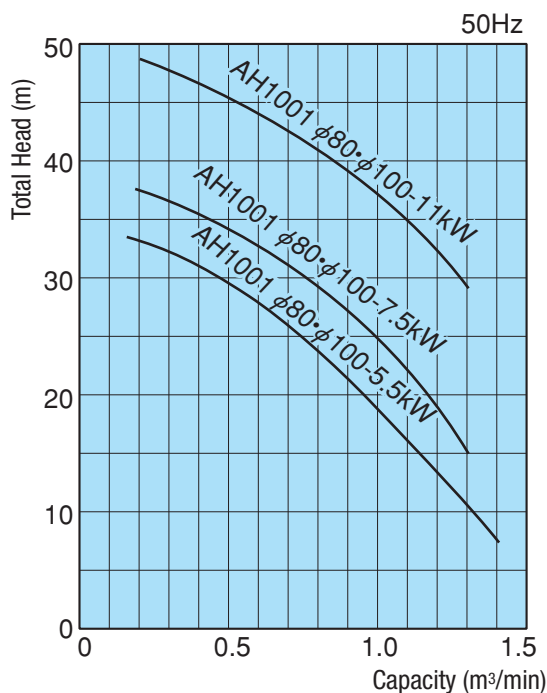
● Connection Dimensions



Unit: mm

Connection Part No.	A	B	C	D	E	F	G
P80	25	100	262	12	6	44	210
P100	25	100	259	15	6	44	210

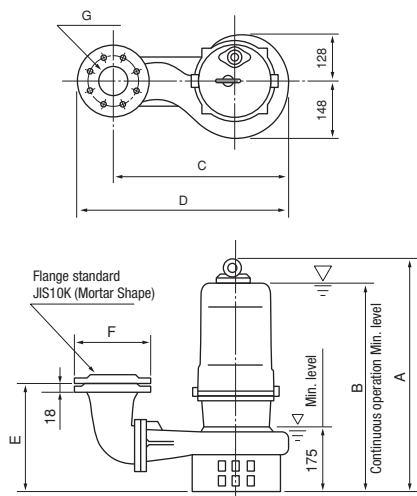
Performance Curves



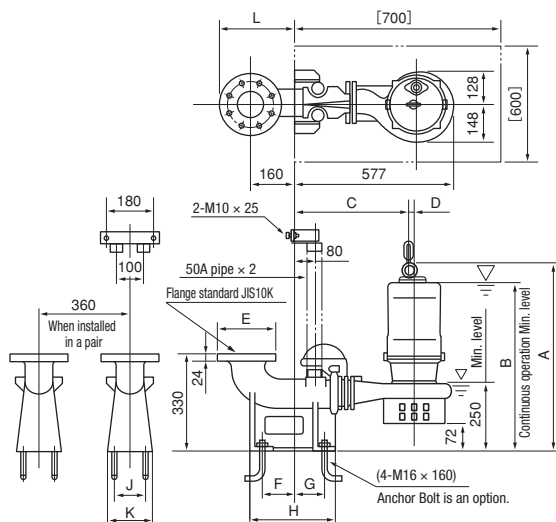
Dimensions

Unit: mm

Free standing type



Auto-connection type



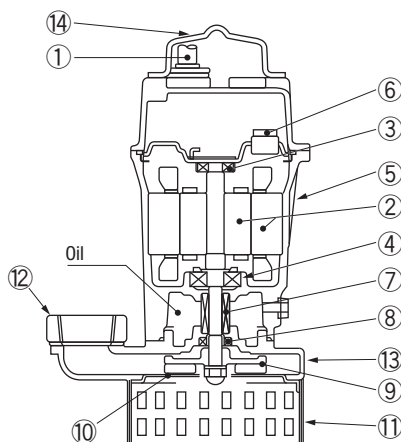
Connection Part No.	OutputkW (HP)	A	B	C	D	E	F	G
F80	5.5 (7.5)	618	560					
	7.5 (10)	653	595	444	537	268	φ185	Rc3
	11 (15)	734	665					
F100	5.5 (7.5)	618	560					
	7.5 (10)	653	595	449	554	278	φ210	Rc4
	11 (15)	734	665					

Connection Part No.	OutputkW (HP)	A	B	C	D	E	F	G	H	J	K	L
P80	5.5 (7.5)	690	630									
	7.5 (10)	725	665	426	12	φ211	107	103	302	120	150	266
	11 (15)	806	735	428	10							
P100	5.5 (7.5)	690	630									
	7.5 (10)	725	665	426	12	φ238	114	115	308	210	238	279
	11 (15)	806	735	428	10							

Sectional View

AH401T

Free standing type

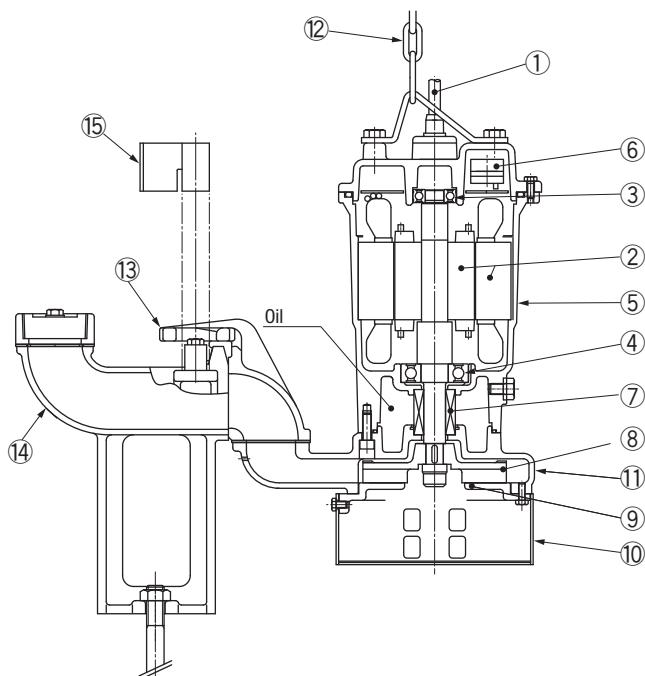


No.	Name	Material
1	Cable	VCT
2	Motor	Shaft: SUS420J2
3	Ball Bearing (Upper)	—
4	Ball Bearing (Lower)	—
5	Stator Casing	FC200
6	Thermal Protector	—
7	Mechanical Seal	—
8	Oil Seal	NBR
9	Impeller	FC200
10	Base Cover	SPCC
11	Strainer	SPCC
12	Screwed Coupling	PP
13	Pump Casing	FC200
14	Handle	SUS304

AH502

Auto-connection type

(1.5kW)

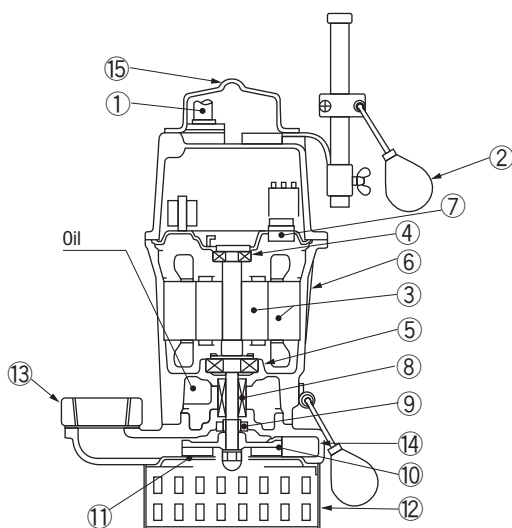


No.	Name	Material
1	Cable	VCT
2	Motor	Shaft: SUS420J2
3	Ball Bearing (Upper)	—
4	Ball Bearing (Lower)	—
5	Stator Casing	FC200
6	Thermal Protector	—
7	Mechanical Seal	—
8	Impeller	FC200
9	Base Cover	FC200
10	Strainer	SUS304
11	Pump Casing	FC200
12	Chain	SS400
13	Sliding Bracket	FC200
14	Connection	FC200
15	Guide Holder	SUS304

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitryl rubber

AH401DT

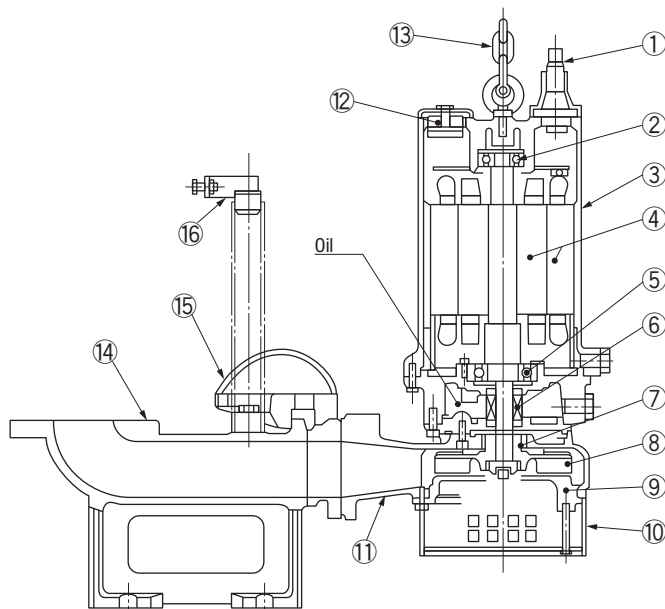
Free standing type



No.	Name	Material
1	Cable	VCT
2	Float Switch	—
3	Motor	Shaft: SUS420J2
4	Ball Bearing (Upper)	—
5	Ball Bearing (Lower)	—
6	Stator Casing	FC200
7	Thermal Protector	—
8	Mechanical Seal	—
9	Oil Seal	NBR
10	Impeller	FC200
11	Base Cover	SPCC
12	Strainer	SPCC
13	Screwed Coupling	PP
14	Pump Casing	FC200
15	Handle	SUS304

AH651

Auto-connection type



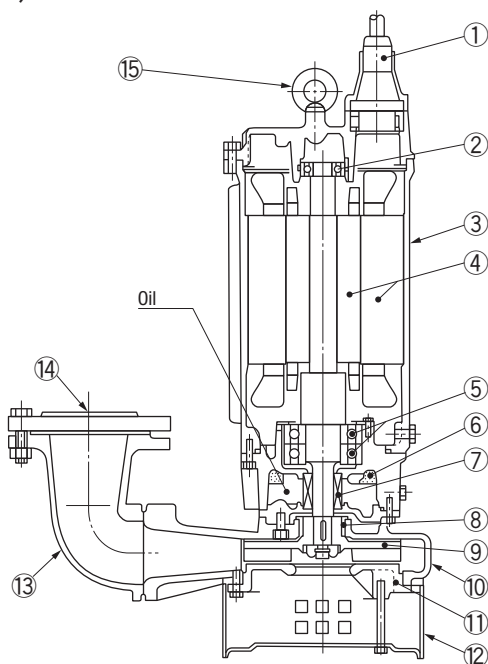
No.	Name	Material
1	Cable	VCT
2	Ball Bearing (Upper)	—
3	Stator Casing	FC200
4	Motor	Shaft: SUS420J2
5	Ball Bearing (Lower)	—
6	Mechanical Seal	—
7	Seal Ring	SUS304
8	Impeller	FC200
9	Base Cover	FC200
10	Strainer	SPCC
11	Pump Casing	FC200
12	Thermal Protector	—
13	Chain	SS400
14	Discharge Connection	FC200
15	Sliding Bracket	FC200
16	Guide Holder	SCS13

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

AH1001

(11kW)

Free standing type

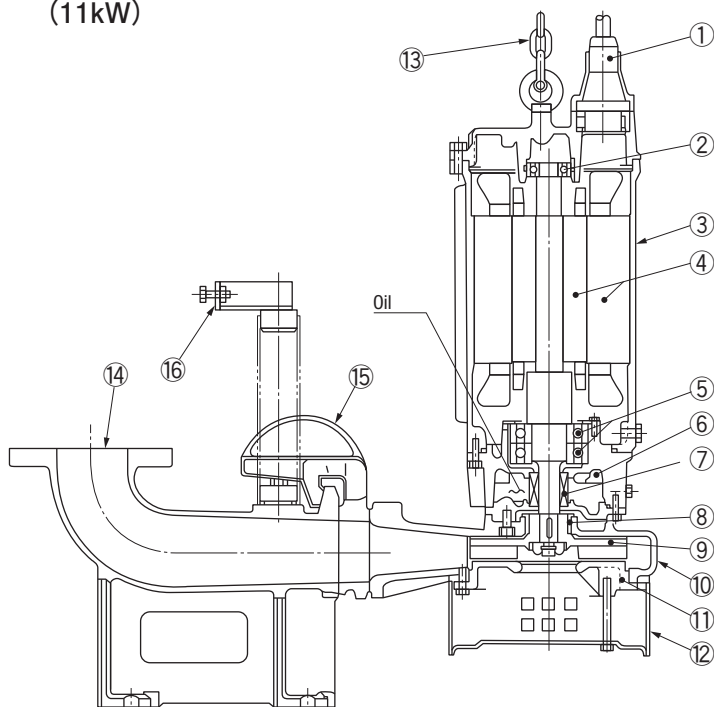


No.	Name	Material
1	Cable	2PNCT
2	Ball Bearing (Upper)	—
3	Stator Casing	FC200
4	Motor	Shaft: SUS420J2
5	Ball Bearing (Lower)	—
6	Equalizer	Foaming NBR
7	Mechanical Seal	—
8	Seal Ring	SUS304
9	Impeller	FCD500
10	Pump Casing	FC200
11	Base Cover	FC200
12	Strainer	SPCC
13	Elbow Flange	FC200
14	Companion Flange	FC200
15	Eyebolt	SUS304

AH1001

(11kW)

Auto-connection type



No.	Name	Material
1	Cable	2PNCT
2	Ball Bearing (Upper)	—
3	Stator Casing	FC200
4	Motor	Shaft: SUS420J2
5	Ball Bearing (Lower)	—
6	Equalizer	Foaming NBR
7	Mechanical Seal	—
8	Seal Ring	SUS304
9	Impeller	FCD500
10	Pump Casing	FC200
11	Base Cover	FC200
12	Strainer	SPCC
13	Chain	SS400
14	Discharge Connection	FC200
15	Sliding Bracket	FC200
16	Guide Holder	SCS13

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel

SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

Bore : 65 - 100 mm (2 1/2" - 4")

Output: 0.75 - 7.5 kW (1 - 10 HP)

CNWX

High efficiency

High solid passage capability

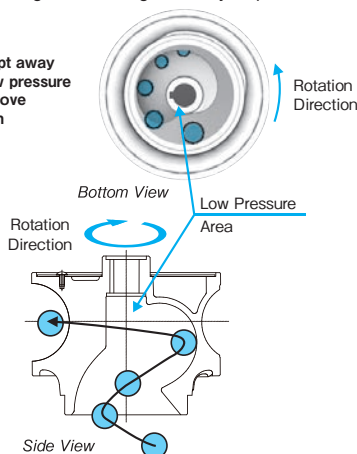
The CNWX Series Submersible Pump is a high efficient and high solid passage capability by employing newly designed non-clogging scroll type impeller. By achieving high pumping efficiency contributes energy saving and reducing operation and maintenance cost. In addition, by employing helix-shaped suction channel realized high solid passage capability. Therefore, 100% of solid passage against bore size has been achieved.

Bore mm (inch)	Output kW (HP)	Pump Model	Page
65 (2 1/2")	0.75 - 3.7 (1 - 5)	CNWX651	42
80 (3")	1.5 - 7.5 (2 - 10)	CNWX801	44
100 (4")	3.7 - 7.5 (5 - 10)	CNWX1001	46

Innovative Pass-Through Technology

ShinMaywa's revolutionary new single vane non-clog scroll impeller has a helix formed passage at its inlet, and a single vane non-clog passage, which significantly improves solids handling.

Debris is kept away from the low pressure area to improve pass-through



Highly Effective Passing

Significantly reduces the clogging, plugging and entangling of fibrous debris that would clog most competing pumps, allowing for less downtime and lower maintenance costs.



Note: Obstacle pass-through may vary with flow rates.

Features

● Achieve high discharge head in a low-volume area

By employing newly developed impeller and dedicated pump casing based on conventional model technology realizes especially high discharge head at low capacity (flow rate). Therefore, small output model can be selected against conventional model so that further energy saving can be achieved.

● 100% Solid Passage

Developed newly designed Non-clogging Scroll Type Impeller. Clogging and tangling due to fibrous and solid materials in the sewage can be almost prevented.

● Equipped with a dedicated motor

High reliability equipped with dedicated motor by improving structure and dimensions in order to endure against large force generate by impeller.

● Leakage water chamber

A leakage water chamber is provided as a standard feature (except for 0.75kW).

● Limit Load characteristics

Adopt limit load characteristics as power characteristics.

So that overload does not occur even when the pump operates at a high flow rate and low head.

● Extended service life

A high-quality mechanical seal has been adopted as a shaft seal. The mechanical seal has four SiC end faces that feature excellent wear resistance. This allows use of the pump in a reliable conditions for an extended period of time.

● Easy maintenance

A vertical mounting design is employed for all models. The impeller can be easily removed from pump casing upwards entirely just by removing bolts for facilitating assembling and disassembling.

Applications

- ☐ Pumping station or Manhole pumping station
Raw water, Rainwater
- ☐ Sewage treatment plants
Raw water and others in treatment processes
- ☐ Building or Shopping complex
Domestic wastewater
- ☐ Factory
Industrial wastewater
- ☐ Others
Various wastewater including fibrous debris or solids.

Standard Specifications

Handling liquid	Kind of liquid	Wastewater and sewage
	Temperature	0 - 32°C
Material	Cable (for motor)	VCT
	Motor shaft	SUS420J2
	Pump casing	FC250 (Gray iron casting)
	Impeller	
Electric motor	Name	Air-filled type submersible induction motor
	Insulation class	Class F
	Enclosure	IP68
	Phase	3-ph
	Voltage	200 - 480V

VCT : Polyvinyl-chloride sheathed cabtyre cable

Special Specifications

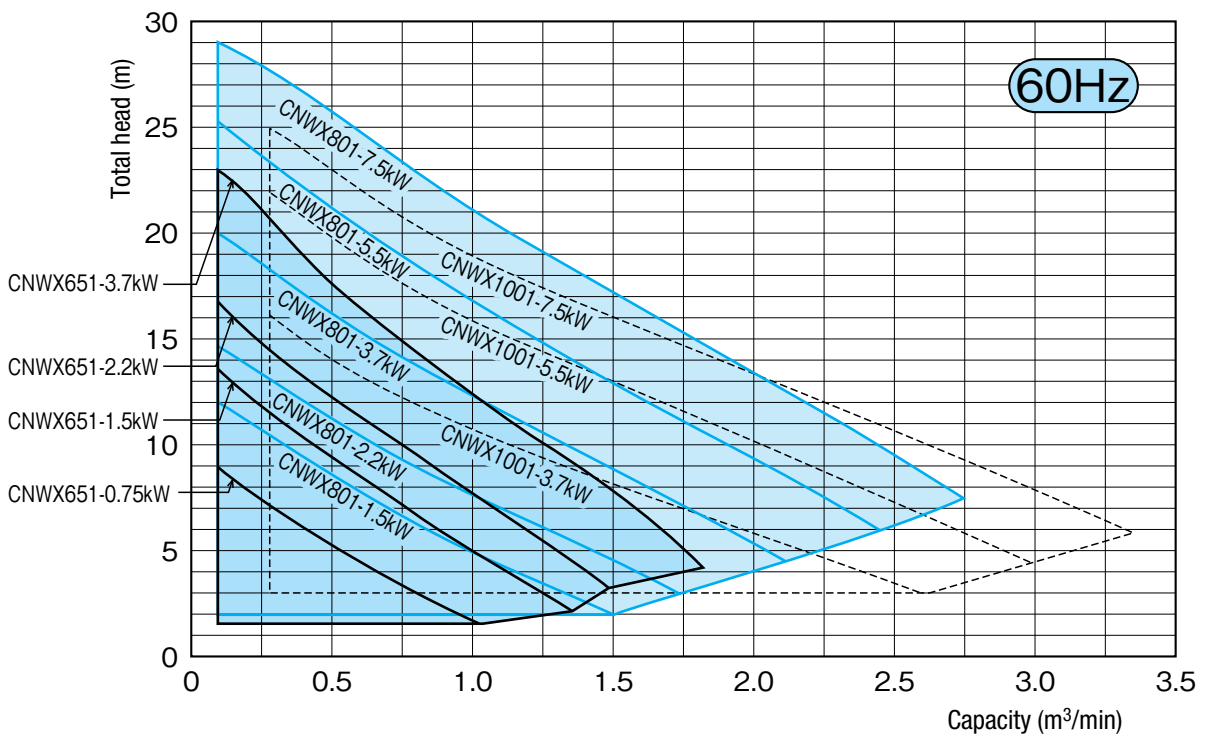
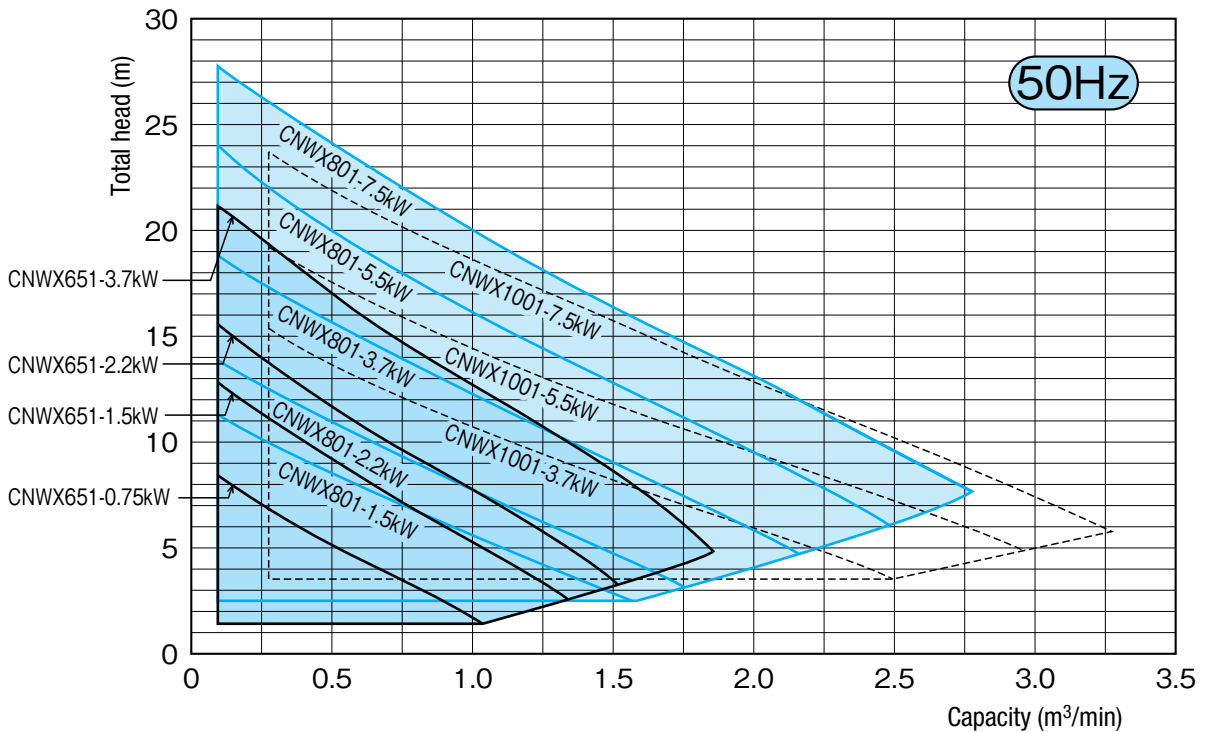
Cable Extension	Cable lengths: 10 - 30m (every 5m)
Material change	Impeller: Stainless steel casting (SCS13), high-chrome cast iron
Other	For specifications other than the above, please contact us.

* Non-clogging scroll type having a flywheel is also manufactured.

Pump-Related Products

- ☐ Liquid level control switch
 - Level Regulator ⇨ See page 370
 - Mini switch ⇨ See page 372
 - Oval Float ⇨ See page 373

Performance Curves



* Non-clogging scroll type with flywheel is also manufactured.

CNWX

Non-clog Scroll Impeller (High efficiency
and High solid passage Capability)

Bore: 65 mm (2 1/2")

Output: 0.75 - 3.7 kW (1 - 5 HP)

**Passing solid size:
100% bore size**


CNWX651-F65



CNWX651-P65WX

Standard Specifications

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity – Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) kg	
		Auto-Connection	Free standing			50Hz	60Hz		50Hz	60Hz
65 (2 1/2")	CNWX651	P65WX (P65GWX)	F65	0.75 (1)	3-ph	0.5– 5.1	0.5– 5.1	4	47	47
				1.5 (2)		0.7– 7.6	0.7– 7.4		63	60
				2.2 (3)		0.8– 9.3	0.8– 9.4		82	83
				3.7 (5)		1.0–12.6	1.0–12.5		92	89

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1. * Not including stand weight for Free standing type.

Standard Accessories

- Cable (6m) 0.75 kW1 pc.
- (8m) 1.5 kW or more1 pc.

Upon placing an order or inquiries, please
give us a pump model and connection
part No.

● Auto-connection type

- Connection
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

Connection Part No.	Set Weight	Connection Weight
P65WX	24kg	15kg
P65GWX	24kg	15kg

● Free standing type

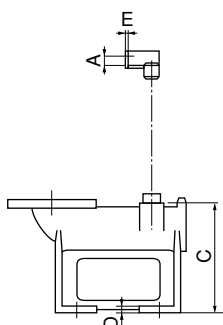
- Elbow Flange
- Companion Flange
(with bolts, nuts and packing)

Connection Part No.	Set Weight
F65	7kg

Part Specifications

Applicable Model		Cable Specifications				Starting Methad	Mechanical Seal		Solid Passage Dia. (mm)
		Type	Section Area (mm ²)	Cores	Outer Dia. (mm)		Lower	Upper	
CNWX651	0.75kW (1 HP)	VCT	1.25	4	φ 11.5	Direct	SiC/SiC	SiC/SiC	65
	1.5kW (2 HP)	VCT	1.25	4	φ 11.5				
	2.2kW (3 HP)	VCT	1.25	4	φ 11.5				
	3.7kW (5 HP)	VCT	2.0	4	φ 12				

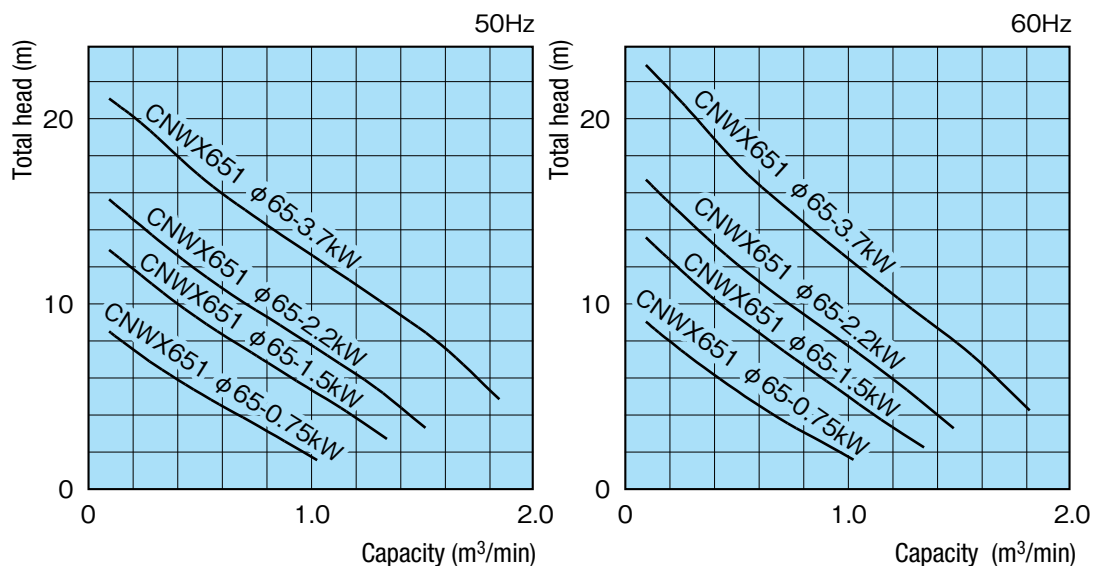
● Connection Dimensions



Unit: mm

Connection Part No.	A	B	C	D	E	F	G
P65WX	17	70	201	17	5	32	160
P65GWX							

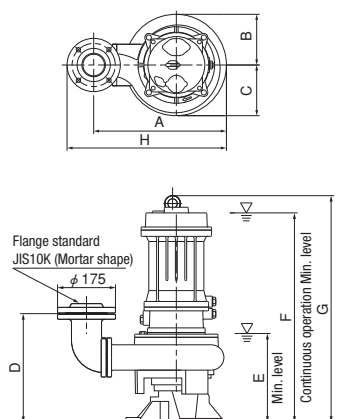
Performance Curves



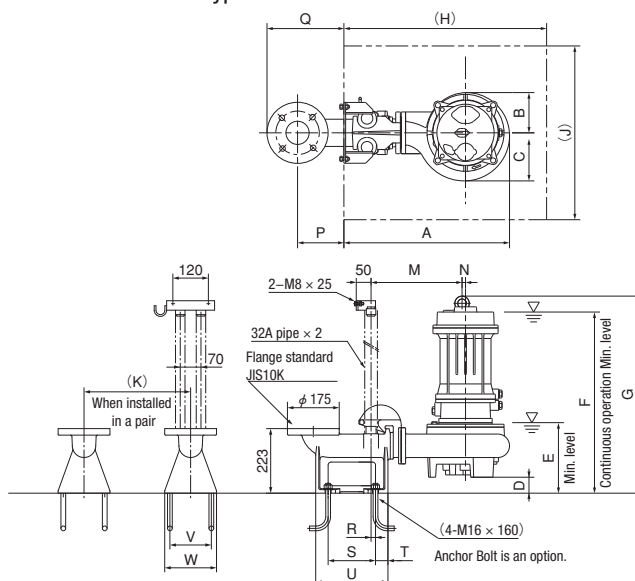
Dimensions

Unit: mm

Free standing type



Auto-connection type



Free standing type

Frequency Hz	Connection part No.	Output kW (HP)	A	B	C	D	E	F	G	H
50	F65	0.75 (1)	377		150	288	245	520	588	464
		1.5 (2)	399	150	154	293	255	575	636	487
		2.2 (3)	429		166	299	265	650	707	517
		3.7 (5)	494	158	191	306	270	660	713	582
		0.75 (1)	377			285	245	515	585	464
60	F65	1.5 (2)	397	150	150	288	250	570	630	484
		2.2 (3)	417			293	260	645	701	504
		3.7 (5)	429		166	300	265	650	707	517

Auto-connection type

Frequency Hz	Output kW (HP)	A	B	C	D	E	F	G	H	J	K	M	N
50	0.75 (1)	455		130	63	230	505	571		550	350	400	263
	1.5 (2)	499	130	154	56		555	612				285	
	2.2 (3)	529	139	166	*51		600	677	600	500		315	
	3.7 (5)	594	158	191	*45	235	620	677	700	600	500	358	12
	0.75 (1)	441		130	66	230	505	571		550	350	400	263
60	1.5 (2)	481		136	63		555	612				283	
	2.2 (3)	511	136	146	56		600	677	600	500		313	
	3.7 (5)	529	139	166	*51	235	620	677	600	500		315	12

If you need a 100% throughput size at the suction height prefixed with *, contact us separately.

Connection Part No.	P	Q	R	S	T	U	V	W
P65WX	145	233	15	160	42	244	140	140
P65GWX	85	173	10	120	45	203	110	175

CNWX

Non-clog Scroll Impeller (High efficiency
and High solid passage Capability)

Bore: 80 mm (3")

Output: 1.5 - 7.5 kW (2 - 10 HP)

**Passing solid size:
100% bore size**


CNWX801-F80



CNWX801-P80BW

Standard Specifications

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity – Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) kg	
		Auto-Connection	Free standing			50Hz	60Hz		50Hz	60Hz
80 (3")	CNWX801	P80BW (P80GW)	F80	1.5 (2)	3-ph	0.85– 6.4	0.85– 5.8	4	66	63
				2.2 (3)		0.9 – 8.3	0.9 – 8.2		86	87
				3.7 (5)		1.2 –10.8	1.2 –10.8		94	92
				5.5 (7.5)		1.45–13.0	1.45–13.2		127	125
				7.5 (10)		1.65–15.4	1.65–15.9		139	134

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1. * Not including stand weight for Free standing type.

Standard Accessories

- Cable (8m)1 pc.

Upon placing an order or inquiries, please
give us a pump model and connection
part No.

● Auto-connection type

- Connection
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

Connection Part No.	Set Weight	Connection Weight
P80BW	31.5kg	18kg
P80GW	38.5kg	25kg

● Free standing type

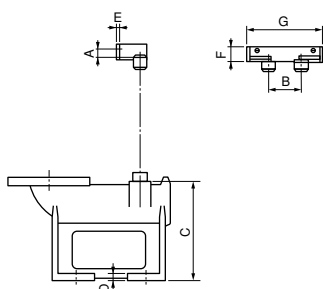
- Elbow Flange
- Companion Flange
(with bolts, nuts and packing)

Connection Part No.	Set Weight
F80	9.5kg

Part Specifications

Applicable Model		Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (mm)
		Type	Section Area (mm ²)	Cores	Outer Dia. (mm)		Lower	Upper	
CNWX801	1.5kW (2 HP)	VCT	1.25	4	φ 11.5	Direct	SiC/SiC	SiC/SiC	80
	2.2kW (3 HP)	VCT	1.25	4	φ 11.5				
	3.7kW (5 HP)	VCT	2.0	4	φ 12				
	5.5kW (7.5 HP)	VCT	3.5	4	φ 14				
	7.5kW (10 HP)	VCT	5.5	4	φ 16.5				

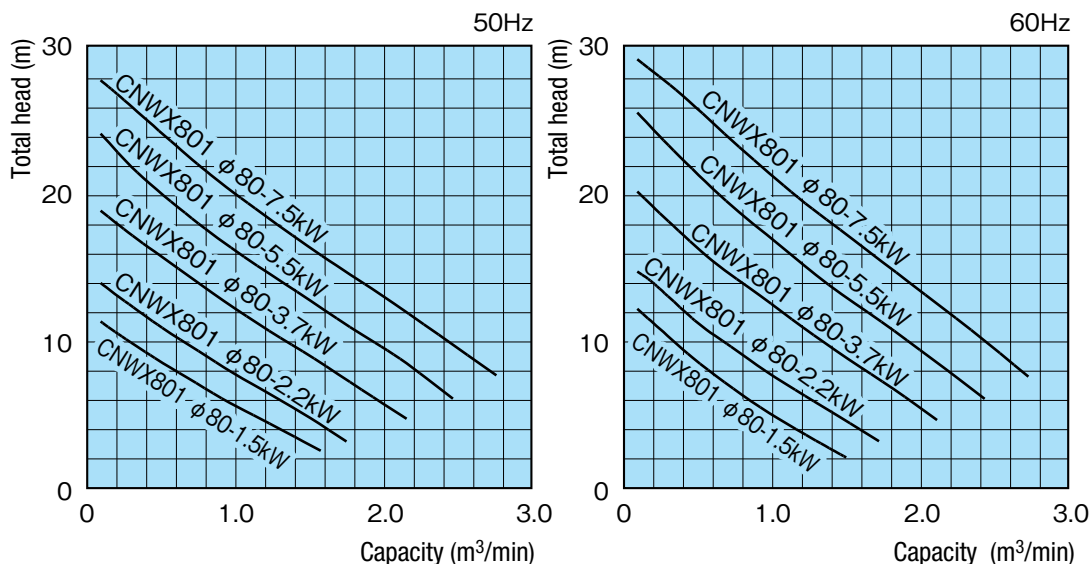
● Connection Dimensions



Unit: mm

Connection Part No.	A	B	C	D	E	F	G
P80BW	25	100	262	12	6	44	210
P80GW							

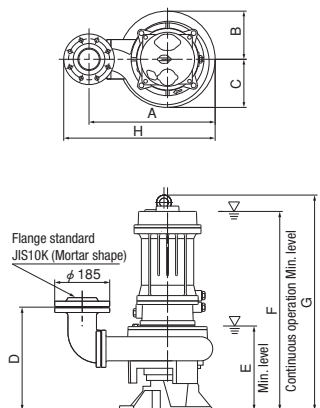
Performance Curves



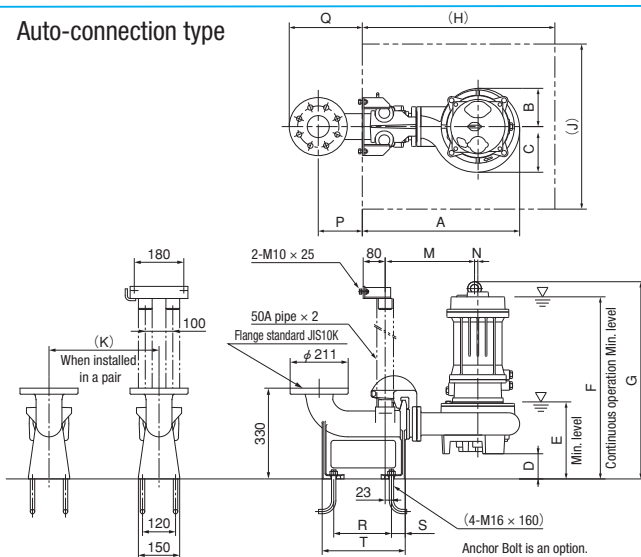
Dimensions

Unit: mm

Free standing type



Auto-connection type



Free standing type

Frequency Hz	Connection part No.	Output kW (HP)	A	B	C	D	E	F	G	H
50	F80	1.5 (2)	431	175	175	353	290	615	672	523
		2.2 (3)	451			358	295	685	739	543
		3.7 (5)	472		183	362	300	690	744	565
		5.5 (7.5)	512		198	368	310	765	826	605
		7.5 (10)	554	178	214	378	325	785	845	647
60	F80	1.5 (2)	431	175	175	353	290	615	672	523
		2.2 (3)	451			354	295	680	735	543
		3.7 (5)	472			358		685	739	
		5.5 (7.5)	496			363	305	760	821	588
		7.5 (10)	502		187	368	315	775	835	595

Auto-connection type

Frequency Hz	Connection part No.	Output kW (HP)	A	B	C	D	E	F	G	H	J	K	M	N
50	F80	1.5 (2)	535	145	148	89	275	600	659	600	500	450	296	22
		2.2 (3)	563	146	157	84		665	722				326	
		3.7 (5)	605	153	183	80	280					500	344	
		5.5 (7.5)	645	166	198	74		740	798	700	600		371	12
		7.5 (10)	687	178	214	*64	285	745	807	900	700		399	
60	F80	1.5 (2)	519			89	275	600	659				296	22
		2.2 (3)	554	145	145	88		665	722	600	500	450	326	
		3.7 (5)	563	146	157	84	280							
		5.5 (7.5)	624	151	174	79		740	798	700	600	550	371	12
		7.5 (10)	635	157	187	74	285	745	807					

If you need a 100% throughput size at the suction height prefixed with *, contact us separately.

Connection Part No.	P	Q	R	S	T
P80BWX	160	266	210	50	302
P80GWX	100	206	160	45	250

CNWX

Non-clog Scroll Impeller (High efficiency
and High solid passage Capability)

Bore: 100 mm (4")

Output: 3.7 - 7.5kW (5 - 10 HP)

**Passing solid size:
100% bore size**


CNWX1001-F100B



CNWX1001-P100C

Standard Specifications

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity – Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) kg	
		Auto-Connection	Free standing			50Hz	60Hz		50Hz	60Hz
100 (4")	CNWX1001	P100C (P100CG)	F100B	3.7 (5)	3-ph	1.4– 8.6	1.4– 8.5	4	102	105
				5.5 (7.5)		1.7–10.8	1.7–11.7		135	137
				7.5 (10)		2.0–12.8	2.0–13.1		147	143

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1. * Not including stand weight for Free standing type.

Standard Accessories

- Cable (8m) 1 pc.

Upon placing an order or inquiries, please
give us a pump model and connection
part No.

● Auto-connection type

- Connection (with bolts and nuts)
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

Connection Part No.	Set Weight	Connection Weight
P100C	55kg	37kg
P100CG	44kg	30.5kg

● Free standing type

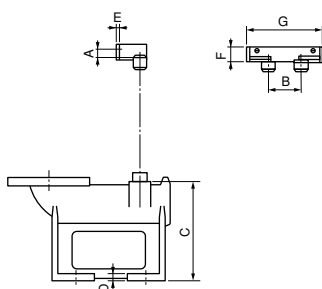
- Elbow Flange
- Companion Flange
(with bolts, nuts and packing)

Connection Part No.	Set Weight
F100B	12kg

Part Specifications

Applicable Model		Cable Specifications				Starting Methad	Mechanical Seal		Solid Passage Dia. (mm)
		Type	Section Area (mm ²)	Cores	Outer Dia. (mm)		Lower	Upper	
CNWX1001	3.7kW (5 HP)	VCT	2.0	4	φ 12	Direct	SiC/SiC	SiC/SiC	100
	5.5kW (7.5 HP)	VCT	3.5	4	φ 14				
	7.5kW (10 HP)	VCT	5.5	4	φ 16.5				

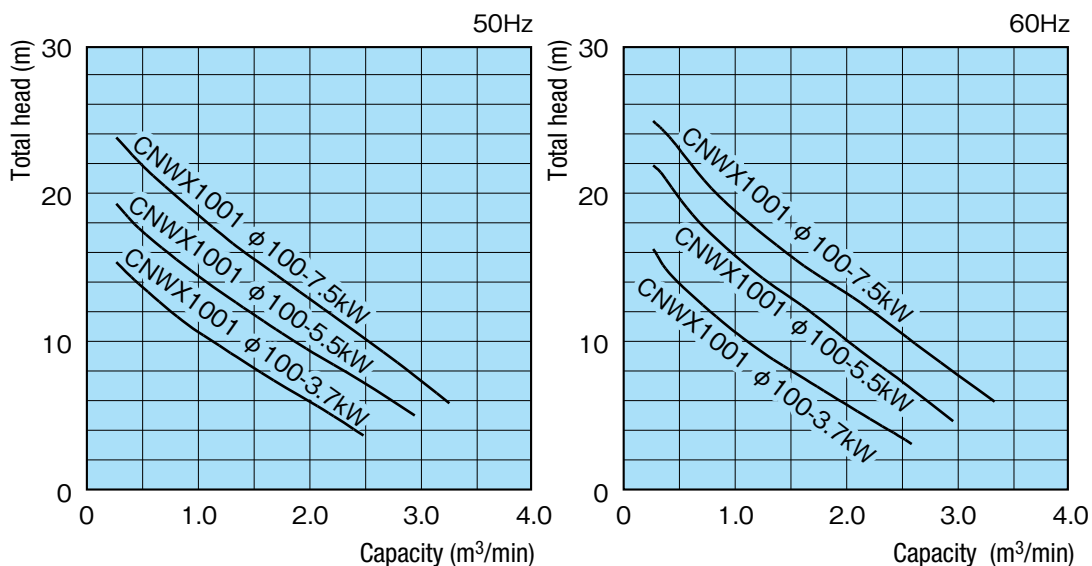
● Connection Dimensions



Unit: mm

Connection Part No.	A	B	C	D	E	F	G
P100C	25	100	318	15	6	44	210
P100CG	25	100	318	22	6	44	210

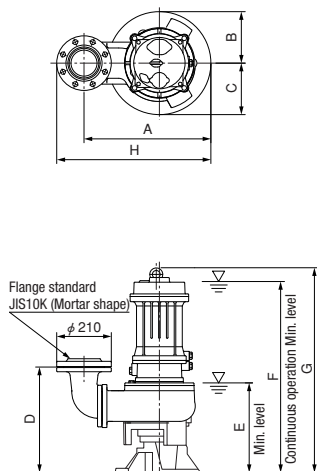
Performance Curves



Dimensions

Unit: mm

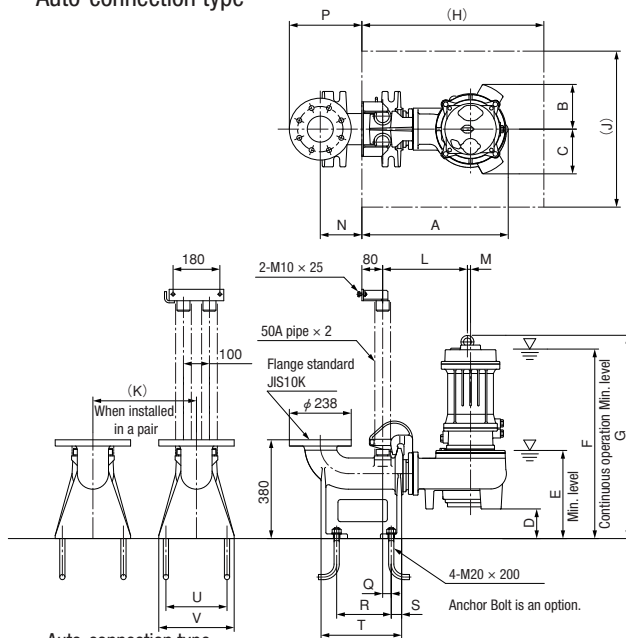
Free standing type



Free standing type

Frequency Hz	Connection part No.	Output kW (HP)	A	B	C	D	E	F	G	H
50	F100B	3.7 (5)	475		195	408	345	735	790	580
		5.5 (7.5)	520	195		350	805	866	625	
		7.5 (10)	521		202	419	360	820	880	626
		3.7 (5)	475			345	735	790	580	
60	F100B	5.5 (7.5)	520	195	195	408	350	805	866	625
		7.5 (10)						810	869	

Auto-connection type



Auto-connection type

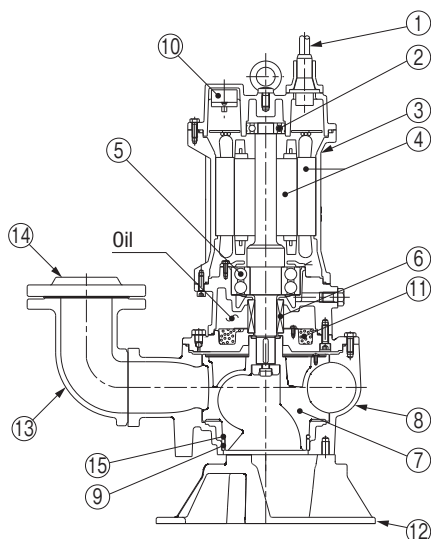
Frequency Hz	Output kW (HP)	A	B	C	D	E	F	G	H	J	K	L	M
50	3.7 (5)	575		172	114		725	782				326	
	5.5 (7.5)	634	172	185		340	800	858	700	600	550	371	12
	7.5 (10)	649		202	103			861					
	3.7 (5)	563					725	782				326	
60	5.5 (7.5)	615	172	172	114	340	800	858	700	600	550	371	12
	7.5 (10)	626		176				861					

Connection Part No.	N	P	Q	R	S	T	U	V
P100C	160	279	33	210	40	310	235	290
P100CG	100	219	23	160	45	250	120	160

Sectional View

CNWX801-F80

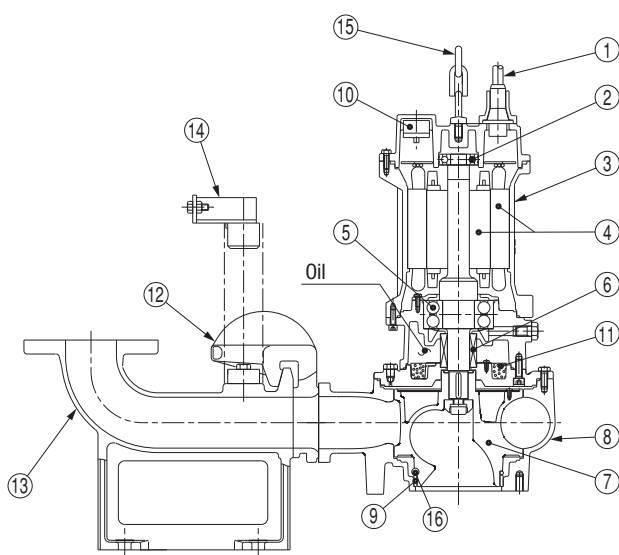
Free standing type



Number	Name	Material
1	Cable	VCT
2	Ball Bearing (Upper)	—
3	Stator Casing	FC200
4	Motor	Shaft: SUS420J2
5	Ball Bearing (Lower)	—
6	Mechanical Seal	—
7	Impeller	FC250
8	Pump Casing	FC250
9	Wearing	CAC403
10	Thermal Protector	—
11	Equalizer	Forming NBR
12	Stand	FC200
13	Elbow Flange	FC200
14	Companion Flange	FC200
15	O ring	NBR

CNWX801-P80BW

Auto-connection type



Number	Name	Material
1	Cable	VCT
2	Ball Bearing (Upper)	—
3	Stator Casing	FC200
4	Motor	Shaft: SUS420J2
5	Ball Bearing (Lower)	—
6	Mechanical Seal	—
7	Impeller	FC250
8	Pump Casing	FC250
9	Wearing	CAC403
10	Thermal Protector	—
11	Equalizer	Forming NBR
12	Sliding Bracket	FC200
13	Connection	FC200
14	Guide Holder	SCS13
15	Chain	SS400
16	O ring	NBR

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitrlyl rubber
CAC : Copper alloy casting

Non-clog Type (Small and Medium-sized Pump)

Bore: 40 - 150 mm (1 1/2" - 6")

Output: 0.25 - 22 kW (1/3 - 30 HP)

CN • CNH

CN Series is a submersible pump for wastewater and sewage with bores of 40 – 150 mm.

The impeller is non-clog type that prevent clogging of foreign object. With an auto-operation and auto-alternate operation type are also available.

Bore mm (inch)	Output kW (HP)	Pump Model	Page
40 (1 1/2")	0.25 (1/3)	CN40 (D • DW) T	52
50 • 65 (2" • 2 1/2")	0.4 • 0.75 (1/2 • 1)	CN501 (D • DW)	54
65 • 80 (2 1/2" • 3")	1.5 (2)	CN651 (D • DW)	56
65 • 80 • 100 (2 1/2" • 3" • 4")	2.2 • 3.7 (3 • 5)	CN80	58
80 • 100 (3" • 4")	5.5 • 7.5 (7.5 • 10)	CN100	60
100 (4")	11 - 22 (15 - 30)	CNH100	62
150 (200) (6" (8"))	5.5 - 22 (7.5 - 30)	CN150	64

D: Auto-operation

DW: Auto-alternate operation

Note: Since D and DW types with output not exceeding 0.75 kW are made-to-order products, please check the delivery time before placing an order.

CN

Non-clog (Semi-open) Type

Bore: 40 - 150 mm (1 1/2" - 6")

Output: 0.25 - 22 kW (1/3 - 30 HP)

Features

● Extended service life

Double Mechanical Seal and Oil Seal offering excellent wear resistance, are employed for shaft seal mechanism.

● Less clogging

Non-clogging impeller has a structure with large flow area for preventing clogging.

● Preventing motor burnout

A built-in auto-reset type motor protector (thermal Protector) protects motor burnout due to overload, impeller locking and open phase. The self-contained core sealer of the cable outlet shuts the water out from penetrating into the motor chamber through the core wires even if the cable tip is immersed in water or the seath is damaged.

Standard Specifications

Handling Liquid	Kind of Liquid	Wastewater and sewage
	Temperature	0 - 32°C
Material	Cable	7.5 kW or lower: VCT 11 kW or higher: 2PNCT
	Motor Shaft	Stainless steel (SUS420J2)
	Pump Casing	FC200 (FC250 for φ 150 only)
	Impeller	FC200 (0.25 - 7.5kW And CNH100 of 11 or 15 kW) FC250 (CN150 5.5kW - 15kW) FCD500 (22kW)
Electric Motor	Name	Air-filled Type Submersible Induction Motor
	Insulation Class	Class E
	Enclosure	IP68
	Phase	3-ph
	Voltage	220 - 480V

Note: Since D and DW types with output not exceeding 0.75 kW are made-to-order products, please check the delivery time before placing an order.

FC : Gray iron casting FCD: Ductile iron casting

Applications

- ☐ Sewage treatment plant & Septic tank
Raw water and other treatment process
- ☐ Sewage system
Rainwater and sewage
- ☐ Building & Shopping complex
Sanitary and Kitchen wastewater
- ☐ Road, Underpass & Subway
Rainwater
- ☐ Others
Industrial wastewater, etc.

Special Specifications

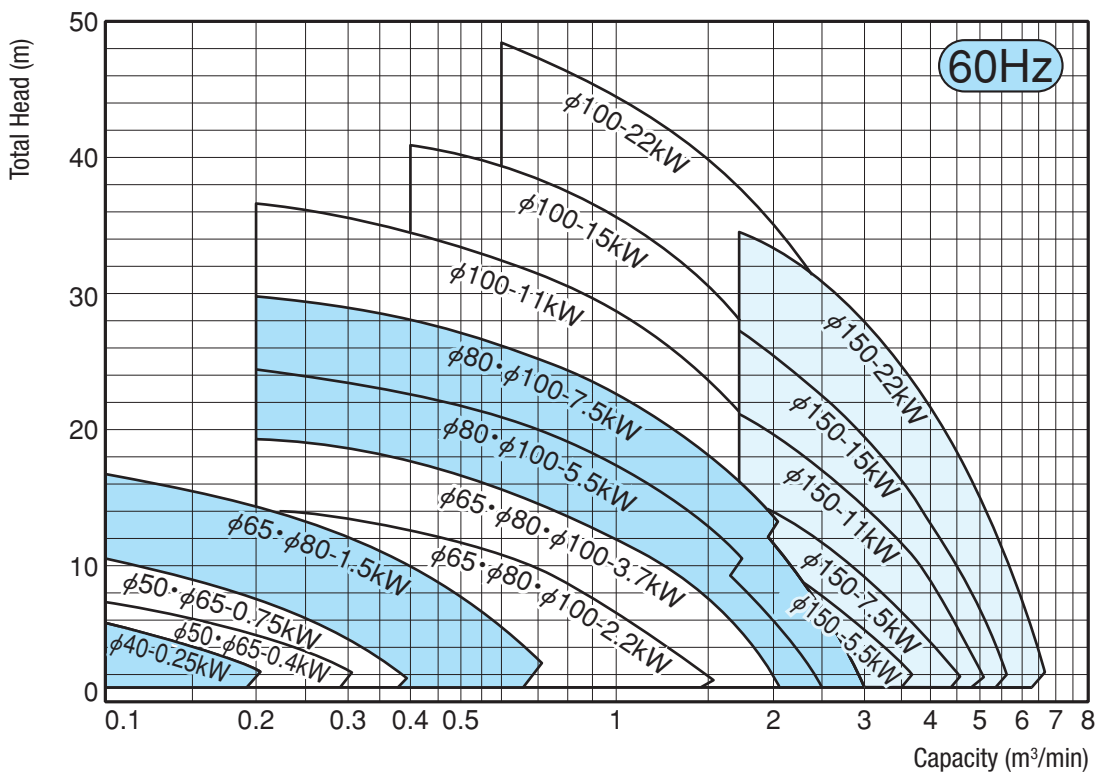
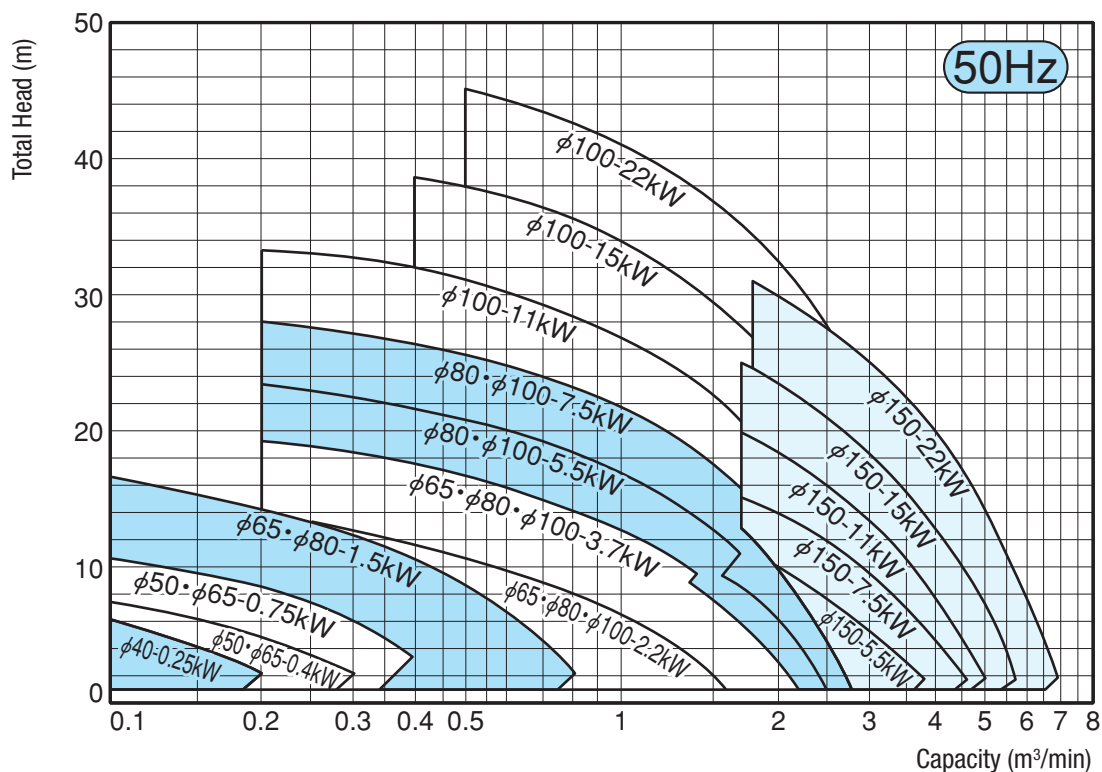
Motor Insulation	Class F	
Cable Extension	Cable length: 10 - 30m (every 5m)	
Material Change	Impeller Base Cover Lifting Chain	Stainless steel casting (SCS13) Stainless steel casting (SCS13) Stainless steel (SUS304)
Other	• Availability of mounting motor protector, please refer to the specifications (detail data) - App.1. • For specifications other than the above, please contact us.	

* The cable length should be limited due to voltage drop, see the specifications (detail data) - App.1.

Pump-Related Products

- ☐ Liquid Level Control Switch
 - Level Regulator ⇒ See page 370
 - Mini Switch ⇒ See page 372
 - Oval Float ⇒ See page 373

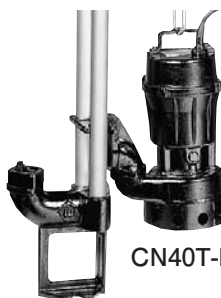
Performance Curves



CN
**Non-clog
(Semi-open) Type**

Bore: **40 mm (1 1/2")**

Output: **0.25 kW (1/3 HP)**

CN40T-F40

CN40T-P40

Standard Specifications

Bore mm (inch)	Pump Model				Connection Part No.		Output kW (HP)	Phase	Capacity - Total Head m³/min-m		No. of poles P	Weight (Bare Pump) (kg)	
	Non-Auto- Operation	Auto- Operation	Auto-Alternate Operation		Auto- Connection	Free Standing			50Hz	60Hz		CN	CN-D CN-W
			Pair Name	Pump No. 1 and 2									
40 (1 1/2")	CN40T	CN40DT	CN40DWT	CN40WT + CN40DT	P40	F40	0.25 (1/3)	3-ph	0.1 - 5.5	0.1 - 5.5	2	15.5	16.5

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Since the items in the cells are made-to-order, please check the delivery time before placing an order.

Standard Accessories

- Cable (6m).....1 pc.
- Float Switch (for type D/W)1 set

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

- Auto-connection type
 - Connection (with bolts and packing)
 - Guide Holder (with bolts and nuts)
 - Sliding Bracket
 - Lifting Chain (6m)
- Free standing type

Connection Part No.	Set Weight
F40	Included in the body

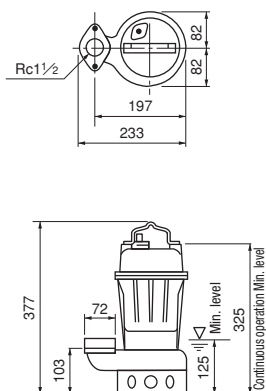
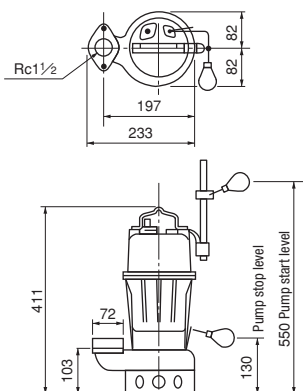
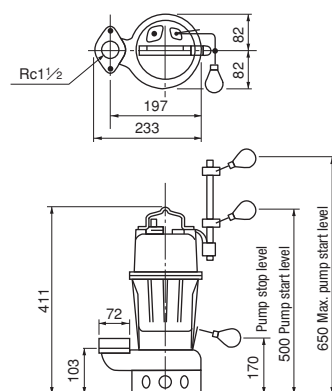
Connection Part No.	Set Weight	Connection Weight
P40	11kg	4.5kg

Part Specifications

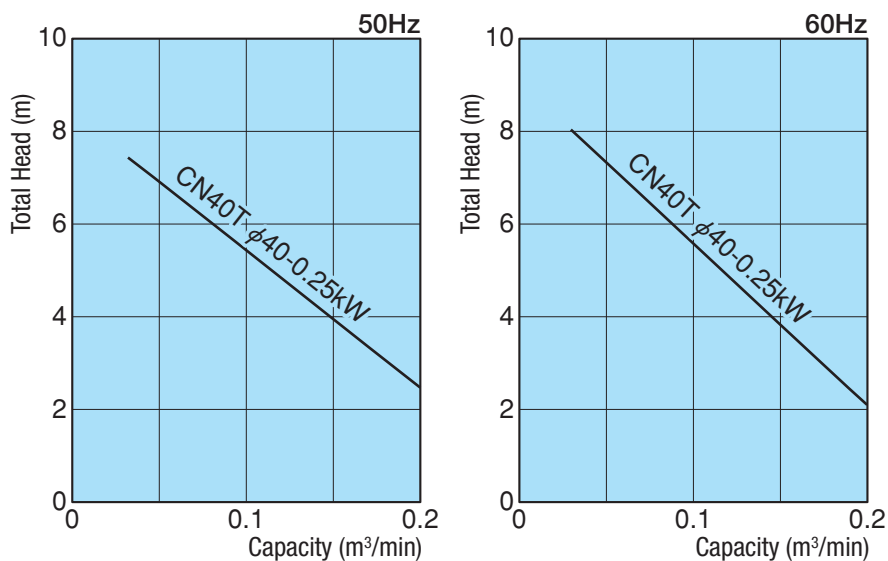
Applicable Model	Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
	Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz
CN40T・CN40DT・CN40WT	VCT	1.25	4	φ 11.5	Direct	SiC/SiC	Carbon/Ceramic	21	20

Dimensions

Free standing type

CN40T

CN40DT

CN40WT


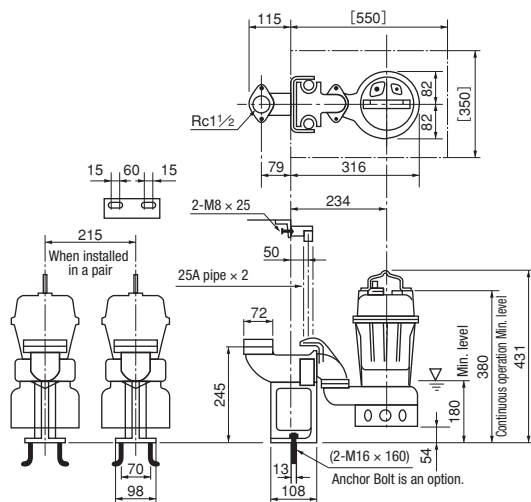
Performance Curves



Unit: mm

Auto-connection type

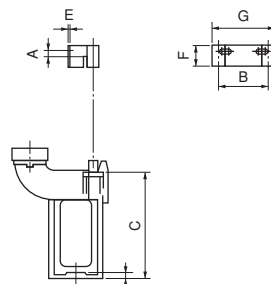
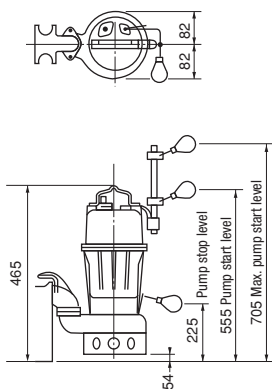
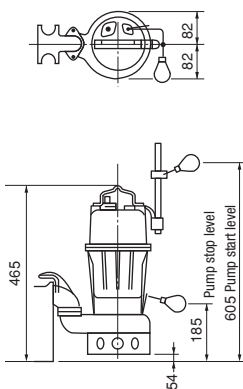
CN40T



CN40DT

CN40WT

● Connection Dimensions



Connection Part No.	A	B	C	D	E	F	G
P40	11	100	223	12	3	44	125

CN

Non-clog (Semi-open) Type

Bore: 50・65 mm (2"・2 1/2")

Output: 0.4・0.75 kW (1/2・1 HP)

Standard Specifications

Bore mm (inch)	Pump Model				Connection Part No.		Output kW (HP)	Phase	Capacity - Total Head m³/min-m		No. of poles P	Weight (Bare Pump) (kg)	
	Non-Auto- Operation	Auto- Operation	Auto-Alternate Operation		Auto- Connection	Free Standing			50Hz	60Hz		CN	CN-D CN-W
			Pair Name	Pump No. 1 and 2									
50 (2")	CN501T	CN501DT	CN501DWT	CN501WT+CN501DT	P50	F50	0.4 (1/2)	3-ph	0.15 - 6	0.15 - 6	2	17	18
	CN501	CN501D	CN501DW	CN501W+CN501D			0.75 (1)		0.2 - 8.2	0.2 - 7.5		18	19
65 (2 1/2")	CN501T	CN501DT	CN501DWT	CN501WT+CN501DT	P65B	F65B	0.4 (1/2)	3-ph	0.15 - 6	0.15 - 6	2	17	18
	CN501	CN501D	CN501DW	CN501W+CN501D			0.75 (1)		0.2 - 8.2	0.2 - 7.5		18	19

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Since the items in the cells are made-to-order, please check the delivery time before placing an order.

Standard Accessories

- Cable (6m).....1pc.
- Float Switch (for type D/W)1 set

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

- Auto-connection type
- Connection (with bolts and packing only for P50)
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

Connection Part No.	Set Weight	Connection Weight
P50	11kg	4.5kg
P65B	20kg	14.5kg

- Free standing type (F65B)
- Elbow Flange
- Companion Flange (with bolts, nuts and packing)

Connection Part No.	Set Weight
F50	Included in the body
F65B	5.5kg

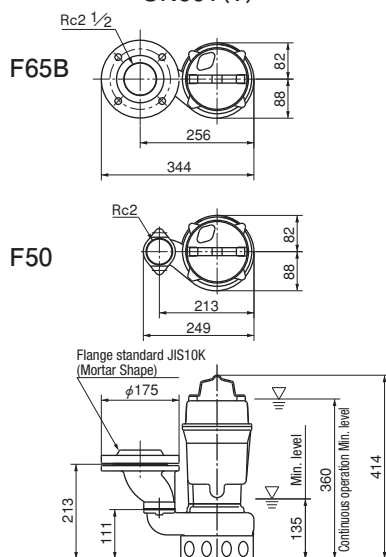
Part Specifications

Applicable Model	Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
	Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz
CN501T・CN501DT・CN501WT	VCT	1.25	4	φ 11.5	Direct	SiC/SiC	Ceramic/carbon	28	24
CN501・CN501D・CN501W								30	29

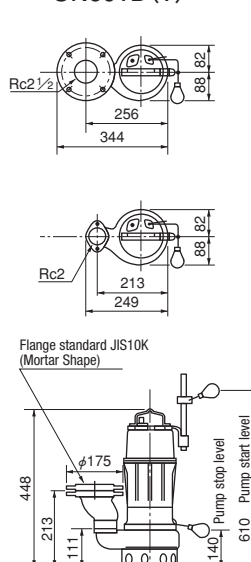
Dimensions

Free standing type

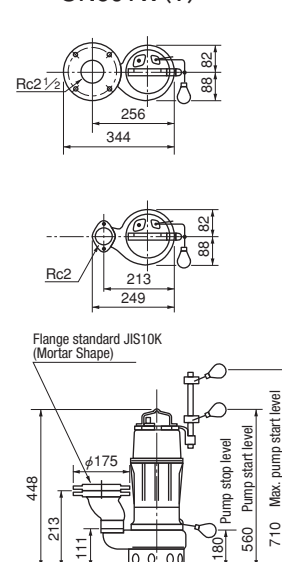
CN501 (T)



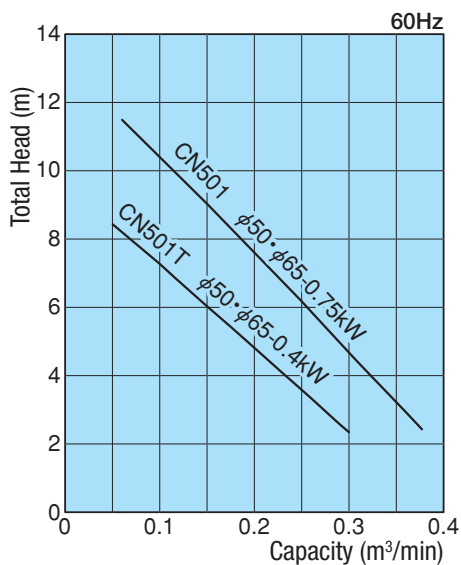
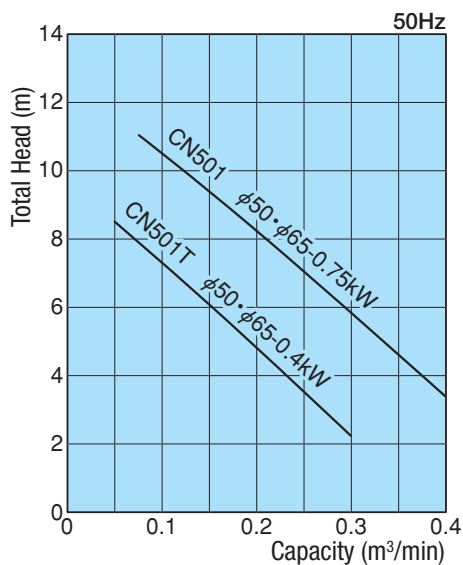
CN501D (T)



CN501W (T)



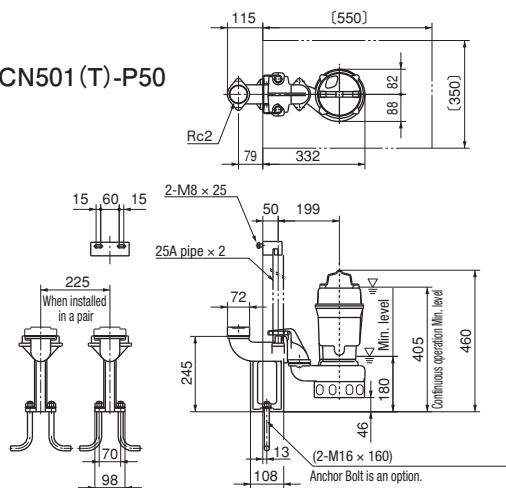
Performance Curves



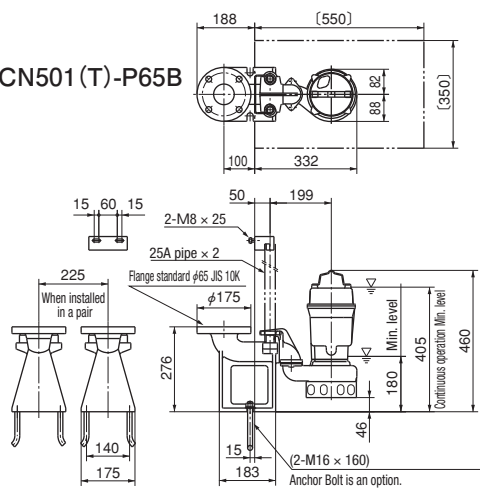
Unit: mm

Auto-connection type

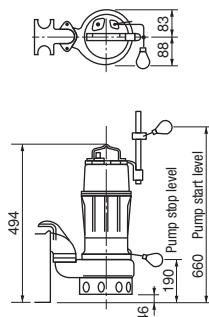
CN501 (T)-P50



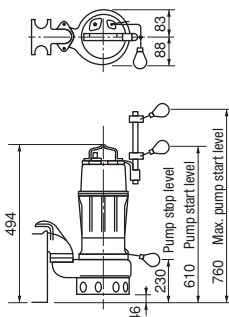
CN501 (T)-P65B



CN501D(T)



CN501W(T)



● Connection Dimensions

Connection Part No.	P50						
	A	B	C	D	E	F	G
P50	11	100	223	12	3	44	125
P65B	11	100	224	12	3	44	125

CN

Non-clog (Semi-open) Type

Bore: 65・80 mm (2 1/2"・3")

Output: 1.5 kW (2 HP)



CN651-F65



CN651-P65



CN651DW-F65



Standard Specifications

Bore mm (inch)	Pump Model				Connection Part No.		Output kW (HP)	Phase	Capacity - Total Head m³/min-m		No. of poles P	Weight (Bare Pump) (kg)	
	Non-Auto- Operation	Auto- Operation	Auto-Alternate Operation		Auto- Connection	Free Standing			50Hz	60Hz		CN	CN-D CN-W
			Pair Name	Pump No. 1 and 2									
65 (2 1/2")	CN651	CN651D	CN651DW	CN651W+CN651D	P65	F65	1.5 (2)	3-ph	0.4 - 10.6	0.4 - 10	2	29	31
80 (3")	CN651	CN651D	CN651DW	CN651W+CN651D	P80	F80	1.5 (2)	3-ph	0.4 - 10.6	0.4 - 10	2	29	31

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (8m)1 pc.
- Float Switch (for type D/W)1 set

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

● Auto-connection type

- Connection
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

Connection Part No.	Set Weight	Connection Weight
P65	24kg	15kg
P80	31.5kg	20.5kg

● Free standing type

- Elbow Flange
- Companion Flange (with bolts, nuts and packing)

Connection Part No.	Set Weight
F65	7kg
F80	9.5kg

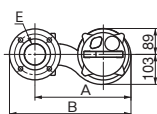
Part Specifications

Applicable Model	Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
	Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz
CN651・CN651D・CN651W	VCT	1.25	4	φ 11.5	Direct	SiC/SiC	SiC/SiC	41	33

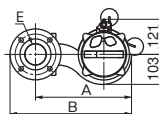
Dimensions

Free standing type

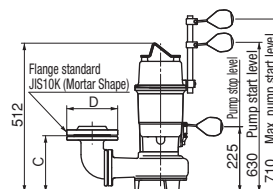
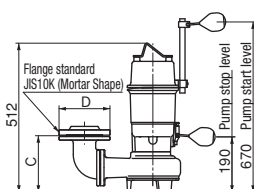
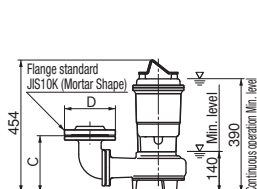
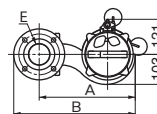
CN651



CN651D

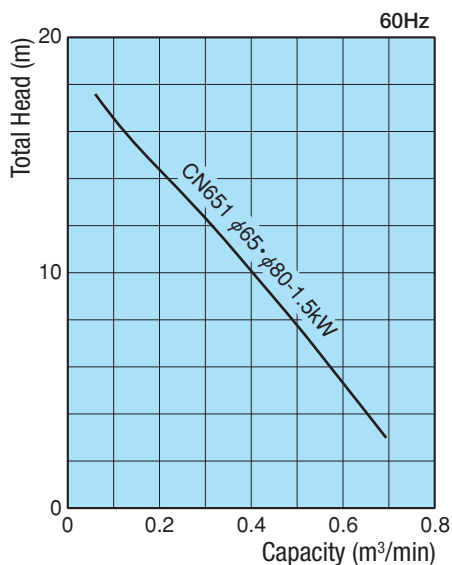
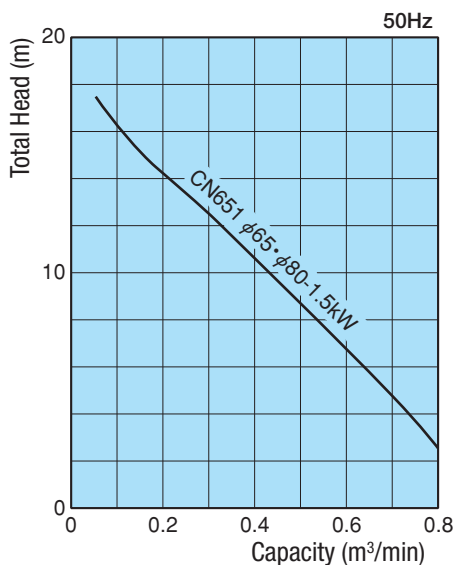


CN651W



Pump Model	Connection Part No.	A	B	C	D	E
CN651・CN651D・CN651W	F65	330	418	194	φ175	Rc2½
CN651・CN651D・CN651W	F80	340	433	224	φ185	Rc3

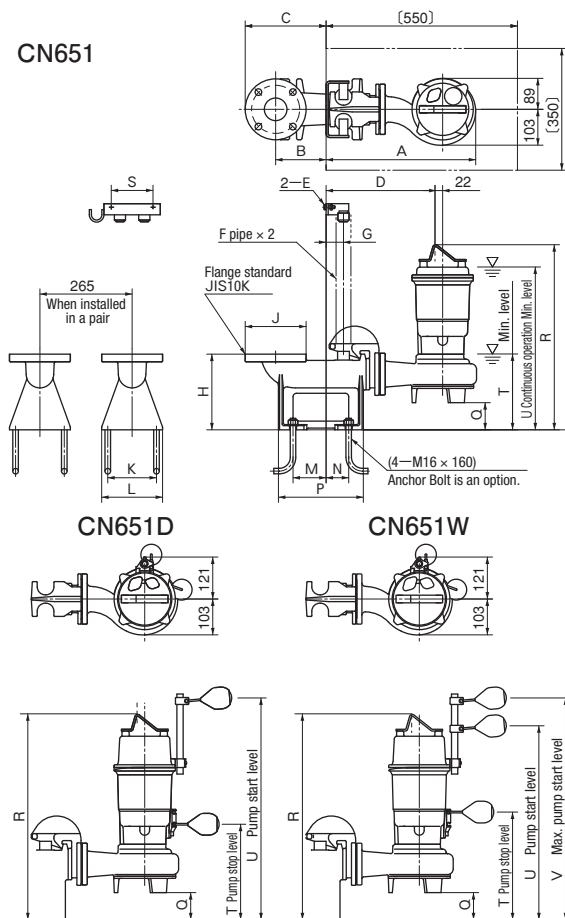
Performance Curves



Unit: mm

Auto-connection type

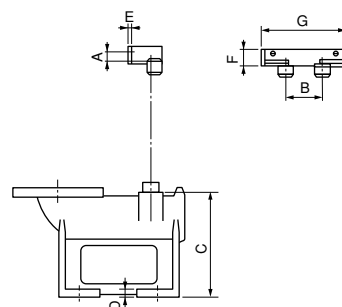
CN651



Pump Model	Connection Part No.	A	B	C	D	E	F	G	H	J
CN651										
CN651D	P65	430	145	233	313	M8x25	32A	50	218	$\phi 175$
CN651W										
CN651										
CN651D	P80	473	160	266	356	M10x25	50A	80	330	$\phi 211$
CN651W										

Pump Model	Connection Part No.	K	L	M	N	P	Q	R	S	T	U	V
CN651												
CN651D	P65	140	175	95	65	244	76	530	120	215	465	-
CN651W								588		265	745	-
CN651										300	705	785
CN651								570		255	505	-
CN651D	P80	120	150	107	103	302	116	180		305	785	-
CN651W								628		340	745	825

● Connection Dimensions



Connection Part No.	A	B	C	D	E	F	G
P65	17	70	201	12	6	32	160
P80	25	100	262	12	6	44	210

CN
**Non-clog
(Semi-open) Type**

Bore: **65·80·100 mm (2 1/2"·3"·4")**

Output: **2.2·3.7 kW (3·5 HP)**

CN80-F80

CN80-P80B

Standard Specifications

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity - Total Head m³/min-m		No. of poles P	Weight (Bare Pump) kg
		Auto-Connection	Free Standing			50Hz	60Hz		
65 (2 1/2")	CN80	P65	F65	2.2 (3)	3-ph	0.8 - 8.4	0.8 - 8.6	4	58
				3.7 (5)		[1] 1.0 - 11.8	1.0 - 11.8		70
						[3] 0.8 - 14.4			
80 (3")	CN80	P80B	F80	2.2 (3)	3-ph	0.8 - 8.4	0.8 - 8.6	4	58
				3.7 (5)		[1] 1.0 - 11.8	1.0 - 11.8		70
						[3] 0.8 - 14.4			
100 (4")	CN80	P100B	F100	2.2 (3)	3-ph	0.8 - 8.4	0.8 - 8.6	4	58
				3.7 (5)		[1] 1.0 - 11.8	1.0 - 11.8		70
						[3] 0.8 - 14.4			

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1. [] Impeller No.

Standard Accessories

- Cable (8m) 1 pc.
- Air Relief Valve

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

● Auto-connection type

- Connection
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

Connection Part No.	Set Weight	Connection Weight
P65	24kg	15kg
P80B	31.5kg	18kg
P100B	40.5kg	27kg

● Free standing type

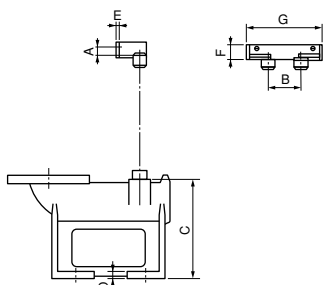
- Elbow Flange
- Companion Flange (with bolts, nuts and packing)

Connection Part No.	Set Weight
F65	7kg
F80	9.5kg
F100	11kg

Part Specifications

Applicable Model	Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
	Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz
CN80 2.2kW (3HP)	VCT	1.25	4	ϕ 11.5	Direct	SiC/SiC	SiC/SiC	54	51
CN80 3.7kW (5HP)	VCT	2.0	4	ϕ 12.0	Direct			[1] 53	54
								[3] 53	

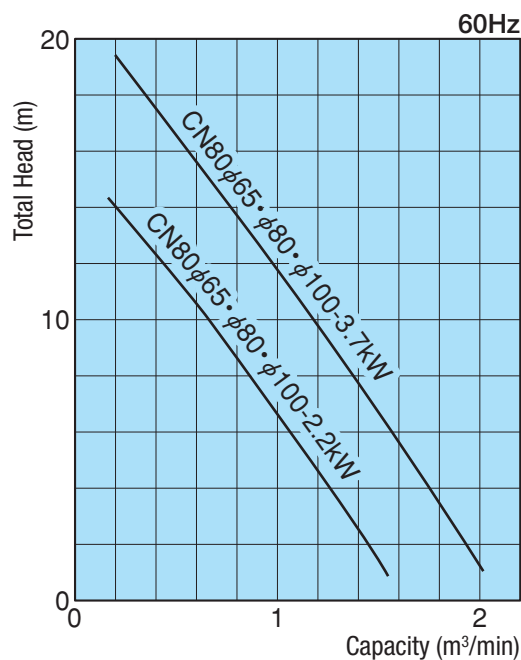
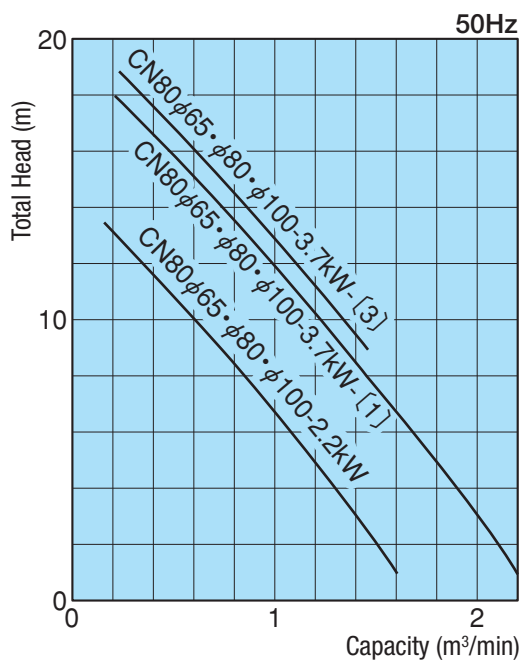
● Connection Dimensions



Unit: mm

Connection Part No.	A	B	C	D	E	F	G
P65	17	70	201	12	6	32	160
P80B	25	100	262	12	6	44	210
P100B	25	100	259	12	6	44	210

Performance Curves

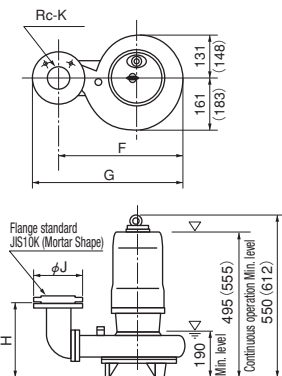


Dimensions

Unit: mm

Free standing type

() : 3.7kW

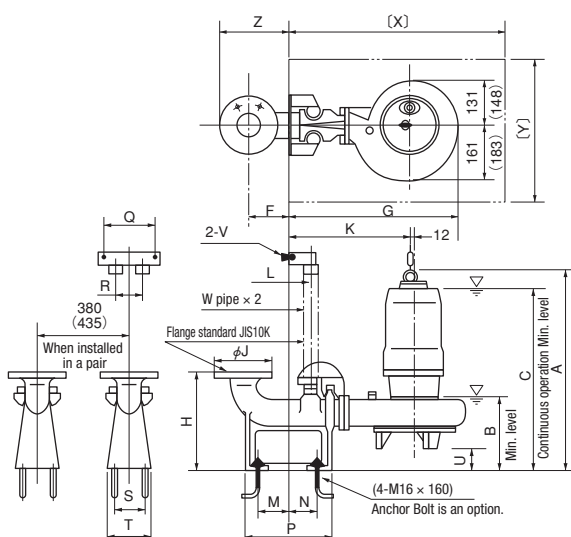


Free standing type

Connection Part No.	Output kW (HP)	F	G	H	J	K
F65	2.2 (3)	421	509	240	175	Rc2½
	3.7 (5)	440	528			
F80	2.2 (3)	431	524	270	185	Rc3
	3.7 (5)	450	543			
F100	2.2 (3)	436	541	280	210	Rc4
	3.7 (5)	455	560			

Auto-connection type

() : 3.7kW



Auto-connection type

Connection Part No.	Output kW (HP)	A	B	C	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X	Y	Z
P65	2.2 (3)	580	220	525	145	521	218	175	363	50	95	65	244	120	70	140	175	30	M8×25	32A	600	500	233
	3.7 (5)	642		585		540																	
P80B	2.2 (3)	620	260	565	160	564	330	211	406	80	107	103	302	180	100	120	150	70	M10×25	50A	600	500	266
	3.7 (5)	682		625		583																	
P100B	2.2 (3)	620	260	565	160	564	330	238	406	80	114	115	308	180	100	200	238	70	M10×25	50A	600	500	279
	3.7 (5)	682		625		583																	

CN

Non-clog (Semi-open) Type

Bore: 80・100 mm (3"・4")

Output: 5.5・7.5 kW (7.5・10 HP)



CN100-F100



CN100-P100B

Standard Specifications

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity - Total Head m ³ /min-m		No. of poles p	Weight (Bare Pump) kg
		Auto-Connection	Free Standing			50Hz	60Hz		
80 (3")	CN100	P80B	F80	5.5 (7.5)	3-ph	[1] 1.2 - 12.9	[2] 1.2 - 13.6	4	95
						[3] 0.9 - 18.0	[4] 0.9 - 18.0		
				7.5 (10)		[1] 1.4 - 15.2	[2] 1.4 - 16.7		108
						[3] 1.0 - 21.8	[4] 1.0 - 22.5		
100 (4")	CN100	P100B	F100	5.5 (7.5)	3-ph	[1] 1.2 - 12.9	[2] 1.2 - 13.6	4	95
						[3] 0.9 - 18.0	[4] 0.9 - 18.0		
				7.5 (10)		[1] 1.4 - 15.2	[2] 1.4 - 16.7		108
						[3] 1.0 - 21.8	[4] 1.0 - 22.5		

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1. [] Impeller No.

Standard Accessories

- Cable (8m)1 pc.
- Air Relief Valve

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

● Auto-connection type

- Connection
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

Connection Part No.	Set Weight	Connection Weight
P80B	31.5kg	18kg
P100B	40.5kg	27kg

● Free standing type

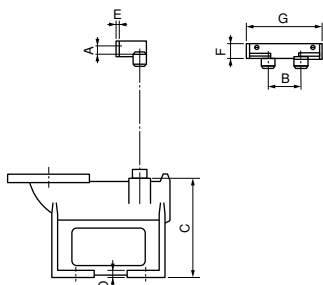
- Elbow Flange
- Companion Flange (with bolts, nuts and packing)

Connection Part No.	Set Weight
F80	9.5kg
F100	11kg

Part Specifications

Applicable Model	Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
	Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz
CN100 5.5kW (7.5HP)	VCT	3.5	4	φ 14.0	Direct	SiC/SiC	SiC/SiC	[1] 60	[2] 53
								[3] 54	[4] 53
CN100 7.5kW (10HP)	VCT	5.5	4	φ 16.5				[1] 60	[2] 53
								[3] 60	[4] 60

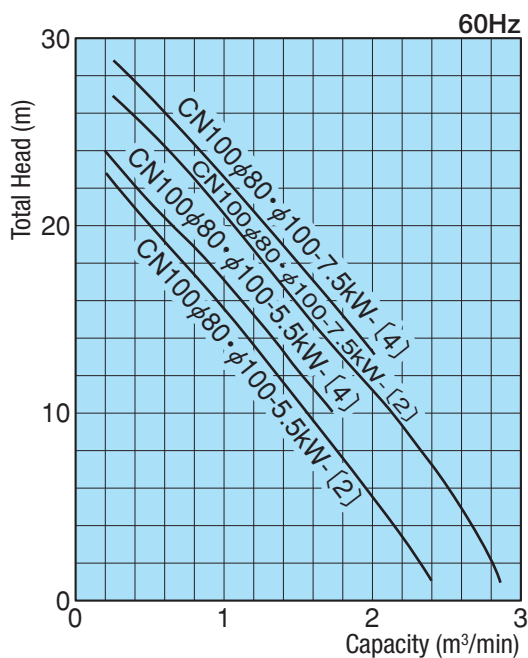
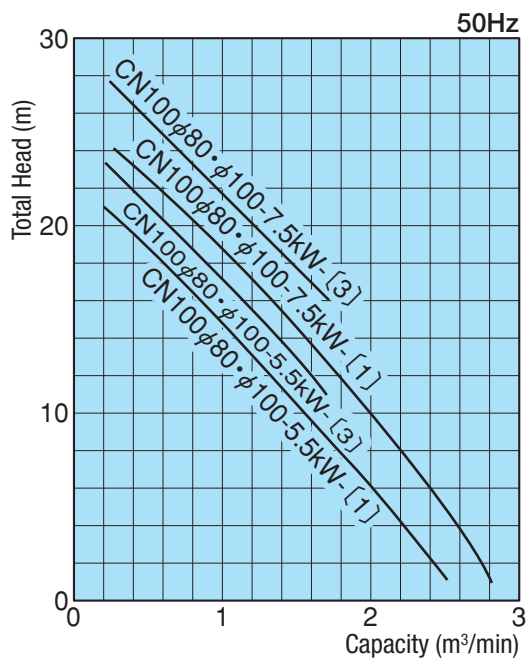
● Connection Dimensions



Unit: mm

Connection Part No.	A	B	C	D	E	F	G
P80B	25	100	262	12	6	44	210
P100B	25	100	259	12	6	44	210

Performance Curves

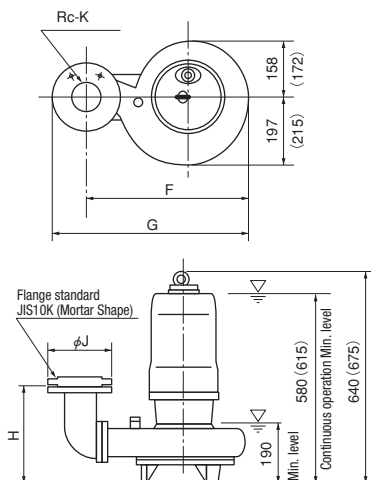


Dimensions

Unit: mm

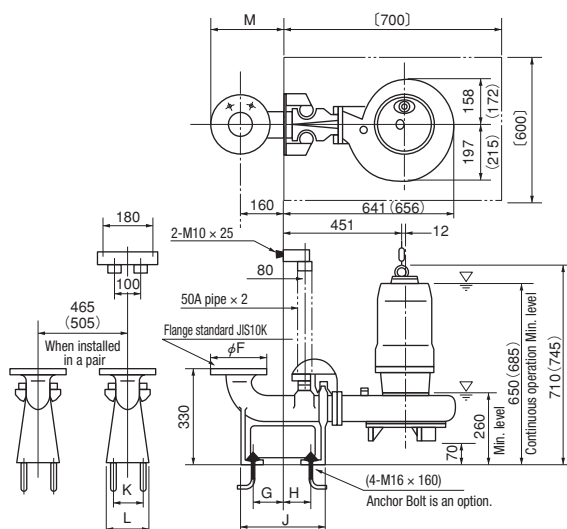
Free standing type

() : 7.5kW



Auto-connection type

() : 7.5kW



Connection Part No.	Output kW (HP)	F	G	H	J	K
F80	5.5 (7.5)	508	601	270	185	Rc3
	7.5 (10)	523	616			
F100	5.5 (7.5)	513	618	280	210	Rc4
	7.5 (10)	528	633			

Connection Part No.	Output kW (HP)	F	G	H	J	K	L	M
P80B	5.5・7.5 (7.5・10)	211	107	103	302	120	150	266
P100B	5.5・7.5 (7.5・10)	238	114	115	308	200	238	279

CN

**Non-clog
(Closed Type)**

Bore: **100 mm (4")**

Output: **11 - 22 kW (15 - 30 HP)**

CNH100-F100B

CNH100-P100C

Standard Specifications

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity - Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) kg
		Auto-Connection	Free Standing			50Hz	60Hz		
100 (4")	CNH100	P100C	F100B	11 (15)	3-ph	1.57 - 22	1.58 - 22	4	216
				15 (20)		1.9 - 26	1.86 - 26		230
				22 (30)		1.8 - 35	1.96 - 35		290

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (8m)3 pcs.

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

● Auto-connection type

- Connection (with bolts and nuts)
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

● Free standing type

- Elbow Flange
- Companion Flange
(with bolts, nuts and packing)

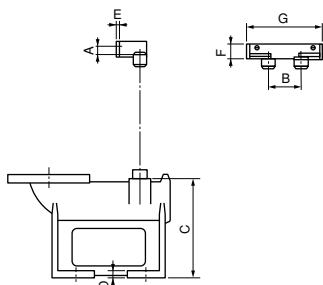
Connection Part No.	Set Weight	Connection Weight
P100C	55kg	37kg

Connection Part No.	Set Weight
F100B	12kg

Part Specifications

Applicable Model	Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)							
	Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz						
CNH100 11kW (15HP)	2PNCT	5.5	4	ϕ 17	Star-delta	SiC/SiC	SiC/SiC	54	54						
		5.5	3	ϕ 15.5											
		1.25	2	ϕ 9.8											
CNH100 15kW (20HP)	2PNCT	8.0	4	ϕ 18.5				Star-delta	SiC/SiC	SiC/SiC	54	55			
		8.0	3	ϕ 17											
		1.25	2	ϕ 9.8											
CNH100 22kW (30HP)	2PNCT	14	4	ϕ 22							Star-delta	SiC/SiC	SiC/SiC	55	58
		14	3	ϕ 20											
		1.25	2	ϕ 9.8											

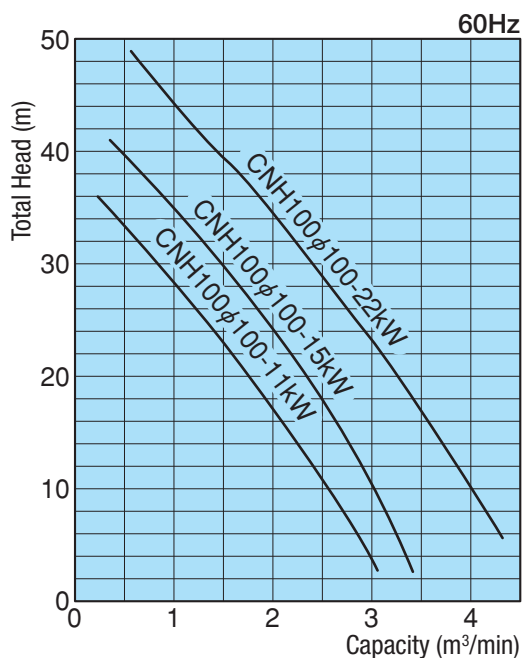
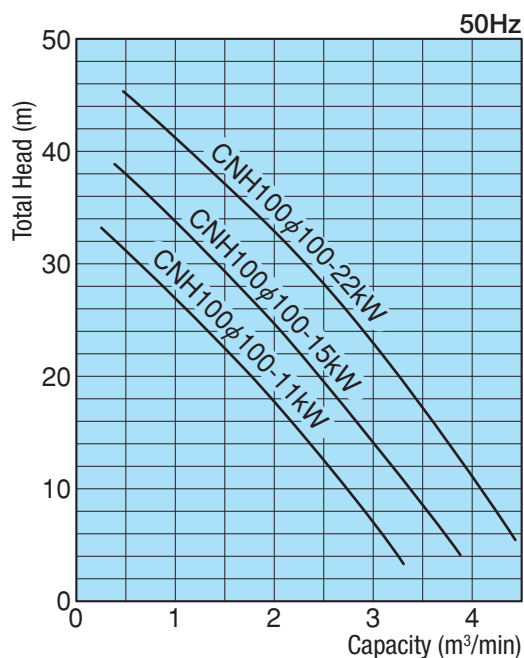
● Connection Dimensions



Unit: mm

Connection Part No.	A	B	C	D	E	F	G
P100C	25	100	318	15	6	44	210

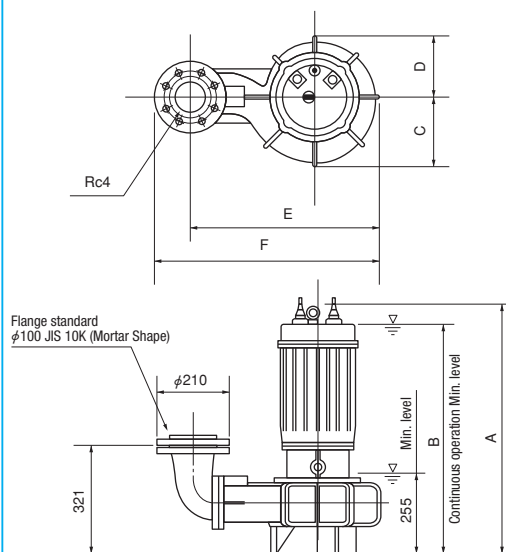
Performance Curves



Dimensions

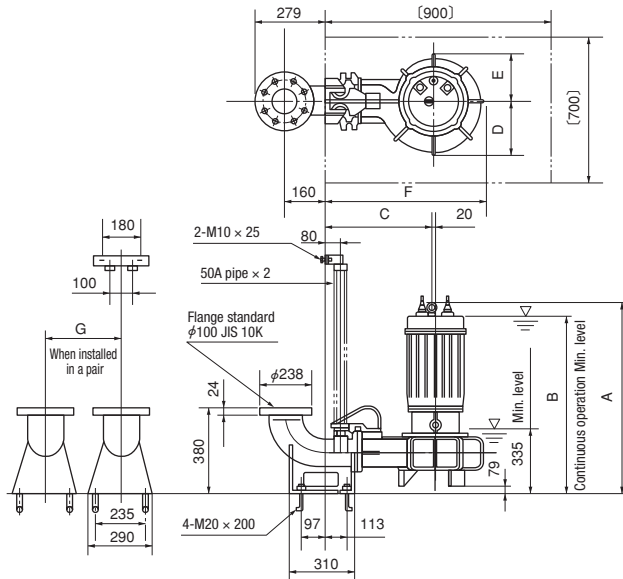
Unit: mm

Free standing type



Output kW (HP)	A	B	C	D	E	F
11 (15)	782	700	259	227	743	848
15 (20)	876	795	282	247	765	870
22 (30)	876	795	282	247	765	870

Auto-connection type

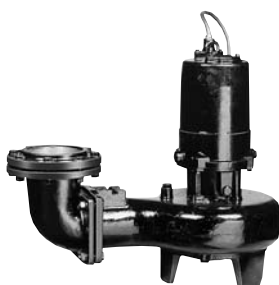


Output kW (HP)	A	B	C	D	E	F	G
11 (15)	861	780	568	259	227	831	635
15 (20)	955	875		282	247	853	690
22 (30)	955	875		282	247	853	690

CN

**Non-clog
(Closed Type)**

Bore: **150 (200) mm (6" (8"))**

Output: **5.5 - 22 kW (7.5 - 30 HP)**

CN150-F150

CN150-P150

Standard Specifications

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity - Total Head m ³ /min-m		No. of poles p	Weight (Bare Pump) kg
		Auto-Connection	Free Standing			50Hz	60Hz		
150 (6")	CN150	P150	F150	5.5 (7.5)	3-ph	2.0 - 10.0	1.96 - 10.0	4	122
				7.5 (10)		2.48 - 12.0	2.33 - 12.0		134
				11 (15)		2.54 - 16.0	2.60 - 16.0		215
				15 (20)		2.87 - 19.0	3.00 - 19.0		228
				22 (30)		3.60 - 22.0	3.86 - 22.0		326

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (8m) 7.5 kW or less1 pc.
11 kW or more...3 pcs.

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

● Auto-connection type

- Connection (with bolts and nuts)
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

Connection Part No.	Set Weight	Connection Weight
P150	60kg	42kg

● Free standing type

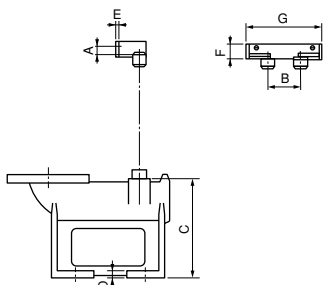
- Elbow Flange
- Companion Flange
(with bolts, nuts and packing)

Connection Part No.	Set Weight
F150	30kg

Part Specifications

Applicable Model		Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
		Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz
CN150	5.5kW (7.5HP)	VCT	3.5	4	ϕ 14	Direct	SiC/SiC	SiC/SiC	70	65
CN150	7.5kW (10HP)	VCT	5.5	4	ϕ 16.5				75	70
CN150	11kW (15HP)	2PNCT	5.5	4	ϕ 17	Star-delta	SiC/SiC	SiC/SiC	64	57
			5.5	3	ϕ 15.5					
			1.25	2	ϕ 9.8					
CN150	15kW (20HP)	2PNCT	8.0	4	ϕ 18.5				70	62
			8.0	3	ϕ 17					
			1.25	2	ϕ 9.8					
CN150	22kW (30HP)	2PNCT	14	4	ϕ 22				76	67
			14	3	ϕ 20					
			1.25	2	ϕ 9.8					

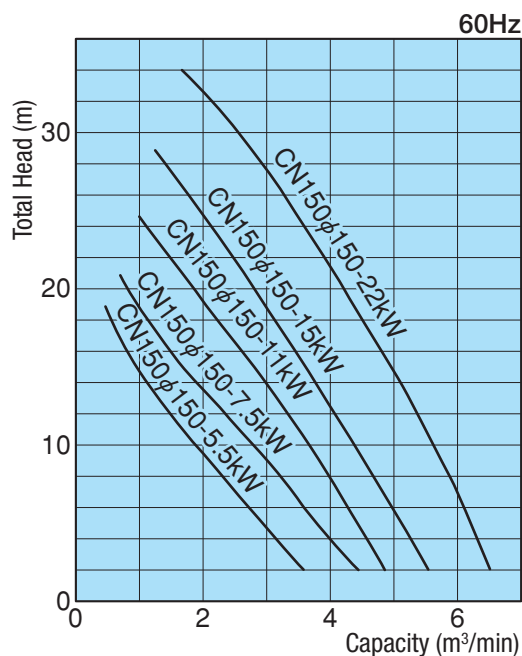
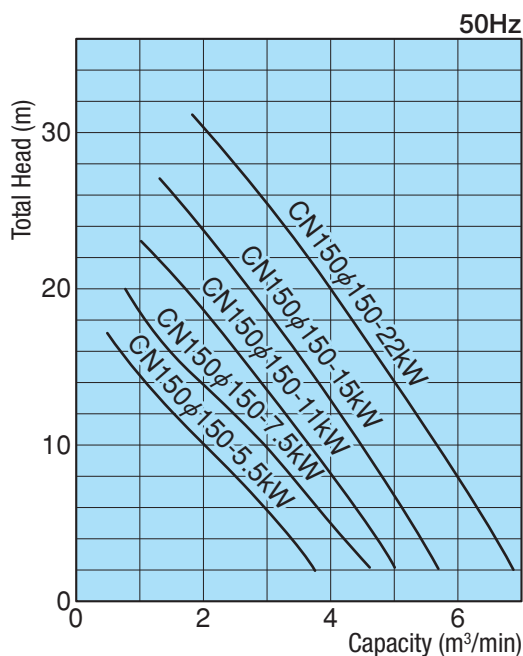
● Connection Dimensions



Unit: mm

Connection Part No.	A	B	C	D	E	F	G
P150	25	100	330	15	6	44	210

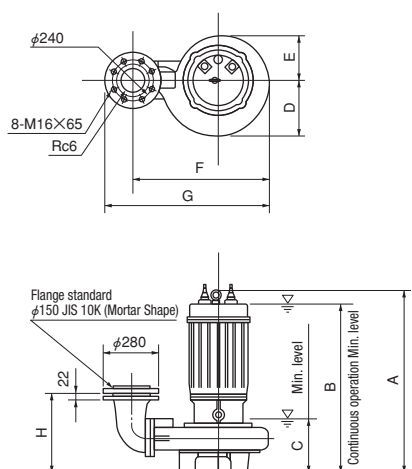
Performance Curves



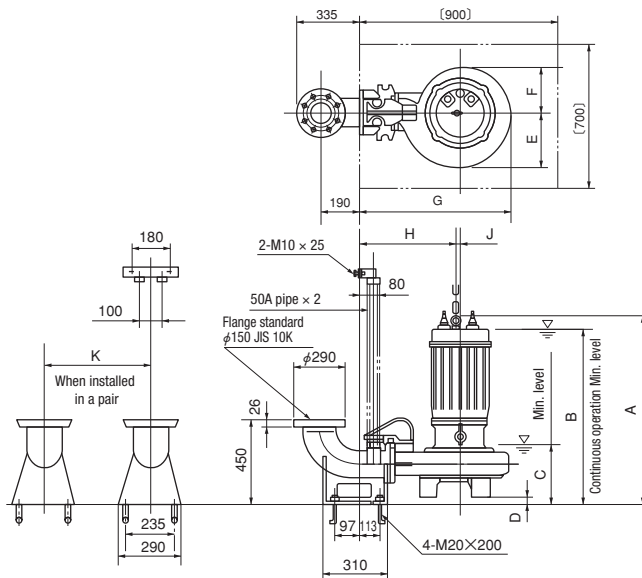
Dimensions

Unit: mm

Free standing type



Auto-connection type



Output kW (HP)	A	B	C	D	E	F	G	H
5.5 (7.5)	713	655	260	222	178	696	836	367
7.5 (10)	748	690	260	222	178	696	836	367
11·15 (15·20)	804	725	280	240	210	750	890	366
22 (30)	915	835	295	261	228	790	930	382

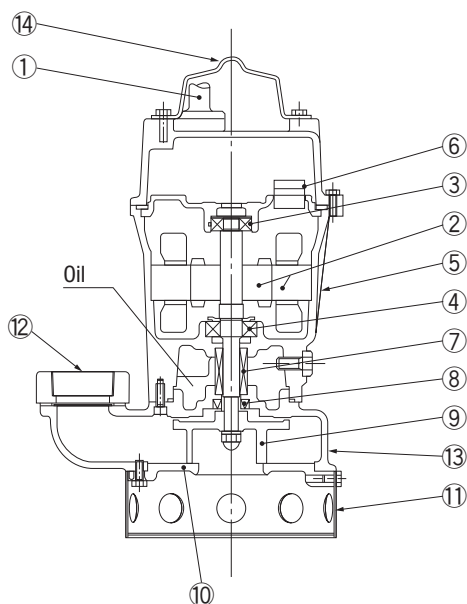
Output kW (HP)	A	B	C	D	E	F	G	H	J	K
5.5 (7.5)	779	720	325	66	222	178	759	546	12	520
7.5 (10)	814	755	325	66	222	178	759	546	12	
11·15 (15·20)	871	790	345	67	240	210	813	568	20	585
22 (30)	967	885	345	52	261	228	853	588	20	640

Sectional View

CN40T

Free standing type

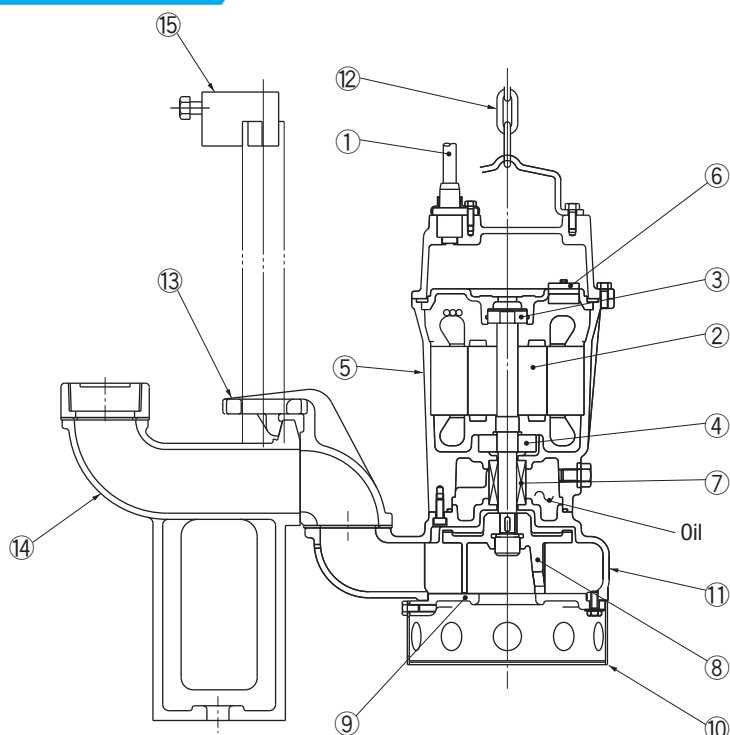
(0.25kW) (1/3HP)



Number	Name	Material
1	Cable	VCT
2	Motor	Shaft: SUS420J2
3	Ball Bearing (Upper)	-
4	Ball Bearing (Lower)	-
5	Stator Casing	FC200
6	Thermal Protector	-
7	Mechanical Seal	-
8	Oil Seal	NBR
9	Impeller	FC200
10	Base Cover	FC200
11	Strainer	SPCC
12	Screwed Coupling	PP
13	Pump Casing	FC200
14	Handle	SUS304

CN501

Auto-connection type



Number	Name	Material
1	Cable	VCT
2	Motor	Shaft: SUS420J2
3	Ball Bearing (Upper)	-
4	Ball Bearing (Lower)	-
5	Stator Casing	FC200
6	Thermal Protector	-
7	Mechanical Seal	-
8	Impeller	FC200
9	Base Cover	FC200
10	Strainer	SPCC
11	Pump Casing	FC200
12	Chain	SS400
13	Sliding Bracket	FC200
14	Connection	FC200
15	Guide Holder	SUS304

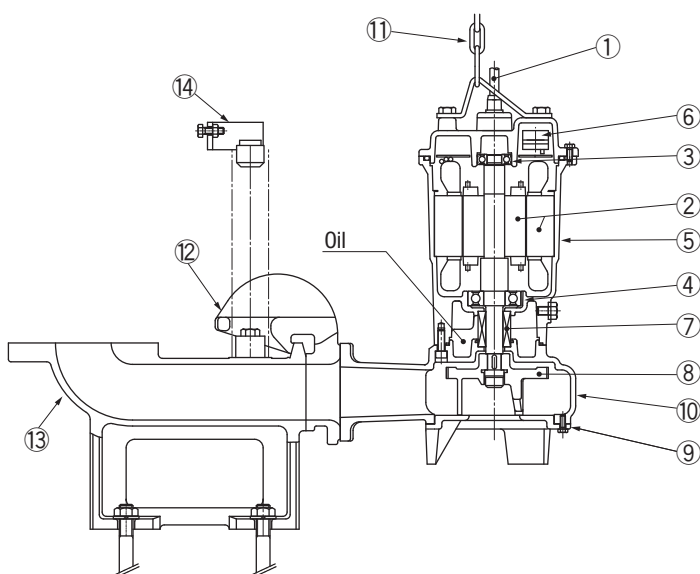
* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel

SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

Sectional View

CN651

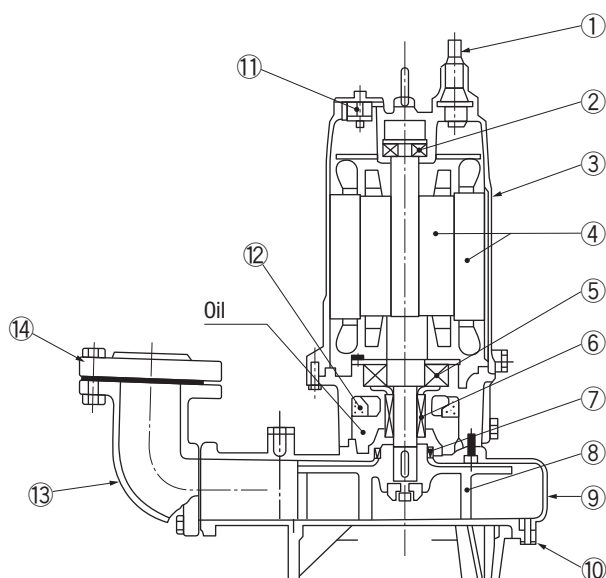
Auto-connection type



Number	Name	Material
1	Cable	VCT
2	Motor	Shaft: SUS420J2
3	Ball Bearing (Upper)	-
4	Ball Bearing (Lower)	-
5	Stator Casing	FC200
6	Thermal Protector	-
7	Mechanical Seal	-
8	Impeller	FC200
9	Base Cover	FC200
10	Pump Casing	FC200
11	Chain	SS400
12	Sliding Bracket	FC200
13	Connection	FC200
14	Guide Holder	SCS13

CN80

Free standing type



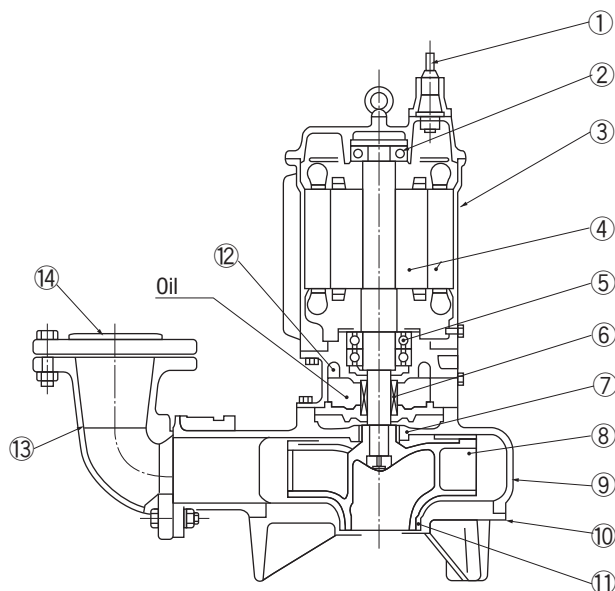
Number	Name	Material
1	Cable	VCT
2	Ball Bearing (Upper)	-
3	Stator Casing	FC200
4	Motor	Shaft: SUS420J2
5	Ball Bearing (Lower)	-
6	Mechanical Seal	-
7	Oil Seal	NBR
8	Impeller	FC200
9	Pump Casing	FC200
10	Base Cover	FC200
11	Thermal Protector	-
12	Equalizer	Foaming NBR
13	Elbow Flange	FC200
14	Companion Flange	FC200

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

Sectional View

CNH100

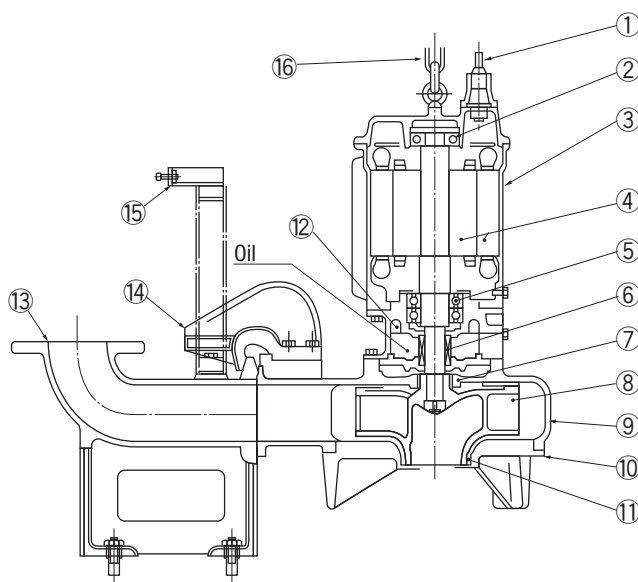
Free standing type



Number	Name	Material
1	Cable	2PNCT
2	Ball Bearing (Upper)	-
3	Stator Casing	FC200
4	Motor	Shaft: SUS420J2
5	Ball Bearing (Lower)	-
6	Mechanical Seal	-
7	Seal Ring	CAC406
8	Impeller	FC200 (22kW FCD500)
9	Pump Casing	FC200
10	Base Cover	FC200
11	Wearing	CAC406
12	Equalizer	Foaming NBR
13	Elbow Flange	FC200
14	Companion Flange	FC200

CNH100

Auto-connection type



Number	Name	Material
1	Cable	2PNCT
2	Ball Bearing (Upper)	-
3	Stator Casing	FC200
4	Motor	Shaft: SUS420J2
5	Ball Bearing (Lower)	-
6	Mechanical Seal	-
7	Seal Ring	CAC406
8	Impeller	FC200 (22kW FCD500)
9	Pump Casing	FC200
10	Base Cover	FC200
11	Wearing	CAC406
12	Equalizer	Foaming NBR
13	Connection	FC200
14	Sliding Bracket	FC200
15	Guide Holder	SCS13
16	Chain	SS400

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel

SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

Non-clog Type (Large-sized Pump with Forced-cooling System)**Bore: 200 - 800 mm (8" - 32")****Output: 7.5 - 250 kW (10 - 333 1/3 HP)**

CN

Large-sized Forced-cooling

The large-sized CN Series is a submersible pump equipped with volute or mixed flow volute impeller of non-clog type. Equipped with forced-cooling system that circulates part of pumped water in the water jacket surrounding the motor.

Bore mm (inch)	Output kW (HP)	Pump Model	Page
200 (8")	7.5 - 55 (10 - 75)	CN200-P	76
250 (10")	15 - 75 (20 - 100)	CN250-P	80
300 (12")	15 - 75 (20 - 100)	CN300-P	82
350 (14")	18.5 - 75 (25 - 100)	CN350-P	84
400 (16")	18.5 - 75 (25 - 100)	CN400-P	86
500 (20")	30 - 75 (40 - 100)	CN500-P	88
600 - 800 (24" - 32")	37 - 250 (50 - 333 1/3)	Designed and manufactured so as to meet specified point requirements.	90

Structure and Features

● Micro Thermal Protector

The Micro Thermal Protector (a built-in auto-reset type motor protector) prevents motor burnout due to overload, impeller locking and open phase.

● Cable Entry

The self-contained core sealer of the cable outlet shuts the water out from penetrating into the motor chamber through the core wires even if the cable tip is immersed in water or the sheath is damaged.

● Depressurizing Structure

The Depressurizing Structure eliminates a high-pressure pulsation flow generated at the impeller so that the service life of the mechanical seal is extended.

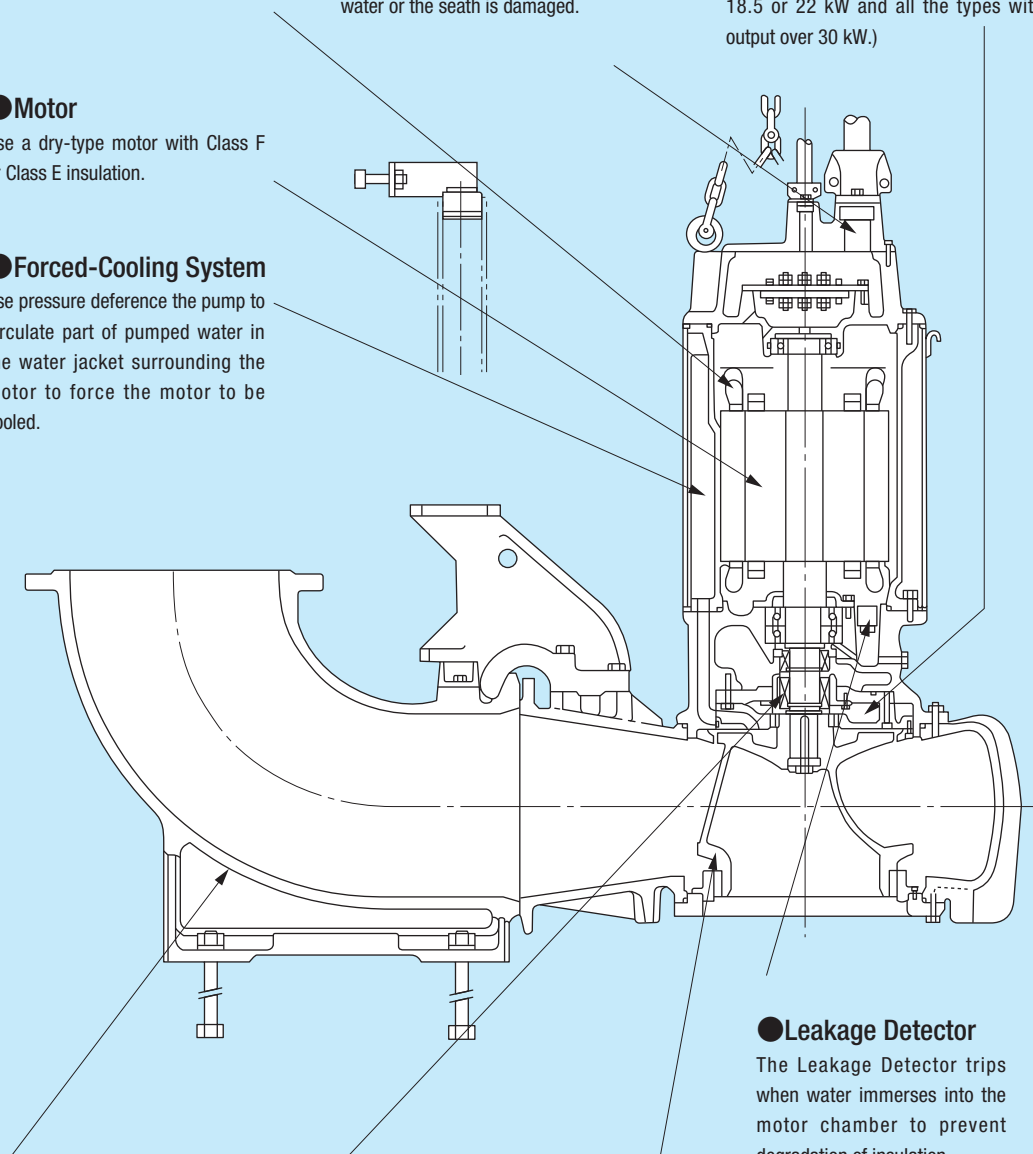
(Applicable for some types of output of 18.5 or 22 kW and all the types with output over 30 kW.)

● Motor

Use a dry-type motor with Class F or Class E insulation.

● Forced-Cooling System

Use pressure difference the pump to circulate part of pumped water in the water jacket surrounding the motor to force the motor to be cooled.



● Leakage Detector

The Leakage Detector trips when water immerses into the motor chamber to prevent degradation of insulation.

● Connection

Connect the submersible pump and the discharge pipe by pump weight (without bolts and nuts)

● Shaft Seal

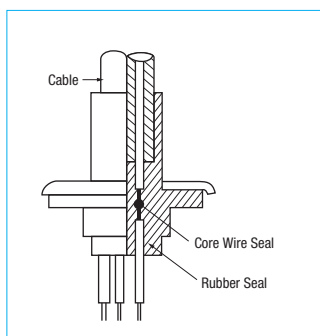
A highly wear resistant Double Mechanical Seal positively prevent the water from penetrating into the Motor Chamber.

● Impeller

Equipped with a volute or a mixed flow volute impeller of non-clog type and it prevents overload at any flow rate in the operation range.

Motor Protector

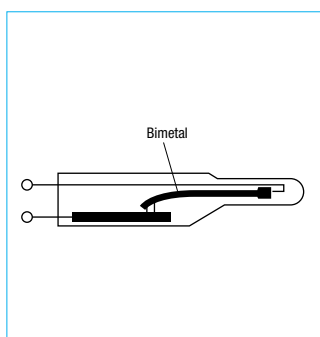
●Core Wire Seal



A core wire is processed by twisting together thin wires. If the cable sheath is broken or the tip of a cable is immersed in water, water may enter into the motor chamber through a small gap in the core wire.

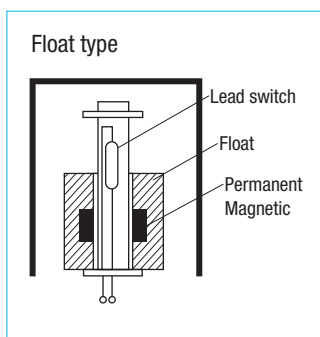
To prevent water immersion, part of the core wire is peeled off, as shown in the left diagram, to seal the gap and a rubber seal is also put on it to prevent water immersion into the motor chamber.

●Micro Thermal Protector (N.C. contact, Auto-reset type)



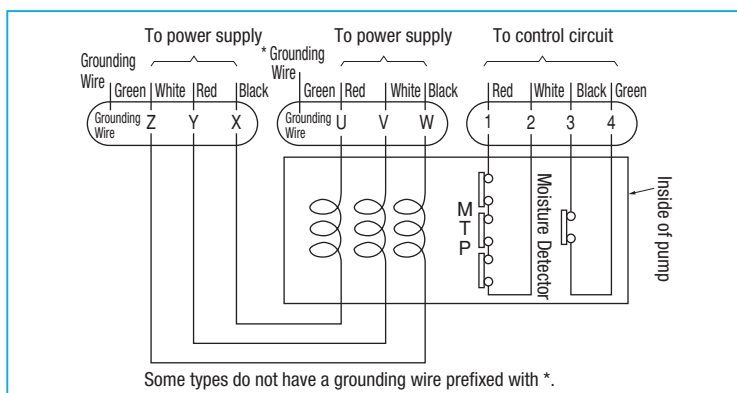
The Micro Thermal Protector is embedded in the motor winding. If the winding temperature rises abnormally, the bimetal deflects to cut the circuit. The Micro Thermal Protector works in conjunction with a magnet switch in the control box to shut down the power circuit. Overcurrent should be detected using a thermal relay or a 3E or 2E relay in the control box.

●Leakage Detector (N.C. contact, Auto-reset type)

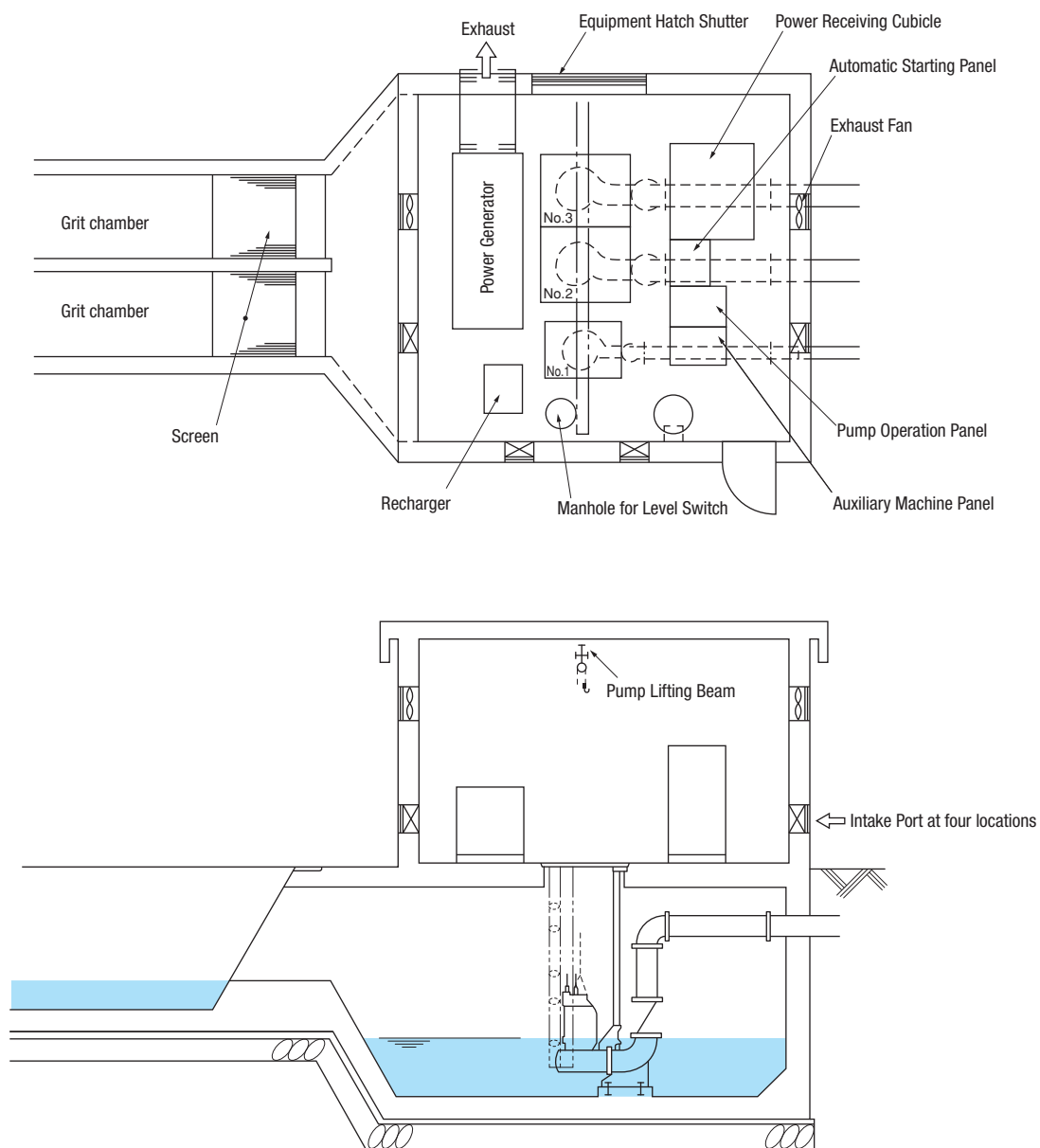


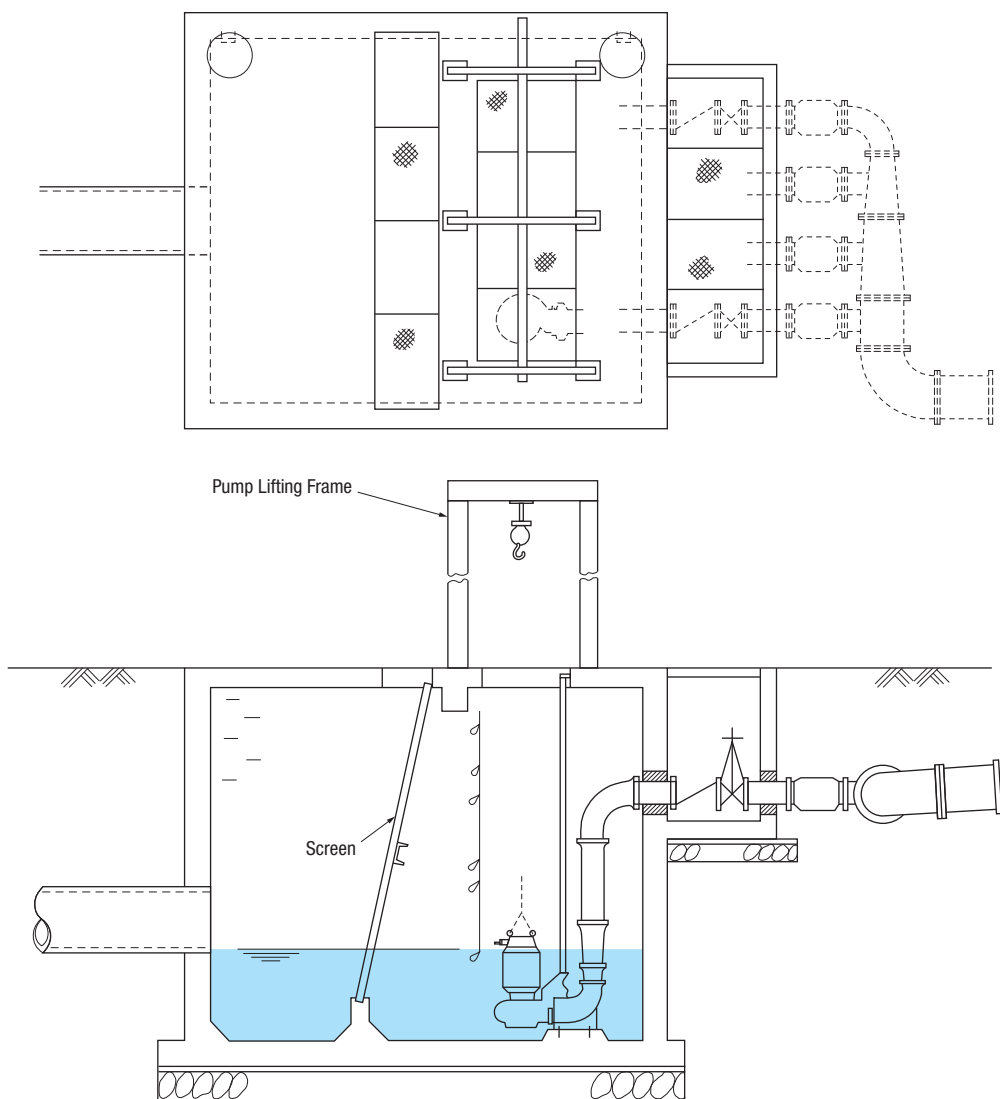
Installed in the lower-structure of the motor chamber. When oil containing water immersion in the motor chamber, the magnet float moves to the lead switch to detect and alert water moisture. The reed switch works in conjunction with a magnet switch in the control box to shut down the power circuit.

Electric Connection Wiring Diagram



Example Layout for Large-sized Submersible Pump





CN

Non-clog Type (Large-sized Pump with Forced-cooling System)

Bore: 200 - 800 mm (8" - 32")

Output: 7.5 - 250 kW (10 - 333 1/3 HP)

■ Features

● Easy to maintain and inspect

The automatic connection device allows the pump to be easily taken out to the ground upon maintenance and inspection.

● Reducing the total cost

The pump is installed in the tank and operates in the water, so that minimum space for constructing a pump facility, is required without constructing large facility.

● Preventing motor burnout

The Micro Thermal Protector and the moisture detector are provided as standard items to prevent motor burnout. A forced-cooling system that circulates sewage water within the pump casing cools down the motor.

● Characteristics that prevent overload

Except for some types, current overload does not occur at any flow rate within the operation range.

■ Standard Specifications

Handling Liquid	Kind of Liquid	Wastewater and sewage
	Temperature	0 - 32°C
Material	Cable	2PNCT
	Motor Shaft	Stainless steel (SUS420J2)
	Pump Casing	Gray iron casting (FC200)
	Impeller	Gray iron casting (FC200)
Electric Motor	Name	Air-filled type Submersible Induction Motor
	Insulation Class	Class E for 15 kW or less, Class F for 18.5 kW or more
	Enclosure	IP68
	Phase	3-ph
	Voltage	200 - 480V (37 kW or less) 400 - 480V (45 kW or more)

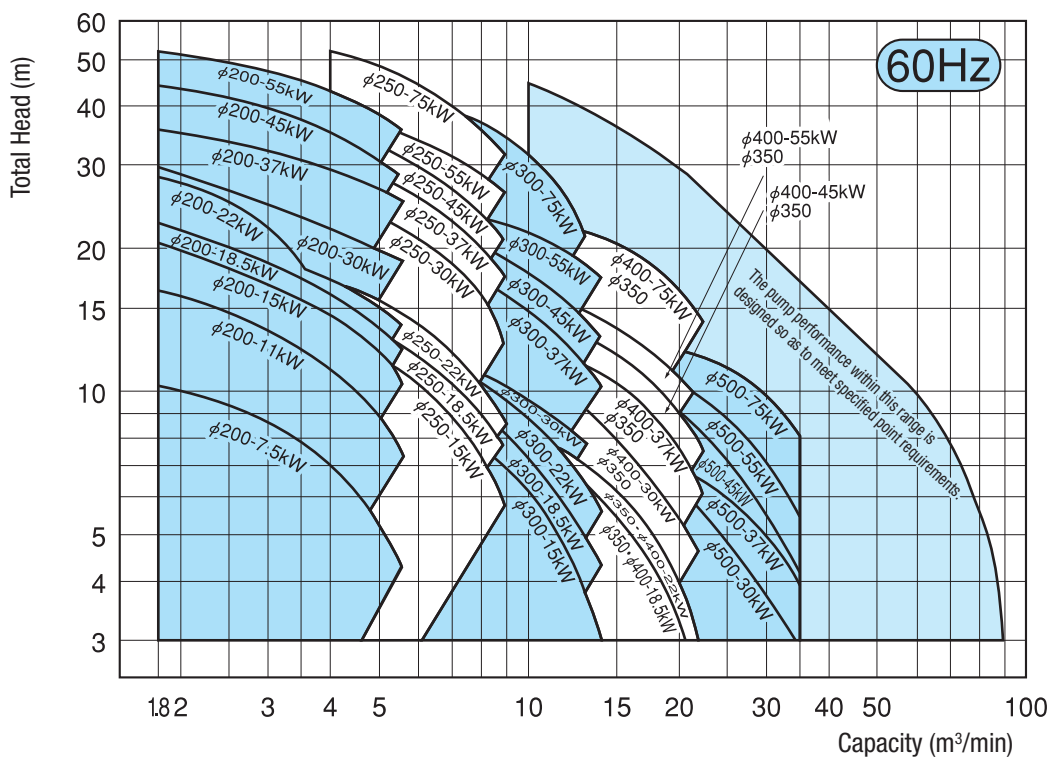
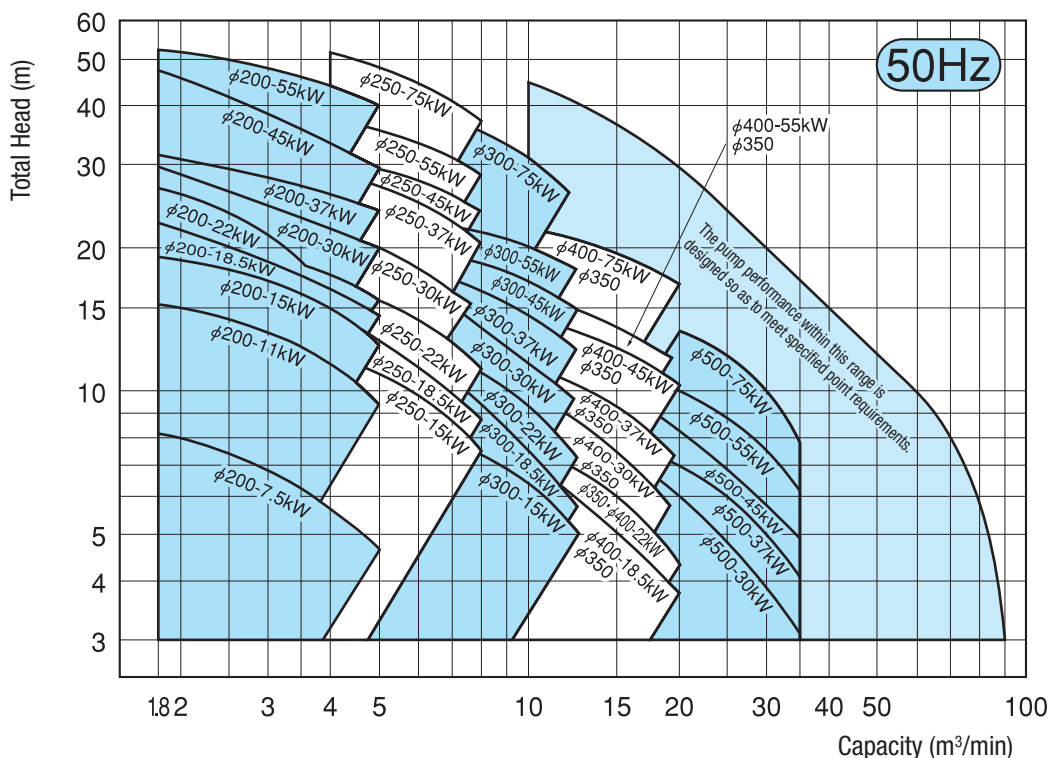
■ Applications

- ☐ Sewage system
Relaying of sewage and rainwater
- ☐ Sewage treatment plant
Raw water and other treatment process
- ☐ Storm water
Flood control
- ☐ Agriculture
Irrigation
- ☐ Factory
Intake/Effluent control
- ☐ Others
Aquaculture, etc.

■ Special Specifications

- ☐ Cable Extension
A cable can be extended as requested. For the allowable lengths, refer to the specifications (detail data) - App.1.
- ☐ If you want to change each material to Stainless steel, please contact us.

Performance Curves



CN**Non-clog Type**
(Large-sized Pump with Forced-cooling System)Bore: **200 mm (8")**Output: **7.5 - 55 kW (10 - 75 HP)****CN200-P**

Standard Specifications

Bore mm (inch)	Model	Output kW (HP)	Phase	Capacity - Total Head m³/min-m		No. of poles P	Weight (Bare Pump) kg
				50Hz	60Hz		
200 (8")	CN200-P	7.5 (10)	3-ph	[263DY] 4.5- 5.2	[215Y] 3.5- 7.8	6	400
		11 (15)		[211A] 4.0-11.3	[212] 4.5-10.0	4	390
		15 (20)		[215] 4.0-15.0	[216] 4.5-13.9		410
		18.5 (25)		[620Y] 4.0-14.0	[630Y] 4.5-13.7	6	540
				[610AY] 4.0-15.4		4	
				[470Y] 2.5-22.8	[480AY] 2.5-22.0		
		22 (30)		[640] 4.0- 8.0	[640] 4.5-12.2	6	
				[630] 4.0-11.0			
				[620] 4.0-14.7	[630] 4.5-16.1		
				[610A] 4.0-17.5			
				[470] 2.5-23.5	[480A] 2.5-25.1	4	
		30 (40)		[251AY] 4.0-22.5	[252AY] 4.5-19.5		900
		37 (50)		[251A] 4.0-26.0	[252A] 4.5-28.0		
		45 (60)		[205AY] 4.0-35.5	[206AY] 4.5-33.0		930
		55 (75)		[205A] 4.0-43.5	[206A] 4.5-40.5		

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1. [] Impeller No.

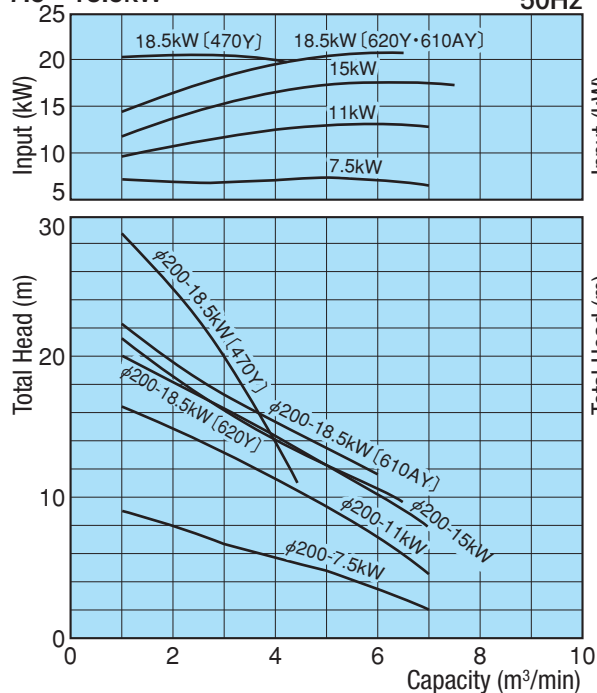
Standard Accessories

- Connection (with bolts and nuts)1 set
Weight 120 kg (7.5 • 11 • 15 • 30 • 37 • 45 • 55kW)
90 kg (18.5 • 22kW)
- Guide holder (with bolts and nuts)1 set
- Cable (8m) 7.5 kW2 pcs.
11 kw or more3 pcs.
- Lifting Chain (6m)1 pc.

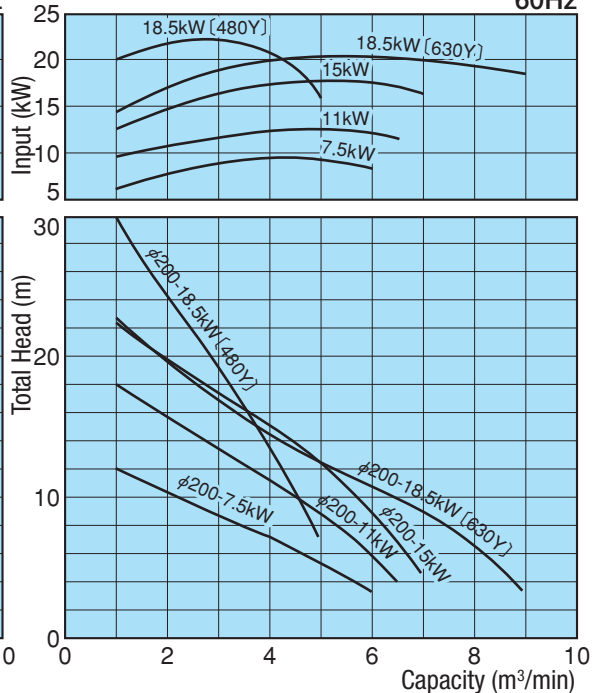
Performance Curves

7.5~18.5kW

50Hz

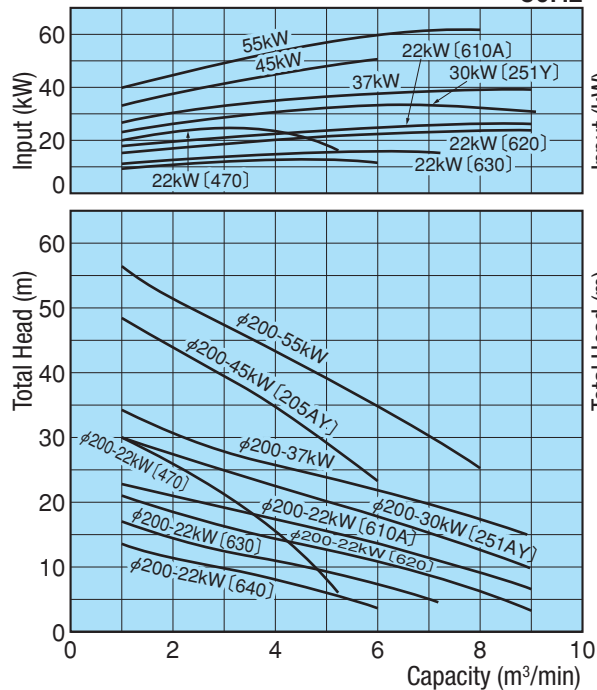


60Hz

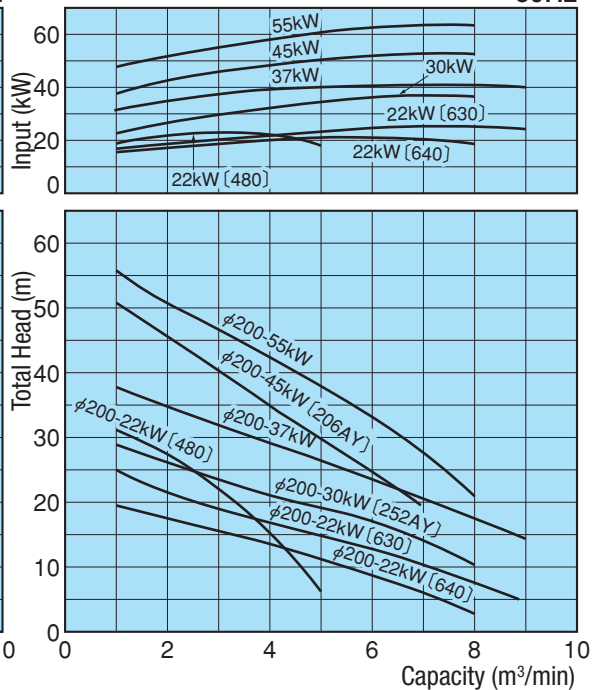


22~55kW

50Hz



60Hz

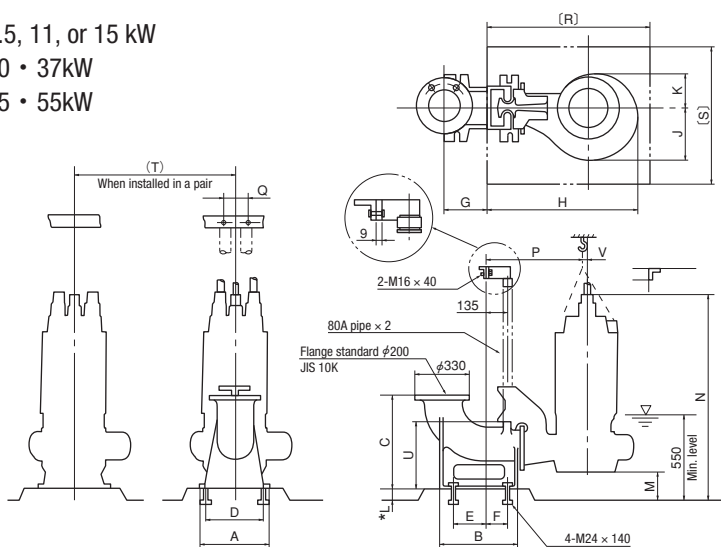


CN**Non-clog Type**
(Large-sized Pump with Forced-cooling System)Bore: **200 mm (8")**Output: **7.5 - 55 kW (10 - 75 HP)****Part Specifications**

Applicable Model		Cable Specifications					Starting Method	Mechanical Seal	
		Type	Section Area (mm ²)	Cores	Outer Dia. (mm)	No. of Cables		Lower	Upper
CN200-P	7.5kW (10 HP)	2PNCT	5.5	4	φ 17.0	1	Direct	SiC/SiC	Carbon/SiC
			2.0	4	φ 12.5	1			
	11kW (15 HP)	2PNCT	5.5	4	φ 17.0	2	Star-delta	Cemented Carbide /Cemented Carbide	Carbon /Cemented Carbide
			2.0	4	φ 12.5	1			
	15kW (20 HP)	2PNCT	8.0	4	φ 18.5	2			
			2.0	4	φ 12.5	1			
	18.5・22kW (25・30 HP)	2PNCT	14.0	4	φ 22.0	2			Carbon/SiC
			2.0	4	φ 12.5	1			
	30・37kW (40・50 HP)	2PNCT	22.0	4	φ 29.0	1			
			22.0	3	φ 27.0	1			
			2.0	4	φ 12.5	1			
	45・55kW (60・75 HP)	2PNCT	14.0	4	φ 22.0	2			
			2.0	4	φ 12.5	1			

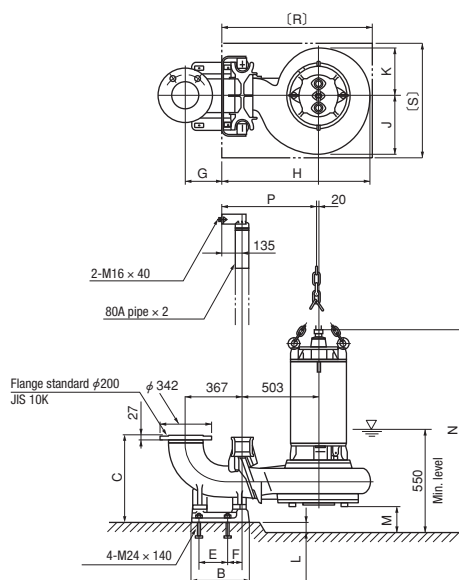
Unit: mm

Output: 7.5, 11, or 15 kW
30 • 37kW
45 • 55kW



The dimension with the * mark shall be not less than the stipulated one.

Output: 18.5 • 22 kW



Output kW (HP)	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V
7.5 (10) (50°)	342	545	570	290	220	160	285	858	275	186	—	132	1,127	606	115	900	700	765	445	20
7.5 (10) (60°)	342	545	570	290	220	160	285	857	251	207	—	147	1,118	607	115	900	700	765	445	20
11 (15)	342	545	570	290	220	160	285	857	251	207	—	147	1,118	607	115	900	700	765	445	20
15 (20)																				
18.5-22 (25-30)	482	373	555	360	145	40	232	975	370	304	60	157	1,284	618	390	1,200	850	915	40	—
30-37 (40-50)	342	545	570	290	220	160	285	1,069	343	260	—	177	1,524	727	115					
45-55 (60-75)								1,196	308	275		146	1,492	877						

CN**Non-clog Type**
(Large-sized Pump with Forced-cooling System)Bore: **250 mm (10")**Output: **15 - 75 kW (20 - 100 HP)**

CN250-P

Standard Specifications

Bore mm (inch)	Model	Output kW (HP)	Phase	Capacity - Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) kg
				50Hz	60Hz		
250 (10")	CN250-P	15 (20)	3-ph	[259] 6.3- 9.5	[250] 7.1- 8.8	4	415
		18.5 (25)		[253Y] 6.3-10.9	[254Y] 7.1-10.5	6	615
		22 (30)		[253] 6.3-13.6	[254] 7.1-12.0		
		30 (40)		[251AY] 6.3-17.5	[252AY] 7.1-17.5	4	900
		37 (50)		[251A] 6.3-24.0	[252A] 7.1-22.5		
		45 (60)		[255Y] 6.3-27.5	[256Y] 7.1-26.5		940
		55 (75)		[255] 6.3-32.5	[256] 7.1-30.8		
		75 (100)		[257B] 6.3-43.0	[258A] 7.1-39.6		1,440

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1. [] Impeller No.

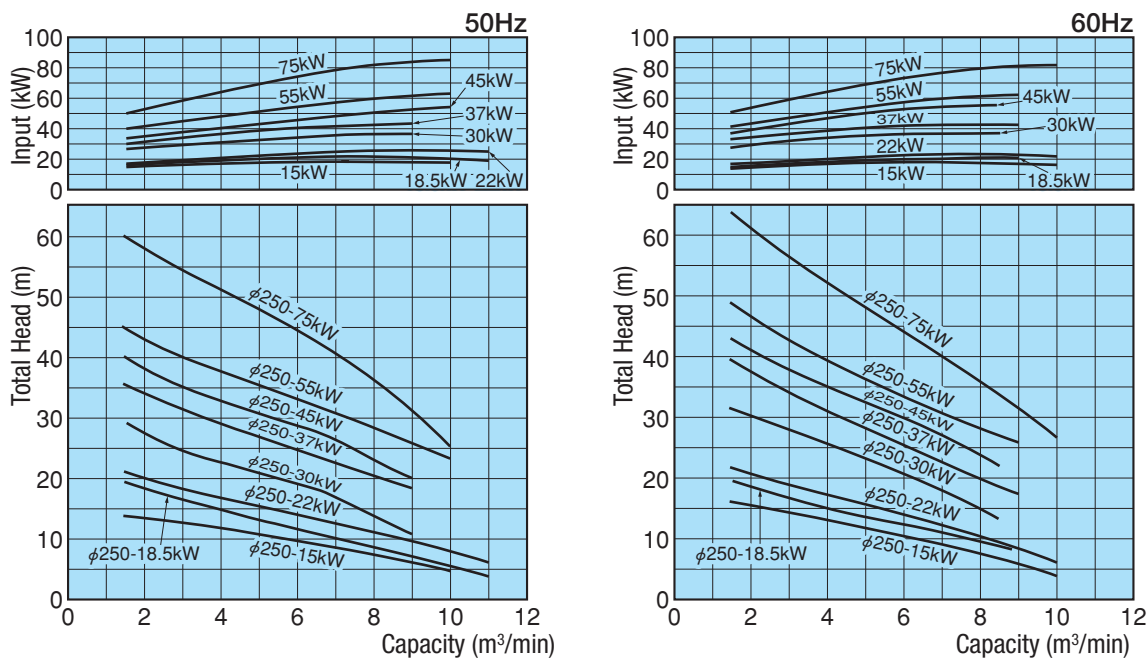
Standard Accessories

- Connection (with bolts and nuts) 195 kg1 set
- Guide Holder (with bolts and nuts).....1 set
- Cable (8m)3 pcs.
- Lifting Chain (6m)1 pc.

Part Specifications

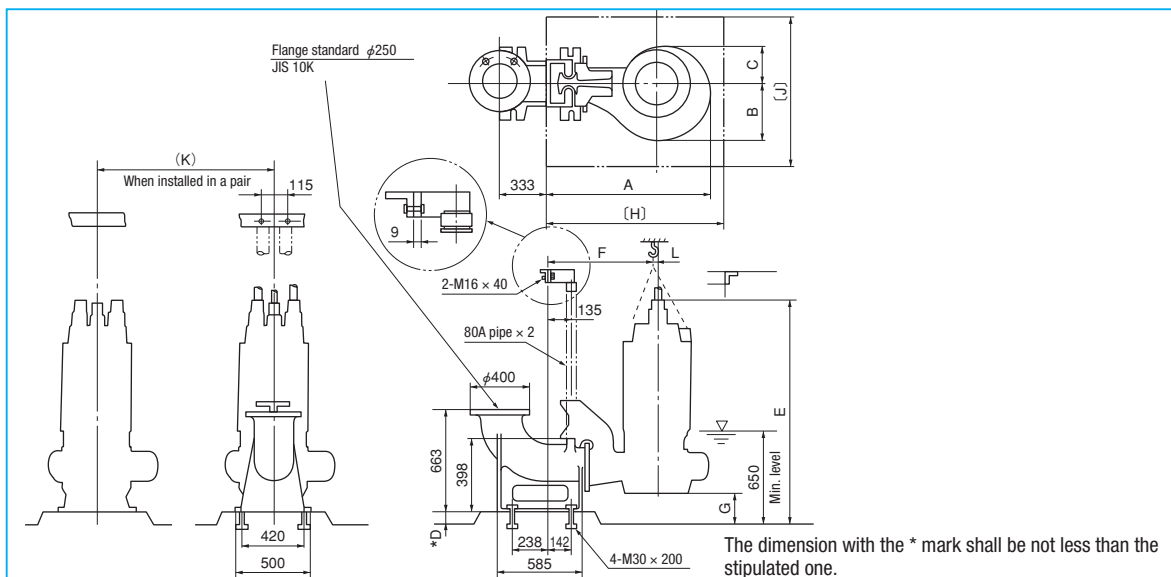
Applicable Model		Cable Specifications					Starting Method	Mechanical Seal	
		Type	Section Area (mm ²)	Cores	Outer Dia. (mm)	No. of Cables		Lower	Upper
CN250-P	15kW (20HP)	2PNCT	8.0	4	φ 18.5	2	Star-delta	Cemented Carbide /Cemented Carbide	Carbon/ Cemented Carbide
			2.0	4	φ 12.5	1			Carbon/SiC
	18.5 · 22kW (25 · 30HP)	2PNCT	14.0	4	φ 22.0	2			
			2.0	4	φ 12.5	1			
	30 · 37kW (40 · 50HP)	2PNCT	22.0	4	φ 29.0	1			
			22.0	3	φ 27.0	1			
	45 · 55kW (60 · 75HP)	2PNCT	2.0	4	φ 12.5	1			
			14.0	4	φ 22.0	2			
	75kW (100HP)	2PNCT	2.0	4	φ 12.5	1			
			22.0	3	φ 27.0	1			
			2.0	4	φ 12.5	1			

Performance Curves

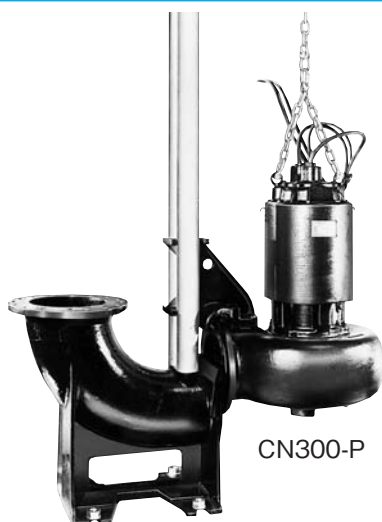


Dimensions

Unit: mm



Output kW (HP)	A	B	C	D	E	F	G	H	J	K	L
15 (20)	858	275	186	75	1,145	606	150	900	700	765	20
18.5-22 (25-30)	1,069	343	260		1,307	737	165	1,200	850	915	30
30-37 (40-50)					1,542	727	195				
45-55 (60-75)					1,519						
75 (100)	1,196	308	275	100	1,662	887	189	1,300	1,000	1,125	20

CN**Non-clog Type**
(Large-sized Pump with Forced-cooling System)Bore: **300 mm (12")**Output: **15 - 75 kW (20 - 100 HP)****CN300-P****Standard Specifications**

Bore mm (inch)	Model	Output kW (HP)	Phase	Capacity - Total Head m³/min-m		No. of poles P	Weight (Bare Pump) kg
				50Hz	60Hz		
300 (12")	CN300-P	15 (20)	3-ph	[315] 10.0- 6.4	[316] 11.2- 5.2	6	520
		18.5 (25)		[321AY] 10.0- 7.3	[322AY] 11.2- 5.6	6	640
		22 (30)		[321A] 10.0- 9.2	[322A] 11.2- 7.8		
		30 (40)		[301Y] 10.0-12.1	[302AY] 11.2-10.5	6	975
		37 (50)		[301] 10.0-14.5	[302A] 11.2-13.5		
		45 (60)		[303] 10.0-16.8	[304] 11.2-16.0		
		55 (75)		[305] 10.0-20.0	[306] 11.2-20.2		
		75 (100)		[307] 10.0-31.0	[308] 11.2-28.0	4	1,500

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1. [] Impeller No.

Standard Accessories

- Connection (with bolts and nuts)1 set
- Cable (8m)3 pcs.
- Weight 215kg (15, 18.5, 22, 55 or 75 kW)
- Lifting Chain (6m) 1 pc.
- 250kg (30, 37, 45 kW)
- Guide Holder (with bolts and nuts)1 set

Part Specifications

Applicable Model		Cable Specifications					Starting Method	Mechanical Seal	
		Type	Section Area (mm²)	Cores	Outer Dia. (mm)	No. of Cables		Lower	Upper
CN300-P	15kW (20HP)	2PNCT	8.0	4	ϕ 18.5	2	Star-delta	Cemented Carbide /Cemented Carbide	Carbon/ Cemented Carbide
			2.0	4	ϕ 12.5	1			Carbon/SiC
	18.5・22kW (25・30HP)	2PNCT	14.0	4	ϕ 22.0	2			
			2.0	4	ϕ 12.5	1			
	30・37kW (40・50HP)	2PNCT	22.0	4	ϕ 29.0	1			
			22.0	3	ϕ 27.0	1			
	45・55kW (60・75HP)	2PNCT	2.0	4	ϕ 12.5	1			
			14.0	4	ϕ 22.0	2			
	75kW (100HP)	2PNCT	2.0	4	ϕ 12.5	1			
			22.0	4	ϕ 29.0	1			
22.0			3	ϕ 27.0	1				
			2.0	4	ϕ 12.5	1			

CN**Non-clog Type**
(Large-sized Pump with Forced-cooling System)Bore: **350 mm (14")**Output: **18.5 - 75 kW (25 - 100 HP)****CN350-P****Standard Specifications**

Bore mm (inch)	Model	Output kW (HP)	Phase	Capacity - Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) kg
				50Hz	60Hz		
350 (14")	CN350-P	18.5 (25)	3-ph	[411Y] 16.0- 4.6	[412Y] 18.0- 3.9	8	1,090
		22 (30)		[411] 16.0- 5.7	[412] 18.0- 4.9		
		30 (40)		[351Y] 16.0- 7.5	[352Y] 18.0- 5.5		
		37 (50)		[351] 16.0- 9.0	[352] 18.0- 8.3	6	1,150
		45 (60)		[353] 16.0-11.9	[354] 18.0-10.0		1,200
		55 (75)		[405] 16.0-13.3	[406] 18.0-12.0		1,400
		75 (100)		[401] 16.0-19.0	[402] 18.0-18.2		1,930

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1. [] Impeller No.

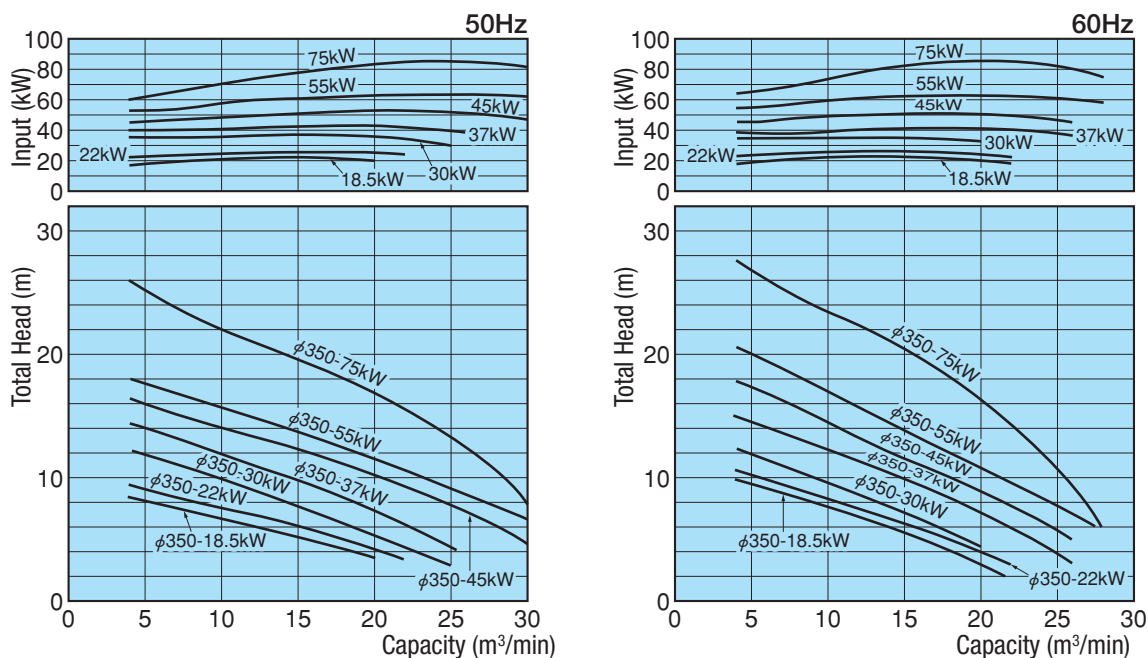
Standard Accessories

- Connection (with bolts and nuts)1 set
Weight 310kg (18.5, 22, 30, 37, 45 and 55 kW)
400kg (75 kW)
- Guide Holder (with bolts and nuts)1 set
- Cable (8m) 3 pcs.
- Lifting Chain (6m)1 pc.

Part Specifications

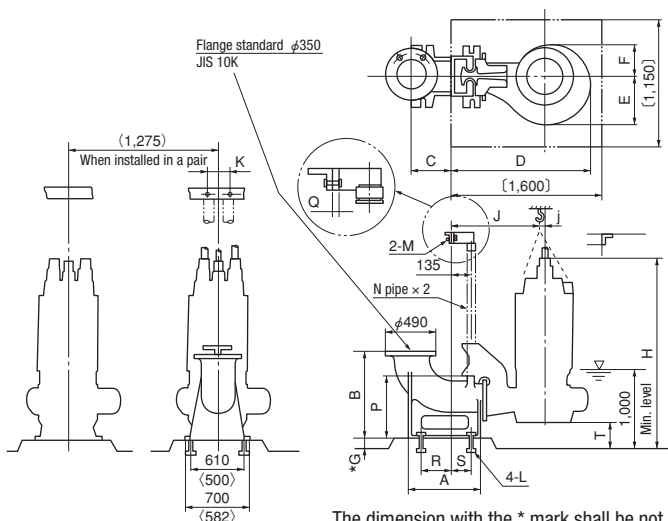
Applicable Model		Cable Specifications					Starting Method	Mechanical Seal	
		Type	Section Area (mm²)	Cores	Outer Dia. (mm)	No. of Cables		Lower	Upper
CN350-P	18.5・22kW (25・30HP)	2PNCT	14.0	4	φ 22.0	2	Star-delta	Cemented Carbide /Cemented Carbide	Carbon/SiC
			2.0	4	φ 12.5	1			
	30・37kW (40・50HP)	2PNCT	22.0	4	φ 29.0	1			
			22.0	3	φ 27.0	1			
			2.0	4	φ 12.5	1			
	45・55kW (60・75HP)	2PNCT	14.0	4	φ 22.0	2			
			2.0	4	φ 12.5	1			
	75kW (100HP)	2PNCT	22.0	4	φ 29.0	1			
22.0			3	φ 27.0	1				
2.0			4	φ 12.5	1				

Performance Curves



Dimensions

Unit: mm



Output kW (HP)	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	j
18.5-22 (25-30)								1,747											
30-37 (40-50)	640	910	383	1,219	484	335	70	1,825	777	115	M30×200	M16×40	80A	685	9	288	142	320	30
45 (60)								1,762											
55 (75)								1,851	787									298	20
75 (100)	986	870	440	1,448	496	361	270	2,165	970	500	M30×300	M24×50	100A	616	19	565	145	323	30

CN**Non-clog Type**
(Large-sized Pump with Forced-cooling System)Bore: **400 mm (16")**Output: **18.5 - 75 kW (25 - 100 HP)**

CN400-P

Standard Specifications

Bore mm (inch)	Model	Output kW (HP)	Phase	Capacity - Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) kg
				50Hz	60Hz		
400 (16")	CN400-P	18.5 (25)	3-ph	[411Y] 16.0- 4.6	[412Y] 18.0- 3.9	8	1,090
		22 (30)		[411] 16.0- 5.7	[412] 18.0- 4.9		
		30 (40)		[351Y] 16.0- 7.5	[352Y] 18.0- 5.5		
		37 (50)		[351] 16.0- 9.0	[352] 18.0- 8.3	6	1,150
		45 (60)		[353] 16.0-11.9	[354] 18.0-10.0		1,200
		55 (75)		[405] 16.0-13.3	[406] 18.0-12.0		1,400
		75 (100)		[401] 16.0-19.0	[402] 18.0-18.2		1,930

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1. [] Impeller No.

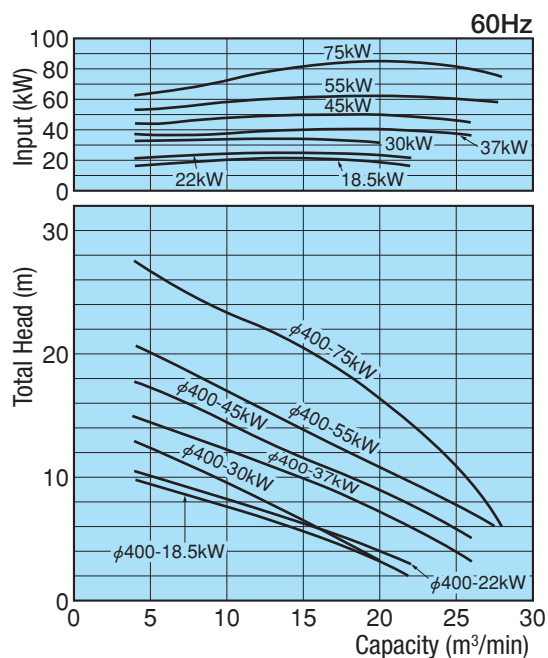
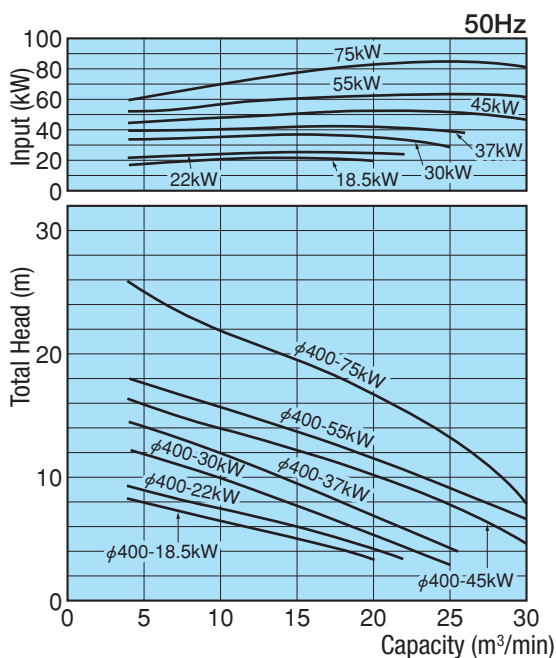
Standard Accessories

- Connection (with bolts and nuts)1 set
Weight 310kg (18.5, 22, 30, 37, 45 or 55 kW)
400kg (75 kW)
- Guide Holder (with bolts and nuts)1 set
- Cable (8m)3 pcs.
- Lifting Chain (6m)1 pc.

Part Specifications

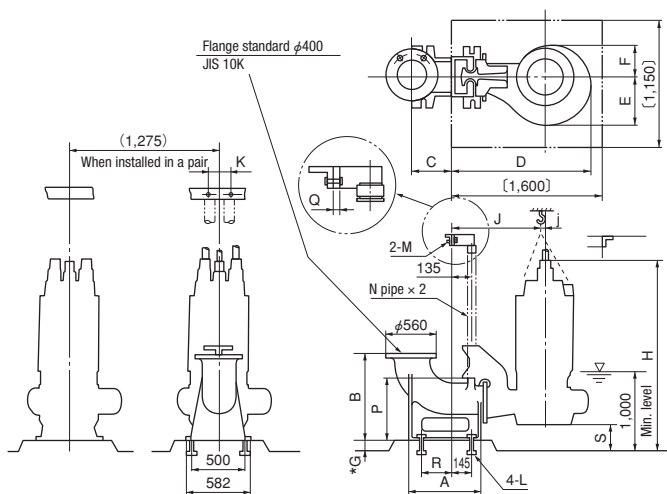
Applicable Model		Cable Specifications					Starting Method	Mechanical Seal	
		Type	Section Area (mm²)	Cores	Outer Dia. (mm)	No. of Cables		Lower	Upper
CN400-P	18.5・22kW (25・30HP)	2PNCT	14.0	4	φ 22.0	2	Star-delta	Cemented Carbide /Cemented Carbide	Carbon/SiC
			2.0	4	φ 12.5	1			
	30・37kW (40・50HP)	2PNCT	22.0	4	φ 29.0	1			
			22.0	3	φ 27.0	1			
			2.0	4	φ 12.5	1			
	45・55kW (60・75HP)	2PNCT	14.0	4	φ 22.0	2			
			2.0	4	φ 12.5	1			
	75kW (100HP)	2PNCT	22.0	4	φ 29.0	1			
			22.0	3	φ 27.0	1			
			2.0	4	φ 12.5	1			

Performance Curves



Dimensions

Unit: mm



The dimension with the * mark shall be not less than the stipulated one.

Output kW (HP)	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	j
18.5-22 (25-30)	666	750	413	1,219	484	335	245	1,747	777	115	M30×200	M16×40	80A	510	9	335	320	30
30-37 (40-50)								1,825										
45 (60)								1,762										
55 (75)								1,851										
75 (100)	986	870	440	1,448	496	361	270	2,165	970	500	M30×300	M24×50	100A	616	19	565	323	30

CN**Non-clog Type**
(Large-sized Pump with Forced-cooling System)Bore: **500 mm (20")**Output: **30 - 75 kW (40 - 100 HP)**

CN500-P

Standard Specifications

Bore mm (inch)	Model	Output kW (HP)	Phase	Capacity - Total Head m ³ /min-m		No. of poles P (50/60Hz)	Weight (Bare Pump) kg
				50Hz	60Hz		
500 (20")	CN500-P	30 (40)	3-ph	[511Y] 30.0- 4.0	[511Y] 30.0- 3.7	10/12	2,160
		37 (50)		[511] 30.0- 5.0	[511] 30.0- 5.0		
		45 (60)		[505Y] 30.0- 5.4	[506Y] 30.0- 5.4		
		55 (75)		[505] 30.0- 7.5	[506] 30.0- 7.2	8	2,000
		75 (100)		[628Y] 30.0- 9.4	[614Y] 30.0-10.0		2,400

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1. [] Impeller No.

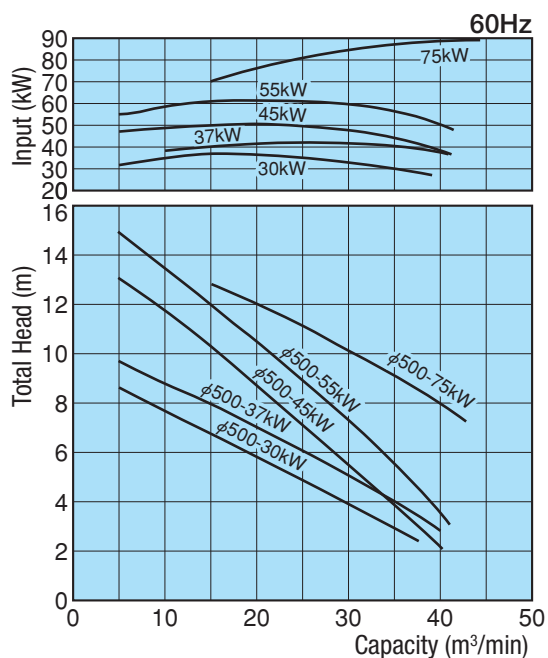
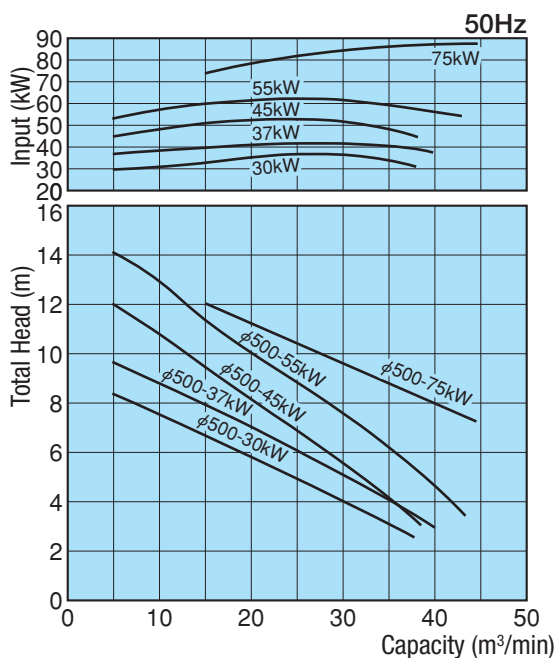
Standard Accessories

- Connection (with bolts and nuts) 830kg1 set
- Guide Holder (with bolts and nuts)1 set
- Cable (8m)3 pcs.
- Lifting Chain (6m)1 pc.

Part Specifications

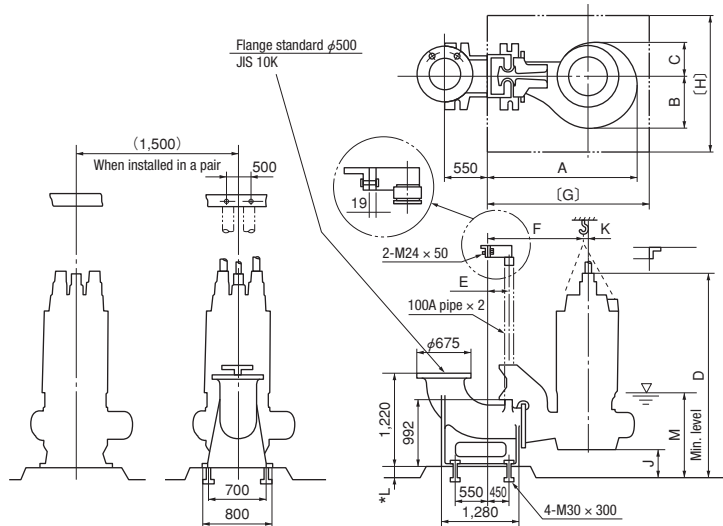
Applicable Model		Cable Specifications					Starting Method	Mechanical Seal	
		Type	Section Area (mm ²)	Cores	Outer Dia. (mm)	No. of Cables		Lower	Upper
CN500-P	30·37·75kW (40·50·100HP)	2PNCT	38.0	4	φ 35.0	1	Star-delta	Cemented Carbide /Cemented Carbide	Carbon/SiC
			38.0	3	φ 32.0	1			
			2.0	4	φ 12.5	1			
	45·55kW (60·75HP)	2PNCT	22.0	4	φ 29.0	1			
			22.0	3	φ 27.0	1			
			2.0	4	φ 12.5	1			

Performance Curves



Dimensions

Unit: mm



The dimension with the * mark shall be not less than the stipulated one.

Output kW (HP)	A	B	C	D	E	F	G	H	J	K	L	M
30 - 55 (40 - 75)	1,597	592	405	2,389	135	1,070	1,800	1,200	399	30	155	1,300
75 (100)	1,597	592	405	2,434	135	1,070	2,000	1,200	567	30	200	1,500

CN

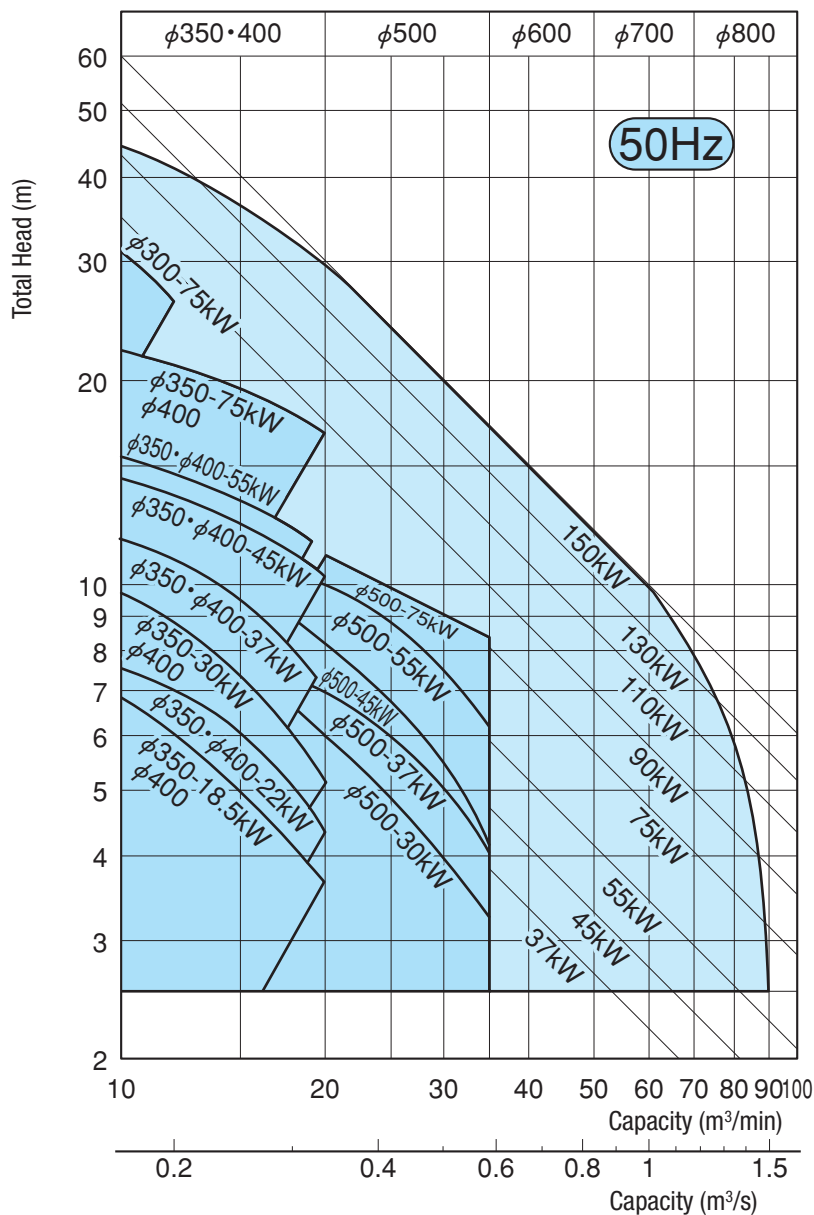
Non-clog Type
(Large-sized Pump with Forced-cooling System)

Bore: 600 - 800 mm (24" - 32")

Output: 37 - 250 kW (50 - 333 1/3 HP)

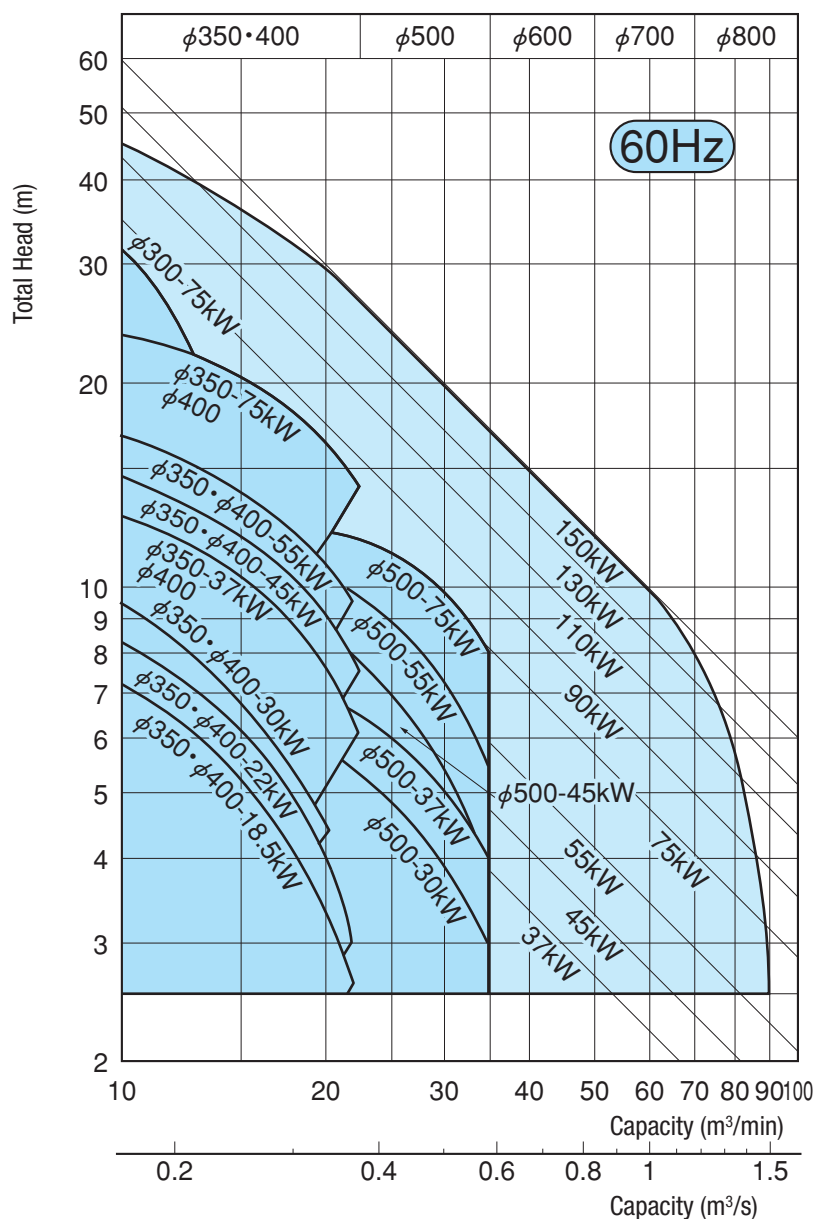
CN600-P or large size models are designed after specifications are fixed. This type of submersible pumps can be installed at medium-sized drainage or pumping stations where land type pumps are conventionally used, allowing to fully utilize the advantages of submersible pumps, such as "no need for a pump building", "easy maintenance", and "less noise and vibration".

Performance Curves



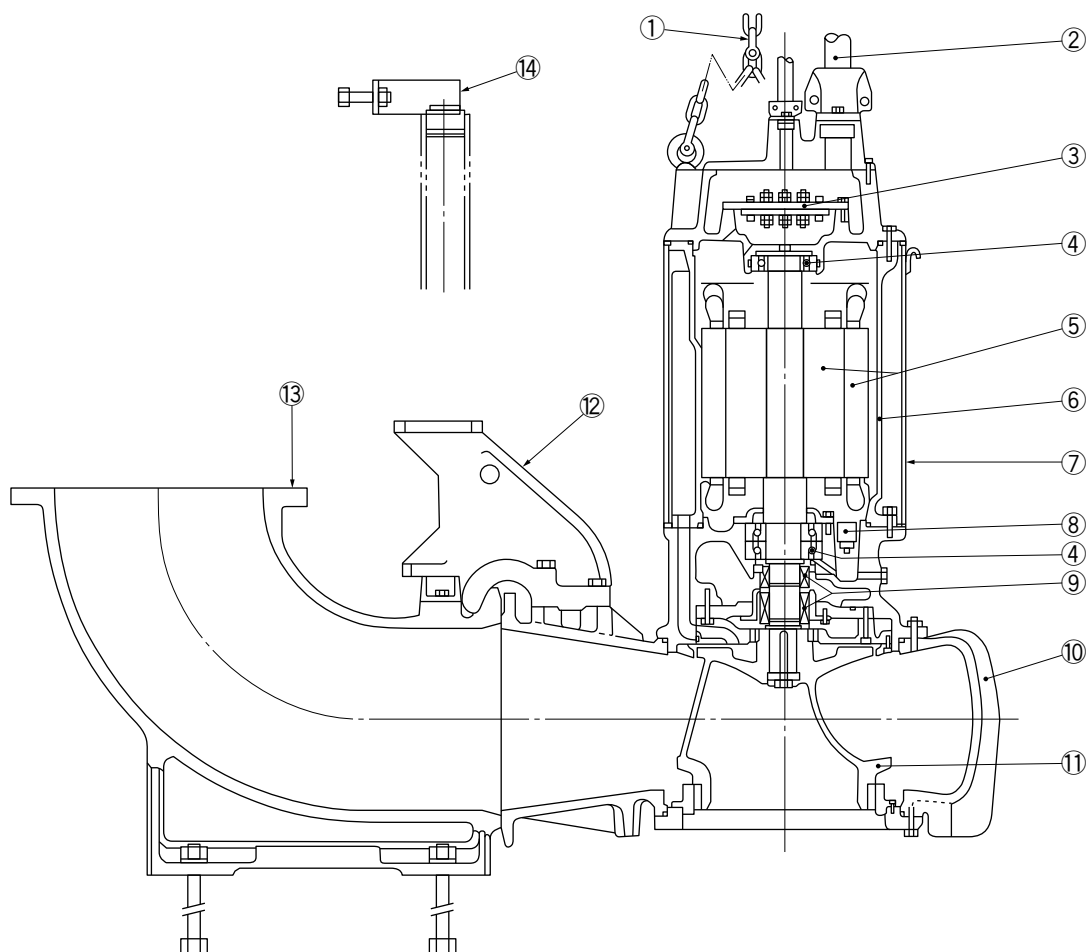
The pump performance in this color indicates that of CN300-P - CN500-P in accordance with the standard specifications. We can design and manufacture pumps in accordance with non-standard specifications, if requested.

The pump performance in this color is designed so as to meet specified point requirements.



Sectional View

CN400-P



Number	Name	Material	Number	Name	Material
1	Chain	SS400	8	Moisure Detector	-
2	Cable	2PNCT	9	Mechanical Seal	-
3	Terminal Block	-	10	Pump Casing	FC200
4	Ball Bearing	-	11	Impeller	FC200
5	Motor	Shaft: SUS420J2	12	Sliding Bracket	FC200
6	Stator Casing	FC200	13	Connection	FC200
7	Outer Casing	FCD or SS	14	Guide Holder	SS400

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitryl rubber

Non-clog Type (Large-sized Pump with Natural-cooling System)

Bore: 200 - 400 mm (8" - 16")

Output: 7.5 - 45 kW (10 - 60 HP)

CN Large-sized Natural-cooling

Employing a time proven simple structured natural cooling type motor.
Both free standing type and auto-connection type are available.

Bore mm (inch)	Output kW (HP)	Model	Page
200 (8")	7.5 - 45 (10 - 60)	CN2001-P CN2001-F	98
250 (10")	11 - 45 (15 - 60)	CN2501-P CN2501-F	100
300 (12")	11 - 37 (15 - 50)	CN3001-P CN3001-F	102
400 (16")	18.5 - 37 (25 - 50)	CN4001-P CN4001-F	104

Structure and Features

● Micro Thermal Protector

The Micro Thermal Protector (a built-in auto-reset type motor protector) prevents motor burnout due to overload, impeller locking and open phase.

● Cable Entry

The self-contained core sealer of the cable outlet shuts the water out from penetrating into the motor chamber through the core wires even if the cable tip is immersed in water or the sheath is damaged.

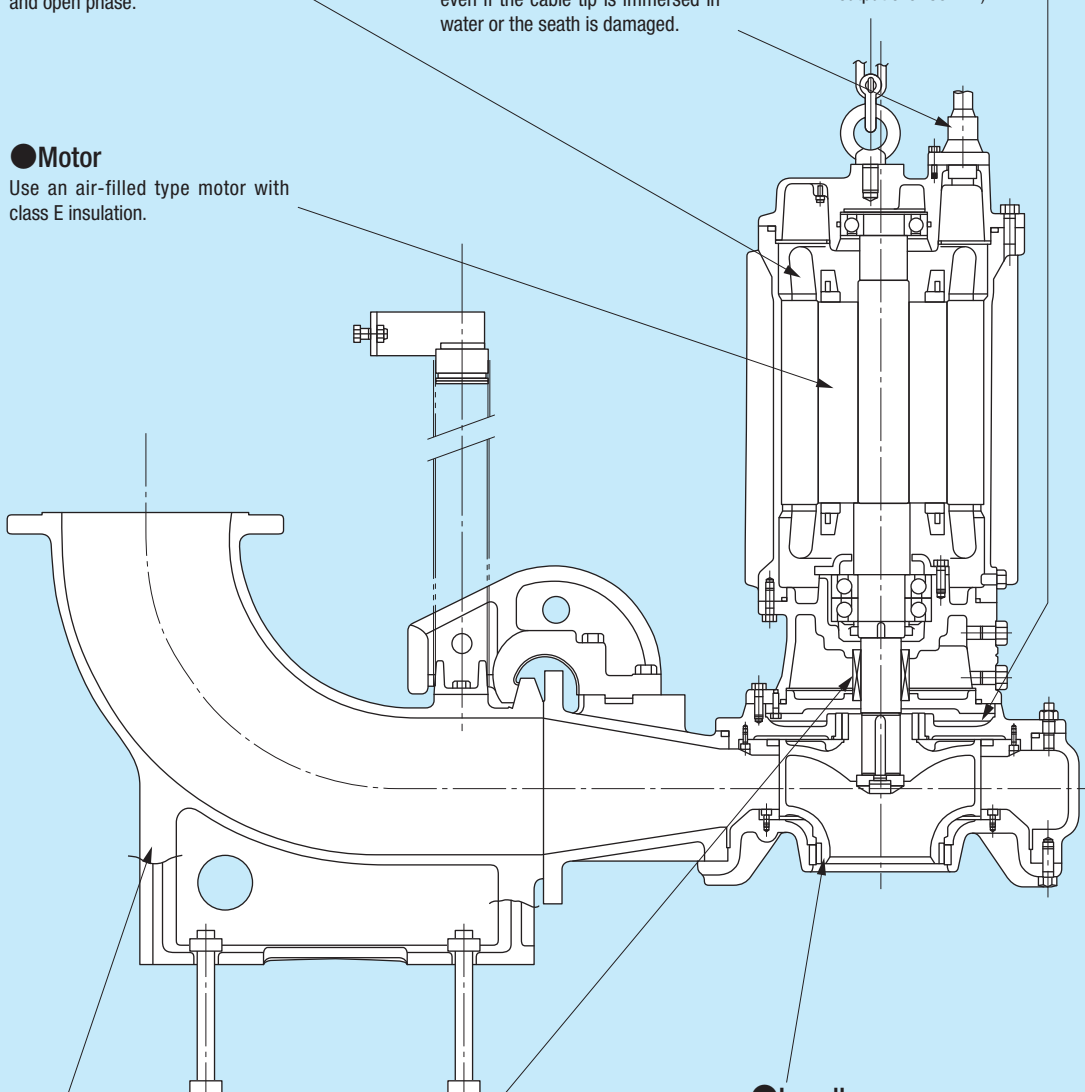
● Depressurizing Structure

The Depressurizing Structure eliminates a high-pressure pulsating flow generated at the impeller so that the service life of the mechanical seal is extended.

(Applicable some types of output of 18.5 or 22 kW and all the types with output over 30 kW.)

● Motor

Use an air-filled type motor with class E insulation.



● Connection

Connect the submersible pump and the discharge pipe by pump weight (without bolts and nuts).

● Shaft Seal

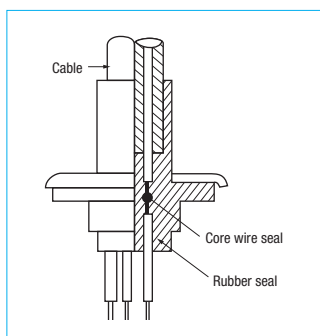
A highly wear resistant Double Mechanical Seal positively prevent the water from penetrating into the Motor Chamber.

● Impeller

Equipped with a volute or a mixed flow volute impeller of non-clog type and it prevents overload at any flow rate in the operation range.

Motor Protector

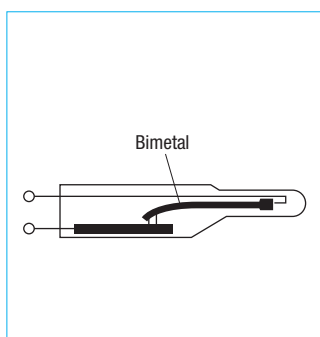
Core Wire Seal



A core wire is processed by twisting together thin wires. If the cable sheath is broken or the tip of a cable is immersed in water, water may enter into the motor chamber through a small gap in the core wire.

To prevent water immersion, part of the core wire is peeled off, as shown in the left diagram, to seal the gap and a rubber seal is also put on it to prevent water immersion into the motor chamber

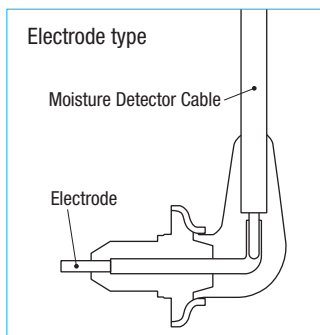
Micro Thermal Protector (N.C. contact, Auto-reset type)



The Micro Thermal Protector is embedded in the motor winding. If the winding temperature rises abnormally, the bimetal deflects to cut the circuit. The Micro Thermal Protector works in conjunction with a magnet switch in the control box to shut down the power circuit. Overcurrent should be detected using a thermal relay or a 3E or 2E relay in the control box.

- (1) Max. Voltage: AC250V
- (2) Max. Current: AC3A
- (3) Contact Capacity: AC60VA
- (4) Contact: N.C. contact (spontaneous restoration type)

Leakage Detector (electrode type) * Optional accessory



Installed in the lower-structure of the motor chamber. When oil containing water immerses in the motor chamber, the relay set of the moisture detector detects electrification between the electrode and the pump body, and then the relay switch activates to alert water moisture.

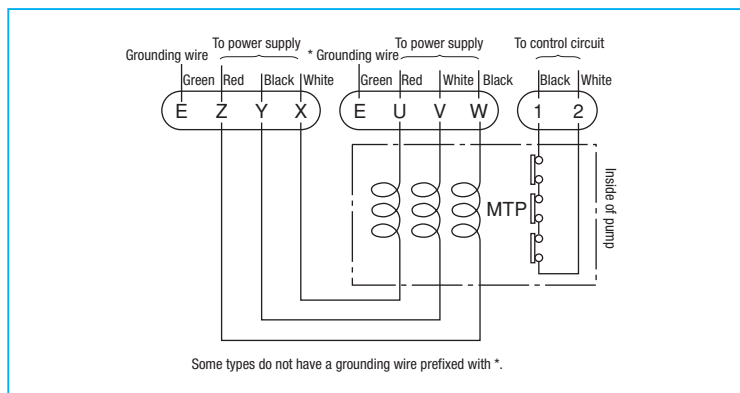
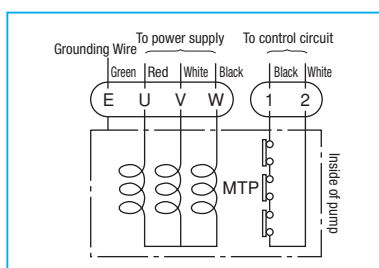
- (1) Rated Voltage: AC 100 or 200 V
- (2) Contact Capacity: AC250V, 8A (Resistance load)
- (3) Contact: Change-over contact

* For availability of motor protector, refer to the specifications in the color pages before placing a special order.

- 11 kW or higher -

Electric Connection Wiring Diagram

- 7.5 kW -



CN**Non-clog Type**
(Large-sized Pump with Natural-cooling System)

Bore : 200 - 400 mm (8" - 16")

Output: 7.5 - 45 kW (10 - 60 HP)

■ Features

● Auto-connection and free standing type

There are two types: Automatic connection that allows the pump to be taken out to the ground for maintenance and inspection. Free standing type which is easy to install.

● Reducing the total cost

The pump is installed in the tank and operates in the water, so that minimum space for constructing a pump facility, is required without constructing large facility.

● Characteristics that prevent overload

Current overload does not occur at any flow rate within the operation range.

● Preventing motor burnout

A built-in Micro Thermal Protector prevents motor burnout. A Core Wire Seal applied to a cable prevents water ingress into the motor chamber.

■ Standard Specifications

Handling Liquid	Kind of Liquid	Wastewater and sewage
	Temperature	0 - 32°C
Materials	Cable	2PNCT
	Motor Shaft	Stainless steel (SUS420J2)
	Pump Casing	Gray steel casting (FC200)
	Impeller	Gray steel casting (FC200 or FCD500)
Electric Motor	Name	Air-filled type Submersible Induction Motor
	Insulation Class	Class E
	Enclosure	IP68
	Phase	3-ph
	Voltage	200 - 480V (37 kW or lower) 400 - 480V (45 kW or higher)

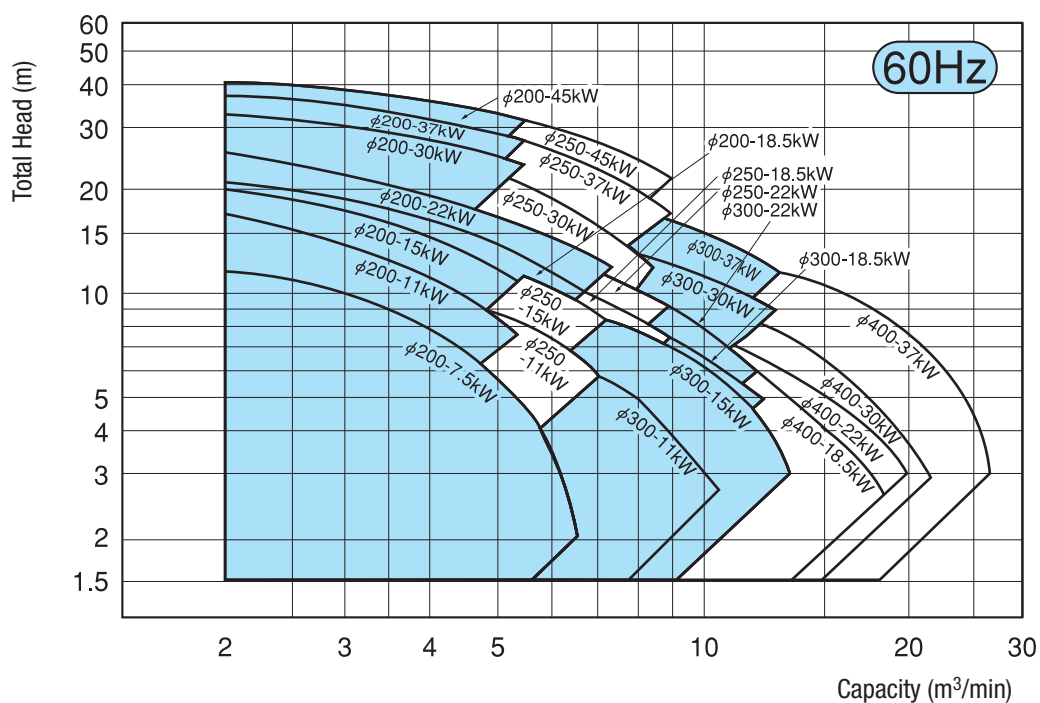
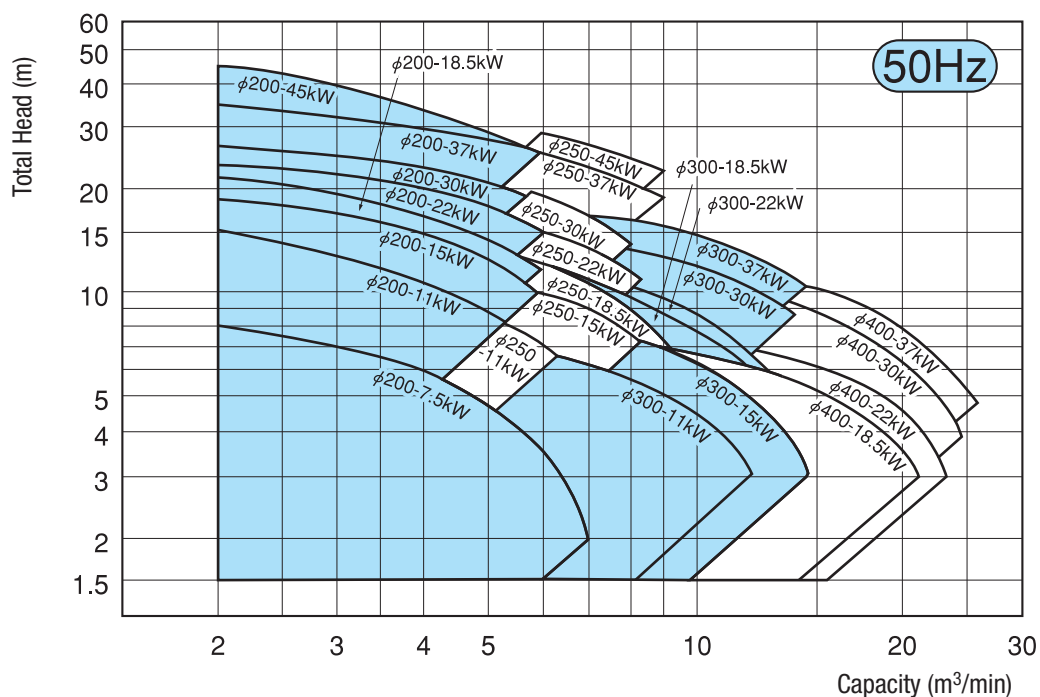
■ Applications

- ☐ Sewage system
Relaying of sewage and rainwater
- ☐ Sewage treatment plant
Raw water and other treatment process
- ☐ Storm water
Flood control
- ☐ Agriculture
Irrigation
- ☐ Factory
Intake/Effluent control
- ☐ Others
Aquaculture, etc.

■ Special Specifications

- ☐ Cable Extension
A cable can be extended as requested. For the allowable lengths, refer to the specifications (detail data) - App.1.
- ☐ If you want to change each material to Stainless steel, please contact us.

Performance Curves



CN

Non-clog Type (Large-sized Pump with Natural-cooling System)

Bore : **200 mm (8")**

Output: **7.5 - 45 kW (10 - 60 HP)**

Standard Specifications

Bore mm (inch)	Pump Model		Output kW (HP)	Phase	Capacity – Total Head m³/min		No. of poles P	Pump Weight kg	
	Auto-Connection	Free standing			50Hz	60Hz		Automatic Connection	Flange Connection
200 (8")	CN2001-P	CN2001-F	7.5 (10)	3-ph	[263DY] 4.5– 5.3	[A215Y] 3.7– 8.0	6	270	315
			11 (15)		[A211A] 4.0–11.0	[A212] 4.5– 9.9	4		
			15 (20)		[A215] 4.0–14.6	[A216] 4.5–13.5			
			18.5 (25)		[221DY] 4.0–16.6	[222DY] 4.5–15.1			
			22 (30)		[221D] 4.0–20.0	[222D] 4.5–18.0		340	385
			30 (40)		[251AY] 4.0–22.5	[252AY] 4.5–26.1	650	730	
			37 (50)		[251A] 4.0–29.2	[252A] 4.5–30.1			
			45 (60)		[205AY] 4.5–32.1	[206AY] 5.0–32.9	700	780	

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1. [] Impeller No.

Standard Accessories

Auto-connection type

- Connection (with bolts and nuts) 120kg1 set
- Guide Holder (with bolts and nuts)1 set
- Cable (8m) 7.5 kW2 pcs.
- 11 kW or more3 pcs.
- Lifting Chain (6m).....1 pc.

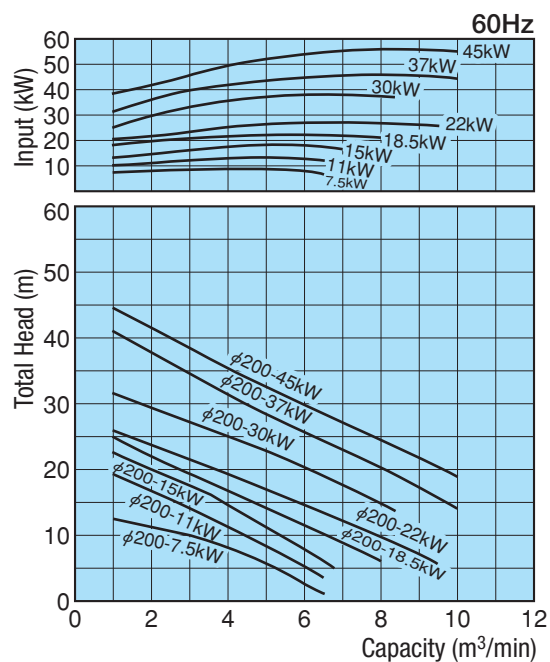
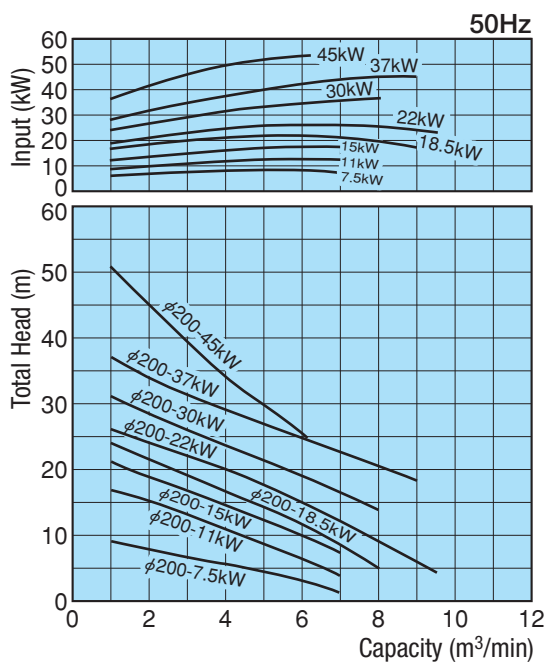
Free standing type

- Cable (8m).....3 pcs.

Part Specifications

Applicable Model	Output kW (HP)	Cable Specifications					Starting Method	Mechanical Seal	
		Type	Section Area (mm²)	Cores	Outer Dia. (mm)	No. of Cables		Lower	Upper
CN2001-P CN2001-F	7.5kW (10HP)	2PNCT	5.5	4	φ 17	1	Direct	SiC/SiC	SiC/SiC
			1.25	2	φ 9.8	1			
	11kW (15HP)	2PNCT	5.5	4	φ 17	1	Star-delta		
			5.5	3	φ 15.5	1			
			1.25	2	φ 9.8	1			
	15kW (20HP)	2PNCT	8.0	4	φ 18.5	1			
			8.0	3	φ 17	1			
			1.25	2	φ 9.8	1			
	18.5・22kW (25・30HP)	2PNCT	14	4	φ 22	1			
			14	3	φ 20	1			
			1.25	2	φ 9.8	1			
	30・37kW (40・50HP)	2PNCT	22	4	φ 29	1			
22			3	φ 27	1				
1.25			2	φ 9.8	1				
45kW (60HP)	2PNCT	14	4	φ 22	2				
		1.25	2	φ 9.8	1				

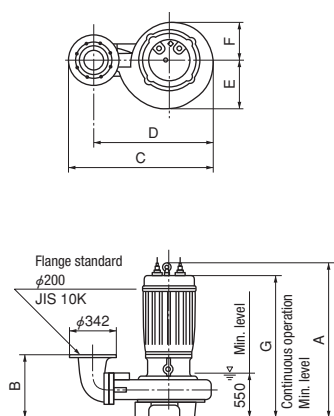
Performance Curves



Dimensions

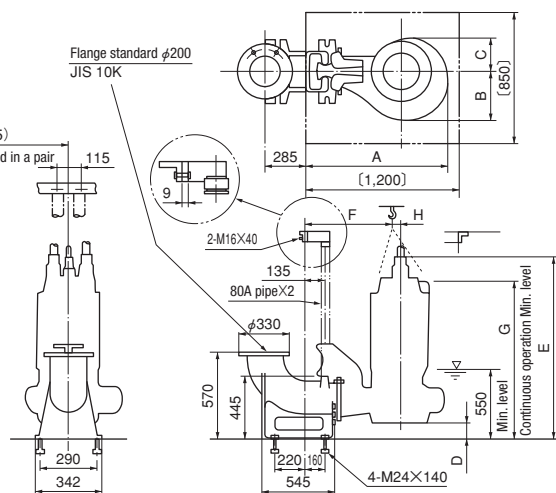
Unit: mm

Free standing type



Output kW (HP)	A	B	C	D	E	F	G
7.5 (50Hz) (10)	1,008	645	1,021	850	278	250	915
7.5(60Hz)·11·15 (10·15·20)	999						905
18.5·22 (25·30)	1,093	645	1,021	850	258	250	1,000
30·37 (40·50)	1,258						1,245
45 (60)	1,334	625	1,201	1,030	350	350	1,320

Auto-connection type

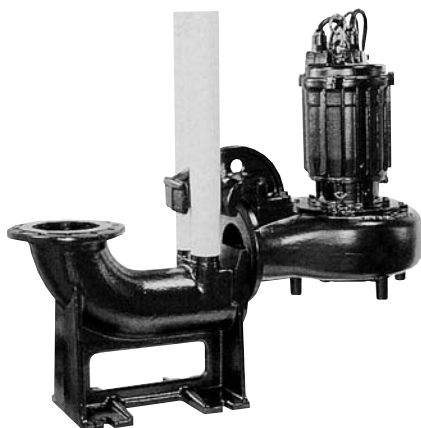


Output kW (HP)	A	B	C	D	E	F	G	H
7.5 (50Hz) (10)	911	277	220	149	982	607	880	70
7.5(60Hz)·11·15 (10·15·20)					974		880	
18.5·22 (25·30)	914	258	220	149	1,068	607	975	70
30·37 (40·50)		343	260	177	1,253	737	1,240	
45 (60)	1,069	342	267	147	1,344		1,330	20

CN**Non-clog Type**
(Large-sized Pump with Natural-cooling System)

Bore : 250 mm (10")

Output: 11 - 45 kW (15 - 60 HP)



CN2501-P

Standard Specifications

Bore mm (inch)	Model		Output kW (HP)	Phase	Capacity – Total Head m ³ /min		No. of poles p	Pump Weight kg	
	Auto-Connection	Free standing			50Hz	60Hz		Automatic Connection	Flange Connection
250 (10")	CN2501-P	CN2501-F	11(15)	3-ph	[A211A] 4.0–11.0	[A250Y] 5.0– 9.0	4	270	315
			15 (20)		[A259] 6.3– 9.3	[A250] 7.1– 8.7		275	325
			18.5 (25)		[263DY] 6.3–12.0	[264DY] 7.1–10.5		345	395
			22 (30)		[263D] 6.3–14.0	[264D] 7.1–12.0		650	735
			30 (40)		[251AY] 6.3–18.0	[252AY] 7.1–15.5			
			37 (50)		[251A] 6.3–24.0	[252A] 7.1–22.5			
			45 (60)		[255Y] 6.3–27.8	[256Y] 7.1–26.9		700	785

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1. [] Impeller No.

Standard Accessories

Auto-connection type

- Connection (with bolts and nuts) 195kg1 set
- Guide Holder (with bolts and nuts).....1 set
- Cable (8m)3 pcs.
- Lifting Chain (6m).....1 pc.

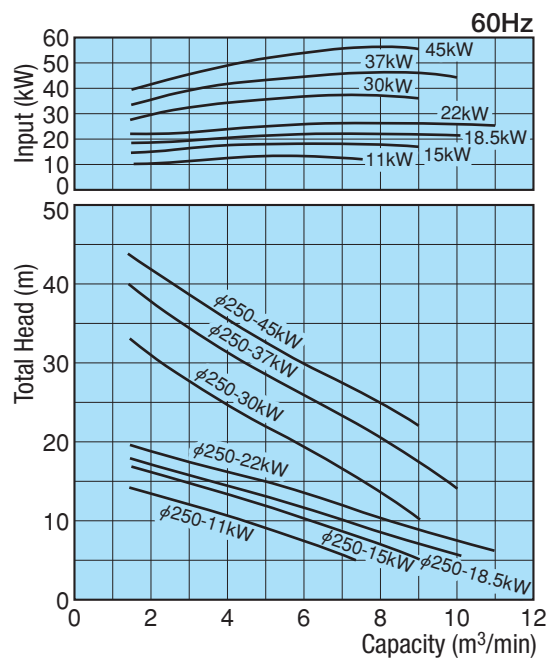
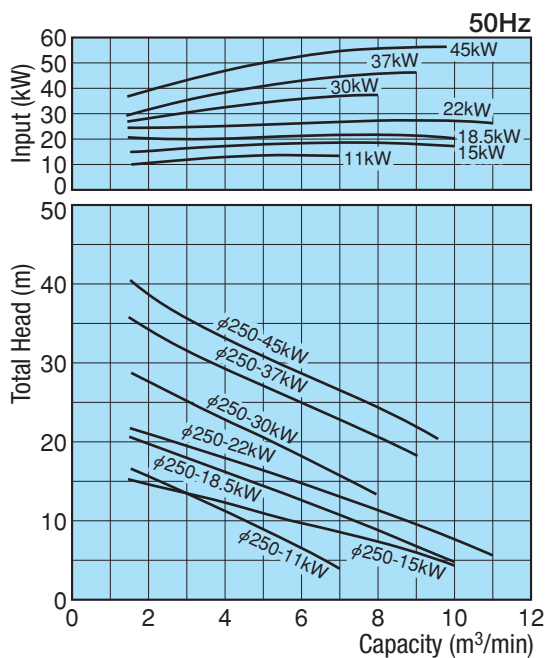
Free standing type

- Cable (8m).....3 pcs.

Part Specifications

Applicable Model	Output kW (HP)	Cable Specifications					Starting Method	Mechanical Seal	
		Type	Section Area (mm ²)	Cores	Outer Dia. (mm)	No. of Cables		Lower	Upper
CN2501-P CN2501-F	11kW (15HP)	2PNCT	5.5	4	φ 17	1	Star-delta	SiC/SiC	SiC/SiC
			5.5	3	φ 15.5	1			
			1.25	2	φ 9.8	1			
	15kW (20HP)	2PNCT	8	4	φ 18.5	1			
			8	3	φ 17	1			
			1.25	2	φ 9.8	1			
	18.5·22kW (25·30HP)	2PNCT	14	4	φ 22	1			
			14	3	φ 20	1			
			1.25	2	φ 9.8	1			
	30·37kW (40·50HP)	2PNCT	22	4	φ 29	1			
			22	3	φ 27	1			
			1.25	2	φ 9.8	1			
	45kW (60HP)	2PNCT	14	4	φ 22	2			
			1.25	2	φ 9.8	1			

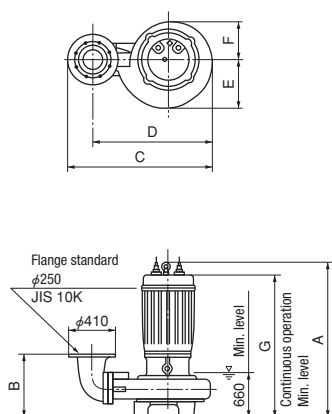
Performance Curves



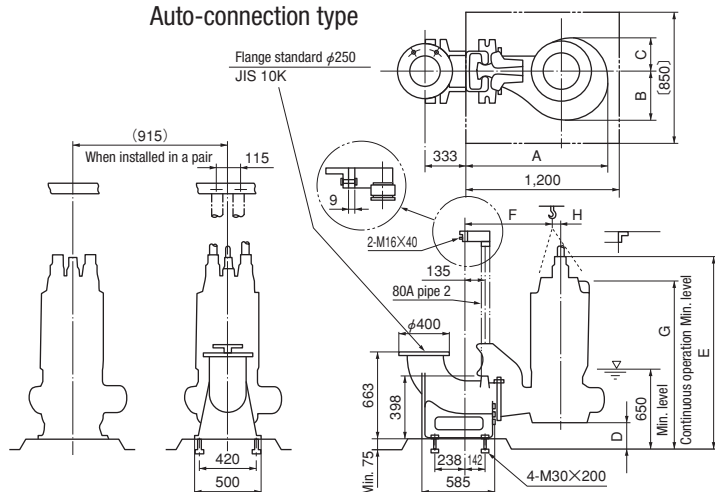
Dimensions

Unit: mm

Free standing type



Auto-connection type



Output kW (HP)	A	B	C	D	E	F	G
11·15 (15·20)	1,008	645	1,095	890	277	250	915
18.5·22 (25·30)	1,101						1,005
30·37 (40·50)	1,258	625	1,275	1,070	350	350	1,245
45 (60)	1,334						1,320

Output kW (HP)	A	B	C	D	E	F	G	H
11·15 (15·20)	911	277	220	167	1,000	607	900	70
18.5·22 (25·30)					1,094		1,000	
30·37 (40·50)	1,069	343	260	195	1,271	737	1,255	20
45 (60)					1,347		1,335	

CN

Non-clog Type (Large-sized Pump with Natural-cooling System)

Bore : 300 mm (12")

Output: 11 - 37 kW (15 - 50 HP)

Standard Specifications

Bore mm (inch)	Model		Output kW (HP)	Phase	Capacity – Total Head m ³ /min		No. of poles P	Pump Weight kg	
	Auto-Connection	Free standing			50Hz	60Hz		Automatic Connection	Flange Connection
300 (12")	CN3001-P	CN3001-F	11 (15)	3-ph	[A315DY] 10.0– 4.3	[A316DY] 11.2– 2.3	6	385	450
			15 (20)		[A315D] 10.0– 6.0	[A316D] 11.2– 4.9			
			18.5 (25)		[321AY] 10.0– 7.7	[322AY] 11.2– 5.6			
			22 (30)		[321A] 10.0– 9.2	[322A] 11.2– 6.4	4	790	895
			30 (40)		[331D] 10.0– 8.3	[332D] 11.2– 6.5			
			37 (50)		[301Y] 10.0–12.1	[302AY] 11.2–10.5	6	420	475
					[301] 10.0–14.5	[302A] 11.2–13.5			

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1. [] Impeller No.

Standard Accessories

Auto-connection type

- Connection (with bolts and nuts) 215kg.....1 set
- Guide Holder (with bolts and nuts)1 set
- Cable (8m)3 pcs.
- Lifting Chain (6m).....1 pc.

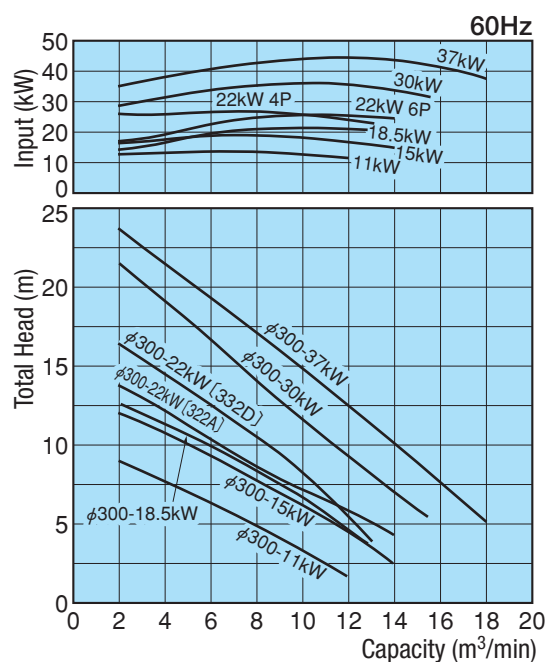
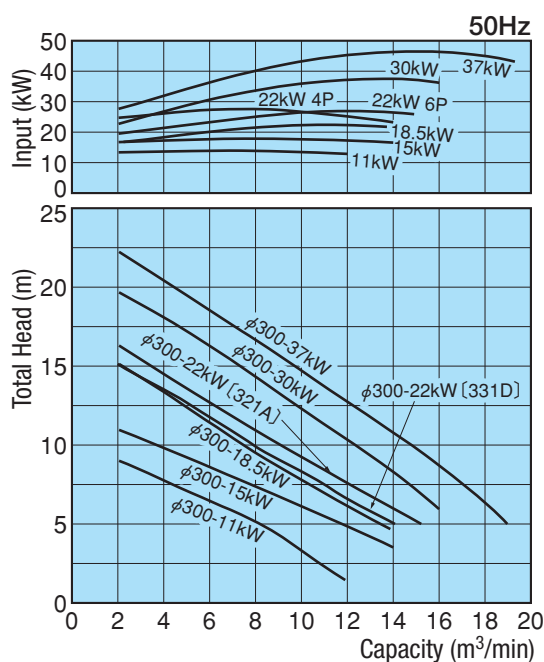
Free standing type

- Cable (8m).....3 pcs.

Part Specifications

Applicable Model	Output kW (HP)	Cable Specifications					Starting Method	Mechanical Seal	
		Type	Section Area (mm ²)	Cores	Outer Dia. (mm)	No. of Cables		Lower	Upper
CN3001-P CN3001-F	11 · 15kW (15 · 20HP)	2PNCT	8	4	φ 18.5	1	Star-delta	SiC/SiC	SiC/SiC
			8	3	φ 17	1			
			1.25	2	φ 9.8	1			
	18.5 · 22kW (25 · 30HP)	2PNCT	14	4	φ 22	1			
			14	3	φ 20	1			
			1.25	2	φ 9.8	1			
	22kW (30HP)	2PNCT	14	4	φ 22	1			
			14	3	φ 20	1			
	30 · 37kW (40 · 50HP)	2PNCT	1.25	2	φ 9.8	1			
			22	4	φ 29	1			
			22	3	φ 27	1			
			1.25	2	φ 9.8	1			

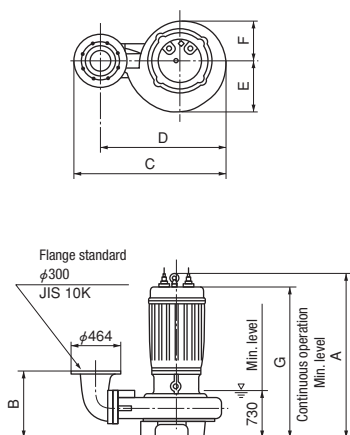
Performance Curves



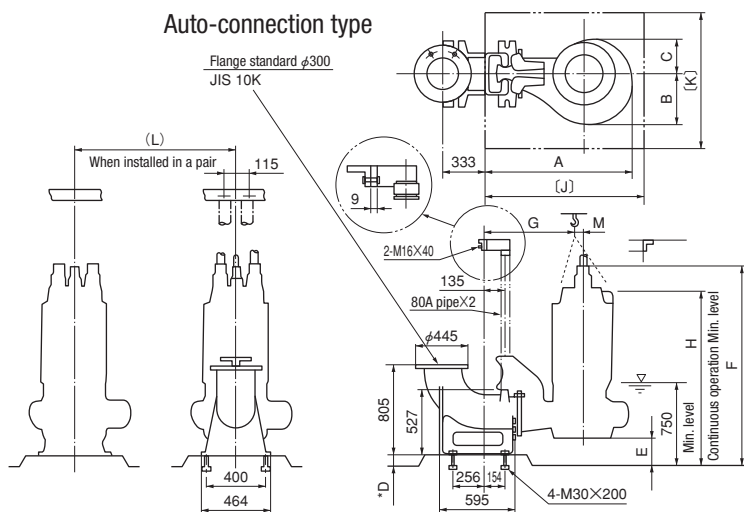
Dimensions

Unit: mm

Free standing type



Auto-connection type



The dimension with the * mark shall be not less than the stipulated one.

Output kW (HP)	A	B	C	D	E	F	G	Output kW (HP)	A	B	C	D	E	F	G	H	J	K	L	M
11-15 (15-20)	1,159	703	1,227	995	351	250	1,070	11-15 (15-20)	972	351	250	45	200	1,181	607	1,090	1,200	850	915	70
22 (30) (4P)								22 (30) (4P)	1,119	353					747					75
18.5-22 (25-30) (6P)	1,368						1,355	18.5-22 (25-30) (6P)												
30-37 (40-50)	1,444	723	1,381	1,149	410	345	1,430	30-37 (40-50)	1,126	410	345	80	235	1,482	737	1,470	1,300	1,000	1,125	20

CN	Non-clog Type (Large-sized Pump with Natural-cooling System)	Bore : 400 mm (16")
		Output: 18.5 - 37 kW (25 - 50 HP)

Standard Specifications

Bore mm (inch)	Model		Output kW (HP)	Phase	Capacity – Total Head m ³ /min		No. of poles P	Pump Weight kg	
	Auto-Connection	Free standing			50Hz	60Hz		Automatic Connection	Flange Connection
400 (16")	CN4001-P	CN4001-F	18.5 (25)	3-ph	[411Y] 16.0– 4.6	[412Y] 18.0–3.9	8	830	1,030
			22 (30)		[411] 16.0– 5.7	[412] 18.0–4.9			
			30 (40)		[351Y] 16.0– 7.5	[352Y] 18.0–5.5	6	850	1,090
			37 (50)		[351] 16.0– 9.0	[352] 18.0–8.3			

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1. [] Impeller No.

Standard Accessories

Auto-connection type

- Connection (with bolts and nuts) 310 kg1 set
- Guide Holder (with bolts and nuts)1 set
- Cable (8m)3 pcs.
- Lifting Chain (6m)1 pc.

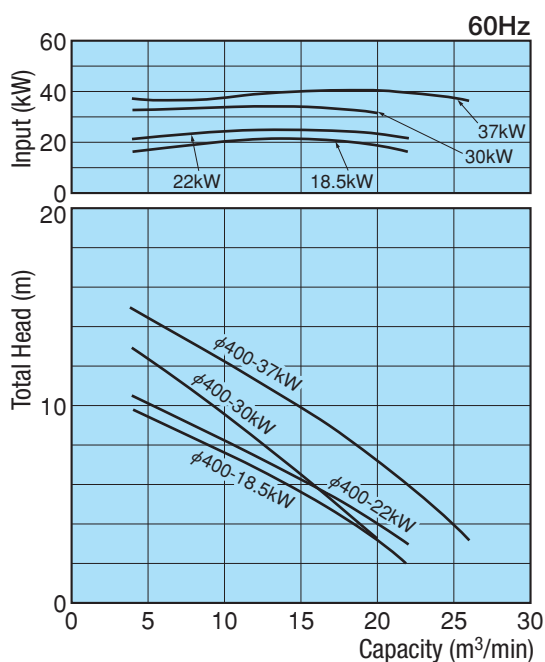
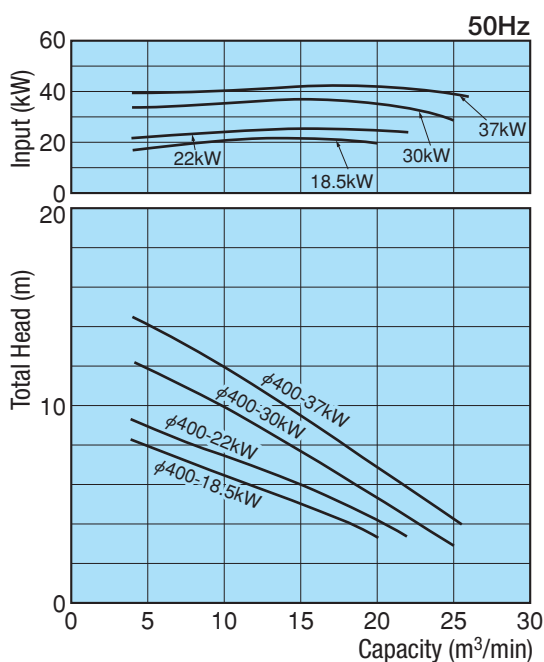
Free standing type

- Cable (8m)3 pcs.

Part Specifications

Applicable Model	Output kW (HP)	Cable Specifications					Starting Method	Mechanical Seal	
		Type	Section Area (mm ²)	Cores	Outer Dia. (mm)	No. of Cables		Lower	Upper
CN4001-P CN4001-F	18.5·22kW (25·30HP)	2PNCT	14	4	φ 22	2	Star-delta	SiC/SiC	SiC/SiC
			1.25	2	φ 9.8	1			
	30·37kW (40·50HP)	2PNCT	22	4	φ 29	1			
			22	3	φ 27	1			
			1.25	2	φ 9.8	1			

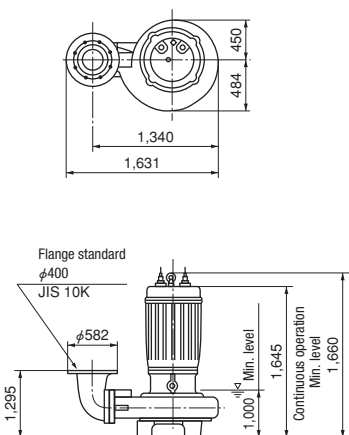
Performance Curves



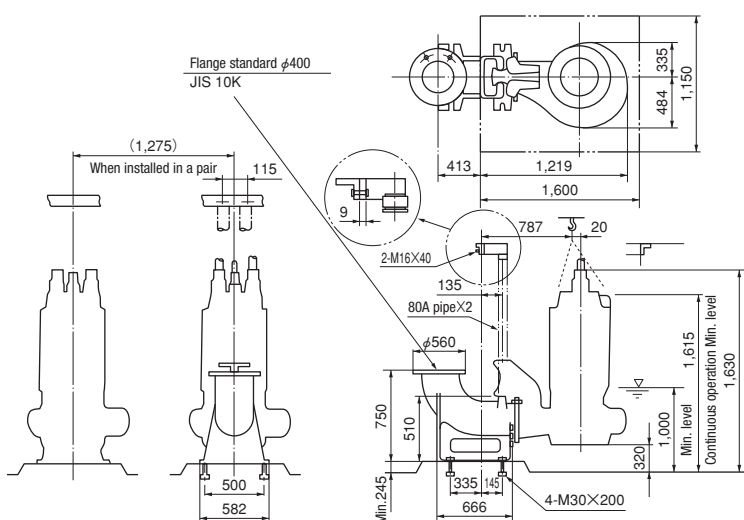
Dimensions

Unit: mm

Free standing type

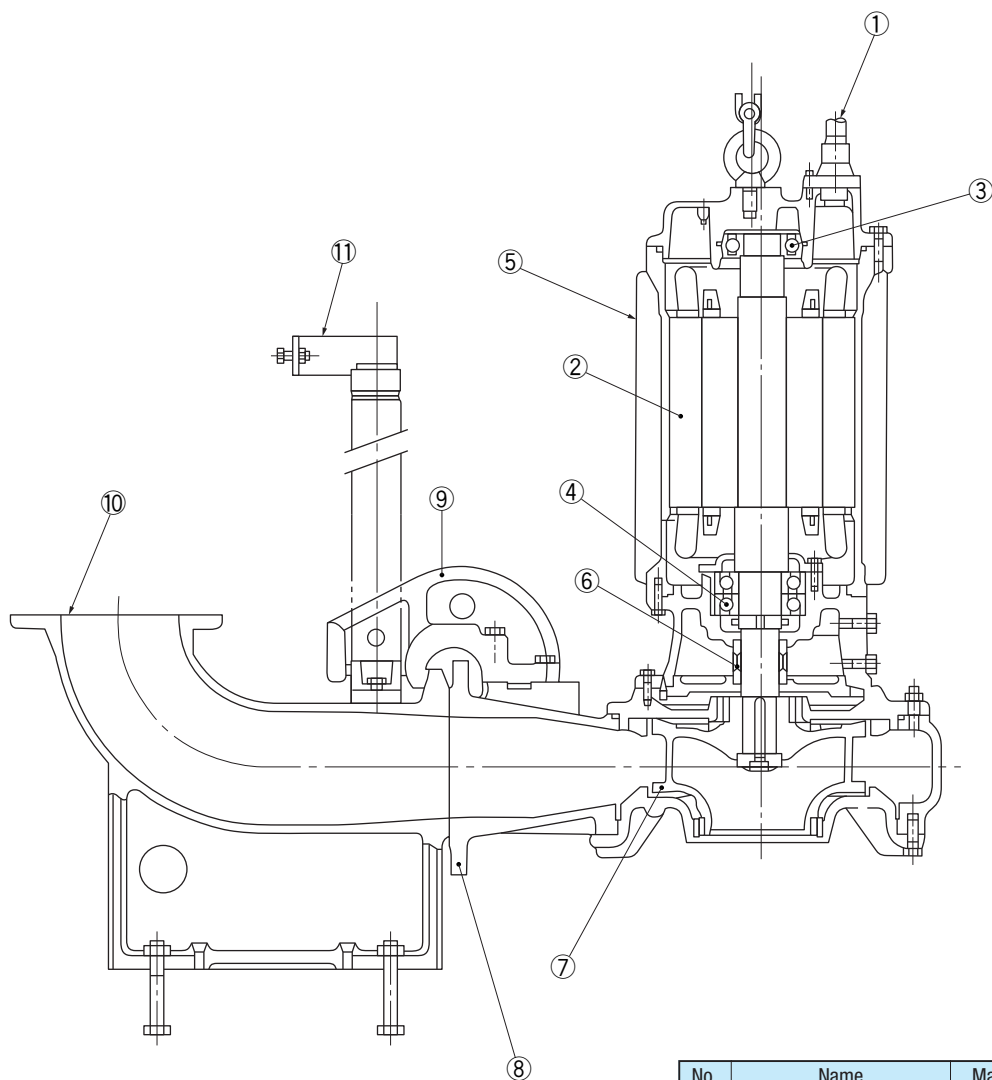


Auto-connection type



Sectional View

CN2501-P



No.	Name	Material
1	Cable	2PNCT
2	Motor	SUS420J2
3	Ball Bearing (Upper)	—
4	Ball Bearing (Lower)	—
5	Stator Casing	FC200
6	Mechanical Seal	—
7	Impeller	FC200 or FCD500
8	Pump Casing	FC200
9	Sliding Bracket	FC200
10	Connection	FC200
11	Guide Holder	SS400

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel

SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

Non-clog type (Closed loop cooling)**Bore: 150 - 300 mm (6" - 12")****Output: 11 - 37 kW (15 - 50 HP)**

CNX

**Closed
loop
cooling**

For the CNX series, three types of impellers for high, mid and low-discharge head are respectively developed by motor output. The enlarged high-efficiency operation area enable selections covering various applications and wide-range of duty points. Every model secures 3 inches of solid-passage and high solidpassage capability.

The CNX-series has closed loop cooling system. This allows stable continuous dry operation. Therefore, CNX-series can be installed in flow control tank or sewage holding tank where the water level changes frequently.

Bore mm (inch)	Output kW (HP)	Model	Page
150 (6")	11 - 37 (15 - 50)	CNX150-P	110
200 (8")	11 - 37 (15 - 50)	CNX200-P	112
250 (10")	11 - 37 (15 - 50)	CNX250-P	114
300 (12")	11 - 37 (15 - 50)	CNX300-P	116

■ Features

● High-efficiency pump for wide range

To provide high pump efficiency over a wide range, three types of impeller are developed respectively by output. Selecting the right impeller helps ensure it operates at near-optimal efficiency.

● 3 inches of solid-passage size and high solid-passage capability is secured

Every model secures 3 inches (76.2mm) or more for solid-passage size, which enables the transfer of foreign objects larger than those for conventional models with an equivalent number of poles.

● Closed loop cooling system enables stable and continuous dry operation

The CNX series cools the motor by circulating coolant that is enclosed in the duplex motor casing by the dedicated impeller and exhausting heat to pumped wastewater through the heat exchanger installed at the bottom of the motor.

This avoids the danger of the clogging of the cooling system with sewage particle and allows stable continuous dry operation.

● Space-saving design thanks to adopting a 4-poles motor

Adopting a 4-poles motor for every model enables a compact and lightweight pump. We can also offer an optional 6-poles motor.

● High reliability secured

High reliability is secured by maintaining the features of conventional models: "No overload at all flow-rate areas," "Motor burnout prevented by a built-in micro-thermal protector," and "Adoption of a bearing lubricated with long-life grease" and others.

■ Applications

- ☐ Sewage system
Relaying of sewage and rainwater
- ☐ Sewage treatment plant
Raw water and other treatment process
- ☐ Storm water
Flood control
- ☐ Agriculture
Irrigation
- ☐ Factory
Intake/Effluent control
- ☐ Others
Aquaculture, etc.

■ Standard Specifications

Handling Liquid	Kind of liquid	Wastewater and sewage
	Temperature	0 - 40 °C
Material	Cable	2PNCT
	Motor shaft	SUS420J2
	Pump casing	FC200
	Impeller	FC200 or FCD500
Electric Motor	Name	Air-filled type Submersible Induction Motor
	Insulation class	Class E
	Enclosure	IP68
	Phase	3-ph
	Voltage	200 - 480V

■ Special Specifications

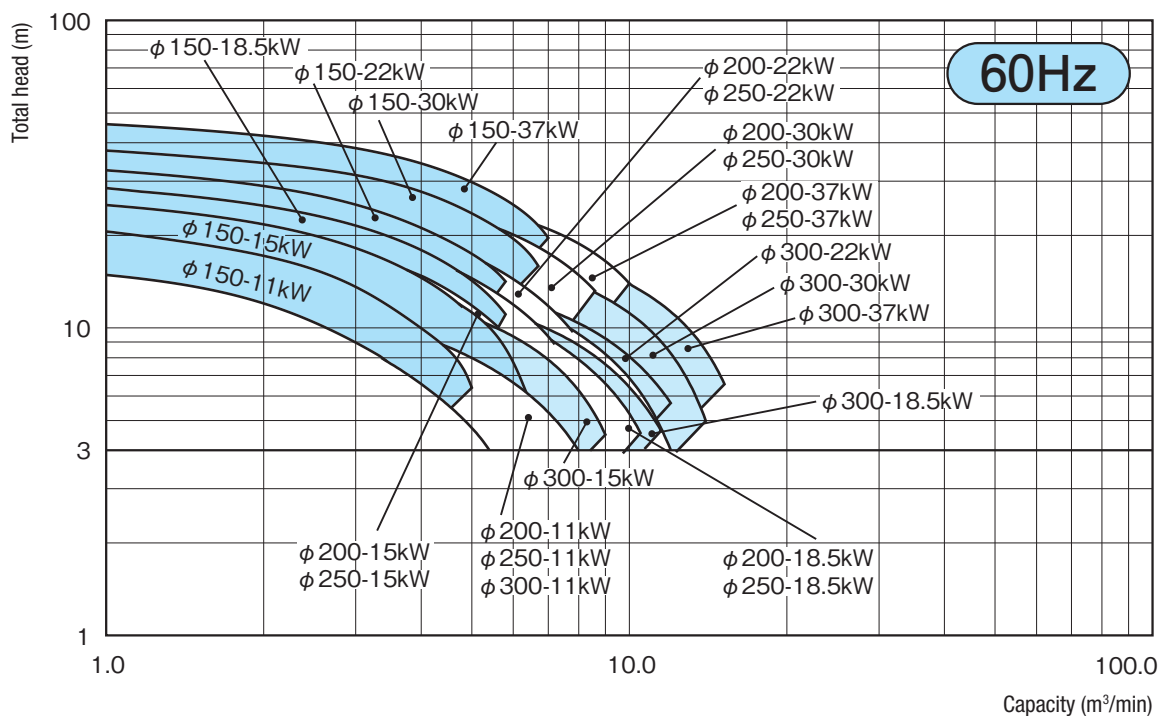
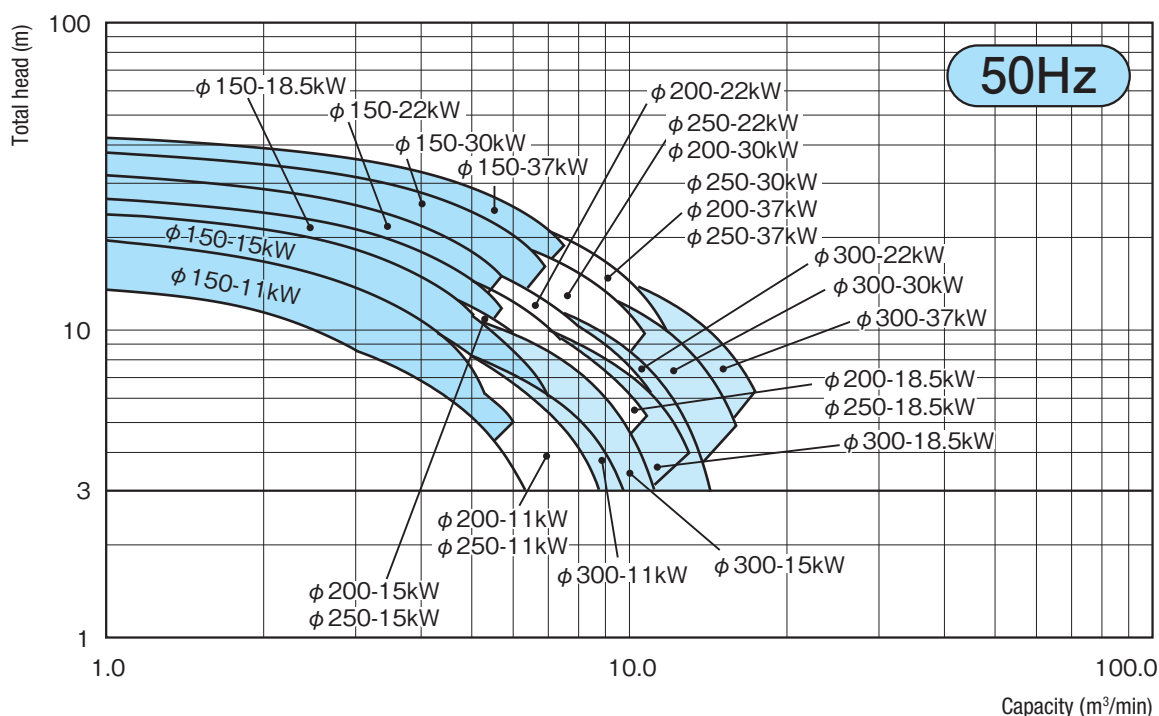
Motor Insulation	Class F
Cable	Cable lengths 10 - 30m (every 5m) * Cable length should be limited due to voltage drop, see the specifications (detail data) - App.1.
Material Change	Impeller: SCS13 (stainless steel casting) High-chrome iron casting)
Others	• For specifications other than the above, please contact us.

■ Pump-Related Product

- ☐ Liquid Level Control Switch
Level Regulator

⇒ See page 370

Performance Curves



CNX	Non-clog type (Closed loop cooling)	Bore: 150 mm (6")
		Output: 11 - 37 kW (15 - 50 HP)

Standard Specifications

Bore mm (inch)	Pump Model	Output kW (HP)	Phase	Capacity - Total Head m ³ /min—m		No. of poles P	Weight (Bare Pump) kg		
				50Hz	60Hz				
150 (6")	CNX150-P	11 (15)	3-ph	[1H]	3.4—12.6	[2H]	2.9—14.1	4	330
				[1M]	3.2—12.1	—			
		15 (20)		[1H]	3.5—16.6	[2H]	3.5—16.4		365
				[1M]	3.7—14.5	[2M]	2.8—18.7		
		18.5 (25)		[1H]	3.8—18.5	[2H]	3.9—18.2		395
		22 (30)		[1H]	4.3—20.8	[2H]	4.1—20.9		405
		30 (40)		[1H]	4.8—24.9	[2H]	4.4—26.3		755
		37 (50)		[1H]	5.4—27.3	[2H]	4.9—30.2		

For the characteristics of the motor, bearing and coolant, refer to the specifications (detail data) - App.1. [] Impeller No.

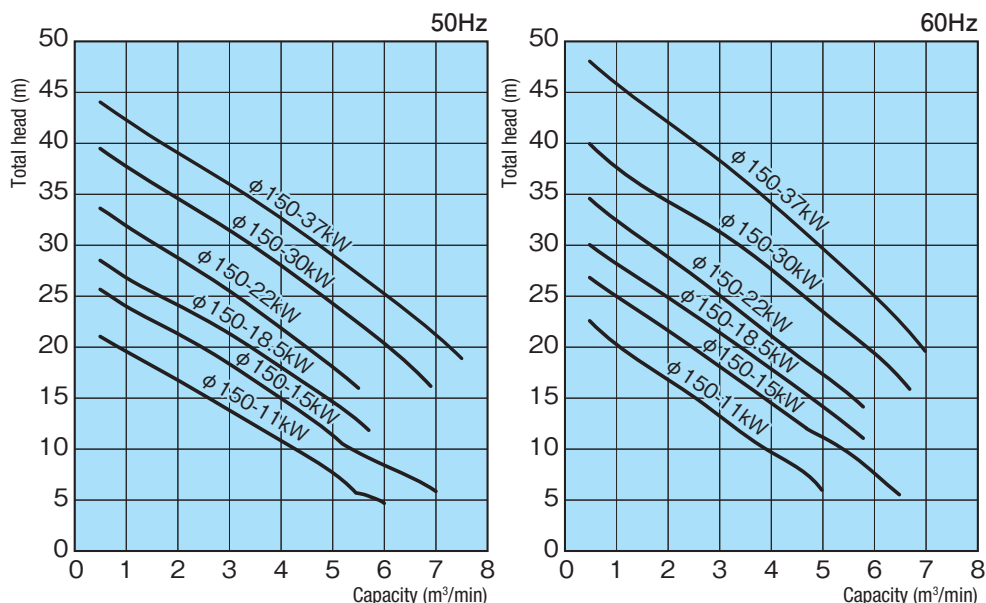
Standard Accessories

- Connection (with bolts and nuts) 1 set
Weight 42kg (11, 15, 18.5, 22kW)
95kg (30 • 37kW)
- Guide holder (with bolts and nuts) 1 set
- Cable (8m)..... 3 pcs.
- Lifting chain (6m) 1 pc.

Part Specification

Applicable Model		Cable Specification					Starting Method	Mechanical Seal	
		Type	Section area (mm ²)	Cores	Outer dia. (mm)	No. of cables		Lower	Upper
CNX150-P	11kW (15 HP)	2PNCT	5.5	4	ϕ 17.0	1 ea.	Star-delta	SiC/SiC	SiC/SiC
			5.5	3	ϕ 15.5				
			1.25	4	ϕ 11.5				
	15kW (20 HP)	2PNCT	8.0	4	ϕ 18.5	1 ea.			
			8.0	3	ϕ 17.0				
			1.25	4	ϕ 11.5				
	18.5kW (25 HP)	2PNCT	14.0	4	ϕ 22.0	1 ea.			
			14.0	3	ϕ 20.0				
			1.25	4	ϕ 11.5				
	22kW (30 HP)	2PNCT	14.0	4	ϕ 22.0	1 ea.			
			14.0	3	ϕ 20.0				
			1.25	4	ϕ 11.5				
	30kW (40 HP)	2PNCT	22.0	4	ϕ 29.0	1 ea.			
			22.0	3	ϕ 27.0				
			1.25	4	ϕ 11.5				
	37kW (50 HP)	2PNCT	22.0	4	ϕ 29.0	1 ea.			
			22.0	3	ϕ 27.0				
			1.25	4	ϕ 11.5				

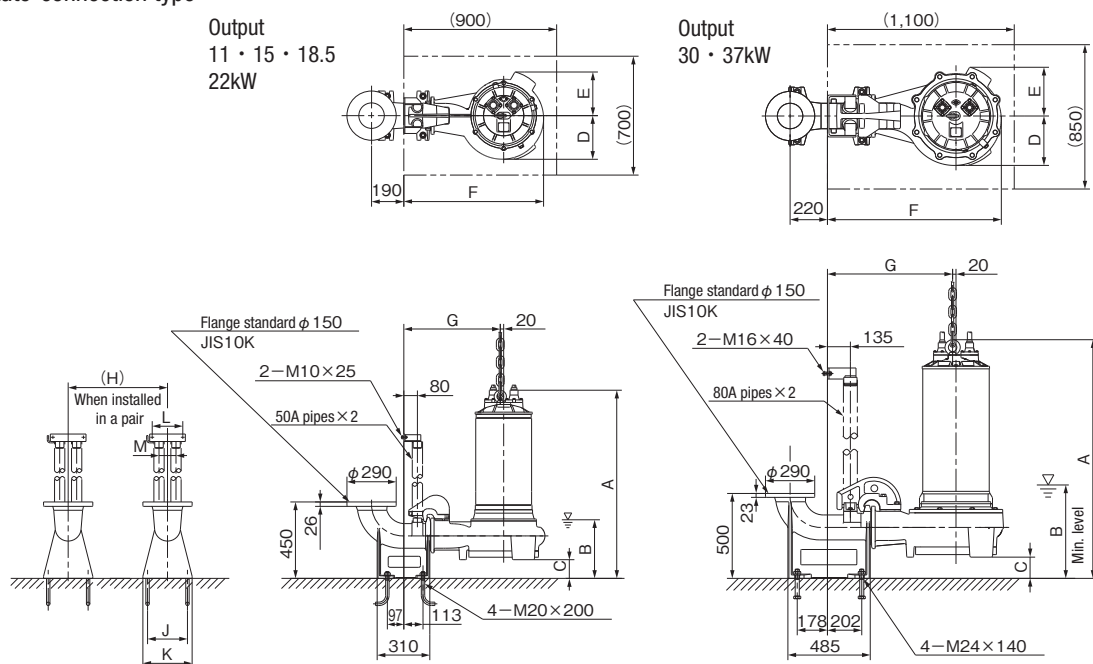
Performance Curves



Dimensions

Unit: mm

Auto-connection type



Output kW (HP)	Impeller No.	A	B	C	D	E	F	G	H	J	K	L	M				
11 (15)	H · M	996	345	110	257	257	823	568	585	235	290	180	100				
15 (20)	H · M	1,032							640								
18.5 (25)	H	1,100															
22 (30)	H	1,133															
30 · 37 (40 · 50)	H	1,406	550	125	291	287	1,024	737	915	280	340	115	124				

Standard Specifications

Bore mm (inch)	Pump Model	Output kW (HP)	Phase	Capacity - Total Head m³/min—m		No. of poles P	Weight (Bare Pump) kg		
				50Hz	60Hz				
200 (8")	CNX200-P	11 (15)	3-ph	[1H]	3.4—12.6	[2H]	2.8—14.8	4	400
				[1M]	3.7—11.2	—			
				[1L]	4.3— 9.4	[2L]	4.8— 8.3		
		15 (20)		[1H]	3.5—16.6	[2H]	3.5—16.4		440
				[1M]	4.4—13.2	[2M]	4.0—14.7		
				[1L]	5.5—10.6	[2L]	5.0—11.3		
		18.5 (25)		[1H]	3.8—18.5	[2H]	3.9—18.2		470
				[1M]	4.7—15.1	[2M]	4.5—15.9		
				[1L]	5.9—11.5	[2L]	6.0—10.6		
		22 (30)		[1H]	4.3—20.8	[2H]	4.1—20.9		480
				[1M]	5.0—16.5	[2M]	4.8—17.6		
				[1L]	6.6—12.2	[2L]	6.6—11.5		
		30 (40)		[1H]	4.8—24.9	[2H]	4.4—26.3		795
				[1M]	6.2—18.8	[2M]	5.4—21.7		
		37 (50)		[1H]	5.4—27.3	[2H]	4.9—30.4		
				[1M]	6.7—21.6	[2M]	6.2—23.3		

For the characteristics of the motor, bearing and coolant, refer to the specifications (detail data) - App.1. [] Impeller No.

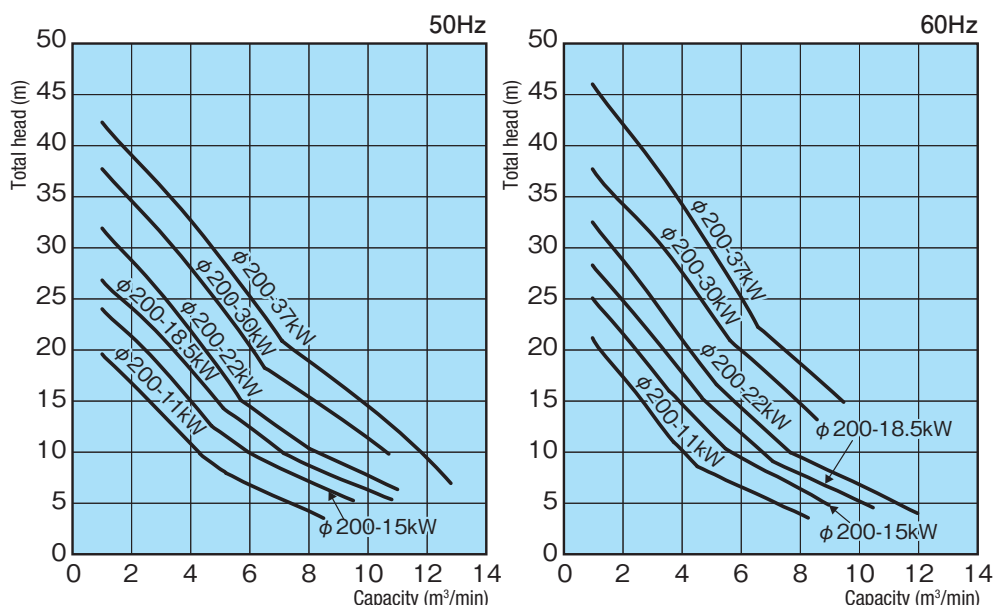
Standard Accessories

- Connection (with bolts and nuts) 1 set
Weight 130kg
- Guide holder (with bolts and nuts) 1 set
- Cable (8m)..... 3 pcs.
- Lifting chain (6m) 1 pc.

Part Specification

Applicable Model		Cable Specification					Starting Method	Mechanical Seal	
		Type	Section area (mm²)	Cores	Outer dia. (mm)	No. of cables		Lower	Upper
CNX200-P	11kW (15 HP)	2PNCT	5.5	4	ϕ 17.0	1 ea.	Star-delta	SiC/SiC	SiC/SiC
			5.5	3	ϕ 15.5				
			1.25	4	ϕ 11.5				
	15kW (20 HP)	2PNCT	8.0	4	ϕ 18.5	1 ea.			
			8.0	3	ϕ 17.0				
			1.25	4	ϕ 11.5				
	18.5kW (25 HP)	2PNCT	14.0	4	ϕ 22.0	1 ea.			
			14.0	3	ϕ 20.0				
			1.25	4	ϕ 11.5				
	22kW (30 HP)	2PNCT	14.0	4	ϕ 22.0	1 ea.			
			14.0	3	ϕ 20.0				
			1.25	4	ϕ 11.5				
	30kW (40 HP)	2PNCT	22.0	4	ϕ 29.0	1 ea.			
			22.0	3	ϕ 27.0				
			1.25	4	ϕ 11.5				
	37kW (50 HP)	2PNCT	22.0	4	ϕ 29.0	1 ea.			
			22.0	3	ϕ 27.0				
			1.25	4	ϕ 11.5				

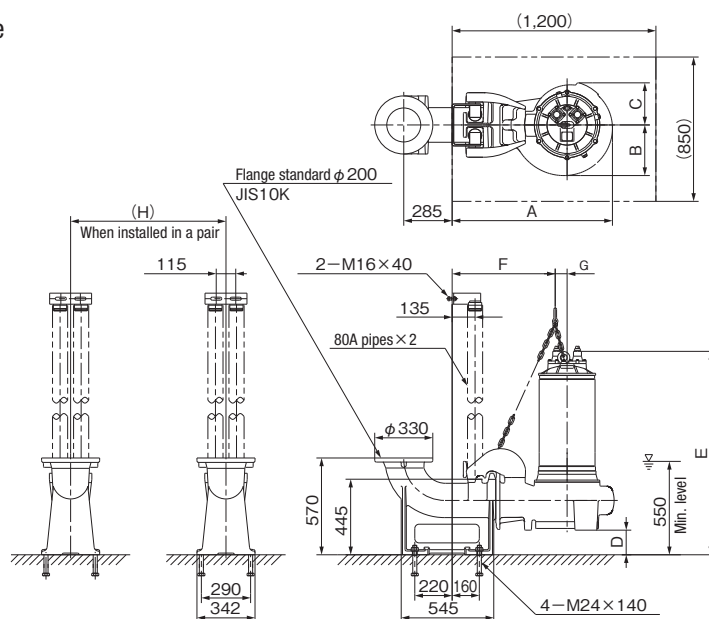
Performance Curves



Dimensions

Unit: mm

Auto-connection type



Output kW (HP)	Impeller No.	A	B	C	D	E	F	G	H		
11 (15)	H	917	262	259	145	1,066	607	70	765		
	M • L	875	277	249		1,086	557				
15 (20)	H	917	262	259		1,102	607			607	915
	M • L	875	277	249		1,122	557				
18.5 (25)	H	917	262	259		1,170	607	20			
	M • L	944	298	248		1,190					
22 (30)	H	917	262	259		1,203	607			20	
	M • L	944	298	248		1,223					
30 • 37 (40 • 50)	H	1,023	291	287	135	1,426	737	20			
	M	1,050	327	288		1,453					

CNX	Non-clog type (Closed loop cooling)	Bore: 250 mm (10")
		Output: 11 - 37 kW (15 - 50 HP)

Standard Specifications

Bore mm (inch)	Pump Model	Output kW (HP)	Phase	Capacity - Total Head		m³/min—m	No. of poles P	Weight (Bare Pump) kg		
				50Hz	60Hz					
250 (10")	CNX250-P	11 (15)	3-ph	[1M]	4.4— 9.6	[2M]	3.5—11.6	4	395	
				[1L]	5.6— 7.3	[2L]	5.3— 7.7			
		15 (20)		[1M]	5.0—12.0	[2M]	4.0—14.8			435
				[1L]	6.4— 9.5	[2L]	6.3— 9.3			
		18.5 (25)		[1M]	5.6—13.1	[2M]	5.7—12.7			470
				[1L]	7.3— 9.7	[2L]	6.8— 9.7			
		22 (30)		[1M]	6.8—13.4	[2M]	5.8—14.7			480
				[1L]	7.7—10.6	[2L]	7.5—10.5			
		30 (40)		[1H]	4.8—24.9	[2H]	4.4—26.3			795
				[1M]	6.2—18.8	[2M]	5.4—21.7			
		37 (50)		[1H]	5.4—27.3	[2H]	4.9—30.4			
				[1M]	6.7—21.6	[2M]	6.2—23.3			

For the characteristics of the motor, bearing and coolant, refer to the specifications (detail data) - App.1. [] Impeller No.

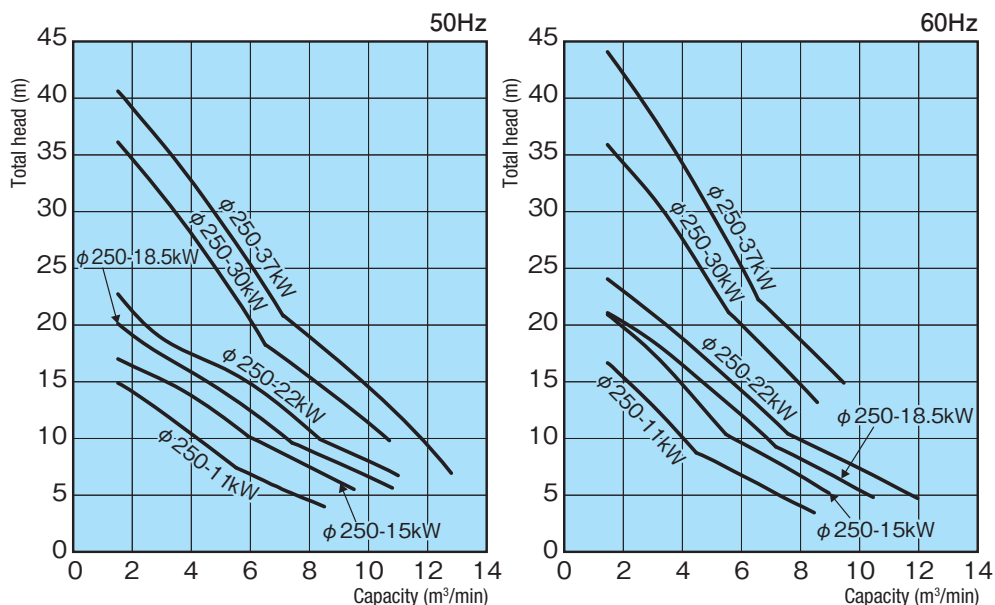
Standard Accessories

- Connection (with bolts and nuts) 1 set
Weight 200kg
- Guide holder (with bolts and nuts) 1 set
- Cable (8m)..... 3 pcs.
- Lifting chain (6m) 1 pc.

Part Specification

Applicable Model		Cable Specification					Starting Method	Mechanical Seal	
		Type	Section area (mm ²)	Cores	Outer dia. (mm)	No. of cables		Lower	Upper
CNX250-P	11kW (15 HP)	2PNCT	5.5	4	ϕ 17.0	1 ea.	Star-delta	SiC/SiC	SiC/SiC
			5.5	3	ϕ 15.5				
			1.25	4	ϕ 11.5				
	15kW (20 HP)	2PNCT	8.0	4	ϕ 18.5	1 ea.			
			8.0	3	ϕ 17.0				
			1.25	4	ϕ 11.5				
	18.5kW (25 HP)	2PNCT	14.0	4	ϕ 22.0	1 ea.			
			14.0	3	ϕ 20.0				
			1.25	4	ϕ 11.5				
	22kW (30 HP)	2PNCT	14.0	4	ϕ 22.0	1 ea.			
			14.0	3	ϕ 20.0				
			1.25	4	ϕ 11.5				
	30kW (40 HP)	2PNCT	22.0	4	ϕ 29.0	1 ea.			
			22.0	3	ϕ 27.0				
			1.25	4	ϕ 11.5				
	37kW (50 HP)	2PNCT	22.0	4	ϕ 29.0	1 ea.			
			22.0	3	ϕ 27.0				
			1.25	4	ϕ 11.5				

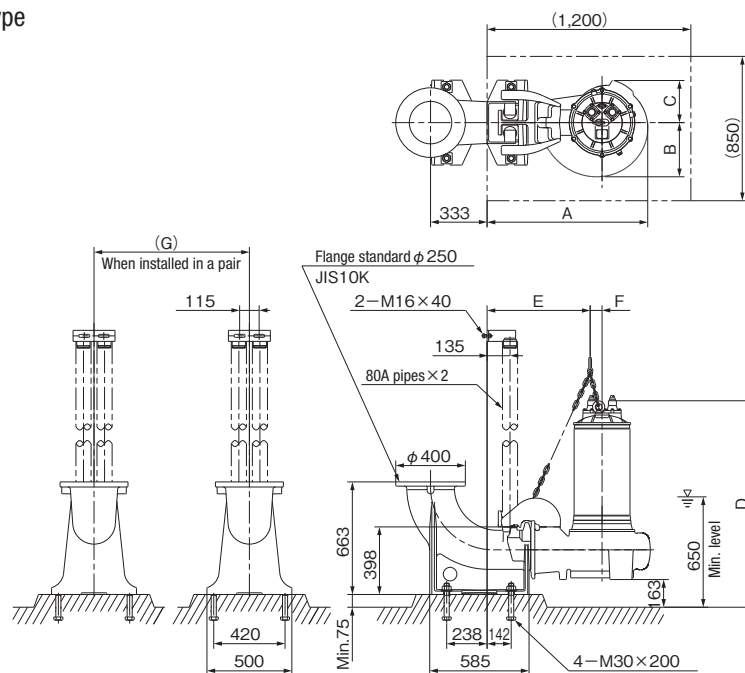
Performance Curves



Dimensions

Unit: mm

Auto-connection type



Output kW (HP)	Impeller No.	A	B	C	D	E	F	G
11 (15)	M · L	875	295	249	1,104	557	70	765
15 (20)	M · L				1,140			
18.5 (25)	M · L	946	319	248	1,208	607	70	915
22 (30)	M · L				1,241			
30 · 37 (40 · 50)	H	1,023	291	287	1,444	737	20	915
	M	1,050	327	288	1,471			

CNX	Non-clog type (Closed loop cooling)	Bore: 300 mm (12")
		Output: 11 - 37 kW (15 - 50 HP)

Standard Specifications

Bore mm (inch)	Pump Model	Output kW (HP)	Phase	Capacity - Total Head m ³ /min—m		No. of poles P	Weight (Bare Pump) kg
				50Hz	60Hz		
300 (12")	CNX300-P	11 (15)	3-ph	[1L] 6.4— 6.7	[2L] 5.7— 7.3	4	405
		15 (20)		[1L] 6.6— 9.0	[2L] 5.9— 9.6		445
		18.5 (25)		[1L] 8.5— 8.6	[2L] 7.8— 9.1		485
		22 (30)		[1L] 8.3—10.5	[2L] 8.4— 9.9		495
		30 (40)		[1L] 10.0—11.9	[2L] 8.8—12.8		855
		37 (50)		[1M] 7.7—19.3	[2M] 7.4—20.2		
				[1L] 11.3—12.9	[2L] 9.9—14.0		

For the characteristics of the motor, bearing and coolant, refer to the specifications (detail data) - App.1. [] Impeller No.

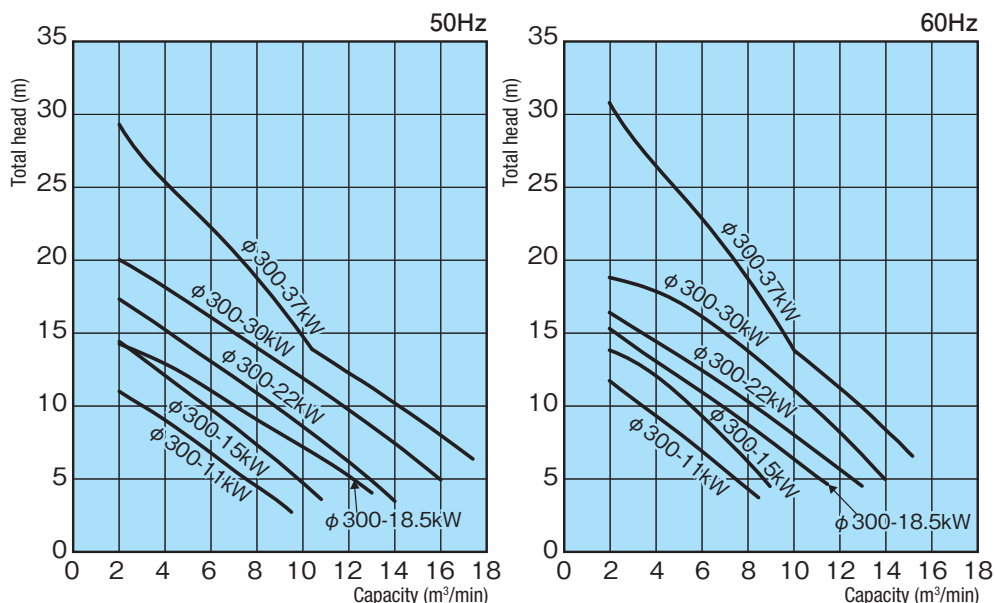
Standard Accessories

- Connection (with bolts and nuts) 1 set
Weight 225kg
- Guide holder (with bolts and nuts) 1 set
- Cable (8m)..... 3 pcs.
- Lifting chain (6m) 1 pc.

Part Specification

Applicable Model		Cable Specification					Starting Method	Mechanical Seal	
		Type	Section area (mm ²)	Cores	Outer dia. (mm)	No. of cables		Lower	Upper
CNX300-P	11kW (15 HP)	2PNCT	5.5	4	ϕ 17.0	1 ea.	Star-delta	SiC/SiC	SiC/SiC
			5.5	3	ϕ 15.5				
			1.25	4	ϕ 11.5				
	15kW (20 HP)	2PNCT	8.0	4	ϕ 18.5	1 ea.			
			8.0	3	ϕ 17.0				
			1.25	4	ϕ 11.5				
	18.5kW (25 HP)	2PNCT	14.0	4	ϕ 22.0	1 ea.			
			14.0	3	ϕ 20.0				
			1.25	4	ϕ 11.5				
	22kW (30 HP)	2PNCT	14.0	4	ϕ 22.0	1 ea.			
			14.0	3	ϕ 20.0				
			1.25	4	ϕ 11.5				
	30kW (40 HP)	2PNCT	22.0	4	ϕ 29.0	1 ea.			
			22.0	3	ϕ 27.0				
			1.25	4	ϕ 11.5				
	37kW (50 HP)	2PNCT	22.0	4	ϕ 29.0	1 ea.			
			22.0	3	ϕ 27.0				
			1.25	4	ϕ 11.5				

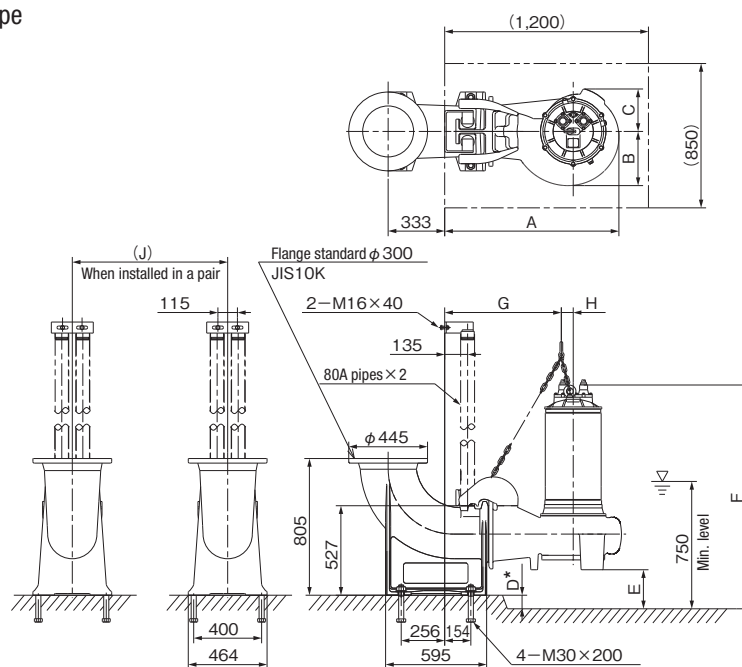
Performance Curves



Dimensions

Unit: mm

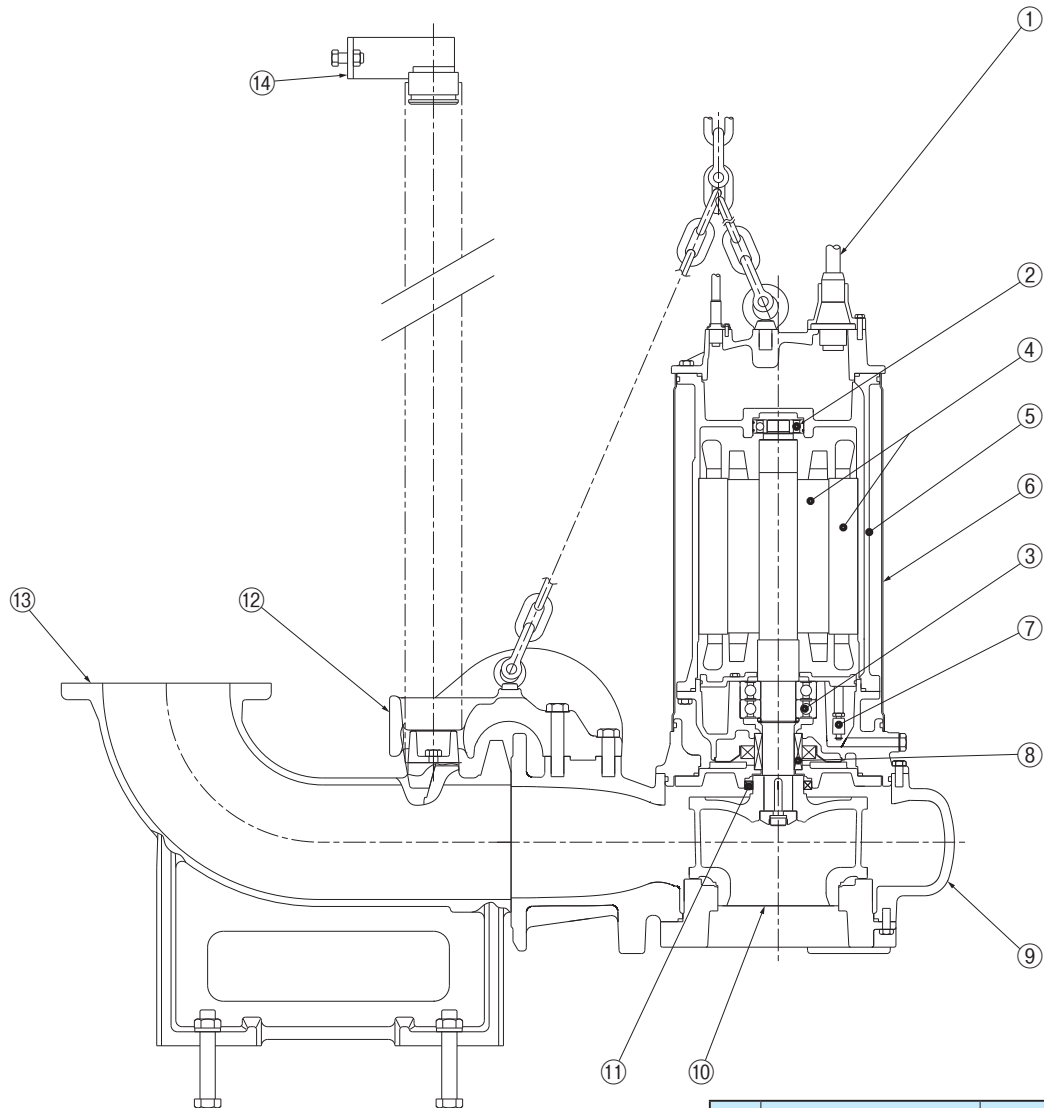
Auto-connection type



Output kW (HP)	Impeller No.	A	B	C	D*	E	F	G	H	J
11 (15)	L	928	297	250	45	195	1,171	607	70	915
15 (20)	L						1,207			
18.5 (25)	L	1,026	319	289	80	230	1,310	687	20	1,125
22 (30)	L						1,343			
30 · 37 (40 · 50)	M · L	1,061	360	289			1,605	737		

* D: Minimum dimension

Sectional View



No.	Name	Material
1	Cable	2PNCT
2	Ball Bearing (Upper)	—
3	Ball Bearing (Lower)	—
4	Motor	Shaft: SUS420J2
5	Stator Casing	FC200
6	Outer Casing	SUS304 or SS400
7	Leakage Detector	—
8	Mechanical Seal	—
9	Pump Casing	FC200
10	Impeller	FC200
11	Oil Seal	NBR
12	Sliding Bracket	FCD500
13	Connection	FC200
14	Guide Holder	SS400

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

Non-clog type (Natural cooling)**Bore: 150 - 300 mm (6" - 12")****Output: 5.5 - 37 kW (7.5 - 50 HP)**

CNX

Natural cooling

For the CNX series, three types of impellers for high, mid and low-discharge head are respectively developed by motor output. The enlarged high-efficiency operation area enables selections covering various applications and wide-range of duty points. Every model secures 3 inches of solid-passage and high solid-passage capability.

Bore mm (inch)	Output kW (HP)	Model	Page
150 (6")	5.5 - 37 (7.5 - 50)	CNX1501-P	122
200 (8")	5.5 - 37 (7.5 - 50)	CNX2001-P	124
250 (10")	5.5 - 37 (7.5 - 50)	CNX2501-P	126
300 (12")	11 - 37 (15 - 50)	CNX3001-P	128

■ Features

● High-efficiency pump for wide range

To provide high pump efficiency over a wide range, three types of impeller are developed respectively by output. Selecting the right impeller helps ensure it operates at near-optimal efficiency.

● 3 inches of solid-passage size and high solid-passage capability is secured

Every model secures 3 inches (76.2mm) or more for solid-passage size, which enables the transfer of foreign objects larger than those for conventional models with an equivalent number of poles.

● Space-saving design thanks to adopting a 4-poles motor

Adopting a 4-poles motor for every model enables a compact and lightweight pump. We can also offer an optional 6-poles motor.

● High reliability secured

High reliability is secured by maintaining the features of conventional models: "No overload at all flow-rate areas," "Motor burnout prevented by a built-in micro-thermal protector," and "Adoption of a bearing lubricated with long-life grease" and others.

■ Applications

- ☐ Sewage system
Relaying of sewage and rainwater
- ☐ Sewage treatment plant
Raw water and other treatment process
- ☐ Storm water
Flood control
- ☐ Agriculture
Irrigation
- ☐ Factory
Intake/Effluent control
- ☐ Others
Aquaculture, etc.

■ Standard Specifications

Handling Liquid	Kind of liquid	Wastewater and sewage
	Temperature	0-40 °C (0-32 °C for 5.5 • 7.5kW)
Material	Cable	2PNCT (VCT for 5.5 • 7.5kW)
	Motor shaft	SUS420J2
	Pump casing	FC200
	Impeller	FC200 or FCD500
Electric Motor	Name	Air-filled type Submersible Induction Motor
	Insulation class	Class E
	Enclosure	IP68
	Phase	3-ph
	Voltage	200 - 480V

■ Special Specifications

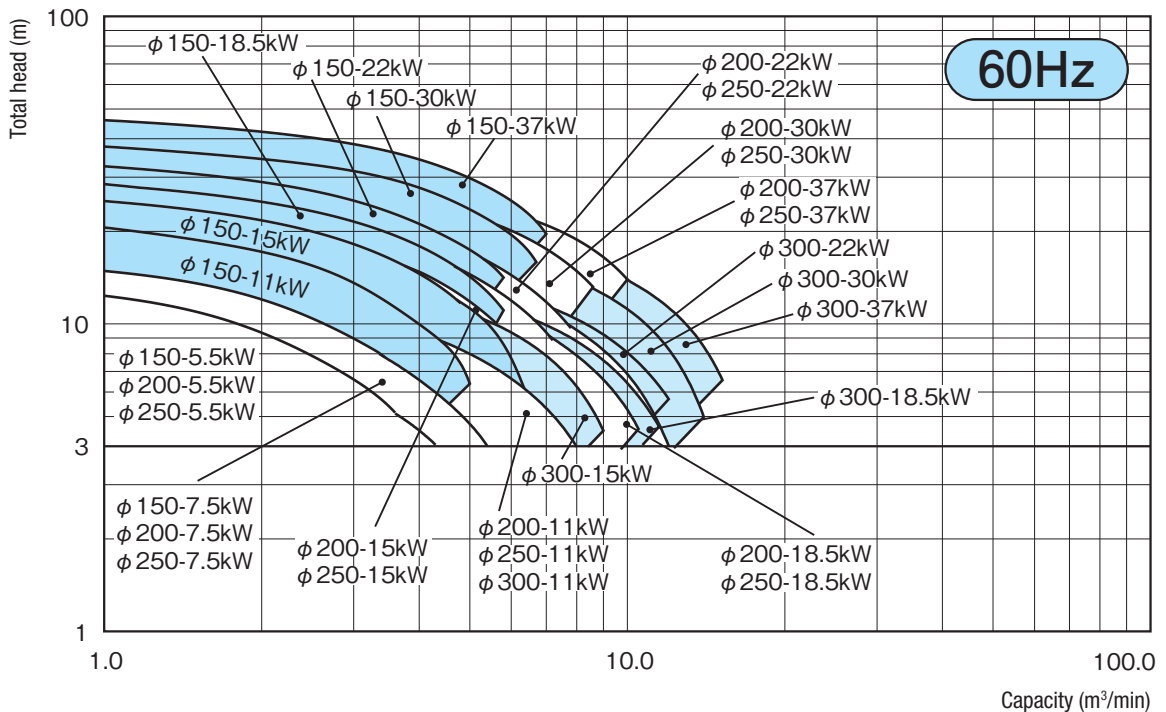
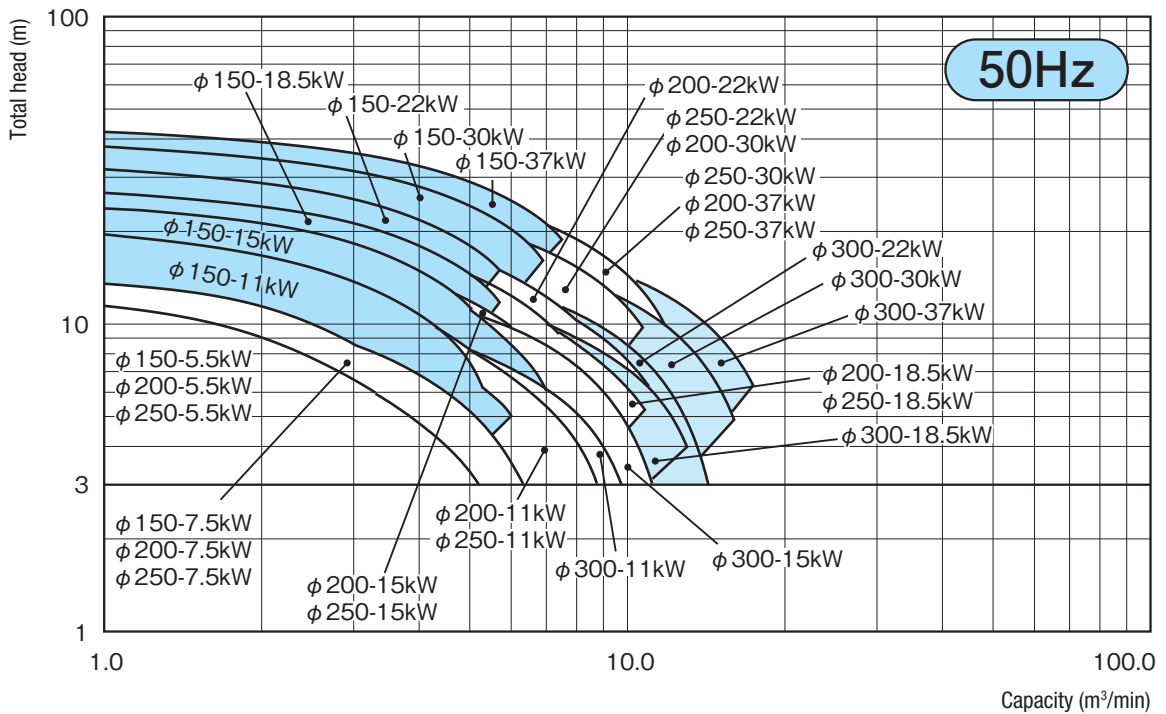
Motor Insulation	Class F
Cable	Cable lengths 10 - 30m (every 5m) * Cable length should be limited due to voltage drop, see the specifications (detail data) - App.1.
Material Change	Impeller: SCS13 (stainless steel casting) High-chrome iron casting)
Others	• For specifications other than the above, please contact us.

■ Pump-Related Product

- ☐ Liquid Level Control Switch
Level Regulator

⇒ See page 370

Performance Curves



Standard Specifications

Bore mm (inch)	Pump Model	Output kW (HP)	Phase	Capacity - Total Head		m ³ /min—m	No. of poles P	Weight (Bare Pump) kg
				50Hz	60Hz			
150 (6")	CNX1501-P	5.5 (7.5)	3-ph	[1M] 2.4— 8.5	[2M] 2.2— 9.1	4		165
		7.5 (10)		[1L] 3.1— 5.9	[2L] 3.1— 5.5			185
		11 (15)		[1M] 2.7— 9.4	[2M] 2.6—11.1			275
		15 (20)		[1L] 3.4— 7.9	[2L] 3.3— 7.7			295
		18.5 (25)		[1H] 3.4—12.6	[2H] 2.9—14.1			335
		22 (30)		[1M] 3.2—12.1	—			355
		30 (40)		[1H] 3.5—16.6	[2H] 3.5—16.4			650
		37 (50)		[1M] 3.7—14.5	[2M] 2.8—18.7			
				[1H] 3.8—18.5	[2H] 3.9—18.2			
				[1H] 4.3—20.8	[2H] 4.1—20.9			
				[1H] 4.8—24.9	[2H] 4.4—26.3			
				[1H] 5.4—27.3	[2H] 4.9—30.2			

For the characteristics of the motor, bearing and oils, refer to the specifications (detail data) - App.1. [] Impeller No.

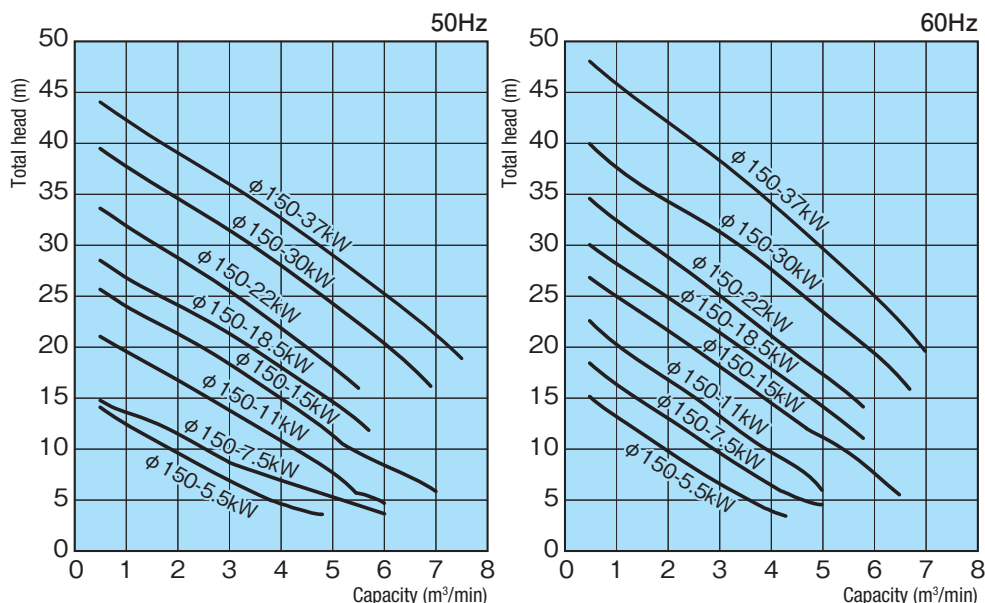
Standard Accessories

- Connection (with bolts and nuts) 1 set
Weight 42kg (5.5, 7.5, 11, 15, 18.5 and 22kW)
95kg (30 • 37kW)
- Cable (8m)..... 1 pc. (5.5/7.5kW or less)
..... 3 pcs. (11kW or more)
- Guide holder (with bolts and nuts) 1 set
- Lifting chain (6m) 1 pc.

Part Specification

Applicable Model		Cable Specification					Starting Method	Mechanical Seal	
		Type	Section area (mm ²)	Cores	Outer dia. (mm)	No. of cables		Lower	Upper
CNX1501-P	5.5kW (7.5 HP)	VCT	3.5	4	ϕ 14.0	1	Star-delta	SiC/SiC	SiC/SiC
	7.5kW (10 HP)	VCT	5.5	4	ϕ 16.5	1			
	11kW (15 HP)	2PNCT	5.5	4	ϕ 17.0	1 ea.			
			5.5	3	ϕ 15.5				
			1.25	2	ϕ 9.8				
	15kW (20 HP)	2PNCT	8.0	4	ϕ 18.5	1 ea.			
			8.0	3	ϕ 17.0				
			1.25	2	ϕ 9.8				
	18.5kW (25 HP)	2PNCT	14.0	4	ϕ 22.0	1 ea.			
			14.0	3	ϕ 20.0				
			1.25	2	ϕ 9.8				
	22kW (30 HP)	2PNCT	14.0	4	ϕ 22.0	1 ea.			
			14.0	3	ϕ 20.0				
			1.25	2	ϕ 9.8				
	30kW (40 HP)	2PNCT	22.0	4	ϕ 29.0	1 ea.			
			22.0	3	ϕ 27.0				
1.25			2	ϕ 9.8					
37kW (50 HP)	2PNCT	22.0	4	ϕ 29.0	1 ea.				
		22.0	3	ϕ 27.0					
		1.25	2	ϕ 9.8					

Performance Curves

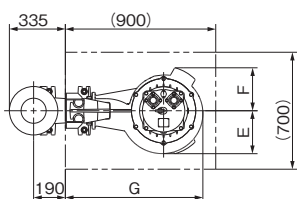


Dimensions

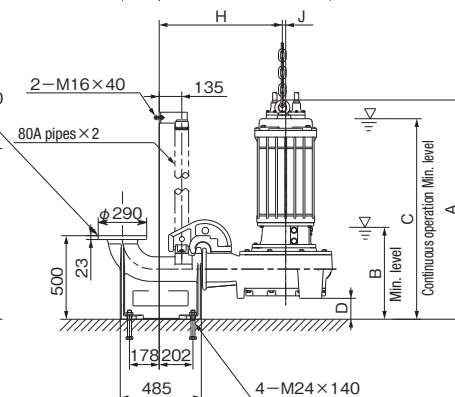
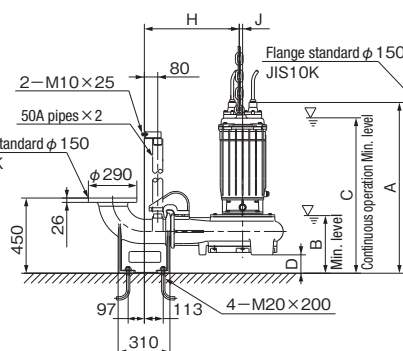
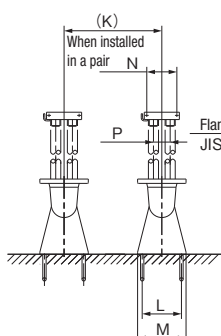
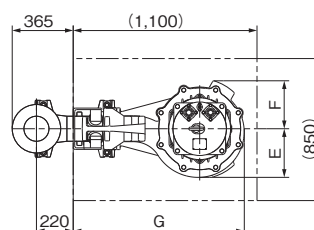
Unit: mm

Auto-connection type

Output
5.5 · 7.5
11 · 15 · 18.5
22kW



Output
30 · 37kW



Output kW (HP)	Impeller No.	A	B	C	D	E	F	G	H	J	K	L	M	N	P
5.5 (7.5)	M	781	325	720	61	222	178	759	546	12	520	235	290	180	100
	L				46										
7.5 (10)	M	816		755	61										
	L				46										
11 (15)	H · M	895	345	800	110	257	257	823	568	20	585				
15 (20)	H · M	921		830											
18.5 (25)	H	989		895											
22 (30)	H	1,022		930											
30 · 37 (40 · 50)	H	1,312	550	1,200	125	291	287	1,024	737		915	280	340	115	124

Standard Specifications

Bore mm (inch)	Pump Model	Output kW (HP)	Phase	Capacity - Total Head m ³ /min—m		No. of poles P	Weight (Bare Pump) kg
				50Hz	60Hz		
200 (8")	CNX2001-P	5.5 (7.5)	3-ph	[1M] 2.9—6.7 [1L] 2.8—7.0	[2M] 2.7—7.4 [2L] 3.3—5.5	4	225
		7.5 (10)		[1M] 3.1—9.5 [1L] 3.4—7.9	[2M] 3.1—8.6 [2L] 3.0—8.8		235
		11 (15)		[1M] 3.4—12.6 [1L] 3.7—11.2	[2H] 2.8—14.8 [2L] —		350
		15 (20)		[1M] 4.3—9.4 [1H] 3.5—16.6 [1M] 4.4—13.2 [1L] 5.5—10.6	[2L] 4.8—8.3 [2H] 3.5—16.4 [2M] 4.0—14.7 [2L] 5.0—11.3		370
		18.5 (25)		[1H] 3.8—18.5 [1M] 4.7—15.1 [1L] 5.9—11.5 [1H] 4.3—20.8	[2H] 3.9—18.2 [2M] 4.5—15.9 [2L] 6.0—10.6 [2H] 4.1—20.9		405
		22 (30)		[1M] 5.0—16.5 [1L] 6.6—12.2	[2M] 4.8—17.6 [2L] 6.6—11.5		430
		30 (40)		[1H] 4.8—24.9 [1M] 6.2—18.8 [1H] 5.4—27.3	[2H] 4.4—26.3 [2M] 5.4—21.7 [2H] 4.9—30.4		690
		37 (50)		[1M] 6.7—21.6 [1M] 6.2—23.3	[2M] 6.2—23.3		

For the characteristics of the motor, bearing and oils, refer to the specifications (detail data) - App.1. [] Impeller No.

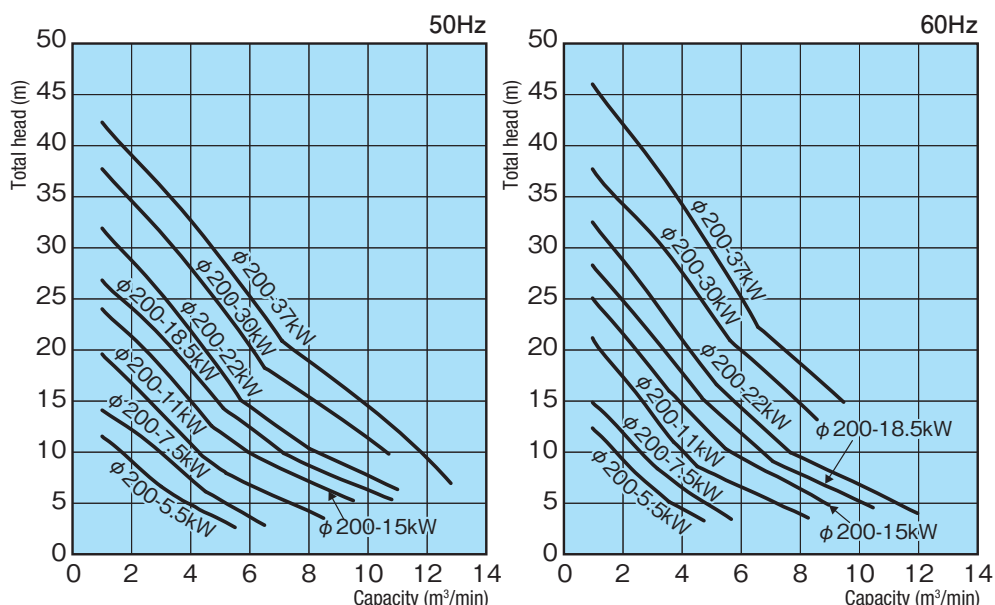
Standard Accessories

- Connection (with bolts and nuts) 1 set
Weight 130kg
- Cable (8m)..... 1 pc. (5.5/7.5kW or less)
..... 3 pcs. (11kW or more)
- Guide holder (with bolts and nuts) 1 set
- Lifting chain (6m) 1 pc.

Part Specification

Applicable Model		Cable Specification					Starting Method	Mechanical Seal	
		Type	Section area (mm ²)	Cores	Outer dia. (mm)	No. of cables		Lower	Upper
CNX2001-P	5.5kW (7.5 HP)	VCT	3.5	4	ϕ 14.5	1	Star-delta	SiC/SiC	SiC/SiC
	7.5kW (10 HP)	VCT	5.5	4	ϕ 16.5	1			
	11kW (15 HP)	2PNCT	5.5	4	ϕ 17.0	1 ea.			
			5.5	3	ϕ 15.5				
			1.25	2	ϕ 9.8				
	15kW (20 HP)	2PNCT	8.0	4	ϕ 18.5	1 ea.			
			8.0	3	ϕ 17.0				
			1.25	2	ϕ 9.8				
	18.5kW (25 HP)	2PNCT	14.0	4	ϕ 22.0	1 ea.			
			14.0	3	ϕ 20.0				
			1.25	2	ϕ 9.8				
	22kW (30 HP)	2PNCT	14.0	4	ϕ 22.0	1 ea.			
			14.0	3	ϕ 20.0				
			1.25	2	ϕ 9.8				
	30kW (40 HP)	2PNCT	22.0	4	ϕ 29.0	1 ea.			
			22.0	3	ϕ 27.0				
1.25			2	ϕ 9.8					
37kW (50 HP)	2PNCT	22.0	4	ϕ 29.0	1 ea.				
		22.0	3	ϕ 27.0					
		1.25	2	ϕ 9.8					

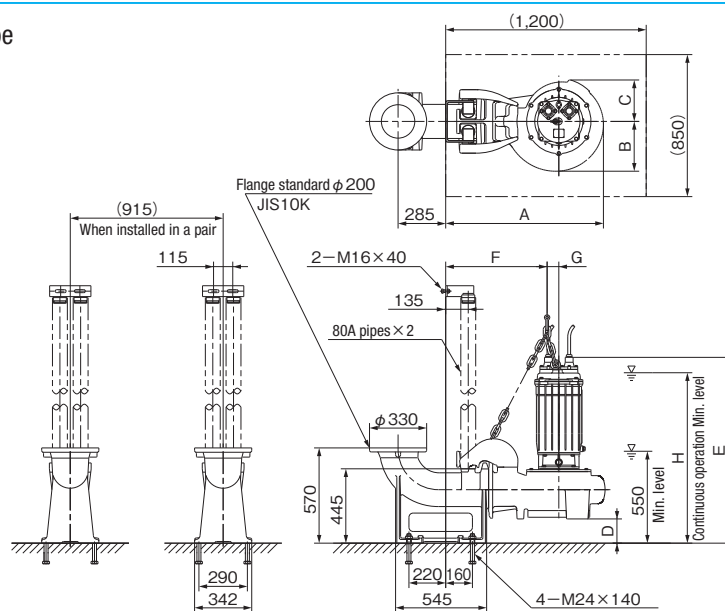
Performance Curves



Dimensions

Unit: mm

Auto-connection type



Output kW (HP)	Impeller No.	A	B	C	D	E	F	G	H
5.5 (7.5)	M · L	847	262	218		874	557		815
7.5 (10)	M · L					909			850
	H	917		259		965	607		870
11 (15)	M · L	875	277	249		985	557		890
	H	917	262	259		991	607		900
15 (20)	M · L	875	277	249	145	1,011	557	70	920
	H	917	262	259		1,059			965
18.5 (25)	M · L	944	298	248		1,079			985
	H	917	262	259		1,092	607		1,000
22 (30)	M · L	944	298	248		1,112			1,020
	H	1,023	291	287		1,332			1,220
30 · 37 (40 · 50)	M	1,050	327	288	135	1,359	737	20	1,250

CNX	Non-clog type (Natural cooling)	Bore: 250 mm (10")
		Output: 5.5 - 37 kW (7.5 - 50 HP)

Standard Specifications

Bore mm (inch)	Pump Model	Output kW (HP)	Phase	Capacity - Total Head m ³ /min—m		No. of poles P	Weight (Bare Pump) kg
				50Hz	60Hz		
250 (10")	CNX2501-P	5.5 (7.5)	3-ph	[1M] 2.9—6.7	[2M] 2.7—7.4	4	220
		7.5 (10)		[1L] 2.8—7.0	[2L] 3.3—5.5		230
		11 (15)		[1M] 3.1—9.5	[2M] 3.1—8.6		340
		15 (20)		[1L] 3.4—7.9	[2L] 3.0—8.8		365
		18.5 (25)		[1M] 4.4—9.6	[2M] 3.5—11.6		410
		22 (30)		[1L] 5.6—7.3	[2L] 5.3—7.7		430
		30 (40)		[1M] 5.0—12.0	[2M] 4.0—14.8		690
		37 (50)		[1L] 6.4—9.5	[2L] 6.3—9.3		
				[1M] 5.6—13.1	[2M] 5.7—12.7		
				[1L] 7.3—9.7	[2L] 6.8—9.7		
				[1M] 6.8—13.4	[2M] 5.8—14.7		
				[1L] 7.7—10.6	[2L] 7.5—10.5		
				[1H] 4.8—24.9	[2H] 4.4—26.3		
				[1M] 6.2—18.8	[2M] 5.4—21.7		
				[1H] 5.4—27.3	[2H] 4.9—30.4		
				[1M] 6.7—21.6	[2M] 6.2—23.3		

For the characteristics of the motor, bearing and oils, refer to the specifications (detail data) - App.1. [] Impeller No.

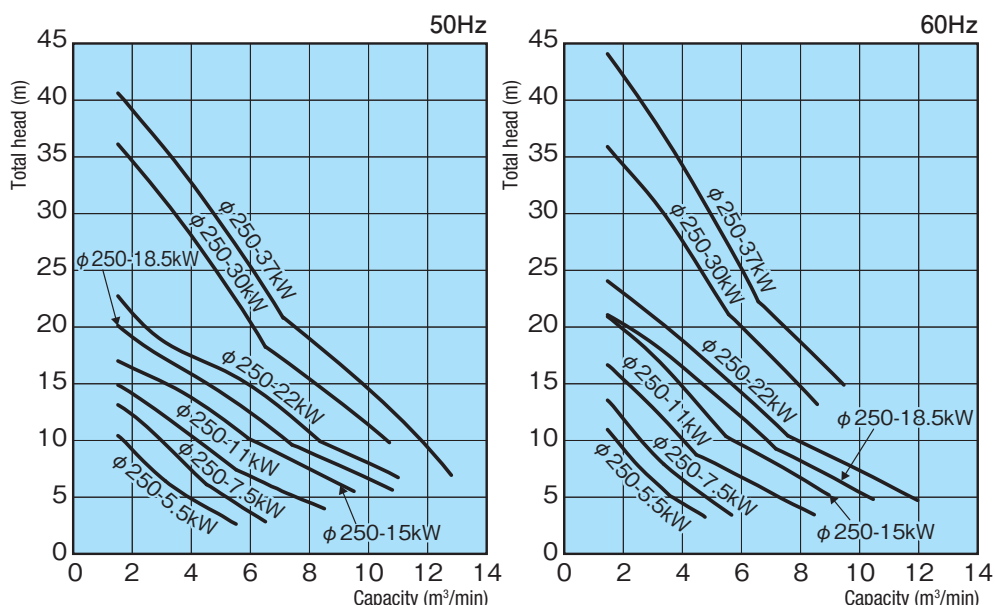
Standard Accessories

- Connection (with bolts and nuts) 1 set
Weight 200kg
- Cable (8m)..... 1 pc. (5.5/7.5kW or less)
..... 3 pcs. (11kW or more)
- Guide holder (with bolts and nuts) 1 set
- Lifting chain (6m) 1 pc.

Part Specification

Applicable Model		Cable Specification					Starting Method	Mechanical Seal	
		Type	Section area (mm ²)	Cores	Outer dia. (mm)	No. of cables		Lower	Upper
CNX2501-P	5.5kW (7.5 HP)	VCT	3.5	4	ϕ 14.0	1	Star-delta	SiC/SiC	SiC/SiC
	7.5kW (10 HP)	VCT	5.5	4	ϕ 16.5	1			
	11kW (15 HP)	2PNCT	5.5	4	ϕ 17.0	1 ea.			
			5.5	3	ϕ 15.5				
			1.25	2	ϕ 9.8				
	15kW (20 HP)	2PNCT	8.0	4	ϕ 18.5	1 ea.			
			8.0	3	ϕ 17.0				
			1.25	2	ϕ 9.8				
	18.5kW (25 HP)	2PNCT	14.0	4	ϕ 22.0	1 ea.			
			14.0	3	ϕ 20.0				
			1.25	2	ϕ 9.8				
	22kW (30 HP)	2PNCT	14.0	4	ϕ 22.0	1 ea.			
			14.0	3	ϕ 20.0				
			1.25	2	ϕ 9.8				
	30kW (40 HP)	2PNCT	22.0	4	ϕ 29.0	1 ea.			
			22.0	3	ϕ 27.0				
			1.25	2	ϕ 9.8				
	37kW (50 HP)	2PNCT	22.0	4	ϕ 29.0	1 ea.			
			22.0	3	ϕ 27.0				
1.25			2	ϕ 9.8					

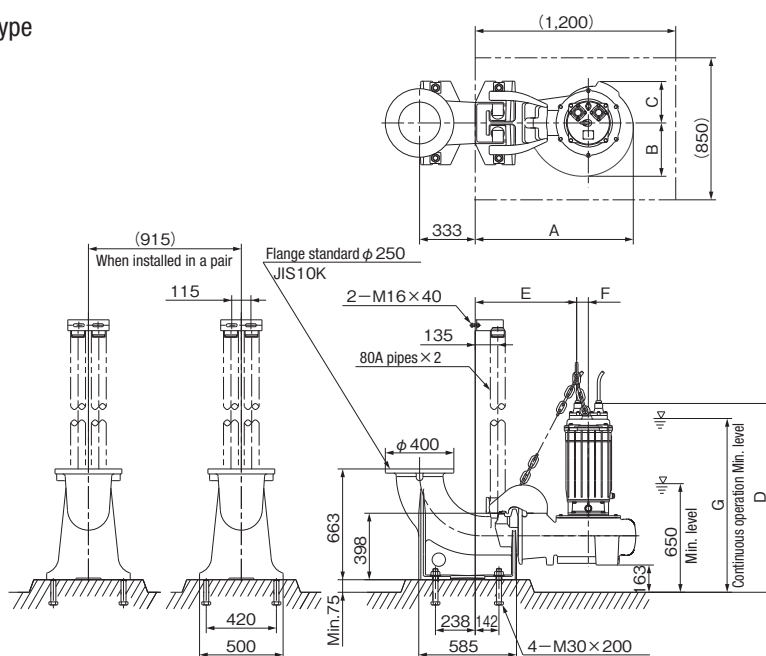
Performance Curves



Dimensions

Unit: mm

Auto-connection type



Output kW (HP)	Impeller No.	A	B	C	D	E	F	G
5.5 (7.5)	M · L	847	262	218	892	557	70	830
7.5 (10)	M · L				927			865
11 (15)	M · L				1,003			910
15 (20)	M · L				1,029			935
18.5 (25)	M · L	946	319	248	1,097	607	70	1,005
22 (30)	M · L				1,130			1,040
30 · 37 (40 · 50)	H	1,023	291	287	1,350	737	20	1,240
	M	1,050	327	288	1,377			1,265

CNX**Non-clog type
(Natural cooling)**Bore: **300 mm (12")**Output: **11 - 37 kW (15 - 50 HP)****Standard Specifications**

Bore mm (inch)	Pump Model	Output kW (HP)	Phase	Capacity - Total Head m ³ /min—m		No. of poles P	Weight (Bare Pump) kg		
				50Hz	60Hz				
300 (12")	CNX3001-P	11 (15)	3-ph	[1L]	6.4— 6.7	[2L]	5.7— 7.3	4	355
		15 (20)		[1L]	6.6— 9.0	[2L]	5.9— 9.6		370
		18.5 (25)		[1L]	8.5— 8.6	[2L]	7.8— 9.1		420
		22 (30)		[1L]	8.3—10.5	[2L]	8.4— 9.9		435
		30 (40)		[1L]	10.0—11.9	[2L]	8.8—12.8	750	
		37 (50)		[1M]	7.7—19.3	[2M]	7.4—20.2		
				[1L]	11.3—12.9	[2L]	9.9—14.0		

For the characteristics of the motor, bearing and oils, refer to the specifications (detail data) - App.1. [] Impeller No.

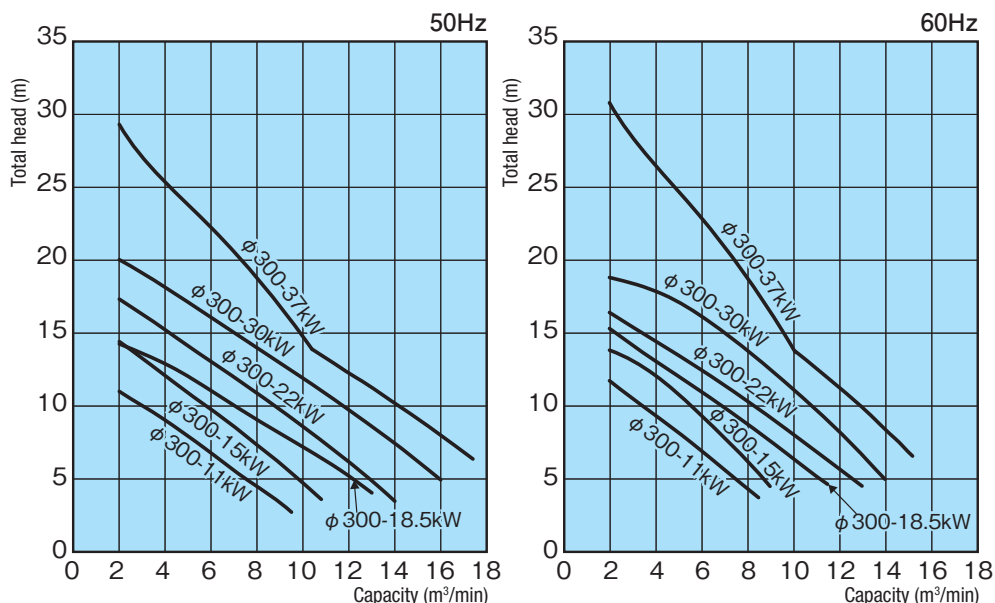
Standard Accessories

- Connection (with bolts and nuts) 1 set
Weight 225kg
- Cable (8m)..... 3 pcs.
- Guide holder (with bolts and nuts) 1 set
- Lifting chain (6m) 1 pc.

Part Specification

Applicable Model		Cable Specification					Starting Method	Mechanical Seal	
		Type	Section area (mm ²)	Cores	Outer dia. (mm)	No. of cables		Lower	Upper
CNX3001-P	11kW (15 HP)	2PNCT	5.5	4	ϕ 17.0	1 ea.	Star-delta	SiC/SiC	SiC/SiC
			5.5	3	ϕ 15.5				
			1.25	2	ϕ 9.8				
	15kW (20 HP)	2PNCT	8.0	4	ϕ 18.5	1 ea.			
			8.0	3	ϕ 17.0				
			1.25	2	ϕ 9.8				
	18.5kW (25 HP)	2PNCT	14.0	4	ϕ 22.0	1 ea.			
			14.0	3	ϕ 20.0				
			1.25	2	ϕ 9.8				
	22kW (30 HP)	2PNCT	14.0	4	ϕ 22.0	1 ea.			
			14.0	3	ϕ 20.0				
			1.25	2	ϕ 9.8				
	30kW (40 HP)	2PNCT	22.0	4	ϕ 29.0	1 ea.			
			22.0	3	ϕ 27.0				
			1.25	2	ϕ 9.8				
	37kW (50 HP)	2PNCT	22.0	4	ϕ 29.0	1 ea.			
			22.0	3	ϕ 27.0				
			1.25	2	ϕ 9.8				

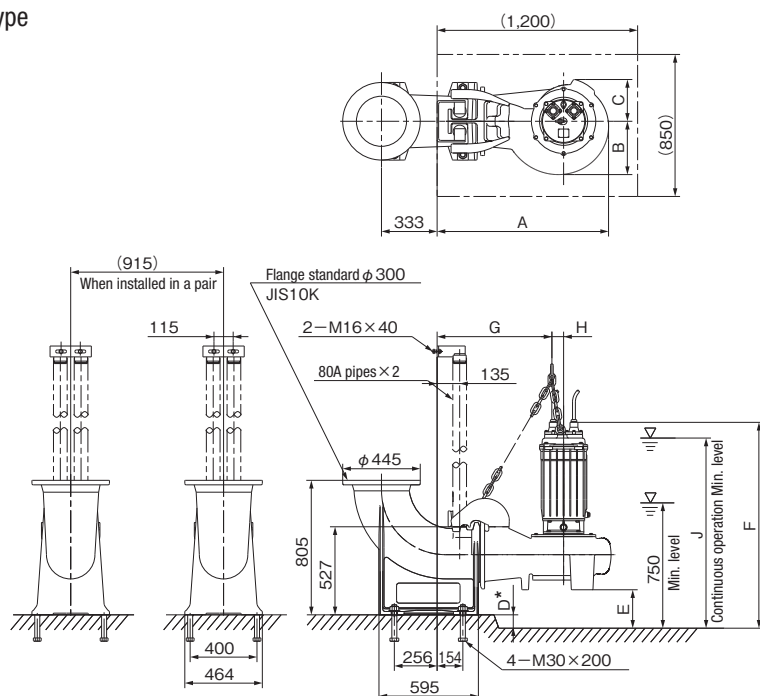
Performance Curves



Dimensions

Unit: mm

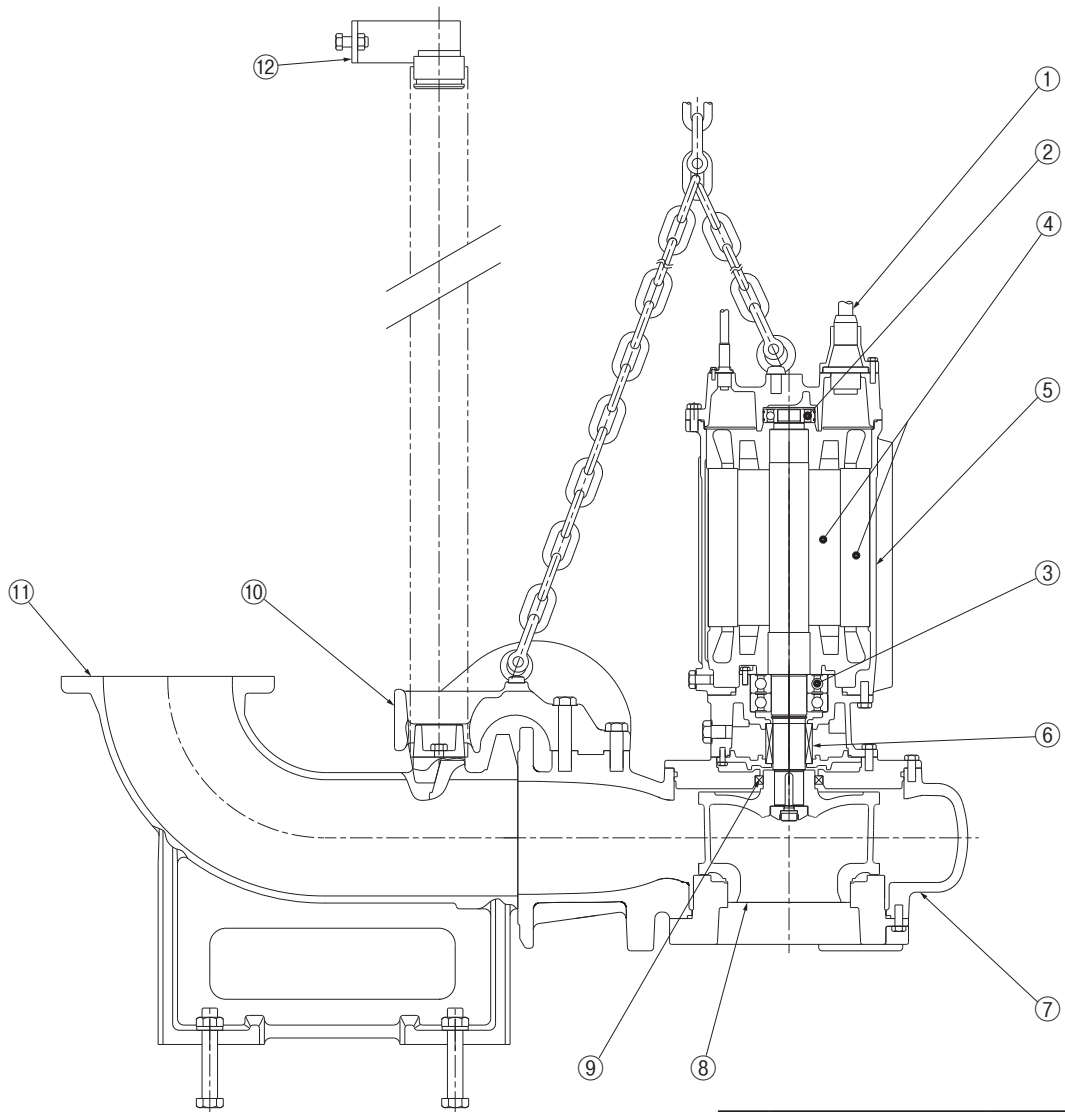
Auto-connection type



Output kW (HP)	Impeller No.	A	B	C	D*	E	F	G	H	J
11 (15)	L	928	297	250	45	195	1,070	607	70	975
15 (20)	L						1,096			1,005
18.5 (25)	L						1,199			1,105
22 (30)	L	1,026	319		80	230	1,232	687		1,140
30 · 37 (40 · 50)	M · L	1,061	360	289			1,511	737	20	1,400

* D: Minimum dimension

Sectional View



No.	Name	Material
1	Cable	2PNCT
2	Ball Bearing (Upper)	—
3	Ball Bearing (Lower)	—
4	Motor	Shaft: SUS420J2
5	Stator Casing	FC200
6	Mechanical Seal	—
7	Pump Casing	FC200
8	Impeller	FC200
9	Oil Seal	NBR
10	Sliding Bracket	FCD500
11	Connection	FC200
12	Guide Holder	SS400

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

Non-clog Type (With a Chopper Mechanism, 4-pole Motor)**Bore: 50 - 80 mm (2" - 3")****Output: 0.25 - 1.5 kW (1/3 - 2 HP)**

CNL

CNL Series is a submersible pump for wastewater and sewage with bore of 50 – 80 mm that include a 4-pole motor with output of 0.25 - 1.5 kW. A non-clog impeller and a chopper mechanism are adopted (except for 0.25 kW), to provide a high solid passage capability.

Bore mm (inch)	Output kW (HP)	Pump Model	Page
50•65 (2"•2 1/2")	0.25 - 0.75 (1/3 - 1)	CNL501	134
65•80 (2 1/2"•3")	1.5 (2)	CNL651	136

CNL

Non-clog Type
(With a Chopper Mechanism, 4-pole Motor)

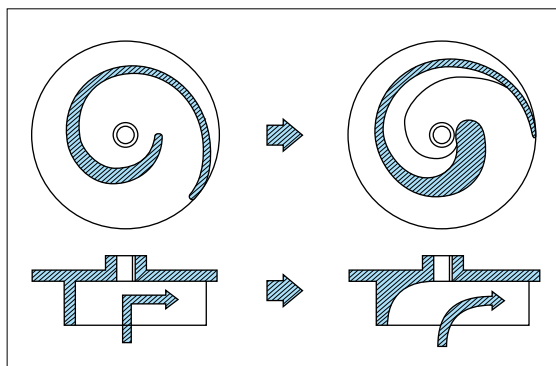
Bore : 50 - 80 mm (2 - 3")

Output: 0.25 - 1.5 kW (1/3 - 2 HP)

Features

● Enhancing throughput of debris

This pump uses a single vane impeller of non-clog type. It prevents tangling at the impeller end by making it thick and differentiating the circumferential velocity on the inner side of the impeller from that on the outer side. Furthermore, it prevents jamming near the suction port by making the inner side round to facilitate a smooth flow.



● Chopper mechanism as a standard item

A carbide-tip chopper mechanism is provided as a standard item (except for 0.25 kW), to shredd debris into pieces to prevent clogging.

● Extended service life

A High-quality double mechanical seal and an oil seal (except for 0,25 kW) has been adopted as a shaft seal.

The double mechanical seal has four SiC end faces that feature excellent wear resistance.

● Prevent motor burnout

Thermal Protector (a Built-in Automatic-reset type Motor Protector) Prevent motor burnout due to overload, impeller locking and open phase. The self-contained core sealer of the cable outlet shuts the water out from penetrating into the motor chamber.

Applications

- Septic tank
Raw water and other treatment process
- Building & Shopping complex
Sanitary and Kitchen wastewater
- Road, Underpass & Subway
Rainwater
- Others
Wastewater containing trash

Standard Specifications

Handling Liquid	Kind of Liquid	Wastewater and sewage
	Temperature	0 - 32°C
Material	Cable	VCT
	Motor Shaft	Stainless steel (SUS420J2)
	Pump Casing	Gray iron casting (FC200)
	Impeller	Gray iron casting (FC200)
Electric Motor	Name	Air-filled type Submersible Induction Motor
	Insulation Class	Class E
	Enclosure	IP68
	Phase	3-ph
	Voltage	200 - 480V

* VCT: Polyvinyl-chloride sheathed cabtyre cable
FC: Gray iron casting FCD: Ductile iron casting

Special Specifications

Motor Insulation	Class F
Cable Extension	Cable length: 10 - 30m (every 5m)
Material Changes	Impeller: SCS13 Base Cover: SCS13 Lifting Chain: SUS304
Others	Possibility of mounting motor protector, please refer to the specifications (detail data) - App.1. For specifications other than the above, please contact us.

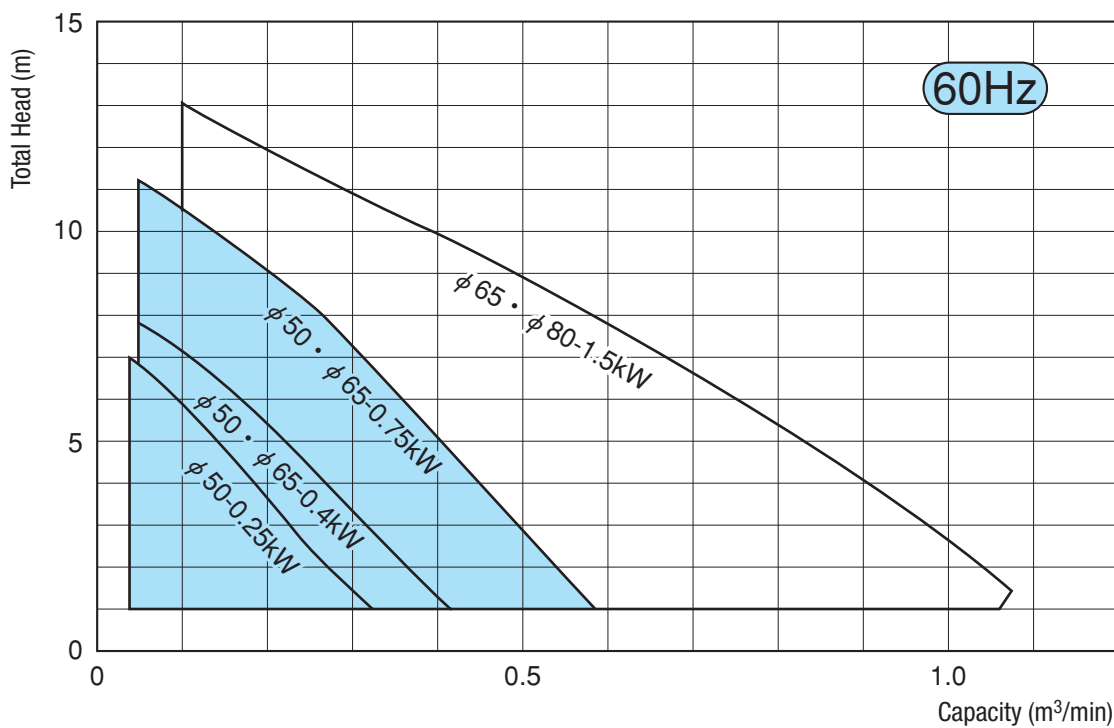
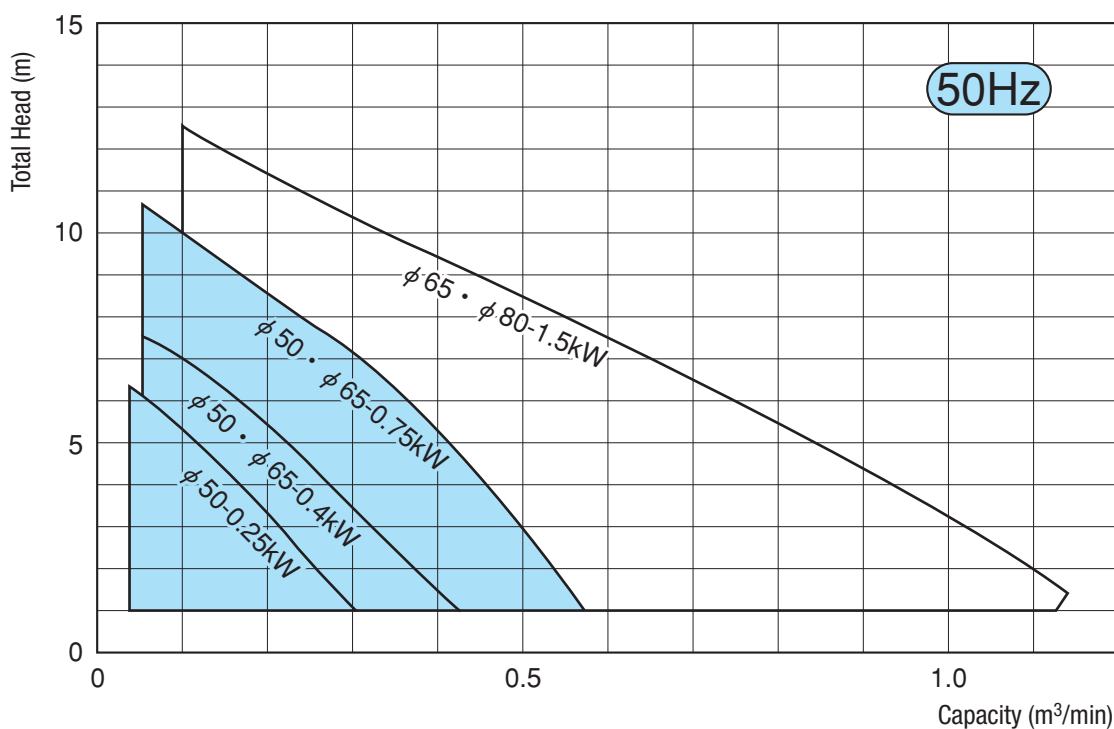
* Cable length should be limited due to voltage drop, see the specifications (detail data) - App.1.

* SCS: Stainless steel casting
SUS: Stainless steel

Pump-Related Product

- Liquid Level Control Switch
 - Level Regulator ⇨ See page 370
 - Mini Switch ⇨ See page 372
 - Oval Float ⇨ See page 373

Performance Curves



CNL

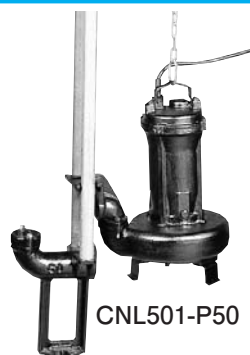
Non-clog Type (With a Chopper Mechanism, 4-pole Motor)

Bore : 50 • 65 mm (2" • 2 1/2")

Output: 0.25 - 0.75 kW (1/3 • 1 HP)



CNL501-F50



CNL501-P50

Standard Specifications

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity – Total Head m ³ /min		No. of poles p	Weight (Bare Pump) kg
		Auto-Connection	Free Standing			50Hz	60Hz		
50 (2")	CNL501	P50	F50	0.25 (1/3)	3-ph	0.17–4.0	0.17–4.4	4	19
				0.4 (1/2)		0.25–4.5	0.24–4.5		26
				0.75 (1)		0.34–6.5	0.34–6.5		27
65 (2 1/2")	CNL501	P65B	F65B	0.4 (1/2)	3-ph	0.25–4.5	0.24–4.5	4	26
				0.75 (1)		0.34–6.5	0.34–6.5		27

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (6m)1 pc.

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

● Auto-connection type

- Connection
(For P50 only, with bolts and packing)
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

● Free standing type (F65B)

- Elbow Flange
- Companion Flange
(with bolts, nuts and packing)

Connection Part No.	Set Weight	Connection Part No.
P50	11kg	4.5kg
P65B	20kg	14.5kg

Connection Part No.	Set Weight
F50	Included in the body
F65B	5.5kg

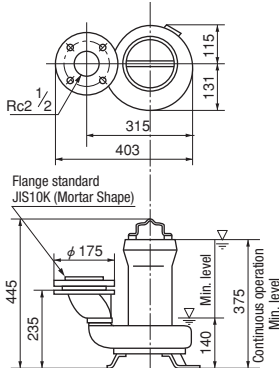
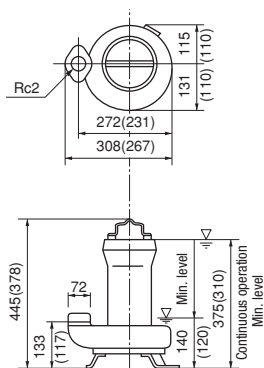
Dimensions

Free standing type

CNL501-F50

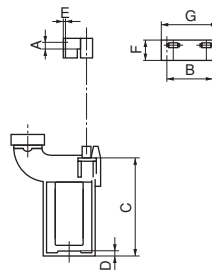
() : 0.25kW

CNL501-F65B

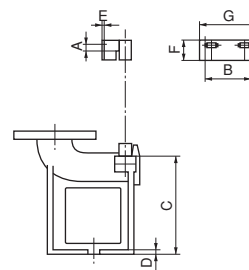


● Connection Dimensions

P50

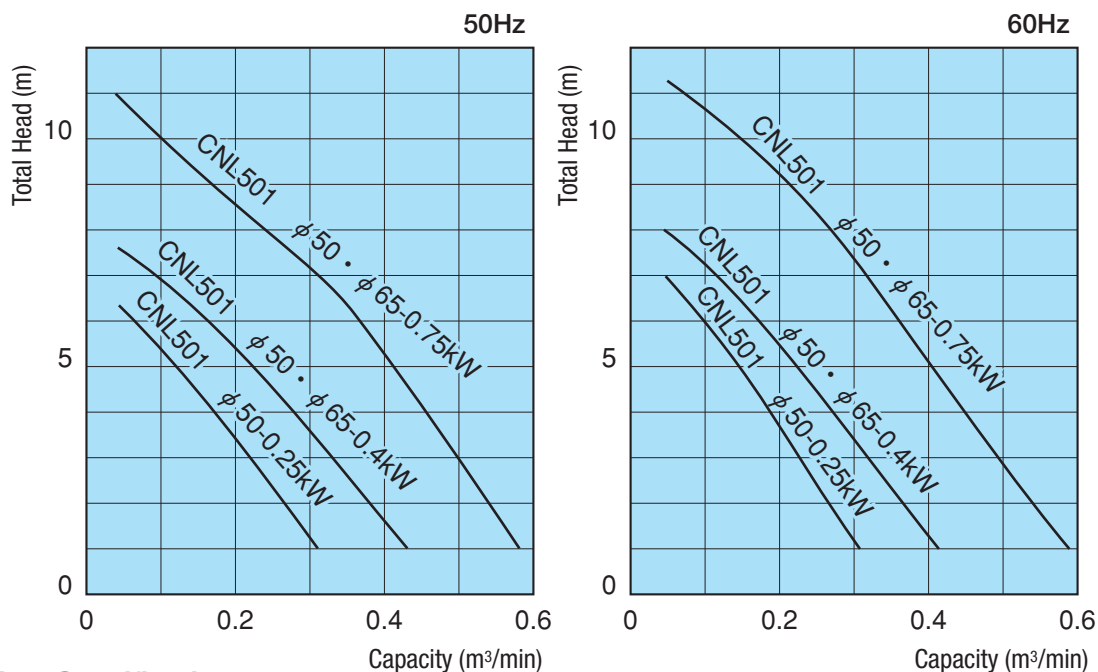


P65B



Connection Part No.	A	B	C	D	E	F	G
P50	11	100	223	12	3	44	125
P65B	11	100	224	12	3	44	125

Performance Curves



Part Specifications

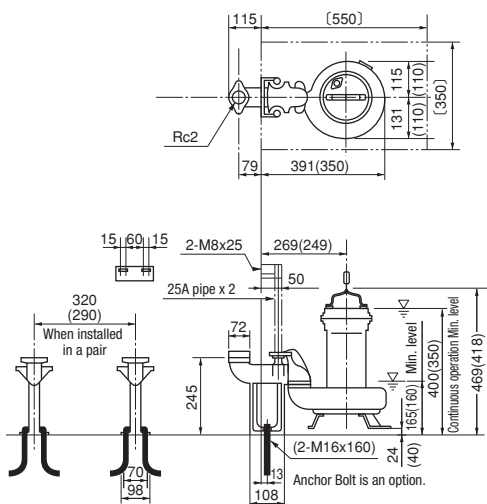
Applicable Model		Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
		Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz
CNL501	0.25kW (1/3HP)	VCT	1.25	4	ϕ 11.5	Direct	SiC/SiC	SiC/SiC	28	28
	0.4kW (1/2HP)								33	28
	0.75kW (1HP)								36	34

Unit: mm

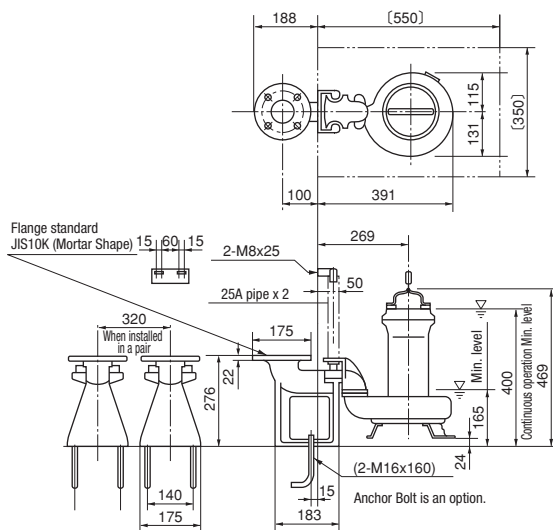
Auto-connection type

() : 0.25kW

CNL501-P50



CNL501-P65B



CNL

Non-clog Type
(With a Chopper Mechanism, 4-pole Motor)

Bore : **65 • 80 mm (2 1/2" • 3")**

Output: **1.5 kW (2 HP)**



CNL651-F65



CNL651-P65

Standard Specifications

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity – Total Head m³/min		No. of poles P	Weight (Bare Pump) kg
		Auto-Connection	Free Standing			50Hz	60Hz		
65 (2 1/2")	CNL651	P65	F65	1.5 (2)	3-ph	0.60–7.4	0.60–7.8	4	45
80 (3")	CNL651	P80	F80	1.5 (2)	3-ph	0.60–7.4	0.60–7.8	4	45

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (8m) 1 pc.

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

● Auto-connection type

- Connection
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

Connection Part No.	Set Weight	Connection Part No.
P65	24kg	15kg
P80	31.5kg	20.5kg

● Free standing type

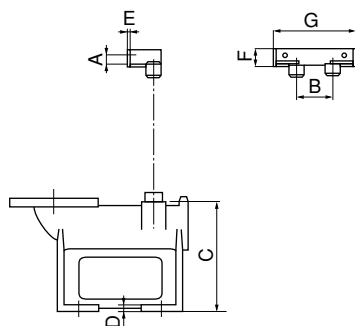
- Elbow Flange
- Companion Flange
(With bolts, nuts and packing)

Connection Part No.	Set Weight
F65	7kg
F80	9.5kg

Part Specifications

Applicable Model	Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
	Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz
CNL651	VCT	1.25	4	φ 11.5	Direct	SiC/SiC	SiC/SiC	46	39

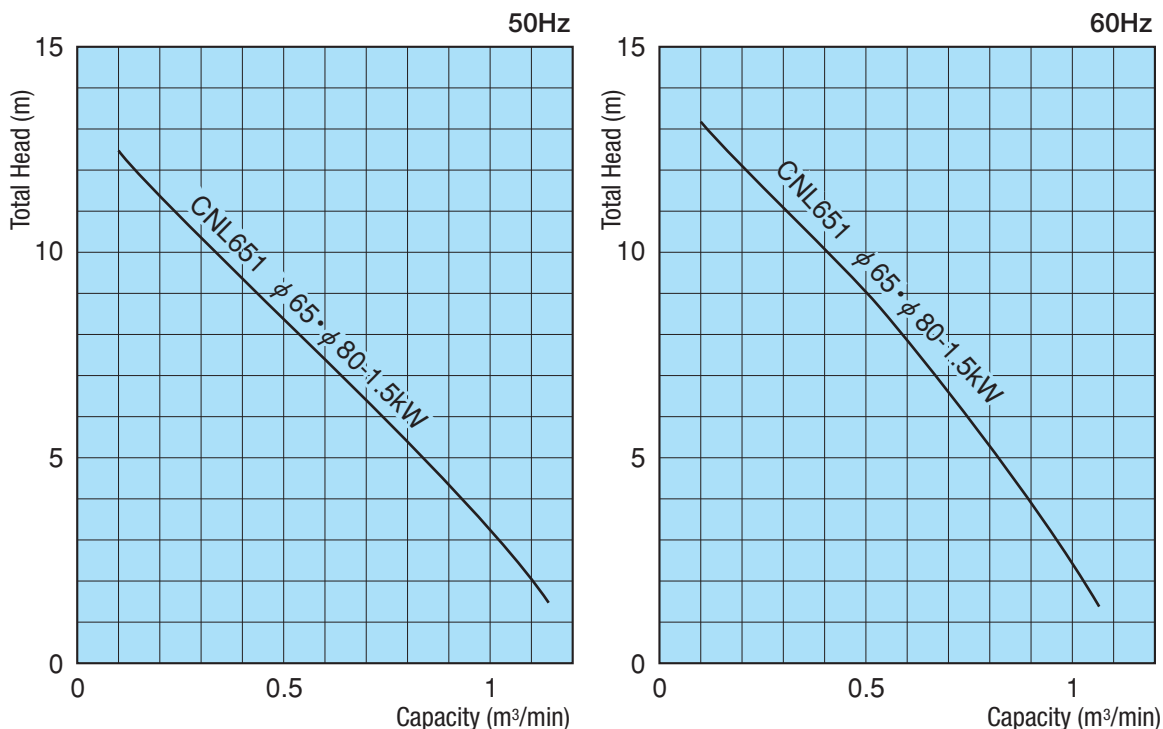
● Connection Dimensions



Unit: mm

Connection Part No.	A	B	C	D	E	F	G
P65	17	70	201	12	6	32	160
P80	25	100	262	12	6	44	210

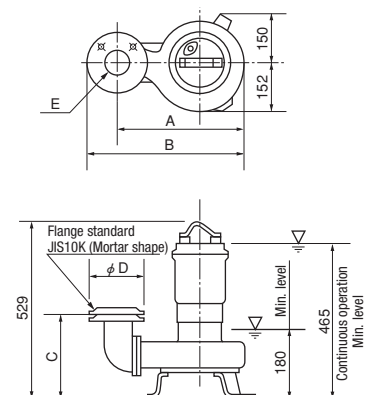
Performance Curves



Dimensions

Unit: mm

Free standing type



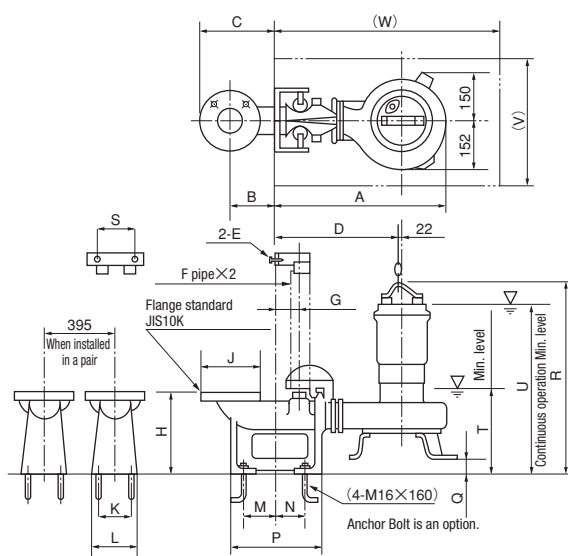
Free standing type

Connection Part No.	A	B	C	D	E
F65	392	480	235	φ175	Rc2 ¹ / ₂
F80	402	495	265	φ185	Rc3

Auto-connection type

Connection Part No.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W
P65	492	145	233	333	M8×25	32A	50	218	φ175	140	175	95	65	244	35	564	120	215	500	350	550
P80	535	160	266	376	M10×25	50A	80	330	φ211	120	150	107	103	302	75	604	180	255	540	500	600

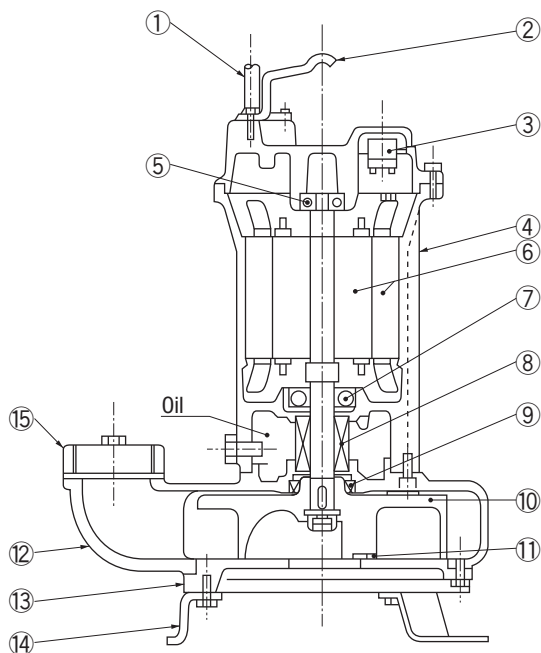
Auto-connection type



Sectional View

CNL501

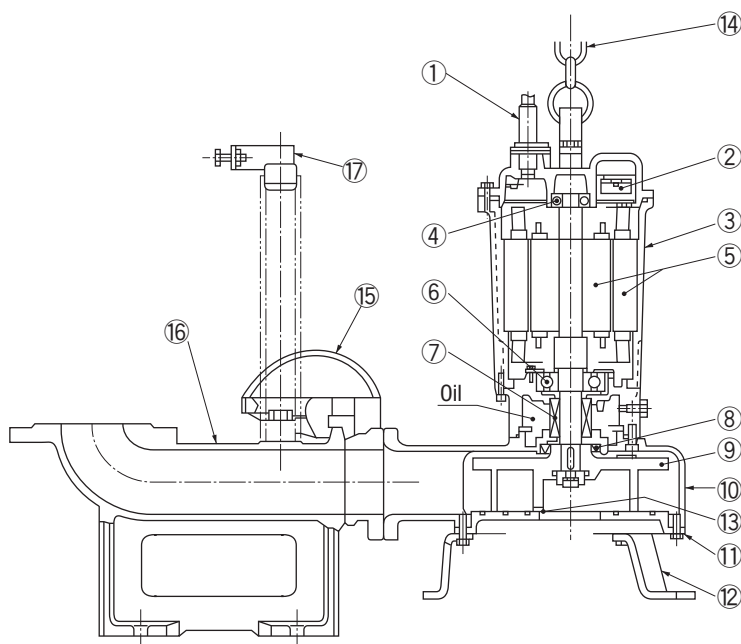
Free standing type



No.	Name	Material
1	Cable	VCT
2	Handle	SUS304
3	Thermal Protector	—
4	Stator Casing	FC200
5	Ball Bearing (Upper)	—
6	Motor	Shaft: SUS420J2
7	Ball Bearing (Lower)	—
8	Mechanical Seal	—
9	Oil Seal	NBR
10	Impeller	FC200
11	Carbide Tip	WC
12	Pump Casing	FC200
13	Base Cover	FC200
14	Stand	SS400
15	Screwed Coupling	FC200

CNL651

Auto-connection type



No.	Name	Material
1	Cable	VCT
2	Thermal Protector	—
3	Stator Casing	FC200
4	Ball Bearing (Upper)	—
5	Motor	Shaft: SUS420J2
6	Ball Bearing (Lower)	—
7	Mechanical Seal	—
8	Oil Seal	NBR
9	Impeller	FC200
10	Pump Casing	FC200
11	Base Cover	FC200
12	Stand	SS400
13	Carbide Tip	WC
14	Chain	SS400
15	Sliding Bracket	FC200
16	Connection	FC200
17	Guide Holder	SCS13

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel

SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

WC : Tungsten carbide

Dry Pit Pump (Non-clog Impeller)**Bore: 65 - 150 mm (2 1/2" - 6")****Output: 1.5 - 22 kW (2 - 30 HP)**

CNT

The CNT series is a dry installation pump. Since its design is based on a submersible pump, it remains operatable, even if immersed in water.

The CNT series can achieve higher discharge head when connected in series with CN-P, making it suitable for use at a transfer-pumping station.

Bore mm (inch)	Output kW (HP)	Model	Page
65 (2 1/2")	1.5 (2)	CNT651	142
80 (3")	2.2•3.7 (3•5)	CNT801	
100 (4")	5.5•7.5 (7.5 •10)	CNT1001	
150 (6")	11•15•22 (15•20•30)	CNT1501	144
	6•11 (50Hz) (8•15)	CNT150B	146
	6.5•13 (60Hz) (9 •17.5)		

CNT**Dry Pit Pump
(Non-clog Impeller)**Bore : **65 - 150 mm (2 1/2 - 6")**Output: **1.5 - 22 kW (2 - 30 HP)**

■ Features

● **Adopts an air-cooled submersible motor (except for CNT150B)**

A dry-type air-cooled submersible motor is adopted. The water jacket-less structure is very simple and facilitates maintenance and inspection. A larger and more efficient motor significantly cuts the emitted heat and reduces the thermal degradation of bearing grease, O-rings, and mechanical seals.

● **Non-clogging impeller**

Equipped with a single-vane, non-clogging closed impeller eliminates clogging and facilitates the transfer of water containing solids.

● **Extended service life**

The shaft seal mechanism is equipped with a reliable double mechanical seal to extend the service life.

● **Operatable in water**

The pump, which is designed to be submersible and remains operatable, even if immersed in water.

● **Replaceable to land pump**

It can replace a land pump without any construction work.

■ Applications

- Sewage treatment plant and Septic tank
 - Wastewater
 - Raw water
 - Sludge
- Factory
 - Industrial wastewater, cooling water
- Others
 - Pumping station
 - Rainwater, etc.

■ Special Specifications

Cable Extension	Cable lengths: 10 - 30m (every 5m)
Material Changes	Impeller: SCS13 (Stainless steel casting) Base Cover: SCS13 (Stainless steel casting)
Others	● Availability of mounting leakage detector, please refer to the specifications (detail data) - App.1. ● For specifications other than the above, please contact us.

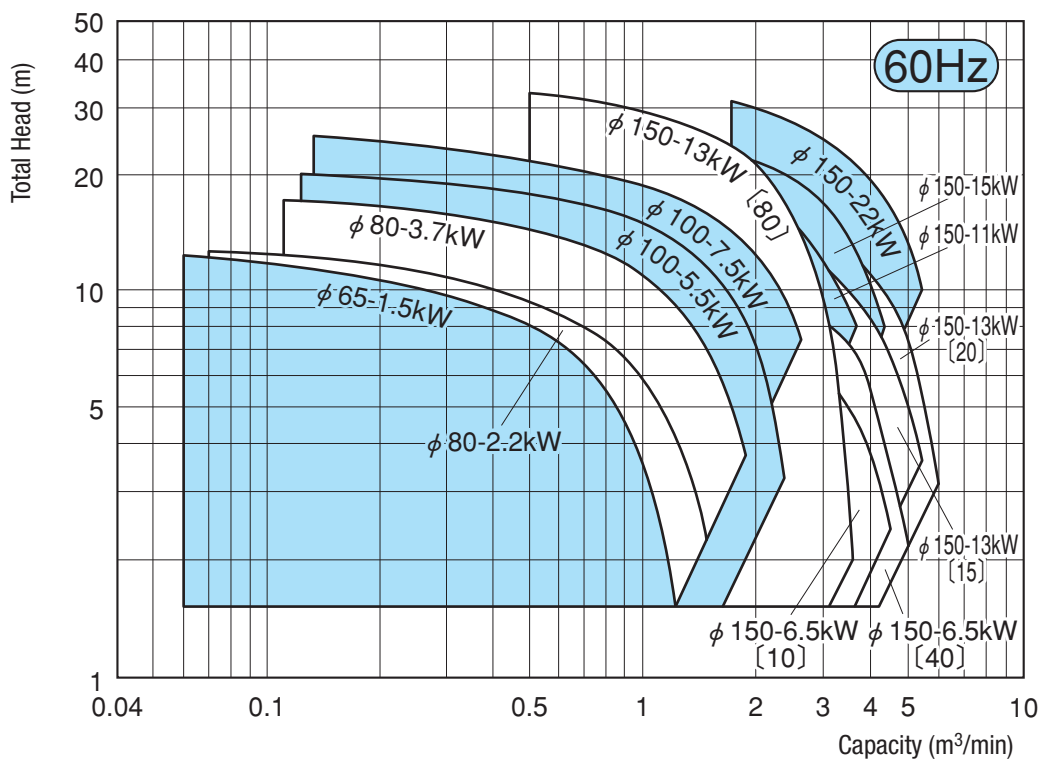
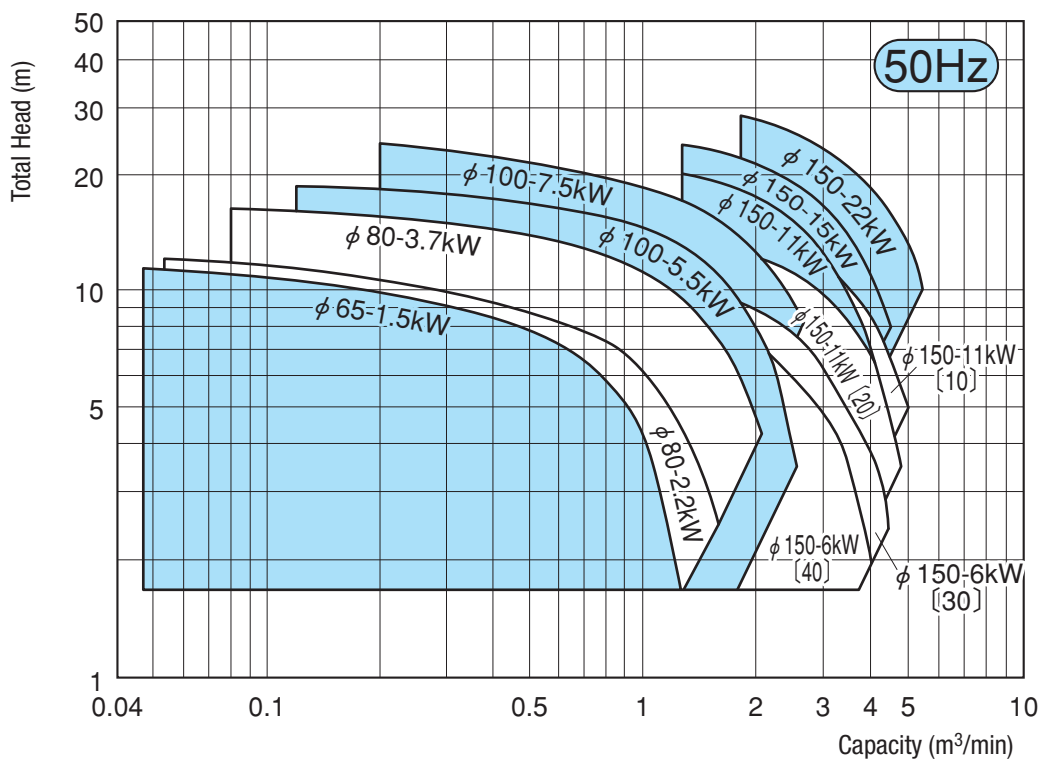
■ Standard Specifications

Installation Environment	Ambient Temperature	-20 - 40°C
	Ambient Humidity	0 - 100%
Handling Liquid	Kind of Liquid	Wastewater, sewage containing sludge
	Temperature	0 - 60°C (0 - 40°C for CNT150B)
Material	Cable	VCT (CNT1501, CNT150B and 2PNCT)
	Motor Shaft	SUS420J2
	Pump Casing	FC250 (FC200 for CNT150B)
	Impeller	FC200 (7.5 kW or more and CNT150B) FC250 (11 kW or more) FCD500 (22 kW)
Electric Motor	Name	Air-filled type Submersible Induction Motor
	Insulation Class	Class E (Class F for CNT150B)
	Enclosure	IP68
	Phase	3-ph
	Voltage	200 - 480V

■ Pump-Related Product

- Liquid Level Control Switch
 - Level Regulator ⇒ See page 370
 - Mini Switch ⇒ See page 372
 - Oval Float ⇒ See page 373

Performance Curves



CNT

Dry Pit Pump (Non-clog Impeller)

Bore : 65 - 150 mm (2 1/2 - 6")

Output: 1.5 - 7.5 kW (2 - 10 HP)



CNT801

Standard Specifications

Bore mm (inch)		Pump Model	Output kW (HP)	Phase	Capacity - Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) kg
Discharge	Suction				50Hz	60Hz		
65 (2 1/2")	80 (3")	CNT651	1.5 (2)	3-ph	0.75–6.5	0.65–7.0	4	130
80 (3")	100 (4")	CNT801	2.2 (3)	3-ph	0.90–6.7	0.84–7.1	4	205
			3.7 (5)		1.18–10.1	1.14–9.9		230
100 (4")	125 (5")	CNT1001	5.5 (7.5)	3-ph	1.50–11.6	1.49–11.6	4	275
			7.5 (10)		1.79–14.0	1.70–14.5		300

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

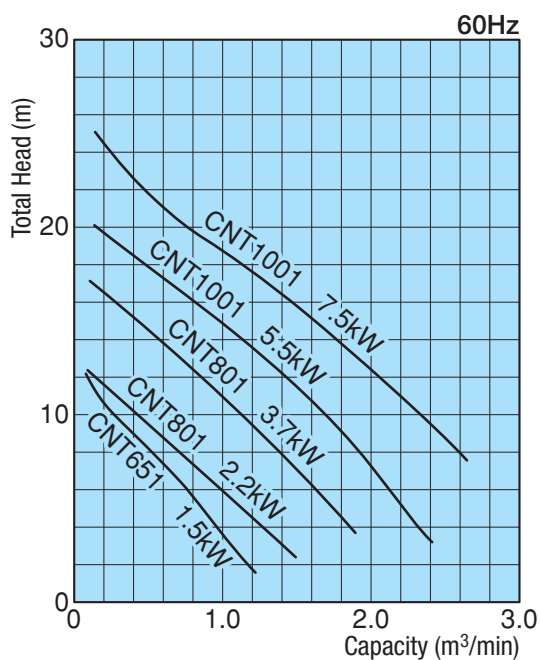
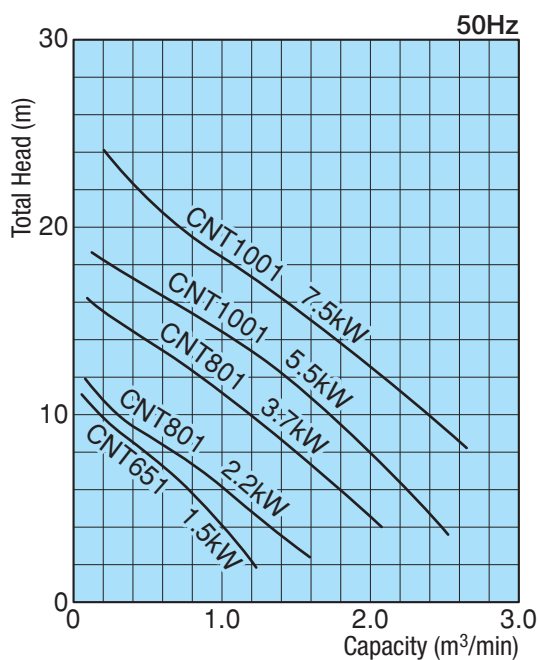
Standard Accessories

- Cable (8 m) 2 pcs.
- Stand (Suction pipe) 1 set

Part Specifications

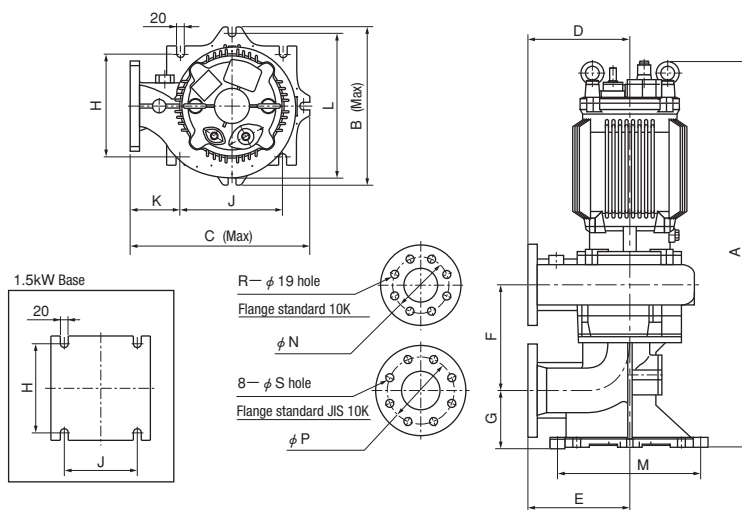
Applicable Model		Cable Specification					Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
		Type	Section Area (mm²)	Cores	Outer Dia. (mm)	Number of Cables		Upper	Lower		
										50Hz	60Hz
CNT651	1.5kW (2 HP)	VCT	1.25	4	ϕ 11.5	1	Direct	SiC/SiC	SiC/SiC	56	56
		2PNCT	1.25	2	ϕ 9.8	1					
CNT801	2.2kW (3 HP)	VCT	1.25	4	ϕ 11.5	1				70	70
		2PNCT	1.25	2	ϕ 9.8	1					
CNT801	3.7kW (5 HP)	VCT	2.0	4	ϕ 12.0	1				70	70
		2PNCT	1.25	2	ϕ 9.8	1					
CNT1001	5.5kW (7.5 HP)	VCT	3.5	4	ϕ 14.0	1				70	70
		2PNCT	1.25	2	ϕ 9.8	1					
CNT1001	7.5kW (10 HP)	VCT	5.5	4	ϕ 16.5	1				70	70
		2PNCT	1.25	2	ϕ 9.8	1					

Performance Curves



Dimensions

Unit: mm



Pump Model	Output kW (HP)	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S									
CNT651	1.5 (2)	865	288	354	210	180	273	130	230	195	110	—	—	140	150	4	19									
CNT801	2.2 (3)	920	410	470	265	265	270	145	270	270	130	380	380	150	175	8										
	3.7 (5)	995												175	210											
CNT1001	5.5 (7.5)	1,050	423											265	265	270	145	270	270	130	380	380	175	210	8	23
	7.5 (10)	1,110																					175	210		



CNT1501

Standard Specifications

Bore mm (inch)		Pump Model	Output kW (HP)	Phase	Capacity - Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) kg
Discharge	Suction				50Hz	60Hz		
150 (6")	200 (8")	CNT1501	11 (15)	3-ph	2.5–15.0	2.5–15.2	4	550
			15 (20)		2.9–17.0	2.9–16.8		610
			22 (30)		3.5–21.2	3.4–22.7		680

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

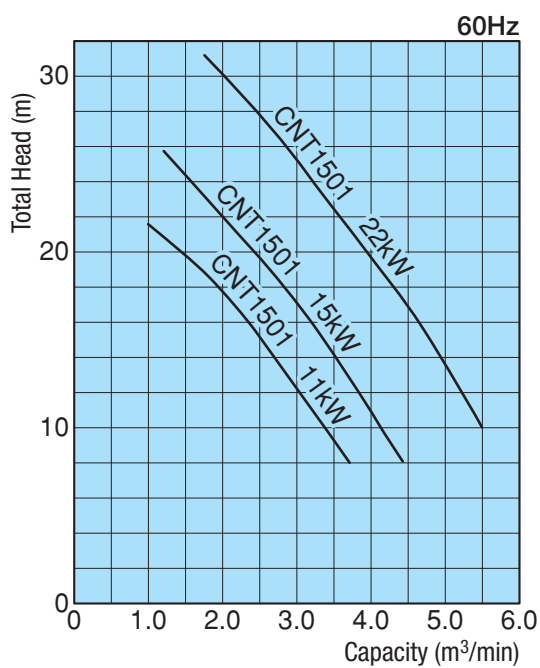
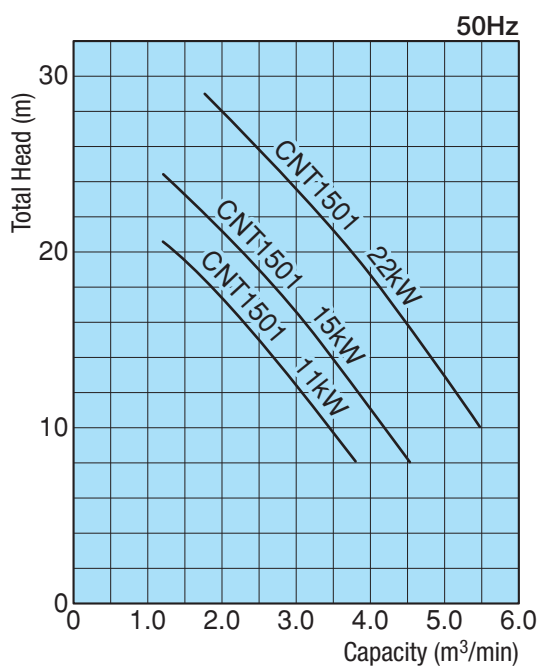
Standard Accessories

- Cable (8 m) 3 pcs.
- Stand (Suction pipe) 1 set

Part Specifications

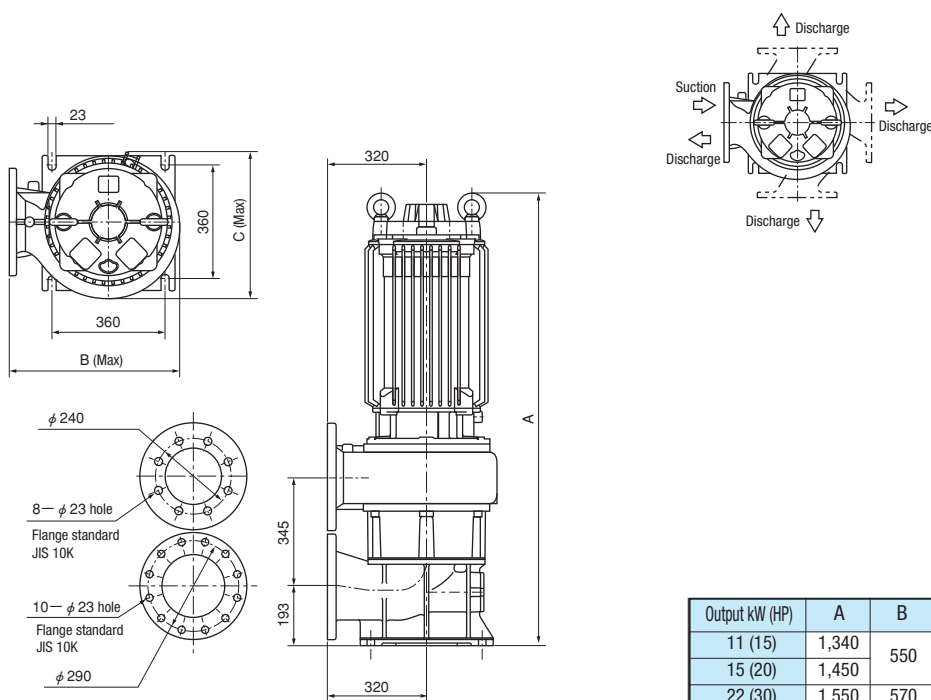
Applicable Model		Cable Specification					Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
		Type	Section Area (mm²)	Cores	Outer Dia. (mm)	Number of Cables		Upper	Lower		
										50Hz	60Hz
CNT1501	11kW (15 HP)	2PNCT	05.5	4	ϕ 17	1	Star-delta	SiC/SiC	SiC/SiC	64	57
			05.5	3	ϕ 15.5	1					
			1.25	2	ϕ 9.8	1					
CNT1501	15kW (20 HP)	2PNCT	08.0	4	ϕ 18.5	1				70	62
			08.0	3	ϕ 17	1					
			1.25	2	ϕ 9.8	1					
CNT1501	22kW (30 HP)	2PNCT	14.0	4	ϕ 22	1				76	67
			14.0	3	ϕ 20	1					
			1.25	2	ϕ 9.8	1					

Performance Curves



Dimensions

Unit: mm



Output kW (HP)	A	B	C
11 (15)	1,340	550	470
15 (20)	1,450		
22 (30)	1,550	570	500



CNT150B

■ Standard Specifications

Bore mm (inch)	Pump Model	Output kW (HP)		Phase	Capacity - Total Head m³/min-m		No. of poles P	Weight (Bare Pump) kg
		50Hz	60Hz		50Hz	60Hz		
150 (6")	CNT150B	6.0 (8)	6.5 (9)	3-ph	[40] 2.5– 6.0	[10] 2.8– 6.8	6	230
					[30] 2.5– 7.7	[40] 2.8– 8.8		
		11 (15)	13 (17.5)		[20] 2.5–11.0	[15] 2.8–11.8	4	
						[20] 2.8–14.8		
					[10] 2.5–13.5	[80] 1.8–22.8		

For motor characteristics, bearings and oils, see the specifications [] Impeller No. (detail data) - App.1.

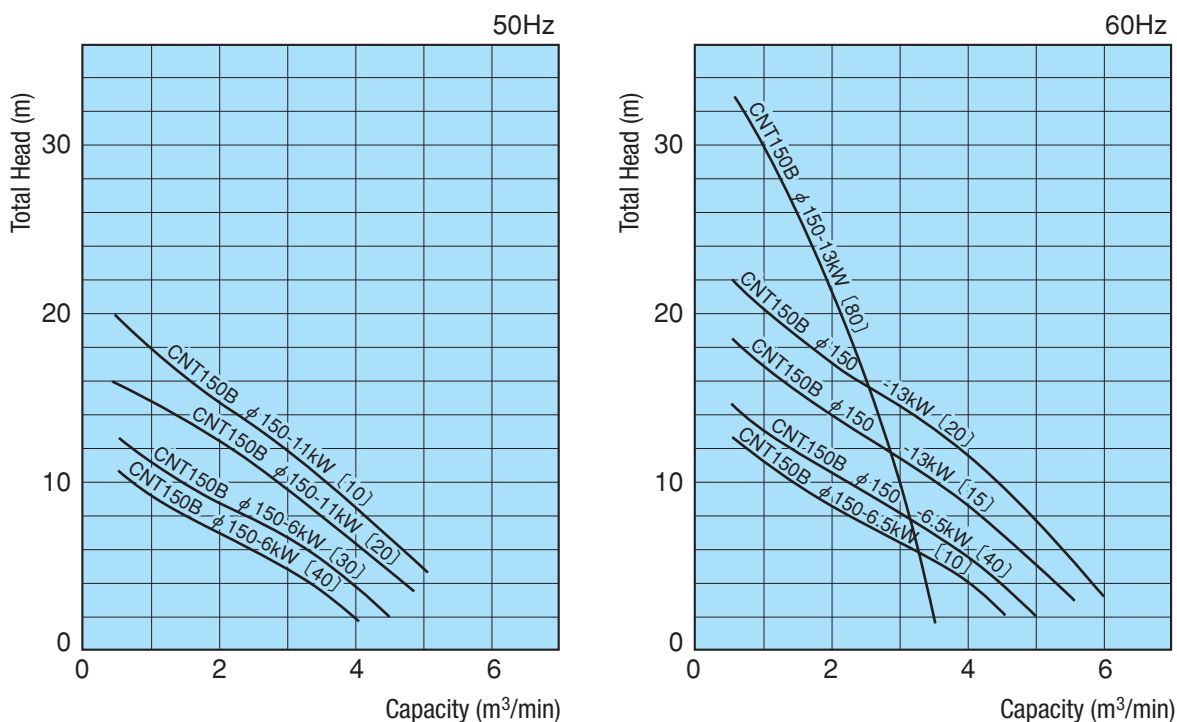
■ Standard Accessories

- | | |
|--------------------------------|--------|
| - Cable (16m • 6/6.5 kW) | 1 pcs. |
| (16m • 11/13kW) | 2 pcs. |
| - Stand | 1 set |
| - Suction Pipe | 1 pcs. |

■ Part Specifications

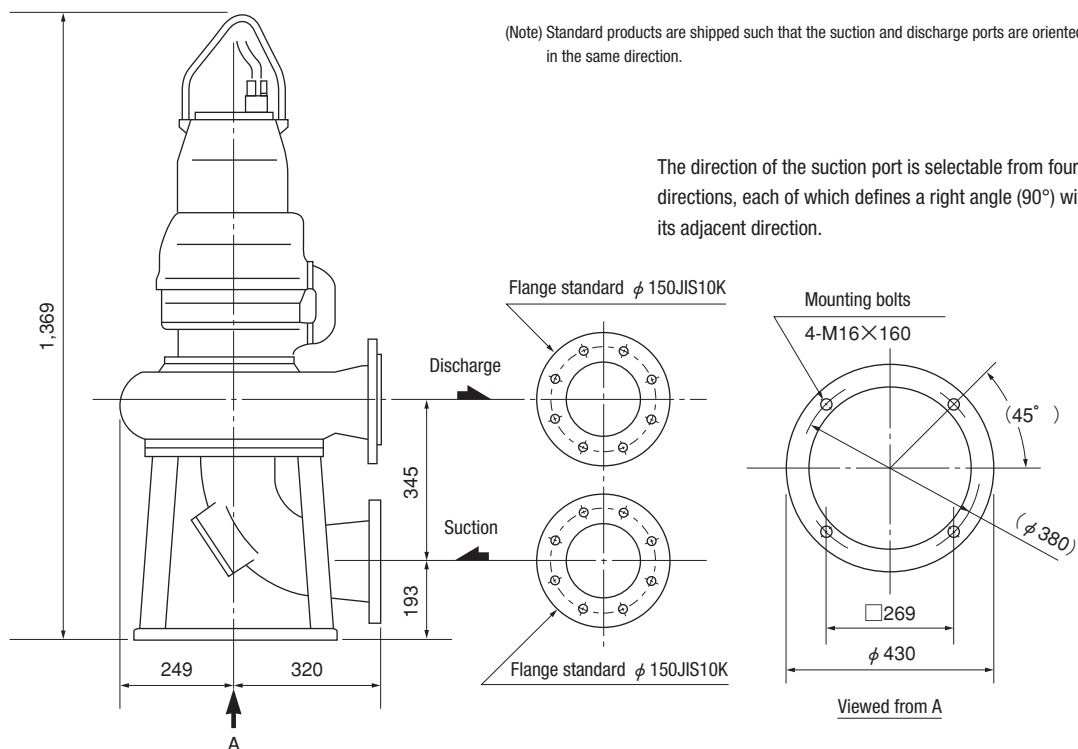
Applicable Model		Cable Specification				Starting Method	Mechanical Seal	
		Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper
CNT150B	6/6.5kW (8/9 HP)	2PNCT	8.0	4	ϕ 18.5	Direct	Cemented Carbide/ Cemented Carbide	Carbon/Cemented Carbide
CNT150B	11/13kW (15/17.5 HP)					Star-delta		

Performance Curves



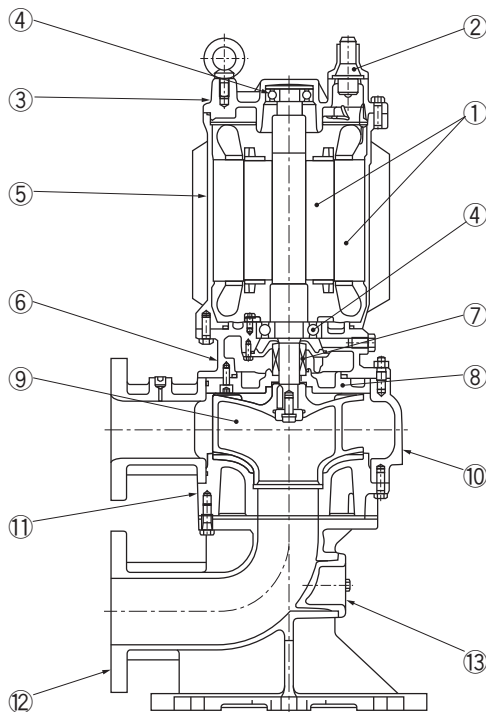
Dimensions

Unit: mm



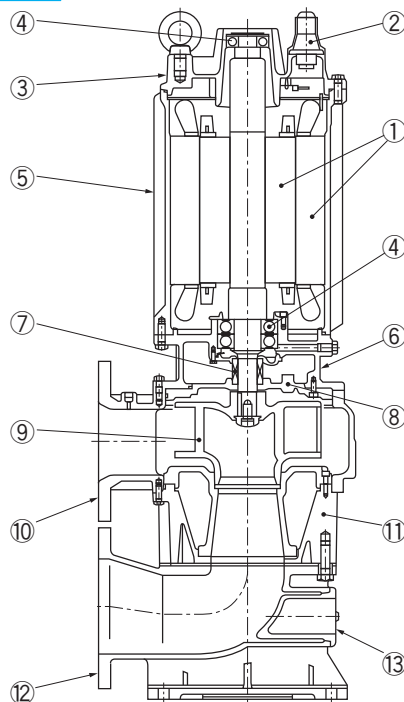
Sectional View

CNT801



No.	Name	Material
1	Motor	—
2	Cable	VCT
3	Motor Cover	FC200
4	Ball Bearing	—
5	Stator Casing	FC200
6	Oil Casing	FC200
7	Mechanical Seal	SiC/SiC
8	Mechanical Seal Bracket	FC250
9	Impeller	FC200
10	Pump Casing	FC250
11	Base Cover	FC250
12	Stand	FC200
13	Inspection Lid	FC200

CNT1501

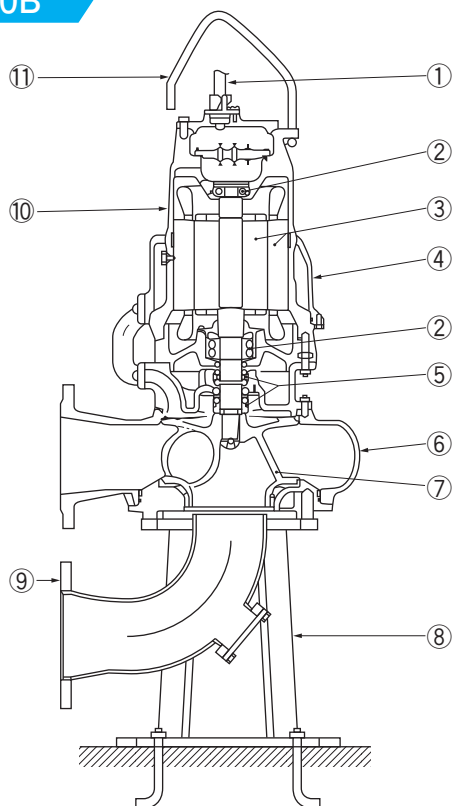


No.	Name	Material
1	Motor	—
2	Cable	2PNCT
3	Motor Cover	FC200
4	Ball Bearing	—
5	Stator Casing	FC200
6	Oil Casing	FC200
7	Mechanical Seal	SiC/SiC
8	Mechanical Seal Bracket	FC250
9	Impeller (11 or 15 kW)	FC250
	Impeller (22 kW)	FCD500
10	Pump Casing	FC250
11	Pump Stand	FC200
12	Suction Stand	FC200
13	Inspection Lid	FC200

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitrlyl rubber

Sectional View

CNT150B



No.	Name	Material
1	Cable	2PNCT
2	Ball Bearing	—
3	Motor	—
4	Outer Casing	FC200
5	Mechanical Seal	—
6	Pump Casing	FC200
7	Impeller	FC200
8	Stand	SS400
9	Curved Suction Pipe	SS400
10	Stator Casing	FC200
11	Handle	SS400

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitrlyl rubber

Non-clog impeller (Solid passage 80mm dia.)

Bore: 80 - 100 mm (3" - 4")

Output: 2.2 - 7.5 kW (3 - 10 HP)

CNM

The CNM Series is a submersible pump for wastewater and sewage with a 80 & 100mm bore.

The newly designed non-clogging semi-open impeller prevents clogging of foreign object and solid passage capability is 80mm in diameter.

Bore mm (inch)	Output kW (HP)	Model	Page
80 • 100 (3" • 4")	2.2 • 3.7 (3 • 5)	CNM80	154
80 • 100 (3" • 4")	5.5 • 7.5 (7.5 • 10)	CNM100	156

CNM

Non-clog impeller
(Solid passage 80mm dia.)

Bore: 80 - 100 mm (3" - 4")

Output: 2.2 - 7.5 kW (3 - 10 HP)

■ Features

● Solid pass-through capacity 80mm

The newly designed semi-open impeller with a pass-through capacity of 80mm.

● Extended service life

Double Mechanical Seal and Oil Seal offering excellent wear resistance, are employed for shaft seal mechanism.

● Preventing motor burnout

The built-in automatic reset type thermal protector prevents motor burnout due to overload. The cable with a core wire seal can prevent water intrusion into the motor chamber, even if the cable sheath breaks or the cable end goes under water.

● Ease of maintenance

All models employed a vertical mounting design. Ease of disassembly and assembly as the impeller can be pulled up simply by removing the bolts of the pump casing.

■ Standard Specifications

Handling Liquid	Kind of Liquid	Wastewater and sewage
	Temperature	0 - 40°C
Material	Cable	VCT
	Motor Shaft	SUS420J2
	Pump Casing	FC250
	Impeller	FC250
Electric Motor	Name	Air-filled Type Submersible Induction Motor
	Insulation Class	Class F
	Enclosure	IP68
	Phase	3-ph
	Pole	4 Poles
	Frequency	50Hz
	Voltage	380 / 400 / 415V

■ Applications

- Sewage treatment plant & Septic tank
Raw water and other treatment process
- Pumping station
Sewage and rainwater
- Building & Shopping complex
Sanitary and kitchen wastewater
- Road, Underpass & Subway
Rainwater
- Factory & other facilities
Industrial wastewater, etc.

■ Special Specifications

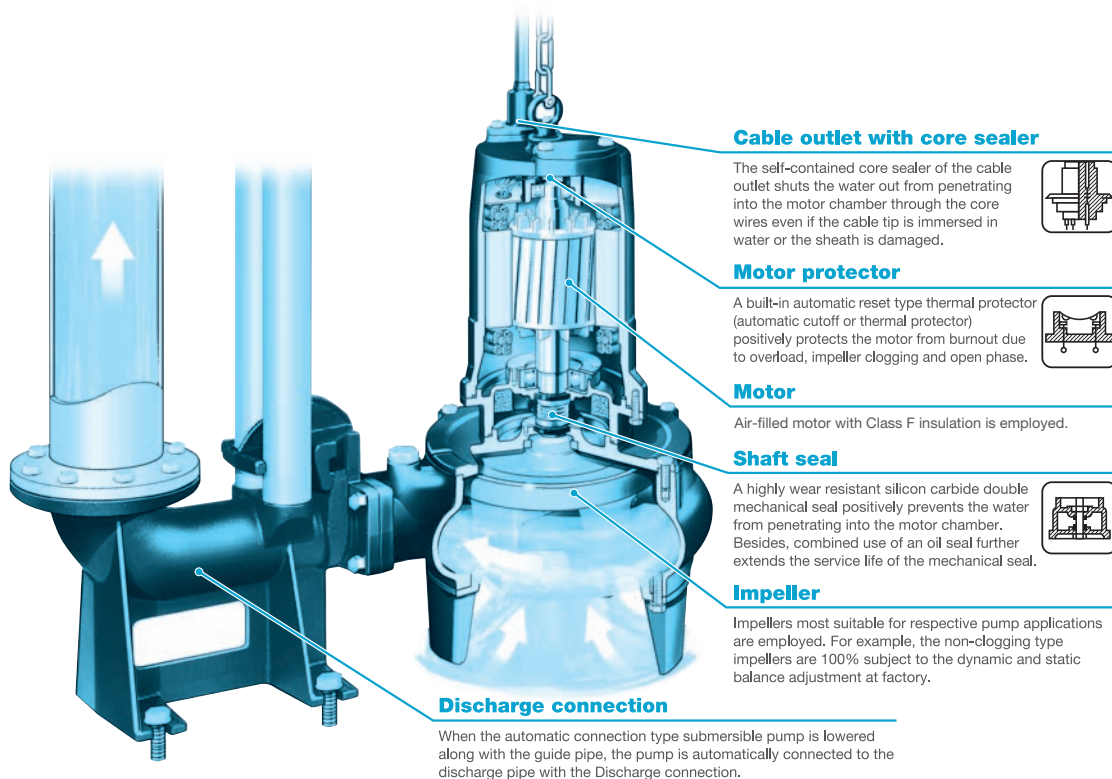
Cable Extension	Cable length: 10 - 30m (every 5m)	
Material Change	Impeller	Stainless steel casting (SCS13)
	Base Cover	Stainless steel casting (SCS13)
	Lifting Chain	Stainless steel (SUS304)
Other	• Availability of mounting motor protector, please refer to the specifications in the color pages. • For specifications other than the above, please contact us.	

* The cable length should be limited due to voltage drop, see the specifications (detail data) - App.1.

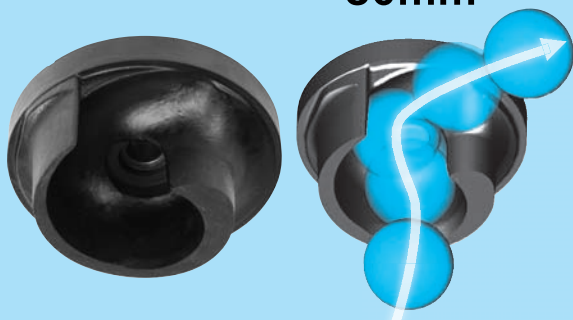
■ Pump-Related Products

- Liquid Level Control Switch
 - Level regulator ⇒ See page 370
 - Mini Switch ⇒ See page 372
 - Oval Float ⇒ See page 373

Structure and Features



Solid passage diameter: **80mm**



Brand-New Non-clogging semi-open

Quick, Easy Maintenance

The vertical mounting design allows for easier and more efficient inspection and part replacement. The pump unit can be detached without removing the impeller from the motor.



CNM

Non-clog impeller
(Solid passage 80mm dia.)

Bore: 80•100 mm (3"•4")

Output: 2.2•3.7 kW (3•5 HP)



CNM80



CNM80-F80



CNM80-P80B

Standard Specifications

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Frequency (Hz)	Capacity - Total Head (m³/min-m)	No. of poles P	Weight (Bare Pump) kg
		Auto-Connection	Free Standing						
80 (3")	CNM80	P80B	F80	2.2 (3)	3-ph	50	1.0 - 7.0	4	73
				3.7 (5)			1.2 - 9.7		85
100 (4")	CNM80	P100B	F100	2.2 (3)	3-ph	50	1.0 - 7.0	4	73
				3.7 (5)			1.2 - 9.7		85

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (8m)1 pc.
- Air Relief Valve

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

● Auto-connection type

- Connection
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

Connection Part No.	Set Weight	Connection Weight
P80B	31.5kg	18kg
P100B	40.5kg	27kg

● Free standing type

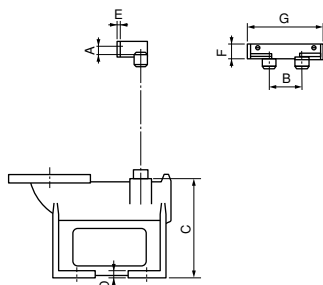
- Elbow Flange
- Companion Flange (with bolts, nuts and packing)

Connection Part No.	Set Weight
F80	9.5kg
F100	11kg

Part Specifications

Applicable Model	Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (mm)
	Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz
CNM80 2.2kW (3HP)	VCT	1.25	4	φ 11.5	Direct	SiC/SiC	SiC/SiC	80
CNM80 3.7kW (5HP)	VCT	2.0	4	φ 12		SiC/SiC	SiC/SiC	

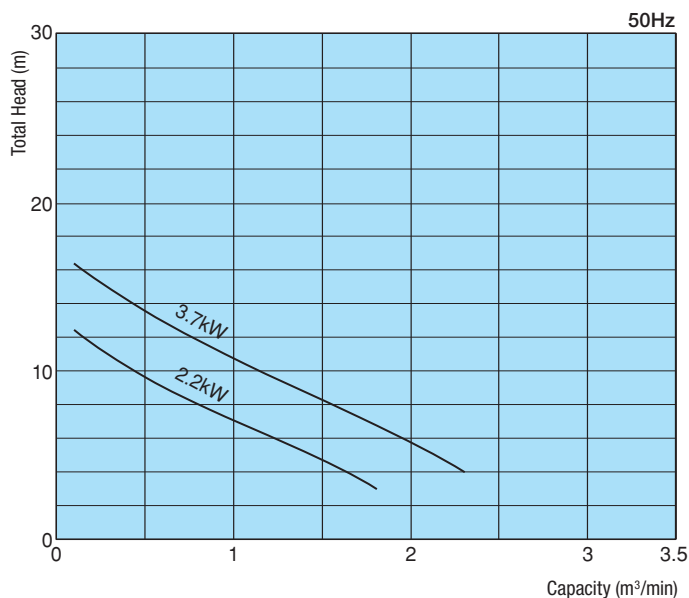
● Connection Dimensions



Unit: mm

Connection Part No.	A	B	C	D	E	F	G
P80B	25	100	262	12	6	44	210
P100B	25	100	259	12	6	44	210

Performance Curves

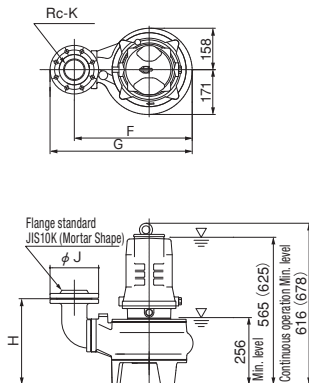


Dimensions

Unit: mm

Free standing type

() : 3.7kW

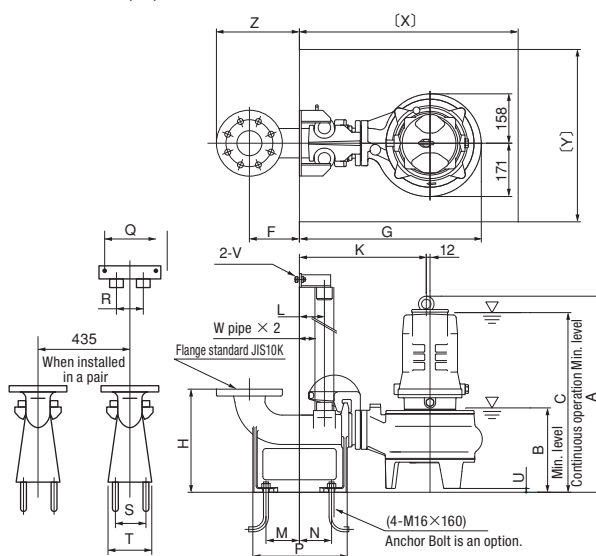


Free standing type

Connection Part No.	Output kW (HP)	F	G	H	J	K
F80	2.2 (3) 3.7 (5)	449	542	328	185	Rc3
F100	2.2 (3) 3.7 (5)	454	559	338	210	Rc4

Auto-connection type

() : 3.7kW



Auto-connection type

Connection Part No.	Output kW (HP)	A	B	C	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X	Y	Z
P80B	2.2 (3) 3.7 (5)	628 690	270	575 635	160	582	330	211	406	80	107	103	302	180	100	120	150	12	M10x25	50A	700	600	266
P100B	2.2 (3) 3.7 (5)	628 690	270	575 635	160	582	330	238	406	80	114	115	308	180	100	200	238	12	M10x25	50A	700	600	279

CNM

Non-clog impeller
(Solid passage 80mm dia.)

Bore: 80 • 100 mm (3" • 4")

Output: 5.5 • 7.5 kW (7.5 • 10 HP)



CNM100



CNM100-F100



CNM100-P100B

Standard Specifications

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Frequency (Hz)	Capacity - Total Head (m³/min-m)	No. of poles P	Weight (Bare Pump) kg
		Auto-Connection	Free Standing						
80 (3")	CNM100	P80B	F80	5.5 (7.5)	3-ph	50	1.4 - 12.8	4	114
				7.5 (10)			1.6 - 14.7		126
100 (4")	CNM100	P100B	F100	5.5 (7.5)	3-ph	50	1.4 - 12.8	4	114
				7.5 (10)			1.6 - 14.7		126

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (8m) 1 pc.
- Air Relief Valve

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

● Auto-connection type

- Connection
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

Connection Part No.	Set Weight	Connection Weight
P80B	31.5kg	18kg
P100B	40.5kg	27kg

● Free standing type

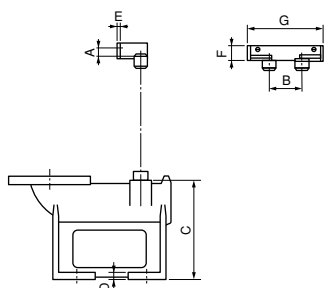
- Elbow Flange
- Companion Flange
(with bolts, nuts and packing)

Connection Part No.	Set Weight
F80	9.5kg
F100	11kg

Part Specifications

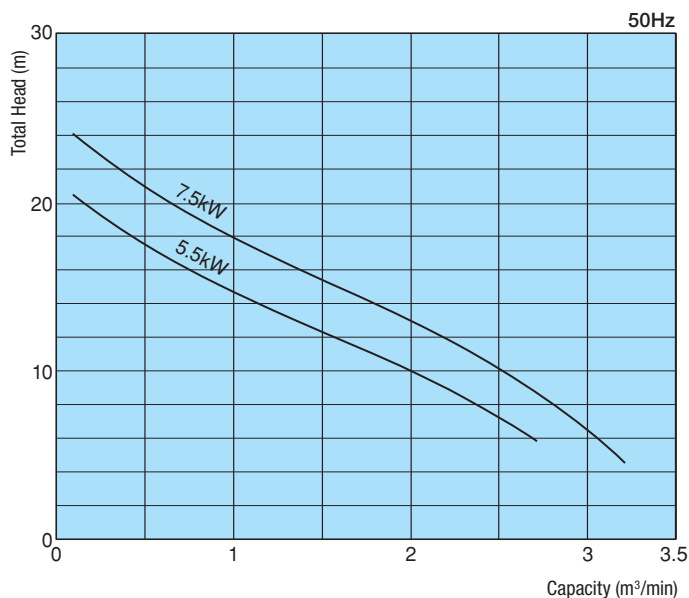
Applicable Model	Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (mm)
	Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	
CNM100 5.5kW (7.5HP)	VCT	2.0	4	φ 12	Direct	SiC/SiC	SiC/SiC	80
CNM100 7.5kW (10HP)	VCT	3.5	4	φ 14				

● Connection Dimensions



Connection Part No.	A	B	C	D	E	F	G
P80B	25	100	262	12	6	44	210
P100B	25	100	259	12	6	44	210

Performance Curves

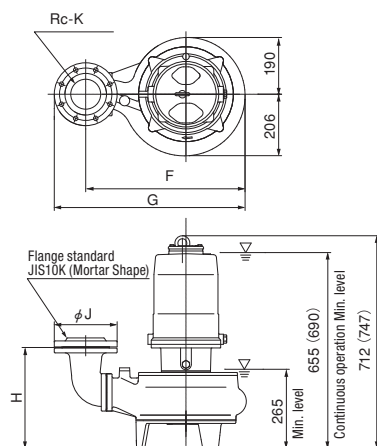


Dimensions

Unit: mm

Free standing type

() : 7.5kW

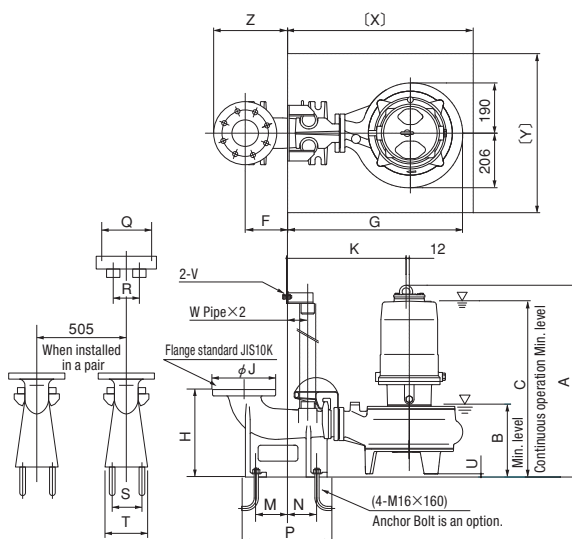


Free standing type

Connection Part No.	Output kW (HP)	F	G	H	J	K
F80	5.5 (7.5)	528	620	328	185	Rc3
	7.5 (10)					
F100	5.5 (7.5)	533	638	338	210	Rc4
	7.5 (10)					

Auto-connection type

() : 7.5kW

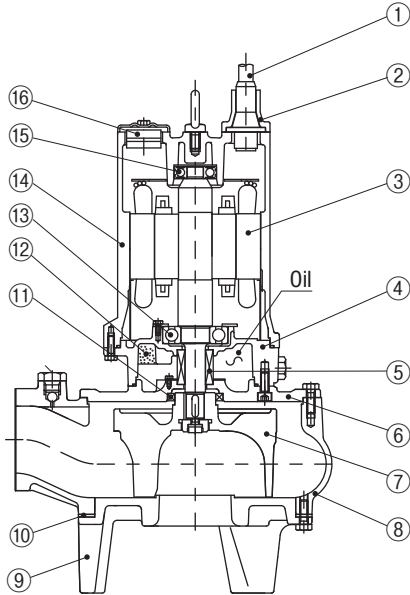


Auto-connection type

Connection Part No.	Output kW (HP)	A	B	C	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X	Y	Z
P80B	5.5 (7.5)	724	275	665	160	661	330	211	451	80	107	103	302	180	100	120	150	12	M10×25	50A	700	600	266
	7.5 (10)	759		700																			
P100B	5.5 (7.5)	724	275	665	160	661	330	238	451	80	114	115	308	180	100	200	238	12	M10×25	50A	700	600	279
	7.5 (10)	759		700																			

Sectional View

CNM80, CNM100



Number	Name	Material
1	Cable	VCT
2	Cable Entry	FC200
3	Motor	Shaft: SUS420J2
4	Oil Housing	FC200
5	Mechanical Seal	Upper: SiC/SiC Lower: SiC/SiC
6	Mecha-Seal Housing	FC200
7	Impeller	FC250
8	Pump Housing	FC250
9	Suction Cover	FC250
10	Shim	Polyethylene
11	Oil Seal	NBR
12	Equalizer	NBR
13	Ball Bearing (Lower)	—
14	Stator Housing	FC200
15	Ball Bearing (Upper)	—
16	Thermal Protector	—

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel **PP** : Polypropylene
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitryl rubber

Vortex Impeller

Bore: 50 - 150 mm (2" - 6")

Output: 0.4 - 1.5/5.5 - 22 kW (1/2 - 2 / 7.5 - 30 HP)

CV • CVH

CV Series is a submersible pump with vortex impeller for sewage and wastewater. The vortex impeller prevents itself from being locked due to clogging and tangling. The impeller has excellent durability against debris not to directly pass through the impeller. Also pump with an automatic float switch allows automatic alternate operation.

Bore mm (inch)	Output kW (HP)	Pump Model	Page
50 • 65 (2" • 2 1/2")	0.4 • 0.75 • 1.5 (1/2 • 1 • 2)	CV501 (D • DW)	162
65 • 80 (2 1/2" • 3")	1.5 (2)	CV651 (D • DW)	164
100 (4")	11 - 22 (15 - 30)	CVH100	166
150 (6")	5.5 - 22 (7.5 - 30)	CV150	168

D: Auto-operation

DW: Auto-alternate operation

Note: Since D and DW types with output not exceeding 0.75 kW are made-to-order products, please check the delivery time before placing an order.

CV

Vortex Impeller

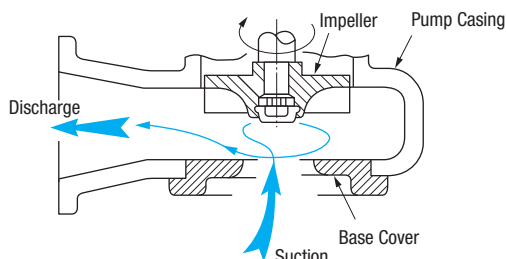
Bore: 50 - 150 mm (2" - 6")

Output: 0.4 - 1.5 / 5.5 - 22kW (1/2 - 2 / 7.5 - 30 HP)

Features

● Prevent clogging of fibrous debris

As being a vortex type, the impeller is so structured to invite less clogging and tangling even in the sewage water that contains fibrous debris.



● Extended service life

Double mechanical seal and oil seal, offering excellent wear resistance, are employed for shaft seal mechanism. The impeller, being the vortex flow type, is less wear and offers excellent durability against sludge or debris not directly passes through the impeller.

● Prevent motor burnout

Thermal Protector (a built-in auto-reset type motor protector) prevents motor burnout due to overload, impeller locking and open phase. The cable entry employs a core seal that effectively prevents water from wicking down the cable even when the cable end is soaked or the cable sheath is damaged. This feature prevents water from penetrating the motor chamber.

Standard Specifications

Handling Liquid	Kind of Liquid	Wastewater, sewage containing sludge
	Temperature	0 - 32°C
Material	Cable	7.5 kW or less: VCT 11 kW or more: 2PNCT
	Motor Shaft	Stainless steel (SUS420J2)
	Pump Casing	Gray iron casting (FC200)
	Impeller	Gray iron casting (FC200)
Electric Motor	Name	Air-filled type Submersible Induction Motor
	Insulation Class	Class E
	Enclosure	IP68
	Phase	3-ph
	Voltage	200 - 480 V

Note: Since D and DW types with output not exceeding 0.75 kW are made-to-order products, please check the delivery time before placing an order.

SUS: Stainless steel

Applications

- ☐ Sewage treatment plant and Septic tank
Raw water, sludge and scum
- ☐ Factory
Industrial wastewater and sludge
- ☐ Food plant and Livestock farm
Food waste and livestock waste
- ☐ Others
Wastewater and sewage containing fibrous debris

Special Specifications

Motor Insulation	Class F
Cable Extension	Cable lengths: 10 - 30m (every 5m)
Material Changes	Impeller: SCS13 Base cover: SCS13 Lifting chain: SUS304
Others	Possibility of mounting motor protector, please refer to the specifications (detail data) - App.1. For specifications other than the above, please contact us.

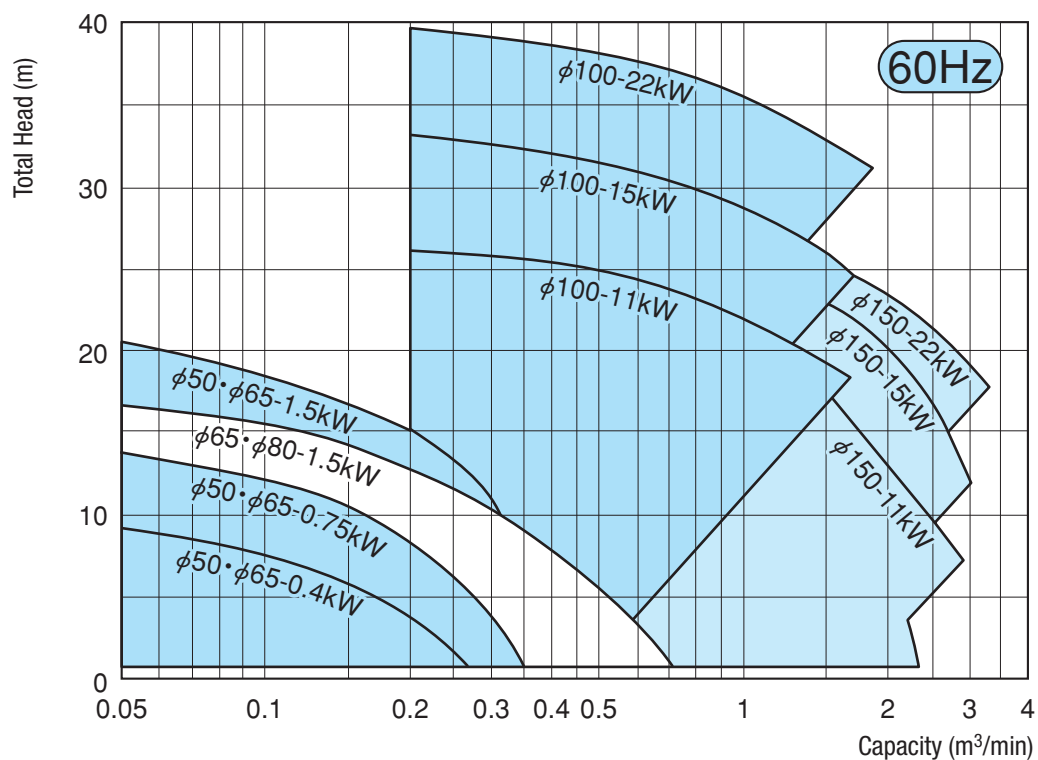
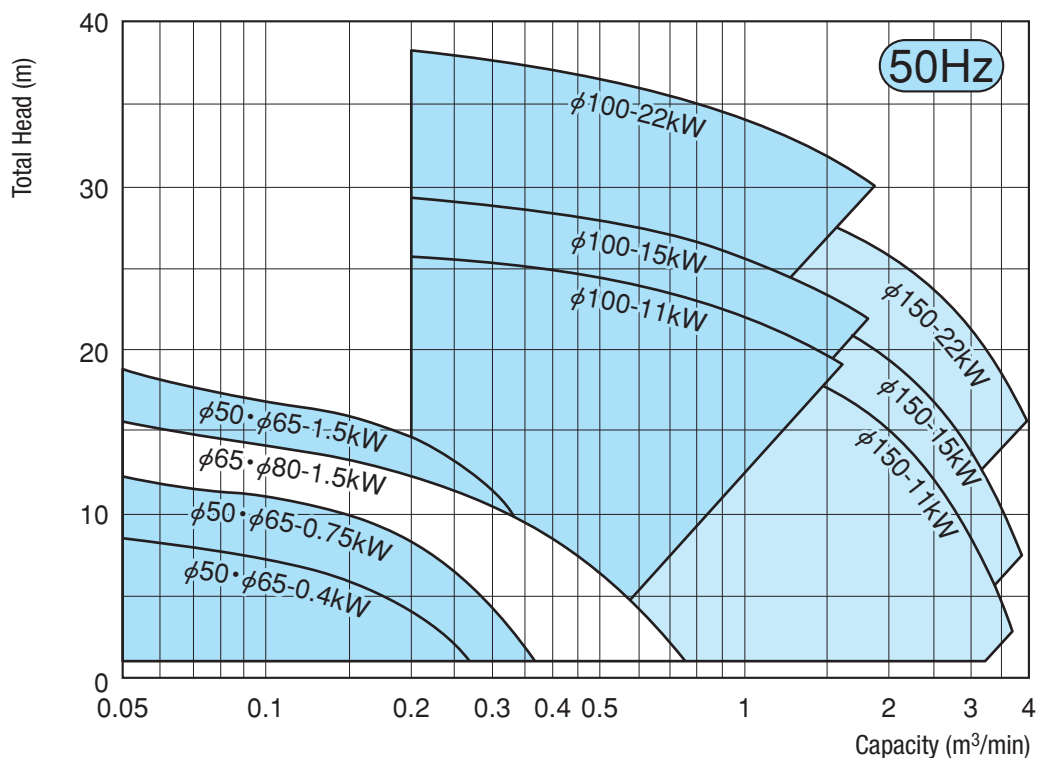
* Cable length should be limited due to voltage drop, see the specifications (detail data) - App.1.

SCS: Stainless steel casting SUS: Stainless steel

Pump-Related Product

- ☐ Liquid Level Control Switch
 - Level Regulator ⇒ See page 370
 - Mini Switch ⇒ See page 372
 - Oval Float ⇒ See page 373

Performance Curves



CV

Vortex Impeller

Bore: 50・65 mm (2"・2 1/2")

Output: 0.4 - 1.5kW (1/2 - 2 HP)

Standard Specifications

Bore mm (inch)	Pump Model				Connection Part No.		Output kW (HP)	Phase	Capacity – Total Head m³/min-m		No. of poles P	Weight (Bare Pump) (kg)	
	Non-Auto Operation	Auto-Operation	Auto-Alternate Operation		Auto- Connection	Free Standing			50Hz	60Hz		CV	CV-D CV-W
			Pair Name	Pump No. 1 and 2									
50 (2")	CV501T	CV501DT	CV501DWT	CV501WT + CV501DT	P50	F50	0.4 (1/2)	3-ph	0.15– 5.9	0.15– 5.9	2	17	18
	CV501	CV501D	CV501DW	CV501W + CV501D			0.75 (1)		0.2 – 8.5	0.2 – 8.5		18	19
	CV501	CV501D	CV501DW	CV501W + CV501D			1.5 (2)		0.2 –14.7	0.2 –15.2		26	28
65 (2 1/2")	CV501T	CV501DT	CV501DWT	CV501WT + CV501DT	P65B	F65B	0.4 (1/2)	3-ph	0.15– 5.9	0.15– 5.9	2	17	18
	CV501	CV501D	CV501DW	CV501W + CV501D			0.75 (1)		0.2 – 8.5	0.2 – 8.5		18	19
	CV501	CV501D	CV501DW	CV501W + CV501D			1.5 (2)		0.2 –14.7	0.2 –15.2		26	28

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Note: Since the items in the cells are made-to-order, please check the delivery time before placing an order.

Standard Accessories

- Cable (0.75 kW or less: 6m)
(1.5 kW: 8m)1 pc.
- Float Switch (for type D/W) ...1 set

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

● Auto-connection type

- Connection (with bolts, nuts and packing for the P50 only)
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

Connection Part No.	Set Weight	Connection Weight
P50	11kg	4.5kg
P65B	20kg	14.5kg

● Free standing type (F65B)

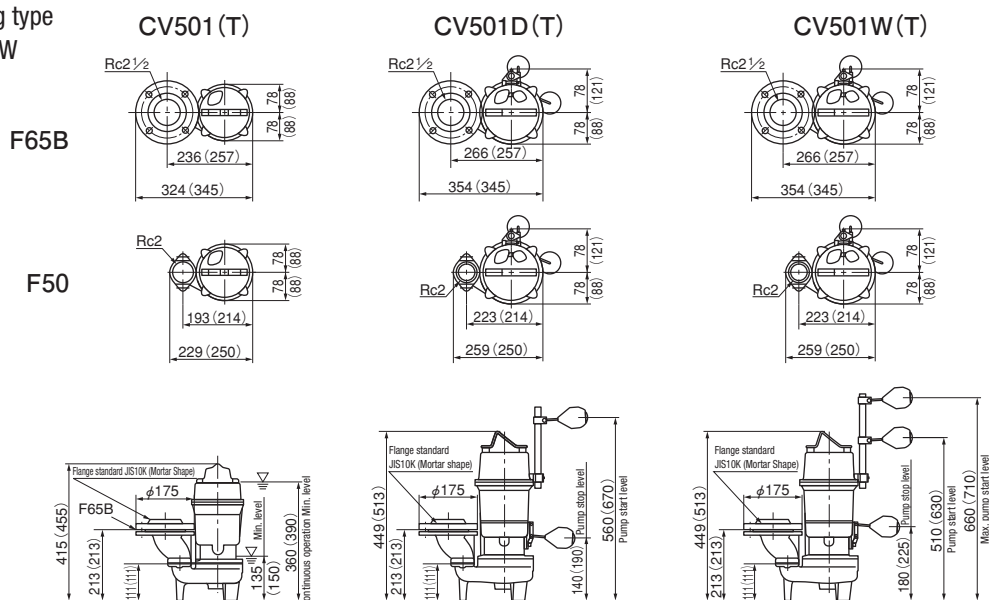
- Elbow Flange
- Companion Flange
(with bolts, nuts and packing)

Connection Part No.	Set Weight
F50	Included in the body
F65B	5.5kg

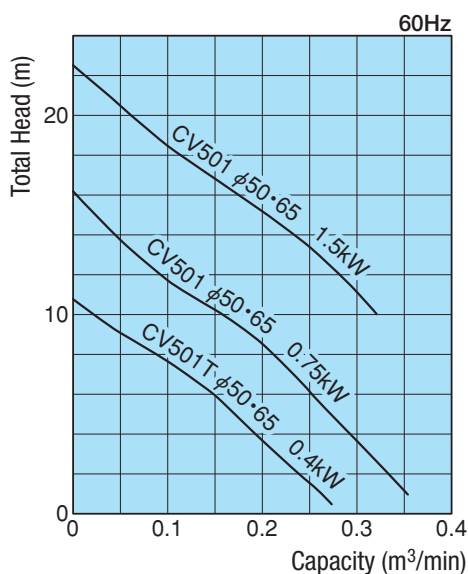
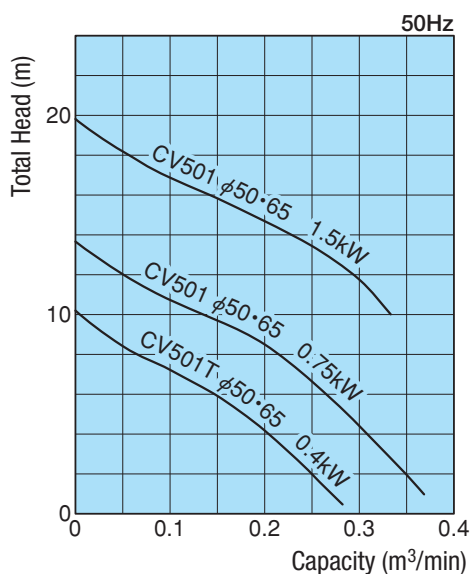
Part Specifications

Applicable Model	Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
	Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz
CV501T・CV501DT・CV501WT	VCT	1.25	4	φ 11.5	Direct	SiC/SiC	Ceramic/Carbon	30	30
CV501・CV501D・CV501W								29	32
CV501・CV501D・CV501W (1.5kW)						SiC/SiC	SiC/SiC	32	31

Dimensions

Free standing type
() : 1.5kW


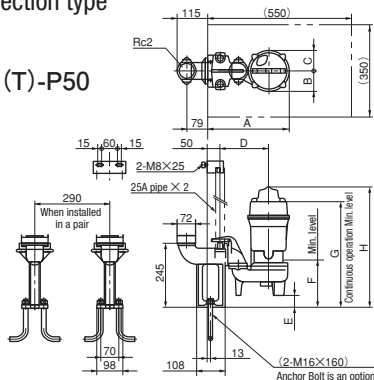
Performance Curves



Unit: mm

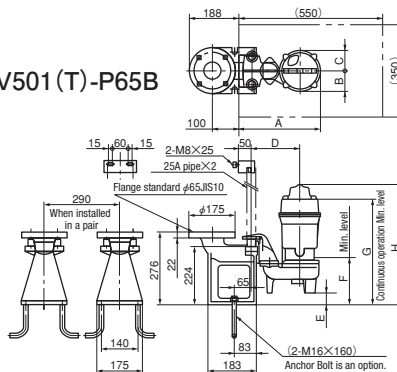
Auto-connection type

CV501 (T)-P50



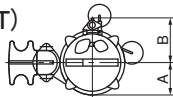
Output kW (HP)	A	B	C	D	E	F	G	H
0.4/0.75 (1/2 / 1)	312	78	78	184	46	180	405	461
1.5 (2)	333	88	88	194	46	195	435	501

CV501 (T)-P65B

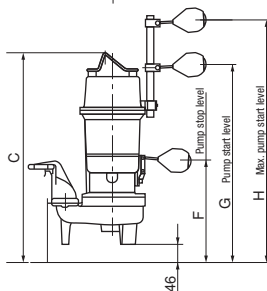
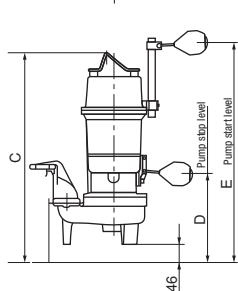
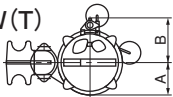


Output kW (HP)	A	B	C	D	E	F	G	H
0.4/0.75 (1/2 / 1)	312	78	78	184	46	180	405	461
1.5 (2)	333	88	88	194	46	195	435	501

CV501D(T)



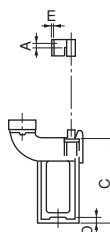
CV501W(T)



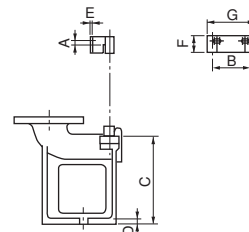
Output kW (HP)	A	B	C	D	E	F	G	H
0.4/0.75 (1/2 / 1)	78	78	495	185	605	225	555	705
1.5 (2)	88	121	559	235	715	270	675	755

● Connection Dimensions

P50



P65B



Connection Part No.	A	B	C	D	E	F	G
P50	11	100	223	12	3	44	125
P65B	11	100	224	12	3	44	125

CV
Vortex Impeller

Bore: **65・80 mm (2 1/2"・3")**

Output: **1.5kW (2 HP)**


CV651-F65



CV651-P65



CV651D-F65



CV651DW-F65



Standard Specifications

Bore mm (inch)	Pump Model				Connection Part No.		Output	Phase	Capacity – Total Head m³/min-m		No. of poles P	Weight (Bare Pump) (kg)	
	Non-Auto Operation	Auto-Operation	Auto-Alternate Operation		Auto- Connection	Free Standing	kW (HP)		50Hz	60Hz		CV	CV-D CV-W
			Pair Name	Pump No. 1 and 2									
65 (2 1/2")	CV651	CV651D	CV651DW	CV651W+CV651D	P65	F65	1.5 (2)	3-ph	0.4–8.7	0.4–8.2	2	29	31
80 (3")	CV651	CV651D	CV651DW	CV651W+CV651D	P80	F80	1.5 (2)	3-ph	0.4–8.7	0.4–8.2	2	29	31

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (8m) 1 pc.
- Float Switch (for type D/W) ... 1 set

- Auto-connection type
 - Connection
 - Guide Holder (with bolts and nuts)
 - Sliding Bracket
 - Lifting Chain (6m)

- Free standing type
 - Elbow Flange
 - Companion Flange (with bolts, nuts and packing)

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

Connection Part No.	Set Weight	Connection Weight
P65	24kg	15kg
P80	31.5kg	20.5kg

Connection Part No.	Set Weight
F65	7kg
F80	9.5kg

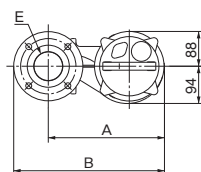
Part Specifications

Applicable Model	Cable Specification				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
	Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz
CV651・CV651D・CV651W	VCT	1.25	4	φ 11.5	Direct	SiC/SiC	SiC/SiC	42	

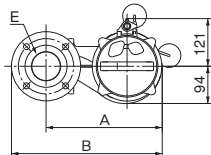
Dimensions

Free standing type

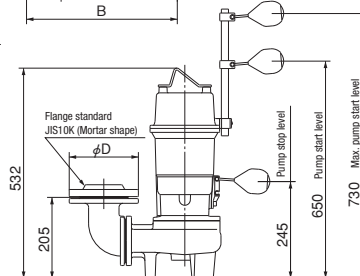
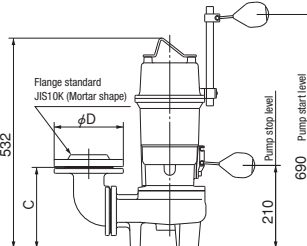
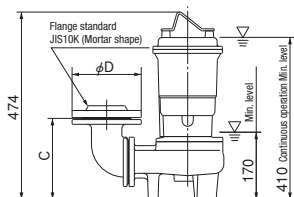
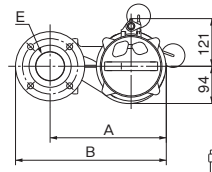
CV651



CV651D

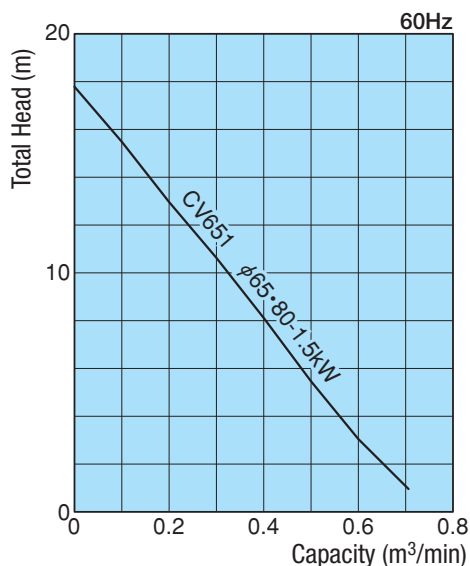
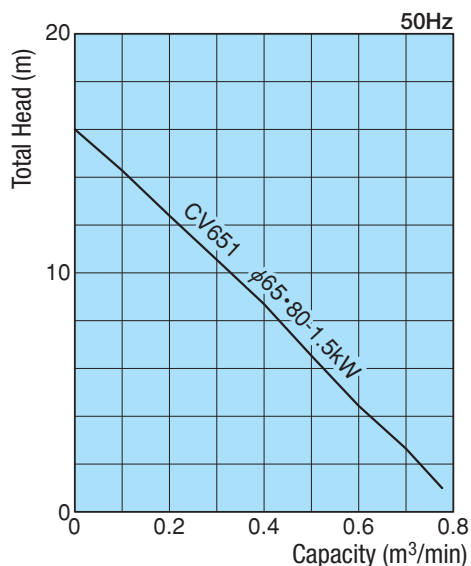


CV651W



Pump Model	Connection Part No.	A	B	C	D	E
CV651・CV651D・CV651W	F65	294	382	205	175	Rc2½
CV651・CV651D・CV651W	F80	304	397	235	185	Rc3

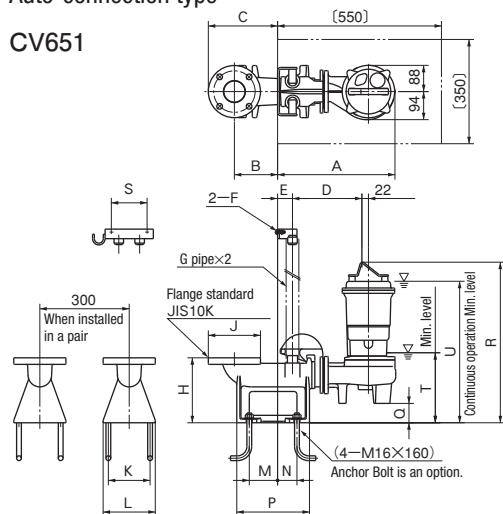
Performance Curves



Unit: mm

Auto-connection type

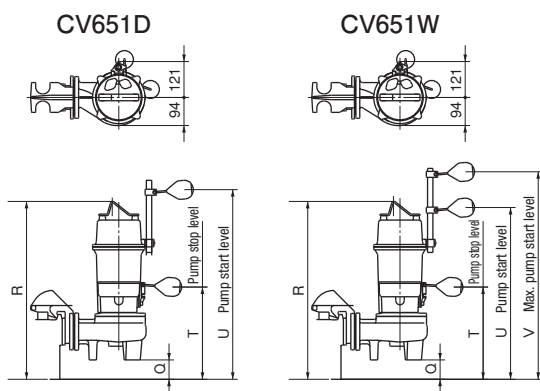
CV651



Pump Model	Connection Part No.	A	B	C	D	E	F	G	H	J
CV651	P65	394	145	233	233	50	M8x25	32A	218	$\phi 175$
CV651D										
CV651W										
CV651	P80	437	160	266	246	80	M10x25	50A	330	$\phi 211$
CV651D										
CV651W										

Pump Model	Connection Part No.	K	L	M	N	P	Q	R	S	T	U	V
CV651	P65	140	175	95	65	224	65	539	120	235	475	—
CV651D								597		275	755	—
CV651W										310	715	795
CV651	P80	120	150	107	103	302	105	579	180	275	515	—
CV651D								637		315	795	—
CV651W										350	755	835

● Connection Dimensions



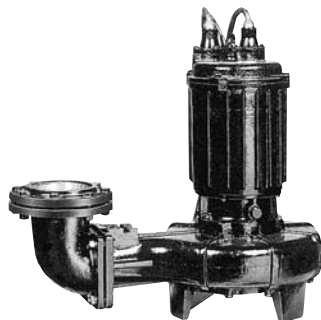
Connection Part No.	A	B	C	D	E	F	G
P65	17	70	201	12	6	32	160
P80	25	100	262	12	6	44	210

CVH

Vortex Impeller

Bore: 100 mm (4")

Output: 11 - 22kW (15 - 30 HP)



CVH100-F100B



CVH100-P100C

Standard Specifications

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity – Total Head m³/min-m		No. of poles P	Weight (Bare Pump) (kg)
		Auto-Connection	Free Standing			50Hz	60Hz		
100 (4")	CVH100	P100C	F100B	11 (15)	3-ph	0.80–23	0.86–23	4	192
				15 (20)		0.94–26	0.90–29		208
				22 (30)		1.05–34	0.92–36		262

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (8m).....3 pcs.

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

● Auto-connection type

- Connection (with bolts and packing)
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

● Free standing type

- Elbow Flange
- Companion Flange (with bolts, nuts and packing)

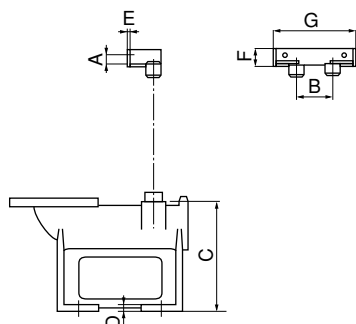
Connection Part No.	Set Weight	Connection Weight
P100C	55kg	37kg

Connection Part No.	Set Weight
F100B	12kg

Part Specifications

Applicable Model		Cable Specifications			Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
		Type	Section Area (mm²)	Cores	Outer Dia. (mm)	Lower	Upper	50Hz	60Hz
CVH100	11kW (15 HP)	2PNCT	5.5	4	φ 17	Star-delta	SiC/SiC	36	
			5.5	3	φ 15.5				
			1.25	2	φ 9.8				
	15kW (20 HP)	2PNCT	8	4	φ 18.5				
			8	3	φ 17				
			1.25	2	φ 9.8				
	22kW (30 HP)	2PNCT	14	4	φ 22				
			14	3	φ 20				
			1.25	2	φ 9.8				

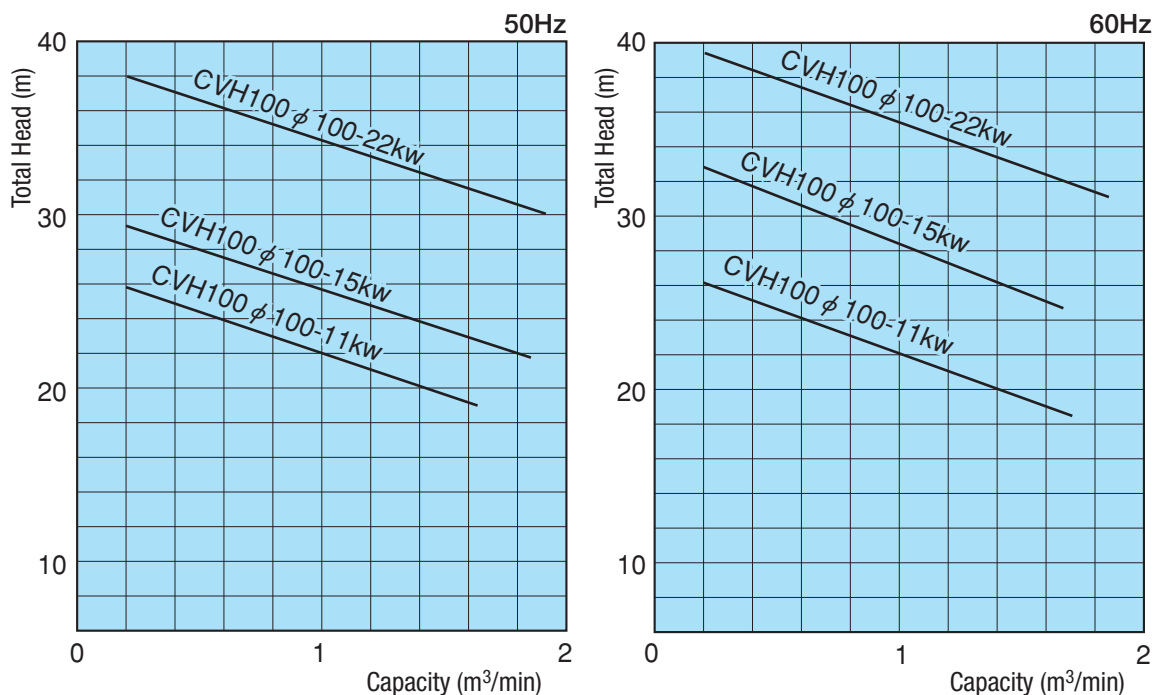
● Connection Dimensions



Unit: mm

Connection Part No.	A	B	C	D	E	F	G
P100C	25	100	318	15	6	44	210

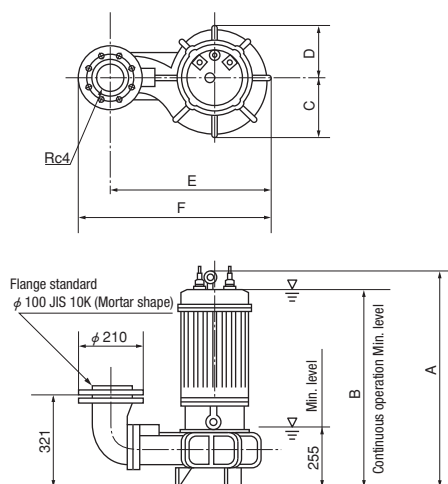
Performance Curves



Dimensions

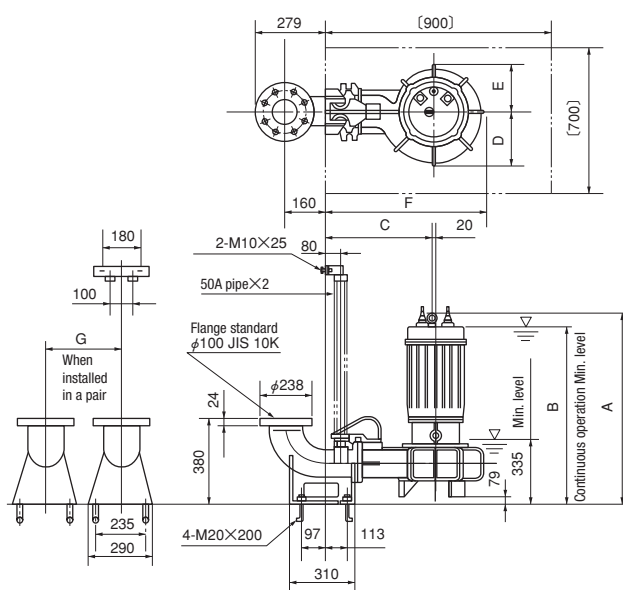
Unit: mm

Free standing type



Output kW (HP)	A	B	C	D	E	F
11 (15)	782	700	259	227	743	848
15 (20)	876	795	282	247	765	870
22 (30)						

Auto-connection type



Output kW (HP)	A	B	C	D	E	F	G
11 (15)	861	780	568	259	227	831	635
15 (20)	955	875		282	247	853	690
22 (30)							

CV

Vortex Impeller

Bore: 150 mm (6")

Output: 5.5 - 22kW (7.5 - 30 HP)



CV150-F150



CV150-P150

Standard Specifications

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity – Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) (kg)
		Auto-Connection	Free Standing			50Hz	60Hz		
150 (6")	CV150	P150	F150	5.5 (7.5)	3-ph	1.60– 8.9	1.30– 8.6	4	120
				7.5 (10)		1.90– 9.4	1.60–10.5		132
				11 (15)		1.90–16	1.67–16		185
				15 (20)		2.15–19	2.05–20		197
				22(30)		2.75–23	2.15–23		256

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (8 m)
7.5 kW or less1 pc.
11 kW or more2 pcs.

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

- Auto-connection type
- Connection (with bolts and nuts)
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

Connection Part No.	Set Weight	Connection Weight
P150	60kg	42kg

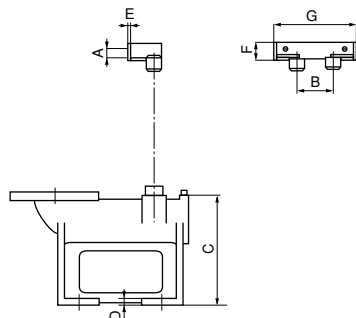
- Free standing type
- Elbow Flange
- Companion Flange
(with bolts, nuts and packing)

Connection Part No.	Set Weight
F150	30kg

Part Specifications

Applicable Model		Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
		Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz
CV150	5.5kW (7.5HP)	VCT	3.5	4	φ 14	Direct	SiC/SiC	SiC/SiC	58	
	7.5kW (10HP)	VCT	5.5	4	φ 16.5					
	11kW (15HP)	2PNCT	5.5	4	φ 17	Star-delta			48	
			5.5	3	φ 15.5					
	15kW (20HP)	2PNCT	1.25	2	φ 9.8					
			8	4	φ 18.5					
			8	3	φ 17					
			1.25	2	φ 9.8					
	22kW (30HP)	2PNCT	14	4	φ 22					
			14	3	φ 20					
1.25			2	φ 9.8						

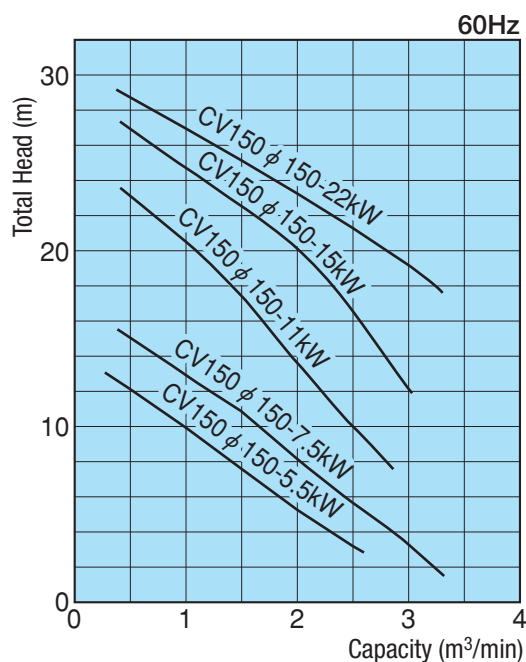
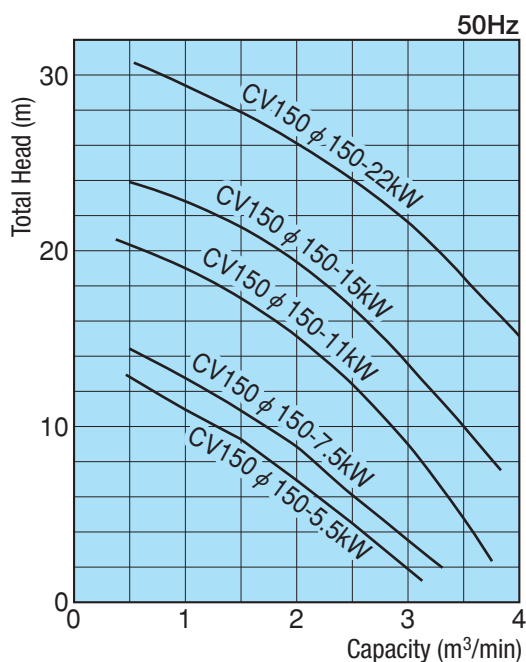
Connection Dimensions



Unit: mm

Connection Part No.	A	B	C	D	E	F	G
P150	25	100	330	15	6	44	210

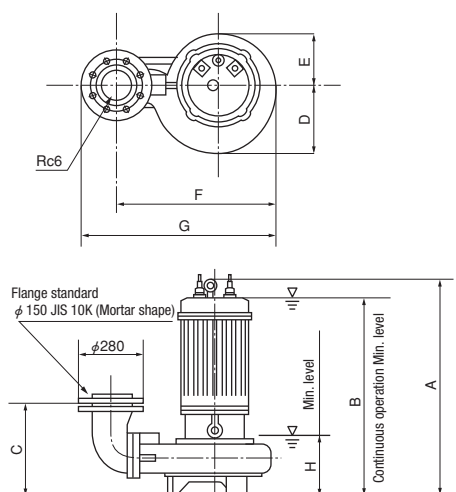
Performance Curves



Dimensions

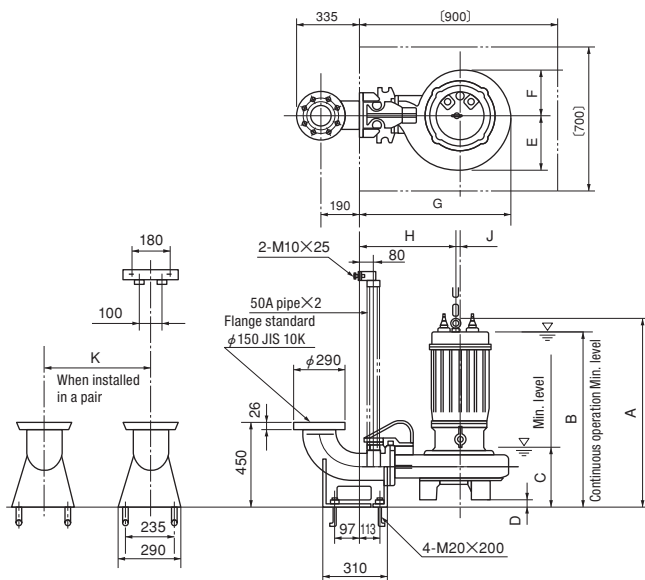
Unit: mm

Free standing type



Output kW (HP)	A	B	C	D	E	F	G	H
5.5 (7.5)	713	655	367	222	178	696	836	260
7.5 (10)	748	690	367	222	178	696	836	260
11 (15)	804	725	366	240	210	750	890	280
15 (20)	804	725	366	240	210	750	890	280
22 (30)	901	820	368	261	228	790	930	280

Auto-connection type

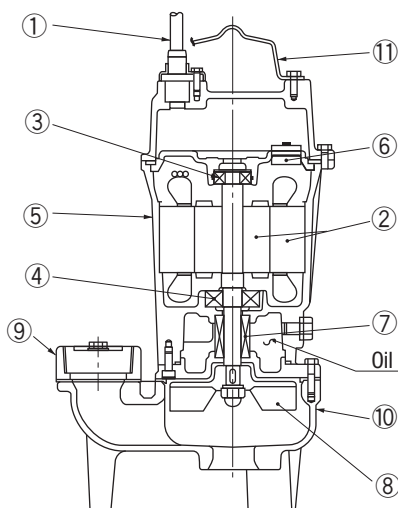


Output kW (HP)	A	B	C	D	E	F	G	H	J	K
5.5 (7.5)	779	720	325	66	222	178	759	546	12	520
7.5 (10)	814	755	325	66	222	178	759	546	12	520
11 (15)	871	790	345	67	240	210	813	568	20	585
15 (20)	871	790	345	67	240	210	813	568	20	585
22 (30)	967	885	345	66	261	228	853	588	20	585

Sectional View

CV501

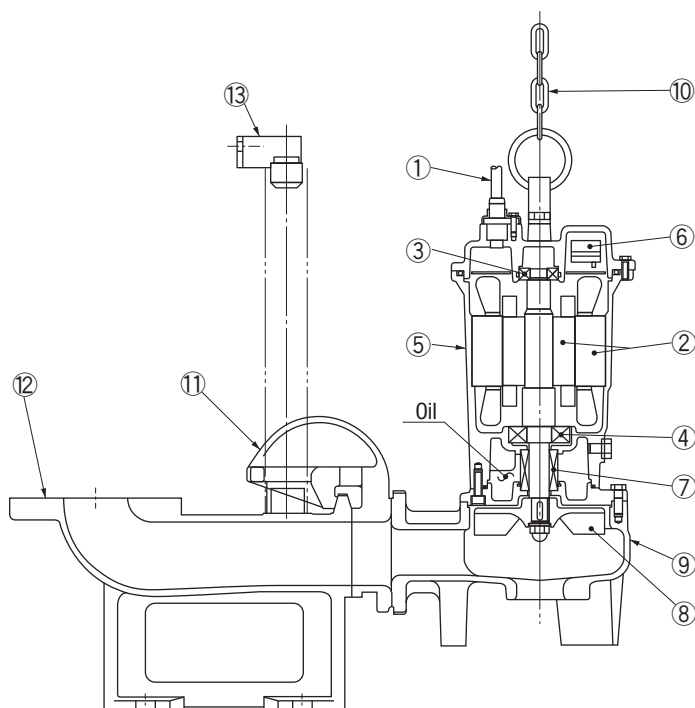
Free standing type



No.	Name	Material
1	Cable	VCT
2	Motor	Shaft: SUS420J2
3	Ball Bearing (Upper)	—
4	Ball Bearing (Lower)	—
5	Stator Casing	FC200
6	Thermal Protector	—
7	Mechanical Seal	—
8	Impeller	FC200
9	Screwed Coupling	PP
10	Pump Casing	FC200
11	Handle	SUS304

CV651

Auto-connection type



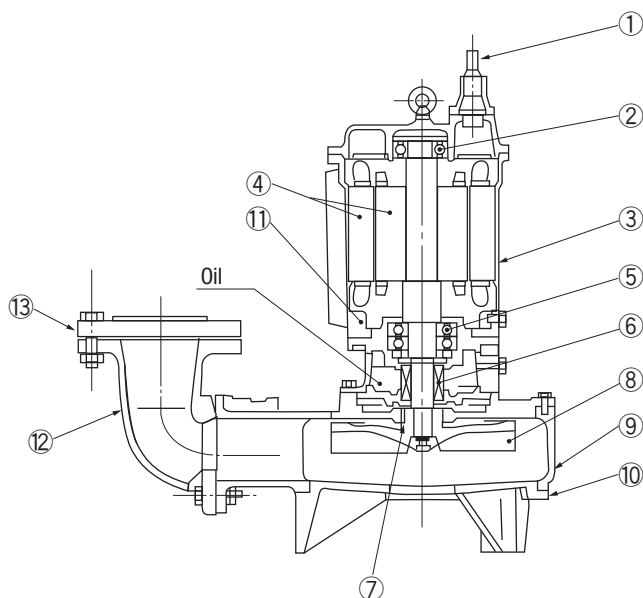
No.	Name	Material
1	Cable	VCT
2	Motor	Shaft: SUS420J2
3	Ball Bearing (Upper)	—
4	Ball Bearing (Lower)	—
5	Stator Casing	FC200
6	Thermal Protector	—
7	Mechanical Seal	—
8	Impeller	FC200
9	Pump Casing	FC200
10	Chain	SS400
11	Sliding Bracket	FC200
12	Connection	FC200
13	Guide Holder	SCS13

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel **PP** : Polypropylene
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitrlyl rubber

Sectional View

CV150

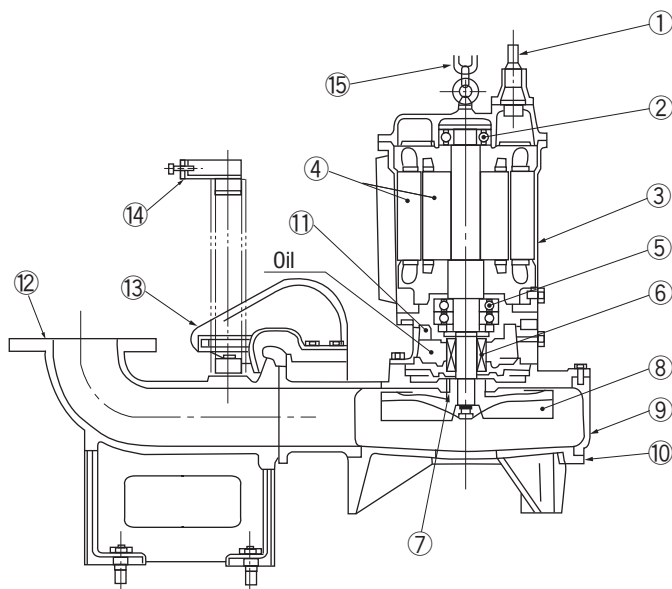
Free standing type



No.	Name	Material
1	Cable	2PNCT
2	Ball Bearing (Upper)	—
3	Stator Casing	FC200
4	Motor	Shaft: SUS420J2
5	Ball Bearing (Lower)	—
6	Mechanical Seal	—
7	Seal Ring	CAC406
8	Impeller	FC200
9	Pump Casing	FC250
10	Base Cover	FC200
11	Equalizer	Foaming NBR
12	Elbow Flange	FC200
13	Companion Flange	FC200

CV150

Auto-connection type



No.	Name	Material
1	Cable	2PNCT
2	Ball Bearing (Upper)	—
3	Stator Casing	FC200
4	Motor	Shaft: SUS420J2
5	Ball Bearing (Lower)	—
6	Mechanical Seal	—
7	Seal Ring	CAC406
8	Impeller	FC200
9	Pump Casing	FC250
10	Base Cover	FC200
11	Equalizer	Foaming NBR
12	Connection	FC200
13	Sliding Bracket	FC200
14	Guide Holder	SCS13
15	Chain	SS400

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

MEMO

Handwriting practice lines consisting of 25 horizontal dashed blue lines.

Vortex Impeller (2P Motor, High-Head)

Bore: 40 - 100 mm (1 1/2" - 4")

Output: 0.25 - 11 kW (1/3 - 15 HP)

CVS

CVS Series is a submersible pump with vortex impeller for sewage and wastewater. The vortex impeller prevents itself from being locked due to clogging and tangling.

CVS Series also have a unique high-head type vortex impeller with output of 5.5 – 11 kW to cover wide range of applications, such as for building facilities.

Bore mm (inch)	Output kW (HP)	Pump Model	Page
40 (1 1/2")	0.25 (1/3)	CVS40 (D • DW) T	176
50 (2")	0.25 - 0.75 (1/3 - 1)	CVS50 (D • DW)	
65•80 (2 1/2"•3")	1.5 (2)	CVS651 (D • DW)	178
65•80•100 (2 1/2"•3"•4")	2.2 • 3.7 (3 • 5)	CVS80	180
80•100 (3"•4")	5.5 - 11 (7.5 • 15)	CVS100	182

D: Auto-operation

DW: Auto-alternate operation

Note: Since D and DW types with output not exceeding 0.75 kW are made-to-order products, please check the delivery time before placing an order.

CVS

Vortex Impeller
(2P Motor, High-Head)

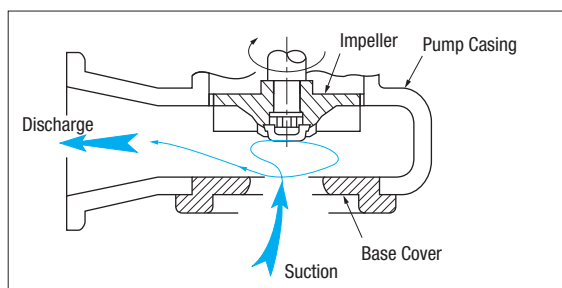
Bore: 40 - 100 mm (1 1/2" - 4")

Output: 0.25 - 11kW (1/3 - 15 HP)

Features

Transferring fibrous debris

As the leading edge is nearly-flat shaped, the impeller is structured to prevent from clogging and tangling even in the sewage water that contains fibrous debris.



Easy replacement

Easy to disassemble/assemble as the pump casing is separated from the oil chamber. (Except for units of 1.5 kW or more)

Extended service life

Double mechanical seal and oil seal, offering excellent wear resistance, are employed for shaft seal mechanism. The impeller, being the vortex flow type, is subject to less wear and has excellent durability against sludge or debris not directly passes through the impeller.

A double mechanical seal with four SiC end faces is adopted for types with output more than 2.2 kW to offer excellent wear resistance and higher reliability.

Prevent motor burnout

Thermal Protector (a built-in auto-reset type motor protector) prevents motor burnout due to overload, impeller locking and open phase. The cable entry employs a core seal that effectively prevents water from wicking down the cable even when the cable end is soaked or the cable sheath is damaged. This feature prevents water from penetrating the motor chamber.

Applications

- Sewage treatment plant and Septic tank
Equalization tank and Effluent tank
- Building and Shopping complex
Sanitary and kitchen wastewater
- Factory
Industrial wastewater
- Others
Rainwater, Spring water, Agricultural water supply/drainage, etc.

Standard Specifications

Handling Liquid	Kind of Liquid	Wastewater, sewage containing sludge
	Temperature	0 - 32°C
Material	Cable	7.5 kW or less: VCT 11 kW or more: 2PNCT
	Motor Shaft	Stainless steel (SUS420J2)
	Pump Casing	Gray iron casting (FC200)
	Impeller	Gray iron casting (FC200)
Electric Motor	Name	Air-filled type Submersible Induction Motor
	Insulation Class	Class E
	Enclosure	IP68
	Phase	3-ph
	Voltage	200 - 480 V

Note: Since D and DW types with output not exceeding 0.75 kW are made-to-order products, please check the delivery time before placing an order.

Special Specifications

Motor Insulation	Class F
Cable Extension	Cable lengths: 10 - 30m (every 5m)
Material Changes	Impeller: SCS13 Base Cover: SCS13 Lifting Chain: SUS304
Others	Possibility of mounting motor protector, please refer to the specifications (detail data) - App.1. For specifications other than the above, please contact us.

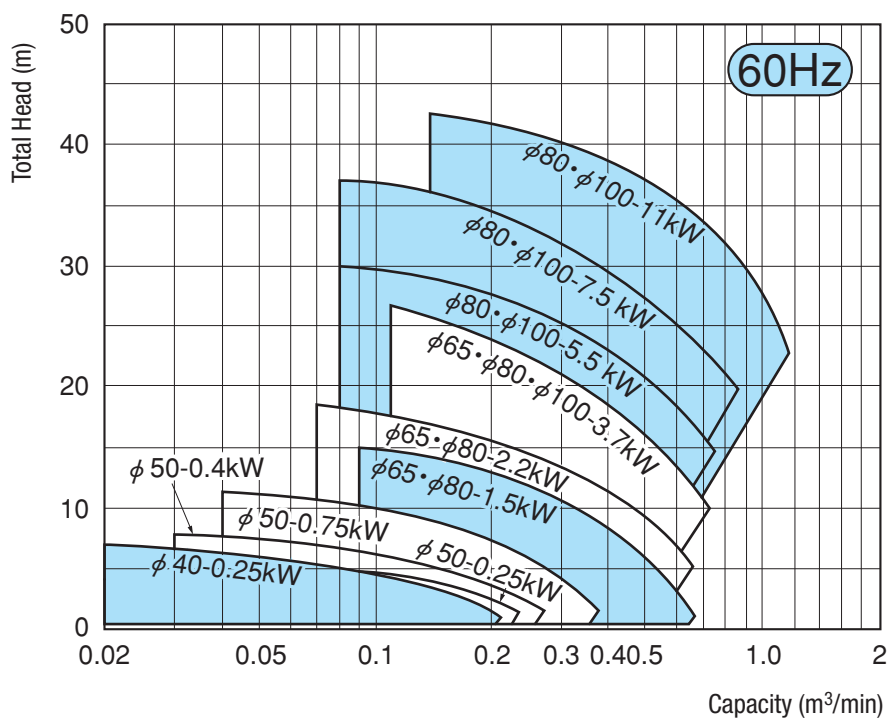
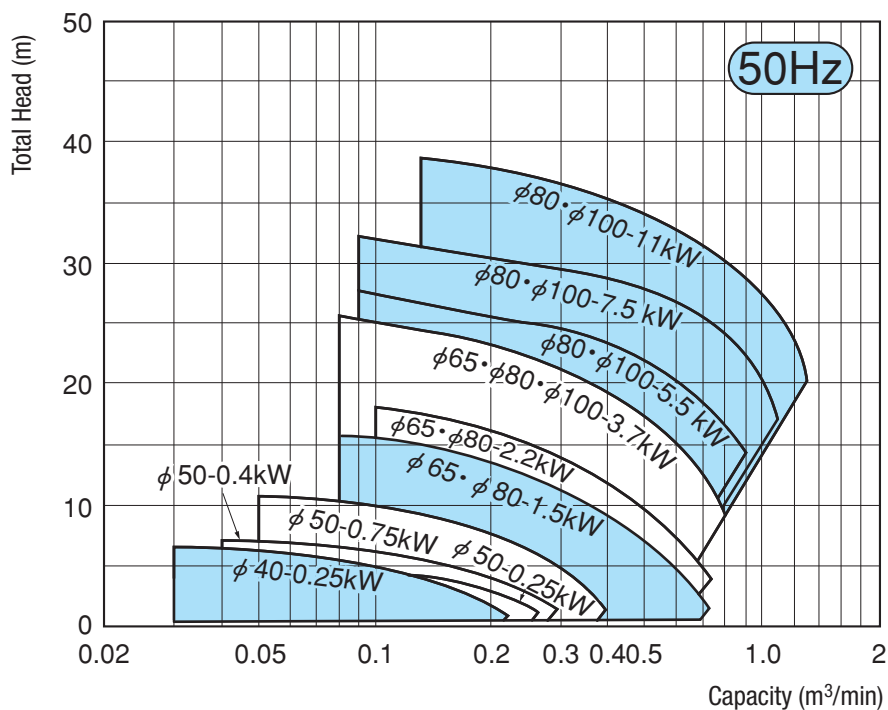
* Cable length should be limited due to voltage drop, see the specifications (detail data) - App.1.

SCS : Stainless steel casting SUS : Stainless steel

Pump-Related Product

- Liquid Level Control Switch
 - Level Regulator ⇒ See page 370
 - Mini Switch ⇒ See page 372
 - Oval Float ⇒ See page 373

Performance Curves



CVS

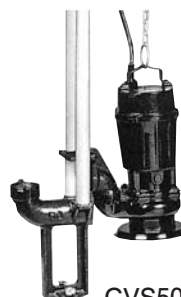
Vortex Impeller
(2P Motor, High-Head)

Bore: 40 • 50 mm (1 1/2" • 2")

Output: 0.25 - 0.75 kW (1/3 - 1 HP)



CVS50-F50



CVS50-P50

Standard Specifications

Bore mm (inch)	Pump Model				Connection Part No.		Output kW (HP)	Phase	Capacity – Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) (kg)		
	Non-Auto Operation	Auto-Operation	Auto-Alternate Operation		Auto- Connection	Free Standing			50Hz	60Hz		CVS	CVS -D	CVS -W
			Pair Name	Pump No. 1 and 2										
40 (1 1/2")	CVS40T	CVS40DT	CVS40DWT	CVS40WT+CVS40DT	P40	F40	0.25 (1/3)	3-ph	0.10–5.0	0.09–4.9	2	17	17	18
50 (2")	CVS50T	CVS50DT	CVS50DWT	CVS50WT+CVS50DT	P50	F50	0.25 (1/3)		0.14–4.0	0.12–4.0	2	17	17	18
							0.4 (1/2)	0.14–5.3	0.14–5.0	18		18	19	
							0.75 (1)	0.17–8.5	0.17–8.3	21		21	22	
	CVS50	CVS50D	CVS50DW	CVS50W+CVS50D										

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Note: Since the items in the cells are made-to-order, please check the delivery time before placing an order.

Standard Accessories

- Cable (6m) 1 pc.
- Float Switch (for type D/W) ... 1 set

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

- Auto-connection type
 - Connection (with bolts and packing)
 - Guide Holder (with bolts and nuts)
 - Sliding Bracket
 - Lifting Chain (6m)

- Free standing type

Connection Part No.	Set Weight
F40 • F50	Included in the body

Connection Part No.	Set Weight	Connection Weight
P40 • P50	11kg	4.5kg

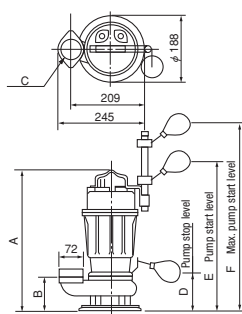
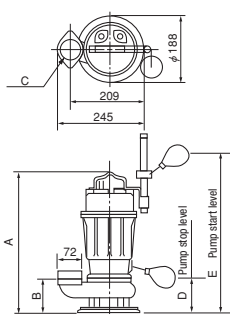
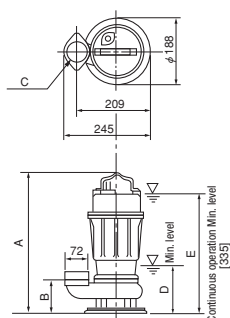
Part Specifications

Applicable Model	Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
	Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz
CVS40T • CVS40DT • CVS40WT	VCT	1.25	4	ϕ 11.5	Direct	SiC/SiC	Carbon/Ceramic	14	
CVS50 (T) • CVS50D (T) • CVS50W (T)								0.25kW: 22 0.4/0.75kW: 18	

Dimensions

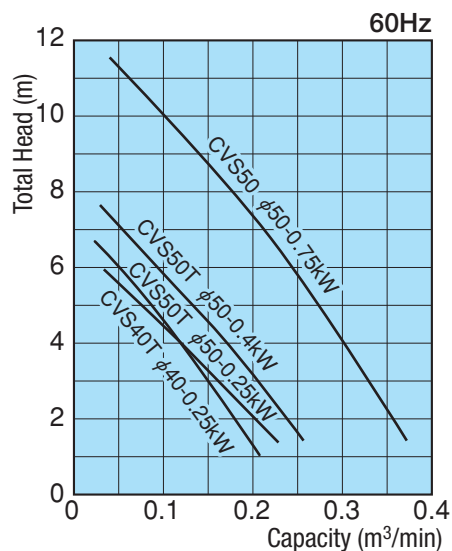
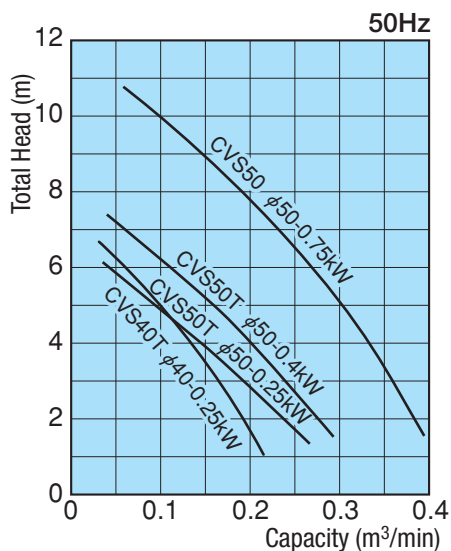
Free standing type

CVS40T • 50(T) CVS40DT • 50D(T) CVS40WT • 50W(T)



Pump Model	Connection Part No.	Output kW (HP)	A	B	C	D	E	F
CVS40T	F40	0.25 (1/3)	370	86	Rc1½	100	320	—
CVS40DT			404			115	540	—
CVS40WT						155	490	640
CVS50T	F50	0.25 (1/3)	383	99	Rc2	115	335	—
CVS50DT			417			130	555	—
CVS50WT						170	505	665
CVS50	F50	0.4 (1/2) 0.75 (1)	403	99	Rc2	115	355	—
CVS50D			437			125	575	—
CVS50W						165	525	675

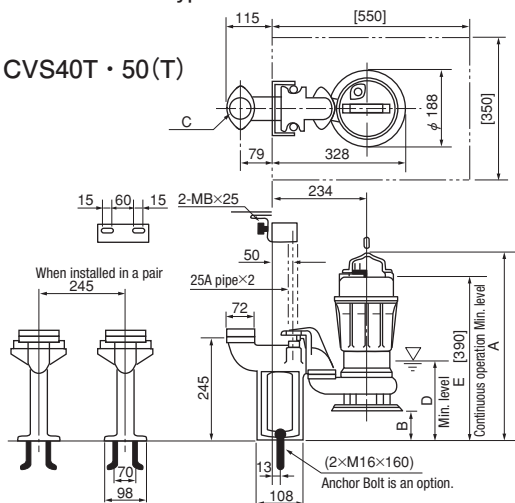
Performance Curves



Unit: mm

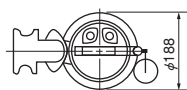
Auto-connection type

CVS40T · 50(T)

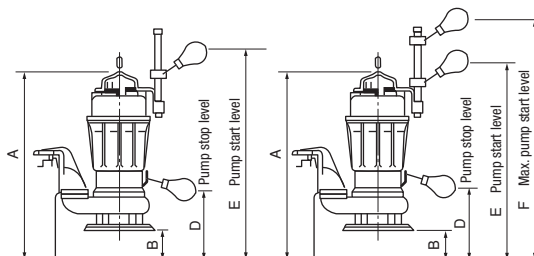
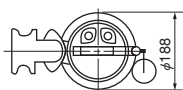


Pump Model	Connection Part No.	Output kW (HP)	A	B	C	D	E	F
CVS40T	P40	0.25	441	71	Rc1½	170	390	—
CVS40DT		(1/3)	475			185	610	—
CVS40WT						225	560	710
CVS50T	P50	0.25	441	58	Rc2	175	390	—
CVS50DT		(1/3)	417			185	610	—
CVS50WT						225	560	710
CVS50	P50	0.4	461	58	Rc2	175	410	—
CVS50D		(1/2)	495			185	635	—
CVS50W		(1)				225	585	735

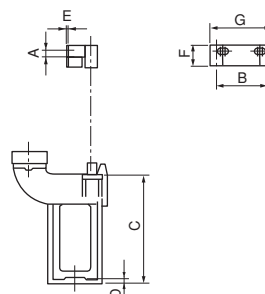
CVS40DT · 50D(T)



CVS40WT · 50W(T)

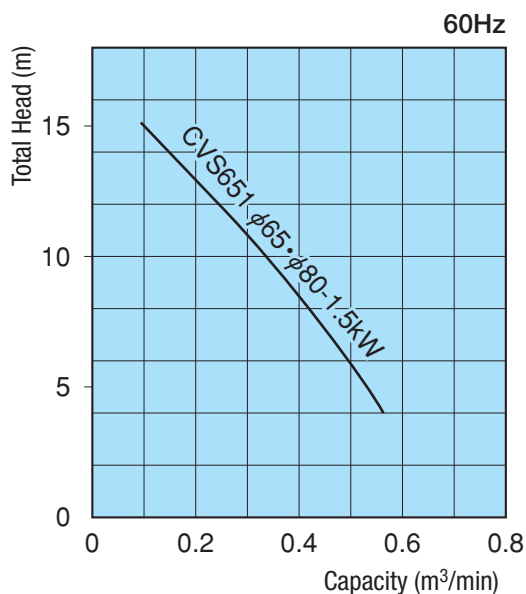
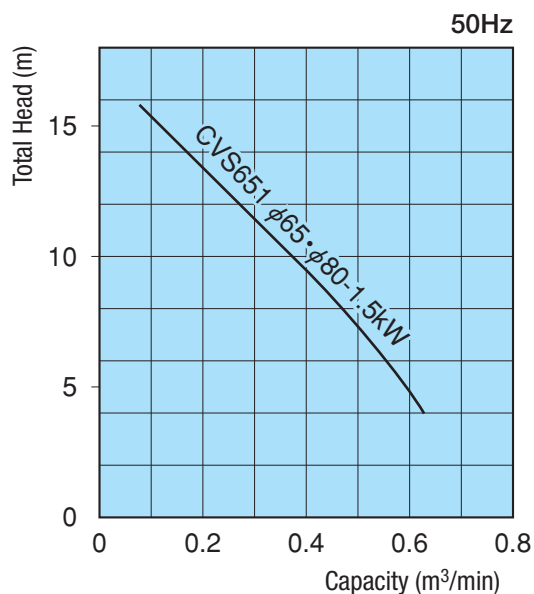


● Connection Dimensions



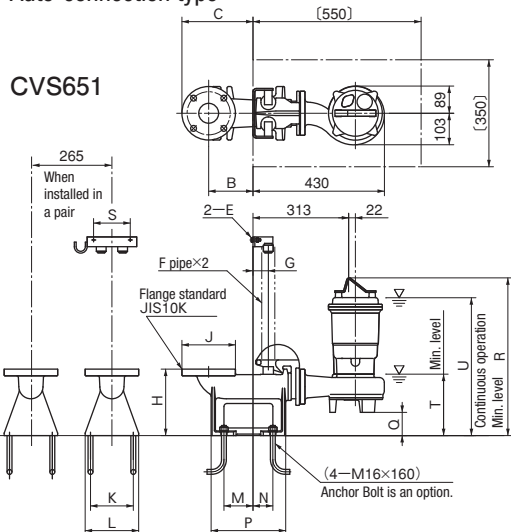
Connection Part No.	A	B	C	D	E	F	G
P40 · P50	11	100	223	12	3	44	125

Performance Curves

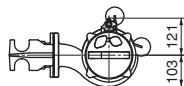


Unit: mm

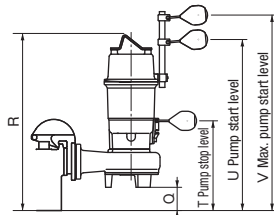
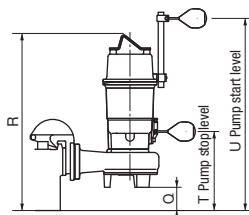
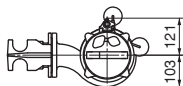
Auto-connection type



CVS651D



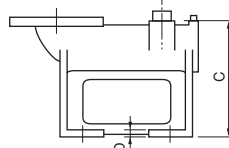
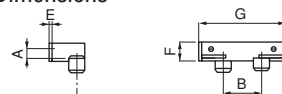
CVS651W



Pump Model	Connection Part No.	A	B	C	D	E	F	G	H	J
CVS651	P65	430	145	233	313	M8×25	32A	50	218	$\phi\text{ }175$
CVS651D										
CVS651W										
CVS651	P80	473	160	266	356	M10×25	50A	80	330	$\phi\text{ }211$
CVS651D										
CVS651W										

Pump Model	Connection Part No.	K	L	M	N	P	Q	R	S	T	U	V
CVS651	P65	140	175	95	65	244	76	516	120	200	450	—
CVS651D								574		250	730	—
CVS651W										285	690	770
CVS651	P80	120	150	107	103	302	116	556	180	240	490	—
CVS651D								614		290	770	—
CVS651W										325	730	810

● Connection Dimensions



Connection Part No.	A	B	C	D	E	F	G
P65	17	70	201	12	6	32	160
P80	25	100	262	12	6	44	210



CVS80-F80



CVS80-P80

Standard Specifications

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity – Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) kg
		Auto-Connection	Free Standing			50 Hz	60 Hz		
65 (2 1/2")	CVS80	P65	F65	2.2 (3)	3-ph	0.44–11	0.42–11	2	46
				3.7 (5)		0.51–17	0.47–17		55
80 (3")	CVS80	P80	F80	2.2 (3)	3-ph	0.44–11	0.42–11	2	46
				3.7 (5)		0.51–17	0.47–17		55
100 (4")	CVS80	P100	F100	3.7 (5)	3-ph	0.51–17	0.47–17	2	55

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (8m)1 pc.
- Air Relief Valve1 pc.

● Auto-connection type

- Connection
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

● Free standing type

- Elbow Flange
- Companion Flange
(with bolts, nuts and packing)

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

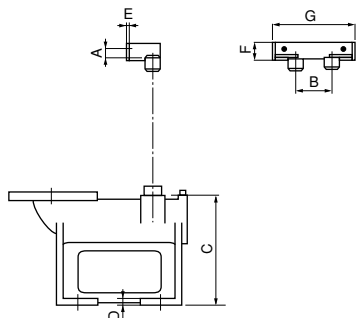
Connection Part No.	Set Weight	Connection Weight
P65	24kg	15kg
P80	31.5kg	20.5kg
P100	40.5kg	27kg

Connection Part No.	Set Weight
F65	7kg
F80	9.5kg
F100	11kg

Part Specifications

Applicable Model		Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
		Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz
CVS80	2.2kW (3HP)	VCT	1.25	4	ϕ 11.5	Direct	SiC/SiC	SiC/SiC	17	
	3.7kW (5HP)	VCT	2.0	4	ϕ 12					

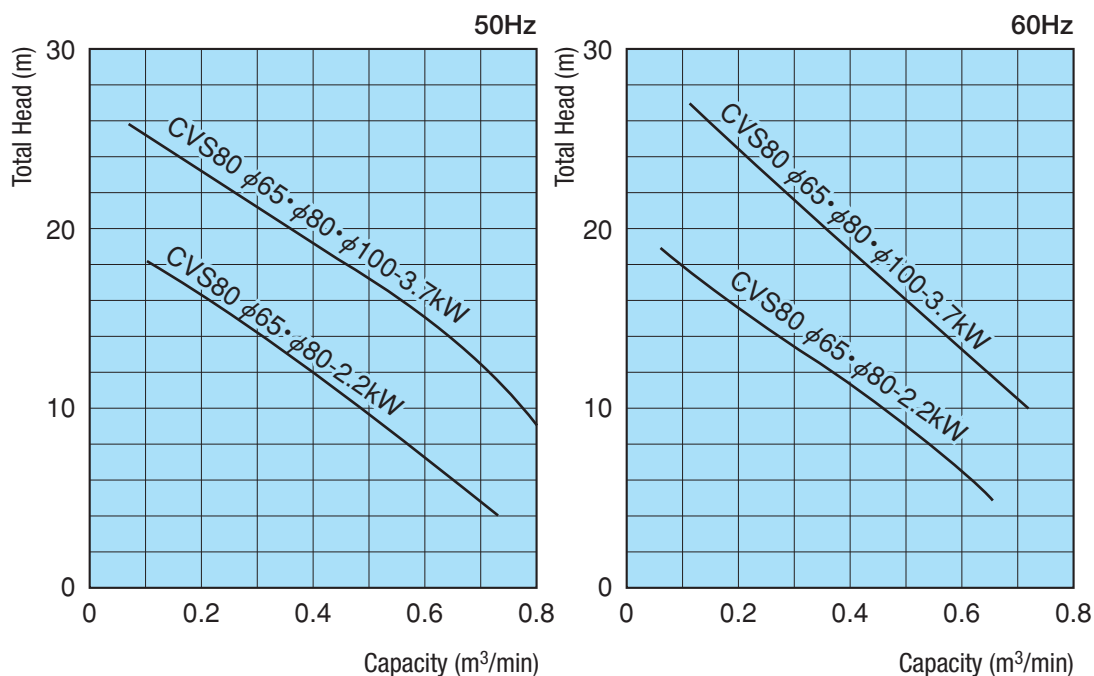
● Connection Dimensions



Unit: mm

Connection Part No.	A	B	C	D	E	F	G
P65	17	70	201	12	6	32	160
P80	25	100	262	12	6	44	210
P100	25	100	259	15	6	44	210

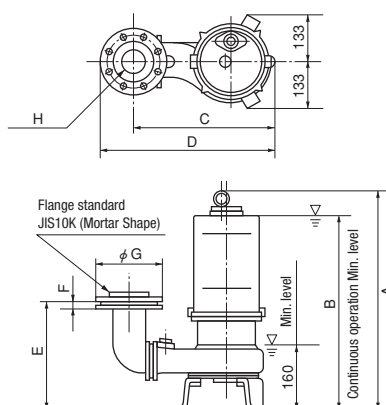
Performance Curves



Dimensions

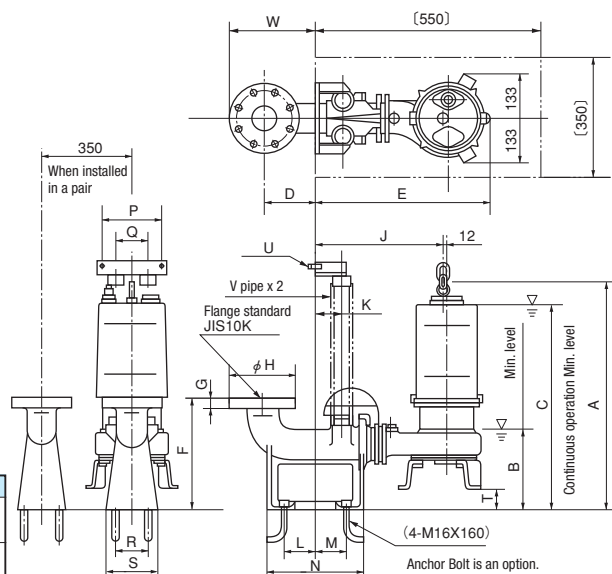
Unit: mm

Free standing type



Connection Part No.	Output kW (HP)	A	B	C	D	E	F	G	H
F65	2.2 (3)	538	480	364	452	228	15	175	Rc2½
	3.7 (5)	579	525						
F80	2.2 (3)	538	480	374	467	258	18	185	Rc3
	3.7 (5)	579	525						
F100	3.7 (5)	579	525	379	484	268	18	210	Rc4

Auto-connection type



Connection Part No.	Output kW (HP)	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W
P65	2.2 (3)	581	200	525	145	464	218	22	175	328	50	95	65	244	120	70	140	175	43	M8×25	32A	233
	3.7 (5)	622		565																		
P80	2.2 (3)	621	240	565	160	507	330	22	211	371	80	107	103	302	180	100	120	150	83	M10×25	50A	266
	3.7 (5)	662		605																		
P100	3.7 (5)	662	240	605	160	507	330	24	238	371	80	114	115	308	180	100	210	238	83	M10×25	50A	279

CVS

**Vortex Impeller
(2P Motor, High-Head)**

Bore: **80-100 mm (3" - 4")**

Output: **5.5 - 11 kW (7.5 - 15 HP)**



CVS100-F100



CVS100-P100

Standard Specifications

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity – Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) kg
		Auto-Connection	Free Standing			50 Hz	60 Hz		
80 (3")	CVS100	P80	F80	5.5 (7.5)	3-ph	0.45–22.7	0.40–23.6	2	82
				7.5 (10)		0.55–27.2	0.45–28.5		92
				11 (15)		0.60–33.0	0.60–35.6		120
100 (4")	CVS100	P100	F100	5.5 (7.5)	3-ph	0.45–22.7	0.40–23.6	2	82
				7.5 (10)		0.55–27.2	0.45–28.5		92
				11 (15)		0.60–33.0	0.60–35.6		120

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (8m) 7.5 kW or less ... 1 pc.
11 kW 3 pcs.

● Auto-connection type

- Connection
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

● Free standing type

- Elbow Flange
- Companion Flange
(with bolts, nuts and packing)

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

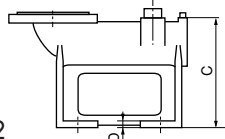
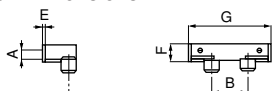
Connection Part No.	Set Weight	Connection Weight
P80	31.5kg	20.5kg
P100	40.5kg	27kg

Connection Part No.	Set Weight
F80	9.5kg
F100	11kg

Part Specifications

Applicable Model		Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
		Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz
CVS100	5.5kW (7.5)	VCT	3.5	4	ϕ 14	Direct	SiC/SiC	SiC/SiC	22	
	7.5kW (10)	VCT	5.5	4	ϕ 16.5					
	11kW (15)	2PNCT	5.5	4	ϕ 17	Star-delta				
			5.5	3	ϕ 15.5					
			1.25	2	ϕ 9.8					

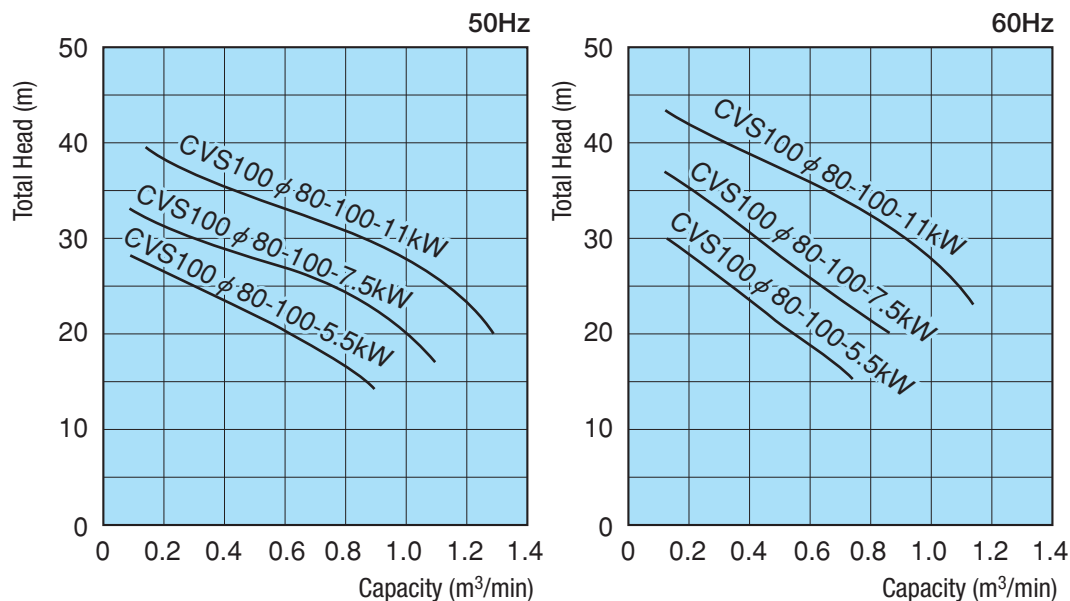
● Connection Dimensions



Unit: mm

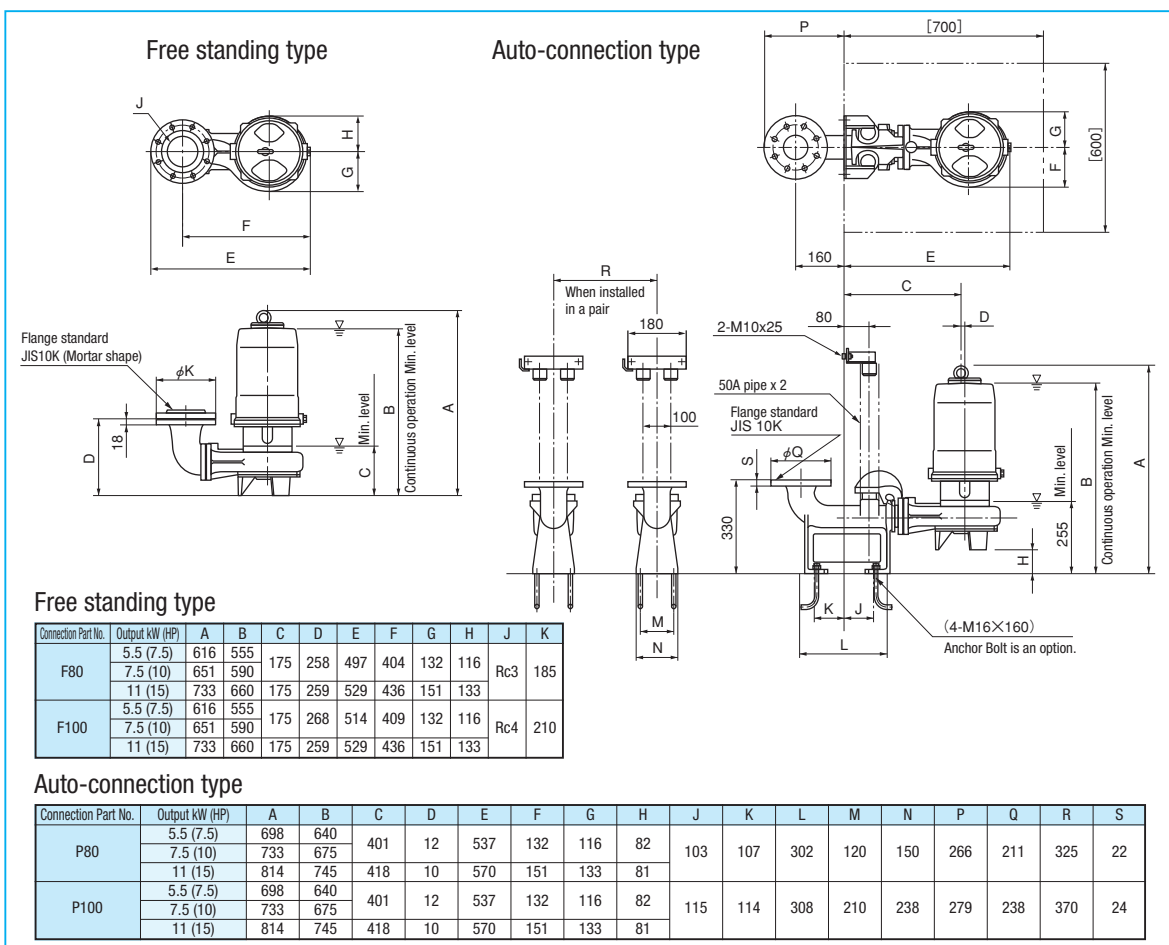
Connection Part No.	A	B	C	D	E	F	G
P80	25	100	262	12	6	44	210
P100	25	100	259	15	6	44	210

Performance Curves



Dimensions

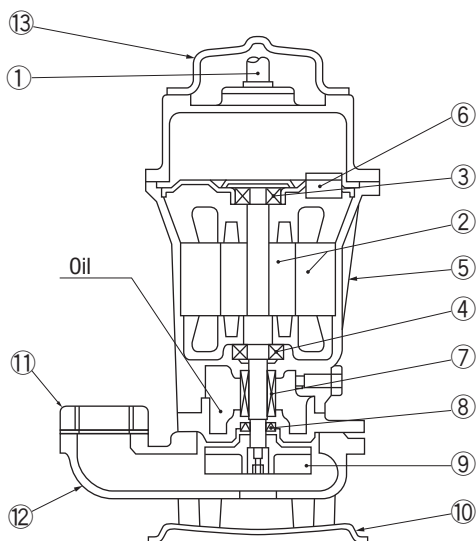
Unit: mm



Sectional View

CVS40T

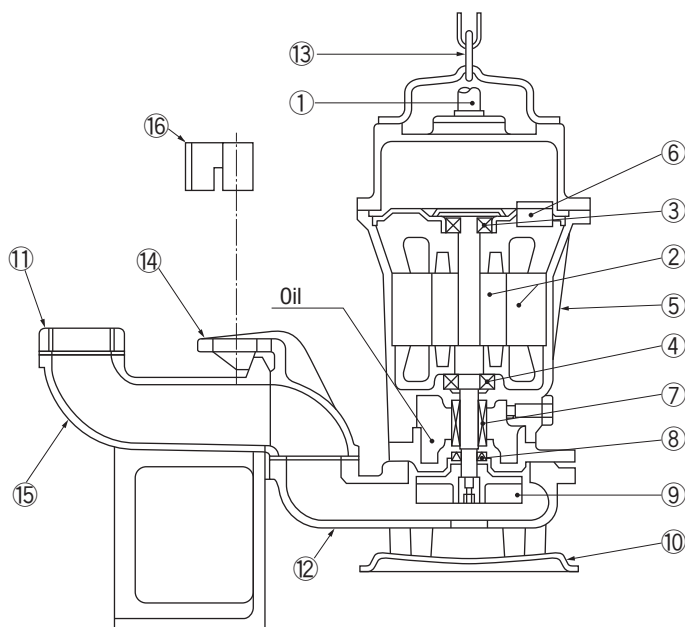
Free standing type



No.	Name	Material
1	Cable	VCT
2	Motor	Shaft: SUS420J2
3	Ball Bearing (Upper)	—
4	Ball Bearing (Lower)	—
5	Stator Casing	FC200
6	Thermal Protector	—
7	Mechanical Seal	—
8	Oil Seal	NBR
9	Impeller	FC200
10	Stand	SPCC
11	Screwed Coupling	PP
12	Pump Casing	FC200
13	Handle	SUS304

CVS50

Auto-connection type



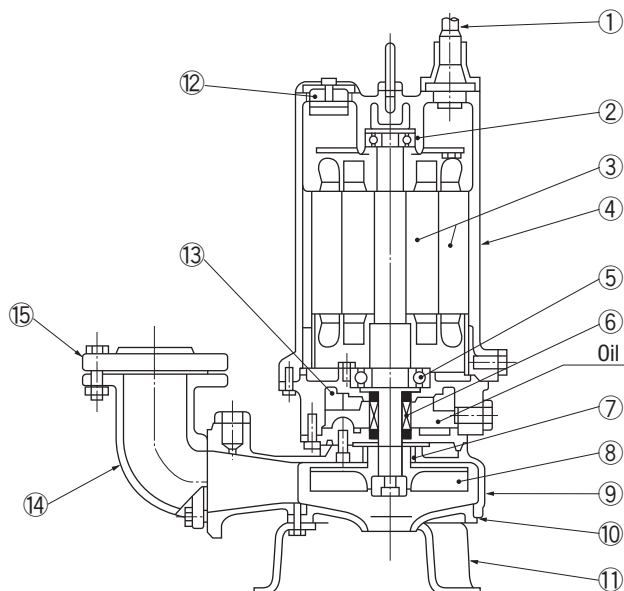
No.	Name	Material
1	Cable	VCT
2	Motor	Shaft: SUS420J2
3	Ball Bearing (Upper)	—
4	Ball Bearing (Lower)	—
5	Stator Casing	FC200
6	Thermal Protector	—
7	Mechanical Seal	—
8	Oil Seal	NBR
9	Impeller	FC200
10	Stand	SPCC
11	Screwed Coupling	PP
12	Pump Casing	FC200
13	Chain	SS400
14	Sliding Bracket	FC200
15	Connection	FC200
16	Guide Holder	SUS304

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel **PP** : Polypropylene
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitryl rubber

Sectional View

CVS80

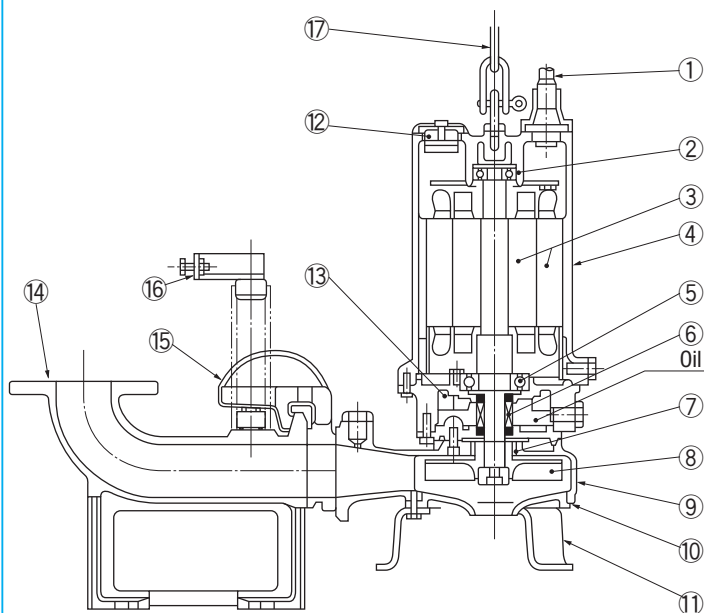
Free standing type



No.	Name	Material
1	Cable	VCT
2	Ball Bearing (Upper)	—
3	Motor	Shaft: SUS420J2
4	Stator Casing	FC200
5	Ball Bearing (Lower)	—
6	Mechanical Seal	—
7	Seal Ring	SUS304
8	Impeller	FC200
9	Pump Casing	FC200
10	Base Cover	FC200
11	Stand	SS400
12	Thermal Protector	—
13	Equalizer	Foaming NBR
14	Elbow Flange	FC200
15	Companion Flange	FC200

CVS80

Auto-connection type



No.	Name	Material
1	Cable	VCT
2	Ball Bearing (Upper)	—
3	Motor	Shaft: SUS420J2
4	Stator Casing	FC200
5	Ball Bearing (Lower)	—
6	Mechanical Seal	—
7	Seal Ring	SUS304
8	Impeller	FC200
9	Pump Casing	FC200
10	Base Cover	FC200
11	Stand	SS400
12	Thermal Protector	—
13	Equalizer	Foaming NBR
14	Connection	FC200
15	Sliding Bracket	FC200
16	Guide Holder	SCS13
17	Chain	SS400

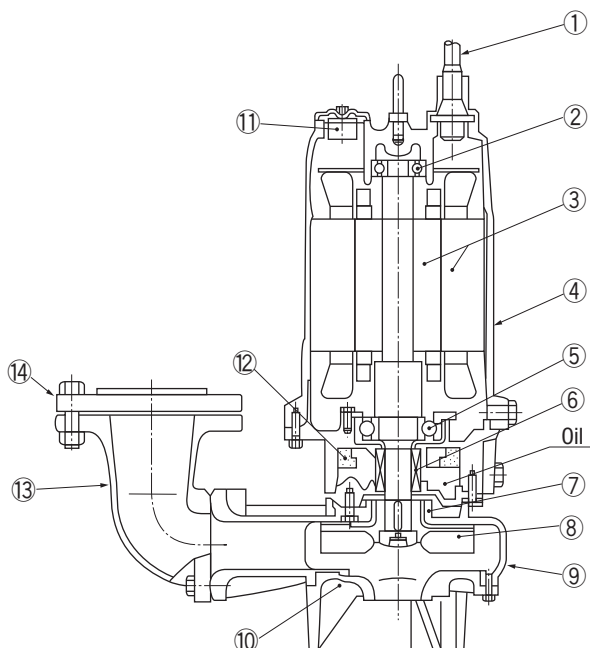
* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitrhyl rubber

Sectional View

CVS100

Free standing type

(5.5 • 7.5kW)

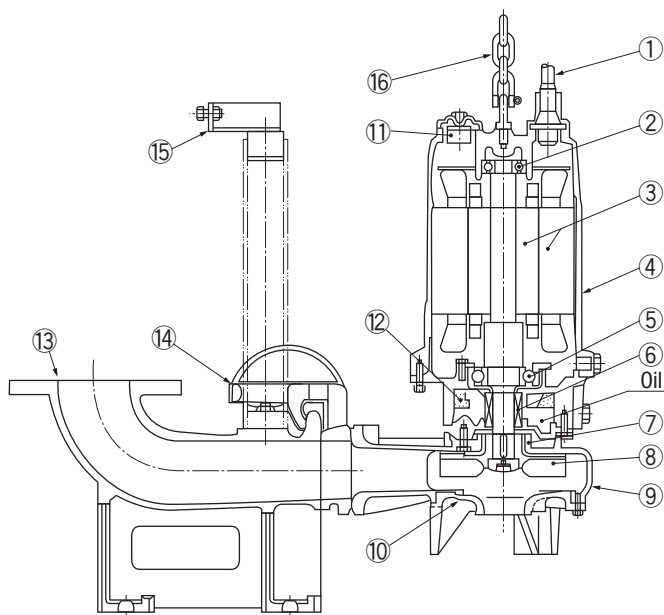


No.	Name	Material
1	Cable	VCT
2	Ball Bearing (Upper)	—
3	Motor	Shaft: SUS420J2
4	Stator Casing	FC200
5	Ball Bearing (Lower)	—
6	Mechanical Seal	—
7	Seal Ring	SUS304
8	Impeller	FC200
9	Pump Casing	FC200
10	Base Cover	FC200
11	Thermal Protector	—
12	Equalizer	Foaming NBR
13	Elbow Flange	FC200
14	Companion Flange	FC200

CVS100

Auto-connection type

(5.5 • 7.5kW)



No.	Name	Material
1	Cable	VCT
2	Ball Bearing (Upper)	—
3	Motor	Shaft: SUS420J2
4	Stator Casing	FC200
5	Ball Bearing (Lower)	—
6	Mechanical Seal	—
7	Seal Ring	SUS304
8	Impeller	FC200
9	Pump Casing	FC200
10	Base Cover	FC200
11	Thermal Protector	—
12	Equalizer	Foaming NBR
13	Connection	FC200
14	Sliding Bracket	FC200
15	Guide Holder	SCS13
16	Chain	SS400

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel

SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitryl rubber

Vortex (4P Motor, Solid Passage: 70% of the bore)**Bore: 50 - 100 mm (2" - 4")****Output: 0.25 - 7.5 kW (1/3 - 10 HP)**

CVC

CVC Series is a submersible pump with vortex impeller for sewage and wastewater. The vortex impeller prevents clogging of debris with the maximum passing solid size 70% of the bore size (except for some types).

The pump offers excellent durability because less possibility of direct passing of debris through the impeller.

Bore mm (inch)	Output kW (HP)	Pump Model	Page
50-65 (2"•2 1/2")	0.25 - 0.75 (1/3 - 1)	CVC501	190
65-80 (2 1/2"•3")	1.5 (2)	CVC651	192
65-80 (2 1/2"•3")	1.5 - 3.7 (2 - 5)	CVC801	194
100 (4")	2.2 - 3.7 (3 - 5)	CVC801	
80-100 (3"•4")	5.5 • 7.5 (7.5 • 10)	CVC1001	196

CVC**Vortex (4P Motor,
Solid Passage: 70% of the bore)**Bore: **50 - 100 mm (2" - 4")**Output: **0.25 - 7.5 kW (1/3 - 10 HP)**

■ Features

● Maximum passing solid size: 70% of the bore size

Adopting a vortex flow type having less clogging of foreign substances, the impeller is so structured to invite less clogging and tangling even in the sewage water that contains fibrous debris.

● Limit load characteristics

Due to motor having limit load characteristics, current overload does not occur even if the pump is used with large amounts of water and at a low head.

● Extended service life

Double mechanical seal and oil seal, offering excellent wear resistance, are employed for shaft seal mechanism, except for 0.25 kW. The pump realized high reliability and long operation time.

In addition, the impeller, being the vortex type, is subject to less wear resistance and offers excellent durable as it prevents filth from directly passing through the impeller.

● Easy maintenance

Disassembly and assembly are easy as the impeller can be pulled up just by removing bolts of pump casing.

■ Applications

- Sewage treatment plant and Septic tank
Raw water, sludge and scum
- Pumping station
Sewage and rainwater
- Factory
Industrial wastewater, sludge and scum
- Others
Wastewater containing fibrous and solid debris

■ Special Specifications

Motor Insulation	Class F
Cable Extension	Cable lengths: 10 - 30m (every 5m)
Material Change	Impeller: SCS13, High-chrome cast iron Lifting Chain: SUS304
Others	For specifications other than the above, please contact us.

* Cable length should be limited due to voltage drop, see the specifications (detail data) - App.1.

SCS: Stainless steel casting SUS: Stainless steel

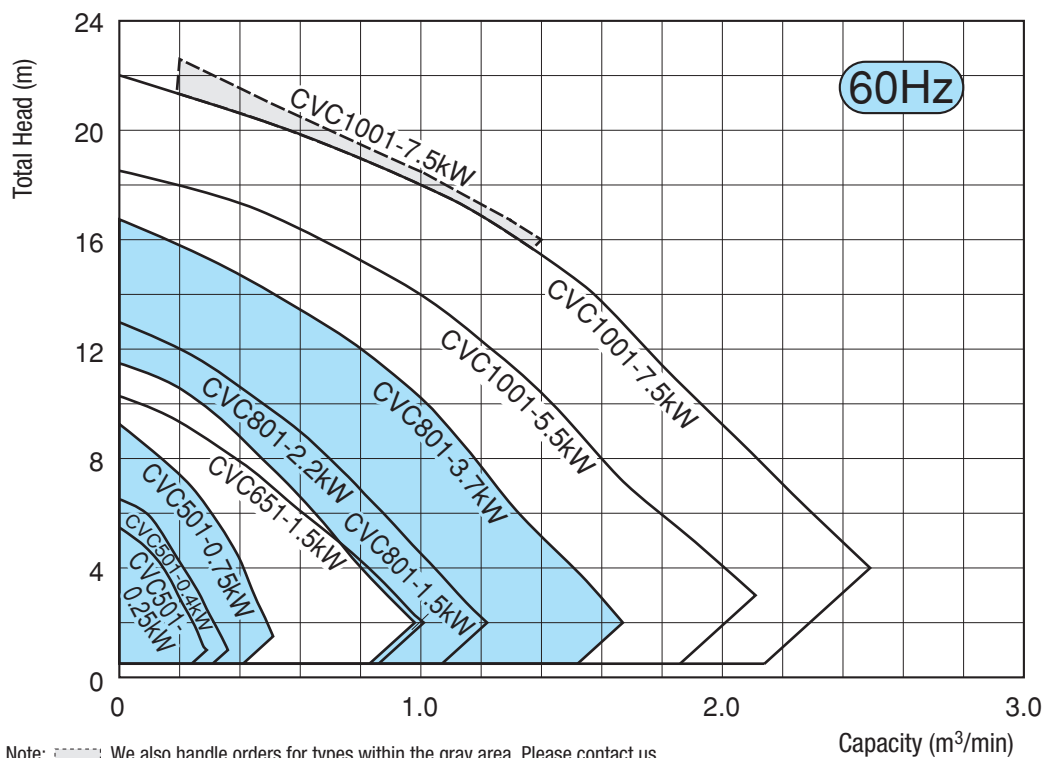
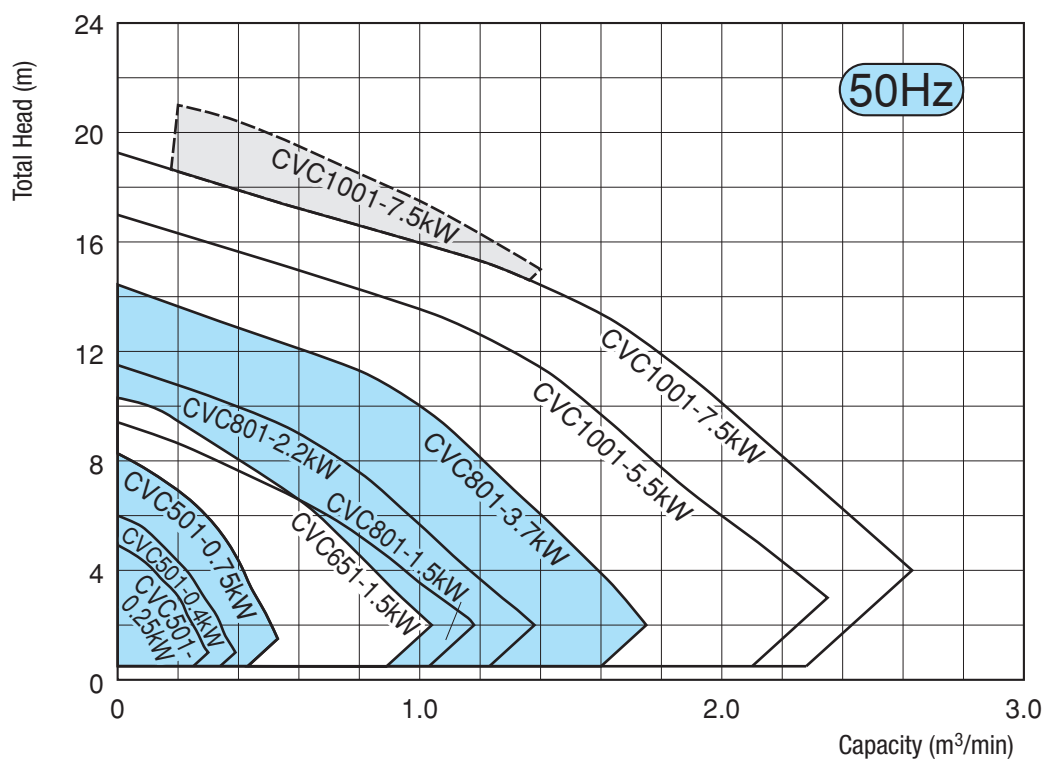
■ Standard Specifications

Handling Liquid	Kind of Liquid	Wastewater, sewage containing sludge
	Temperature	0 - 32°C
Material	Cable	VCT
	Motor Shaft	Stainless steel (SUS420J2)
	Pump Casing	Gray iron casting (FC200)
	Impeller	Gray iron casting (FC200)
Electric Motor	Name	Air-filled type Submersible Induction Motor
	Insulation Class	Class E
	Enclosure	IP68
	Phase	3-ph
	Voltage	200 - 480 V

■ Pump-Related Product

- Liquid Level Control Switch
 - Level Regulator ⇒ See page 370
 - Mini Switch ⇒ See page 372
 - Oval Float ⇒ See page 373

Performance Curves



Note: We also handle orders for types within the gray area. Please contact us.

CVC

Vortex (4P Motor,
Solid Passage: 70% of the bore)

Bore: 50-65 mm (2" - 2 1/2")

Output: 0.25 - 0.75 kW (1/3 - 1 HP)



CVC501-F50



CVC501-P50

Standard Specifications

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity – Total Head m ³ /min		No. of poles P	Weight (Bare Pump) kg
		Auto-Connection	Free Standing			50Hz	60Hz		
50 (2")	CVC501	P50	F50	0.25 (1/3)	3-ph	0.19–3.1	0.19–3.1	4	22
				0.4 (1/2)		0.18–4.4	0.18–4.6		25
				0.75 (1)		0.23–6.5	0.23–7.1		28
65 (2 1/2")	*CVC501	P65B	F65B	0.4 (1/2)	3-ph	0.18–4.4	0.18–4.6	4	25
				0.75 (1)		0.23–6.5	0.23–7.1		28

Note: The types prefixed with * does not meet the passing solid size requirement of 70%.

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (6m)1 pc

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

● Auto-connection type

- Connection (P50 only) (with bolts and packing)
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

● Free standing type (F65B)

- Elbow Flange
- Companion Flange
(with bolts, nuts and packing)

Connection Part No.	Set Weight	Connection Weight
P50	11kg	4.5kg
P65B	20kg	14.5kg

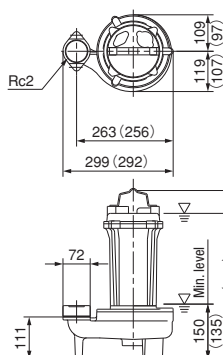
Connection Part No.	Set Weight
F50	Included in the body
F65B	5.5kg

Dimensions

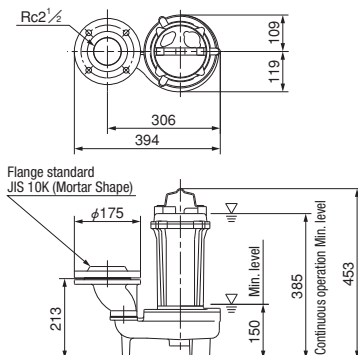
Free standing type

CVC501-F50

() : 0.25kW



CVC501-F65B

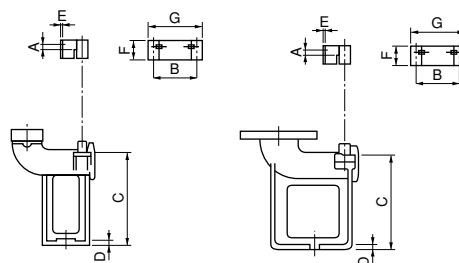


* This is not applicable to 0.25 kW.

● Connection Dimensions

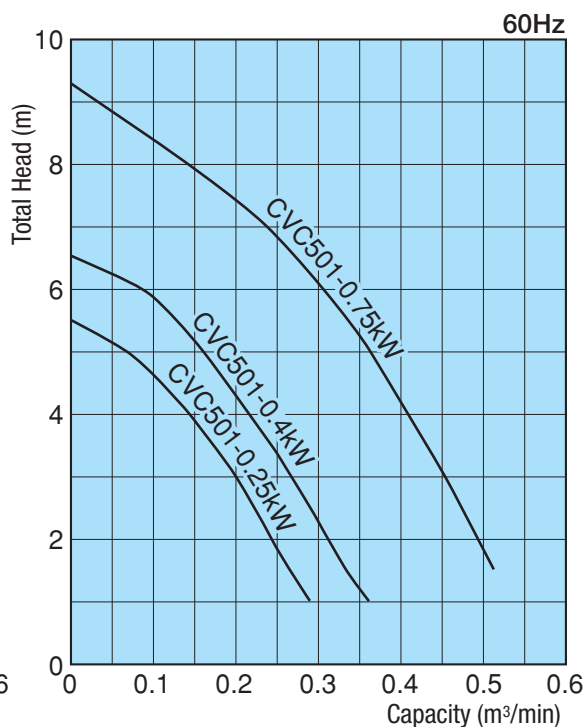
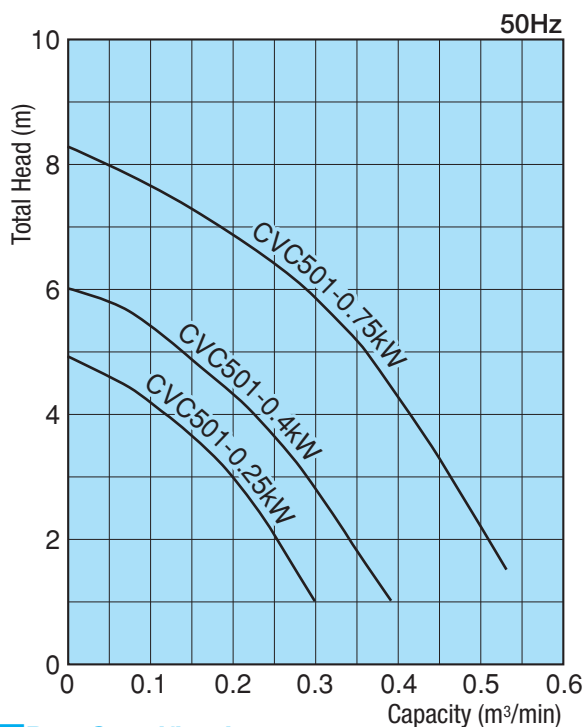
P50

P65B



Connection Part No.	A	B	C	D	E	F	G
P50	11	100	223	12	3	44	125
P65B	11	100	224	12	3	44	125

Performance Curves



Part Specifications

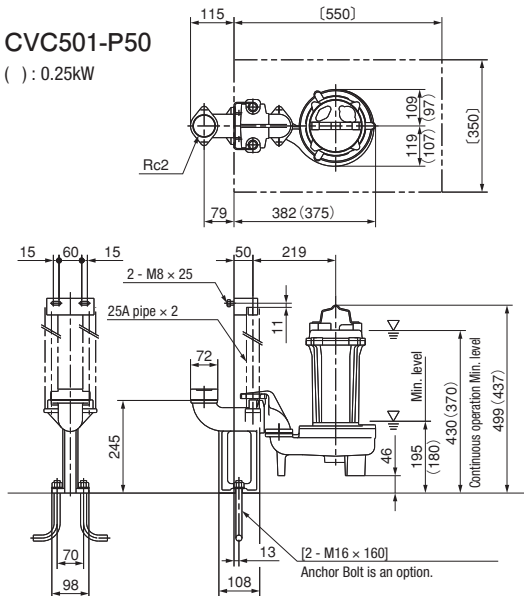
Applicable Model	Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
	Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upperer	50Hz	60Hz
CVC501	VCT	1.25	4	ϕ 11.5	Direct	SiC/SiC	SiC/SiC	35	

Unit: mm

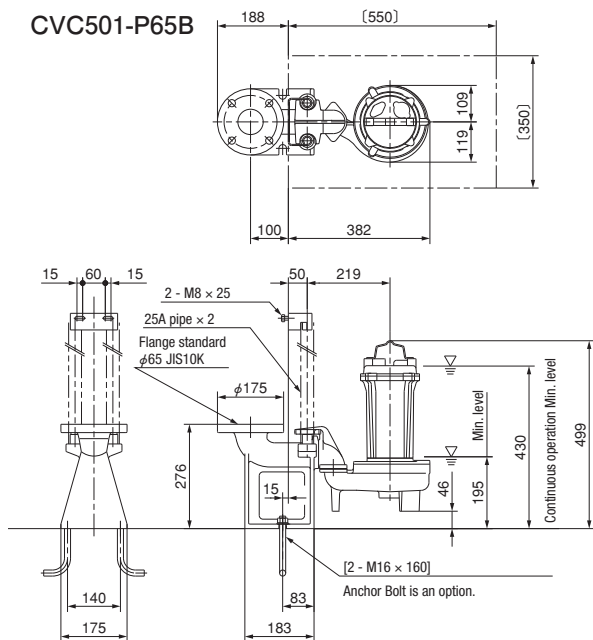
Auto-connection type

CVC501-P50

() : 0.25kW



CVC501-P65B



* This is not applicable to 0.25 kW.

CVC

Vortex (4P Motor,
Solid Passage: 70% of the bore)

Bore: 65 • 80 mm (2 1/2" • 3")

Output: 1.5 kW (2 HP)



CVC651-F65



CVC651-P65

Standard Specifications

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity – Total Head m ³ /min		No. of poles P	Weight (Bare Pump) kg
		Auto-Connection	Free Standing			50Hz	60Hz		
65 (2 1/2")	CVC651	P65	F65	1.5 (2)	3-ph	0.45–7.6	0.45–8.2	4	45
80 (3")	*CVC651	P80	F80						

Note: The types prefixed with * does not meet the passing solid size requirement of 70%.
For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (8m)1 pc.

Upon placing an order or inquiries, please
inform us of the pump model and
connection part No.

● Auto-connection type

- Connection
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

Connection Part No.	Set Weight	Connection Weight
P65	24kg	15kg
P80	31.5kg	20.5kg

● Free standing type

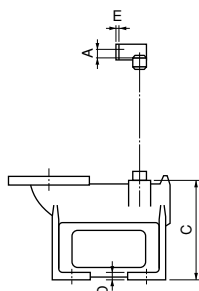
- Elbow Flange
- Companion Flange
(with bolts, nuts and packing)

Connection Part No.	Set Weight
F65	7kg
F80	9.5kg

Part Specifications

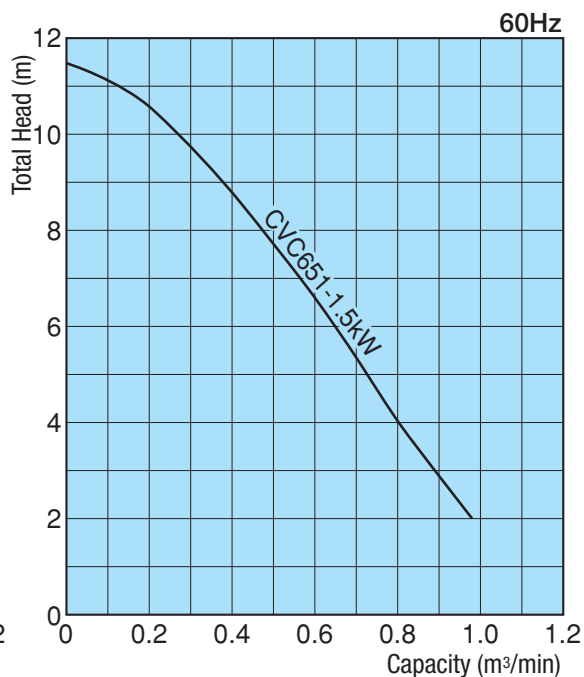
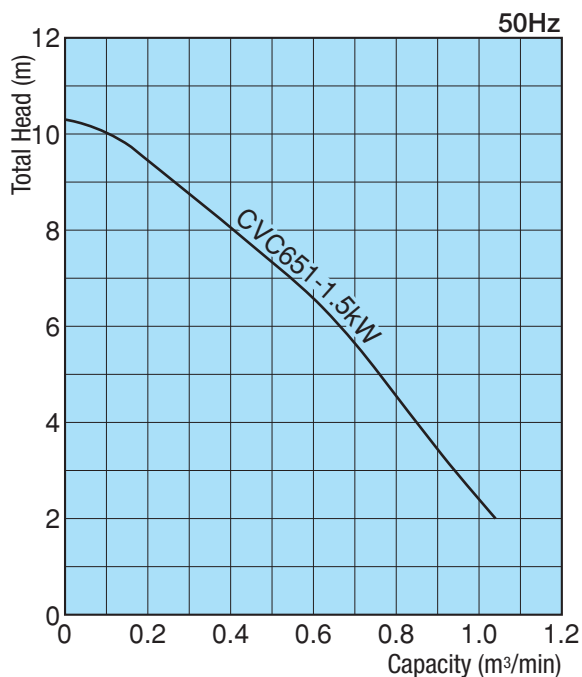
Applicable Model		Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
		Type	Section Area (mm ²)	Cores	Outer Dia. (mm)		Lower	Upper		
CVC651	1.5kW (2 HP)	VCT	1.25	4	φ 11.5	Direct	SiC/SiC	SiC/SiC	50Hz	60Hz
									46	

● Connection Dimensions



Connection Part No.	A	B	C	D	E	F	G
P65	17	70	201	12	6	32	160
P80	25	100	262	12	6	44	210

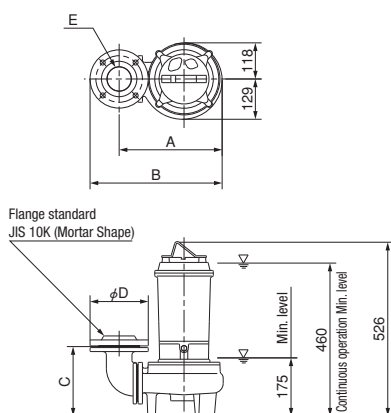
Performance Curves



Dimensions

Unit: mm

Free standing type



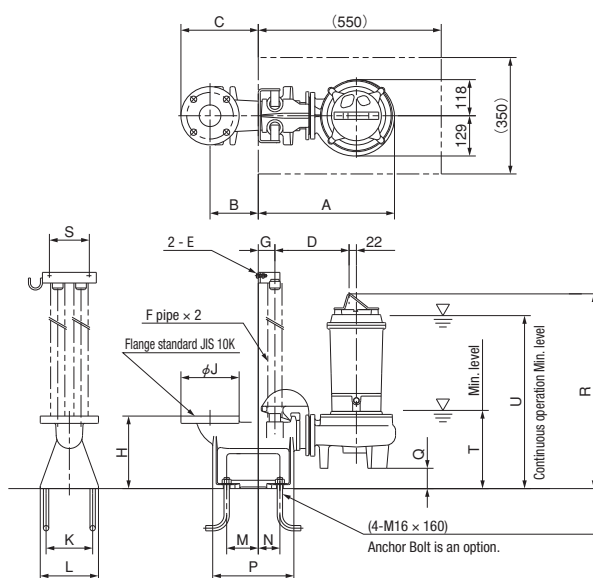
Free standing Type

Connection Part No.	Output kW (HP)	A	B	C	D	E
F65	1.5 (2)	337	425	209	φ175	Rc2½
F80		347	440	239	φ185	Rc3

Automatic connection Type

Connection Part No.	Output kW (HP)	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	T	U
P65	1.5 (2)	437	145	233	243	M8×25	32A	50	218	φ175	140	175	95	65	244	61	587	235	520
P80		480	160	266	256	M10×25	50A	80	330	φ211	120	150	107	103	302	101	627	275	560

Auto-connection type



CVC

Vortex (4P Motor,
Solid Passage: 70% of the bore)

Bore: 65·80·100 mm (2 1/2"·3"·4")

Output: 1.5·2.2·3.7 kW (2·3·5 HP)



CVC801-F80



CVC801-P80B

Standard Specifications

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity – Total Head m ³ /min		No. of poles P	Weight (Bare Pump) kg
		Auto-Connection	Free Standing			50Hz	60Hz		
65 (2 1/2")	CVC801	P65	F65	1.5 (2)	3-ph	0.52– 7.0	0.52– 6.7	4	45
				2.2 (3)		0.6 – 8.9	0.6 – 8.9		57
				3.7 (5)		0.8 –11.3	0.8 –11.9		69
80 (3")	CVC801	P80B	F80	1.5 (2)	3-ph	0.52– 7.0	0.52– 6.7	4	45
				2.2 (3)		0.6 – 8.9	0.6 – 8.9		57
				3.7 (5)		0.8 –11.3	0.8 –11.9		69
100 (4")	*CVC801	P100B	F100	2.2 (3)	3-ph	0.6 – 8.9	0.6 – 8.9	4	57
				3.7 (5)		0.8 –11.3	0.8 –11.9		69

Note: The types prefixed with * does not meet the passing solid size requirement of 70%.
For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (8m)1 pc.

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

● Auto-connection type

- Connection
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

Connection Part No.	Set Weight	Connection Weight
P65	24kg	15kg
P80B	31.5kg	18kg
P100B	40.5kg	27kg

● Free standing type

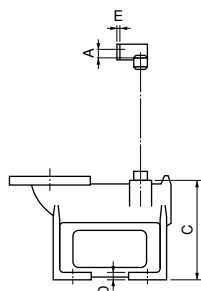
- Elbow Flange
- Companion Flange (with bolts, nuts and packing)

Connection Part No.	Set Weight
F65	7kg
F80	9.5kg
F100	11kg

Part Specifications

Applicable Model		Cable Specifications			Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
		Type	Section Area (mm ²)	Cores	Outer Dia. (mm)	Lower	Upper		
CVC801	1.5kW (2 HP)	VCT	1.25	4	φ 11.5	Direct	SiC/SiC	SiC/SiC	56
	2.2kW (3 HP)	VCT	1.25	4	φ 11.5		SiC/SiC		
	3.7kW (5 HP)	VCT	2.0	4	φ 12		SiC/SiC		

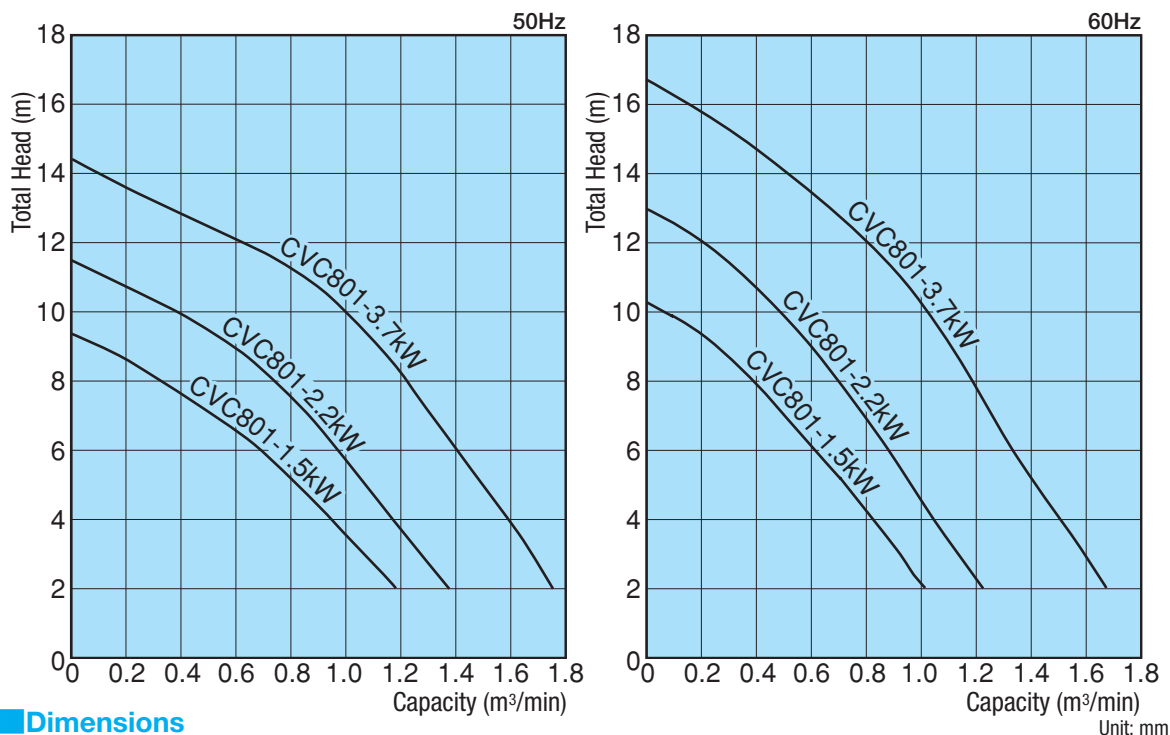
● Connection Dimensions



Unit: mm

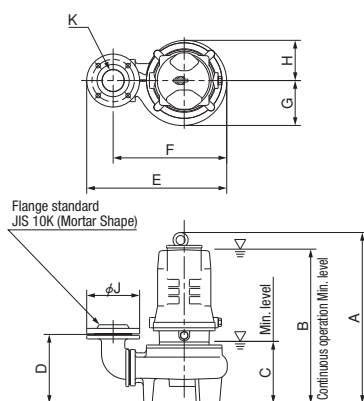
Connection Part No.	A	B	C	D	E	F	G
P65	17	70	201	12	6	32	160
P80B	25	100	262	12	6	44	210
P100B	25	100	259	12	6	44	210

Performance Curves

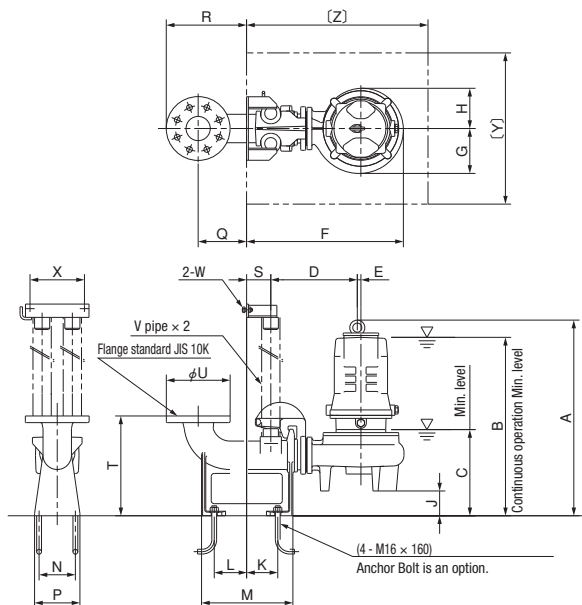


Dimensions

Free standing type



Auto-connection type



Free standing Type

Connection Part No.	Output kW (HP)	A	B	C	D	E	F	G	H	J	K
F65	1.5 (2)	557	495	210		448	360	135	118		
	2.2 (3)	574	520	215	235	490	403	156	141	175	Rc2½
	3.7 (5)	636	580								
F80	1.5 (2)	557	495	210		463	370	135	118		
	2.2 (3)	574	520	215	265	505	413	156	141	185	Rc3
	3.7 (5)	636	580								
F100	2.2 (3)	574	520		275	523	418	156	141	210	Rc4
	3.7 (5)	636	580	215							

Automatic connection Type

Connection Part No.	Output kW (HP)	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X	Y	Z
P65	1.5 (2)	592	530	245	263	22	460	135	118	35															
	2.2 (3)	610	555	250	293	12	503	156	141	36	65	95	244	140	175	145	233	50	218	175	32A	M8×25	120	350	550
	3.7 (5)	672	615																					500	600
P80B	1.5 (2)	632	570	285	276	22	503	135	118	75															
	2.2 (3)	650	595	290	306	12	546	156	141	76	103	107	302	120	150	160	266	80	330	211	50A	M10×25	180	350	550
	3.7 (5)	712	655																					500	600
P100B	2.2 (3)	650	595	290	306	12	546	156	141	76	115	114	308	200	238	160	279	80	330	238	50A	M10×25	180	500	600
	3.7 (5)	712	655																						

CVC

Vortex (4P Motor,
Solid Passage: 70% of the bore)

Bore: 80 • 100 mm (3" • 4")

Output: 5.5 • 7.5 kW (7.5 • 10 HP)



CVC1001-F100



CVC1001-P100B

Standard Specifications

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity – Total Head m ³ /min		No. of poles P	Weight (Bare Pump) kg
		Auto-Connection	Free Standing			50Hz	60Hz		
80 (3")	CVC1001	P80B	F80	5.5 (7.5)	3-ph	1.2–12.2	1.2–12.2	4	95
				7.5 (10)		1.3–14.8	1.3–16.0		105
100 (4")	CVC1001	P100B	F100	5.5 (7.5)	3-ph	1.2–12.2	1.2–12.2	4	95
				7.5 (10)		1.3–14.8	1.3–16.0		105

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (8m) 1 pc.

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

● Auto-connection type

- Connection
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

Connection Part No.	Set Weight	Connection Weight
P80B	31.5kg	18kg
P100B	40.5kg	27kg

● Free standing type

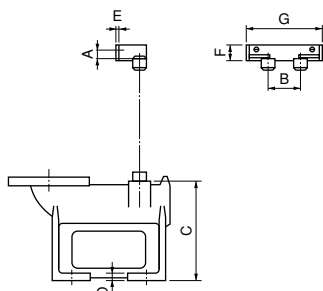
- Elbow Flange
- Companion Flange
(with bolts, nuts and packing)

Connection Part No.	Set Weight
F80	9.5kg
F100	11kg

Part Specifications

Applicable Model		Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
		Type	Section Area (mm ²)	Cores	Outer Dia. (mm)		Lower	Upper		
CVC1001	5.5kW (7.5 HP)	VCT	3.5	4	φ 14	Direct	SiC/SiC	SiC/SiC	70	
	7.5kW (10 HP)	VCT	5.5	4	φ 16.5	Direct	SiC/SiC	SiC/SiC	70	

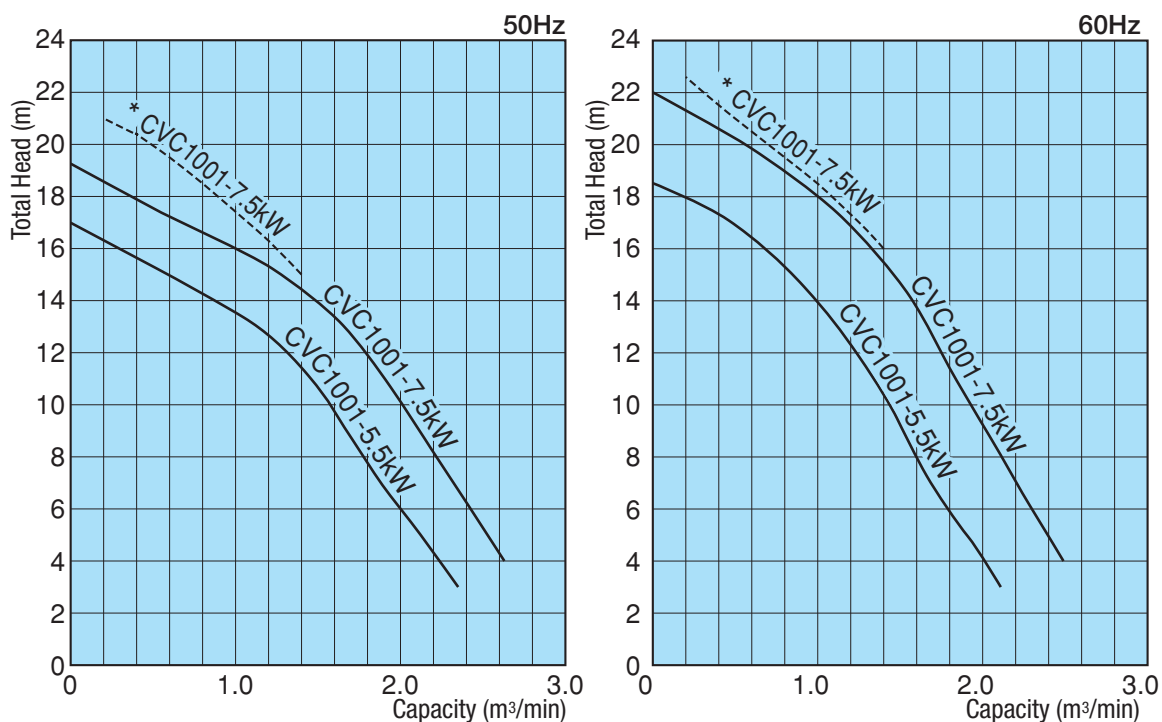
● Connection Dimensions



Unit: mm

Connection Part No.	A	B	C	D	E	F	G
P80B	25	100	262	12	6	44	210
P100B	25	100	259	12	6	44	210

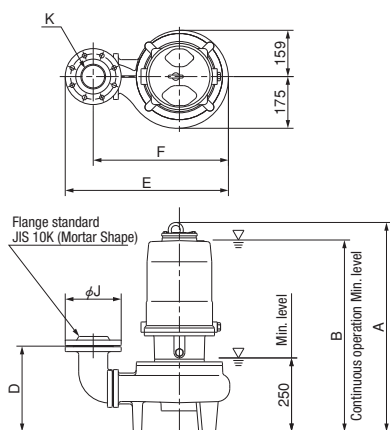
Performance Curves



Dimensions

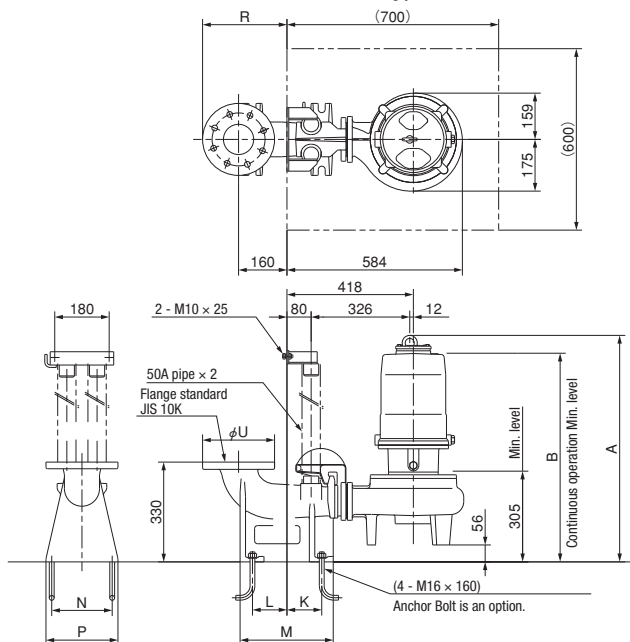
Unit: mm

Free standing type



Connection Part No.	Output kW (HP)	A	B	D	E	F	J	K
F80	5.5 (7.5)	702	645	284	544	451	185	Rc3
	7.5 (10)	737	680					
F100	5.5 (7.5)	702	645	294	561	456	210	Rc4
	7.5 (10)	737	680					

Auto-connection type

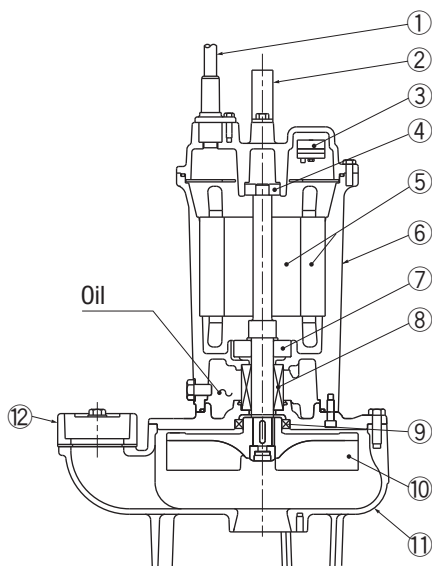


Connection Part No.	Output kW (HP)	A	B	K	L	M	N	P	R	U
P80B	5.5 (7.5)	758	700	103	107	302	120	150	266	211
	7.5 (10)	793	735							
P100B	5.5 (7.5)	758	700	115	114	308	200	238	279	238
	7.5 (10)	793	735							

Sectional View

CVC501

Free standing type

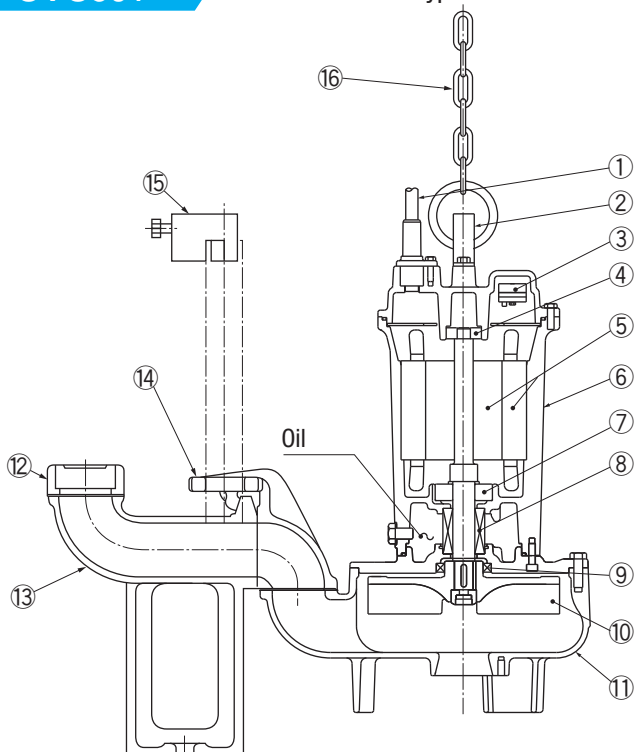


No.	Name	Material
1	Cable	VCT
2	Handle	SUS304
3	Thermal Protector	—
4	Ball Bearing (Upper)	—
5	Motor	Shaft: SUS420J2
6	Stator Casing	FC200
7	Ball Bearing (Lower)	—
8	Mechanical Seal	—
*9	Oil Seal	NBR
10	Impeller	FC200
11	Pump Casing	FC200
12	Screwed Coupling	FC200

Note: The * mark is not applicable to 0.25 kW (1/3HP).

CVC501

Auto-connection type



No.	Name	Material
1	Cable	VCT
2	Handle	SUS304
3	Thermal Protector	—
4	Ball Bearing (Upper)	—
5	Motor	Shaft: SUS420J2
6	Stator Casing	FC200
7	Ball Bearing (Lower)	—
8	Mechanical Seal	—
*9	Oil Seal	NBR
10	Impeller	FC200
11	Pump Casing	FC200
12	Screwed Coupling	FC200
13	Connection	FC200
14	Sliding Bracket	FC200
15	Guide Holder	SUS304
16	Chain	SS400

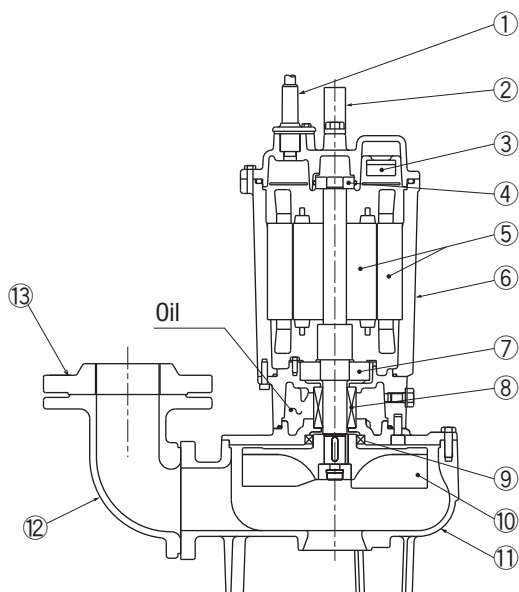
Note: The * mark is not applicable to 0.25 kW (1/3HP).

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel

SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitryl rubber

CVC651

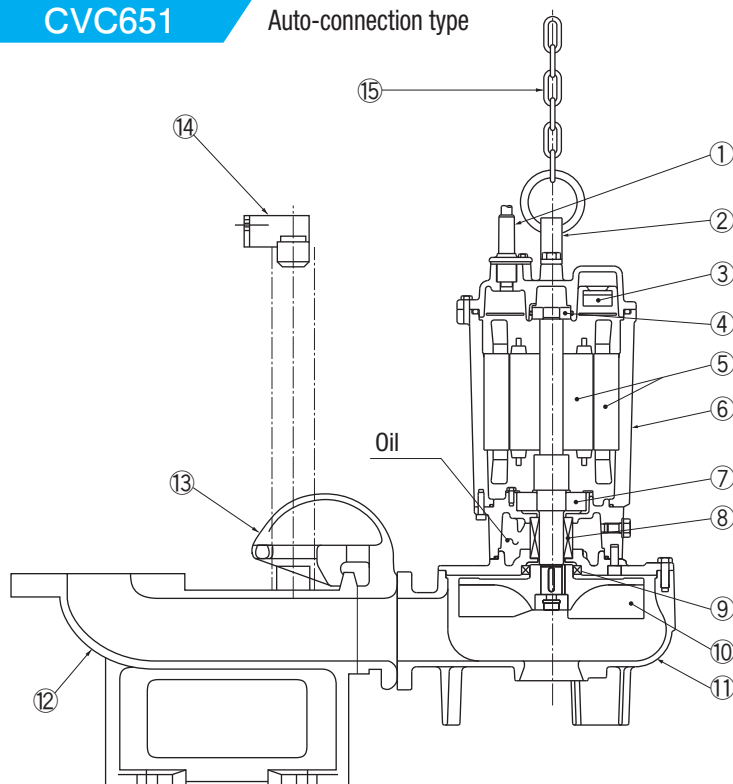
Free standing type



No.	Name	Material
1	Cable	VCT
2	Handle	SUS304
3	Thermal Protector	—
4	Ball Bearing (Upper)	—
5	Motor	Shaft: SUS420J2
6	Stator Casing	FC200
7	Ball Bearing (Lower)	—
8	Mechanical Seal	—
9	Oil Seal	NBR
10	Impeller	FC200
11	Pump Casing	FC200
12	Elbow Flange	FC200
13	Companion Flange	FC200

CVC651

Auto-connection type



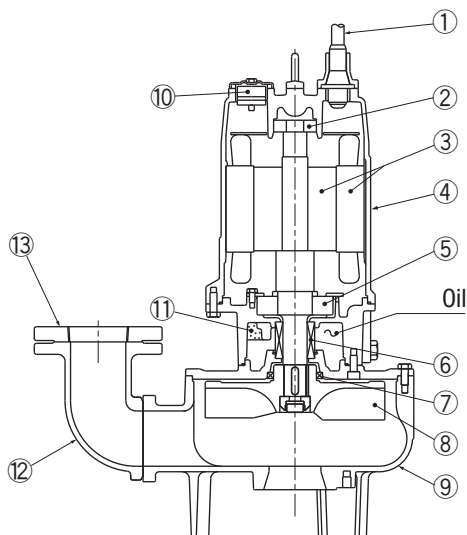
No.	Name	Material
1	Cable	VCT
2	Handle	SUS304
3	Thermal Protector	—
4	Ball Bearing (Upper)	—
5	Motor	Shaft: SUS420J2
6	Stator Casing	FC200
7	Ball Bearing (Lower)	—
8	Mechanical Seal	—
9	Oil Seal	NBR
10	Impeller	FC200
11	Pump Casing	FC200
12	Connection	FC200
13	Sliding Bracket	FC200
14	Guide Holder	SCS13
15	Chain	SS400

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

Sectional View

CVC801 • 1001

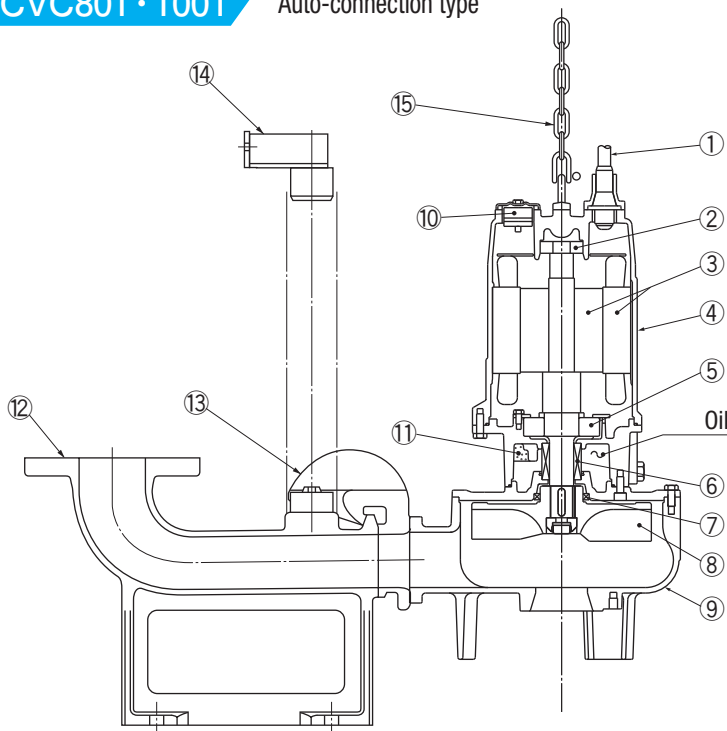
Free standing type



No.	Name	Material
1	Cable	VCT
2	Ball Bearing (Upper)	—
3	Motor	Shaft: SUS420J2
4	Stator Casing	FC200
5	Ball Bearing (Lower)	—
6	Mechanical Seal	—
7	Oil Seal	NBR
8	Impeller	FC200
9	Pump Casing	FC200
10	Thermal Protector	—
11	Equalizer	Foaming NBR
12	Elbow Flange	FC200
13	Companion Flange	FC200

CVC801 • 1001

Auto-connection type



No.	Name	Material
1	Cable	VCT
2	Ball Bearing (Upper)	—
3	Motor	Shaft: SUS420J2
4	Stator Casing	FC200
5	Ball Bearing (Lower)	—
6	Mechanical Seal	—
7	Oil Seal	NBR
8	Impeller	FC200
9	Pump Casing	FC200
10	Thermal Protector	—
11	Equalizer	Foaming NBR
12	Connection	FC200
13	Sliding Bracket	FC200
14	Guide Holder	SCS13
15	Chain	SS400

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel

SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

Screw Impeller

Bore: **65 - 150 mm (2 1/2" - 6")**Output: **1.5 - 22 kW (2 - 30 HP)****CW•CWH**

The CW series, mounting screw impeller with a high pass-through capability, can transfer water containing plastics and fibers that are prone to cause clogging. The screwing effect at the impeller entry enables the transfer of high-viscosity sludge. The CW series can effectively transfer filth and sludge during treatment of sewerage.

Bore mm (inch)	Output kW (HP)	Model	Page
65•80 (2 1/2"•3")	1.5 (2)	CW65	204
65•80•100 (2 1/2"•3"•4")	1.5 - 3.7 (2 - 5)	CW80	
80•100 (3"•4")	5.5•7.5 (7.5 - 10)	CW100	
100 (4")	11 - 22 (15 - 30)	CWH100	
150 (6")	5.5 - 22 (7.5 - 30)	CW150	

CW**Screw Impeller**

Bore : 65 - 150 mm (2 1/2 - 6")

Output: 1.5 - 22 kW (2 - 30 HP)

Features**● Excellent pass-through capability**

The screw type impeller, can transfer water containing plastics and fibers that are prone to cause clogging. The screwing effect at the impeller entry enables transfer of high-viscosity sludge.

● Easily removable impeller

The impeller, supplied as an integral part, can be easily mounted and removed, similar to those used in conventional pumps for transferring sewage water or filth.

● Limit load characteristics

The screw impeller has limit-load characteristics. No overload occurs, even at a high flow rate.

● Extended service life

A double mechanical seal with excellent wear resistance is employed for the shaft seal mechanism.

● Preventing motor burnout

An auto-reset type motor protector (Thermal Protector) prevents motor burnout due to overload. A core wire seal, applied to a cable, prevents water leakage into the motor chamber in case a cable sheath breaks or a cable end is immersed.

Standard Specifications

Handling Liquid	Liquid Type	Wastewater, sewage containing sludge
	Temperature	0 - 32°C
Material	Cable	VCT: 7.5 kW or less, 2PNCT: 11 kW or more
	Motor Shaft	SUS420J2
	Pump Casing	FC250
	Impeller	FC250 or FCD500 (22 kW)
Electric Motor	Name	Air-filled type Submersible Induction Motor
	Insulation Class	Class E
	Enclosure	IP68
	Phase	3-ph
	Voltage	200 - 480V

Pump-Related Product☐ Liquid Level Control Switch

Level Regulator

⇒ See page 370

Mini Switch

⇒ See page 372

Oval Float

⇒ See page 373

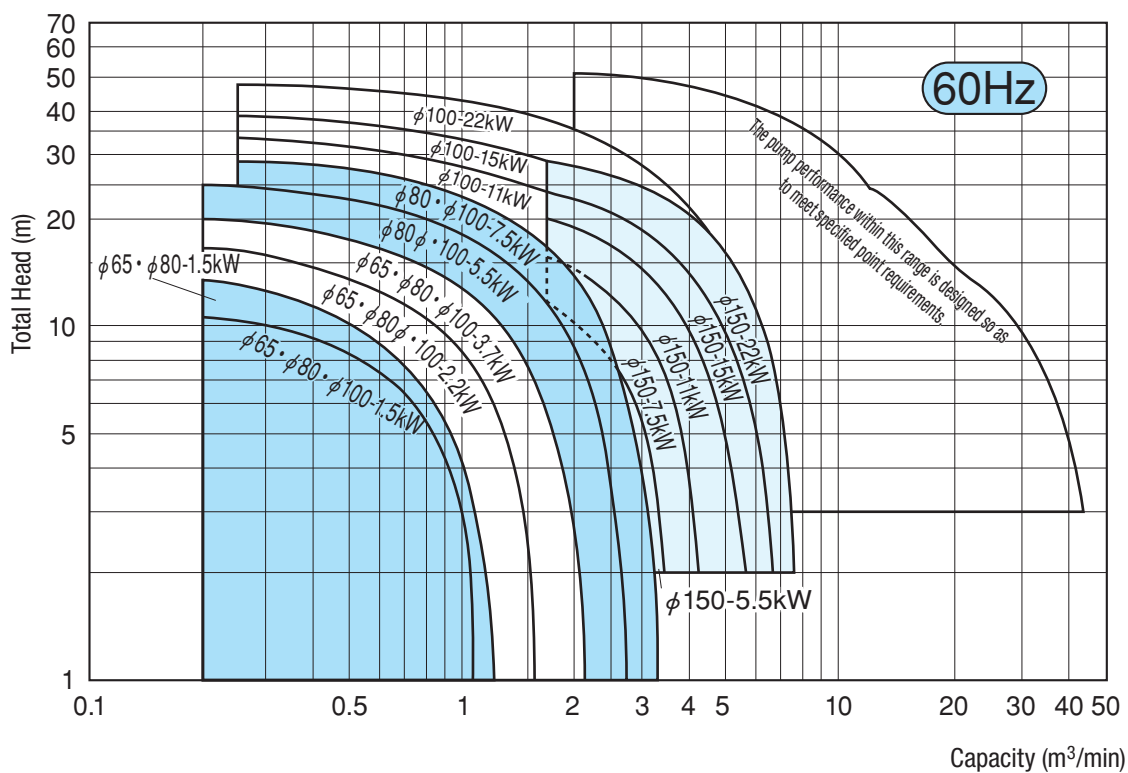
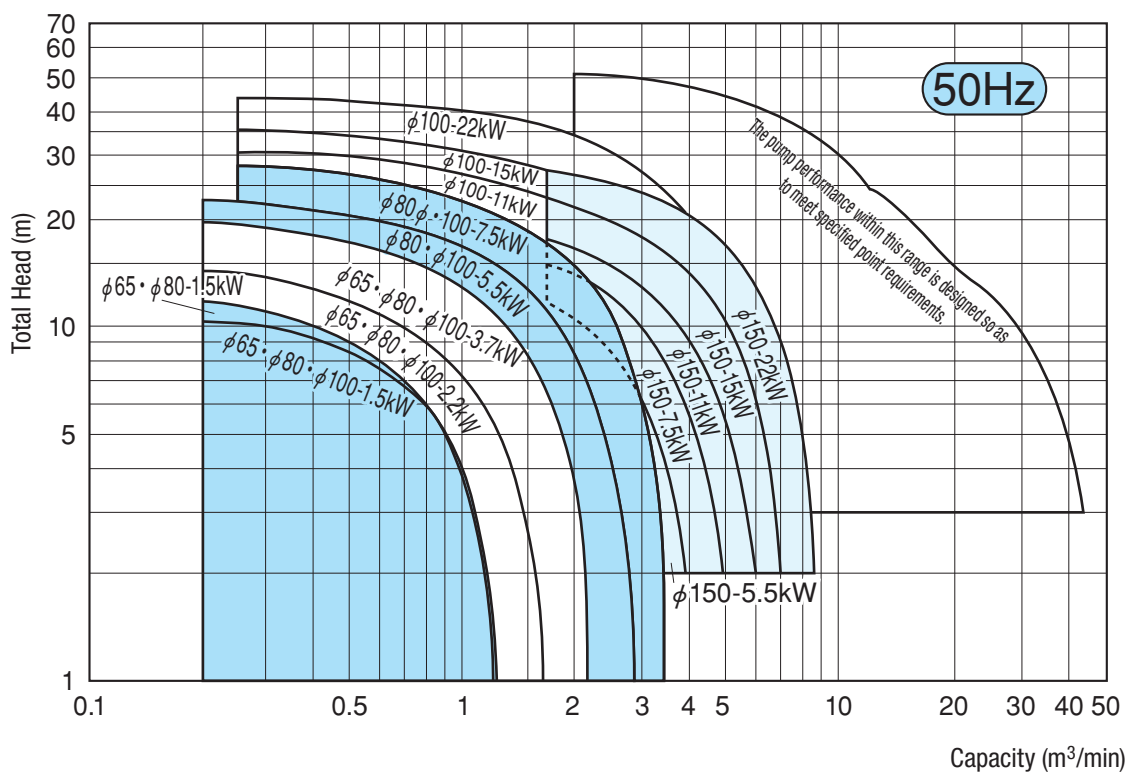
**Applications**

- ☐ Sewage treatment plant
Raw water, sludge
- ☐ Pumping station
Raw water, Rainwater
- ☐ Factory
Industrial wastewater
- ☐ Building, Shopping complex
Domestic wastewater
- ☐ Others
Various wastewater including sludge

Special Specifications

Motor Insulation	Class F
Cable Extension	Cable lengths: 10 - 30m (every 5m)
Material Changes	Impeller: SCS13 (Stainless steel casting) Base Cover: SCS13 (Stainless steel casting) Lifting Chain: SUS304 (Stainless steel)
Suction Pipe	Suction pipes dedicated to low water levels are also available.
Others	● Availability of mounting motor protector, please refer to the specifications (detail data) - App.1. ● For specifications other than the above, please contact us.

Performance Curves



CW
Screw Impeller

Bore : **65 - 150 mm (2 1/2 - 6")**

Output: **1.5 - 22 kW (2 - 30 HP)**

Standard Specifications

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity - Total Head m³/min-m		No. of poles P	Weight (Bare Pump) kg
		Auto-Connection	Free Standing			50Hz	60Hz		
65 (2 1/2")	CW65	P65	F65	1.5 (2)	3-ph	0.6– 8.0	0.6 – 8.9	4	55
	CW80			2.2 (3)		0.7– 6.8	0.62– 7.2		65
				3.7 (5)		0.8– 8.9	0.8 –10.5		70
							1.1–11.7		1.1 –11.7
80 (3")	CW65	P80	F80	1.5 (2)	3-ph	0.6– 8.0	0.6 – 8.9	4	55
	CW80	P80B		2.2 (3)		0.7– 6.8	0.62– 7.2		65
				3.7 (5)		0.8– 8.9	0.8 –10.5		70
				5.5 (7.5)		1.1–11.7	1.1 –11.7		84
	CW100			7.5 (10)		1.4–13.3	1.3 –15.2		115
						1.7–16.9	1.7 –16.8		130
100 (4")	CW80	P100B	F100	1.5 (2)	3-ph	0.7– 6.8	0.62– 7.2	4	65
				2.2 (3)		0.8– 8.9	0.8 –10.5		70
				3.7 (5)		1.1–11.7	1.1 –11.7		84
	CW100			5.5 (7.5)		1.4–13.3	1.3 –15.2		115
				7.5 (10)		1.7–16.9	1.7 –16.8		130
	CWH100	P100C	F100B	11 (15)	3-ph	2.5–17.5	2.3 –19.4	4	246
				15 (20)		2.7–20.5	2.5 –23.0		260
				22 (30)		3.0–27.0	3.3 –27.5		310
150 (6")	CW150	P150	F150	5.5 (7.5)	3-ph	2.1–10.0	2.0 –10.6	4	162
				7.5 (10)		2.6–11.3	2.6 –11.7		170
				11 (15)		3.2–12.1	3.2 –13.4		245
				15 (20)		3.6–15.6	3.6 –16.0		258
				22 (30)		4.5–18.3	4.5 –18.2		306

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (8 m) 7.5 kW or less 1 pcs.
11 kW or more 3 pcs.
- Air Vent Valve
(except for 1.5 kW)

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

●Auto-connection type

- Connection
(For the CWH100 and CW150, bolts and nuts are included.)
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6 m)

Connection Part No.	Set Weight	Connection Weight
P65	24kg	15kg
P80	31.5kg	20.5kg
P80B	31.5kg	18kg
P100B	40.5kg	27kg
P100C	55kg	37kg
P150	60kg	42kg

●Free standing type

- Elbow Flange
- Companion Flange
(with bolts, nuts and packing)

Connection Part No.	Set Weight
F65	7kg
F80	9.5kg
F100	11kg
F100B	12kg
F150	30kg

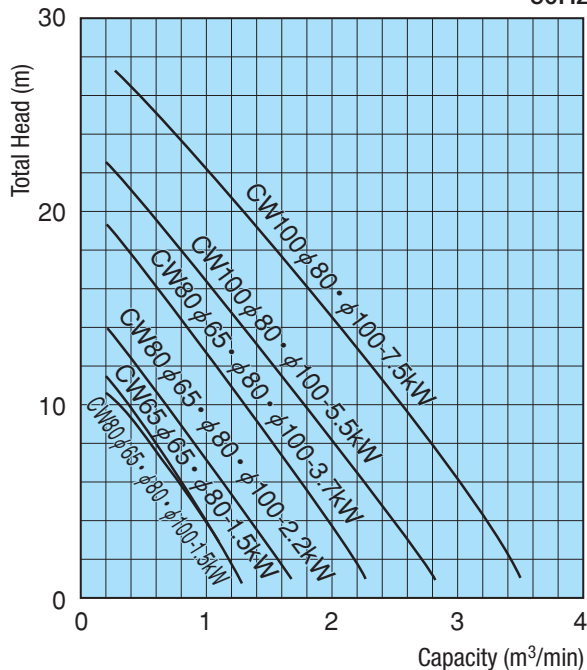
Part Specifications

Applicable Model		Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
		Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz
CW65	1.5kW (2 HP)	VCT	1.25	4	ϕ 11.5	Direct	SiC/SiC	SiC/SiC	43	34
CW80	1.5kW (2 HP)	VCT	1.25	4	ϕ 11.5				43	43
CW80	2.2kW (3 HP)	VCT	1.25	4	ϕ 11.5				49	42
CW80	3.7kW (5 HP)	VCT	2.0	4	ϕ 12				53	48
CW100	5.5kW (7.5 HP)	VCT	3.5	4	ϕ 14				54	48
CW100	7.5kW (10 HP)	VCT	5.5	4	ϕ 16.5				56	49
CW150	5.5kW (7.5 HP)	VCT	3.5	4	ϕ 14				66	58
CW150	7.5kW (10 HP)	VCT	5.5	4	ϕ 16.5	81			57	
CWH100	11kW (15 HP)	2PNCT	5.5	4	ϕ 17	Star-delta			54	51
CW150	11kW (15 HP)		1.25	2	ϕ 9.8				78	76
CWH100	15kW (20 HP)	2PNCT	8.0	4	ϕ 18.5				57	62
CW150	15kW (20 HP)		1.25	2	ϕ 9.8				80	76
CWH100	22kW (30 HP)	2PNCT	14	4	ϕ 22				73	65
CW150	22kW (30 HP)		1.25	2	ϕ 9.8				80	78

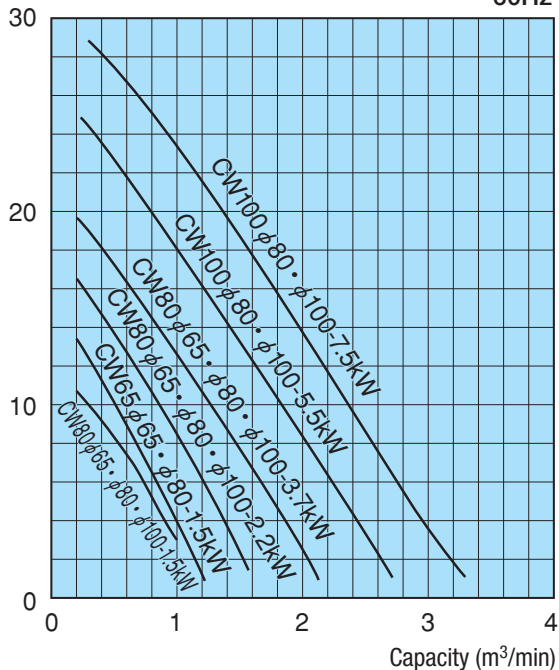
Performance Curves

CW65 • 80 • 100

50Hz

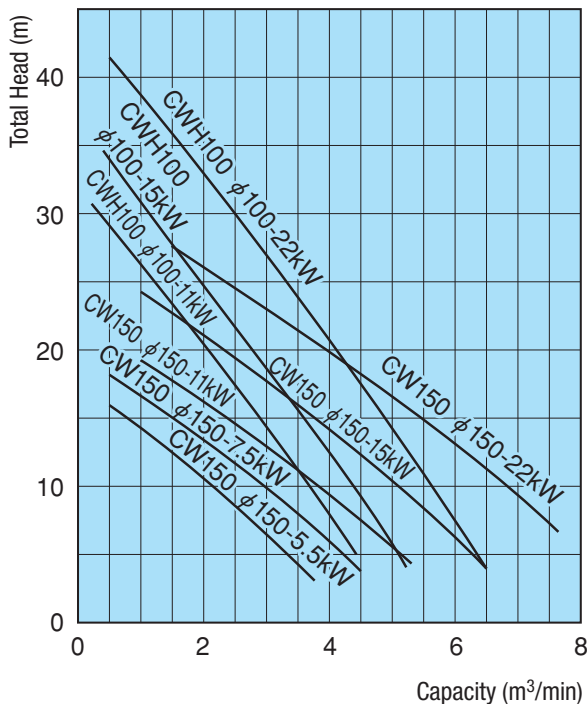


60Hz

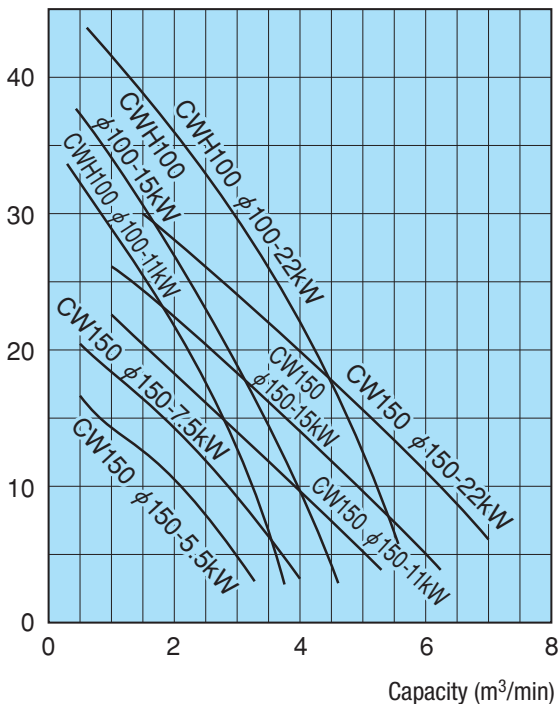


CWH100 • CW150

50Hz



60Hz



Unit: mm

Free standing type

CW65

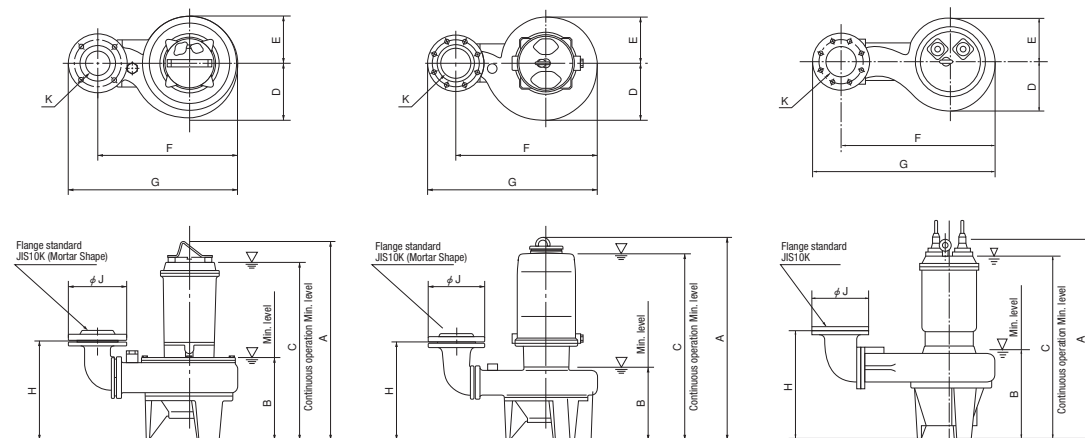
CW80 (1.5kW)

CW80

CW100

CWH100

CW150



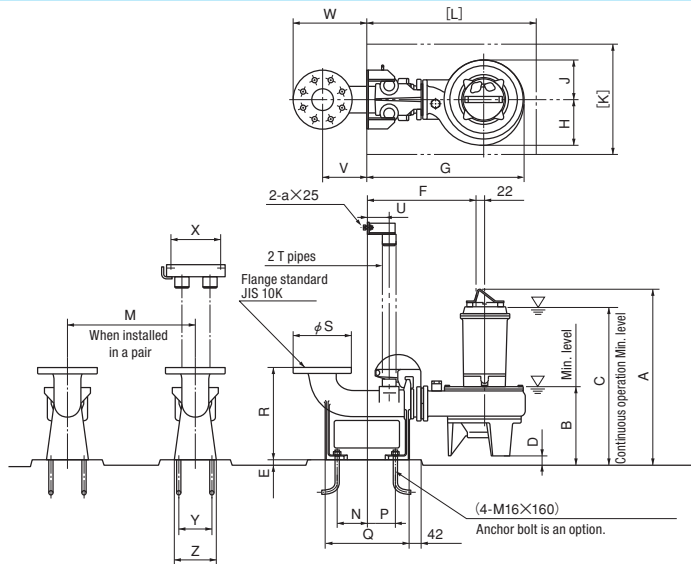
Pump Model	Output kW (HP)	Connection Part No.	A	B	C	D	E	F	G	H	J	K	
CW65	1.5 (2)	F65	570	220	505	152	123	392	480	276	175	Rc2½	
		F80						402	495	306	185	Rc3	
CW80	1.5 (2)	F65	595	245	530	161	142	421	509	297	175	Rc2½	
		F80							524	327	185		
		F100							541	337	210		
	2.2 (3)	F65	606	245	550	161	131	421	509	297	175	Rc2½	
		F80							431	524	327	185	Rc3
		F100							436	541	337	210	Rc4
	3.7 (5)	F65	687	265	630	183	148	440	528	316	175	Rc2½	
		F80							450	543	346	185	Rc3
		F100							455	560	356	210	Rc4
CW100	5.5 (7.5)	F80	725	275	665	197	158	508	601	356	185	Rc3	
		F100						513	618	366	210	Rc4	
	7.5 (10)	F80	760		700	215	172	523	616	356	185	Rc3	
		F100						528	633	366	210	Rc4	
CWH100	11·15 (15·20)	F100B	866	340	785	259	227	743	848	405	210	Rc4	
	22 (30)		960	340	880	282	247	765	870	405	210	Rc4	
CW150	5.5 (7.5)	F150	824	370	765	222	178	696	836	478	280	Rc6	
	7.5 (10)		859	370	800	222	178	696	836	478	280	Rc6	
	11·15 (15·20)		966	440	885	240	210	750	890	528	280	Rc6	
	22 (30)		1,062	440	980	261	228	790	930	528	280	Rc6	

Dimensions

Auto-connection type

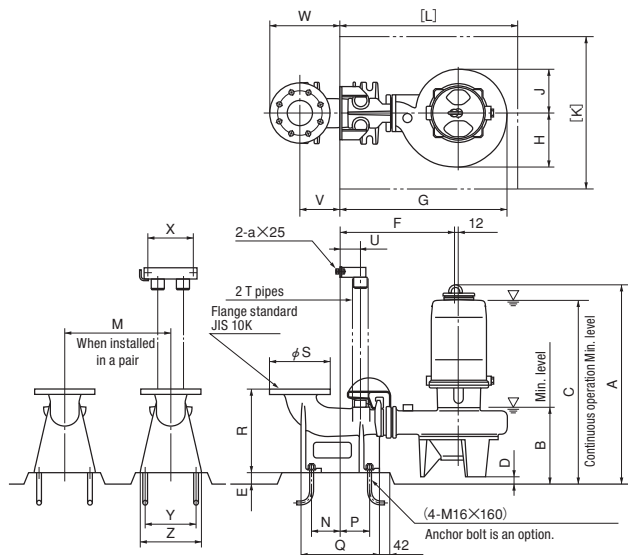
CW65

CW80 (1.5kW)



CW80

CW100

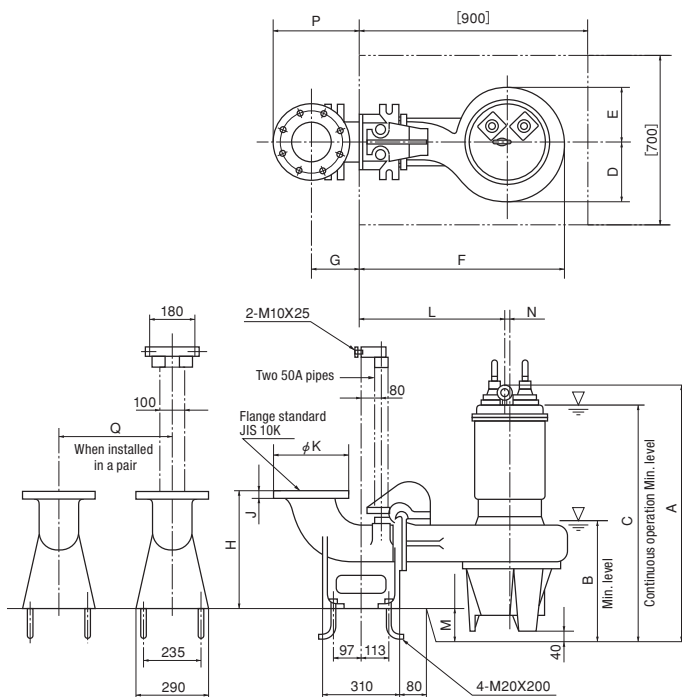


Pump Model	Output kW (HP)	Connection Part No.	A	B	C	D	E	F	G	H	J	K	L	M	
CW65	1.5 (2)	P65	600	250	535	30	35	333	492	152	123	350	550	360	
		P80	605	255	540	35	—	376	535			500	600		
CW80	1.5 (2)	P65	629	280	565	34	60	353	521	161	142	500	600	380	
		P80B•P100B					20	396	564						
	2.2 (3)	P65	640	280	585	34	60	363	521	161	131	500	600	380	
		P80B•P100B					20	406	564						
	3.7 (5)	P65	717	295	660	30	75	363	540	183	148	500	600	435	
		P80B•P100B					35	406	583			600	700		
CW100	5.5 (7.5)	P80B•P100B	755	305	695	30	45	451	641	197	158	600	700	465	
	7.5 (10)	P80B•P100B	790		730				656	215	172			505	
Pump Model	Output kW (HP)	Connection Part No.	N	P	Q	R	S	T	U	V	W	X	Y	Z	a
CW65	1.5 (2)	P65	95	65	244	218	175	32A	50	145	233	120	140	175	M8
CW80	7.5 (10)	P80•P80B	107	103	302	330	211	50A	80	160	266	180	120	150	M10
CW100		P100B	114	115	308		238				279		200	238	

Unit: mm

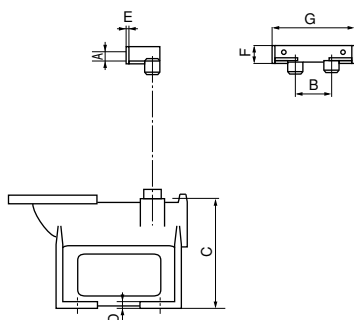
Auto-connection type

CWH100 • CW150



Pump Model	Connection Part No.	Output kW (HP)	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
CWH100	P100C	11·15 (15·20)	906	380	825	259	227	831	160	380	24	238	568	45	20	279	635
		22 (30)	1,000	380	920	282	247	853	160	380	24	238	568	45	20		690
CW150	P150	5.5 (7.5)	864	410	805	222	178	759	190	450	26	290	546	85	12	335	520
		7.5 (10)	899	410	840	222	178	759	190	450	26	290	546	85	12		585
		11·15 (15·20)	1,006	480	925	240	210	813	190	450	26	290	568	135	20		640
		22 (30)	1,102	480	1,020	261	228	853	190	450	26	290	588	135	20		640

Connection Dimensions

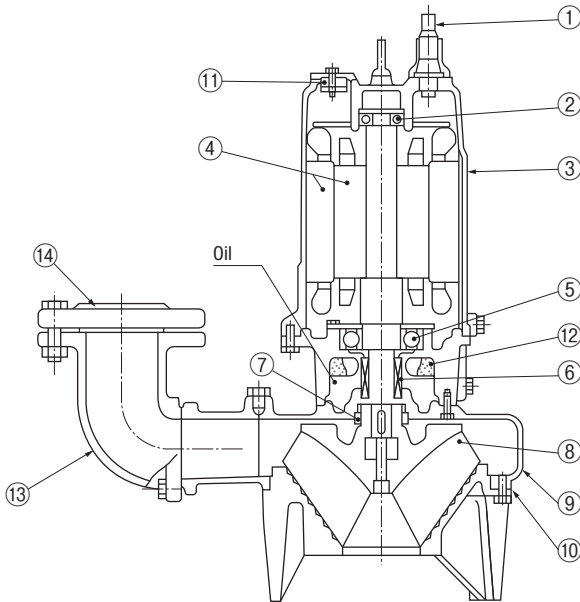


Connection Part No.	A	B	C	D	E	F	G
P65	17	70	201	12	6	32	160
P80	25	100	262	12	6	44	210
P80B	25	100	262	12	6	44	210
P100B	25	100	259	12	6	44	210
P100C	25	100	318	15	6	44	210
P150	25	100	330	15	6	44	210

Sectional View

CW80

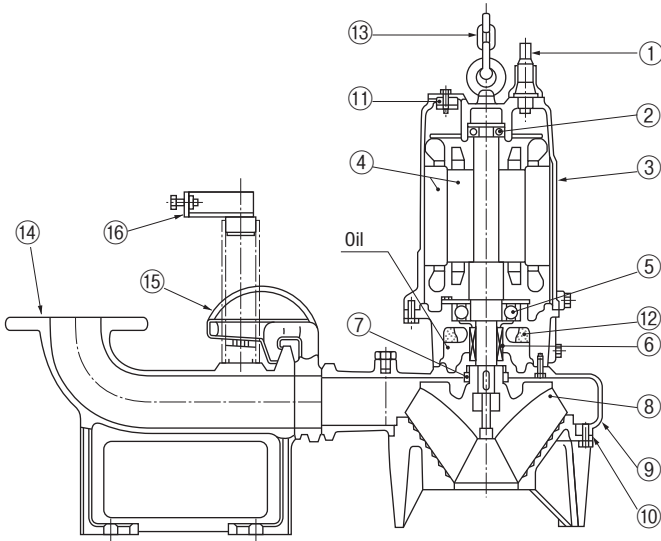
Free standing type



No.	Name	Material
1	Cable	VCT
2	Ball Bearing (Upper)	—
3	Stator Casing	FC200
4	Motor	Shaft: SUS420J2
5	Ball Bearing (Lower)	—
6	Mechanical Seal	—
7	Ring	SUS420J2
8	Impeller	FC250
9	Pump Casing	FC250
10	Base Cover	FC200
11	Thermal Protector	—
12	Equalizer	Foaming NBR
13	Elbow Flange	FC200
14	Companion Flange	FC200

CW80

Auto-connection type



No.	Name	Material
1	Cable	VCT
2	Ball Bearing (Upper)	—
3	Stator Casing	FC200
4	Motor	Shaft: SUS420J2
5	Ball Bearing (Lower)	—
6	Mechanical Seal	—
7	Ring	SUS420J2
8	Impeller	FC250
9	Pump Casing	FC250
10	Base Cover	FC200
11	Thermal Protector	—
12	Equalizer	Foaming NBR
13	Chain	SS400
14	Connection	FC200
15	Sliding Bracket	FC200
16	Guide Holder	SCS13

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitrlyl rubber

Dry Pit Pump (Screw Impeller)**Bore: 65 - 150 mm (2 1/2" - 6")****Output: 1.5 - 22 kW (2 - 30 HP)**

CWT

The CWT series is a dry installation pump. Since its design is based on a submersible pump, it remains operatable, even if immersed in water. This pump can achieve a higher discharge head when connected in series with a submersible pump, making it suitable for use at a transfer-pumping station.

Bore mm (inch)	Output kW (HP)	Model	Page
65 (2 1/2")	1.5 (2)	CWT65	214
80 (3")	2.2•3.7 (3•5)	CWT80	
100 (4")	5.5•7.5 (7.5 •10)	CWT100	
150 (6")	11-22 (15-30)	CWT150	216

Features

● Adopts an air-cooled submersible motor

A dry-type air-cooled submersible motor is adopted. The very simple water jacket-less structure facilitates maintenance and inspection. A larger and more efficient motor significantly cuts the emitted heat and reduces the thermal degradation of bearing grease, O-rings, and mechanical seals.

● Excellent pass-through capability

The screw type impeller, can transfer water containing plastics and fibers. The screwing effect at the impeller entry enables the transfer of high-viscosity sludge.

● Extended service life

The shaft seal mechanism is equipped with a reliable double mechanical seal to extend its service life.

● Operable in water

The pump, which is designed to be submersible and remains operable, even if immersed in water.

● Replaceable to land pump

It can replace a land pump without any construction work.

Standard Specifications

Installation Environment	Ambient Temperature	-20 - 40°C
	Ambient Humidity	0 - 100%
Handling Liquid	Liquid Type	Wastewater and sewage containing sludge
	Temperature	0 - 60°C
Material	Cable (For power)	VCT: 7.5 kW or less, 2PNCT: 11 kW or more
	Motor Shaft	SUS420J2
	Pump Casing	FC250
	Impeller	FC250 (CWT150, and FCD500 for 22kW)
Electric Motor	Name	Air-filled type submersible induction motor
	Insulation Class	Class E
	Enclosure	IP68
	Phase	3-ph
	Voltage	200 - 480V

Applications

- Sewage treatment plant and Septic tank
 - Wastewater
 - Raw water
 - Sludge
- Factory
 - Industrial wastewater, cooling water
- Others
 - Pumping station
 - Rainwater, etc.

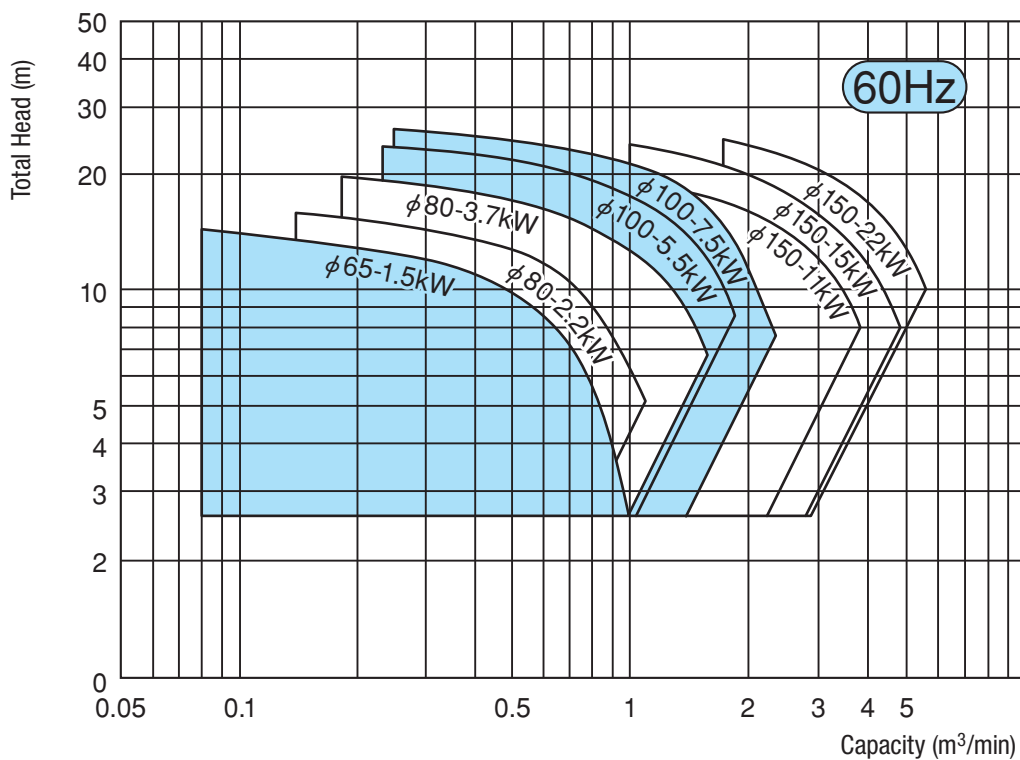
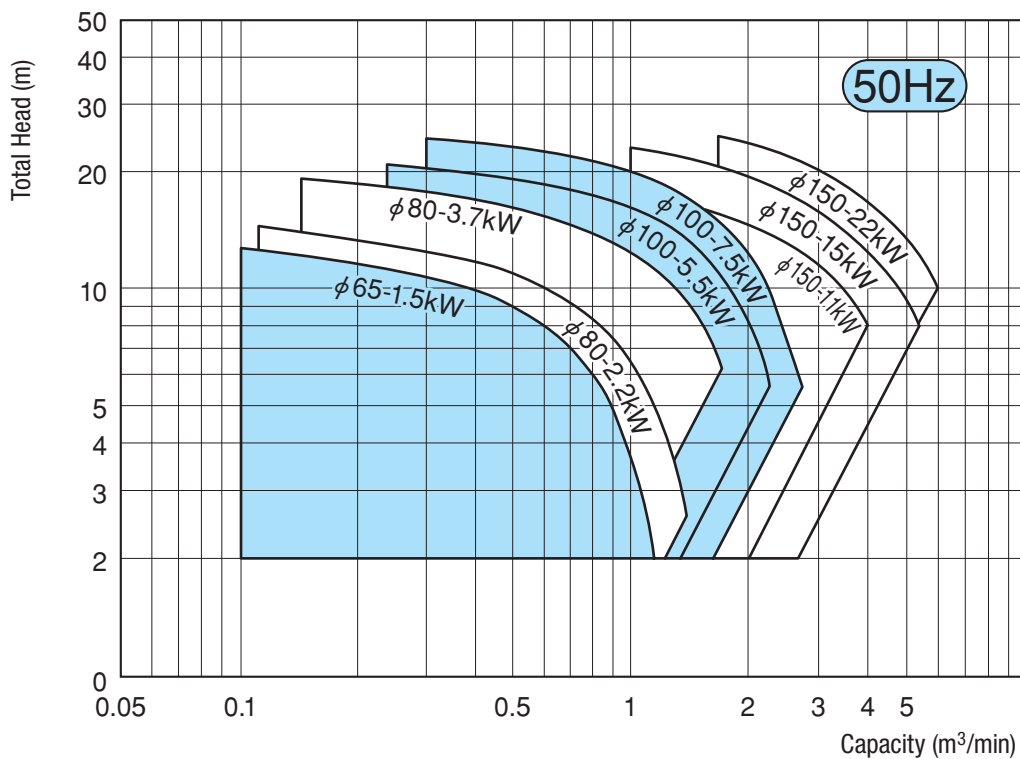
Special Specifications

Cable Extension	Cable lengths: 10 - 30m (every 5m)
Material Changes	Impeller: SCS13 (Stainless steel casting) Base Cover: SCS13 (Stainless steel casting)
Others	● Availability of mounting leakage detector, please refer to the specifications (detail data) - App.1. ● For specifications other than the above, please contact us.

Pump-Related Product

- Liquid Level Control Switch
 - Level Regulator ⇒ See page 370
 - Mini Switch ⇒ See page 372
 - Oval Float ⇒ See page 373

Performance Curves



CWT

Dry Pit Pump (Screw Impeller)

Bore : 65 - 100 mm (2 1/2 - 4")

Output: 1.5 - 7.5 kW (2 - 10 HP)



CWT80

Standard Specifications

Bore mm (inch)		Pump Model	Output kW (HP)	Phase	Capacity - Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) kg
Discharge	Suction				50Hz	60Hz		
65 (2 1/2")	80 (3")	CWT65	1.5 (2)	3-ph	0.65– 7.3	0.57– 8.9	4	130
80 (3")	100 (4")	CWT80	2.2 (3)	3-ph	0.79– 8.3	0.75– 9.6	4	205
			3.7 (5)		1.11–11.4	1.10–11.7		230
100 (4")	125 (5")	CWT100	5.5 (7.5)	3-ph	1.40–13.4	1.36–14.4	4	275
			7.5 (10)		1.70–15.0	1.50–17.2		300

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

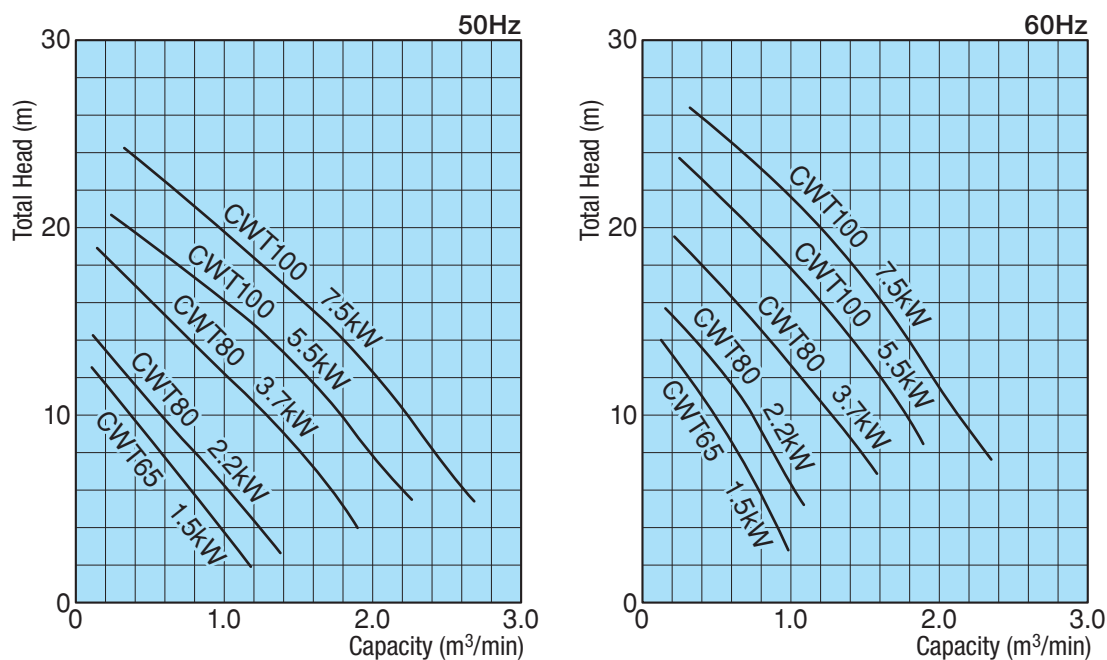
Standard Accessories

- Cable (8 m) 2 pcs.
- Stand (Suction pipe) 1 set

Part Specifications

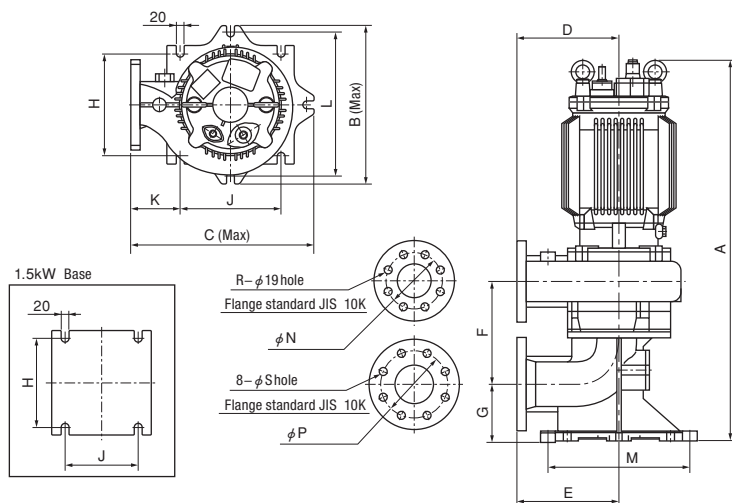
Applicable Model	Output kW (HP)	Cable Specification					Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
		Type	Section Area (mm²)	Cores	Outer Dia. (mm)	Number of Cables		Upper	Lower	50Hz	60Hz
CWT65	1.5 (2)	VCT	1.25	4	ϕ 11.5	1	Direct	SiC/SiC	SiC/SiC	73	34
		2PNCT	1.25	2	ϕ 9.8	1					
CWT80	2.2 (3)	VCT	1.25	4	ϕ 11.5	1				49	42
		2PNCT	1.25	2	ϕ 9.8	1					
	3.7 (5)	VCT	2.0	4	ϕ 12.0	1				53	48
		2PNCT	1.25	2	ϕ 9.8	1					
CWT100	5.5 (7.5)	VCT	3.5	4	ϕ 14.0	1				54	48
		2PNCT	1.25	2	ϕ 9.8	1					
	7.5 (10)	VCT	5.5	4	ϕ 16.5	1				56	49
		2PNCT	1.25	2	ϕ 9.8	1					

Performance Curves



Dimensions

Unit: mm



Pump Model	Output kW (HP)	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S
CWT 65	1.5 (2)	865	288	354	210	180	273	130	230	195	110	—	—	140	150	4	19
	2.2 (3)	920	410											150	175		
CWT 80	3.7 (5)	995		470	265	265	270	145	270	270	130	380	380	175	210	8	23
	5.5 (7.5)	1,050															
CWT 100	7.5 (10)	1,110	423														

CWT

Dry Pit Pump (Screw Impeller)

Bore : 150 mm (6")

Output: 11 - 22 kW (15 - 30 HP)



CWT150

Standard Specifications

Bore mm (inch)		Pump Model	Output kW (HP)	Phase	Capacity - Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) kg
Discharge	Suction				50Hz	60Hz		
150 (6")	200 (8")	CWT150	11 (15)	3-ph	3.0-11.5	2.9-12.3	4	550
			15 (20)		3.7-14.0	3.3-14.3		610
			22 (30)		4.0-16.9	3.7-18.1		680

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

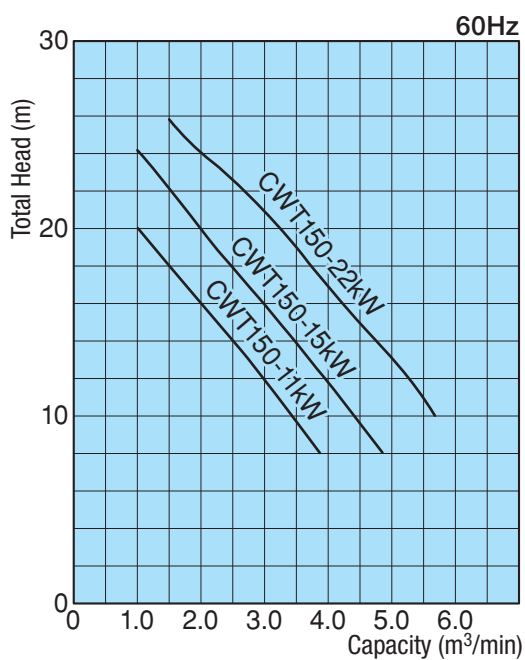
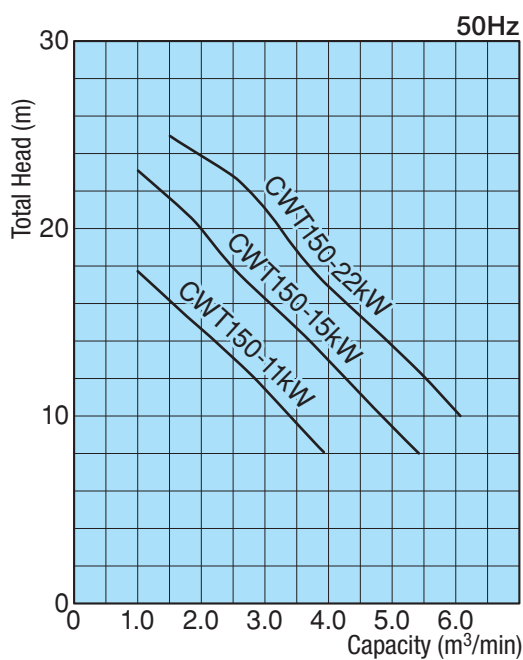
Standard Accessories

- Cable (8 m) 3 pcs.
- Stand (Suction pipe) 1 set

Part Specifications

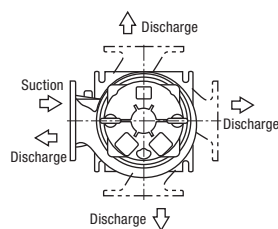
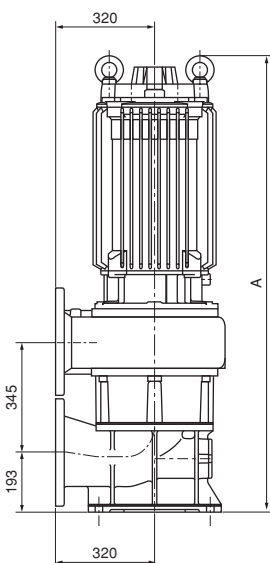
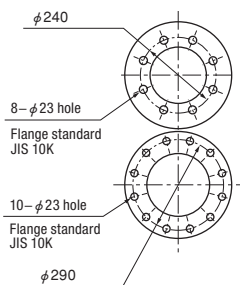
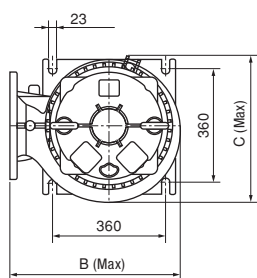
Applicable Model	Output kW (HP)	Cable Specification					Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
		Type	Section Area (mm²)	Cores	Outer Dia. (mm)	Number of Cables		Upper	Lower	50Hz	60Hz
CWT150	11 (15)	2PNCT	5.5	4	φ 17	1	Direct	SiC/SiC	SiC/SiC	76	76
			5.5	3	φ 15.5						
			1.25	2	φ 9.8						
	15 (20)	2PNCT	8.0	4	φ 18.5	1				80	76
			8.0	3	φ 17						
			1.25	2	φ 9.8						
	22 (30)	2PNCT	14.0	4	φ 22	1				80	78
			14.0	3	φ 20						
			1.25	2	φ 9.8						

Performance Curves



Dimensions

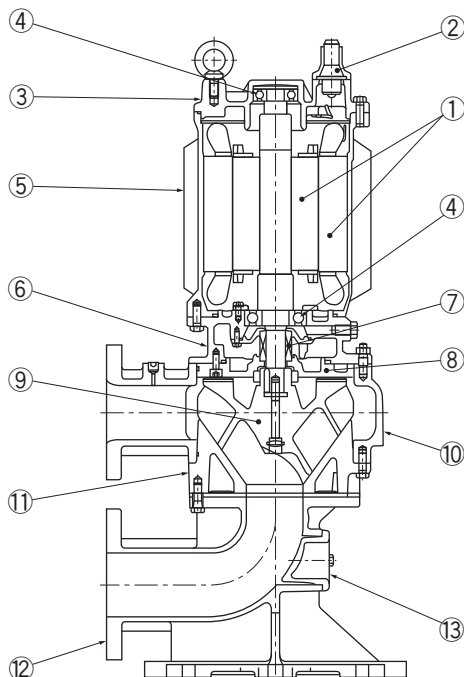
Unit: mm



Pump Model	Output kW (HP)	A	B	C
CWT150	11 (15)	1,340	550	470
	15 (20)	1,450		
	22 (30)	1,550		

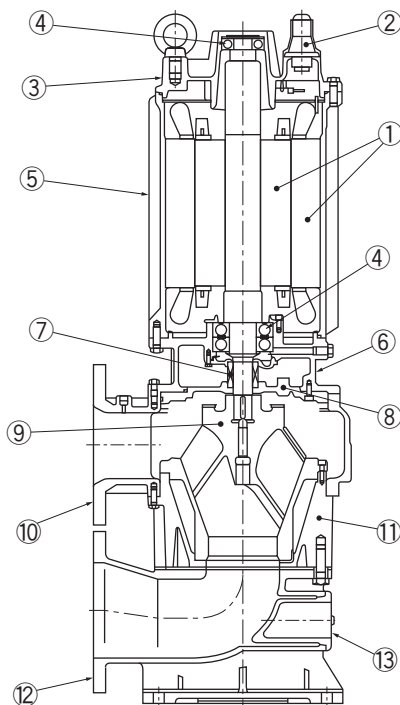
Sectional View

CWT80



No.	Name	Material
1	Motor	–
2	Cable	VCT
3	Motor Cover	FC200
4	Ball Bearing	–
5	Stator Casing	FC200
6	Oil Casing	FC200
7	Mechanical Seal	SiC/SiC
8	Mechanical Seal Bracket	FC250
9	Impeller	FC250
10	Pump Casing	FC250
11	Base Cover	FC250
12	Stand	FC200
13	Inspection Lid	FC200

CWT150



No.	Name	Material
1	Motor	–
2	Cable	2PNCT
3	Motor Cover	FC200
4	Ball Bearing	–
5	Stator Casing	FC200
6	Oil Casing	FC200
7	Mechanical Seal	SiC/SiC
8	Mechanical Seal Bracket	FC250
9	Impeller (11 or 15 kW)	FC250
	Impeller (22 kW)	FCD500
10	Pump Casing	FC250
11	Pump Stand	FC200
12	Stand	FC200
13	Inspection Lid	FC200

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

Lightweight Submersible Pump

NORUS

Bore: **32 - 80 mm (1 1/4" - 3")**

Output: **0.1 - 2.2 kW (1/8 - 3 HP)**

CR • CRS • CRC

Submersible Pump
for Water Treatment

NORUS Series Submersible Pump offers three advantages: toughness, lightweight and corrosion resistance in combination with highly functional resin and stainless steel.

CR (High solid passage type), CRS (High-efficiency type) and CRC (High head type with closed impeller), can be selected for optimal usage conditions.

	Bore mm (inch)	Output kW (HP)	Pump Model	Page
"CR" High Solid Passage Type	50 (2")	0.15 - 0.75 (1/5 - 1)	CR501 (D • DW)	222
	65 • 80 (2 1/2" • 3")	1.5 (2)	CR65	224
		2.2 (3)	CR80	
"CRS" High-efficiency Type	32 (1 1/4")	0.1 • 0.15 (1/8 • 1/5)	CRS321 (D • DW)	226
	40 (1 1/2")	0.15 • 0.25 (1/5 • 1/3)	CRS401 (D • DW)	
	50 (2")	0.4 • 0.75 (1/2 • 1)	CRS501 (D • DW)	
	50 • 65 • 80 (2" • 2 1/2" • 3")	1.5 (2)	CRS65 (D • DW)	228
	65 • 80 (2 1/2" • 3")	2.2 (3)	CRS80 (D • DW)	
"CRC" High Head Type (closed impeller)	40 (1 1/2")	0.4 (1/2)	CRC40 (D)	230
	50 (2")	0.75 (1)	CRC50 (D)	
	50 • 65 (2" • 2 1/2")	1.5 (2)	CRC50 (D • DW)	232
	65 • 80 (2 1/2" • 3")	2.2 (3)	CRC65 (D • DW)	

D: Auto-operation

DW: Auto-alternate operation

NORUS is a trademark in Japan and the USA.

Structures and Features

TORNADO FIN, a dedicated cooling fin, contributes extended service life of the mechanical seal, and the **Seamless Stator Casing Structure**, achieved by an integrated pressing process, has eliminated weld joints to prevent antirust.

TORNADO FIN

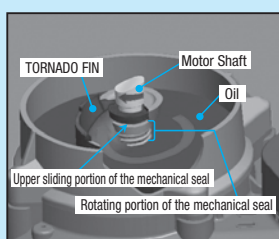
Extended service life of the mechanical seal (CR•CRS 0.25 - 0.75 kW)

TORNADO FIN, a dedicated cooling fin, is provided in the mechanical seal chamber to significantly reduce the temperature rise and degradation of the mechanical seal.



Effect of TORNADO FIN

In the oil chamber, the rotating area of the mechanical seal rotates together with the motor shaft to create an oil flow. The TORNADO FIN uses this flow to guide oil into the upper sliding portion of the mechanical seal, therefore, creating proper cooling and lubrication of that portion even when the oil level is low, which extends the service life.



Air Relief Valve to prevent air lock

A ball-shaped air relief valve is provided in the lower part of the screwed coupling to discharge the remaining air from the pump casing to prevent air lock.

Rubber Protector

A rubber protector is provided at the foot of the pump to prevent damage to the FRP septic tank.

Motor dedicated to operation in the air at low water level

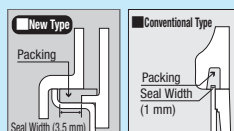
Adopting a motor with a low temperature rise allows continuous operation in air for thirty minutes even when the water remains at a low level. This prevents the motor from heating up, thereby keeping the bearings at a low temperature and extending its service life.

Seamless Stator Casing Structure

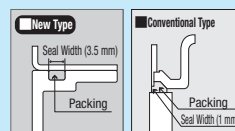
Eliminating weld joints to significantly improve the corrosion (CR•CRS 0.1 - 0.75 kW)

The “**Seamless Stator Casing Structure**”, achieved by an integrated pressing process, has eliminated weld joints to prevent the antirust. Furthermore, a larger packing seal width prevents rust at gap.

Upper Motor Seal

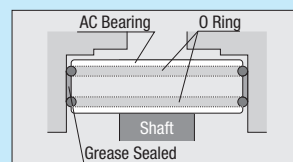


Lower Motor Seal



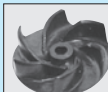
AC Bearing capable of enduring intermittent operation

Adopt an AC (Anti-Creep) bearing for upper bearing. The AC bearing has two outer O rings, which prevents damage to the bearing due to creep during intermittent operation.



Impeller with a service life 100 times that of a general ABS resin

Uses engineering plastic with excellent wear resistance for the impeller. It features wear resistance to sand, cleaning chemicals and solids contained in sewage water 100 times greater than those of general ABS resin. Furthermore, the engineering plastic provides a transfer capacity equivalent to or superior to that of conventional volute type pumps by reducing tangling of fibers.



Impeller made of engineering plastic
● After 200 hours of operation
Impeller weight: Reduced by 3.3%



Impeller made of a general ABS resin
● After 24 hours of operation
Impeller weight: Reduced by 46%

* Test conditions: Operated under a water volume of 600l and sand weight of 120 kg

Shaft Material SUS316 as standard

(Applicable: CR & CRS 0.25 - 0.75 kW)

Features

● Reduced weight, 1/3 of the conventional type (for 2.2 kW)

The adoption of resin and stainless steel achieved reduction of weight to 1/3 of our conventional cast iron pumps (Compared with our 2.2 kW).

● Excellent shock resistance

Adopts engineering plastic with excellent impact resistance for resin parts, which prevents the pump from breakage, even if dropped.

Standard Specifications

Handling Liquid	Kind of Liquid	● CR · CRS Wastewater and sewage containing sludge ● CRC Wastewater	
	Temperature	0 - 40°C	
Material	Motor Shaft	CR CRS	0.1 - 0.15 kW=SUS420J2 0.25 - 0.75 kW=SUS316 1.5 - 2.2 kW=SUS304
		CRC	0.4 - 2.2 kW=SUS304
	Stator Casing	Stainless steel (SUS304)	
	Pump Casing	Engineering Plastic (Containing Glass Fiber)	
	Impeller		
Impeller	CR · CRS	Vortex type	
	CRC	Closed channel type	
Structure	Shaft Seal	Double Mechanical Seal Impeller Side: SiC/SiC Motor Side: 0.75 kW or less Ceramic/Carbon 1.5 kW or more SiC/SiC	
Electric Motor	Name	Air-filled type Submersible Induction Motor	
	Insulation Class	Class E	
	Enclosure	IP68	
	Phase	1-ph (0.1 - 0.4 kW)	3-ph (0.15 - 2.2 kW)
	Voltage	0.1/0.15 kW =100 - 240 V 0.25/0.4 kW =100 - 240 V	200 - 460 V

Applications

● CR · CRS

- Small sewage treatment plant and Septic tank
Raw water and other treatment process
- Building and Shopping complex
Sanitary and kitchen wastewater
- Sewage system and Manhole
Rainwater and sewage
- Factory
Industrial wastewater
- Food plant and Livestock firm
Food waste and livestock wastewater
- Fish pond and Waster scape
Water supply and circulation
- Others

● CRC

- Sewage treatment plant and Septic tank
Defoaming
Backwashing
Filtration
Effluent
- Road and Underpass
Rainwater and spring water
- Building, Factory, Basement or others
Sump water

Special Specifications

Cable Extension	Cable length: 10 - 30m (every 5m)
Others	For specifications other than the above, please contact us.

* Cable length should be limited due to voltage drop, see the specifications (detail data) - App.1.

CR

Lightweight Submersible Pump "NORUS"
(High solid passage)

Bore: 50 mm (2")

Output: 0.15 - 0.75 kW (1/5 - 1 HP)

Solid Passage Capability: 35 mm



CR501



CR501D



CR501DW

Standard Specifications

Bore mm (inch)	Pump Model			Connection Part No.			Output kW (HP)	Phase	Capacity – Total Head m³/min-m		No. of poles P	Weight (Bare Pump) kg		
	Non-Auto- Operation	Auto- Operation	Auto-Alternate Operation		Auto- Connection	Free Standing			50Hz	60Hz		CR	CR-D CR-W	
			Pair Name	Pump No. 1 and 2		Screw								Valve Socket
50 (2")	CR501S	CR501DS	CR501DWS	CR501WS + CR501DS	P50RL	F50	VF50	0.15 (1/5)	1-ph	0.1-3.5	0.1-3.5	2	5.5	6.0
								0.25 (1/3)		0.13-4.5	0.13-4.8		7.0	7.5
								0.4 (1/2)		0.16-6.8	0.16-6.4		8.2	8.7
	CR501T	CR501DT	—	—	P50RL	F50	VF50	0.15 (1/5)	3-ph	0.1-3.5	0.1-3.5	2	4.9	5.4
								0.25 (1/3)		0.13-4.5	0.13-4.8		6.3	6.8
								0.4 (1/2)		0.16-6.8	0.16-6.4		7.4	7.9
	CR501	CR501D	—	—	P50RL	F50	VF50	0.75 (1)	3-ph	0.22-8.8	0.22-8.9	2	8.8	9.3

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

* The above capacity and total head are those of the Free standing type.

Standard Accessories

- Cable (5m) 1 pc.
- Screwed Coupling 1 set
- Spare Nameplate 1 pc.
- Float Switch (for type D/W) 1 set

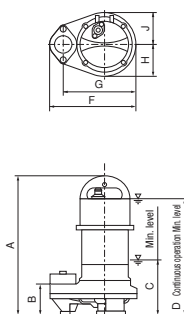
Options

- Auto-connection type
 - Connection (with bolts, nuts and packing)
 - Lifting Chain (4m)
 - Sliding Bracket
 - Guide Holder (with bolts and nuts)
 - Shackle
- Valve Socket Type Coupling

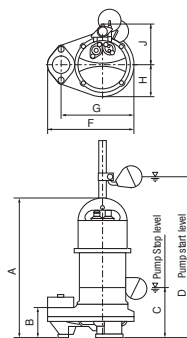
Dimensions

Free standing type

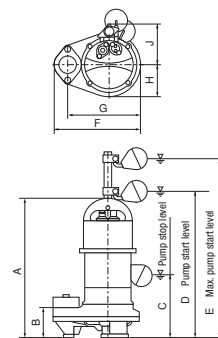
CR



CR-D

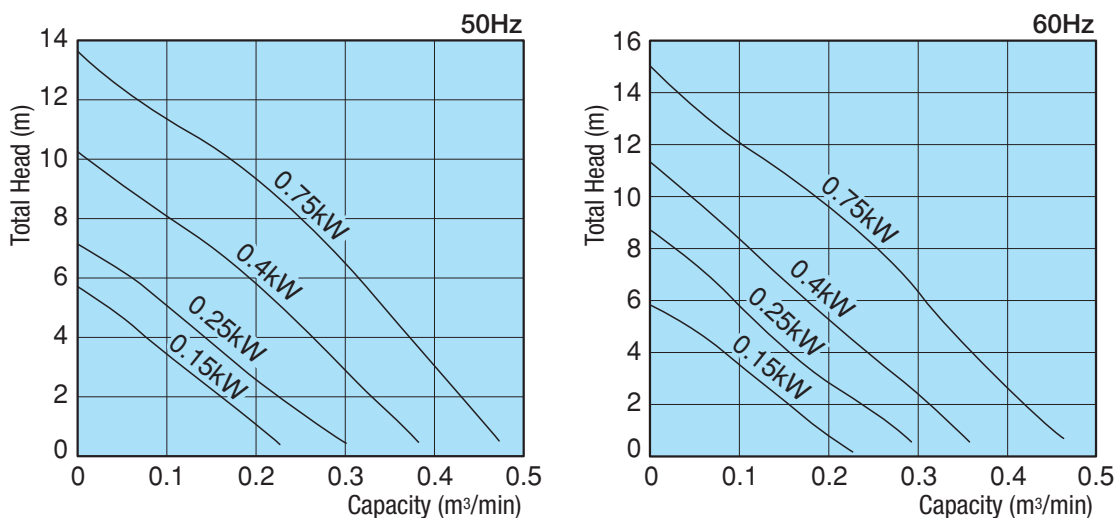


CR-W



Pump Model	Connection Part No.	Output kW (HP)	A	B	C	D	E	F	G	H	J
CR501S/CR501T	F50	0.15 (1/5)	380	100	150	330	—	206	169	75	69
		0.25 (1/3)	394					240	203	91	84
CR501S/CR501T/CR501		0.4/0.75 (1/2, 1)	398					240	203	91	84
CR501DS/CR501DT	F50	0.15 (2)	380	100	150	510	—	206	169	75	96
		0.25 (1/3)	394			515		240	203	91	111
CR501DS/CR501DT/CR501D		0.4/0.75 (1/2, 1)	398			520		240	203	91	111
CR501WS	F50	0.15 (1/5)	380	100	185	460	590	206	169	75	96
		0.25 (1/3)	394			465	595	240	203	91	111
		0.4 (1/2)	398			470	600	240	203	91	111

Performance Curves



* The above performance curves are that of the Free standing type.

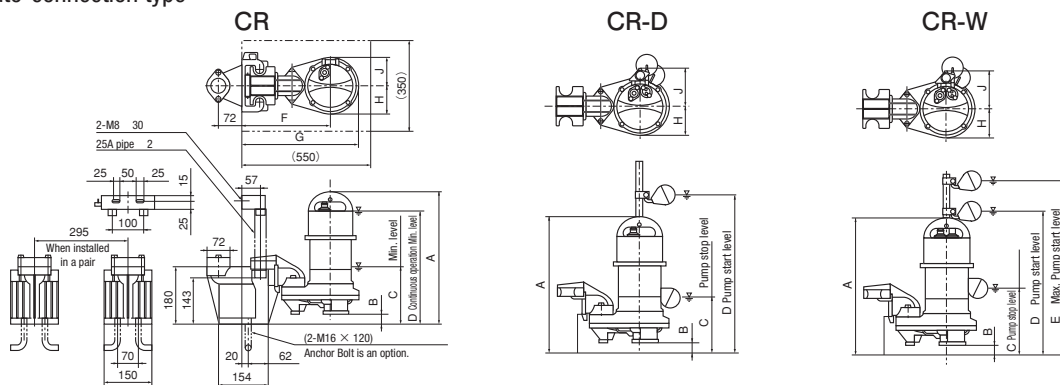
Part Specifications

Applicable Model	Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
	Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz
CR501S・CR501DS・CR501WS	VCT	1.25 (0.75)	3	φ 10.5 (φ 9.2)	Condenser-run	Si/SiC	Ceramic/Carbon	35	
CR501T・CR501DT	VCT	1.25 (0.75)	4	φ 10.5 (φ 9.2)	Direct				
CR501・CR501D									

The value within parentheses is that for 0.15 kW.

Unit: mm

Auto-connection type



Pump Model	Connection Part No.	Output kW (HP)	A	B	C	D	E	F	G	H	J
CR501S/CR501T	P50RL	0.15 (1/5)	395	15	165	345	—	256	328	75	69
		0.25 (1/3)	409					274	362	91	84
CR501S/CR501T/CR501		0.4/0.75 (1/2, 1)		11							
CR501DS/CR501DT	P50RL	0.15 (1/5)	395	15	165	530	—	256	328	75	96
		0.25 (1/3)	409					274	362	91	111
CR501DS/CR501DT/CR501D		0.4/0.75 (1/2, 1)		11							
CR501WS	P50RL	0.15 (1/5)	395	15	200	480	610	256	328	75	96
		0.25 (1/3)	409					274	362	91	111
		0.4 (1/2)		11							

Solid Passage Capability: 46 mm



CR65



CR80

Standard Specifications

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity –Total Head m³/min-m		No. of poles P	Weight (Bare Pump) kg
	Non-Auto-Operation	Auto- Connection	Free Standing			50Hz	60Hz		
65 (2 1/2")	CR65	P65NR	F65N	1.5 (2)	3-ph	0.35– 9.8	0.30– 9.7	2	16
	CR80			2.2 (3)		0.35–13.0	0.35–12.6		19
80 (3")	CR65	P80NR	F80N	1.5 (2)	3-ph	0.35– 9.8	0.35– 9.7	2	16
	CR80			2.2 (3)		0.35–13.0	0.35–12.6		19

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (8m)1 pc.
- Screwed Coupling1 set
- Spare Nameplate1 pc.

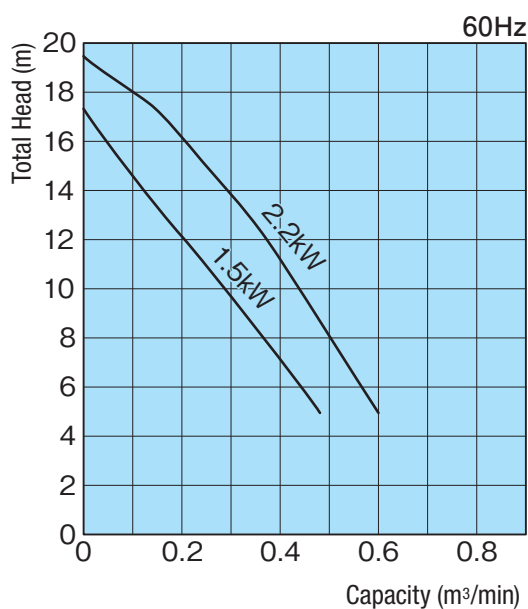
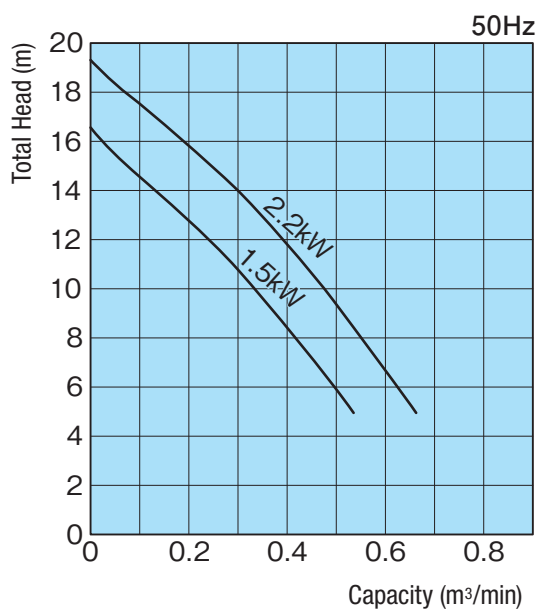
Options

- Auto-connection type
 - Connection (with bolts, nuts and packing)
 - Sliding Bracket
 - Guide Holder (with bolts and nuts)
 - Lifting Chain (6m)
 - Shackle

Part Specifications

Applicable Model	Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
	Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz
CR65	VCT	1.25	4	ϕ 11.5	Direct	SiC/SiC	SiC/SiC	46	
CR80									

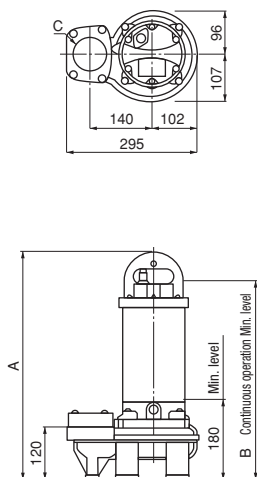
Performance Curves



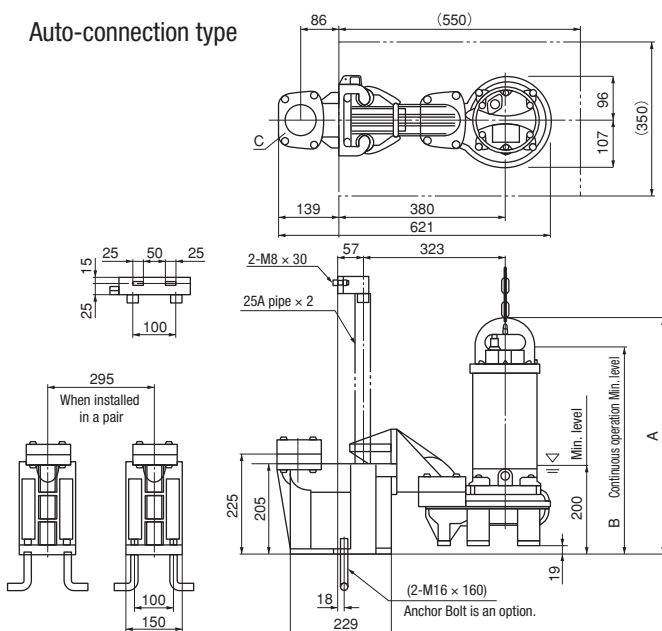
Dimensions

Unit: mm

Free standing type



Auto-connection type



Pump Model	Connection Part No.	Output kW (HP)	A	B	C
CR65	F65N	1.5 (2)	517	450	Rc2 1/2
	F80N				Rc3
CR80	F65N	2.2 (3)	542	470	Rc2 1/2
	F80N				Rc3

Pump Model	Connection Part No.	Output kW (HP)	A	B	C
CR65	P65NR	1.5 (2)	536	470	Rc2 1/2
	P80NR				Rc3
CR80	P65NR	2.2 (3)	561	490	Rc2 1/2
	P80NR				Rc3

CRS

Lightweight Submersible Pump "NORUS" (High-efficiency Type)

Bore: 32 • 40 • 50 mm (1 1/4" • 1 1/2" • 2")

Output: 0.1 - 0.75 kW (1/8 - 1 HP)

Solid Passage Capability:
20mm (0.1 - 0.25kW)
25mm (0.4 - 0.75kW)



CRS501



CRS501D



CRS501DW

Standard Specifications

Bore mm (inch)	Pump Model				Connection Part No.			Output kW (HP)	Phase	Capacity –Total Head m³/min-m		No. of poles P	Weight (Bare Pump) kg				
	Non-Auto- Operation	Auto- Operation	Auto-Alternate Operation		Auto- Connection	Free Standing				50Hz	60Hz		CRS	CRS-D CRS-W			
			Pair Name	Pump No. 1 and 2		Screw	Valve Socket										
32 (1 1/4")	CRS321S	CRS321DS	CRS321DWS	CRS321WS + CRS321DS	—	F32	VF32	0.1 (1/8)	1-ph	0.08-2.9	0.08-3.2	2	4.5	5.0			
					P32RL			0.15 (1/5)		0.1-3.9	0.1-3.9		5.4	5.9			
40 (1 1/2")	CRS401S	CRS401DS	CRS401DWS	CRS401WS + CRS401DS	P40RL	F40	VF40	0.15 (1/5)	1-ph	0.1-3.9	0.1-3.9	2	5.4	5.9			
								0.25 (1/3)		0.13-5.3	0.13-5.4		6.9	7.4			
	CRS401T	CRS401DT	CRS401DWT	CRS401WT + CRS401DT				0.15 (1/5)	3-ph	0.1-3.9	0.1-3.9		4.8	5.3			
								0.25 (1/3)		0.13-5.3	0.13-5.4		6.2	6.7			
50 (2")	CRS501S	CRS501DS	CRS501DWS	CRS501WS + CRS501DS	P50RL	F50	VF50	0.4 (1/2)	1-ph	0.16-7.2	0.16-6.8	2	8.1	8.6			
	CRS501T	CRS501DT	CRS501DWT	CRS501WT + CRS501DT				0.4 (1/2)	3-ph	0.16-7.2	0.16-6.8		7.3	7.8			
	CRS501	CRS501D	CRS501DW	CRS501W + CRS501D				0.75 (1)	3-ph	0.22-9.2	0.22-9.4		8.7	9.2			

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

* The above Capacity and total head are those of the Free standing type.

Standard Accessories

- Cable (5m) 1 pc.
- Screwed Coupling 1 set
- Spare Nameplate 1 pc.
- Float Switch (for type D/W) 1 set

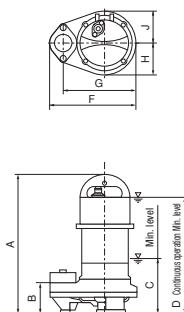
Options

- Auto-connection type
 - Connection (with bolts, nuts and packing)
 - Lifting Chain (4m)
 - Sliding Bracket
 - Guide Holder (with bolts and nuts)
 - Shackle
- Valve Socket Type Coupling

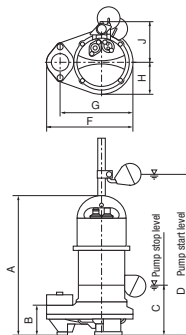
Dimensions

Free standing type

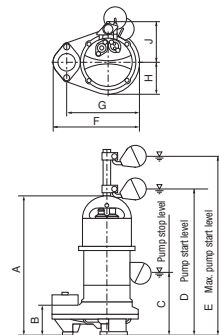
CRS



CRS-D

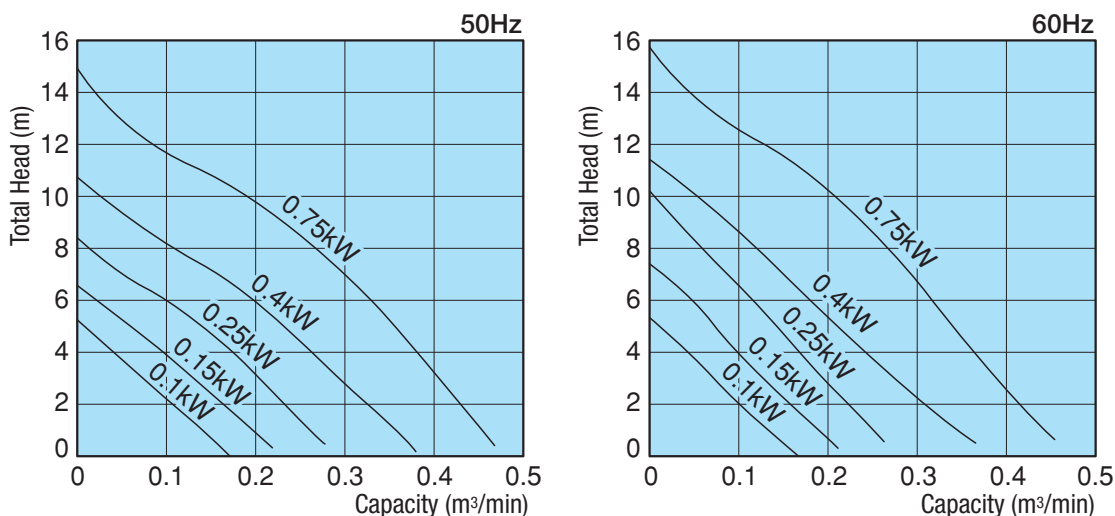


CRS-W



Pump Model	Connection Part No.	Output kW (HP)	A	B	C	D	E	F	G	H	J	
CRS321S	F32	0.1 (1/8)	352	72	105	305	—	206	169	75	69	
CRS321S/CRS401S/CRS401T	F32/F40	0.15 (1/5)			125							
CRS401S/CRS401T	F40	0.25 (1/3)	366	85		135		315	240	203	91	84
CRS501S/CRS501T/CRS501	F50	0.4/0.75 (1/2, 1)	379		135	315						
CRS321DS	F32	0.1 (1/8)	352	72	105	480		206	169	75	96	
CRS321DS/CRS401DS/CRS401DT	F32/F40	0.15 (1/5)			125							
CRS401DS/CRS401DT	F40	0.25 (1/3)	366	85		125		490	240	203	91	111
CRS501DS/CRS501DT/CRS501D	F50	0.4/0.75 (1/2, 1)	379		135	500						
CRS321WS	F32	0.1 (1/8)	352	72	140	430	560	206	169	75	96	
CRS321WS/CRS401WS/CRS401WT	F32/F40	0.15 (1/5)			160							
CRS401WS/CRS401WT	F40	0.25 (1/3)	366	85		170		440	570	240	203	91
CRS501WS/CRS501WT/CRS501W	F50	0.4/0.75 (1/2, 1)	379		450			580				

Performance Curves



* The above performance curves are that of the Free standing type.

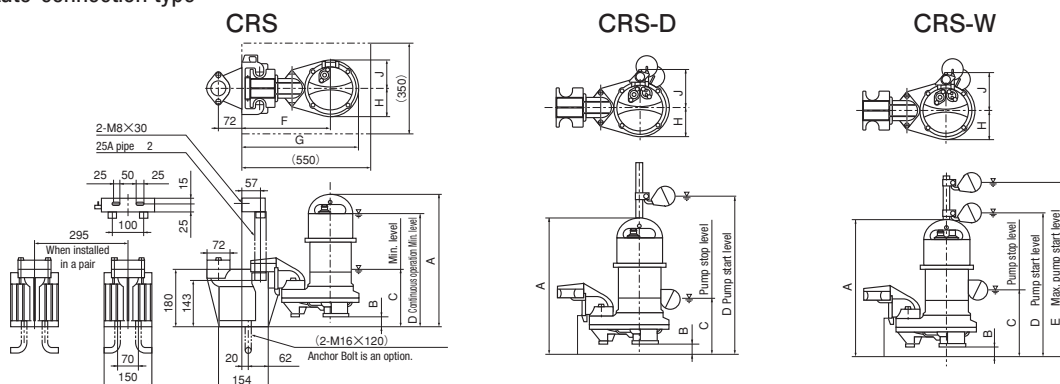
Part Specifications

Applicable Model	Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
	Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz
CRS321S・CRS321DS・CRS321WS	VCT	1.25 (0.75)	3	φ 10.5 (φ 9.2)	Condenser-run	SiC/SiC	Ceramic/Carbon	0.1 - 0.25kW 20	
CRS401S・CRS401DS・CRS401WS									
CRS501S・CRS501DS・CRS501WS									
CRS401T・CRS401DT・CRS401WT	VCT	1.25 (0.75)	4	φ 11.5 (φ 9.9)	Direct	SiC/SiC	Ceramic/Carbon	0.4・0.75kW 25	
CRS501T・CRS501DT・CRS501WT									
CRS501・CRS501D・CRS501W									

The value within parentheses is that for 0.1 · 0.15 kW.

Unit: mm

Auto-connection type



Pump Model	Connection Part No.	Output kW (HP)	A	B	C	D	E	F	G	H	J
CRS321S/CRS401S/CRS401T	P32RL/P40RL	0.15 (1/5)	395	43	165	345	—	256	328	75	69
CRS401S/CRS401T	P40RL	0.25 (1/3)	409	30	165	345	—	274	362	91	84
CRS501S/CRS501T/CRS501	P50RL	0.4/0.75 (1/2, 1)	409	30	165	530	—	256	328	75	96
CRS321DS/CRS401DS/CRS401DT	P32RL/P40RL	0.15 (1/5)	395	43	165	530	—	274	362	91	111
CRS401DS/CRS401DT	P40RL	0.25 (1/3)	409	30	165	530	—	256	328	75	96
CRS501DS/CRS501DT/CRS501D	P50RL	0.4/0.75 (1/2, 1)	409	30	165	530	—	274	362	91	111
CRS321WS/CRS401WS/CRS401WT	P32RL/P40RL	0.15 (1/5)	395	43	200	480	610	256	328	75	96
CRS401WS/CRS401WT	P40RL	0.25 (1/3)	409	30	200	480	610	274	362	91	111
CRS501WS/CRS501WT/CRS501W	P50RL	0.4/0.75 (1/2, 1)	409	30	200	480	610	256	328	75	96

CRS

Lightweight Submersible Pump "NORUS" (High-efficiency Type)

Bore: 50 - 80 mm (2" - 3")

Output: 1.5 - 2.2 kW (2 - 3 HP)

Solid Passage Capability: 30 mm


CRS80



CRS80D



CRS80DW

Standard Specifications

Bore mm (inch)	Pump Model				Connection Part No.		Output kW (HP)	Phase	Capacity –Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) kg	
	Non-Auto- Operation	Auto-Operation	Auto-Alternate Operation		Auto- Connection	Free Standing			50Hz	60Hz		CRS	CRS-D CRS-W
			Pair Name	Pump No. 1 and 2									
50 (2")	CRS65	CRS65D	CRS65DW	CRS65W + CRS65D	P50NR	F50N	1.5 (2)	3-ph	0.35 - 10.5	0.30 - 10.5	2	16	16.5
65 (2 1/2")	CRS65	CRS65D	CRS65DW	CRS65W + CRS65D	P65NR	F65N	1.5 (2)	3-ph	0.35 - 10.5	0.30 - 10.5	2	16	16.5
	CRS80	CRS80D	CRS80DW	CRS80W + CRS80D			2.2 (3)		0.35 - 14.1	0.35 - 13.4		19	19.5
80 (3")	CRS65	CRS65D	CRS65DW	CRS65W + CRS65D	P80NR	F80N	1.5 (2)	3-ph	0.35 - 10.5	0.30 - 10.5	2	16	16.5
	CRS80	CRS80D	CRS80DW	CRS80W + CRS80D			2.2 (3)		0.35 - 14.1	0.35 - 13.4		19	19.5

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

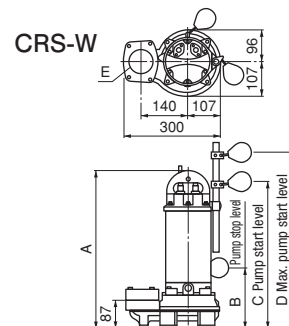
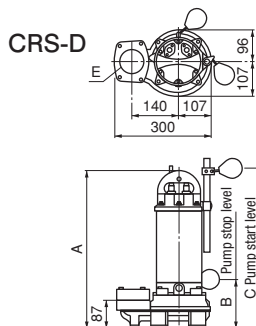
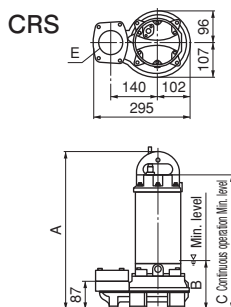
- Cable (8m) 1 pc.
- Screwed Coupling 1 set
- Spare Nameplate 1 pc.
- Float Switch (for type D/W) 1 set

Options

- Auto-connection type
 - Connection (with bolts, nuts and packing)
 - Sliding Bracket
 - Guide holder (with bolts and nuts)
 - Lifting Chain (6m)
 - Shackle

Dimensions

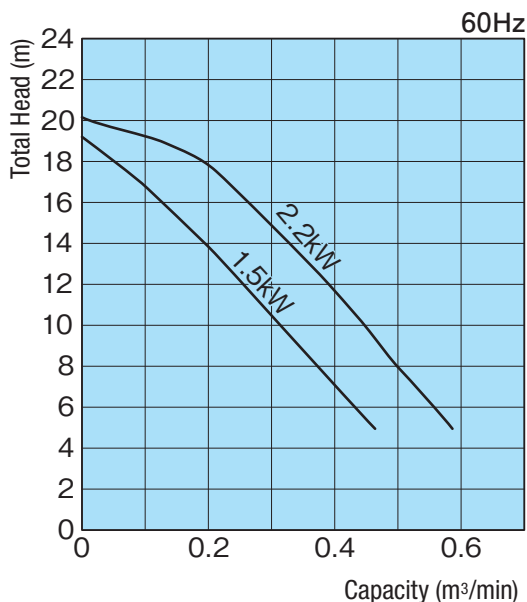
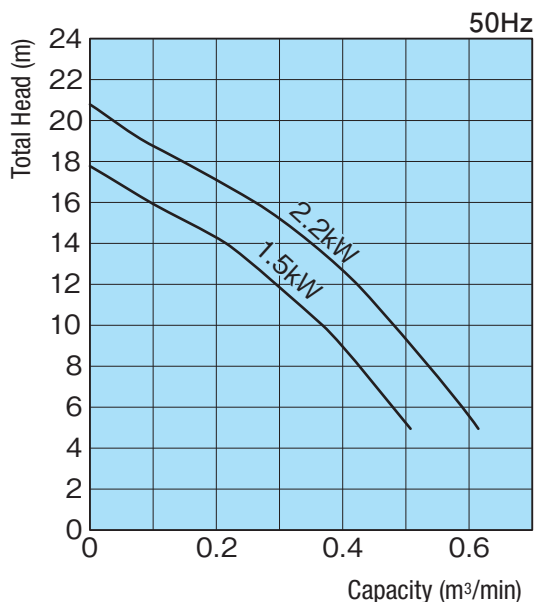
Free standing type



Pump Model	Connection Part No.	Output kW (HP)	A	B	C	D
CRS65	F50N/F65N/F80N	1.5 (2)	485	150	420	-
CRS80	F65N/F80N	2.2 (3)	510	150	440	-
CRS65D	F50N/F65N/F80N	1.5 (2)	485	155	715	-
CRS80D	F65N/F80N	2.2 (3)	510	155	740	-
CRS65W	F50N/F65N/F80N	1.5 (2)	485	190	645	725
CRS80W	F65N/F80N	2.2 (3)	510	190	670	750

Connection Part No.	E
F50N	Rc2
F65N	Rc2 1/2
F80N	Rc3

Performance Curves

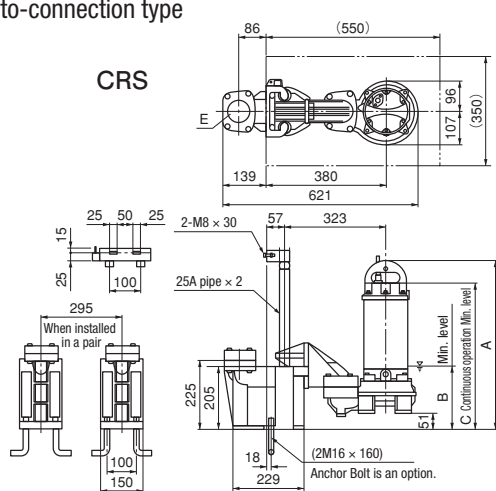


Part Specifications

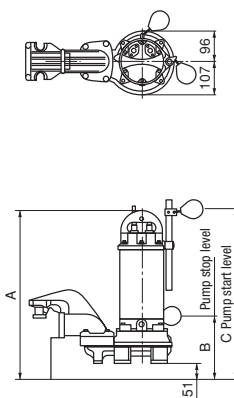
Applicable Model	Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
	Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz
CRS65 · CRS65D · CRS65W	VCT	1.25	4	φ 11.5	Direct	SiC/SiC	SiC/SiC	30	
CRS80 · CRS80D · CRS80W									

Unit: mm

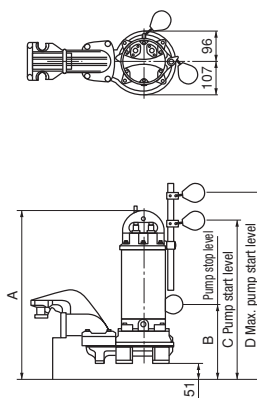
Auto-connection type



CRS-D



CRS-W



Pump Model	Connection Part No.	Output kW (HP)	A	B	C	D
CRS65	P50NR/P65NR/P80NR	1.5 (2)	536	200	470	—
CRS80	P65NR/P80NR	2.2 (3)	561	200	490	—
CRS65D	P50NR/P65NR/P80NR	1.5 (2)	536	205	765	—
CRS80D	P65NR/P80NR	2.2 (3)	561	205	790	—
CRS65W	P50NR/P65NR/P80NR	1.5 (2)	536	240	695	775
CRS80W	P65NR/P80NR	2.2 (3)	561	240	720	800

Connection Part No.	E
P50NR	Rc2
P65NR	Rc2 1/2
P80NR	Rc3

CRC

Lightweight Submersible Pump "NORUS"
(Closed Impeller & High Head Type)

Bore: 40 • 50 mm (1 1/2" • 2")

Output: 0.4 • 0.75 kW (1/2 • 1 HP)

Solid Passage Capability: 7 mm



CRC50



CRC50D



Standard Specifications

Bore mm (inch)	Pump Model		Connection Part No.			Output kW (HP)	Phase	Capacity –Total Head m³/min-m		No. of poles P	Weight (Bare Pump) kg	
	Non-Auto- Operation	Auto-Operation	Auto- Connection	Free Standing				50Hz	60Hz		CRC	CRC-D
				Screw	Valve Socket							
40 (1 1/2")	CRC40S	CRC40DS	P40RH	F40	VF40	0.4 (1/2)	1-ph	0.05-14.2	0.05-14.0	2	8.9	9.4
	CRC40T	CRC40DT		F40	VF40		3-ph				8.8	9.3
50(2")	CRC50	CRC50D	P50RH	F50	VF50	0.75 (1)	3-ph	0.10-16.0	0.10-17.0	2	10.2	10.7

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (5m) 1 pc.
- Screwed Coupling 1 set
- Spare Nameplate 1 pc.
- Float Switch (for type D/W) 1 set

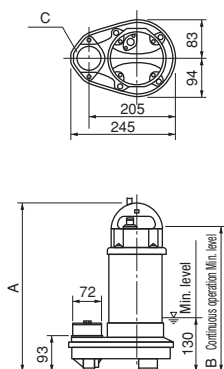
Options

- Auto-connection type
 - Connection (with bolts, nuts and packing)
 - Sliding Bracket
 - Guide Holder (with bolts and nuts)
 - Lifting Chain (4m)
- Valve Socket Type Coupling

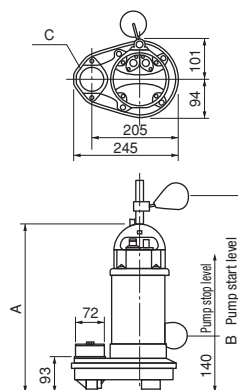
Dimensions

Free standing type

CRC

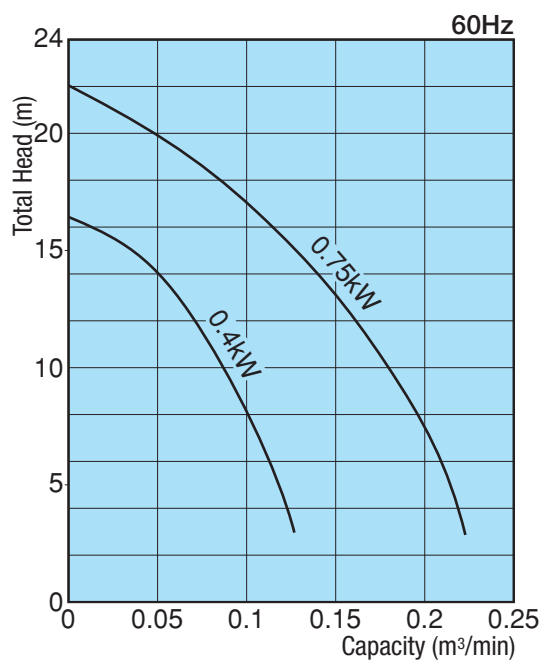
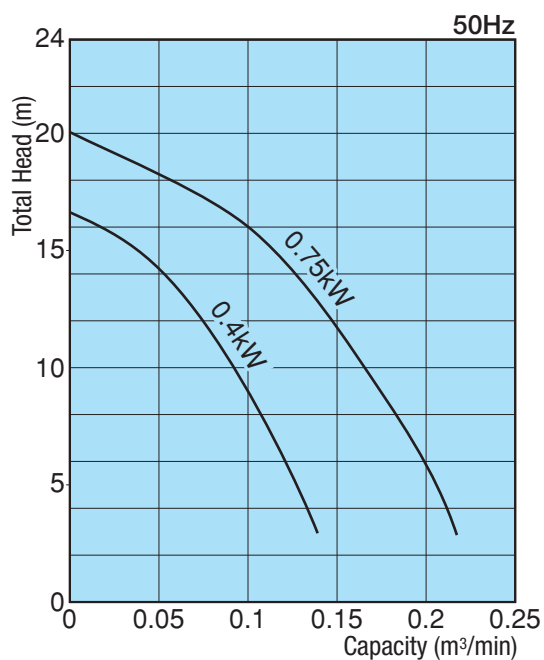


CRC-D



Pump Model	Connection Part No.	Output kW (HP)	A	B	C
CRC40S • CRC40T	F40	0.4 (1/2)	389	330	Rc1 1/2
CRC50	F50	0.75 (1)	408	350	Rc2
CRC40DS • CRC40DT	F40	0.4 (1/2)	389	540	Rc1 1/2
CRC50D	F50	0.75 (1)	408	540	Rc2

■ Performance Curves

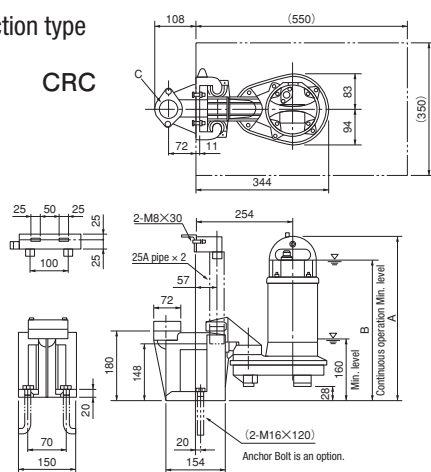


■ Part Specifications

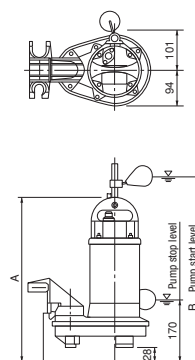
Applicable Model	Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
	Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz
CRC40S • CRC40DS	VCT	1.25	3	ϕ 10.5	Condenser-run	SiC/SiC	Ceramic/Carbon	7	
CRC40T • CRC40DT	VCT	1.25	4	ϕ 11.5	Direct				
CRC50 • CRC50D									

Unit: mm

Auto-connection type



CRC-D



Pump Model	Connection Part No.	Output kW (HP)	A	B	C
CRC40S • CRC40T	P40RH	0.4 (1/2)	417	360	Rc1½
CRC50	P50RH	0.75 (1)	436	380	Rc2
CRC40DS • CRC50DT	P40RH	0.4 (1/2)	417	570	Rc1½
CRC50D	P50RH	0.75 (1)	436	570	Rc2

CRC

Lightweight Submersible Pump "NORUS"
(Closed Impeller & High Head Type)

Bore: 50 - 80 mm (2" - 3")

Output: 1.5 • 2.2 kW (2 • 3 HP)

Solid Passage Capability: 12 mm



CRC65



CRC65D



CRC65DW

Standard Specifications

Bore mm (inch)	Pump Model				Connection Part No.		Output kW (HP)	Phase	Capacity – Total Head m³/min-m		No. of poles P	Weight (Bare Pump) kg	
	Non-Auto- Operation	Auto-Operation	Auto-Alternate Operation		Auto- Connection	Free Standing			50Hz	60Hz		CRC	CRC-D CRC-W
			Pair Name	Pump No. 1 and 2									
50 (2")	CRC50	CRC50D	CRC50DW	CRC50W + CRC50D	P50NR	F50N	1.5 (2)	3-ph	0.2-18.2	0.2-18.4	2	16	16.5
65 (2 1/2")	CRC50	CRC50D	CRC50DW	CRC50W + CRC50D	P65NR	F65N	1.5 (2)	3-ph	0.2-18.2	0.2-18.4	2	16	16.5
	CRC65	CRC65D	CRC65DW	CRC65W + CRC65D			2.2 (3)		0.3-20.6	0.3-21.3		19	19.5
80 (3")	CRC65	CRC65D	CRC65DW	CRC65W + CRC65D	P80NR	F80N	2.2 (3)	3-ph	0.3-20.6	0.3-21.3	2	19	19.5

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (8m) 1 pc.
- Screwed Coupling 1 set
- Spare Nameplate 1 pc.
- Float Switch (for type D/W) 1 set

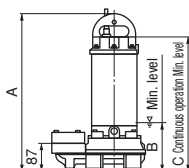
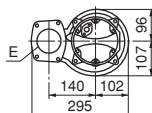
Options

- Auto-connection type
 - Connection (with bolts, nuts and packing)
 - Sliding Bracket
 - Guide Holder (with bolts and nuts)
 - Lifting Chain (6m)
 - Shackle

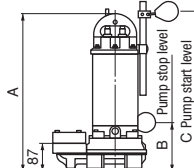
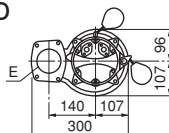
Dimensions

Free standing type

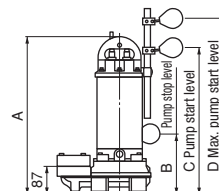
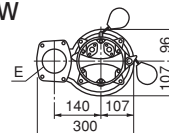
CRC



CRC-D



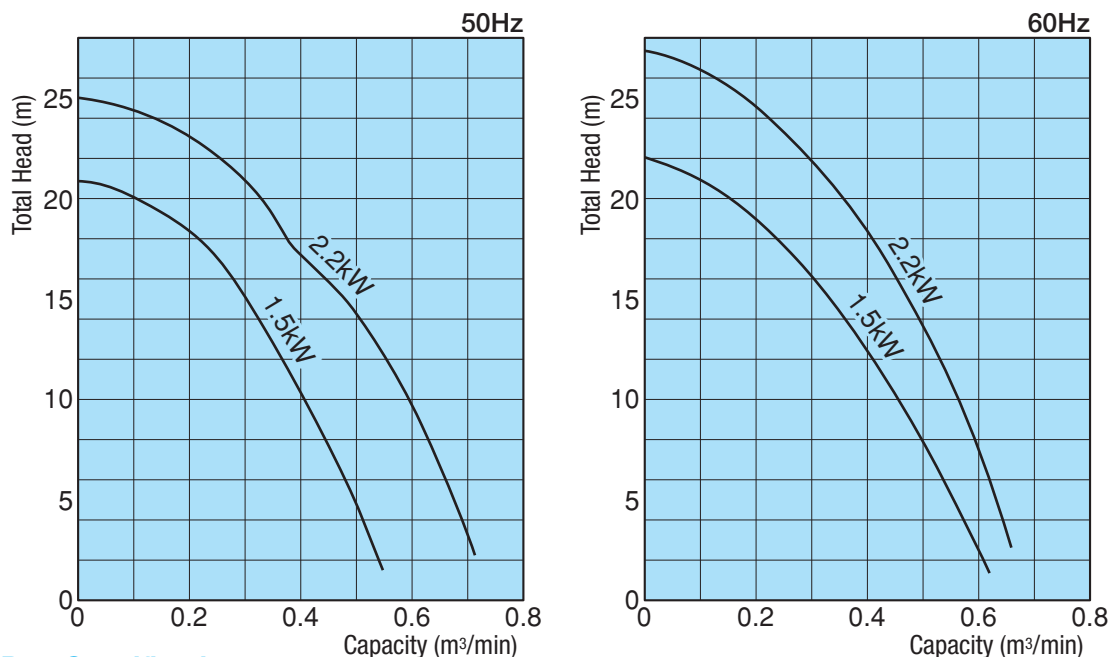
CRC-W



Pump Model	Connection Part No.	Output kW (HP)	A	B	C	D
CRC50	F50N/F65N	1.5 (2)	485	150	420	—
CRC65	F65N/F80N	2.2 (3)	510	150	440	—
CRC50D	F50N/F65N	1.5 (2)	485	155	715	—
CRC65D	F65N/F80N	2.2 (3)	510	155	740	—
CRC50W	F50N/F65N	1.5 (2)	485	190	645	725
CRC65W	F65N/F80N	2.2 (3)	510	190	670	750

Connection Part No.	E
F50N	Rc2
F65N	Rc2 1/2
F80N	Rc3

Performance Curves

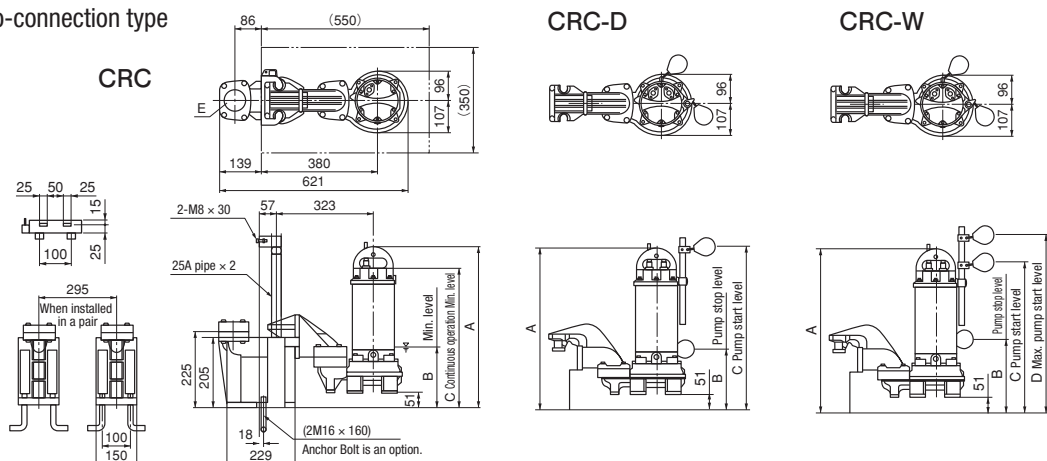


Part Specifications

Applicable Model	Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
	Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz
CRC50 · CRC50D · CRC50W	VCT	1.25	4	φ 11.5	Direct	SiC/SiC	SiC/SiC	12	
CRC65 · CRC65D · CRC65W									

Unit: mm

Auto-connection type



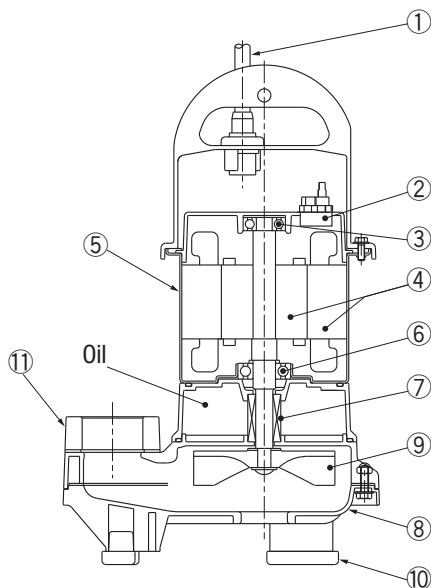
Pump Model	Connection Part No.	Output kW (HP)	A	B	C	D
CRC50	P50NR/P65NR	1.5 (2)	536	200	470	—
CRC65	P65NR/P80NR	2.2 (3)	561	200	490	—
CRC50D	P50NR/P65NR	1.5 (2)	536	205	765	—
CRC65D	P65NR/P80NR	2.2 (3)	561	205	790	—
CRC50W	P50NR/P65NR	1.5 (2)	536	240	695	775
CRC65W	P65NR/P80NR	2.2 (3)	561	240	720	800

Connection Part No.	E
P50NR	Rc2
P65NR	Rc2 1/2
P80NR	Rc3

Sectional View

CR501

Free standing type

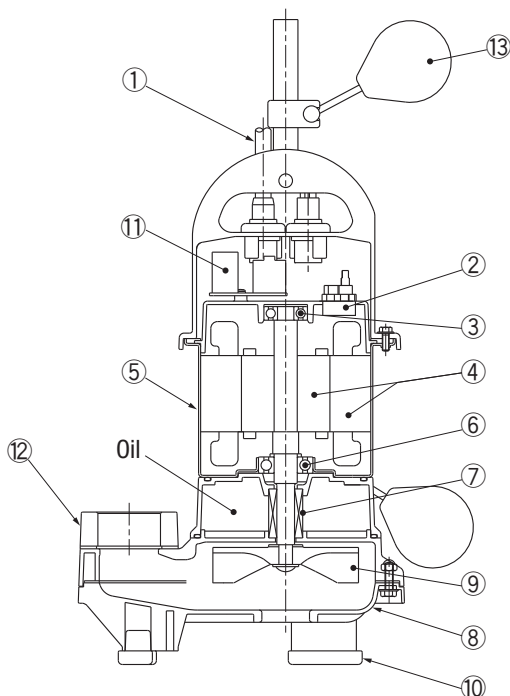


Number	Name	Material
1	Cable	VCT
2	Thermal Protector	—
3	Ball Bearing (Upper)	—
4	Motor	Shaft *1
5	Stator Casing	SUS304
6	Ball Bearing (Lower)	—
7	Mechanical Seal	—
8	Pump Casing	Engineering Plastic
9	Impeller	Engineering Plastic
10	Stand Cap	Synthetic Rubber
11	Screwed Coupling	Engineering Plastic

*1 SUS420J2 (0.1 - 0.15 kW), SUS316 (0.25 - 0.75 kW)

CR501D

Free standing type



Number	Name	Material
1	Cable	VCT
2	Thermal Protector	—
3	Ball Bearing (Upper)	—
4	Motor	Shaft *1
5	Stator Casing	SUS304
6	Ball Bearing (Lower)	—
7	Mechanical Seal	—
8	Pump Casing	Engineering Plastic
9	Impeller	Engineering Plastic
10	Stand Cap	Synthetic Rubber
11	Substrate	—
12	Screwed Coupling	Engineering Plastic
13	Float Switch	—

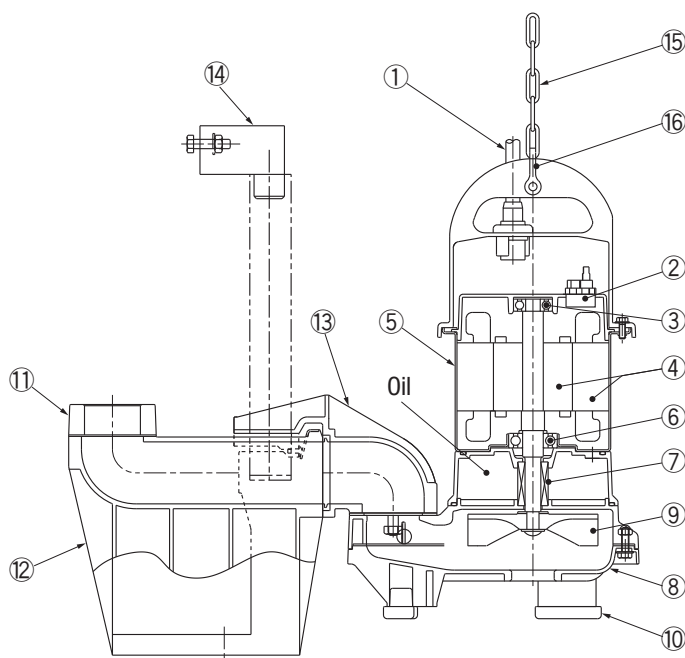
*1 SUS420J2 (0.1 - 0.15 kW), SUS316 (0.25 - 0.75 kW)

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitryl rubber

Sectional View

CR501

Auto-connection type

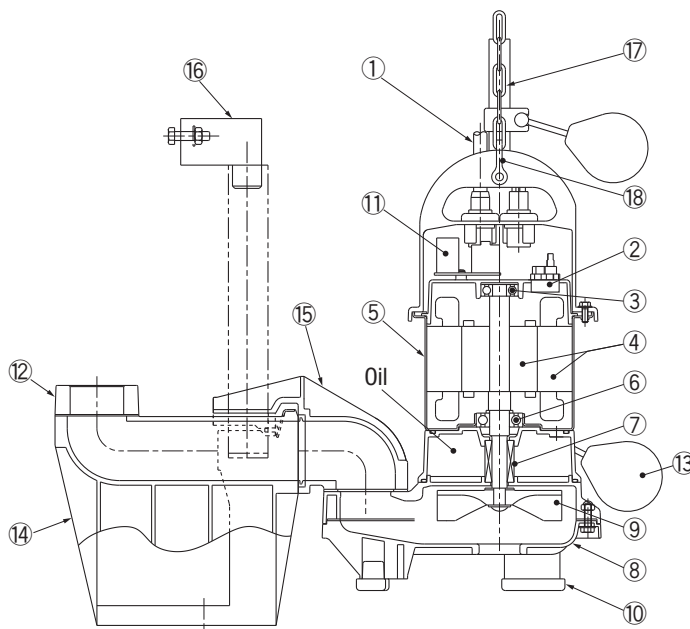


Number	Name	Material
1	Cable	VCT
2	Thermal Protector	—
3	Ball Bearing (Upper)	—
4	Motor	Shaft *
5	Stator Casing	SUS304
6	Ball Bearing (Lower)	—
7	Mechanical Seal	—
8	Pump Casing	Engineering Plastic
9	Impeller	Engineering Plastic
10	Stand Cap	Synthetic Rubber
11	Screwed Coupling	Engineering Plastic
12	Connection	Engineering Plastic
13	Sliding Bracket	Engineering Plastic
14	Guide Holder	Engineering Plastic
15	Chain	SUS304
16	Shackle	SUS304

*1 SUS420J2 (0.1 - 0.15 kW), SUS316 (0.25 - 0.75 kW)

CR501D

Auto-connection type



Number	Name	Material
1	Cable	VCT
2	Thermal Protector	—
3	Ball Bearing (Upper)	—
4	Motor	Shaft *
5	Stator Casing	SUS304
6	Ball Bearing (Lower)	—
7	Mechanical Seal	—
8	Pump Casing	Engineering Plastic
9	Impeller	Engineering Plastic
10	Stand Cap	Synthetic Rubber
11	Substrate	—
12	Screwed Coupling	Engineering Plastic
13	Float Switch	—
14	Connection	Engineering Plastic
15	Sliding Bracket	Engineering Plastic
16	Guide Holder	Engineering Plastic
17	Chain	SUS304
18	Shackle	SUS304

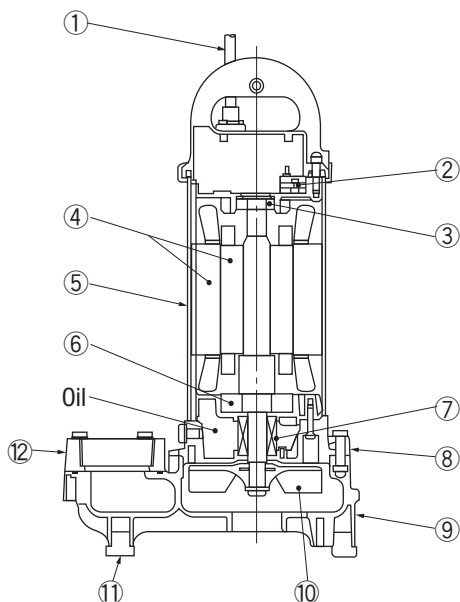
*1 SUS420J2 (0.1 - 0.15 kW), SUS316 (0.25 - 0.75 kW)

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

Sectional View

CR80

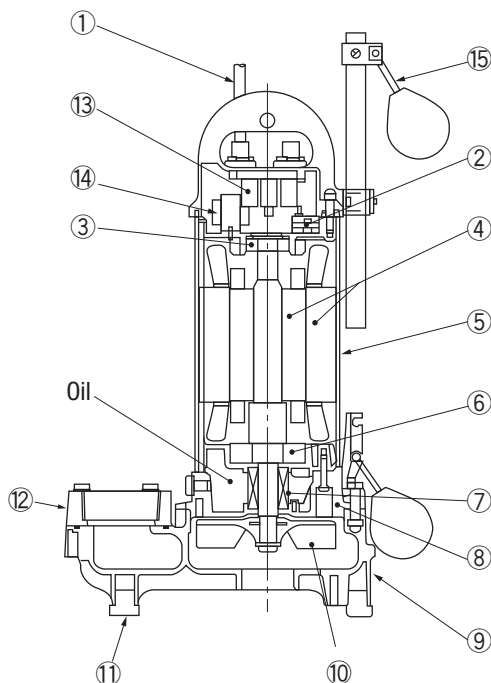
Free standing type



Number	Name	Material
1	Cable	VCT
2	Thermal Protector	—
3	Ball Bearing (Upper)	—
4	Motor	Shaft: SUS304
5	Stator Casing	SUS304
6	Ball Bearing (Lower)	—
7	Mechanical Seal	—
8	Mechanical Seal Bracket	Engineering Plastic
9	Pump Casing	Engineering Plastic
10	Impeller	Engineering Plastic
11	Stand Cap	Synthetic Rubber
12	Screwed Coupling	Engineering Plastic

CRS80D

Free standing type



Number	Name	Material
1	Cable	VCT
2	Thermal Protector	—
3	Ball Bearing (Upper)	—
4	Motor	Shaft: SUS304
5	Stator Casing	SUS304
6	Ball Bearing (Lower)	—
7	Mechanical Seal	—
8	Mechanical Seal Bracket	Engineering Plastic
9	Pump Casing	Engineering Plastic
10	Impeller	Engineering Plastic
11	Stand Cap	Synthetic Rubber
12	Screwed Coupling	Engineering Plastic
13	Substrate	—
14	Transformer	—
15	Float Switch	—

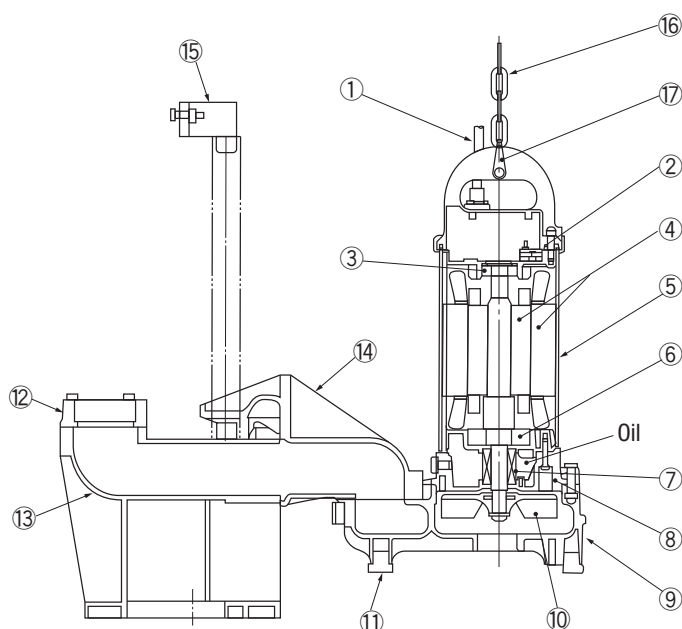
* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel

SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitryl rubber

Sectional View

CR80

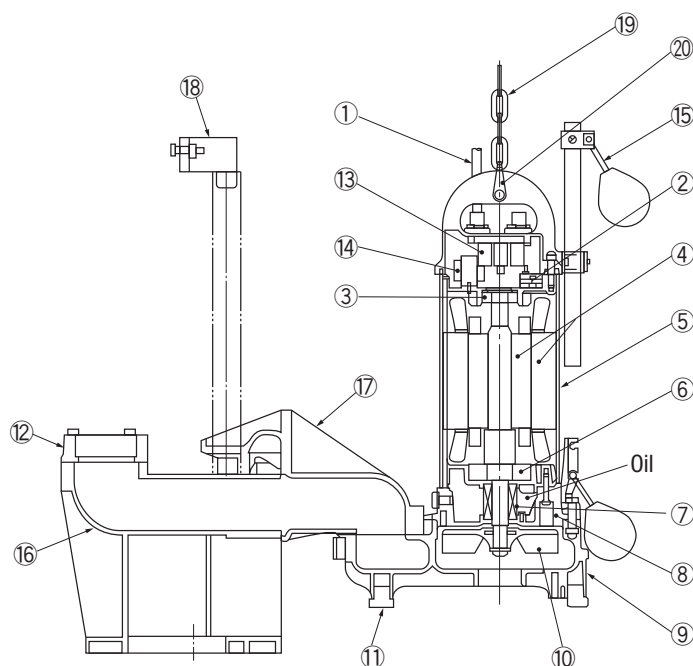
Auto-connection type



Number	Name	Material
1	Cable	VCT
2	Thermal Protector	—
3	Ball Bearing (Upper)	—
4	Motor	Shaft: SUS304
5	Stator Casing	SUS304
6	Ball Bearing (Lower)	—
7	Mechanical Seal	—
8	Mechanical Seal Bracket	Engineering Plastic
9	Pump Casing	Engineering Plastic
10	Impeller	Engineering Plastic
11	Stand Cap	Synthetic Rubber
12	Screwed Coupling	Engineering Plastic
13	Connection	Engineering Plastic
14	Sliding Bracket	Engineering Plastic
15	Guide Holder	Engineering Plastic
16	Chain	SUS304
17	Shackle	SUS304

CRS80D

Auto-connection type



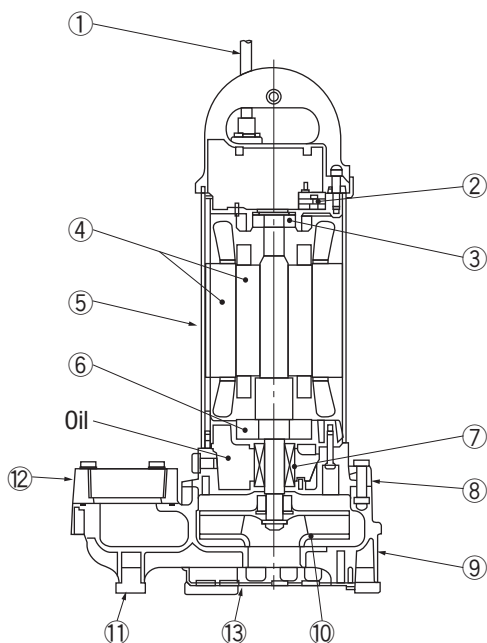
Number	Name	Material
1	Cable	VCT
2	Thermal Protector	—
3	Ball Bearing (Upper)	—
4	Motor	Shaft: SUS304
5	Stator Casing	SUS304
6	Ball Bearing (Lower)	—
7	Mechanical Seal	—
8	Mechanical Seal Bracket	Engineering Plastic
9	Pump Casing	Engineering Plastic
10	Impeller	Engineering Plastic
11	Stand Cap	Synthetic Rubber
12	Screwed Coupling	Engineering Plastic
13	Substrate	—
14	Transformer	—
15	Float Switch	—
16	Connection	Engineering Plastic
17	Sliding Bracket	Engineering Plastic
18	Guide Holder	Engineering Plastic
19	Chain	SUS304
20	Shackle	SUS304

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

Sectional View

CRC65

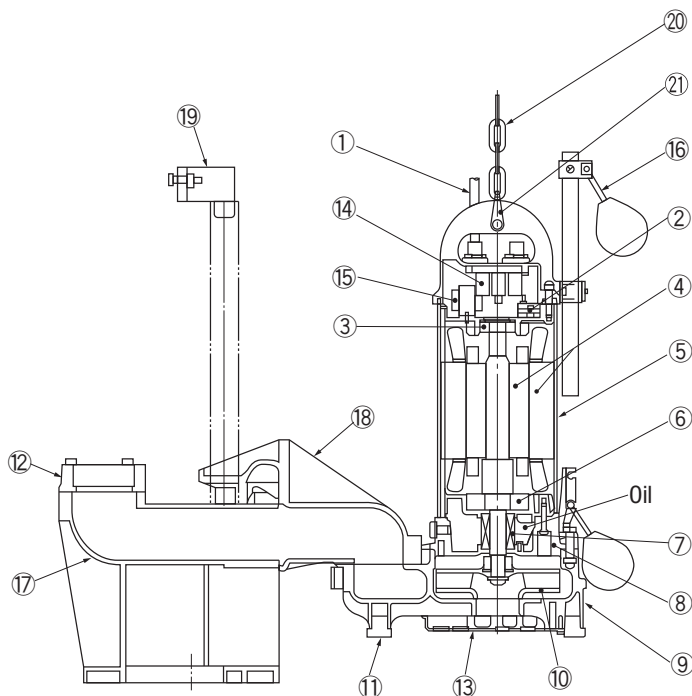
Free standing type



Number	Name	Material
1	Cable	VCT
2	Thermal Protector	—
3	Ball Bearing (Upper)	—
4	Motor	Shaft: SUS304
5	Stator Casing	SUS304
6	Ball Bearing (Lower)	—
7	Mechanical Seal	—
8	Mechanical Seal Bracket	Engineering Plastic
9	Pump Casing	Engineering Plastic
10	Impeller	Engineering Plastic
11	Stand Cap	Synthetic Rubber
12	Screwed Coupling	Engineering Plastic
13	Strainer	Engineering Plastic

CRC65D

Auto-connection type



Number	Name	Material
1	Cable	VCT
2	Thermal Protector	—
3	Ball Bearing (Upper)	—
4	Motor	Shaft: SUS304
5	Stator Casing	SUS304
6	Ball Bearing (Lower)	—
7	Mechanical Seal	—
8	Mechanical Seal Bracket	Engineering Plastic
9	Pump Casing	Engineering Plastic
10	Impeller	Engineering Plastic
11	Stand Cap	Synthetic Rubber
12	Screwed Coupling	Engineering Plastic
13	Strainer	Engineering Plastic
14	Substrate	—
15	Transformer	—
16	Float Switch	—
17	Connection	Engineering Plastic
18	Sliding Bracket	Engineering Plastic
19	Guide Holder	Engineering Plastic
20	Chain	SUS304
21	Shackle	SUS304

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel

SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

Stainless Steel Submersible Pump

Bore: 40 - 100 mm (1 1/2" - 4")

Output: 0.25 - 7.5 kW (1/3 - 10 HP)

S3A • S3N • S3V

All wetted parts for this series are made of stainless steel.

We offer three types of impeller for discharging wastewater and sewage from food plants, hospitals, etc.

Impeller	Bore mm (inch)	Output kW (HP)	Model	Page
Volute Type	40 (1 1/2")	0.25•0.4 (1/3 •1/2)	S3A40 (D•DW) T	242
	50 (65) 2" (2 1/2")	0.4-1.5 (1/2-2)	S3A50 (D•DW)	
	65 (80) 2 1/2" (3")	1.5 (2)	S3A65 (D•DW)	
Non-clog Type	40 (1 1/2")	0.25 (1/3)	S3N40 (D•DW) T	246
	50 (65) 2" (2 1/2")	0.4•0.75 (1/2•1)	S3N50 (D•DW)	
	65 (80) 2 1/2" (3")	1.5 (2)	S3N65 (D•DW)	
	80 (65•100) 3" (2 1/2"•4")	2.2•3.7 (3•5)	S3N80	
	100 (80) 4" (3")	5.5•7.5 (7.5 •10)	S3N100	
Vortex-flow Type	40 (1 1/2")	0.25 (1/3)	S3V40 (D•DW) T	252
	50 (65) 2" (2 1/2")	0.4•0.75 (1/2•1)	S3V50 (D•DW)	
	65 (80) 2 1/2" (3")	1.5 (2)	S3V65 (D•DW)	
	80 (65•100) 3" (2 1/2"•4")	2.2•3.7 (3•5)	S3V80	
	100 (80) 4" (3")	5.5•7.5 (7.5 •10)	S3V100	

A pump with a bore within parentheses
() is also provided.

D: Auto-operation
DW: Auto-Alternate operation

Note: Since D and DW types with output not exceeding 0.75 kW are made-to-order products, please check the delivery time before placing an order.

S3A·S3N·S3V

Stainless Steel Submersible Pump

■ Features

● Wetted parts made of stainless steel

Stainless steel (SUS304 or SCS13) with adequate thickness is used for the wetted parts of the body.

● Extended service life

A double mechanical seal and oil seal with excellent wear resistance are employed for the shaft seal mechanism.

● Preventing motor burnout

An automatic-reset type motor protector (Thermal Protector) prevents motor burnout due to overload, impeller locking or open-phase. A core wire seal applied to a cable prevents water ingress into the motor chamber in case a cable sheath breaks or a cable end is immersed.

● Various impellers offered in accordance with applications

Provide three types of impeller: Efficient Volute type, Non-clog type, which causes less clogging, and Vortex type, with a large passage area and thus less prone to clogging and tangling.

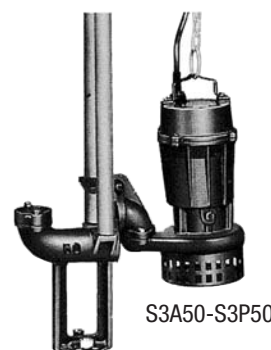
■ Standard Specifications

Handling Liquid	Liquid Type	Wastewater and Sewage
	Temperature	0 - 32°C
Material	Cable	VCT
	Motor Shaft	SUS304 (1.5 kW or less) SUS316 (2.2 kW or more)
	Pump Casing	SCS13
	Impeller	SCS13
Electric Motor	Name	Air-filled type submersible induction motor
	Insulation Class	Class E
	Enclosure	IP68
	Phase	3-ph
	Voltage	200 - 480V

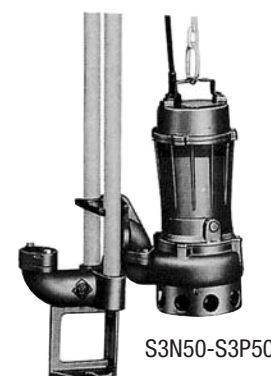
■ Special Specifications

Motor Insulation	Class F
Cable Extension	Cable lengths: 10 - 30m (every 5m)
Material Changes	For the wetted parts, the material can be changed to SCS14 (SUS316).
Others	- Availability of mounting motor protector, please refer to the specifications (detail data) - App.1. - For specifications other than the above, please contact us.

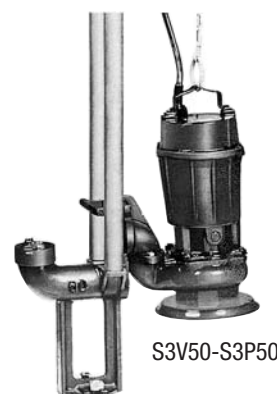
Volute type
S3A



Non-clog type
S3N



Vortex type
S3V



■ Applications

- Discharging from food plants
- Discharging from hospitals and research institutes
- Treatment processes at septic tanks
- Draining rainwater from roads or underpass
- Treatment processes at industrial water treatment facilities

■ Corrosion Resistance Classification Table (Reference)

Chemicals	Chemical Symbol	Concentration % (Wt)	Temperature (32°C or more)		Remark
			SUS304	SUS316	
Ammonia	NH ₃	Compressed gas and solution	○	○	
Ethylene glycol	C ₂ H ₆ O ₂	Solution or vapor	○	○	
Ammonium chloride	NH ₄ Cl	≤5	△	○	Note 2 Note 3
		5~20	△	○	
		20~50	△	○	
		Saturation	△	○	
Calcium chloride	CaCl ₂	5	△	○	Note 2
		Saturation	△	○	Note 3
Sodium chloride	NaCl	5	○	○	Note 2
		Saturation	△	○	Note 3
Magnesium chloride	MgCl ₂ · 6H ₂ O	5	○	○	Note 2
		Saturation	△	○	Note 3
Formic acid	H · COOH	1	○	○	Note 1
		5	○	○	
		10	○	○	
		50	△	○	
Citric acid	C ₆ H ₈ O ₇ · H ₂ O	≤15	○	○	
		15<	○	○	
Oxalic acid	(COOH) ₂ · 2H ₂ O	≤10	○	○	Note 1
		10<	△	○	
Acidum tartaricum	[CH (OH) CO ₂ H] ₂	1	○	○	
		10	○	○	
		10<	○	○	
Carbonic acid	H ₂ CO ₃	Humid gas or water solution	○	○	
Lactic acid	CH ₃ · CH (OH) · COOH	5	○	○	
		10	○	○	
		20	○	○	
		50	○	○	
		100	○	○	
Picric acid	C ₆ H ₂ (OH) (NO ₂) ₃	High	○	○	
Boric acid	H ₃ BO ₃	≤50	○	○	
		50<	○	○	
Hydrogen sulfide	H ₂ S	Humid gas or water solution	△	○	
Phosphoric acid	H ₃ PO ₄	≤5	○	○	Note 1
		5~25	△	○	
		25~50	—	○	

○ : Corrosion at 0.1 mm/year or less △ : Corrosion at 0.1 - 1.0 mm/year

Note 1. Be alert to the risk of intergranular corrosion. Note 2. Be alert to the risk of pitting corrosion

Note 3. Be alert to the risk of breakage of corroded parts due to stress.

SUS316 (SCS14) also
available as an option

S3A

Stainless Steel Submersible Pump (Volute Impeller)

Bore : 40 - 80 mm (1 1/2 - 3")

Output: 0.25 - 1.5 kW (1/3 - 2 HP)

Standard Specifications

Bore mm (inch)	Pump Model				Connection Part No.		Output kW (HP)	Phase	Capacity - Total Head m³/min-m		No. of poles P	Weight (Bare Pump) kg		
	Non-Auto Operation	Auto- Operation	Auto-Alternate operation		Auto- Connection	Free Standing			50Hz			60Hz	S3A	S3A-D S3A-W
			Pair Name	Pump No. 1 and 2										
40 (1 1/2")	S3A40T	S3A40DT	S3A40DWT	S3A40WT + S3A40DT	S3P40	S3F40	0.25 (1/3)	3-ph	0.1 – 6.2	0.1 – 6.1	2	16.5	17.5	
							0.4 (1/2)		0.05–12.0	0.05–11.9		19	20	
50 (65) 2" (2 1/2")	S3A50T	S3A50DT	S3A50DWT	S3A50WT + S3A50DT	S3P50	S3F50	0.4 (1/2)	3-ph	0.15– 6.4	0.15– 6.3	2	19	20	
	S3A50	S3A50D	S3A50DW	S3A50W + S3A50D			0.75 (1)		[3] 0.2–9.3	[4] 0.2–9.2		20	21	
							1.5 (2)		[5H] 0.1–13.6	[6H] 0.1–13.6		20	21	
									[7H] 0.2–17.3	[8H] 0.2–16.9		37	39	
65 (80) 2 1/2" (3")	S3A65	S3A65D	S3A65DW	S3A65W + S3A65D	S3P65	S3F65	1.5 (2)	3-ph	0.3 –13.1	0.3 –13.1	2	38	40	

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

* A pump with a bore within parentheses () is also provided.

[] Impeller number

Note: Since the items in the cells are made-to-order, please check the delivery time before placing an order.

Standard Accessories

- Cable (6 m: 0.75 kW or less) . 1 pc.
(10 m: 1.5 kW)
- Float Switch (for type D/W) 1 set

●Auto-connection type

- Connection
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6 m)

●Free standing type (S3F65)

- Elbow Flange
- Companion Flange
(with bolts, nuts and packing)

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

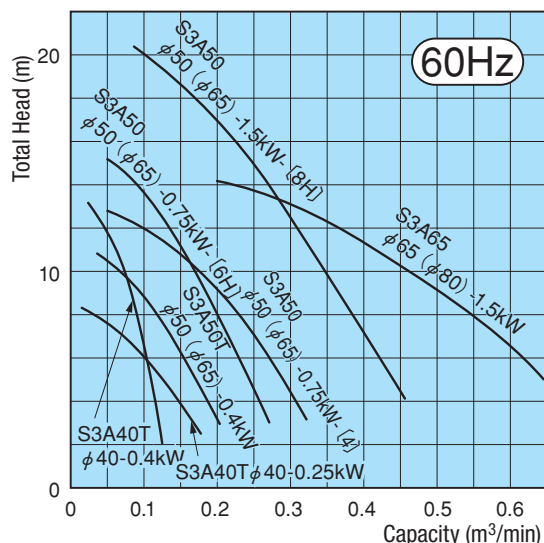
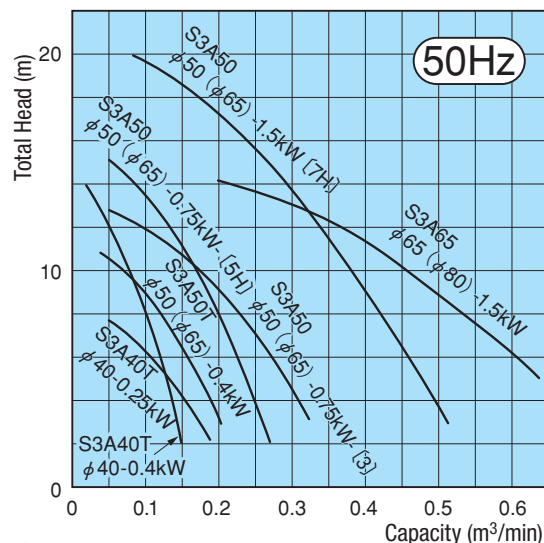
Connection Part No.	Set Weight	Connection Weight
S3P40	12kg	6.5kg
S3P50	12kg	6.5kg
S3P65	26kg	17kg

Connection Part No.	Set Weight
S3F40	Included in the body
S3F50	
S3F65	8kg

Part Specifications

Applicable Model	Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (mm)	
	Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz
S3A40T-S3A40DT-S3A40WT	VCT	1.25	4	ϕ 11.5	Direct	SiC/SiC	Carbon/Ceramic	0.25kW: 9	
S3A50T-S3A50DT-S3A50WT								0.4kW: 5.5	6.5
S3A50-S3A50D-S3A50W								0.4/0.75kW: 9	
S3A65-S3A65D-S3A65W								1.5kW: 11.5	
								14	13

Performance Curves



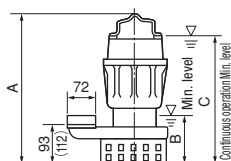
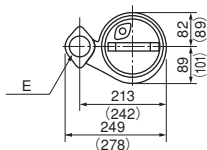
Unit: mm

Dimensions

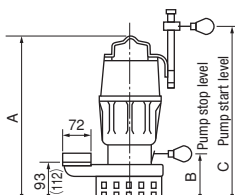
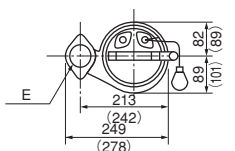
Free standing type

(): 1.5kW

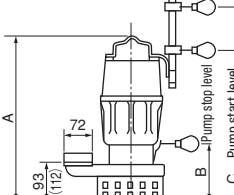
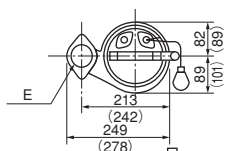
S3A40T • 50 (T)



S3A40DT • 50D (T)



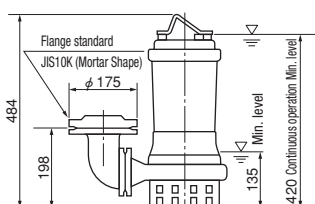
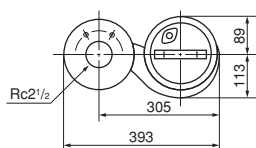
S3A40WT • 50W (T)



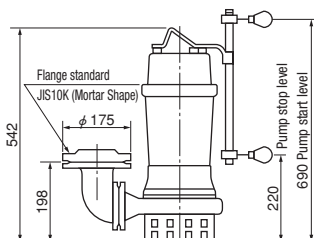
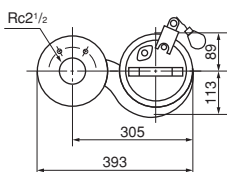
Pump Model	Connection Part No.	Output kW (HP)	A	B	C	D	E
S3A40T	S3F40	0.25 (1/3)	367	115	315	—	Rc1½
		0.4 (1/2)	387		335		
S3A40DT		0.25 (1/3)	401	120	540	—	
		0.4 (1/2)	421		560		
S3A40WT		0.25 (1/3)	401	160	490	640	
		0.4 (1/2)	421		510	660	
S3A50T	S3F50	0.4 (1/2)	387	115	—	—	Rc2
		0.75 (1)					
S3A50		1.5 (2)	482	135	420		
S3A50DT		0.4 (1/2)	421	120	560	—	
		0.75 (1)					
S3A50D		1.5 (2)	540	220	690		
S3A50WT		0.4 (1/2)	421	160	510	660	
		0.75 (1)					
S3A50W		1.5 (2)	540	280	640	820	

* For the S3A50(T), 50D(T), and 50W(T), a pump with a bore of 65 mm is also provided.

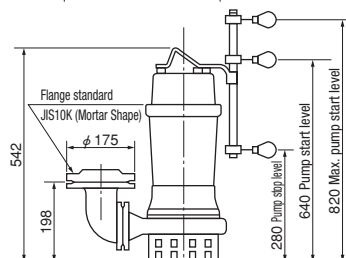
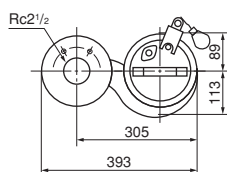
S3A65



S3A65D



S3A65W



* A pump with a bore of 80 mm is also provided.

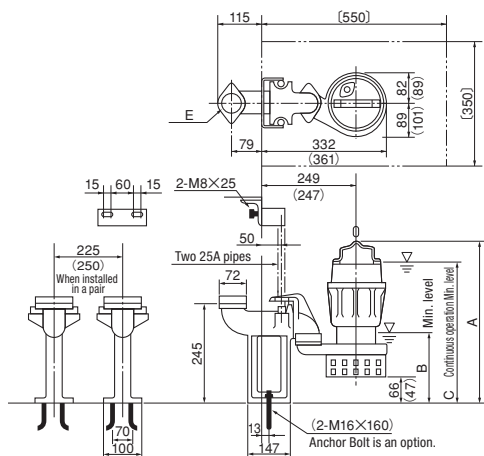
Dimensions

Unit: mm

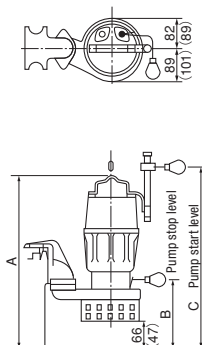
Auto-connection type

() : 1.5kW

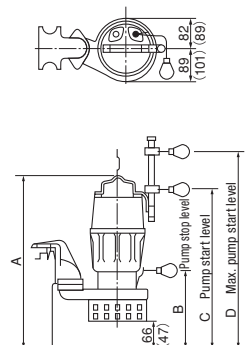
S3A40T • 50 (T)



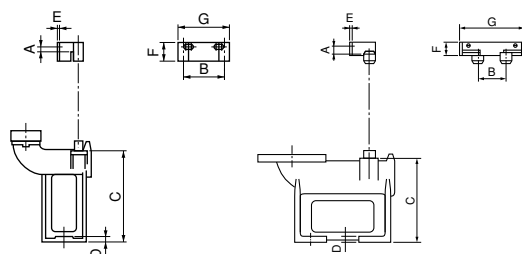
S3A40DT • 50D (T)



S3A40WT • 50W (T)



Connection Dimensions

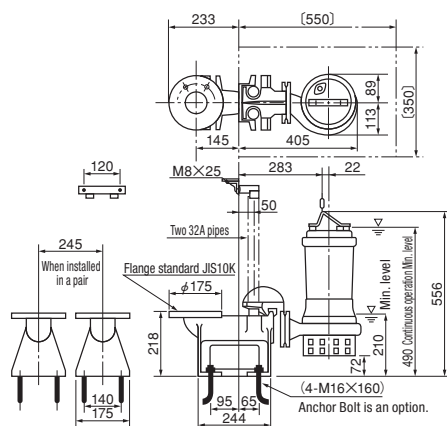


Connection Part No.	A	B	C	D	E	F	G
S3P40	11	100	223	12	3	44	125
S3P50	11	100	223	12	3	44	125
S3P65	22	70	201	12	5	32	160

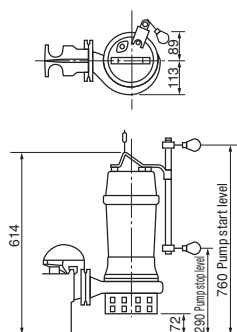
Pump Model	Connection Part No.	Output kW (HP)	A	B	C	D	E
S3A40T	S3P40	0.25 (1/3)	431	180	380	—	Rc1½
		0.4 (1/2)	451		400		
0.25 (1/3)		465	185	605	—		
0.4 (1/2)		485		625			
S3A40WT		0.25 (1/3)	465	225	555	705	
		0.4 (1/2)	485		575	725	
S3A50T	S3P50	0.4 (1/2)	451	180	400	—	Rc2
S3A50		0.75 (1)			527	470	
		1.5 (2)					
S3A50DT		0.4 (1/2)	485	185	625	—	
S3A50D		0.75 (1)			735		
1.5 (2)							
S3A50WT		0.4 (1/2)	485	225	575	725	
S3A50W		0.75 (1)					
	1.5 (2)	585	325	685	865		

* For the S3A50(T), 50D(T), and 50W(T), a pump with a bore of 65 mm is also provided.

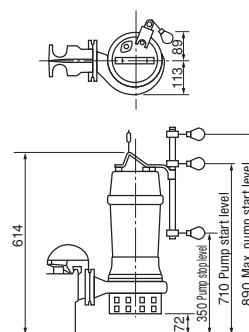
S3A65



S3A65D



S3A65W

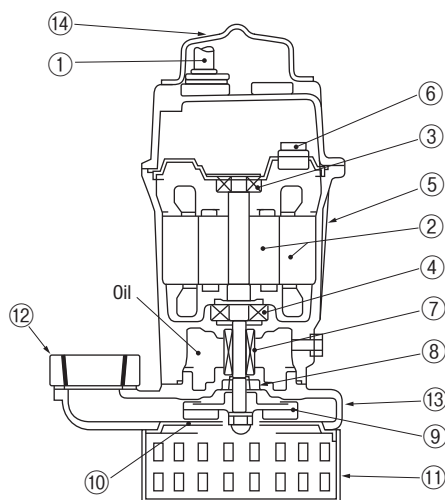


* A pump with a bore of 80 mm is also provided.

Sectional View

S3A50

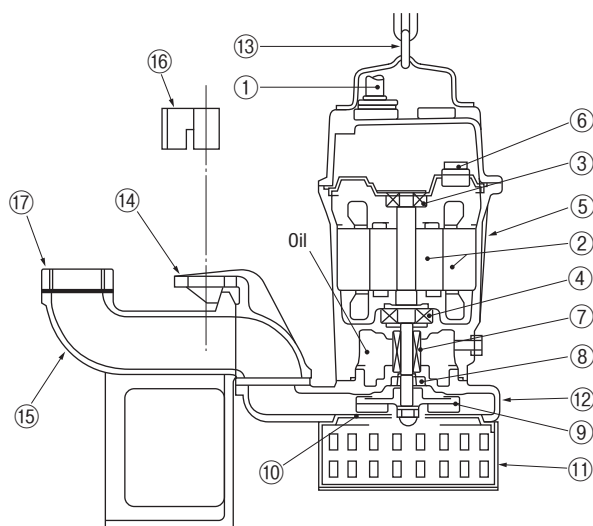
Free standing type



No.	Name	Material
1	Cable	VCT
2	Motor	Shaft: SUS304
3	Ball Bearing (Upper)	—
4	Ball Bearing (Lower)	—
5	Stator Casing	SCS13
6	Thermal protector	—
7	Mechanical Seal	—
8	Oil Seal	NBR
9	Impeller	SCS13
10	Base Cover	SCS13
11	Strainer	SUS304
12	Screwed Coupling	SCS13
13	Pump Casing	SCS13
14	Handle	SUS304

S3A50

Auto-connection type



No.	Name	Material
1	Cable	VCT
2	Motor	Shaft: SUS304
3	Ball Bearing (Upper)	—
4	Ball Bearing (Lower)	—
5	Stator Casing	SCS13
6	Thermal protector	—
7	Mechanical Seal	—
8	Oil Seal	NBR
9	Impeller	SCS13
10	Base Cover	SCS13
11	Strainer	SUS304
12	Pump Casing	SCS13
13	Chain	SUS304
14	Sliding Bracket	SCS13
15	Connection	SCS13
16	Guide Holder	SUS304
17	Screwed Coupling	SCS13

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitrly rubber

S3N

Stainless Steel Submersible Pump (Non-clog Impeller)

Bore : 40 - 80 mm (1 1/2 - 3")

Output: 0.25 - 7.5 kW (1/3 - 10 HP)

Standard Specifications

0.25 - 1.5kW

Bore mm (inch)	Pump Model				Connection Part No.		Output kW (HP)	Phase	Capacity - Total Head m³/min-m		No. of poles P	Weight (Bare Pump) kg	
	Non-Auto Operation	Auto- Operation	Auto-Alternate operation		Auto- Connection	Free standing			50Hz	60Hz		S3N	S3N-D S3N-W
			Pair Name	Pump Nos. 1 and 2									
40 (1 1/2")	S3N40T	S3N40DT	S3N40DWT	S3N40WT+S3N40DT	S3P40	S3F40	0.25 (1/3)	3-ph	0.1 –5.1	0.1 –5.0	2	17.5	18.5
50 (65) 2" (2 1/2")	S3N50T	S3N50DT	S3N50DWT	S3N50WT+S3N50DT	S3P50	S3F50	0.4 (1/2)	3-ph	0.15–5.6	0.15–5.6	2	23	24
	S3N50	S3N50D	S3N50DW	S3N50W+S3N50D			0.75 (1)		0.2 –7.6	0.2 –7.0		24	25
65 (80) 2 1/2" (3")	S3N65	S3N65D	S3N65DW	S3N65W+S3N65D	S3P65	S3F65	1.5 (2)	3-ph	0.4 –9.9	0.4 –9.2	2	39	41

Note: Since the items in the cells are made-to-order, please check the delivery time before placing an order.

2.2 - 7.5kW

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity - Total Head m³/min-m		No. of poles P	Weight (Bare Pump) kg
		Auto-Connection	Free standing			50Hz	60Hz		
80 (65) (100) 3" (2 1/2") (4")	S3N80	S3P80B	S3F80	2.2 (3)	3-ph	0.8– 7.4	0.8– 7.6	4	63
				3.7 (5)		[1] 1.0–10.8	1.0–10.8		76
						[3] 0.8–13.4			
100 (80) 4" (3")	S3N100	S3P100B	S3F100	5.5 (7.5)	3-ph	[1] 1.2–11.5	[2] 1.2–12.2	4	103
				7.5 (10)		[3] 0.9–16.5	[4] 0.9–16.5		117
						[1] 1.4–14.0	[2] 1.4–15.4		
						[3] 1.0–20.0	[4] 1.0–21.0		

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

[] Impeller number

* A pump with a bore within parentheses () is also provided.

Standard Accessories

- Cable 1 pc.
(6 m: 0.75 kW or less)
(10 m: 1.5 kW)
(8 m: 2.2 - 7.5 kW)
- Float Switch (for type D/W) 1 set

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

●Auto-connection type

- Connection
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6 m)

Connection Part No.	Set Weight	Connection Weight
S3P40	12kg	6.5kg
S3P50	12kg	6.5kg
S3P65	26kg	17kg
S3P80B	34kg	20kg
S3P100B	44kg	30kg

●Free standing type (S3F65/80/100)

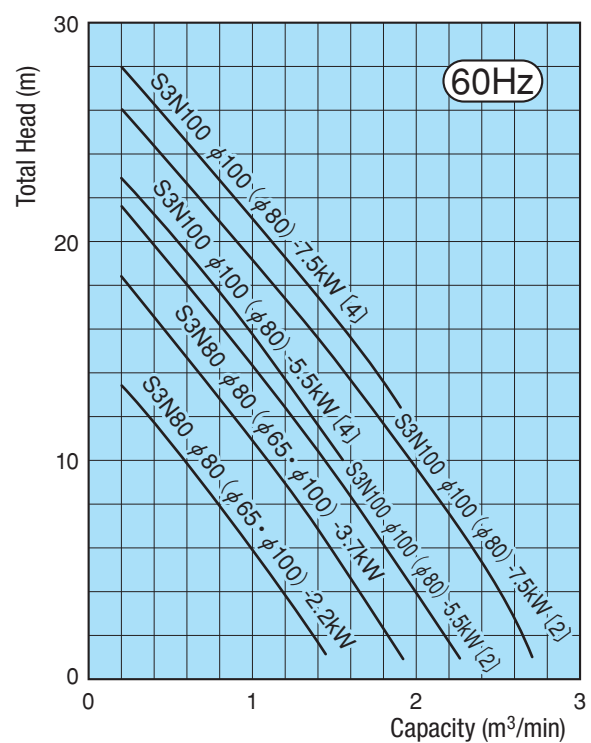
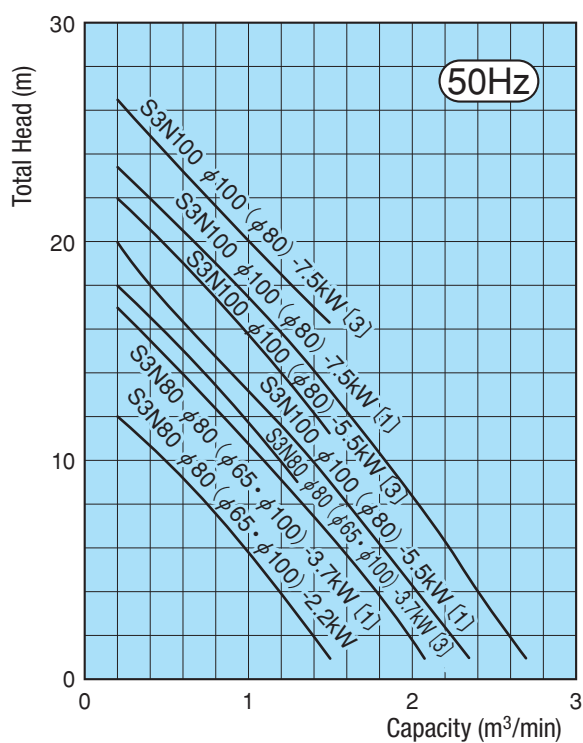
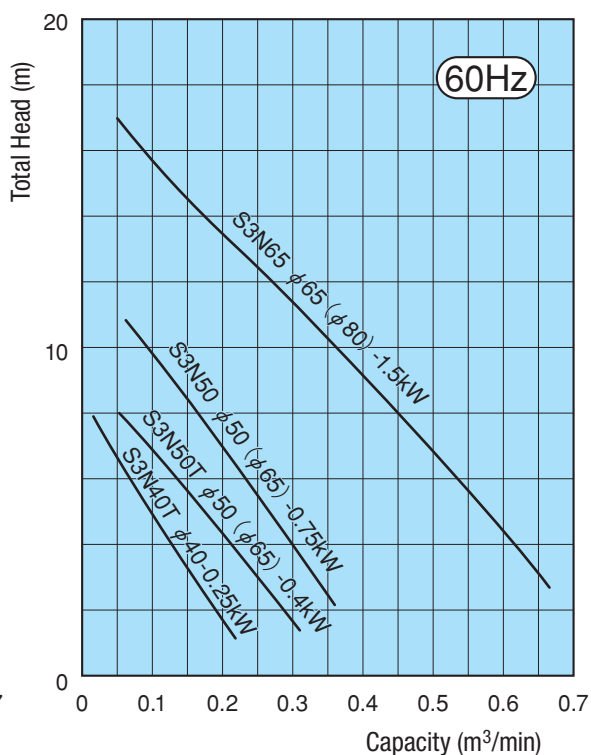
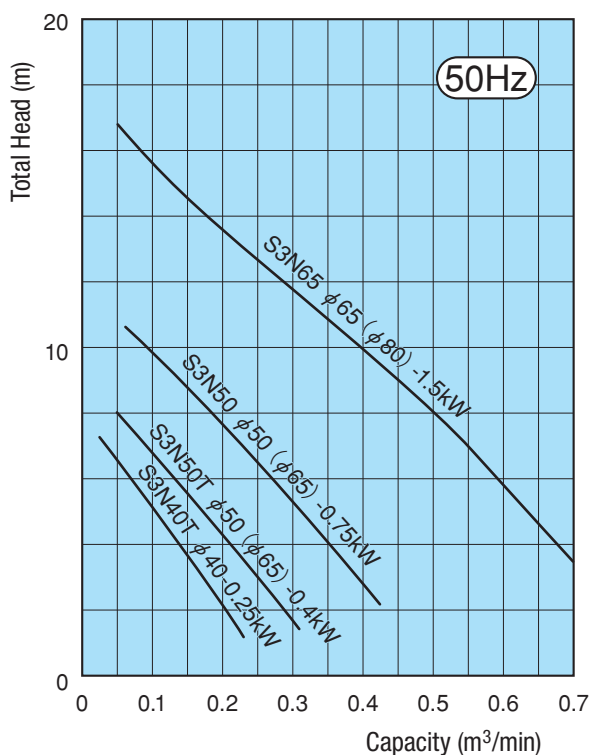
- Elbow Flange
- Companion Flange
(with bolts, nuts and packing)

Connection Part No.	Set Weight
S3F40	Included in the body
S3F50	
S3F65	
S3F80	11kg
S3F100	12kg

Part Specifications

Applicable Model	Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)		
	Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz	
S3N40T-S3N40DT-S3N40WT	VCT	1.25	4	ϕ 11.5	ϕ 11.5	Direct	Carbon/Ceramic	21	20	
S3N50T-S3N50DT-S3N50WT	VCT	1.25	4	ϕ 11.5			28	23		
S3N50-S3N50D-S3N50W							30	30		
S3N65-S3N65D-S3N65W	VCT	1.25	4	ϕ 11.5			Carbon/Ceramic	39	34	
S3N80	2.2kW (3 HP)	VCT	1.25	4	ϕ 11.5		SiC/SiC	52	51	
S3N80	3.7kW (5 HP)	VCT	2.0	4	ϕ 12			51	52	
S3N100	5.5kW (7.5 HP)	VCT	3.5	4	ϕ 14			[1] 58	[2] 51	
								[3] 52	[4] 51	
S3N100	7.5kW (10 HP)	VCT	5.5	4	ϕ 16.5			[1] 65	[2] 54	
								[3] 58	[4] 58	

Performance Curves

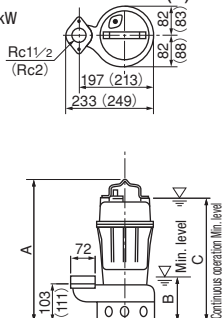


Dimensions

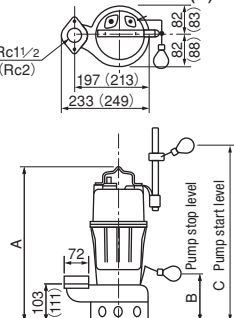
Free standing type

S3N40T • 50 (T)

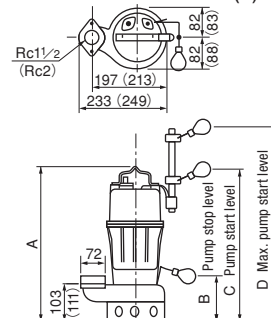
() : 0.75kW



S3N40DT • 50D (T)



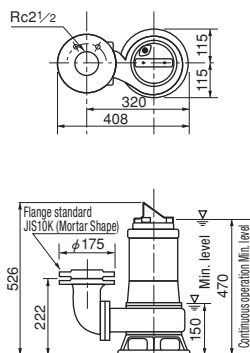
S3N40WT • 50W (T)



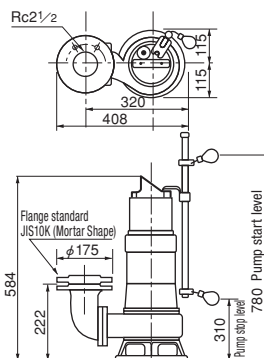
Pump Model	Connection Part No.	Output kW (HP)	A	B	C	D
S3N40T	S3F40	0.25 (1/3)	377	125	325	—
S3N40DT			411	130	550	—
S3N40WT			—	170	500	650
S3N50 (T)	S3F50	0.4 (1/2)	439	135	380	—
S3N50D (T)			473	140	610	—
S3N50W (T)			—	180	560	710

* For the S3N50(T), 50D(T), and 50W(T), a pump with a bore of 65 mm is also provided.

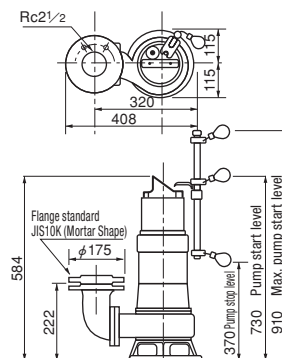
S3N65



S3N65D

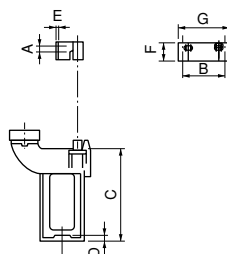


S3N65W

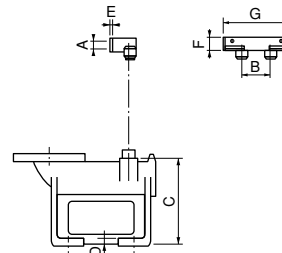


* A pump with a bore of 80 mm is also provided.

● Connection Dimensions



Connection Part No.	A	B	C	D	E	F	G
S3P40	11	100	223	12	3	44	125
S3P50	11	100	223	12	3	44	125



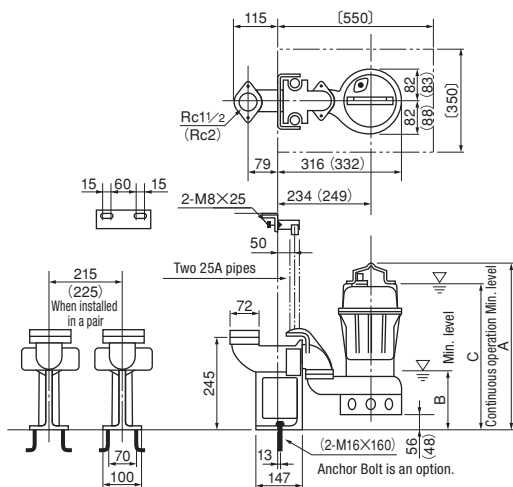
Connection Part No.	A	B	C	D	E	F	G
S3P65	22	70	201	12	5	32	160

Unit: mm

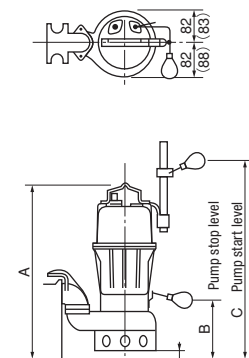
Auto-connection type

S3N40T • 50 (T)

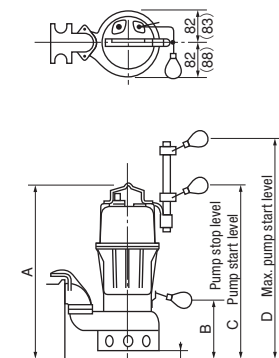
() : 0.75kW



S3N40DT • 50D (T)



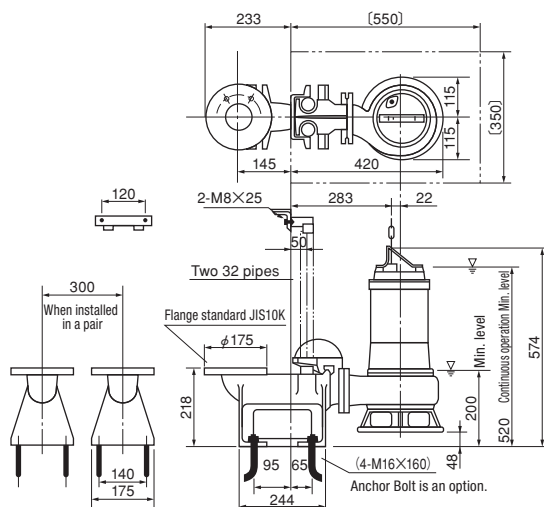
S3N40WT • 50W (T)



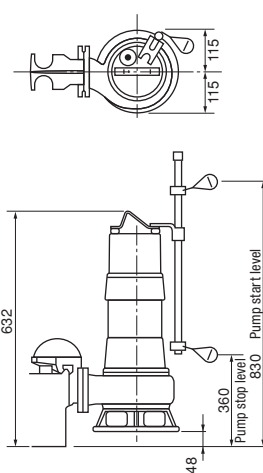
Pump Model	Connection Part No.	Output kW (HP)	A	B	C	D
S3N40T	S3P40	0.25 (1/3)	433	180	380	—
S3N40DT			467	185	605	—
S3N40WT			487	225	555	705
S3N50 (T)	S3P50	0.4 • 0.75 (1/2 • 1)	487	180	430	—
S3N50D (T)			521	190	660	—
S3N50W (T)			521	230	610	760

* For the S3N50(T), 50D(T), and 50W(T), a pump with a bore of 65 mm is also provided.

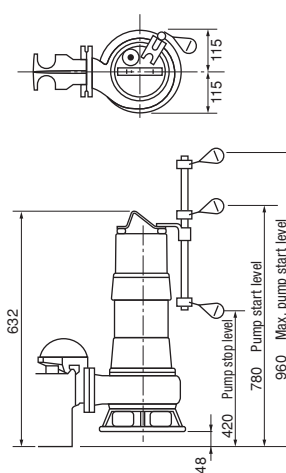
S3N65



S3N65D



S3N65W

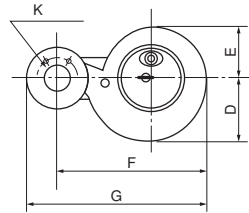


* A pump with a bore of 80 mm is also provided.

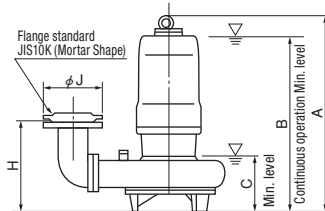
Dimensions

S3N80 • 100

Free standing type



For the S3N80 and S3N100,
pumps with a bore of 65 or 100 mm and
80 mm are also provided, respectively.

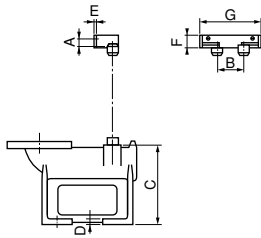


Pump Model	Connection Part No.	Output kW (HP)	A	B	C	D	E	F	G	H	J	K
S3N80	S3F80	2.2 (3)	550	495	190	161	131	431	524	270	185	Rc3
		3.7 (5)	612	555		183	148	450	543			
S3N100	S3F100	5.5 (7.5)	640	580	190	197	158	513	618	280	210	Rc4
		7.5 (10)	675	615		215	172	528	633			

S3N80 • 100

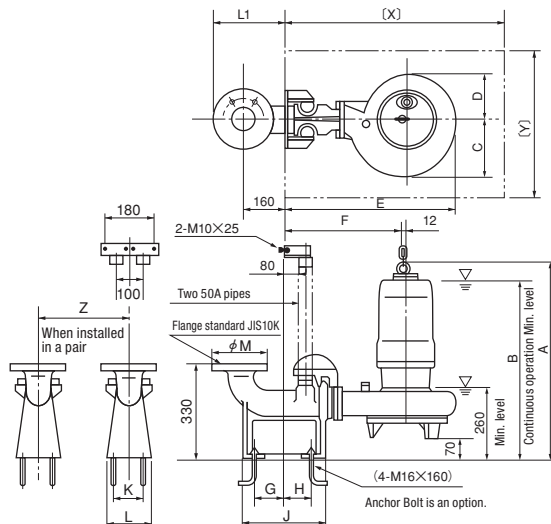
Auto-connection type

● Connection Dimensions



Connection Part No.	A	B	C	D
S3P80B	25	100	262	12
S3P100B	25	100	259	12
Connection Part No.	E	F	G	
S3P80B	6	44	210	
S3P100B	6	44	210	

For the S3N80 and S3N100,
pumps with a bore of 65 or 100 mm and
80 mm are also provided, respectively.

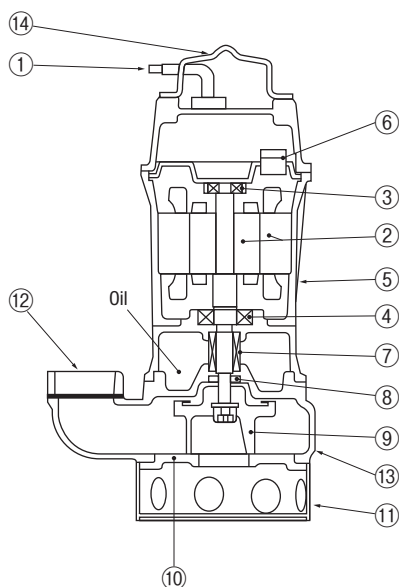


Pump Model	Connection Part No.	Output kW (HP)	A	B	C	D	E	F	G	H	J	K	L	M	X	Y	Z	L1
S3N80	S3P80B	2.2 (3)	620	565	161	131	564	406	107	103	302	120	150	211	600	500	380	266
		3.7 (5)	682	625	183	148	583								700	600	435	
S3N100	S3P100B	5.5 (7.5)	710	650	197	158	641	451	114	115	308	210	238	238	700	600	465	279
		7.5 (10)	745	685	215	172	656										505	

Sectional View

S3N50

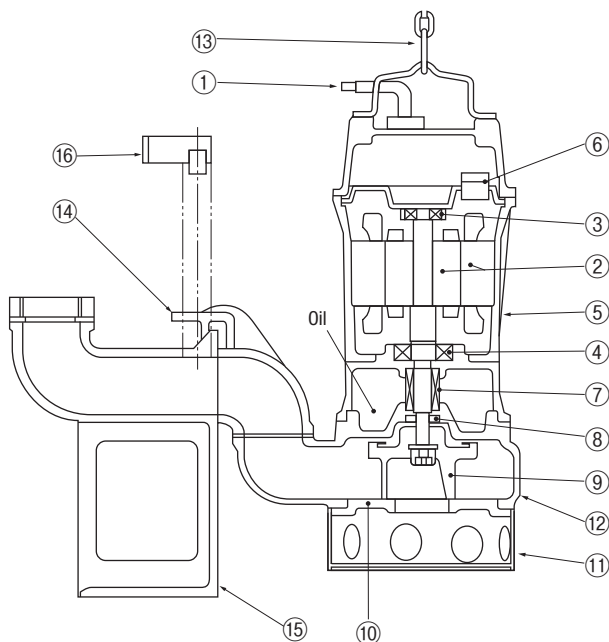
Free standing type



No.	Name	Material
1	Cable	VCT
2	Motor	Shaft: SUS304
3	Ball Bearing (Upper)	—
4	Ball Bearing (Lower)	—
5	Stator Casing	SCS13
6	Thermal protector	—
7	Mechanical Seal	—
8	Oil Seal	NBR
9	Impeller	SCS13
10	Base Cover	SCS13
11	Strainer	SUS304
12	Screwed Coupling	SCS13
13	Pump Casing	SCS13
14	Handle	SUS304

S3N50

Auto-connection type



No.	Name	Material
1	Cable	VCT
2	Motor	Shaft: SUS304
3	Ball Bearing (Upper)	—
4	Ball Bearing (Lower)	—
5	Stator Casing	SCS13
6	Thermal protector	—
7	Mechanical Seal	—
8	Oil Seal	NBR
9	Impeller	SCS13
10	Base Cover	SCS13
11	Strainer	SUS304
12	Pump Casing	SCS13
13	Chain	SUS304
14	Sliding Bracket	SUS304
15	Connection	SCS13
16	Guide Holder	SUS304

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitrlyl rubber

S3V

Stainless Steel Submersible Pump (Vortex Impeller)

Bore : 40 - 100 mm (1 1/2 - 4")

Output: 0.25 - 7.5 kW (1/3 - 10 HP)

Standard Specifications

0.25 - 1.5kW

Bore mm (inch)	Pump Model				Connection Part No.		Output kW (HP)	Phase	Capacity - Total Head m³/min-m		No. of poles P	Weight (Bare Pump) kg	
	Non-Auto Operation	Auto- Operation	Auto-Alternate operation		Auto- Connection	Free standing			50Hz	60Hz		S3V	S3V-D S3V-W
			Pair Name	Pump Nos. 1 and 2									
40 (1 1/2")	S3V40T	S3V40DT	S3V40DWT	S3V40WT+S3V40DT	S3P40	S3F40	0.25 (1/3)	3-ph	0.1 —4.4	0.09—4.3	2	19	20
50 (65) 2" (2 1/2")	S3V50T	S3V50DT	S3V50DWT	S3V50WT+S3V50DT	S3P50	S3F50	0.4 (1/2)	3-ph	0.14—4.7	0.14—4.3	2	20	21
	S3V50	S3V50D	S3V50DW	S3V50W+S3V50D			0.75 (1)		0.17—7.4	0.17—7.3		23	24
65 (80) 2 1/2" (3")	S3V65	S3V65D	S3V65DW	S3V65W+S3V65D	S3P65	S3F65	1.5 (2)	3-ph	0.42—8.0	0.38—8.0	2	38	40

Note: Since the items in the cells are made-to-order, please check the delivery time before placing an order.

2.2 - 7.5kW

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity - Total Head m³/min-m		No. of poles P	Weight (Bare Pump) kg
		Auto-Connection	Free standing			50Hz	60Hz		
80 (65) (100) 3" (2 1/2") (4")	S3V80	S3P80B	S3F80	2.2 (3)	3-ph	0.8– 6.6	0.7– 6.8	4	63
				3.7 (5)		1.0– 8.8	0.9– 9.5		76
100 (80) 4" (3")	S3V100	S3P100B	S3F100	5.5 (7.5)	3-ph	1.2–10.4	1.2–10.8	4	103
				7.5 (10)		[1] 1.3–12.8	[2] 1.3–12.8		117
						[3] 0.8–17.5	[4] 0.8–18.4		

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

[] Impeller number

* A pump with a bore within parentheses () is also provided.

Standard Accessories

- Cable 1 pc.
(6 m: 0.75 kW or less)
(10 m: 1.5 kW)
(8 m: 2.2 - 7.5 kW)
- Float Switch (for type D/W) 1 set

- Auto-connection type
 - Connection
 - Guide Holder (with bolts and nuts)
 - Sliding Bracket
 - Lifting Chain (6 m)

- Free standing type (S3F65/80/100)
 - Elbow Flange
 - Companion Flange
(with bolts, nuts and packing)

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

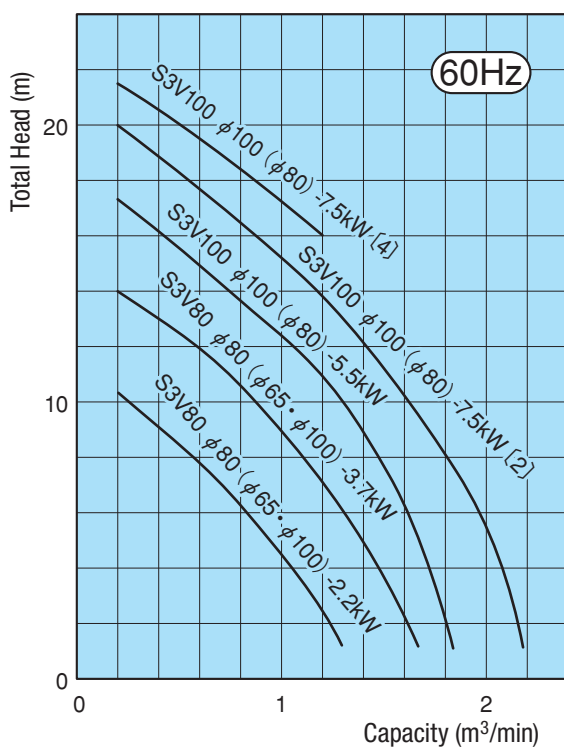
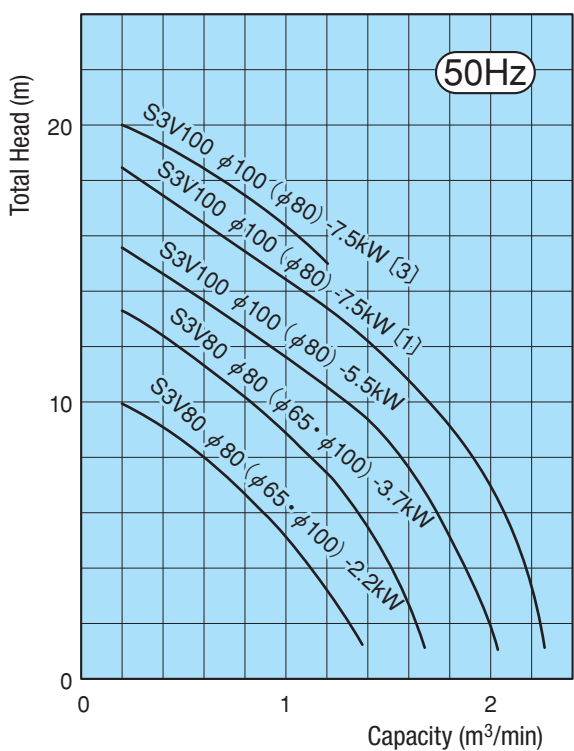
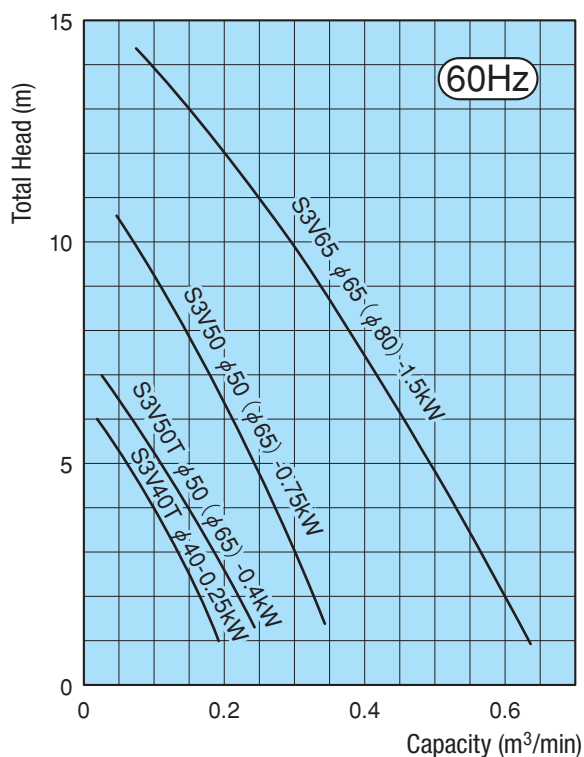
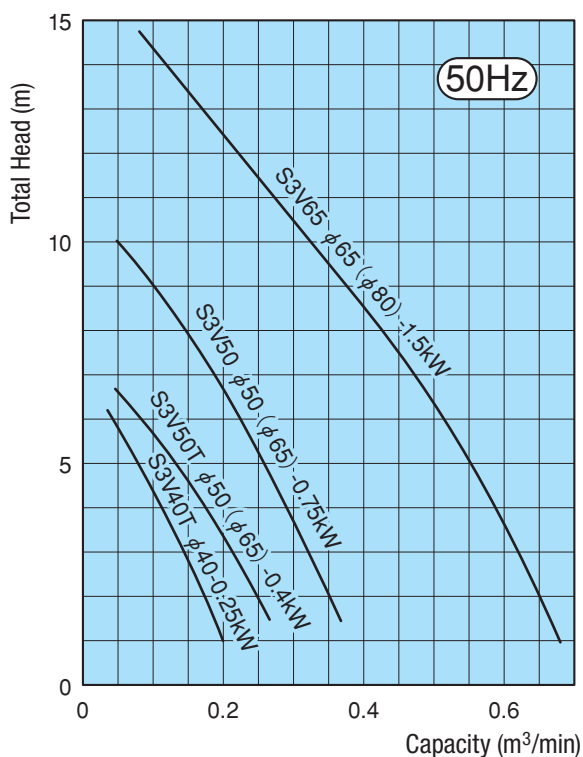
Connection Part No.	Set Weight	Connection Weight
S3P40	12kg	6.5kg
S3P50	12kg	6.5kg
S3P65	26kg	17kg
S3P80B	34kg	20kg
S3P100B	44kg	30kg

Connection Part No.	Set Weight
S3F40	Included in the body
S3F50	
S3F65	8kg
S3F80	11kg
S3F100	12kg

Part Specifications

Applicable Model	Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
	Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz
S3V40T·S3V40DT·S3V40WT	VCT	1.25	4	ϕ 11.5	Direct	SiC/SiC	Carbon/Ceramic	19	
S3V50T·S3V50DT·S3V50WT	VCT	1.25	4	ϕ 11.5				26	
S3V50·S3V50D·S3V50W									
S3V65·S3V65D·S3V65W	VCT	1.25	4	ϕ 11.5			SiC/SiC	28	
S3V80 2.2kW (3 HP)	VCT	1.25	4	ϕ 11.5					
S3V80 3.7kW (5 HP)	VCT	2.0	4	ϕ 12					
S3V100 5.5kW (7.5 HP)	VCT	3.5	4	ϕ 14					
S3V100 7.5kW (10 HP)	VCT	5.5	4	ϕ 16.5					33

Performance Curves



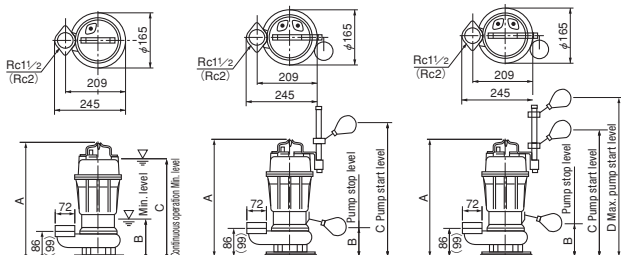
S3V

Stainless Steel Submersible Pump (Vortex Impeller)

Dimensions

Free standing type

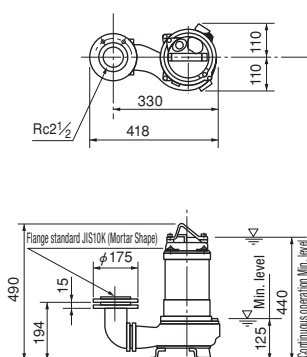
S3V40T · 50 (T) S3V40DT · 50D (T) S3V40WT · 50W (T)
(): 0.75kW



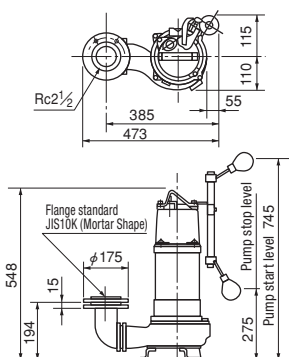
Pump Model	Connection Part No.	Output kW (HP)	A	B	C	D
S3V40T	S3F40	0.25 (1/3)	370	100	320	
S3V40DT				115	540	—
S3V40WT			404	155	490	
S3V50 (T)	S3F50	0.4 (1/2)	403	115	355	—
S3V50D (T)				125	575	
S3V50W (T)			437	165	525	675

* For the S3V50(T), 50D(T), and 50W(T), a pump with a bore of 65 mm is also provided.

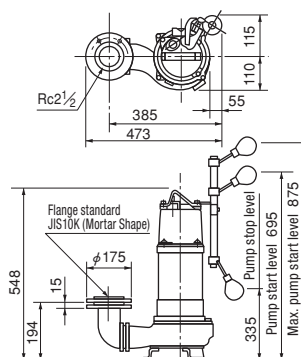
S3V65



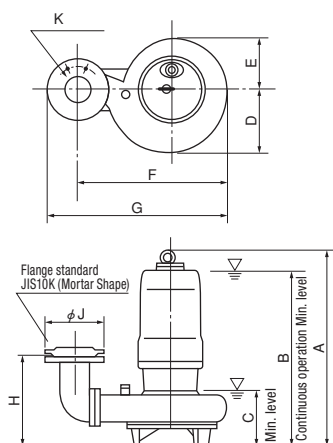
S3V65D



S3V65W

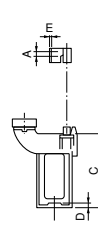


S3V80 · 100

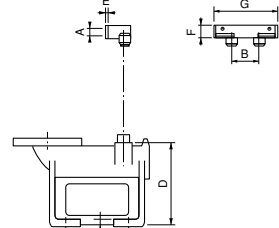


● Connection Dimensions

S3P40 · 50



S3P65 · 80B · 100B



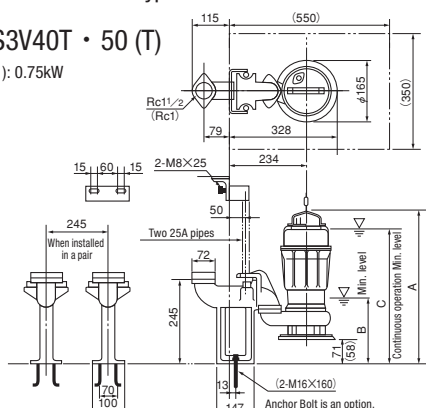
Connection Part No.	A	B	C	D	E	F	G
S3P40	11	100	223	12	3	44	125
S3P50	11	100	223	12	3	44	125
S3P65	22	70	201	12	5	32	160
S3P80B	25	100	262	12	6	44	210
S3P100B	25	100	259	12	6	44	210

Pump Model	Connection Part No.	Output kW (HP)	A	B	C	D	E	F	G	H	J	K
S3V80	S3F80	2.2 (3)	550	493	190	161	131	431	524	270	185	Rc3
		3.7 (5)	612	557		183	148	450	543			
S3V100	S3F100	5.5 (7.5)	640	580	190	197	158	513	618	280	210	Rc4
		7.5 (10)	675	615		215	172	528	633			

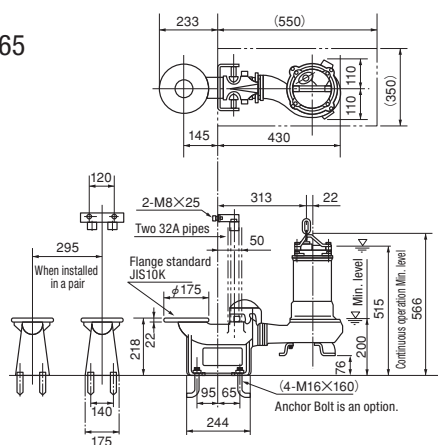
Auto-connection type

S3V40T • 50 (T)

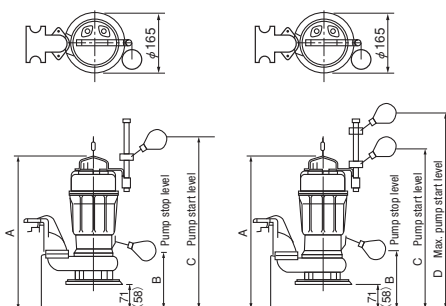
(): 0.75kW



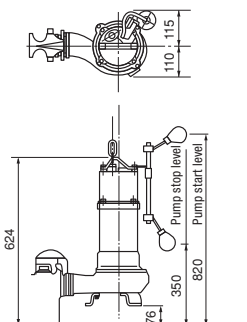
S3V65



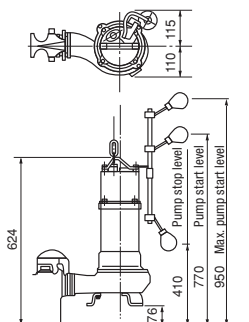
S3V40DT • 50D (T) S3V40WT • 50W (T)



S3V65D



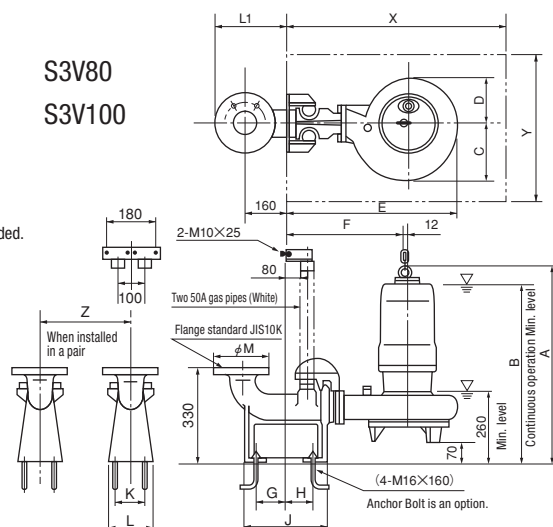
S3V65W



Pump Model	Connection Part No.	Output kW (HP)	A	B	C	D
S3V40T	S3P40	0.25 (1/3)	441	170	390	—
S3V40DT			475	185	610	
S3V40WT			495	225	560	710
S3V50 (T)	S3P50	0.4 (1/2)	461	175	410	—
S3V50D (T)			495	185	635	
S3V50W (T)			495	225	585	735

* For the S3V50(T), 50D(T), and 50W(T), a pump with a bore of 65 mm is also provided.

S3V80
S3V100



Pump Model	Connection Part No.	Output KW (HP)	A	B	C	D	E	F	G	H	J	K	L	M	X	Y	Z	L1
S3V80	S3P80B	2.2 (3)	620	565	161	131	564	406	107	103	302	120	150	211	600	500	380	266
		3.7 (5)	682	625	183	148	583								700	600	435	
S3V100	S3P100B	5.5 (7.5)	710	650	197	158	641	451	114	115	308	200	238	238	700	600	465	279
		7.5 (10)	745	685	215	172	656								700	600	505	

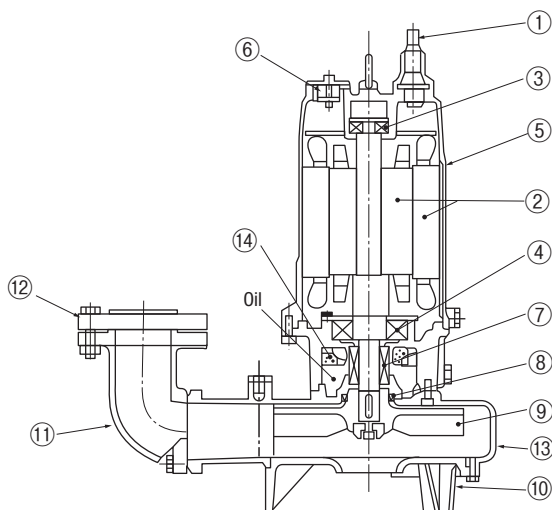
S3V

Stainless Steel Submersible Pump (Vortex Impeller)

Sectional View

S3V80

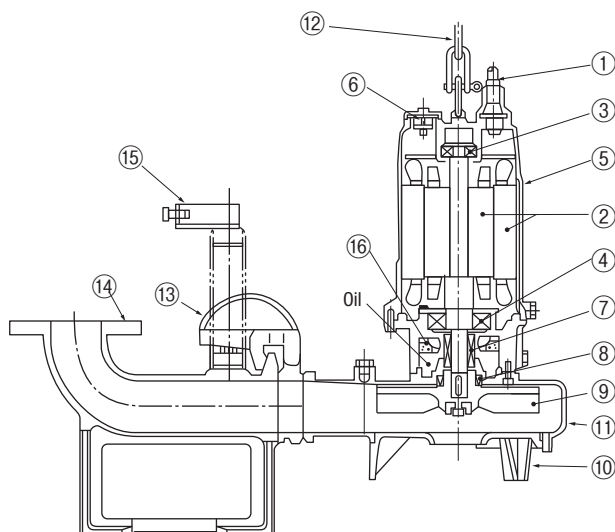
Free standing type



No.	Name	Material
1	Cable	VCT
2	Motor	Shaft: SUS316
3	Ball Bearing (Upper)	—
4	Ball Bearing (Lower)	—
5	Motor Frame	SCS13
6	Thermal protector	—
7	Mechanical Seal	—
8	Oil Seal	NBR
9	Impeller	SCS13
10	Base Cover	SCS13
11	Elbow Flange	SCS13
12	Companion Flange	SUS304
13	Pump Casing	SCS13
14	Equalizer	Forming NBR

S3V80

Auto-connection type



No.	Name	Material
1	Cable	VCT
2	Motor	Shaft: SUS316
3	Ball Bearing (Upper)	—
4	Ball Bearing (Lower)	—
5	Motor Frame	SCS13
6	Thermal protector	—
7	Mechanical Seal	—
8	Oil Seal	NBR
9	Impeller	SCS13
10	Base Cover	SCS13
11	Pump Casing	SCS13
12	Chain	SUS304
13	Sliding Bracket	SCS13
14	Connection	SCS13
15	Guide Holder	SCS13
16	Equalizer	Forming NBR

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitrlyl rubber

Submersible Pump with Flywheel (Non-clog Impeller)

Bore: 80 - 500 mm (3" - 20")
Output: 5.5 - 75 kW (7.5 - 100 HP)

CNF

The CNF-series incorporates a flywheel which increases the inertia to alleviate drastic decline in flow rate which causes water hammer. It is equipped with a centrifugal or a centrifugal-design diagonal flow impeller of the non-clog type. The auto-connection type facilitates installation and maintenance.

	Bore mm (inch)	Output kW (HP)	Model	Page
Natural-cooling	80 (3")	5.5 - 7.5 (7.5 - 10)	CNF80-P	262
	100 (4")	5.5 - 22 (7.5 - 30)	CNF100-P	
	150 (6")	11 - 22 (15 - 30)	CNF1502-P	266
Forced-cooling	150 (6")	11 - 37 (15 - 50)	CNF150-P	268
	200 (8")	15 - 55 (20 - 75)	CNF200-P	270
	250 (10")	15 - 75 (20 - 100)	CNF250-P	274
	300 (12")	18.5 - 75 (25 - 100)	CNF300-P	276
	400 (16")	30 - 75 (40 - 100)	CNF400-P	278
	500 (20")	75 (100)	CNF500-P	

● Submersible pump with flywheel

The pump incorporates a flywheel which increases the inertia to alleviate drastic decline in flow rate which causes water hammer.

It needs no large facilities, including an air chamber and surge tank, and reduces overall pump-facility costs. Easy automatic operation is possible thanks to its long-life grease-insulation bearing insulation, without any auxiliary grease-supply machine and linked to the liquid-level control switch. Moreover, it can also operate underwater with reduced noise and vibration.

○ Generation of water hammer

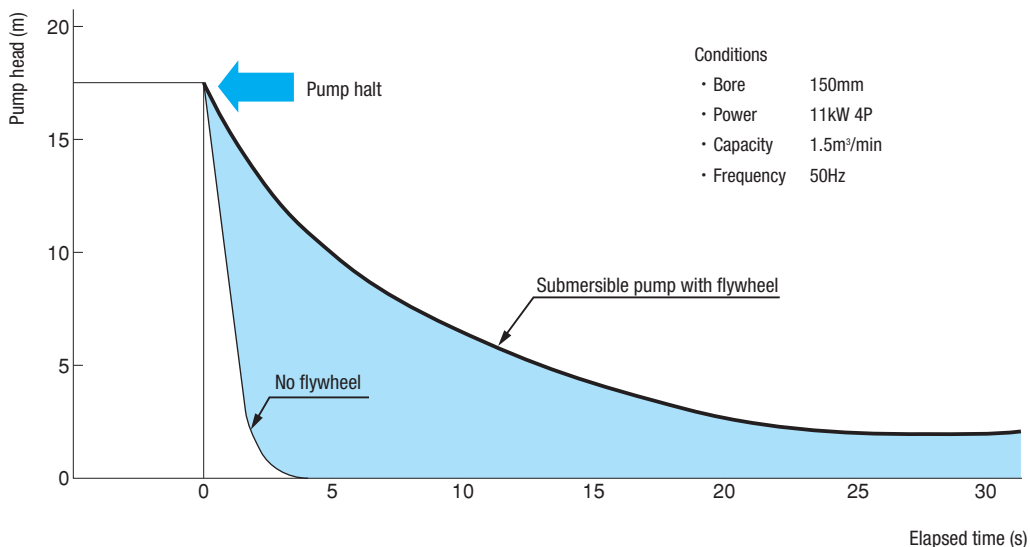
Where the pipeline is very long or the pump head is high, water hammer occurs due to a drastic change in flow rate.

○ Damages due to water hammer

When water hammer occurs, the increase in pressure damages the pump, valves, and pipes.

With a significant drop in pressure, the water column is separated, generating abnormally high impact pressure and considerable damage.

● Comparison of the pressure (pump head) changes for submersible pumps with flywheel and no flywheel



Structure and Features

● Motor

Air-filled type submersible induction motor with class E or F insulation.

● Motor protector

- 11 kW or over: MTP

The motor incorporates Micro Thermal Protector which are embedded in each phase of the windings to protect the motor from over temperature.

- 5.5 & 7.5 kW: Thermal protector

Incorporates an auto-reset type thermal protector.

● Cable entry

Employs a core seal that effectively prevents water from wicking down the cable even when the cable end is soaked or the cable sheath is damaged.

● Forced-cooling system (except model CNF80, 100 & 1502)

Motor is cooled continuously by a part of pumped liquid while the pump in operation even under dry condition.

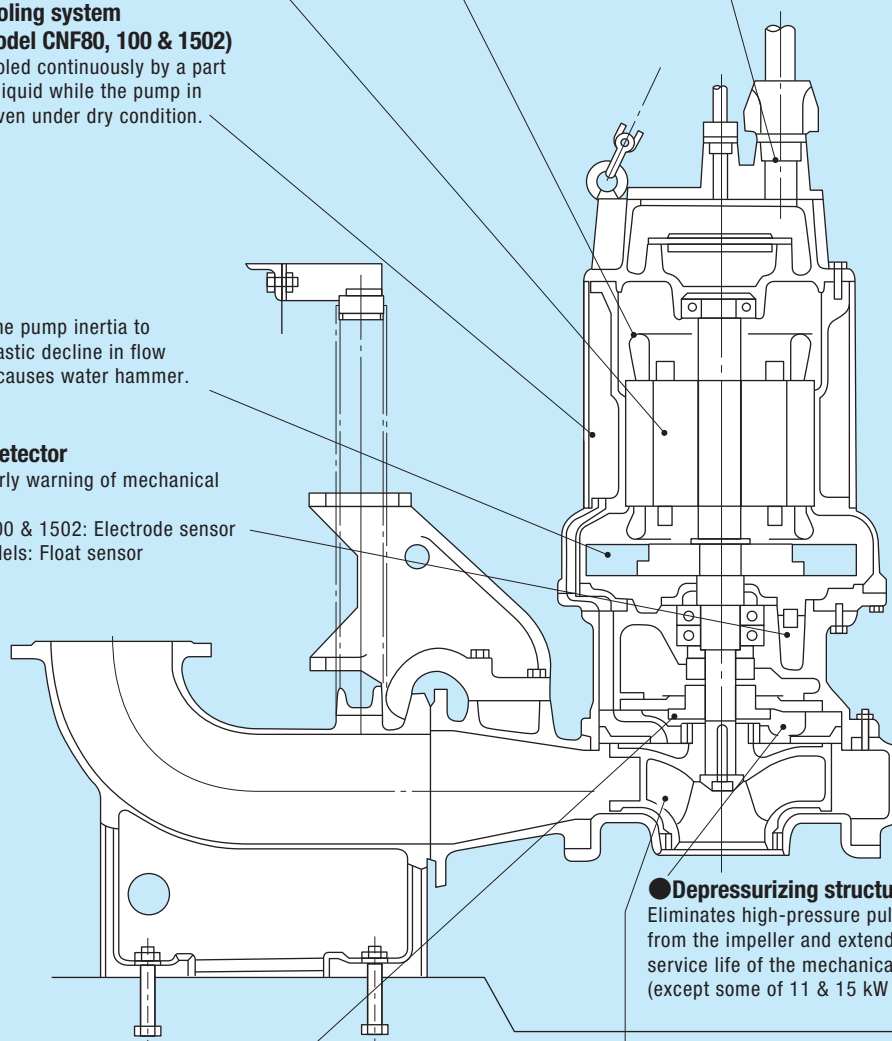
● Flywheel

Increases the pump inertia to alleviate drastic decline in flow rate which causes water hammer.

● Leakage detector

Provides early warning of mechanical seal failure.

- CNF80, 100 & 1502: Electrode sensor
- Other models: Float sensor



● Depressurizing structure

Eliminates high-pressure pulsating flow from the impeller and extends the service life of the mechanical seal. (except some of 11 & 15 kW models)

● Shaft seal

Double mechanical seal made of highly-wear resistant material prevents water from penetrating the motor chamber.

● Impeller

Features a centrifugal or a centrifugal-design diagonal flow impeller of the non-clogging type to prevent overload throughout the flow range. (except some models)

CNF**Submersible Pump with Flywheel
(Non-clog Impeller)**

Bore : 80 - 500 mm (3" - 20")

Output: 5.5 - 75 kW (7.5 - 100 HP)

■ Features

● Eliminates the need for large equipment to prevent water hammer

Increases the pump inertia of the pump to prevent any sudden decrease in capacity, which causes water hammer. No large equipment, such as an air chamber or surge tank, is necessary.

● Overall costs reduced

The overall pump-facility costs decline thanks to the features of the submersible pump and eliminating the need for water hammer prevention facilities.

● Easy maintenance and inspection

Automatic connection device facilitates maintenance and inspection.

■ Applications

- Transfer pumping station in the sewerage system
 - Intake of agricultural water, flooding protection, and irrigation
 - Intake of industrial water
- When water hammer occurs or may occur for the above applications

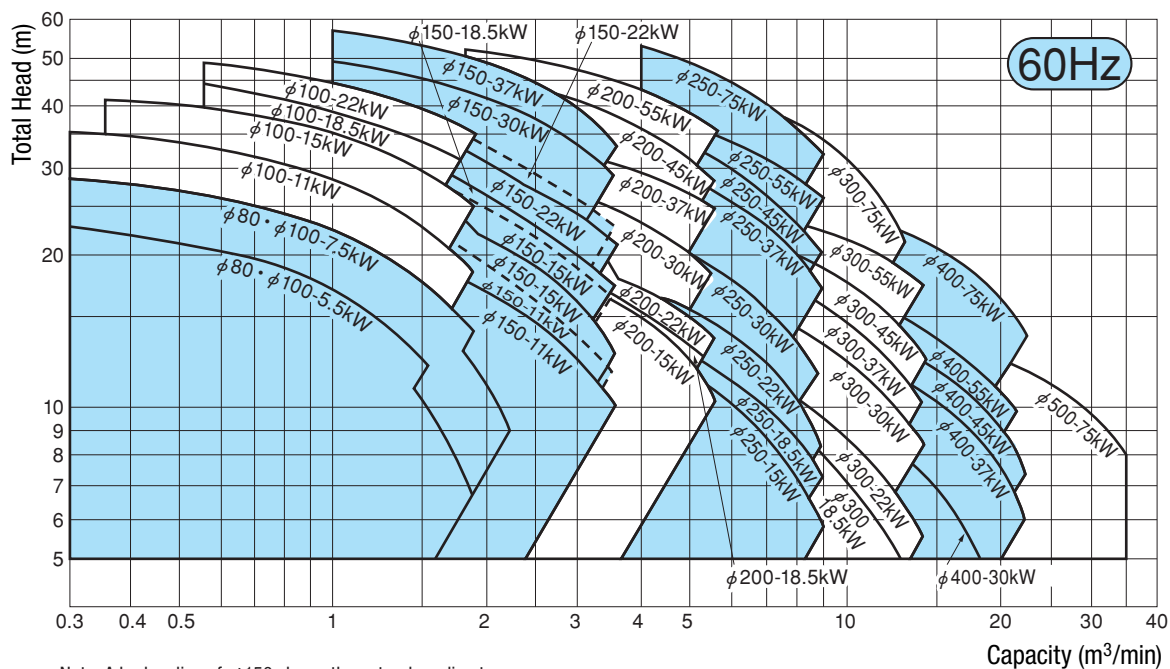
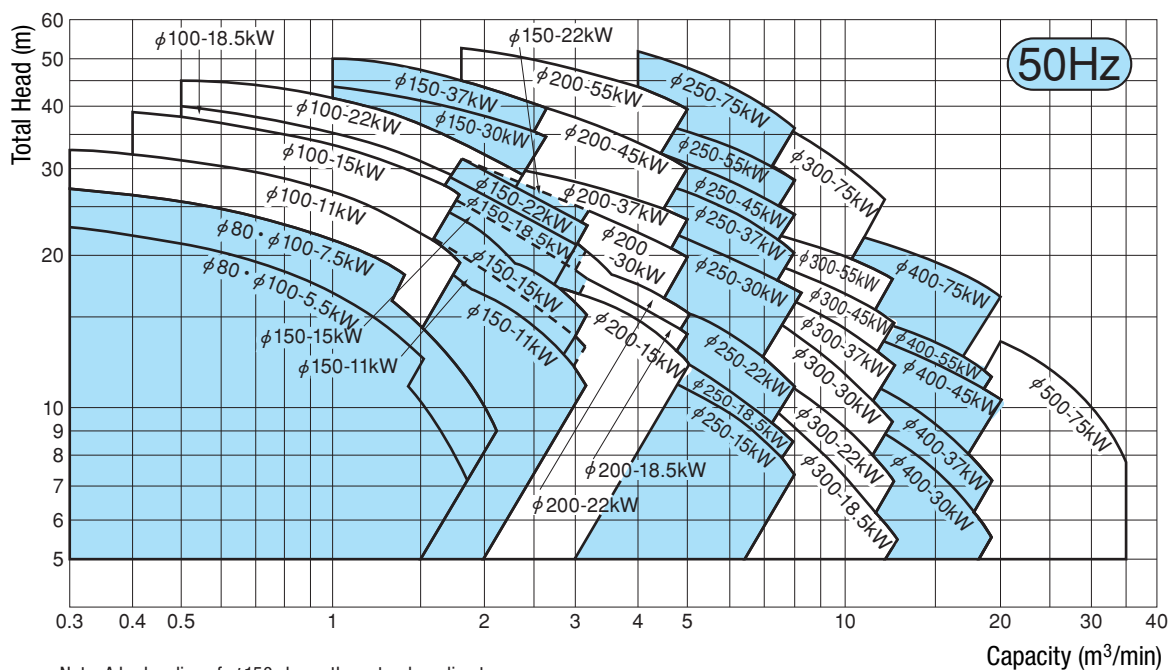
**CNF250-P**

■ Standard Specifications

Handling Liquid	Kind of Liquid	Sewage and Wastewater
	Temperature	0 - 32°C
Material	Cable	VCT (natural-cooling type 5.5 · 7.5kW) 2PNCT (11kW or more)
	Motor Shaft	SUS420J2
	Pump Casing	FC200
	Impeller	FC200 · *FCD500
Electric Motor	Name	Air-filled type submersible induction motor
	Insulation Class	Class E: All the natural-cooling and forced-cooling types of 15kW or less Class F: Forced-cooling type of 18.5kW or over
	Enclosure	IP68
	Phase	3-ph
	Voltage	200 - 480V (37 kW or less) 400 - 480V (45 kW or more)
	Start frequency	See start frequency on page 548.

* Only the natural-cooling type 18.5 · 22kW

Performance Curves



CNF

Submersible Pump with Flywheel
(Natural-Cooling)

Bore : 80 · 100 mm (3" · 4")

Output: 5.5 - 22 kW (7.5 - 30 HP)



CNF80-P

Standard Specifications

Bore mm (inch)	Pump Model	Output kW (HP)	Phase	Capacity - Total Head m³/min-m				No. of poles P	Standard GD² (kg · m²)						Weight (Bare Pump) kg
				50Hz		60Hz			Pump		Flywheel		Total		
									50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	
80 (3")	CNF80-P	5.5 (7.5)	3-ph	(55-1)	1.2–12.9	(55-2)	1.2–13.6	4	0.31	0.30	2.1	2.1	2.41	2.40	185
				(55-3)	0.9–18.0	(55-4)	0.9–18.0		0.41	0.40			2.51	2.50	195
		7.5 (10)		(75-1)	1.4–15.2	(75-2)	1.4–16.7				2.1	2.1	2.51	2.50	195
				(75-3)	1.0–21.8	(75-4)	1.0–22.5		2.51	2.50			195		
100 (4")	CNF100-P	5.5 (7.5)	3-ph	(55-1)	1.2–12.9	(55-2)	1.2–13.6	4	0.31	0.30	2.1	2.1	2.41	2.40	185
				(55-3)	0.9–18.0	(55-4)	0.9–18.0		0.41	0.40			2.51	2.50	195
		7.5 (10)		(75-1)	1.4–15.2	(75-2)	1.4–16.7				7.4	7.4	2.51	2.50	195
				(75-3)	1.0–21.8	(75-4)	1.0–22.5		2.51	2.50			195		
		11 (15)		(110-3)	1.57–22.0	(110-4)	1.58–22.0		1.54	1.10	7.4	7.4	8.94	8.50	430
		15 (20)		(150-3)	1.9–26.0	(150-4)	1.86–26.0		1.90	1.35	9.30	8.75	440		
		18.5 (25)		(220-30V)	1.8–28.0	(220-40V)	1.96–29.0		2.54	1.69	12.5	12.5	15.04	14.19	500
		22 (30)		(220-30)	1.8–35.0	(220-40)	1.96–35.0								

[] Impeller No.

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

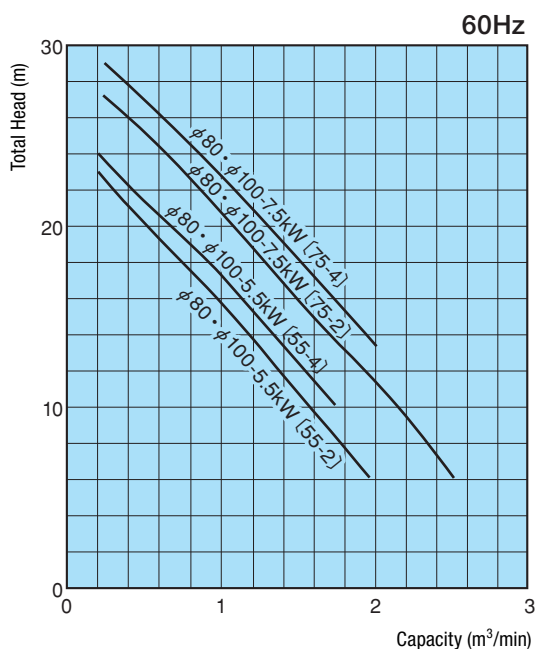
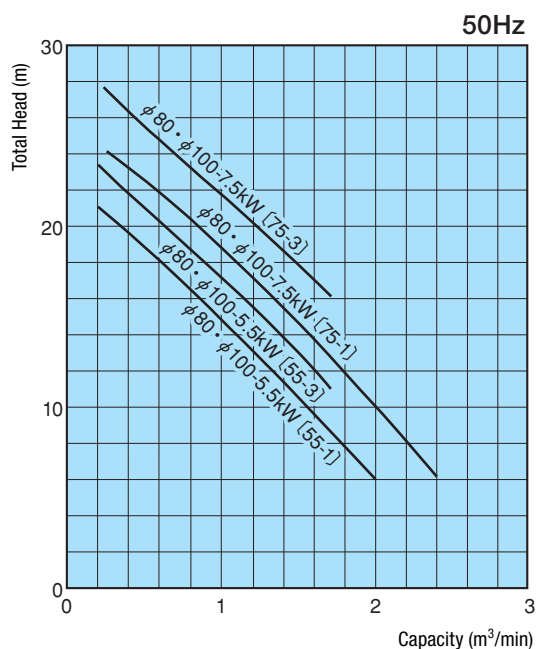
* Special orders are possible for any GD² other than the standard. Please contact us.

Standard Accessories

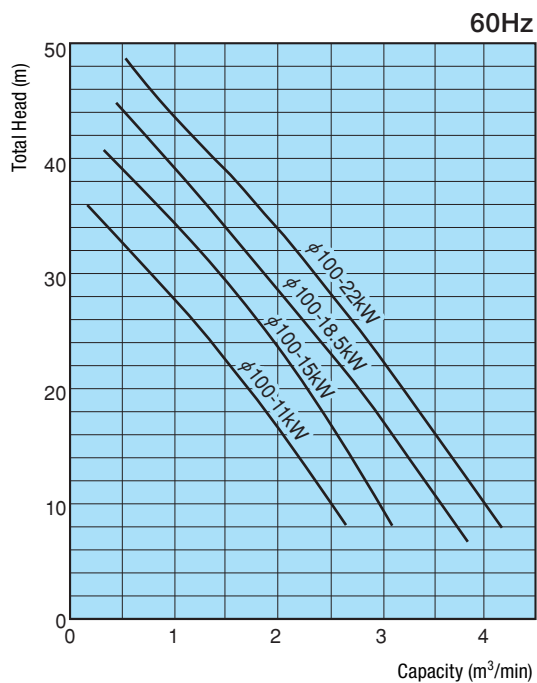
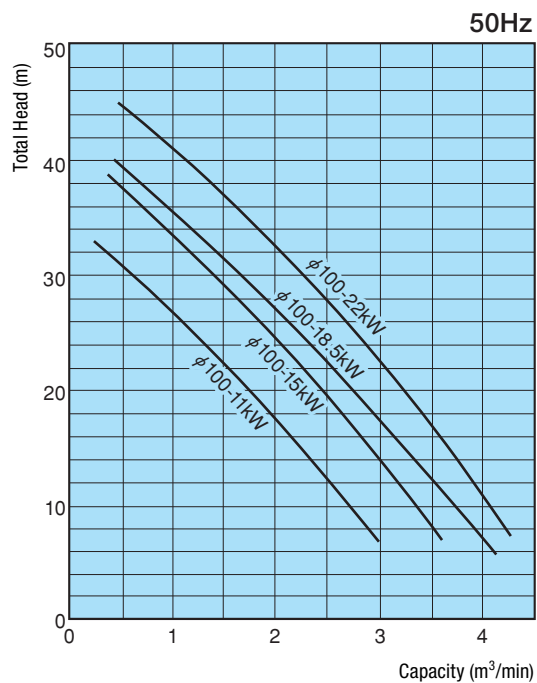
- Connection (with bolts and nuts) 1 set
Weight 18kg (φ 80)
27kg (φ 100 · 7.5kW or less)
37kg (φ 100 · 11kW or more)
- Guide holder (with bolts and nuts) 1 set
- Cable (8m) 2 pcs. (7.5kW or less)
.....4 pcs. (11kW or more)
- Lifting chain (6m) 1 pc.
- Leakage detector relay set 1 set

Performance Curves

CNF80-P · CNF100-P



CNF100-P



CNF

Submersible Pump with Flywheel
(Natural-Cooling)

Bore : 80 • 100 mm (3" • 4")

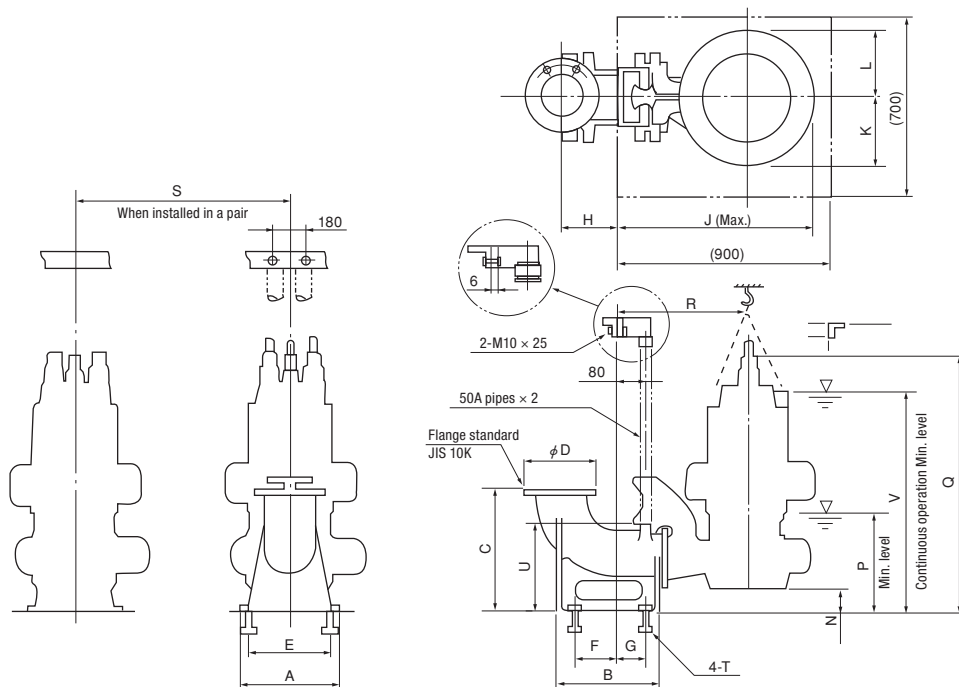
Output: 5.5 - 22 kW (7.5 - 30 HP)

Part Specifications

Applicable Model		Cable Specification					Starting Method	Mechanical Seal		
		Type	Section Area (mm²)	Cores	Outer Dia. (mm)	No. of Cables		Lower	Upper	
CNF80-P	5.5kW (7.5 HP)	VCT	3.5	4	ϕ 14.0	1	Direct	SiC/SiC	SiC/SiC	
		2PNCT	2.0	1	ϕ 6.5	1				
	7.5kW (10 HP)	VCT	5.5	4	ϕ 16.5	1				
		2PNCT	2.0	1	ϕ 6.5	1				
CNF100-P	5.5kW (7.5 HP)	VCT	3.5	4	ϕ 14.0	1				Star-delta
		2PNCT	2.0	1	ϕ 6.5	1				
	7.5kW (10 HP)	VCT	5.5	4	ϕ 16.5	1				
		2PNCT	2.0	1	ϕ 6.5	1				
		11kW (15 HP)	2PNCT	5.5	4	ϕ 17.0	1			
				5.5	3	ϕ 15.5	1			
	1.25			2	ϕ 9.8	1				
	2.0			1	ϕ 6.5	1				
	15kW (20 HP)	2PNCT	8.0	4	ϕ 18.5	1				
			8.0	3	ϕ 17.0	1				
			1.25	2	ϕ 9.8	1				
			2.0	1	ϕ 6.5	1				
	18.5•22kW (25 •30 HP)	2PNCT	14.0	4	ϕ 22.0	1				
			14.0	3	ϕ 20.0	1				
			1.25	2	ϕ 9.8	1				
			2.0	1	ϕ 6.5	1				

Unit: mm

Auto-connection type



Model	Output kW (HP)	A	B	C	D	E	F	G	H	J	K	L	N	P	Q	R	S	T	U	V
CNF80-P	5.5 (7.5)	150	302	330	211	120	107	103	160	616	215	173	70	275	918	423	550	M16 ×160	262	855
	7.5 (10)														953					890
CNF100-P	5.5 (7.5)	238	308	330	238	200	114	115	160	616	215	173	70	275	918	423	550	M16 ×160	259	855
	7.5 (10)														953					890
	11·15 (15·20)	290	310	380	235	97	113	848	260	260	79	335	1,105	588	700	M20 ×200	318	1,030		
	18.5·22 (25·30)								282				1,193		900			1,120		

CNF

**Submersible Pump with Flywheel
(Natural-Cooling)**

Bore : **150 mm (6")**

Output: **11 - 22 kW (15 - 30 HP)**

Standard Specifications

Bore mm (inch)	Pump Model	Output kW (HP)	Phase	Capacity - Total Head m³/min-m				No. of poles P	Standard GD² (kg · m²)						Weight (Bare Pump) kg
				50Hz		60Hz			Pump		Flywheel		Total		
									50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	
150 (6")	CNF1502-P	11 (15)	3-ph	[110-1]	2.54—16.0	[110-2]	2.60—16.0	4	1.19	1.16	7.4	7.4	8.59	8.56	450
		[150-1]		2.87—19.0	[150-2]	3.00—19.0	1.32		1.27	8.72			8.67	460	
		[220-1DY]		3.60—18.0	[220-2DY]	3.86—18.0	2.54		2.24	12.5	12.5	15.04	14.74	560	
		[220-1D]		3.60—22.0	[220-2D]	3.86—22.0									

[] Impeller No.

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

* Special orders are possible for any GD² other than the standard. Please contact us.

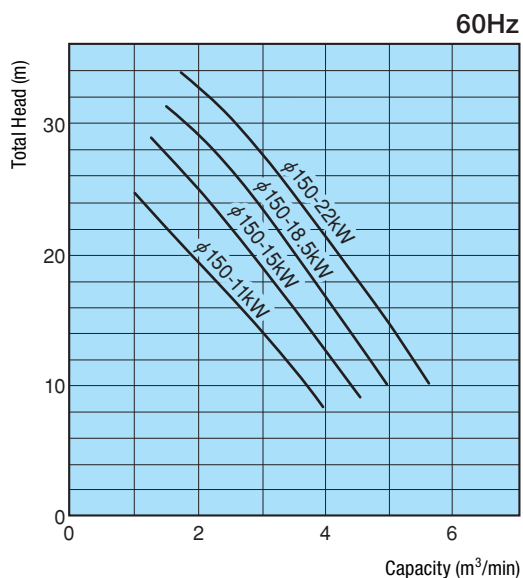
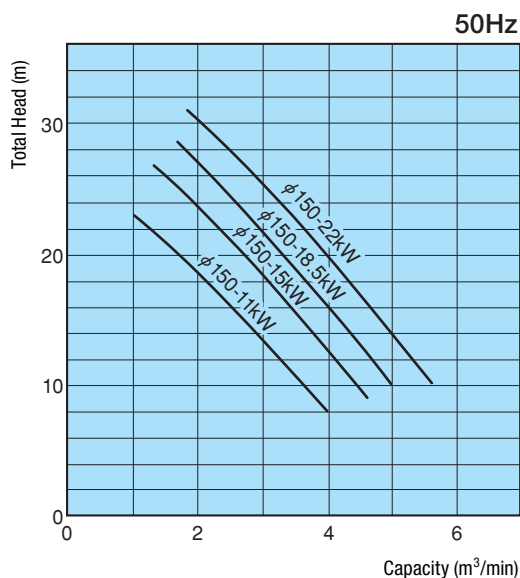
Standard Accessories

- Connection (with bolts and nuts) 1 set
Weight 42kg
- Guide holder (with bolts and nuts)..... 1 set
- Cable (8m) 3 pcs.
- Lifting chain (6m) 1 pc.
- Leakage detector relay set..... 1 set

Part Specifications

Applicable Model		Cable Specification					Starting Method	Mechanical Seal	
		Type	Section Area (mm ²)	Cores	Outer Dia. (mm)	No. of Cables		Lower	Upper
CNF1502-P	11kW (15 HP)	2PNCT	5.5	4	φ 17.0	1	Star-delta	SiC/SiC	SiC/SiC
			5.5	3	φ 15.5	1			
			1.25	2	φ 9.8	1			
			2.0	1	φ 6.5	1			
	15kW (20 HP)	2PNCT	8.0	4	φ 18.5	1			
			8.0	3	φ 17.0	1			
			1.25	2	φ 9.8	1			
			2.0	1	φ 6.5	1			
	18.5-22kW (25 -30 HP)	2PNCT	14.0	4	φ 22.0	1			
			14.0	3	φ 20.0	1			
			1.25	2	φ 9.8	1			
			2.0	1	φ 6.5	1			

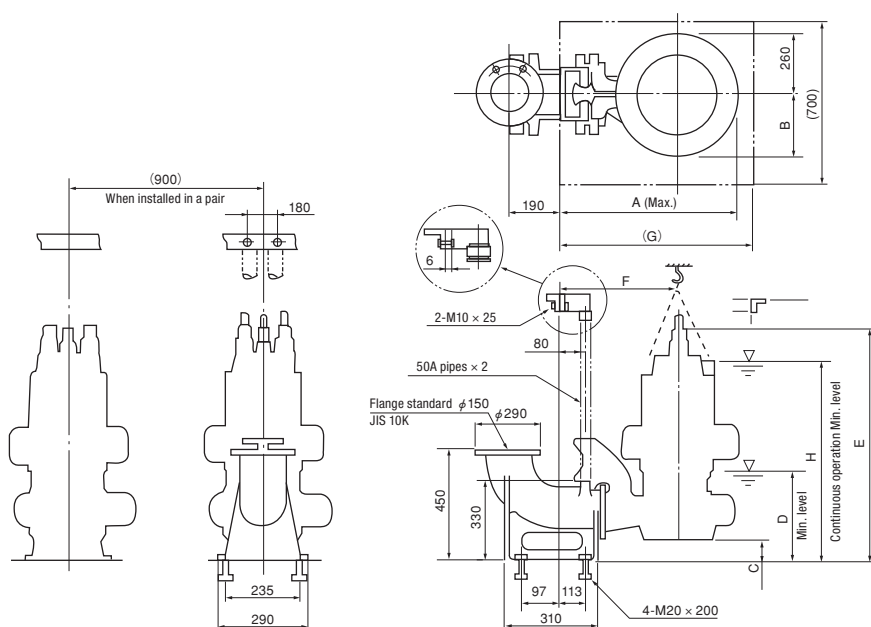
Performance Curves



Dimensions

Unit: mm

Auto-connection type



Output kW (HP)	A	B	C	D	E	F	G	H
11·15 (15·20)	848	260	67	345	1,115	588	900	1,040
18.5·22 (25·30)	868	262	53	345	1,205	608	1,000	1,130

CNF

**Submersible Pump with Flywheel
(Forced-Cooling)**

Bore : **150 mm (6")**

Output: **11 - 37 kW (15 - 50 HP)**

CNF150-P

Standard Specifications

Bore mm (inch)	Pump Model	Output kW (HP)	Phase	Capacity - Total Head m³/min-m		No. of poles P	Standard GD² (kg · m²)						Weight (Bare Pump) kg	
				50Hz	60Hz		Pump		Flywheel		Total			
							50Hz	60Hz	50Hz	60Hz	50Hz	60Hz		
150 (6")	CNF150-P	11 (15)	3-ph	(1501L)	3.0–12.4	(1502L)	3.0–12.2	1.0	0.7	12.5	12.5	13.5	13.2	650
				(1501H)	1.5–21.0	(1502H)	1.5–22.0							
		15 (20)		(1503L)	3.0–17.0	(1504L)	3.0–17.4	1.4	0.9	12.5	12.5	13.9	13.4	650
				(1503H)	1.5–27.0	(1504H)	1.5–27.6							
		18.5 (25)		(1505LY)	3.0–19.5	(1506LY)	3.0–20.0	2.0	1.4	25.1	25.1	27.1	26.5	910
				(1505HY)	1.5–30.5	(1506HY)	1.5–31.0							
		22 (30)		(1505L)	3.0–22.5	(1506L)	3.0–23.5	2.0	1.4	25.1	25.1	27.1	26.5	910
				(1505H)	1.5–33.8	(1506H)	1.5–35.0							
		30 (40)		(1507HY)	1.5–41.0	(1508HY)	1.5–41.5	5.4	3.9	53.2	53.2	58.6	57.1	1,400
				(1507H)	1.5–47.0	(1508H)	1.5–53.0							

[] Impeller No.

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

* Special orders are possible for any GD² other than the standard. Please contact us.

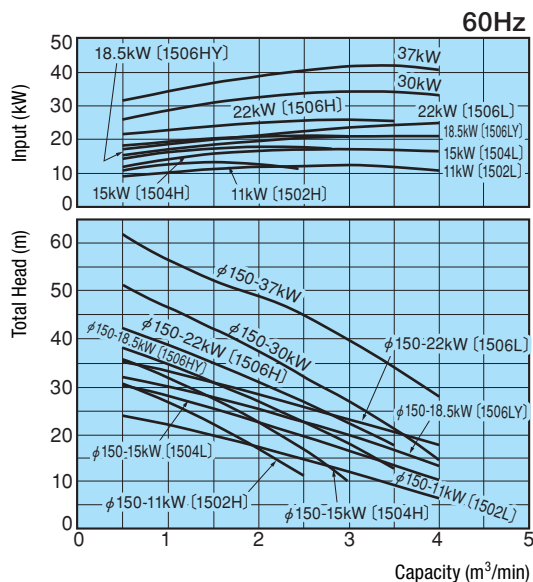
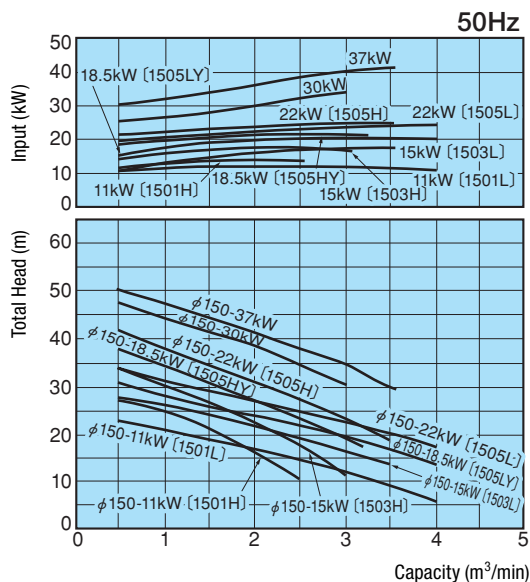
Standard Accessories

- Connection (with bolts and nuts)..... 1 set
Weight 95kg
- Guide holder (with bolts and nuts) 1 set
- Cable (8m) 3 pcs.
- Lifting chain (6m) 1 pc.

Part Specifications

Applicable Model		Cable Specification					Starting Method	Mechanical Seal	
		Type	Section Area (mm²)	Cores	Outer Dia. (mm)	No. of Cables		Lower	Upper
CNF150-P	11kW (15 HP)	2PNCT	5.5	4	ϕ 17.0	2	Star-delta	SiC/SiC	Carbon/SiC
			2.0	4	ϕ 12.5	1			
	15kW (20 HP)	2PNCT	8.0	4	ϕ 18.5	2			
			2.0	4	ϕ 12.5	1			
	18.5-22kW (25-30 HP)	2PNCT	14.0	4	ϕ 22.0	2		Cemented carbide/ Cemented carbide	
			2.0	4	ϕ 12.5	1			
	30-37kW (40-50 HP)	2PNCT	22.0	4	ϕ 29.0	1			
			22.0	3	ϕ 27.0	1			
		2.0	4	ϕ 12.5	1				

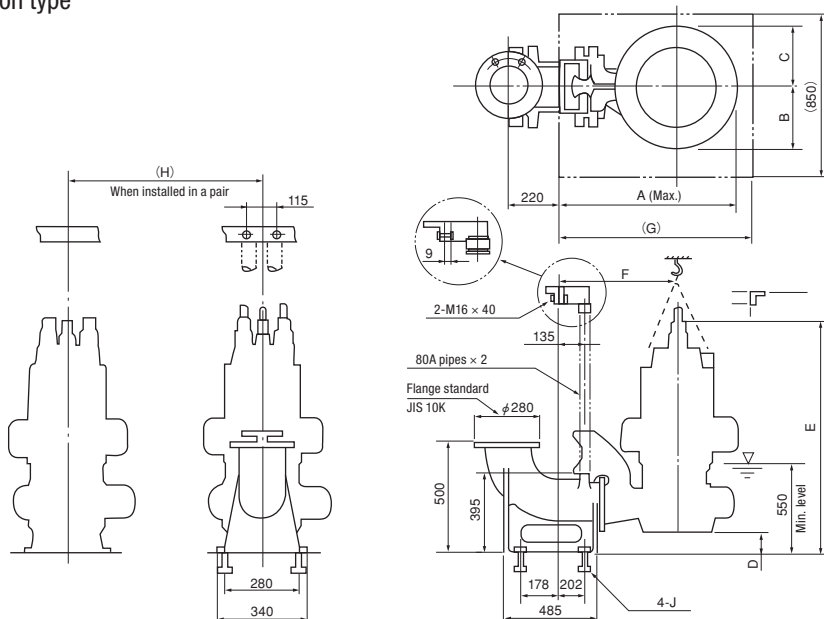
Performance Curves



Dimensions

Unit: mm

Auto-connection type



Output kW (HP)	A	B	C	D	E	F	G	H	J
11·15 (15·20)	973	306	306	171	1,315	667	1,100	900	M24×140
18.5·22 (25·30)	988			172	1,582	682			
30·37 (40·50)	1,105	350	350	150	1,790	755	1,200	1,000	M24×250
				160	1,784				

CNF**Submersible Pump with Flywheel
(Forced-Cooling)**Bore : **200 mm (8")**Output: **15 - 55 kW (20 - 75 HP)****Standard Specifications**

Bore mm (inch)	Pump Model	Output kW (HP)	Phase	Capacity - Total Head m³/min-m		No. of poles P	Standard GD² (kg · m²)						Weight (Bare Pump) kg		
				50Hz	60Hz		Pump		Flywheel		Total				
							50Hz	60Hz	50Hz	60Hz	50Hz	60Hz			
200 (8")	CNF200-P	15 (20)	3-ph	(215)	4.0–15.0	(216)	4.5–13.9	4	0.9	0.8	12.5	12.5	13.4	13.3	750
		(620Y)		4.0–14.0	(630Y)	4.5–13.7	6	3.7	2.6	16.2			15.1	850	
		(610AY)		4.0–15.4											
		18.5 (25)		(470Y)	2.5–22.8	(480AY)	2.5–22.0	4	1.8	1.4	25.1	25.1	26.9	26.5	980
				(640)	4.0– 8.0	(640)	4.5–12.2	6	3.7	2.6	12.5	12.5	16.2	15.1	850
				(630)	4.0–11.0										
				(620)	4.0–14.7										
				(610A)	4.0–17.5										
		(470)		2.5–23.5	(480A)	2.5–25.1	4								
		30 (40)		(251AY)	4.0–22.5	(252AY)		4.5–19.5	3.5	2.3	53.2	53.2	56.7	55.5	1,400
		37 (50)		(251A)	4.0–26.0	(252A)		4.5–28.0							
		45 (60)		(205AY)	4.0–35.5	(206AY)		4.5–33.0	5.3	3.1			58.5	56.3	1,600
		55 (75)		(205A)	4.0–43.5	(206A)		4.5–40.5							

[] Impeller No.

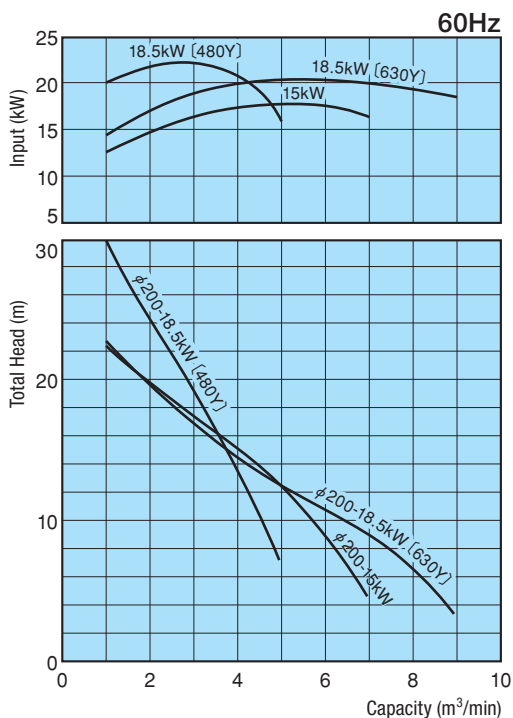
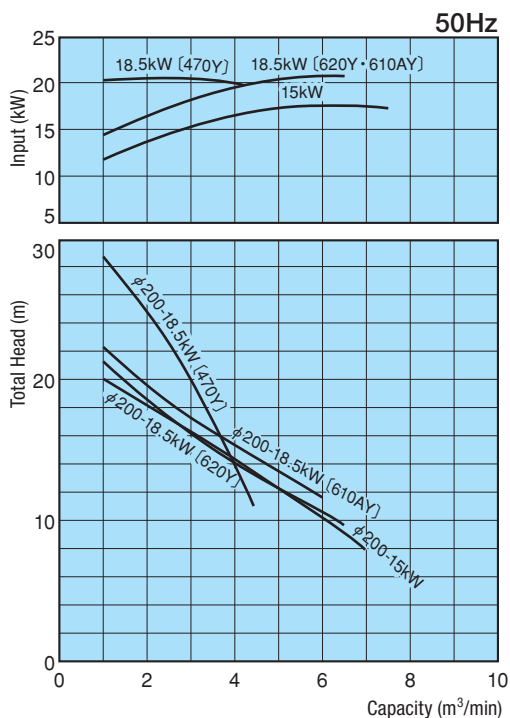
For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

* Special orders are possible for any GD² other than the standard. Please contact us.**Standard Accessories**

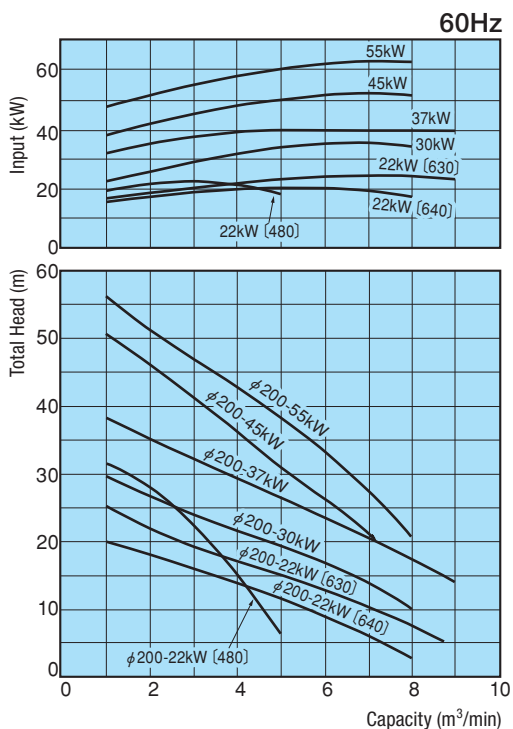
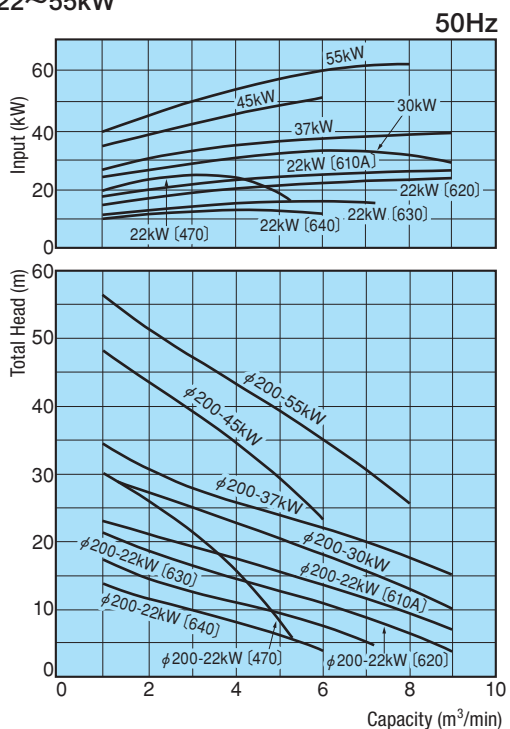
- Connection (bolts and nuts) 1 set
Weight 120kg
- Guide holder (bolts and nuts) 1 set
- Cable (8m) 3 pcs.
- Lifting chain (6m) 1 pc.

Performance Curves

15 · 18.5kW



22~55kW



CNF

Submersible Pump with Flywheel
(Forced-Cooling)

Bore : 200 mm (8")

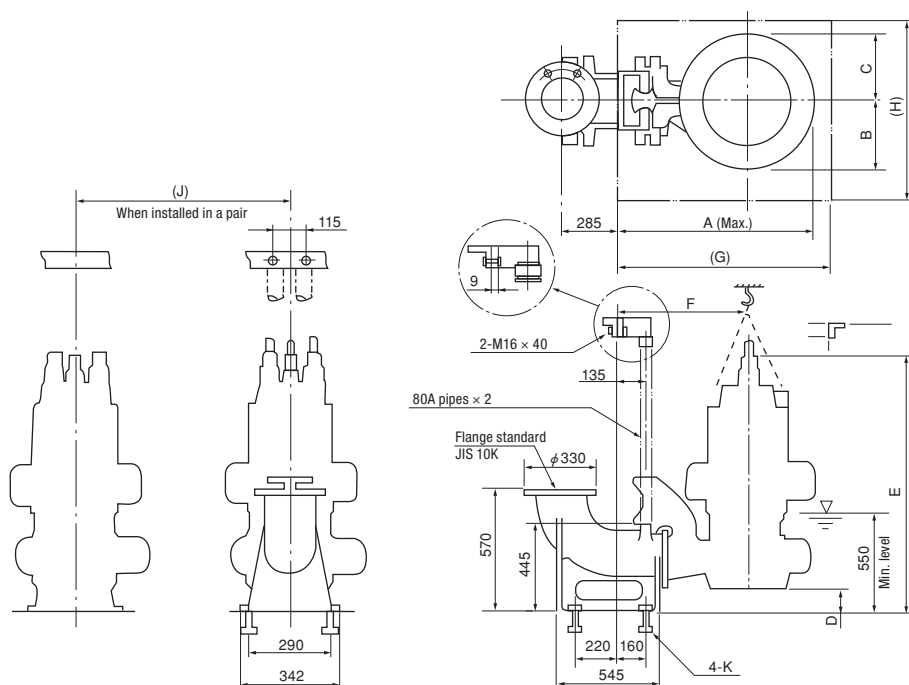
Output: 15 - 55 kW (20 - 75 HP)

Part Specifications

Applicable Model		Cable Specification					Starting Method	Mechanical Seal	
		Type	Section Area (mm ²)	Cores	Outer Dia. (mm)	No. of Cables		Lower	Upper
CNF200-P	15kW (20 HP)	2PNCT	8.0 2.0	4 4	φ 18.5 φ 12.5	2 1	Star-delta	Cemented carbide/ Cemented carbide	Carbon/ Cemented carbide
	18.5•22kW (25•30 HP)	2PNCT	14.0 2.0	4 4	φ 22.0 φ 12.5	2 1			Carbon/SiC
	30•37kW (40•50 HP)	2PNCT	22.0 2.0	4 4	φ 29.0 φ 27.0 φ 12.5	1 1 1			
	45•55kW (60•75 HP)	2PNCT	14.0 2.0	4 4	φ 22.0 φ 12.5	2 1			

Unit: mm

Auto-connection type



Output kW (HP)	A	B	C	D	E	F	G	H	J	K
15 (20)	933	306	306	147	1,350	627	1,000	700	900	M24×140
18.5-22 (25 -30)	1,044	370		162	1,603	707	1,200	850		
30-37 (40 -50)	1,107	350	350	177	1,807	757			1,000	1,000
45-55 (60-75)	1,257			146	1,735	907	1,300	1,000		

CNF**Submersible Pump with Flywheel
(Forced-Cooling)**Bore : **250 mm (10")**Output: **15 - 75 kW (20 - 100 HP)****Standard Specifications**

Bore mm (inch)	Pump Model	Output kW (HP)	Phase	Capacity - Total Head m³/min-m				No. of poles P	Standard GD² (kg · m²)						Weight (Bare Pump) kg
				50Hz		60Hz			Pump		Flywheel		Total		
									50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	
250 (10")	CNF250-P	15 (20)	3-ph	[259]	6.3— 9.5	[250]	7.1— 8.8	4	0.7	0.7	12.5	12.5	13.2	13.2	755
		18.5 (25)		[253Y]	6.3—10.9	[254Y]	7.1—10.5	6	4.3	2.2			16.8	14.7	1,050
		22 (30)		[253]	6.3—13.6	[254]	7.1—12.0								
		30 (40)		[251AY]	6.3—17.5	[252AY]	7.1—17.5	4	3.5	2.3	53.2	53.2	56.7	55.5	1,400
		37 (50)		[251A]	6.3—24.0	[252A]	7.1—22.5								
		45 (60)		[255Y]	6.3—27.5	[256Y]	7.1—26.5		3.7	3.1			56.9	56.3	1,600
		55 (75)		[255]	6.3—32.5	[256]	7.1—30.8								
		75 (100)		[257B]	6.3—43.0	[258A]	7.1—39.6		9.6	8.1	79.3	79.3	88.9	87.4	1,850

[] Impeller No.

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

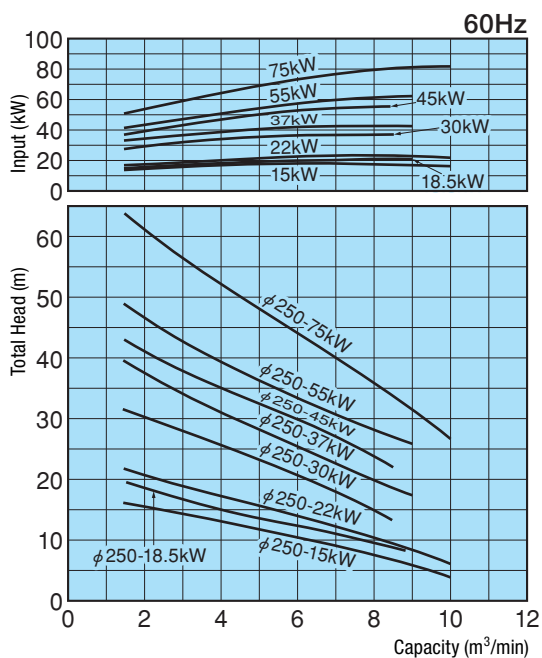
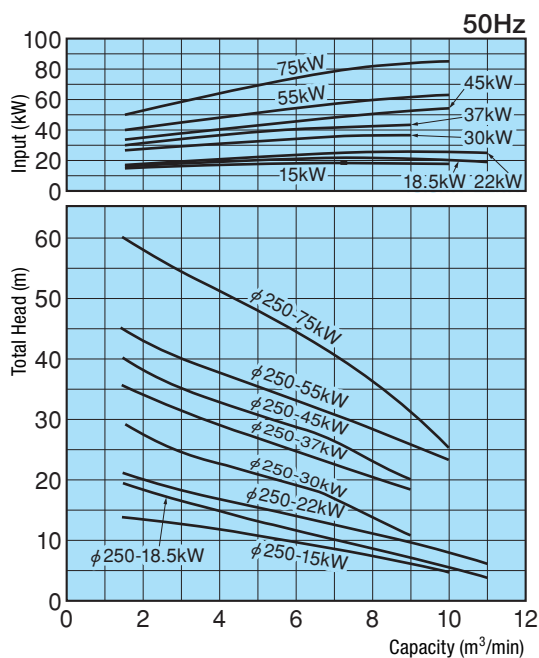
* Special orders are possible for any GD² other than the standard. Please contact us.**Standard Accessories**

- Connection (bolts and nuts) 1 set
Weight 195kg
- Guide holder (bolts and nuts) 1 set
- Cable (8m) 3 pcs.
- Lifting chain (6m) 1 pc.

Part Specifications

Applicable Model		Cable Specification					Starting Method	Mechanical Seal	
		Type	Section Area (mm ²)	Cores	Outer Dia. (mm)	No. of Cables		Lower	Upper
CNF250-P	15kW (20 HP)	2PNCT	8.0	4	φ 18.5	2	Star-delta	Cemented carbide/ Cemented carbide	Carbon/ Cemented carbide
			2.0	4	φ 12.5	1			Carbon/SiC
	18.5·22kW (25·30 HP)	2PNCT	14.0	4	φ 22.0	2			
			2.0	4	φ 12.5	1			
	30·37kW (40·50 HP)	2PNCT	22.0	4	φ 29.0	1			
			22.0	3	φ 27.0	1			
			2.0	4	φ 12.5	1			
	45·55kW (60·75 HP)	2PNCT	14.0	4	φ 22.0	2			
			2.0	4	φ 12.5	1			
	75kW (100 HP)	2PNCT	22.0	4	φ 29.0	1			
			22.0	3	φ 27.0	1			
			2.0	4	φ 12.5	1			

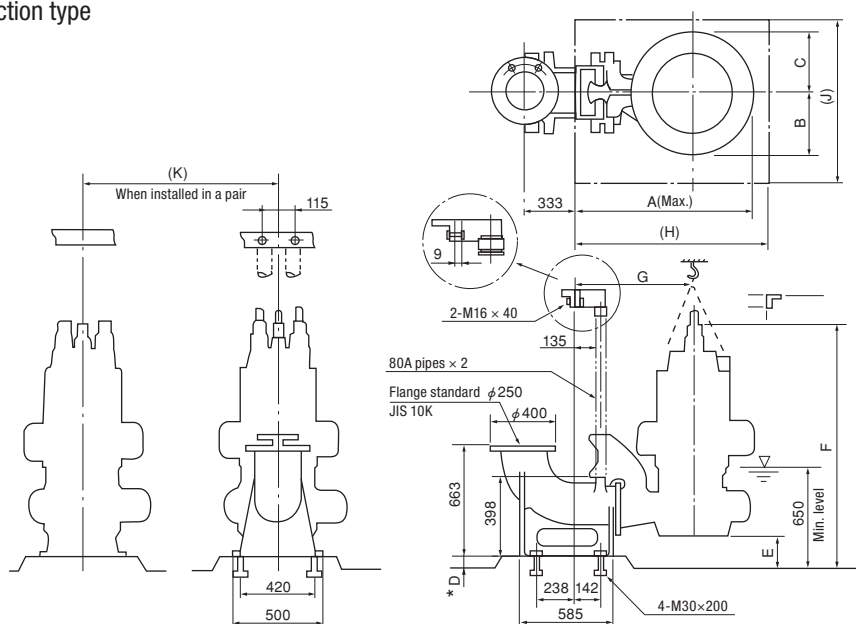
Performance Curves



Dimensions

Unit: mm

Auto-connection type



* D: Minimum dimension

D. Minimum dimensions										
Output kW (HP)	A	B	C	D	E	F	G	H	J	K
15 (20)	931	305	305	75	150	1,378	626	1,100	850	900
18.5-22 (25-30)	1,069	343	306		165	1,621				
30-37 (40-50)	1,107	350	350		195	1,825	757	1,200		
45-55 (60-75)						1,762				
75 (100)	1,162	392	335	100	192	1,987	827	1,300	1,000	

CNF**Submersible Pump with Flywheel
(Forced-Cooling)**Bore : **300 mm (12")**Output: **18.5 - 75 kW (25 - 100 HP)****Standard Specifications**

Bore mm (inch)	Pump Model	Output kW (HP)	Phase	Capacity - Total Head m³/min-m				No. of poles P	Standard GD² (kg · m²)						Weight (Bare Pump) kg	
				50Hz		60Hz			Pump		Flywheel		Total			
									50Hz	60Hz	50Hz	60Hz	50Hz	60Hz		
300 (12")	CNF300-P	18.5 (25)	3-ph	(321AY)	10.0— 7.3	(322AY)	11.2— 5.6	6	3.3	2.1	12.5	12.5	15.8	14.6	1,100	
		22 (30)		(321A)	10.0— 9.2	(322A)	11.2— 7.8									
		30 (40)		(301Y)	10.0—12.1	(302AY)	11.2—10.5		5.3	5.9	53.2	53.2	58.5	59.1		1,500
		37 (50)		(301)	10.0—14.5	(302A)	11.2—13.5									
		45 (60)		(303)	10.0—16.8	(304)	11.2—16.0	5.7	4.4			58.9	57.6	1,550		
		55 (75)		(305)	10.0—20.0	(306)	11.2—20.2	10.5	8.7	79.3	79.3	89.8	88.0		1,700	
		75 (100)		(307)	10.0—31.0	(308)	11.2—28.0	4	7.4			6.2				86.7

[] Impeller No.

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

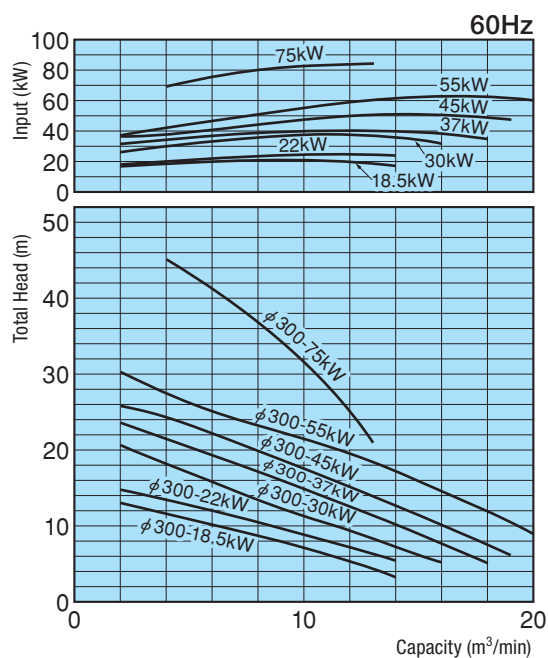
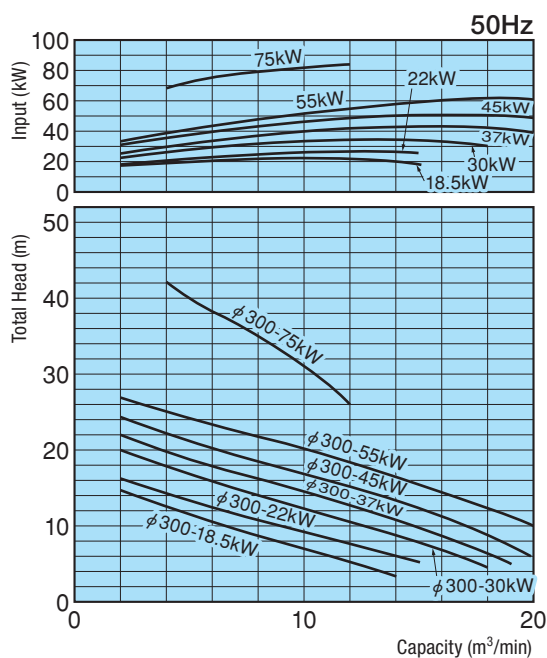
* Special orders are possible for any GD² other than the standard. Please contact us.**Standard Accessories**

- Connection (bolts and nuts) 1 set
Weight 215kg
- Guide holder (bolts and nuts) 1 set
- Cable (8m) 3 pcs.
- Lifting chain (6m) 1 pc.

Part Specifications

Applicable Model		Cable Specification					Starting Method	Mechanical Seal	
		Type	Section Area (mm ²)	Cores	Outer Dia. (mm)	No. of Cables		Lower	Upper
CNF300-P	18.5·22kW (25·30 HP)	2PNCT	14.0	4	φ 22.0	2	Star-delta	Cemented carbide/ Cemented carbide	Carbon/SiC
			2.0	4	φ 12.5	1			
	30·37kW (40·50 HP)	2PNCT	22.0	4	φ 29.0	1			
			22.0	3	φ 27.0	1			
	45·55kW (60·75 HP)	2PNCT	2.0	4	φ 12.5	1			
			14.0	4	φ 22.0	2			
	75kW (100 HP)	2PNCT	2.0	4	φ 12.5	1			
			22.0	4	φ 29.0	1			

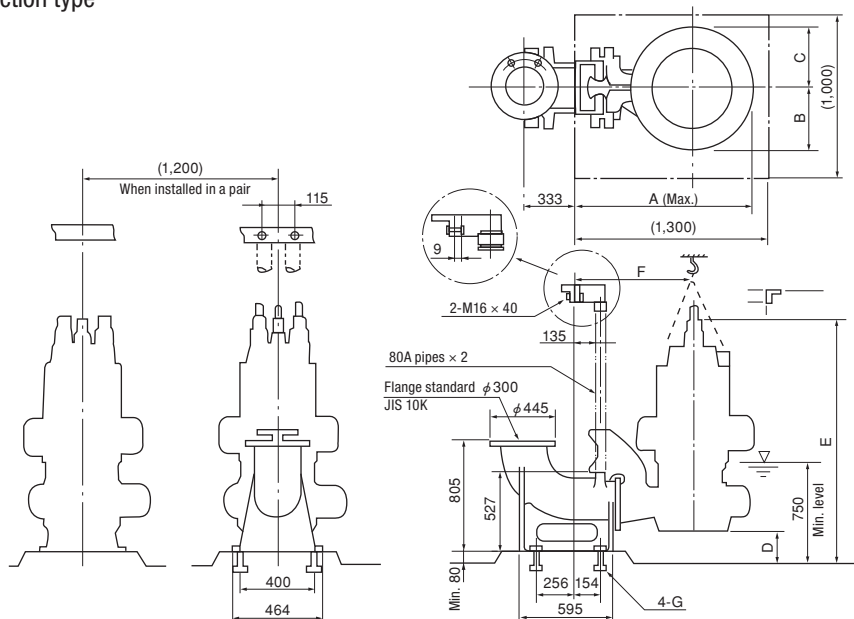
Performance Curves



Dimensions

Unit: mm

Auto-connection type



Output kW (HP)	A	B	C	D	E	F	G
18.5-22 (25-30)	1,126		345		1,756		
30-37 (40-50)	1,126	410	350	235	1,960	757	M30×200
45 (60)					1,897		
55 (75)	1,126		390		2,028		
75 (100)	1,192	409	335	229	2,080	817	M30×300

CNF**Submersible Pump with Flywheel
(Forced-Cooling)**Bore : **400 - 500 mm (16" - 20")**Output: **30 - 75 kW (40 - 100 HP)****Standard Specifications**

Bore mm (inch)	Pump Model	Output kW (HP)	Phase	Capacity - Total Head m³/min-m				No. of poles P		Standard GD² (kg · m²)						Weight (Bare Pump) kg			
				50Hz		60Hz				Pump		Flywheel		Total					
				50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz						
400 (16")	CNF400-P	30 (40)	3-ph	[351Y]	16.0– 7.5	[352Y]	18.0– 5.5	6	6	4.9	4.3	53.2	53.2	58.1	57.5	1,600			
		37 (50)		[351]	16.0– 9.0	[352]	18.0– 8.3			58.4	59.0			1,650					
		45 (60)		[353]	16.0–11.9	[354]	18.0–10.0					5.2	5.8		79.3	79.3	89.3	87.9	1,850
		55 (75)		[405]	16.0–13.3	[406]	18.0–12.0					10.0	8.6				79.3	79.3	
		75 (100)		[401]	16.0–19.0	[402]	18.0–18.2			15.6	15.6	147.0	147.0	162.6	162.6				
500 (20")	CNF500-P	75 (100)		[501]	30.0–10.0	[504]	30.7– 9.7	6	8	15.1	18.0	147.0	147.0	162.1	165.0	3,800			

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

[] Impeller No.

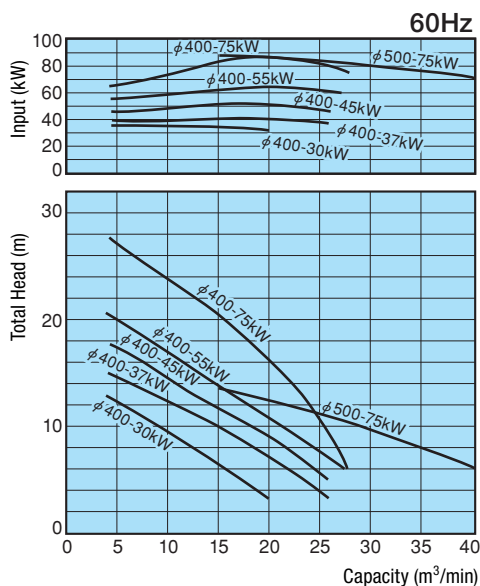
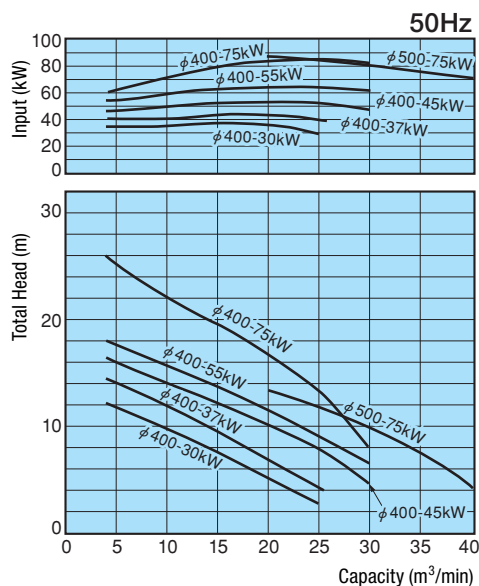
* Special orders are possible for any GD² other than the standard. Please contact us.**Standard Accessories**

- Connection (bolts and nuts) 1 set
Weight 310kg (φ 400 30 - 55kW)
400kg (φ 400 75kW)
830kg (φ 500)
- Guide holder (bolts and nuts) 1 set
- Cable (8m) 3 pcs.
- Lifting chain (6m) 1 pc.

Part Specifications

Applicable Model		Cable Specification					Starting Method	Mechanical Seal	
		Type	Section Area (mm ²)	Cores	Outer Dia. (mm)	No. of Cables		Lower	Upper
CNF400-P	30·37kW (40·50 HP)	2PNCT	22.0	4	φ 29.0	1	Star-delta	Cemented carbide/ Cemented carbide	Carbon/SiC
			22.0	3	φ 27.0	1			
			2.0	4	φ 12.5	1			
	45·55kW (60·75 HP)	2PNCT	14.0	4	φ 22.0	2			
			2.0	4	φ 12.5	1			
			22.0	4	φ 29.0	1			
CNF500-P	75kW (100 HP)	2PNCT	22.0	3	φ 27.0	1			
			2.0	4	φ 12.5	1			
			38.0	4	φ 35.0	1			
			38.0	3	φ 32.0	1			
			2.0	4	φ 12.5	1			

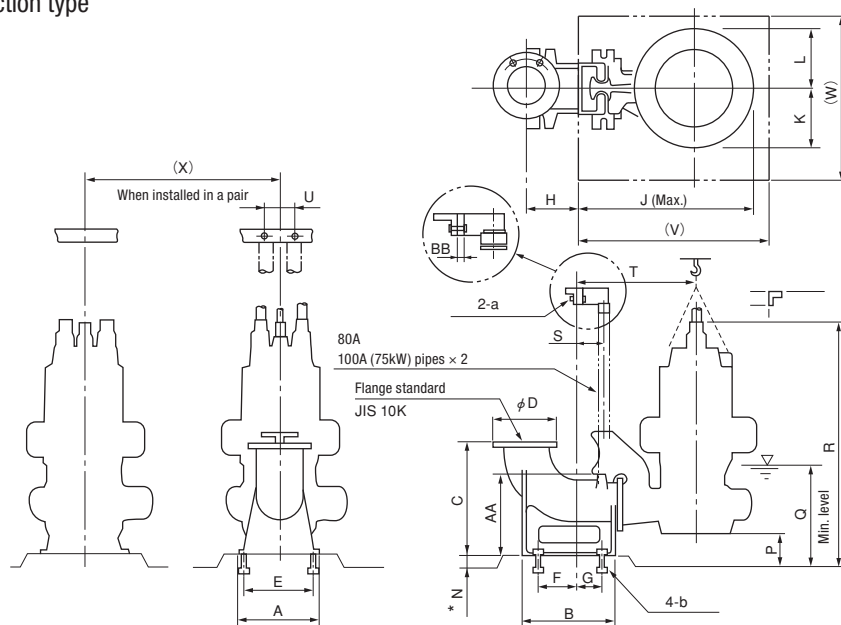
Performance Curves



Dimensions

Unit: mm

Auto-connection type

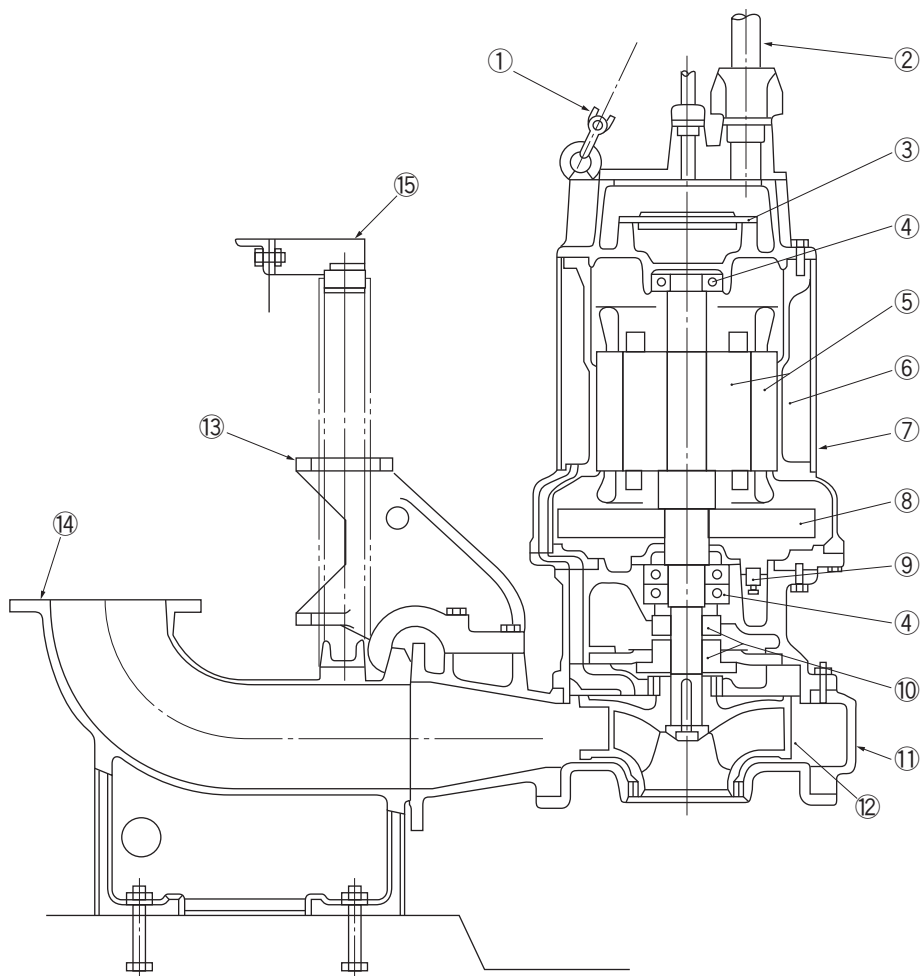


Model	Output kW (HP)	A	B	C	D	E	F	G	H	J	K	L	N	P	Q	R	S	T	U	V	W	X	a	b	AA	BB
CNF400-P	30-37 (40-50)	582	666	750	560	500	335	145	413	1,219	484	350	245	320	1,000	2,108	135	807	115	1,600	1,150	1,300	M16×40	M30×200	510	9
	45 (60)											2,045														
	55 (75)											2,176														
	75 (100)											2,554														
CNF500-P	75 (100)	800	1,280	1,220	675	700	685	315	550	1,697	692	482	120	400	1,300	2,605	135	1,100	500	1,900	1,400	1,500	M24×50	M30×300	992	19

Sectional View

CNF250-P

Auto-connection type



No.	Name	Material	No.	Name	Material
1	Chain	SUS304	8	Flywheel	SS400
2	Cable	2PNCT	9	Leakage Detector	—
3	Terminal Board	—	10	Mechanical Seal	—
4	Ball Bearing	—	11	Pump Casing	FC200
5	Motor	Shaft: SUS420J2	12	Impeller	FC200
6	Stator Casing	FC200	13	Sliding Bracket	FC200
7	Outer Casing	FCD or SS	14	Connection	FC200
			15	Guide Holder	SUS304

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

Non-clog Type (with Chopper)**Bore: 50 - 100 mm (2" - 4")****Output: 0.75 - 7.5 kW (1 - 10 HP)****CJ**

CJ Series is a submersible pump for sewage and wastewater, including a built-in chopper mechanism which cuts debris which may cause clogging and tangling.

Bore mm (inch)	Output kW (HP)	Pump Model	Page
50•65 (2"•2 1/2")	0.75 (1)	CJ501 (D • DW)	284
65•80 (2 1/2"•3")	1.5 (2)	CJ651 (D • DW)	286
65•80•100 (2 1/2"•3"•4")	2.2•3.7 (3•5)	CJ80	288
80•100 (3"•4")	5.5•7.5 (7.5 •10)	CJ100	290

D: Auto-operation

DW: Auto-alternate operation

Note: Since D and DW types with output not exceeding 0.75 kW are made-to-order, please check the delivery time before placing an order.

CJ

Non-clog Type
(with Chopper)

Bore : 50 - 100 mm (2" - 4")

Output: 0.75 - 7.5 kW (1 - 10 HP)

Features

Extended service life

Double Mechanical Seal and Oil Seal are employed for shaft seal mechanism.

The cutting tip is especially heat-treated to enhance wear resistance.

Prevent Motor burnout

The Thermal Protector (a built-in automatic-reset type motor protector) prevents motor burnout due to overload, impeller locking and open phase. The self-contained core sealer of the cable outlet shuts the water out from penetrating into the motor chamber through the core wires even if the cable end is immersed in water or the sheath is damaged.

Standard Specifications

Handling Liquid	Kind of Liquid	Sewage water
	Temperature	0 - 32°C
Materials	Cable	VCT
	Motor Shaft	Stainless steel (SUS420J2)
	Pump Casing	Gray steel casting (FC200)
	Impeller	Gray steel casting (FC200)
Electric Motor	Name	Air-filled type Submersible Induction Motor
	Insulation Class	Class E
	Enclosure	IP68
	Phase	3-ph
	Voltage	200 - 480 V

Note: Since D and DW types with output not exceeding 0.75 kW are made-to-order, please check the delivery time before placing an order.

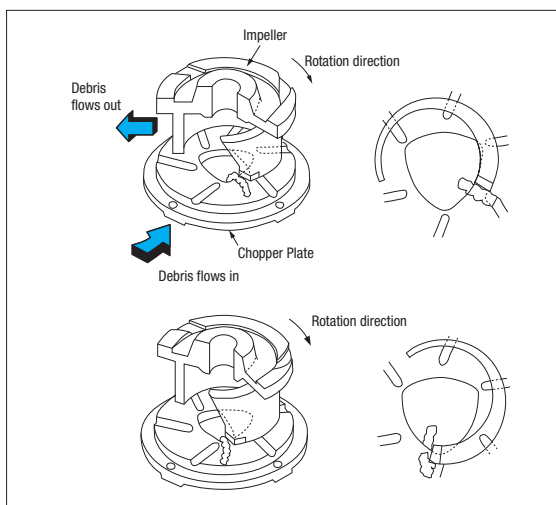
Pump-Related Product

Liquid Level Control Switch

Level Regulator	⇒ See page 370
Mini Switch	⇒ See page 372
Oval Float	⇒ See page 373

Applications

- Transferring sewage water containing debris
- Effluent from building facilities as sanitary equipment



For 2.2 kW or more, a chopper disk can be replaced.

Special Specifications

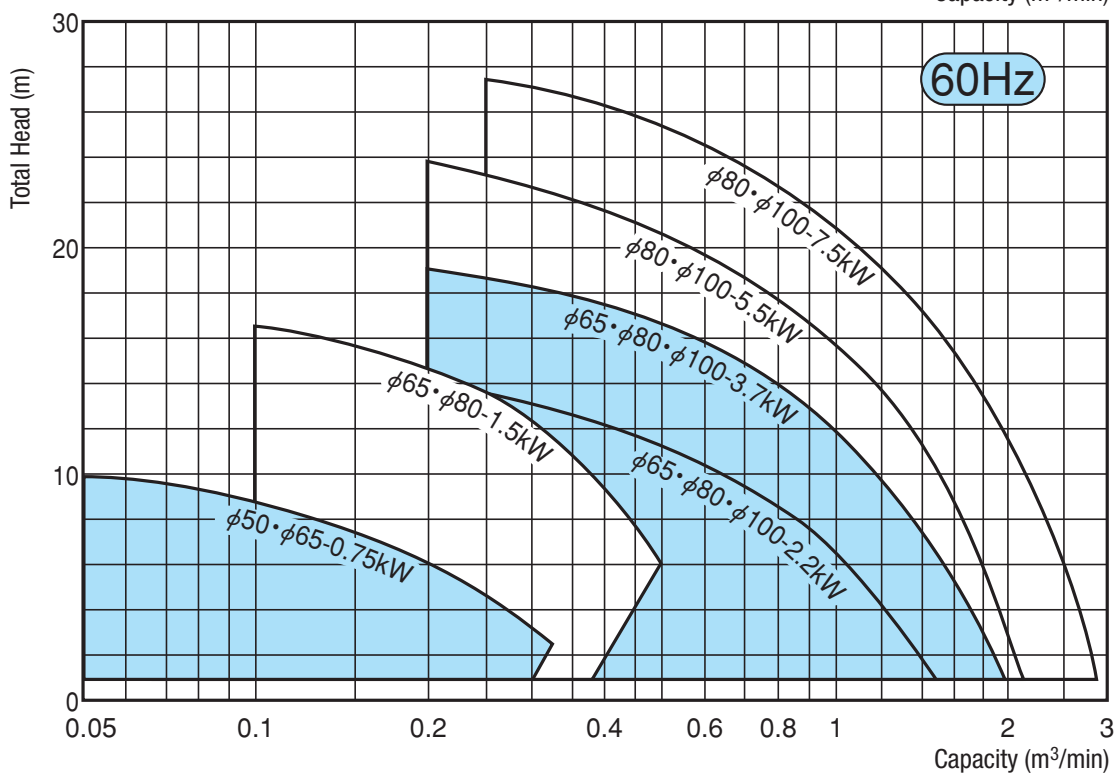
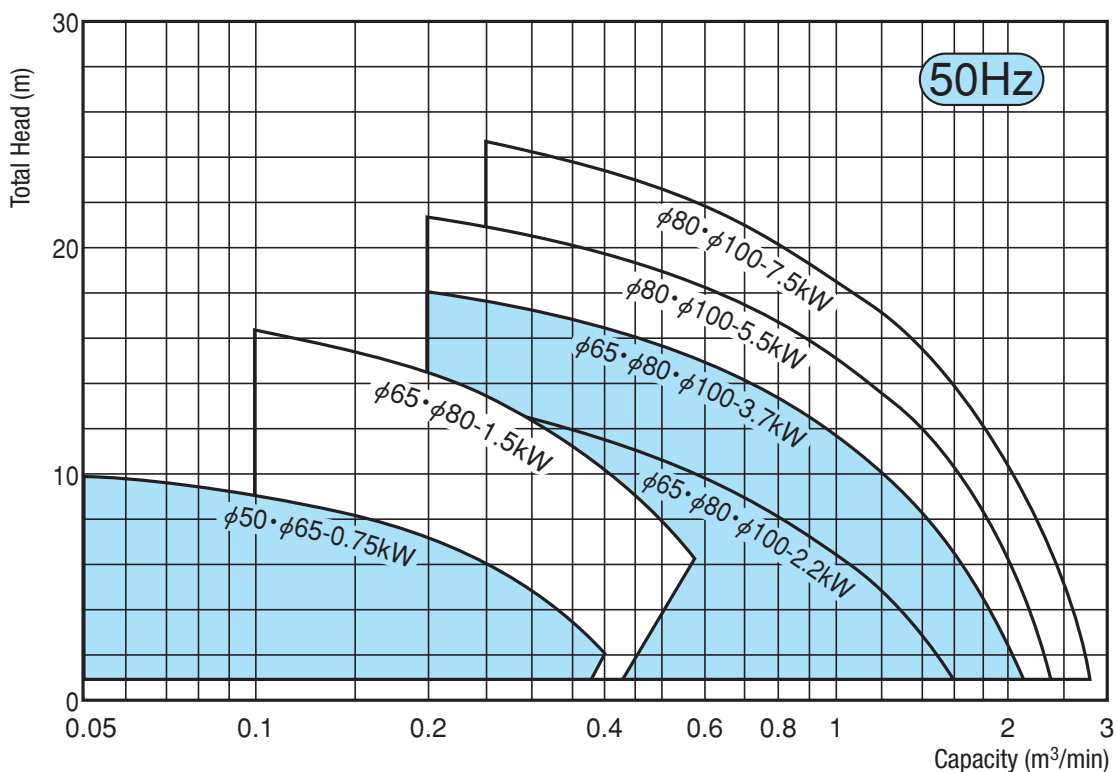
Motor Insulation	Class F
Cable Extension	Cable lengths: 10 - 30m (every 5m)
Material Changes	Impeller: SCS13 Base cover: SCS13 Lifting chain: SUS304
Others	Possibility of Mounting Motor Protector, please refer to the specifications (detail data) - App.1. For specifications other than the above, please contact us.

* Cable length should be limited due to voltage drop, see the specifications (detail data) - App.1.

SUS: Stainless steel

SCS: Stainless steel casting

Performance Curves



CJ

Non-clog Type
(with Chopper)

Bore: 50・65 mm (2"・2 1/2")

Output: 0.75 kW (1 HP)

Standard Specifications

Bore mm (inch)	Pump Model				Connection Part No.		Output kW (HP)	Phase	Capacity – Total Head m³/min-m		No. of poles P	Weight (Bare Pump) (kg)	
	Non-Auto- Operation	Auto- Operation	Auto-Alternate Operation		Auto- Connection	Free Standing			50Hz	60Hz		CJ	CJ-D CJ-W
			Pair Name	Pump No. 1 and 2									
50 (2")	CJ501	CJ501D	CJ501DW	CJ501W + CJ501D	P50	F50	0.75 (1)	3-ph	{1} 0.2 –7.2 {3} 0.15–5.1	{2} 0.2 –6.1 {4} 0.15–4.9	2	19.5	20.5
65 (2 1/2")					P65B	F65B							

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Note: Since the items in the cells are made-to-order, please check the delivery time before placing an order.

[] A value within parentheses indicates an impeller number.

Standard Accessories

- Cable (6m) 1 pc.
- Float Switch (for type D/W) ... 1 set

- Auto-connection type
- Connection (with bolts and packing)
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

- Free standing type (F65B)
- Elbow Flange
- Companion Flange (with bolts, nuts and packing)

Upon placing an order or inquiries, please quote the pump model and connection part No.

Connection Part No.	Set Weight	Connection Weight
P50	11kg	4.5kg
P65B	20kg	14.5kg

Connection Part No.	Set Weight
F50	Included in the body
F65B	5.5kg

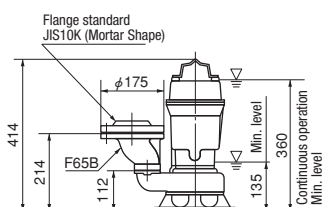
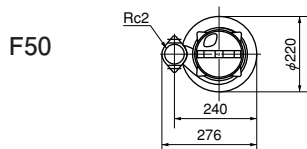
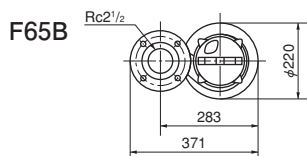
Part Specifications

Applicable Model	Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
	Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz
CJ501	VCT	1.25	4	φ 11.5	Direct	SiC/SiC	Ceramic/Carbon	30	29
CJ501D・CJ501W						SiC/SiC	Ceramic/Carbon		

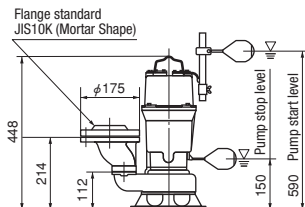
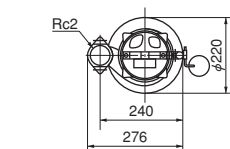
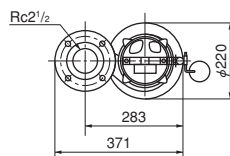
Dimensions

Free standing type

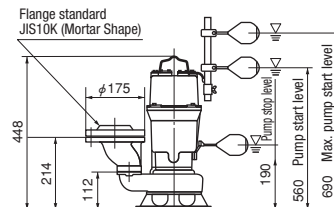
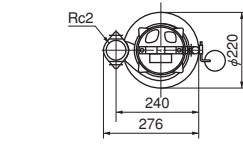
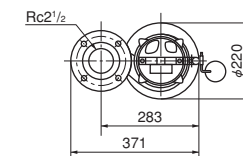
CJ501



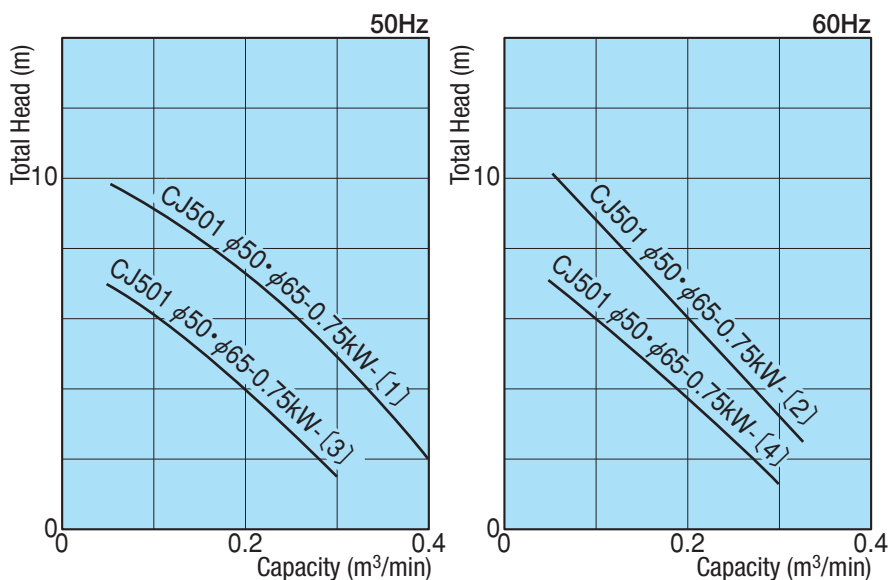
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CJ501W

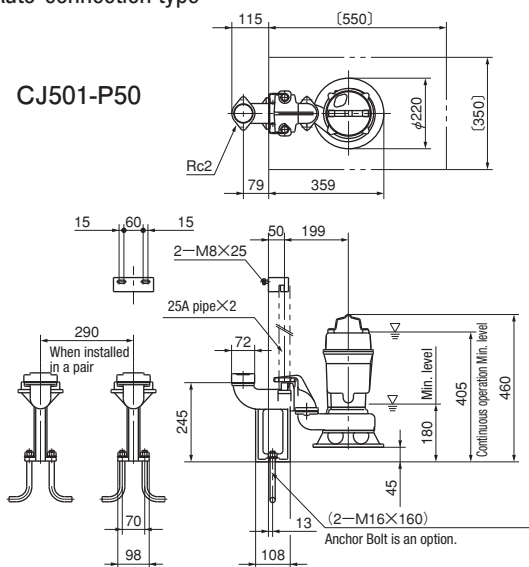


Performance Curves

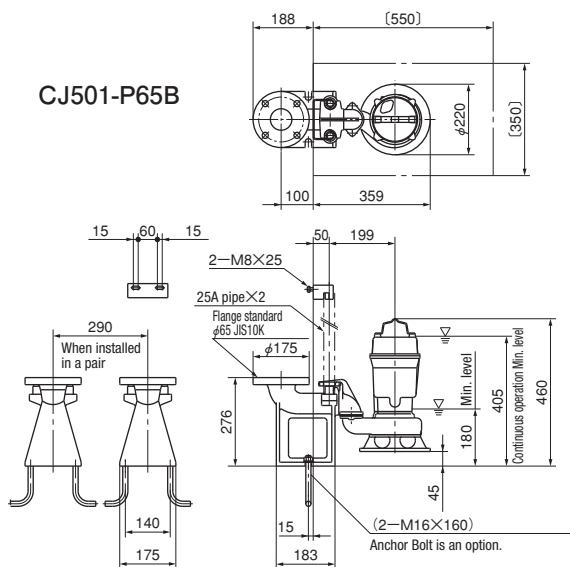


Auto-connection type

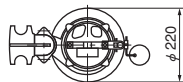
CJ501-P50



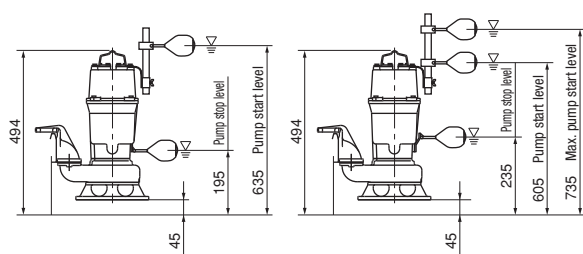
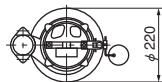
CJ501-P65B



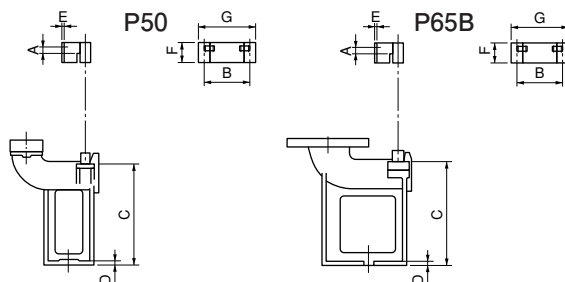
CJ501D



CJ501W



● Connection Dimensions



Connection Part No.	A	B	C	D	E	F	G
P50	11	100	223	12	3	44	125
P65B	11	100	224	12	3	44	125

CJ
**Non-clog Type
(with Chopper)**

Bore: **65・80 mm (2 1/2"・3")**

Output: **1.5 kW (2 HP)**

CJ651-F65

CJ651-P65

CJ651DW-F65


Standard Specifications

Bore mm (inch)	Pump Model				Connection Part No.		Output kW (HP)	Phase	Capacity – Total Head m³/min-m		No. of poles P	Weight (Bare Pump) (kg)	
	Non-Auto- Operation	Auto- Operation	Auto-Alternate Operation		Auto- Connection	Free Standing			50Hz	60Hz		CJ	CJ-D CJ-W
			Pair Name	Pump No. 1 and 2									
65 (2 1/2") 80 (3")	CJ651	CJ651D	CJ651DW	CJ651W + CJ651D	P65 P80	F65 F80	1.5 (2)	3-ph	0.4–10.2	0.4–9.3	2	29	31

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (8m) 1 pc.
- Float Switch (for type D/W) ... 1 set

Upon placing an order or inquiries, please quote the pump model and connection part No.

- Auto-connection type
 - Connection
 - Guide Holder (with bolts and nuts)
 - Sliding Bracket
 - Lifting Chain (6m)

Connection Part No.	Set Weight	Connection Weight
P65	24kg	15kg
P80	31.5kg	20.5kg

- Free standing type
 - Elbow Flange
 - Companion Flange (with bolts, nuts and packing)

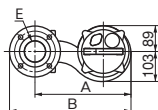
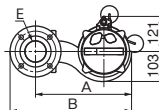
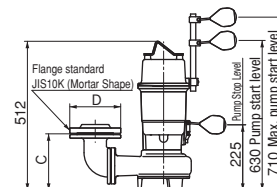
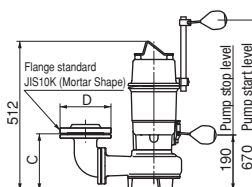
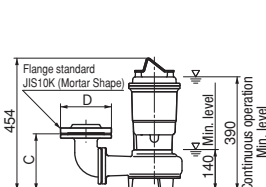
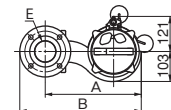
Connection Part No.	Set Weight
F65	7kg
F80	9.5kg

Part Specifications

Applicable Model	Cable Specifications				Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
	Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper	50Hz	60Hz
CJ651・CJ651D・CJ651W	VCT	1.25	4	φ 11.5	Direct	SiC/SiC	SiC/SiC	41	33

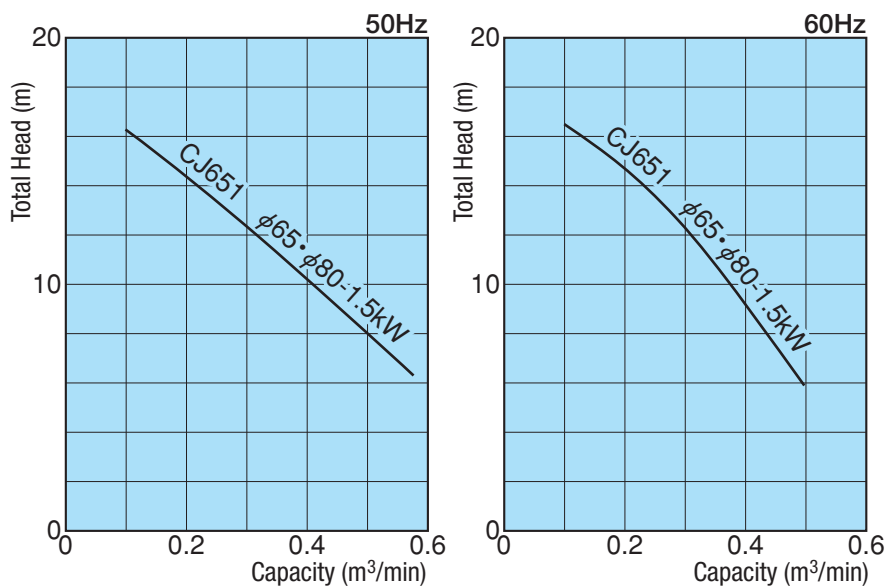
Dimensions

Free standing type

CJ651

CJ651D

CJ651W


Pump Model	Connection Part No.	A	B	C	D	E
CJ651・CJ651D・CJ651W	F65	330	418	194	φ175	Rc2½
CJ651・CJ651D・CJ651W	F80	340	433	224	φ185	Rc3

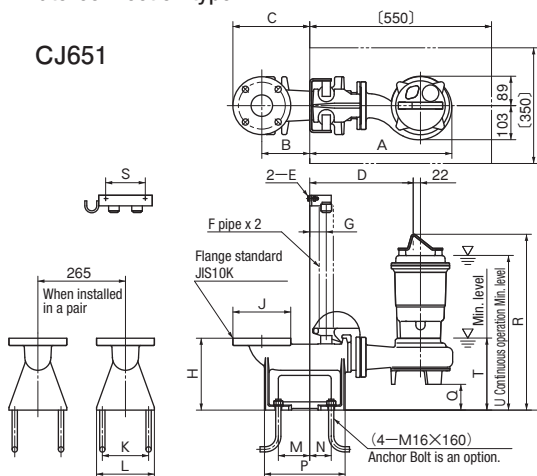
Performance Curves



単位：mm

Auto-connection type

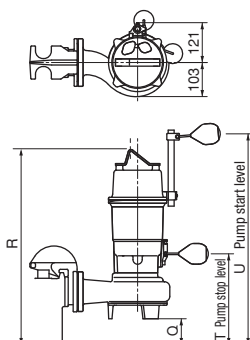
CJ651



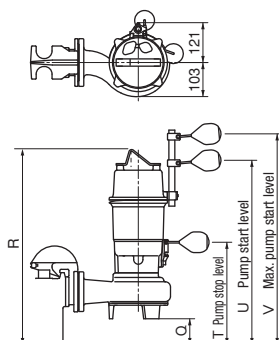
Pump Model	Connection Part No.	A	B	C	D	E	F	G	H	J
CJ651	P65	430	145	233	313	M8×25	32A	50	218	φ175
CJ651D										
CJ651W										
CJ651	P80	473	160	266	356	M10×25	50A	80	330	φ211
CJ651D										
CJ651W										

Pump Model	Connection Part No.	K	L	M	N	P	Q	R	S	T	U	V
CJ651	P65	140	175	95	65	244	76	530	120	215	465	—
CJ651D								588		265	745	—
CJ651W										300	705	785
CJ651	P80	120	150	107	103	302	116	570	180	255	505	—
CJ651D								628		305	785	—
CJ651W										340	745	825

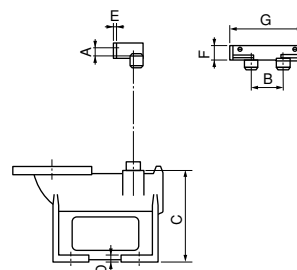
CJ651D



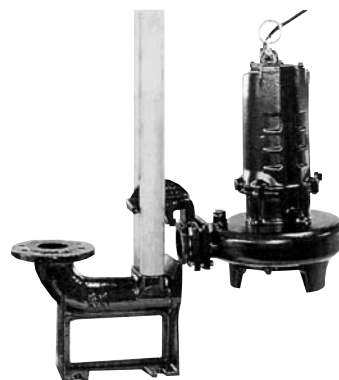
CJ651W



● Connection Dimensions



Connection Part No.	A	B	C	D	E	F	G
P65	17	70	201	12	6	32	160
P80	25	100	262	12	6	44	210

CJ**Non-clog Type
(with Chopper)**Bore: **65•80•100 mm (2 1/2"•3"•4")**Output: **2.2•3.7 kW (3•5 HP)****CJ80-F80****CJ80-P80B****Standard Specifications**

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity – Total Head m³/min-m		No. of poles P	Weight (Bare Pump) kg
		Auto-Connection	Free Standing			50 Hz	60 Hz		
65 (2 1/2")	CJ80	P65	F65	2.2 (3)	3-ph	0.8– 8.2	0.8– 8.5	4	58
				3.7 (5)		1.0–11.7	1.0–11.8		70
80 (3")		P80B	F80	2.2 (3)		0.8– 8.2	0.8– 8.5		58
				3.7 (5)		1.0–11.7	1.0–11.8		70
100 (4")		P100B	F100	2.2 (3)		0.8– 8.2	0.8– 8.5		58
				3.7 (5)		1.0–11.7	1.0–11.8		70

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (8m)1 pc.
- Air Relief Valve1 pc.

Upon placing an order or inquiries, please quote the pump model and connection part No.

● Auto-connection type

- Connection
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

Connection Part No.	Set Weight	Connection Weight
P65	24kg	15kg
P80B	31.5kg	18kg
P100B	40.5kg	27kg

● Free standing type

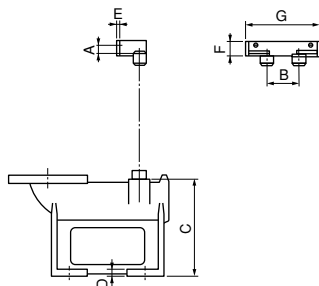
- Elbow Flange
- Companion Flange
(with bolts, nuts and packing)

Connection Part No.	Set Weight
F65	7kg
F80	9.5kg
F100	11kg

Part Specifications

Applicable Model		Cable Specification			Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
		Type	Section Area (mm²)	Cores	Outer Dia. (mm)	Lower	Upper	50Hz	60Hz
CJ80	2.2kW (3HP)	VCT	1.25	4	φ 11.5	Direct	SiC/SiC	54	51
	3.7kW (5HP)	VCT	2.0	4	φ 12			53	54

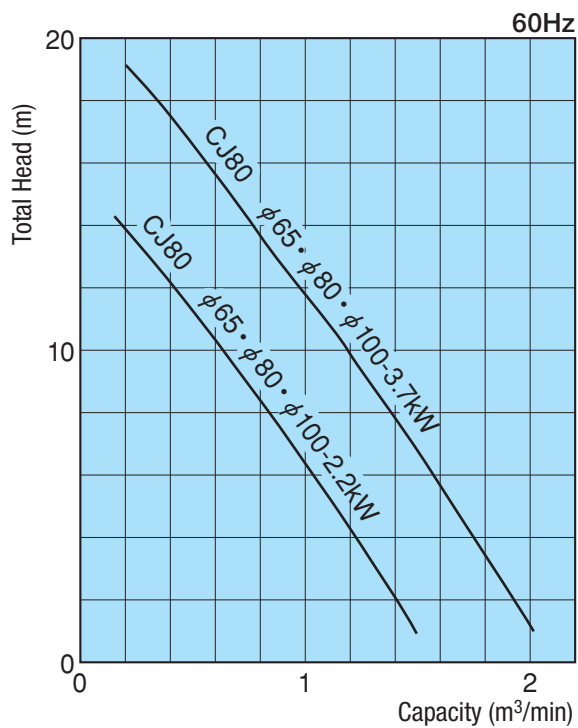
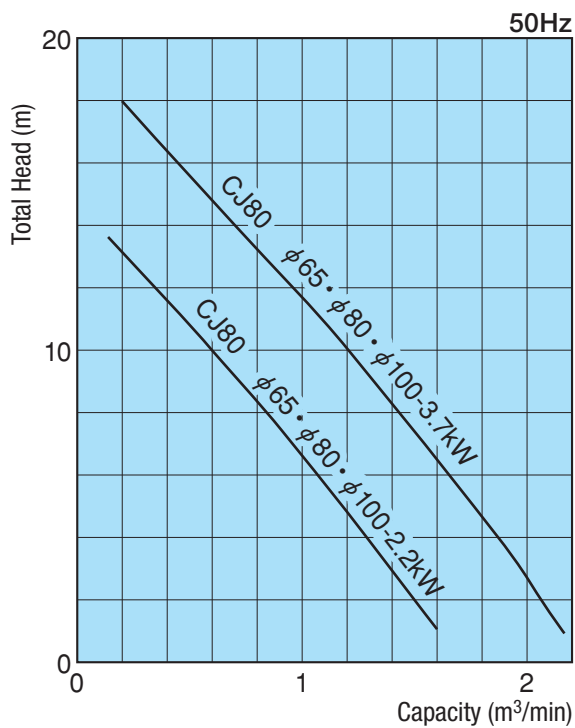
● Connection Dimensions



Unit: mm

Connection Part No.	A	B	C	D	E	F	G
P65	17	70	201	12	6	32	160
P80B	25	100	262	12	6	44	210
P100B	25	100	259	12	6	44	210

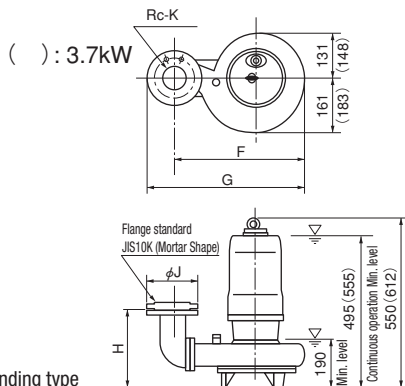
Performance Curves



Dimensions

Unit: mm

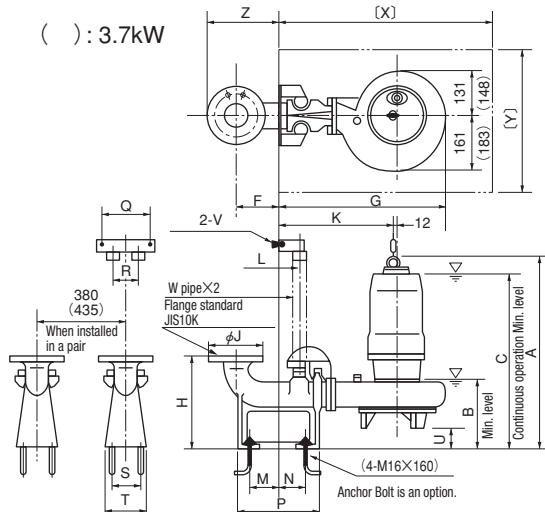
Free standing type



Free standing type

Connection Part No.	Output kW (HP)	F	G	H	J	K
F65	2.2 (3)	421	509	240	175	Rc2½
	3.7 (5)	440	528			
F80	2.2 (3)	431	524	270	185	Rc3
	3.7 (5)	450	543			
F100	2.2 (3)	436	541	280	210	Rc4
	3.7 (5)	455	560			

Auto-connection type



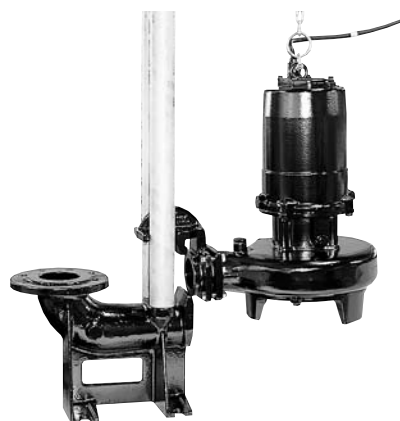
Auto-connection type

Connection Part No.	Output kW (HP)	A	B	C	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X	Y	Z
P65	2.2 (3)	580	220	525	145	521	218	175	363	50	95	65	244	120	70	140	175	30	M8×25	32A	600	500	233
	3.7 (5)	642		585		540																	
P80B	2.2 (3)	620	260	565	160	564	330	211	406	80	107	103	302	180	100	120	150	70	M10×25	50A	600	500	266
	3.7 (5)	682		625		583																	
P100B	2.2 (3)	620	260	565	160	564	330	238	406	80	114	115	308	180	100	200	238	70	M10×25	50A	600	500	279
	3.7 (5)	682		625		583																	

CJ
**Non-clog Type
(with Chopper)**

Bore: **80 • 100 mm (3" • 4")**

Output: **5.5 • 7.5 kW (7.5 • 10 HP)**

CJ100-F100

CJ100-P100B

Standard Specifications

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity – Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) kg
		Auto-Connection	Free Standing			50 Hz	60 Hz		
80 (3")	CJ100	P80B	F80	5.5 (7.5)	3-ph	1.2–13.6	1.2–13.6	4	95
				7.5 (10)		1.4–15.6	1.4–17.4		108
100 (4")		P100B	F100	5.5 (7.5)		1.2–13.6	1.2–13.6		95
				7.5 (10)		1.4–15.6	1.4–17.4		108

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (8m) 1 pc.
- Air Relief Valve 1 pc.

● Auto-connection type

- Connection
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

● Free standing type

- Elbow Flange
- Companion Flange (with bolts, nuts and packing)

Upon placing an order or inquiries, please quote the pump model and connection part No.

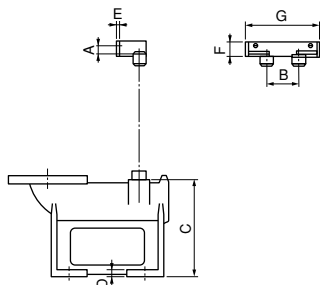
Connection Part No.	Set Weight	Connection Weight
P80B	31.5kg	18kg
P100B	40.5kg	27kg

Connection Part No.	Set Weight
F80	9.5kg
F100	11kg

Part Specifications

Applicable Model		Cable Specification			Starting Method	Mechanical Seal		Solid Passage Dia. (Soft Solid) (mm)	
		Type	Section Area (mm ²)	Cores	Outer Dia. (mm)	Lower	Upper	50Hz	60Hz
CJ100	5.5kW (7.5 HP)	VCT	3.5	4	φ 14	Direct	SiC/SiC	60	53
	7.5kW (10 HP)	VCT	5.5	4	φ 16.5			60	53

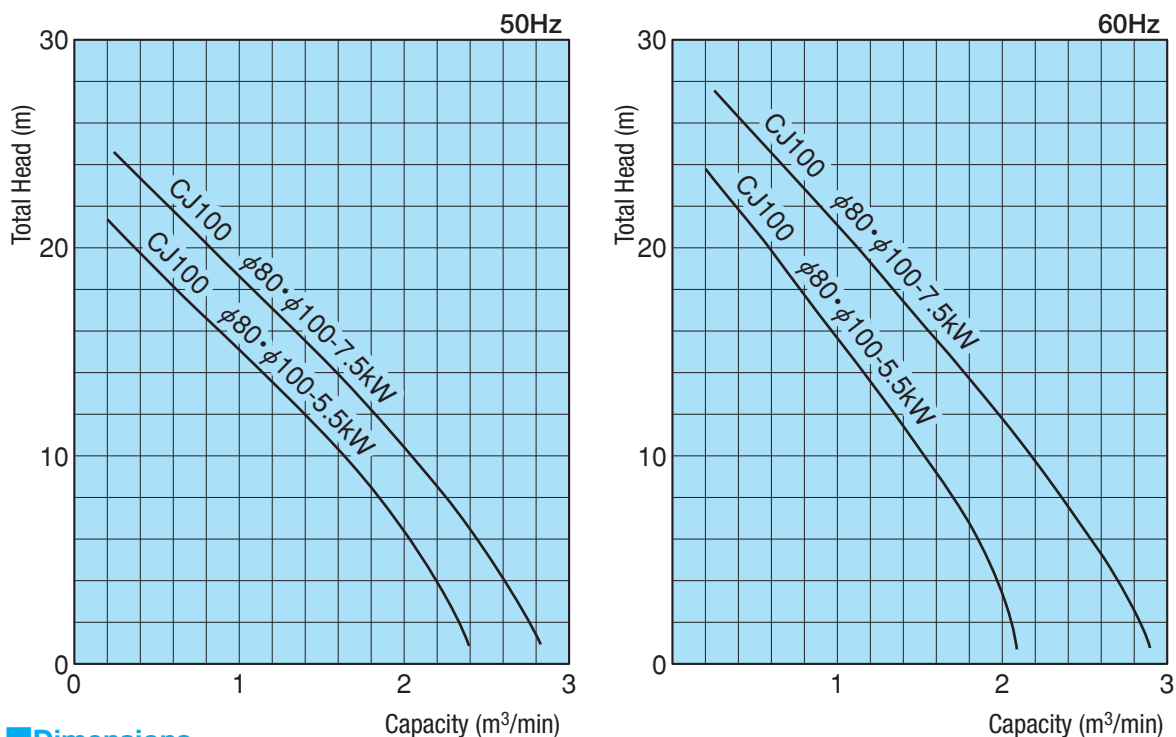
● Connection Dimensions



Unit: mm

Connection Part No.	A	B	C	D	E	F	G
P80B	25	100	262	12	6	44	210
P100B	25	100	259	12	6	44	210

Performance Curves

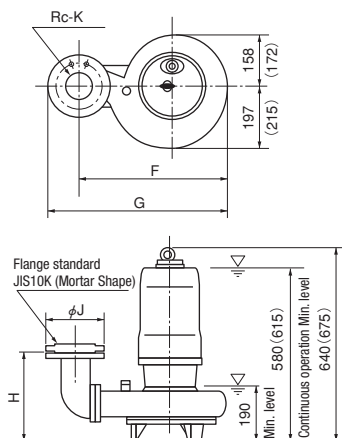


Dimensions

Unit: mm

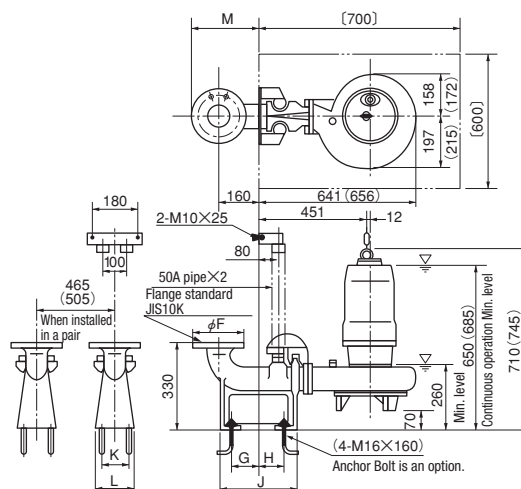
Free standing type

(): 7.5kW



Auto-connection type

(): 7.5kW



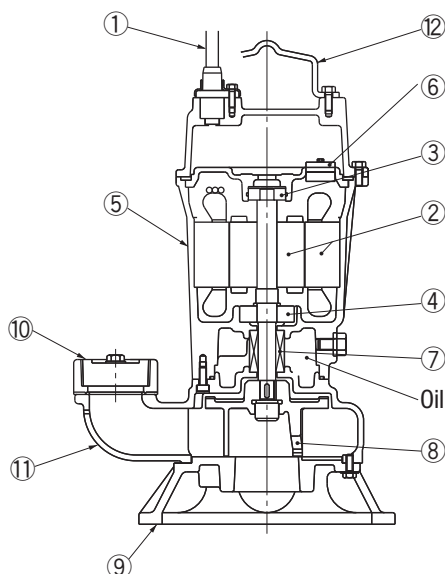
Connection Part No.	Output KW (HP)	F	G	H	J	K
F80	5.5 (7.5)	508	601	270	185	Rc3
	7.5 (10)	523	616			
F100	5.5 (7.5)	513	618	280	210	Rc4
	7.5 (10)	528	633			

Connection Part No.	Output KW (HP)	F	G	H	J	K	L	M
P80B	5.5/7.5 (7.5, 10)	211	107	103	302	120	150	266
P100B	5.5/7.5 (7.5, 10)	238	114	115	308	200	238	279

Sectional View

CJ501

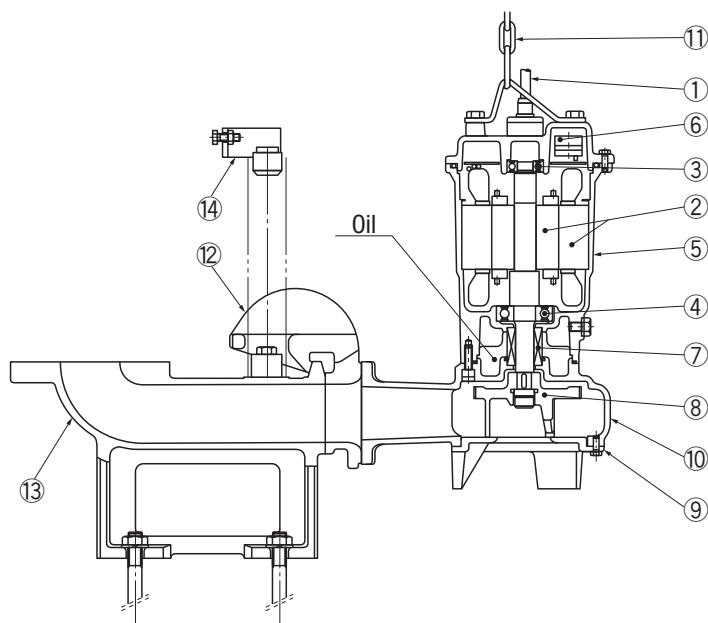
Free standing type



No.	Name	Material
1	Cable	VCT
2	Motor	Shaft: SUS420J2
3	Ball Bearing (Upper)	—
4	Ball Bearing (Lower)	—
5	Stator Casing	FC200
6	Thermal Protector	—
7	Mechanical Seal	—
8	Impeller	FC200
9	Chopper Stand	FC250
10	Screwed Coupling	PP
11	Pump Casing	FC200
12	Handle	SUS304

CJ651

Auto-connection type

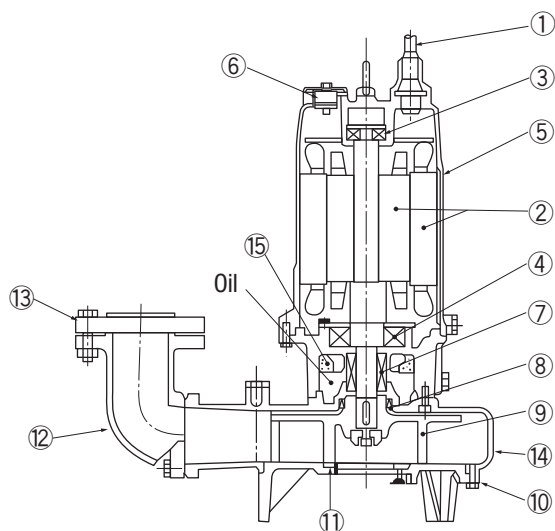


No.	Name	Material
1	Cable	VCT
2	Motor	Shaft: SUS420J2
3	Ball Bearing (Upper)	—
4	Ball Bearing (Lower)	—
5	Stator Casing	FC200
6	Thermal Protector	—
7	Mechanical Seal	—
8	Impeller	FC200
9	Base Cover	FC200
10	Pump Casing	FC200
11	Chain	SS400
12	Sliding Bracket	FC200
13	Connection	FC200
14	Guide Holder	SCS13

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel **PP** : Polypropylene
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitryl rubber

CJ80

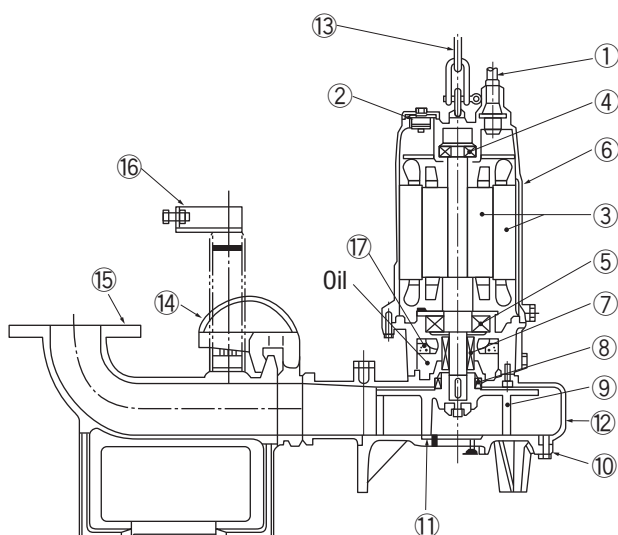
Free standing type



No.	Name	Material
1	Cable	VCT
2	Motor	Shaft: SUS420J2
3	Ball Bearing (Upper)	—
4	Ball Bearing (Lower)	—
5	Stator Casing	FC200
6	Thermal Protector	—
7	Mechanical Seal	—
8	Oil Seal	NBR
9	Impeller	FC200
10	Chopper Plate	FC200
11	Chopper Disk	SUS304
12	Elbow Flange	FC200
13	Companion Flange	FC200
14	Pump Casing	FC200
15	Equalizer	Foaming NBR

CJ80

Auto-connection type



No.	Name	Material
1	Cable	VCT
2	Thermal Protector	—
3	Motor	Shaft: SUS420J2
4	Ball Bearing (Upper)	—
5	Ball Bearing (Lower)	—
6	Stator Casing	FC200
7	Mechanical Seal	—
8	Oil Seal	NBR
9	Impeller	FC200
10	Chopper Plate	FC200
11	Chopper Disk	SUS304
12	Pump Casing	FC200
13	Chain	SS400
14	Sliding Bracket	FC200
15	Connection	FC200
16	Guide Holder	SCS13
17	Equalizer	Foaming NBR

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitrlyl rubber

Grinder Pump

Bore: **32 - 50 mm (1 1/4" - 2")**Output: **0.4 - 3.7 kW (1/2 - 5 HP)**

CKM

The CKM Series eliminates foreign objects in wastewater, including clothes, rubber products, and vinyl, via a special grinder mechanism.

The wastewater can be pumped through narrow bore pipes over a long distance.

● 2-poles Motor Type

Bore mm (inch)	Output kW (HP)		Model	Page
32 (1 1/4")	1.0 (1 1/3)	3-ph	CKM32H	298
40 (1 1/2")	1.2 • 1.5 (1 2/3 • 2)		CKM40H	
50 (2")	2.2 • 3.7 (3 • 5)		CKM50H	

● 4-poles Motor Type

Bore mm (inch)	Output kW (HP)		Model	Page
40 (1 1/2")	0.4 (1/2)		CKM40L	300
50 (2")	0.75 (1)		CKM50L	

CKM**Grinder Pump**Bore : **32 - 50 mm (1 1/4" - 2")**Output: **0.4 - 3.7 kW (1/2 - 5 HP)**

■ Features

● Usable in low-head range

SCS13 material, which resists cavitation erosion, is employed for the impeller for 2-poles motor type so that it is usable in a wide range from low- to high-head.

With newly added 0.4 and 0.75kW 4-poles motor type, it is also usable for a further lower discharge head range with total head of 4m or less.

Specifically, it is particularly suited to small manhole.

● A very varied lineup

With the 4-poles motor type added to the existing 1.0-3.7kW 3-phase 2-poles motor type, usable for wide-ranging applications.

● Effective durability

High-chrome cast iron is employed for the grinder mechanism's rotating and static parts. The SCS13 impeller (only the 2-poles motor type) has excellent durability and reliability.

* The 4-poles motor type SCS13 impeller has special specifications.

■ Applications

- ☐ Pressure sewage system
- ☐ Manhole pumping
- ☐ Sewage transportation for small residential community
- ☐ Building wastewater sump and others

■ Special Specifications

Motor Insulation	Class F
Cable Extension	Cable length: 10 - 30m (every 5m)
Material Change	Lifting chain
Others	● See the specifications (detail data) - App.1 to check whether or not a protector can be installed. ● For specifications other than the above, please contact us.

■ Standard Specifications

Handling Liquid	Kind of Liquid		Sewage and Wastewater
	Temperature		0 - 32°C
Material	Cable		VCT
	Motor Shaft		SUS420J2
	Pump Casing		FC200
	Impeller		SCS13 (2-poles) FC200 (4-poles)
	Shredding mechanism	Rotary cutter	High-chrome cast iron
Fixed cutter		High-chrome cast iron	
Electric Motor	Name		Air-filled type submersible induction motor
	Insulation Class		Class E
	Enclosure		IP68
	Phase		3-ph
	Voltage		200 - 480V

■ Pump-Related Product

☐ Liquid Level Control Switch

Level regulator

Mini Switch

Oval Float

⇒ See Page 370

⇒ See Page 372

⇒ See Page 373

■ Grinder Mechanism

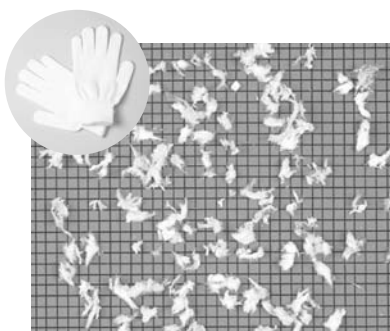
Excellent grinding performance

A strong grinder mechanism grinds solids in sewage to 5-10mm particles and pumps them, which can prevent troubles within the pipe. The pipe is unlikely to clog, and its diameter can be smaller, which facilitates the laying of a pumping pipe and its cost-effectiveness.

(The photograph shows the 2-poles motor type.)

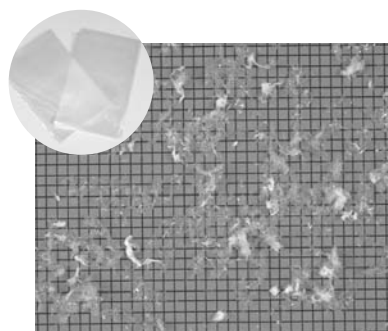


■ Cutting Example



Work gloves

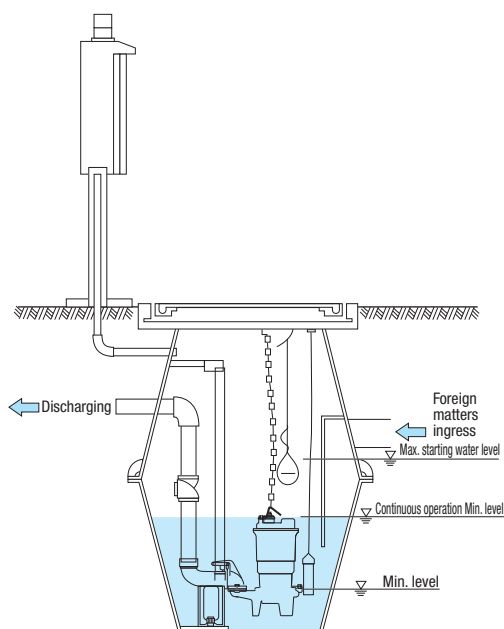
* The square size is 5 x 5mm.



Vinyl bag

■ Grinder Pump Unit

- The water-storage tank, submersible-grinder pump, check valve, and water-level regulator can all be integrated as a single unit. The design and construction can also be standardized.
- The construction period is short and it is easy to respond to geographic change.
- You can select either FRP or concrete as the material for the water-storage tank according to the installation conditions.
- The special shape of the FRP water-storage tank can prevent the tank from lifting above the ground, and reduce residual sewage water.
- For the control box, either self-standing or pole-installation types can be selected according to usage conditions.

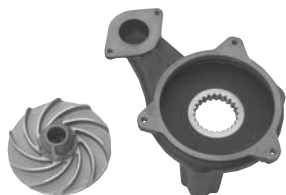


CKM

Grinder Pump

Bore : 32 - 50 mm (1 1/4" - 2")

Output: 0.4 - 3.7 kW (1/2 - 5 HP)



CKM40H-F40



CKM40H-P40

Standard Specifications

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity - Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) kg
		Auto- Connection	Free Standing			50Hz	60Hz		
32 (40) 1 1/4 (1 1/2")	CKM32H	P32 (P40)	F32 (F40)	1.0 (1 1/3)	3-ph	0.06—13.6	0.06—13.6	2	28
40 (32) 1 1/2" (1 1/4")	CKM40H	P40 (P32)	F40 (F32)	1.2 (1 2/3)		0.06—16.5	0.06—17.2		28
				1.5 (2)		0.06—20	0.06—20.8		28
						0.12—21.2[1]	0.12—21.7[2]		46
50 (40) 2" (1 1/2")	CKM50H	P50 (P40)	F50 (F40)	2.2 (3)		0.15—16.8[3]	0.15—17.0[4]	4	55
				3.7 (5)		0.20—26.5	0.20—25.3		28
40 (50) 1 1/2" (2")	CKM40L	P40 (P50)	F40 (F50)	0.4 (1/2)		0.08—4.9	0.08—4.5		28
50 (40) 2" (1 1/2")	CKM50L	P50 (P40)	F50 (F40)	0.75 (1)		0.10—7.3	0.10—7.7		28

* Bore () is also available.

[] Impeller No.

For the characteristics of the motor, bearing and oil, please refer to the specifications (detail data) - App.1.

(Option) For P50, the companion flange can be changed to a JIS10K standard flange.

Standard Accessories

- Cable (8m) 1 pc.
(For 0.4 / 0.75kW 4 poles, 6m)

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

●Auto-connection type

- Connection (with bolts and packing)
- Guide holder (with bolts and nuts)
- Sliding bracket
- Lifting chain (6m)

●Free standing type

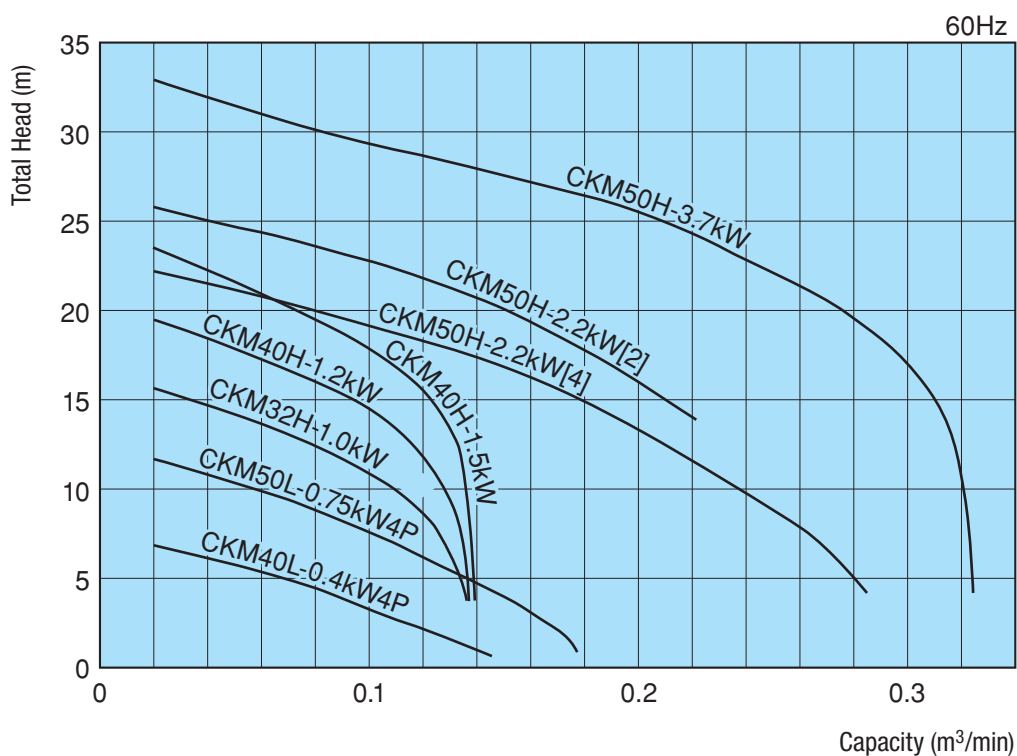
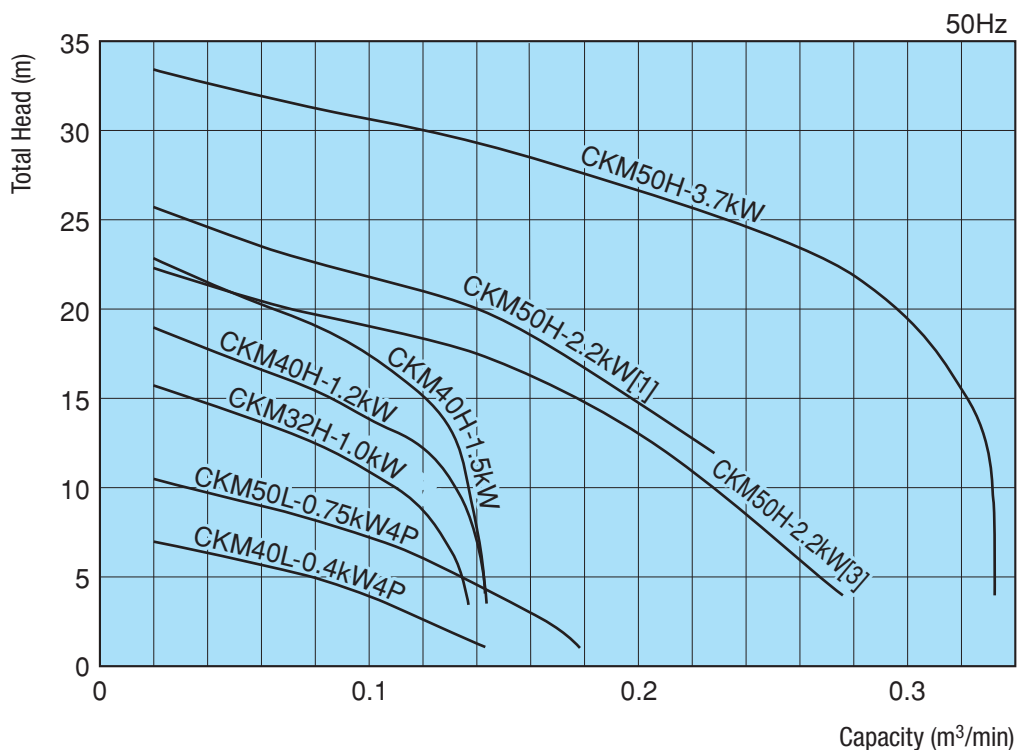
Connection Part No.	Set Weight
F32 · F40 · F50	Included in the body

Connection Part No.	Set Weight	Connection Weight
P32 · P40 · P50	11kg	4.5kg

Part Specifications

Applicable Model	Cable Specification				Starting Method	Mechanical Seal	
	Type	Section Area (mm ²)	Cores	Outer Dia. (mm)		Lower	Upper
CKM32H, CKM40H, CKM50H (2.2kW) CKM40L, CKM50L	VCT	1.25	4	φ 11.5	Direct	SiC/SiC	SiC/SiC
CKM50H (3.7kW)	VCT	2.0	4	φ 12			

Performance Curves



[] Impeller number

CKM

Grinder Pump

Bore : 32 - 50 mm (1 1/4" - 2")

Output: 1.0 - 3.7 kW (1 1/3 - 5 HP)

Unit: mm

Dimensions

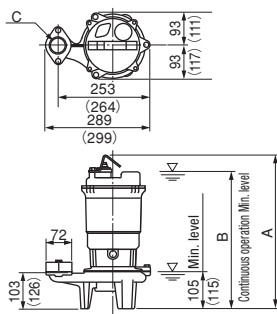
Free standing type

CKM32H

CKM40H

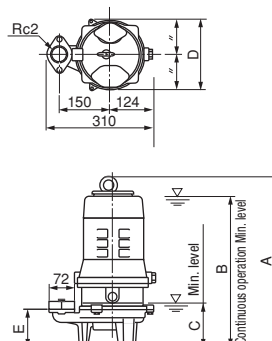
CKM40L

CKM50L

() : CKM40L
CKM50L


Model	Connection Part No.	Output kW (HP)	A	B	C
CKM32H	F32	1.0 (1 1/3)	432	385	Rc1 1/4
CKM40H	F40	1.2 (1 2/3)			Rc1 1/2
		1.5 (2)			
CKM40L	F40	0.4 (1/2)	380	380	Rc1 1/2
CKM50L	F50	0.75 (1)			Rc2

CKM50H



Model	Connection Part No.	Output kW (HP)	A	B	C	D	E
CKM50H	F50	2.2 (3)	499	445	130	208	109
		3.7 (5)	547	495	135	210	118

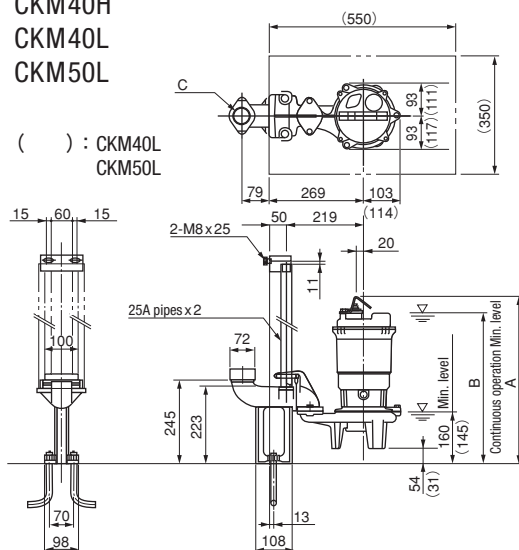
Auto-connection type

CKM32H

CKM40H

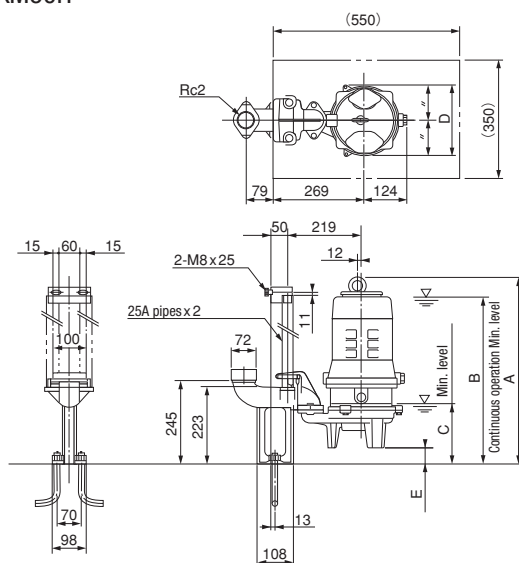
CKM40L

CKM50L

() : CKM40L
CKM50L


Model	Connection Part No.	Output kW (HP)	A	B	C
CKM32H	P32	1.0 (1 1/3)	486	440	Rc1 1/4
CKM40H	P40	1.2 (1 2/3)			Rc1 1/2
		1.5 (2)			
CKM40L	P40	0.4 (1/2)	463	410	Rc1 1/2
CKM50L	P50	0.75 (1)			Rc2

CKM50H

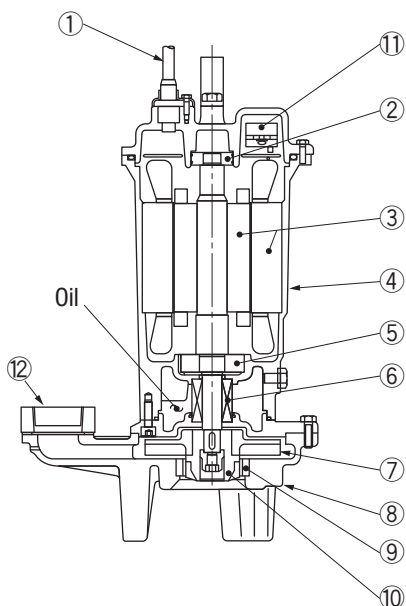


Model	Connection Part No.	Output kW (HP)	A	B	C	D	E
CKM50H	P50	2.2 (3)	547	495	180	208	48
		3.7 (5)	588	535	175	210	41

Sectional View

CKM40H

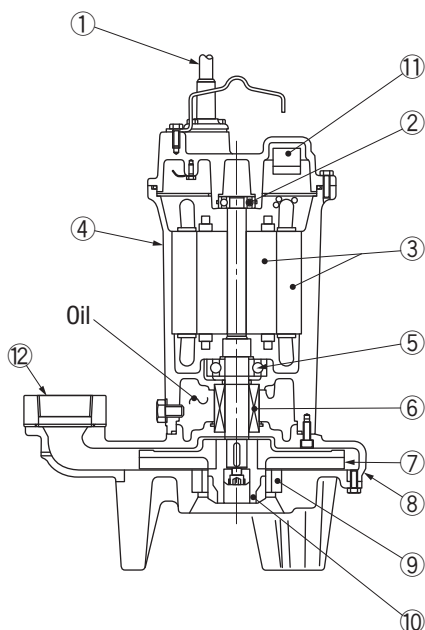
Free standing type



No.	Name	Material
1	Cable	VCT
2	Ball Bearing (Upper)	—
3	Motor	Shaft: SUS420J2
4	Stator Casing	FC200
5	Ball Bearing (Lower)	—
6	Mechanical Seal	—
7	Impeller	SCS13
8	Pump Casing	FC200
9	Fixed Cutter	High-chrome cast iron
10	Rotary Cutter	High-chrome cast iron
11	Thermal Protector	—
12	Screwed Coupling	PP

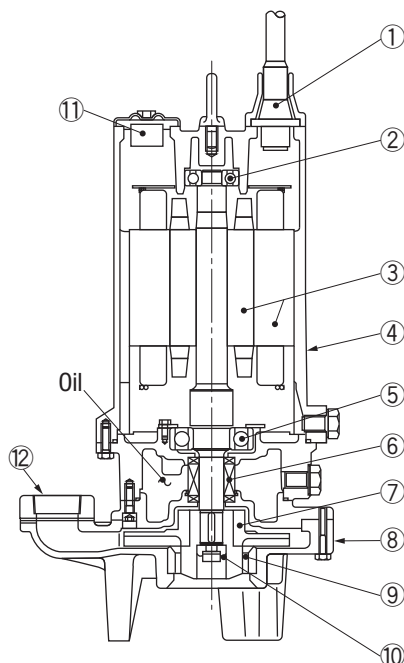
CKM50L

Free standing type

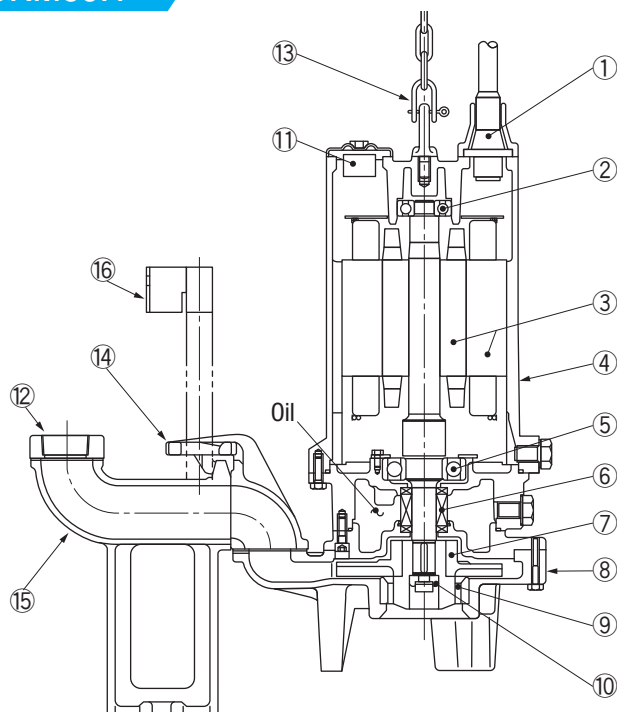


No.	Name	Material
1	Cable	VCT
2	Ball Bearing (Upper)	—
3	Motor	Shaft: SUS420J2
4	Stator Casing	FC200
5	Ball Bearing (Lower)	—
6	Mechanical Seal	—
7	Impeller	FC200
8	Pump Casing	FC200
9	Fixed Cutter	High-chrome cast iron
10	Rotary Cutter	High-chrome cast iron
11	Thermal Protector	—
12	Screwed Coupling	PP

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitrhyl rubber

Sectional View**CKM50H****Free standing type**

No.	Name	Material
1	Cable	VCT
2	Ball Bearing (Upper)	—
3	Motor	Shaft: SUS420J2
4	Stator Casing	FC200
5	Ball Bearing (Lower)	—
6	Mechanical Seal	—
7	Impeller	SCS13
8	Pump Casing	FC200
9	Fixed Cutter	High-chrome cast iron
10	Rotary Cutter	High-chrome cast iron
11	Thermal Protector	—
12	Screwed Coupling	FC200

CKM50H**Auto-connection type**

No.	Name	Material
1	Cable	VCT
2	Ball Bearing (Upper)	—
3	Motor	Shaft: SUS420J2
4	Stator Casing	FC200
5	Ball Bearing (Lower)	—
6	Mechanical Seal	—
7	Impeller	SCS13
8	Pump Casing	FC200
9	Fixed Cutter	High-chrome cast iron
10	Rotary Cutter	High-chrome cast iron
11	Thermal Protector	—
12	Screwed Coupling	FC200
13	Chain	SS400
14	Sliding Bracket	FC200
15	Connection	FC200
16	Guide Holder	SS400

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitrtyl rubber

Floating Scum Pump

Bore: 50 • 80 mm (2" • 3")

Output: 0.75 • 1.5 kW (1 • 2 HP)

FP

FP-series is a floating scum pump to collect suspended solids on water surface. The float maintains water at a steady depth at the suction port. Since the pump is based on a submersible pump capable of handling sewage water and filth, the motor has a high water sealing capacity and the pump is less likely to be clogged with suspended solids.

Bore mm (inch)	Output kW (HP)	Model	Page
50 (2")	0.75 (1)	FP501	304
80 (3")	1.5 (2)	FP801	

■ Application Example (Collecting Scum)

This type of pump facilitates the collection of suspended solids or soft scum (floc) in sewage water. At a combined treatment plant without a residential caretaker, floc generated

at a settling basin becomes malodorous scum. Once installed, a float pump collects and forcibly returns the floc, thereby reducing the level of odor generated.



■ Features

● Reduced operation time

The suction port, which is always near the surface of the water, has a higher collection rate than other methods, such as a septic tank truck, which thus allows a reduction in operation time.

● Unattended operation

At a combined treatment plant without a residential caretaker, the floating scum pump collects and forcibly returns the scum generated at a settling basin, thereby reducing the odor generation.

■ Applications

- Removing scum or other suspended matters on water surface

■ Main Specifications

Handling Liquid	Liquid Type	Wastewater
	Temperature	0 - 32°C
Material	Cable	VCT
	Motor Shaft	SUS420J2
	Pump Casing	FC200
	Impeller	FC200
	Float	Foamed Polyethylene
Electric Motor	Name	Dry-type Submersible induction Motor
	Insulation Class	Class E
	Phase	3-ph
	Voltage	200 - 480 V

■ Special Specifications

- Motor Insulation: Class F
- Cable Extension: 10, 15, 20 or longer
 - * Allowable lengths, please refer to the specifications (detail data) - App.1.
- Stainless Steel Float
 - If using the floating scum pump in a pond, fish may damage the float; causing it to shrink or gradually sink from a predetermined position. If that happens, please contact us.
 - * If the pond contains considerable oil, please contact us.



FP501



FP801

Standard Specifications

Bore mm (inch)	Pump Model	Output kW (HP)	Phase	Capacity - Total Head m ³ /min-m		Pole P	Weight (Bare Pump) kg
				50Hz	60Hz		
50 (2")	FP501	0.75 (1)	3-ph	0.25–5.3	0.25–4.3	2	35
80 (3")	FP801	1.5 (2)	3-ph	0.6 –5.7	0.6 –4.0	2	68

For the motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

FP501

- Cable (6 m) 1 pc.

FP801

- Cable (8 m) 1 pc.

Special Accessories

Hose (VS hose ϕ 50 x 20 m or ϕ 75 x 20 m)

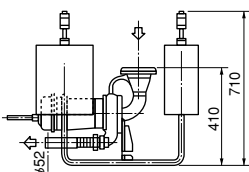
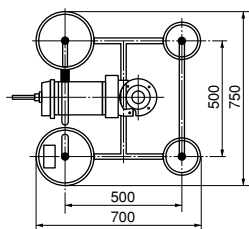
Part Specifications

Applicable Model	Cable Specification				Starting Method	Mechanical Seal	
	Type	Section Area (mm ²)	Cores	Outer Dia. (mm)		Lower	Upper
FP501	VCT	1.25	4	ϕ 11.5	Direct	SiC/SiC	Ceramic/Carbon
FP801							SiC/SiC

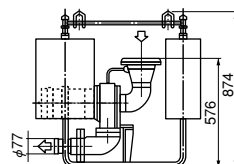
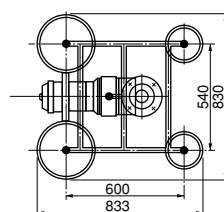
Dimensions

Unit: mm

FP501



FP801



Explanatory Diagram

Pump

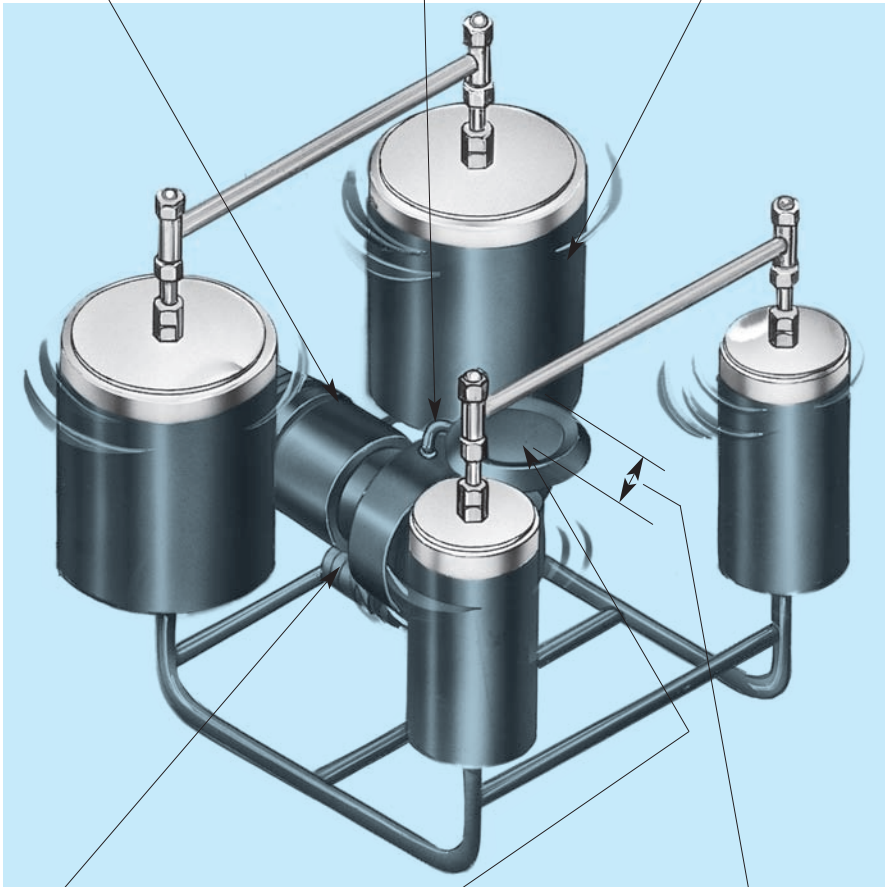
A submersible pump capable of transferring sewage water and filth is used. The pump is equipped with an impeller having a large solid passage area.

Air vent pipe

Removes air sucked into the pump. Since the pipe has a small diameter, water loss is negligible.

Float

Made of foamed polyethylene. Maintains water at a steady depth and inclination at the suction port.



Discharge pipe (Hose Coupling)

Connected with a VS hose.

Suction port

Suspended solids, such as scum, are sucked through here. The dimensions of solids that can traverse the port:
FP501: 20 mm or less
FP801: 30 mm or less

The optimum length from the suction port to the water surface is 30 to 50 mm. This can be readily adjusted.

Submersible Dewatering Pump for Construction Work and General Purpose

2-poles Motor Type	
BTR (Lightweight)	309
BUCF	315
BRL (Residual Water)	319
BHV (Trash)	323
4-poles Motor Type	
BU/BU-K(A)	327
4 or 6-poles Motor Type	
SN (Sand)	333

Submersible Dewatering Pumps for Construction Work and General Purpose

B-series is a submersible pump for general or construction work purpose. It can be used for various applications, such as construction site, sewage treatment plant, water purification plant, building, cable pit, homes, etc.

Summary & Applications	Model	
■ Dewatering Pumps (2 poles Motor) BTR (Lightweight)Bore: 40-100 mm, 0.25-5.5 kW BHV (Trash pump)Bore: 50 mm, 0.4 kW BUCF (Cast iron pump) Bore: 100 or 150 mm, 7.5 or 11 kW Applications - Dewatering spring water at construction site - Water intake or drainage for agricultural purpose - Drainage at basement, underpass or cable pit - Household, gardening and etc.	BTR BUCF BHV	 BTR (0.25~0.75kW)  BTR (1.5~5.5kW)
■ Residual Water Pump BRL.....Bore: 25 or 50 mm, 0.4 kW Applications - Dewatering residual water in tanks, swimming pools and etc. - Dewatering spring or sump from construction sites, underpass and etc.	BRL	 BUCF  BHV
■ Dewatering Pumps (4 poles Motor, Large Capacity Type) BU/BU-K (No Agitator) Bore: 150-250 mm, 5.5-22 kW BU/BU-KA (with Agitator) Bore: 150 or 200 mm, 5.5-11 kW Applications - Dewatering spring water at construction sites of dams, sewage systems, tunnels, rivers and etc. - Water intake or drainage for agricultural purpose	BU / BU-K(A)	 BRL  BU/BU-K(A)
■ Sand Pumps (4 or 6 poles Motor) SN (No agitating mechanism) Bore: 150 mm, 22 kW SN-A, C, E (with Agitator) Bore: 150 or 200 mm, 3.7-37 kW SN-J (Water-jet agitation) Bore 150 or 200 mm, 37 kW Applications - Drainage of sand basin and sewage tank containing sand at sewage treatment facilities - Dewatering muddy water at dredging work, civil engineering work, and etc. - Removing mill scales and other sandy sediments at iron works or cement plants	SN	 SN

Submersible Dewatering Pump

Bore: 40 - 100 mm (1 1/2" - 4")

Output: 0.25 - 5.5 kW (1/3 - 7.5 HP)

BTR

BTR is a submersible pump that is lightweight and user-friendly. It is also highly wear resistant with high power (0.25 - 0.75 kW) by using of a high-torque motor, even its compact in size.

Submersible Pump
for Dewatering

Bore mm (inch)	Output kW (HP)	Model	Page
40 (1 1/2")	0.25 (1/3)	BTR250S	311
		BTR250T	
50 (2")	0.4 (1/2)	BTR400S	
		BTR400T	
	0.75 (1)	BTR750S	
		BTR750T	
50/(80) [2"/(3")]	1.5 (2)	BTR15	313
80/(50) [3"/(2")]	2.2 (3)	BTR22	
	3.7 (5)	BTR37H	
100/(80) [4"/(3")]	3.7 (5)	BTR37L	
	5.5 (7.5)	BTR55	

Features

BTR-S / T (0.25 - 0.75 kW)

● Lightweight

Built with a compact motor and lightweight materials. The pump weight has been reduced approx. 40 % (comparing BTR400S with our former model), which facilitates a handling.

● Durable motor

Employing the motor with fewer rise in heat and three-terminals type thermal protector prevents motor burnout due to a rise in heat.

● Special impeller

The impeller and pump casing are made of wear-resistant special synthetic rubber. They have more than triple the wear resistance of our former model.

● Easy maintenance

The pump can be disassembled by removing three bolts. The impeller and pump casing are also easy to maintain.

BTR (1.5 - 5.5 kW)

● Lightweight

Weight is remarkably reduced to the minimum by incorporating plenty of lightweight materials.

● Durable motor

Employing the motor with fewer rise in heat and three-terminals type thermal protector prevents troubles of burnout due to a overloading, the weak point of the ordinary top discharge, side flow structure models.

● Special impeller

The pump casing, rear cover and discharge cover are made of wear-resistant special synthetic rubber. They have more than triple the wear resistance of our former model.

Applications

- Dewatering spring water at construction sites
- Water intake or drainage for agricultural purposes
- Drainage from basements or cable pits
- Household, Gardening & etc.

(0.25 - 0.75 kW)



(1.5 - 5.5 kW)



Standard Specifications

Handling Liquid	Kind of Liquid	Rain, Spring, Sand carrying water	
	Temperature	0 - 40°C	
Material	Cable	VCT	
	Motor Shaft	Shaft: SUS420J2	
	Pump Casing	Special Wear-resistant Synthetic Rubber	
Impeller	0.75 kW or less	Special Wear-resistant Urethane Rubber	
	1.5 kW or more	FCD700	
Electric Motor	Name	Air-filled type Submersible Induction Motor	
	Insulation Class	Class E	
	Enclosure	IP68	
	Phase	1-ph (0.25 - 0.75 kW)	3-ph (0.25 - 5.5 kW)
	Voltage	100 - 240V	200 - 480V

SUS: Stainless steel FCD: Ductile iron casting

Standard Specifications 0.25 - 0.75 kW

Bore mm (inch)	Model	Output kW (HP)	Phase	Capacity - Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) kg
				50Hz	60Hz		
40 (1 1/2")	BTR250S	0.25 (1/3)	1-ph	0.1 – 6.0	0.1 – 6.0	2	9
50 (2")	BTR400S	0.4 (1/2)		0.12– 8.0	0.12– 8.0		12.4
	BTR750S	0.75 (1)		0.17–10.0	0.16–10.0		
40 (1 1/2")	BTR250T	0.25 (1/3)	3-ph	0.1 – 6.0	0.1 – 6.0	2	9
50 (2")	BTR400T	0.4 (1/2)		0.12– 8.0	0.12– 8.0		12
	BTR750T	0.75 (1)		0.17–10.0	0.16–10.0		

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

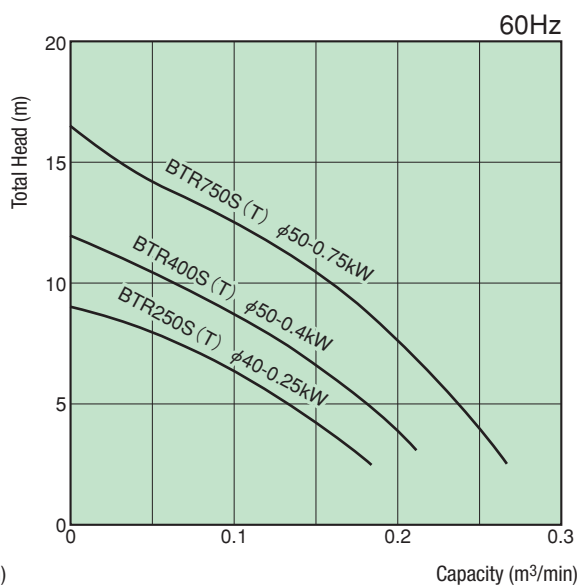
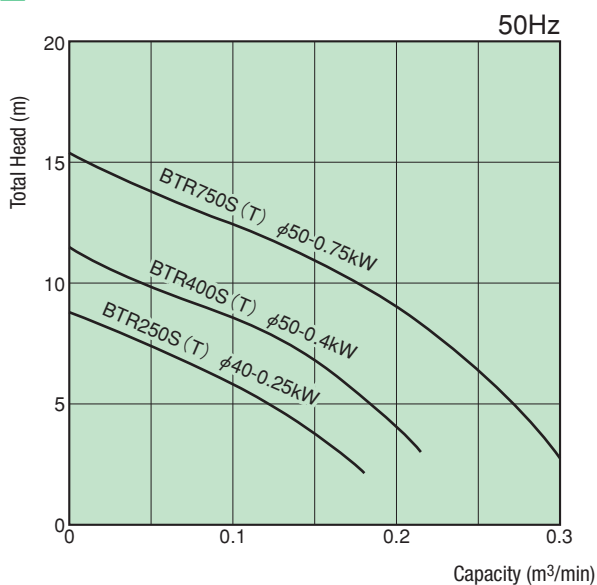
Standard Accessories

- Cable (5m)1 pc.
- Hose nipple1 set

Optional Accessories

- Screwed Coupling.....1 set

Performance Curves



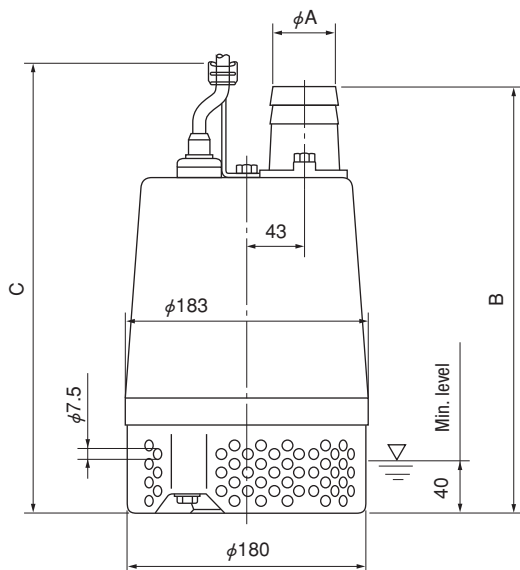
Part Specifications

Applicable Model	Cable Specifications				Starting Method	Mechanical Seal	
	Type	Section Area (mm ²)	Cores	Outer Dia. (mm)		Lower	Upper
BTR250S BTR400S	VCT	1.25	3	ϕ 10.5	Condenser-run	SiC/SiC	Carbon/Ceramic
BTR750S	VCT	2.0	3	ϕ 11			
BTR250T BTR400T BTR750T	VCT	1.25	4	ϕ 11.5	Direct		

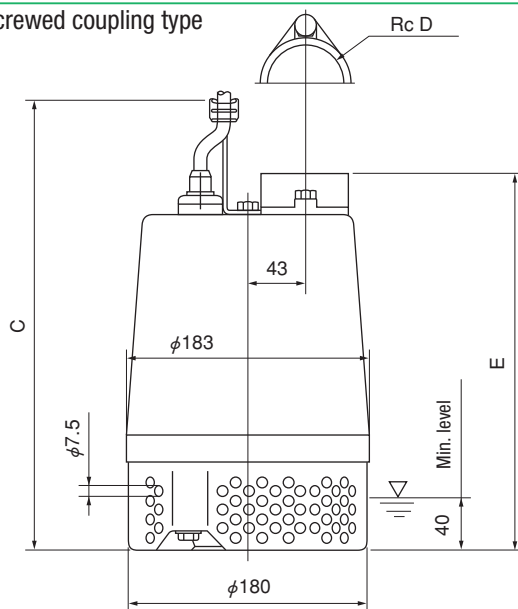
Dimensions

Unit: mm

Hose nipple type



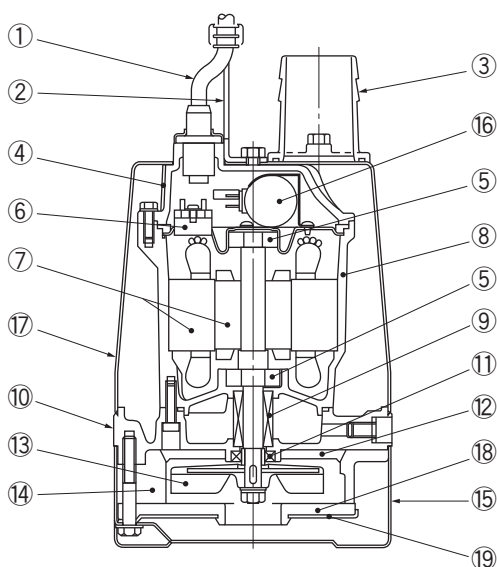
Screwed coupling type



Model	A	B	C	D	E
BTR250S (T)	40	314	340	1½	282
BTR400S (T)	50	324	340	2	286
BTR750S (T)	50	368	384	2	330

Sectional View

BTR250S • BTR400S



Number	Name	Material
1	Cable	VCT
2	Handle	SPHC/NBR
3	Hose Nipple	ADC12
4	Motor Cover	ADC12
5	Ball Bearing	—
6	Thermal Protector	—
7	Motor	Shaft: SUS420J2
8	Stator Casing	ADC12
9	Mechanical Seal	—
10	Mechanical Seal Bracket	ADC12
11	Oil Seal	NBR
12	Rear Liner	Special Synthetic Rubber
13	Impeller	Special Urethane Rubber
14	Pump Casing	Special Synthetic Rubber
15	Strainer	SPCD
16	Capacitor	—
17	Outer Casing	SPCE
18	Suction Plate	Special Synthetic Rubber
19	Suction Cover	SPCD

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **SUS** : Stainless steel **ADC** : Aluminum die casting **SPCD** : Steel **SPCE** : Steel
FC : Gray iron casting **NBR** : Nitril rubber

Standard Specifications 1.5 - 5.5 kW

Bore mm (inch)	Model	Output kW (HP)	Phase	Capacity - Total Head m³/min-m		No. of poles P	Weight (Bare Pump) kg
				50Hz	60Hz		
50 (80) 2" (3")	BTR15	1.5 (2)	3-ph	0.3–11.0	0.3–11.8	2	19.0
80 (50) 3" (2")	BTR22	2.2 (3)		0.3–16.0	0.3–16.5		22.0
	BTR37H	3.7 (5)		0.2–30.5	0.2–30.8		34.0
100 (80) 4" (3")	BTR37L			0.4–20.0	0.4–21.0		
	BTR55	5.5 (7.5)		0.7–17.5	0.7–18.5		42.0

() Can be also changed to the inner diameter (Optional).

For the motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

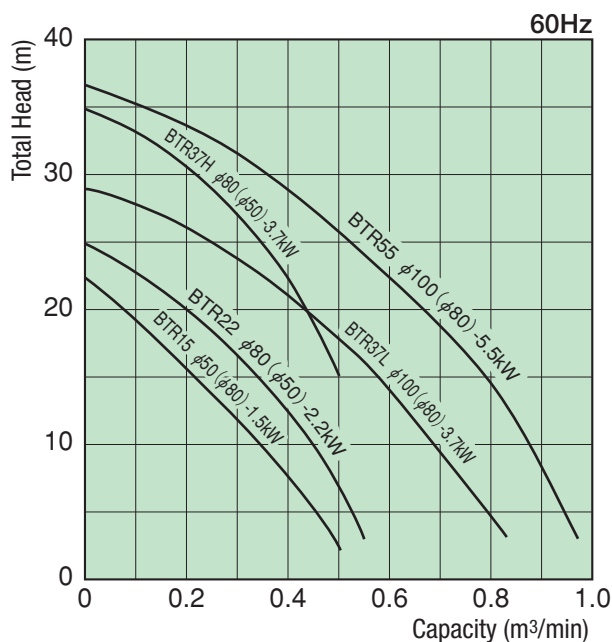
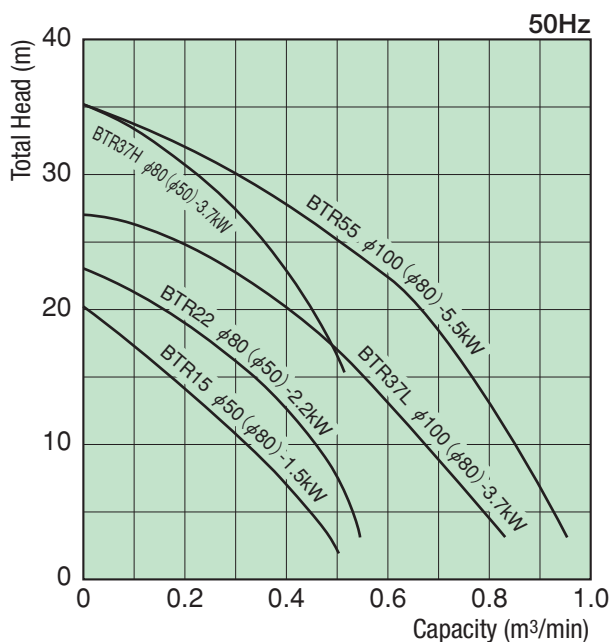
Standard Accessories

- Cable (8m)1 pc.
- Hose nipple1 set

Special Accessories

- Flange Pipe (Straight)1 set
- Flange Pipe (Curved)1 set

Performance Curves



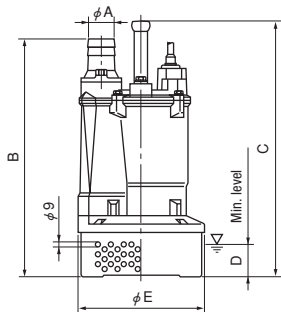
Part Specifications

Applicable Model	Cable Specifications				Starting Method	Mechanical Seal	
	Type	Section Area (mm ²)	Cores	Outer Dia. (mm)		Lower	Upper
BTR15 • BTR22	VCT	1.25	4	φ 11.5	Direct	SiC/SiC	SiC/SiC
BTR37H • BTR37L	VCT	2.0	4	φ 12.0			
BTR55	VCT	3.5	4	φ 14.0			

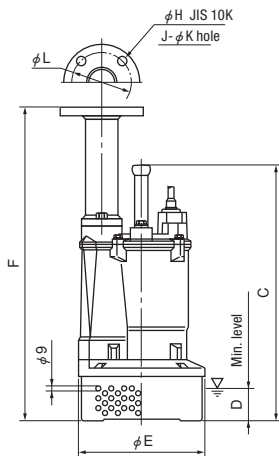
Dimensions

Unit: mm

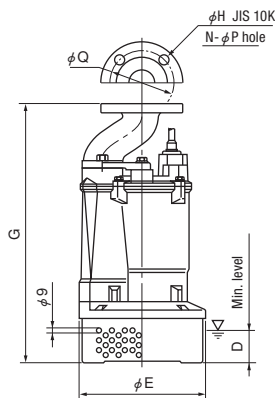
Hose nipple type



Flange pipe type (Straight)



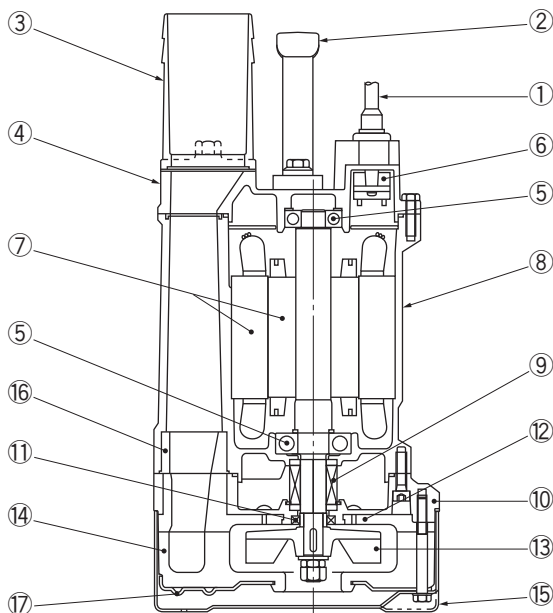
Flange pipe type (Curved)



Model	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
BTR15	50	442	474	60	235	581	481	50	4	19	120	50	4	19	120
BTR22	80	489	474	60	235	589	481	80	8	19	150	50	4	19	120
BTR37H	80	573	543	80	284	672	580	80	8	19	150	80	8	19	150
BTR37L	100	593	543	80	284	680	580	100	8	19	175	80	8	19	150
BTR55	100	632	582	80	284	717	617	100	8	19	175	80	8	19	150

Sectional View

BTR15~55



Number	Name	Material
1	Cable	VCT
2	Handle	Flat steel + Special Synthetic Rubber
3	Hose Nipple	ADC12
4	Motor Cover	ADC12 (AC)
5	Ball Bearing	—
6	Thermal Protector	—
7	Motor	—
8	Stator Casing	ADC12 (AC)
9	Mechanical Seal	—
10	Mechanical Seal Bracket	ADC12
11	Oil Seal	NBR
12	Rear Liner	Special Synthetic Rubber
13	Impeller	FCD700
14	Pump Casing	Special Synthetic Rubber
15	Strainer	SPCD
16	Discharge Cover	Special Synthetic Rubber
17	Suction Cover	SPCD

() : BTR37H (L)/55

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **SUS** : Stainless steel **ADC** : Aluminum die casting **SPCD** : Steel **SPCE** : Steel **FCD** : Ductile iron casting **NBR** : Nitryl rubber

Submersible Dewatering Pumps (2-poles Motor)

Bore: **100 • 150 mm (4" • 6")**

Output: **7.5 • 11 kW (10 • 15 HP)**

BUCF

Its high-durability and ease of operation in confined places and with low water levels is perfect for harsh construction sites.

Submersible Pump
for Dewatering

Bore mm (inch)	Output kW (HP)	Model	Page
100 (4")	7.5 (10)	BUCF2104 (-F)	317
	11 (15)	BUCF2154 (-F)	
150 (6")	7.5 (10)	BUCF2106 (-F)	
	11 (15)	BUCF2156 (-F)	

Features

● Heavy-duty

[Motor]

The auto-reset type thermal protector prevents motor burnout due to an overcurrent and an overheat. In addition, the motor is always cooled by pumped water while the pump is in operation.

[Shaft seal]

The pressure-resistant special mechanical seal ensures a operation under deep water.

(withstanding pressure: Max. 980 kPa, Normal: 690 kPa)

[Impeller]

The high-chrome hardening cast iron impeller maintains long-term stable performance.

● Compact body

The compact cylindrical shaped body is suitable for operating in confined spaces such as deep-well construction.



Standard Specifications

Handling Liquid	Kind of Liquid	Spring, Muddy water, Wastewater
	Temperature	0 - 40°C
Material	Cable	2PNCTS
	Motor Shaft	SUS420J2
	Pump Casing	FCD500 (BUCF2104) Synthetic rubber (BUCF2106)
	Impeller	High-chrome cast iron
Electric Motor	Name	Air-filled type submersible induction motor
	Insulation Class	Class B (7.5kW) and E (11kW)
	Enclosure	IP68
	Phase	3-ph
	Voltage	200 - 480V

Special Specifications

Cable Extension	While 15, 20 and 30m are specified, please refer to the specifications (detail data) - App.1. for the "permissible length".
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Applications

- Dewatering spring water at construction site
- Water intake or drainage for agricultural purpose
- Drainage at basement, underpass or cable pit and etc.

Standard Specifications

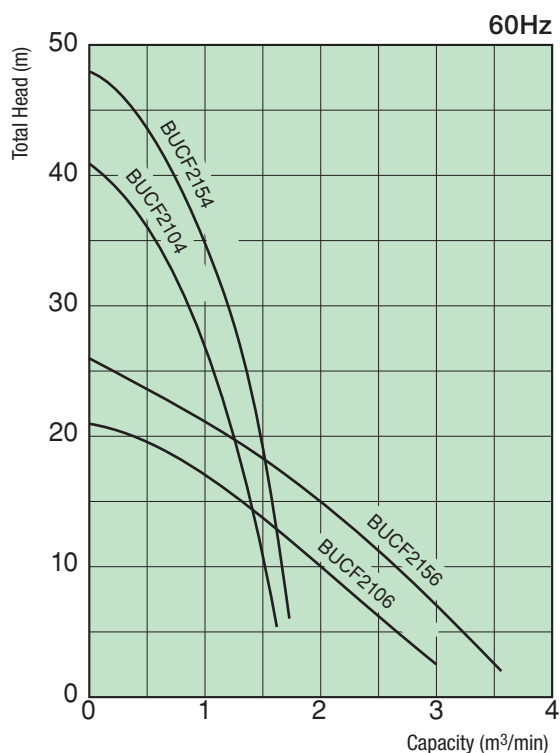
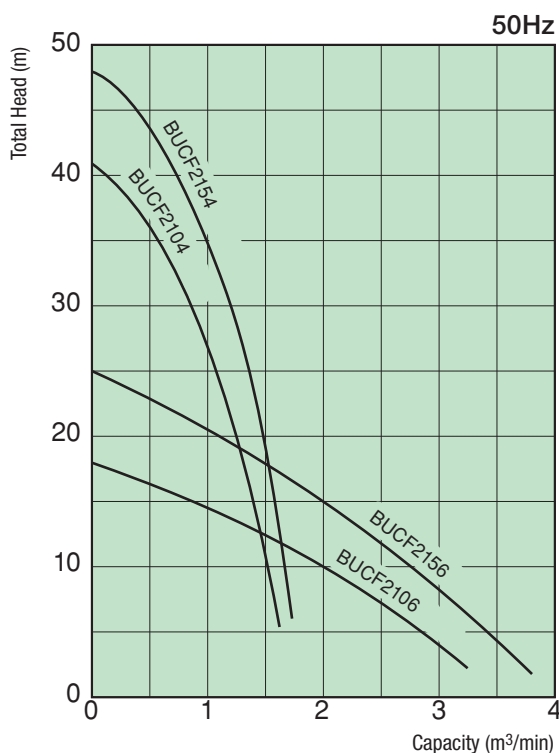
Bore mm (inch)	Pump Model	Output kW (HP)	Phase	Capacity - Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) kg
				50Hz	60Hz		
100 (4")	BUCF2104 (-F)	7.5 (10)	3-ph	1.0–27	1.0–27	2	113 (118)
	BUCF2154 (-F)	11 (15)		1.0–35	1.0–35		118 (123)
150 (6")	BUCF2106 (-F)	7.5 (10)	3-ph	2.0–10	2.0–10	2	106 (113)
	BUCF2156 (-F)	11 (15)		2.0–15	2.0–15		111 (118)

* (-F) Flange pipe coupling type.

Standard Accessories

- Cable (10m) 1 pc.
- Hose nipple or Flange pipe 1 pc.

Performance Curves



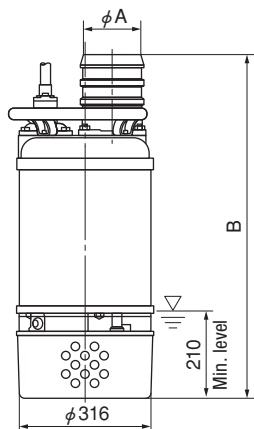
Part Specifications

Applicable Model	Cable Specifications				Starting Method	Mechanical Seal	
	Type	Section Area (mm ²)	Cores	Outer Dia. (mm)		Lower	Upper
BUCF2104 BUCF2106	2PNCTS	5.5	4	φ 19.6	Direct	SiC/SiC	Ceramic/CAC
BUCF2154 BUCF2156	2PNCTS	8.0	4	φ 21.2		SiC/SiC	Ceramic/CAC

Dimensions

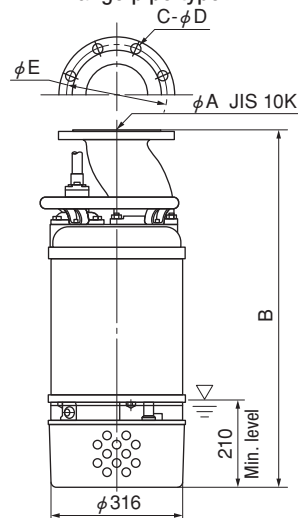
Unit: mm

Hose nipple type



Model	A	B
BUCF2104	100	775
BUCF2106	150	825
BUCF2154	100	740
BUCF2156	150	790

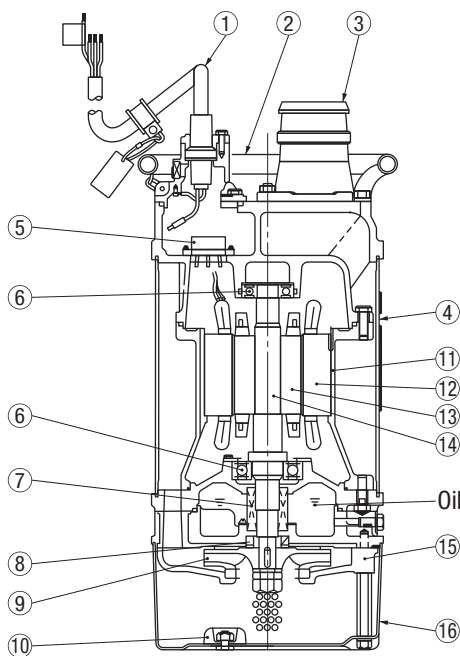
Flange pipe type



Model	A	B	C	D	E
BUCF2104-F	100	833	8	19	175
BUCF2106-F	150	855	8	23	240
BUCF2154-F	100	798	8	19	175
BUCF2156-F	150	823	8	23	240

Sectional View

BUCF2104



No.	Name	Material
1	Cable	2PNCTS
2	Handle	SGP
3	Hose Nipple	FC200
4	Outer Cover	SPCC
5	Thermal protector	—
6	Ball Bearing	—
7	Mechanical Seal	—
8	Oil Seal	Synthetic rubber
9	Impeller	High-chrome cast iron
10	Sacrificial Anode	Aluminum alloy
11	Motor Frame	FC200
12	Stator	—
13	Rotor	—
14	Motor Shaft	SUS420J2
15	Casing	FCD500
16	Strainer	SPCC

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel

SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

Submersible pump for residual water

Bore: **25 • 50 mm** **(1" • 2")**

Output: **0.4 kW** **(1/2 HP)**

BRL

A submersible pump equipped with a special strainer meant for dewatering residual water. With a starting minimum water level of 4mm or over, this pump can dewater residual water until the level reaches 1 to 2mm.

Submersible Pump
for Dewatering

Bore mm (inch)	Output kW (HP)	Model	Page
25 (1")	0.4 (1/2)	BRL400S	321
50 (2")			

Features

- **Dewatering residual water to a water level of 1 to 2mm**
When the water level remains 4 to 5mm from the bottom at the start, it can dewater residual water to a level of 1 to 2mm. In addition, the top discharge flow-through structure realized a continuous dry running.
- **No damage to the floor**
The bottom part includes a special synthetic rubber pump casing with a stand function, which eliminates the risk of damage to the floor.
- **With a back-flow prevention handle cock (φ 25)**
One-touch handle cock with easy open-close function is equipped.
- **Excellent durability**
The shaft seal uses both a wear-resistant double mechanical seal and oil seal, while the impeller has a long-life design using time-proven special urethane rubber.
- **Compact design**
Lightweight design - can be carried with one hand. (Weight 9.5kg)
- **Uses capacitor start-run motor**
The compact/lightweight/high-power capacitor start-run motor has a reliable built-in 3-terminal type automatic cutoff, which is designed to reduce the risk of burnout compared to conventional models.
- **Easy maintenance for the pump section**
The pump section can only be disassembled by removing 3 bolts at the bottom.
The impeller and pump casing are also easy to maintain.
- **Wear-resistance more than tripled**
Time-proven special synthetic rubber is employed for wetted parts including impeller and pump casing. The wear-resistance is three times or higher than that of conventional models.

Main Specifications

Handling Liquid	Kind of Liquid	Waste water
	Temperature	0 - 40°C
Material	Cable	VCT
	Motor Shaft	SUS420J2
	Pump Casing	Special synthetic rubber
	Impeller	Special urethane rubber
Electric Motor	Name	Air-filled type submersible induction motor
	Insulation Class	Class E
	Enclosure	IP68
	Phase	1-ph
	Voltage	100 - 230V

Since specifications of 115V, 230V and others, other than 100V, are for lot production, please contact our sales office.



Applications

- Dewatering residual water in tanks, swimming pools and etc.
- Dewatering spring water or sump from construction sites, underpass and etc.

Special Accessories (Optional)

- φ 25 vinyl hose

Standard Specifications

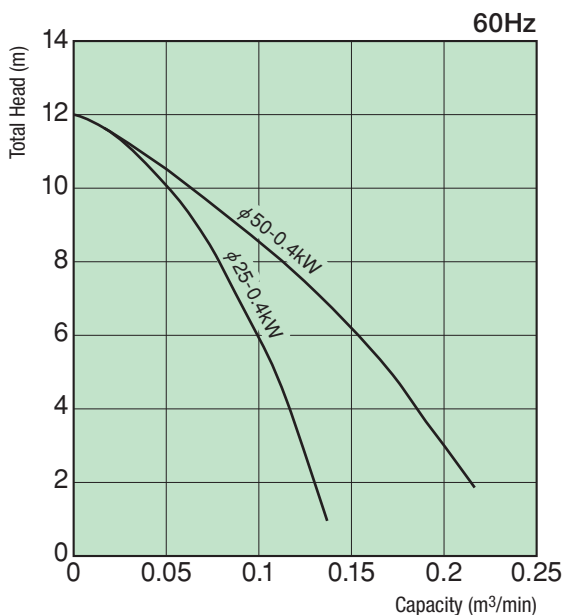
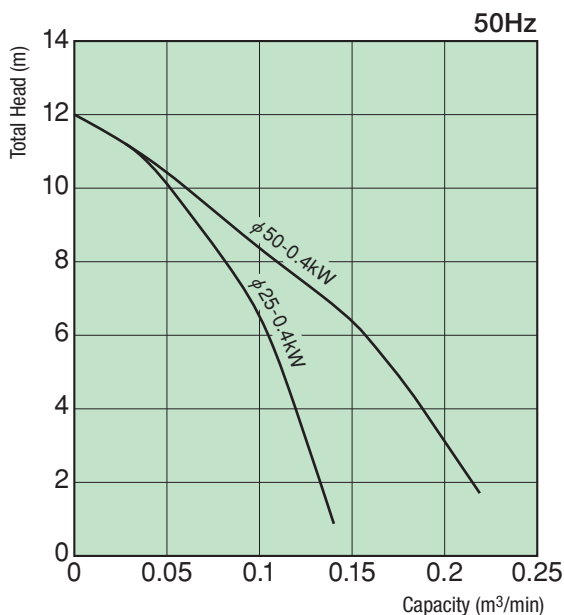
Bore mm (inch)	Pump Model	Output kW (HP)	Phase	Capacity - Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) kg
				50Hz	60Hz		
25 (1")	BRL400S	0.4 (1/2)	1-ph	0.1-6	0.1-6	2	9.5
50 (2")				0.15-6	0.15-6		

For the characteristics of the motor, bearing and oil, please refer to the specifications (detail data) - App.1.

Standard Accessories

- Cable (5m)1 pc.
- Check valve unit1 set (φ 25 specification)
(Companion flange, nipple, handle cock, and hose-coupling)
- Hose nipple.....1 pc. (φ 50 specification)

Performance Curves

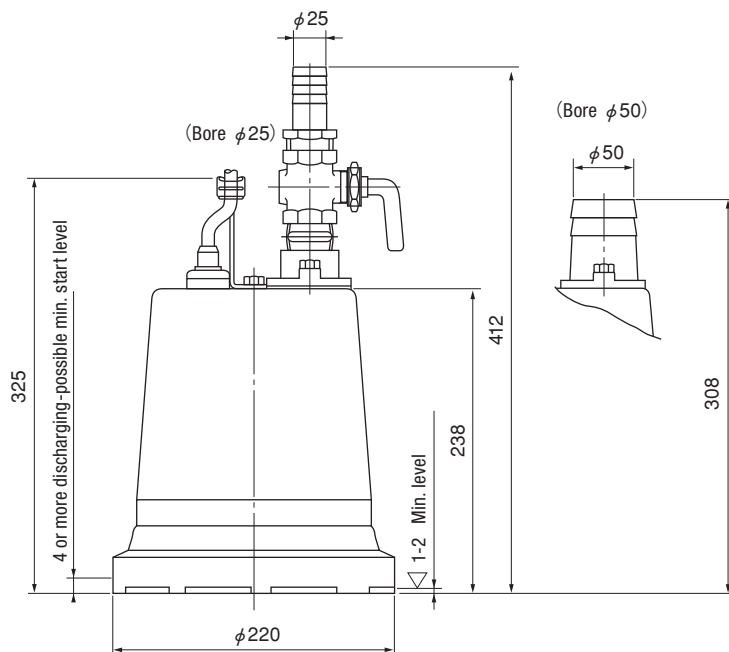


Part Specifications

Applicable Model	Cable Specifications				Starting Method	Mechanical Seal	
	Type	Section Area (mm ²)	Cores	Outer Dia. (mm)		Lower	Upper
BRL400S	VCT	1.25	3	φ 10.5	Condenser-run	SiC/SiC	Carbon/ Ceramic

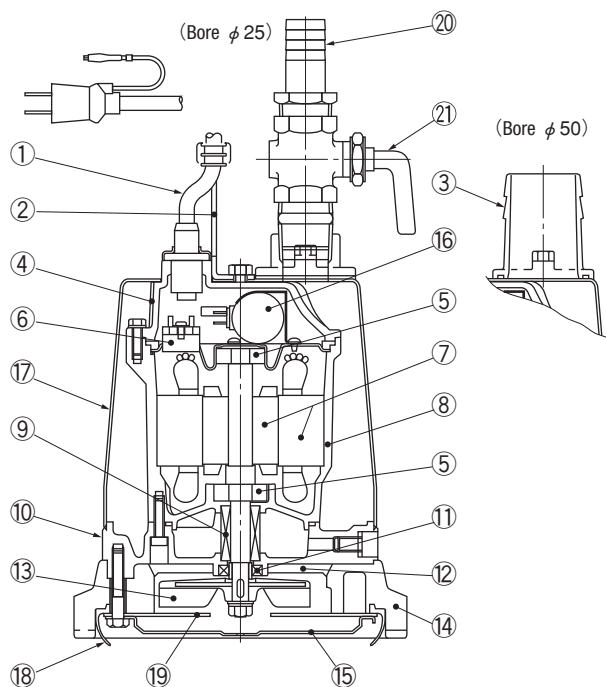
Dimensions

Unit: mm



Sectional View

BRL400S



No.	Name	Material
1	Cable	VCT
2	Handle	SPHC/NBR
3	Hose Nipple	ADC12
4	Motor Cover	ADC12
5	Ball Bearing	—
6	Thermal Protector	—
7	Motor	Shaft: SUS420J2
8	Stator Casing	ADC12
9	Mechanical Seal	—
10	Mechanical Seal Bracket	ADC12
11	Oil Seal	NBR
12	Rear Cover	Special synthetic rubber
13	Impeller	Special urethane rubber
14	Pump Casing	Special synthetic rubber
15	Strainer	SPCD
16	Capacitor	—
17	Outer Casing	SPCE
18	Water Absorption Skirt	Special synthetic rubber
19	Suction Cover	SUS
20	Hose Nipple	FC200
21	Handle Cock	BC

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **SUS** : Stainless steel **ADC** : Aluminum die casting **SPCD** : Steel **SPCE** : Steel **FC** : Gray iron casting **NBR** : Nitril rubber **SPHC** : Hot-rolled steel **SPCD/SPCE** : Cold-rolled steel

Submersible Trash Pump

Bore: 50 mm (2")

Output: 0.4 kW (1/2 HP)

BHV

BHV401S is a handy-type submersible pump with excellent durability and suitable for dewatering spring water at construction sites, agricultural purposes or simple domestic water supply/discharge.

Submersible Pump
for Dewatering

Bore mm (inch)	Output kW (HP)	Model	Page
50 (2")	0.4 (1/2)	BHV401S	325

Features

● Lightweight

Built with a compact capacitor start run motor and lightweight materials, the pump weight has been reduced approx. 60% against our former model, which facilitates a handling.

● Durable motor

Employing a capacitor start run motor with fewer rise in heat and three-terminals type thermal protector prevents troubles of governor and motor burn out due to a rise in heat. In addition, the combined use of a double mechanical seal and an oil seal enhances the durability of the motor.

● Special impeller

The impeller is made of wear-resistant special synthetic urethane rubber.

● Easy maintenance

The pump can be disassembled by removing three bolts. The impeller and pump casing are also easy to maintain.

Applications

- ☐ Dewatering spring water at construction sites
- ☐ Water intake or drainage for agricultural purposes
- ☐ Drainage from basements or cable pits
- ☐ Household, Gardening & etc.



Standard Specifications

Handling Liquid	Kind of Liquid	Rain, Spring, Sand carrying water
	Temperature	0 - 40°C
Material	Cable	VCT
	Motor Shaft	Stainless steel (SUS420J2)
	Pump Casing	Gray iron casting (FC200)
	Impeller	Special Urethane Rubber
Electric Motor	Name	Air-filled type Submersible Induction Motor
	Insulation Class	Class E
	Enclosure	IP68
	Phase	1-ph
	Voltage	100 - 240V

Standard Specifications

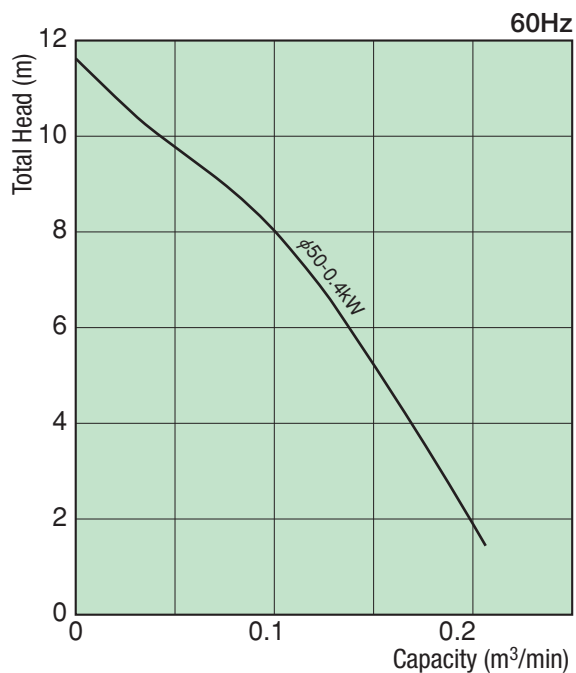
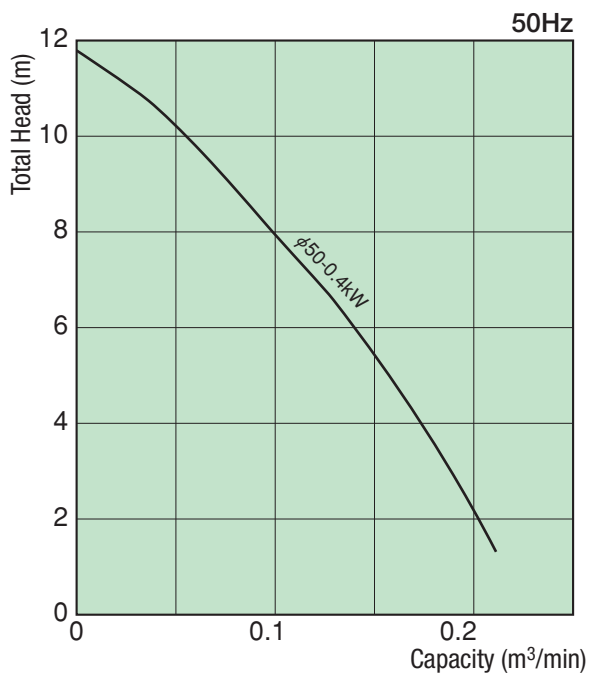
Bore mm (inch)	Model	Output kW (HP)	Phase	Capacity - Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) kg
				50Hz	60Hz		
50 (2")	BHV401S	0.4 (1/2)	1-ph	0.1–8.0	0.1–8.0	2	10

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (5m)1 pc.
- Hose nipple1 set

Performance Curves

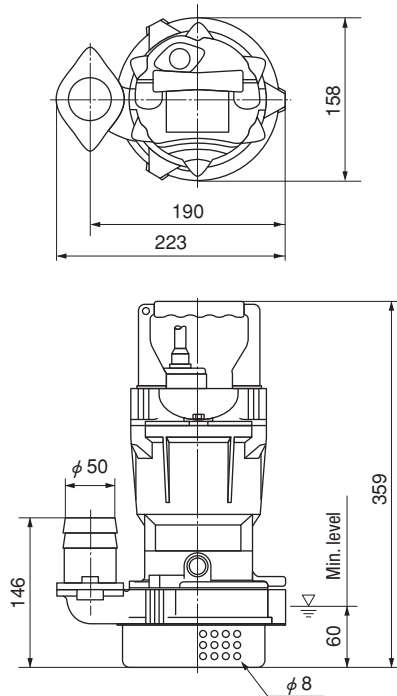


Part Specifications

Applicable Model	Cable Specifications				Starting Method	Mechanical Seal	
	Type	Section Area (mm ²)	Cores	Outer Dia. (mm)		Lower	Upper
BHV401S	VCT	1.25	3	φ 10.5	Condenser-run	SiC/SiC	Carbon/Ceramic

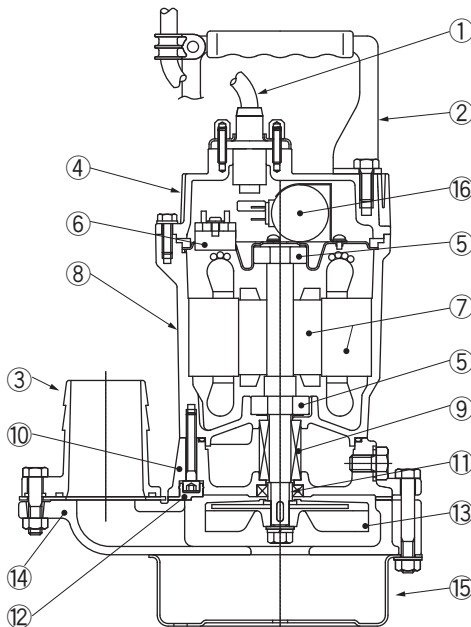
Dimensions

Unit: mm



Sectional View

BHV401S



Number	Name	Material
1	Cable	VCT
2	Handle	SPHC/NBR
3	Hose Nipple	ADC12
4	Motor Cover	ADC12
5	Ball Bearing	—
6	Thermal Protector	—
7	Motor	Shaft: SUS420J2
8	Stator Casing	ADC12
9	Mechanical Seal	—
10	Mechanical Seal Bracket	FC200
11	Oil Seal	NBR
12	Rear Surface Packing	Special Synthetic Rubber
13	Impeller	Special Urethane Rubber
14	Pump Casing	FC200
15	Strainer	SPCD
16	Capacitor	—

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **SUS** : Stainless steel **ADC** : Aluminum die casting **SPCD** : Steel **SPCE** : Steel **FC** : Gray iron casting **NBR** : Nitryl rubber **SPHC** : Hot-rolled steel

Submersible Dewatering Pump (4-poles Motor)

Bore: 150 - 250 mm (6" - 10")

Output: 5.5 - 22 kW (7.5 - 30 HP)

BU•BU-K (A) (equipped wit an agitator)

Submersible Pump
for Dewatering

This is a low-head design 4-poles motor submersible pump that can handle large volumes of water.

Excels for applications with large volumes of water and low head, such as river improvement and irrigation.

Models with agitators can transfer muddy water containing a lot of sands.

Bore mm (inch)	Output kW (HP)	Model	Page
150 (6")	5.5 (7.5)	BU486KB (-F)	329
	9 (12)	BU4126K (-F)	
200 (8")	11 (15)	BU4158K (-F)	331
250 (10")	22 (30)	BU43010B (-F)	
150 (6")	5.5 (7.5)	BU486KBA (-F)	329
	9 (12)	BU4126KA (-F)	
200 (8")	11 (15)	BU4158KA (-F)	

* The character "A" at the end of the Model indicates that it has an agitator.

* (-F) indicates the flange coupling type.

Features

● Heavy-duty

[Motor]

The auto-reset type thermal protector prevents motor burnout due to an overcurrent and an overheat.

[Shaft seal]

The double mechanical seal is made of time-proven silicon carbide (4-end faces).

[Impeller]

The impeller has high pass-through capability and it prevents troubles of clogging.

● Simple structure

The simple structure realizes low-maintenance.



Main Specifications

Handling Liquid	Kind of Liquid	Spring water
	Temperature	0 - 40°C
Material	Cable	2RNCT (5.5kW) 2PNCTS
	Motor Shaft	SUS420J2
	Pump Casing	FC250 FC200 (BU43010B)
	Impeller	FCD700 High-chrome cast iron (BU43010B)
Electric Motor	Name	Air-filled type submersible induction motor
	Insulation Class	Class B (5.5-11kW) and Class F (22kW)
	Enclosure	IP68
	Phase	3-ph
	Voltage	200 - 480V

Applications

- Dewatering spring water at construction site of dams, sewage systems, tunnels, rivers and etc.
- Water intake or drainage for agricultural purpose

Special Specifications

Cable Extension	While 15, 20 and 30m are specified, please refer to the specifications on color pages for the "permissible length".
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Standard Specifications

Bore mm (inch)	Pump Model	Output kW (HP)	Phase	Capacity - Total Head m³/min-m		No. of poles P	Weight (Bare Pump) kg
				50Hz	60Hz		
150 (6")	BU486KB (-F)	5.5 (7.5)	3-ph	2.0—10.0	2.0—10.0	4	124(133)
	BU486KBA (-F)			1.5—10.0	1.5—10.0		
	BU4126K (-F)	9 (12)		2.0—16.0	2.0—16.0		180(189)
	BU4126KA (-F)			2.0—14.0	2.0—14.0		
200 (8")	BU4158K (-F)	11 (15)		4.0—10.0	4.0—10.0		200(210)
	BU4158KA (-F)			4.0—8.0	4.0—8.0		

* (-F) indicates the flange pipe coupling type.

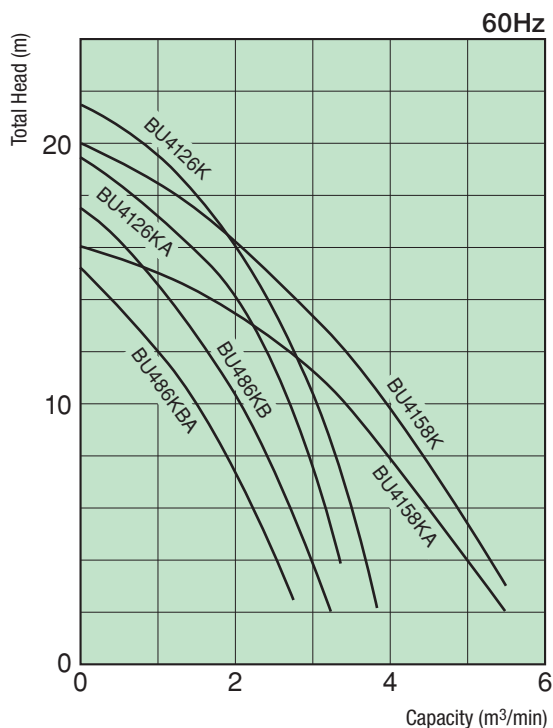
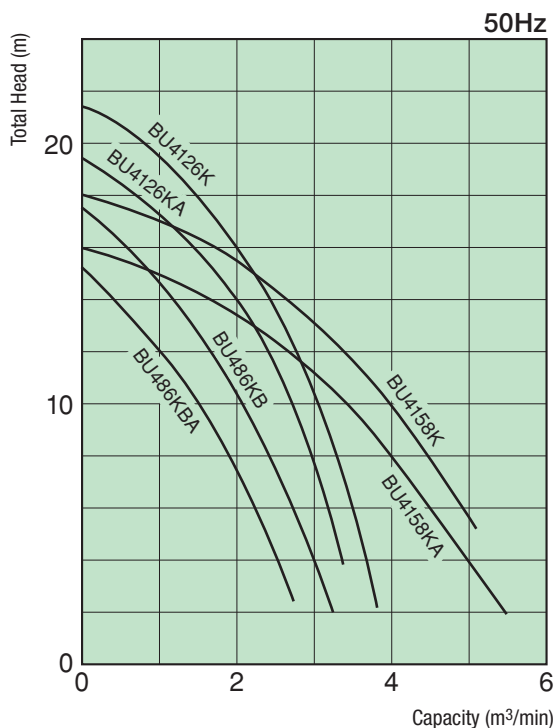
* The character "A" at the end of the Model indicates that it has an agitator.

For the characteristics of the motor, bearing and oil, please refer to the specifications (detail data) - App.1.

Standard Accessories

- Cable (10m) 1 pc.
- Hose nipple or Flange pipe 1 pc.

Performance Curves

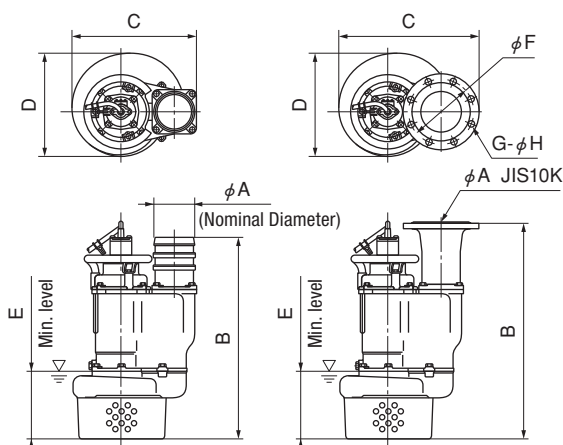


Part Specifications

Applicable Model	Cable Specifications				Starting Method	Mechanical Seal	
	Type	Section Area (mm ²)	Cores	Outer Dia. (mm)		Lower	Upper
BU486KB (A)	2RNCT	3.5	4	φ 15.8	Direct	SiC/SiC	SiC/SiC
BU4126K (A)	2PNCTS	5.5	4	φ 19.6			
BU4158K (A)	2PNCTS	8	4	φ 21.2			

Dimensions

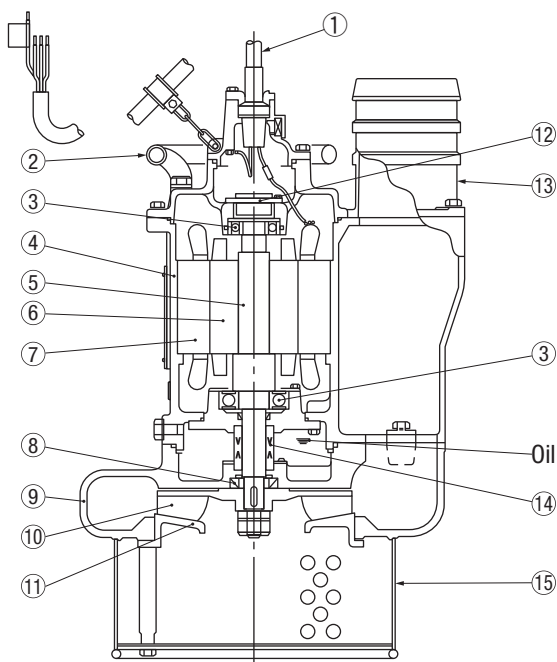
Unit: mm



Model	A	B	C	D	E	F	G	H
BU486KB (A)	150	745	457	381	250	—	—	—
BU486KB (A)-F	150	800	516	381	250	240	8	23
BU4126K (A)	150	806	541	480	300	—	—	—
BU4126K (A)-F	150	861	600	480	300	240	8	23
BU4158K (A)	200	848	543	483	300	—	—	—
BU4158K (A)-F	200	900	594	483	300	290	12	23

Sectional View

BU4126K



No.	Name	Material
1	Cable	2PNCTS
2	Handle	SGP
3	Ball Bearing	—
4	Motor Frame	FC200
5	Motor Shaft	SUS420J2
6	Rotor	—
7	Stator	—
8	Oil Seal	Synthetic rubber
9	Casing	FC250
10	Impeller	FCD700
11	Suction Cover	FCD700
12	Thermal Protector	—
13	Hose Nipple	FC200
14	Mechanical Seal	—
15	Strainer	SS330

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel

SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

Standard Specifications

Bore mm (inch)	Pump Model	Output kW (HP)	Phase	Capacity - Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) kg
				50Hz	60Hz		
250 (10")	BU43010B (-F)	22 (30)	3-ph	8.0-10	8.0-10	4	365 (370)

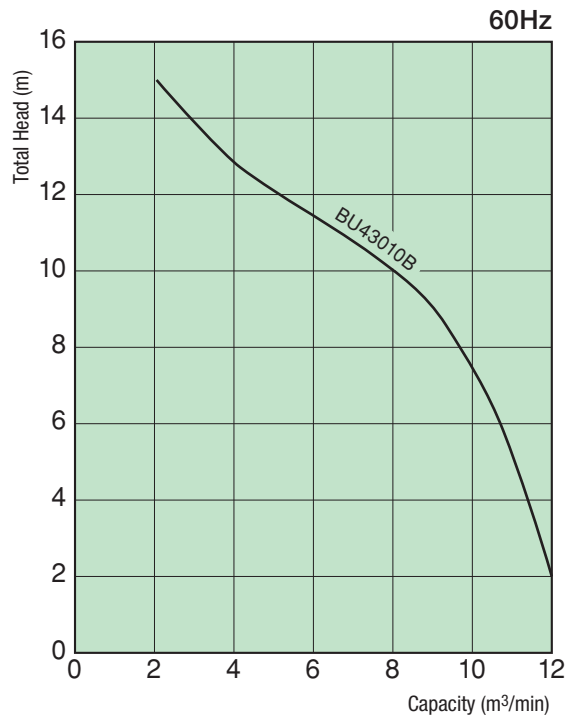
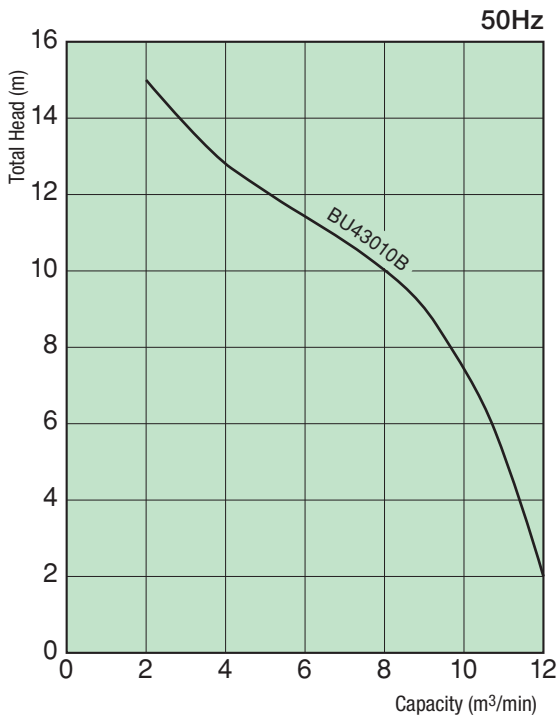
* (-F) indicates the flange pipe coupling type.

For the characteristics of the motor, bearing and oil, please refer to the specifications (detail data) - App.1.

Standard Accessories

- Cable (10m) 1 pc.
- Hose nipple or Flange coupling 1 pc.

Performance Curves

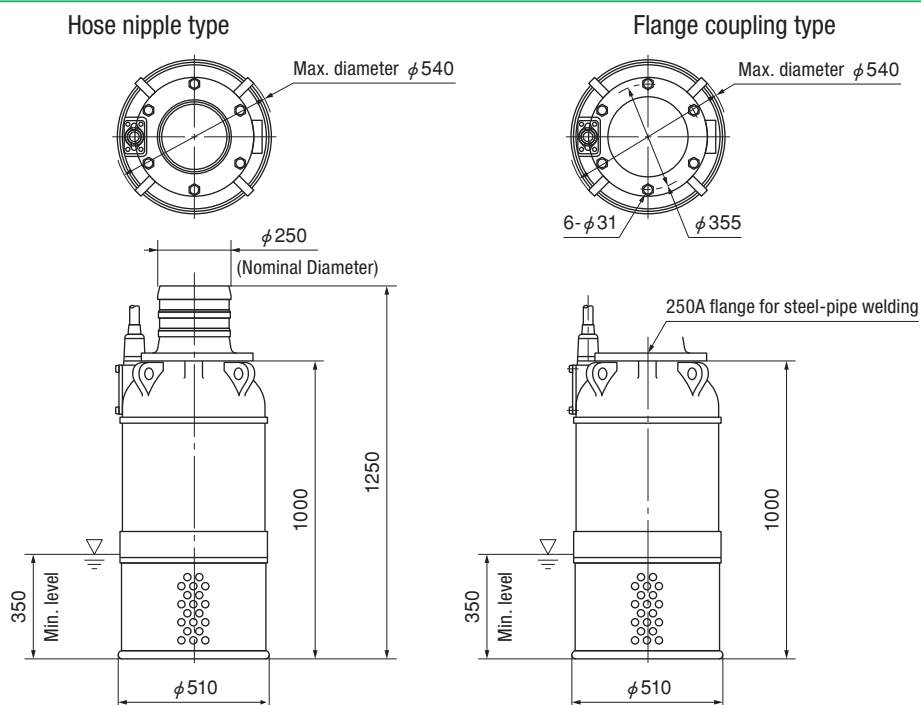


Part Specifications

Applicable Model	Cable Specifications				Starting Method	Mechanical Seal	
	Type	Section Area (mm ²)	Cores	Outer Dia. (mm)		Lower	Upper
BU43010B	2PNCT	22 14	3 1 } 4	φ 31.6	Direct	Cemented Carbide/ Cemented Carbide	Ceramic/CAC

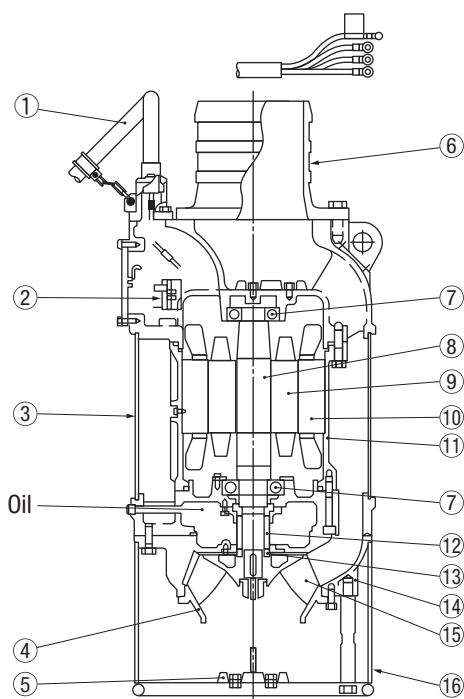
Dimensions

Unit: mm



Sectional View

BU43010B



No.	Name	Material
1	Cable	2PNCTS
2	Thermal Protector	—
3	Outer Cover	STK
4	Suction Cover	High-chrome cast iron
5	Sacrificial Anode	Aluminum alloy
6	Hose Nipple	FC200
7	Ball Bearing	—
8	Motor Shaft	SUS420J2
9	Rotor	—
10	Stator	—
11	Motor Frame	FC200
12	Mechanical Seal	—
13	Oil Seal	Synthetic rubber
14	Casing	FC200
15	Impeller	High-chrome cast iron
16	Strainer	SS400

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel

SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitryl rubber

Submersible Sand Pump (4 or 6 Poles Motor)

Bore: 80 - 200 mm (3" - 8")
Output: 3.7 - 37 kW (5 - 50 HP)

SN

The SN series is a submersible sand pump equipped with a high-chrome cast iron impeller as standard specification. Depending on usage, you can select from various models, including the impeller with an agitator, water-jet agitation type and no agitating mechanism type.

	Bore mm (inch)	Output kW (HP)	Model	Page
Impeller with an agitator	80 (3")	3.7 (5)	SN35A	336
	100 (4")	5.5 (7.5)	SN48E	337
	150 (6")	11 (15)	SN615C	338
	150 (6")	22 (30)	SN631A	
	150 (6")	37 (50)	SN651A	
	200 (8")	37 (50)	SN851A	340
Water-jet agitation	150 (6")	37 (50)	SN651J	338
	200 (8")	37 (50)	SN851J	340
No agitating mechanism	150 (6")	22 (30)	SN631	338

Features

● Heavy-duty materials

Wear-resistant materials, including high-chrome cast iron for the impeller and special cast iron for the pump casing are used respectively.

● Durable motor

An optimal motor protector is employed for each model. Moreover, the cable has a core wire seal to prevent water leakage from the cable end.

Model	Thermal protector (Auto-reset type)	Micro-thermal Protector	Leakage Detector
SN35A	○	—	—
SN48E	○	—	—
SN615C	○	—	—
SN631 (A type)	—	○	○
SN651 (A-J type)	—	○	○
SN851 (A-J type)	—	○	○

● High pass-through capability

Impeller with a wide passage reduces the risk of clogging from solids.

● Please select your model from the table below according to usage.

No-agitating mechanism	With agitator	Water-jet agitation
—	SN35A	—
—	SN48E	—
—	SN615C	—
SN631	SN631A	—
—	SN651A	SN651J
—	SN851A	SN851J

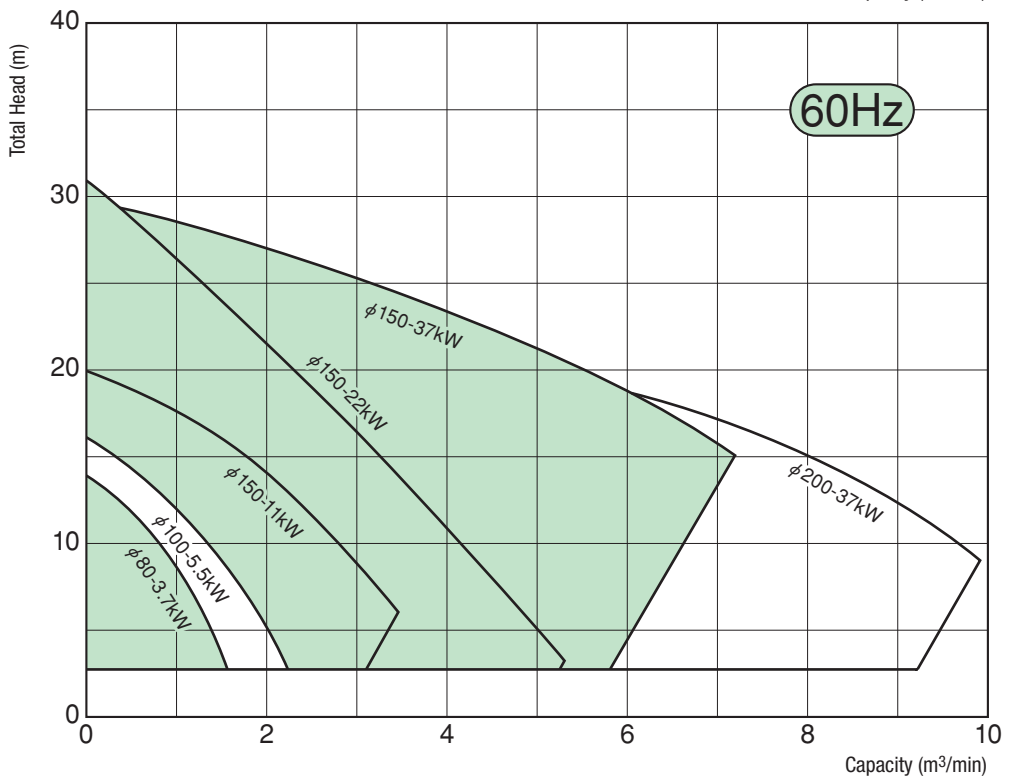
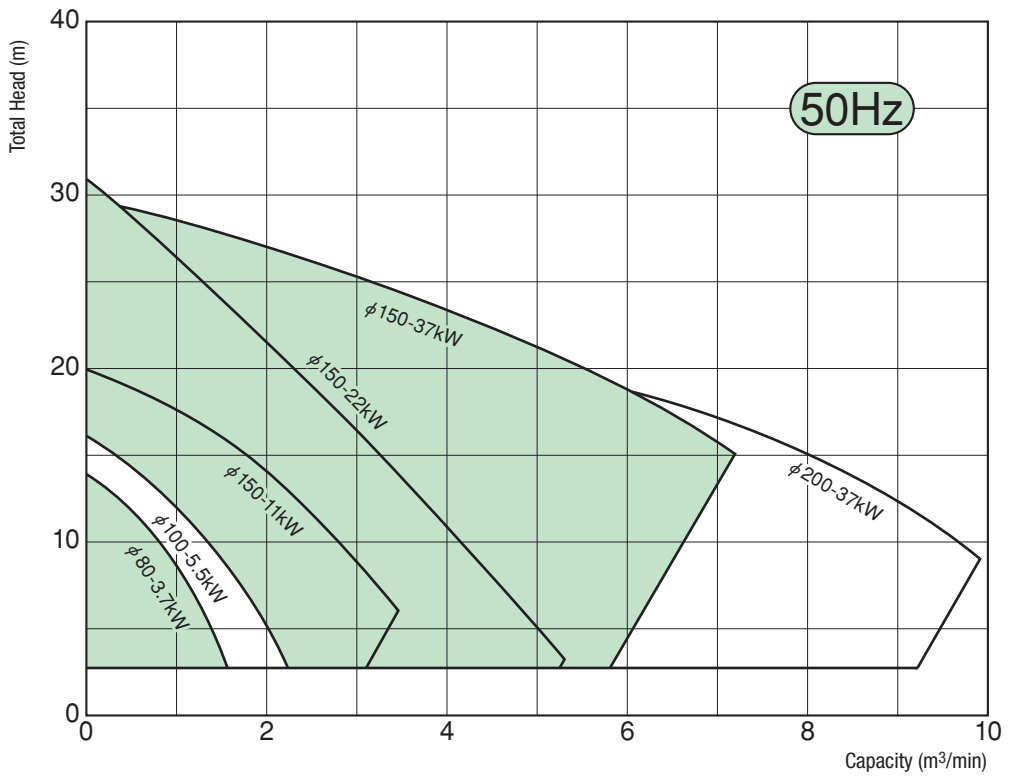
Applications

- Drainage of sand basin and sewage tank containing sand at sewage treatment facilities
- Dewatering muddy water at dredging work, civil engineering work, and etc.
- Removing mill scales and other sandy sediments at iron works or cement plants

Main Specifications

Handling Liquid	Kind of Liquid	Muddy water containing sands
	Temperature	0 - 40°C
Material	Cable	2RNCT or 2PNCT
	Motor Shaft	SUS420J1 or J2
	Pump Casing	FC250 or FCD500
	Impeller	High-chrome cast iron
Electric Motor	Name	Air-filled type submersible induction motor
	Insulation Class	Class E, Class B or Class F
	Enclosure	IP68
	Phase	3-ph
	Voltage	200 - 480V

Performance Curves



SN

Submersible Sand Pump
(4 or 6 Poles Motor)

Bore : 80 • 100 mm (3" • 4")

Output: 3.7 • 37 kW (5 • 50 HP)



SN35A

Submersible Pump
for Dewatering

Standard Specifications

Bore mm (inch)	Pump Model	Output kW (HP)	Phase	Capacity - Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) kg
				50Hz	60Hz		
80 (3")	SN35A	3.7 (5)	3-ph	0.8-10	0.8-10	4	114

For the characteristics of the motor, bearing and oil, please refer to the specifications (detail data) - App.1.

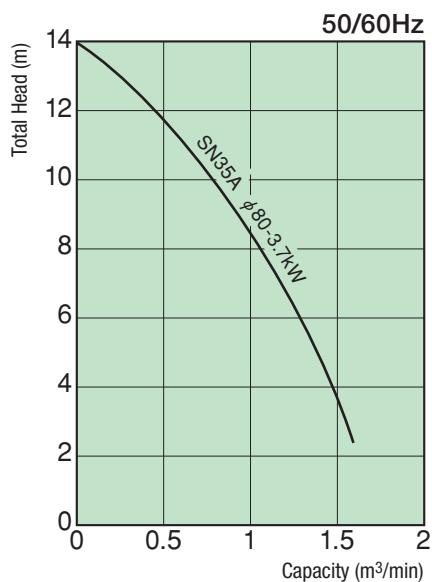
Standard Accessories

- Cable (10m) 1 pc.

Part Specifications

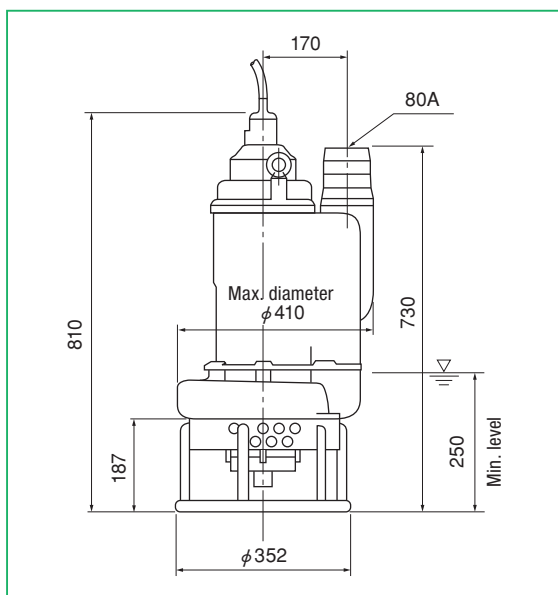
Applicable Model	Cable Specifications				Starting Method	Mechanical Seal	
	Type	Section Area (mm ²)	Cores	Outer Dia. (mm)		Lower	Upper
SN35A	2RNCT	3.5	4	φ 15.8	Direct	SiC/SiC	SiC/SiC

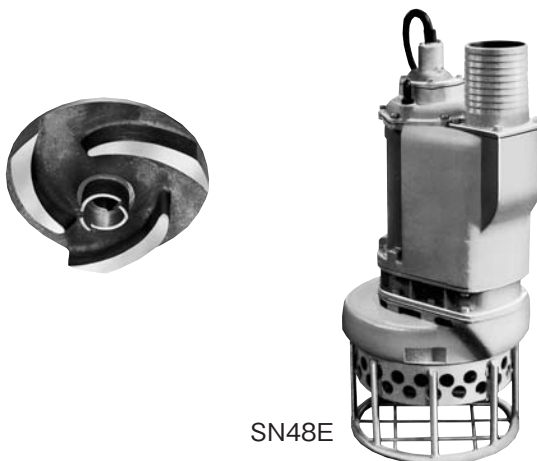
Performance Curves



Dimensions

Unit: mm





SN48E

Standard Specifications

Bore mm (inch)	Pump Model	Output kW (HP)	Phase	Capacity - Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) kg
				50Hz	60Hz		
100 (4")	SN48E	5.5 (7.5)	3-ph	1.3-10	1.3-10	4	115

For the characteristics of the motor, bearing and oil, please refer to the specifications (detail data) - App.1.

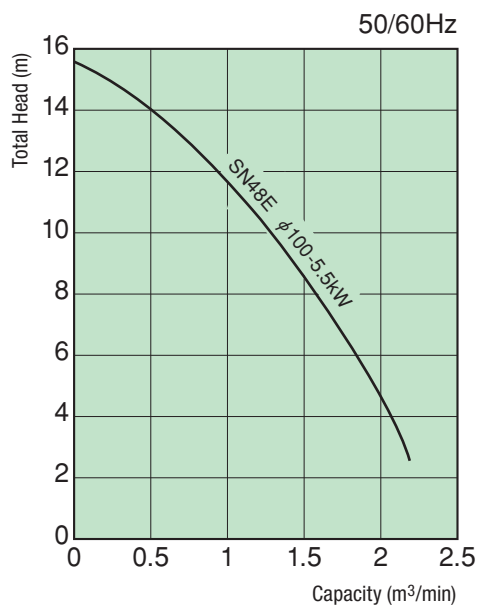
Standard Accessories

- Cable (10m) 1 pc.

Part Specifications

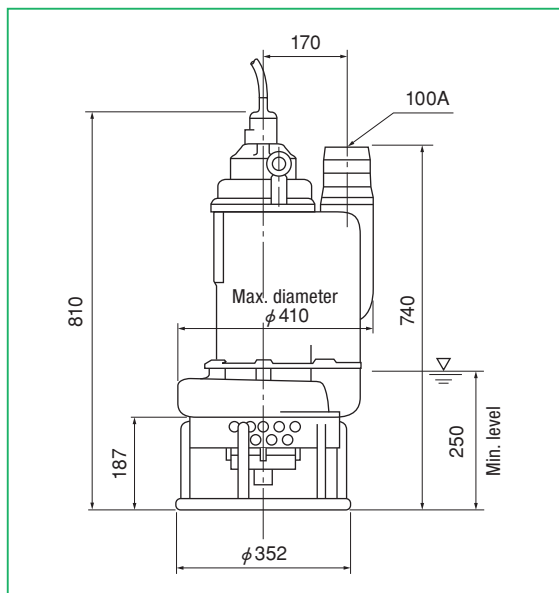
Applicable Model	Cable Specifications				Starting Method	Mechanical Seal	
	Type	Section Area (mm ²)	Cores	Outer Dia. (mm)		Lower	Upper
SN48E	2RNET	3.5	4	φ 15.8	Direct	SiC/SiC	SiC/SiC

Performance Curves



Dimensions

Unit: mm



SN**Submersible Sand Pump
(4 or 6 Poles Motor)**Bore : **150 mm (6")**Output: **11 - 37 kW (15 - 50 HP)**

SN615C



SN631A

Submersible Pump
for Dewatering

Standard Specifications

Bore mm	Pump Model			Output kW (HP)	Phase	Capacity - Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) kg		
	No-agitating mechanism	With an agitator type	Water-jet agitation type			50Hz	60Hz		No-agitating mechanism	With an agitator type	Water-jet agitation type
150 (6")	—	SN615C	—	11 (15)	3-ph	2.0–14	2.0–14	4	—	240	—
	SN631	SN631A	—	22 (30)		3.2–15	3.2–15		430	435	—
	—	SN651A	SN651J	37 (50)		3.2–25	3.2–25	6	—	740	785

For the characteristics of the motor, bearing and oil, please refer to the specifications (detail data) - App.1.

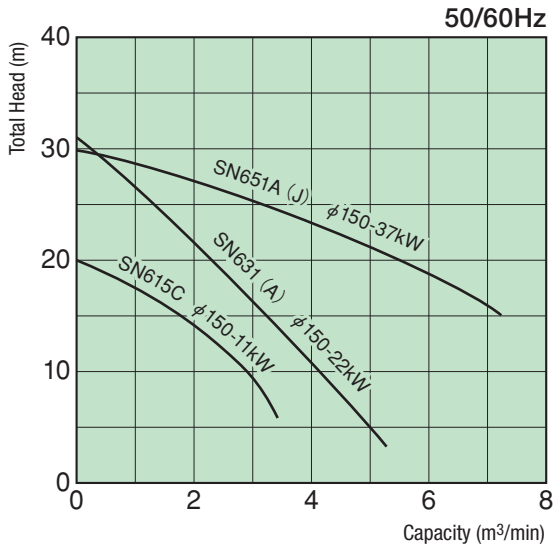
Standard Accessories

- Cable (10m) 1 pc.

Part Specifications

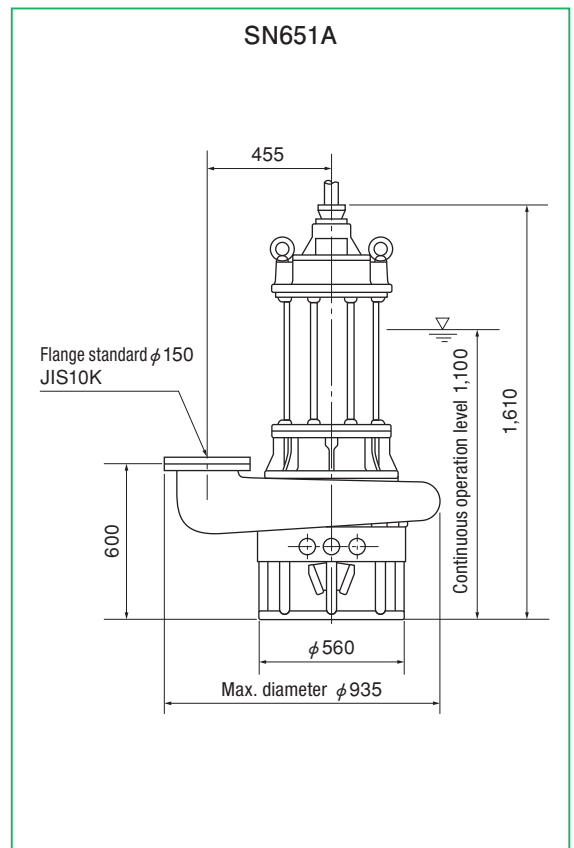
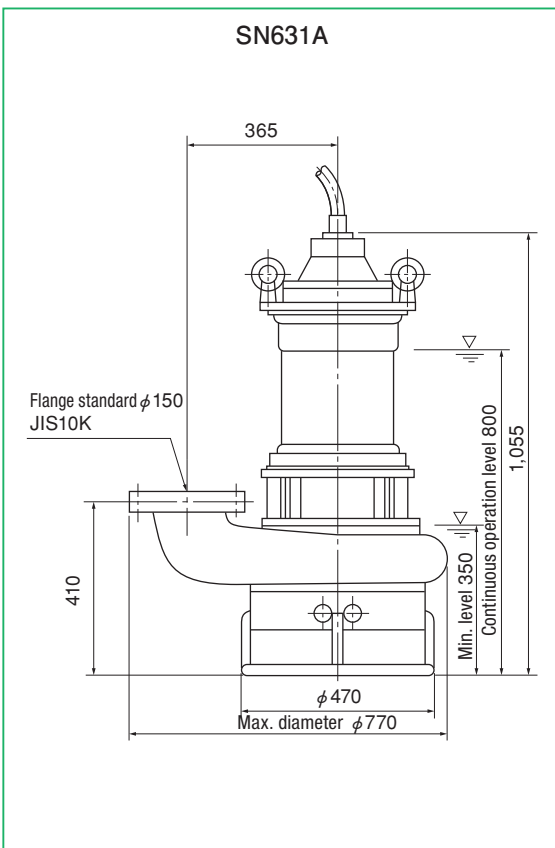
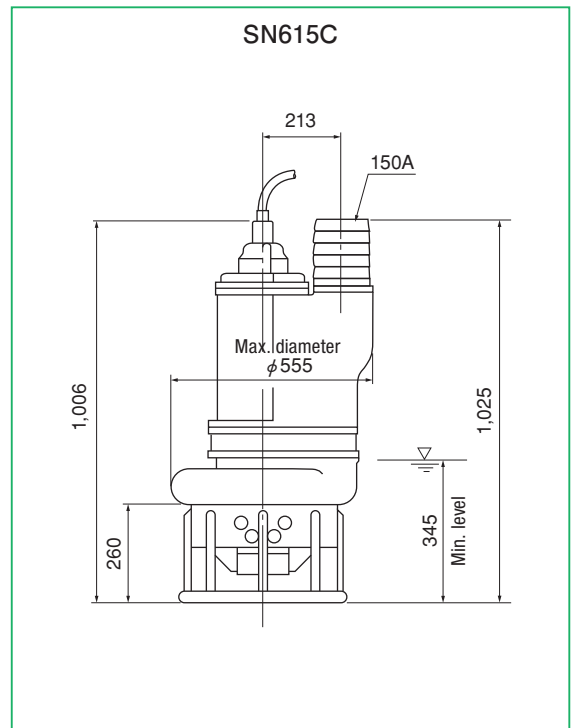
Applicable Model	Cable Specifications				Starting Method	Mechanical Seal	
	Type	Section Area (mm ²)	Cores	Outer Dia. (mm)		Lower	Upper
SN615C 11kW (15 HP)	2PNCT	8	4	φ 21.2	Direct	Cemented carbide /Cemented carbide	Ceramic/BC
SN631 (A) 22kW (30 HP)	2PNCT	22 14 0.75	3 1 3 } 7	φ 31.6			Stainless/ Carbon
SN651A (J) 37kW (50 HP)	2PNCT	30 14 0.75	6 1 3 } 10	φ 41.3	Star-delta		SiC/SiC

Performance Curves



Dimensions

Unit: mm



SN	Submersible Sand Pump (4 or 6 Poles Motor)	Bore : 200 mm (8")
		Output: 37 kW (50 HP)

Standard Specifications

Bore mm	Pump Model		Output kW (HP)	Phase	Capacity - Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) kg	
	With an agitator type	Water-jet agitation type			50Hz	60Hz		With an agitator type	Water-jet agitation type
200 (8")	SN851A	SN851J	37 (50)	3-ph	6.0-19	6.0-19	6	785	815

For the characteristics of the motor, bearing and oil, please refer to the specifications (detail data) - App.1.

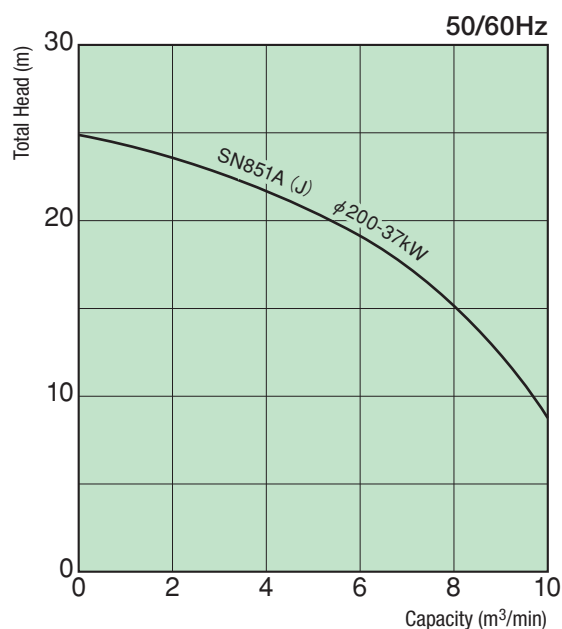
Standard Accessories

- Cable (10m) 1 pc.

Part Specifications

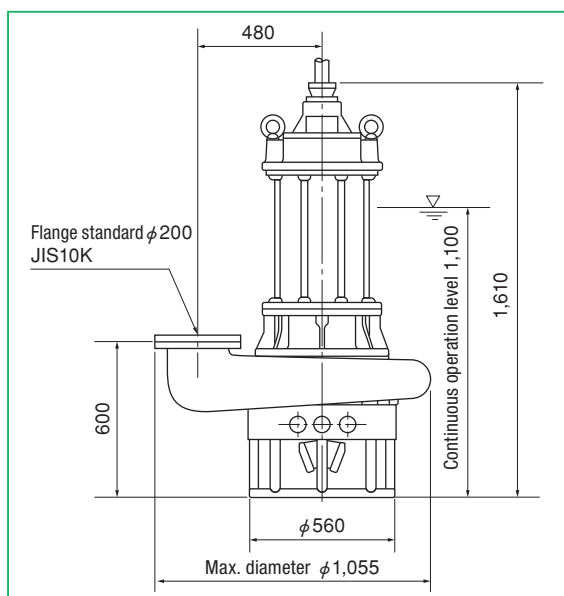
Applicable Model	Cable Specifications				Starting Method	Mechanical Seal	
	Type	Section Area (mm ²)	Cores	Outer Dia. (mm)		Lower	Upper
SN851A (J)	2PNCT	30 14 0.75	6 1 3 } 10	φ 41.3	Star-delta	Cemented carbide /Cemented carbide	SiC/SiC

Performance Curves



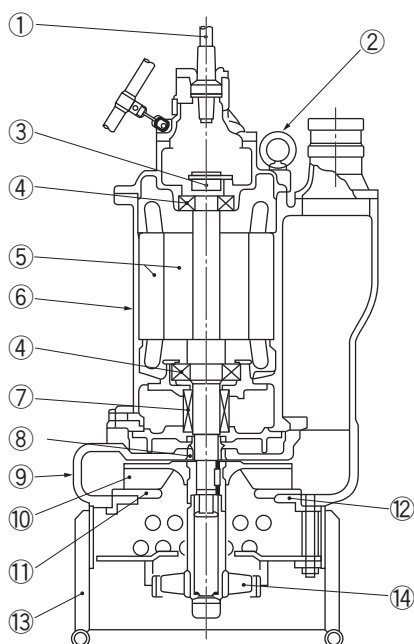
Dimensions

Unit: mm



Sectional View

SN48E



No.	Name	Material
1	Cable	2RNCT
2	Eyebolt	S45C
3	Thermal Protector	—
4	Ball Bearing	—
5	Motor	Shaft: SUS420J2
6	Stator Casing	FC200
7	Mechanical Seal	—
8	Ring	High-chrome cast iron
9	Pump Casing	FC250
10	Impeller	High-chrome cast iron
11	Suction Cover Base	SS400
12	Suction Cover	FC200
13	Strainer	SS330
14	Agitator	High-chrome cast iron

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitrlyl rubber

MEMO

Submersible Pump
for Dewatering

Handwriting practice lines consisting of 25 horizontal dashed green lines.

Land Pump

Dry Pit Pump

CNT (Non-clog Impeller) 345

CWT (Screw Impeller) 357

Self-Priming Residue Dewatering Pump

BVR (Lightweight) 365

MEMO

Land Type

Handwriting practice area with horizontal dashed lines.

Dry Pit Pump (Non-clog Impeller)

Bore: 65 - 150 mm (2 1/2" - 6")

Output: 1.5 - 22 kW (2 - 30 HP)

CNT

The CNT series is a dry installation pump. Since its design is based on a submersible pump, it remains operatable, even if immersed in water.

The CNT series can achieve higher discharge head when connected in series with CN-P, making it suitable for use at a transfer-pumping station.

Land Pump

Bore mm (inch)	Output kW (HP)	Model	Page
65 (2 1/2")	1.5 (2)	CNT651	348
80 (3")	2.2•3.7 (3•5)	CNT801	
100 (4")	5.5•7.5 (7.5 •10)	CNT1001	
150 (6")	11•15•22 (15•20•30)	CNT1501	350
	6•11 (50Hz) (8•15)	CNT150B	352
	6.5•13 (60Hz) (9 •17.5)		

■ Features

● Adopts an air-cooled submersible motor (except for CNT150B)

A dry-type air-cooled submersible motor is adopted. The water jacket-less structure is very simple and facilitates maintenance and inspection. A larger and more efficient motor significantly cuts the emitted heat and reduces the thermal degradation of bearing grease, O-rings, and mechanical seals.

● Non-clogging impeller

Equipped with a single-vane, non-clogging closed impeller eliminates clogging and facilitates the transfer of water containing solids.

● Extended service life

The shaft seal mechanism is equipped with a reliable double mechanical seal to extend the service life.

● Operatable in water

The pump, which is designed to be submersible and remains operatable, even if immersed in water.

● Replaceable to land pump

It can replace a land pump without any construction work.

■ Applications

- Sewage treatment plant and Septic tank
 - Wastewater
 - Raw water
 - Sludge
- Factory
 - Industrial wastewater, cooling water
- Others
 - Pumping station
 - Rainwater, etc.

■ Special Specifications

Cable Extension	Cable lengths: 10 - 30m (every 5m)
Material Changes	Impeller: SCS13 (Stainless steel casting) Base Cover: SCS13 (Stainless steel casting)
Others	● Availability of mounting leakage detector, please refer to the specifications (detail data) - App.1. ● For specifications other than the above, please contact us.

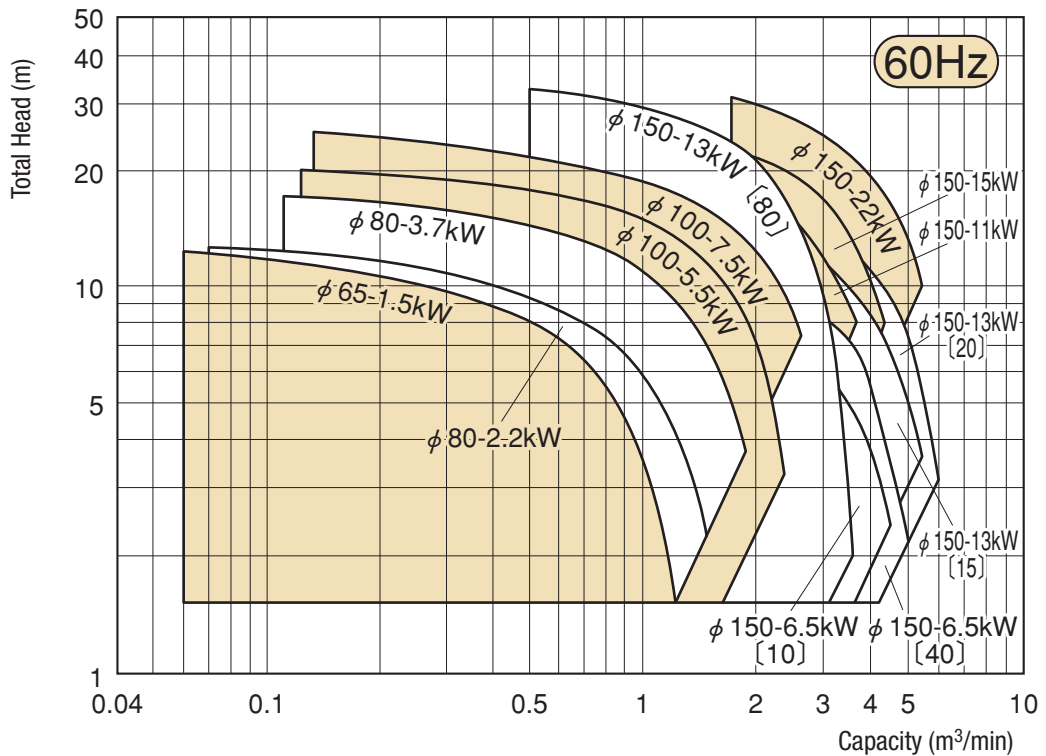
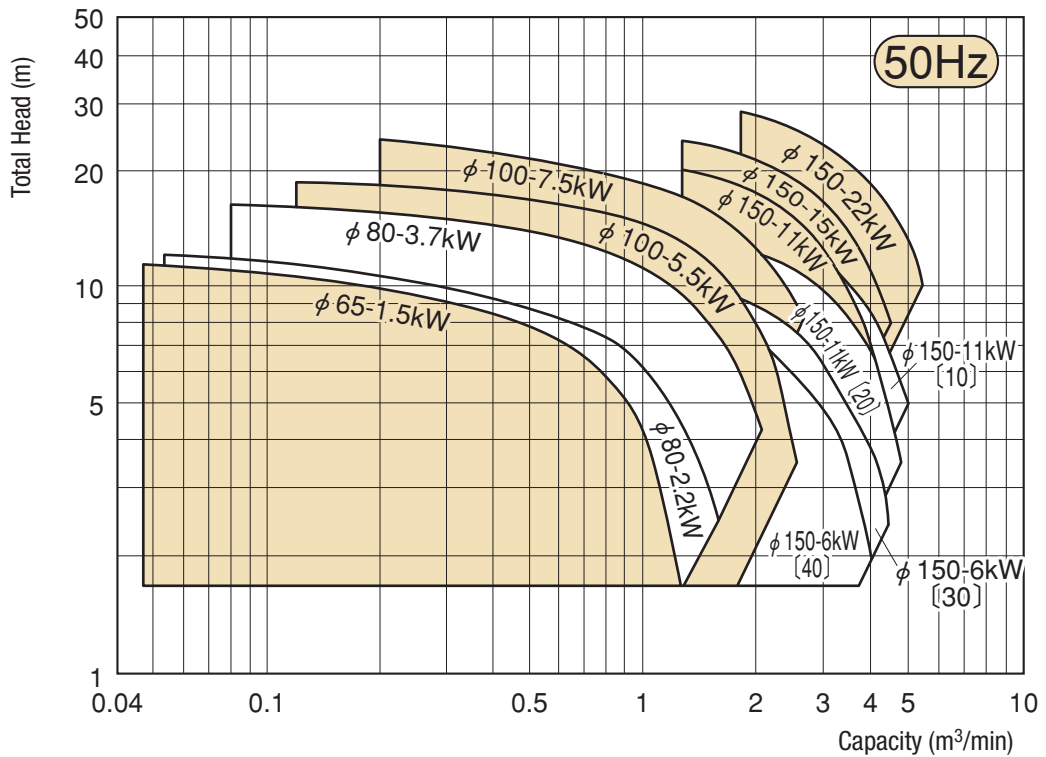
■ Standard Specifications

Installation Environment	Ambient Temperature	-20 - 40°C
	Ambient Humidity	0 - 100%
Handling Liquid	Kind of Liquid	Wastewater, sewage containing sludge
	Temperature	0 - 60°C (0 - 40°C for CNT150B)
Material	Cable	VCT (CNT1501, CNT150B and 2PNCT)
	Motor Shaft	SUS420J2
	Pump Casing	FC250 (FC200 for CNT150B)
	Impeller	FC200 (7.5 kW or more and CNT150B) FC250 (11 kW or more) FCD500 (22 kW)
Electric Motor	Name	Air-filled type Submersible Induction Motor
	Insulation Class	Class E (Class F for CNT150B)
	Enclosure	IP68
	Phase	3-ph
	Voltage	200 - 480V

■ Pump-Related Product

- Liquid Level Control Switch
 - Level Regulator ⇒ See page 370
 - Mini Switch ⇒ See page 372
 - Oval Float ⇒ See page 373

Performance Curves





CNT801

Standard Specifications

Bore mm (inch)		Pump Model	Output kW (HP)	Phase	Capacity - Total Head m³/min-m		No. of poles P	Weight (Bare Pump) kg
Discharge	Suction				50Hz	60Hz		
65 (2 1/2")	80 (3")	CNT651	1.5 (2)	3-ph	0.75–6.5	0.65–7.0	4	130
80 (3")	100 (4")	CNT801	2.2 (3)	3-ph	0.90–6.7	0.84–7.1	4	205
			3.7 (5)		1.18–10.1	1.14–9.9		230
100 (4")	125 (5")	CNT1001	5.5 (7.5)	3-ph	1.50–11.6	1.49–11.6	4	275
			7.5 (10)		1.79–14.0	1.70–14.5		300

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

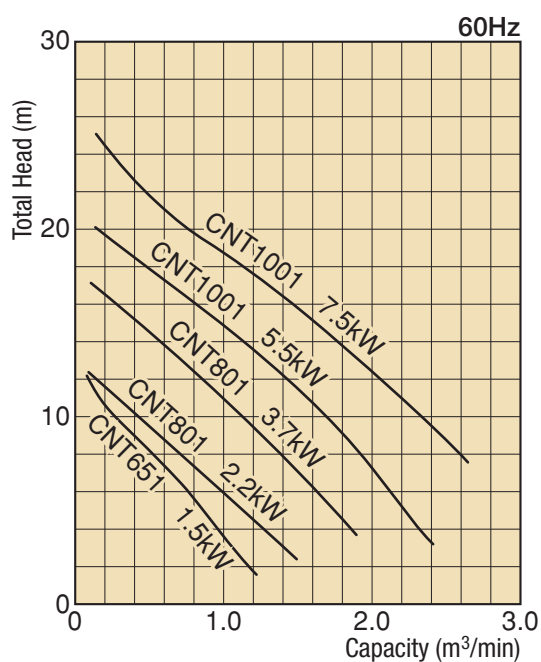
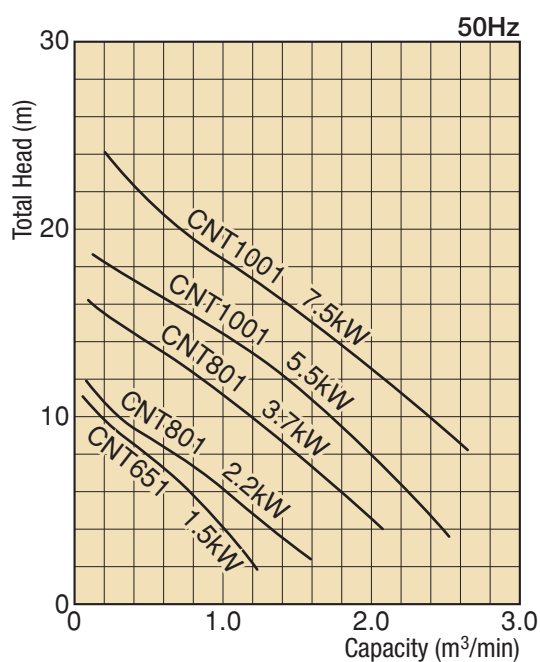
Standard Accessories

- Cable (8 m) 2 pcs.
- Stand (Suction pipe) 1 set

Part Specifications

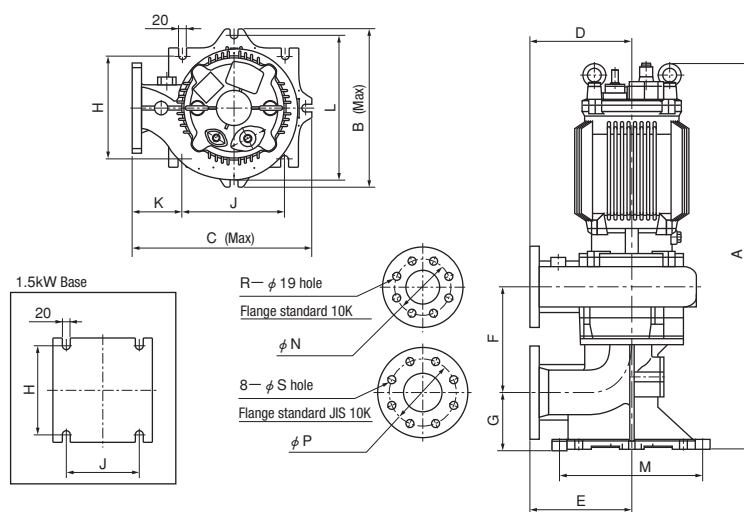
Applicable Model		Cable Specification					Starting Method	Mechanical Seal	
		Type	Section Area (mm²)	Cores	Outer Dia. (mm)	Number of Cables		Upper	Lower
CNT651	1.5kW (2 HP)	VCT	1.25	4	φ 11.5	1	Direct	SiC/SiC	SiC/SiC
		2PNCT	1.25	2	φ 9.8	1			
CNT801	2.2kW (3 HP)	VCT	1.25	4	φ 11.5	1			
		2PNCT	1.25	2	φ 9.8	1			
CNT801	3.7kW (5 HP)	VCT	2.0	4	φ 12.0	1			
		2PNCT	1.25	2	φ 9.8	1			
CNT1001	5.5kW (7.5 HP)	VCT	3.5	4	φ 14.0	1			
		2PNCT	1.25	2	φ 9.8	1			
CNT1001	7.5kW (10 HP)	VCT	5.5	4	φ 16.5	1			
		2PNCT	1.25	2	φ 9.8	1			

Land Pump



■ Dimensions

Unit: mm



Pump Model	Output kW (HP)	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S								
CNT651	1.5 (2)	865	288	354	210	180	273	130	230	195	110	—	—	140	150	4	19								
CNT801	2.2 (3)	920	410	470	265	265	270	145	270	270	130	380	380	150	175	8									
	3.7 (5)	995												175	210										
CNT1001	5.5 (7.5)	1,050	423											265	265		270	145	270	270	130	380	380	175	210
	7.5 (10)	1,110														175								210	

CNT

Dry Pit Pump
(Non-clog Impeller)

Bore : 150 mm (6")

Output: 11 - 22 kW (15 - 30 HP)



CNT1501

Land Pump

Standard Specifications

Bore mm (inch)		Pump Model	Output kW (HP)	Phase	Capacity - Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) kg
Discharge	Suction				50Hz	60Hz		
150 (6")	200 (8")	CNT1501	11 (15)	3-ph	2.5–15.0	2.5–15.2	4	550
			15 (20)		2.9–17.0	2.9–16.8		610
			22 (30)		3.5–21.2	3.4–22.7		680

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

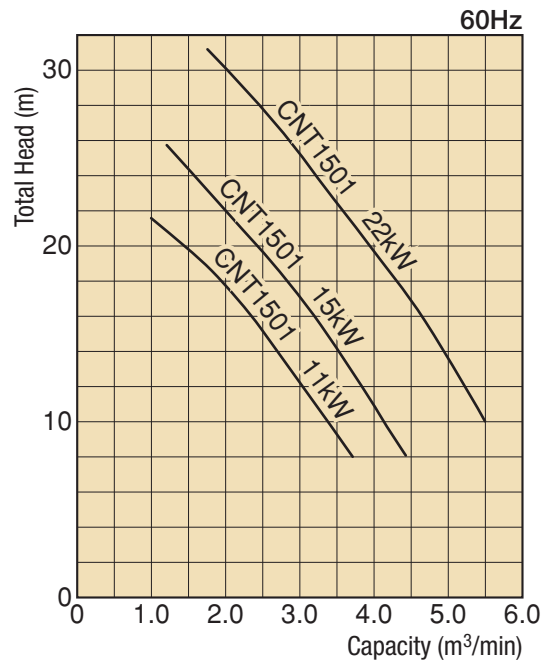
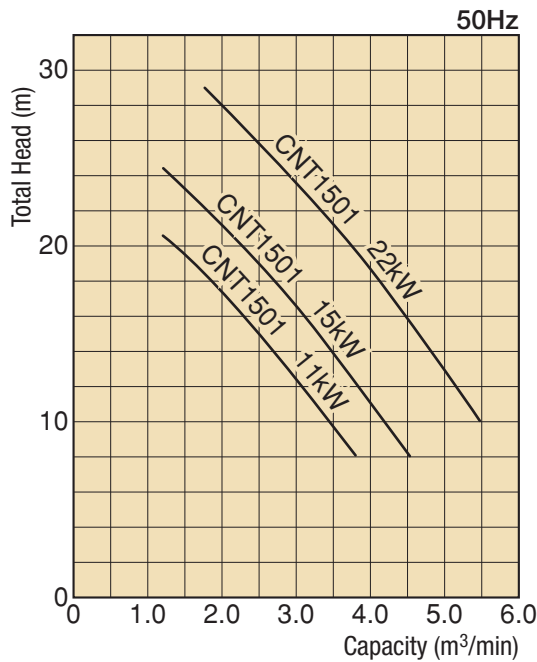
Standard Accessories

- Cable (8 m) 3 pcs.
- Stand (Suction pipe) 1 set

Part Specifications

Applicable Model		Cable Specification					Starting Method	Mechanical Seal	
		Type	Section Area (mm ²)	Cores	Outer Dia. (mm)	Number of Cables		Upper	Lower
CNT1501	11kW (15 HP)	2PNCT	5.5	4	φ 17	1	Star-delta	SiC/SiC	SiC/SiC
			5.5	3	φ 15.5	1			
			1.25	2	φ 9.8	1			
CNT1501	15kW (20 HP)	2PNCT	8.0	4	φ 18.5	1			
			8.0	3	φ 17	1			
			1.25	2	φ 9.8	1			
CNT1501	22kW (30 HP)	2PNCT	14.0	4	φ 22	1			
			14.0	3	φ 20	1			
			1.25	2	φ 9.8	1			

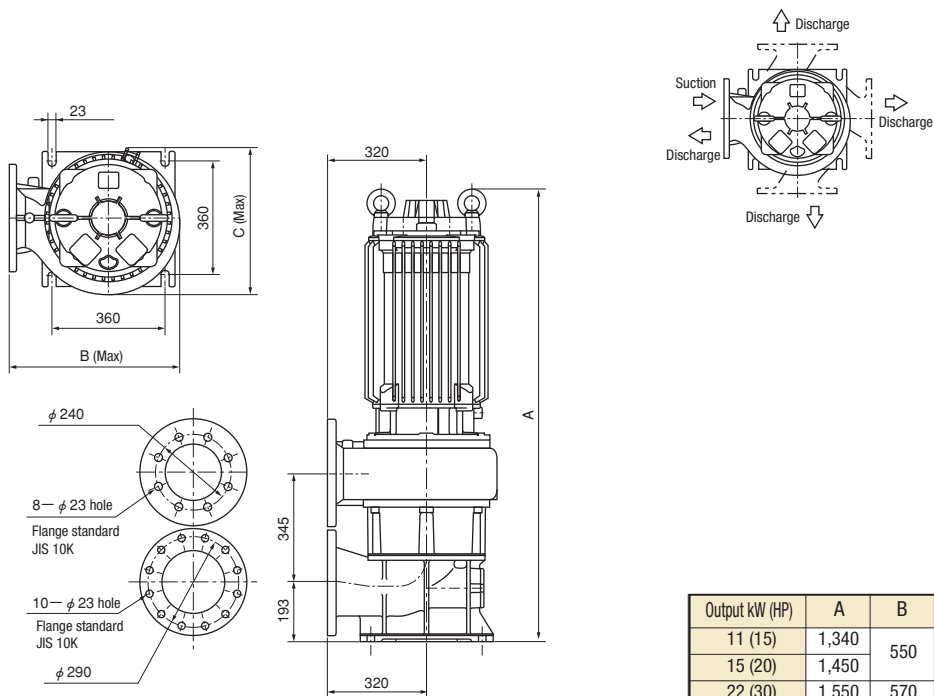
Performance Curves



Land Pump

Dimensions

Unit: mm



Output kW (HP)	A	B	C
11 (15)	1,340	550	470
15 (20)	1,450		
22 (30)	1,550	570	500



CNT150B

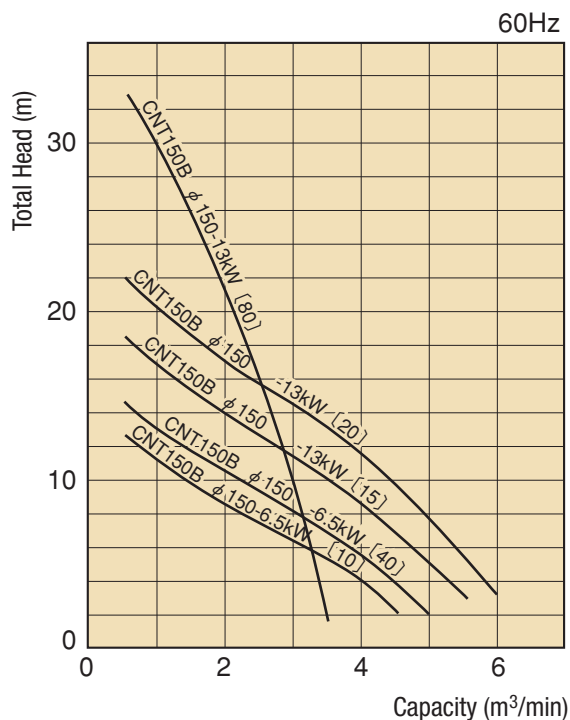
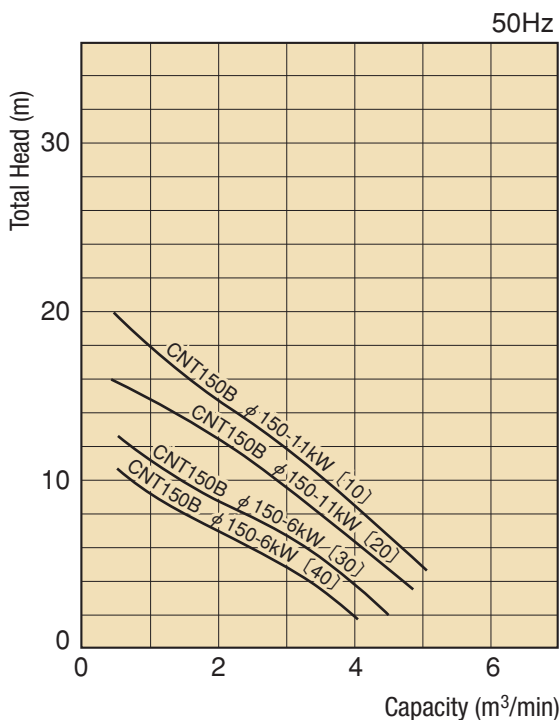
Bore mm (inch)	Pump Model	Output kW (HP)		Phase	Capacity - Total Head m³/min-m		No. of poles P	Weight (Bare Pump) kg
		50Hz	60Hz		50Hz	60Hz		
150 (6")	CNT150B	6.0 (8)	6.5 (9)	3-ph	[40] 2.5– 6.0	[10] 2.8– 6.8	6	230
					[30] 2.5– 7.7	[40] 2.8– 8.8		
		11 (15)	13 (17.5)		[20] 2.5–11.0	[15] 2.8–11.8	4	
					[10] 2.5–13.5	[20] 2.8–14.8		
						[80] 1.8–22.8		

For motor characteristics, bearings and oils, see the specifications [] Impeller No. (detail data) - App.1.

- Cable (16m • 6/6.5 kW) 1 pcs.
- (16m • 11/13kW) 2 pcs.
- Stand 1 set
- Suction Pipe 1 pcs.

Applicable Model		Cable Specification				Starting Method	Mechanical Seal	
		Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper
CNT150B	6/6.5kW (8/9 HP)	2PNCT	8.0	4	ϕ 18.5	Direct	Cemented Carbide/ Cemented Carbide	Carbon/Cemented Carbide
CNT150B	11/13kW (15/17.5 HP)					Star-delta		

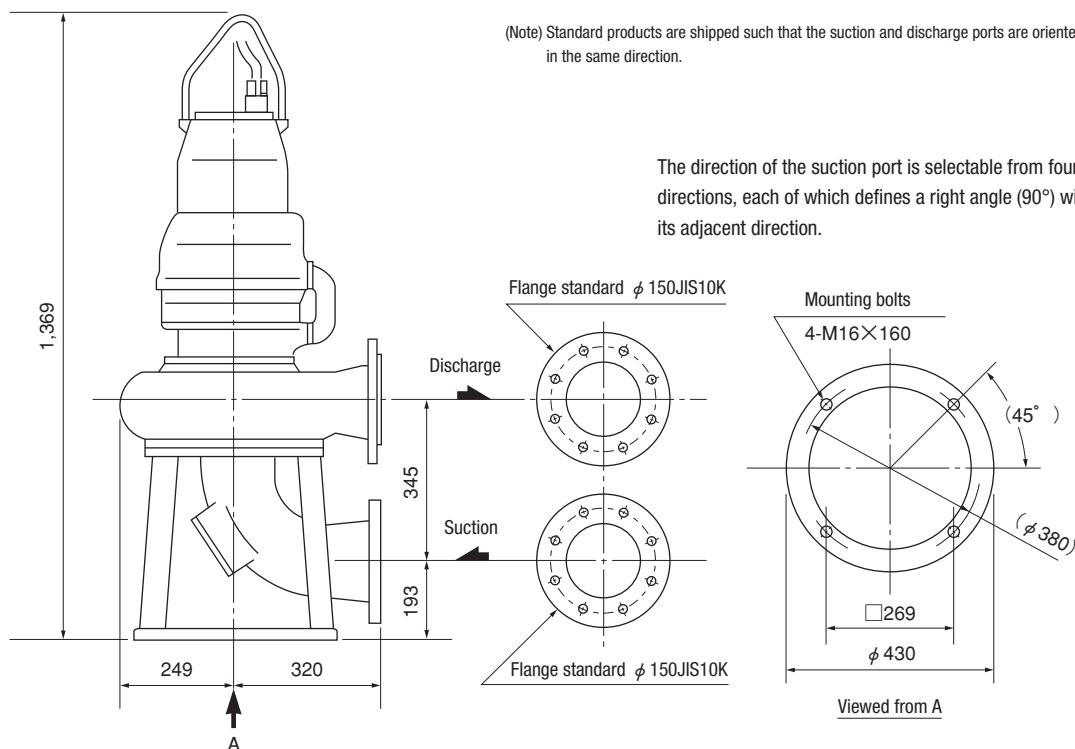
Performance Curves



Land Pump

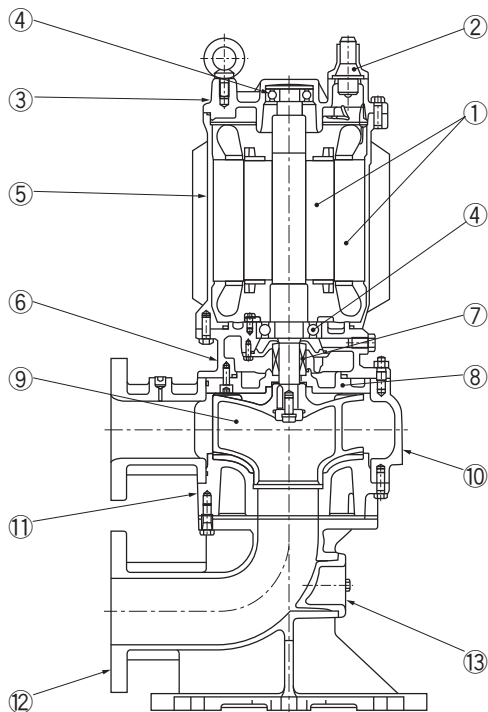
Dimensions

Unit: mm



Sectional View

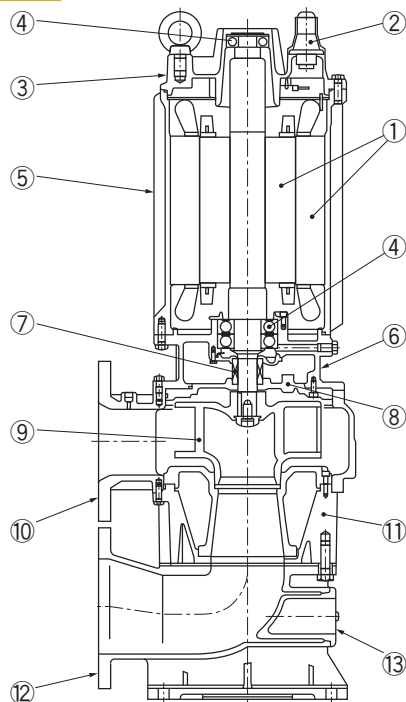
CNT801



No.	Name	Material
1	Motor	—
2	Cable	VCT
3	Motor Cover	FC200
4	Ball Bearing	—
5	Stator Casing	FC200
6	Oil Casing	FC200
7	Mechanical Seal	SiC/SiC
8	Mechanical Seal Bracket	FC250
9	Impeller	FC200
10	Pump Casing	FC250
11	Base Cover	FC250
12	Stand	FC200
13	Inspection Lid	FC200

Land Pump

CNT1501

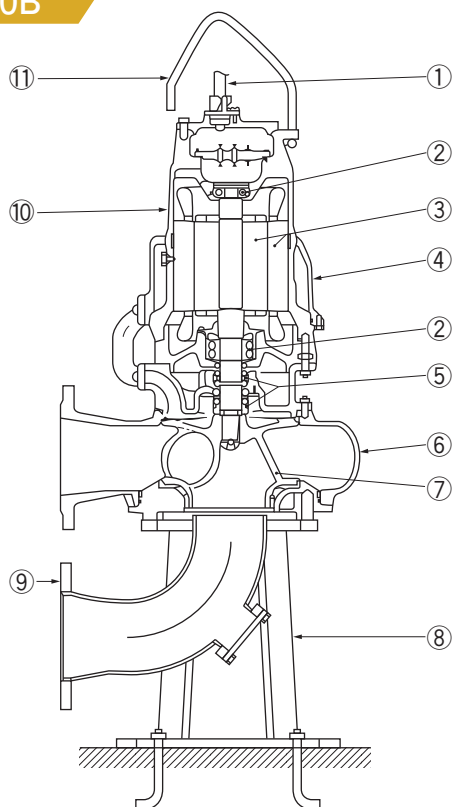


No.	Name	Material
1	Motor	—
2	Cable	2PNCT
3	Motor Cover	FC200
4	Ball Bearing	—
5	Stator Casing	FC200
6	Oil Casing	FC200
7	Mechanical Seal	SiC/SiC
8	Mechanical Seal Bracket	FC250
9	Impeller (11 or 15 kW)	FC250
	Impeller (22 kW)	FCD500
10	Pump Casing	FC250
11	Pump Stand	FC200
12	Suction Stand	FC200
13	Inspection Lid	FC200

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

Sectional View

CNT150B



No.	Name	Material
1	Cable	2PNCT
2	Ball Bearing	—
3	Motor	—
4	Outer Casing	FC200
5	Mechanical Seal	—
6	Pump Casing	FC200
7	Impeller	FC200
8	Stand	SS400
9	Curved Suction Pipe	SS400
10	Stator Casing	FC200
11	Handle	SS400

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitrlyl rubber

MEMO

Land Pump

Handwriting practice lines consisting of 25 horizontal dashed lines.

Dry Pit Pump (Screw Impeller)

Bore: 65 - 150 mm (2 1/2" - 6")

Output: 1.5 - 22 kW (2 - 30 HP)

CWT

The CWT series is a dry installation pump. Since its design is based on a submersible pump, it remains operatable, even if immersed in water. This pump can achieve a higher discharge head when connected in series with a submersible pump, making it suitable for use at a transfer-pumping station.

Land Pump

Bore mm (inch)	Output kW (HP)	Model	Page
65 (2 1/2")	1.5 (2)	CWT65	360
80 (3")	2.2•3.7 (3•5)	CWT80	
100 (4")	5.5•7.5 (7.5 •10)	CWT100	
150 (6")	11-22 (15-30)	CWT150	362

■ Features

● Adopts an air-cooled submersible motor

A dry-type air-cooled submersible motor is adopted. The very simple water jacket-less structure facilitates maintenance and inspection. A larger and more efficient motor significantly cuts the emitted heat and reduces the thermal degradation of bearing grease, O-rings, and mechanical seals.

● Excellent pass-through capability

The screw type impeller, can transfer water containing plastics and fibers. The screwing effect at the impeller entry enables the transfer of high-viscosity sludge.

● Extended service life

The shaft seal mechanism is equipped with a reliable double mechanical seal to extend its service life.

● Operatable in water

The pump, which is designed to be submersible and remains operatable, even if immersed in water.

● Replaceable to land pump

It can replace a land pump without any construction work.

■ Standard Specifications

Installation Environment	Ambient Temperature	-20 - 40°C
	Ambient Humidity	0 - 100%
Handling Liquid	Liquid Type	Wastewater and sewage containing sludge
	Temperature	0 - 60°C
Material	Cable (For power)	VCT: 7.5 kW or less, 2PNCT: 11 kW or more
	Motor Shaft	SUS420J2
	Pump Casing	FC250
	Impeller	FC250 (CWT150, and FCD500 for 22kW)
Electric Motor	Name	Air-filled type submersible induction motor
	Insulation Class	Class E
	Enclosure	IP68
	Phase	3-ph
	Voltage	200 - 480V

■ Applications

- Sewage treatment plant and Septic tank
 - Wastewater
 - Raw water
 - Sludge
- Factory
 - Industrial wastewater, cooling water
- Others
 - Pumping station
 - Rainwater, etc.

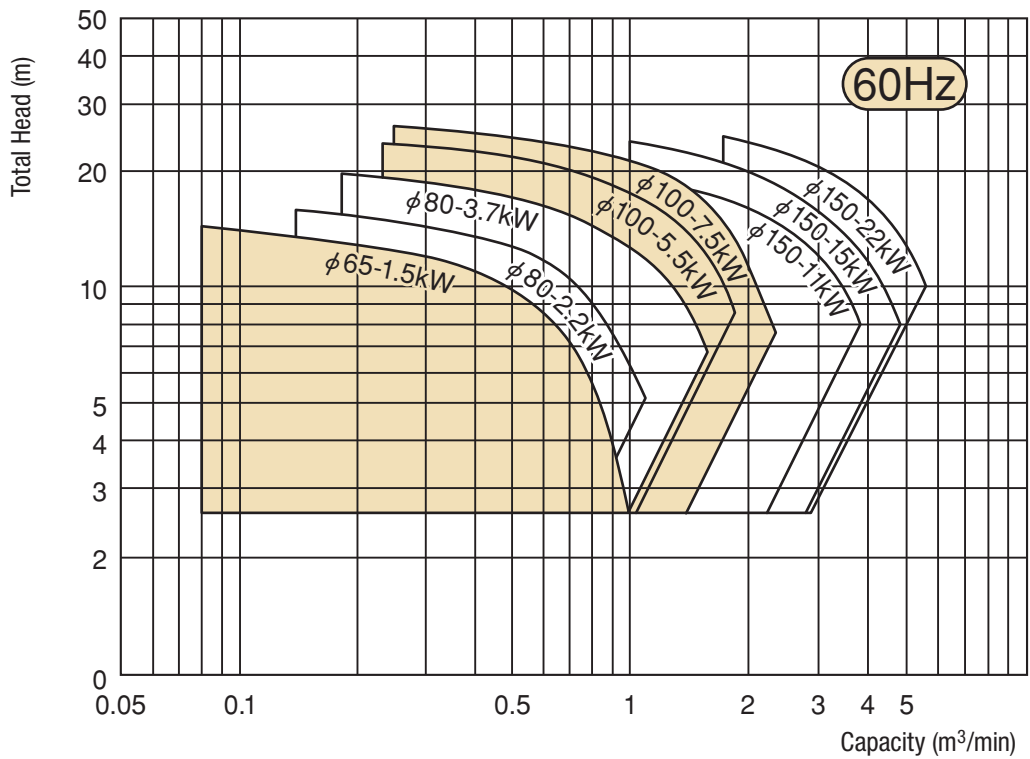
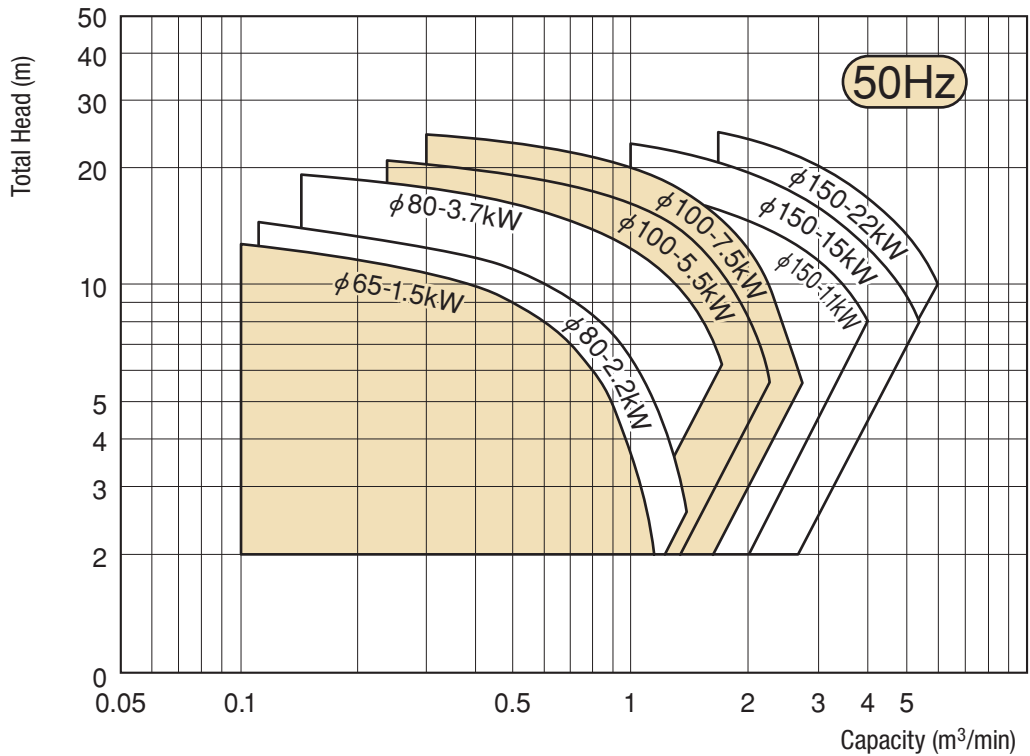
■ Special Specifications

Cable Extension	Cable lengths: 10 - 30m (every 5m)
Material Changes	Impeller: SCS13 (Stainless steel casting) Base Cover: SCS13 (Stainless steel casting)
Others	● Availability of mounting leakage detector, please refer to the specifications (detail data) - App.1. ● For specifications other than the above, please contact us.

■ Pump-Related Product

- Liquid Level Control Switch
 - Level Regulator ⇒ See page 370
 - Mini Switch ⇒ See page 372
 - Oval Float ⇒ See page 373

Performance Curves





CWT80

Standard Specifications

Bore mm (inch)		Pump Model	Output kW (HP)	Phase	Capacity - Total Head m³/min-m		No. of poles P	Weight (Bare Pump) kg
Discharge	Suction				50Hz	60Hz		
65 (2 1/2")	80 (3")	CWT65	1.5 (2)	3-ph	0.65– 7.3	0.57– 8.9	4	130
80 (3")	100 (4")	CWT80	2.2 (3)	3-ph	0.79– 8.3	0.75– 9.6	4	205
			3.7 (5)		1.11–11.4	1.10–11.7		230
100 (4")	125 (5")	CWT100	5.5 (7.5)	3-ph	1.40–13.4	1.36–14.4	4	275
			7.5 (10)		1.70–15.0	1.50–17.2		300

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

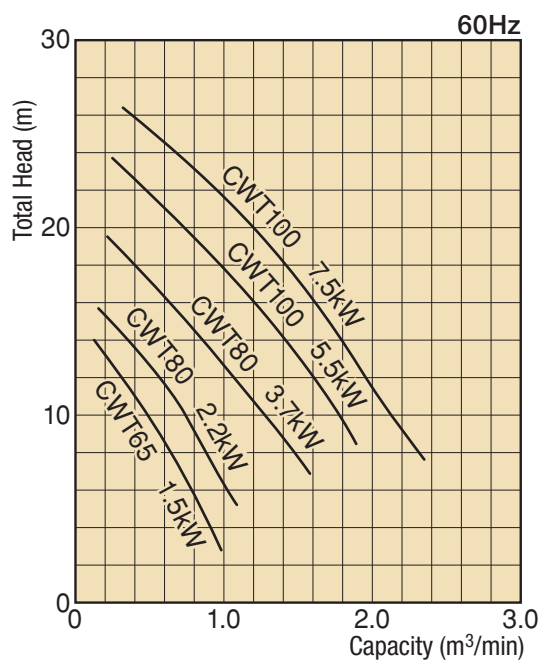
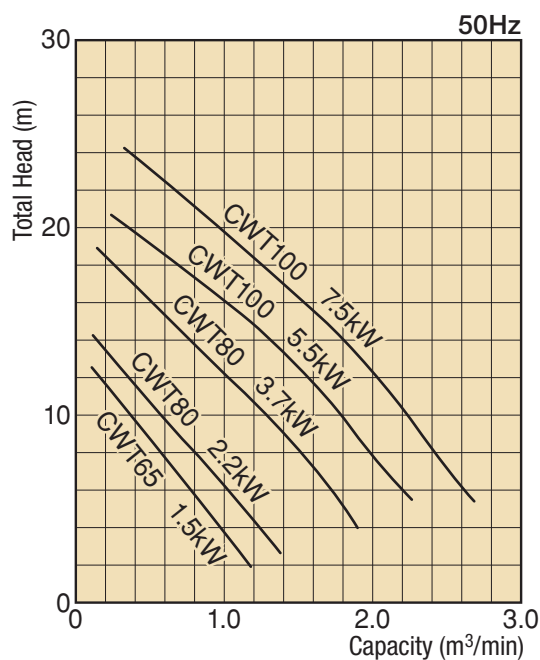
Standard Accessories

- Cable (8 m) 2 pcs.
- Stand (Suction pipe) 1 set

Part Specifications

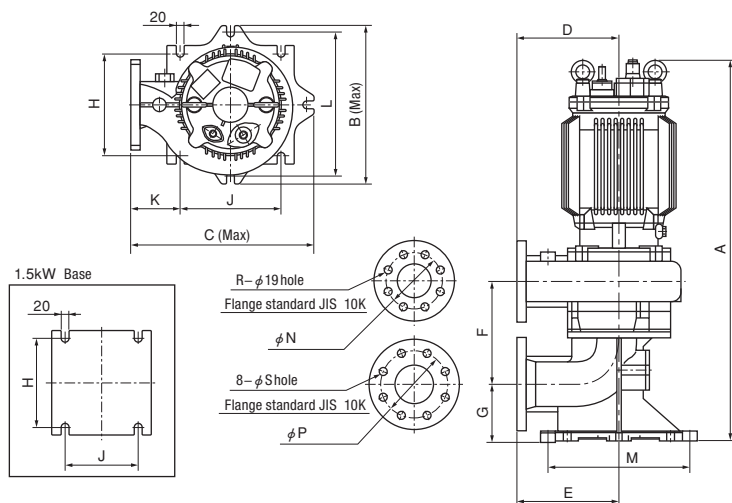
Applicable Model	Output kW (HP)	Cable Specification					Starting Method	Mechanical Seal	
		Type	Section Area (mm²)	Cores	Outer Dia. (mm)	Number of Cables		Upper	Lower
CWT65	1.5 (2)	VCT	1.25	4	φ 11.5	1	Direct	SiC/SiC	SiC/SiC
		2PNCT	1.25	2	φ 9.8	1			
CWT80	2.2 (3)	VCT	1.25	4	φ 11.5	1			
		2PNCT	1.25	2	φ 9.8	1			
	3.7 (5)	VCT	2.0	4	φ 12.0	1			
		2PNCT	1.25	2	φ 9.8	1			
CWT100	5.5 (7.5)	VCT	3.5	4	φ 14.0	1			
		2PNCT	1.25	2	φ 9.8	1			
	7.5 (10)	VCT	5.5	4	φ 16.5	1			
		2PNCT	1.25	2	φ 9.8	1			

Performance Curves



Dimensions

Unit: mm



Pump Model	Output kW (HP)	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S
CWT 65	1.5 (2)	865	288	354	210	180	273	130	230	195	110	—	—	140	150	4	19
	2.2 (3)	920	410														
CWT 80	3.7 (5)	995		470	265	265	270	145	270	270	130	380	380	150	175	8	23
	5.5 (7.5)	1,050												175	210		
CWT 100	7.5 (10)	1,110	423														



CWT150

Standard Specifications

Bore mm (inch)		Pump Model	Output kW (HP)	Phase	Capacity - Total Head m ³ /min-m		No. of poles P	Weight (Bare Pump) kg
Discharge	Suction				50Hz	60Hz		
150 (6")	200 (8")	CWT150	11 (15)	3-ph	3.0-11.5	2.9-12.3	4	550
			15 (20)		3.7-14.0	3.3-14.3		610
			22 (30)		4.0-16.9	3.7-18.1		680

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

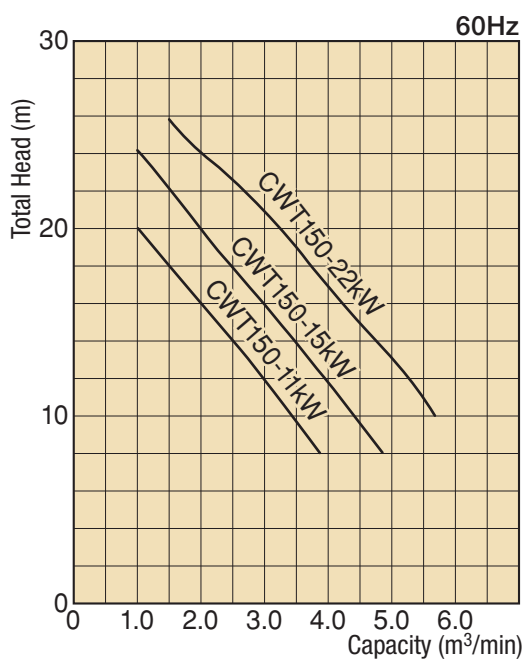
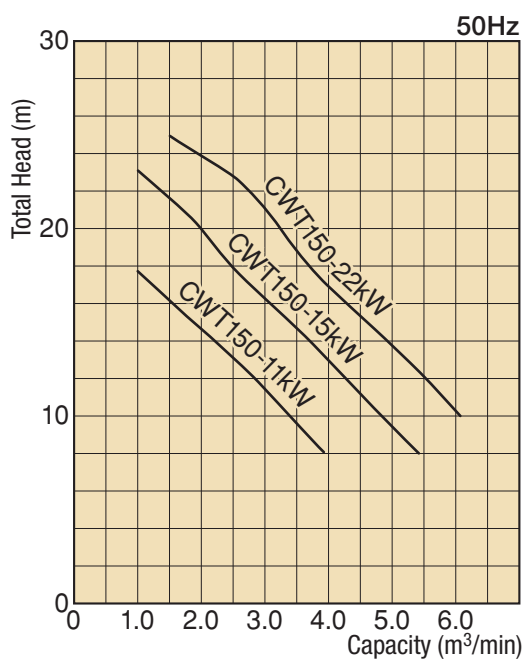
Standard Accessories

- Cable (8 m) 3 pcs.
- Stand (Suction pipe) 1 set

Part Specifications

Applicable Model	Output kW (HP)	Cable Specification					Starting Method	Mechanical Seal	
		Type	Section Area (mm ²)	Cores	Outer Dia. (mm)	Number of Cables		Upper	Lower
CWT150	11 (15)	2PNCT	5.5	4	φ 17	1	Star-delta	SiC/SiC	SiC/SiC
			5.5	3	φ 15.5				
			1.25	2	φ 9.8				
	15 (20)	2PNCT	8.0	4	φ 18.5	1			
			8.0	3	φ 17				
			1.25	2	φ 9.8				
	22 (30)	2PNCT	14.0	4	φ 22	1			
			14.0	3	φ 20				
			1.25	2	φ 9.8				

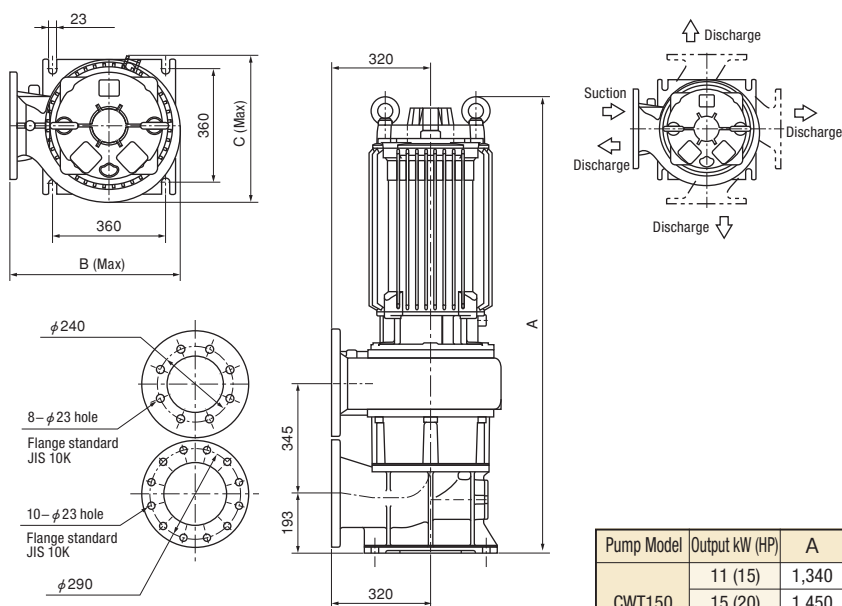
Performance Curves



Land Pump

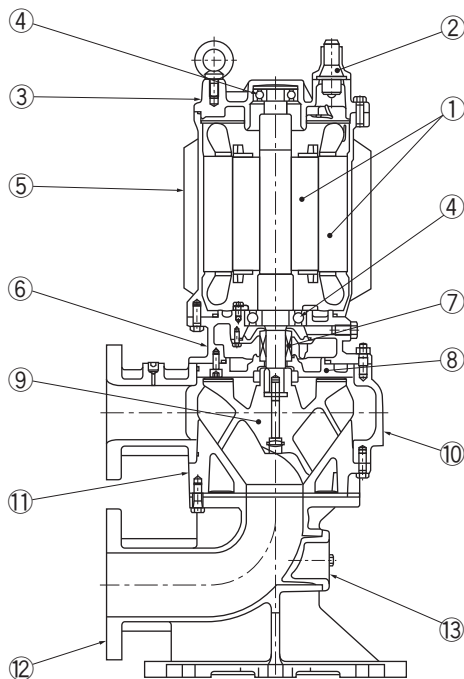
Dimensions

Unit: mm



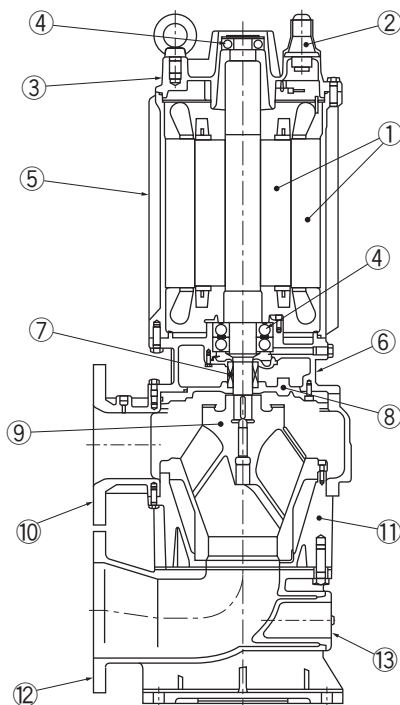
Sectional View

CWT80



No.	Name	Material
1	Motor	–
2	Cable	VCT
3	Motor Cover	FC200
4	Ball Bearing	–
5	Stator Casing	FC200
6	Oil Casing	FC200
7	Mechanical Seal	SiC/SiC
8	Mechanical Seal Bracket	FC250
9	Impeller	FC250
10	Pump Casing	FC250
11	Base Cover	FC250
12	Stand	FC200
13	Inspection Lid	FC200

CWT150



No.	Name	Material
1	Motor	–
2	Cable	2PNCT
3	Motor Cover	FC200
4	Ball Bearing	–
5	Stator Casing	FC200
6	Oil Casing	FC200
7	Mechanical Seal	SiC/SiC
8	Mechanical Seal Bracket	FC250
9	Impeller (11 or 15 kW)	FC250
	Impeller (22 kW)	FCD500
10	Pump Casing	FC250
11	Pump Stand	FC200
12	Stand	FC200
13	Inspection Lid	FC200

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitrtyl rubber

Self-Priming Residue Dewatering Pump

Bore: **25 mm (1")**
Output: **0.4 kW (1/2 HP)**

BVR

The BVR pump has excellent handling, maintenance and durability as it can be easily used to dewatering residual water at relatively narrow pits and construction sites.

It is also usable for continuous operation while suctioning water containing sludge and air.

■ Features

● Reliable operation

Long time operation is available even suctioning water with air.

● Superior suctioning performance

The high-efficiency vortex impeller and the guide vane realizes superior suctioning performance.

Max. capacity: 0.1 m³/min. and max. total head: 9 m are equal to normal pumps.

● High-durability

Wear-resistant materials are employed for wetted parts for dewatering of wastewater.

In addition, employing a capacitor start run motor with fewer rise in heat and three-terminals type thermal protector prevents troubles of governor and motor burn out due to a rise in heat.

● Easy maintenance

Easy disassemble to maintain the pump by removing the bolts while the pump remain standing on the floor.

● Facilitate a work

This lightweight and slim pump enables swift on-site work.

■ Applications

- Dewatering residual water at construction sites (especially foundation work), pit, ditches and manholes
- Removing sediments in ponds for aquarium fish
- Dewatering rinse water in factories, large tanks, special purpose vehicles, etc.

■ Main Specifications

Handling Liquid	Kind of Liquid	Wastewater
	Temperature	0 - 40°C
Material	Motor Shaft	SUS420J2 (Stainless steel)
	Pump Casing	AC4A (Al alloy casting)
	Impeller	FC200 (Iron casting)



Standard Specifications

Model	BVR400S
Power	1-ph 100 - 230V
Motor Output	0.4kW
Bore	25mm
Capacity (Max.)	0.1m ³ /min
Total Head (Max.)	8.2/9m (50/60Hz)
Suction Pump Head (Max.)	5m (20°C)
Weight (Bare Pump)	13kg
Priming water	1.5ℓ

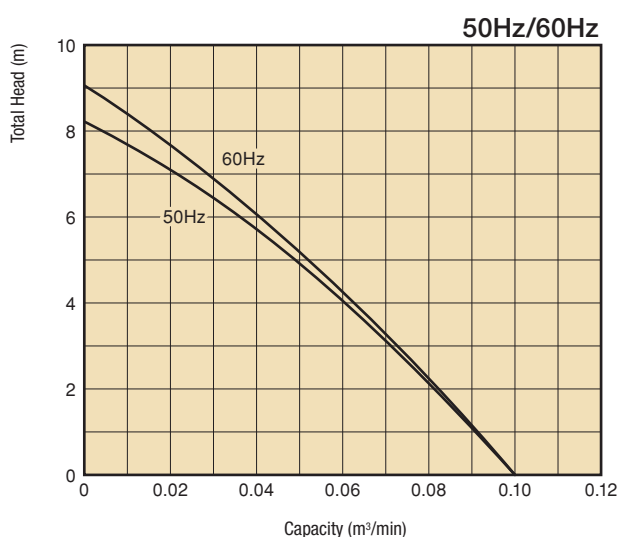
Since the specifications of 115V, 230V and others are for lot production, other than 100V, please contact our sales office.

Standard Accessories

- Cable (5m)1 pc.
VCT 1.25mm²×3 cores Outer Dia. ϕ 10.5mm
- Suction hose ϕ 25mm x 5m1 pc.
(Discharging hose is an option.)
- Suction head1 pc.
- Hose-coupling (for 25mm hose)1 pc.

Performance Curves

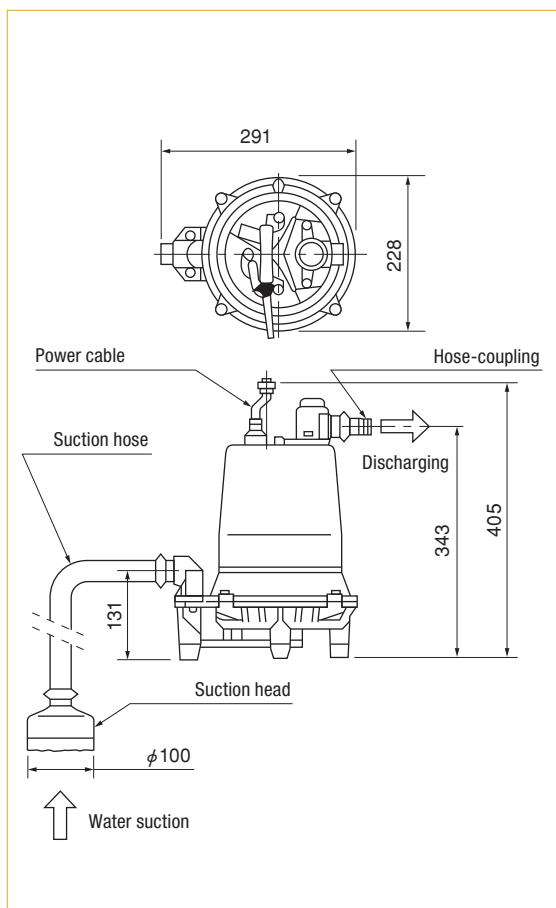
SI unit 1 mAq=9.80665 kPa
1,000 kPa=1 MPa



* Indicating performance without suction hose

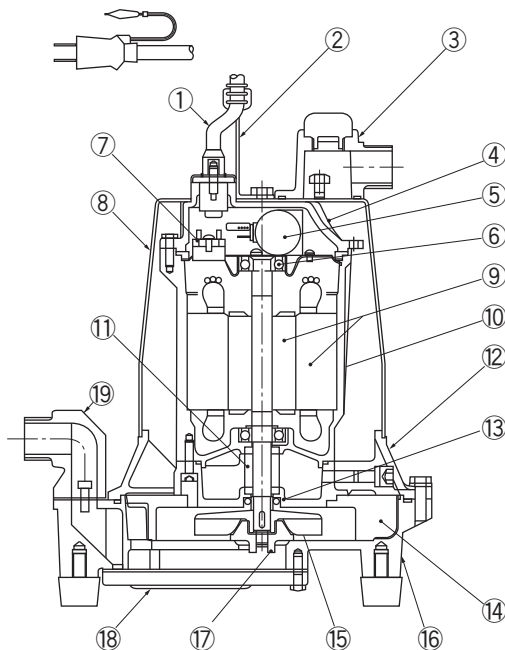
Dimensions

Unit: mm



Sectional View

BVR400S



No.	Name	Material
1	Cable	VCT
2	Handle	SPHC+NBR
3	Discharging Port	ADC12
4	Motor Cover	ADC12
5	Capacitor	—
6	Bearing	—
7	Thermal Protector	—
8	Outer Casing	SPCE
9	Motor	Shaft: SUS420J2
10	Stator Casing	ADC12
11	Mechanical Seal	—
12	Mechanical Seal Bracket	AC4A
13	Oil Seal	NBR
14	Guide Vane	Urethane resin
15	Impeller	FC200
16	Pump Casing	AC4A
17	Impeller Nut	SCS13
18	Base Cover	FC200
19	Suction Port	ADC12

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel **PP** : Polypropylene
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitryl rubber
ADC : Aluminium alloy die casting **AC** : Aluminium alloy casting **SPHC** : Hot-rolled steel **SPCE** : Cold-rolled steel

Pump-Related Products

Liquid Level Control Equipment

LC (Liquid Level Control Switch “Level Regulator”) ...370

MS (Liquid Level Control Switch “Mini Switch”)372

FV (Liquid Level Control Switch “Oval Float”)373

The LC12 Level Regulator is a liquid-level control switch usable in clean water, sewage, or liquid containing scums.

The product primarily comprises resin with certain components in contact with the liquid made of stainless steel, which renders the product less prone to rust or corrosion for a longer service life. As shown in the following diagram, although the Level Regulator has a simple structure, it incorporates many ingenious ideas.



The desired water level can be achieved simply by adjusting the cable length.

A chain is attached to support the body and increase the bending radius of the cable, which has significantly increased the service life of the latter.

Sealing the rubber while pressing it prevents ingress of water from outside.

The body is inclined about this pivot point without applying excessive force to the cable.

The cable guard incorporates waterproofing measures, which shut off water coming through the core wire in case the cable sheath breaks.

The float inclined to a certain angle swiftly presses and turns on the switch all at once.

Microswitch

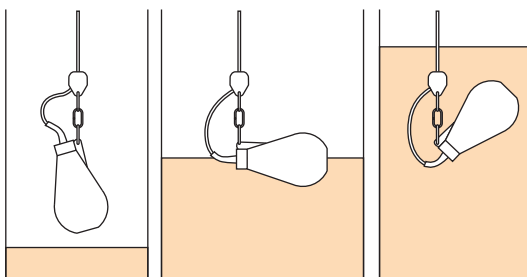
Arrow (indicating inclination direction)

Composed of polypropylene. Its water-drop shape and smooth surface help repel foreign substances and filth.

Operating principle

The ShinMaywa Level Regulator hangs almost vertically in air as shown in the right diagram ①. When the water level rises to reach the level regulator, the regulator is inclined at a certain angle, as shown in ②. This inclination causes the internal switch to close; thus ensuring the Regulator can detect the liquid surface. If the water level rises further, the Regulator does not float on the liquid surface but remains inclined at a predetermined position in the liquid (③).

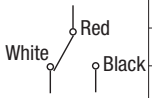
① Posture in air ② Posture on the surface of the liquid ③ Posture in liquid



Standard Specifications

Model	LC12
Specific Gravity of the Handled Liquid	0.95 - 1.15
Operating Temperature	0°C - 60°C
Rated Voltage	AC/DC 30 V or less
Max. Operating Current	5A
Cable Length	6m, 13m, 20m (for further extension at an interval of 10 m) MAX. length 100m
Cable	3-cores flat cable x 0.75 mm ²
Mass (including cable)	6m: 1.2kg, 13m: 1.6kg, 20m: 2.0kg
Material of Case	PP resin
Cable Material	VCTFK (PVC)
Chain Material	SUS304

Contact Specifications (In Air)

	Color of Cores	Contact specifications	
	Black and Red	ON in liquid	N.O. contact
	White and Red	ON in air	N.C. contact

Please use either contact, a or b.

Chemical resistance

The product can be used in liquid containing the following chemicals, but regular inspection is strongly recommended:

Ammonia water	Sodium bicarbonate	Glucose sugar
Fruit juice	Vegetable oil	Boracic acid (25%)
Solution of sodium hydroxide (10%)	Potassium hydrate	Milk
Permanganic acid potassium salt	Calcium hydrate	Zinc sulfide
Citric acid	Magnesium hydrate	Ammonium sulfate
Potassium cyanide	Barium hydroxide	Potassium sulfate
Sodium cyanide	Soapy water	Calcium sulfate
Potassium nitrate	Ammonium carbonate	Sodium sulfate
Calcium nitrate	Potassium carbonate	Nickel sulfate
Cupric nitrate	Calcium carbonate	Magnesium sulfate
Sodium nitrate	Carbonated water	Copper sulfate
Barium nitrate	Sodium carbonate	Barium sulfate
Sodium bisulfite	Magnesium carbonate	Wine
Potassium bicarbonate	Beer	

- Note 1) This product has no explosion-proof structure, which means it cannot be used in an inflammable liquid or gaseous atmosphere.
- 2) Using the product in a high-viscosity liquid is not recommended since it may cause malfunction. A liquid with a specific gravity in the specified range should be used.
- 3) A singly connected regulator cannot be used to directly power the motor on or off. Be sure to connect it to an electromagnetic switch or auxiliary relay.
- 4) For chemicals other than the above, please contact us.

Weight Assembly LCW (Option)

Used to fix the Level Regulator so it is less affected by the water flow.

Number	Part Name	Material	Specifications
①	Wire assembly	SUS304	Wire dia.: ϕ 2.5 mm, Wire length: 8 m
②	Weight	SUS403	Mass: 5 kg

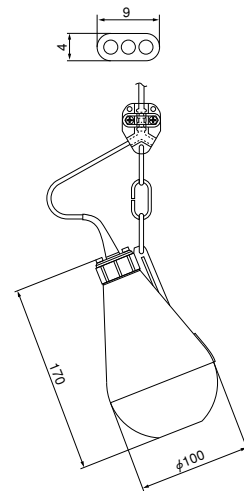
Note 1) Adjust the wire length with the upper wire clip.

- 2) Be sure to use the weight such that it is placed on the bottom of a tank.
- 3) The level regulator and the cable tie are not provided as standard items.

Dimensions

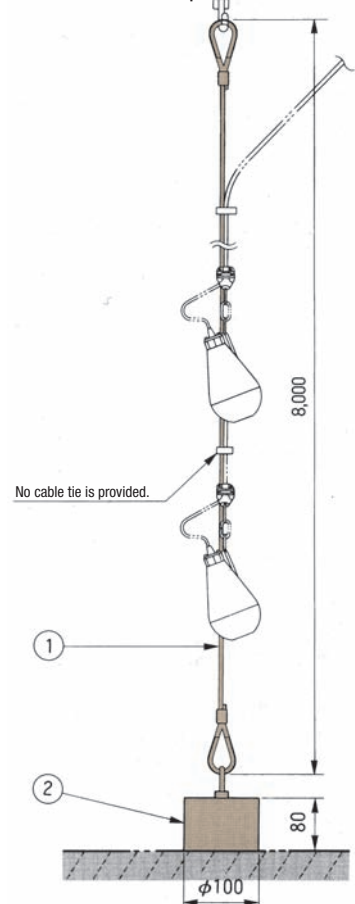
Unit: mm

Cross-Sectional View of Cable



Unit: mm

Installation Example

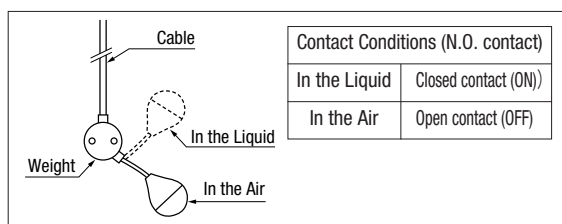


Mini Switch is a switch equipped with a reed switch as a detecting contact, and used to detect the liquid level of sewage water. The float changes its inclination in accordance with the rise or falls, with the weight or bundled wire band as a fulcrum point, to open or close the switch contact.

Mini Switch is available in two types: MS11 capable of detecting one level (single float) and MS21 capable of detecting a different water level (double floats). A combination of MS11 and MS21 allows detection of three or more water levels.

Mini Switch in accordance with the N.C. contact specifications (MS11B) is also available as a special order.

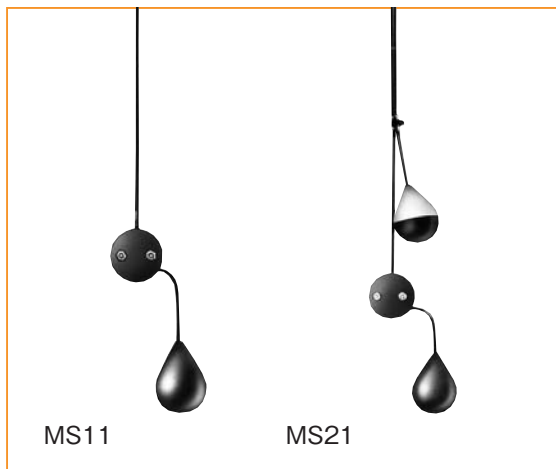
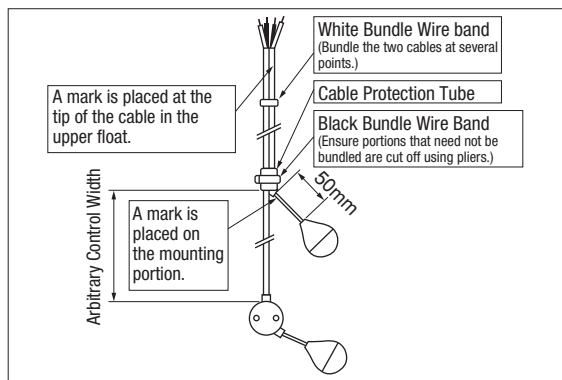
State Diagram



Standard Specifications

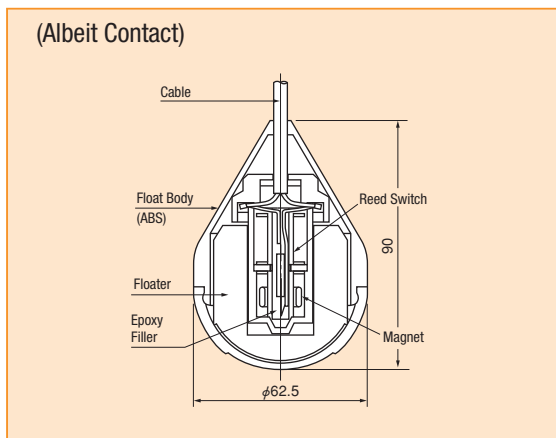
Model	MS11 (Single Float) MS21 (Double Floats)
Specific Gravity of the Handled Liquid	0.95 - 1.10
Operating Temperature	0°C - 40°C
Voltage	AC/DC 30 V or less
Max. Operating Current	0.5A
Max. Contact Capacity	AC10VA, DC10W
Contact Type	N.O. contact (Special order: N.C. contact)
Cable Length	6m, 13m, 20m (for further extension at an interval of 10 m) MAX. length 100m
Cable	0.2 mm ² x 2 cores, Outer Dia.: 4.7 mm
Weight	0.6 kg (MS11 for 6 m cable)
Material	ABS Resin
Cable Material	PVC Resin (Soft)
Weight Material	PVC Resin coating is applied to FC150.

Level Control Method (for MS21)



Structure Drawing

Unit: mm



Components List

Model	Float Body	Weight	Bundle Wire Band (Black)	Bundle Wire Band (White)	Cable Protection Tube
MS11	1 pc.	1 pc.	*1 set	*1 set	*1 pc.
MS21	2 pcs.	1 pc.	2 sets	4 sets	2 pcs.

* is used in combination with MS21.

Operating Precautions

- Avoid using the product in flammable or explosive places as it is not explosion-proof.
- Single switch detects one surface level.
To detect a water level difference, several switches are required.
- A Mini Switch alone cannot turn on or off motor directly. Be sure to use a magnetic switch and an auxiliary relay.

Oval Float is suitable for detecting the liquid level of clear or sewage water without suspended solids.

A single Oval Float is capable controlling both the upper and lower limits. The control level difference between upper and lower limits can be easily adjusted on site.

Features

- A single Oval Float controls upper and lower limits. (If level difference to be controlled exceeds 1 m, two floats are required.)
- Less chattering structure.
- The float body is made of polypropylene so that it prevents the sticking of debris.
- Oval Float is very easy to install. Simply hang it to complete the installation.
- Oval Float can be installed in small area.

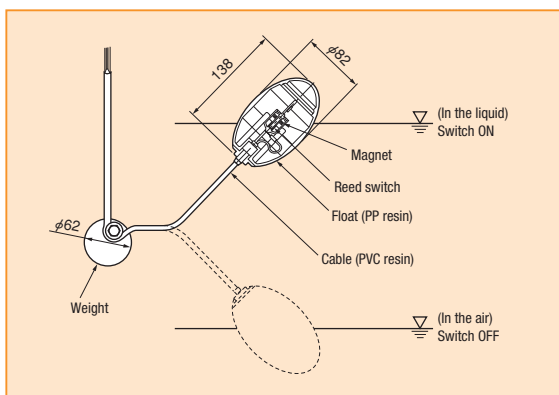
Operation

The float contains a magnetism-driven reed switch secured in place.

When the water level reaches a switch ON level, the magnet moves towards the cable side to activate the reed switch.

When a water level reaches a switch OFF level, the magnet moves towards the opposite side to deactivate the reed switch.

Unit: mm



Standard Specifications

Model	FV11
Specific Gravity of the Handled Liquid	0.95 - 1.10
Operating Temperature	0°C - 60°C
Voltage	AC/DC 30 V or less
Max. Operating Current	0.6A
Max. Contact Capacity	AC50VA DC50W
Contact Type	N.O. contact (Special order: N.C. contact)
Cable Length	6m, 13m, 20m (for further extension at an interval of 10 m) MAX. length 100m
Cable	0.5 mm ² x 2 cores, outer dia.: ϕ 5.8 mm
Weight	Approx. 1.0 kg (for 6 m cable)
Material	PP (Polypropylene) Resin
Cable Material	PVC Resin (Soft)
Weight Material	The FC200 is coated

Operating Precautions

- Avoid using the product in flammable or explosive places as it is not explosion-proof.
- Single switch detects two surface levels (The level difference to be controlled must be within 1 m). (If it exceeds 1 m, two floats are required.)
- The Oval Float alone cannot turn on or off the motor directly. Be sure to use a magnetic switch and an auxiliary relay.

MEMO

Pump-Related
Products

Handwriting practice lines consisting of multiple horizontal dashed orange lines.

Aeration and Mixing

Submersible Aerator (Forced Air Supply Type)

SJ (Downward Discharge and Multipole Motor Direct Drive) 377

SJL (Downward Discharge with a Reduction Gear) ...387

SU (Upward Discharge and Multipole Motor Direct Drive) ...397

Submersible Aerator (Self-Aspirating Type)

JSA405

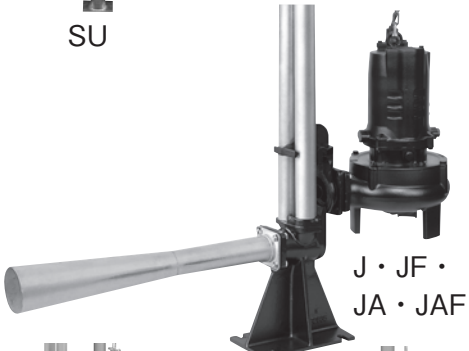
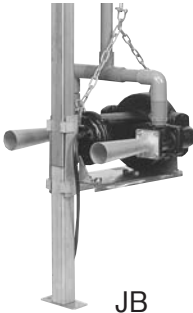
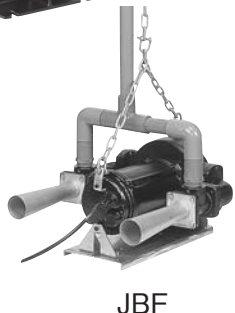
Submersible Ejector

J • JF • JA • JAF.....411

Submersible Ejector for Shallow Tank

JB • JBF427

Types of Aeration and Mixing

Summary and Applications	Appearance
1. Submersible Aerator – Model: SJ, SJL, SU & JSA – Performs aeration and mixing of a tank by dissolving oxygen into the water with fine bubbles. ShinMaywa has both forced air-supply type and self-aspirating type submersible aerators. 1-1. Forced Air Supply Type (operate with an Air Blower) ● SJ Downward discharge and multipoles motor direct drive ● SJL ... Downward discharge and 4-poles motor with reduction gear drive ● SU Upwardward discharge and multipoles motor direct drive Applications - Aeration and mixing at wastewater treatment facilities. - Alternate operations for aerobic and anaerobic mixing for denitrification, nitrification and SBR processes. - Mixing at anoxic tank, etc. - Aeration and mixing at deep tank by a draft tube installation. (Model: SU) 1-2. Self-Aspirating Type ● JSA ... Easy installation and operation Applications - Aeration and mixing at wastewater treatment facilities.	 SJ  SJL  SU  JSA
2. Submersible Ejector – Model: J, JA, JF & JAF – Suctioned air is ejected with water jet folw into a tank to perform aeration and mixing. ● J • JA..... Guide rail type ● JF • JAF... Free standing type Applications - Aeration and mixing at wastewater treatment facilities.	 J • JF • JA • JAF
3. Submersible Ejector (for shallow tanks) – Model: JB & JBF – Horizontal shaft installation and twin-diffuser system allows effective aeration and mixing at shallow tank (Min. water level: 225 mm) in large-area. ● JB.....Guide rail type ● JBF... Free standing type Applications - Aeration and mixing at sewage holding tank.	 JB  JBF

Output: **0.75 - 7.5 kW (1 - 10 HP)**

SJ

SJ Series is a submersible aerator which performs aeration and mixing of the tank by dissolving oxygen into the water with fine bubble supplied by blower. SJ Series adopts a high-efficiency multipole motor, instead of a reduction gear, making it economical for maintenance of the reduction gear and replacement of its oil are no longer necessary.

	Installation	Output kW (HP)	Pump Model	Page
Aerator	Guide Rail Type	0.75 (1)	SJ8-P	380
		1.5 (2)	SJ15-P	
		2.2 (3)	SJ22-P	
		3.7 (5)	SJ37-P	
		5.5 (7.5)	SJ55-P	
		7.5 (10)	SJ75-P	
	Free Standing Type	0.75 (1)	SJ8-F	
		1.5 (2)	SJ15-F	
		2.2 (3)	SJ22-F	
		3.7 (5)	SJ37-F	
		5.5 (7.5)	SJ55-F	
		7.5 (10)	SJ75-F	
Mixer (No-aeration)	Free Standing Type	0.75 (1)	SJ8-K	
		1.5 (2)	SJ15-K	
		2.2 (3)	SJ22-K	
		3.7 (5)	SJ37-K	
		5.5 (7.5)	SJ55-K	
		7.5 (10)	SJ75-K	

■ Features

● Available for both Aerobic and Anaerobic mixing

The SJ-series is a forced-air supply type submersible aerator. It can be used for both aerobic and anaerobic mixing simply by running or halting the operation of the air blower. It is suitable for denitrification, nitrification and SBR processes.

● Compact and Lightweight

Multipole motor (50 Hz: 10 P, 60 Hz: 12 P) direct drive design is compact and lightweight. No gear oil replacement is needed because no reduction gear is used.

● Powerful Mixing

The axial-flow impeller and downward discharge casing ensure high flow velocity at the tank bottom and uniform convection.

● Low Energy Consumption

Air bubble minimization effect offers a high oxygen transfer rate with a low energy consumption.

● Non-clogging and High durability

Non-clogging design casing and time-proven double mechanical seals with 4-faces SiC ensure high durability in the application of continuous operation in a long-term.

● Reinforced Cable

Lightweight and tough cable with special reinforcement and core sealer is employed.

● Easy Maintenance

Motor and impeller can be removed from the casing by simply unfastening the three bolts, which provides simple maintenance accessibility.



SJ37

■ Applications

○ Sewage and Industrial waste treatment facilities

- Aeration and mixing processes
- Anaerobic or anoxic mixing process
- SBR process

■ Standard Specifications

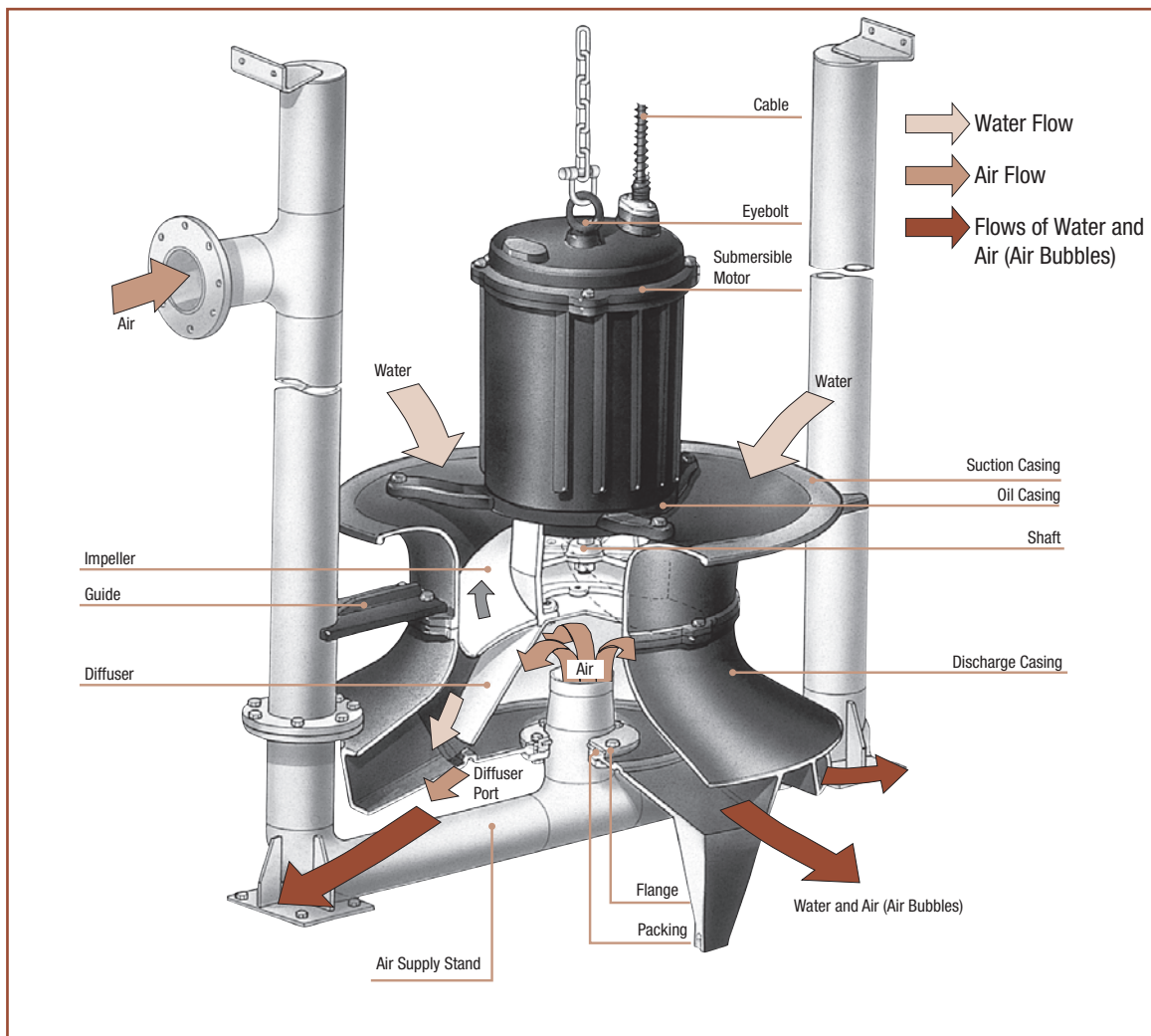
Handling Liquid	Kind of Liquid	Wastewater (including sewage, human waste, industrial waste and sludge)
	Temperature	0 - 40°C
Material	Cable	2PNCTS
	Main Shaft	Stainless steel (SUS329J1)
	Impeller	Stainless steel casting (SCS13)
	Suction / Discharge casing	Gray iron casting (FC250)
Electric Motor	Name	Air-filled type Submersible Induction Motor
	Insulation Class	Class E
	Enclosure	IP68
	Phase	3-ph
	Voltage	200 - 480V
	Pole	50Hz 10P / 60Hz 12P
	Starting Method	Direct
	Motor Protector	Micro Thermal Protector (MTP)

■ Special Specifications

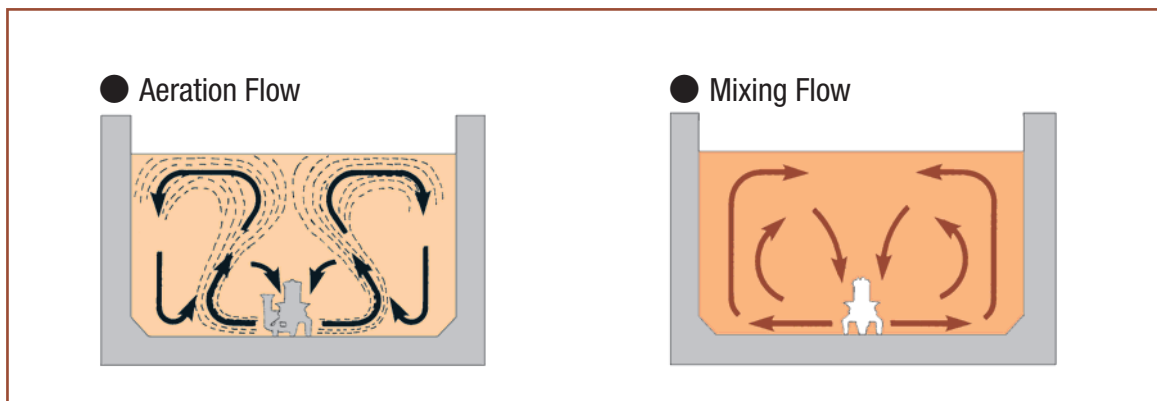
Motor Insulation	Class F
Cable Extension	Cable Length 15 - 30m (every 5m)
Motor Protector	Leakage Detector
High Temperature Specifications	Water temperature 60°C (Only cables are changed)

For special specifications other than the above, please contact us.

Function Explanation Diagram (SJ-P: Guide rail type)



Flow Patterns



Standard Specifications

Model	Output kW (HP)	Discharge Water Volume m ³ /min	Airflow Range* 1 m ³ /min	Reference Performance* 2 (Water Depth: 5m)		Necessary Blowing Pressure at Air Supply Connection Port * 3 kPa (mmAq)	Applicable Tank Size			Weight (Bare Body) kg	Air Supply Stand Weight kg
				Airflow m ³ /min	Oxygen Transfer Rate kg (O ₂)/h		Max. Volume m ³	Max. Surface Area m ²	Max. Side Length of Rectangle m		
SJ8	0.75 (1)	7	0.4 - 1.6	1.0	3.4	Installation Water Depth + 1.0 (+ 100)	130	24	6.7	140	13
SJ15	1.5 (2)	9	0.6 - 3.0	1.6	6.0	Installation Water Depth + 2.0 (+ 200)	280	52	8.1	190	18
SJ22	2.2 (3)	11	0.9 - 4.1	2.4	9.0	Installation Water Depth + 2.5 (+ 250)	460	85	9.5	220	18
SJ37	3.7 (5)	17	1.1 - 6.8	3.8	14.4	Installation Water Depth + 3.5 (+ 350)	670	124	12.8	250	22
SJ55	5.5 (7.5)	28	1.6 - 9.7	5.6	21.4	Installation Water Depth + 2.5 (+ 250)	1,000	185	14.3	330	32
SJ75	7.5 (10)	39	3.2 - 12.9	7.5	28.9	Installation Water Depth + 3.0 (+ 300)	1,400	260	17.5	560	52

For motors characteristics, bearings and oils, see the specifications (detail data) - App.1.

Note 1) *1 - *3 are applicable to the Guide rail and Free standing types only and not to the Mixing type.

Note 2) Air Break may occur, depending on debris in the tank or liquid quality, in which case the airflow range may be extremely small.

Note 3) These values are subject to at a clear water temperature of 20°C and a concentration of dissolved oxygen of 0mg/l. They vary approximately 10%, depending on measurement conditions. They need to be corrected with the water quality, temperature of inflowing water and the concentration of dissolved oxygen in the tank. The airflow range and applicable tank size values are obtained at a sludge concentration of 5,000mg/l.

Standard Accessories

- Cable (10m) 1 pc.
- Cable Holder 1 pc.
- Connecting Device 1 set

(Guide Rail Type: Air Supply Stand
Free Standing Type: Air Supply Pipe)

Special Accessories

- Lifting Chain
- Special Tools
- Anchor Bolt
- Guide Pipe that also serves as an Air Supply Pipe

Part Specifications

Applicable Model	Cable Specifications					Starting Method	Mechanical Seal	
	Type	Section Area (mm ²)	Cores	Applications	Outer Dia. (mm)		Lower	Upper
SJ8 SJ15 SJ22	2PNCTS	2	4	Power	φ 16	Direct	SiC/SiC	SiC/SiC
		(2)	(2)	Control (MTP) (Control (Leakage Detector))	(φ 18)			
SJ37	2PNCTS	3.5	4	Power	φ 18			
		(2)	(2)	Control (MTP) (Control (Leakage Detector))	(φ 20)			
SJ55	2PNCTS	5.5	4	Power	φ 20			
		(2)	(2)	Control (MTP) (Control (Leakage Detector))	(φ 22)			
SJ75	2PNCTS	8	4	Power	φ 22			
		(2)	(2)	Control (MTP) (Control (Leakage Detector))	(φ 24.5)			

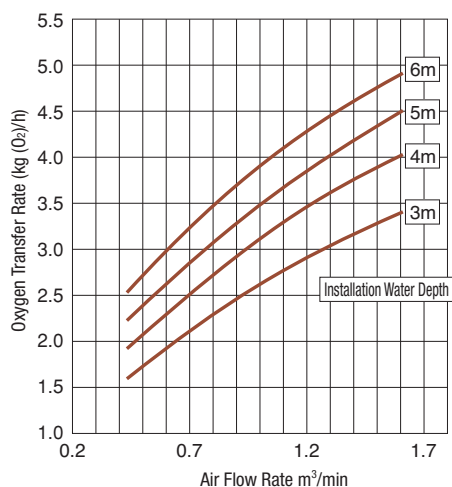
The values within the parenthesis indicate those for special specifications (with a Leakage Detector).

MTP: Micro Thermal Protector

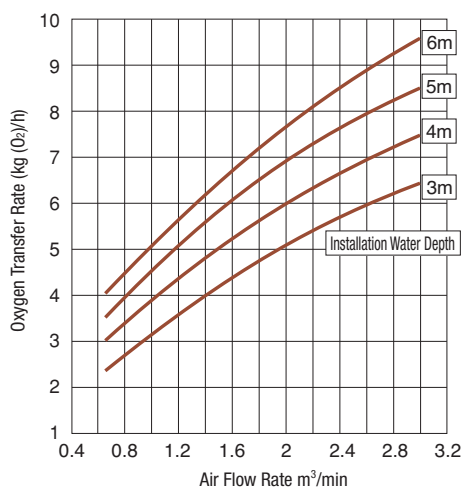
Performance Curves

(Conditions: Normal air flow, clear water at a temperature of 20°C, and dissolved oxygen at a concentration of 0mg/l)

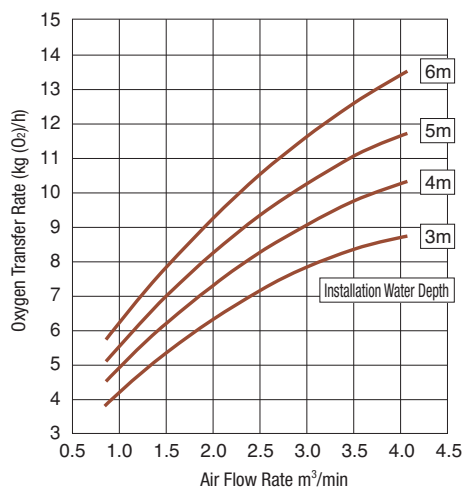
SJ8



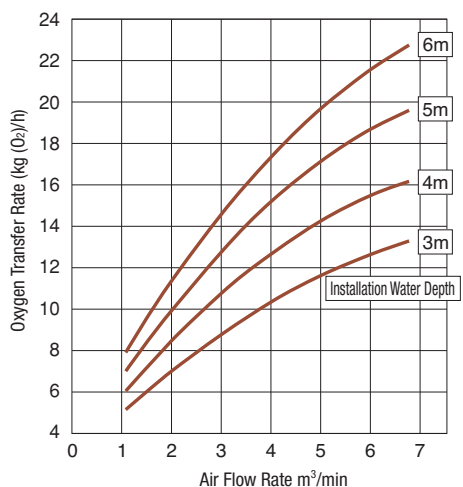
SJ15



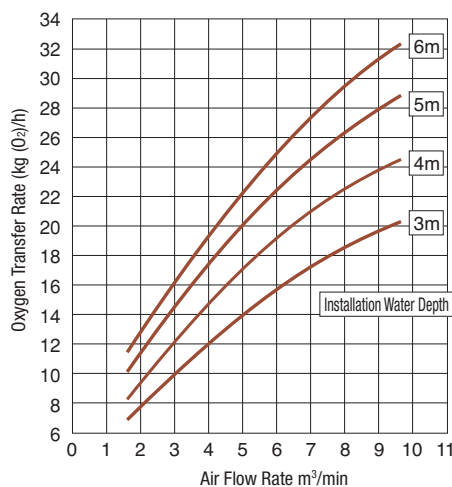
SJ22



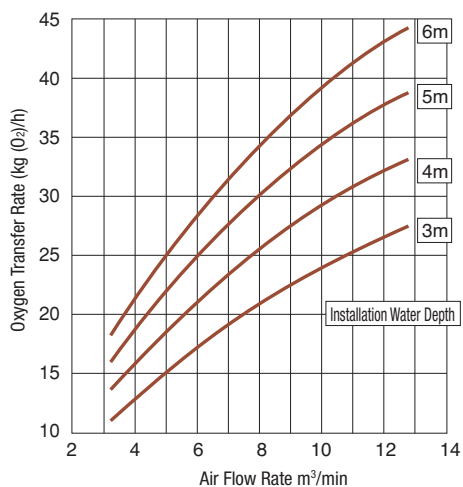
SJ37



SJ55



SJ75

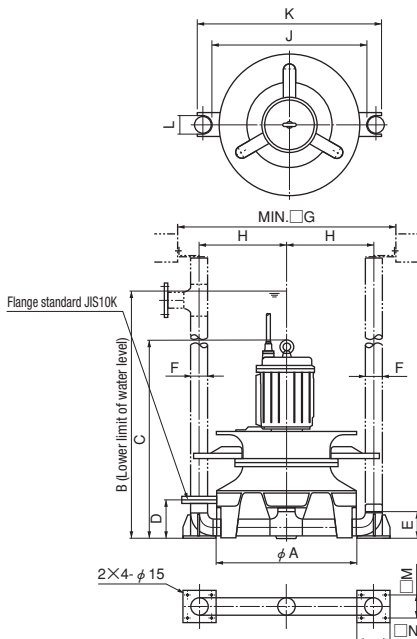


* Normal air flow conditions: Temperature of 20°C, absolute pressure of 101.3 kPa and relative humidity of 65%

Dimensions

Unit: mm

Guide rail type SJ-P



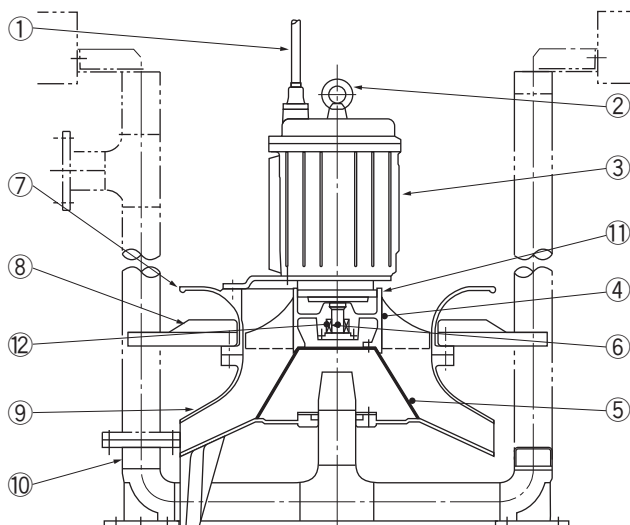
Model	Output kW (HP)	A	B	C	D	E	F
SJ8-P	0.75 (1)	510	1,100	810	150	100	50A
SJ15-P	1.5 (2)	600	1,300	894	200	120	65A
SJ22-P	2.2 (3)	670	1,500	934	200	120	65A
SJ37-P	3.7 (5)	740	1,700	1,052	200	140	80A
SJ55-P	5.5 (7.5)	890	1,900	1,102	250	180	100A
SJ75-P	7.5 (10)	1,080	2,100	1,294	300	220	125A

Model	Output kW (HP)	G	H	J	K	L	M	N
SJ8-P	0.75 (1)	850	340	609	738	71	100	150
SJ15-P	1.5 (2)	1,006	410	732	877	87	110	160
SJ22-P	2.2 (3)	1,050	432	777	922	87	110	160
SJ37-P	3.7 (5)	1,150	460	820	978	100	120	170
SJ55-P	5.5 (7.5)	1,350	560	994	1,148	126	150	200
SJ75-P	7.5 (10)	1,600	660	1,162	1,350	158	200	250

Sectional View

SJ-P

Guide rail type



* The Guide Rails are provided as a special accessory.

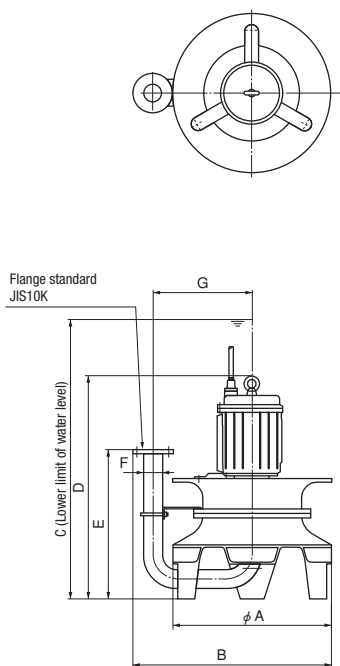
Number	Name	Material
1	Cable	2PNCTS
2	Eyebolt	SUS304
3	Submersible Motor	—
4	Impeller	SCS13
5	Diffuser	SUS304
6	Shaft	SUS329J1
7	Suction Casing	FC250
8	Guide	FC200
9	Discharge Casing	FC250
10	Air Supply Stand	SUS304
11	Shield Ring	NBR
12	Locking Element	—

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitryl rubber

Dimensions

Unit: mm

Free standing type SJ-F



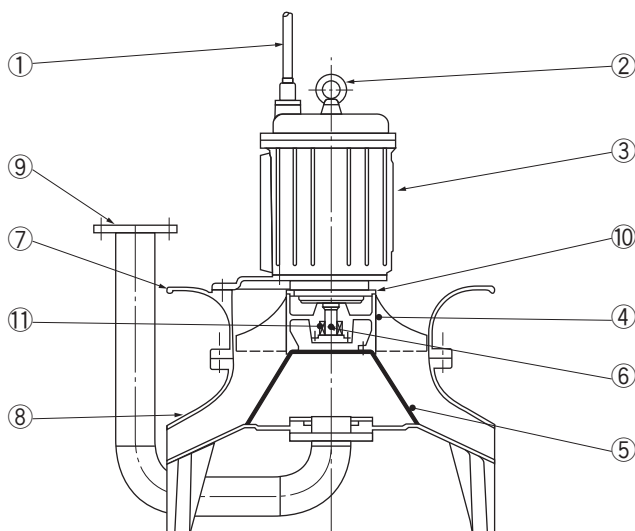
Model	Output kW (HP)	A	B	C	D	E	F	G
SJ8-F	0.75 (1)	510	633	1,100	810	550	50A	300
SJ15-F	1.5 (2)	600	808	1,300	894	646	65A	420
SJ22-F	2.2 (3)	670	843	1,500	934	650	65A	420
SJ37-F	3.7 (5)	740	903	1,700	1,052	700	80A	440
SJ55-F	5.5 (7.5)	890	1,070	1,900	1,102	800	100A	520
SJ75-F	7.5 (10)	1,080	1,305	2,100	1,294	900	125A	640

Note) As this type of aerator may move during operation, depending on the conditions of the installation floor (an inclined floor or slippery nature of metal), the aerator needs to be fixed using a Guide Pipe, Anchor Weight or Anchor Rope.

Sectional View

SJ-F

Free standing type

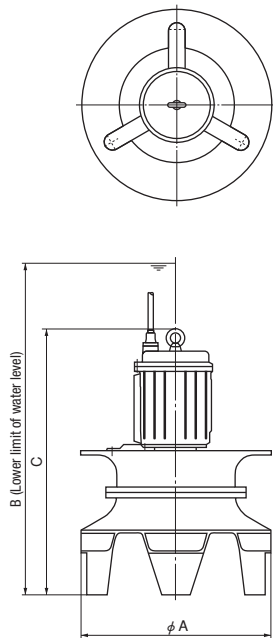


Number	Name	Material
1	Cable	2PNCTS
2	Eyebolt	SUS304
3	Submersible Motor	—
4	Impeller	SCS13
5	Diffuser	SUS304
6	Shaft	SUS329J1
7	Suction Casing	FC250
8	Discharge Casing	FC250
9	Air Supply Pipe	SUS304
10	Shield Ring	NBR
11	Locking Element	—

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

Dimensions

Unit: mm



Mixing type (No-aeration) SJ-K

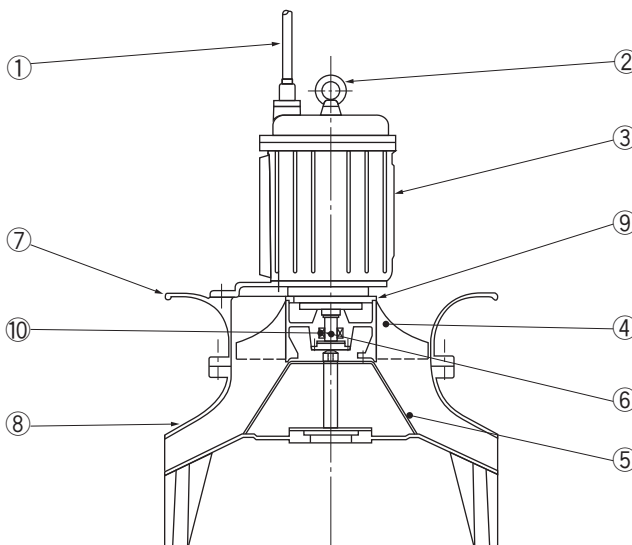
Model	Output kW (HP)	A	B	C
SJ8-K	0.75 (1)	510	1,100	810
SJ15-K	1.5 (2)	600	1,300	894
SJ22-K	2.2 (3)	670	1,500	934
SJ37-K	3.7 (5)	740	1,700	1,052
SJ55-K	5.5 (7.5)	890	1,900	1,102
SJ75-K	7.5 (10)	1,080	2,100	1,294

Note) As this type of aerator may move during operation, depending on the conditions of the installation floor (an inclined floor or slippery nature of metal), the aerator needs to be fixed using a Guide Pipe, Anchor Weight or Anchor Rope.

Sectional View

SJ-K

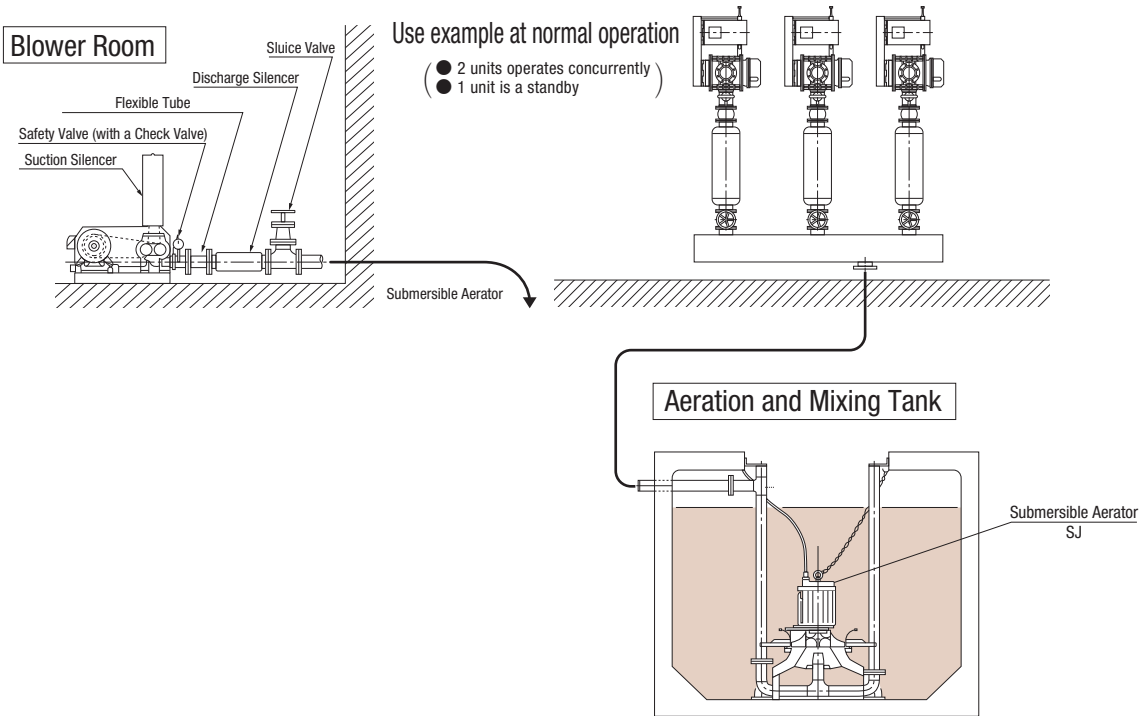
Mixing type (No-aeration)



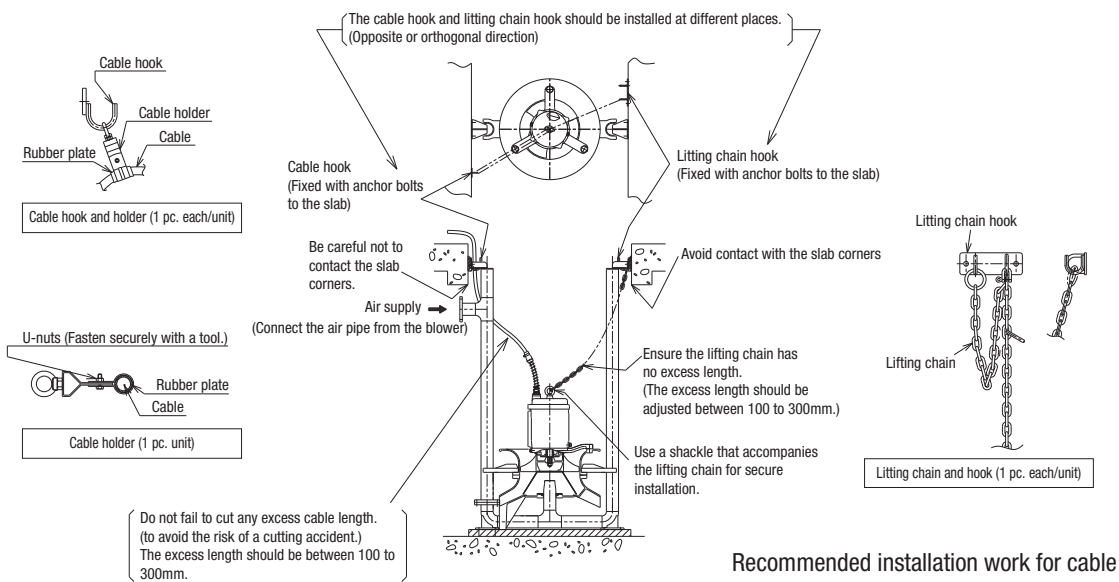
Number	Name	Material
1	Cable	2PNCTS
2	Eyebolt	SUS304
3	Submersible Motor	—
4	Impeller	SCS13
5	Diffuser	SUS304
6	Shaft	SUS329J1
7	Suction Casing	FC250
8	Discharge Casing	FC250
9	Shield Ring	NBR
10	Locking Element	—

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitryl rubber

Example Layout



Recommended Installation Work



Recommended installation work for cable and lifting chain

(The SJ-P type is described as an example, but the case is the same for both SJL-P and SU-P types.)

MEMO

Handwriting practice lines consisting of 25 horizontal dashed lines.

Output: **2.2 - 30 kW (3 - 40 HP)**

SJL

SJL Series is a submersible aerator which performs aeration and mixing of the tank by dissolving oxygen into the water with fine bubble supplied by blower. SJL Series adopts a dedicated reduction gear developed for large mixing force.

	Installation	Output kW (HP)	Pump Model	Page
Aerator	Guide Rail Type	2.2 (3)	SJL22-P	390
		3.7 (5)	SJL37-P	
		5.5 (7.5)	SJL55-P	
		7.5 (10)	SJL75-P	
		11 (15)	SJL110-P	
		15 (20)	SJL150-P	
		22 (30)	SJL220-P	
		30 (40)	SJL300-P	
	Free Standing Type	2.2 (3)	SJL22-F	
		3.7 (5)	SJL37-F	
		5.5 (7.5)	SJL55-F	
		7.5 (10)	SJL75-F	
		11 (15)	SJL110-F	
		15 (20)	SJL150-F	
		22 (30)	SJL220-F	
		30 (40)	SJL300-F	
Mixer (No-aeration)	Free Standing Type	2.2 (3)	SJL22-K	
		3.7 (5)	SJL37-K	
		5.5 (7.5)	SJL55-K	
		7.5 (10)	SJL75-K	
		11 (15)	SJL110-K	
		15 (20)	SJL150-K	
		22 (30)	SJL220-K	
		30 (40)	SJL300-K	

■ Features

● Available for both Aerobic and Anaerobic mixing

The SJL-series is a forced-air supply type submersible aerator. It can be used for both aerobic and anaerobic mixing simply by running or halting the operation of the air blower. It is suitable for denitrification, nitrification and SBR processes.

● Highly Reliable Dedicated Reduction Gear

Equipped with a dedicated reduction gear developed for the SJL-series, providing high reliability for continuous operation in a long-term.

● Powerful Mixing

The axial-flow impeller and downward discharge casing ensure high flow velocity at the tank bottom and uniform convection.

● Low Energy Consumption

Air bubble minimization effect offers a high oxygen transfer rate with a low energy consumption.

● Non-clogging and High durability

Non-clogging design casing and time-proven double mechanical seals with 4-faces SiC ensure high durability in the application of continuous operation in a long-term.

● Reinforced Cabtyre cable

Lightweight and tough cabtyre cable with special reinforcement and core sealer is employed.

● Easy Maintenance

Motor and impeller can be removed from the casing by simply unfastening the three bolts, which provides simple maintenance accessibility.



SJL75

■ Applications

○ Sewage and Industrial waste treatment facilities

- Aeration and mixing processes
- Anaerobic or anoxic mixing process
- SBR process

■ Standard Specifications

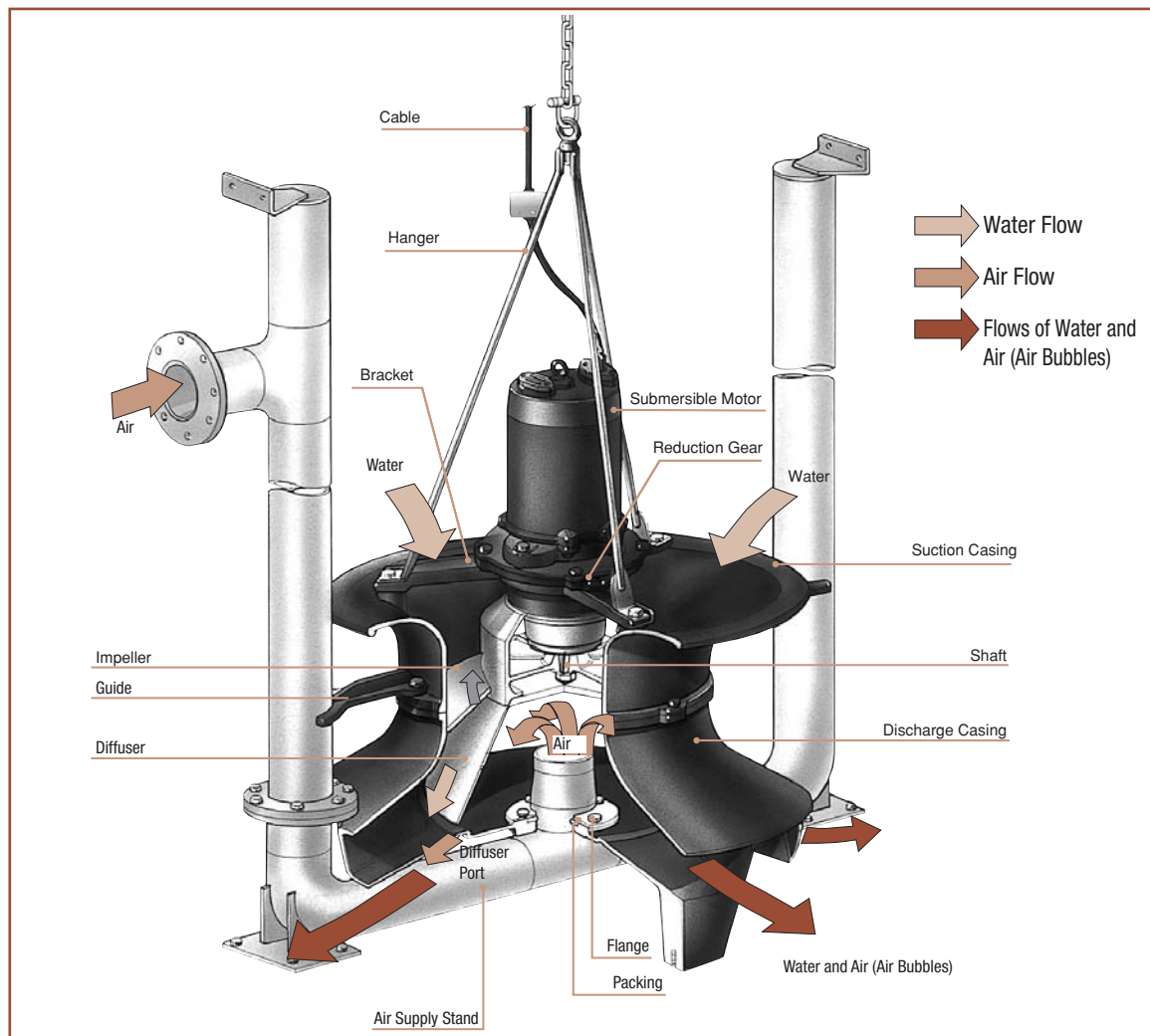
Handling Liquid	Kind of Liquid	Wastewater (including sewage, human waste, industrial waste and sludge)
	Temperature	0 - 40°C
Material	Cable	2PNCST
	Main Shaft	Stainless steel (SUS329J1)
	Impeller	Stainless steel casting (SCS13)
	Suction / Discharge casing	Gray steel casting (FC250)
Electric Motor	Name	Air-filled type Submersible Induction Motor
	Insulation Class	Class E
	Enclosure	IP68
	Phase	3-ph
	Voltage	200 - 480V
	Pole	4P
	Motor Protector	Micro Thermal Protector (MTP)

■ Special Specifications

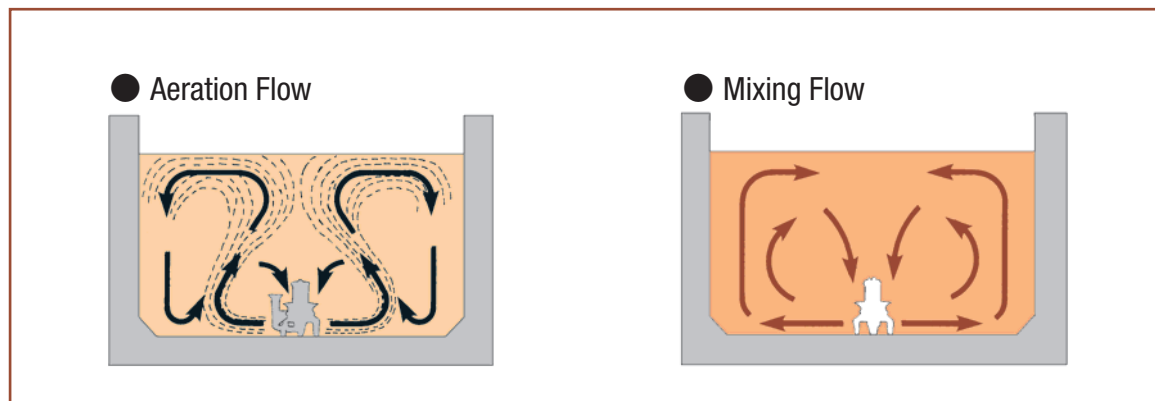
Motor Insulation	Class F
Cable Extension	Cable Length 15 - 30m (every 5m)
Motor Protector	Leakage Detector

For special specifications other than the above, please contact us.

Function Explanation Diagram (SJL-P: Guide rail type)



Flow Patterns



Standard Specifications

Model	Output kW (HP)	Discharge Water Volume m³/min	Airflow Range* 1 m³/min	Reference Performance* 2 (Water Depth: 5m)		Necessary Blowing Pressure at Air Supply Connection Port * 3 kPa (mmAq)	Applicable Tank Size			Weight (Bare Body) kg	Air Supply Stand Weight kg
				Airflow m³/min	Oxygen Transfer Rate kg (O₂)/h		Max. Volume m³	Max. Surface Area m²	Max. Side Length of Rectangle m		
SJL22	2.2 (3)	13	0.9~4.1	2.4	8.2	Installation Water Depth + 1.5 (+ 150)	460	85	9.5	250	18
SJL37	3.7 (5)	21	1.1~6.8	3.8	13.8	Installation Water Depth + 2.0 (+ 200)	670	124	12.8	330	23
SJL55	5.5 (7.5)	34	1.6~9.7	5.6	20.0	Installation Water Depth + 2.0 (+ 200)	1,000	185	14.3	640	33
SJL75	7.5 (10)	47	3.2~12.9	7.5	27.5	Installation Water Depth + 2.5 (+ 250)	1,400	260	17.5	900	53
SJL110	11 (15)	70	4.3~19.3	11.8	42.5	Installation Water Depth + 1.5 (+ 150)	2,000	370	21.2	1,250	80
SJL150	15 (20)	95	6.4~25.8	16.1	58.1	Installation Water Depth + 1.5 (+ 150)	2,700	500	24.6	1,560	84
SJL220	22 (30)	140	8.6~40.8	24.7	85.0	Installation Water Depth + 1.0 (+ 100)	4,000	740	30	3,100	146
SJL300	30 (40)	190	12.9~53.7	33.3	112.0	Installation Water Depth + 0.5 (+ 50)	5,500	1,020	35	4,200	206

For motors characteristics, bearings and oils, see the specifications (detail data) - App.1. The value within the parenthesis { } are given for reference.
Note 1) *1 ~ *3 are applicable to the Guide rail and Free standing types only and not to the Mixing type.

Note 2) Air Break may occur, depending on debris in the tank or liquid quality, in which case the airflow range may be extremely small.

Note 3) These values are subject to at a clear water temperature of 20°C and a concentration of dissolved oxygen of 0mg/ℓ. They vary approximately 10%, depending on measurement conditions. They need to be corrected with the water quality, temperature of inflowing water and the concentration of dissolved oxygen in the tank. The airflow range and applicable tank size values are obtained at a sludge concentration of 5,000mg/ℓ.

Standard Accessories

- Cable (10m) 1 pc.
- Cable Holder 1 pc.
- Connecting Device 1 set

(Guide Rail Type: Air Supply Stand)
(Free Standing Type: Air Supply Pipe)

Special Accessories

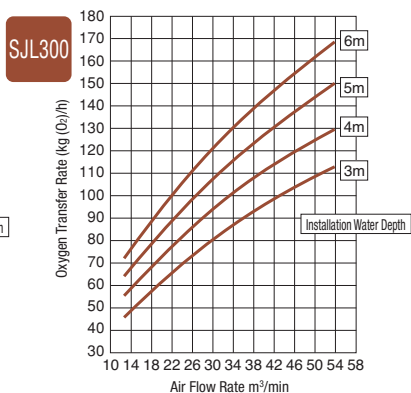
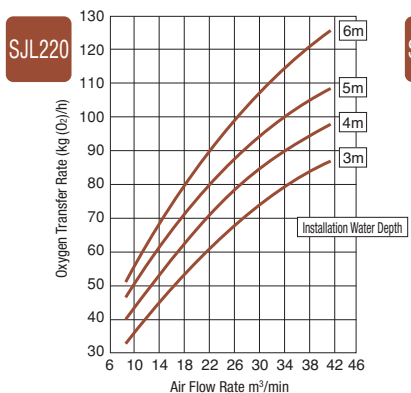
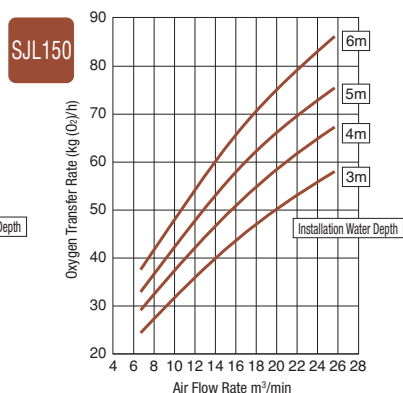
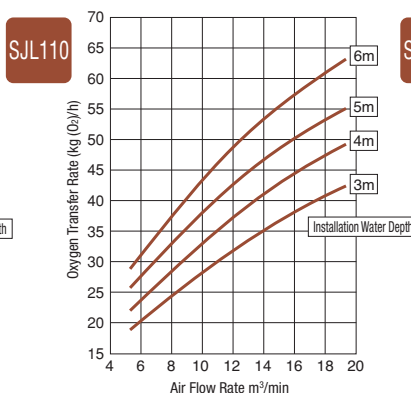
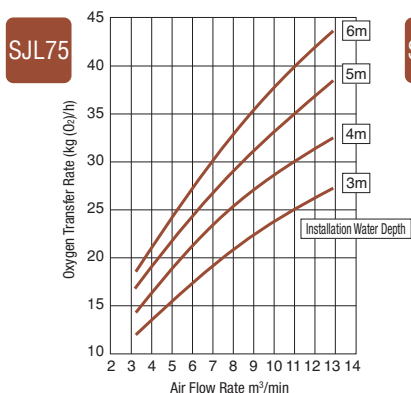
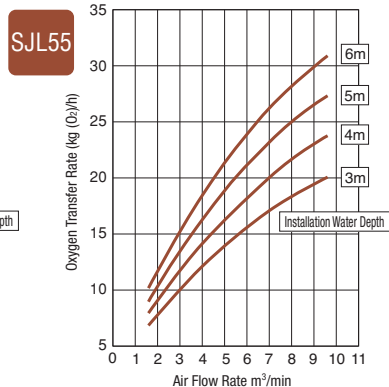
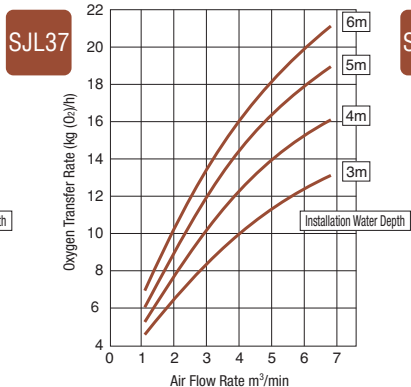
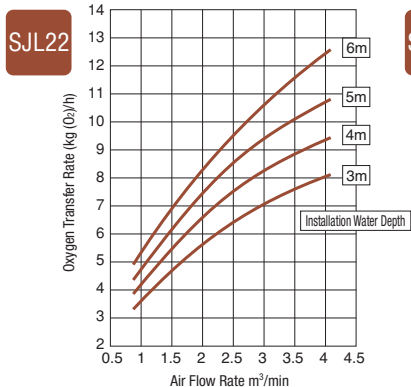
- Lifting Chain
- Special Tools
- Anchor Bolt
- Guide Pipe that also serves as an Air Supply Pipe

Part Specifications

Applicable Model	Cable Specifications					Starting Method	Mechanical Seal	
	Type	Section Area (mm²)	Cores	Applications	Outer Dia. (mm)		Lower	Upper
SJL22 SJL37	2PNCTS	2 2 (2)	4 2 (2)	Power Control (MTP) (Control (Leakage Detector))	φ 16 (φ 18)	Direct	SiC/SiC	SiC/SiC
SJL55	2PNCTS	3.5 2 (2)	4 2 (2)	Power Control (MTP) (Control (Leakage Detector))	φ 18 (φ 20)			
SJL75	2PNCTS	5.5 2 (2)	4 2 (2)	Power Control (MTP) (Control (Leakage Detector))	φ 20 (φ 22)			
SJL110	2PNCTS	5.5 2 2	7 2 2	Power Control (MTP) (Standby (Leakage Detector))	φ 28	Star-delta	SiC/SiC	SiC/SiC
SJL150	2PNCTS	14 2 2	7 2 2	Power Control (MTP) (Standby (Leakage Detector))	φ 33			
SJL220	2PNCTS	22 2 2	7 2 2	Power Control (MTP) (Standby (Leakage Detector))	φ 40		Cemented carbide/ Cemented carbide	Carbon/SiC
SJL300	2PNCTS	30 2 2	7 2 2	Power Control (MTP) (Standby (Leakage Detector))	φ 45			

Performance Curves

(Conditions: Normal air flow, clear water at a temperature of 20°C, and dissolved oxygen at a concentration of 0mg/ℓ)

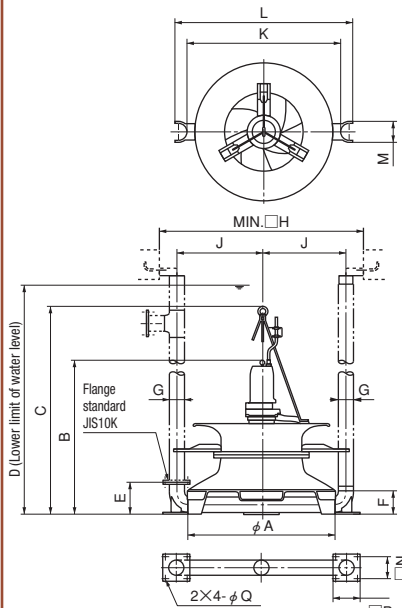


Normal air flow conditions: Temperature of 20°C, absolute pressure of 101.3 kPa and relative humidity of 65%

Dimensions

Unit: mm

Guide rail type SJL-P



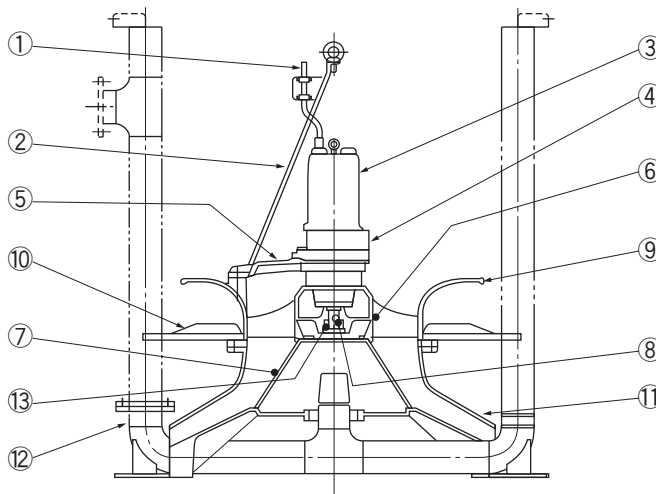
Model	Output kW (HP)	A	B	C	D	E	F	G
SJL22-P	2.2 (3)	740	983	1,383	1,500	200	120	65A
SJL37-P	3.7 (5)	900	1,055	1,414	1,700	200	140	80A
SJL55-P	5.5 (7.5)	1,150	1,305	1,757	1,900	250	180	100A
SJL75-P	7.5 (10)	1,400	1,453	1,870	2,100	300	220	125A
SJL110-P	11 (15)	1,640	1,759	2,200	2,300	350	260	150A
SJL150-P	15 (20)	1,900	1,890	2,305	2,500	350	260	150A
SJL220-P	22 (30)	2,300	2,194	2,635	2,700	450	400	200A
SJL300-P	30 (40)	2,600	2,389	2,830	2,900	550	500	250A

Model	Output kW (HP)	H	J	K	L	M	N	P	Q
SJL22-P	2.2 (3)	1,086	450	814	915	86	110	160	15
SJL37-P	3.7 (5)	1,290	530	960	1,075	100	120	170	15
SJL55-P	5.5 (7.5)	1,530	650	1,175	1,319	124	150	200	15
SJL75-P	7.5 (10)	1,880	800	1,440	1,620	160	200	250	15
SJL110-P	11 (15)	2,200	930	1,676	1,890	184	220	270	19
SJL150-P	15 (20)	2,460	1,060	1,936	2,150	184	220	270	19
SJL220-P	22 (30)	3,000	1,325	2,414	2,680	236	260	320	19
SJL300-P	30 (40)	3,400	1,475	2,664	2,980	286	310	370	19

Sectional View

SJL-P

Guide rail type



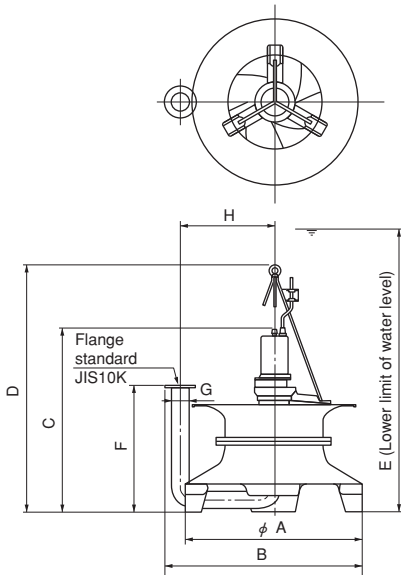
* The Guide Rails are provided as a special accessory.

Number	Name	Material
1	Cable	2PNCTS
2	Suspension Fitting	SUS304
3	Submersible Motor	—
4	Reduction Gear	—
5	Bracket	FC200
6	Impeller	SCS13
7	Diffuser	SUS304
8	Shaft	SUS329J1
9	Suction Casing	FC250
10	Guide	FC200
11	Discharge Casing	FC250
12	Air supply Stand	SUS304
13	Locking Element	—

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

Dimensions

Unit: mm



Free standing type SJL-F

Model	Output kW (HP)	A	B	C	D	E
SJL22-F	2.2 (3)	740	888	983	1,383	1,500
SJL37-F	3.7 (5)	900	1,043	1,055	1,414	1,700
SJL55-F	5.5 (7.5)	1,150	1,330	1,305	1,757	1,900
SJL75-F	7.5 (10)	1,400	1,565	1,453	1,870	2,100
SJL110-F	11 (15)	1,640	1,830	1,759	2,200	2,300
SJL150-F	15 (20)	1,900	2,080	1,890	2,305	2,500
SJL220-F	22 (30)	2,300	2,565	2,194	2,635	2,700
SJL300-F	30 (40)	2,600	2,900	2,389	2,830	2,900

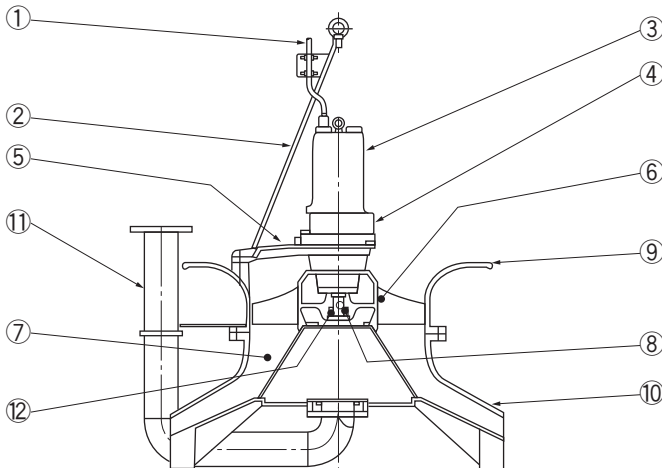
Model	Output kW (HP)	F	G	H
SJL22-F	2.2 (3)	600	65A	430
SJL37-F	3.7 (5)	650	80A	500
SJL55-F	5.5 (7.5)	900	100A	650
SJL75-F	7.5 (10)	1,000	125A	740
SJL110-F	11 (15)	1,150	150A	870
SJL150-F	15 (20)	1,250	150A	990
SJL220-F	22 (30)	1,350	200A	1,200
SJL300-F	30 (40)	1,600	250A	1,400

Note) As this type of aerator may move during operation, depending on the conditions of the installation floor (an inclined floor or slippery nature of metal), the aerator needs to be fixed using a Guide Pipe, Anchor Weight or Anchor Rope.

Sectional View

SJL-F

Free standing type



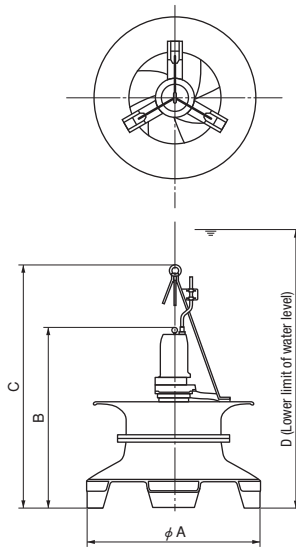
Number	Name	Material
1	Cable	2PNCTS
2	Suspension Fitting	SUS304
3	Submersible Motor	—
4	Reduction Gear	—
5	Bracket	FC200
6	Impeller	SCS13
7	Diffuser	SUS304
8	Shaft	SUS329J1
9	Suction Casing	FC250
10	Discharge Casing	FC250
11	Air Supply Pipe	SUS304
12	Locking Element	—

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

Dimensions

Unit: mm

Mixing type (No-aeration) SJL-K



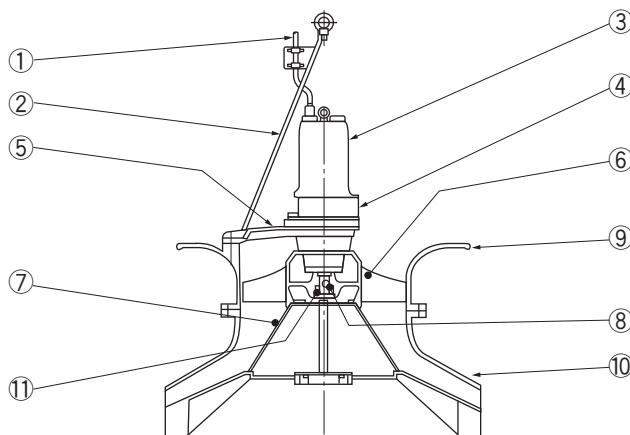
Model	Output kW (HP)	A	B	C	D
SJL22-K	2.2 (3)	740	983	1,383	1,500
SJL37-K	3.7 (5)	900	1,055	1,414	1,700
SJL55-K	5.5 (7.5)	1,150	1,305	1,757	1,900
SJL75-K	7.5 (10)	1,400	1,453	1,870	2,100
SJL110-K	11 (15)	1,640	1,759	2,200	2,300
SJL150-K	15 (20)	1,900	1,890	2,305	2,500
SJL220-K	22 (30)	2,300	2,194	2,635	2,700
SJL300-K	30 (40)	2,600	2,389	2,830	2,900

Note) As this type of aerator may move during operation, depending on the conditions of the installation floor (an inclined floor or slippery nature of metal), the aerator needs to be fixed using a Guide Pipe, Anchor Weight or Anchor Rope.

Sectional View

SJL-K

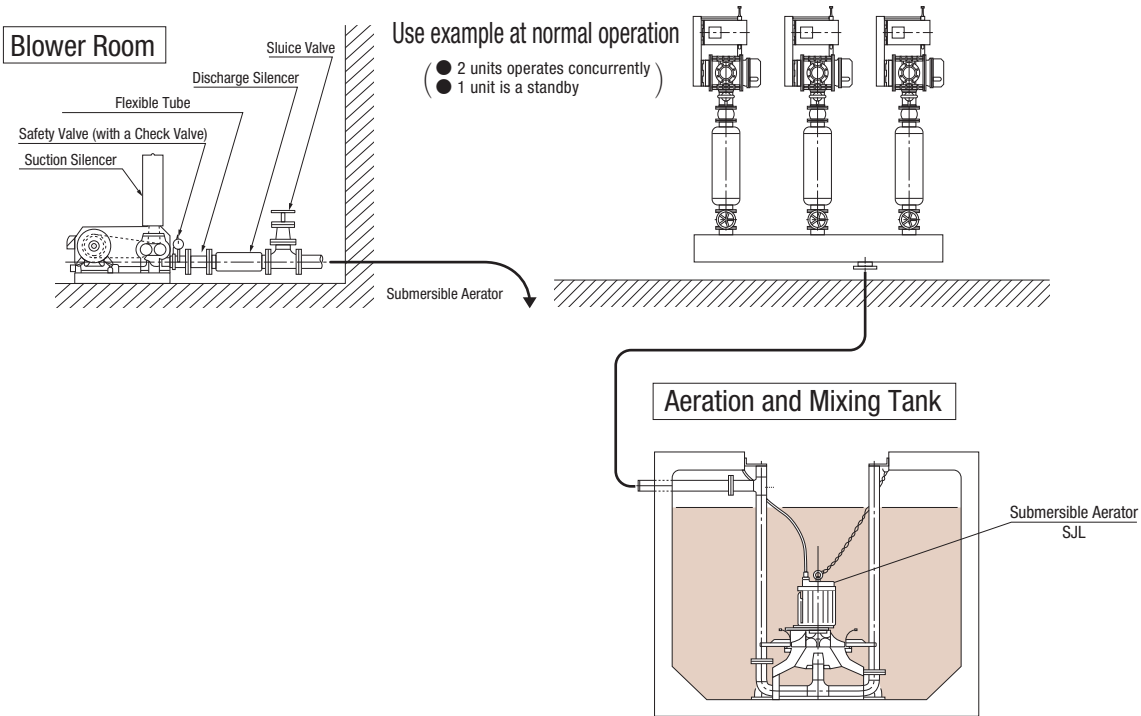
Mixing type (No-aeration)



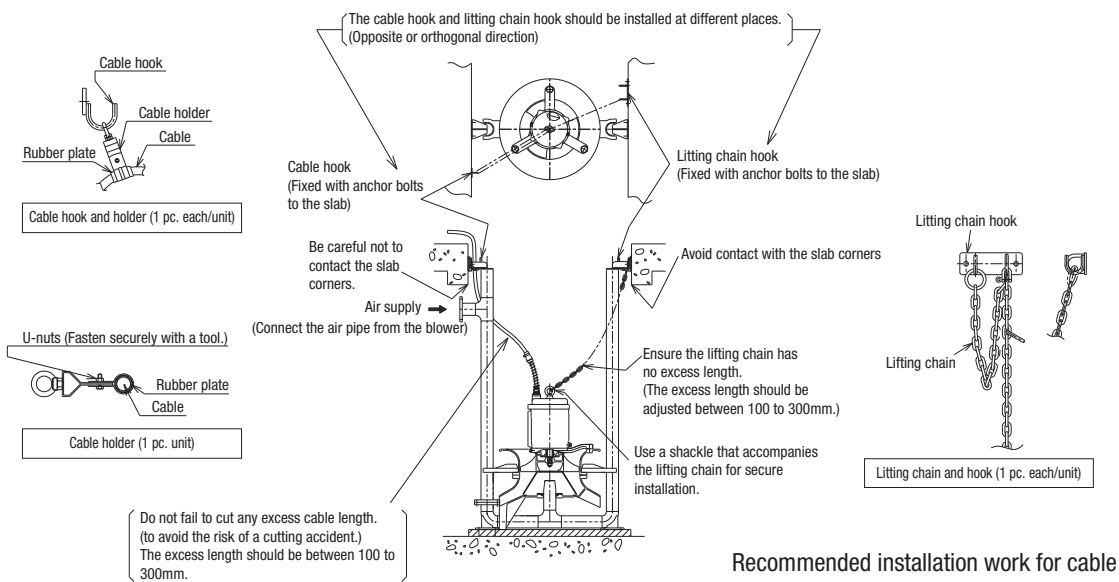
Number	Name	Material
1	Cable	2PNCTS
2	Suspension Fitting	SUS304
3	Submersible Motor	—
4	Reduction Gear	—
5	Bracket	FC200
6	Impeller	SCS13
7	Diffuser	SUS304
8	Shaft	SUS329J1
9	Suction Casing	FC250
10	Discharge Casing	FC250
11	Locking Element	—

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

Example Layout



Recommended Installation Work



Recommended installation work for cable and lifting chain

(The SJ-P type is described as an example, but the case is the same for both SJL-P and SU-P types.)

MEMO

Handwriting practice lines consisting of 24 horizontal dashed lines.

Output: **1.5 - 15 kW (2 - 20 HP)**

SU

SU Series is of upward discharge type suitable for aeration in a deep tank. Like the SJ Series, a high-efficiency multipole motor, instead of a reduction gear, is adopted, making it economical as it eliminates the necessity for maintenance of the reduction gear and replacement of reduction gear oil. Furthermore, no power loss due to the absence of a reduction gear allows high-efficiency operation.

Installation	Output kW (HP)	Pump Model	Page
Guide Rail Type	1.5 (2)	SU15-P	400
	2.2 (3)	SU22-P	
	3.7 (5)	SU37-P	
	5.5 (7.5)	SU55-P	
	7.5 (10)	SU75-P	
	11 (15)	SU110-P	
	15 (20)	SU150-P	
Free Standing Type	1.5 (2)	SU15-F	
	2.2 (3)	SU22-F	
	3.7 (5)	SU37-F	
	5.5 (7.5)	SU55-F	
	7.5 (10)	SU75-F	
	11 (15)	SU110-F	
	15 (20)	SU150-F	

■ Features

● Available for both Aerobic and Anaerobic mixing

The SU-series is a forced-air supply type submersible aerator. It can be used for both aerobic and anaerobic mixing simply by running or halting the operation of the air blower. It is suitable for denitrification, nitrification and SBR processes.

● Suitable for Operation in a Deep tank

The SU-series can be operated efficiently even in a deep tank by installing with a draft tube (optional accessory).

● Compact and Lightweight

Multipole motor (50 Hz: 10 P, 60 Hz: 12 P) direct drive design is compact and lightweight. No gear oil replacement is needed because no reduction gear is used.

● Low Energy Consumption

The special designed axial-flow impeller for SU-series and upward discharge casing ensure high oxygen transfer rate with a low energy consumption.

● High durability

The time-proven double mechanical seals with 4-faces SiC ensure high durability in the application of continuous operation in a long-term.

● Reinforced Cable cable

Lightweight and tough cable with special reinforcement and core sealer is employed.

● Easy Maintenance

Motor and impeller can be removed from the casing by simply unfastening the six bolts, which provides simple maintenance accessibility.

■ Applications

- Sewage and Industrial waste treatment facilities
 - Aeration and mixing processes
 - Anaerobic or anoxic mixing process
 - SBR process



■ Standard Specifications

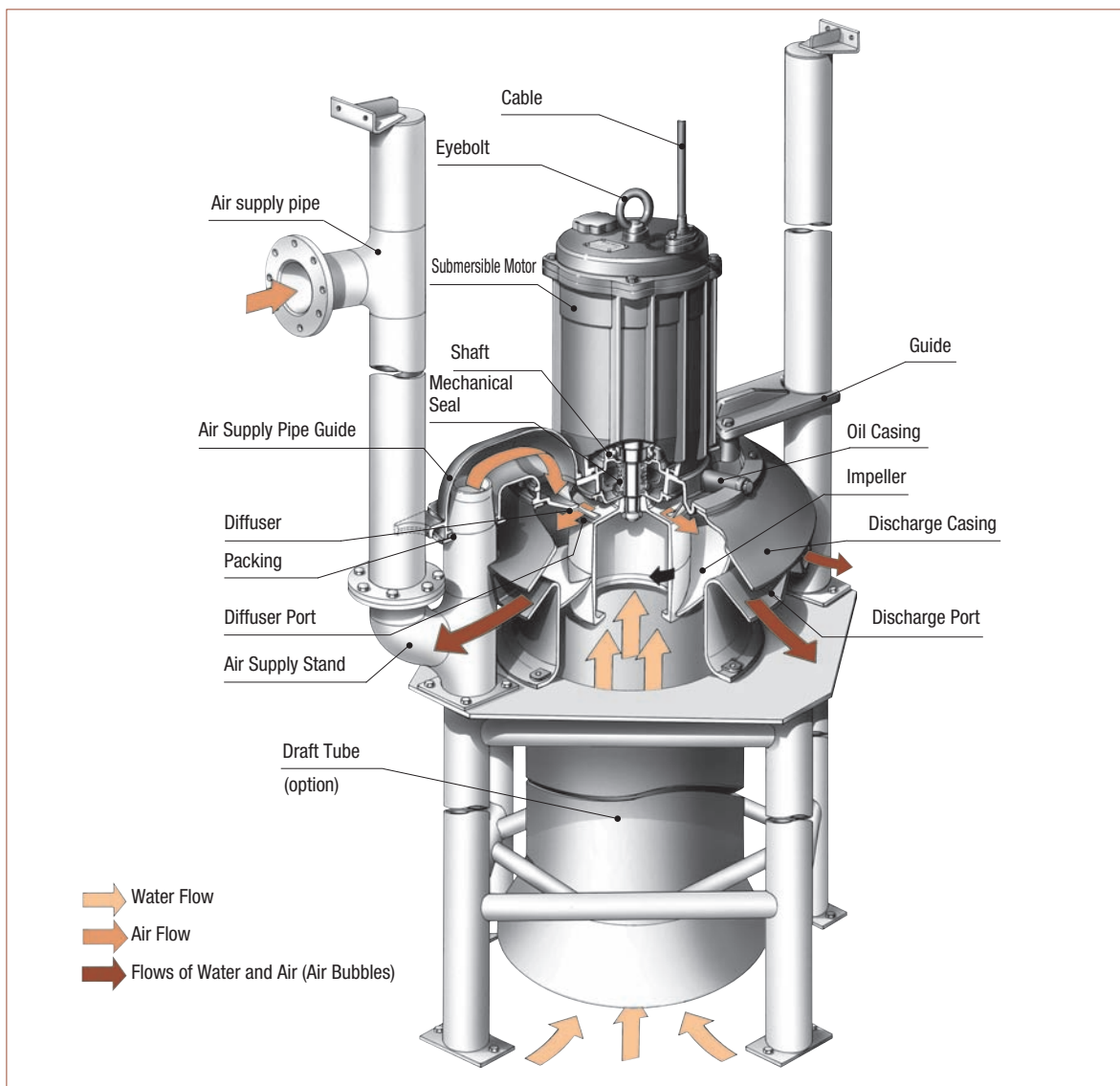
Handling Liquid	Kind of Liquid	Sewage water (including sewer water, human waste, industrial effluents, polluted sludge)
	Temperature	0 - 40°C
Material	Cable	2PNCTS
	Motor Shaft	Stainless steel (SUS329J1)
	Impeller	Stainless steel casting (SCS13)
	Discharge Casing	Gray iron casting (FC250)
Electric Motor	Name	Air-filled type Submersible Induction Motor
	Insulation Class	Class E
	Enclosure	IP68
	Phase	3-ph
	Voltage	200 - 480V
	Pole	10P/12P (50/60Hz)
	Starting Method	Direct
	Motor Protector	Micro Thermal Protector (MTP)

■ Special Specifications

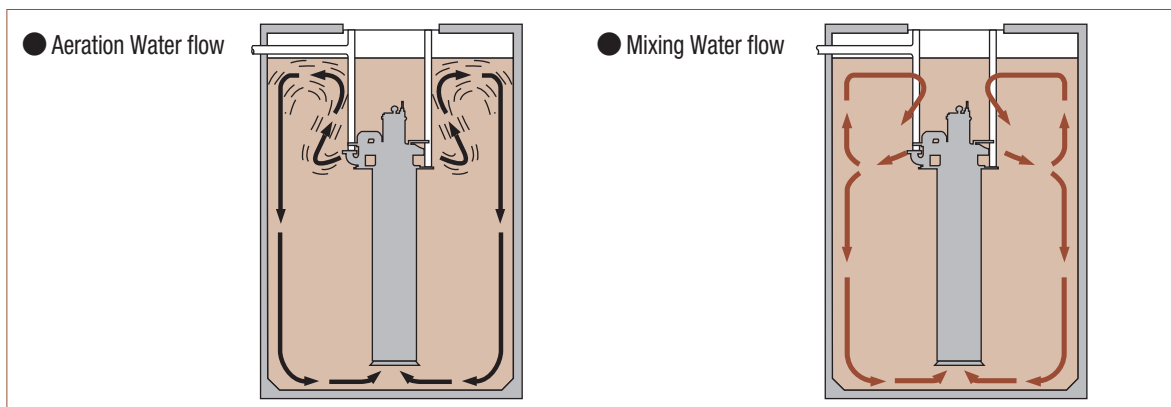
Motor Insulation	Class F
Cable Extension	Cable Length: 15 - 30m (every 5m) * If a Cable Length exceeds 30 m, please contact us.
Motor Protector	Leakage Detector
High Temperature Specifications	Water temperature of 60°C (Only cables are changed)

For special specifications other than the above, please contact us.

■ Function Explanation Diagram (SU-P: Guide rail type with a draft tube)



■ Flow Patterns



Standard Specifications

Model	Output kW (HP)	Discharge Water Volume m³/min	Airflow Range*1 m³/min	Reference Performance*2 (Water Depth 5m)		Necessary Blowing Pressure at Air Supply Connection Port* 3 kPa {mmAq}	Applicable Tank Size			Weight (Bare Body) kg
				Airflow m³/min	Oxygen Transfer Rate kg (O₂)/h		Max. Volume m³	Max. Surface Area m²	Max. Side Length of Rectangle m	
SU15	1.5 (2)	9	0.6 - 3.2	1.6	6.0	Installation Water Depth + 3.0 {+ 300}	250	46	7.5	175
SU22	2.2 (3)	11	0.9 - 4.6	2.4	9.2	Installation Water Depth + 4.0 {+ 400}	350	65	8.8	195
SU37	3.7 (5)	17	1.1 - 7.5	4.3	15.7	Installation Water Depth + 5.0 {+ 500}	600	110	11.5	230
SU55	5.5 (7.5)	28	1.6 - 10.7	6.4	23.6	Installation Water Depth + 5.0 {+ 500}	900	165	13.9	320
SU75	7.5 (10)	39	3.2 - 14.5	8.6	31.6	Installation Water Depth + 6.0 {+ 600}	1,250	230	16.5	360
SU110	11 (15)	55	5.4 - 21.5	11.8	45.0	Installation Water Depth + 5.0 {+ 500}	1,800	330	20.0	700
SU150	15 (20)	75	6.4 - 25.8	16.1	62.5	Installation Water Depth + 7.5 {+ 750}	2,400	440	23.0	1,000

For motors characteristics, bearings and oils, see the specifications (detail data) - App.1. The value within the parenthesis { } are given for reference.

Note 1) *1 - *3 are applicable to the Guide rail and Free standing types only and not to the Mixing type.

Note 2) Air Break may occur, depending on debris in the tank or liquid quality, in which case the airflow range may be extremely small.

Note 3) These values are subject to at a clear water temperature of 20°C and a concentration of dissolved oxygen of 0mg/ℓ. They vary approximately 10%, depending on measurement conditions. They need to be corrected with the water quality, temperature of inflowing water and the concentration of dissolved oxygen in the tank. The airflow range and applicable tank size values are obtained at a sludge concentration of 5,000mg/ℓ.

Standard Accessories

- Cable (10m).....1 pc.
- Cable Holder.....1 pc.
- Connecting Device.....1 set

Guide Rail Type: Air Supply Stand

Free Standing Type: Air Supply Pipe and Suction Stand

Special Accessories

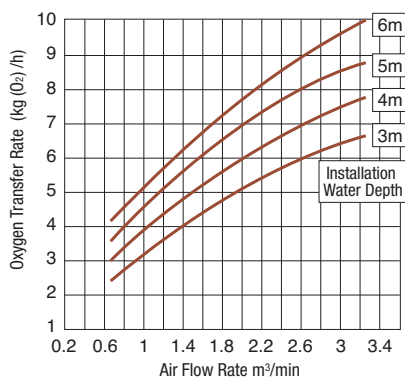
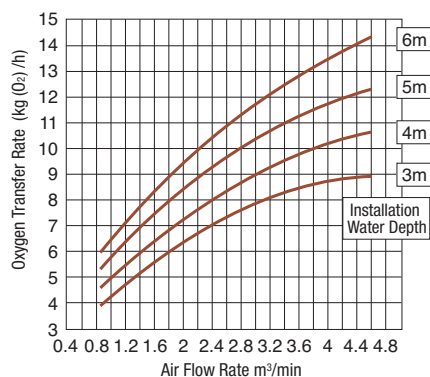
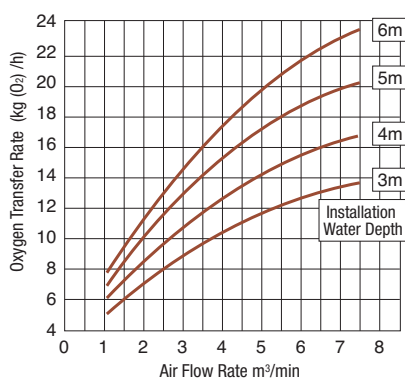
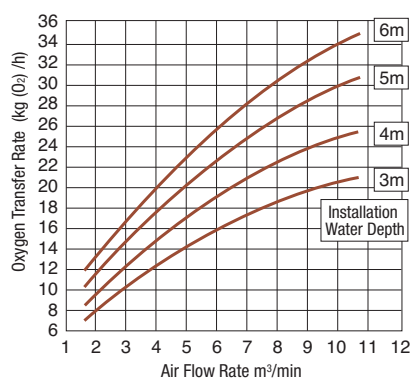
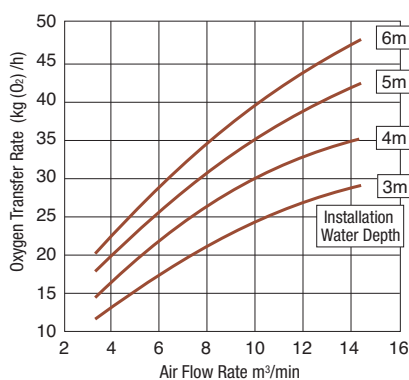
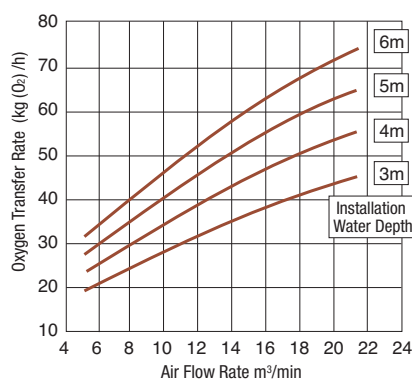
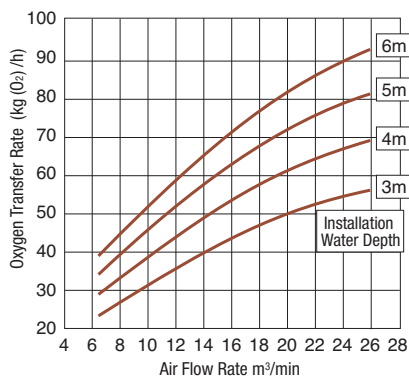
- Lifting Chain
- Special Tools
- Anchor Bolt
- Guide Pipe
- Draft Tube

Part Specifications

Applicable Model	Cable Specifications					Starting Method	Mechanical Seal	
	Type	Section Area (mm²)	Cores	Applications	Outer Dia. (mm)		Lower	Upper
SU15•SU22	2PNCTS	2	4	Power	φ 16	Direct	SiC/SiC	SiC/SiC
		(2)	(2)	Control (MTP) (Control (Leakage Detector))	(φ 18)			
SU37	2PNCTS	3.5	4	Power	φ 18			
		(2)	(2)	Control (MTP) (Control (Leakage Detector))	(φ 20)			
SU55	2PNCTS	5.5	4	Power	φ 20			
		(2)	(2)	Control (MTP) (Control (Leakage Detector))	(φ 22)			
SU75	2PNCTS	8	4	Power	φ 22	Star-delta	SiC/SiC	SiC/SiC
		(2)	(2)	Control (MTP) (Control (Leakage Detector))	(φ 24.5)			
SU110	2PNCTS	8	7	Power	φ 30			
		(2)	(2)	(Standby (Leakage Detector))				
SU150	2PNCTS	14	7	Power	φ 33			
		(2)	(2)	(Standby (Leakage Detector))				

() The values within the parenthesis indicate those for special specifications (with a Leakage Detector).

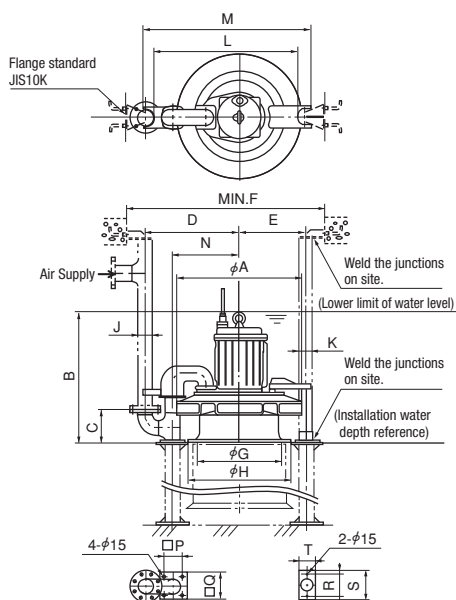
Performance Curves (Conditions: Normal air flow, clear water at a temperature of 20°C, and dissolved oxygen at a concentration of 0mg/l)

SU15

SU22

SU37

SU55

SU75

SU110

SU150


* Normal air flow conditions: Temperature of 20°C, absolute pressure of 101.3 kPa and relative humidity of 65%

■ Dimensions

Guide rail type SU-P



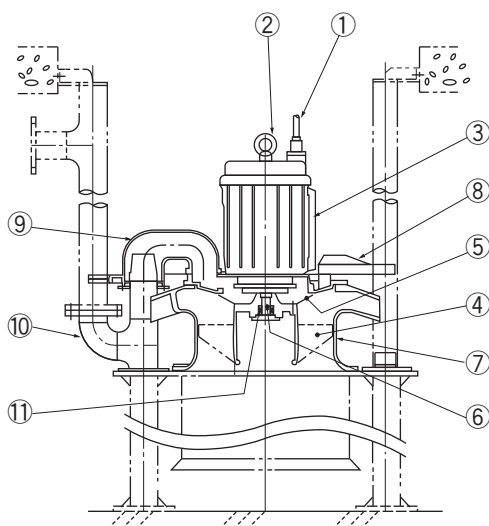
Model	Output kW (HP)	A	B	C	D	E	F	G	H	J
SU15-P	1.5 (2)	600	665	200	495	350	1,050	420	506	65A
SU22-P	2.2 (3)	670	684	200	495	350	1,050	480	560	65A
SU37-P	3.7 (5)	740	770	200	555	390	1,150	520	600	80A
SU55-P	5.5 (7.5)	890	798	250	685	480	1,400	616	716	100A
SU75-P	7.5 (10)	890	886	300	740	535	1,550	616	716	125A
SU110-P	11 (15)	1,150	1,168	350	920	610	1,900	854	960	150A
SU150-P	15 (20)	1,400	1,386	350	1,025	720	2,200	1,004	1,110	150A

Model	Output kW (HP)	K	L	M	N	P	Q	R	S	T
SU15-P	1.5 (2)	50A	768	905	355	100	125	120	170	80
SU22-P	2.2 (3)	50A	768	905	355	100	125	120	170	80
SU37-P	3.7 (5)	65A	852	990	393	120	150	130	180	100
SU55-P	5.5 (7.5)	80A	1,049	1,206	479	150	200	140	190	120
SU75-P	7.5 (10)	100A	1,129	1,300	489	200	230	170	220	140
SU110-P	11 (15)	125A	1,359	1,560	625	200	250	200	250	180
SU150-P	15 (20)	125A	1,574	1,775	730	200	250	200	250	180

■ Sectional View

SU-P

Guide rail type



Number	Name	Material
1	Cable	2PNCTS
2	Eyebolt	SUS304
3	Submersible Motor	—
4	Impeller	SCS13
5	Diffuser	SUS304
6	Shaft	SUS329J1
7	Discharge Casing	FC250
8	Guide	FC200
9	Air Supply Pipe Guide	FC250
10	Air Supply Stand	SUS304
11	Locking Element	—

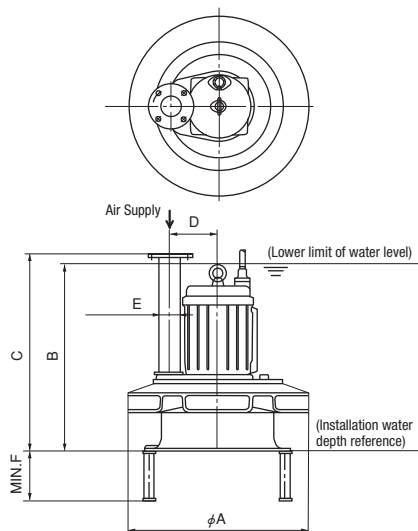
* Note VCT : Polyvinyl-chloride sheathed cabtyre cable 2PNCT : Chloroprene sheathed cabtyre cable SUS : Stainless steel

SCS : Stainless steel casting SS : Mild steel SPCC : Steel FC : Gray iron casting FCD : Ductile iron casting NBR : Nitril rubber

■ Dimensions

Unit: mm

Free standing type SU-F



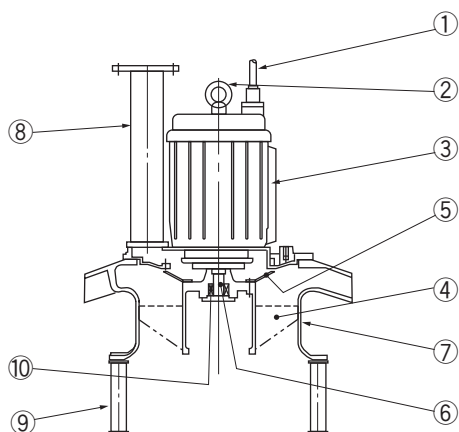
Model	Output kW (HP)	A	B	C	D	E	F
SU15-F	1.5 (2)	600	665	665	189	65A	200
SU22-F	2.2 (3)	670	684	665	189	65A	200
SU37-F	3.7 (5)	740	770	684	198	80A	200
SU55-F	5.5 (7.5)	890	798	845	232	100A	200
SU75-F	7.5 (10)	890	886	945	232	125A	250
SU110-F	11 (15)	1,150	1,168	1,136	277	150A	400
SU150-F	15 (20)	1,400	1,386	1,354	277	150A	400

* We will handle orders for the above dimensions. For detailed dimensions, please contact us.

■ Sectional View

SU-F

Free standing type

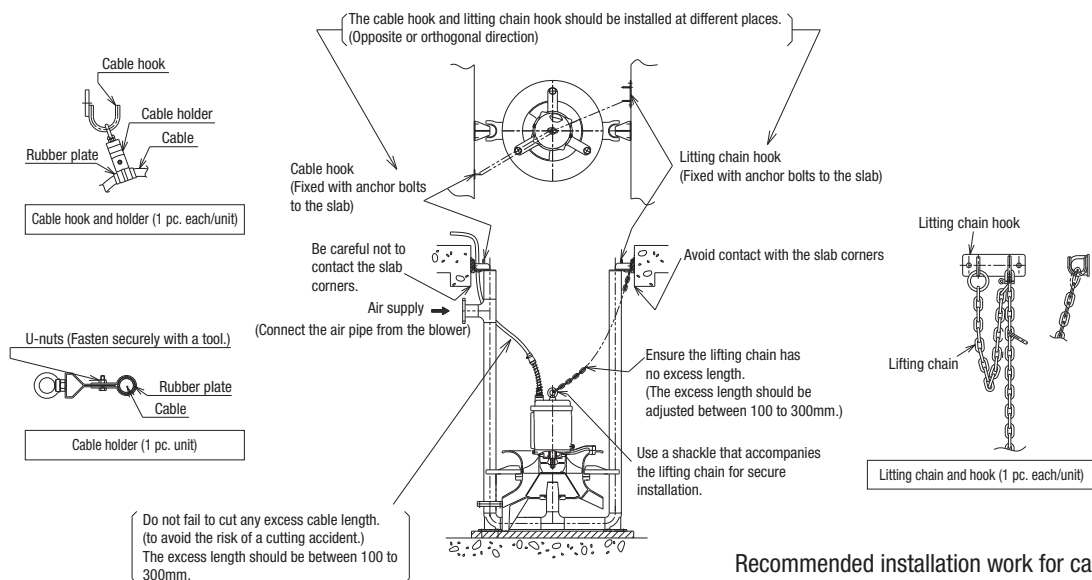


Number	Name	Material
1	Cable	2PNCTS
2	Eyebolt	SUS304
3	Submersible Motor	—
4	Impeller	SCS13
5	Diffuser	SUS304
6	Shaft	SUS329J1
7	Discharge Casing	FC250
8	Air Supply Pipe	SUS304
9	Suction Stand	SUS304
10	Locking Element	—

* The shape of the suction stand varies depending on model.

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

Recommended Installation Work



Recommended installation work for cable and lifting chain

(The SJ-P type is described as an example, but the case is the same for both SJL-P and SU-P types.)

Submersible Aerator (Self-Aspirating Type)

Output: **2.2 • 3.7 kW (3, 5 HP)**

JSA

The JSA-series is a self-aspirating type submersible aerator for aeration and mixing of wastewater in treatment facilities.

A specially designed impeller generates strong jet flow of water mixed with air and supplies oxygen into wastewater.

Output kW (HP)	Model	Applicable water depth	Page
2.2 (3)	JSA22	Max. 3.6 m	408
3.7 (5)	JSA37	Max. 4.0 m	



■ Features

● Self-aspirating

The specially designed star-shaped closed impeller generates negative pressure in water and aspirates air from above the water surface through an air pipe.

● Non-clogging

Water is sucked from the large inflow port on top of the impeller casing and mixed with air. This structure prevents troubles that the inflow port is clogged up with sediments on bottom of a tank.

● Long service life

The impeller is made of cast stainless steel.

The top and bottom faces inside the impeller casing are lined with stainless steel plates. It improves abrasion resistance and controls a reduction in air flow performance.

● Lightweight and compact

The compact unit is light in weight too. You can easily sink and lift the unit and out of a chamber.

● Ready to set up

To get the unit up and running, just connect the air intake pipe to the body and place the unit in the chamber.

● Easy to maintain design

Oil can be changed and the motor may be inspected while the unit is in its upright position. In short, the product is configured for easy servicing.

■ Applications

- Sewage and Industrial waste treatment facilities
- Aeration and mixing processes
- SBR process



■ Standard Specifications

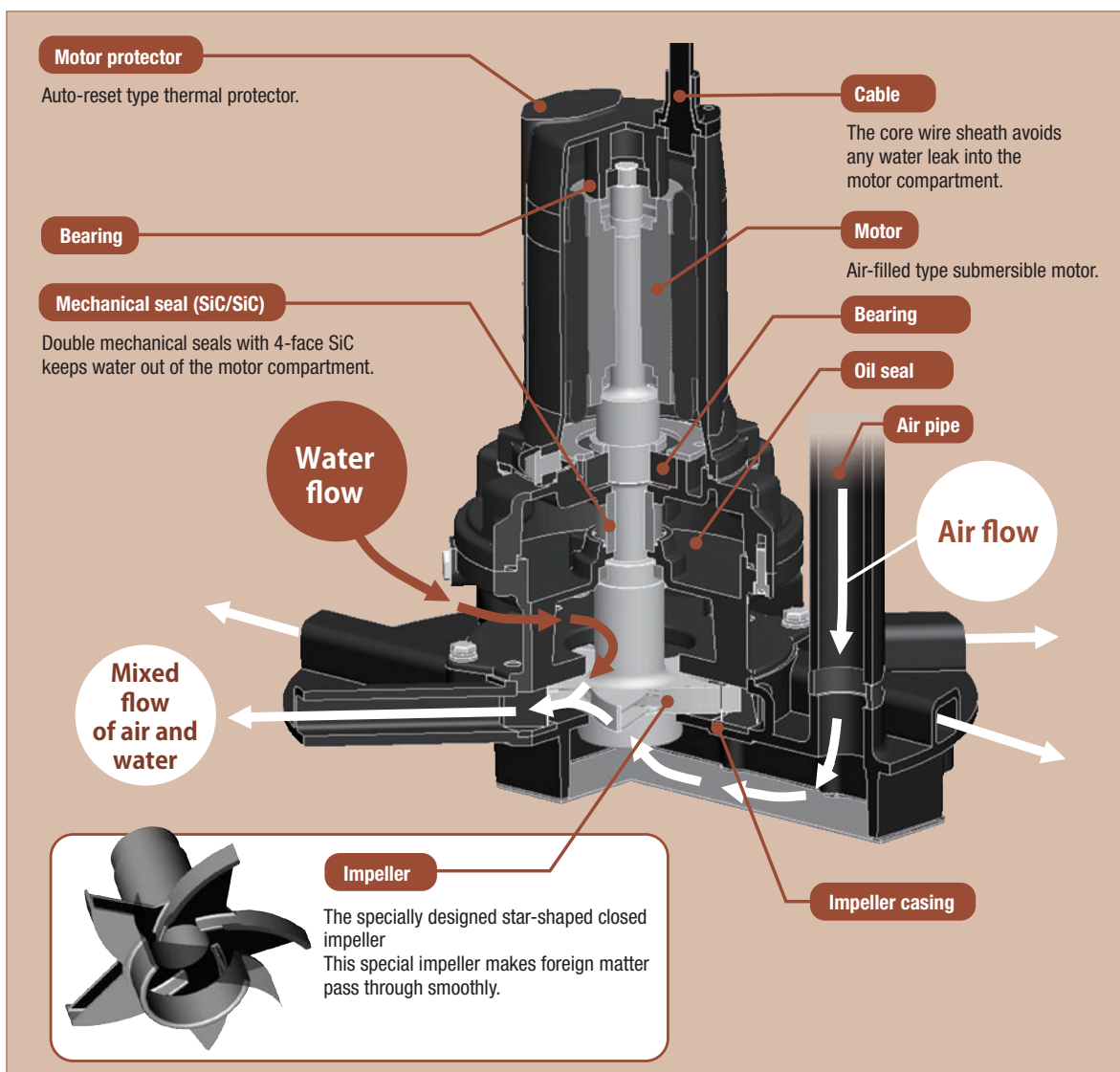
Handling Liquid	Kind of Liquid	Wastewater and sewage
	Temperature	0 - 32°C
Material	Cable	VCT
	Motor Shaft	Stainless steel (SUS420J2)
	Impeller	Stainless steel casting (SCS13)
	Pump Casing	Gray iron casting (FC200)
Electric Motor	Name	Air-filled type submersible motor
	Insulation	Class E
	Enclosure	IP68
	Phase	3-ph
	Voltage	200 - 480V
	Pole	4P
	Starting Method	Direct
	Protector	Thermal protector (Auto-reset type)

■ Special Specifications

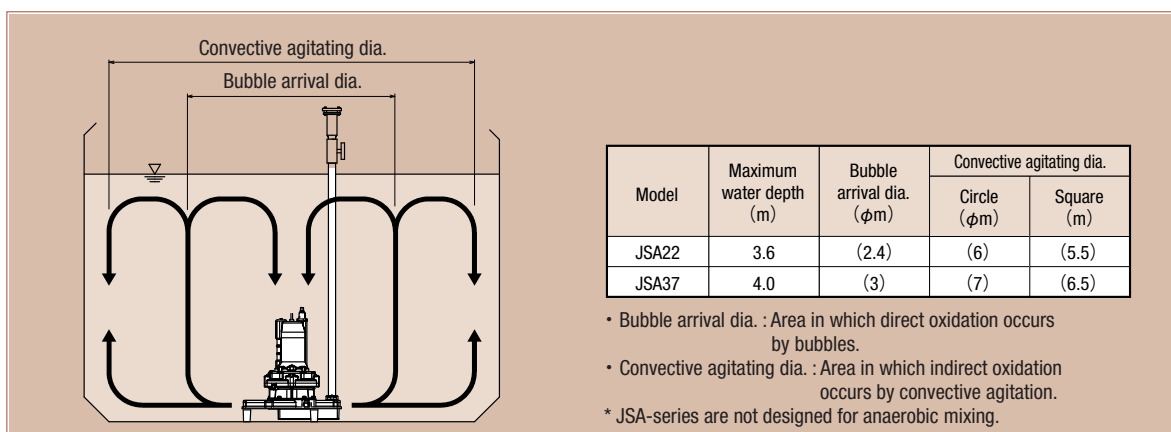
Motor Insulation	Class F
Cable Extension	Cable length: 10 - 30m (every 5m)
Motor Protector	Leakage Detector

For special specifications other than the above, please contact us.

Function Explanation Diagram



Flow Patterns



Standard Specifications

Intake pipe dia. (mm)	Model	Output (kW)	No. of poles	Revolving speed (min ⁻¹)	Passable particle dia. (mm)	No. of outlets	Max. water depth- Air-flow rate (m - m ³ /h)	Weight (kg)
50	JSA22	2.2 (3)	4P	1,500	15	8	3.6 - 30	110
	JSA37	3.7 (5)					4.0 - 56	115

For motors characteristics, bearings and oils, see the specifications (detail data) - App.1.

Note 1) These values are subject to at a clear water temperature of 20°C and a concentration of dissolved oxygen of 0mg/ℓ. They vary approximately 10%, depending on measurement conditions. They need to be corrected with the water quality, temperature of inflowing water and the concentration of dissolved oxygen in the tank. The airflow range and applicable tank size values are obtained at a sludge concentration of 5,000mg/ℓ.

Standard Accessories

- Cable (8m)1 pc.

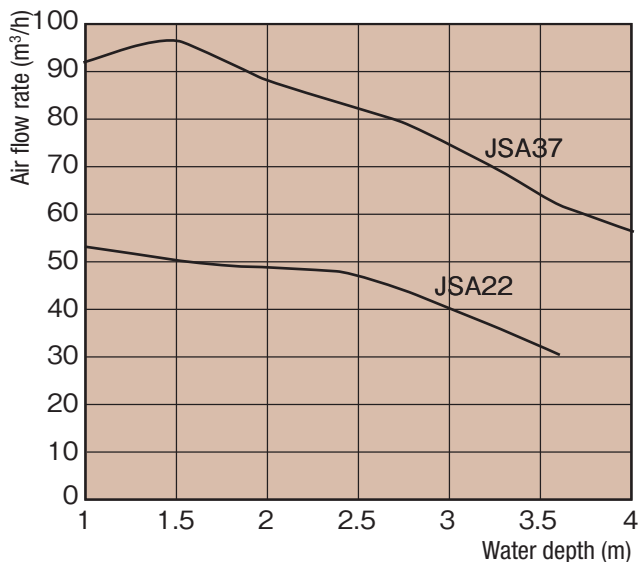
Special Accessories

- Lifting Chain (Std. length: 6 m)
- Suction silencer with ball valve

Part Specifications

Applicable Model	Cable Specifications					Starting Method	Mechanical Seal	
	Type	Section Area (mm ²)	Cores	Applications	Outer Dia. (mm)		Lower	Upper
JSA22	VCT	1.25	4	Power	φ 11.5	Direct	SiC/SiC	SiC/SiC
JSA37		2.0			φ 12			

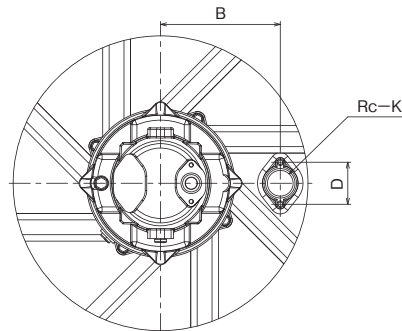
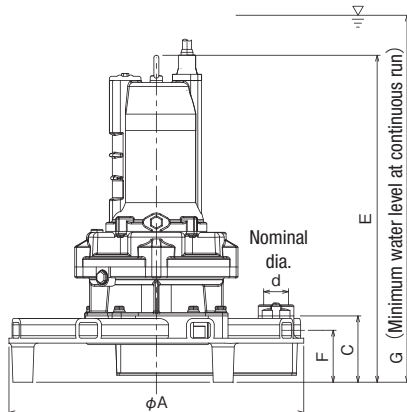
Performance Curves



Note : The air flow rates are expressed at the standard condition.
i.e. temperature of 20°C, 1atm and may vary by up to approximately 5%

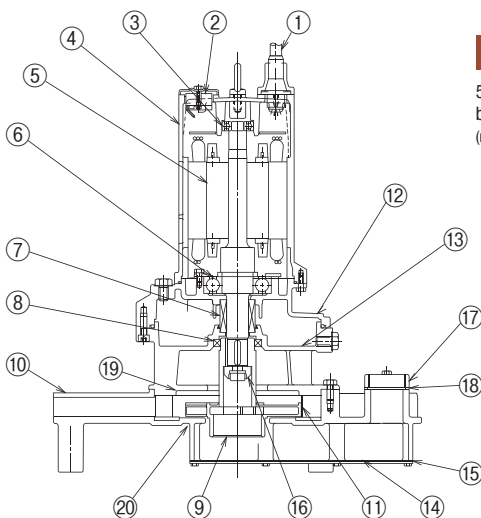
Dimensions

Unit: mm



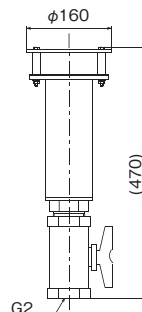
Type	JSA22	JSA37
d	50A	
K	2	
A	596	
B	242	
C	134	
D	85	
E	582	661
F	105	
G	1500	

Sectional View



Options

50 mm dia. suck-in silencer and ball valve
(material : Hard vinyl chloride)



Number	Name	Material
1	Cable	VCT
2	Automatic Cut-off	—
3	Ball Bearing (upper)	—
4	Stator Casing	FC200
5	Motor	Shaft: SUS420J2
6	Ball Bearing (Lower)	—
7	Mechanical Seal	—
8	Oil Seal	NBR
9	Impeller	SCS13
10	Delivery Casing	FC200
11	Channel Ring	NBR
12	Oil Casing	FC200
13	Mechanical Seal Bracket	FC200
14	Bottom Cover	SUS304
15	Bottom Cover Packing	NBR
16	Impeller Retainer	—
17	Eye Flange	FC200
18	Packing	NR
19	Upper Cover	SUS304
20	Lower Cover	SUS304

- * The suck-in silencer and ball valve are optionally available.
- * The specifications, dimensions, materials and other factors are subject to change without notice.
- * The product is not designed for anaerobic agitation.

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

MEMO

Handwriting practice lines consisting of 20 horizontal dashed lines.

Aeration
and Mixing

Submersible Ejector

Output: **0.75 - 5.5 kW (1 - 7.5 HP)**

J•JF•JA•JAF

The Submersible Ejector ejects suctioned air by the ejector action together with a water jet flow into the pit to perform mixing and aeration at the same time.

	Output kW (HP)	Pump Model	Page
Guide Rail Type	0.75 (1)	J750V	414
	1.5 (2)	JA152	
	2.2 (3)	JA222	
	3.7 (5)	JA372	
	5.5 (7.5)	JA552	
Free-standing Type	0.75 (1)	JF750V	
	1.5 (2)	JAF152	
	2.2 (3)	JAF222	
	3.7 (5)	JAF372	
	5.5 (7.5)	JAF552	

■ Features

● Uniform distribution of MLSS concentration

Firstly, water jet flow mix the bottom of the tank, and then micro bubbles are distributed to mix the tank in the upper direction, resulting in an extremely uniform distribution of MLSS concentration in the tank.

● Low noise

Submersible ejector is a low noise structure, so that it can be installed wherever you want. And as no sound proof chamber is required, thereby reducing the construction cost.

● Wide-ranging water depths

Submersible ejector can operate at a water depth of approximately 4 - 5 m, allowing efficient utilization of the treatment plant site.

● Impeller that prevents clogging

It adopts a vortex flow-type impeller which facilitates good solid passage.

● Easy installation and maintenance

The guide rail type is easy to maintain. Installation is also easy as submersible pumps, as the air suction pipe is also used as a guide rail.



■ Applications

- ☐ Preliminary aeration of a septic tank
- ☐ Preliminary aeration of industrial water treatment facilities

■ Standard Specifications

Handling Liquid	Kind of Liquid	Sewage water
	Temperature	0 - 32°C
Material	Cable	VCT
	Motor Shaft	Stainless steel (SUS420J2)
	Pump Casing	Gray iron casting (FC200)
	Impeller	Gray iron casting (FC200)
Electric Motor	Name	Air-filled type Submersible Induction Motor
	Insulation Class	Class E
	Enclosure	IP68
	Phase	3-ph
	Voltage	200 - 480V

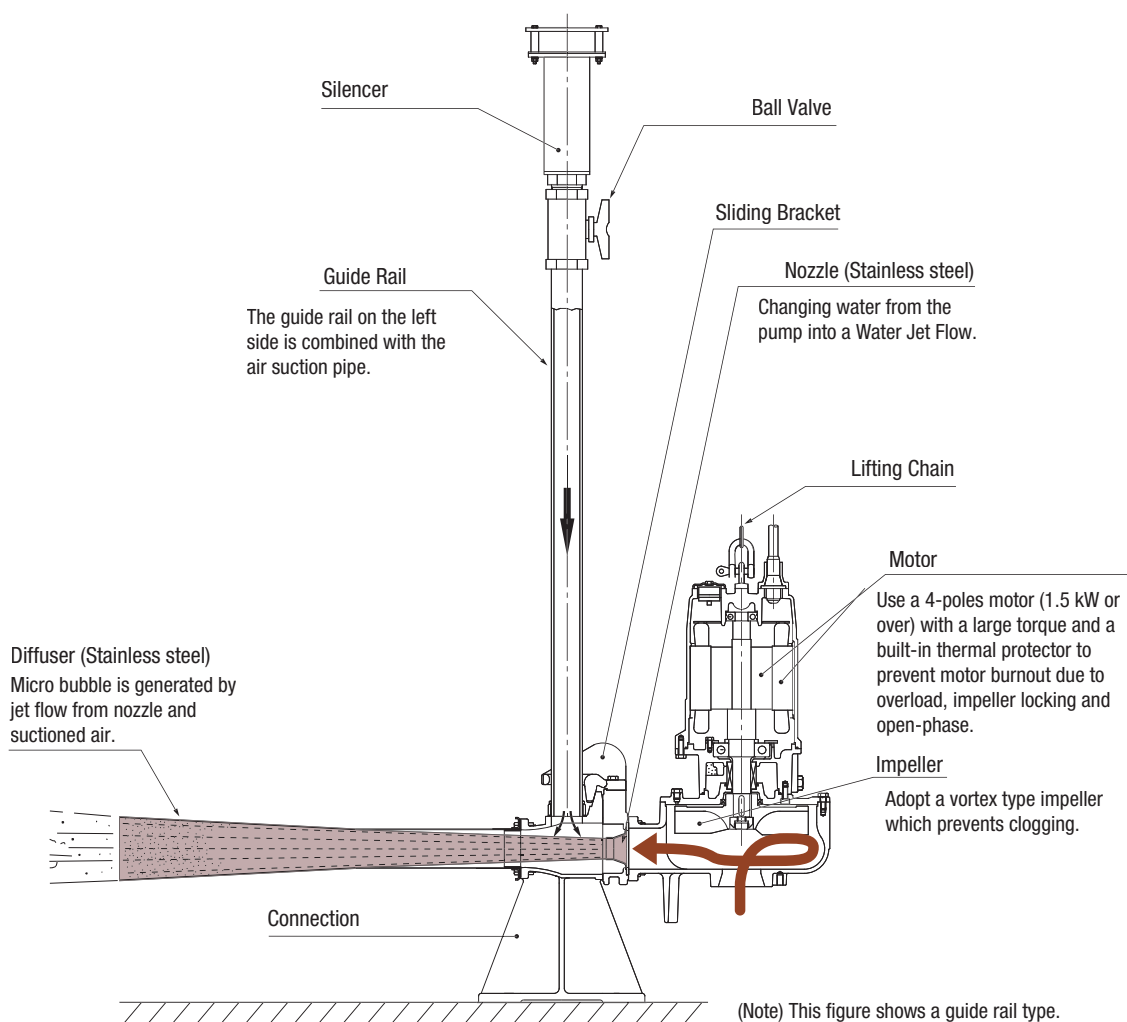
■ Special Specifications

Motor Insulation	Class F
Cable Extension	Cable length: 10 - 30m (every 5m)
Material Change	Each material can be changed to stainless steel on request. Please contact us.
Others	• Availability of mounting motor protector, please refer to the specifications. • Diffuser and connection can be provided as a system. • For specifications other than the above, please contact us.

▲ Caution

- [1] The standard operating time is not more than 12 hours a day or not more than 4,000 hours a year. If your operating time exceeds these figures, please contact us. For continuous operation, be sure to operate two pumps alternately.
- [2] A (thickened) sludge storage tank may reduce the service life of the pump or cause it to become clogged up with debris due to the high sludge concentration.
- [3] The submersible ejector uses an upward flow of air bubbles to mix the tank. It cannot perform anaerobic mixing.

■ Explanatory Drawing



Standard Specifications

Model		Output kW (HP)	Phase	Rated Specification (50/60 Hz)		No. of poles P	Lifting Weight kg			Gross Weight kg
Guide rail type	Free-standing type			Air Flow Rate m³/h	Water Depth m		J · JA	JF · JAF	J · JA	
J750V	JF750V	0.75 (1)	3-ph	10	2.0	2	24	26	31	
JA152	JAF152	1.5 (2)		22	3.5	4	52	54	71	
JA222	JAF222	2.2 (3)		35	3.5	4	65	68	98	
JA372	JAF372	3.7 (5)		67	4.0	4	77	80	110	
JA552	JAF552	5.5 (7.5)		101	4.0	4	103	106	136	

For motor characteristics, bearings and oils, see the specifications (detail data)
- App.1.

Note 1) The water depth indicates the distance from the center of the diffuser to the water surface.

2) The lifting weight for the JF or JAF type excludes the mass of the air suction pipe.

3) The air flow rates are expressed at the standard condition, i.e. temperature of 20°C, 1atm and may vary by up to approximately 5%.

Mixing Capacity

Model	Preliminary Aeration			
	Tank Dimensions			Max. Mixing Capacity (m³)
	Max. Width (m)	Max. Length (m)	Max. Water Depth (m)	
J750V · JF750V	2	3	3.2	19.2
JA152 · JAF152	3.5	4	3.9	54.6
JA222 · JAF222	4.5	5	4.5	101.3
JA372 · JAF372	6	6	5.3	190.8
JA552 · JAF552	7	7	6.3	308.7

Note 1) The tank dimensions for preliminary aeration shows the maximum dimensions assuming a water flow rate of about 0.3 m/s or over.

2) The Maximum Mixing Capacity for Preliminary Aeration shows Max. width x Max. length x Max. water depth.

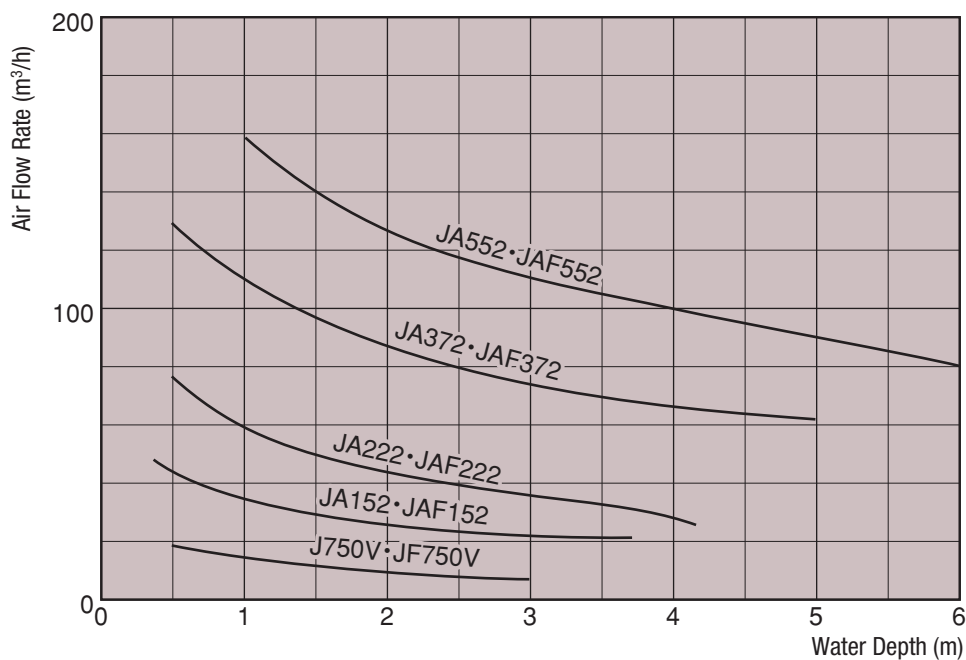
Standard Accessories

Model Name	Guide Rail Type					Free-standing Type				
	J750V	JA152	JA222	JA372	JA552	JF750V	JAF152	JAF222	JAF372	JAF552
Cable	1 pc. (6m)	1 pc. (8m)				1 pc. (6m)	1 pc. (8m)			
Lifting chain	1 pc. (4m)	1 pc. (6m)				—	1 pc. (6m)			
Guide Holder (bolts and nuts)	1 set						—			
Silencer	1 set (with a socket)	1 set				1 set (with a socket)	1 set			
Ball Valve (screwed)	—	1 set (1 1/4")	1 set (2")			—	1 set (1 1/4")	1 set (2")		

Part Specifications

Applicable Model	Output kW (HP)	Cable Specifications				Starting Method	Mechanical Seal	
		Type	Section Area (mm²)	Cores	Outer Dia. (mm)		Lower	Upper
J750V · JF750V	0.75 (1)	VCT	1.25	4	φ 11.5	Direct	SiC/SiC	SiC/SiC
JA152 · JAF152	1.5 (2)				φ 12			
JA222 · JAF222	2.2 (3)				φ 14			
JA372 · JAF372	3.7 (5)		2.0					
JA552 · JAF552	5.5 (7.5)		3.5					

Performance Curves



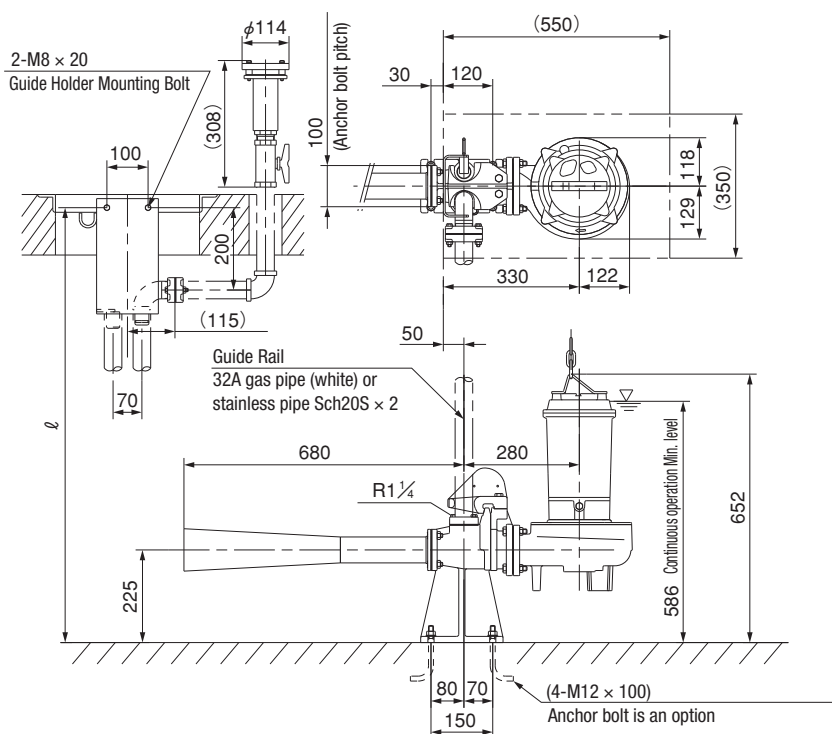
Note The water depth indicates the distance from the center of the diffuser to the water surface.
The air flow rates are expressed at the standard condition,
i.e. temperature of 20°C, 1atm and may vary by up to approximately 5%.

Performance Table

unit: m³/h (Air Flow Rate)

Model		Water Depth										
Guide rail	Free-standing	1m	1.5 m	2 m	2.5 m	3 m	3.5 m	4 m	4.5 m	5 m	5.5 m	6 m
J750V	JF750V	15	12	10	9	8	–	–	–	–	–	–
JA152	JAF152	36	31	27	25	23	22	–	–	–	–	–
JA222	JAF222	60	51	45	40	37	35	29	–	–	–	–
JA372	JAF372	110	98	88	81	75	70	67	64	62	–	–
JA552	JAF552	158	139	127	118	111	105	101	96	91	86	79

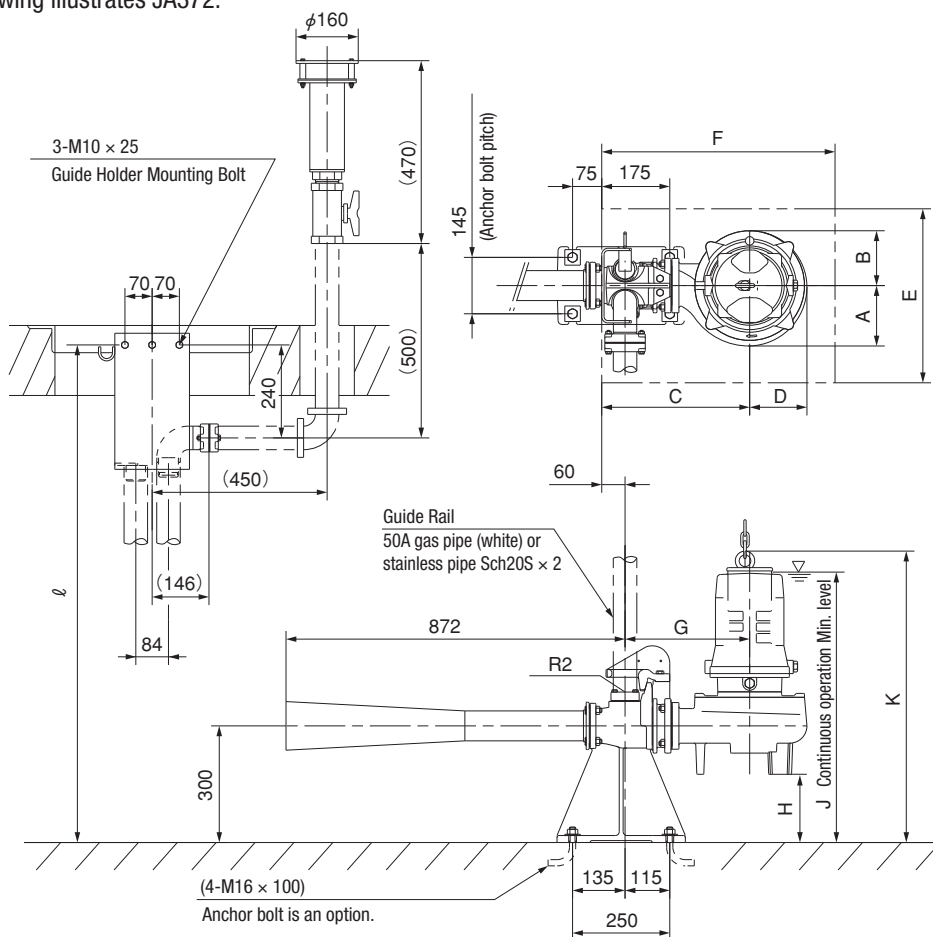
JA152



- Note
- 1) The two guide rails should have a length of ℓ -542 (mm).
 - 2) Tap an R1 1/4 screw hole at one end of the guide rail on the air suction pipe side.
 - 3) If you use a stainless steel pipe, use a schedule 20S.
 - 4) The guide rails should be provided by the customer.
 - 5) Before mounting a steel pipe on the guide holder on-site, apply grease to the O ring provided as a standard accessory to the guide holder.

JA222 · 372 · 552

The drawing illustrates JA372.



Model	A	B	C	D	E	F	G	H	J	K
JA222	156	141	381	148	500	600	321	178	696	750
JA372	156	141	381	148	500	600	321	178	756	812
JA552	175	159	401	166	600	700	341	156	801 (50Hz) 776 (60Hz)	858 (50Hz) 833 (60Hz)

Note 1) The two guide rails should have a length of ℓ -675 (mm).

2) Tap an R2 screw hole at one end of the guide rail on the air suction pipe side.

3) If you use a stainless steel pipe, use a schedule 20S.

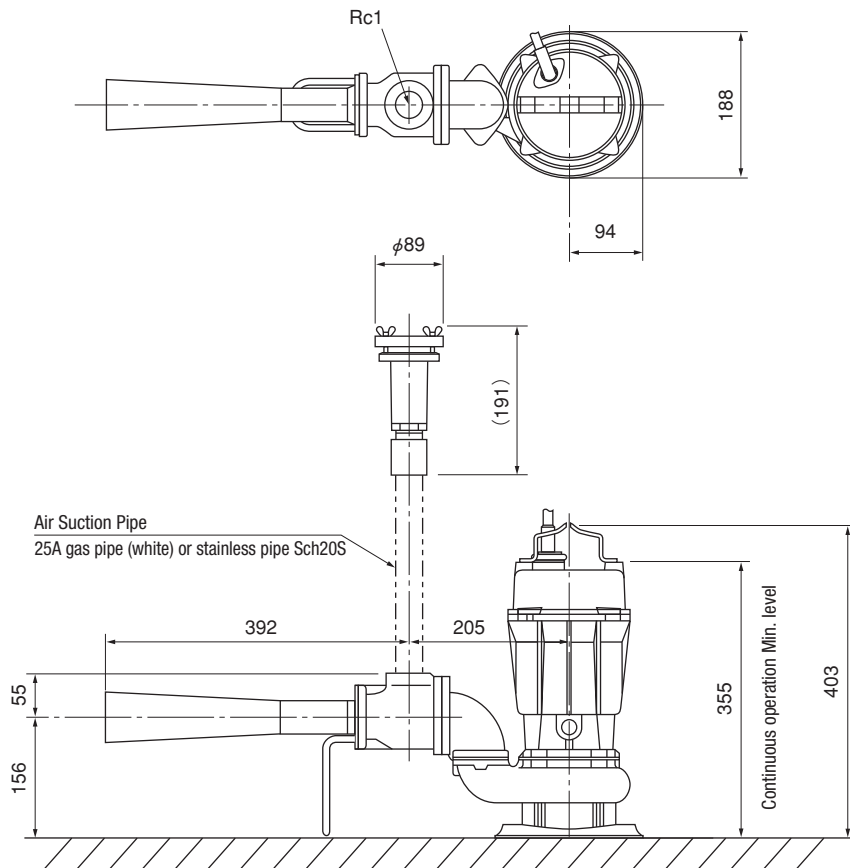
4) The guide rails should be provided by the customer.

5) Before mounting a guide rails on the guide holder on-site, apply grease to the O ring provided as a standard accessory to the guide holder.

■ Dimensions

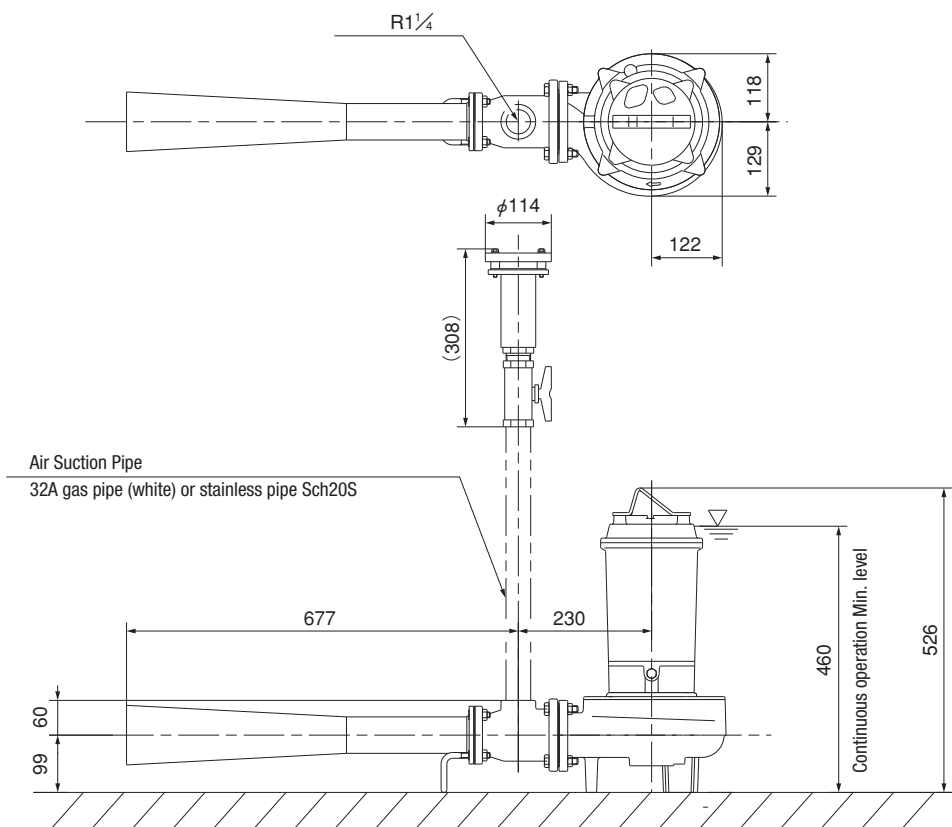
Unit: mm

JF750V



- Note
- 1) Tap an R1 screw hole at both ends of the air suction pipe.
 - 2) If you use a stainless steel pipe, use a schedule 20S.
 - 3) The air suction pipe should be provided by the customer.
 - 4) A lifting chain is not provided as a standard accessory.
 - 5) The free-standing type should be supported at two points on the pipe to prevent falling.

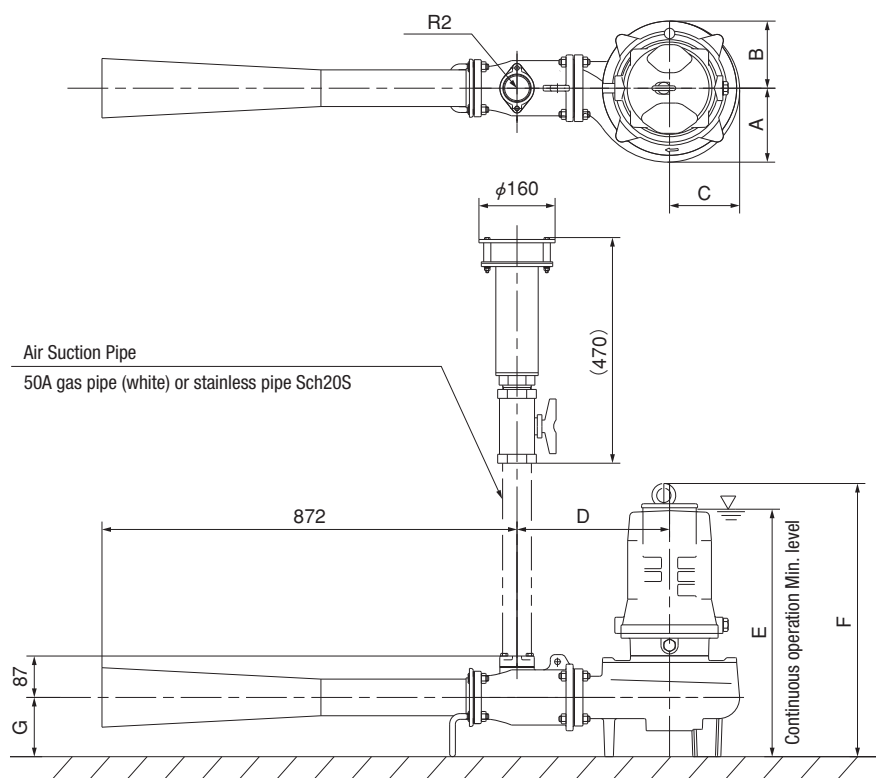
JAF152



- Note
- 1) Tap an R1 1/4 screw hole at both ends of the air suction pipe.
 - 2) If you use a stainless steel pipe, use a schedule 20S.
 - 3) The air suction pipe should be provided by the customer.
 - 4) The free-standing type should be supported at two points on the pipe to prevent falling.

JAF222 • 372 • 552

The drawing illustrates JA372.

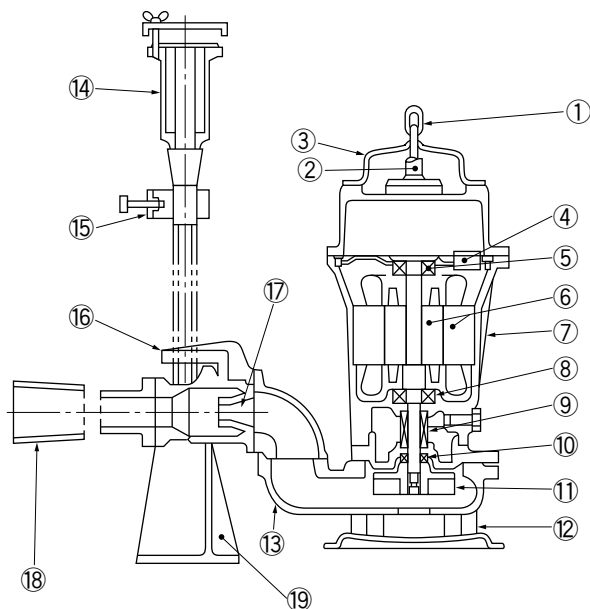


Model	A	B	C	D	E	F	G
JAF222	156	141	148	321	520	574	125
JAF372	156	141	148	321	580	636	125
JAF552	175	159	166	341	645 (50Hz) 620 (60Hz)	702 (50Hz) 677 (60Hz)	144

- Note
- 1) Tap an R2 screw hole at both ends of the air suction pipe side.
 - 2) If you use a stainless steel pipe, use a schedule 20S.
 - 3) The air suction pipe should be provided by the customer.
 - 4) The free-standing type should be supported at two points on the pipe to prevent falling.

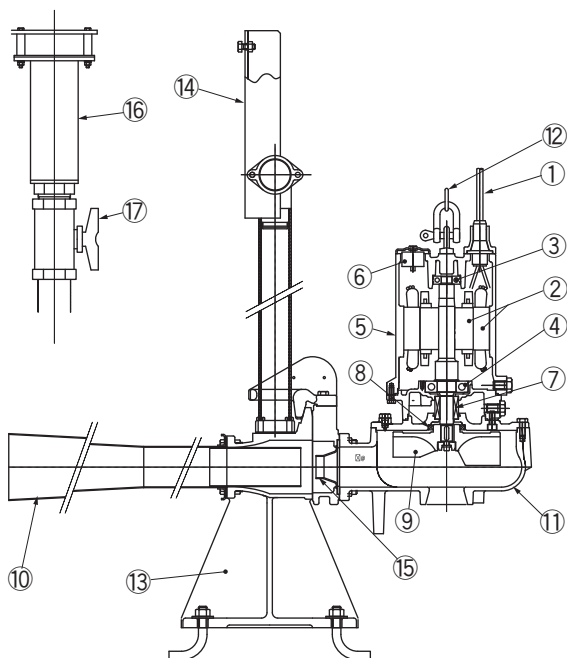
Sectional View

J750V



Number	Name	Material
1	Chain	SS400
2	Cable	VCT
3	Handle	SS400
4	Thermal Protector	—
5	Ball Bearing (Upper)	—
6	Motor	Shaft: SUS420J2
7	Stator Casing	FC200
8	Ball Bearing (Lower)	—
9	Mechanical Seal	—
10	Oil Seal	NBR
11	Impeller	FC200
12	Stand	SPCC
13	Pump Casing	FC200
14	Silencer	Rigid PVC
15	Guide Holder	SS400
16	Sliding Bracket	FC200
17	Nozzle	SUS304
18	Diffuser	SUS304L
19	Connection	FC200

JA222



Number	Name	Material
1	Cable	VCT
2	Motor	Shaft: SUS420J2
3	Ball Bearing (Upper)	—
4	Ball Bearing (Lower)	—
5	Stator Casing	FC200
6	Thermal Protector	—
7	Mechanical Seal	—
8	Oil Seal	NBR
9	Impeller	FC200
10	Diffuser	SUS304L
11	Pump Casing	FC200
12	Chain	SS400
13	Connection	FC200
14	Guide Holder	SS400
15	Nozzle	SUS304
16	Silencer	Rigid PVC
17	Ball Valve	Rigid PVC

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel

SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitryl rubber

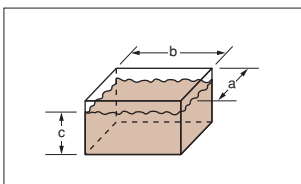
There are two methods for selecting a submersible ejector: One is to determine the number of units based on **Max. Capacity of Tank** and the other is to determine the number of units based on the **Tank Surface Area**. The numbers of required units calculated by the respective methods normally differ because of constant variation in the water level in the flow regulating tank. Select a large number of units, carefully examine whether aeration is sufficient or not, and then select finally the type of pump and the number of units.

When determining a type of ejector and the number of units, **Max. Water Depth** and the **tank shape** should be considered. The followings are the pump selection procedures and calculation examples:

Pump selection procedures

1. Checking the Max. Water Depth

Compare the **Max. Water Depth** in the Standard Specifications Table with the C dimension to determine the types of suitable ejector.



2. Determine the number of units based on Max. Capacity of Tank.

[1] **Max. Capacity of Tank** shall be calculated as follows:

Max. Capacity of Tank = Width (a) x Length (b) x **Max. Water Depth** (c)

[2] Use the **Mixing Capacity Table** to calculate the maximum mixing capacity per submersible ejector.

[3] The number of submersible ejectors required shall be calculated as follows:

$$\begin{aligned} \text{Number of units required} &= \frac{[1]}{[2]} \\ &= \frac{\text{Max. Capacity of Tank}}{\text{Maximum mixing capacity per unit}} \\ &= (A) \end{aligned}$$

3. Determine the number of units based on Tank Surface Area

[1] **Tank surface area** is calculated as follows:

Tank surface area = Width (a) x Length (b)

[2] Use the **Mixing Capacity Table** to calculate the maximum surface mixing area per submersible ejector.

Maximum surface mixing area = Maximum width of tank x Maximum length of tank

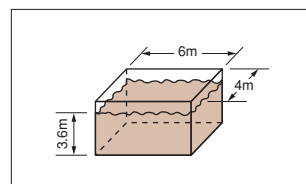
[3] The number of submersible ejectors required shall be calculated as follows:

$$\begin{aligned} \text{Number of units required} &= \frac{[1]}{[2]} \\ &= \frac{\text{Tank surface area}}{\text{Maximum surface mixing area per unit}} \\ &= (B) \end{aligned}$$

Calculation example

1. Checking the Max. Water Depth

If the **Max. Water Depth** is 3.6m, all types of ejector, except J750V and JF750V, are candidates.



2. Determining the number of units based on Max. Capacity of Tank Water

[1] **Max. Capacity of Tank Water** shall be calculated as follows:

$$4 \times 6 \times 3.6 \text{ m} = 86.4 \text{ m}^3$$

[2] Based on the **Mixing Capacity Table**, the maximum mixing capacity per submersible ejector is 54.6 m³ for JA152 (1.5 kW) and 101.3 m³ for JA222 (2.2 kW).

[3] The number of units required being = $\frac{[1]}{[2]}$

$$\left. \begin{aligned} \text{For JA152 (1.5 kW):} \\ \frac{86.4}{54.6} &= 1.58 \div 2 \text{ (units)} \\ \text{For JA222 (2.2 kW):} \\ \frac{86.4}{101.3} &= 0.85 \div 1 \text{ (unit)} \end{aligned} \right\} (A)$$

3. Determining the number of units based on a Tank Surface Area

[1] **Tank Surface Area** is calculated as follows:

$$4 \text{ m} \times 6 \text{ m} = 24 \text{ m}^2$$

[2] Based on the **Mixing Capacity Table**, the maximum surface mixing area per submersible ejector is calculated as follows:

$$\text{For JA152 (1.5 kW), } 3.5 \text{ m} \times 4 \text{ m} = 14 \text{ m}^2$$

$$\text{For JA222 (2.2 kW), } 4.5 \text{ m} \times 5 \text{ m} = 22.5 \text{ m}^2$$

[3] The number of units required being = $\frac{[1]}{[2]}$

$$\left. \begin{aligned} \text{For JA152 (1.5 kW):} \\ \frac{24}{14} &= 1.71 \div 2 \text{ (units)} \\ \text{For JA222 (2.2 kW):} \\ \frac{24}{22.5} &= 1.07 \div 2 \text{ (units)} \end{aligned} \right\} (B)$$

to be continued
to next page

4. Determine the number of units

Compare the numbers of units obtained from (A) and (B), and select larger one. The aeration strength, described in the next paragraph, should be also considered. If it is insufficient, the number of units should be increased or larger type of ejector should be selected to detain the sufficient aeration.

5. Studying Aeration Strength

[1] The aeration strength required for preliminary aeration is calculated as follows:

The required air flow rate per 1m³ of sewage of is 0.4m³/h.

Aeration Strength

$$= \frac{\text{Amount of suctioned air by pump} \times \text{Number of units}}{\text{Max. Capacity of Tank Water}}$$

$$\geq 0.4\text{m}^3/\text{h}/\text{m}^3$$

[2] Required Surface Aeration Strength per surface area of 1m² is 1.8m³/h.

Surface Aeration Strength

$$= \frac{\text{Amount of suctioned air by pump} \times \text{Number of units}}{\text{Tank Surface Area}}$$

$$\geq 1.8\text{m}^3/\text{h per surface area of } 1\text{m}^2$$

[3] Finally determine a type of Ejector and the number of units, taking [1] and [2] into account.

6. Decide Layout

When deciding layout, the tank shape and mixing condition should be considered. For complex tank shapes, consult us.

4. Determine the number of units

Compare (A) with (B).

Model	(A)	(B)		Number of Required Units
JA152 (1.5kW)	2 units	2 units	⇒	2 units
JA222 (2.2kW)	1 unit	2 units		2 units

Consider the aeration strength, as described in the following paragraphs, to determine the type of ejector and the number of units.

5. Considering Aeration Strength

[1] With reference to the **Performance Curves** of Aeration Strength,

For JA152 (1.5 kW)

$$\frac{22\text{ m}^3/\text{h} \times 2}{86.4\text{m}^3} = 0.51\text{m}^3/\text{h per } 1\text{m}^3 \text{ of sewage}$$

$$\geq 0.40\text{m}^3/\text{h per } 1\text{m}^3 \text{ of sewage}$$

For JA222 (2.2 kW)

$$\frac{35\text{ m}^3/\text{h} \times 2}{86.4\text{m}^3} = 0.81\text{m}^3/\text{h per } 1\text{m}^3 \text{ of sewage}$$

$$\geq 0.40\text{m}^3/\text{h per } 1\text{m}^3 \text{ of sewage}$$

The Aeration Strength is sufficient.

[2] Surface Aeration Strength

For JA152 (1.5 kW)

$$\frac{22\text{ m}^3/\text{h} \times 2}{24\text{m}^3} = 1.83\text{m}^3/\text{h per surface area of } 1\text{m}^3$$

$$\geq 1.80\text{m}^3/\text{h per surface area of } 1\text{m}^3$$

For JA222 (2.2 kW)

$$\frac{35\text{ m}^3/\text{h} \times 2}{24\text{m}^3} = 2.92\text{m}^3/\text{h per surface area of } 1\text{m}^3$$

$$\geq 1.80\text{m}^3/\text{h per surface area of } 1\text{m}^3$$

The Surface Aeration Strength is sufficient.

[3] Comparing the above calculation results, 2 units of JA152 (1.5 kW) will be used.

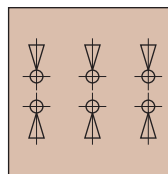
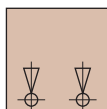
The Air Flow Rate should be adjusted on-site based on the mixing condition. Avoid excessive preliminary aeration.

6. Decide Layout

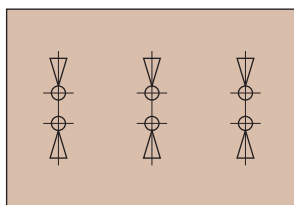
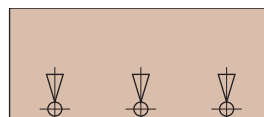
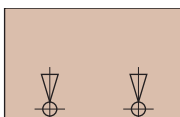
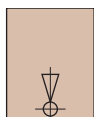
Decide the layout by referring to the Installation Example in the page 399.

Installation Example

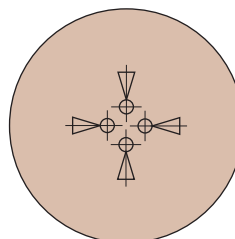
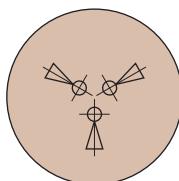
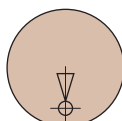
1 Square Tank



2 Rectangular Tank



3 Circular Tank



Cautions on Installation

- [1] Install the guide pipe and air suction pipe vertically, and the connection and diffuser horizontally.
- [2] Install the silencer not less than 900 mm above the maximum water level to prevent any backflow of sewage when the pump is not in operation.
- [3] Air suction pipes of the free-standing type may incline due to the discharge reaction force of the pump. Support the air suction pipe more than two points, with sufficient distance.
- [4] If inflow of debris is expected, provide a 20 or 25 mm bar screen.
- [5] The air suction pipe should have fewer bends and the total length should not exceed 10 m.
- [6] Adjust the air flow rate using the ball valve at the air inlet for the JA and JAF types, and using the silencer for J and JF750V.
- [7] If an anchor bolt cannot be used for the automatic connection type, use a base for the free-standing type (We will accept a special order).
- [8] Check the oil, insulation resistance or current in accordance with the operation manual.

MEMO

Handwriting practice lines consisting of 20 horizontal dashed lines.

Submersible Ejector for Shallow tank

Output: **0.4 - 0.75 kW (1/2 - 1 HP)**

JB•JBF

Bad odor drifting among urban buildings come from sewage holding tanks under buildings, before it is discharged into the public sewer system.

JB•JBF-series agitate sewage by aeration. It keeps stored sewage aerobic to prevent sedimentation of sludge and generation of scum, which causes bad odor.

	Output kW (HP)	Pump Model	Page
Guide Rail Type	0.4 (1/2)	JB400	430
	0.75 (1)	JB750	
Free-standing Type	0.4 (1/2)	JBF400	
	0.75 (1)	JBF750	

Features

● Eliminating bad odors

Bad odors caused by sedimentation of sludge in stored sewage or scum floating on its surface. JB·JBF-series use negative pressure (ejector action) generated when water is ejected from the nozzle by suctioning air and diffuse it into the water as micro bubbles, while generating a water flow in the tank, to prevent the sedimentation of sludge and the generation of scum.

● By installing the JB·JBF-series in sewage holding tanks, following good results can be realized (Example)

Unit (mg/ℓ)

Category Item	Tank (A)		Tank (B)	
	Before	After	Before	After
Hydrogen Sulfide (H ₂ S)	5.2	Not detected	260	Not detected
Methyl Mercaptan (CH ₃ SH)	0.41	Not detected	40	Not detected
Methyl Sulfide ((CH ₃) ₂ S)	0.048	0.004	Cannot be analyzed due to high H ₂ S concentration.	0.001
Dissolved Oxygen (DO)	Less than 0.5	5.5	—	—

Note: JB·JBF-series operates intermittently per hour.

* High concentrations of hydrogen sulfide in particular may cause corrosion of pipes, drains or concrete during exposure for long periods.

● Reduces cleaning cost of building pits

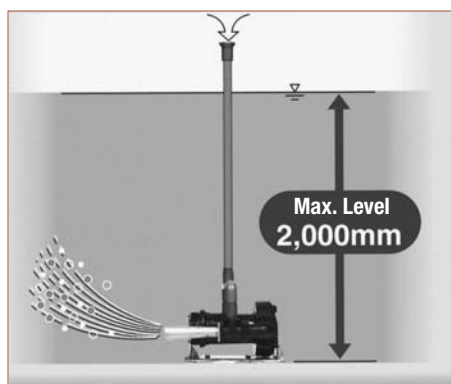
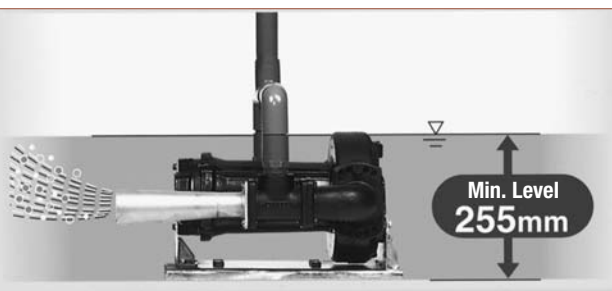
Saving cost of cleaning sewage holding tanks due to less frequency of cleaning.

● Improving working environment

Improving working environment in the Pump Room and building maintenance management.

● Can be operated at wide-ranging water levels

Aeration and mixing can be performed at a wide range of water levels, from 255 to 2,000 mm.

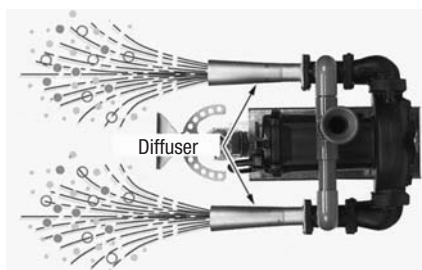
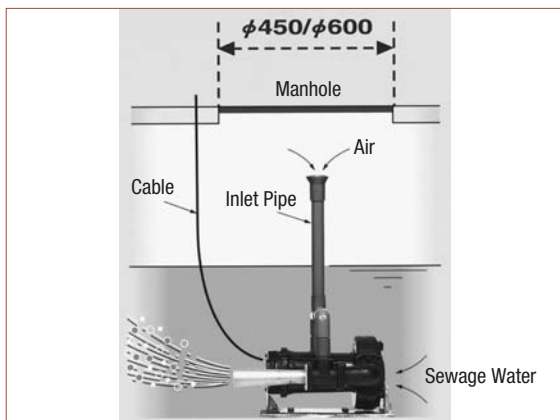


● Easily installable in existing buildings

JB·JBF-series can be installed in existing building manholes (φ 400/φ 600) without remodeling. The installation work is so simple by drilling a hole, since no inlet pipe (hose) is required. Just drilling cable mounting holes is enough.

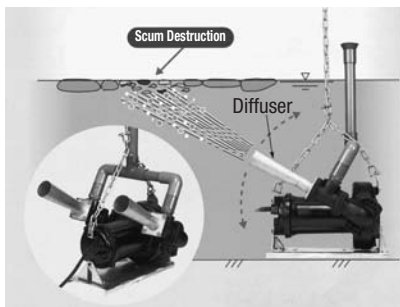
● More effective in large-area in a tank

The adoption of a twin-diffuser system allows aeration and mixing within large-area sewage holding tank, enhancing the effect.

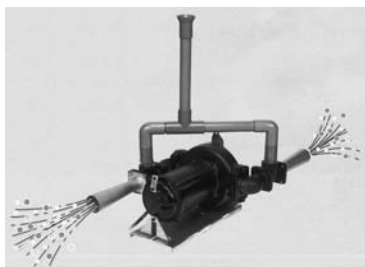


● Adjustable diffuser direction

Angle and direction of diffuser can be changed, depending on the shape and dimensions of the sewage holding tank.



Angle of diffuser can be adjusted in five steps. Scum can be destroyed by raising diffuser to directly impact scum with water flow.



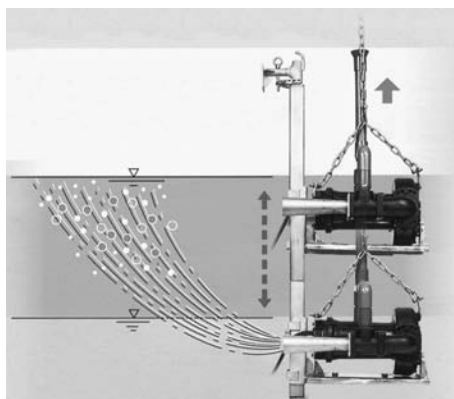
When JB-JBF-series is installed in the center of tank, each of diffusers can be set as opposite direction.



A guide rail system facilitates directional control of JB-series (180°, pitch 15°) using a handle from the outside of the tank, thus allowing the polluted sludge having accumulated in dead space to be mixed.

⚠ Caution

Standard operating time is not more than 12 hours a day and not more than 4,000 hours a year. If operating time exceeds these values, please contact us. For continuous operation, be sure to operate two pumps alternately.



The guide rail system allows JB-JBF-series to be operated at any water level, and facilitates its installation and/or removal in or from the tank.

● Excellent durability

Mechanical seal and bearing have a long service life and excellent durability by short impeller shaft (overhang) and low vibration.

● Easy maintenance

A simple structure facilitates maintenance.

■ Applications

- Mixing underground sewage tanks at commercial facilities, such as department stores and hotels.
- Mixing underground sewage tanks at public facilities.

Standard Specifications

Handling Liquid	Kind of Liquid	Wastewater or sewage containing sludge
	Temperature	0 - 32°C
Material	Cable	VCT
	Motor Shaft	Stainless steel (SUS420J2)
	Pump Casing	Gray iron casting (FC200)
	Impeller	Gray iron casting (FC200)
Electric Motor	Name	Air filled-type Submersible Induction Motor
	Insulation Class	Class E
	Enclosure	IP68
	Phase	3-ph
	Voltage	200-480V

VCT : Polyvinyl-chloride sheathed cabtyre cable

Special Specifications

Motor Insulation	Class F
Cable Extension	Cable length: 10 - 30m (every 5m) * The cable length should be limited due to voltage drop, see the specifications (detail data) - App.1.
Material Change	Impeller: SCS13, High-chrome Cast Iron Base Cover: SCS13, High-chrome Cast Iron Lifting Chain: SUS304
Others	• Strainer • Availability of mounting motor protector, please refer to the specifications (detail data) - App.1. • For specifications other than the above, contact us.

SCS : Stainless steel casting SUS: Stainless steel

Standard Specifications

Frequency Hz	Model		Output kW (HP)	Phase	Rated Specifications		Tank Dimensions			No. of poles P	Lifting Weight kg	
	Guide Rail Type	Free-standing Type			Air Flow Rate m³/h	Water Depth m	Max. Width m	Max. Length m	Max. Mixed Area m²		JB	JBF
50	JB400	JBF400	0.4 (1/2)	3-ph	11	1.0	5	5	22	4	40	37
	JB750	JBF750	0.75 (1)		16.5		6	6	33		41	38
60	JB400	JBF400	0.4 (1/2)		12		5	5	24		40	37
	JB750	JBF750	0.75 (1)		15.5		6	6	31		41	38

Note 1) Standard operation means the pump operates and is rested for one hour each respectively.

2) If the operation time exceeds 12 hours a day, be sure to operate two pumps alternately.

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

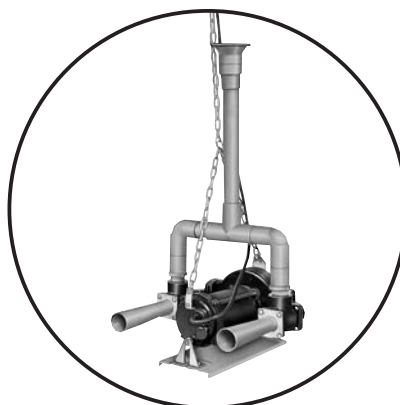
Standard Accessories

JB (Guide Rail Type)

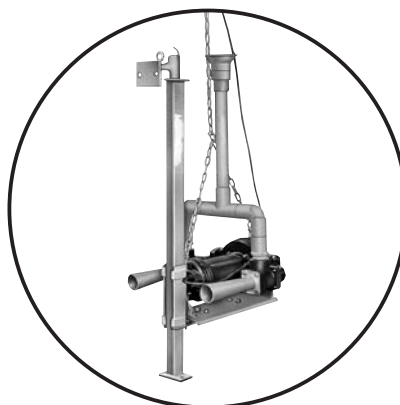
- Cable (6m) 1 pc.
 - Lifting Chain (3m) 1 pc.
 - Guide Bar Bracket..... 1 set
 - Lock Plate..... 1 set
 - Lock Pin 1 set
 - Bottom Base 1 set
 - Slider 1 set
 - Handle 1 set
 - Suction Unit 1 set
- (A Suction Pipe is not included.)

JBF (Free Standing Type)

- Cable (6m) 1 pc.
 - Lifting Chain (3m) 1 pc.
 - Suction Unit 1 set
- (A Suction Pipe is not included.)

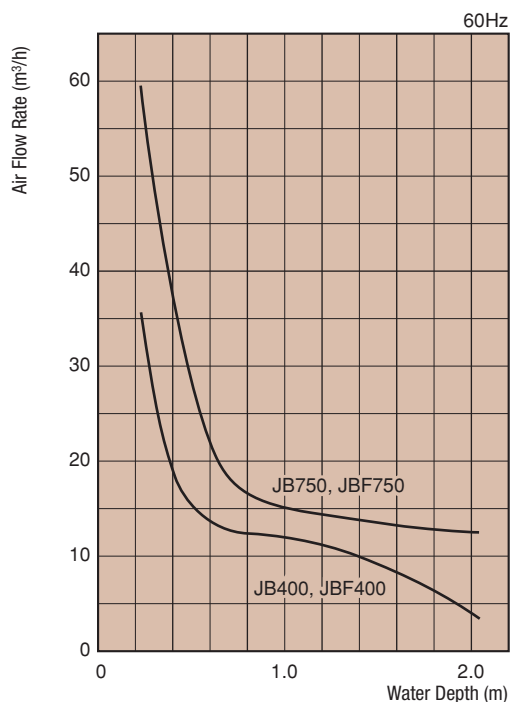
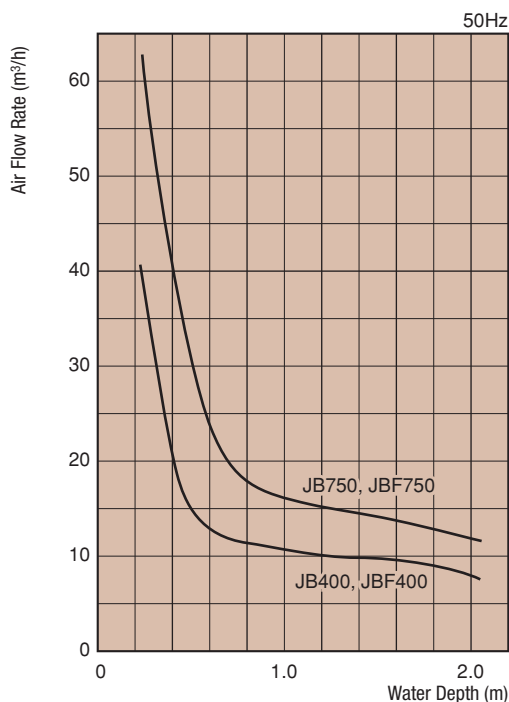


Free-standing Type



Guide Rail Type

Performance Curves

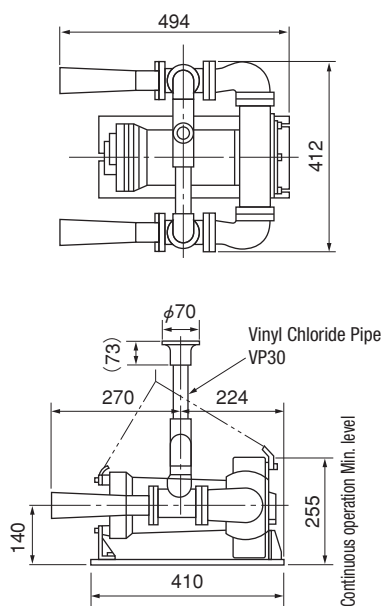


The air flow rates are expressed at the standard condition, i.e. temperature of 20°C, 1atm and may vary by up to approximately 5%.

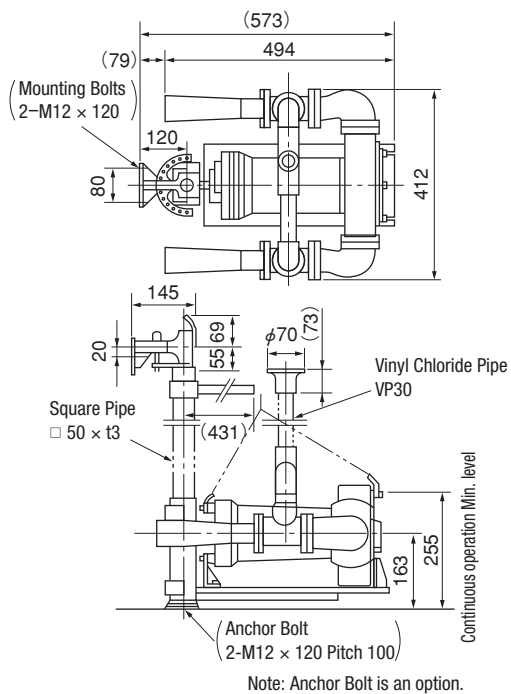
Dimensions

Unit: mm

Free-standing type



Guide rail type



MEMO

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Blower (Roots-type)

Land Blower (Roots type)

ARS (Three-lobes Spur rotor) 435

ARH-S/SP (Three-lobes Helical rotor) 447

Submersible Blower (Roots type)

RB-H (Three-lobes Helical rotor) 467

Types of ShinMaywa Air Blowers

Summary & Applications	Appearance
1. Land Blower 1-1. ARS-series ● Structure Three-lobes spur rotor with Pulse eraser and Cooling silencer ● Discharge bore 50 - 250 mm ● Output 1.5 - 132 kW ● Air flow 1.0 - 77.2 m³/min. (at 60 kPa) ● Pressure Max. 80 kPa 1-2. ARH-series ● Structure Low noise Three-lobes helical rotor ● Discharge bore 20 - 200 mm ● Output 0.4 - 55 kW ● Air flow 0.1 - 30.4 m³/min. (at 60 kPa) ● Pressure Max. 60 kPa Applications - Aeration at wastewater treatment processes - Pneumatic conveying of cement power, wheat, soybeans, etc. - Air-cooling, drying and blowing off at industrial processes - Oxygen supply at fish farms, aquariums, etc. - Foaming of water at baths and swimming pools	 ARS  ARH-S/SP
2. Submersible Blower RB-H series ● Structure Low noise Three-lobes helical rotor ● Discharge bore 25 - 125 mm ● Output 0.4 - 15 kW ● Air flow 0.34 - 11.2 m³/min. (at 30 kPa) ● Pressure Max. 60 kPa Applications - Aeration at wastewater treatment processes - Oxygen supply at fishfarms, aquariums, etc. - Foaming of water at baths and swimming pools	 RB-H

Land Blower (Roots-type)

Bore: 50 - 250 mm (2" - 10")

Output: 1.5 - 132 kW (2 - 176 HP)

ARS

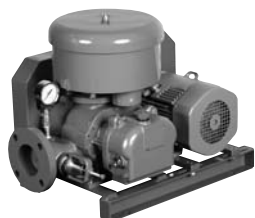
Energy Saving

Easy Maintenance

The high-efficiency blower ARS series includes a cooling silencer that reduces a temperature rise of bearings and with a pulse eraser structure that reduces noise.

It achieves energy and maintenance savings and enhances durability. ARS series meets versatile requirements.

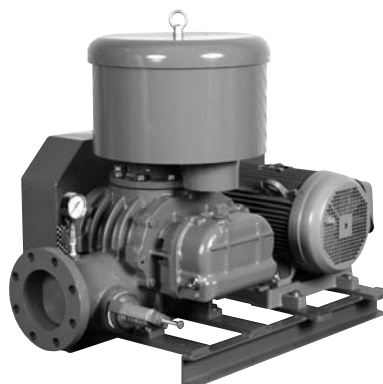
Bore mm (inch)	Output kW (HP)	Model	Page
50 (2")	1.5 - 5.5 (2 - 7.5)	ARS50	439
65 (2 1/2")	2.2 - 7.5 (3 - 10)	ARS65A	
80 (3")	3.7 - 11 (5 - 15)	ARS80	440
100 (4")	5.5 - 15 (7.5 - 20)	ARS100	
125 (5")	11 - 30 (15 - 40)	ARS125	441
150 (6")	15 - 45 (20 - 60)	ARS150	
200 (8")	22 - 75 (30 - 100)	ARS200	442
250 (10")	37 - 132 (50 - 176)	ARS250/250A	443



ARS65A



ARS80



ARS125

■ Applications

- Aeration at wastewater treatment processes
- Pneumatic conveying of cement powder, wheat, soybeans, etc.
- Air-cooling, drying and blowing off at industrial processes
- Oxygen supply at fish farms, aquariums, etc.
- Foaming of water at baths and swimming pools

■ Standard Specifications

Handled Gas	Type	Air
	Temperature	-15 – 40°C
Main Structures	Rotor	Three-lobes spur type
	Shaft Seal	Labyrinth seal and Oil seal
	Bearing	Ball bearing
Material	Casing	Gray iron casting (FC200)
	Rotor	Ductile iron casting (FCD450)
Painting	Phthalate resin paint	
	Paint thickness: 25μm or more	

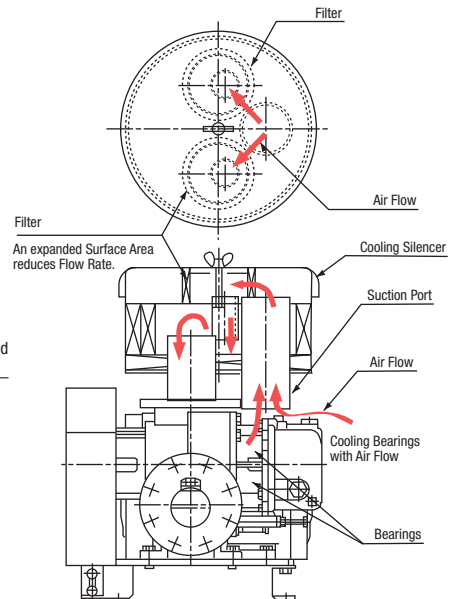
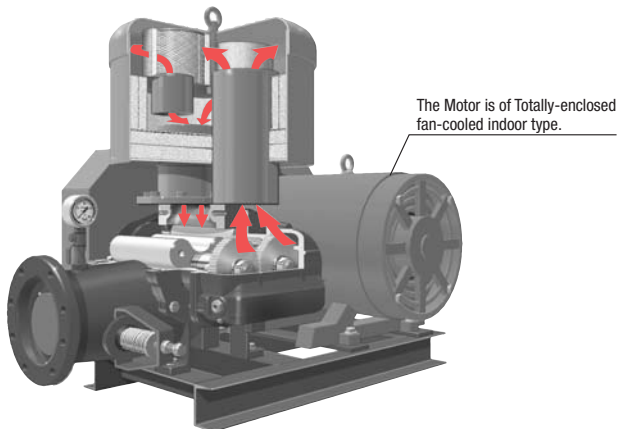
■ Special Specifications

- Outdoor installation
 - Anti-corrosion finishing (Electroless nickel plating with stainless steel coating)
- * For special specifications, please contact us.

■ Features

Cooling Silencer that has significantly reduced a bearing temperature rise

Cooling silencer has been developed for the ARS series. The silencer has a mechanism that air is suctioned over the bearings on the gear side to cool. This has significantly reduced the bearing temperature rise, and improved durability and enabled high-speed rotation. This also leads to compact design with lower total height.

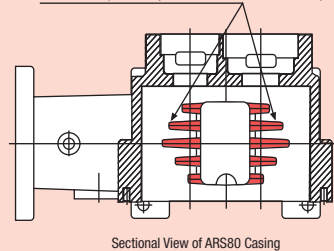


Pulse Eraser (pressure pulsation reduction mechanism) to reduce noise and pressure pulsation

A Spur-Type rotor tends to generate larger noise and pressure pulsation comparing Helical Rotor due to intermittent discharge of air. To reduce this problem, the ARS series has successfully relieved an abrupt backflow of high-pressure air by providing casing with uniquely shaped grooves (each groove shapes having a different length) to achieve reduction of noise and pressure pulsation.



Pulse Eraser (Pressure pulsation reduction mechanism)



- **Depending on specified point requirements, a one grade lower output motor may be used.**
Adoption of a newly shaped spur-type rotor and high speed rotation have significantly improved thermal insulation efficiency.
- **Depending on specified point requirements, a one level smaller bore size may be used.**
Reduction of bearing temperature rise allows high-speed operations and increases the maximum air flow rate.
- **No need for cooling water and air cooling fans.**
Handles 80 kPa with natural cooling. The standard machine can handle pressure that exceeds 60 kPa.
(Up to 60 kPa for outdoor specifications or pipe connections on the suction side.)
- **Saving grease and oil.**
Increased reliability of bearing has doubled grease refill and oil replacement periods to six months.
(For discharge pressure exceeding 60 kPa, or for outdoor specifications or pipe connections on the suction side, those period should be three months.)
- **Improved durability and allowed extension of the service life of bearings.**
Downsizing of the rotor has reduced load manent and increased the durability of bearings.

● Wide range of lineup

Meet wide-ranging needs from bore of 50mm and output of 1.5kW to bore size of 250mm and output of 132kW.

● Compact

Downsizing of cooling silencer and rotor has reduced height and footprint.

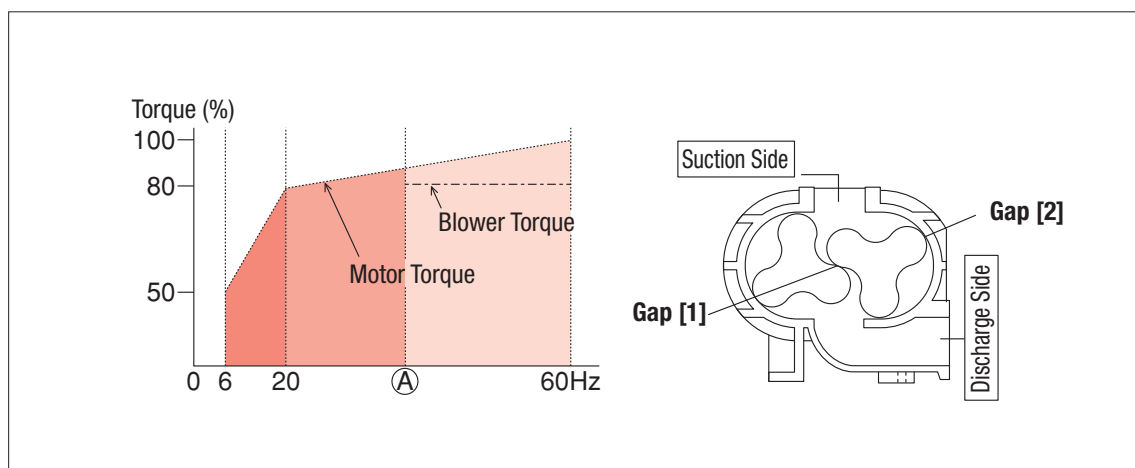
● Expanded Inverter control range

Inverter control range is larger than that of conventional types, allowing energy-saving operations to meet operation needs.

■ Method for Selecting Machine Types for Inverter Control

Allows inverter control on all models. Fine airflow control to change air volume freely in response to the amount of water to be handled that varies in accordance with seasons and times of day.

In case of too much reduction of motor rotation speed, blower may have high temperature rise and it will cause breakdown due to exceeding of allowable bearing operation temperature due to compressed and heated air would be leaked from **Gap [1]** in rotors and **Gap [2]** between casing and rotor.



(Note) (A) indicates a controllable lower limit frequency determined by a blower temperature rise.

- 1) Blower has constant torque characteristics. Torque is not lowered even if rotation speed is reduced.
- 2) Select an inverter controller as inverter output rating $\geq$ motor output rating.
- 3) Inverter control range starts from 60 Hz, regardless of the frequency of power source. Note that inverter control range varies depending on specified aeration requirements, motor output, and machine type.

If inverter control is considered, we will provide an inverter calculation sheet. Please let us know.

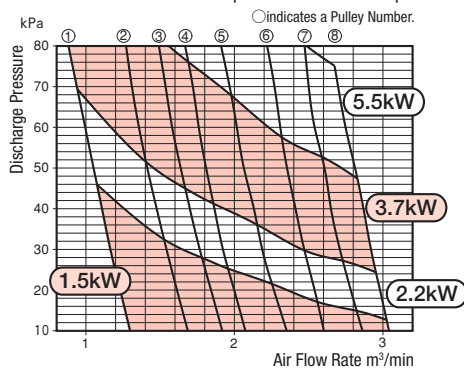
ARS50 Bore 50mm (2")

Performance Table

Q: Air Flow Rate (m³/min), P: Power Requirements (kW)

Model	Pulley No.	Rotor speed (min ⁻¹)	10kPa		15kPa		20kPa		25kPa		30kPa		35kPa		40kPa		45kPa		50kPa		55kPa		60kPa		65kPa		70kPa		75kPa		80kPa	
			Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
ARS50	1	1,900	1.30	0.60	1.26	0.71	1.23	0.8	1.20	0.94	1.17	1.1	1.14	1.2	1.11	1.3	1.08	1.5	1.05	1.6	1.02	1.8	1.00	1.9	0.97	2.1	0.94	2.2	0.91	2.3	0.88	2.5
	2	2,400	1.69	0.72	1.65	0.88	1.61	1.0	1.58	1.2	1.54	1.4	1.51	1.6	1.48	1.8	1.44	2.0	1.41	2.1	1.39	2.3	1.36	2.5	1.33	2.7	1.31	2.9	1.29	3.0	1.27	3.2
	3	2,710	1.92	0.80	1.88	0.98	1.84	1.2	1.80	1.4	1.77	1.6	1.73	1.8	1.70	2.0	1.67	2.2	1.64	2.4	1.61	2.6	1.58	2.8	1.56	3.0	1.54	3.2	1.51	3.4	1.49	3.6
	4	2,940	2.07	0.86	2.04	1.1	2.00	1.3	1.96	1.5	1.92	1.7	1.89	1.9	1.87	2.1	1.84	2.4	1.81	2.6	1.78	2.8	1.76	3.0	1.74	3.2	1.72	3.4	1.69	3.6	1.67	3.8
	5	3,290	2.35	1.0	2.31	1.2	2.27	1.4	2.23	1.7	2.19	1.9	2.16	2.1	2.13	2.4	2.10	2.6	2.06	2.9	2.04	3.1	2.02	3.3	1.99	3.6	1.97	3.8	1.94	4.0	1.91	4.3
	6	3,660	2.60	1.1	2.57	1.4	2.54	1.7	2.51	1.9	2.47	2.2	2.44	2.4	2.41	2.7	2.38	3.0	2.35	3.3	2.33	3.5	2.31	3.8	2.29	4.1	2.27	4.4	2.25	4.6	2.22	4.9
	7	3,880	2.86	1.2	2.82	1.5	2.78	1.8	2.75	2.1	2.71	2.4	2.68	2.7	2.65	2.9	2.63	3.2	2.61	3.5	2.57	3.8	2.54	4.1	2.52	4.4	2.50	4.7	2.49	5.0	2.47	5.3
	8	4,330	3.04	1.3	3.01	1.6	2.98	1.9	2.95	2.2	2.92	2.6	2.89	2.9	2.87	3.2	2.84	3.5	2.81	3.8	2.78	4.2	2.75	4.5	2.72	4.8	2.70	5.1	2.67	5.4	—	—

The standard motor set has output of 1.5 - 5.5 kW. * Up to 60 kPa of discharge pressure is allowed for outdoor specifications and for Suction Pipe Connections.



Sound Levels

Unit: dB (A)

Pulley No.	Rotor speed (min ⁻¹)	Discharge Pressure (kPa)							
		10	20	30	40	50	60	70	80
1	1,900	67	68	69	70	71	71	72	72
2	2,400	69	70	71	71	72	72	73	73
3	2,710	70	71	72	72	73	73	74	74
4	2,940	71	72	73	73	74	74	75	75
5	3,290	72	73	74	74	75	75	76	76
6	3,660	73	74	75	75	76	76	77	77
7	3,880	74	75	76	76	77	77	78	78
8	4,330	75	76	77	77	78	78	79	—

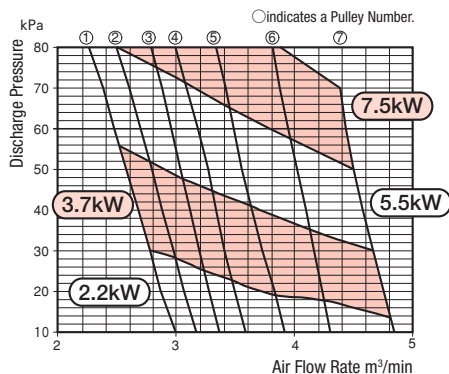
ARS65A Bore 65mm (2 1/2")

Performance Table

Q: Air Flow Rate (m³/min), P: Power Requirements (kW)

Model	Pulley No.	Rotor speed (min ⁻¹)	10kPa		15kPa		20kPa		25kPa		30kPa		35kPa		40kPa		45kPa		50kPa		55kPa		60kPa		65kPa		70kPa		75kPa		80kPa	
			Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
ARS65A	1	2,580	2.98	1.1	2.92	1.4	2.86	1.7	2.82	1.9	2.77	2.2	2.72	2.5	2.67	2.8	2.62	3.1	2.57	3.4	2.52	3.6	2.47	4.0	2.42	4.3	2.37	4.6	2.31	4.9	2.25	5.2
	2	2,740	3.16	1.3	3.11	1.5	3.05	1.8	3.01	2.0	2.97	2.3	2.92	2.6	2.88	2.9	2.83	3.2	2.78	3.6	2.74	3.9	2.69	4.2	2.64	4.5	2.60	4.9	2.54	5.2	2.49	5.5
	3	2,920	3.36	1.4	3.31	1.6	3.27	1.9	3.23	2.2	3.19	2.4	3.15	2.8	3.11	3.2	3.07	3.6	3.03	3.8	2.99	4.1	2.95	4.5	2.91	4.9	2.87	5.2	2.82	5.5	2.78	5.8
	4	3,100	3.58	1.5	3.53	1.7	3.49	2.0	3.44	2.4	3.40	2.7	3.36	3.0	3.33	3.3	3.29	3.8	3.26	4.1	3.21	4.4	3.17	4.8	3.12	5.2	3.08	5.4	3.03	5.8	2.99	6.1
	5	3,280	3.91	1.6	3.86	1.8	3.82	2.3	3.77	2.6	3.72	3.0	3.67	3.3	3.63	3.6	3.59	4.1	3.55	4.4	3.51	4.7	3.48	5.0	3.44	5.5	3.41	5.8	3.37	6.2	3.33	6.5
	6	3,670	4.30	1.7	4.26	2.0	4.23	2.4	4.19	2.8	4.16	3.3	4.12	3.7	4.09	4.1	4.05	4.5	4.02	4.9	3.98	5.4	3.94	5.8	3.90	6.2	3.87	6.6	3.84	7.0	3.81	7.4
	7	4,100	4.84	1.8	4.79	2.4	4.75	2.9	4.70	3.3	4.66	3.7	4.61	4.2	4.57	4.6	4.53	5.1	4.50	5.5	4.46	6.0	4.43	6.4	4.40	7.0	4.38	7.5	—	—	—	—

The standard motor set has output of 2.2 - 7.5 kW. * Up to 60 kPa of discharge pressure is allowed for outdoor specifications and for Suction Pipe Connections.



Sound Levels

Unit: dB (A)

Pulley No.	Rotor speed (min ⁻¹)	Discharge Pressure (kPa)							
		10	20	30	40	50	60	70	80
1	2,580	71	72	72	72	73	73	74	75
2	2,740	72	73	73	73	74	74	75	76
3	2,920	73	74	74	74	75	75	76	77
4	3,100	74	75	75	75	76	76	77	78
5	3,280	75	76	76	76	77	77	78	79
6	3,670	76	77	78	78	79	79	80	81
7	4,100	78	79	80	80	81	81	82	—

ARS	Three-lobes Spur rotor	Bore: 80 · 100 mm (3" - 4")
		Output: 3.7 - 15 kW (5 - 20 HP)

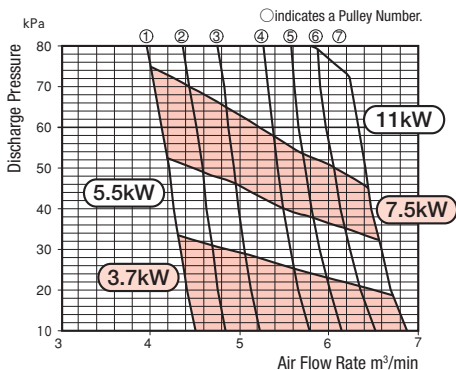
ARS80 Bore 80mm (3")

Performance Table

Q: Air Flow Rate (m³/min), P: Power Requirements (kW)

Model	Pulley No.	Rotor speed (min ⁻¹)	10kPa		15kPa		20kPa		25kPa		30kPa		35kPa		40kPa		45kPa		50kPa		55kPa		60kPa		65kPa		70kPa		75kPa		80kPa	
			Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
ARS80	1	2,790	4.51	1.8	4.46	2.2	4.41	2.6	4.37	3.0	4.34	3.4	4.30	3.9	4.26	4.3	4.23	4.8	4.21	5.3	4.17	5.7	4.13	6.0	4.09	6.5	4.05	7.0	4.01	7.5	3.97	7.9
	2	2,940	4.84	1.9	4.80	2.3	4.76	2.7	4.73	3.2	4.70	3.6	4.67	4.2	4.63	4.6	4.61	5.1	4.59	5.6	4.55	6.0	4.52	6.5	4.48	7.0	4.44	7.5	4.40	8.0	4.37	8.5
	3	3,100	5.23	2.1	5.18	2.5	5.13	2.9	5.09	3.4	5.06	3.8	5.03	4.3	4.99	5.0	4.97	5.4	4.94	5.9	4.91	6.4	4.88	6.9	4.85	7.5	4.83	8.2	4.80	8.6	4.76	9.2
	4	3,480	5.79	2.2	5.72	2.6	5.66	3.1	5.61	3.7	5.57	4.3	5.53	4.9	5.49	5.5	5.46	6.1	5.43	6.6	5.40	7.2	5.37	7.7	5.34	8.2	5.32	8.8	5.30	9.4	5.27	9.9
	5	3,670	6.14	2.3	6.07	2.8	6.01	3.3	5.95	4.0	5.90	4.6	5.85	5.2	5.81	5.8	5.77	6.4	5.74	7.1	5.70	7.7	5.67	8.3	5.64	8.9	5.62	9.4	5.60	10.0	5.58	10.7
	6	3,910	6.52	2.4	6.44	3.0	6.36	3.6	6.30	4.2	6.24	4.8	6.18	5.5	6.13	6.2	6.10	6.8	6.06	7.5	6.02	8.1	5.97	8.7	5.94	9.3	5.91	9.9	5.89	10.5	—	—
	7	4,120	6.87	2.6	6.78	3.3	6.70	3.9	6.64	4.5	6.59	5.2	6.53	6.0	6.48	6.7	6.45	7.5	6.41	8.2	6.37	8.8	6.33	9.5	6.29	10.1	6.25	10.7	—	—	—	—

The standard Motor set has output of 3.7 - 11kW. * Up to 60 kPa of discharge pressure is allowed for outdoor specifications and for Suction Pipe Connections.



Sound Levels

Unit: dB (A)

Pulley No.	Rotor speed (min ⁻¹)	Discharge Pressure (kPa)							
		10	20	30	40	50	60	70	80
1	2,790	73	74	75	75	76	77	78	79
2	2,940	74	75	76	76	77	78	79	80
3	3,100	75	76	77	77	79	80	81	82
4	3,480	76	77	78	79	80	81	82	83
5	3,670	77	78	79	80	81	82	83	84
6	3,910	78	79	80	81	82	83	84	—
7	4,120	79	80	81	82	83	84	85	—

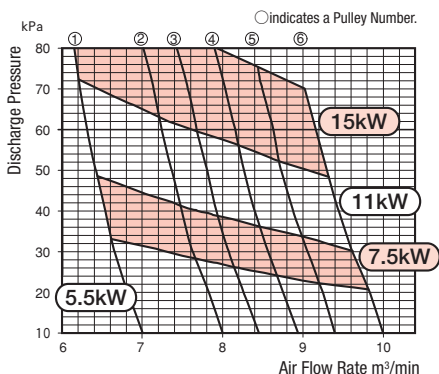
ARS100 Bore 100mm (4")

Performance Table

Q: Air Flow Rate (m³/min), P: Power Requirements (kW)

Model	Pulley No.	Rotor speed (min ⁻¹)	10kPa		15kPa		20kPa		25kPa		30kPa		35kPa		40kPa		45kPa		50kPa		55kPa		60kPa		65kPa		70kPa		75kPa		80kPa	
			Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
ARS100	1	2,840	7.01	2.5	6.91	3.2	6.82	3.8	6.74	4.4	6.65	5.1	6.60	5.7	6.54	6.3	6.48	7.0	6.42	7.7	6.37	8.6	6.31	9.3	6.27	10.1	6.22	10.7	6.18	11.4	6.15	12.2
	2	3,170	8.01	2.7	7.92	3.4	7.83	4.2	7.73	5.0	7.63	5.7	7.56	6.3	7.49	7.3	7.43	8.0	7.37	8.8	7.31	9.7	7.24	10.4	7.19	11.4	7.14	12.2	7.08	12.9	7.01	13.7
	3	3,350	8.46	2.9	8.36	3.6	8.27	4.3	8.17	5.2	8.08	5.9	8.00	6.7	7.92	7.7	7.87	8.5	7.81	9.4	7.75	10.2	7.68	11.1	7.62	12.0	7.57	12.8	7.49	13.6	7.42	14.5
	4	3,530	8.95	3.1	8.85	3.9	8.76	4.7	8.66	5.6	8.57	6.3	8.49	7.3	8.40	8.1	8.34	9.0	8.27	9.8	8.21	10.8	8.15	11.7	8.09	12.5	8.03	13.3	7.97	14.2	7.90	15.0
	5	3,770	9.44	3.3	9.34	4.1	9.25	5.0	9.15	6.0	9.06	6.9	8.97	7.7	8.88	8.6	8.80	9.8	8.73	10.7	8.68	11.4	8.63	12.4	8.56	13.2	8.49	14.1	8.44	15.0	—	—
	6	3,970	10.0	3.5	9.94	4.4	9.84	5.3	9.73	6.4	9.62	7.4	9.53	8.4	9.45	9.2	9.37	10.3	9.30	11.3	9.23	12.2	9.16	13.2	9.09	14.1	9.02	15.0	—	—	—	—

The standard Motor set has output of 5.5 - 15 kW. * Up to 60 kPa of Discharge Pressure is allowed for outdoor specifications and for Suction Pipe Connections.



Sound Levels

Unit: dB (A)

Pulley No.	Rotor speed (min ⁻¹)	Discharge Pressure (kPa)							
		10	20	30	40	50	60	70	80
1	2,840	76	77	78	79	80	80	81	82
2	3,170	77	78	79	80	81	81	82	83
3	3,350	78	79	80	81	82	82	83	84
4	3,530	79	80	81	81	82	83	84	85
5	3,770	80	81	82	82	83	84	85	—
6	3,970	81	82	83	83	84	85	86	—

ARS125 Bore 125mm (5")

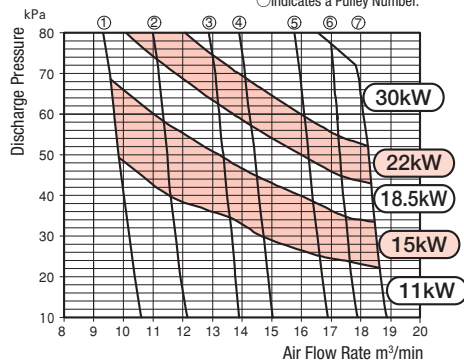
Performance Table

Q: Air Flow Rate (m³/min), P: Power Requirements (kW)

Model	Pulley No.	Rotor speed (min ⁻¹)	10kPa		15kPa		20kPa		25kPa		30kPa		35kPa		40kPa		45kPa		50kPa		55kPa		60kPa		65kPa		70kPa		75kPa		80kPa	
			Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
ARS125	1	2,150	10.6	4.0	10.5	4.8	10.4	5.6	10.3	6.5	10.2	7.3	10.1	8.2	10.0	9.1	9.92	10.1	9.84	11.2	9.77	12.2	9.69	13.3	9.62	14.3	9.55	15.3	9.45	16.3	9.35	17.3
	2	2,430	12.2	4.6	12.0	5.5	11.9	6.4	11.9	7.4	11.8	8.4	11.7	9.5	11.6	11.1	11.5	11.8	11.5	13.0	11.4	14.2	11.3	15.4	11.3	16.5	11.2	17.6	11.1	18.9	11.0	20.1
	3	2,710	13.9	5.1	13.8	6.2	13.8	7.2	13.7	8.5	13.7	9.8	13.6	11.1	13.5	12.5	13.4	13.8	13.4	15.2	13.3	16.5	13.2	17.8	13.2	19.2	13.1	20.6	13.0	22.1	12.9	23.4
	4	3,050	15.0	5.4	14.9	6.6	14.9	7.8	14.8	9.2	14.7	11.1	14.6	12.1	14.6	13.5	14.5	15.1	14.4	16.5	14.3	17.9	14.3	19.3	14.2	20.8	14.1	22.3	14.0	23.8	13.9	25.3
	5	3,340	16.9	6.2	16.8	7.6	16.7	9.1	16.6	11.1	16.5	12.3	16.5	13.9	16.4	15.5	16.3	17.2	16.3	18.9	16.2	20.5	16.1	22.2	16.0	23.8	16.0	25.5	15.9	27.2	15.8	28.9
	6	3,510	17.9	6.6	17.8	8.2	17.7	9.9	17.6	11.5	17.6	13.2	17.5	15.1	17.4	16.7	17.4	18.6	17.3	20.2	17.3	22.1	17.2	23.8	17.2	25.5	17.1	27.3	17.0	29.1	—	—
	7	3,760	18.9	6.8	18.8	8.6	18.7	10.4	18.6	12.1	18.5	13.8	18.5	15.6	18.4	17.5	18.3	19.3	18.3	21.2	18.2	23.1	18.1	25.0	18.0	26.9	18.0	28.8	—	—	—	—

The standard Motor set has output of 11 - 30kW. * Up to 60 kPa of Discharge Pressure is allowed for outdoor specifications and for Suction Pipe Connections.

○ indicates a Pulley Number.



Sound Levels

Unit: dB (A)

Pulley No.	Rotor speed (min ⁻¹)	Discharge Pressure (kPa)							
		10	20	30	40	50	60	70	80
1	2,150	77	78	79	80	81	81	82	83
2	2,430	78	79	80	81	82	82	83	84
3	2,710	79	80	81	82	83	83	84	85
4	3,050	80	81	82	83	84	84	85	86
5	3,340	82	83	84	84	85	86	87	87
6	3,510	83	84	85	85	86	87	88	—
7	3,760	85	86	87	87	88	88	89	—

ARS150 Bore 150mm (6")

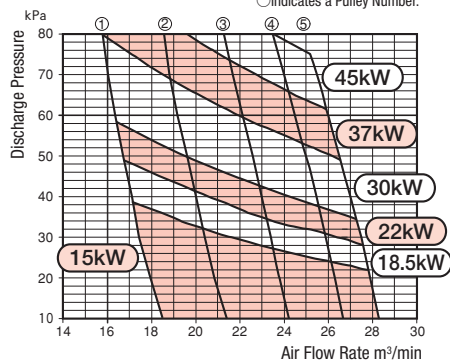
Performance Table

Q: Air Flow Rate (m³/min), P: Power Requirements (kW)

Model	Pulley No.	Rotor speed (min ⁻¹)	10kPa		15kPa		20kPa		25kPa		30kPa		35kPa		40kPa		45kPa		50kPa		55kPa		60kPa		65kPa		70kPa		75kPa		80kPa	
			Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
ARS150	1	2,070	18.5	5.2	18.2	6.7	17.9	8.1	17.7	10.2	17.5	12.3	17.3	13.8	17.1	15.3	16.9	17.0	16.7	18.8	16.5	20.7	16.4	22.5	16.2	24.1	16.1	25.8	15.9	27.6	15.8	30.1
	2	2,360	21.4	6.1	21.1	8.0	20.9	9.8	20.6	12.0	20.4	14.2	20.2	16.1	20.0	17.9	19.8	20.0	19.6	22.1	19.4	24.2	19.2	26.3	19.0	28.3	18.9	30.3	18.7	32.5	18.6	34.6
	3	2,670	24.2	7.1	24.0	9.3	23.8	11.5	23.6	13.8	23.4	16.2	23.2	18.6	23.0	20.7	22.8	23.1	22.6	25.5	22.3	27.8	22.1	30.2	21.9	32.6	21.7	35.0	21.5	37.5	21.3	39.9
	4	2,960	26.7	8.2	26.5	10.6	26.3	12.9	26.1	15.5	25.9	18.0	25.7	20.6	25.5	23.2	25.3	25.8	25.0	28.4	24.8	31.0	24.5	33.6	24.2	36.4	24.0	39.3	23.7	42.2	23.5	45.0
	5	3,160	28.3	9.3	28.1	11.7	27.9	14.0	27.7	16.7	27.5	19.4	27.2	22.1	27.0	24.9	26.8	27.7	26.5	30.5	26.3	33.2	26.0	36.0	25.7	39.0	25.5	42.1	25.2	45.0	—	—

The standard Motor set has output of 15 - 45kW. * Up to 60 kPa of Discharge Pressure is allowed for outdoor specifications and for Suction Pipe Connections.

○ indicates a Pulley Number.



Sound Levels

Unit: dB (A)

Pulley No.	Rotor speed (min ⁻¹)	Discharge Pressure (kPa)							
		10	20	30	40	50	60	70	80
1	2,070	79	80	81	82	83	83	84	84
2	2,360	80	81	82	83	84	84	85	85
3	2,670	82	83	84	84	85	85	86	86
4	2,960	83	84	85	85	86	86	87	87
5	3,160	84	85	86	86	87	87	88	—

ARS	Three-lobes Spur rotor	Bore: 200 mm (8")
		Output: 22 - 75 kW (30 - 100 HP)

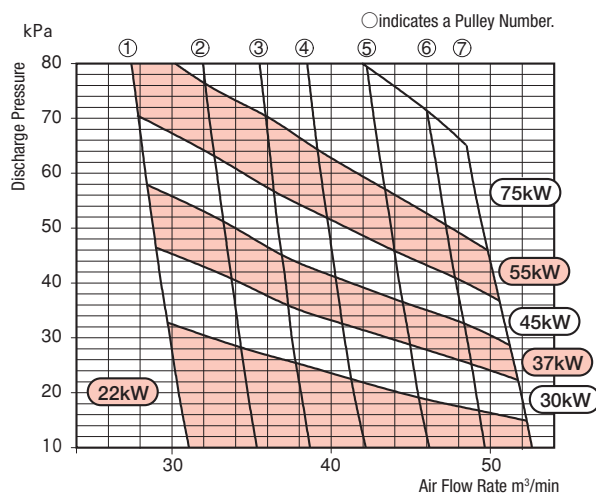
ARS200 Bore 200mm (8" inch)

Specifications

Q: Air Flow Rate (m³/min), P: Power Requirements (kW)

Model	Pulley No.	Rotor speed (min⁻¹)	10kPa		15kPa		20kPa		25kPa		30kPa		35kPa		40kPa		45kPa		50kPa		55kPa		60kPa		65kPa		70kPa		75kPa		80kPa	
			Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
ARS200	1	1,510	31.1	8.4	30.7	11.6	30.4	14.8	30.2	17.6	29.9	20.4	29.6	23.2	29.3	26.1	29.1	29.1	28.8	32.1	28.6	35.1	28.3	38.2	28.1	41.4	27.9	45.1	27.7	47.7	27.4	50.7
	2	1,710	35.3	9.1	35.0	12.6	34.8	16.1	34.5	19.6	34.3	23.1	34.0	26.3	33.8	30.1	33.5	32.8	33.3	36.2	33.1	39.4	32.8	42.6	32.6	46.4	32.3	50.1	32.1	53.8	31.9	57.6
	3	1,860	38.7	10.1	38.4	13.9	38.1	17.8	37.8	22.1	37.5	25.4	37.3	29.2	37.1	33.0	36.9	37.1	36.7	40.6	36.5	43.8	36.3	47.0	36.1	50.8	35.9	55.1	35.7	58.6	35.5	62.6
	4	2,020	42.2	12.3	41.8	16.2	41.4	20.0	41.1	23.9	40.8	27.8	40.6	32.0	40.3	36.2	40.1	39.9	39.8	43.5	39.6	47.4	39.3	51.3	39.1	55.5	38.9	59.6	38.7	63.7	38.5	67.9
	5	2,210	46.2	14.3	45.8	18.4	45.4	22.6	45.2	26.7	44.9	30.9	44.6	35.5	44.3	40.1	44.0	44.2	43.8	48.3	43.5	52.9	43.2	57.5	42.9	62.0	42.7	66.4	42.4	70.8	—	—
	6	2,400	49.6	15.5	49.4	20.2	49.1	24.9	48.8	30.1	48.5	34.4	48.2	39.2	47.8	44.0	47.5	49.2	47.2	54.4	47.0	59.3	46.7	64.2	46.4	69.0	46.1	73.8	—	—	—	—
	7	2,540	52.6	16.6	52.3	22.1	51.9	27.4	51.5	32.8	51.1	38.3	50.7	43.2	50.3	48.1	49.9	53.8	49.5	59.5	49.2	64.5	48.8	69.4	48.5	74.7	—	—	—	—	—	—

The standard Motor set has output of 22 - 75kW. * Up to 60 kPa of Discharge Pressure is allowed for outdoor specifications and for Suction Pipe Connections.



Sound Levels

Unit: dB (A)

Pulley No.	Rotor speed (min⁻¹)	Discharge Pressure (kPa)							
		10	20	30	40	50	60	70	80
1	1,510	81	82	84	85	86	87	88	89
2	1,710	82	83	85	86	87	88	89	90
3	1,860	83	84	86	87	88	89	90	91
4	2,020	84	85	87	88	89	90	91	92
5	2,210	85	86	87	88	90	92	93	—
6	2,400	86	87	88	89	91	93	95	—
7	2,540	86	87	89	90	92	94	—	—

ARS250 (50-176 HP) Bore 250mm (10")

ARS250A (150-240 HP)

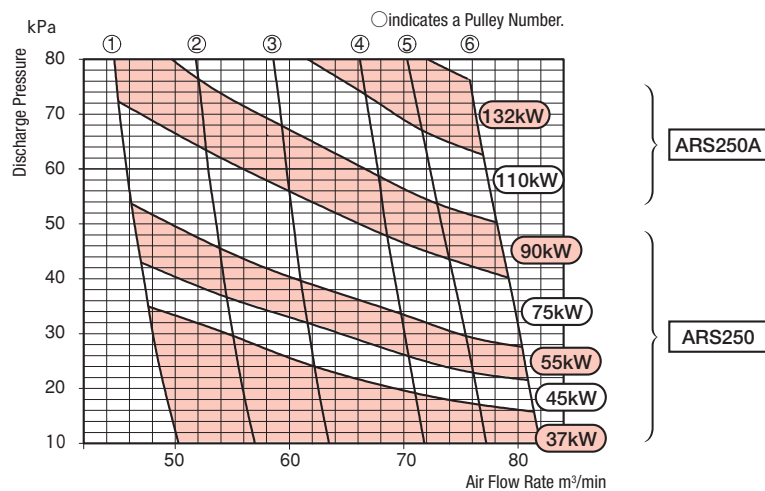
Performance Table

Q: Air Flow Rate (m³/min), P: Power Requirements (kW)

Model	Pulley No.	Rotor speed (min⁻¹)	10kPa		15kPa		20kPa		25kPa		30kPa		35kPa		40kPa		45kPa		50kPa		55kPa		60kPa		65kPa		70kPa		75kPa		80kPa	
			Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
ARS250 ARS250A	1	1,560	50.3	12.9	49.7	18.0	49.1	23.2	48.6	27.3	48.0	31.5	47.6	37.0	47.3	42.4	46.8	46.6	46.4	50.9	46.1	56.4	45.7	62.0	45.4	67.5	45.1	73.0	44.9	77.0	44.7	81.0
	2	1,760	57.0	18.2	56.4	23.4	55.9	28.7	55.5	32.9	55.0	37.2	54.6	43.0	54.3	48.7	53.9	54.2	53.6	59.7	53.2	65.2	52.9	70.7	52.6	76.7	52.4	82.6	52.1	87.9	51.8	93.1
	3	1,970	63.5	21.7	63.0	27.5	62.5	33.2	62.1	37.8	61.7	42.4	61.4	48.8	61.0	55.2	60.7	61.6	60.4	67.9	60.0	73.8	59.7	79.6	59.5	86.0	59.2	92.4	58.9	98.4	58.6	104.5
	4	2,220	71.8	24.9	71.4	31.4	70.9	37.8	70.5	43.8	70.1	49.8	69.6	56.9	69.2	64.0	68.8	70.9	68.4	77.9	68.1	84.7	67.7	91.5	67.3	98.5	66.9	105.6	66.5	112.1	66.2	118.7
	5	2,350	77.2	27.6	76.8	34.1	76.4	40.7	75.9	48.0	75.4	55.4	74.9	62.5	74.4	69.6	73.8	77.0	73.3	84.4	72.8	91.9	72.3	99.3	71.8	106.7	71.3	114.1	70.8	121.1	70.3	128.2
	6	2,490	82.0	29.2	81.5	35.8	81.0	42.5	80.6	50.6	80.2	58.7	79.7	66.7	79.2	74.7	78.7	82.2	78.2	89.6	77.7	97.8	77.2	106.0	76.7	113.6	76.3	121.2	75.9	129.4	—	—

The standard Motor set has output of 37 - 132 kW.

* Up to 60 kPa of Discharge Pressure is allowed for outdoor specifications and for Suction Pipe Connections.



Sound Levels

Unit: dB (A)

Pulley No.	Rotor speed (min⁻¹)	Discharge Pressure (kPa)							
		10	20	30	40	50	60	70	80
1	1,560	84	85	86	86	87	88	90	92
2	1,760	85	86	87	87	88	89	91	93
3	1,970	86	87	88	88	89	90	92	94
4	2,220	87	88	89	89	91	92	94	96
5	2,350	88	89	90	90	92	93	95	97
6	2,490	89	90	91	91	93	94	96	—

Note 1) The air flow rate (measured in accordance with JISB8341) indicates a flow rate of suctioned air.

2) The tolerance of each air flow rate is $\pm 5\%$.

3) If your specifications are out of those stipulated in the handbook, please contact us.

4) Indoor installation is standard. If you want to install outdoor, please contact us.

5) The noise level stipulated herein is a typical value measured 1m away from the machine. The unit is dB (A) (± 3 dB (A)).

6) Blower Rotor speed is for reference.

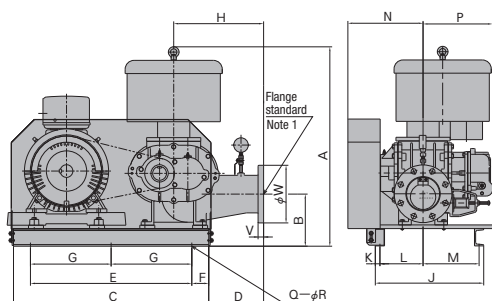
7) Performance table is based on equipped IE1 motor.

Up to 60 kPa of Discharge Pressure is allowed for outdoor specifications and for Suction Pipe Connections.

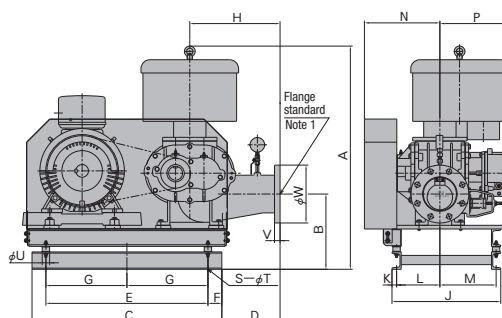
■ Dimensions

Unit: mm

● Standard Dimensions



● Dimensions with a Vibration-Proof Base



Model	Bore mm (inch)	Applicable Motor kW	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	Weight kg
ARS50	50	1.5~5.5	489 (588)	152 (251)	556 (548)	105 (109)	400	78 (74)	—	220	330	15	105	195	173	197	4	13	4	13	35	20	155	58 (67)
ARS65A	65	2.2~7.5	518 (617)	162 (261)	115 (119)	140		160	208	233			175 (87)											
ARS80	80	3.7~11	624 (723)	170 (269)	650 (628)	143 (154)	460	95 (84)	—	280	470	20	119	181	229	234	6	15	6	15	65	24	210	112 (123)
ARS100	100	5.5~15	660 (759)	182 (281)	148 (159)	157		143	267	272			139 (150)											
ARS125	125	11~30	892 (991)	226 (325)	859 (847)	232 (238)	700	80 (74)	350	390	510	30	187	243	332	312	14	15	6	15	65	30	400	241 (256)
ARS150	150	15~45	930 (1029)	241 (340)	312 (318)	266		164	411	448			280	325	452	510								699 (793)
ARS200	200	22~55	1203 (1,335)	273 (405)	1100 (1,240)	258 (188)	900	150 (220)	450	510	830	405	365	596 (645)	625	6	15	6	15	65	30	400	622 (645)	
		75	1248 (1430)	318 (500)	699 (793)																			
ARS250	250	37~90	1335 (1517)	353 (535)	1200 (1,340)	900	150 (220)	450	510	830	405	365	596 (645)	625	6	15	6	15	65	30	400	939 (1046)		
ARS250A		110, 132	978 (1095)																					

Note 1) The punching in the discharge flange is in accordance with JIS10K.

2) The above dimensions are based on totally-enclosed fan-cooled indoor type (IP44) motor. A special motor may have a base with different dimensions.

3) Indoor installation is standard. If you want to install outdoor, please contact us.

4) The value within the parenthesis is that with a vibration-proof base. * The weight does not include that of the motor (with a base).

* We also provide an electronic brochure for CAD drawings. Please contact us.

Blower

■ Standard Accessories

- Common Base.....1 set
- Pulley, Belt and Belt Cover1 set
- Pressure Gauge (with a gauge cock, 160 kPa, setscrew R $\frac{1}{4}$).....1 pc.
- Suction Silencer (with a filter).....1 pc.
- Safety Valve (with a check valve).....1 set
- Motor of Totally-enclosed Fan-cooled Indoor Type (IP44) (with a base).....1 pc.

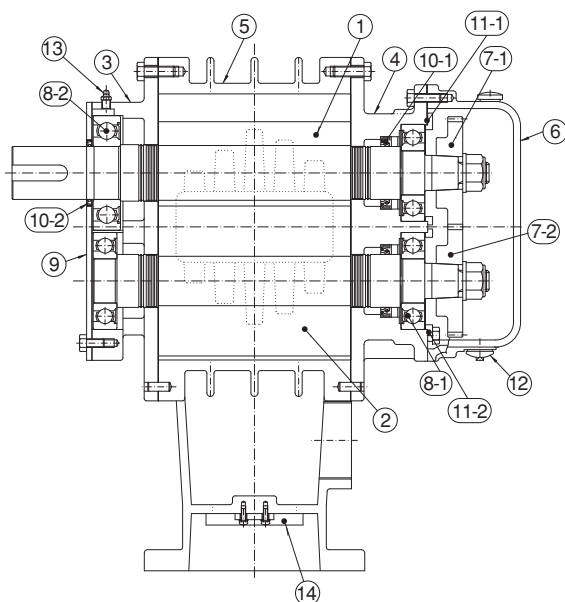
* Motor specifications : Please contact us.

■ Motor Set (Totally-enclosed Fan-cooled Indoor type)

Model	Applicable Motor Output kW (HP)																
	1.5 (2)	2.2 (3)	3.7 (5)	5.5 (7.5)	7.5 (10)	11 (15)	15 (20)	18.5 (24 1/2)	22 (30)	30 (40)	37 (50)	45 (60)	55 (75)	75 (100)	90 (120)	110 (150)	132 (176)
ARS50	○	○	○	○													
ARS65A		○	○	○	○												
ARS80			○	○	○	○											
ARS100				○	○	○	○										
ARS125					○	○	○	○	○	○							
ARS150						○	○	○	○	○	○	○					
ARS200								○	○	○	○	○	○	○			
ARS250										○	○	○	○	○	○		
ARS250A																○	○
Motor Weight (kg) (including the motor base)	22	27	41	47	53	75	90	133	143	169	228	248	281	515	560	670	750

Note: The Motor with output of 5.5 kW or higher can be started by star-delta starting.

Sectional View



- Note 1) ARS50, ARS65A, ARS80, ARS100 have the bearing plate ③ and the casing ⑤ manufactured in one piece.
- 2) Replenish **Shell Stamina Grease RL2** every six months.
(For a machine type with discharge pressure exceeding 60 kPa, replenish the grease every three months.)
- 3) Replace gear oil #220 in its entirety every six months.
(For a machine type with discharge pressure exceeding 60 kPa, replace the grease every three months.)

Number	Name	Material
1	Rotor (Driving)	FCD450
2	Rotor (Driven)	FCD450
3	Bearing Plate	FC200
4	Bearing Case	FC200
5	Casing	FC200
6	Gear Case	FC200
7-1	Timing Gear	SCM415
7-2	Timing Gear	SCM415
8-1	Ball Bearing	—
8-2	Ball Bearing	—
9	Bearing Cover	SS400
10-1	Oil Seal	Fluororubber
10-2	Oil Seal	NBR
11-1	Bearing Cover	SS400
11-2	Bearing Cover	SS400
12	Oil Gauge	—
13	Grease Nipple	—
14	Valve	EPDM

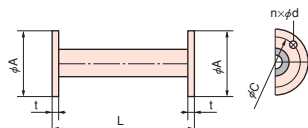
* Note **SCM** : Chromium molybdenum steel **EPDM** : Ethylene propylene rubber **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

Optional Accessories

Unit: mm

Discharge Silencer

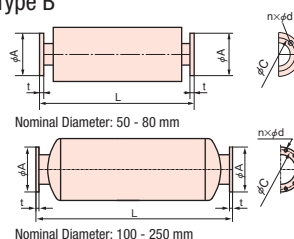
Type AS



Nominal Diameter (mm)	L	A	C	n	d	t	Weight (kg)
50	560	155	120	4	19	16	6.5
65	610	175	140			18	9.0
80	770	185	150			20	11
100	1,060	210	175			22	18
125	1,160	250	210	8	23	20	27
150	1,110	280	240			22	36
200	1,440	330	290			25	80
250	1,800	400	355			24	147

Note 1) The discharge pressure shall be 60 kPa or less.
2) The flange outer diameter and punching are in accordance with JIS10K.

Type B



Nominal Diameter: 50 - 80 mm

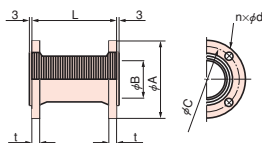
Nominal Diameter: 100 - 250 mm

Nominal Diameter (mm)	L	A	C	n	d	t	Weight (kg)
50	560	155	120	4	19	16	11
65	610	175	140			18	15
80	770	185	150			20	22
100	1,060	210	175			22	39
125	1,160	250	210	8	23	20	59
150	1,110	280	240			22	69
200	1,440	330	290			25	95
250	1,800	400	355			24	172

(Note) The flange outer diameter and punching are in accordance with JIS10K.

Flexible Tube

Nominal Diameter: 50 - 250 mm

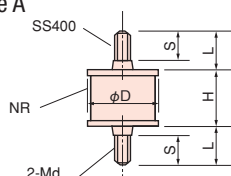


Nominal Diameter (mm)	L	A	B	C	n	d	t	Weight (kg)
50	300	155	54	120	4	19	16	5
65		175	67	140			18	6
80	230	185	79	150			20	8
100		210	104	175			22	12
125		250	129	210	8	23	22	15
150	300	280	152	240			25	28
200		330	203	290			24	28
250	350	400	251	355			24	28

(Note) The flange outer diameter and punching are in accordance with JIS10K.

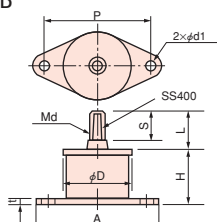
Vibration Isolating Rubber

Type A



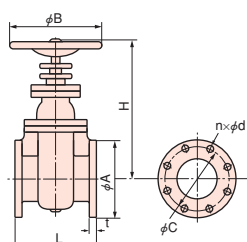
Applicable Model	D	H	d	L	S	Pieces/Unit
ARS50	35	26	8	24	20	4
ARS65A				30	25	6
ARS80				30	25	7
ARS100				30	25	6
ARS125	40	25	12	35	35	7
ARS150				35	35	6
ARS200				35	35	7
ARS250/250A				35	35	7

Type B



Applicable Model	D	H	d	L	S	A	P	d1	t	Pieces/Unit
ARS50	35	26	8	24	20	69	53	9	2.3	4
ARS65A				30	25	76	60			6
ARS80				30	25	76	60			7
ARS100				30	25	76	60			6
ARS125	40	25	12	35	35	116	92	11.5	3.2	7
ARS150				35	35	116	92			6
ARS200				35	35	116	92			7
ARS250/250A				35	35	116	92			7

Sluice Valve



Nominal Diameter (mm)	L	H	A	t	B	C	n	d	Weight (kg)
50	150	235	155	20	140	120	4	19	10
65	160	266	175	22	160	140			14
80	175	293	185			150			17
100	200	360	210	24		175			25
125	225	406	250		224	210	8	23	36
150	265	453	280	26		240			47
200	290	608	330		280	290			90
250	330	721	400	30	310	355			135

(Note) The flange outer diameter and punching are in accordance with JIS10K.

Others

- Motor Changes:
Totally-enclosed Fan-Cooled Outdoor Type
Tropical Climate Specifications
Safety-enhanced Explosion-proof Type
Corrosion-proof
- Belt Cover
With a V-belt Inspection Window
- Pressure Gauge
Pressure Gauge Stand
- Noise-proof Cover

Land Blower (Roots-type)

Bore: 20 - 200 mm (4/5" - 8")

Output: 0.4 - 55 kW (1/2 - 75 HP)

ARH-S/SP

Helical Rotor Blower has significantly reduced low-frequency noise, which was a long-term problem for Roots-type Blowers to meet the needs of the water treatment industry.

	Bore mm (inch)	Output kW (HP)	Model	Page
ARH-S Series	20 (4/5")	0.4 - 0.75 (1/2 - 1)	ARH20S	451
	25 (1")	0.4 - 1.5 (1/2 - 2)	ARH25S	
	32 (1 1/4")	0.75 - 1.5 (1 - 2)	ARH32S	452
	40 (1 1/2")	1.5 - 3.7 (2 - 5)	ARH40S	
	50 (2")	1.5 - 3.7 (2 - 5)	ARH50S	453
	65 (2 1/2")	2.2 - 7.5 (3 - 10)	ARH65S	
	80 (3")	3.7 - 11 (5 - 15)	ARH80S	454
	100 (4")	5.5 - 11 (7.5 - 15)	ARH100S	
	125 (5")	7.5 - 18.5 (10 - 25)	ARH125S	455
		11 - 22 (15 - 30)	ARH125SA	
		15 - 30 (20 - 40)	ARH125SF	456
	150 (6")	15 - 37 (20 - 50)	ARH150S	457
	200 (8")	18.5 - 55 (25 - 75)	ARH200S	458
ARH-SP Series	50 (2")	1.5 - 3.7 (2 - 5)	ARH50SP	460
	65 (2 1/2")	1.5 - 3.7 (2 - 5)	ARH65SP	
	80 (3")	3.7 - 7.5 (5 - 10)	ARH80SP	461
	100 (4")	5.5 - 11 (7.5 - 15)	ARH100SP	

■ Features

- By adoption of new form rotor and improving heat radiation mechanism, temperature rise has been greatly reduced (up to discharge pressure 60kPa). Therefore, burden on grease also be reduced, and commercialized grease can be used.
- **Using fluororubber for oil seal**
Uses thermal resistant Fluororubber for oil seal. Furthermore, adoption of a labyrinth structure for oil-containing part design enhances the reliability against oil leaks.
- **Achieving low noise**
Adopts a helical-type rotor. Significantly reduces pulsation noise as compared to spur-type due to continuous air discharge.
- **Easy maintainance**
Adoption of a C-shape snap allows bearings to be fixed in place with one-touch operation. Timing gear can be easily disassembled using a gear puller. All of this facilitates maintenance.
- **Enhancing durability to extend the service life**
Temperature rise reduction and large size Bearing enhance durability.



■ Standard Specifications

Handled Gas	Type	Air
	Temperature	-15 – 40°C
Main Structures	Rotor	Three-lobes helical type
	Shaft Seal	Labyrinth seal and Oil seal
	Bearing	Ball bearing
Material	Casing	Gray iron casting (FC200)
	Shaft	*1 FCD500 • (S45C)
	Rotor	*2 FCD500 • (FC200)
Painting	Phthalate Resin Paint	
	Paint Thickness: 25 μm or more	

*1, *2: The Rotor Shaft and the Helical Portions of ARH20S - 125SA are made of Ductile iron casting (FCD500) in one piece parts.
The Shaft and Helical Portions for ARH125SF, 150S and 200S are made of Steel (S45C) and Gray iron casting (FC200) respectively.

■ Applications

- Aeration at wastewater treatment processes
- Pneumatic conveying of cement power, wheat, soy-beans, etc.
- Air-cooling, drying and blowing off at industrial processes
- Oxygen supply at fish farms, aquariums, etc.
- Foaming of water at baths and swimming pools

■ Special Specifications

- Outdoor specifications
- Anti-corrosion finishing (Electroless nickel plating with stainless steel coating)

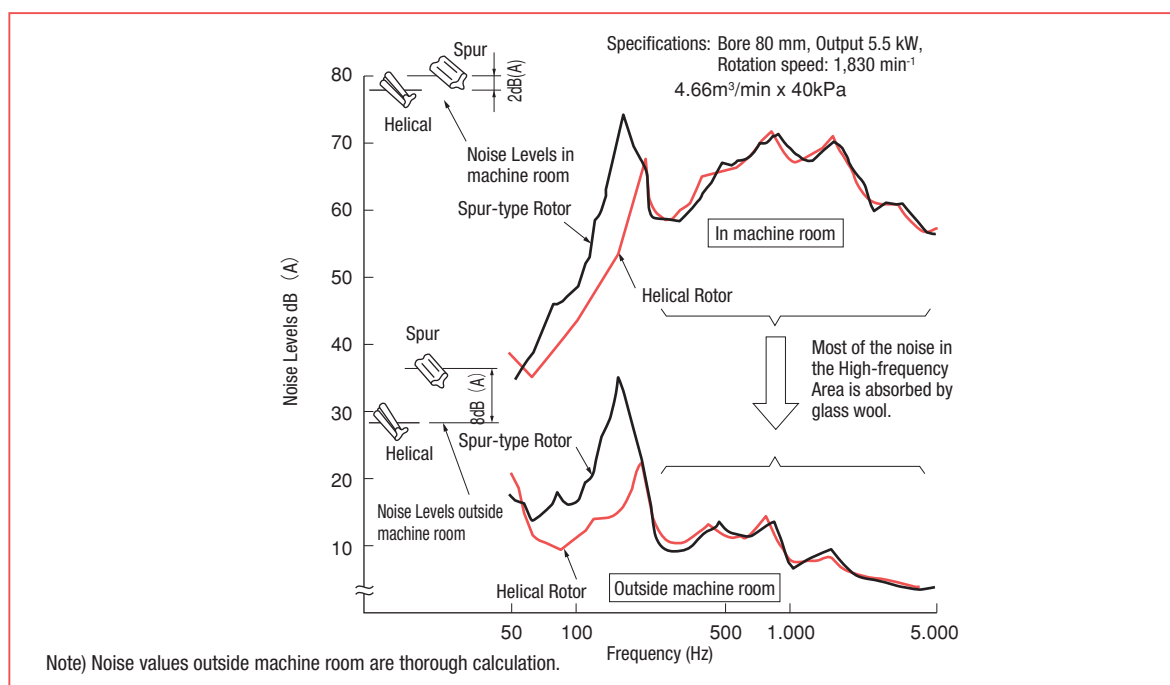
* For special specifications, please contact us.

Low-frequency Noise can scarcely prevent by acoustic absorbent. Helical Rotor Blower brings successful reduction of Low-frequency Noise.

There are overlapping of curves at high frequency side for both Helical Rotor Type and Spur Type. However, low frequency side such as 60 – 200Hz, it is very clear that Helical Rotor Type is significantly lower the noise than Spur Type. Why low noise at low frequency side is important? Actually material of acoustic absorbent or glass wool used for machine room wall have little efficiency to absorb noise. Through the graph, noise over than 200Hz is absorbed by glass wool, but peak around 160Hz still remains. Consequently, noise we hear at machine room consists low frequency noise. Difference of noise value (typical noise level) indicates 2dB in “Machine room”, but through calculation, its value becomes 8dB at “Outside Machine room”.

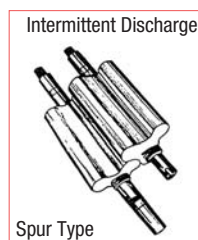
Therefore, more low noise can be featured by adding noise reduction measures, or even in case of blower should be installed near workplace, or in condominium or apartment.

Comparison of frequency of blower noise between our products



Why is Helical Rotor Blower so quiet? It is continuous discharge from the Helical Rotor.

Most conventionally used Spur Type Rotor has straight groove, therefore suctioned air is discharged each one operation cycle so that pulsation becomes larger and generated noise is higher. On the other hand, Helical Type has twisted rotor grooves, a structure that discharging air gradually and constantly reduces pulsation and noise.



How to read the performance table

1. The Air Flow Rate shown in the Handbook is that of suctioned air. (20°C, 101.3kPa, 65%)
2. The Power requirements shown in the performance table includes the driving power for the power transmission system. When selecting a motor, you need not consider power margin.
However, margin at 10% of the power requirement set forth in the Handbook is needed for sealing specifications.
3. The air flow rate for dry gas is generally expressed as m³/min (Normal) under the reference conditions (temperature: 0°C and absolute pressure: 101.3 kPa). Select a motor with an air flow rate increased by 10%.
4. For outdoor specifications, a limit pressure shall be less than the maximum pressure set forth in the Handbook by 10 kPa.
5. Air flow rate varies depending on temperatures. The following equation expresses relationship between temperature and air flow rate.

$$Q_2 = Q_1 \times \frac{273 + t_2}{273 + t_1}$$

Q₁: Air flow rate at temperature of t₁°C

Q₂: Air flow rate at temperature of t₂°C

Precautions for Inverter Operation

Inverter control provides a means for obtaining an appropriate air volume from the blower.

Inverter control offers advantages, such as allowing easy and fine electrical tuning, but it also has remarks, especially when using the machine out of the specifications described in this Handbooks.

1. Since Roots-type Blower is volume discharge type, air flow rate and output are almost proportional to its revolutions.

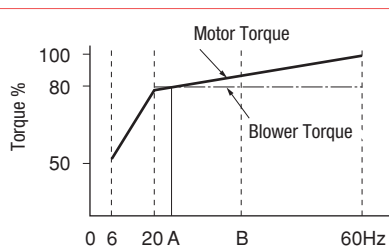
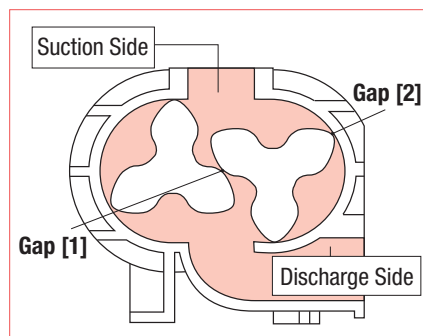
2. An excess reduction of revolutions of the blower results a high temperature rise, causing damage to blower.

In case of too much reduction of motor rotation speed, blower may have high temperature rise and it will cause breakdown due to exceeding of allowable bearing operation temperature due to compressed and heated air would be leak from **Gap [1]** in rotors and **Gap [2]** between casing and rotor.

3. As the blower has constant torque characteristics, in case of normal motor, if motor rotation is lowered too much, insufficient motor torque would occur as shown in the right, then causing motor burnout. In order to prevent insufficient motor torque, by using constant torque motor (for inverter control type), constant torque operation up to low frequency can be done. Also there is inverter controller which can operate with constant torque in combination with normal motor.

If you are planning to use Inverter Control, we will submit an Inverter Calculation Sheet, please let us know. If specific motor supplier is considered, please inform us of the manufacturer name.

4. To avoid Inverter Control problems, be sure to use Inverter and Motor from the same manufacturer company.
5. Be sure to use Inverter with constant torque characteristics.



Note: B indicates upper limit frequency due to Temperature rises of Blower.

Note: A indicates a limit frequency for motor torque.
The frequency at A and B whichever is higher, the frequency at B, is the lower limit frequency in the control range for this blower.

ARH-S	Three-lobes Helical rotor	Bore: 20·25 mm (4/5"·1")
		Output: 0.4 - 1.5 kW (1/2 - 2 HP)

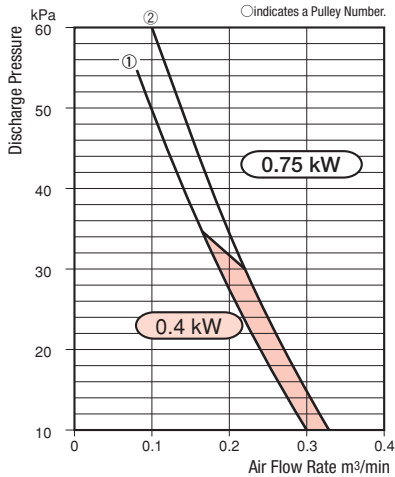
ARH20S Bore: 20mm (4/5")

Performance Table

Q: Air Flow Rate (m³/min), P: Power Requirements (kW)

Model	Pulley No.	Rotor speed (min⁻¹)	10kPa		15kPa		20kPa		25kPa		30kPa		35kPa		40kPa		45kPa		50kPa		55kPa		60kPa	
			Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
ARH20S	1	1,630	0.30	0.25	0.27	0.29	0.24	0.32	0.22	0.35	0.19	0.38	0.17	0.40	0.14	0.46	0.12	0.52	0.10	0.58	0.08	0.65		
	2	1,730	0.33	0.26	0.30	0.30	0.28	0.34	0.25	0.38	0.22	0.40	0.20	0.45	0.18	0.51	0.16	0.56	0.14	0.61	0.12	0.67	0.10	0.72

The Standard Motor set has output of 0.4 or 0.75 kW.



Sound Levels

Unit: dB (A)

Pulley No.	Rotor speed (min⁻¹)	Discharge Pressure (kPa)					
		10	20	30	40	50	60
1	1,630	58	59	60	61	61	
2	1,730	60	61	62	63	63	64

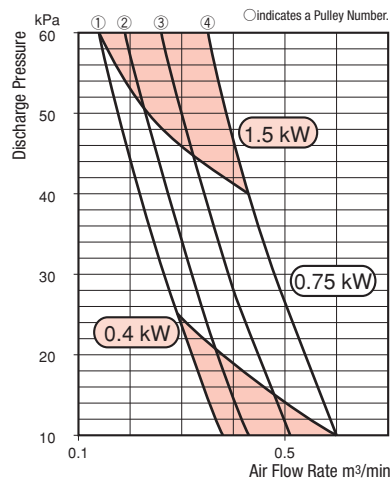
ARH25S Bore: 25mm (1")

Performance Table

Q: Air Flow Rate (m³/min), P: Power Requirements (kW)

Model	Pulley No.	Rotor speed (min⁻¹)	10kPa		15kPa		20kPa		25kPa		30kPa		35kPa		40kPa		45kPa		50kPa		55kPa		60kPa	
			Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
ARH25S	1	1,940	0.38	0.28	0.35	0.31	0.32	0.35	0.29	0.40	0.27	0.44	0.24	0.49	0.22	0.53	0.20	0.58	0.18	0.63	0.16	0.69	0.14	0.75
	2	2,160	0.43	0.30	0.40	0.33	0.37	0.38	0.35	0.41	0.32	0.48	0.30	0.52	0.27	0.56	0.25	0.63	0.23	0.74	0.21	0.83	0.19	0.93
	3	2,400	0.51	0.35	0.48	0.40	0.45	0.43	0.42	0.48	0.39	0.53	0.37	0.58	0.34	0.65	0.32	0.75	0.30	0.86	0.28	0.97	0.26	1.07
	4	2,690	0.60	0.40	0.57	0.47	0.54	0.50	0.51	0.54	0.48	0.60	0.46	0.66	0.43	0.75	0.41	0.84	0.39	0.91	0.37	1.00	0.35	1.10

The Standard Motor set has output of 0.4 or 1.5 kW.



Sound Levels

Unit: dB (A)

Pulley No.	Rotor speed (min⁻¹)	Discharge Pressure (kPa)					
		10	20	30	40	50	60
1	1,940	62	63	63	64	64	65
2	2,160	63	63	64	65	65	66
3	2,400	63	64	65	66	66	67
4	2,690	65	66	67	68	68	69

ARH-S

Three-lobes Helical rotor

Bore: 32·40 mm (1 1/4"·1 1/2")

Output: 0.75 - 3.7 kW (1 - 5 HP)

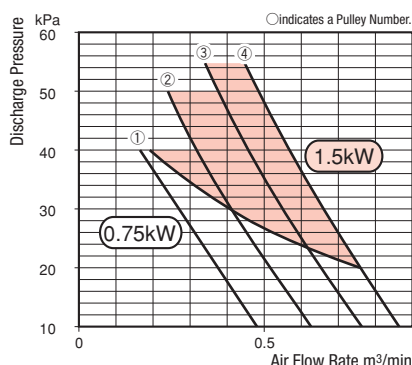
ARH32S Bore: 32mm (1 1/4")

Performance Table

Q: Air Flow Rate (m³/min), P: Power Requirements (kW)

Model	Pulley No.	Rotor speed (min⁻¹)	10kPa		15kPa		20kPa		25kPa		30kPa		35kPa		40kPa		45kPa		50kPa		55kPa		60kPa	
			Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
ARH32S	1	1,240	0.48	0.53	0.43	0.57	0.38	0.61	0.33	0.64	0.27	0.68	0.22	0.71	0.17	0.74								
	2	1,480	0.62	0.57	0.57	0.62	0.52	0.67	0.47	0.70	0.41	0.75	0.36	0.95	0.32	1.13	0.28	1.18	0.24	1.23				
	3	1,740	0.76	0.60	0.71	0.64	0.66	0.69	0.61	0.79	0.55	1.00	0.50	1.10	0.46	1.22	0.42	1.24	0.38	1.27	0.34	1.30		
	4	1,910	0.86	0.64	0.81	0.69	0.76	0.75	0.71	0.90	0.66	1.05	0.61	1.15	0.57	1.25	0.53	1.35	0.49	1.42	0.45	1.49		

The Standard Motor set has output of 0.75 or 1.5 kW.



Sound Levels

Unit: dB (A)

Pulley No.	Rotor speed (min⁻¹)	Discharge Pressure (kPa)					
		10	20	30	40	50	60
1	1,240	65	66	67	68		
2	1,480	66	67	68	69	70	
3	1,740	67	68	69	70	71	
4	1,910	69	70	71	72	73	

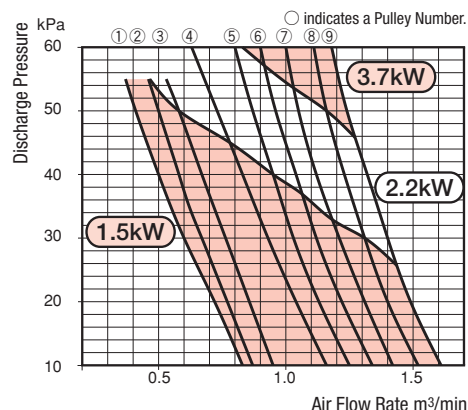
ARH40S Bore: 40mm (1 1/2")

Performance Table

Q: Air Flow Rate (m³/min), P: Power Requirements (kW)

Model	Pulley No.	Rotor speed (min⁻¹)	10kPa		15kPa		20kPa		25kPa		30kPa		35kPa		40kPa		45kPa		50kPa		55kPa		60kPa	
			Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
ARH40S	1	1,720	0.83	0.61	0.78	0.66	0.72	0.72	0.67	0.92	0.60	1.11	0.56	1.17	0.50	1.24	0.45	1.26	0.41	1.29	0.37	1.32	—	—
	2	1,840	0.87	0.64	0.82	0.69	0.77	0.76	0.74	0.95	0.67	1.14	0.63	1.20	0.58	1.28	0.55	1.35	0.50	1.42	0.46	1.49	—	—
	3	1,960	0.95	0.71	0.91	0.77	0.86	0.85	0.80	1.03	0.76	1.20	0.71	1.27	0.67	1.35	0.63	1.43	0.58	1.50	0.53	1.61	—	—
	4	2,210	1.16	0.77	1.10	0.87	1.04	0.99	0.99	1.11	0.93	1.24	0.88	1.33	0.83	1.45	0.78	1.50	0.73	1.76	0.68	1.84	0.63	1.99
	5	2,380	1.25	0.83	1.19	0.97	1.13	1.12	1.08	1.19	1.03	1.28	0.99	1.39	0.95	1.50	0.91	1.68	0.87	1.86	0.84	2.02	0.80	2.18
	6	2,520	1.34	0.95	1.28	1.08	1.22	1.20	1.17	1.28	1.12	1.35	1.08	1.45	1.04	1.55	1.00	1.76	0.96	1.96	0.93	2.13	0.90	2.30
	7	2,620	1.42	1.07	1.37	1.19	1.31	1.32	1.26	1.36	1.21	1.42	1.17	1.55	1.12	1.70	1.09	1.89	1.05	2.08	1.03	2.25	1.00	2.41
	8	2,790	1.52	1.15	1.46	1.09	1.40	1.40	1.36	1.45	1.31	1.50	1.27	1.66	1.23	1.82	1.20	2.01	1.16	2.20	1.14	2.39	1.11	2.57
	9	3,000	1.61	1.30	1.55	1.40	1.49	1.50	1.45	1.64	1.40	1.78	1.36	1.92	1.32	2.06	1.28	2.20	1.24	2.33	1.21	2.51	1.18	2.69

The Standard Motor set has output of 1.5 - 3.7 kW.



Sound Levels

Unit: dB (A)

Pulley No.	Rotor speed (min⁻¹)	Discharge Pressure (kPa)					
		10	20	30	40	50	60
1	1,720	66	67	68	69	70	—
2	1,840	67	68	70	71	72	—
3	1,960	69	70	71	71	72	—
4	2,210	70	71	71	71	72	73
5	2,380	70	71	71	71	72	74
6	2,520	70	71	71	72	72	74
7	2,620	71	71	72	72	73	74
8	2,790	71	72	72	73	73	75
9	3,000	71	72	72	73	74	75

ARH-S	Three-lobes Helical rotor	Bore: 50·65 mm (2" · 2 1/2")
		Output: 1.5 - 7.5 kW (2 - 10 HP)

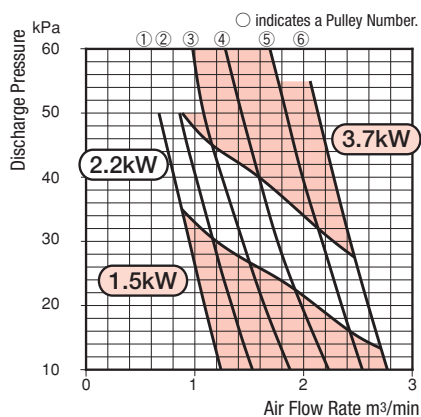
ARH50S Bore: 50mm (2")

Performance Table

Q: Air Flow Rate (m³/min), P: Power Requirements (kW)

Model	Pulley No.	Rotor speed (min⁻¹)	10kPa		15kPa		20kPa		25kPa		30kPa		35kPa		40kPa		45kPa		50kPa		55kPa		60kPa	
			Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
ARH50S	1	1,270	1.27	0.7	1.17	0.8	1.09	1.0	1.02	1.1	0.95	1.3	0.88	1.5	0.81	1.7	0.74	1.8	0.67	2.0	—	—	—	—
	2	1,400	1.53	0.9	1.43	1.0	1.34	1.2	1.25	1.3	1.17	1.4	1.09	1.7	1.01	1.8	0.93	1.9	0.86	2.1	—	—	—	—
	3	1,650	1.85	1.0	1.74	1.2	1.64	1.3	1.54	1.4	1.44	1.7	1.35	1.8	1.27	2.0	1.19	2.2	1.11	2.5	1.04	2.7	0.98	2.9
	4	1,850	2.23	1.1	2.11	1.3	1.98	1.4	1.87	1.6	1.76	1.8	1.68	2.0	1.59	2.2	1.51	2.5	1.43	2.7	1.35	2.9	1.28	3.1
	5	2,080	2.54	1.2	2.45	1.5	2.35	1.7	2.26	1.9	2.17	2.1	2.08	2.4	1.99	2.6	1.92	2.8	1.84	3.0	1.76	3.2	1.69	3.4
	6	2,230	2.77	1.3	2.68	1.6	2.59	1.9	2.51	2.1	2.43	2.3	2.36	2.6	2.28	2.8	2.21	3.1	2.13	3.3	2.06	3.4	—	—

The Standard Motor set has output of 1.5 or 3.7 kW.



Sound Levels

Unit: dB (A)

Pulley No.	Rotor speed (min⁻¹)	Discharge Pressure (kPa)					
		10	20	30	40	50	60
1	1,270	63	64	66	67	69	—
2	1,400	66	66	68	70	71	—
3	1,650	69	70	71	72	73	74
4	1,850	70	70	71	72	73	74
5	2,080	70	71	72	73	74	75
6	2,230	72	74	74	74	75	75

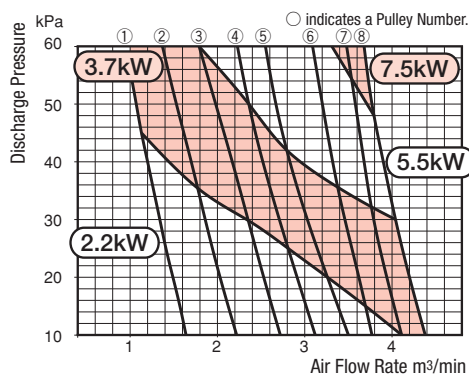
ARH65S Bore: 65mm (2 1/2")

Performance Table

Q: Air Flow Rate (m³/min), P: Power Requirements (kW)

Model	Pulley No.	Rotor speed (min⁻¹)	10kPa		15kPa		20kPa		25kPa		30kPa		35kPa		40kPa		45kPa		50kPa		55kPa		60kPa	
			Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
ARH65S	1	1,100	1.64	0.9	1.57	1.1	1.49	1.3	1.41	1.5	1.34	1.7	1.27	1.9	1.20	2.1	1.13	2.2	1.07	2.6	1.01	2.8	—	—
	2	1,320	2.22	1.2	2.12	1.4	2.03	1.6	1.94	1.8	1.86	2.0	1.78	2.2	1.70	2.4	1.62	2.7	1.53	3.0	1.45	3.2	1.37	3.4
	3	1,550	2.72	1.3	2.62	1.6	2.53	1.8	2.44	2.0	2.35	2.2	2.26	2.5	2.17	2.8	2.07	3.0	1.98	3.3	1.89	3.5	1.79	3.7
	4	1,730	3.12	1.5	3.01	1.8	2.91	2.0	2.81	2.2	2.71	2.7	2.61	2.9	2.52	3.2	2.44	3.4	2.36	3.7	2.30	3.9	2.23	4.2
	5	1,960	3.50	1.7	3.37	2.0	3.26	2.2	3.14	2.7	3.03	3.1	2.92	3.3	2.83	3.6	2.75	3.9	2.67	4.1	2.61	4.3	2.55	4.6
	6	2,200	3.77	1.9	3.70	2.2	3.62	2.4	3.54	2.8	3.46	3.2	3.39	3.7	3.32	4.1	3.26	4.5	3.20	4.9	3.15	5.2	3.09	5.4
	7	2,350	4.11	2.2	4.03	2.3	3.94	2.5	3.87	3.0	3.79	3.5	3.74	4.0	3.68	4.4	3.63	4.8	3.58	5.1	3.53	5.5	3.48	6.0
	8	2,500	4.38	2.4	4.29	2.6	4.20	2.8	4.12	3.3	4.04	3.7	3.97	4.2	3.90	4.7	3.84	5.2	3.77	5.7	3.73	6.1	3.68	6.5

The Standard Motor set has output of 2.2 - 7.5 kW.



Sound Levels

Unit: dB (A)

Pulley No.	Rotor speed (min⁻¹)	Discharge Pressure (kPa)					
		10	20	30	40	50	60
1	1,100	66	67	68	68	69	—
2	1,320	66	67	68	69	71	72
3	1,550	66	67	69	70	72	73
4	1,730	67	68	69	71	73	73
5	1,960	67	69	71	72	74	75
6	2,200	68	70	71	72	74	75
7	2,350	70	71	72	73	74	76
8	2,500	72	73	74	75	75	76

ARH-S	Three-lobes Helical rotor	Bore: 80 • 100 mm (3" • 4")
		Output: 3.7 - 11 kW (5 - 15 HP)

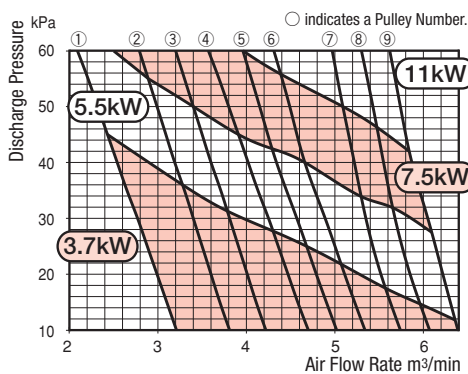
ARH80S Bore: 80mm (3")

Performance Table

Q: Air Flow Rate (m³/min), P: Power Requirements (kW)

Model	Pulley No.	Rotor speed (min⁻¹)	10kPa		15kPa		20kPa		25kPa		30kPa		35kPa		40kPa		45kPa		50kPa		55kPa		60kPa	
			Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
ARH80S	1	1,130	3.21	1.4	3.10	1.7	2.99	2.1	2.88	2.4	2.77	2.8	2.65	3.1	2.54	3.5	2.43	3.7	2.32	4.3	2.21	4.7	2.09	5.1
	2	1,350	3.81	1.8	3.70	2.1	3.60	2.5	3.50	2.8	3.40	3.2	3.30	3.6	3.19	4.1	3.09	4.5	2.99	5.0	2.89	5.5	2.79	6.1
	3	1,490	4.22	2.1	4.11	2.4	4.01	2.8	3.91	3.2	3.81	3.6	3.71	4.0	3.60	4.5	3.50	5.0	3.40	5.5	3.30	6.1	3.20	6.6
	4	1,630	4.70	2.2	4.58	2.7	4.47	3.2	4.36	3.6	4.25	4.1	4.13	4.5	4.02	5.0	3.91	5.5	3.80	6.0	3.69	6.6	3.57	7.2
	5	1,730	5.02	2.3	4.90	2.8	4.79	3.4	4.68	3.7	4.57	4.3	4.45	4.7	4.34	5.2	4.25	5.9	4.15	6.5	4.06	7.1	3.96	7.5
	6	1,830	5.34	2.4	5.22	3.0	5.11	3.5	5.00	4.1	4.89	4.6	4.78	5.1	4.66	5.5	4.58	6.2	4.49	6.8	4.40	7.4	4.31	8.0
	7	2,040	5.74	2.8	5.63	3.4	5.52	4.0	5.44	4.6	5.35	5.2	5.29	5.6	5.22	6.2	5.16	6.9	5.09	7.5	5.03	8.1	4.97	8.6
	8	2,150	6.07	3.0	5.96	3.7	5.85	4.2	5.77	4.8	5.68	5.3	5.62	6.0	5.55	6.6	5.49	7.4	5.43	7.8	5.37	8.5	5.30	9.1
	9	2,270	6.39	3.5	6.31	4.1	6.22	4.6	6.14	5.2	6.05	5.8	5.96	6.6	5.87	7.3	5.81	7.8	5.74	8.5	5.68	9.1	5.62	9.7

The standard motor set has output of 3.7 - 11 kW.



Sound Levels

Unit: dB (A)

Pulley No.	Rotor speed (min⁻¹)	Discharge Pressure (kPa)					
		10	20	30	40	50	60
1	1,130	70	71	72	73	74	75
2	1,350	71	71	73	74	75	76
3	1,490	72	73	73	75	76	77
4	1,630	73	74	75	76	77	78
5	1,730	74	75	76	76	78	79
6	1,830	75	76	77	78	79	80
7	2,040	76	77	78	79	79	80
8	2,150	77	78	78	79	79	80
9	2,270	77	78	79	79	79	80

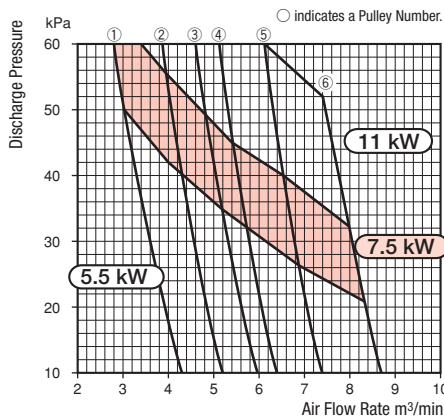
ARH100S Bore: 100mm (4")

Performance Table

Q: Air Flow Rate (m³/min), P: Power Requirements (kW)

Model	Pulley No.	Rotor speed (min⁻¹)	10kPa		15kPa		20kPa		25kPa		30kPa		35kPa		40kPa		45kPa		50kPa		55kPa		60kPa	
			Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
ARH100S	1	1,020	4.29	2.3	4.11	2.7	3.94	3.1	3.75	3.4	3.58	3.7	3.43	4.0	3.30	4.4	3.17	5.1	3.03	5.5	2.90	6.2	2.77	6.8
	2	1,200	5.19	2.5	5.04	3.0	4.89	3.5	4.74	4.0	4.58	4.5	4.44	5.0	4.31	5.5	4.19	6.2	4.08	6.8	3.98	7.4	3.88	8.1
	3	1,390	5.94	2.9	5.79	3.4	5.64	3.9	5.49	4.4	5.33	4.9	5.19	5.5	5.06	6.2	4.94	6.9	4.83	7.6	4.73	8.4	4.63	9.2
	4	1,490	6.44	3.3	6.29	3.8	6.14	4.4	5.99	4.9	5.83	5.4	5.69	6.0	5.56	6.8	5.44	7.5	5.33	8.2	5.23	9.0	5.13	9.8
	5	1,630	7.39	3.9	7.24	4.4	7.09	4.9	6.94	5.4	6.78	5.9	6.65	6.8	6.53	7.5	6.43	8.5	6.33	9.4	6.23	10.3	6.13	11.0
	6	1,830	8.69	4.6	8.54	5.0	8.39	5.4	8.24	6.2	8.08	7.1	7.93	8.0	7.78	8.9	7.62	9.8	7.47	10.7				

The Standard Motor set has output of 5.5 - 11 kW.



Sound Levels

Unit: dB (A)

Pulley No.	Rotor speed (min⁻¹)	Discharge Pressure (kPa)					
		10	20	30	40	50	60
1	1,020	71	72	73	74	75	76
2	1,200	72	73	74	76	76	78
3	1,390	74	74	75	77	78	79
4	1,490	75	76	77	78	79	80
5	1,630	76	77	78	79	80	80
6	1,830	77	78	79	80	81	

ARH-S	Three-lobes Helical rotor	Bore: 125 mm (5")
		Output: 7.5 - 22 kW (10 - 30 HP)

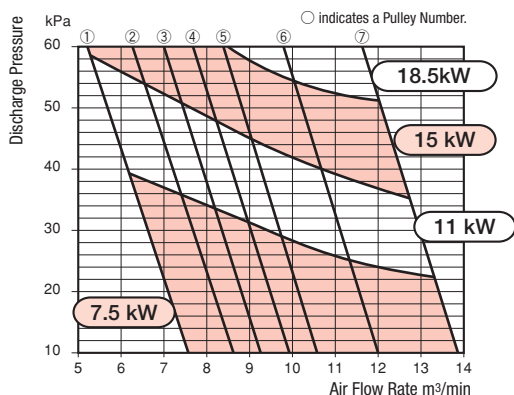
ARH125S Bore: 125mm (5")

Performance Table

Q: Air Flow Rate (m³/min), P: Power Requirements (kW)

Model	Pulley No.	Rotor speed (min ⁻¹)	10kPa		15kPa		20kPa		25kPa		30kPa		35kPa		40kPa		45kPa		50kPa		55kPa		60kPa	
			Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
ARH125S	1	1,160	7.58	2.5	7.35	3.4	7.11	4.3	6.88	5.0	6.64	5.8	6.41	6.7	6.17	7.6	5.94	8.5	5.70	9.4	5.46	10.3	5.23	11.3
	2	1,290	8.67	3.4	8.43	4.0	8.19	4.7	7.95	5.4	7.71	6.3	7.47	7.2	7.23	8.2	6.99	9.1	6.75	10.1	6.51	11.2	6.26	12.3
	3	1,370	9.29	3.9	9.06	4.4	8.83	4.9	8.59	5.7	8.37	6.7	8.13	7.7	7.91	8.5	7.67	9.5	7.44	10.7	7.21	11.8	6.98	13.0
	4	1,460	10.0	4.2	9.77	4.6	9.53	5.1	9.30	6.0	9.06	7.1	8.84	8.1	8.60	9.2	8.37	10.2	8.14	11.3	7.91	12.5	7.67	13.9
	5	1,540	10.7	4.4	10.4	5.0	10.2	5.7	9.98	6.6	9.76	7.7	9.53	8.8	9.31	10.0	9.08	11.0	8.86	12.1	8.64	13.4	8.41	14.8
	6	1,710	12.0	4.7	11.8	5.4	11.5	6.2	11.3	7.4	11.1	8.6	10.9	9.7	10.7	10.9	10.5	12.3	10.3	13.8	10.1	15.1	9.84	16.5
	7	1,920	13.9	5.1	13.6	5.9	13.4	6.8	13.2	8.2	13.0	9.7	12.7	10.9	12.5	12.2	12.3	13.2	12.1	14.5	11.8	16.2	11.6	18.1

The standard motor set has output of 7.5 - 18.5 kW.



Sound Levels

Unit: dB (A)

Pulley No.	Rotor speed (min ⁻¹)	Discharge Pressure (kPa)					
		10	20	30	40	50	60
1	1,160	72	73	74	75	75	76
2	1,290	72	73	74	75	76	76
3	1,370	73	74	75	76	77	77
4	1,460	73	74	75	76	77	78
5	1,540	74	75	76	77	78	79
6	1,710	75	76	77	78	79	81
7	1,920	76	77	78	79	81	82

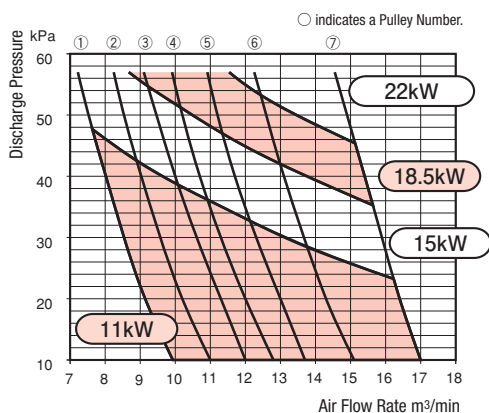
ARH125SA Bore: 125mm (5")

Performance Table

Q: Air Flow Rate (m³/min), P: Power requirements (kW)

Model	Pulley No.	Rotor speed (min ⁻¹)	10kPa		15kPa		20kPa		25kPa		30kPa		35kPa		40kPa		45kPa		50kPa		55kPa		60kPa	
			Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
ARH125SA	1	1,160	9.93	3.5	9.50	4.5	9.14	5.4	8.82	6.4	8.54	7.4	8.27	8.4	8.02	9.4	7.76	10.4	7.52	11.4	7.30	12.4	—	—
	2	1,290	11.0	3.8	10.6	4.9	10.2	6.0	9.89	7.1	9.58	8.2	9.30	9.3	9.03	10.4	8.77	11.5	8.53	12.7	8.31	13.9	—	—
	3	1,370	12.0	4.1	11.6	5.3	11.3	6.5	10.9	7.7	10.6	8.9	10.3	10.1	10.0	11.3	9.75	12.5	9.46	13.7	9.11	14.9	—	—
	4	1,460	12.8	4.5	12.4	5.7	12.0	6.9	11.6	8.2	11.3	9.5	11.0	10.7	10.7	12.0	10.4	13.3	10.2	14.6	9.97	15.9	—	—
	5	1,540	13.7	4.8	13.3	6.1	13.0	7.4	12.6	8.8	12.3	10.2	12.0	11.5	11.7	12.9	11.4	14.3	11.2	15.6	11.0	16.9	—	—
	6	1,710	15.1	5.5	14.7	7.0	14.3	8.4	14.0	9.9	13.7	11.4	13.4	12.9	13.1	14.3	12.8	15.9	12.6	17.4	12.3	18.9	—	—
	7	1,920	17.0	6.4	16.7	8.1	16.4	9.8	16.2	11.4	15.9	13.0	15.7	14.8	15.5	16.6	15.2	18.3	14.9	19.9	14.6	21.6	—	—

The Standard Motor set has output of 11 - 22 kW. (Up to 57 kPa of discharge pressure is allowed.)



Sound Levels

Unit: dB (A)

Pulley No.	Rotor speed (min ⁻¹)	Discharge Pressure (kPa)					
		10	20	30	40	50	60
1	1,160	72	74	75	76	77	—
2	1,290	73	75	77	78	79	—
3	1,370	73	75	78	78	79	—
4	1,460	73	75	78	79	80	—
5	1,540	74	76	79	79	80	—
6	1,710	75	76	79	79	80	—
7	1,920	77	79	80	81	82	—

ARH-S

Three-lobes Helical rotor

Bore: 125 mm (5")

Output: 15 - 30 kW (20 - 40 HP)

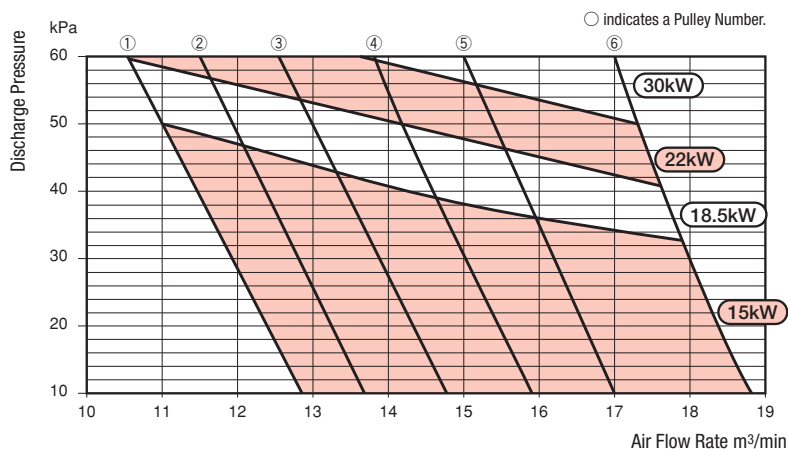
ARH125SF Bore: 125mm (5")

Performance Table

Q: Air Flow Rate (m³/min), P: Power Requirements (kW)

Model	Pulley No.	Rotor speed (min ⁻¹)	10kPa		15kPa		20kPa		25kPa		30kPa		35kPa		40kPa		45kPa		50kPa		55kPa		60kPa	
			Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
ARH125SF	1	1,000	12.9	6.7	12.7	7.5	12.4	8.3	12.2	9.2	12.0	10.1	11.7	11.0	11.5	11.9	11.3	13.4	11.0	15.0	10.8	16.8	10.6	18.7
	2	1,060	13.7	7.1	13.5	7.9	13.3	8.7	13.1	9.7	12.9	10.8	12.6	11.7	12.4	12.7	12.2	14.4	12.0	16.1	11.8	17.8	11.6	19.7
	3	1,130	14.8	7.9	14.6	8.6	14.4	9.4	14.1	10.3	13.9	11.4	13.7	12.6	13.5	14.0	13.2	15.7	13.0	17.3	12.8	18.9	12.6	20.8
	4	1,210	15.9	8.1	15.7	9.0	15.5	9.9	15.3	11.1	15.1	12.2	14.8	13.8	14.6	15.3	14.4	16.8	14.2	18.5	14.0	20.3	13.8	22.2
	5	1,300	17.0	8.5	16.8	9.5	16.6	10.5	16.4	11.6	16.2	12.8	16.0	14.6	15.8	16.5	15.6	18.1	15.4	19.8	15.2	21.6	15.0	23.5
	6	1,420	18.8	9.1	18.6	10.1	18.4	11.1	18.2	12.4	18.0	13.8	17.8	16.1	17.7	18.2	17.5	20.1	17.3	22.0	17.2	23.7	17.0	25.5

The Standard Motor set has output of 15 - 30 kW.



Sound Level

Unit: dB (A)

Pulley No.	Rotor speed (min ⁻¹)	Discharge Pressure (kPa)					
		10	20	30	40	50	60
1	1,000	72	73	74	75	77	78
2	1,060	72	73	74	75	77	78
3	1,130	73	74	75	76	78	79
4	1,210	74	75	76	78	79	80
5	1,300	75	76	77	79	80	81
6	1,420	76	77	78	80	81	82

ARH-S	Three-lobes Helical rotor	Bore: 150 mm (6")
		Output: 15 - 37 kW (20 - 50 HP)

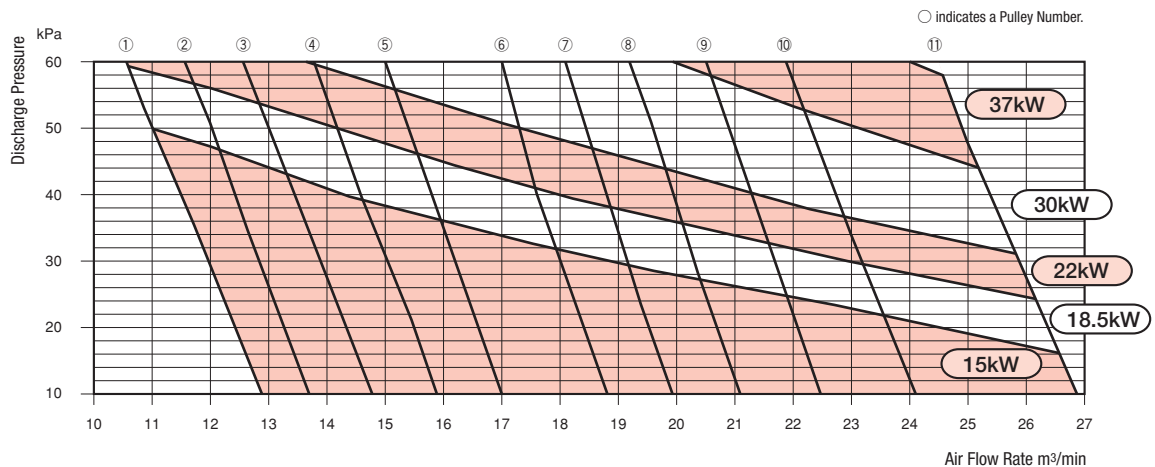
ARH150S Bore: 150mm (6")

Performance Table

Q: Air Flow Rate (m³/min), P: Power Requirements (kW)

Model	Pulley No.	Rotor speed (min⁻¹)	10kPa		15kPa		20kPa		25kPa		30kPa		35kPa		40kPa		45kPa		50kPa		55kPa		60kPa	
			Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
ARH150S	1	1,000	12.9	6.7	12.7	7.5	12.4	8.3	12.2	9.2	12.0	10.1	11.7	11.0	11.5	11.9	11.3	13.4	11.0	15.0	10.8	16.8	10.6	18.7
	2	1,060	13.7	7.1	13.5	7.9	13.3	8.7	13.1	9.7	12.9	10.8	12.6	11.7	12.4	12.7	12.2	14.4	12.0	16.1	11.8	17.8	11.6	19.7
	3	1,130	14.8	7.9	14.6	8.6	14.4	9.4	14.1	10.3	13.9	11.4	13.7	12.6	13.5	14.0	13.2	15.7	13.0	17.3	12.8	18.9	12.6	20.8
	4	1,210	15.9	8.1	15.7	9.0	15.5	9.9	15.3	11.1	15.1	12.2	14.8	13.8	14.6	15.3	14.4	16.8	14.2	18.5	14.0	20.3	13.8	22.2
	5	1,300	17.0	8.5	16.8	9.5	16.6	10.5	16.4	11.6	16.2	12.8	16.0	14.6	15.8	16.5	15.6	18.1	15.4	19.8	15.2	21.6	15.0	23.5
	6	1,420	18.8	9.1	18.6	10.1	18.4	11.1	18.2	12.4	18.0	13.8	17.8	16.1	17.7	18.2	17.5	20.1	17.3	22.0	17.2	23.7	17.0	25.5
	7	1,510	19.9	9.5	19.7	10.6	19.5	11.8	19.4	13.5	19.2	15.3	19.0	17.2	18.8	19.3	18.6	21.2	18.5	23.2	18.3	24.9	18.1	26.8
	8	1,590	21.1	9.9	20.9	11.1	20.7	12.4	20.5	14.3	20.3	16.4	20.1	18.3	20.0	20.4	19.8	22.5	19.6	24.7	19.4	26.7	19.2	28.7
	9	1,680	22.5	10.5	22.3	11.6	22.1	12.8	21.9	15.1	21.7	17.4	21.5	19.7	21.3	21.9	21.1	24.2	20.9	26.5	20.7	28.8	20.5	31.1
	10	1,770	24.1	11.9	23.9	12.7	23.7	13.7	23.4	16.3	23.2	18.8	23.0	21.2	22.8	23.6	22.5	26.1	22.3	28.5	22.1	30.6	21.9	33.0
	11	1,940	26.9	12.2	26.7	14.4	26.4	16.6	26.2	18.8	25.9	21.4	25.7	24.0	25.5	26.9	25.2	30.2	24.9	33.6	24.7	35.4		

The Standard Motor set has output of 15 - 37 kW.



Sound Level

Unit: dB (A)

Pulley No.	Rotor speed (min⁻¹)	Discharge Pressure (kPa)					
		10	20	30	40	50	60
1	1,000	72	73	74	75	77	78
2	1,060	72	73	74	75	77	78
3	1,130	73	74	75	76	78	79
4	1,210	74	75	76	78	79	80
5	1,300	75	76	77	79	80	81
6	1,420	76	77	78	80	81	82
7	1,510	77	78	80	81	82	83
8	1,590	77	79	81	82	83	84
9	1,680	79	80	81	82	83	84
10	1,770	81	82	83	84	85	86
11	1,940	83	84	85	85	86	87

ARH-S

Three-lobes Helical rotor

Bore: 200 mm (8")

Output: 18.5 - 55 kW (24 1/2 - 75 HP)

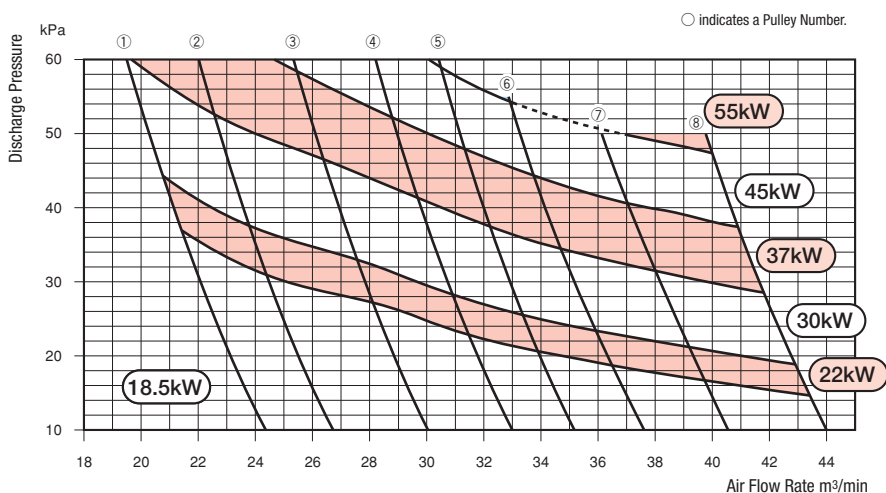
ARH200S Bore: 200mm (8")

Performance Table

Q: Air Flow Rate (m³/min), P: Power Requirements (kW)

Model	Pulley No.	Rotor speed (min⁻¹)	10kPa		15kPa		20kPa		25kPa		30kPa		35kPa		40kPa		45kPa		50kPa		55kPa		60kPa	
			Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
ARH200S	1	1,000	24.3	5.7	23.7	8.1	23.1	10.5	22.6	12.9	22.1	15.3	21.6	17.7	21.1	20.1	20.7	22.5	20.3	24.9	19.9	27.3	19.5	29.7
	2	1,100	26.7	7.2	26.1	9.9	25.5	12.6	25.0	15.3	24.5	18.0	24.0	20.7	23.6	23.4	23.2	26.1	22.8	28.8	22.4	31.5	22.0	34.2
	3	1,240	30.1	8.3	29.5	11.3	28.9	14.3	28.4	17.3	27.9	20.3	27.4	23.3	26.9	26.3	26.5	29.2	26.1	32.1	25.7	35.0	25.3	37.9
	4	1,360	33.0	10.1	32.4	13.3	31.8	16.5	31.3	19.7	30.8	22.9	30.3	26.1	29.8	29.3	29.4	32.5	29.0	35.7	28.6	38.9	28.2	42.0
	5	1,440	35.2	11.2	34.6	14.6	34.0	18.0	33.5	21.4	33.0	24.8	32.5	28.2	32.0	31.6	31.6	35.0	31.2	38.4	30.8	41.8	30.4	45.2
	6	1,530	37.6	12.0	37.0	15.7	36.4	19.4	35.8	23.1	35.2	26.8	34.7	30.5	34.2	34.2	33.7	37.9	33.3	41.5	32.9	45.1		
	7	1,660	40.6	13.1	40.0	17.0	39.4	20.9	38.8	24.8	38.2	28.7	37.6	32.6	37.1	36.5	36.6	40.4	36.1	44.3				
	8	1,750	44.0	14.4	43.4	18.5	42.8	22.6	42.2	26.7	41.7	30.8	41.2	34.9	40.7	39.0	40.2	43.1	39.8	47.2				

The Standard Motor set has output of 18.5 - 55 kW.



Sound Level

Unit: dB (A)

Pulley No.	Rotor speed (min⁻¹)	Discharge Pressure (kPa)					
		10	20	30	40	50	60
1	1,000	79	79	81	82	84	85
2	1,100	79	80	82	84	86	87
3	1,240	79	80	82	84	86	87
4	1,360	79	80	82	84	86	87
5	1,440	80	81	83	85	86	87
6	1,530	82	82	83	85	86	
7	1,660	84	85	86	87	88	
8	1,750	85	86	88	89	91	

Note 1) The air flow rate (measured in accordance with JISB8341) indicates a flow rate of suctioned air.

2) The tolerance of each air flow rate is $\pm 5\%$.

3) The noise level stipulated herein is a typical value measured 1m away from the machine.

($\pm 3\text{dB (A)}$ is not a guaranteed value.)

4) The noise level varies depending on base or pipe connection conditions.

5) If your specifications are out of those stipuated in the Handbook, please contact us.

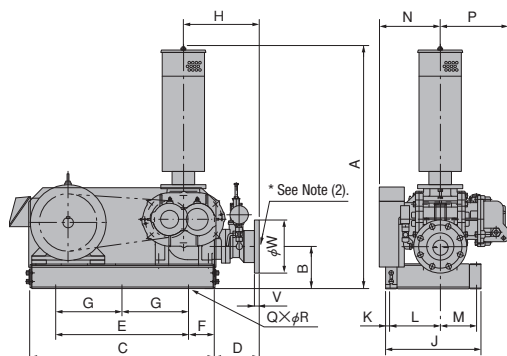
6) Blower Rotor speed is for reference.

7) Performance table is based on equipped IE1 motor

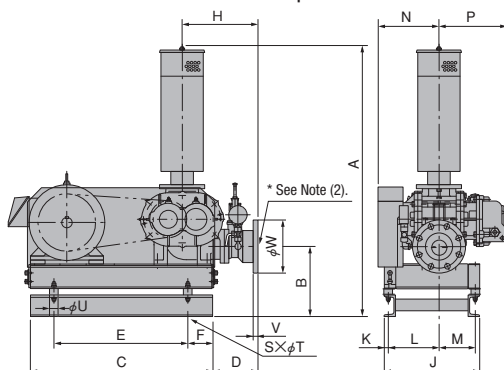
Dimensions

Unit: mm

● Standard dimensions



● Dimensions with a vibration-proof base



Model	Bore mm	Applicable Motor kW	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	Weight (kg)					
ARH20S	20	0.4~0.75	456	133	430	53	350	25	—	256	300	13	110	164	124	156	4	12	4	12	20	—	—	22					
ARH25S	25	0.4~1.5	(511)	(188)		25				228																			(26)
ARH32S	32	0.75~1.5	741	135	487	125	340	74	—	215	290	15	130	130	173	221		6						13	35	22	185	135	45
ARH40S	40	1.5~3.7	(841)	(235)	(479)	(129)		(70)						175	125	202												228	
ARH50S	50	1.5~3.7	809	137	556	120	400	78	—	207	330		174	126	212	234	247		175	100									
ARH65S	65	2.2~7.5	(909)	(237)	(548)	(124)	460	(74)	—	245																			
ARH80S	80	3.7~7.5	1,009	155	704	164	540	82	—	294	360	172	158	209	219	289	6	14	6	14	40	26	175	100					
		11	(1,108)	(254)	(696)	(168)			(78)																				
ARH100S	100	5.5~11	995	143	722	151	700	91	270	281	440	221	189	288	289	411	520	270	260	370	447	280	250	145					
ARH125S	125	7.5~18.5	(1,094)	(242)	(714)	(155)			(87)															(—)					
ARH125SA	125	11~22	1,098	150	788	266	700	44	350	491	570	20	234	196	372	395	6	14	6	14	40	26	170						
ARH125SF	125	15~30	(1,197)	(249)	(780)	(270)		(40)								265							215	390	435				
ARH150S	150	15~37	1,323	205	788	260	710	40	355	551	700	406	254	511	566	566	18.5	18.5	90	26	330	280							
ARH200S	200	18.5~55	(1,422)	(303)	(976)	(300)	900	53	400																				

Note 1) The punching in the flange of the discharging portion is in accordance with JIS10K.

2) The above dimensions are based on totally-enclosed fan-cooled indoor type (IP44) motor. A special motor may have a base with different dimensions.

3) Indoor installation is standard. If you want to install outdoor, please contact us.

* The value within the parenthesis is that with a vibration-proof base. * The weight does not include that of the motor (with a base).

* We also provide an electronic brochure for CAD drawings. Please contact us.

Standard Accessories

- Common Base 1 set
- Pulley, Belt and Belt Cover 1 set
- Pressure Gauge (with a gauge cock, 160 kPa, setscrew R $\frac{1}{4}$) 1 pc.

* A Pressure Gauge is not attached to ARH20S and ARH25S.

* Motor specifications : Please contact us.

- Suction Silencer (with a filter) 1 pc.
- Safety Valve (with a check valve) 1 set
- Motor of Totally-enclosed Fan-cooled Indoor Type (IP44) (with a base) 1 pc.

Motor Weight (with a Base)

Output (kW)	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55
Motor Weight (kg) (Including a motor base)	10	16	22	28	38	45	52	75	90	133	143	169	228	248	283

For motor starting and current ratings, see the specifications in the color pages.

The motor with output of 5.5 kW or higher can be started by Star-delta starting

ARH-SP

Three-lobes Helical rotor

Bore: 50 • 65 mm (2" • 2 1/2")

Output: 1.5 - 3.7 kW (2 - 5 HP)

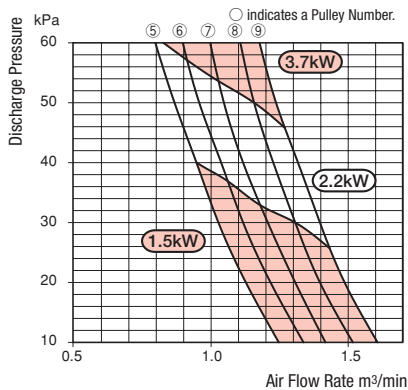
ARH50SP Bore: 50mm (2")

Performance Table

Q: Air Flow Rate (m³/min), P: Power Requirements (kW)

Model	Pulley No.	Rotor speed (min⁻¹)	10kPa		15kPa		20kPa		25kPa		30kPa		35kPa		40kPa		45kPa		50kPa		55kPa		60kPa	
			Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
ARH50SP	5	2,380	1.25	0.83	1.19	0.97	1.13	1.12	1.08	1.19	1.03	1.28	0.99	1.39	0.95	1.50	0.91	1.68	0.87	1.86	0.84	2.02	0.80	2.18
	6	2,520	1.34	0.95	1.28	1.08	1.22	1.20	1.17	1.28	1.12	1.35	1.08	1.45	1.04	1.55	1.00	1.76	0.96	1.96	0.93	2.13	0.90	2.30
	7	2,620	1.42	1.07	1.37	1.19	1.31	1.32	1.26	1.36	1.21	1.42	1.17	1.55	1.12	1.70	1.09	1.89	1.05	2.08	1.03	2.25	1.00	2.41
	8	2,790	1.52	1.15	1.46	1.09	1.40	1.40	1.36	1.45	1.31	1.50	1.27	1.66	1.23	1.82	1.20	2.01	1.16	2.20	1.14	2.39	1.11	2.57
	9	3,000	1.61	1.30	1.55	1.40	1.49	1.50	1.45	1.64	1.40	1.78	1.36	1.92	1.32	2.06	1.28	2.20	1.24	2.33	1.21	2.51	1.18	2.69

The Standard Motor set has output of 1.5 - 3.7 kW.



Sound Levels

Unit: dB (A)

Pulley No.	Rotor speed (min⁻¹)	Discharge Pressure (kPa)					
		10	20	30	40	50	60
5	2,380	70	71	71	71	72	74
6	2,520	70	71	71	71	72	74
7	2,620	71	71	72	72	73	74
8	2,790	71	72	72	73	73	75
9	3,000	71	72	72	73	74	75

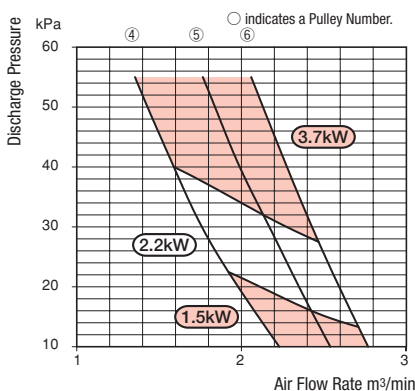
ARH65SP Bore: 65mm (2 1/2")

Performance Table

Q: Air Flow Rate (m³/min), P: Power Requirements (kW)

Model	Pulley No.	Rotor speed (min⁻¹)	10kPa		15kPa		20kPa		25kPa		30kPa		35kPa		40kPa		45kPa		50kPa		55kPa		60kPa	
			Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
ARH65SP	4	1,850	2.23	1.1	2.11	1.3	1.98	1.4	1.87	1.6	1.76	1.8	1.67	2.0	1.59	2.2	1.51	2.5	1.43	2.7	1.35	2.9	—	—
	5	2,080	2.54	1.2	2.45	1.5	2.35	1.7	2.26	1.9	2.17	2.1	2.08	2.4	1.99	2.6	1.91	2.8	1.84	3.0	1.76	3.2	—	—
	6	2,230	2.77	1.3	2.68	1.6	2.59	1.9	2.51	2.1	2.43	2.3	2.36	2.6	2.28	2.8	2.21	3.1	2.13	3.3	2.06	3.4	—	—

The Standard Motor set has output of 1.5 - 3.7 kW.



Sound Levels

Unit: dB (A)

Pulley No.	Rotor speed (min⁻¹)	Discharge Pressure (kPa)					
		10	20	30	40	50	60
4	1,850	70	70	71	72	73	74
5	2,080	70	71	72	73	74	75
6	2,230	72	74	74	74	75	75

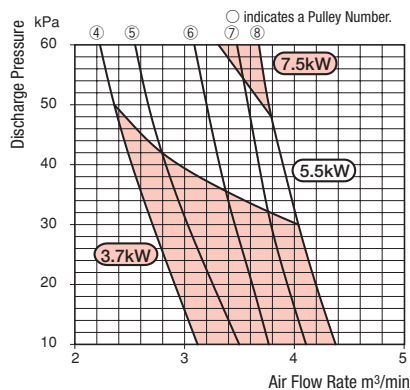
ARH80SP Bore: 80mm (3")

Performance Table

Q: Air Flow Rate (m³/min), P: Power Requirements (kW)

Model	Pulley No.	Rotor speed (min ⁻¹)	10kPa		15kPa		20kPa		25kPa		30kPa		35kPa		40kPa		45kPa		50kPa		55kPa		60kPa	
			Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
ARH80SP	4	1,730	3.12	1.5	3.01	1.8	2.91	2.0	2.81	2.2	2.71	2.7	2.61	2.9	2.52	3.2	2.42	3.4	2.36	3.7	2.30	3.9	2.23	4.2
	5	1,960	3.50	1.7	3.37	2.0	3.26	2.2	3.14	2.7	3.03	3.1	2.92	3.3	2.83	3.6	2.73	3.9	2.67	4.1	2.61	4.3	2.55	4.6
	6	2,200	3.77	1.9	3.70	2.2	3.62	2.4	3.54	2.8	3.46	3.2	3.39	3.7	3.32	4.1	3.26	4.5	3.20	4.9	3.15	5.2	3.09	5.4
	7	2,350	4.11	2.2	4.03	2.3	3.94	2.5	3.87	3.0	3.79	3.5	3.74	4.0	3.68	4.4	3.63	4.8	3.58	5.1	3.53	5.5	3.48	6.0
	8	2,500	4.38	2.4	4.29	2.6	4.20	2.8	4.12	3.3	4.04	3.7	3.97	4.2	3.90	4.7	3.84	5.2	3.77	5.7	3.73	6.1	3.68	6.5

The Standard Motor set has output of 3.7 - 7.5 kW.



Sound Levels

Unit: dB (A)

Pulley No.	Rotor speed (min ⁻¹)	Discharge Pressure (kPa)					
		10	20	30	40	50	60
4	1,730	67	68	69	71	72	73
5	1,960	67	69	70	71	73	73
6	2,200	68	70	71	72	73	75
7	2,350	70	71	72	73	74	76
8	2,500	72	73	74	75	75	76

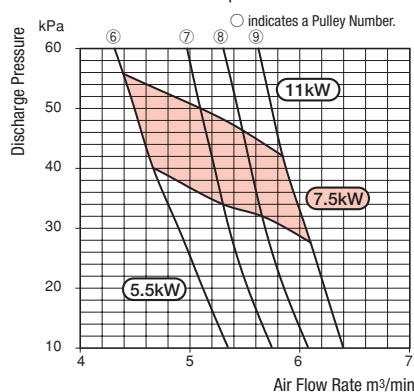
ARH100SP Bore: 100mm (4")

Performance Table

Q: Air Flow Rate (m³/min), P: Power Requirements (kW)

Model	Pulley No.	Rotor speed (min ⁻¹)	10kPa		15kPa		20kPa		25kPa		30kPa		35kPa		40kPa		45kPa		50kPa		55kPa		60kPa	
			Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
ARH100SP	6	1,830	5.34	2.4	5.22	3.0	5.11	3.5	5.00	4.1	4.89	4.6	4.77	5.1	4.66	5.5	4.58	6.2	4.49	6.8	4.40	7.4	4.31	8.0
	7	2,040	5.74	2.8	5.63	3.4	5.52	4.0	5.44	4.6	5.35	5.2	5.29	5.6	5.22	6.2	5.16	6.9	5.09	7.5	5.03	8.1	4.97	8.6
	8	2,150	6.07	3.0	5.96	3.7	5.85	4.2	5.77	4.8	5.68	5.3	5.62	6.0	5.55	6.6	5.49	7.4	5.43	7.8	5.37	8.5	5.30	9.1
	9	2,270	6.39	3.5	6.31	4.1	6.22	4.6	6.14	5.2	6.05	5.8	5.96	6.6	5.87	7.3	5.81	7.8	5.74	8.5	5.68	9.1	5.62	9.7

The Standard Motor set has output of 5.5 - 11 kW.



Sound Levels

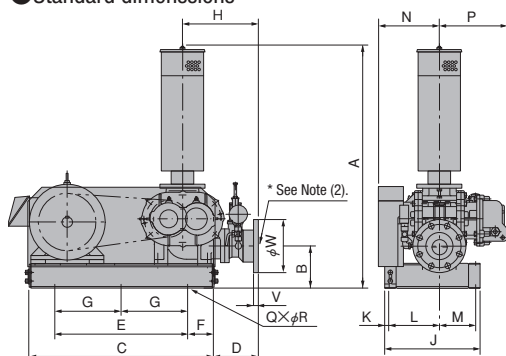
Unit: dB (A)

Pulley No.	Rotor speed (min ⁻¹)	Discharge Pressure (kPa)					
		10	20	30	40	50	60
6	1,830	75	76	77	78	79	80
7	2,040	76	77	78	79	79	80
8	2,150	77	78	78	79	79	80
9	2,270	77	78	79	79	79	80

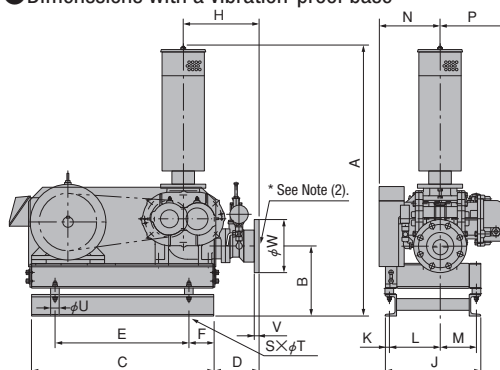
- Note 1) The air flow rate (measured in accordance with JISB8341) indicates a flow rate of suctioned air.
 2) The tolerance of each air flow rate is $\pm 5\%$.
 3) The noise level stipulated herein is a typical value measured 1m away from the machine.
 (± 3 dB (A) is not a guaranteed value.)
 4) The noise level varies depending on base or pipe connection conditions.
 5) If your specifications are out of those stipulated in the Handbook, please contact us.
 6) Blower Rotation Speed is for reference.
 7) Performance table is based on equipped IE1 motor.

Dimensions

● Standard dimensions



● Dimensions with a vibration-proof base



Model	Bore mm	Applicable Motor kW	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	Weight (kg)
ARH50SP	50	1.5 - 3.7	741 (841)	135 (235)	487 (479)	120 (124)	340	74 (70)	—	210	290		130	130	173	221							155 (53)	45 (53)
ARH65SP	65	1.5 - 3.7	809 (909)	137 (237)	556 (548)	125 (129)	400	78 (74)	—	212			175	125	202	228	4				25	16	175	70 (79)
ARH80SP	80	3.7 - 7.5	948 (1,047)	147 (246)	636 (628)	153 (157)	460	88 (84)	—	260			174	126	212	234		13	4	13			185	100 (111)
ARH100SP	100	5.5 - 7.5	1,009 (1,108)	155 (254)	704 (696)			82 (78)	—		360		172	158	209						35	18		140 (152)
		11	995 (1,094)	143 (242)	722 (714)	164 (168)	540	91 (87)	270 (—)	294	440		165	245	219		6						210	145 (160)

Note 1) The punching in the flange of the discharging portion is in accordance with JIS10K.

2) The above dimensions are based on totally-enclosed fan-cooled indoor type (IP44) motor. A special motor may have a base with different dimensions.

3) Indoor installation is standard. If you want to install outdoor, please contact us.

* The value within the parenthesis is that with a vibration-proof base. * The weight does not include that of motor (with a base).

* We also provide an electronic brochure for CAD drawings. Please contact us.

Blower

Standard Accessories

- Common Base1 set
- Pulley, Belt and Belt Cover1 set
- Pressure Gauge (with a gauge cock, 160 kPa, setscrew R¹/₄)1 pc.

- Suction Silencer (with a filter)1 pc.
- Safety Valve (with a check valve)1 set
- Motor of Totally-enclosed Fan-cooled Indoor Type (IP44) (with a base)1 pc.

* Motor specifications : Please contact us.

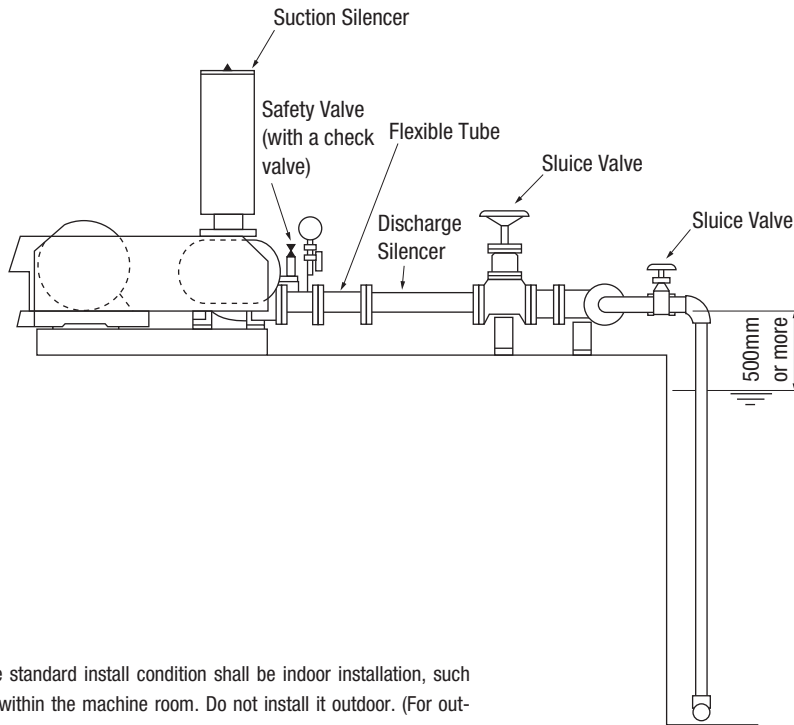
Motor Weight (with a Base)

Output (kW)	1.5	2.2	3.7	5.5	7.5	11
Motor Weight (kg) (Including a motor base)	22	28	38	45	52	75

For motor starting and current ratings, see the specifications in the color pages.

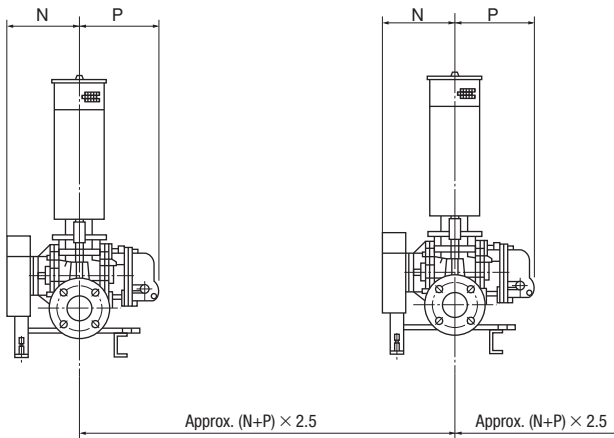
The motor with output of 5.5 kW or higher can be started by Star-delta starting.

■ Installation Example



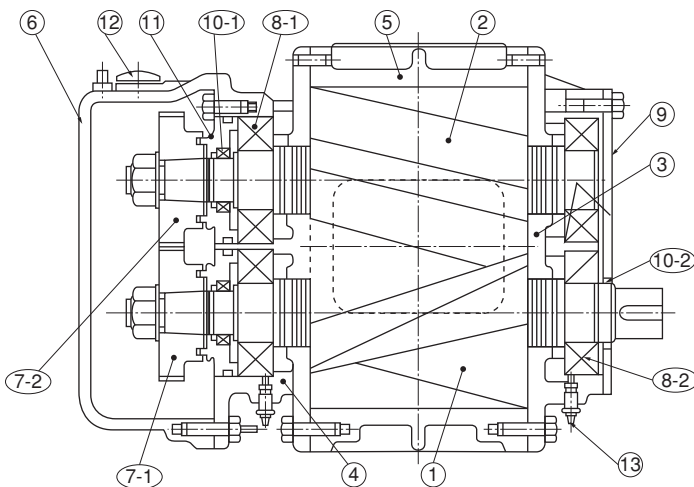
Note 1) The standard install condition shall be indoor installation, such as within the machine room. Do not install it outdoor. (For outdoor installation, please contact us.)

- 2) Install exhaust fan to maintain temperature within the machine room is 40°C or less.
- 3) If several Blowers are installed, place discharge pipes with keeping space $(N+P) \times 2.5$ or more apart from each blowers for maintenance purposes, as shown below:



- 4) Install blower Pipes not less than 500mm above the surface level to prevent any backflow into blower when blower stops operation.
- 5) For motor-related issues, read the motor operation manual carefully. Specifically, for motors requires to fill up of grease, use grease in accordance with the instruction plate provided on the motor.
- 6) High-humid hot air or gas may cause corrosion of rotor, resulting in the rotor lock when blower remains inoperative for a long time. Install a drain gas filter on suction side to remove humidity. In addition, water may be pooled in suction pipe, provide a drain in suction pipe draining water completely.
If you are planning to use Non-electrolytic nickel plating or sealing specifications, please contact us.
- 7) On the operation panel, set the current value by 5% above of that for normal operation for thermal setting.

Sectional View



Note 1) ARH20S • 25S • 32S • 40S • 50SP: Bearing Plate ③ and Casing ⑤ are manufactured in one piece parts.

2) ARH125SF • 150S • 200S: Rotor is made of FC200 (helical portion) and S45C (shaft portion).

ARH20S – 125SA: Helical and shaft are manufactured of FCD500 in one piece parts.

3) ARH20S • 25S, ARH125S – 200S: Bearing Cover is made of FC200.

ARH32S – 65S: Bearing Cover is made of SPHC.

ARH80S, 100S: Bearing Cover is made of SPCC.

4) Use proper grease every three months.

5) Replace Gear Oil #220 every three months entirety. (The blower is shipped with **Shell Omara S2G 220**.)

For an amount of Oil, see the specifications (detail date) - App.1.

6) Bearings of ARH20S - 125S are special ones. Be sure to replace them with genuine ones upon overhaul. (Never use a commercialize bearings.)

Number	Name	Material
1	Rotor (Drive Side)	FCD500
2	Rotor (Driven Side)	FCD500
3	Bearing Plate	FC200
4	Bearing Case	FC200
5	Casing	FC200
6	Gear Case	FC200
7-1	Timing Gear	SCM415
7-2	Timing Gear	SCM415
8-1	Ball Bearing	—
8-2	Ball Bearing	—
9	Bearing Cover	SS400/SPHC/SPCC
10-1	Oil Seal	Fluororubber
10-2	Oil Seal	NBR
11	Oil Stopper	SS400
12	Oil Gauge	—
13	Grease Nipple	—

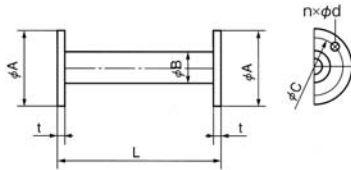
* Note **SCM** : Chromium molybdenum steel **SUS** : Stainless steel **SCS** : Stainless steel casting **SS** : Mild steel **SPHC** • **SPCC** : Steel
S45C : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

Optional Accessories

Unit: mm

Discharge Silencer (Punching and outer diameter on the both flanges are in accordance with JIS10K.)

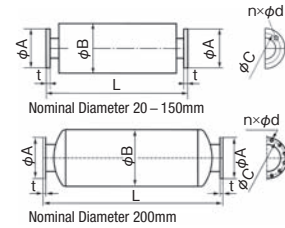
Type A



Nominal Diameter	L	A	B	C	n	d	t	Weight (kg)
20	380	100	43	75	4	15	14	2.5
25		125		90		19		4.0
32		450		135				100
40	140		49	105			4.8	
50	560		155	61		120	6.5	
65	610	175	76	140		8	23	20
80	770	185	89	150	11			
100	1,060	210	114	175	18			
125	1,160	250	140	210				27

* We can meet you special order for Discharge Silencer made of stainless steel.

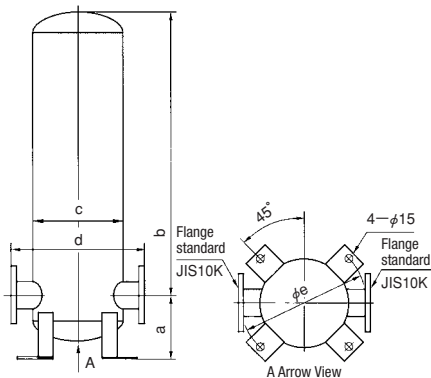
Type B



Nominal Diameter	L	A	B	C	n	d	t	Weight (kg)
20	380	100	102	75	4	15	14	4.6
25		125		90				5.6
32	450	135	140	100		19	16	8.1
40		140		105				8.4
50	560	155	120	11				
65	610	175	170	140	18		15	
80	770	185	210	150			22	
100	1,060	210	250	175	8		39	
125	1,160	250	290	210		23	20	59
150	1,110	280	350	240			22	69
200	1,440	330	462	290				12

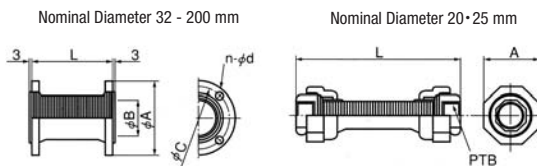
* We can meet you special order for Discharge Silencer made of stainless steel.

Self-standing



Nominal Diameter	a			b	c	d	e	t
	For Standard Base	For Vibration Isolating Rubber	For Vibration- Proof Base					
20	133	148	188	250	130	230	220	14
25								
32	135	160	235	300	140	250	230	16
40								
50	137	162	237	370	160	300	250	
65	147	171	246	440	200	350	300	
80	155	179	254	540	250	400	350	18
100	150	174	249	850				
125	193	217	292	930	350	510	490	
125	205	228	303					
150				1,200	460	640	600	24
200				224	271	271	1,400	

Flexible Tube



Nominal Diameter	L	A	B	C	n	d	t	Weight (kg)
20	300	47	Rc3/4	-	-	-	-	1
25		56	Rc1					
32		135	41					
40	230	140	46	105	4	19	16	4
50		155	54	120				
65		175	67	140				
80	300	185	79	150	8	23	18	6
100		210	104	175				
125		250	129	210				
150	300	280	152	240	12	23	22	15
200		330	203	290				

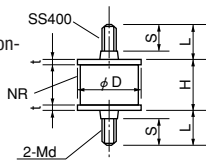
Punching and outer diameter on the both flanges are in accordance with JIS10K. (Nominal diameter: 32 - 200)

Flange made of mild steel SS400 (We can meet you special order for flange made of stainless steel.)

●Vibration Isolating Rubber

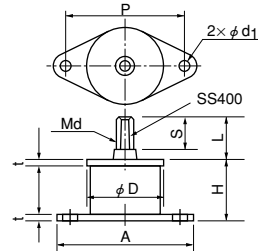
Type A

(For Vibration-proof Base)



Applicable Model	D	H	d	L	S	t	Pieces/Unit
ARH20S/25S	20	15	6	15	12	1.6	4
ARH32S							
ARH40S-50SP	25	27	6	18	15	2.3	4
ARH50S-65SP							
ARH65S-80SP							4
ARH80S-100SP							
ARH100S	35	26	8	24	20	2.3	6
ARH125S							8
ARH125SA							
ARH125SF-150S	40	25	8	30	25	2.3	9
ARH200S	90	50	12	45	40	4.5	7

Type B



Applicable Model	D	H	d	L	S	A	P	d ₁	t	Pieces/Unit
ARH20S/25S	20	15	6	15	12	49	36	7	1.6	4
ARH32S										
ARH40S-50SP	25	27	6	18	15	56	42	7	2.3	4
ARH50S-65SP										
ARH65S-80SP										4
ARH80S-100SP										
ARH100S	35	26	8	24	20	69	53	9	2.3	6
ARH125S										8
ARH125SA										
ARH125SF-150S	40	25	8	30	25	76	60	9	2.3	9
ARH200S	90	50	12	45	40	141	117	13.5	4.5	7

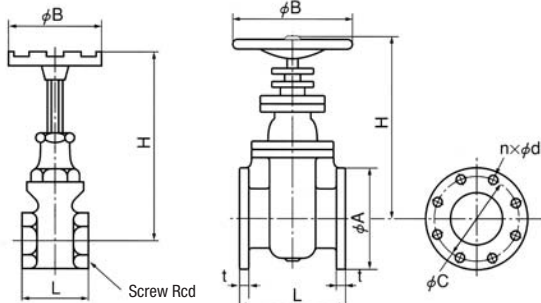
●Sluice Valve

For φ 20 - 40

For φ 50 - 200

Nominal Diameter: 20 - 40 mm

Nominal Diameter: 50 - 200 mm



Punching on the both flanges is in accordance with JIS10K (Nominal diameter: 50 - 200 mm)

Nominal Diameter	L	H	A	B	C	n	d	t	Weight (kg)
20	47	90		55			3/4		0.6
25	50	103		60			1		0.7
32	60	118		70			1 1/4		0.9
40	63	135		80			1 1/2		1.2
50	150	235	155	140	120	4		20	10
65	160	266	175	160	140			22	14
80	175	293	185		150			24	17
100	200	360	210		175	8		26	25
125	225	406	250	224	210			28	36
150	265	453	280		240			30	37
200	290	608	330	280	290	12		32	90

■Others

Item	Remark
Motor Changes	Totally-enclosed Fan-cooled Outdoor Type Tropical Climate Specifications Safety-enhanced Explosion-proof Type Corrosion-proof
Belt Cover	With a V-belt Inspection Window
Pressure Gauge	Pressure Gauge Stand
Noise-proof Cover	—

Submersible Type Helical Rotor Blower (Roots-Type)

Bore: 25 - 125 mm (1" - 5")

Output: 0.4 - 15 kW (1/2 - 20 HP)

RB-H

The RB-H series is a submersible type free standing helical rotor roots blower designed for water treatment. A blower room is not necessary and significantly reduce sound level as it is of submersible type. The body is compact and easy to handle.

Bore mm (inch)	Output kW (HP)	Pump Model	Page
25 (1")	0.4 (1/2)	RB25H	470 (50Hz)
32 (1 1/4")	0.75 (1)	RB32H	
40 (1 1/2")	1.5 (2)	RB401H	
		RB402H	
50 (2")	2.2 (3)•3.7 (5) *5.5 (7.5)	RB50AH	471 (60Hz)
		RB50BH	
65 (2 1/2")	3.7 (5)•5.5 (7.5)	RB65H	
80 (3")	5.5 (7.5)•7.5 (10)	RB80H	
100 (4")	7.5 (10)•11 (15)	RB100H	
125 (5")	11 (15)•15 (20)	RB125H	

* 50mm, 5.5kW is only for 60Hz.

Features

● Reducing the installation space to half that of the land type

Structure with slimmer silencer and vertical rotor shaft design realized reduction of installation space to half that of the land type. The opening space of a blower tank to be installed can be also reduced.

● Adopting a 3-lobes helical rotor

The adoption of a helical rotor enhances performance up to 60 kPa of discharge pressure (for RB50AH-RB125H). Normally, the helical rotor emitting little pulsation noise eliminates the need for noise-proof measures other than silencers provided in two tiers on the suction side – one in the water and one on the ground.

● Proven reliability

Uses a time-proven air-filled type submersible motor as a rotor driving motor. Casing sealed with O-ring is watertight. Fluororubber with high temperature resistance and durability is used as oil seal. A labyrinth structure is adopted for oil-containing parts to prevent oil leakage.

● Simple installation reduces installation time

No need for anchor bolts because of no requirement of base or stand. installation is completed just by placing blower on the bottom of the tank and supporting the suction and discharge pipes in the upper part of the tank. Since blower is provided with vibration isolating rubber at the contact portion with the bottom of tank to absorb or prevent transmission of blower vibration, so that it can be also used in FRP tanks.

● Easy maintenance

A ball bearing is used to eliminate the risk of causing damage to an inner race during disassembly and assembly, and facilitate work. Since it is cooled underwater, no need to change gear lubrication oil about two years.

Modification Examples

- Special Suction Silencer (made of stainless steel and electrode position coating)
- Noise-proof Cover for Suction Silencer



Applications

Aeration at water treatment process

- Sewage treatment plants
- Septic tanks
- Industrial wastewater
- Livestock wastewater

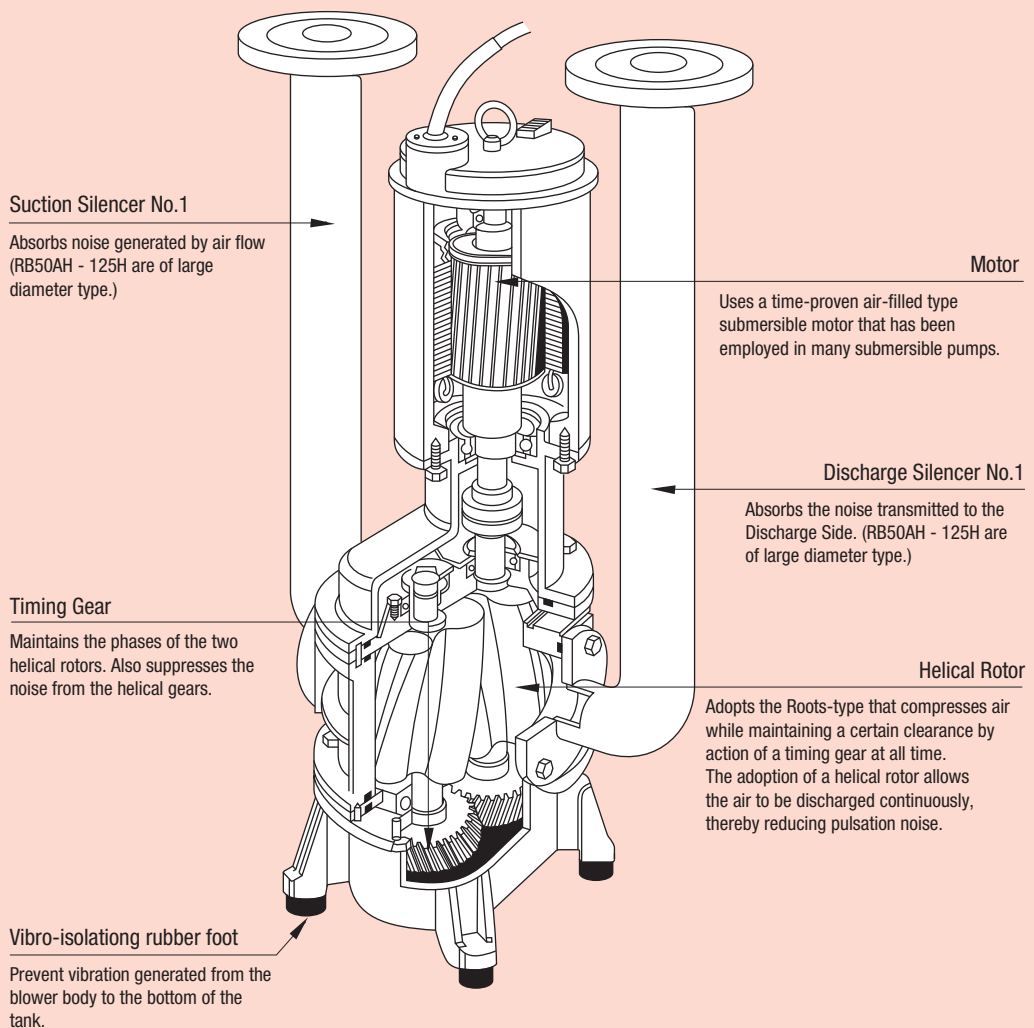
Others

- Supplying oxygen at aquariums or fish farm
- Foaming generation at baths and swimming pools

Standard Specifications

Handled Gas	Type	Air
	Temperature	0 - 32°C
	Shaft Seal	Oil Seal and Labyrinth Seal
	Upper Bearing	Sealed Ball Bearing
	Lower Bearing	Ball Bearing
Material	Rotor	Ductile iron casting (FCD500)
	Casing	Gray iron casting (FC200)
Electric Motor	Type	Air-filled type Submersible Induction Motor
	Insulation Class	Class E
	Enclosure	IP68
	Phase	3-ph
	Voltage	200 - 480V
Painting	Epoxy Resin Paint (with a thickness of 50 μm or more)	

■ Explanation Drawing



Standard Specifications

50Hz

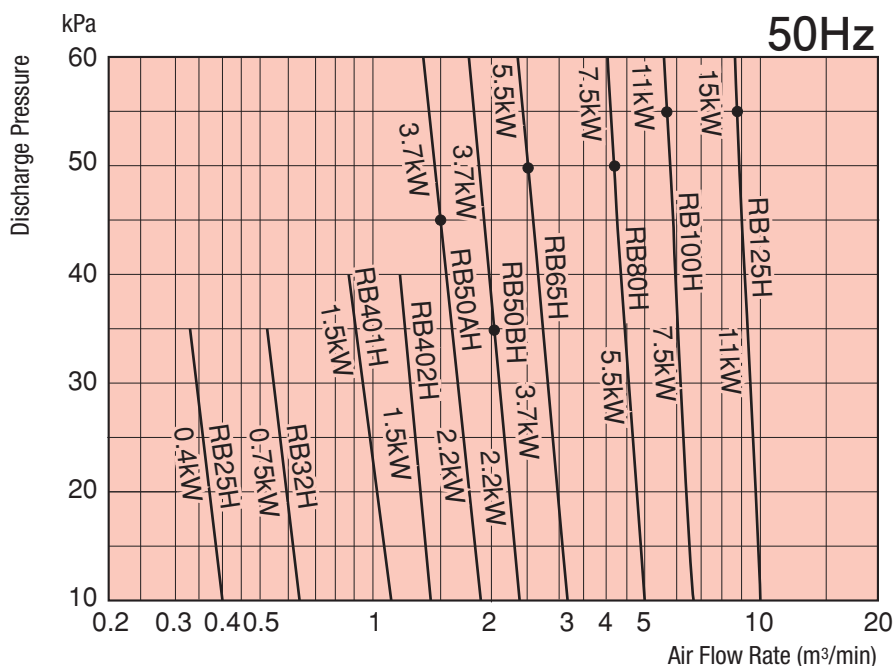
Bore mm (inch)	Model	Output kW (HP)	Phase	No. of poles	Discharge Pressure / Air flow rate m³/min											Weight kg
					10kPa	15kPa	20kPa	25kPa	30kPa	35kPa	40kPa	45kPa	50kPa	55kPa	60kPa	
25 (1")	RB25H	0.4 (1/2)	3-ph	2	0.40	0.39	0.37	0.36	0.34	0.33	—	—	—	—	—	43
32 (1 1/4")	RB32H	0.75 (1)	3-ph	2	0.62	0.60	0.58	0.56	0.54	0.52	—	—	—	—	—	48
40 (1 1/2")	RB401H	1.5 (2)	3-ph	2	1.09	1.05	1.02	0.99	0.95	0.91	0.87	—	—	—	—	60
	RB402H				1.39	1.36	1.32	1.28	1.25	1.21	1.17	—	—	—	—	62
50 (2")	RB50AH	2.2 (3)	3-ph	2	1.83	1.78	1.73	1.68	1.63	1.59	1.54	1.50	—	—	—	120
		3.7 (5)			1.83	1.78	1.73	1.68	1.63	1.59	1.54	1.50	1.45	1.41	1.36	
	RB50BH	2.2 (3)	3-ph	2	2.27	2.23	2.18	2.14	2.09	2.05	—	—	—	—	—	130
		3.7 (5)			2.27	2.23	2.18	2.14	2.09	2.05	2.00	1.95	1.90	1.85	1.80	
65 (2 1/2")	RB65H	3.7 (5)	3-ph	2	3.03	2.95	2.88	2.79	2.70	2.63	2.56	2.51	2.45	—	—	140
		5.5 (7.5)			3.03	2.95	2.88	2.79	2.70	2.63	2.56	2.51	2.45	2.40	2.34	
80 (3")	RB80H	5.5 (7.5)	3-ph	4	4.80	4.72	4.64	4.56	4.48	4.40	4.32	4.24	4.16	—	—	230
		7.5 (10)			4.80	4.72	4.64	4.56	4.48	4.40	4.32	4.24	4.16	4.08	4.00	
100 (4")	RB100H	7.5 (10)	3-ph	4	6.50	6.40	6.30	6.20	6.10	6.00	5.90	5.80	5.70	5.60	—	300
		11 (15)			6.50	6.40	6.30	6.20	6.10	6.00	5.90	5.80	5.70	5.60	5.50	
125 (5")	RB125H	11 (15)	3-ph	4	10.0	9.85	9.70	9.55	9.40	9.25	9.10	8.95	8.80	8.65	—	390
		15 (20)			10.0	9.85	9.70	9.55	9.40	9.25	9.10	8.95	8.80	8.65	8.50	

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

* Air Flow Rate indicates an air flow rate of the suctioned air.

* The tolerance of each air flow rate is $\pm 5\%$.

Performance Curves



* Air Flow Rate indicates an air flow rate of the suctioned air.

* The tolerance of each air flow rate is $\pm 5\%$.

Standard Specifications

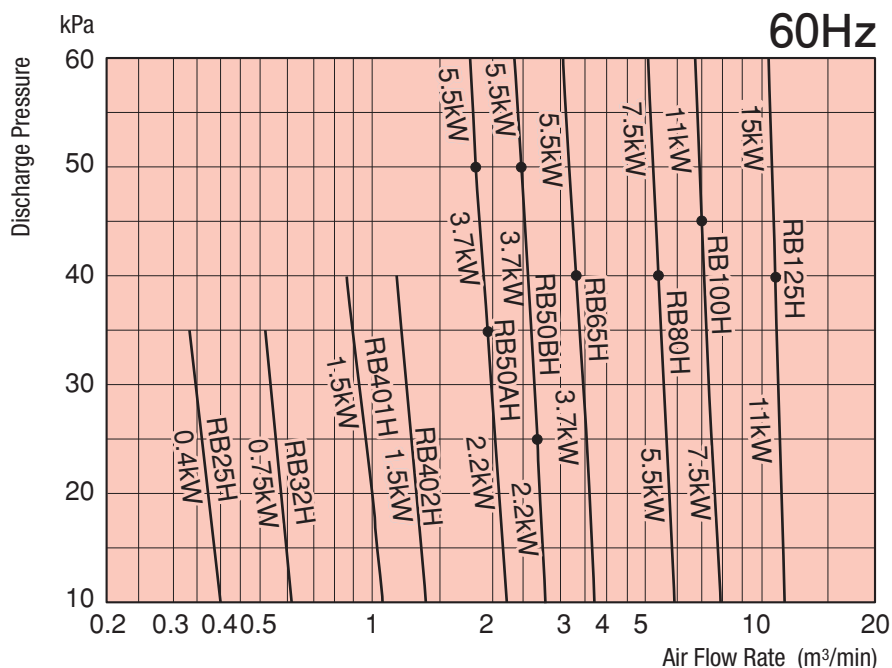
Bore mm (inch)	Model	Output kW (HP)	Phase	No. of poles	Discharge Pressure / Air flow rate m ³ /min											Weight kg
					10kPa	15kPa	20kPa	25kPa	30kPa	35kPa	40kPa	45kPa	50kPa	55kPa	60kPa	
25 (1")	RB25H	0.4 (1/2)	3-ph	2	0.40	0.39	0.37	0.36	0.34	0.33	—	—	—	—	—	43
32 (1 1/4")	RB32H	0.75 (1)	3-ph	2	0.62	0.60	0.58	0.56	0.54	0.52	—	—	—	—	—	48
40 (1 1/2")	RB401H	1.5 (2)	3-ph	2	1.09	1.05	1.02	0.99	0.95	0.91	0.87	—	—	—	—	60
	RB402H				1.39	1.36	1.32	1.28	1.25	1.21	1.17	—	—	—	—	62
50 (2")	RB50AH	2.2 (3)	3-ph	2	2.17	2.13	2.08	2.04	1.99	1.95	—	—	—	—	—	120
		3.7 (5)			2.17	2.13	2.08	2.04	1.99	1.95	1.90	1.86	1.81	—	—	
		5.5 (7.5)			2.17	2.13	2.08	2.04	1.99	1.95	1.90	1.86	1.81	1.77	1.72	
	RB50BH	2.2 (3)	3-ph	2	2.75	2.70	2.66	2.61	—	—	—	—	—	—	—	130
		3.7 (5)			2.75	2.70	2.66	2.61	2.56	2.51	2.47	2.42	2.37	—	—	
		5.5 (7.5)			2.75	2.70	2.66	2.61	2.56	2.51	2.47	2.42	2.37	2.33	2.28	
65 (2 1/2")	RB65H	3.7 (5)	3-ph	2	3.71	3.64	3.58	3.48	3.40	3.33	3.25	—	—	—	—	140
		5.5 (7.5)			3.71	3.64	3.58	3.48	3.40	3.33	3.25	3.20	3.15	3.10	3.05	
80 (3")	RB80H	5.5 (7.5)	3-ph	4	5.98	5.89	5.80	5.71	5.62	5.53	5.44	—	—	—	—	230
		7.5 (10)			5.98	5.89	5.80	5.71	5.62	5.53	5.44	5.35	5.27	5.18	5.10	
100 (4")	RB100H	7.5 (10)	3-ph	4	7.94	7.81	7.68	7.55	7.42	7.29	7.16	7.03	—	—	—	300
		11 (15)			7.94	7.81	7.68	7.55	7.42	7.29	7.16	7.03	6.91	6.78	6.66	
125 (5")	RB125H	11 (15)	3-ph	4	11.8	11.7	11.5	11.4	11.2	11.1	10.9	—	—	—	—	390
		15 (20)			11.8	11.7	11.5	11.4	11.2	11.1	10.9	10.8	10.6	10.5	10.3	

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

* Air Flow Rate indicates an air flow rate of the suctioned air.

* The tolerance of each air flow rate is $\pm 5\%$.

Performance Curves



* Air Flow Rate indicates an air flow rate of the suctioned air.

* The tolerance of each air flow rate is $\pm 5\%$.

Standard Accessories

- Cable

Cable with a length of 6 m for RB25H - 402H1 pc.
Cable with a length of 8 m for RB50AH - 100H (7.5kW)1 pc.
Cable with a length of 8 m for RB100H (11kW) and 125H3 pcs.

- Lifting Chain (6 m)1 pc. (4 m for RB25H - 402H)

- Suction Silencer No.1 (attached to blower body) ..1 set
- Discharge Silencer No.1 (attached to blower body) ..1 set
- Safety Valve (Check Valve)1 set
- Expansion Joint2 pcs.
- Pressure Gauge (with a Gauge Cock, 160 kPa, setscrew 1/4) ...1 set

* The Suction Silencer No.2 is optional accessory.

Part Specifications

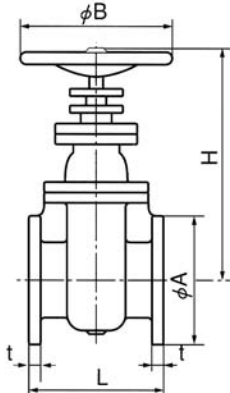
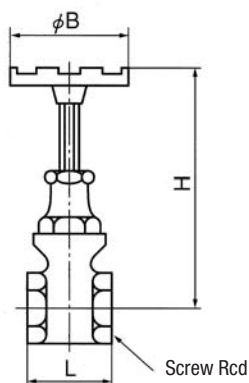
Applicable Model		Cable Specifications			Starting Method
		Type	Section Area (mm ²)	Cores	
RB25H·32H·401H·402H	0.4·0.75·1.5 (1/2·1·2)	VCT	1.25	4	Direct
RB401H·402H·50AH·50BH	2.2·3.7 (3·5)		2.0	4	
RB50AH·50BH·65H·80H	5.5 (7.5)		3.5	4	
RB80H·100H	7.5 (10)		5.5	4	
RB100H·125H	11(15)	2PNCT	1.25	2	Star-delta
			5.5	3	
			5.5	4	
RB125H	15 (20)	2PNCT	1.25	2	
			8.0	3	
			8.0	4	

Special Accessories

- Sluice Valve

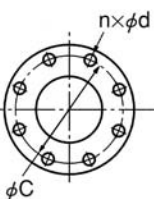
For $\phi 25 - 40\text{mm}$

For $\phi 50 - 125\text{mm}$



Normal Dia. (mm)	L	H	A	B	C	n	d	t	Weight kg
20	47	90	—	55	—	—	3/4	—	0.6
25	50	103	—	60	—	—	1	—	0.7
32	60	118	—	70	—	—	1 1/4	—	0.9
40	63	135	—	80	—	—	1 1/2	—	1.2
50	150	235	155	140	120	4	19	20	10
65	160	266	175	160	140			22	14
80	175	293	185		150			24	17
100	200	360	210	224	175	8	23	24	25
125	225	406	250		210				36

Outer dia., hole pitch and hole dia. of flange comply with JIS10K (Normal dia. 50-200mm)



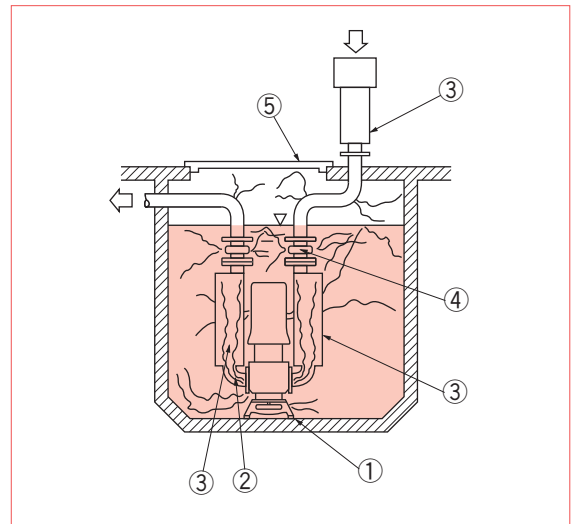
■ Noise Levels (dB (A))

Model	Pressure (kPa)	50Hz						60Hz					
		10	20	30	40	50	60	10	20	30	40	50	60
RB25H		47	48	50	—	—	—	47	48	50	—	—	—
RB32H		47	48	50	—	—	—	47	48	50	—	—	—
RB401H		50	51	52	53	—	—	50	51	52	53	—	—
RB402H		50	51	52	53	—	—	50	51	52	53	—	—
RB50AH		52	53	53	54	54	55	55	55	55	55	56	56
RB50BH		53	53	54	55	55	56	54	54	54	54	54	54
RB65H		58	58	59	60	61	62	60	60	59	59	59	59
RB80H		60	60	59	59	58	58	62	62	61	61	61	60
RB100H		53	55	57	58	59	59	55	56	58	59	60	61
RB125H		64	65	66	66	66	66	65	66	66	66	67	67

* The noise level stipulated herein is measured 1m away from the Silencer No.2. (± 3 dB (A)).

■ Noise Reduction Method for Submersible Type Helical Rotor Blower

- ① A vibration isolating rubber is used to prevent vibration from to the floor, thereby reducing noise emitted from the floor or wall.
- ② Shapes of the casing and silencer are so designed to reduce noise more into the water from the body and less into the air through pipes. Most of the noise emitted into the water is not released into the air as it is reflected on the boundary layer between water and air.
- ③ Noise emitted through pipes to the suction and discharge sides is absorbed by the silencer.
- ④ Expansion joint is also used to reduce the noise emitted by pipe vibration.
- ⑤ Further noise reduction can be realized by placing thick lid in order not to emit vibration noise from non submerged pipe and side wall.



Layout Example

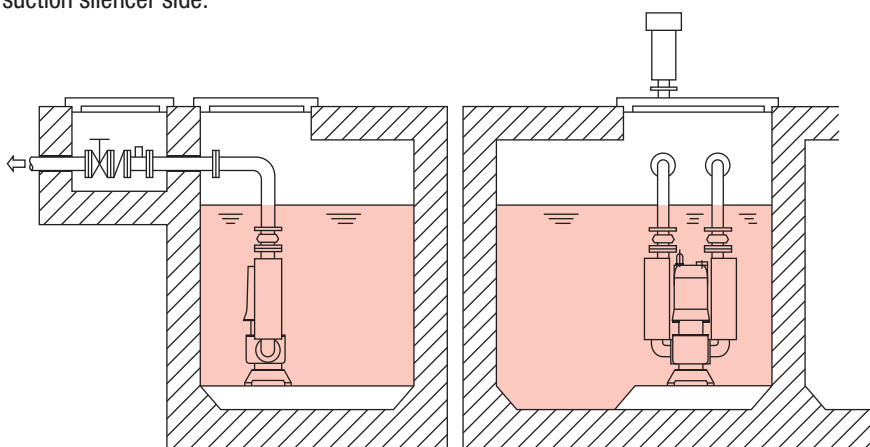
1 Applicable Tank: Effluent, Defoaming and Blower tanks

[Advantages]

- Since blower is installed at a low water level, it is easy to lift up for inspection purposes.
- Oil can be replaced within the tank after draining water.
- Ground space can be used efficiently by extending the pipe on the suction silencer side.

[Notes]

- Be sure to keep the minimum water level.
- Be sure to install the blower at a position where water is exchanged frequently to keep the temperature of surrounding water at 32°C or less.



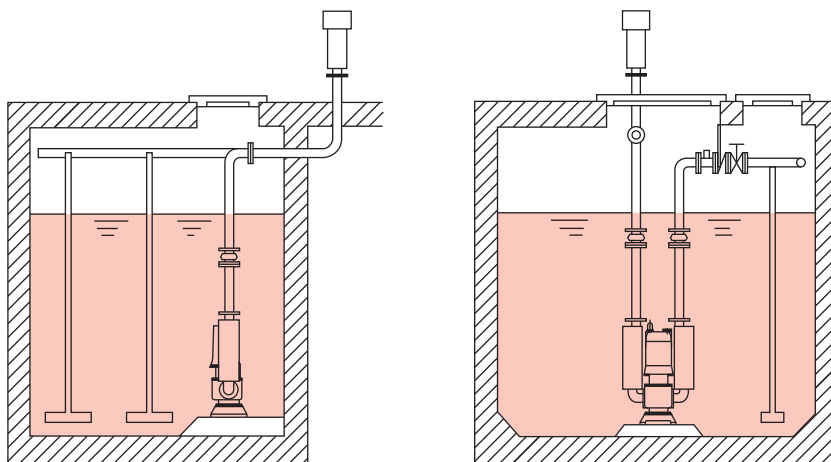
2 Applicable Tank: Aeration Tank

[Advantages]

- Air pipes are shorter and economical.
- As no special space is required to install blower, it is advantageous when the installation space is limited.

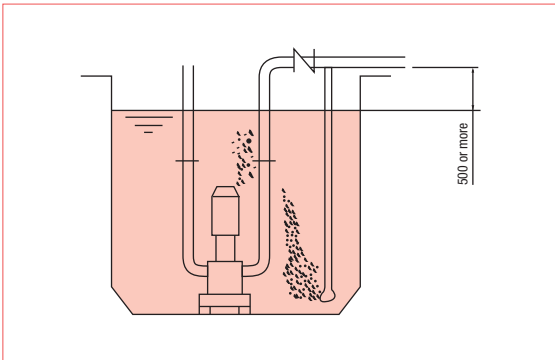
[Notes]

- Install blower at the position where it does not disturb water circulation.
- Fix cable or chain in place to avoid being cut by water circulation.
- Avoid blower being directly or intensity exposed to Air Bubbles.



■ Precautions for Each Tank

- Install a safety valve in a place that facilitates inspection, including checking normal operation or adjustments.
- Install a check valve at the highest level as possible in the aeration tank, at least 500mm above the water level, to prevent any backflow when blower stops operation. If water level may be raised further, raise the valve position by that level accordingly.
- Accumulation of sludge around the blower causes bad thermal release, which may cause a motor problem. If such accumulation is anticipated, raise setting level of the floor on which the blower is installed, or mix sludge around the blower to prevent accumulation, as shown in the illustration. (The mixing shall be to the extent that it mixes air bubbles, but not to the extent that it directly and intensively exposes the blower to air bubbles.)
(Examples)

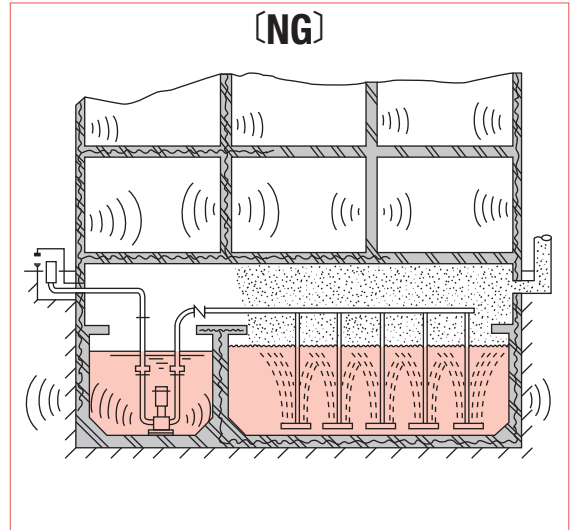


- Avoid a loosen cable coming into contact with Motor.
- It is recommended that a spare nameplate should be affixed in the control box to let maintenance personnel identify the model number of an operating blower.

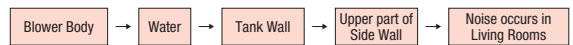
■ Precautions for Installation Sites

- Install blower in a tank which is separated from the foundation of a building, such as condominium or hospital, where people live. If blower is installed as shown in the following diagram, noise may be transmitted to each living room.

[Example 1]

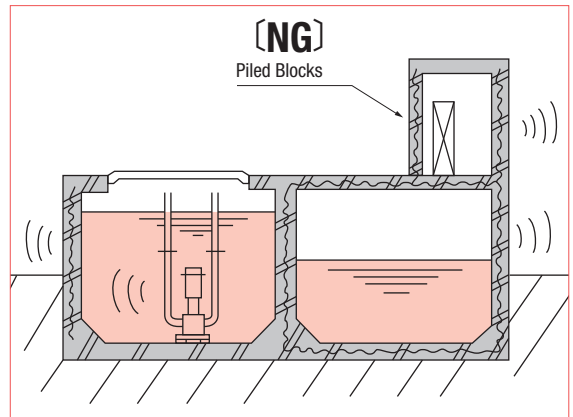


Transmission Path



- When Blower is installed on the ground, resonance may occur from the Tank Walls.

[Example 2]



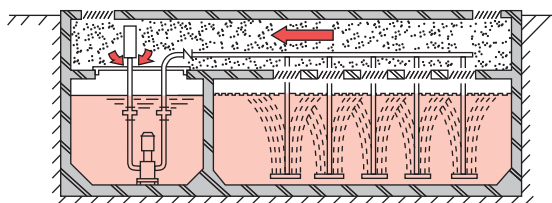
- When Tank is made of iron plates, noise may occur from the tank walls.

■Precautions for Suctioned air

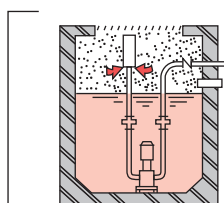
- Install a suction silencer vertically at outside to prevent suction of air containing a lot of humidity in the tank.
- If air is anticipated to contain a lot of dust or oil, replace the silencer filter at an early interval.
- * If used in an environment as shown below, blower may fail to start when humid air is suctioned, which may cause rotor corrosion.

- ① Double Layer Slabs [Example 1]
- ② Air vent is not provided in Aeration Tank. [Example 1]
- ③ A Silencer is installed in a Tank. [Example 2]
- ④ A lid is placed on the Tank. [Example 3]

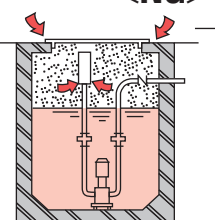
[Example 1] (NG)



[Example 2] (NG)



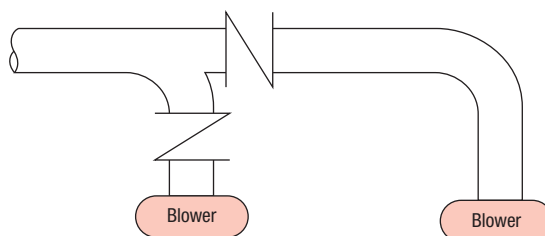
(Example 3) (NG)



■Guidelines for Piping

- When installing two blowers with one as a spare, noise levels may vary slightly, depending on a difference in pipe connection methods. When two or more blowers are installed, arrange discharge pipes, as shown in the right drawing.

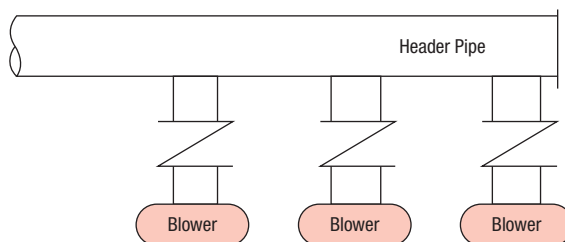
- 2 units (with one spare)



■Guidelines for Operation Methods

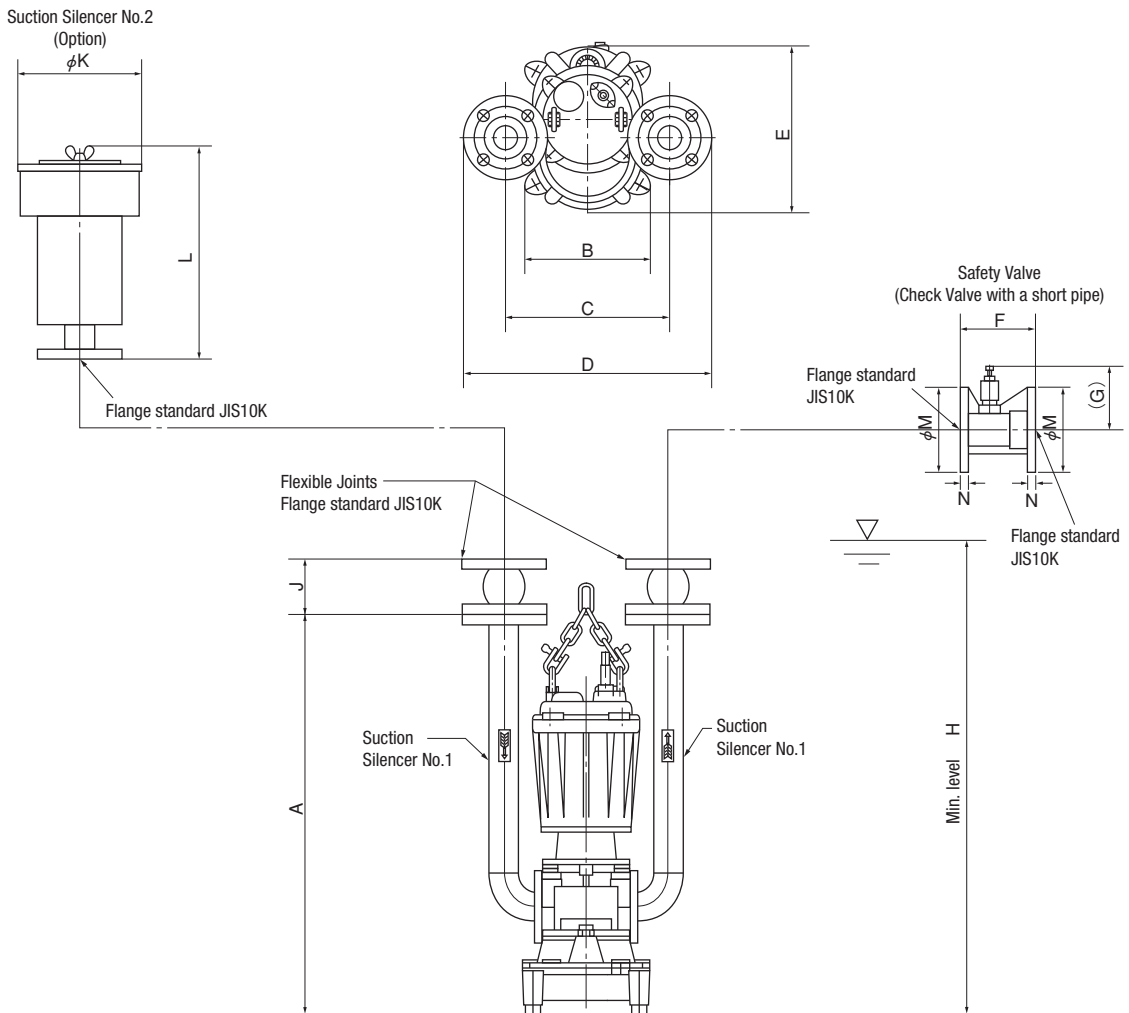
- If a spare blower is kept out of operation for long time, it may be locked and fail to start. It is recommended that two blowers should be operated in timer-driven auto-alternate operation at an interval of 24 hours or less.
- If blowers are expected to suction air containing a lot of humidity, automatic alternative operation should be recommended at an interval of 6 – 12 hours.

- 3 or more units (with one spare)



■ Dimensions RB25H - RB402H

Unit: mm



Model	Free Standing Bolt		
	Nominal Size of Bolt	Length (mm)	Number of Bolts
RB25H	M16	50	4
RB32H		60	
RB401H			
RB402H			

Note 1: The number of bolts indicates that for each Free Standing portion.
Note 2: Washers or Spring Washers are not taken into account with length.

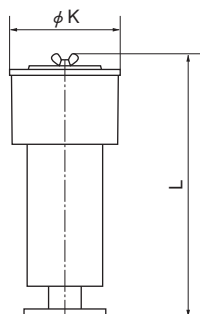
Model	A	B	C	D	E	F	G	H	J	K	L	M	N
RB25H	546	167	212	337	229	120	96	650	96	209	349	125	18
RB32H	593		232	367		101	700	135				20	
RB401H	660	208	272	412	279	130	106	760					140
RB402H													

* Flexible Joints, Safety Valves and Silencer mounting bolts are not provided as Standard Accessories. Please have them ready in accordance with the above table.

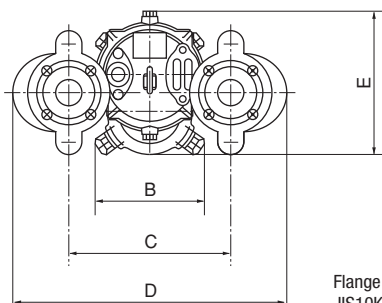
■ Dimensions RB50AH - RB100H

Unit: mm

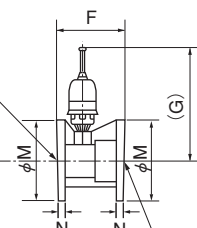
Suction Silencer No.2
(Option)



Flange standard JIS10K



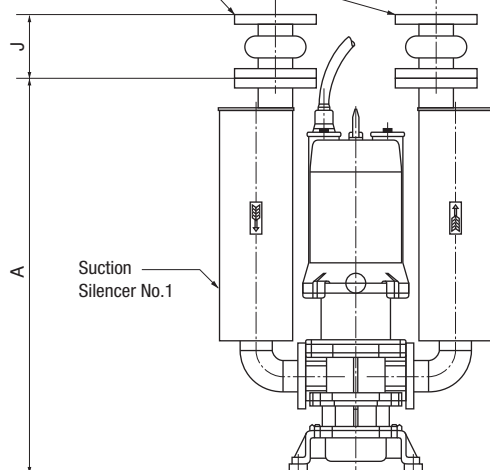
Safety Valve
(Check Valve with a short pipe)



Flange standard
JIS10K

Flange standard
JIS10K.

Expansion Joints
Flange standard JIS10K



Suction
Silencer No.1

Discharge
Silencer No.1

Min level H

Model	Free Standing Bolt		
	Nominal Size of Bolt	Length (mm)	Number of Bolts
RB50AH	M16	60	4
RB50BH			
RB65H		65	8
RB80H			
RB100H			

Note 1: The number of bolts indicates that for each Free Standing portion.

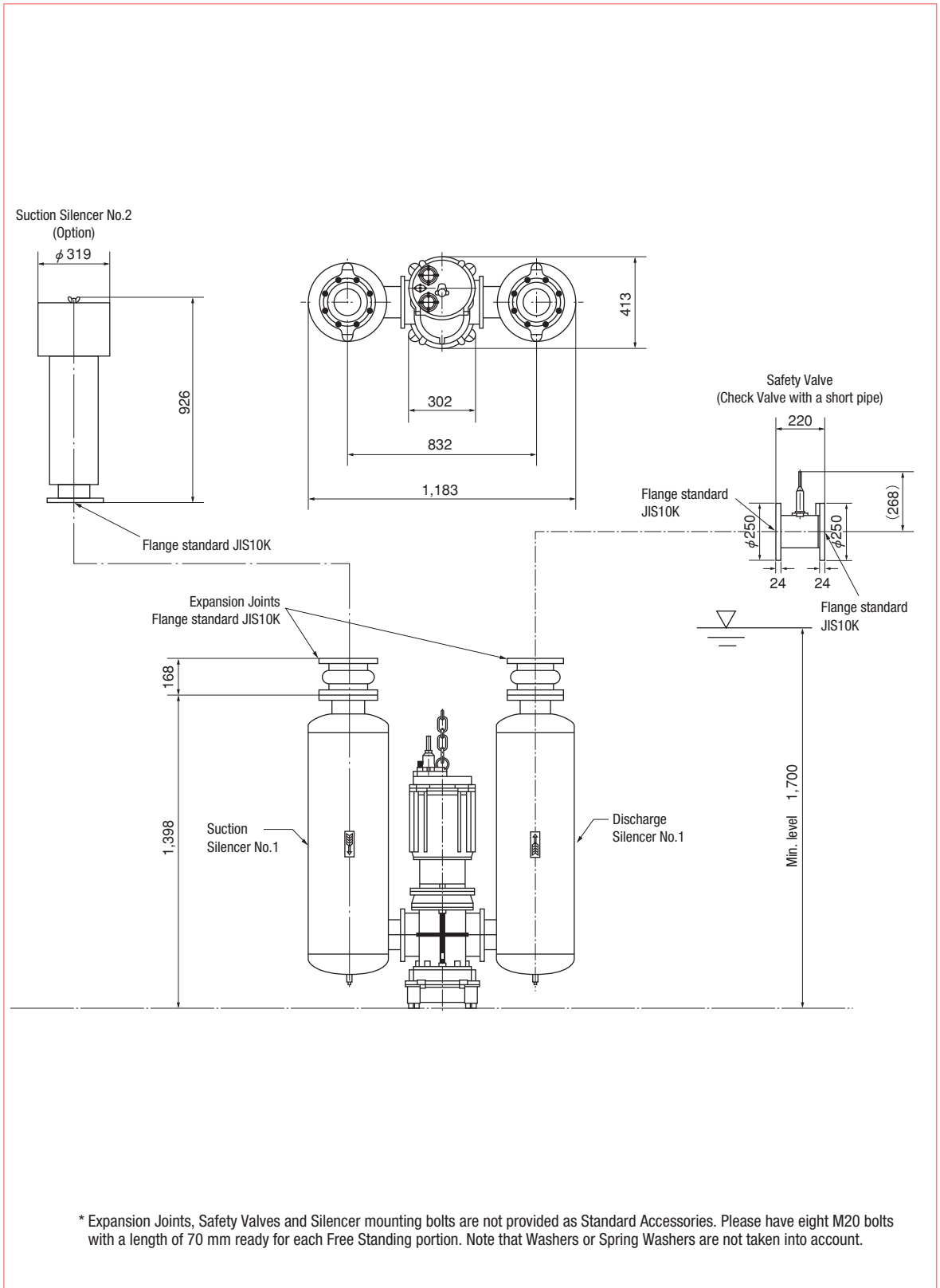
Note 2: Washers or Spring Washers are not taken into account with length.

Model	A	B	C	D	E	F	G	H	J	K	L	M	N
RB50AH	767	215	310	526	274 (5.5kW 286)	130	222	1,000	125	209	513	155	20
RB50BH	772												
RB65H	821	261	321	571	286		232		130		602	175	22
RB80H	859		430	688	374	160	276	1,100	134	319	657	185	
RB100H	1,173		481	696	384	190	286	1,400	156		874	210	24

* Expansion Joints, Safety Valves and Silencer mounting bolts are not provided as Standard Accessories. Please have them ready in accordance with the above table.

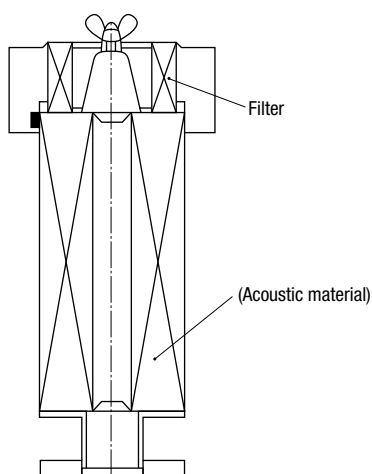
■ Dimensions RB125H

Unit: mm

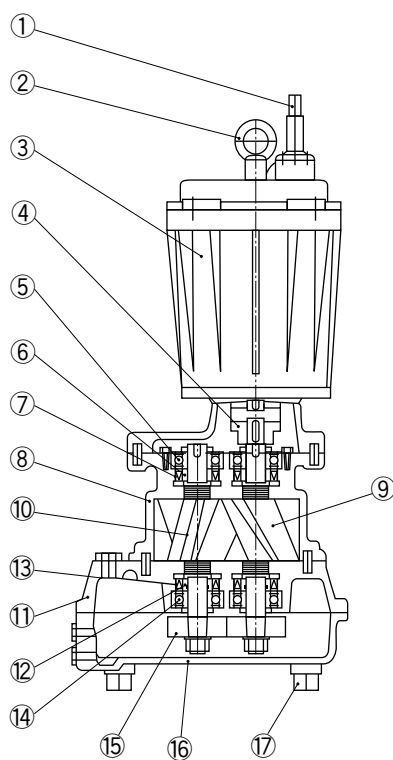


Sectional View

RB32H



Suction Silencer No.2



Body

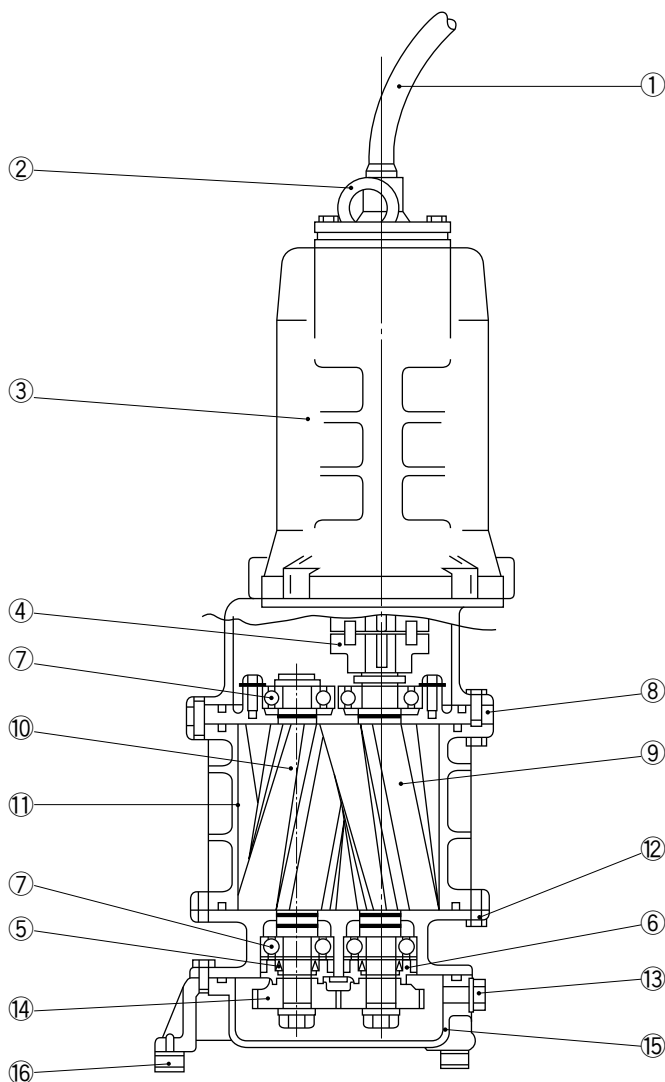
Number	Name	Material	Number	Name	Material
1	Cable	VCT	10	Driven Rotor	FCD500
2	Eyebolt	SS400	11	Bearing Case (Upper)	FC200
3	Motor	—	12	Sleeve (Lower)	SS400
4	Coupling	FC250	13	Oil Seal	Fluororubber
5	Ball Bearing	—	14	Ball Bearing	—
6	Sleeve (Upper)	SS400	15	Timing Gear	SCM415
7	Oil Seal	—	16	Gear Case	FC200
8	Casing	FC200	17	Vibration Isolating Rubber	NBR
9	Driving Rotor	FCD500			

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel

SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitryl rubber

Sectional View

RB50AH



Number	Name	Material	Number	Name	Material
1	Cable	VCT	9	Driving Rotor	FCD500
2	Eyebolt	SUS304	10	Driven Rotor	FCD500
3	Motor	—	11	Casing	FC200
4	Coupling	FC250	12	Bearing Case (Lower)	FC200
5	Oil Seal	Fluororubber	13	Oil Plug	SUS304
6	Oil Stopper	SS400	14	Timing Gear	SCM415
7	Ball Bearing	—	15	Gear Case	FC200
8	Bearing Case (Upper)	FC200	16	Vibration Isolating Rubber	NBR

Note: Please replace Gear Oil #150 for general industrial purposes in its entirety every two years.
(The blower is shipped with **Shell Morlina S2 BA150**)

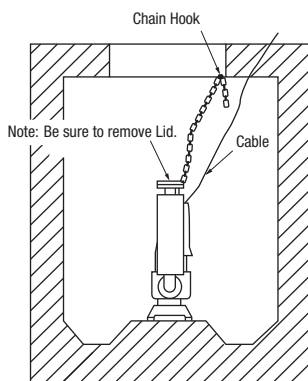
* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

Installation Procedure

1. Installation of submersible type helical rotor blower

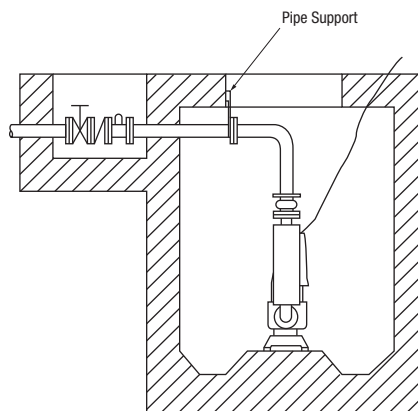
Remove the lid in the upper part of silencer, use a chain to lift down blower to tank bottom and place it on the floor stably. Installation is complete simply by placing without using bolts and nuts.

- Avoid pulling cable instead of chain.
- Hook the tip of chain on the hook at the top of Tank.



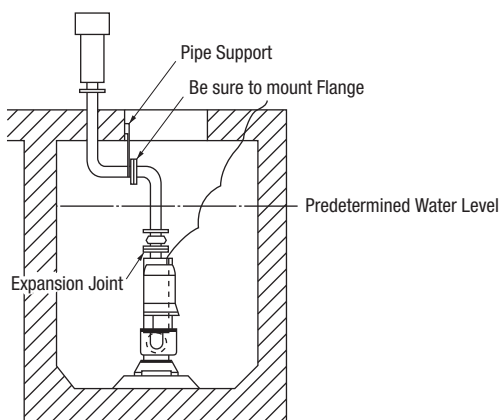
3. Discharging piping (Piping is performed on Discharge Side as illustrated.)

- Mount expansion joint and support pipe as well as suction side.
- Adjust safety valve in accordance with operating pressure. (Please refer to the operation manual.)
- Place a thick lid which is large enough to allow blower to be taken out on top of the tank.



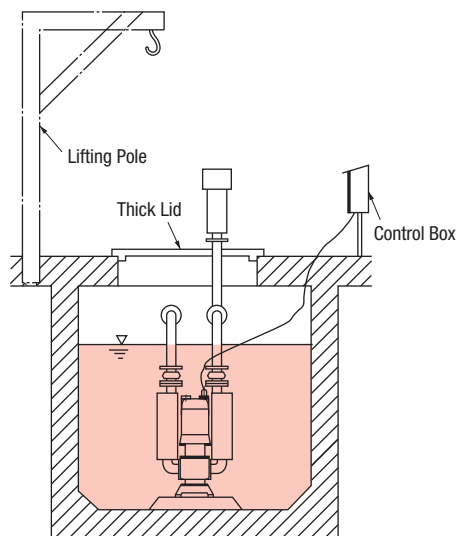
2. Suction piping (Piping is performed on the suction side as illustrated.)

- Mount expansion joint in a submersible position. Keep the distance between the flange surfaces of the expansion joint as stipulated. Avoid adjusting two support bolts (no support bolts provided for RB25H - 402H).
- Mount the flange at a position where submersible blower can be lifted together with the associated pipes for removal out of tank.
- Secure suction pipe in place with a support.



4. Note

The Control Box to operate the submersible blower and a Lifting Gear, including a Lifting Pole, are required.

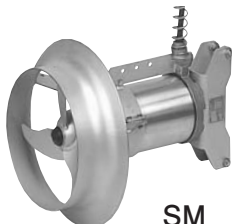
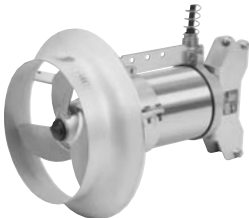


Submersible Mixer

Submersible Mixer

SM (Small-sized Submersible Mixer, High-speed Submersible Mixer) ...	485
SM-S (High-silicon Stainless Steel Propeller)	501
SM-R (Aeration Mixer)	505
SML (Low-speed Submersible Mixer)	509

Types of Submersible Mixer

Overview and Applications	Model	Appearance
Submersible Mixer - Sewage treatment EQ tank, Sludge holding tank, reactor tank and others at treatment processes - Industrials Paper pulp chests, industrial wastes, etc. - Others Waterscape, Mixing of ponds, etc.	SM (Small-sized, High speed Submersible Mixer)	 SM
- Livestock waste or other concentrated liquids	SM-S (High-silicon Stainless Steel Propeller)	 SM-S
Aeration Mixer - Mixing in pumping wells at transfer pumping station or of building pit	SM-R (Aeration Mixer)	 SM-R
Low-speed submersible mixer - Generating a rotating flow in Oxidation Ditch (OD) tank Generating or circulating water flows in dams, lakes etc.	SML (Low-speed Submersible Mixer)	 SML

Small-sized, High-speed Submersible Mixer

Output: **0.25 - 15 kW (1/3 - 20 HP)**

SM

Shinmaywa SM Series is a submersible mixer that resolved complaints against conventional mixers.

Propeller is of non-clog type with a shape avoiding foreign objects attaching and clogging, generating a strong jet flow.

The mixer can adjust installation angle and depth at the point suitable for mixing, producing a large mixing effect in an energy saving.

Small-sized Submersible Mixer

■ Features

- Low-output (0.25 - 0.75kW) compact design allows to install easily even in a narrow space.
- Installing optional flow stabilizer allows operations at water depth 500mm, suitable for mixing flow rate adjusting tanks in a small-scale sewage treatment plant.
- Newly developed propeller generates strong jet flow even with low-output.
- Mounting and removing mixer can be done only moving along the guide bar, auto connection device provide the easy maintenance.
- Non-clog type propeller is used to avoid tangling debris. Troubles due to debris clogging are avoided.
- Mixer installation angle is 120°, allowing operation with free angles. Select the most suitable angle for mixing effect.



SM750

■ Applicable Condition

Liquid Type	Specific Gravity	Viscosity	Temperature	Chlorine Ion	Sludge Concentrat	Water Depth	pH
Various types of sludge	1.1 or less	1,000m Pa·s or less	0°C - 40°C	1,000mg/ℓ or less	5% or less	10m or less	6 - 9

- Applicable liquid specific gravity and viscosity vary per product type.
- Some liquid type may support a range exceeding the above scope. Please contact us.

■ Applications

- Sewage treatment
EQ tank, Sludge holding tank, reactor tank and others at treatment processes
- Industrials
Paper pulp chests, industrial wastes, etc.
- Others
Waterscape, Mixing of ponds, etc.

■ Standard Specifications

Model	Frequency Hz	Rated output kW (HP)	Phase	Pole P	Mixing Output in Clear Water kW	Rated Electric Current A	Flow Rate m³/min	Thrust N	Weight kg
SM250	50	0.25 (1/3)	3-ph	4	0.21	2.3	1.8	53	20
	60				0.22	2.0	1.5	44	
SM400	50	0.4 (1/2)			0.33	2.8	2.7	80	23
	60				0.32	2.5	2.0	60	
SM750	50	0.75 (1)			0.55	4.4	3.5	140	25
	60				0.6	4.2	3.4	125	

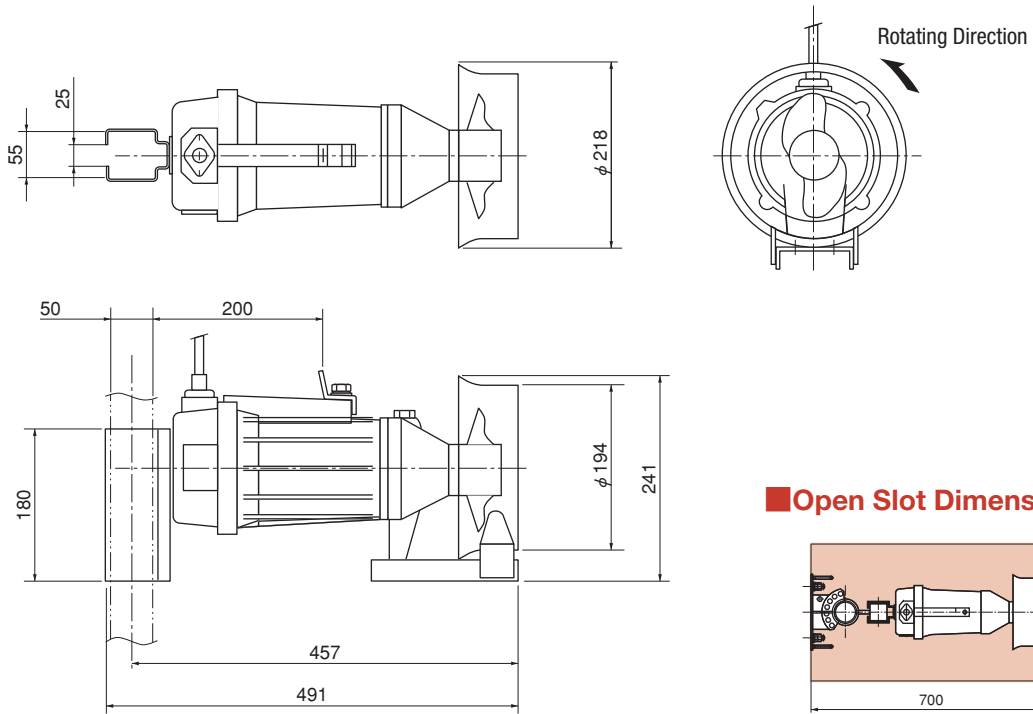
For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

■ Accessories

- Cable (10m) 1 pc.
- Shackle (SUS304) 1 pc.

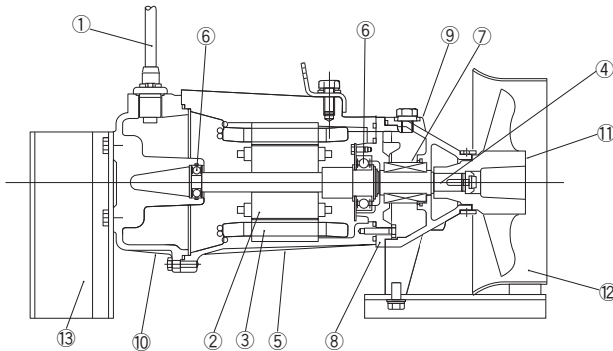
■ Dimensions

Unit: mm



■ Open Slot Dimensions

■ Sectional View



Number	Name	Material
1	Cable	VCT
2	Rotor	—
3	Stator	—
4	Shaft	SUS420J2
5	Stator Casing	FC200
6	Ball Bearing	—
7	Mechanical Seal	SiC / SiC
8	Mechanical Seal Bracket	FC200
9	Oil Casing	FC200
10	Head Cover	FC200
11	Propeller	FCD500
12	Draft Ring	SUS304
13	Sliding Bracket	SUS304

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

■ Cable Specification

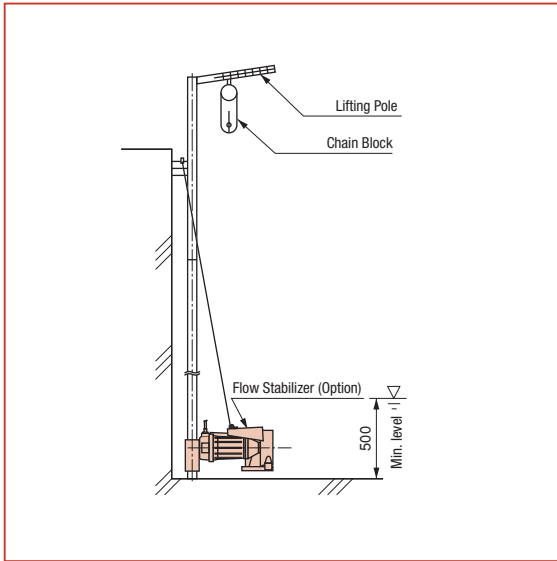
Model Type	Type	Section area	Cores	Applications	Length	Outer Dia.
SM250 SM400 SM750	VCT	1.25mm ²	4 cores	Power	10m	$\phi 11.5\text{mm}$

■ Installation example for sewage treatment

● Equalization tank

Achieving superb mixing capability for anaerobic mixing for denitrification and desphorization processes.

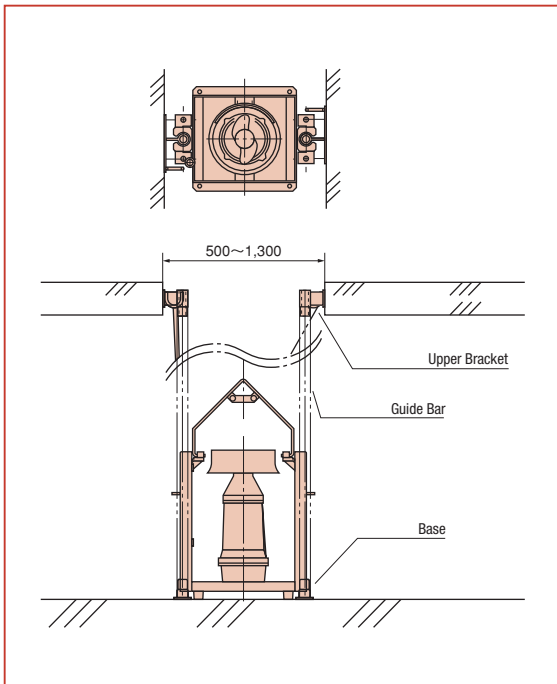
Unit: mm



● Contact Aeration Tank

(contact aeration of septic tank for up to 50 peoples)

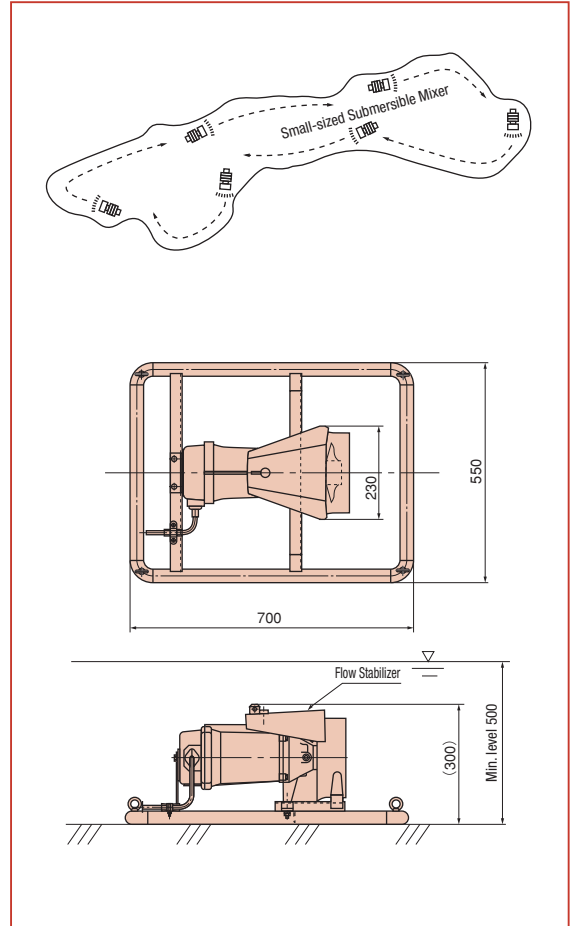
Unit: mm



■ Installation example for a shallow pond, pool

By attaching optional Flow Stabilizer, mixer can install in shallow pond, even though previously impossible, to revitalize pond water effectively.

Unit: mm



High-speed Submersible Mixer

■ Features

● Improved reliability

Equipped with leakage water chamber as standard (More than 1.5kW Model). Cable core sealer, support coil to prevent suctioning, Stainless steel (SUS316) motor shaft are employed so that high durability and reliability are achieved.

● Superb durability

Employed newly developed submersible motor. double mechanical seal with 4-faces SiC is employed. Also, durability is improved by using large size bearing.

● Strong jet flow

Strong jet flow is generated by its unique propeller shape through computer analyzation. Also, wear resistance of propeller is improved by special hardening treatment.

● Improved maintainability

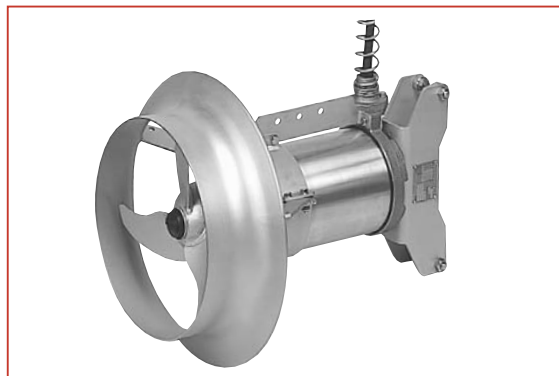
Easy to handle due to its light-weight, compact in size and simple structure. Easy to check leaked water into motor through maintenance plug at head cover side. Oil change can be done at Oil plug without removing propeller.

● Applicable low level (option)

By installing flow stabilizer, operation level can be lowered than normal. Therefore, it enables to operate even water level variation is wide.

● Efficient mixing by simple adjustment

As position and angle (left / right and up / down) can be easily adjusted to the most efficient location, efficient mixing can be realized in accordance with shape, size and depth of tank, liquid characters and mixing purpose.



■ Applications

○ Sewage treatment

EQ tank, Sludge holding tank, reactor tank and others at treatment processes

○ Industrials

Paper pulp chests, industrial wastes, etc.

○ Others

Waterscape, Mixing of ponds, etc.

■ Applicable Condition

Liquid Type	Wastewater, Sewage containing sludge
Specific Gravity	1.1 or less
Viscosity	1,000 mPa · s or less
Temperature	0°C - 40°C
Chlorine Ion	1,000 mg/ℓ or less
Sludge Concentration	5% or less
Water Depth	10m or less
pH	6 - 9

- Applicable liquid specific gravity and viscosity vary per product type.
- Some liquid type may support a range exceeding the above scope.
Please contact us.

■ Accessories

- Cable (10m) 1 pc.
- Shackle (SUS304) 1 pc.

■ Cable Specification

Model	Type	Section Area (mm²)	Cores	Application	Outer Dia. (mm)	Length (m)
SM15JA·JB	2PNCTS	1.25	4	Power Thermal (Leakage Detector)	φ 15 (φ 17)	10
SM15A·B		1.25	2			
SM24JA·JB		(1.25)	(2)			
SM28A·B	2PNCTS	2	4	Power Thermal (Leakage Detector)	φ 16 (φ 18)	10
		2	2			
		(2)	(2)			
SM30A·B SM40A·B	2PNCTS	3.5	4	Power Thermal (Leakage Detector)	φ 18 (φ 20)	10
		2	2			
		(2)	(2)			

() shows a case of special specification for Leakage Detector.

Model	Type	Section Area (mm²)	Cores	Application	Outer Dia. (mm)	Length (m)
SM50A·B	2PNCTS	5.5	4	Power Thermal (Leakage Detector)	φ 20 (φ 22)	10
		2	2			
SM75A·B	2PNCTS	8	4	Power Thermal (Leakage Detector)	φ 22 (φ 24.5)	10
		2	2			
		(2)	(2)			

Standard Specifications

50Hz Specifications

Model	Motor		Rated Current (A)	Synchronous Rotation Speed (min ⁻¹)	Propeller Cord	Propeller Diameter (mm)	Output at Clear Water (kW)	Mixing Flow Rate (m ³ /min)	Thrust (N)	Weight (kg)
	Output kW (HP)	Poles								
SM15JA・JB	0.9 (1.2)	6	5.8	1,000	112	254	0.8	5.6	175	47
					113	254	0.7	4.9	130	
					110	254	1.2	7.4	300	
	1.5 (2)	6	7.8	1,000	111	254	0.9	6.5	230	
					112	254	0.8	5.6	175	
					113	254	0.7	4.9	130	
SM15A・B	1.5 (2)	6	7.8	1,000	* 210	300	1.4	10.5	430	49
SM24JA・JB	2 (2.5)	4	8.4	1,500	211	300	1.2	9.8	380	47
					610	220	1.7	6.4	300	
					611	220	1.0	5.1	190	
SM28A・B	2.8 (3.7)	6	15.3	1,000	* 310	300	2.5	12.9	650	57
					311	300	2.2	12.0	570	
					312	300	1.9	11.2	490	
					313	300	1.5	8.7	300	
SM30A・B	3 (4)	6	15.8	1,000	412	350	2.6	15.0	650	66
					413	350	2.4	14.0	570	
					414	350	2.3	13.0	490	
SM40A・B	4 (5)	6	19.0	1,000	* 410	350	3.3	17.2	850	66
					411	350	3.0	16.1	750	
					412	350	2.6	15.0	650	
SM50A・B	5 (7)	10	25.8	600	* 512	525	4.5	35.5	1,620	145
					513	525	4.0	34.2	1,500	
					514	525	3.6	30.6	1,200	
					515	525	2.8	26.5	900	
SM75A・B	7.5 (10)	10	39.6	600	* 510	525	6.8	43.0	2,370	160
					511	525	6.0	40.0	2,050	
					512	525	5.3	35.5	1,620	

60Hz Specifications

Model	Motor		Rated Current (A)	Synchronous Rotation Speed (min ⁻¹)	Propeller Cord	Propeller Diameter (mm)	Output at Clear Water (kW)	Mixing Flow Rate (m ³ /min)	Thrust (N)	Weight (kg)
	Output kW (HP)	Poles								
SM15JA・JB	1.1 (1.5)	6	5.7	1,200	115	254	0.9	6.5	230	47
					116	254	0.8	5.6	175	
					117	254	0.7	4.9	130	
	1.5 (2)	6	7.4	1,200	114	254	1.2	7.4	300	
					115	254	0.9	6.5	230	
					116	254	0.8	5.6	175	
SM15A・B	1.5 (2)	6	7.4	1,200	* 212	300	1.5	10.5	430	49
SM24JA・JB	2.4 (3.2)	4	9.7	1,800	213	300	1.4	9.8	380	47
					612	220	1.6	5.8	250	
					* 314	300	2.6	12.9	650	
SM28A・B	2.8 (3.7)	6	14.9	1,200	315	300	2.3	12.0	570	57
					316	300	2.0	11.2	490	
					317	300	1.6	8.7	300	
					* 417	350	2.9	15.0	650	
SM30A・B	3 (4)	6	14.1	1,200	418	350	2.8	14.0	570	66
					419	350	2.7	13.0	490	
					* 415	350	3.3	17.2	850	
SM40A・B	4 (5)	6	18.0	1,200	416	350	3.2	16.1	750	66
					417	350	2.9	15.0	650	
					* 512	525	4.5	35.5	1,620	
SM50A・B	5 (7)	12	29.9	600	513	525	4.0	34.2	1,500	145
					514	525	3.6	30.6	1,200	
					515	525	2.8	26.5	900	
					* 510	525	6.8	43.0	2,370	
SM75A・B	7.5 (10)	12	44.6	600	511	525	6.0	40.0	2,050	160
					512	525	5.3	35.5	1,620	

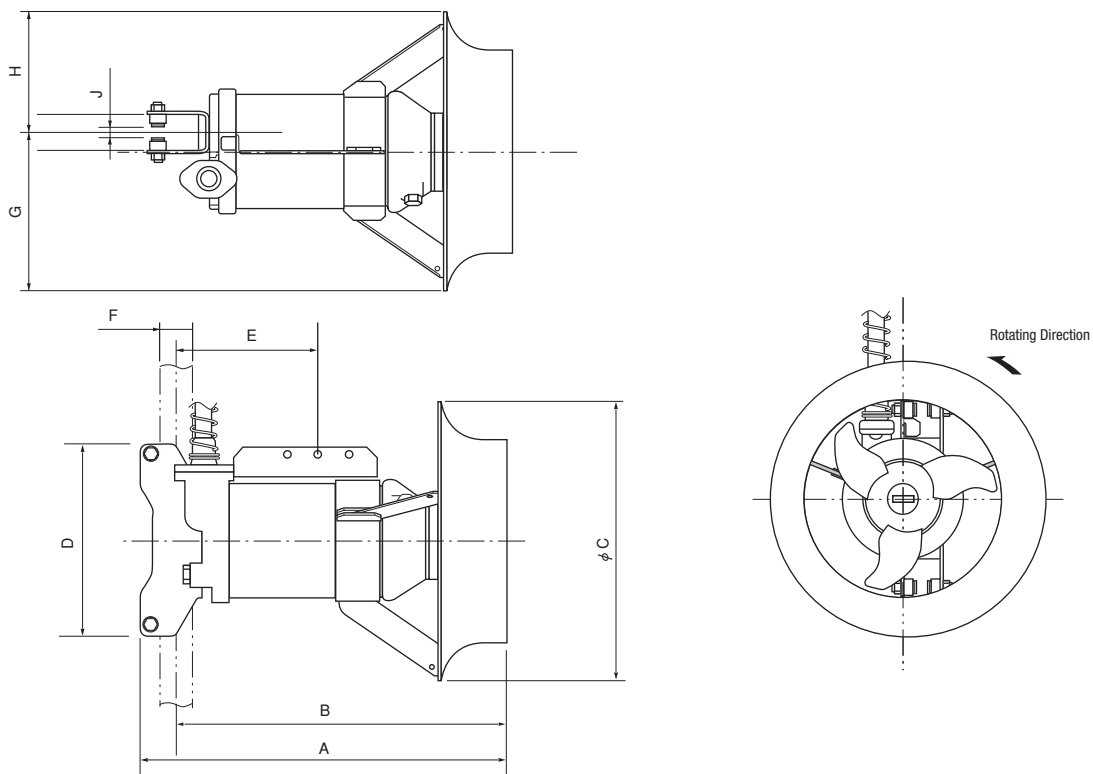
For motor characteristics, bearings and oils, see the specifications (detail data) - App. 1.

Note) Propeller cord with * mark is not available in fluid that contains a large amount of foreign objects or has a large specific gravity (1.03 or higher).

- For motor outputs not specified in the table, please contact us.

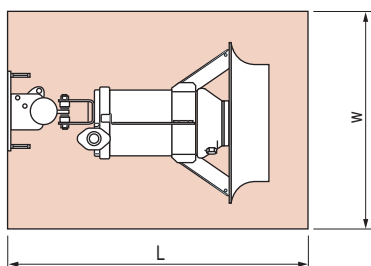
■ Dimensions

Unit: mm



Model	Dimension								
	A	B	C	D	E	F	G	H	J
SM15J	543	486	360	308	215	50	211	150	19
SM15	559	502	440	308	215	50	251	190	19
SM24J	543	486	360	308	215	50	211	150	19
SM28	582	525	440	308	228	50	251	190	19
SM30	598	541	510	308	236	50	259	251	19
SM40	598	541	510	308	236	50	259	251	19
SM50	836	746	705	280	328	100	353	353	43
SM75	888	798	705	280	350	100	353	353	43

■ Open Slot Dimensions

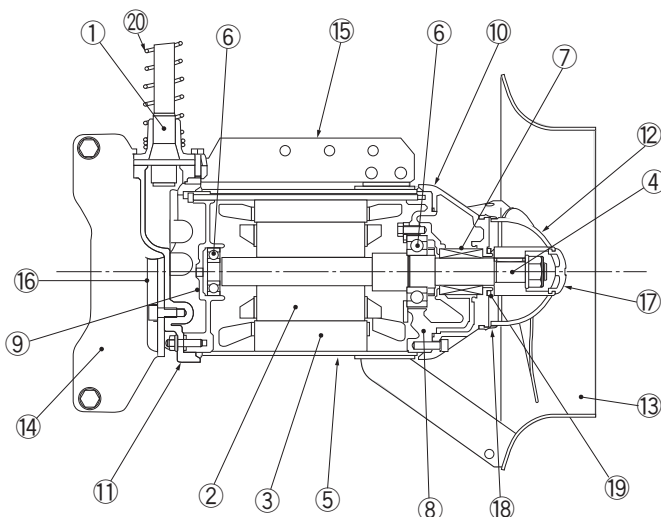


Model	W	L
SM15JA·JB·24JA·JB	500	800
SM15A·B, SM28A·B	600	800
SM30A·B, SM40A·B	600	900
SM50A·B, SM75A·B	800	1,200

Sectional View

SM-A

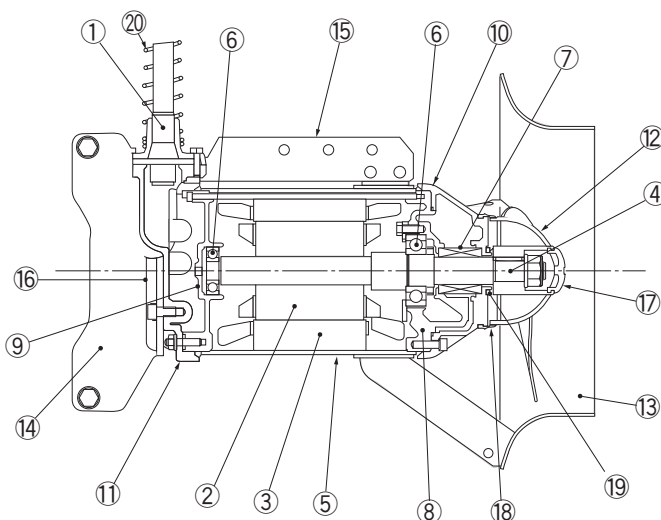
Cast iron specification



Number	Part Name	Material
1	Cable	2PNCTS
2	Rotor	—
3	Stator	—
4	Shaft	SUS316
5	Stator Casing	SUS316L
6	Ball Bearing	—
7	Mechanical Seal	SiC/SiC
8	Mechanical Seal Bracket	FC200
9	Bearing Bracket	FC200
10	Oil Casing	FC200
11	Head Cover	FC200
12	Propeller	SUS316L
13	Draft Ring	SUS304L
14	Sliding Bracket	SUS304
15	Lifting Plate	SUS304
16	Sliding Plate	Polyethylene
17	Propeller Cap	NBR
18	Shield Ring	NBR
19	Oil Seal	NBR
20	Support Coil	SUS304

SM-B

Stainless specification

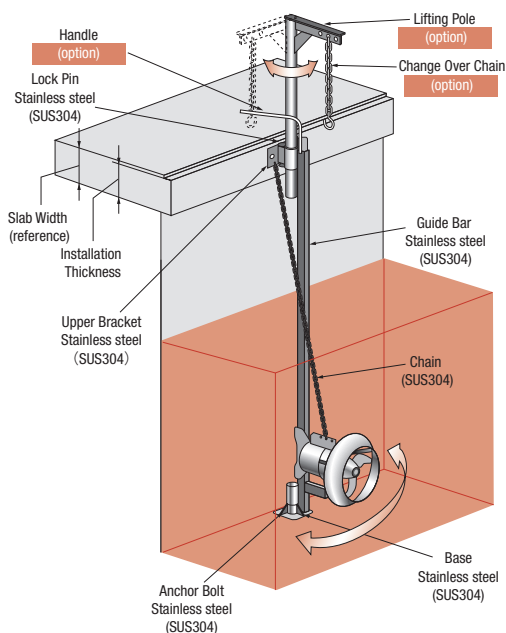


Number	Part Name	Material
1	Cable	2PNCTS
2	Rotor	—
3	Stator	—
4	Shaft	SUS316
5	Stator Casing	SUS316L
6	Ball Bearing	—
7	Mechanical Seal	SiC/SiC
8	Mechanical Seal Bracket	FC200
9	Bearing Bracket	FC200
10	Oil Casing	SCS14
11	Head Cover	SCS14
12	Propeller	SUS316L
13	Draft Ring	SUS304L
14	Sliding Bracket	SUS304
15	Lifting Plate	SUS304
16	Sliding Plate	Polyethylene
17	Propeller Cap	NBR
18	Shield Ring	NBR
19	Oil Seal	NBR
20	Support Coil	SUS304

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel

SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

Submersible Mixer Installation Device



Guide Bar	Installation Thickness	Slab Width (reference)
□50 pipe	150mm	200mm
□100 pipe	200mm	250mm

Installation Device Standard Specification

Size	□50		□50		□100	
Applied Submersible Mixer	SM250 SM400 SM750		SM15JA · JB SM15A · B SM24JA · JB SM28A · B SM30A · B SM40A · B		SM50A · B SM75A · B	
		Weight kg		Weight kg		Weight kg
Upper Guide Bar (with fastening screw)	3m×1 pc.	16	3m×1 pc.	16	3m×1 pc.	53
Below Guide Bar	3m×1 pc.	15	3m×1 pc.	15.5	3m×1 pc.	54
Upper Bracket	1 pc.	3.2	1 pc.	3.2	1 pc.	12
Lock Pin	1 set	0.5	1 set	0.5	1 set	0.5
Joint Pipe	1 pc.	1.3	1 pc.	1.3	1 pc.	3.1
Base	1 pc.	1.9	1 pc.	1.9	1 pc.	4.2
Chain (with shackle)	6m×1 set	6	6m×1 set	7.8	6m×1 set	18
Intermediate Bracket	(Note 1)	—	(Note 1)	—	1 pc.	7.6
Hinge	(Note 1)	—	(Note 1)	—	1 pc.	4.2

Note 1) If guide bar length exceed values below, you need an intermediate brackets and hinge.

Model	Guide Bar length
SM250～SM40A · B	6m
SM50A · B	5m
SM75A · B	4m

Note 2) Handle, Lifting Pole, Change Over Lifting Hook and Chain Block are optional

Note 3) Lifting Pole and Change Over Lifting Hook are dedicated for Submersible mixer. Do not use it for lifting other mixer models than specified.

■ Left/Right Angle Adjustment

- Can adjust angles up to left/right 60° with 20° pitch.



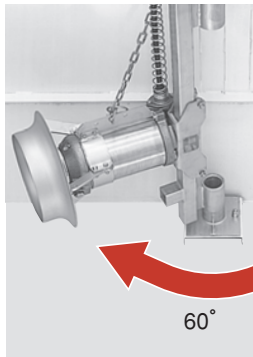
① Removing a Pin...



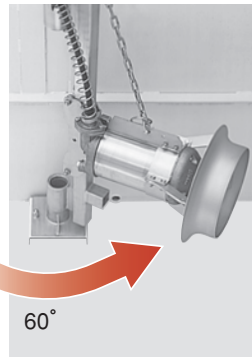
② Determine angle with Handle



③ Fix it with pin



60°



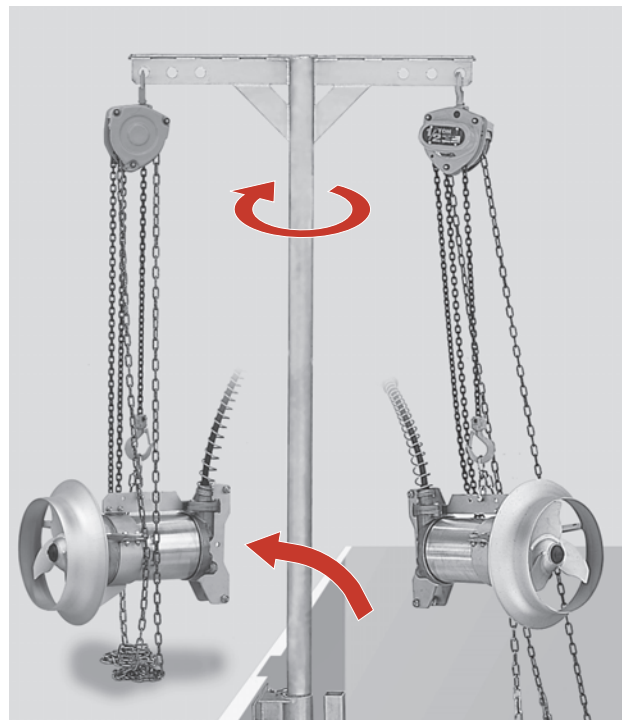
60°

■ Changing Up/Down Angle

- Can special sliding brackets that can be installed with up/down angle you specify.

■ Removing Procedure

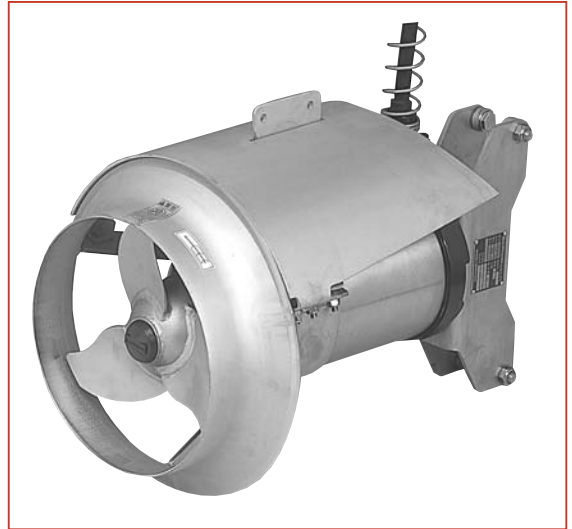
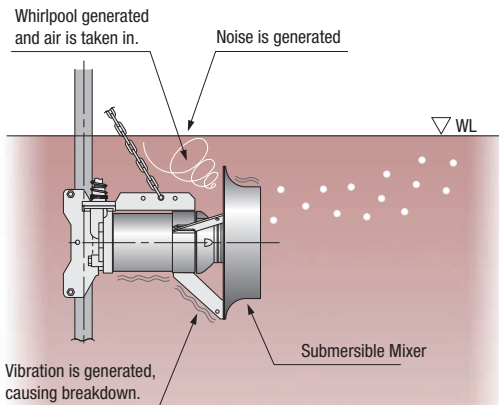
- Remove submersible mixer from guide bar; can rotate and move it from water tank to floor.



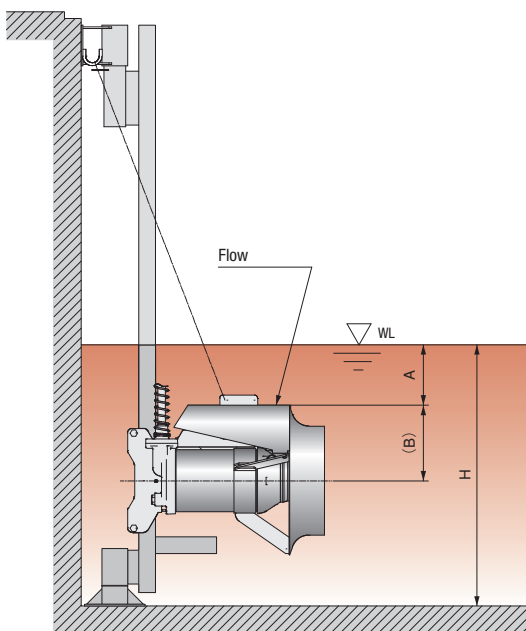
■ Flow Stabilizer for low water level (option)

When submersible mixer operates at the lower water level, for example in a flow control tank, anaerobic mixing is disabled as mixer takes air due to whirlpool generates on the water surface. This may cause breakdown of mixer. Therefore, in case of low water level operation, by installing flow stabilizer to mixer, operable water level can be lowered.

● Problems at low water level

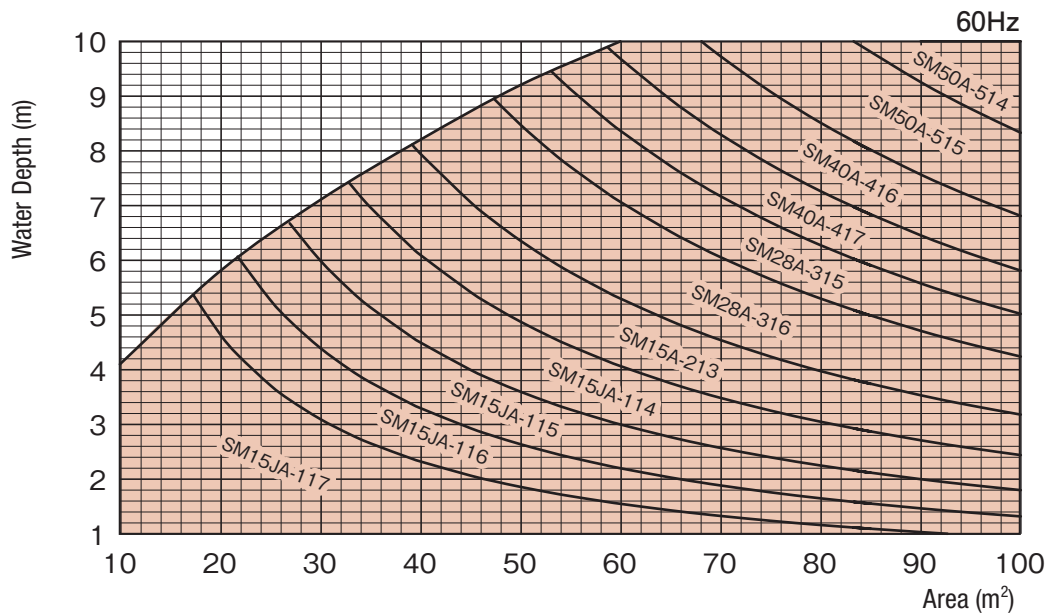
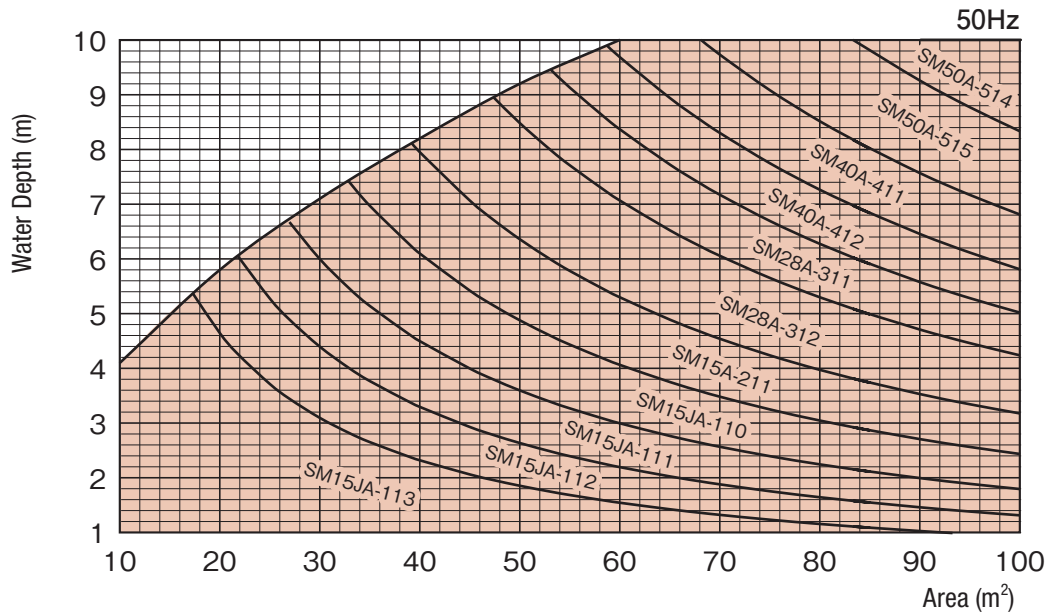


Min. level of submersible mixer

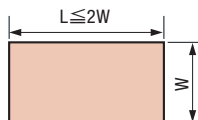


Model	Flow Stabilizer	H (mm)	A (mm)	B (mm)
SM250	Without	1,100	700	109
	With	500	100	135
SM400	Without	1,100	700	109
	With	500	100	135
SM750	Without	1,100	700	109
	With	500	100	135
SM15JA · JB	Without	1,100	700	180
	With	500	100	185
SM15A · B	Without	1,300	700	220
	With	900	300	226
SM24JA · JB	Without	1,100	700	180
	With	500	100	185
SM28A · B	Without	1,500	900	220
	With	900	300	226
SM30A · B	Without	1,700	1,100	255
	With	1,000	400	261
SM40A · B	Without	1,700	1,100	255
	With	1,000	400	261
SM50A · B	Without	1,700	800	353
	With	1,200	300	361
SM75A · B	Without	1,900	1,000	353
	With	1,200	300	361

Performance Curves



Note) Length / Width ratio of plain surface of tank shall be less than 2:1 as described below.

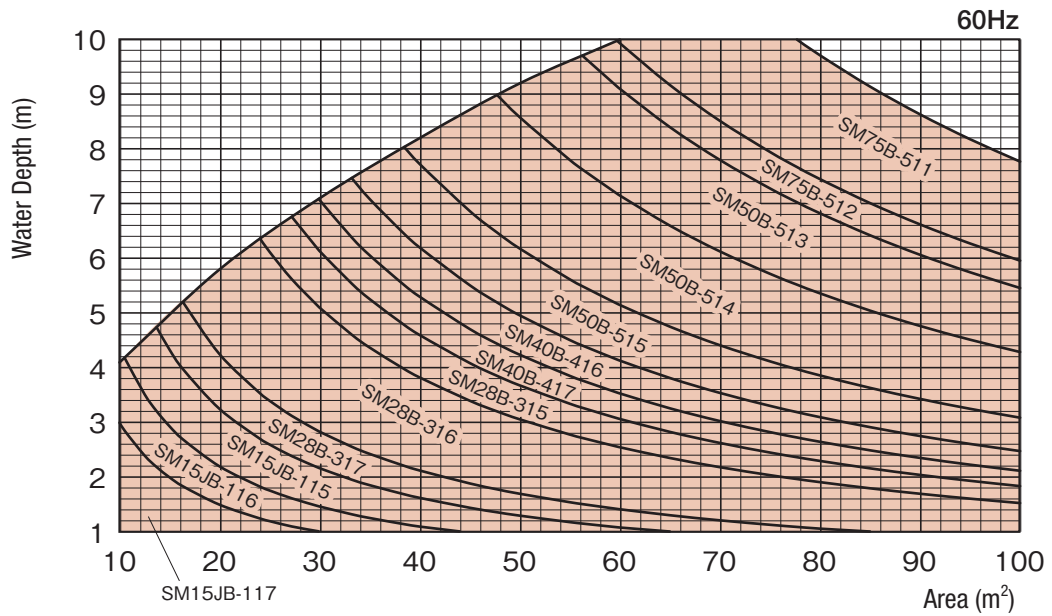
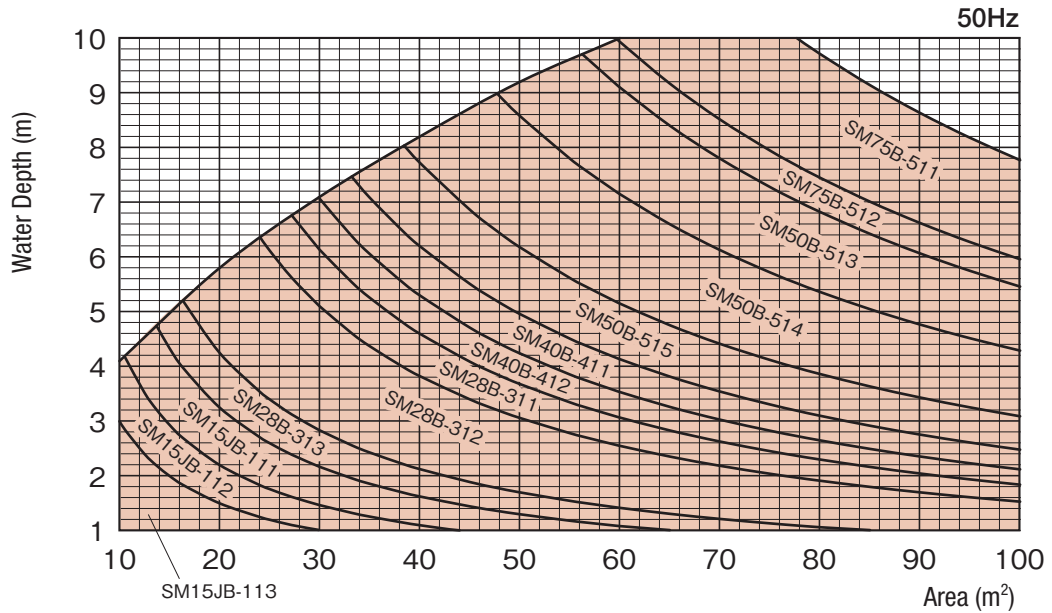


Liquid Condition

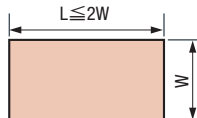
Specific Gravity	1.01
Density	0.1%

* Model selection is just for reference so that correct model shall be determined by formal calculation, please contact us.

Performance Curves



Note) Length / Width ratio of plain surface of tank shall be less than 2:1 as described below.

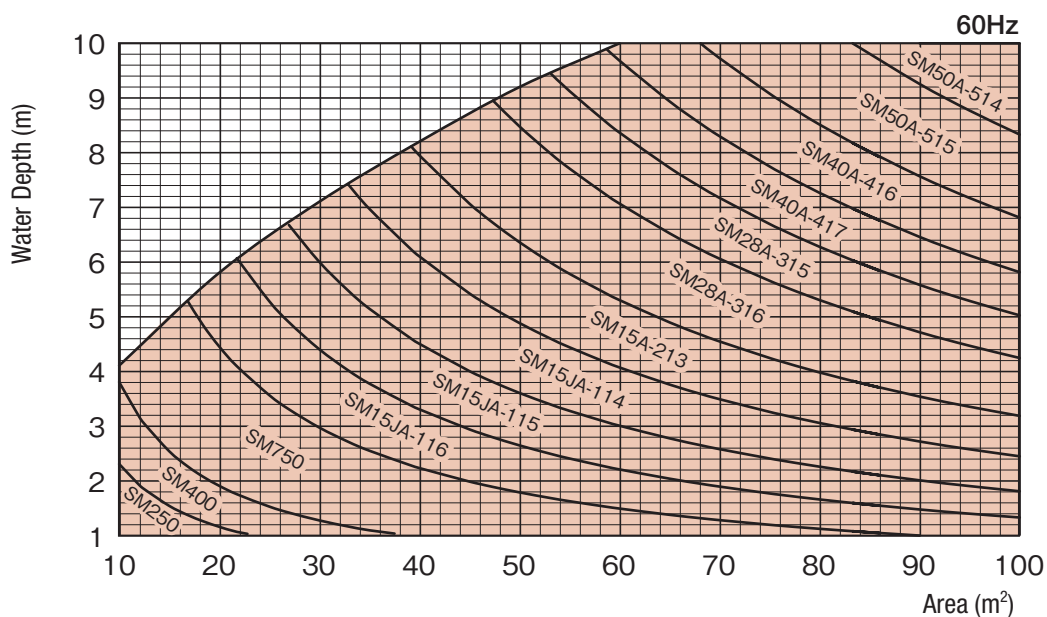
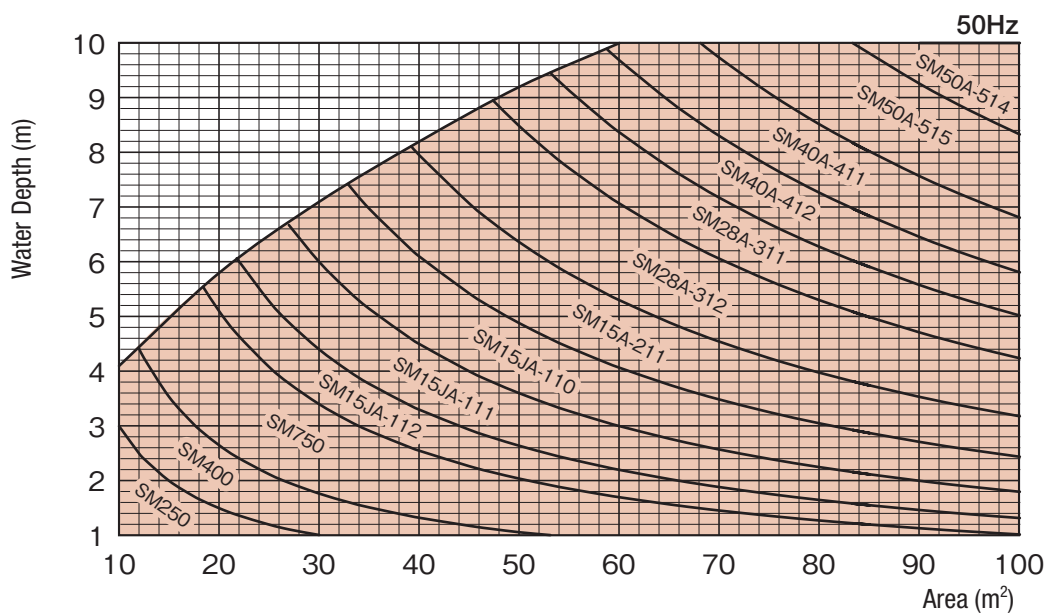


Liquid Condition

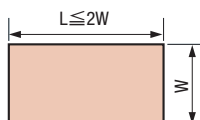
Specific Gravity	1.05
Density	2% or less

* Model selection is just for reference so that correct model shall be determined by formal calculation, please contact us.

Performance Curves



Note) Length / Width ratio of plain surface of tank shall be less than 2:1 as described below.

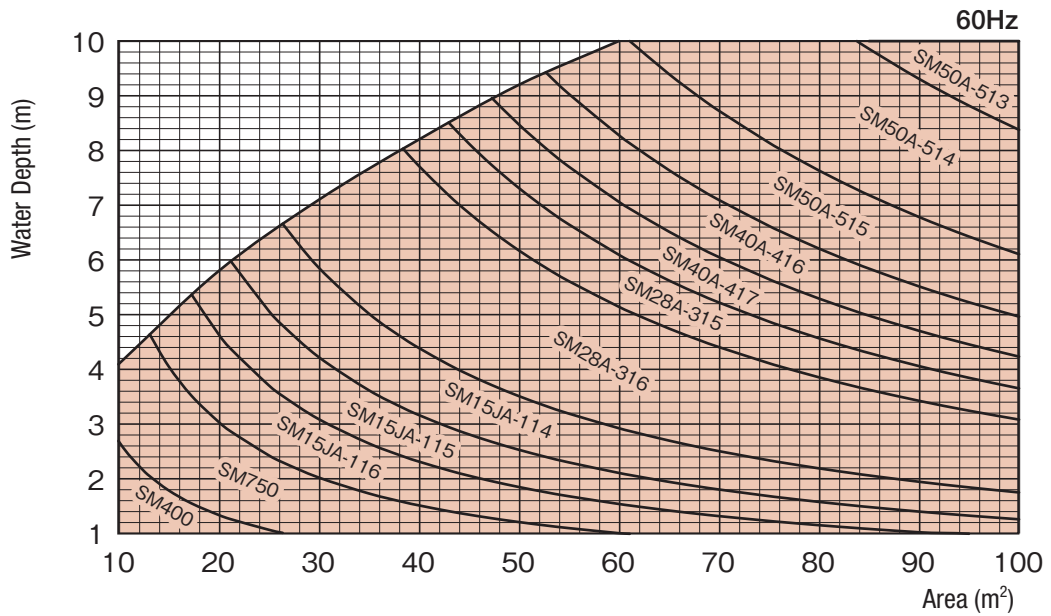
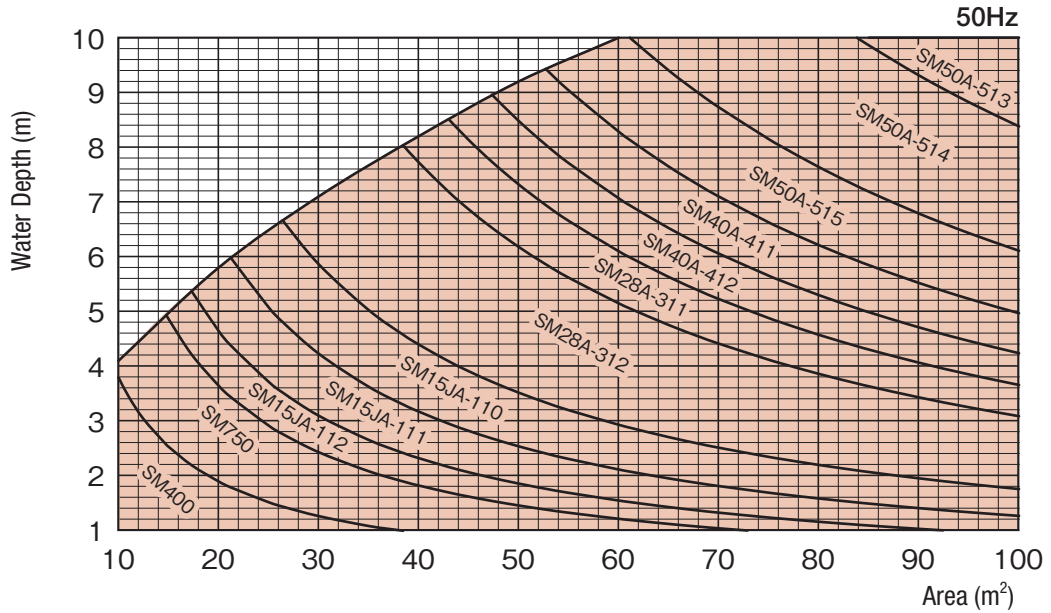


Liquid Condition

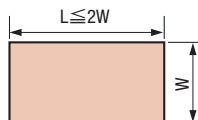
Specific Gravity	1.01
Density	0.1%

* Model selection is just for reference so that correct model shall be determined by formal calculation, please contact us.

Performance Curves



Note) Length / Width ratio of plain surface of tank shall be less than 2:1 as described below.



Liquid Condition

Specific Gravity	1.03
Density	0.5%

* Model selection is just for reference so that correct model shall be determined by formal calculation, please contact us.

Submersible Mixer

■ Features

- SM110A and 150A is a high-output (11・15kW) submersible mixer in spite of small and lightweight, in addition simple maintenance.
- Propeller adopts stainless steel casting (SCS14) as standard, which has a superb corrosion and abrasion resistance. Propeller shaft also stainless steel (SUS316), which has a superb corrosion resistance.
- Reduction gear adopts a robust one step gear system.



■ Applicable Condition

Liquid Type	Wastewater, Sewage containing sludge
Specific Gravity	1.1 or less
Viscosity	1,000 mPa・s or less
Temperature	0°C - 40°C
Chlorine Ion	1,000 mg/ℓ or less
Sludge Concentration	5% or less
Water Depth	10m or less
pH	6 - 9

- Some liquid type may support a range exceeding the above scope. Please contact us.

■ Applications

- Sewage treatment
EQ tank, Sludge holding tank, reactor tank and others at treatment processes
- Industrials
Paper pulp chests, industrial wastes, etc.
- Others
Waterscape, Mixing of ponds, etc.

■ Accessories

- Cable (10m)1 pc.
- Shackle (SUS304)1 pc.

■ Cable Specification

Model	Type	Section Area (mm ²)	Cores	Application	Outer Dia. (mm)	Length (m)
SM110A	2PNCTS	14	4	Power Thermal (Leakage Detector)	φ 29	10
		2	2			
		(2)	(2)			
SM150A	2PNCTS	14	4	Power Thermal (Leakage Detector)	φ 29	10
		2	2			
		(2)	(2)			

() shows a case of special specification for Leakage Detector

* Composite wire cables are used.

* Leakage Detector is not equipped as standard. (2-cores wire for Leakage Detector is not used)

**Submersible Mixer
with a High-silicon Stainless Steel Propeller**

Output: 0.9 - 7.5 kW (1.2 - 10 HP)

SM-S

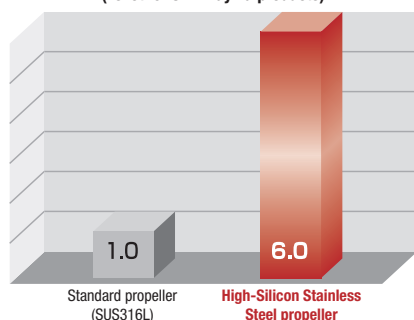
The “SM-S Series” Submersible Mixer is equipped with a High-Silicon Stainless Steel propeller and has significantly enhanced wear resistance. It has improved solid pass-through capability, and can also withstand the harsh effects of livestock feces and urine treatment.

■ Features

● Propeller with a service life six times' longer than conventional equivalents

ShinMaywa employed High-Silicon Stainless Steel for its propeller vane as an industry first. It has a service life six times' longer than conventional products due to the synergy and much-improved wear-resistance of this new material, and the redesigned wear-resistant propeller with a unique shape.

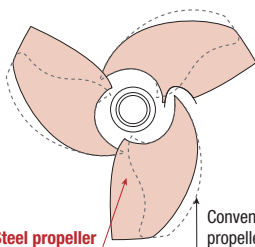
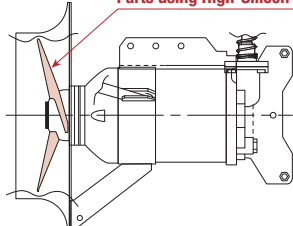
Comparison of the propeller service life
(vs. other ShinMaywa products)



● Excellent solid pass-through capability

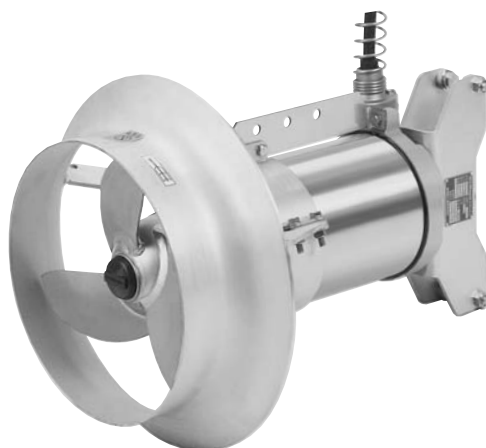
Its solid pass-through capability has been further improved by employing a high-performance swept-wing propeller, which is less prone to clogging or impaired performance in an environment with foreign objects, including straw dust.

Parts using High-Silicon Stainless Steel



High-Silicon Stainless Steel propeller

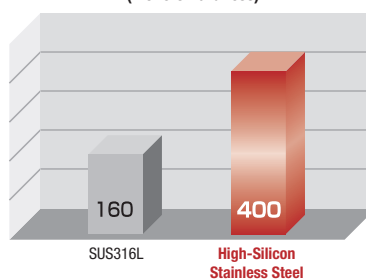
Conventional propeller



What is High-Silicon Stainless Steel?

Stainless steel containing abundant silicon, with hardness achieved by silicon. Besides the hardness, its unique three-layered structure also provides robustness and corrosion resistance.

Comparison of hardness
(Vickers Hardness)



Standard Specifications

50Hz Specification

Model	Motor		Synchronous rotation speed (min ⁻¹)	Propeller code	Propeller dia. (mm)	Output (kW)	Mixing Flow rate (m ³ /min)	Thrust (N)	Weight (kg)
	Motor kW (HP)	Pole (P)							
SM15JAS · JBS	0.9 (1.2)	6	1,000	642	220	0.8	4.2	130	47
	1.5 (2)	6	1,000	140	254	1.2	6.9	260	
SM24JAS · JBS	2.0 (2.5)	4	1,500	640	220	1.8	6.4	300	57
SM28AS · BS	2.8 (3.7)	6	1,000	340	300	2.1	11.0	480	66
SM40AS · BS	4.0 (5)	6	1,000	440	300	3.2	12.8	640	145
SM50AS · BS	5.0 (7)	10	600	540	525	4.0	30.6	1,200	160
SM75AS · BS	7.5 (10)	10	600	541	525	6.0	36.4	1,700	

* In clear water

Dimensions

Model	A	B	φC	D	E	F	G	H	J
SM15JAS · JBS	543	486	360	308	215	50	211	150	19
SM24JAS · JBS	543	486	360	308	215	50	211	150	19
SM28AS · BS	582	525	440	308	228	50	251	190	19
SM40AS · BS	598	541	510	308	236	50	259	251	19
SM50AS · BS	836	746	705	280	328	100	353	353	43
SM75AS · BS	888	798	705	280	350	100	353	353	43

Min. water level for Submersible Mixer

Model	Flow Stabilizer	H	A	B
SM15JAS · JBS	w/o	1,100	700	180
	with	500	100	185
SM24JAS · JBS	w/o	1,100	700	180
	with	500	100	185
SM28AS · BS	w/o	1,500	900	220
	with	900	300	226
SM40AS · BS	w/o	1,700	1,100	255
	with	1,000	400	261
SM50AS · BS	w/o	1,700	800	353
	with	1,200	300	361
SM75AS · BS	w/o	1,900	1,000	353
	with	1,200	300	361

60Hz Specification

Model	Motor		Synchronous rotation speed (min ⁻¹)	Propeller code	Propeller dia. (mm)	Output (kW)	Mixing Flow rate (m ³ /min)	Thrust (N)	Weight (kg)
	Motor kW (HP)	Pole (P)							
SM15JAS · JBS	1.1 (1.5)	6	1,200	643	220	0.8	4.2	130	47
	1.5 (2)	6	1,200	141	254	1.2	6.9	260	
SM24JAS · JBS	2.4 (3.2)	4	1,800	641	220	2.0	5.8	250	57
SM28AS · BS	2.8 (3.7)	6	1,200	341	300	2.3	11.0	480	66
SM40AS · BS	4.0 (5)	6	1,200	441	300	3.2	12.8	640	145
SM50AS · BS	5.0 (7)	12	600	540	525	4.0	30.6	1,200	160
SM75AS · BS	7.5 (10)	12	600	541	525	6.0	36.4	1,700	

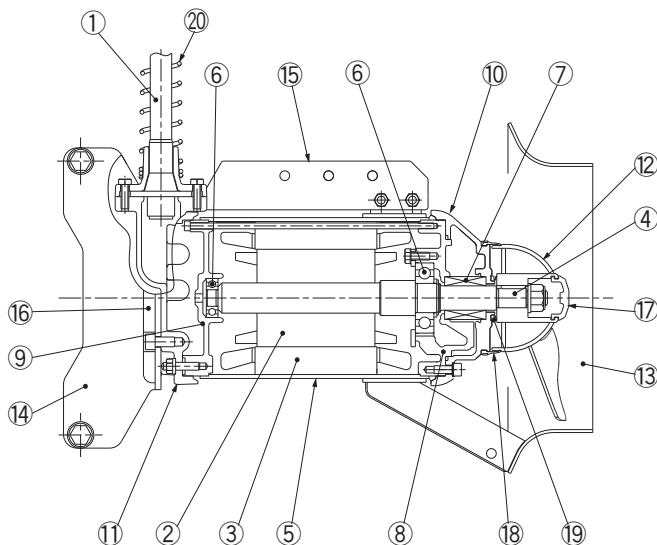
For the characteristics of motor and the oil volume, please refer to the specifications (detail data) - App.1.

Unit: mm

Sectional View

SM-AS

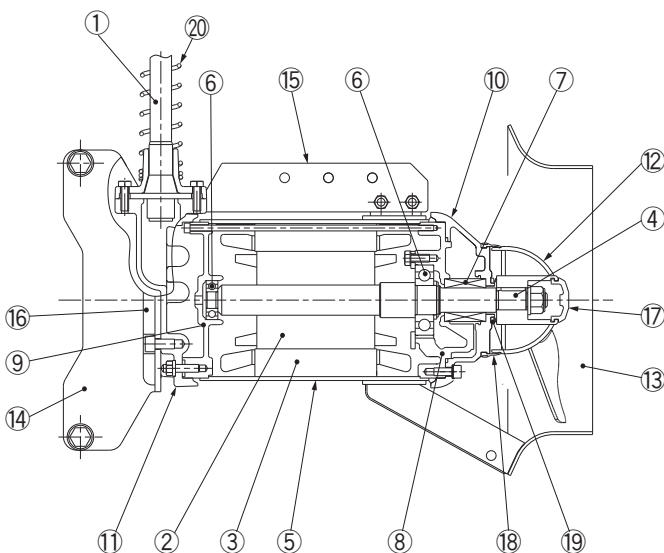
Cast iron specification



No.	Name	Material
1	Cable	2PNCTS
2	Rotor	—
3	Stator	—
4	Shaft	SUS316
5	Stator Casing	SUS316L
6	Ball Bearing	—
7	Mechanical Seal	SiC/SiC
8	Mechanical Seal Bracket	FC200
9	Bearing Bracket	FC200
10	Oil Casing	FC200
11	Head Cover	FC200
12	Propeller	Boss: SUS316L Vane: High-silicon stainless steel
13	Draft Ring	SUS304L
14	Sliding Bracket	SUS304
15	Lifting plate	SUS304
16	Sliding Plate	Polyethylene
17	Propeller Cap	NBR
18	Shield Ring	NBR
19	Oil Seal	NBR
20	Support Coil	SUS304

SM-BS

Stainless Steel Specification



No.	Name	Material
1	Cable	2PNCTS
2	Rotor	—
3	Stator	—
4	Shaft	SUS316
5	Stator Casing	SUS316L
6	Ball Bearing	—
7	Mechanical Seal	SiC/SiC
8	Mechanical Seal Bracket	FC200
9	Bearing Bracket	FC200
10	Oil Casing	SCS14
11	Head Cover	SCS14
12	Propeller	Boss: SUS316L Vane: High-silicon stainless steel
13	Draft Ring	SUS304L
14	Sliding Bracket	SUS304
15	Lifting plate	SUS304
16	Sliding Plate	Polyethylene
17	Propeller Cap	NBR
18	Shield Ring	NBR
19	Oil Seal	NBR
20	Support Coil	SUS304

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitrlyl rubber

Output: **1.5 - 2.8 kW (2 - 3 3/4 HP)**

SM-R

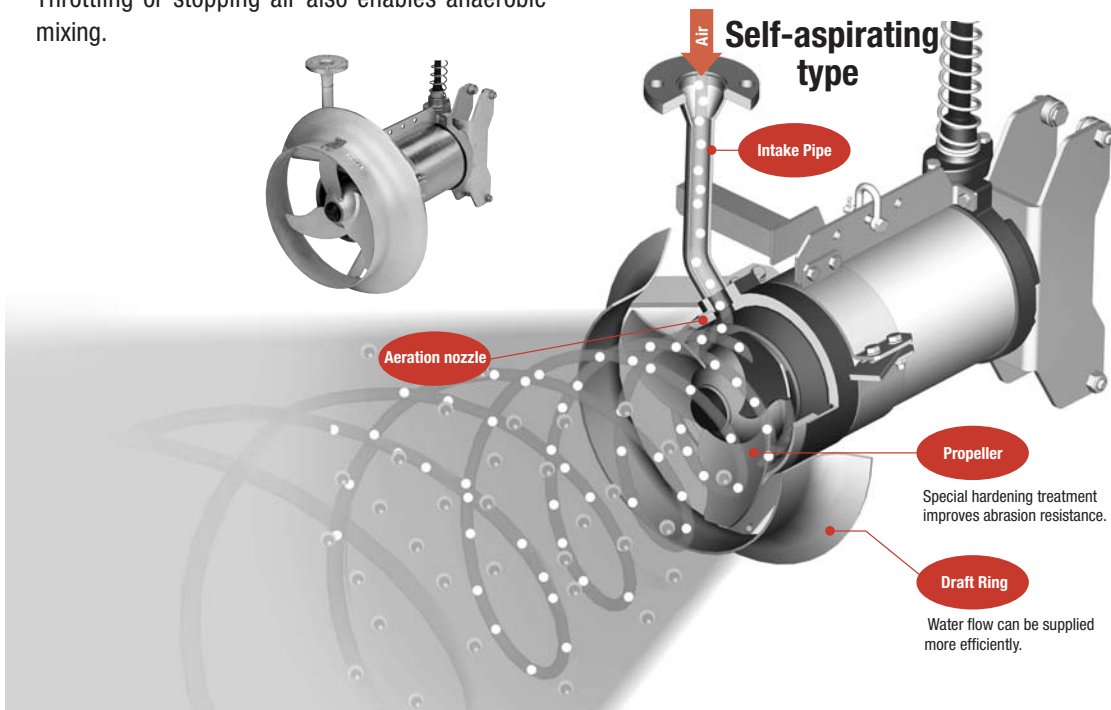
Aeration mixer “SM-R series”, a device effective for scum destruction and odor prevention, adds an aeration function to highly evaluated submersible mixer, which has excellent durability, energy saving and maintainability.

■ Features

- **No blower is required as self-aspirating type**
- **Supplying oxygen simultaneously with mixing**
Submersible mixer is used as a base for supplying oxygen and simultaneously mixing.
- **Anaerobic mixing is also available**
Throttling or stopping air also enables anaerobic mixing.

● Preventing debris clogging

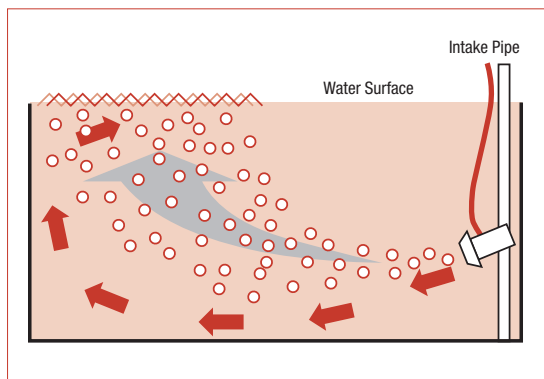
Use of sweepback blade propeller prevents foreign object clogging.



■ Applications

- **Mixing of the pumping well in transfer pumping station**
Load reduction in post-process (sewage treatment plant) and prevention of hydrogen sulfide generation
- **Mixing of the building pits for public facilities and department stores**
Preventing sludge deposit and scum generation

■ Conceptual Chart



■ Installation Example (SM15JAR water depth 0.9m)



Standard Specifications

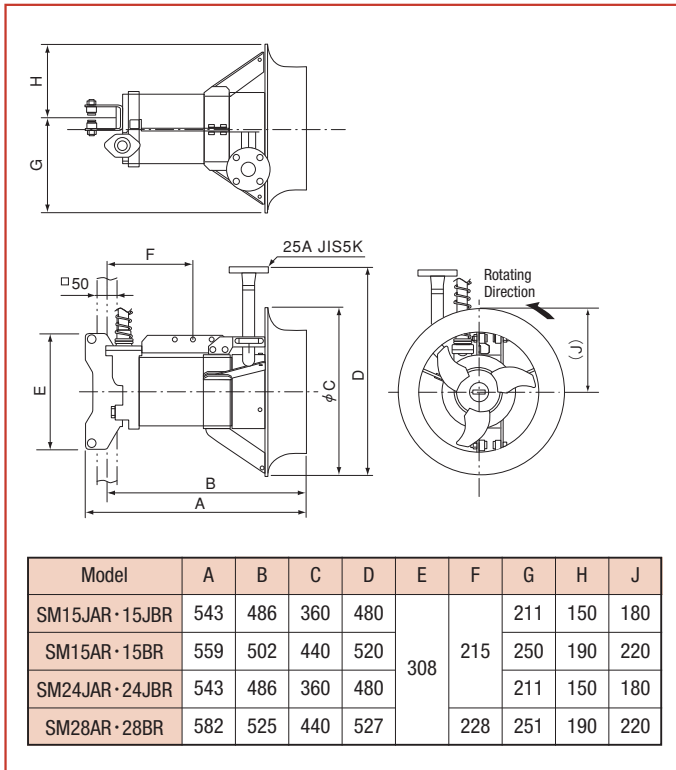
Model	Output kW (HP)	Frequency Hz	Rated Current A	Synchronous Rotation Speed min ⁻¹	Propeller Cord	Air Flow Rate (Standard submergence depth) m ³ /h	Maximum Submergence Depth (m) for aspiration	Weight kg
SM15JAR SM15JBR	1.5 (2)	50	7.8	1,000	130	17.4 (0.4m)	0.5	50
		60	7.4	1,200	131	22.0 (0.4m)	0.7	
SM15AR SM15BR	1.5 (2)	50	7.8	1,000	230	13.9 (0.35m)	0.4	52
		60	7.4	1,200	231	19.3 (0.35m)	0.65	
SM24JAR SM24JBR	2.0 (2.5) 2.4 (3.2)	50	8.4	1,500	132	16.2 (0.8m)	1.1	50
		60	9.7	1,800	133	21.6 (0.8m)	1.5	
SM28AR SM28BR	2.8 (3.7)	50	15.3	1,000	330	15.4 (0.95m)	1.15	61
		60	14.9	1,200	331	17.0 (0.95m)	1.45	

* When water depth exceeding the maximum submergence depth, use with blowers. In this case, air supply rate shall not exceed air flow rate as shown in above tables.

* Submergence Depth: Distance between water surface and top of draft ring of the mixer.

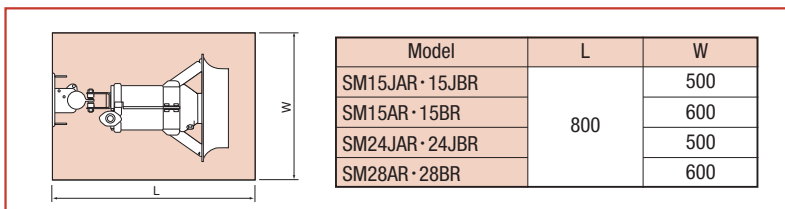
Dimension

Unit: mm



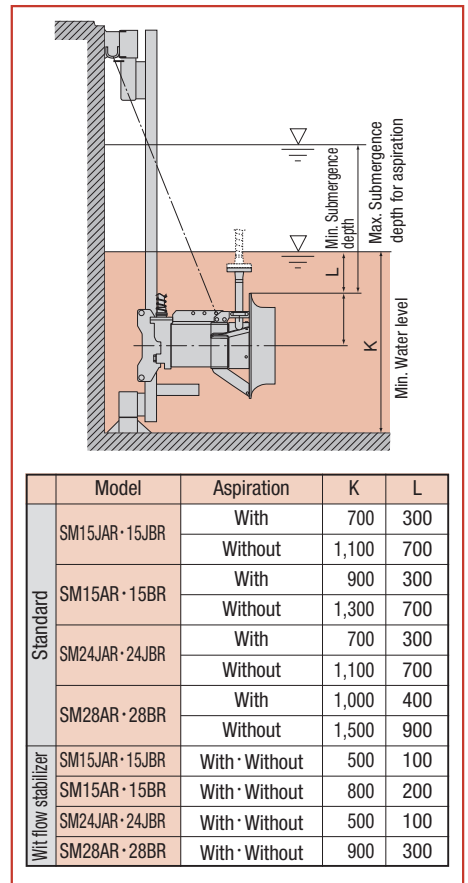
Open Slot Dimensions

Unit: mm



Operation Min. Level

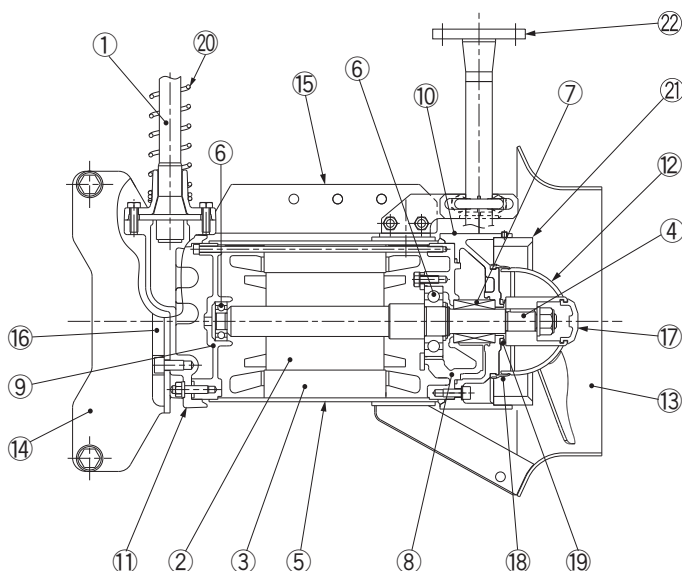
Unit: mm



Sectional View

SM-AR

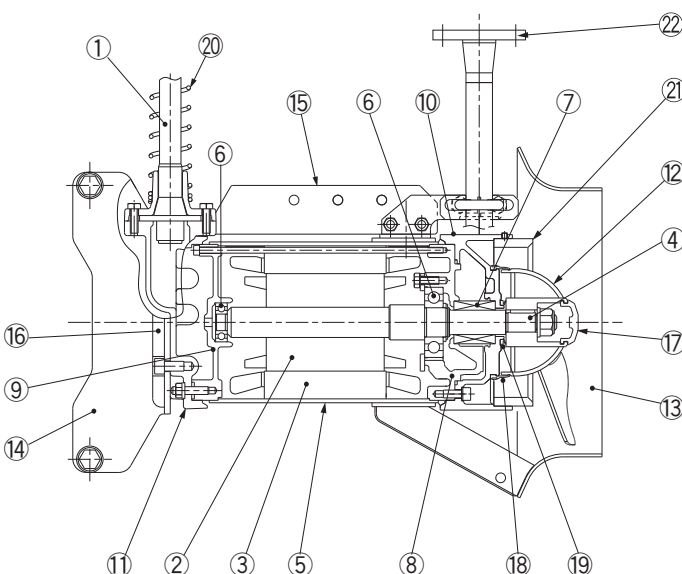
Cast iron specification



Number	Name	Material
1	Cable	2PNCTS
2	Rotor	—
3	Stator	—
4	Shaft	SUS316
5	Stator Casing	SUS316L
6	Ball Bearing	—
7	Mechanical Seal	SiC/SiC
8	Mechanical Seal racket	FC200
9	Bearing Bracket	FC200
10	Oil casing	SCS14
11	Head Cover	FC200
12	Propeller	SUS316L
13	Draft Ring	SUS304L
14	Sliding Bracket	SUS304
15	Lifting Plate	SUS304
16	Sliding Plate	Polyethylene
17	Propeller Cap	NBR
18	Shield Ring	NBR
19	Oil Seal	NBR
20	Support Coil	SUS304
21	Aeration Nozzle	SUS304
22	Intake Pipe	SUS304

SM-BR

Stainless steel specification



Number	Name	Material
1	Cable	2PNCTS
2	Rotor	—
3	Stator	—
4	Shaft	SUS316
5	Stator Casing	SUS316L
6	Ball Bearing	—
7	Mechanical Seal	SiC/SiC
8	Mechanical Seal racket	FC200
9	Bearing Bracket	FC200
10	Oil casing	SCS14
11	Head Cover	SCS14
12	Propeller	SUS316L
13	Draft Ring	SUS304L
14	Sliding Bracket	SUS304
15	Lifting Plate	SUS304
16	Sliding Plate	Polyethylene
17	Propeller Cap	NBR
18	Shield Ring	NBR
19	Oil Seal	NBR
20	Support Coil	SUS304
21	Aeration Nozzle	SUS304
22	Intake Pipe	SUS304

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel

SCS : Stainless steel casting **SS** : Mild steel **SPCC** : Steel **FC** : Gray iron casting **FCD** : Ductile iron casting **NBR** : Nitril rubber

Low-speed Submersible Mixer

Output: **1.5 - 3.7 kW (2 - 5 HP)**

SML

Low-speed Submersible Mixer, SML Series adopts a specially designed blade based on Shinmaywa's mixer know-how and latest analysis and technologies, realizing a stable circulation flow required by the Oxidation Ditch (OD) process with low cost.

■ Features

● Strong water flow

Using hydrodynamic structure analysis as well as high-performance propeller that enables both mixing performance and strength.

In addition, a structure with a sweepback angle will prevent debris from tangling and provide superb durability.

● Safety design

Leakage water chamber is equipped as a standard for all types to prevent immersion into motor.

Use of leakage detector (option) allows to check moisture status even during operation.

Specially reinforced cable with fabric is used for preventing immersion into motor, even if damaged, by using core wire seal.

● High maintainability

Under a lifting condition, oil change for mechanical seal and reduction gear parts, and inspection of the immersion to the leakage water chamber are available.

● Superb reliability

Using 4-end face SiC mechanical seal that has a fully proved performance as a submersible pump manufacturer.

Satisfactory reliability is proved to endure a long term continuous operation required for submersible mixer.

Propeller shaft employs corrosion resistant Stainless steel (SUS316), achieving a reliability in various environments.

● Extended service life

Use of slow-rotation multi-pole motor reduces load of reduction gear and realizes a longer life.

● Wider scope of application

To reduce a motor temperature rise, high-temperature resistant motor is employed to endure liquid temperature up to 40°C.

Liquid contact part is fully made of stainless for application in wider environment such as seawater.



■ Accessories

- Cable (see the cable specification)1 pc.

■ Application Condition

Liquid Type	Wastewater, Sewage containing sludge
Specific Gravity	1.03 or less
Viscosity	1,000 mPa·s or less
Temperature	0 - 40°C
Chlorine Ion	1,000 mg/ℓ or less
Sludge Concentration	5% or less
Water Depth	10m or less
pH	6 - 9

- Scope of application of liquid specific gravity and viscosity varies per type.
- Depending on liquid type, application other than above can be handled.
Please contact us.

■ Applications

- Generating circulating water flow for Oxidation Ditch (OD) tank

Standard Specifications

Model	Rated Output kW (HP)	Rated Current A		Propeller Cord	Output at clear water mixing kW	Propeller Diameter m	Minimum Passing Width mm	Flow Rate m ³ /min	Thrust N	Weight kg
		50Hz	60Hz							
SML15	1.5 (2)	8.8	9.7	*1020	1.5	1.4	510	70	900	225
				1021	1.3			68	850	
				1022	1.2			66	800	
				1023	1.1			63	700	
				1120	1.4	1.6	555	85	1,000	
				1121	1.2			82	900	
				1122	1.1			79	800	
				*1220	1.5			103	1,200	
				1221	1.3	1.8	605	99	1,100	
				1222	1.1			95	1,000	
				1223	1			91	900	
				*1320	1.4			143	1,500	
				1321	1.4	2.2	750	140	1,400	
				1322	1.2			134	1,300	
				*1420	1.5			180	1,800	
				1421	1.4	2.5	850	174	1,700	
				*2020	2.2			80	1,200	
				2021	2	1.4	510	77	1,100	
				2022	1.8			75	1,050	
				2023	1.6			73	1,000	
				2024	1.5			70	900	
SML22	2.2 (3)	13.5	14.7	*2120	2.2	1.6	555	99	1,400	225
				2121	2			96	1,300	
				2122	1.8			93	1,200	
				2123	1.6			90	1,100	
				*2220	2.2	1.8	605	117	1,500	
				2221	1.9			111	1,400	
				2222	1.7			107	1,300	
				2223	1.5			103	1,200	
				*2320	2.1	2.2	750	168	2,100	
				2321	1.9			162	1,900	
				2322	1.8			156	1,800	
				2323	1.6			149	1,600	
				2324	1.6			143	1,500	
				*2420	2.1	2.5	850	201	2,300	
				2421	1.9			195	2,100	
				2422	1.7			189	2,000	
				2423	1.7			183	1,900	
				2424	1.7			180	1,800	
SML37	3.7 (5)	21.2	25.5	3020	3.2	1.4	510	91	1,600	235
				3021	3			89	1,500	
				3022	2.6			86	1,400	
				3023	2.3			82	1,300	
				3024	2.2	1.6	555	80	1,200	
				*3120	3.5			116	1,900	
				3121	3.2			114	1,800	
				3122	2.9			109	1,700	
				3123	2.5			104	1,600	
				3124	2.3	1.8	605	102	1,500	
				3125	2			97	1,400	
				*3220	3.5			137	2,100	
				3221	3.2			133	2,000	
				3222	2.8			128	1,800	
				3223	2.5			122	1,700	
				3224	2.4	2.2	750	120	1,600	
				3225	2			113	1,500	
				*3320	3.6			210	3,200	
				3321	3.2			201	3,000	
				3322	2.9			192	2,700	
				3323	2.8	2.5	850	190	2,600	
				3324	2.4			179	2,300	
				*3420	3.5			237	3,200	
				3421	3.2			229	3,000	
				3422	3.1			226	2,900	
				3423	2.7			216	2,700	

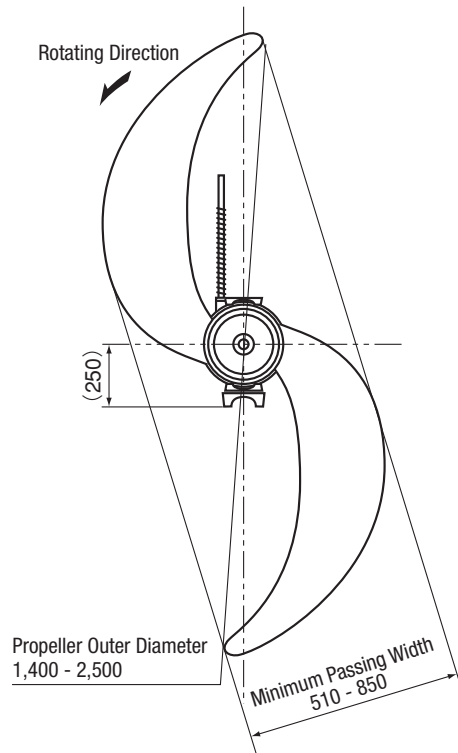
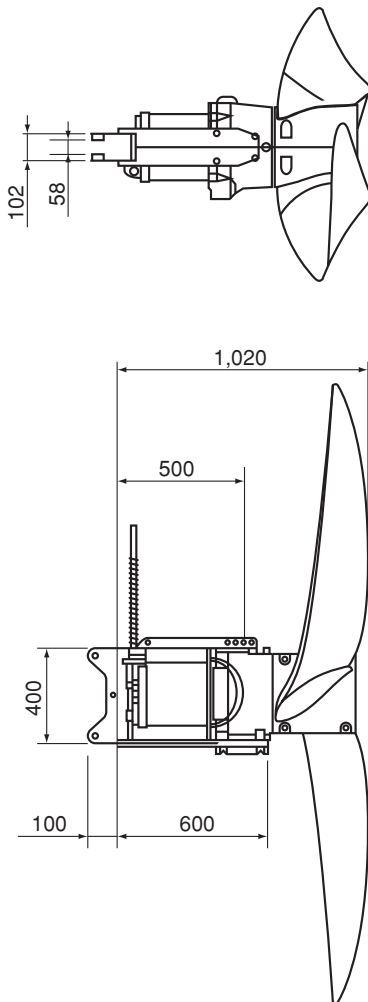
Cable Specification

Model	Type	Section Area (mm ²)	Cores	Applications	Outer Dia. (mm)	Length (m)
SML15 SML22	2PNCTS	2.0	4	Power Thermal Spare	φ 18	10
		2.0	2			
		2.0	2			
SML37	2PNCTS	3.5	4	Power Thermal Spare	φ 20	10
		2.0	2			
		2.0	2			

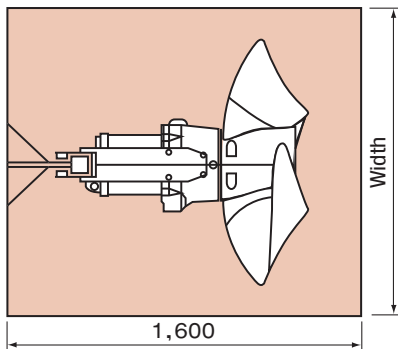
- Do not use products, whose propeller cord is marked with *, in the fluid containing a large amount of foreign objects or high specific gravity (1.03 or higher).
- Flow rate is a calculation value and may change per tank shape.

■ Dimensions

Unit: mm



Open Slot Width



Propeller Outer Dia.	Minimum Width	Recommended Width
1,400	900	1,800
1,600	950	2,000
1,800	1,000	2,200
2,200	1,100	2,600
2,500	1,200	2,900

At the minimum width, the propeller must be positioned vertically during installation and removal.
As far as space available, use recommended width.

■ Propeller Selection Table (propeller cord)

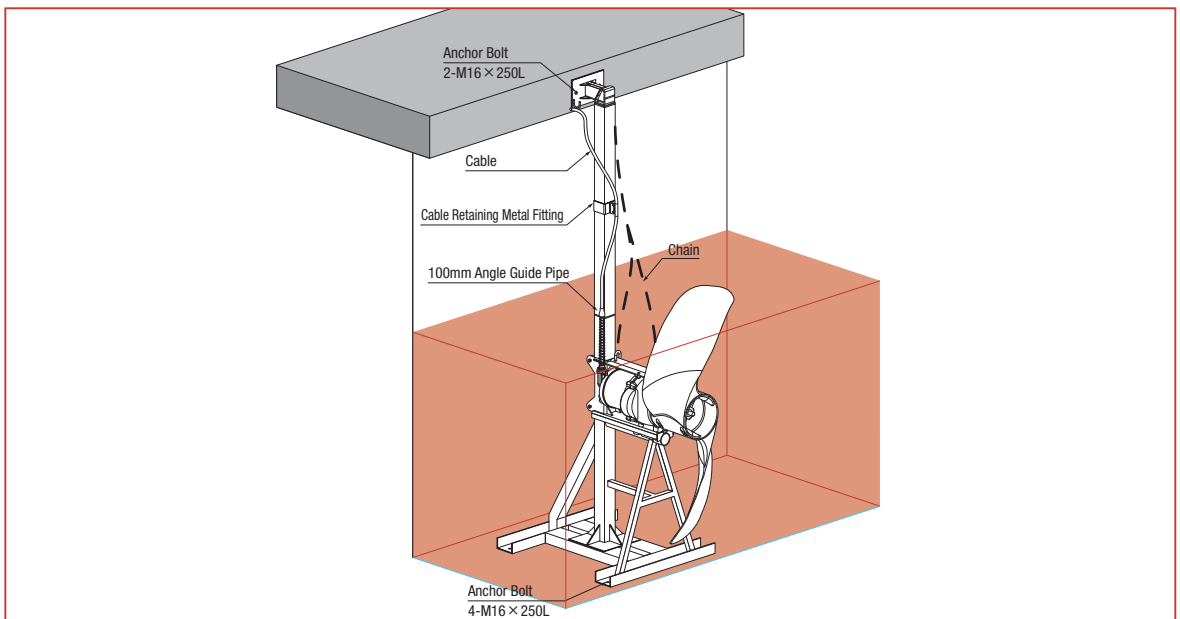
Reactive Force N	Propeller Outer Diameter m				
	1.4	1.6	1.8	2.2	2.5
700	1023				
800	1022	1122			
850	1021				
900	*1020 / 2024	1121	1223		
1,000	2023	1120	1222		
1,100	2021	2123	1221		
1,200	*2020 / 3024	2121	*1220 / 2223		
1,300	3023	2122	2222	1322	
1,400	3022	*2120 / 3125	2221	1321	
1,500	3021	3124	*2220 / 3225	*1320 / 2324	
1,600	3020	3123	3224	2323	
1,700		3122	3223		1421
1,800		3121	3222	2322	*1420 / 2424
1,900		*3120		2321	2423
2,000			3221		2422
2,100			*3220	*2320	2421
2,300				3324	*2420
2,600				3323	
2,700				3322	3423
2,900					3422
3,000				3321	3421
3,200				*3320	*3420

SML15
SML15 (clear water) / 22
SML22
SML22 (clear water) / 37
SML37
SML37 (clear water)

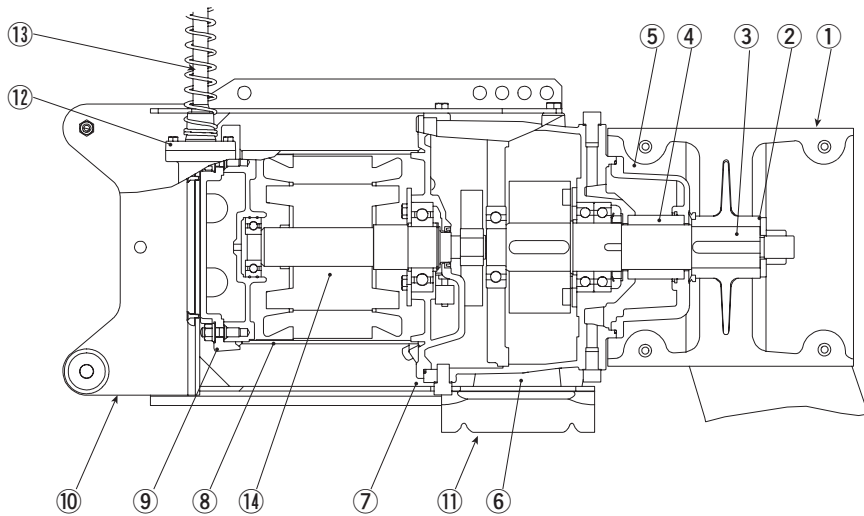
- A submersible mixer must have a mixing force greater than the thrust of a specific operation. For this reason, it is essential to calculate the thrust before selecting an appropriate mixer. The thrust varies depending on the chamber configuration, chamber size, and the water quality in each application. We will perform the calculation so you can benefit from our experience and expertise. Please contact us for this calculation.

Models marked with an asterisk* cannot be used in highly contaminated liquids or liquids with a specific gravity exceeding 1.03.

■ Example Layout



Sectional View



Number	Name	Material	Number	Name	Material
1	Propeller	Resin	8	Stator Casing	SUS316L
2	Propeller Boss	SCS14	9	Head Cover	FC200
3	Propeller Shaft	SUS316	10	Guide Bracket	SUS316L
4	Mechanical Seal	SiC/SiC	11	Buffer Material	EPDM
5	Mechanical Seal Bracket	FC200	12	Cable Entry	FC200
6	Oil Casing	FC200	13	Cable	2PNCTS
7	Bearing Casing	FC200	14	Motor Shaft	S55C

* Note **2PNCTS** : Chloroprene sheathed cabtyre cables **SUS** : Stainless steel **SCS** : Stainless steel casting **SPCC** : Steel
FC : Gray iron casting **EPDM** : Ethylene-propylene rubber **S55C** : Carbon steel

Screen

Automatic Bar Screen

BS (Bar Spacing: 1 - 50mm, Rake Type) 517

VS (Bar Spacing: 20, 30, 50mm, Belt Type) 523

SS Screen

SB (With built-in Backwash Brush) 527

S (No Backwash Brush) 531

MEMO

Handwriting practice lines consisting of 20 horizontal dashed lines.

BS

Automatic Bar Screen is a device for removing suspended solids at various water treatment facilities. It has superb durability to withstand tough operating conditions, such as continuous operation through day and night and submersion of a lower part of shafts, and can be used for long time.

Features

● Toughness and long life

Adoption of a reduction gear built-in motor of outer rotor type and bearings not come into contact with sewage water realize long service life.

● Easy maintenance

The reduction gear built-in motor and rake built in one piece facilitates maintenance.

● Adoption of a reduction gear with submergence Tolerance

In the event that a reduction gear built-in motor is submerged due to unexpected increase of water, screen can be used continuously provided that such submergence is detected early and appropriate measures are taken.

Applications

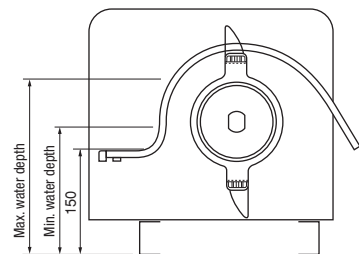
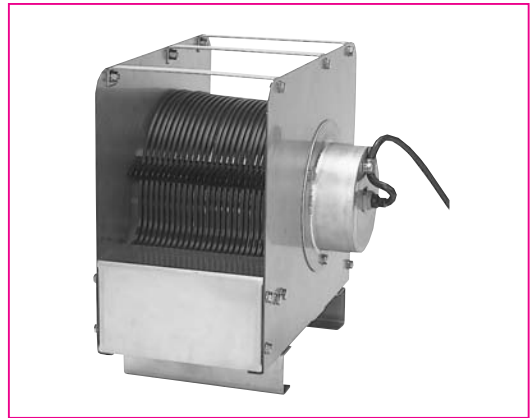
- Septic tanks or small sized water treatment facilities

Specifications

Capacity (Clear water) (m³/h)	Silt (mm)	Model
		BS1S·BS1D
	2	23
	2.5	27
Rotation Speed (min⁻¹)		13/16 (50/60Hz)
Motor		25 W, 200V (with submergence tolerance), 3-ph
Weight (kg)		14
Applicable Min. Water Depth (mm)		165
Applicable Max. Water Depth (mm)		230
Standard Accessories		Cable (2 PNCT 0.75mm², 4 cores, outer dia.: ϕ 10.5mm) × 3 m

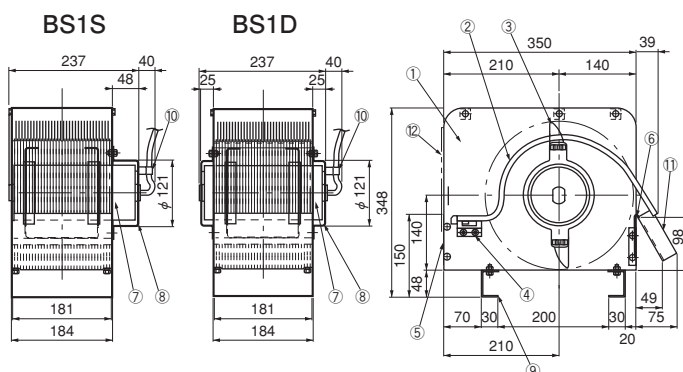
Examples of Modification

- Changing Cable lengths
- Changing Voltage



Dimensions

Unit: mm



* ⑪, ⑫ are optional.

Number	Name	Quantity	Material
1	Frame	2	SUS304
2	Screen Bar	—	PET
3	Rake	2	PC
4	Bar Receipt	1	PP
5	Inflow Cover	1	SUS304
6	Outflow Cover	1	SUS304
7	Geared Motor	1	SUS304
8	Motor Cover	1	SUS304
9	Legs	2	SUS304
10	Cable Band	1	PE
11	Chute *	1	PE
12	Inflow Packing *	1 set	NBR

* Optional

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **2PNCT** : Chloroprene sheathed cabtyre cable **SUS** : Stainless steel
PET : Polyethylene terephthalate **PC** : Polycarbonate **PP** : Polypropylene **PE** : Polyethylene **NBR** : Nitril rubber

■ Features

● Adopting stainless steel for main components

The main components, such as frame, screen bar and rake, are made of stainless steel and thus provide strength and durability.

● Adopting inner chain structure

Carriage chain is built in the frame and not exposed in front of screen, preventing sludge or dirt passing through the screen from attaching to carriage chain or sprocket in the lower part of the machine.

● Adopting link-type bar support device

Link-type bar support mechanism (excluding BS1N and BS1H) prevents screen bar from sagging due to its own weight. This mechanism provides less wear and higher durability than a rake-type bar support mechanism.

● Adopting reduction gear with submergence tolerance.

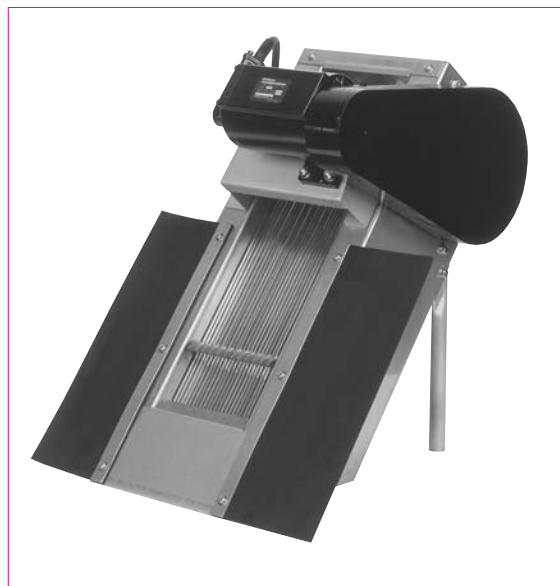
Adopts a proven reduction gear with submergence tolerance. In the event that a reduction gear built-in motor is submerged due to an unexpected increase in water, screen can be used continuously provided that such submergence is detected early and appropriate measures are taken.

Note 1

A special rake needs should be mounted to handle screen residues containing food oils or having a nearly spherical shape. Please contact us.

Note 2

To respond the needs of industrial water treatment facilities, we can change a rake speed or number of rakes. Please contact us.



■ Applications

- Primary treatment at septic tanks and water treatment facilities
- Screening suspended solids from kitchen at hotel, shopping complex and etc.

■ Main Specifications

Material of FramesStainless steel
Coating for FramesNone
Reduction GearEpoxy resin coating
Cable: VCT 1.25mm², 4 cores, outer dia.: φ 11.5

■ Examples of Modification

- Changing the length of a rubber sealer (Changes to a water channel width)

Standard Specifications

Capacity (Clear water) (m³/h)	Silt (mm)	Model							
		BS1H	BS2H	BS3H	BS1N	BS2N	BS3N	BS4N	BS5N
	1	18	25	43	18	25	43	86	99
	2	23	45	65	23	45	65	106	145
	2.5	27	50	75	27	50	75	130	179
	5	38	70	105	38	70	105	182	240
	10	43	75	112	43	75	112	206	251
	20	47	88	130	47	88	130	226	260
	30	50	92	138	50	92	138	240	276
50	—	—	—	—	—	—	252	290	
Rake-up Speed (m/min)		1.9/2.3(50/60Hz)							
Motor		25 W, 3-ph, 200V (with submergence tolerance)			0.1 kW, 3-ph, 200V (with submergence tolerance)				
Weight (kg)		21 - 24	28 - 33	29 - 37	21 - 24	28 - 33	29 - 37	32 - 50	43 - 68
Applicable Channel Width (mm)		300 - 400						500 - 600	
Standard Accessories		Cable (VCT 1.25mm², 4 cores, outer dia.: ϕ 11.5) × 6 m Trash Basket (made of stainless steel) × 1 unit Spare Belt x 1 pc.							

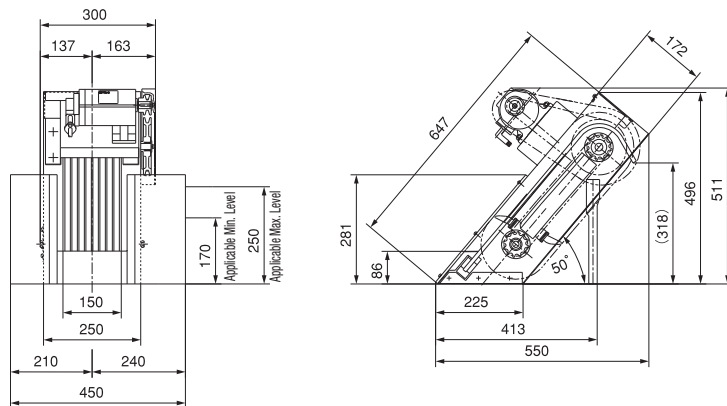
Note 1: A manual handle type is also available (only for BS1H, BS2H, BS1N and BS2N)

Note 2: We will receive a special order for BS1H - 3H and 1N - 3N with a silt of 50 mm. Please contact us.

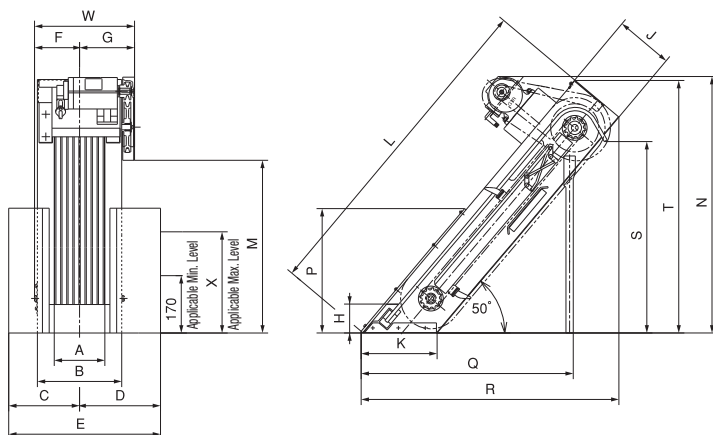
Dimensions

Unit: mm

BS1N, BS1H



BS2N, BS3N, BS4N, BS5N, BS2H, BS3H

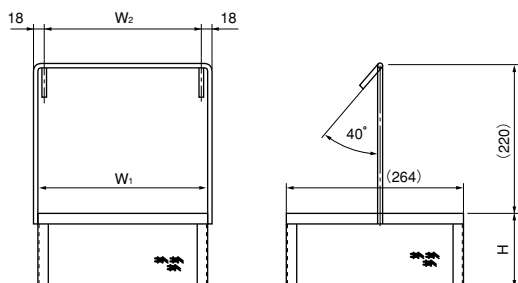


Model	BS2N BS2H	BS3N BS3H	BS4N	BS5N
A	150	150	350	350
B	250	250	450	450
C	210	210	335	335
D	240	240	365	365
E	450	450	700	700
F	137	137	237	237
G	163	163	263	263
H	86	86	86	86
J	172	172	172	172
K	225	225	225	225
L	981	1,140	1,140	1,568
M	512	634	634	961
N	766	894	894	1,216
P	370	570	570	650
Q	629	731	734	1,010
R	765	868	868	1,143
S	573	701	701	1,023
T	751	879	879	1,201
W	300	300	500	500
X	330	510	510	580

■ Dimensions

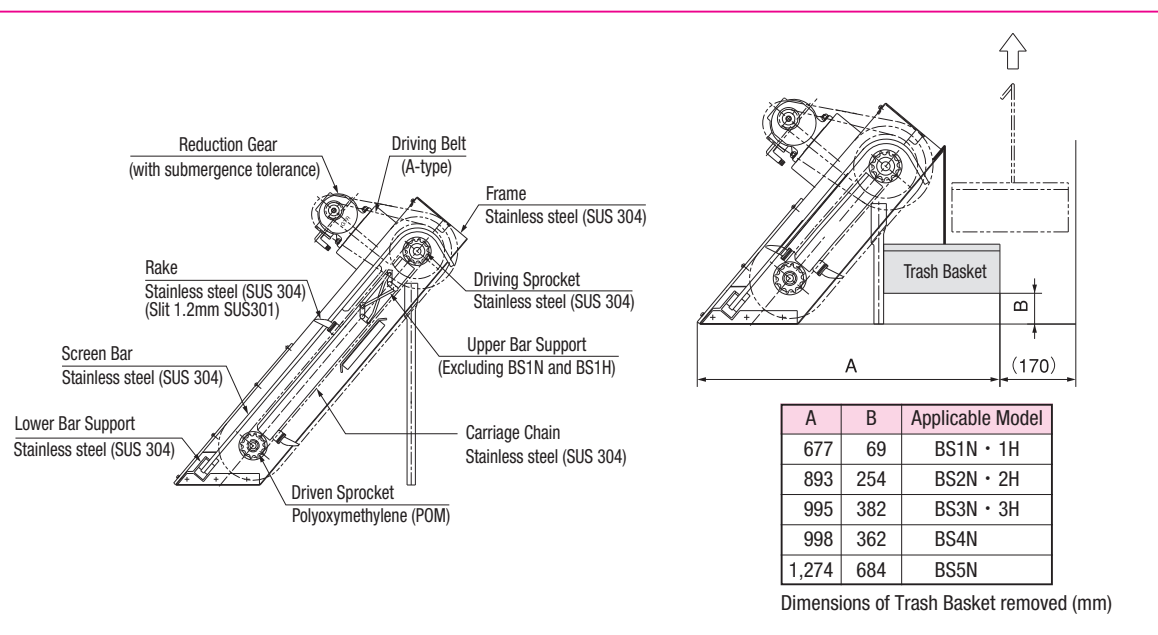
Unit: mm

Dimensions of Trash Basket



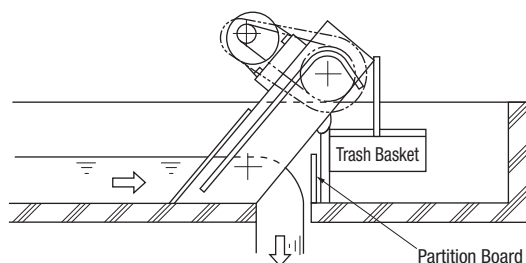
H	W1	W2	Applicable Model
110	254	230	BS1N · 1H
180	254	230	BS2N · 3N · 2H · 3H
200	454	430	BS4N · 5N

■ Structure and Main Materials

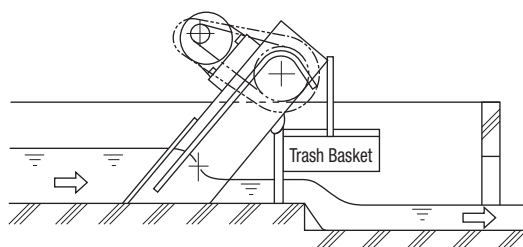


■ Installation Example

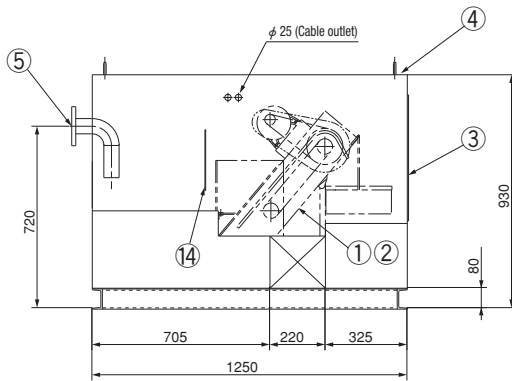
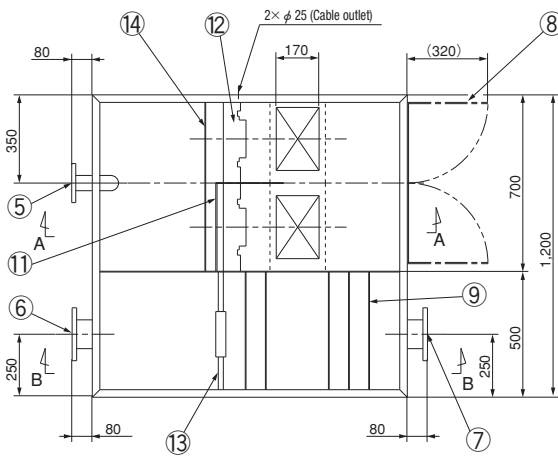
A partition board is provided to drop water



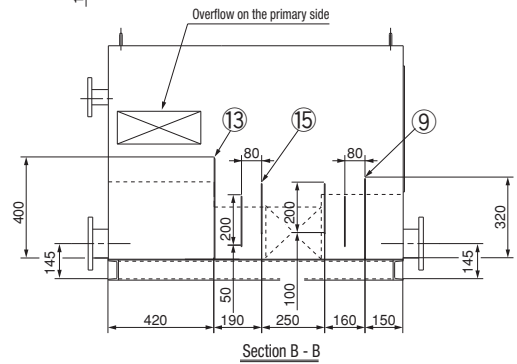
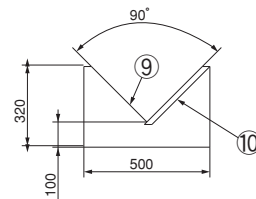
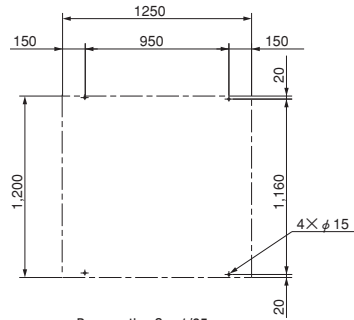
A step is provided behind the screen to lower the water level



Screen unit (for two BS1N/1H)



Section A - A



Section B - B

Number	Part Name
1	Automatic Screen
2	Automatic Screen
3	Unit Body
4	Cover
5	Inflow Pipe
6	Return Pipe
7	Outflow Pipe
8	Trash Basket Removal Door
9	V Notch
10	Scale Board
11	Gate
12	Inflow Section Cover
13	Flow Rate Adjustment Board
14	Inflow Section Wave-dissipating Board
15	Wave-dissipating Board in Measurement Tank

Unit Weight (excluding that of automatic screen)

Approx. 350 kg

Applicable Screen: BS1N or BS1H

Slit: 5mm or less (Maximum amount of inflow: 42 m³/h)

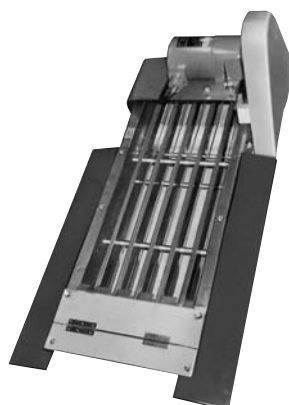
Note 1: Be sure to provide a wave-dissipating board in the inflow section when a unit is manufactured by a customer.

2: To install the screen in building facilities, a vent pipe or a vent valve for wastewater shall be provided.

VS

VS series is a rotating belt type bar screen and specially designed for primary treatment at human waste treatment facilities.

These include an outstanding function to rake up many types of residue mixed in the influent and mechanically sort the residue to be raked up (paper, cloth, and vinyl, etc.) and that to be passed (fecaloma). VS series can be used for extended periods thanks to exceptional durability to withstand harsh working conditions, including continuous 24 hours operation, immersion of the downside bearing, etc.

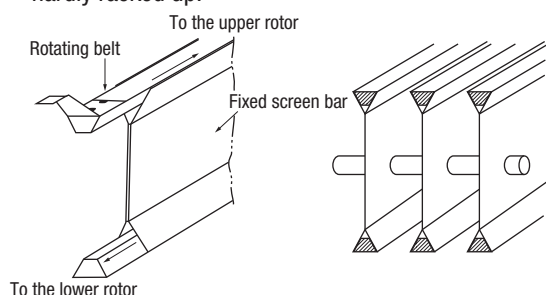


VS

Features

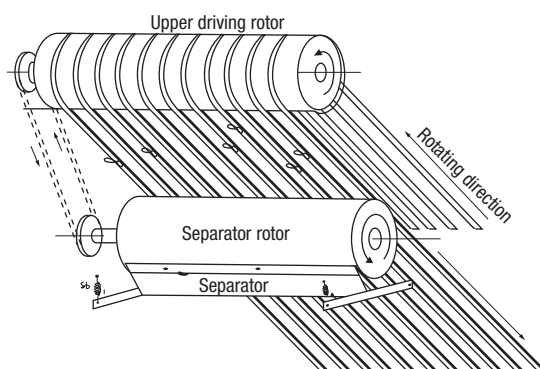
● Fixed Screen Bar and Rotating Belt

The upper and lower parts of fixed screen bar and the rotor have V-shaped groove. The rotating belt runs endlessly along the V-shaped grooves to rake up trash in the inflow water. It is structured that the trash to be racked up includes only paper, cloth and plastic attached to the rotating belt, and lumps of feces are hardly racked up.



● Separator

Trash such as paper, cloth and plastic, which is racked up by the rotating belt, does not drop by gravity, but is forcibly detached by the separator and rotor separator so that the fixed screen is always kept clean.



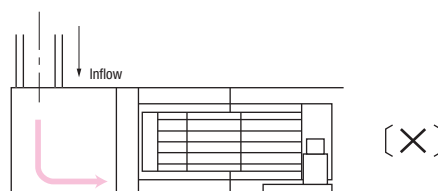
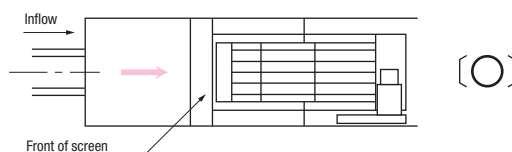
Notes

○ Selection of mesh width

For a screen with coarse meshes used in general sewage treatment facilities, including rural community waste water treatment facilities, a bar spacing of 50 mm is recommended. Using 20 or 30 mm may result in racking up lumps of feces. For bypass use or fine spacing, using 20 or 30 mm is recommended.

○ Installation precautions

Install the screen at right angles to the sewage flow, or lumps of feces may accumulate in the channel.



Standard Specifications

Capacity (in m ³ /h)	Bar spacing	Model							
	(mm)	VS-1H	VS-2H	VS-1	VS-2	VS-3	VS-4	VS-5	VS-6
	20	40	70	40	70	120	70	120	150
	30	50	80	50	80	150	80	150	180
	50	70	100	70	100	180	100	190	220
Rake-up Speed (m/min)		3.0 (50Hz)/3.6 (60Hz)					3.0 (50Hz)/3.6 (60Hz)		
Weight (kg)		55	65	55	65	70	65	75	85
Motor (Water-proof type)		25 W 3-ph 200 - 480 V		0.1 kW 3-ph 200 - 480 V			0.1 kW 3-ph 200 - 480 V		
Applicable Channel Width (mm)		400 - 500	400 - 500	400 - 500	400 - 500	400 - 500	600 - 700	600 - 700	600 - 700
Applicable Water Depth (mm)		150 - 300	150 - 400	150 - 300	150 - 400	150 - 600	150 - 300	150 - 400	150 - 600
* Applicable Channel Height (mm)		420 - 490	610 - 820	420 - 490	610 - 820	930 - 1,140	420 - 490	610 - 820	930 - 1,140

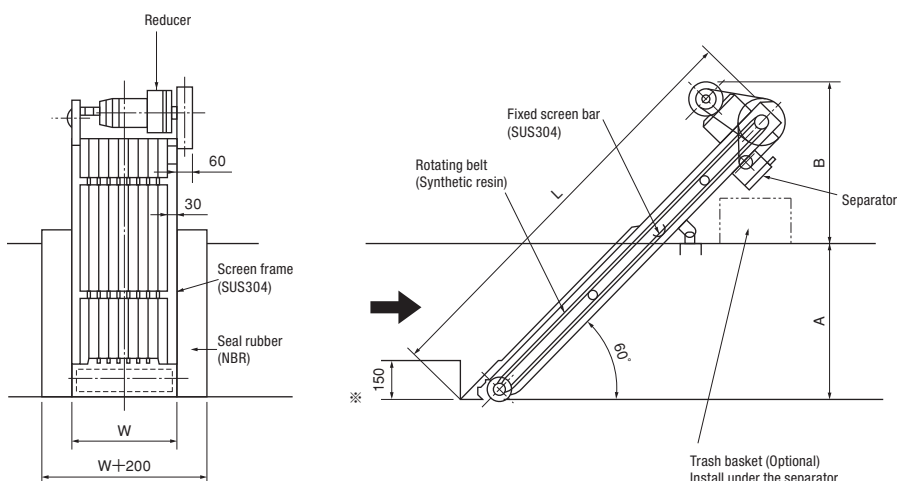
* The indicated capacity is the capacity when measured with clear water.

* The applicable height may vary. For details, please contact us.

* The VS-4, -5 and -6 are made-to-order products. Please check the delivery time before placing an order.

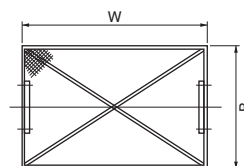
Major Dimensions and Materials

Unit: mm



Trash basket (Optional)
Install under the separator.
Depending on the height of the channel,
the trash basket may be placed in the channel.

● Dimensions of the Trash Basket



Model	Bar Spacing		Machine Length (L)	Machine Width (W)	A	B
VS-1 · 1H	20	30	1,000	380	490	440
VS-2 · 2H					820	580
VS-3					1,140	660
VS-4			1,000	580	490	440
VS-5					820	580
VS-6					1,140	660

Note 1: The step on the bottom of the channel of the VS type should have a length of 150 or more to prevent lumps of feces accumulating.

2: A pilot plate may be installed.

W	B	Applicable Model
400	350	VS-1, 1H, 2, 2H, 3
600	400	VS-4, 5, 6

Material: SUS304

MEMO

Handwriting practice lines consisting of 20 horizontal dashed lines.

SB

The SS screen can separate and remove suspended solids in wastewater. The SS screen with a built-in backwash brush separates solids with a clean screen, reduce clogging problems and make the cleaning easier.

■ Features

● Clean screen

A backwash brush mounted on the back surface of the screen automatically cleans the wedge wire to keep it clean.

● Low running cost

The drive power of the backwash brush is 100 W. The backwash brush operates intermittently, and keeps power consumption low.

● High dewatering effect

Since the backwash brush keeps the slits clean, the screen can maintain a high dehydrating effect while removing organic elements contained in effluent and achieves the stable separation of solids from liquid.

■ Main Specifications

Material: 304 Stainless steel (SUS304)

Coating: None



■ Applications

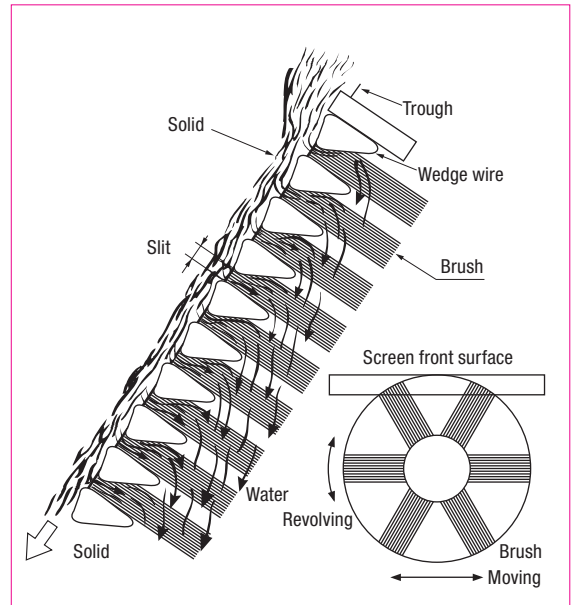
- Removing suspended solids at sewage treatment facilities or septic tanks.
- Collecting materials or discharging water at paper pulp plants
- Treatment processes of factory effluent in food, fiber dyeing and chemical industries
- Primary treatment at wastewater treatment facilities containing abundant suspended solids, such as cattle sheds or hog factories

■ Principle and Structure

The SS screen consists of a screen, feedbox, and chassis. The screen, namely the central element, is fabricated by welding a support rod to a wedge wire with a wedge-shaped cross section. The main parts of the SS screen are made of stainless steel and have a corrosion-proof structure.

- The wedge wire and support rod are manufactured integrally by special welding to achieve high-precision slits, which are the key portions of the screen.
- The wedge wire is welded to the support rod at a certain angle so that the downside of the wedge wire comes into contact with the support rod. This configuration effectively separates the solids from water.
- The backwash brush, which is mounted on the back surface of the screen, operates intermittently via a timer setting. The backwash brush stops at a predetermined position in response to a proximity switch.
- The controller in a waterproof ABS resin control panel can be activated when the primary power source is turned on.

■ Detailed Drawing



The backwash brush moves to left and right along a back surface of a screen while revolving.

■ Capacity

The following table shows approximate values. The capacity varies significantly, depending on the quality of effluent, even if the same Effluent type is used. Be sure to confirm the capacity by using the actual effluent before selecting your screen type.

Unit: m³/h

Effluent type	Slit mm	Model						
		32SB	62SB	92SB	122SB	152SB	182SB	220SB
Clear water	0.25	16	32	48	85	106	127	154
	0.5	18	36	54	95	118	141	171
	0.75	20	40	60	106	132	158	192
	1.0	22	44	66	117	146	175	212
	1.5	24	48	72	127	158	189	229
	2.0	27	54	81	143	178	213	259
Treatment of papermaking white water	0.25	6	11	17	22	28	33	39
Dyeing effluent	0.5	8	15	23	31	39	47	57
Effluent from hog factories	0.5	10	20	30	40	50	60	70
Incineration effluent from garbage-disposal facilities	0.5	15	31	47	62	78	93	113
Effluent from fish meat or leather factories	0.5	11	22	33	44	55	66	80
Handling of labels at beer factories	0.5	12	24	36	49	61	73	88
Concentrated newspaper liquid	0.5	10	20	30	40	50	60	70
Combined effluent from beer factories	0.5	16	32	48	64	80	96	116
Liquid from vegetable debris and pickle liquid	0.75	16	32	48	64	80	96	116
Effluent from tofu factories	0.9	13	26	39	52	65	78	94
Kitchen effluent	1.0	16	32	48	64	80	96	116
Sewage water	1.0	20	40	60	80	100	120	140

Standard Specifications

〈32SB~182SB〉

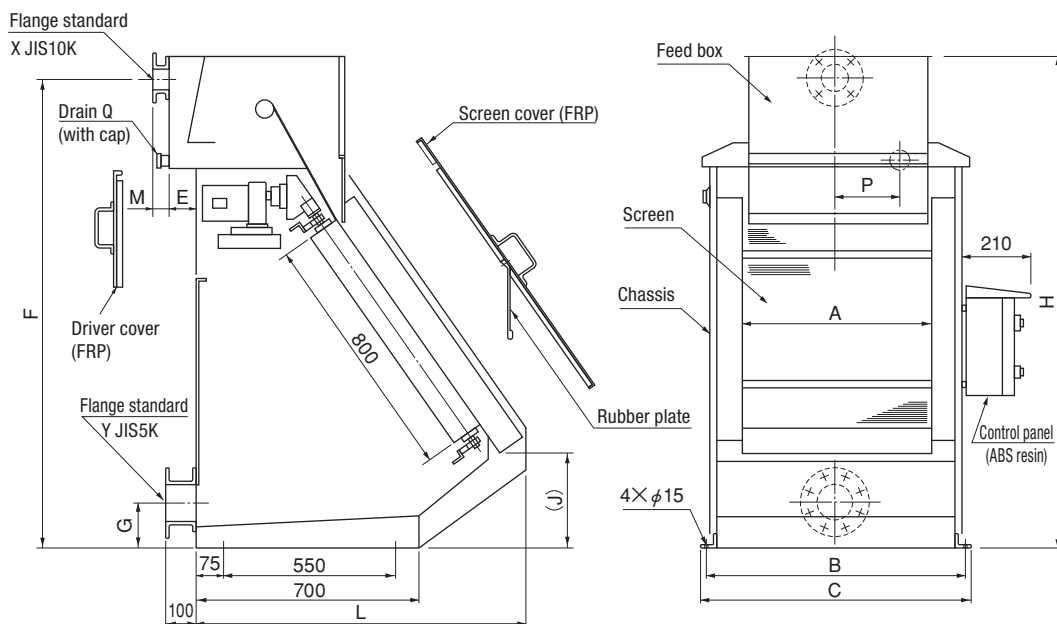
Frequency	Output (W)	Phase - Voltage	Brush speed (mm/s)	Rotating speed (min ⁻¹)
50Hz	100	3-ph 200 - 480 V	116	55
60Hz			139	66

〈220SB〉

Frequency	Output (W)	Phase - Voltage	Brush speed (mm/s)	Rotating speed (min ⁻¹)
50Hz	200	3-ph 200 - 480 V	116	55
60Hz			139	66

Dimensions

Unit: mm



(Note) A screen with a protective cover or screen cleaning shower is also provided as an option.

Model	Screen Effective Dimensions L×X (mm)	A	B	C	E	F	G	H	J	L	M	P	Q	X	Y	Weight Mass (kg)
32SB	800×295	295	503	538	95	1,450	120	1,525	300	1,040	50	75	25A	50A	100A	150
62SB	800×600	600	808	843			132					200		65A	125A	200
92SB	800×905	905	1,113	1,148			145					350		80A	150A	250
122SB	800×1,190	1,190	1,429	1,474	120	1,650	180	1,750	390	1,070	75	500	50A	100A	200A	350
152SB	800×1,495	1,495	1,734	1,779			205					650		125A	250A	400
182SB	800×1,800	1,800	2,039	2,084			230					800		150A	300A	450
220SB	800×2,190	2,190	2,446	2,506			255					1,000		200A	350A	550

List of Slits

(Unit: mm)

0.25	0.5	0.75	1.0	1.5	2.0
------	-----	------	-----	-----	-----

* A screen with slits of 0.2, 0.3, 0.4, 0.6, or 0.9 is also provided.

S

The SS screen can separate and remove suspended solids from wastewater. In particular, strict conformance with discharge requirements is required when treating sewage water and factory effluent. Removing suspended solids at a primary treatment significantly reduces the load on subsequent processes and thus the treatment cost. The simple product structure makes it less prone to failure, thus reducing the maintenance cost.

■ Features

● Economical

No operation cost since it does not run on electricity.
Less prone to failure and low maintenance cost.

● Easy Installation

Can be readily installed in an existing plant because of its small footprint and lightweight.

● Excellent dewatering and separation performance

■ Main Specifications

Material: 304 Stainless steel (SUS 304)

Coating: None

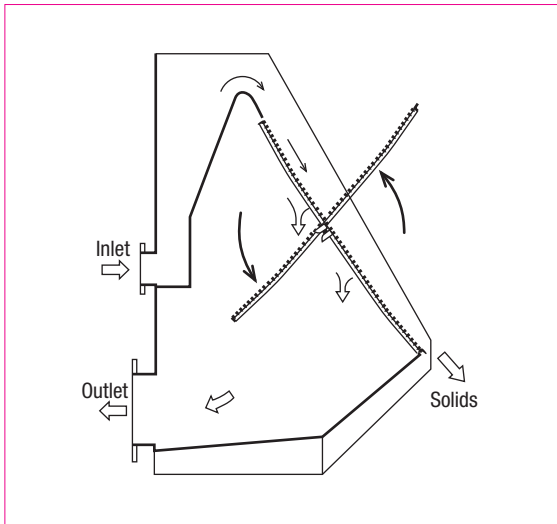


■ Applications

- Removing suspended solids at sewage treatment facilities or septic tanks
- Collecting materials or discharging water at paper pulp plants
- Treatment processes for factory effluent in food and chemical industries
- Classifying or selecting earth and sand at mines
- Removing suspended solids in water for melting water (generally river water)

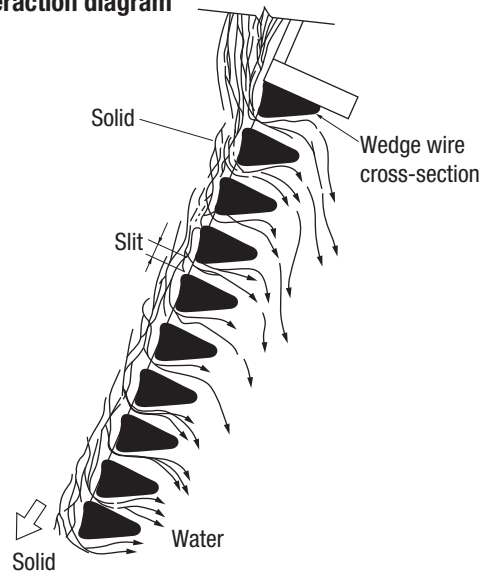
■ Explanatory diagram

The main component of the SS screen is a screen including wedge wires; each with a wedge-shaped cross-section welded on. Effluent flows through the inlet into the screen, where it is separated into solids and water. The water is discharged via the outlet, while the solids gradually slide down on the screen.



■ Detailed Drawing

Interaction diagram



■ Capacity

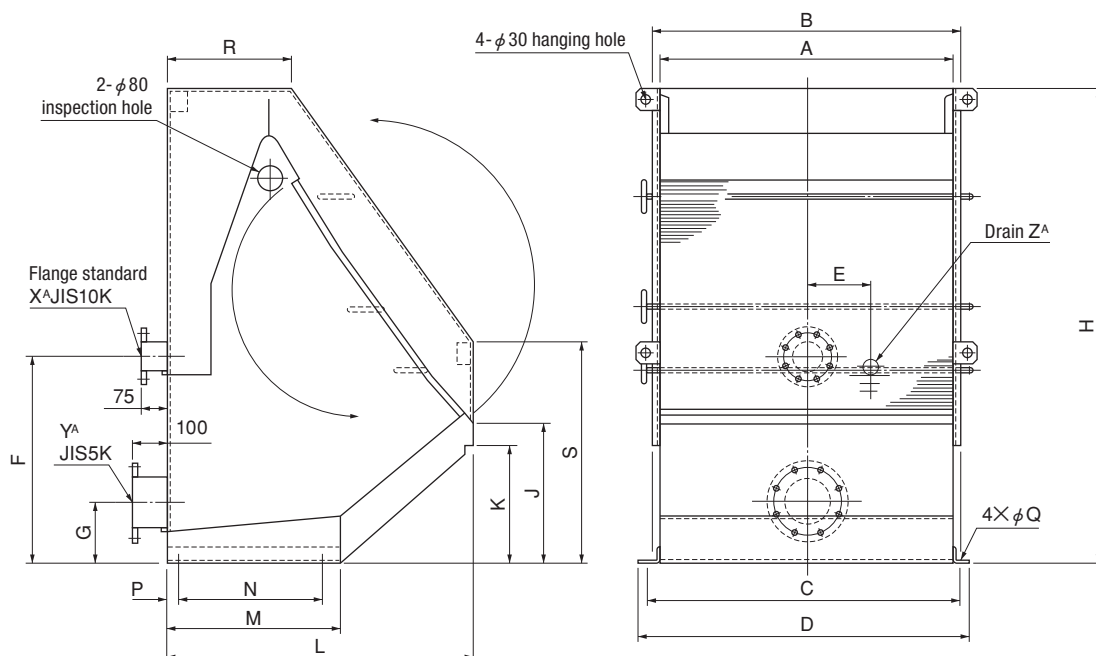
The following table shows approximate values. The capacity varies significantly, depending on the quality of effluent, even if the same Effluent type is used. Be sure to confirm the capacity using the actual effluent before selecting your screen type.

Unit: m³/h

Effluent type	Slit mm	Model						
		30S	60S	90S	130S	170S	200S	230S
Clear water	0.25	16	32	48	85	106	127	160
	0.5	18	36	54	95	118	141	178
	0.75	20	40	60	106	132	158	199
	1.0	22	44	66	117	146	175	221
	1.5	24	48	72	127	158	189	238
	2.0	27	54	81	143	178	213	269
Treatment of papermaking white water	0.25	5	10	15	26	32	38	48
Dyeing effluent	0.5	7	14	21	38	47	56	70
Effluent from hog factories	0.5	9	18	27	47	59	70	88
Kitchen effluent	0.5	14	28	43	76	94	113	142
Incineration effluent from garbage-disposal facilities	0.5	14	28	43	76	94	113	142
Effluent from fish meat or leather factories	0.5	10	21	32	55	67	80	101
Handling of labels at beer factories	0.5	11	22	33	57	71	85	107
Concentrated newspaper liquid	0.5	9	18	27	45	56	67	84
Combined effluent from beer factories	0.5	16	32	48	86	106	127	160
Liquid from vegetable debris and pickle liquid	0.75	15	30	45	80	99	119	150
Effluent from tofu factories	0.9	13	26	39	70	88	105	132
Sewage water	1.0	18	35	53	94	117	140	176

■ Dimensions

Unit: mm



Model	Screen Effective Dimensions L×X (mm)	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	X	Y	Z	Weight Mass (kg)
30S	900×285	285	333	339	389	115	632	160											50	100	25	70
60S	900×600	600	648	654	704	150	640	172	1,500	430	363	960	555	450	50	15	390	686	65	125	40	105
90S	900×905	905	953	959	1,009	200	646	185											80	150		135
130S	1,200×1,220	1,222	1,270	1,276	1,326		859	211											100	200		215
170S	1,200×1,500	1,502	1,550	1,556	1,606	300	872	236	1,800	477	460	1,180	720	600	60	19	470	786	125	250	50	250
200S	1,200×1,805	1,807	1,855	1,861	1,911		885	262											150	300		300
230S	1,300×2,280	2,280	2,350	2,366	2,436	600	920	290	2,000	558	483	1,469	893	700	100	19	703	673	200	350	50	630

■ List of Slits

(Unit: mm)

0.25	0.5	0.75	1.0	1.5	2.0
------	-----	------	-----	-----	-----

* A screen with slits of 0.2, 0.3, 0.4, 0.6, or 0.9 is also provided.

Pump, Blowers and Related Products

Specifications (detail data)

Submersible Pumps for Water Treatment

● Volute Type	
A, AH	536
● Non-Clogging Channel Type	
CNWX, CN • CNH	536
CN (Large-sized Pump with Forced-cooling)	537
CN (Natural-cooling), CNL, CNT	538
CNM	538
CNX (Closed Loop Cooling)	539
CNX (Natural-Cooling)	539
● Vortex Impeller Type	
CV • CVH, CVS, CVC	541
● Screw Impeller Type	
CW • CWH	542
CWT	542
● Lightweight Submersible Pump "NORUS"	
CR, CRS, CRC	542
● Stainless Steel Type	
SA • S3N • S3V	543
CNF	544
● Non-Clog Type (with Chopper)	
CJ, CKM	545
● Floating Scum Pump	
FP	545

Submersible Dewatering Pump for Construction Work and General Purpose

● 2 pole Motor Type	
BTR, BUC • BUCF, BRL, BHV	546
● 4 pole Motor Type	
BU-K • BU	546
● 4 pole Motor Type (with an Agitator)	
BU-KA	546
● Sand Pumps	
SN	546

Land Pump

● Self-Priming Residue Dewatering Pump	
BVR	547

Aerator and Ejector

● Submersible Aerator	
SJ, SJL (Lower Discharge)	547
SU (Upper Discharge)	548
JSA (Self-Aspirating Type)	548
● Submersible Ejector	
J • JF, JA • JAF	548
● Submersible Ejector for Shallow tank	
JB • JBF	548

Blowers

● Land Blower	
ARS (Roots-type)	549
ARH-S, ARH-SP (Three-lobes Helical Rotor)	550
● Submersible Type Helical Rotor Blower	
RB-H	551

Submersible Mixers

● High-speed Submersible Mixer	
SM	551
● Aeration Mixer	
SM-R	551
● Submersible Mixer with a High-silicon Stainless Steel Propeller	
SM-S	552
● Low-speed Submersible Mixer	
SML	552

Related Products

● Screen	
BS, VS	552

1. Description of legends for motor protector

For Thermal Protector and MTP

○.....Provided as a standard part

△.....Mountable if ordered

×.....Cannot be mounted due to structure.

For Leakage Detector

○.....Float type is provided as a standard part.

△.....Float type is mountable.

●.....Electrode type is provided as a standard part.

▲.....Electrode type is mountable.

×.....Cannot be mounted due to structure.

2. The allowable cable length indicates an extensible length of a cable having the same size (sectional area of the cores) as the standard specification of each models

3. The allowable cable length is stipulated such that voltage depression is within 5% of the rated voltage. If you have other standards or regulations, you must abide by it.

4. The start current shows when the direct-on-line, even the motor use the star-delta starting.

5. Bearing grease and lubricant: refer to the individual installation manual or ask us.

Note) Bearing grease: Refer to the individual installation manuals.

Submersible Pumps for Water Treatment

Volute Type

Model		Output kW (HP)	Pole P	Phase	Current A				Motor Protector			Allowable Cable Length		Amount of Oil ℓ	Bearing	
					Start		Rating		Thermal Protector	MTP	Leakage detector	m			Lower	Upper
					50Hz	60Hz	50Hz	60Hz				50Hz	60Hz			
A	A401 (¾) T	0.25 (1/3)	2	3-ph	7.4	6.7	1.6	1.5	○	×	×	253	270	0.175	6203ZZ	6201ZZ
	A501 (¾) T	0.4 (1/2)			12.2	11.3	2.5	2.2	○	×	×	162	184			
	A501 (¾)	0.75 (1)			19.8	17.9	3.9	3.5	○	×	×	104	115			
	A652	1.5 (2)			46.0	43.0	6.8	6.5	○	×	×	59	62	0.3	6305ZZ	6203ZZ
	A652 (¾)				26	28										
AH	AH401 (¾) T	0.4 (1/2)	2	3-ph	12.2	11.3	2.5	2.2	○	×	×	162	184	0.175	6203ZZ	6201ZZ
	AH501 (¾)	0.75 (1)			19.8	17.9	3.9	3.5	○	×	×	104	115			
	AH502	1.5 (2)			46.0	43.0	6.8	6.5	○	×	×	59	62	0.3	6305ZZ	6203ZZ
	AH502 (¾)				26	28										
	AH651	2.2 (3)			48.0	44.0	9.3	9.3	○	△	▲	43	43	0.48	6307ZZ	6304ZZ
	AH801	3.7 (5)			90.0	80.0	14.8	14.7	○	△	▲	43	44			
	AH1001	5.5 (7.5)			164	156	23.0	23.0	○	△	▲	49	49			
		7.5 (10)			228	207	30.0	30.0	○	△	▲	59	59	0.38	6309ZZ	6305ZZ
		11 (15)			327	295	44.0	44.0	×	○	▲	60	60			

Note)

- For some of models, the radial gap of the deep-groove bearing is C3.
- The currents and the allowable cable length shown in the table are values at 3-ph 200V.
For other voltage, please refer to the individual data sheet or ask us.

Non-Clogging Channel Type

Model		Output kW (HP)	Pole P	Phase	Current A				Motor Protector			Allowable Cable Length		Amount of Oil ℓ	Bearing				
					Start		Rating		Thermal Protector	MTP	Leakage detector	m			Lower	Upper			
					50Hz	60Hz	50Hz	60Hz				50Hz	60Hz						
CNWX	CNWX651	0.75 (1)	4	3-ph	15.6	14.5	4.3	4.4	○	×	▲	94	92	0.3	6306ZZ	6204ZZ			
		1.5 (2)			32.6	30.5	7.4	7.3	○	△	▲	54	55	0.42	5307	6205ZZ			
		2.2 (3)			47.0	42.8	11.2	11.3	○	△	▲	36	35	1.0	5310	6305ZZ			
		3.7 (5)			80.5	71.5	16.8	16.4	○	△	▲	38	39						
	CNWX801	1.5 (2)			32.6	30.5	7.4	7.3	○	△	▲	54	55	0.42	5307	6205ZZ			
		2.2 (3)			47.0	42.8	11.2	11.3	○	△	▲	36	35	1.0	5310	6305ZZ			
		3.7 (5)			80.5	71.5	16.8	16.4	○	△	▲	38	39						
		5.5 (7.5)			98.7	84.3	23.9	24.1	○	△	▲	47	47	1.05	5312	6308ZZ			
		7.5 (10)			128	112	32.6	32.5	○	△	▲	54	54						
		CNWX1001			3.7 (5)	80.5	71.5	16.8	16.4	○	△	▲	38	39	1.0	5310	6305ZZ		
	5.5 (7.5)				98.7	84.3	23.9	24.1	○	△	▲	47	47	1.05	5312	6308ZZ			
	7.5 (10)				128	112	32.6	32.5	○	△	▲	54	54						
	CN · CNH				CN40 (¾) T	0.25 (1/3)	2	3-ph	7.4	6.7	1.6	1.5	○	×	×	253	270	0.175	6203ZZ
		CN501T			0.4 (1/2)	12.2			11.3	2.5	2.2	○	×	×	162	184	0.19	6303ZZ	
		CN501 (¾) T			0.4 (1/2)	12.2			11.3	2.5	2.2	○	×	×	162	184	0.19		
		CN501			0.75 (1)	19.8			17.9	3.9	3.5	○	×	×	104	115	0.19		
CN501 (¾)		0.75 (1)	19.8	17.9	3.9	3.5			○	×	×	104	115	0.19					
CN651		1.5 (2)	46.0	43.0	6.8	6.5			○	×	×	59	62	0.3	6305ZZ	6203ZZ			
CN651 (¾)												26	28						
CN80		2.2 (3)	50.5	47.0	10.1	9.6			○	△	▲	40	42	0.54	6307ZZ	6304ZZ			
		3.7 (5)	91.0	86.0	16.1	15.7	○		△	▲	40	41	6308ZZ						
CN100		5.5 (7.5)	130	108	24.5	24.0	○		△	▲	46	47	0.6	6310ZZ	6305ZZ				
		7.5 (10)	193	171	33.0	32.5	○		△	▲	54	54							
CNH100		11 (15)	201	169	46.0	45.0	×		○	▲	58	59	0.9	6311ZZ×2	6307ZZ				
		15 (20)	317	284	64.0	62.0	×		○	▲	60	62							
		22 (30)	492	438	87.0	87.0	×		○	▲	78	78	0.97	6310ZZ	6305ZZ				
			130	108	24.5	24.0	○		△	▲	46	47							
CN150		5.5 (7.5)	193	171	33.0	32.5	○		△	▲	54	54	0.6	6310ZZ	6305ZZ				
	7.5 (10)	201	169	46.0	45.0	×	○	▲	58	59									
	11 (15)	317	284	64.0	62.0	×	○	▲	60	62	0.9	6311ZZ×2	6307ZZ						
	15 (20)	492	438	87.0	87.0	×	○	▲	78	78									
	22 (30)																		

Note)

- For some of models, the radial gap of the deep-groove bearing is C3.
- The currents and the allowable cable length shown in the table are values at 3-ph 200V.
For other voltage, please refer to the individual data sheet or ask us.

Non-Clogging Channel Type

Model		Output kW (HP)	Pole P	Phase	Current A				Motor Protector			Allowable Cable Length		Amount of Oil ℓ	Bearing			
					Start		Rating		Thermal Protector	MTP	Leakage detector	m			Lower	Upper		
					50Hz	60Hz	50Hz	60Hz				50Hz	60Hz					
CN: Large-sized Pump with Forced-Cooling	CN200-P	7.5 (10)	6	3-ph	166	144	35	34	×	○	○	51	52	1.7	7211BDF	6308ZZ		
		11 (15)	4		394	342	46	43	×	○	○	50	58					
		15 (20)			394	342	59	56	×	○	○	65	69					
		18.5 (25)	6		412	355	82	81	×	○	○	70	77	2.5	7213BDF	6210Z		
		22 (30)			412	355	95	88	×	○	○	70	77					
		18.5 (25)	4		676	571	76	70	×	○	○	75	83				5.1	7314BDF
		22 (30)			676	571	87	82	×	○	○	75	83					
		30 (40)			1036	904	123	115	×	○	○	73	78					
		37 (50)			1036	904	145	138	×	○	○	73	78					
		45 (60)			625	525	94	86	×	○	○	122	133					
		55 (75)			625	525	108	102	×	○	○	122	133					
		CN250-P	15 (20)		4	3-ph	394	342	59	56	×	○	○	65	69	1.7	7211BDF	6210Z
	18.5 (25)		6	412	355		82	81	×	○	○	70	77	2.5	7213BDF			
	22 (30)			412	355		95	88	×	○	○	70	77			5.1	7314BDF	6312Z
	30 (40)		4	1036	904		123	115	×	○	○	73	78					
	37 (50)			1036	904		145	138	×	○	○	73	78					
	45 (60)			625	525		94	86	×	○	○	128	133					
	55 (75)			625	525		108	102	×	○	○	128	133					
	75 (100)			911	910		144	138	×	○	○	143	155					
	CN300-P			15 (20)	6		3-ph	340	296	69	62	×	○	○	56	62	1.7	7211BDF
			18.5 (25)	412				355	82	81	×	○	○	70	77	2.5	7213BDF	
			22 (30)	412				355	95	88	×	○	○	70	77			
			30 (40)	1034				904	125	120	×	○	○	71	76	5.1	7314BDF	6312Z
		37 (50)	1034	904		149		139	×	○	○	71	76					
		45 (60)	625	520		89		85	×	○	○	152	160	5.3	7318BDF			
		55 (75)	699	591		114		107	×	○	○	119	119					
		75 (100)	911	910		144		138	×	○	○	143	155	5.7				
	CN350-P CN400-P	18.5 (25)	8	3-ph	495	417	86	83	×	○	○	68	74	5.1	7314BDF	6312Z		
		22 (30)			495	417	98	93	×	○	○	68	74					
		30 (40)			1034	904	125	120	×	○	○	71	76					
		37 (50)	6		1034	904	149	139	×	○	○	71	76	5.3	7318BDF			
		45 (60)			625	520	89	85	×	○	○	152	160					
		55 (75)			699	591	114	107	×	○	○	119	119	5.7				
		75 (100)			1315	1095	147	140	×	○	○	133	154	20	7321BDB	6218Z		
	CN500-P	30 (40)	10	3-ph	850	—	141	—	×	○	○	112	—	11	7220BDF	6218Z		
		30 (40)	12		—	900	—	152	×	○	○	—	102					
		37 (50)	10		850	—	162	—	×	○	○	114	—					
		37 (50)	12		—	900	—	178	×	○	○	—	102					
		45 (60)	8		800	670	98	93	×	○	○	187	198					
		55 (75)			800	670	117	115	×	○	○	187	187					
		75 (100)			1050	1100	152	160	×	○	○	176	168		7320BDB			

Note)

- For some of models, the radial gap of the deep-groove bearing is C3.
- The currents and the allowable cable length shown in the table are values at 3-ph 200V or 400V.
For other voltage, please refer to the individual data sheet or ask us.

Non-Clogging Channel Type

Model		Output kW (HP)	Pole P	Phase	Current A				Motor Protector			Allowable Cable Length		Amount of Oil ℓ	Bearing					
					Start		Rating		Thermal Protector	MTP	Leakage detector	m			Lower	Upper				
					50Hz	60Hz	50Hz	60Hz				50Hz	60Hz							
CN: Natural-Cooling	CN2001-P/F	7.5 (10)	6	3-ph	166	144	35	34	×	○	▲	51	52	0.9	6311ZZ×2	6307ZZ				
		11 (15)	201		169	46	45	×	○	▲	58	59								
		15 (20)	317		284	64	62	×	○	▲	60	62								
		18.5 (25)	492		438	76	76	×	○	▲	78	78								
		22 (30)	492		438	87	87	×	○	▲	78	78	0.97	7314BDB	6312Z					
		30 (40)	945		805	120	118	×	○	▲	75	78								
		37 (50)	945		805	142	136	×	○	▲	75	78								
		45 (60)	719		598	82	81	×	○	▲	111	131								
	CN2501-P/F	11 (15)	4	3-ph	201	169	46	45	×	○	▲	58	59	0.9	6311ZZ×2	6307ZZ				
		15 (20)			317	284	64	62	×	○	▲	60	62							
		18.5 (25)			492	438	76	76	×	○	▲	78	78							
		22 (30)			492	438	87	87	×	○	▲	78	78							
		30 (40)			945	805	120	118	×	○	▲	75	78	3.8	7314BDB	6312Z				
		37 (50)			945	805	142	136	×	○	▲	75	78							
		45 (60)			719	598	82	81	×	○	▲	111	131							
		CN3001-P/F			11 (15)	6	3-ph	348	298	54	50	×	○				▲	58	62	0.97
	15 (20)		348	298	66			62	×	○	▲	58	62							
	18.5 (25)		552	472	82			75	×	○	▲	73	78							
	22 (30)		552	472	93			87	×	○	▲	73	78							
	22 (30)		492	438	87			87	×	○	▲	78	78	0.97	6311ZZ×2	6307ZZ				
	30 (40)		1100	927	138			119	×	○	▲	66	75							
	37 (50)		1100	927	160			142	×	○	▲	66	75							
	CN4001-P/F		18.5 (25)	8	3-ph			545	452	90	84	×	○				▲	67	69	3.8
		22 (30)	545			452	100	97	×	○	▲	67	69							
		30 (40)	1100			927	138	119	×	○	▲	66	75							
		37 (50)	1100			927	160	142	×	○	▲	66	75							
CNL	CNL501	0.25 (1/3)	4	3-ph	4.4	5.0	1.7	1.6	○	×	×	238	253	0.30	6303ZZ	6201ZZ				
		0.4 (1/2)			11.0	9.8	2.8	2.5	○	×	×	144	162	0.29	6304ZZ					
		0.75 (1)			13.2	11.7	4.4	4.2	○	×	×	92	96							
		CNL651			1.5 (2)	32.4	29.4	6.9	6.7	○	△	▲	58	60	0.30		6306ZZ	6203ZZ		
CNT	CNT651	1.5 (2)	4	3-ph	27	24	6.5	6.6	×	○	▲	54	53	0.39	6306ZZ	6304ZZ				
	CNT801	2.2 (3)			48	42	8.9	8.9	×	○	▲	37	40	0.94	6309ZZ	6306ZZ				
		3.7 (5)			77	67	14.7	14.7	×	○	▲	37	38							
		5.5 (7.5)			189	162	22.2	21.5	×	○	▲	26	30							
	CNT1001	7.5 (10)			260	228	29.5	28.8	×	○	▲	30	34	1.7	6311ZZ	6307ZZ				
		11 (15)			275	236	44.5	43.8	×	○	▲	28	33							
		15 (20)			424	364	61.3	59.3	×	○	▲	27	31							
	CNT1501	22 (30)			632	544	87	84.7	×	○	▲	31	36	3.5	6312ZZ×2	6308ZZ				
		CNT150B			6 (8)/6.5 (8.5)	114	97	28.1	31.3	△	△	▲	92				82	2.4	3309	6306RS
					11 (15)/13 (17.5)	241	211	48.4	53.8	×	△	▲	80				72			
CNM	CNM80	2.2 (3)	4	3-ph	29	—	5.2	—	○	△	▲	139	—	0.54	6307ZZ	6304ZZ				
		3.7 (5)			56	—	8.9	—	○	△	▲	116	—		6308ZZ					
	CNM100	5.5 (7.5)			68	—	12.6	—	○	△	▲	93	—	0.6	6310ZZ	6305ZZ				
		7.5 (10)			96	—	16.9	—	○	△	▲	117	—							

Note)

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Non-Clogging Channel Type

Model		Output kW (HP)	Pole P	Phase	Impeller No		Current A				Motor Protector			Allowable Cable Length		Amount of Oil ℓ	Bearing	
							Start		Rating		Thermal Protector	MTP	Leakage detector	m			Lower	Upper
					50Hz	60Hz	50Hz	60Hz	50Hz	60Hz				50Hz	60Hz			
CNX: Closed Loop Cooling	CNX150-P	11 (15)	4	3-ph	1H	2H	201	169	46	45	×	○	○	58	59	11	6311ZZ×2	6307ZZ
					1M	2M	201	169	46	45				58	59	11	6311ZZ×2	6307ZZ
		15 (20)			1H	2H	349	293	64	62				60	62	13	6311ZZ×2	6307ZZ
					1M	2M	349	293	64	62				60	62	13	6311ZZ×2	6307ZZ
		18.5 (25)			1HD	2HD	492	438	76	76				78	78	14	6311ZZ×2	6307ZZ
					1HD	2HD	548	486	87	87				78	78	15	6311ZZ×2	6307ZZ
		22 (30)			1H	2H	1116	984	121	118				75	78	27	7314BDB	6312ZZ
					1H	2H	1116	984	143	137				75	78	27	7314BDB	6312ZZ
	CNX200-P	11 (15)	4	3-ph	1H	2H	201	169	46	45	×	○	○	58	59	11	6311ZZ×2	6307ZZ
					1M	2M	201	169	46	45				58	59	11	6311ZZ×2	6307ZZ
		15 (20)			1L	2L	201	169	46	45				60	62	13	6311ZZ×2	6307ZZ
					1H	2H	349	293	64	62				60	62	13	6311ZZ×2	6307ZZ
		18.5 (25)			1M	2M	349	293	64	62				78	78	14	6311ZZ×2	6307ZZ
					1L	2L	349	293	64	62				78	78	14	6311ZZ×2	6307ZZ
		22 (30)			1HD	2HD	492	438	76	76				78	78	15	6311ZZ×2	6307ZZ
					1MD	2MD	492	438	76	76				78	78	15	6311ZZ×2	6307ZZ
		30 (40)			1HD	2HD	548	486	87	87				75	78	27	7314BDB	6312ZZ
					1MD	2MD	548	486	87	87				75	78	27	7314BDB	6312ZZ
		37 (50)			1LD	2LD	548	486	87	87				75	78	27	7314BDB	6312ZZ
					1H	2H	1116	984	121	118				75	78	27	7314BDB	6312ZZ
	CNX250-P	11 (15)	4	3-ph	1M	2M	201	169	46	45	×	○	○	58	59	11	6311ZZ×2	6307ZZ
					1L	2L	201	169	46	45				58	59	11	6311ZZ×2	6307ZZ
		15 (20)			1M	2M	349	293	64	62				60	62	13	6311ZZ×2	6307ZZ
					1L	2L	349	293	64	62				60	62	13	6311ZZ×2	6307ZZ
		18.5 (25)			1MD	2MD	492	438	76	76				78	78	14	6311ZZ×2	6307ZZ
					1LD	2LD	492	438	76	76				78	78	14	6311ZZ×2	6307ZZ
		22 (30)			1MD	2MD	548	486	87	87				75	78	27	7314BDB	6312ZZ
					1LD	2LD	548	486	87	87				75	78	27	7314BDB	6312ZZ
	CNX300-P	11 (15)	4	3-ph	1H	2H	1116	984	121	118	×	○	○	58	59	11	6311ZZ×2	6307ZZ
					1M	2M	1116	984	121	118				58	59	11	6311ZZ×2	6307ZZ
		15 (20)			1L	2L	201	169	46	45				60	62	13	6311ZZ×2	6307ZZ
					1L	2L	349	293	64	62				60	62	13	6311ZZ×2	6307ZZ
		18.5 (25)			1LD	2LD	492	438	76	76				78	78	14	6311ZZ×2	6307ZZ
					1LD	2LD	548	486	87	87				78	78	15	6311ZZ×2	6307ZZ

Note)

- For some of models, the radial gap of the deep-groove bearing is C3.
- The currents and the allowable cable length shown in the table are values at 3-ph 200V.
For other voltage, please refer to the individual data sheet or ask us.

Non-Clogging Channel Type

Model		Output kW (HP)	Pole P	Phase	Impeller No		Current A				Motor Protector			Allowable Cable Length		Amount of Oil ℓ	Bearing	
							Start		Rating		Thermal Protector	MTP	Leakage detector	m			Lower	Upper
					50Hz	60Hz	50Hz	60Hz	50Hz	60Hz				50Hz	60Hz			
CNX: National-Cooling	CNX1501-P	5.5 (7.5)	4	3-ph	1M	2M	130	108	25	24	○	△	▲	46	47	0.6	6310ZZ	6305ZZ
					1L	2L	130	108	25	24				46	47			
		7.5 (10)			1M	2M	193	171	33	33	○	△	▲	54	54	0.6	6310ZZ	6305ZZ
					1L	2L	193	171	33	33				54	54			
		11 (15)			1H	2H	201	169	46	45	×	○	▲	58	59	0.9	6311ZZ×2	6307ZZ
					1M	2M	201	169	46	45				58	59			
		15 (20)			1H	2H	349	293	64	62	×	○	▲	60	62	0.9	6311ZZ×2	6307ZZ
					1M	2M	349	293	64	62				60	62			
		18.5 (25)			1HD	2HD	492	438	76	76	×	○	▲	78	78	0.97	6311ZZ×2	6307ZZ
					1HD	2HD	548	486	87	87				78	78			
	22 (30)	1H	2H	1116	984	121	118	×	○	▲	75	78	3.8	7314BDB	6312Z			
		1H	2H	1116	984	143	137				75	78						
	30 (40)	1H	2H	1116	984	143	137	×	○	▲	75	78	3.8	7314BDB	6312Z			
		1H	2H	1116	984	143	137				75	78						
	37 (50)	1H	2H	1116	984	143	137	×	○	▲	75	78	3.8	7314BDB	6312Z			
		1H	2H	1116	984	143	137				75	78						
	CNX2001-P	5.5 (7.5)	4	3-ph	1M	2M	130	108	25	24	○	△	▲	46	47	0.6	6310ZZ	6305ZZ
					1L	2L	130	108	25	24				46	47			
		7.5 (10)			1M	2M	193	171	33	33	○	△	▲	54	54	0.6	6310ZZ	6305ZZ
					1L	2L	193	171	33	33				54	54			
		11 (15)			1H	2H	201	169	46	45	×	○	▲	58	59	0.9	6311ZZ×2	6307ZZ
					1M	2M	201	169	46	45				58	59			
		15 (20)			1L	2L	201	169	46	45	×	○	▲	60	62	0.9	6311ZZ×2	6307ZZ
					1M	2M	349	293	64	62				60	62			
		18.5 (25)			1HD	2HD	492	438	76	76	×	○	▲	78	78	0.97	6311ZZ×2	6307ZZ
					1MD	2MD	492	438	76	76				78	78			
	22 (30)	1LD	2LD	492	438	76	76	×	○	▲	78	78	0.97	6311ZZ×2	6307ZZ			
		1HD	2HD	548	486	87	87				78	78						
	30 (40)	1MD	2MD	548	486	87	87	×	○	▲	78	78	0.97	6311ZZ×2	6307ZZ			
		1LD	2LD	548	486	87	87				78	78						
	37 (50)	1H	2H	1116	984	121	118	×	○	▲	75	78	3.8	7314BDB	6312Z			
		1M	2M	1116	984	121	118				75	78						
	37 (50)	1H	2H	1116	984	143	137	×	○	▲	75	78	3.8	7314BDB	6312Z			
		1M	2M	1116	984	143	137				75	78						
	CNX2501-P	5.5 (7.5)	4	3-ph	1M	2M	130	108	25	24	○	△	▲	46	47	0.6	6310ZZ	6305ZZ
					1L	2L	130	108	25	24				46	47			
		7.5 (10)			1M	2M	193	171	33	33	○	△	▲	54	54	0.6	6310ZZ	6305ZZ
					1L	2L	193	171	33	33				54	54			
		11 (15)			1M	2M	201	169	46	45	×	○	▲	58	59	0.9	6311ZZ×2	6307ZZ
					1L	2L	201	169	46	45				58	59			
		15 (20)			1M	2M	349	293	64	62	×	○	▲	60	62	0.9	6311ZZ×2	6307ZZ
					1L	2L	349	293	64	62				60	62			
		18.5 (25)			1MD	2MD	492	438	76	76	×	○	▲	78	78	0.97	6311ZZ×2	6307ZZ
					1LD	2LD	492	438	76	76				78	78			
	22 (30)	1MD	2MD	548	486	87	87	×	○	▲	78	78	0.97	6311ZZ×2	6307ZZ			
		1LD	2LD	548	486	87	87				78	78						
	30 (40)	1H	2H	1116	984	121	118	×	○	▲	75	78	3.8	7314BDB	6312Z			
		1M	2M	1116	984	121	118				75	78						
	37 (50)	1H	2H	1116	984	143	137	×	○	▲	75	78	3.8	7314BDB	6312Z			
		1M	2M	1116	984	143	137				75	78						
CNX3001-P	4	3-ph	1L	2L	201	169	46	45	×	○	▲	58	59	0.9	6311ZZ×2	6307ZZ		
			1L	2L	349	293	64	62	×	○	▲	60	62	0.9	6311ZZ×2	6307ZZ		
			1LD	2LD	492	438	76	76	×	○	▲	78	78	0.97	6311ZZ×2	6307ZZ		
			1LD	2LD	548	486	87	87	×	○	▲	78	78	0.97	6311ZZ×2	6307ZZ		
			1L	2L	1116	984	121	118	×	○	▲	75	78	3.8	7314BDB	6312Z		
			1M	2M	1116	984	143	137	×	○	▲	75	78	3.8	7314BDB	6312Z		

Note)

1. For some of models, the radial gap of the deep-groove bearing is C3.
 2. The currents and the allowable cable length shown in the table are values at 3-ph 200V.
- For other voltage, please refer to the individual data sheet or ask us.

Vortex Impeller Type

Model	Output kW (HP)	Pole P	Phase	Current A				Motor Protector			Allowable Cable Length		Amount of Oil ℓ	Bearing					
				Start		Rating		Thermal Protector	MTP	Leakage detector	m			Lower	Upper				
				50Hz	60Hz	50Hz	60Hz				50Hz	60Hz							
CV · CVH	CV501T	0.4 (1/2)	2	3-ph	12.2	11.3	2.5	2.2	○	×	×	162	184	0.19	6303ZZ	6201ZZ			
	CV501 (⅔) T				12.2	11.3	2.5	2.2	○	×	×	162	184	0.19	6303ZZ	6201ZZ			
	CV501	19.8			17.9	3.9	3.5	○	×	×	104	115	0.19						
	CV501 (⅔)	19.8			17.9	3.9	3.5	○	×	×	104	115	0.19						
	CV501	1.5 (2)			46.0	43.0	6.8	6.5	○	×	×	59	62	0.3	6305ZZ	6203ZZ			
	CV501 (⅔)				46.0	43.0	6.8	6.5	○	×	×	26	28						
	CV651	1.5 (2)			46.0	43.0	6.8	6.5	○	×	×	59	62				0.9	6311ZZ×2	6307ZZ
	CV651 (⅔)				46.0	43.0	6.8	6.5	○	×	×	26	28						
	CVH100	11 (15)	4		201	169	46.0	45.0	×	○	▲	58	59	0.9	6311ZZ×2	6307ZZ			
					15 (20)	317	284	64.0	62.0	×	○	▲	60				62		
					22 (30)	492	438	87.0	87.0	×	○	▲	78				78		
		CV150			5.5 (7.5)	130	108	24.5	24.0	○	△	▲	46	47	0.6	6310ZZ	6305ZZ		
					7.5 (10)	193	171	33.0	32.5	○	△	▲	54	52					
					11 (15)	201	169	46.0	45.0	×	○	▲	58	59	0.9	6311ZZ×2	6307ZZ		
					15 (20)	317	284	64.0	62.0	×	○	▲	60	62					
					22 (30)	492	438	87.0	87.0	×	○	▲	78	78					
	CVS	CVS40 (⅔) T	0.25 (1/3)		2	3-ph	7.4	6.7	1.7	1.6	○	×	×	238	253	0.215	6203ZZ	6201ZZ	
		CVS50 (⅔) T					7.4	6.7	1.7	1.6	○	×	×	238	253				
		CVS50 (⅔)	12.2				11.3	2.5	2.3	○	×	×	162	176					
		CVS651	19.8				17.9	3.9	3.6	○	×	×	104	112					
CVS651 (⅔)		1.5 (2)	46.0				43.0	6.8	6.5	○	×	×	59	62	0.3	6305ZZ	6203ZZ		
CVS80		48.0	44.0				9.3	9.3	○	△	▲	43	43						
CVS100		3.7 (5)	90.0				80.0	14.8	14.7	○	△	▲	43	44	0.48	6307ZZ	6304ZZ		
		5.5 (7.5)	164				156	23.0	23.0	○	△	▲	49	49					
		7.5 (10)	228				207	30.0	30.0	○	△	▲	59	59	0.38	6309ZZ	6305ZZ		
		11 (15)	327				295	44.0	44.0	×	○	▲	60	60					
CVC	CVC501	0.25 (1/3)	4		3-ph	4.4	5.0	1.7	1.6	○	×	×	238	253	0.28	6303ZZ	6201ZZ		
	CVC501	0.4 (1/2)				11.0	9.8	2.8	2.5	○	×	×	144	162					
	CVC651	0.75 (1)				13.2	11.7	4.4	4.2	○	×	×	92	96	0.26	6304ZZ	6201ZZ		
	CVC801	1.5 (2)				32.4	29.4	6.9	6.7	○	△	▲	58	60					
	CVC801	2.2 (3)				50.5	47.0	10.1	9.6	○	△	▲	40	42	0.47	6307ZZ	6304ZZ		
		3.7 (5)				91.0	86.0	16.1	15.7	○	△	▲	40	41					
		CVC1001				5.5 (7.5)	130	108	24.5	24.0	○	△	▲	46	47	0.53	6310ZZ	6305ZZ	
	7.5 (10)					193	171	33.0	32.5	○	△	▲	54	54					

Note)

- For some of models, the radial gap of the deep-groove bearing is C3.
- The currents and the allowable cable length shown in the table are values at 3-ph 200V.
For other voltage, please refer to the individual data sheet or ask us.

Screw Impeller Type

Model		Output kW (HP)	Pole P	Phase	Current A				Motor Protector			Allowable Cable Length		Amount of Oil ℓ	Bearing					
					Start		Rating		Thermal Protector	MTP	Leakage detector	m			Lower	Upper				
					50Hz	60Hz	50Hz	60Hz				50Hz	60Hz							
CW • CWH	CW65	1.5 (2)	4	3-ph	32.4	29.4	6.9	6.7	○	△	▲	58	60	0.3	6306ZZ	6203ZZ				
		1.5 (2)			32.4	29.4	6.9	6.7	○	△	▲	58	60	0.3	6306ZZ	6203ZZ				
	CW80	2.2 (3)			50.5	47.0	10.1	9.6	○	△	▲	40	42	0.54	6307ZZ	6304ZZ				
		3.7 (5)			91.0	86.0	16.1	15.7	○	△	▲	40	41		6308ZZ					
	CW100	5.5 (7.5)			130	108	24.5	24.0	○	△	▲	46	47	0.6	6310ZZ	6305ZZ				
		7.5 (10)			193	171	33.0	32.5	○	△	▲	54	54		6310ZZ					
	CWH100	11 (15)			201	169	46.0	45.0	×	○	▲	58	59	0.9	6311ZZ×2	6307ZZ				
		15 (20)			317	284	64.0	62.0	×	○	▲	60	62							
		22 (30)			492	438	87.0	87.0	×	○	▲	78	78				0.97			
	CW150	5.5 (7.5)			130	108	24.5	24.0	○	△	▲	46	47	0.6	6310ZZ	6305ZZ				
		7.5 (10)			193	171	33.0	32.5	○	△	▲	54	54							
		11 (15)			201	169	46.0	45.0	×	○	▲	58	59	0.9	6311ZZ×2	6307ZZ				
		15 (20)			317	284	64.0	62.0	×	○	▲	60	62							
		22 (30)			492	438	87.0	87.0	×	○	▲	78	78				0.97			
		CWT			CWT65	1.5 (2)	4	3-ph	27	24	6.5	6.6	×	○	▲	54	53	0.39	6306ZZ	6304ZZ
						2.2 (3)			48	42	8.9	8.9	×	○	▲	37	40	0.94	6309ZZ	6306ZZ
	CWT80				3.7 (5)	77			67	14.7	14.7	×	○	▲	37	38	1.7		6311ZZ	6307ZZ
					5.5 (7.5)	189			162	22.2	21.5	×	○	▲	26	30		6309ZZ		
	CWT100				7.5 (10)	260			228	29.5	28.8	×	○	▲	30	34	3.5	6312ZZ×2	6308ZZ	
11 (15)			275	236	44.5	43.8			×	○	▲	28	33							
15 (20)			424	364	61.3	59.3			×	○	▲	27	31							
22 (30)			632	544	87	84.7			×	○	▲	31	36							

Note)

- For some of models, the radial gap of the deep-groove bearing is C3.
- The currents and the allowable cable length shown in the table are values at 3-ph 200V.
For other voltage, please refer to the individual data sheet or ask us.

Lightweight Submersible Pump “NORUS”

Model		Output kW (HP)	Pole P	Phase	Current A				Motor Protector			Allowable Cable Length		Amount of Oil ℓ	Bearing		
					Start		Rating		Thermal Protector	MTP	Leakage detector	m			Lower	Upper	
					50Hz	60Hz	50Hz	60Hz				50Hz	60Hz				
CR	CR501 (⅝) S	0.15 (1/5)	2	1-ph	9.5	8.8	3.5	3.3	*○	×	×	30	31	0.155	6201ZZ	6201ZZ	
		0.25 (1/3)			17	16	4.3	4.7	*○	×	×	31	32	0.34	6203ZZ		
		0.4 (1/2)			25	22	7.6	6.4	*○	×	×	21	23	0.155	6201ZZ		
		0.15 (1/5)			4.2	3.8	1.3	1.1	○	×	×	170	190	0.155	6201ZZ		
	CR501 (D) T	0.25 (1/3)		3-ph	7.6	7.3	1.7	1.5	○	×	×	160	160	0.34	6203ZZ	6203ZZ	
		0.4 (1/2)			12	11	2.5	2.1	○	×	×	100	110				
		0.75 (1)			19	16	3.7	3.4	○	×	×	64	76				
		1.5 (2)			40	35	7.1	7.1	○	×	×	30	34				
CR65	1.5 (2)																
CR80	2.2 (3)			74	62	10.2	9.8	○	×	×	16	19					
CRS	CRS321 (⅝) S	0.1 (1/10)	2	1-ph	6.7	5.8	2.4	2.6	*○	×	×	43	40	0.155	6201ZZ	6201ZZ	
	CRS321 (⅝) S	0.15 (1/5)			9.5	8.8	3.5	3.3	*○	×	×	30	31		0.155		6201ZZ
	CRS401 (⅝) S	0.15 (1/5)			9.5	8.8	3.5	3.3	*○	×	×	30	31		0.34		6203ZZ
		0.25 (1/3)			17	16	4.3	4.7	*○	×	×	31	32		0.155		6201ZZ
	CRS401 (⅝) T	0.15 (1/5)		3-ph	4.2	3.8	1.3	1.1	○	×	×	170	190	0.34	6203ZZ	6203ZZ	
		0.25 (1/3)			7.6	7.3	1.7	1.5	○	×	×	160	160				
	CRS501 (⅝) S	1-ph		25	22	7.6	6.4	*○	×	×	21	23	0.34	6203ZZ	6203ZZ		
				12	11	2.5	2.1	○	×	×	100	110					
	CRS501 (⅝) T	3-ph		19	16	3.7	3.4	○	×	×	64	76	0.34	6306ZZ	6203ZZ		
				40	35	7.1	7.1	○	×	×	30	34					
	CRS65 (⅝)	3-ph		1.5 (2)	40	35	7.1	7.1	○	×	×	30	34	0.34	6306ZZ	6203ZZ	
				2.2 (3)	74	62	10.2	9.8	○	×	×	16	19				
CRC	CRC40 (D) S	0.4 (1/2)	2	1-ph	24.0	21.0	6.9	6.7	○	×	×	21	25	0.24	6203ZZ	6201ZZ	
	CRC40 (D) T	11.0		10.0	2.6	2.3	○	×	×	110	121						
	CRC50 (D)	0.75 (1)		21.0	19.0	3.8	3.6	○	×	×	57	64	0.34	6306ZZ	6203ZZ		
	CRC50 (⅝)	1.5 (2)		40	35	7.1	7.1	○	×	×	30	34					
	CRC65 (⅝)	2.2 (3)		74	62	10.2	9.8	○	×	×	16	19					

Note)

- For some of models, the radial gap of the deep-groove bearing is C3.
- The currents and the allowable cable length shown in the table are values at 1-ph 100V or 3-ph 200V.
For other voltage, please refer to the individual data sheet or ask us.

Stainless Steel Type

Model		Output kW (HP)	Pole P	Phase	Current A				Motor Protector			Allowable Cable Length		Amount of Oil ℓ	Bearing	
					Start		Rating		Thermal Protector	MTP	Leakage detector	m			Lower	Upper
					50Hz	60Hz	50Hz	60Hz				50Hz	60Hz			
S3A	S3A40 (⅓) T	0.25 (1/3)	2	3-ph	7.4	6.7	1.6	1.5	○	×	×	253	270	0.175	6203ZZ	6201ZZ
		0.4 (1/2)			9.3	10.8	2.5	2.2	○	×	×	162	184			
		0.4 (1/2)			9.3	10.8	2.5	2.2	○	×	×	162	184			
	S3A50 (½) T	0.75 (1)			18.3	16.9	3.9	3.5	○	×	×	104	115	0.8	6306ZZ	6203ZZ
		1.5 (2)			42.3	38.2	6.9	6.5	○	×	×	58	62			
	S3A65 (¾)	1.5 (2)			42.3	38.2	6.9	6.5	○	×	×	58	62			
S3N	S3N40 (⅓) T	0.25 (1/3)	2	3-ph	7.4	6.7	1.6	1.5	○	×	×	253	270	0.175	6303ZZ	6201ZZ
		0.4 (1/2)			9.3	10.8	2.5	2.2	○	×	×	162	184	0.46		
		0.75 (1)			18.3	16.9	3.9	3.5	○	×	×	104	115			
	S3N65 (¾) T	1.5 (2)			42.3	38.2	6.9	6.5	○	×	×	58	62	0.8	6306ZZ	6203ZZ
		2.2 (3)			50.5	47.0	10.1	9.6	○	△	▲	40	42	0.54	6307ZZ	6304ZZ
	S3N80	3.7 (5)			91.0	86.0	16.1	15.7	○	△	▲	40	41		6308ZZ	
	S3N100	5.5 (7.5)	130	108	24.5	24.0	○	△	▲	46	47	0.6	6310ZZ	6305ZZ		
		7.5 (10)	193	171	33.0	32.5	○	△	▲	54	54					
S3V	S3V40 (⅓) T	0.25 (1/3)	2	3-ph	7.4	6.7	1.7	1.6	○	×	×	253	270	0.215	6203ZZ	6201ZZ
		0.4 (1/2)			9.3	10.8	2.5	2.3	○	×	×	162	184			
		0.75 (1)			18.3	16.9	3.9	3.6	○	×	×	104	115			
	S3V65 (¾) T	1.5 (2)			42.3	38.2	6.9	6.5	○	×	×	58	62	0.8	6306ZZ	6203ZZ
		2.2 (3)			50.5	47.0	10.1	9.6	○	△	▲	40	42	0.54	6307ZZ	6304ZZ
	S3V80	3.7 (5)			91.0	86.0	16.1	15.7	○	△	▲	40	41		6308ZZ	
	S3V100	5.5 (7.5)	130	108	24.5	24.0	○	△	▲	46	47	0.6	6310ZZ	6305ZZ		
		7.5 (10)	193	171	33.0	32.5	○	△	▲	54	54					

Note)

- For some of models, the radial gap of the deep-groove bearing is C3.
- The currents and the allowable cable length shown in the table are values at 3-ph 200V.
For other voltage, please refer to the individual data sheet or ask us.

Stainless Steel Type

Model		Output kW (HP)	Pole P	Phase	Current A				Motor Protector			Allowable Cable Length		Amount of Oil ℓ	Bearing	
					Start		Rating		Thermal Protector	MTP	Leakage detector	m			Lower	Upper
					50Hz	60Hz	50Hz	60Hz				50Hz	60Hz			
CNF	CNF80-P	5.5 (7.5)	4	3-ph	130	108	25	24	○	△	●	46	47	1.3	7308BDB	6305ZZ C3
		7.5 (10)			193	171	33	33	○	△	●	54	54			
	CNF100-P	5.5 (7.5)			130	108	25	24	○	△	●	46	47	1.3	7308BDB	6305ZZ C3
		7.5 (10)			193	171	33	33	○	△	●	54	54			
		11 (15)			201	169	46	45	×	○	●	58	59	1.4	7311BDB	6307ZZ C3
		15 (20)			317	284	64	62	×	○	●	60	62			
		18.5 (25)			492	438	76	76	×	○	●	78	78			
		22 (30)			492	438	87	87	×	○	●	78	78			
	CNF1502-P	11 (15)			201	169	46	45	×	○	●	58	59	1.4	7311BDB	6307ZZ C3
		15 (20)			317	284	64	62	×	○	●	60	62			
		18.5 (25)			492	438	76	76	×	○	●	78	78			
		22 (30)			492	438	87	87	×	○	●	78	78			
	CNF150-P	11 (15)	394		342	46	43	×	○	○	50	58	2.5	7311BDB	6308Z	
		15 (20)	394		342	59	56	×	○	○	65	69				
		18.5 (25)	676		571	76	70	×	○	○	75	83	3.0	7313BDB	6210Z	
		22 (30)	676		571	87	82	×	○	○	75	83				
		30 (40)	1036		904	123	115	×	○	○	73	78	5.2	7314BDF	6312Z	
		37 (50)	1036		904	145	138	×	○	○	73	78				
		15 (20)	394		342	59	56	×	○	○	65	69	1.4	7211BDF	6308Z	
		18.5 (25)	412		355	82	81	×	○	○	70	77				
	CNF200-P	22 (30)	412		355	95	88	×	○	○	70	77	3.0	7313BDB	6210Z	
		18.5 (25)	676		571	76	70	×	○	○	75	83				
		22 (30)	676		571	87	82	×	○	○	75	83				
		30 (40)	1036		904	123	115	×	○	○	73	78				
		37 (50)	1036		904	145	138	×	○	○	73	78	5.2	7314BDF	6312Z	
		45 (60)	625		525	94	86	×	○	○	122	133				
		55 (75)	625		525	108	102	×	○	○	122	133	1.4	7211BDF	6308Z	
		15 (20)	394		342	59	56	×	○	○	65	69				
	CNF250-P	18.5 (25)	412		355	82	81	×	○	○	70	77	3.0	7313BDB	6210Z	
		22 (30)	412		355	95	88	×	○	○	70	77				
		30 (40)	1036		904	123	115	×	○	○	73	78				
		37 (50)	1036		904	145	138	×	○	○	73	78				
		45 (60)	625		525	94	86	×	○	○	128	133	5.2	7318BDF	6312Z	
		55 (75)	625		525	108	102	×	○	○	128	133				
		75 (100)	1240		1000	147	138	×	○	○	143	155	18.0	7319BDB	6219Z	
		18.5 (25)	412		355	82	74	×	○	○	70	77				
	CNF300-P	22 (30)	412		355	95	88	×	○	○	70	77	5.2	7314BDF	6312Z	
		30 (40)	1034		904	125	120	×	○	○	71	76				
		37 (50)	1034		904	149	139	×	○	○	71	76				
		45 (60)	625		520	89	85	×	○	○	152	160	6.5	7318BDF	6312Z	
		55 (75)	800		800	105	105	×	○	○	119	119				
		75 (100)	1240		1000	147	138	×	○	○	143	155	18.0	7326BDB	6219Z	
		30 (40)	1034		904	125	120	×	○	○	71	76				
	CNF400-P	37 (50)	1034		904	149	139	×	○	○	71	76	5.2	7314BDF	6312Z	
		45 (60)	625		520	89	85	×	○	○	152	160				
		55 (75)	800		800	105	105	×	○	○	129	129	18.0	7319BDB	6219Z	
		75 (100)	1200		1032	147	141	×	○	○	133	154				
		CNF500-P	75 (100)		1200	—	147	—	×	○	○	133	—	14.0	7326BDB	6219Z
	75 (100)	—	1000		—	153	×	○	○	—	144					

Note)

- For some of models, the radial gap of the deep-groove bearing is C3.
- The currents and the allowable cable length shown in the table are values at 3-ph 200V or 400V.
For other voltage, please refer to the individual data sheet or ask us.

Non-Clogging Channel Type (with Chopper)

Model		Output kW (HP)	Pole P	Phase	Current A				Motor Protector			Allowable Cable Length		Amount of Oil ℓ	Bearing	
					Start		Rating		Thermal Protector	MTP	Leakage detector	m			Lower	Upper
					50Hz	60Hz	50Hz	60Hz				50Hz	60Hz			
CJ	CJ501 (⅝)	0.75 (1)	2	3-ph	19.8	17.9	3.9	3.5	○	×	×	104	115	0.19	6303ZZ	6201ZZ
	CJ651	1.5 (2)			46.0	43.0	6.8	6.5	○	×	×	59	62	0.30	6305ZZ	6203ZZ
	CJ651 (⅞)									26	28					
	CJ80	2.2 (3)	4		50.5	47.0	10.1	9.6	○	△	▲	40	42	0.54	6307ZZ	6304ZZ
		3.7 (5)			91.0	86.0	16.1	15.7	○	△	▲	40	41		6308ZZ	
		5.5 (7.5)			130	108	24.5	24.0	○	△	▲	46	47	0.6	6310ZZ	6305ZZ
		CJ100			7.5 (10)	193	171	33.0	32.5	○	△	▲	54		54	
CKM	CKM32HS	1.0 (1 1/3)	2	1-ph	37	37	7.9	8.0	○	×	×	44	43	0.28	6305ZZ	6203ZZ
	CKM32H	1.0 (1 1/3)		3-ph	46	43	5.3	4.9	○	×	×	44	48	0.29		
	CKM40H	1.2 (1 2/3)			46	43	5.8	5.5	○	×	×	44	48	0.29		
		1.5 (2)			46	43	6.8	6.5	○	×	×	44	48	0.29		
	CKM50H	2.2 (3)			48	44	9.3	9.3	○	△	▲	43	43	0.65	6307ZZ	6304ZZ
		3.7 (5)		90	80	14.8	14.7	○	△	▲	49	49	0.65			
	CKM40L	0.4 (1/2)		4	13.2	11.7	3.2	2.8	○	×	×	126	144	0.27	6304ZZ	6201ZZ
	CKM50L	0.75 (1)			13.2	11.7	4.4	4.2	○	×	×	92	96	0.27		

Note)

- For some of models, the radial gap of the deep-groove bearing is C3.
- The currents and the allowable cable length shown in the table are values at 3-ph 200V.
For other voltage, please refer to the individual data sheet or ask us.

Floating Scum Pump

Model		Output kW (HP)	Pole P	Phase	Current A				Motor Protector			Allowable Cable Length		Amount of Oil ℓ	Bearing	
					Start		Rating		Thermal Protector	MTP	Leakage detector	m			Lower	Upper
					50Hz	60Hz	50Hz	60Hz				50Hz	60Hz			
FP	FP501	0.75 (1)	2	3-ph	19.8	17.9	3.9	3.5	○	×	×	104	115	0.19	6303ZZ	6201ZZ
	FP801	1.5 (2)			46.0	43.0	6.8	6.5	○	×	×	59	62	0.3	6305ZZ	6203ZZ

Note)

- For some of models, the radial gap of the deep-groove bearing is C3.
- The currents and the allowable cable length shown in the table are values at 3-ph 200V.
For other voltage, please refer to the individual data sheet or ask us.

Portable Dewatering Pumps

2 poles Motor Type

Model		Output kW (HP)	Pole P	Phase	Current A				Motor Protector			Allowable Cable Length m		Amount of Oil ℓ	Bearing		
					Start		Rating		Thermal Protector	MTP	Leakage detector	m			Lower	Upper	
					50Hz	60Hz	50Hz	60Hz				50Hz	60Hz				
BTR	BTR250S	0.25 (1/3)	2	1-ph	21.0	19.0	5.0	5.0	○	×	×	30	30	0.14	6202ZZ	6201ZZ	
	BTR250T	0.25 (1/3)		3-ph	10.1	9.0	1.9	1.6	○	×	×	200	225				
	BTR400S	0.4 (1/2)		1-ph	21.0	19.0	6.3	6.3	○	×	×	22	22				
	BTR400T	0.4 (1/2)		3-ph	10.1	9.0	2.4	2.2	○	×	×	169	184				
	BTR750S	0.75 (1)		1-ph	46.0	37.0	13.6	12.0	○	×	×	20	23				
	BTR750T	0.75 (1)		3-ph		22.2	20.4	4.2	3.7	○	×	×	91	99	0.37	6305ZZ	6204ZZ
	BTR15	1.5 (2)				33.0	29.0	7.1	7.2	○	×	×	56	56			
	BTR22	2.2 (3)				56.0	49.0	10.0	9.8	○	×	×	36	41			
	BTR37 (†)	3.7 (5)				88.0	77.3	16.3	16.3	○	×	×	36	39			
	BTR55	5.5 (7.5)				153	137	23.0	22.0	○	×	×	37	41			
BUC · BUCF	BUC2104	7.5 (10)	2	3-ph	162	141	31	30	○	△	×	51	51	1.6	6309ZZ	6306ZZ	
	BUCF2104																
	BUC2154	11 (15)			234	206	43	42	○	△	×	52	52	1.6	6309ZZ	6306ZZ	
	BUCF2154																
	BUC2106	7.5 (10)			162	141	31	30	○	△	×	51	51	1.6	6309ZZ	6306ZZ	
	BUCF2106																
BUC2156	11 (15)	234	206	43	42	○	△	×	52	52	1.6	6310ZZ	6308ZZ				
BUCF2156																	
BRL	BRL400S	0.4 (1/2)	2	1-ph	21.0	19.0	6.3	6.3	○	×	×	22	22	0.14	6202ZZ	6201ZZ	
BHV	BHV401S	0.4 (1/2)	2	1-ph	21.0	19.0	6.3	6.3	○	×	×	22	22	0.15	6202ZZ	6201ZZ	

4 poles Motor Type

Model		Output kW (HP)	Pole P	Phase	Current A				Motor Protector			Allowable Cable Length		Amount of Oil ℓ	Bearing	
					Start		Rating		Thermal Protector	MTP	Leakage detector	m			Lower	Upper
					50Hz	60Hz	50Hz	60Hz				50Hz	60Hz			
BU-K · BU	BU486KB	5.5 (7.5)	4	3-ph	140	121	22	20.5	○	△	×	50	50	1.2	6308ZZ	6306ZZ
	BU4126K	9 (12)			188	162	34	34	○	△	×	50	50	2.0	6309ZZ	6306ZZ
	BU4158K	11 (15)			222	193	42	41	○	△	×	59	59	2.0	6309ZZ	6306ZZ
	BU43010B	22 (30)			463	404	79	78	○	△	×	78	78	3.6	6312ZZ	6310ZZ

4 poles Motor Type (with an Agitator)

Model		Output kW (HP)	Pole P	Phase	Current A				Motor Protector			Allowable Cable Length		Amount of Oil ℓ	Bearing	
					Start		Rating		Thermal Protector	MTP	Leakage detector	m			Lower	Upper
					50Hz	60Hz	50Hz	60Hz				50Hz	60Hz			
BU-KA	BU486KBA	5.5 (7.5)	4	3-ph	140	121	22	20.5	○	△	×	50	50	1.2	6308ZZ	6306ZZ
	BU4126KA	9 (12)			188	162	34	34	○	△	×	50	50	2.0	6309ZZ	6306ZZ
	BU4158KA	11 (15)			222	193	42	41	○	△	×	59	59	2.0	6309ZZ	6306ZZ

Sand Pumps

Model		Output kW (HP)	Pole P	Phase	Current A				Motor Protector			Allowable Cable Length		Amount of Oil ℓ	Bearing	
					Start		Rating		Thermal Protector	MTP	Leakage detector	m			Lower	Upper
					50Hz	60Hz	50Hz	60Hz				50Hz	60Hz			
SN	SN35A	3.7 (5)	4	3-ph	84.5	74.2	15.0	14.5	○	×	×	67	76	1.0	6308ZZ	6306ZZ
	SN48E	5.5 (7.5)			145.2	125.4	22.0	20.5	○	×	×	39	45			
	SN615C	11 (15)			300.0	263.2	43.0	42.5	○	×	×	43	49			
	SN631	22 (30)			571.4	480.0	80.0	76.0	×	○	○	62	74	4.5	6312ZZ	6309ZZ
	SN651	37 (50)			738.0	626.0	133	133	×	○	○	57	63			
	SN851	37 (50)	6	3-ph	738.0	626.0	133	133	×	○	○	57	63	6.5	7316BDB	6310ZZ

Note)

1. The radial gap of the deep-groove bearing is C3.
2. The currents and the allowable cable length shown in the table are values at 1-ph-100V or 3-ph 200V.
For other voltage, please refer to the individual data sheet or ask us.

Land Pump

Self-Priming Residue Dewatering Pump

Model	Output kW (HP)	Pole P	Phase	Current A				Motor Protector			Allowable Cable Length		Amount of Oil ℓ	Bearing	
				Start		Rating		Thermal Protector	MTP	Leakage detector	m			Lower	Upper
				50Hz	60Hz	50Hz	60Hz				50Hz	60Hz			
BVR400S	0.4 (1/2)	2	1-ph	18	17	7.1	7.0	○	×	×	24	25	0.16	6202ZZ	6201ZZ

(Note)

The currents and the allowable cable length shown in the table are values at 1-ph 100V.

For other voltage, please refer to the individual data sheet or ask us.

Aerator and Ejector

Submersible Aerator (Lower Discharge)

Model		Output kW (HP)	Pole P	Phase	Current A				Motor Protector			Allowable Cable Length		Amount of Oil ℓ	Bearing	
					Start		Rating		Thermal Protector	MTP	Leakage detector	m			Lower	Upper
					50Hz	60Hz	50Hz	60Hz				50Hz	60Hz			
SJ	SJ8	0.75 (1)	10 (50Hz) 12 (60Hz)	3-ph	16	17	5.8	6.9	×	○	▲	111	94	0.42	6306ZZ	6304ZZ
	SJ15	1.5 (2)			29	22	9.3	10.4	×	○	▲	69	62	0.59	6309ZZ	6307ZZ
	SJ22	2.2 (3)			38	38	13.6	15.5	×	○	▲	47	41	0.59	6309ZZ	
	SJ37	3.7 (5)			53	56	20.0	23.4	×	○	▲	56	48	0.57	6310ZZ	
	SJ55	5.5 (7.5)			75	83	30.1	33.2	×	○	▲	59	53	0.57	6310ZZ	
	SJ75	7.5 (10)			120	113	39.6	45.1	×	○	▲	65	57	1.0	6311ZZX2	

(Note)

1. The radial gap of the deep-groove bearing is C3. Urea grease (MP-1) is used.

2. The currents and the allowable cable length shown in the table are values at 3-ph 200V.

For other voltage, please refer to the individual data sheet or ask us.

Submersible Aerator (Lower Discharge)

Model		Output kW (HP)	Pole P	Phase	Current A				Motor Protector			Allowable Cable Length m		Amount of Oil ℓ		Bearing	
					Start		Rating		Thermal Protector	MTP	Leakage detector	50Hz	60Hz	Reduction Gear Room	Mechanical Seal Room	Lower	Upper
					50Hz	60Hz	50Hz	60Hz									
SJL	SJL22	2.2 (3)	4	3-ph	51	47	11.4	10.8	×	○	△	56	60	2.3	0.7	6308ZZ	6304ZZ
	SJL37	3.7 (5)			91	86	17.5	17.1	×	○	△	35	37	2.3	0.7		
	SJL55	5.5 (7.5)			130	108	26.3	25.9	×	○	△	43	43	3.9	1.2	6310ZZ	6305ZZ
	SJL75	7.5 (10)			193	171	35.4	34.9	×	○	△	46	51	3.9	1.2		
	SJL110	11 (15)			201	169	49.4	48.6	×	○	△	54	55	10.0	2.5	6311ZZX2	6307ZZ
	SJL150	15 (20)			317	284	67	65.2	×	○	△	101	104	10.0	2.5		
	SJL220	22 (30)			492	438	93.2	93.9	×	○	△	114	113	33.0	5.7	6314ZZX2	
	SJL300	30 (40)			642	587	130.6	124.5	×	○	△	111	117	33.0	5.7		

(Note)

1. The radial gap of the deep-groove bearing is C3. Urea grease (MP-1) is used.

2. The currents and the allowable cable length shown in the table are values at 3-ph 200V.

For other voltage, please refer to the individual data sheet or ask us.

Submersible Aerator (Upper Discharge)

Model		Output kW (HP)	Pole P	Phase	Current A				Motor Protector			Allowable Cable Length		Amount of Oil ℓ	Bearing	
					Start		Rating		Thermal Protector	MTP	Leakage detector	m			Lower	Upper
					50Hz	60Hz	50Hz	60Hz				50Hz	60Hz			
SU	SU15	1.5 (2)	10 (50Hz) 12 (60Hz)	3-ph	29	22	9.3	10.4	×	○	▲	69	62	0.59	6309ZZ	6307ZZ
	SU22	2.2 (3)			38	38	13.6	15.5	×	○	▲	47	41	0.59	6309ZZ	
	SU37	3.7 (5)			53	56	20.0	23.4	×	○	▲	56	48	0.57	6310ZZ	
	SU55	5.5 (7.5)			75	83	30.1	33.2	×	○	▲	59	53	1.0	6311ZZ×2	
	SU75	7.5 (10)			120	113	39.6	45.1	×	○	▲	65	57	1.0	6311ZZ×2	
	SU110	11 (15)			151	122	55.2	61.5	×	○	▲	70	63	1.7	7311BDB	6312ZZ
	SU150	15 (20)			169	180	80.7	88.5	×	○	▲	84	76	1.7	7311BDB	6312ZZ

Note)

1. The radial gap of the deep-groove bearing is C3. Urea grease (MP-1) is used.
2. The currents and the allowable cable length shown in the table are values at 3-ph 200V.
For other voltage, please refer to the individual data sheet or ask us.

Submersible Aerator Pump (Self-Aspirating Type)

Model		Output kW (HP)	Pole P	Phase	Current A				Motor Protector			Allowable Cable Length		Amount of Oil ℓ	Bearing	
					Start		Rating		Thermal Protector	MTP	Leakage detector	m			Lower	Upper
					50Hz	60Hz	50Hz	60Hz				50Hz	60Hz			
JSA	JSA22	2.2 (3)	4	3-ph	26	—	5.3	—	○	△	×	145	—	1.3	6308ZZ	6304ZZ
	JSA37	3.7 (5)			41	—	8.3	—	○	△	×	148	—	2.9	6310ZZ	

Note)

1. The radial gap of the deep-groove bearing is C3.
2. The currents and the allowable cable length shown in the table are values at 3-ph 380V.
For other voltage, please ask us.

Submersible Ejector

Model		Output kW (HP)	Pole P	Phase	Current A				Motor Protector			Allowable Cable Length		Amount of Oil ℓ	Bearing	
					Start		Rating		Thermal Protector	MTP	Leakage detector	m			Lower	Upper
					50Hz	60Hz	50Hz	60Hz				50Hz	60Hz			
J·JF	J (F) 750V	0.75 (1)	2	3-ph	19.8	17.9	3.9	3.6	○	×	×	104	112	0.215	6203ZZ	6201ZZ
JA · JAF	JA (F) 152	1.5 (2)	4	3-ph	32.4	29.4	6.9	6.7	○	△	▲	58	60	0.27	6306ZZ	6203ZZ
	JA (F) 222	2.2 (3)			50.5	47.0	10.1	9.6	○	△	▲	40	42	0.47	6307ZZ	6304ZZ
	JA (F) 372	3.7 (5)			91.0	86.0	16.1	15.7	○	△	▲	40	41		6308ZZ	
	JA (F) 552	5.5 (7.5)			130	108	24.5	24.0	○	△	▲	46	47	0.53	6310ZZ	6305ZZ

Note)

1. For some of models, the radial gap of the deep-groove bearing is C3.
2. The currents and the allowable cable length shown in the table are values at 3-ph 200V.
For other voltage, please refer to the individual data sheet or ask us.

Submersible Ejector for Shallow tank

Model		Output kW (HP)	Pole P	Phase	Current A				Motor Protector			Allowable Cable Length		Amount of Oil ℓ	Bearing	
					Start		Rating		Thermal Protector	MTP	Leakage detector	m	Lower		Upper	
					50Hz	60Hz	50Hz	60Hz								50Hz
JB	JB (F) 400	0.4 (1/2)	4	3-ph	11.0	9.8	2.8	2.5	○	×	×	144	162	0.29	6304ZZ	6201ZZ
JBF	JB (F) 750	0.75 (1)			13.2	11.7	4.4	4.2	○	×	×	92	96			

Note)

1. The radial gap of the deep-groove bearing is C3.
2. The currents and the allowable cable length shown in the table are values at 1-ph-100V or 3-ph 200V.
For other voltage, please refer to the individual data sheet or ask us.

Land Blower (Roots-type)

Model		Output kW (HP)	Phase	Current A				Amount of Oil ℓ	Bearing			
				Start		Rating			Pulley Side		Gear Side	
				50Hz	60Hz	50Hz	60Hz		Drive	Driven	Drive	Driven
ARS	ARS50	1.5 (2)	3-ph	43.5	39.0	7.2	6.6	0.37	6206ZCM	6205ZCM	6205ZCM	6205ZCM
		2.2 (3)		66.8	58.7	9.0	8.6					
		3.7 (5)		104	90.7	15.6	14.4					
		5.5 (7.5)		150	131	22.6	20.6					
	ARS65A	2.2 (3)		66.8	58.7	9.0	8.6	0.37	6306ZCM	6205ZCM	6305ZCM	6305ZCM
		3.7 (5)		104	90.7	15.6	14.4					
		5.5 (7.5)		150	131	22.6	20.6					
		7.5 (10)		206	180	29.8	27.4					
	ARS80	3.7 (5)		104	90.7	15.6	14.4	0.4	6309ZCM	6307ZCM	6307ZCM	6307ZCM
		5.5 (7.5)		150	131	22.6	20.6					
		7.5 (10)		206	180	29.8	27.4					
		11 (15)		301	262	43.0	39.0					
	ARS100	5.5 (7.5)		150	131	22.6	20.6	0.4	6309ZCM	6307ZCM	6307ZCM	6307ZCM
		7.5 (10)		206	180	29.8	27.4					
		11 (15)		301	262	43.0	39.0					
		15 (20)		419	366	58.0	53.0					
	ARS125	11 (15)		301	262	43.0	39.0	0.9	6312ZCM	6310ZCM	6310ZCM	6310ZCM
		15 (20)		419	366	58.0	53.0					
		18.5 (25)		504	460	73.0	66.0					
		22 (30)		647	580	85.0	78.0					
	ARS150	30 (40)		888	772	113	105	2.0	6312ZCM	6310ZCM	6310 ×6310Z	6310 ×6310Z
		15 (20)		419	366	58.0	53.0					
		18.5 (25)		504	460	73.0	66.0					
		22 (30)		647	580	85.0	78.0					
	ARS200	30 (40)		888	772	113	105	3.1	6318Z	6316Z	6316Z	6316Z
		37 (50)		992	892	140	131					
		45 (60)		1205	1059	169	158					
		55 (75)		1556	1376	209	191					
	ARS250	75 (100)		2388	2080	260	260	3.1	6318Z	6316Z	6316Z	6316Z
		37 (50)		992	892	140	131					
		45 (60)		1205	1059	169	158					
		55 (75)		1556	1376	209	191					
	ARS250A	75 (100)		2388	2080	260	260	3.1	6319 X6319Z	6316Z	6318Z	6318Z
		90 (120)		3290	2828	320	310					
		110 (150)		3282	2830	380	380					
		132 (176)		4244	3720	450	450					

Land Blower (Three-lobes Helical Rotor)

Model		Output kW (HP)	Phase	Current A				Amount of Oil ℓ	Bearing			
				Start		Rating			Pulley Side		Gear Side	
				50Hz	60Hz	50Hz	60Hz		Drive	Driven	Drive	Driven
ARH-S	ARH20S	0.4 (1/2)	3-ph	11.3	10.6	2.3	2.0	0.1	6303ZZCM	6302ZZCM	6302ZZCM	6302ZZCM
		0.75 (1)		19.1	17.3	3.5	3.3					
		0.4 (1/2)		11.3	10.6	2.3	2.0					
	ARH25S	0.75 (1)		19.1	17.3	3.5	3.3	0.1	6303ZZCM	6302ZZCM	6302ZZCM	6302ZZCM
		1.5 (2)		43.5	39.0	7.2	6.6					
		0.75 (1)		19.1	17.3	3.5	3.3					
	ARH32S	1.5 (2)		43.5	39.0	7.2	6.6	0.15	6305ZZCM	6304ZZCM	6304ZZCM	6304ZZCM
		0.75 (1)		43.5	39.0	7.2	6.6					
	ARH40S	1.5 (2)		43.5	39.0	7.2	6.6	0.15	6305ZZCM	6304ZZCM	6304ZZCM	6304ZZCM
		2.2 (3)		66.8	58.7	9.0	8.6					
	ARH50S	1.5 (2)		43.5	39.0	7.2	6.6	0.25	6306ZZCM	6305ZZCM	6305ZZCM	6305ZZCM
		2.2 (3)		66.8	58.7	9.0	8.6					
		3.7 (5)		104	90.7	15.6	14.4					
		2.2 (3)		66.8	58.7	9.0	8.6					
	ARH65S	3.7 (5)		104	90.7	15.6	14.4	0.4	6308ZZCM	6308ZZCM	6308ZZCM	6308ZZCM
		5.5 (7.5)		150	131	22.6	20.6					
		7.5 (10)		206	180	29.8	27.4					
		2.2 (3)		66.8	58.7	9.0	8.6					
	ARH80S	3.7 (5)		104	90.7	15.6	14.4	0.9	6310ZZCM	6310ZZCM	6310ZZCM	6310ZZCM
		5.5 (7.5)		150	131	22.6	20.6					
		7.5 (10)		206	180	29.8	27.4					
		11 (15)		301	262	43.0	39.0					
	ARH100S	5.5 (7.5)		150	131	22.6	20.6	0.9	6310ZZCM	6310ZZCM	6310ZZCM	6310ZZCM
		7.5 (10)		206	180	29.8	27.4					
		11 (15)		301	262	43.0	39.0					
		7.5 (10)		206	180	29.8	27.4					
	ARH125S	11 (15)		301	262	43.0	39.0	0.9	6312ZZCM	6310ZZCM	6311ZZCM	6311ZZCM
		15 (20)		419	366	58.0	53.0					
		18.5 (25)		504	460	73.0	66.0					
		11 (15)		301	262	43.0	39.0					
	ARH125SA	15 (20)		419	366	58.0	53.0	0.9	6311Z	6311Z	6311Z	6311Z
		18.5 (25)		504	460	73.0	66.0					
		22 (30)		647	580	85.0	78.0					
		15 (20)		419	366	58.0	53.0					
	ARH125SF	18.5 (25)		504	460	73.0	66.0	3.1	6318Z	6316Z	6316Z	6316Z
		22 (30)		647	580	85.0	78.0					
		30 (40)		888	772	113	105.0					
		15 (20)		419	366	58.0	53.0					
	ARH150S	18.5 (25)		504	460	73.0	66.0	3.1	6318Z	6316Z	6316Z	6316Z
		22 (30)		647	580	85.0	78.0					
		30 (40)		888	772	113	105					
		37 (50)		992	892	140	131					
	ARH200S	18.5 (25)		504	460	73.0	66.0	3.1	6318Z	6316Z	7216DB	7216DB
		22 (30)		647	580	85.0	78.0					
		30 (40)		888	772	113	105					
37 (50)		992	892	140	131							
45 (60)		1205	1059	169	158							
55 (75)		1556	1376	209	191							
ARH-SP	ARH50SP	1.5 (2)	3-ph	43.5	39.0	7.2	6.6	0.15	6305ZZCM	6304ZZCM	6304ZZCM	6304ZZCM
		2.2 (3)		66.8	58.7	9.0	8.6					
		3.7 (5)		104	90.7	15.6	14.4					
	ARH65SP	1.5 (2)		43.5	39.0	7.2	6.6	0.25	6306ZZCM	6305ZZCM	6305ZZCM	6305ZZCM
		2.2 (3)		66.8	58.7	9.0	8.6					
		3.7 (5)		104	90.7	15.6	14.4					
	ARH80SP	3.7 (5)		104	90.7	15.6	14.4	0.4	6308ZZCM	6308ZZCM	6308ZZCM	6308ZZCM
		5.5 (7.5)		150	131	22.6	20.6					
		7.5 (10)		206	180	29.8	27.4					
	ARH100SP	5.5 (7.5)		150	131	22.6	20.6	0.9	6310ZZCM	6310ZZCM	6310ZZCM	6310ZZCM
		7.5 (10)		206	180	29.8	27.4					
		11 (15)		301	262	43.0	39.0					

Note) It is recommended to use genuine parts because special bearing with additional hole(s), etc. is used for Helical Rotor Blowers.

Submersible Type Helical Rotor Blower

Model		Output kW (HP)	Pole P	Phase	Current A				Motor Protector			Allowable Cable		Amount of Oil ℓ	Bearing				
					Start		Rating		Thermal Protector	MTP	Leakage detector	Length m			Body Side		Motor Side		
					50Hz	60Hz	50Hz	60Hz				50Hz	60Hz		Upper	Lower	Upper	Lower	
RB-H	RB25H	0.4 (1/2)	2	3-ph	12.2	11.3	2.4	2.2	○	×	×	120	135	0.35	6302ZZ×2	6302×2	6202ZZC3	6203ZZC3	
	RB32H	0.75 (1)			19.7	17.9	3.5	3.5	○	×	×	65	75						
	RB401H	1.5 (2)			45.7	41.6	5.9	5.9	○	×	×	35	40	0.7	6304ZZ×2	6304×2	6203ZZC3	6304ZZC3	
	RB402H				6.8	6.8													
	RB50AH	2.2 (3)			90	80	10.7	9.6	○	△	×	40	40	0.54	6306ZZCM	6305ZZCM ×2	6304ZZC3	6307ZZC3	
		3.7 (5)			90	80	12.3	11.7	○	△	×	35	35						
		5.5 (7.5)			—	156	—	14.8	○	△	×	—	40						
	RB50BH	2.2 (3)			90	80	10.7	9.6	○	△	×	40	40	0.54	6305ZZCM		6305ZZC3	6308ZZC3	
		3.7 (5)			90	80	14.6	14.7	○	△	×	35	35						
		5.5 (7.5)			—	156	—	17.7	○	△	×	—	40						
	RB65H	3.7 (5)			90	80	15.0	15.0	○	△	×	35	35	0.54				6304ZZC3	6307ZZC3
		5.5 (7.5)			164	156	18.5	19.8	○	△	×	40	40						
	RB80H	5.5 (7.5)	130	108	22.9	22.4	○	△	×	40	40	1.64	6310ZZCM ×2	6310ZZCM ×2	6305ZZC3	6308ZZC3			
		7.5 (10)	193	171	28.0	30.6	○	△	×	40	40								
	RB100H	7.5 (10)	193	171	31.2	30.6	○	△	×	40	40	1.64	6310ZZCM ×2	6310ZZCM ×2	6305ZZC3	6308ZZC3			
		11 (15)	201	169	34.8	41.7	×	○	×	30	30								
	RB125H	11 (15)	201	169	45.0	44.0	×	○	×	30	30	3.0	6309ZZCM ×2	6309 ×2	6307ZZC3	6309ZZC3			
		15 (20)	317	284	51.0	57.5	×	○	×	30	30								

Note)

- It is recommended to use genuine parts because special bearing and grease are used for submersible helical rotor blowers.
- The currents and the allowable cable length shown in the table are values at 3-ph 200V.
For other voltage, please refer to the individual data sheet or ask us.

Submersible Mixers

High-speed Submersible Mixer

Model		Output kW (HP)	Pole P	Phase	Current A				Motor Protector			Allowable Cable Length		Amount of Oil ℓ
					Start		Rating		Motor Protector	MTP	Leakage detector	m		
					50Hz	60Hz	50Hz	60Hz				50Hz	60Hz	
SM	SM250	0.25 (1/3)	4	3-ph	11	9.8	2.3	2.0	○	×	×	176	202	0.22
	SM400	0.4 (1/2)			11	9.8	2.8	2.5	○	×	×	144	162	0.22
	SM750	0.75 (1)			13.2	11.7	4.4	4.2	○	×	×	92	97	0.22
	SM15JA・JB	0.9 (1.2)	32.7		—	5.8	—	×	○	▲	69	—	0.3	
		1.1 (1.5)	—		27.3	—	5.7	×	○	▲	—	71	0.3	
		1.5 (2)	32.7		27.3	7.8	7.4	×	○	▲	52	55	0.3	
	SM15A・B	1.5 (2)	32.7		27.3	7.8	7.4	×	○	▲	52	55	0.3	
	SM24JA・JB	2 (2.5)	46		—	8.4	—	×	○	▲	44	—	0.3	
		2.4 (3.2)	—		43	—	9.7	×	○	▲	—	42	0.3	
	SM28A・B	2.8 (3.7)	6		45.3	37.3	15.3	14.9	×	○	▲	42	44	0.6
	SM30A・B	3 (4)			70.8	58.1	15.8	14.1	×	○	▲	72	81	0.7
	SM40A・B	4 (5)			70.8	58.1	19.0	18.0	×	○	▲	60	63	0.7
	SM50A・B	5 (7)	10・12		76	86	25.8	29.9	×	○	▲	69	60	2.0
	SM75A・B	7.5 (10)			115	116	39.6	44.6	×	○	▲	66	58	2.0
	SM110	8.8 (12)			210	—	38	—	×	○	△	113	—	Reduction Gear Room
	SM110	10.5 (14)	4		—	169	—	43	×	○	△	—	105	4.0
	SM150	13.5 (18)			317	—	59	—	×	○	△	71	—	Mechanical Seal Room
	SM150	15 (20)			317	284	64	62	×	○	△	71	73	2.6

Note)

- The currents and the allowable cable length shown in the table are values at 3-ph 200V.
For other voltage, please refer to the individual data sheet or ask us.

Aeration Mixer

Model		Output kW (HP)	Pole P	Phase	Current A				Motor Protector			Allowable Cable Length		Amount of Oil ℓ
					Start		Rating		Thermal Protector	MTP	Leakage detector	m		
					50Hz	60Hz	50Hz	60Hz				50Hz	60Hz	
SM-R	SM15JAR-JBR	1.5 (2)	6	3-ph	32.7	27.3	7.8	7.4	×	○	▲	52	55	0.3
	SM15AR-BR				×	○	▲							
	SM24JAR-JBR	2 (2.5)	4		46	—	8.4	—	×	○	▲	44	—	0.3
	SM28AR-BR	2.4 (3.2)			—	43	—	9.7	×	○	▲	—	42	
		2.8 (3.7)	6		45.3	37.3	15.3	14.9	×	○	▲	42	44	0.6

Note)

- The currents and the allowable cable length shown in the table are values at 3-ph 200V.
For other voltage, please refer to the individual data sheet or ask us.

Submersible Mixer with a High – silicon Stainless Steel Propeller

Model		Output kW (HP)	Pole P	Phase	Current A				Motor Protector			Allowable Cable Length		Amount of Oil ℓ
					Start		Rating		Thermal Protector	MTP	Leakage detector	m		
					50Hz	60Hz	50Hz	60Hz				50Hz	60Hz	
SM-S	SM15JAS·JBS	0.9 (1.2)	6	3-ph	32.7	—	5.8	—	×	○	▲	69	—	0.3
		1.1 (1.5)			—	27.3	—	5.7	×	○	▲	—	71	
		1.5 (2)			32.7	27.3	7.8	7.4	×	○	▲	52	55	
	SM24JAS·JBS	2 (2.5)	4		46	—	8.4	—	×	○	▲	44	—	0.3
		2.4 (3.2)			—	43	—	9.7	×	○	▲	—	42	
		SM28AS·BS			2.8 (3.7)	6	45.3	37.3	15.3	14.9	×	○	▲	
	SM40AS·BS	4 (5)	70.8		58.1		19.0	18.0	×	○	▲	72	81	0.7
	SM50AS·BS	5 (7)	76		86		25.8	29.9	×	○	▲	69	60	2.0
	SM75AS·BS	7.5 (10)	10·12		115	116	39.6	44.6	×	○	▲	66	58	2.0

Note)

The currents and the allowable cable length shown in the table are values at 3-ph 200V.

For other voltage, please refer to the individual data sheet or ask us.

Low-speed Submersible Mixer

Model		Output kW (HP)	Pole P	Phase	Current A		Motor Protector			Allowable Cable Length m	Amount of Oil ℓ	
					Start	Rating	Thermal Protector	MTP	Leakage detector		Reduction Gear Room	Mechanical Seal Room
SML	SML15	1.5 (2)	10 (50Hz)	3-ph	28	8.8	×	○	△	66	4.7	2.0
			12 (60Hz)		25	9.7	×	○	△	66	4.7	2.0
	SML22	2.2 (3)	10 (50Hz)		39	13.5	×	○	△	44	4.7	2.0
			12 (60Hz)		37	14.7	×	○	△	44	4.7	2.0
			10 (50Hz)		60	21.2	×	○	△	45	4.7	2.0
			12 (60Hz)		55	25.5	×	○	△	45	4.7	2.0
	SML37	3.7 (5)	10 (50Hz)		—	—	—	—	—	—	—	—
			12 (60Hz)		—	—	—	—	—	—	—	—

Note)

The currents and the allowable cable length shown in the table are values at 3-ph 200V.

For other voltage, please refer to the individual data sheet or ask us.

Related Products

Screen

Model		Output kW	Pole P	Phase	Current A						Allowable Cable Length m	
					Start		Rating		Preset Value of Thermal Relay			
					50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz
BS	BS1S	0.025	4	3-ph	0.5	0.5	0.29	0.26	0.3	0.27	40	40
	BS1N	0.1			2.1	2.0	0.67	0.64	0.67	0.64	230	270
	BS2N				2.1	2.0	0.67	0.64	0.67	0.64		
	BS3N				2.1	2.0	0.67	0.64	0.67	0.64		
	BS4N				2.1	2.0	0.67	0.64	0.67	0.64		
	BS5N				2.1	2.0	0.67	0.64	0.67	0.64		
	BS1H				0.025	1.06	1.01	0.26	0.23	0.26		
	BS2H	1.06				1.01	0.26	0.23	0.26	0.23		
	BS3H	1.06				1.01	0.26	0.23	0.26	0.23		
VS	VS-1	0.1	4	3-ph	2.1	2.0	0.67	0.64	0.67	0.64	230	270
	VS-2				2.1	2.0	0.67	0.64	0.67	0.64		
	VS-3				2.1	2.0	0.67	0.64	0.67	0.64		
	VS-4				2.1	2.0	0.67	0.64	0.67	0.64		
	VS-5				2.1	2.0	0.67	0.64	0.67	0.64		
	VS-6				2.1	2.0	0.67	0.64	0.67	0.64		
	VS-1H	0.025			1.06	1.01	0.26	0.23	0.26	0.23	420	470
	VS-2H				1.06	1.01	0.26	0.23	0.26	0.23		

Note)

The currents and the allowable cable length shown in the table are values at 3-ph 200V.

For other voltage, please refer to the individual data sheet or ask us.

Technical Guidance

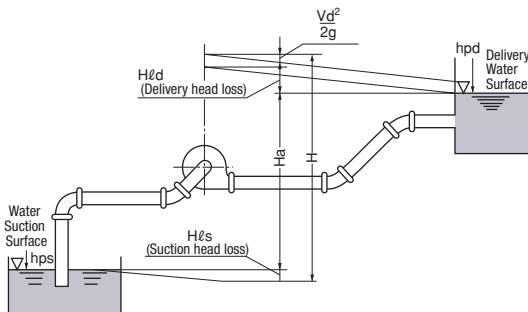
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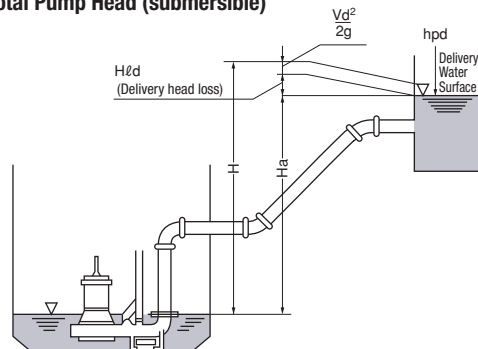
Pump related calculation

How to calculate total dynamic head

Total Pump Head (land type)



Total Pump Head (submersible)



Description of symbols

H : Total pump head(m)

Ha : Actual pump head (m)

hps : Static water head on suction water surface (m)

hpd : Static water head on delivery water surface (m)

Vd : Liquid velocity in delivery pipe (m/s)

Hls : Loss head of suction pipe (m)

Hld : Loss head of delivery pipe (m)

g : Gravitational acceleration(m/s²)

D : Pipe bore(mm)

Total pump head H in the above figure is derived with the following equation:

$$H = Ha + \Delta hp + Hl + \frac{Vd^2}{2g}$$

Where, Δhp and piping head loss Hl are represented with the following equation:

$$\Delta hp = hpd - hps \quad Hl = Hls + Hld$$

Generally, $hpd = hps =$ atmospheric pressure, thus $\Delta hp = 0(m)$.

For submersible type, $Hls \approx 0(m)$, therefore $Hl = Hld$.

Assuming that piping consists of ① straight pipe, ② expanding pipe, ③ curved pipe, ④ 90° curved pipe, ⑤ multi-node curved pipe, and ⑥ discharge hole, each head loss consisting of Hl_1 , Hl_2 , Hl_3 , Hl_4 , Hl_5 , and Hl_6 ; Hl is derived by the following equation:

$$Hl = Hl_1 + Hl_2 + Hl_3 + Hl_4 + Hl_5 + Hl_6$$

(1) Straight pipe's head loss (Hl_1)

There are various ways to derive straight pipe's head loss. Procedures introduced here include two methods; using either Darcy equation and Hazen-Williams equation, or graphs.

a. Darcy equation

$$Hl_1 = f_1 \times \frac{L}{D} \times \frac{V^2}{2g}$$

$$f_1 = 0.02 + \frac{0.0005}{D}$$

L : pipe length (m)

V : Liquid velocity in delivery pipe (m/s)

D : pipe bore (m)

b. Hazen-Williams equation

$$Hl_1 = 10.666 \times \left(\frac{Q}{C}\right)^{1.85} \times D^{-4.87} \times L$$

C : coefficient

D : Pipe bore(mm)

Q : flow rate (m³/s)

L : pipe length (m)

General pipe condition	C	General pipe condition	C
Smooth straight pipe	140	Old cast-iron pipe	100
Smooth rubber hose			
Smooth straight pipe	130	Old cast iron pipe under adverse condition or old steel pipe	70
Smooth concrete pipe			
Smooth wooden pipe	120	Small diameter iron pipe under adverse condition	40
New steel pipe			
Steel pipe	110		
Earthen pipe			

c. Procedure for deriving from graph

Figure below shows the head loss for both gas steel pipe (SGP white: after 15 year's use) and hard polyvinyl chloride pipe, per 100m pipe length. Same hard polyvinyl chloride pipe is used in both new and old pipes. In case of gas steel pipe, instead, multiply the calculated loss with a coefficient derived from the aged deterioration (Table 1).

(2) Head loss of other piping elements ($H_{L2} - H_{L6}$)

$$H_{L2} \sim 6 = f \times \frac{V^2}{2g}$$

- f: Loss factor for various types of piping element
V: Average flow rate (m/s)

Table 1 Loss factor for pipe type and use years (for small and intermediate pipe diameters)

Pipe type \ Use years	0	10	15	20
SGP (white)	0.71	0.84	1.00	1.22
Hume Pipe, Rubber Hose	1.20	1.20	1.20	1.20
Hemp Hose	2.50	—	—	—
Cast Iron Pipe	1.76	2.10	2.50	3.05

Where pipe type differs from SGP (white), multiply a value read from **Figure 1** with coefficient from **Table 1**.

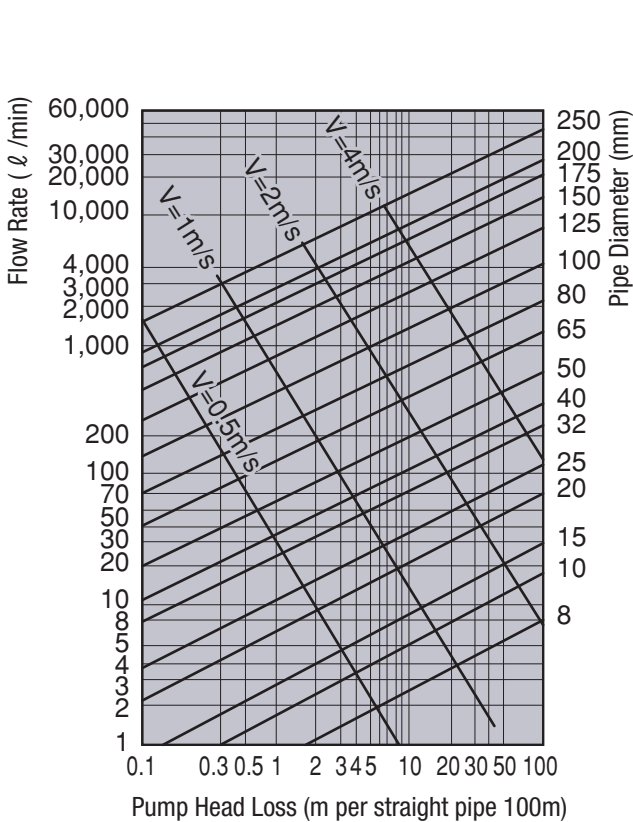


Figure 1 Gas pipe (SGP white) head loss (after use for 15 years)

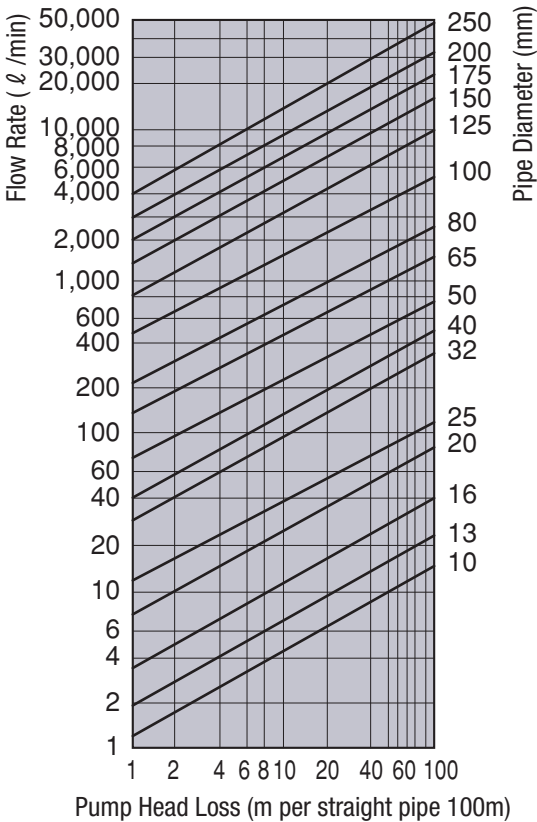
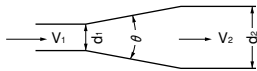


Figure 2 Hard polyvinyl chloride pipe's head loss (common for new/old pipe)

Loss factor for various types of piping element

Expanding pipe's loss factor

Head loss of expanding pipe $hf = f \frac{V_1^2}{2g}$



Narrowing pipe: Generally negligible

V_1 : Average liquid velocity (m/s) in small diameter side

V_2 : Average liquid velocity (m/s) in large diameter side

f : Loss factor

hf : Head loss(m)

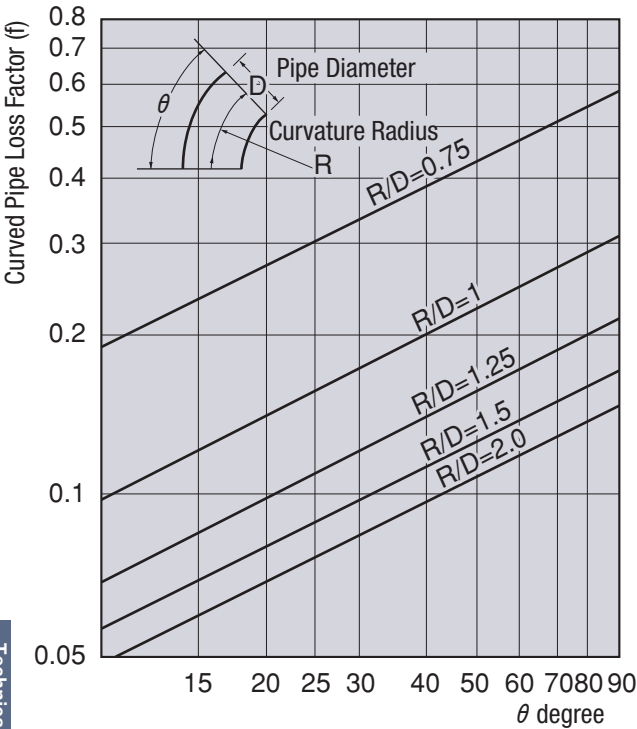
d_1 : Small diameter

d_2 : Large diameter

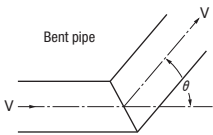
θ : Expanding angle

d_2/d_1 \ θ°	2	4	6	8	10	15	20	25	30	35	40	45	50	60
1.1	0.01	0.01	0.01	0.02	0.03	0.05	0.10	0.13	0.16	0.18	0.19	0.20	0.21	0.23
1.2	0.02	0.02	0.02	0.03	0.04	0.09	0.16	0.21	0.25	0.29	0.31	0.33	0.35	0.37
1.4	0.02	0.03	0.03	0.04	0.06	0.12	0.23	0.30	0.36	0.41	0.44	0.47	0.50	0.53
1.6	0.03	0.03	0.04	0.05	0.07	0.14	0.26	0.35	0.42	0.47	0.51	0.54	0.57	0.61
1.8	0.03	0.04	0.04	0.05	0.07	0.15	0.28	0.37	0.44	0.50	0.54	0.58	0.61	0.65
2.0	0.03	0.04	0.04	0.05	0.07	0.16	0.29	0.38	0.46	0.52	0.56	0.60	0.63	0.68
2.5	0.03	0.04	0.04	0.05	0.08	0.16	0.30	0.39	0.48	0.54	0.58	0.62	0.65	0.70
3.0	0.03	0.04	0.04	0.05	0.08	0.16	0.31	0.40	0.48	0.55	0.59	0.63	0.66	0.71
∞	0.03	0.04	0.05	0.06	0.08	0.16	0.31	0.40	0.49	0.56	0.60	0.64	0.69	0.72

Curved pipe's loss factor

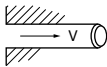
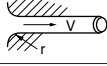
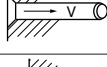
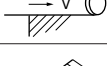
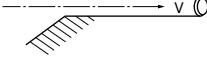
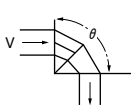
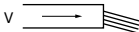


Bent pipe's loss factor



θ°	15	30	45	60	90	120
f	0.0222	0.0728	0.183	0.365	0.99	1.86

● Various irregular shaped pipe's loss factor

Irregular Shaped Pipe Name	Shape	Loss Factor (f)																												
Inflow port	Angled end 	0.5																												
	Rounded end 	0.06 - 0.005 (r: small) (r: large)																												
	Beveled end 	0.25																												
	Projected pipe end 	0.56 - 3.0 (blunt end) (acute end)																												
	Slanting end 	$0.5 + \beta$ Angled end $\therefore \beta = 0.3\cos \theta + 0.2\cos^2 \theta$ $0.05 + \beta$ Rounded end																												
	Add β to loss factor of inflow port	<table><tr><th>θ</th><th>15°</th><th>30°</th><th>45°</th><th>60°</th><th>75°</th><th>90°</th></tr><tr><th>β</th><td>0.48</td><td>0.41</td><td>0.31</td><td>0.2</td><td>0.02</td><td>0</td></tr></table>	θ	15°	30°	45°	60°	75°	90°	β	0.48	0.41	0.31	0.2	0.02	0														
θ	15°	30°	45°	60°	75°	90°																								
β	0.48	0.41	0.31	0.2	0.02	0																								
Bell Mouth	(a)  (b) 	(a) 0.2 Horn shape (b) 0.4 Conical shape																												
90° Bend	(a)  (b)  (c)  (d)  (e)  (f) 	(a) 1.0 (b) 0.14~0.40 (with aligning grid) (c) <table><tr><th>$\frac{r}{d}$</th><th>1.0</th><th>1.25</th><th>1.5</th><th>2.5</th></tr><tr><th>f</th><td>0.30</td><td>0.21</td><td>0.17</td><td>0.15</td></tr></table> (d) $\frac{r}{d} = 1 \rightarrow f = 0.24$ (e) 0.88 (f) $\frac{r}{d} = 1.5 \rightarrow f = 0.40$	$\frac{r}{d}$	1.0	1.25	1.5	2.5	f	0.30	0.21	0.17	0.15																		
$\frac{r}{d}$	1.0	1.25	1.5	2.5																										
f	0.30	0.21	0.17	0.15																										
Miter bend	 θ Angle of bend per node θ_1 Total angle of bend N Node count	<table><tr><th>θ</th><th>22.5°</th><th>30°</th><th>20°</th><th>45°</th><th>22.5°</th><th>30°</th></tr><tr><th>N</th><td>2</td><td>2</td><td>3</td><td>2</td><td>4</td><td>3</td></tr><tr><th>θ_1</th><td>45°</td><td>60°</td><td>60°</td><td>90°</td><td>90°</td><td>90°</td></tr><tr><th>f</th><td>0.284</td><td>0.268</td><td>0.236</td><td>0.377</td><td>0.250</td><td>0.299</td></tr></table>	θ	22.5°	30°	20°	45°	22.5°	30°	N	2	2	3	2	4	3	θ_1	45°	60°	60°	90°	90°	90°	f	0.284	0.268	0.236	0.377	0.250	0.299
θ	22.5°	30°	20°	45°	22.5°	30°																								
N	2	2	3	2	4	3																								
θ_1	45°	60°	60°	90°	90°	90°																								
f	0.284	0.268	0.236	0.377	0.250	0.299																								
Discharge		1.0																												

● Sluice valve's loss factor

Bore (mm)	When Fully Opened (f)
25	0.23
40	0.18
50	0.17
80	0.15
100	0.14
125	0.13
150	0.12
200	0.10
250	0.09
300	0.07
Large bore	≈ 0

● Other valve's loss factor

Valve Name	When Fully Opened (f)
Ball Type Valve	6 - 16 (large-size - small-size)
Angle Valve	3 - 8 (large-size - small-size)
Butterfly Valve	0.2 - 0.4 (large-size - small-size)
Cock	0.05 or less
Check Valve	0.6 - 1.5 (large-size - small-size)

For curved pipes and valves, there is another method to derive a straight pipe equivalent length from **Table 2**.
Straight pipe equivalent length indicates what length (m) of straight pipe generates the same head loss with that by curved pipes and valves.

Table 2 Straight pipe equivalent length for curved pipes and valves(m for each)

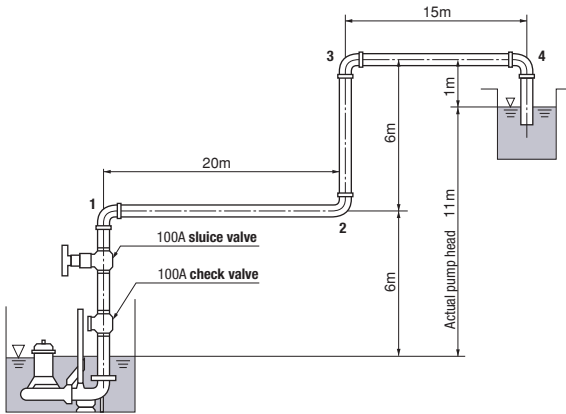
Unit: mm

Pipe Diameter mm (inch) Product Name	8 ($\frac{1}{4}$ ")	10 ($\frac{3}{8}$ ")	15 ($\frac{1}{2}$ ")	20 ($\frac{3}{4}$ ")	25 (1")	32 (1 $\frac{1}{4}$ ")	40 (1 $\frac{1}{2}$ ")	50 (2")	65 (2 $\frac{1}{2}$ ")	80 (3")	100 (4")	125 (5")	150 (6")	175 (7")	200 (8")	250 (10")
45° elbow	0.19	0.24	0.29	0.38	0.45	0.52	0.6	0.7	0.8	0.95	1.1	1.3	1.4	1.6	1.7	2.0
90° elbow	0.9	1.1	1.4	1.7	2.0	2.3	2.6	3.2	3.5	4.2	4.8	5.5	6.2	6.8	7.4	8.4
Bend	0.14	0.18	0.22	0.28	0.33	0.38	0.42	0.52	0.6	0.66	0.8	0.9	1.0	1.1	1.2	1.4
Tees elbow Split Flow	1.7	2.1	2.5	3.2	3.8	4.4	4.8	5.8	6.6	7.4	9	10	11	12	13	15
Tees elbow Direct Flow	0.14	0.18	0.22	0.28	0.33	0.38	0.42	0.52	0.6	0.66	0.8	0.9	1.0	1.1	1.2	1.4
Different Diameter Socket Bushing	0.19	0.24	0.29	0.38	0.45	0.52	0.6	0.7	0.8	0.95	1.1	1.3	1.4	1.6	1.7	2.0
Sluice valve	0.12	0.15	0.18	0.24	0.28	0.33	0.36	0.43	0.5	0.55	0.65	0.75	0.84	0.92	1.0	1.2
Stop valve	5	6.4	7.5	10	12	13	15	18	22	24	28	33	36	40	44	50
Check valve	2	2.5	3	3.8	4.6	5.3	6.0	7	8	9	11	13	14	15	17	19
Foot valve	2.5	3.2	3.8	5	6	6.8	7.5	9.2	10	12	14	17	19	20	22	25
Cock	2	2.5	3.5	4	4.5	5	5.5	6.5	7	10	—	—	—	—	—	—

Strainer, socket, union and flange can be omitted.

■ Calculation sample of total head

(For $f_2 - f_4$, refer to "loss factor for various types of piping element")



Pump bore100mm Total length of discharge tube ..48m
 Delivery pipe bore100mm 90° elbow4 pcs.
 Delivery flow rate...1.2m³/min Sluice valve.....1 pc.
 Actual pump head.....11m Check valve.....1 pc.

$$\text{Total Head } H = H_a + \Delta h_p + H_l + \frac{Vd^2}{2g}$$

$H_a = 11\text{m} = \text{Actual pump head}$

$$\Delta h_p = 0$$

$Vd = 2.5\text{m/s}$, according to **water volume – flow rate chart** (Lower right)

From $g = 9.8\text{m/s}^2$

$$\frac{Vd^2}{2g} = 0.319$$

$$H_l = H_{l1} + H_{l2} + H_{l3} + H_{l4}$$

Straight pipe's head loss $L : 48\text{m}$ $D : 0.1\text{m}$

$$f_1 = 0.02 + 0.0005 / D \quad \text{Darcy equation}$$

$$H_{l1} = f_1 \times \frac{L}{D} \times \frac{Vd^2}{2g} = 3.828\text{m}$$

90° elbow (assuming $r/d = 1.0$)

4 types of head loss $f_2 = 4 \times 0.3$ Various irregular shaped pipe's

$$H_{l2} = f_2 \times \frac{Vd^2}{2g} = 0.383\text{m} \quad \text{loss factor -90° Bend (C)}$$

Sluice valve (100A) head loss $f_3 : 0.14$ Sluice valve's loss factor

$$H_{l3} = f_3 \times \frac{Vd^2}{2g} = 0.045\text{m}$$

Check valve (100A) head loss $f_4 : 1.5$ Other valve's loss factor

$$H_{l4} = f_4 \times \frac{Vd^2}{2g} = 0.478\text{m}$$

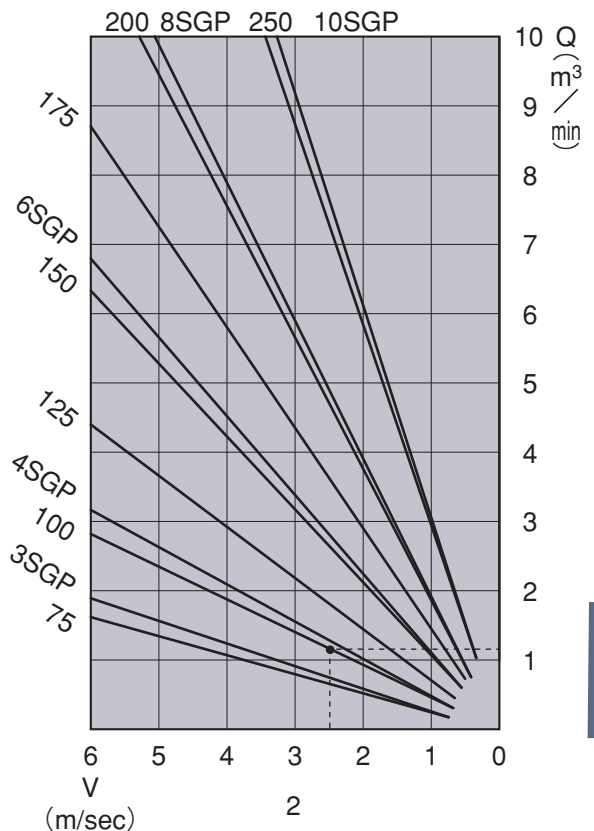
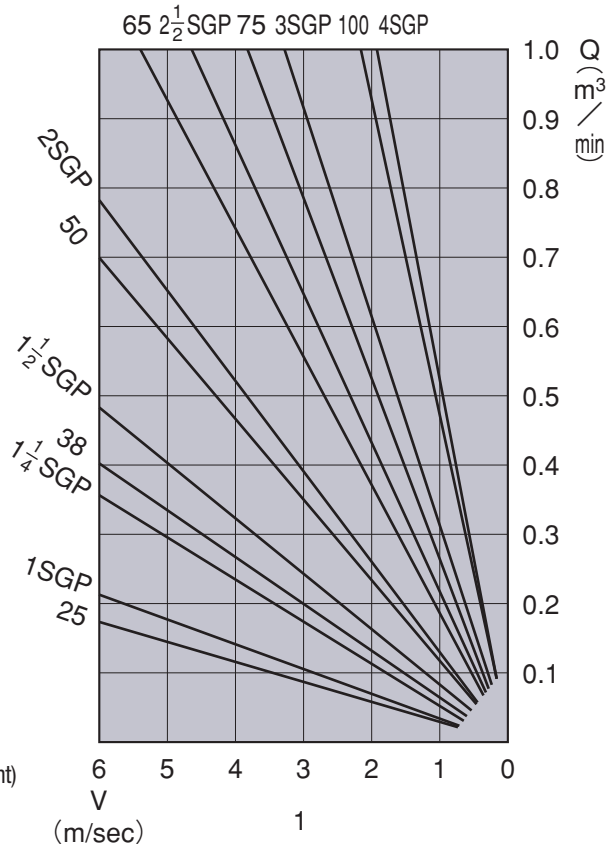
$$\text{Therefore, } H_l = 3.828 + 0.383 + 0.045 + 0.478 = 4.734\text{m}$$

Total head (H)

$$H = 11 + 0 + 4.734 + 0.319 = 16.053\text{m}$$

Thus, pump's total head is set to 16.1m

water volume – flow rate chart (pipe diameter mm SGP shows a gas pipe)



Blower related calculation

Piping pressure loss

1. Pressure loss of straight pipe

$$H_1 = 1.267 \times 10^{-2} \times \frac{273}{T} \times 4 \cdot f \cdot \frac{\ell}{d} \cdot \frac{V^2}{2g} \dots\dots\dots ①$$

H_1 : pressure loss of straight pipe (kPa)
 ℓ : Pipe length (m) d : Pipe diameter (m)
 f : 0.004 - 0.0059
 V : Air verocity of inner pipe(m/s)

$$V = \frac{4Q}{60\pi d^2}$$
 g : Gravitational acceleration (9.8m/s²)
 Q : Air flow rate (m³/min)
 T : Absolute temperature (K)

[Calculation Sample] Where pipe diameter 65mm=0.065m, pipe length 10m, airflow rate 2.0m³/min and air temperature 40°C

$$\begin{aligned}
 V &= \frac{4Q}{60\pi d^2} = \frac{4 \times 2.0}{60 \times \pi \times 0.065^2} = 10.05 \text{ (m/s)} \\
 H_1 &= 1.267 \times 10^{-2} \times \frac{273}{T} \times 4 \cdot f \cdot \frac{\ell}{d} \cdot \frac{V^2}{2g} \\
 &= 1.267 \times 10^{-2} \times \frac{273}{273+40} \times 4 \times 0.0059 \times \frac{10}{0.065} \times \frac{10.05^2}{2 \times 9.8} \\
 &= \underline{\underline{0.207 \text{ (kPa)}}}
 \end{aligned}$$

2. Pressure loss of irregular shaped pipe

$$H_2 = K \cdot \frac{V^2}{2g} \times 1.267 \times 10^{-2} \dots\dots\dots ②$$

H_2 : Pressure loss of irregular shaped pipe(kPa)
 V : Air verocity of inner pipe (m/s)
 K : Pressure loss factor of irregular shaped pipe section
 (according to Table 1)

Table 1 Pressure loss factor of various irregular shaped pipe (K)

90° curved pipe					T-pipe	Pipe Inlet	Pipe Outlet	Reducer	Air Regulating Valve	
r/R									Sluice Valve	Stop Valve
1/3	1/2	1/1.5	1/1.2	1/1.0						
0.21	0.36	0.70	1.37	2.44	1.23	0.62	1.23	0.06	0.02	1.85

Note) r: Pipe radius R: pipe bending radius curved pipe with any angle α : Multiply K for 90° curved pipe with $\alpha/90$
 $K \text{ (90° curved pipe)} \times \alpha/90$

[Calculation Sample] 90° elbow for pipe diameter 65mm (pipe bending radius R= 63.5mm)

$r/R = 32.5/63.5 = 1/2$ Therefore, K= 0.36 according to **Table 1**

$$H_2 = K \cdot \frac{V^2}{2g} \times 1.267 \times 10^{-2} = 0.36 \cdot \frac{10.05^2}{2 \times 9.8} \times 1.267 \times 10^{-2} = \underline{\underline{0.0235 \text{ (kPa)}}}$$

3. Pressure loss of passing resistance

Pressure loss by passing resistance (e.g. air diffuser) is specified in **Table 2**.

Table 2 Pressure loss by passing resistance

Device Type	Diffusing Plate	Diffusing Tube	Air Flow Rate Measuring Device	Air Filter
Pressure Loss (kPa)	4.0	4.0	2.0	0.15

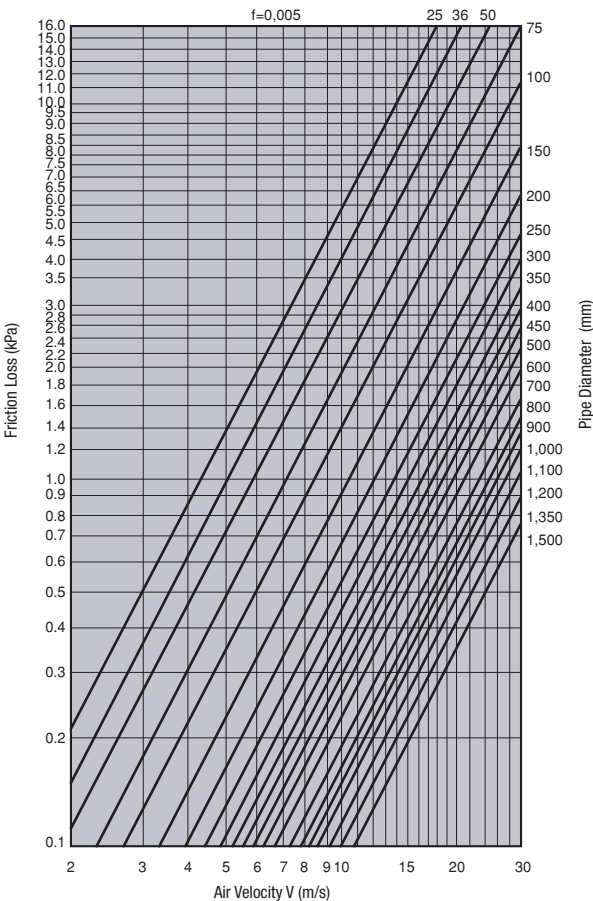
Note): Diffusing plate and diffusing tube is for use of holder orifice, while airflow rate measuring device is for use of orifice type.

4. Air-pipe velocity

Specify the air-pipe's velocity by referring to **Table 3**, taking into consideration the economical efficiency, pipe's vibration resistance and others.

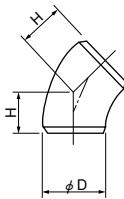
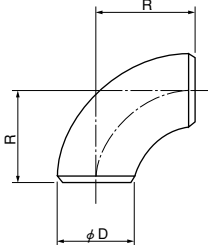
Table 3 Economical velocity of air-pipe

Pipe Diameter (mm)	Air Velocity (m/min)
25 - 75	180 - 300
100 - 250	250 - 450



Steel pipe's friction loss (per 100m straight pipe)

Unit: mm

		45° elbow		90° elbow	
					
Nominal Diameter		Outer Diameter D		Distance from Center to End Face	
				45° Elbow H	90° Elbow R
				Long	Long Short
15	1/2"	21.7		15.8	38.1 —
20	3/4"	27.2		15.8	38.1 —
25	1"	34.0		15.8	38.1 25.4
32	1 1/4"	42.7		19.7	47.6 31.8
40	1 1/2"	48.6		23.7	57.2 38.1
50	2"	60.5		31.6	76.2 50.8
65	2 1/2"	76.3		39.5	95.3 63.5
80	3"	89.1		47.3	114.3 76.2
90	3 1/2"	101.6		55.3	133.4 88.9
100	4"	114.3		63.1	152.4 101.6
125	5"	139.8		78.9	190.5 127.0
150	6"	165.2		94.7	228.6 152.4
200	8"	216.3		126.3	304.8 203.2
250	10"	267.4		157.8	381.0 254.0
300	12"	318.5		189.4	457.2 304.8

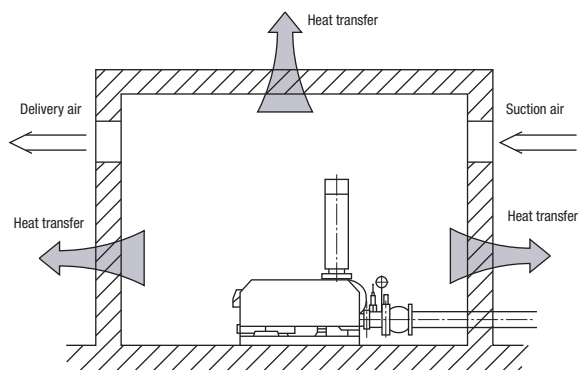
Ventilation air flow rate calculation

1. Condition

Blower room's temperature rise derives from blower's heat release value, part of which however is lost by wall's heat transfer and circulation air.

Blower is however surrounded with lower heat transfer substances such as air and concrete wall. Considering adverse conditions for example the high-temperature in summer time, heat transfer from wall surface must be ignored.

Therefore, calculation is according to blower heat release value = lost heat by circulation air.



2. Blower heat value calculation

2.1 motor's heat value q_1

$$q_1 = 3.6 \times 10^3 \times (P_{in} - P_{out}) / 60 \dots\dots\dots (\text{kJ/min})$$

P_{in} : motor input (kW)

P_{out} : motor output (kW)

2.2 blower's heat value q_2

$$q_2 = C_v \times \left(\frac{n-k}{n-1} \right) (T_2 - T_1) \times Q_1 \times \gamma \dots\dots\dots (\text{kJ/min})$$

However

$$T_2 = T_1 \times \left(\frac{P_2}{P_1} \right)^{\frac{n-1}{n}} \dots\dots\dots (\text{K})$$

C_v : Specific heat at constant volume
(air 0.718 kJ/kg°C)

n : Polytropic exponent

k : Adiabatic exponent (air 1.4)

T_1 : Blower suction air temperature = $273 + t_a$ (K)

T_2 : Delivery air temperature (K)

Q_1 : Blower suction air flow rate (m³/min)

γ : Air density (1.2 kg/m³)

P_2 : Delivery absolute pressure (kPa)

P_1 : Suction absolute pressure (101.3 kPa)

3. Ventilation air flow rate calculation

$$Q \geq \frac{q_1 + q_2}{\gamma \times (t_a - t_1) \times C_p} \dots\dots\dots (\text{m}^3/\text{min})$$

t_a : Blower room allowable temperature (40°C)

t_1 : Ventilation suction air temperature (°C)

C_p : Specific heat at constant pressure
(air 1.005 kJ/kg°C)

Q : Blower room's necessary ventilation air flow rate (m³/min)

Polytropic exponent (n) for blower heat value calculation

Model \ Pressure (kPa)	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
ARS50	2	2	2	1.9	1.8	1.8	1.8	1.8	1.7	1.6	1.6	1.6	1.6	1.6	1.6
ARS65A	2	2	2	1.9	1.8	1.8	1.8	1.8	1.7	1.6	1.6	1.6	1.6	1.6	1.6
ARS80	2	2	1.8	1.7	1.7	1.6	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6
ARS100	2	2	1.8	1.7	1.7	1.6	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6
ARS125	2	2	1.8	1.7	1.7	1.6	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6
ARS150	2	2	1.8	1.7	1.7	1.6	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6
ARS200	2	2	1.8	1.7	1.7	1.6	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6
ARS250	2	2	1.8	1.7	1.7	1.6	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6
ARH20S • 25S	2	1.9	1.9	1.8	1.8	1.6	1.6	1.6	1.6	1.6	1.6	—	—	—	—
ARH32S • 40S • 50SP	1.8	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	—	—	—	—
ARH50S • 65SP	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	—	—	—	—
ARH65S • 80SP	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	—	—	—	—
ARH80S • 100SP	1.7	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	—	—	—	—
ARH100S	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	—	—	—	—
ARH125S • 125SA	1.9	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	—	—	—	—
ARH125SF • 150S	1.9	1.8	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	—	—	—	—
ARH200S	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	—	—	—	—

[Calculation sample of ventilation airflow rate]

Blower specification:

ARH100S Delivery pressure 35kPa Air flow rate 6.65m³/min Output 7.5kW 60Hz (1630min⁻¹).....2 units of blowers are operated simultaneously.

Derive the ventilation air flow rate necessary.

However, ventilation suction air temperature is 30°C; polytropic exponent is 1.6.

(1) Motor's heat value

According to performance table (ARH100S), P_{out}= 6.8kW

According to motor characteristics, efficiency $\eta = 90.2\%$

P_{in} = P_{out} / $\eta = 6.8 / 0.902 = 7.54$ (kW)

q₁ = 3.6 × 10³ × (P_{in} - P_{out}) / 60 = 3.6 × 10³ × (7.54 - 6.8) / 60 = 44.40 (kJ/min)

(2) blower's heat value

$$T_2 = T_1 \times \left(\frac{P_2}{P_1} \right)^{\frac{n-1}{n}} = (30 + 273) \times \left(\frac{101.3 + 35}{101.3} \right)^{\frac{1.6-1}{1.6}}$$

$$= 313 \times \left(\frac{136.3}{101.3} \right)^{\frac{0.6}{1.6}}$$

$$= 350 \text{ (K)}$$

$$q_2 = C_v \times \left(\frac{n-k}{n-1} \right) (T_2 - T_1) \times Q_1 \times r = 0.718 \times \left(\frac{1.6-1.4}{1.6-1} \right) \times [350 - (273 + 30)] \times 6.65 \times 1.2$$

$$= 70.67 \text{ (kJ/min)}$$

$$(3) Q \geq \frac{(q_1 + q_2)}{\gamma \times (t_a - t_i) \times C_p} = \frac{(44.40 + 70.67) \times 2 \text{ units}}{1.2 \times (40 - 30) \times 1.005} = 19.1 \text{ (m}^3/\text{min)}$$

(4) Blower room's necessary ventilation air flow rate to be derived is 19.1(m³/min)

How to view performance curve

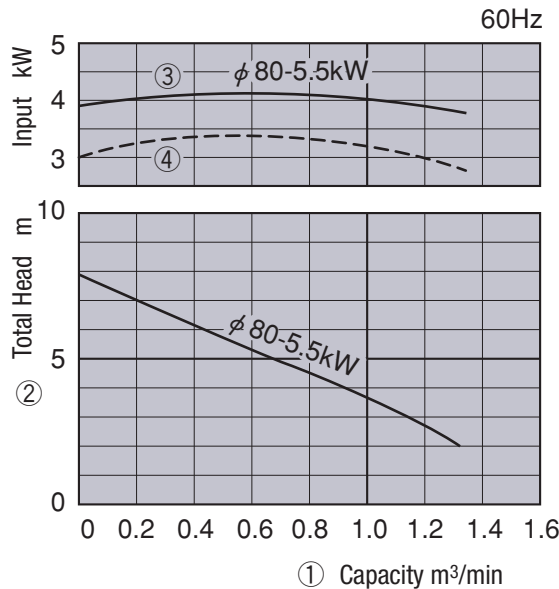


Figure shows curves indicating pump performance, input and output.

①: Capacity per minute, (unit: m^3/min or ℓ/min)

②: Total pump head (or pressure), (unit: m)

To convert to pressure:

$$\text{Pressure} = \text{total head} \times \left(\frac{1}{10} \text{ kgf/cm}^2 \right)$$

$$= \text{total head} \times 9.80665 \times 10^{-3} \text{ (MPa)}$$

③: Motor's actual electric power consumption (kW) (input)

④: Motor's work indicated by electric power (kW) (output)

Relation between input and output is as follows:

$$P_i \text{ (kW)} = \frac{P_o \text{ (kW)}}{\eta_m}$$

P_i : Input

P_o : Output (axis power)

η_m : Motor efficiency

$$P_o \text{ (kW)} = \frac{0.163 \cdot \gamma \cdot Q \cdot H}{\eta_p}$$

γ : Specific gravity (water: 1)

Q : Capacity (m^3/min)

H : Total head (m)

η_p : Pump efficiency

pump efficiency η_p :

$$\eta_p = \frac{W}{P_o}$$

$$W \text{ (kW)} = 0.163 \cdot \gamma \cdot Q \cdot H$$

W : Theoretical power (kW)

Pump efficiency varies per pump structure and size.

Application of performance curve

The intersection point between **Capacity – Head Curve** (Q–H curve) and **resistance curve** (load curve to Q, derived by adding various pipe line losses to actual pump head loss) represents the pump operation point.

If pipe line and valve losses are given too much margin or actual pump head becomes too low, pump's operation point is deflected to a lower pump head side, increasing the capacity higher than desired water volume.

Depending on the purpose of use, extra water flow may cause an inconvenience, or, pump may generate cavitation.

On the contrary, underrated head loss or increased actual pump head may deflect the operation point toward higher pump head side, decreasing water volume as a result.

Figure 1 shows the operation point changed when pipe line loss varies; **Figure 2** shows that changed when actual pump head varies.

In Figures 1 and 2, points P, Q, R and S, T, U represent operation points.

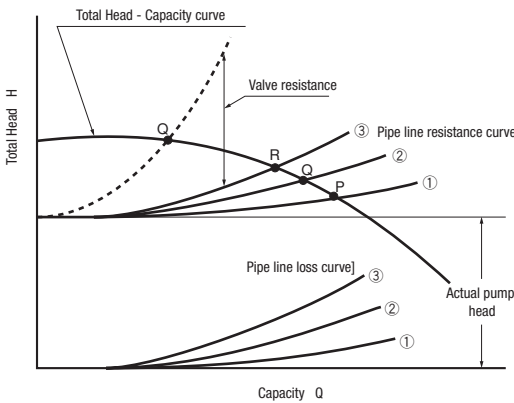


Figure 1 Operation points for varied pipe line losses

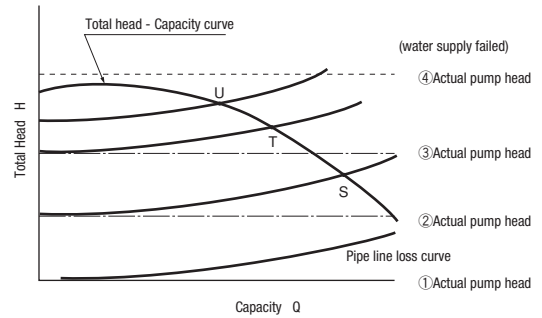


Figure 2 Operation points for varied actual pump heads

Considering the pump facility in terms of transfer purpose, if, even with higher efficiency of pump itself, larger losses generated from pipe, valve, water conduit, screen other than pump may lower the facility efficiency.

Generally, when lower power is consumed by a transfer facility to transfer a specified water volume with a specified height (actual pump head), the transfer facility is evaluated better.

$$\eta_{st} = \eta \cdot \frac{H - h\ell}{H}$$

η_{st} : Transfer efficiency (Q relation)

η : Pump efficiency (Q relation)

H: Total pump head (Q relation)

$h\ell$: Various head losses other than pump ($\propto Q^2$)

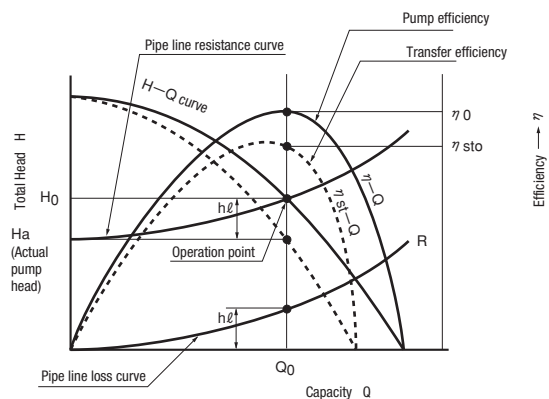


Figure 3 Transfer efficiency

● Series and parallel operations

If a change of required water volume and pump head variation increase so the capacity by one pump lacks, two or more pumps may be operated in series or in parallel.

(1) Pumps with same characteristics operating in series or in parallel

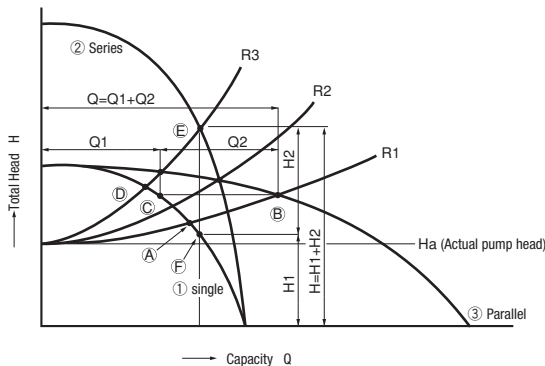


Figure 4 Pumps with same characteristics operating in series or in parallel

Figure 4:

- ①: Capacity – total head curve for single pump
- ②: Capacity – total head curve for 2 pumps in series
- ③: Capacity – total head curve for 2 pumps in parallel
- ② is derived by doubling ① along the vertical axis direction,
- ③ is derived by doubling ① along horizontal axis direction.
- If resistance curve R_2 applies, both series and parallel operations have a same operation point.
- If resistance curves R_3 and R_1 apply, both have a different operation points with each other.

A large discharge rate is required, resistance R_3 takes series operation with the operation points (E), and (F), while resistance R_1 takes a parallel operation with the operation points (B) and (C).

2nd pump in series operation uses the pressed operation, therefore be careful in pump casing pressure resistance and water sealing.

(2) Parallel operation of pumps having different characteristics

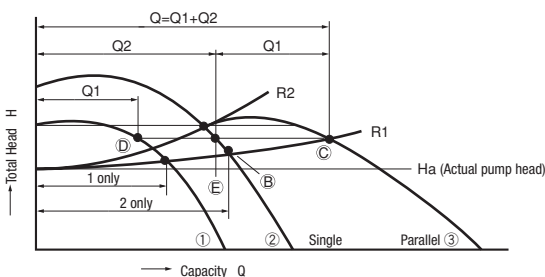


Figure 5 Parallel operation of pumps having different characteristics

Figure 5

- ①: Capacity – total head curve for small capacity pump
- ②: Capacity – total head curve for large capacity pump
- ③: Capacity – total head curve for parallel operation

Integrated parallel operation point is (C), while each pump's operation point is (D) and (E).

If resistance becomes larger than R_2 , pump ① is incapable of pump-up, i.e. in blocking operation status.

In addition, without check valve, pump enters the normal rotation and back-flow operation state.

(3) Series operation of pumps having different characteristics

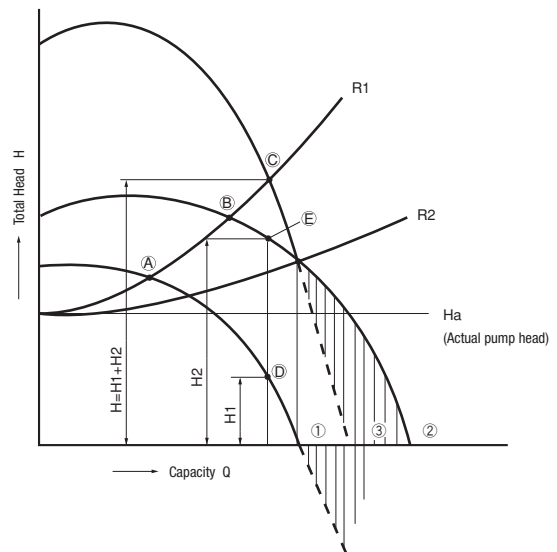


Figure 6 Series operation of pumps having different characteristics

Figure 6

- ①: Capacity – total head curve for small capacity pump
- ②: Capacity – total head curve for large capacity pump
- ③: Capacity – total head curve for series operation

The integrated series operation point is (C); each pump's operation point is (D) and (E), respectively.

Operation in which resistance is smaller than R_2 is not preferable.

At least, a large capacity pump must be used in the stage 1; 2nd stage pump becomes simply a resistance, though decreasing 1st stage pump's pump head.

● Transferring to piping with different characteristics

(1) Series transfer to two tubes with different characteristics

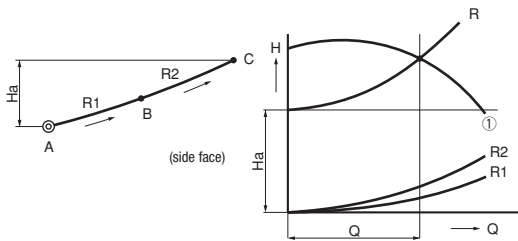


Figure 7 Series transfer to two pipes with different resistances

Transfer from point A to point C of height H_a via point B in **Figure 7**

①: Pump capacity – total head curve

R1: Resistance between pipe AB

R2: Resistance between pipe BC

R: Integrated resistance curve by adding H_a and R1, R2 along vertical axis direction

The intersection point between ① and R is the operation point to be derived.

(2) Parallel transfer to two pipes with different resistances

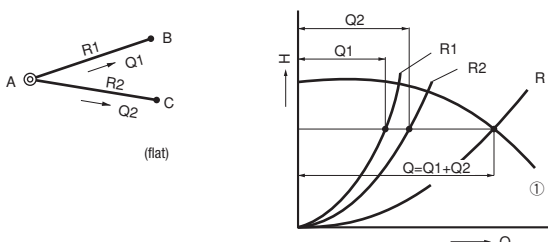


Figure 8 Parallel transfer to two pipes with different resistances

Transferring from point A to two points B and C in **Figure 8** (however, three points A, B, C are on the same flat surface)

①: Pump capacity – total head curve

R1: Resistance between pipe AB

R2: Resistance between pipe AC

R: Integrated resistance curve by adding R1, R2 along horizontal axis direction

Intersection point between ① and R is the operation point; Intersection point between a line, passing the aforementioned point, parallel with a horizontal axis and R1, R2 represents water volume flow to AB and AC respectively.

(3) Parallel transfer to two pipes with different heights and resistances

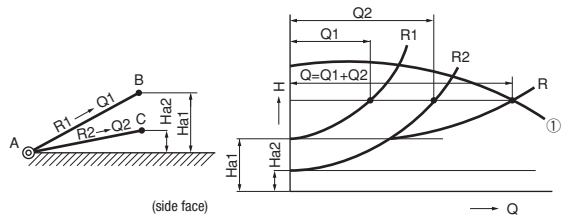


Figure 9 Parallel transfer to two pipes with different heights and resistances

Parallel transfer from point A to points B, C with a height H_{a1} , H_{a2} respectively in **Figure 9**

①: Pump capacity – total head curve

R1: Resistance between pipe AB

R2: Resistance between pipe AC

R: Integrated resistance curve by adding R1, R2 along horizontal axis direction

Intersection point between ① and R is the operation point; Intersection point between a line, passing the aforementioned point, parallel with a horizontal axis and R1, R2 represents water volume flow to AB and AC respectively.

(4) Parallel transfer to two pipes with different height and resistance via one pipe

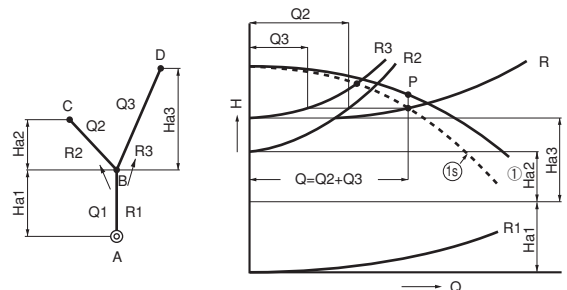


Figure 10 Parallel transfer to two pipes with different height and resistance via one pipe

Parallel transfer from point A via point B with a height H_{a1} , moreover, to points C, D with a height H_{a2} , H_{a3} in **Figure 10**

①: Pump capacity – total head curve

R1: resistance between pipe AB

①s: Curve derived by subtracting R1 from ① along the vertical axis direction (Q–H characteristic curve regarding one pump up to point B)

Point B and after is derived same as (3) **Parallel transfer to two pipes with different heights and resistances**

R2: resistance between pipe BC

R3: resistance between pipe BD

R: integrated resistance curve by adding R2, R3 to the horizontal axis direction.

Intersection points between ①s and R represents the overall water volume; another intersection point between a line, parallel to the horizontal axis, passing through the aforementioned point and R2, R3, are respectively represent a water volume flowing to BC, BD. Point P is the pump's operation point.

(5) Transfer from two pumps to another pipe via one pipe with different resistances respectively

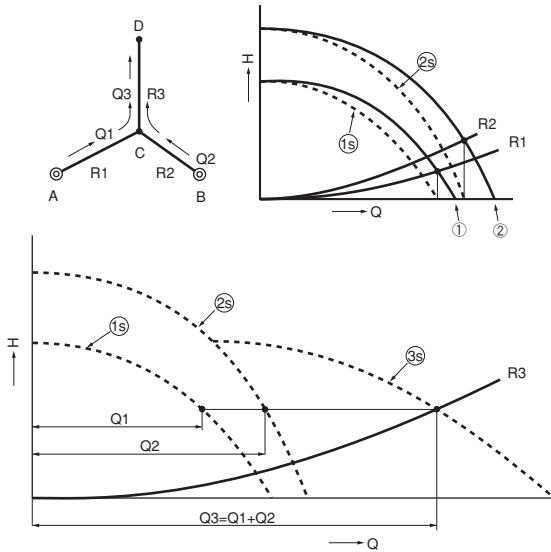


Figure 11 Transfer to one pipe via two pumps and two pipes

Transfer to one pipe CD via pipe AC and BC by pumps with different characteristics at two point A, B in **Figure 11**

①: Pump A's capacity – total head curve

R1: loss between pipe AC

①s: Curve derived by subtracting R1 from ① along the vertical axis direction (Q–H characteristic curve derived by regarding area until C of pump A as one pump)

②: Pump B's capacity – total head curve

R2: loss between pipe BC

②s: Curve derived by subtracting R2 from ② along the vertical axis direction (Q–H characteristic curve derived by regarding area until C of pump B as one pump)

Point C and after represents a parallel operation of two pumps having 1s and 2s characteristics.

③s: Characteristic curve derived by adding ①s and ②s along horizontal axis direction

R3: loss between pipe CD

intersection point between ③s and R3 represents total water volume of two pumps; intersection points between a line, parallel with horizontal axis, passing through the aforementioned point and ①s, ②s represent respectively a capacity of both pumps A, B.

Table for Auto-connection pairing

Bore (mm)	Connection Part No.	Applicable Pump Model
32	P32	A321, CKM32
	P32RL (resin)	CRS321
40	P40	A401, AH401, CN40, CVS40, CKM40
	S3P40 (stainless)	Same with P40
	P40RH (resin)	CRC40
	P40RL (resin)	CRS401
50	P50	A501, AH501, AH502, CN501, CNL501, CV501, CVS50, CVC501, CVM50, CJ501, CKM50
	S3P50 (stainless)	Same with P50
	P50RH (resin)	CRC50
	P50NR (resin)	CRS65, CRC50
65	P50RL (resin)	CR501, CRS501
	P65	A652, AH651, AH801, CNW651, CN651, CN80(G), CNL651, CV651, CVS651, CVS80, CVC651(G), CVC801(G), CVM65(G), CM65(G), CW80(G), CWQ65, CWQ80, CVMQ65, CVCQ651, CVCQ801, CN65G, CJ651, CJ80, CN501, CNL501, CV501, CVC501
	P65B	A501, AH501, AH502, CJ501, CN501, CNL501, CV501, CVC501
	P65WX	CNWX651
	S3P65 (stainless)	Same with P65
	P65D	CN65 / 80
	P65G (short type)	Same with P65
	P65GWX (short type)	CNWX651
	P65NR (resin)	CR65, CR80, CRS65, CRS80, CRC50, CRC65
	P80	A652, AH651, AH801, AH1001, CN651, CNL651, CVC651, CVC80, CVC100, CVC651, CVC851, CW65, CWQ65, CVCQ651, CN65G, CJ651
80	P80B	CNWX801, CN80(G), CN100(G), CVM80(G), CVC801(G), CVC1001(G), CW80(G), CW100(G), CVMQ80, CVCQ801, CVCQ1001, CJ80, CJ100, CV801GS, CV1001GS, CWQ80, CWQ100, CNM80
	P80BWX	CNWX801
	S3P80B (stainless)	Same with P80B
	P80C	CN801
	P80D	CN65/80
	P80E	CN80/100A
	P80F	CK80/100
	P80G (short type)	Same with P80B
	P80GWX (short type)	CNWX801
	P80NR (resin)	CR65, CR80, CRS65, CRS80, CRC65
100	P100	AH801, AH1001, CVS80, CVS100
	P100B	CN80(G), CN100(G), CVC801, CVC1001(G), CW80, CW100(G), CVCQ801, CVCQ1001, CJ80, CJ100, CV1001GS, CWQ80, CWQ100, CNM100
	S3P100B (stainless)	Same with P100B
	P100C	CNWX1001, CNH100, CVH100, CVM100(G), CVMQ100, CWH100(G), CNWX1001
	P100CG (short type)	Same with P100C
	P100D	CN80/100A
	P100E	CK80/100
	P100G (short type)	Same with P100B
	P150	CN150(G), CV150, CVM150(G), CVMQ150, CV150GS, CW150(G)
	P150B	CN150A, CN150B

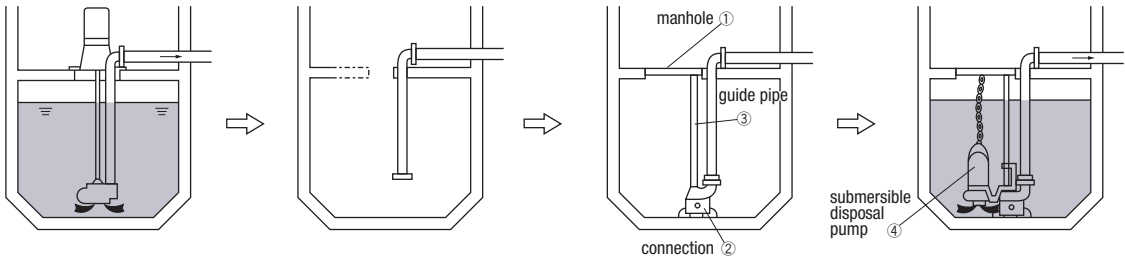
* Combinations other than the above may be available. Please contact us.

■ Pump replacement procedure

Replacement to any pump you are using now is available easily.

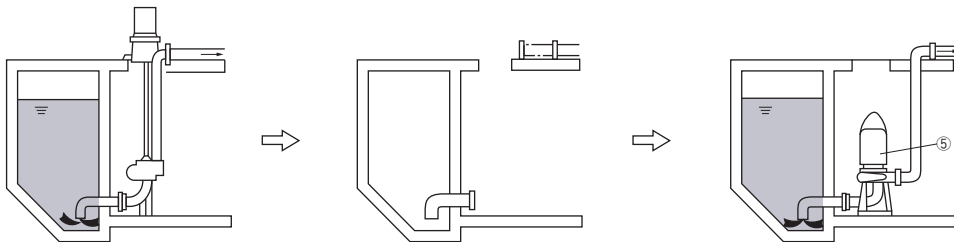
If troubled with sewage water pump and sewage water disposal pump, refer to the following procedure for replacement planning.

1. Replacing Vertical axis sewage water pump to Auto Connection Type submersible disposal pump.....



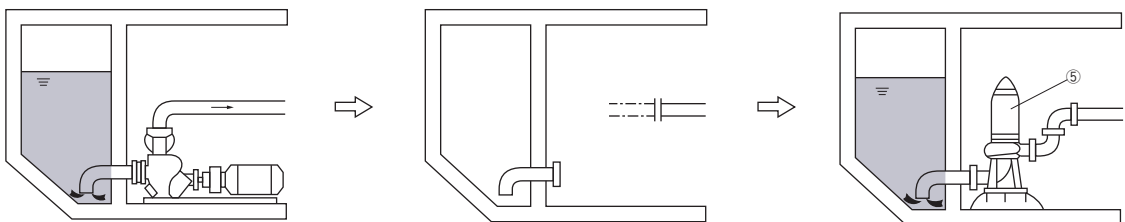
Piping is available with no changes. Install a manhole ① to upside floor surface, and fix a connection ② to tank floor. Mounting a guide pipe ③ allows you to install the Shinmaywa submersible disposal pump ④.

2. Replacing Vertical axis sewage water pump to Vertical Dry Pit type sewage disposal pump



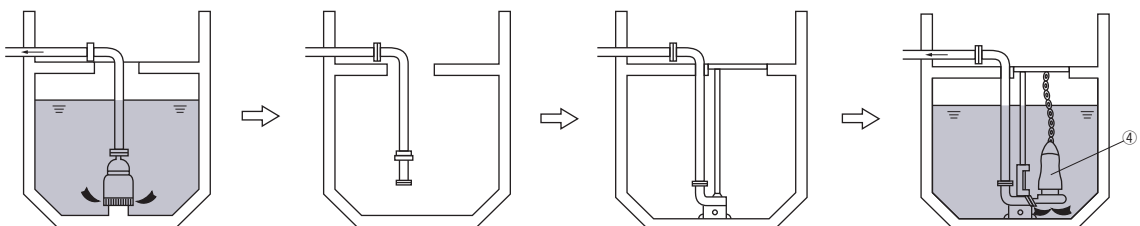
Piping is available with no changes. In this case, use the Shinmaywa Vertical Dry Pit type pump CNT/CWT type ⑤. This CNT/CWT type is operable not only in air but also in submersible condition. Even if the pump is immersed, it may operate continuously.

3. Replacing Horizontal type sewage water pump to Vertical Dry pit type sewage disposal pump



Piping is available with no changes. Similarly with case 2, use the Vertical Dry Pit type pump CNT/CWT type ⑤. This CNT/CWT type is operable not only in air but also in submersible condition. Even if the pump is immersed, it may operate continuously.

4. Replacing other type submersible pump to auto-connection submersible sewage water disposal pump



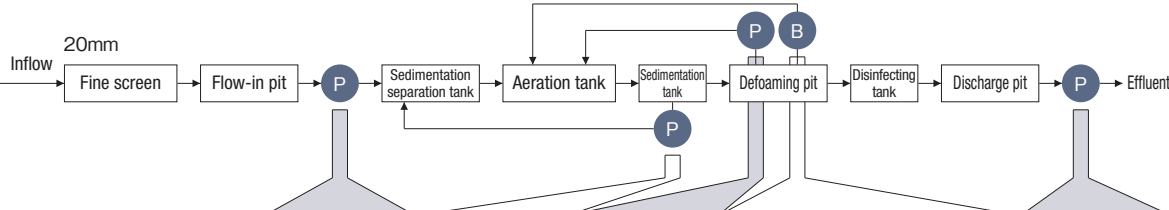
Piping is available with no changes. Installation procedure is almost similar with case 1. Use the auto connection type submersible disposal pump ④. Auto-connection allows an easy maintenance and inspection, for saving maintenance time and cost.

Pump & blower application table in consolidation processing

Product type selection

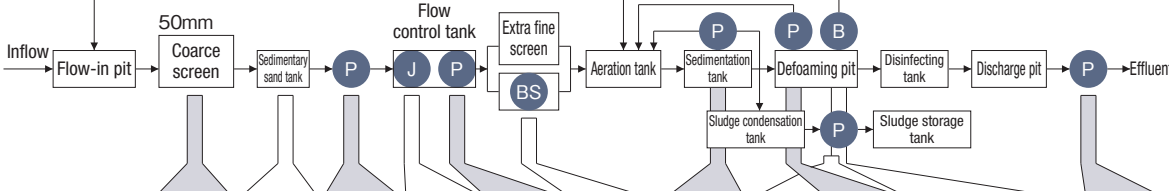
Use as a reference for selecting the Shinmaywa's pump and water disposal related product.

(Contact aeration type, discharge water BOD60mg/ℓ or less, BOD removal ratio 70% or more)



Target Personnel Number	Standard Water Volume m³/day	Two Raw Water Pumps (1 unit for spare)	One Sludge Transfer Pump	One Defoaming Pump	Two Aeration Blowers (1 unit for spare)		Two Discharge Pumps (1 unit for spare)	
					Submersible Blower	Land Type Blower		
51	10.2	CVS50 CV501 CVC501 CVM50 CR501 CRS501	CVS50 CV501 CVC501 CR501 CRS501	CRC40 AH401	RB25H RB32H	ARH32S	CVS50 CRS501 CRC50 A501	
75	15							
100	20				RB401H RB402H RB50AH	ARH40S ARH50S ARS50		
125	25							
150	30			CRC50 AH501				
200	40			RB50BH	ARH65S ARS65A			
250	50							
300	60							
350	70							
400	80							
450	90							
500	100							

(Long-time aeration type, discharge water BOD20mg/ℓ or less, BOD removal ratio 90% or more)



Target Personnel Number	Standard Water m³/day	One Coarse Spacing Screen	One Submersible Mixer	Two Raw Water Pumps (1 unit for spare)	Submersible Mixing Pump	Three Pumps for Flow Control Tank (1 unit for alarm pump)	Fine Screen	One Sludge Return Pump	One Sludge Transfer Pump	One Defoaming Pump	Two Aeration Blowers (1 unit for spare)		Discharge Pump 2 (1 unit for spare)	
											Submersible Blower	Land Type Blower		
501	100.2	VS-1	JSR400	CVS651	JA222 1	CVS65	BS1N BS1H BS2N BS2H BS3N BS3H	CVS651	CVS50 CV501 CVC501 CR501 CRS501	CRC50 AH502	RB65H RB80H	ARS80/100	CVS50 CRC50 A501	
600	120			CVM65		CVC651		CV651				ARH80S		
800	160			CVC651	CR65	CR65		ARH100S						
1,000	200			CR65	CRS65	CRS65								
1,200	240			CVS80 CVM80 CVC801 CR80 CRS80	JA372 1	CVS651	BS4N				CVS80 CR80 CRS80			
1,500	300					CVM65		CVC651				CR65		
2,000	400					CVC651	CR65	CRS65						
2,500	500					CR65	CRS65							
3,000	600			VS-2	JA372 2	CVS80	BS5N					RB100H RB125H	ARH125S ARS125	CVS65 CRC65 A652
3,500	700					CVM80		CVC801			CR80			
4,000	800	CVC801	CR80			CRS80								
4,500	900	3 (1 unit for Spare)												
5,000	1,000	VS-3 VSP-3 VSK-3												

Pump for raw water/flow control tank

■ List table of applied pumps

Machine \ Screen		Installed After Coarse Spacing Screen	Installed After Fine Screen	Installed Extra Fine Screen
Vortex Flow Type	CVS	Bore 80mm	All Pump Types	All Pump Types
	CVC	Bore 65mm or more	All Pump Types	All Pump Types
	CVM	Bore 65mm or more	All Pump Types	All Pump Types
Chopper Mechanism Type	CJ	Bore 80mm	All Pump Types	All Pump Types
Non-clogging Channel Type	CN	Bore 80mm	Bore 50mm (0.75kw) or more	All Pump Types
	CNL	Bore 80mm	All Pump Types	All Pump Types
	CNM	Bore 80mm	All Pump Types	All Pump Types

Pump capacity calculation method

● Raw water pump

[Flow-in pit → Sediment separation tank · Flow control tank]

If sewage water is transferred to sediment separation tank by a pump, the pump's per-day transfer capacity must have 2.5 times the average sewage water volume.

Raw water pump capacity (m³/min)

$$= \frac{\text{Per-day average sewage water volume (m}^3\text{/day)}}{24 \times 60} \times 2.5$$

(Note) If the pump capacity is unnecessarily large, pump operation may cause mixing inside a sediment separation tank. Be careful to avoid such operation.

● Pump for flow control tank

[Flow control tank → Aeration tank]

Where: discharge water BOD60mg/ℓ or less,
BOD removal ratio 70% or higher
and discharge water BOD30mg/ℓ or less, BOD
removal ratio 85% or higher

- Structure must assure that per-hour sewage water volume transferred from flow control tank is 1.5 times the 1/24 of the day-average sewage water volume that flows in the tank; in addition, a device must be equipped so that the sewage water volume can be measured.

- Structure must assure that if the tank's water level rises extraordinarily, the sewage water can be transferred to the next tank efficiently.

- To transfer sewage water by pump, install two or more pumps.

Pump capacity for flow control tank (m³/min)

$$= \frac{\text{Day-average sewage water volume (m}^3\text{/day)}}{24 \times 60} \times 1.5$$

(Note) (A) If the high water level (HWL) is higher than the disposal water tank's water level (WL), install a pump as shown in.

(B) If the high water level (HWL) is lower than the disposal water tank level (WL), install a pump as shown in. Here, the emergency pump's capacity is as follows:

Capacity of emergency pump (m³/min)

$$= \frac{\text{Maximum hourly sewage water volume (m}^3\text{/h)}}{60}$$

Maximum hourly sewage water volume : maximum per-hour disposal water discharge volume a year

(C) Each pump's start/stop position (water level) is shown in **Figure 3**.

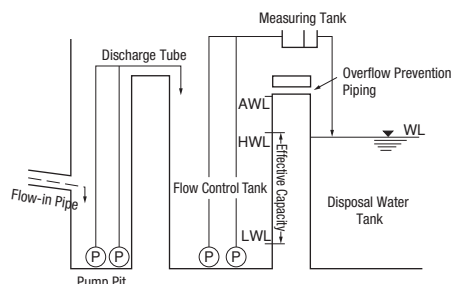


Figure 1 Case where high water level (HWL) is higher than the disposal water tank water level (WL)

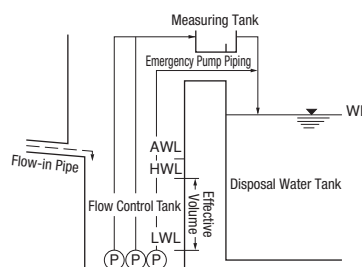


Figure 2 Case where high water level (HWL) is lower than disposal water tank water level (WL)

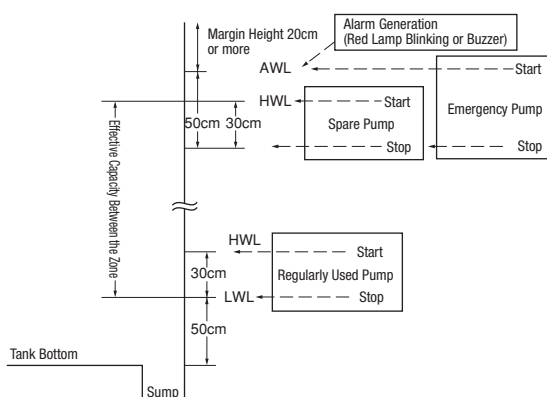


Figure 3 Each pump's start/stop position

(Legend)

Alarm water level AWL: Set the level so to prevent overflow from flow rate adjusting tank, immersion to accessory device(e.g. breaker), and back-flow to disposal water flow-in pipe.

High water level HWL: Set the position at 20cm high from Alarm Water Level.

Low level LWL: Set the position at least 50cm from tank bottom.

The structure must assure that if regularly used pump failed, switching to the spare pump automatically.

[In case where discharge water BOD20mg/ℓ or less, BOD removal ratio 90% or higher]

Structure must assure that per-hour sewage water volume transferred from flow control tank is less than 1/24 the day-average sewage water volume flowing in the tank; additionally, install a device with which the sewage water volume can be measured.

Pump capacity for flow control tank (m³/min)

$$= \frac{\text{Day-average sewage water volume (m}^3\text{/day)}}{24 \times 60} \times 1.0$$

●Sludge transfer pump

[Sedimentation tank → Sediment separation tank]

[Sludge condensation tank → Sludge storage tank]

Where Rotating Plate Contact Method, Contact Aeration Method or Spraying Floor Method is adopted, sludge extraction will occur almost intermittently; if extraction is conducted according to sludge generation volume, supervisor must operate the pump at the time of maintenance and inspection, or, by setting a timer, the sludge must be automatically removed according to the actual condition of sludge generating volume.

●Sludge return pump [Sedimentation tank → Aeration tank]

Sludge return pump capacity (m³/min)

(In case long-time aeration method)

$$= \frac{\text{Day-average sewage water volume (m}^3\text{/day)}}{24 \times 60} \times 200\%$$

(In case standard activation sludge method)

$$= \frac{\text{Day-average sewage water volume (m}^3\text{/day)}}{24 \times 60} \times 100\%$$

●Defoaming pump [Defoaming pit → Aeration tank]

Install a defoaming nozzle in place, not limited to the aeration tank, but water conduit and discharge area with head drops where foams are easily generated.

Nozzle ejection tip's desired pressure is about 147kPa (1.5kgf/cm²); in case of rectangle or square shaped aeration tanks, set the nozzle installation interval to 1.0 - 1.5m.

Ejection volume per nozzle is 5 - 10ℓ/min as standard. Install a nozzle so that water volume can be adjusted by valve.

●Discharge pump [Discharge pit → Discharge target]

[Where sediment separation tank is installed with discharge water BOD60mg/ℓ or less, BOD removal ratio 70% or higher]

Discharge pump capacity (m³/min)

$$= \frac{\text{Day-average sewage water volume (m}^3\text{/day)}}{24 \times 60} \times 2.5$$

[In case where discharge water BOD60mg/ℓ or less, BOD removal ratio 70% and discharge water BOD30mg/r or less, BOD removal ratio 85% or higher]

Discharge pump capacity (m³/min)

$$= \frac{\text{Day-average sewage water volume (m}^3\text{/day)}}{24 \times 60} \times 1.5$$

[In case where discharge water BOD20mg/ℓ or less, BOD removal ratio 90% or higher]

Discharge pump capacity (m³/min)

$$= \frac{\text{Day-average sewage water volume (m}^3\text{/day)}}{24 \times 60} \times 1.0$$

However, if the flow control tank pump failed, by following operation of the emergency pump, water-discharge will occur with maximum hourly sewage water volume. So, be careful when planning the discharge pit capacity.

Pump handling

Operating condition

Pump operation other than described here, please contact with us.

① Applied water quality

Temperature	0 - 32°C ¹⁾
pH	6 - 9
Electric Conductivity	1,000 μ S/cm or less
DO (Dissolved Oxygen)	1 - 4 mg (O ₂)/ℓ
Chlorine Ion	1,000mg/ℓ or less
SS	3,000mg/ℓ or less
BOD, COD	1,000mg/ℓ or less
Viscosity	5cP or less
Liquid Specific Gravity	1.05 or less
Sludge Concentration	1% or less ²⁾

However, some product type may be operated in other range than described above. Please contact us.

1) Part of pump type: 0 - 40°C

2) Even where 1% or less, the higher the concentration, the shorter the pump life.

② Operation time

Plan the operation time per pump so that it does not exceed 12 hours a day, or, 4000 hours a year.

Especially, for continuous operation, use two or more pumps alternately.

③ Start frequency

Motor Output (kW)	Start Frequency	
	Without Flywheel	With Flywheel
7.5 or less	10 times/hour or less	4 times/hour or less
11 - 22	6 times/hour or less	4 times/hour or less
30 - 55	4 times/hour or less	4 times/hour or less
Exceeding 55	2 times/hour or less	2 times/hour or less

④ Pump operation point

Use the blocking pump head (Capacity: 0m³/min) at 90% or less.

Installation procedures

1-1 Inspection prior to installation

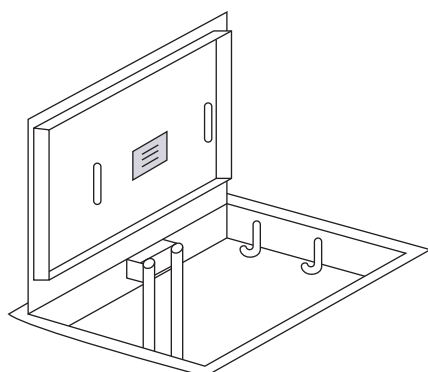
1. Unpack and take out the pump and Operation Manual.
2. Check that the pump is what you ordered, and, there are no lacks or errors in accessories.
3. Check that pump has no damages through transportation, (or check the place of damage if any), and there are no deformed bolts and no oil leaks.
4. Operation Manual taken out with pump describes important information about operation and maintenance. Be sure to read it before installation.

Parts catalog, if enclosed, is useful when you replace parts. Keep carefully it same way as Operation Manual.

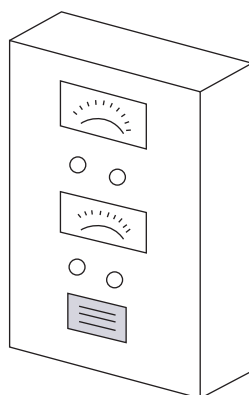
5. Some pump may have a spare name plate fixed to power supply cable.

The plate is same with that installed to the main body of pump.

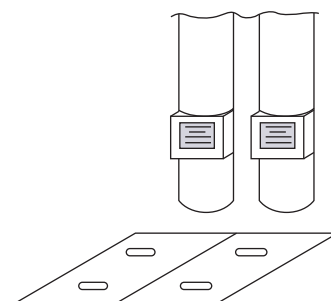
Since submersible pump is installed in water; you can not confirm the name plate from above ground. Thus, install the attached spare name plate somewhere above the ground as bellow.



Rear side of the manhole cover

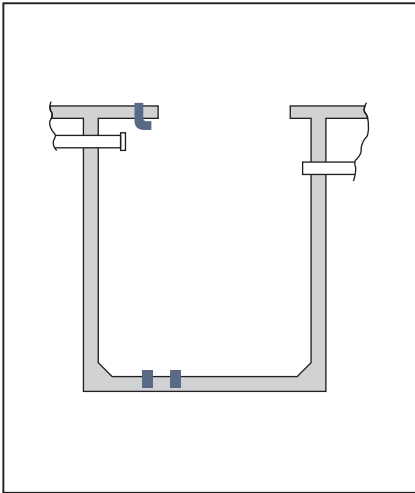


Control box

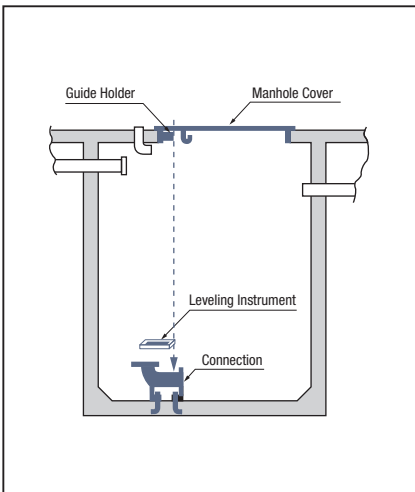


Near discharge tube

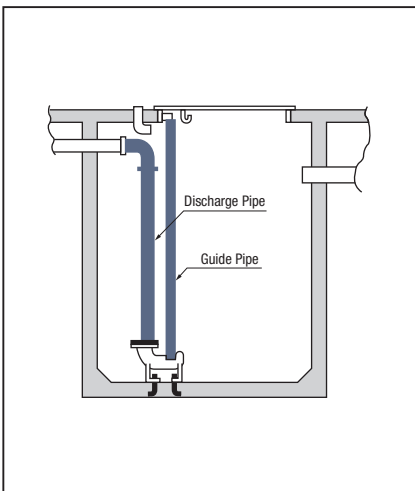
1-2 Installation procedure



- ① Arrange the embedded portion of electric wire tube.
- ② Make an advanced hole shaping for manholes and connection anchor bolt holes, and pour concrete.



- ① Install the manhole cover.
- ② At upside manhole, fix the guide holder with bolts.
- ③ Using the guide holder as reference, position and install the connection.
- ④ Embed anchor bolts, and finish with waterproof mortar.



- ① Joint the discharge pipe with connection for piping construction.
- ② Determine and cut the guide pipe length by on-site mating, then fix it with guide holder.

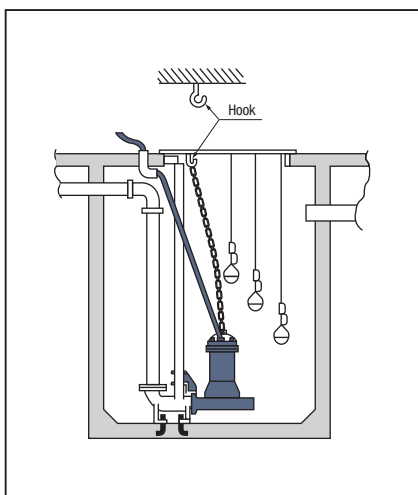
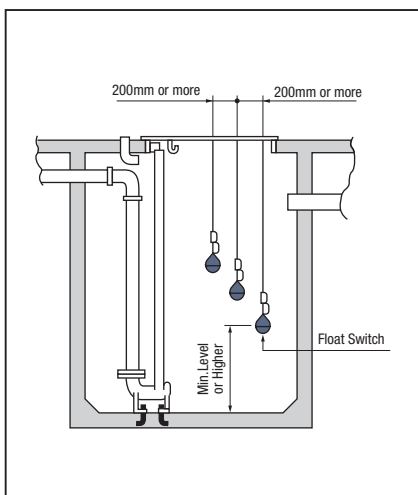
Cautions

Keep manhole opening slot size larger than specified in the installation dimension chart, to allow pump freely put it inside and take it out.

For installing the connection, use an leveling instrument to correct the inclination of the horizontal direction.

During the construction, apply a cover or sheet to prevent concrete or mortar from attaching to the connection.

If the guide pipe dimension is longer than specified (5m or more), install an intermediate guide holder. [Prepared as a special accessory]



Procedure

- ① Install necessary number of float switch at desired height.
Fix the float switch at the hook at the upper portion manhole aperture.

- ① Lower slowly the pump along the guide pipe. The pump is automatically jointed with the connection.
- ② Fix the chain that is attached to the pump to a hook at the upper portion of manhole aperture.
- ③ Pass the pump cable and float switch cord through the electric wire tube.

Cautions

Near the tank inlet, do not install a float switch.
Separate float switch wit each other by 200mm or more so to avoid entangling.
Set the float switch's lowest position higher than the pump's minimum level.

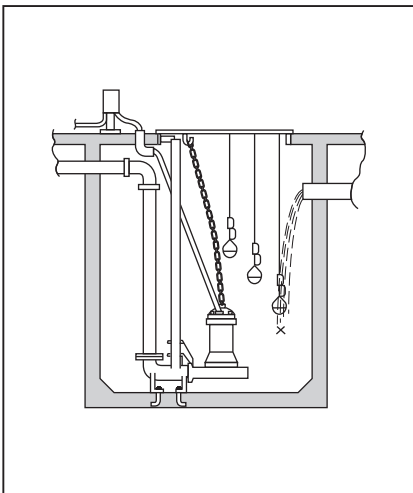
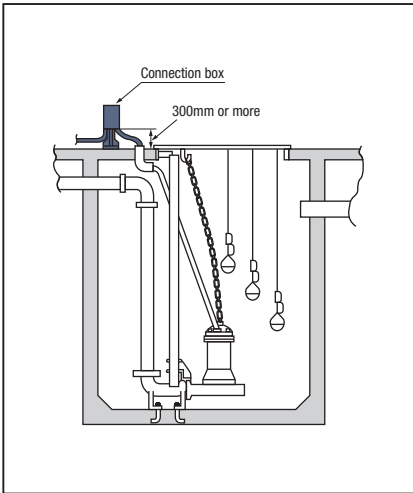
Maintain an appropriate margin for cable length. (if too short, you may fail to take the pump out above the ground)
No slacks of cable are allowed. Slack down to the tank bottom may cause the cable to be sucked when the pump operates.
Avoid an extreme bending of cable. Install hooks at the upper portion of manhole aperture; they are useful for maintenance and inspection.

Procedure

- ① Wire a cable at its end.
- ② Ground cables with earth wire (green color wire). Be careful not to connect the earth wire with power supply.

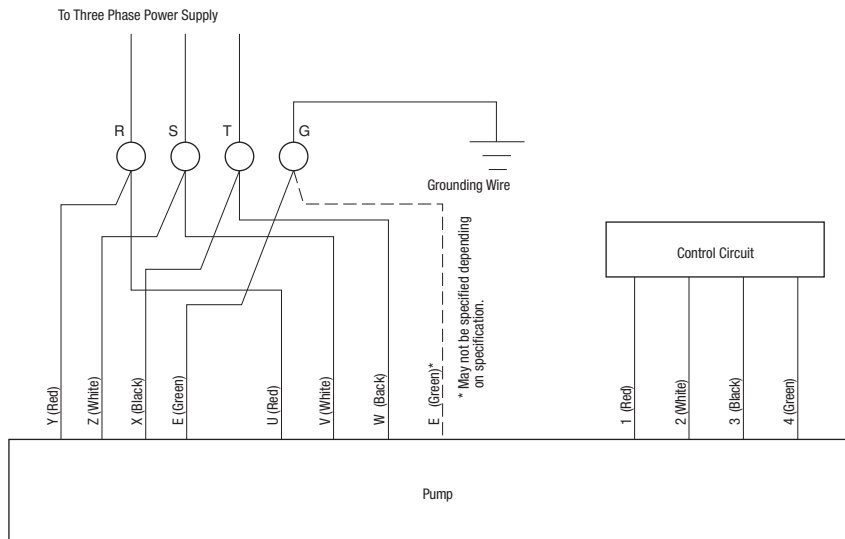
Cautions

⚠ Wiring shall be conducted by a qualified person.
Be sure to disconnect the electric circuits while wiring.
Conduct cable wiring outside the tank.
Install a connection box outside the tank at a place 300mm or more above the floor, where no immersion occurs due to rain water, washing water and abnormal water level.



- ① Before commissioning, check again the float switch's interval and minimum level.
- ② Remove pebbles and metallic wires from inside the tank by cleaning.
- ③ Check the pump rotating direction.

During commissioning, check that the float switch will not be drawn into the pump.
Place a float switch so that it is not affected by flow-in water.



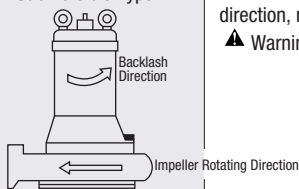
Example of wiring diagram where star-delta starting pump is used with direct-on-line start.

■ Operation procedures

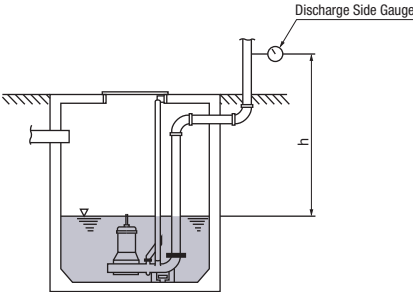
Check before operation

Inspection of Inner Water Tank	All Pump Types	If a water tank contains remaining rags, wooden pieces, vinyl, concrete pieces, pebbles, metallic wire, and paper pieces, they may be clogged into strainer and pump impeller, disabling transfer. Thus, be sure to keep clean inside the tank. Fill the water tank with water fully. Unless the strainer (or pump if submersible pump is used) is fully immersed in water, air intake may occur, finally disabling a transfer.
Lubricant Inspection	Submersible Type	Lubricant is sealed into the mechanical seal's oil chamber. Check that the sealed oil is not wasted. Turbine oil #32
Check Rotation by Hand	Land-Type Submersible Type	Try to rotate the impeller by hand. If you feel a heavy load or deflection, repair it. ▲ Warning Be sure to turn off the power supply.
Check Motor Protector		Check that motor protector has an appropriate capacity. (e.g. phase, voltage, frequency, output)

Operation procedure

Valve	Fully open valves at intake side and discharge side.	
Priming	For self-priming type pump, fill water inside the pump.	
Inching	Turn on and off the switch 2 – 3 times; while pump rotates by inertia, check that there are no abnormal noise and vibration. If abnormal events are found, check again the pump with centering, rotating direction and rotation by hand; then repair it as necessary.	
Check the Rotating Direction.	Land type	If rotated to the embossed arrow direction on the coupling cover, or pump casing, the rotation is normal.
	Submersible Type 	Lift the pump above ground and turn on the switch; if pump rotates to the backlash direction, rotating direction is normal. Be careful in pump reaction. ▲ Warning For checking the rotating direction, be sure not to insert your hand into the impeller. Or, you may be injured.
Continuous Operation	If no failures are found, start the continuous operation.	

Check in operation

Pump Head	$\text{Total head} = P_d + h$ (Total Head) P_d = discharge side gauge value (m) h = Measuring point height (m)  ☐ If gauge pointer swings suddenly, any pump trouble may occur. ☐ Look into the performance curve, and you can assume roughly a water volume from total head.
Electric Current Value	☐ Check that ammeter value is lower than the motor's rated electric current value. ☐ Swinging of ammeter pointer may indicate any deflection or foreign object insertion.
Capacity (Flow Rate)	☐ It is normally difficult to measure discharge flow rate, which though can be assumed by pump's total head and performance curve. If water tank area is known, you may assume the pump water volume by the change of water level per unit time.
Vibration and Noise	☐ If vibration and noise level is large, investigate their sources and repair them by referring to "Trouble shooting".

Maintenance and inspection procedures

Inspection Point	Inspection Procedure	Inspection Standard	Processing	Inspection Time
Voltage Value	Measured by voltmeter (viewing control box voltmeter)	Rated voltage within $\pm 5\%$	Favorable	Every month
		Rated voltage outside $\pm 5\%$	Ask electric power company for investigation	
Electric Current Value	Measured by ammeter (viewing control box ammeter)	Name plate indicated electric current or less	Favorable	Every month
		Name plate indicated electric current is exceeded.	Investigation by lifting pump	
		Ammeter pointer swinging extraordinarily	Remove foreign objects which is inserted into impeller	
Insulation Resistance	Use the 500V or 1,000V megger to measure the motor insulation between phases and against earth(E).	20M Ω or more	Favorable insulation	Every month
		1M Ω or more Less than 20M Ω	Early repair is required though usable	
		Less than 1M Ω	Overhaul is required	
Oil (mechanical seal lubrication)	Remove the oil plug, and take out oil completely.	Oil without stain	Replace with new oil	Every year
		Oil with stain	Replace mechanical seal and new oil	
Motor Chamber	Remove the inspection plug.	No discharge	Upper side of mechanical seal favorable	Every year
		Discharging oil containing water or water component	mechanical seal replacement or overhaul	
Impeller and Wearing	Use gap gauge to measure gap before blade or wear ring gap.	1.5mm or less	Continuous use allowed	Every year
		Exceeding 1.5mm	Shorten a gap or parts replacement	
	Visual check	Wearing	Replace in case of discharge rate lacking, vibration is large	
		Corrosion		
Lifting Chain	Visual check	Corrosion	Replace with new product	Every 6 months
External Appearance	Lifting pump	Corrosion (rust generation), damage	Overhaul or Replace as necessary	Every 6 months
Generation Abnormal Noise, Vibration	Visual check	Considerably larger than new product	Lift pump for investigation	Every month
Water Gauge (float switch)	Visual check	Attaching of foreign object	Remove the foreign object	Every 6 months

Note) Inspection time shown above is a guideline only; it depends on operation time and fluid quality. For oil selection, refer to the following recommended oil for submersible pump

Oil recommended for Shinmaywa submersible pump (excluding TC, TB, TF)

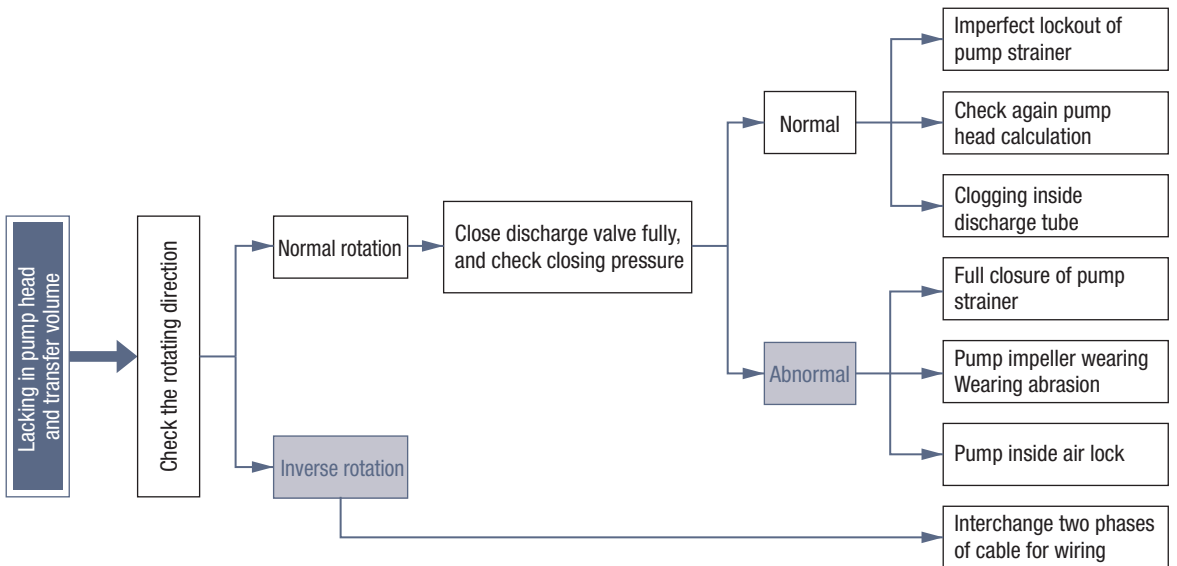
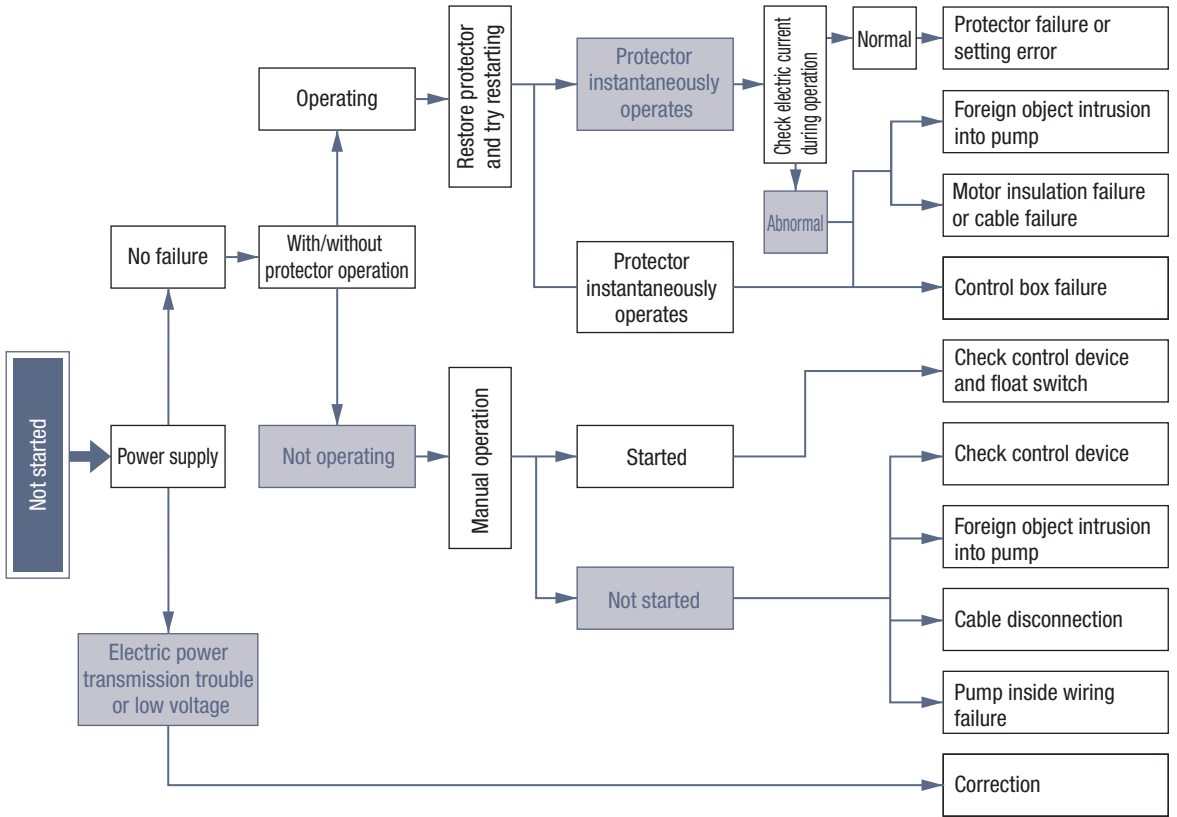
Standard specification turbine oil #32

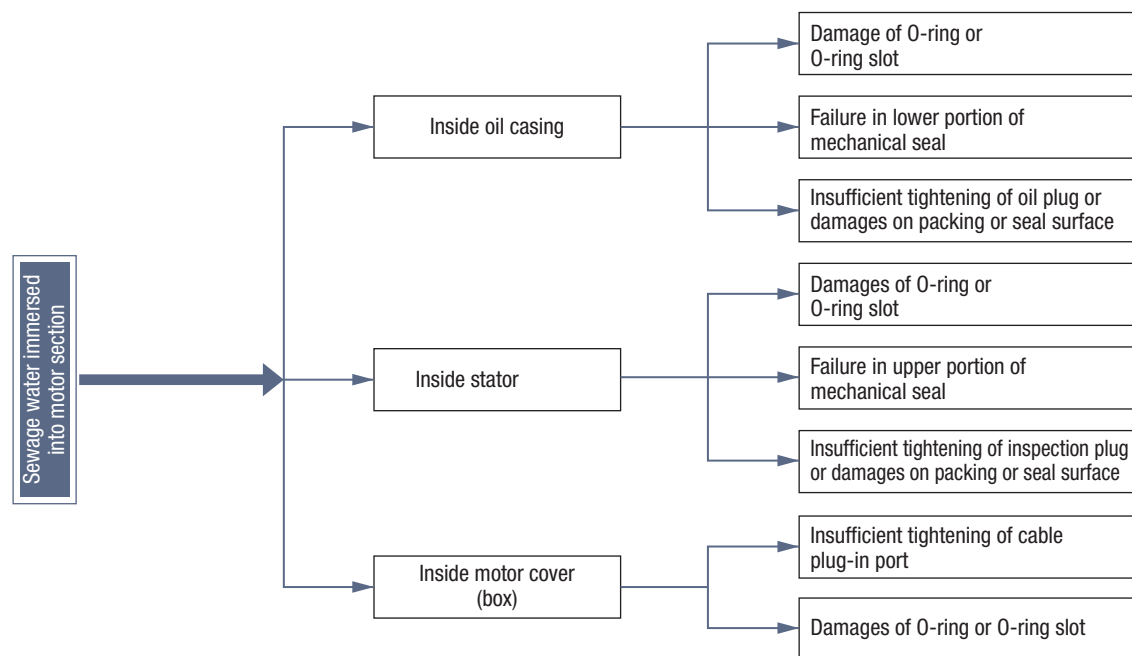
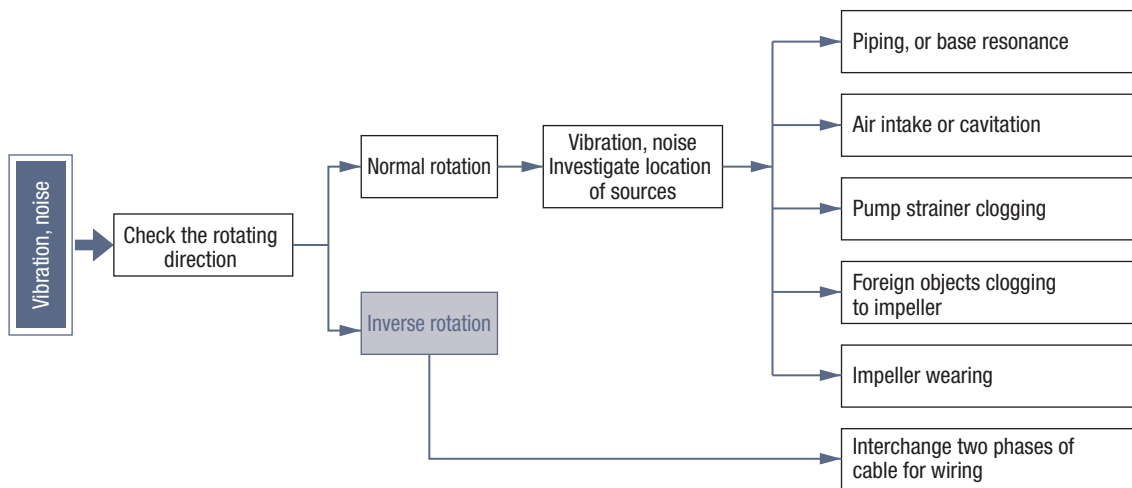
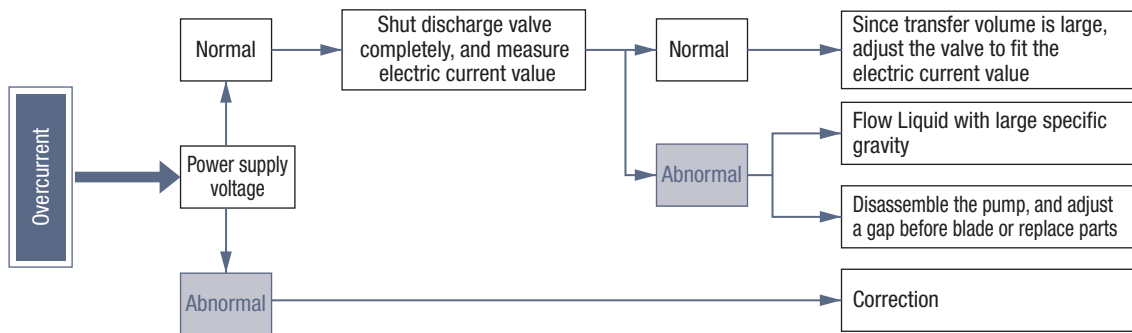
Maker	Product Name
Shell	Shell TurboT32
ExxonMobil	Mobil DTE Oil Light
JX Nippon Oil & Energy Corporation	FBK Turbine32
Idemitsu Kosan Co., Ltd.	Super Turbine32

High-temperature specification (rotary compressor oil 32)

Maker	Product Name
Shell	Corena Oil RS
ExxonMobil	NEUREX RT32
JX Nippon Oil & Energy Corporation	FAIRCOL RA32
Idemitsu Kosan Co., Ltd.	Rotary compressor oil A (32)

Trouble shooting





Non-clog (Semi - open) type (Solid passage 80mm dia. with chopper)

Bore: 80 • 100 mm (3" • 4")**Output: 1.5 - 7.5 kW (2 - 10 HP)**

CNMJ

- The CNMJ series is a submersible pump for wastewater and sewage with a 80 and 100mm bore.
- The newly designed semi-open channel impeller has helix formed passage and solid passage up to 3inches "80mm" in diameter.
- The CNMJ series has brand -new chopper mechanism.

Bore mm (inch)	Output kW (HP)	Model	Page
80•100 (3"•4")	1.5 - 3.7 (2 - 5)	CNMJ80	586
80•100 (3"•4")	5.5•7.5 (7.5•10)	CNMJ100	588

CNMJ

Non-clog (Semi - open) type
(Solid passage 80mm dia. with chopper)

Bore: 80 · 100 mm (3" · 4")

Output: 1.5 - 7.5 kW (2 - 10 HP)

Features

● Solid passage up to 3inch "80mm" in diameter

The newly designed semi - open channel impeller with solid passage up to 3inch to "80mm" in diameter.

● Brand - new chopper mechanism

CNMJ is equipped with brand - new chopper mechanism using chopper plate.

● Extended service life

Double mechanical seal and oil seal offering excellent wear resistance, are employed for shaft seal mechanism.

● Preventing motor burnout

The built-in automatic reset type thermal protector prevents motor burnout due to overload. The cable with a core wire seal can prevent water intrusion into the motor chamber, even if the cable sheath breaks or the cable end goes under water.

● Easy of maintenance

All models employed a vertical mounting design.

Easy of disassembly and assembly as the impeller can be pulled up simply by removing the bolts of the pump housing.

Applications

- Sewage treatment plant & Septic tank
Handling of raw water and other treatment process
- Pumping station
Relaying of sewage and rainwater
- Building & Shopping complex
Drainage of sanitary and kitchen wastewater
- Road, Underpass & Subway
Drainage of rainwater
- Factory & other facilities
Handling of industrial wastewater, etc.

Special Specifications

Cable Extension	Cable length: 10 - 30m (every 5m)
Material Change	Impeller Stainless steel casting (SCS13) Lifting Chain Stainless steel (SUS304)
Others	• Availability of mounting motor protector, please refer to the specifications in the color pages. • For specifications other than the above, please contact us.

* The cable length should be limited due to voltage drop, see the specifications (detail data) - App.1.

Standard Specifications

Handling Liquid	Kind of liquid	Wastewater and sewage
	Temperature	0 - 40 °C
Material	Cable	VCT
	Motor shaft	SUS420J2
	Pump housing	FC250
	Impeller	FC250
Electric Motor	Name	Air-filled type Submersible Induction Motor
	Insulation Class	Class F
	Enclosure	IP68
	Phase	3-ph
	Pole	4 Poles
	Frequency	50Hz / 60Hz
	Voltage	380 / 400 / 415V (50Hz) 380 / 400 / 440V (60Hz)

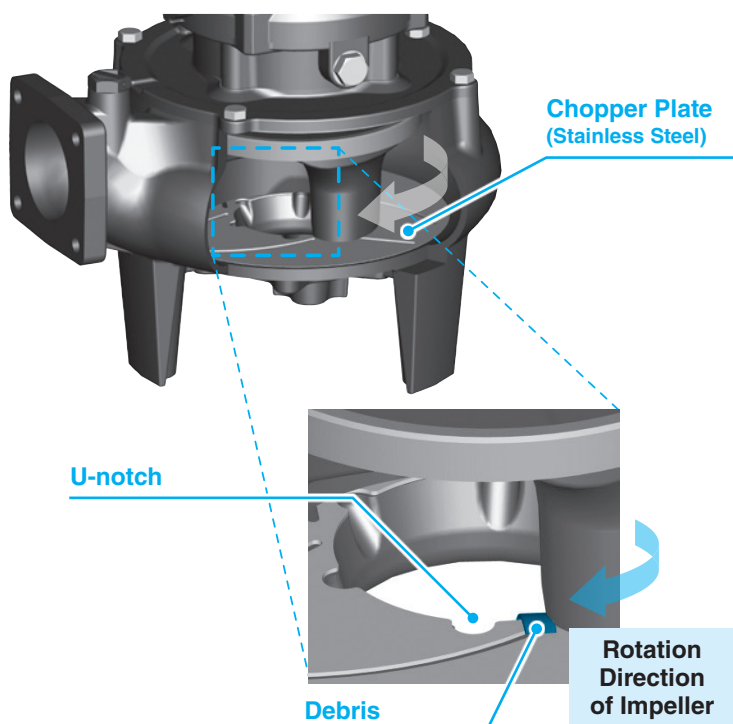
Pump-Related Product

- Liquid Level Control Switch
 - Level Regulator ⇒ See page 370
 - Mini Switch ⇒ See page 372
 - Oval Float ⇒ See page 373

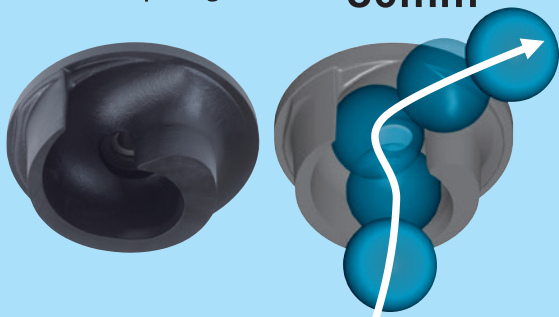
Structure and Features

■ Chopper Mechanism

Brand-new chopper mechanism using chopper plate.



Solid passage diameter: **80mm**



Brand-New Non-clogging semi-open

Quick, Easy Maintenance

The vertical mounting design allows for easier and more efficient inspection and part replacement. The pump unit can be detached without removing the impeller from the motor.





CNMJ



CNMJ80-F80



CNMJ80-P80B

Standard Specifications

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity - Total Head (m ³ /min - m)		No. of poles P	Weight (Bare Pump) kg
		Auto-Connection	Free Standing			50Hz	60Hz		
80 (3")	CNMJ80	P80B	F80	1.5 (2)	3-ph	0.8— 5.2	—	4	63
				2.2 (3)		0.9— 7.1	0.9— 6.8		69
				3.7 (5)		1.1— 9.9	1.1— 9.6		81
100 (4")	CNMJ80	P100B	P100	1.5 (2)		0.8— 5.2	—		63
				2.2 (3)		0.9— 7.1	0.9— 6.8		69
				3.7 (5)		1.1— 9.9	1.1— 9.6		81

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (8m) 1 pc.
- Air Relief Valve

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

● Auto-connection type

- Connection
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

Connection Part No.	Set Weight	Connection Weight
P80B	31.5kg	18kg
P100B	40.5kg	27kg

● Free standing type

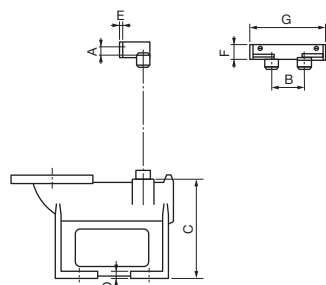
- Elbow Flange
- Companion Flange (with bolts, nuts and packing)

Connection Part No.	Set Weight
F80	9.5kg
F100	11kg

Part Specification

Applicable Model		Cable Specification				Starting Method	Mechanical Seal		Solid Passage Dia. (mm)
		Type	Section Area (mm ²)	Cores	Outer dia. (mm)		Lower	Upper	
CNMJ80	1.5kW (2 HP)	VCT	1.25	4	φ 11.5	Direct	SiC/SiC	SiC/SiC	80
	2.2kW (3 HP)	VCT	1.25	4	φ 11.5				
	3.7kW (5 HP)	VCT	2.0	4	φ 12				

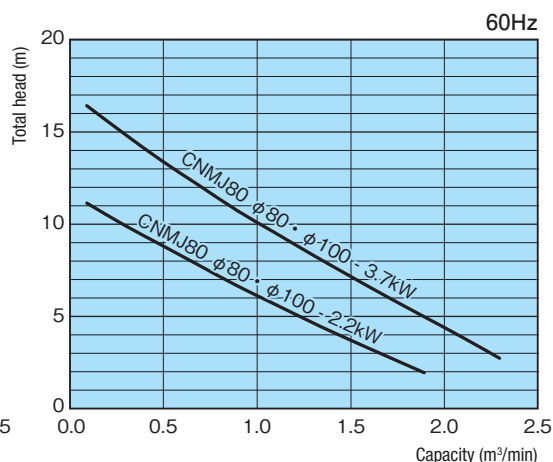
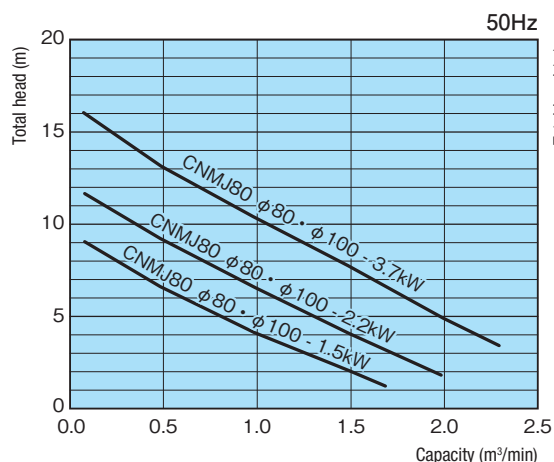
● Connection Dimensions



Unit: mm

Connection Part No.	A	B	C	D	E	F	G
P80B	25	100	262	12	6	44	210
P100B	25	100	259	12	6	44	210

Performance Curves

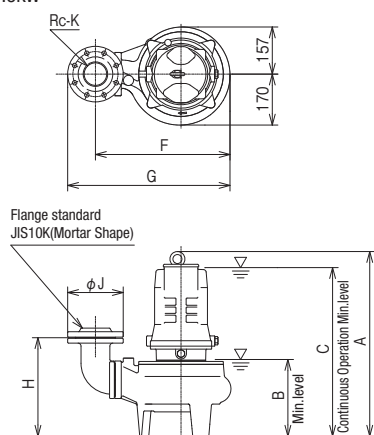


Dimensions

Unit: mm

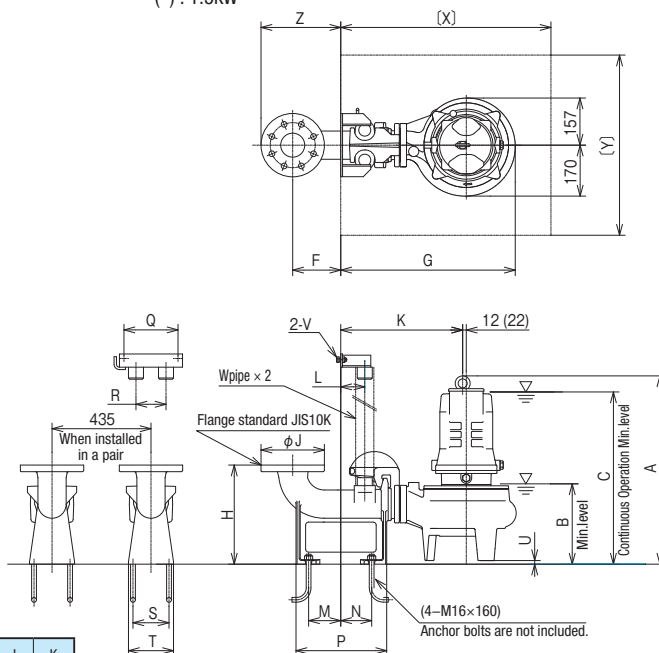
Free standing type

() : 1.5kW



Auto-connection type

() : 1.5kW



Free standing type

Connection Part No.	Output kW (HP)	A	B	C	F	G	H	J	K
F80	1.5 (2)	607		545					
	2.2 (3)	615	260	565	448	541	328	185	Rc3
	3.7 (5)	677		625					
P100	1.5 (2)	607		545					
	2.2 (3)	615	260	565	453	558	338	210	Rc4
	3.7 (5)	677		625					

Auto-connection type

Connection Part No.	Output kW (HP)	A	B	C	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X	Y	Z
P80B	1.5 (2)	619		555					396														
	2.2 (3)	627	270	575	160	581	330	211	406	80	107	103	302	180	100	120	150	12	M10 $\times$ 25	50A	700	600	266
	3.7 (5)	689		635																			
P100B	1.5 (2)	619		555					396														
	2.2 (3)	627	270	575	160	581	330	238	406	80	114	115	308	180	100	200	238	12	M10 $\times$ 25	50A	700	600	279
	3.7 (5)	689		635																			



CNMJ



CNMJ100-F100



CNMJ100-P100B

Standard Specifications

Bore mm (inch)	Pump Model	Connection Part No.		Output kW (HP)	Phase	Capacity - Total Head (m ³ /min - m)		No. of poles P	Weight (Bare Pump) kg
		Auto-Connection	Free Standing			50Hz	60Hz		
80 (3")	CNMJ100	P80B	F80	5.5 (7.5)	3-ph	1.5—11.6	1.5—11.3	4	105
				7.5 (10)		1.7—13.7	1.7—13.9		116
100 (4")	CNMJ100	P100B	F100	5.5 (7.5)		1.5—11.6	1.5—11.3		105
				7.5 (10)		1.7—13.7	1.7—13.9		116

For motor characteristics, bearings and oils, see the specifications (detail data) - App.1.

Standard Accessories

- Cable (8m) 1 pc.
- Air Relief Valve

Upon placing an order or inquiries, please inform us of the pump model and connection part No.

● Auto-connection type

- Connection
- Guide Holder (with bolts and nuts)
- Sliding Bracket
- Lifting Chain (6m)

Connection Part No.	Set Weight	Connection Weight
P80B	31.5kg	18kg
P100B	40.5kg	27kg

● Free standing type

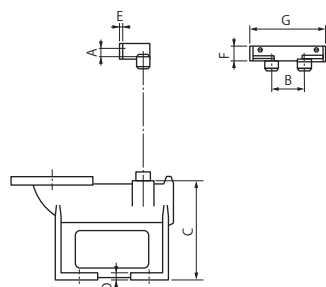
- Elbow Flange
- Companion Flange
(with bolts, nuts and packing)

Connection Part No.	Set Weight
F80	9.5kg
F100	11kg

Part Specification

Applicable Model		Cable Specification				Starting Method	Mechanical Seal		Solid Passage Dia. (mm)
		Type	Section Area (mm ²)	Cores	Outer dia. (mm)		Lower	Upper	
CNMJ100	5.5kW (7.5 HP)	VCT	2	4	φ 12	Direct	SiC/SiC	SiC/SiC	80
	7.5kW (10 HP)	VCT	3.5	4	φ 14				

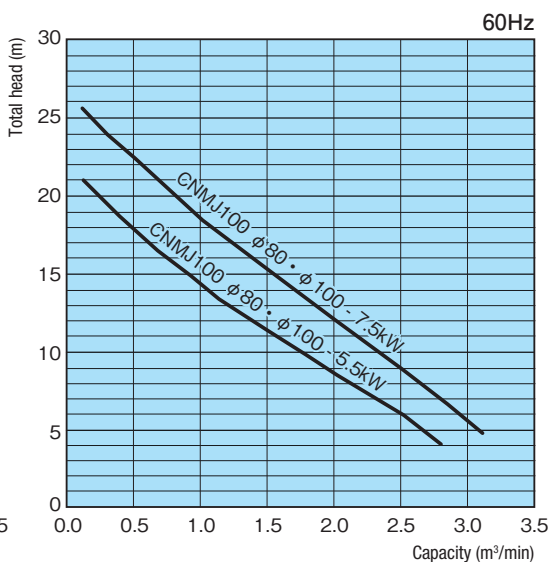
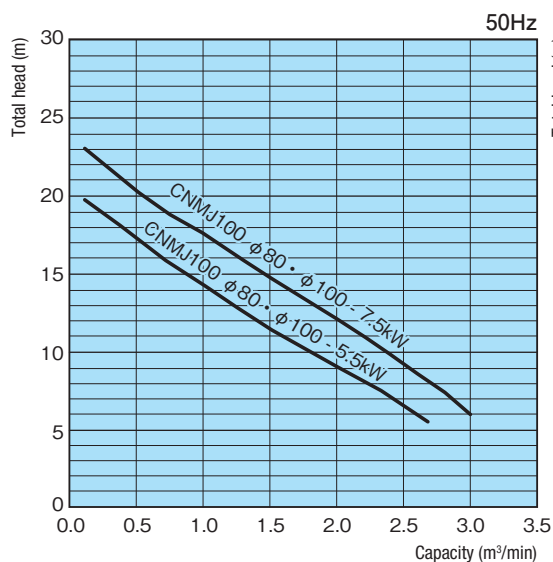
● Connection Dimensions



Unit: mm

Connection Part No.	A	B	C	D	E	F	G
P80B	25	100	262	12	6	44	210
P100B	25	100	259	12	6	44	210

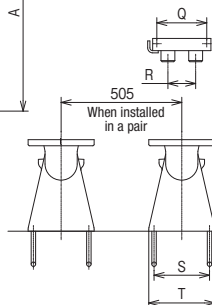
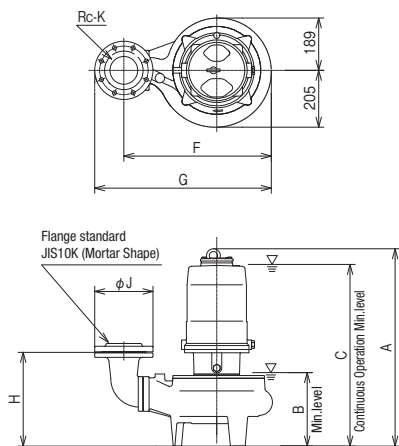
Performance Curves



Dimensions

Unit: mm

Free standing type

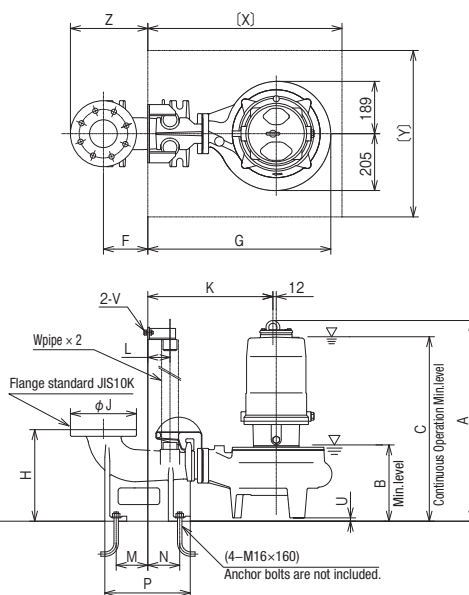


Free standing type

Connection Part No.	Output kW (HP)	A	B	C	F	G	H	J	K
F80	5.5 (7.5)	712	265	655	527	619	328	185	Rc3
	7.5 (10)	747		690					
P100	5.5 (7.5)	712	265	655	532	637	338	210	Rc4
	7.5 (10)	747		690					

Auto-connection type

Auto-connection type

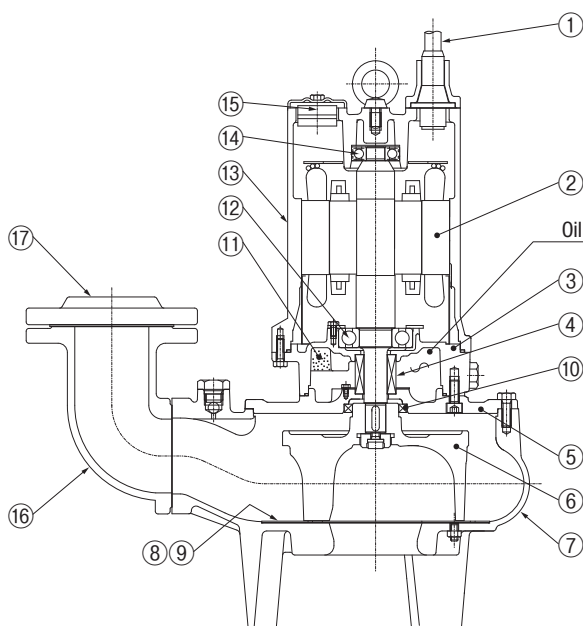


Connection Part No.	Output kW (HP)	A	B	C	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X	Y	Z
P80B	5.5 (7.5)	724	275	665	160	660	330	211	451	80	107	103	302	180	100	120	150	12	M10x25	50A	700	600	266
	7.5 (10)	759		700																			
P100B	5.5 (7.5)	724	275	665	160	660	330	238	451	80	114	115	308	180	100	200	238	12	M10x25	50A	700	600	279
	7.5 (10)	759		700																			

Sectional View

CNMJ80, CNMJ100

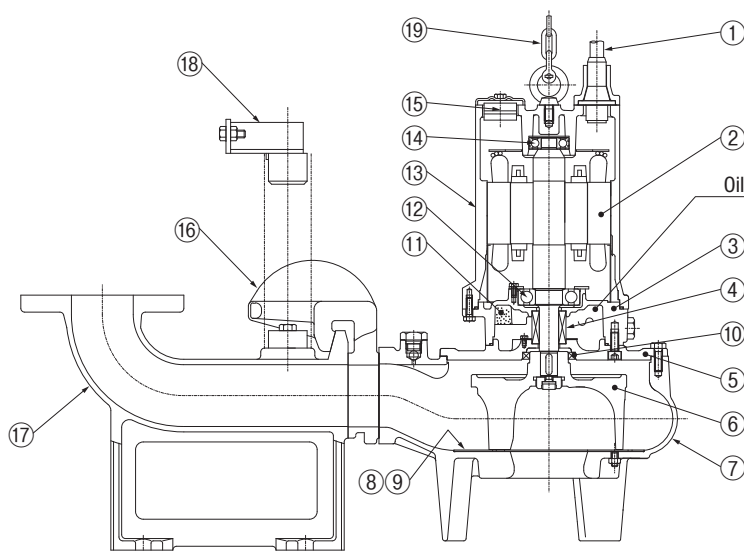
Free standing type



No.	Name	Material
1	Cable	VCT
2	Motor	Shaft: SUS420J2
3	Oil Housing	FC200
4	Mechanical Seal	Upper SiC/SiC Lower SiC/SiC
5	Mechanical Seal Housing	FC200
6	Impeller	FC250
7	Pump Housing	FC250
8	Chopper Plate	SUS304
9	Shim	Polyethylene
10	Oil seal	NBR
11	Equalizer (Upper 2.2kW)	NBR
12	Ball Bearing (Lower)	—
13	Stator Housing	FC200
14	Ball Bearing (Upper)	—
15	Thermal Protector	—
16	Elbow Flange	FC200
17	Companion Flange	FC200

CNMJ80, CNMJ100

Auto-connection type



No.	Name	Material
1	Cable	VCT
2	Motor	Shaft: SUS420J2
3	Oil Housing	FC200
4	Mechanical Seal	Upper SiC/SiC Lower SiC/SiC
5	Mechanical Seal Housing	FC200
6	Impeller	FC250
7	Pump Housing	FC250
8	Chopper Plate	SUS304
9	Shim	Polyethylene
10	Oil seal	NBR
11	Equalizer (Upper 2.2kW)	NBR
12	Ball Bearing (Lower)	—
13	Stator Housing	FC200
14	Ball Bearing (Upper)	—
15	Thermal Protector	—
16	Sliding Bracket	FC200
17	Connection	FC200
18	Guide Folder	SCS13
19	Chain	SS400

* Note **VCT** : Polyvinyl-chloride sheathed cabtyre cable **SUS** : Stainless steel **PP** : Polypropylene **FC** : Gray iron casting **NBR** : Nitryl rubber

Pump, Blowers and Related Products

Specifications (detail data)

Submersible Pumps for Water Treatment

Non-Clogging Channel Type

Model		Output kW (HP)	Pole P	Phase	Current A				Motor Protector			Allowable Cable Length m		Amount of Oil ℓ	Bearing	
					Start		Rating		Thermal Protector	MTP	Leakage detector	m			Lower	Upper
					50Hz	60Hz	50Hz	60Hz				50Hz	60Hz			
CNMJ	CNMJ80	1.5 (2)	4	3-ph	17.0	—	3.5	—	○	△	▲	208	—	0.27	6306ZZ	6203ZZ
		2.2 (3)			26.5	24.7	5.2	4.9	○	△	▲	138	148	0.47	6307ZZ	6304ZZ
		3.7 (5)			47.8	45.2	8.3	8.0	○	△	▲	122	143	0.47	6308ZZ	6304ZZ
		5.5 (7.5)			68.3	56.7	12.6	12.3	○	△	▲	85	95	0.53	6310ZZ	6305ZZ
	CNMJ100	7.5 (10)			101.0	89.8	16.9	16.7	○	△	▲	100	114	0.53	6310ZZ	6305ZZ

Note)

- For some of models, the radial gap of the deep-groove bearing is C3.
- The currents and the allowable cable length shown in the table are values at 3-ph 400V.
For other voltage, please refer to the individual data sheet or ask us.

1. Description of legends for motor protector

For Thermal Protector and MTP

○.....Provided as a standard part

△.....Mountable if ordered

×.....Cannot be mounted due to structure.

For Leakage Detector

○.....Float type is provided as a standard part.

△.....Float type is mountable.

●.....Electrode type is provided as a standard part.

▲.....Electrode type is mountable.

×.....Cannot be mounted due to structure.

- The allowable cable length indicates an extensible length of a cable having the same size (sectional area of the cores) as the standard specification of each models
- The allowable cable length is stipulated such that voltage depression is within 5% of the rated voltage. If you have other standards or regulations, you must abide by it.
- The start current shows when the direct-on-line, even the motor use the star-delta starting.
- Bearing grease and lubricant: refer to the individual installation manual or ask us.

Note) Bearing grease: Refer to the individual installation manuals.

Specifications and dimensions are subject to change without notice.

ShinMaywa Industries, Ltd.

**International Business Group
Sales & Marketing Dept., Fluid Div.**

3-2-43, Shitte, Tsurumi-ku, Yokohama, 230-0003, Japan
Phone : +81-45-584-1322 Fax : +81-45-575-2286
E-mail : overseas@shinmaywa.co.jp

ShinMaywa (America), Ltd.

10737 Gateway West, Suite 240,
El Paso, Texas 79935, U.S.A.
Phone : +1-915-594-9862
Fax : +1-915-594-9866
E-mail : info@shinmaywaamerica.com

ShinMaywa (Asia) Pte. Ltd.

8 Burn Road, #14-10 Trivex
Singapore 369977
Phone : +65-6224-0728
Fax : +65-6224-9678
E-mail : asia.ad@shinmaywa.com.sg

Chongqing ShinMaywa & Endurance Machinery Equipment Co., Ltd.

No.6 Yangliu Road, Huangshan Branch,
New Northern District, Chongqing, China 401121
Phone : +86-23-6730-4378
Fax : +86-23-6730-4377
E-mail : zixun@shinmaywa.co.jp



ShinMaywa ONO PLANT

ISO 9001(No.956445)/ISO 14001(No.771888)

ShinMaywa
Brighten Your Future