

Torishima Pump Global Network



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CAL (Cast Iron)

CAR (Stainless Steel)

End-Suction Volute Pump



■ Manufacturing ■ Service Center

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 **TORISHIMA**



Go Green with The Eco-Pumps

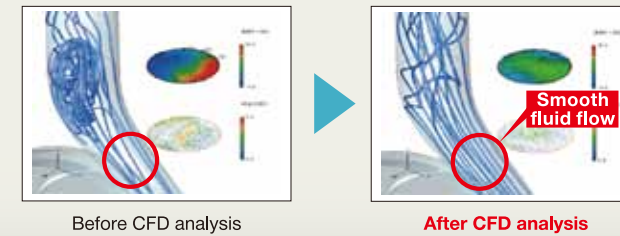


CAL: Cast Iron
CAR: Stainless Steel
(10bar)

Energy Saving	- High-Efficiency Pump - Impeller Trimmed to Exactly Meet Customer Specification - Ultra High Efficiency Motor (Equivalent to IEC IE3)
Downsizing	Higher Speed Enables Same Duty to be Achieved with Smaller Pump
Easy Maintenance	- Simple Maintenance with Mechanical Seals - Excellent Parts Interchangeability - Back Pull-Out Design
Convenience	- Low NPSH (High Suction Performance) - Stable Operation
Safety	Shaft Guard and Totally Enclosed Coupling Guard

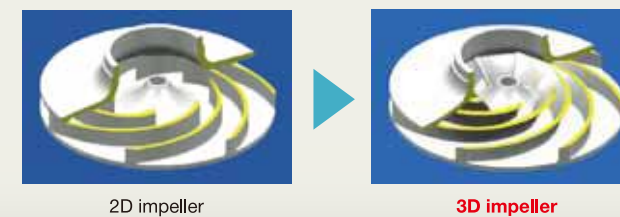
Optimized Hydraulic Performance

CFD (Computational Fluid Dynamics) optimized casing design ensures smooth fluid flow.



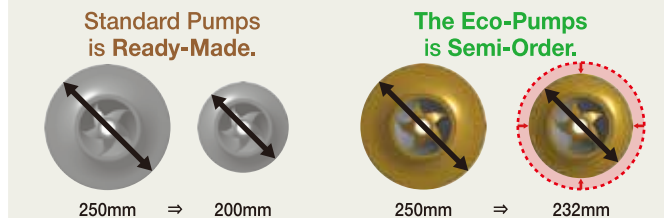
3D High-Efficiency Impeller

Three dimensional curved impeller optimizes smooth fluid flow.



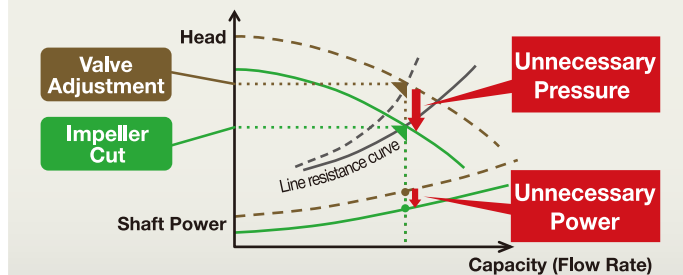
Meeting Customer's Specification (Impeller cut)

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



Defined Size doesn't match customer's specific duty resulting in unnecessary power consumption

Impeller Cut Meet's customer's specific duty to optimize power consumption

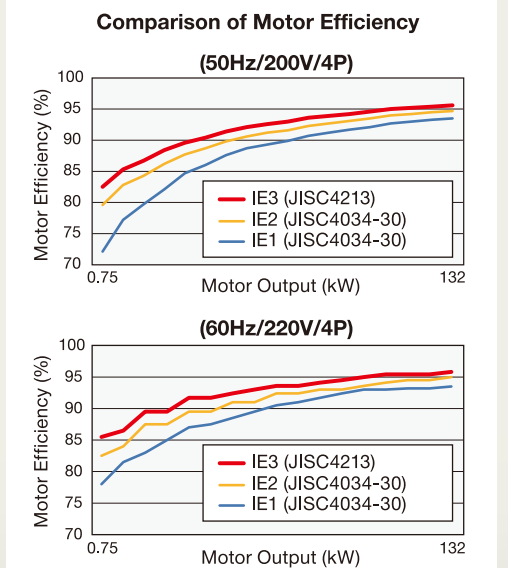


TU Motor (Torishima Ultra High Efficiency Motor)

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

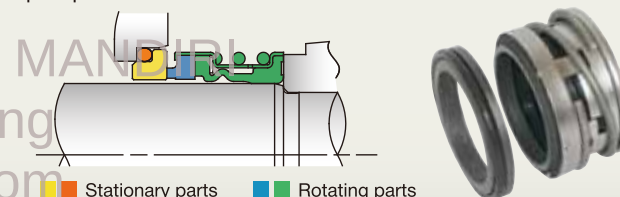
- Iron losses are reduced** by use of high quality magnetic steel sheet.
- Copper losses are reduced** by coil combination and optimized iron core configuration.
- Mechanical losses are reduced** by downsized fan.
- Reduced noise**

Motors of the following power output are in regular stock.
2P: 0.75kW to 22kW
4P: 0.75kW to 55kW

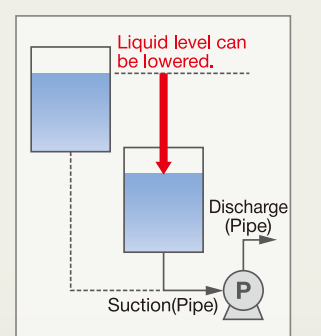


Mechanical Seal as Standard

Standard mechanical seal (rubber bellows type) is easy to install and does not damage shaft, thus eliminating need for shaft sleeve. Minimal leakage from seal improves cleanliness around pump.



Low NPSH / Stable Operation



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Enhanced Safety with Shaft Guard and Totally Enclosed Coupling Guard

The Eco-Pumps (CAL/CAR) are equipped with a shaft guard and totally enclosed coupling guard. A totally enclosed coupling guard improves safety and maintenance compared to an existing coupling guard due to the wide area of coverage.

Existing Pump with Standard Coupling Guard and No Shaft Guard



Totally Enclosed Coupling Guard and Shaft Guard



Shaft Guard



Totally Enclosed Coupling Guard

All CAL/CAR series pumps are equipped with shaft guard.
Applied condition of enclosed coupling guards:
TU motor: 2P-55kW or less, 4P-110kW or less
Coupling diameter: 280mm or less
Motor size and frame depends on manufacturer selected.

Higher Speed Enables Pump Size to be Reduced

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, 60Hz

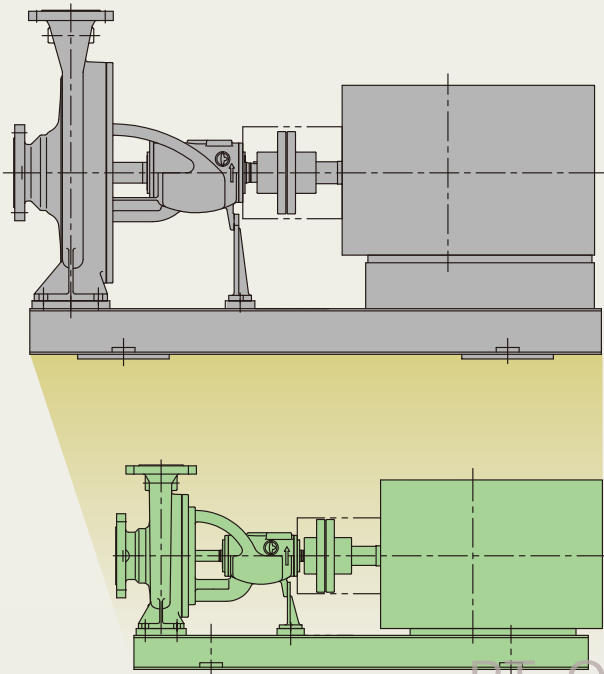
Pole number: 4P
Pump size: CAL80-400
Motor output: 18.5kW
Weight: **400kg**



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

Weight reduced by 47% compared to 4P!

$$= (400 - 209) \div 400 \times 100$$



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 manufacturer.

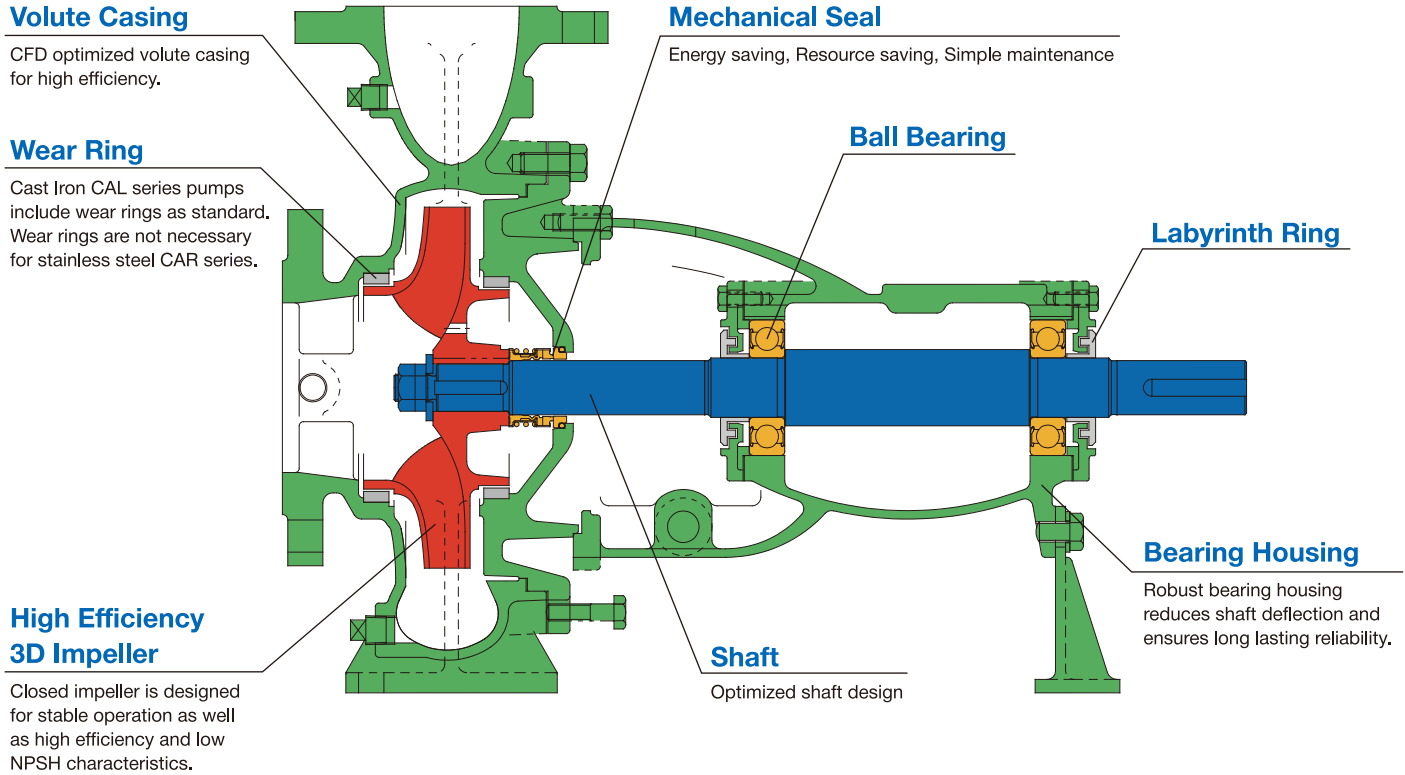
Applications

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 10K R.F. Shaft direction suction / Vertical top discharge	JIS 10K R.F. 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+S45C, SUS304	Standard: SUS304 Option: SUS316, SUS329J1+S45C
	Case wear ring	Standard: PSG Option: SUS304	—

Design Features



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			
40-160	5				
50-160	6				
32-200	7	3			
40-200	8				
50-200	9				
80-160	10	4	2	2	2
80-200	11	5	3	3	
32-250	12	6			
40-250	13				
50-250	14				
80-250	15	7			

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

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

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.

Sstandard
Seal: Mechanical seal
Bearing: Grease lubrication

Option
Seal: Mechanical seal + Water cooling
Bearing: Oil lubrication

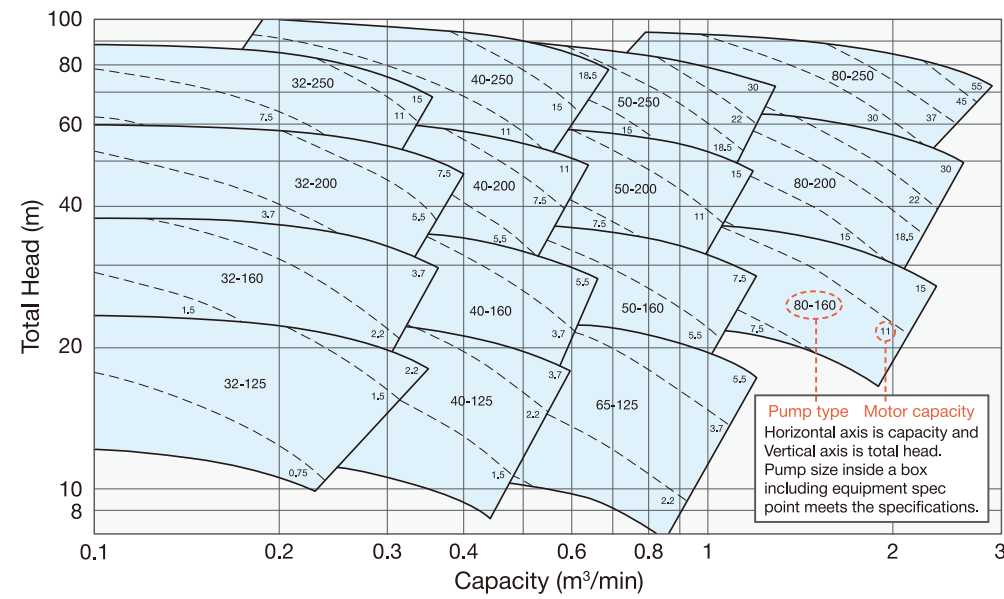
Option
Seal: Double mechanical seal
Bearing: Oil lubrication

Option
Seal: Gland packing
Bearing: Grease lubrication

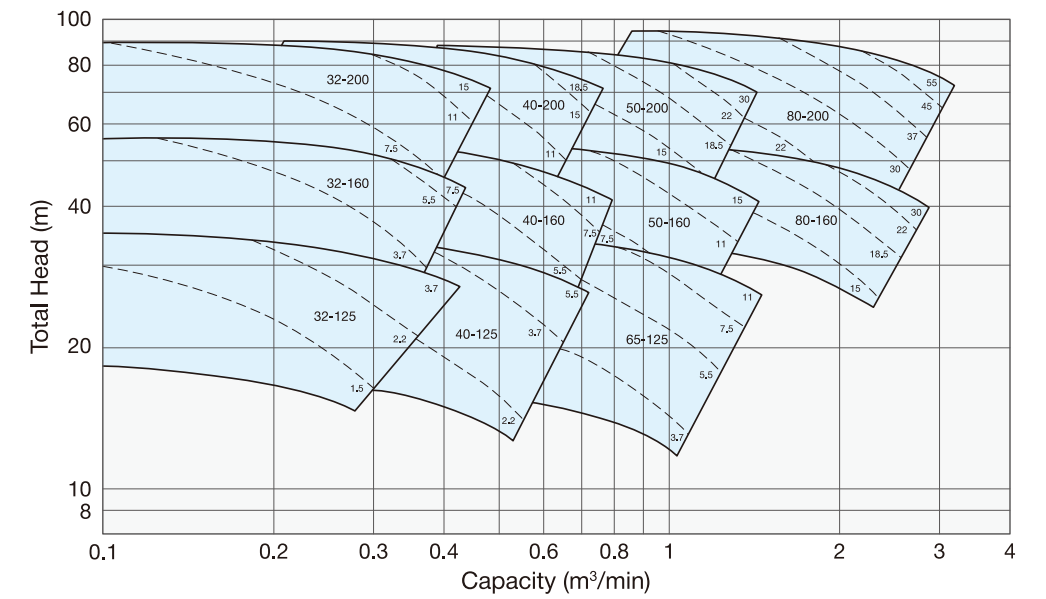
Parts number	Parts name	Parts number	Parts name	Parts number	Parts name	Parts number	Parts name
1020	Volute casing	3600.2	Bearing cover	4580	Lantern ring	9010	Hex. bolt
1610	Casing cover	4000.1	Flat gasket	4610	Gland packing	9041	Nock
1830	Support foot	4000.2	Flat gasket	4710	Seal cover	9130	Plug
2100	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

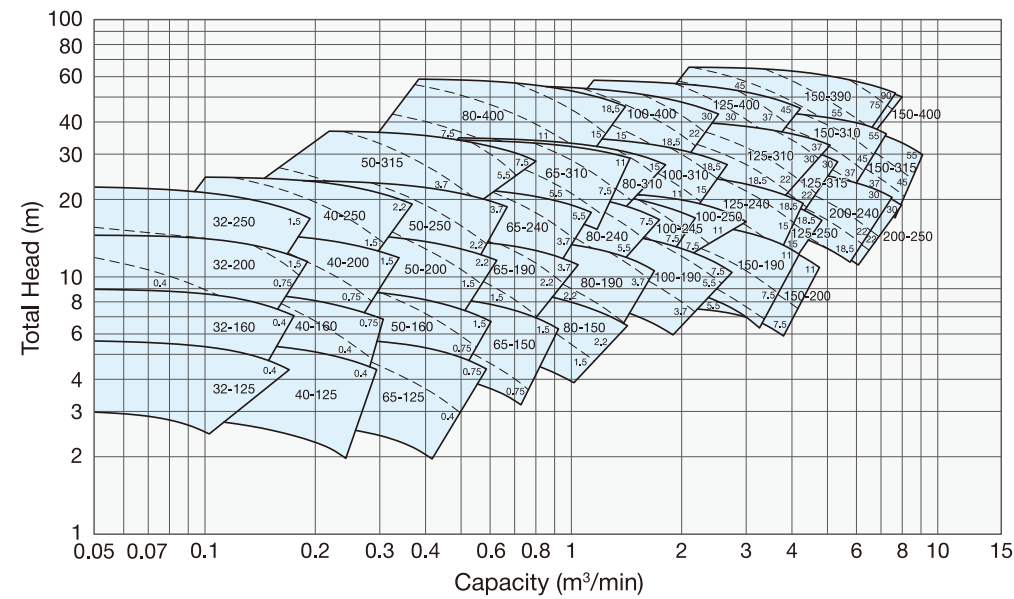
50Hz-2P
(3000min⁻¹)



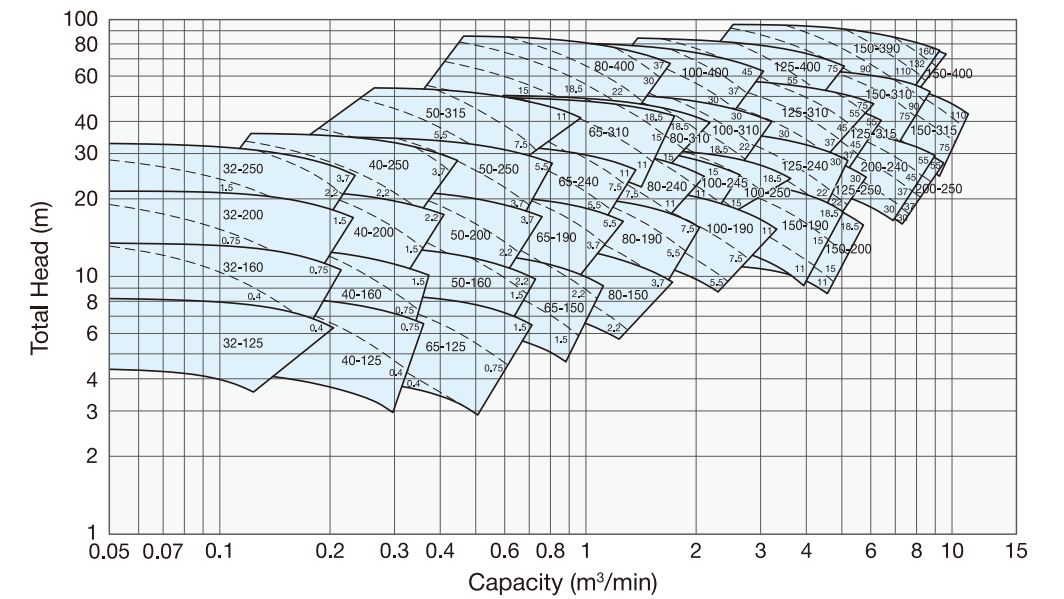
60Hz-2P
(3600min⁻¹)



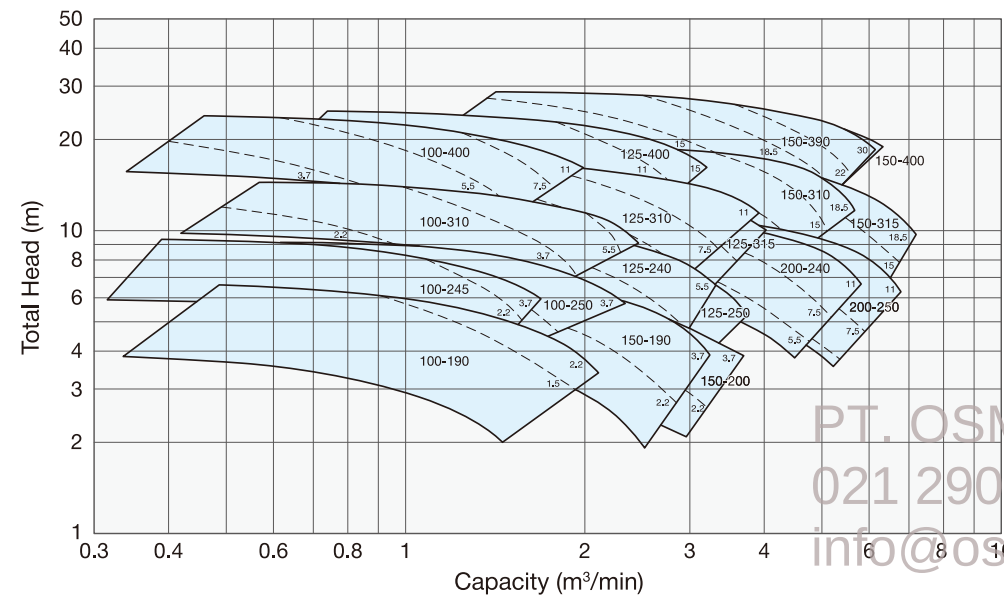
50Hz-4P
(1500min⁻¹)



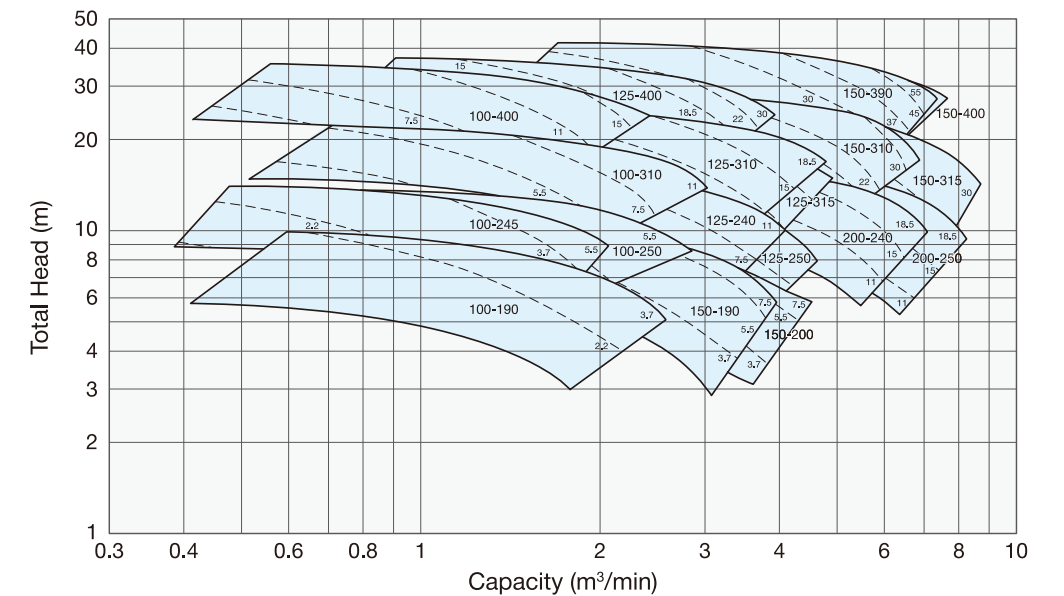
60Hz-4P
(1800min⁻¹)



50Hz-6P
(1000min⁻¹)



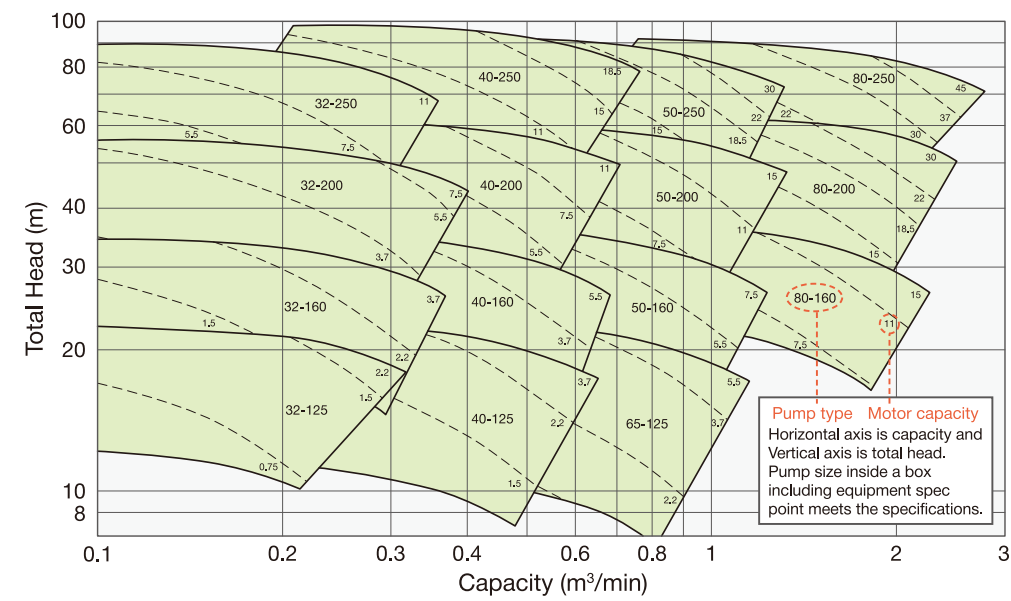
60Hz-6P
(1200min⁻¹)



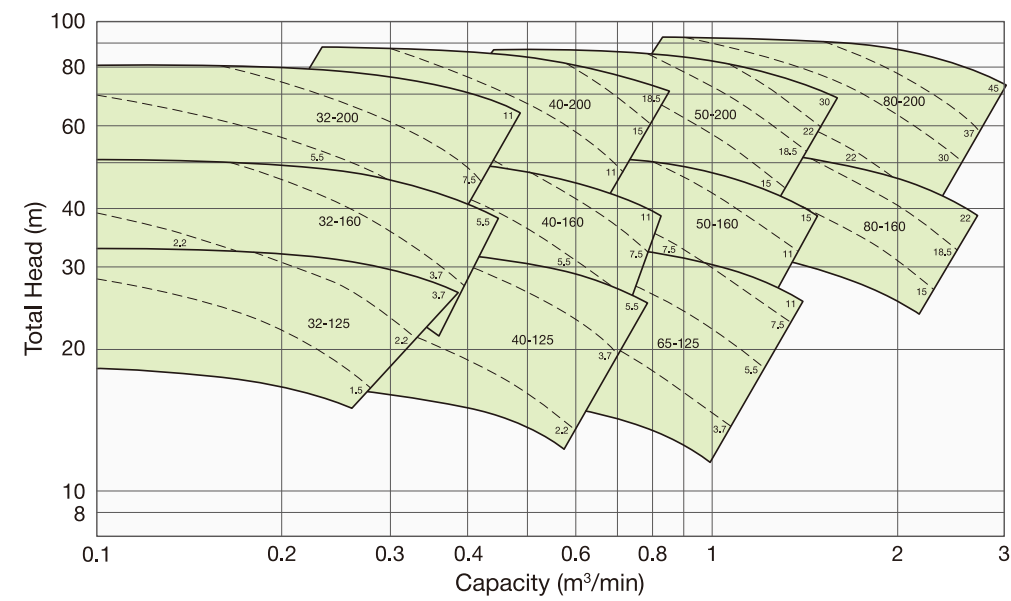
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CAR (Stainless Steel) Selection Range Charts

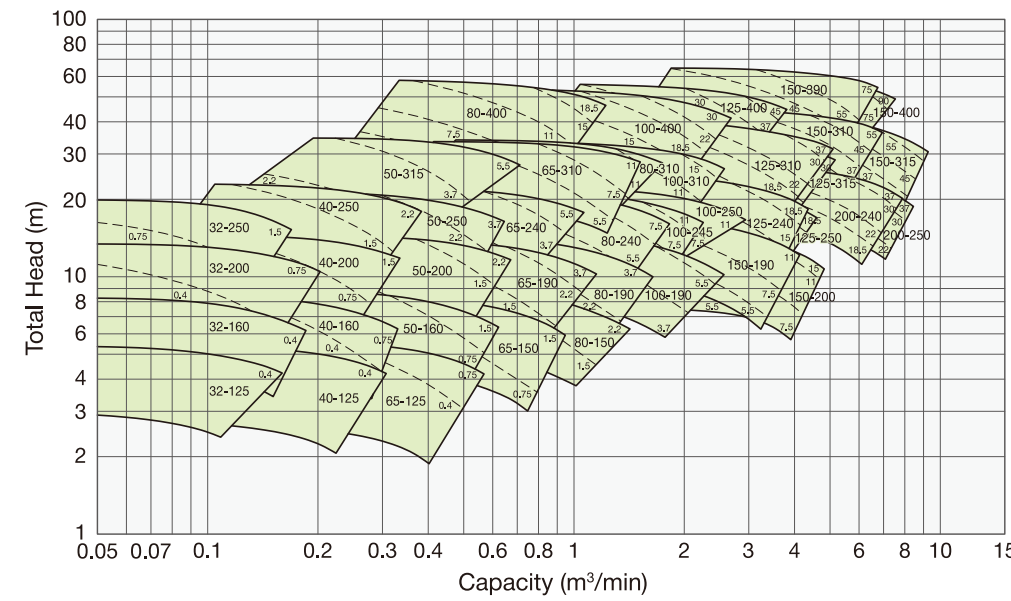
50Hz-2P
(3000min⁻¹)



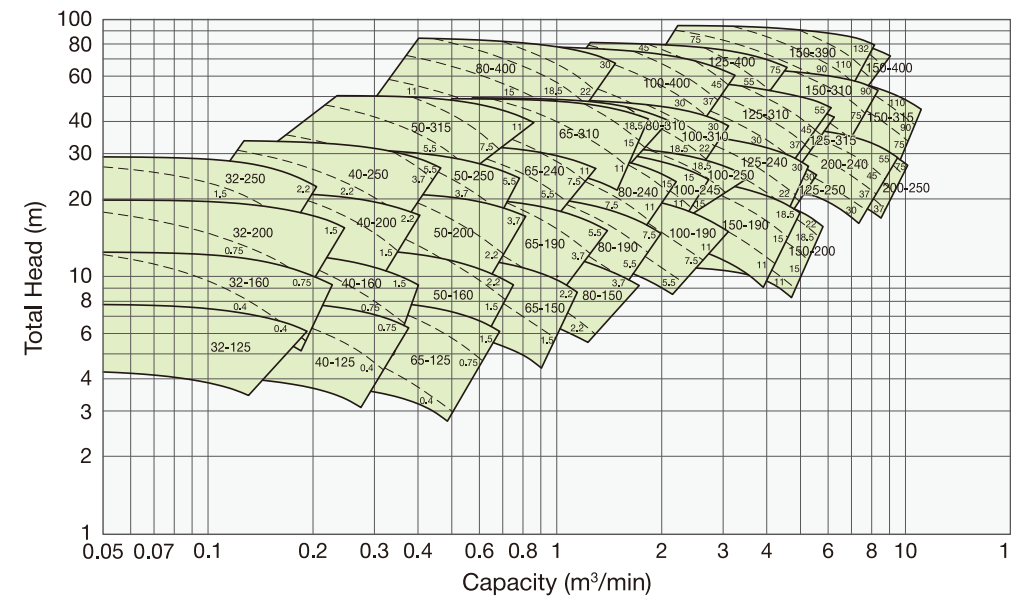
60Hz-2P
(3600min⁻¹)



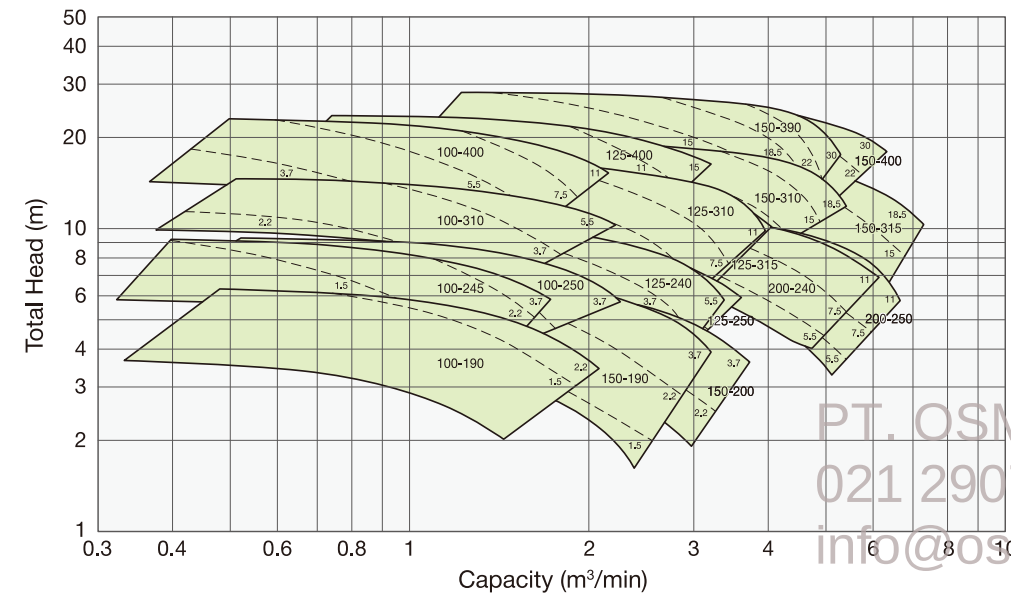
50Hz-4P
(1500min⁻¹)



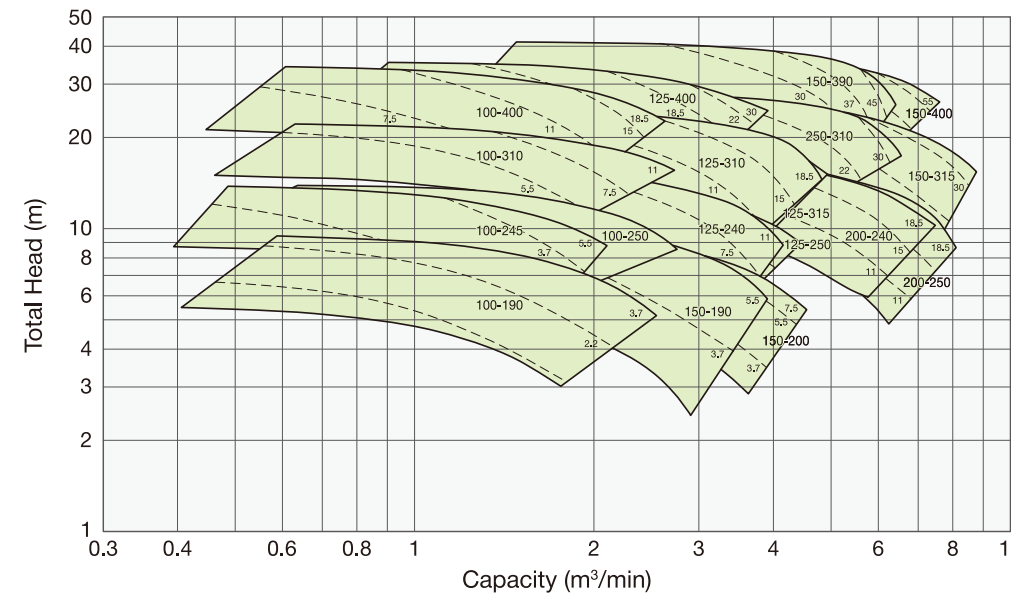
60Hz-4P
(1800min⁻¹)



50Hz-6P
(1000min⁻¹)



60Hz-6P
(1200min⁻¹)



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Dimension Table

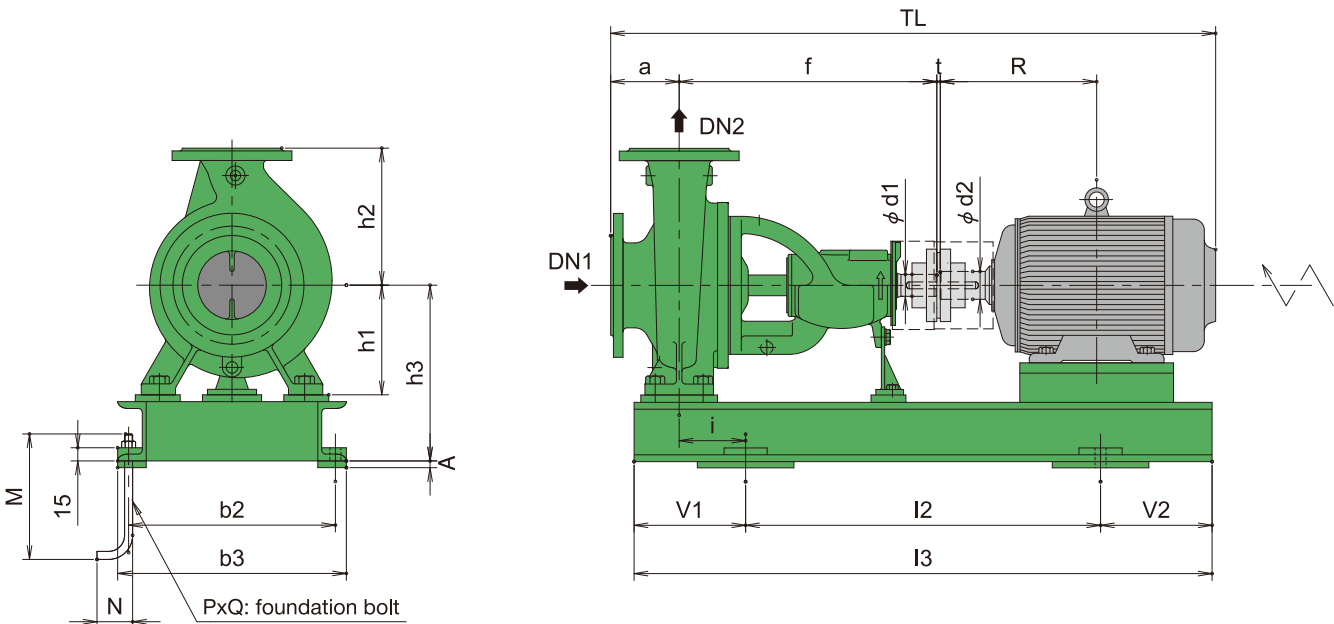
- Flange standard CAL: JIS10K RF / CAR: JIS10K RF
- Dimension in the table is based on totally enclosed fan-cooled motor.
Note: Motor size and frame depends on manufacturer selected.
- */** in the table indicate that motor frame is the same but shaft diameter (d2) is different.
- Base plate material FC: Cast Iron SS: Steel
Option: FC (Cast Iron) can be replaced with SS (Steel).



FC Base Plate



SS Base Plate



The above dimension is for SS (Steel) base plate.
FC (Cast Iron) base plate follows above.

Dimension Table for 2P Motor Drive

Pump Sizes	Pump									Motor			Base Plate				Foundation Dimensions										Coupling		Refer.	
	Bore		Dimension				Axle	Weight		Frame	Dimension																			
	DN1	DN2	a	f	h1	h2	d1	Grade L	Grade R		R	d2	Mate- rial	b3	I3	A	Wt.	h3	i	b2	I2	M	N	P	Q	V1	V2	t		Wt.
	mm	mm	mm	mm	mm	mm	mm	kg	kg	—	mm	mm	—	mm	mm	mm	kg	mm	mm	mm	mm	mm	mm			mm	mm	mm	kg	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	FC	370	740	0	19.2	157	30	330	550	200	50	4	M12	95	95	3	1.1	681
										80	140	19	FC	370	740	0	18.9	157	30	330	550	200	50	4	M12	95	95	3	1.1	725.5
										80M	140	19	FC	370	740	0	18.9	157	30	330	550	200	50	4	M12	95	95	3	1.1	705
										90S	156	24	FC	370	740	0	18.1	157	30	330	550	200	50	4	M12	95	95	3	1.1	750.5
										90L	168.5	24	FC	370	740	0	18.1	157	30	330	550	200	50	4	M12	95	95	3	1.1	775.5
										100L	193	28	FC	370	740	0	18.5	157	30	330	550	200	50	4	M12	95	95	3	1.6	809
										112M	200	28	FC	370	740	0	15.7	157	30	330	550	200	50	4	M12	95	95	3	1.6	834.5
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	132S	239	38	FC	370	820	0	21.9	177	20	330	650	200	50	4	M12	85	85	3	3.2	897
										80	140	19	FC	370	740	0	19.7	177	30	330	550	200	50	4	M12	95	95	3	1.1	745.5
										80M	140	19	FC	370	740	0	19.7	177	30	330	550	200	50	4	M12	95	95	3	1.1	725
										90S	156	24	FC	370	740	0	19	177	30	330	550	200	50	4	M12	95	95	3	1.1	770.5
										90L	168.5	24	FC	370	740	0	19	177	30	330	550	200	50	4	M12	95	95	3	1.1	795.5
										100L	193	28	FC	370	740	0	19.1	177	30	330	550	200	50	4	M12	95	95	3	1.6	829
										112M	200	28	FC	370	740	0	18.7	177	30	330	550	200	50	4	M12	95	95	3	1.6	854.5
										132S	239	38	FC	370	820	0	16.5	177	20	330	650	200	50	4	M12	85	85	3	3.2	917
										160M	323	42	SS	430	1000	0	41	250	110	400	660	200	50	4	M12	170	170	3	5.4	1071
										160L	345	42	SS	430	1000	0	41	250	110	400	660	200	50	4	M12	170	170	3	6.7	1115

Dimension Table for 2P Motor Drive

Pump Sizes	Pump									Motor			Base Plate					Foundation Dimensions										Coupling		Refer.
	Bore		Dimension				Axle	Weight		Frame	Dimension																			
	DN1	DN2	a	f	h1	h2	d1	Grade L	Grade R		d2	Mate- rial	b3	I3	A	Wt.	h3	i	b2	I2	M	N	P	Q	V1	V2	t	Wt.	TL	
	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	kg	mm	
32-200 40-200 50-160	50 65 80	32 40 50	80 80 100	360 360 360	160 160 160	180 180 180	24 24 24	36 37 32	38 39 33	90L	168.5	24	FC	370	740	0	20.1	205	30	330	550	200	50	4	M12	95	95	3	1.1	795.5
										100L	193	28	FC	370	740	0	20.4	205	30	330	550	200	50	4	M12	95	95	3	1.6	829
										112M	200	28	FC	370	740	0	20.1	205	30	330	550	200	50	4	M12	95	95	3	1.6	854.5
										132S	239	38	FC	370	820	0	20	205	20	330	650	200	50	4	M12	85	85	3	3.2	917
										160M	323	42	SS	430	1000	0	39	250	110	400	660	200	50	4	M12	170	170	3	5.4	1071
										160L	345	42	SS	430	1000	0	39	250	110	400	660	200	50	4	M12	170	170	3	6.7	1115
										180M	351.5	48	SS	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	FC	370	740	0	20.1	205	30	330	550	200	50	4	M12	95	95	3	1.6	854.5
										132S	239	38	FC	370	820	0	20	205	20	330	650	200	50	4	M12	85	85	3	3.2	917
										160M	323	42	SS	430	1000	0	39	250	110	400	660	200	50	4	M12	170	170	3	5.4	1071
										160L*	345	42	SS	430	1000	0	39	250	110	400	660	200	50	4	M12	170	170	3	6.7	1115
										160L**	345	48	SS	430	1000	0	39	250	110	400	660	200	50	4	M12	170	170	3	9.0	1033.5
										180MA	351.5	48	SS	430	1030	0	44	270	110	400	660	200	50	4	M12	170	200	3	9.0	1135
										180M*	351.5	48	SS	430	1030	0	44	270	110	400	660	200	50	4	M12	170	200	3	9.0	1107
										180M**	351.5	55	SS	430	1030	0	44	270	110	400	660	200	50	4	M12	170	200	4	13.9	1041
										180L	370.5	55	SS	430	1030	0	44	270	110	400	660	200	50	4	M12	170	200	4	13.9	1146
										200LA	395.5	55	SS	470	1120	0	53	292	130	440	740	200	50	4	M12	190	190	4	13.9	1234
										200L	395.5	55	SS	470	1120	0	53	292	130	440	740	200	50	4	M12	190	190	4	13.9	1214.5
225S	402	55	SS	530	1250	10	71	342	145	490	840	250	63	4	M16	205	205	4	13.9	1231										
80-160	100	80	125	470	160	225	32	50	52	132S	239	38	SS	350	1000	0	33	250	110	320	660	200	50	4	M12	170	170	3	3.2	1052
										160M	323	42	SS	430	1120	0	36	250	130	400	740	200	50	4	M12	190	190	3	5.4	1206
										160L*	345	42	SS	430	1120	0	36	250	130	400	740	200	50	4	M12	190	190	3	6.7	1250
										160L**	345	48	SS	430	1120	0	36	250	130	400	740	200	50	4	M12	190	190	3	9.0	1168.5
										180MA	351.5	48	SS	430	1180	0	46	270	130	400	740	200	50	4	M12	190	250	3	9.0	1270
										180M*	351.5	48	SS	430	1180	0	46	270	130	400	740	200	50	4	M12	190	250	3	9.0	1242
										180M**	351.5	55	SS	430	1180	0	46	270	130	400	740	200	50	4	M12	190	250	4	13.9	1176
										180L	370.5	55	SS	430	1180	0	46	270	130	400	740	200	50	4	M12	190	250	4	13.9	1281
										200LA	395.5	55	SS	470	1250	10	63	317	145	430	840	250	63	4	M16	205	205	4	13.9	1369
										200L	395.5	55	SS	470	1250	10	63	317	145	430	840	250	63	4	M16	205	205	4	13.9	1349.5
										225S	402	55	SS	530	1250	10	65	342	145	490	840	250	63	4	M16	205	205	4	13.9	1366
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 32 32 32	54 55 57 60	56 58 59 62	112M	200	28	FC	900	870	0	30.6	225	5	480	700	200	50	4	M12	100	100	3	3.2	989.5
										132S	239	38	FC	930	1000	0	33.9	225	0	480	740	200	50	4	M12	95	95	3	3.2	1052
										160M	323	42	SS	470	1120	0	45	270	115	440	740	200	50	4	M12	190	190	3	5.4	1206
										160L*	345	42	SS	470	1120	0	45	270	115	440	740	200	50	4	M12	190	190	3	6.7	1250
										160L**	345	48	SS	470	1120	0	45	270	115	440	740	200	50	4	M12	190	190	3	9.0	1168.5
										180MA	351.5	48	SS	470	1180	0	45	270	115	440	740	200	50	4	M12	190	250	3	9.0	1270
										180M*	351.5	48	SS	470	1180	0	45	270	115	440	740	200	50	4	M12	190	250	3	9.0	1242
										180M**	351.5	55	SS	470	1180	0	45	270	115	440	740	200	50	4	M12	190	250	4	13.9	1176
										180L	370.5	55	SS	470	1180	0	45	270	115	440	740	200	50	4	M12	190	250	4	13.9	1281
										200LA	395.5	55	SS	530	1250	10	67	317	130	490	840	250	63	4	M16	205	205	4	13.9	1369
										200L	395.5	55	SS	530	1250	10	67	317	130	490	840	250	63	4	M16	205	205	4	13.9	1349.5
										225S	402	55	SS	530	1250	10	69	342	130	490	840	250	63	4	M16	205	205	4	13.9	1366
										225MA	414.5	55	SS	530	1250	10	69	342	130	490	840	250	63	4	M16	205	205	4	13.9	1410
										225M	414.5	55	SS	530	1250	10	69	342	130	490	840	250	63	4	M16	205	205	4	13.9	1463.5
250SA	463.5	60	SS	530	1250	10	76	370	130	490	840	250	63	4	M16	205	205	4	21.0	1481.5										
250M	452.5	55	SS	530	1250	10	76	370	130	490	840	250	63	4	M16	205	205	4	13.9	1527										
80-250	100	80	125	470	225	280	32	67	70	160M	323	42	SS	470	1120	0	52	317	100	440	740	200	50	4	M12	190	190	3	5.4	1206
										160L*	345	42	SS	470	1120	0	52	317	100	440	740	200	50	4	M12	190	190	3	6.7	1250
										160L**	345	48	SS	470	1120	0	52	317	100	440	740	200	50	4	M12	190	190	3	9.0	1168.5
										180MA	351.5	48	SS	470	1180	0	55	317	100	440	740	200	50	4	M12	190	250	3	9.0	1270
										180M*	351.5	48	SS	470	1180	0	55	317	100	440	740	200	50	4	M12	190	250	3	9.0	1242
										180M**	351.5	55	SS	470	1180	0	55	317	100	440	740	200	50	4	M12	190	250	4	13.9	1176
										180L	370.5	55	SS	470	1180	0	55	317	100	440	740	200	50	4	M12	190	250	4	13.9	1281
										200LA	395.5	55	SS	530	1250	10	74	342	115	490	840	250	63	4	M16	205	205	4	13.9	1369
										200L	395.5	55	SS	530	1250	10	74	342	115	490	840	250	63	4	M16	205	205	4	13.9	1349.5
										225S	402	55	SS	530	1250	10	65	342	115	490	840	250	63	4	M16	205	205	4	13.9	1366
										225MA	414.5	55	SS	530	1250	10	65	342	115	490	840	250	63	4	M16	205	205	4	13.9	1410
										225M	414.5	55	SS	530	1250	10	65	342	115	490	840	250	63	4	M16	205	205	4	13.9	1463.5
										250SA	463.5	60	SS	530	1250	10	74	370	115	490	840	250	63	4	M16	205	205	4	21.0	1481.5
										250M	452.5	55	SS	530	1250	10	74	370	115	490	840	250	63	4	M16	205	205	4	13.9	1527

Dimension Table

Dimension Table for 4P Motor Drive

Pump Sizes	Pump									Motor				Base Plate								Foundation Dimensions								Coupling		Refer.						
	Bore		Dimension				Axle		Weight		Frame	Dimension			Base Plate								Foundation Dimensions								Coupling							
	DN1	DN2	a	f	h1	h2	d1	Grade	Grade			R	d2	Mate- rial	b3	I3	A	Wt.	h3	i	b2	I2	M	N	P	Q	V1	V2	t	Wt.								
	mm	mm	mm	mm	mm	mm	mm	L	R	---	mm	mm	---	mm	mm	mm	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg	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	FC	370	740	0	19.2	157	30	330	550	200	50	4	M12	95	95	3	1.1	681								
										80	140	19	FC	370	740	0	18.9	157	30	330	550	200	50	4	M12	95	95	3	1.1	726								
										80M	140	19	FC	370	740	0	18.9	157	30	330	550	200	50	4	M12	95	95	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	FC	370	740	0	20	177	30	330	550	200	50	4	M12	95	95	3	1.1	681								
										80	140	19	FC	370	740	0	19.7	177	30	330	550	200	50	4	M12	95	95	3	1.1	726								
										80M	140	19	FC	370	740	0	19.7	177	30	330	550	200	50	4	M12	95	95	3	1.1	705								
										90L	169	24	FC	370	740	0	19	177	30	330	550	200	50	4	M12	95	95	3	1.1	776								
										71M	120	14	FC	370	740	0	21.2	205	30	330	550	200	50	4	M12	95	95	3	1.1	701								
32-200 40-200 50-160 65-150	50 65 80 80	32 40 50 56	80 80 100 100	360 360 360 360	160 160 160 160	180 180 180 180	24 24 24 24	36 37 32 34	38 39 33 36	80	140	19	FC	370	740	0	20.9	205	30	330	550	200	50	4	M12	95	95	3	1.1	746								
										80M	140	19	FC	370	740	0	20.9	205	30	330	550	200	50	4	M12	95	95	3	1.1	725								
										90L	168.5	24	FC	370	740	0	20.1	205	30	330	550	200	50	4	M12	95	95	3	1.1	796								
										100L	193	28	FC	370	740	0	20.4	205	30	330	550	200	50	4	M12	95	95	3	1.6	838								
										112M	200	28	FC	370	740	0	20.1	205	30	330	550	200	50	4	M12	95	95	3	1.9	855								
50-200 65-190	80 80	50 65	100 100	360 360	160 160	200 200	24 24	37 41	39 43	80	140	19	FC	370	740	0	21.7	205	30	330	550	200	50	4	M12	95	95	3	1.1	746								
										80M	140	19	FC	370	740	0	20.9	205	30	330	550	200	50	4	M12	95	95	3	1.1	725								
										90L	168.5	24	FC	370	740	0	20.1	205	30	330	550	200	50	4	M12	95	95	3	1.1	796								
										100L	193	28	FC	370	740	0	20.4	205	30	330	550	200	50	4	M12	95	95	3	1.6	838								
										112M	200	28	FC	370	740	0	20.1	205	30	330	550	200	50	4	M12	95	95	3	1.9	855								
80-150	100	80	100	470	160	200	32	47	49	90L	169	24	SS	320	870	0	30	250	90	290	600	200	50	4	M12	150	120	3	3.2	906								
										100L	193	28	SS	320	870	0	30	250	90	290	600	200	50	4	M12	150	120	3	3.2	948								
										112M	200	28	SS	320	870	0	29	250	90	290	600	200	50	4	M12	150	120	3	3.2	965								
										132S	239	38	SS	350	1000	0	33	250	110	320	660	200	50	4	M12	170	170	3	3.2	1027								
										80	140	19	FC	520	900	0	33.8	225	5	480	700	200	50	4	M12	100	100	3	3.2	881								
32-250 40-250 50-250 65-240 80-190	50 65 80 80 100	32 40 50 65 80	100 100 100 100 100	470 470 470 470 470	180 180 180 180 180	225 225 225 225 225	32 32 32 32 32	49 50 52 55 52	51 53 54 58 56	80M	140	19	FC	520	900	0	33.8	225	5	480	700	200	50	4	M12	100	100	3	3.2	860								
										90L	168.5	24	FC	520	900	0	33	225	5	480	700	200	50	4	M12	100	100	3	3.2	931								
										100L	193	28	FC	520	900	0	33.4	225	5	480	700	200	50	4	M12	100	100	3	3.2	973								
										112M	200	28	FC	520	900	0	30.6	225	5	480	700	200	50	4	M12	100	100	3	3.2	990								
										132S	239	38	FC	520	930	0	33.9	225	0	480	740	200	50	4	M12	95	95	3	3.2	1052								
80-240 100-190	100 125	80 100	100 125	470 470	200 200	250 280	32 32	63 64	62 67	132M	258	38	FC	520	930	0	33.9	225	0	480	740	200	50	4	M12	95	95	3	5.4	1090								
										160M	323	42	SS	470	1120	0	45	270	115	440	740	200	50	4	M12	190	190	3	5.4	1206								
										100L	193	28	FC	520	900	0	34	245	5	480	700	200	50	4	M12	100	100	3	3.2	973								
										112M	200	28	FC	520	900	0	33.6	245	5	480	700	200	50	4	M12	100	100	3	3.2	990								
										132S	239	38	FC	520	930	0	35	245	0	480	740	200	50	4	M12	95	95	3	3.2	1052								
50-315	80	50	100	470	225	280	32	70	71	132M	258	38	FC	520	930	0	36.3	270	0	480	740	200	50	4	M12	95	95	3	3.2	1027								
										132M	258	38	FC	520	930	0	36.3	270	0	480	740	200	50	4	M12	95	95	3	5.4	1065								
										160M	323	42	SS	470	1120	0	51	315	115	440	740	200	50	4	M12	190	190	3	5.4	1181								

Dimension Table

Dimension Table for 4P Motor Drive

Pump Sizes	Pump									Motor			Base Plate				Foundation Dimensions										Coupling		Refer.	
	Bore		Dimension				Axle		Weight		Frame	Dimension																		
	DN1	DN2	a	f	h1	h2	d1	Grade L	Grade R	R		d2	Mate- rial	b3	I3	A	Wt.	h3	i	b2	I2	M	N	P	Q	V1	V2	t	Wt.	TL
	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	mm	mm
	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	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	SS	590	1250	10	90	435	95	550	840	250	63	4	M16	205	205	3	9.0	1263.5
										180MC	351.5	48	SS	590	1250	10	90	435	95	550	840	250	63	4	M16	205	205	3	9.0	1365
										180M*	351.5	48	SS	590	1250	10	90	435	95	550	840	250	63	4	M16	205	205	3	9.0	1337
										180M**	351.5	55	SS	590	1250	10	90	435	95	550	840	250	63	4	M16	205	205	4	13.9	1279
										180LC	370.5	48	SS	590	1250	10	90	435	95	550	840	250	63	4	M16	205	205	3	9.0	1403
										180L*	370.5	55	SS	590	1250	10	90	435	95	550	840	250	63	4	M16	205	205	4	13.9	1376
										180L**	400.5	60	SS	590	1250	10	90	435	95	550	840	250	63	4	M16	205	205	4	21.0	1367
										200M	406.5	65	SS	590	1400	10	99	435	120	550	940	250	63	4	M16	230	230	4	21.0	1401.5
										200LC	395.5	55	SS	590	1400	10	99	435	120	550	940	250	63	4	M16	230	230	4	13.9	1464
										200L*	395.5	55	SS	590	1400	10	99	435	120	550	940	250	63	4	M16	230	230	4	13.9	1489.5
										200L**	425.5	60	SS	590	1400	10	99	435	120	550	940	250	63	4	M16	230	230	4	21.0	1474.5
										225SC	432	60	SS	590	1400	10	95	435	120	550	940	250	63	4	M16	230	230	4	21.0	1510
										225S*	432	60	SS	590	1400	10	95	435	120	550	940	250	63	4	M16	230	230	4	21.0	1566
										225S**	432	65	SS	590	1400	10	95	435	120	550	940	250	63	4	M16	230	230	4	21.0	1491
										225S***	432	75	SS	590	1400	10	95	435	120	550	940	250	63	4	M16	230	230	4	31.0	1551
										225MC	444.5	60	SS	590	1400	10	95	435	120	550	940	250	63	4	M16	230	230	4	21.0	1535
										225M*	444.5	60	SS	590	1400	10	95	435	120	550	940	250	63	4	M16	230	230	4	21.0	1588.5
										225M**	444.5	75	SS	590	1400	10	95	435	120	550	940	250	63	4	M16	230	230	4	31.0	1551
										250SC	463.5	70	SS	640	1450	10	107	435	120	600	940	250	63	4	M16	230	280	4	31.0	1576.5
										250S*	463.5	75	SS	640	1450	10	107	435	120	600	940	250	63	4	M16	230	280	4	31.0	1574
										250MC	482.5	70	SS	640	1450	10	107	435	120	600	940	250	63	4	M16	230	280	4	31.0	1614.5
										250M*	482.5	65	SS	640	1450	10	107	435	120	600	940	250	63	4	M16	230	280	4	21.0	1627.5
										250M**	482.5	75	SS	640	1450	10	107	435	120	600	940	250	63	4	M16	230	280	4	31.0	1652
										280SB	544	80	SS	710	1600	10	109	435	160	670	1060	250	63	4	M16	270	270	4	45.0	1765.5
										280S	514	75	SS	710	1600	10	109	435	160	670	1060	250	63	4	M16	270	270	4	31.0	1718.5
										280M*	539.5	75	SS	710	1600	10	109	435	160	670	1060	250	63	4	M16	270	270	4	31.0	1769.5
										280M**	569.5	85	SS	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	150 160 160 150	160 160 160 160	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	SS	590	1250	10	90	435	95	550	840	250	63	4	M16	205	205	3	9.0	1365
										180M*	351.5	48	SS	590	1250	10	90	435	95	550	840	250	63	4	M16	205	205	3	9.0	1337
										180M**	351.5	55	SS	590	1250	10	90	435	95	550	840	250	63	4	M16	205	205	4	13.9	1279
										180LC	370.5	48	SS	590	1250	10	90	435	95	550	840	250	63	4	M16	205	205	3	9.0	1403
										180L*	370.5	55	SS	590	1250	10	90	435	95	550	840	250	63	4	M16	205	205	4	13.9	1376
										180L**	400.5	60	SS	590	1250	10	90	435	95	550	840	250	63	4	M16	205	205	4	21.0	1367
										200M	406.5	65	SS	590	1400	10	99	435	120	550	940	250	63	4	M16	230	230	4	21.0	1401.5
										200LC	395.5	55	SS	590	1400	10	99	435	120	550	940	250	63	4	M16	230	230	4	13.9	1464
										200L*	395.5	55	SS	590	1400	10	99	435	120	550	940	250	63	4	M16	230	230	4	13.9	1489.5
										200L**	425.5	60	SS	590	1400	10	99	435	120	550	940	250	63	4	M16	230	230	4	21.0	1474.5
										225SC	432	60	SS	590	1400	10	95	435	120	550	940	250	63	4	M16	230	230	4	21.0	1510
										225S*	432	60	SS	590	1400	10	95	435	120	550	940	250	63	4	M16	230	230	4	21.0	1566
										225S**	432	65	SS	590	1400	10	95	435	120	550	940	250	63	4	M16	230	230	4	21.0	1491
										225S***	432	75	SS	590	1400	10	95	435	120	550	940	250	63	4	M16	230	230	4	31.0	1551
										225MC	444.5	60	SS	590	1400	10	95	435	120	550	940	250	63	4	M16	230	230	4	21.0	1535
225M*	444.5	60	SS	590	1400	10	95	435	120	550	940	250	63	4	M16	230	230	4	21.0	1588.5										
225M**	444.5	75	SS	590	1400	10	95	435	120	550	940	250	63	4	M16	230	230	4	31.0	1551										
250SC	463.5	70	SS	640	1450	10	107	435	120	600	940	250	63	4	M16	230	280	4	31.0	1576.5										
250S*	463.5	75	SS	640	1450	10	107	435	120	600	940	250	63	4	M16	230	280	4	31.0	1574										
250S**	493.5	85	SS	640	1400	10	99	435	120	600	940	250	63	4	M16	230	230	4	45.0	1551										
250MC	482.5	70	SS	640	1450	10	107	435	120	600	940	250	63	4	M16	230	280	4	31.0	1614.5										
250M*	482.5	65	SS	640	1450	10	107	435	120	600	940	250	63	4	M16	230	280	4	21.0	1627.5										
250M**	482.5	75	SS	640	1450	10	107	435	120	600	940	250	63	4	M16	230	280	4	31.0	1652										
250M***	512.5	85	SS	640	1400	10	99	435	120	600	940	250	63	4	M16	230	230	4	45.0	1606										
280SB	544	80	SS	710	1600	10	109	435	160	670	1060	250	63	4	M16	270	270	4	45.0	1765.5										
280S*	514	75	SS	710	1600	10	109	435	160	670	1060	250	63	4	M16	270	270	4	31.0	1718.5										
280S**	544	85	SS	710	1600	10	109	435	160	670	1060	250	63	4	M16	270	270	4	45.0	1726										
280MB	569.5	80	SS	710	1600	10	109	435	160	670	1060	250	63	4	M16	270	270	4	45.0	1816										
280M*	539.5	75	SS	710	1600	10	109	435	160	670	1060	250	63	4	M16	270	270	4	31.0	1769.5										
280M**	569.5	85	SS	710	1600	10	109	435	160	670	1060	250	63	4	M16	270	270	4	45.0	1777										
315SB	589	85	SS	710	1600	10	109	445	160	670	1060	250	63	4	M16	270	270	4	61.0	1855										

Motor Paremeter Comparison Table by Motor Type

2P Motor

Frame size	Center height	Shaft dia.	Totally enclosed fan-cooled (TU motor)		Drip-proof		Increased-safety explosion-proof		Flame-proof	
	R	d2	Output	Weight	Output	Weight	Output	Weight	Output	Weight
---	mm	mm	kW	kg	kW	kg	kW	kg	kW	kg
71M	120	14	0.4	7	-	-	0.4	7.2	0.4	17
80	140	19	-	-	-	-	-	-	-	-
80M	140	19	0.75	18	0.75	9	0.75	11.5	0.75	26
90S	156	24	-	-	-	-	-	-	-	-
90L	168.5	24	1.5	27.5	1.5	15.5	1.5	18.5	1.5	29
100L	193	28	2.2	28	2.2	16	-	-	-	42
112M	200	28	3.7	47	3.7	27	3.7	40	3.7	58
132S	239	38	5.5	73	5.5	34	5.5	60	5.5	74
160M	323	42	11	133	11	65	7.5	85	11	125
160L*	345	42	15	135	15	75	-	-	15	15
160L**	345	48	-	-	22	105	-	-	-	-
180M*	351.5	48	22	235	-	-	15	150	22	205
180MA	351.5	48	-	-	-	-	-	-	-	-
180M**	351.5	55	-	-	30	120	-	-	-	-
180L	370.5	55	30	248	37	190	-	-	-	-
200LA	395.5	55	-	-	-	-	-	-	-	-
200L	395.5	55	37	333	45	357	-	-	240	345
225S	402	55	55	467	-	-	30	310	37	390
225MA	414.5	55	-	-	-	-	-	-	-	-
225M	414.5	55	-	-	-	-	-	-	45	450
250SA	463.5	60	-	-	-	-	-	-	-	-
250M	452.5	55	-	-	-	-	45	550	55	590

6P Motor

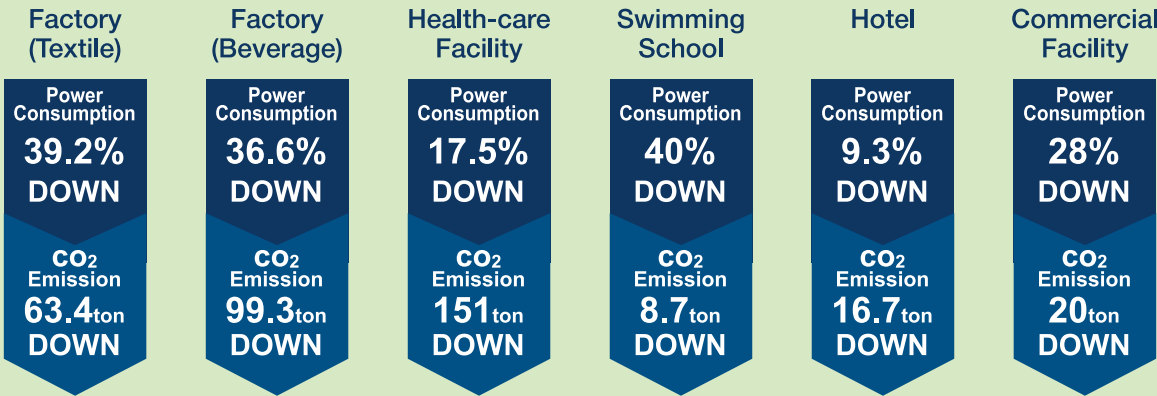
Frame size	Center height	Shaft dia.	Totally enclosed fan-cooled (TU motor)		Drip-proof		Increased-safety explosion-proof		Flame-proof	
	R	d2	Output	Weight	Output	Weight	Output	Weight	Output	Weight
---	mm	mm	kW	kg	kW	kg	kW	kg	kW	kg
100L	193	28	1.5	38	-	-	-	-	-	-
112M	200	28	2.2	46	-	-	-	-	-	-
132S	239	38	3.7	68	-	-	-	-	-	-
132M	258	38	5.5	79	-	-	-	-	-	-
160M	323	42	7.5	125	-	-	-	-	-	-
160L	345	42	11	140	-	-	-	-	-	-
180M	351.5	48	15	250	-	-	-	-	-	-
180L	370.5	55	18.5	225	-	-	-	-	-	-
200L	425.5	60	30	385	-	-	-	-	-	-
225S	432	65	45	500	-	-	-	-	-	-
250S	463.5	75	55	565	-	-	-	-	-	-
250M	482.5	75	75	640	-	-	-	-	-	-
280S	544	85	90	750	-	-	-	-	-	-
280M	569.5	85	110	725	-	-	-	-	-	-

4P Motor

Frame size	Center height	Shaft dia.	Totally enclosed fan-cooled (TU motor)		Drip-proof		Increased-safety explosion-proof		Flame-proof	
	R	d2	Output	Weight	Output	Weight	Output	Weight	Output	Weight
---	mm	mm	kW	kg	kW	kg	kW	kg	kW	kg
71M	120	14	0.4	8	-	-	0.4	9	0.4	17
80	140	19	-	-	-	-	-	-	-	-
80M	140	19	0.75	11	0.75	10.5	0.75	12	0.75	28
90L	168.5	24	1.5	20	1.5	16	1.5	20	1.5	30
100L	193	28	2.2	25	2.2	22	2.2	33	2.2	45
112M	200	28	3.7	37	3.7	30	3.7	41	3.7	58
132S	239	38	5.5	49	5.5	40	5.5	60	5.5	77
132M	258	38	7.5	60	7.5	51	7.5	74	7.5	95
160M	323	42	11	85	11	70	11	98	11	115
160L*	345	42	15	105	15	85	15	115	15	145
160L**	345	48	-	-	18.5	110	-	-	-	-
180MC	351.5	48	-	-	-	-	-	-	-	-
180M*	351.5	48	18.5	130	-	-	18.5	165	18.5	200
180M**	351.5	55	-	-	22	125	-	-	-	-
180LC	370.5	48	-	-	-	-	-	-	-	-
180L*	370.5	55	30	175	-	-	-	-	-	-
200LC	395.5	55	-	-	-	-	-	-	-	-
200L*	395.5	55	-	-	-	-	-	-	30	375
200L**	425.5	60	37	230	-	-	22	230	-	-
180L**	400.5	60	-	-	37	195	-	-	-	-
225SC	432	60	-	-	-	-	-	-	-	-
225S*	432	60	-	-	-	-	-	-	37	440
225S**	432	65	55	275	-	-	30	295	-	-
200M	406.5	65	-	-	55	240	-	-	-	-
225MC	444.5	60	-	-	-	-	-	-	-	-
225M	444.5	60	-	-	-	-	-	-	45	500
250SC	463.5	70	-	-	-	-	-	-	-	-
250M*	482.5	65	-	-	-	-	-	-	55	600
250M**	482.5	75	90	520	-	-	45	550	-	-
225S	432	75	-	-	75	350	-	-	-	-
225M	444.5	75	-	-	90	380	-	-	-	-
250S	463.5	75	75	470	-	-	-	-	-	-
250MC	482.5	70	-	-	-	-	-	-	-	-
280SB	544	80	-	-	-	-	-	-	-	-
280S*	514	75	-	-	-	-	-	-	75	780
280M*	539.5	75	-	-	-	-	-	-	90	920
280M**	569.5	85	132	800	-	-	75	800	-	-
250S	493.5	85	-	-	110	500	-	-	-	-
250M***	512.5	85	-	-	132	565	-	-	-	-
280S**	544	85	110	685	-	-	-	-	-	-
280MB	569.5	80	-	-	-	-	-	-	-	-
315SB	589	85	-	-	-	-	-	-	-	-

Potential Energy Saving with the Eco-Pump

The Eco-Pumps reduce power consumption by 10~30%!

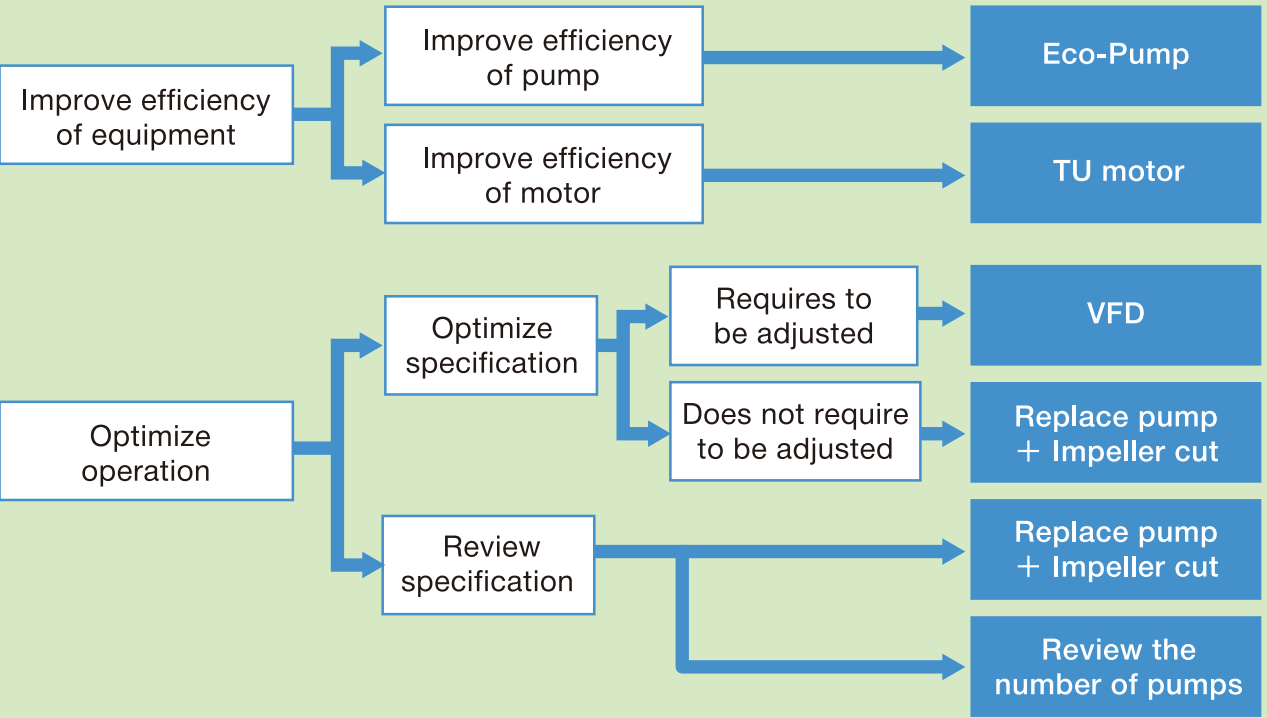


The above figures are a few examples of successfull installation of the Eco-Pumps in various industries.

6 typical examples where big engery savings can be expected:

- Pump flow rate controlled by valve
- Pump operating at fixed speed
- Pump with high annual operating hours
- Pump with oversized motor
- Old pump
- Pump for new facility

We propose several solutions depending on your situation:



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Would you like to try to select an Eco-Pump that meets your requirements, look at testimonials, or just learn more about the Eco-Pumps?
Then please visit the Eco-Pump website:
www.torishima.co.jp/en/ecopump/index.html



Note: Totally eclosed fan-cooled motor is only available for TU motor, Torishima Ultra motor.