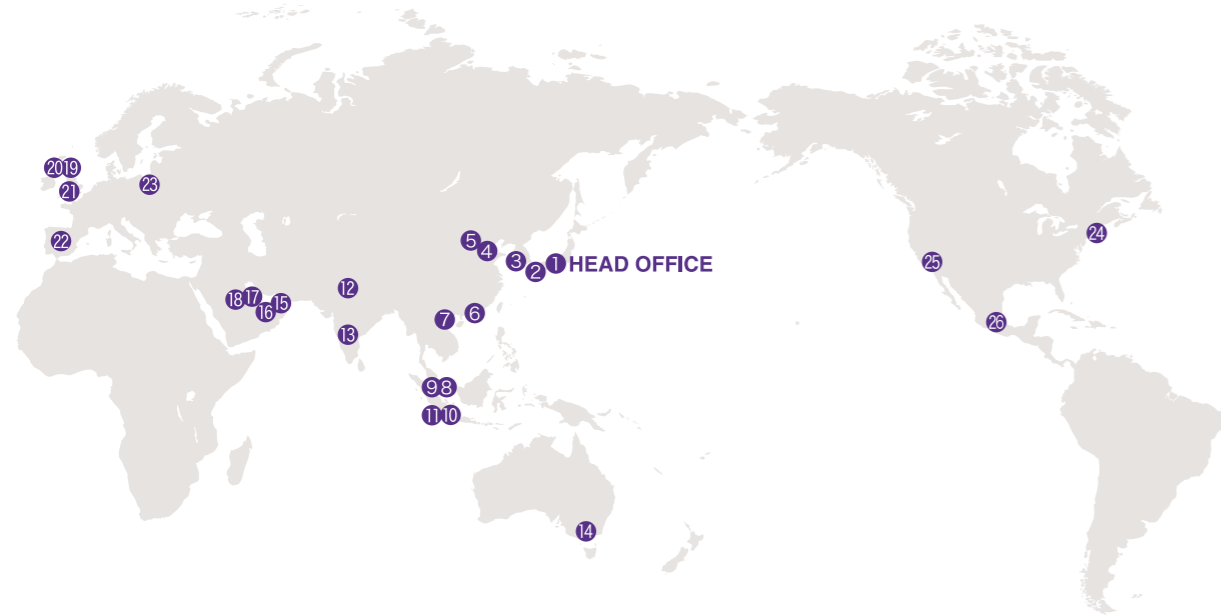


Torishima Pump Global Network



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6 Torishima (Hong Kong) Ltd.
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9 Torishima Service Solutions
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10 P.T. Torishima Guna Engineering ■
P.T. Torishima Guna Indonesia ■
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11 P.T. Geteka Founindo ■
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23 Torishima Europe Ltd. Poland Office
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25 Torishima Pump Mfg. Co., Ltd.
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■ Manufacturing ■ Service Center



CAL (Cast Iron)

CAR (Stainless Steel)

End-Suction Volute Pump



CAL



CAR

The Torishima "Eco Pumps" lead the World!

End-Suction Volute Pump (10 bar type)

CAL is of Cast Iron construction. CAR is of Stainless Steel construction.

CA series pumps are eco-friendly high-efficiency pumps based on technology from our engineered pumps.



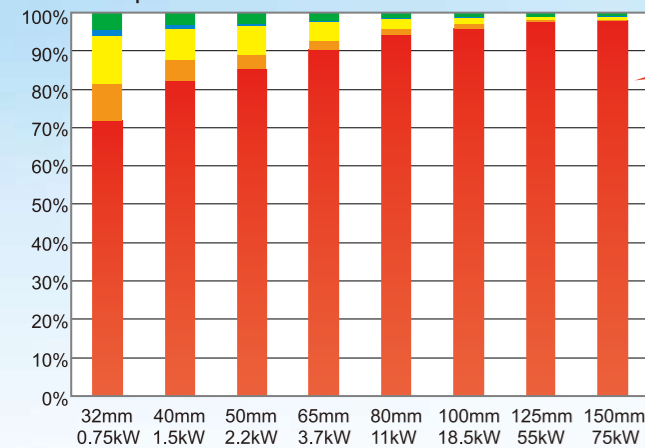
Energy Saving & Cost Reduction

Eco pumps significantly reduce the life cycle costs of pumps and CO₂ emissions because of their design (3D impeller, casing), motor (Torishima ultra high efficiency motor) and optimized specification (impeller cut).

Reduction of LCC (Life Cycle Cost)

About 90% of the pump LCC is generated from electricity cost. Increased efficiency leads to big reduction of LCC.

LCC composition



About 90% of pump LCC is electricity cost.

LCC is calculated on the basis of:
 CAL size 32 to 150mm;
 24hours day, 365days, 15years operation;
 Operating at 60Hz-4P with normal temperature clean water;
 Electricity cost of JP¥10 per kWh.

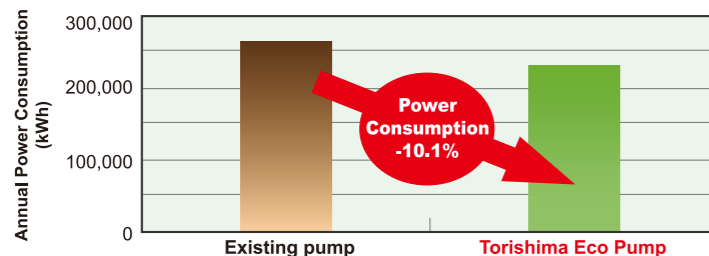
Operating cost: Electricity (red), Maintenance (orange), Spare parts (yellow)
 Initial cost: Installation work (blue), Unit price (green)

Energy Saving with Eco Pumps

Cooling water pump

Annual operating hours: 8,760hours

	Existing pump spec		Torishima pump CAL125-250	Difference
	Motor capacity	30kW	30kW	
	Facility spec	Operating point	Operation point	
Capacity(m ³ /min)	4.7	4.7	4.7	0%
Head(m)	26.5	27.7	26.5	-1.2m
Pump efficiency(%)		78	81	+3.0%
Shaft power(kW)		27.2	25.1	-2.1kW
Motor efficiency(%)		91.9	94.5	+2.6%
Power consumption(kW)		29.6	26.6	-3.0%(-10.1%)
Annual Power Consumption(kWh)		259,296	233,016	-26,280kWh



Annual Saving JP¥262,800
 (=262,800kWh × ¥10)

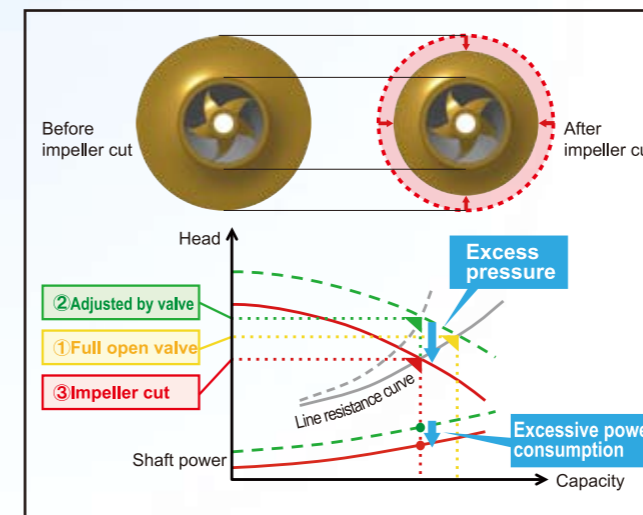
Electricity cost per kWh: JP¥10

Annual CO₂ Reduction 11.8t-CO₂
 (=26,280kWh × 0.00045t-CO₂/kWh)

Conversion factor of CO₂ emission: 0.00045 (t-CO₂/kWh) referred from Tokyo Electric Power Co., Inc. 2011

Meeting Customer's Specification (Impeller cut)

The impeller diameter can be cut to meet the customer's specification to reduce unnecessary power consumption.



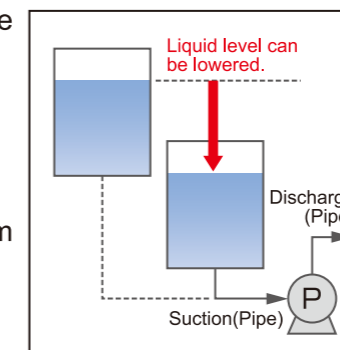
High Speed and Simplified Design

CAL/CAR are simplified with high speed and compact design, which enable to reduce the installation space.

Low NPSH and a Wide Application Range

Low NPSH performance enables lower suction level which reduces plant construction cost.

CAL/CAR can handle liquid temperatures from -40 to +350°C (heat medium) and various liquid types.



Maintenance & Operation

Mechanical Seal as Standard Part

Maintenance free.

No leakage from seal parts allows cleanliness around pumps.

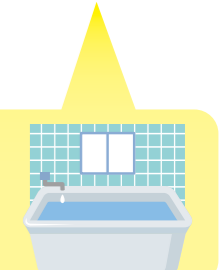
Standard mechanical seal (rubber bellows seal) is easy to install and does not damage shaft, thus does not require shaft sleeve.



	Mechanical seal	Gland packing
Leakage	0 cc/min	15 cc/min
5-year leakage	0 ℓ	39,420 ℓ
Cost amount	JP¥ 0	JP¥ 13,797*

* In case of using tap water
 • Industrial water: JP¥1,773 (JP¥45/m³)
 • Tap water: JP¥13,797 (JP¥350/m³)
 • Pure water: JP¥59,130,000 (JP¥1500/t)

39,420ℓ leakage from using gland packing for 5 years equals to about 197 bathtubs (200ℓ home bathtub)



Safe Operation with Precision Bearing Design

Stable Operation

The stable pump performance facilitates valve control and parallel operation.

Coupling Guard

CAL/CAR are covered with an enclosed type coupling guard.

An enclosed coupling guard improves safety and maintenance compared to an existing coupling guard due to the wide area of coverage



Existing Coupling Guard

Enclosed Coupling Guard

Applied condition of enclosed coupling guard : TU motor; 2P-55kW or less, 4P-110kW or less
Coupling diameter; 280mm or less
Motors have different size and frame by manufacturers.

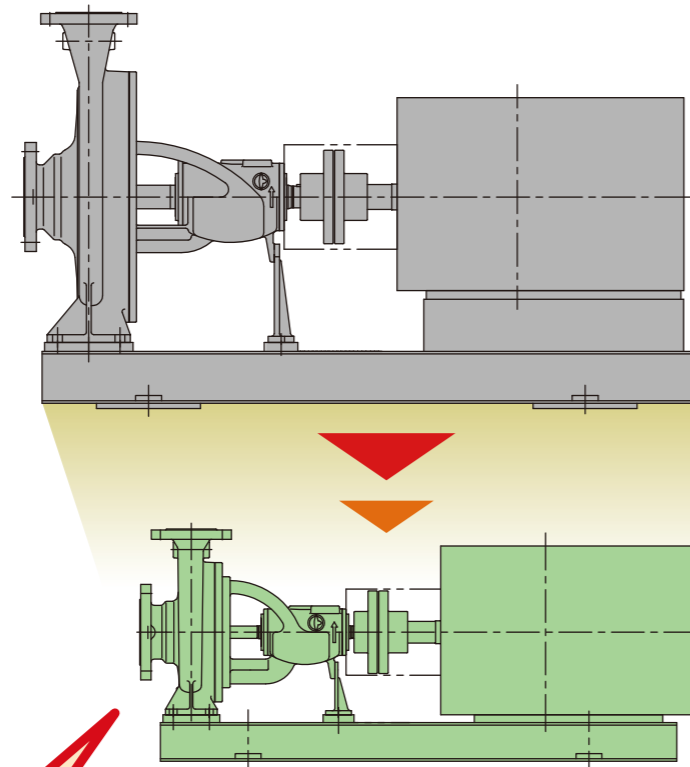
Downsizing to 2P Design

Increasing the pump speed by using a 2 pole motor reduces the pump size and weight.

Conditions: total head of 50m, capacity of 1m³/min, and 60Hz

Pole number: 4P
Pump size: CAL80-400
Motor output: 18.5kW
Weight: 400kg

Pole number: 2P
Pump size: CAL50-200
Motor output: 15kW
Weight: 209kg





Weight reduced by 47% compared to 4P
= (400-209) ÷ 400 × 100

The above diagram describes characteristics of 2P. We can provide the design for 4P as well.
Weight includes pump, base plate, motor and coupling.
Motor weight differs depending on manufacturers.

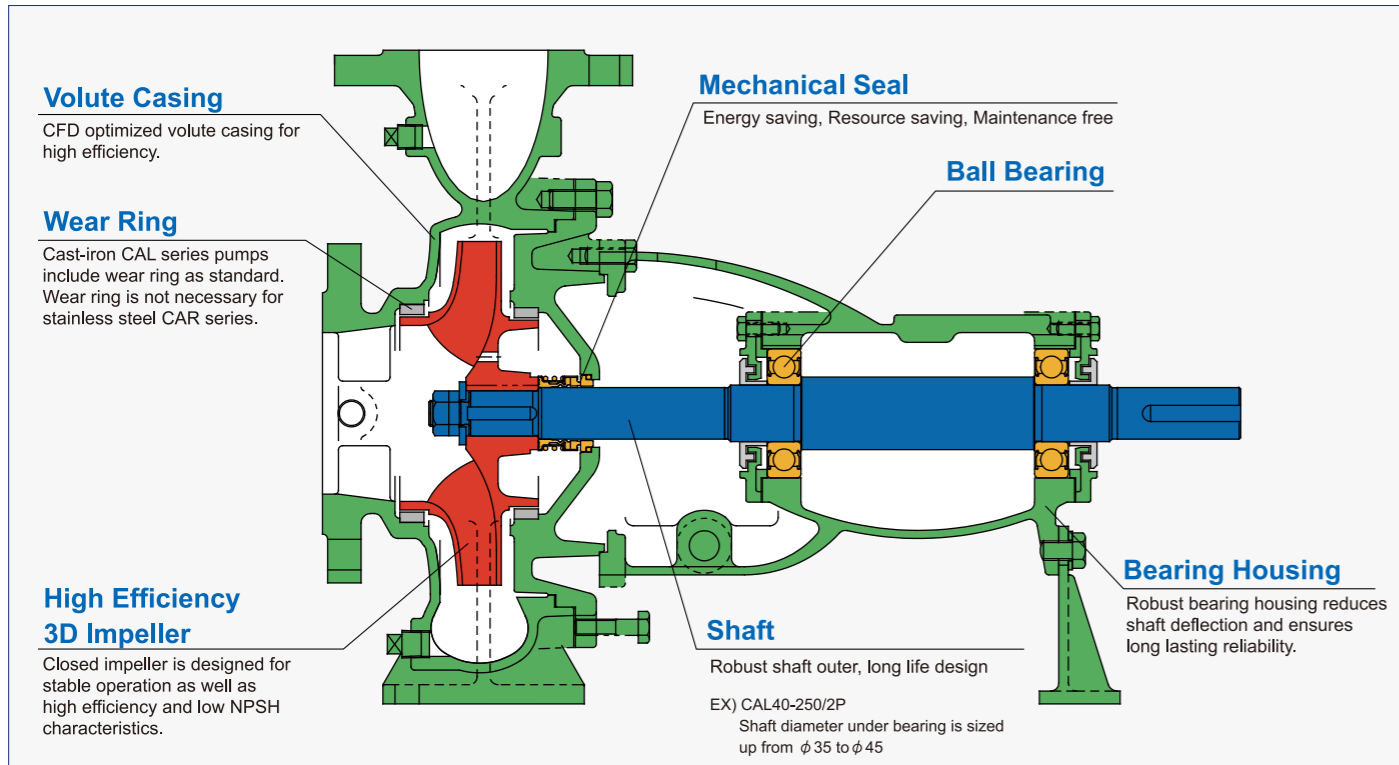
Applications

Utility	Co-generation	Cooling water pump, Hot water (circulation) pump
	Air conditioning	Cold water pump, Cooling water pump, Hot water pump
	Drainage treatment	Raw water pump, Filtrate pump, Back wash pump, Transfer pump
	Pure water facility	Raw water pump, RO wash pump, Recovering back wash pump, Filtrate water pump
Iron and Metal	Power generation	Deaerator feed water pump
	Hot rolling	Transfer pump, Hot water pump, Water pumping pump, Filtrate pump, Back wash pump,
	Flue gas desulfurization	Cooling water pump, Industrial water pump
	Roll coolant	Spray pump
	Plating	Wash pump (Rinse pump)
Food and Beverage	Manufacturing process	Cold water pump, Cooling water pump (Circulation / Boost), Recycle water pump, Filtrate pump, Sprinkling pump
	Refrigerator	Chilled pump, Defrost pump
	CIP system	CIP supply / return pump
Automobile (Painting plant)	Degreasing process	Degreasing pump, Hot / Cold water wash pump, Spray pump
	Transformation process	Chemical pump, Hot / Cold water wash pump, Pure water pump
	Electrodeposition process	Electrodeposition liquid circulation pump, Wash pump, Pure water pump
Garbage incinerating plant	Power generation	Deaerator feed water pump, Condensate pump,
	Heat decrease tower	Heat decrease pump, Spray pump for heat decrease tower
	Drainage	Reuse water pump (pumping, transferring, feeding)
Other liquid handled	Brain, Acetone, Calcium chloride, Kalium chloride, Alkaline solution, Ethylene glycol, Agua fortis, Sulfate, Sodium hydroxide, Ammonia liquor, Caustic soda, etc. <i>Please ask about special fluid.</i>	

Specification

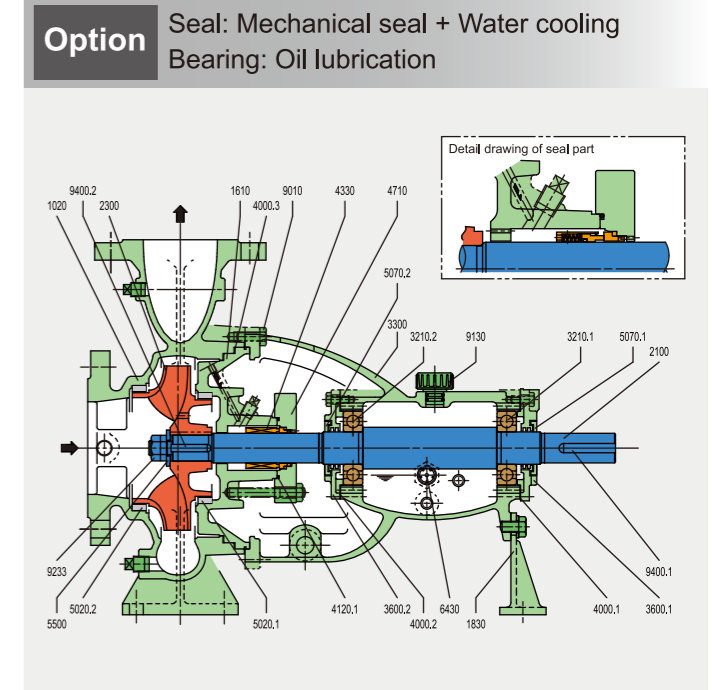
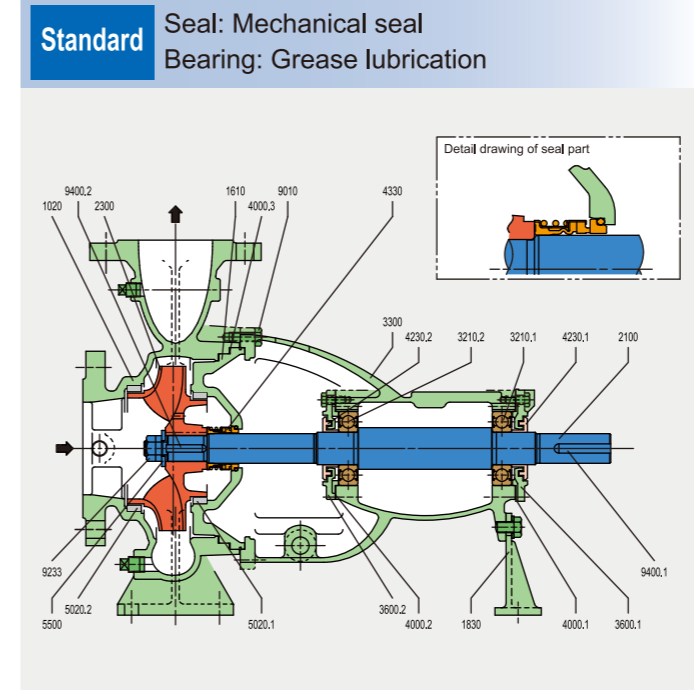
		CAL(Cast Iron) 	CAR(Stainless Steel) 
Handled liquid	Kinds	Clean water, Warm water, Oil, Chemical medicine, Alkaline solution, Brine, Heat transfer media, Abrasive slurry liquid under 3wt%, etc.	Pure water, Hot water, Sea water, Salted water, Refrigerant, Electrodeposition paint, Abrasive slurry liquid under 3wt%, etc.
	Temperature	Standard: -10°C to +80°C Option: -30°C to +350°C	Standard: -10°C to +80°C Option: -40°C to +140°C
Max. discharge pressure		Standard: 1MPa (10kgf/cm ² G) Option: 1.4MPa (14kgf/cm ² G)	1MPa (10kgf/cm ² G)
Max. suction pressure		0.8MPa (8kgf/cm ² G)	0.8MPa (8kgf/cm ² G)
Design	Impeller	Closed	Closed
	Shaft seals	Standard: Single mechanical seal (Rubber bellows) Option: Double mechanical seal, Gland packing	Standard: Single mechanical seal (Rubber bellows) Option: Double mechanical seal, Gland packing
	Water injection for bearing	Standard: Internal injection Option: Quenching, Flushing	Standard: Internal injection Option: Quenching, Flushing
	Lubricated bearing	Standard: Grease lubrication Option: Oil lubrication	Standard: Grease lubrication Option: Oil lubrication
Flange standard, Suction / Discharge direction		JIS 10KRF Shaft direction suction / Vertical top discharge	JIS 10KRF Shaft direction suction / Vertical top discharge
Pump material	Casing	Standard: FC250 Option: FCD400	Standard: SCS13 Option: SCS14
	Impeller	Standard: FC200 Option: SCS13	Standard: SCS13 Option: SCS14
	Shaft	Standard: SUS420J2 Option: SUS329J1, SUS304	Standard: SUS304 Option: SUS316, SUS329J1
	Case wear ring	Standard: PSG Option: SUS304	—

Design Features



Pump Sectional Drawing

The basic structure is same between CAL and CAR for parts interchangeability. CAR, which is made from stainless, does not require case wear ring. Due to adopting build to order method, various combination with pump material, seal and bearing is available according to liquids kinds and temperature.



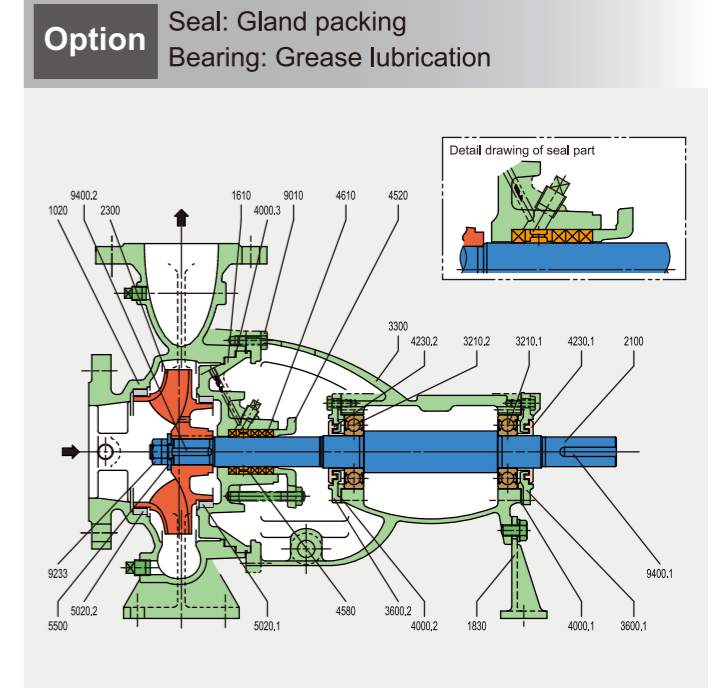
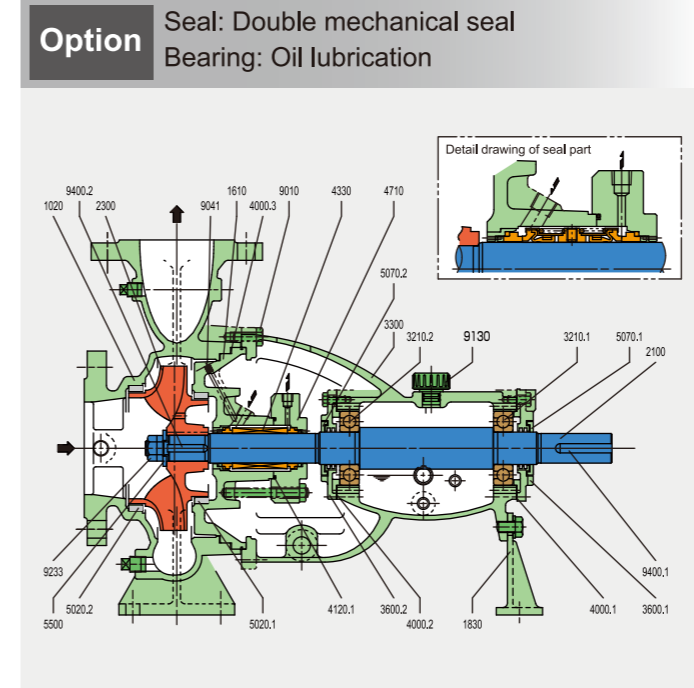
Parts Interchangeability

2P type Same color and number in the same parts indicate interchangeability.

Parts Pump type	Casing	Casing Cover	Bearing Housing	Shaft	Mechanical Seal
32-125	1	1	1	1	1
40-125	2				
65-125	3				
32-160	4	2	1	1	1
40-160	5				
50-160	6	3	1	1	1
32-200	7				
40-200	8				
50-200	9	4	2	2	1
80-160	10				
80-200	11	5	3	3	2
32-250	12				
40-250	13				
50-250	14	6	3	3	2
80-250	15				

4P type Same color and number in the same parts indicate interchangeability.

Parts Pump type	Casing	Casing Cover	Bearing Housing	Shaft	Mechanical Seal
32-125	1	1	1	1	1
40-125	2				
65-125	3				
32-160	4	2	1	1	1
40-160	5				
50-160	6	3	1	1	1
65-150	7				
32-200	8				
40-200	9	4	2	2	2
50-200	10				
65-190	11	5	2	2	2
80-150	12				
80-190	13				
100-190	14	6	2	2	2
32-250	15				
40-250	16	7	2	2	2
50-250	17				
65-240	18				
80-240	19	8	2	2	2
100-245	20				
100-250	21	9	3	3	3
50-315	22				
65-310	23				
80-310	24	10	3	3	3
100-310	25				
150-190	26	11	4	4	3
150-200	27				
125-240	28				
125-250	29	12	4	4	3
200-240	30				
200-250	31	13	4	4	3
125-310	32				
125-315	33				
80-400	34	14	5	5	4
100-400	35				
125-400	36	15	5	5	4
150-310	37				
150-315	38	16	5	5	4
150-390	39				
150-400	40				



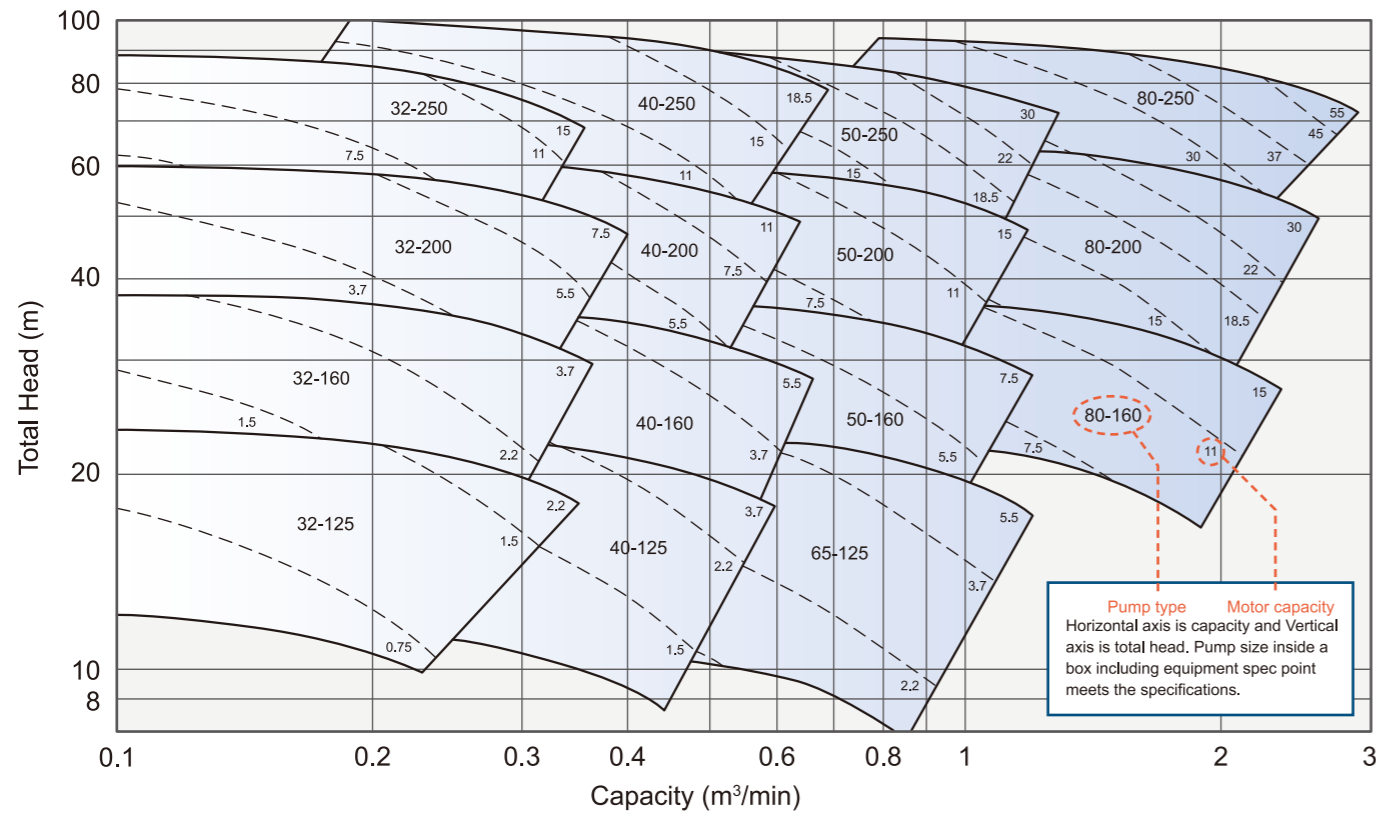
Parts number	Parts name	Parts number	Parts name	Parts number	Parts name	Parts number	Parts name
1020	Volute casing	3600.2	Bearing cover	4580	Lantern ring	9010	Hex. bolt
1610	Casing cover	4000.1	Flat gasket	4610	Gland packing	9041	Nock
1830	Support foot	4000.2	Flat gasket	4710	Seal cover	9130	Plug
2100	Shaft	4000.3	Flat gasket	5020.1	Casing wear ring	9233	Lock nut
2300	Impeller	4120.1	O-ring	5020.2	Casing wear ring	9400.1	Key
3210.1	Deep groove ball bearing	4230.1	Labyrinth ring	5070.1	Deflector	9400.2	Key
3210.2	Deep groove ball bearing	4230.2	Mechanical seal	5070.2	Deflector		
3300	Bearing housing	4330	Shaft box gland	5500	Washer		
3600.1	Bearing cover	4520		6430	Oil gauge		

CAL (Cast Iron) Selection Range Charts

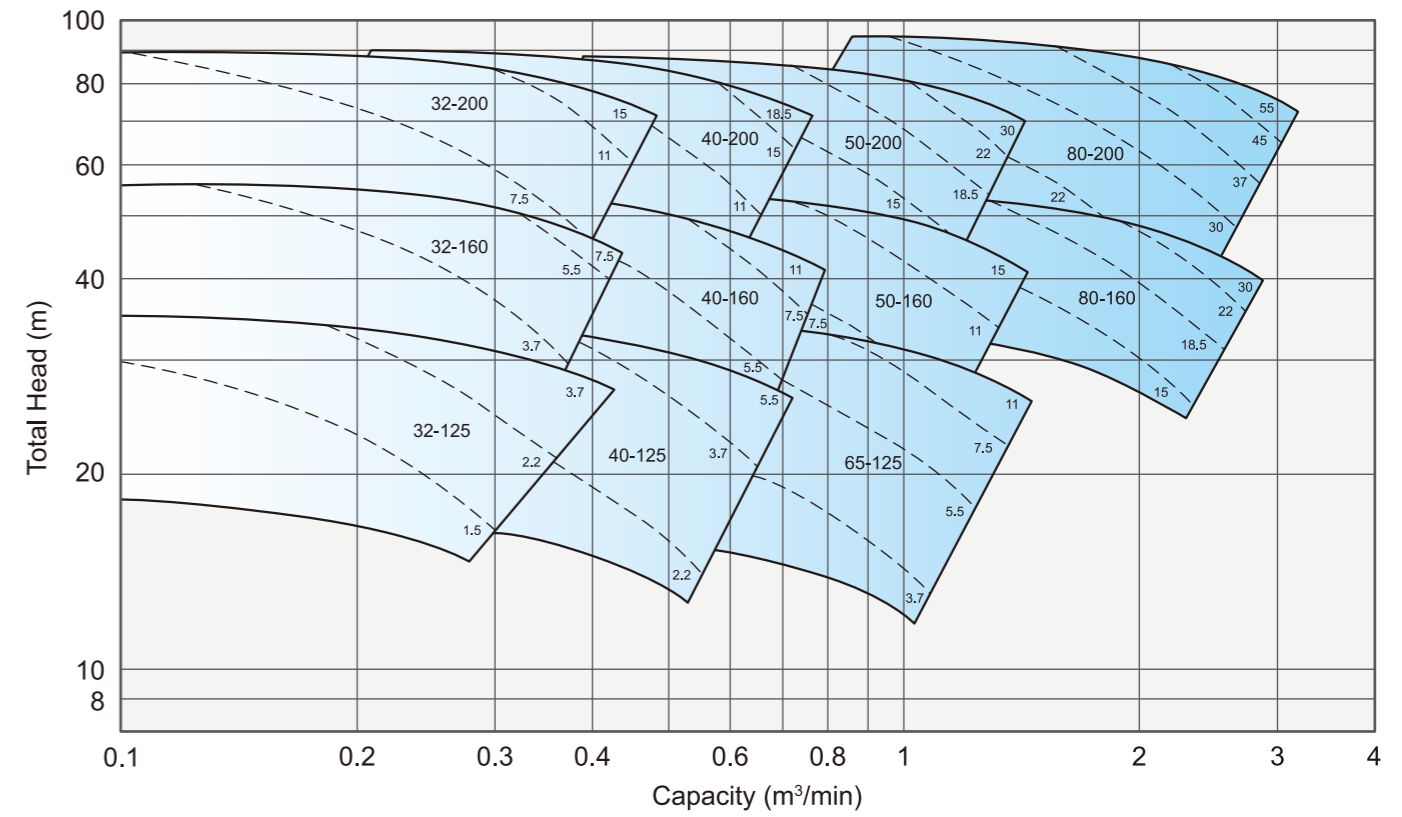
6P is also available. Please ask our sales representative for details.



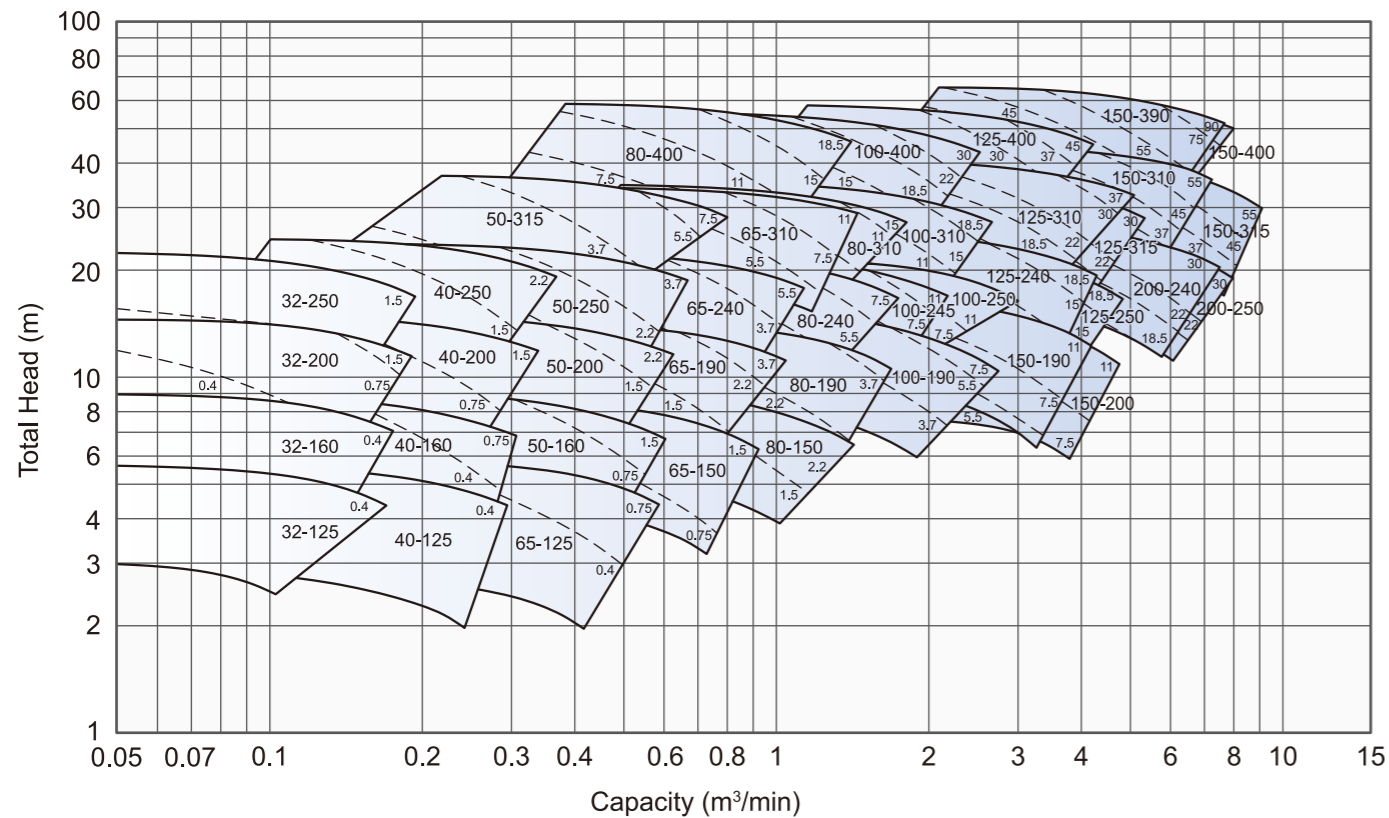
50Hz-2P (3000min⁻¹)



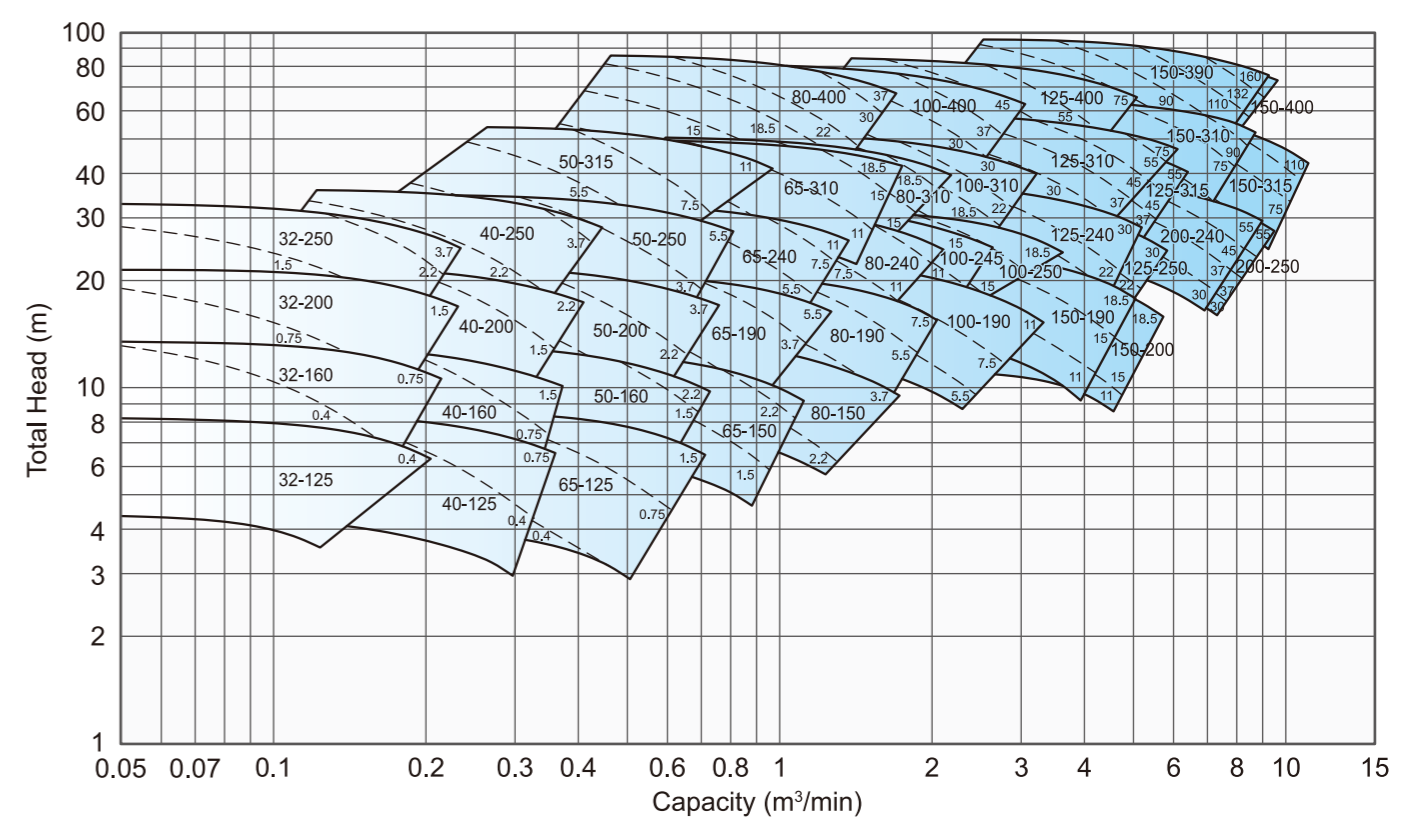
60Hz-2P (3600min⁻¹)



50Hz-4P (1500min⁻¹)



60Hz-4P (1800min⁻¹)

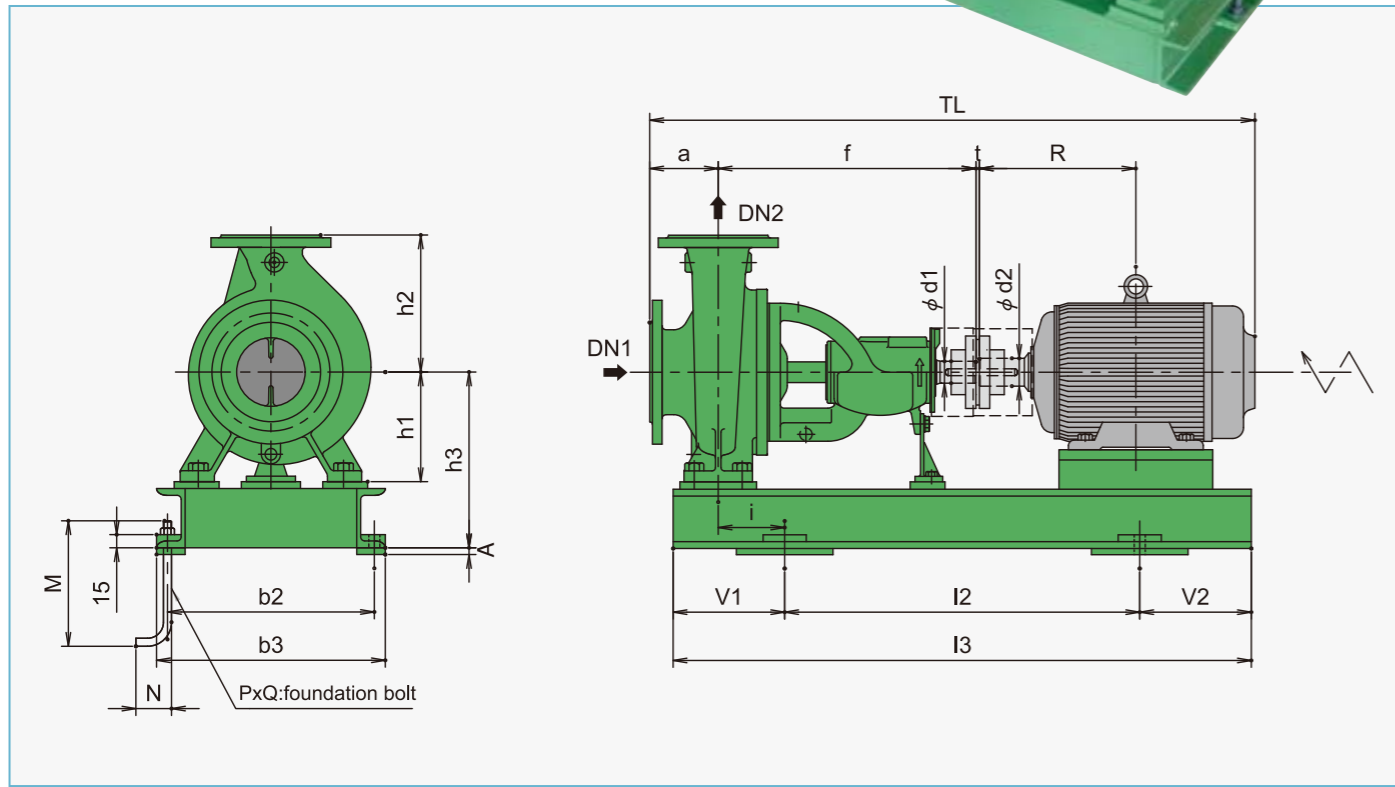


Dimension Chart

■ Flange standard CAL : JIS10K RF / CAR : JIS10K RF

■ Below dimension is based on totally enclosed fan-cooled motor.

■ Motors have different size and frame depending on manufacturers.



Pump Sizes	Pump										Motor		Base Plate				Foundation Dimensions								Coupling		Refer.													
	Bore		Dimension				Axle	Weight		Frame	Dimension		b3	I3	A	Wt.	h3	i	b2	I2	M	N	P	Q	V1	V2		t	Wt.	TL										
	DN1	DN2	a	f	h1	h2	d1	Grade R	Grade R		R	d2																												
	mm	mm	mm	mm	mm	mm	mm	kg	kg	mm	mm																													
32-200 40-200 50-160	50 65 80	32 40 50	80 80 100	360 360 360	160 160 180	180 180 180	24 24 24	36 37 32	38 39 33	---	90L	168.5	24	320	750	0	33	250	55	290	480	200	50	4	M12	115	155	3	1.1	795.5										
										100L	193	28	320	750	0	33	250	55	290	480	200	50	4	M12	115	155	3	1.6	829											
										112M	200	28	320	750	0	32	250	55	290	480	200	50	4	M12	115	155	3	1.6	854.5											
										132S	239	38	350	870	0	34	250	90	320	600	200	50	4	M12	150	120	3	3.2	917											
										160M*	323	42	430	1000	0	39	250	110	400	660	200	50	4	M12	170	170	3	6.7	1071											
										160M**	323	42	430	1000	0	39	250	110	400	660	200	50	4	M12	170	170	3	6.7	786											
										160L	345	42	430	1000	0	39	250	110	400	660	200	50	4	M12	170	170	3	6.7	1115											
										180M	351.5	48	430	1000	0	42	270	110	400	660	200	50	4	M12	170	170	3	9.0	1107											
50-200	80	50	100	360	160	200	24	37	39	---	112M	200	28	320	750	0	32	250	55	290	480	200	50	4	M12	115	155	3	1.6	854.5										
										132S	239	38	350	870	0	34	250	90	320	600	200	50	4	M12	150	120	3	3.2	917											
										160M*	323	42	430	1000	0	39	250	110	400	660	200	50	4	M12	170	170	3	6.7	1071											
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										160L*	345	42	430	1000	0	39	250	110	400	660	200	50	4	M12	170	170	3	6.7	1115											
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										180MA	351.5	48	430	1000	0	42	270	110	400	660	200	50	4	M12	170	170	3	9.0	1135											
										180M*	351.5	48	430	1000	0	42	270	110	400	660	200	50	4	M12	170	170	3	9.0	1107											
										180M**	351.5	55	430	1000	0	42	270	110	400	660	200	50	4	M12	170	170	3	13.9	1040											
										180L	370.5	55	430	1000	0	42	270	110	400	660	200	50	4	M12	170	170	3	13.9	1145											
										200LA	395.5	55	470	1120	0	53	292	130	440	740	200	50	4	M12	190	190	3	13.9	1233											
										200L	395.5	55	470	1120	0	53	292	130	440	740	200	50	4	M12	190	190	3	13.9	1213.5											
										225S	402	55	530	1250	10	71	342	145	490	840	250	63	4	M16	205	205	3	13.9	1230											
										80-160	100	80	125	470	160	225	32	50	52	---	132S	239	38	350	1000	0	33	250	110	320	660	200	50	4	M12	170	170	3	3.2	1052
																				160M*	323	42	430	1120	0	36	250	130	400	740	200	50	4	M12	190	190	3	6.7	1206	
																				160M**	323	42	430	1120	0	36	250	130	400	740	200	50	4	M12	190	190	3	6.7	921	
160L*	345	42	430	1120	0	36	250	130	400											740	200	50	4	M12	190	190	3	6.7	1250											
160L**	345	48	430	1120	0	36	250	130	400											740	200	50	4	M12	190	190	3	9.0	1168.5											
180MA	351.5	48	430	1120	0	44	270	130	400											740	200	50	4	M12	190	190	3	9.0	1270											
180M*	351.5	48	430	1120	0	44	270	130	400											740	200	50	4	M12	190	190	3	9.0	1242											
180M**	351.5	55	430	1120	0	44	270	130	400											740	200	50	4	M12	190	190	3	13.9	1175											
180L	370.5	55	430	1120	0	44	270	130	400											740	200	50	4	M12	190	190	3	13.9	1280											
200LA	395.5	55	470	1250	10	63	317	145	430											840	250	63	4	M16	205	205	3	13.9	1368											
200L	395.5	55	470	1250	10	63	317	145	430											840	250	63	4	M16	205	205	3	13.9	1348.5											
225S	402	55	530	1250	10	65	342	145	490											840	250	63	4	M16	205	205	3	13.9	1365											
32-250 40-250 50-250 80-200	50 65 80 100	32 40 50 80	100 100 100 125	470 470 470 470	180 180 180 180	225 225 225 250	32	54 55 57 60	56 58 59 62											---	112M	200	28	380	870	0	38	270	75	350	600	200	50	4	M12	150	120	3	3.2	989.5
																				132S	239	38	430	1000	0	42	270	95	400	660	200	50	4	M12	170	170	3	3.2	1052	
																				160M*	323	42	470	1120	0	45	270	115	440	740	200	50	4	M12	190	190	3	6.7	1206	
																				160M**	323	42	470	1120	0	45	270	115	440	740	200	50	4	M12	190	190	3	6.7	921	
										160L*	345	42	470	1120	0	45	270	115	440	740	200	50	4	M12	190	190	3	6.7	1250											
										160L**	345	48	470	1120	0	45	270	115	440	740	200	50	4	M12	190	190	3	9.0	1168.5											
										180MA	351.5	48	470	1120	0	43	270	115	440	740	200	50	4	M12	190	190	3	9.0	1270											
										180M*	351.5	48	470	1120	0	43	270	115	440	740	200	50	4	M12	190	190	3	9.0	1242											
										180M**	351.5	55	470	1120	0	43	270	115	440	740	200	50	4	M12	190	190	3	13.9	1175											
										180L	370.5	55	470	1120	0	43	270	115	440	740	200	50	4	M12	190	190	3	13.9	1280											
										200LA	395.5	55	530	1250	10	67	317	130	490	840	250	63	4	M16	205	205	3	13.9	1368											
										200L	395.5	55	530	1250	10	67	317	130	490	840	250	63	4	M16	205	205	3	13.9	1348.5											
										225S	402	55	530	1250	10	69	342	130	490	840	250	63	4	M16	205	205	3	13.9	1365											
										225MA	414.5	55	530	1250	10	69	342	130	490	840	250	63	4	M16	205	205	3	13.9	1409											
										225M	414.5	55	530	1250	10	69	342	130	490	840	250	63	4	M16	205	205	3	13.9	1462.5											
										250SA	463.5	60	530	1250	10	76	370	130	490	840	250	63	4	M16	205	205	4	21.0	1481.5											
250M	452.5	55	530	1250	10	76	370	130	490	840	250	63	4	M16	205	205	3	13.9	1526																					
80-250	100	80	125	470	225	280	32	67	70	---	160M*	323	42	470	1120	0	52	317	100	440	740	200	50	4	M12	190	190	3	6.7	1206										
										160M**	323	42	470	1120	0	52	317	100	440	740	200	50	4	M12	190	190	3	6.7	921											
										160L*	345	42	470	1120	0	52	317	100	440	740	200	50	4	M12	190	190	3	6.7	1250											
										160L**	345	48	470	1120	0	52	317	100	440	740	200	50	4	M12	190	190	3	9.0	1168.5											
										180MA	351.5	48	470	1120	0	53	317	100	440	740	200	50	4	M12	190	190	3	9.0	1270											
										180M*	351.5	48	470	1120	0	53	317	100	440	740	200	50	4	M12	190	190	3	9.0	1242											
										180M**	351.5	55	470	1120	0	53	317	100	440	740	200	50	4	M12	190	190	3	13.9	1175											
										180L	370.5	55	470	1120	0	53	317	100	440	740	200	50	4	M12	190	190	3	13.9	1280											
										200LA	395.5	55	530	1																										

Dimension Chart

Dimension Chart for 4P Motor Drive

Pump Sizes	Pump										Motor										Coupling		Refer.						
	Bore		Dimension				Axle		Weight		Frame	Dimension		Base Plate				Foundation Dimensions						t	Wt.	TL			
	DN1	DN2	a	f	h1	h2	d1	Grade R	Grade R	R		d2	b3	I3	A	Wt.	h3	i	b2	I2	M	N					P	Q	V1
	mm	mm	mm	mm	mm	mm	mm	kg	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm		mm	mm	mm	mm	mm	
32-125 40-125	50 65	32 40	80 80	360 360	112 112	140 140	24 24	27 28	28 29	71M	120	14	320	670	0	27	202	45	290	420	200	50	4	M12	105	145	3	1.1	681
										80	140	19	320	670	0	27	202	45	290	420	200	50	4	M12	105	145	3	1.1	726
										80M	140	19	320	670	0	27	202	45	290	420	200	50	4	M12	105	145	3	1.1	705
32-160 40-160 65-125	50 65 80	32 40 65	80 80 100	360 360 360	132 132 132	160 160 180	24 24 24	28 30 31	30 31 33	71M	120	14	320	670	0	28	222	45	290	420	200	50	4	M12	105	145	3	1.1	681
										80	140	19	320	670	0	28	222	45	290	420	200	50	4	M12	105	145	3	1.1	726
										80M	140	19	320	670	0	28	222	45	290	420	200	50	4	M12	105	145	3	1.1	705
										90L	168.5	24	320	750	0	30	222	55	290	480	200	50	4	M12	115	155	3	1.1	776
										71M	120	14	320	670	0	30	250	45	290	420	200	50	4	M12	105	145	3	1.1	701
										80	140	19	320	670	0	30	250	45	290	420	200	50	4	M12	105	145	3	1.1	746
32-200 40-200 50-160 65-150	50 65 80	32 40 65	80 80 100	360 360 360	160 160 160	180 180 180	24 24 24	36 37	38 39 33	80M	140	19	320	670	0	30	250	45	290	420	200	50	4	M12	105	145	3	1.1	725
										90L	168.5	24	320	750	0	33	250	55	290	480	200	50	4	M12	115	155	3	1.1	796
										100L	193	28	320	750	0	33	250	55	290	480	200	50	4	M12	115	155	3	1.6	838
										112M	200	28	320	750	0	32	250	55	290	480	200	50	4	M12	115	155	3	1.9	855
										80	140	19	320	670	0	30	250	45	290	420	200	50	4	M12	105	145	3	1.1	746
										80M	140	19	320	670	0	30	250	45	290	420	200	50	4	M12	105	145	3	1.1	725
50-200 65-190	80 80	50 65	100 100	360 360	160 160	200 200	24 24	37 41	39 43	90L	168.5	24	320	750	0	33	250	55	290	480	200	50	4	M12	115	155	3	1.1	796
										100L	193	28	320	750	0	33	250	55	290	480	200	50	4	M12	115	155	3	1.6	838
										112M	200	28	320	750	0	32	250	55	290	480	200	50	4	M12	115	155	3	1.9	855
										132S	239	38	350	870	0	34	250	90	320	600	200	50	4	M12	150	120	3	3.2	917
										90L	168.5	24	320	750	0	30	250	90	290	600	200	50	4	M12	150	120	3	3.2	906
										100L	193	28	320	750	0	30	250	90	290	600	200	50	4	M12	150	120	3	3.2	948
80-150	100	80	100	470	160	200	32	47	49	112M	200	28	320	870	0	29	250	90	290	600	200	50	4	M12	150	120	3	3.2	965
										132S	239	38	350	1000	0	33	250	110	320	660	200	50	4	M12	170	170	3	3.2	1027
										80	140	19	380	870	0	38	270	75	350	600	200	50	4	M12	150	120	3	3.2	881
										80M	140	19	380	870	0	38	270	75	350	600	200	50	4	M12	150	120	3	3.2	860
										90L	168.5	24	380	870	0	36	270	75	350	600	200	50	4	M12	150	120	3	3.2	931
										100L	193	28	380	870	0	38	270	75	350	600	200	50	4	M12	150	120	3	3.2	973
32-250 40-250 50-250 65-240 80-190	50 65 80 80	32 40 65	100 100 100	470 470 470	180 180 180	225 225 225	32 32 32	49 50	51 53 54	112M	200	28	380	870	0	38	270	75	350	600	200	50	4	M12	150	120	3	3.2	990
										132S	239	38	430	1000	0	42	270	95	400	660	200	50	4	M12	170	170	3	3.2	1052
										132M	258	38	430	1000	0	42	270	95	400	660	200	50	4	M12	170	170	3	5.4	1090
										160M	323	42	470	1120	0	45	270	115	440	740	200	50	4	M12	190	190	3	6.7	1206
										100L	193	28	380	870	0	41	292	60	350	600	200	50	4	M12	150	120	3	3.2	973
										112M	200	28	380	870	0	41	292	60	350	600	200	50	4	M12	150	120	3	3.2	990
80-240 100-190	100 125	80 100	100 125	470 470	200 280	32 32	63 64	62 67	132S	239	38	430	1000	0	46	292	80	400	660	200	50	4	M12	170	170	3	3.2	1052	
									132M	258	38	430	1000	0	46	292	80	400	660	200	50	4	M12	170	170	3	5.4	1090	
									160M	323	42	470	1120	0	49	292	100	440	740	200	50	4	M12	190	190	3	6.7	1206	
									160L	345	42	470	1120	0	49	292	100	440	740	200	50	4	M12	190	190	3	6.7	1250	
									100L	193	28	380	870	0	38	315	75	350	600	200	50	4	M12	150	120	3	3.2	948	
									112M	200	28	380	870	0	42	315	75	350	600	200	50	4	M12	150	120	3	3.2	965	
50-315	80	50	100	470	225	280	32	70	71	132S	239	38	430	1000	0	46	315	95	400	660	200	50	4	M12	170	170	3	3.2	1027
										132M	258	38	430	1000	0	46	315	95	400	660	200	50	4	M12	170	170	3	5.4	1065
										160M	323	42	470	1120	0	51	315	115	440	740	200	50	4	M12	190	190	3	6.7	1181
										160L	345	42	470	1120	0	51	315	115	440	740	200	50	4	M12	190	190	3	6.7	1225
										112M	200	28	430	870	0	45	317	60	400	600	200	50	4	M12	150	120	3	3.2	990
										132S	239	38	430	1000	0	49	317	80	400	660	200	50	4	M12	170	170	3	3.2	1052
100-245 100-250 65-310 80-310	125 125 80 100	100 100 125 80	125 125 125 125	470 470 470 470	225 225 225 225	280 280 280 280	32 32 32 32	71 72	75 75 72 76	132M	258	38	430	1000	0	49	317	80	400	660	200	50	4	M12	170	170	3	5.4	1090
										160M	323	42	470	1120	0	52	317	100	440	740	200	50	4	M12	190	190	3	6.7	1206
										160L*	345	42	470	1120	0	52	317	100	440	740	200	50	4	M12	190	190	3	6.7	1250
										160L**	345	48	470	1120	0	52	317	100	440	740	200	50	4	M12	190	190	3	9.0	1169
										180MC	351.5	48	470	1120	0	53	317	100	440	740	200	50	4	M12	190	190	3	9.0	1270
										180M*	351.5	48	470	1120	0	53	317	100	440	740	200	50	4	M12	190	190	3	9.0	1242
										180M**	351.5	55	470	1120	0	53	317	100	440	740	200	50	4	M12	190	190	3	13.9	1183
										180LC	370.5	48	470	1120	0	53	317	100	440	740	200	50	4	M12	190	190	3	9.0	1308
										180L	370.5	55	470	1120	0	53	317	100	440	740	200	50	4	M12	190	190	3	13.9	1280
										200LC	395.5	55	530	1250	10	74	342	115	490	840	250	63	4	M16	205	205	3	13.9	1368
										200L*	395.5	55	530	1250	10	74	342	115	490	840	250	63	4	M16	205	205	3	13.9	1394
										200L**	425.5	60	530	1250															

Dimension Chart

Dimension Chart for 4P Motor Drive (continuation)

Pump Sizes	Pump								Motor		Base Plate				Foundation Dimensions										Coupling		Refer.		
	Bore		Dimension				Axle	Weight	Frame	Dimension		Base Plate				Foundation Dimensions										t		Wt.	TL
	DN1	DN2	a	f	h1	h2	d1	Grade R		R	d2	b3	l3	A	Wt.	h3	i	b2	l2	M	N	P	Q	V1	V2				
	mm	mm	mm	mm	mm	mm	mm	kg	mm	mm	mm	mm	mm	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm			
125-400 200-240 200-250	150 200 200	125 200 200	140 160 160	530 530 530	315 315 315	400 375 375	42 42 42	165 158 158	182 174 174	160L	345	48	590	1250	10	90	435	95	550	840	250	63	4	M16	205	205	3	9.0	1263.5
										180MC	351.5	48	590	1250	10	90	435	95	550	840	250	63	4	M16	205	205	3	9.0	1365
										180M*	351.5	48	590	1250	10	90	435	95	550	840	250	63	4	M16	205	205	3	9.0	1337
										180M**	351.5	55	590	1250	10	90	435	95	550	840	250	63	4	M16	205	205	3	13.9	1278
										180LC	370.5	48	590	1250	10	90	435	95	550	840	250	63	4	M16	205	205	3	9.0	1403
										180L*	370.5	55	590	1250	10	90	435	95	550	840	250	63	4	M16	205	205	3	13.9	1375
										180L**	400.5	60	590	1250	10	90	435	95	550	840	250	63	4	M16	205	205	4	21.0	1367
										200M	406.5	65	590	1400	10	99	435	120	550	940	250	63	4	M16	230	230	4	21.0	1401.5
										200LC	395.5	55	590	1400	10	99	435	120	550	940	250	63	4	M16	230	230	3	13.9	1463
										200L*	395.5	55	590	1400	10	99	435	120	550	940	250	63	4	M16	230	230	3	13.9	1488.5
										200L**	425.5	60	590	1400	10	99	435	120	550	940	250	63	4	M16	230	230	4	21.0	1474.5
										225SC	432	60	590	1400	10	95	435	120	550	940	250	63	4	M16	230	230	4	21.0	1510
										225S*	432	60	590	1400	10	95	435	120	550	940	250	63	4	M16	230	230	4	21.0	1566
										225S**	432	65	590	1400	10	95	435	120	550	940	250	63	4	M16	230	230	4	21.0	1491
										225S***	432	75	590	1400	10	95	435	120	550	940	250	63	4	M16	230	230	4	31.0	1551
										225MC	444.5	60	590	1400	10	95	435	120	550	940	250	63	4	M16	230	230	4	21.0	1535
										225M*	444.5	60	590	1400	10	95	435	120	550	940	250	63	4	M16	230	230	4	21.0	1588.5
										225M**	444.5	75	590	1400	10	95	435	120	550	940	250	63	4	M16	230	230	4	31.0	1551
										250SC	463.5	70	640	1400	10	99	435	120	600	940	250	63	4	M16	230	230	4	31.0	1576.5
										250S	463.5	75	640	1400	10	99	435	120	600	940	250	63	4	M16	230	230	4	31.0	1574
										250MC	482.5	70	640	1400	10	99	435	120	600	940	250	63	4	M16	230	230	4	31.0	1614.5
										250M*	482.5	65	640	1400	10	99	435	120	600	940	250	63	4	M16	230	230	4	21.0	1627.5
										250M**	482.5	75	640	1400	10	99	435	120	600	940	250	63	4	M16	230	230	4	31.0	1652
										280SB	544	80	710	1600	10	109	435	160	670	1060	250	63	4	M16	270	270	4	45.0	1765.5
280S	514	75	710	1600	10	109	435	160	670	1060	250	63	4	M16	270	270	4	31.0	1718.5										
280M*	539.5	75	710	1600	10	109	435	160	670	1060	250	63	4	M16	270	270	4	31.0	1769.5										
280M**	569.5	85	710	1600	10	109	435	160	670	1060	250	63	4	M16	270	270	4	45.0	1777										
150-310 150-315 150-390 150-400	200 200 200 200	150 160 160 160	530 530 530 530	315 315 315 315	400 400 450 450	48 48 48 48	188 188 204 204	198 198 217 217	180MC	351.5	48	590	1250	10	90	435	95	550	840	250	63	4	M16	205	205	3	9.0	1365	
									180M*	351.5	48	590	1250	10	90	435	95	550	840	250	63	4	M16	205	205	3	9.0	1337	
									180M**	351.5	55	590	1250	10	90	435	95	550	840	250	63	4	M16	205	205	3	13.9	1278	
									180LC	370.5	48	590	1250	10	90	435	95	550	840	250	63	4	M16	205	205	3	9.0	1403	
									180L*	370.5	55	590	1250	10	90	435	95	550	840	250	63	4	M16	205	205	3	13.9	1375	
									180L**	400.5	60	590	1250	10	90	435	95	550	840	250	63	4	M16	205	205	4	21.0	1367	
									200M	406.5	65	590	1400	10	99	435	120	550	940	250	63	4	M16	230	230	4	21.0	1401.5	
									200LC	395.5	55	590	1400	10	99	435	120	550	940	250	63	4	M16	230	230	3	13.9	1463	
									200L*	395.5	55	590	1400	10	99	435	120	550	940	250	63	4	M16	230	230	3	13.9	1488.5	
									200L**	425.5	60	590	1400	10	99	435	120	550	940	250	63	4	M16	230	230	4	21.0	1474.5	
									225SC	432	60	590	1400	10	95	435	120	550	940	250	63	4	M16	230	230	4	21.0	1510	
									225S*	432	60	590	1400	10	95	435	120	550	940	250	63	4	M16	230	230	4	21.0	1566	
									225S**	432	65	590	1400	10	95	435	120	550	940	250	63	4	M16	230	230	4	21.0	1491	
									225S***	432	75	590	1400	10	95	435	120	550	940	250	63	4	M16	230	230	4	31.0	1551	
									225MC	444.5	60	590	1400	10	95	435	120	550	940	250	63	4	M16	230	230	4	21.0	1535	
									225M*	444.5	60	590	1400	10	95	435	120	550	940	250	63	4	M16	230	230	4	21.0	1588.5	
									225M**	444.5	75	590	1400	10	95	435	120	550	940	250	63	4	M16	230	230	4	31.0	1551	
									250SC	463.5	70	640	1400	10	99	435	120	600	940	250	63	4	M16	230	230	4	31.0	1576.5	
									250S*	463.5	75	640	1400	10	99	435	120	600	940	250	63	4	M16	230	230	4	31.0	1574	
									250S**	493.5	85	640	1400	10	99	435	120	600	940	250	63	4	M16	230	230	4	45.0	1551	
									250MC	482.5	70	640	1400	10	99	435	120	600	940	250	63	4	M16	230	230	4	31.0	1614.5	
									250M*	482.5	65	640	1400	10	99	435	120	600	940	250	63	4	M16	230	230	4	21.0	1627.5	
									250M**	482.5	75	640	1400	10	99	435	120	600	940	250	63	4	M16	230	230	4	31.0	1652	
									250M***	512.5	85	640	1400	10	99	435	120	600	940	250	63	4	M16	230	230	4	45.0	1606	
280SB	544	80	710	1600	10	109	435	160	670	1060	250	63	4	M16	270	270	4	45.0	1765.5										
280S*	514	75	710	1600	10	109	435	160	670	1060	250	63	4	M16	270	270	4	31.0	1718.5										
280S**	544	85	710	1600	10	109	435	160	670	1060	250	63	4	M16	270	270	4	45.0	1726										
280MB	569.5	80	710	1600	10	109	435	160	670	1060	250	63	4	M16	270	270	4	45.0	1816										
280M*	539.5	75	710	1600	10	109	435	160	670	1060	250	63	4	M16	270	270	4	31.0	1769.5										
280M**	569.5	85	710	1600	10	109	435	160	670	1060	250	63	4	M16	270	270	4	45.0	1777										
315SB	589	85	710	1600	10	109	445	160	670	1060	250	63	4	M16	270	270	4	61.0	1855										

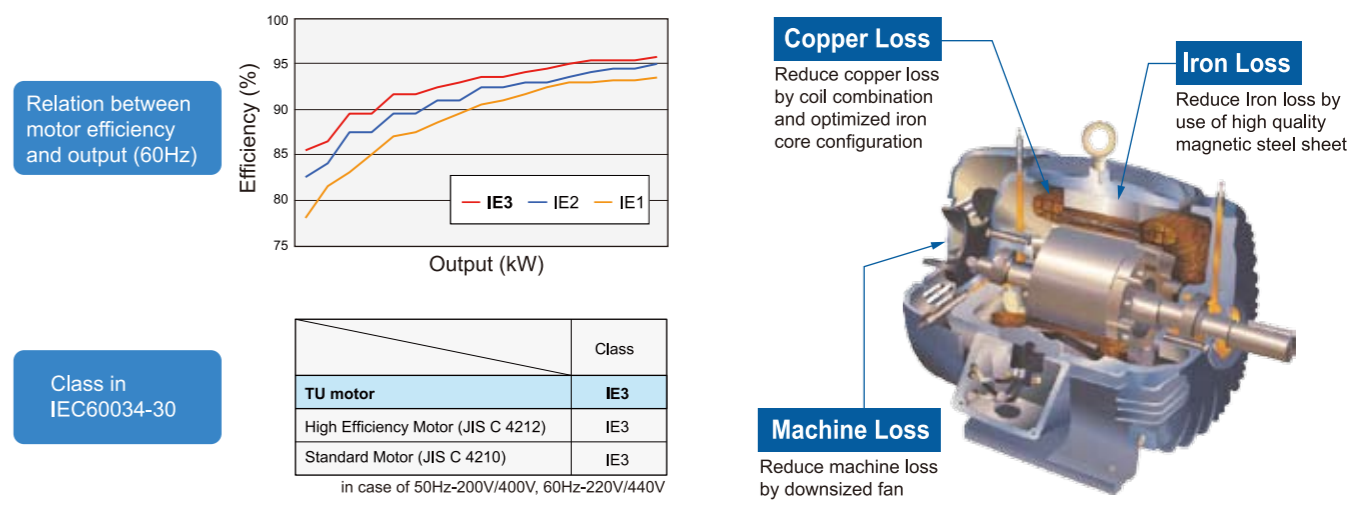
*Motor frame is the same but shaft axle diameter (d2) is different.

TU Motor (Torishima Ultra High Efficiency Motor)



Torishima pursues high efficiency for not only pump but motor.

IEC (International Electrotechnical Commission) classifies IE1 (standard), IE2 (high efficiency), IE3 (premium efficiency) by motor efficiency. TU motor is equivalent to IE3.



Motor Parameter Comparison Table by Motor Type

2P Motor

Frame size	Center height	Shaft diameter	Totally enclosed fan-cooled	
	R (mm)	d2 (mm)	Output (kW)	Weight
71M	120	14	-	-
80	140	19	0.75	20
80M	140	19	-	-
90S	156	24	1.5	23
90L	168.5	24	2.2	27
100L	193	28	-	-
112M	200	28	3.7	45
132S	239	38	5.5	68
160M	323	42	11	128
160L*	345	42	15	151
160L**	345	48	-	-
180MA	351.5	48	22	190
180M*	351.5	48	-	-
180M**	351.5	55	-	-
180L	370.5	55	-	-
200LA	395.5	55	30	300
200M	376.5	55	37	-
200L	395.5	55	-	-
225S	402	55	-	-
225MA	414.5	55	45	350
225M	414.5	55	-	-
250SA	463.5	60	55	470
250M	452.5	55	-	-

4P Motor

Frame size	Center height	Shaft diameter	Totally enclosed fan-cooled	
	R (mm)	d2 (mm)	Output (kW)	Weight
71M	120	14	-	-
80	140	19	0.75	20
80M	140	19	-	-
90L	168.5	24	1.5	27
100L	193	28	2.2	37
112M	200	28	3.7	45
132S	239	38	5.5	68
132M	258	38	7.5	77
160M	323	42	11	128
160L*	345	42	15	151
160L**	345	48	-	-
180MC	351.5	48	18.5	190
180M*	351.5	48	-	-
180M**	351.5	55	-	-
180LC	370.5	48	22	205
180L*	370.5	55	-	-
180L**	400.5	60	-	-
200M	406.5	65	-	-
200LC	395.5	55	30	300
200L*	395.5	55	-	-
200L**	425.5	60	-	-
225SC	432	60	37	355
225S*	432	60	-	-
225S**	432	65	-	-
225S***	432	75	-	-
225MC	444.5	60	45	365
225M*	444.5	60	-	-
225M**	444.5	75	-	-
250SC	463.5	70	55	510
250S*	463.5	75	-	-
250S**	493.5	85	-	-
250MC	482.5	70	75	570
250M*	482.5	65	-	-
250M**	482.5	75	-	-
250M***	512.5	85	-	-
280S*	514	75	-	-
280SB	544	80	90	710
280S**	544	85	-	-
280M*	539.5	75	-	-
280MB	569.5	80	110	790
280M**	569.5	85	-	-
315SB	589	85	132	960

Do you have pump like this ?

- ✓ Pump flow rate controlled by valve
- ✓ Pump operating with fixed speed
- ✓ Pump with high annual operating hours
- ✓ Pump with large rating output of motor
- ✓ Aging pump
- ✓ Pump to be introduced into the new facility



If you have those pump, please allow us to make our Eco Pump proposal to meet your specification!