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# Guardian<sup>tm</sup>

*Universal Regulator Tester.*

## *Service Manual*

Congratulations on your purchase of the Air America® Guardian™ Universal Regulator Tester. Precision machined and anodized, from certified quality aerospace aluminum alloy, your Guardian™ Universal Regulator Tester is an indispensable field or bench tool specifically designed to provide a fast fail-safe accurate way to tune your Air/Nitrogen delivery and regulation systems.

### **Introduction**

The Air America® Limited Lifetime Warranty guarantees a lifetime of trouble free service and accuracy while providing the highest safety and equipment standards in the sport of Paintball.

*Guardian™ Standard features include:*

- *Low pressure safety to prevent over pressurization of the system*
- *Rotational bleed valve that will allow you to cycle your system.*
- *Marker discharge simulation.*
- *180 degree sweep gauge for accurate pressure readings*
- *Exterior knurling to allow one hand operation*
- *Skirted knob to direct air flow during the bleed phase*
- *Internationally famous Air America® Limited Lifetime Warranty*

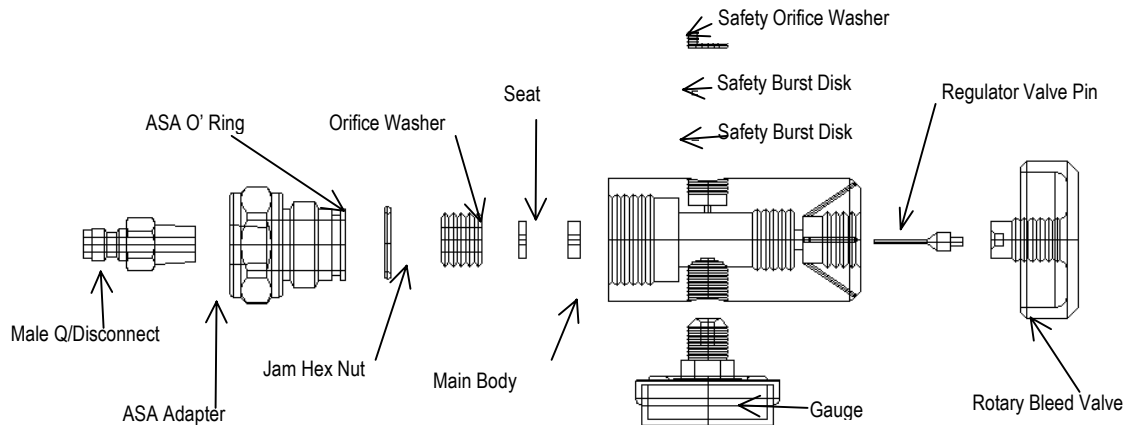
## **SAFETY ALERT!!**

**ALWAYS DE-GAS YOUR SYSTEM  
BEFORE YOU ATTEMPT ANY SERVICE OR REPAIR.**

***NOTE: To achieve maximum benefit from your factory replacement parts, have them installed by an authorized AIR AMERICA® technician. Additional technical assistance is available through the internet at [www.airamerica.com](http://www.airamerica.com).***

## Terminology

Take the time and use the following exploded view of the Air America® Guardian™ Universal Regulator tester to familiarize yourself with the names and locations of the parts you will be working with. Doing so will make the instructions for use clearer and enable you to be more proficient in your testing procedures.



## Using the Air America® Guardian™

### To test primary regulators

Install the Air America® ASA Adapter supplied with your Guardian™ tester into the female port located on the bottom of the Guardian™. Using a combination of hose and fittings to match your current air delivery system, connect the output side of your air system to the ASA Adapter on the Guardian™. **NOTE: to prevent premature bleed off of the systems tank pressure the Rotary Bleed Valve on the Guardian™ must be in a HAND TIGHT fully closed (clockwise) position.** Once the primary regulator is connected to the Guardian™ you may then pressurize the system. The gauge on the Guardian™ will read output system pressure (pressure going into the marker or secondary regulator). **NOTE: Before you make any adjustments to the output pressure of your primary regulator, cycle the Guardian™ several times by rotating the rotary bleed valve counterclockwise; it is NOT necessary to rotate the valve more than a quarter turn, purging any trapped air in the regulator passages and allowing the system pressure to stabilize.** You can also utilize this procedure to simulate firing the marker, thereby judging the response time of your air system. After cycling the Guardian™ several times take note of the gauge reading, if you feel that adjustments are needed to the output pressure of the primary regulator, do so and cycle the system again to stabilize the pressure. Repeat this procedure until you reach the desired output pressure of the primary regulator being tested. **CAUTION: BEFORE DISCONNECTING AND REMOVING THE GUARDIAN™ BE SURE THAT THE SYSTEM HAS BEEN TURNED OFF AND THE ROTARY BLEED VALVE IS OPEN.** This shut down procedure will allow any trapped pressure in the system to escape and enable a safe removal of the primary regulator.

### Testing secondary regulators

The Air America® Guardian™ is designed to allow easy adjustment of secondary regulators. Most secondary regulators are equipped with a standard ASA male fitting on one end. Testing a regulator with this type of fitting requires you to simply screw the regulator into the female ASA port on the Guardian™. If your secondary

regulator requires a different configuration, use the Air America® ASA adapter and fittings supplied with your Guardian™ to attach the output port of the regulator to the inlet side of your Guardian™. Once the proper ASA connections are made and your secondary regulator is connected to the Guardian™ you may then pressurize the system; follow the same procedures as outlined for the testing of the primary regulator. **NOTE: to prevent premature bleed off of the systems tank pressure the Rotary Bleed Valve on the Guardian™ must be in a HAND TIGHT fully closed (clockwise) position.**

### **Servicing the Air America® Guardian™**

The Air America® Guardian™ has been engineered for a lifetime reliable service. If service is ever required Air America® will service your tester upon request. If you choose to do the repairs yourself the following procedures and safeguards should be utilized. The Guardian™ has been designed to use many of the standard Air America® replacement parts currently available in the Air America® parts kits. The standard Air America® Regulator Seat and Valve Pin Assembly are located in the main body of the tester. These are the only service replacement parts you will need to bring your Guardian™ back to “like new” condition.

The Guardian™ can be completely disassembled with the following tools; 3/16 inch Allen key and a 1/4 inch Allen key. Start the disassembly by removing the Rotary Bleed Valve from the tester entirely. Turning the tester over will allow the Valve Pin assembly to fall out of the tester body. Once Valve Pin assembly has been removed rotate the tester so that the ASA side faces up, insert the 1/4-inch Allen key in the jam nut. Remove the jam nut followed by the Stainless Steel Orifice Washer. Once these parts are removed the Regulator Seat should fall out, if not, gently press it out from the Bleed Valve side with the 3/16-inch Allen key.

Prior to installing your new Regulator Seat and Valve Pin, it is best to clean the housing. Take a cotton swab and dip the end into some alcohol, now wipe the inside of the Tester body and Bleed Valve. Repeat this process until the cotton swab comes out clean, this may take several applications. **Caution: Be sure not leave any cotton residue in the tester.** To install the new Regulator Seat and Valve Pin start by inserting the Regulator Seat narrow side first, then install the Stainless Steel Orifice Washer smooth side facing the seat. Use the 1/4-inch Allen key to install and sufficiently tighten the jam nut to prevent a Regulator Seat leak. **NOTE: Regulator Seats have a taper to them with one side being wider than the other.**

Rotate the Main Body till the ASA adapter portion is facing down. Now insert the Valve Pin (long narrow end first) into the bore for the Rotary Bleed Valve. BEFORE installing the Bleed Valve use a cotton swab to put a small amount of Anti-seize lubricant onto the valves thread area and onto the pin bore located at the bottom of the Bleed Valve. Now install the Rotary Bleed Valve by screwing it in (clockwise), do not worry about the pin assembly, it's self-centering.

If the Safety Burst Disc requires service start by contacting Air America® for a proper replacement disc. Using another disc assembly could result in harm to the Guardian™ and/ or individuals. Begin by removing the safety jam nut with a 3/16-inch Allen key, exposing the orifice washer and ruptured disc assembly. Turn the tester over to allow the disc and washer to fall out. If they do not come out easily take a pick and **CAREFULLY** pry them out. **CAUTION: DO NOT DAMAGE OR SCORE THE BOTTOM OF THE SAFETY POCKET.** Damage to the bottom of the safety pocket will result in an improper seal and premature failure of the new safety burst disc.

Prior to installing your new safety burst disc, orifice washer and jam nut, it is best to clean the tester body. Take a cotton swab and dip the end into some alcohol, now wipe the inside of the tester body and thread area. Repeat this process until the cotton swab comes out clean, this may take several applications. **Caution: Be sure not leave any cotton residue in the tester.** Install the burst disc covered by the orifice washer. The orifice washer should be placed rounded side up for best results. **IMPORTANT NOTE: Do not replace the orifice washer with ANYTHING other than an Air America® orifice washer. The dimensions have been specifically calculated.** After the burst disc and washer are in place install the hex head jam nut and torque to 15-20 ft lbs. to complete the procedure.

# Guardian<sup>tm</sup>

## Trouble Shooting Guide

Note: The following chart is for reference purposes only. **Air America® recommends that all safety precautions, as outlined in the Service Manual, are strictly adhered to before any repairs or testing procedures are attempted.** In the event, repairs are required certified Air America® technicians using factory replacement parts should be relied upon to achieve maximum performance from your system. Additional technical assistance is available at [www.airamerica.com](http://www.airamerica.com).

<b>Bleed Valve Position</b>	<b>Gauge Action</b>	<b>Possible Cause</b>	<b>Probable System Repair</b>
Closed	Steady-No Leaks	Normal	Normal
Cycled 1/16 To 1/4 Turn	Drops Slightly & Rapidly. Returns To Preset Pressure & Holds Steady	Normal	Normal
Closed	Reads Zero	System Obstruction Regulator Adjustment Nut Out Of Adjustment. Improperly Set	Remove Obstruction & Clean Regulator Turn On System Adjust Regulator Output Pressure.
Closed	Slowly Rises (Creeps) Past Set Pressure.	Faulty Pin/Seat Dirt/Debris In Regulator	Replace With Factory Replacement Parts Clean Regulator
Cycled 1/16 To 1/4 Turn	Pressure Drops Then Slowly Climbs Back To Preset Pressure	Non-Air America® Regulator Seat & Pin. Wrong Piston O' Ring Wrong Spring Pack Improper Piston/Spring Pack Lubricant. Defective Spring Pack Dirt/Debris In Regulator	Replace With Air America® Seat & Pin Replace With Air America® O'ring Replace With Air America® Spring Pack Clean Assemblies & Relubricate With Proper Lubricant Replace Spring Pack Clean Regulator
Closed	Steady Beyond Preset Pressure System Leaks Out Of Regulator Nut Until Tank Reaches Approximately 1200 PSI. Safety Functioning Properly-Ignore Leak.	Bad Seat & Pin Wrong Piston O' Ring Piston Binding In Housing Dirt In Regulator Regulator Set To High	Replace Seat & Pin Replace With Air America® O'ring Free Bind & Clean Assembly, Replace O' Ring & Lubricate. Clean Regulator Reset Output Pressure To Lower Pressure.
Closed	Steady-System Leaks Out Regulator Nit	Defective O'Ring Piston Safety Failure	Replace With Air America® O'ring Replace Piston Assembly
Cycled 1/16 To 1/4 Turn	Drops & Stays Low	Internal Obstruction To Regulator Non Air America® Regulator Seat & Pin Dirt/Debris In Regulator	Remove Obstruction & Clean Regulator Replace With Air America® Seat & Pin Clean Regulator.