



TEXEL® Horizontal Centrifugal Pumps

GTA • TSX • NTS • TSU • SEM • SEL



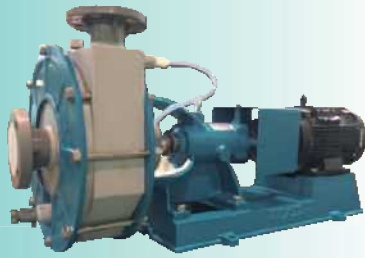
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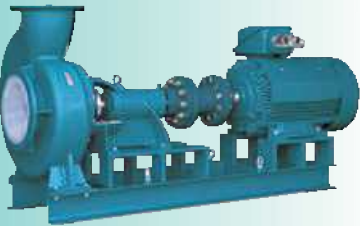
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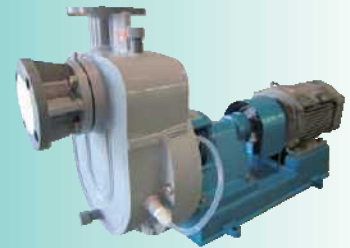
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Features of Texel horizontal mechanical seal pumps

Wide variations of pumps

Texel horizontal mechanical seal pumps offer wide variations in the types of materials of liquid contact parts and the types of shaft seal mechanisms. Optimum corrosion resistance and durability are provided by mixing and matching materials and shaft seal mechanisms to meet the specifications of the customer's site.

Self-suction (suction) type, as well as push type, is also available in the product lineup.

Covering high-corrosion resistance to semi-corrosion resistance

With excellent corrosion resistance of fluororesin (combination of PFA and PVDF), Texel horizontal mechanical seal pumps are applicable to lines that need high corrosion resistance to hydrochloric acid, sulfuric acid, sodium hypochlorite, etc. Also, some models are made of PVC and HTPVC suitable for fields that require semi-corrosion resistance to brine and seawater.

Resistance to slurry

Since the casing and impeller are made of materials that provide excellent wear resistance and corrosion resistance, TSU series pumps are suitable for pumping slurry that contains foreign objects (crystal, etc.). The open impeller structure prevents impeller clogging.

Various types of shaft seal mechanisms

The dedicated shaft seal mechanisms of Texel horizontal pumps are classified into "external mechanical seals (MA1 type)" and "internal mechanical seals (MB1 type)". With the external mechanical seal, the sliding parts are cooled with external feed water (freshwater). This type of seal is applicable to highly-crystalline chemical liquids.

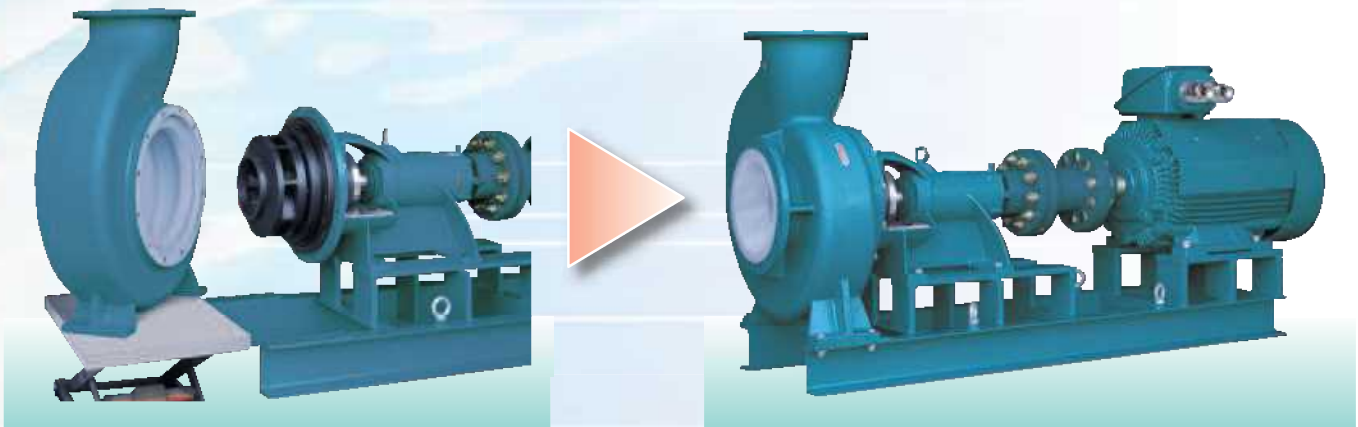
On the other hand, the internal mechanical seal is of a self-flushing type that is applicable to lines where external feed water is not available. Also, a dead-end type (non-water feed type) of internal mechanical seal that is resistant to mixture of foreign objects or slurry is available. And, a double mechanical seal type of higher sealing effect is available in the standard product lineup.

Proven track record

Texel horizontal mechanical seal pumps have been adopted in many lines that require various levels of corrosion resistance, including the steel, chemical, medical, agricultural, semiconductor, plating and wastewater treatment fields.

Feature specific to resin structure

Since the material cost is lower in comparison with corrosion-resistant metal pumps, resin pumps are advantageous in terms of initial investment and purchasing of replacement parts. The body is lighter than that of metal pumps.



▲ Unassembled

▲ Assembled

Materials of Principal Parts

Materials of principal parts of horizontal pumps

	PVC	HTPVC	PFA	ETFE	PVDF	UPE ^{*2}
Casing	NTS	NTS	GTA ^{*1}	GTA-200 ^{*1}	Self-suction type SEM-050 ^{*1}	TSU
	Self-suction type SEL			TSX		
Impeller		NTS			GTA	TSU
		Self-suction type SEL			Self-suction type SEM	
		GTA			TSX	
		TSX				
		Self-suction type SEM				
Casing cover	NTS	NTS			GTA	TSU
Suction cover	Self-suction type SEL	Self-suction type SEL			Self-suction type SEM	
	GTA	GTA			TSX	
	TSX	TSX				
	Self-suction type SEM	Self-suction type SEM				
Stuffing box	Self-suction type SEL	NTS			GTA	
		Self-suction type SEL			Self-suction type SEM	
		GTA			TSX	
		TSX			TSU	



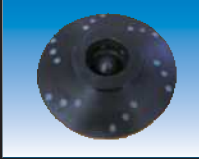

*1 The casing for magnetic pumps is partially modified.

*2 UPE: Ultra-high molecular weight polyethylene

Characteristics of Materials

Characteristics of materials of liquid contact parts

● Impeller and casing

PVC		PVC provides excellent corrosion resistance to acids and alkalis across a wide range of concentrations, but it is unsuitable for some kinds of chemicals and organic solvents.
HTPVC		HTPVC's corrosion resistance is almost equal to that of PVC. It provides excellent heat resistance (80°C max.).
PVDF		PVDF provides excellent corrosion resistance to general acids and organic solvents across a wide temperature range covering high temperatures, but it is unsuitable for alkalis (sodium hydroxide etc.), strong acids (98% sulfuric acid etc.) and organic solvents (amine, ketone, ester, amid, etc.).
UPE		UPE provides extremely high wear resistance and impact resistance. It provides excellent corrosion resistant to general acids and alkalis, but it is unsuitable for liquid chemicals and organic solvents of high concentration and high temperature.

● O-ring

FPM	FPM provides excellent corrosion resistance to acid, but it is unsuitable for organic solvents, alkalis (sodium hydroxide, aqueous ammonia, etc.) and acids (acetic acid, formic acid, concentrated nitric acid, hydrofluoric acid, etc.).
EPDM	EPDM provides excellent corrosion resistance to alkalis, but it is unsuitable for organic solvents and acids. This material can be used for liquid chemicals (sodium hydroxide, acetic acid, formic acid, methanol, acetone, etc.) to which FPM is not applicable.
FFKM	This material provides excellent corrosion resistance to organic solvents, as well as acids and alkalis.

● For details, refer to "Corrosion Resistance Table" (p. 27 and 28).

Characteristics of materials

Material		PVC	HTPVC	PVDF	UPE	FRP
Specific gravity		1.45	1.65	1.75	0.93	1.40
Continuous operating temperature (°C)		50	80	150	60	90
Tensile strength (MPa)		54	60	55	42	95
Corrosion resistance	Acid	○	○	◎	○	○
	Alkaline	○	○	▲	○	○
	Organic solvent	×	×	▲	▲	▲

Description of code ○: Excellent ◯: Good ▲: Caution required in use, ×: Not applicable

Parts material table

Parts	O-ring			Shaft sleeve			Self-suctioning	Casing lining	Closed impeller	Semi-open impeller
	FPM	EPDM	Other material (FFKM, etc.)	HTPVC	PVDF	FEP				
GTA	○	○	★	—	○	○	—	○	○	★
TSX	○	○	★	—	○	○	—	○	○	★
NTS	○	○	★	—	○	○	—	—	○	★
TSU	○	○	★	—	○	—	—	—	○	—
SEM	○	○	★	—	○	○	○	—	○	—
SEL	○	○	★	○	★	○	○	—	★	○

Description of code ○: Standard type ★: Optionally available

Wear resistance of UPE

Table 1 shows results of wear resistance tests conducted on UPE and other materials according to the test method shown in Fig. 1.

In this test, a container is filled with a slurry and each test piece is attached to a rotating shaft and rotated. The change in weight of the test piece is determined and compared with other materials.

The slurry used for this test is a mixture of grindstone (60 mesh) and water prepared to a 1:1 volumetric concentration. The test piece rotational speed is 3500 min⁻¹, the rotation time is 24 hours, and the test temperature is 17 to 25°C (room temperature). The test results show that UPE is considerably better than other materials.

Fig. 1 Equipment for wear resistance test and test piece

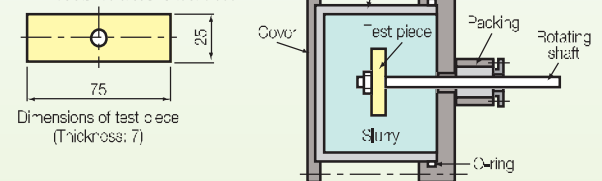


Table 1 Comparison of wear resistance test results (UPF = 1.0)

Material	5	10	15	20	25	Material	5	10	15	20	25
UPE	1.0					FC200				15.0	
PVC		17.1				S45C				24.2	
P/PT		8.8				SUS304			8.8		
FRP				20.4		Titanium				20.0	
ETFE		5.8				HASTELLOY			8.0		
C-PTFE		14.2				FuLac (thickness: 20)				18.3	
PP		14.2									

Selection of Shaft Seal Mechanism by Application

External mechanical seal

The shaft seal sliding surface is cooled with external water feed (freshwater).

The external mechanical seal is recommended for applications that handle general liquid, slurried and highly-crystalline chemicals.

The MA1 and AC/AX series are single mechanical seal type pumps. The MAW series has double mechanical seal type pumps. There are restrictions on external feed water pressure and water feed rate. For details, refer to the instruction manual.

MA1 series

Type	MA1-1	MA1-4	MA1-6
Stationary ring	Ceramic	Ceramic	SiC
Rotating ring	Carbon	Teflon	SiC

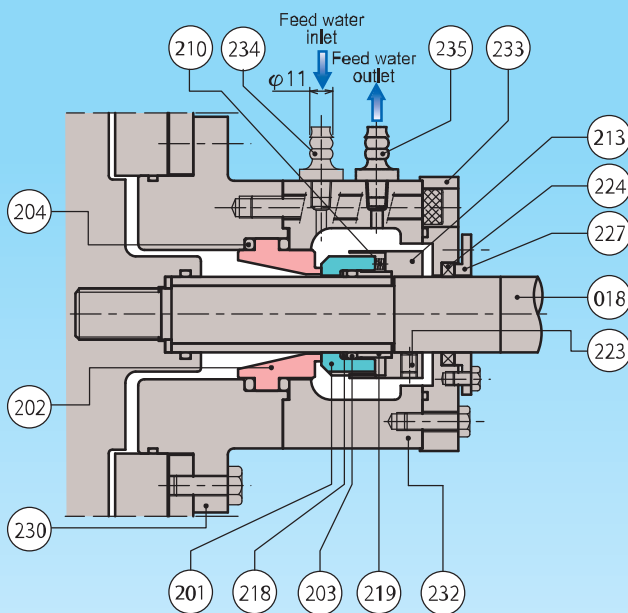
AC/AZ series

Type	AC	AZ
Stationary ring	Carbon	Ceramic
Rotating ring	Carbon	Teflon

MAW series (Double mechanical seals)

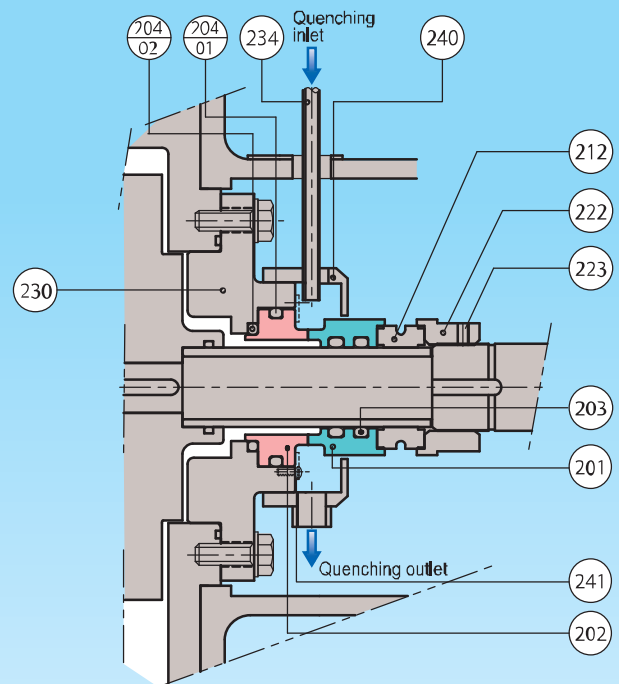
Type	Liquid contact side	Atmosphere side
Stationary ring	SiC	SiC
Rotating ring	SiC	SiC

MA1 series



Part No.	Part name	Material	Q'ty
201	Rotating ring	Carbon / Teflon / SiC	1
202	Stationary ring	Ceramic / SiC	1
203	O-ring (Rotating ring)	FPM/EPDM	1
204	O-ring (Stationary ring)	FPM/EPDM	2
210	Spring	1st alloy C	1 set
218	Spring retainer	SUS316	1
219	Backup ring	PTFE	1
224	Gland packing	C-PIFE	1
227	Packing gland	SUS316	1
230	Stuffing box	HTPVC/PVDF	1
232	Gland cover	HTPVC/PVDF	1
233	Cover seal	SUS316	1
234	Flooding pipe	HTPVC	1
235	Drainage pipe	HTPVC	1

AC/AZ series



Part No.	Part name	Material	Q'ty
201	Rotating ring	Carbon / Teflon	-
202	Stationary ring	Carbon / Ceramic	-
203	O-ring (Rotating ring)	FPM/EPDM	2
204-01	O-ring (Stationary ring 1)	FPM/EPDM	-
204-02	O-ring (Stationary ring 2)	FPM/EPDM	-
212	Cushion ring	Neoprene	-
222	Adjust collar	PP	-
223	Set screw	SUS304	-
230	Stuffing box	PVC/HTPVC	-
234	Flooding pipe	PP	-
240	Seal cover	PVC	-
241	Stopper	PVC	-

Pump models that support external mechanical seals

Model	Type	MA1 series	AC/AZ series	MAW series
GTA series		○	—	○
TSX series		○	—	○
NTS series		○	★	○

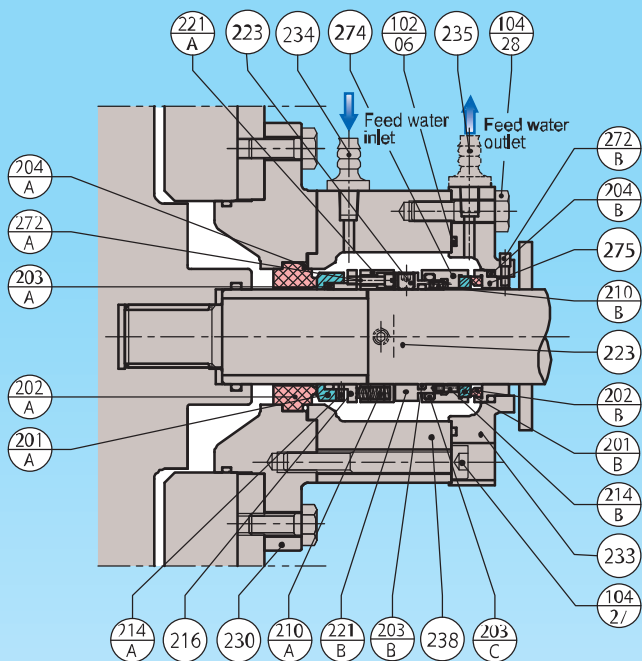
Model	Type	MA1 series	AC/AZ series	MAW series
TSU series		○	—	○
SEM series		○	○	★
SEL series		○	○	★

Description of code ○: Standard type ★: Optionally available

Internal mechanical seal

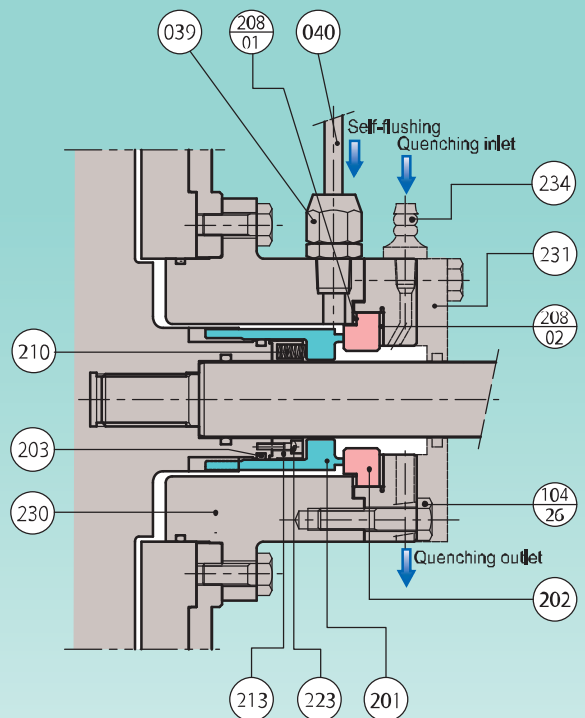
The shaft seal sliding surfaces are cooled by internal liquid circulation. The internal mechanical seal is recommended for applications where external feed water is not available. For slurried and highly-crystalline chemicals, the DEM series mechanical seal that can cope with slurries is recommended.

MAW series (Double mechanical seals)



Part No.	Part name	Material	Q'ty
102-06	O-ring (Cover seal)	FPM/EPDM	1
104-2/	Grand cover bolt	SUS304	1 set
104-79	Cover seal bolt	SUS304	1 set
201A	Rotating ring A	SIC	1
201B	Rotating ring B	SIC	1
202A	Stationary ring A	SIC	1
202B	Stationary ring B	SIC	1
202C	O-ring (Rotating ring A)	FPM/EPDM	1
202D	O-ring (Rotating ring B)	FPM/EPDM	1
202E	O-ring (Rotating ring C)	FPM/EPDM	1
202F	O-ring (Stationary ring A)	FPM/EPDM	1
202G	O-ring (Stationary ring B)	FPM/EPDM	1
202H	O-ring (Stationary ring C)	FPM/EPDM	1
210A	Spring A	Hastelloy C	1 set
210B	Spring B	SUS316	1 set
214A	Drive pin A	Hastelloy C	1 set
214B	Drive pin B	SUS316	1 set
216	Cono ring	Hastelloy C	1
221A	Collar A	SUS316	1
221B	Collar B	SUS316	1 set
223	Set screw	SUS316	2 set
227	Stuffing box	HTPXC PVDF	1
228	Cover seal	HTPXC PVDF	1
234	Flooding pipe	HTPXC PVDF	1
235	Drainage pipe	HTPXC PVDF	1
238	Mid box	PVDF	1
272A	Set pin A	Hastelloy C	1 set
272B	Set pin B	SUS304	1
274	Rotating ring liner	SUS316	1
275	Stationary ring liner	SUS316	1

MB1 series



Part No.	Part name	Material	Q'ty
039	Bypass pipe joint	PVDF	1 set
040	Bypass pipe	TEP	1
201	Rotating ring	Carbon Teflon	1
202	Stationary ring	Carbon Teflon	1
203	O-ring (Rotating ring)	FPM/EPDM	1
208-01	Gasket (Stationary ring 1)	PTFE	1
208-02	Gasket (Stationary ring 2)	PTFE	1
210	Spring	Hastelloy C	1 set
213	Spring retainer	SUS316	1
223	Set screw	SUS316	1 set
230	Stuffing box	PVDF	1
231	Stationary ring cover	PVDF	1
234	Flooding pipe	ITPVC	1

Internal mechanical seal

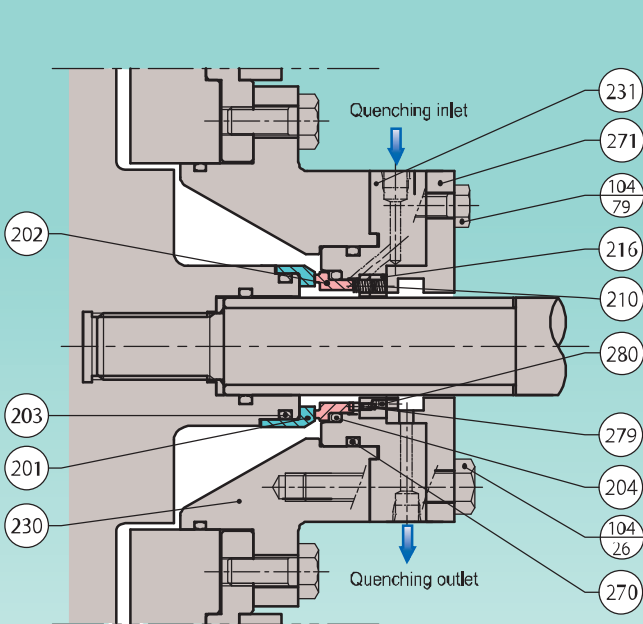
MB1 series

Type	MB1-1	MB1-4	MB1-6
Stationary ring	Ceramic	Ceramic	SiC
Rotating ring	Carbon	Teflon	SiC

DEM series

Type	DEM
Stationary ring	SiC
Rotating ring	SiC

DEM series



Part No.	Part name	Material	Q'ty
104-26	Stationary ring cover bolt	SUS304	6
104-79	Stationary ring cover bushing bolt	SUS304	2
201	Rotating ring	SiC	1
202	Stationary ring	SiC	1
203	O-ring (Rotating ring)	HPM/EPDM	1
204	O-ring (Stationary ring)	HPM/EPDM	1
210	Spring	Hastelloy C	1 set
216	Comp ring	Hastelloy C	1
220	Stuffing box	PVDF	1
221	Stationary ring cover	PVDF	1
270	O-ring (Stationary ring cover)	HPM/EPDM	1
271	Stationary ring cover pushing	SUS316	1
279	Lock pin (Stationary ring)	Hastelloy C	1 set
280	Lock pin (Comp ring)	Hastelloy C	1 set

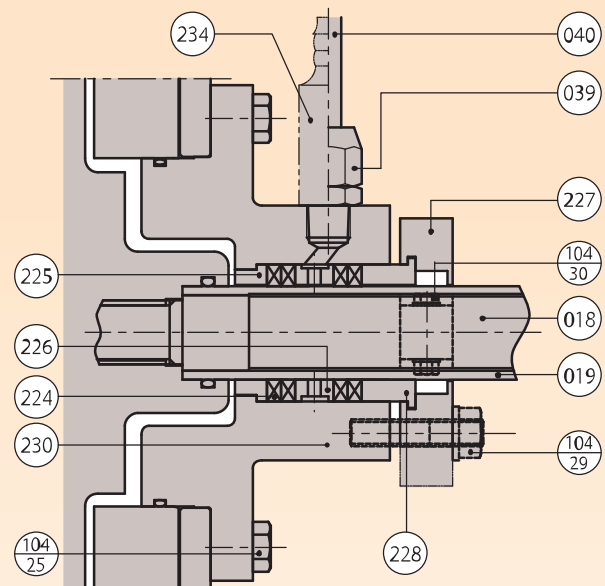
Packing seal

The packing seal provides a sealing effect by tightening the gland packing. Sliding surfaces are cooled by external feed water, or by internal liquid circulation. The gland packing periodically requires retightening.

Packing seal

Type	PS1/PW1	PS2/PW2	PS3/PW3
Shaft	SUS316	SUS420J2	SUS420J2
Shaft sleeve	None	Hastelloy C	Titanium

PS/PW series



Seal type	Part No.	Part name	Material	Q'ty	
PS1	PW1	018	Shaft	SUS316	1
		019	Shaft sleeve	—	1
PS2	PW2	018	Shaft	SUS420J2	1
		019	Shaft sleeve	Hastelloy C	1
PS3	PW3	018	Shaft	SUS420J2	1
		019	Shaft sleeve	Titanium	1

Part No.	Part name	Material	Q'ty
039-1	Bypass pipe joint	PVDF	1 set
040	Bypass pipe	FCP	1
104-25	Stuffing box bolt	SUS304	1 set
104-26	Gland bolt	SUS304	2
104-27	Gland set bolt	SUS304	2
224	Gland backing	Induced carbon fiber PTFE	1
225	Neck bush	Filler-contained PTFE	1
226	Intern ring	Filler-contained PTFE	1
227	Packing gland	HTPVC	1
228	Gland ring	Filler-contained PTFE	1
230	Stuffing box	HTPVC	1
234	Loading pipe	HTPVC	1

Pump models that support internal mechanical seals or packing seals

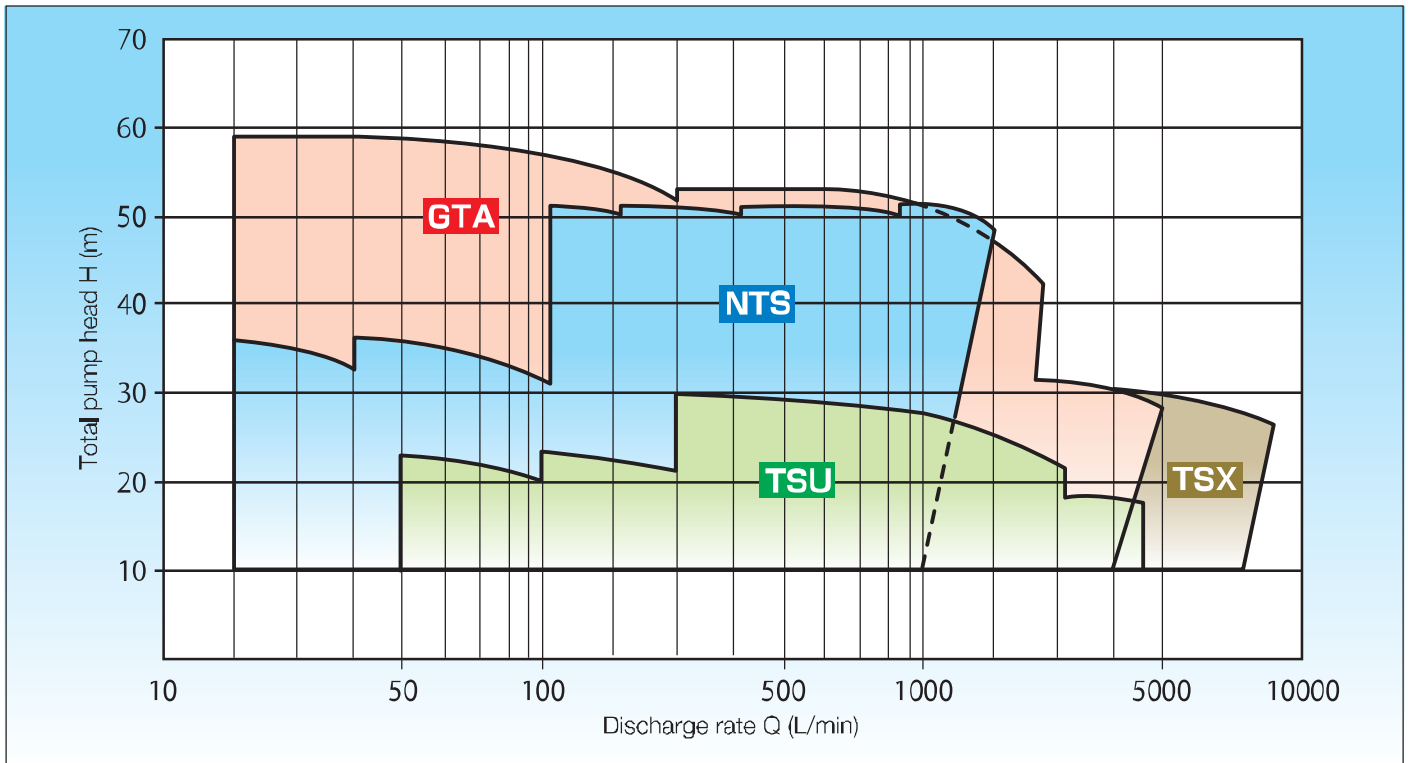
Model	Type	MB1 series	DEM series	Packing seal
GTA series		○	○	★
TSX series		○	○	★
NTS series		○	★	○
TSU series		—	○	★

Model	Type	MB1 series	DEM series
SEM series		○	○
SEL series		○	★

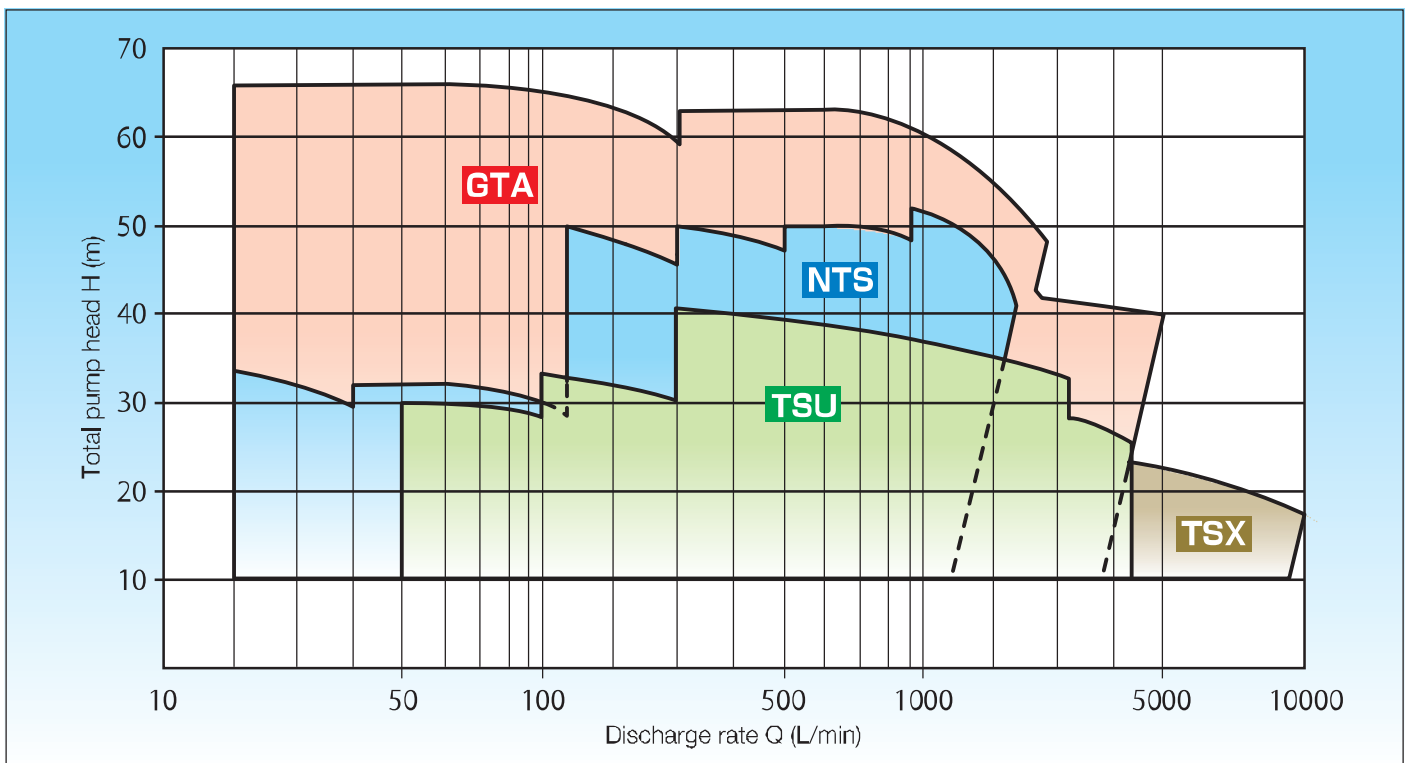
Description of code ○: Standard type ★: Optionally available

General Capacity Chart

Horizontal pump capacity chart: 50 Hz (GTA/TSX/NTS/TSU)



Horizontal pump capacity chart: 60 Hz (GTA/TSX/NTS/TSU)



Necessary Information for Inquiries and Orders

- ① Pump head or pressure (m or MPa·kgf/cm²)
 - a) Suction condition: Suction head (m), piping and other conditions (Details)
 - b) Discharge condition: Discharge head (m), piping and other conditions (Details)
- ② Pump capacity (Flow rate): L/min or m³/hr
- ③ Applicable liquid
 - ① Liquid name (composition), operating temperature, specific gravity, viscosity and vapor pressure at operating temperature, mixture of fine particles, etc.
 - ② Power supply, voltage, frequency
 - ③ Motor type: Explosion-proof type, high-efficiency type, etc.

GTA series

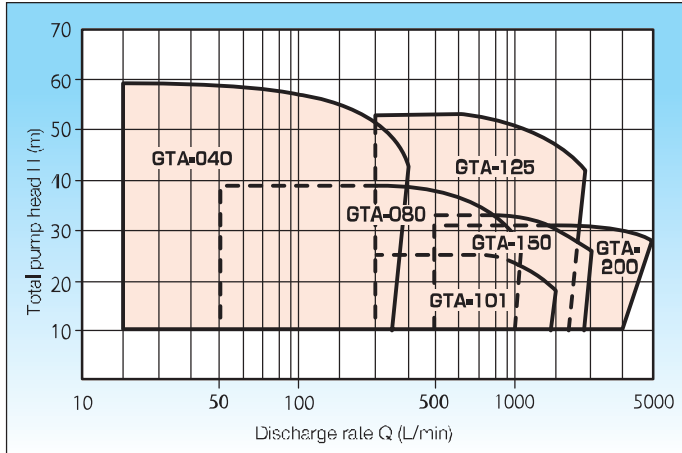


GTA series pumps adopt a magnetic pump casing, thus providing high-corrosion resistance. The material of liquid contact parts can be changed to HTPVC, PVDF, etc., to match operating conditions.

Standard specifications

Structure	Drive: Motor direct-driven type
	Shaft seal: Mechanical seal / Packing seal
	Impeller: Closed type
	Bearing: Oilless seal ball bearing
Operating temperature range	PVC: 0 to 50°C
	HTPVC: 0 to 80°C
	PVDF: 0 to 90°C
Rotating direction	Clockwise (When viewed from motor side)
Flange	Equivalent to JIS 10K RF
Motor	General-purpose horizontal motor with base
Paint color	Equivalent to Munsell 2.5B4/8 (Metal exposed parts, except for pump shaft)

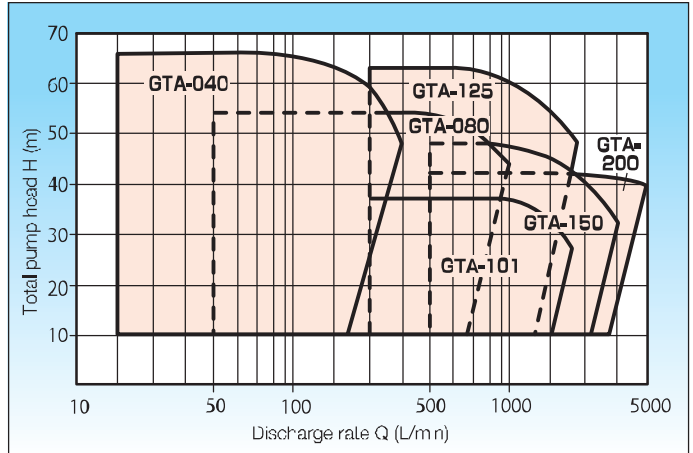
Capacity chart and specification table: 50 Hz



Model	Bore diameter (Bore dia. × Dia. (mm))	2F			4F			Frame No.
		Discharge rate (L/min)	Total head (m)	Motor output (kW)	Discharge rate (L/min)	Total head (m)	Motor output (kW)	
GTA-0401	40×25	200	35	5.5	—	—	—	F3
GTA-0403	40×25	200	40	5.5	—	—	—	F3
GTA-0405	40×25	300	50	7.5	—	—	—	F3
GTA-0407	40×25	—	—	—	150	10	1.5	F3
GTA-0801	80×50	700	10	3.7	—	—	—	F3
GTA-0803	80×50	800	20	7.5	—	—	—	F3
GTA-0805	80×50	800	30	11	—	—	—	F4
GTA-0807	80×50	—	—	—	400	8	1.5	F3
GTA-1011	100×80	—	—	—	1500	15	11	F4
GTA-1013	100×80	—	—	—	2000	20	15	F4
GTA-1251	125×100	2000	30	22	—	—	—	F5
GTA-1253	125×100	2000	40	30	—	—	—	F5
GTA-1501	150×125	—	—	—	2000	23	15	F5
GTA-1503	150×125	—	—	—	2000	30	22	F5
GTA-2001	200×150	—	—	—	3000	12	15	F5
GTA-2003	200×150	—	—	—	4000	20	30	F5
GTA-2005	200×150	—	—	—	4000	30	37	F5

Motor output is given for liquids with a specific gravity of 1.0 at the target point.

Capacity chart and specification table: 60 Hz



Model	Bore diameter (Bore dia. × Dia. (mm))	2F			4F			Frame No.
		Discharge rate (L/min)	Total head (m)	Motor output (kW)	Discharge rate (L/min)	Total head (m)	Motor output (kW)	
GTA-0402	40×25	200	50	7.5	—	—	—	F3
GTA-0404	40×25	200	50	11	—	—	—	F3
GTA-0408	40×25	—	—	—	150	15	1.5	F3
GTA-0802	80×50	800	20	7.5	—	—	—	F3
GTA-0804	80×50	1000	30	15	—	—	—	F4
GTA-0806	80×50	1000	40	15	—	—	—	F4
GTA-0808	80×50	—	—	—	600	10	2.2	F3
GTA-1012	100×80	—	—	—	1500	15	11	F4
GTA-1014	100×80	—	—	—	2000	20	15	F4
GTA-1016	100×80	—	—	—	2000	30	18.5	F4
GTA-1252	125×100	2000	30	30	—	—	—	F5
GTA-1254	125×100	2000	40	30	—	—	—	F5
GTA-1502	150×125	—	—	—	2500	32	30	F5
GTA-1504	150×125	—	—	—	3000	40	37	F5
GTA-2002	200×150	—	—	—	3000	20	30	F5
GTA-2004	200×150	—	—	—	4000	30	37	F5

Motor output is given for liquids with a specific gravity of 1.0 at the target point.

Model identification

GTA - 150 1 F 15 S A 1 1

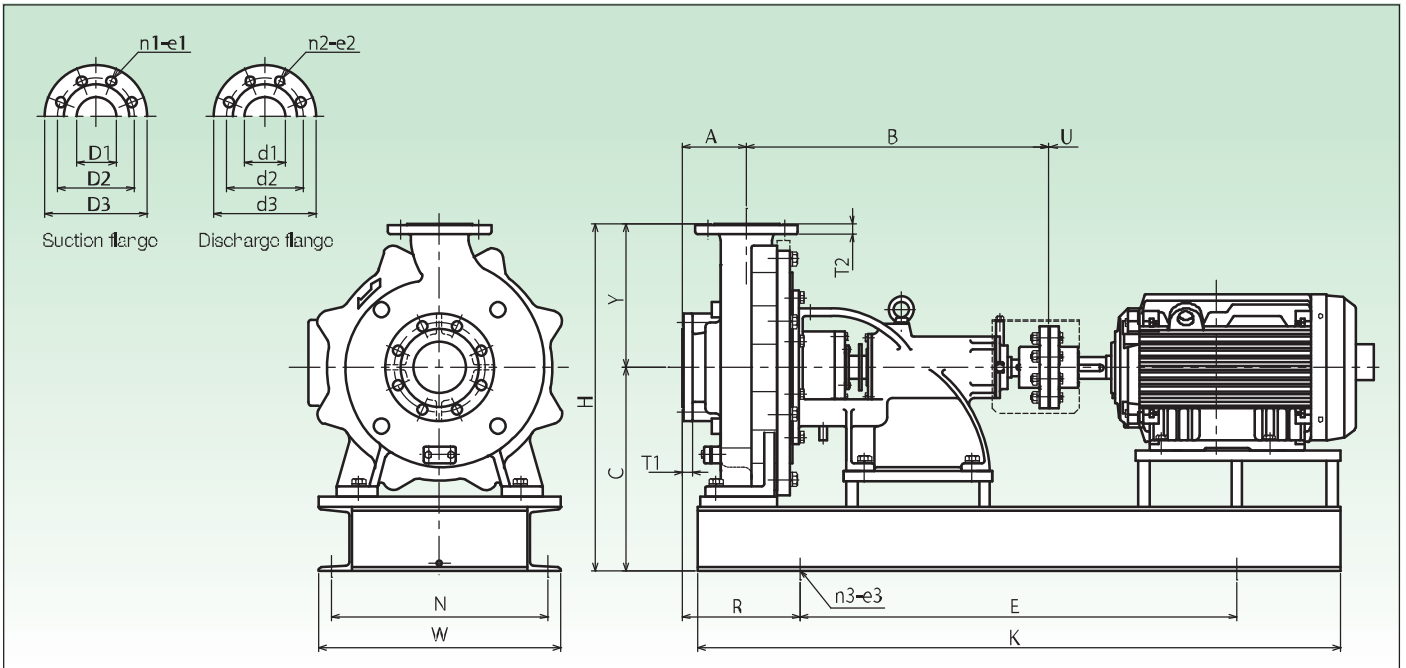
(1) (2) (3) (4) (5) (6) (7) (8) (9)

- ① Name
- ② Bore diameter (100 A, 4P motor: 101)
- ③ Frame No.
- ④ O-ring material F: FPM E: EPDM Z: Other
- ⑤ Motor output
 - 01 : 0.75 kW 02 : 1.5 kW 03 : 2.2 kW
 - 05 : 3.7 kW 07 : 5.5 kW 10 : 7.5 kW
 - 15 : 11 kW 20 : 15 kW 25 : 18.5 kW
 - 30 : 22 kW 40 : 30 kW 50 : 37 kW
- ⑥ Body material (Casing, casing cover, etc.)
- ⑦ Shaft seal structure
- ⑧ Shaft seal type
- ⑨ Shaft seal configuration

Code	Impeller	Casing cover	Stuffing box
S	HTPVC	PVC	HTPVC
H	HTPVC	HTPVC	HTPVC
V	PVDF	PVDF	PVDF
Z	Other	Other	Other

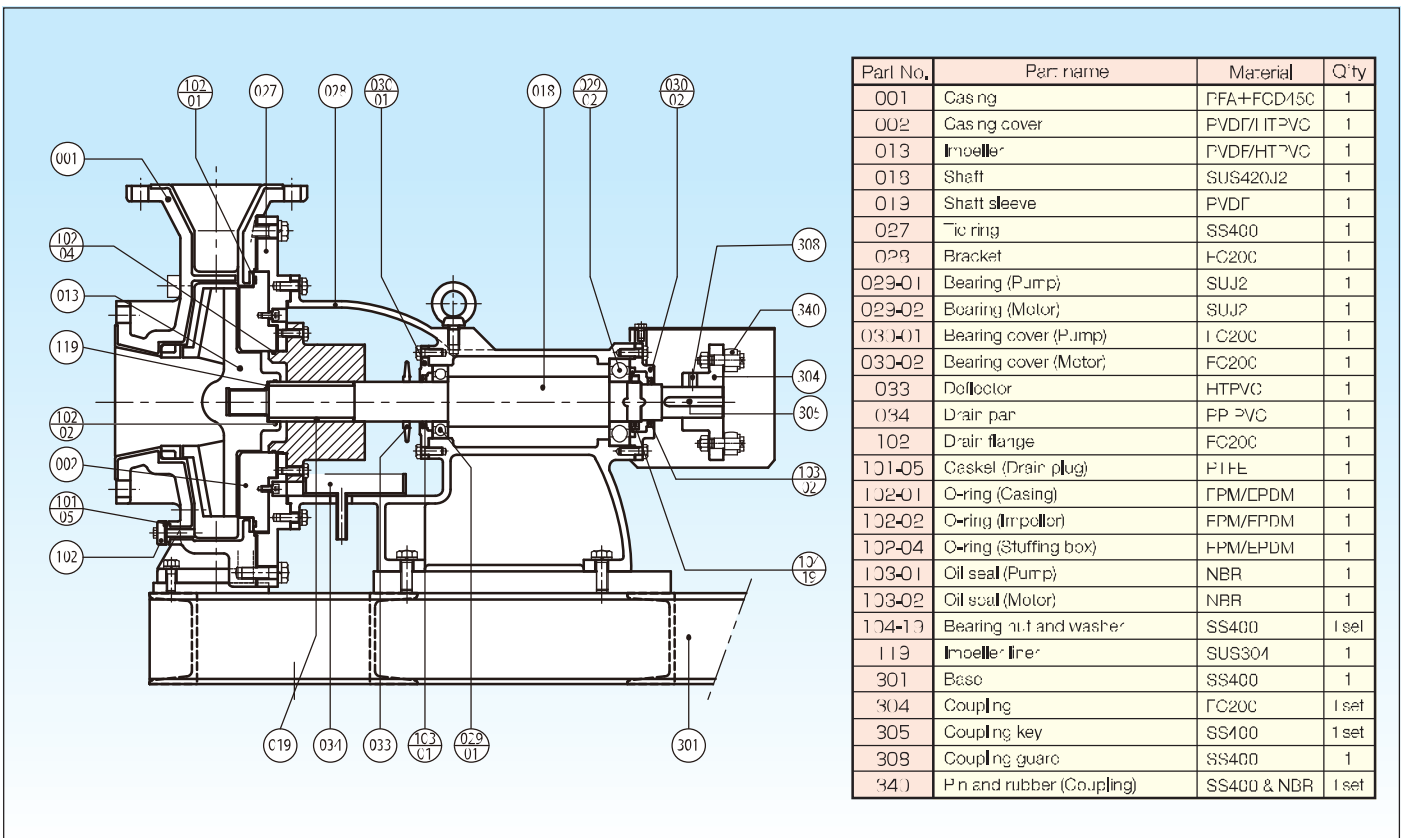
A: External mechanical seal	B: Internal mechanical seal	P: Packing seal
1: MA1	1: MB1	S: Internally cooled
W: MAW	2: MB1Q1	W: Externally cooled
Z: Other	3: MB1Q2	
	D: DFM	
	Z: Other	
Rotating ring	Stationary ring	1: SUS316 (Straight shaft)
1: Resin-impregnated carbon	Alumina	2: Hastelloy C
4: Filler-contained PTFE	Alumina	3: Titanium
6: SiC	SiC	4: SiC
Z: Other than above	Other than above	5: Silicon nitride
* Double mechanical seal and dead-end types: SiC only		Z: Other than above

Outer dimensions drawing and table

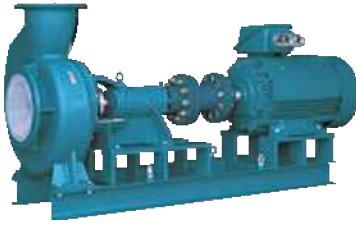


Model	A	B	R	C	Y	F	U	E	K	N	W	D1	D2	D3	n1-e1	T1	n1	d2	d3	n2-e2	T2	n3-e3	Motor output (kW)
GTA-040	102	522.5	244.5	315	165	490	3	500	900	350	390	40	105	140	4-19	18.5	27	90	125	4-3	15.5	4-3	1.5/2.2x2P
								550	950														3,7x2P
								600	1000														5.5/7.5x2P
GTA-080	102	529.5	240	345	210	550	3	550	950	310	360	90	150	200	8-19	20.5	30	120.5	155	4-3	17.5	4-3	3,7x2P
								650	1050														5.5/7.5x2P
GTA-101	125	587	230	395	280	675	3	950	1250	420	470	100	175	210	8-19	20	78	150	200	3-19	20	4-19	11/15x4P
								900	1300														13,5/22x4P
GTA-125	125	602	297.5	395	250	645	3	900	1400	420	470	120	210	250	8-23	22	98	175	220	3-19	20	4-19	11/15/18,5x2P
			262					350	22x2P														
GTA-150	140	700	217.5	390	300	690	3	1000	1400	460	530	150	240	280	8-23	22	125	210	250	3-23	22	4-19	11/15x4P
			297.5					1500	30x4P														
GTA-200	200	710	255	495	420	915	3	1000	1500	440	500	120	290	350	12-23	26	146	240	280	3-23	26	4-3	13,5/22x4P

Cross-sectional drawing



TSX series

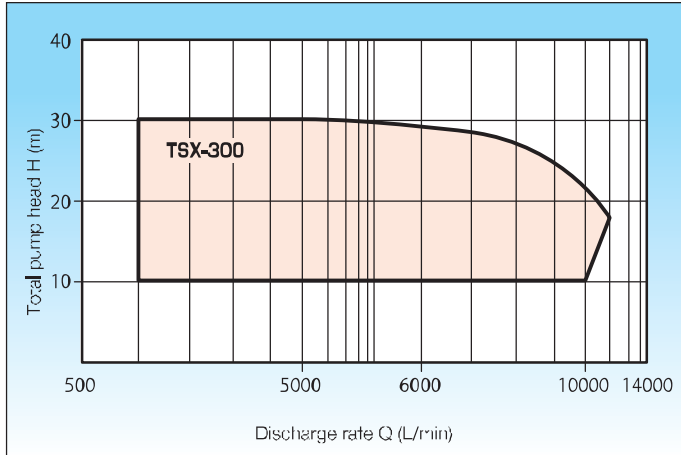


This series of large-capacity mechanical seal pumps has liquid contact parts made of fluoro resin, thus providing high temperature resistance (90°C max.) and high corrosion resistance. The material of liquid contact parts can be changed to HTPVC, PVDF, etc., to match operating conditions.

Standard specifications

Structure	Drive: Motor direct-driven type Shaft seal: Mechanical seal / Packing seal Impeller: Closed type Bearing: Oilless seal ball bearing
Operating temperature range	PVC: 0 to 50°C HTPVC: 0 to 80°C PVDF: 0 to 90°C
Rotating direction	Clockwise (When viewed from motor side)
Hange	Equivalent to JIS 10K RF
Motor	General-purpose horizontal motor with base
Paint color	Equivalent to Munsell 2.5B4/8 (Vetal exposed parts, except for pump shaft)

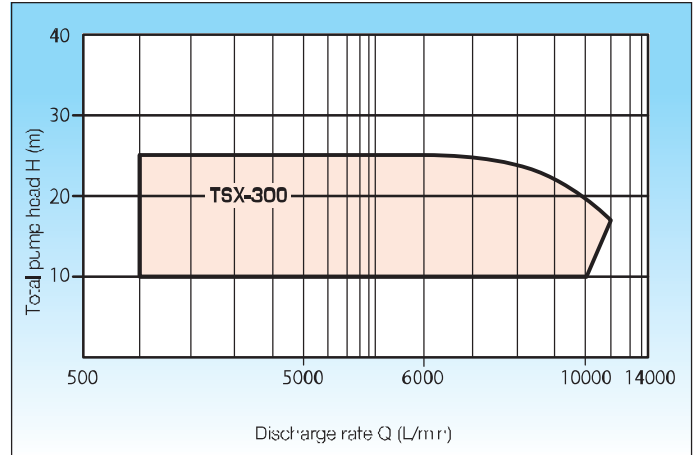
Capacity chart and specification table: 50 Hz (4P)



Model	Bore diameter (Suction x Dis.) (mm)	Discharge rate (L/min)	Total head (m)	Motor output (kW)	Frame No.
TSX-3001	300x250	9000	15	45	F6
TSX-3003			20	55	

Motor outputs given for liquids with a specific gravity of 1.0 at the target point.

Capacity chart and specification table: 60 Hz (6P)



Model	Bore diameter (Suction x Dis.) (mm)	Discharge rate (L/min)	Total head (m)	Motor output (kW)	Frame No.
TSX-3002	300x250	9000	15	45	F6
TSX-3004			20	55	

Motor output is given for liquids with a specific gravity of 1.0 at the target point.

Model identification

TSX - 300 1 F 50 S A 1 1

- ① Name
- ② Bore diameter
- ③ Frame No.
- ④ C-ring material: F: FPM E: EPDM Z: Other
- ⑤ Motor output
25: 18.5 kW 30: 22 kW 40: 30 kW
50: 37 kW 60: 45 kW 70: 55 kW
100: 75 kW
- ⑥ Body material (Casing, casing cover, etc.)

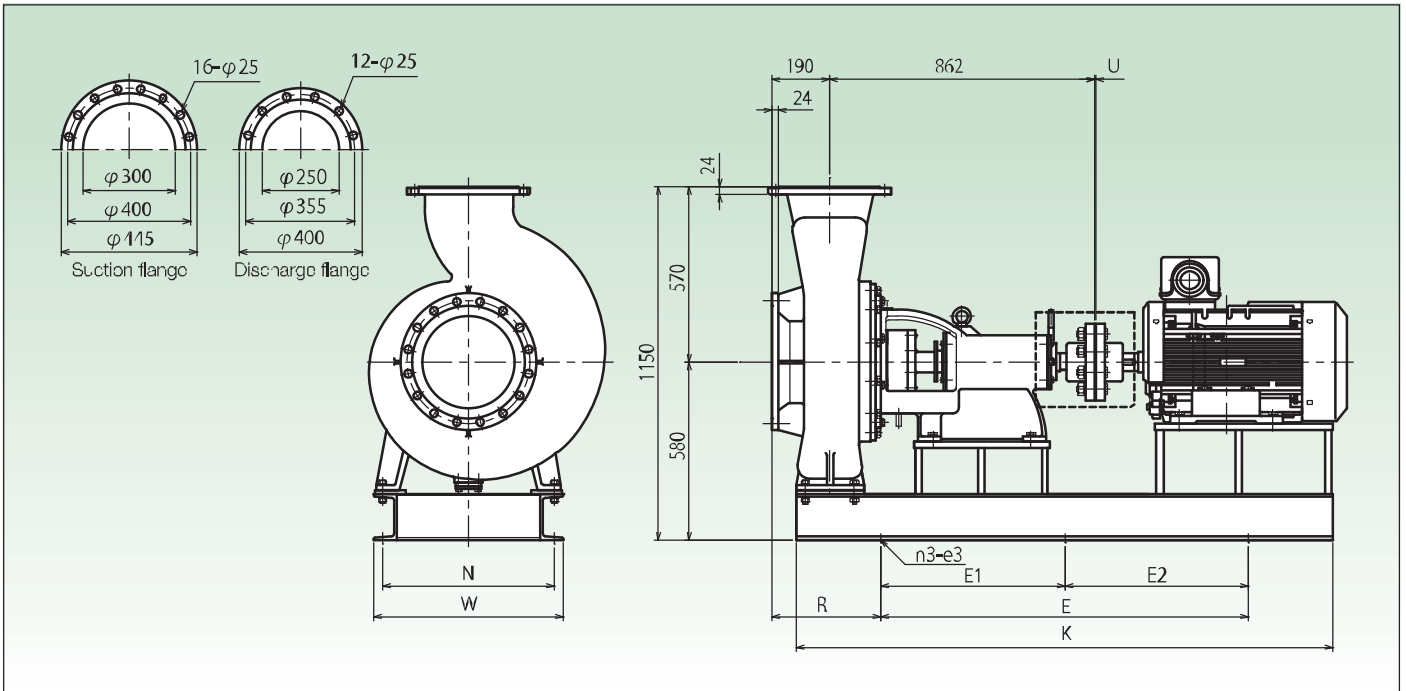
Code	Impeller	Casing cover	Stuffing box
S	HTPVC	PVC	HTPVC
II	HTPVC	HTPVC	HTPVC
V	PVDF	PVDF	PVDF
Z	Other	Other	Other

- ⑦ Shaft seal structure
- ⑧ Shaft seal type

A: External mechanical seal	B: Internal mechanical seal	P: Packing seal
1: MA1	1: MB1	S: Internally cooled
W: MAW	2: MB10*	W: Externally cooled
7: Other	3: MB1Q*	
	D: DLM	
	Z: Other	
Rotating ring	Stationary ring	1: SUS316 (Straight shaft)
1: Resin-impregnated carbon	Alumina	2: Hastelloy C
4: Filler-contained PTFE	Alumina	3: Titanium
6: SiC	SiC	4: SiC
7: Other than above	Other than above	5: Silicon nitride
		Z: Other than above

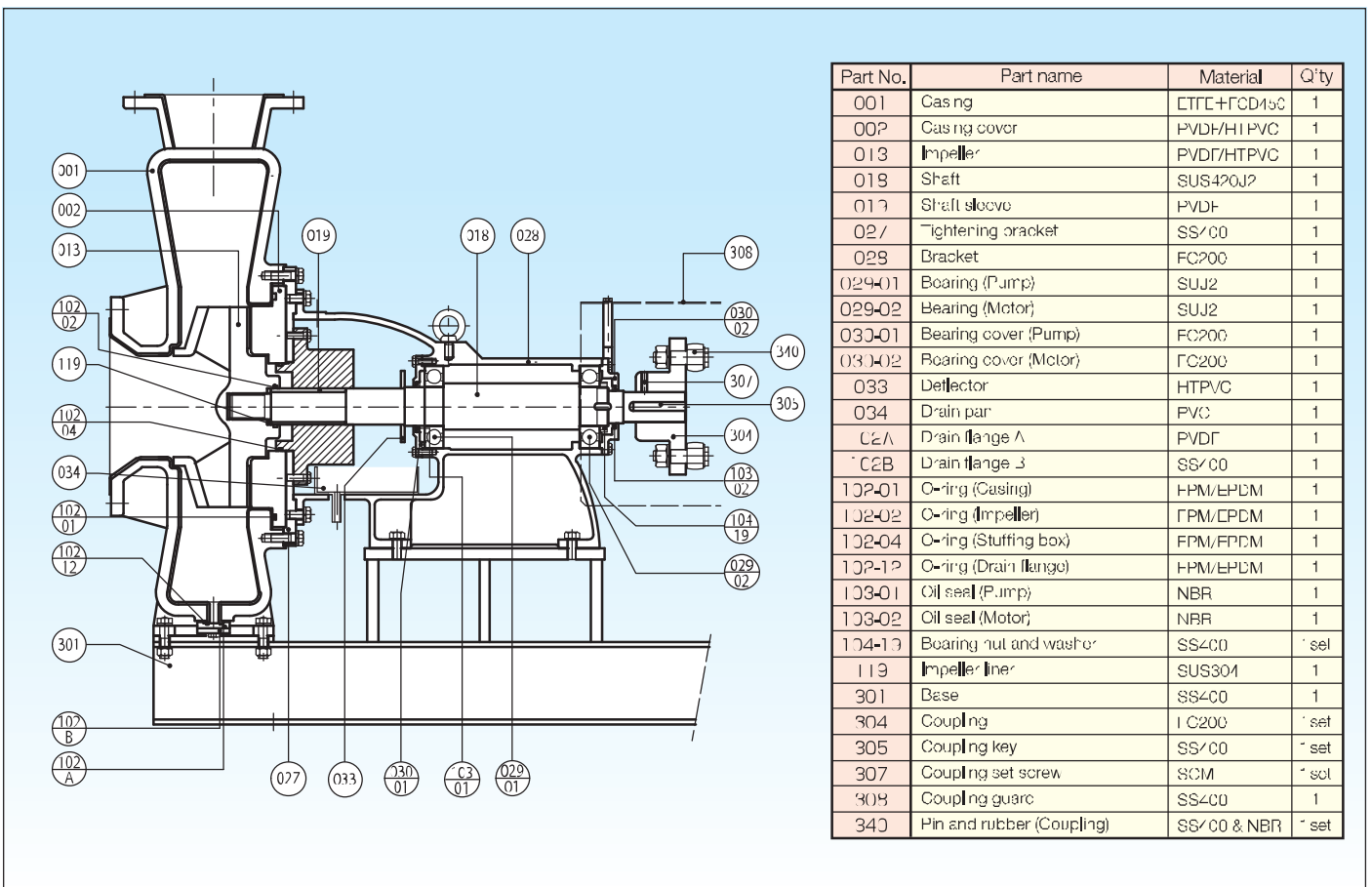
- ⑨ Shaft seal configuration

Outer dimensions drawing and table



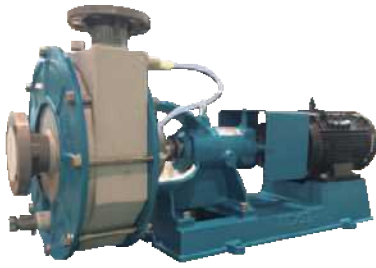
Model	R	U	E	E1	E2	K	N	W	13-33	Motor output (kW)
TSX-300	355	/	1200	—	—	750	580	620	4-19	37/45 × 4P
	330			625	625	750				3C/37 × 6P
	28J			750	750	900				55 × 4P/15 × 6P
									6-19	75 × 4P/55 × 6P

Cross-sectional drawing



Part No.	Part name	Material	Q'ty
001	Casing	ETFE+GCD15C	1
00P	Casing cover	PVDF/HIPVC	1
013	Impeller	PVDF/HTPVC	1
019	Shaft	SUS420J2	1
017	Shaft sleeve	PVDF	1
027	Tightening bracket	SS400	1
029	Bracket	FC200	1
029-01	Bearing (Pump)	SUJ2	1
029-02	Bearing (Motor)	SUJ2	1
030-01	Bearing cover (Pump)	FC200	1
030-02	Bearing cover (Motor)	FC200	1
033	Deflector	HTPVC	1
034	Drain pan	PVC	1
C2A	Drain flange A	PVDF	1
C2B	Drain flange B	SS400	1
102-01	O-ring (Casing)	FPM/EPDM	1
102-02	O-ring (Impeller)	FPM/EPDM	1
102-04	O-ring (Stuffing box)	FPM/EPDM	1
102-12	O-ring (Drain flange)	FPM/EPDM	1
103-01	Oil seal (Pump)	NBR	1
103-02	Oil seal (Motor)	NBR	1
104-13	Bearing nut and washer	SS400	1 set
119	Impeller liner	SUS304	1
301	Base	SS400	1
304	Coupling	FC200	1 set
305	Coupling key	SS400	1 set
307	Coupling set screw	SCM	1 set
308	Coupling guard	SS400	1
340	Pin and rubber (Coupling)	SS400 & NBR	1 set

NTS series

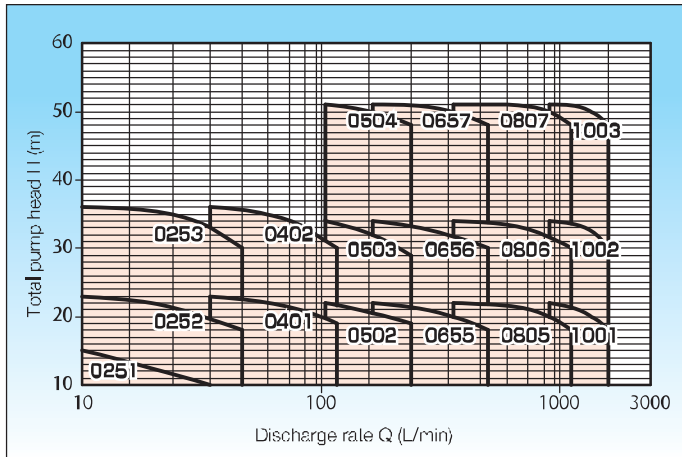


These general-purpose mechanical seal pumps feature the corrosion resistance of PVC and high cost performance. The NTS series has an extensive track record in applications for chemical transfer and high-temperature liquid chemical circulation.

Standard specifications

Structure	Drive: Motor direct-driven type
	Shaft seal: Mechanical seal / Packing seal
	Impeller: Closed type
	Bearing: Oilless seal ball bearing
Operating temperature range	PVC: 0 to 50°C
	HTPVC: 0 to 80°C
Rotating direction	Clockwise (When viewed from motor side)
Flange	Equivalent to JIS 10K FF
Motor	General-purpose horizontal motor with base
Paint color	Equivalent to Munsell 2.5B4/8 (Metal exposed parts, except for pump shaft)

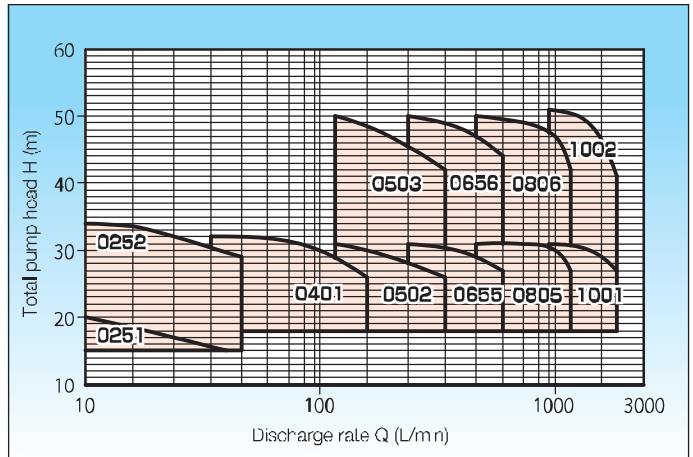
Capacity chart and specification table: 50 Hz (2P)



Model	Bore diameter (Suction x Dis.) (mm)	Discharge rate (L/min)	Total head (m)	Motor output (kW)	Frame No.
NTS-0251	25x20	20	12	0.4	F2
NTS-0252			21	0.75	F2
NTS-0253	40x32	105	32	1.5	F2
NTS-0401			20	1.5	F3
NTS-0402	50x40	200	32	2.2	F2
NTS-0502			12	1.5	F2
NTS-0503	65x50	420	15	3.7	F2
NTS-0504			15	7.5	F4
NTS-0655	80x65	840	20	3.7	F2
NTS-0656			32	5.5	F2
NTS-0657	100x80	1370	50	11	F4
NTS-0805			20	5.5	F2
NTS-0806	100x80	1370	32	7.5	F4
NTS-0807			50	15	F4
NTS-1001	100x80	1370	20	11	F4
NTS-1002			32	15	F4
NTS-1003	50	30	F4		

Motor outputs given for liquids with a specific gravity of 1.0 at the target point.

Capacity chart and specification table: 60 Hz (2P)



Model	Bore diameter (Suction x Dis.) (mm)	Discharge rate (L/min)	Total head (m)	Motor output (kW)	Frame No.
NTS-0251	25x20	20	18	0.75	F2
NTS-0252			22	1.5	F2
NTS-0401	40x32	125	29	2.2	F2
NTS-0502			29	3.7	F3
NTS-0503	50x40	250	26	5.5	F2
NTS-0655			29	5.5	F2
NTS-0656	65x50	420	26	7.5	F2
NTS-0805			29	5.5	F2
NTS-0806	80x65	840	26	15	F2
NTS-1001			29	15	F2
NTS-1002	100x80	1370	26	30	F2

Motor outputs given for liquids with a specific gravity of 1.0 at the target point.

Frame No.	Applicable motor (kW)	
	2P	4P
F2	0.4-3.7	—
F3	0.75-11	0.75-7.5
F4	3.7-30	3.7-30
F5	11-45	11-45

Model identification

NTS - 150 1 F 15 S A 1 1

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

- ① Name
- ② Bore diameter
- ③ Frame No.
- ④ O-ring material F: FPM E: EPDM Z: Other
- ⑤ Motor output:
 - 01 : 0.75 kW 02 : 1.5 kW 03 : 2.2 kW
 - 05 : 3.7 kW 07 : 5.5 kW 10 : 7.5 kW
 - 15 : 11 kW 20 : 15 kW 25 : 18.5 kW
 - 30 : 22 kW 40 : 30 kW 50 : 37 kW
- ⑥ Body material (Casing, casing cover, etc.)
 - S: PVC
 - H: HTPVC
 - 7: Other

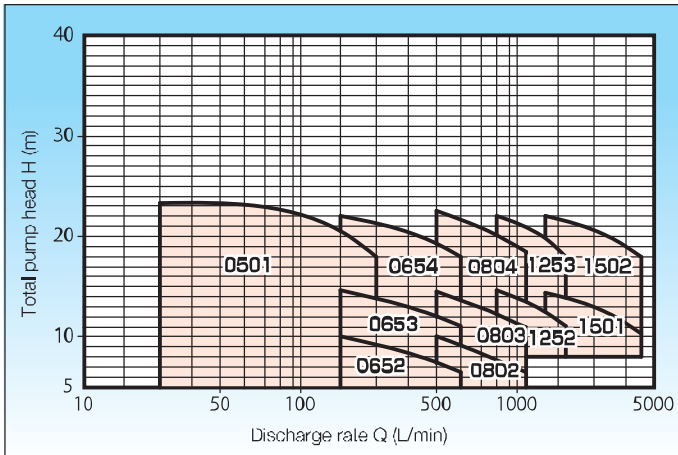
- ⑦ Shaft seal structure
- ⑧ Shaft seal type

- ⑨ Shaft seal configuration

A: External mechanical seal	B: Internal mechanical seal	P: Packing seal
1: MA1	1: MB1	S: Internally cooled
W: MAW	2: MB1Q1	W: Externally cooled
Z: Other	3: MB1Q2	
	D: DEM	
	Z: Other	
Rotating ring	Stal onary ring	1: SUS316 (Stainless steel)
1: Resin-impregnated carbon	Alumina	2: Hastelloy C
2: Fluorocarbon PTFE	Alumina	3: Titanium
6: SiC	SiC	4: SiC
Z: Other than above	Other than above	5: Silicon nitride
		Z: Other than above

* Double mechanical seal and dead-end types: SiC only

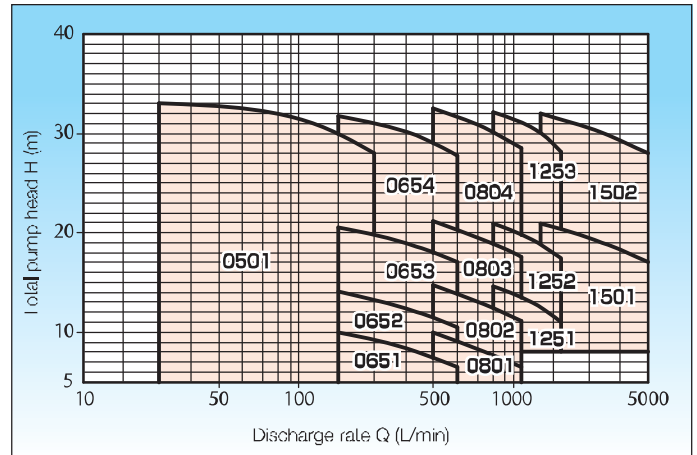
Capacity chart and specification table: 50 Hz (4P)



Model	Bore diameter (Suction x Dis.) (mm)	Discharge rate (L/min)	Total head (m)	Motor output (kW)	Frame No.
NTS-0501	50x40	210	20	2.2	F3
NTS-0652	65x50	420	8	1.5	F3
NTS-0653			12.5	2.2	F3
NTS-0654			20	3.7	F4
NTS-0802	90x65	840	3	2.2	F3
NTS-0803			12.5	3.7	F4
NTS-0804			20	5.5	F4
NTS-1252	125x100	1670	12.5	7.5	F4
NTS-1253			20	11	F5
NTS-1501	150x125	3340	12.5	11	F5
NTS-1502			20	30	F5

Motor output is given for liquids with a specific gravity of 1.0 at the target point.

Capacity chart and specification table: 60 Hz (4P)

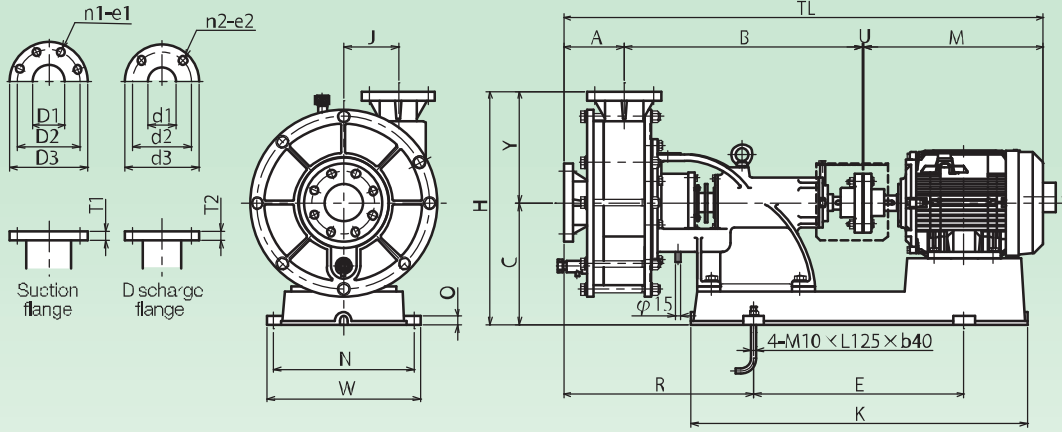


Model	Bore diameter (Suction x Dis.) (mm)	Discharge rate (L/min)	Total head (m)	Motor output (kW)	Frame No.
NTS-0501	50x40	250	28	3.7	F3
NTS-0651	65x50	500	7	1.5	F3
NTS-0652			11.5	2.2	F3
NTS-0653			18	3.7	F3
NTS-0654			28	5.5	F4
NTS-0801	90x65	1000	7	3.7	F3
NTS-0802			11.5	5.5	F3
NTS-0803			18	7.5	F4
NTS-0804	28	11	F4		
NTS-1251	125x100	2000	11.5	7.5	F4
NTS-1252			18	15	F4
NTS-1253	28	22	F5		
NTS-1501	150x125	4000	18	22	F5
NTS-1502			28	37	F5

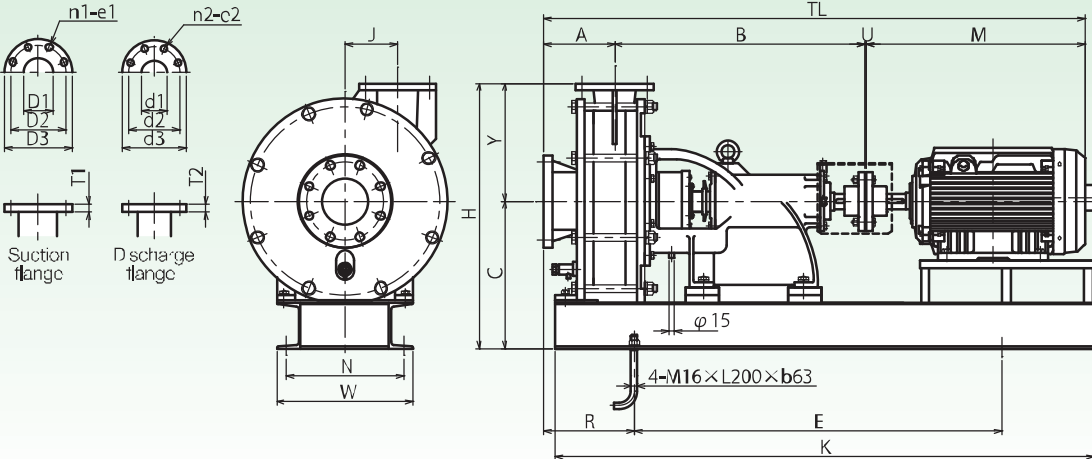
Motor output is given for liquids with a specific gravity of 1.0 at the target point.

Outer dimensions drawing and table

● Frame Nos.: F2 and F3



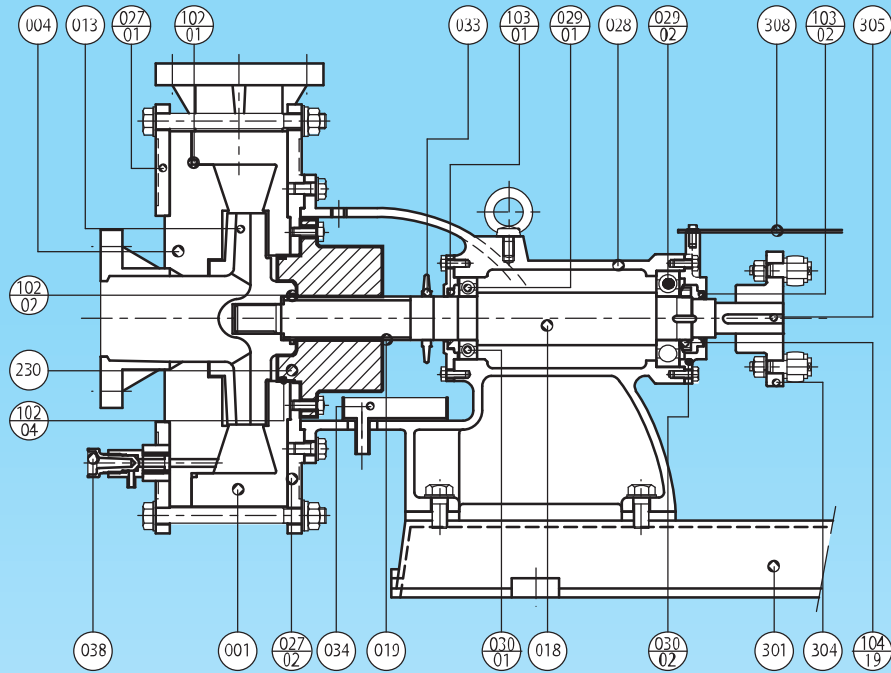
● Frame Nos.: F4 and F5



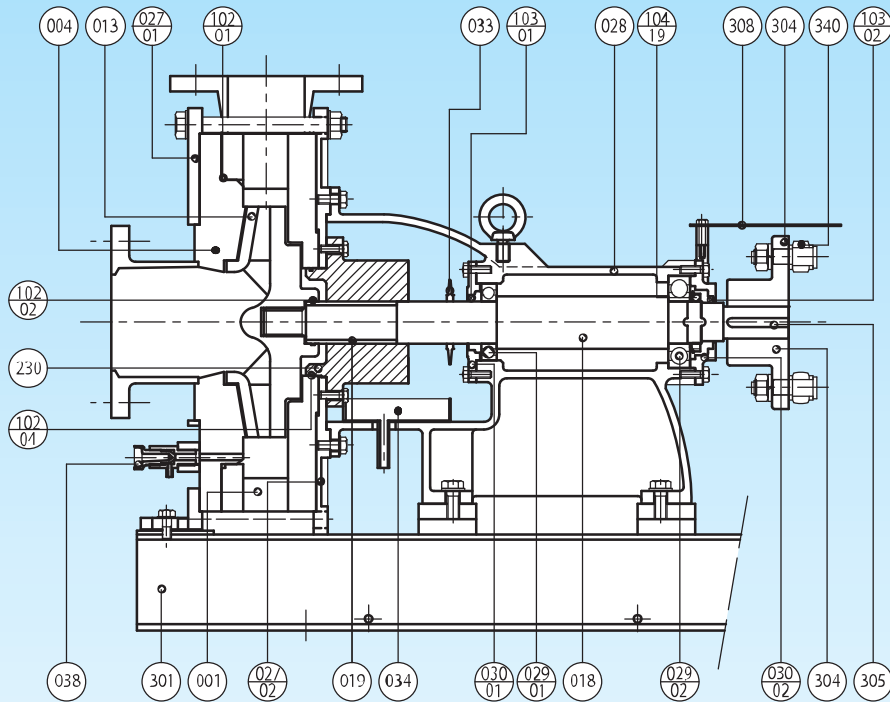
Model	Motor (kW)	Body							Base					Flange JIS 10K										Frame No.	
		A	B	R	J	C	Y	H	U	E	K	N	W	O	D1	D2	D3	n-e	T1	d1	d2	c3	r2-θ2		T2
NTS-0251	0.75	82	339	285	80	160	61	321	3	310	490	215	240	15	25	30	25	∠-19	15	20	75	100	4-19	15	F2
NTS-0252	1.5	92	339	295	80	160	61	321	3	335	505	230	255	15	25	30	25	∠-19	15	20	75	100	4-19	15	F2
NTS-0253	1.5	91	372	297	83	160	81	341	3	335	535	230	255	15	25	30	25	∠-19	15	20	75	100	4-19	15	F2
NTS-0401	2.2	120	338	340	86	180	86	345	3	335	535	230	255	15	40	105	40	∠-19	18	32	100	135	4-19	16	F2
NTS-0402	2.2	116	338	330	80	160	86	345	3	335	535	230	255	15	40	105	40	∠-19	18	32	100	135	4-19	16	F2
NTS-0501	3.7	139	517	424	125	220	241	421	3	400	660	290	320	20	52	120	35	∠-19	20	40	105	140	4-19	16	F3
NTS-0502	3.7	125	338	346	65	195	96	391	3	400	600	295	310	15	52	120	35	∠-19	20	40	105	140	4-19	16	F2
NTS-0503	5.5	124	510	408	80	240	241	421	3	425	725	330	356	20	52	120	35	∠-19	20	40	105	140	4-19	16	F3
NTS-0504	7.5	131	536	438	100	340	236	421	3	500	800	250	300	12	52	120	35	∠-19	20	40	105	140	4-19	16	F4
NTS-0651	1.5	134	517	399	90	220	250	470	3	400	640	260	290	20	67	140	75	∠-19	22	52	120	155	4-19	22	F3
NTS-0652	2.2	139	517	423	95	220	250	470	3	400	660	290	320	20	67	140	75	∠-19	22	52	120	155	4-19	22	F3
NTS-0653	3.7	136	517	421	115	220	250	470	3	400	660	290	320	20	67	140	75	∠-19	22	52	120	155	4-19	22	F3
NTS-0654	5.5	137	533	442	125	230	265	455	3	500	800	335	355	20	67	140	75	∠-19	22	52	120	155	4-19	22	F4
NTS-0655	5.5	133	517	423	100	240	250	490	3	425	725	330	356	20	67	140	75	∠-19	22	52	120	155	4-19	22	F3
NTS-0656	7.5	133	517	425	85	240	250	490	3	425	725	330	356	20	67	140	75	∠-19	22	52	120	155	4-19	22	F3
NTS-0657	11	133	533	448	95	340	245	485	3	750	1050	320	370	12	67	140	75	∠-19	22	52	120	155	4-19	22	F4
NTS-0801	3.7	146	522	436	90	220	250	470	3	400	660	290	320	20	78	150	85	∠-19	22	57	140	175	4-19	22	F3
NTS-0802	5.5	141	522	438	110	240	265	405	3	425	725	330	356	20	78	150	85	∠-19	22	57	140	175	4-19	22	F3
NTS-0803	7.5	144	536	452	120	230	265	455	3	500	800	335	356	20	78	150	85	∠-19	22	57	140	175	4-19	22	F4
NTS-0804	11	141	536	449	135	230	265	455	3	750	1050	465	435	20	78	150	85	∠-19	22	57	140	175	4-19	22	F4
NTS-0805	7.5	147	522	444	90	240	250	490	3	425	725	330	356	20	78	150	85	∠-19	22	57	140	175	4-19	22	F3
NTS-0806	15	136	536	454	110	340	245	485	3	750	1050	320	370	12	78	150	85	∠-19	22	57	140	175	4-19	22	F4
NTS-0807	15	142	536	460	110	340	245	485	3	750	1050	320	370	12	78	150	85	∠-19	22	57	140	175	4-19	22	F4
NTS-1001	15	185	578	493	110	340	280	620	3	750	1050	320	370	12	100	175	210	∠-19	22	78	150	195	8-19	22	F4
NTS-1002	30	157	538	477	110	340	280	620	3	750	1050	320	370	12	100	175	210	∠-19	22	78	150	195	8-19	22	F4
NTS-1003	30	159	538	479	110	340	280	620	3	750	1050	320	370	12	100	175	210	∠-19	22	78	150	195	8-19	22	F4
NTS-1251	7.5	202	578	277	143	400	320	720	3	300	300	320	370	12	125	210	250	∠-23	24	100	175	210	8-19	22	F4
NTS-1252	15	194	578	268	143	400	320	720	3	300	300	320	370	12	125	210	250	∠-23	24	100	175	210	8-19	22	F4
NTS-1253	22	194	630	247	143	400	320	720	4	1000	500	320	370	12	125	210	250	∠-23	24	100	175	210	8-19	22	F5
NTS-1501	22	241	635	308	150	440	400	840	4	1000	500	370	420	12	146	240	280	∠-23	25	125	210	250	8-23	24	F5
NTS-1502	37	230	631	294	150	440	400	840	4	1000	500	370	420	12	146	240	280	∠-23	25	125	210	250	8-23	24	F5

Cross-sectional drawing

● Frame Nos.: F2, F3 and F4 (Suction diameter of 100 A or less)



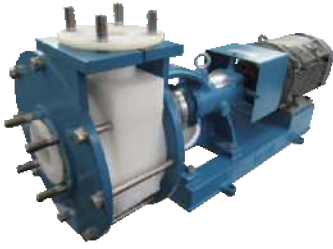
● Frame Nos.: F4 (Suction diameter of 125 A or more) and F5



Part No.	Part name	Material	Q'ty
001	Casing	PVC/HTPVC	1
001	Suction cover	PVC/HIPVC	1
013	Impeller	HTPVC	1
018	Shaft	SUS420J2	1
019	Shaft sleeve	FEP/PVDF	1
027-01	Tie ring (Front)	FC200/SS400	1
027-02	Tie ring (Rear)	FC200	1
028	Bracket	FC200	1
029-01	Bearing (Pump)	SUJ2	1
029-02	Bearing (Motor)	SUJ2	1
030-01	Bearing cover (Pump)	FC200	1
030-02	Bearing cover (Motor)	FC200	1
033	Deflector	EPDM	1
034	Drain pan	PP/PVC	1

Part No.	Part name	Material	Q'ty
036	Drain plug	HTPVC	1
102-01	O-ring (Casing)	FPM/EPDM	1
102-02	O-ring (Impeller)	FPM/EPDM	1
102-04	O-ring (Stuffing box)	FPM/EPDM	1
103-01	Oil seal (Pump)	NBR	1
103-02	Oil seal (Motor)	NBR	1
104-19	Bearing nut and washer	SS400	1 set
030	Stuffing box	HTPVC	1
001	Base	FC200	1
004	Coupling	FC200	1 set
005	Coupling key	SS400	1
006	Coupling guard	SS400	1
040	Pin and rubber (Coupling)	SS400 & NBR	1 set

TSU series

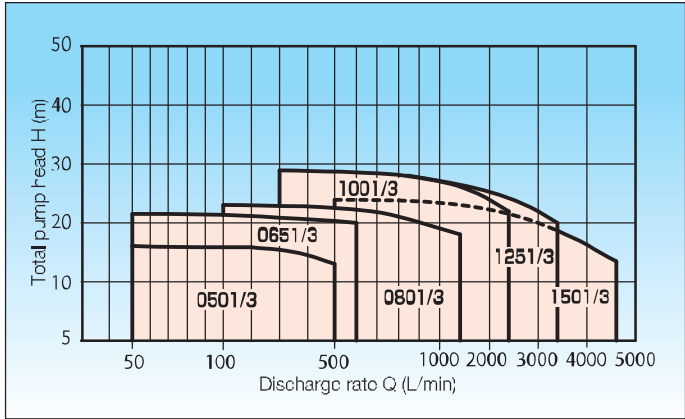


These slurry pumps are made of wear-resistant UPE (ultra-high molecular weight polyethylene).

Standard specifications

- Structure: Drive: Motor direct-driven type
- Impeller: Full-open type
- Shaft seal: Mechanical seal
- Bearing: Oilless seal ball bearing
- Operating temperature range: UPE: 0 to 60°C
- Rotating direction: Clockwise (When viewed from motor side)
- Flange: Equivalent to JIS 10K FF
- Motor: General-purpose horizontal motor with base
- Paint color: Equivalent to Munsell 2,5B4/8 (Metal exposed parts, except for pump shaft)

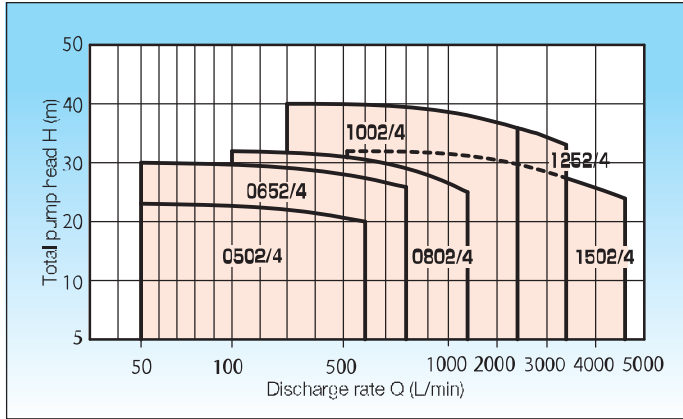
Capacity chart and specification table: 50 Hz



Model	Bore diameter (Suction x Dis.) (mm)	Discharge rate (L/min)	Total head (m)	Motor output (kW)	Frame No.
TSU-0501	50x40	250	10	2.2	F3
TSU-0503			15	3.7	
TSU-0651	65x50	400	15	5.5	F3/F4
TSU-0653			20	7.5	
TSU-0801	80x65	800	15	7.5	F3/F4
TSU-0803			20	11	
TSU-1001	100x80	1000	20	15	F4
TSU-1003			25	18.5	
TSU-1251	125x100	2000	20	18.5	F4/F5
TSU-1253			25	22	
TSU-1501	150x125	2500	15	15	F5
TSU-1503			20	18.5	

Motor output is given for liquids with a specific gravity of 1.0 at the target point.

Capacity chart and specification table: 60 Hz



Model	Bore diameter (Suction x Dis.) (mm)	Discharge rate (L/min)	Total head (m)	Motor output (kW)	Frame No.
TSU-0502	50x40	250	15	2.2	F3
TSU-0504			20	3.7	
TSU-0652	65x50	400	20	5.5	F3/F4
TSU-0654			25	7.5	
TSU-0802	80x65	800	20	7.5	F3/F4
TSU-0804			25	11	
TSU-1002	100x80	1000	25	15	F4
TSU-1004			35	22	
TSU-1252	125x100	2000	25	22	F4/F5
TSU-1254			35	30	
TSU-1502	150x125	2500	20	18.5	F5
TSU-1504			25	22	

Motor outputs are given for liquids with a specific gravity of 1.0 at the target point.

Model identification

TSU - 050 1 F 07 U B D 6

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

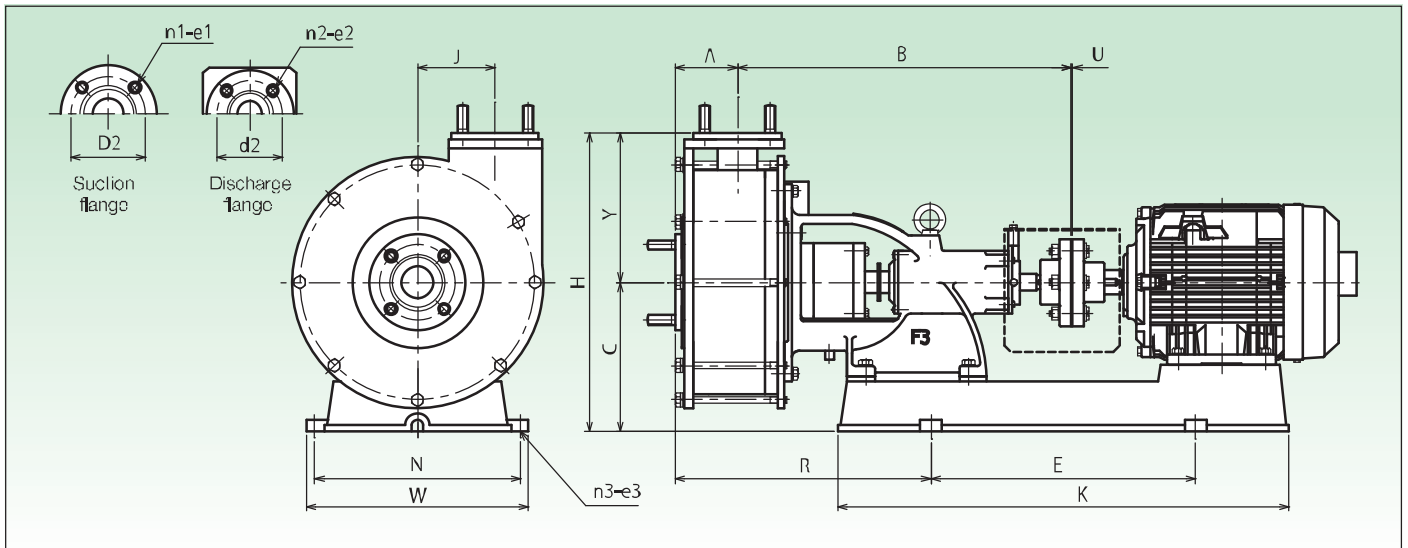
- ① Name
- ② Bore diameter
- ③ Frame No.
- ④ O-ring material: F: FPM E: EPDM Z: Other
- ⑤ Motor output: 01: 0.75 kW 02: 1.5 kW 03: 2.2 kW 05: 3.7 kW 07: 5.5 kW 10: 7.5 kW 15: 11 kW 20: 15 kW 25: 18.5 kW 30: 22 kW 40: 30 kW
- ⑥ Body material (Casing, casing cover, etc.)

Code	Impeller	Casing cover	Stuffing box
U	UPE	UP=	UPC
7			Other

- ⑦ Shaft seal structure
- ⑧ Shaft seal type
- ⑨ Shaft seal configuration

A: External mechanical seal	B: Internal mechanical seal	P: Packing seal
1: MA1	D: DEM	S: Internally cooled
W: MAW	Z: Other	W: Externally cooled
Z: Other		
Rotating ring	Stationary ring	1: SUS316 (S-raight shaft)
1: Resin-impregnated carbon	Alumina	2: Hastelloy C
4: Filler-contained PTFE	Alumina	3: Titanium
6: SiC	SiC	4: SiC
Z: Other than above	Other than above	5: Silicon nitride
* Double mechanical seal and dead-end types: SiC only		Z: Other than above

Outer dimensions drawing and table



Model	A	B	R	J	C	Y	H	U	E	<	V	W	D2	r1-e1	d2	r2-e2	n3-e3	Motor output (kW)
TSU-050	100	536	404	125	220	240	460	3	400	680	230	320	120	4-M16	105	4-M16	4-φ 4	3.7×4P
					240				725	330	355	5.5/7.5×4P						
TSU-065	115	598	455	135	290	270	560	3	500	800	335	365	140	4-M16	120	4-M16	4-φ 4	5.5/7.5×4P
									750	850	435	495						7.5/15×4P
TSU-080	115	598	455	135	290	270	560	3	500	800	335	365	150	8-M16	140	4-M16	4-φ 4	5.5/7.5×4P
									750	850	435	495						7.5/15×4P
TSU-100	125	600	477	168	340	325	665	3	700	1000	420	470	175	8-M16	150	8-M16	4-φ 19	7.5×4P
TSU-125	123	609	408	172	395	345	740	3	600	850	510	550	210	8-M16	175	8-M16	4-φ 19	7.5×4P
TSU-150	154	695	482.5	150	460	480	850	4	550	1000	538	580	240	8-M20	210	8-M20	6-φ 19	30×4P

Cross-sectional drawing

Part No.	Part name	Material	Q'ty
018	Shaft	SJS420J2	1
019	Shaft sleeve	PVDF	1
027-01	Tie ring (Front)	SS-00	1
027-02	Tie ring (Rear)	SS-00	1
028	Bracket	FC200	1
029-01	Bearing (Pump)	SJJ2	1
029-02	Bearing (Motor)	SJJ2	1
030-01	Bearing cover (Pump)	FC200	1
030-02	Bearing cover (Motor)	FC200	1
033	Deflector	HPV/EPDM	1
034	Drain pan	PP/PCVC	1
102-01	O-ring (Casing)	FPM/EPDM	1 set
102-02	O-ring (Impeller)	FPM/EPDM	1
102-02	O-ring (Stuffing box)	FPM/EPDM	1
102-29	O-ring (Suction)	FPM/EPDM	1
102-30	O-ring (Discharge)	FPM/EPDM	2
103-01	Oil seal (Pump)	NBR	1
103-02	Oil seal (Motor)	NBR	1
104-01	Casing bolt	SJS3C4	1 set
104-05	Suction cover set bolt	SJS3C4	1 set
104-06	Suction flange bolt	SJS3C4	1 set
104-09	Discharge flange bolt	SJS3C4	1 set
104-13	Tie ring bolt	SJS3C4	1 set
104-17	Bracket bolt	SJS3C4	1 set
104-18	Bearing cover bolt	SJS3C4	1 set
104-19	Bearing nut and washer	SS-00	1 set
104-24	Eye bolt	SS-00	1
104-25	Stuffing box bolt	SJS3C4	1 set
301	Base	FC200	1
304	Coupling	FC200	1 set
305	Coupling key	SS-00	1
307	Coupling set screw	SCM	1 set
308	Coupling guard	SS-00	1
309	Coupling guard bolt	SJS3C4	1 set
310	Pin and rubber (Coupling)	SS00 & NBR	1 set

Part No.	Part name	Material	Q'ty
002	Casing cover	UPE (Ultra-high molecular weight polyethylene)	1
001	Suction cover		1
005	Suction pipe		1
008	Discharge pipe		1
013	Impeller		1
135	Casing cover ring		1

Self-suction type mechanical seal pumps (Self-suction type SEM)

SEM series

Self-suction type

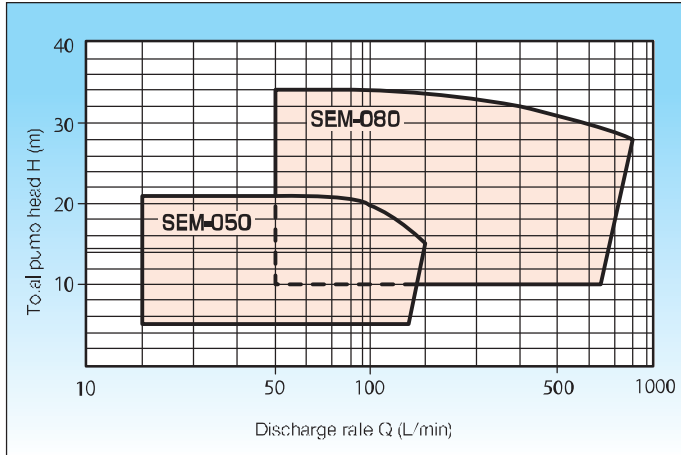


These self-suction type pumps adopt a casing tank for magnetic pump.
The material of liquid contact parts can be changed to HTPVC, PVDF, etc., to match operating conditions.

Standard specifications

Structure	Drive: Motor direct-driven type
	Shaft seal: Mechanical seal
	Impeller: Closed type
	Bearing: Oilless sealless ball bearing
Operating temperature range	PVC: 0 to 50°C
	HTPVC: 0 to 80°C
	PVDF: 0 to 90°C
Rotating direction	Clockwise (When viewed from motor side)
Flange	Equivalent to JIS 10K FF
Motor	General-purpose hermetic motor with base
Paint color	Equivalent to Munsell 2.5B4/8 (Metal exposed parts, except for pump shaft)

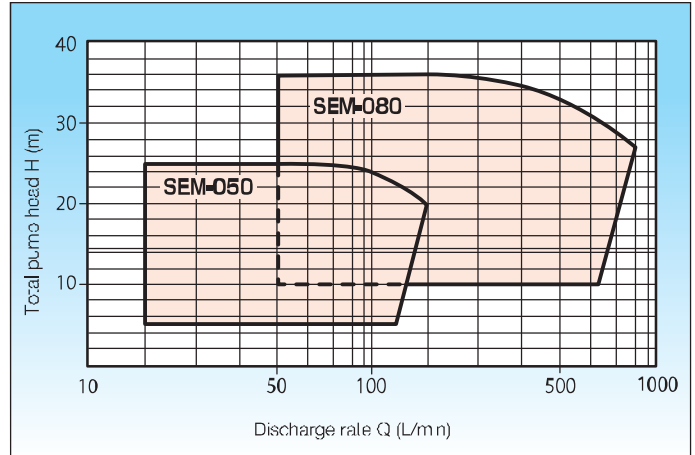
Capacity chart and specification table: 50 Hz



Model	Bore diameter (Inlet x Discharge) (mm)	2P			4P			Frame No.
		Discharge rate (L/min)	Total head (m)	Motor output (kW)	Discharge rate (L/min)	Total head (m)	Motor output (kW)	
SEM-0501	50×40	200	10	2.2	100	5	0.4	F2
SEM-0503			15	3.7				F3
SEM-0505			20	3.7				F3
SEM-0507		—	—	—				F2
SEM-0801	80×80	800	9	5.5	400	7.5	1.5	F4
SEM-0803			15	7.5				F4
SEM-0805			20	11				F4
SEM-0807			30	11				F4
SEM-0809			—	—				—

Motor outputs given for liquids with a specific gravity of 1.0 at the target point.

Capacity chart and specification table: 60 Hz



Model	Bore diameter (Inlet x Discharge) (mm)	2P			4P			Frame No.	
		Discharge rate (L/min)	Total head (m)	Motor output (kW)	Discharge rate (L/min)	Total head (m)	Motor output (kW)		
SEM-0500	50×40	200	—	—	100	8	0.75	F2	
SEM-0502			10	2.2				F2	
SEM-0504			15	3.7				F3	
SEM-0506			18	3.7				F3	
SEM-0508			20	3.7				F3	
SEM-0802			80×80	800				15	7.5
SEM-0804	25	11			F4				
SEM-0806	30	15			F4				
SEM-0808	—	—			—	F4			

Motor output is given for liquids with a specific gravity of 1.0 at the target point.

Model identification

SEM - 050 1 F 07 S A 1 1

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

- ① Name
- ② Bore diameter (050 080)
- ③ Frame No.
- ④ O-ring material F: FPM E: EPDM Z: Other
- ⑤ Motor output
01: 0.75 kW 02: 1.5 kW 03: 2.2 kW 05: 3.7 kW
07: 5.5 kW 10: 7.5 kW 15: 11 kW 20: 15 kW
* 11/15 kW is applicable to SEM-080 only.
- ⑥ Body material

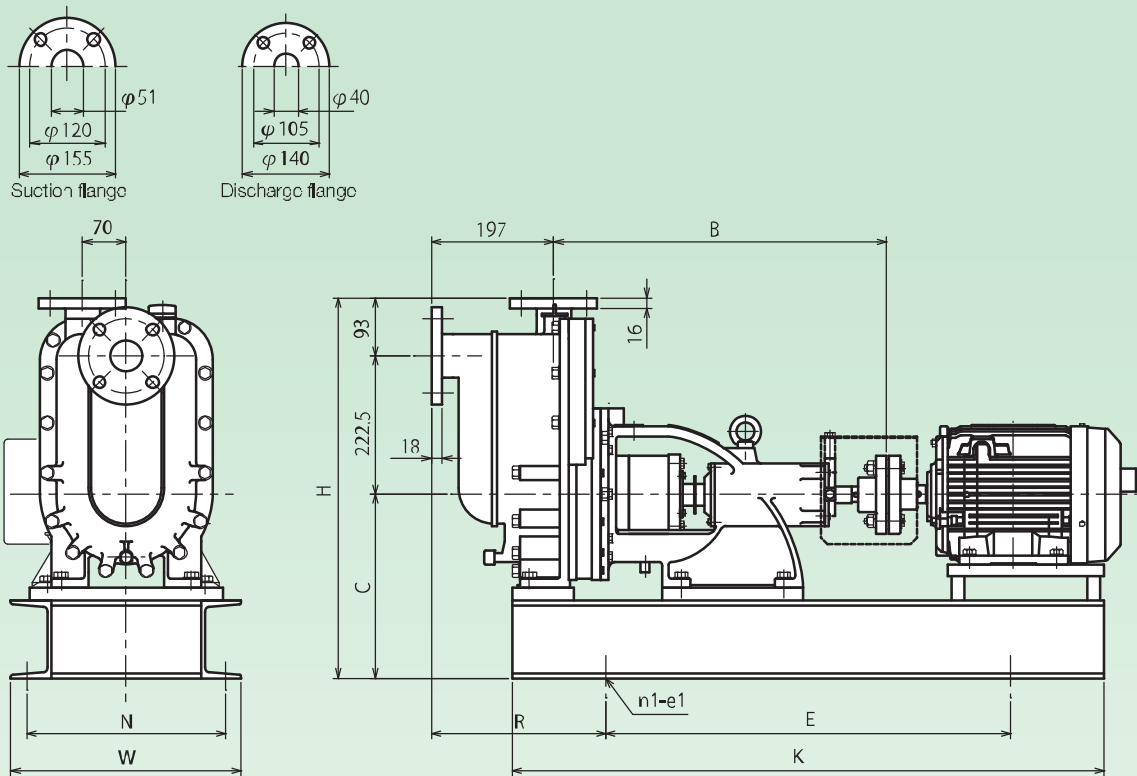
- ⑦ Shaft seal structure
- ⑧ Shaft seal type
- ⑨ Shaft seal configuration

Code	Casing/Tank	Impeller	Casing cover	Stuffing box
S		HTPVC	PVC	HTPVC
II	050: PVDF	II PVPVC	II PVPVC	II PVPVC
V	080: FRP	PVDF	PVDF	PVDF
Z		Other	Other	Other

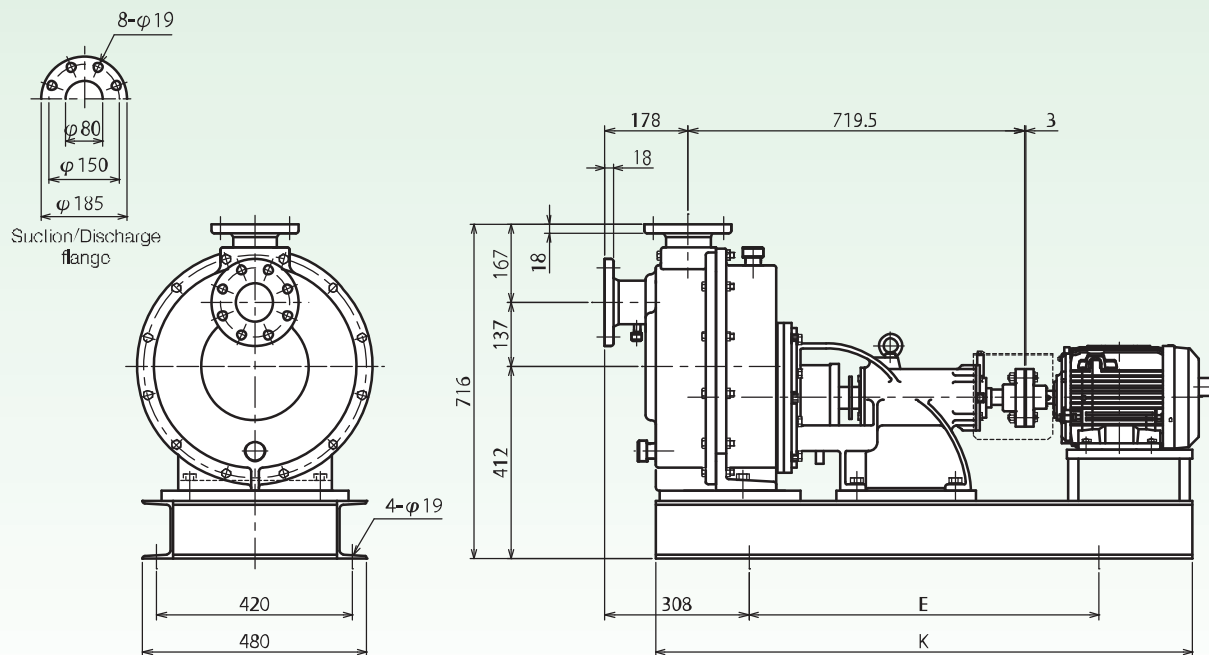
A: External mechanical seal		B: Internal mechanical seal	
1: MA1		1: MB1	
W: MAW		2: MB1Q1	
Z: Other		3: MB1Q2	
		D: DFM	
		Z: Other	
Rotating ring		Stationary ring	
1: Resin-impregnated carbon		Alumina	
Z: Fluor-contained PTFE		Alumina	
6: SiC		SiC	
Z: Other than above		Other than above	
* Double mechanical seal and dead-end types: SiC only			

Outer dimensions drawing and table

● SEM-050



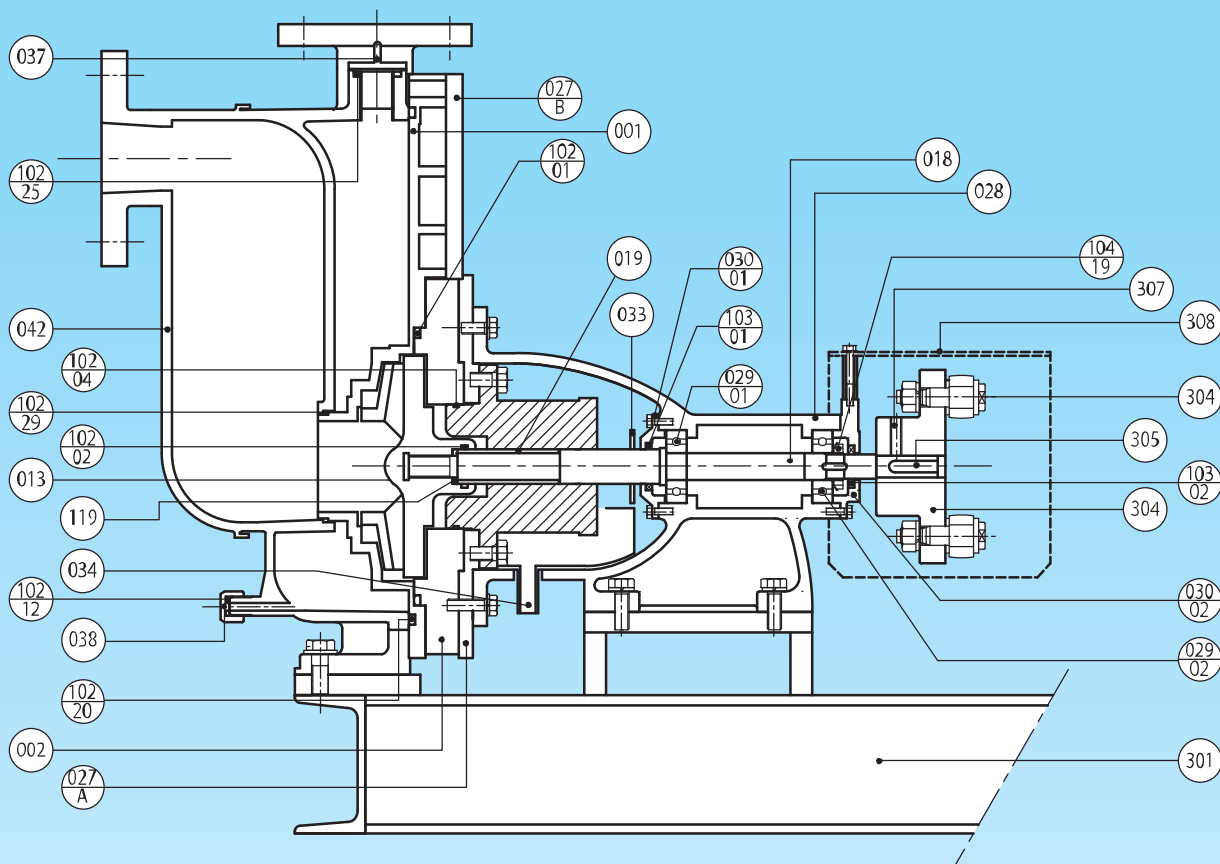
● SEM-080



Model	\bar{S}	R	C	F	E	K	N	W	$n1-e1$	Motor output (kW)
SEM-050	105	239.5	265	580.5	600	800	270	290	4-15	1.5/2.2×2P
	132.5	280	295	610.5	650	950	320	370		3.7×2P
					700	1000				5.5/7.5×2P
SEM-080	—	—	—	—	750	1150	—	—	—	3.7×2P
					800	1200				5.5/7.5×2P
					1000	1700				11/15/13.5×2P

Cross-sectional drawing

● SEM-050

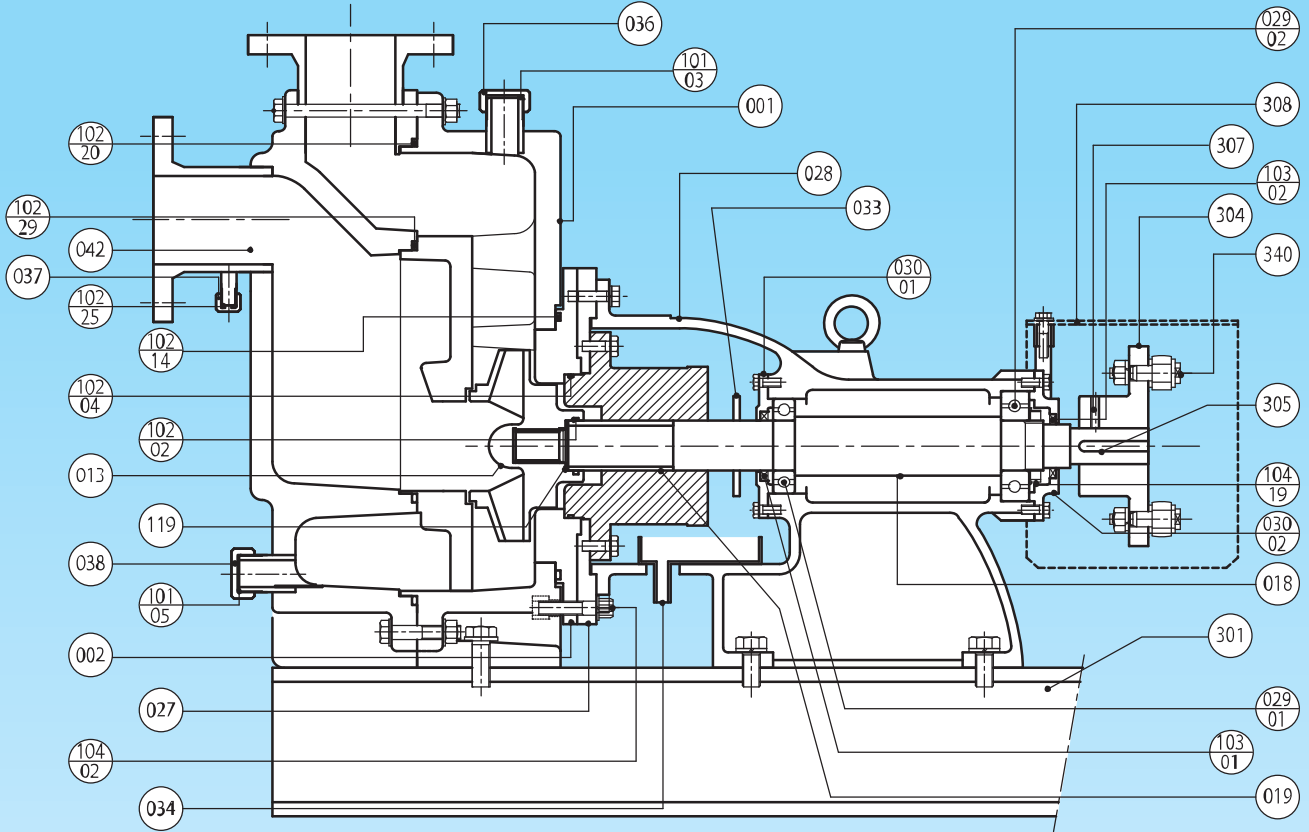


Part No.	Part name	Material	Q'ty
001	Casing	PVDF	1
002	Casing cover	PVDF/HTPVC	1
013	Impeller	PVDF/HTPVC	1
018	Shaft	SS420.2	1
019	Shaft sleeve	PVDF	1
027-A	Tie ring	SS400	1
027-B	Casing support	FC200	1
028	Bracket	FC200	1
029-01	Bearing (Pump side)	SLJ2	1
029-02	Bearing (Motor side)	SLJ2	1
030-01	Bearing cover (Pump side)	FC200	1
030-02	Bearing cover (Motor side)	FC200	1
033	Deflector	HTPVC	1
034	Drain pan	PP	1
037	Air vent plug	PVDF	1
038	Drain plug	PVDF	1
042	Tank	PVDF	1
102-01	O-ring (Casing)	FPM LPDM	1

Part No.	Part name	Material	Q'ty
102-02	O-ring (Impeller)	FPM EPDM	1
102-04	O-ring (Stuffing box)	FPM EPDM	1
102-12	O-ring (Drain plug)	FPM LPDM	1
102-20	O-ring (Tank)	FPM EPDM	1
102-25	O-ring (Air vent)	FPM EPDM	1
102-29	O-ring (Suction)	FPM EPDM	1
103-01	O-ring seal (Pump)	NBR	1
103-02	O-ring seal (Motor)	NBR	1
104-19	Bearing nut and washer	SS400	1 set
113	Impeller liner	SS304	1
301	Base	SS400	1
304	Coupling	FC200	1 set
305	Coupling key	SS400	1 set
307	Coupling set screw	SCM	1 set
308	Coupling guard	SS400	1
309	Coupling guard bolt	SS304	1 set
340	Pin and rubber (Coupling)	SS400 & NBR	1 set

Cross-sectional drawing

● SEM-080



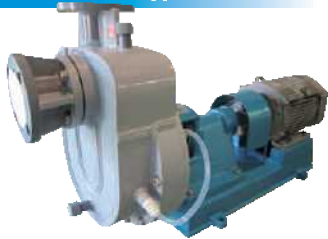
Part No.	Part name	Material	Q'ty
001	Casing	FRP	-
002	Casing cover	PVDF/HTPVC	-
003	Impeller	PVDF/HTPVC	-
004	Shaft	SUS12CJ2	-
005	Shaft sleeve	PVDF	-
006	Te ring	SS400	-
007	Bracket	FC200	-
008-01	Bearing (Pump side)	SUJ2	-
008-02	Bearing (Motor side)	SUJ2	-
009-01	Bearing cover (Pump side)	FC200	-
009-02	Bearing cover (Motor side)	FC200	-
010	Dollictor	HTPVC	-
011	Drain pan	PVC	-
012	Priming plug	PVDF	-
013	Air vent plug	PVDF	-
014	Drain plug	PVDF	-
015	Tank	FRP	-
016-01	Gasket (Priming plug)	FPM/EPDM	-

Part No.	Part name	Material	Q'ty
017-01	Gasket (Drain plug)	FPM/EPDM	-
017-02	O-ring (Impeller)	FPM/LPDM	-
017-03	O-ring (Stuffing box)	FPM/EPDM	-
017-04	O-ring (Casing cover)	FPM/EPDM	-
017-05	O-ring (Tank)	FPM/EPDM	-
017-06	O-ring (Air vent)	FPM/EPDM	-
017-07	O-ring (Suction)	FPM/EPDM	-
018-01	Oil seal (Pump)	NBR	-
018-02	Oil seal (Motor)	NBR	-
019-01	Bearing nut and washer	SS400	1 set
019	Impeller liner	SUS304	-
020	Base	SS400	-
021	Coupling	FC200	1 set
022	Coupling key	SS400	1 set
023	Coupling set screw	SCM	1 set
024	Coupling guard	SS400	-
025	Coupling guard bolt	SUS304	1 set
026	Pin and rubber (Coupling)	SS400 & NBR	1 set

PVC mechanical seal pumps (Self-suction type SEL)

SEL series

Self-suction type

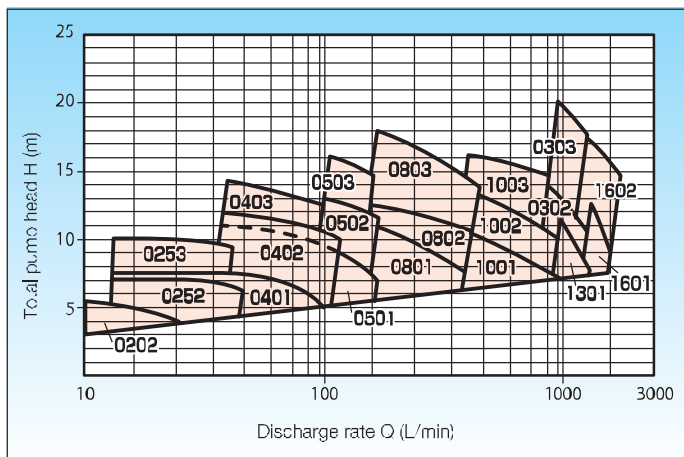


These self-suction pumps features the corrosion resistance of PVC. The SEL series has an extensive track record in applications for wastewater treatment and liquid chemical circulation.

Standard specifications

Structure	Drive: Motor direct-driven type
	Shaft seal: Mechanical seal
	Impeller: Semi-open type
	Bearing: Oilless seal ball bearing
Operating temperature range	PVC: 0 to 50°C
Rotating direction	Clockwise (When viewed from motor side)
Flange	Equivalent to JIS 10K FF
Motor	General-purpose horizontal motor with base
Paint color	Equivalent to Munsell 2.5B4/8 (Metal exposed parts, except for pump shaft)

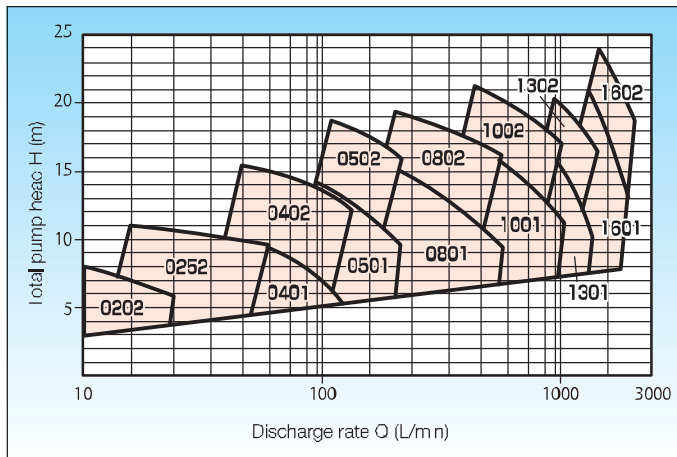
Capacity chart and specification table: 50 Hz (1450/2900 rpm)



Model	Bore diameter (Station x Dia) (mm)	4P			Frame No.
		Discharge rate (L/min)	Total head (m)	Motor output (kW)	
SEL-0202	20x20	20	5	0.1	0.5
SEL-0251	25x25	45	6.5	0.75	1.2
SEL-0253	25x25	45	8.5	0.75	1.2
SEL-0401	40x40	10	8	0.75	1.2
SEL-0402	40x40	10	9	1.5	1.2
SEL-0403	40x40	10	12.5	1.5	1.2
SEL-0501	50x50	90	7.5	1.5	1.2
SEL-0502	50x50	90	12	2.2	3.5
SEL-0503	50x50	90	15	3.7	3.5
SEL-0801	80x80	420	8	2.2	3.5
SEL-0802	80x80	420	11	3.7	3.5
SEL-0803	80x80	420	15	5.5	3.5
SEL-1001	100x100	750	8	3.7	3.5
SEL-1002	100x100	750	10	5.5	7.5
SEL-1003	100x100	750	15	7.5	7.5
SEL-1301	125x125	1500	10	7.5	7.5
SEL-1302	125x125	1500	12	11	7.5
SEL-1303	125x125	1500	19	15	7.5
SEL-1601	150x150	900	10	11	7.5
SEL-1602	150x150	900	16	15	7.5

Motor output is given for liquids with a specific gravity of 1.0 at the target point.

Capacity chart and specification table: 60 Hz (1750/3500 rpm)



Model	Bore diameter (Station x Dia) (mm)	4F			Frame No.
		Discharge rate (L/min)	Total head (m)	Motor output (kW)	
SEL-0202	20x20	20	7	0.7	0.5
SEL-0253	25x25	50	10	0.75	1.2
SEL-0401	40x40	130	8	0.75	1.2
SEL-0402	40x40	130	3	1.5	1.2
SEL-0501	50x50	230	11	2.2	1.2
SEL-0502	50x50	230	7	3.7	3.5
SEL-0801	80x80	500	11	3.7	3.5
SEL-0802	80x80	500	7	5.5	3.5
SEL-1001	100x100	900	2	7.5	3.5
SEL-1002	100x100	900	17.5	11	7.5
SEL-1301	125x125	1500	12	11	7.5
SEL-1302	125x125	1500	7	15	7.5
SEL-1601	150x150	2300	15	22	7.5
SEL-1602	150x150	2300	2	22	7.5

Motor output is given for liquids with a specific gravity of 1.0 at the target point.

Model identification

SEL - 100 1 F 15 S A 1 1

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

- ① Name
- ② Bore diameter
- ③ Frame No.
- ④ O-ring material: F: FPM G: EPDM Z: Other
- ⑤ Motor output
 - 01: 0.75 kW 02: 1.5 kW 03: 2.2 kW
 - 05: 3.7 kW 07: 5.5 kW 10: 7.5 kW
 - 15: 11 kW 20: 15 kW 25: 18.5 kW
 - 30: 22 kW
- ⑥ Body material (Casing, casing cover, etc.)
 - S: PVC
 - R: PVC + FRP reinforcement (For casing only)
 - Z: Other

- ⑦ Shaft seal structure
- ⑧ Shaft seal type

- ⑨ Shaft seal configuration

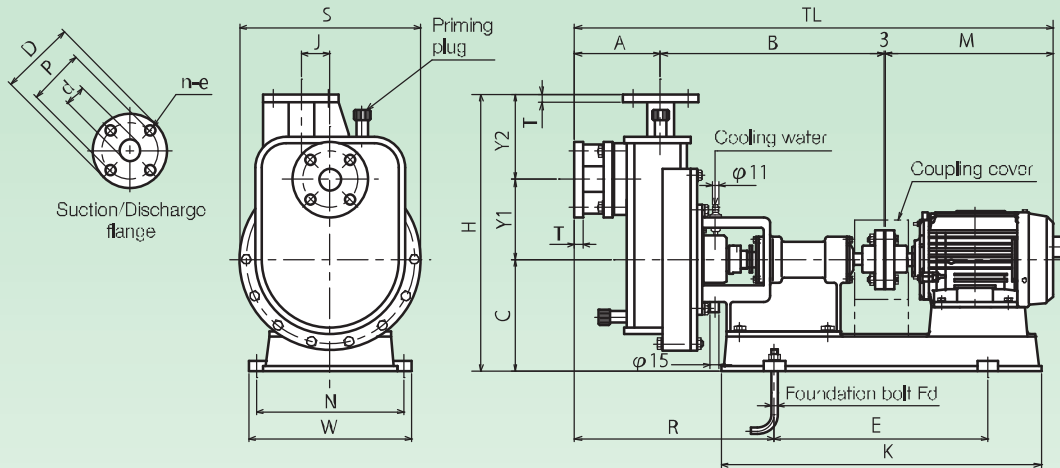
A: External mechanical seal	B: Internal mechanical seal
C: Standard	D: Standard
1: MA1	1: MB1
W: MAW	2: MB*Q1
	3: MB*Q2
	D: DEM

Standard		MA1 / DEM	
Rotating ring	Stationary ring	Rotating ring	Stationary ring
C: Carbon	Carbon	1: Resin-impregnated carbon	Alumina
Z: Ceramic	Carbon-contained PTFE	4: Teflon-contained PTFE	Alumina
		6: SiC	SiC

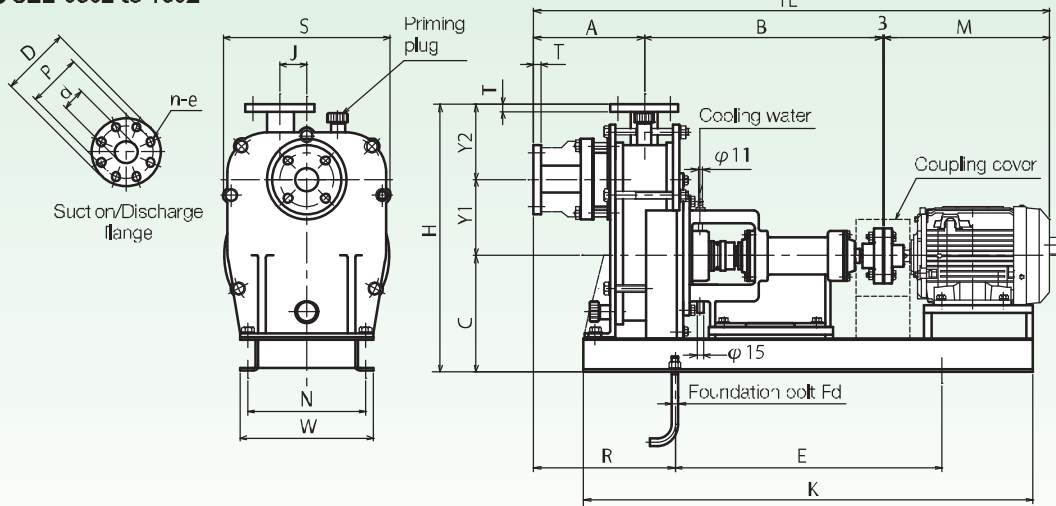
* Double mechanical seal and dead-end types: S/C only

Outer dimensions drawing and table

● SEL-0202 to 0501



● SEL-0502 to 1602

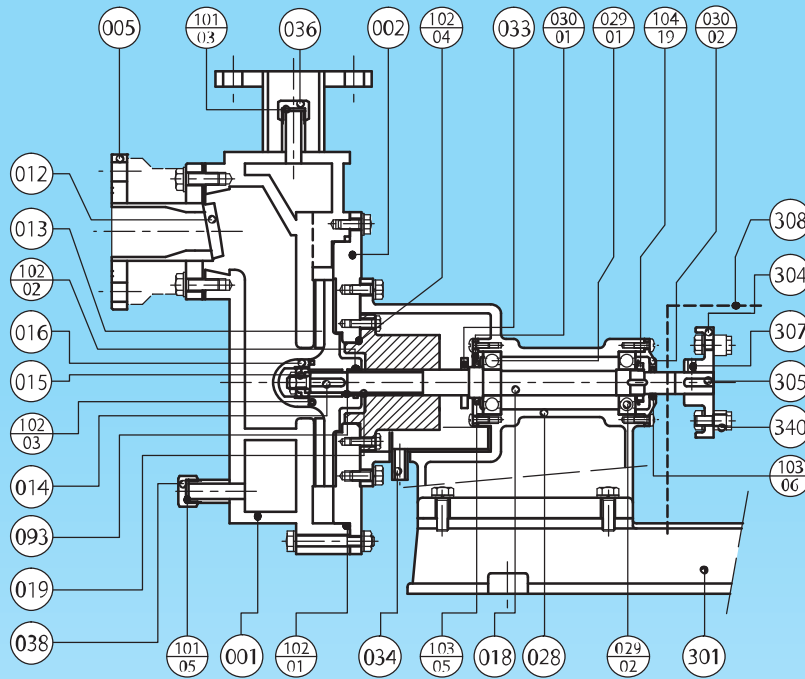


Model	Nominal diameter (A)	Body											Base					Flange JIS 10K					Bearing No.	Body weight (kg)
		A	B	R	J	S	C	H	V1	Y2	M	TL	E	K	N	W	Fd	d	c	D	φe	τ		
SEL-0202	20	147	309	374	50	245	170	400	100	130	236.5	835.5	295	435	275	240	4N110x125Lx40c	20	75	100	47.5	14	830EZZ	33
SEL-0252	25	154	422	377	50	300	210	490	140	140	268.5	847.5	400	630	275	305	4N112x130Lx50c	25	90	125	47.9	14	830E77	70
SEL-0253	25	154	422	377	50	300	210	490	140	140	268.5	847.5	400	630	275	305	4N112x130Lx50c	25	90	125	47.9	14	830EZZ	70
SEL-0401	40	174	422	377	50	300	210	490	140	140	268.5	867.5	400	630	275	305	4N112x130Lx50c	40	105	140	47.9	13	830EZZ	70
SEL-0402	40	167	418	374	55	340	210	520	150	160	379	901	400	630	275	305	4N112x130Lx50c	40	105	140	47.9	13	830EZZ	75
SEL-0403	40	167	418	374	55	340	210	520	150	160	379	901	400	630	275	305	4N112x130Lx50c	40	105	140	47.9	13	830EZZ	75
SEL-0501	50	187	418	374	55	340	210	520	150	160	350	952	400	630	275	305	4N112x130Lx50c	51	120	155	47.9	13	830E77	75
SEL-0502	50	243	536	377	60	376	280	600	172	189	374	1161	600	1070	235	300	4N116x200Lx60c	51	120	155	47.9	13	8307ZZ	145
SEL-0503	50	243	536	377	60	376	280	600	172	189	374	1161	600	1070	235	300	4N116x200Lx60c	51	120	155	47.9	13	8307ZZ	145
SEL-0801	80	243	536	377	60	376	280	610	172	178	374	1161	600	1070	235	300	4N116x200Lx60c	77	150	185	47.9	13	8307ZZ	145
SEL-0802	80	264	550	392	70	396	270	650	130	200	443	1200	805	1105	235	300	4N116x200Lx60c	77	150	185	47.9	13	8307ZZ	175
SEL-0803	80	264	550	392	70	396	270	650	130	200	443	1200	805	1105	235	300	4N116x200Lx60c	77	150	185	47.9	13	830777	175
SEL-1001	100	264	550	392	70	396	270	660	130	210	437	1299	805	1105	235	300	4N116x200Lx60c	100	175	210	47.9	13	8307ZZ	175
SEL-1002	100	274	757	328	80	438	225	755	270	220	535	1629	1000	1450	370	350	4N116x200Lx60c	100	175	210	47.9	13	830EZZ	270
SEL-1003	100	274	757	328	80	438	225	755	270	220	437	1515	1000	1450	370	350	4N116x200Lx60c	100	175	210	47.9	13	830EZZ	270
SEL-1301	130	294	757	338	80	438	225	765	270	220	535	1639	1000	1450	370	350	4N116x200Lx60c	125	210	250	47.5	20	830EZZ	270
SEL-1302	130	302	774	338	100	574	275	845	220	250	639	1719	1000	1500	340	400	4N116x200Lx60c	125	210	250	47.5	20	830E77	355
SEL-1303	130	302	774	338	100	574	275	845	220	250	639	1719	1000	1500	340	400	4N116x200Lx60c	125	210	250	47.5	20	830EZZ	355
SEL-1601	160	302	774	338	100	574	275	855	220	260	655	1734	1000	1500	340	400	4N116x200Lx60c	146	240	280	47.5	22	830EZZ	355
SEL-1602	160	324	787	333	100	586	271	941	240	290	693	1807	1000	1590	390	450	4N116x200Lx60c	146	240	280	47.5	22	830EZZ	420

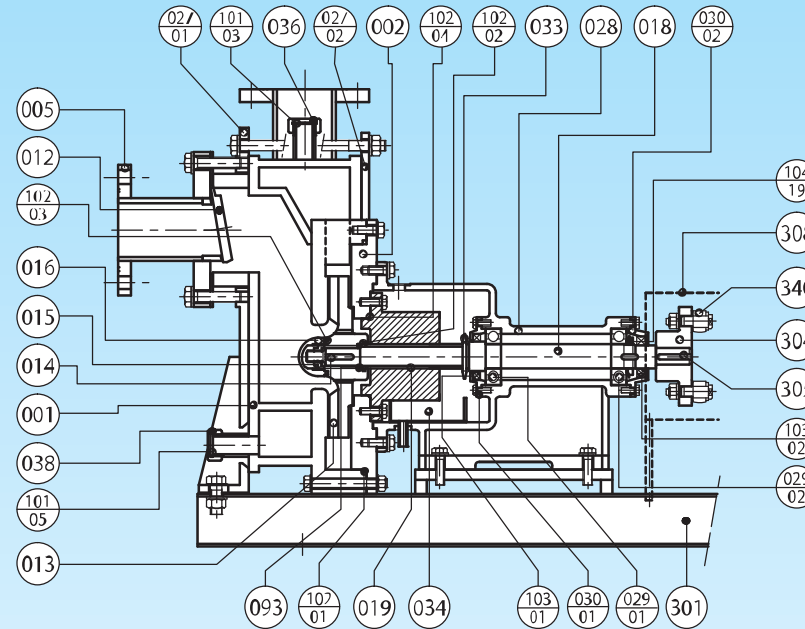
Note: Dimensions of M and TL apply to standard specifications, which slightly vary depending on motor manufacturers. The motor weight is not included in the body weight.

Cross-sectional drawing

● SEL-0202 to 0501



● SEL-0502 to 1602



Part No.	Part name	Material	Q'ty
CC1	Casing	PVC	1
CC2	Casing cover	PVC	1
CC5	Suction pipe	PVC	1
C12	Flap valve	FFM/FPDM	1
C13	Impeller	HTPVC	1
C14	Impeller key	SUS304	2
C15	Impeller nut	SUS304	1 set
C16	Impeller nut cover	HTPVC	1
C18	Shaft	SUS420J2	1
C19	Shaft sleeve	HTPVC	1
027-C1	Tie ring (Front)	FC200	1
027-C2	Tie ring (Rear)	FC200	1
C28	Bracket	FC200	1
029-C1	Bearing (Pump)	SUJ2	1
029-C2	Bearing (Motor)	SUJ2	1
030-C1	Bearing cover (Pump)	FC200	1
030-C2	Bearing cover (Motor)	FC200	1
C32	Deflector	FPDM	1
C31	Drain pan	PVC	1
C36	Priming plug	PVC	1

Part No.	Part name	Material	Q'ty
C38	Drain plug	PVC	1
C93	Adjusting liner	SUS304	1 set
C1-C3	Gasket (Priming plug)	FFM/EPDM	1
C1-C5	Gasket (Drain plug)	FFM/FPDM	1
C2-C1	O-ring (Casing)	FFM/EPDM	1
C2-C2	O-ring (Impeller)	FFM/EPDM	1
C2-C3	O-ring (Impeller nut)	FFM/EPDM	1
C2-C4	O-ring (Stuffing box)	FFM/EPDM	1
C3-C1	O-ring (Pump)	NBR	1
C3-C2	O-ring (Motor)	NBR	1
C3-C5	Felt seal (Pump)	Felt	1
C3-C6	Felt seal (Motor)	Felt	1
C4-C9	Bearing nut and washer	SS400	1 set
3C	Base	FC200	1 set
3C4	Coupling	FC200	1 set
3CF	Coupling key	SS400	1
3C7	Coupling set screw	SCM	1 set
3C8	Coupling guard	SS400	1
3/C	Pin and rubber (Coupling)	SS400 & NBR	1 set

Handling Precautions

- ① Improper use of Texel corrosion-resistance pumps is extremely hazardous, as with high-speed/high-pressure equipment. Use caution particularly when handling highly corrosive or hazardous chemicals.
- ② The pump body of NTS, TSU, SEM and SEL series pumps is made entirely of resin. Do not hold the pumps by the flanges when carrying.
- ③ Select pump models according to the intended application. Using the pumps in inappropriate applications may result in accident.

Precautions for piping

- ① For pipe connections to the pumps, it is recommended to use flexible joints so that excessive force is not be applied to flanges. Each pipe connected to the pump should be supported at a point near the pump.
- ② If reverse flow is possible when the pump stops or when pump head is high, a check valve should be installed to prevent reverse flow. In such case, however, air vent piping should be provided, because air may be trapped at the bottom of the check valve at startup.
- ③ With the SEM series, the suction pipe diameter should be smaller than the suction bore diameter of the pump. The overall pipe length and number of bends should be designed to be a minimum.

Precautions for suction piping

- ① The suction pipe length should be as short as possible. However, a valve and short pipe (approx. 0.3 m) required for pump disassembly work should be provided.
- ② The flange joint of the suction pipe should be as small as possible.
- ③ Since the suction pipe has significant influence on NPSH_{AV}, the pipe diameter, length and accessories should be carefully considered.
- ④ The suction pipe should be installed at an upward gradient (approx. 1/50) from the suction level to the pump. However, for push-in piping, the suction pipe should be installed at a downward gradient to the pump.
- ⑤ Provide dust-preventive equipment (screen) for the suction water tank.
- ⑥ Insert the tip of the suction pipe deeply enough into the target fluid so as not to suck up air during pump operation.
- ⑦ Valves on the suction side should be installed so that the handle sits horizontal. Otherwise, air may be trapped inside the valve during priming operation.
- ⑧ The number of bends should be kept to a minimum. Do not place a bend close to the pump suction port.
- ⑨ For use of reducing pipe, select an eccentric type so that air does not remain trapped inside the line. If using a concentric type reducing pipe, provide an air vent on the large diameter side.
- ⑩ To connect several pumps with a tank, an independent suction pipe should be provided for each pump.

Precautions for discharge piping

- ① For discharge piping, be sure to provide a flow control valve.
- ② Also, with discharge piping, trapped air inside the pipe may have a harmful effect. Provide an air vent, as required.
- ③ When a discharge pipe serves as a siphon, the highest part of the discharge pipe should be lower than the shutoff head of the pump.
- ④ If reverse flow is possible when the pump stops or when pump head is high, a check valve should be installed to prevent reverse flow. In such case, however, air vent piping should be provided, because air may be trapped at the bottom of the check valve at startup.

Precautions in operation and check items

- ① Noise check
If air or solid matter is sucked into the pump from the suction pipe, the pump emits abnormal sounds, and, in most cases, this phenomenon involves vibrations. Fluctuations in suction pressure gauge indication may be caused by air intrusion.
- ② Vibration check
Check for cavitation or vibrations due to improper installation before operation.
- ③ For discharge rate adjustments, be sure to use the discharge valve. Do not reduce the flow rate with the suction valve.
- ④ Occasionally run spare pumps that have been connected with piping, to ensure that they are always ready for operation. Running a pump without fluid causes the mechanical seal sliding parts to seize up, resulting in a fatal accident. Never run pumps without fluid.
- ⑤ Observe the specified discharge rate and pump head. Do not run pumps at the minimum discharge rate or excessively high discharge rates.
- ⑥ Other
Watch the discharge pressure, suction pressure, flow rate, and current value. Abnormal fluctuations or reductions in these conditions mostly indicate clogging by solid matter or air intrusion in the suction pipe.

Recommended maintenance and inspection

To ensure smooth and safe operation of the pump for a long period of time, it is recommended to periodically inspect the pump and keep records of the inspection results.

General maintenance items are as follows.

1. Daily inspection: Check and keep record of the following items.

- ① Suction tank water level
- ② Suction/Discharge pressure
- ③ Abnormal sounds and vibrations of the pump and motor
- ④ Bearing temperature of the pump and motor
- ⑤ Motor current value
- ⑥ Leaks from the casing and flange gasket
- ⑦ Abnormal liquid leaks from shaft seals
- ⑧ Amount of leak from glands of packing seal type pumps

2. Periodic inspection

Use caution not to impact or drop pump parts during disassembly work. Handle mechanical seals with caution.

- ① This catalog outlines products.
- ② To ensure proper use of products, read the instruction manual carefully and familiarize yourself with the contents.
- ③ The pump body or parts of some of the products described in this catalog may be subject to export restrictions under the Foreign Exchange and Foreign Trade Act. For details, see "Product Information" on our website.

Corrosion Resistance Table

This corrosion resistance table is based on corrosion resistance of pump main materials. Please refer to this table as reference for selecting the best product for your application.

Chemical name	Molecular formula	Density (%)	Specific gravity	Maximum operating temperature (°C)										
				Casing / Impeller				Mechanical seal sliding parts				O-ring		
				PFA	PVDF	ETFE	UPE	Alumina	C-PtFE	G-PtFE	Carbon	SiC	FPM	EPDM
Acipic acid	HOOC(CH ₂) ₇ COOH	sat.	1.36	150	90	80	60	bp	90	90	—	bp	80	60
Acetaldehyde	CH ₃ CHO	100	0.78	bp	NR	bp	NR	bp	bp	op	—	bp	bp	—
Acetonitrile	CH ₃ CN		0.98	bp	50	bp	—	bp	bp	op	—	bp	—	NR
Acetone	CH ₃ COCH ₃	100	1.0	bp	NR	bp	60	bp	bp	op	bp	bp	NR	bp
Ammoniacal liquor	NH ₄ OH	40		150	60	80	60	bp	90	90	—	bp	NR	60
Isopropyl alcohol	(CH ₃) ₂ CHOH	100		bp	60	45	60	bp	bp	op	—	bp	60	60
Ethyl alcohol	C ₂ H ₅ OH	100	0.8	bp	bp	bp	60	bp	bp	op	bp	bp	bp	bp
Aluminium chloride	AlCl ₃	sat.		150	90	80	60	bp	90	90	90	bp	90	80
Ammonium chloride	NH ₄ Cl	sat.		150	90	80	80	bp	90	90	90	bp	90	80
Potassium chloride	KCl			150	90	80	80	bp	90	90	90	bp	90	80
Calcium chloride	CaCl ₂	sat.		150	90	80	60	bp	90	90	90	bp	90	60
Ferrous chloride	FeCl ₂	sat.		150	90	80	80	bp	90	90	90	bp	90	80
Thionyl chloride	SOCl ₂			150	NR	80	—	bp	90	90	—	bp	NR	NR
Sodium chloride	NaCl			150	90	80	80	bp	90	90	—	bp	90	—
Benzyl chloride	C ₆ H ₅ CH ₂ Cl	100		150	80	80	—	bp	90	90	—	bp	—	—
Magnesium chloride	MgCl ₂	sat.		150	90	80	60	bp	90	90	90	bp	80	80
Dichloromethane	CH ₂ Cl ₂			bp	NR	bp	—	bp	bp	op	—	bp	NR	NR
Hydrochloric acid	HCl	10	1.05	bp	90	bp	80	bp	90	90	—	bp	90	60
		30	1.15	bp	80	bp	80	bp	90	90	—	bp	80	—
		36		bp	bp	bp	80	bp	90	90	bp	bp	80	—
Chlorine water				150	90	80	NR	bp	90	90	NR	bp	90	NR
Aqua regia				150	NR	NR	NR	bp	90	90	NR	bp	40	NR
Phosphorus oxychloride	POCl ₃			150	NR	80	—	bp	90	90	—	bp	NR	NR
Formic acid	HCOOH	90		bp	80	80	60	bp	90	90	NR	bp	NR	80
Xylene	C ₆ H ₄ (CH ₃) ₂		0.88	bp	90	80	NR	bp	90	90	NR	bp	NR	NR
Citric acid		10	1.67	150	90	80	60	hp	90	90	90	hp	90	80
Glycolic acid	HOCH ₂ COOH	sat.		150	NR	80	60	bp	90	90	—	bp	NR	NR
Chromic acid	Cr ₂ O ₃	40		150	80	—	80	※bp	90	90	100	hp	80	—
		50		—	50	100	80	※bp	90	90	NR	bp	50	—
Chloroform	CHCl ₃	100	1.50	bp	60	NR	NR	hp	hp	op	NR	hp	NR	NR
Acetic acid	CH ₃ COOH	10	1.01	150	60	—	80	bp	90	90	—	bp	NR	40
		50	1.05	150	40	80	60	hp	90	90	80	hp	NR	40
		80	1.06	150	NR	—	40	bp	90	90	—	bp	NR	NR
Ethyl acetate	CH ₃ CO ₂ C ₂ H ₅	100		bp	NR	65	NR	bp	bp	op	—	bp	NR	NR
Butyl acetate	CH ₃ COO(CH ₂) ₃ CH ₃	100		bp	NR	80	—	bp	90	90	—	bp	NR	NR
Sodium hypochlorite	NaClO	5		150	90	80	—	bp	90	90	NR	bp	90	NR
		15		150	90	80	—	bp	90	90	NR	bp	80	NR
Carbon tetrachloride	CCl ₄			150	60	65	NR	bp	90	90	—	bp	60	NR
Cyclohexane	C ₆ H ₁₂	100	0.78	bp	80	40	20	bp	bp	op	40	bp	40	NR
Dimethylamine	(CH ₃) ₂ NH	100	0.68	bp	NR	—	NR	bp	bp	op	bp	bp	NR	NR
Potassium bromide	KBr		1.37	150	90	80	60	bp	90	90	90	bp	90	80
Hydrobromic acid	HB ⁺	50	1.15	150	90	80	60	bp	90	90	90	bp	80	40
Methylene bromide	CH ₂ Br ₂			bp	bp	bp	—	bp	bp	op	—	bp	20	NR

Chemical name	Molecular formula	Density (%)	Specific gravity	Maximum operating temperature (°C)										
				Casing / Impeller				Mechanical seal sliding parts				O-ring		
				PFA	PVDF	ETFE	UPE	Alumina	C-PTFE	G-PTFE	Carbon	SiC	FPM	EPDM
Nitric acid	HNO ₃	10	1.06	bp	80	—	60	bp	90	90	—	bp	90	—
		50	1.32	bp	50	65	NR	bp	90	90	80	bp	80	NR
		98	1.51	bp	NR	40	NR	NR	bp	bp	NR	bp	NR	NR
Ammonium nitrate	NH ₄ NO ₃			150	90	80	60	bp	90	90	—	bp	90	60
Aluminum hydroxide	Al(OH) ₃	sat.		150	90	80	60	bp	90	90	—	bp	80	60
Potassium hydroxide	KOH	50	1.51	150	40*	80	80	bp	90	90	80	bp	NR	80
Sodium hydroxide	NaOH	10	1.11	bp	50*	80	80	bp	90	90	—	bp	NR	80
		50	1.53	bp	40*	100	80	bp	90	90	80	bp	NR	80
Magnesium hydroxide	Mg(OH) ₂	sat.		150	80	80	60	bp	90	90	90	bp	90	80
Ammonium carbonate	(NH ₄) ₂ CO ₃	sat.		150	90	80	60	bp	90	90	—	bp	90	80
Calcium carbonate	CaCO ₃	sat.		150	90	80	60	bp	90	90	—	bp	90	60
Sodium carbonate	Na ₂ CO ₃	sat.		150	90	80	80	bp	90	90	—	bp	90	80
Sodium thiosulfate	Na ₂ S ₂ O ₃			150	90	80	—	bp	90	90	80	bp	60	60
Trichloroethylene	C ₂ HCl ₃		1.46	bp	60	80	NR	bp	90	90	NR	bp	40	NR
Trichloroacetic acid	CCl ₃ COOH	10		—	90	—	—	bp	90	90	—	bp	NR	NR
		50		100	NR	40	—	bp	90	90	—	bp	NR	NR
Toluene	CH ₃ C ₆ H ₅		0.87	bp	NR	80	NR	bp	90	90	40	bp	25	NR
Nitrobenzene	C ₆ H ₅ NO ₂		1.21	150	NR	80	NR	bp	90	90	—	bp	60	NR
Oleum	H ₂ SO ₄ +SO ₃			150	NR	NR	NR	bp	NR	NR	NR	bp	NR	NR
Arsenic acid	H ₃ AsO ₄ / 2H ₂ O	sat.	1.10	150	80	80	60	bp	90	90	90	bp	60	40
Glacial acetic acid	CH ₃ COOH			bp	NR	80	—	bp	90	90	—	bp	NR	NR
Ammonium fluoride	NH ₄ F	sat.		150	90	80	80	bp	90	90	90	bp	60	60
Potassium fluoride	KF			150	90	70	60	bp	90	90	50	bp	90	80
Hydrofluoric acid	HF	30	1.10	150	90	80	60	NR	90	90	85	bp	60	NR
		70	1.17	150	40	80	60	NR	90	90	—	bp	NR	NR
Hexane	CH ₃ (CH ₂) ₄ CH ₃		0.66	bp	bp	bp	NR	bp	bp	bp	—	bp	60	NR
Benzene	C ₆ H ₆	100	0.89	bp	NR	bp	NR	bp	bp	bp	20	bp	NR	NR
Boric acid	H ₃ BO ₃	sat.		150	90	100	—	bp	90	90	90	bp	90	60
Formaldehyde	HCHO	37	0.82	150	50	100	60	bp	90	90	—	bp	60	60
Methanol	CH ₃ OH	100	0.79	bp	bp	bp	60	bp	bp	bp	NR	bp	NR	60
Sulfuric acid	H ₂ SO ₄	60	1.49	bp	90	100	80	bp	90	90	100	bp	60	60
		90	1.81	150	80	100	NR	bp	90	90	—	bp	60	NR
		98	1.83	150	50*	100	NR	bp	90	90	NR	bp	50	NR
Aluminum sulfate	Al ₂ (SO ₄) ₃	sat.		150	90	100	60	bp	90	90	90	bp	80	60
Copper sulfate	CuSO ₄	sat.		150	90	100	80	bp	90	90	—	bp	90	80
Nickel sulfate	NiSO ₄	sat.	1.06	150	90	100	80	bp	90	90	90	bp	90	80
Phosphoric acid	H ₃ PO ₄	50	1.33	150	90	100	80	bp	90	90	80	bp	90	80
		85	1.69	150	90	100	80	bp	90	90	80	bp	90	80
Calcium phosphate	Ca ₃ (PO ₄) ₂	sat.		150	90	100	60	bp	90	90	—	bp	—	—

- **Description of code** —: No data available
 NR: Inapplicable
 bp: Liquid boiling point
 Sat.: Saturated

Cautions:

- For use with mixed liquids or solid-containing liquids, contact us for more information.
- For items indicated with *, contact our sales office.
- Corrosion resistance given in this table indicates the allowable operating temperature of each material, not the allowable operating temperature of the pump body.
- The specific gravity may change depending on operating conditions, therefore treat shown values as reference.

TEXEL[®] CORROSION-RESISTANT FANS/BLOWERS

Product lineup



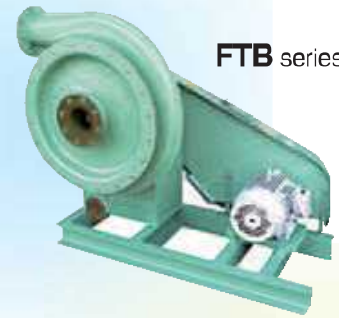
CES series



CES-D series



CES-V series



FTB series



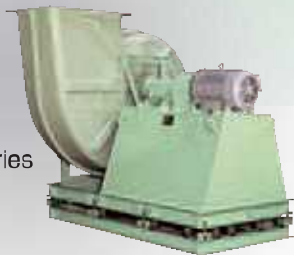
FTF-MD series



FTF series



NSF series



FTF-MC series

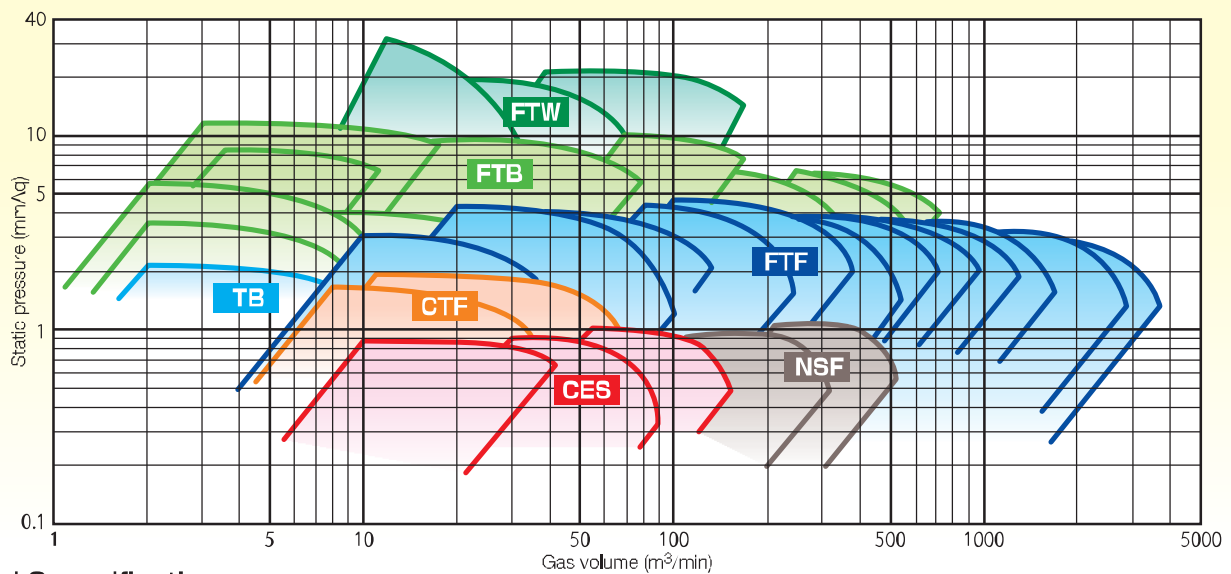


CTF series



FTW series

TEXEL Fans/Blowers Capacity Range

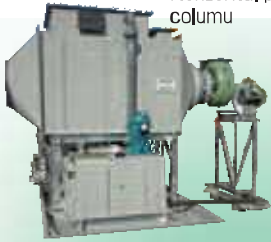


Standard Specifications

Model	CES	CES		FTF	FTF		NSF	CTF	FTB	FTW
		D	V		MD	MC				
Gas Temperature	-10~50°C	-10~50°C		-10~80°C	-10~80°C		-10~50°C	-10~50°C	-10~80°C	-10~80°C
Construction	Impeller	Sirocco		Turbo	Turbo		Sirocco	Turbo	Turbo	Turbo
	Sealing	Free Gland		Seal Plate	Seal Plate		Free Gland	Free Gland	Seal Plate	Seal Plate
Material	Impeller	FRPP		GRP	GRP		FRP	GRP	GRP	GRP
	Casing	FRPP		FRP	FRP		FRP	FRPP	FRP	FRP
	Shaft	Carbon steel		Carbon steel	Carbon steel		Carbon steel	Carbon steel	Carbon steel	Carbon steel

Product lineup

SYS-E type
Horizontal packed column

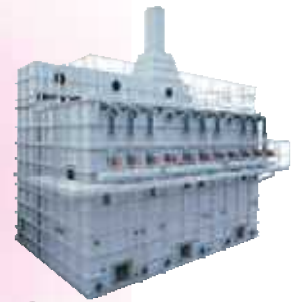


General acidic alkali gas treatment

TRS-HS type
Vertical packed column



NOx gas treatment



NOx method
Wet oxidation/Reduction treatment



STP type
Vertical packed column



NPS type
Net spray column

Soft-containing gas treatment

White smoke treatment



HES type
Hybrid scrubber with electrical dust collector

Silane-containing gas treatment



TTS type
Spray + Jet + Packed column



VSC type
Venturi scrubber



TMC type
Mist separator

Mist treatment

TEXEL Wet-scrubber Selection Table

You are advised to select an off-gas scrubber of the right type from the table below in consideration of the gas type, concentration and exhaust flow rate.

Suitable scrubber types

	Suitable scrubber types	
	Packed type	Non-filling type
General acidic/alkali gas treatment	Low concentration: ~30ppm	TRS-HS type or SYS type.
	Medium concentration: 10~200ppm	TRS-HS type, SYS type, TRS-F type or STP type
	High concentration: 200ppm~	STP type
Particle-containing gas treatment		NSP type (for use only at a small airflow rate) or VSC type
		NSP type (for use only at a small airflow rate)
Special (silane-containing) gas treatment	TTS type (for use at a very small airflow rate up to 300L/min.)	NSP type (for use only at a small airflow rate)
White smoke (acidic fume) treatment		HES type
		TMC type (called a "mist catcher")
NOx gas treatment	NOx type or STP type (reduction column only)	