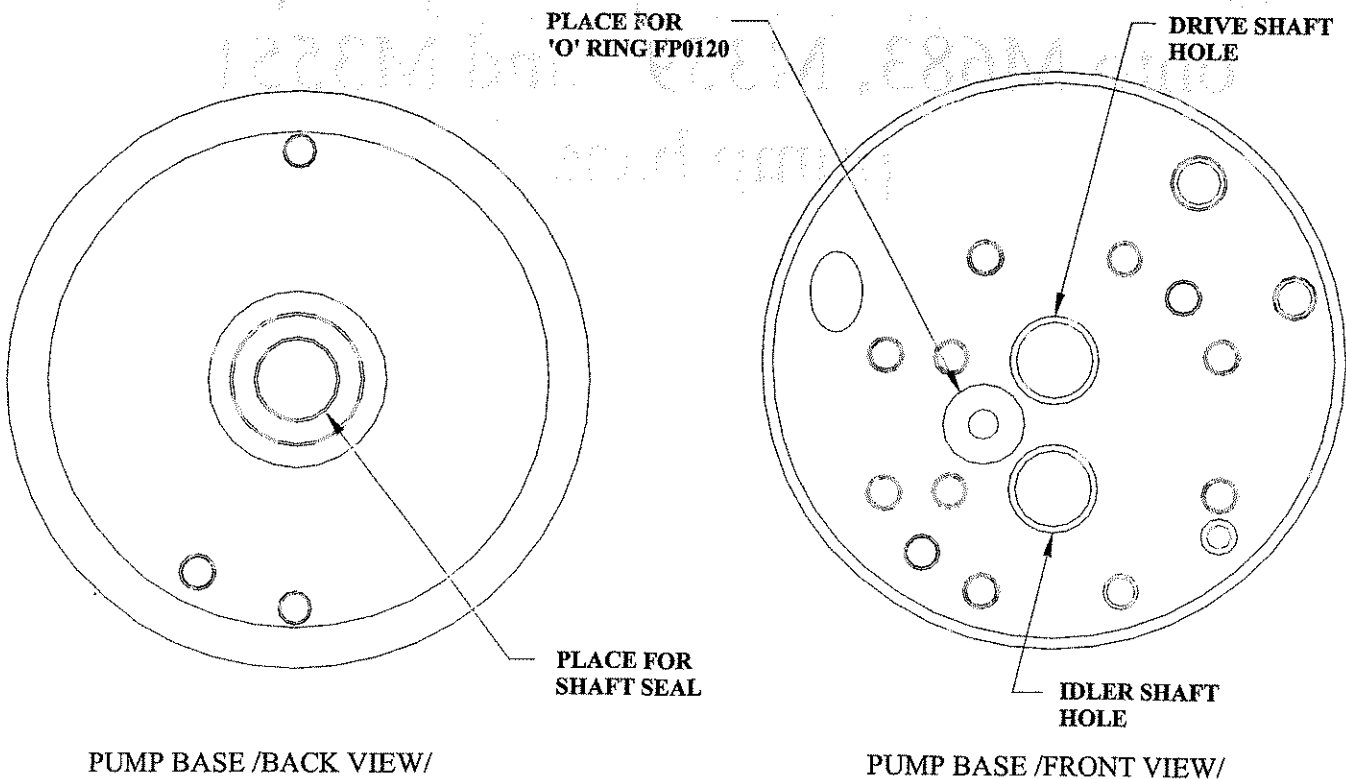


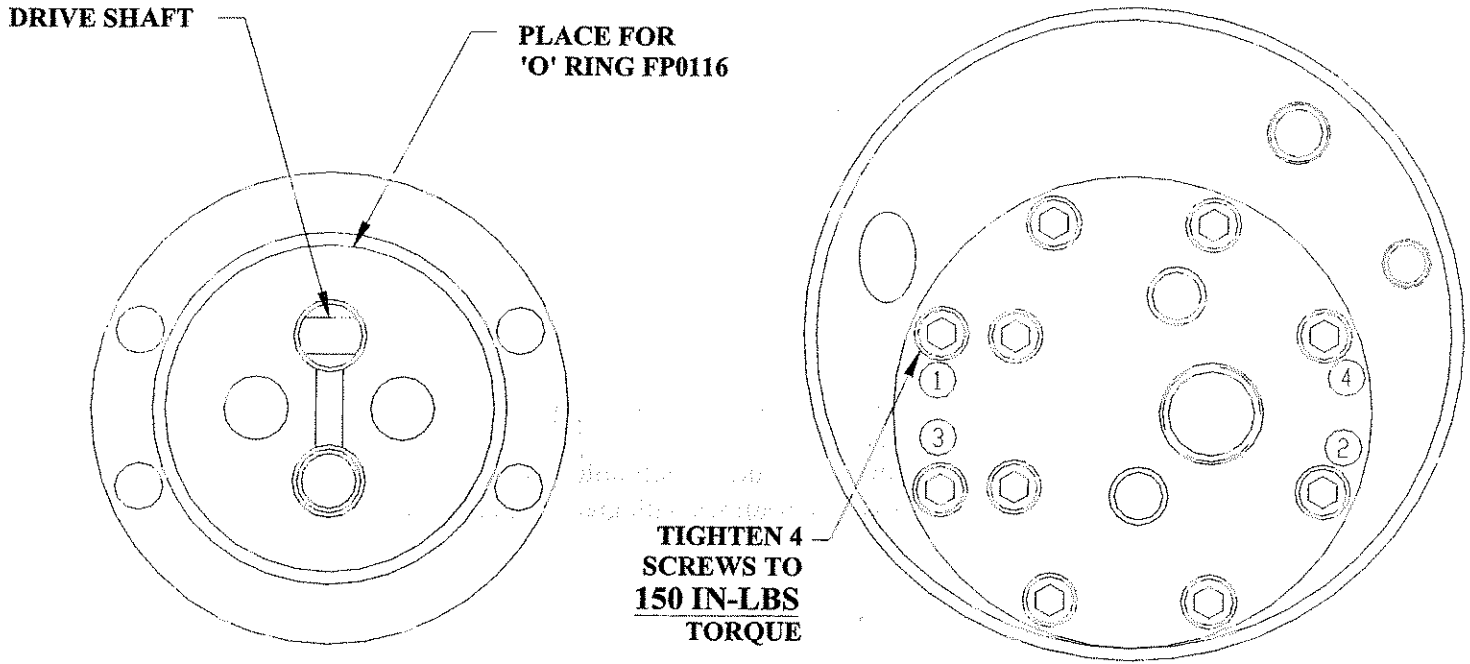
# Installation of the modular pump kit onto M683, M3593 and M3551 pump base

Installation of the modular pump kit FP12171-250-SA onto M683 pump base

- 1) Remove the old pump and pump parts from the pump base. Take the shaft seal out from pump base. Remove all needle bearing rollers from the idler shaft hole (be sure that there are no needle bearing rollers left in the hole - because the pump can fail) (see detail 1). Check that all needle bearing rollers are present in the drive shaft hole (see detail 1).
- 2) Assembly of the modular pump kit FP12171-250-SA:
  - a) place 'O'-ring FP0120 on the pump base (see detail 1),
  - b) place 'O' ring FP0116 in the pump groove (see detail 2),
  - c) insert the drive shaft of pump through pump base and orientate pump in correct orientation (see detail 3),
  - d) insert 4 screws FP7818 through pump and torque to approximately 150 in-lbs (see detail 3)
  - e) put shaft seal on drive shaft with lip facing towards pump base. Press seal into pump base until seal is against the bottom of the seal cavity. The seal should be approximately 0.030" below the top of the seal cavity.



DETAIL 1



MODULAR PUMP /BACK VIEW/

ASSEMBLY OF MODULAR PUMP ON PUMP BASE

**DETAIL 2**

- f) install the suction tube in pump (apply sealant on the thread of tube (do not put sealant on the couple threads on the end of tube) and do not use teflon tape) and put the suction screen on suction tube.

*Note:* on the manifolds with the old acorn nuts on the cross-over's, the return tube is located in the center of the manifold and suction tube may interfere with that return tube, when assembling the unit. In order to avoid that interference turn the return tube towards the transfer tube location as far as possible and the new suction tube in the other direction as far as possible.

**DETAIL 3**

Installation of the modular pump kit FP12171-250-SA onto M3551 & M3593

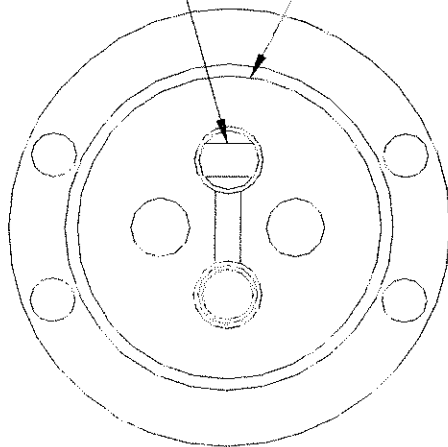
**pump base**

For M3593 and M3551 power units, the following is the recommended procedure for replacing an M-Series pump with a modular pump.

1. Drain oil from the reservoir. Do not reuse this oil.
2. It is generally recommended to replace the pump shaft seal when the pump is being replaced. To remove the seal, the motor needs to be removed.
3. Remove the reservoir from the power unit by removing the (6) collar screws (steel reservoir).
4. Note the orientation of the suction screen and tube assembly on the old pump. Remove pump.
5. Remove the 10 pump screws in the old pump. Remove the pump and the 2 dowel pins from the pump base.
6. Remove the existing seal.
7. There are two shaft holes in the base, one goes all the way through (drive shaft) and one does not (idler shaft). In the past, two bearing styles have been used. If the needles are "caged" do nothing. If the needles are loose:
  - a. Remove all loose needle bearings from the idler shaft hole and throw them away, as they are not needed with the new pump.
  - b. You will need to reinstall the needles in the drive shaft hole. There are twenty-four (24) needles in each bearing. Coat the needle bearings with grease and place them back in the bearing housings in the drive shaft hole.

**DRIVE SHAFT**

**PLACE FOR  
'O' RING FP0116**

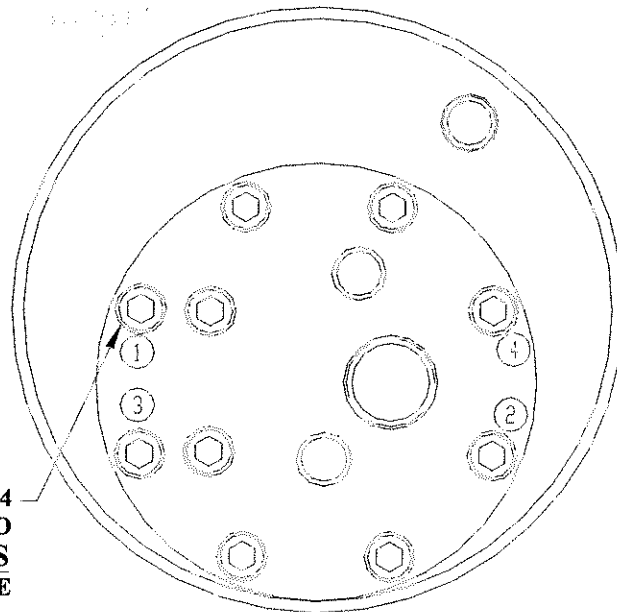


**MODULAR PUMP /BACK VIEW/**

**DETAIL 2**

*Handwritten notes:*  
10 screws  
2 dowel pins

**TIGHTEN 4  
SCREWS TO  
150 IN-LBS  
TORQUE**

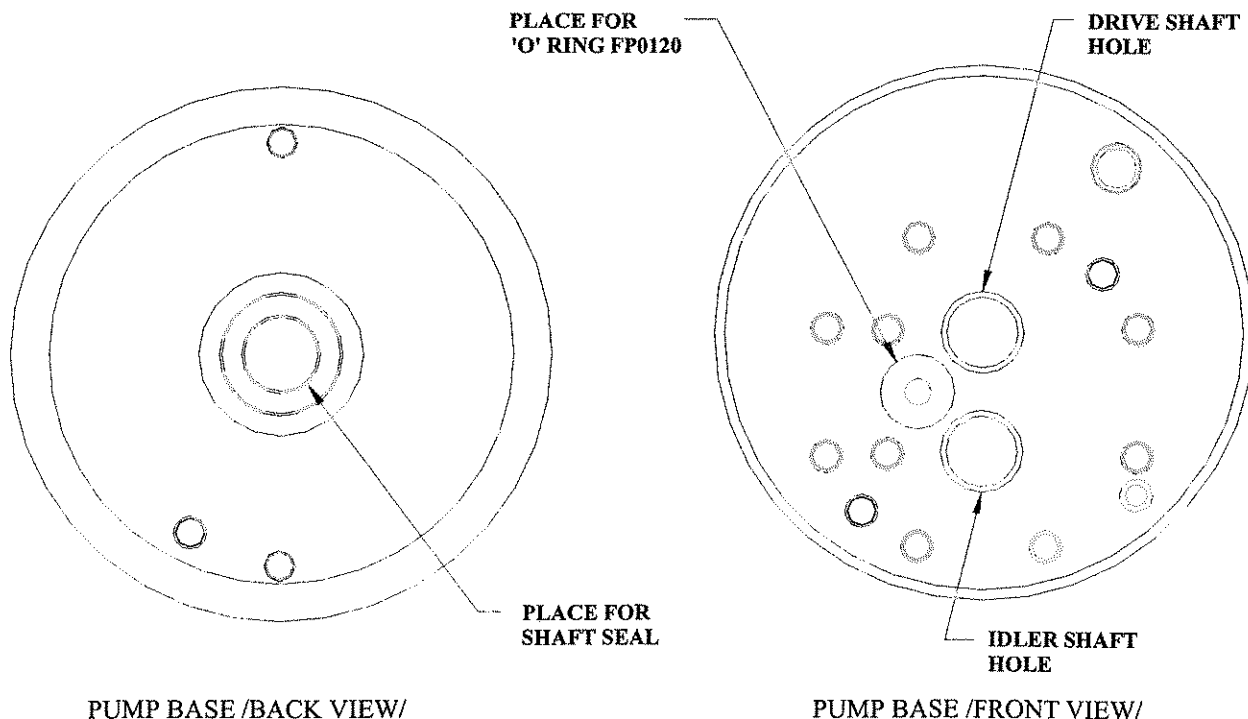


**ASSEMBLY OF MODULAR  
PUMP ON PUMP BASE**

**DETAIL 3**

8. Wipe surface of the base clean, removing old oil, dirt, etc.

9. Replace FP0120 O-ring provided in pump kit (See Detail 1). Place O-ring FP0116 into the groove of the pump (see detail 2).
10. Carefully slide the pump into place.
11. Align (4) through holes with (4) empty screw holes in the pump. (See Detail 3)
12. Drop the (4) screws provided in the pump kit into the holes. The screws should be started by hand -- no air tools. Torque (4) provided screws to approximately 150 in-lbs. Do not over tighten! Do not tighten any other screws in the pump other than the (4) provided loose in the kit.
13. To install seal, grease the end of the pump shaft and place the seal on the shaft with the lip facing towards the pump base. Press seal into pump base until the seal is against the bottom of the seal cavity. The seal should be approximately 0.030" below the top of the seal cavity. Inspect the seal and verify the lip has not been caught by the pump shaft and reversed.
14. Remove the suction tube and screen assembly from the old pump's suction plate.
15. Apply a small amount of sealant on a couple threads half way around the suction tube. Sealant should be applied a couple of threads in from the end of tube, do not put sealant on the end of tube. Do not use teflon tape.
16. Orientate the suction and return tubes to the bottom of the reservoir (or as noted in step 4).
17. Grease the reservoir O-ring and slide the pump assembly back into the reservoir collar.  
Caution; A pinched or deformed seal may result in leaking.



**DETAIL 1**

Modular Pump Kit FP12171-250-SA			
Item	Part #	Description	Quantity
1	FP12171-250	Pump, Modular, 03 gear	1
2	FP7818	Screw, SHCS, 1/4"-20 x 3" long	4
3	FP13092	Tube, Suction	1
4	FP0120	'O'-ring, 1/16" x 1/2" x 5/8"	1
5	FP0116	'O'-ring, 1/16" x 2-1/4" x 2-3/8"	1
6	FP2159	Seal, pump shaft	1
7	FP2352	'O'-ring, 1/8" x 3-5/8" x 3-7/8"	1
8	FP1134	Suction Strainer	1