TROJAN SPECIALTY PRODUCTS

User's Manual
&
Trouble Shooting Guide
for the
Trojan 66B
Stock Tank Heater

Beck Sales Company, Inc."dba"
TROJAN SPECIALTY PRODUCTS
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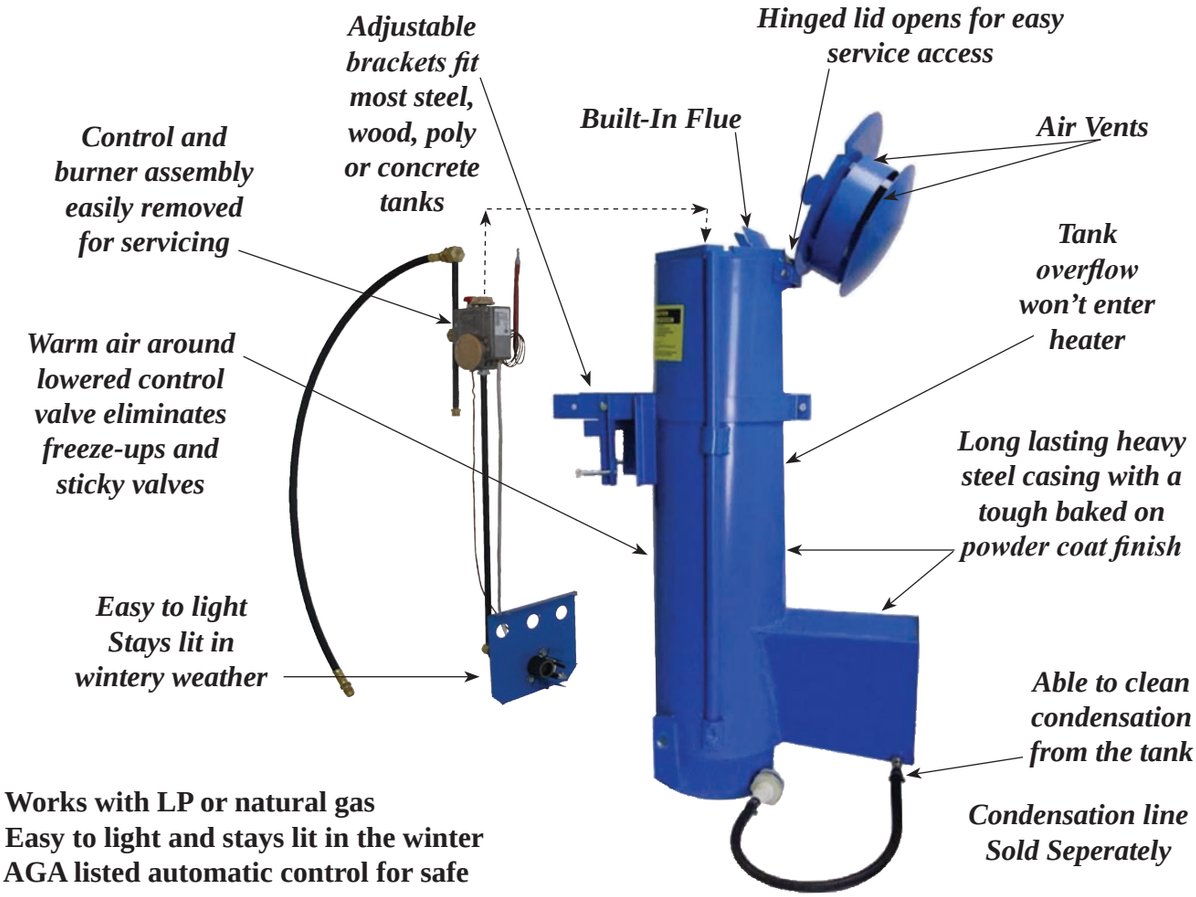
TROJAN SPECIALTY PRODUCTS

TROJAN'S 66B L.P. GAS STOCK TANK HEATER



- Works with LP or natural gas
- Easy to light and stays lit in the winter
- AGA listed automatic control for safe operation
- Thermostat and controls may be removed easily for service
- Adjustable brackets fit most steel, wood, poly or concrete tanks
- 12,400 BTU every hour if needed
- No gaskets to melt or leak
- Long-lasting heavy steel casing
- Control and burner assembly easily removed for servicing
- Can be shipped UPS

Height	35"
Diameter	8 1/2"
Weight	49 lbs.
Casing and heat chamber length	20"

Part #: 15000

PARTS ARE AVAILABLE

TROJAN SPECIALTY PRODUCTS

CHECK FOR THE FOLLOWING BEFORE OPERATING YOUR 66B

1. **LOW PRESSURE GAS REGULATOR IS REQUIRED OR WARRANTY IS VOIDED.**

2. **BURNER ASSEMBLY MUST BE LIT OUTSIDE OF THE CASING. REFER TO PAGE 6 FOR LIGHTING INSTRUCTIONS.**

3. **ONLY PILOT LIGHT NEEDS TO BE BURNING WHEN BURNER ASSEMBLY IS INSERTED INTO CASING.**

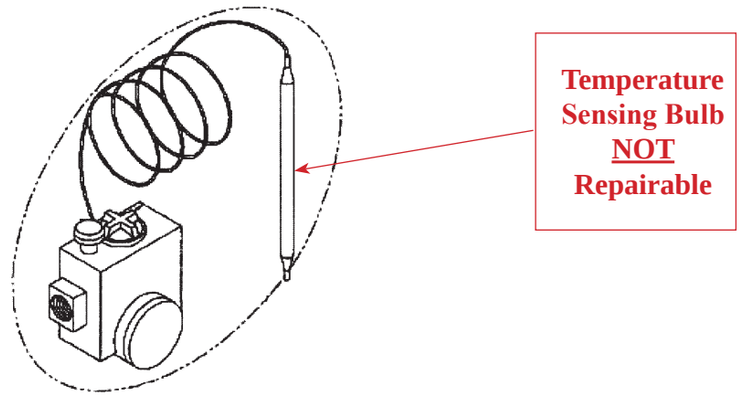
4. **MAKE SURE BURNER PLATE IS CONNECTED TO HEATING CHAMBER (see figure # 1 page 5). IF NOT CONNECTED PROPERLY THE UNITROL WILL BE DAMAGED AND WILL HAVE TO BE REPLACED. IF YOU LOOK DOWN INTO THE CASING AND SEE A FLAME...IT IS NOT CONNECTED PROPERLY.**

5. **THE SENSING BULB ON THE UNITROL IS GAS FILLED...IF BENT, CRIMPED, HEATED OR DAMAGED IN ANY WAY THE ENTIRE UNITROL WILL HAVE TO BE REPLACED.**

6. **DON'T LET THE SENSING BULB TUBE FILL WITH WATER. IT WILL FREEZE THUS CAUSING REPLACEMENT OF THE ENTIRE UNITROL.**

7. **ADD ENOUGH VEGETABLE OIL INTO THE SENSING BULB TUBE TO COVER SENSING BULB TO PREVENT FREEZING.**

THE SENSING BULB IS THE HEART OF THE UNIT
THERE IS NO TRANSPLANT AVAILABLE



FOR PRODUCT OR SERVICE INFORMATION

CALL
TOLL FREE
800-279-1770

Assembly Instructions

1. **Refer to Figure 1 (page 5) to clarify the following assembly instructions. To avoid removal of the Cover (6) from the Casing (23), the Anchor Brackets (27 & 28) should be assembled onto the Casing instead of assembling the Anchor Brackets separately and sliding it onto the Casing. Slide the Right Hand Half Band Assembly (25) between the Casing and the Bulb Tube Guide (18). This will help hold the Anchor Brackets (27 & 28) in place to complete the assembly. Insert the 5/16" x 6" Hex Head Bolt (30) through the non-threaded hole in the Left Hand Anchor Bracket (28) with the bolt head toward the leg side of the angle (see Figure 1 page 5).**

   Insert this bolt through one of the two rear holes in the Left Hand Half Band Assembly (26). The hole selected depends on the thickness of the stock tank wall. Insert the bolt through the Center Brace Tube (29), the Right Hand Half Band Assembly (25), and through the non-threaded hole in the Right Hand Anchor Bracket (27). Install the 5/16" Nut (32) but do not tighten at this time. Install the 1/4" x 2 1/2" Hex Bolt (31) through the front holes of the Half Band Assemblies (25 & 26) and loosely install the 1/4" Nut (33). Install two 3/8" x 2 1/2" Bolts (34) in the threaded holes on the Anchor Brackets (27, 28).

   Install 66B in the stock tank and slide hanger bracket to desired position. The unit should be installed as level as possible. It may be desirable to tip the unit slightly so that the front of the boot (see Figure 1 page 5 for location of boot) is a little lower than the bottom of the casing. When in the desired position, tighten the 5/16" bolt and nut (30 & 32) so the unit does not slide in the anchor bracket. Over-tightening this bolt is unnecessary and may cause deformation of the anchor bracket.

2. **Heater should be installed at least three feet from any building, board fence, or any structure to eliminated downdrafts.**

3. **The temperature-sensing bulb has been placed in a protective tube or Bulb Guide (18) on the outside of the Casing (23). At all times when the burner assembly is in operation, the temperature-sensing bulb must be in the bulb tube guide. This is intended to allow easy withdrawal FOR ADJUSTMENTS OR REPAIR.**

4. **This unit may be used to heat a polyethylene stock tank as long as the stock tank heater is 4 inches from the side of the stock tank.**

5. **A Pressure Regulator should first be installed by your gas service man and set per recommended pressures listed in the specifications section. Regulator should be installed in line within 7 feet of this tank heater.**

6. **Flexible rubber hose is to be connected to the fitting from the regulator and the bottle gas supply. CAUTION: Be sure to blow out the piping before connecting to the heater hose to eliminate any moisture from the lines.**

7. **Protect Hose Assembly (2) and the small temperature sensing bulb control (sensing tube) from being damaged by livestock.**

CAUTION !

Do not use pipe compound, shellac, or any other sealing compound on any of the fittings between supply lines and this control unit.

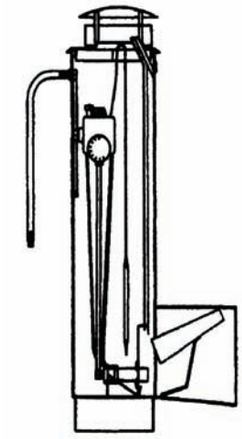
Brass to brass or brass to aluminum connections do not require any sealing compound. Any particle of sealing compound that gets into the control will not allow the control to function properly.

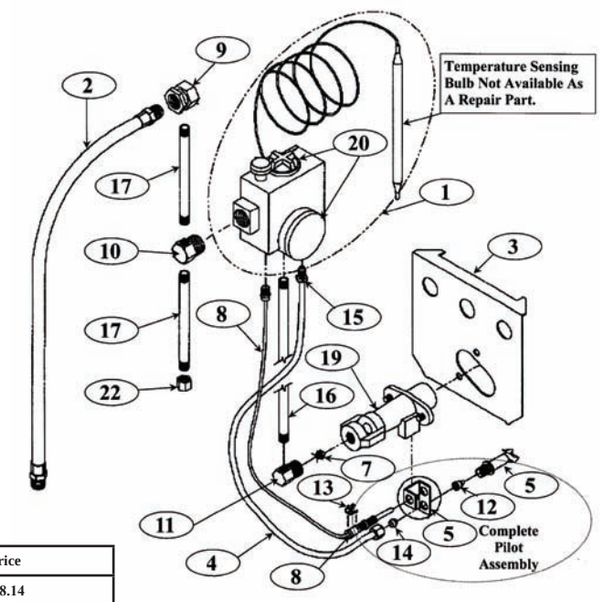
The use of a sealing compound and the servicing of this control by anyone, will void the one year guarantee on the control.

Assembly Instructions

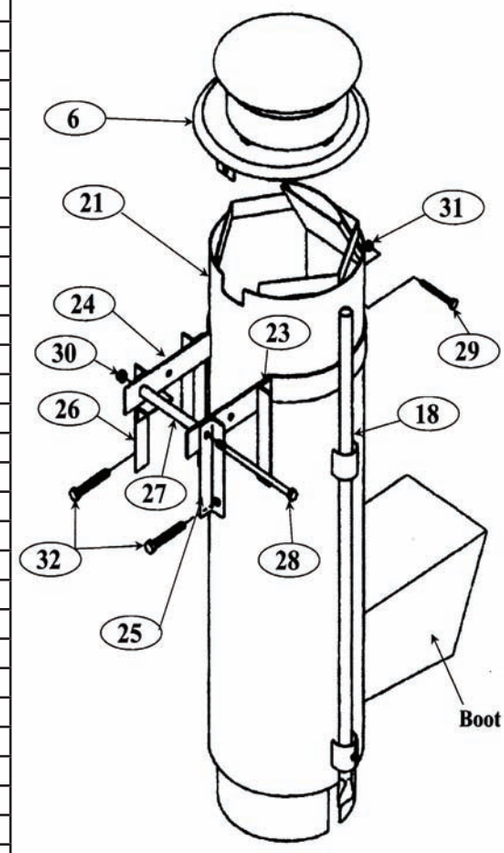
Figure No. 1: 66B Stock Tank Heater

Assembled Heater





Item No.	Part No.	Description	Price
1	11869	Robertshaw Unitrol 110SS	238.14
2	16628	Gas Hose Assembly	17.20
3	13989	Burner Plate	10.08
4	13994	1/4" Pilot Tube - 23"	6.52
5	13997	Pilot Assembly	17.02
6	13999	Round Cover	71.16
7	14428	#58 Orifice - Main Burner - LP only	5.46
8	14429	24" Thermocouple	23.28
9	14441	Brass Locator Fitting	13.20
10	14442	Brass Inlet Fitting	10.08
11	14446	90° Orifice Holder	8.04
12	15418	Pilot Orifice Pkg. - LP	16.80
13	14488	Thermocouple Spring	0.60
14	14489	1/4" Ferrule & Sleeve for Pilot	3.66
15	14493	Pilot Tube - Unitrol Fitting Only	2.82
16	14962	1/8" x 18 9/16" Nipple Pipe	14.64
17	14963	1/8" x 5" Nipple Pipe	11.88
18	15006	Bulb Guide	10.92
19	15092	Cast Iron Burner w/ Screws	33.36
20	15414	On/Off Control Dial - Plastic	
		Temp. Control Dial - Plastic	15.34
21	15471	Casing & Heat Chamber	Included w/ 20000
22	17190	1/8" NPT Pipe Cap	3.00
23	15467	Right Half-Band	14.82
24	15468	Left Half-Band	14.82
25	15469	Right Anchor Bracket	9.00
26	15470	Left Anchor Bracket	9.00
27	15472	Center Brace Hanger	Included w/ 15563
28	14633	Bolt - 5/16 - 18 x 6"	Included w/ 15563
29	14425	Bolt - 1/4 - 20 x 2 1/2"	Included w/ 15563
30	11372	Nut - 5/16 - 18 HZP Steel	Included w/ 15563
31	11369	Nut - 1/4 - 20 HZP Steel	Includedw/ 15563
32	11365	Screw 3/8 - 16 x 2 1/2"	Included w/ 15563
---	15563	Parts Bag	10.01
--	15564	Parts Box	58.20
--	15466	Complete Burner Assembly	387.94
---	20000	Complete Casing Assembly	367.94



Operating Instructions

NOTE: The following warning applies to installations using LP., Propane Gas.

WARNING

To avoid possible injury, tire, and explosion, please read and follow these precautions and all instructions on this appliance before lighting the pilot. This appliance uses L.P. (Propane) gas that is heavier than air and will remain at low levels if there is a leak. Before lighting, sniff air at low levels. If you smell gas, follow these rules: 1) Shut off gas at L.P. tank and 2) DO NOT attempt to light.
If your L.P. tank runs out of fuel, turn off gas at the stock tank heater. After L.P. tank is refilled, stock tank heater must be re-lit according to manufacturer's instructions. If the gas control has been exposed to WATER in any way, DO NOT try to use it. It must be replaced. DO NOT attempt repair on gas control or appliance.

Tampering is DANGEROUS and voids all warranties

Make sure gas piping is pressure tested before gas valve (Unitrol) is connected. High pressure can damage gas valve (Unitrol) causing a hazardous condition. Do not subject gas valve (Unitrol) to more than 1/2 P.,S.I. (14" W.C.) inlet pressure.

1 **Pilot may be lit by raising the burner assembly out of the casing (be sure the temperature sensing bulb is free to be raised with the burner assembly),**
2- **Turn Control off-on to "OFF" position. (See Figure 2 in Trouble Shooting section for gas valve (Unitrol) locations.)**
3. **Turn temperature dial to lowest reading.**
4. **Turn Control off-on to pilot position.**
5. **Light match and hold at pilot.**
6. **While holding lit match at pilot, completely depress red reset button and light pilot. May take several seconds for gas to reach pilot.**
7. **After pilot lights, hold red reset button down for 60 seconds.**
8. **Release red reset button.**
9. **If pilot goes out, turn control off-on clockwise to "OFF" and repeat steps four through eight.**
10. **After pilot is properly lit, it is very important NOT to turn control off-on to "ON" position until after the burner is lowered to the bottom of the casing-then turn the control off-on to "ON" position. If the burner is turned on while lowering the pilot and burner to the bottom of the casing, the unit will go out from lack of oxygen before draft is started.**
11. **Re-insert the temperature sensing bulb in the bulb tube guide. Being careful NOT to bend, dent, or crimp the temperature sensing bulb. This can cause breakage or damage to the temperature sensing bulb, may result in replacement of Unitrol, and VOIDS all warranties**
12. **Turn temperature dial to desired setting.**

Temperature Dial Markings correspond approximately to the following OFF temperatures:

DIAL POSITION	1	2	3	4*	5	6	7	8	9
TEMP. ºF (110SS)	36º	40º	44º	48º	52º	56º	60º	64º	68º

*** Suggested starting temperature**

Storage Instructions

1. **Remove the complete stock tank heater from the stock tank.**

2. **When possible: store complete stock tank heater in an air tight container and free from water, dirt, and dust.**

3. **If not possible to store complete stock tank heater in air tight container:**
   a) You should remove the complete burner assembly (the insides) from the casing. Place a plug in the gas inlet opening or tape over the opening. Also, wrap the burner in a plastic bag. DO NOT COVER GAS VALVE (Unitro1) with plastic bag! This could cause damage and result in replacing gas valve (Unitrol).
   b) Turn casing upside down and if possible, cover up.

4. **If the unit must be stored in an upright position, then it is important that it be protected from having water accumulation in the casing. The burner assembly should not be exposed to water.**

5. **If you are leaving the stock tank heater in the stock tank you should leave the gas supply in tact and leave the pilot lit. This will help prevent premature rusting and gas valve (Unitrol) failure and possible replacement.**

6. **To restore operation, be sure the casing is free of nests, etc. before starting up.**

Specifications

Input Ratings:

Propane:	**13,000 BTU/HR @ 10.9 in. W.C. at Manifold**
Natrural Gas:	**13,000 BTU/HR @ 5.0 in. W.C. at Manifold**

Recommended Pressures (in. W.C.) :	**Natural**	**L.P.**
Minimum Supply Pressure	**7.0”**	**11.0”**
Maximum Manifold Pressure	**5.0”**	**10.9”**

Orifice Sizes (Drill Size No.):

Main Burner	**#53**	**#58**
Pilot Burner	**#77**	**#87**

Trouble Shooting

PROBLEM	POSSIBLE CAUSE	WHAT TO DO:
Pilot doesn't light	1. Pilot burner not getting gas.	1. Check to see if tank valve is "ON" 2. Control off-on set to "pilot" 3. Red reset button depressed (it may take 30 to 60 seconds to bleed all air from line)
	2. Pilot orifice blocked.	1. Remove flare nut and ¼" line. See Fig.1 No. 14. 2. Pull line back & remove orifice. 3. Clean with compressed air, DO NOT use drill bit or wire as this may change the size of the orifice and cause an improper or unsafe flame.
	3. Control Knob not in "Pilot" position	1. Check to see if control knob is set in "Pilot" position
Pilot will light but doesn't stay lit.	1. Are you using a Low Pressure Regulator?	1. If a Low Pressure Regulator is not being used, install one. Operation of unit with out one could ruin the Robert Shaw Unitrol unit. (Blow out the bellows)
	2. Thermocouple not hot enough.	1. Hold red reset button down longer. It should not take more than 30-40 seconds.
	3. Damaged thermocouple or just bad (Kinked, hole, frozen, etc)	1. Replace with new one. 2. Tighten thermocouple nut finger tight plus ¼ turn and NO MORE. Overtightening may damage thermocouple or magnet.
	4. Pilot flame in wrong position.	1. Flame should Contact the upper 1/3 and including the tip of the thermocouple (3/8" to 1/2") Bend flame deflector hood as needed. Operates best when bent in "L".
	5. Pilot flame is wrong size.	1. Adjust pilot adjustment screw. See Fig. 2b. If thermocouple has swelled, flame is too hot and thermocouple may be dam aged. (Order a new one.)
	6. Weak magnet.	1. Replace gas valve (Unitrol). NOTE: See test procedure No. 2.
	7. Red Button Melted or Deformed	1. The knob will not push down into correct position. Replace Red Knob
Pilot lights but burner doesn't.	1. Control off-on set to "PILOT."	1. Turn Control off-on to "ON."
	2. Temperature dial too low.	1. Turn temperature dial to a higher number.
	3. Temperature sensing bulb too warm.	1. Bulb must be less than 60 degrees to light Burner. If bulb is less than 40 degrees & burner still won't light, see next cause. Sensing bulb must be below water level in bulb guide.
	4. Temperature sensing bulb or line is damaged.	1. Dents in temperature sensing bulb par tially crushed due to water freezing in the bulb tube guide (see Fig. No. 2) or sharp bends in the line may cause the control to "think' the temperature is higher than it is. It the damage is major, a new gas valve (Unitrol) is required. Tempera ture sensing bulb not sold Separately.

Trouble Shooting

PROBLEM	POSSIBLE CAUSE	WHAT TO DO:
	5. Temperature dial calibration wrong.	1. See Fig No. 4 for recalibration procedures.
	6. Damaged bellows.	1. Temperature sensing bulb exposed to either high temperature or crushed due to water freezing in the bulb tube guide. (The bellows housing may exhibit a large gap to the main valve body) See Figure No 2. 2. May have to replace Robert Shaw UNITROL unit.
	7. Dirt in burner orifice.	1. Remove burner and orifice. 2. Clean with compressed air. DO NOT use drill bits or wire to clean. This may change the orifice size and cause im proper or unsafe burner operation.
Burner lights but doesn't shut off.	1. Temperature sensing bulb to cold.	1. Warm to 50 degrees and check.
	2. Temperature sensing bulb or line damaged causing a leak.	1. If temperature sensing bulb has lost some or all of Its fluid, the control will "think" the temperature is colder than it is. 2. Order a new gas valve (Unitrol). Tempera ture sensing bulb not sold separately.
	3. Temperature dial.	1. See Figure No. 4 for recalibration proce dures.
	4. Expanded Bellows	1. Replace Robert Shaw UNITROL Unit
Melted valve knobs	1. Main burner orifice partly plugged	1. Remove burner and clean
	2. Low pressure or bad gas supply.	1. Correct gas supply.
	3. Burner assembly is not properly inserted into casing	1. Remove and re-insert burner assembly making sure that it is all the way to the bottom and tight against the boot. 2. Replace melted knobs
	4. Chimney could be partially plugged.	1. Remove burner assembly. Blow compressed air into top of chimney to remove debris.
Sensing Bulb froze down in tube	1. Frozen water in tube	1. Put vegetable oil in tube but keep close watch, vegetable oil will float on water.
	Continued On Next Page	

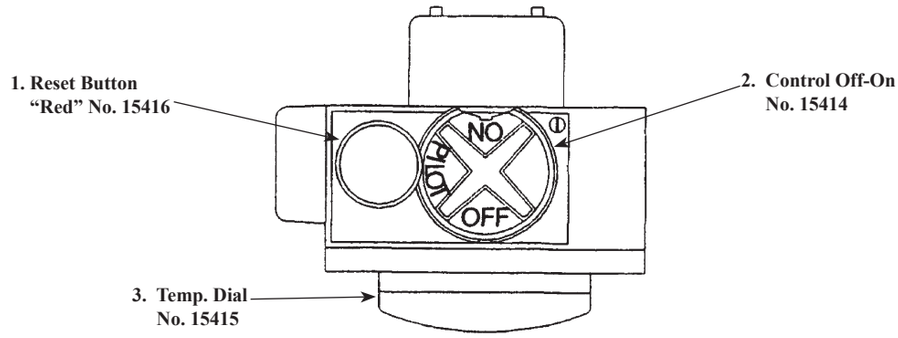
Trouble Shooting

PROBLEM	POSSIBLE CAUSE	WHAT TO DO:
Burner assembly works fine outside of Casing, but goes out when in Casing.	**1. Wind blowing out flame.**	**1. Always keep top cover closed.** **2. Try to point the tip of the boot into the prevailing wind.**
	2. The stack (chimney) passage plugged.	**1. Clean out the passage (chimney).**
	3 Lack of air flue convection.	**1. Allow sufficient time for the pilot light heat to create a convection after installing burner assembly in casing before starting the main burner.**
	4. Excessive water (condensation) build-up in Casing.	**1. Empty water and operate at a slightly higher temperature dial setting. Runs best between #4 and #6.**

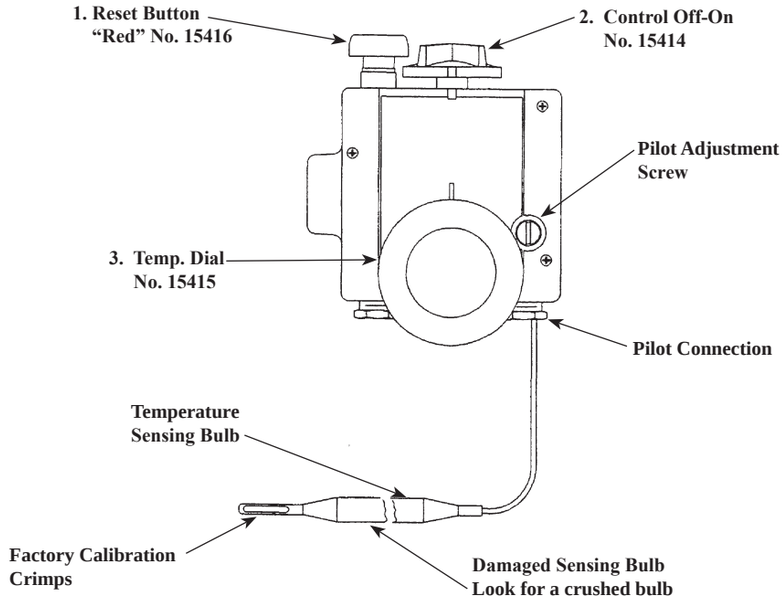
Trouble Shooting

Figure No. 2: Gas Valve (Unitrol)

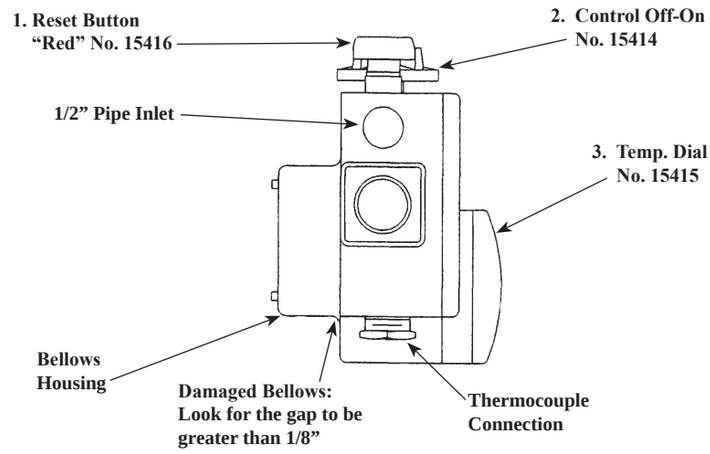
2a. Top View



2b. Side View



2c. End View

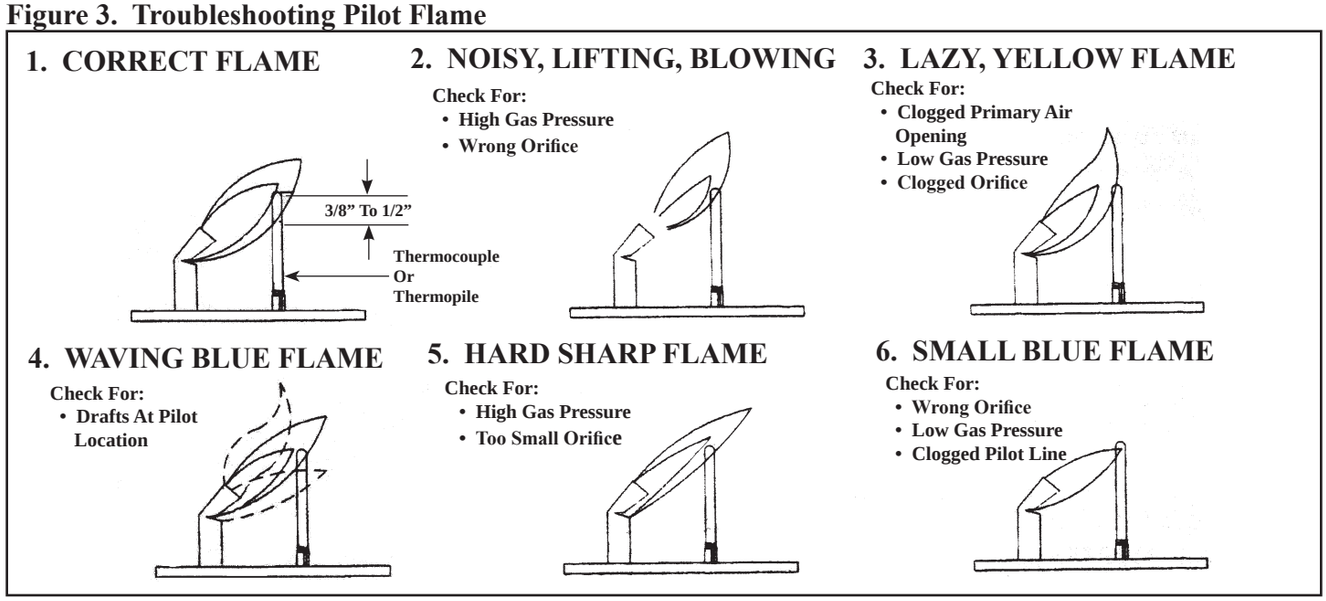


Trouble Shooting

Pilot Burner Adjustment (see Figure 2 and 3)

1. Adjust pilot adjustment screw (Figure 2b) to provide properly sized flame (Figure 3).
2. Improper flame size can result in pilot light not staying lit (Figure 3).

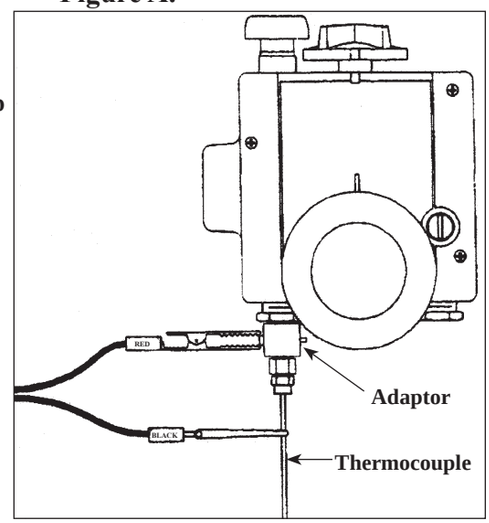
Figure 3. Troubleshooting Pilot Flame



Test No. 1 To Test Thermocouple Using Millivolt Meter And Robertshaw Adapter #75036* (see fig. A)

1. Unscrew thermocouple from control.
2. Screw Robertshaw adapter #75036 into control.
3. Screw thermocouple into adapter.
4. Connect millivolt meter leads to adapter and thermocouple as shown in fig. A.
5. Light pilot and allow it to heat tip of thermocouple for three minutes. If pilot will not stay lit, hold red reset button down during this test.
6. If meter reads below 13 millivolts, replace thermocouple. If meter reads 13 millivolts or more, the thermocouple is good.

Figure A.



Test No. 2 To Test Magnet Using Millivolt Meter And Robertshaw Adapter W75036 (see fig. A)

1. After testing thermocouple and replacing if necessary as described above, follow normal pilot lighting procedure with adapter and millivolt meter attached as shown in fig. A.
2. Allow pilot to burn for three minutes.
3. Note millivolt reading on meter and blow out pilot.
4. Magnet should continue to hold for a drop of five millivolts or more before it releases. A "snap" can be heard when magnet releases. If magnet does not hold for a drop of at least five millivolts, replace control. Magnet is good if it holds for a drop of five millivolts or more.

Trouble Shooting

Figure No. 4
Re-Calibration of the Robertshaw 110SS Gas Heating Control
(see Figure No. 2 for details)

If the burner will light but will not shut off, the temperature sensing bulb probably has lost some of its fluid. A new gas valve (Unitrol) will be required.

If there has been MINOR damage to the temperature sensing bulb or line on your gas valve (Unitrol), the burner may not light. The temperature dial may be re-calibrated in this case. If the damage is major, it will not be possible to re-calibrate and a new gas valve (Unitrol) will be required. Temperature sensing bulb is not sold separately.

TO RE-CALIBRATE:

1. **Remove the temperature dial.**
2. **Using needle-nose pliers, hold the pointer on the dial shaft.**
3. **Loosen the nut holding this pointer.**
4. **Move the pointer clockwise approximately 90 degrees (1/4 turn).**
5. **Re-tighten nut.**
6. **Replace temperature dial.**
7. **Turn temperature dial and note where valve "clicks" off. For correct calibration, the temperature sensing bulb should be 52 degrees when the dial is at #5 position.**
8. **If this calibration is not suitable, repeat steps 1 through 7.**
9. **There is a limit to how much the unit can be calibrated. If these steps do not correct the problem, a new gas valve (Unitrol) may be required.**

<u>Temperature sensing bulb not sold separately.</u>

Accessories

Propane Hook Up Kit (Part No. 50000)

This kit provides the connecting link between an LP cylinder and a stock tank heater or other low pressure equipment and appliances.

Not for use with high pressure equipment.

11” WC Low Pressure Regulator For Vapor Propane Only (Part No. 50100)

1/4” FPT Inlet x 3/8” FPT Outlet. The Trojan Regulator is for low pressure, vapor propane applications only. Capacity: 125,000 BTU/hr at 25 P.S.I. inlet pressure.

Not for use with torches or high pressure equipment.

Condensation Kit (Part No. 15023)

Condensation is a natural by-product of combustion, and of having a warm tank in cold water. This condensation will be evaporated during heating. In some situations however, condensation may appear to be excessive due to climate. If water accumulates in the tank heater you may need this kit. Easy to install and use.

Additional Trojan Heater Products

AG Universal Automatic Gas Heater *(Part No. 15037)*

An efficient way to prevent freezing. Mount this unit under livestock waterers. It runs on LP or convert to natural gas. Developing 4,060 BTU per hour. An adjustable automatic thermostat permits you to control the temperature for whatever the condition.

Hot-Scot® Heater *(Part No. 12520)*

An excellent replacement or repair heater.
This 450 watt, 120 volt space heater features ranges from 30° to 150°F. Only 4 amps required;
measures 8-1/8" x 3" x 2-1/8"
Not to be immersed in water.

Pipe-N-Hot® Heater *(Part No. 12523)*

Prevent water line freezing.
Works well on plastic or metal pipe in cold weather. Useful as a heat supplement on supply lines under livestock waterers. Requires 100 watt.

8' Cable Heater *(Part No. 15450)*

36 watts supplemental heat for supply lines, works great on plastic or metal supply lines beneath livestock waterers. Wired through existing thermostat.

DISCOVER NETWORK
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Beck Sales Company, Inc.
"dba"
Trojan Specialty Products
Phone: 620-225-1770
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www.trojanlivestock.com

Please Fill Out, Cut On Dotted Line And Mail To:

Trojan Specialty Products
PO Box 1735
Dodge City, KS 67801

66B Stock Tank Heater

TROJAN WARRANTY CARD

COMPLETE AND MAIL FOR WARRANTY REGISTRATION

Date of installation_____
Dealer's Name_____ **Phone No.**_____
Address/City/State_____
Your Name_____ **Phone No.**_____
Address/City/State_____
Why did you buy Trojan?_____
Will this replace existing product? Y___ N___ What brand?_____

TO BE VALID, THIS FORM MUST BE COMPLETED AND MAILED WITHIN 10 DAYS AFTER INSTALLATION

This Automatic Gas Tank Heater is designed to operate efficiently and economically when properly installed. If given the proper care, this heater will give the best of service for years. It has been tested for leaks and proper burning operation. This unit is guaranteed for one year against defects in materials and workmanship. If you find any defects in materials or workmanship, please call or write our Customer Service Department at 1-800-279-1770

or

E-mail us at: info@becksales.net
Trojan Specialty Products
PO Box 1735
Dodge City, KS 67801

Owners Reference

Date Purchased:_____
Purchased From:_____

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