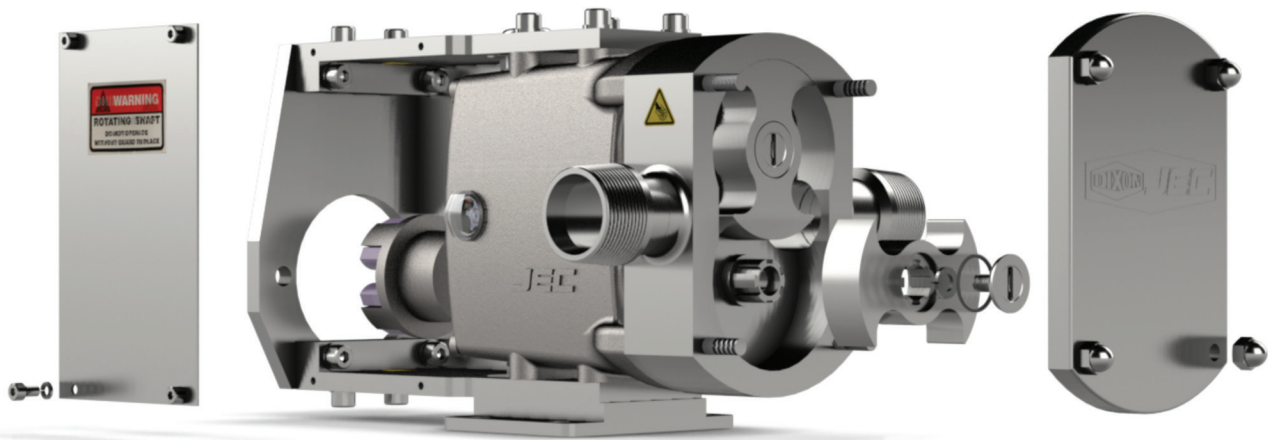


Operating & Maintenance Manual for JRZL-115 Rotary Lobe Frac Pumps



The Right Connection®

Dixon Sanitary

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Thank you for purchasing a Dixon Sanitary product!

This manual contains installation, operation, disassembly and assembly instructions, maintenance procedures, troubleshooting and a complete parts list for all JRZL 115 frac pump.


READ THIS MANUAL carefully to learn how to service these pumps. Failure to do so could result in personal injury or equipment damage. 

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Safety Information

Do's & Don'ts

- DO** read and understand these instructions before installing or using the pump.
- DO** use Dixon spare parts when replacing a component of the pump.
- DO NOT** service the pump while it is running.
- DO NOT** place the pump in an application where the service ratings are exceeded.
- DO NOT** modify the pump. Modifying the pump creates unsafe conditions and voids all warranties.

Safety Precautions When Installing Pump

- DO** use an authorized electrician when connecting the pump.
- DO** observe the mechanical limits of the pump (refer to the pump performance sheet).
- DO** install a throttling valve in the discharge line.
- DO NOT** install a throttling valve in the suction line.

Safety Precautions When Operating Pump

- DO** allow only qualified personnel to operate this pump.
- DO NOT** start the pump until all personnel are clear.
- DO NOT** touch the pump or the lines when pumping hot fluids or when performing Clean In Place (CIP) procedures.
- DO NOT** run the pump with BOTH the suction inlet and discharge outlet blocked. Running the pump with the inlet blocked will cause serious damage to the pump.
- DO NOT** check pump rotation with liquid in the pump.
- DO NOT** run the pump with the front cover removed. The rotors and rotor case could be damaged or may cause severe injury.
- DO NOT** operate the pump with the safety guard removed.

Safety Precautions When Servicing Pump

- DO** ensure the pump is cool to touch before performing service.
- DO** relieve all pressure and drain all fluids from pump and connected piping before performing service.
- DO ENSURE POWER TO THE UNIT HAS BEEN DISCONNECTED PRIOR TO PERFORMING ANY PUMP MAINTENANCE OR CLEANING.**
- DO** exercise caution and wear protective clothing when using lye or acid for cleaning.

Care of Stainless Steel

The stainless steel components in Dixon Sanitary equipment are machined, welded and assembled by skilled craftsmen using manufacturing methods that preserve the corrosion-resistant quality of the stainless steel.

Retention of corrosion-resistant qualities under processing conditions requires regular attention to the precautions listed below.

1. Regularly check all electrical devices connected to the equipment for stray currents caused by improper grounding, damaged insulation or other defects. Corrosion: Pitting often occurs when stray currents come in contact with moist stainless steel.
2. Never leave rubber mats, fittings, wrenches, etc. in contact with stainless steel. Corrosion: Pitting or galvanic action. Objects retard complete drying, preventing air from reforming the protective oxide film. Galvanic corrosion occurs when two dissimilar metals touch when wet.
3. Immediately rinse equipment after use with warm water until the rinse water is clear. Clean the equipment (manual or CIP) as soon as possible after rinsing. Corrosion: discoloration, deposits, pitting. Product deposits often cause pitting beneath the particles.
4. Use only recommended cleaning compounds. Purchase chemicals from reputable and responsible chemical manufacturers familiar with stainless steel processing equipment, they continuously check the effects of their products on stainless steel.
5. Use cleaning chemicals exactly as specified by the manufacturer. Do not use excessive concentrations, temperatures or exposure times. Corrosion: Pitting, discoloration, stress cracks. Permanent damage often occurs from excessive chemical concentrations, temperatures or exposure times.
6. For manual cleaning, use only soft non-metallic brushes, sponges or pads. Brush with the grain on polished surfaces, avoid scratching the surface. Corrosion: Pitting, scratches. Metal brushes or sponges will scratch the surface and promote corrosion over a period of time. Metal particles allowed to remain on a stainless steel surface will cause pitting.
7. Use chemical bactericides exactly as prescribed by the chemical manufacturer in concurrence with local health authority. Use the lowest permissible concentration, temperature and exposure time possible. Flush immediately after bacterial treatment. In no case should the solution be in contact with stainless steel more than 20 minutes. Corrosion: Protective film destroyed. Chlorine and other halogen bactericides can destroy the protective film. A few degrees increase in temperature greatly increases chemical activity and accelerates corrosion.
8. Regularly inspect the joints in pipelines. Be sure all connections are tight fitting without binding. Corrosion: Crevice corrosion. Small crevices caused by improperly seated gaskets will promote crevice corrosion. Stainless steel under stress will develop stress cracking especially in the presence of bactericides containing chlorine.
9. Regularly inspect equipment for surface corrosion (i.e. pitting deposits, stress cracks, etc.). If deposit or color corrosion is detected, remove it immediately using mild scouring powder and detergents. Rinse thoroughly and allow to air dry. Review production and cleaning procedures to determine the cause. Note: If corrosion is not removed, the protective film cannot be restored and corrosion will continue at an accelerated rate.

JRZL 115-Series Technical Specifications

Specifications:

| Model | Maximum Differential Pressure (PSI) ¹ | Maximum Flow Rate (GPM) | Temperature Range | Viscosity Range | Noise Level |
|-------|--|-------------------------|-----------------------------------|------------------------|-------------|
| 115 | 174 | 17 | 14°F to 356°F (-10°C to 180°C) | Up to 1,000,000 cPs | 60 ~ 80 dB |

Materials:

- product wetted steel part: AISI 316L Stainless Steel (standard)
- product wetted elastomers: FKM (standard), EPDM, Buna (optional)

Shaft Seals:

- seal options: single mechanical
- stationary seal ring material: tungsten carbide
- rotating seal ring material: tungsten carbide
- O-ring material: FKM (standard), EPDM, Buna (optional)

Rotor Information: Not all rotors available in all models.

- single/bi-wing and bi-lobe/tri-lobe/heli-lobe are interchangeable
- optional rotors: multi-lobe, hardened

Optional Information:

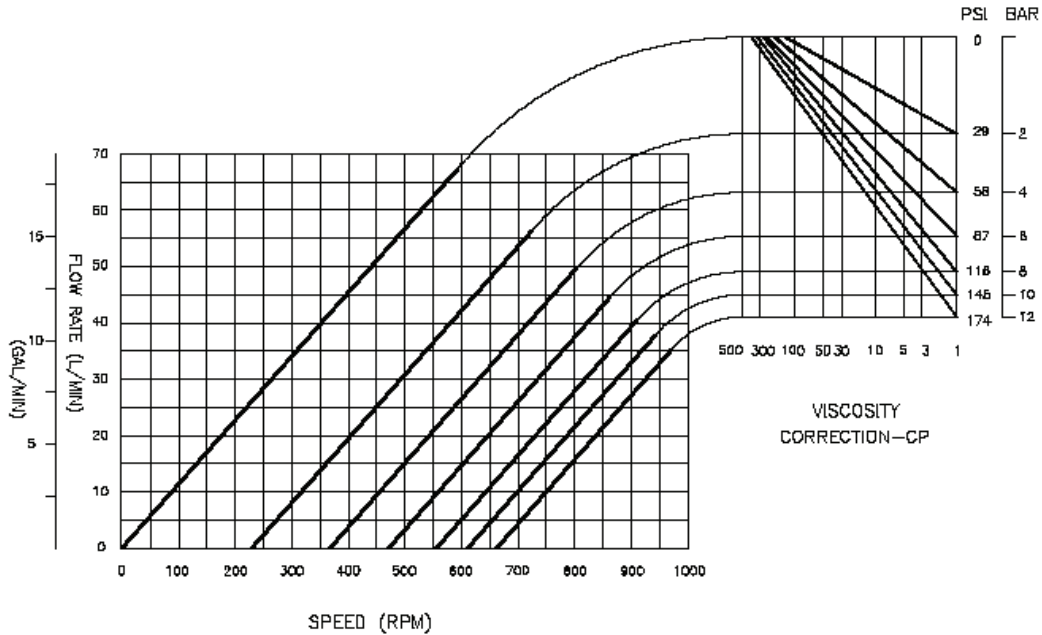
- SAE-A or SAE-B hydraulic motor adapters
- bare shaft pump without hydraulic motor adapter
- adapter plates can be customized to meet existing bolt pattern

JRZL 115 Curves

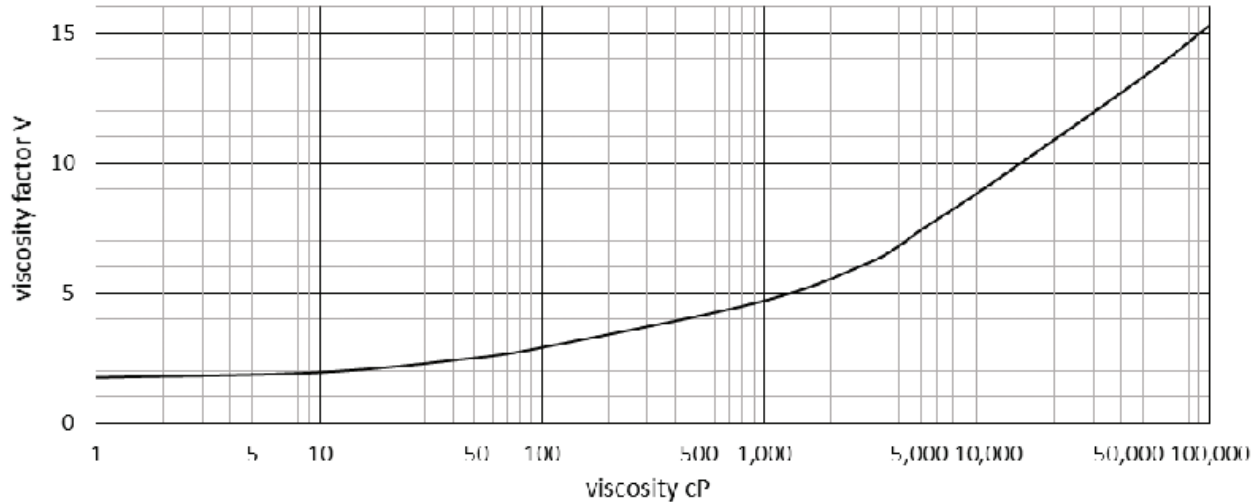
Rotary Lobe Pump JRZL115

APPLIES TO BI-WING

PORT SIZE: 1.5 X 1.5



Power Calculation for Viscosity Liquids



$$(English\ units)\ Total\ Power\ (HP) = (0.0007 \times p + 0.0051 \times v) \times n \times c$$

$$(Metric\ units)\ Total\ Power\ (Kw) = \frac{(2 \times p + v) \times n \times c}{1000}$$

p = pressure (psi or bar)

v = viscosity correction factor (from graph)

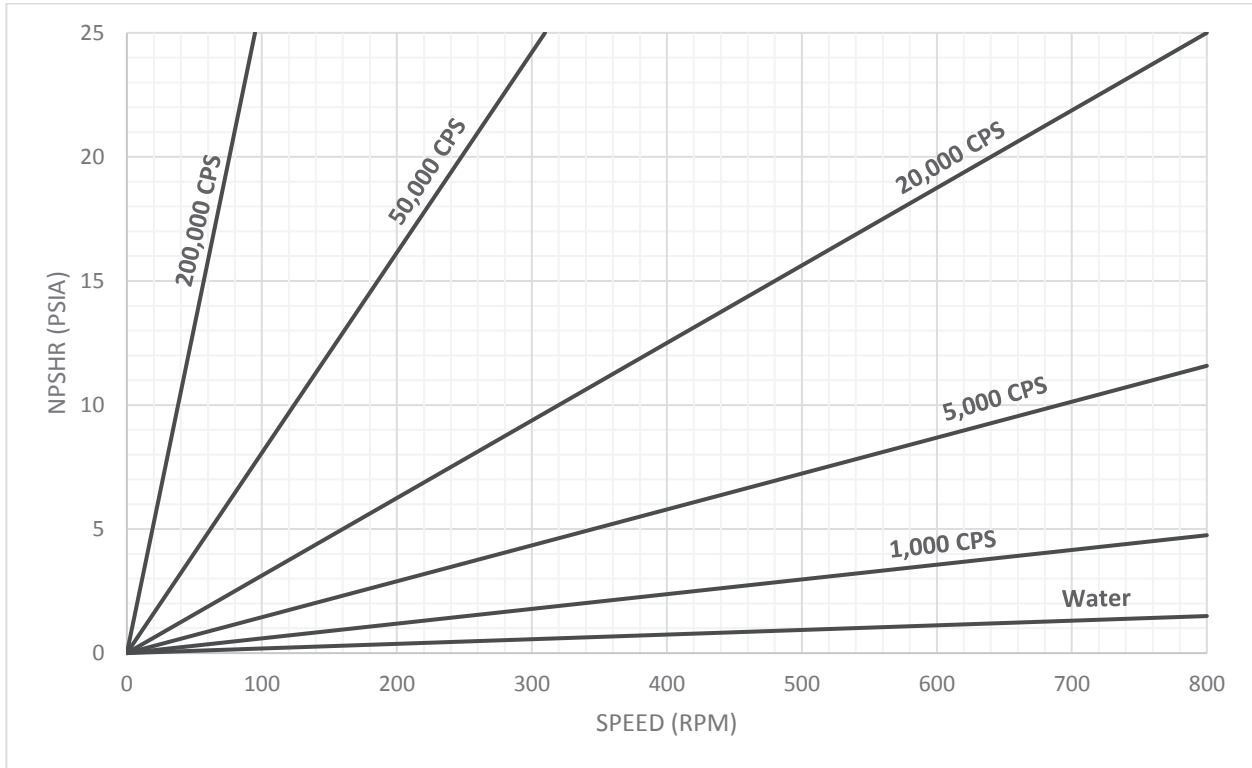
n = speed (RPM)

c = displacement (0.03 gal/rev or 0.12 L/rev)

JRZL115 NPSHR Curves

Rotary Lobe Pump JRZL115

NET POSITIVE SUCTION HEAD REQUIRED
PORT SIZE: 1.5 X 1.5

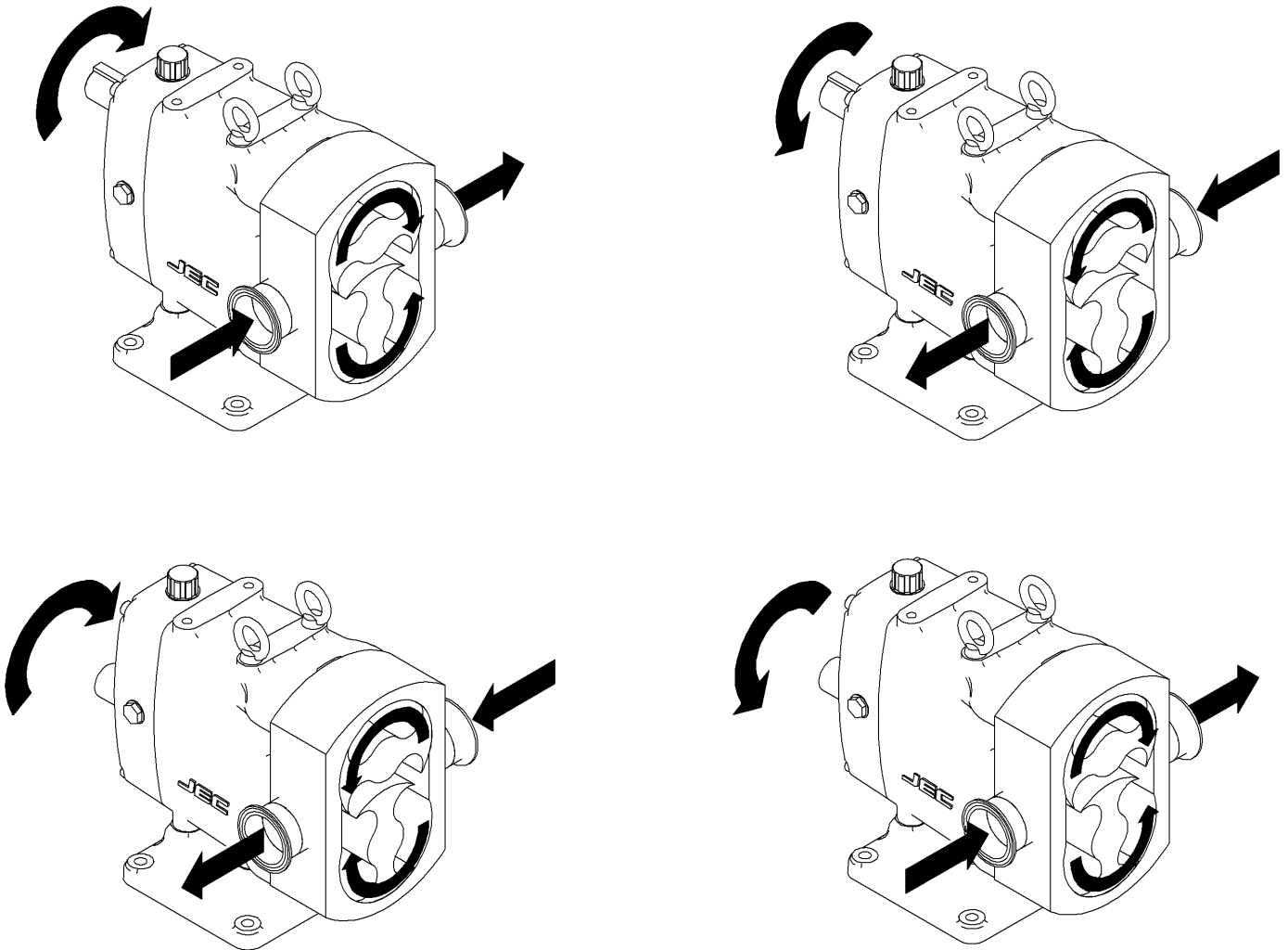


Unpacking

Carefully unpack all parts of the pump and inspect for damage that may have occurred during shipment. Report any damages to the carrier immediately.

Installation & Start Up

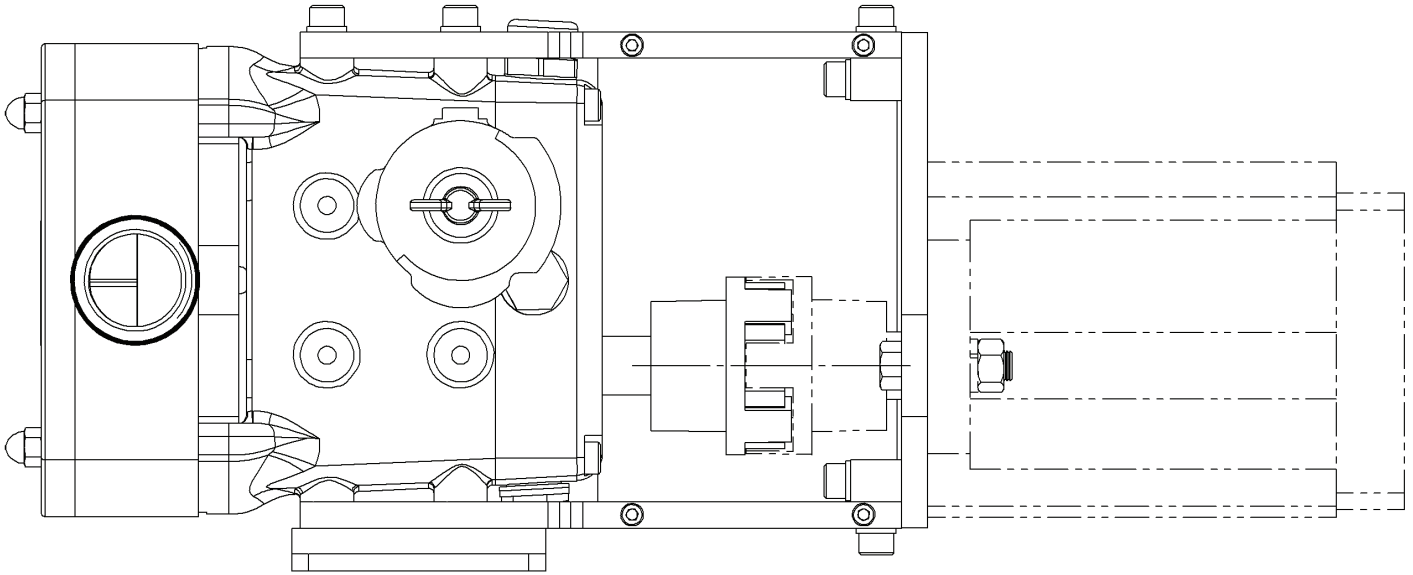
Pump Flow



Installation & Start Up

Pump Alignment

- A flexible coupling is used to compensate for end play and small differences in alignment. The pump and drive shaft should be aligned as closely as possible.
- Check angular alignment using feeler or taper gauge.
- Adjust to get equal dimension at all points – at the same time, set space between coupling halves to the coupling manufacturer's recommended distance.



Tools Needed

- Rotor tool
- Plastic dowel
- Open ended wrench set
- Rubber mallet
- Flat head screw driver
- Feeler gauges
- Hex keys
- O-ring pick
- Spanner wrench
- Rotor extraction tool (optional)

Additional tools needed when assembling or disassembling gear box

- Spanner wrench
- Arbor press or bearing puller

Maintenance

Pump Housing Disassembly

! Prior to removal of pump, the shut-off valves in the suction and discharge lines must be closed. If there is any risk that product may harden, crystallize or freeze in the pump it should be thoroughly drained and cleaned immediately after use. Same attention applies if there is a seal flush option. Power needs to be locked out to prevent unintended start of the pump.

Note: Reference numbers are listed in the sectional view located on pages 32-33. Connections shown may be different.

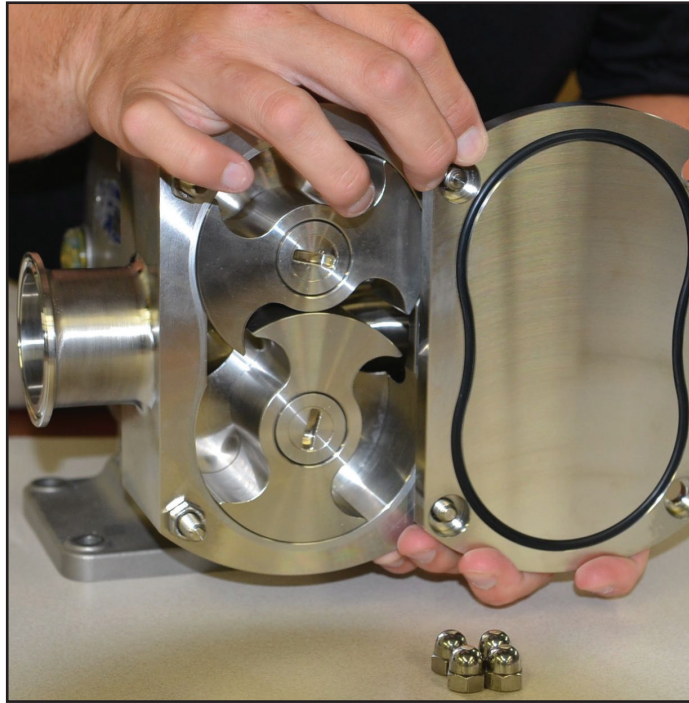
1. Loosen and remove the four hex nuts (33) from the front cover.



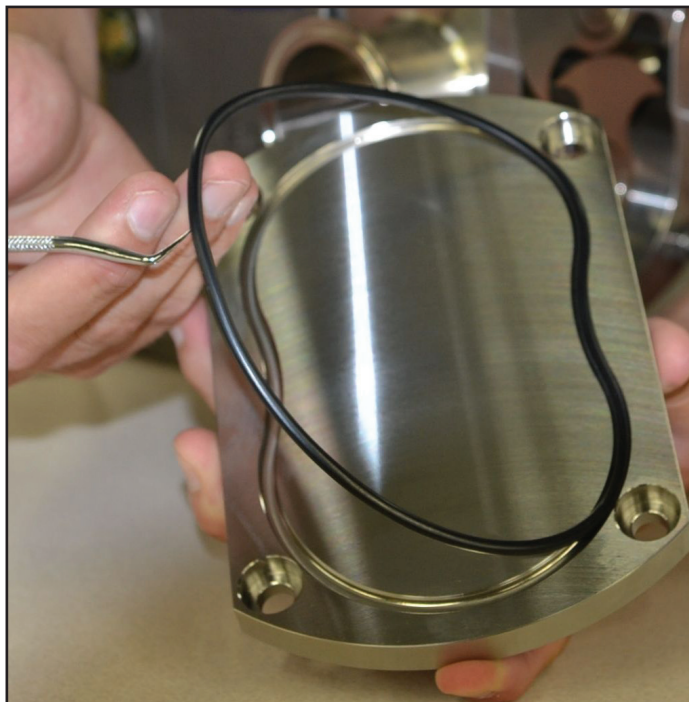
Maintenance

Pump Housing Disassembly (continued)

2. Remove the cover (32). If it is stuck, tap the cover with a soft hammer.



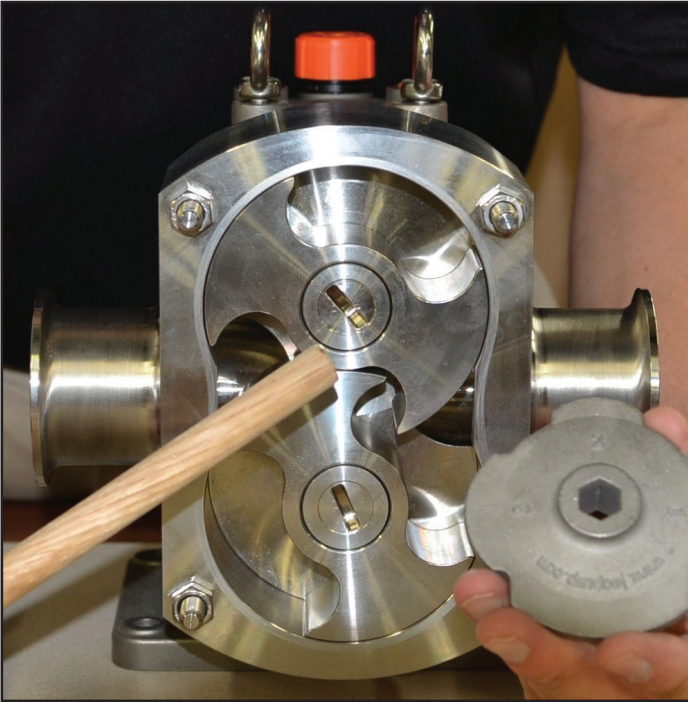
3. Remove the cover O-ring (34).



Maintenance

Pump Housing Disassembly (continued)

4. Remove the rotor retaining bolts (35). To remove the rotor retaining bolts, place the dowel between the rotors. Turn the first rotor bolt counter-clockwise.



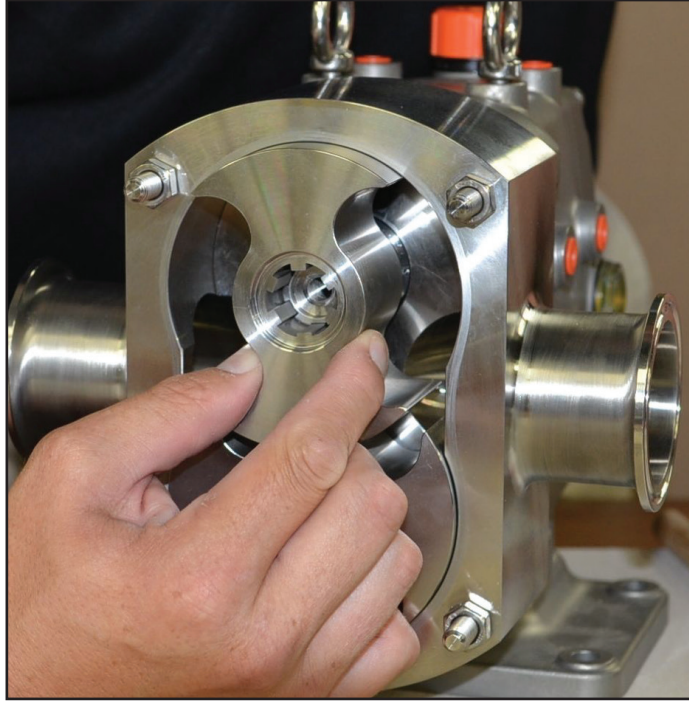
5. Remove the rotor bolts (35), spring washers (36) and O-ring (37).



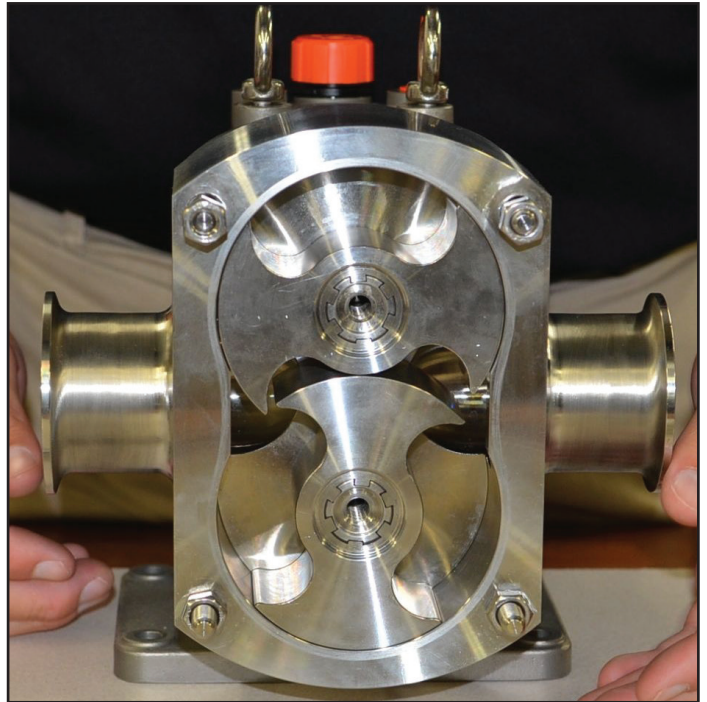
Maintenance

Pump Housing Disassembly (continued)

6. Remove the rotors (38) from the pump housing (31) by pulling straight.



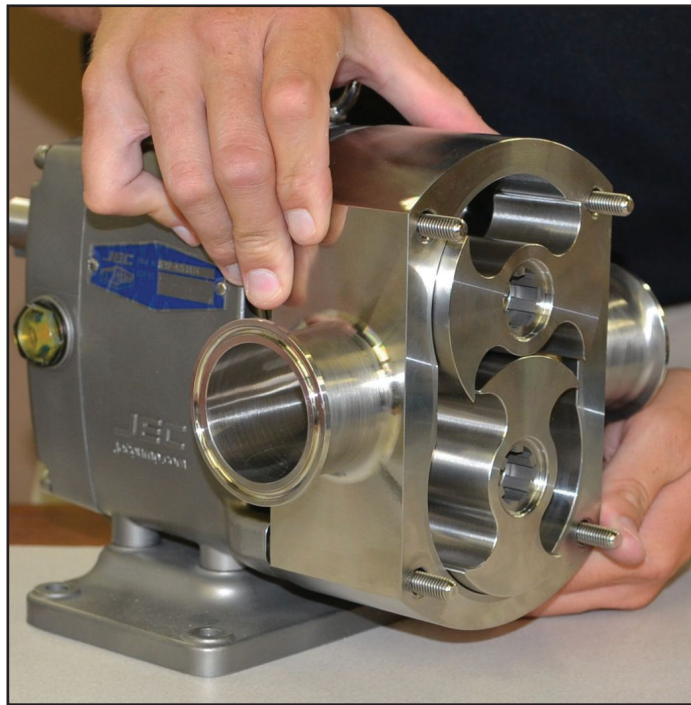
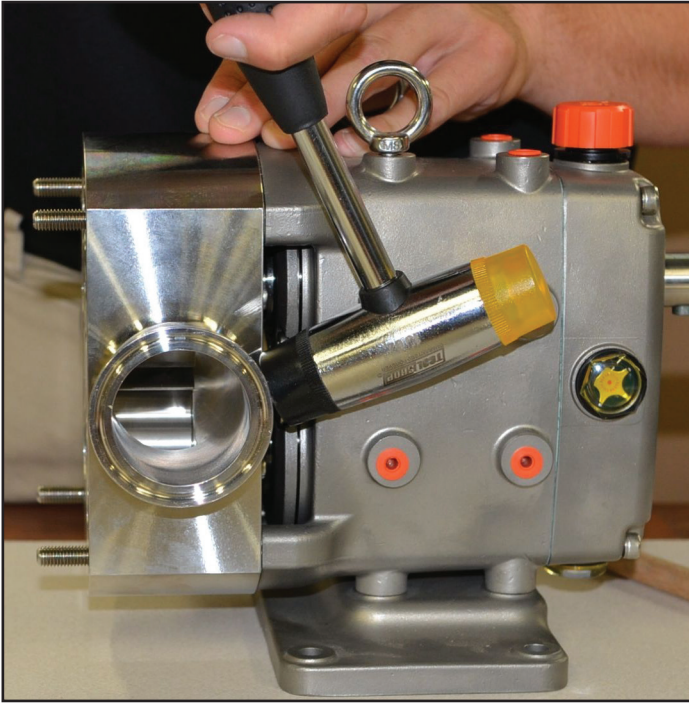
6a. If the rotors (38) will not come out freely, remove the stud bolt hex nuts (46) and then tap on the back of the inlet and outlet ports with a soft hammer. Once the rotors (38) are loose, then push the casing (31) back towards the gear box and remove the rotors.



Maintenance

Pump Housing Disassembly (continued)

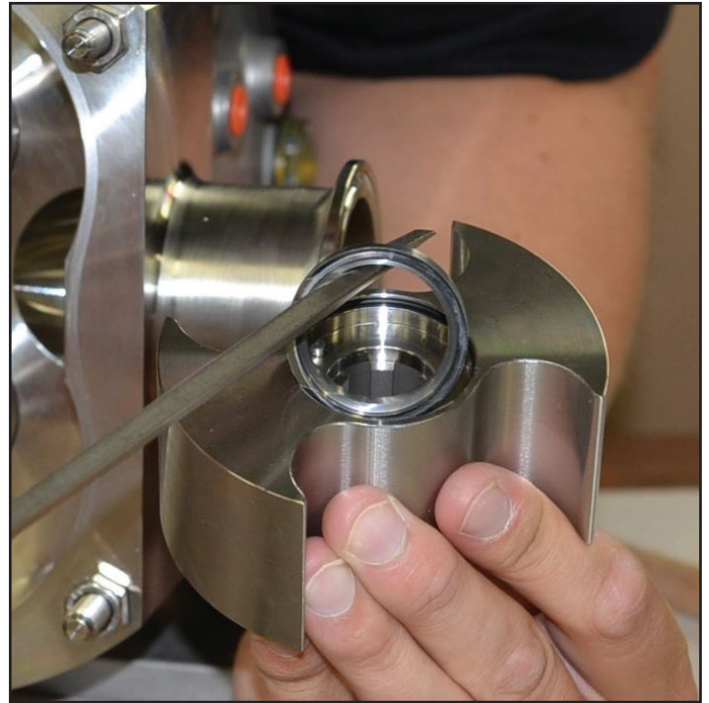
6a, continued



Maintenance

Pump Housing Disassembly (continued)

7. Remove the seal ring (52) from the back of the rotor (38).



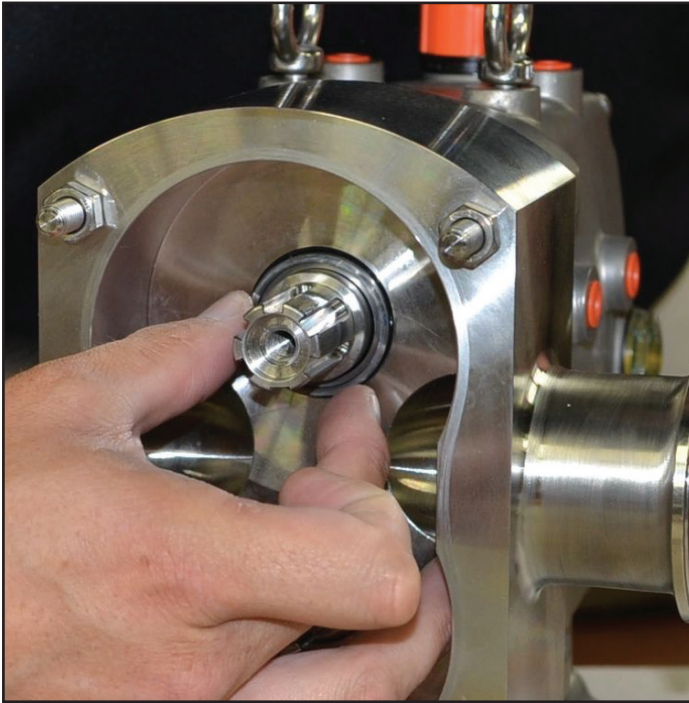
8. Remove the rotor O-rings (51).



Maintenance

Pump Housing Disassembly (continued)

9. Remove the casing seal rings (52).



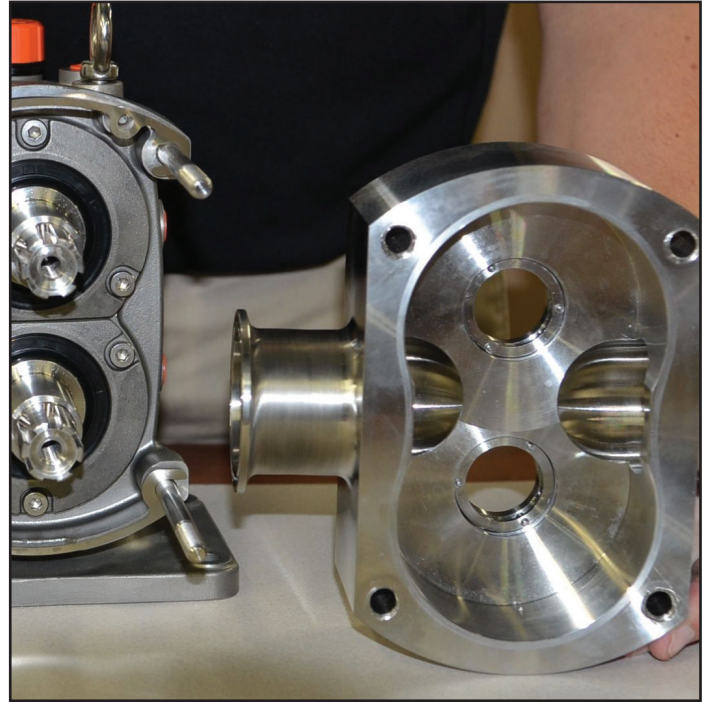
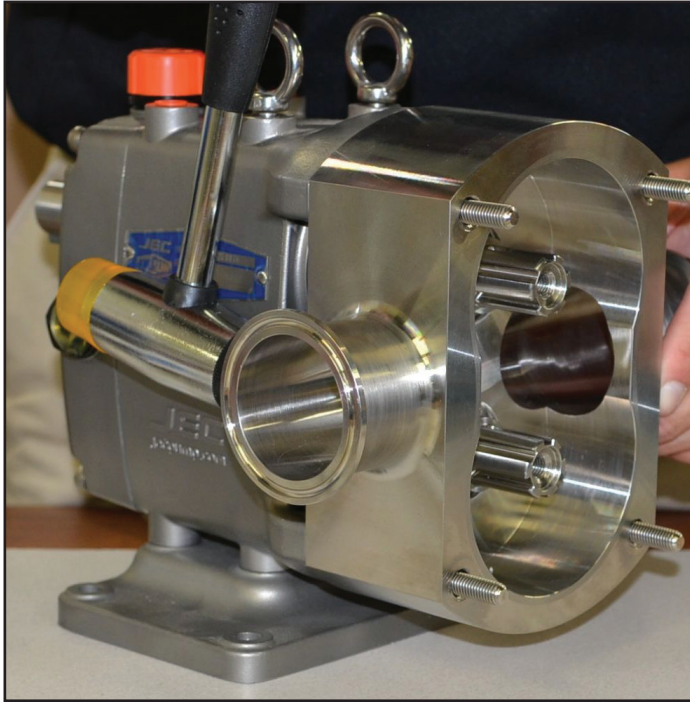
10. Remove the stud bolt hex nuts (46).



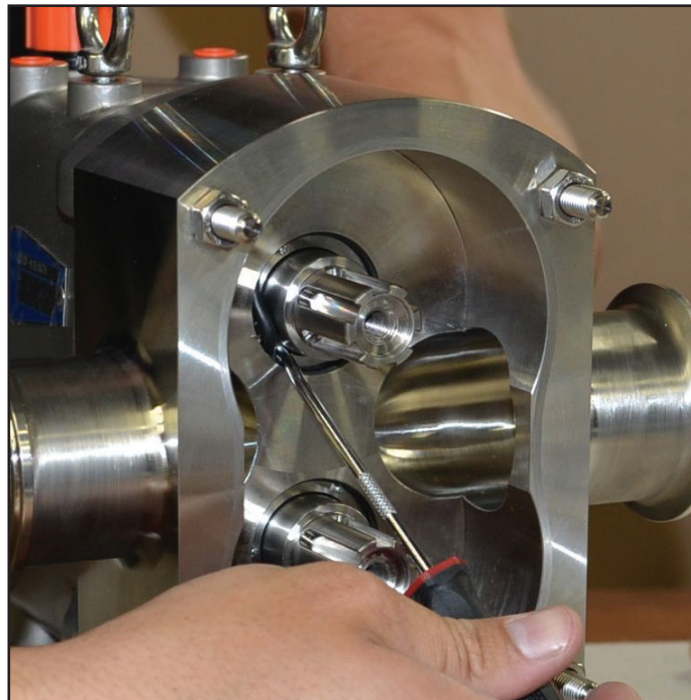
Maintenance

Pump Housing Disassembly (continued)

11. Remove the rotor case (31).



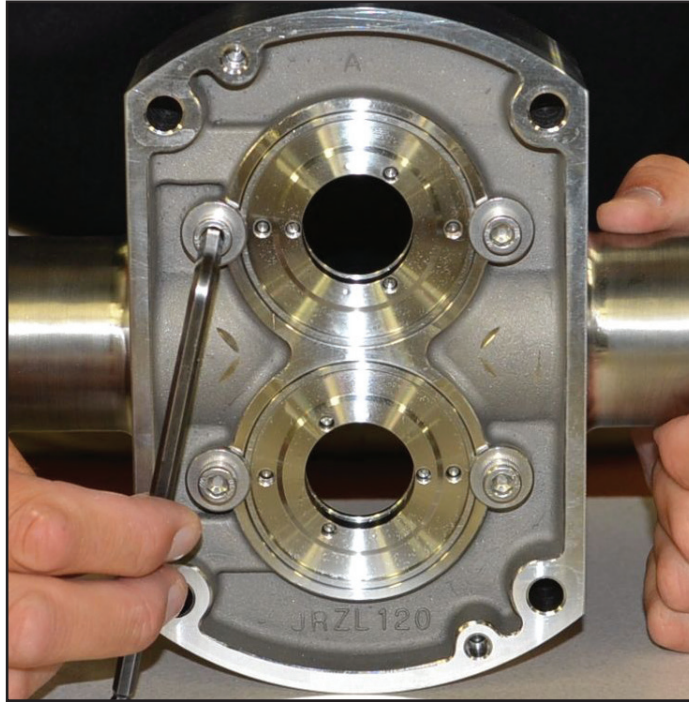
12. Remove the rotor case O-ring (53). This can be done before you remove the casing or after.



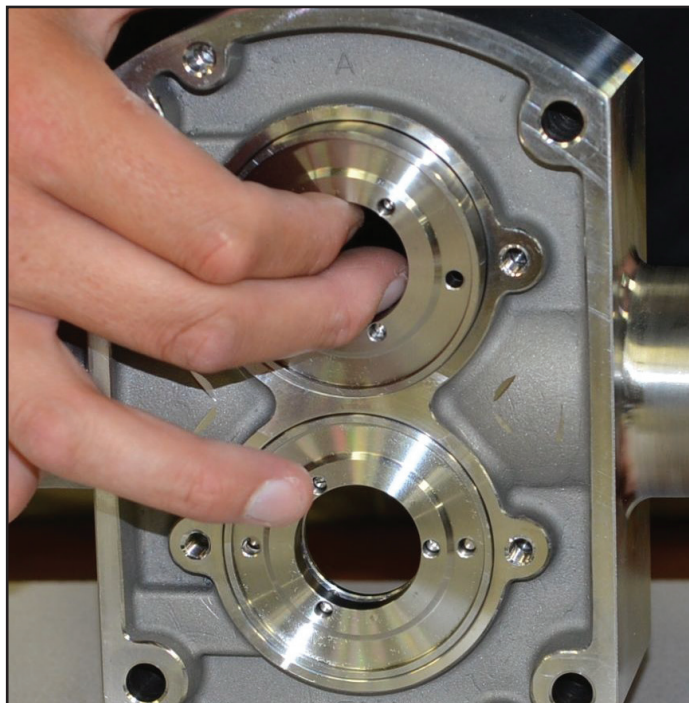
Maintenance

Pump Housing Disassembly (continued)

13. On the back of the rotor case, remove the four mechanical seal gland wrench bolts (42 & 43).



14. Remove the single seal body cases (54).



Maintenance

Pump Housing Inspection

1. Inspect O-rings and seals for reuse. Worn O-rings and seals should be replaced.
2. Inspect seal faces for scoring or cracks. Replace any seal faces that are damaged.
3. Inspect rotors for any damage or abnormal wear.
4. Inspect rotors for wear on splines and that they fit snugly on the shafts.
5. Inspect shafts for wear on splines and make sure they are not loose in the gear case.
6. Inspect rotor galling sign among the rotor housing, front cover and rotors. Must be removed or replaced.
7. Inspect burr of the rotor bolt groove. Must be removed or replaced.

Pump Housing Assembly

Before installing the pump housing (31) to the gearbox make sure that the surface of the pump housing and gear box are clean and check the shim plate between pump housing and gear box. Install the pump housing (31) onto the gear box (1A) and secure the four housing set nuts (46).

When installing the ceramic shaft sleeve onto the pump shaft, align sleeve with fit pin.

Follow the disassembly instructions in reverse for all types of seals and rotor assembly.

Assemble a rotor onto shaft engaging the shallow groove with small spline in rotor and seal side first in to the shaft.

Place the plastic dowel between the rotors. Tighten the first rotor bolt with a special tool to the recommended torque.

| Model | Rotor Nut Torque Specification |
|----------|--------------------------------|
| JRZL 115 | 116.3 in. lbs. |

To tighten the second rotor place the plastic dowel on the opposite side of the rotor and tighten the second rotor bolt to the proper torque.



Install the cover (32) and tighten the cap nuts (33).

Maintenance

Rotor Clearance

Use feeler gauges to verify the back and radial clearances between the rotors and the housing. A depth gauge should be used to verify the front clearance.

Rotor clearance must be precisely maintained to provide maximum pumping efficiency, prevent contact between rotors, rotor housing and front cover during operation. If pumping efficiency is below expectations or if parts contact has occurred during operation (within rated differential pressure) check rotor clearances and adjust if incorrect.

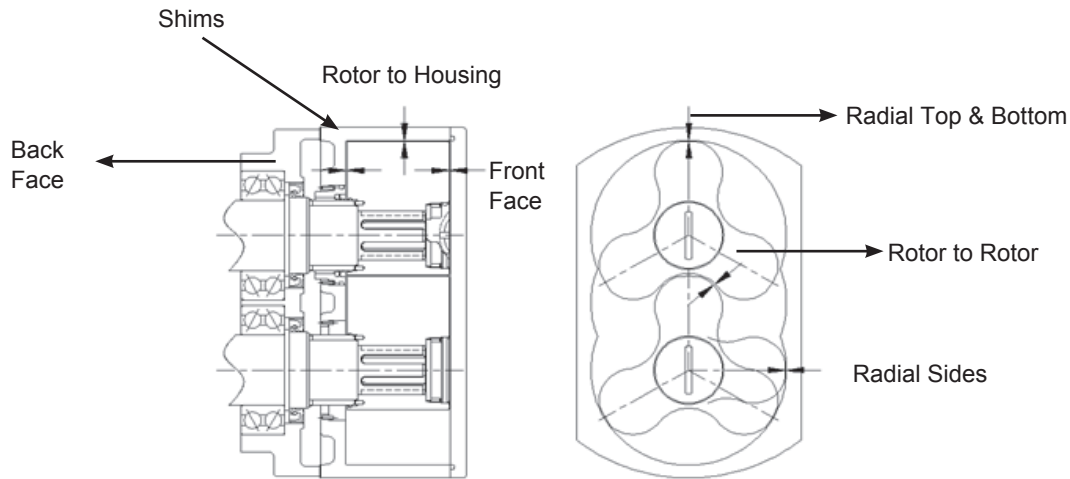


Figure 20

| Standard Rotor Clearances (mm/in) | | | | | |
|-----------------------------------|------------|------------|-----------------------------|---------------------|----------------|
| Model | Back Face | Front Face | Clearances for Rotor Timing | | |
| | | | Radial Sides | Radial Top & Bottom | Rotor to Rotor |
| JRZL 115 | 0.15/0.006 | 0.15/0.006 | 0.27/0.011 | 0.12/0.005 | 0.15/0.006 |

There are two areas of rotor clearances as illustrated following:

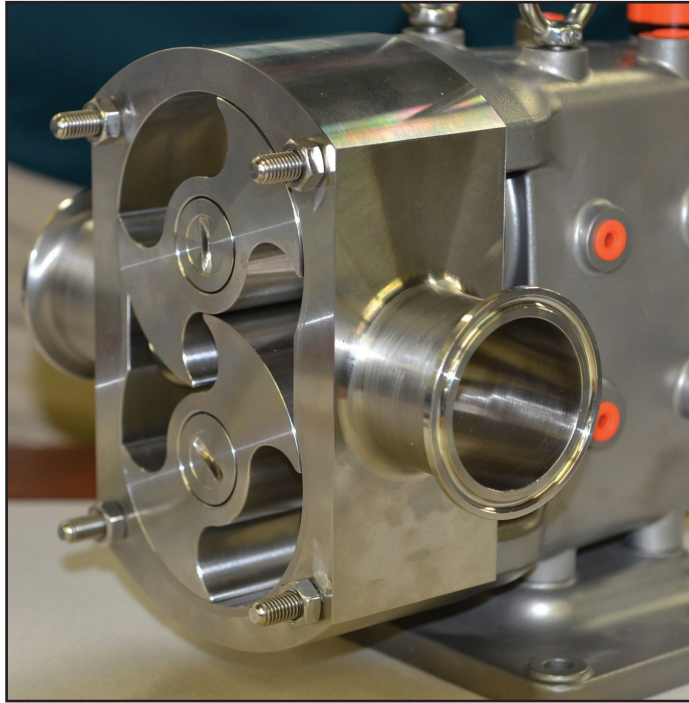
- Rotor tip clearance – not adjustable set by manufacturer
- Front and back face clearance – adjustable by shim

Maintenance

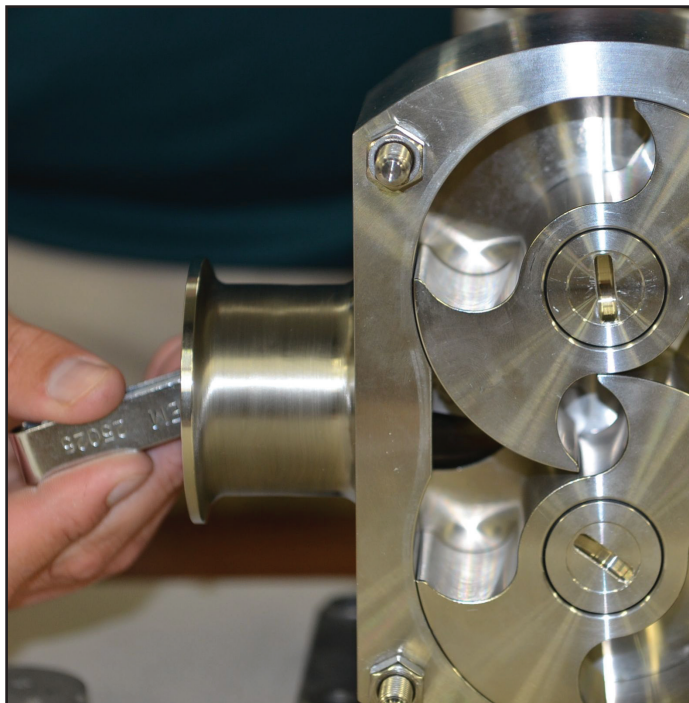
Rotor Clearance (continued)

Rotor width and body depth are fixed at manufacturer. Therefore, with the correct rotor size selected, the only maintenance adjustment that can be made is the proportion of front and rear clearance. Measure the front clearance as follows:

1. The rotor to rotor housing back face clearance is maintained by the shim (45).
2. Check that the rotor housing (31) is tight to gearbox (1A). And check the rotor bolts (35) are tight.



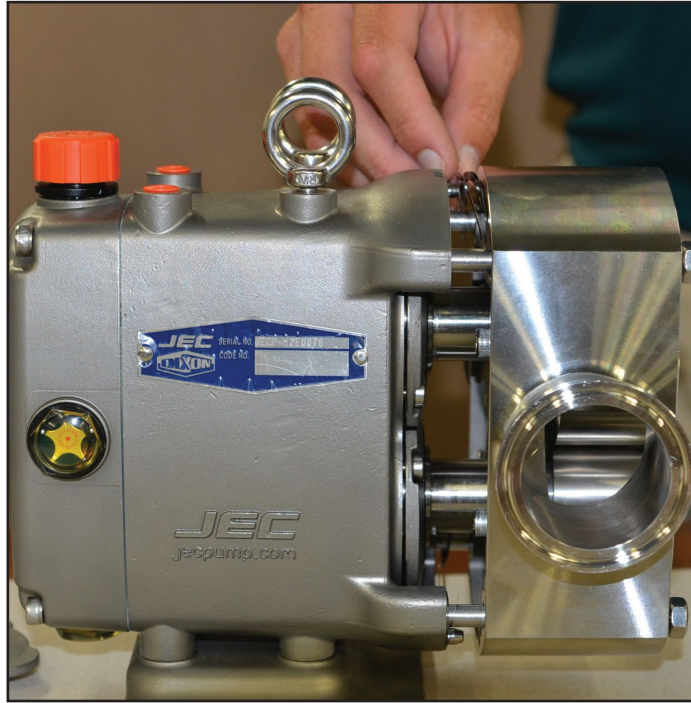
3. Measure the clearance between the back face of the pump housing and the back of the rotor with a feeler gauge. Check the reading with the recommended back face clearance.



Maintenance

Rotor Clearance (continued)

4. If incorrect, adjust by adding or removing shim plates (45) from behind the pump housing.



5. Check each rotor and adjust as necessary.

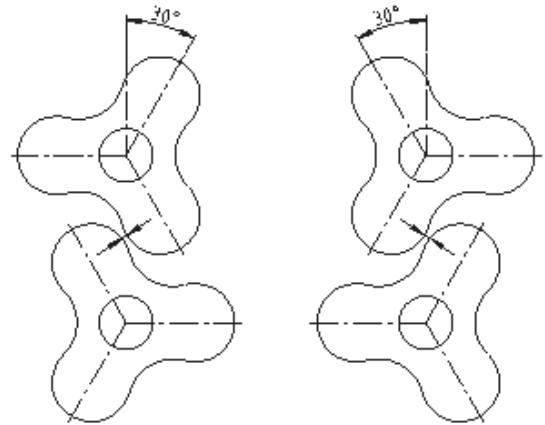
Maintenance

Rotor Timing

Rotor timing must be precisely maintained to provide maximum pumping efficiency, prevent contact between rotors during operation. If pumping efficiency is below expectations or if rotors contact during operation (within rated differential pressure), check rotor timing and adjust if incorrect. Also check rotor timing after any gearbox dismantling when the gears are removed and/or replaced.

Check Rotor timing as follows:

1. Assemble each rotor in its normal location on the drive shaft and the idle shaft. Assemble each rotor bolt and tighten hand tight.
2. Rotate the shafts 30 degrees and measure gap as illustrated by arrows. Rotate the shafts 60 degrees the opposite direction and measure gap as illustrated.
3. The rotors are correctly timed when the gap measured, using a feeler gauge, at both locations are equal. If the gap is unequal, adjust the timing as follows.
4. Rotor timing is determined by the relative location of the two helical gears (14) on the shafts. Gear spacers (16) are used to adjust the location and the timing. When adjusting timing, move only one of the two gears.
5. Place the wooden dowel between the rotors.
6. Bend away the tab of the lock washer (12) on one shaft. Loosen the lock nut and temporarily insert shim stock between the gear and gear spacer. Tighten the lock nut, reassemble the rotor in its correct location, and recheck rotor timing.
 - If rotor timing is correct, remove the gear and replace added other spacer or add a shim equal in thickness to the shim stock temporarily added. Reassemble the gear and gear nut, tighten to the correct torque, and check rotor timing again to confirm that it is correct.
 - If rotor timing is incorrect, but closer to equal than original measurement, repeat previous step adding additional shim stock.
 - If rotor timing is incorrect and more unequal than original measurement, remove temporary shim stock from one shaft and add instead to the other shaft.
7. Repeat above procedures until the timing gap is equal after gear spacers are in place and gear nuts are tightened to correct torque.
8. Reassemble pump.



Maintenance

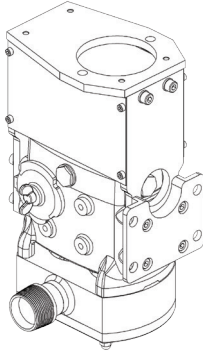
Gearbox Disassembly

1. Remove the oil drain plug (5) and drain the oil.
2. Remove the gear box cover bolts (6) from the rear cover (4).
3. Pull the rear cover off the drive shaft extension. If the cover is stuck use a soft hammer carefully to loosen it.
4. Remove the rear cover oil seal (11) from the rear cover.
5. Remove the paper gasket (26) from the rear cover or gear box.
6. Straighten the locking tab of the bearing lock washer (12). Reinstall the rotors (38) on the drive (8) and idle (9) shafts. Lock the rotor with a plastic dowel. Remove the lock nut (12-1) and lock nut washer from the drive shaft (8) and idle shaft (9).
7. Pull the two helical-gears (14) off the pump shafts. Remove the gear keys (7).
8. Remove the front bearing gland set bolts (23).
9. Place the gearbox (1), wet end (rotor side) down, on an arbor press.
10. Protect the shaft ends with a wood block and press the drive and idle shaft out of the gearbox.
11. Remove the bearings (17) and spacers (18) together by pressing them out from the shafts.
12. Or remove bearings by puller.

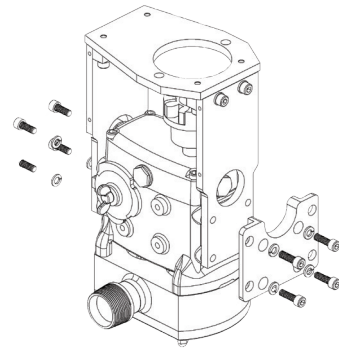
Maintenance

Frac Pump Disassembly

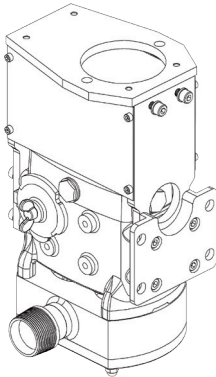
1. Before the adapter can be disassembled, be sure to disconnect the pump/adapter from any source of power. Stand the pump on front face to position the pump for disassembly.



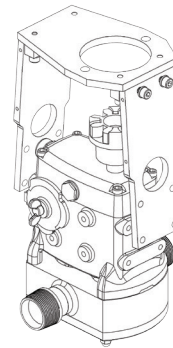
4. Remove the M8 bolts (213) and lock washers (215) holding the top plate (201), bottom plate (201) and foot plate (205) to the gearbox. The motor adapter will completely separate from the gearbox.



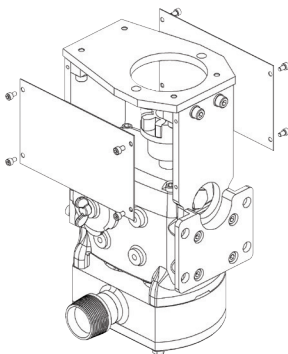
2. Loosen the M8 bolts (214) connected to the motor plate (203). It is not necessary to remove the bolts completely unless you are completely dismantling the motor adapter.



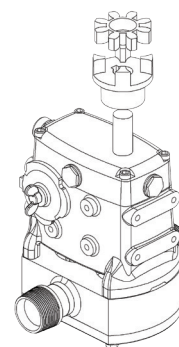
5. Now that the motor adapter is no longer fastened to the gearbox, separate the top and bottom plates apart and lift off the remaining partially assembled adapter.



3. Remove the M5 bolts (216) holding the guards plates (204) in place.



6. Remove coupling (208) and flexible insert (209) from pump shaft.



Maintenance

Gearbox Assembly

1. Clean and lubricate the front and rear bearing areas of the drive (8) and idle shafts (9) with oil.
2. Fit the front bearing (20), spacer (18) and rear bearing (17) on the shaft by arbor press or heat 120C (250F) up by heater.
3. Lubricate and install the front bearing oil seals (22) in to the bearing gland.
4. Position the gearbox (1) with wet end up.
5. Clean and lubricate the front and rear bearing areas with oil.
6. Insert the shaft perpendicularly to the gearbox properly. There should be a tight sliding fit between the gearbox and the bearing outer rings. Press or soft hammer could be used.
7. Place the front bearing gland set bolt (23) and washer and tighten.
8. Lubricate and install the rear oil seal cover (24) into gear box.
9. Place the gear spacer (16) over the shafts.
10. Clean and lubricate the gear area of the shaft and the face of the lock washer with oil.
11. Position both shaft gear keys (7) to the 12:00 position.
12. Place the gear, lock washer (12) and lock nut (12-1) onto the shafts and hand tighten.
13. After the gears are installed, turn the shafts to make sure they turn freely and that the rotors (38) are timed correctly. (rotor alignments are required)
14. Use a spanner wrench to tighten the gear lock nut on the drive shaft. You can install the rotors to hold the shafts in place while you tighten the nut.
15. Tighten the locknut on the idle shaft, following the previous steps.
16. Install the paper gasket to rear cover (26) and mount the rear cover assembly over the drive shaft extension onto the gearbox.
17. Set the cover bolts, oil window and pressure relieve valve.
18. Fill the oil reservoir with oil to the middle of the oil window.

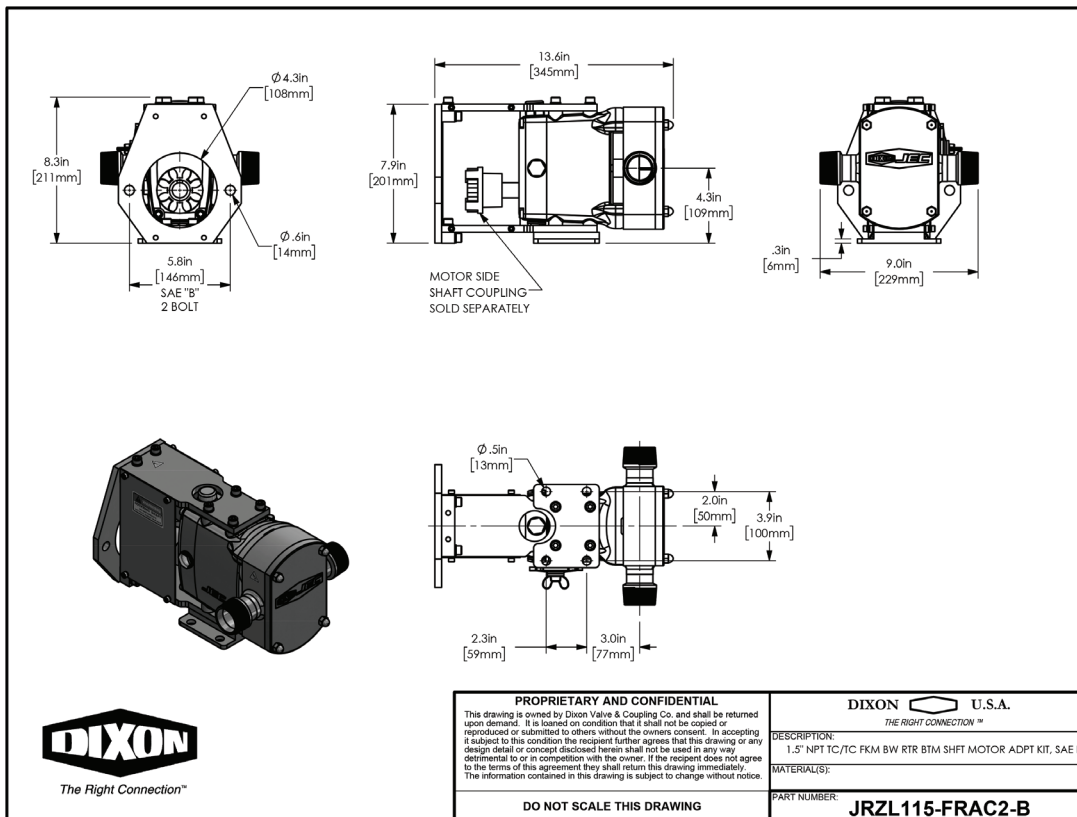
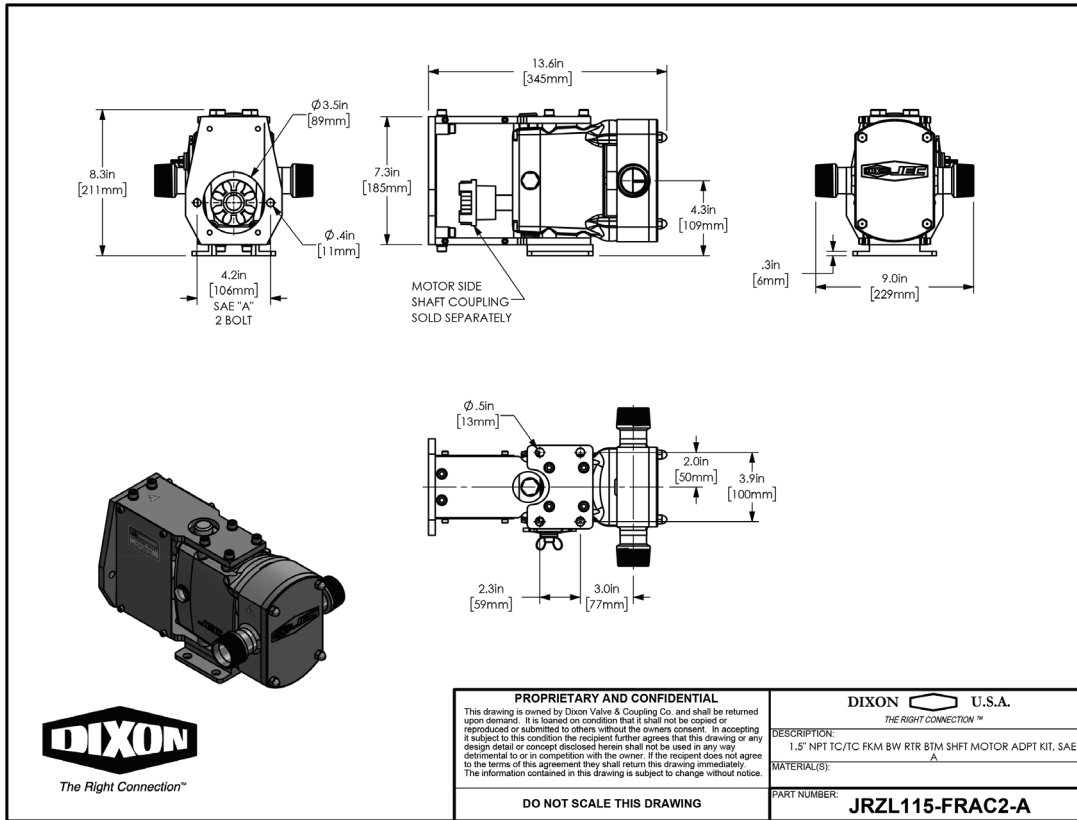
Scheduled Maintenance

- After initial startup – change oil after 4,000 hours.
- After, change oil annually based on 8 hrs a day, 5 days a week run time.
- Every two years, change oil seals

Recommended Spare Parts:

- 1 Year – (2) Seal sets and (1) O-ring set
- 2 Years – (4) Seal sets and (2) O-ring sets and (1) set rotors

Dimensions



Troubleshooting

| Problem | Possible Cause | Suggested Action |
|--|--|---|
| No Flow, Pump Rotors Are Not Turning | Drive motor not running. | Check resets, fuses, circuit breakers. |
| | Key sheared or missing. | Replace. |
| | Drive belts, power transmission components slipping or broken. | Replace or adjust. |
| | Pump shaft, keys or gears sheared. | Inspect and replace parts as necessary. |
| No Flow, Pump Rotors Are Turning | Rotors turning in the wrong direction. | Check motor hookup to reverse motor rotation. |
| | Relief valve not properly adjusted or held open by foreign material. | Adjust or clear valve. |
| | Suction port is blocked, not allowing flow to the pump. | Check all inlet valves, strainers and tank outlet ports. |
| No Flow, Pump Not Priming | Valve closed in inlet line. | Open valve. |
| | Inlet line clogged or restricted. | Clear line, clean filters, etc. |
| | Air leaks due to bad gaskets or pipe connections. | Replace gaskets, check lines for leakage (can be done by air pressure or by filling with liquid and pressurizing with air. |
| | Pump speed too slow. | Increase pump speed. |
| | Pump speed too fast for high viscosity liquid. | Decrease pump speed. |
| | Liquid drains or siphons from system during off periods. | Use foot valve or check valves. Filling inlet lines with material before startup may solve startup priming problems due to no material in system. |
| | "Air" lock caused by fluids which "gas off" or vaporize or allow gas to come out of material during off periods. | Install and use a manual or automatic air bleed from pump or lines near pump. |
| | Extra clearance rotors, worn pump. | Increase pump speed within limits, use foot valve to improve priming. Replace worn rotors. |
| | NPSHA too low. | Check net inlet pressure available against net inlet pressure required. Change inlet system as needed. |
| On "Vacuum" inlet system: On initial start-up, atmospheric "blow back" prevents pump from developing enough differential pressure to start flow. | Install check valve in discharge line. | |
| Insufficient Flow | Speed too low or too high to obtain desired flow. | Check curve and adjust as necessary. |
| | Air leak due to bad seals, pipe connections or other equipment. | Replace seals, check inlet fittings. |
| Insufficient Flow – Flow Being Bypassed Somewhere | Flow diverted in branch line, open valve, etc. | Check system and controls. |
| | Relief valve not adjusted or jammed. | Clear or adjust valve. |
| Insufficient Flow – High Slip | Hot (HC) or extra clearance rotors being used on "cold" fluid and/or low viscosity fluid. | Replace with standard clearance rotors. |
| | Worn pump. | Increase pump speed (within limits). |
| | | Replace rotors. |
| High pressure. | Reduce pressure by adjusting system settings or hardware. | |

Troubleshooting

| Problem | Possible Cause | Suggested Action |
|---|---|--|
| Cavitation | Strainers, foot valves, inlet fittings or lines clogged. | Clear lines. If problem continues, inlet system may require changing. |
| | Inlet line size too small, inlet line too long. Too many fittings or valves. Foot valve, strainers too small. | Increase inlet line size. Reduce length, minimize direction and size changes, reduce number of fittings. |
| | NPSHA too low. | Raise liquid level in source tank to increase net inlet pressure. |
| | | Increase net inlet pressure by raising or pressurizing source tank. |
| | | Select larger pump size with lower net inlet pressure required. |
| | Fluid viscosity greater than expected. | Reduce pump speed and accept lower flow or change system to reduce line losses. |
| Change temperature of product to reduce viscosity. | | |
| Fluid temperature higher than expected (vapor pressure higher). | Reduce temperature, reduce speed and accept lower flow or change system to increase net inlet pressure available. | |
| Noisy Operation | Cavitation. | |
| | High fluid viscosity. High vapor pressure fluid. High temperature. | Slow down pump, reduce temperature, change system setup. |
| | NPSHA less than NPSHR. | Increase NPSHA or decrease NPSHR. |
| | Air or gas in fluid. | |
| | Leaks in the pump or piping. | Fix leaks. |
| | Dissolved gas or naturally aerated products. | Minimize discharge pressure (also see "Cavitation" above). |
| Noisy Operation Caused By Mechanical Problems | Rotor to Body Contact | |
| | Improper assembly of pump. | Check clearances and adjust shimming. |
| | Distortion of pump due to improper piping installation. | Change piping installation to eliminate piping stress and distortion on body. |
| | Pressures required higher than the pump is rated for. | Reduce discharge pressure required. |
| | Worn bearings. | Rebuild with new bearings and lubricate regularly. |
| | Rotor to Rotor Contact | |
| | Loose or incorrectly-timed gears. | Rebuild with new parts. Note: This will cause severe damage. |
| | Sheared keys. | Rebuild with new parts. Note: This will cause severe damage. |
| | Worn gear splines. | Rebuild with new parts. Note: This will cause severe damage. |
| | Drive noise caused by gear trains, chains, couplings or bearings. | Repair or replace drive parts. Check bearings for damage and replace as necessary. |

Troubleshooting

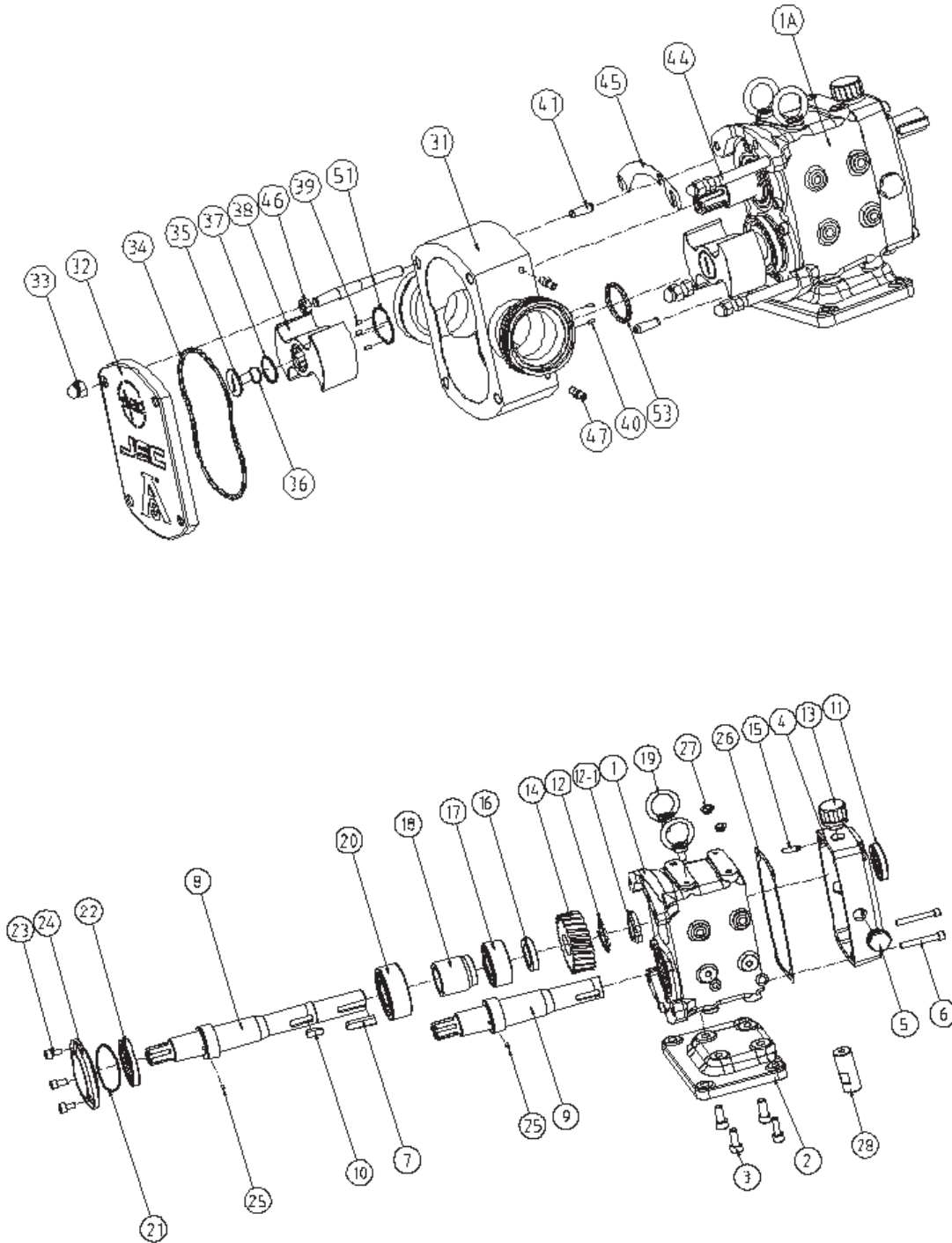
| Problem | Possible Cause | Suggested Action |
|--|---|--|
| Pump Requires Excessive Power (overheats, stalls, high current draw, breakers trip) | Higher than expected viscosity losses. | If within pump rating, increase drive size |
| | Higher than expected pressures. | Reduce pump speed. Increase line sizes. |
| | Fluid is colder with a higher viscosity than expected. | Heat fluid, insulate lines or heat trace lines. |
| | Fluid sets in line and pump during shutdown. | Increase line sizes. |
| | | Insulate lines or heat trace lines. |
| | | Install a "soft start" drive. |
| Install a recirculating bypass system. | | |
| Flush system with a nonsetting fluid. | | |
| Fluid builds up on pump surfaces. | Replace the pump with more running clearances. | |
| Short Pump Service Life | Pumping abrasives. | Larger pumps at slower speeds. |
| | Speeds and pressures higher than rated. | Reduce speeds and pressures by making changes in the system. |
| | | Replace pump with a larger model with higher pressure ratings. |
| | Worn bearings and gears due to lack of lubrication. | Check and replace bearing and gears as necessary. Adjust lubrications schedule to decrease time between lubrication. |
| Modify external wash down method to reduce water entering into gear case. | | |
| Misalignment of drive and piping. (Excessive overhung load or misaligned couplings.) | Check alignment of piping and drive. Adjust as necessary. | |
| Any Other Issue | | Contact: Dixon Sanitary 800-789-1718 |

Repair Kits

| Part Number | Description | Material |
|---------------------------------------|------------------------------------|----------|
| Complete Replacement Seal Kits | | |
| RZL-115B-2V-KIT | Single Mech. Seal Repair Kit TC/TC | FKM |
| RZL-115B-2E-KIT | Single Mech. Seal Repair Kit TC/TC | EPDM |
| Repair kits include items 51, 52 & 53 | | |
| Pump Elastomers Only | | |
| RZL-115B-2V-EK | Single Mech. Seal EPDM Elastomers | FKM |
| RZL-115B-2E-EK | Single Mech. Seal FKM Elastomers | EPDM |
| Set of TC Seats | | |
| RZL-115B-TC-SET | TC Seal Ring | |
| Includes item 52 | | |

Bill of Materials

Gear Box Assembly (Basic)



Bill of Materials

Gear Box Assembly (Basic)

| Item | Part # | Description | Material | Quantity Per Pump |
|------|-----------------|--------------------------------------|-----------|-------------------|
| 1 | RZL-115B-GBSS | Gear Box | SUS304 | 1 |
| 2 | RZL-115B-GBSSB | Base, Gear Box | SUS304 | 1 |
| 3 | RZL-115B-BWB | Wrench Bolt, Base (M8x20L) | SUS304 | 4 |
| 4 | RZL-115B-GBCSS | Cover, Gear Box | SUS304 | 1 |
| 5 | RZL-115B-PLD | Plug, Level, Drain | | 3 |
| 6 | RZL-115B-GBWB | Wrench Bolt, Gear Box Cover (M6x45L) | S45C | 4 |
| 7 | RZL-115B-DSLEY | Key, Shaft (8x7x34) | S45C | 1 |
| 8 | RZL-115-DSHAFT | Shaft, Drive | SUS304 | 1 |
| 9 | RZL-115-ISHAFT | Shaft, Idle | SUS304 | 1 |
| 10 | RZL-115B-GKEY | Key, Gear (8x7x21) | S45C | 2 |
| 11 | RZL-115B-OSCB | Oil Seal, Cover (23x43x7t) | NBR | 1 |
| | RZL-115B-OSCV | Oil Seal, Cover (23x43x7t) | FKM | 1 |
| 12 | RZL-115B-TGWASH | Lock Washer | S45C | 2 |
| 12-1 | RZL-115B-TGNUT | Lock Nut | S45C | 2 |
| 13 | RZL-115B-RVLV | Breather, Gearbox | PE | 1 |
| 14 | RZL-115B-TGHELG | Hellical Gear | S45C | 2 |
| 15 | RZL-115B-GBDOW | Dowel, Gear Box (Φ6) | SUS304 | 2 |
| 16 | RZL-115B-GSPAC | Spacer, Gear (Φ35x5L) | S45C | 2 |
| 17 | RZL-115B-RBEAR | Bearing, Rear (#5205) | | 2 |
| 18 | RZL-115B-BSPAC | Spacer, Bearing | S45C | 2 |
| 19 | RZL-115B-IBOLT | I-bolt / M8 | SUS304 | 2 |
| 20 | RZL-115B-FBEAR | Bearing, Front (#5206) | | 2 |
| 21 | RZL-115B-OSGOV | O-ring, Oil seal gland (AN035) | FKM | 2 |
| 22 | RZL-115B-OSGB | Oil Seal, Gear Box (38x55x9t) | NBR | 2 |
| | RZL-115B-OSGV | Oil Seal, Gear Box (38x55x9t) | FKM | 2 |
| 23 | RZL-115B-OSGWB | Wrench Bolt, Oil Seal Gland (M6x12L) | SUS304 | 6 |
| 24 | RZL-115B-OSGLD | Gland, Oil Seal | SUS304 | 2 |
| 25 | RZL-115B-DSPIN | Pin, Double Seal | SUS304 | 2 |
| 26 | RZL-115B-GCGP | Gasket | Paper | 1 |
| 27 | RZL-115B-PLUG | Plug (M8) | PE | 8 |
| 28 | RZL-115B-VADAPT | Vertical adaptor | SUS304 | 4 |
| 29 | RZL-115B-LFP | Pad, Leg feet | SS+Rubber | 4 |
| 30 | RZL-115B-ERT | Rotor tool, Extraction | SUS304 | 1 |

Bill of Materials

Pump Assembly

| Item | Part # | Description | Material | Quantity Per Pump |
|------|----------------------------|----------------------------------|----------|-------------------|
| 1A | RZL-115-GBASS | Gear Box Ass'y - Stainless Steel | SUS304 | 1 |
| 31 | RZL-115-RCNPT ¹ | Rotor Case, 1½" NPT | SUS316L | 1 |
| 32 | RZL-115B-RCVR | Front Cover | SUS316L | 1 |
| 33 | RZL-115B-CNUT | Cap Nut | SUS304 | 4 |
| 34 | RZL-115B-FCORB | O-ring, Front Cover (AN251) | NBR | 1 |
| | RZL-115B-FCORE | O-ring, Front Cover (AN251) | EPDM | 1 |
| | RZL-115B-FCORV | O-ring, Front Cover (AN251) | FKM | 1 |
| 35 | RZL-115B-RB | Rotor Bolt | SUS316L | 2 |
| 36 | RZL-115B-RBW | Rotor Bolt & Spring Washer | SUS304 | 2 |
| 37 | RZL-115B-RB0RB | O-ring, Rotor Bolt (AN021) | NBR | 2 |
| | RZL-115B-RBORE | O-ring, Rotor Bolt (AN021) | EPDM | 2 |
| | RZL-115B-RBORV | O-ring, Rotor Bolt (AN021) | FKM | 2 |
| 39 | RZL-115B-RTSLP | Seal Pin, Rotor | SUS304 | 6 |
| 40 | RZL-115B-CSSLP | Seal Pin, Case | SUS304 | 4 |
| 41 | RZL-115B-RCDOW | Dowel, Rotor Case (Φ6) | SUS304 | 2 |
| 44 | RZL-105B-CSSB | Stud Bolt, Case (M8) | SUS304 | 4 |
| | RZL-115-CSSB | Stud Bolt, Case (M8) | SUS304 | 4 |
| 45 | RZL-115B-SHIM05 | Shim, 0.05mm | SUS304 | 2 |
| | RZL-115B-SHIM1 | Shim, 0.1mm | SUS304 | 2 |
| 46 | RZL-115B-SBHYN | Hex nut, Stud Bolt (M8) | SUS304 | 4 |
| 47 | RZL-115B-FSNIP | Nipple, Flush (PT ¼") | SUS304 | 2 |
| 51 | RZL-115B-RTORB | O-ring, Rotor (AN028) | NBR | 2 |
| | RZL-115B-RTORE | O-ring, Rotor (AN028) | EPDM | 2 |
| | RZL-115B-RTORV | O-ring, Rotor (AN028) | FKM | 2 |
| 53 | RZL-115B-RCORB | O-ring, Rotor Case (AN220) | NBR | 2 |
| | RZL-115B-RCORE | O-ring, Rotor Case (AN220) | EPDM | 2 |
| | RZL-115B-RCORV | O-ring, Rotor Case (AN220) | FKM | 2 |

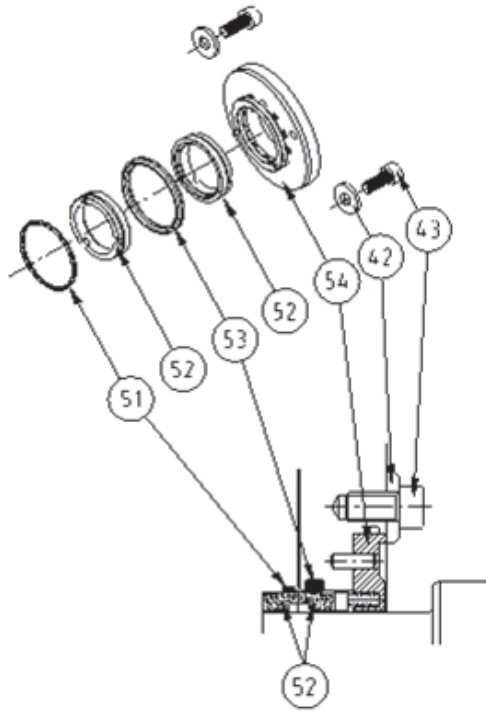
¹ All standard rotor cases do not have tap holes for flushing on jacketed options.

Rotor Set

| Item | Dixon Sanitary Part # | Description | Material | Quantity Per Pump |
|------|-----------------------|--------------------------|----------|-------------------|
| 38 | JRZL-115-BWA | Rotor Set (2), Bi-Wing | SUS316L | 2 |
| | JRZL-115-HELIA | Rotor Set (2), Heli-Lobe | SUS316L | 2 |

Bill of Materials

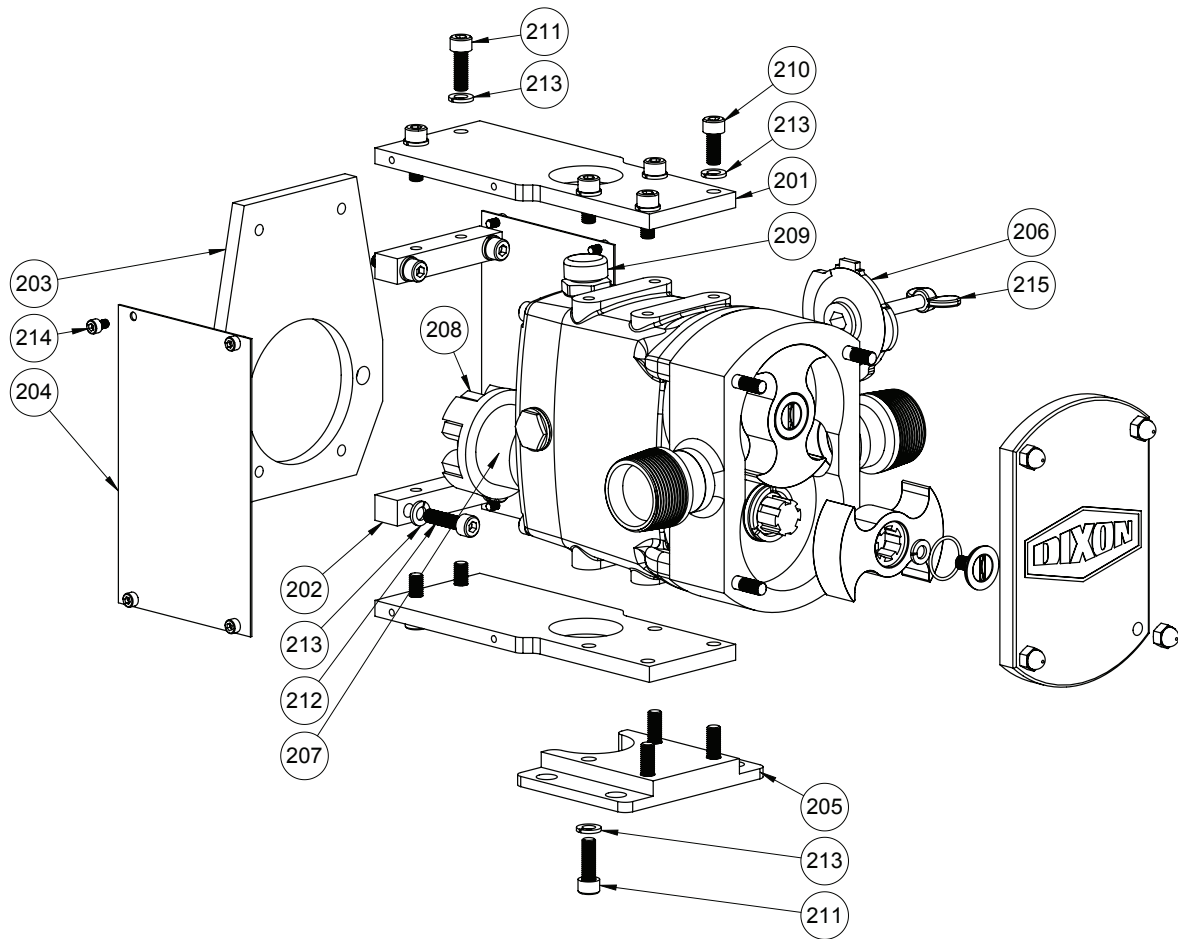
Single Mechanical Seal



| Item | Part # | Description | Material | Quantity Per Pump |
|------|-----------------|------------------------------------|----------|-------------------|
| 42 | RZL-115B-MSGFW | Flat Washer, M/Seal Gland (Φ6) | SUS304 | 4 |
| 43 | RZL-115B-MSGWB | Wrench Bolt, M/Seal Gland (M6x10L) | SUS304 | 4 |
| 51 | RZL-115B-RTORB | O-ring, Rotor (AN028) | NBR | 2 |
| | RZL-115B-RTORE | O-ring, Rotor (AN028) | EPDM | 2 |
| | RZL-115B-RTORV | O-ring, Rotor (AN028) | FKM | 2 |
| 52 | RZL-115B-TCSEAL | Seal Ring | TC | 4 |
| 53 | RZL-115B-RCORB | O-ring, Rotor Case (AN220) | NBR | 2 |
| | RZL-115B-RCORE | O-ring, Rotor Case (AN220) | EPDM | 2 |
| | RZL-115B-RCORV | O-ring, Rotor Case (AN220) | FKM | 2 |
| 54 | RZL-115B-CSSB | Single Seal Body, Case | SUS304 | 2 |

Bill of Materials

Hydraulic Motor Adapter Assembly



| Item | Part Number | Description | Material | Quantity Per Pump |
|------|-----------------|-------------------------------|----------|-------------------|
| 201 | RZL-115B-HMA01 | 115 HMA Top And Bottom Plate | 304SS | 2 |
| 202 | RZL-115B-HMA02 | 115 HMA Mounting Bar | 304SS | 2 |
| 203 | RZL-115B-HMA03 | 115 HMA Motor Plate SAE A | 304SS | 1 |
| | RZL-115B-HMA03B | 115 HMA Motor Plate SAE B | 304SS | 1 |
| 204 | RZL-115B-HMA04 | 115 HMA Guard Plate | 304SS | 2 |
| 205 | RZL-115B-HMA06 | 115 HMA Foot Plate | 304SS | 1 |
| 206 | RZL-TOOL-F | Frac Rotor Tool | 304 | 1 |
| 207 | RKTRH-C1 | Rotex Coupling Hub 22mm | Al-D | 1 |
| 208 | RKTRI-C2 | Flexible Coupling Insert | PUR | 1 |
| 209 | RZL-GSBP-050 | 1/2" BSP Steel Breather | GS | 1 |
| 210 | SHCSM820 | M8-1.25 X 20 Socket Cap Screw | A2-70 | 4 |
| 211 | SHCSM825 | M8-1.25 X 25 Socket Cap Screw | A2-70 | 8 |
| 212 | SHCSM830 | M8-1.25 X 30 Socket Cap Screw | A2-70 | 4 |
| 213 | M8LW | M8 Lock Washer | A2 | 16 |
| 214 | SHCSM510 | M5-0.8 X 10 Socket Cap Screw | A2 | 8 |
| 215 | M8WS | M8-1.25 X 25 Wing Screw | A2 | 1 |

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