CAL (Cast Iron)
CAR (Stainless Steel)

End-Suction Volute Pump

End-Suction Volute Pump

CAR

CAL

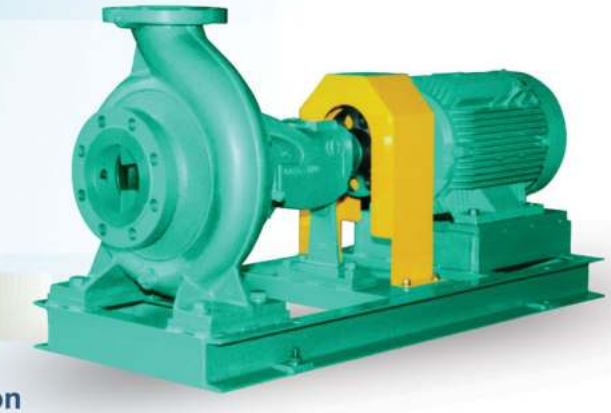
PT TORISHIMA GUNA INDONESIA

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.

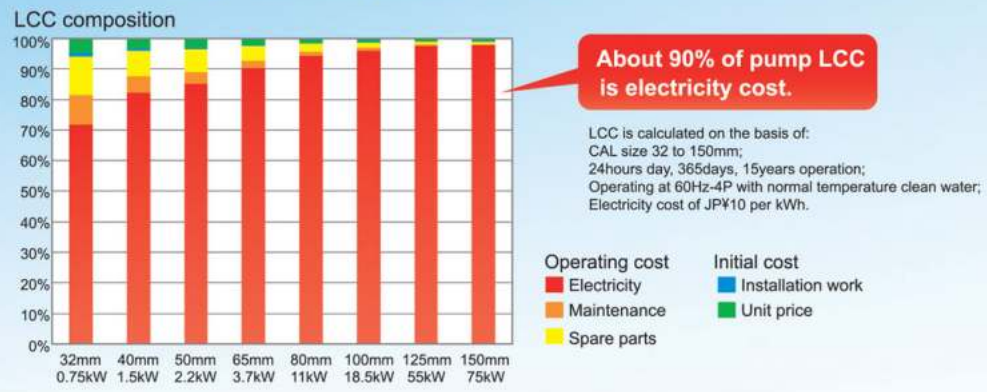


Energy Saving & Cost Reduction

Eco pumps significantly reduce the life cycle costs of pumps and CO_2 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)

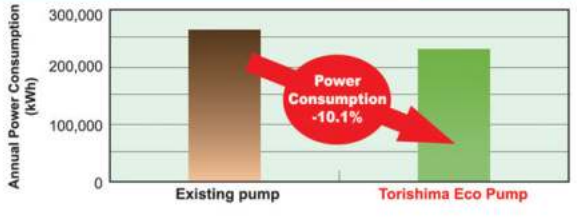
About 90% of the pump LCC is generated from electricity cost.
Increased efficiency leads to big reduction of LCC.



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	
	Facillity spec	Operating point	Operation point	
Capacity(m³/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	−3.0kW(−10.1%)
Annual Power Consumption(kWh)		**259,296**	**233,016**	**−26,280kWh**



Annual Saving USD$2,628 (= 26,280 kWh x USD 0,1)

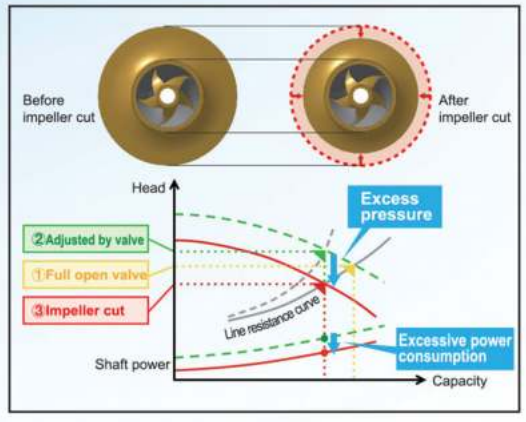
Electricity cost per kWh : USD 0,1

Annual CO_2 Reduction 11.8t-CO_2 (=26,280kWh x 0.00045t-CO_2/kWh)

Conversion factor of CO_2 emission: 0.00045 (t-CO_2/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.



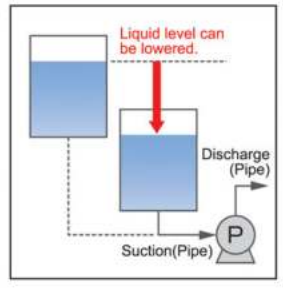
High Speed and Simplified Design

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℃ (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	USD$ 0	USD$ 138*

* In case of using tap water
- Industril Water : USD$ 17,74 (USD$ 0,45/m3)
- Tap Water : USD$ 138 (USD$ 3,5/m3)
- Pure Water : USD$ 591,000(USD$ 15/l)

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 and enclosed type coupling guard as an optional

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

Standard Coupling Guard

Enclosed Coupling Guard
(as optional)

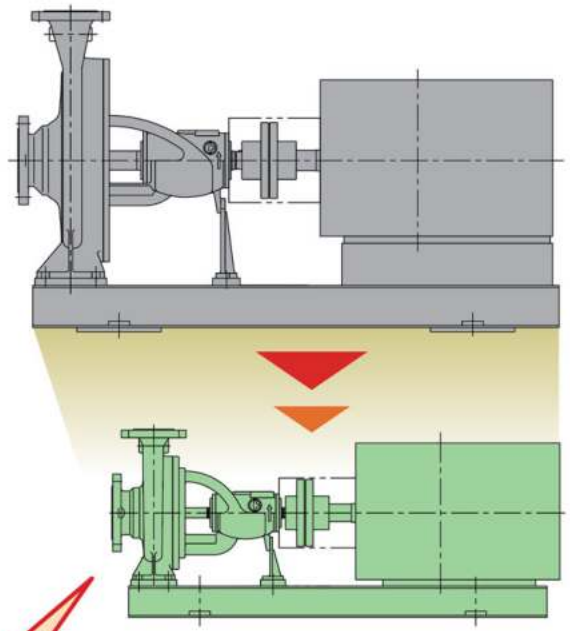
TU Motor : 2P-55kW or less, 4P-110kW or less
Coupling Diameter ; 280 mm or less
Motors have different size and frame by manufacturers

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

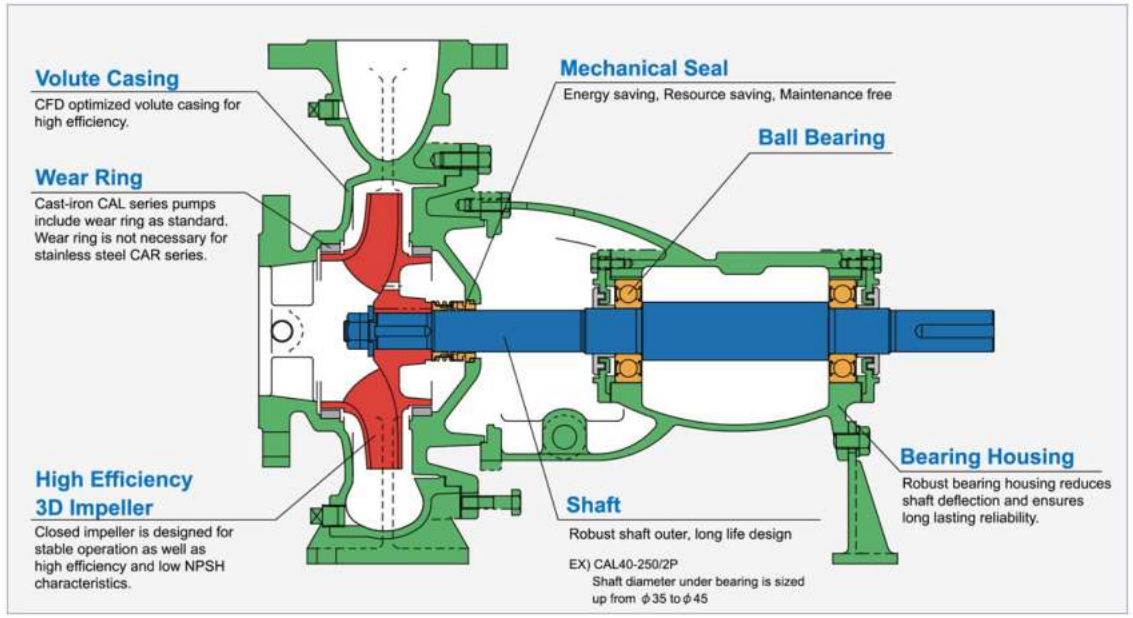
Utility	Co-generation	Cooling water pump, Hot water (circulation) pump	CAL
	Air conditioning	Cold water pump, Cooling water pump, Hot water pump	
	Drainage treatment	Raw water pump, Filtrate pump, Back wash pump, Transfer pump	CAR
	Pure water facility	Raw water pump, RO wash pump, Recovering back wash pump, Filtrate water pump	
Iron & Metal	Power generation	Deaerator feed water pump	
	Hot rolling	Transfer pump, Hot water pump, Water pumping pump, Filtrate pump, Back wash pump,	CAL
	Flue gas desulfurization	Cooling water pump, Industrial water pump	
	Roll coolant	Spray pump	CAR
	Plating	Wash pump (Rinse pump)	
Food & Beverage	Manufacturing process	Cold water pump, Cooling water pump (Circulation / Boost), Recycle water pump, Filtrate pump, Sprinkling pump	CAL
	Refrigerator	Chilled pump, Defrost pump	
	CIP system	CIP supply / return pump	CAR
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	CAR
	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	CAL
	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.		CAR

Please ask about special fluid.

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℃ < T≤100℃ Option: 100℃ < T≤ 350℃	Standard: -10℃ to +80℃ Option: -40℃ to +140℃
Max. discharge pressure		Standard: 1MPa (10kgf/cm²G) Option: 1.4MPa (14kgf/cm²G)	1MPa (10kgf/cm²G)
Max. suction pressure		0.8MPa (8kgf/cm²G)	0.8MPa (8kgf/cm²G)
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 shaft seal	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,SCS14,BC6	Standard: SCS13 Option: SCS14
	Shaft	Standard: SUS420J2 Option: SUS329J1,SUS304	Standard: SUS304 Option: SUS316,SUS329J1
	Case wear ring	Standard: FC200	–

Design Features



Parts Interchangeability

■2P type

Same color and number in the same parts indicate interchangeability.

Pump type \ Parts	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

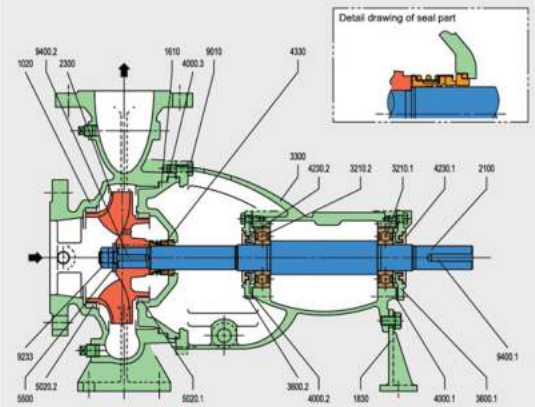
Same color and number in the same parts indicate interchangeability.

Pump type \ Parts	Casing	Casing Cover	Bearing Housing	Shaft	Mechanical Seal
32-125	1	1	1	1	1
40-125	2				
65-125	3	2			
32-160	4				
40-160	5				
50-160	6				
32-200	7	3			
40-200	8				
50-200	9				
80-150	12	4	2	2	2
80-190	13	5			
100-190	14	6			
32-250	15				
40-250	16				
50-250	17				
65-240	18	7			
80-240	19				
100-245	20				
100-250	21				
50-315	22	8			
65-310	23				
80-320	24				
100-320	25		3	3	3
150-190	26	9			
150-200					
125-240	27	10			
125-250					
200-240	28	11	4	4	
200-250					
125-310	29	12			
125-315					
80-400	30	13	3	3	
100-400	31	14	4	4	
125-400	32				
150-310	33	15	5	5	4
150-315					
150-390	34	16			
150-400					

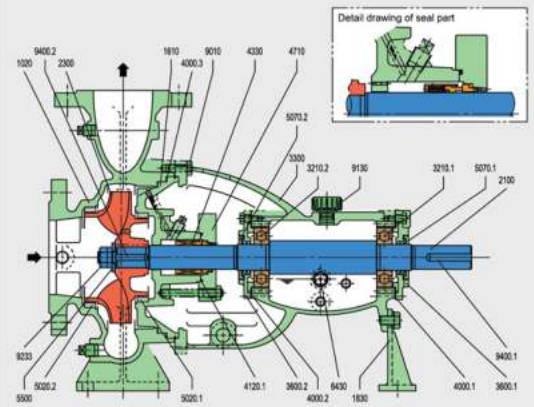
Pump Sectional Drawing

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.

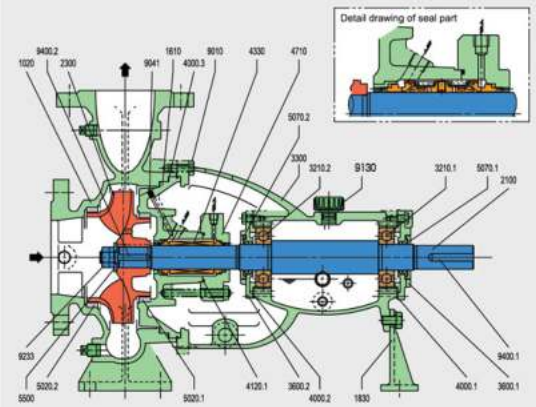
Standard Seal: Mechanical seal
Bearing: Grease lubrication



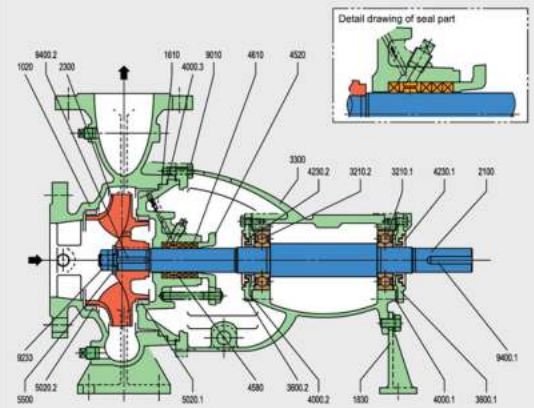
Option Seal: Mechanical seal + Water cooling
Bearing: Oil lubrication



Option Seal: Double mechanical seal
Bearing: Oil lubrication



Option Seal: Gland packing
Bearing: Grease lubrication

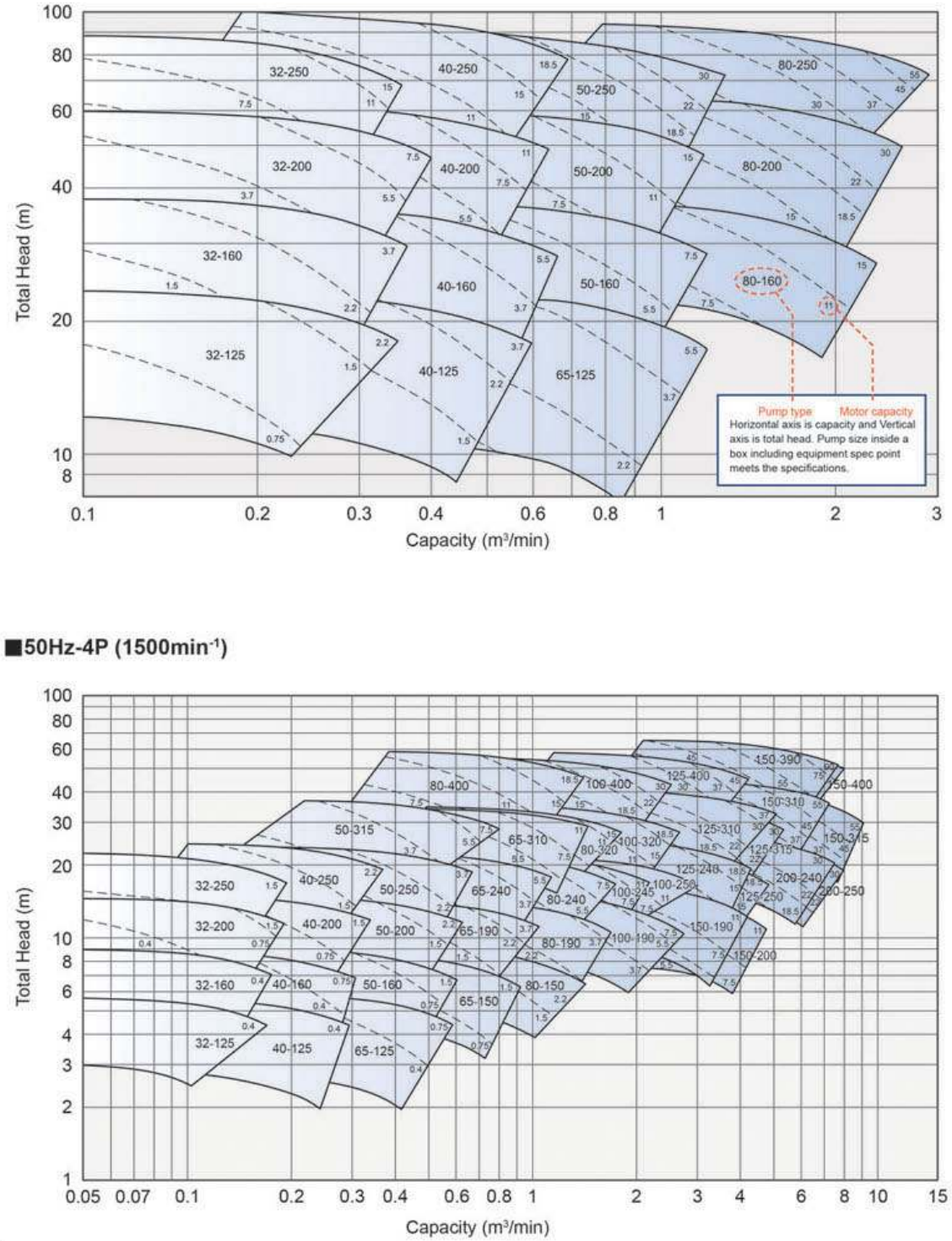


Parts number	Parts name	Parts number	Parts name	Parts number	Parts name	Parts number	Parts name
1020	Volute casing	3600.2	Bearing cover	4580	Lantern ring	9010	Hex. bolt
1610	Casing cover	4000.1	Flat gasket	4610	Gland packing	9041	Nock
1830	Support foot	4000.2	Flat gasket	4710	Seal cover	9130	Plug
2100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

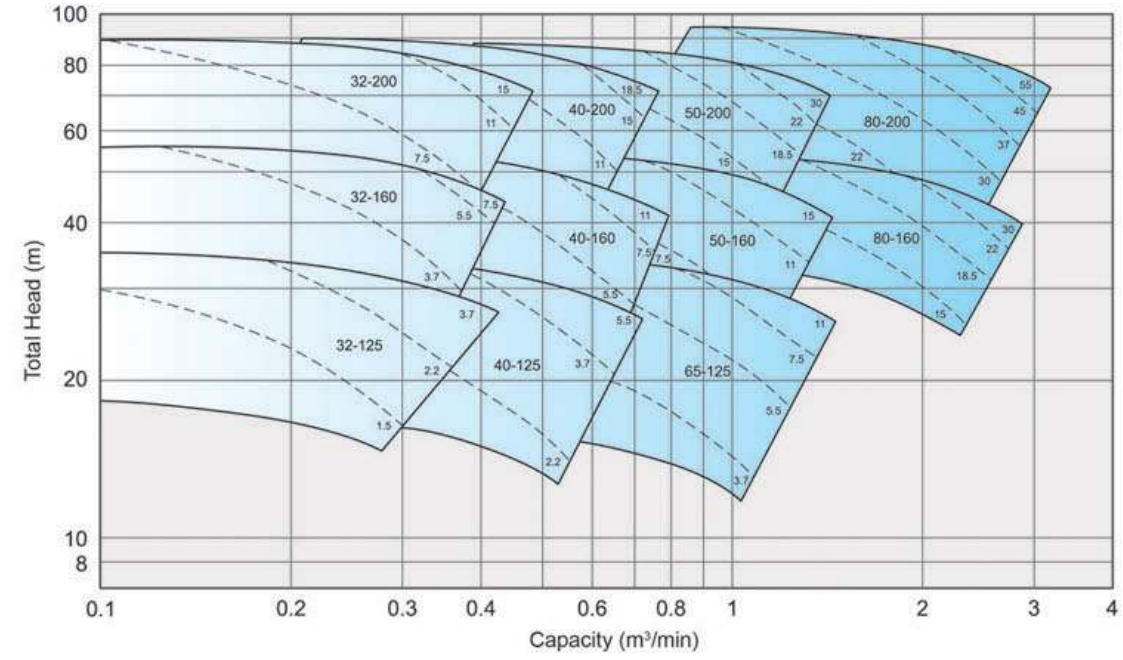
CAL (Cast Iron) Selection Range Charts

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

■50Hz-2P (3000min^{-1})

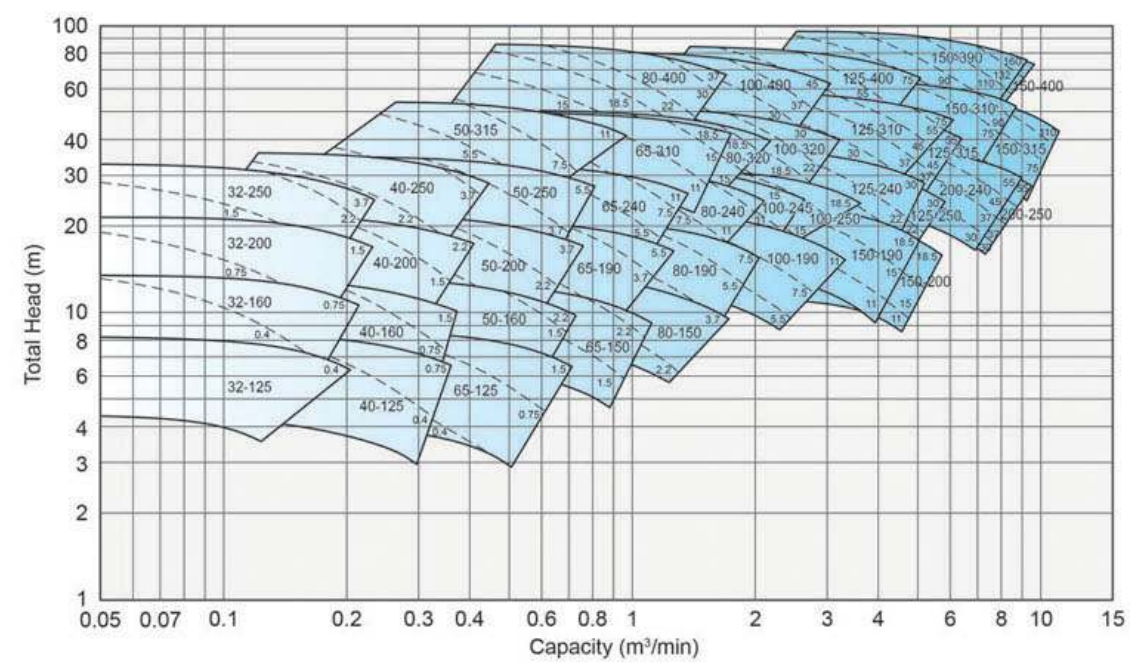


■60Hz-2P (3600min^{-1})



■50Hz-4P (1500min^{-1})

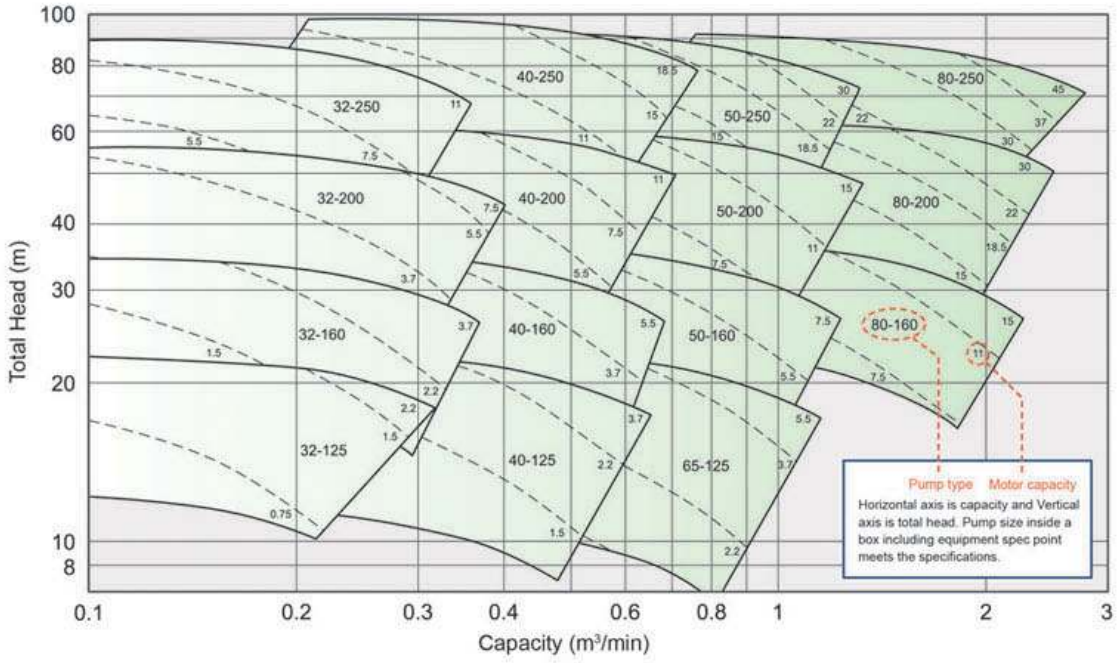
■60Hz-4P (1800min^{-1})



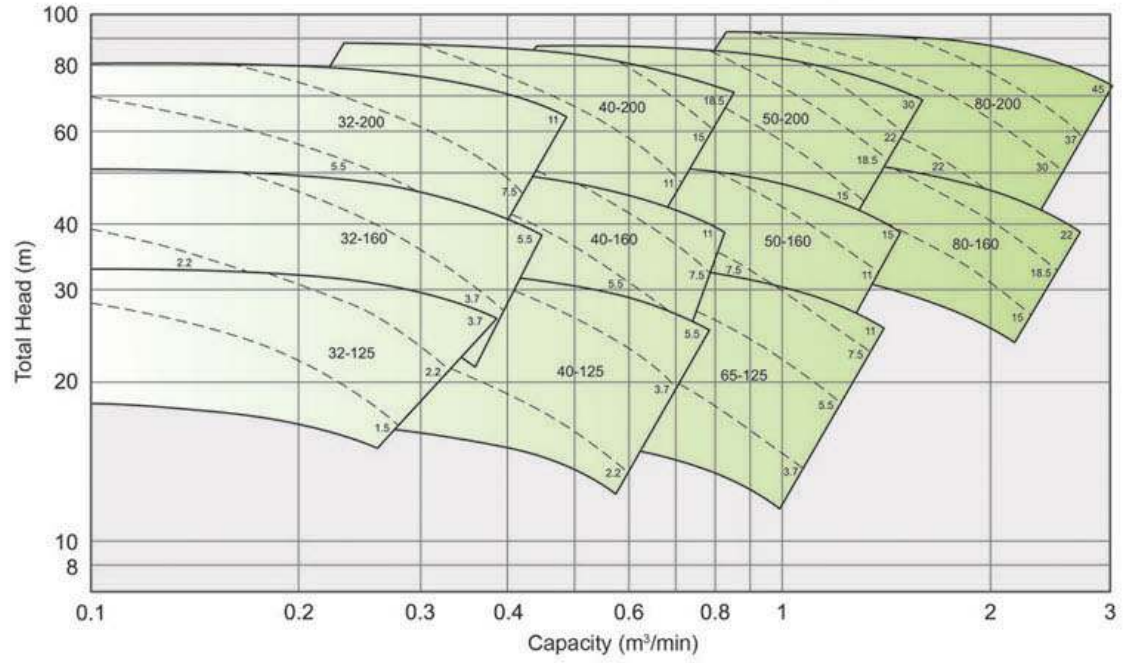
CAR (Stainless Steel) Selection Range Charts

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

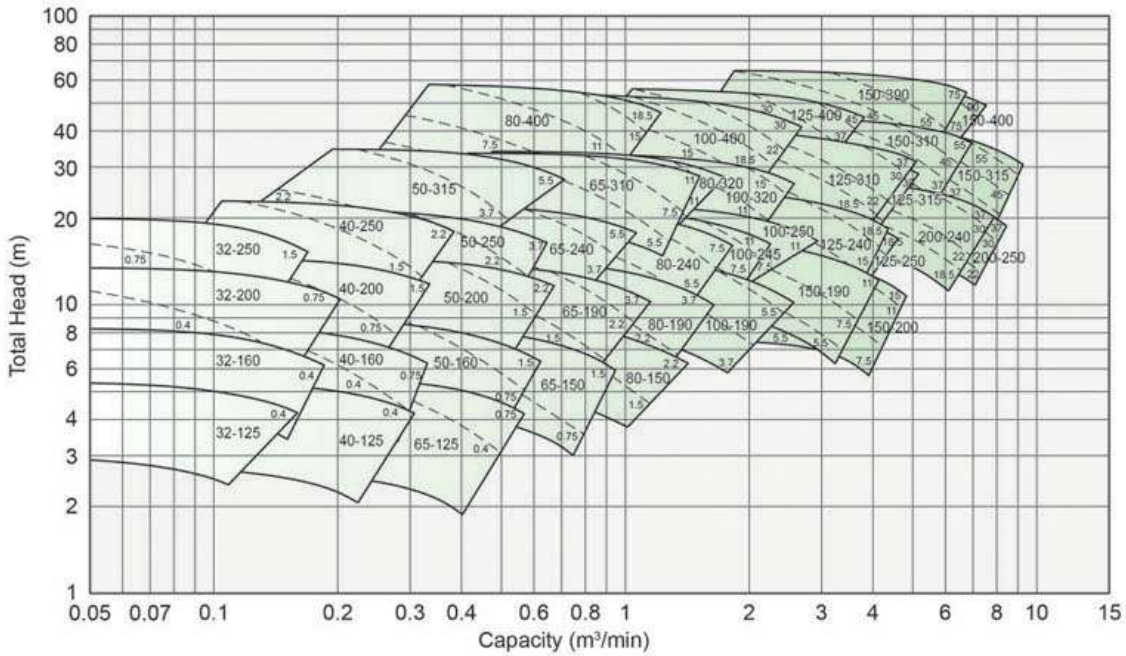
■ 50Hz-2P (3000min^{-1})



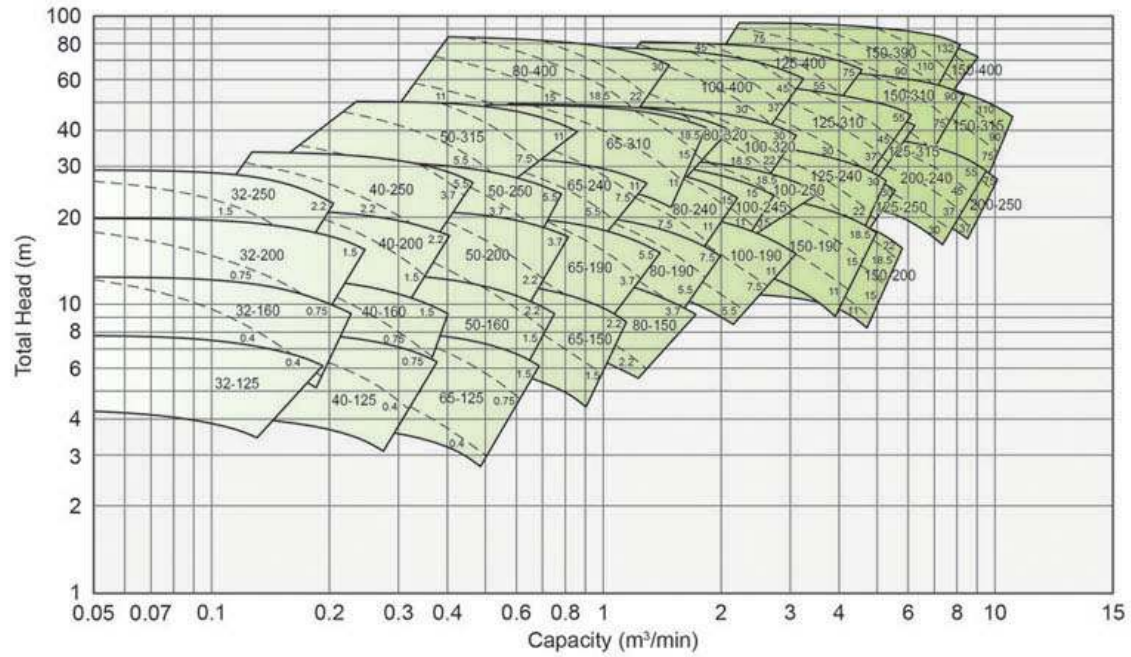
■ 60Hz-2P (3600min^{-1})



■ 50Hz-4P (1500min^{-1})



■ 60Hz-4P (1800min^{-1})

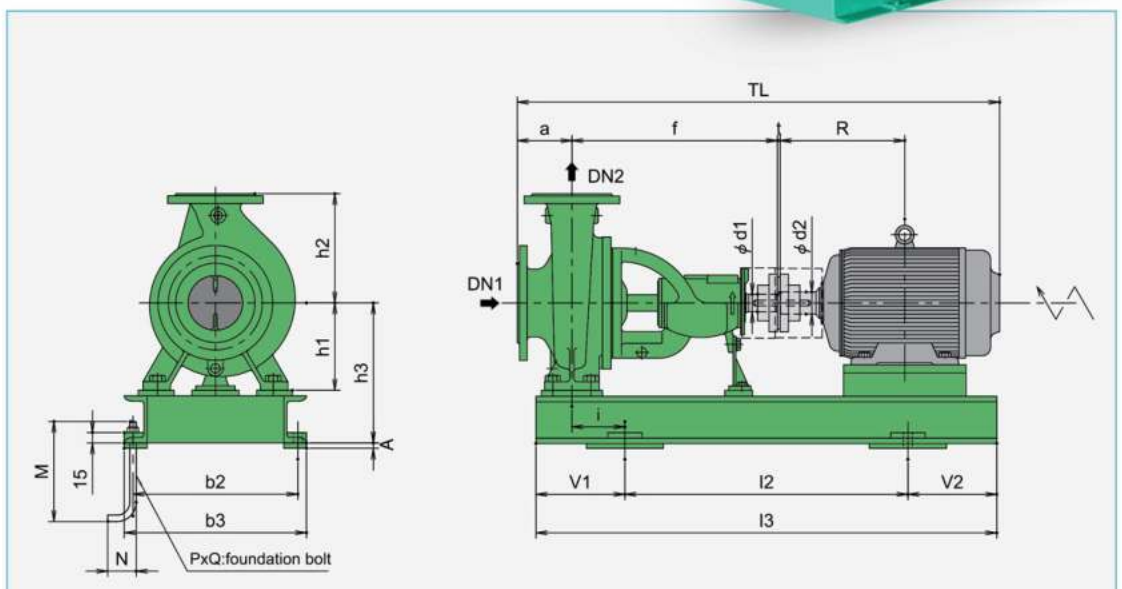


Dimension Chart

■ 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.



Dimension Chart 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	b3	l3	A	Wt.	h3	i	b2	l2	M	N	P	Q	V1	V2	t	Wt.	TL
	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	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	725.5
										80M	140	19	320	670	0	27	202	45	290	420	200	50	4	M12	105	145	3	1.1	705
										90S	156	24	320	750	0	28	202	55	290	480	200	50	4	M12	115	155	3	1.1	750.5
										90L	168.5	24	320	750	0	28	202	55	290	480	200	50	4	M12	115	155	3	1.1	775.5
										100L	193	28	320	750	0	28	202	55	290	480	200	50	4	M12	115	155	3	1.6	809
										112M	200	28	320	750	0	27	202	55	290	480	200	50	4	M12	115	155	3	1.6	834.5
										132S	239	38	350	870	0	32	219	90	320	600	200	50	4	M12	150	120	3	3.2	897
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	80	140	19	320	670	0	28	222	45	290	420	200	50	4	M12	105	145	3	1.1	745.5
										80M	140	19	320	670	0	28	222	45	290	420	200	50	4	M12	105	145	3	1.1	725
										90S	156	24	320	750	0	30	222	55	290	480	200	50	4	M12	115	155	3	1.1	770.5
										90L	168.5	24	320	750	0	30	222	55	290	480	200	50	4	M12	115	155	3	1.1	795.5
										100L	193	28	320	750	0	29	222	55	290	480	200	50	4	M12	115	155	3	1.6	829
										112M	200	28	320	750	0	28	222	55	290	480	200	50	4	M12	115	155	3	1.6	854.5
										132S	239	38	350	870	0	31	222	90	320	600	200	50	4	M12	150	120	3	3.2	917
										160M*	323	42	430	1000	0	41	250	110	400	660	200	50	4	M12	170	170	3	6.7	1071
										160M**	323	42	430	1000	0	41	250	110	400	660	200	50	4	M12	170	170	3	6.7	786
										160L	345	42	430	1000	0	41	250	110	400	660	200	50	4	M12	170	170	3	6.7	1115

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

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	b3	l3	A	Wt.	h3	i	b2	l2	M	N	P	Q	V1	V2	t	Wt.	TL
	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
32-200 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	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	1071
										160L	345	42	430	1000	0	39	250	110	400	660	200	50	4	M12	170	170	3	6.7	1115
										160L*	345	42	430	1000	0	39	250	110	400	660	200	50	4	M12	170	170	3	6.7	1115
										160L**	345	48	430	1000	0	39	250	110	400	660	200	50	4	M12	170	170	3	9.0	1033.5
50-200	80	50	100	360	160	200	24	37	39	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 32 32 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	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	1348.5
										225S	402	55	530	1250	10	65	342	115	490	840	250	63	4	M16	205	205	3	13.9	1365
										225MA	414.5	55	530	1250	10	65	342	115	490	840	250	63	4	M16	205	205	3	13.9	1409
										225M	414.5	55	530	1250	10	65	342	115	490	840	250	63	4	M16	205	205	3	13.9	1462.5
										250SA	463.5	60	530	1250	10	74	370	115	490	840	250	63	4	M16	205	205	4	21.0	1481.5
										250M	452.5	55	530	1250	10	74	370	115	490	840	250	63	4	M16	205	205	3	13.9	1526

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

Dimension Chart

Dimension Chart for 4P Motor Drive

Pump Sizes	Pump									Motor			Base Plate				Foundatiion Dimensions										Coupling		Refer.
	Bore		Dimension				Axle	Weight		Frame	Dimension		b3	l3	A	Wt.	h3	i	b2	l2	M	N	P	Q	V1	V2	t	Wt.	TL
	DN1	DN2	a	f	h1	h2	d1	Grade L	Grade R		R	d2																	
	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	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
32-200 40-200 50-160 65-150	50 65 80 80	32 40 50 65	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	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
										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
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	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
										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
80-150	100	80	100	470	160	200	32	47	49	90L	168.5	24	320	870	0	30	250	90	290	600	200	50	4	M12	150	120	3	3. 2	906
										100L	193	28	320	870	0	30	250	90	290	600	200	50	4	M12	150	120	3	3. 2	948
										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
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	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
										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
80-240 100-190	100 125	80 100	100 125	470 470	200 200	250 280	32 32	63 64	62 67	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
										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
50-315	80	50	100	470	225	280	32	70	71	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
										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
100-245 100-250 65-310 80-320	125 125 80 100	100 100 65 80	125 125 125 125	470 470 470 470	225 225 225 225	280 280 280 280	32 32 32 32	71 72 76 78	75 75 72 76	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
										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	10	74	342	115	490	840	250	63	4	M16	205	205	4	21. 0	1380
100-320	125	100	125	470	250	315	32	81	91	132S	239	38	430	1000	0	51	342	80	400	660	200	50	4	M12	170	170	3	3. 2	1052
										132M	258	38	430	1000	0	51	342	80	400	660	200	50	4	M12	170	170	3	5. 4	1090
										160M	323	42	470	1120	0	56	342	100	440	740	200	50	4	M12	190	190	3	6. 7	1206
										160L*	345	42	470	1120	0	56	342	100	440	740	200	50	4	M12	190	190	3	6. 7	1250
										160L**	345	48	470	1120	0	56	342	100	440	740	200	50	4	M12	190	190	3	9. 0	1169
										180MC	351. 5	48	470	1120	0	56	342	100	440	740	200	50	4	M12	190	190	3	9. 0	1270
										180M*	351. 5	48	470	1120	0	56	342	100	440	740	200	50	4	M12	190	190	3	9. 0	1242
										180M**	351. 5	55	470	1120	0	56	342	100	440	740	200	50	4	M12	190	190	3	13. 9	1183

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

Pump Sizes	Pump									Motor			Base Plate				Foundatiion Dimensions										Coupling		Refer.
	Bore		Dimension				Axle	Weight		Frame	Dimension		b3	l3	A	Wt.	h3	i	b2	l2	M	N	P	Q	V1	V2	t	Wt.	TL
	DN1	DN2	a	f	h1	h2	d1	Grade L	Grade R		R	d2																	
	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
100-320	125	100	125	470	250	315	32	81	91	180LC	370. 5	48	470	1120	0	56	342	100	440	740	200	50	4	M12	190	190	3	9. 0	1308
										180L*	370. 5	55	470	1120	0	56	342	100	440	740	200	50	4	M12	190	190	3	13. 9	1280
										180L**	400. 5	60	470	1250	10	66	367	115	430	840	250	63	4	M16	205	205	4	21. 0	1272
										200LC	395. 5	55	530	1250	10	75	367	115	490	840	250	63	4	M16	205	205	3	13. 9	1368
										200L*	395. 5	55	530	1250	10	75	367	115	490	840	250	63	4	M16	205	205	3	13. 9	1394
										200L**	425. 5	60	530	1250	10	75	367	115	490	840	250	63	4	M16	205	205	4	21. 0	1380
										225SC	432	60	530	1250	10	75	367	115	490	840	250	63	4	M16	205	205	4	21. 0	1415
										225S*	432	60	530	1250	10	75	367	115	490	840	250	63	4	M16	205	205	4	21. 0	1471
										225S**	432	65	530	1250	10	75	367	115	490	840	250	63	4	M16	205	205	4	21. 0	1396
150-190 150-200 125-240 125-250	150 150 150 150	150 150 125 125	140 140 140 140	470 470 470 470	250 250 250 250	315 315 355 355	42 42 42 42	95 95 103 103	103 103 113 113	112M	200	28	430	870	0	46	342	60	400	600	200	50	4	M12	150	120	3	5. 4	1004. 5
										132S	239	38	430	1000	0	51	342	80	400	660	200	50	4	M12	170	170	3	5. 4	1067
										132M	258	38	430	1000	0	51	342	80	400	660	200	50	4	M12	170	170	3	5. 4	1105
										160M	323	42	470	1120	0	56	342	100	440	740	200	50	4	M12	190	190	3	6. 7	1221
										160L*	345	42	470	1120	0	56	342	100	440	740	200	50	4	M12	190	190	3	6. 7	1265
										160L**	345	48	470	1120	0	56	342	100	440	740	200	50	4	M12	190	190	3	9. 0	1183. 5
										180MC	351. 5	48	470	1120	0	56	342	100	440	740	200	50	4	M12	190	190	3	9. 0	1285
										180M*	351. 5	48	470	1120	0	56	342	100	440	740	200	50	4	M12	190	190	3	9. 0	1257
										180M**	351. 5	55	470	1120	0	56	342	100	440	740	200	50	4	M12	190	190	3	13. 9	1198
										180LC	370. 5	48	470	1120	0	56	342	100	440	740	200	50	4	M12	190	190	3	9. 0	1323
										180L*	370. 5	55	470	1120	0	56	342	100	440	740	200	50	4	M12	190	190	3	13. 9	1295
										180L**	400. 5	60	470	1250	10	66	367	115	430	840	250	63	4	M16	205	205	4	21. 0	1287
										200LC	395. 5	55	530	1250	10	75	367	115	490	840	250	63	4	M16	205	205	3	13. 9	1383
										200L*	396	55	530	1250	10	75	367	115	490	840	250	63	4	M16	205	205	3	13. 9	1408. 5
										200L**	425. 5	60	530	1250	10	75	367	115	490	840	250	63	4	M16	205	205	4	21. 0	1394. 5
										225SC	432	60	530	1250	10	75	367	115	490	840	250	63	4	M16	205	205	4	21. 0	1430
										225S*	432	60	530	1250	10	75	367	115	490	840	250	63	4	M16	205	205	4	21. 0	1486
										225S**	432	65	530	1250	10	75	367	115	490	840	250	63	4	M16	205	205	4	21. 0	1411
80-400	100	80	125	470	280	355	42	128	128	132S	239	38	510	1000	0	60	372	80	480	660	200	50	4	M12	170	170	3	5. 4	1052
										132M	258	38	510	1000	0	60	372	80	480	660	200	50	4	M12	170	170	3	5. 4	1090
										160M	323	42	530	1250	10	77	397	115	490	840	250	63	4	M16	205	205	3	6. 7	1206
										160L*	345	42	530	1250	10	77	397	115	490	840	250	63	4	M16	205	205	3	6. 7	1250
										160L**	345	48	530	1250	10	77	397	115	490	840	250	63	4	M16	205	205	3	9. 0	1168. 5
										180MC	351. 5	48	530	1250	10	77	397	115	490	840	250	63	4	M16	205	205	3	9. 0	1270
										180M*	351. 5	48	530	1250	10	77	397	115	490	840	250	63	4	M16	205	205	3	9. 0	1242
										180M**	351. 5	55	530	1250	10	77	397	115	490	840	250	63	4	M16	205	205	3	13. 9	1183
										180LC	370. 5	48	530	1250	10	77	397	115	490	840	250	63	4	M16	205	205	3	9. 0	1308
										180L*	370. 5	55	530	1250	10	77	397	115	490	840	250	63	4	M16	205	205	3	13. 9	1280
										180L**	400. 5	60	530	1250	10	77	397	115	490	840	250	63	4	M16	205	205	4	21. 0	1272
										200LC	395. 5	55	590	1400	10	89	397	140	550	940	250	63	4	M16	230	230	3	13. 9	1368
										200L*	395. 5	55	590	1400	10	89	397	140	550	940	250	63	4	M16	230	230	3	13. 9	1393. 5
										200L**	425. 5	60	590	1400	10	89	397	140	550	940	250	63	4	M16	230	230	4	21. 0	1379. 5
										225SC	432	60	590	1400	10	92	397	140	550	940	250	63	4	M16	230	230	4	21. 0	1415
										225S*	432	60	590	1400	10	92	397	140	550	940	250	63	4	M16	230	230	4	21. 0	1471
										225S**	432	65	590	1400	10	92	397	140	550	940	250	63	4	M16	230	230	4	21. 0	1396
125-310 125-315 100-400	150 150 125	125 125 100	140 140 140	530 530 530	280 280 280	355 355 355	42 42 42	140 140 156	151 151 157	160L*	345	42	530	1250	10	81	400	95	490	840	250	63	4	M16	205	205	3	6. 7	1325
										160L**	345	48	530	1250	10	81	400	95	490	840	250	63	4	M16	205	205	3	9. 0	1243. 5
										180MC	351. 5	48	530	1250	10	80	400	95	490	840	250	63	4	M16	205	205	3	9. 0	1345
										180M*	351. 5	48	530	1250	10	80	400	95	490	840	250	63	4	M16	205	205	3	9. 0	1317
										180M**	351. 5	55	530	1250	10	80	400	95	490	840	250	63	4	M16	205	205	3	13. 9	1258
										180LC	370. 5	48	530	1250	10	80	400	95	490	840	250	63	4	M16	205	205	3	9. 0	1383
										180L*	370. 5	55	530	1250	10	80	400	95	490	840	250	63	4	M16	205	205	3	13. 9	1355
										180L**	400. 5	60	530	1250	10	80	400	95	490	840	250	63	4	M16	205	205	4	21. 0	1347
										200M	406. 5	65	590	1400	10	91	400	120	550	940	250	63	4	M16	230	230	4	21. 0	1381. 5
										200LC	395. 5	55	590	1400	10	91	400	120	550	940	250	63	4	M16	230	230	3	13. 9	1443
										200L*	395. 5	55	590	1400	10	91	400	120	550	940	250	63	4	M16	230	230	3	13. 9	1468. 5
										200L**	425. 5	60	590	1400	10	91	400	120	550	940	250	63	4	M16	230	230	4	21. 0	1454. 5
										225SC	432	60	590	1400	10	87	400	120	550	940	250	63	4	M16	230	230	4	21. 0	1490
										225S*	432	60	590	1400	10	87	400	120	550	940	250	63	4	M16	230	230	4	21. 0	1546
										225S**	432	65	590	1400	10	87	400	120	550	940	250	63	4	M16	230	230	4	21. 0	1471
										225MC	444. 5	60	590	1400	10	87	400	120	550	940	250	63	4	M16	230	230	4	21. 0	1515
										225M	444. 5	60	590	1400	10	87	400	120	550	940	250	63	4	M16	230	230	4	21. 0	1568. 5
										250SC	463. 5	70	590	1400	10	87	400	120	550	940	250	63	4	M16	230	230	4	31. 0	1556. 5
										250M*	482. 5	65	590	1400	10	87	400	120	550	940	250	63	4	M16	230	230	4	21. 0	1607. 5
										250M**	482. 5	75	590	1400	10	87	400	120	550	940	250	63	4	M16	230	230	4	31. 0	1632

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

Dimension Chart

Dimension Chart for 4P Motor Drive (continuation)

Pump Sizes	Pump: Bore DN1	Bore DN2	Dimension a	f	h1	h2	Axle d1	Weight Grade L	Grade R	Motor Frame	Motor Dimension R	d2	Base Plate b3	l3	A	Wt.	Foundatiion Dimensions h3	i	b2	l2	M	N	P	Q	V1	V2	Coupling t	Wt.	Refer. TL
	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
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	150 150 150 150	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	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

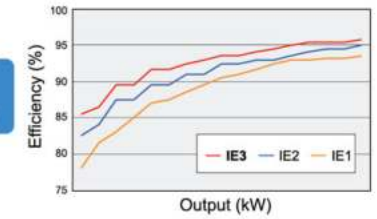
*Motor frame is the same but shaft axle diameter (d2) is different.

TU Motor (Torishima Ultra High Efficiency Motor)

Torishima pursues high efficiency for not only pump but motor.

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

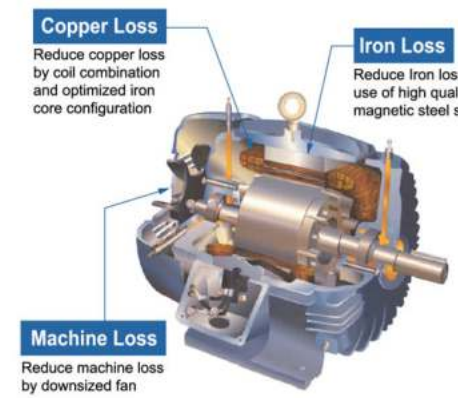
Relation between motor efficiency and output (60Hz)



Class in IEC60034-30

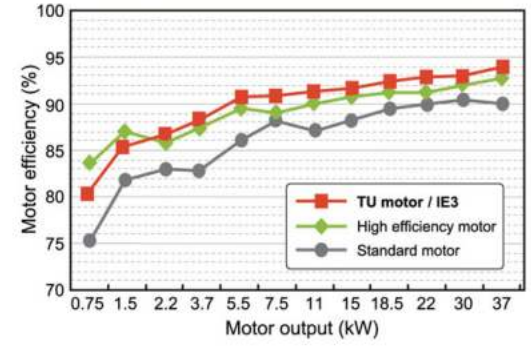
	Class
TU motor	IE3
High Efficiency Motor (JIS C 4212)	IE2
Standard Motor (JIS C 4210)	IE1

in case of 50Hz-200V/400V, 60Hz-220V/440V

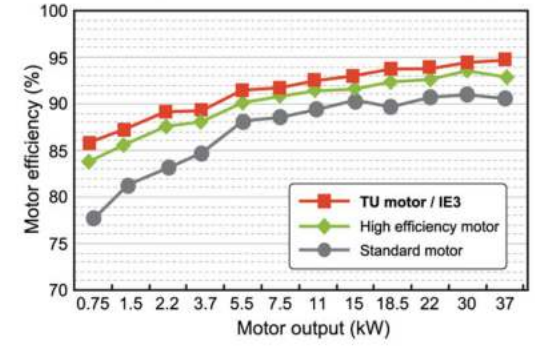


TU Motor Efficiency (Ex. 50Hz, 400V)

Comparison of motor efficiency (2P)

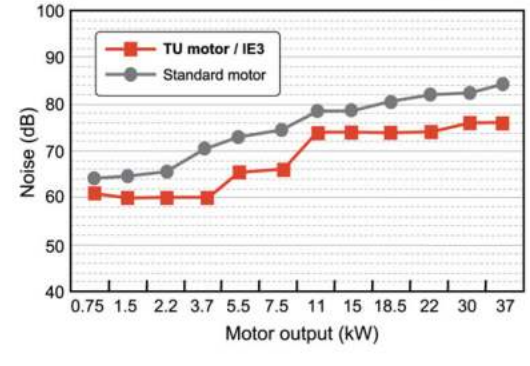


Comparison of motor efficiency (4P)



TU Motor Noise (Ex. 50Hz, 400V)

Comparison of motor noise (2P)



Comparison of motor noise (4P)