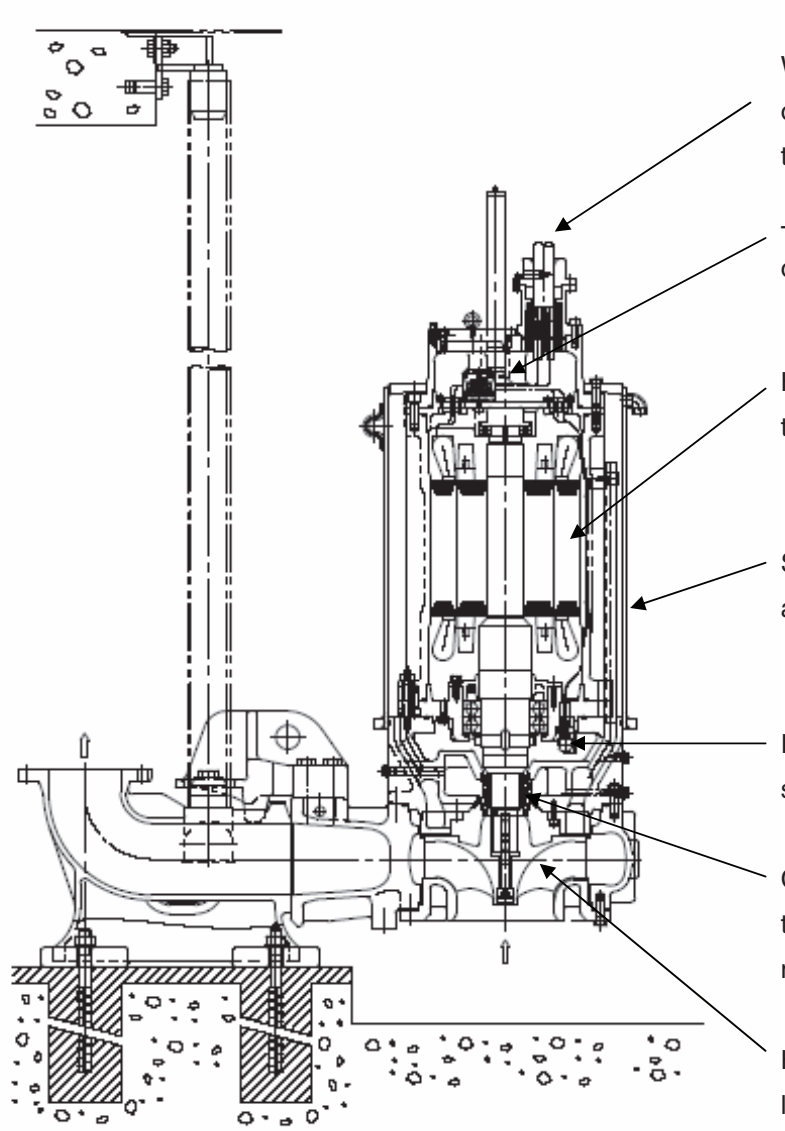
Contents

Features - DSC4

Semi-open Impeller



Watertight cable entry system assures safe operation without water leakage into terminal casing.

Terminal board provides easy connecting of cable.

High efficiency, compact designed motor with thermal detector for each phase of winding.

Self cooling system with cooling Jacket assures safe operation of motor in air.

Float type leakage detector warns mechanical seal failure.

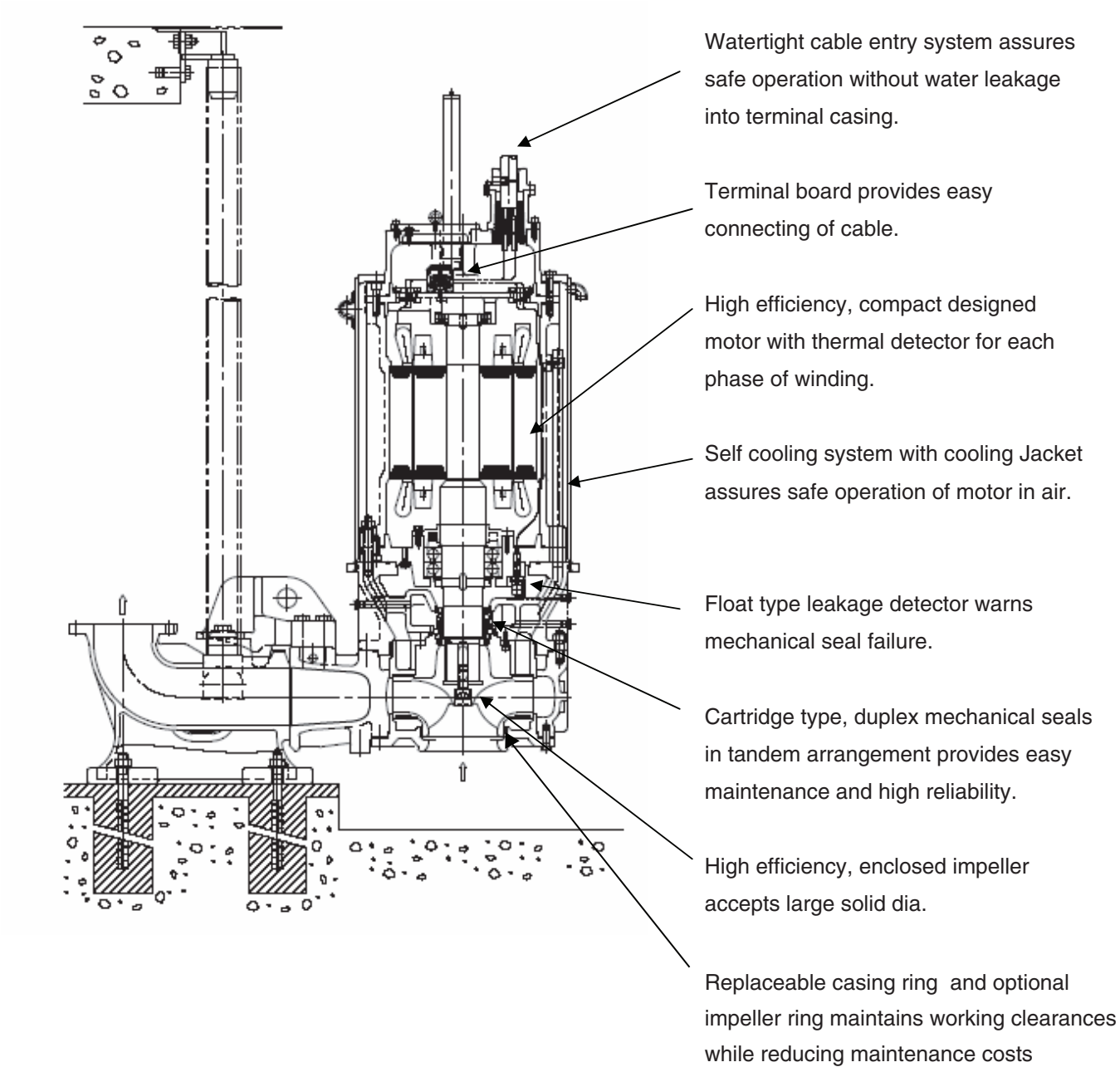
Cartridge type, duplex mechanical seals in tandem arrangement provides easy maintenance and high reliability.

High efficiency, semi-open impeller accepts large solid dia.

Typical Construction (Semi-open Impeller)

Features - DSC4

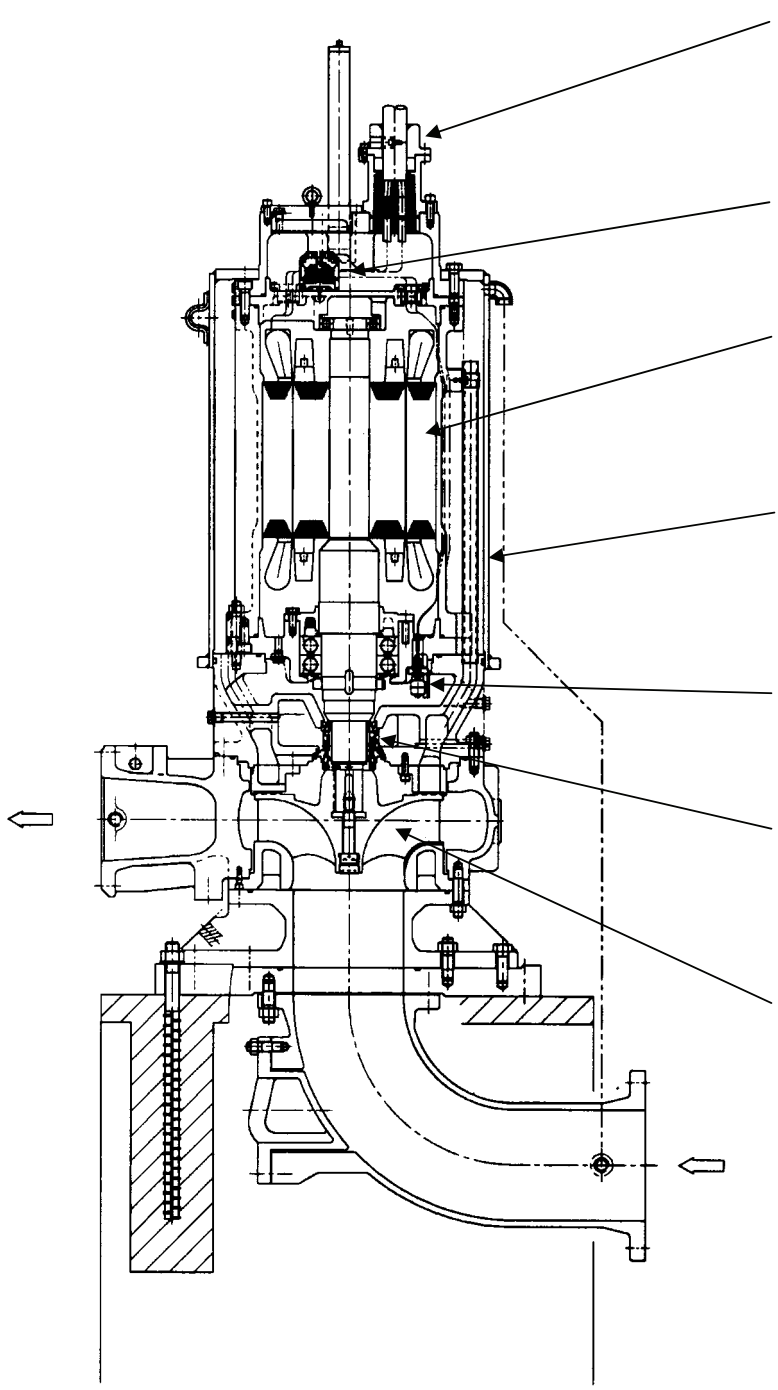
Enclosed Impeller



Typical Construction (Enclosed Impeller)

Features - DSCA4

Semi-open Impeller



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High efficiency, compact designed motor with thermal detector for each phase of winding.

Self cooling system with cooling Jacket assures safe operation of motor in the air.

Float type leakage detector warns mechanical seal failure.

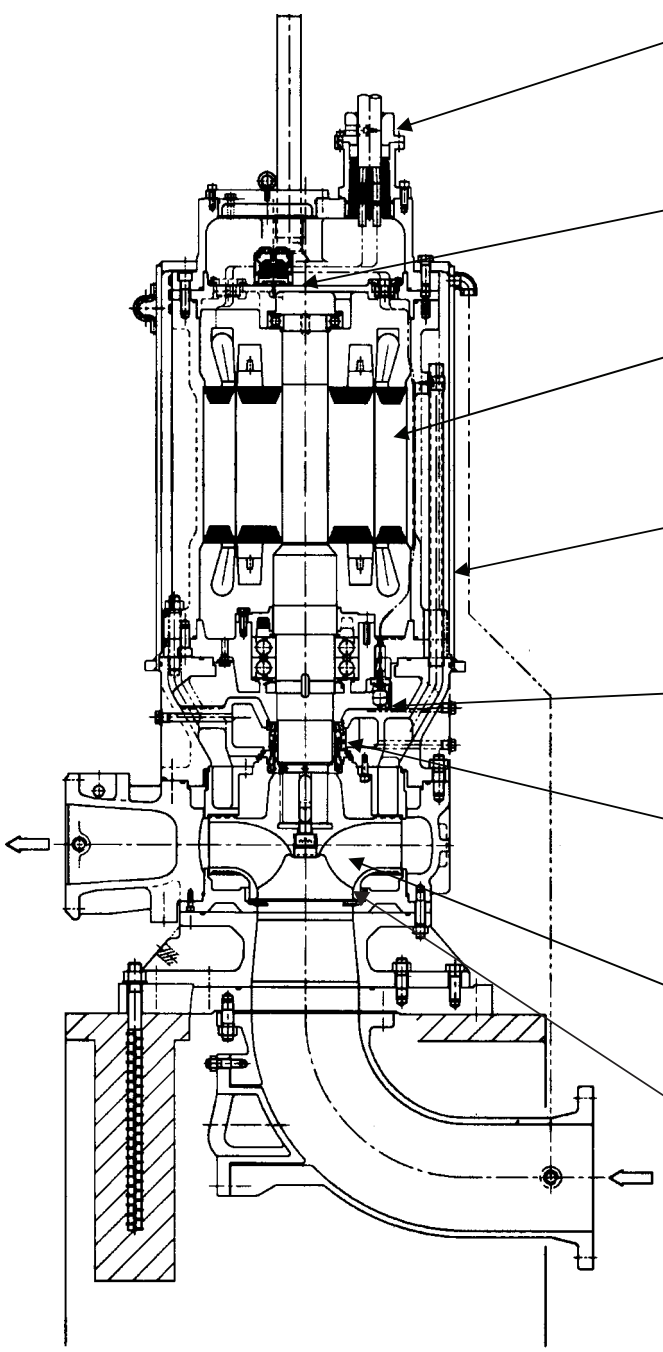
Cartridge type, duplex mechanical seals in tandem arrangement provides easy maintenance and high reliability.

High efficiency, open impeller accepts large solid dia.

Typical Construction (Semi-open Impeller)

Features - DSCA4

Enclosed Impeller



Watertight cable entry system assures safe operation without water leakage into terminal casing.

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High efficiency, compact designed motor with thermal detector for each phase of winding.

Self cooling system with cooling Jacket assures safe operation of motor in the air.

Float type leakage detector warns mechanical seal failure.

Cartridge type, duplex mechanical seals in tandem arrangement provides easy maintenance and high reliability.

High efficiency, enclosed impeller accepts large solid dia.

Replaceable casing ring and optional impeller ring maintains working clearances while reducing maintenance costs

Typical Construction (Enclosed Impeller)

Standard Specifications

	STANDARD SPECIFICATIONS		OPTIONAL
Design	Capacity	530 to 7000 USGPM (2 to 26 m³/min)	
	Total head	23 to 300 ft (7 to 91 m)	
	Liquid temp.	32°F to 104°F (0° to 40°C)	
	Max. submergence	114 ft (35 m)	
Materials	Casing	Cast Iron	
	Impeller	Cast Iron	
	Casing Ring	420 Stainless Steel (enclosed impeller models)	
	Shaft	420 Stainless Steel	
	Motor Frame	Cast Iron	
	Cooling Jacket	Steel	
	Fasteners	304 Stainless Steel	
Construction	Impeller	Semi-open/Enclosed	Impeller ring (enclosed impeller models)
	Shaft seal	Cartridge type duplex mechanical seals in tandem arrangement Upper: Carbon/Ceramic Lower: Silicon Carbide/Silicon Carbide	Consult factory for optional seal material
	Bearing	Grease lubricated ball bearing	
	Motor	Air filled water tight electric motor with cooling jacket Starting method: D.O.L. 60 Hz, 460V Built-in winding temperature detector Built-in float type leak detector	FM Explosion proof Class 1, Group C, D Temp. detector for thrust bearing
	Mounting method	Wet Pit: Quick discharge connector (QDC) Dry Pit: with baseplate	
Accessories	50 ft (15.24 m) water tight rubber insulated flexible cable		Consult factory for additional cable lengths

Specifications – DSC4

A. General:
Provide FM explosion proof submersible sewage pumps suitable for continuous duty operation underwater without loss of watertight integrity to a depth of 114 feet. Pump system design shall include a guide rail system such that the pump will be automatically connected to the discharge piping when lowered into place. The pump shall be easily removable for inspection or service, requiring no bolts, nuts, or other fasteners to be disconnected, or the need for personnel to enter the wet well. The motor and pump shall be designed, manufactured, and assembled by the same manufacturer.

B. Manufacturer:
Ebara International Corporation

C. Pump Characteristics:
Pumps shall conform to the following requirements:

Number of units	
Design flow (gpm)	
Design TDH (ft)	
Minimum shut off head (ft)	
RPM	
Maximum HP	
Minimum hydraulic efficiency at design (%)	
Voltage/HZ	460V / 60
Phase	3

D. Pump Construction:
All major parts of the pumping unit(s) including casing, intermediate casing, impeller, motor frame shall be manufactured from gray cast iron, ASTM A-48 Class 35. Castings shall have smooth surfaces devoid of blow holes or other casting irregularities. Casing design shall be centerline discharge with a large radius on the cut water to prevent clogging. All exposed bolts and nuts shall be 304 stainless steel. All mating surfaces of major components shall be machined and fitted with NBR o-rings where watertight sealing is required. Machining and fitting shall be such that sealing is accomplished by automatic compression of o-rings in two planes and o-ring contact is made on four surfaces without the requirement of specific torque limits. Surfaces in contact with the pumpage shall be surface prepared to SSPC-SP-10 and coated with one (1) coat of zinc rich primer paint and two (2) coats of coal tar epoxy paint. The internal surface of the motor shall be surface prepared to SSPC-SP-3 and coated with one (1) coat of zinc rich primer paint.

1. Impellers
   a. The impeller shall be a non-clog, enclosed, multi-vane mixed flow type. It shall be balanced and shall be designed for solids handling with a long thrulet without acute turns. The inlet edge of the impeller vanes shall be angled toward the impeller periphery so as to facilitate the release of objects that might otherwise clog the pump. The design shall also include back pump out vanes to reduce the pressure and entry of foreign materials into the mechanical seal area. Impellers shall be direct connected to the motor shaft with a slip fit, key driven, and secured with an impeller nut. A replaceable casing ring shall be provided, manufactured of AISI 420SS material, to maintain working clearances and hydraulic efficiencies.The design shall include an optional, replaceable impeller ring manufactured of AISI 304SS material to maintain working clearances and hydraulic efficiencies.
   b. The impeller shall be a mixed flow multi-vane semi-open design. It shall be balanced and shall be designed for solids handling with a long thrulet without acute turns. The inlet edge of the impeller vanes shall be angled toward the impeller periphery so as to facilitate the release of objects that might otherwise clog the pump. The design shall also include back pump out vanes to reduce the pressure and entry of foreign materials into the mechanical seal area. Impellers shall be direct connected to the motor shaft with a slip fit, key driven and secured with an impeller bolt. The design shall include a replaceable cast iron suction cover. The suction cover shall be designed such that it may be adjusted to maintain working clearances and hydraulic efficiencies.

2. Mechanical Seals
   The mechanical seal system shall be a cartridge mounted double mechanical seal in a tandem arrangement. Each seal shall be positively driven and act independently with its own spring system. The upper seal operates in an oil bath, while the lower seal is lubricated by the oil from between the shaft and the seal faces, and in contact with the pumpage. The oil filled seal chamber shall be designed to prevent over-filling and include an anti-vortexing vane to

insure proper lubrication of both seal faces. Lower face materials shall be Silicon Carbide, upper faces Carbon vs. Ceramic. NBR elastomers shall be provided in the oil chamber and viton elastomers where in contact with the pumpage. The mechanical seal hardware shall be 304SS. Seal system shall not rely on pumping medium for lubrication.

E. Motor Construction:

The pump motor shall be FM Explosion Proof, Class 1, Division 1, Groups C and D. The design shall be an air filled induction type with a squirrel cage rotor, shell type design, built to NEMA MG-1, Design B specifications. Stator windings shall be copper, insulated with moisture resistant Class H insulation, rated for 356°F. The stator shall be dipped and baked three times in Class H varnish and heat shrunk fitted into the stator housing. Rotor bars and short circuit rings shall be manufactured of cast aluminum. The motor junction area shall include a terminal strip for wire connections and shall be sealed with gaskets and o-rings from the motor stator housing. The motor shaft shall be one piece AISI420SS material, rotating on two permanently lubricated ball bearings designed for a minimum B-10 life of up to 100,000 hours. Motor service factor shall be 1.15 and capable of up to 15 starts per hour. The motor shall be designed for continuous duty pumping at a maximum sump temperature of 104°F. Voltage and frequency tolerances shall be a maximum 10 / 5% respectively. A thrust bearing RTD temperature monitor shall be provided.(Thrust bearing RTD is optional) Motor over temperature protection shall be provided by miniature thermal protectors embedded in the windings. Mechanical seal failure protection shall be provided by a mechanical float switch located in a chamber above the seal. This switch shall be comprised of a magnetic float that actuates a dry reed switch encapsulated within the stem. Should the mechanical seal fail, liquid shall be directed into the float chamber, in which the rising liquid activates the switch opening the normally closed circuit. The float switch components shall be 316SS material. The motor shall be non-overloading over the entire specified range of operation and be able to operate at full load continuously with the motor unsubmerged.

Power cable jacket shall be manufactured of an oil resistant chloroprene rubber material, designed for submerged applications. Cable shall be watertight to a depth of a least 114'. The cable entry system shall comprise of primary, secondary, and tertiary sealing methods. The primary seal shall be achieved by a cylindrical elastomeric grommet compressed between the cable housing and cable gland. Secondary sealing is accomplished with a compressed o-rings made of NBR material. Compression and subsequent sealing shall preclude specific torque requirements. The system shall also include tertiary sealing to prevent leakage into the motor housing due to capillary action through the insulation if the cable is damaged or cut. The cable wires shall be stripped and embedded in epoxy within the cable gland. This provides a dead end for leakage through the cable insulation into the motor junction area. The cable entry system shall be the same for both the power and control cables.

The motor design shall also include an integral cooling jacket constructed of steel, A283, Grade D. The cooling medium shall be the pumpage. Re-circulation through the jacket shall be achieved by discharging the pumpage into the cooling jacket from the periphery, high pressure area, of the impeller, and returning it into the low pressure behind the impeller, at the hub. Riser pipes within the jacket shall be utilized to facilitate circulation. The cooling passage ways shall be non-clogging by virtue of the dimensions; screening solids from entering the jacket. The jacket shall have external NPT connections to be used for external cooling as an option, as well as for venting the jacket. The jacket cooling system shall provide heat dissipation for the motor whether the unit is submerged or operating in air.

F. Guide Rail system:

The QDC shall be manufactured of cast iron, ASTM A48 Class 35. It shall be designed to adequately support the guide rails, discharge piping, and pumping unit under both static and dynamic loading conditions with support legs that are suitable for anchoring it to the wetwell floor. The face of the inlet QDC flange shall be perpendicular to the floor of the wetwell. The discharge flange of the QDC shall conform to ANSI B16.1 Class 125.

The pump design shall include an integral self-aligning sliding bracket. Sealing of the pumping unit to the QDC shall be accomplished by a single, linear, downward motion of the pump. The entire weight of the pump unit shall be guided to and wedged tightly against the inlet flange of the QDC, making metal to metal contact with the pump discharge forming a seal without the use of bolts, gaskets or o-rings.

Design requires two (2) 304SS schedule 40 guide rails sized to mount directly to the quick discharge connector, QDC, at the floor of the wetwell and to a guide rail bracket at the top of the wetwell below the hatch opening, (refer to project drawings). Intermediate guide brackets are recommended for rail lengths over 15 feet.

Guide rails are not part of the pump package and shall be supplied by others.

Lifting chain, either galvanized or stainless steel, is suitable for removing and installing the pump unit.

Specifications – DSCA4

A. General:
Provide FM explosion proof dry pit submersible sewage pumps suitable for continuous duty operation underwater without loss of watertight integrity to a depth of 114 feet. Pump system design shall include permanently mounted suction elbow on which the pump/motor unit is mounted. The motor and pump shall be designed, manufactured, and assembled by the same manufacturer.

B. Manufacturer:
Ebara International Corporation

C. Pump Characteristics:
Pumps shall conform to the following requirements:

Number of units	
Design flow (gpm)	
Design TDH (ft)	
Minimum shut off head (ft)	
RPM	
Maximum HP	
Minimum hydraulic efficiency at design (%)	
Voltage/HZ	460V / 60
Phase	3

D. Pump Construction:
All major parts of the pumping unit(s) including casing, intermediate casing, impeller, motor frame, suction elbow shall be manufactured from gray cast iron, ASTM A-48 Class 35. Castings shall have smooth surfaces devoid of blow holes or other casting irregularities. Casing design shall be centerline discharge with a large radius on the cut water to prevent clogging. Units shall be furnished with suction and discharge elbows with 125 lb. flat face ANSI flange. All exposed bolts and nuts shall be 304 stainless steel. All mating surfaces of major components shall be machined and fitted with NBR o-rings where watertight sealing is required. Machining and fitting shall be such that sealing is accomplished by automatic compression of o-rings in two planes and o-ring contact is made on four surfaces without the requirement of specific torque limits. Surfaces in contact with the pumpage shall be surface prepared to SSPC-SP-10 and coated with two (2) coats of coal tar epoxy paint. The internal surface of the motor shall be surface prepared to SSPC-SP-3 and coated with one (1) coat of zinc rich primer paint. Exposed surfaces shall be surface prepared to SSPC-SP-10 and coated with one (1) coat of zinc chromate primer and one (2) coats of coal tar epoxy paint.

1. Impellers
   a. The impeller shall be a non-clog, enclosed, multi-vane mixed flow type. It shall be balanced and shall be designed for solids handling with a long thrulet without acute turns. The inlet edge of the impeller vanes shall be angled toward the impeller periphery so as to facilitate the release of objects that might otherwise clog the pump. The design shall also include back pump out vanes to reduce the pressure and entry of foreign materials into the mechanical seal area. Impellers shall be direct connected to the motor shaft with a slip fit, key driven, and secured with an impeller nut. A replaceable casing ring shall be provided, manufactured of AISI 420SS material, to maintain working clearances and hydraulic efficiencies.The design shall include an optional, replaceable impeller ring manufactured of AISI 304SS material to maintain working clearances and hydraulic efficiencies.
   b. The impeller shall be a mixed flow multi-vane semi-open design. It shall be balanced and shall be designed for solids handling with a long thrulet without acute turns. The inlet edge of the impeller vanes shall be angled toward the impeller periphery so as to facilitate the release of objects that might otherwise clog the pump. The design shall also include back pump out vanes to reduce the pressure and entry of foreign materials into the mechanical seal area. Impellers shall be direct connected to the motor shaft with a slip fit, key driven and secured with an impeller bolt. The design shall include a replaceable cast iron suction cover. The suction cover shall be designed such that it may be adjusted to maintain working clearances and hydraulic efficiencies.

2. Mechanical Seals
   The mechanical seal system shall be a cartridge mounted double mechanical seal in a tandem arrangement. Each seal shall be positively driven and act independently with its own spring system. The upper seal operates in an oil bath, while the lower seal is lubricated by the oil from between the shaft and the seal faces, and in contact with the

pumpage on the outside. The oil filled seal chamber shall be designed to prevent over-filling and include an anti-vortexing vane to insure proper lubrication of both seal faces. Lower face materials shall be Silicon Carbide, upper faces carbon vs. ceramic. NBR elastomers shall be provided in the oil chamber and viton elastomers where in contact with the pumpage. The mechanical seal hardware shall be 304SS. Seal system shall not rely on pumping medium for lubrication.

E. Motor Construction:

The pump motor shall be FM Explosion Proof, Class 1, Division 1, Groups C, D. The design shall be an air filled induction type with a squirrel cage rotor, shell type design, built to NEMA MG-1, Design B specifications. Stator windings shall be copper, insulated with moisture resistant Class H insulation, rated for 356°F. The stator shall be dipped and baked three times in Class H varnish and heat shrunk fitted into the stator housing. Rotor bars and short circuit rings shall be manufactured of cast aluminum. The motor junction area shall include a terminal strip for wire connections and shall be sealed with gaskets and o-rings from the motor stator housing. The motor shaft shall be one piece AISI 420SS material, rotating on two permanently lubricated ball bearings designed for a minimum B-10 life of up to 100,000 hours. Motor service factor shall be 1.15 and capable of up to 15 starts per hour. The motor shall be designed for continuous duty pumping at a maximum sump temperature of 104°F. Voltage and frequency tolerances shall be a maximum 10 / 5% respectively. A thrust bearing RTD temperature monitor shall be provided. (Thrust bearing RTD is optional) Motor over temperature protection shall be provided by miniature thermal protectors embedded in the windings. Mechanical seal failure protection shall be provided by a mechanical float switch located in a chamber above the seal. This switch shall be comprised of a magnetic float that actuates a dry reed switch encapsulated within the stem. Should the mechanical seal fail, liquid shall be directed into the float chamber, in which the rising liquid activates the switch opening the normally closed circuit. The float switch components shall be 316SS material. The motor shall be non-overloading over the entire specified range of operation and be able to operate at full load continuously with the motor unsubmerged.

Power cable jacket shall be manufactured of an oil resistant chloroprene rubber material, designed for submerged applications. Cable shall be watertight to a depth of a least 114'. The cable entry system shall comprise of primary, secondary, and tertiary sealing methods. The primary seal shall be achieved by a cylindrical elastomeric grommet compressed between the cable housing and cable gland. Secondary sealing is accomplished with a compressed o-rings made of NBR material. Compression and subsequent sealing shall preclude specific torque requirements. The system shall also include tertiary sealing to prevent leakage into the motor housing due to capillary action through the insulation if the cable is damaged or cut. The cable wires shall be cut, stripped, re-connected with a copper butt end connector, and embedded in epoxy within the cable gland. This provides a dead end for leakage through the cable insulation into the motor junction area. The cable entry system shall be the same for both the power and control cables.

The motor design shall also include an integral cooling jacket constructed of steel, A283, Grade D. The cooling medium shall be the pumpage. Re-circulation through the jacket shall be achieved by discharging the pumpage into the cooling jacket from the periphery, high pressure area, of the impeller, and returning it into the low pressure behind the impeller, at the hub. Riser pipes within the jacket shall be utilized to facilitate circulation. The cooling passage ways shall be non-clogging by virtue of the dimensions; screening solids from entering the jacket. The jacket shall have external NPT connections to be used for external cooling as an option, as well as for venting the jacket.

Model Designation – DSC4

200	×	150	DSC4	A	O	FM	4	6	075

SUCTION BORE SIZE – mm
- 200mm – 8"
- 400mm – 16"

DISCHARGE BORE SIZE – mm
- 150mm – 6"
- 250mm – 10"
- 300mm – 12"

MODEL TYPE
- DSC4 – submersible sewage pump: wet pit
- DSCA4 – submersible sewage pump: dry pit

MODEL CODE
- HYDRAULIC MODEL
- IMPELLER TYPE
  - O – Semi-open
  - C – Enclosed

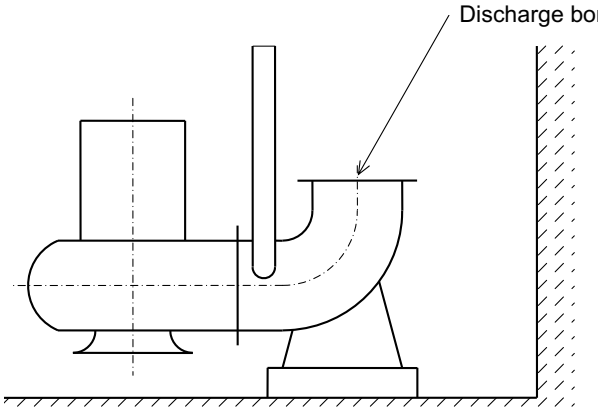
FM – FM Explosion proof

POLE
- 4 – 1800 RPM
- 6 – 1200 RPM

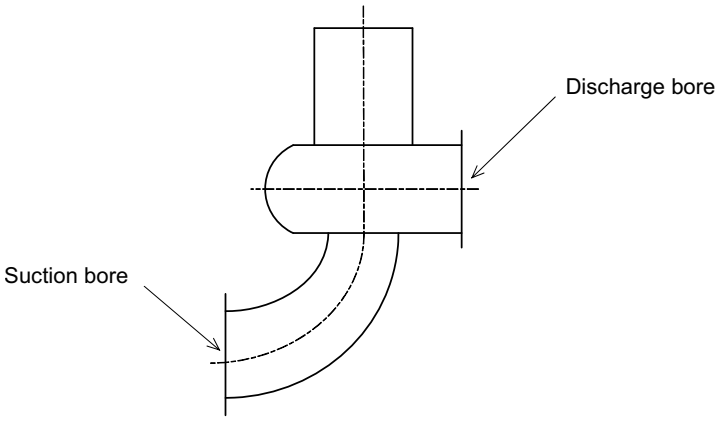
HERTZ
- 6 – 60Hz

HORSEPOWER

050 – 50HP	100 – 100HP
060 – 60HP	120 – 120HP
075 – 75HP	145 – 145HP

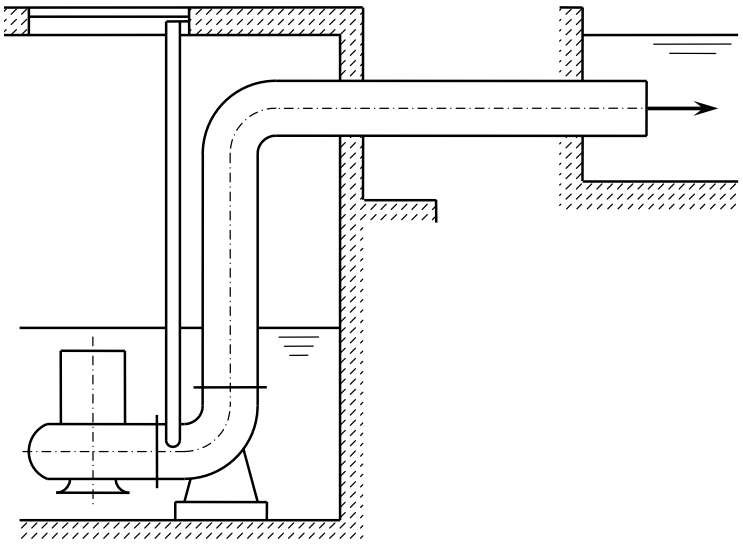


Model DSC4
Wet Pit Installation

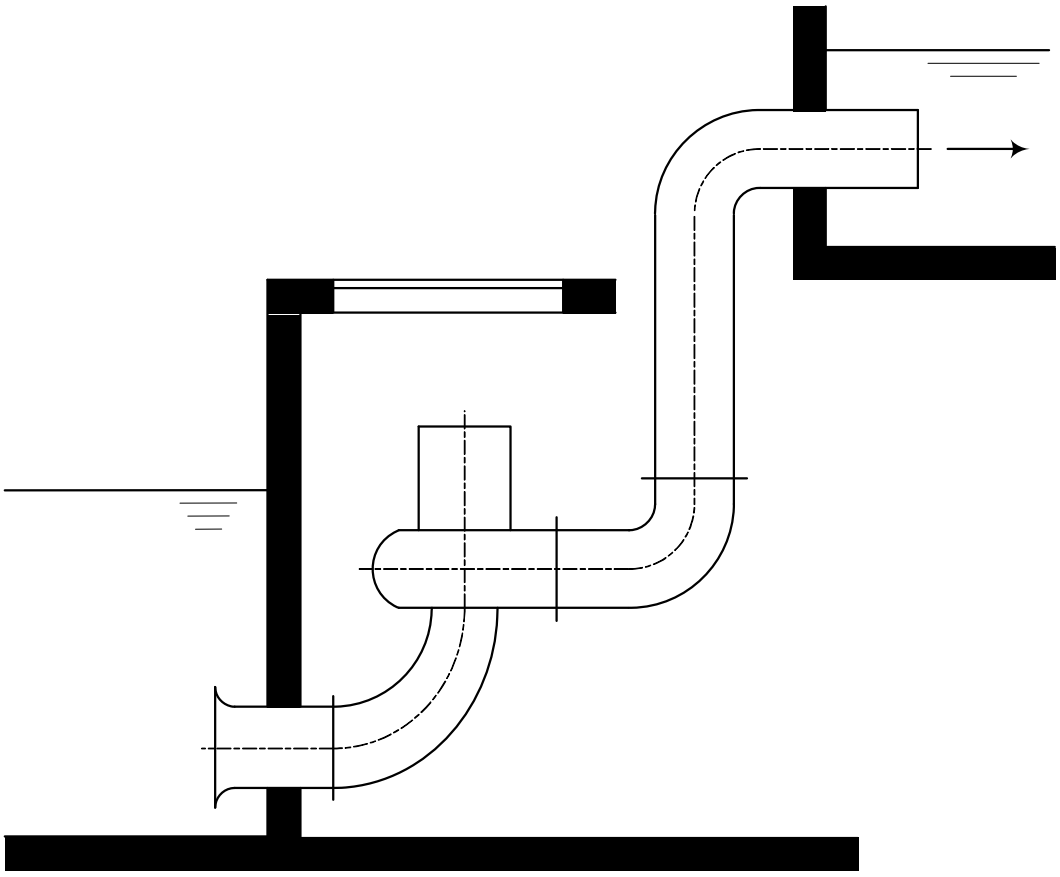


Model DSCA4
Dry Pit Installation

Configurations



MODEL DSC4
(WET PIT INSTALLATION)



MODEL DSCA4
(DRY PIT INSTALLATION)

Specifications

Impeller Design

Pump Model	Model Code	Impeller Type	No. of Vanes
150DSC4 200x150DSCA4	AO-46050	Semi-open	2
	AO-46060		
	AO-46075		
	BC-46100	Enclosed	
	BC-46120		
	CC-46145		
250DSC4 400x250DSCA4	EO-66100	Semi-open	3
	EO-66120		
	EO-66145		
300DSC4 400x300DSCA4	FO-66050		
	FO-66060		
	GO-66075		
150DSC4 200x150DSCA4	HO-46050		2
	HO-46060		
	HO-46075		

Material Specifications

PARTS	MATERIAL
Pump casing QDC	Cast iron ASTM A48 CL35
Impeller[3]	Cast iron ASTM A48 CL35
Shaft	Stainless Steel AISI 420
Casing ring[1]	Stainless Steel AISI 420
Suction Cover[2]	Cast Iron ASTM A48 CL35
Motor Frame	Cast iron ASTM A48 CL35
Cooling jacket	Rolled steel ASTM A283 Gr.D
Mechanical Seal	Upper: Carbon/Ceramic Lower: Silicon Carbide/Silicon Carbide
Lifting Handle	Stainless Steel AISI 304 SS

Note:

[1] Enclosed impeller models only

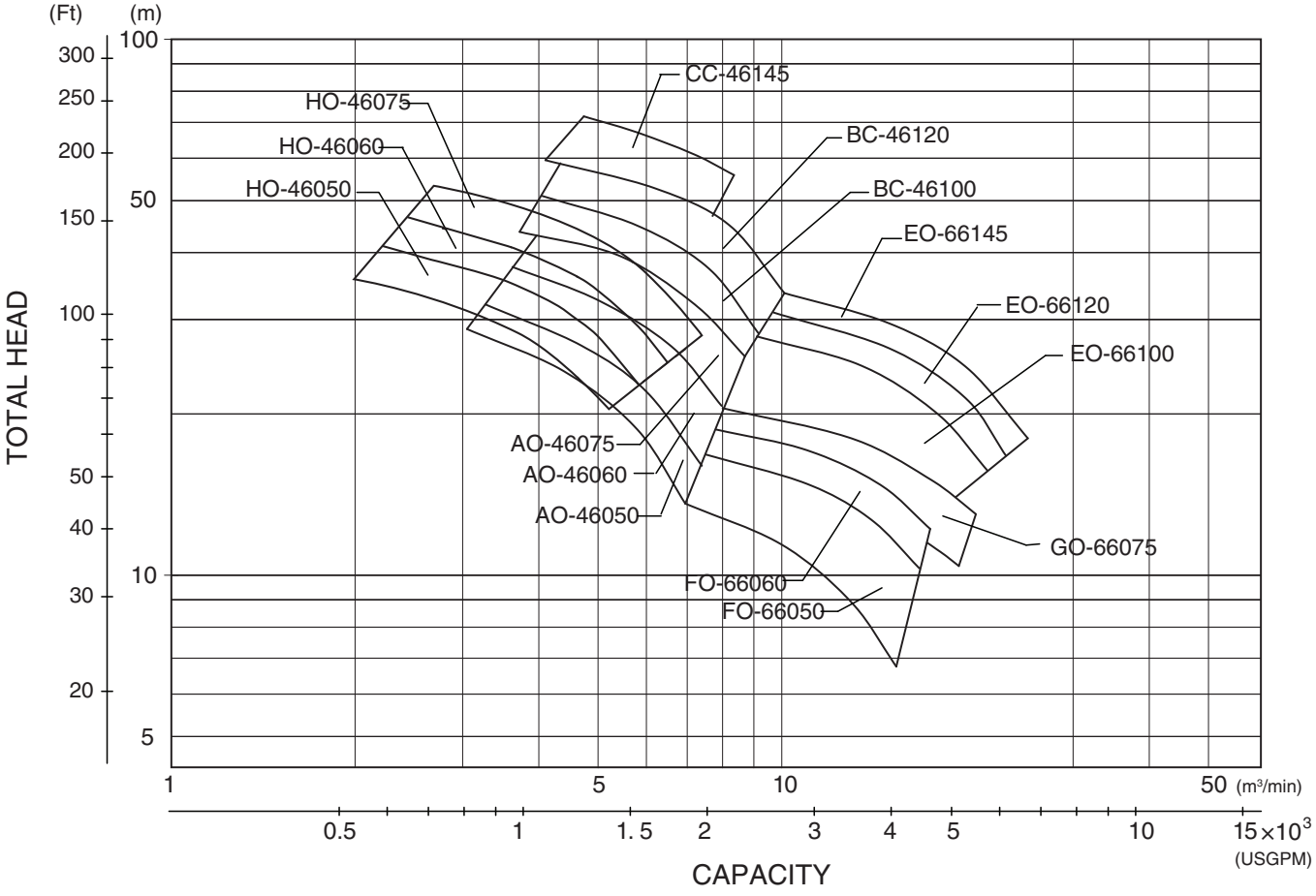
[2] Semi-open impeller models only

[3] Optional 304 SS Impeller ring available for enclosed impeller models

Selection Chart

Project: Model: Chk'd: Date:

DSC4/DSCA4 Selection Chart

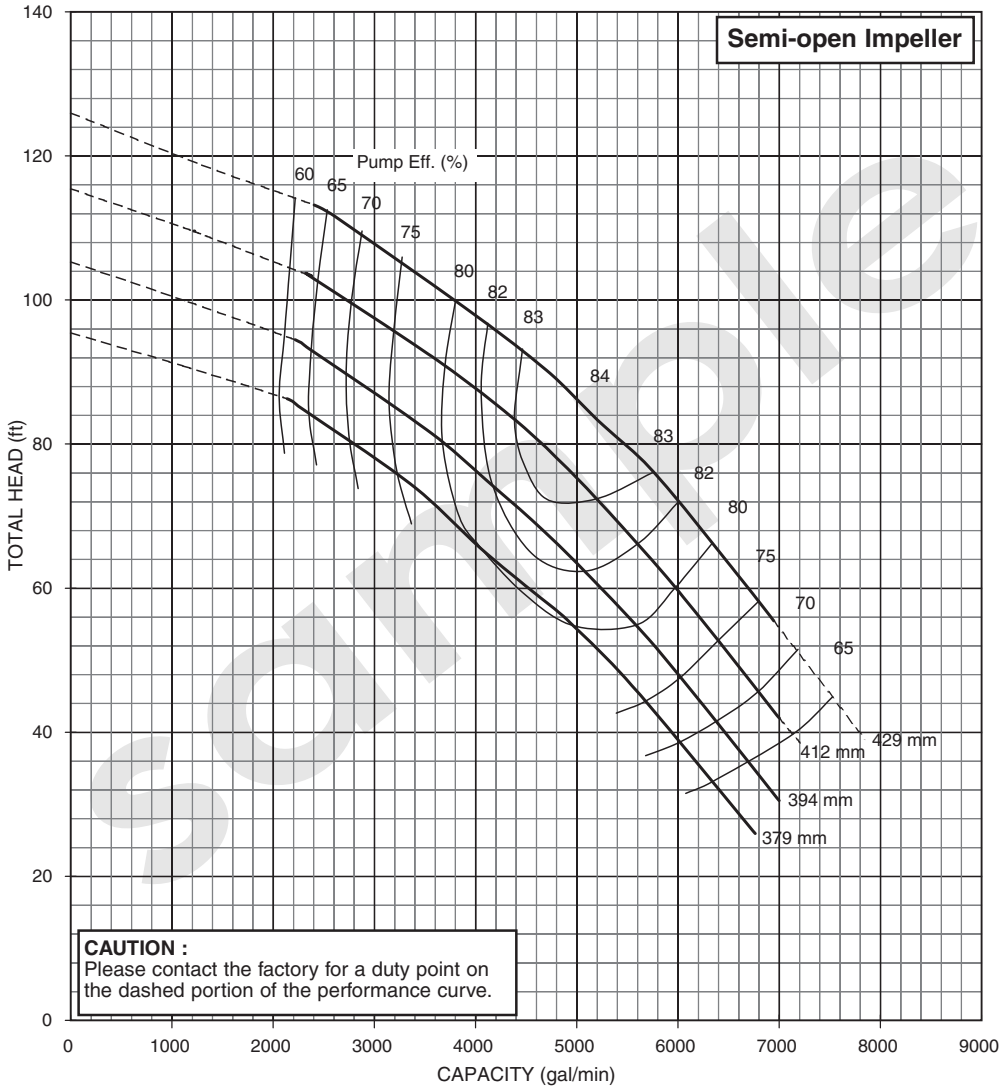


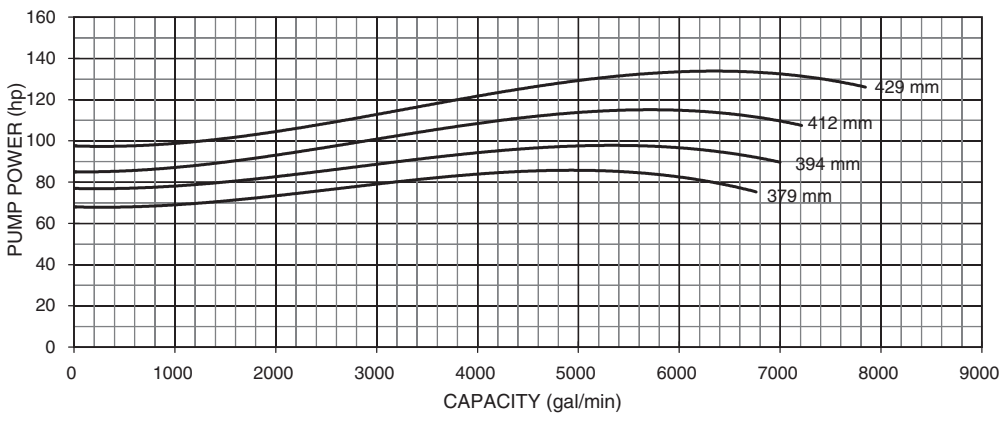
Performance Curves

Project: Chk'd: Date:

Rated Capacity	Rated Total Head	Pump Speed	Motor Output Power
GPM	FT	RPM	HP
(3800)	(100)	1800	(145)

MODEL: 250DSC4
400×250DSCA4
100HP - 145HP



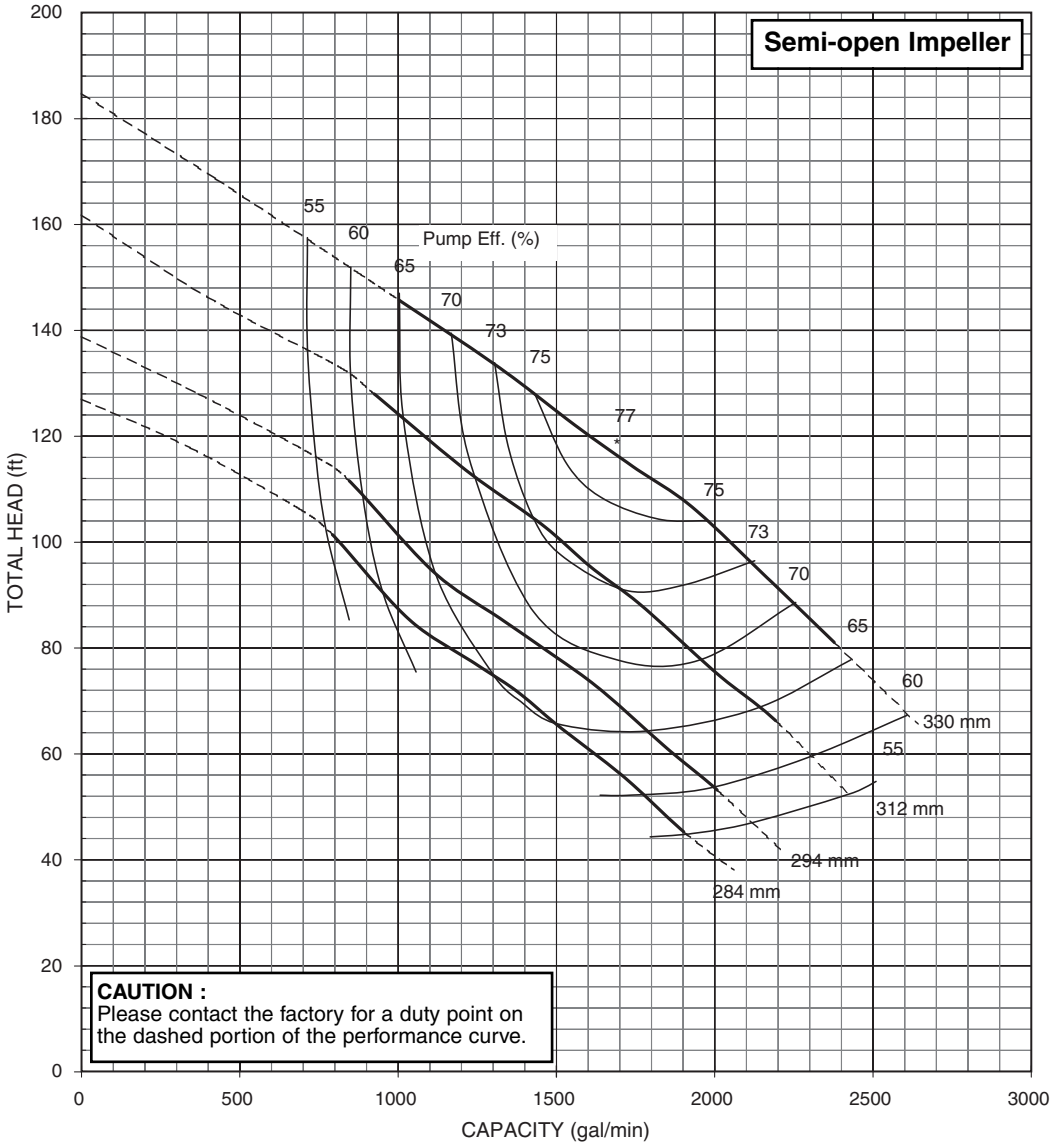


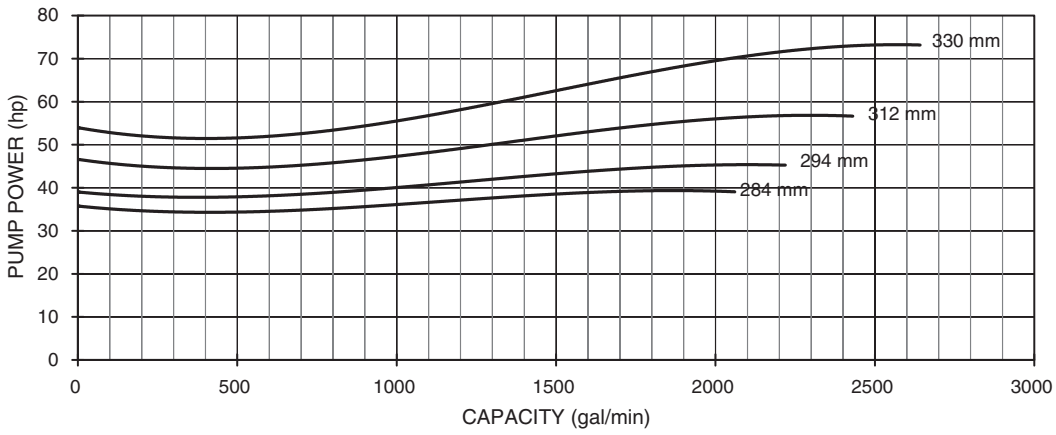
Performance Curves

MODEL CODE: AO

Project: Chk'd: Date:

MODEL:	GPM	FT	RPM	HP
150DSC4 **200×150DSCA4** **50HP - 75HP**	( )	( )	1800	( )



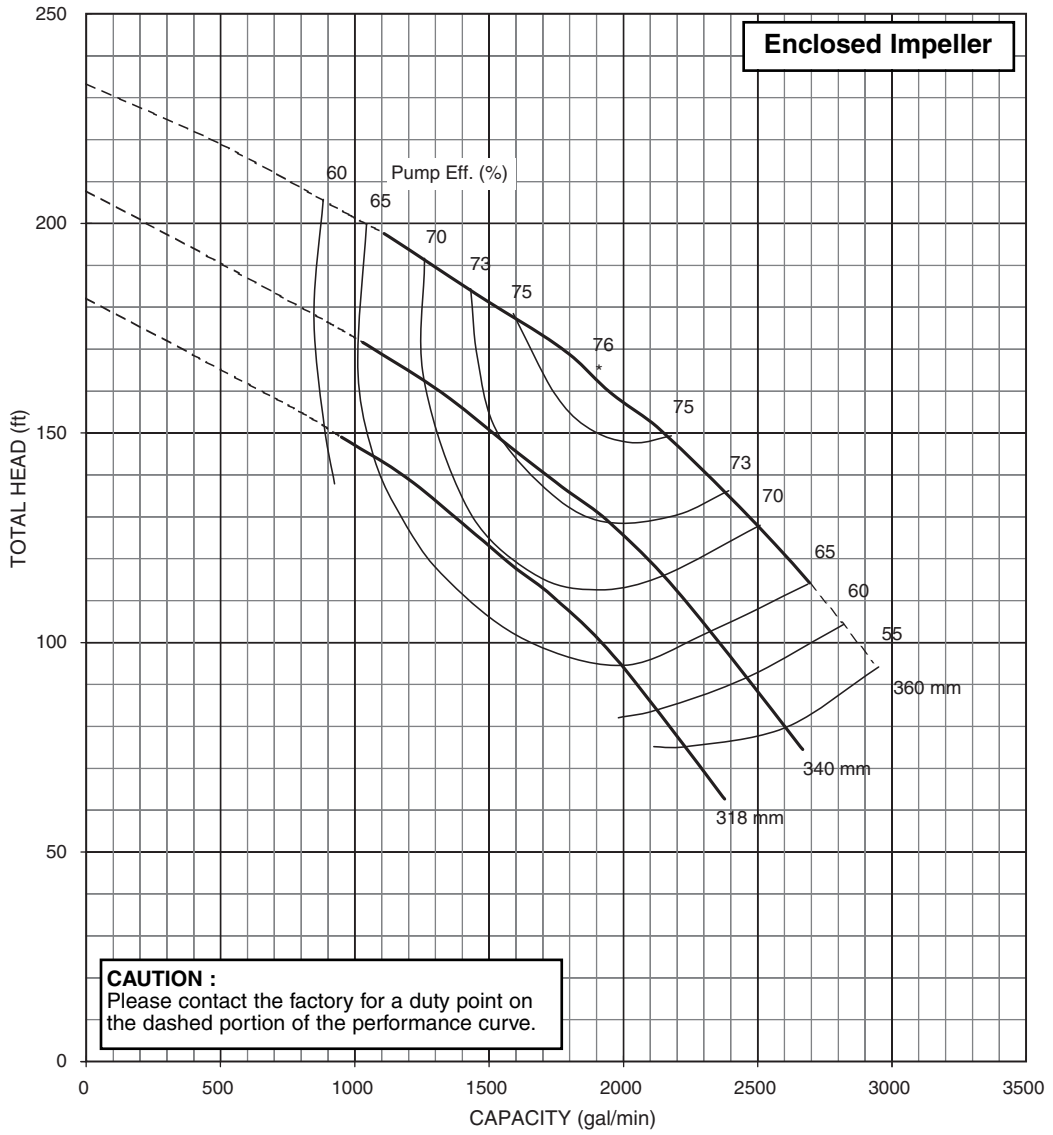


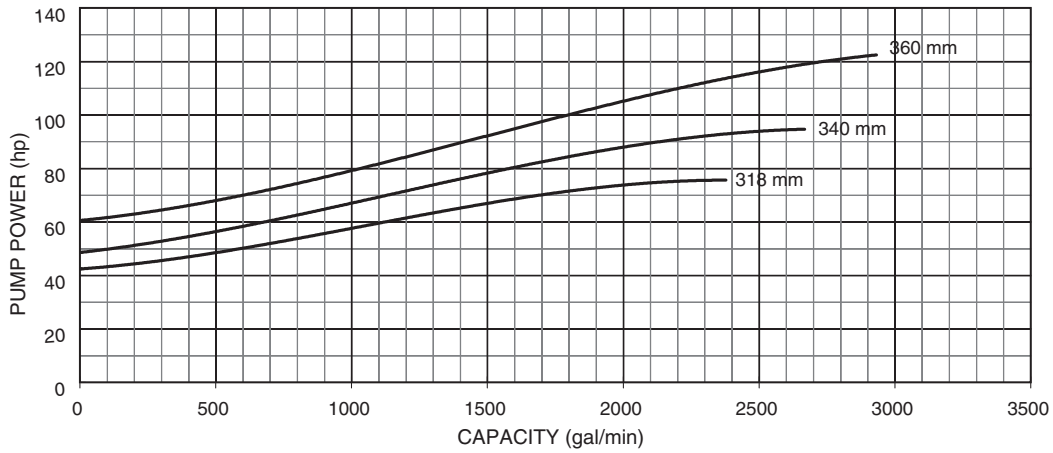
Performance Curves

MODEL CODE: BC

Project: Chk'd: Date:

MODEL:	GPM	FT	RPM	HP
150DSC4 **200×150DSCA4** **100HP - 120HP**	( )	( )	1800	( )



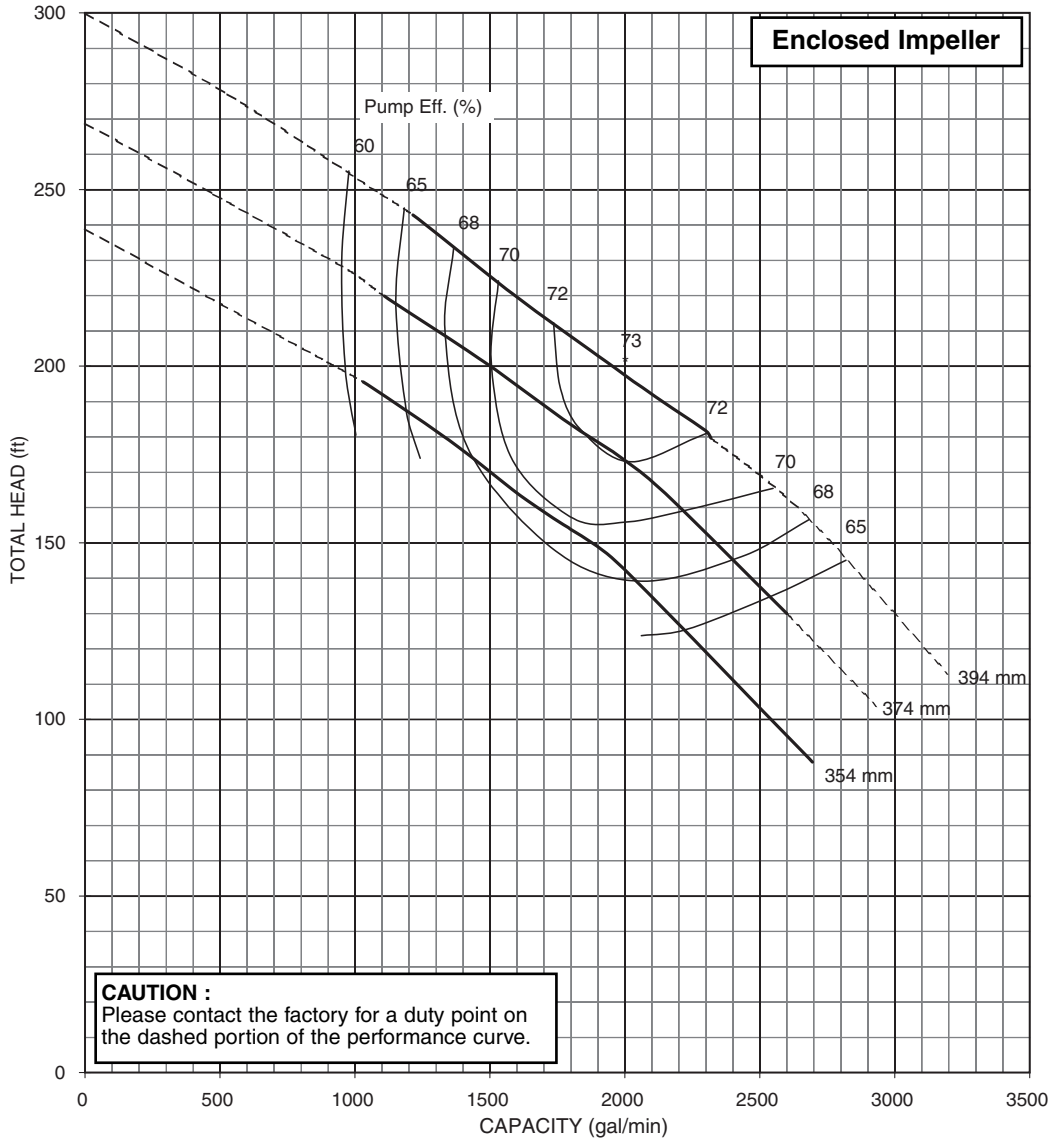


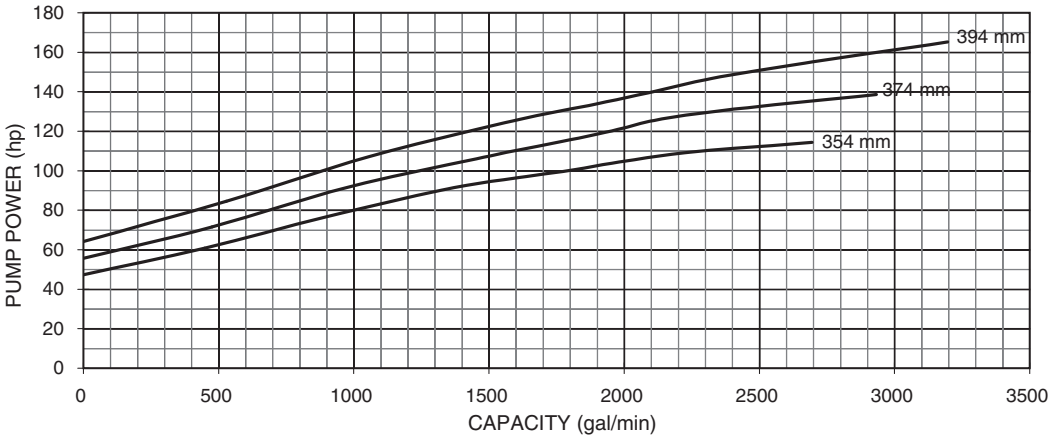
Performance Curves

MODEL CODE: CC

Project: Chk'd: Date:

MODEL:	GPM	FT	RPM	HP
150DSC4 **200×150DSCA4** **145HP**	( )	( )	1800	( )



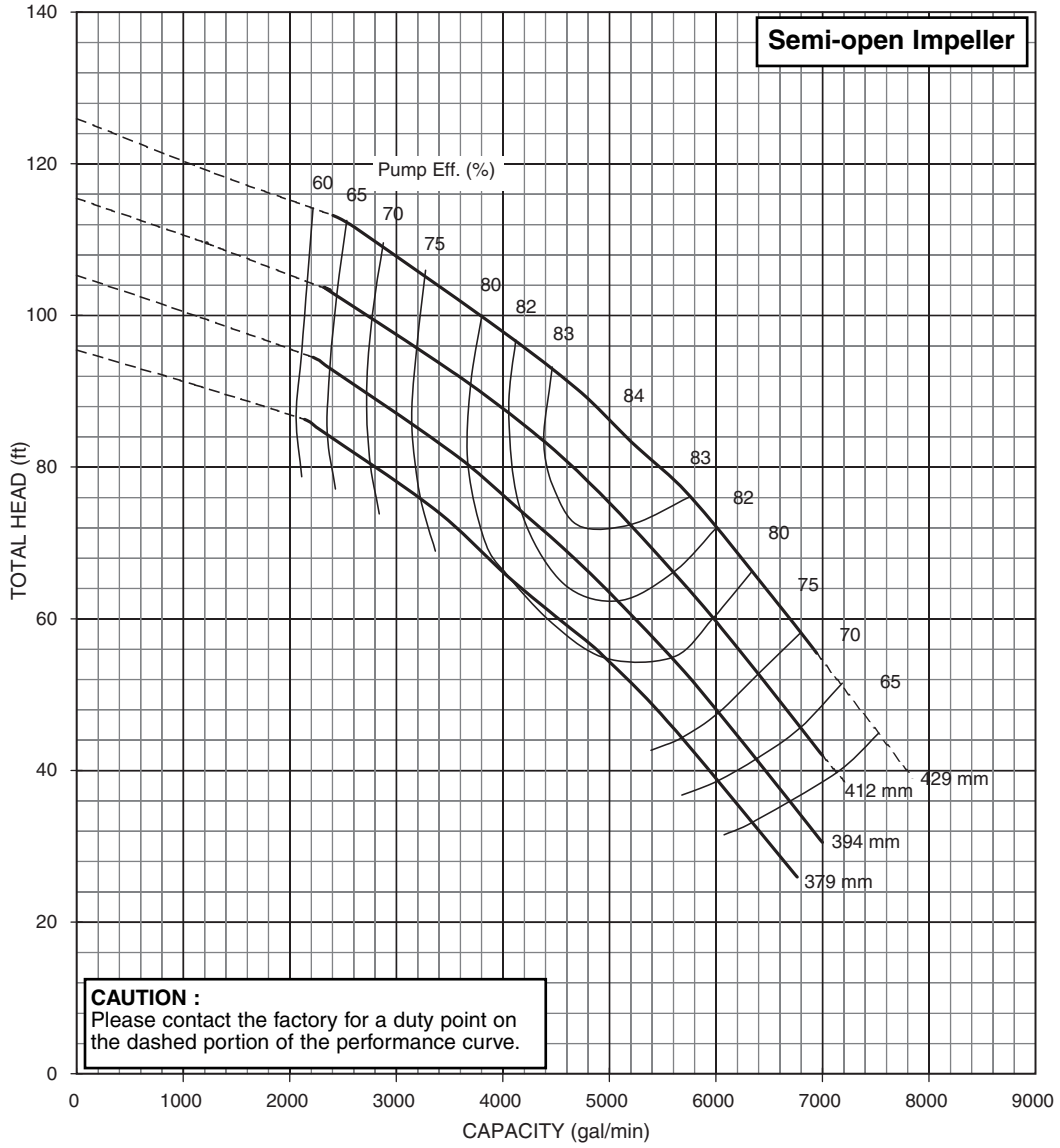


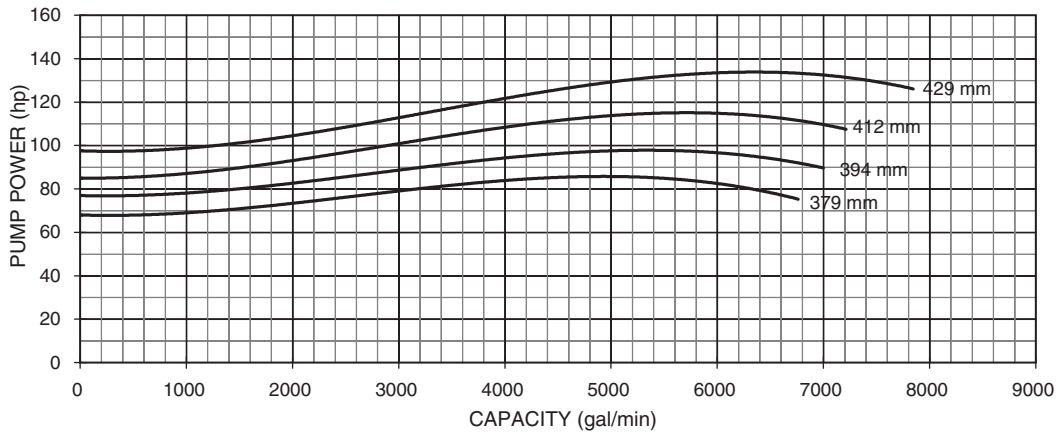
Performance Curves

MODEL CODE: EO

Project: Chk'd: Date:

MODEL:	GPM	FT	RPM	HP
250DSC4 **400×250DSCA4** **100HP - 145HP**	( )	( )	1200	( )



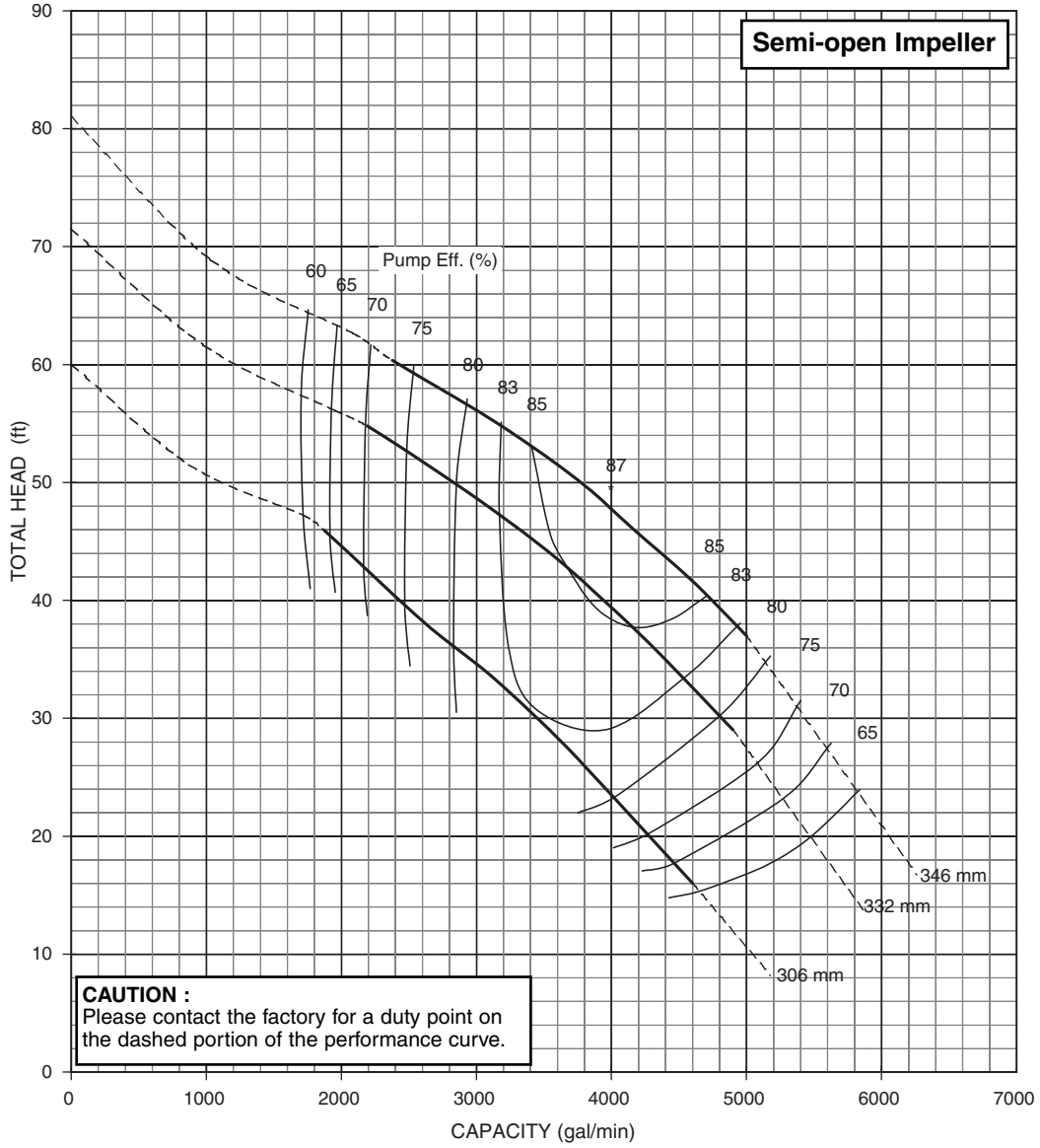


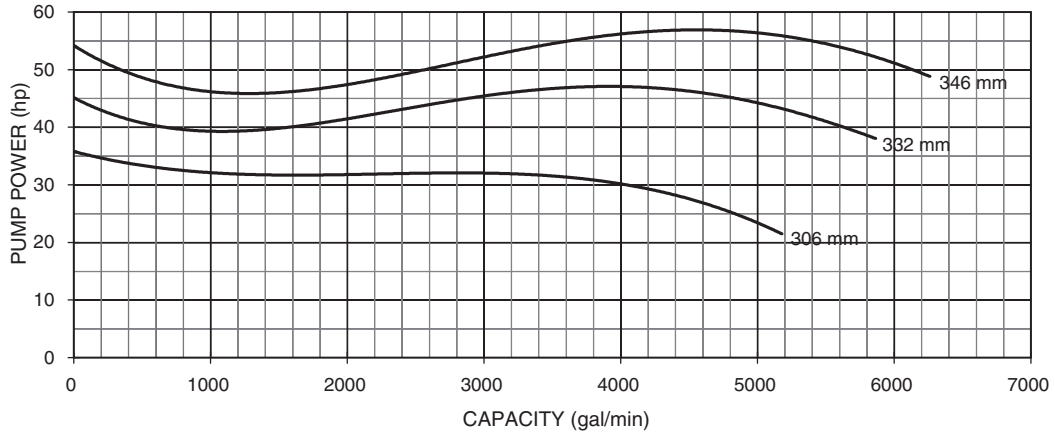
Performance Curves

MODEL CODE: FO

Project: Chk'd: Date:

MODEL:	GPM	FT	RPM	HP
300DSC4 **400×300DSCA4** **50HP - 60HP**	( )	( )	1200	( )



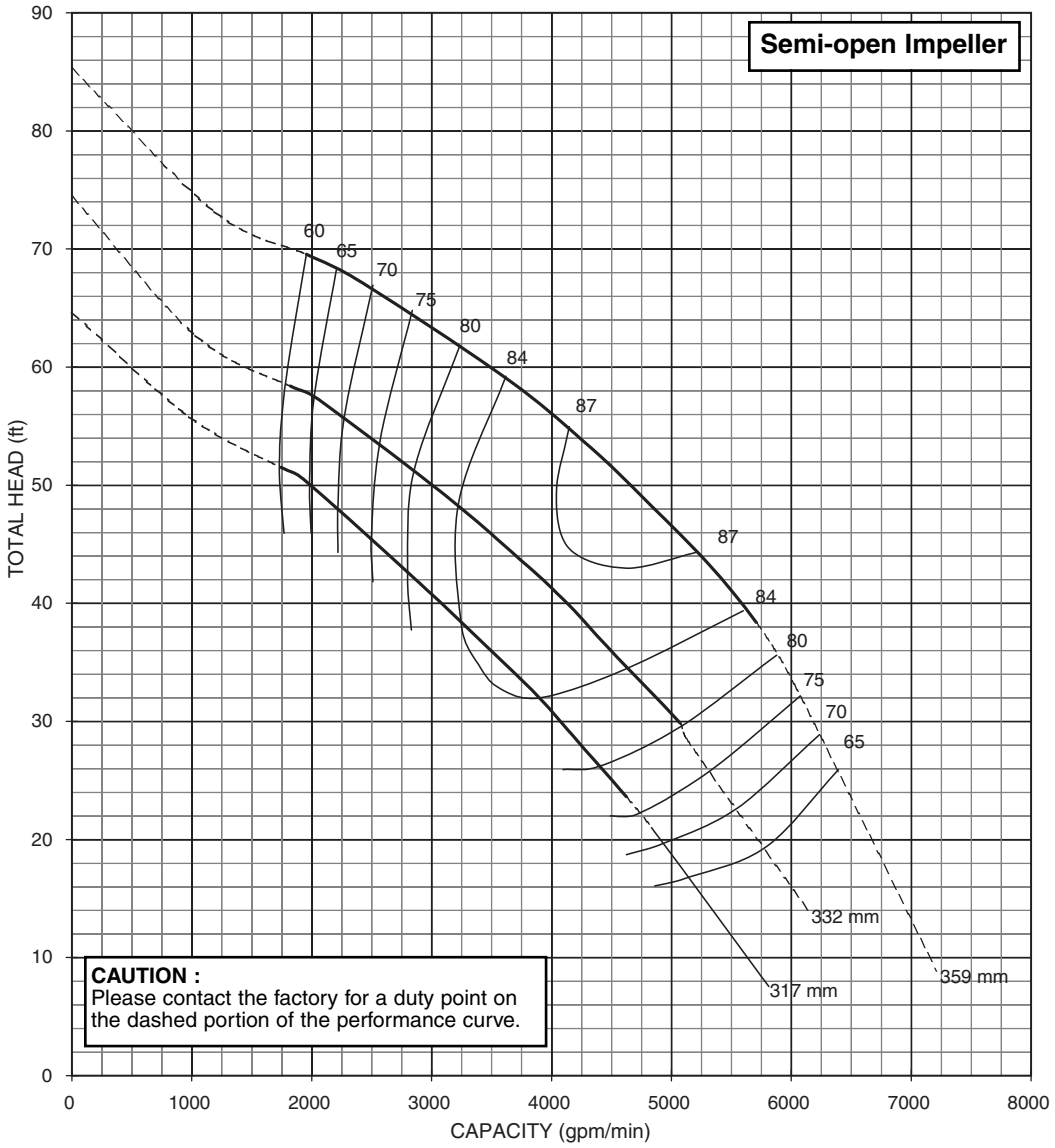


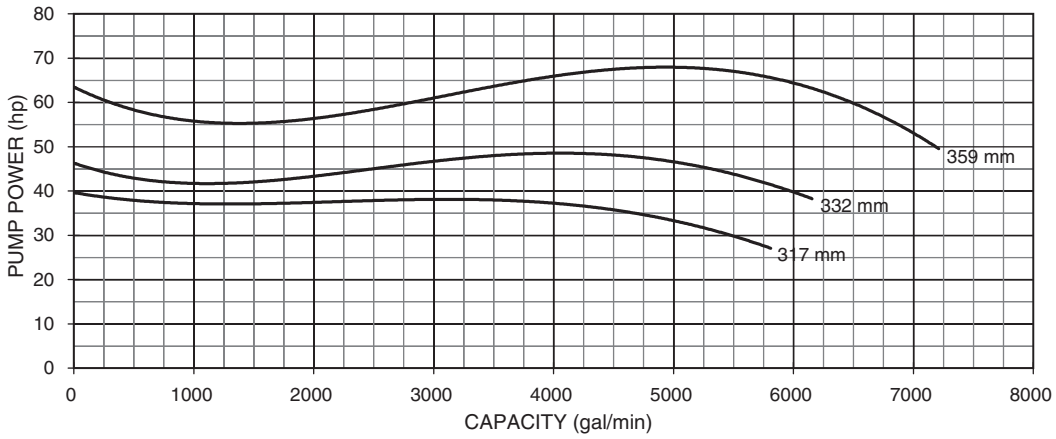
Performance Curves

MODEL CODE: GO

Project: Chk'd: Date:

MODEL:	GPM	FT	RPM	HP
300DSC4 **400×300DSCA4** **75HP**	( )	( )	1200	( )



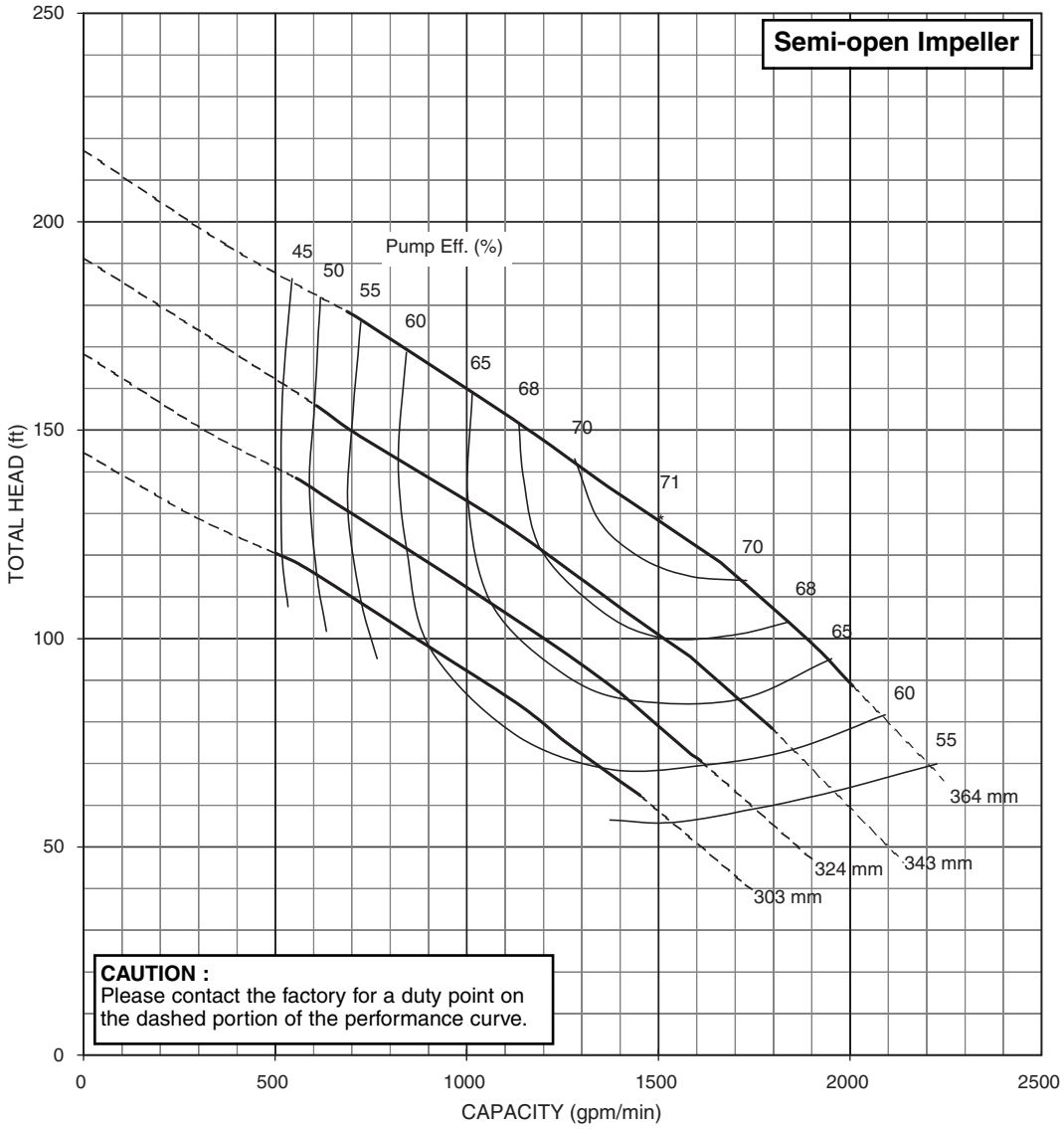


Performance Curves

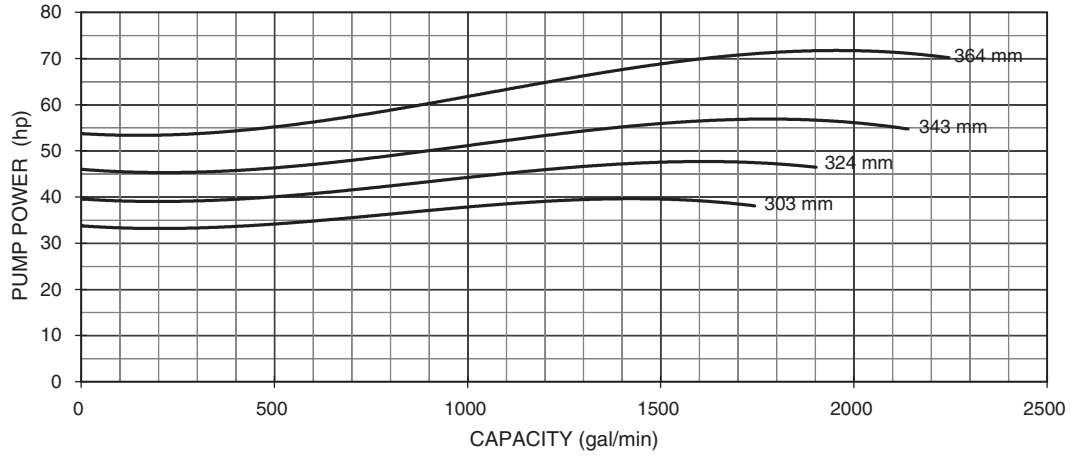
MODEL CODE: HO

Project: Chk'd: Date:

MODEL:	GPM	FT	RPM	HP
150DSC4 **200×150DSCA4** **50HP - 75HP**	( )	( )	1800	( )



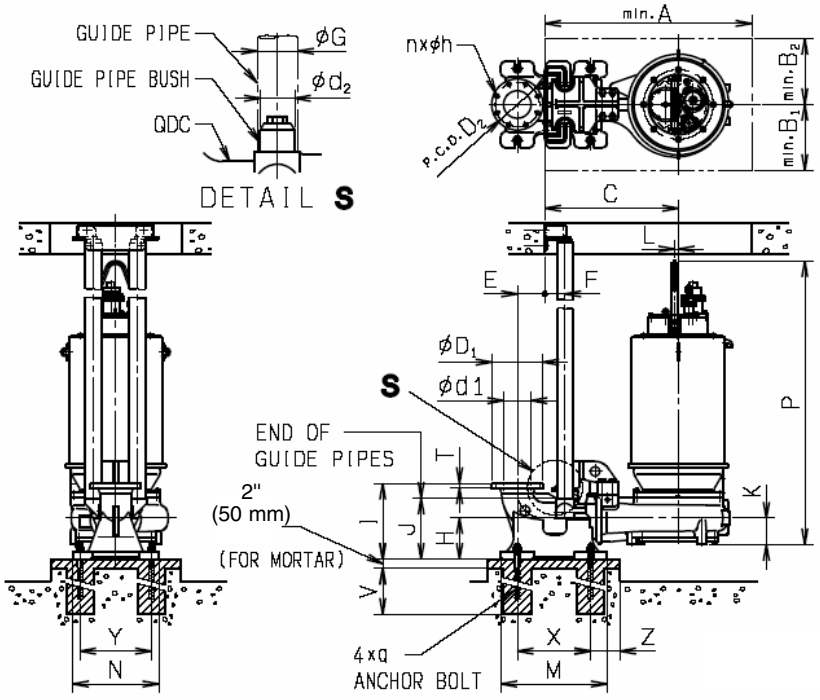
CAUTION :
Please contact the factory for a duty point on the dashed portion of the performance curve.



Dimensions

Project: Model: Chk'd: Date:

Model 150DSC4 Model Code AO with Quick Discharge Connector



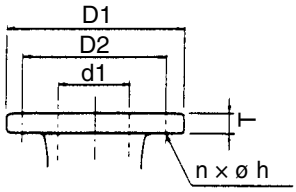
Weights†

Unit: lbs.

Model	HP	Pump	QDC
AO-46050	50	1811	243
AO-46060	60	1877	
AO-46075	75	1987	

Unit: kg

Model	kW	Pump	QDC
AO-46050	37	822	110
AO-46060	45	952	
AO-46075	55	901	



Flange Detail

Unit: inches

D1	D2	T	n	h
11	9 1/2	1	8	7/8

Unit: mm

D1	D2	T	n	h
279.4	241.3	25.4	8	23

Unit: inches

Model	HP	d1	A	B1	B2	C	E	F	G	H	I	J
AO-46050	50	6	44 1/2	14 3/16	14 3/16	28 3/4	5 7/8	4 5/16	3 1/2	8 7/8	16 5/16	13 1/8
AO-46060	60											
AO-46075	75											

Model	HP	K	L	M	N	P	V	X	Y	Z	q	d2
AO-46050	50	5 11/16	13/16	22 13/16	18 1/2	57 1/8	17 11/16	15 3/4	15 3/8	6 5/16	1	3
AO-46060	60					59 1/2						
AO-46075	75					61 1/16						

Unit: mm

Model	kW	d1	A	B1	B2	C	E	F	G	H	I	J
AO-46050	37	150	1130	360	360	730	150	110	89.1	225	415	333
AO-46060	45											
AO-46075	55											

Model	kW	K	L	M	N	P	V	X	Y	Z	q	d2
AO-46050	37	145	20	580	470	1451	450	400	390	160	24	75
AO-46060	45					1511						
AO-46075	55					1551						

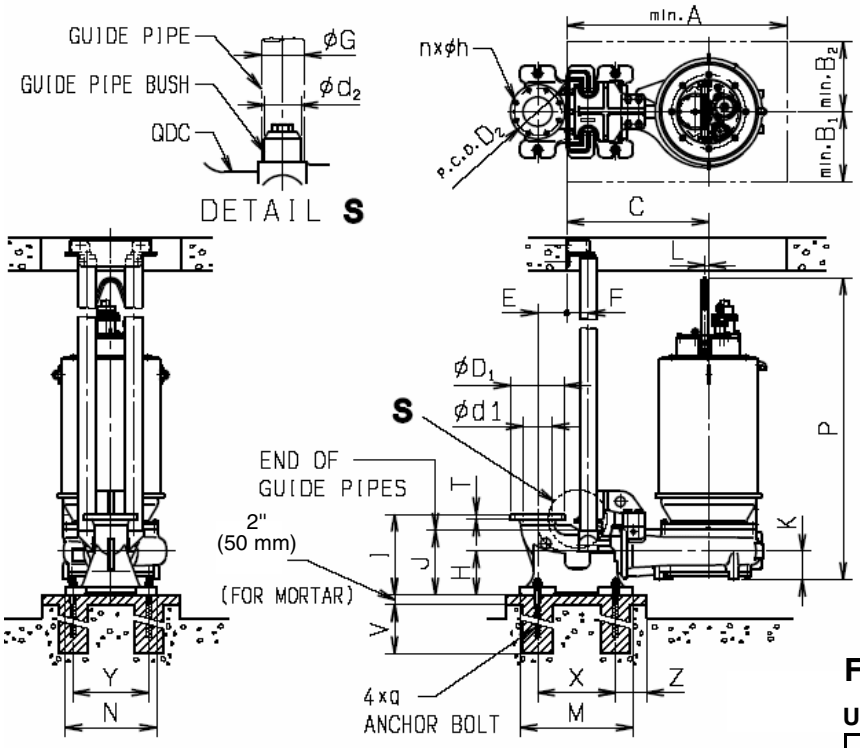
Notes:

†The weight of pump includes the weight of 50 ft. (15.25 m) of cables, and does not include the weight of the guide pipes and the water in pump.

Dimensions

Project: Model: Chk'd: Date:

Model 150DSC4 Model Code BC with Quick Discharge Connector



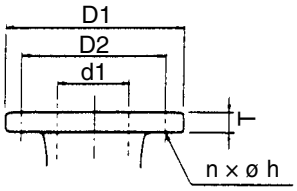
Weights†

Unit: lbs.

Model	HP	Pump	QDC
BC-46100	100	2185	243
BC-46120	120	2776	

Unit: kg

Model	kW	Pump	QDC
BC-46100	75	991	110
BC-46120	90	1259	



Flange Detail

Unit: inches

D1	D2	T	n	h
11	9 1/2	1	8	7/8

Unit: mm

D1	D2	T	n	h
279.4	241.3	25.4	8	23

Unit: inches

Model	HP	d1	A	B1	B2	C	E	F	G	H	I	J
BC-46100	100	6	44 1/2	14 3/16	14 3/16	28 3/4	5 7/8	4 5/16	3 1/2	8 7/8	16 5/16	13 1/8
BC-46120	120		45 1/4	14 15/16	14 15/16							

Model	HP	K	L	M	N	P	V	X	Y	Z	q	d2
BC-46100	100	5 11/16	13/16	22 13/16	18 1/2	64 3/16	17 11/16	15 3/4	15 3/8	6 5/16	1	3
BC-46120	120		1 3/16			67 3/8						

Unit: mm

Model	kW	d1	A	B1	B2	C	E	F	G	H	I	J
BC-46100	75	150	1130	360	360	730	150	110	89.1	225	415	333
BC-46120	90		1150	380	380							

Model	kW	K	L	M	N	P	V	X	Y	Z	q	d2
BC-46100	75	145	20	580	470	1631	450	400	390	160	24	75
BC-46120	90		30			1712						

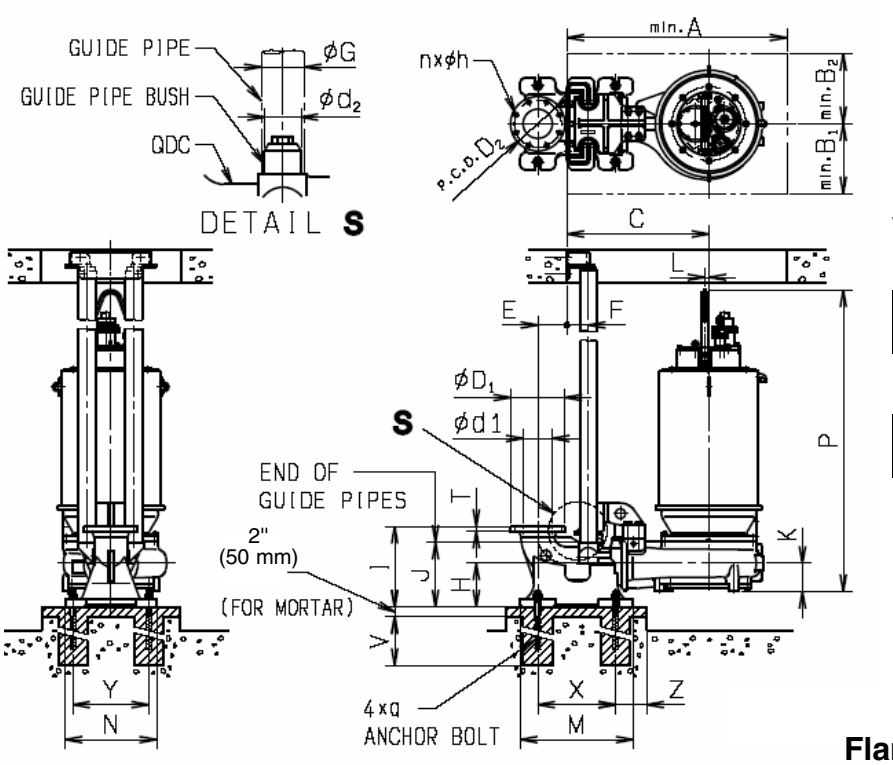
Notes:

†The weight of pump includes the weight of 50 ft. (15.25 m) of cables, and does not include the weight of the guide pipes and the water in pump.

Dimensions

Project: Model: Chk'd: Date:

Model 150DSC4 Model Code CC with Quick Discharge Connector



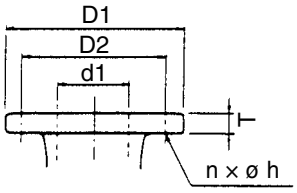
Weights†

Unit: lbs.

Model	HP	Pump	QDC
CC-46145	145	3066	243

Unit: kg

Model	kW	Pump	QDC
CC-46145	110	1391	110



Flange Detail

Unit: inches

D1	D2	T	n	h
11	9 1/2	1	8	7/8

Unit: mm

D1	D2	T	n	h
279.4	241.3	25.4	8	23

Unit: inches

Model	HP	d1	A	B1	B2	C	E	F	G	H	I	J
CC-46145	145	6	48 1/16	15 3/4	14 15/16	30 11/16	5 7/8	4 5/16	3 1/2	8 7/8	16 5/16	13 1/8

Model	HP	K	L	M	N	P	V	X	Y	Z	q	d2
CC-46145	145	5 11/16	1 3/16	22 13/16	18 1/2	70 15/16	17 11/16	15 3/4	15 3/8	6 5/16	1	3

Unit: mm

Model	kW	d1	A	B1	B2	C	E	F	G	H	I	J
CC-46145	110	150	1220	400	380	780	150	110	89.1	225	415	333

Model	kW	K	L	M	N	P	V	X	Y	Z	q	d2
CC-46145	110	145	30	580	470	1802	450	400	390	160	24	75

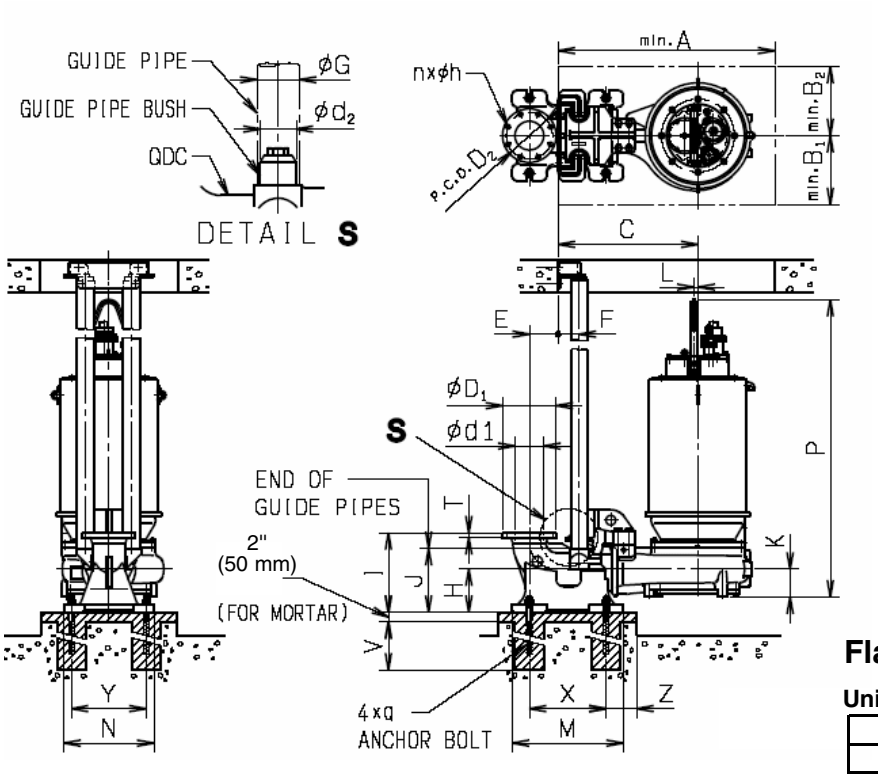
Notes:

†The weight of pump includes the weight of 50 ft. (15.25 m) of cables, and does not include the weight of the guide pipes and the water in pump.

Dimensions

Project: Model: Chk'd: Date:

Model 250DSC4 Model Code EO with Quick Discharge Connector



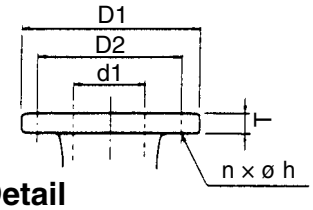
Weights†

Unit: lbs.

Model	HP	Pump	QDC
EO-66100	100	3354	375
EO-66120	120	3393	
EO-66145	145	3617	

Unit: kg

Model	kW	Pump	QDC
EO-66100	75	1521	170
EO-66120	90	1539	
EO-66145	110	1640	



Flange Detail

Unit: inches

D1	D2	T	n	h
16	14 1/4	1 3/16	12	1

Unit: mm

D1	D2	T	n	h
406.4	362	30.3	12	26

Unit: inches

Model	HP	d1	A	B1	B2	C	E	F	G	H	I	J
EO-66100	100	10	55 1/2	19 5/16	15 3/8	35 5/8	8 7/16	4 5/16	3 1/2	11 7/16	22 13/16	17 5/8
EO-66120	120											
EO-66145	145											

Model	HP	K	L	M	N	P	V	X	Y	Z	q	d2
EO-66100	100	8 1/4	1 3/16	24 13/16	21 5/8	73 11/16	17 11/16	17 11/16	18 1/2	6 5/16	1	3
EO-66120	120					75 11/16						
EO-66145	145					78 13/16						

Unit: mm

Model	kW	d1	A	B1	B2	C	E	F	G	H	I	J
EO-66100	75	250	1410	490	390	905	215	110	89.1	290	580	448
EO-66120	90											
EO-66145	110											

Model	kW	K	L	M	N	P	V	X	Y	Z	q	d2
EO-66100	75	210	30	630	550	1872	450	450	470	160	24	75
EO-66120	90					1922						
EO-66145	110					2002						

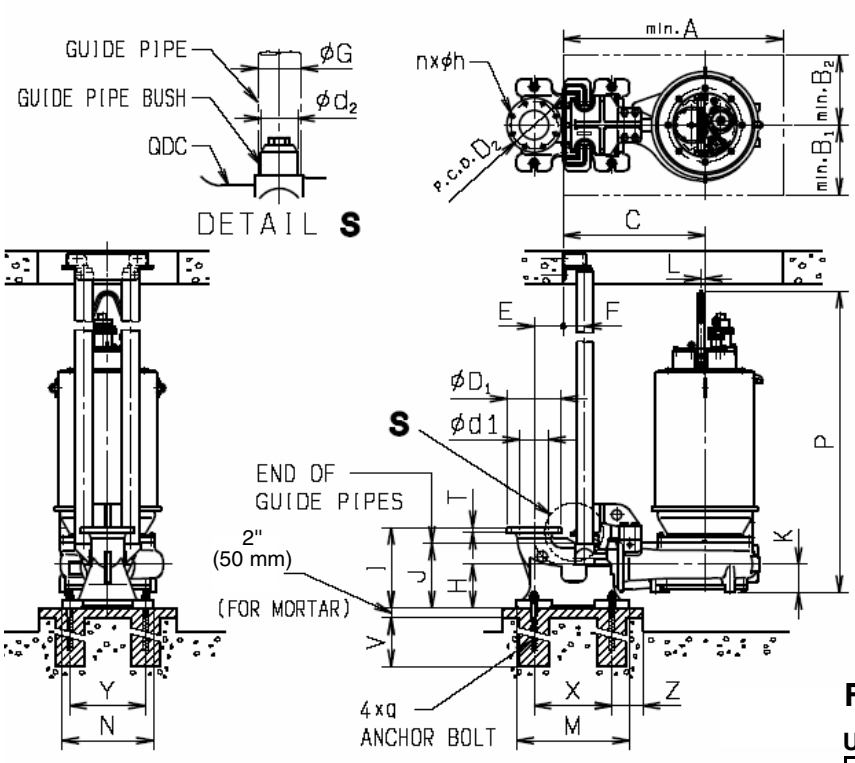
Notes:

†The weight of pump includes the weight of 50 ft. (15.25 m) of cables, and does not include the weight of the guide pipes and the water in pump.

Dimensions

Project: Model: Chk'd: Date:

Model 300DSC4 Model Code FO with Quick Discharge Connector



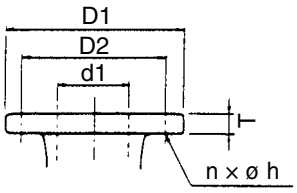
Weights†

Unit: lbs.

Model	HP	Pump	QDC
FO-66050	50	2279	507
FO-66060	60	2560	

Unit: kg

Model	kW	Pump	QDC
FO-66050	37	1034	230
FO-66060	45	1161	



Flange Detail

Unit: inches

D1	D2	T	n	h
19	17	1 1/4	12	1

Unit: mm

D1	D2	T	n	h
482.6	431.8	31.8	12	26

Unit: inches

Model	HP	d1	A	B1	B2	C	E	F	G	H	I	J
FO-66050	50	12	53 1/4	17 11/16	13 3/4	34 7/16	10 1/4	4 5/16	3 1/2	13	26	19 13/16
FO-66060	60											

Model	HP	K	L	M	N	P	V	X	Y	Z	q	d2
FO-66050	50	9 13/16	13/16	26 3/4	22 7/16	64 13/16	17 11/16	19 11/16	19 5/16	6 5/16	1	3
FO-66060	60					66 3/8						

Unit: mm

Model	kW	d1	A	B1	B2	C	E	F	G	H	I	J
FO-66050	37	300	1350	450	350	875	260	110	89.1	330	660	503
FO-66060	45											

Model	kW	K	L	M	N	P	V	X	Y	Z	q	d2
FO-66050	37	250	20	680	570	1646	450	500	490	160	24	75
FO-66060	45					1686						

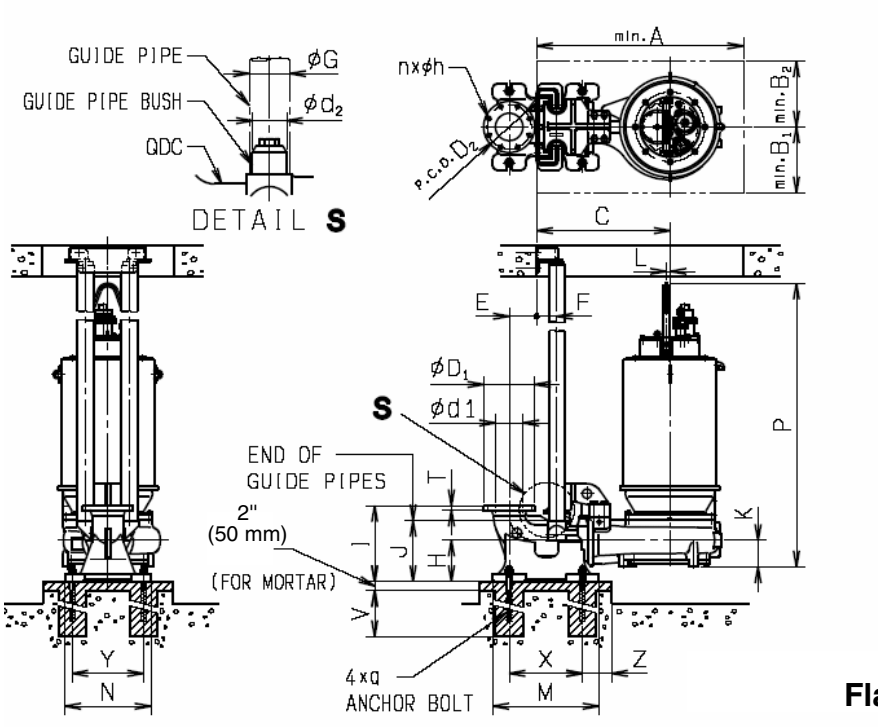
Notes:

†The weight of pump includes the weight of 50 ft. (15.25 m) of cables, and does not include the weight of the guide pipes and the water in pump.

Dimensions

Project: Model: Chk'd: Date:

Model 300DSC4 Model Code GO with Quick Discharge Connector



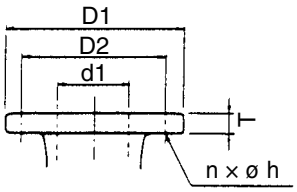
Weights†

Unit: lbs.

Model	HP	Pump	QDC
GO-66075	75	3119	508

Unit: kg

Model	kW	Pump	QDC
GO-66075	55	1415	230



Flange Detail

Unit: inches

D1	D2	T	n	h
19	17	1 1/4	12	1

Unit: mm

D1	D2	T	n	h
482.6	431.8	31.8	12	26

Unit: inches

Model	HP	d1	A	B1	B2	C	E	F	G	H	I	J
GO-66075	75	12	54 3/4	18 1/2	14 15/16	35 1/16	10 1/4	4 5/16	3 1/2	13	26	19 13/16

Model	HP	K	L	M	N	P	V	X	Y	Z	q	d2
GO-66075	75	9 13/16	1 3/16	26 3/4	22 7/16	71 3/4	17 11/16	19 11/16	19 5/16	6 5/16	1	3

Unit: mm

Model	kW	d1	A	B1	B2	C	E	F	G	H	I	J
GO-66075	55	300	1390	470	380	890	260	110	89.1	330	660	503

Model	kW	K	L	M	N	P	V	X	Y	Z	q	d2
GO-66075	55	250	30	680	570	1822	450	500	490	160	24	75

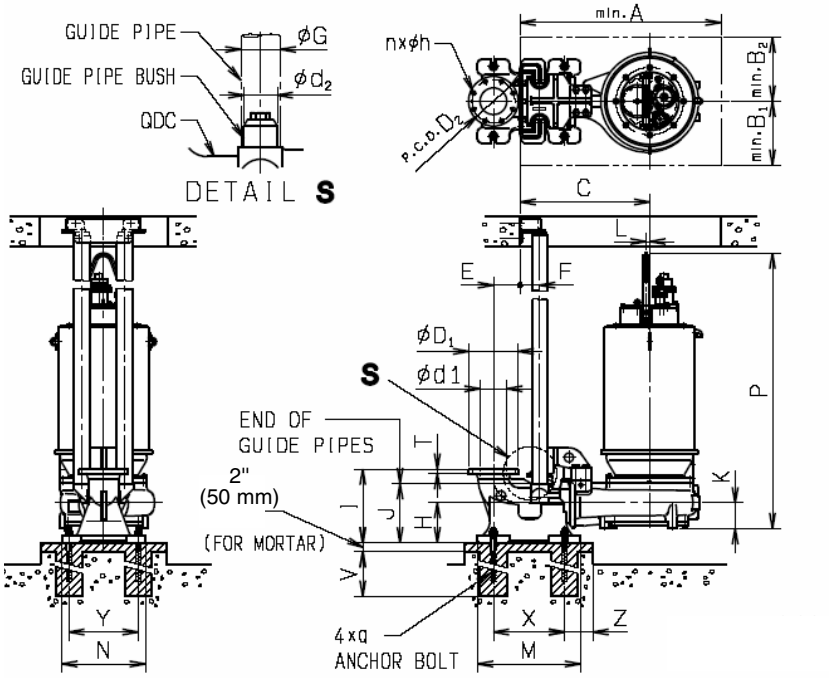
Notes:

†The weight of pump includes the weight of 50 ft. (15.25 m) of cables, and does not include the weight of the guide pipes and the water in pump.

Dimensions

Project: Model: Chk'd: Date:

Model 150DSC4 Model Code HO with Quick Discharge Connector



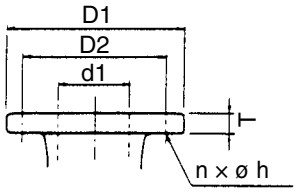
Weights†

Unit: lbs.

Model	HP	Pump	QDC
HO-46050	50	1904	243
HO-46060	60	1970	
HO-46075	75	2080	

Unit: kg

Model	kW	Pump	QDC
HO-46050	37	864	110
HO-46060	45	894	
HO-46075	55	944	



Flange Detail

Unit: inches

D1	D2	T	n	h
11	9 1/2	1	8	7/8

Unit: mm

D1	D2	T	n	h
279.4	241.3	25.4	8	23

Unit: inches

Model	HP	d1	A	B1	B2	C	E	F	G	H	I	J
HO-46050	50	6	44 1/2	14 3/16	14 3/16	28 3/4	5 7/8	4 5/16	3 1/2	8 7/8	16 5/16	13 1/8
HO-46060	60											
HO-46075	75											

Model	HP	K	L	M	N	P	V	X	Y	Z	q	d2
HO-46050	50	5 11/16	13/16	22 13/16	18 1/2	57 15/16	17 11/16	15 3/4	15 3/8	6 5/16	1	3
HO-46060	60					60 1/4						
HO-46075	75					61 7/8						

Unit: mm

Model	kW	d1	A	B1	B2	C	E	F	G	H	I	J
HO-46050	37	150	1130	360	360	730	150	110	89.1	225	415	333
HO-46060	45											
HO-46075	55											

Model	kW	K	L	M	N	P	V	X	Y	Z	q	d2
HO-46050	37	145	20	580	470	1471	450	400	390	160	24	75
HO-46060	45					1531						
HO-46075	55					1571						

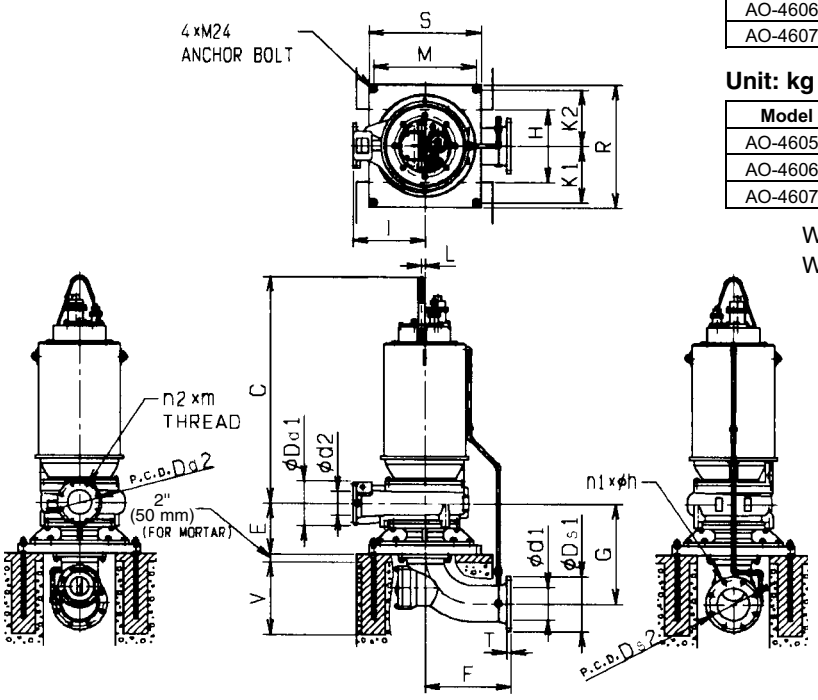
Notes:

†The weight of pump includes the weight of 50 ft. (15.25 m) of cables, and does not include the weight of the guide pipes and the water in pump.

Dimensions

Project: Model: Chk'd: Date:

Model 200×150DSCA4 Model Code AO Drypit Application



Weights

Unit: lbs.

Model	HP	W1	W2	W3	W4
AO-46050	50	2031	220	463	265
AO-46060	60	2087			287
AO-46075	75	2208			287

Unit: kg

Model	kW	W1	W2	W3	W4
AO-46050	37	921	100	210	120
AO-46060	45	951			130
AO-46075	55	1002			130

W1: Pump weight† W3: Base weight
W2: Suction elbow weight W4: Water in pump weight

Suction Flange

Unit: inches

Ds1	Ds2	T	n1	h
13 1/2	11 3/4	1	8	7/8

Unit: mm

Ds1	Ds2	T	n1	h
342.9	298.4	28.5	8	23

Discharge Flange

Unit: inches

Dd1	Dd2	n2	m
11	9 1/2	8	3/4–10UNC

Unit: mm

Dd1	Dd2	n2	m
280	241.3	8	3/4–10UNC

Unit: inches

Model	HP	d1	d2	C	E	F	G	H	I
AO-46050	50	8	6	51 1/2	12 7/16	21 1/4	24 1/2	17 11/16	17 11/16
AO-46060	60			53 3/4					
AO-46075	75			55 1/4					

Model	HP	K1	K2	L	M	R	S	V
AO-46050	50	13 3/4	13 3/4	13/16	25 3/16	29 15/16	27 9/16	17 11/16
AO-46060	60							
AO-46075	75							

Unit: mm

Model	kW	d1	d2	C	E	F	G	H	I
AO-46050	37	200	150	1306	316	540	621	450	450
AO-46060	45			1366					
AO-46075	55			1406					

Model	kW	K1	K2	L	M	R	S	V
AO-46050	37	350	350	20	640	760	700	450
AO-46060	45							
AO-46075	55							

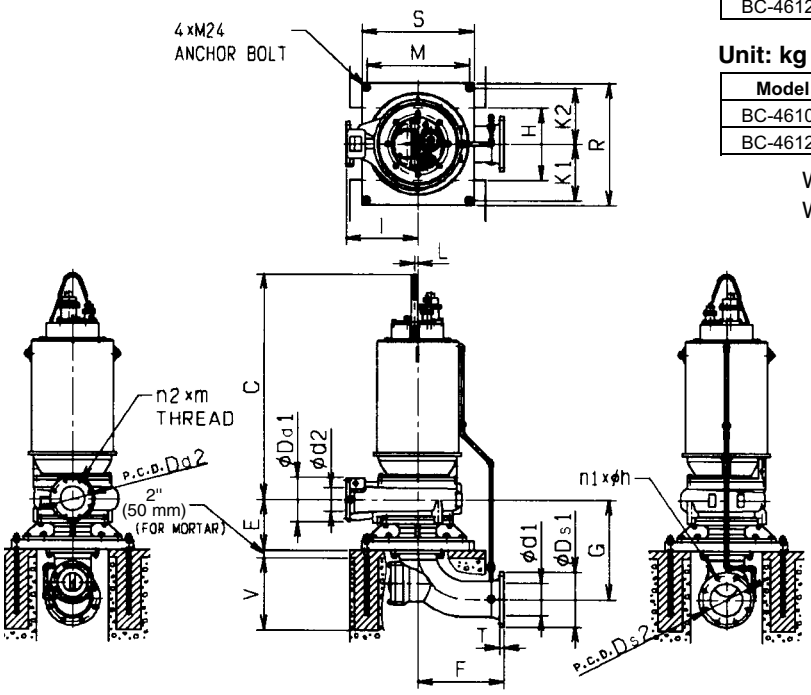
Notes:

†The weight of pump includes the weight of 50 ft. (15.25 m) of cables, and does not include the weight of the guide pipes and the water in pump.

Dimensions

Project: Model: Chk'd: Date:

Model 200×150DSCA4 Model Code BC Drypit Application



Weights

Unit: lbs.

Model	HP	W1	W2	W3	W4
BC-46100	100	2450	220	463	287
BC-46120	120	3040			

Unit: kg

Model	kW	W1	W2	W3	W4
BC-46100	75	1111	100	210	130
BC-46120	90	1379			

W1: Pump weight† W3: Base weight
W2: Suction elbow weight W4: Water in pump weight

Suction Flange

Unit: inches

Ds1	Ds2	T	n1	h
13 1/2	11 3/4	1	8	7/8

Unit: mm

Ds1	Ds2	T	n1	h
342.9	298.4	28.5	8	23

Discharge Flange

Unit: inches

Dd1	Dd2	n2	m
11	9 1/2	8	3/4–10UNC

Unit: mm

Dd1	Dd2	n2	m
280	241.3	8	3/4–10UNC

Unit: inches

Model	HP	d1	d2	C	E	F	G	H	I
BC-46100	100	8	6	58 1/2	12 7/16	21 1/4	24 7/16	17 11/16	17 11/16
BC-46120	120			61 11/16					

Model	HP	K1	K2	L	M	R	S	V
BC-46100	100	13 3/4	13 3/4	13/16	25 3/16	29 15/16	27 9/16	17 11/16
BC-46120	120			1 3/16				

Unit: mm

Model	kW	d1	d2	C	E	F	G	H	I
BC-46100	75	200	150	1486	316	540	621	450	450
BC-46120	90			1567					

Model	kW	K1	K2	L	M	R	S	V
BC-46100	75	350	350	20	640	760	700	450
BC-46120	90			30				

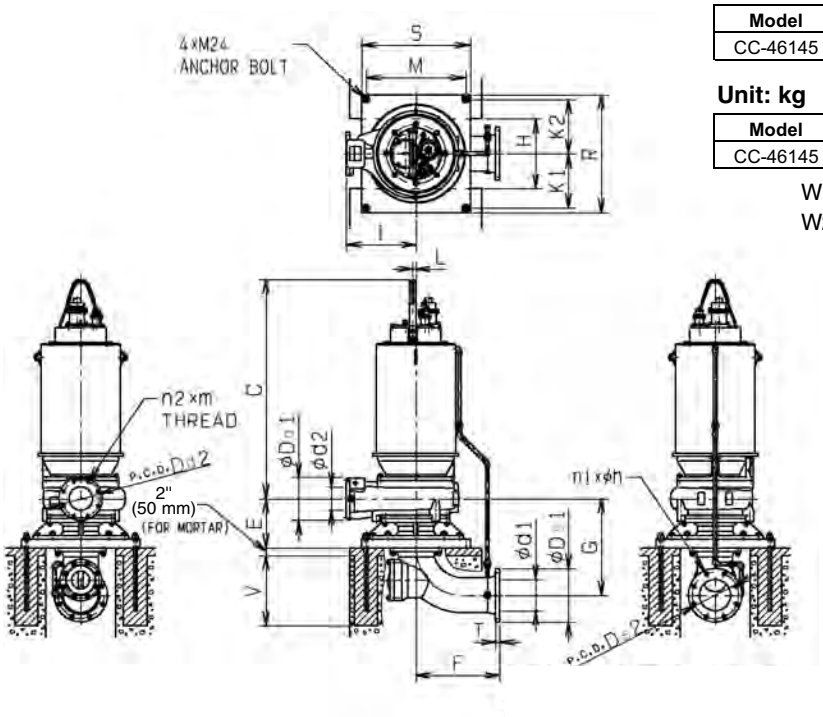
Notes:

†The weight of pump includes the weight of 50 ft. (15.25 m) of cables, and does not include the weight of the guide pipes and the water in pump.

Dimensions

Project: Model: Chk'd: Date:

Model 200×150DSCA4 Model Code CC
Drypit Application



Weights

Unit: lbs.

Model	HP	W1	W2	W3	W4
CC-46145	145	3353	220	463	309

Unit: kg

Model	kW	W1	W2	W3	W4
CC-46145	110	1521	100	210	140

W1: Pump weight† W3: Base weight
W2: Suction elbow weight W4: Water in pump weight

Suction Flange

Unit: inches

Ds1	Ds2	T	n1	h
13 1/2	11 3/4	1	8	7/8

Unit: mm

Ds1	Ds2	T	n1	h
342.9	298.4	28.5	8	23

Discharge Flange

Unit: inches

Dd1	Dd2	n2	m
11	9 1/2	8	3/4–10UNC

Unit: mm

Dd1	Dd2	n2	m
280	241.3	8	3/4–10UNC

Unit: inches

Model	HP	d1	d2	C	E	F	G	H	I
CC-46145	145	8	6	65 1/4	12 7/16	21 1/4	24 1/2	17 11/16	19 11/16

Model	HP	K1	K2	L	M	R	S	V
CC-46145	145	13 3/4	13 3/4	1 3/16	25 3/16	29 15/16	27 9/16	17 11/16

Unit: mm

Model	kW	d1	d2	C	E	F	G	H	I
CC-46145	110	200	150	1657	316	540	621	450	500

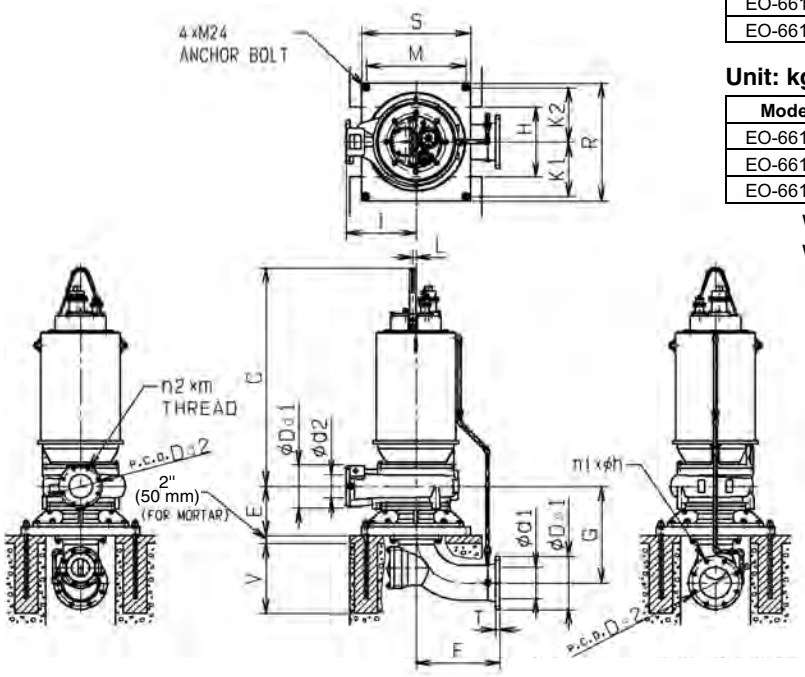
Model	kW	K1	K2	L	M	R	S	V
CC-46145	110	350	350	30	640	760	700	450

Notes:
†The weight of pump includes the weight of 50 ft. (15.25 m) of cables, and does not include the weight of the guide pipes and the water in pump.

Dimensions

Project: Model: Chk'd: Date:

Model 400×250DSCA4 Model Code EO Drypit Application



Weights

Unit: lbs.

Model	HP	W1	W2	W3	W4
EO-66100	100	3618	529	794	728
EO-66120	120	3658			705
EO-66145	145	3882			705

Unit: kg

Model	kW	W1	W2	W3	W4
EO-66100	75	1641	240	360	330
EO-66120	90	1659			320
EO-66145	110	1761			320

W1: Pump weight† W3: Base weight
W2: Suction elbow weight W4: Water in pump weight

Suction Flange

Unit: inches

Ds1	Ds2	T	n1	h
23 1/2	21 1/4	1 7/16	16	1

Unit: mm

Ds1	Ds2	T	n1	h
596.9	539.8	36.6	16	29

Discharge Flange

Unit: inches

Dd1	Dd2	n2	m
16	14 1/4	12	7/8–9UNC

Unit: mm

Dd1	Dd2	n2	m
406	362	12	7/8–9UNC

Unit: inches

Model	HP	d1	d2	C	E	F	G	H	I
EO-66100	100	16	10	65 7/16	16 3/4	25 1/4	40 3/8	29 1/2	23 5/8
EO-66120	120			67 3/8					
EO-66145	145			70 9/16					

Model	HP	K1	K2	L	M	R	S	V
EO-66100	100	19 11/16	19 11/16	1 3/16	31 1/8	41 3/4	33 7/16	17 11/16
EO-66120	120							
EO-66145	145							

Unit: mm

Model	kW	d1	d2	C	E	F	G	H	I
EO-66100	75	400	250	1662	426	640	1026	750	600
EO-66120	90			1712					
EO-66145	110			1792					

Model	kW	K1	K2	L	M	R	S	V
EO-66100	75	500	500	30	790	1060	850	450
EO-66120	90							
EO-66145	110							

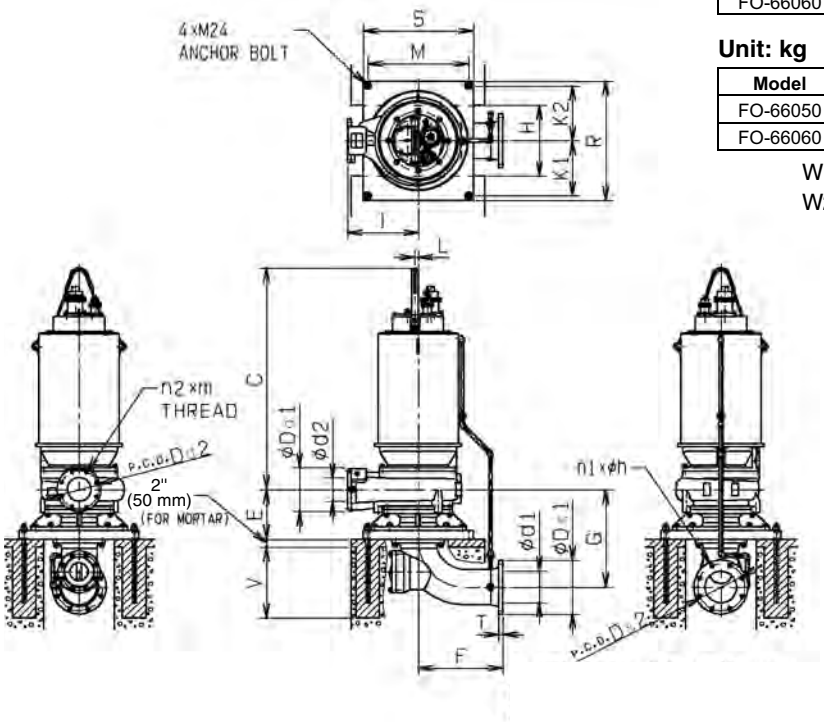
Notes:

†The weight of pump includes the weight of 50 ft. (15.25 m) of cables, and does not include the weight of the guide pipes and the water in pump.

Dimensions

Project: Model: Chk'd: Date:

Model 400×300DSCA4 Model Code FO Drypit Application



Weights

Unit: lbs.

Model	HP	W1	W2	W3	W4
FO-66050	50	2500	529	794	661
FO-66060	60	2781			

Unit: kg

Model	kW	W1	W2	W3	W4
FO-66050	37	1134	240	360	300
FO-66060	45	1261			

W1: Pump weight† W3: Base weight
W2: Suction elbow weight W4: Water in pump weight

Suction Flange

Unit: inches

Ds1	Ds2	T	n1	h
23 1/2	21 1/4	1 7/16	16	1

Unit: mm

Ds1	Ds2	T	n1	h
596.9	539.8	36.6	16	29

Discharge Flange

Unit: inches

Dd1	Dd2	n2	m
19	17	12	7/8–9UNC

Unit: mm

Dd1	Dd2	n2	m
483	431.8	12	7/8–9UNC

Unit: inches

Model	HP	d1	d2	C	E	F	G	H	I
FO-66050	50	16	12	54 15/16	16 3/4	25 3/16	40 3/8	29 1/2	22 1/4
FO-66060	60			56 9/16					

Model	HP	K1	K2	L	M	R	S	V
FO-66050	50	19 11/16	19 11/16	13/16	31 1/8	41 3/4	33 7/16	17 11/16
FO-66060	60							

Unit: mm

Model	kW	d1	d2	C	E	F	G	H	I
FO-66050	37	400	300	1396	426	640	1026	750	565
FO-66060	45			1436					

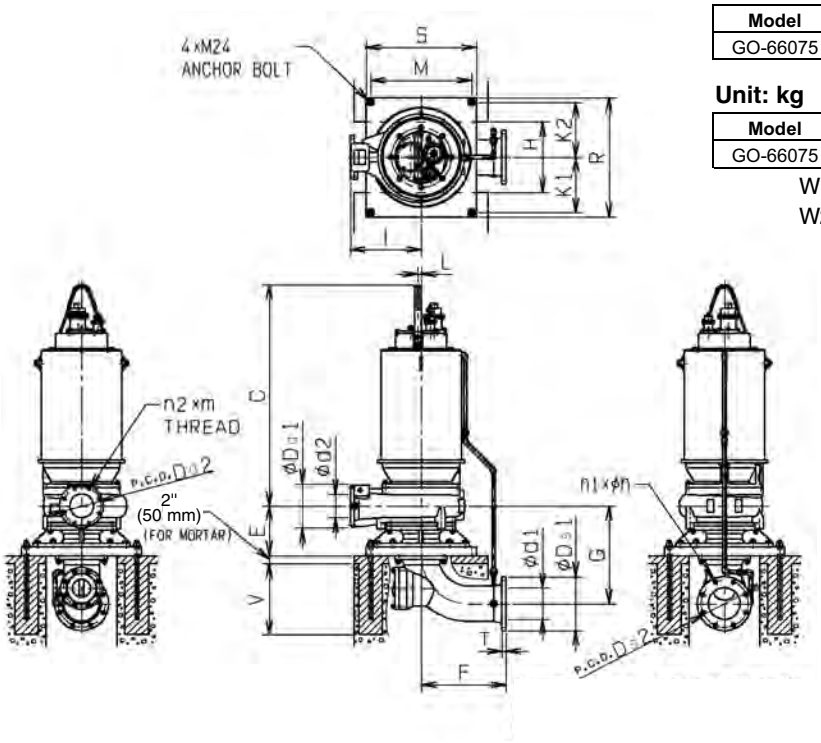
Model	kW	K1	K2	L	M	R	S	V
FO-66050	37	500	500	20	790	1060	850	450
FO-66060	45							

Notes:
†The weight of pump includes the weight of 50 ft. (15.25 m) of cables, and does not include the weight of the guide pipes and the water in pump.

Dimensions

Project: Model: Chk'd: Date:

Model 400×300DSCA4 Model Code GO
Drypit Application



Weights

Unit: lbs.

Model	HP	W1	W2	W3	W4
GO-66075	75	3119	508	796	685

Unit: kg

Model	kW	W1	W2	W3	W4
GO-66075	55	1415	230	360	310

W1: Pump weight† W3: Base weight
W2: Suction elbow weight W4: Water in pump weight

Suction Flange

Unit: inches

Ds1	Ds2	T	n1	h
23 1/2	21 1/4	1 7/16	16	1

Unit: mm

Ds1	Ds2	T	n1	h
596.9	539.8	36.6	16	29

Discharge Flange

Unit: inches

Dd1	Dd2	n2	m
19	17	12	7/8–9UNC

Unit: mm

Dd1	Dd2	n2	m
483	431.8	12	7/8–9UNC

Unit: inches

Model	HP	d1	d2	C	E	F	G	H	I
GO-66075	75	16	12	61 7/8	16 3/4	25 3/16	40 3/8	29 1/2	22 13/16

Model	HP	K1	K2	L	M	R	S	V
GO-66075	75	19 11/16	19 11/16	1 1/4	31 1/8	41 3/4	33 7/16	17 11/16

Unit: mm

Model	kW	d1	d2	C	E	F	G	H	I
GO-66075	55	400	300	1572	426	640	1026	750	580

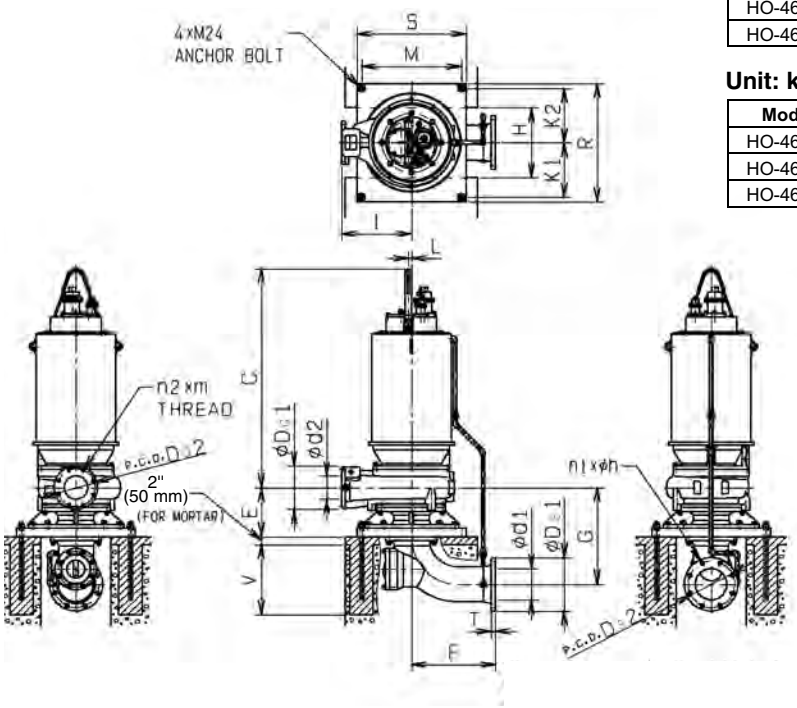
Model	kW	K1	K2	L	M	R	S	V
GO-66075	55	500	500	30	790	1060	850	450

Notes:
†The weight of pump includes the weight of 50 ft. (15.25 m) of cables, and does not include the weight of the guide pipes and the water in pump.

Dimensions

Project: Model: Chk'd: Date:

Model 200×150DSCA4 Model Code HO Drypit Application



Weights

Unit: lbs.

Model	HP	W1	W2	W3	W4
HO-46050	50	2169	221	464	309
HO-46060	60	2235			265
HO-46075	75	2345			265

Unit: kg

Model	kW	W1	W2	W3	W4
HO-46050	37	984	100	210	140
HO-46060	45	1014			120
HO-46075	55	1064			120

W1: Pump weight† W3: Base weight
W2: Suction elbow weight W4: Water in pump weight

Suction Flange

Unit: inches

Ds1	Ds2	T	n1	h
13 1/2	11 3/4	1	8	7/8

Unit: mm

Ds1	Ds2	T	n1	h
342.9	298.4	28.5	8	23

Discharge Flange

Unit: inches

Dd1	Dd2	n2	m
11	9 1/2	8	3/4–10UNC

Unit: mm

Dd1	Dd2	n2	m
280	241.3	8	3/4–10UNC

Unit: inches

Model	HP	d1	d2	C	E	F	G	H	I
HO-46050	50	8	6	52 3/16	12 7/16	21 1/4	24 7/16	17 11/16	17 11/16
HO-46060	60			54 9/16					
HO-46075	75			56 1/8					

Model	HP	K1	K2	L	M	R	S	V
HO-46050	50	13 3/4	13 3/4	13/16	25 3/16	29 15/16	27 9/16	17 11/16
HO-46060	60							
HO-46075	75							

Unit: mm

Model	kW	d1	d2	C	E	F	G	H	I
HO-46050	37	200	150	1326	316	540	621	450	450
HO-46060	45			1386					
HO-46075	55			1426					

Model	kW	K1	K2	L	M	R	S	V
HO-46050	37	350	350	20	640	760	700	450
HO-46060	45							
HO-46075	55							

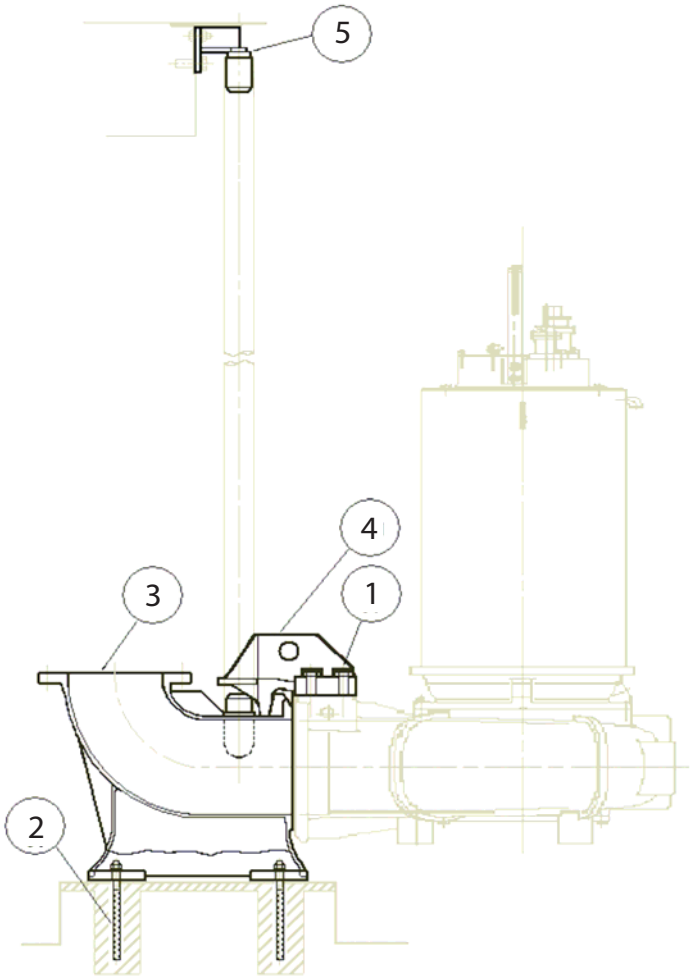
Notes:

†The weight of pump includes the weight of 50 ft. (15.25 m) of cables, and does not include the weight of the guide pipes and the water in pump.

Dimensions

Project: Model: Chk'd: Date:

QDC (Quick Discharge Connector) for Model DSC4

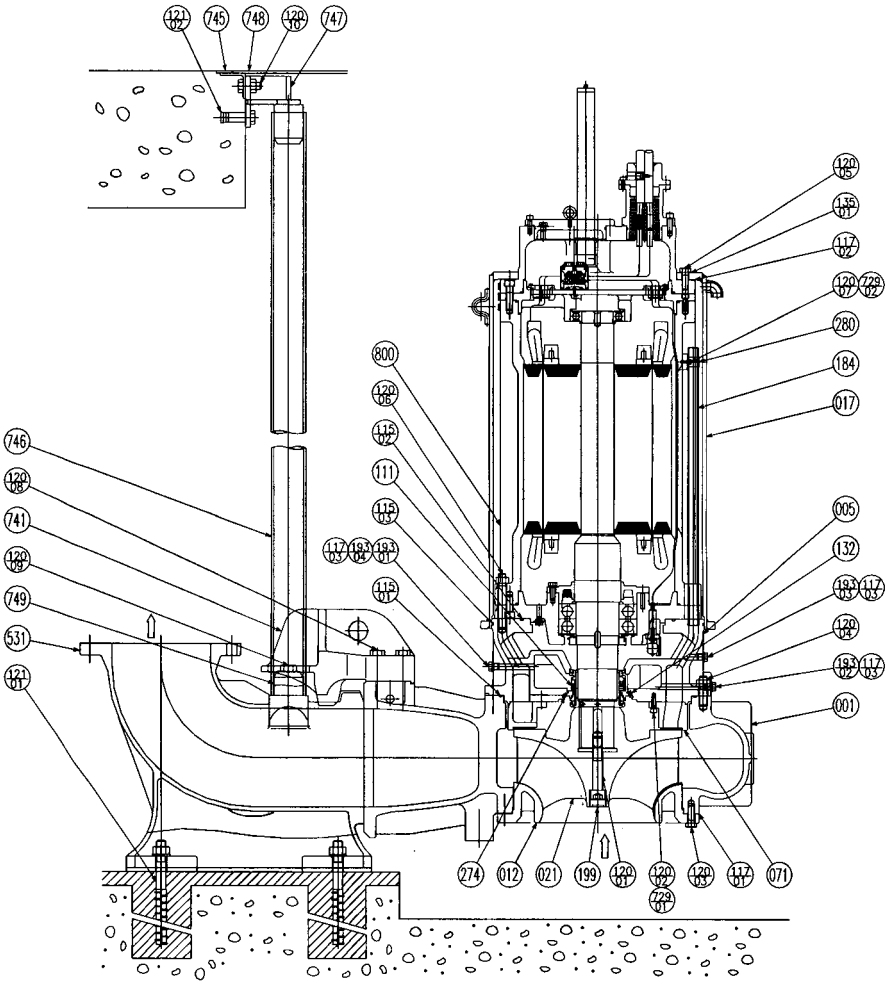


Part #	Part name	Material	Number for set
1	Bolt	Stainless steel	4
2	Anchor bolt, nut, washer	Stainless steel	4
3	Quick discharge connector	Cast iron	1
4	Sliding guide	Ductile iron	1
5	Guide pipe support	Carbon steel	1

Sectional View

Project: Model: Chk'd: Date:

Model DSC4 with Quick Discharge Connector
Semi-Open Impeller



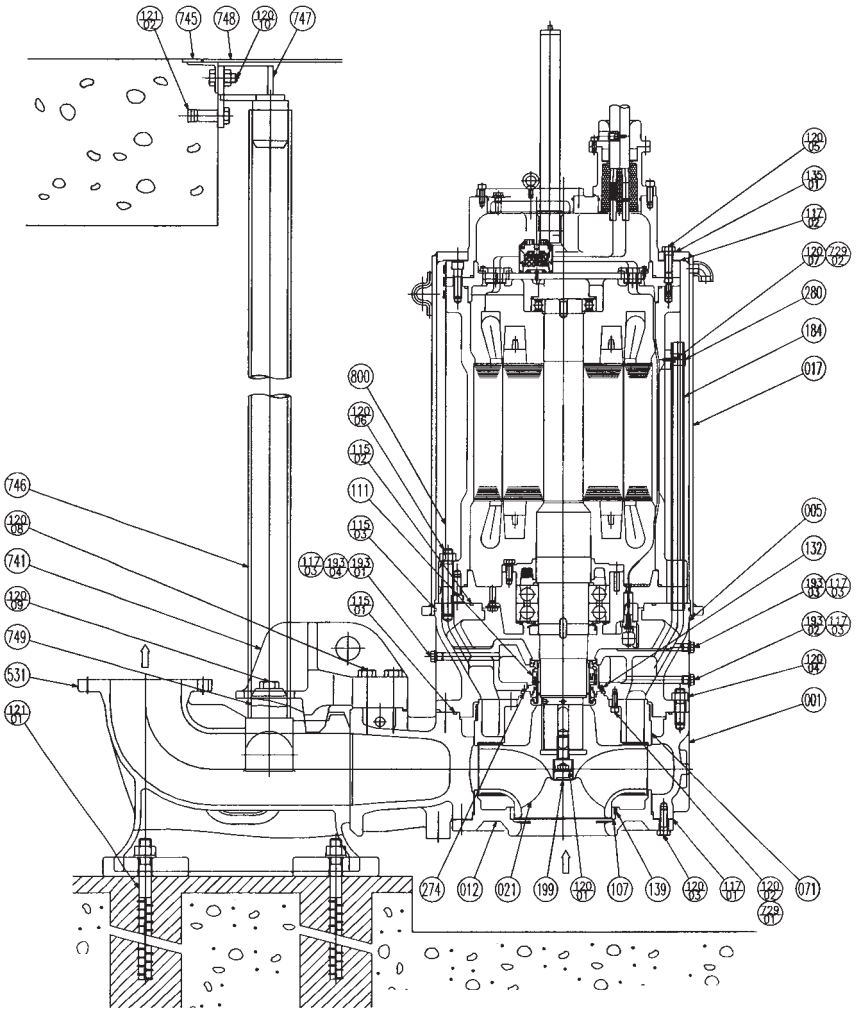
Part No.	Part Name	Material	No. for 1 Unit
800	Motor	–	1 Set
749	Guide Pipe Bush	AISI 304	2
748	Floor Plate	ASTM A283	1
747	Guide Pipe Holder	ASTM A283	1
746	Guide Pipe	AISI 304	2
745	Floor Frame	ASTM A283	1
741	Sliding Guide	ASTM 536	1
729-02	Spring Washer	AISI 304	4
729-01	Spring Washer	AISI 304	6
531	Quick Discarge Connector	ASTM A48 CL35	1
280	Pipe Clamp	AISI 304	2
274	Snap Ring	AISI 304	1
199	Impeller Bolt Cap	ASTM A48 CL30	1
193-04	Plug (Air Vent)	AISI 304	1
193-03	Plug (Leak Check)	AISI 304	1
193-02	Plug (Oil Drain)	AISI 304	1
193-01	Plug (Oil Port)	AISI 304	1
184	Cooling Water Pipe	SGP	2
135-01	Seal Washer	AISI304/NBR	12
132	Parallel Pin	AISI 304	2
121-02	Hole-in Anchor	AISI 304	2
121-01	Anchor Bolt	AISI 304	4
120-10	Holder Bolt	AISI 304	2
120-09	Hex. Head Bolt	AISI 304	2
120-08	Hex. Head Bolt	AISI 304	4
120-07	Hex. Head Bolt	AISI 304	4
120-06	Stud Bolt/Nut	AISI 304	8
120-05	Hex. Head Bolt	AISI 304	12
120-04	Stud Bolt/Nut	AISI 304	12
120-03	Hex. Head Bolt	AISI 304	16
120-02	Hex. Socket Cap Screw	AISI 304	6
120-01	Impeller Bolt	AISI 403	1
117-03	Sheet Gasket	–	4
117-02	Sheet Gasket	NBR	1
117-01	Sheet Gasket	Non-Asbestos	1 Set
115-03	O-Ring	NBR	1
115-02	O-Ring	NBR	1
115-01	O-Ring	NBR	1
111	Mechanical Seal	–	1 Set
071	Side Plate	ASTM A48 CL35	1
021	Impeller	ASTM A48 CL35	1
017	Cooling Jacket	ASTM A283 Gr. D	1
012	Suction Cover	ASTM A48 CL35	1
005	Intermediate Casing	ASTM A48 CL35	1
001	Pump Casing	ASTM A48 CL35	1

For reference only;
consult spare parts pricing for available spare parts

Sectional View

Project: Model: Chk'd: Date:

Model DSC4 with Quick Discharge Connector
Enclosed Impeller



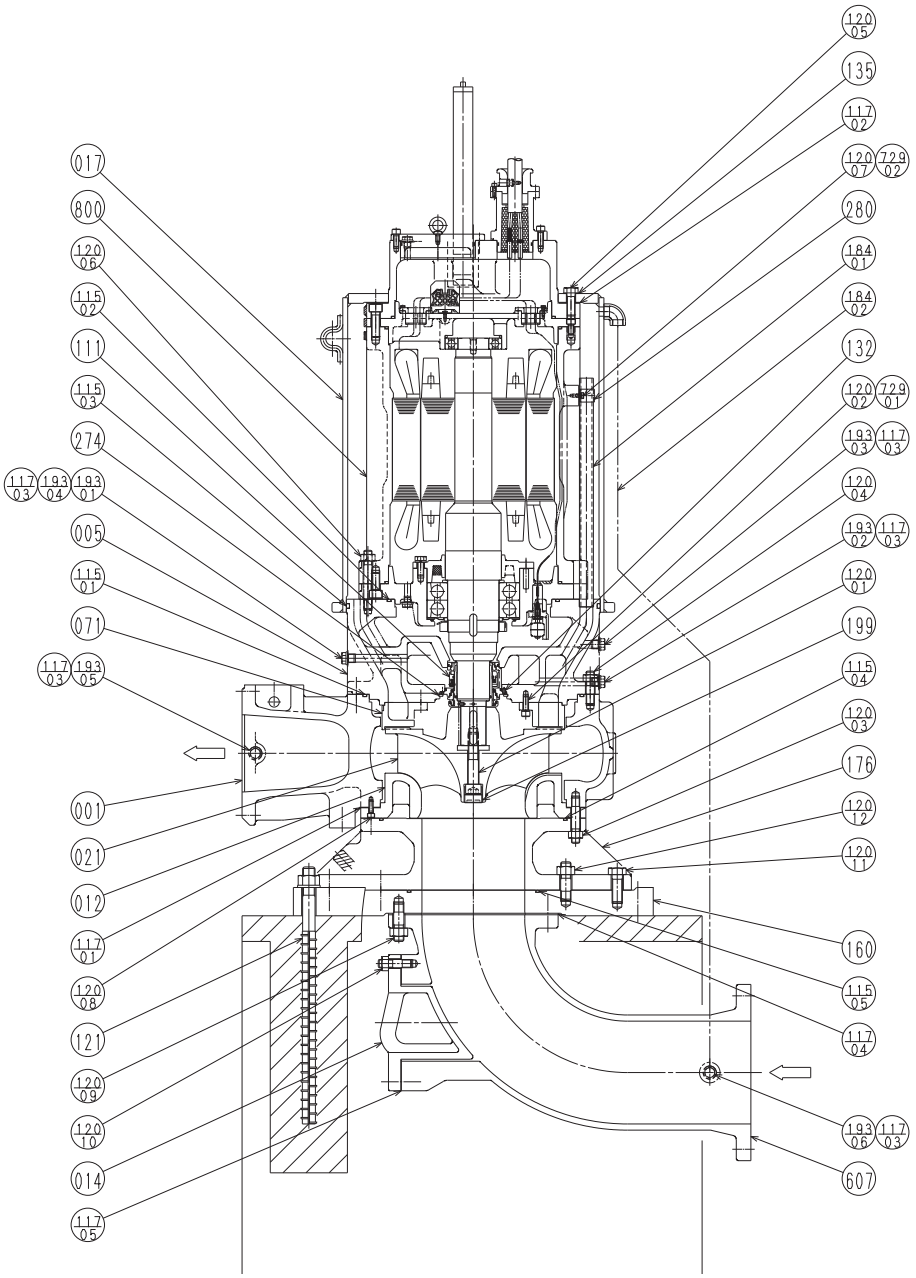
Part No.	Part Name	Material	No. for 1 Unit
800	Motor	–	1 Set
749	Guide Pipe Bush	AISI 304	2
748	Floor Plate	ASTM A283	1
747	Guide Pipe Holder	ASTM A283	1
746	Guide Pipe	AISI 304	2
745	Floor Frame	ASTM A283	1
741	Sliding Guide	ASTM 536	1
729-02	Spring Washer	AISI 304	4
729-01	Spring Washer	AISI 304	6
531	Quick Discarge Connector	ASTM A48 CL35	1
280	Pipe Clamp	AISI 304	2
274	Snap Ring	AISI 304	1
199	Impeller Bolt Cap	ASTM A48 CL30	1
193-04	Plug (Air Vent)	AISI 304	1
193-03	Plug (Leak Check)	AISI 304	1
193-02	Plug (Oil Drain)	AISI 304	1
193-01	Plug (Oil Port)	AISI 304	1
184	Cooling Water Pipe	SGP	2
139	Spring Pin	AISI 304	2
135-01	Seal Washer	AISI304/NBR	12
132	Parallel Pin	AISI 304	2
121-02	Hole-in Anchor	AISI 304	2
121-01	Anchor Bolt	AISI 304	4
120-10	Holder Bolt	AISI 304	2
120-09	Hex. Head Bolt	AISI 304	2
120-08	Hex. Head Bolt	AISI 304	4
120-07	Hex. Head Bolt	AISI 304	4
120-06	Stud Bolt/Nut	AISI 304	8
120-05	Hex. Head Bolt	AISI 304	12
120-04	Stud Bolt/Nut	AISI 304	12
120-03	Hex. Head Bolt	AISI 304	16
120-02	Hex. Socket Cap Screw	AISI 304	6
120-01	Impeller Bolt	AISI 403	1
117-03	Sheet Gasket	–	4
117-02	Sheet Gasket	NBR	1
117-01	Sheet Gasket	Non-Asbestos	1
115-03	O-Ring	NBR	1
115-02	O-Ring	NBR	1
115-01	O-Ring	NBR	1
111	Mechanical Seal	–	1 Set
107	Casing Ring	SUS420	
071	Side Plate	ASTM A48 CL35	1
021	Impeller	ASTM A48 CL35	1
017	Cooling Jacket	ASTM A283 Gr. D	1
012	Suction Cover	ASTM A48 CL35	1
005	Intermediate Casing	ASTM A48 CL35	1
001	Pump Casing	ASTM A48 CL35	1

For reference only;
consult spare parts pricing for available spare parts

Sectional View

Project: Model: Chk'd: Date:

Model DSCA4 Drypit Application
Semi-Open Impeller



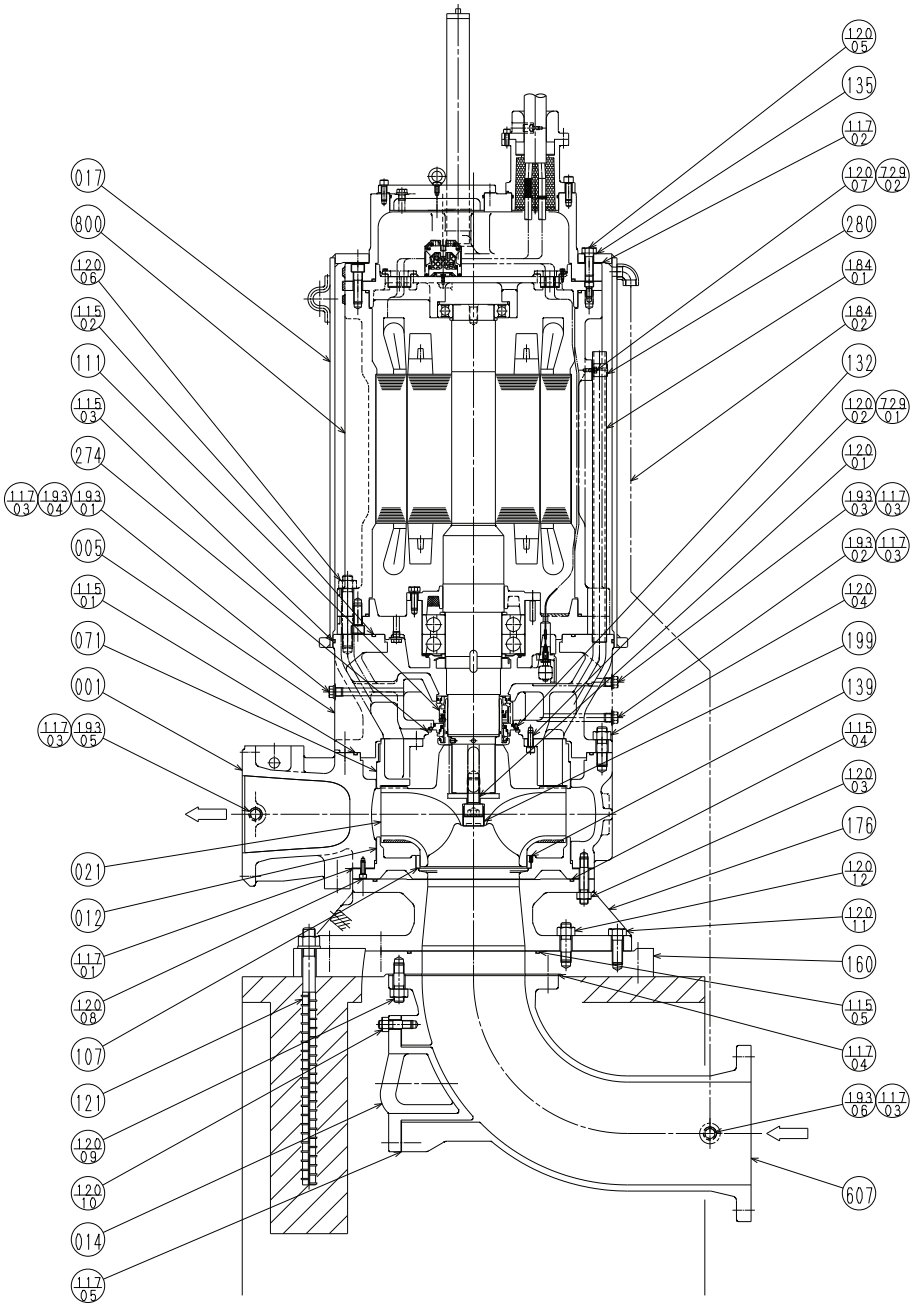
Part No.	Part Name	Material	No. for 1 Unit
800	Motor	–	1 Set
729-02	Spring Washer	AISI 304	4
729-01	Spring Washer	AISI 304	6
607	Suction Elbow	ASTM A48 CL35	1
280	Pipe Clamp	AISI 304	2
274	Snap Ring	AISI 304	1
199	Impeller Bolt Cap	ASTM A48 CL35	1
193-06	Plug (Gauge Connection)	AISI 304	1
193-05	Plug (Gauge Connection)	AISI 304	1
193-04	Plug (Air Vent)	AISI 304	1
193-03	Plug (Leak Check)	AISI 304	1
193-02	Plug (Oil Drain)	AISI 304	1
193-01	Plug (Oil Port)	AISI 304	1
184-02	Return Pipe	SGP/FCMB	1 Set
184-01	Cooling Water Pipe	SGP	2
176	Suction Stand	ASTM A48 CL35	1
160	Base	ASTM A283	1
135	Seal Washer	AISI304/NBR	8
132	Parallel Pin	SUS420	2
121	Anchor Bolt	SD295A	4
120-12	Stud Bolt/Nut	ASTM A283	8
120-11	Hex. Head Bolt	ASTM A283	8
120-10	Stud Bolt/Nut	ASTM A283	8
120-09	Stud Bolt/Nut	ASTM A283	12
120-08	Hex. Socket Cap Screw	AISI 304	4
120-07	Hex. Head Bolt	AISI 304	4
120-06	Stud Bolt/Nut	AISI 304	8
120-05	Hex. Head Bolt	AISI 304	8
120-04	Stud Bolt/Nut	AISI 304	12
120-03	Stud Bolt/Nut	ASTM A283	12
120-02	Hex. Socket Cap Screw	AISI 304	6
120-01	Impeller Bolt	AISI 403	1
117-05	Sheet Gasket	Non-Asbestos	1
117-04	Sheet Gasket	Non-Asbestos	1
117-03	Sheet Gasket	–	6
117-02	Sheet Gasket	NBR	1
117-01	Sheet Gasket	Non-Asbestos	1 Set
115-05	O-Ring	NBR	1
115-04	O-Ring	NBR	1
115-03	O-Ring	NBR	1
115-02	O-Ring	NBR	1
115-01	O-Ring	NBR	1
111	Mechanical Seal	–	1 Set
071	Side Plate	ASTM A48 CL35	1
021	Impeller	ASTM A48 CL35	1
017	Cooling Jacket	ASTM A283 Gr. D	1
014	Handhole Cover	ASTM A48 CL35	1
012	Suction Cover	ASTM A48 CL35	1
005	Intermediate Casing	ASTM A48 CL35	1
001	Pump Casing	ASTM A48 CL35	1

For reference only;
consult spare parts pricing for available spare parts

Sectional View

Project: Model: Chk'd: Date:

Model DSCA4 Drypit Application
Enclosed Impeller



Part No.	Part Name	Material	No. for 1 Unit
800	Motor	–	1 Set
729-02	Spring Washer	AISI 304	4
729-01	Spring Washer	AISI 304	6
607	Suction Elbow	ASTM A48 CL35	1
280	Pipe Clamp	AISI 304	2
274	Snap Ring	AISI 304	1
199	Impeller Bolt Cap	FC200	1
193-06	Plug (Gauge Connection)	AISI 304	1
193-05	Plug (Gauge Connection)	AISI 304	1
193-04	Plug (Air Vent)	AISI 304	1
193-03	Plug (Leak Check)	AISI 304	1
193-02	Plug (Oil Drain)	AISI 304	1
193-01	Plug (Oil Port)	AISI 304	1
184-02	Return Pipe	SGP/FCMB	1 Set
184-01	Cooling Water Pipe	SGP	2
176	Suction Stand	ASTM A48 CL35	1
160	Base	ASTM A283	1
139	Spring Pin	AISI 304	2
135	Seal Washer	AISI304/NBR	8
132	Parallel Pin	SUS420	2
121	Anchor Bolt	SD295A	4
120-12	Stud Bolt/Nut	ASTM A283	8
120-11	Hex. Head Bolt	ASTM A283	8
120-10	Stud Bolt/Nut	ASTM A283	8
120-09	Stud Bolt/Nut	ASTM A283	12
120-08	Hex. Socket Cap Screw	AISI 304	4
120-07	Hex. Head Bolt	AISI 304	4
120-06	Stud Bolt/Nut	AISI 304	8
120-05	Hex. Head Bolt	AISI 304	12
120-04	Stud Bolt/Nut	AISI 304	12
120-03	Stud Bolt/Nut	ASTM A283	16
120-02	Hex. Socket Cap Screw	AISI 304	6
120-01	Impeller Bolt	AISI 403	1
117-05	Sheet Gasket	Non-Asbestos	1
117-04	Sheet Gasket	Non-Asbestos	1
117-03	Sheet Gasket	–	6
117-02	Sheet Gasket	NBR	1
117-01	Sheet Gasket	Non-Asbestos	1 Set
115-05	O-Ring	NBR	1
115-04	O-Ring	NBR	1
115-03	O-Ring	NBR	1
115-02	O-Ring	NBR	1
115-01	O-Ring	NBR	1
111	Mechanical Seal	–	1 Set
107	Casing Ring	SUS420	1
071	Side Plate	ASTM A48 CL35	1
021	Impeller	ASTM A48 CL35	1
017	Cooling Jacket	ASTM A283 Gr. D	1
014	Handhole Cover	ASTM A48 CL35	1
012	Suction Cover	ASTM A48 CL35	1
005	Intermediate Casing	ASTM A48 CL35	1
001	Pump Casing	ASTM A48 CL35	1

For reference only;
consult spare parts pricing for available spare parts

Motor Specifications

Project: Model: Chk'd: Date:

1. MOTOR SPECIFICATIONS

Type	Air-filled watertight three phase induction motor
Frequency and Voltage	60Hz, 460V
Insulation class	H
Service factor	1.15
Max. allowable starts	15 per hour
Protection	Thermal detector for each phase
	Float type leakage detector
	Thermal detector for thrust bearing (optional)

2. STARTING METHOD

Direct on line (DOL) starting and variable frequency drive (VFD) starting apply to Ebara submersible motor pump, type DSC4.

If a VFD drive is selected, minimum frequency is 30Hz.

3. CABLE

Watertight rubber-insulated flexible cable conforming to UL & CSA is provided.
Detailed specifications are shown in **Table 5-2 CABLE DATA.**
Cables provided for the motor consist of the following:

Protection : AWG #14/5C (AWG#14/8C if thermal detector for thrust bearing is required)
Power supply : See **Table 5-1 MOTOR DATA.**

Standard length of cables : 50 ft. (15.25 m.)

Electrical Data

Project: Model: Chk'd: Date:

Table 5-1 Motor Data 60Hz 460V

1800 RPM

(Data listed are design values)

POLE	kW	HP	Frame	Full load (A)	Efficiency (%)			Power factor (%)		
					½ Load	¾ Load	1/1Load	½ Load	¾ Load	1/1 Load
4	37	50	315	65	80.4	84.2	85.9	71.5	79.5	82.9
	45	60	315	77	82.3	85.9	87.2	72.4	80.3	83.7
	55	75	315	93	83.7	87.0	88.2	72.9	80.6	83.8
	75	100	315	124	85.1	88.0	89.0	76.0	82.8	85.1
	90	120	380	144	85.0	88.3	89.6	77.2	84.5	87.4
	110	145	380	176	85.7	88.9	90.2	75.4	83.4	86.9

POLE	kW	HP	Start Current (%)	Start Torque(%)	Mech. Seal size	Cable size	Bearing	
							Lower	Upper
4	37	50	570	227	63	4	7220BDB	6212ZZ
	45	60	566	217	63	4	7220BDB	6212ZZ
	55	75	610	226	63	1	7220BDB	6212ZZ
	75	100	581	219	75	1	7220BDB	6212ZZ
	90	120	708	261	100	2/0	7222BDB	6216ZZ
	110	145	752	288	100	4/0	7222BDB	6216ZZ

1200 RPM

POLE	kW	HP	Frame	Full load (A)	Efficiency (%)			Power factor (%)		
					½ Load	¾ Load	1/1 Load	½ Load	¾ Load	1/1 Load
6	37	50	315	64	83.2	86.2	87.0	72.6	80.2	83.1
	45	60	315	82	79.6	83.7	85.3	67.1	76.1	80.4
	55	75	380	94	83.1	86.7	88.1	70.8	79.3	83.2
	75	100	380	129	82.9	86.6	88.2	68.3	77.9	82.3
	90	120	380	152	83.8	87.2	88.7	72.1	80.0	83.4
	110	145	380	184	85.5	88.5	89.7	71.6	79.7	83.3

(Data listed are design values)

POLE	kW	HP	Start Current (%)	Start Torque(%)	Mech. Seal Size	Cable size	Bearing	
							Lower	Upper
6	37	50	546	189	63	4	7220BDB	6212ZZ
	45	60	544	208	63	4	7220BDB	6212ZZ
	55	75	691	264	75	1	7222BDB	6216ZZ
	75	100	744	274	100	1	7222BDB	6216ZZ
	90	120	707	260	100	2/0	7222BDB	6216ZZ
	110	145	713	271	100	4/0	7222BDB	6216ZZ

Electrical Data

Project: Model: Chk'd: Date:

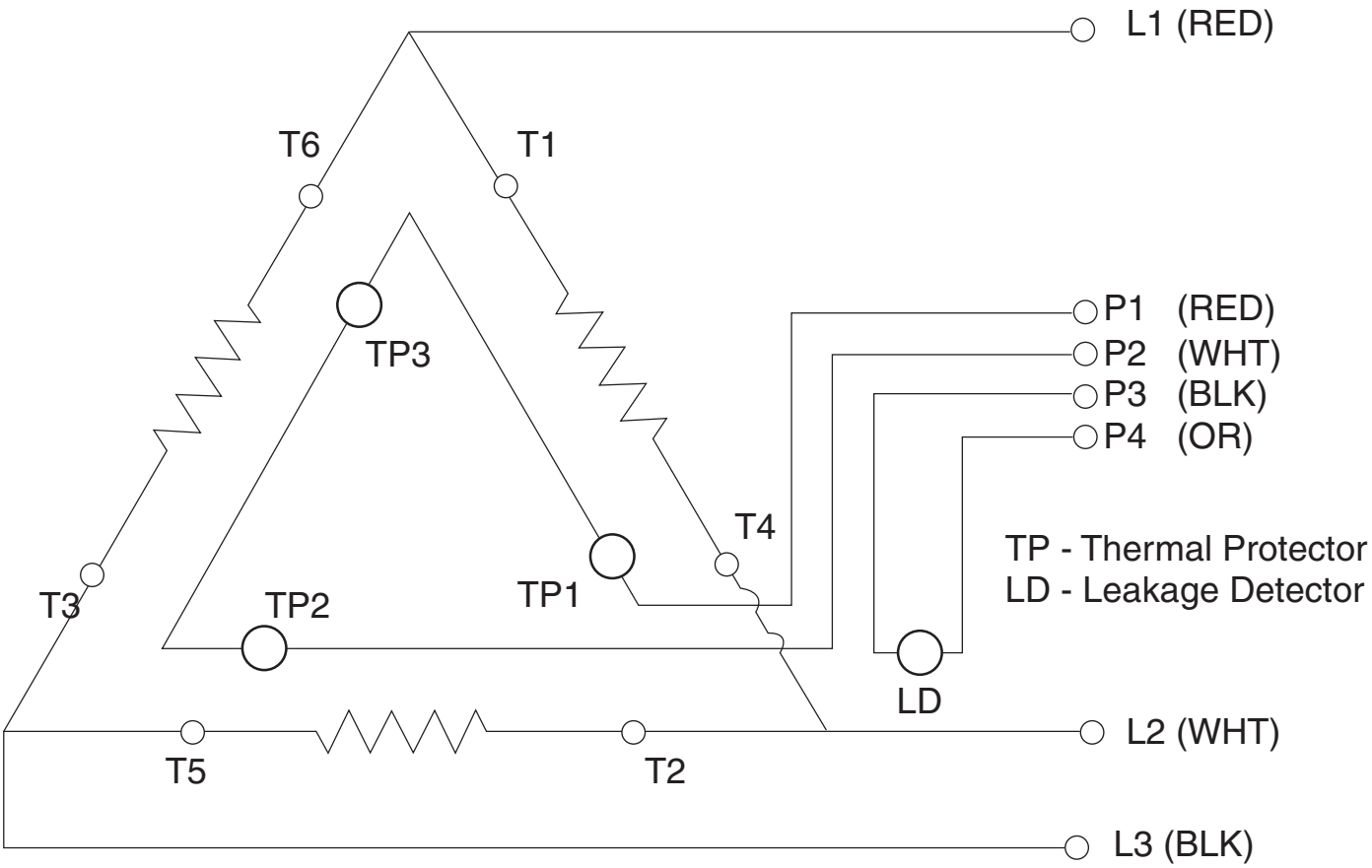
Table 5-2 Cable Data

AWG	No. of Cond.	Type	Cond. Strand	Nom. Ins. Thickness		Nominal O.D.	
				inch	mm	inch	mm
14	5	SOOW	41/30	0.045	1.14	0.645	16.38
14	8	SOOW	41/30	0.045	1.14	0.760	19.30
4	4	W	259	0.060	1.52	1.220	30.99
1	4	W	259	0.080	2.03	1.680	42.67
2/0	4	W	259	0.080	2.03	1.930	49.02
4/0	4	W	259	0.080	2.03	2.260	57.40

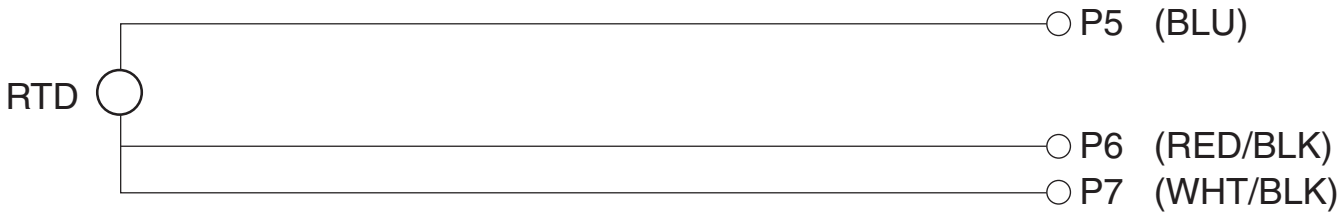
AWG	No. of Cond.	Type	Resistance at 20℃		Approx. Weight	
			Ω/kft	Ω/km	lbs/kft	kg/km
14	5	SOOW	2.71	8.89	265	394
14	8	SOOW	2.71	8.89	380	566
4	4	W	0.261	0.856	1175	1749
1	4	W	0.133	0.436	2450	3646
2/0	4	W	0.083	0.272	3450	5134
4/0	4	W	0.052	0.171	4970	7396

Wiring Diagram

Project: Model: Chk'd: Date:



OPTION:



RTD - Resistance Temperature Detector

Technical Data

Project: Model: Chk'd: Date:

Mechanical Seal

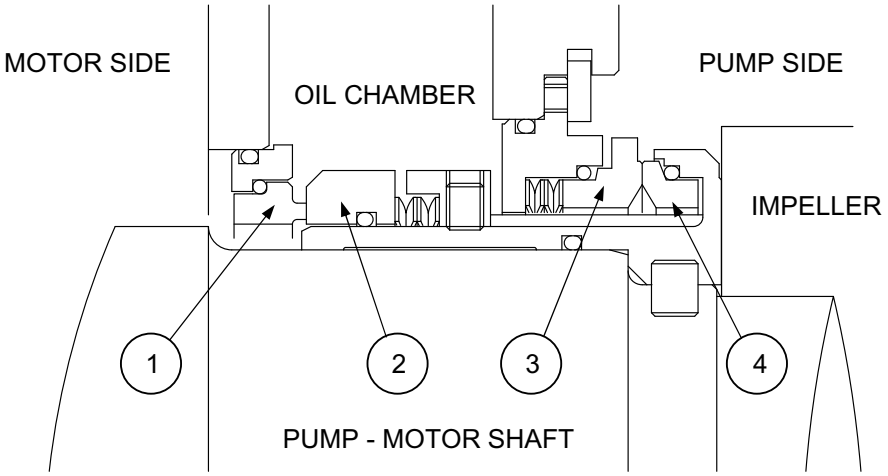
Ebara DSC4 pumps employ **cartridge type, duplex mechanical seals in tandem arrangement**.

Cartridge type mechanical seal provide:

- Easy maintenance because it is handled as one unit
- High reliability due to assembly and adjustment separate from the bowl unit

Duplex mechanical seals in tandem arrangement provide:

- High reliability because of dual seals construction
- Long life operation with oil lubrication

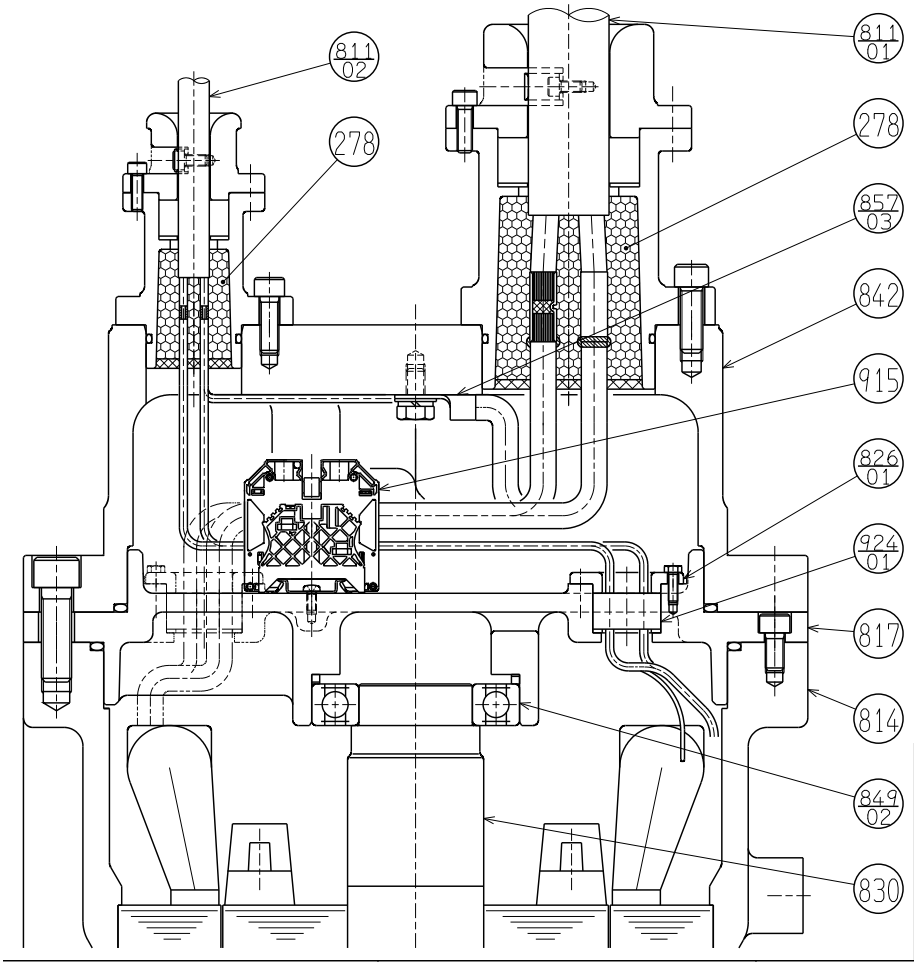


Part No.	Part Name	Material
1	STATIONARY RING (UPPER)	CARBON
2	SEAL RING (UPPER)	CERAMIC+STAINLESS STEEL
3	STATIONARY RING(LOWER)	SILICON CARBIDE
4	SEAL RING (LOWER)	SILICON CARBIDE

Technical Data

Project: Model: Chk'd: Date:

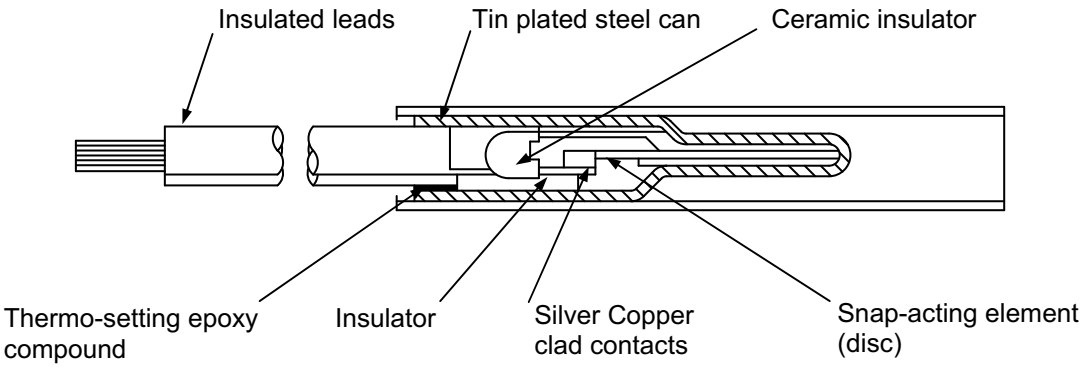
Cable – Sectional View



Part No.	Part Name	Material	No. for 1 Unit
278	Sealing Compound	Epoxy Resin	–
811-01	Line Cord	Type W	1
811-02	Control Cord	Type SOOW	1
814	Frame	Cast Iron	1
817	Opposite Side Bracket	Cast Iron	1
826-01	Gland	Cast Iron	1
830	Shaft	420 Stainless Steel	1
842	Motor Cover	Cast Iron	1
849-02	Ball Bearing	–	1
857-03	Earth Terminal	Copper	–
915	Terminal Board Assy.	–	1
924-01	Packing	NBR	1

2. THERMAL DETECTOR FOR MOTOR WINDING

The motor shall be equipped with a Miniature Thermal Protector (MTP). This MTP is embedded in the windings and will act to protect the motor from over-heating. If the motor winding temperature reaches the MTP acting point it will activate and open the circuit.



Switch Rating

CONTACT RATING :	AC115V 18A / AC230C 13A
CONTACT TYPE :	B – CONTACT (NORMALLY CLOSED)
OPEN TEMP. :	140±5° C(284 ± 9° F)

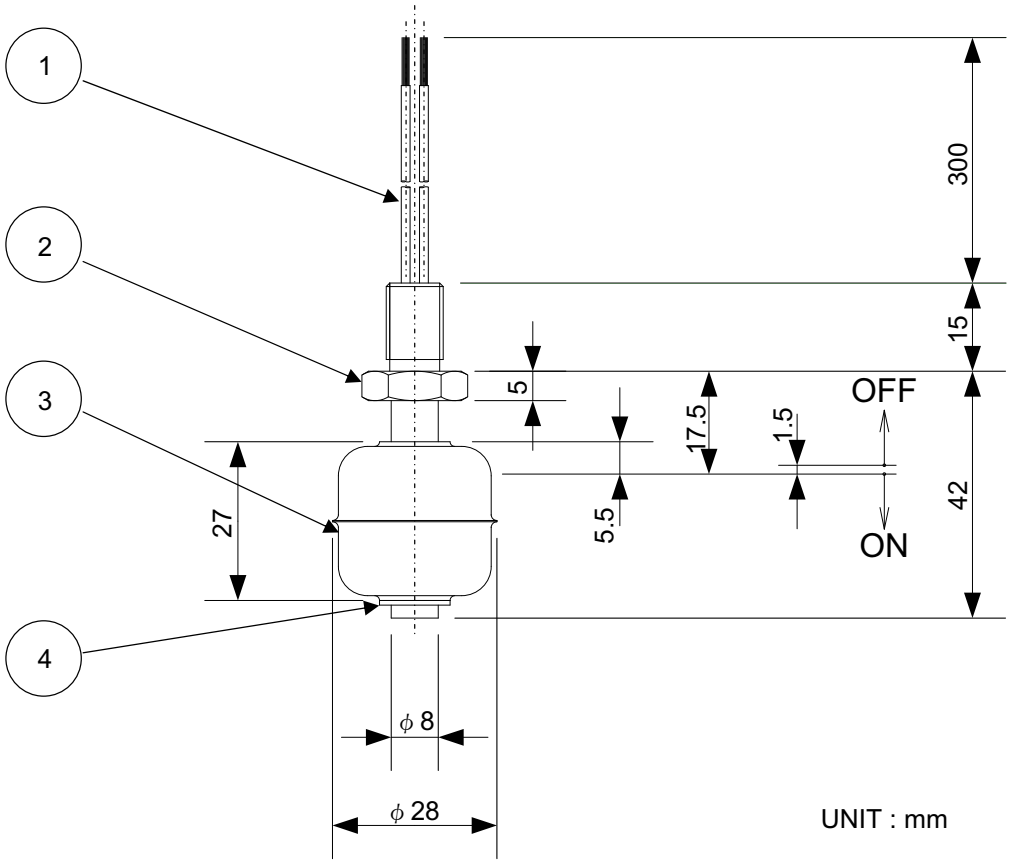
Fig.6-2 THERMAL DETECTOR FOR MOTOR WINDING

CHARACTERISTICS

The circuit is normally closed.
The disc is operated both by the current passing through it and by heat received from the windings.
When the temperature of the disc reaches a predetermined point corresponding to the maximum allowable temperature of winding, the disc snaps open to interrupt the circuit.
When the winding temperature returns to the safe operation range, the circuit is restored automatically.

3. LEAKAGE DETECTOR

A built-in float type leakage detector is fitted to sense leaking of pumping water and/or seal oil into the motor as a result of failure of the mechanical seal.



Switch Rating

CONTACT RATING : Breaking capacity : AC50VA/DC50W
Max. breaking current : AC0.5A/DC0.5A
Max. operating voltage : AC300V/DC300V

CONTACT TYPE : B-CONTACT (NORMALLY CLOSED)

Part No.	Part Name	Material	Qty/Set
1	LEAD WIRE	Heatproof Polyvinyl Chloride Wire (0.3mm)	2
2	HOUSING	316 Stainless Steel	1
3	FLOAT	316 Stainless Steel	1
4	STOPPER	316 Stainless Steel	1

4. THERMAL DETECTOR FOR THRUST BEARING (OPTION)

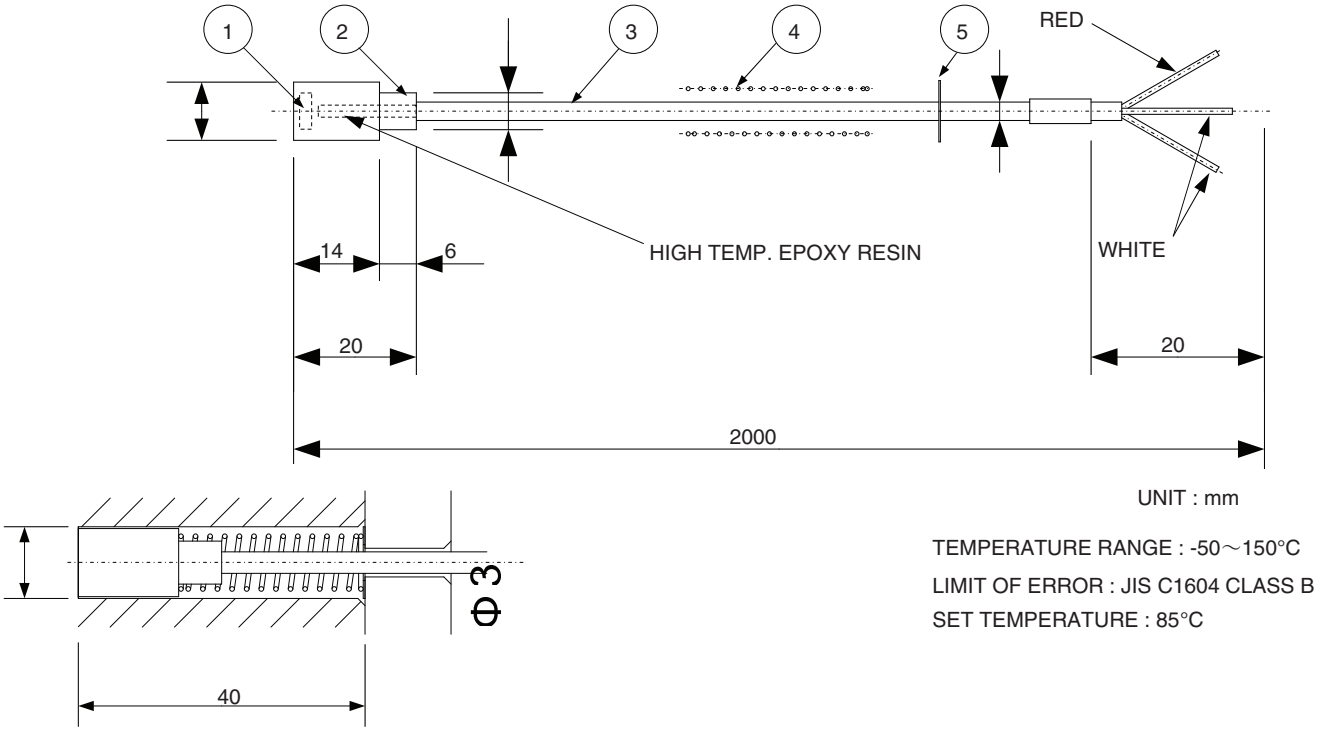


Fig. 6-4 THERMAL DETECTOR FOR THRUST BEARING

Part No.	Part Name	Material	Qty	Remarks
1	Resistance Bulb	–	1	Pt100°Ω at 0°C 3W 5mA
2	Cap	Stainless Steel	1	
3	Lead Wire	–	1	7/Ø 0.16 Teflon-Teflon
4	Spring	Stainless Steel	1	
5	Self Lock Retaining Ring	Spring Steel	1	

7. LUBRICATION

		Lower Bearing	Upper Bearing	Shaft Seal
Lubricant		Grease		Turbine Oil (see Note)
Standard		NLGI grade 3		ISO VG32
MFG.	EXXON	UNIREX N3	—	TERESSO 32
	MOBIL		POLYREX EM	DTE OIL, OIL LIGHT

Note: Other lubricants may be used when the oil is not allowed.

8. SHOP PAINTING

Coating Spec. No.	I	II
Preparation	SSPC - SP - 10	SSPC - SP - 3
Materials & coating nos.	Zinc rich primer x 1 Coal tar epoxy paint x 2	Zinc rich primer x 1
Color	Black	Green
Total dry film thickness (μ m)	140	10

Spec. No. I : surfaces contacting pumping liquid

Spec. No. II : internal surface of motor

Note: Non-ferrous material and stainless steel are not painted.

Project: Model: Chk'd: Date:

1. PUMP RATED CAPACITY AND TOTAL HEAD

Pumping requirements in the system are stated as **Rated Capacity** and **Rated Total Head.** Rated capacity is the flow rate determined by the total design capacity of the pumping station and the number of operating pumps.

$$\textbf{Rated Capacity} = \frac{\text{Total design capacity of pumping station}}{\text{Number of operating pumps}}$$

Rated Total Head = System head at the rated capacity.

The pump is operated at the cross point of the pump Q-H (capacity-head) curve and the **System Head Curve** as shown in Fig. 1-1. The head at the cross point is defined as the rated total head of pump.

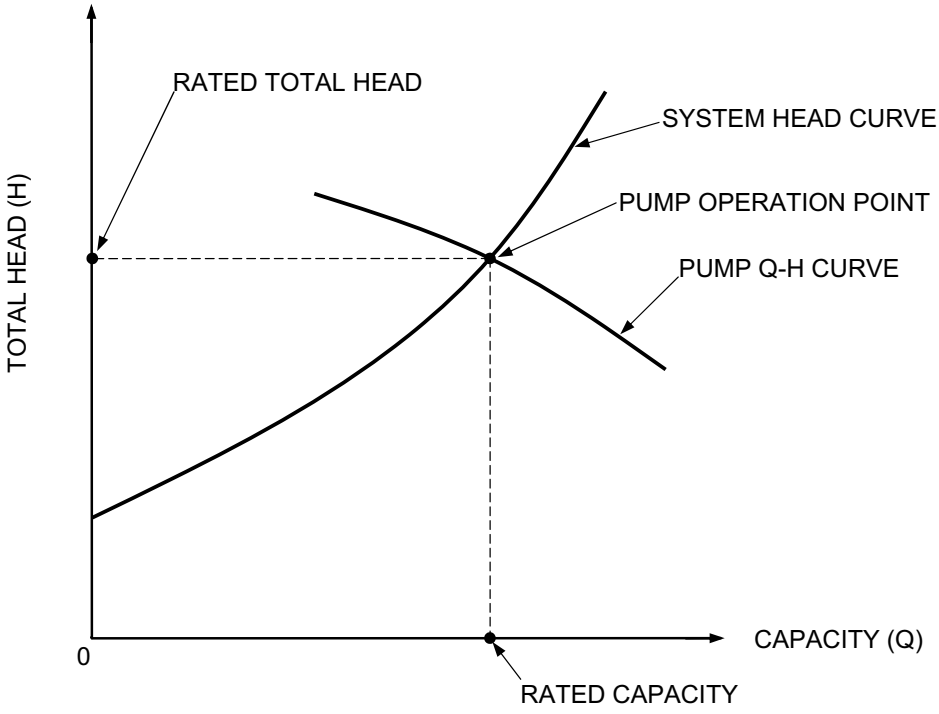


Fig. 1-1 PUMP OPERATION POINT

2. SYSTEM HEAD

System head of the system is the sum of the **Static Head** and the **Dynamic Head**, and its curve is a quadratic curve of the flow rate as shown in Fig. 1-2.

System Head = Static head (Ha) + Dynamic Head (Hd)

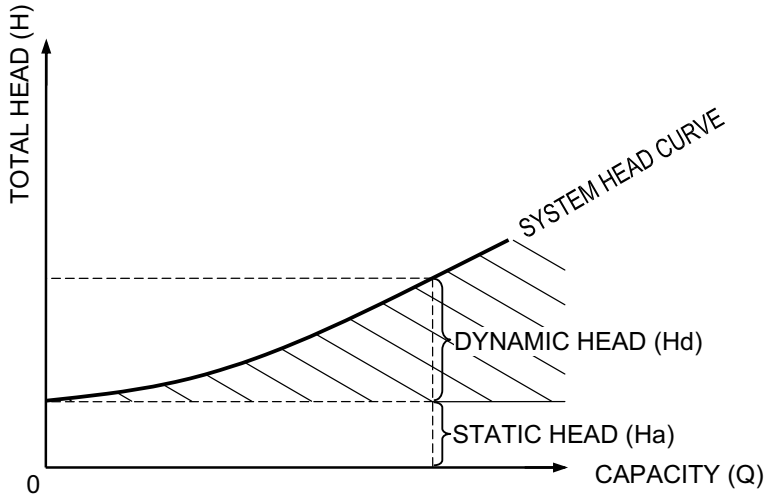


Fig. 1-2 SYSTEM HEAD CURVE

Static Head (Ha)

Static head arises from the difference between the pump suction pit water level and the discharge water level.

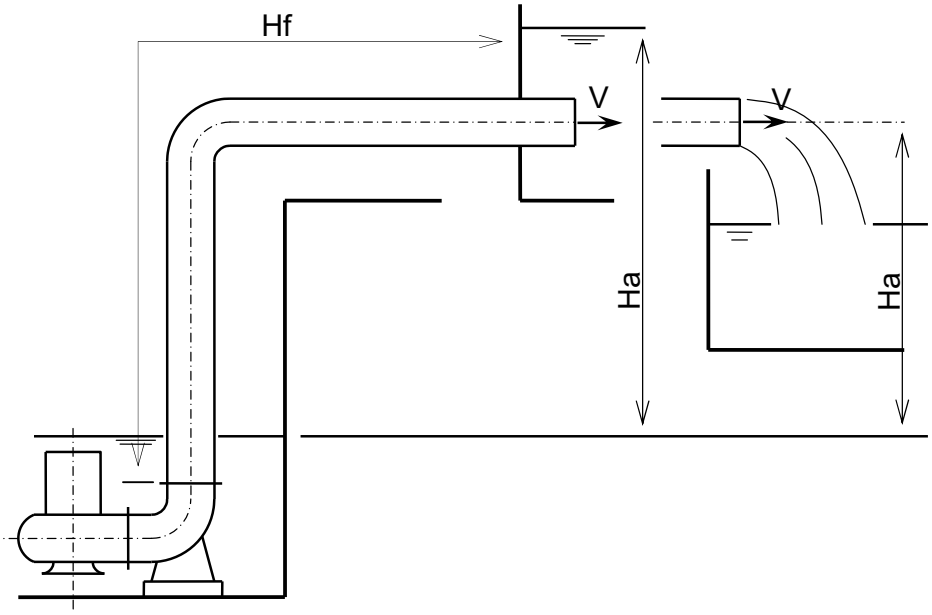


Fig. 1-3-1 STATIC HEAD

Dynamic Head (Hd) – Wet Pit

Dynamic head for Fig. 1-3-1 is as follows:

$$\mathbf{Hd} = Hf + \frac{V^2}{2g}$$

Where, Hf : Hydraulic loss from the discharge of the QDC to the system discharge end

$\frac{V^2}{2g}$: Velocity head at the system discharge end

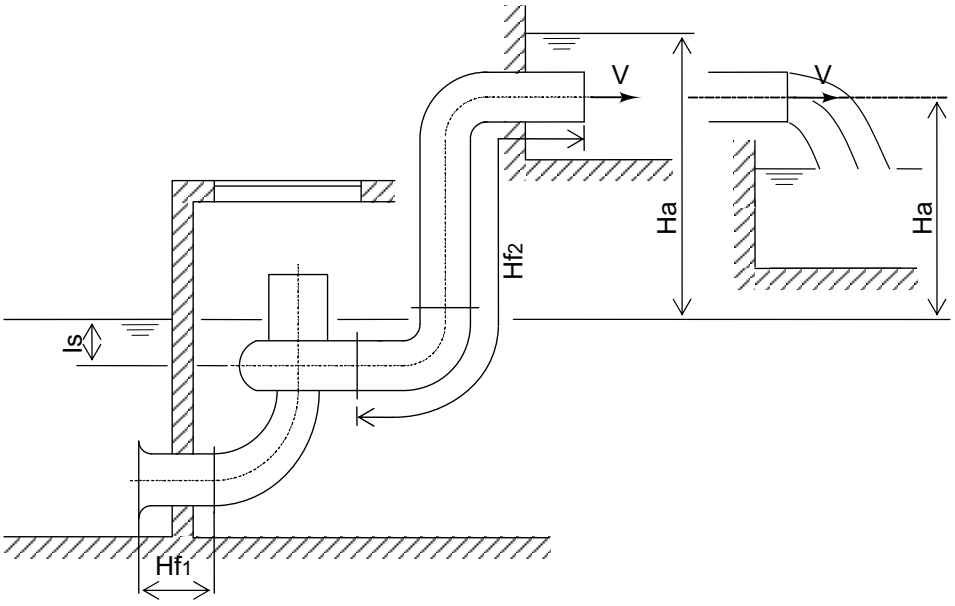


Fig. 1-3-2 STATIC HEAD

Dynamic Head (Hd) – Dry Pit

Dynamic head for Fig. 1-3-2 is as follows:

$$\mathbf{Hd} = Hf + \frac{V^2}{2g}$$

Where, Hf : Hydraulic losses of piping ($Hf = Hf_1 + Hf_2$)

$\frac{V^2}{2g}$: Velocity head at the system discharge end

Pump Total Head (Ht) The pump total head is a sum of the static head and the dynamic head. The pump total head may be obtained from the following equation:

Pump Total Head (Ht) = Static Head + Dynamic Head = (Ha + Hd)

Where, **Ha** : **Static Head**
Hd : **Dynamic Head**

3. PUMP OPERATION RANGE

As stated in paragraph 1, the pump is operated at the cross point of its Q-H curve and the system head curve. Therefore, so long as the system head curve is not changed, the pump is operated at a design point. In an actual pumping system, however, the static head varies depending on the suction and/or discharge water level. As a result, the system head curve shifts as shown in Fig. 1-4.

With this shift in the system head curve, the cross point with pump Q-H varies, and this variation is termed as the **Pump Operation Range.**

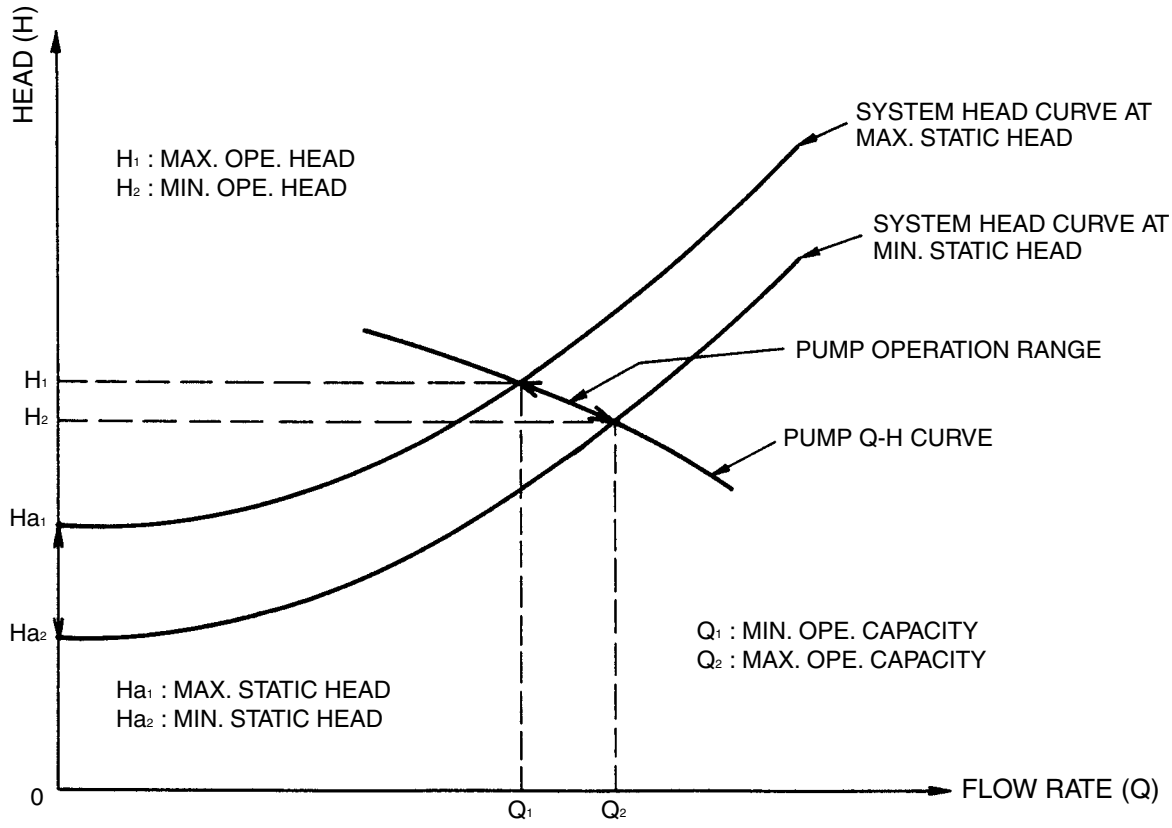
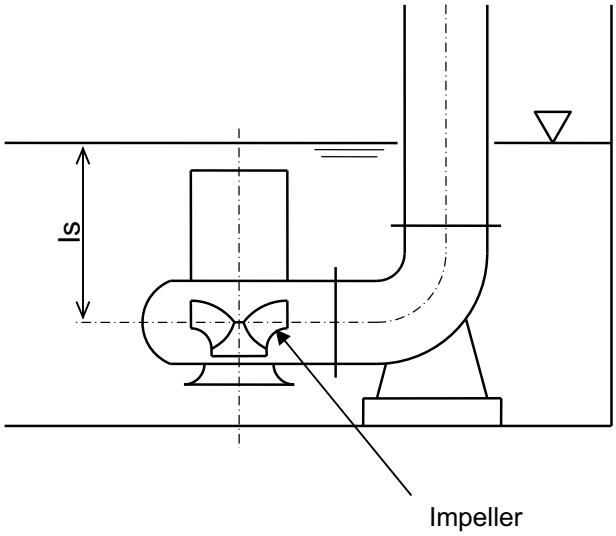


Fig. 1-4 PUMP OPERATION RANGE

4. NPSH

Adequate suction pressure at the impeller inlet is necessary for the pump to perform as designed. This suction pressure (absolute) converted into water head is called **NPSH req.** and is shown on the pump performance curve as one of the pump characteristics.
On the other hand, actual suction pressure (absolute) converted into water head is called **NPSH av.** and is defined as shown in Fig. 1-5.

NPSH req. shall not exceed NPSH av. in the continuous operation range.



NPSH available (m)
NPSH av. = Is + Pa – Pv
Where,

Is: Submergence of impeller (m)

Pa: Atmospheric pressure (m)
under 1 atm, Pa = 10.3m

Pv: Vapour pressure (m)
water at 20c, Pv = 0.24 (m)

Fig. 1-5 NPSH av.

5. AIR-ENTRAINING VORTEX

Lack of enough submergence causes the generation of harmful air-entraining vortices as shown in Fig. 1-6. The submergence at which generation of vortices can be avoided is termed as the **Minimum Submergence (S).**

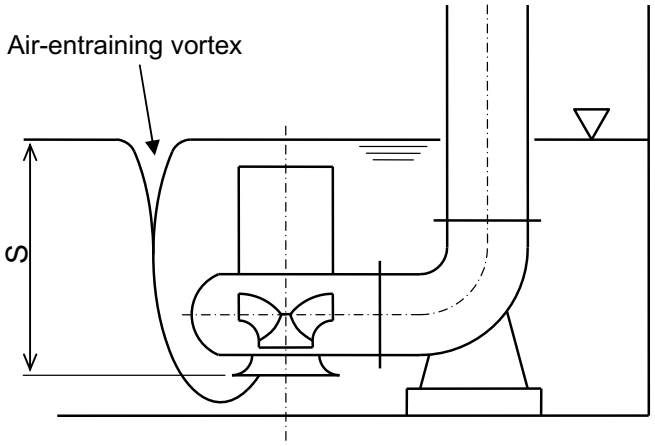


Fig. 1-6 AIR-ENTRAINING VORTEX

6. SUBSURFACE VORTEX

In cases where the clearance between pump and bottom of the pit is not adequate, harmful subsurface vortices generates as shown in Fig.1-7.

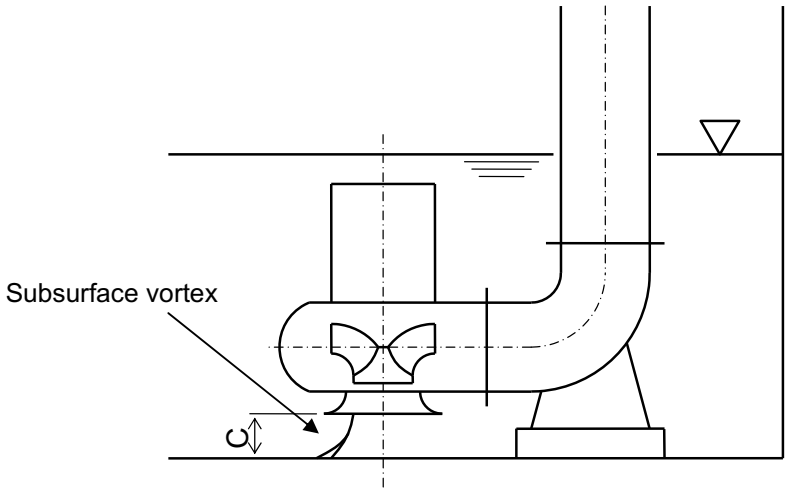
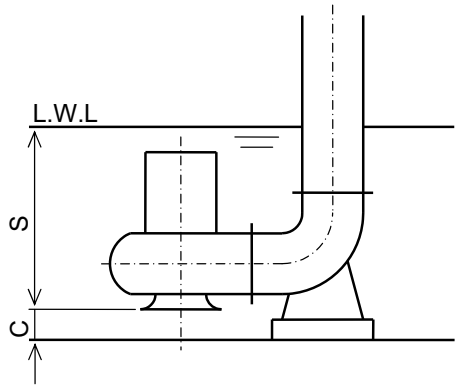


Fig. 1-7 SUBSURFACE VORTICES

7. SUBMERGENCE AND CLEARANCE



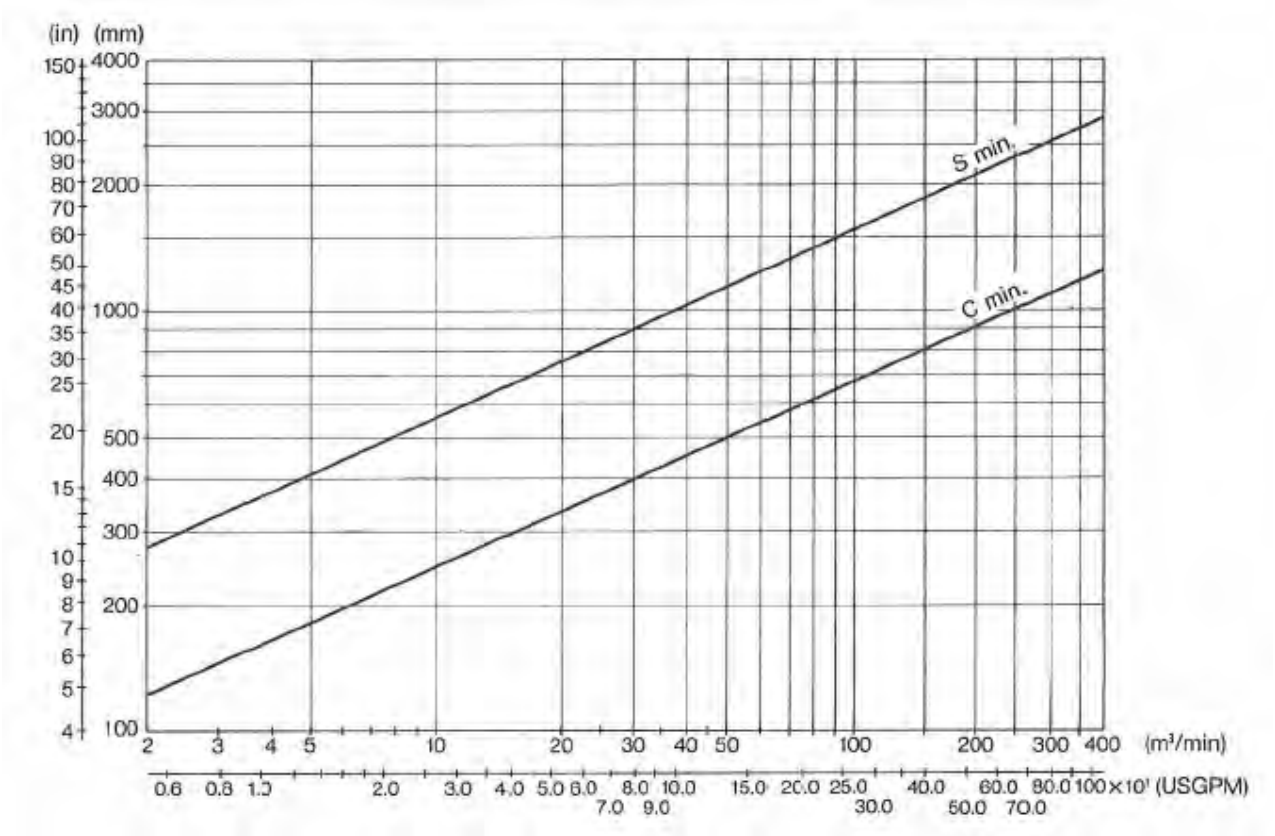


Fig. 1-8 SUBMERGENCE AND CLEARANCE

8. PUMP SELECTION

In this paragraph, a sample selection of the DSC4 pump is demonstrated by using a simple wet pit case.

Conditions **Rated capacity**: 4500 GPM
Ha: 70 ft
Hd: 15 ft

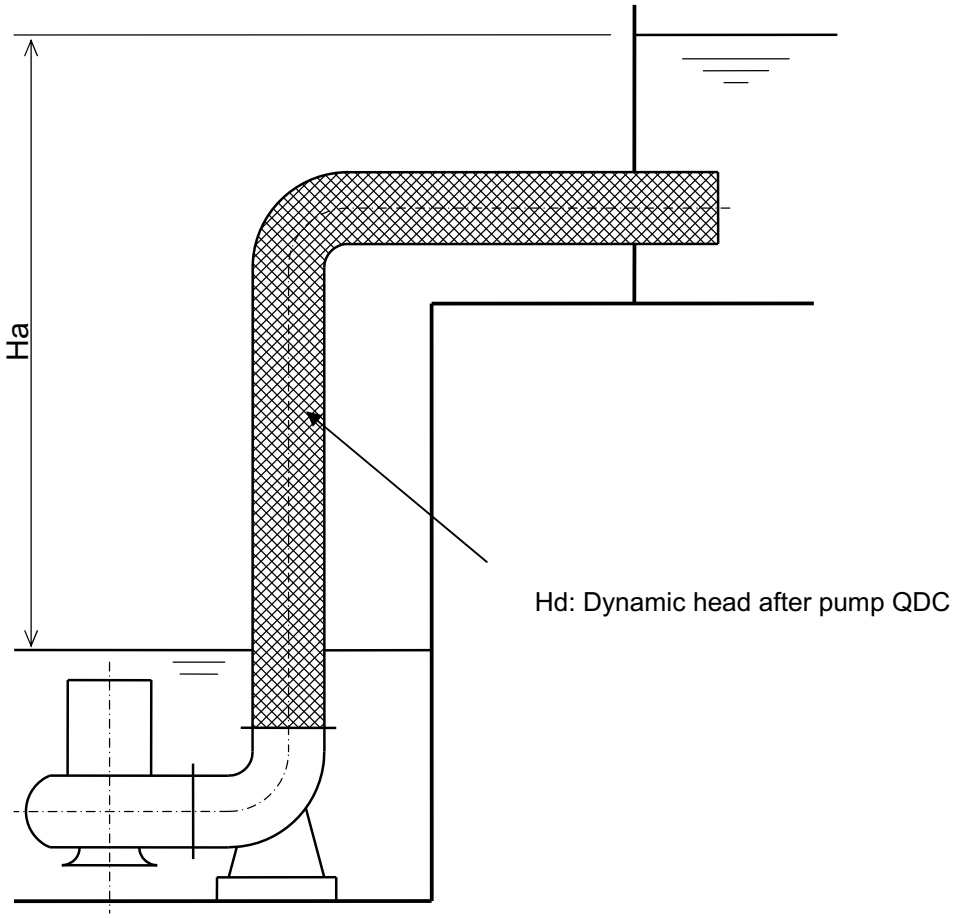


Fig.3-2 Dynamic Head

Step 1: Selection of pump model

Assuming a sum of Ha and Hd as pump total head, select pump from **DSC4 FAMILY CURVES**. In this case, the assumed total head is 85 ft, and EO-66145 is selected from family curves.

Step 2: Check Items on the Selected Pump
Check the selected pump for the following items:

- **Pump continuous operation range**
  Confirm that the pump continuous operation range based on the system head variation is within the continuous operable range of the performance curve.

- **NPSH**
  NPSH req. shall not exceed NPSH av. in the continuous pump operation range.

- **Motor rating**
  Pump power input shall not exceed motor rating in the pump operation range.

- **Starting method and cable size**
  Check starting method and cable size with Part 5. ELECTRICAL DATA.