Module Testing
RF

Service Procedure **001**

Revision B: 07/15/2014

This Service Procedure helps facilitate testing of the modules for general communication, proper function and helps to identify the source of any leaks.

1). Begin by inspecting the gaskets on the underside of each module and replace them if they have become deformed or cracked. Look for any off-centered gaskets that have slide to one side. Typically one can see the impression from the lip of the bottle on the gasket which helps in determining if the gasket is in the correct position and sealing correctly.

2). Plug the charged batteries into each of the modules you want to test.

3). Apply a small amount of RF41 Synthetic Grease w/PTFE to the gaskets and the lip of the bottle. Attach a glass bottle to the modules being tested. From this point forward avoid handling the glass bottle to keep from warming the air in the bottle and affecting pressure readings later.

4). Click the Gas Pressure Monitor icon 

on your PC to run the GPM software.

5). On the GPM main screen change the **Live Interval** to 1 second and **Recording Interval** to 0.25 minutes.

6). Change the **Valve Open Time** to 100 ms and click **Set**. Enter a **Global Release** setting of 8 psi and click **Set**. Attach a Check Valve to the Luer fitting on the side of each module. Pressurize the glass bottle by applying approximately 8-10 psi through the Check Valve. Verify on the screen that the module has pressure. Any modules that received more than 8 psi should release to bring the pressure below 8 psi. Cap the Check Valve with a Male Luer Cap.

Warning: Never apply more than 10 psi to the Glass Bottle while purging, or allow the pressure in the bottles to exceed 10 psi during an experiment. Always wear safety glasses and appropriate lab protection when handling the Modules and Glass Bottles.

7). Press **Record** on your PC screen to start recording pressure data.

8). Place modules in a temperature controlled environment and allow enough time for the temperature in the bottles to equilibrate with the environment. Monitor the pressure for 30 minutes, making sure there is not a significant drop in pressure. Small changes of up to ± 0.07 psi are normal. A pressure loss of more than 0.07 psi points to a leak in the system. Note any modules that are leaking and diagnose in the steps that follow. If leaks are observed skip step 9.

9). Confirm valve function and communication during pressure setting changes. After 8 minutes change the **Global Release** setting to 6 psi and click **Set**. Monitor the modules to confirm that they all respond to the change, release pressure and reseal without leaks. Repeat this after about 15 minutes lowering the pressure to 4 psi and again after about 22 minutes lowering finally to 2 psi. Each time monitor the modules to confirm that they all respond to the change, release pressure and reseal without leaks.

Identifying & Correcting Leaks

10). **Vent Valve Tube**: Apply a small amount of gas leak detector or detergent solution to the end of the Vent Valve tube. If bubbles form, the valve is leaking. Gently tug on the tube several times so that it is extended approximately ⅛" longer. This will typically renew the seal and correct the problem. Retest the Vent Tube for leaks to determine that the problem has been resolved. If the Vent Tube continues to leak contact us at service@ankom.com or 315.986.8090.

11). **Side Port Luer Fitting / Check Valve**: When testing these parts always test with a male Luer Cap on the Check Valve. Use an eye dropper to apply a small amount of gas leak detector or detergent solution on the Side Port Luer Fitting and Check Valve.

If bubbles form where the Luer Fitting threads into the Side Port, the Luer Fitting may need to be resealed. Stop the test, release pressure and unscrew the Luer Fitting. Wipe clean the threads on the fitting and in the housing. Apply sealant (e.g. Loctite #80725 or Teflon Tape) to the threads on the Luer Fitting and reinstall. Rerun a pressure test to verify that the leaks have been eliminated.

If bubbles form from anywhere on the Check Valve, this part will need to be replaced. Order a new Check Valve (part # 7139). Replace this part and rerun this module test.

12). **Gasket Seal:** If neither the Vent Tube or the Side Port Luer Fitting/Check Valve show any leaks but a bottle is losing pressure, the leak must be coming from the gasket sealing area between the module housing and the glass bottle. End the test by entering a **Global Release** setting of "0" and click **Set.** Verify the vent valve opens for each Module by the pressure dropping to 0. It may take up to 60 seconds to release all the pressure, depending on how many Modules you have connected. Click **Stop** and save the test if desired. Remove the module from the bottle and inspect the gasket. Look for an off-centered gasket that has slid to one side. Typically one can see the impression from the lip of the bottle on the gasket which helps in determining if the gasket is in the correct position and sealing correctly. If necessary, replace the gasket following Service Procedure 185 and rerun a pressure test. A 10 pack of gaskets can be ordered as part # RF34.