



Innovative Liquid Vaporizing and Gas Mixing Solutions



151 South Michigan Street,
Seattle, WA 98108 U.S.A.
Phone: 206-789-5410
Fax: 206-789-5414
Internet: www.algas-sdi.com

Installation Instructions for P/N: 41073
Algas-SDI thermostat retrofit kit
Field Kit for 40/40H thru 120/60H Model
Vaporizers

Algas-SDI Thermowell and Thermostat Kit (Part Number 41073) Includes:

Item	P/N	Description	Model
(a)	55011	Installation Instructions	All
(b)	3-1042	Tube connector, straight, 3/8" tube x 1/2" MNPT	All
(c)	20438	Copper tubing 3/8" x 3 " Lg. (cut to fit)	All
(d)	3-1041	Tube connector, straight, 3/8" tube x 3/8" MNPT	All
(e)	31058	Tube connector, elbow, 3/8" tube x 3/8" MNPT	All
(f)	20439	Copper tubing 3/8" x 4 " Lg. (cut to fit)	All
(g)	1501-4007	Thermostat and reigniter assembly	All
(h)	3-1062	Nut and sleeve 1/4"	All
(i)	20440	Copper tubing 1/4" x 32 " Lg. (cut to fit)	All
(j)	20441	Copper tubing 3/8" x 22 " Lg. (cut to fit)	All
(k)	36603	Heavy duty nut	All
(l)	34277	Brass tee 3/8"	All
(m)	30221-Z	Steel plug 3/8" Zinc Plated	All

REQUIRED TOOLS:

- | | |
|------------------------------------|----------------------------------|
| 7/16" End Wrench or Tubing Wrench | 3/8" End Wrench or Tubing Wrench |
| 11/16" End Wrench or Tubing Wrench | 6" Crescent Wrench |
| 18" Crescent Wrench | |

WARNING

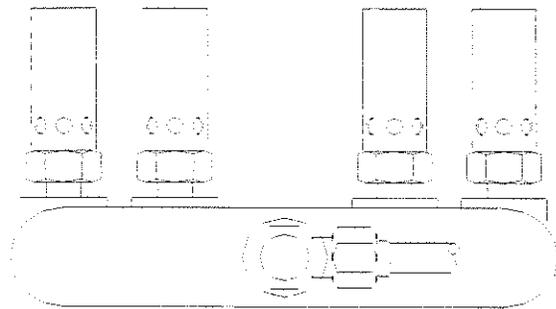
Read the OPERATION and MAINTENANCE MANUAL before operating this equipment.

- **DO NOT USE THE ENCLOSED THERMOSTAT WITHOUT THE THERMOWELL PROVIDED IN THE KIT.**
- This equipment uses LP Gas, a flammable fuel handled under pressure. Inherent hazards exist; thorough understanding of the equipment is required to allow safe operation and maintenance.
- Allow only **TRAINED and FULLY QUALIFIED PERSONNEL** to service this equipment.

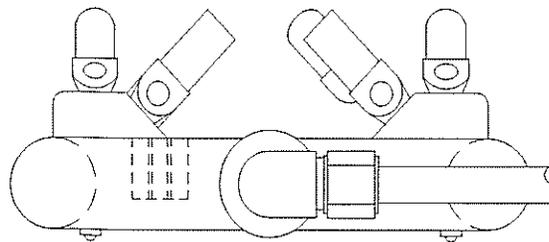
IDENTIFYING DIRECT FIRED BURNERS

The Direct Fired burners were updated to a new, low emissions burner in early 2003. The difference between the burners can be seen in Figure 1, below.

The Low emission burners with #69 jets are marked with a metal tag on the inlet to the burner. The tag has #69 stamped on it.



Six Jet Burner:
 Pressure Setting at regulator
 (Burner ON):
 40/40H = 14" w.c.
 80/40H = 16" w.c.
 120/60H = 18" w.c.



Low Emissions Burner:
 Pressure Setting at regulator
 (Burner ON):
 40/40H = 11" w.c. (66# orifice)
 80/40H = 10" w.c. (66# orifice)
 120/60H = 15" w.c. (66# orifice)

40/40H = 11" w.c. (69# orifice)
 80/40H = 10" w.c. (69# orifice)
 120/60H = 18" w.c. (69# orifice)

Figure 1. Burner styles and pressure settings

CAUTION: Prior to venting and removing the thermostat all sources of ignition within 50 feet must be eliminated.

REMOVING ROBERT SHAW THERMOSTAT

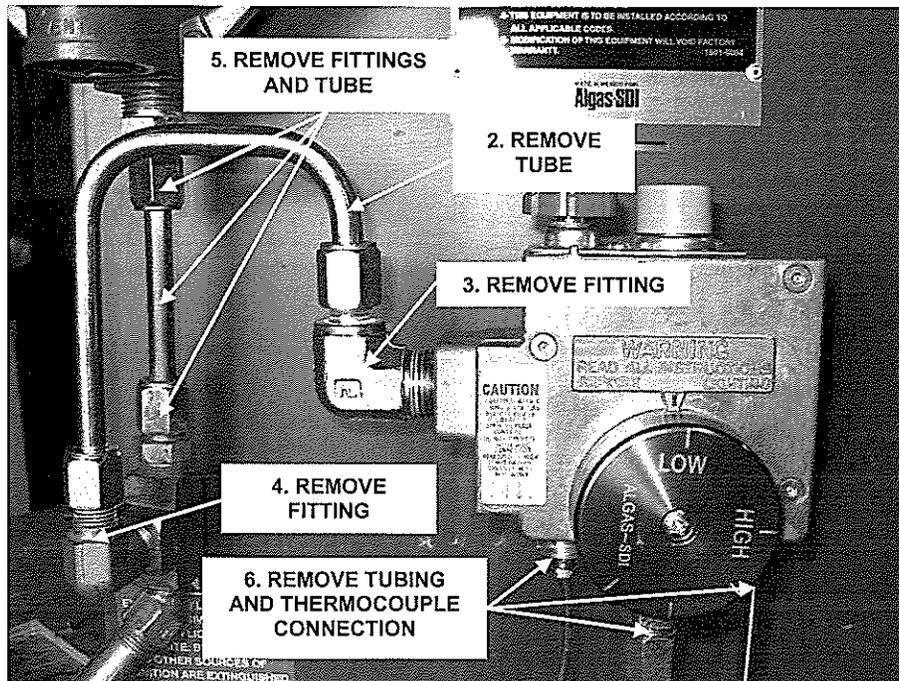


Figure 2. Disconnecting tubing and connections from Robert Shaw thermostat assembly

1. Close regulator supply valve.
2. Remove thermostat supply tube.
3. Remove elbow fitting at the inlet to the thermostat.
4. Remove thermostat supply tube fitting at the brass tee.
5. Remove fitting at the outlet of the regulator, inlet to the brass tee and the tubing that connect these two fittings.
6. Remove pilot tube fitting, thermocouple connection and supply tube fitting from the bottom of the thermostat.

7. Remove pilot and burner tube fittings at the pilot assembly and at the burner inlet brass tee.
8. Prior to removing thermowell make sure that vaporizer has been properly purged per shut down and purge procedure listed in the manual and only then remove the installed thermowell.

NOTE: Never use existing thermowell provided with Robert Shaw thermostat with new thermostat assembly. Discard existing thermowell and replace with the one included in the kit.

INSTALLING NEW THERMOSTAT ASSEMBLY

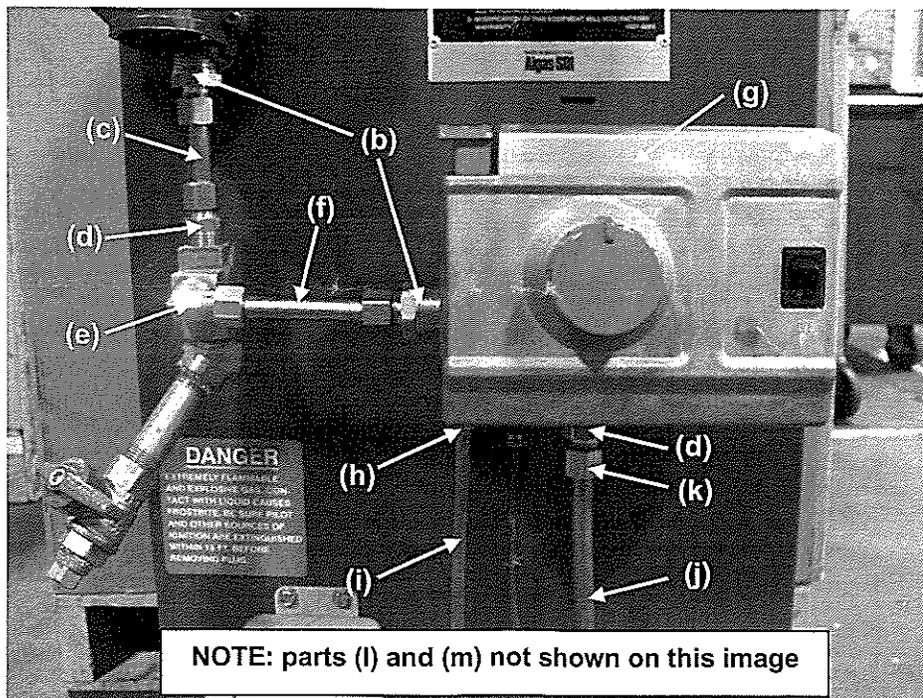


Figure 3. Installing new thermostat assembly

1. Using pipe dope approved for LP Gas, apply pipe dope to male threads of the new thermowell and install in the thermostat connection on the heat exchanger.
2. Thread in thermostat assembly in thermowell. Ensure there is Never Seez on thermostat threads.
3. Apply LPG approved pipe dope to fitting (b) threads and install at the outlet of the regulator.

4. Apply LPG approved pipe dope to fitting (b) threads and install at the inlet to the thermostat.
5. Apply LPG approved pipe dope to fitting (d) threads and install at the inlet to the brass tee.
6. Apply LPG approved pipe dope to elbow fitting (e) threads and install at the outlet of the brass tee.
7. Cut 3/8" copper tubing (c) to fit to align brass outlet elbow fitting (e) and thermostat inlet fitting (b) as shown in Figure 3.
8. Cut 3/8" copper tubing (f) to fit to connect brass tee elbow fitting (e) and thermostat inlet fitting (b).
9. Tighten all fittings to ensure proper sealing.
10. Thread in nut and sleeve (h) into pilot assembly mounted on the heat exchanger flue, push 1/4" pilot copper tubing (i) through and tighten the nut. Run pilot copper tubing through hole in the cabinet and up to thermostat. Place another nut and sleeve (h) into the pilot hole at the bottom of the thermostat assembly. Cut tubing to fit accordingly and tighten the nut.
11. For 80/40H and 120/60H vaporizers, apply LPG approved pipe dope to fitting (d) threads and install at the burner inlet brass tee and use heavy duty nut (k) to compress on the tubing. Run burner copper tubing through the hole in the cabinet up to the thermostat.
12. For 40/40H vaporizer, apply LPG approved pipe dope to elbow fitting (e) threads and thread in the burner. Use heavy duty nut (k) to compress on the tubing. Run burner copper tubing through the hole in the cabinet up to the thermostat.
13. Install the brass tee (l) at the outlet of the thermostat. Thread in the 3/8" male threads on the tee into the thermostat outlet. Ensure that the port on the tee is facing away from the vaporizer cabinet. *Be Careful not to over tighten!*
14. Install 3/8" steel plug (m) in the port on the brass tee.
15. Install the second straight 3/8" tubing fitting (d) at the bottom of the brass tee.
16. Cut burner tubing to fit accordingly and use heavy duty nut (k) to compress on the tubing.
17. Connect thermocouple to thermostat.

**CAUTION**

The entire installation must be leak tested prior to operating the system.

TESTING NEW THERMOSTAT

1. Ensure all internal and external fittings are tightened prior to testing new thermostat.
2. Apply soap and water leak testing solution to all internal, external, flanged and tubing connections. Ensure that there is at least 150PSI of pressure available within the heat exchanger to conduct a full leak test.
3. **Repair any leaks before continuing. Repeat leak test to verify no leaks are present.**
4. Close the supply valve to the Thermostat Supply Regulator and vent lines.
5. Using a 3/8" FNPT barb fitting and hose, connect a 0-30" manometer (or similar pressure indicating device) to the pressure tap port at the bottom of the drip leg. You will have to remove the 3/8" plug and drain the drip leg first.
6. Open the supply valve to the Thermostat Supply Regulator.
7. Turn the reignitor switch "ON".
8. Establish pilot by turning gas control dial to "RUN". Push down the "PILOT" button while igniting pilot (hold button down for 30 - 60 seconds and then release). After pilot is established, rotate gas control dial counter clockwise towards "7" mark position. The main burner(s) should engage depending on the ambient temperature.



NOTE: If the ambient temperature is below 10°F (-12°C) when the pilot button is released it is likely that the main burner will immediately cycle on. As soon as the LP gas inside the heat exchanger heats up above this temperature the main burner will cycle off. This is normal operation for the new Algas-SDI thermostatic gas valves and is different than previous gas valves used.

9. With the main burner operating, check the Thermostat Supply Regulator and burner gas pressure using the manometer. For the desired Thermostat Supply Regulator pressure for each model please refer to page 2 of this installation instruction. To adjust the Thermostat Supply Regulator pressure, remove the cap and turn the adjustment screw clockwise with a standard screwdriver to increase the pressure. Return Thermostat Supply Regulator cap when complete.

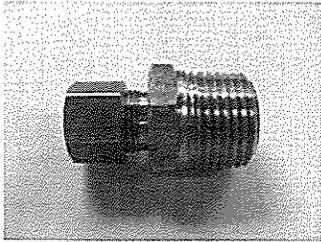


Innovative Liquid Vaporizing and Gas Mixing Solutions

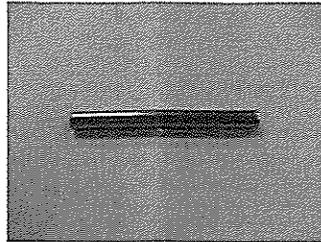


10. Close the supply valve to the Thermostat Supply Regulator and **wait until the pilot and main burner have extinguished**. Turn the gas control dial to "OFF" position and turn the reignitor switch "OFF". Remove the manometer and fittings. **Replace all plugs before proceeding**.

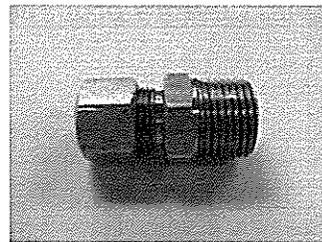
Kit content Part Identification



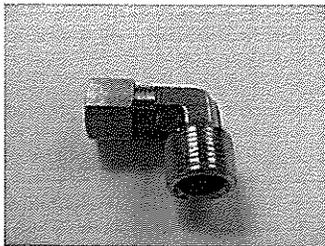
(b)



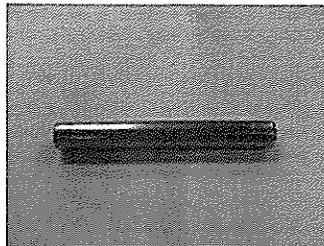
(c)



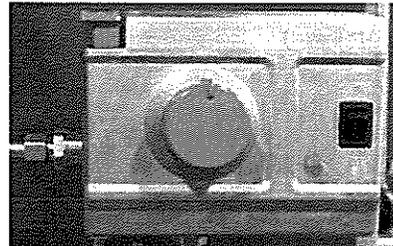
(d)



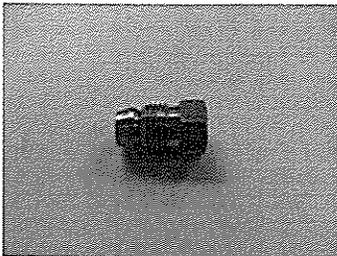
(e)



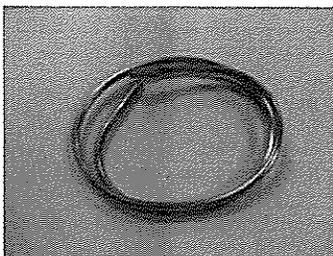
(f)



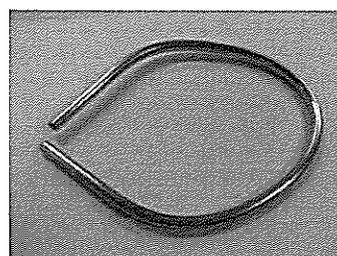
(g)



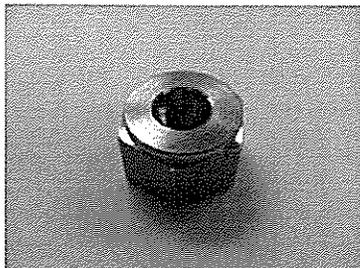
(h)



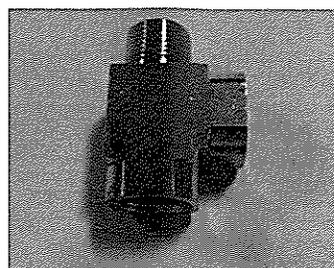
(i)



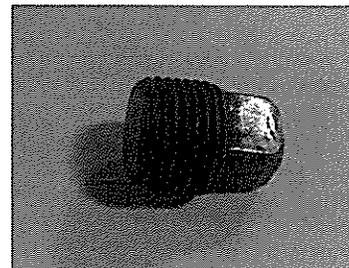
(j)



(k)



(l)



(m)