

## Centrifugal Pumps

Series 880RI

Operation, Maintenance & Installation Manual



## **CAUTION!!**

DO NOT RUN PUMP DRY, SEAL DAMAGE MAY OCCUR. INSPECT PUMP SEAL REGULARLY FOR LEAKS. **REPLACE AS REQUIRED.** FOR LUBRICATION REQUIREMENTS, CONSULT **SERVICE INSTRUCTIONS. FAILURE TO FOLLOW INSTRUCTIONS COULD RESULT IN INJURY OR** PROPERTY DAMAGE. COUPLER ALIGNMENT IS REQUIRED! **LEVEL AND GROUT PUMP BEFORE USE! CHECK ALIGNMENT BEFORE GROUTING, AFTER SYSTEM 18 FILLED, AFTER SERVICING PUMP, AND AS REQUIRED. CONSULT THE SERVICE INSTRUCTIONS FOR DETAILS. FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN INJURY OR** PROPERTY DAMAGE. FAULT TO FOLLOW THIS INSTRUCTION MAY VOID THE WARANTY OF THE UNIT.

#### I.O.M - 880RI SERIES



#### **VERTICAL IN LINE PUMPS**

FLO FAB In Line pumps are designed to be mounted vertically in the pipe line with the motor above the pump. Center line suction and discharge keep weight evenly balanced and directly down upon the piping. No flexible connections to take up pipe misalignement are necessary since pump is not permanently connected to anything but the piping and is free to move with the expansion and contraction of the piping system. Support of the piping at the pump may be made by two pipe hangers, floor saddles or floor flanges, placed on line close to the pump.

Selection of the actual type of support is determined after consideration of the structural characteristics at the location of the pump, size and weight of both the piping and the pump, expansion and contraction of the piping, etc. In other words, the same criteria and formula for selecting piping supports are used with the additional consideration that the weight of the pump is concentrated at one point in the piping. Otherwise, piping recommendations are the same as for other types of pumps. For example, gate valves should be installed at both the pump suction and discharge to permit servicing of the pump without draining the entire system. If vertical inline pumps are mounted in a straight horizontal run of piping, then the weight of the piping and pump system is generally supported by pipe supports, or spring hangers, and experience has shown that no additional pump support, vibration or noise isolation devices are required.

### **CAUTION**

- A. INSTALL VERTICAL IN INLINE PUMPS WITH MOTOR IN VERTICAL POSITION.
- B. MAKE CERTAIN THE SPACE ABOVE THE PUMP IS SUFFICIENT TO GIVE CLEARANCE FOR LIFTING THE PUMP ASSEMBLY FROM THE CASING. ALSO THE SPACE AROUND THE PUMP SHOULD BE LARGE ENOUGH FOR GENERAL ACCESSIBILITY AND VENTILATION.
- C. SUPPORT PUMP ONLY BY PIPING.
- D. MANUALLY VENT ALL AIR FROM CASING.
- E. MAKE SURE SUCTION VALVE IS WIDE OPEN BEFORE STARTING MOTOR
- F. CHECK MOTOR ROTATION (CLOCKWISE LOOKING DOWN FROM TOP OF MOTOR).

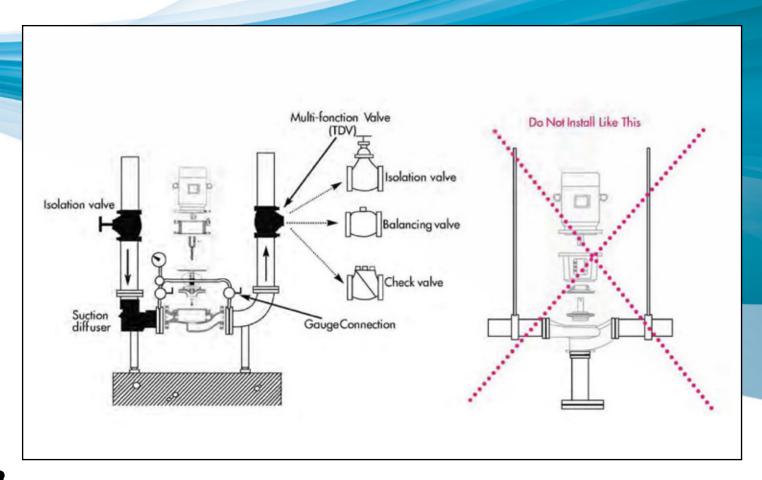


#### FLOOR MOUNTED TYPE VERTICAL IN LINE PUMPS

Larger **FLO FAB** Vertical In Line and Split Coupled pumps pumps have supporting Floor plate under the cosing. These pumps to be floor mounted but other wise piped-up the same way os shown. Although Vertical In line pumps ore vibration free, it is recommended for floor mounted pumping units to provide isolation between pedestal block and foundation structvre and flexible members in pipes adjacent to pump. Typically, the natural rubber pad would hove a hardness in the range of 50 durometres, a thickness of 0.375 inches and up, depending on the loading and site conditions, and be designed for a maximum detection of 8 mm. This arrangement has been used, successfully, for many years on all types of flooring systems. The recommended arrangement diminishes noise transmission and provides adequate vibration isolation in the horizontal and vertical planes.

### When Installing MFV Valve

If you are using the MFV valves as a balancing valve, you must hove these installed 10 times the pipe size diameter to obtain any type of accuracy. IF these are only to be used as a throttling, check, and shut off valve, then 5 times the pipe diameter after the pump discharge is acceptable. If the system balancing at less than 50% stem rise and this is the primary balance valve, ASHREA Standard 90.1 and Flo Fob recommend trimming the impeller to the necessary system design flow. This will reduce electrical energy consumption and comply with the Notional Energy Building Code Standard. To avoid noise problems ond possible damage to the valve I do not exceed 25 feet of pressure drop across the MFV valve.





## **OPERATION**

#### STARTING OF ELECTRIC MOTOR DRIVEN PUMPS

- 1. Before connecting motor and starter to the line:
- 1.1. Check wiring information available inside the conduit box.
- 1.2. Check voltage and frequency of power supply with what s shown on motor nameplate.
- 1.3. Check current rating of overload relays and fuses against nameplate full load current value.
- 2. Check lubrication and pocking (see MAINTENANCE).
- 3. Check if rotor is free to turn. It must be possible to revolve the rotor by hand. If the rotor drags even slightly, do not operate until the cause of trouble is located and corrected.
- 4. For unit with fluid drive, refer to the maintenance instructions of Auid drives.
- 5. If unit is for high temperature application, refer to operating instructions For high temperature pumps.
- 6. Prime the pump. A pump is primed when cosing and suction line are filled with liquid and when all the air contained in the pump has been allowed to escape. If pump is to operate under suction lift without foot valve, priming is done by pumping air out by means of an ejector, on exhauster or a vacuum pump.
- 7. Check direction of driver rotation. Proper direction is indicated by arrow on pump ca sing.
- 8. Check electric motor current as soon as motor is started to verify whether or not the mechanical load applied corresponds to the motor rating. The continuous full load cur rent value should be within the electric motor nameplate rating with service factor taken into account.

### **CAUTION**

- A. MAKE SURE THE GATE VALVE ON PUMP SUCTION IS FULLY OPEN AS THROTILING ON SUCTION SIDE IS HARMFUL TO THE PUMP.
- B. MAKE SURE PUMP WILL NOT RUN DRY. MOST CENTRIFUGAL PUMPS HAVE CLOSE CLEA-RANCES AND CANNOT RUN DRY WITHOUT SERIOUS DAMAGE RESULTING.



### **LONG TERM STORAGE**

Here are some general suggestions for long term storage. The applicability of all, or some, of these suggestions depends on several factors such as type of equipment, length of storage, and condition of the environment.

### **GENERAL CARE**

Drain the casing completely and dry it throughly, including its bearing housing and stuffing box, or seal chamber. Apply a coat of soluble rust preventive solution both internally and externally.

Cover all openings. Flanged openings (such as suction and discharge nozzles) should be covered with blind flanges with elastomer gasket. Threaded openings should be covered with steel plugs or caps.

Protect the bearing housing from moisture by placing bags of vapor phase inhibitor crystals around the housing.

Cover the equipment with industrial strength plastic, preferably transparent to allow its visual inspection, including its nameplate, without uncovering the unit.

Store the unit in its normal position in a dry place.

Inspect the unit periodically and turn the shaft a few times at least 1/4 turn. Turning the shaft prevents pitting of finished surfaces. The extra 1/4 turn is to displace the sag and prevent the shaft from developing a permanent bow.

This needs to be done at least once a month



## **MAINTENANCE**

A systematic inspection made at regular intervals, giving special attention to the following, will ensure years of trouble-free operation.

### **GENERAL CARE**

- 1. Keep unit clean.
- 2. Avoid excessive belt tension.
- 3. Provide the motor with adequate overload protection.
- 4. Keep flying chips or other loose particles away from the ventilating openings of the motor.
- 5. Avoid operating the unit in overheated surroundings.
- 6. Guard three phase motor against single phasing which is frequently accompanied by an unusual humming soud, a drop in speed, and by excessive heating which, if continued, may burn out the motor windings.
- 7. Use thermometers when checking temperatures.
- 8 If pump is standing idle in freezing weather, pump casing and piping should be drained.

#### **BEARINGS**

- 1. LIFE LUBRICATED BEARINGS are heavy duty permanently lubricated, sealed type and require no maintenance
- 2. GREASE LUBRICATED BEARINGS require very little attention. More trouble can be caused by overcharging than by undercharging with grease. Approximately every month, depending on service, inject a small quantity of grease (Esso Andok No. 280 or equal) into bearing container after removing the grease outlet plug so that old grease is flushed out and bearing is not overfilled.



#### **MECHANICAL SHAFT SEAL LIMITATIONS**

Standard FLO FAS pumps are equipped with mechanical seals. Standard mechanical seals have Ni-resist seat, carbon washer and Viton below. Maximum recommended operating temperatures and pressures are shown below.

MOTOR HP & SPEED	SUCTION PRESSURE (PSIG)	MAXIMUM TEMPERATURE (°F)
Up to 10HP 1750 RPM	60 85 125	250 225 160
15 - 50HP 1750 RPM	50 60 100	250 225 160
Up to 1.5HP 3500 RPM	20 125	180 120
20 - 60HP 3500 RPM	15 115	180 120

### **CAUTION**

- A. A MECHANICAL SEAL IS A PRECISION PRODUCT. HANDLE IT WITH CARE. SPECIAL CARE MUST BE TAKEN WITH THE SEALING WASHER AND SEAT. DO NOT LET THEM DROP AND TAKE PARTICULAR CARE NOT TO SCRATCH THE LAPPED FACES.
- B. NEVER RUN SEALS DRY.
- C. FOLLOW SEAL MANUFACTURER'S INSTRUCTIONS.



### PREVENTIVE MAINTENANCE

- 1. Protect pump with a suitable strainer
- 2. Never pump a liquid for which the pump was not designed (check with your FLO FAS representative).
- 3. Keep the right amount of the right lubricant in bearings at all times, Following lubrication instructions.
- 4. Check periodically pump and motor alignment.
- 5. Any down sloping towards the pump in suction piping should be corrected.
- 6. See that piping puts no strain on pump casing.
- 7. Never allow pump to run dry.
- 8. Examine wearing rings at regular intervals.
- 9. If shaft sleeves are badly scored, replace them immediately.
- 10. If the liquid being pumped contains grit, o separate source of sealing liquid should be used.
- 11. A routine maintenance schedule should be set-up to ensure an optimum inspection and service operation in order to get the best service out of your pumping equipment.

### VERTICAL IN -LINE PUMP MAINTENANCE AND SERVICE

Vertical pumps are built to operate without periodic maintenance with the exception of lubrication motor bearings with silicone grease such as Dow-Corning 44, Keystone #78 or Supermill ASU 06752 grease every 3 months. Good operational life will depend upon proper pump seledion, installation and continuous water lubrication of the mechanical seals. The air vent plug must always be loosened to thoroughly vent casing before start-up and to insure water lubrication of mechanical seals.

Impurities in the system will shorten the operational life of mechanical seals due to the generally abrasive charaderistics of these impurities. Most common is black iron oxide which is highly magnetic and has a tendency to fonn hard coating on all surfaces in contact with water. Water treatment is also an important factor in seal life. It is recommended that the chromate content in wafer be limited to 250 ppm.

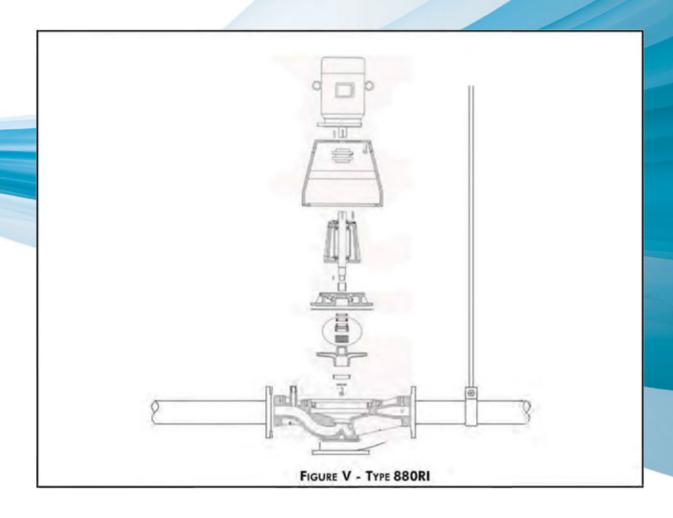
#### I.O.M - 880RI SERIES



#### TYPE 880RI PUMPS DISASSEMBLY

It is unnecessary to disconnect piping or casing to service these pumps. All service and maintenance can be performed by removing pump assembly from casing.

- 1. Remove casing bolts, connecting casing and the spacer coupling and entire pump power frame assembly con be withdrawn from casing living the motor and cosing in place.
- 2. Remove impeller bolt by turning it counter clockwise. Pull off the impeller by wedging around its periphery and slip out the impeller key From its shaft groove.
- 3. Slide spring loaded carbon rotating face off impeller shaft.
- 4. If wear rings are to be replaced, split with cold chisel to remove from its recess. Replace ring after smoothing and lightly lubricating recess and tap the new ring with a lead hammer.
- 5. If pump shaft sleeve is to be replaced, it is important that no pressure be placed upon the pump bearings.



### I.O.M - 880RI SERIES



#### PUMP RE-ASSEMBLY

- 1. Clean seal recess of adapter. Lightly lubricate seat ring and press stationary seal assembly and adapter.
- 2. Bolt power frame and braket to adopter. Use caufon not to bump the motor shaft.
- 3. Replace impeller key in shaft groove. Slip on spring loaded carbon seal and impeller on shaft.
- 4. Replace impeller cap screw and tighten by turning clockwise.
- 5. Remove old cosing and adapter gasket and clean off any pieces that may have broken off on theses castings. Put new gasket on adapter.
- 6. Lower pump power assembly into casing. Use caution to properly align impeller into cosing so that it will not be damaged. Tighten-up cop screws evenly and in rotation.
- 7. Replace motor and power frame key into these shafts.
- 8. Slide both flange coupling with the insert between them and tighten both set screws.
- 9. Fill pump casing with water and vent all air by loosening air vent plug.
- 10. Re-connect motor wiring. Check motor rotation to insure proper operation.



### **RENEWAL PARTS**

The service for which centrifugal pump is used will determine, to a great extent, the minimum number of spore ports that should be carried in stock at the installation site. The minimum for any centrifugal pump should include:

- One set of wearing rings
- One set of shaft sleeves (or a shaft if no sleeves are used)
- One set of bearings
- Suffient stock of spare mechanical seal
- Material For gasket

When ordering spare or repair ports, always give pump serial number and full description of part(s) required.

### WARRANTY

FLO FAB pumps ore guaranteed against defective workmanship and material For a period of twelve months from date of shipment from Manufacturing Plant. Should the pump fail within this warranty period, our responsibility is limited to the repair or replacement of defective parts, provided such ore returned to our Plant, transportation prepaid. We do not accept liability for damage or break-down from causes beyond our control, or the result of reasonable wear nor for repair mode, or attempted to be made without prior sanction, nor for any consequential damage resulting From the failure of a pump. The customer will assume all labour charges incurred in making the replacement or adjustment of the parts

PLEASE NOTE THAT THERE IS NO GUARANTEE ON MECHANICAL SHAFT SEALS.

### TROUBLE CHART (SEE KEY IN THE NEXT PAGE)

SYMPTOMS	Possible Causes
Pump does not deliver water	1, 2, 3, 4, 6, 11, 14, 16, 17, 22, 23
Insufficient capacity delivered	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 14, 17, 20, 22, 23, 29, 30, 31
Insufficient pressure developed	5, 14, 16, 18, 19, 20, 23, 24, 26, 27, 29, 33, 34, 37
Pump loses prime after starting	2, 3, 5, 6, 7, 8, 11, 12, 13
Pump requires excessive power	15, 16, 18, 19, 20, 23, 24, 26, 27, 29, 33, 34, 37
Stuffing box leaks excessively	24, 26, 32, 33, 34, 35, 36, 38, 39, 40
Packing has short life	12, 13, 24, 26, 28, 32, 33, 34, 35, 36, 37, 38, 39, 40
Pump vibrates or is noisy	2, 3, 4, 9, 10, 11, 21, 23, 24, 25, 26, 27, 28, 30, 35, 36, 41, 42, 43, 44, 45, 46, 47
Bearings have short life	24, 26, 27, 28, 35, 36, 41, 42, 43, 44, 45, 46, 47
Pump overheats and seizes	1, 4, 21, 22, 24, 27, 28, 35, 36, 41



### **KEY**

#### **SUCTION TROUBLES**

- 1. Pump not primed.
- 2. Pump or suction pipe not completely filled with liquid.
- 3. Suction lift too high.
- 4. Insufficient margin between suction pressure and vapor pressure (available NPSH too low).
- 5. Excessive amount of air or gas in liquid.
- 6. Air pocket in suction line,
- 7. Air leakage into suction line.
- 8. Air leakage into pump through stuffing boxes.
- 9. Foot valve too small.
- 10. Foot valve partially clogged.
- 11. Inlet of suction pipe insufficiently submerged,
- 12. Water seal pipe plugged.
- 13. Seal cage improperly located in stuffing box, preventing sealing fluid entering space to form the seal.

#### SYSTEM TROUBLES

- 14. Speed too low.
- 15. Speed too high.
- 16. Wrong direction of rotation.
- 17. Total head of system higher than pump design head.
- 18. Total head of system lower than pump design head.
- 19. Specific gravity of liquid different than design.
- 20. Viscosity of liquid differs from that for which designed.
- 21. Operation at very low capacity.

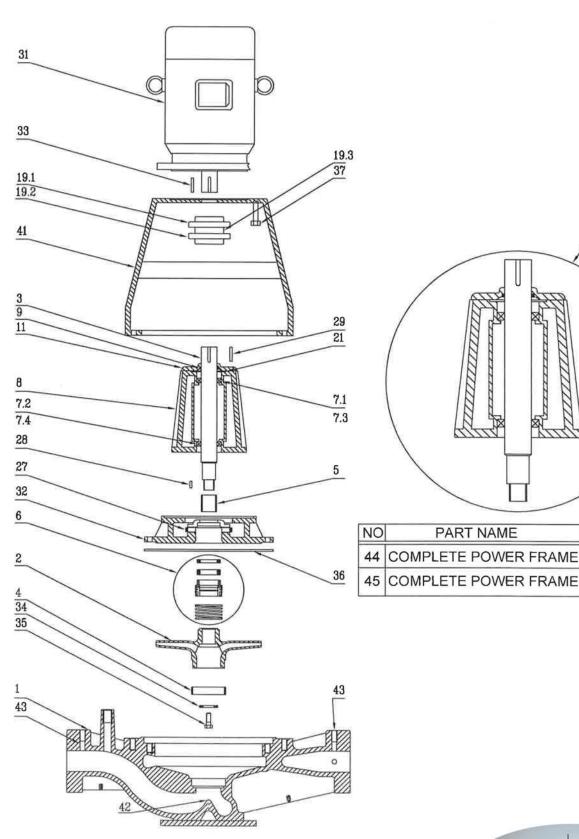
22. Parallel operation of pumps unsuitable for such operation.

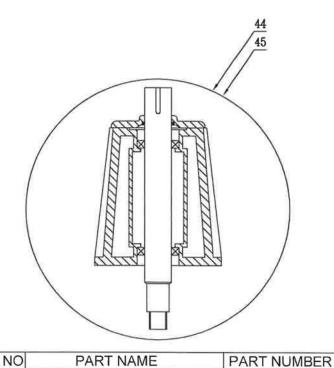
### MECHANICAL TROUBLES

- 23. Foreign matter in impeller.
- 24. Misalignment.
- 25. Foundation not rigid.
- 26. Shaft bent.
- 27. Rotating part rubbing on stationary part.
- 28. Bearing worn.
- 29. Wearing rings worn.
- 30. Impeller damaged.
- 31. Casing gasket defective, permitting internal leakage.
- 32. Shaft or shaft sleeves worn or scored at the packing.
- 33. Packing improperly installed.
- 34. Incorrect type of packing for operation conditions.
- 35. Shaft running off-center due to worn bearings or misalignment.
- 36. Rotor out of balance resulting in vibration.
- 37. Gland too tight, resulting in no Flow of liquid to packing.
- 38. Failure to provide cooling liquid to water-cooled stuffing boxes.
- 39. Excessive clearance at bottom of stuffing box between shaft and casing, causing packing to be forced into pump interior.

- 40. Dirt or grit in sealing liquid, leading to scoring of shaft or shaft sleeve.
- 41. Excessive thrust caused by a mechanical Failure inside the pump or by the failure of the hydraulic balancing device, if any.
- 42. Excessive amount of grease or oil in the housing of on antifriction bearing or lack of cooling, causing excessive bearing temperature.
- 43. Lack of lubrications.
- 44. Improper installation of antifriction bearings (damage during assembly).
- 45. Dirt getting into bearings.
- 46. Rusting of bearings due to water getting into housing.
- 47. Excessive cooling of waler-cooled bearing resulting in condensation in the bearing housing of moisture from the atmosphere.

### SERIES 880RI PARTS LIST





COMPLETE POWER FRAME

SERIAL # : TYPE: ID. : SERIES: MODEL: DATE : 880RI 03-05-2011



LF1-143-184JM

LF2-254-256JM



PART NAME  volute casing volute casing volute casing volute casing volute casing impeller 7/8 impeller 7/8 impeller 1 1/4 pump shaft pump shaft casing wearing shaft sleeve 143-215 shaft sleeve 354-326 mechanical seal 143-215 mechanical seal 354-326 ball bearing outboard F1 ball bearing inboard F1	2687414 2687414 V1735-449 V3289-449 SHAFTLF1	cast iron ASTMA48CL 30 bronze ASTMB584C87400 bronze ASTMB584C87400	PART NUMBER	
volute casing volute casing volute casing volute casing volute casing impeller 7/8 impeller 7/8 impeller 1 1/4 pump shaft casing wearing shaft sleeve 143-215 shaft sleeve 354-326 mechanical seal 143-215 mechanical seal 354-326 ball bearing outboard F1 ball bearing inboard F1	2687414 V1735-449 V3289-449 SHAFTLF1	cast iron ASTMA48CL 30 bronze ASTMB584C87400 bronze ASTMB584C87400		OPTIONAL MATERIAL
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volute casing volute casing volute casing impeller 7/8 impeller 1 1/4 impeller 1 1/4 pump shaft casing wearing shaft sleeve 143-215 shaft sleeve 354-326 mechanical seal 143-215 mechanical seal 143-215 ball bearing outboard F1 ball bearing inboard F1	V1735-449 V3289-449 SHAFTLF1	bronze ASTMB584C87400	2687414-SS	stainless steel 304
wolute casing impeller 7/8 impeller 7/8 impeller 1/4 impeller 1/4 pump shaft pump shaft casing wearing shaft sleeve 143-215 shaft sleeve 354-326 mechanical seal 143-215 mechanical seal 354-326 ball bearing outboard F1 ball bearing inboard F1	V1735-449 V3289-449 SHAFTLF1	bronze ASTMB584C87400 bronze ASTMB584C87400	2687414-DI	ductile iron 300 PSI GGG50
impeller 7/8 impeller 7/8 impeller 1 1/4 pump shaft pump shaft casing wearing shaft sleeve 143-215 shaft sleeve 354-326 mechanical seal 143-215 mechanical seal 354-326 ball bearing outboard F1 ball bearing inboard F1	V1735-449 V3289-449 SHAFTLF1	bronze ASTMB584C87400 bronze ASTMB584C87400	2687414-CS	cast steel ASTMA216WCB
impeller 7/8 impeller 1 1/4 impeller 1 1/4 pump shaft pump shaft casing wearing shaft sleeve 143-215 shaft sleeve 354-326 mechanical seal 143-215 mechanical seal 354-326 ball bearing outboard F1 ball bearing inboard F1	V3289-449 SHAFTLF1	bronze ASTMB584C87400	V1735-491	cast iron ASTMA48CL30
impeller 1 1/4 impeller 1 1/4 pump shaft pump shaft casing wearing shaft sleeve 143-215 shaft sleeve 354-326 mechanical seal 143-215 mechanical seal 354-326 ball bearing outboard F1 ball bearing inboard F1	V3289-449 SHAFTLF1	bronze ASTMB584C87400	V1735-SS	stainless steel 304
impeller 1 1/4  pump shaft  casing wearing shaft sleeve 143-215 shaft sleeve 354-326 mechanical seal 143-215 mechanical seal 354-326 ball bearing outboard F1 ball bearing inboard F1	SHAFTLF1		V3289-491	cast iron ASTMA48CL30
pump shaft pump shaft casing wearing shaft sleeve 143-215 shaft sleeve 354-326 mechanical seal 143-215 mechanical seal 354-326 ball bearing outboard F1 ball bearing inboard F1	SHAFTLF1		V3289-SS	stainless steel 304
shaft sleeve 143-215 shaft sleeve 143-215 shaft sleeve 354-326 mechanical seal 143-215 mechanical seal 354-326 ball bearing outboard F1 ball bearing inboard F1		stainless steel 304		
shaft sleeve 143-215 shaft sleeve 143-215 shaft sleeve 354-326 mechanical seal 143-215 mechanical seal 354-326 ball bearing outboard F1 ball bearing inboard F1	SHAFTLF2	stainless steel 304		
shaft sleeve 143-215 shaft sleeve 354-326 mechanical seal 143-215 mechanical seal 354-326 ball bearing outboard F1 ball bearing inboard F1	2684006	bronze ASTMB584C87400	2684006-SS	stainless steel 18-8 open designation
shaft sleeve 354-326 mechanical seal 143-215 mechanical seal 354-326 ball bearing outboard F1 ball bearing inboard F1	SLJM1.250B	bronze ASTMB584C87400	SLJM1.250SS	stainless steel 18-8 open designation
mechanical seal 143-215 mechanical seal 354-326 ball bearing outboard F1 ball bearing inboard F1	SLJM1.500B	bronze ASTMB584C87400	SLJM1.500SS	stainless steel 18-8 open designation
ball bearing inboard F1	011-S125-21-per	viton/ceramic vs carbon w/stainless steel spring	011-S125-dirt	viton/silicone carbide w/stainless steel
ball bearing outboard F1 ball bearing inboard F1	011-S150-21-per	viton/ceramic vs carbon w/stainless steel spring	011-S150-dirt	viton/silicone carbide w/stainless steel
ball bearing inboard F1	002-B62062RS			
Ca broading anithograf II.	002-B62072Z-NR			
ball bearing outboard FZ	002-B62092RS			
ball bearing inboard F2	002-B62082RS-NR			
bearing housing F1	01-BH01	cast iron ASTMA48CL 30		*
bearing housing F2	02-BH02	cast iron ASTMA48CL 30		
radial shaft seal ring	01-SR01	buna N O' ring		
bearing cover	01-BC01	cast iron ASTMA48CL 30		
half coupling motor side		depending on motor HP		
half coupling pump side		depending on pump shaft		
coupling insert		depending on coupling size		
gasket bearing housing cover	01-GBC01	fiber gasket vellumoid		
air vent valve plug				
impeller key		carbon steel ASTMA108G10800		
pump shaft key		carbon steel ASTMA108G10800		
		SEE PAGE 2 OF 2 FOR MORE PARTS		



++-	recommended spares				PAGE 2 OF 2
10	880RI model 2 X 2 X S PART NAME	PART NUMBER	STANDARD MATERIAL	PART NUMBER	OPTIONAL MATERIAL
+	motor				
32.1	bracket 143-215	2683879	cast iron ASTMA48CL 30	2683879-B	bronze ASTMB584C87400
32.2	bracket 143-215			2683879-SS	stainless steel 304
32.3	bracket 143-215			2683879-DI	ductile iron 300 PSI GGG50
32.4	bracket 143-215			2683879-CS	cast steel ASTMA216WCB
32.5	bracket 254-256	2683880	cast iron ASTMA48CL 30	2683880-B	bronze ASTMB584C87400
32.6	bracket 254-256			2683880-SS	stainless steel 304
32.7	bracket 254-256			2683880-DI	ductile iron 300 PSI GGG50
32.8	bracket 254-256			2683880-CS	cast steel ASTMA216WCB
32.9	bracket 284-326	2683882	cast iron ASTMA48CL 30	2683882-B	bronze ASTMB584C87400
32.10.	bracket 284-326			2683882-SS	stainless steel 304
32.11	bracket 284-326			2683882-DI	ductile iron 300 PSI GGG50
32.12	bracket 284-326			2683882-CS	cast steel ASTMA216WCB
-	motor shaft key		carbon steel - 1045		stainless steel 18-8 open designation
34.1	impeller washer no 1	WF1-SS	stainless steel 18-8 open designation		
34.2	impeller washer no 2	WF2-SS	stainless steel 18-8 open designation		
-	impeller bolt no 1	LBF1-SS	stainless steel 18-8 open designation		
35.2	impeller bolt no 2	LBF2-SS	stainless steel 18-8 open designation		
	casing gasket	G-8P	fiber gasket vellumoid		
-	motor bolts		carbon steel ASTMA108G10800		
-	motor bracket 143-215	B8143256TC	cast iron ASTMA48CL 30		
41.1	motor bracket 284-286	B8284286TC	cast iron ASTMA48CL 30		
41.2	motor bracket 324 449	B8324449TC	cast iron ASTMA48CL 30		
-	drain connection		carbon steel ASTMA108G10800		
-	gauge tappings		steel plugs		
*44	complete power frame	LF1-143-184JM	cast iron ASTMA48CL 30		
-	complete power frame	LF2-254-256JM	cast iron ASTMA48CL 30		



10	recommended spares				PAGE 1 OF 2
ON ON	980Ri model 3 X 3 X 8 PART NAME	PART NUMBER	STANDARD MATERIAL	PART NUMBER	OPTIONAL MATERIAL
1	volute casing	2687418	cast iron ASTMA48CL 30	2687418-B	bronze ASTMB584C87400
	volute casing			2687418-SS	stainless steel 304
1.2	volute casing			2687418-DI	ductile iron 300 PSI GGG50
1.3	volute casing	112		2687418-CS	cast steel ASTMA216WCB
*2.1	impeller 7/8	2683739-449	bronze ASTMB584C87400	2683739-491	cast iron ASTMA48CL30
*2.2	impeller 7/8			2683739-SS	stainless steel 304
*2.3	impeller 1 1/4	2683747-449	bronze ASTMB584C87500	2683747-491	cast iron ASTMA48CL30
*2.4	impeller 1 1/4			2683747-SS	stainless steel 304
8	pump shaft	SHAFTLF1	stainless steel 304		
3.1	pump shaft	SHAFTLF2	stainless steel 304		
*4	casing wearing	V1811	bronze ASTMB584C87400	V1811-SS	stainless steel 18-8 open designation
*5.1	shaft sleeve 143-215	SLJM1.250B	bronze ASTMB584C87400	SLJM1.250SS	stainless steel 18-8 open designation
*5.2	shaft sleeve 354-326	SLJM1.500B	bronze ASTMB584C87400	SLJM1.500SS	stainless steel 18-8 open designation
*6.1	mechanical seal 143-215	011-S125-21-per	viton/ceramic vs carbon w/stainless steel spring	011-S125-dirt	viton/silicone carbide w/stainless stee
*6.2	mechanical seal 354-326	011-S150-21-per	viton/ceramic vs carbon w/stainless steel spring	011-S150-dirt	viton/silicone carbide w/stainless stee
+7.1	ball bearing outboard F1	002-B62062RS			
*7.2	ball bearing inboard F1	002-B62072Z-NR			
*7.3	ball bearing outboard F2	002-B62092RS			
*7.4	ball bearing inboard F2	002-B62082RS-NR			
8	bearing housing F1	01-BH01	cast iron ASTMA48CL 30		
8.1	bearing housing F2	02-BH02	cast iron ASTMA48CL 30		
6*	radial shaft seal ring	01-SR01	buna N O' ring		
11	bearing cover	01-BC01	cast iron ASTMA48CL 30		
*19.1	half coupling motor side		depending on motor HP		
*19.2	half coupling pump side		depending on pump shaft		
*19.3	coupling insert		depending on coupling size		
*21	gasket bearing housing cover	01-GBC01	fiber gasket vellumoid		
27	air vent valve plug				
28	impeller key		carbon steel ASTMA108G10800		
59	pump shaft key		carbon steel ASTMA108G10800		
1					
			SEE PAGE 2 OF 2 FOR MORE PARTS		



	recommended spares				PAGE 2 OF 2
	880Ri model 3 X 3 X 8				
4	PART NAME	PART NUMBER	STANDARD MATERIAL	PART NUMBER	OPTIONAL MATERIAL
+	motor				
_	bracket 143-215	2683879	cast iron ASTMA48CL 30	2683879-B	bronze ASTMB584C87400
_	bracket 143-215			2683879-SS	stainless steel 304
	bracket 143-215			2683879-DI	ductile iron 300 PSI GGG50
	bracket 143-215			2683879-CS	cast steel ASTMA216WCB
_	bracket 254-256	2683880	cast iron ASTMA48CL 30	2683880-B	bronze ASTMB584C87400
_	bracket 254-256			2683880-SS	stainless steel 304
32.7	bracket 254-256			2683880-DI	ductile iron 300 PSI GGG50
32.8	bracket 254-256			2683880-CS	cast steel ASTMA216WCB
32.9	bracket 284-326	2683882	cast iron ASTMA48CL 30	2683882-B	bronze ASTMB584C87400
32.10.	bracket 284-326			2683882-SS	stainless steel 304
32.11	bracket 284-326			2683882-DI	ductile iron 300 PSI GGG50
32.12	bracket 284-326			2683882-CS	cast steel ASTMA216WCB
-	motor shaft key		carbon steel - 1045		stainless steel 18-8 open designation
	impeller washer no 1	WF1-SS	stainless steel 18-8 open designation		
	impeller washer no 2	WF2-SS	stainless steel 18-8 open designation		
-	impeller bolt no 1	LBF1-SS	stainless steel 18-8 open designation		
35.2	impeller bolt no 2	LBF2-SS	stainless steel 18-8 open designation		
-	casing gasket	G-8P	fiber gasket vellumoid		
-	motor bolts		carbon steel		
-	motor bracket 143-215	B8143256TC	cast iron ASTMA48CL 30		
-	motor bracket 284-286	B8284286TC	cast iron ASTMA48CL 30		
-	motor bracket 324-449	B8324449TC	cast iron ASTMA48CL 30		
-	drain connection		carbon steel ASTMA108G10800		
-	gauge tappings		steel plugs		
	complete power frame	LF1-143-184JM	cast iron ASTMA48CL 30		
	complete power frame	LF2-254-256JM	cast iron ASTMA48CL 30		



980R1 model 4 X 4 X 8				PAGE 1 OF 2
	PART NUMBER	STANDARD MATERIAL	PART NUMBER	OPTIONAL MATERIAL
volute casing	2687420	cast iron ASTMA48CL 30	2687420-B	bronze ASTMB584C87400
volute casing			2687420-SS	stainless steel 304
volute casing			2687420-DI	ductile iron 300 PSI GGG50
volute casing			2687420-CS	cast steel ASTMA216WCB
impeller 7/8	2680864-449	bronze ASTMB584C87400	2680864-491	cast iron ASTMA48CL30
impeller 7/8			2680864-SS	stainless steel 304
impeller 1 1/4	2680863-449	bronze ASTMB584C87400	2680863-491	cast iron ASTMA48CL30
impeller 1 1/4			2680863-SS	stainless steel 304
pump shaft	SHAFTLF1	stainless steel 304		
pump shaft	SHAFTLF2	stainless steel 304		
casing wearing	2691670	bronze ASTMB584C87400	2691670-SS	stainless steel 18-8 open designation
shaft sleeve 143-215	SLJM1.250B	bronze ASTMB584C87400	SLJM1.250SS	stainless steel 18-8 open designation
shaft sleeve 354-326	SLJM1.500B	bronze ASTMB584C87400	SLJM1.500SS	stainless steel 18-8 open designation
mechanical seal 143-215	0	viton/ceramic vs carbon w/stainless steel spring	011-S125-dirt	viton/silicone carbide w/stainless steel
mechanical seal 354-326	-	viton/ceramic vs carbon w/stainless steel spring	011-S150-dirt	viton/silicone carbide w/stainless steel
ball bearing outboard F1	002-B62062RS			
ball bearing inboard F1	002-B62072Z-NR			
ball bearing outboard F2	002-B62092RS			
ball bearing inboard F2	002-B62082RS-NR			
bearing housing F1	01-BH01	cast iron ASTMA48CL 30		
bearing housing F2	02-BH02	cast iron ASTMA48CL 30		
radial shaft seal ring	01-SR01	buna N O' ring		
bearing cover	01-BC01	cast iron ASTMA48CL 30		
half coupling motor side		depending on motor HP		
half coupling pump side		depending on pump shaft		
coupling insert		depending on coupling size		
gasket bearing housing cover	ver 01-GBC01	fiber gasket vellumoid		
air vent valve plug				
impeller key		carbon steel ASTMA108G10800		
pump shaft key		carbon steel ASTMA108G10800		
		SEE PAGE 2 OF 2 FOR MORE PARTS		



PAGE 2 OF 2		PAKI NUMBEK OPIIONAL MATERIAL		0 2683879-B bronze ASTMB584C87400	2683879-SS stainless steel 304			0 2683880-B bronze ASTMB584C87400	2683880-SS stainless steel 304	2683880-DI dustile iron 300 PSI GGG50	2683880-CS cast steel ASTMA216WCB	0 2683882-B bronze ASTMB584C87400		2683882-DI ductile iron 300 PSI GGG50	2683882-CS cast steel ASTMA216WCB	stainless steel 18-8 open designation	gnation	gnation	gnation	nation			0	0	0	0800		0	c
		STANDARD MATERIAL		cast iron ASTMA48CL 30				cast iron ASTMA48CL 30				cast iron ASTMA48CL 30				carbon steel - 1045	stainless steel 18-8 open designation	fiber gasket vellumoid	carbon steel	cast iron ASTMA48CL 30	cast iron ASTMA48CL 30	cast iron ASTMA48CL 30	carbon steel ASTMA108G10800	steel plugs	cast iron ASTMA48CL 30	OC IOONANATON ACCUSAGE			
		PART NUMBER		2683879				2683880				2683882					WF1-SS	WF2-SS	LBF1-SS	LBF2-SS	G-8P		B8143256TC	B8284286TC	B8324449TC			LF1-143-184JM	I ES SEA SEC IN
recommended spares	880RI model 4 X 4 X 5	PAKI NAME	motor	bracket 143-215	bracket 143-215	bracket 143-215	bracket 143-215	bracket 254-256	bracket 254-256	bracket 254-256	bracket 254-256	bracket 284-326	bracket 284-326	bracket 284-326	bracket 284-326	motor shaft key	impeller washer no 1	impeller washer no 2	impeller bolt no 1	impeller bolt no 2	casing gasket	motor bolts	motor bracket 143-215	motor bracket 284-286	motor bracket 324-449	drain connections	gauge tappings	complete power frame	the same of the same of the same of
*	Saries	2	31	32.1	32.2	32.3	32.4	32.5	32.6	32.7	32.8	32.9	32.10.	32.11	32.12	33	34.1	34.2	35.1	35.2	*36	37	41	41.1	41.2	42	43	*44	+11



PART NUMBER   STANDARD MATERIAL   PART NUMBER		recommended spares				PAGE 1 OF 2
volute casing         2687422         cast iron ASTMA48CL 30         2687422-SB           volute casing         volute casing         2687422-SB         2687422-SB           volute casing         2680869-449         bronze ASTMB584C87400         2687422-CS           impeller 7/8         2680870-449         bronze ASTMB584C87400         2680880-491           impeller 11/4         2680870-449         bronze ASTMB584C87400         2680880-70-491           pump shaft         SHAFTLF1         stainless steel 304         2680870-631           pump shaft         SHAFTLF2         bronze ASTMB584C87400         2680870-631           shaft sleeve 34-33-6         SLJM1, 250B         bronze ASTMB584C87400         26800870-55           shaft sleeve 34-33-6         SLJM1, 250B         bronze ASTMA584C87400         26800870-55           ball bearing inboard F1         002-852062R8-NR         cast iron ASTMA48CL 30         011-S126-dirt           bearing bucking F1         01-BH02         cast iron ASTMA48CL 30 <th>NO</th> <th>880RI model 2 X 2 X 10 PART NAME</th> <th>PART NUMBER</th> <th>STANDARD MATERIAL</th> <th>PART NUMBER</th> <th>OPTIONAL MATERIAL</th>	NO	880RI model 2 X 2 X 10 PART NAME	PART NUMBER	STANDARD MATERIAL	PART NUMBER	OPTIONAL MATERIAL
volute casing         2007-22.           impeller 7/8         2007-22.           impeller 7/8         2007-22.           pump shaft         2007-24.         2007-24.           pump shaft         SHAFTLE 2         Stainless steel 304         268086-491           pump shaft         SHAFTLE 2         Stainless steel 304         2680870-5S           shaft sleeve 143-215         SLMI 2008         bronze ASTMBS84C87400         268080-SS           shaft sleeve 354-326         SLMI 2008         bronze ASTMBS84C87400         SLMI 200SS           shaft sleeve 354-326         SLMI 2018         bronze ASTMBS84C87400         SLMI 200SS           shaft sleeve 354-326         SLMI 2018         bronze ASTMBS84C87400         SLMI 200SS           shaft sleeve 354-326         SLMI 2018         bronze ASTMBS84C87400         SLMI 300SS           shall bearing outboard F1         002-862082RS         bronze ASTMBS84C87400         SLMI 300SS           ball bearing outboard F2         002-86208		prisco etulor	2687422	OS IOSTMANS	2687422 B	Progra ACTMBERACRIADO
volute casing         268/1422-D3           volute casing         268/14/22-D3           impeller 1/8         268/14/22-D3         268/14/22-D3           pump shaft         SHAFTLF2         stainless steel 304         268/14/22-D3           casing wearing         268/14/22-D3         268/14/22-D3         268/14/22-D3           shaft sleeve 143-216         SLM1.260B         bronze ASTMBS84C81400         SLJM1.260S           shaft sleeve 143-226         SLJM1.260B         bronze ASTMBS84C81400         SLJM1.260S           shaft sleeve 354-326         SLJM1.500B         bronze ASTMBS84C81400         SLJM1.500S           mechanical seal 354-326         SLJM1.500B         bronze ASTMBS84C81400         SLJM1.500S           ball bearing outboard F1         002-862062RS         Cast iron ASTMA48CL 30         C1-S125-dir           ball bearing housing F2         002-862062RS-NR         cast iron ASTMA48CL 30         C1-S125-dir           bearing bousing F2         02-862062RS-NR         cast iron ASTMA48CL 30         C1-S125-dir		Volute casing	774/007	Cast IIOI AS I MATOR SO	0-774/007	DOLLO SALINIDOS SALINIO
volute casing         2687422-CS           volute casing         volute casing         2687422-CS           volute casing         268080-491         bronze ASTMBS64C87400         268080-2CS           impeller 7/8         impeller 7/8         2680870-49         bronze ASTMBS64C87400         2680870-5S           pump shaft         SHAFTLE7         staniess steel 304         2680870-SS           pump shaft         SHAFTLE7         staniess steel 304         2680870-SS           shaft sleeve 143-215         SLM1.250B         bronze ASTMBS64C87400         SLM1.250S           shaft sleeve 143-215         SLM1.250B         bronze ASTMBS64C87400         SLM1.250S           shaft sleeve 354-326         SLJM1.250B         bronze ASTMBS64C87400         SLJM1.250S           shaft sleeve 354-326         SLJM1.350B         bronze ASTMBS64C87400         SLJM1.250S           shaft sleeve 354-326         SLJM1.350B         bronze ASTMBS64C87400         SLJM1.250S           shaft sleeve 354-326         O11-S125-1-per         viton/ceramic vs carbon wistainless steel spring         O11-S126-dir           ball bearing outboard F1         O02-B6207Z2-MR         cast iron ASTMA46CL 30         cast iron ASTMA46CL 30           ball bearing inboard F1         O1-SE020RS-NR         cast iron ASTMA46CL 30         cast iron ASTMA40	_	volute casing			708/477-23	stainless steel 304
Impeller 7/18   2680869-449   bronze ASTMBS84C87400   2680869-5C     Impeller 7/18   2680870-449   bronze ASTMBS84C87400   2680870-491     Impeller 7/18   2680870-449   bronze ASTMBS84C87400   2680870-491     Impeller 1/14   SHAFTLF1   stainless steel 304   2680870-491     Impeller 1/14   SHAFTLF2   stainless steel 304   2680870-491     Impeller 1/14   SHAFTLF2   bronze ASTMBS84C87400   26800870-481     Impeller 1/14   SHAFTLF2   bronze ASTMBS84C87400   26800870-5S     Shaft sleeve 143-215   SLJM1.250B   bronze ASTMBS84C87400   SLJM1.250SS     Impeller 1/14   SHAFTLF2   bronze ASTMBS84C87400   SLJM1.250SS     Impeller 1/14   SHAFTLF2   stainless steel 304   268006-SS     Shaft sleeve 354-326   SLJM1.50B   bronze ASTMBS84C87400   SLJM1.250SS     Impeller 1/14   SHAFTLF2   stainless steel 5pring   O11-S152-1-per   viton/ceramic vs carbon w/stainless steel spring   O11-S152-1-per   viton/ceramic vs carbon w/stainless steel spring   O11-S152-0-irt     ball bearing outboard F1   002-B62092RS   ball bearing outboard F2   002-B62092RS   ball bearing outboard F2   002-B62092RS   ball bearing outboard F2   002-B62092RS   ball bearing brousing F1   O1-BRO1   cast iron ASTMA48CL 30   cast iron ASTMA48CL 30   bearing cover   O1-BCO1   depending on motor HP   half coupling pump side   depending on cuping size   depending on cuping si	2	volute casing			2687422-DI	ductile iron 300 PSI GGG50
Impeller 7/8   268089449   bronze ASTMB584C87400   2680869-491	3	volute casing			2687422-CS	cast steel ASTMA216WCB
Impeller 7/8   2680870-449   bronze ASTMB584C87400   2680870-85   impeller 1 1/4   2680870-449   bronze ASTMB584C87400   2680870-85   bronze ASTMB584C87400   2680870-85   bronze ASTMB584C87400   2680870-85   shaft sleeve 143-215   SLJM1.500B   bronze ASTMB584C87400   SLJM1.500S   shaft sleeve 354-326   SLJM1.500B   bronze ASTMB584C87400   SLJM1.500S   bronze ASTMB48CL 30   SLJM1.500S   standard Pz 01-SR01   Stand	-	impeller 7/8	2680869-449	bronze ASTMB584C87400	2680869-491	cast iron ASTMA48CL30
Impeller 1 1/4   2680870-499   bronze ASTMB584C87400   2680870-491   bronze ASTMB584C87400   2680870-491   bronze ASTMB584C87400   2680870-SS   shaft sleeve 143-215   SLM1.260B   bronze ASTMB584C87400   SLJM1.260S   shaft sleeve 354-326   SLJM1.260B   bronze ASTMB584C87400   SLJM1.260S   shaft sleeve 354-326   SLJM1.260B   bronze ASTMB584C87400   SLJM1.260S   SLJM1.260S   bronze ASTMB584C87400   SLJM1.260S   SLJM1.260S   bronze ASTMB584C87400   SLJM1.260S   SLJM1.260S   bronze ASTMB584C87400   SLJM1.260S   SLJM1.260S   bronze ASTMB584C8.130   O11-S150-dirt   bronze ASTMA48C1.30   O11-S150-dirt   bronze ASTMA48C1.30   O11-S150-dirt   depending on motor HP   bronze ASTMA48C1.30   depending on motor side   O1-BC01   depending on motor HP   depending on motor side   O1-BC01   depending on motor side   depending on coupling sizer   depending on co	2	impeller 7/8			2680869-SS	stainless steel 304
Impeller 11/4   SHAFTLF1   Stainless steel 304   2680870-SS     Poump shaft   SHAFTLF2   Stainless steel 304   2680870-SS     Poump shaft   SHAFTLF2   Stainless steel 304   2684006-SS     Casing wearing   2684006   bronze ASTMB584C87400   SLJM1.250S     Staff sleeve 143-215   SLJM1.250B   bronze ASTMB584C87400   SLJM1.250S     Staff sleeve 143-215   SLJM1.250B   bronze ASTMB584C87400   SLJM1.250S     Staff sleeve 354-326   SLJM1.300B   bronze ASTMB584C87400   SLJM1.250S     Staff sleeve 354-326   SLJM1.500B   bronze ASTMB584C87400   SLJM1.250S     Staff sleeve 364-326   SLJM1.500B   bronze ASTMB584C87400   SLJM1.250S     Dall bearing inboard F1   002-B62062RS   O11-S150-21-per viton/ceramic vs carbon w/stainless steel spring   O11-S150-dirt     Dall bearing inboard F2   002-B62062RS   Dall bearing inboard F2   002-B62062RS     Dall bearing inboard F2   002-B62062RS   Dall bearing inboard F2   002-B62062RS     Dall bearing inboard F2   002-B62062RS   Dall bearing inboard F2   002-B62062RS     Dall bearing inboard F2   002-B62062RS   Dall bearing inboard F2   002-B62062RS     Dall bearing inboard F2   002-B62062RS   Dall bearing inboard F2   002-B62062RS     Dall bearing inboard F2   002-B62062RS   Dall bearing inboard F2   002-B62062RS     Dall bearing inboard F2   002-B62062RS   Dall bearing inboard F2   002-B62062RS     Dall bearing inboard F2   002-B62062RS   Dall bearing inboard F2   002-B62062RS     Dall bearing inboard F2   002-B62062RS   Dall bearing inboard F2   002-B62062RS     Dall bearing inboard F2   002-B62062RS   Dall bearing inposition of the place	3	impeller 1 1/4	2680870-449	bronze ASTMB584C87400	2680870-491	cast iron ASTMA48CL30
pump shaft         SHAFTLF1         stainless steel 304         2684006-SS           casing wearing         2684006         bronze ASTMBS84C87400         2684006-SS           shaft sleeve 143-215         SLJM1.250B         bronze ASTMBS84C87400         SLJM1.250SS           shaft sleeve 143-215         SLJM1.500B         bronze ASTMBS84C87400         SLJM1.500SS           mechanical seal 143-215         011-5126-21-per         viton/ceramic vs carbon wistainless steel spring         011-5126-dirt           ball bearing outboard F1         002-B62062RS         ASTMARSARCB100         SLJM1.500S           ball bearing inboard F2         002-B62072Z-NR         cast iron ASTMA48C1.30         011-S156-dirt           ball bearing inboard F2         002-B62092RS         Duna N O'ring         011-S160-dirt           ball bearing noutboard F2         002-B62092RS         ASTMA48C1.30         011-S160-dirt           ball bearing noutboard F2         002-B62092RS         Duna N O'ring         01-SR01         cast iron ASTMA48C1.30           bearing housing F1         01-BH01         cast iron ASTMA48C1.30         Carbon ASTMA48C1.30         Carbon ASTMA48C1.30           bearing cover         01-SR01         depending on motor HP         depending on motor HP         depending on motor HP           half coupling pump side         01-GBC01 <td>4</td> <td>impeller 1 1/4</td> <td></td> <td></td> <td>2680870-SS</td> <td>stainless steel 304</td>	4	impeller 1 1/4			2680870-SS	stainless steel 304
pump shaft         SHAFTLF2         stainless steel 304         2684006-SS           shaft sleever 132-215         \$LJM1.260B         bronze ASTMB684C87400         \$LJM1.250SS           shaft sleeve 354-326         \$LJM1.500B         bronze ASTMB684C87400         \$LJM1.250SS           shaft sleeve 354-326         \$LJM1.500B         bronze ASTMB684C87400         \$LJM1.250SS           mechanical seal 143-215         \$01-5125-21-per         viton/ceramic vs carbon w/stainless steel spring         \$01-5125-dift           ball bearing inboard F1         \$02-86202RS         \$01-87022ATS         \$01-8702-dift           ball bearing inboard F2         \$02-86202RS-NR         cast iron ASTMA48CL 30         \$01-5126-dift           bearing housing F1         \$02-86202RS-NR         \$01-8H02         \$02-8H02         \$02-8H02           bearing housing F2         \$02-8H02         \$03-8H02         \$03-8H02         \$03-8H02           bearing housing F2         \$01-8H02         \$03-8H02         \$03-8H02         \$03-8H02           bearing housing F2         \$02-8H02         \$04-8H02         \$04-8H02         \$04-8H02           bearing housing cover         \$01-8C01         \$04-8H048CL 30         \$04-8H04           coupling insert         \$01-8C01         \$04-8H048CL 30         \$04-8H048CL 30	_	pump shaft	SHAFTLF1	stainless steel 304		
shaft sleeve 143-215         SLJM1.250B         bronze ASTMB584C87400         2684006-SS           shaft sleeve 143-215         SLJM1.250B         bronze ASTMB584C87400         SLJM1.250SS           mechanical seal 143-215         0.11-S125-21-per         viton/ceramic vs carbon w/stainless steel spring         0.11-S126-dirt           mechanical seal 344-326         0.11-S150-21-per         viton/ceramic vs carbon w/stainless steel spring         0.11-S126-dirt           ball bearing outboard F1         0.02-B62062RS         Ball bearing outboard F2         0.02-B62092RS         Dastring outboard F2           ball bearing inboard F2         0.02-B62092RS-NR         cast iron ASTMA48CL 30         0.1-S16-dirt           ball bearing inboard F2         0.02-B62092RS-NR         cast iron ASTMA48CL 30         0.1-S16-dirt           ball bearing inboard F2         0.02-B62092RS-NR         cast iron ASTMA48CL 30         0.1-S16-dirt           ball bearing inboard F2         0.1-BH01         cast iron ASTMA48CL 30         0.1-S16-dirt           bearing housing F2         0.1-BH01         cast iron ASTMA48CL 30         0.1-S16-dirt           bearing bouter ide         0.1-BC01         depending on pump shaft         0.1-BC01           coupling pump side         0.1-BC01         depending on pump shaft         0.1-GBC01           air vent valve plug <t< td=""><td>4-</td><td>pump shaft</td><td>SHAFTLF2</td><td>stainless steel 304</td><td></td><td></td></t<>	4-	pump shaft	SHAFTLF2	stainless steel 304		
shaft sleeve 143-215         SLJM1.260B         bronze ASTMB584C87400         SLJM1.250SS           shaft sleeve 354-326         SLJM1.500B         bronze ASTMB584C87400         SLJM1.500SS           mechanical seal 143-215         011-S125-21-per         viton/ceramic vs carbon w/stainless steel spring         011-S126-dirt           mechanical seal 343-236         010-S150-21-per         viton/ceramic vs carbon w/stainless steel spring         011-S150-dirt           ball bearing outboard F1         002-B62072Z-NR         cast iron ASTMA48CL 30         011-S150-dirt           ball bearing inboard F2         002-B62092RS         cast iron ASTMA48CL 30         011-S150-dirt           ball bearing inboard F2         002-B62092RS         cast iron ASTMA48CL 30         011-S150-dirt           bearing housing F1         01-BH01         cast iron ASTMA48CL 30         01-SR01           bearing housing F2         02-BH02         cast iron ASTMA48CL 30         01-SR01           bearing housing F2         01-BC01         depending on motor HP         depending on motor HP           1 half coupling motor side         01-SR01         depending on coupling size         101-SR01           2 sket bearing housing cover         01-GBC01         carbon steel ASTMA108G10800         101-SR01           3 asket bearing housing cover         01-GBC01         carbon ste	*4	casing wearing	2684006	bronze ASTMB584C87400	2684006-SS	stainless steel 18-8 open designation
shaft sleeve 354-326         SLJM1.500B         bronze ASTMB584C87400         SLJM1.500SS           mechanical seal 143-215         011-S125-21-per         viton/ceramic vs carbon wistainless steel spring         011-S126-dirt           mechanical seal 354-326         011-S150-21-per         viton/ceramic vs carbon wistainless steel spring         011-S150-dirt           ball bearing outboard F1         002-B62062RS         001-B62092RS         011-S150-dirt           ball bearing inboard F2         002-B62092RS         002-B62092RS           bearing inboard F2         002-B62092RS         002-B62092RS           bearing inboard F2         002-B62092RS-NR         cast iron ASTMA48CL 30           bearing inboard F2         002-B62092RS-NR         cast iron ASTMA48CL 30           bearing housing F2         01-BH01         cast iron ASTMA48CL 30           readial shaft seal ring         01-SR01         depending on motor HP           half coupling motor side         01-SR01         depending on pump shaft           coupling insert         01-GBC01         depending on coupling size           coupling insert         01-GBC01         fiber gasket vellumoid           pump shaft key         carbon steel ASTMA108G10800           pump shaft key         carbon steel ASTMA108G10800	-	shaft sleeve 143-215	SLJM1.250B	bronze ASTMB584C87400	SLJM1.250SS	stainless steel 18-8 open designation
mechanical seal 143-215 011-S125-21-per viton/ceramic vs carbon w/stainless steel spring 011-S125-dirt mechanical seal 354-326 011-S150-21-per viton/ceramic vs carbon w/stainless steel spring 011-S150-dirt 002-B62062RS ball bearing outboard F1 002-B62092RS ball bearing inboard F2 002-B62092RS ball bearing inboard F2 002-B62092RS-NR bearing inboard F2 002-B62092RS-NR cast iron ASTMA48CL 30 bearing housing F1 01-BH01 cast iron ASTMA48CL 30 bearing cover 01-BC01 cast iron ASTMA48CL 30 bearing cover 01-BC01 cast iron ASTMA48CL 30 depending on motor HP depending on coupling size depending on coupling size depending on coupling size depending on coupling size carbon steel ASTMA108G10800 carbon shaft key carbon steel ASTMA108G10800 carbon shaft key carbon steel ASTMA108G10800	2	shaft sleeve 354-326	SLJM1.500B	bronze ASTMB584C87400	SLJM1.500SS	stainless steel 18-8 open designation
ball bearing outboard F1 002-B62072Z-NR ball bearing outboard F2 002-B62072Z-NR ball bearing inboard F2 002-B6209ZRS ball bearing inboard F2 002-B6209ZRS ball bearing inboard F2 002-B6209ZRS ball bearing outboard F2 002-B6209ZRS-NR cast iron ASTMA48CL 30 radial shaft seal ring 01-SR01 cast iron ASTMA48CL 30 radial shaft seal ring 01-SR01 cast iron ASTMA48CL 30 half coupling motor side 01-SR01 depending on motor HP half coupling motor side depending on coupling size depending on shaft key carbon steel ASTMA108G10800 pump shaft key carbon steel ASTMA108G10800  SEE PAGE 2 OF 2 FOR MORE PARTS	-	mechanical seal 143-215	011-S125-21-per	viton/ceramic vs carbon w/stainless steel spring	011-S125-dirt	viton/silicone carbide w/stainless steel
ball bearing outboard F1 002-B62062RS ball bearing inboard F2 002-B62092RS ball bearing inboard F2 002-B62092RS ball bearing inboard F2 002-B62082RS-NR bearing housing F2 002-BH01 bearing housing F2 01-BH01 bearing housing F2 01-BR01 radial shaft seal ring 01-SR01 bearing cover 01-BC01 half coupling motor side coupling insert gasket bearing housing cover o1-GBC01 air vent valve plug impeller key pump shaft key	2	mechanical seal 354-326	011-S150-21-per	viton/ceramic vs carbon w/stainless steel spring	011-S150-dirt	viton/silicone carbide w/stainless steel
ball bearing inboard F1 002-B62092RS ball bearing outboard F2 002-B62092RS ball bearing inboard F2 002-B62082RS-NR bearing housing F1 01-BH01 bearing housing F2 01-SR01 radial shaft seal ring 01-SR01 bearing cover 01-BC01 half coupling motor side half coupling insert 01-GBC01 air vent valve plug impeller key car pump shaft key car	-	ball bearing outboard F1	002-B62062RS			
ball bearing outboard F2 002-B62092RS ball bearing inboard F2 002-B62082RS-NR bearing housing F1 01-BH01 bearing housing F2 02-BH02 radial shaft seal ring 01-SR01 bearing cover bearing pump side coupling insert coupling insert air vent valve plug impeller key car pump shaft key see FE P	2	ball bearing inboard F1	002-B62072Z-NR			
ball bearing inboard F2 002-B62082RS-NR bearing housing F1 01-BH01 bearing housing F2 02-BH02 radial shaft seal ring 01-SR01 bearing cover 01-BC01 half coupling motor side half coupling insert coupling insert air vent valve plug impeller key pump shaft key car pump shaft key see FEEF	8	ball bearing outboard F2	002-B62092RS			
bearing housing F1 01-BH01 bearing housing F2 02-BH02 radial shaft seal ring 01-SR01 bearing cover 01-BC01 half coupling motor side half coupling pump side coupling insert gasket bearing housing cover o1-GBC01 air vent valve plug impeller key pump shaft key SEE P	4	ball bearing inboard F2	002-B62082RS-NR			
bearing housing F2 02-BH02 radial shaft seal ring 01-SR01 bearing cover 01-BC01 half coupling motor side half coupling pump side coupling insert 01-GBC01 air vent valve plug impeller key car pump shaft key car	_	bearing housing F1	01-BH01	1		
radial shaft seal ring 01-SR01 bearing cover 01-BC01 half coupling motor side half coupling pump side coupling insert air vent valve plug impeller key car pump shaft key car	-	bearing housing F2	02-BH02			
half coupling motor side half coupling pump side coupling insert air vent valve plug impeller key pump shaft key  SEE P	6	radial shaft seal ring	01-SR01	buna N O' ring		
half coupling motor side half coupling bump side coupling insert gasket bearing housing cover air vent valve plug impeller key pump shaft key SEE P	-	bearing cover	01-BC01	cast iron ASTMA48CL 30		
half coupling pump side coupling insert gasket bearing housing cover air vent valve plug impeller key pump shaft key SEE P	9.1	half coupling motor side		depending on motor HP		
gasket bearing housing cover 01-GBC01 air vent valve plug impeller key car pump shaft key car	3.2	half coupling pump side		depending on pump shaft		
gasket bearing housing cover 01-GBC01 air vent valve plug impeller key car pump shaft key car	9.3	coupling insert		depending on coupling size		
air vent valve plug impeller key car pump shaft key SEE P	1	gasket bearing housing cover	01-GBC01	fiber gasket vellumoid		
pump shaft key car	7	air vent valve plug				
pump shaft key car	8	impeller key		carbon steel ASTMA108G10800		
SEE PAGE 2 OF 2 FOR MORE PARTS	6	pump shaft key		carbon steel ASTMA108G10800		
SEE PAGE 2 OF 2 FOR MORE PARTS	1					
				SEE PAGE 2 OF 2 FOR MORE PARTS		
	H					



recommended spares				PAGE 2 OF 2
PART NAME	PART NUMBER	STANDARD MATERIAL	PART NUMBER	OPTIONAL MATERIAL
motor				
bracket 143-215	2683883	cast iron ASTMA48CL 30 F1	2683883-B	bronze ASTMB584C87400
bracket 143-215			2683883-SS	stainless steel 304
bracket 143-215			Z683883-DI	ductile iron 300 PSI GGG50
bracket 143-215			2683883-CS	cast steel ASTMA216WCB
bracket 254-256	2683884	cast iron ASTMA48CL 30 F2	2683884-B	bronze ASTMB584C87400
bracket 254-256			2683884-SS	stainless steel 304
bracket 254-256			2683884-DI	ductile iron 300 PSI GGG50
bracket 254-256			2683884-CS	cast steel ASTMA216WCB
bracket 284-326	2691995	cast iron ASTMA48CL 30 F2	2691995-B	bronze ASTMB584C87400
bracket 284-326			2691995-SS	stainless steel 304
bracket 284-326			2691995-DI	ductile iron 300 PSI GGG50
bracket 284-326			2691995-CS	cast steel ASTMA216WCB
motor shaft key		carbon steel - 1045		stainless steel 18-8 open designation
impeller washer no 1	WF1-SS	stainless steel 18-8 open designation		
impeller washer no 2	WF2-SS	stainless steel 18-8 open designation		
impeller bolt no 1	LBF1-SS	stainless steel 18-8 open designation		
impeller bolt no 2	LBF2-SS	stainless steel 18-8 open designation		
casing gasket	G-10P	fiber gasket vellumoid		
motor bolts		carbon steel		
motor bracket 143-215	B10143256TC	cast iron ASTMA48CL 30		
motor bracket 284-286	B10284286TC			
motor bracket 324-449	B10324449TC	cast iron ASTMA48CL 30		
drain connection		carbon steel ASTMA108G10800		
gauge tappings		steel plugs		
complete power frame	LF1-143-184JM	cast iron ASTMA48CL 30		
complete power frame	LF2-254-256JM	cast iron ASTMA48CL 30		



ON - 1.	ARDRI model 3 X 3 X 10				200 300
1	PART NAME	PART NUMBER	STANDARD MATERIAL	PART NUMBER	OPTIONAL MATERIAL
1.1	volute casing	2687424	cast iron ASTMA48CL 30	2687424-B	bronze ASTMB584C87400
	volute casing			2687424-SS	stainless steel 304
1.2	volute casing	-		2687424-DI	ductile iron 300 PSI GGG50
1.3	volute casing			2687424-CS	cast steel ASTMA216WCB
*2.1	impeller 7/8	2684314-449	bronze ASTMB584C87400	2684314-491	cast iron ASTMA48CL30
*2.2	impeller 7/8			2684314-SS	stainless steel 304
*2.3	impeller 1 1/4	2684354-449	bronze ASTMB584C87400	2684354-491	cast iron ASTMA48CL30
*2.4	impeller 1 1/4			2684354-SS	stainless steel 304
3	pump shaft	SHAFTLF1	stainless steel 304		
3.1	pump shaft	SHAFTLF2	stainless steel 304		
*4	casing wearing	V1810-brz	bronze ASTMB584C87400	V1810-SS	stainless steel 18-8 open designation
*5.1	shaft sleeve 143-215	SLJM1.250B	bronze ASTMB584C87400	SLJM1.250SS	stainless steel 18-8 open designation
*5.2	shaft sleeve 354-326	SLJM1.500B	bronze ASTMB584C87400	SLJM1.500SS	stainless steel 18-8 open designation
*6.1	mechanical seal 143-215	011-S125-21-per	viton/ceramic vs carbon w/stainless steel spring	011-S125-dirt	viton/silicone carbide w/stainless steel
*6.2	mechanical seal 354-326	011-S150-21-per	viton/ceramic vs carbon w/stainless steel spring	011-S150-dirt	viton/silicone carbide w/stainless stee
*7.1	ball bearing outboard F1	002-B62062RS			
*7.2	ball bearing inboard F1	002-B62072Z-NR			
*7.3	ball bearing outboard F2	002-B62092RS			
47.4	ball bearing inboard F2	002-B62082RS-NR			
8	bearing housing F1	01-BH01	cast iron ASTMA48CL 30		
8.1	bearing housing F2	02-BH02	cast iron ASTMA48CL 30		
6*	radial shaft seal ring	01-SR01	buna N O' ring		
11	bearing cover	01-BC01	cast iron ASTMA48CL 30		
*19.1	half coupling motor side		depending on motor HP		
*19.2	half coupling pump side		depending on pump shaft		
*19.3	coupling insert		depending on coupling size		
*21 g	gasket bearing housing cover	01-GBC01	fiber gasket vellumoid		
27	air vent valve plug				
28	impeller key		carbon steel ASTMA108G10800		
29	pump shaft key		carbon steel ASTMA108G10800		
-					
			SEE PAGE 2 FOR MORE PARTS		



	RIAL	02400	8/400	36650	SWCB	87400	24	3GG50	SWCB	87400	24	36650	SWCB	designation													
PAGE 2 OF 2	OPTIONAL MATERIAL	CASCALA OTTANDEDAO	pronze AS I MB584C8/400	ductile iron 300 PSI GGG50	cast steel ASTMA216WCB	bronze ASTMB584C87400	stainless steel 304	ductile iron 300 PSI GGG50	cast steel ASTMA21	bronze ASTMB584C87400	stainless steel 304	ductile iron 300 PSI GGG50	cast steel ASTMA216WCB	stainless steel 18-8 open designation													
	PART NUMBER	0 0000000	2083883-D	2683883-DI	2683883-CS	2683884-B	2683884-SS	2683884-DI	2683884-CS	2691995-B	2691995-SS	2691995-DI	2691995-CS														
	STANDARD MATERIAL	ASSESSMENT ASSESSMENT OF EA	Cast Iron As I MA46CL SU F I			cast iron ASTMA48CL 30 F2			The second secon	cast iron ASTMA48CL 30 F2				carbon steel - 1045	stainless steel 18-8 open designation	fiber gasket vellumoid	carbon steel	cast iron ASTMA48CL 30	cast iron ASTMA48CL 30	cast iron ASTMA48CL 30	carbon steel ASTMA108G10800	steel plugs	cast iron ASTMA48CL 30	cast iron ASTMA48CL 30			
	PART NUMBER	0000000	7002002			2683884				2691995					WF1-SS	WF2-SS	LBF1-SS	LBF2-SS	G-10P		B10143256TC	B10284286TC	B10324449TC			LF1-143-184JM	LF2-254-256JM
recommended spares	PART NAME	motor hander	bracket 143-215	bracket 143-215	bracket 143-215	bracket 254-256	bracket 254-256	bracket 254-256	bracket 254-256	bracket 284-326	bracket 284-326	bracket 284-326	bracket 284-326	motor shaft key	impeller washer no 1	impeller washer no 2	impeller bolt no 1	impeller bolt no 2	casing gasket	motor bolts	motor bracket 143-215	motor bracket 284-286	motor bracket 324-449	drain connection	gauge tappings	complete power frame	complete power frame
1	NO	31	32.7	32.3	32.4	32.5	32.6	32.7	32.8	32.9	32.10.	32.11	32.12	33	34.1	34.2	35.1	35.2	*36	37	41	41.1	41.2	42	43	*44	*45



volute casing volute casing volute casing volute casing volute casing impeller 7/8 impeller 7/8 impeller 11/4 pump shaft pump shaft casing wearing shaft sleeve 143-215 shaft sleeve 143-215 mechanical seal 143-215 mechanical seal 354-326 ball bearing inboard F1 casing outboard F1 ball bearing inboard F1	IBER         STANDARD MATERIAL           :6         cast iron ASTMA48CL 30           449         bronze ASTMB584C87400           449         bronze ASTMB584C87400           F1         stainless steel 304	2687426-B 2687426-S 2687426-DI 26857426-CS	OPTIONAL MATERIAL
volute casing volute casing volute casing volute casing impeller 7/8 impeller 7/8 impeller 11/4 pump shaft pump shaft casing wearing shaft sleeve 143-215 shaft sleeve 354-326 mechanical seal 143-215 mechanical seal 354-326 ball bearing outboard F1 ball bearing inboard F1		2687426-B 2687426-SS 2687426-DI 26857426-CS	
volute casing volute casing volute casing impeller 7/8 impeller 11/4 impeller 11/4 pump shaft pump shaft casing wearing shaft sleeve 143-215 shaft sleeve 354-326 mechanical seal 143-215 mechanical seal 354-326 ball bearing outboard F1 ball bearing inboard F1	Δ Δ	2687426-SS 2687426-DI 26857426-CS	bronze ASTMB584C87400
volute casing volute casing impeller 7/8 impeller 7/8 impeller 11/4 pump shaft pump shaft casing wearing shaft sleeve 143-215 shaft sleeve 354-326 mechanical seal 143-215 mechanical seal 143-215 ball bearing outboard F1 ball bearing inboard F1	<b>a a</b>	2687426-DI 26857426-CS	stainless steel 304
volute casing impeller 7/8 impeller 7/8 impeller 11/4 pump shaft pump shaft pump shaft casing wearing shaft sleeve 143-215 shaft sleeve 354-326 mechanical seal 143-215 mechanical seal 354-326 ball bearing outboard F1 ball bearing inboard F1	q q	26857426-CS	ductile iron 300 PSI GGG50
impeller 7/8 impeller 7/8 impeller 1/4 impeller 1 1/4 pump shaft casing wearing shaft sleeve 143-215 shaft sleeve 354-326 mechanical seal 143-215 mechanical seal 354-326 ball bearing outboard F1 ball bearing inboard F1	Δ	POP SPOROCO	cast steel ASTMA216WCB
impeller 7/8 impeller 11/4 impeller 11/4 pump shaft pump shaft casing wearing shaft sleeve 143-215 shaft sleeve 354-326 mechanical seal 143-215 mechanical seal 43-215 ball bearing outboard F1 ball bearing inboard F1	q	2684315-491	cast iron ASTMA48CL30
impeller 1 1/4 impeller 1 1/4 pump shaft pump shaft casing wearing shaft sleeve 143-215 shaft sleeve 354-326 mechanical seal 143-215 mechanical seal 354-326 ball bearing outboard F1 ball bearing inboard F1	9	2684315-SS	stainless steel 304
impeller 1 1/4  pump shaft  pump shaft  casing wearing  shaft sleeve 143-215  shaft sleeve 354-326  mechanical seal 143-215  mechanical seal 354-326  ball bearing outboard F1  ball bearing inboard F1		2684353-491	cast iron ASTMA48CL30
pump shaft pump shaft casing wearing shaft sleeve 143-215 shaft sleeve 354-326 mechanical seal 143-215 mechanical seal 354-326 ball bearing outboard F1 ball bearing inboard F1		2684353-SS	stainless steel 304
casing wearing shaft sleeve 143-215 shaft sleeve 354-326 mechanical seal 143-215 mechanical seal 354-326 ball bearing outboard F1 ball bearing inboard F1			
shaft sleeve 143-215 shaft sleeve 143-215 shaft sleeve 354-326 mechanical seal 143-215 mechanical seal 354-326 ball bearing outboard F1 ball bearing inboard F1			
shaft sleeve 143-215 shaft sleeve 354-326 mechanical seal 143-215 mechanical seal 354-326 ball bearing outboard F1 ball bearing inboard F1	bronze ASTMB584C87400	V1811-SS	stainless steel 18-8 open designation
shaft sleeve 354-326 mechanical seal 143-215 mechanical seal 354-326 ball bearing outboard F1 ball bearing inboard F1	50B bronze ASTMB584C87400	SLJM1.250SS	stainless steel 18-8 open designation
mechanical seal 143-215 mechanical seal 354-326 ball bearing outboard F1 ball bearing inboard F1	00B bronze ASTMB584C87400	SLJM1.500SS	stainless steel 18-8 open designation
mechanical seal 354-326 ball bearing inboard F1	11-per viton/ceramic vs carbon w/stainless steel spring	ig 011-S125-dirt	viton/silicone carbide w/stainless steel
ball bearing outboard F1		ig 011-S150-dirt	viton/silicone carbide w/stainless steel
ball bearing inboard F1			
C	ZZ-NR		
*7.3 ball bearing outboard F2 002-B62092RS	2RS		
*7.4 ball bearing inboard F2   002-B62082RS-NR	RS-NR		
bearing housing F1 01-BH01	cast iron ASTMA48CL 30		
	2 cast iron ASTMA48CL 30		
radial shaft seal ring 01-SR01	11 buna N O' ring		
bearing cover 01-BC01	cast iron ASTMA48CL 30		
*19.1 half coupling motor side	depending on motor HP	La	
*19.2 half coupling pump side	depending on pump shaft		
*19.3 coupling insert	depending on coupling size		
gasket bearing housing cover 01-GBC01			
air vent valve plug			
impeller key	carbon steel ASTMA108G10800		
pump shaft key	carbon steel ASTMA108G10800		
	SEE PAGE 2 OF 2 FOR MORE SPARES		



PAGE 2 OF 2	PART NUMBER OPTIONAL MATERIAL		2683883-B bronze ASTMB584C87400	2683883-SS stainless steel 304	2683883-DI ductile iron 300 PSI GGG50	2683883-CS cast steel ASTMA216WCB	2683884-B bronze ASTMB584C87400	2683884-SS stainless steel 304	2683884-DI ductile iron 300 PSI GGG50	2683884-CS cast steel ASTMA216WCB	2691995-B bronze ASTMB584C87400	2691995-SS stainless steel 304	2691995-DI ductile iron 300 PSI GGG50	2691995-CS cast steel ASTMA216WCB	stainless steel 18-8 open designation												
	STANDARD MATERIAL		cast iron ASTMA48CL 30 F1				cast iron ASTMA48CL 30 F2				cast iron ASTMA48CL 30 F2				carbon steel - 1045	stainless steel 18-8 open designation	fiber gasket vellumoid	carbon steel	cast iron ASTMA48CL 30	cast iron ASTMA48CL 30	cast iron ASTMA48CL 30	carbon steel ASTMA108G10800	steel plugs	OC LOOK ARATON THE TATE			
	PART NUMBER		2683883				2683884		11		2691995					WF1-SS	WF2-SS	LBF1-SS	LBF2-SS	G-10P		B10143256TC	B10284286TC	B10324449TC			1 F4 445 404 INA
recommended spares	PART NAME	motor	bracket 143-215	bracket 143-215	bracket 143-215	bracket 143-215	bracket 254-256	bracket 254-256	bracket 254-256	bracket 254-256	bracket 284-326	bracket 284-326	bracket 284-326	bracket 284-326	motor shaft key	impeller washer no 1	impeller washer no 2	impeller bolt no 1	impeller bolt no 2	casing gasket	motor bolts	motor bracket 143-215	motor bracket 284-286	motor bracket 324-449	drain connection	gauge tappings	Company of the same
	NO	34	32.1	32.2	32.3	32.4	32.5	32.6	32.7	32.8	32.9	32.10.	32.11	32.12	33	34.1	34.2	35.1	35.2	*36	37	41	41.1	41.2	42	43	,,,,



volute casing volute casing volute casing volute casing	PART NUMBER	STANDARD MATERIAL	PART NUMBER	OPTIONAL MATERIAL
volute casing volute casing volute casing	2687430	cast iron ASTMA48CL 30	2687430-B	bronze ASTMB584C87400
volute casing			2687430-BB	stainless steel 304
volute casing			2687430-DI	ductile iron 300 PSI GGG50
			2687430-CS	cast steel ASTMA216WCB
impeller 7/8	2691939-449	bronze ASTMB584C87400	2691939-491	cast iron ASTMA48CL30
impeller 7/8			2691939-SS	stainless steel 304
impeller 1 1/4	2689502-449	bronze ASTMB584C87400	2689502-491	cast iron ASTMA48CL30
impeller 1 1/4			2689502-SS	stainless steel 304
pump shaft	SHAFTLF1	stainless steel 304		
pump shaft	SHAFTLF2	stainless steel 304		
casing wearing	2691672	bronze ASTMB584C87400	2691672-SS	stainless steel 18-8 open designation
shaft sleeve 143-215	SLJM1.250B	bronze ASTMB584C87400	SLJM1.250SS	stainless steel 18-8 open designation
shaft sleeve 354-326	SLJM1.500B	bronze ASTMB584C87400	SLJM1.500SS	stainless steel 18-8 open designation
15	011-S125-21-per	viton/ceramic vs carbon w/stainless steel spring	011-S125-dirt	viton/silicone carbide w/stainless steel
-	011-S150-21-per	viton/ceramic vs carbon w/stainless steel spring	011-S150-dirt	viton/silicone carbide w/stainless steel
ball bearing outboard F1	002-B62062RS			
	002-B62072Z-NR			
	002-B62092RS			
	002-B62082RS-NR			
bearing housing F1	01-BH01	cast iron ASTMA48CL 30		
bearing housing F2	02-BH02	cast iron ASTMA48CL 30		
radial shaft seal ring	01-SR01	buna N O' ring		
bearing cover	01-BC01	cast iron ASTMA48CL 30		
half coupling motor side		depending on motor HP		
half coupling pump side		depending on pump shaft		
coupling insert		depending on coupling size		
gasket bearing housing cover	01-GBC01	fiber gasket vellumoid		
air vent valve plug				
impeller key		carbon steel ASTMA108G10800		
pump shaft key		carbon steel ASTMA108G10800		
		SEE PAGE 2 OF 2 FOR MORE PARTS		
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	PAGE 2 OF 2		STANDARD MATERIAL PART NUMBER OPTIONAL MATERIAL		cast iron ASTMA48CL 30 F1 2683883-B bronze ASTMB584C87400	2683883-SS	2683883-DI ductile iron 300 PSI GGG50	2683883-CS cast steel ASTMA216WCB	cast iron ASTMA48CL 30 F2 2683884-B bronze ASTMB584C87400	2683884-SS stainless steel 304	2683884-DI ductile iron 300 PSI GGG50	2683884-CS cast steel ASTMA216WCB	cast iron ASTMA48CL 30 F2 2691995-B bronze ASTMB584C87400	2691995-SS stainless steel 304	2691995-DI ductile iron 300 PSI GGG50	2691995-CS cast steel ASTMA216WCB	carbon steel - 1045 stainless steel 18-8 open designation	fiber gasket vellumoid	carbon steel	cast iron ASTMA48CL 30	cast iron ASTMA48CL 30	cast iron ASTMA48CL 30	irbon steel ASTMA108G10800	steel plugs	cast iron ASTMA48CL 30					
			PART NUMBER		2683883				2683884				2691995					WF1-SS stain	WF2-SS stain	LBF1-SS stain	LBF2-SS stain	G-10P		B10143256TC	B10284286TC	B10324449TC	car		LF1-143-184JM	The same of the sa
	recommended spares	380Ri misdel 6 X 6 X 10	PART NAME	motor	bracket 143-215	bracket 143-215	bracket 143-215	bracket 143-215	bracket 254-256	bracket 254-256	bracket 254-256	bracket 254-256	bracket 284-326	bracket 284-326	bracket 284-326	bracket 284-326	motor shaft key	impeller washer no 1	impeller washer no 2	impeller bolt no 1	impeller bolt no 2	casing gasket	motor bolts	motor bracket 143-215	motor bracket 284-286	motor bracket 324-449	drain connection	gauge tappings	complete power frame	
	*	Senes	ON.	31	32.1	32.2	32.3	32.4	32.5	32.6	32.7	32.8	32.9	32.10.	32.11	32.12	33	34.1	34.2	35.1	35.2	*36	37	41	41.1	41.2	42	43	*44	



PAGE 1 OF 2	OPTIONAL MATERIAL		bronze ASTMB584C87400	stainless steel 304	ductile iron 300 PSI GGG50	cast steel ASTMA216WCB	cast iron ASTMA48CL30	stainless steel 304			stainless steel 18-8 open designation	stainless steel 18-8 open designation	stainless steel 18-8 open designation	viton/silicone carbide w/stainless steel	viton/silicone carbide w/stainless steel																		
	PART NUMBER	1	2687434-B	2687434-BB	2691991-DI	2691991-CS	2689502-491	2689502-SS			2691672-SS	SLJM1.250SS	SLJM1.500SS	011-S125-dirt	011-S150-dirt										7								
	STANDARD MATERIAL		cast iron ASTMA48CL 30				bronze ASTMB584C87400		stainless steel 304	stainless steel 304	bronze ASTMB584C87400	bronze ASTMB584C87400	bronze ASTMB584C87400	viton/ceramic vs carbon w/stainless steel spring	viton/ceramic vs carbon w/stainless steel spring					cast iron ASTMA48CL 30	cast iron ASTMA48CL 30	buna N O' ring	cast iron ASTMA48CL 30	depending on motor HP	depending on pump shaft	depending on coupling size	fiber gasket vellumoid		carbon steel ASTMA108G10800	carbon steel ASTMA108G10800	SEE PAGE 2 OF 2 FOR MORE PARTS		
	PART NUMBER		2687434				2685595-449		SHAFTLF1	SHAFTLF2	2691672	SLJM1.250B	SLJM1.500B	011-S125-21-per	011-S150-21-per	002-B62062RS	002-B62072Z-NR	002-B62092RS	002-B62082RS-NR	01-BH01	02-BH02	01-SR01	01-BC01				01-GBC01						
recommended spares	PART NAME		volute casing	volute casing	volute casing	volute casing	impeller 1 1/4	impeller 1 1/4	pump shaft	pump shaft	casing wearing	shaft sleeve 143-215	shaft sleeve 354-326	mechanical seal 143-215	mechanical seal 354-326	ball bearing outboard F1	ball bearing inboard F1	ball bearing outboard F2	ball bearing inboard F2	bearing housing F1	bearing housing F2	radial shaft seal ring	bearing cover	half coupling motor side	half coupling pump side	coupling insert	gasket bearing housing cover	air vent valve plug	impeller key	pump shaft key			
	9		1	1.1	1.2	1.3	*2.1	*2.2	3	3.1	*4	*5.1	*5.2	*6.1	*6.2	*7.1	*7.2	*7.3	*7.4	8	8.1	6*	11	*19.1	*19.2	*19.3	+21	27	28	59			



PAGE Z OF Z	STANDARD MATERIAL PART NUMBER OPTIONAL MATERIAL		cast iron ASTMA48CL 30 F1 2683883-B bronze ASTMB584C87400	2683883-SS stainless steel 304	)	2683883-CS cast steel ASTMA216WCB	cast iron ASTMA48CL 30 F2 2683884-B bronze ASTMB584C87400	2683884-SS	2683884-DI ductile iron 300 PSI GGG50	2683884-CS cast steel ASTMA216WCB	cast iron ASTMA48CL 30 F2 2691995-B bronze ASTMB584C87400	2691995-SS steel 304	2691995-DI ductile iron 300 PSI GGG50	2691995-CS cast steel ASTMA216WCB	carbon steel - 1045 steel 18-8 open designation	stainless steel 18-8 open designation	fiber gasket vellumoid	carbon steel	cast iron ASTMA48CL 30	cast iron ASTMA48CL 30	cast iron ASTMA48CL 30	carbon steel ASTMA108G10800	steel plugs	cast iron ASTMA48CL 30			
	PART NUMBER		2683883				2683884				2691995					WF1-SS sta	WF2-SS sta	LBF1-SS sta	LBF2-SS sta	G-10P		B10143256TC	B10284286TC	B10324449TC			LF1-143-184JM
recommended spares	PART NAME	motor	bracket 143-215	bracket 143-215	bracket 143-215	bracket 143-215	bracket 254-256	bracket 254-256	bracket 254-256	bracket 254-256	bracket 284-326	bracket 284-326	bracket 284-326	bracket 284-326	motor shaft key	impeller washer no 1	impeller washer no 2	impeller bolt no 1	impeller bolt no 2	casing gasket	motor bolts	motor bracket 143-215	motor bracket 284-286	motor bracket 324-449	drain connection	gauge tappings	complete power frame
*	ON	31	32.1	32.2	32.3	32.4	32.5	32.6	32.7	32.8	32.9	32.10.	32.11	32.12	33	34.1	34.2	35.1	35.2	*36	37	41	41.1	41.2	42	43	*44



PAGE 1 OF 2	INIGHT MATERIAL	OPTIONAL MATERIAL	bronze ASTMB584C87400	stainless steel 304	ductile iron 300 PSI GGG50	cast steel ASTMA216WCB	cast iron ASTMA48CL30	stainless steel 304			stainless steel 18-8 open designation	stainless steel 18-8 open designation	viton/silicone carbide w/stainless steel																			
	DADY IN TOAD	PAKI NUMBER	2687428-B	2687428-SS	2687428-DI	2687428-CS	2685580-491	2685580-SS			2691669-SS	SLJM1.500SS	011-S150-dirt																			
	INIGHTAM GOAGNATO	STANDARD MATERIAL	cast iron ASTMA48CL 30				bronze ASTMB584C87400		stainless steel 304	stainless steel 304	bronze ASTMB584C87400	bronze ASTMB584C87400	viton/ceramic vs carbon w/stainless steel spring					cast iron ASTMA48CL 30	cast iron ASTMA48CL 30	buna N O' ring	cast iron ASTMA48CL 30	depending on motor HP	depending on pump shaft	depending on coupling size	fiber gasket vellumoid		carbon steel ASTMA108G10800	carbon steel ASTMA108G10800	SEE DAGE 2 OF 2 EOB MOBE DARTS	SECTAGE OF A LOW MONE LAND		
	CAN TO A C	PAKI NUMBEK	2687428				2685580-449		SHAFTLF1	SHAFTLF2	2691669	SLJM1.500B	011-S150-21-per	002-B62062RS	002-B62072Z-NR	002-B62092RS	002-B62082RS-NR	01-BH01	02-BH02	01-SR01	01-BC01				01-GBC01							
recommended spares	880RI model 4 x 4 x 12	PART NAME	volute casing	volute casing	volute casing	volute casing	impeller 1 1/4	impeller 1 1/4	pump shaft	pump shaft	casing wearing	shaft sleeve 354-326	mechanical seal 354-326	ball bearing outboard F1	ball bearing inboard F1	2		bearing housing F1	bearing housing F2	radial shaft seal ring	bearing cover	half coupling motor side	half coupling pump side	coupling insert	gasket bearing housing cover	air vent valve plug	impeller key	pump shaft key				
*	Series	Q	-	1.1	1.2	1.3	*2.1	*2.2	3	3.1	*4	*5.1	*6.1	*7.1	*7.2	*7.3	*7.4	80	8.1	6*	11	*19.1	*19.2	*19.3	*21	27	28	29				



PAGE Z OF 2	STANDADD MATEDIAL BADT NIIMBED ODTIONAL MATEDIAL	LAN NOMBER		cast iron ASTMA48CL 30 F1 2687811-B bronze ASTMB584C87400	2687811-SS	2687811-DI ductile iron 300 PSI GGG50		cast iron ASTMA48CL 30 F2 2687812-B bronze ASTMB584C87400	2687812-SS steel 304	2687812-DI ductile iron 300 PSI GGG50	2687812-CS cast steel ASTMA216WCB	cast iron ASTMA48CL 30 F2 2687813-B bronze ASTMB584C87400		2687813-DI ductile iron 300 PSI GGG50	2687813-CS cast steel ASTMA216WCB	carbon steel - 1045 stainless steel 18-8 open designation	fiber gasket vellumoid	carbon steel	cast iron ASTMA48CL 30	cast iron ASTMA48CL 30	cast iron ASTMA48CL 30	carbon steel ASTMA108G10800	steel plugs				
	DADT NIMBED	TAKI NOMBER		2687811 c				2687812 c				2687813 c					WF1-SS stain!	WF2-SS stain!	LBF1-SS stain	LBF2-SS stain	G-12P		B12143256TC	B12284286TC	B10324449TC	car	
recommended spares	BROR! model 4 X 4 X 12	LAN INMINE	motor	bracket 143-215	bracket 143-215	bracket 143-215	bracket 143-215	bracket 254-256	bracket 254-256	bracket 254-256	bracket 254-256	bracket 284-326	bracket 284-326	bracket 284-326	bracket 284-326	motor shaft key	impeller washer no 1	impeller washer no 2	impeller bolt no 1	impeller bolt no 2	casing gasket	motor bolts	motor bracket 143-215	motor bracket 284-286	motor bracket 324-449	drain connection	gauge tappings
*	Series	2	31	32.1	32.2	32.3	32.4	32.5	32.6	32.7	32.8	32.9	32.10.	32.11	32.12	33	34.1	34.2	35.1	35.2	*36	37	41	41.1	41.2	42	43



NO 1 1 1 1 1 1 1 1 1 3 1 1 3 1 1 3 1 1 3 1 1 3 1 1 3 1	recommended spares				PAGE 1 OF 2
0 1 - 2 8	880Rt model 6 X 6 X 12				
1 2 2	PART NAME	PART NUMBER	STANDARD MATERIAL	PART NUMBER	OPTIONAL MATERIAL
- Z E	volute casing	2687432	cast iron ASTMA48CL 30	2687432-B	bronze ASTMB584C87400
2 8	volute casing			2687432-SS	stainless steel 304
3	volute casing			2687432-DI	ductile iron 300 PSI GGG50
	volute casing			2687432-CS	cast steel ASTMA216WCB
*2.1	impeller 1 1/4	2685593-449	bronze ASTMB584C87400	2685593-491	cast iron ASTMA48CL30
*2.2	impeller 1 1/4			2685593-SS	stainless steel 304
3	pump shaft	SHAFTLF1	stainless steel 304		
3.1	pump shaft	SHAFTLF2	stainless steel 304		
*4	casing wearing	2691671-1	bronze ASTMB584C87400	2691671-1SS	stainless steel 18-8 open designation
*5.1	shaft sleeve 354-326	SLJM1.500B	bronze ASTMB584C87400	SLJM1.500SS	stainless steel 18-8 open designation
*6.1	mechanical seal 354-326	011-S150-21-per	viton/ceramic vs carbon w/stainless steel spring	011-S150-dirt	viton/silicone carbide w/stainless steel
*7.1	ball bearing outboard F1	002-B62062RS			
*7.2	ball bearing inboard F1	002-B62072Z-NR			
*7.3	ball bearing outboard F2	002-B62092RS			
*7.4	ball bearing inboard F2	002-B62082RS-NR			
80	bearing housing F1	01-BH01	cast iron ASTMA48CL 30		
8.1	bearing housing F2	02-BH02	cast iron ASTMA48CL 30		
6*	radial shaft seal ring	01-SR01	buna N O' ring		
11	bearing cover	01-BC01	cast iron ASTMA48CL 30		
*19.1	half coupling motor side		depending on motor HP		
*19.2	half coupling pump side		depending on pump shaft		
*19.3	coupling insert		depending on coupling size		
*21 g	gasket bearing housing cover	- 01-GBC01	fiber gasket vellumoid		
27	air vent valve plug				
28	impeller key		carbon steel ASTMA108G10800		
29	pump shaft key		carbon steel ASTMA108G10800		
			SEE PAGE 2 OF 2 FOR MORE PARTS		
+					



recommended spares				PAGE 2 OF 2
DADT NAME	DAPT NIMBED	STANDARD MATERIAL	DADT NI IMBED	ODTIONAL MATERIAL
TIMEN IN	LAKI NOMBEN	STANDARD MALENAL	LAN NOMBEN	OF HOME MALENAL
motor				
bracket 143-215	2687811	cast iron ASTMA48CL 30 F1	2687811-B	bronze ASTMB584C87400
bracket 143-215			2687811-SS	stainless steel 304
bracket 143-215			2687811-DI	ductile iron 300 PSI GGG50
bracket 143-215			2687811-CS	cast steel ASTMA216WCB
bracket 254-256	2687812	cast iron ASTMA48CL 30 F2	2687812-B	bronze ASTMB584C87400
bracket 254-256			2687812-SS	stainless steel 304
bracket 254-256			2687812-DI	ductile iron 300 PSI GGG50
bracket 254-256			2687812-CS	cast steel ASTMA216WCB
bracket 284-326	2687813	cast iron ASTMA48CL 30 F2	2687813-B	bronze ASTMB584C87400
bracket 284-326			2687813-SS	stainless steel 304
bracket 284-326			2687813-DI	ductile iron 300 PSI GGG50
bracket 284-326			2687813-CS	cast steel ASTMA216WCB
motor shaft key		carbon steel - 1045		stainless steel 18-8 open designation
impeller washer no 1	WF1-SS	stainless steel 18-8 open designation		
impeller washer no 2	WF2-SS	stainless steel 18-8 open designation		
impeller bolt no 1	LBF1-SS	stainless steel 18-8 open designation		
impeller bolt no 2	LBF2-SS	stainless steel 18-8 open designation		
casing gasket	G-12P	fiber gasket vellumoid		
motor bolts		carbon steel		
motor bracket 143-215	B12143256TC	cast iron ASTMA48CL 30		
motor bracket 284-286	B12284286TC	cast iron ASTMA48CL 30		
motor bracket 324-449	B12324449TC	cast iron ASTMA48CL 30		
drain connection		carbon steel ASTMA108G10800		
gauge tappings		steel plugs		
complete power frame	LF1-143-184JM	cast iron ASTMA48CL 30		
complete power frame	LF2-254-256JM	cast iron ASTMA48CL 30		



0	PART NUMBER	STANDARD MATERIAL	PART NUMBER	PAGE 2 OF 2 OPTIONAL MATERIAL
	2687811	cast iron ASTMA48CL 30 F1	2687811-B	bronze ASTMB584C87400
			2687811-SS	stainless steel 304
			2687811-DI	ductile iron 300 PSI GGG50
			2687811-CS	cast steel ASTMA216WCB
	2687812	cast iron ASTMA48CL 30 F2	2687812-B	bronze ASTMB584C87400
			2687812-SS	stainless steel 304
			2687812-DI	ductile iron 300 PSI GGG50
			2687812-CS	cast steel ASTMA216WCB
2	2687813	cast iron ASTMA48CL 30 F2	2687813-B	bronze ASTMB584C87400
			2687813-SS	stainless steel 304
			2687813-DI	ductile iron 300 PSI GGG50
	Loy		2687813-CS	cast steel ASTMA216WCB
		carbon steel - 1045		stainless steel 18-8 open disignation
۸	WF1-SS	stainless steel 18-8 open designation		
۸	WF2-SS	stainless steel 18-8 open designation		
	LBF1-SS	stainless steel 18-8 open designation		
	LBF2-SS	stainless steel 18-8 open designation		
	G-12P	fiber gasket vellumoid		
		carbon steel		
B12	B12143256TC	cast iron ASTMA48CL 30		
B12	B12284286TC	cast iron ASTMA48CL 30		
B1.	B12324449TC	cast iron ASTMA48CL 30		
		carbon steel ASTMA108G10800		
		steel plugs		
LFI	LF1-143-184JM	cast iron ASTMA48CL 30		
LF2-254-256JM		OS LUND ACTIVADAIN 20		



	recommended spares	4			PAGE 1 OF 2
FIES	880RI model 8 X 8 X 12				
9	PART NAME	PART NUMBER	STANDARD MATERIAL	PART NUMBER	OPTIONAL MATERIAL
-	volute casing	2687435	cast iron ASTMA48CL 30	2687435-B	bronze ASTMB584C87400
1.1	volute casing			2687435-SS	stainless steel 304
1.2	volute casing			2687435-DI	ductile iron 300 PSI GGG50
1.3	volute casing			2687435-CS	cast steel ASTMA216WCB
*2.1	impeller 1 1/4	2685596-449	bronze ASTMB584C87400		cast iron ASTMA48CL30
*2.2	impeller 1 1/4				stainless steel 304
3	pump shaft	SHAFTLF1	stainless steel 304		
3.1	pump shaft	SHAFTLF2	stainless steel 304		
*4	casing wearing	2691670	bronze ASTMB584C87400	2691670-SS	stainless steel 18-8 open designation
*5.1	shaft sleeve 354-326	SLJM1.500B	bronze ASTMB584C87400	SLJM1.500SS	stainless steel 18-8 open designation
*6.1	mechanical seal 354-326	011-S150-21-per	viton/ceramic vs carbon w/stainless steel spring	011-S150-dirt	viton/silicone carbide w/stainless stee
*7.1	ball bearing outboard F1	002-B62062RS			
*7.2	ball bearing inboard F1	002-B62072Z-NR			
*7.3	ball bearing outboard F2	002-B62092RS			
47.4	ball bearing inboard F2	002-B62082RS-NR			
8	bearing housing F1	01-BH01	cast iron ASTMA48CL 30		
8.1	bearing housing F2	02-BH02	cast iron ASTMA48CL 30		
6*	radial shaft seal ring	01-SR01	buna N O' ring		
11	bearing cover	01-BC01	cast iron ASTMA48CL 30		
*19.1	half coupling motor side		depending on motor HP		
*19.2			depending on pump shaft		
*19.3			depending on coupling size		
*21	gasket bearing housing cover	01-GBC01	fiber gasket vellumoid		
27	air vent valve plug				
28	impeller key		carbon steel ASTMA108G10800		
29	pump shaft key		carbon steel ASTMA108G10800		
-					
			SEE PAGE 2 OF 2 FOR MORE PARTS		
7					

# 1A1 MODEL Cartridge Filter Housing



The 1A1 MODEL Cartridge Filter Housing is an all-metal, two-piece housing, featuring centerpost-type construction. The 1 Al Model has a maximum operating temperature and pressure of 125 psig at 200°F. The 1A1 Model Cartridge Filter Housing has flow rates to up to 6 Gallons Per Minute (GPM).

### APPLICABLE FILTER CARTRIDGES

Micro-Klean- III (Series U30)

Betapure-

#### **DESIGN FEATURES**

- All-metal, two-piece construction.
- Head and Sump Durable die-cast aluminum
- Mounting pads drilled to accept self-tapping screws provided with the optional mounting bracket.
- Centerpost-type design for easy cartridge changeout.

#### Options

Mounting bracket; order separately.

### STANDARD MODEL SPECIFICATIONS

Table 1 gives specifications for the 1A1 Model. Note that Maximum Operating Pressure is the rating for the housing only. Actual filter operating temperature depends on temperature capability of the filter cartridge used in the housing.

Operating Data	1A1 Model
Maximum Operating Pressure and Temperature	125 psi @ 200°F
Flow Rate (GPM)	See Table 2.
Materials of Construction	
Head and Sump	Die-Cast Aluminum
Centerpost	Stainless Steel
Head Gasket	Buna N & Cork
Cap-Nut Gasket	Fiber
Connection Sizes	3/8" NPTF
Cartridge Requirements	The model uses one filter cartridge. See "Cartridge Requirements" for more information.

TABLE 1 - SPECIFICATIONS

#### CARTRIDGE REQUIREMENTS

The 1A1 Model Cartridge Filter Housing uses one Micro-Klean III Cartridge or one Betapure Cartridge Filter.

#### FLOW RATES

Table 2 gives maximum flow rates in Gallons Per Minute (GPM) for the 1A1 Model Cartridge Filter Housings. Do not use Table 2 for filter sizing. Use the table as a guide only in establishing the housing flow rates. When you know the flow rate for a selected cartridge, then use the table to determine whether or not the housing is within the recommended flow rate. Remember to consider the amount of contaminant to be removed when selecting a filter.

Hausin	Inlet /	FLOW (GPM)					
Housin g Model	Inlet / Outlet	Water	80 SSU	150 SSU	300 SSU	600 SSU	1000 SSU
1A1	3/8° NPTF	6	5	4.5	4	3.5	3

TABLE 2 - RECOMMENDED FLOW RATES

### BENEFITS

- Long Service Life
- Quick and Easy Cartridge Change-out
- Reduced Down Time for Filter Change-out
- Reduced Labor Cost
- Uses Standard Filters
- Economical
- Easily Mounted to Wall or Support Structure



#### STANDARD MODEL DIMENSIONS

Table 3 gives dimensions in inches and shipping weight in pounds for the 1A1 Model Cartridge Filter Housing. These should be used for rough plumbing and approximate size definition. Note that figure 1 defines a length or width by a letter symbol in the top row. The square where the row and column meet is the selected dimension.

Model	Α	В	С	D	Shippin g Weight
1A1	6 3/16"	4 15/16*	3 1/2"	2 3/4"	3 lbs

**TABLE 3. - 1A1 HOUSING DIMENSIONS** 

#### 1A1 MODEL ORDERING GUIDE Plant Code 01 Product Code 020

Model	Catalog Number	Mounting Bracket Kit*
1A1	44109-01	35581-05

<sup>\*</sup> Order Separately

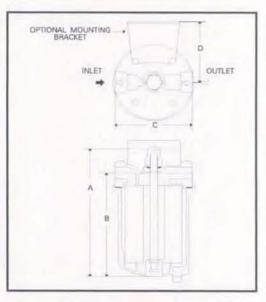
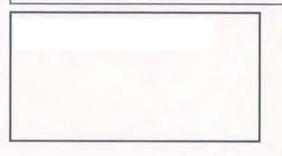


FIGURE 1. - 1A1 MODEL FILTER HOUSING

#### WARRANTY

Seller warrants its equipment against defects in workmanship and material for a period of 12 months from date of shipment from the factory under normal use and service and otherwise when such equipment is used in accordance with instructions furnished by Seller and for purposes disclosed in writing at the time of purchase, if any. Any unauthorized alteration of modification of the equipment by Buyer will void this warranty. Seller's liability under this warranty shall be limited to the replacement or repair, F.O.B., point of

manufacture, of any defective equipment or part which, having been returned to the factory, transportation charges prepaid, has been inspected and determined by Seller to be defective. THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, EITHER EXPRESSED OR IMPLIED, AS TO DESCRIPTION, QUALITY, MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE OR USE, OR ANY OTHER MATTER. Under no circumstances shall Seller be liable to Buyer or any third party for any loss of profits or







### **Terms and Conditions**

LIMITED WARRANTY: We warrant to our immediate customer and to the ultimate consumer that products of our manufacture will be free of defects in material and workmanship under normal use and service for the following time periods, when installed and maintained in accordance with our instructions. Pumps Products: One (1) year form date of invoicing. As used herein, "the ultimate consumer" is defined as the purchaser who first uses the product after its initial installation or, in the case of product designed for non permanent installation, the first owner who used the product. It is the purchaser's or any sub-vendee's obligation to make know to the ultimate consumer the terms and conditions of this warranty. This warranty gives you specific legal rights, and there may also be other rights whichvary from province to province. In the event the product is covered by the Consumer Product Warranty (1) the duration of any implied warranty associated with the product by virtue of said law is limited to the same duration as stated herein, (2) this warranty is a LIMITED WARRANTY, and (3) no claims of any nature whatsoever shall be made against us, until the ultimates consumer, his successor, or assigns, notifies us in writing of the defect, and delivers the product and/or defective part(s) freight prepaid to our factory or nearest authorized service station. THE SOLE AND EXCLU-SIVE REMEDY FOR BREACH OF ANY AND ALL WARRANTIES WITH RESPECT TO ANY PRODUCT SHALL BE TO REPLACE OR REPAIR AT OUR ELECTION, F.O.B. POINT OF MANUFACTURE OR AUTHORIZED REPAIR STATION, SUCH PRODUCTS AND/OR PARTS REPAIR STATION, SUCH PRODUCTS AND/OR PATS AS PROVEN DEFECTIVE. THERE SHALL BE NO FURTHER LIABILITY, WHETHER BASED ON WARRANTY, NEGLI-GENCE OR OTHERWISE. Unless expressly stated otherwise guarantees in the nature of performance specifications furnished in addition to the foregoing material and workmanship warranties on a product manufactured by us, if any, are subject to laboratory tests corrected for field performance. Any additional guarantees, in the nature of performance specifications must be in writing and such writing must be signed by our authorized representative. Due to inaccuracies in field testing if a conflict arises between the results of field testing conducted by or for user, and laboratory test corected for field performance, the latter shall control. Components or accessories supplied by us but manufactured by others are warranted only to the extent of and by the terms and conditions of the original manufacturer's warranty. RECOMMENDATIONS FOR SPECIAL APPLICATIONS OR THOSE RESULTING FROM SYSTEMS ANALYSES AND EVALUATIONS WE CONDUCT WILL BE BASED ON OUR BEST AVAILABLE EXPERIENCE AND PUBLISHED INDUSTRY INFORMATION. SUCH RECOMMENDA-TIONS DO NOT CONSTITUTE A WARRANTY OF SATISFACTORY PER-FORMANCE AND NO SUCH WARRANTY IS GIVEN. This warranty shall not apply when damage is caused by (A) improper installation, (B) improper voltage (C) lightning (D) sand or other abrasive material (E) scale or corrosion build-up due to excessive chemical content. Any modification of the original equipment will also void the warranty. We will not be responsible for loss, damage or labour cost due to interruption of service caused by defective parts. Neither will we accept charges incurred by others without our prior written approval. This warranty is void if our inspection reveals the product was in a manner inconsistent with normal industry practice and/or our specific recommendations.

The purchaser is responsible for communication of all necessary information regarding the application and use of the product. UNDER NO CIR-CUMSTANCES WILL BE RESPONSIBLE FOR ANY OTHER DIRECT OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOST PROFITS, LOST INCOME, LABOUR CHARGES, DELAYS IN PRODUCTION, IDLE PRODUCTION, WHICH DAMAGES ARE CAUSED BY ANY DEFECTS IN MATERIALAND/OR WORKMANSHIP AND/OR DAMAGE OR DELAYS IN SHIPMENT. THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER EXPRESS OR IMPLIED WARRANTY, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. No rights extended under this warranty shall be assigned to any other person, whether by operation of law or otherwise, without our prior written approval. If any litigation is commenced between the parties hereto for the enforcement of any rights hereunder, the successful party in subject litigationshall be entitled to receive from the unsuccessful party all costs incurred in connection therewith, including a reasonable amount of attorney's fees. YOUR ACCEPTANCE OF ANY GOODS SUPPLIED BY US, OR ON OUR BEHALF, SHALL, WITHOUT LIMITATION CONSTITUTE ACCEPTANCE OF ALL TERMS AND CONDITIONS STATED ABOVE.

PROJECT:	
CONTRACTOR:	
ENGINEER:	
DATE:	



### **Terms and Conditions**

Our acceptance of your order is expressly conditioned on the general terms and conditions set forth below and all terms stated on the face of this form. The contract shall not include any deviating or additional terms unless expressly agreed to in writing and signed by an officer of our company.

**PRICES:** All prices are subject to change without notice and all shipments will be invoiced at the price in effect at the time of shipment, except when otherwise agreed to in writing by our authorized representative. Published prices are for products of our standard design and construction and any item not covered by the most recent published price list must be referred to us for special pricing. Prices do not include freight. Weights shown in price lists are approximate shipping weights. The amount of any applicable present or future tax or other government charge upon the production, sale, shipment or use of goods ordered or sold is not in the price and will be added to billing unless you provide us with an appropriate exemption certificate.

**QUOTATION:** Prices quoted by us are valid for 30 days from date of quotation unless we have otherwise specified in writing. Clerical errors on quotations are subject to our correction and such errors will not be binding.

**CANCELLATION & REVISIONS:** No purchase orders accepted and acknoledged by us may be cancelled or revised by you except with our prior written consent and upon payment of reasonable cancellation charges compensating us for all costs incurred in work done and material purchased. We reserve the right to determine what constitutes reasonable cancellation charges.

RETURN OF EQUIPMENT: No equipment shall be returned to us without first obtaining a written Returned Goods Authorization and shipping instruction from us. The returner must prepay the charges in full for transportation to our factory. Credit allowed for new, undamaged equipment of current standard design will be 80% of the invoiced price or current billing price, whichever is less. Equipment which has been used, however slight, will not be accepted. Authorization will not be given for return of equipment, (1) which would, in our opinion, result in an excess in the amount of stock we normally carry, (2) not invoiced within the last 3 months, or (3) which is non-standard and manufactured specifically to a buyer's specifications. For non-standard equipment not of our manufacture, the only credit allowed will be such credit as may be allowed by the manufacturer of such equipment. Equipment must be returned within 30 days of the issuance of the Returned Goods Authorization. No item with a net value of less than \$50.00 will be authorized for return. Unauthorized returns may be refused and/or returned freight collect.

CREDIT & PAYMENT: Payment is due as noted on our invoice. Overdue accounts are subject to a service charge. All orders are subject to approval of our credit department and we may require full or partial payment in advance. Pro rata payments shall become due as shipments are made. If the shipments are delayed by you for any cause, payments shall become due from date on which we are prepared to make shipment and storage shall be at your risk and expense. If manufacture is delayed by you for any

cause, a partial payment based upon the proportion of the order completed shall become due from the date on which we are notified of the delay.

**SECURITY INTEREST:** We shall have a lien on all goods sold as security for payment on the invoice price, and upon request you shall provide and execute a financing statement showing such lien.

**DELIVERY:** We will reasonable effort to meet your delivery requirement provided you provide us, on a timely basis, all approvals, technical data, instructions and credit approval requirements needed for release of the shipment. However, all delivery and/or shipment dates are estimates only unless we have expressly guaranteed delivery of such dates in writing at your specific request. In no event shall we have any liability if delivery is delayed by strikes, labour disturbances, material shortages, plant calamities or disaster, acts of God, government actions, civil disturbance, the failure of any pre-supposed condition of the contract, withholding shipments due to credit clearance, or other interferences beyond our reasonable control, and the date of delivery shall be extended for a period of time equal to the time lost because of any such reason.

**SHIPPING:** Unless you specify in writing and we acknow-ledge in writing, (A) goods will be boxed or crated as we may deem proper for protection against normal handling and for domestic shipment, (B) routing and manner of shipment will be at our discretion, and may be insured at your expense. An extra charge will be made for special handling. All shipments are F.O.B. point of manufacture. Delivery of goods to the initial carrier will constitute delivery to you and all goods will be shipped at your risk. A claim for loss or damage in transit must be entered with the carrier and prosecuted by you. Acceptance of material from a common carrier constitutes a waiver of any claims against us for delay, damage or loss.

GOVERNING LAW: It is understood and agreed that these Terms and Condition of Sale shall be interpreted under and pursuant to the laws of the Province of Quebec; you agree that any action at law which is related to any contract of sale brought against the company shall be filed in the appropriate court located in the Province of Quebec.

PROJECT:
CONTRACTOR:
ENGINEER:
DATE:

### We are proud supplier for the following completed and on going projects:



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