

Diaphragm and Valve Replacement Procedure For Thermo Scientific # 117096-00

SHIMS UNDER DIAPHRAGM ARE REQUIRED

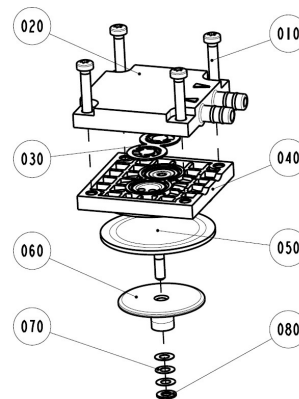
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Tools and Materials required:

- Thermo Scientific Pump Rebuild Kit #117877-00
- Torx head screwdriver, size T10
- Marking pencil or marker

Seq.	Description
010	Self tap screw
020	Headplate
030	Valveplate
040	Intermediate Plate
050	Diaphragm
060	Connecting rod disc
070	Shim ring 0.1mm thick
080	Shim ring 0.5mm thick

Exploded View of Pump Head:



Disassembly:

Parts removed must be replaced exactly as found. If repairing multiple pumps, take care not to mix parts.

1. Disconnect the pump from electrical power. Make a sketch of the position of any tubes and fittings for ease of re-assembly later.
2. Mark the position of the pump headplate (020), intermediate plate (040) and compressor housing relative to each other by drawing a line on the edges with a pencil or marker to insure proper re-assembly.
3. Remove the four screws (010) with the T10 Torx head screwdriver and remove the headplate (020) and intermediate plate (040). Note the positioning of the valveplate (030) relative to the valve ports on the headplate (020) and intermediate plate (040).
4. Check that all parts are free from dirt and clean as necessary. **DO NOT** scratch the parts.
5. Removal of the old diaphragm (050): Hold the pump with one hand, so that the diaphragm is pointing downwards. Do not scratch the head components. While unscrewing the diaphragm with one hand, use your other hand to secure the shim ring(s) onto the diaphragm stud. High initial force may be required to break the diaphragm loose. **DO NOT use tools!** Note: Take care not to lose any shim ring(s) (070, 080), as the exact number of shim ring(s) must be used during re-assembly. The quantity and thickness of shim ring(s) will vary from pump to pump.
6. Remove connecting rod disc (060) and shim ring(s) (070, 080) from the diaphragm stud.
7. Repeat steps 2-6 for the opposite pump head.

Assembly with new diaphragm and valveplate:

1. Move connecting rod to the upper point.
2. Reference the shim quantity label on the pump to determine the number of shims required to rebuild the pump. The quantity may vary from pump to pump. Place the connecting rod disc (060) and the shim ring(s) (070, 080) required per the label onto the threaded stud of the new diaphragm. Carefully screw the new diaphragm (050) into the connecting rod. It is helpful to hold the connecting rod at a slight angle until the threads are started. Spin the diaphragm on until it is snug. Lift and grip the edges of the diaphragm at 7 and 2 o'clock and tighten firmly using both hands. DO NOT use tools! (TIP: If the pump is loose and not mounted, position and hold the pump with the motor shaft vertical when starting the threaded diaphragm stud into the connecting rod. This helps to prevent the small parts from falling off the stud.)
3. Place the clean intermediate plate (040) onto the compressor housing using the reference mark made earlier to insure the correct orientation. Then place the new valveplate (030) on top of the intermediate plate.
4. Place the clean headplate (020) on top of the intermediate plate (040) using the reference mark made earlier to insure the correct orientation. Tighten the four head screws (010) snugly in a diagonal pattern and then tighten to a maximum torque of 6-6.5 inch-lbs.
5. Repeat steps 1-4 for the opposite pump head.