

# Torishima Pump Global Network



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# CAL (Cast Iron)

# CAR (Stainless Steel)

End-Suction Volute Pump



# Go Green with The Eco-Pumps

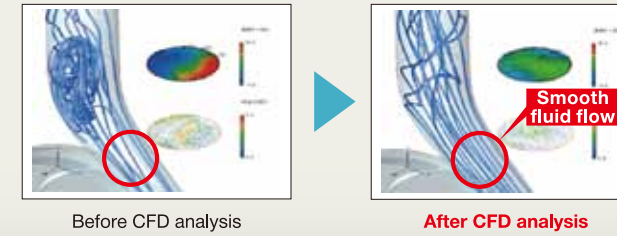


CAL: Cast Iron  
CAR: Stainless Steel  
(10bar)

<b>Energy Saving</b>	<ul style="list-style-type: none"> <li>High-Efficiency Pump</li> <li>Impeller Trimmed to Exactly Meet Customer Specification</li> <li>Ultra High Efficiency Motor (Equivalent to IEC IE3)</li> </ul>
<b>Downsizing</b>	<ul style="list-style-type: none"> <li>Higher Speed Enables Same Duty to be Achieved with Smaller Pump</li> </ul>
<b>Easy Maintenance</b>	<ul style="list-style-type: none"> <li>Simple Maintenance with Mechanical Seals</li> <li>Excellent Parts Interchangeability</li> <li>Back Pull-Out Design</li> </ul>
<b>Convenience</b>	<ul style="list-style-type: none"> <li>Low NPSH (High Suction Performance)</li> <li>Stable Operation</li> </ul>
<b>Safety</b>	<ul style="list-style-type: none"> <li>Shaft Guard and Totally Enclosed Coupling Guard</li> </ul>

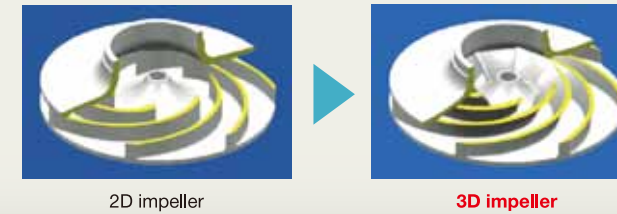
## Optimized Hydraulic Performance

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



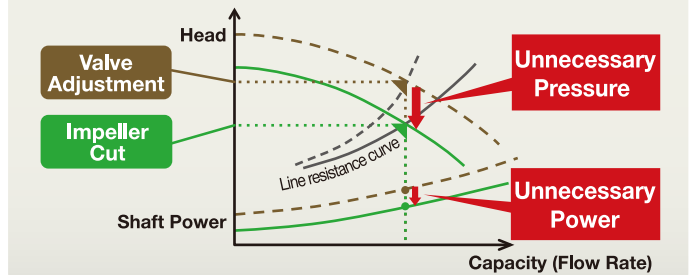
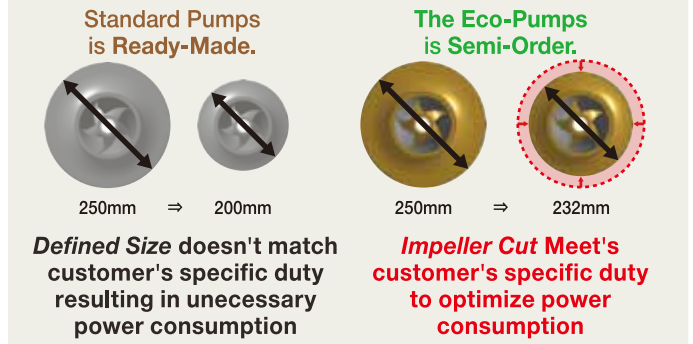
## 3D High-Efficiency Impeller

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.

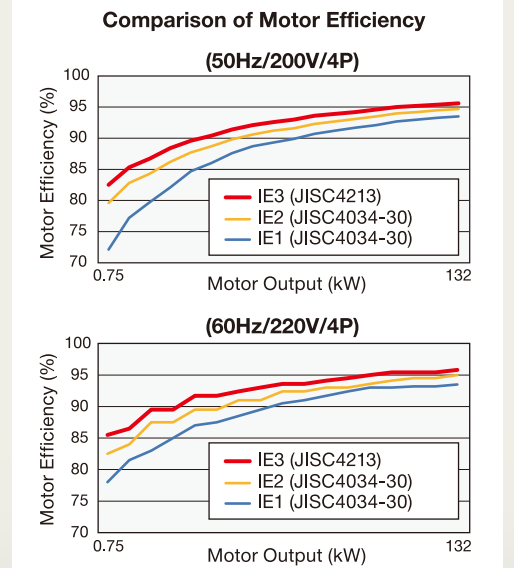


## TU Motor (Torishima Ultra High Efficiency Motor)

IEC (International Electrical 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

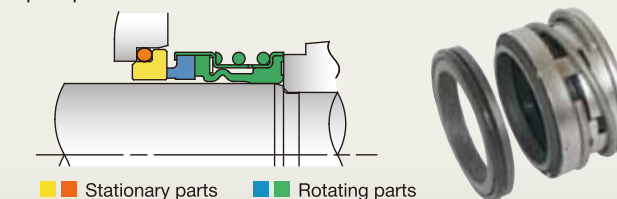
Motors of the following power output are in regular stock.  
2P: 0.75kW to 22kW  
4P: 0.75kW to 55kW



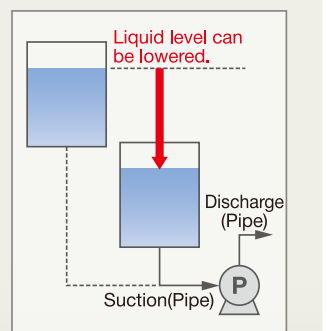
## Mechanical Seal as Standard

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





## 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.

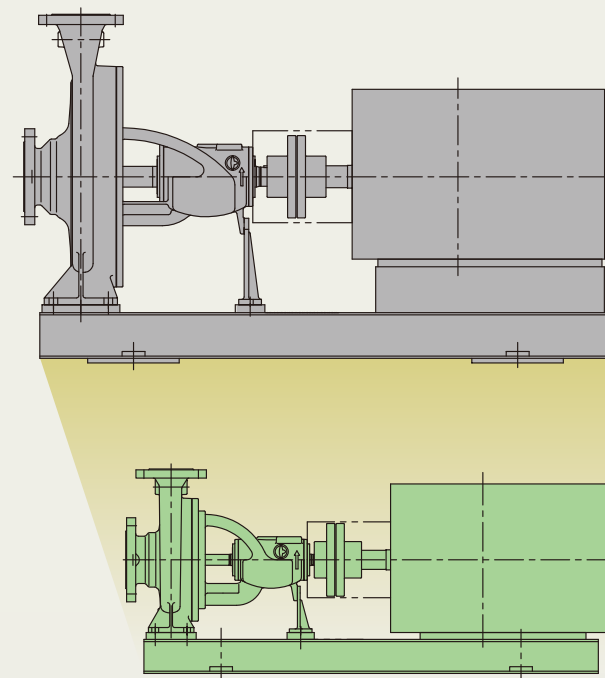
Conditions: total head of 50m, capacity of 1m<sup>3</sup>/min, 60Hz

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.

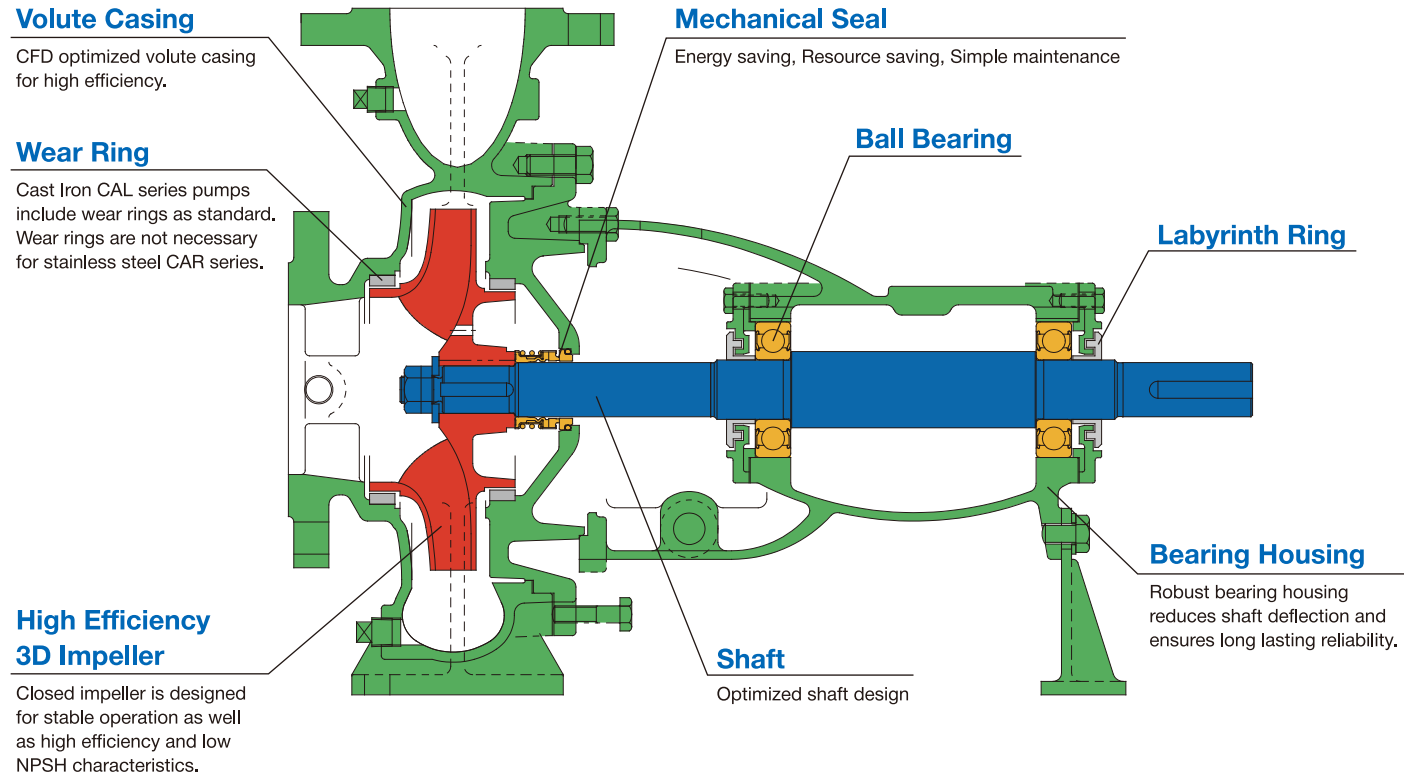
## Applications

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)
	Manufacturing process	Cold water pump, Cooling water pump (Circulation / Boost), Recycle water pump, Filtrate pump, Sprinkling pump
Food and Beverage	Refrigerator	Chilled pump, Defrost pump
	CIP system	CIP supply / return pump
	Degreasing process	Degreasing pump, Hot / Cold water wash pump, Spray pump
Automobile (Painting plant)	Transformation process	Chemical pump, Hot / Cold water wash pump, Pure water pump
	Electrodeposition process	Electrodeposition liquid circulation pump, Wash pump, Pure water pump
	Power generation	Deaerator feed water pump, Condensate pump,
Garbage incinerating plant	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

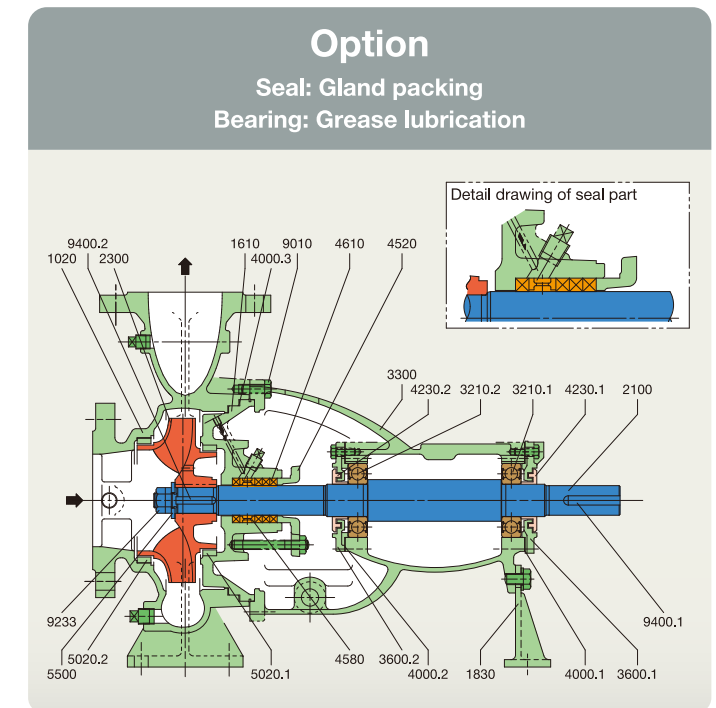
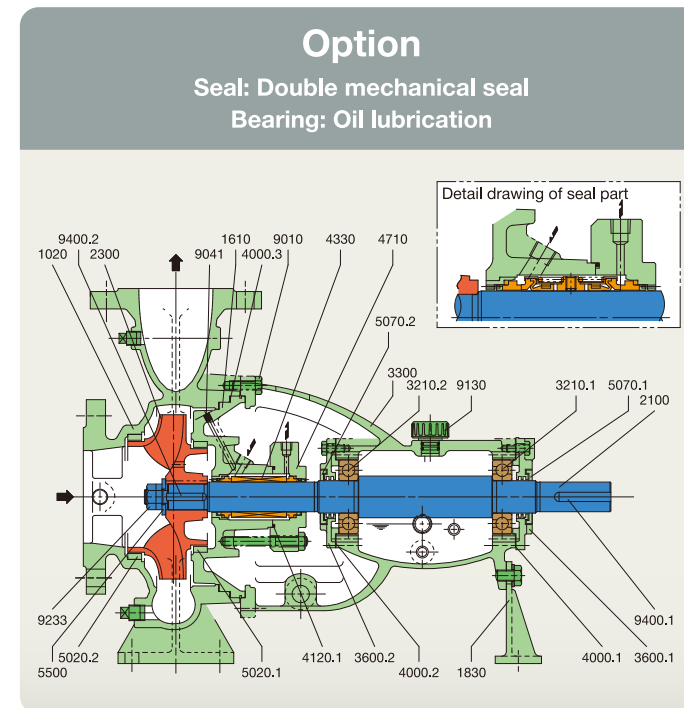
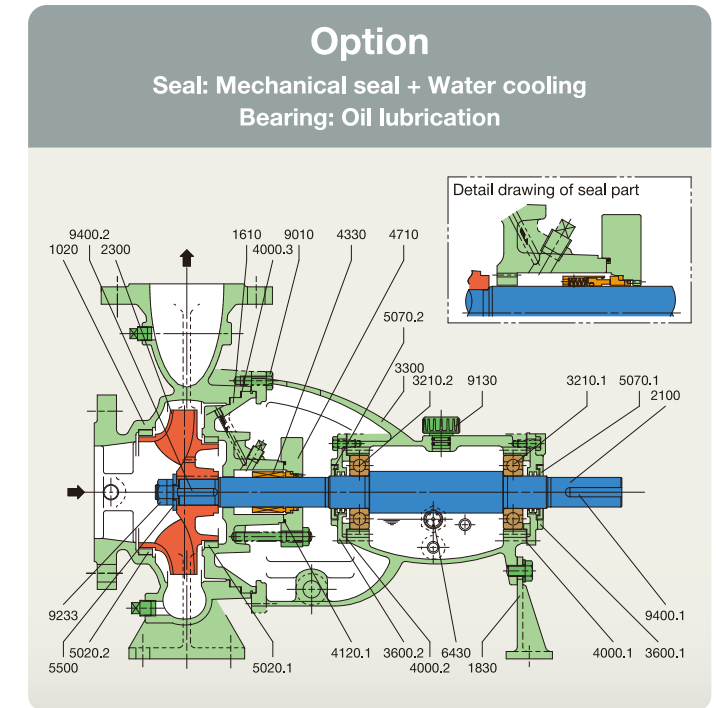
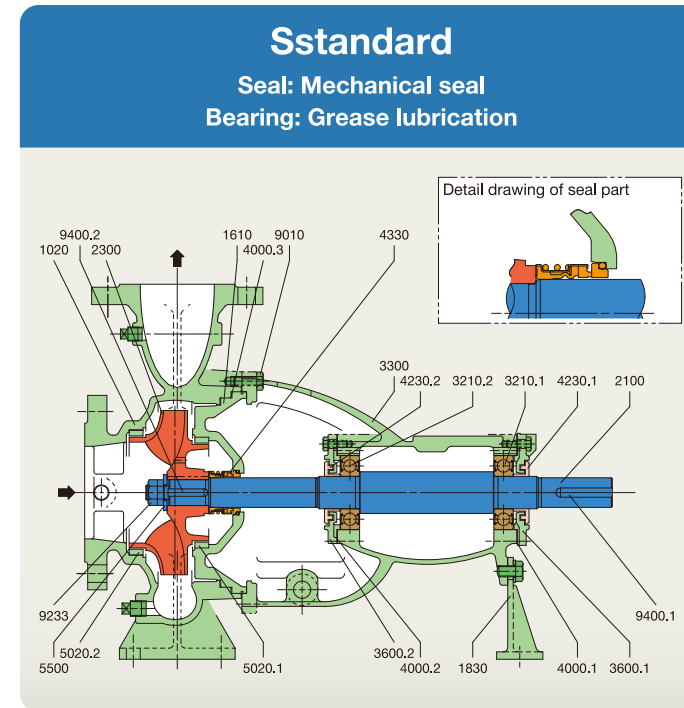
		CAL (Cast Iron) 	CAR (Stainless Steel) 
Handled liquid	Kinds	Clean water, Warm water, Oil, Chemical medicine, Alkaline solution, Brine, Heat transfer media, Abrasive slurry liquid under 3wt%, etc.	Pure water, Hot water, Sea water, Salted water, Refrigerant, Electrodeposition paint, Abrasive slurry liquid 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 <sup>2</sup> G) Option: 1.4MPa (14kgf/cm <sup>2</sup> G)	1MPa (10kgf/cm <sup>2</sup> G)
Max. suction pressure		0.8MPa (8kgf/cm <sup>2</sup> G)	0.8MPa (8kgf/cm <sup>2</sup> 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



# 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.

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

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

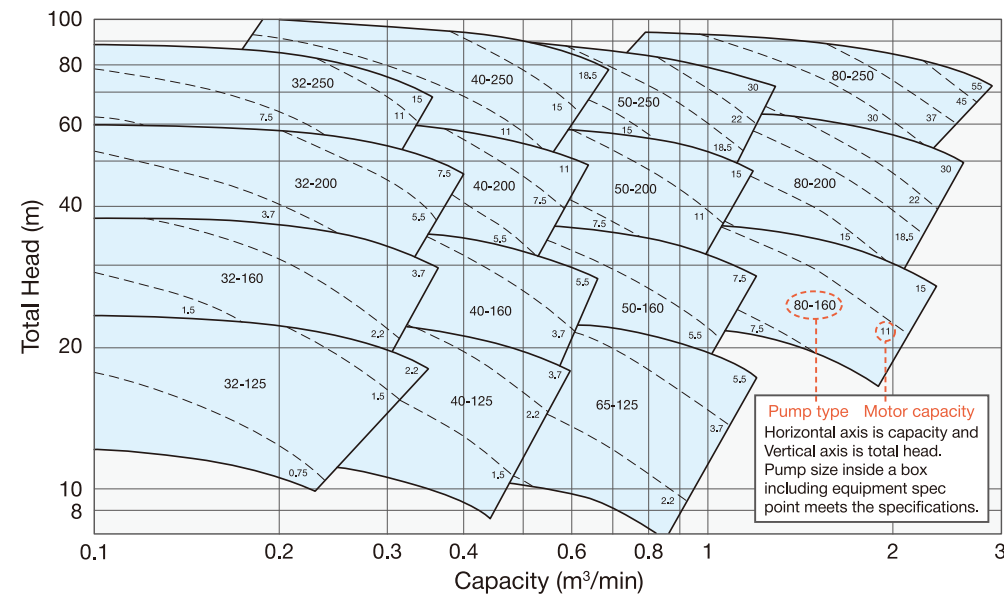
Pump type	Casing	Casing Cover	Bearing Housing	Shaft	Mechanical Seal
32-125	1				
40-125	2	1			
65-125	3				
32-160	4				
40-160	5	2	1	1	1
50-160	6				
65-150	7				
32-200	8				
40-200	9	3			
50-200	10				
65-190	11				
80-150	12	4			
80-190	13				
100-190	14	5			
32-250	15				
40-250	16	6			
50-250	17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

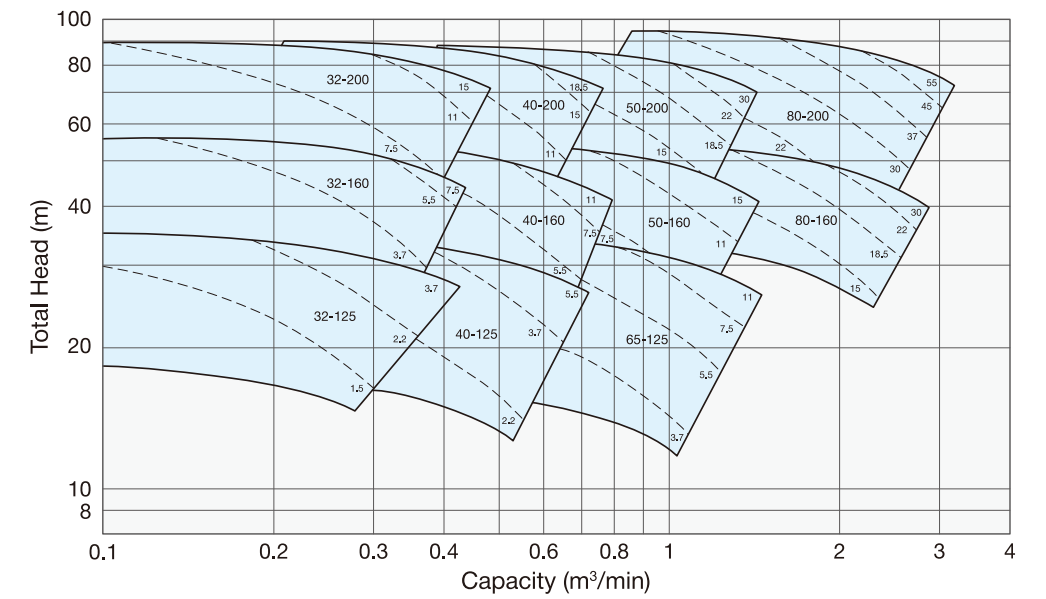


# CAL (Cast Iron) Selection Range Charts

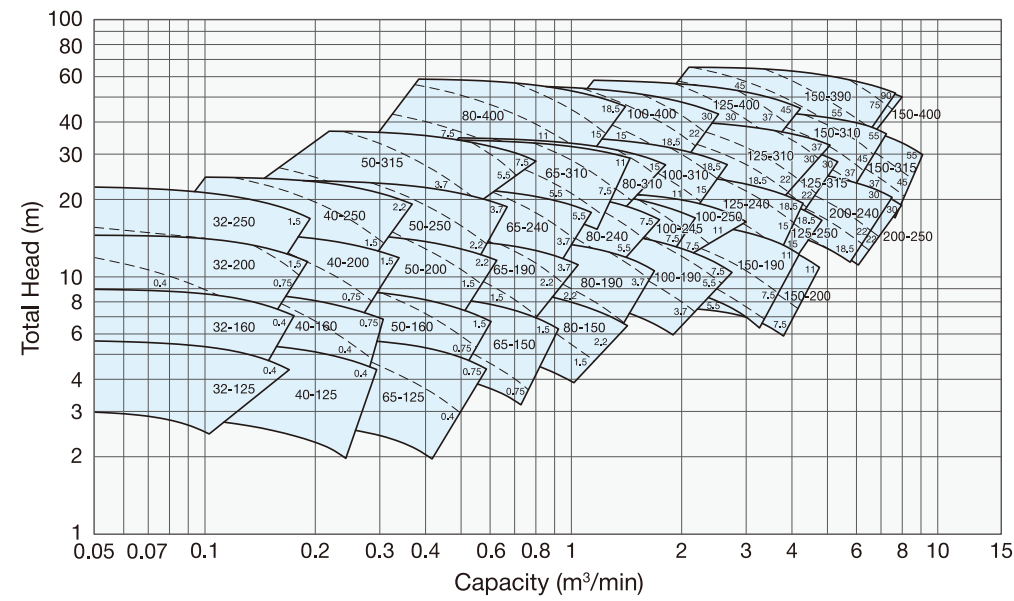
**50Hz-2P  
(3000min<sup>-1</sup>)**



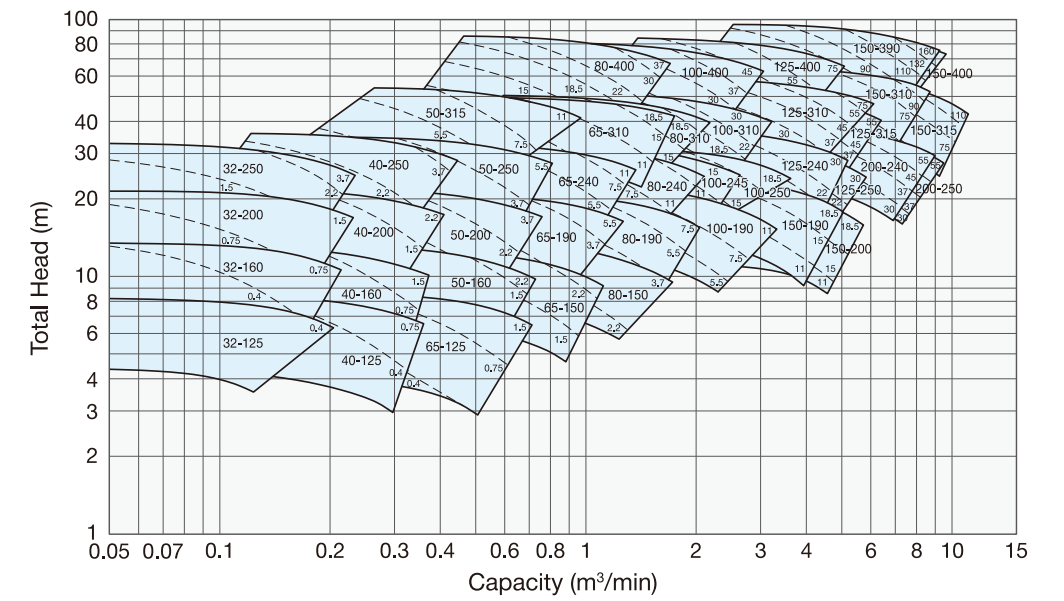
**60Hz-2P  
(3600min<sup>-1</sup>)**



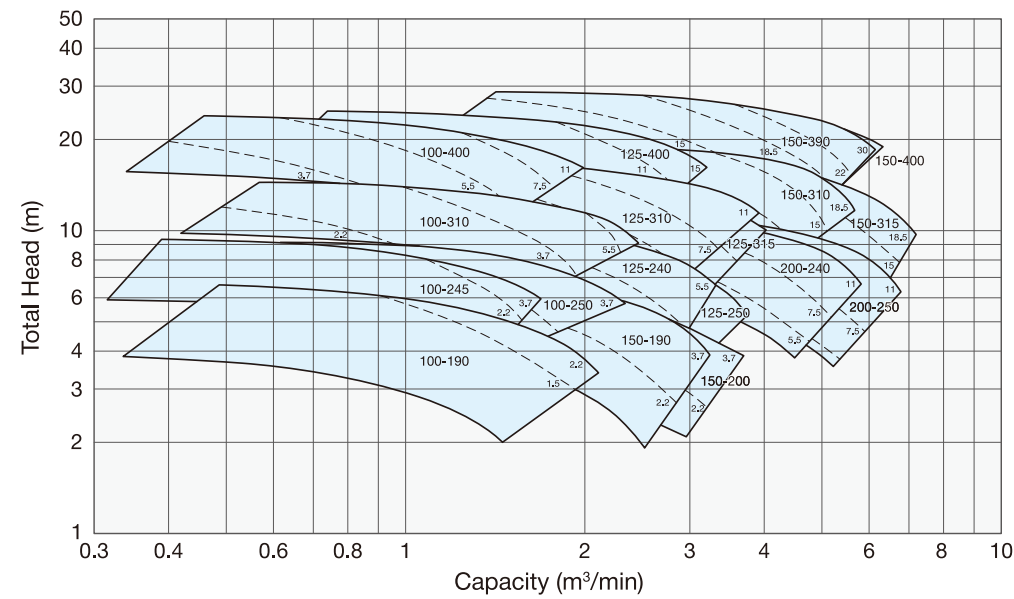
**50Hz-4P  
(1500min<sup>-1</sup>)**



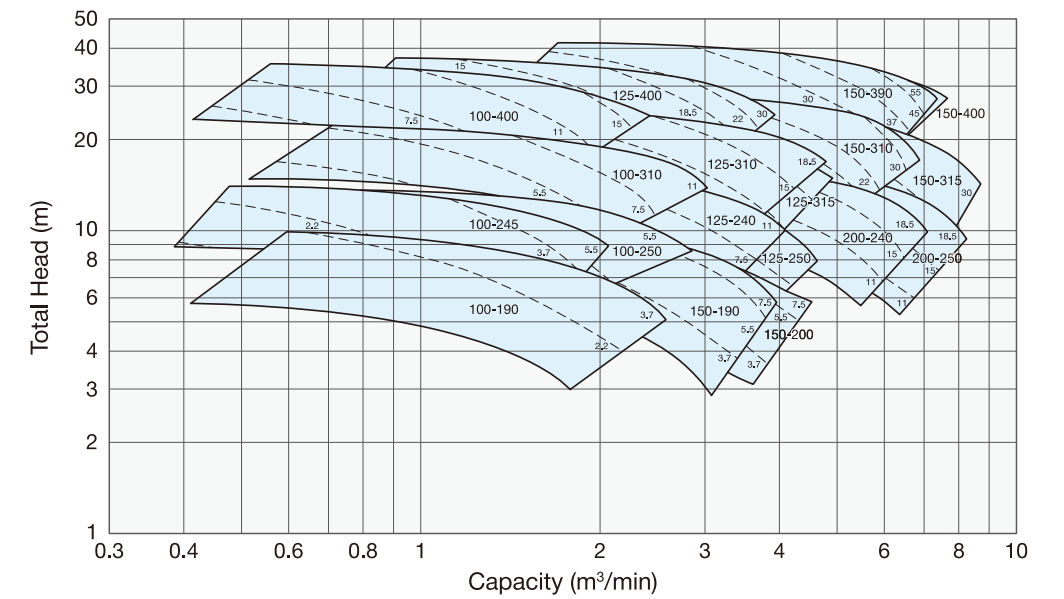
**60Hz-4P  
(1800min<sup>-1</sup>)**



**50Hz-6P  
(1000min<sup>-1</sup>)**

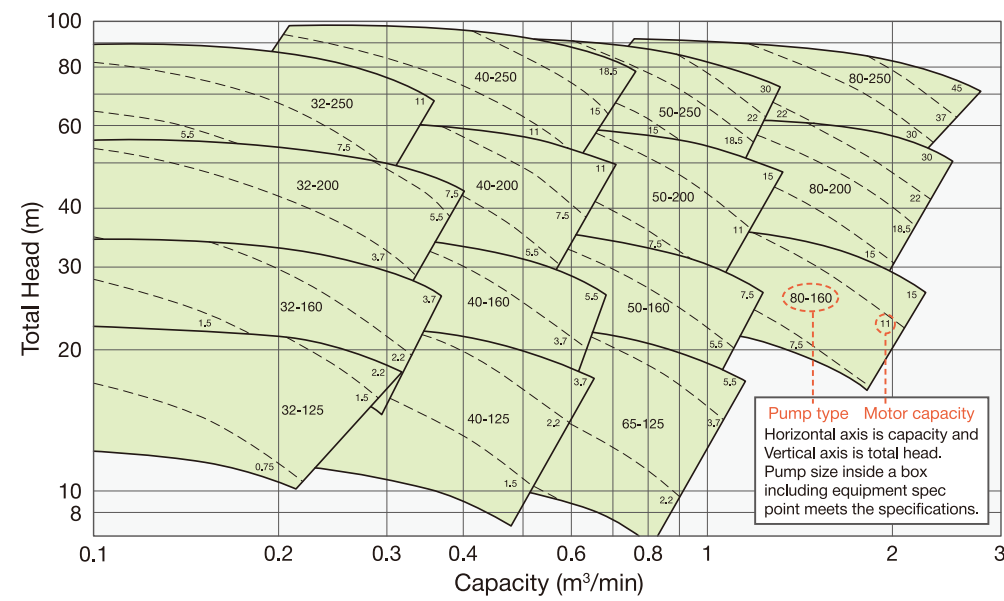


**60Hz-6P  
(1200min<sup>-1</sup>)**

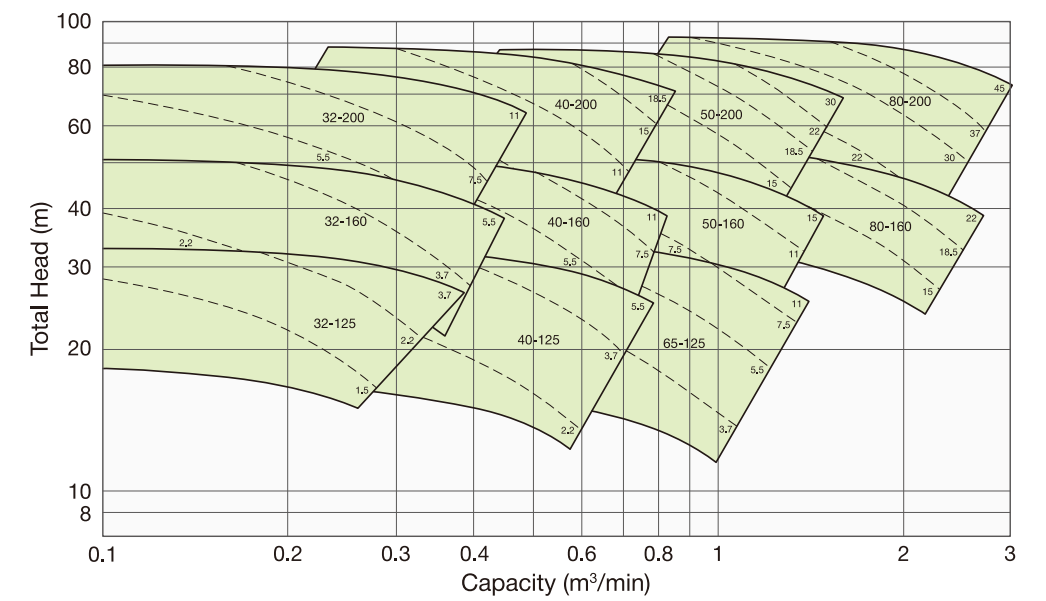


# CAR (Stainless Steel) Selection Range Charts

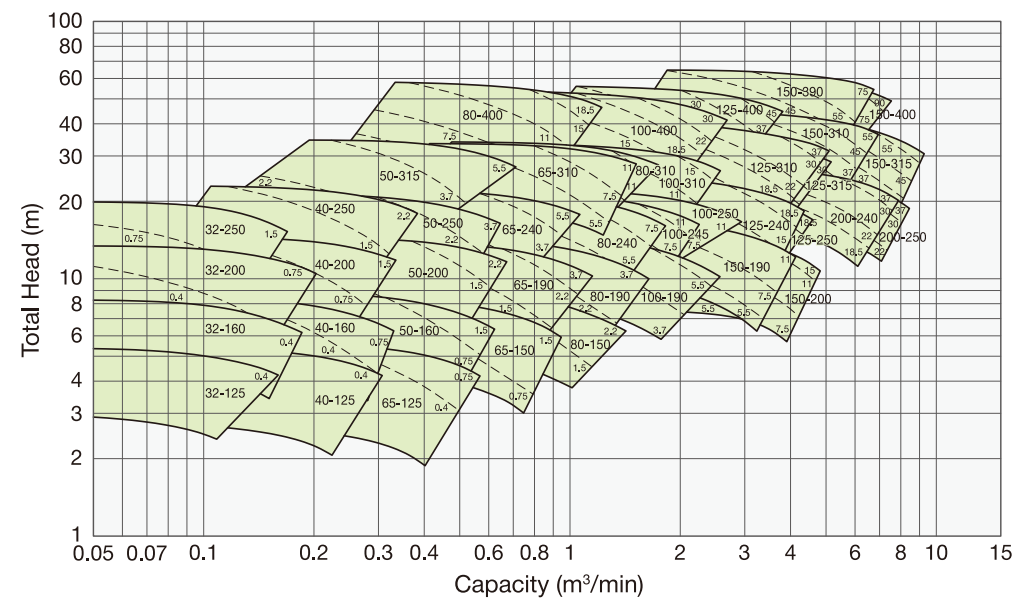
**50Hz-2P  
(3000min<sup>-1</sup>)**



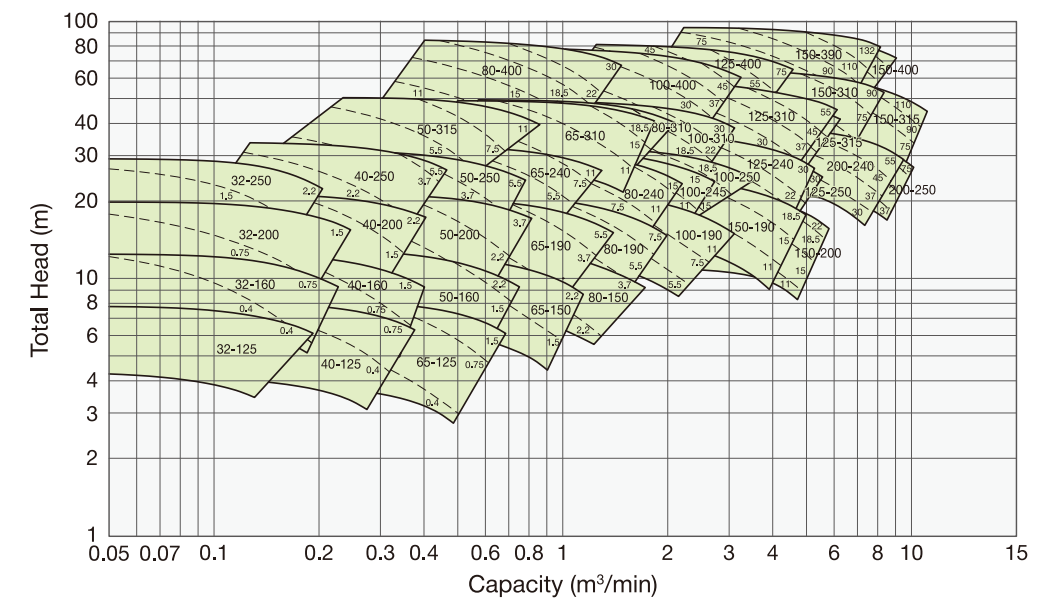
**60Hz-2P  
(3600min<sup>-1</sup>)**



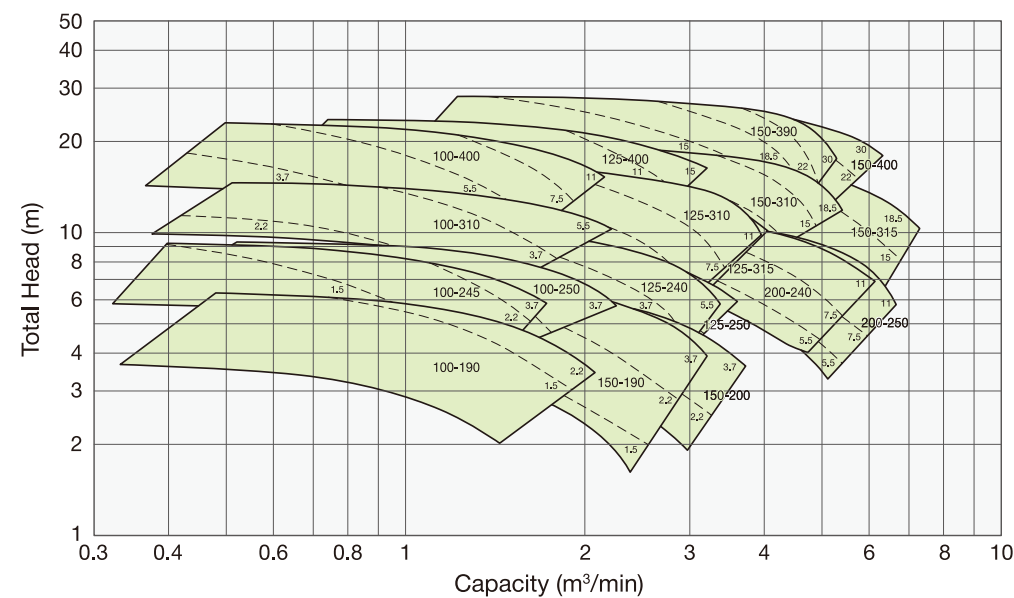
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(1500min<sup>-1</sup>)**



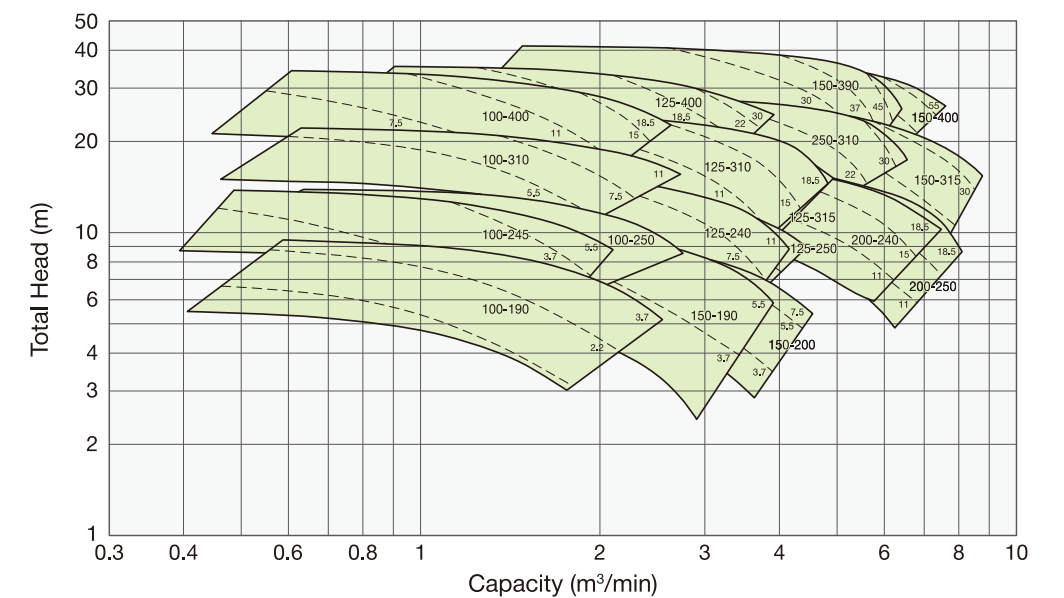
**60Hz-4P  
(1800min<sup>-1</sup>)**



**50Hz-6P  
(1000min<sup>-1</sup>)**



**60Hz-6P  
(1200min<sup>-1</sup>)**



# Dimension Table

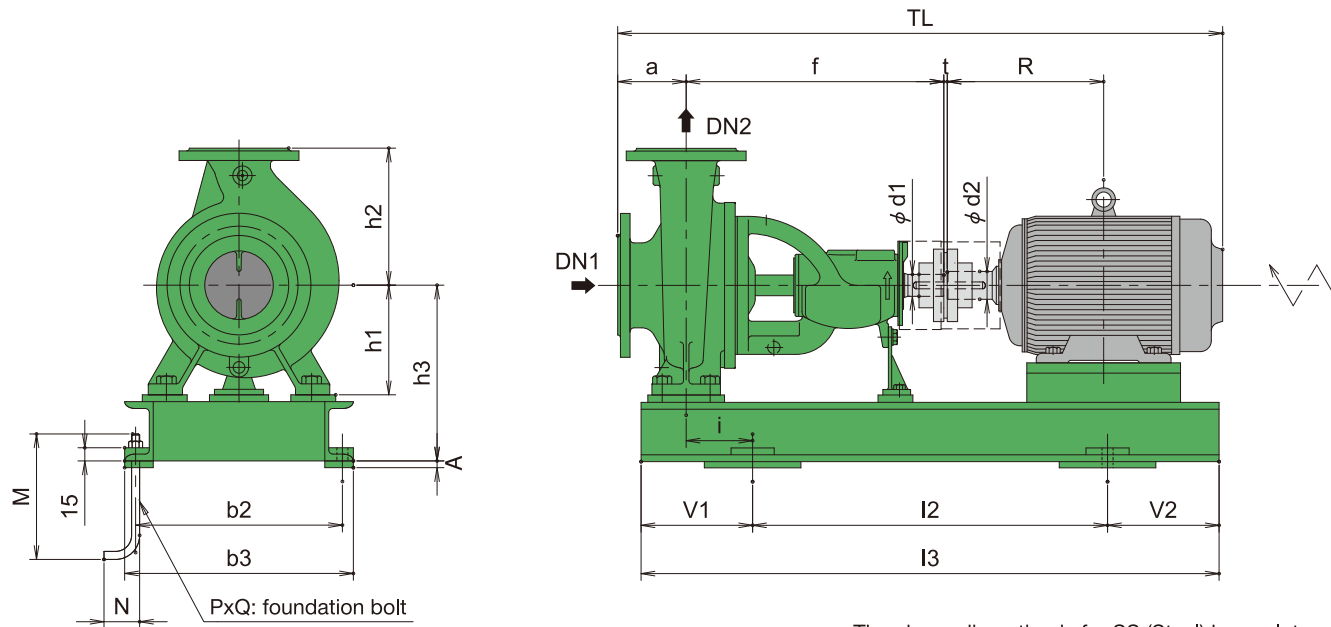
- Flange standard CAL: JIS10K RF / CAR: JIS10K RF
- Dimension in the table is based on totally enclosed fan-cooled motor.  
Note: Motor size and frame depends on manufacturer selected.
- \*/\*\* in the table indicate that motor frame is the same but shaft diameter (d2) is different.
- Base plate material 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		Material	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	Grade		R	d2																			
	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
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	917	
										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	
80-160	100	80	125	470	160	225	32	50	52	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	430	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	
80-250	100	80	125	470	225	280	32	67	70	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	
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	20.4	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											
80-250	100	80	125	470	160	225	32	50	52	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	
										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	
32-250 40-250 50-250 80-200	50 65 80 100	32 40 50 80	80 80 100 125	470 470 470 470	160 180 180 250	225 225 225 32	32 32 32 32	54 55 57 60	56 58 59 62	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	
										180																					



# 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												t		Wt.	TL
	DN1	DN2	a	f	h1	h2	d1	Grade	Grade	R		d2	Material	b3	I3	A	Wt.	h3	i	b2	I2	M	N	P	Q	V1	V2							
	mm	mm	mm	mm	mm	mm	mm	L	R	mm		mm	mm	mm	mm	mm	kg	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	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	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				
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 53 55 56	51 54 53 58 56	80	140	19	FC	520	900	0	33.8	225	5	480	700	200	50	4	M12	100	100	3	3.2	881				
										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				
80-240 100-190	100 125	80 100	100 125	470 470	200 200	250 280	32 32	63 64	62 67	132S	239	38	FC	520	930	0	33.9	225	0	480	740	200	50	4	M12	95	95	3	3.2	1052				
										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				
50-315	80	50	100	470	225	280	32	70	71	100L	193	28	FC	520	900	0	35.1	270	5	480	700	200	50	4	M12	100	100	3	3.2	948				
										112M	200	28	FC	520	900	0	34.9	270	5	480	700	200	50	4	M12	100	100	3	3.2	965				
										132S	239	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				
100-245 100-250 65-310 80-310	125 125 80 100	100 100 125 125 80	125 125 125 125 125	470 470 470 470	225 225 225 225	280 280 280 280	32 32 32 32	71 71 76 76	75 75 72 76	112M	200	28	FC	520	900	0	34.9	270	5	480	700	200	50	4	M12	100	100	3	3.2	990				
										132S	239	38	FC	520	930	0	36.3	270	0	480	740	200	50	4	M12	95	95	3	3.2	1052				
										132M	258	38	FC	520	930	0	36.3	270	0	480	740	200	50	4	M12	95	95	3	5.4	1090				
										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	1169				
										180MC	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	1184				
										180LC	370.5	48	SS	470	1180	0	55	317	100	440	740	200	50	4	M12	190	250	3	9.0	1308				
										180L	370.5	55	SS	470	1180	0	55	317	100	440	740	200	50	4	M12	190	250	4	13.9	1281				
										200LC	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	1395				
										200L**	425.5	60	SS	530	1250	10	74	342	115	490	840	250	63	4	M16	205	205	4	21.0	1380				
										100-310	125 100	100 100	125 125	470 470	250 250	315 315	32 32	81 81	91 91	132S	239	38	FC	520	930									





# Motor Parameter 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
---	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	2.2	29.5	-	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	-	-	22	240
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

## 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
---	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	-	-	-	-	-	-	-	-

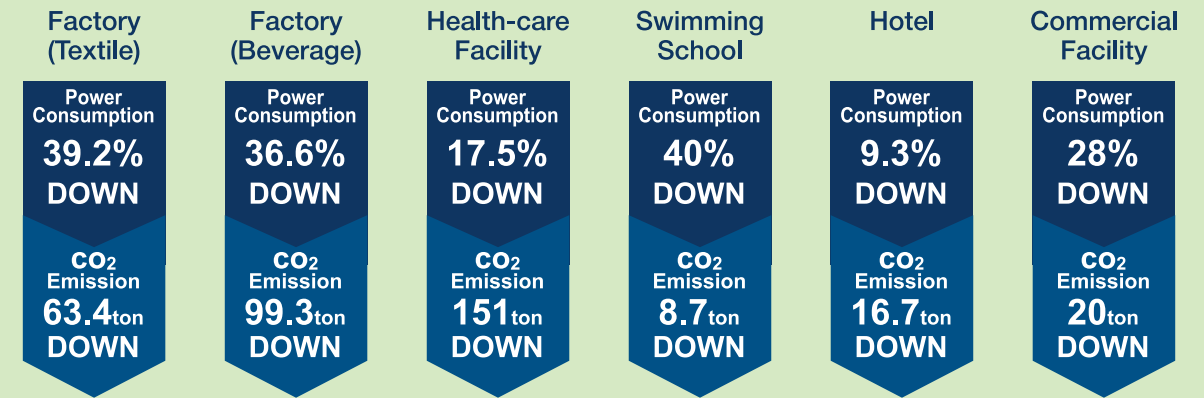
## 6P Motor

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	
---	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	-	-	-	-	-	-

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

# Potential Energy Saving with the Eco-Pump

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

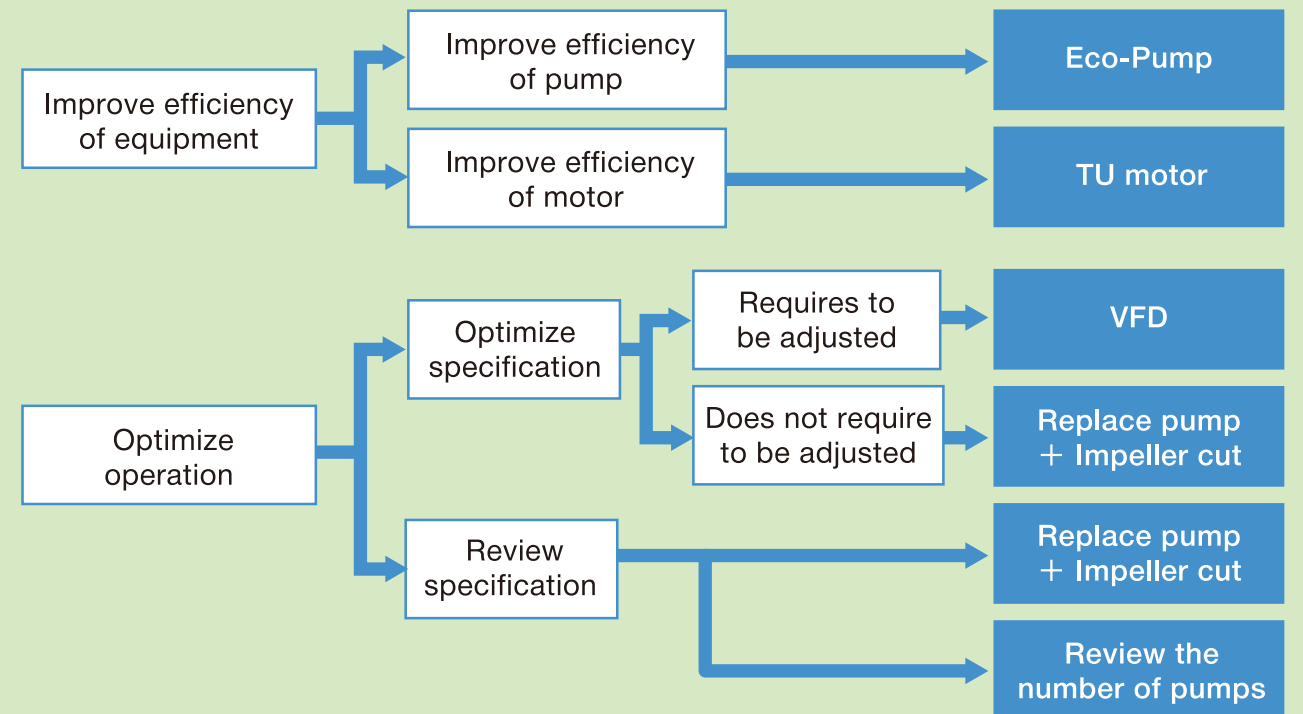


The above figures are a few examples of successful installation of the Eco-Pumps in various industries.

6 typical examples where big energy 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:



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](http://www.torishima.co.jp/en/ecopump/index.html)

