



Installation, Operation, Maintenance, Disassembly and Assembly Instructions for A1804 & A1805 Equa-Flo Manifolds

July 2005

Form FVC 055 - Rev 05

KEEP THIS DOCUMENT WITH THE PRODUCT UNTIL IT REACHES THE END USER.

WARNING

Before installation or removal of the Equa-Flo Manifold, the system must be purged completely of all product. Use proper safety equipment at all times. An abundant supply of clean water must be readily available and easily accessible as a means of providing IMMEDIATE First Aid treatment for exposure to ANHYDROUS AMMONIA. **To insure long term safe operation, the manufacturer recommends that under normal service conditions this product should be inspected at least once every five (5) years and be repaired or replaced as required.**

CAUTION: Contact with or inhalation of Liquid Anhydrous Ammonia or its vapors can cause serious injury or death. Dispersement must be in accordance with local regulations. For the proper handling and storage of Anhydrous Ammonia refer to ANSI Standard K61.1.

TOOLS REQUIRED: Safety Equipment (i.e. gloves, goggles, and clothing), 7/16" Wrench, 3/4" Wrench, 5/16" Allen Wrench, 3/4"-10 x 3" Bolt (included)

Installation and Operating Instructions

REFER TO FIGURE 1 FOR THE FOLLOWING STEPS:

Installation Instructions

- Step 1:** Install the Equa-Flo Manifold at the rear of the tool bar using two 1/2"-13 mounting bolts (not included) on any structural member. The Manifold should be plumbed as level to the ground as possible.
- Step 2:** Each manifold is equipped with either 16 or 21 ports (Model Numbers 1804-1000 & 1805-1000, respectively). Depending on the number of knives on the tool bar, plug the unused ports as symmetrically as possible to obtain the most even distribution of anhydrous ammonia. All outlet distribution hoses should be the same length within six inches. Use only full port hose barbs.
- Step 3:** Install the inlet hose in a **gentle sweeping arc** into a 1" NPT Swivel Fitting (not included). Do not use a 45° or 90° elbow to attach the hose to the manifold. **Avoid excessive use of thread pipe sealants which could result in an obstruction in the line. Never remove the 6" inlet nipple, as this helps provide a uniform liquid/vapor mixture into the dividing chamber.**
- Step 4:** NOTE: We **strongly** recommend that an **inline strainer with a 40 mesh screen and a magnet** be installed in the tool bar piping somewhere between the safety disconnect coupling and the meter that is measuring the flow of anhydrous ammonia. Rust or bits of tape may obstruct the precision distribution ports and greatly affect the knife-to-knife NH₃ delivery.

Operating Instructions

Start-Up Procedure

The Equa-Flo manifold is shipped from the factory with the .810" Flow Restrictor installed. The following are **RECOMMENDED STARTING POINTS** based on application rates of Anhydrous Ammonia in lbs. N per acre.

The factory installed .810 Flow Restrictor should be used for an application rate equal to or less than 100 lbs. N per acre.

For an application rate between 100 and 150 lbs. N per acre, install the .640" Flow Restrictor.

For an application rate between 150 and 200 lbs. N per acre, install the .470" Flow Restrictor.

For an application rate greater than 200 lbs. N per acre, use no Flow Restrictors.

See **Replacement of Flow Restrictor or O-Ring**, on page 2.

An operating back-pressure in the range of 40% to 75% of tank pressure will generally yield the best results. If the operating back-pressure is too high and/or application rate cannot be achieved, remove the .810" Flow Restrictor and install the .640" Flow Restrictor.

Note: The .640" and .470" Flow Restrictors and the 3/4"-10 x 3" Bolt are included with the Equa-Flo Manifold.

An essential element of running with the Equa-Flo manifold is knowing the nurse tank pressure and being able to see the manifold back-pressure while the unit is in operation. To achieve optimal performance, a 0-200 psi pressure gage must be installed (as shown in **Figure 1**) and should be readable from the cab of the tractor. The gage is not included.

Operating Instructions — Start-Up Procedure (cont'd)

Begin Application of NH₃

Step 1: Begin application of one row and observe the manifold back-pressure during operation after flow stabilization.

Step 2: If the operating manifold back-pressure is between 40% and 75% of the nurse tank pressure, continue operation. The correct Flow Restrictor is installed.

Step 3: If the operating manifold back-pressure is greater than 75% of nurse tank pressure, install a shorter Flow Restrictor to achieve a lower back-pressure. Run another row and observe back-pressure after flow stabilization.

Step 4: If the operating manifold back-pressure is less than 40% of nurse tank pressure, install a longer Flow Restrictor to achieve a higher back-pressure. Run another row and observe back-pressure after flow stabilization.

Replacement of Flow Restrictor or O-Ring (REFER TO FIGURE 1 FOR ITEM NUMBERS)

Step 1: Safety Equipment (i.e. goggles, gloves and clothing) must be worn before continuing with the next step.

Step 2: Before opening the Equa-Flo Manifold, make sure all pressure is bled from the system.

NOTE: See “WARNING” at top of first page.

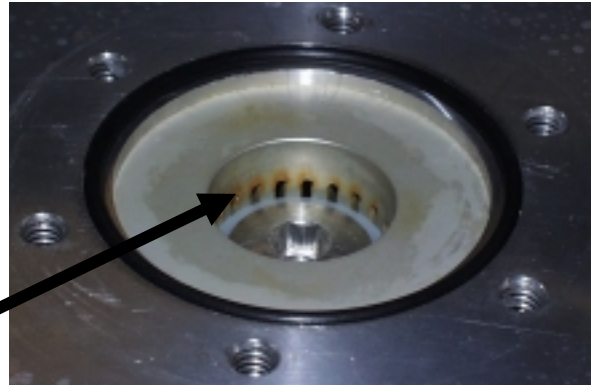
Step 3: Remove the six 1/4”-20 Hex Head Bolts ④ and Lock Washers ⑤ from the Distributor Top ③.

NOTE: The Distributor Top should be re-installed in its original position.

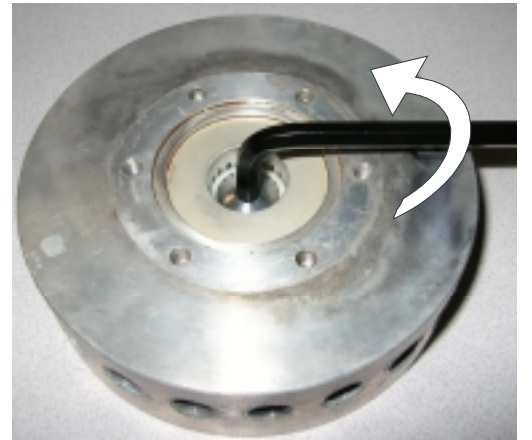
Step 4: With the hose still attached, lift the Distributor Top from the Main Body ① and set aside. Remove O-Ring ⑥.

CAUTION: The Distributor Center Core ② is permanently installed inside the Distributor Main Body. Do not attempt to separate from the Main Body ①. Using compressed air or a clean, lint-free cloth, remove any debris or particles from the bore of the Center Core. **Do not use a screwdriver or any metal object inside the bore to remove debris, as the surface finish could be damaged, causing the Flow Restrictor to leak.**

**Remove debris from this area.
DO NOT DAMAGE THIS AREA.**

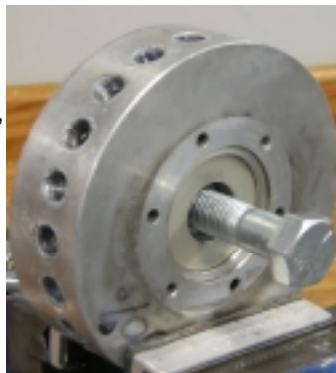


Step 5: With a 5/16” Allen wrench, remove the Cap from the Restrictor.



Step 6: Taking great care to avoid damage to the area where the Distributor Top ③ meets the Main Body ①, secure the unit in a bench-mounted vise, as shown. To replace the Flow Restrictor ⑨, screw the 3/4”-10 x 3” Bolt into the existing Flow Restrictor. When the bolt reaches the bottom, continue turning it and allow it to “jack” the Restrictor out of the Distributor Center Core ②.

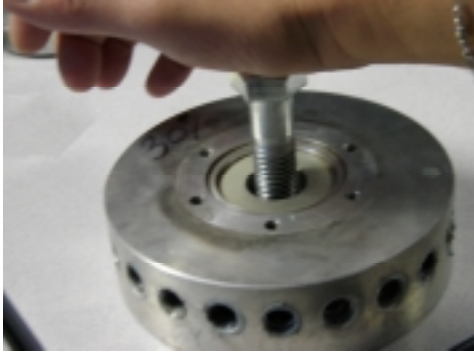
Use caution to avoid damage to the Center Core and the O-Ring seal surface.



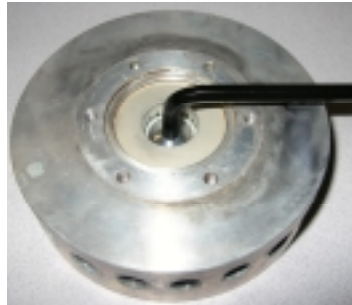
Step 7: Remove the old Restrictor from the Bolt. Select a replacement Flow Restrictor. (See steps 3 & 4 of **Operating Instructions** to determine which Restrictor will produce the proper back-pressure.) Inspect both ends of the new Restrictor for nicks or marks. If one end is damaged, be sure to install that end downward, leaving the smooth end up to seal against the anhydrous ammonia. Screw the new Restrictor onto the Bolt about 3 or 4



Step 8: Insert the Restrictor into the Distributor Center Core ② and, with the heel of your hand, press or tap the Bolt gently **until the Restrictor bottoms out.**



Step 9: Remove the Bolt and re-install the Flow Restrictor Cap ⑫.



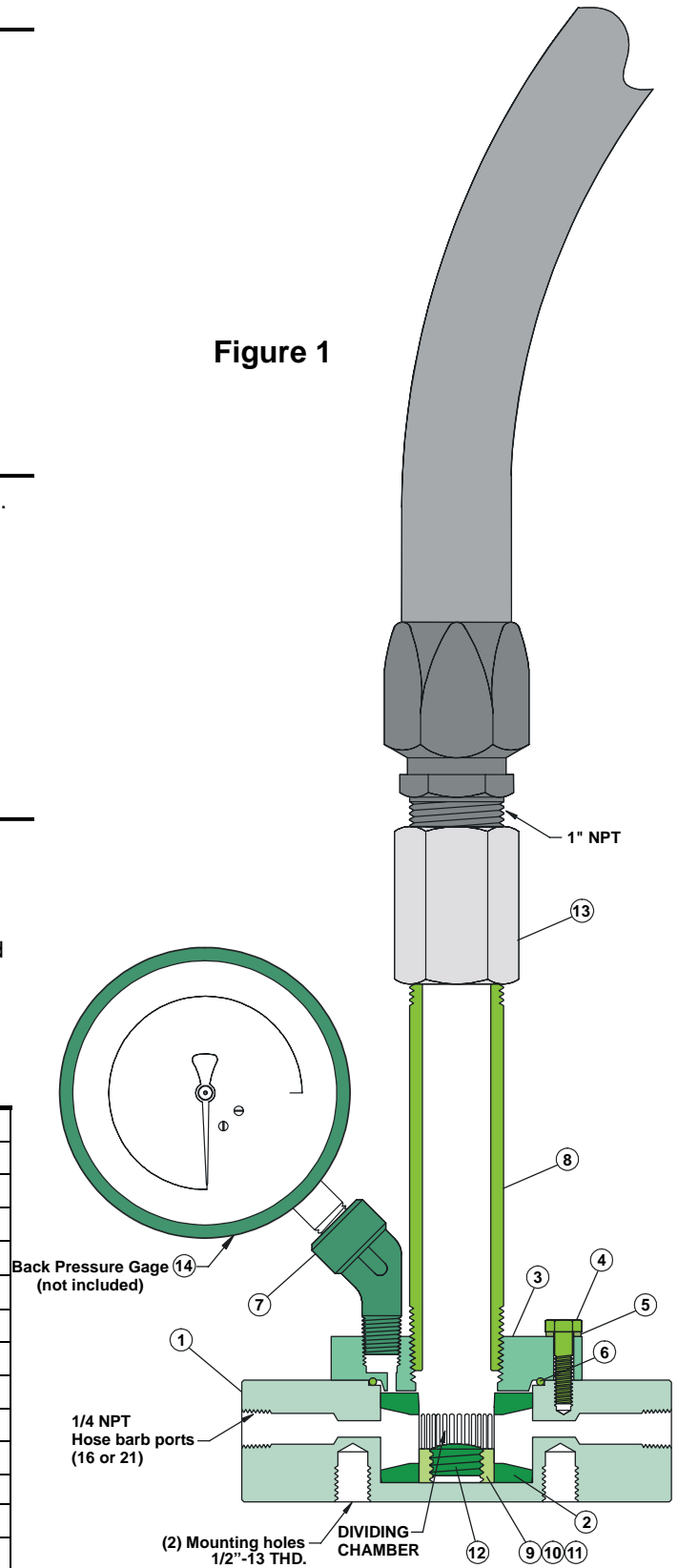
Step 10: Install the O-Ring ⑥ into the groove on the Distributor Main Body ①. Lubricate the O-Ring with a good quality grease that is compatible with anhydrous ammonia.

Step 11: Re-install the Distributor Top ③ in its original position and secure with the six 1/4"-20 Hex Head Bolts ④ and the six 1/4" External Tooth Lock Washers ⑤. Cross tighten to a torque of 7 ft.-lbs.

The Equa-Flo Manifold may now be returned to service.

NO.	QTY.	DESCRIPTION
1	1	DISTRIBUTOR MAIN BODY
2	1	DISTRIBUTOR CENTER CORE
3	1	DISTRIBUTOR TOP
4	6	1/4"-20UNC HEX HEAD BOLT x 1" LONG, 300 SERIES SS
5	6	EXTERNAL TOOTH LOCK WASHER, CBN. ZINC PLATED
*6	1	O-RING (2-140 N674-70)
7	1	1/4" NPT 45° STREET ELBOW
8	1	1" NPT SCHEDULE 40 STEEL PIPE
9	1	.810" FLOW RESTRICTOR (INSTALLED)
10	1	.640" FLOW RESTRICTOR (INCLUDED)
11	1	.470" FLOW RESTRICTOR (INCLUDED)
12	1	FLOW RESTRICTOR CAP
13	1	1" FNPT x 1" FNPT COUPLING (NOT INCLUDED)
14	1	4" DIA. DIAL 0-200 PSI AMMONIA GAGE (NOT INCLUDED)
*REPAIR KIT		1804-0022 (INCLUDES O-RING ONLY)

Figure 1



INSTALLATION INSTRUCTIONS FOR TWO-WAY (MODEL A1802), THREE-WAY (MODEL A1803) & FOUR-WAY (MODEL A1806) SPLITTERS

ALL 1" NPT HOSES SHOULD BE THE SAME LENGTH AND HAVE A SWEEPING RADIUS OUT OF THE SPLITTER AND INTO THE EQUA-FLO MANIFOLDS.

A SWEEPING RADIUS ON THE 1" NPT INLET HOSE MUST ENTER THE SPLITTER FROM THE TOP. SPLITTER MUST BE REASONABLY LEVEL WITH THE TOOL BAR.

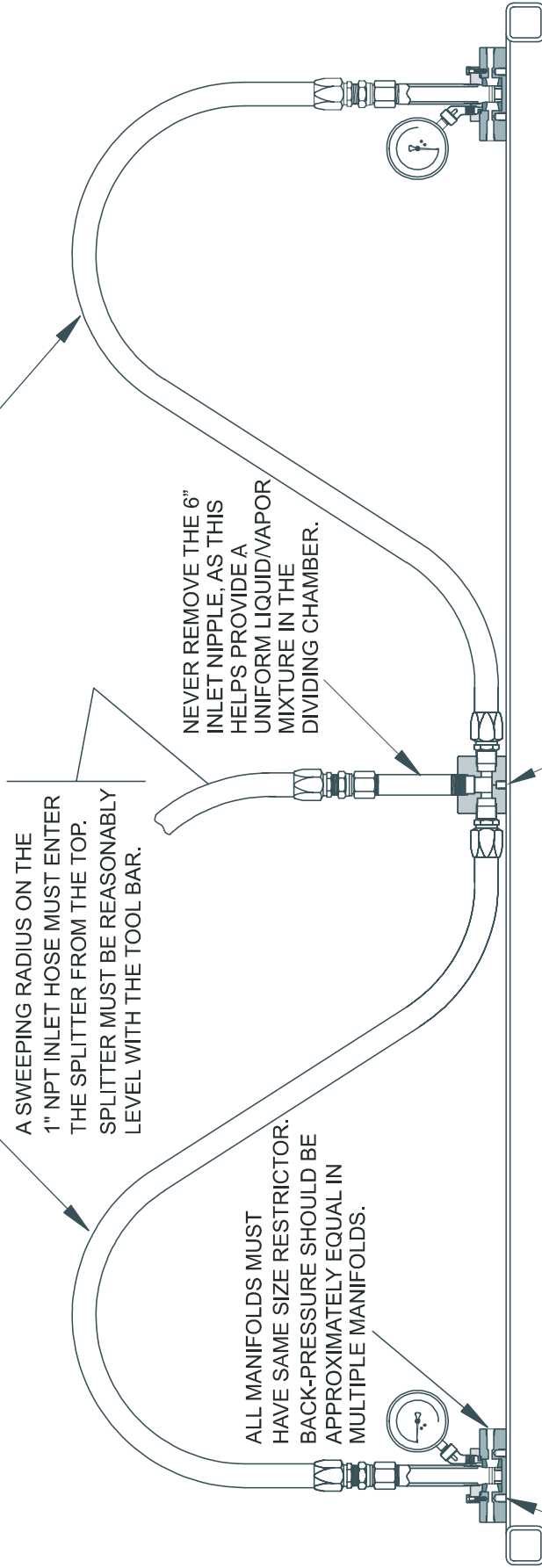
NEVER REMOVE THE 6" INLET NIPPLE, AS THIS HELPS PROVIDE A UNIFORM LIQUID/VAPOR MIXTURE IN THE DIVIDING CHAMBER.

ALL MANIFOLDS MUST HAVE SAME SIZE RESTRICTOR. BACK-PRESSURE SHOULD BE APPROXIMATELY EQUAL IN MULTIPLE MANIFOLDS.

MOUNT EQUA-FLO TO FRAME WITH TWO 1/2"-13 HEX HEAD BOLTS.

MOUNT SPLITTER TO FRAME WITH A 1/2"-13 HEX HEAD BOLT.

TOOL BAR FRAME MEMBER



NOTE:
A MODEL A1802 TWO-WAY SPLITTER IS SHOWN. A MODEL A1803 THREE-WAY SPLITTER OR A MODEL A1806 FOUR-WAY SPLITTER WILL MOUNT IDENTICALLY AND EACH HOSE TO THE EQUA-FLO MANIFOLDS MUST BE THE SAME LENGTH.



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