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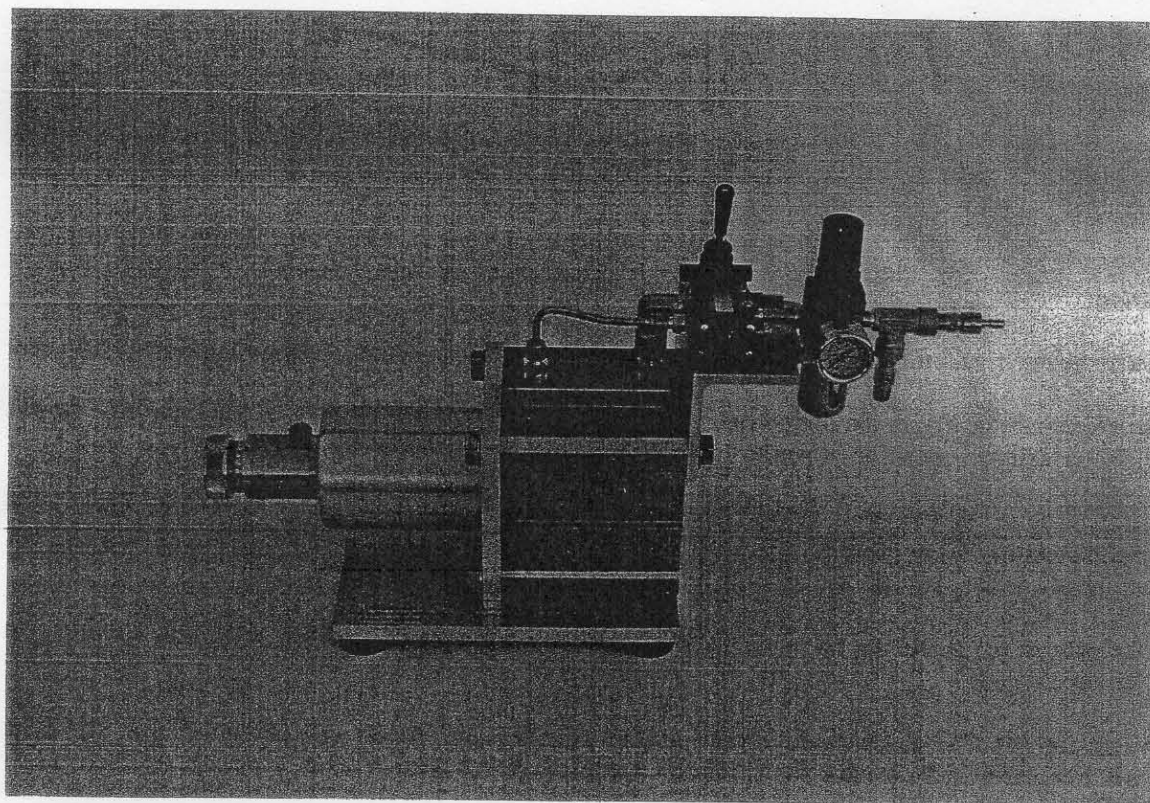
2450 Don Reid Drive, Ottawa, Canada, K1H 8P5, e-mail: avestin@avestin.com, website: www.avestin.com

Tel: -613-736-0019, Fax: -613-736-8086, US & CDN customers call toll free: 1-888-AVESTIN (283-7846)

No voice mail: a qualified person will answer your call in the language of your choice: English, Deutsch, Français

EmulsiFlex®- B3

Operating Manual



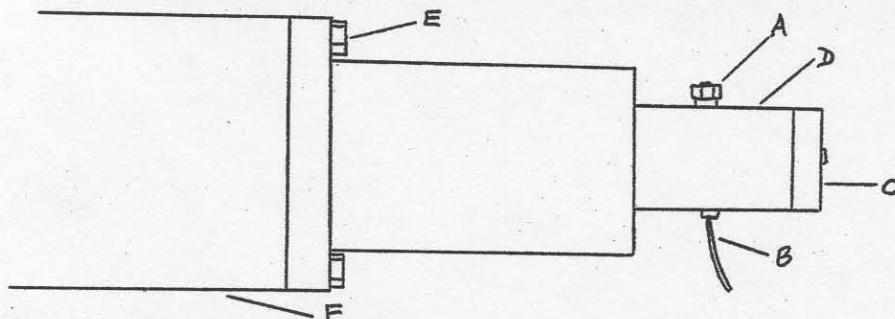
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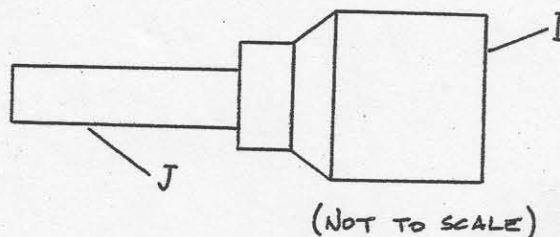
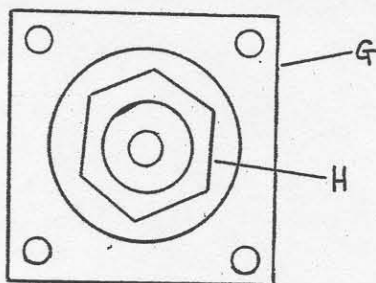
EmulsiFlex-B3 Pump Seal Replacement

May, 1999

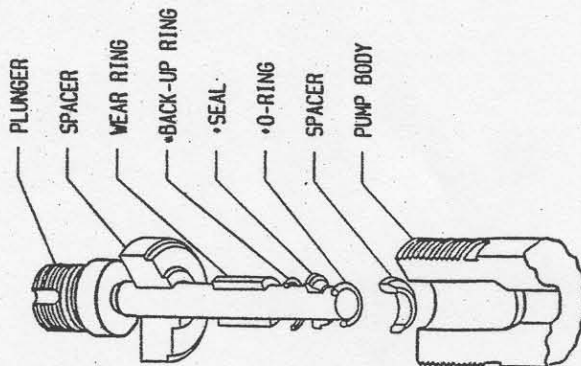
- 1) Remove high pressure plug (A), exit tube assembly (B) and unscrew homogenizing end cap (C). A short stem with an O-ring will come out of the barrel (D); this is normal.
- 2) Remove the four (4) bolts (E) and set aside. The whole pump assembly can now be eased off of the air cylinder (F). Make certain that this assembly is pulled *straight* as it is riding on the pump plunger contained within.



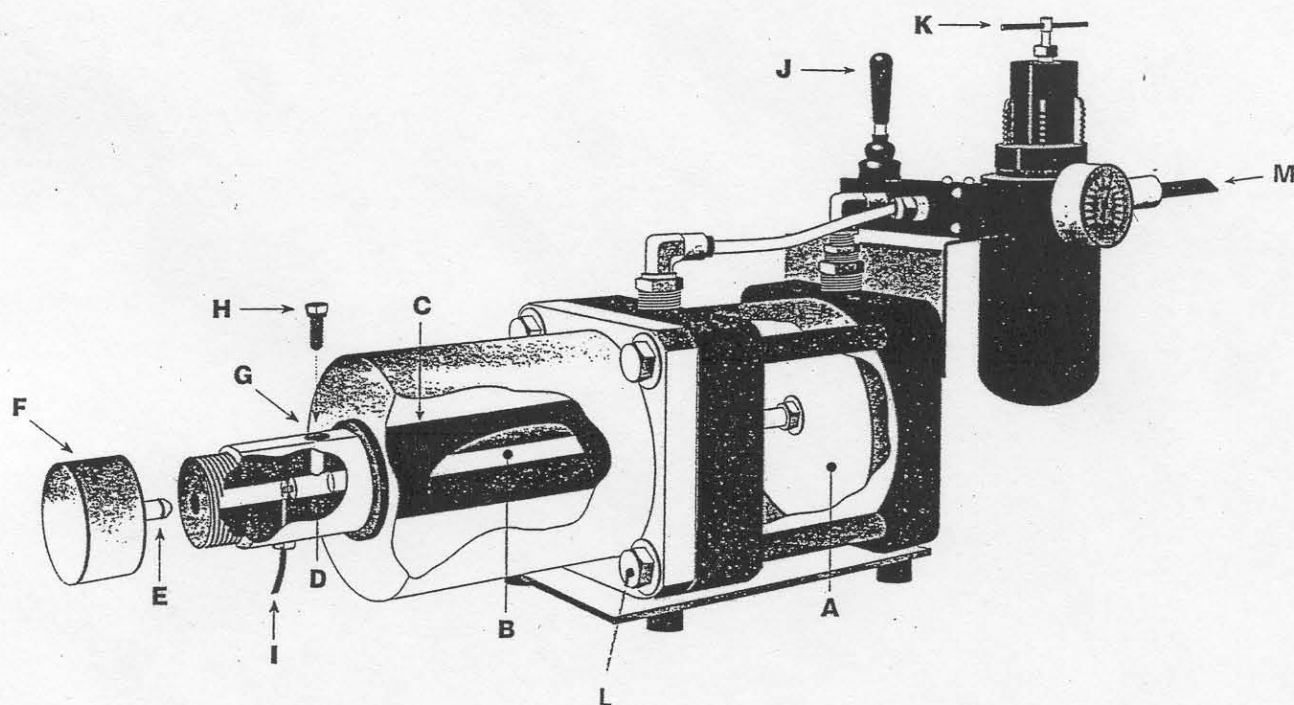
- 3) Position the pump assembly in a vice so that the wide aluminium flange (G) is facing up, giving access to the large, 2" nut (H) inside the aluminium housing.
- 4) A large, 2" socket (I) with a 4" extension (J) is required to access the seal parts. Use this tool to unscrew the first large nut and remove. The disk-shaped, steel, spacer can now be removed by hand.



- 5) The seal parts are now exposed and can be eased out of place. Please note the order of the parts on the drawing below. Order and orientation are important for correct operation.



EmulsiFlex™ - B3



Introduction:

1-Familiarize yourself with the functions of the EmulsiFlex B3. Remove the plug (H) using the provided wrench.

2-Connect the connector (M) to the compressed air or gas source and set the pressure to approximately 50 PSI with the regulator (K). Maximum allowable pressure: 150PSI.

Note: Pressures up to 150PSI (10.3bar=1030kPa) can be set at the regulator, which corresponds to $150 \times 200 = 30000$ PSI hydraulic pressure. If the pressure prior to the regulator exceeds 160 PSI, the safety valve will release with a rather loud noise. If this occurs, reduce the incoming pressure to under 160 PSI.

3-Move the plunger (B) in and out by setting the switch (J) in the Suck/Pump position. Watch the movement of the plunger through the opening (G).

4-Remove set cap (F). The standard needle valve stem is installed. Valve stems with different shapes are available. Put the set cap back into position. Be careful not to damage the O-ring (E).

Sample Processing:

1-Set the pressure at the instruments regulator (K). The air cylinder (A) intensifies the hydraulic pressure by a factor of 200. The maximum allowable homogenizing pressure is 30000PSI, which translates to a maximum incoming pressure of 150PSI.

Note: Do not run samples at maximum pressure. A working pressure of 20,000PSI corresponding to 100PSI at the regulator should be enough for virtually every application. Try to determine the optimum pressure for your product.

2-Open the plug (H) using the wrench provided. Set the switch (J) in the Suck position. The plunger (B) is now pulled back and the sample cylinder (D) can be filled through the opening (G).

3-Close the homogenizing valve gently by turning the set cap (F) clockwise. Do not over-tighten.

4-Introduce your sample into the sample cylinder using the syringe and needle. Exactly 3.5 ml can be introduced into the sample cylinder. If this quantity can not be reached, either the sample cylinder contains drops from the previous sample, or the sample has not been introduced properly. The sample should be introduced deep inside the cylinder by means of the needle to make sure the air inside can escape through the hole (G).

Note: Scratching the sample cylinder and/or plug seat could lead to leakage. Be careful while using the needle to introduce the sample into the cylinder.

5-Close plug (H) tight using the wrench.

6-Place the discharge tubing (I) in your collection tube. Use a long sample tube for discharging. This ensures that all of the sample in your collection tube will be sucked back into the sample cylinder if several cycles are necessary.

7-Set the switch (J) in the Pump position. If the plug (H) and the homogenizing valve are properly closed, nothing should flow and the sample is now under high pressure.

8-Open the gap of the homogenizing valve slightly by turning the set cap (F) counter clock-wise. A turn as little as 10 degrees could be sufficient. The sample will be pushed through the homogenizing valve at 200 times the homogenizing pressure set at the regulator. Please note that for optimal homogenization, the stream of the emulsion through the valve must be very slow and continuous. Open the gap only enough for the liquid to escape through the valve under high pressure. The discharge of 3.5 ml should take 1-2 minutes.

9-To repeat the cycle, close the set cap (F), set the switch to the Suck position and then open the valve widely by turning the set cap several revolutions. The sample will be sucked back into the sample cylinder. Now close the homogenizing valve and repeat steps 7 and 8.

Note: During homogenization, hydraulic pressure is converted mostly into heat which will increase sample temperature, especially during the first cycle. If necessary, cool the sample between cycles. Equipment for larger quantities come equipped with stainless steel heat exchanger to control product temperature.

Cleaning:

The sample cylinder (D) can be cleaned by removing the plug (H), the discharge tubing (I) and the valve stem, and then flush cleaning agent through the opening (G). **DO NOT** use the following organic solvents to clean the instrument: chloroform, ethyl/diethyl ether, methanol, phenol, and petroleum based compounds.

If additional cleaning is necessary, set the switch (J) to the Suck position, remove the four bolts (L) connecting the aluminum distance piece (C) to the intensifier (A). Now pull the distance piece straight back. Be careful not to bend the plunger (B), which sits tightly in the seal system.

Now the sample cylinder and the seal system can be cleaned easily with cleaning agents, or distilled water. The entire distance piece can also be placed in an autoclave for sterilizing.

Compressed air applied through the blow-gun can be used for quick drying of the sample cylinder.

Caution: EmulsiFlex instruments are manufactured for safe operation. Incorrect operation may lead to the discharge of fluids under pressure. Users must wear eye protection whenever the equipment is used.

Requirement: Compressed air or gas. Maximum pressure: 150 PSI. Required compressed air 0.05ft³ (4 litres) per stroke. This is extremely low compared to other high pressure homogenizers.

Dimensions (HxWxD): 12"x6"x24" (300x150x600mm);

Net weight: 30 lbs (14kg)