



CAUTION!!

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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.**

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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.

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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

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	В.	MAKE CERTAIN THE SPACE ABOVE THE PUMP IS SUFFICIENT TO GIVE CLEARANCE FOR
		LIFTING THE PUMP ASSEMBIY FROM THE CASING. ALSO THE SPACE AROUND THE
		PUMP SHOULD BE LARGE ENOUGH FOR GENERAL ACCESSIBILITY AND VENTILATION.
	C.	SUPPORT PUMP ONLY BY PIPING.

- MANUALLY VENT ALL AIR FROM CASING. D.
- MAKE SURE SUCTION VALVE IS WIDE OPEN BEFORE STARTING MOTOR Ε.

F. CHECK MOTOR ROTATION (CLOCKWISE LOOKING DOWN FROM TOP OF MOTOR).

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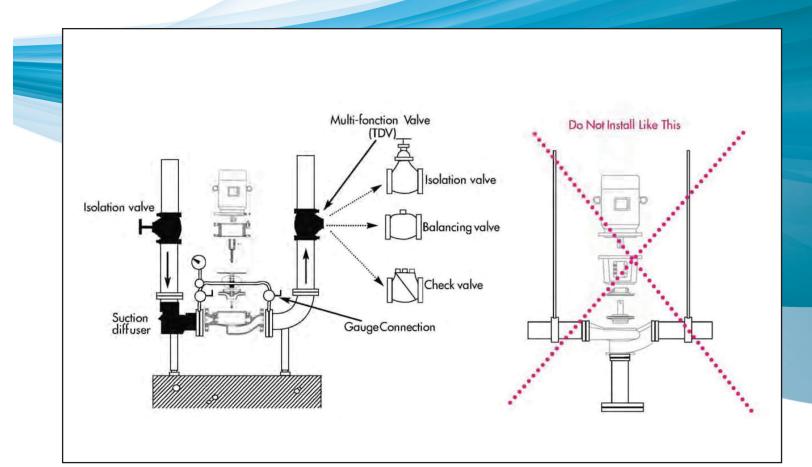
FLOOR MOUNTED TYPE VERTICAL IN LINE PUMPS

FLO FAB Vertical Split Coupled Larger In Line pumps and pumps have supporting Floor plate under the cosing. These pumps are 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.

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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

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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

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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

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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.



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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.

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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 15HP 3500 RPM	20 125	180 120
20 - 60HP 3500 RPM	15 115	180 120



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.

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PREVENTIVE MAINTENANCE

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- 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.

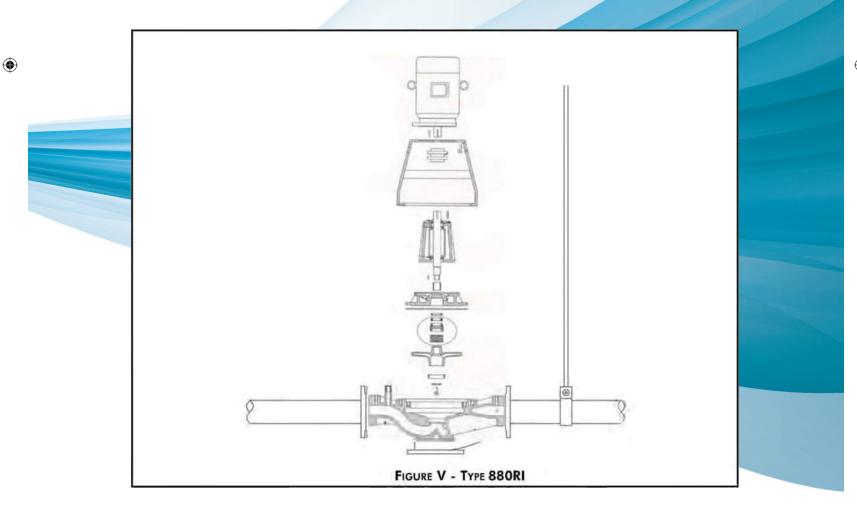
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TYPE 880RI PUMPS DISASSEMBLY

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.





PUMP RE-ASSEMBLY

1. Clean seal recess of adapter. Lightly lubricate seat ring and press stationary seal assembly and adapter.

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- 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.

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RENEWAL PARTS

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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

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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.

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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.

KEY

I.O.M - 880RI SERIES

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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.

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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).

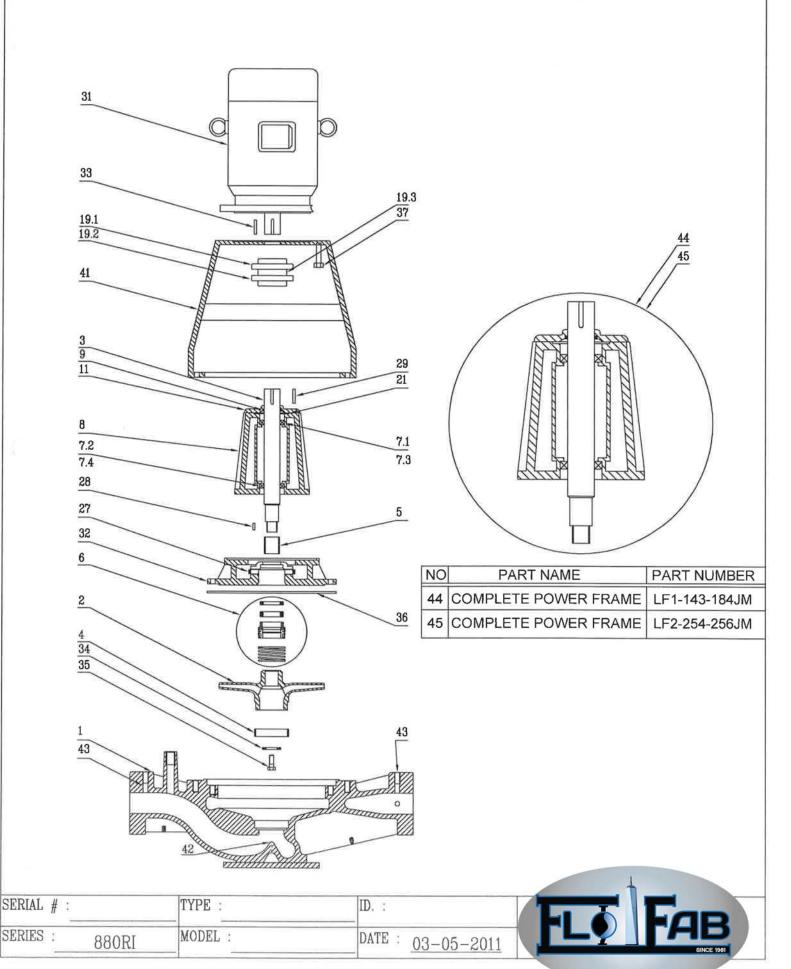
45. Dirt getting into bearings.

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.

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SERIES 880RI PARTS LIST





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	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	2687414-B	2687414-SS	2687414-DI	2687414-CS	V1735-491	V1735-SS	V3289-491	V3289-SS			2684006-SS	SLJM1.250SS	SLJM1.500SS	011-S125-dirt	011-S150-dirt																
	STANDARD MATERIAL	cast iron ASTMA48CL 30				bronze ASTMB584C87400		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	2687414				V1735-449		V3289-449		SHAFTLF1	SHAFTLF2	2684006	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 7/8	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	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	
+	NO	1	1,1	1.2	1.3	*2.1	*2.2	*2.3	*2.4	3	3.1	*4	*5.1	*5.2	*6.1	*6.2	1.7*	*7.2	*7.3	*7.4	8	8.1	6*	11	*19.1	*19.2	*19.3	*21	27	28	29	



	recommended spares				PAGE 2 OF 2
10	830RI madel 2 X 2 X 5				
-	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
-	bracket 143-215			2683879-DI	ductile iron 300 PSI GGG50
-	bracket 143-215			2683879-CS	cast steel ASTMA216WCB
32.5	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		
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		
\vdash	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		
-	complete power frame	LF1-143-184JM	cast iron ASTMA48CL 30		
-	complete power frame	LF2-254-256JM	cast iron ASTMA48CL 30		



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	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	2687418-B	2687418-SS	2687418-DI	2687418-CS	2683739-491	2683739-SS	2683747-491	2683747-SS			V1811-SS	1	SLJM1.500SS	011-S125-dirt	011-S150-dirt														1		
	STANDARD MATERIAL	cast iron ASTMA48CL 30				bronze ASTMB584C87400		bronze ASTMB584C87500		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					1	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	2687418			11	2683739-449		2683747-449		SHAFTLF1	SHAFTLF2	V1811	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 7/8	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	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	
. Sanda	Q	1	1.1	1.2	1.3	*2.1	*2.2	*2.3	*2.4	3	3.1	*4	*5.1	*5.2	*6.1	*6.2	1.7*	*7.2	*7.3	*7.4	8	8.1	6*	11	*19.1	*19.2	*19.3	*21	27	28	29	11



PAGE 2 OF 2		OPTIONAL MATERIAL		bronze ASTMB584C87400	stainless steel 304	ductile iron 300 PSI GGG50	cast steel ASTMA216WCB	bronze ASTMB584C87400	stainless steel 304	ductile iron 300 PSI GGG50	cast steel ASTMA216WCB	bronze ASTMB584C87400	stainless steel 304	ductile iron 300 PSI GGG50	cast steel ASTMA216WCB	stainless steel 18-8 open designation													
		PART NUMBER		2683879-B	2683879-SS	2683879-DI	2683879-CS	2683880-B	2683880-SS	2683880-DI	2683880-CS	2683882-B	2683882-SS	2683882-DI	2683882-CS	S													
		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	cast iron ASTMA48CL 30			
		PART NUMBER		2683879				2683880				2683882					WF1-SS	WF2-SS	LBF1-SS	LBF2-SS	G-8P		B8143256TC	B8284286TC	B8324449TC			LF1-143-184JM	LF2-254-256JM
recommended spares	880R1 model 3 X 3 X 8	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	complete power frame
*	Pries.	NO	31	32.1	32.2	2.3	32.4	2.5	32.6	32.7	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



PAGE1 OF 2	ABER OPTIONAL MATERIAL	-B bronze ASTMB584C87400				491 cast iron ASTMA48CL30		cas	-SS stainless steel 304				0SS stainless steel 18-8 open designation	0SS stainless steel 18-8 open designation	-dirt viton/silicone carbide w/stainless steel	-dirt viton/silicone carbide w/stainless steel																
	PART NUMBER	2687420-B	2687420-SS	2687420-DI	2687420-CS	2680864-491	2680864-SS	2680863-491	2680863-SS			2691670-SS	SLJM1.250SS	SLJM1.500SS	011-S125-dirt	011-S150-dirt																
	STANDARD MATERIAL	cast iron ASTMA48CL 30				bronze ASTMB584C87400		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	2687420				2680864-449		2680863-449		SHAFTLF1	SHAFTLF2	2691670	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	B80R1 model 4 X 4 X 8 PART NAME	volute casing	volute casing	volute casing	volute casing	impeller 7/8	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	~		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 NO	1	1.1	1.2	1.3	*2.1	*2.2	*2.3	*2.4	3	3.1	*4	*5.1	*5.2	*6.1	*6.2	1.7*	*7.2	*7.3	*7.4	80	8.1	6*	11	*19.1	*19.2	*19.3	*21	27	28	29	



recommended spares	spares				PAGE 2 0F 2
model 4	X 4 X 5				
PART NAME	E	PART NUMBER	STANDARD MATERIAL	PART NUMBER	OPTIONAL MATERIAL
motor					
bracket 143-215	215	2683879	cast iron ASTMA48CL 30	2683879-B	bronze ASTMB584C87400
bracket 143-215	215			2683879-SS	stainless steel 304
bracket 143-215	215			2683879-DI	ductile iron 300 PSI GGG50
bracket 143-215	215			2683879-CS	cast steel ASTMA216WCB
bracket 254-256	256	2683880	cast iron ASTMA48CL 30	2683880-B	bronze ASTMB584C87400
bracket 254-256	256			2683880-SS	stainless steel 304
bracket 254-256	256			2683880-DI	dustile iron 300 PSI GGG50
bracket 254-256	256			2683880-CS	cast steel ASTMA216WCB
bracket 284-326	326	2683882	cast iron ASTMA48CL 30	2683882-B	bronze ASTMB584C87400
bracket 284-326	326			2683882-SS	stainless steel 304
bracket 284-326	326			2683882-DI	ductile iron 300 PSI GGG50
bracket 284-326	326			2683882-CS	cast steel ASTMA216WCB
motor shaft key	Key		carbon steel - 1045		stainless steel 18-8 open designation
impeller washer no 1	r no 1	WF1-SS	stainless steel 18-8 open designation		
impeller washer no 2	r no 2	WF2-SS	stainless steel 18-8 open designation		
impeller bolt no	101	LBF1-SS	stainless steel 18-8 open designation		
impeller bolt no 2	10.2	LBF2-SS	stainless steel 18-8 open designation		
casing gasket	tet	G-8P	fiber gasket vellumoid		
motor bolts	s		carbon steel		
motor bracket 143-215	43-215	B8143256TC	cast iron ASTMA48CL 30		
motor bracket 284-286	84-286	B8284286TC	cast iron ASTMA48CL 30		
motor bracket 324-449	24-449	B8324449TC	cast iron ASTMA48CL 30		
drain connections	ions		carbon steel ASTMA108G10800		
gauge tappings	SOL		steel plugs		
complete power frame	frame	LF1-143-184JM	cast iron ASTMA48CL 30		
complete power frame	frame	LF2-254-256JM	cast iron ASTMA48CL 30		



STANDARD MATERIAL PART NUMBER STANDARD MATERIAL PART NUMBER cast iron ASTMA48CL 30 2687422-B bronze ASTMB584C87400 2687422-CS bronze ASTMB584C87400 268086-491 cast iron ASTMA8CL 30 2687422-CS bronze ASTMB584C87400 2680869-491 cast iron ASTMB584C87400 26800869-55 bronze ASTMB584C87400 26800869-55 bronze ASTMB584C87400 26800869-55 bronze ASTMB584C87400 2680060-SS bronze ASTMB584C87400 2680060-SS bronze ASTMB584C87400 268006-SS bronze ASTM48CL 30 011-S150-dirt viton/ceramic vs carbon w/stainless steel spring 011-S150-dirt viton/ceramic	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	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																
STANDARD MATERIAL STANDARD MATERIAL cast iron ASTMA48CL 30 bronze ASTMB584C87400 bronze ASTMB584C87300 bronze ASTMA48CL 30 cast iron ASTMA48CL 30 ca				2687422-SS				2680869-SS		2680870-SS																							
		STANDARD MATERIAL	cast iron ASTMA48CL 30				bronze ASTMB584C87400		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		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
	recommended spares	PART NAME	volute casing	volute casing	volute casing	volute casing	impeller 7/8	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	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	
recommended spares PART NAME PART NAME volute casing volute casing impeller 7/8 impeller 11/4 pump shaft pump shaft pump shaft casing wearing shaft sleeve 143-215 shaft sleeve 143-215 shaft sleeve 143-215 shaft sleeve 143-215 mechanical seal 143-215 all bearing outboard F1 ball bearing outboard F1 ball bearing outboard F2 ball bearing outboard F1 ball bearing outboard F1 ball bearing inboard F1 ball bearing notor side half coupling motor side half bearing housing cover air vent valve plug impeller key	* Series	ON	1	1.1	1.2	1.3	*2.1	*2.2	*2.3	*2.4	3	3.1	*4	*5.1	*5.2	*6.1	*6.2	1.7*	*7.2	*7.3	+7.4	8	8.1	6*	11	*19.1	*19.2	*19.3	*21 9	27	28	29	



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



0F 2	ATERIAL	84C87400	el 304	SI GGG50	A216WCB	A48CL30	el 304	A48CL30	el 304			pen designation	pen designation	pen designation	w/stainless steel	w/stainless steel					-												
PAGE 1 C	OPTIONAL MATERIAL	bronze ASTMB584C87400	stainless steel 304	ductile iron 300 PSI GGG50	cast steel ASTMA216WCB	cast iron ASTMA48CL30	stainless steel 304	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											1						
	PART NUMBER	2687424-B	2687424-SS	2687424-DI	2687424-CS	2684314-491	2684314-SS	2684354-491	2684354-SS			V1810-SS	SLJM1.250SS	SLJM1.500SS	011-S125-dirt	011-S150-dirt																	
	STANDARD MATERIAL	cast iron ASTMA48CL 30				bronze ASTMB584C87400		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 FOR MORE PARTS
	PART NUMBER	2687424				2684314-449		2684354-449		SHAFTLF1	SHAFTLF2	V1810-brz	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 7/8	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	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		
* Series	Q	1	1.1	1.2	1.3	*2.1	*2.2	*2.3	*2.4	3	3.1	*4	*5.1	*5.2	*6.1	*6.2	1.7*	*7.2	*7.3	*7.4	8	8.1	6*	11	*19.1	*19.2	*19.3	*21	27	28	29		



PAGE 2 OF 2	OPTIONAL MATERIAL		bronze ASTMB584C87400	stainless steel 304	ductile iron 300 PSI GGG50	cast steel ASTMA216WCB	bronze ASTMB584C87400	stainless steel 304	ductile iron 300 PSI GGG50	cast steel ASTMA216WCB	bronze ASTMB584C87400	stainless steel 304	ductile iron 300 PSI GGG50	cast steel ASTMA216WCB	stainless steel 18-8 open designation													
	PART NUMBER		2683883-B	2683883-SS	2683883-DI	2683883-CS	2683884-B	2683884-SS	2683884-DI	2683884-CS	2691995-B	2691995-SS	2691995-DI	2691995-CS	11									1				
	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	cast iron ASTMA48CL 30	cast iron ASTMA48CL 30			
	PART NUMBER		2683883				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	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	complete power frame
* Series	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	*45



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	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	2687426-B	2687426-SS	2687426-DI	26857426-CS	2684315-491	2684315-SS	2684353-491	2684353-SS			V1811-SS sta	SLJM1.250SS sta	SLJM1.500SS sta	011-S125-dirt vito	011-S150-dirt vito																
	STANDARD MATERIAL	cast iron ASTMA48CL 30				bronze ASTMB584C87400		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 SPARES
	PART NUMBER	2687426				2684315-449		2684353-449		SHAFTLF1	SHAFTLF2	V1811	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 7/8	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	~		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	N	1	1.1	1.2	1.3	*2.1	*2.2	*2.3	*2.4	3	3.1	*4	*5.1	*5.2	*6.1	*6.2	1.7*	*7.2	*7.3	*7.4	8	8.1	6*	11	*19.1	*19.2	*19.3	*21	27	28	29	



PAGE 2:0F2	STANDARD MATERIAL PART NUMBER OPTIONAL MATERIAL		cast iron ASTMA48CL 30 F1 2683883-B bronze ASTMB584C87400	2683883-SS stainless steel 304	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 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				
	PART NUMBER		2683883				2683884				2691995					WF1-SS sta	WF2-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	
	NO	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	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												the second se				
	PART NUMBER	2687430-B	2687430-BB	2687430-DI	2687430-CS	2691939-491	2691939-SS	2689502-491	2689502-SS			2691672-SS	SLJM1.250SS	SLJM1.500SS	011-S125-dirt	011-S150-dirt																
	STANDARD MATERIAL	cast iron ASTMA48CL 30				bronze ASTMB584C87400		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	2687430				2691939-449		2689502-449		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 7/8	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	ball bearing outboard 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	
*	NO	-	1.1	1.2	1.3	*2.1	*2.2	*2.3	*2.4	3	3.1	*4	*5.1	*5.2	*6.1	*6.2	1.7*	*7.2	*7.3	*7.4	8	8.1	6*	11	*19.1	*19.2	*19.3	*21	-	28	29	



	recommended spares				PAGE 2 OF 2
in	880R1 model 6 X 6 X 10				
-	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			2683883-DI	ductile iron 300 PSI GGG50
32.4	bracket 143-215			2683883-CS	cast steel ASTMA216WCB
32.5	bracket 254-256	2683884	cast iron ASTMA48CL 30 F2	2683884-B	bronze ASTMB584C87400
32.6	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
32.10.	bracket 284-326			2691995-SS	stainless steel 304
32.11	bracket 284-326			2691995-DI	ductile iron 300 PSI GGG50
32.12	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		
\vdash	motor bracket 143-215	B10143256TC	cast iron ASTMA48CL 30		
-	motor bracket 284-286	B10284286TC	cast iron ASTMA48CL 30		
-	motor bracket 324-449	B10324449TC	cast iron ASTMA48CL 30		
-	drain connection		carbon steel ASTMA108G10800		
-	gauge tappings				
-	complete power frame	LF1-143-184JM	cast iron ASTMA48CL 30		
\vdash	complete power frame	LF2-254-256JM	cast iron ASTMA48CL 30		



Nom PART NUMBER STANDARD MATERIAL PART NUMBER OPTIONAL MATERIAL 1 volue casing 2657434 B Doroza ASTMABG4C300 2667434 B Doroza ASTMABG4C300 1 volue casing 2671434 B Doroza ASTMABG4C300 2667434 B Doroza ASTMB5G4C300 1 volue casing 2691591-25 Casing Casing 2661630-2630 2661630		lecollillelinen spares				FAGE UL 2
volute casing 2687434 cast iron ASTMA48CL 30 268743-B volute casing volute casing 2687141B 2687141B volute casing cast iron ASTMA48CL 30 2687141B volute casing casing 2687141B volute casing casing 2687141B volute casing casing 2687549 bronze ASTMB634C87400 2681951.CS pump shaft SHAFTLF1 stainless steel 304 2689502.4S1 2689502.4S1 pump shaft SHAFTLF2 bronze ASTMB634C87400 2691672.5S 2691672.5S shaft sleeve 43.216 SLM1 250B bronze ASTMB634C87400 2691672.5S 2691672.5S shaft sleeve 43.216 SLM1 500B bronze ASTMB634C87400 2691672.5S 2691672.5S shaft sleeve 43.216 SLM1 500B bronze ASTMB634C87400 21JM1.500S 2691672.5S shaft sleeve 43.216 SLM1 500B bronze ASTMB634C87400 SLJM1.500S 2691672.5S shaft sleeve 43.216 SLM1 500B bronze ASTMB634C87400 SLJM1.500S 2691672.5S ball bearing nuboard F1	NO	BBDRI model 8 X 8 X 10 PART NAME	PART NUMBER	STANDARD MATERIAL	PART NUMBER	OPTIONAL MATERIAL
volute casing 2687434 cast iron ASTMA48CL 30 268743-BB volute casing volute casing 2687132-BB 2687132-BB volute casing volute casing 2687132-BB 2687132-BB volute casing SHAFTLF1 stainless steel 304 2687132-BB volute casing 2681672 26819672 2689502-SS pump shaft SHAFTLF2 stainless steel 304 2689502-SS pump shaft SHAFTLF2 bionze ASTMBB84057400 2689502-SS shaft sleeve 143-215 SLM1500B bionze ASTMBB84057400 2691672-SS shaft sleeve 143-215 SLM1500B bionze ASTMBB84057400 2691672-SS shaft sleeve 143-215 SLM150B bionze ASTMBB84057400 SLM150SS shaft sleeve 143-215 SLM150B bionze ASTMB884057400 SLM150SS shaft sleeve 143-215 SLM150B bionze ASTMB884057400 SLM150SS shaft sleeve 143-215 SLM150B bionze ASTMB884057400 SLM150SS mechanical seal 354-235 O11-S150-21-per vicon/ceramic vs carbon wistainless steel spring 011-S150-din						
volute casing volute casing 2681434 BB volute casing volute casing 2681991-C5 volute casing volute casing 2681991-C5 volute casing SHAFTLF1 stainless steel 304 2681991-C5 pump shaft SHAFTLF2 bionze ASTMB584C87400 2689502-S5 pump shaft SHAFTLF2 stainless steel 304 2689502-S5 pump shaft SHAFTLF2 bionzee ASTMB584C87400 2689502-S5 staft sleeve 354-326 SLIM1250B bionzee ASTMB584C87400 269167-S5 staft sleeve 354-326 SLIM150B bionzee ASTMB584C87400 269167-S5 staft sleeve 352 011-5152-1-per witon/ceramic vs carbon wistainless steel spring 011-5152-61rt ball bearing outboard F1 002-852092R5 bionzee ASTM8584C130 SLM1505S ball bearing outboard F2 002-852092R5 bionzee ASTM8584C130 SLM150S ball bearing inboard F1 002-852092R5 cast iron ASTMA4SCL 30 011-5125-61rt ball bearing inboard F1 002-850202R5 cast iron ASTMA4SCL 30 011-5125-61rt ball bearing inboard F	1	volute casing	2687434	cast iron ASTMA48CL 30	2687434-B	bronze ASTMB584C87400
volute casing volute casing 2691991-DI volute casing impeller 114 269555-449 bronze ASTMB684C87400 2691991-ZS vibule casing impeller 114 2681505-451 2689502-SS 2689502-SS purps shaft SHATLE7 stainless steel 304 2681672-SS 2681672-SS purps shaft SHATLE7 stainless steel 304 2681672-SS 2681672-SS shaft sleeve 34-205 SLM1500B bronze ASTMB684C87400 2881672-SS 2891672-SS shaft sleeve 34-205 SLM150B bronze ASTMB684C87400 2881672-SS 2891672-SS shaft sleeve 34-205 SLM150B bronze ASTMB684C87400 2891672-SS 2891672-SS shaft sleeve 34-205 SLM150B bronze ASTMB684C87400 SLM1250SS 2891672-SS mechanical seal 143-215 011-S152-1-per viton/ceramic vs carbon wistainless steel spring 011-S155-dirf ball bearing inboard F1 002-BS2072-NR bronze ASTMA48CL 30 011-S155-dirf ball bearing inboard F2 002-BS20722-NR viton/ceramic vs carbon wistainless steel spring 011-S155-dirf b	1.1	volute casing			2687434-BB	stainless steel 304
volute casing xolute casing xolute casing z861991-CS impeller 1 14 286555-449 bronze ASTMB684637400 2869502-451 impeller 1 14 SHAFTLF1 staintess steel 304 2869502-451 pump shaft SHAFTLF2 bronze ASTMB684057400 2869502-555 pump shaft SHAFTLF2 bronze ASTMB584027400 2869502-555 pump shaft SLM1250B bronze ASTMB584027400 SLM1250SS shaft sleeve 143-215 SLM1250B bronze ASTMB584057400 SLM1250SS mechanical seal 143-215 D115152-1-per wton/ceramic vs carbon wistainless steel spring D11-5155-01F ball bearing outboard F1 002-B62065RS bronze ASTMB584051400 SLM12505-01F ball bearing outboard F2 001-5150-11-per wton/ceramic vs carbon wistainless steel spring D11-5155-01F ball bearing outboard F1 002-B62082RS-NR honcrearmic vs carbon wistainless steel spring D11-5152-01F ball bearing outboard F2 002-B62082RS-NR cast iron ASTMA80L 30 D1-5152-01F ball bearing outboard F2 002-B62082RS-NR cast iron ASTMA480L 30 D11-5152-01F <td>1.2</td> <td>volute casing</td> <td></td> <td></td> <td>2691991-DI</td> <td>ductile iron 300 PSI GGG50</td>	1.2	volute casing			2691991-DI	ductile iron 300 PSI GGG50
impeller 1 14 268555-449 bronze ASTMB554C97400 2689502-491 impeller 1 14 SHAFTLF1 stainless steel 304 2689502-55 pump shaft SHAFTLF1 stainless steel 304 2689502-55 pump shaft SHAFTLF2 bronze ASTMB554037400 26891672-55 staff sleeve 354-356 SLUM1 250B bronze ASTMB554037400 2691672-55 shaft sleeve 354-356 SLUM1 250B bronze ASTMB554037400 2691672-55 shaft sleeve 354-356 SLUM1 250B bronze ASTMB554037400 SLUM1 25055 shaft sleeve 354-326 SLUM1 2500B bronze ASTMB554037400 SLUM1 25055 mechanical seal 143-215 011-5156-21-per viton/ceramic vs carbon w/stainless steel spring 011-5156-dirt ball bearing inboard F1 002-8620722-NR cast iron ASTMA48CL 30 011-5156-dirt ball bearing inboard F2 002-8620722-NR cast iron ASTMA48CL 30 011-5156-dirt ball bearing inboard F2 002-8620722-NR cast iron ASTMA48CL 30 011-5156-dirt ball bearing inboard F2 002-8620722-NR cast iron ASTMA48CL 30 011-5156-dirt ball	1.3	volute casing			2691991-CS	cast steel ASTMA216WCB
impelier 1 14 StaffLF stainless steel 304 2689502-SS Dump shaft SHAFTLF2 stainless steel 304 2689602-SS Dump shaft SHAFTLF2 stainless steel 304 26891672 Dump shaft SHAFTLF2 stainless steel 304 2691672-SS shaft sleeve 143-215 SLJMT.500B bronze ASTIMB584037400 2691672-SS shaft sleeve 143-215 SLJMT.500B bronze ASTIMB584037400 SLJMT.500SS mechanical seal 133-215 011-S125-21-per viton/ceramic vs carbon w/stainless steel spring 011-S125-dift Dall bearing outboard F1 002-B620027S-NR cast iron ASTMA861.30 011-S125-dift Dall bearing outboard F1 002-B620027S-NR cast iron ASTMA861.30 011-S125-dift Dall bearing outboard F1 002-B620027S-NR cast iron ASTMA861.30 011-S125-dift Dall bearing outboard F2 002-B620027S-NR cast iron ASTMA861.30 011-S125-dift Dall bearing outboard F1 002-B620027S-NR cast iron ASTMA861.30 011-S125-dift Dall bearing outboard F2 002-B620027S-NR cast iron ASTMA861.30 011-S126-dift	*2.1	impeller 1 1/4	2685595-449	bronze ASTMB584C87400	2689502-491	cast iron ASTMA48CL30
pump shaft SHAFTLF1 stainless steel 304 pump shaft pump shaft SHAFTLF2 stainless steel 304 2691672-SS cuaging wearing SHAFTLF2 bronze ASTMB584C87400 2691672-SS staft sleeve 143-215 SLM1 250B bronze ASTMB584C87400 SLM1 250S staft sleeve 143-215 SLM1 50B bronze ASTMB584C87400 SLM1 50DS mechanical seal 143-215 SLM1 50B bronze ASTMB584C87400 SLM1 50DS mechanical seal 143-215 SLM1 50B bronze ASTMB584C87400 SLM1 50DS mechanical seal 143-216 OI1-5152-21-per viton/ceramic vs carbon wistainless steel spring OI1-5150-dit ball bearing outboard F1 002-862062RS bronze ASTMA8CL 30 OI1-5150-dit ball bearing inboard F2 002-862092RS-RR cast iron ASTMA48CL 30 OI1-5150-dit ball bearing noutboard F2 002-862092RS-RR cast iron ASTMA48CL 30 OI1-5150-dit ball bearing nousing F1 002-862092RS-R cast iron ASTMA48CL 30 OI1-5150-dit ball bearing noutboard F2 001-8001 cast iron ASTMA48CL 30 In-4001 tadial bea	*2.2	impeller 1 1/4			2689502-SS	stainless steel 304
pump shaftSHAFTLF2stainless steel 304Sel 673pump shaftSHAFTLF2stainless steel 3042691672-SSshaft sleeve 354-3215SIJM1.5008binorze ASTMB584C87400SLJM1.500SSshaft sleeve 354-3215SIJM1.5008binorze ASTMB584C87400SLJM1.500SSmechanical seal 143-215011-S125-21-perviton/ceramic vs carbon w/stainless steel spring011-S150-diftmechanical seal 354-326011-S150-21-perviton/ceramic vs carbon w/stainless steel spring011-S150-diftball bearing inboard F1002-B62002RS002-B62002RScast inon ASTMA48C1.30011-S150-diftball bearing inboard F2002-B62002RS-NRcast inon ASTMA48C1.30011-S150-diftball bearing nuboard F1002-B62002RS01-SR01cast inon ASTMA48C1.30011-S150-diftball bearing nuboard F201-BR01cast inon ASTMA48C1.30011-S150-diftball bearing nuboard F201-SR01cast inon ASTMA48C1.3001-S150-diftbearing nuboard F201-SR01cast inon ASTMA48C1.3001-S150-diftbearing nuboard F201-SR01cast inon ASTMA48C1.3001-S150-diftbearing nuboard F201-SR01cast inon ASTMA48C1.3001-S16010bearing nuboard F201-SR01cast inon ASTMA48C1.3001-S16010bearing nuboard F201-SR01cast inon ASTMA48C1.3001-S16101bearing nuboard F201-SR01cast inon ASTMA48C1.3001-S16101bearing nuboard F201-SR01cast inon ASTMA48C1.3001-S16101bearing nuboard F2 <td< td=""><td>3</td><td>pump shaft</td><td>SHAFTLF1</td><td>stainless steel 304</td><td></td><td></td></td<>	3	pump shaft	SHAFTLF1	stainless steel 304		
casing wearing 2891672 bronze ASTMB584C87400 2691672-SS shaft sleeve 143-215 SLJM1.250B bronze ASTMB584C87400 254.30C mechanical seal 143-215 SLJM1.250B bronze ASTMB584C87400 254.30C mechanical seal 143-215 011-S155-21-per viton/ceramic vs carbon wistainless steel spring 011-S155-61rt bail bearing outboard F1 002-B520722-NR viton/ceramic vs carbon wistainless steel spring 011-S156-61rt bail bearing inboard F1 002-B520722-NR viton/ceramic vs carbon wistainless steel spring 011-S156-61rt bail bearing inboard F1 002-B520722-NR cast iron ASTMA48CL 30 011-S156-61rt bail bearing inboard F2 002-B62082RS-NR cast iron ASTMA48CL 30 011-S156-61rt bail bearing inboard F2 002-B62082RS-NR cast iron ASTMA48CL 30 011-S167-61rt bail bearing inboard F2 002-B62082RS-NR cast iron ASTMA48CL 30 011-S167-61rt bail bearing inboard F1 013-SR01 cast iron ASTMA48CL 30 011-S167-61rt bail bearing inboard F2 01-SR01 cast iron ASTMA48CL 30 011-S167-61rt bail bearing inboard F2 0	3.1	pump shaft	SHAFTLF2	stainless steel 304		
shaft sleeve 143-215 SLJM1 250B bronze ASTMB584C87400 SLJM1 250SS shaft sleeve 354-326 SLJM1 250B bronze ASTMB584C87400 SLJM1 250SS mechanical seal 354-326 011-S152-21-per viton/ceramic vs carbon w/stainless steel spring 011-S155-dit mechanical seal 011-S150-21-per viton/ceramic vs carbon w/stainless steel spring 011-S155-dit ball bearing outboard F1 002-B62082RS-NR carbon w/stainless steel spring 011-S155-dit ball bearing inboard F2 002-B62092RS cast iron ASTMA48CL 30 011-S150-dit ball bearing inboard F2 002-B62092RS-NR cast iron ASTMA48CL 30 011-S150-dit ball bearing inboard F2 002-B62092RS-NR cast iron ASTMA48CL 30 011-S150-dit ball bearing inboard F2 002-B62092RS-NR cast iron ASTMA48CL 30 01-S150-dit ball bearing puscing F1 01-BC01 cast iron ASTMA48CL 30 01-S150-dit bearing puscing F2 01-BC01 cast iron ASTMA48CL 30 01-S150-dit bearing puscing F2 02-BH02 cast iron ASTMA48CL 30 01-S150-dit bearing puscing F2 01-BC01	*4	casing wearing	2691672	bronze ASTMB584C87400	2691672-SS	stainless steel 18-8 open designation
shaft sleeve 354-326 SLJM1.500B bronze ASTMB534C87400 SLJM1.500SS mechanical seal 143-215 011-S125-21-per viton/ceramic vs carbon w/stainless steel spring 011-S125-dirt mechanical seal 354-326 011-S125-21-per viton/ceramic vs carbon w/stainless steel spring 011-S125-dirt ball bearing outboard F1 002-B62032RS 002-B62032RS 011-S125-dirt ball bearing inboard F1 002-B62032RS 002-B62032RS 011-S125-dirt ball bearing inboard F2 002-B62032RS 002-B62032RS 01-B101 ball bearing inboard F2 002-B62032RS 01-B101 cast iron ASTMA48CL 30 011-S125-dirt bearing inboard F2 01-B011 cast iron ASTMA48CL 30 011-S125-dirt depending on motor HP bearing nousing F1 01-BC01 cast iron ASTMA48CL 30 01-BC01 cast iron ASTMA48CL 30 101-S125-dirt bearing nousing F1 01-BC01 cast iron ASTMA48CL 30 101-S125-dirt 101-S125-dirt bearing nousing F2 01-BC01 cast iron ASTMA48CL 30 101-S125-dirt 101-S125-dirt bearing nousing F2 01-BC01 cast iron ASTMA48CL 30 <td>*5.1</td> <td>shaft sleeve 143-215</td> <td>SLJM1.250B</td> <td>bronze ASTMB584C87400</td> <td>SLJM1.250SS</td> <td>stainless steel 18-8 open designation</td>	*5.1	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-S150-dirt mechanical seal 354-326 011-S150-21-per viton/ceramic vs carbon w/stainless steel spring 011-S150-dirt ball bearing outboard F1 002-B62062RS No 002-B62062RS No ball bearing outboard F2 002-B62082RS-NR cast iron /stainless steel spring 011-S150-dirt ball bearing inboard F1 002-B62082RS-NR cast iron ASTMA48CL 30 No No ball bearing inboard F2 002-B62082RS-NR cast iron ASTMA48CL 30 No No bearing housing F1 01-BC01 cast iron ASTMA48CL 30 No No bearing noutor F2 01-BC01 cast iron ASTMA48CL 30 No No bearing noutor f1P 01-BC01 cast iron ASTMA48CL 30 No No bearing noutor side 01-BC01 cast iron ASTMA48CL 30 No No half coupling motor side 01-BC01 cast iron ASTMA48CL 30 No No fadepending on notor HP 01-BC01 depending on motor HP No No No	*5.2	shaft sleeve 354-326	SLJM1.500B	bronze ASTMB584C87400	SLJM1.500SS	stainless steel 18-8 open designation
mechanical seal 354-326 011-S150-21-per viton/ceramic vs carbon w/stainless steel spring 011-S150-dirt ball bearing outboard F1 002-B62072S-NR 002-B62072S-NR 01-S150-dirt ball bearing inboard F2 002-B6207SS-NR 002-B62072S-NR 01-S150-dirt ball bearing inboard F2 002-B62082RS-NR 002-B62082RS-NR 002-B62082RS-NR ball bearing inboard F2 002-B62082RS-NR cast iron ASTMA48CL 30 01-S150-dirt bearing housing F1 01-BH01 cast iron ASTMA48CL 30 01-S160-dirt bearing housing F2 01-BH01 cast iron ASTMA48CL 30 01-S160-dirt bearing housing F2 01-BC01 cast iron ASTMA48CL 30 01-S160-dirt bearing housing F2 01-BC01 cast iron ASTMA48CL 30 01-S160-dirt bearing housing cover 01-BC01 cast iron ASTMA48CL 30 01-S160-dirt half coupling motor side 01-S160-dirt cast iron ASTMA48CL 30 01-S160-dirt half coupling motor side 01-BC01 cast iron ASTMA48CL 30 01-S160-dirt for bearing nousing F2 01-S160-dirt depending on noup intert 01-S160-dirt	*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
ball bearing outboard F1 002-B62062RS ball bearing inboard F2 002-B62062RS ball bearing inboard F2 002-B62082RS-NR ball bearing outboard F2 002-B62082RS-NR ball bearing inboard F2 002-B62082RS-NR ball bearing inboard F2 002-B62082RS-NR bearing housing F1 002-B6102 bearing housing F2 01-BH01 bearing housing F2 01-BH01 bearing housing F2 01-BH01 bearing housing F2 01-BC01 half coupling motor side 01-BC01 half coupling noutor side 01-G00 half coupling notor side 01-G00 impeller key 01-GBC01 impeller key 01-GBC01	*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 steel
ball bearing inboard F1 002-B620722-NR ball bearing outboard F2 002-B62082RS-NR ball bearing outboard F2 002-B62082RS-NR ball bearing inboard F2 002-B62082RS-NR bearing housing F1 002-B62082RS-NR bearing housing F2 002-B62082RS-NR bearing housing F2 002-B602082RS-NR bearing housing F2 01-BH01 bearing housing F2 01-BH01 bearing cover 01-BC01 half coupling motor side 01-BC01 half coupling motor side 01-BC01 half coupling insert 01-BC01 gasket bearing housing cover 01-GBC01 air vent valve plug 01-GBC01 impeller key 01-GBC01 pump shaft key 01-GBC01 pump shaft key 01-GBC01	1.7*	ball bearing outboard F1	002-B62062RS			
ball bearing outboard F2 002-B62092RS-NR ball bearing inboard F2 002-B62082RS-NR bearing inboard F2 002-B62082RS-NR bearing housing F1 01-BH01 bearing housing F2 02-BH02 radial shaft seal ring 01-BH01 bearing nousing F2 02-BH02 radial shaft seal ring 01-BC01 bearing cover 01-BC01 half coupling motor side 01-BC01 half coupling insert 01-BC01 gasket bearing housing cover 01-GBC01 air vent valve plug 01-GBC01 pump shaft key 01-GBC01 pump shaft key 01-GBC01	*7.2	ball bearing inboard F1	002-B62072Z-NR			
ball bearing inboard F2 002-B62082RS-NR bearing housing F1 01-BH01 bearing housing F2 01-BH01 bearing housing F2 01-BH02 radial shaft seal ring 01-SR01 bearing ousing F2 02-BH02 radial shaft seal ring 01-BC01 bearing cover 01-BC01 half coupling motor side 01-BC01 half coupling insert 01-GBC01 gasket bearing housing cover 01-GBC01 impeller key 01-GBC01 pump shaft key 01-GBC01 pump shaft key SEE P	*7.3	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 01-BC01 half coupling motor side 01-BC01 half coupling motor side 01-BC01 in half coupling insert 01-BC01 gasket bearing housing cover 01-GBC01 air vent valve plug 01-GBC01 impeller key car pump shaft key SEE P	*7.4	ball bearing inboard F2	002-B62082RS-NR			
bearing housing F2 02-BH02 radial shaft seal ring 01-SR01 bearing cover 01-BC01 baring cover 01-BC01 half coupling motor side 01-BC01 half coupling motor side 01-G01 fastet bearing housing cover 01-GBC01 air vent valve plug 01-GBC01 impeller key car pump shaft key car	8	bearing housing F1	01-BH01	cast iron ASTMA48CL 30		
radial shaft seal ring 01-SR01 bearing cover 01-BC01 bearing cover 01-BC01 half coupling motor side 01-BC01 half coupling motor side 01-CGBC01 gasket bearing housing cover 01-GBC01 air vent valve plug 01-GBC01 impeller key 01-GBC01 pump shaft key car sir vent valve plug SEE P	8.1	bearing housing F2	02-BH02	cast iron ASTMA48CL 30		
bearing cover 01-BC01 half coupling motor side 01-BC01 half coupling pump side 01-GBC01 coupling insert 01-GBC01 gasket bearing housing cover 01-GBC01 air vent valve plug 01-GBC01 impeller key car pump shaft key car	6*	radial shaft seal ring	01-SR01	buna N O' ring		
half coupling motor side half coupling motor side half coupling pump side 01-GBC01 gasket bearing housing cover 01-GBC01 air vent valve plug 01-GBC01 impeller key car pump shaft key car	11	bearing cover	01-BC01	cast iron ASTMA48CL 30		
half coupling pump side half coupling pump side coupling insert 01-GBC01 gasket bearing housing cover 01-GBC01 air vent valve plug 01-GBC01 impeller key car pump shaft key car SEE P SEE P	*19.1	half coupling motor side		depending on motor HP		
coupling insert coupling insert gasket bearing housing cover 01-GBC01 air vent valve plug 01-GBC01 impeller key car pump shaft key car SEE P SEE P	*19.2	half coupling pump side		depending on pump shaft		
gasket bearing housing cover 01-GBC01 air vent valve plug car impeller key car pump shaft key car SEE P	*19.3	coupling insert		depending on coupling size		
air vent valve plug impeller key pump shaft key car	*21	gasket bearing housing cover	01-GBC01	fiber gasket vellumoid		
impeller key car pump shaft key car SEE P	27	air vent valve plug				
pump shaft key car SEE P	28	impeller key		carbon steel ASTMA108G10800		
SEE	29	pump shaft key		carbon steel ASTMA108G10800		
SEE PAGE 2 OF 2 FOR MORE PARTS						
				OFF BAOF 2 OF 2 FOR MORE DADTO		
				SEE FAGE 2 OF 2 FOR MURE FARIS		



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10	B80Rt model 8 X 8 X10				1405 201 c
	PART NAME	PART NUMBER	STANDARD MATERIAL	PART NUMBER	OPTIONAL MATERIAL
-	motor				
-	bracket 143-215	2683883	cast iron ASTMA48CL 30 F1	2683883-B	bronze ASTMB584C87400
32.2	bracket 143-215			2683883-SS	stainless steel 304
32.3	bracket 143-215			2683883-DI	ductile iron 300 PSI GGG50
32.4	bracket 143-215			2683883-CS	cast steel ASTMA216WCB
32.5	bracket 254-256	2683884	cast iron ASTMA48CL 30 F2	2683884-B	bronze ASTMB584C87400
32.6	bracket 254-256			2683884-SS	stainless steel 304
32.7	bracket 254-256			2683884-DI	ductile iron 300 PSI GGG50
-	bracket 254-256			2683884-CS	cast steel ASTMA216WCB
32.9	bracket 284-326	2691995	cast iron ASTMA48CL 30 F2	2691995-B	bronze ASTMB584C87400
32.10.	bracket 284-326			2691995-SS	stainless steel 304
32.11	bracket 284-326			2691995-DI	ductile iron 300 PSI GGG50
32.12	bracket 284-326			2691995-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		
-	impeller washer no 2	WF2-SS	stainless steel 18-8 open designation		
35.1	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		
*36	casing gasket	G-10P	fiber gasket vellumoid		
-	motor bolts		carbon steel		
-	motor bracket 143-215	B10143256TC	cast iron ASTMA48CL 30		
41.1	motor bracket 284-286	B10284286TC	cast iron ASTMA48CL 30		
41.2	motor bracket 324-449	B10324449TC	cast iron ASTMA48CL 30		
-	drain connection		carbon steel ASTMA108G10800		
-	gauge tappings				
*44	complete power frame	LF1-143-184JM	cast iron ASTMA48CL 30		
*45	complete power frame	LF2-254-256JM	cast iron ASTMA48CL 30		



PAGE LOF 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	viton/silicone carbide w/stainless steel																		
	PART NUMBER	2687428-B	2687428-SS	2687428-DI	2687428-CS	2685580-491	2685580-SS			2691669-SS	SLJM1.500SS	011-S150-dirt																		
	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		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 FOR MORE DARTS		
	PART NUMBER	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	880R1 model 4 x 4 1:12 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	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			
	NO	-	11	1.2	1.3	*2.1	*2.2	3	3.1	*4	*5.1	*6.1	1.7*	*7.2	*7.3	*7.4	80	8.1	6 <u>*</u>	11	*19.1	*19.2	*19.3		27	28	29			



+	recommended spares				PAGE 2 OF 2
Sties	380R1 model 4 X 4 X 12				
No	PART NAME	PART NUMBER	STANDARD MATERIAL	PART NUMBER	OPTIONAL MATERIAL
31	motor				
32.1	bracket 143-215	2687811	cast iron ASTMA48CL 30 F1	2687811-B	bronze ASTMB584C87400
32.2	bracket 143-215			2687811-SS	stainless steel 304
2.3	bracket 143-215			2687811-DI	ductile iron 300 PSI GGG50
32.4	bracket 143-215			2687811-CS	cast steel ASTMA216WCB
32.5	bracket 254-256	2687812	cast iron ASTMA48CL 30 F2	2687812-B	bronze ASTMB584C87400
32.6	bracket 254-256			2687812-SS	stainless steel 304
32.7	bracket 254-256			2687812-DI	ductile iron 300 PSI GGG50
32.8	bracket 254-256			2687812-CS	cast steel ASTMA216WCB
32.9	bracket 284-326	2687813	cast iron ASTMA48CL 30 F2	2687813-B	bronze ASTMB584C87400
32.10.	bracket 284-326			2687813-SS	stainless steel 304
32.11	bracket 284-326			2687813-DI	ductile iron 300 PSI GGG50
32.12	bracket 284-326			2687813-CS	cast steel ASTMA216WCB
33	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		
35.1	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		
*36	casing gasket	G-12P	fiber gasket vellumoid		
37	motor bolts		carbon steel		
41	motor bracket 143-215	B12143256TC	cast iron ASTMA48CL 30		
41.1	motor bracket 284-286	B12284286TC	cast iron ASTMA48CL 30		
41.2	motor bracket 324-449	B10324449TC	cast iron ASTMA48CL 30		
42	drain connection		carbon steel ASTMA108G10800		
43	gauge tappings				
*44	complete power frame	LF1-143-184JM	cast iron ASTMA48CL 30		
*45	complete power frame	LF2-254-256JM	cast iron ASTMA48CL 30		



PAGE 1 DF 2	STANDARD MATERIAL PART NUMBER OPTIONAL MATERIAL	cast iron ASTMA48CL 30 2687432-B bronze ASTMB584C87400	2687432-SS stainless steel 304	2687432-DI ductile iron 300 PSI GG50	2687432-CS cast steel ASTMA216WCB	bronze ASTMB584C87400 2685593-491 cast iron ASTMA48CL30	2685593-SS stainless steel 304	stainless steel 304	stainless steel 304	bronze ASTMB584C87400 2691671-1SS stainless steel 18-8 open designation	bronze ASTMB584C87400 SLJM1.500SS stainless steel 18-8 open designation	viton/ceramic vs carbon w/stainless steel spring 011-S150-dirt viton/silicone carbide w/stainless steel					cast iron ASTMA48CL 30	cast iron ASTMA48CL 30		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	SFF PAGE 2 OF 2 FOR MORE PARTS		
	PART NUMBER	2687432				2685593-449		SHAFTLF1	SHAFTLF2	2691671-1	SLJM1.500B	011-S150-21-per viton	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 354-326	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			
* Series	Q	1	1.1	1.2	1.3	*2.1	*2.2	ę	3.1	*4	*5.1	*6.1	1.7*	*7.2	*7.3	*7.4	œ	8.1	6*	11	*19.1	*19.2	*19.3	*21 9	27	28	29			



+	recommended spares				PAGE 2 OF 2
NO	880R1 model 6 X 6 X 12 PART NAME	PART NUMBER	STANDARD MATERIAL	PART NUMBER	OPTIONAL MATERIAL
31	motor				
32.1	bracket 143-215	2687811	cast iron ASTMA48CL 30 F1	2687811-B	bronze ASTMB584C87400
32.2	bracket 143-215			2687811-SS	stainless steel 304
32.3	bracket 143-215			2687811-DI	ductile iron 300 PSI GG50
32.4	bracket 143-215			2687811-CS	cast steel ASTMA216WCB
32.5	bracket 254-256	2687812	cast iron ASTMA48CL 30 F2	2687812-B	bronze ASTMB584C87400
32.6	bracket 254-256			2687812-SS	stainless steel 304
27	bracket 254-256			2687812-DI	ductile iron 300 PSI GGG50
32.8	bracket 254-256			2687812-CS	cast steel ASTMA216WCB
32.9	bracket 284-326	2687813	cast iron ASTMA48CL 30 F2	2687813-B	bronze ASTMB584C87400
32.10.	bracket 284-326			2687813-SS	stainless steel 304
32.11	bracket 284-326			2687813-DI	ductile iron 300 PSI GGG50
32.12	bracket 284-326			2687813-CS	cast steel ASTMA216WCB
33	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		
35.1	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		
*36	casing gasket	G-12P	fiber gasket vellumoid		
37	motor bolts		carbon steel		
41	motor bracket 143-215	B12143256TC	cast iron ASTMA48CL 30		
41.1	motor bracket 284-286	B12284286TC	cast iron ASTMA48CL 30		
41.2	motor bracket 324-449	B12324449TC	cast iron ASTMA48CL 30		
42	drain connection		carbon steel ASTMA108G10800		
43	gauge tappings		steel plugs		
*44	complete power frame	LF1-143-184JM	cast iron ASTMA48CL 30		
*45	complete power frame	LF2-254-256JM	cast iron ASTMA48CL 30		



	recommended spares				PAGE 2 OF 2
085	RI model 8 X B X 12	1			
	PART NAME	PART NUMBER	STANDARD MATERIAL	PART NUMBER	OPTIONAL MATERIAL
	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
Ľ -	bracket 254-256			2687812-DI	ductile iron 300 PSI GGG50
	bracket 254-256			2687812-CS	cast steel ASTMA216WCB
Ľ –	bracket 284-326	2687813	cast iron ASTMA48CL 30 F2	2687813-B	bronze ASTMB584C87400
Γ.	bracket 284-326			2687813-SS	stainless steel 304
	bracket 284-326			2687813-DI	ductile iron 300 PSI GGG50
11	bracket 284-326			2687813-CS	cast steel ASTMA216WCB
	motor shaft key		carbon steel - 1045		stainless steel 18-8 open disignation
	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		
L .	motor bolts		carbon steel		
1-	motor bracket 143-215	B12143256TC	cast iron ASTMA48CL 30		
1-	motor bracket 284-286	B12284286TC	cast iron ASTMA48CL 30		
1-	motor bracket 324-449	B12324449TC	cast iron ASTMA48CL 30		
	drain connection		carbon steel ASTMA108G10800		
	gauge tappings		steel plugs		
10	complete power frame	LF1-143-184JM	cast iron ASTMA48CL 30		
ျပ	complete power frame	LF2-254-256JM	cast iron ASTMA48CL 30		



PAGE 1 OF 2	PART NUMBER OPTIONAL MATERIAL	2687435-B bronze ASTMB584C87400		2687435-DI ductile iron 300 PSI GGG50	2687435-CS cast steel ASTMA216WCB	cast iron ASTMA48CL30	stainless steel 304				SLJM1.500SS stainless steel 18-8 open designation	011-S150-dirt viton/silicone carbide w/stainless steel																	
	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 PAGE 2 OF 2 FOR MORE PARTS	
	PART NUMBER	2687435				2685596-449		SHAFTLF1	SHAFTLF2	2691670	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	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	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		
* Senas	N	۲	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		27	28	29		

HS.1A1.0692 REPLACES HS.1A1.0590

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.

Housin	Inlet /	FLOW (GPM)								
Housin g Model		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	A	В	с	D	Shippin g Weight
1A1	6 3/16°	4 15/16ª	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

* Order Separately

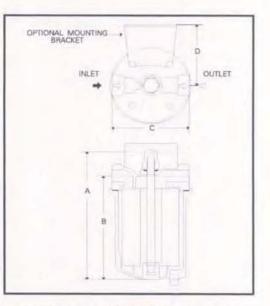


FIGURE 1. - 1A1 MODEL FILTER HOUSING

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, MER-CHANTABILITY, 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



Section 1.1

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 theproduct 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.

PROJECT:

DATE:

CONTRACTOR: ENGINEER:

FLO FAB

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.

Section 1.1

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

PROJECT: CONTRACTOR: ENGINEER:

DATE:

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 Gad, 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.

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