



EBARA

Single Suction Process Pump

(Chemical / Light slurry) ===== **Type TFS & TLS**

- ***Easy Maintenance***

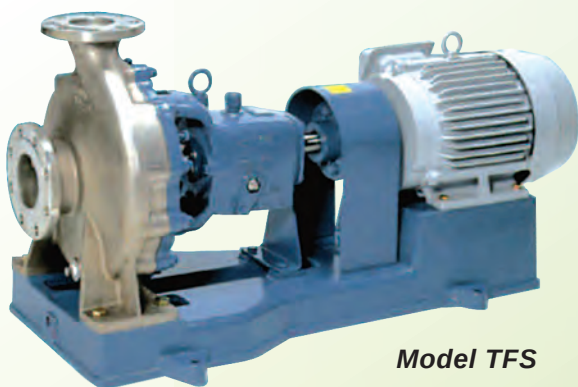
- Simple assembly and disassembly
TFS : back pull-out system
TLS : triple division casing system

- ***Variable shaft seal***

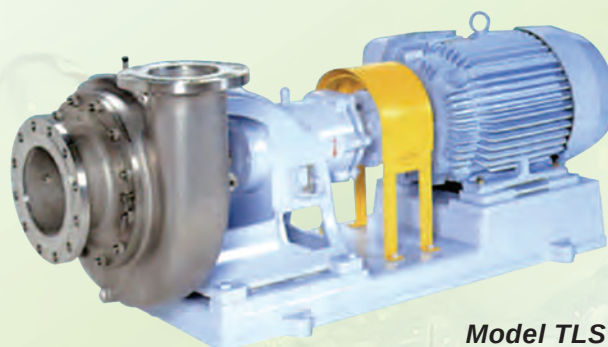
- Not mention about gland packing, available to adapt to a wide variety of mechanical seals.

- ***Substantial service***

- many customer satisfy our service



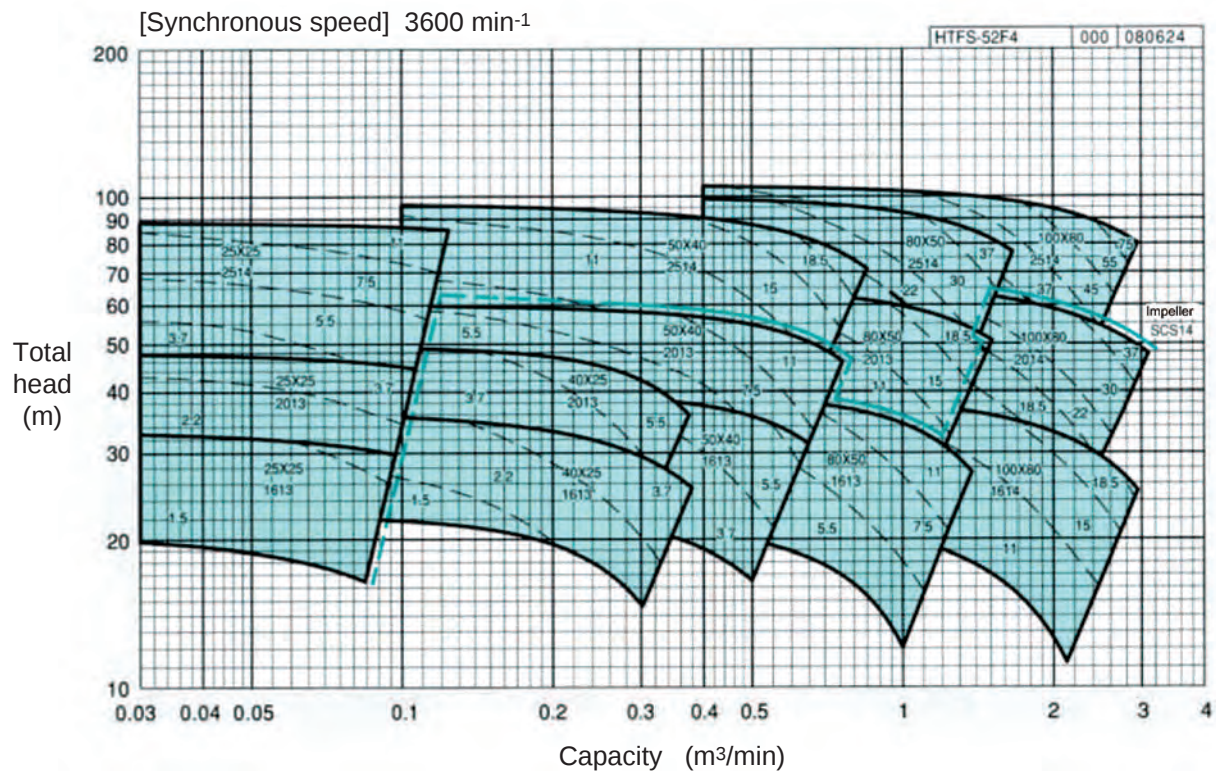
Model TFS



Model TLS

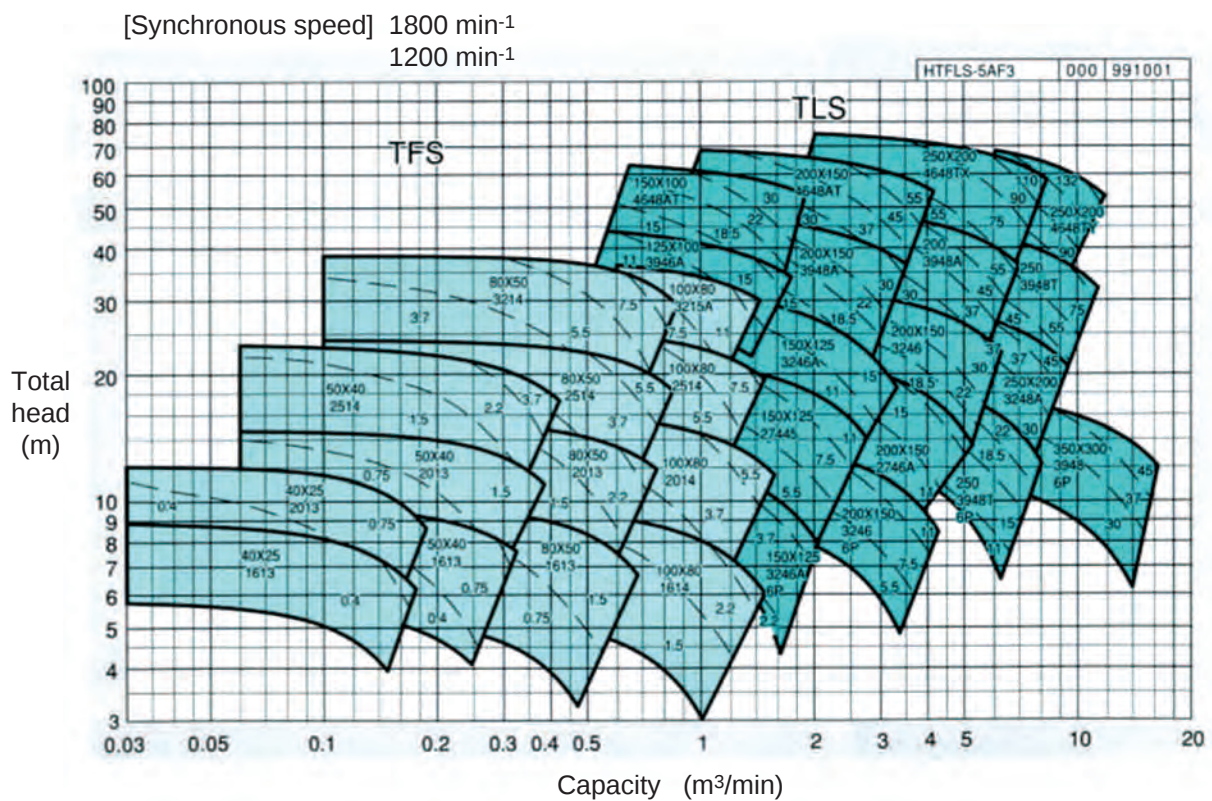
PERFORMANCE CHART

TFS - 2 poles



TFS - 4 poles

TLS - 4 poles, 6 poles



SPECIFICATIONS - TFS

Standard			
Liquid	Liquid Specification	Water, Chemical liquid	
	Temperature	0 ~ 120°C	
	Density	700 ~ 1000kg/m³ {0.7 ~ 1.0kg/L}	
	Viscosity	Under 4.3mPa·s 4.3cP	
Maximum operating pressure		1.37MPa 14kgf/cm²	
Maximum suction pressure		0.3MPa{3kgf/cm²} However, it should be less than (the maximum operating pressure - shut off pressure)	
Installation site		Indoor Outdoor	
		Cast Iron	Stainless Steel
Material	Casing	FC250	SCS14
	Impeller	FC200/SCS14	SCS14
	Shaft	S35C	SUS316
	Shaft Sleeve	SUS403	SUS316
	Gland Packing	P#6501L (Carbon fiber)	P#6501L (Carbon fiber)
Construction	Shaft Seal	Gland packing - non water cooling	
	Flushing Method	External flushing	
	Bearing	Ball bearing - non water cooling	
	Lubrication	Oil bath	
	Casing Split	Ball bearing - non water cooling	
	Impeller	Semi open	
Flange Rating	Suction	JIS10K FF	JIS10K RF
	Discharge	JIS10K FF	JIS10K RF
Nozzle Rating	Suction	End	
	Discharge	Top	
Rotation		Clockwise viewed from driver	
Option			
Construction	Shaft Seal	Mechanical seal	
Material	Casing	SCS11	
	Impeller	SCS14*, SCS11	
	Shaft	SUS316*, SUS316L, SUS329J1	
	Shaft Sleeve	Base Metal : SUS316, SUS316L, SUS329J1	
	(Surface Processing)	Coating material : Stellite, ceramics	
Coupling		Disc type (with spacer)	
Coupling Guard		Enclosure types with hinges	
Temperature		- 15 ~ 150°C (Cast iron), - 29 ~ 150°C (SCS 14)	
Standard Accessories			
Common base, Coupling (both the pump side and driver side), External flushing piping, Anchor bolts, Coupling guard, Casing drain plug			

* is apply to cast iron impeller

SPECIFICATIONS - TLS

Standard			
Liquid	Liquid Specification	Water, Chemical liquid	
	Temperature	0 ~ 120°C	
	Density	700 ~ 1000kg/m³ {0.7 ~ 1.0kg/L}	
	Viscosity	Under 4.3mPa·s 4.3cP	
Maximum operating pressure		0.69 ~ 1.27MPa {7 ~ 13kgf/cm²} It depends on model	
Maximum suction pressure		0.3MPa{3kgf/cm²} However, it should be less than (the maximum operating pressure - shut off pressure)	
Installation site		Indoor Outdoor	
		Stainless Steel for main parts	Stainless Steel
Material	Casing	FC200	SCS13
	Impeller	SCS13	SCS13
	Shaft	SUS304	SUS304
	Shaft Sleeve	SUS304	SUS304
	Gland Packing	P#6501L (Carbon fiber)	P#6501L (Carbon fiber)
Construction	Shaft Seal	Gland packing - non water cooling	
	Flushing Method	External flushing	
	Bearing	Ball bearing - non water cooling	
	Lubrication	Oil bath	
	Casing Split	Front cover vertical split	
	Impeller	Full open	
Flange Rating	Suction	JIS10K RF	
	Discharge	JIS10K RF	
Nozzle Rating	Suction	End	
	Discharge	Top	
Rotation		Clockwise viewed from driver	
Option			
Construction	Shaft Seal	Mechanical seal	
Material	Casing	SCS14, SCS11	
	Impeller	SCS14, SCS11	
	Shaft	SUS316, SUS316L, SUS329J1	
	Shaft Sleeve (Surface Processing)	Base Metal : SUS304, SUS316, SUS316L, SUS329J1 Coating material : Stellite, ceramics	
Coupling		Disc type (with spacer)	
Coupling Guard		Enclosure types with hinges	
Temperature		- 15 ~ 150°C (Stainless steel for main parts), - 29 ~ 150°C (SCS 13)	
Standard Accessories			
Common base, Coupling (both the pump side and driver side), External flushing piping, Anchor bolts, Coupling guard, Casing drain plug			

SECTIONAL VIEW - TFS

Clearance Adjustment

To laminated adjustment shims make it easier to adjustment clearance at front side of impeller.

Shaft Seal

Available to install gland packing and mechanical seal.

Impeller

Use semi-open impeller with backbane.

Casing

Easy to disassemble and re-assemble the pump without removing the casing from the discharge pipe.

SECTIONAL VIEW - TLS

Clearance Adjustment

Adjustment of clearance between the impeller and the front side plate can be carried out externally, without disassembling the pump, thus reducing the time required for impeller replacement.

Labyrinth Seal

The labyrinth seal eliminates oil leak from the bearing housing without any damage to the shaft.

Shaft Seal

Available to install gland packing and mechanical seal.

Impeller

Use open impeller.

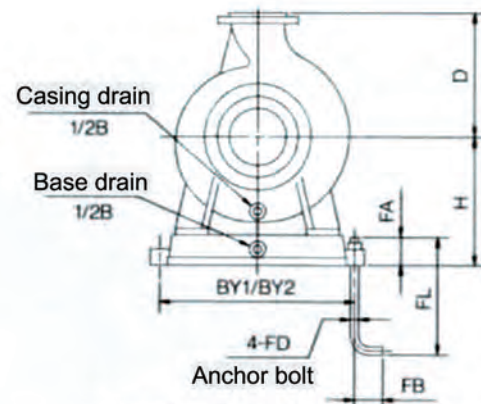
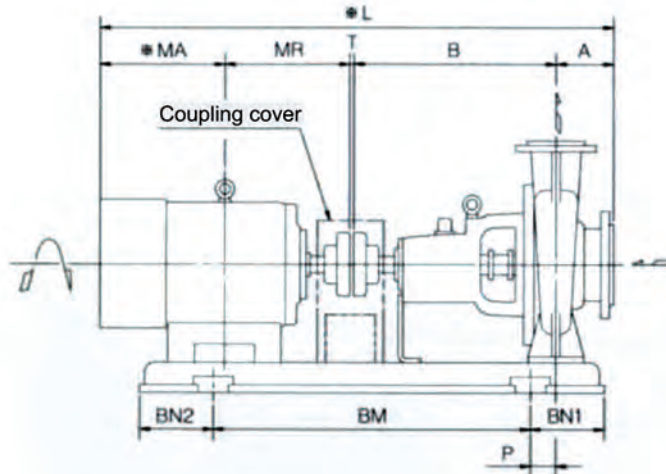
Triple Division Casing System

Triple division of the casing make it easy to disassemble the pump without re-moving the casing from the discharge pipe.

Side Plates

Side plates are provided both front side and back side of the impeller to prevent wear of the casing and suction cover, it contribute to reduce part cost.

DIMENSION - TFS



Note 1) BY1: Pump side BY2: Driver side
2) ※ indicates approximate dimension

Unit : mm

Model	Motor					T	Pump					*L	Common Base					Anchor Bolt				Weight Kg
	Frame No.	Output (kW)		MR	*MR		A	B	H	D	P		BM	BN1	BN2	BY1	BY2	FD	FL	FA	FB	
40 X 25 TFSM 1613	71	-	0.4	120	121	3	80	385	207	160	55	709	480	115	130	290	250	M12	250	55	50	74
	80	-	0.75	140	133	3	80	385	207	160	55	741	480	115	130	290	250	M12	250	55	50	81
	90L	1.5/2.2	1.5	168.5	158.5	3	80	385	217	160	55	795	480	115	130	290	250	M12	250	55	50	89
	112M	3.7	-	200	187	3	80	385	207	160	70	855	540	130	95	320	320	M12	250	55	50	115
	132S	5.5/7.5	-	239	211	3	80	385	240	160	70	918	540	130	135	350	350	M12	250	55	50	144
40 X 25 TFSM 2013	71	-	0.4	120	121	3	100	385	235	180	55	729	480	115	130	320	250	M12	250	55	50	85
	80	-	0.75	140	133	3	100	385	235	180	55	761	480	115	130	320	250	M12	250	55	50	93
	90L	1.5/2.2	1.5	168.5	158.5	3	100	385	245	180	55	815	480	115	130	320	250	M12	250	55	50	102
	112M	3.7	-	200	187	3	100	385	235	180	70	875	540	130	95	320	320	M12	250	55	50	125
	132s	5.5/7.5	-	239	211	3	100	385	235	180	70	938	540	130	135	350	350	M12	250	55	50	150
50 X 40 TFSM 1613	160M	11	-	323	280	3	100	385	250	180	110	1091	560	170	140	400	400	M12	250	55	50	212
	71	-	0.4	120	121	3	80	385	207	160	55	709	480	115	130	290	250	M12	250	55	50	77
	80	-	0.75	140	133	3	80	385	207	160	55	741	480	115	130	290	250	M12	250	55	50	84
	90L	2.2	1.5	168.5	158.5	3	80	385	217	160	55	795	480	115	130	290	250	M12	250	55	50	92
	112M	3.7	-	200	187	3	80	385	207	160	70	855	540	130	95	320	320	M12	250	55	50	117
50 X 40 TFSM 2013	132S	5.5/7.5	-	239	211	3	80	385	235	160	70	918	540	130	135	350	350	M12	250	55	50	144
	160M	11	-	323	280	3	80	385	250	160	110	1071	660	170	140	400	400	M12	250	55	50	208
	80	-	0.75	140	133	3	100	385	235	180	55	741	480	115	130	320	250	M12	250	55	50	97
	90L	-	1.5	168.5	158.5	3	100	385	245	180	55	815	480	115	130	320	250	M12	250	55	50	106
	100L	-	2.2	193	173	3	100	385	235	180	70	854	540	130	95	320	320	M12	250	55	50	115
50 X 40 TFSM 2514	112M	-	3.7	200	187	3	100	385	235	180	70	875	540	130	95	320	320	M12	250	55	50	128
	132S	5.5/7.5	-	239	211	3	100	385	235	180	70	938	540	130	135	350	350	M12	250	55	50	154
	160M	11/15	-	323	280	3	100	385	250	180	110	1091	660	170	140	400	400	M12	250	55	50	216
	160L	18.5	-	345	302	3	100	385	250	180	110	1135	660	170	140	400	400	M12	250	55	50	244
	180M	22	-	351.5	325	3	100	385	270	180	110	1164.5	660	170	185	320	440	M12	250	55	50	278
80 X 50 TFSM 1613	180L	30	-	370.5	344	3	100	500	279	225	130	1317.5	840	205	215	490	490	M12	250	55	50	353
	200L	37	-	395.5	377	3	100	500	290	225	130	1375.5	840	205	200	400	490	M12	250	55	50	430
	90L	-	1.5	168.5	158.5	3	100	500	270	225	75	930	600	150	150	400	320	M12	250	55	50	138
	100L	-	2.2	193	173	3	100	500	270	225	75	969	600	150	150	400	320	M12	250	55	50	144
	112M	-	3.7	200	187	3	100	500	282	225	75	990	600	150	150	400	320	M12	250	55	50	158
80 X 50 TFSM 2514	132S	5.5/7.5	5.5	239	211	3	100	500	270	225	95	1053	660	170	165	400	400	M12	250	55	50	191
	160M	11/15	-	323	280	3	100	500	270	225	115	1206	740	190	190	440	440	M12	250	55	50	249
	160L	18.5	-	345	302	3	100	500	270	225	115	1250	740	190	190	440	440	M12	250	55	50	272
	180M	22	-	351.5	325	3	100	500	270	225	115	1279.5	740	190	190	440	440	M12	250	55	50	305
	180L	30	-	370.5	344	3	100	500	279	225	130	1317.5	840	205	215	490	490	M12	250	55	50	353

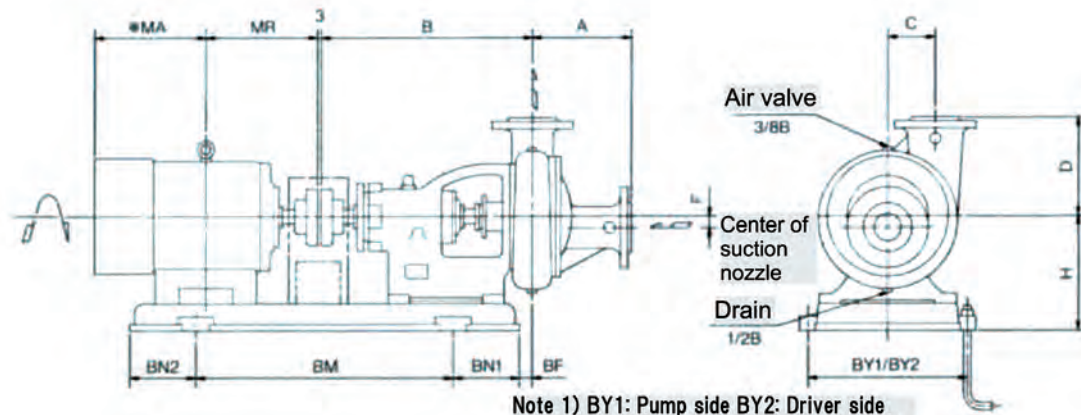
DIMENSION - TFS

Unit : mm

Model	Motor					T	Pump					*L	Common Base					Anchor Bolt				Weight Kg
	Frame No.	Output (kW)		MR	*MR		A	B	H	D	P		BM	BN1	BN2	BY1	BY2	FD	FL	FA	FB	
		2 Poles	4 Poles																			
80 X 50 TFSM 2013	90L	-	1.5	168.5	158.5	3	100	385	245	200	55	815	480	115	130	320	250	M12	250	55	50	111
	100L	-	2.2	193	173	3	100	385	235	200	70	854	540	130	95	320	320	M12	250	55	50	120
	112M	-	3.7	200	187	3	100	385	235	200	70	875	540	130	95	320	320	M12	250	55	50	133
	132S	-	5.5	239	211	3	100	385	235	200	70	938	540	130	135	350	350	M12	250	55	50	151
	160M	11/15	-	323	280	3	100	385	250	200	110	1091	660	170	140	400	400	M12	250	55	50	221
	160L	18.5	-	345	302	3	100	385	250	200	110	1135	660	170	140	400	400	M12	250	55	50	249
	180M	22	-	351.5	325	3	100	385	270	200	110	1164.5	660	170	185	320	440	M12	250	55	50	283
	180L	30	-	370.5	344	3	100	385	270	200	110	1202.5	660	170	185	320	440	M12	250	55	50	311
	200L	37	-	395.5	377	3	100	385	290	200	130	1260.5	740	190	190	320	490	M12	250	55	50	408
80 X 50 TFSM 2514	100L	-	2.2	193	173	3	125	500	270	225	75	994	600	150	150	400	320	M12	250	55	50	152
	112M	-	3.7	200	187	3	125	500	282	225	75	1015	600	150	150	400	320	M12	250	55	50	165
	132S	-	5.5	239	211	3	125	500	270	225	95	1078	660	170	165	400	400	M12	250	55	50	193
	132M	-	7.5	258	230	3	125	500	270	225	95	1116	660	170	165	400	400	M12	250	55	50	206
	160M	-	11	323	280	3	125	500	270	225	115	1231	740	190	190	440	440	M12	250	55	50	259
	160L	18.5	-	345	302	3	125	500	270	225	115	1275	740	190	190	440	440	M12	250	55	50	280
	180M	22	-	351.5	325	3	125	500	270	225	115	1304.5	740	190	190	440	440	M12	250	55	50	313
	180L	30	-	370.5	344	3	125	500	270	225	130	1342.5	840	205	215	490	490	M12	250	55	50	361
	200L	37/45	-	395.5	377	3	125	500	290	225	130	1400.5	840	205	200	400	490	M12	250	55	50	508
	225S	55	-	402	388	4	125	500	335	225	130	1419	840	205	175	400	550	M16	315	70	63	557
	250S	75	-	433.5	521	4	125	500	360	225	130	1583.5	840	205	215	440	600	M16	315	70	63	746
80 x 50 TFSM 3214	112M	-	3.7	200	187	3	125	500	327	280	75	1015	600	150	155	400	320	M12	250	55	50	204
	132S	-	5.5	239	211	3	125	500	315	280	95	1078	660	170	160	440	350	M12	250	55	50	224
	132M	-	7.5	258	230	3	125	500	315	280	95	1116	660	170	160	440	350	M12	250	55	50	236
	160M	-	11	323	280	3	125	500	315	280	115	1231	740	190	190	440	440	M12	250	55	50	288
	160L	-	15	345	302	3	125	500	315	280	115	1275	740	190	190	440	440	M12	250	55	50	316
100 X 80 TFSM 1614	90L	-	1.5	168.5	158.5	3	100	500	235	200	75	930	600	150	130	350	290	M12	250	55	50	123
	100L	-	2.2	193	173	3	100	500	235	200	75	969	600	150	130	350	290	M12	250	55	50	129
	112M	-	3.7	200	187	3	100	500	235	200	75	990	600	150	150	350	350	M12	250	55	50	146
	132S	7.5	5.5	239	211	3	100	500	250	200	95	1053	660	170	140	400	400	M12	250	55	50	184
	160M	11/15	-	323	280	3	100	500	250	200	115	1206	740	190	190	440	440	M12	250	55	50	234
	160L	18.5	-	345	302	3	100	500	250	200	115	1250	740	190	190	440	440	M12	250	55	50	257
	180M	22	-	351.5	325	3	100	500	270	200	115	1279.5	740	190	190	440	440	M12	250	55	50	297
	180L	30	-	370.5	344	3	100	500	270	200	130	1317.5	840	205	200	400	490	M12	250	55	50	343
	200L	37	-	395.5	377	3	100	500	290	200	130	1375.5	840	205	200	400	490	M12	250	55	50	423
100 X 80 TFSM 2014	100L	-	2.2	193	173	3	100	500	270	225	75	969	600	150	150	400	320	M12	250	55	50	152
	112M	-	3.7	200	187	3	100	500	282	225	75	990	600	150	150	400	320	M12	250	55	50	166
	132S	-	5.5	239	211	3	100	500	270	225	95	1053	660	170	165	400	400	M12	250	55	50	193
	132M	-	7.5	258	230	3	100	500	270	225	95	1091	660	170	165	400	400	M12	250	55	50	205
	160M	15	11	323	280	3	100	500	270	225	115	1206	740	190	190	440	440	M12	250	55	50	259
	160L	18.5	-	345	302	3	100	500	270	225	115	1250	740	190	190	440	440	M12	250	55	50	282
	180M	22	-	351.5	325	3	100	500	270	225	115	1279.5	740	190	190	440	440	M12	250	55	50	313
	180L	30	-	370.5	344	3	100	500	270	225	130	1317.5	840	205	215	490	490	M12	250	55	50	361
	200L	37/45	-	395.5	377	3	100	500	290	225	130	1375.5	840	205	200	400	490	M12	250	55	50	508
	225S	55	-	402	388	4	100	500	335	225	130	1394	840	205	175	400	550	M16	315	70	63	557
	250S	75	-	433.5	521	4	100	500	360	225	130	1558.5	840	205	215	440	600	M16	315	70	63	744
100 X 80 TFSM 2514	132S	-	5.5	239	211	3	125	500	315	250	80	1078	660	170	160	440	350	M12	250	55	50	213
	132M	-	7.5	258	230	3	125	500	315	250	80	1116	660	170	160	440	350	M12	250	55	50	225
	160M	-	11	323	280	3	125	500	315	250	100	1231	740	190	190	440	440	M12	250	55	50	276
	160L	-	15	345	302	3	125	500	315	250	100	1275	740	190	190	440	440	M12	250	55	50	304
	180L	30	-	370.5	344	3	125	500	290	250	115	1342.5	840	205	215	490	490	M12	250	55	50	384
	200L	37/45	-	395.5	377	3	125	500	290	250	115	1400.5	840	205	215	490	490	M12	250	55	50	524
	225S	55	-	402	388	4	125	500	335	250	115	1419	840	205	220	550	550	M16	315	70	63	580
	250S	75	-	433.5	521	4	125	500	360	250	115	1583.5	840	205	215	440	600	M16	315	70	63	756
	250M	90	-	452.5	540	4	125	500	360	250	140	1621.5	940	230	250	440	660	M16	315	70	63	834
280S	110	-	484	599.5	4	125	500	390	250	140	1712.5	940	230	250	440	670	M16	315	70	63	1063	
100 X 80 TFSM 3215A	132M	-	7.5	258	230	3	125	530	315	280	80	1146	660	170	190	490	350	M16	250	55	50	271
	160M	-	11	323	280	3	125	530	343	280	100	1261	740	190	185	490	400	M12	250	55	50	321
	160L	-	15	345	302	3	125	530	315	280	115	1305	840	205	210	490	400	M12	250	55	50	355
	180M	-	18.5/22	351.5	325	3	125	530	315	280	115	1334.5	840	205	220	490	490	M12	250	55	50	400
	180L	-	30	370.5	344	4	125	530	315	280	115											

- Note**
1. Frame No. of motor is applied for general low pressure three phase squirrel cage type induction motor all closed typed.
 2. *MA and *L lenght are different depend on motor manufacturer.
 3. Please pay attention in case of use previous JEM standard motor, base dimensions are different from this table.
 4. This dimension table will change without notice.

DIMENSION - TLS



Unit : mm

Pump								
Model	Frame No.	A	B	C	D	BF	F	Weight kg
150 X125 TLSM	27445	185	565	185	230	65	5	130

Motor					Common Base						
Frame No.	Output (kW)		Shaft Diameter	MR	*MA	BN1	BN2	BN	H	BY1/BY2	Weight kg
	4 poles	6 poles									
100L	2.2	1.5	28	193	173	155	155	500	275	390/310	40
112M	3.7	2.2	28	200	175	155	155	500	275	390/310	40
132S	5.5	3.7	38	239	205	170	170	680	285	390/390	50
132M	7.5	5.5	38	258	225	170	170	680	285	390/390	50
160M	11	7.5	42	323	255	170	170	680	285	390/390	50
160L	15	11	42	345	275	170	170	680	285	390/390	50
180M	18.5/22	15	48	351.5	325	180	180	780	295	480/480	55
180L	30	18.5/22	55	370.5	344	180	180	780	295	480/480	55

Unit : mm

Pump								
Model	Frame No.	A	B	C	D	BF	F	Weight kg
125 X 100 TLSM	3946A	180	695	220	270	65	0	230
150 X 125 TLSM	3246A	195	695	210	250	65	5	220
200 X 150 TLSM	2746A	210	715	225	240	85	10	220
200 X 150 TLSM	3246	215	715	240	265	85	5	260

Motor					Common Base						
Frame No.	Output (kW)		Shaft Diameter	MR	*MA	BN1	BN2	BN	H	BY1/BY2	Weight kg
	4 poles	6 poles									
132S	5.5	3.7	38	239	205	175	175	800	370	480/390	60
132M	7.5	5.5	38	258	225	175	175	800	370	480/390	60
160M	11	7.5	42	323	255	175	175	800	370	480/390	60
160L	15	11	42	345	275	175	175	800	370	480/390	60
180M	18.5/22	15	48	351.5	325	200	200	860	380	490/490	75
180L	30	18.5/22	55	370.5	344	200	200	860	380	490/490	75
200L	37/45	-	60	425.5	377	200	200	860	380	490/490	75
225S	55	-	65	432	388	220	220	960	380	600/600	100

Unit : mm

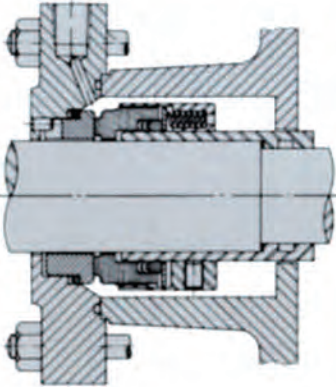
Pump								
Model	Frame No.	A	B	C	D	BF	F	Weight kg
150 X 100 TLSM	4648AT	195	855	250	300	90	5	440
200 X 150 TLSM	3948A	200	860	240	280	95	25	360
200 X 150 TLSM	4648AT	215	865	275	310	100	20	460
200 TLSM	3948A	210	870	260	310	105	5	440
250 X 200 TLSM	3248A	240	890	265	285	125	20	520
250 X 200 TLSM	4648TX	240	880	290	350	115	25	550
250 TLSM	3948T	280	885	305	350	120	10	530
250 X 200 TLSM	4648TY	280	875	300	335	110	15	540
350 X 300 TLSM	3948	280	895	320	350	130	0	550

Motor					Common Base						
Frame No.	Output (kW)		Shaft Diameter	MR	*MA	BN1	BN2	BN	H	BY1/BY2	Weight kg
	4 poles	6 poles									
160M	11	7.5	42	323	255	220	220	960	460	640/500	120
160L	15	11	42	345	275	220	220	960	460	640/500	120
180M	18.5/22	15	48	351.5	325	220	220	960	460	640/500	120
180L	30	18.5/22	55	370.5	344	220	220	960	460	640/500	120
200L	32/45	30/37	60	425.5	377	220	220	960	460	640/500	120
225S	55	45	65	432	388	240	240	1040	460	640/640	150
250S	75	55	75	463.5	501	240	240	1040	460	640/640	150
250M	90	75	75	482.5	520	240	240	1040	460	640/640	150
280S	110	-	85	544	579	280	280	1160	480	640/740	170
280M	132	-	85	569.5	604.5	280	280	1160	480	640/740	170
315S	160	-	95	589	640	280	280	1160	480	640/740	170

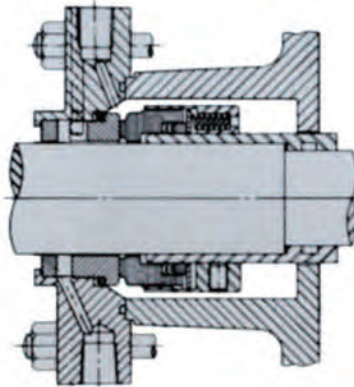
- Note**
1. Frame No. of motor is applied for general low pressure three phase squirrel cage type induction motor all closed typed.
 2. *MA and *L lenght are different depend on motor manufacturer.
 3. Please pay attention in case of use previous JEM standard motor, base dimensions are different from this table.
 4. This dimension table will change without notice.

SHAFT SEAL CONSTRUCTION

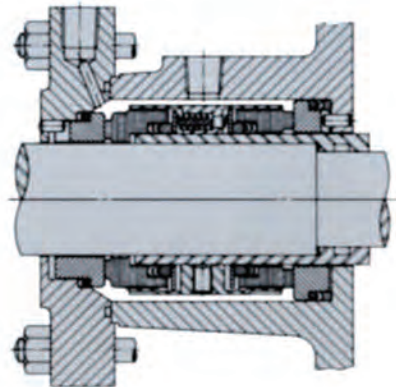
1A Balance seal
Standard



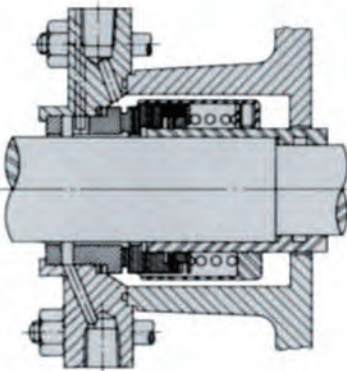
1B Balance seal
With quenching type



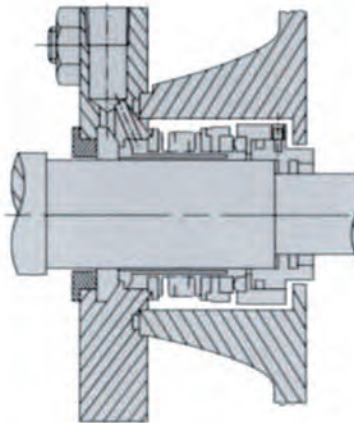
1C Double seal
(Atmosphere side balance type)



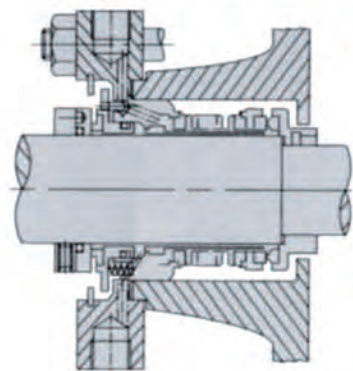
2A Monocoil seal
With quenching type



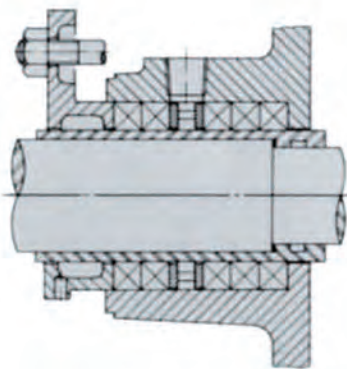
2B Knife edge
Single seal Standard



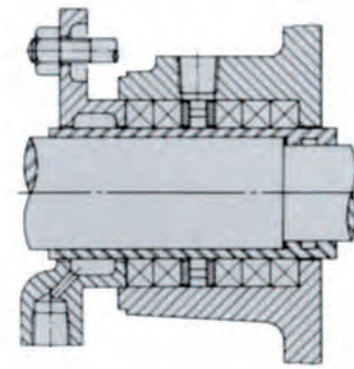
2B Knife edge
Double seal



4A Gland packing
Standard



4B Gland packing
With quenching type



This drawing indicates TFS model
TLS model consists of 6 pieces gland packing (3 pieces on the each side)

* For Correspond to any specification and conditon, every kinds of shaft seal construction is available to manufacture not only above drawing

* Dimensional details are provided for reference only.

* All specifications are subject to change without prior notice.

Authorised dealer:



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