



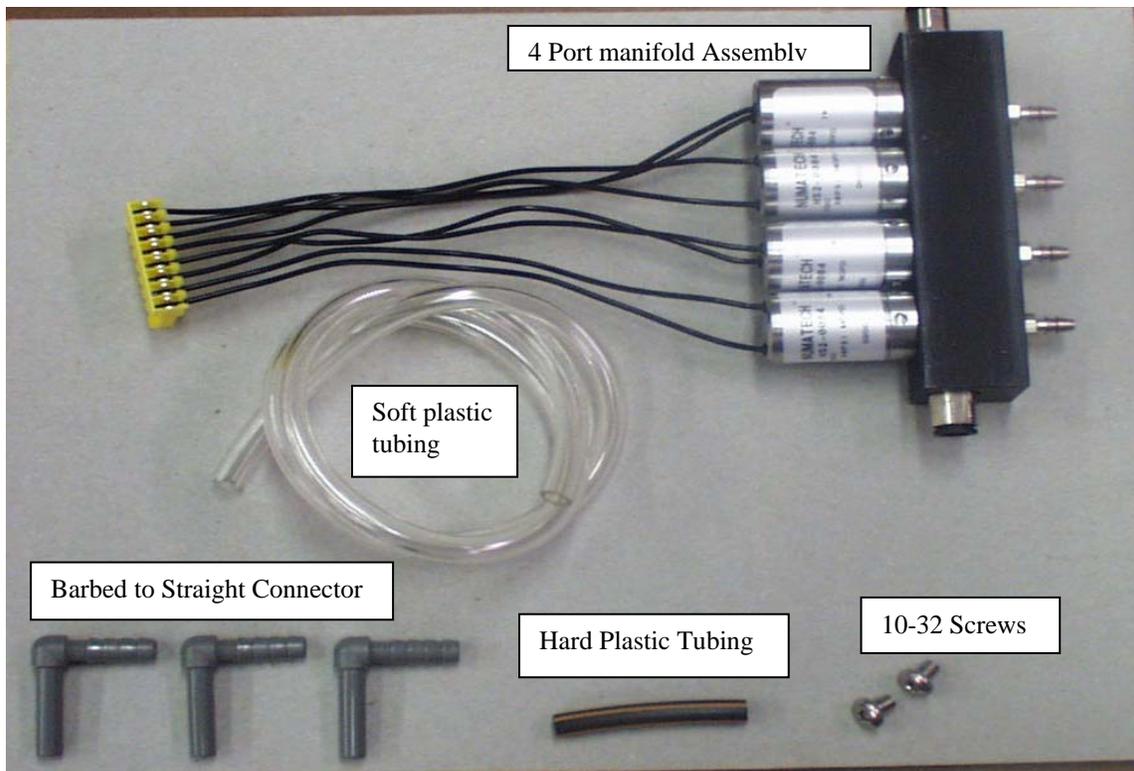
Kit Instructions for Field Upgrade of Additional Manifolds to the HGM300

Scope

This kit is used for field upgrade of additional manifolds to the HGM300. The number of zones on the HGM300 may be upgraded in increments of 4 zones up to a total of 16 zones. This kit contains instructions and material for one 4 zone upgrade. The kit is generic in that it can be used to upgrade from 4 zones to 8 zones, 8 zones to 12 zones, or 12 zones to 16 zones. Because of the general nature of this kit, there will be extra parts included in the kit, which will not be used on all upgrades.

Kit Contents

Qty 1	3015-3086 (M1110UC)	4 port Manifold
Qty 3	3015-3234 (M1110VF)	Barbed to Straight, Right angle connector
Qty 1	3015-3235 (M1100AA)	1.8" (4.6 cm) hard plastic tubing
Qty 2	3015-3282 (M1110VJ)	10-32 x 1/4" Pan Head Screw
24" (61 cm)	3015-3164 (M1110VA)	3/16" ID, 5/16" OD soft plastic tube



Tools Required

Phillips Head Screw Driver
3/8" wrench or nut driver
Knife

Procedure

1. Before beginning the upgrade procedure, some data should be taken from the HGM300 for comparison purposes after the procedure is complete. Follow the instructions below to take the necessary data:
 - From the system menu on the RDM800, select the key that corresponds to the HGM300 to be modified (see figure below). This will lead to the HGM300 Setup Screen

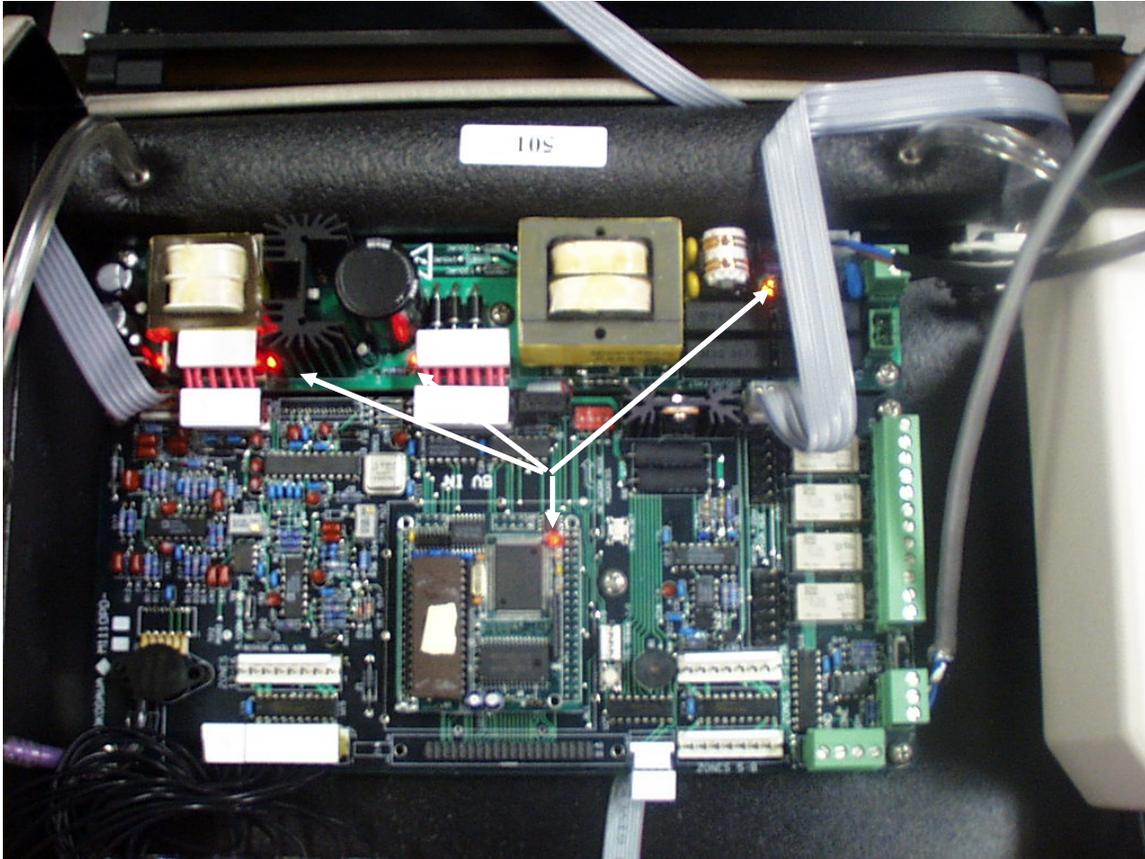


- From the HGM300 setup screen select the key that corresponds to the DIAG Key as shown in the figure below. This will lead to the Diagnostic Screen.



2. Record the following values from the DIAG Screen: DET, AVE, ZERO, NOISE, PPM, ZERO, BENCH, BOX, PRES, VAC and AMB. **Verify that the VAC reading is less than 12.5 PSIA.** If it is not, please contact Bacharach at help@bacharach-inc.com or call 800-850-0044 for assistance.

- **VERY IMPORTANT.** Disconnect the power from the AC Power from the HGM300. For safety purposes, this should be done at the AC breaker that feeds the mains to the HGM300. Verify that power has been removed from the HGM300 by checking the following:
- All external LEDs on the HGM300 are extinguished.
- All HGM300 Internal LEDs (locations shown in figure below) are extinguished.
- The pump inside the HGM300 is not running.

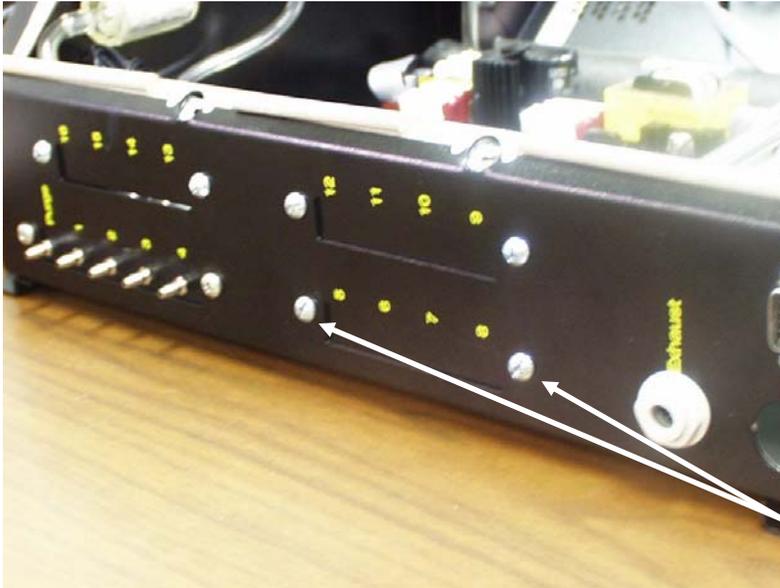


The remaining instructions are specific to the type of upgrade you are implementing (i.e, 4 zone to 8 zone, 8 zone to 12 zone, or 12 zone to 16 zone). Please go to the appropriate page listed below in order to proceed.

- 4 zone to 8 zone **PAGE 4**
- 8 zone to 12 zone **PAGE 8**
- 12 zone to 16 zone **PAGE 13**

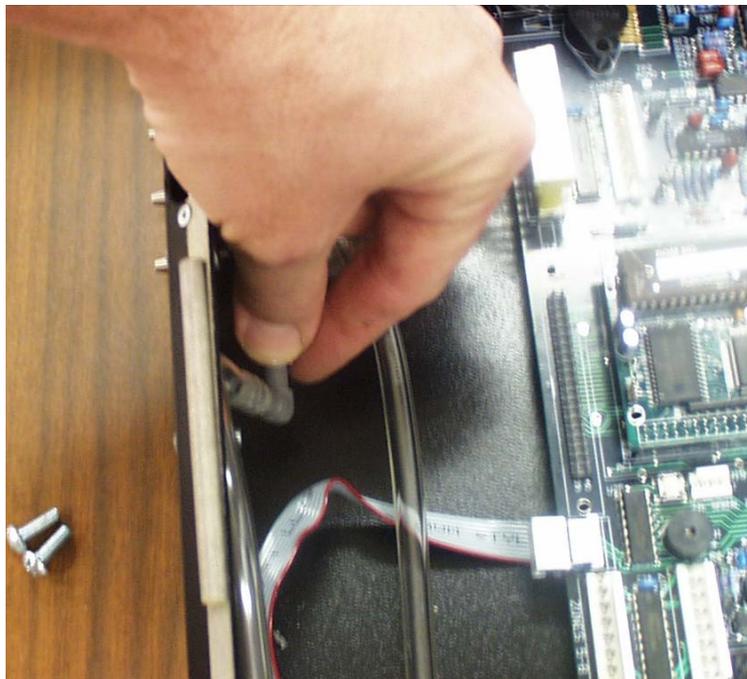
4 Zone to 8 Zone Upgrade.

1. Using a Phillips Head Screwdriver and 3/8" wrench, unscrew the 2 screws that hold the manifold blanking plate for zones 5-8 to the chassis as shown blow. Remove the blanking plate.

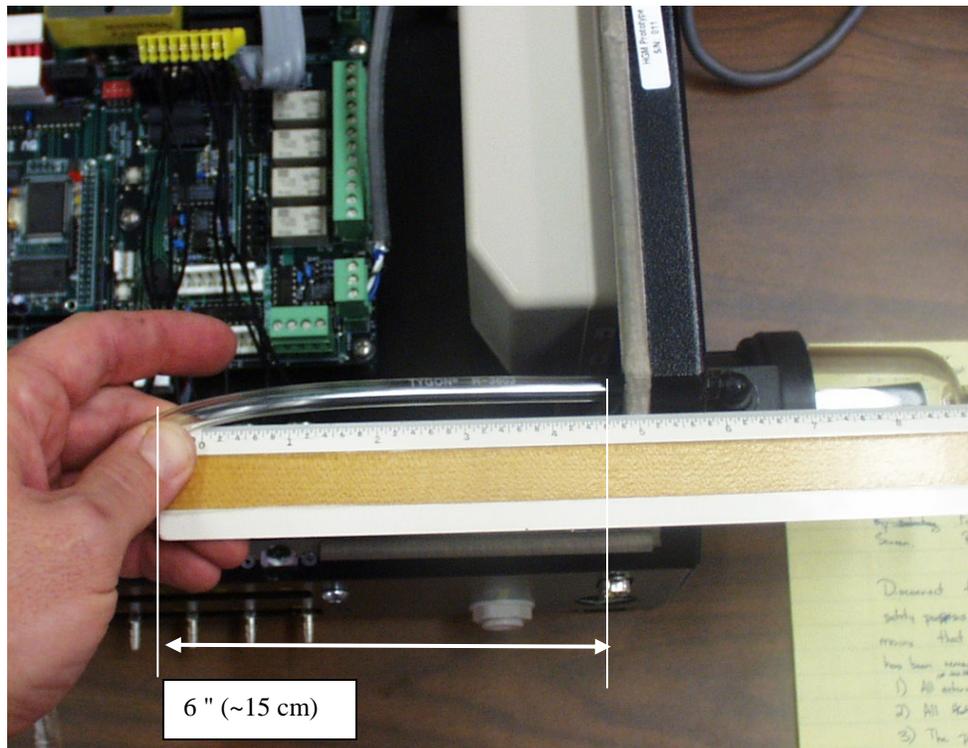


Manifold Blanking
Plate Screws

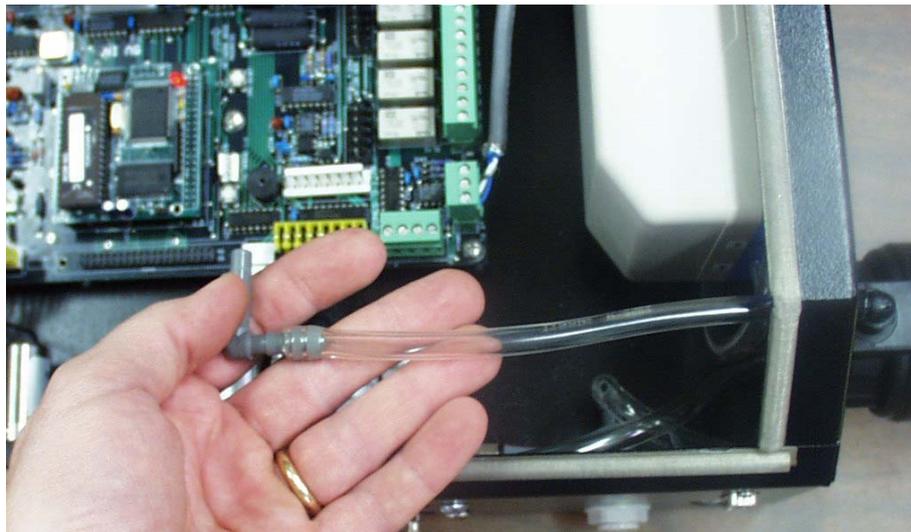
2. In the HGM300 locate the tubing running from the water trap to the gray connector which is inserted into the existing manifold block. Remove the gray connector from the manifold block by depressing the black outer ring around the manifold port fitting and pulling the connector out.



3. Remove the gray connector from the tubing and cut the tubing such that the overall length of the tubing **from the watertrap connection to the end of the tube** is 6" (15.2 cm)



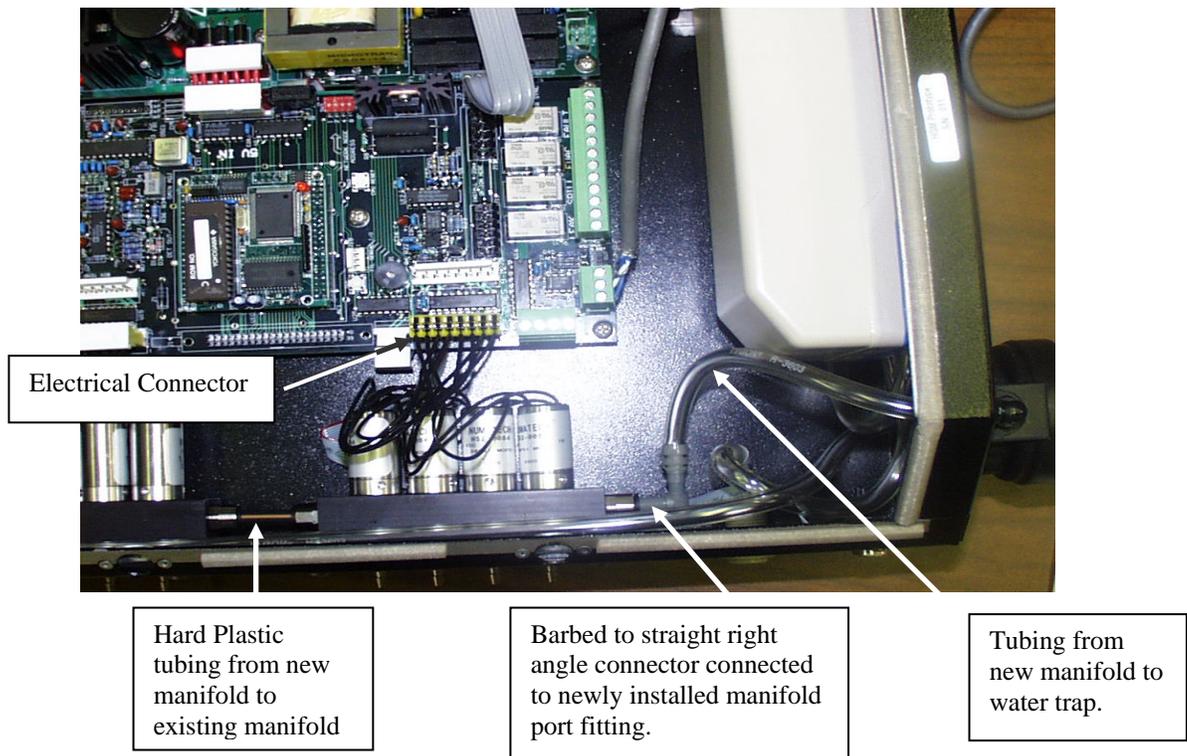
4. Insert the barbed end of the barbed to straight right angle connector to the end of the tubing that was cut in the previous step. The tubing must insert over at least two barbs. If necessary gently stretch the tubing to allow it to fit over the barbs. Do not overstretch the tubing, as this could cause an air leak.



- With the new manifold assembly oriented with the input ports on the right hand side and the electrical connector on the left hand side, (with connector sockets facing down) as shown below, insert the 1.8" (4.5 cm) piece of hard plastic tubing into the port fitting on the manifold which is facing directly towards you. Make sure that the tubing is inserted completely into the fitting by pushing it in until it stops. Approximately 1 3/8" (3.5 cm) will extend beyond the manifold when the tube is pushed in completely.

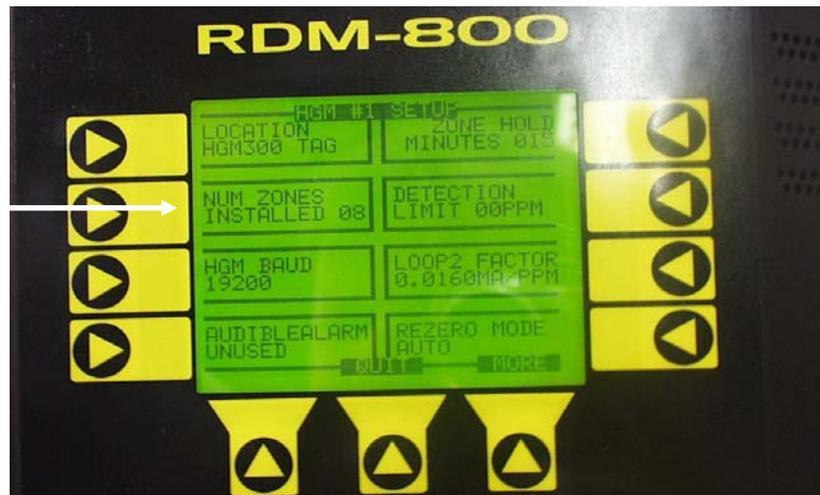


- Mount the new manifold assembly into the HGM300 by placing the new manifold assembly adjacent to the installed manifold assembly and inserting the free end of the hard plastic tube into the port fitting on the installed manifold assembly. The hard plastic tubing must slide fully into the port fitting until it stops. After the tubing is fully inserted, attach the new manifold to the chassis using the two 10-32 x 1/4" screws provided. If the holes in the manifold do not align with the holes in the chassis, the hard plastic tubing may not be fully inserted. Insert the barbed to straight right angle connector (which was inserted into the tubing in step 4) into the port fitting on the newly installed manifold. Make sure that the connector is fully inserted into the port fitting by pushing the connector in until it stops. Insure that there are no kinks in the tubing connected to it, which should now run from the newly installed manifold to the water trap. Connect the yellow electrical connector on the new manifold to the header on the circuit board closest to the manifold (labeled Zones 5-8 on the circuit board). The installed assembly is shown below.



7. Reconnect power to the HGM300 and reenergize the unit. The unit will go through a power on self test which will take approximately 30 seconds. After the self test is complete, the unit will enter a Warm Up period, indicated by the GREEN Monitor On LED flashing on the HGM300. In the system screen of the RDM800, the display box for the HGM300 which has been upgraded should indicate that the HGM300 is in warm up. If it does not, verify that the communications wiring is still connected properly. Select the key adjacent to the HGM300 which is warming up. This will bring up the HGM Setup screen. Select the key adjacent to the SETUP box. This will bring up the first setup screen. On the left hand side of the screen, the “Num Zones Installed” field should now indicate 8, as shown in the figure below. If it does not, return to page 4 and verify that the procedure was followed correctly. Specifically verify that . . .
- The hard plastic tubing is inserted between the old manifold port fitting and the new manifold port fitting.
 - The new manifold is installed in the correct orientation.
 - The tubing from the water trap to the port fitting on the new manifold is securely in place and there are no kinks in the tubing.
 - The new manifold electrical connector is connected to the correct header on the printed circuit board and in the proper orientation.
 - No interior tubing in the unit has inadvertently been disconnected or kinked, especially the tubing from the water trap to the filter assembly or from the pump outlet to the exhaust port.
 - All tubing connections are secure and tight.

If the above checks do not reveal any problems please contact Bacharach at help@bacharach-inc.com or call 800-850-0044 for assistance.



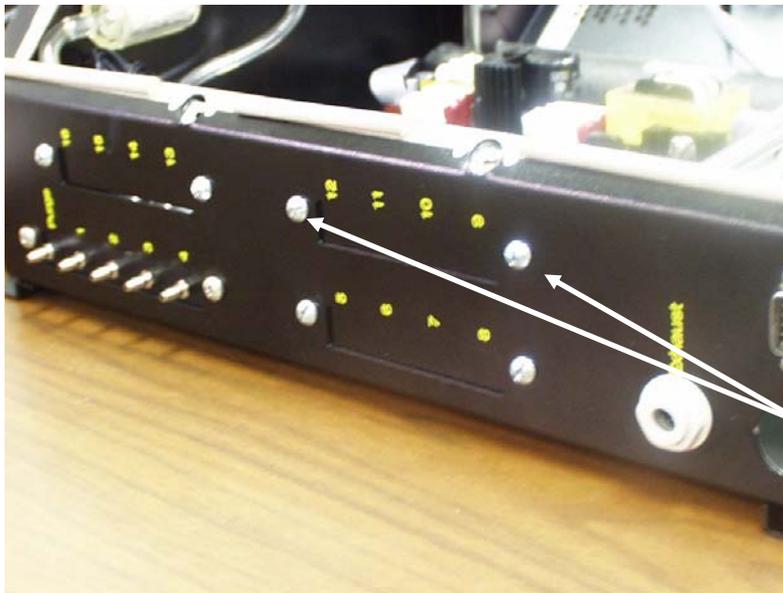
8. After the HGM300 has completed its warm up cycle (approximately 15 minutes) the GREEN Monitor On light should change from flashing to solid. Allow the unit to complete one purge cycle. This can be verified from the RDM800 System Screen. The block corresponding to the HGM300 just modified will have a status indicating which zone is currently being monitored. Monitor the status until the status block indicates that a purge cycle has been completed (see figure for step 1 on page 2, which shows the HGM300 status as Purge). After the purge cycle is complete follow steps 1 and 2 on page 2 to navigate to the DIAG screen. Record the DIAG values indicated in step 2 on page 2. Verify that **the VAC reading is less than 12.5 PSIA**. If it is not, then an air leak has been introduced into the system. Go back and check that all tubing connections are tight and secure and that the hard plastic tubing that was inserted between the two manifolds is fully inserted and seated into each manifold. If the YELLOW System Fault light is on after the initial purge cycle, refer to your HGM300 service manual for troubleshooting steps. Save the recorded DIAG values from before the installation and after the installation (along with the date the values were taken) for future reference. This information can be a valuable tool for checking future performance of the equipment.

This completes the 4 zone to 8 zone upgrade. The unit has automatically detected the new zones and will now include them in its measurement cycle. Each zone may be individually setup for parameters such as Gas Type, Input Length, and alarm levels by using selecting the ZONE screen from the HGM300 setup menu.

8 Zone to 12 Zone upgrade

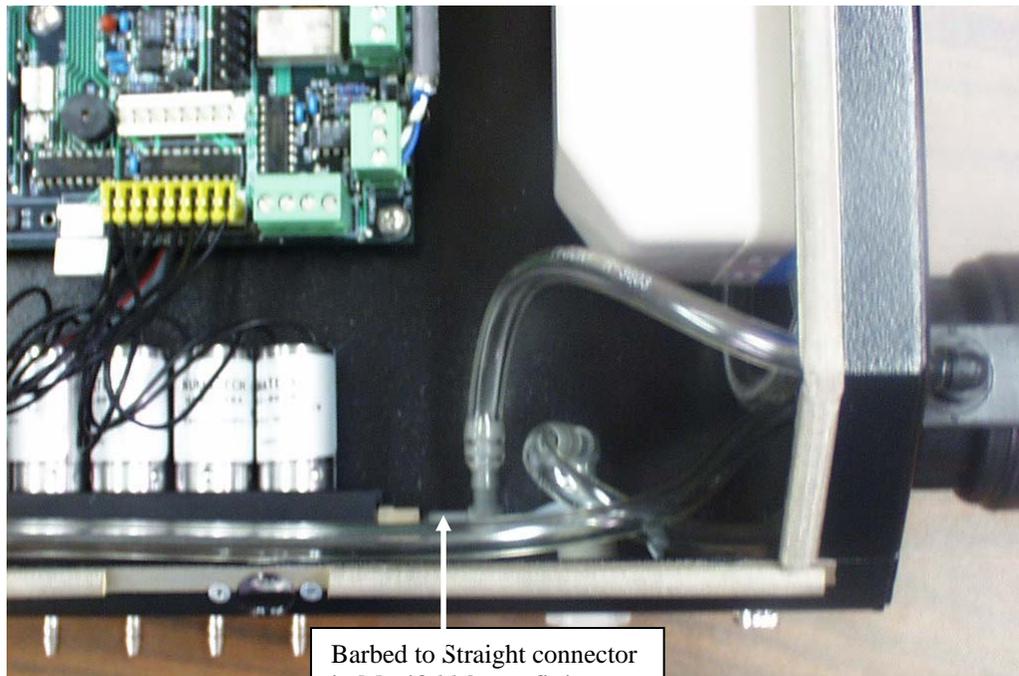
NOTE: The term “Manifold 2” will be used to describe the existing manifold in the unit for zones 5-8. The term “Manifold 3” will be used to describe the new manifold which is being installed for zones 9-12.

1. Using a Phillips Head Screwdriver and 3/8” wrench, unscrew the 2 screws that hold the manifold blanking plate for zones 9-12 to the chassis as shown blow. Remove the blanking plate.



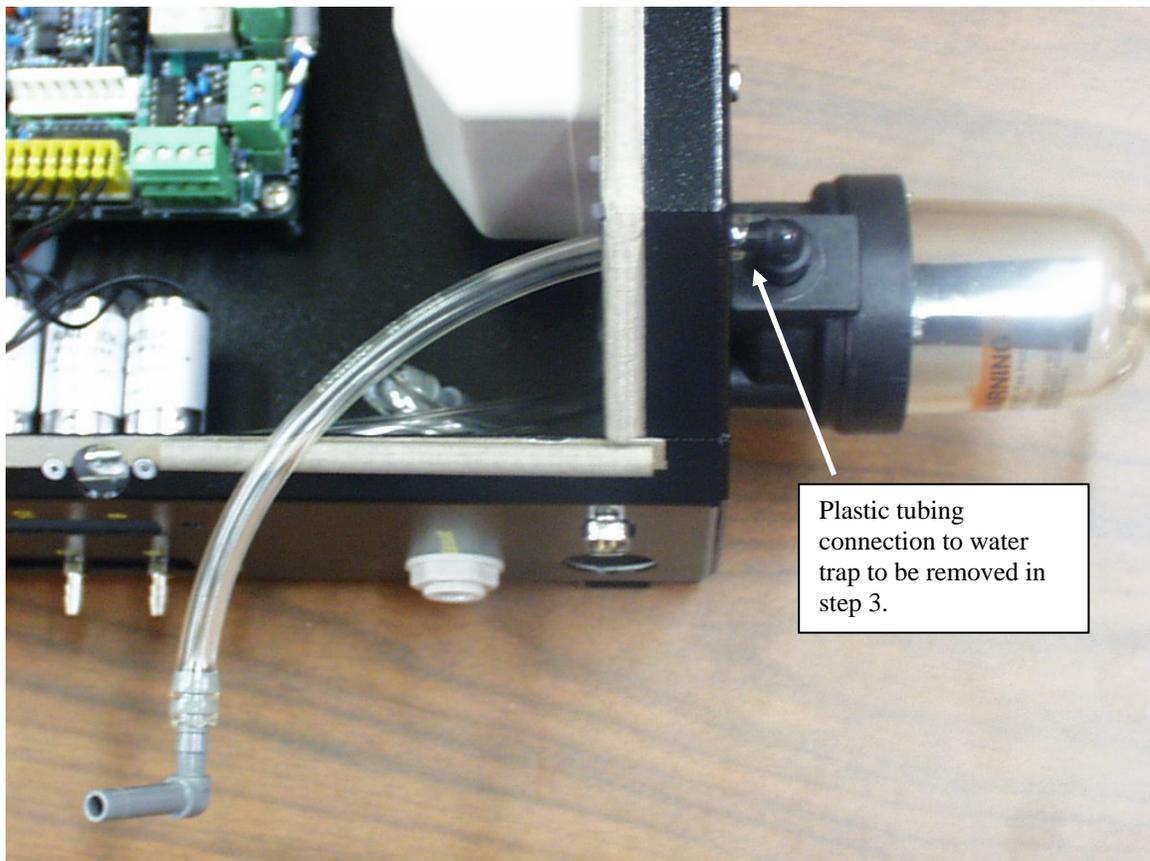
Manifold Blanking
Plate Screws

2. Locate the tubing running from Manifold 2 to the Water Trap. Remove the barbed to straight connector from the port fitting in Manifold 2. This is done by pushing in on the black plastic ring around the port fitting, while pulling out on the connector.



Barbed to Straight connector
in Manifold 2 port fitting

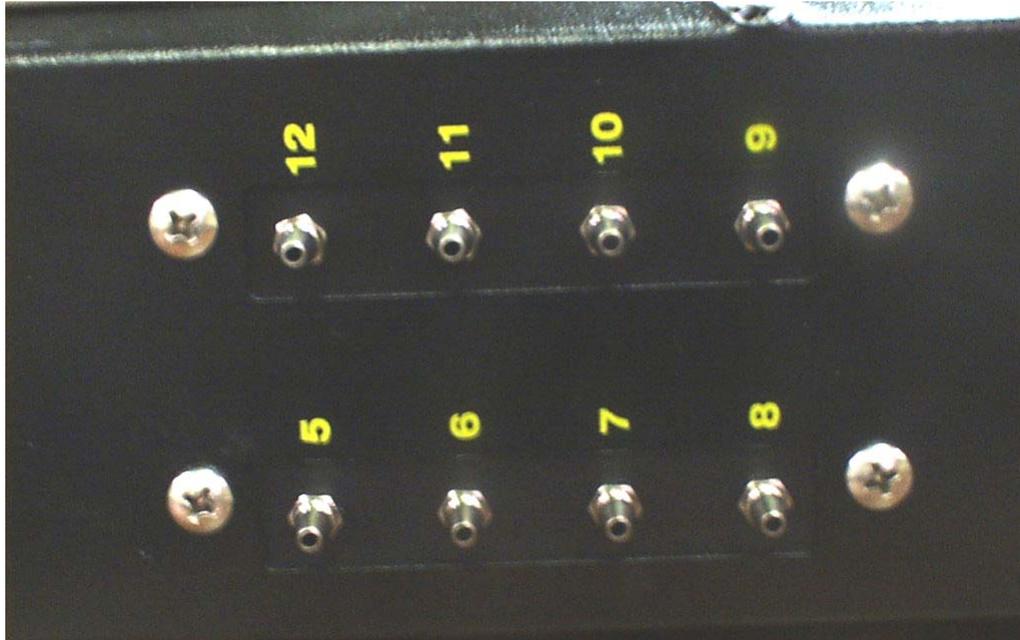
3. Remove the plastic tubing (connected to the barbed to straight connector removed in the previous step) from the barbed fitting on the water trap assembly.



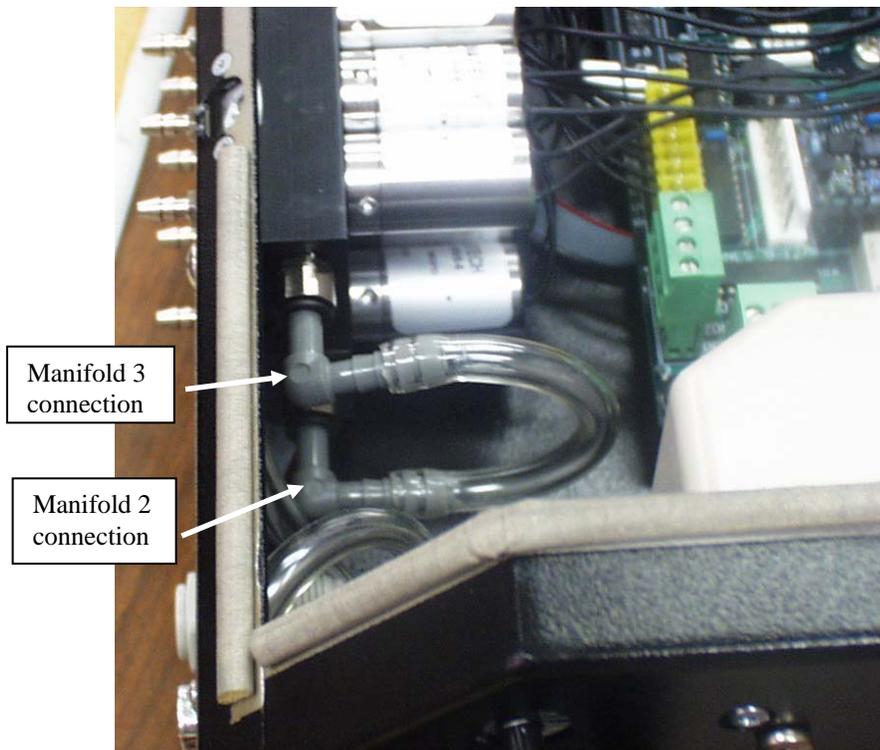
4. Cut the plastic tubing (removed in the previous step) ~4" (~10cm) from the point where it attaches to the barbed to straight connector (which was removed from Manifold 2 in step 2 above) . Insert the barbed end of a second barbed to straight connector into the freshly cut end of the tubing. The tubing should go over at least 2 barbs on the connector. It may be necessary to gently stretch the tubing in order for it to fit over the barbs. Do not overstretch the tubing, as this could cause air leaks. The completed assembly is shown in the figure below.



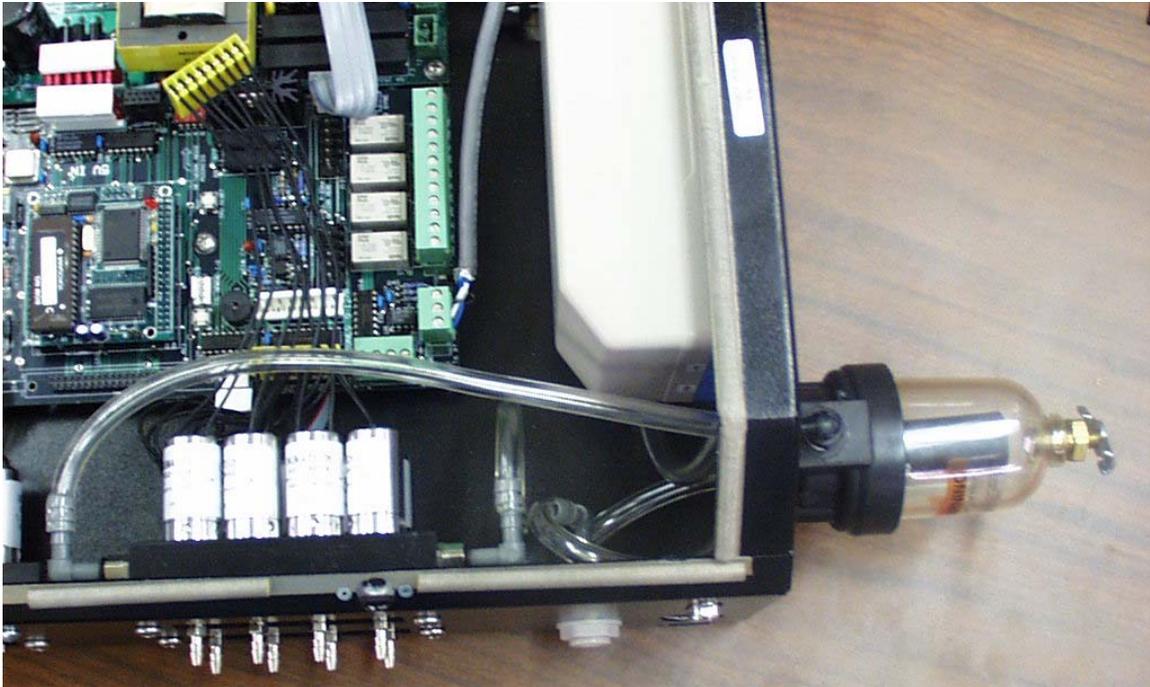
5. Mount the new manifold assembly (Manifold 3) in the location for ports 9-12 using the two 10-32 x 1/4" screws provided. It is possible to mount the manifold upside down. When the manifold is mounted properly, the barbed fittings that extend through the chassis opening will be approximately in the middle of the opening and slightly below an imaginary centerline drawn between the two mounting screws.



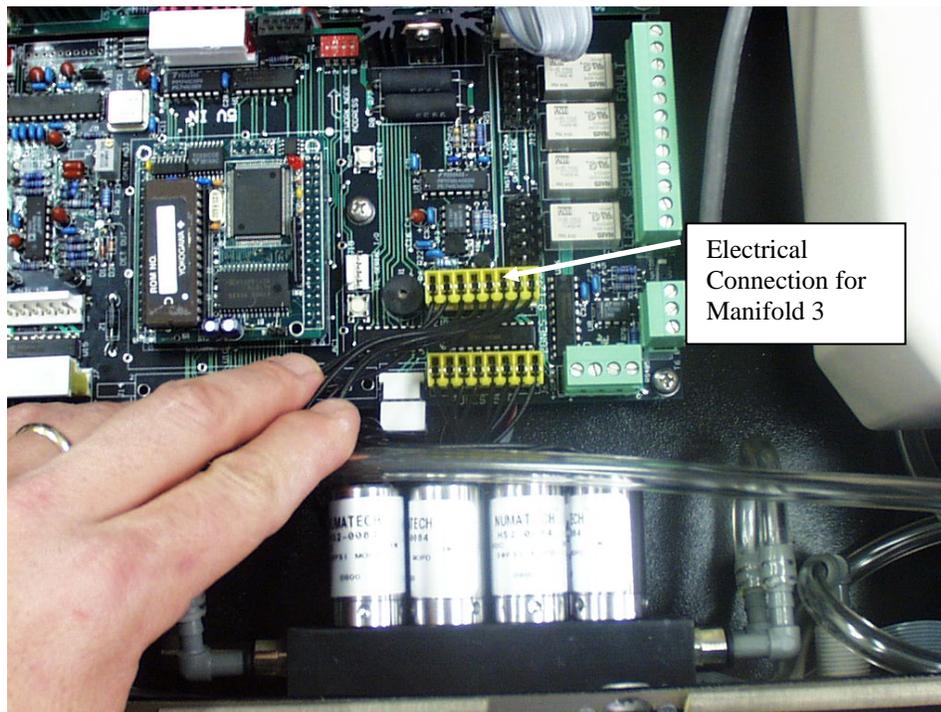
6. Insert one end of the assembly created in step 4 into the port fittings on the end of Manifold 2 and the other into the port fitting of Manifold 3. Make sure that the connectors fully insert into the port fittings by pushing them in until they stop. Insure that there are no kinks in the tubing that will restrict airflow.



7. Cut ~ 12" (30.5 cm) of soft plastic tubing. Insert the barbed end of a straight to barbed connector in one end of the tubing. The tubing should extend over at least 2 barbs. It may be necessary to gently stretch the tubing to enable it to fit over the barbs. Insert the straight end of the connector into the remaining Manifold 3 port fitting. Connect the other end of the tubing to the barbed end of the water trap fitting. The tubing should extend completely over the barb on the water trap fitting. After the tubing is attached on both ends, assure that there are no kinks in the tubing that will block airflow. The assembly when completely attached is shown below.



8. Connect the yellow electrical connector to the printed circuit board header that is labeled Zones 9-12. Insure that the connector is fully and securely seated on the pins.



9. Reconnect power to the HGM300 and reenergize the unit. The unit will go through a power on self test which will take approximately 30 seconds. After the self test is complete, the unit will enter a Warm Up period, indicated by the GREEN Monitor On LED flashing on the HGM300. In the system screen of the RDM800, the display box for the HGM300 which has been upgraded should indicate that the HGM300 is in warm up. If it does not, check and verify that the communications wiring is still connected properly. Select the key adjacent to the HGM300 which is warming up. This will bring up the HGM Setup screen. Select the key adjacent to the SETUP box. This will bring up the first setup screen. On the left hand side of the screen, the “Num Zones Installed” field should now indicate 12, as shown in the figure below. If it does not, return to page 8 and verify that the procedure was followed correctly. Specifically verify that . . .
- The new manifold is installed in the correct orientation.
 - The tubing from the water trap to the port fitting on the new manifold is securely in place and there are no kinks in the tubing.
 - The tubing assembly between Manifold 2 and Manifold 3 is securely inserted into each manifold with no kinks in the tubing.
 - The new manifold electrical connector is connected to the correct header on the printed circuit board and in the proper orientation.
 - No interior tubing in the unit has inadvertently been disconnected or kinked, especially the tubing from the water trap to the filter assembly or from the pump outlet to the exhaust port.
 - All tubing connections are secure and tight.

If the above checks do not reveal any problems please contact Bacharach at help@bacharach-inc.com or call 800-850-0044 for assistance.



10. After the HGM300 has completed its warm up cycle (approximately 15 minutes) the GREEN Monitor On light should change from flashing to solid. Allow the unit to complete one purge cycle. This can be verified from the RDM800 System Screen. The block corresponding to the HGM300 just modified will have a status indicating which zone is currently being monitored. Monitor the status until the status block indicates that a purge cycle has been completed (see figure for step 1 on page 2, which shows the HGM300 status as Purge). After the purge cycle is complete follow steps 1 and 2 on page 2 to navigate to the DIAG screen. Record the DIAG values indicated in step 2 on page 2. Verify that **the VAC reading is less than 12.5 PSIA**. If it is not, then an air leak has been introduced into the system. Go back and check that all tubing connections are tight and secure and that the hard plastic tubing that was inserted between the two manifolds is fully inserted and seated into each manifold. If the YELLOW System Fault light is on after the initial purge cycle, refer to your HGM300 service manual for troubleshooting steps.

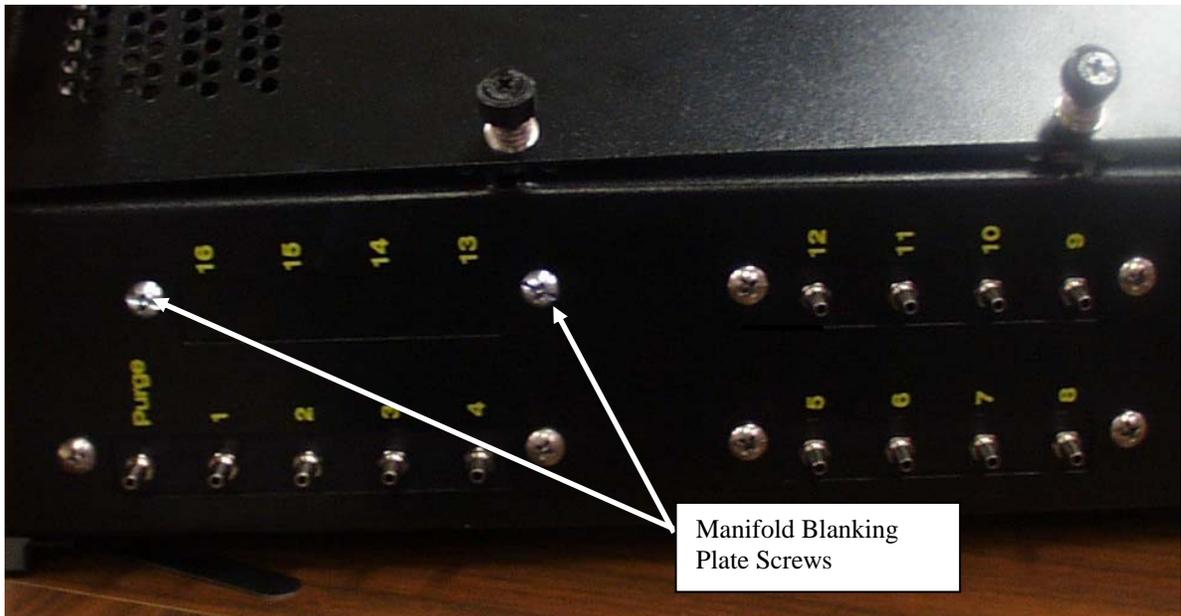
Save the recorded DIAG values from before the installation and after the installation (along with the date the values were taken) for future reference. This information can be a valuable tool for checking future performance of the equipment.

This completes the 8 zone to 12 zone upgrade. The unit has automatically detected the new zones and will now include them in its measurement cycle. Each zone may be individually setup for parameters such as Gas Type, Input Length, and alarm levels by using selecting the ZONE screen from the HGM300 setup menu.

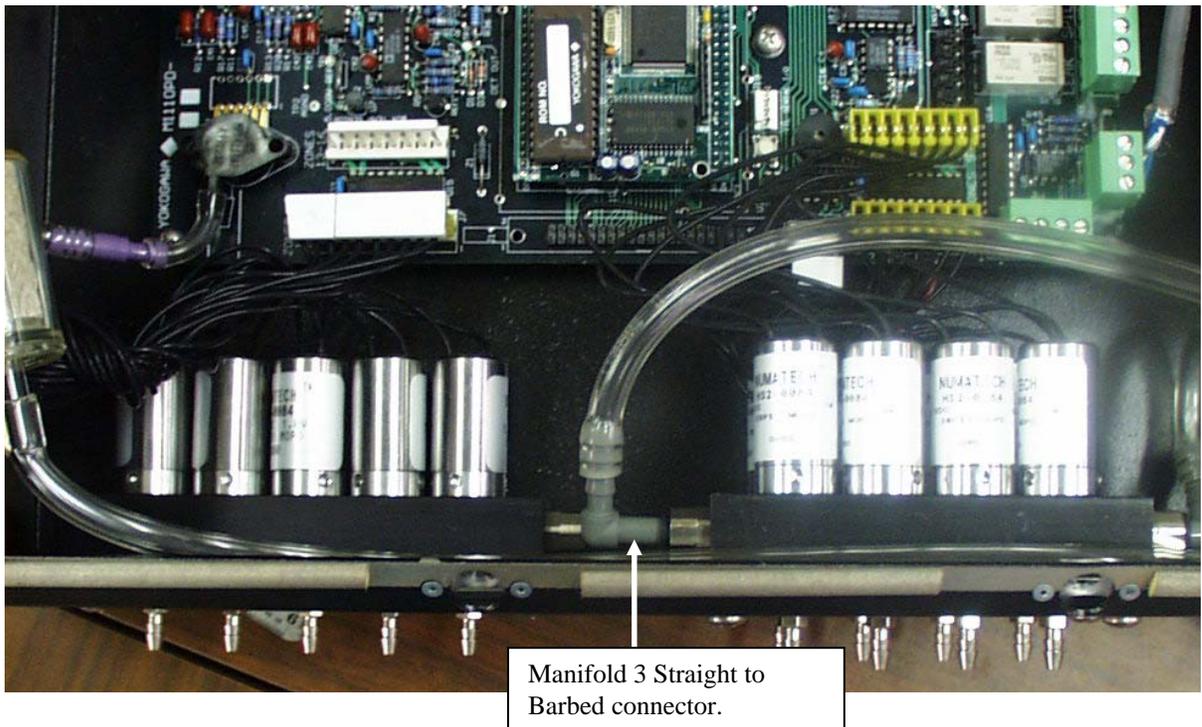
12 Zone to 16 Zone upgrade

NOTE: The term “Manifold 3” will be used to describe the existing manifold in the unit for zones 9-12. The term “Manifold 4” will be used to describe the new manifold which is being installed for zones 13-16.

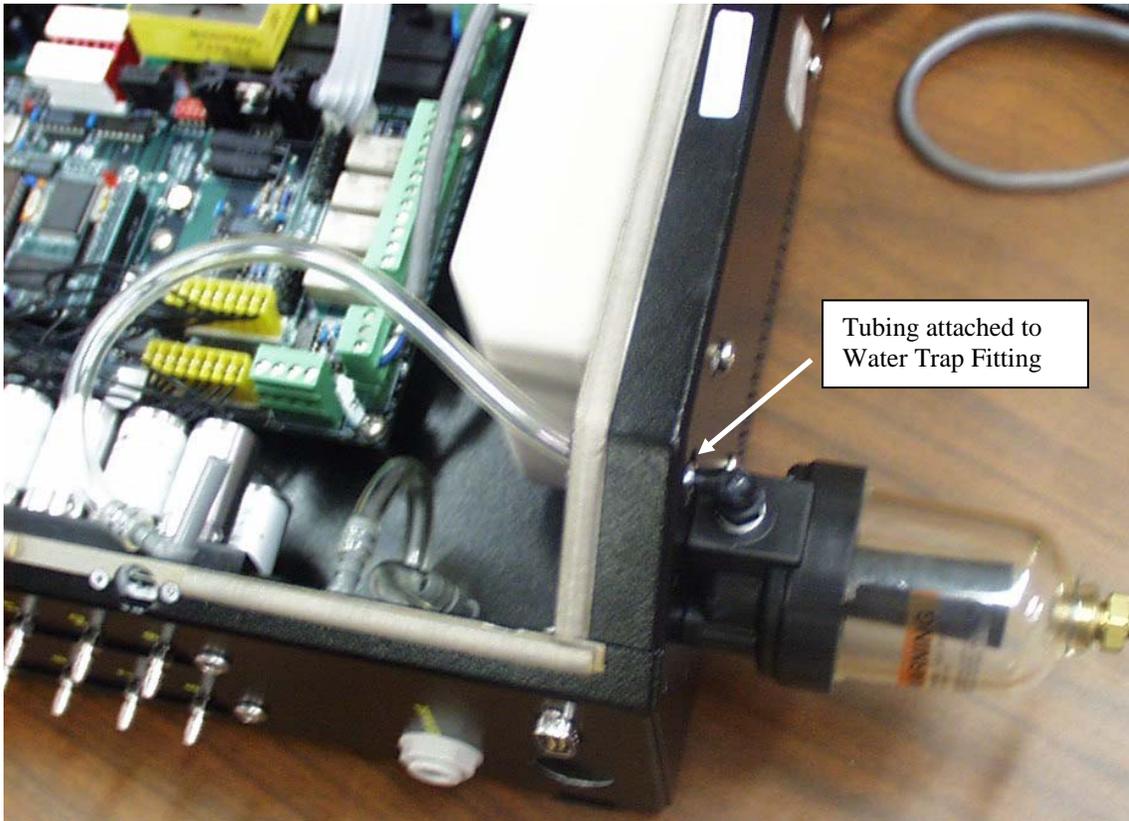
1. Using a Phillips Head Screwdriver and 3/8" wrench, unscrew the 2 screws that hold the manifold blanking plate for zones 9-12 to the chassis as shown blow. Remove the blanking plate.



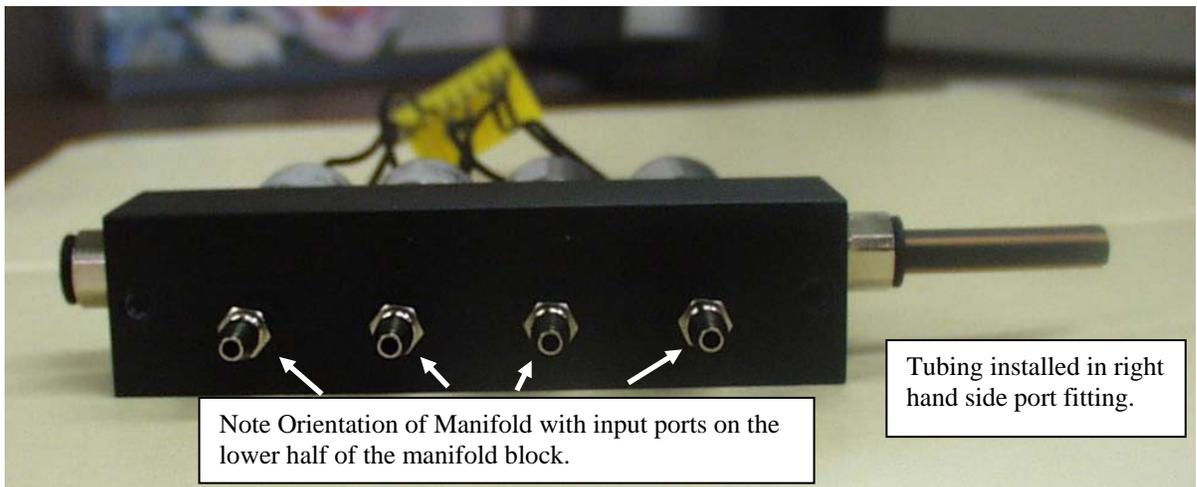
2. Locate the tubing running from Manifold 3 to the Water Trap Assembly. Remove the Straight to Barbed connector attached to this tubing from the port fitting in Manifold 3. This can be done by pressing the black plastic ring around the port fitting in while pulling the connector out.



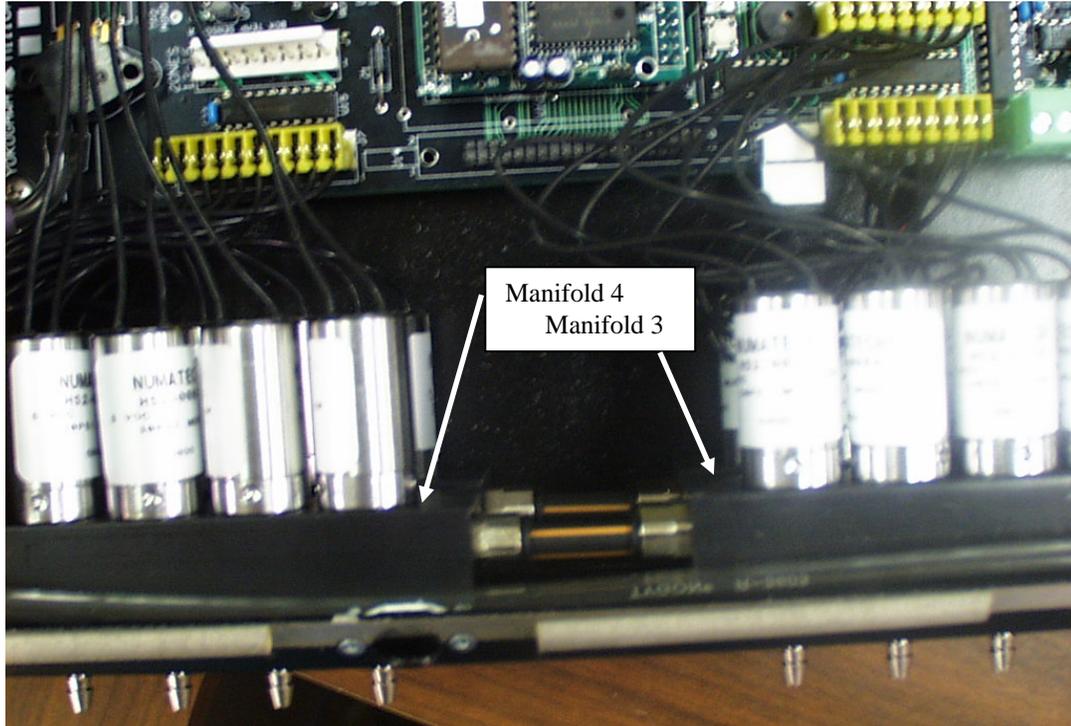
3. Follow the tubing attached to the connector removed in the previous step (formerly attached to manifold 3) until it reaches the water trap fitting. Remove the tubing from the water trap fitting.



4. With the manifold oriented as shown in the figure below, install the 1.8" (4.6 cm) piece of hard plastic tubing into the right hand side port fitting of the manifold to be installed. Make sure that the tubing is fully inserted into the port fitting by pushing it in until it stops.

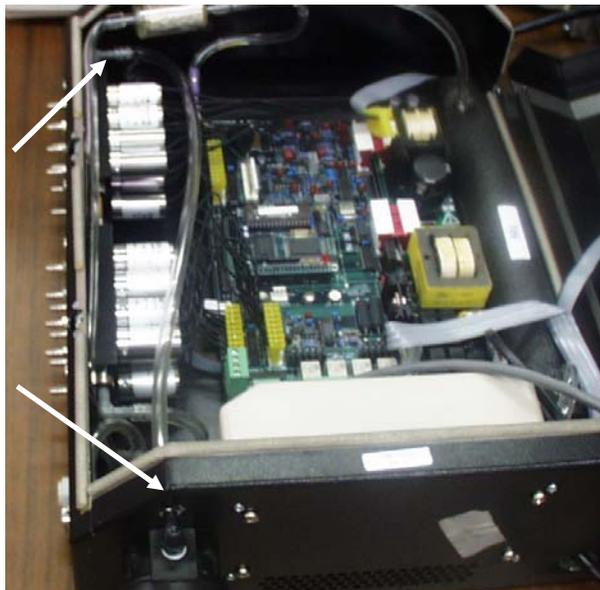


5. Install the new Manifold assembly into the HGM300 by first inserting the free end of the hard plastic tubing (inserted into the new manifold in the previous step) into the port fitting in Manifold 3. Make sure that the tubing is fully inserted by pushing the tubing in until it stops. Use the two 10-32 x 1/4" screws provided to attach the manifold block to the chassis. The mounted assembly is shown below.

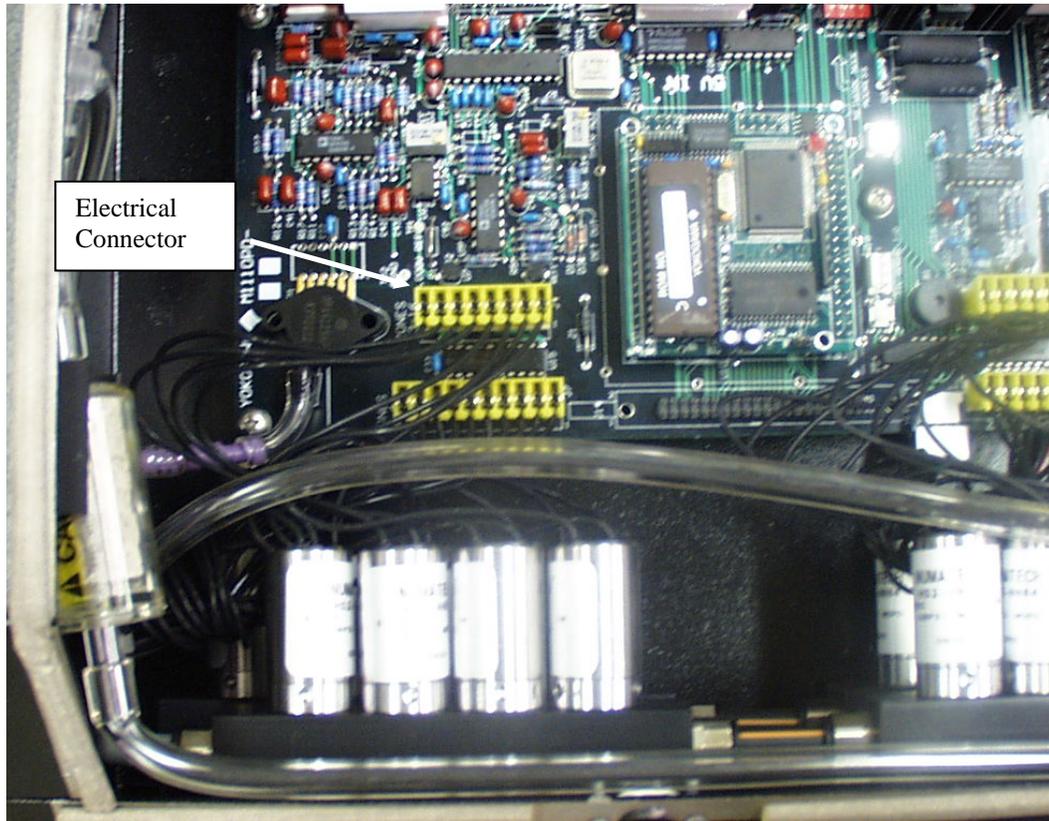


6. Cut a 17" (43.2 cm) length of soft plastic tubing. Insert the barbed end of one of the provided straight to barbed connectors into the soft plastic tubing. The connector should be inserted such that the tubing is over at least 2 barbs. It may be necessary to gently stretch the tubing in order to allow it to fit over the barbs. Do not overstretch the tubing as this could cause air leaks. Insert the straight end of the connector into the remaining port fitting in Manifold 4. Make sure that the connector is fully inserted by pushing it in until it stops. Attach the free end of the tubing onto the water trap assembly fitting. Assure that there are no kinks in the tubing that could block airflow. The complete attachment is shown below.

Tubing running from remaining manifold 4 port fitting to water trap fitting.



7. Install the yellow electrical connector onto the header on the printed circuit board labeled zones 13-16. Insure that the connector is fully seated on the pins.



11. Reconnect power to the HGM300 and reenergize the unit. The unit will go through a power on self test which will take approximately 30 seconds. After the self test is complete, the unit will enter a Warm Up period, indicated by the GREEN Monitor On LED flashing on the HGM300. In the system screen of the RDM800, the display box for the HGM300 which has been upgraded should indicate that the HGM300 is in warm up. If it does not, check and verify that the communications wiring is still connected properly. Select the key adjacent to the HGM300 which is warming up. This will bring up the HGM Setup screen. Select the key adjacent to the SETUP box. This will bring up the first setup screen. On the left hand side of the screen, the “Num Zones Installed” field should now indicate 16, as shown in the figure below. If it does not, return to page 13 and verify that the procedure was followed correctly. Specifically verify that . . .
 - The hard plastic tubing is inserted between the old manifold port fitting and the new manifold port fitting.
 - The new manifold is installed in the correct orientation.
 - The tubing from the water trap to the port fitting on the new manifold is securely in place and there are no kinks in the tubing.
 - The new manifold electrical connector is connected to the correct header on the printed circuit board and in the proper orientation.
 - No interior tubing in the unit has inadvertently been disconnected or kinked, especially the tubing from the water trap to the filter assembly or from the pump outlet to the exhaust port.
 - All tubing connections are secure and tight.

If the above checks do not reveal any problems please contact Bacharach at help@bacharach-inc.com or call 800-850-0044 for assistance.



12. After the HGM300 has completed its warm up cycle (approximately 15 minutes) the GREEN Monitor On light should change from flashing to solid. Allow the unit to complete one purge cycle. This can be verified from the RDM800 System Screen. The block corresponding to the HGM300 just modified will have a status indicating which zone is currently being monitored. Monitor the status until the status block indicates that a purge cycle has been completed (see figure for step 1 on page 2, which shows the HGM300 status as Purge). After the purge cycle is complete follow steps 1 and 2 on page 2 to navigate to the DIAG screen. Record the DIAG values indicated in step 2 on page 2. Verify that the **VAC reading is less than 12.5 PSIA**. If it is not, then an air leak has been introduced into the system. Go back and check that all tubing connections are tight and secure and that the hard plastic tubing that was inserted between the two manifolds is fully inserted and seated into each manifold. If the YELLOW System Fault light is on after the initial purge cycle, refer to your HGM300 service manual for troubleshooting steps.

Save the recorded DIAG values from before the installation and after the installation (along with the date the values were taken) for future reference. This information can be a valuable tool for checking future performance of the equipment.

This completes the 12 zone to 16 zone upgrade. The unit has automatically detected the new zones and will now include them in its measurement cycle. Each zone may be individually setup for parameters such as Gas Type, Input Length, and alarm levels by using selecting the ZONE screen from the HGM300 setup menu.