

Model 14-1 Gas Ingress Filter – Cleaning Procedure

Introduction

The Sonic Sentinel Model 14-1 Propane Regulator Assembly (p/n 00014) includes a 40 μ filter that utilizes a sintered bronze element to prevent debris from fouling the Injector Assembly's solenoid valve. Under normal conditions, the element should provide reliable filtration for the life of the Model 14-1. In extreme environments, however, the filter element may become clogged and require periodic cleaning to restore a reliable flow of propane gas.

The following procedure outlines the steps necessary to safely clean the filter, and must be followed *exactly* to prevent debris from reaching the solenoid valve. Failure to do so will void the warranty and could result in fire or other serious consequences. This procedure should be conducted in a clean environment with adequate lighting and requires the following tools and materials:

Required Tools & Materials

- 9/16in and 5/8in Wrenches
- 14mm and 20mm Wrenches
- 3/4in and 5/8in Sockets and Ratchet
- Torque Wrench (inch lbs.)
- Small, Fine Bristle Paint Brush
- Air Compressor with Hose and Fittings (Must be capable of providing oil and moisture free air at 90PSI)
- Compressed Air Blow Gun
- RectorSeal® #5 Pipe Thread Sealant
- Clean Rags and Workspace

Filter Removal & Cleaning Procedure

1. Power down the cannon via the external power switch (down position) and disconnect the propane tank. Allow cannon to sit for 30min to discharge any remaining gas.
2. Remove the cannon from the tripod barrel clamp using the included 6mm Allen wrench, and place the cannon on a flat, clean workspace.
3. Unlatch and lift the cannon's top shroud, disconnect solar panel, and set the top shroud aside.
4. Disconnect both power wires from the battery, remove battery, and set aside.
5. Remove the LPG regulator hose from the filter using a 5/8in wrench to securely hold the filter (Figure 1, **A**) while unthreading the hose fitting (Figure 1, **B**) with a 9/16in wrench.

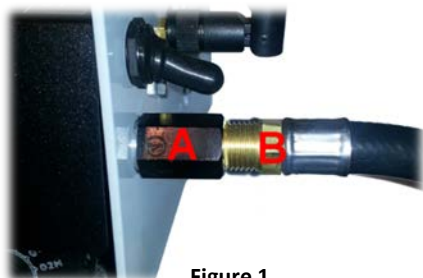
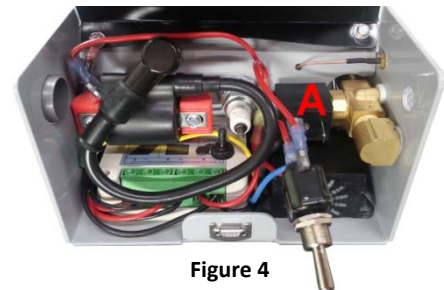


Figure 1

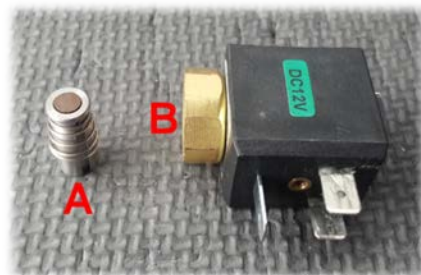
6. Remove the filter from the injector assembly using a 5/8in wrench or socket.
7. Carefully clean the residual pipe sealant from the male and female threads of the filter using a clean rag.
8. Using the compressed air blow gun, blow air into the male end of the filter (Fig. 2, A) until all visible debris is dislodged. Then briefly blow air into the female end of the filter (Fig. 2, B) as well.

**Figure 2****Valve Purging Procedure**

1. Gently lift the black electronics bay dust cover by first pushing it in at the bottom, and prop the cover open (Fig. 3).
2. Loosen inner nuts on power switch (Fig. 3, A) using a 9/16in wrench, unthread the rubber boot, remove the power switch from lower shroud, and push switch to the side (Fig. 4).

**Figure 3****Figure 4**

3. Disconnect the spark plug boot and remove the spark plug using a 3/4in socket.
4. Disassemble the solenoid valve:
 - a. Locate the solenoid coil (Fig. 4, A) and disconnect the red and blue wires.
 - b. Using a 14mm wrench, loosen the nut securing the solenoid coil to the plunger sleeve.
 - c. Using a 20mm wrench, remove the brass nut securing the coil sleeve to the valve body.
 - d. Remove the plunger and coil assembly (Fig. 5), and carefully set aside in a clean location.
5. Using the compressed air blow gun, blow air through the solenoid valve in both directions (Fig. 6, green arrows) and visually inspect for debris in the valve. Take care not to score the fragile brass plunger seat inside the valve core.

**Figure 5****Figure 6**

Reassembly Procedure

1. Prior to reassembly, again blow compressed air through the female end of the filter to ensure no debris entered during the purging procedure.
2. Using a small paint brush, apply pipe thread sealant to the male threads of the filter (Fig. 7). Apply only a small amount and use caution not to get any sealant beyond the end of the threads.



Figure 7

3. Reinstall the filter into the injector assembly and torque to 65 inch-pounds using a 5/8in socket and torque wrench. Do not over tighten!
4. Using the compressed air blow gun, blow air through the female end of filter (Fig. 2, **B**) to evacuate any possible debris introduced into in the valve core during filter installation.
5. Inspect the plunger (Fig. 5, **A**) for foreign debris and clean as necessary.
6. Inspect the inside of the plunger sleeve (Fig. 5, **B**) for foreign debris and clean as necessary.
7. Reassemble the solenoid valve:
 - a. Place plunger into sleeve and reinstall the plunger/coil assembly onto the valve body.
 - b. Carefully tighten the 20mm brass nut until finger tight to avoid cross threading, then securely tighten using a 20mm wrench. Use extreme caution to keep debris from entering the solenoid valve core during reassembly!
 - c. Tighten the coil retaining nut using a 14mm wrench.
 - d. Reconnect the coil wires (polarity does not matter).
8. Install the spark plug and connect spark plug boot.
9. Using the small brush from step 2, apply pipe thread sealant to the propane hose male threads. As before, use only a small amount and do not get any sealant beyond the end of the threads.
10. Install the hose into the filter using a 5/8in wrench to securely hold the filter (Figure 1, **A**) while tightening the hose fitting (Figure 1, **B**) with a 9/16in wrench. Do not apply torque to the filter!
11. Reinsert the power switch into the lower shroud and thread on the outside rubber boot until finger tight. Then tighten the two inside nuts with a 9/16in wrench while firmly holding the switch body to prevent it from rotating.