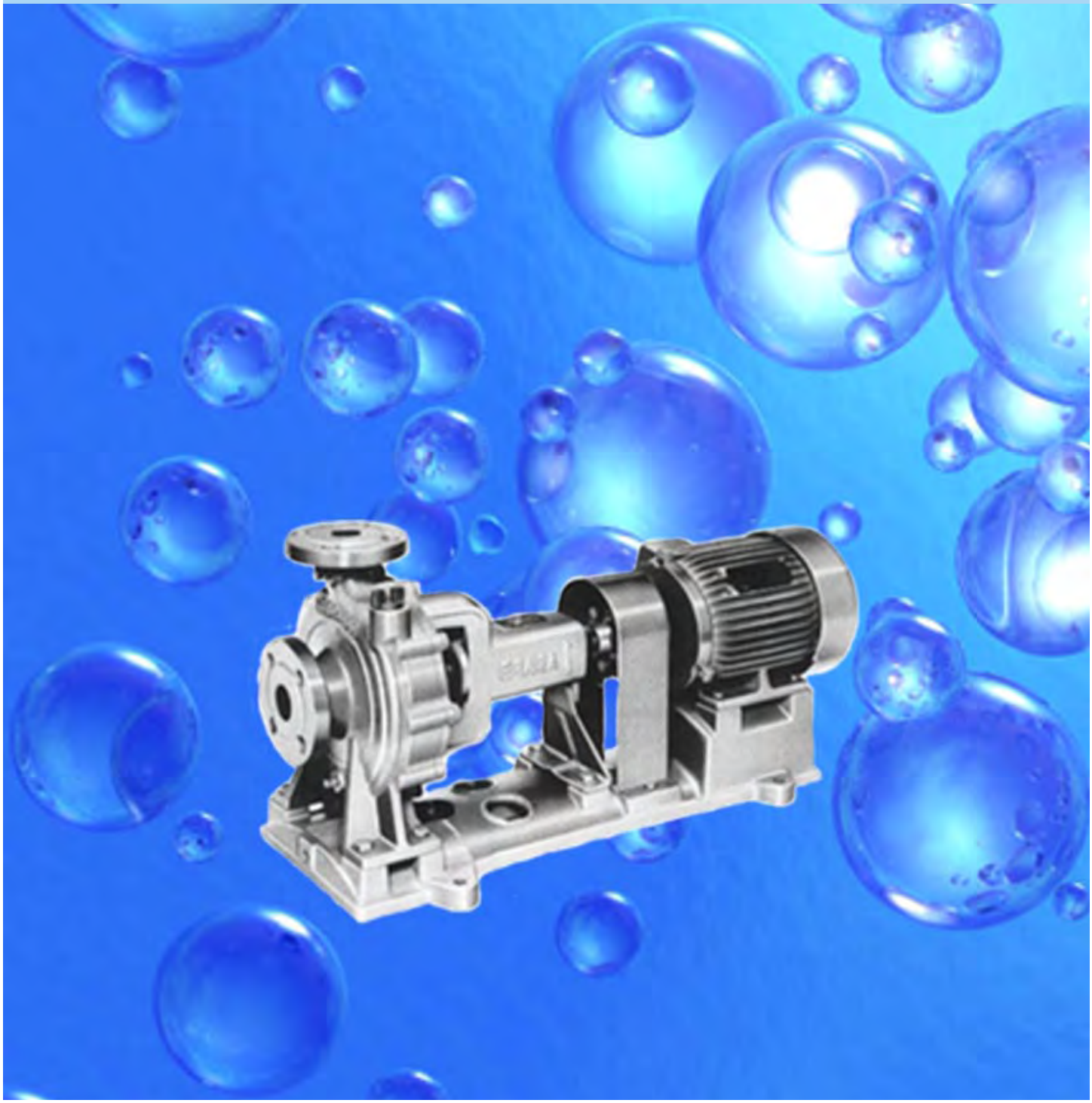
EBARA

ISO 9001 : 2000
Lic. No : QEC22090

FS 8005-56 Rev. 3

TECHNICAL DATA BOOK
EBARA END SUCTION VOLUTE PUMP
MODEL FSA
SUCTION SIZE 50 ~ 250 MM 50/60HZ



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Note :

All specifications subject to change without prior notice

Ebara End Suction Volute Pump — Model FSA

Features and Applications — 50/60 Hz

Features

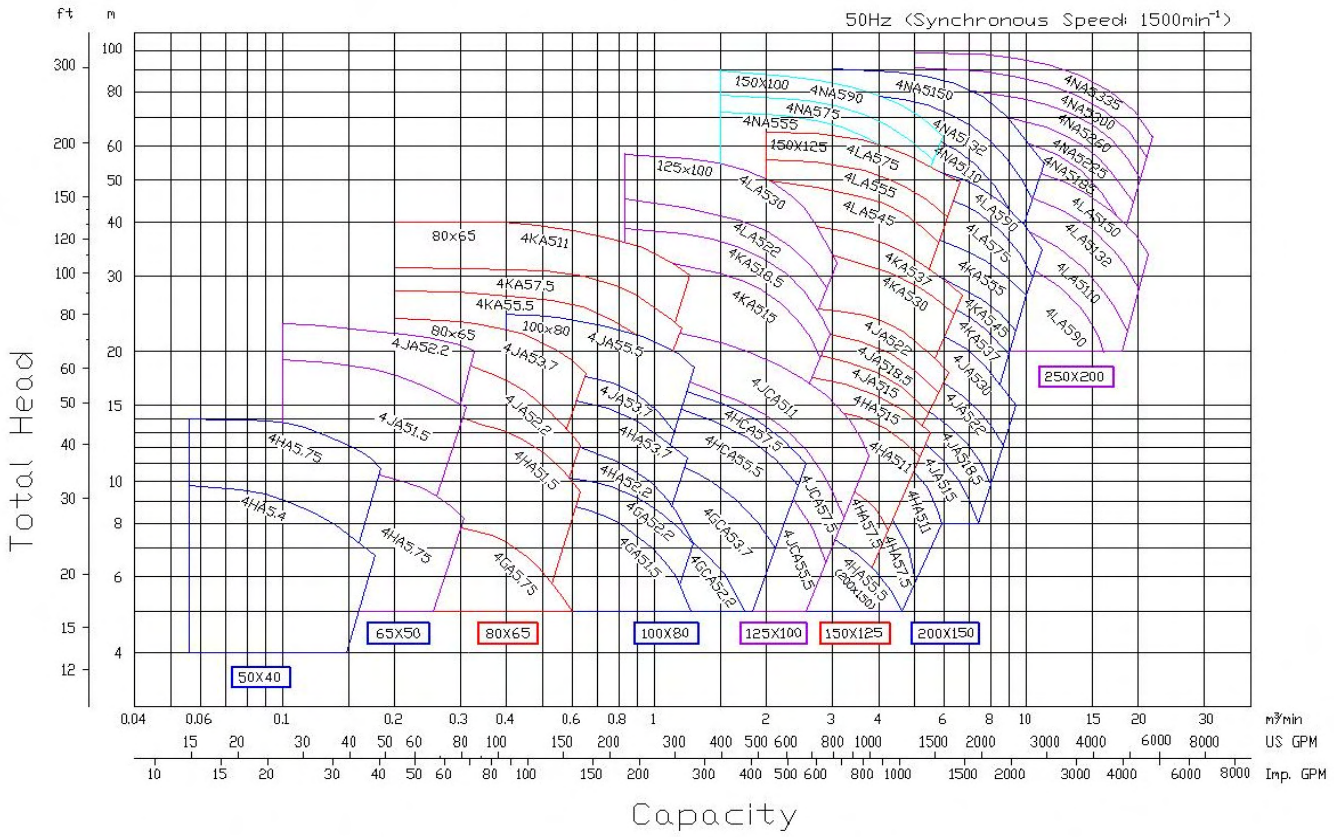
1. Easy removal and maintenance, BPO (Back Pull Out) system allows all rotating elements to be removed without disconnecting suction and discharge pipework.
2. Top centerline discharge, foot support under casing for maximum resistance to misalignment and distorsion from pipe loads
3. Non-overload design to ensure stable performance for all applications
4. Wider range application with flow capacity up to 22 m^3/min.
5. Higher working pressure up to 16 bar.

Applications

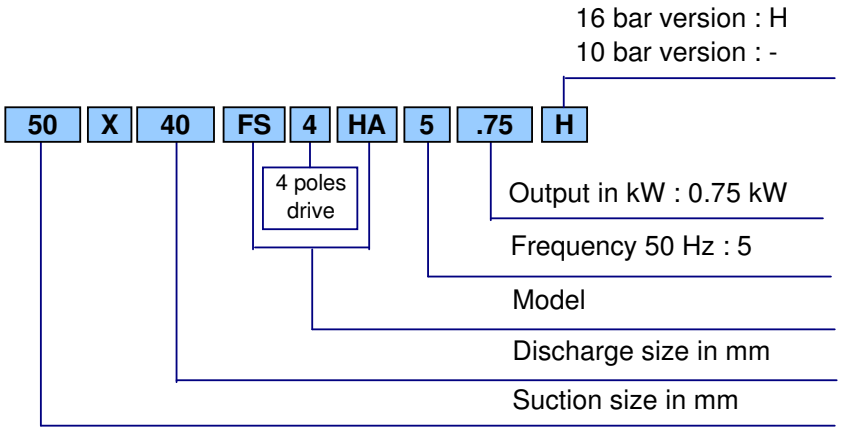
1. Industrial use
2. Water supply
3. Hot and cold water supply
4. For swimming pool
5. Sprinkling
6. Air conditioning
7. Fire-fighting application.

Performance Chart and Model Code (1/4) 50/60 Hz

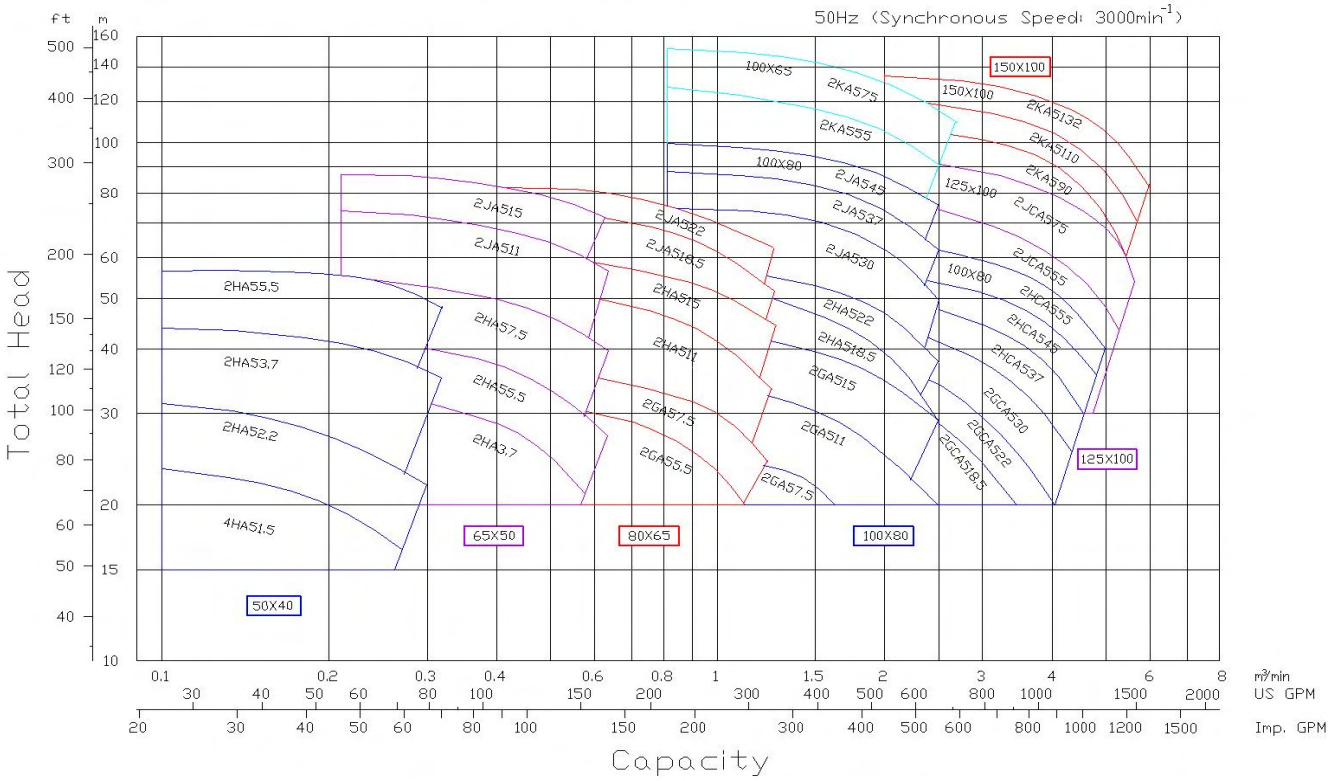
Performance Chart - 4 Poles - 50 Hz



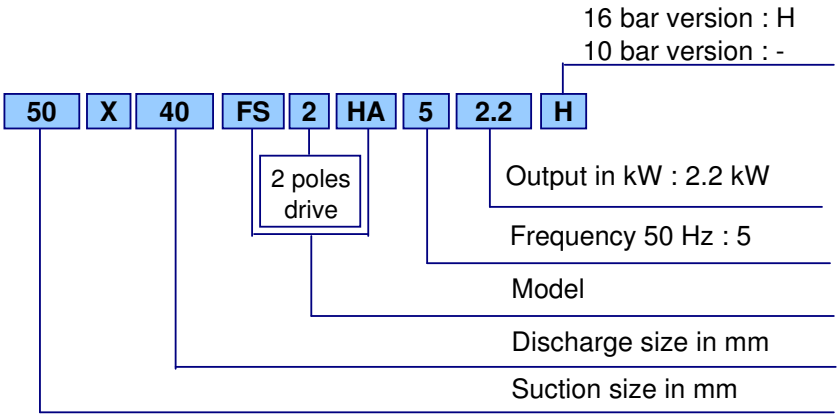
Model Code - 4 Poles - 50 Hz



Performance Chart - 2 Poles - 50 Hz



Model Code - 2 Poles - 50 Hz



Specifications 50/60 Hz

Description		Standard		Optional	
		2 poles model	4 poles model	2 poles model	4 poles model
Liquid	Name	Clean water			
	Temperature	0 to 100 °C (32 to 212 °F)			
Max. Working Pressure		10 bar (10.2 kgf/cm^2) for standard flange JIS 10K RF		16 bar (16.3 kgf/cm^2)	
		16 bar (16.3 kgf/cm^2) for standard flange JIS 16K RF			
Synchrounous Speed		3000 min^{-1}	1500 min^{-1}		
Instalation		Indoors		Outdoors	
Construction	Impeller	Enclosed			
	Shaft seal	Mechanical seal		Gland Packing	
	Sealing	Self flushing		External flushing	
	Bearing	Sealed ball bearing		Oil bath (some models only)	
Flange	Suction & Discharge	Suction < ϕ 150 mm, except 100x65 FSKA : JIS 10K RF		16 bar : JIS 16K RF; DIN PN-16	
		100x65 FSKA : JIS 16K RF		DIN PN-16	
		Suction = ϕ 150 mm, except below models : JIS 10K RF		16 bar : JIS 16K RF; DIN PN-16	
		150x100 FSKA; 150x100 FSNA : JIS 16K RF		DIN PN-16	
		Suction = ϕ 200 mm, except below models : JIS 10K RF		16 bar : JIS 16K RF; DIN PN-16	
		200x150 FSLA; 200x150 FSNA : JIS 16K RF		DIN PN-16	
		Suction = ϕ 250 : JIS 16K RF		DIN PN-16	
Material	Casing	Cast Iron		Ductile Cast Iron (FCD)	
	Impeller	Bronze Casting (CAC406/BC6)		Cast iron; Ductile Cast Iron (FCD)	
	Shaft	403 Stainless steel		304; 316 Stainless steel	
	Seal	Mechanical Seal: Ceramic/Carbon/NBR		Gland Packing : Teflon (PTFE) impregnated	
				Mechanical Seal : SiC/SiC	
Accessories	Bare shaft			Priming funnel ; valve; Companion Flange	
	With motor	Common base, Coupling, Coupling guard		Priming funnel ; valve; Companion Flange	

Hydrostatic Test and Material (1/2) 50/60 Hz

Model	10 Bar version						16 Bar version					
	Material					Hydro Test	Material					Hydro Test
	Casing	Impeller		Shaft			Casing	Impeller		Shaft		
		Standard	Option	Standard	Option	kg/cm2		Standard	Option	Standard	Option	kg/cm2
50x40 FSHA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Ductile Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5
65x50 FSHA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Ductile Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5
65x50 FSJA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Ductile Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5
80x65 FSGA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Ductile Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5
80x65 FSHA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Ductile Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5
80x65 FSJA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Ductile Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5
80x65 FSKA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Ductile Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5
100x80 FSGA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Ductile Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5
100x80 FSHA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Ductile Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5
100x80 FSJA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Ductile Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5
100x65 FSKA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5
100x80 FSGCA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Ductile Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5
100x80 FSHCA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Ductile Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5
125x100 FSJCA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Ductile Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5
125x100 FSKA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Ductile Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5
125x100 FSLA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Ductile Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5

Hydrostatic Test and Material (2/2) 50/60 Hz

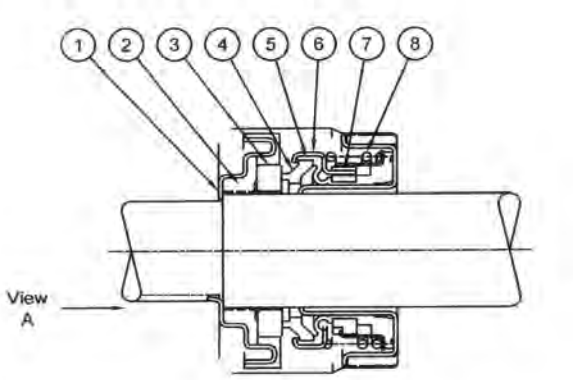
Model	10 Bar version						16 Bar version					
	Material					Hydro Test	Material					Hydro Test
	Casing	Impeller		Shaft			Casing	Impeller		Shaft		
		Standard	Option	Standard	Option	kg/cm2		Standard	Option	Standard	Option	kg/cm2
150x100 FSKA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5
150x100 FSNA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5
150X125 FSHA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Ductile Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5
150x125 FSJA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Ductile Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5
150x125 FSKA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Ductile Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5
150x125 FSLA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Ductile Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5
200x150 FSHA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Ductile Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5
200x150 FSJA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Ductile Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5
200x150 FSKA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Ductile Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5
200x150 FSLA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5
200x150 FSNA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5
250x200 FSLA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5
250x200 FSNA	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	15.3	Cast Iron	Bronze	Cast Iron	403 St. Steel	304; 316 St. Steel	24.5

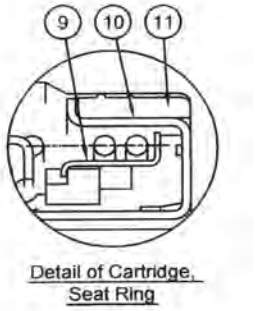
Shaft Seal, Gasket and Bearing 50/60 Hz

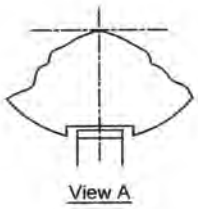
Model	Mechanical Seal	O-Ring/ Gasket	Gland Packing Size mm	Qty of Gland Packing	Ball Bearing
50x40 FSHA	FH-25	Gs-225	41x25x8	4	6305 ZZ
65x50 FSHA	FH-25	Gs-225	41x25x8	4	6305 ZZ
65x50 FSJA		Gs-275			
80x65 FSGA	FH-25	Gs-180	41x25x8	4	6305 ZZ
80x65 FSHA		Gs-225			
80x65 FSJA	FH-35	Gs-275	51x35x8		6307 ZZ
80x65 FSKA		Gs-335			
100x65 FSKA	EA-262-40	Gs-335	56x40x8	4	6208 ZZ
100x80 FSGA	FH-25	Gs-275	41X25X8	4	6305 ZZ
100x80 FSHA	FH-35	Gs-225	51X35X8		6307 ZZ
100x80 FSJA		Gs-275			
100x80 FSGCA	EA-262-35	Gs-185			
100x80 FSHCA		Gs-225			
125x100 FSJCA	EA-262-40	Gs-275	56x40x8	4	6208 ZZ
125x100 FSKA	FH-35	Gs-335	51x35x8		6307 ZZ
125x100 FSLA	EA-262-45	Gs-425	65x45x10	5	6309 ZZ
150x100 FSKA	EA-262-50	370x320x0.8T	70x50x10	4	6310 ZZ
150x100 FSNA	EA-262-55	560x515x0.8T	75x55x10	5	6312 ZZ
150x125 FSHA	EA-262-35	Gs-225	51x35x8	4	6307 ZZ
150x125 FSJA		Gs-275			
150x125 FSKA	EA-262-45	Gs-335	65x45x10	5	6309 ZZ
150x125 FSLA		Gs-425			
200x150 FSHA	EA-262-35	Gs-225	51x35x8	4	6307 ZZ
200x150 FSJA	EA-262-45	Gs-275	65x45x10	5	6309 ZZ
200x150 FSKA	EA-262-55	Gs-335	75x55x10		6312 ZZ
200x150 FSLA		450x415x0.8T			
200x150 FSNA	EA-262-65	560x515x0.8T	90x65x12.5		6313 ZZ
250x200 FSLA	EA-262-65	480x440x0.8T	90x65x12.5	5	6313 ZZ
250x200 FSNA	EA-262-75	615x550x0.8T	104x75x14.5		6315 ZZ

Sectional View of Mechanical Seal 50/60 Hz

Model FH

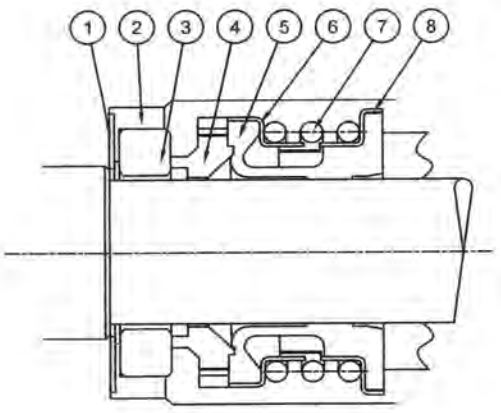






Part No.	Part Name	Material	Qty/Unit
1	Case	304 Stainless Steel	1
2	Cup Gasket	NBR	1
3	Mating Ring	Ceramic NT-32	1
4	Seal Ring	Carbon NC-11B1	1
5	Bellows	NBR	1
6	Case	304 Stainless Steel	1
7	Drive Ring	304 Stainless Steel	1
8	Coil Spring	304 Stainless Steel	1
9	Spring Holder	304 Stainless Steel	1
10	Cartridge	304 Stainless Steel	1
11	Seat Ring	NBR A834	1

Model EA



Part No.	Part Name	Material	Qty/Unit
1	Washer	316 Stainless Steel	1
2	Cup Gasket	NBR	1
3	Mating Ring	Ceramic	1
4	Seal Ring	Carbon	1
5	Bellows	NBR	1
6	Case	316 Stainless Steel	1
7	Coil Spring	316 Stainless Steel	1
8	Spring Holder	316 Stainless Steel	1

Impeller and Coupling (1/6) 50/60 Hz

4 POLES - 50 Hz (1500 rpm)

MODEL	MOTOR		IMPELLER DIAMETER mm	COUPLING CLA	SHAFT DIAMETER	
	POWER	FRAME			PUMP	MOTOR
	kW	No.			dP (mm)	dM (mm)
50x40 FSHA	0.4	71	182	112	24	14
	0.75	80	209			19
65x50 FSHA	0.75	80	199	112	24	19
65x50 FSJA	1.5	90L	240	112	24	24
	2.2	100L	261	125		28
80x65 FSGA	0.75	80	164	112	24	19
80x65 FSHA	1.5	90L	207	112	24	24
80x65 FSJA	2.2	100L	237	140	32	28
	3.7	112M	261			
80x65 FSKA	5.5	132S	279	160	32	38
	7.5	132M	300			
	11	160M	333			42
100x80 FSGA	1.5	90L	169	112	24	24
	2.2	100L	183	125		28
100x80 FSHA	2.2	100L	199	140	32	28
	3.7	112M	223			
100x80 FSJA	3.7	112M	236	140	32	48
	5.5	132S	265	160		
100x80 FSGCA	2.2	100L	166	140	32	28
	3.7	112M	190	140		
100x80 FSHCA	3.7	112M	187	140	32	28
	5.5	132S	205	160		38
	7.5	132M	223	160		38
125x100 FSJCA	5.5	132S	232	160	38	38
	7.5	132M	251			38
	11	160M	273			42
125x100 FSKA	7.5	132M	250	160	32	38
	11	160M	283			42
	15	160L	315			
	18.5	180M	333	180		48
125x100 FSLA	22	180L	368	180	32	48
	30	200L	407	200		55
150x125 FSHA	7.5	132M	190	160	32	38
	11	160M	212			42
	15	160L	224			
150x125 FSJA	15	160L	246	160	32	42
	18.5	180M	260	180		48
	22	180L	274			
150x125 FSKA	30	200L	316	200	42	55
	37	225SC	334	224		60
150x125 FSLA	45	225MC	378	224	42	60
	55	250SC	400	250		70
	75	250MC	424			
150x100 FSNA	55	250SC	409	250	55	70
	75	250MC	460			
	90	280SC	499	280		80

4 POLES - 50 Hz (1500 rpm - Continue)

MODEL	MOTOR		IMPELLER DIAMETER mm	COUPLING CLA	SHAFT DIAMETER	
	POWER	FRAME			PUMP	MOTOR
	kW	No.			dP (mm)	dM (mm)
200x150 FSHA	5.5	132S	186	160	32	38
	7.5	132M	200			
	11	160M	222			42
200x150 FSJA	15	160L	220	160	42	42
	18.5	180M	234	180		48
	22	180L	248			
	30	200L	268	200		55
	37	225SC	274	224		60
200x150 FSKA	37	225SC	294	224	48	60
	45	225MC	310			
	55	250SC	334	250		70
200x150 FSLA	75	250MC	385	250	48	70
	90	280SC	411	280		80
200x150 FSNA	110	280MC	445	280	60	80
	132	315SC	480	315		85
	150	315MC	495			
250x200 FSLA	90	280SC	362	280	60	80
	110	280MC	380			
	132	315SC	392	315		85
	150	315MC	408			
250x200 FSNA	185	315MB	445	315	74	85
	225	315CB-95R	473	355		95
	260	355AB-95R	492			
	300	355CB-95R	520			
	335	355CB-95R	530			

Impeller and Coupling (3/6) 50/60 Hz

2 POLES - 50 Hz (3000 rpm)

MODEL	MOTOR		IMPELLER DIAMETER mm	COUPLING CLA	SHAFT DIAMETER	
	POWER	FRAME			PUMP	MOTOR
	kW	No.			dP (mm)	dM (mm)
50x40 FSHA	1.5	90S	143	112	24	24
	2.2	90L	160			
	3.7	112M	188	125		28
	5.5	132S	208	160		38
65x50 FSHA	3.7	112M	166	125	24	28
	5.5	132S	185	160		38
	7.5	132S	207			
65X50 FSJA	11	160M	232	160	24	42
	15	160M	250			
80x65 FSGA	5.5	132S	157	160	24	38
	7.5	132S	173			
80X65 FSHA	11	160M	199	160	24	42
	15	160M	215			
80X65 FSJA	18.5	160L	240	160	32	42
	22	180MA	246	180		48
100X80 FSGA	7.5	132S	147	160	24	38
	11	160M	167			42
	15	160M	180			
100X80 FSHA	18.5	160L	201	160	32	42
	22	180MA	211	180		48
100X80 FSJA	30	200LA	235	200	32	55
	37	200LA	254			
	45	225MA	269			
100x65 FSKA	55	250SA	286	224	38	60
	75	250MA	328			
100X80 FSGCA	18.5	160L	166	160	32	42
	22	180MA	178			
	30	200LA	193	180		48
100X80 FSHCA	37	200LA	197	200	32	55
	45	225MA	205			
	55	250SA	223			
125X100 FSJCA	55	250SA	236	200	38	55
	75	250MA	273	224		60
150x100 FSKA	75	250MA	278	224	42	60
	90	280SA	291	250		65
	110	280MA	310			
	132	315SA	323			

Recommended Spare Parts 50/60 Hz

Part No.	Part Name	Standard Material	Q'ty/Unit
056	Ball Bearing	-	2
107	Liner Ring	Bronze	2
111	Mechanical Seal	Ceramic/Carbon/NBR	1
119	Gland Packing	Teflon (PTFE) Impregnated	3 or 4
	Coupling Rubber	NBR	1 set

Inspections and Test 50/60 Hz

Item Check	Standard		Option	
Material Inspection	EI	Material chemical composition and mechanical Properties are checked periodically according to JIS.	CR/ ES	Material certificat is to be submitted
Hydrostatic test *3	EN	Hydrostatic test is to be performed on casing using fresh water at normal temperature. Retention time of water pressure is 5 minutes for Cast Iron	EN	Hydrostatic test record is to be submitted
Balancing test *3	EN	Impeller is to be subject to balancing test	EN	
Assembly dimensional inspection *3	EN	Dimensions of the followings are to be subject to inspection * Position of foundation bolt hole * Position of suction & discharge flange * Relative positions of suction and discharge flange and foundation bolt hole.	CR	Outline dimensional inspection record is to be submitted.
Performance test General performance *1	ES	Capacity, total head, pump power input, and speed of rotation are to be measured and pump efficiency to be calculated. Measurement point are to be 5 points within the range from shutoff point 125% rated capacity. Judgement is to be based on JIS Testing Code B8301 9.1 (1)	CR	Judgement is to be based on following standards. * JIS Testing Code B8301 9.1 (2) * ISO 2548 Part 1 Class C (as requested by customer)
Bearing Vibration	EN	Vibration is to be measured on bearing housing at rated capacity. Judgement is to be based on JIS Testing Code B8301 9.4.1	CR	Measured record is to be submitted
Performance test Bearing Temperature	EN	Temperature is to be measured at saturated point of the temperature increase. Judgement is to be based on JIS Testing Code B8301 9.4.2	CR	Measurement record is to be submitted.
NPSH	NA		CR	Measurement record is to be performed for Req'd NPSH at above or below rated capacity
	EN	Internal Ebara Standard	CR	Noise level is to be measured at rated capacity. *2
Shipping Inspection	ES	Shipping Inspection is to be performed based on EBARA shipping inspection check sheet.	ES	

NOTE :

CR : Ebara Inspector Witness Point (Record shall be submitted)
EI : Ebara Inspector Witness Point (Record shall be not submitted)
EN : Ebara Inspector Witness Point (Not Recorded but stamp/marking/OK inspection label)
ES : Ebara Inspector Witness Point (Record shall be kept)
NA : Not Applied.

***1** Performance test based on JIS B8301 " Testing Methods for Centrifugal Pumps, Mixed Flow Pumps and Axial Flow Pump" and JIS B8302 "Measurement Methods of Pump Discharge".

***2** Measured Value on pump noise is considered as reference value because its include background noise effect of motor, discharge valve, etc.

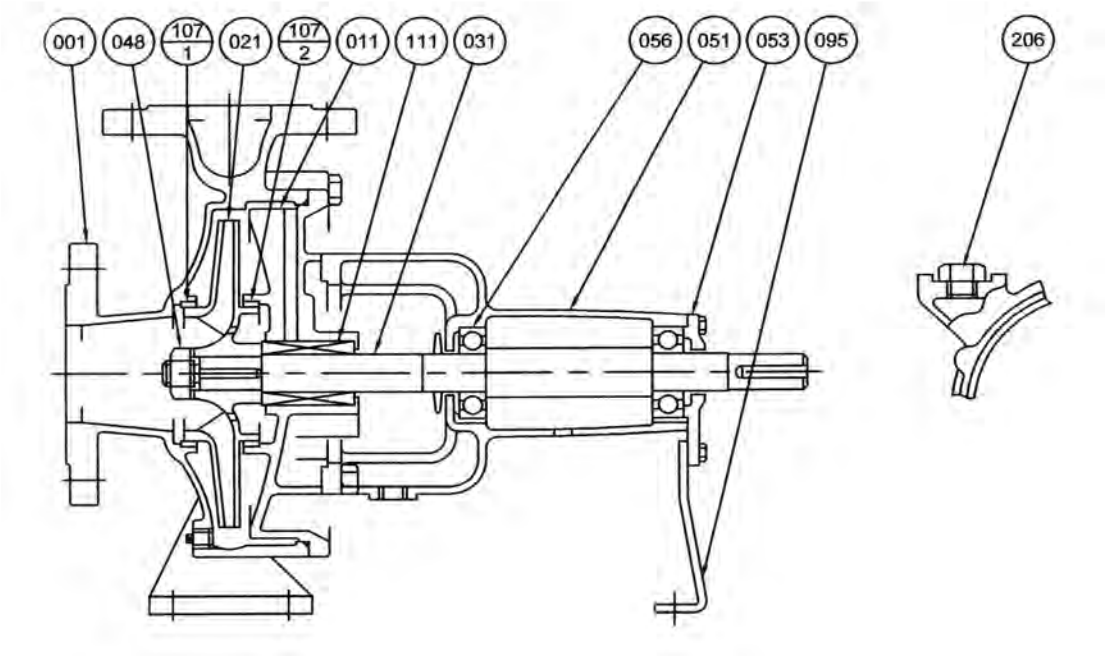
***3** Judgement is based on Ebara Standard.

Paint Specifications 50/60 Hz

Part Name	Material (JIS Code)	Standard		Optional Inner Surface
		Inner Surface	Outer Surface	
Casing	Cast Iron (FC)	1 coat of Zinc chromate primer	Under coat - 1 coat of Zinc chromate primer Finish coat - 1 coat of Phthalic resin enamel	1 coat of Tar epoxy resin
Bearing Housing **Bearing Cover**	Cast Iron (FC)			
Common Base	Cast Iron (FC)	Under coat - 1 coat of Zinc chromate primer Finish coat - 1 coat of Phthalic resin enamel		
	Steel			

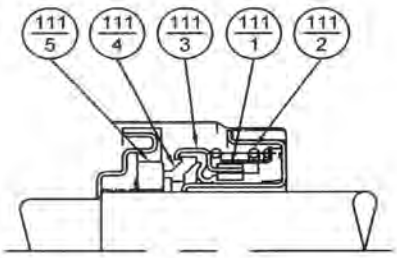
Sectional View - 50x40 FSHA; 65x50 FSHA, FSJA; 80x65 FSGA, FSHA, FSJA, FSKA; 100x80 FSGA, FSHA, FSJA; 125x100 FSKA

50/60 Hz



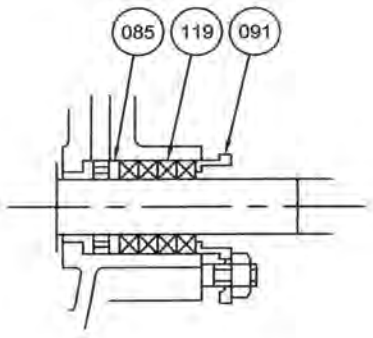
Mechanical Seal Type (Standard)

Model FH



No.	Part Name	Material	Qty
111-5	Mating Ring	Ceramic	1
111-4	Seal Ring	Carbon	
111-3	Friction Ring	NBR	
111-2	Coil Spring	Stainless Steel	
111-1	Spring Holder		

Gland Packing Type (Option)

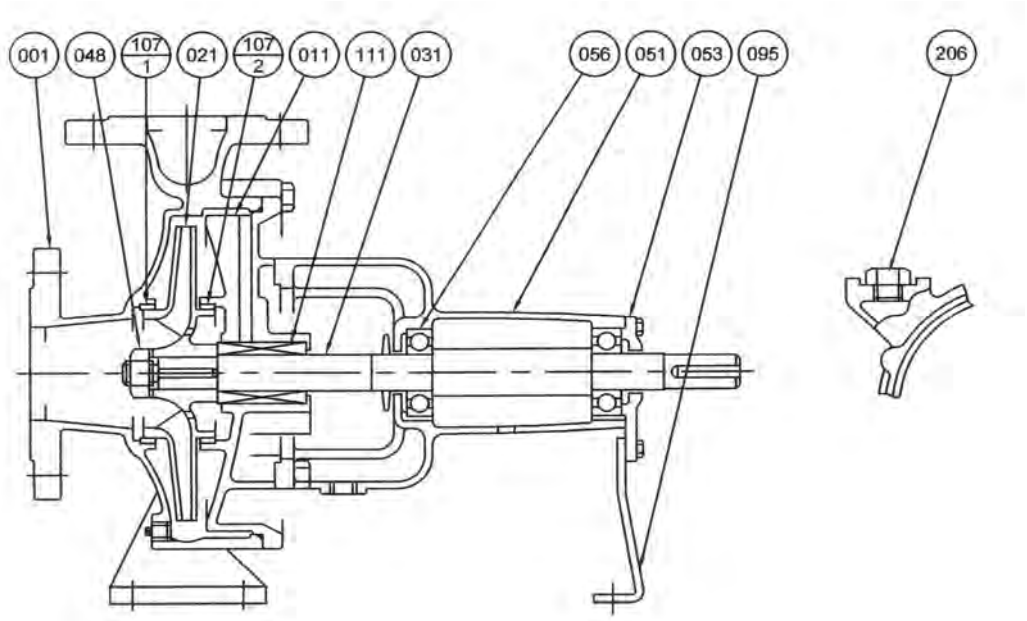


No.	Part Name	Material	Qty
119	Gland Packing	-	4 or 5
091	Gland	Bronze	1
085	Lantern Ring Bushing		

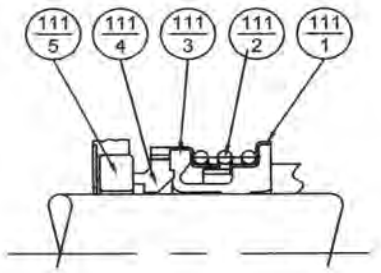
No.	Part Name	Material	Qty
207	Plug	Steel	1
111	Mechanical Seal	-	
107-2	Casing Ring	Bronze	
107-1	Casing Ring		
095	Stay	Steel	1
056	Ball Bearing	-	2
053	Bearing Cover	Cast Iron	1
051	Bearing Housing		
048	Impeller Nut	Brass	
031	Shaft	Stainless Steel	
021	Impeller	Bronze	
011	Casing Cover	Cast Iron	
001	Casing		

Ebara End Suction Volute Pump — Model FSA

Sectional View - 100x65 FSKA; 100x80 FSGCA, FSHCA
125x100 FSJCA, FSLA
150x100 FSKA, FSNA
150x125 FSHA, FSJA, FSKA, FSLA
200x150 FSHA, FSJA, FSKA, FSLA, FSNA
250x200 FSLA, FSNA — 50/60 Hz

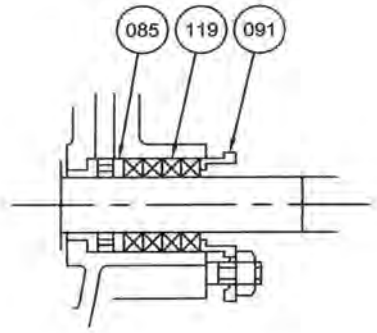


Mechanical Seal Type (Standard)
Model EA



No.	Part Name	Material	Qty
111-6	Cup Gasket	NBR	1
111-5	Mating Ring	Ceramic	
111-4	Seal Ring	Carbon	
111-3	Bellows	NBR	
111-2	Spring	Stainless Steel	
111-1	Spring Holder		

Gland Packing Type (Option)

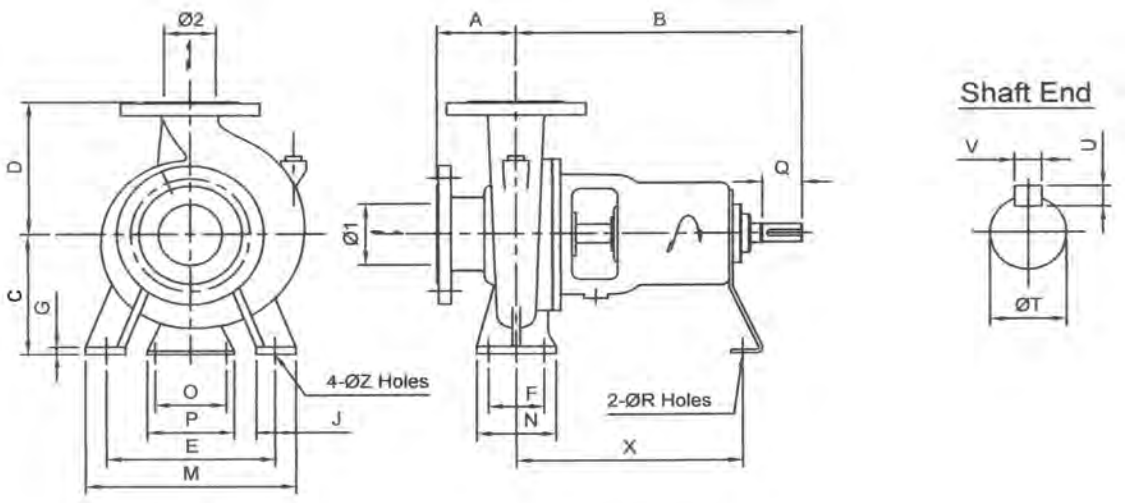


No.	Part Name	Material	Qty
119	Gland Packing	-	4 or 5
091	Gland	Bronze	1
085	Lantern Ring Bushing		

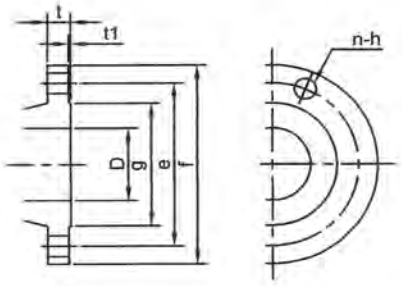
No.	Part Name	Material	Qty
207	Plug	Steel	1
111	Mechanical Seal	-	
107-2	Casing Ring	Bronze	
107-1	Casing Ring		
095	Stay	Steel	1
056	Ball Bearing	-	2
053	Bearing Cover	Cast Iron	1
051	Bearing Housing		
048	Impeller Nut	Brass	
031	Shaft	Stainless Steel	
021	Impeller	Bronze	
011	Casing Cover	Cast Iron	
001	Casing		

Dimension - Bare Shaft Pump (10 Bar Model) 1/2 50/60 Hz

Pump



Flange



Dimension - Flange (JIS 10K RF)

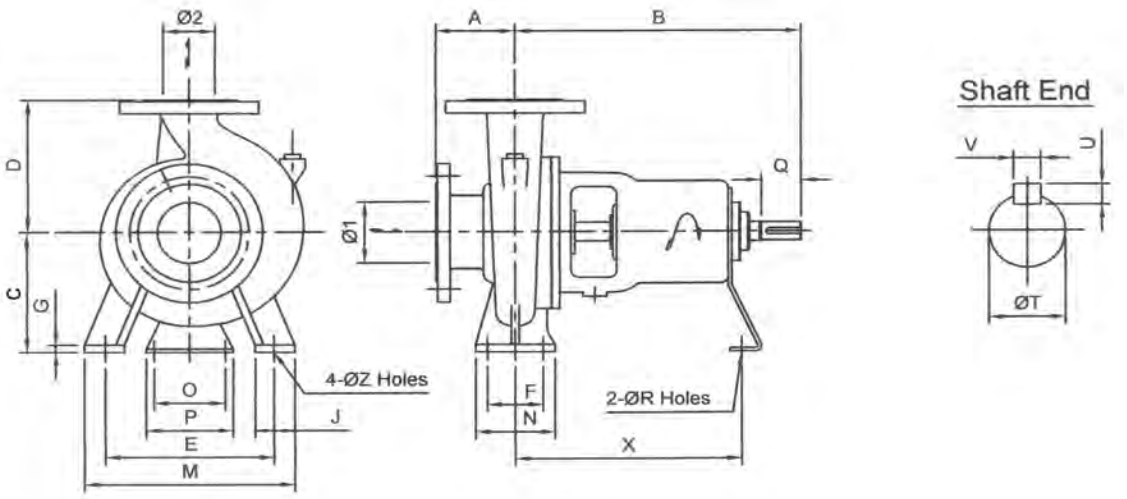
D mm	f mm	e mm	g mm	t1 mm	t mm	n	h mm
40	140	105	81	2	20	4	19
50	155	120	96	2	20	4	19
65	175	140	116	2	22	4	19
80	185	150	126	2	22	8	19
100	210	175	151	2	24	8	19
125	250	210	182	2	24	8	23
150	280	240	212	2	26	8	23
200	330	290	262	2	26	12	23

Dimension - Pump (50/60 Hz)

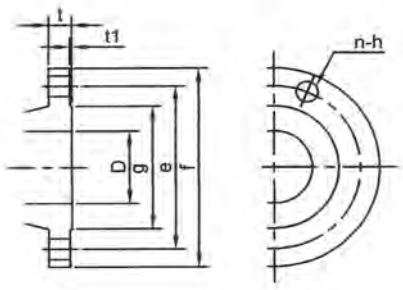
Model	Size		Pump															Shaft				wt
	ϕ1	ϕ2	A	B	C	D	E	F	G	J	M	N	O	P	R	X	Z	T	Q	U	V	kg
50x40 FSHA	50	40	80	360	160	180	190	70	12	50	240	100	110	150	17	285	15	24	50	7	8	37
65x50 FSHA	65	50	100	360	160	180	212	70	12	50	265	100	110	150	17	285	15	24	50	7	8	42
65x50 FSJA					180	225	250	95	14	65	320	125										49
80x65 FSGA	80	65	100	360	160	180	212	70	12	50	265	100	110	150	17	285	15	24	50	7	8	39
80x65 FSHA						200																48
80x65 FSJA					180	225	250	95	14	65	320	125						32	80	8	10	60
80x65 FSKA			125	470	225	280	315	120	16	80	400	160				370	19					108
100x80 FSGA	100	80	100	360	160	200	212	95	14	65	280	125	110	150	17	285	15	24	50	7	8	49
100x80 FSHA					180	225	250		15		320							32	80	8	10	62
100x80 FSJA					200	250	280	120		80	360	160					19					70
100x80 FSGCA			125	360	180	225	250	95	14	65	320	125					15					62
100x80 FSHCA						250	280				345											65
125x100 FSJCA	125	100	140	360	225	280	315	120	16	80	400	160	110	150	17	285	19	32	80	8	10	108
125x100 FSKA				470	250	315										370						128
125x100 FSLA				530	280	355	400	150	20	100	500	200					24	42	110	8	12	168
150x125 FSHA	150	125	140	470	250	315	315	120	15	80	400	160	110	150	17	370	19	32	80	8	10	120
150x125 FSJA						355			16													128
200x150 FSHA	200	150	160	470	280	355	400	150	18	100	500	200	110	150	17	370	24	32	80	8	10	137

Dimension - Bare Shaft Pump (10 Bar Model) 2/2 50/60 Hz

Pump



Flange



Dimension - Flange (JIS 10K RF)

D mm	f mm	e mm	g mm	t1 mm	t mm	n	h mm
40	140	105	81	2	20	4	19
50	155	120	96	2	20	4	19
65	175	140	116	2	22	4	19
80	185	150	126	2	22	8	19
100	210	175	151	2	24	8	19
125	250	210	182	2	24	8	23
150	280	240	212	2	26	8	23
200	330	290	262	2	26	12	23

Dimension - Pump (50 Hz)

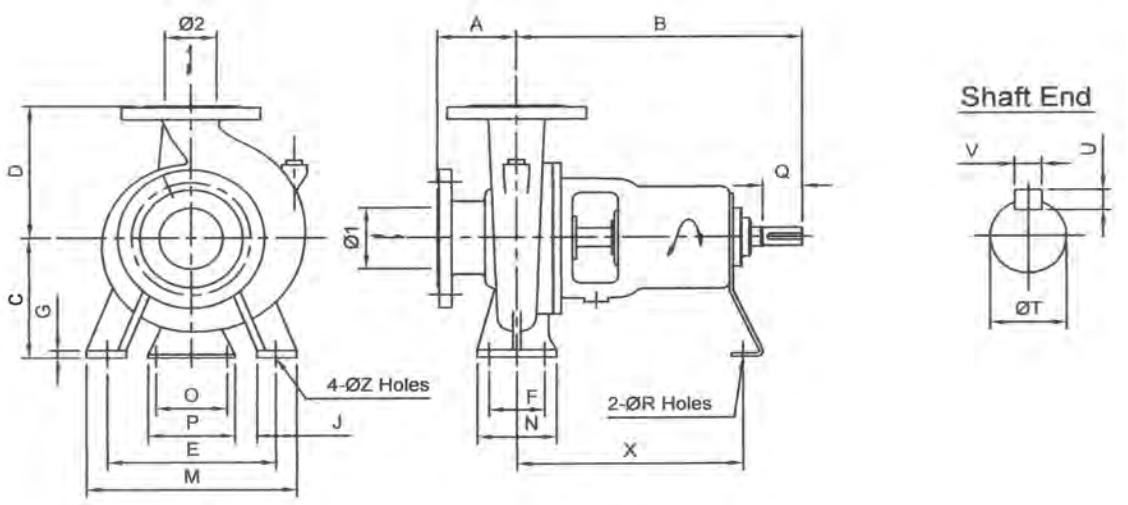
Model	Size		Pump															Shaft				wt
	ϕ1	ϕ2	A	B	C	D	E	F	G	J	M	N	O	P	R	X	Z	T	Q	U	V	(kg)
150x125 FSKA	150	125	140	530	280	355	400	150	16	100	500	200	110	150	17	370	24	42	110	8	12	170
150x125 FSLA					315	400			20													205
200x150 FSJA	200	150	160	530	280	375	400	150	18	100	500	200	110	150	17	370	24	42	110	8	12	183
200x150 FSKA				670	315	400	450		20		550		140	180	19	500		48		9	14	222

Dimension - Pump (60 Hz)

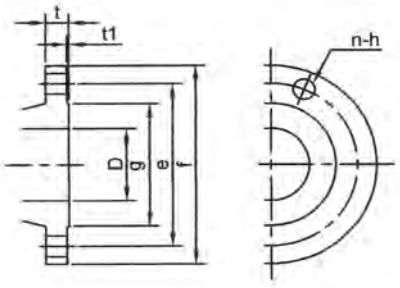
Model	Size		Pump															Shaft				wt
	ϕ1	ϕ2	A	B	C	D	E	F	G	J	M	N	O	P	R	X	Z	T	Q	U	V	(kg)
150x125 FSKA	150	125	140	470	280	355	400	150	16	100	500	200	110	150	17	310	24	42	110	8	12	170
150x125 FSLA					315	400			20													205
200x150 FSJA	200	150	160	470	280	375	400	150	18	100	500	200	110	150	17	310	24	42	110	8	12	183
200x150 FSKA				640	315	400	450		20		550		140	180	19	470		48		9	14	222

Dimension - Bare Shaft Pump (16 Bar Model) 50/60 Hz

Pump



Flange



Dimension - Flange (JIS 16K RF)

D mm	f mm	e mm	g mm	t1 mm	t mm	n	h mm
65	175	140	116	2	22	8	19
100	225	185	160	2	26	8	23
150	305	260	230	2	28	12	25
200	350	305	275	2	30	12	25
250	430	380	345	2	34	12	27

Dimension - Pump

Model	Size		Pump															Shaft				wt
	ϕ1	ϕ2	A	B	C	D	E	F	G	J	M	N	O	P	R	X	Z	T	Q	U	V	kg
100x65 FSKA	100	65	125	360	225	280	315	120	16	80	400	160	110	150	17	257	19	38	80	8	10	106
150x100 FSKA	150	100	140	530	250	315	315	120	16	80	400	160	90	120	15	373	19	42	95	8	12	146
150x100 FSNA			180	670	375	450	450	150	20	100	550	200	140	180	19	500	24	48	110	9	14	365
200x150 FSLA	200	150	162	670	315	450	450	150	20	100	550	200	140	180	19	500	24	48	110	9	14	336
200x150 FSNA			182		375	560												60		11	18	488
250x200 FSLA	250	200	180	670	385	560	560	250	25	100	660	315	140	180	19	500	24	60	110	11	18	505
250x200 FSNA			200	820	435	630							160	200		630	27	74	125	12	20	642

Unit:mm, unless otherwise stated