



Hygienic
**Centrifugal
Pumps**

**Equipped with Top
Runner motor**

High efficiency performance

Pumps equipped with top runner motor

INDEX

Type symbol	Material symbol	Details	Motor capacity	Page
EZN	316	Direct connection; floor-mounted; side terminal box	0.75~3.7kW	4
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EZM	316	Direct connection; floor-mounted; side terminal box	0.75~15kW	4
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ESM	316	Separate; fixed to floor	22kW	5
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ECN	316	Coupling; floor-mounted; explosion-proof motor	1.5~3.7kW	7
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	304			
ECB	316	Coupling; floor-mounted; explosion-proof motor	5.5~7.5kW	7
ECH	316	Coupling; floor-mounted; explosion-proof motor	1.5~7.5kW	7

Material

SUS316 (or equivalent) SUS304 (or equivalent)

Production standard

External finish	Beads shot blast
Internal finish	#320 to #400 Buff polishing
In-between surfaces tolerance	± 1.5mm or less
Parallelism at ends	±0.5°
Squareness	±0.5°

Lubricant application specifications

Application specifications	Application area	Note
Standard specifications	Shaft axial part	—
Wetted surface lubrication prohibited area	Shaft axial part (Partial wiping with alcohol)	Be sure to give lubricity to the sliding seal part with fresh water, etc. before starting operation.
Lubricant	NOK Kluber PAPALIQ GTE 703*1 (NFF category H1)	

※ 1 Conforming to the Food Sanitation Law

► Pump selection and ordering

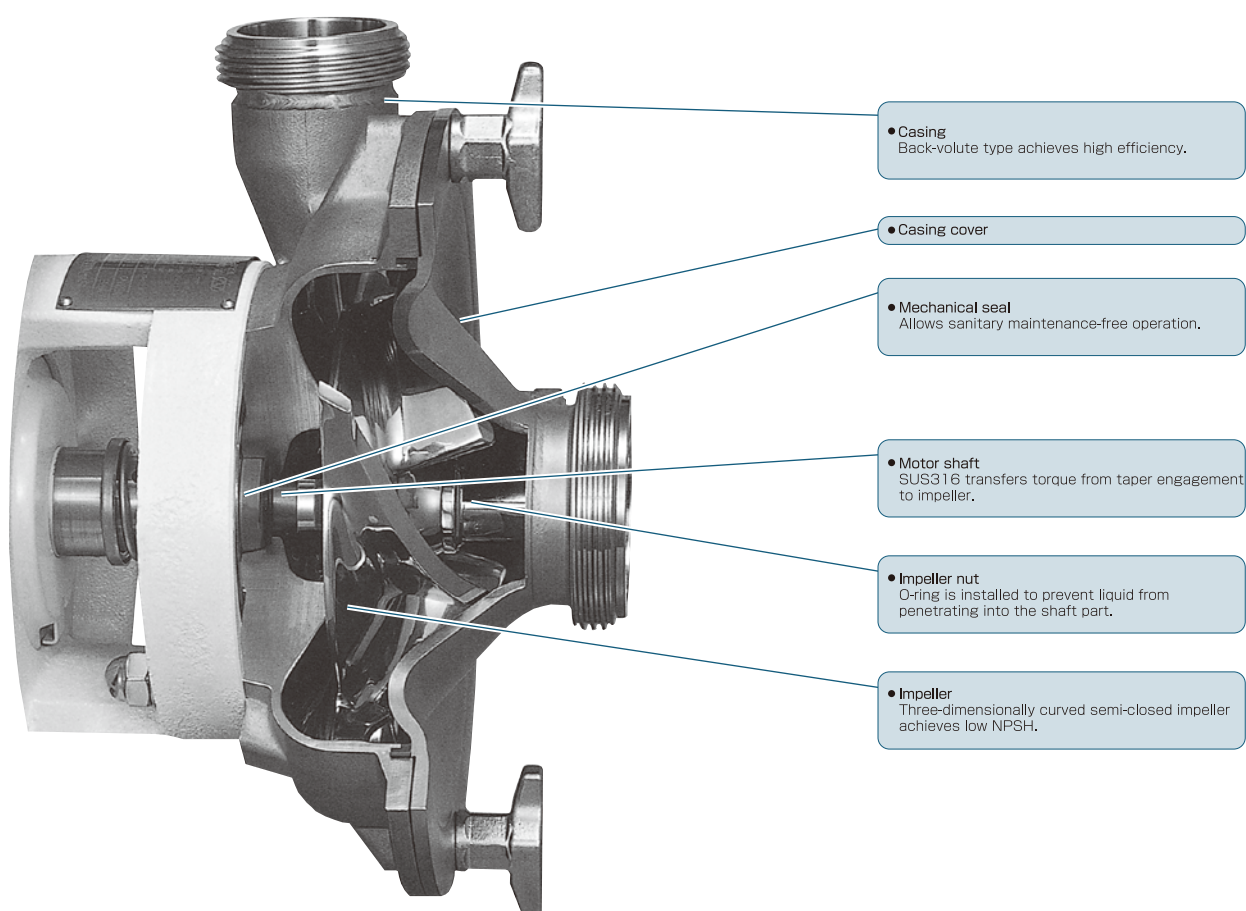
When using our pumps, be sure to use them within the respective pump specifications. If pumps will be used outside the scope of specifications, a design with higher safety taking into consideration various conditions is required. We would be pleased to offer consultation if you provide us with information.

► Ordering

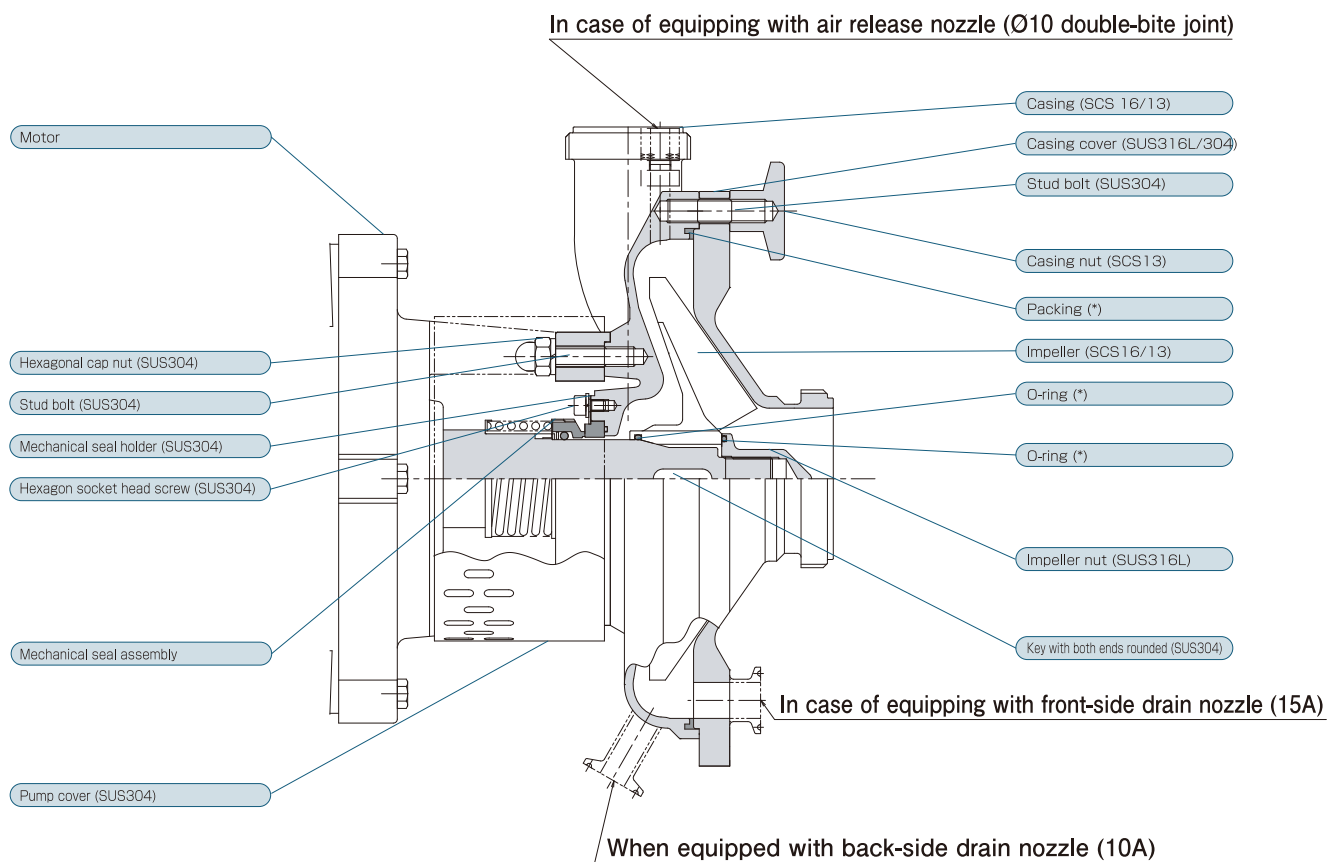
○ Refer to the specifications on Page 13 and the type symbol table on Page 14 to specify your required pumps.

► Cross-section view

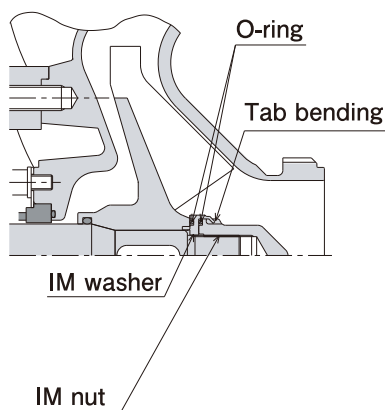
- Achieves high efficiency using a three-dimensionally curved semi-closed impeller and a back-volute type casing. (Pump efficiency $\eta_p = 70\%$)
- Achieves low NPSH using a original intake angle and an appropriate impeller profile. (3m at NPSH (RH) 60m³)
- Achieves low-noise operation using a special motor and a original motor cover. (Noise reduced by 3 to 10dB in comparison with our conventional model)
- Realizes a rigid structure through development of a top runner motor specifically for pump use. (Larger load-side bearing, shaft seals with outdoor specifications, etc.)
- Achieves high hygienic property by using a reversible clutch-type external mechanical seal.
- Main body lineup of five types (N, M, L, B and H) which can cope with any capacity and pump head. (Capacity: Up to 150m³/hr; Pump head: Up to 100m; Motor power: 0.75 to 37kw)
- Small-capacity closed-impeller type (EZH) achieves high-efficiency operation at low noise and low NPSH.



► Cross-section view (EZ, ES type)



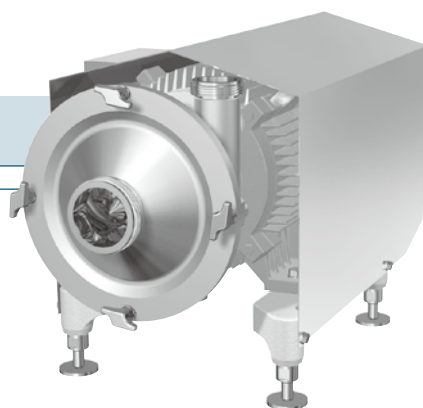
Impeller nut compatible with back wash (reverse)



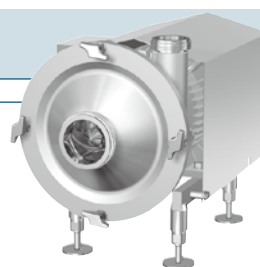
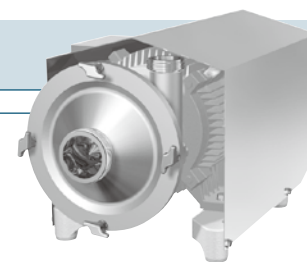
* Refer to "(1) Material classification" on Page 14.

* Conforming to food hygiene test (Ministry of Health and Welfare bulletin).

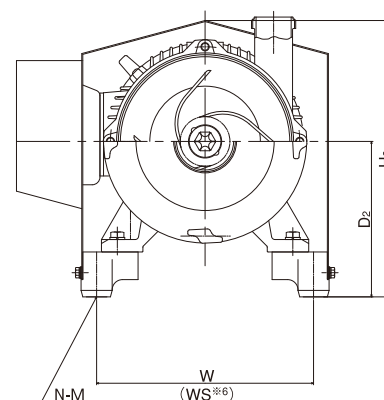
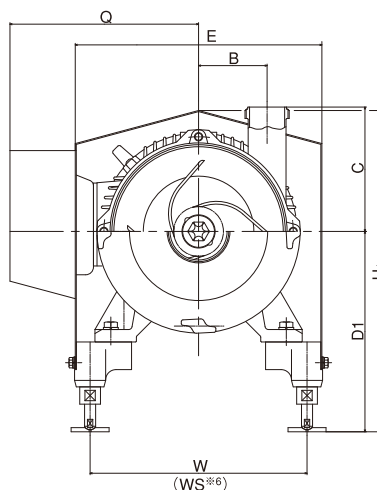
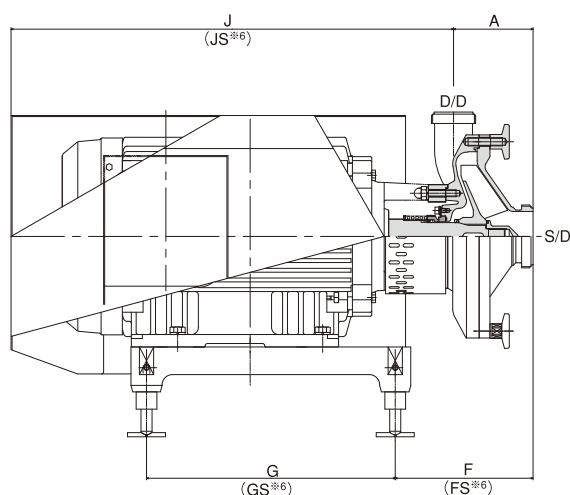
0.75 to 15kW direct-coupled type (integrated motor/shaft type)

EZ type

Floor-mounted type

Floor-mounted SUS
base type

Type for unit



Type	Dimensions					Motor kW	Dimensions														(mm)	
	S/D*	D/D*	A*4	B	C		F*4	FS*6	D1	D2*5	H1	H2*5	W	WS*6	E	Q	J	JS*6	G	GS*6	N-M	
EZN	2½ (2) (1½)	2 (1½)	100*1	74	150*7	0.75	148.5	150.5	220	150	346	276	145	125	187	182	386	383	290	250	4-M12	
						1.5~2.2	145.5	149.5	230	160	357	287	160	140	202	184	411	415.5	320	250	4-M12	
						3.7	150.5	149.5	250	182	385	317	210	190	252	209	463	463	345	280	4-M12	
EZM EZH	3	2 (3)	105	99	180*2	0.75	152.5	154.5	220	150(200)	346	276(326)	145	125	187	182	385	382	290	250	4-M12	
						1.5~2.2	149.5	153.5	230	160(210)	357	287(337)	160	140	202	184	410	414.5	320	250	4-M12	
						3.7	154.5	153.5	250	182	385	317	210	190	252	209	462	462	345	280	4-M12	
						5.5~7.5	208	—	290	237	452	399	276	—	314	264	521	—	260	—	4-M12	
						11~15	201.5	—	290	225	485	420	314	—	357	291	653	—	360	—	4-M16	
EZL	3	2 (3)	115	99	180*2	1.5~2.2	160	159	230	160(210)	357	287(337)	160	140	202	184	410	414.5	320	250	4-M12	
						3.7	165	164	250	182	385	317	210	190	252	209	462	462	345	280	4-M12	
						5.5~7.5	218	—	290	237	452	399	276	—	314	264	521	—	260	—	4-M12	
						11~15	211.5	—	290	225	485	420	314	—	357	291	653	—	360	—	4-M16	
EZB	4	2½ (4)	135	105.5	190*3	5.5~7.5	228.5	—	290	237	452	399	276	—	314	264	511	—	260	—	4-M12	
						11~15	222	—	290	225	485	420	314	—	357	291	643	—	360	—	4-M16	

* S/D shows the suction port diameter and D/D shows the discharge port diameter.

* 1 For S/D size of (2) or (1½), dimensions A and F increase by +20mm.

* 2 For D/D size of (3), dimension C increases by +40mm.

* 3 For D/D size of (4), dimension C increases by +105mm.

* 4 When the pipe end is sanitary flange or JIS 10K flange, dimensions A and F increase by +10mm.

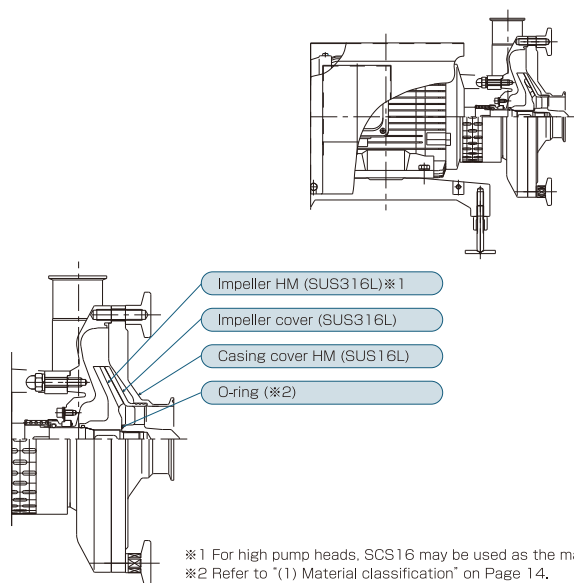
* 5 Dimensions D2 and H2 in parentheses are for when an optional extension spacer is attached.

(If the attachment surface is the whole surface, an extension spacer is required.)

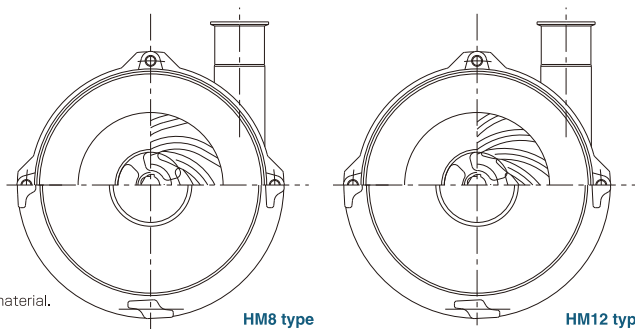
* 6 For FS, JS, GS, and WS, SUS304 is employed for the motor base.

* 7 For sanitary flange with D/D size of (1½), dimension C increases by +10mm.

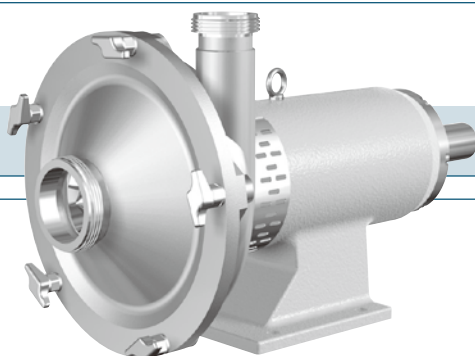
1.5 to 15kW small-capacity closed impeller pump

EZH type

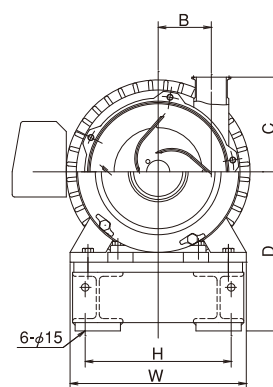
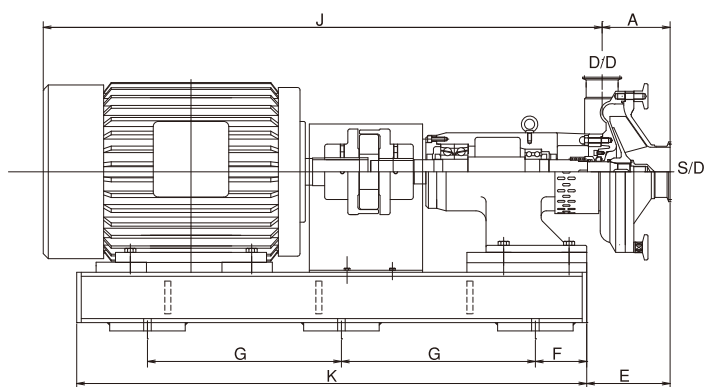
- Employment of separated-type closed impeller allows you to change EZM type to EZH type by replacing the following 4 parts.
- Achieves stable operations at lower noise (2 to 3dB decrease) and NPSH (0.2 to 0.5m decrease) more efficiently (10 to 50% increase) in low flow rate area.
- Contamination is prevented and impeller finish roughness is good.



22 to 37kW separate type pump

ES type

- Large-capacity bearing-equipped pump (22kW to 37kW)
- Terminal box for 30 to 37kW is mounted on the upper part.
 - Outdoor-type motor is used for this type as standard. (without motor cover)



Type	Motor kW	Dimensions												(mm)
		S/D*	D/D*1	A*3	B	C	D	E	F*3	G	H	J	K	
ESM	22	3	2 (3)	105	99	180	316	145	102	385.25	290	1120	1013	350
ESL	22	3	2 (3)	115	99	180*1	316	155	102	385.25	290	1120	1013	350
	30	3	2 (3)	115	99	180*1	316	155	102	394.75	290	1174	1013	400
ESB	22	4	2½ (4)	135	105.5	190*2	316	165.6	102	385.25	290	1110	1013	350
	30	4	2½ (4)	135	105.5	190*2	316	165.6	102	394.75	290	1164	1013	350
	37	4	2½ (4)	135	105.5	190*2	336	165.6	102	382.25	330	1216	1013	400

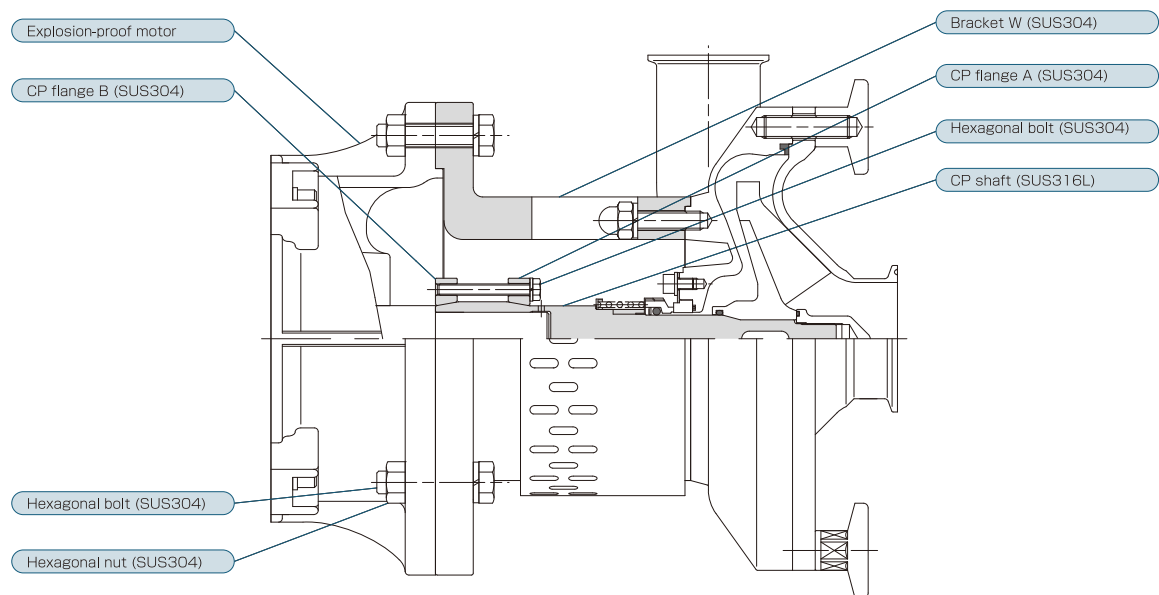
* S/D indicates the suction port diameter and D/D indicates the discharge port diameter.

*1 For D/D size of (3), dimension C increases by +40mm.

*2 For D/D size of (4), dimension C increases by +105mm.

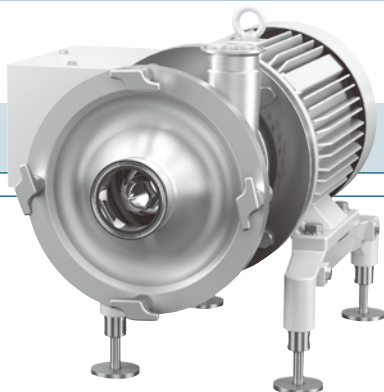
*3 When the pipe end is sanitary flange or JIS 10K flange, dimensions A and F increase by +10mm.

► Cross-section view (EC type)

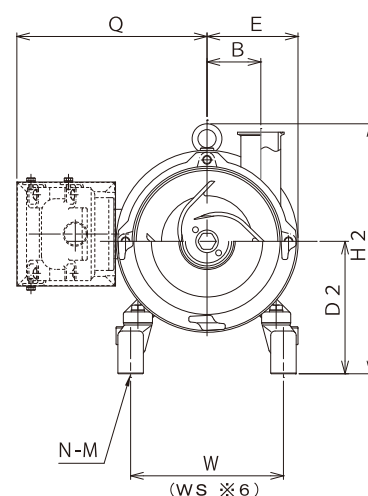
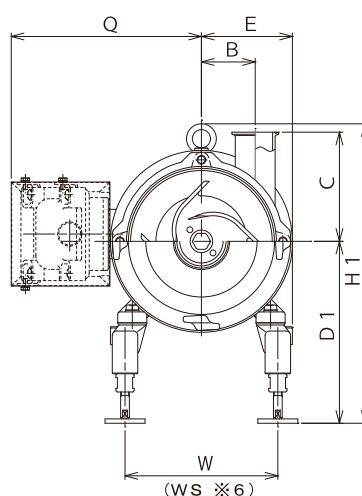
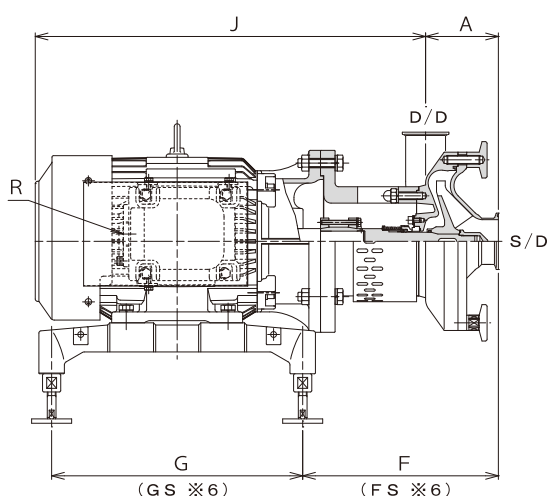


1.5 to 7.5kW Coupling type (explosion-proof motor)

EC type



Use of explosion-proof motor (d2G4) enables not only energy-saving operation when combined with an inverter but also use in Class I hazardous area.



Type	Dimensions					Motor kW	Dimensions															(mm)	
	S/D*	D/D*	A*4	B	C		F*4	FS*6	D ₁	D ₂ *5	H ₁	H ₂ *5	W	WS*6	E	Q	J	G	GS*6	N-M	R		
ECN	2½ (2) (1½)	2 (1½)	100*1	74	150*7	1.5~2.2	—	180	230	160	371.3	301.3	—	140	122.5	256.3	452.4	—	250	4-M12	PF ¾		
						3.7	269	268	250	182	411.5	343.5	210	190	125	261	536	345	280	4-M12	PF 1		
ECM ECH	3	2 (3)	105	99	180*2	1.5~2.2	—	184	230	160(210)	371.3	301.3(351.3)	—	140	122.5	256.3	452.4	—	250	4-M12	PF ¾		
						3.7	273	272	250	182	411.5	343.5	210	190	125	261	536	345	280	4-M12	PF 1		
						5.5~7.5	331.5	—	290	237	466.5	413.5	276	—	158	320	608	260	—	4-M12	PF 1¼		
ECL	3	2 (3)	115	99	180*2	1.5~2.2	—	194	230	160(210)	371.3	301.3(351.3)	—	140	122.5	256.3	452.4	—	250	4-M12	PF ¾		
						3.7	283	282	250	182	411.5	343.5	210	190	125	261	536	345	280	4-M12	PF 1		
						5.5~7.5	341.5	—	290	237	466.5	413.5	276	—	158	320	608	260	—	4-M16	PF 1¼		
ECB	4	2½ (4)	135	105.5	190*3	5.5~7.5	361.5	—	290	237	466.5	413.5	276	—	158	320	608	260	—	4-M12	PF 1¼		

* S/D shows the suction port diameter and D/D shows the discharge port diameter.

* 1 For S/D size of (2) or (1½), dimensions A and F increase by +20mm.

* 2 For D/D size of (3), dimension C increases by +40mm.

* 3 For D/D size of (4), dimension C increases by +105mm.

* 4 When the pipe end is sanitary flange or JIS 10K flange, dimensions A and F increase by +10mm.

* 5 Dimensions D₂ and H₂ in parentheses are for when an optional extension spacer is attached.

(If the attachment surface is the whole surface, an extension spacer is required.)

* 6 For FS, JS, GS, and WS, SUS304 is employed for the motor base.

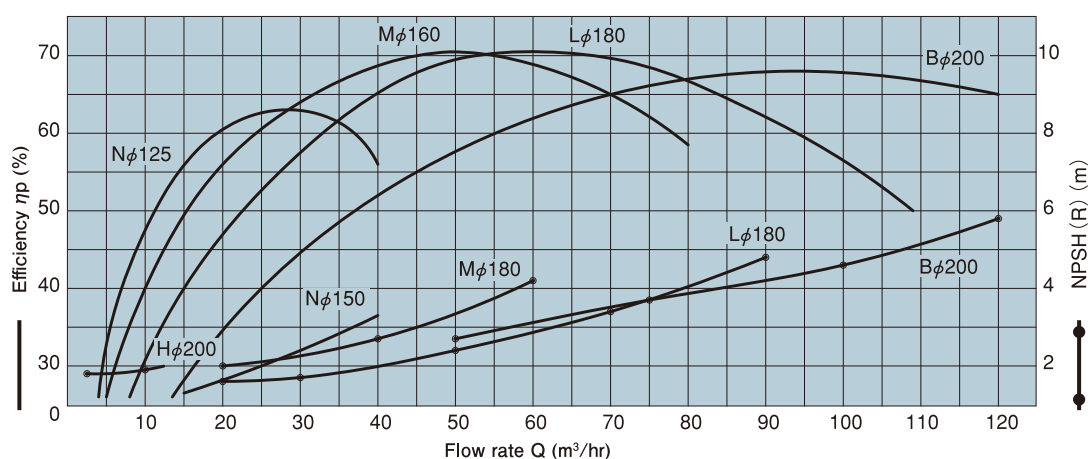
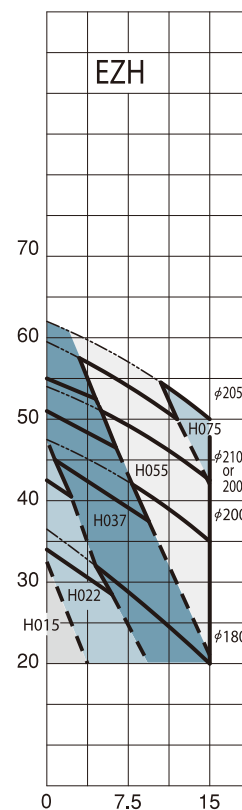
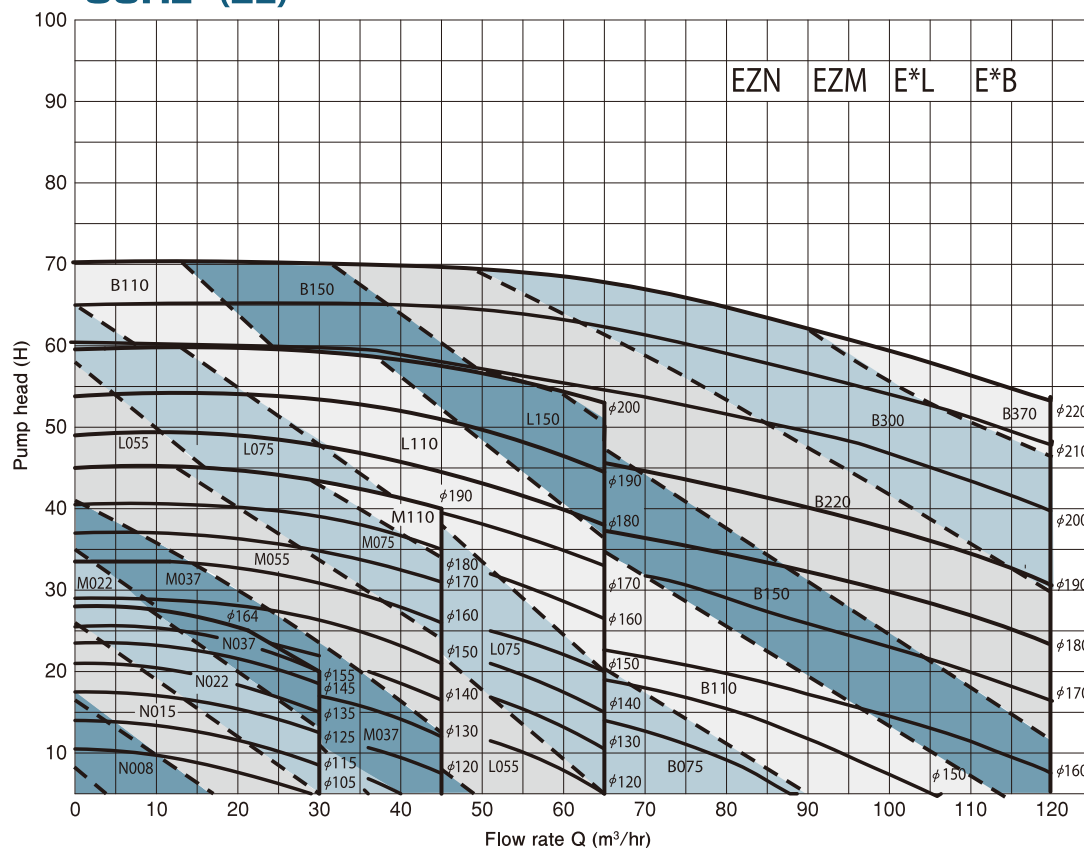
* 7 For sanitary flange with D/D size of (1½), dimension C increases by +10mm.

Sanitary pump characteristics table

Tolerance

ISO 2548 Q $\pm 8\%$ ISO 2548 H $\pm 6\%$

50Hz (2E)



Characteristics data conditions

- Fluid: Fresh water at 15°C
- Suction port diameter x discharge port diameter
N: 2.5s x 2s
M: 3s x 2s
L: 3s x 2s
B: 4s x 2.5s
- Rotation speed: Actual rotation speed at each motor capacity
- Suction water head: 1 to 2m (G)

Pump piping

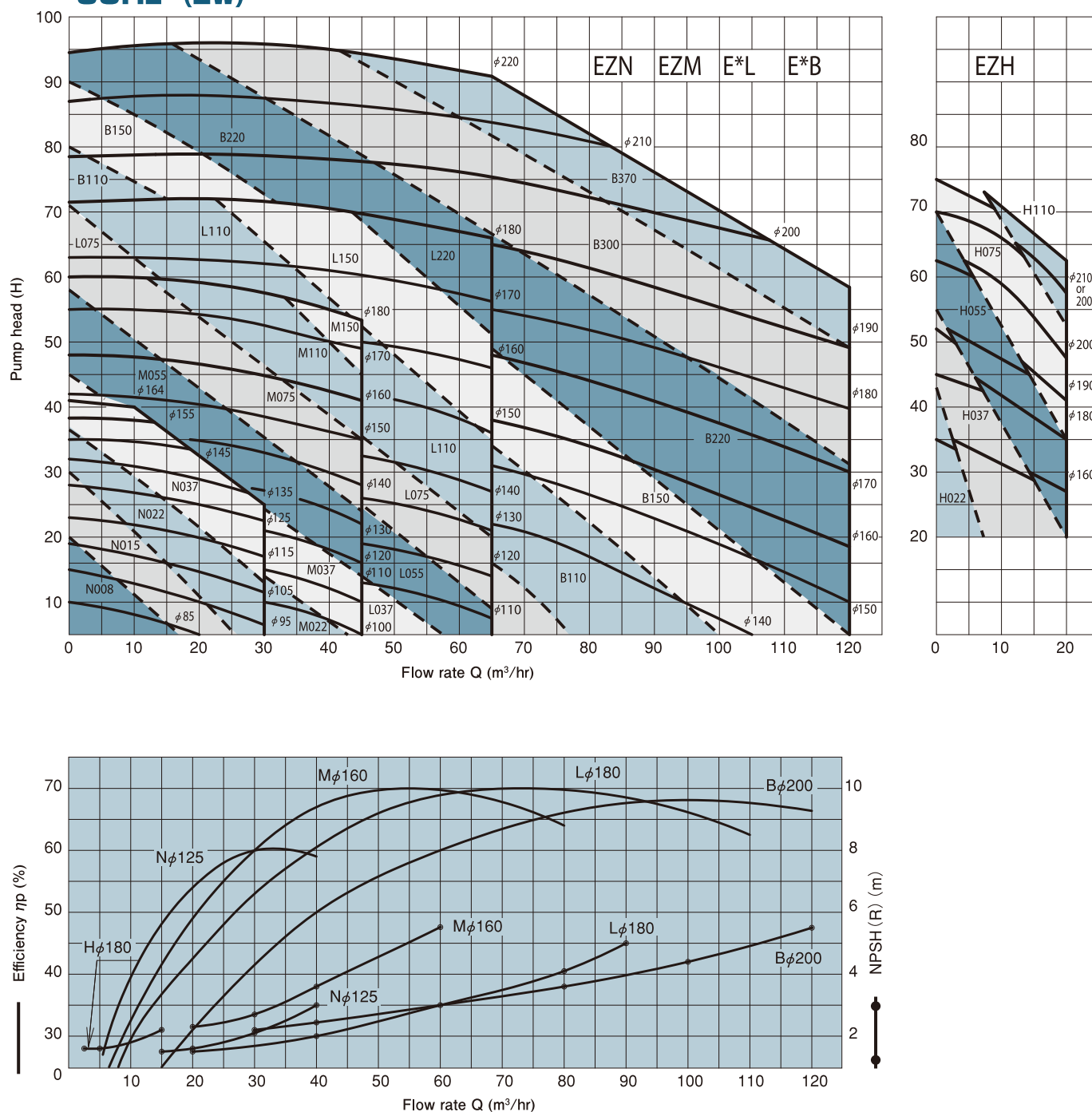
- Set the flow rate of suction piping to 1m/s or less.
- Perform flow rate adjustment with the inverter or discharge throttle valve not with suction-side throttle valve.

Sanitary pump characteristics table

Tolerance

ISO 2548 $Q \pm 8\%$ ISO 2548 $H \pm 6\%$

60Hz (2W)



Handling of viscous fluids

- In the case of viscous fluids, it is necessary to compensate for the viscosity.
Fill out necessary items in the specifications on Page 13 and contact our company.
- The viscosity that can be handled is 300mPa·s or less.
- Even for viscous fluids, the pump characteristics tests are conducted by conversion to water equivalent values.

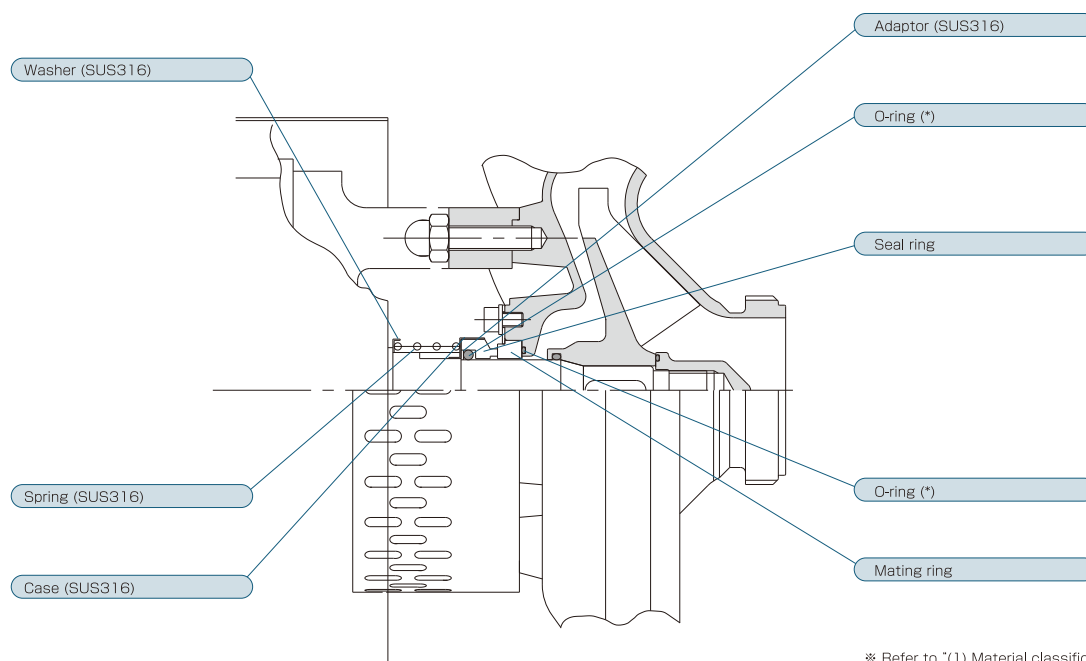
Note

- * Select a motor with wide margin.
- * For quenching mechanism and double mechanism, it is necessary to add 0.3 to 0.5kW to this characteristics table.
- * When operating in the low-flow-rate area (5m³/h or less), fluid may become heated.
- * Be sure to operate at positive pressure at the suction side as a rule.

Mechanical seal and maintenance jig

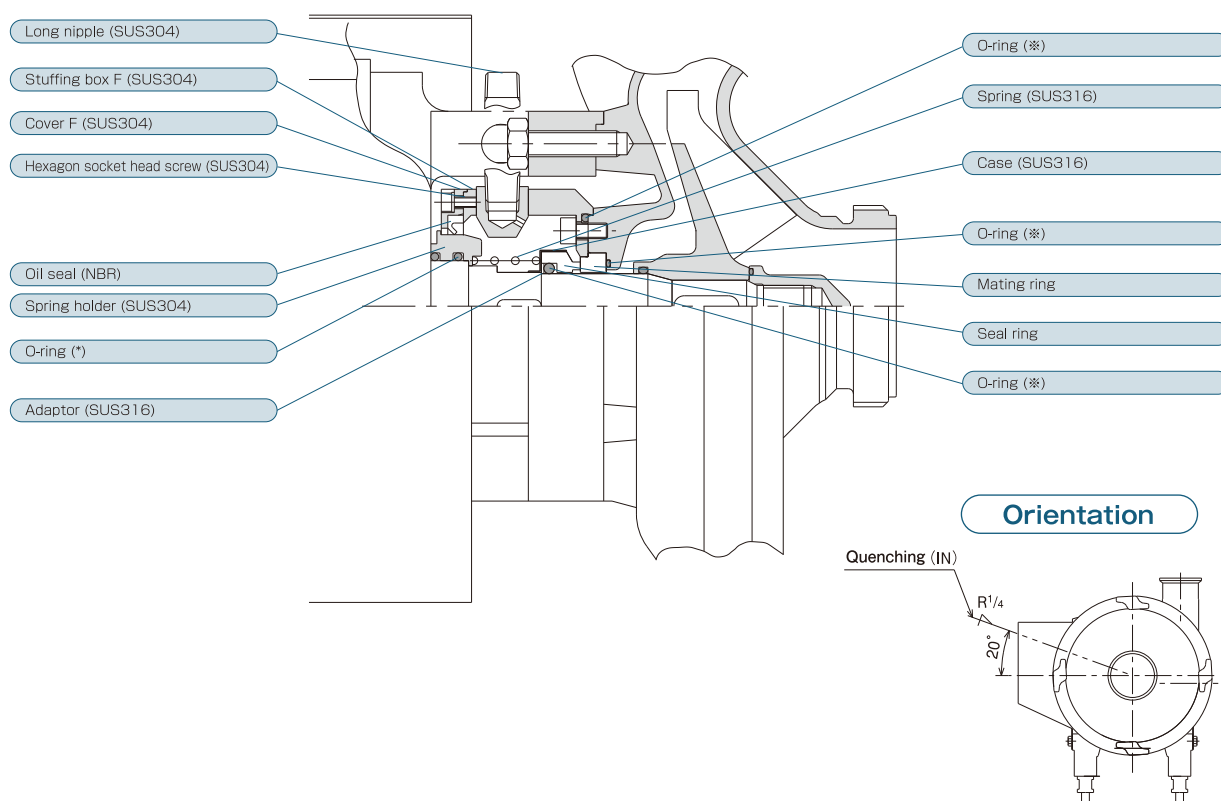
- An outside system clutch type that can withstand reversing during backwash and is sanitary.
- Maintenance cost is low because only sliding part is replaced
- Should be used with a suction head of within 0.5MPa.

► Standard type



► Quenching type

- Since a stuffing box is provided to prevent quenching water from scattering, if back pressure is applied to the drain side, leakage may occur from each connection part.
- Use water at 0.5 to 1.0ℓ/min at normal temperature as quenching water.

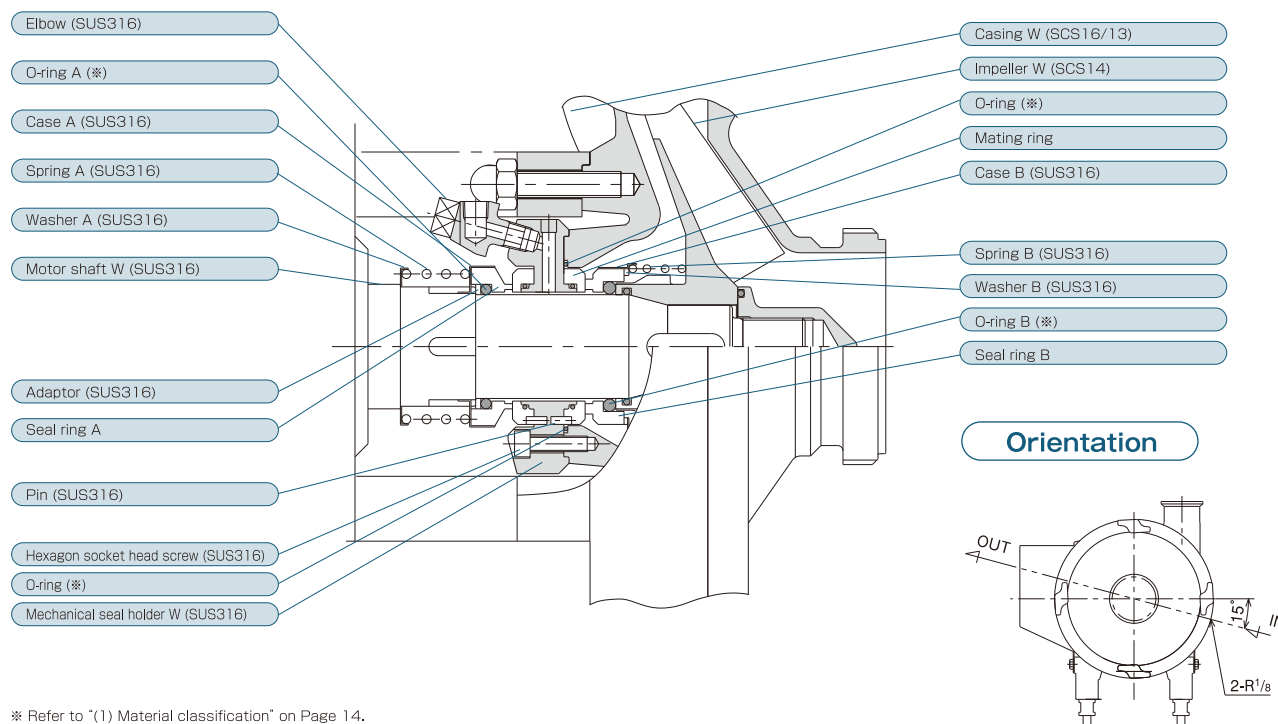


※ Refer to "(1) Material classification" on Page 14.

Mechanical seal and maintenance jig

► Double mechanical seal type

- Allowable leakage amount from each mechanical seal is 3 ml/hr.
- Seal fluid pressure should be applied at in-pump pressure or less.



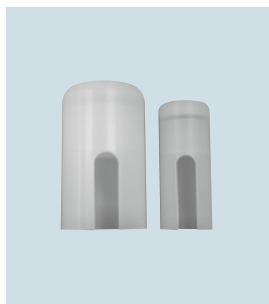
► Mechanical seal selection standards

Material	Fluid properties (upper limit)				Item
	Temperature	Slurry	Viscosity		
Carbon x Ceramic	(1)	－10～120℃	≤0.3%	≤300cp	――
Ceramic x Ceramic	(1)	－10～60℃	0.3～1%	>300cp	――
	(2)	>60℃	0.3～1%	>300cp	Need to undergo quenching (external cooling).
Superhard x Superhard	(1)	－10～60℃	0.3～0.8%	>250cp	――
	(2)	>60℃	0.3～0.8%	>250cp	Need to undergo quenching (external cooling).
Carbon x Ceramic	(1)	>90℃	>0.3%	>300cp	Need to undergo flushing by double mechanical seal.
Ceramic x Ceramic	(2)	>60℃	>1%	>250cp	
Superhard x Superhard	(3)	>60℃	>0.8%	>250cp	
Remarks	Allowable leakage amount of mechanical seal is 3 ml/hr.				

Maintenance jig (option)

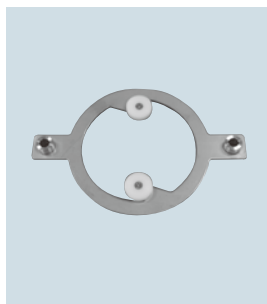
Pump shaft cover

- Prevents mechanical seal from being broken during disassembly and reassembly.



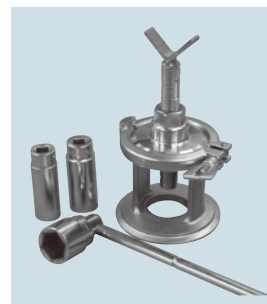
Impeller securing jig

- Use this jig to secure the impeller.



Impeller nut attachment/detachment jig

- Use this jig to disassemble and reassemble the impeller nut.



Important points for pump selection and operation

► Pump head and capacity calculation

- Overestimation in pressure loss in the piping line may cause motor overload.
- Underestimation in pressure loss in the piping line may cause insufficient in capacity

(flow rate). Do a trial calculation by the equivalent pipe length method to determine the pump head with approx. 5% margin. Attach a throttle valve to the pump discharge part.

- Total pump head = discharge pump head - suction pump head.
- In the case of viscous fluid (10mPa·s or higher), compensate for the viscosity to determine the motor power.
- Since back wash causes larger pressure loss and pump reversing, provide a bypass circuit.

► Suction characteristics

- If the suction pump head is negative and the liquid temperature is too high, cavitation may occur.

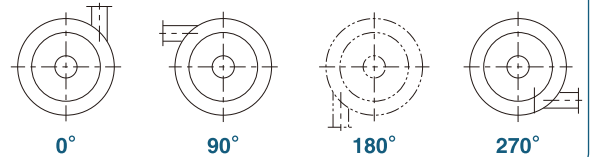
$$\text{Effective NPSH (A)} = h_{sv} = \frac{P_t - P_{vp}}{\gamma} + Z - h_f$$

Effective NPSH (A) (m)
 Absolute pressure being applied to liquid surface on the suction side (mAbs)
 Steam pressure at liquid temperature in the suction part (mAbs)
 Specific gravity at liquid temperature in the suction part
 Height from the pump center to the suction liquid surface (m)
 Pressure loss from the tank on the suction side to the suction part (m)

- If gas is mixed in on the suction side, mixed gas/liquid operation will be performed, which will causes the performance to decrease.
- In the case of NPSH (A) < NPSH (R), consult our company. This problem can be improved in some cases by inducer, etc.

► Installation and operation

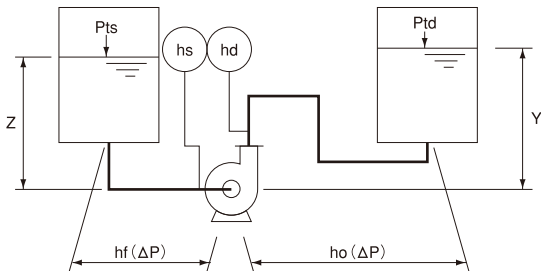
- The following 4 pump discharge port directions are available; however, the pump should be attached at 0° as much as possible. (In cases other than 0° and 90°, cavities may be generated in the upper part of the casing. An air vent is required.)
- Be sure to check the pump rotation direction. The anti-clockwise direction when viewed from the front side is the correct direction.
- Starting and stopping large-capacity pumps (5.5kW or higher) may affect the service life of each component adversely. (In this case, it is recommended to perform inverter-based starting and λ - Δ startup at least.)
- Avoid idling.
- Be sure to operate with the pump cover attached.
- For pumps of 3.7kW or less, the pump discharge port cannot be attached at 180°.



► Motor rating table

Efficiency	Frame No.	Insulation	Capacity kW	Number of poles	200V/50Hz		200V/60Hz		220V/60Hz		Bearing No.	
					rpm	A	rpm	A	rpm	A	BRG.D.S	BRG.O.S
IE3	80	F	0.75	2	2900	3.2	3485	2.9	3505	2.9	6207ZZ-C3	6204ZZ-C3
	90L		1.5	2	2895	5.8	3470	5.6	3495	5.2		6205ZZ-C3
			2.2	2	2880	8.2	3460	8	3495	7.4		
	112M		3.7	2	2930	14.6	3510	13.8	3530	12.8	6310ZZ-C3	6306ZZ-C3
	132S		5.5	2	2930	21.6	3520	20.4	3530	19		
			7.5	2	2915	27.6	3500	27	3525	24.6		6307ZZ-C3
	160M		11	2	2945	40	3535	39	3550	36		
			15	2	2945	54	3535	52	3550	48	6311ZZ-C3	6309ZZ-C3
	180M		22	2	2960	76	3550	76	3560	70		
	180L		30	2	2955	102	3545	102	3555	92		6312ZZ-C3
200LB	37	2	2965	128	3555	126	3565	116				
IE1	Explosion-proof 90L	B	1.5	2	2870	6.2	3440	6	3450	5.6	6205ZZ	6204ZZ
			2.2	2	2860	8.6	3430	8.4	3460	7.8		
	Explosion-proof 112M		3.7	2	2910	14.2	3480	13.8	3490	12.8	6207ZZ	6206ZZ
			5.5	2	2910	21.4	3490	20.2	3500	19	6308ZZ	6207ZZ
	Explosion-proof 132S		7.5	2	2920	27.6	3500	26.6	3510	24.6		

Sanitary pump specifications

1	Liquid quality	1) Liquid name	①	6	Motor type	Fully-closed external fan																		
			②		Motor capacity																			
		2) Specific gravity γ	①		Number of motor poles	2 4 Other ()																		
			②		Protection structure	Indoor, Outdoor, Other ()																		
		3) Viscosity ν	①		Insulation	F, B ()																		
			②		Installation environment	℃ %																		
		4) Temperature T	①																					
			②																					
2	Performance	1) Discharge amount Q	①	7	Drain nozzle	Unnecessary Necessary																		
			②		Air release nozzle	Unnecessary Necessary																		
		2) Total pump head H	①		Phase coupling	Unnecessary Necessary																		
			②		Pressure gauge	Unnecessary Necessary																		
		3) Discharge pump head h_d	①		Foundation bolt	Unnecessary Necessary																		
			②																					
		4) Suction pump head h_s	①																					
			②																					
3	Material	Remarks		Options/accessories																				
		1) Metal liquid contact part	SUS316 SUS304																					
		2) Packing	EPDM, FKM, SE72																					
		3) O-ring	EPDM, FKM, SE72																					
		4) Mechanical seal	SC, SS, TT																					
4	Structure	1) Pump type	Vortex																					
		2) Impeller type	Semi-closed																					
		3) Casing type	Back-volute																					
		4) Mechanical seal type	Clutch type outside																					
		5) Mechanical seal	Single Quenching Double																					
		6) Discharge direction	 ()																					
		7) Installation method	Floor-mounted, Foundation, For unit																					
5	Power supply	1) Voltage	200V 220V Other (V)	<table border="1"> <tr> <td>Pts=</td> <td>mAbs</td> <td>Ptd</td> <td>mAbs</td> </tr> <tr> <td>Z=</td> <td>m</td> <td>ho</td> <td>m</td> </tr> <tr> <td>hf=</td> <td>m</td> <td>Y</td> <td>m</td> </tr> <tr> <td>hs=</td> <td>m</td> <td>hd</td> <td>m</td> </tr> <tr> <td>H=</td> <td></td> <td>NPSH(A)=</td> <td>m</td> </tr> </table>	Pts=	mAbs	Ptd	mAbs	Z=	m	ho	m	hf=	m	Y	m	hs=	m	hd	m	H=		NPSH(A)=	m
		Pts=	mAbs	Ptd	mAbs																			
		Z=	m	ho	m																			
		hf=	m	Y	m																			
hs=	m	hd	m																					
H=		NPSH(A)=	m																					
2) Frequency	50Hz 60Hz Other (Hz)	$H = h_d - h_s$ $h_d = h_o + Y + P_{td} - 10.3$ $h_s = P_{ts} - 10.3 + Z - h_f$ $NPSH(A) = \frac{P_{ts} - P_{vp}}{\gamma} + Z - h_f$																						
3) Use of inverter	Used Unused	Pvp: Saturated steam pressure (mAbs)																						
4) Location of use	Indoor Outdoor	Section for entry of special notes ☐ If using nonstandard specifications for the lubricant application specifications on Page 1, be sure to designate them. ☐ If the specification is not specified, lubricant is applied. ☐ Safety of lubricant to be applied: ☐ NSF category H1 ☐ Conforming to the Food Sanitation Law																						

Sanitary pump type symbol table

Name	JIS material classification	Finish classification	Pipe end classification	Size classification	Product name/type
Symbol	※	0 P · 1 P · 2 P	M · C · W	X	— ^{*1} H E
	①	②	③	④	⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮

※Our company's reference number (V/W) ※1: H (Top runner motor)

① Material classification

Symbol	Material		
	Metal part (main body)	Casing packing	O-ring
316	SUS 316L (or equivalent)	Silicone rubber	Fluororubber
316-E	SUS 316L (or equivalent)	EPDM	EPDM
316-F	SUS 316L (or equivalent)	Fluororubber	Fluororubber
316-S	SUS 316L (or equivalent)	Silicone rubber	Silicone rubber
304	SUS 304 (or equivalent)	Silicone rubber	Fluororubber
304-E	SUS 304 (or equivalent)	EPDM	EPDM
304-F	SUS 304 (or equivalent)	Fluororubber	Fluororubber
304-S	SUS 304 (or equivalent)	Silicone rubber	Silicone rubber

※For 304 material, only N, M, and L size are available as ⑧ impeller diameter classification.

② Motor base materials

Category	Symbol	Material
Standard	—	FC20
Special	S	SUS304

③ Finish classification

Category	Symbol	Finish	
		Internal finish	External finish
Standard	0P	Pickling	Pickling or beads shot blasting
	1P	#320 to #400 buff polishing	Pickling or beads shot blasting
Option	EP (1P)	Electrolytic polishing	Pickling or beads shot blasting
	ODP	Special	Special

④ Pipe end classification

Category	Symbol	Details
Standard	M	ISO male
	C	ISO clamp
Option	N	ISO nut
	T	Sanitary flange
Special	X	—

⑤ ⑥ Size classification

Symbol	Size
15	1 1/2 S
20	2 S
25	2 1/2 S
30	3 S
40	4 S

Suction x discharge

⑦ Basic model classification

Symbol	Details	Note
EZ	Direct-connection (Motor/shaft integrated type)	Standard
ES	Separate type	Standard
EC	Direct-connection (Coupling method)	Explosion-proof

※For EC, 1.5 to 7.5kW is output.

⑧ Impeller diameter classification

Symbol	Impeller diameter
B	220
L	200
M	200
N	165
H	210

⑨ Number of motor poles

Category	Symbol	Number of poles	Rotation number (r.p.m.)
Standard	2	2P	50Hz (2915) 60Hz (3500)
		4P ^{*1}	50Hz (1460) 60Hz (1750)

※1 For 4P motor, the performance may change significantly. Please contact us.

※For 4P, 3.7 to 15kW is output

⑩ Frequency classification

Symbol	Frequency (Hz)
E	50
W	60
X	Other

⑪ Motor capacity (kW) classification

Symbol	Motor capacity kW	Symbol	Motor capacity kW
008	0.75	110	11
015	1.5	150	15
022	2.2	220	22
037	3.7	300	30
055	5.5	370	37
075	7.5		

⑫ Motor type classification

Category	Symbol	Details
Standard	B	200/220V 50/60Hz indoor type
	O	200/220V 50/60Hz outdoor type
Option	C	Various voltages
	P	Outdoor type various voltages
Explosion-proof	Z	200/220V 50/60Hz outdoor type
	Y	400/440V 50/60Hz outdoor type

⑬ Mechanical seal type

Symbol	Details
S	Single mechanical seal
C	Quenching mechanical seal
W	Double mechanical seal

⑭ Mechanical seal classification

Category	Symbol	Details
Standard	C	Carbon x ceramic (M6-CxES-4)
	S	Ceramic x ceramic (ES-4xES-4)
Option	T	Tungsten carbide x tungsten carbide (TC3 x TC3)
	X	Other

※ Symbols in () are manufacturer's own code.

⑮ Options

Symbol	Details
D	With drain nozzle
A	With air drain nozzle
S	With air drain-drain nozzle
U	With base for unit
X	Other



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