Doc. No. F554-A55121 Rev.0

HORIZONTAL END SUCTION VOLUTE PROCESS PUMP MODEL GSOF

ISO2858/5199

TECHNICAL DATA BOOK 50/60Hz

Model GSOF:
Front semi-open impeller type

eDYNAMiQ

Eco, Dynamic and Integrated Quality

EBARA CORPORATION

March 2024

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PERFORMANCE CURVES

PETROCHEMICAL & CHEMICAL INDUSTRY

- Chemical feed pump (Organic chemicals, Acid, Alkali)【**GSO/GSOF**】
- Catalyst feed pump【**GSOF**】
- Slurry product feed pump (e.g. PVC slurry)【**GSOF**】

INORGANIC CHEMICAL INDUSTRY

- Chemical feed pump (Acid, Alkali)【**GSO/GSOF**】
- Catalyst feed pump【**GSOF**】

PHARMACEUTICAL INDUSTRY

- Chemical feed pump (Organic chemicals, Acid, Alkali)【**GSO/GSOF**】
- Purified water feed pump【**GSO/GSOF**】
- Slurry product feed pump (Crystalized products)【**GSOF**】
- Wastewater pump【**GSO/GSOF**】

SEMICONDUCTOR INDUSTRY

- Pure water feed pump【**GSO/GSOF**】
- Wastewater pump【**GSOF**】

STEEL INDUSTRY

- Rolling facility (Rinsed water, Scale pit slurry)【**GSO/GSOF**】
- Plating facility (Degreasing liquid, e.g. Alkali, Acid, Rinsed water)【**GSO/GSOF**】

METAL GOODS INDUSTRY

- Plating facility (Degreasing liquid, e.g. Alkali, Acid, Rinsed water)【**GSO/GSOF**】

WATER TREATMENT INDUSTRY

- RO water facility (e.g. Seawater, Filtered water)【**GSO/GSOF**】

FOOD INDUSTRY

- Process liquid feed pump (e.g. Starch, Molasses, Wort, and miscellaneous liquid with viscosity range is up to 400cst)【**GSO/GSOF**】
- Cleaning in place pump【**GSO/GSOF**】
- Filtration medium feed pump【**GSO/GSOF**】

PAPER AND PULP INDUSTRY

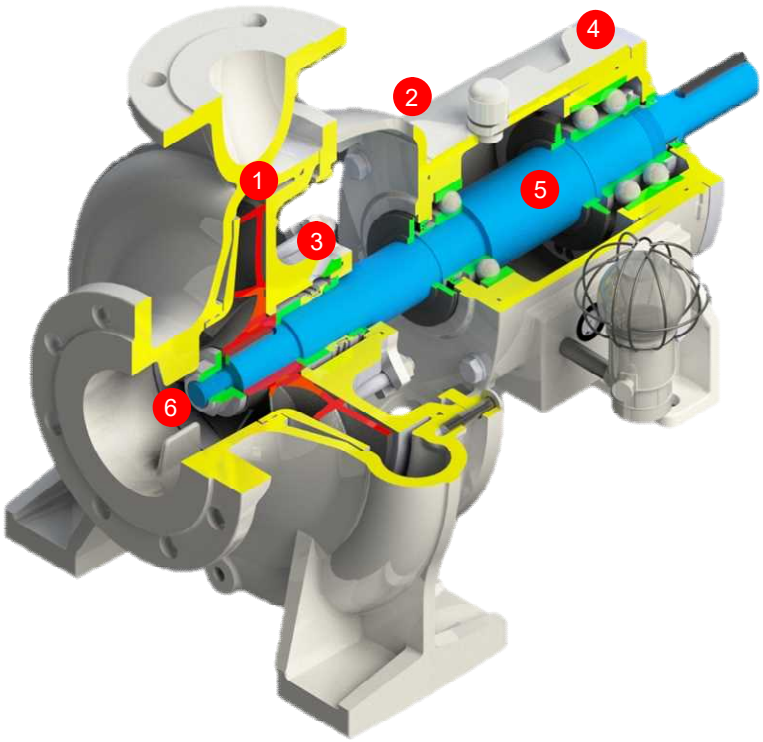
- Process liquid feed pump (Inorganic chemical)【**GSO/GSOF**】
- Pulp slurry feed pump (Pulp conc. is 0.3% and below)【**GSO/GSOF**】

MOTOR VEHICLE INDUSTRY

- Machining line (Coolant)【**GSO/GSOF**】
- Painting line (Chemical conversion treatment, Electrodeposition paint)【**GSO/GSOF**】

FISHERIES INDUSTRY

- Aquaculture (Seawater)【**GSO/GSOF**】



1 Impeller with front semi-open shape
- Front semi-open vanes are desinged for slurry that can handle with higher content of particle than the application of reverse open vane.

2 Back pullout construction
- Easy maintenance without disassembling suction and discharge piping

3 Gland cover compatible with various shaft seal types
- Sufficient seal box space enough to support shaft sealing requirements for special applications

4 Heavy duty design of bearing and bearing housing construction
- Low vibration value of 3.0 mm/s as per ISO 5199
- Longer bearing life as per ISO 5199

5 Heavy duty shaft design
- Deflection at shaft seal 50 µm or less
- Reduction of shaft sealing problems to make maintenance costs lower by small shaft deflection and vibration

6 U-type impeller nut
- Not loosen during operation
- Short assembly time
- Can be used repeatedly

7 High interchangeability of parts
- Minimized maintenance cost and stock parts
- Only 3 sizes of bearing housing frame
- Only 4 type of shaft

8 International Standards
- Pump dimension in accordance with ISO 2858 and EN 22858
- Pump design as per ISO 5199
- Seal chamber dimension in accordance with ISO 3069

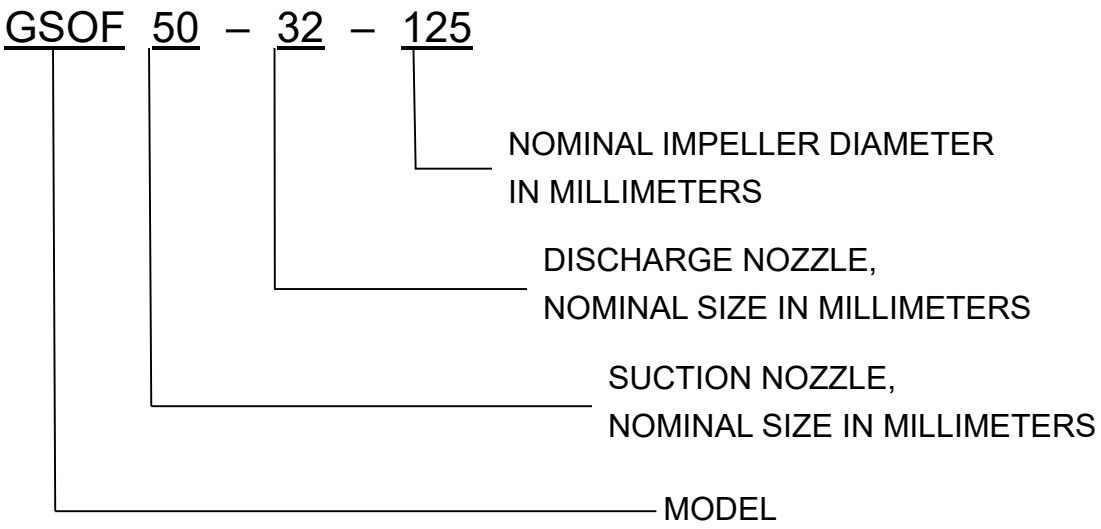
General Description

Capacity	To 210 m3/hr (50Hz)
	To 250 m3/hr (60Hz)
Head	To 105 m (50Hz)
	To 150 m (60Hz)
Liquid temperature	-30℃ to 150℃
Max. working pressure	Up to 16 bar (1.6MPa)
Material (*1)	Casing : 304 Stainless Steel Impeller: 304 Stainless Steel
Standard	ISO2858, ISO5199
Rotation	Clockwise viewed from coupling end

(*1) 316 stainless steel can be selected as an option.

Designation

The following designation is system according to ISO 2858.



FEATURE

- Horizontal foot mounting
- Back pull-out design
- Single-stage
- Radially split volute casing

APPLICABLE FLANGE STANDARD

- EN PN16
- JIS 10K

IMPELLER TYPE

- Front semi-open impeller, single suction

SHAFT SEAL

- Single mechanical seal based upon DIN 24960
- Single mechanical seal (Cylindrical type)
- Double mechanical seal (Cylindrical type)
- Gland packing

BEARINGS AND LUBRICATION

- Standard : Heavy duty ball bearing (Oil lubrication)

PAINTING

1. Outer Surface

・Standard for Casing and Gland Cover

Primer coating	Non painting
Final coating	Non painting

・Standard for Bearing Housing, Bearing Cover, Adapter, Bracket and Stay

Primer coating	Polyurethane resin primer
Final coating	Acrylic urethane resin paint
Finish color	Munsell 2.5PB4/2 (Dark gray)

2. Inner Surface

・Standard for Casing, Gland cover and Impeller

Primer coating	Non painting
Final coating	Non painting

・Standard for Bearing Housing

Primer coating	Polyurethane resin primer
Final coating	Non painting

TECHNICAL DATA – Impeller Diameter

— Not applicable Model Unit : mm

Model	Shaft No.	50Hz				60Hz			
		2P		4P		2P		4P	
		Max	Min	Max	Min	Max	Min	Max	Min
50-32-125	40	142	106	142	106	142	106	142	106
50-32-160	40	173	139	173	139	173	139	173	139
50-32-200	40	214	166	214	166	214	166	214	166
50-32-250	50A	256	204	256	204	256	204	256	204
65-40-160	40	177	134	177	134	177	134	177	134
65-40-200	40	212	168	212	168	212	168	212	168
65-40-250	50A	254	206	254	206	254	206	254	206
80-50-160	40	177	131	177	131	177	131	177	131
80-50-200	40	215	176	215	176	215	176	215	176
80-50-250	50A	264	197	264	197	235	197	264	197
80-50-315	50B	-	-	335	262	-	-	335	262
100-65-160	50A	177	135	177	135	177	135	177	135
100-65-200	50A	219	162	219	162	219	162	219	162
100-65-250	50B	266	214	266	214	266	214	266	214
100-65-315	60	-	-	305	243	-	-	305	243

TECHNICAL DATA – Shaft No. and Shaft Diameter

Unit : mm

Model	Shaft No.	At Coupling	At Radial Bearing	At Thrust Bearing	Under Shaft Sleeve	Sleeve Dia. (For Gland packing)
50-32-125	40	24	40	40	38	45
50-32-160	40	24	40	40	38	45
50-32-200	40	24	40	40	38	45
50-32-250	50A	32	50	55	48	55
65-40-160	40	24	40	40	38	45
65-40-200	40	24	40	40	38	45
65-40-250	50A	32	50	55	48	55
80-50-160	40	24	40	40	38	45
80-50-200	40	24	40	40	38	45
80-50-250	50A	32	50	55	48	55
80-50-315	50B	32	50	55	48	55
100-65-160	50A	32	50	55	48	55
100-65-200	50A	32	50	55	48	55
100-65-250	50B	32	50	55	48	55
100-65-315	60	42	60	65	55	60

1. Maximum Allowable Working Pressure (MAWP)

Pressure casing material	Liquid temperature	Max. allowable working pressure	Flange standard
Stainless Steel	-30℃ to 150℃	16 bar (1.6MPa)	EN PN16
		14 bar (1.4MPa)	JIS 10K

2. Maximum Allowable Suction Pressure (MASP)

(1) Mechanical Seal Application

Maximum Allowable Suction Pressure (MASP) must be smaller than the difference between the Maximum Allowable Working Pressure (MAWP) and Pump Shut-off Pressure (PSP), as follows. However, MASP shall not exceed 16 bar.

MASP < MAWP — PSP

[PSP(in bar) = 0.098 x Pump Shut-off Head(in m) x Liquid Density(in kg/L)]

(2) Gland Packing Application

Maximum Allowable Suction Pressure (MASP) of Gland Packing application is **6 bar** as standard.

TECHNICAL DATA – Interchangeability Chart

Oil Lubrication Bearing

Model	Shaft No.	Impeller	Ball Bearing (M)	Ball Bearing (P)	Deflector	Oil Seal (M)	Oil Seal (P)	for Mechanical Seal					for Gland Packing		
								O-Ring (Gland Cover)	O-Ring BG Cover (M)	O-Ring BG Cover (P)	Mech.Seal	O-Ring (Gland Plate)	Packing Sleeve	Gasket (PK Sleeve)	Gland Packing
50-32-125	40	Depends on each model	L	M	A	A	B	A	B	A	A	A	A	A	A
50-32-160	40		L	M	A	A	B	A	B	A	A	A	A	A	A
50-32-200	40		L	M	A	A	B	B	B	A	A	A	A	A	A
50-32-250	50A		N	P	B	B	C	C	D	C	B	B	B	B	B
65-40-160	40		L	M	A	A	B	A	B	A	A	A	A	A	A
65-40-200	40		L	M	A	A	B	B	B	A	A	A	A	A	A
65-40-250	50A		N	P	B	B	C	C	D	C	B	B	B	B	B
80-50-160	40		L	M	A	A	B	A	B	A	A	A	A	A	A
80-50-200	40		L	M	A	A	B	B	B	A	A	A	A	A	A
80-50-250	50A		N	P	B	B	C	C	D	C	B	B	B	B	B
80-50-315	50B		N	P	B	B	C	D	D	C	B	B	C	B	B
100-65-160	50A		N	P	B	B	C	A	D	C	B	B	B	B	B
100-65-200	50A		N	P	B	B	C	B	D	C	B	B	B	B	B
100-65-250	50B		N	P	B	B	C	C	D	C	B	B	C	B	B
100-65-315	60		Q	R	C	C	D	D	F	E	C	C	D	C	C

Note: Materials of every parts should be specified by the section of "Materials of Construction".
The same letters in the same vertical column are interchangeable.

The number of recommended spare parts

Parts name	Used number of parts / unit	Spare parts for 1 year operation		Spare parts for 2 years operation		Remarks
		1 pump	2 and more pumps (*1)	1 pump	2 and more pumps (*1)	
Impeller	1	-	-	1	20%	
Shaft	1	-	-	1	20%	
Ball bearing (M)	1 set	1 set	25%	1 set	40%	
Ball bearing (P)	1	1	25%	1	40%	
Packing sleeve	1	1	30%	1	50%	*2
Coupling consumable parts (if any)	1 set	1 set	30%	1	50%	
Mechanical seal	1 set	1 set	40%	1 set	70%	*3
Deflector	1	1	40%	1	70%	
Oil Flinger	1	1	40%	1	70%	
Oil seal (M)	1	1	100%	2	150%	
Oil seal (P)	1	1	100%	2	150%	
Gland packing	1 set	1 set	100%	2 sets	150%	*2
Gasket-PK sleeve	1	1	100%	2	150%	*2
O-Rings	1	1	100%	2	150%	

*1 It should be noted, the standby pump is also taken into consideration, and the fraction of the calculation result is rounded up.

Calculation example: 3 pumps x 70%, applicable parts = 210% ⇒ Recommend 300% spare parts

*2 for gland packing type

*3 for mechanical seal type

Overall Sound Pressure Level

Unit : dB(A)

Model	Shaft No.	50Hz		60Hz	
		2950 mim^{-1} (2 Pole)	1450 mim^{-1} (4 Pole)	3550 mim^{-1} (2 Pole)	1750 mim^{-1} (4 Pole)
50-32-125	40	64	54	68	54
50-32-160	40	68	54	70	58
50-32-200	40	72	58	73	62
50-32-250	50A	73	62	77	65
65-40-160	40	70	58	73	62
65-40-200	40	73	62	77	65
65-40-250	50A	76	63	80	67
80-50-160	40	72	58	76	63
80-50-200	40	76	63	78	65
80-50-250	50A	80	67	81	69
80-50-315	50B	—	69	—	72
100-65-160	50A	73	62	77	65
100-65-200	50A	77	65	80	69
100-65-250	50B	81	67	81	71
100-65-315	60	—	71	—	72

Note : The overall sound pressure level is the value measured 1m away from the pump unit and does not include driver noise.

The following lubricants are used to lubricate pump bearings with an oil lubricated structure.

Recommended Lubricants Type	Manufacturer's Brand Name		
	SHELL	EXXON MOBIL	
Turbine Oil ISO VG46	TURBO OIL T46	DTE MEDIUM	TERESSO 46
Turbine Oil ISO VG68 (*1)	TURBO OIL T68	DTE HEAVY MEDIUM	TERESSO 68

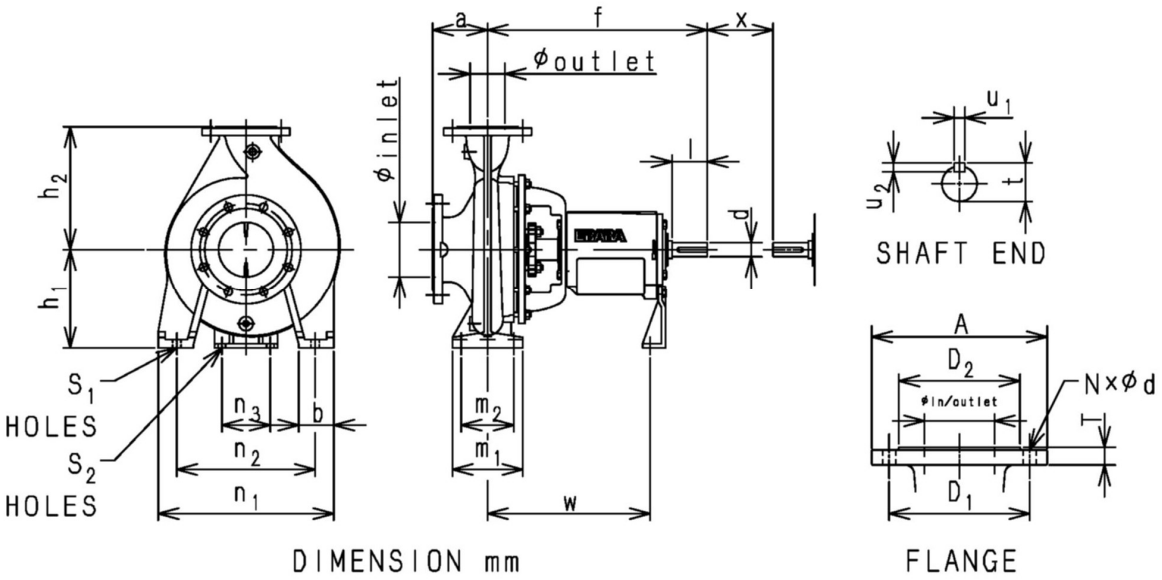
Note : (*1) Recommended for the installation at tropical area.

Model	Shaft No.
50-32-125	40
50-32-160	40
50-32-200	40
50-32-250	50A
65-40-160	40
65-40-200	40
65-40-250	50A
80-50-160	40
80-50-200	40
80-50-250	50A
80-50-315	50B
100-65-160	50A
100-65-200	50A
100-65-250	50B
100-65-315	60

Bearing lubrication shall be changed at least per the following schedule.

	Initial Charge		On and after the Seacond Charge	
Shaft No.	Capacity (Liter)	Interval (Hours)	Capacity (Liter)	Interval (Hours)
40	0.6	300	0.6	4000
50A, 50B	1	300	1	4000
60	1.5	300	1.5	4000

DIMENSIONS - Dimensions of Bare Shaft Pump



Flange Dimension

Material : Stainless Steel

Flange Standard : EN PN16

Unit : mm

Model (suc - dis)	Suction Flange							Discharge Flange						
	Φin	A	D1	D2	T	N	d	Φout	A	D1	D2	T	N	d
50-32	50	165	125	102	18	4	18	32	140	100	78	18	4	18
65-40	65	185	145	122	18	4	18	40	150	110	88	18	4	18
80-50	80	200	160	138	20	8	18	50	165	125	102	18	4	18
100-65	100	220	180	158	20	8	18	65	185	145	122	18	4	18

Flange Standard : JIS 10K

Unit : mm

Model (suc - dis)	Suction Flange							Discharge Flange						
	Φin	A	D1	D2	T	N	d	Φout	A	D1	D2	T	N	d
50-32	50	155	120	96	16	4	19	32	135	100	76	16	4	19
65-40	65	175	140	116	18	4	19	40	140	105	81	16	4	19
80-50	80	185	150	126	18	8	19	50	155	120	96	16	4	19
100-65	100	210	175	151	18	8	19	65	175	140	116	18	4	19

Dimensions of Bare Shaft Pump

Unit : mm

Model	Shaft No.	Nominal Nozzle Diameter		Pump				Support							Holes for bolts		Shaft end					(*1)	Mass (kg)
		φ inlet	φ outlet	a	f	h1	h2	b	m1	m2	n1	n2	n3	w	S1	S2	d	l	t	u1	u2	x	
50-32-125	40	50	32	80	385	112	140	50	100	70	190	140	110	285	M12	M12	24	50	27	8	7	100	54
50-32-160	40	50	32	80	385	132	160	50	100	70	240	190	110	285	M12	M12	24	50	27	8	7	100	55
50-32-200	40	50	32	80	385	160	180	50	100	70	240	190	110	285	M12	M12	24	50	27	8	7	100	62
50-32-250	50A	50	32	100	500	180	225	65	125	95	320	250	110	370	M12	M12	32	80	35	10	8	100	100
65-40-160	40	65	40	80	385	132	160	50	100	70	240	190	110	285	M12	M12	24	50	27	8	7	100	57
65-40-200	40	65	40	100	385	160	180	50	100	70	265	212	110	285	M12	M12	24	50	27	8	7	100	64
65-40-250	50A	65	40	100	500	180	225	65	125	95	320	250	110	370	M12	M12	32	80	35	10	8	100	103
80-50-160	40	80	50	100	385	160	180	50	100	70	265	212	110	285	M12	M12	24	50	27	8	7	100	60
80-50-200	40	80	50	100	385	160	200	50	100	70	265	212	110	285	M12	M12	24	50	27	8	7	100	69
80-50-250	50A	80	50	125	500	180	225	65	125	95	320	250	110	370	M12	M12	32	80	35	10	8	100	105
80-50-315	50B	80	50	125	500	225	280	65	125	95	345	280	110	370	M12	M12	32	80	35	10	8	100	125
100-65-160	50A	100	65	100	500	160	200	65	125	95	280	212	110	370	M12	M12	32	80	35	10	8	100	90
100-65-200	50A	100	65	100	500	180	225	65	125	95	320	250	110	370	M12	M12	32	80	35	10	8	140	96
100-65-250	50B	100	65	125	500	200	250	80	160	120	360	280	110	370	M16	M12	32	80	35	10	8	140	115
100-65-315	60	100	65	125	530	225	280	80	160	120	400	315	110	370	M16	M12	42	110	45	12	8	140	159

(*1) Dimension to be considered by the manufacturer in respect of removal of inner parts of the Pump. The dimension X must not be identical with the distance between the shafts of the pump and the driving machine. The given dimension considers the use of flexible shaft couplings with spacer. The gap is necessary for the withdrawal of the rotor toward the driven side.

Fig.-A (for 4 anchor bolts without coupling spacer)

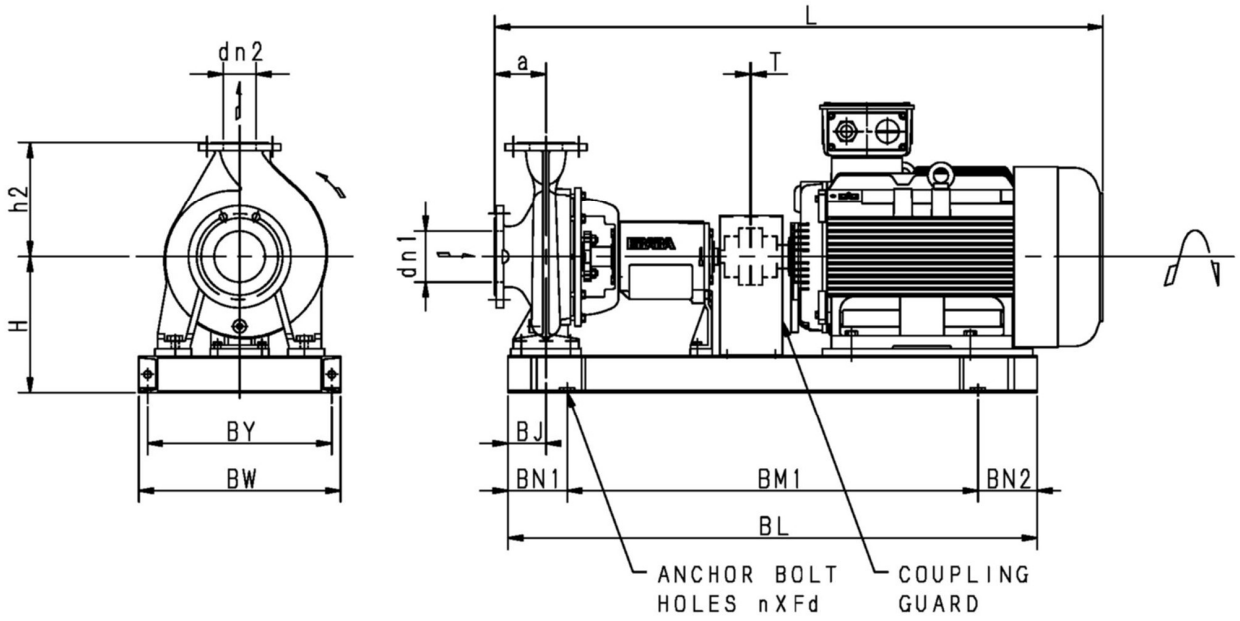
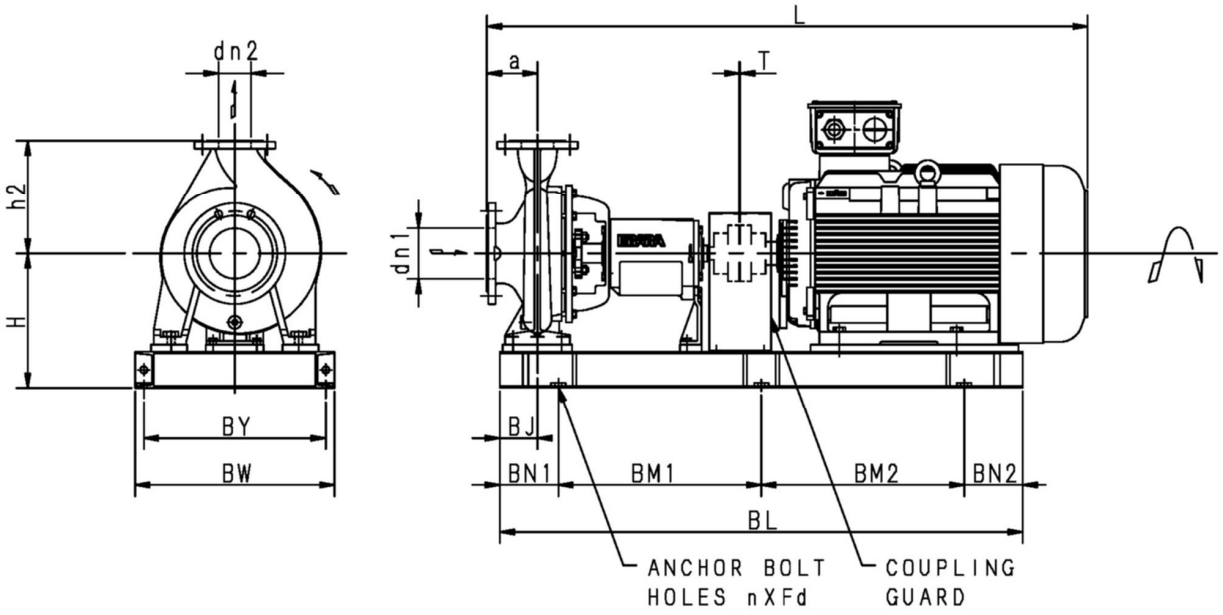


Fig.-B (for 6 anchor bolts without coupling spacer)



DIMENSIONS - Dimensions of Pump with motor (2P)

Model GSOF - 2 Pole - 50Hz / 60Hz (1/2) ○ : Applicable ** : Dimension in mm

Model	Hz		Power	Fig.	Nozzle		Pump			Motor		BASE											Total (Approx.)		
	50	60	kW		dn1 **	dn2 **	a **	h2 **	Mass (kg)	Frame	Mass (kg)	H **	BJ **	BN1 **	BM1 **	BM2 **	BN2 **	BL **	BY **	BW **	T **	n x Fd	Mass (kg)	L **	Mass (kg)
50-32-125	○		0.75	A	50	32	80	140	54	80M1	14	190	70	130	540	-	130	800	320	350	3	4 x M12	47	762	115
	○		1.1	A						80M2	15	190		130	540	-	130	800	320	350	3		47	762	116
	○	○	1.5	A						90S	23	190		130	540	-	130	800	320	350	3		47	797	124
	○	○	2.2	A						90L	26	190		130	540	-	130	800	320	350	3		48	819	128
	○	○	3	A						100L	37	190		130	540	-	130	800	320	350	3		46	861	137
	○	○	4	A						112M	41	190		130	540	-	130	800	350	380	3		44	876	139
		○	5.5	A						132S1	59	230		150	600	-	150	900	350	380	3		61	913	174
		○	7.5	A						132S2	67	230		150	600	-	150	900	350	380	3		61	913	182
50-32-160	○		2.2	A	50	32	80	160	55	90L	26	210	70	130	540	-	130	800	350	380	3	4 x M12	44	819	125
	○		3	A						100L	37	210		130	540	-	130	800	350	380	3		54	861	146
	○	○	4	A						112M	41	210		130	540	-	130	800	350	380	3		50	876	146
	○	○	5.5	A						132S1	59	210		150	600	-	150	900	350	380	3		61	913	175
	○	○	7.5	A						132S2	67	230		150	600	-	150	900	350	380	3		55	913	177
		○	11	A						160M1	117	255		170	660		170	1000	400	430	3		74	1052	246
50-32-200	○		4	A	50	32	80	180	62	112M	41	255	70	130	540	-	130	800	350	380	3	4 x M12	57	876	160
	○		5.5	A						132S1	59	255		150	600	-	150	900	350	380	3		66	913	187
	○	○	7.5	A						132S2	67	255		150	600	-	150	900	350	380	3		66	913	195
	○	○	11	A						160M1	117	255		170	660	-	170	1000	400	430	3		66	1052	245
	○	○	15	A						160M2	122	255		170	660	-	170	1000	400	430	3		66	1052	250
		○	18.5	A						160L	134	255		170	660	-	170	1000	400	430	3		76	1096	272
		○	22	A						180M	168	275		190	740	-	190	**1120**	400	430	3		79	1114	309
		○	30	A						200L1	253	320		205	840	-	205	1250	440	480	4	4 x M16	109	1400	424
50-32-250	○		5.5	A	50	32	100	225	100	132S1	59	275	85	190	740	-	190	1120	440	470	3	4 x M12	68	1048	227
	○		7.5	A						132S2	67	275		190	740	-	190	1120	440	470	3		68	1048	235
	○		11	A						160M1	117	275		190	740	-	190	1120	440	470	3		85	1187	302
	○	○	15	A						160M2	122	275		190	740	-	190	1120	440	470	3		85	1187	307
	○	○	18.5	A						160L	134	300		205	840	-	205	1250	440	480	3		99	1231	333
		○	22	A						180M	168	300		205	840	-	205	1250	440	480	3	4 x M16	92	1249	360
		○	30	A						200L1	253	320		205	840	-	205	1250	440	480	4		109	1400	462
		○	37	A						200L2	271	320		205	840	-	205	1250	440	480	4		109	1400	480
65-40-160	○		2.2	A	65	40	80	160	57	90L	26	210	70	130	540	-	130	800	350	380	3	4 x M12	44	819	127
	○		3	A						100L	37	210		130	540	-	130	800	350	380	3		54	861	148
	○	○	4	A						112M	41	210		130	540	-	130	800	350	380	3		50	876	148
	○	○	5.5	A						132S1	59	210		150	600	-	150	900	350	380	3		50	913	166
	○	○	7.5	A						132S2	67	210		150	600	-	150	900	350	380	3		50	913	174
	○	○	11	A						160M1	117	255		170	660	-	170	1000	400	430	3		74	1052	248
		○	15	A						160M2	122	255		170	660	-	170	1000	400	430	3		74	1052	253
		○	18.5	A						160L	134	255		170	660	-	170	1000	400	430	3		84	1096	275
65-40-200	○		5.5	A	65	40	100	180	64	132S1	59	240	70	150	600	-	150	900	350	380	3	4 x M12	62	933	185
	○		7.5	A						132S2	67	240		150	600	-	150	900	350	380	3		62	933	193
	○	○	11	A						160M1	117	255		170	660	-	170	1000	400	430	3		66	1072	247
	○	○	15	A						160M2	122	255		170	660	-	170	1000	400	430	3		66	1072	252
	○	○	18.5	A						160L	134	255		170	660	-	170	1000	400	430	3		76	1116	274
	○	○	22	A						180M	168	275		170	660	-	170	1000	400	430	3		76	1134	308
		○	30	A						200L1	253	300		190	740	-	190	1120	440	470	4		97	1285	414
		○	37	A						200L2	271	300		190	740	-	190	1120	440	470	4		97	1285	432
65-40-250	○		7.5	A	65	40	100	225	103	132S2	67	275	85	170	660	-	170	1000	400	430	3	4 x M12	63	1048	233
	○		11	A						160M1	117	275		190	740	-	190	1120	440	470	3		85	1187	305
	○		15	A						160M2	122	275		190	740	-	190	1120	440	470	3		85	1187	310
	○	○	18.5	A						160L	134	275		190	740	-	190	1120	440	470	3		85	1231	322
	○	○	22	A						180M	168	275		190	740	-	190	1120	440	470	3		77	1249	348
	○	○	30	A						200L1	253	320		205	840	-	205	1250	490	530	4		113	1400	469
		○	37	A						200L2	271	320		205	840	-	205	1250	490	530	4	4 x M16	113	1400	487
		○	45	A						225M	323	345		205	840	-	205	1250	490	530	4		114	1445	540
		○	55	B						250M	417	370		230	470	470	230	1400	550	590	4	6 x M16	138	1532	658

DIMENSIONS - Dimensions of Pump with motor (2P)

Model GSOF - 2 Pole - 50Hz / 60Hz (2/2)

○ : Applicable

** : Dimension in mm

Model	Hz		Power	Fig.	Nozzle		Pump			Motor		BASE											Total (Approx.)	
	50	60	kW		dn1 **	dn2 **	a **	h2 **	Mass (kg)	Frame	Mass (kg)	H **	BJ **	BN1 **	BM1 **	BM2 **	BN2 **	BL **	BY **	BW **	T **	n x Fd	Mass (kg)	L **	Mass (kg)
80-50-160	○		4	A	80	50	100	180	60	112M	41	240	70	130	540	-	130	800	350	380	3	4 x M12	47	896	148
	○	○	5.5	A						132S1	59	255		150	600	-	150	900	350	380	3		66	933	185
	○	○	7.5	A						132S2	67	255		150	600	-	150	900	350	380	3		66	933	193
	○	○	11	A						160M1	117	255		170	660	-	170	1000	400	430	3		66	1072	243
	○	○	15	A						160M2	122	255		170	660	-	170	1000	400	430	3		66	1072	248
		○	18.5	A						160L	134	255		170	660	-	170	1000	400	430	3		76	1116	270
		○	22	A						180M	168	275		170	660	-	170	1000	400	430	3		76	1134	304
		○	30	A						200L1	253	300		190	740	-	190	1120	440	470	4		97	1285	410
80-50-200	○		7.5	A	80	50	100	200	69	132S2	67	255	70	150	600	-	150	900	350	380	3	4 x M12	66	933	202
	○	○	11	A						160M1	117	255		170	660	-	170	1000	400	430	3		66	1072	252
	○	○	15	A						160M2	122	255		170	660	-	170	1000	400	430	3		66	1072	257
	○	○	18.5	A						160L	134	255		170	660	-	170	1000	400	430	3		76	1116	279
	○	○	22	A						180M	168	275		170	660	-	170	1000	440	470	3		79	1134	316
	○	○	30	A						200L1	253	300		190	740	-	190	1120	440	470	4		97	1285	419
		○	37	A						200L2	271	300		190	740	-	190	1120	440	470	4		97	1285	437
		○	45	A						225M	323	345		190	740	-	190	1120	490	530	4	4 x M16	113	1330	505
80-50-250	○		11	A	80	50	125	225	105	160M1	117	275	85	190	740	-	190	1120	440	470	3	4 x M12	85	1212	307
	○		15	A						160M2	122	275		190	740	-	190	1120	440	470	3		85	1212	312
	○		18.5	A						160L	134	275		190	740	-	190	1120	440	470	3		85	1256	324
	○	○	22	A						180M	168	275		190	740	-	190	1120	440	470	3		77	1274	350
	○	○	30	A						200L1	253	320		205	840	-	205	1250	490	530	4		113	1425	471
	○	○	37	A						200L2	271	320		205	840	-	205	1250	490	530	4	4 x M16	113	1425	489
	○	○	45	A						225M	323	345		205	840	-	205	1250	490	530	4		114	1470	542
	○	○	55	B						250M	417	370		230	470	470	230	1400	550	590	4	6 x M16	138	1558	660
		○	75	B						280S	530	420		230	470	470	230	1400	600	640	4	6 x M20	178	1636	813
100-65-160	○		5.5	A	100	65	100	200	90	132S1	59	255	85	170	660	-	170	1000	400	430	3	4 x M12	73	1048	222
	○	○	7.5	A						132S2	67	255		170	660	-	170	1000	400	430	3		73	1048	230
	○	○	11	A						160M1	117	255		190	740	-	190	1120	400	430	3		72	1187	279
	○	○	15	A						160M2	122	255		190	740	-	190	1120	400	430	3		72	1187	284
	○	○	18.5	A						160L	134	255		190	740	-	190	1120	400	430	3		80	1231	304
	○	○	22	A						180M	168	275		190	740	-	190	1120	440	470	3		83	1249	341
		○	30	A						200L1	253	320		205	840	-	205	1250	440	480	4	4 x M16	115	1400	458
		○	37	A						200L2	271	320		205	840	-	205	1250	440	480	4		115	1400	476
100-65-200	○		7.5	A	100	65	100	225	96	132S2	67	275	85	170	660	-	170	1000	400	430	3	4 x M12	63	1048	226
	○		11	A						160M1	117	275		190	740	-	190	1120	400	430	3		82	1187	295
	○		15	A						160M2	122	275		190	740	-	190	1120	400	430	3		82	1187	300
	○	○	18.5	A						160L	134	275		190	740	-	190	1120	400	430	3		82	1231	312
	○	○	22	A						180M	168	275		190	740	-	190	1120	400	430	3		75	1249	339
	○	○	30	A						200L1	253	320		205	840	-	205	1250	490	530	4		113	1400	462
	○	○	37	A						200L2	271	320		205	840	-	205	1250	490	530	4	4 x M16	113	1400	480
		○	45	A						225M	323	345		205	840	-	205	1250	490	530	4		114	1446	533
		○	55	B						250M	417	370		230	470	470	230	1400	550	590	4	6 x M16	136	1533	649
		○	75	B						280S	530	420		230	470	470	230	1400	600	640	4	6 x M20	167	1636	793
100-65-250	○		18.5	A	100	65	125	250	115	160L	134	320	100	205	840	-	205	1250	490	530	3	4 x M16	108	1256	357
	○	–	22	A						180M	168	320		205	840	-	205	1250	490	530	3		109	1274	392
	○	–	30	A						200L1	253	320		205	840	-	205	1250	490	530	4		109	1425	477
	○	○	37	A						200L2	271	320		205	840	-	205	1250	490	530	4		109	1425	495
	○	○	45	A						225M	323	345		205	840	-	205	1250	490	530	4		120	1470	558
	○	○	55	B						250M	417	370		230	470	470	230	1400	550	590	4	6 x M16	137	1558	669
	○	○	75	B						280S	530	420		230	470	470	230	1400	600	640	4	6 x M20	167	1636	812
		○	90	B						280M	665	420		270	530	530	270	1600	670	710	4	6 x M20	213	1684	993
		○	110	B						315S	944	460		270	530	530	270	1600	670	710	4	6 x M20	213	1761	1157
		○	132	B						315M	1054	460		270	530	530	270	1600	670	710	4	6 x M20	220	1861	1274

DIMENSIONS - Dimensions of Pump with motor (4P)

Model GSOF - 4 Pole - 50Hz / 60Hz (1/2) ○ : Applicable ** : Dimension in mm

Model	Hz		Power	Fig.	Nozzle		Pump			Motor		BASE												Total (Approx.)	
	50	60	kW		dn1 **	dn2 **	a **	h2 **	Mass (kg)	Frame	Mass (kg)	H **	BJ **	BN1 **	BM1 **	BM2 **	BN2 **	BL **	BY **	BW **	T **	n x Fd	Mass (kg)	L **	Mass (kg)
50-32-125	○	○	0.55	A	50	32	80	140	54	80M1	18	190	70	130	540	-	130	800	320	350	3	4 x M12	47	762	119
	○	○	0.75	A						80M2	19	190		130	540	-	130	800	320	350	3		47	762	120
		○	1.1	A						90S	23	190		130	540	-	130	800	320	350	3		47	797	124
50-32-160	○		0.55	A	50	32	80	160	55	80M1	18	210	70	130	540	-	130	800	320	350	3	4 × M12	42	762	115
	○	○	0.75	A						80M2	19	210		130	540	-	130	800	320	350	3		42	762	116
	○	○	1.1	A						90S	23	210		130	540	-	130	800	320	350	3		42	797	120
		○	1.5	A						90L	26	240		130	540	-	130	800	320	350	3		46	819	127
50-32-200	○		0.75	A	50	32	80	180	62	80M2	19	240	70	130	540	-	130	800	320	350	3	4 × M12	44	762	125
	○	○	1.1	A						90S	23	240		130	540	-	130	800	320	350	3		44	797	129
	○	○	1.5	A						90L	26	240		130	540	-	130	800	320	350	3		46	819	134
	○	○	2.2	A						100L1	38	240		130	540	-	130	800	320	350	3		46	861	146
		○	3	A						100L2	43	240		130	540	-	130	800	320	350	3		47	861	152
		○	4	A						112M	48	240		130	540	-	130	800	320	350	3		47	876	157
50-32-250	○		1.1	A	50	32	100	225	100	90S	23	275	85	150	600	-	150	900	350	380	3	4 × M12	60	932	183
	○	○	1.5	A						90L	26	275		150	600	-	150	900	350	380	3		60	954	186
	○	○	2.2	A						100L1	38	275		170	660	-	170	1000	400	430	3		64	996	202
	○	○	3	A						100L2	43	275		170	660	-	170	1000	400	430	3		64	996	207
		○	4	A						112M	48	275		170	660	-	170	1000	400	430	3		62	1011	210
		○	5.5	A						132S	69	275		170	660	-	170	1000	400	430	3		63	1048	232
65-40-160	○		0.75	A	65	40	80	160	57	80M2	19	210	70	130	540	-	130	800	320	350	3	4 × M12	42	762	118
	○	○	1.1	A						90S	23	210		130	540	-	130	800	320	350	3		42	797	122
	○	○	1.5	A						90L	26	210		130	540	-	130	800	320	350	3		42	819	125
		○	2.2	A						100L1	38	210		130	540	-	130	800	320	350	3		51	861	146
		○	3	A						100L2	43	210		130	540	-	130	800	320	350	3		52	861	152
65-40-200	○		0.75	A	65	40	100	180	64	80M2	19	240	70	130	540	-	130	800	320	350	3	4 × M12	44	782	127
	○	○	1.1	A						90S	23	240		130	540	-	130	800	320	350	3		44	817	131
	○	○	1.5	A						90L	26	240		130	540	-	130	800	320	350	3		46	839	136
	○	○	2.2	A						100L1	38	240		130	540	-	130	800	320	350	3		46	881	148
	○	○	3	A						100L2	43	240		130	540	-	130	800	320	350	3		46	881	153
		○	4	A						112M	48	240		130	540	-	130	800	320	350	3		47	896	159
		○	5.5	A						132S	69	240		150	600	-	150	900	350	380	3		62	933	195
65-40-250	○		1.1	A	65	40	100	225	103	90S	23	275	85	150	600	-	150	900	350	380	3	4 × M12	60	932	186
	○		1.5	A						90L	26	275		150	600	-	150	900	350	380	3		60	954	189
	○	○	2.2	A						100L1	38	275		170	660	-	170	1000	400	430	3		64	996	205
	○	○	3	A						100L2	43	275		170	660	-	170	1000	400	430	3		64	996	210
	○	○	4	A						112M	48	275		170	660	-	170	1000	400	430	3		64	1011	215
		○	5.5	A						132S	69	275		170	660	-	170	1000	400	430	3		63	1048	235
		○	7.5	A						132M	77	275		170	660	-	170	1000	400	430	3		64	1086	244
80-50-160	○	○	0.75	A	80	50	100	180	60	80M2	19	240	70	130	540	-	130	800	320	350	3	4 × M12	44	782	123
	○	○	1.1	A						90S	23	240		130	540	-	130	800	320	350	3		44	817	127
	○	○	1.5	A						90L	26	240		130	540	-	130	800	320	350	3		46	839	132
	○	○	2.2	A						100L1	38	240		130	540	-	130	800	320	350	3		46	881	144
		○	3	A						100L2	43	240		130	540	-	130	800	320	350	3		47	881	150
		○	4	A						112M	48	240		130	540	-	130	800	320	350	3		47	896	155
80-50-200	○		1.1	A	80	50	100	200	69	90S	23	240	70	130	540	-	130	800	320	350	3	4 × M12	44	817	136
	○	○	1.5	A						90L	26	240		130	540	-	130	800	320	350	3		46	839	141
	○	○	2.2	A						100L1	38	240		130	540	-	130	800	320	350	3		46	881	153
	○	○	3	A						100L2	43	240		130	540	-	130	800	320	350	3		46	881	158
	○	○	4	A						112M	48	240		130	540	-	130	800	320	350	3		49	896	166
		○	5.5	A						132S	69	240		150	600	-	150	900	350	380	3		62	933	200
80-50-250	○		1.5	A	80	50	125	225	105	90L	26	275	85	150	600	-	150	900	350	380	3	4 × M12	60	979	191
	○		2.2	A						100L1	38	275		170	660	-	170	1000	400	430	3		64	1021	207
	○	○	3	A						100L2	43	275		170	660	-	170	1000	400	430	3		64	1021	212
	○	○	4	A						112M	48	275		170	660	-	170	1000	400	430	3		64	1036	217
	○	○	5.5	A						132S	69	275		170	660	-	170	1000	400	430	3		63	1073	237
	○	○	7.5	A						132M	77	275		170	660	-	170	1000	400	430	3		64	1111	246
		○	11	A						160M	120	275		190	740	-	190	1120	400	430	3		82	1212	307
80-50-315	○		3	A	80	50	125	280	125	100L2	43	320	85	170	660	-	170	1000	400	430	3	4 × M12	68	1021	236
	○		4	A						112M	48	320		170	660	-	170	1000	400	430	3		68	1036	241
	○	○	5.5	A						132S	69	320		170	660	-	170	1000	400	430	3		68	1073	262
	○	○	7.5	A						132M	77	320		170	660	-	170	1000	400	430	3		70	1111	272
	○	○	11	A						160M	120	320		190	740	-	190	1120	440	470	3		76	1212	321
	○	○	15	A						160L	133	320		190	740	-	190	1120	440	470	3		90	1256	348
		○	18.5	A						180M	172	320		190	740	-	190	1120	440	470	3		75	1274	372
		○	22	A						180L	195	370		205	840	-	205	1250	490	530	3	4 × M16	104	1342	424

DIMENSIONS - Dimensions of Pump with motor (4P)

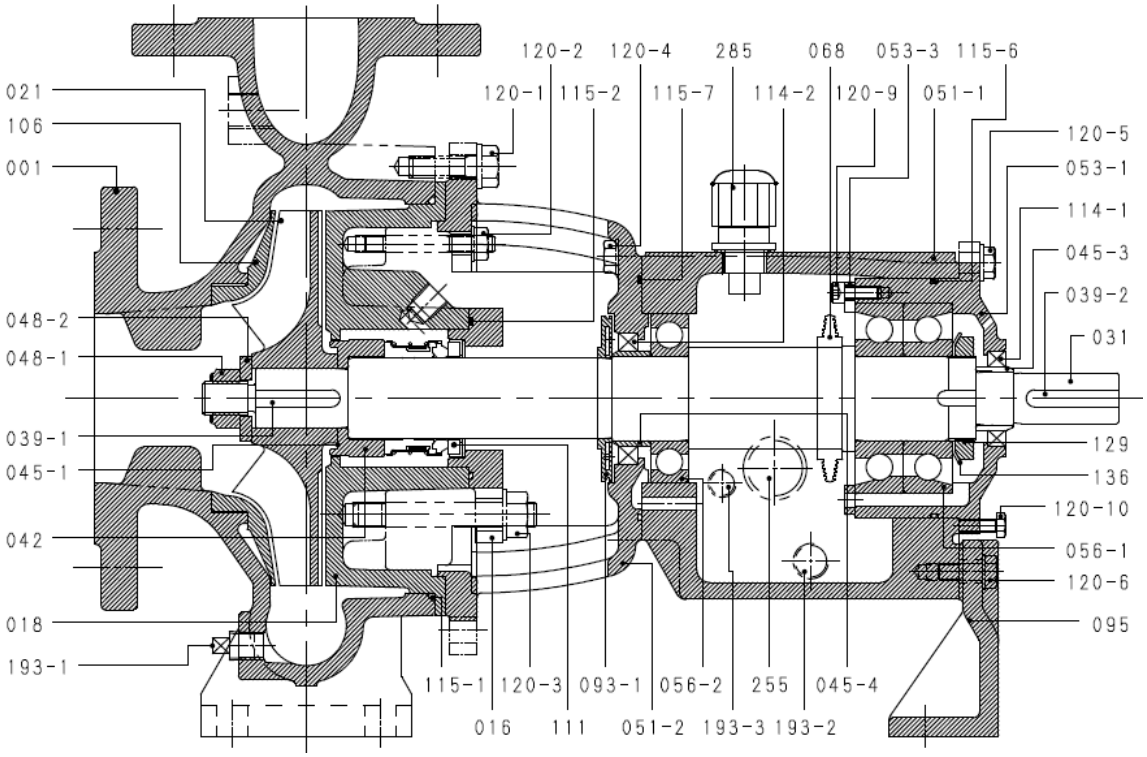
Model GSOF - 4 Pole - 50Hz / 60Hz (2/2)

○ : Applicable ** : Dimension in mm

Model	Hz		Power	Fig.	Nozzle		Pump			Motor		BASE											Total (Approx.)	
	50	60	kW		dn1 **	dn2 **	a **	h2 **	Mass (kg)	Frame	Mass (kg)	H **	BJ **	BN1 **	BM1 **	BM2 **	BN2 **	BL **	BY **	BW **	T **	n x Fd	Mass (kg)	L **	Mass (kg)
100-65-160	○		0.75	A	100	65	100	200	90	80M2	19	255	85	150	600	-	150	900	350	380	3	4 × M12	58	897	167
	○	○	1.1	A						90S	23	255		150	600	-	150	900	350	380	3		59	932	172
	○	○	1.5	A						90L	26	255		150	600	-	150	900	350	380	3		59	954	175
	○	○	2.2	A						100L1	38	255		170	660	-	170	1000	400	430	3		63	996	191
	○	○	3	A						100L2	43	255		170	660	-	170	1000	400	430	3		63	996	196
		○	4	A						112M	48	255		170	660	-	170	1000	400	430	3		61	1011	199
		○	5.5	A						132S	69	255		170	660	-	170	1000	400	430	3		73	1048	232
100-65-200	○		1.5	A	100	65	100	225	96	90L	26	275	85	150	600	-	150	900	350	380	3	4 × M12	60	954	182
	○	○	2.2	A						100L1	38	275		170	660	-	170	1000	400	430	3		64	996	198
	○	○	3	A						100L2	43	275		170	660	-	170	1000	400	430	3		64	996	203
	○	○	4	A						112M	48	275		170	660	-	170	1000	400	430	3		64	1011	208
	○	○	5.5	A						132S	69	275		170	660	-	170	1000	400	430	3		63	1048	228
		○	7.5	A						132M	77	275		170	660	-	170	1000	400	430	3		64	1086	237
		○	11	A						160M	120	275		190	740	-	190	1120	440	470	3		85	1187	301
100-65-250	○		2.2	A	100	65	125	250	115	100L1	38	295	100	170	660	-	170	1000	400	430	3	4 × M12	68	1021	221
	○		3	A						100L2	43	295		170	660	-	170	1000	400	430	3		68	1021	226
	○	○	4	A						112M	48	295		170	660	-	170	1000	400	430	3		68	1036	231
	○	○	5.5	A						132S	69	295		170	660	-	170	1000	400	430	3		66	1073	250
	○	○	7.5	A						132M	77	295		190	740	-	190	1120	400	430	3		71	1111	263
		○	11	A						160M	120	295		190	740	-	190	1120	400	430	3		94	1212	329
		○	15	A						160L	133	320		205	840	-	205	1250	440	480	3	4 × M16	103	1256	351
100-65-315	○	○	4	A	100	65	125	280	159	112M	48	320	100	170	660	-	170	1000	440	470	3	4 × M12	75	1066	282
	○	○	5.5	A						132S	69	320		170	660	-	170	1000	440	470	3		74	1103	302
	○	○	7.5	A						132M	77	320		190	740	-	190	1120	440	470	3		77	1141	313
	○	○	11	A						160M	120	345		205	840	-	205	1250	490	530	3		97	1242	376
	○	○	15	A						160L	133	345		205	840	-	205	1250	490	530	3	4 × M16	110	1286	402
	○	○	18.5	A						180M	172	345		205	840	-	205	1250	490	530	3		96	1304	427
		○	22	A						180L	195	370		205	840	-	205	1250	490	530	3	4 × M16	104	1342	458
		○	30	B						200L	268	370		230	470	470	230	1400	550	590	4	6 x M16	121	1455	548

CONSTRUCTION - Sectional view

Standard feature
Mechanical seal type with oil lubrication bearings

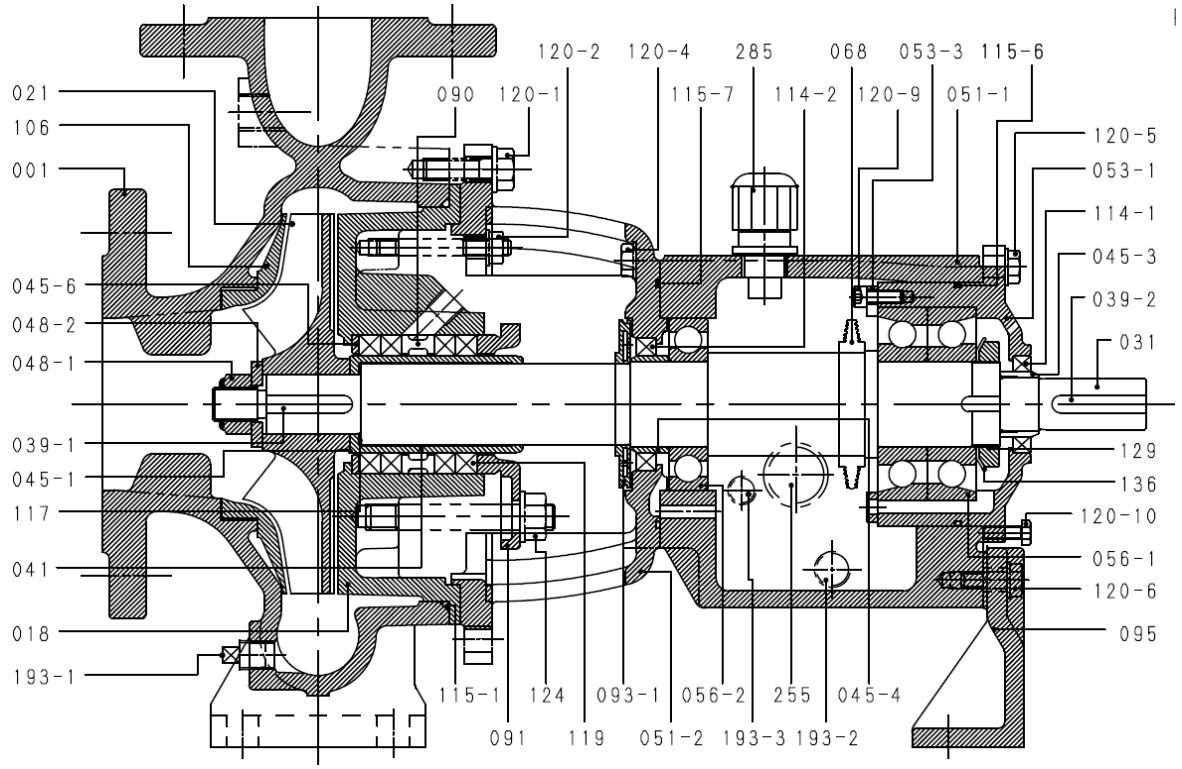


NO.	NAME OF PART	Q'ty
001	CASING	1
016	SEAL GLAND PLATE	1
018	GLAND COVER	1
021	IMPELLER	1
031	SHAFT	1
039-1	KEY - IMPELLER	1
039-2	KEY - COUPLING	1
042	SEAL SPACER	1
045-1	IMPELLER SHIM	1 set
045-3	OIL SEAL SLEEVE (M)	1
045-4	OIL SEAL SLEEVE (P)	1
048-1	IMPELLER NUT	1
048-2	IMPELLER WASHER	1
051-1	BEARING HOUSING	1
051-2	ADAPTER - BG HOUSING	1
053-1	BEARING COVER (M)	1
053-3	STOPPER - BG (M)	1
056-1	BALL BEARING (M)	1 set
056-2	BALL BEARING (P)	1
068	OIL FLINGER	1
093-1	DEFLECTOR	1
095	STAY	1
106	SIDE PLATE	1

NO.	NAME OF PART	Q'ty
111	MECHANICAL SEAL	1 set
114-1	OIL SEAL (M)	1
114-2	OIL SEAL (P)	1
115-1	O-RING - GLAND COVER	1
115-2	O-RING - GLAND PLATE	1
115-6	O-RING - BG COVER(M)	1
115-7	O-RING - BG COVER (P)	1
120-1	BOLT - CASING	1 set
120-2	BOLT/NUT - GLAND COVER	1 set
120-3	BOLT/NUT - GLAND PLATE	4
120-4	BOLT - BG HOUSING	4
120-5	BOLT - BG COVER	4
120-6	BOLT - STAY	2
120-9	BOLT - STOPPER - BG (M)	1 set
120-10	BOLT - for DISASSEMBLY	4
129	BEARING NUT	1
136	BEARING WASHER	1
193-1	PLUG - CASING	1
193-2	PLUG - OIL DRAIN (*1)	1
193-3	PLUG - OILER	1
255	OIL LEVEL GAUGE	1
256	CONSTANT LEVEL OILER (*2)	1 set
285	AIR BREATHER	1

(*1) MAGNETIC TYPE
(*2) OPTIONAL

Standard feature
Gland packing type with oil lubrication bearings



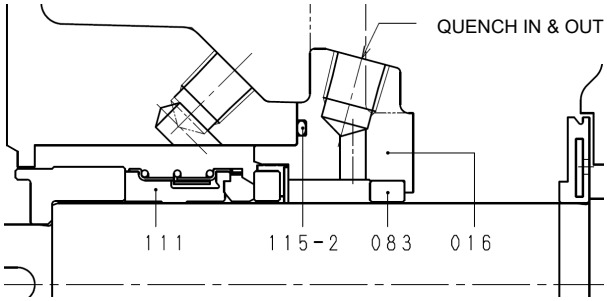
NO.	NAME OF PART	Q'ty
001	CASING	1
018	GLAND COVER	1
021	IMPELLER	1
031	SHAFT	1
039-1	KEY - IMPELLER	1
039-2	KEY - COUPLING	1
041	PACKING SLEEVE	1
045-1	IMPELLER SHIM	1 set
045-3	OIL SEAL SLEEVE (M)	1
045-4	OIL SEAL SLEEVE (P)	1
045-6	SPACER - GPK	1
048-1	IMPELLER NUT	1
048-2	IMPELLER WASHER	1
051-1	BEARING HOUSING	1
051-2	ADAPTER - BG HOUSING	1
053-1	BEARING COVER (M)	1
053-3	STOPPER - BG (M)	1
056-1	BALL BEARING (M)	1 set
056-2	BALL BEARING (P)	1
068	OIL FLINGER	1
90	LANTERN RING	1
091	GLAND	1
093-1	DEFLECTOR	1
095	STAY	1
106	SIDE PLATE	1

NO.	NAME OF PART	Q'ty
114-1	OIL SEAL (M)	1
114-2	OIL SEAL (P)	1
115-1	O-RING - GLAND COVER	1
115-2	O-RING - GLAND PLATE	1
115-6	O-RING - BG COVER(M)	1
115-7	O-RING - BG COVER (P)	1
117	GASKET - PK SLEEVE	1
119	GLAND PACKING	1 set
120-1	BOLT - CASING	1 set
120-2	BOLT/NUT - GLAND COVER	1 set
120-4	BOLT - BG HOUSING	4
120-5	BOLT - BG COVER	4
120-6	BOLT - STAY	2
120-9	BOLT - STOPPER - BG (M)	1 set
120-10	BOLT - for DISASSEMBLY	4
124	GLAND BOLT	2
129	BEARING NUT	1
136	BEARING WASHER	1
193-1	PLUG - CASING	1
193-2	PLUG - OIL DRAIN (*1)	1
193-3	PLUG - OILER	1
255	OIL LEVEL GAUGE	1
256	CONSTANT LEVEL OILER (*2)	1 set
285	AIR BREATHER	1

(*1) MAGNETIC TYPE
(*2) OPTIONAL

Optional Mechanical Seal

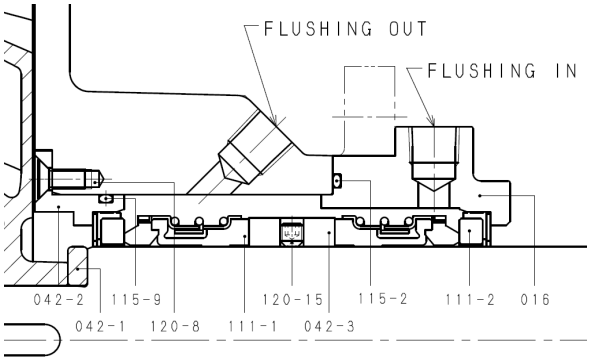
1. Standard Type - Quench



NO.	NAME OF PART	Q'ty
016	SEAL GLAND PLATE	1
083	THROTTLE BUSHING (*1)	1
111	MECHANICAL SEAL	1 set
115-2	O-RING - GLAND PLATE	1

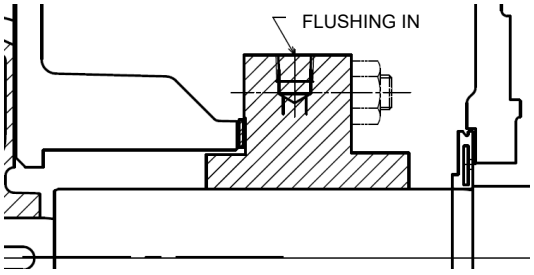
(*1) Standard material is CARBON.

2. Standard Type - Double Seal

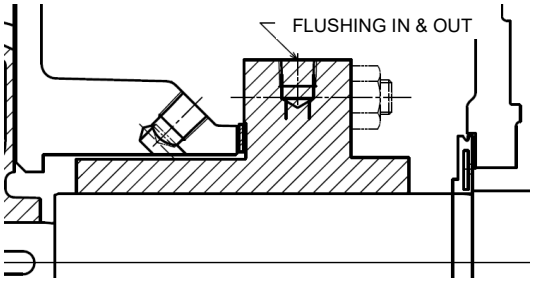


NO.	NAME OF PART	Q'ty
016	SEAL GLAND PLATE	1
042-1	DISTANCE PIECE	1
042-2	SEAL ADAPTOR	1
042-3	SEAL SET RING	1
111-1	MECHANICAL SEAL	1 set
111-2	MECHANICAL SEAL	1 set
115-2	O-RING - GLAND PLATE	1
115-9	O-RING - SEAL ADAPTOR	1
120-8	BOLT - SEAL ADAPTOR	1 set
120-15	SET SCREW - SEAL SET RING	2

3. Cartridge Type - Single Seal



4. Cartridge Type - Double Seal



Materials of mechanical seal application with oil lubrication

No.	Name of part	Material	JIS Material EQ.	ASTM EQ.	Remarks
001	CASING	304 Stainless steel	SCS13	A351-CF8	
		316 Stainless steel	SCS14A	A351-CF8M	
016	SEAL GLAND PLATE	316 Stainless steel	SCS14A	A351-CF8M	
018	GLAND COVER	304 Stainless steel	SCS13	A351-CF8	
		316 Stainless steel	SCS14A	A351-CF8M	
021	IMPELLER	304 Stainless steel	SCS13	A351-CF8	
		316 Stainless steel	SCS14A	A351-CF8M	
031	SHAFT	304 Stainless steel	SUS304	A276-304	
		316L Stainless steel	SUS316L	A276-316L	
039-1	KEY - IMPELLER	304 Stainless steel	SUS304	A276-304	
		316 Stainless steel	SUS316	A276-316	
039-2	KEY - COUPLING	Carbon steel	S50C	A576-1050	
042	SEAL SPACER	316L Stainless steel	SUS316L	A276-316L	
045-1	IMPELLER SHIM	316L Stainless steel	SUS316L	A276-316L	
045-3	OIL SEAL SLEEVE (M)	Carbon steel	S50C	A576-1050	
045-4	OIL SEAL SLEEVE (P)	Carbon steel	S50C	A576-1050	
048-1	IMPELLER NUT	304 Stainless steel	SUS304	A276-304	
		316 Stainless steel	SUS316	A276-316	
048-2	IMPELLER WASHER	316L Stainless steel	SUS316L	A276-316L	
051-1	BEARING HOUSING	Cast iron	FC250	A48-35	
051-2	ADAPTER - BG HOUSING	Cast iron	FC250	A48-35	
053-1	BEARING COVER (M)	Cast iron	FC250	A48-35	
053-3	STOPPER - BG(M)	Carbon steel	SS	A283-D	
056-1	BALL BEARING (M)	Steel			
056-2	BALL BEARING (P)	Steel			
068	OIL FLINGER	NBR			
093-1	DEFLECTOR	EPDM			
095	STAY	Carbon steel or Ductile cast irons	SPHC or FCD450	A569 or A536-65-45-12	
106	SIDE PLATE	304 Stainless steel	SCS13	A351-CF8	
		316 Stainless steel	SCS14A	A351-CF8M	
111	MECHANICAL SEAL	Sic / Carbon / FKM			
		Sic / Sic / FKM			Optional
		Sic / Carbon / EPDM			Optional
114-1	OIL SEAL (M)	NBR			
114-2	OIL SEAL (P)	NBR			
115-1	O-RING - GLAND COVER	FKM			
115-2	O-RING - GLAND PLATE	FKM			
115-6	O-RING - BG COVER(M)	NBR			
115-7	O-RING - BG COVER (P)	NBR			
120-1	BOLT - CASING	Carbon steel	SS	A283-D	
120-2	BOLT/NUT - GLAND COVER	Carbon steel	SS	A283-D	
120-3	BOLT/NUT - GLAND PLATE	Carbon steel	SS	A283-D	
120-4	BOLT - BG HOUSING	Carbon steel	SS	A283-D	
120-5	BOLT - BG COVER	Carbon steel	SS	A283-D	
120-6	BOLT - STAY	Carbon steel	SS	A283-D	
120-9	BOLT - STOPPER - BG (M)	Carbon steel	SCM435	-	
120-10	BOLT - for DISASSEMBLY	Carbon steel	SS	A283-D	
129	BEARING NUT	Carbon steel	SS	A283-D	
136	BEARING WASHER	Carbon steel	SS	A283-D	
193-1	PLUG - CASING	316 Stainless steel	SUS316	A276-316	
193-2	PLUG - OIL DRAIN	Stainless steel / Magnet			Magnetic type
193-3	PLUG - OILER	Carbon steel			
255	OIL LEVEL GAUGE	Poly carbonate / NBR			
256	CONSTANT LEVEL OILER	Zinc die-cast and glass			Optional
285	AIR BREATHER	Poly carbonate / NBR			

Materials of gland packing application with oil lubrication (*1)

No.	Name of part	Material	JIS Material EQ.	ASTM EQ.	Remarks
018	GLAND COVER	304 Stainless steel	SCS13	A351-CF8	
		316 Stainless steel	SCS14A	A351-CF8M	
041	PACKING SLEEVE	304 Stainless steel	SUS304	A276-304	
		316L Stainless steel	SUS316L	A276-316L	
045-6	SPACER - GPK	316L Stainless steel	SUS316L	A276-316L	
90	LANTERN RING	316L Stainless steel	SUS316L	A276-316L	
091	GLAND	316 Stainless steel	SCS14	A351-CF8M	
117	GASKET - PK SLEEVE	Graphite w/s.steel sheet			
119	GLAND PACKING	Carbonized fiber packing (P#6501L eq.)			see D-6
124	GLAND BOLT	316 Stainless steel	SUS316	A276-316	

(*1) The components which constitute the gland packing pump are these parts instead of P/N 016, 018, 042, 111, 115-2 and 120-3 of the mechanical seal pump.

1. Mechanical seal lineup （＊1）

Basic style: Unbalanced type, Internal arrangement,
Gland cover non-water-cooled structure

Mechanical seal type （＊3）		without seal sleeve	with seal sleeve
Single （＊2）	EB	Standard	---
	CS	Optional	Optional
Single cartridge （＊2）	CS	---	Optional
Double (back to back)	EB	Semi-standard	---
	CS	---	Optional
Double knife-edge	MB	---	Optional
Double cartridge	CS	---	Optional

（＊1）For other lineups, please contact the engineering center.

（＊2）With QUENCH is applied as a semi-standard.

（＊3）EB：Mono coil / rubber bellows

CS：Coil spring / O ring

MB：Metal bellows

2. Material of mechanical seal（＊4）

（1）Face materials

Standard：Sic / Carbon

Semi-standard：Sic / Sic

（2）Rubber parts material

Standard：FKM

Semi-standard：EPDM

Optional：FFKM

（＊4）Please consult with the engineering center for other materials.

3. Soft packing

（1）Materials

Standard：Carbonized fiber packing（P#6501L EQ.)

Optional：PTFE (P#436 EQ.) or P#4526L EQ or P#4527L EQ

（2）Arrangement

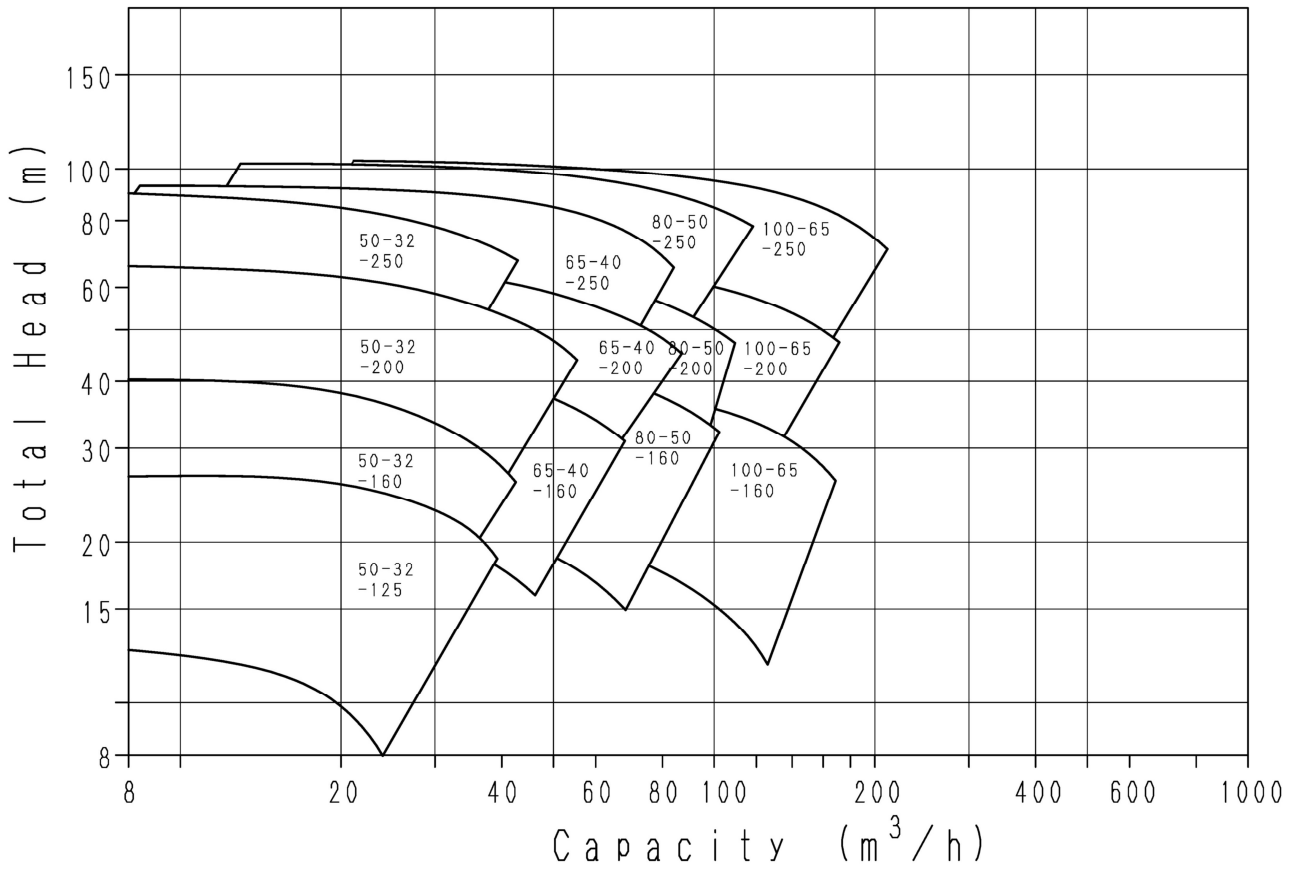
2 soft packing + lantern ring + 2 soft packing

（3）Other

- Depending on suction pressure and box pressure, it may not be possible to adopt a soft packing structure.
- It can not be used for metallic soft packing.
- It can not be used for the soft packing structure for the slurry containing liquid or the liquid where crystals are deposited.
- It does not correspond to the QUENCH structure.
- It does not correspond to the split type gland structure.

SELECTION CHART

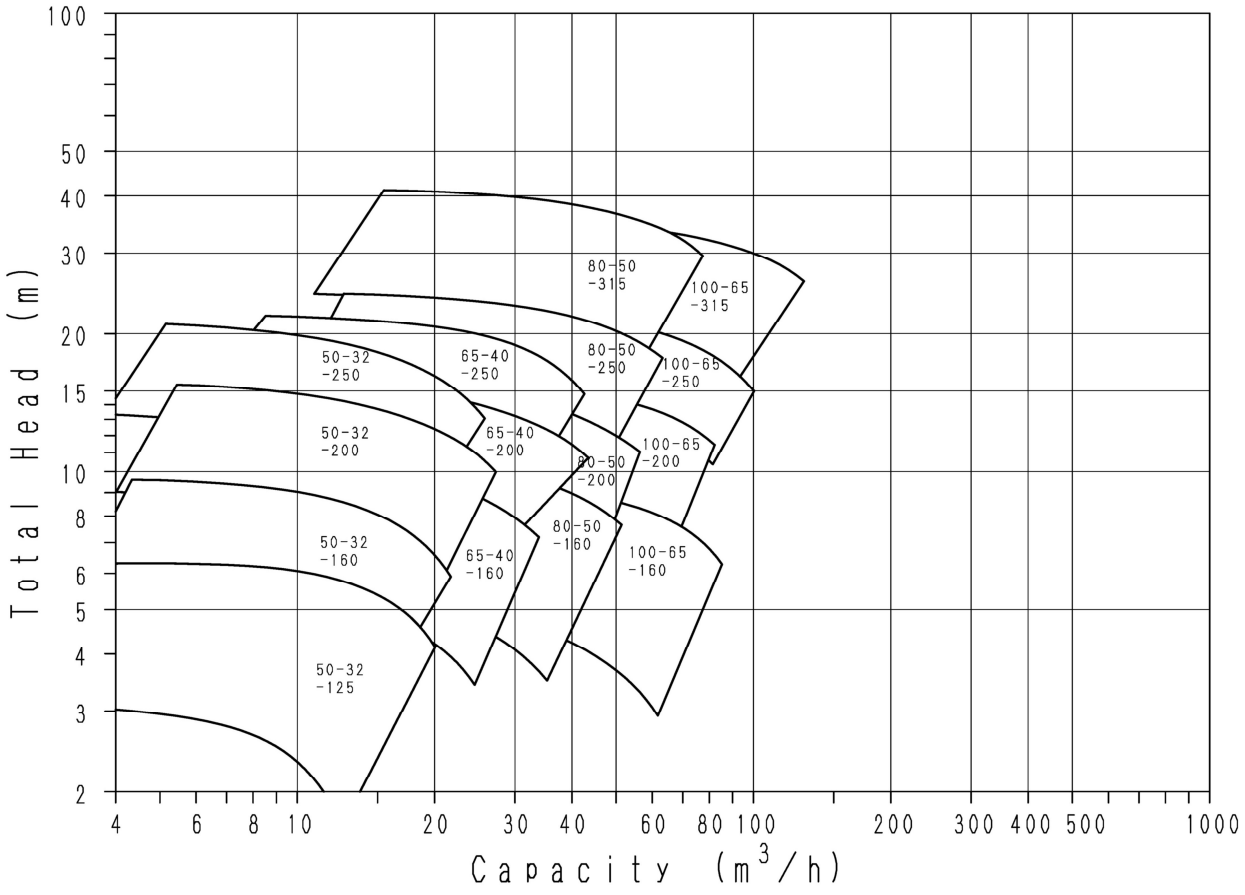
50Hz – 2950min^{-1}



Note : When selecting a pump , NPSH Av. should have a safety margin of at least 0.5m from NPSH Re.

SELECTION CHART

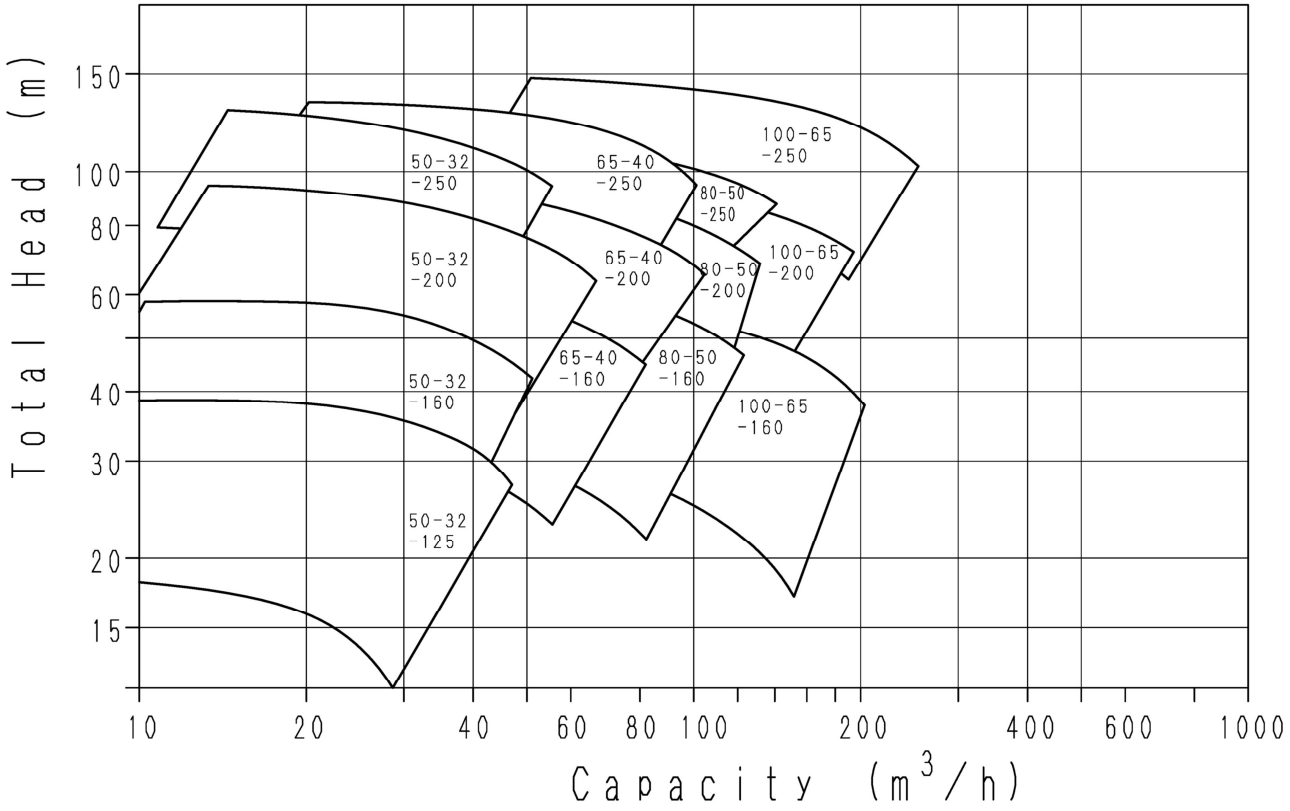
50Hz – 1450min^{-1}



Note : When selecting a pump , NPSH Av. should have a safety margin of at least 0.5m from NPSH Re.

SELECTION CHART

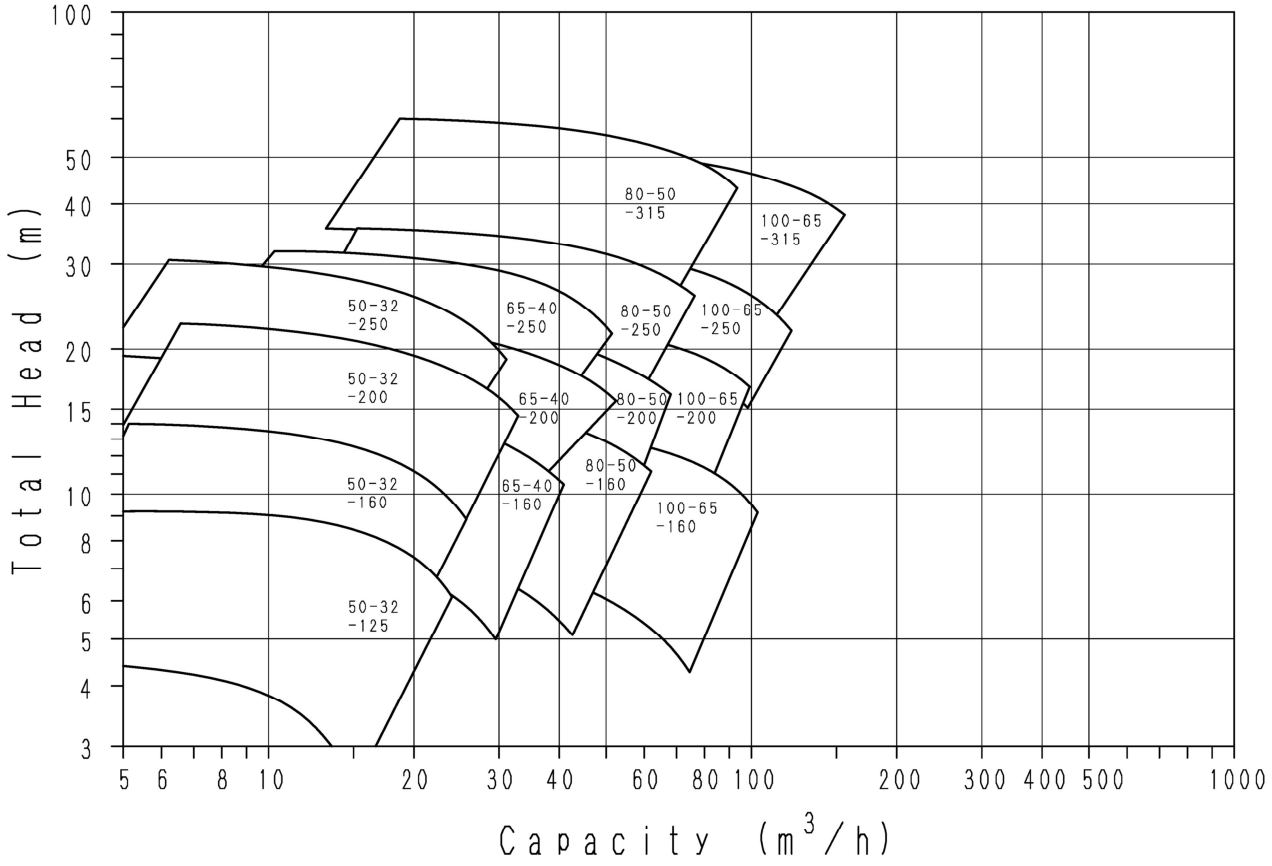
60Hz – 3550min^{-1}



Note : When selecting a pump , NPSH Av. should have a safety margin of at least 0.5m from NPSH Re.

SELECTION CHART

60Hz – 1750min^{-1}



Note : When selecting a pump , NPSH Av. should have a safety margin of at least 0.5m from NPSH Re.