BLACKMER

MECHANICAL SEAL PARTS AND INSTRUCTIONS
PUMP MODELS: MLX4, MLX4-CS

MAINTENANCE

MAINTENANCE AND TROUBLE SHOOTING MUST BE DONE BY AN INDIVIDUAL EXPERIENCED WITH PUMP MAINTENANCE AND THE TYPE OF SYSTEM INVOLVED.

NOTE: The following instructions include only those steps necessary to remove and replace the mechanical seal components. For more detailed and complete instructions on the disassembly and assembly of the MLX4, MLX4-CS pumps refer to Instructions and Parts List No. 106-A00.

DISASSEMBLY

Before work is started on the pump, be sure the pressure is relieved and the liquid is drained.

Remove the bearing cover capscrews. Slide the bearing cover from the shaft, being careful not to cut the inserted grease seal on the shaft keyway. If working on the outboard end, the shaft protector will come off with the bearing cover as a unit. Remove the bearing preload wave spring.

Remove the bearing locknut and lockwasher by bending up the engaged lockwasher tang and rotating the nut counterclockwise.

Slide the bearing spacer from the shaft. Make sure the shaft is free of burrs that may cut or nick the mechanical seal O-Ring when the hub assembly is removed.

Remove the hub capscrews. To disengage the hub assembly from the head, two (2) jack screw holes are provided in the rim of the hub. The bearing, mechanical seal stationary seat and its O-Ring will slide off the shaft along with the hub.

The rotating half of the mechanical seal, including the seal jacket, rotating face and rotating O-Ring, can then be removed from the shaft as a complete unit. To facilitate removal, lightly grease the shaft. Insert wire hooks into the holes and pull the rotating unit away from the head and off the shaft.

If the mechanical seal has been leaking, it is recommended that a complete, new seal assembly be installed.

ASSEMBLY

Before reassembling the hub, clean each part thoroughly. Wash out the seal recess and the bearing housing.

If any of the O-Rings have been removed or "disturbed" during service, it is recommended they be replaced with new. Before installing the O-Rings, inspect the O-Ring grooves and remove any burrs or dirt to ensure proper sealing. NOTE: PTFE O-Rings can be heated in hot water to facilitate installation.

To install the mechanical seal components:

NOTE: It is important that the polished seal faces of both the rotating and stationary units be kept spotlessly clean during installation. When necessary, a clean tissue and alcohol should be used to clean the seal faces. Apply a light oil or suitable lubricant on bronze seal faces only.

1. Make sure the shaft is clean and free of burrs which might cut or nick the O-Rings. A very thin coating of light grease on the shaft and on the O-Ring chamfers in the heads will help the parts slide into place. (Use a grease which is compatible with the product being pumped.)
2. Carefully slide the rotating half of the seal down the shaft, and engage the drive tangs of the seal jacket with the notches in the rotor. Make sure the polished face of the seal is outward and free of all traces of grease or dirt.
3. Put a light coating of grease in the seal recess of the hub.
4. Insert the stationary seat of the seal into the mechanical seal cavity of the hub and engage the locating pin of the seat with the slot in the hub. The polished seal face must be outward and free of all traces of grease or dirt.
5. Before installing the hub assembly, be sure to grease the head chamfers.
6. Slide the hub onto the shaft with the V-notch down. Extreme care should be used to avoid damage or contamination of the seal faces.
7. Install and evenly tighten the two counterbored (shorter) hub capscrews.
8. Insert the greased bearing into the bearing housing in the hub. Tap the outer race of the bearing to ensure that it is properly seated in the hub.
9. Slide the bearing spacer onto the shaft.

LOCKNUT ADJUSTMENT

The purpose of the locknut adjustment is to center and maintain the pump rotor between the discs. It is very important that the bearing locknuts be installed properly. Overtightening locknuts will cause bearing failure and/or a broken lockwasher inner tang "A" (see Figure 1). Loose locknuts will allow the rotor to shift, causing excessive wear on the discs.

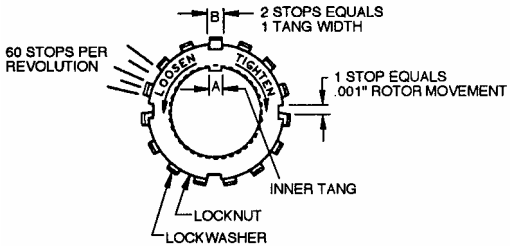


Figure 1 – Locknut Assembly

1. Install the lockwashers with the tangs outward. Engage the inner tang with the drive slot in the shaft threads. Install the locknuts with the tapered face inward.
2. Tap the outer edge of the bearings on both ends. Using a spanner wrench, tighten both locknuts to be sure the bearings are bottomed in the hub recess. CAUTION: Overtightening will bend or shear the inner tang and damage the bearing.
3. Loosen both locknuts one complete turn.
4. Tighten one locknut until a slight rotor drag is felt when turning the shaft by hand.
5. Back off the nut the width of one lockwasher tang "B" (see Figure 1), or two stops. Secure the locknut by bending the closest aligned lockwasher tang into the locknut slot. Make sure the pump turns freely when rotated by hand.
6. Tighten the other locknut by hand until it is snug against the bearing, and the bearing is firmly seated in the hub recess. With a spanner wrench, tighten the nut the width of one lockwasher tang "B" or two stops. Secure the locknut by bending the aligned lockwasher tang into the groove in the locknut. The pump should continue to turn as freely as before adjustment.
7. A check of adjustment may be made by grasping the nut and washer with finger pressure and rotating back and forth. If this cannot be done, one or both nuts are too tight, and the nuts should be alternately loosened one stop or 0.001" (0.025mm) at a time until the washer can be moved. Start with the last adjusted nut.

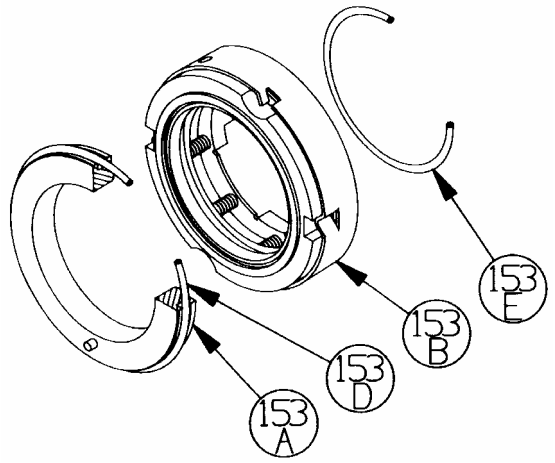
GREASE SEAL

If the grease seal has been removed from the bearing cover, it must be replaced prior to attaching the cover to the pump. Apply a small amount of grease to the outside diameter of the grease seal, and push it into the bearing cover cavity so that the lip of the seal will face inward (towards the pump) when the cover is attached.

BEARING COVER

Place the bearing preload wave spring against the outer bearing race. Install the bearing cover O-Ring into the groove in the bearing cover, and slide the bearing cover onto the shaft with the V-notch down. Install and tighten all bearing cover capscrews.

CAUTION: The pump must not be operated without the bearing covers bolted into place.



MLX4 MECHANICAL SEAL - STANDARD

Ref. No.	Part Name	Parts Per Pump	Part No.
153	Mechanical Seal Assembly	2	337007
153A	Stationary Seat (Hardened Steel)	2	336992
153B	Rotating Assembly with Carbon Seal Face	2	337000
153D	O-Ring - Stationary (Buna-N)	2	701934
153E	O-Ring - Rotating (Buna-N)	2	701933

MLX4 MECHANICAL SEAL - OPTIONAL

Ref. No.	Part Name	Parts Per Pump	Part No.
153	Mechanical Seal Assembly	2	337008
153A	Stationary Seat (Hardened steel)	2	336992
153B	Rotating Assembly with Carbon Seal Face	2	337000
153D	O-Ring - Stationary (FKM)	2	701921
153E	O-Ring - Rotating (FKM)	2	701967

MLX4 MECHANICAL SEAL - OPTIONAL

Ref. No.	Part Name	Parts Per Pump	Part No.
153	Mechanical Seal Assembly	2	337009
153A	Stationary Seat (Hardened Steel)	2	336992
153B	Rotating Assembly with Carbon Seal Face	2	337000
153D	O-Ring - Stationary (PTFE)	2	702056
153E	O-Ring - Rotating (PTFE)	2	702055

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Ref. No.	Part Name	Parts Per Pump	Part No.
153	Mechanical Seal Assembly	2	337010
153A	Stationary Seat (Hardened Steel)	2	336992
153B	Rotating Assembly with Bronze Seal Face	2	337001
153D	O-Ring - Stationary (Buna-N)	2	701934
153E	O-Ring - Rotating (Buna-N)	2	701933

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153B	Rotating Assembly with Bronze Seal Face	2	337001
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153B	Rotating Assembly with Bronze Seal Face	2	337001
153D	O-Ring - Stationary (PTFE)	2	702056
153E	O-Ring - Rotating (PTFE)	2	702055

MLX4 MECHANICAL SEAL - OPTIONAL

Ref. No.	Part Name	Parts Per Pump	Part No.
153	Mechanical Seal Assembly	2	337013
153A	Stationary Seat (Ceramic)	2	336995
153B	Rotating Assembly with Ceramic Seal Face	2	337002
153D	O-Ring - Stationary (Buna-N)	2	701934
153E	O-Ring - Rotating (Buna-N)	2	701933

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Ref. No.	Part Name	Parts Per Pump	Part No.
153	Mechanical Seal Assembly	2	337014
153A	Stationary Seat (Ceramic)	2	336995
153B	Rotating Assembly with Ceramic Seal Face	2	337002
153D	O-Ring - Stationary (FKM)	2	701921
153E	O-Ring- Rotating (FKM)	2	701967

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Ref. No.	Part Name	Parts Per Pump	Part No.
153	Mechanical Seal Assembly	2	337015
153A	Stationary Seat (Ceramic)	2	336995
153B	Rotating Assembly with Ceramic Seal Face	2	337002
153D	O-Ring – Stationary (PTFE)	2	702056
153E	O-Ring – Rotating (PTFE)	2	702055

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Ref. No.	Part Name	Parts Per Pump	Part No.
153	Mechanical Seal Assembly	2	337016
153A	Stationary Seat (Ceramic)	2	336995
153B	Rotating Assembly with Carbon Seal Face	2	337000
153D	O-Ring – Stationary (Buna-N)	2	701934
153E	O-Ring – Rotating (Buna-N)	3	701933

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