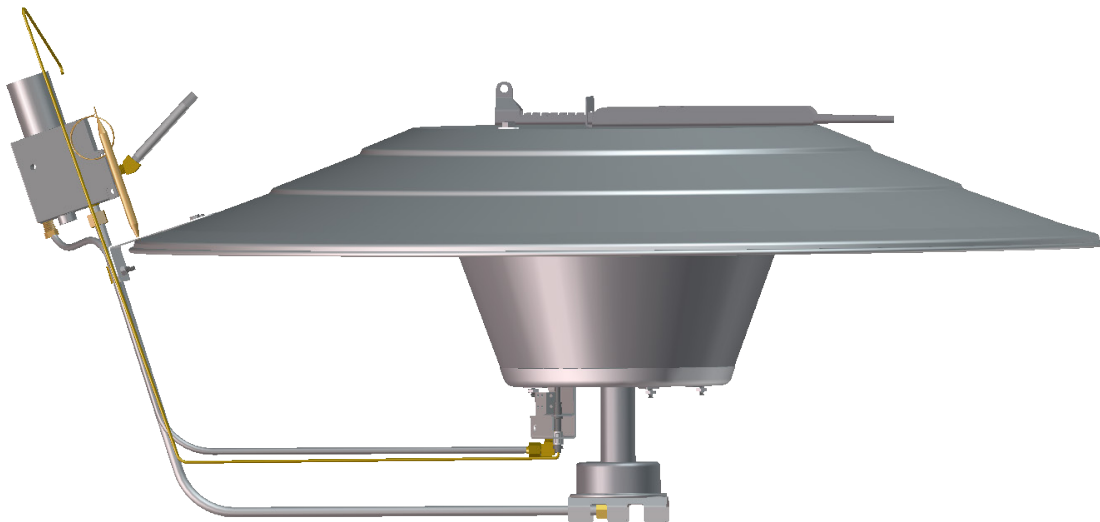




# **GLOW - RADIANT BROODER**

## **Installation and Operating Instructions**

**470459, 470473, 470467**  
**470460, 470474, 470468**





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## **VAL PRODUCTS, INC. WARRANTIES**

### **Val-co® MANUFACTURED PRODUCTS OTHER THAN EXTENDED WARRANTY PRODUCTS**

Val Products, Inc. (Val Products) warrants to the original purchaser that Val Products' manufactured products (other than the products subject to an extended warranty set forth below) will be free of defects in material and workmanship for a period of one (1) year from and after the date of original purchase and when used in a usual and customary fashion. If Val Products is notified that such a defect exists within one year of the original purchase date and, upon inspection, agrees that the product is defective, Val Products will, at its option, (a) repair or replace (FOB Val Products' plant) the defective product, or (b) refund to the original purchaser the original purchase price paid for the defective product less any installation, shipping, or other charges associated with the original purchase. All defective products must be returned to a Val Products designated location for evaluation. Val Products' determination as to whether the product is defective is final. See the General Conditions and Limitations set forth below.

### **NIPPLE DRINKERS EXTENDED WARRANTY**

Val Products, Inc. (Val Products) agrees to the following extended warranty with respect to VR Series and VL Series Nipple Drinkers manufactured by Val Products: VR Series and VL Series Nipple Drinkers that prove to be defective in workmanship or material and become unusable within a period of five (5) years from and after the date of original purchase will be repaired or replaced, at Val Products' option, at no charge (excluding labor of removal and installation), FOB Val Products' plant. VR Series and VL Series Nipple Drinkers which prove to be defective in workmanship or material and become unusable after five (5) years but within ten (10) years of the date of original purchase will be repaired or replaced, at Val Products' option, at a pro rated cost basis (excluding labor of removal and installation) to the original purchaser, FOB Val Products' plant, on the following basis: Year six (6), customer pays 50% of the current price, year seven (7), customer pays 60% of the current price, year eight (8), customer pays 70% of the current price, year nine (9), customer pays 80% of the current price, and year ten (10), customer pays 90% of the current price. All defective Nipple Drinkers must be returned to a Val Products' designated location for evaluation. Val Products' determination as to whether the product is defective and unusable is final. See the General Conditions and Limitations set forth below.

### **FIBERGLASS FAN HOUSINGS EXTENDED WARRANTY**

Val Products, Inc. (Val Products) agrees to the following extended warranty with respect to the fiberglass fan housings manufactured by Val Products on Val-co® PMC Power Miser 12", 16", 21", 24", 36", 48", and 50" Fiberglass Fans that prove to be defective in workmanship or material and become unusable over the life of the structure where the Val-co® Fiberglass Fan was originally installed after original purchase, provided that the fan has remained undisturbed in its original installation location, will be repaired or replaced, at Val Products' option, at no charge (excluding labor of removal and installation and shipping), FOB Val Products' plant. All defective fan housings must be returned to a Val Products' designated location for evaluation. Val Products' determination as to whether the product is defective and unusable is final. See the General Conditions and Limitations set forth below.

### **FIBERGLASS FAN MOTORS EXTENDED WARRANTY**

Val Products, Inc. (Val Products) agrees to the following extended warranty with respect to the fiberglass fan motors included as original equipment on Val-co® PMC Power Miser 12", 16", 21", and 24" Fiberglass Fans manufactured by Val Products that prove to be defective in workmanship or material and become unusable within a period of two (2) years from and after the date of original purchase will be repaired or replaced, at Val Products' option, at no charge (excluding labor of removal and installation and shipping), FOB Val Products' plant.





## VAL PRODUCTS, INC. WARRANTIES - continued

All defective fan motors must be returned to a Val Products' designated location for evaluation. Val Products' determination as to whether the product is defective and unusable is final. See the General Conditions and Limitations set forth below.

### General Conditions and Limitations Applicable to All Val Products, Inc. (Val Products) Warranties, Including Extended Warranties

1. The Product must be installed and operated in accordance with instructions published by Val Products or the warranty will be void.
2. Warranty will be void if all components of the product or system are not original equipment supplied by the manufacturer.
3. Products not manufactured by Val Products and supplied by outside manufacturers (such as, but not limited to, certain electrical motors, certain controls, gas valves, etc.) are warranted separately by the respective manufacturer and only to the extent of the manufacturer's warranty.
4. Warranty applies only to products used in applications as originally intended by Val Products other applications in industry or commerce are not covered by the Warranty. Val Products' products are expressly not designed or authorized for use in any applications where intended to Sustain or support human life or any other application where the failure of the product could result in personal injury or death.
5. Malfunctions resulting from misuse, abuse, mismanagement, negligence, alteration, accident, lack of proper maintenance, lightening strikes, electrical power surges, or electrical power interruption shall not be considered defects under the Warranty. Corrosion, material deterioration and/or equipment malfunction caused by or consistent with the excessive additions of chemicals, minerals, sediments or other foreign elements with the product shall not be considered defects under the Warranty.
6. VAL PRODUCTS WILL NOT, UNDER ANY CIRCUMSTANCES, BE LIABLE FOR ANY KIND OF SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR CONTINGENT DAMAGES INCLUDING, BUT NOT LIMITED TO, LOST OR DAMAGED PRODUCT, GOODS OR LIVESTOCK, COSTS OF TRANSPORTATION, LOST SALES, LOST ORDERS, LOST INCOME, INCREASED OVERHEAD, LABOR AND INCIDENTAL COSTS AND OPERATIONAL INEFFICIENCIES. IN NO EVENT SHALL THE WARRANTY LIABILITY EXCEED THE INVOICED PRICE OF THE PRODUCT TO THE ORIGINAL PURCHASER.
7. THE WARRANTIES SET FORTH ABOVE CONSTITUTE VAL PRODUCTS' ENTIRE AND SOLE WARRANTY. VAL PRODUCTS EXPRESSLY DISCLAIMS ANY AND ALL OTHER WARRANTIES INCLUDING, BUT NOT LIMITED TO, ANY AND ALL OTHER EXPRESS OR IMPLIED WARRANTIES AS TO THE MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR USE, DESCRIPTION OF QUALITY OF THE PRODUCT FURNISHED, AND ANY OTHER WARRANTY ARISING BY OPERATION OF LAW, CUSTOM OR USAGE.
8. Val Products denies any authorization of any distributor, dealer, agent, or employee to modify, extend, or otherwise alter the conditions of any warranty in addition to, or in lieu of, those conditions and authorized in writing by an officer of Val Products. Val Products reserves the right to change or delete models, or change specifications at any time without notice or obligation to improve previous products.



## Brooder Description



**BEFORE STARTING ASSEMBLY, CHECK WITH ENCLOSED PARTS LIST FOR A COMPLETE LISTING OF PARTS AND EXPLODED DRAWING OF UNIT BE SURE TO READ ALL INSTRUCTIONS AND WARNINGS CAREFULLY. SAVE THIS MANUAL AND PARTS LISTS FOR FUTURE REFERENCE.**

BROODER DESCRIPTIONS				
Brooder Type		VGR - Glo radiant		
Type of Control		SS - S.I.T. Snap Action Control	RZ-Robertshaw 7000ELC Zone Control	WD-Direct Spark Ignition Control
Type of Pilot		VP-Vertical Pilot		
Gas Type	LP	LP-LP Gas	NAT-Natural Gas	
BTU Output		40K-40,000 BTU		
Canopy Size	3	3Ft Diameter		
Location	DOM	DOM-Domestic Anywhere but Canada	CGA-Approved for Sales in Canada	
Tunnel Vent	TV	TV-Yes, Tunnel Ventilation		

## Radiant Glo Brooder (Infrared) Specifications

**CAPACITY: 40,000 BTU/Hr 10,100 k/cal**

**DIMENSIONS: WIDTH: 34" - 86 cm**

**HEIGHT: 16" - 41 cm**

## CONTROL OPTIONS

### Direct Spark

Use less fuel with no burning pilots. Avoid unnecessary heat when you don't need it. A low voltage electrical source instead of burning pilots reduces maintenance

### Robertshaw 7000 ELC

May be used when controlling multiple brooders in specific zones.

### S.I.T. Snap Action or

S.I.T. combines a snap-action thermostat with 100% safety cut-off valve.



## Brooder Description - continued

### **Features:**

The Radiant Glo Brooder uses infrared heating technology to quickly and efficiently warm the floor and chicks rather than wasting heat on the air that rises above the brooding area.

#### **Many option combinations:**

- 34" (86 cm) Canopy
- BTU/Hr 40,000 (10,100 k/cal)
- Liquid Propane (LP) or Natural Gas
- Ignition options include the pilot and pilot-free direct spark
- Control methods – individual, zone,
- (3) individual brooder control options – snap action, direct spark, zone.

#### **Innovative:**

- Fewer brooders, more efficient heat per brooder – Glow Radiant infrared brooders warm chicks and floor without wasting energy on air.
- Easy, trouble-free assembly and cleaning  
Factory-assembled burners provide quick installation.
- Even heat – unique leveler brackets quickly adjust canopy in two directions – side-to-side and front-to-back.
- Durability – specialized steel components promote heat efficiency and prevent corrosion



## Symbols

Below are symbols used throughout the manual to draw your attention to either important information or notes on assembly instructions to aid you in the assembly process or to warn you of safety precautions that need to be taken. The safety warnings are included as a guide to help and encourage the safe operation of your equipment. However; it is your responsibility to evaluate the hazards of each operation and implement the safest method of protecting yourself and your facility as owner and/or operator.



= NOTE - take notice this may help you!



= IMPORTANT INFORMATION - be sure to read!



= CHECK - the details of all requirements, processes or procedures of instructions listed.



= WARNING - The safety alert symbol is always used on warning signs that involve your safety. Anytime you see this symbol heed the warning it identifies. This symbol may be used alone or in conjunction with other symbols.

*This manual is offered in color on our website @val-co.com.*

## Tools Required

- Tape Measure
- Level
- Cordless Power Drill/Screw Driver
- Open end wrenches or adjustable wrench



## Warnings

### ***ATTENTION !***



Please read all of these instructions before assembling your Gas Brooder. These assemblies must be installed in accordance with all Federal, State and Local Codes. Consult a Local contractor for more details.



### ***SAFETY ALERT !***



Exhaust Fans **MUST BE OPERATING PROPERLY** when heating the building to avoid carbon monoxide buildup.



### ***SAFETY ALERT !***



**DO NOT STORE OR USE GASOLINE OR OTHER FLAMMABLE VAPORS OR LIQUIDS IN THE VICINITY OF GAS BROODERS.**



### **IF YOU SMELL GAS ...**



- 1. OPEN WINDOWS AND DOORS**
- 2. DO NOT TOUCH ELECTRICAL SWITCHES**
- 3. EXTINGUISH ANY OPEN FLAMES**
- 4. CALL YOUR GAS SUPPLIER**





## Connecting Gas Supply



### WARNING!

**Improper installation of Gas Supply can result in serious personal or property damage. DO NOT PROCEED without following ALL Federal, State and Local Installation Codes.**

Selecting the correct size of gas supply line is very important for the efficiency of your brooder operation. Pipe size is dependent upon the length of run and the flow rate required by your brooder. The chart below shows maximum pipe capacity in 1,000 BTU/hr for propane by pipe diameter and length and includes allowances for fittings. Consult your local pipe supplier before purchasing your pipe.

LENGTH (FEET)	TUBING SIZE						NOMINAL PIPE SIZE, SCHEDULE 40						
	3/8"	1/2"	5/8"	3/4"	7/8"	1-1/8"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"
10	39	92	189	329	501	935	275	567	1071	2205	3307	6221	10140
20	28	62	131	215	346	630	189	393	732	1495	2299	4331	7048
30	21	50	107	181	277	500	152	315	590	1212	1858	3465	5695
40	19	41	90	145	233	427	129	287	504	1038	1559	2992	4778
50	18	37	79	131	198	375	114	237	448	913	1417	2646	4343
60	16	35	72	121	187	340	103	217	409	834	1275	2394	3908
80	13	29	62	104	155	289	89	185	346	724	1056	2047	3329
100	11	26	55	90	138	255	78	162	307	630	976	1811	2991
125	10	24	48	81	122	224	69	146	276	567	866	1606	2654
150	9	21	43	72	108	203	63	132	252	511	787	1486	2412
200	8	19	39	66	100	187	54	112	209	439	665	1282	2038
250	6	17	36	60	93	172	48	100	185	390	590	1138	1808
300							43	90	168	353	534	1030	1637
350							40	83	155	325	491	947	1506
400							37	77	144	303	456	883	1404

**USE ONLY QUALIFIED INSTALLERS FOR ALL GAS LINE INSTALLATIONS !**

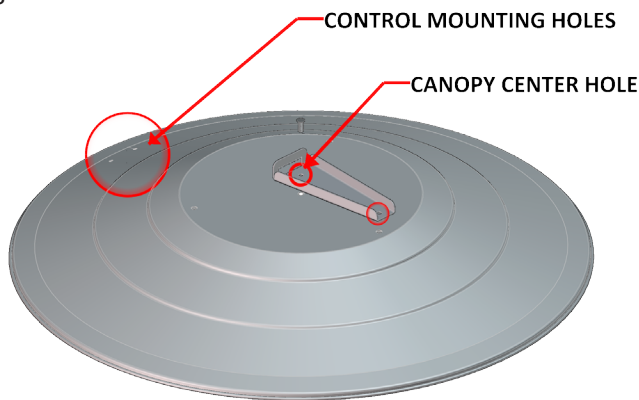
## GAS PRESSURE

Accurate regulation of gas pressure is important for proper and efficient operation. The main line pressure regulator should be set at 11 inches of water column (6.4 oz per sq. inch or 27.4 mbar) for propane gas and 7 inches of water column (4 oz per sq. inch or 17.4 mbar) for natural gas. Gas pressure should be checked at the end of each line while brooders are operating. Low pressure will cause carbon deposits and weak pilot flame. High pressure can cause a blow torch flame that will light past your burner tube and burn very inefficiently. Consult the LP Handbook.

## Canopy Assembly

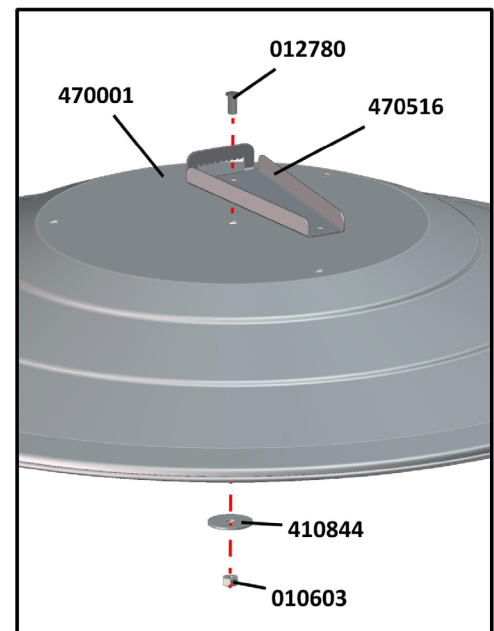
1. Attach 470516 Hanger Base to canopy with 012780 Thread Stud, 410844 Washer and 010603 Full Nut, note orientation in Figure 1 and hardware orientation in Figure 2.

Figure 1



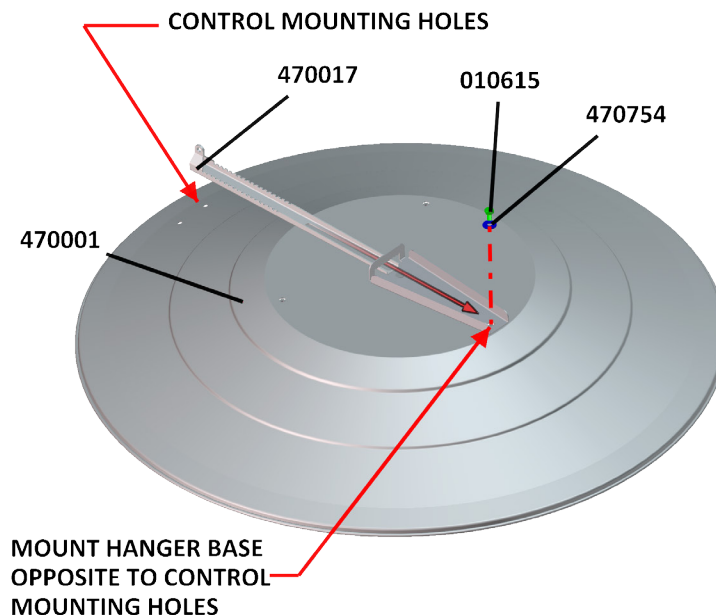
Position Hanger Base (with slot end) CENTER HOLE over center hole in Canopy. Tapered end should be positioned opposite of Control Mounting Holes

Figure 2



2. Slide 470017 Hanger Bracket thru 470516 Hanger Base as shown in Figure 3.
3. Place (1) 010615 Hex Bolt and (1) 470754 Hanger Bracket Washer through slot in Hanger Bracket and end hole in Hanger Base, as shown in Figure 3. *(Alternate assembly instruction: you may attach 470038 bracket under canopy as you attach each bolt and washer set, as shown in Step 5, or follow the steps as listed.)*

Figure 3

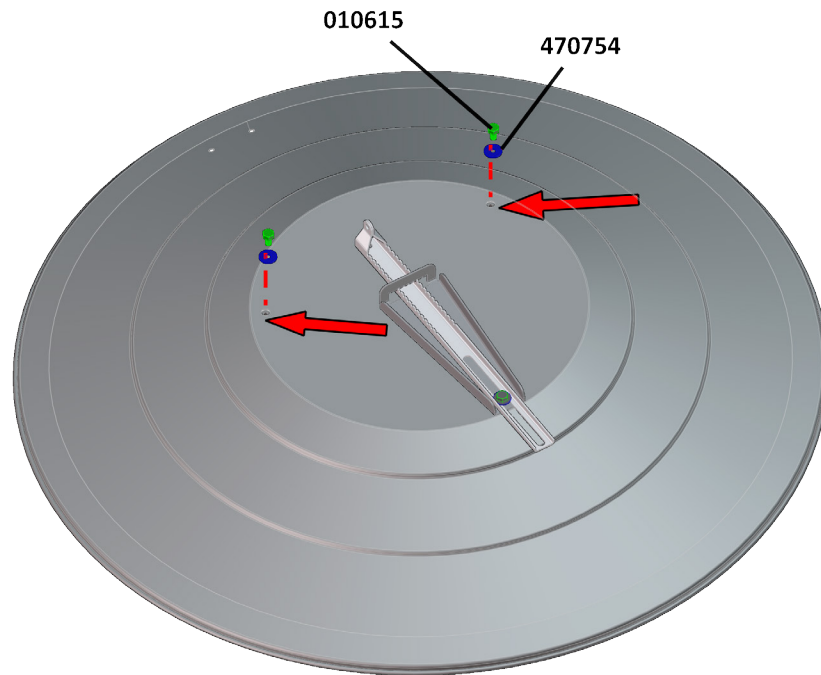




## Canopy Assembly - continued

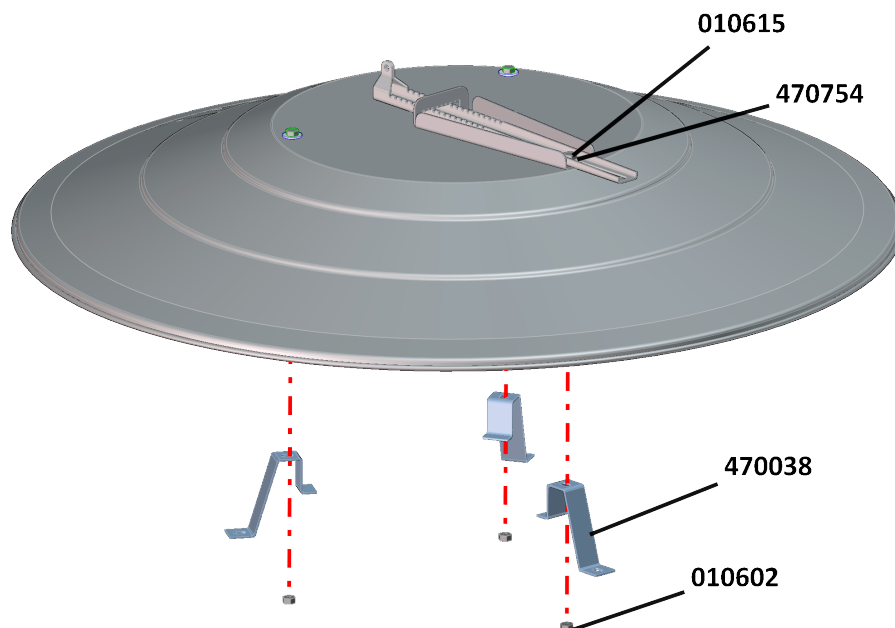
4. Place [2] 010615 Hex Bolts with 470754 Hanger Bracket Washers through other (2) holes in canopy. Note orientation in Figure 4. *(attach nuts to secure in next step.)*

Figure 4



5. Place [3] 470038 SS Reflect Pan Mount Brackets below Canopy and over the [3] bolts and fasten with [3] 010602 Hex Nuts on Hex Bolts through canopy.

Figure 5



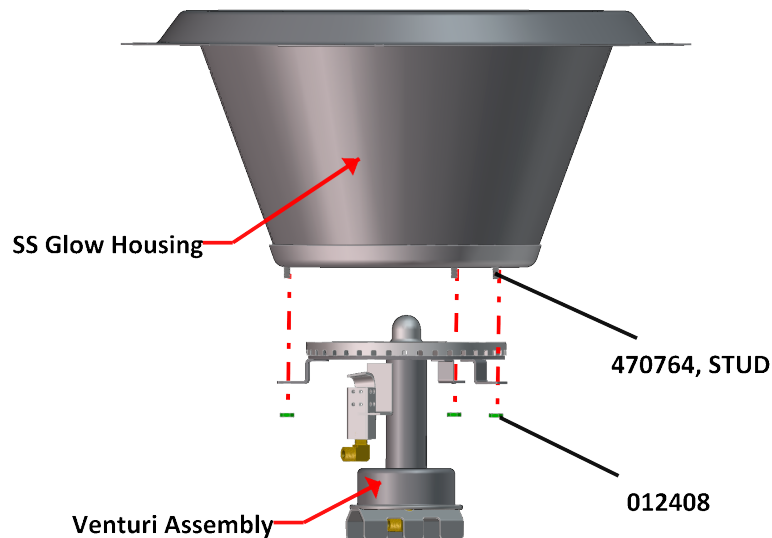


## Gas Pilot Control / Radiant Assembly

6. Position Venturi assembly under Glow Housing so brackets (pre-assembled on Venturi assembly) fit on Studs in Glow Housing. Secure with [3] 012408 Kep Lock Nuts.

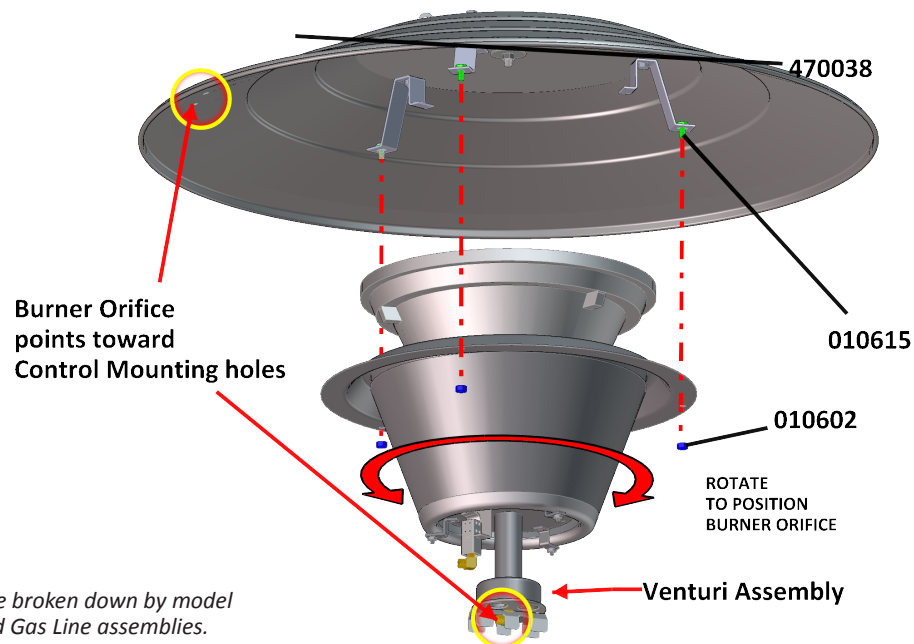
*(Direct Spark instructions begin from this point on page 18.)*

**Figure 6**



7. Place 470019 Radiant in 470111 Glow Housing assembly before securing to 470038 brackets. Rotate Glow Housing assembly so that the Burner Orifice at the bottom of the Venturi assembly is pointing toward the Control mounting holes. Secure housing to brackets with [3] 010615 Hex Bolts and [3] 010602 Hex Nuts.

**Figure 7**



*Pages to follow are broken down by model for the Control and Gas Line assemblies.*



*For proper burning, be sure center of RADIANT is directly above center of burner tube before tightening bolts.*



## 470459, 470460 Gas Pilot Control and Gas Line Connection

1. Attach the 470669 Controller Base to the Canopy, inserting the 012795 Hex Bolts through the Control mounting holes and secure with the 012408 Hex Nuts as shown in Figure 8 below.

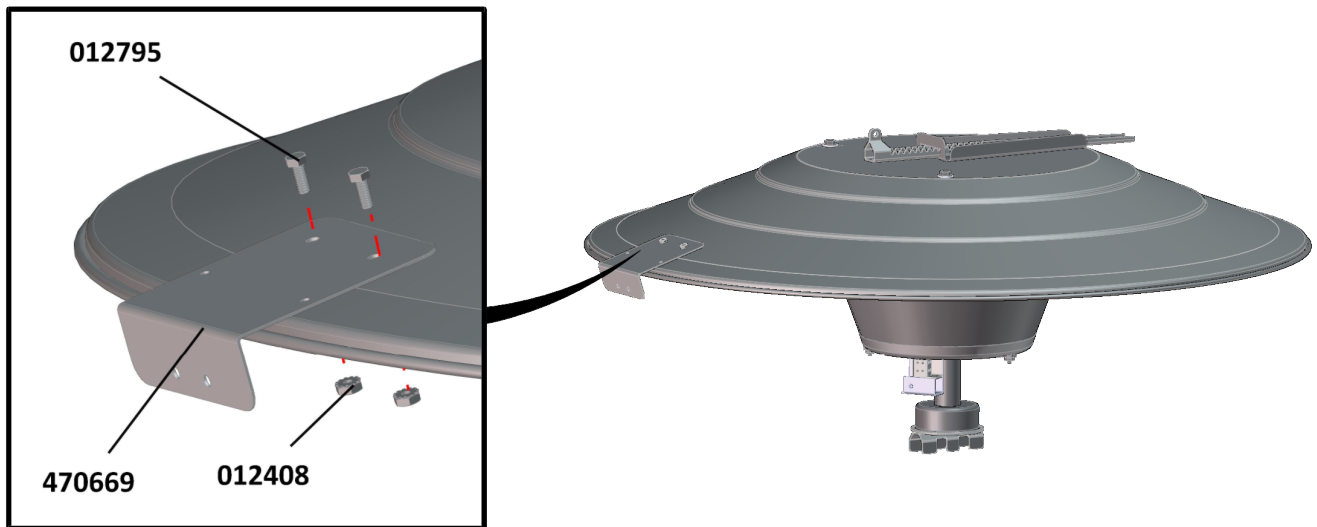
*The Control and Fittings are shipped pre-assembled.*



### WARNING!

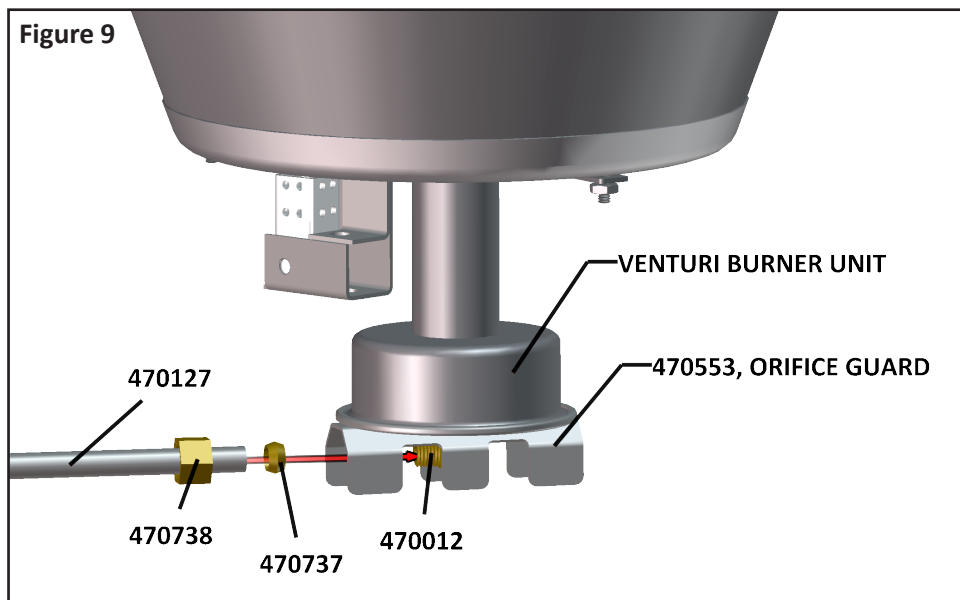
**ALL GAS CONNECTIONS MUST BE MADE BY A QUALIFIED INSTALLER AND CHECKED WITH A SOAPY SOLUTION FOR LEAKS BEFORE OPERATING !**

Figure 8



2. Insert Burner Tube into the end of the 470012 Brass Elbow using the 470737 Brass Ferrule and 470738 Brass Compression Nut to secure, as shown in Figure 9.

Figure 9

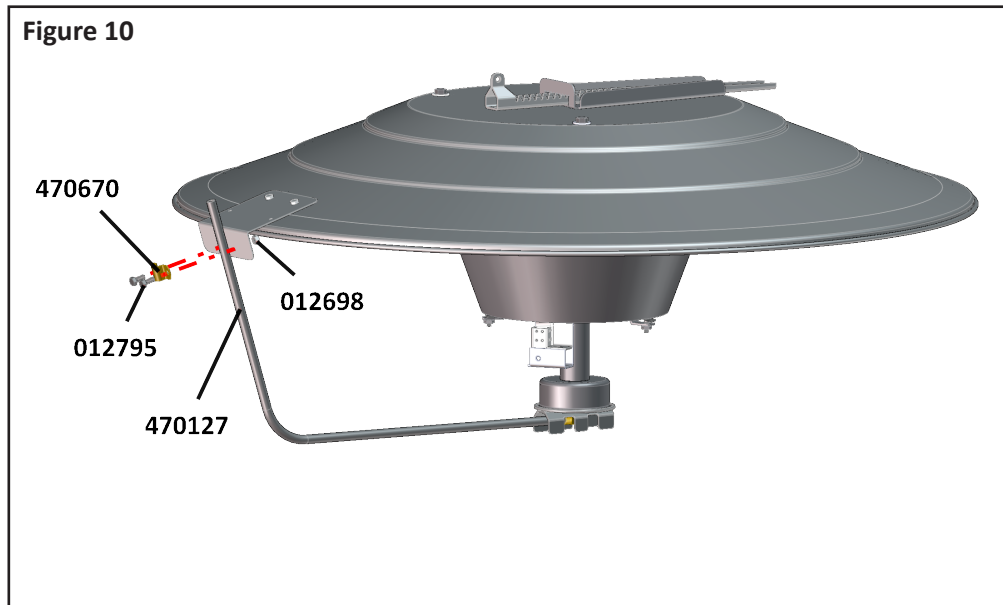


**DO NOT  
OVERTIGHTEN  
FITTINGS!**

## 470459, 470460 Gas Pilot Control and Gas Line Connection - continued

3. Attach the 470127 Burner Tube to the Control Base using the (1) 470670 Tube Retainer and secure with (2) 012795 Hex Head Machine Screws and (2) 012408 Kep Lock Nuts, as shown in Figure 10.

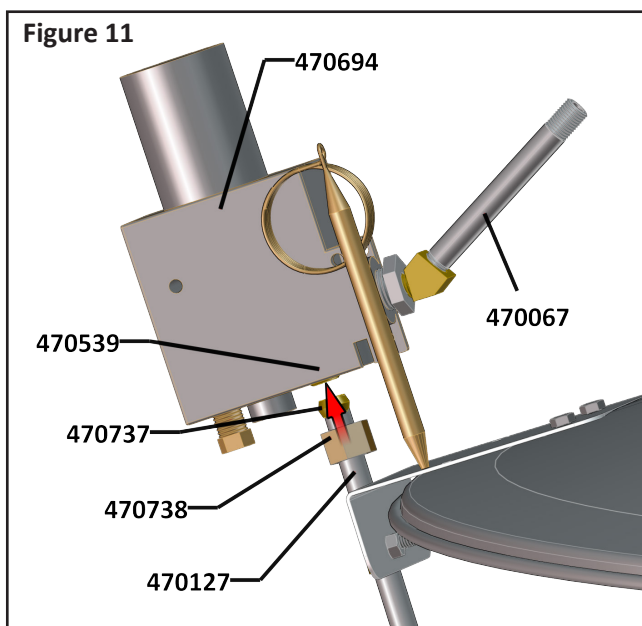
*(Pilot Tube may be hooked up now or after step 15.)*



4. Insert the 470127 Burner Tube into 470539 (*large*) Brass Fitting on the bottom of the controller and secure using the 470737 Brass Ferrule and 470738 Brass Compression Nut, as shown in Figure 11.
5. The gas line may be connected to the 470067 Galvanized Nipple at any time.

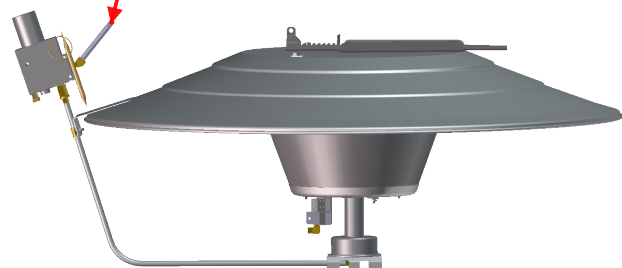


**BE SURE TO FOLLOW THE FEDERAL, STATE AND LOCAL INSTALLATION CODES. GAS CONNECTIONS MUST BE MADE BY A QUALIFIED INSTALLER AND CHECKS WITH SOAPY SOLUTION FOR LEAKS BEFORE OPERATING.**



**Figure 12**

Connect gas supply line to the 470067 GALV NIPPLE on the control. Be sure to apply proper pipe dope to the threads before attaching (after assembly is complete)

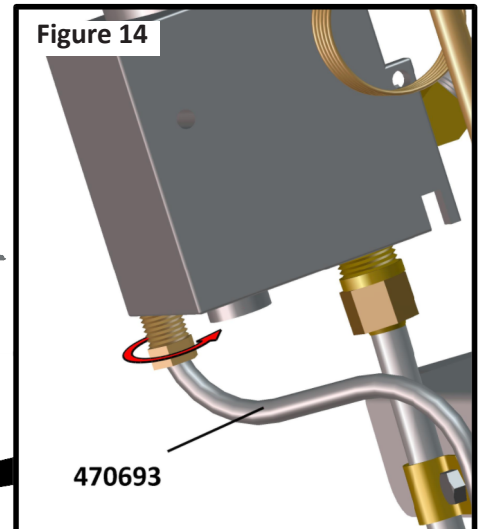
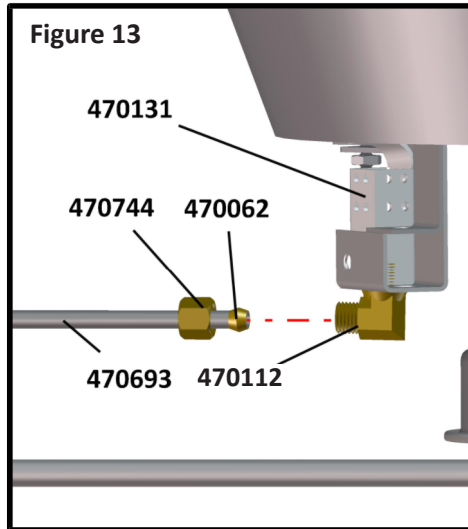




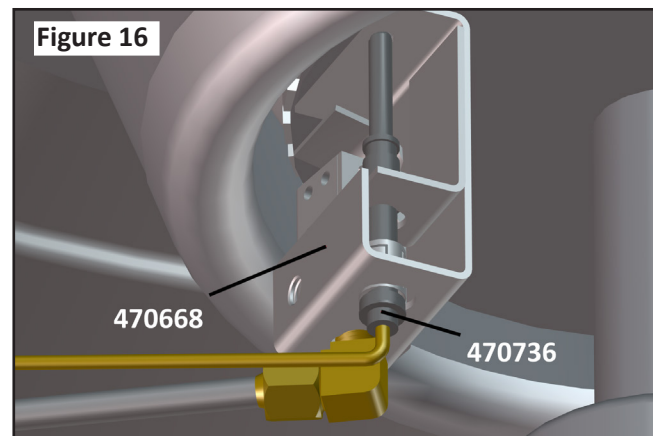
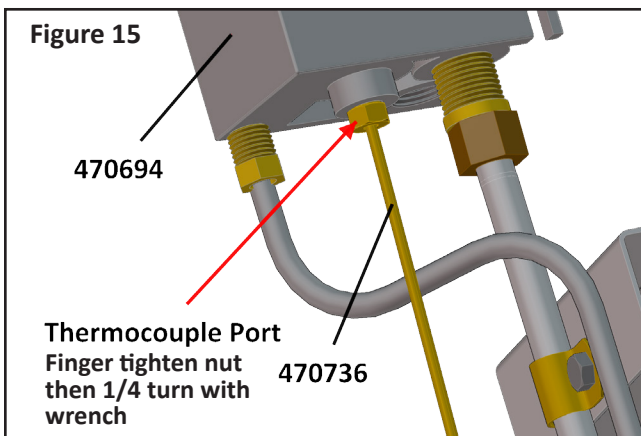
## 470459, 470460 Gas Pilot Control and Gas Line Connection - continued

6. Attach the 470693 Pilot Tube to the 470012 Brass Elbow of the Pilot Shield, as shown in Figure 13.
7. Insert the Pilot Tube into the (small) Brass fitting on the bottom of the Control, as shown in Figure 14.

***Be sure the tube is all the way into fitting before tightening. While turning, the fitting will suddenly become loose, due to the compression ring on the fitting snapping loose. Continue to tighten for approximately 1-1/2 turns.***



8. Secure the 470736 Thermocouple end into the Thermocouple Port at bottom of the gas valve and finger tighten nut then turn 1/4 turn with wrench, as shown in Figure 15 and insert the other end into the 470668 Pilot Housing, as shown in Figure 16.



**DO NOT OVERTIGHTEN FITTINGS!**

*Refer to page 20 for instructions on Cable/Chain Attachment and Suspending the Brooder*



### **WARNING!**

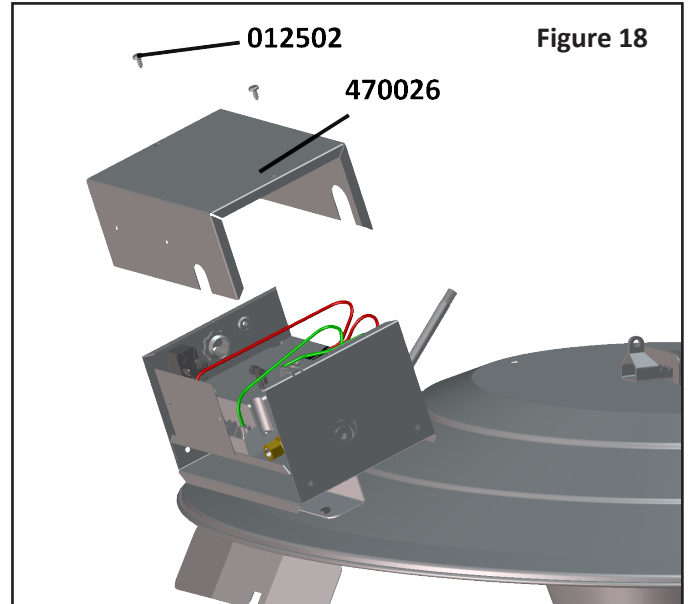
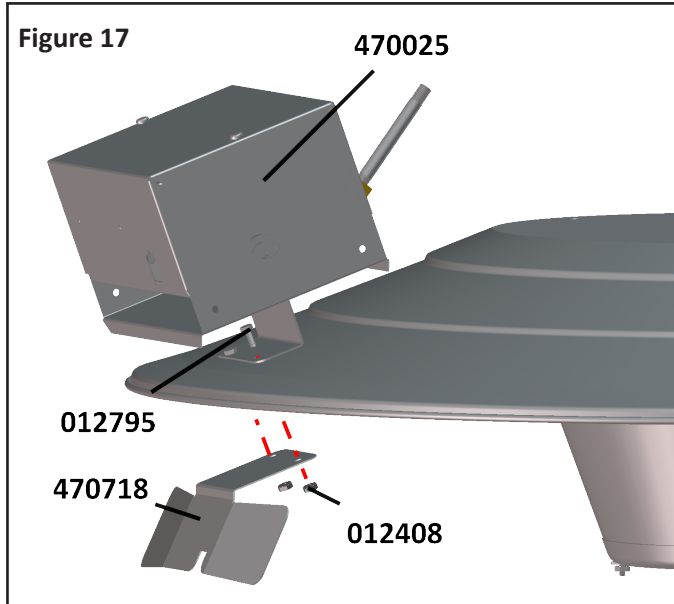
**ALL GAS CONNECTIONS MUST BE MADE BY A QUALIFIED INSTALLER AND CHECKED WITH A SOAPY SOLUTION FOR LEAKS BEFORE OPERATING !**

## 470473, 470474 Direct spark Ignition Control / Radiant Assembly

1. Assemble the Canopy and Radiant assemblies first, as shown on page 11 and 12, then continue control and gas line assemblies as follows.

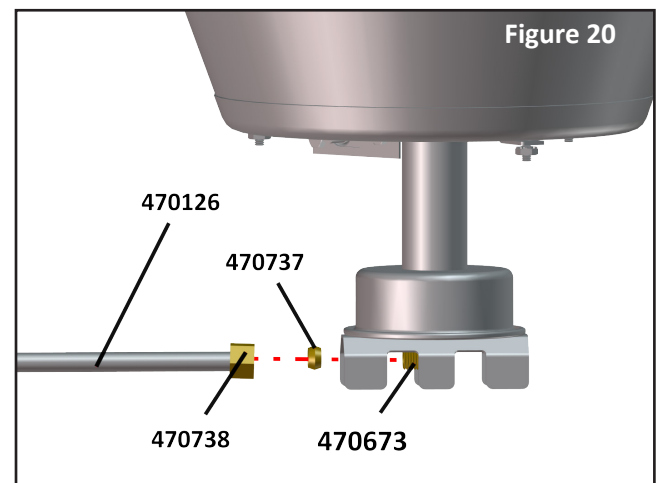
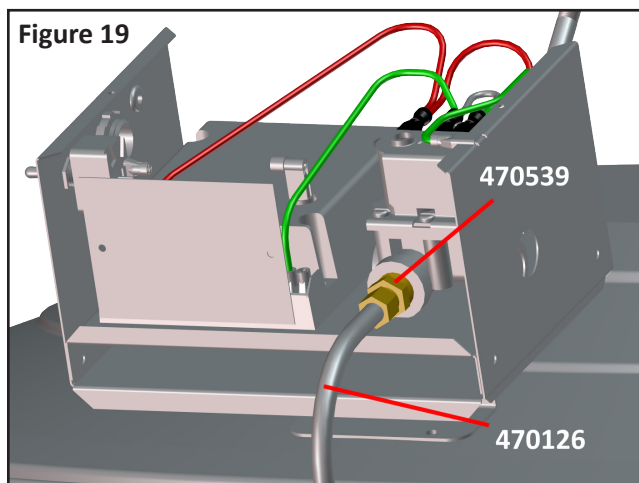
*The Control and Fittings are shipped pre-assembled.*

2. Attach the control / mount assembly to the Canopy and 470718 DS Heat Shield as shown in Figure 17 using 012795 Hex Bolts and 012408 Lock Nuts. *Note orientation.*
3. For access to 470539 Pipe Adapter to connect the Burner Tube, remove the 470026 Electric (Control) Box Cover by removing (2) 012502 Sheet Metal Screws from the top of the cover, as shown in Figure 18.



## 470473 Direct spark Ignition Control and Gas Line Connection

4. Attach the 470126 Burner Tube to the 470539 Pipe Adapter, as shown in Figure 19 then replace cover.
5. Connect the other end of the Burner Tube to the Burner Orifice at the bottom of the Venturi Burner Assembly, as shown in Figure 20.



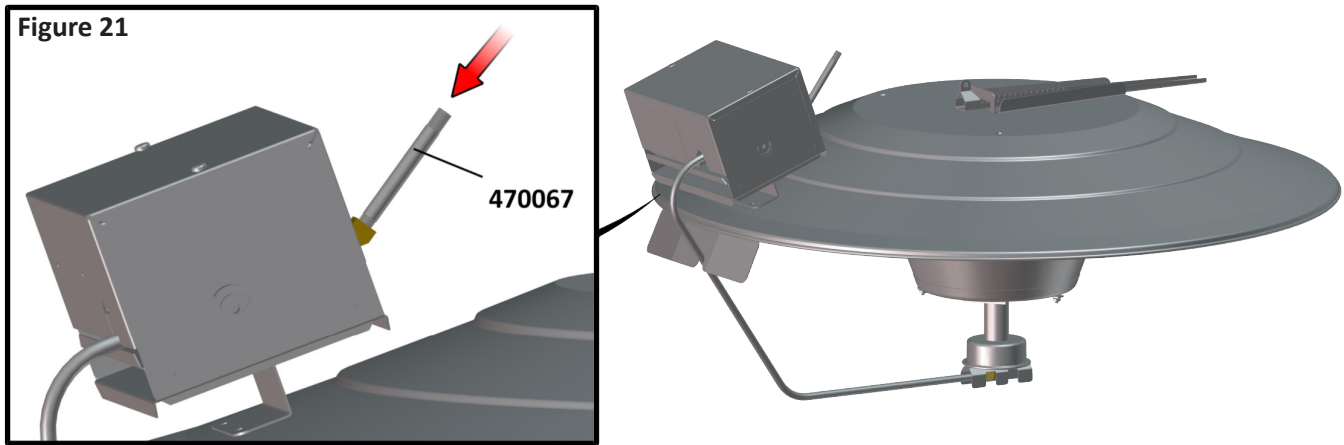
**DO NOT OVERTIGHTEN FITTINGS!**



## 470473, 470474 Direct spark Ignition Control and Gas Line Connection - continued

6. Attach the Gas Line to the 470067 Galvanized Nipple. *Gas Line(s) to brooder(s) may be hooked up now or after you have suspended the brooders.*

Figure 21



*Refer to page 20 for instructions on Cable/Chain Attachment and Suspending the Brooder*



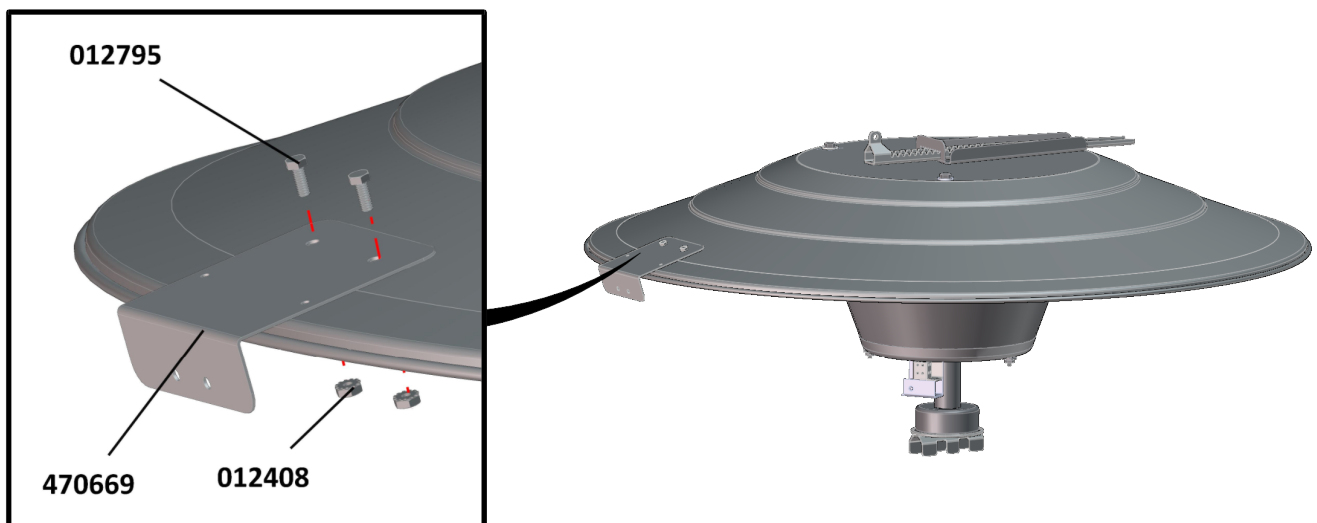
**Be sure to apply proper amount of pipe dope to Gas Nipple threads before securing gas line.**

## 470467, 470468 Zone Control Valve Control and Gas Line Connection

1. Assemble the Canopy and Radiant assemblies first, as shown on page 11 and 12, then continue control and gas line assemblies as follows.

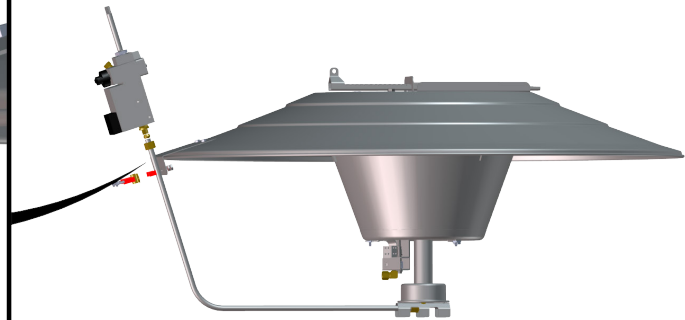
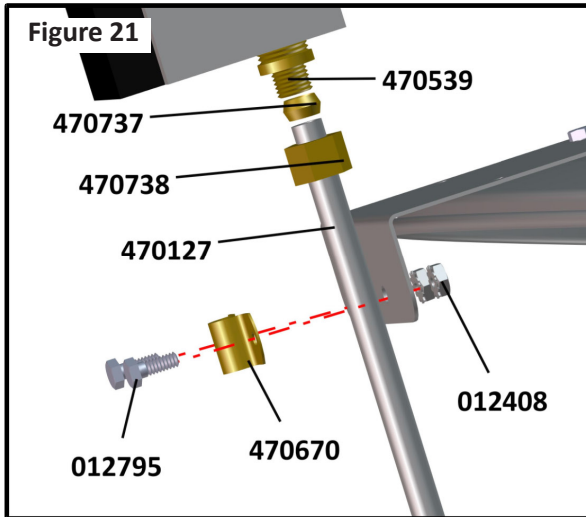
*The Control and Fittings are shipped pre-assembled.*

Figure 20



## 470467, 470468 Zone Control Valve Control and Gas Line Connection - continued

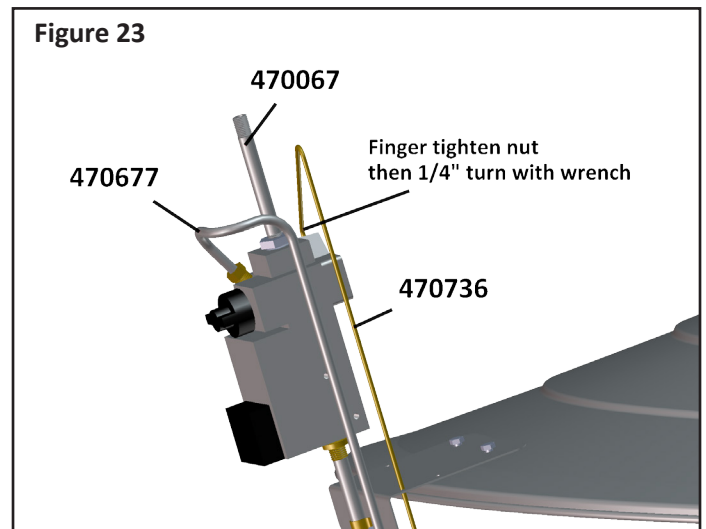
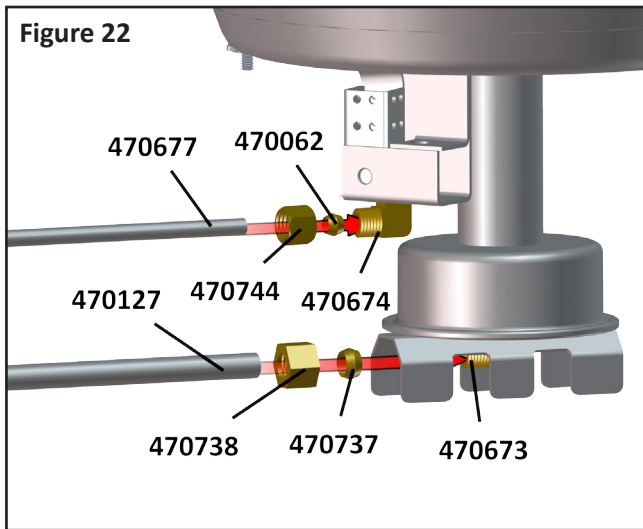
2. Insert the 470127 Burner Tube into the 470539 Pipe Adapter at the bottom of the Control securing with a 470737 Brass Ferrule and 470738 Brass Compression Nut.
3. Attach the control / mount assembly to the Canopy using the 470670 Tube Retainer and (2) 012795 Hex Head Machine Screw and (2) 012408 Kep Lock Nuts.



4. Attach the other end of the Burner Tube to the Burner Orifice at the bottom of the Venturi Burner Assembly, as shown in Figure 22.
5. Attach Pilot Tube to the 470674 Brass Elbow securing with the 470063 Brass Ferrule and 470744 Brass Compression Nut, as shown in Figure 22.

***Be sure the tube is all the way into fitting before tightening. While turning, the fitting will suddenly become loose due to the compression ring on the fitting snapping loose. Continue to tighten for approximately 1-1/2 turns.***

6. Attach the Gas Line to the 470067 Gas Nipple, Pilot Tube at top of the Control and the Thermocouple to Thermocouple port with Nut on top of control as shown in Figure 23. Refer to page 16 Figure 16 for installing the Thermocouple into Pilot Housing Shield.



**DO NOT OVERTIGHTEN FITTINGS!**



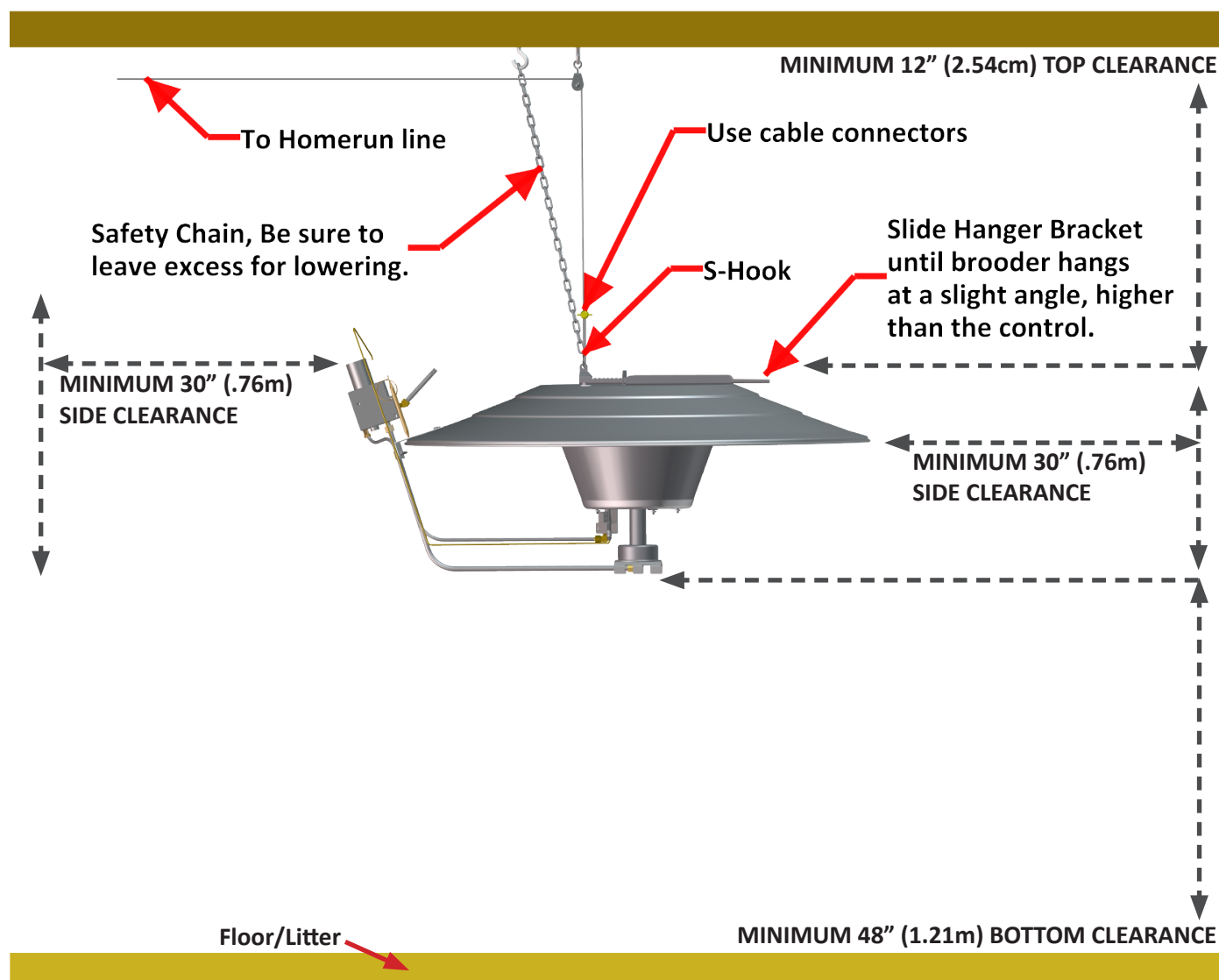


## Cable / Safety Chain Attachment and Suspension

Room temperature is controlled by a combination of thermostat settings and height of brooder. The higher the brooder the higher the thermostat setting. When hanging several brooders in series with winch be sure to check weight limits of winch and cable. Safety chain **MUST** be used on each unit to prevent heated unit from falling to floor litter in case winch cable breaks.



Brooders should be suspended with noncombustible cable. Safety chain **MUST** be used on each unit to prevent heated unit from falling to floor litter in case winch cable breaks.



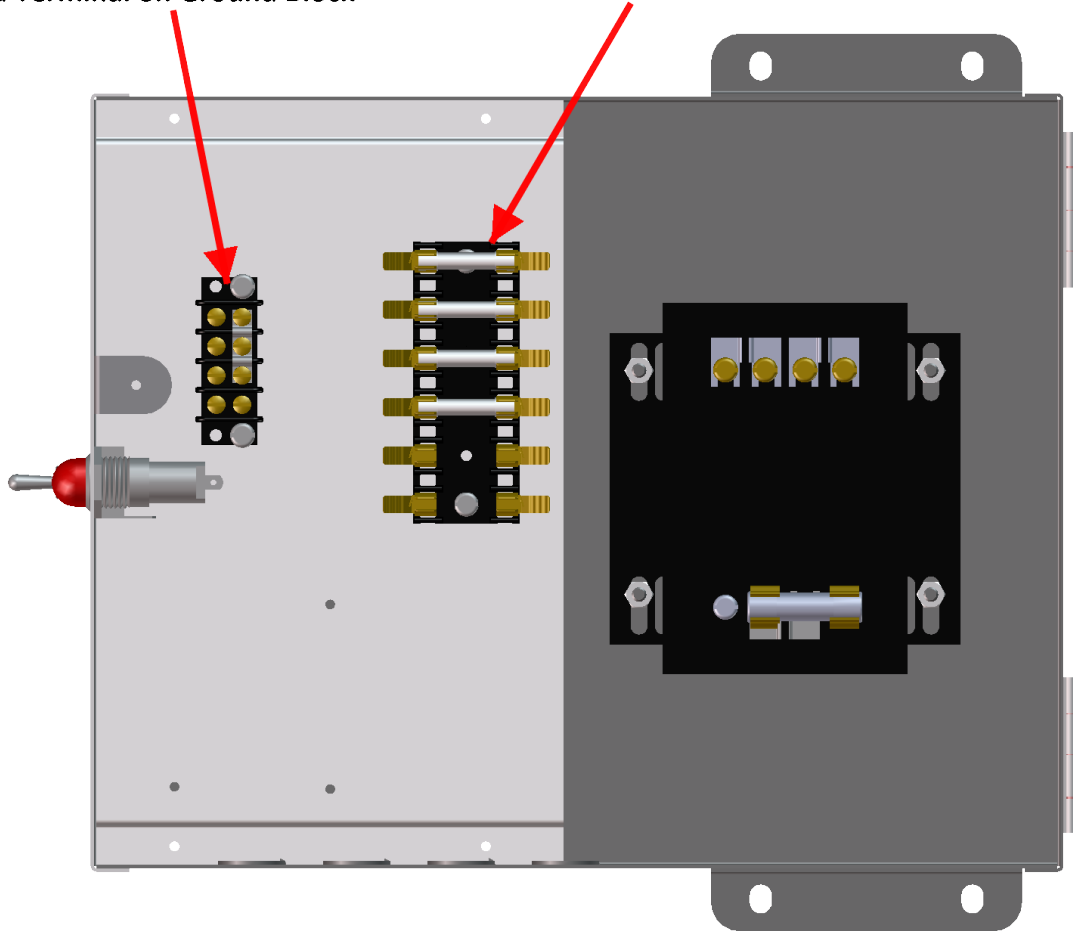
Proper height and clearance for your brooders is very important. Starting heights should be between 60" to 72" above litter. Required minimum clearances for safe operation are shown in Figure 16.



## 470650 Zone Control Units

Connect 14-2 WHITE wires  
from Brooder Controls to  
a Terminal on Ground Block

Connect 14-2 BLACK wires  
from Load on Thermostat to  
Terminals on Fuze Block

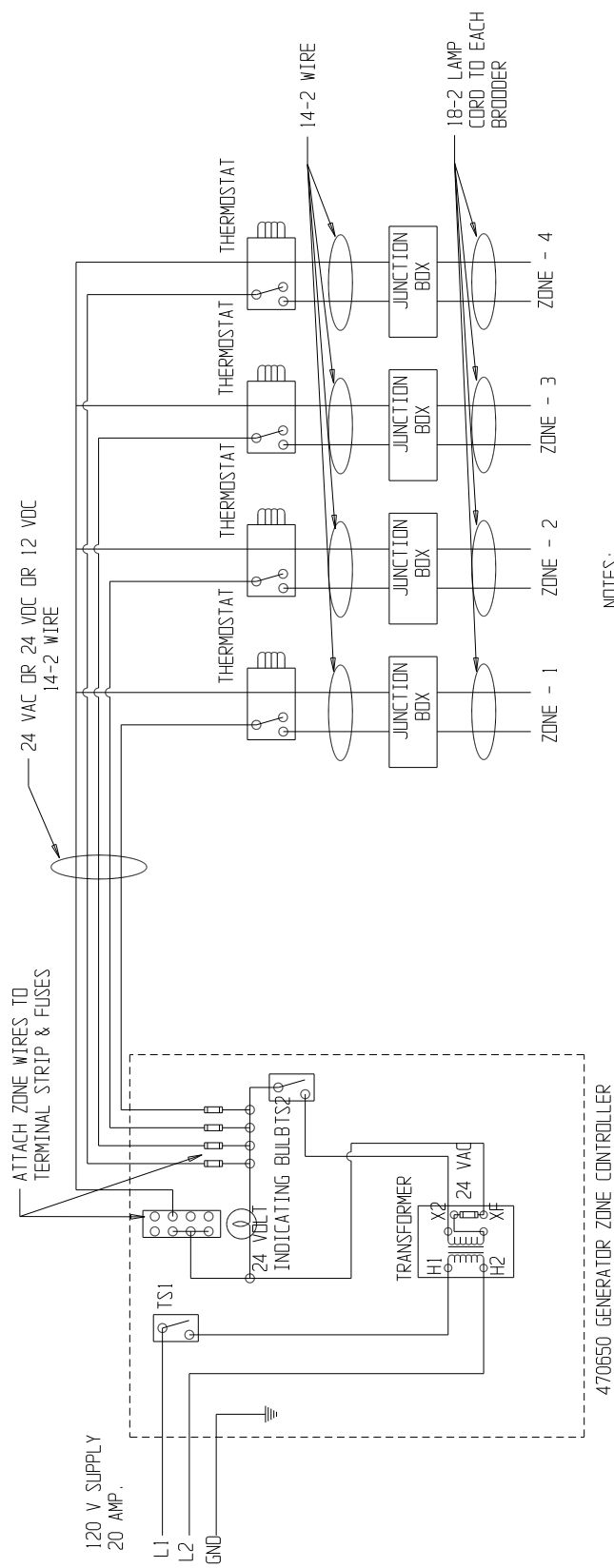


### WARNING!

ALL ELECTRICAL CONNECTIONS MUST BE MADE BY A QUALIFIED ELECTRICIAN. Incorrect wiring can cause serious personal injury or equipment damage.



470650 Zone Controller Wiring Diagram - GENERATOR



NOTES:

- 1. THERMOSTAT REQUIRED FOR EACH ZONE
  - 2. 470650 CONTROL OPERATES UP TO 30 PILOT MODEL ZONE BROODERS OR UP TO 25 DIRECT SPARK IGNITION (OSI) ZONE BROODERS
- NOTE: SEE INSTRUCTION MANUAL FOR ZONE BROODER WIRING INFORMATION

## Control Valve Operating Instructions (7000RZ and S.I.T. Controls)



### WARNING



1. Shut off gas and electricity before starting installation or service. Turn back on to test or operate.
2. Installation and servicing of gas appliances and controls must only be performed by qualified personnel. After installation or servicing; test manual valve, operating valve, pressure regulation (if so equipped), and automatic safety shut off valve for proper operation.
3. When lighting the pilot, the fail safe safety device must be functionally tested to prove its operation in the event the main control valve malfunctions.
4. A drip leg should be provided in the supply line to the control.
5. Leak test with soap solution after installation or servicing with main burner on. Coat pipe and tubing joints, gas-ket etc. with soap solution. **Bubbles indicate leaks.**
6. **DO NOT** use this control if it has been exposed to water corrosion through immersion, dripping, etc. It may be damaged and must be replaced.
7. **DO NOT** insert any object other than suitable pipe or tubing in the inlet or outlet of this control. Internal damage may occur and result in a hazardous condition.
8. **DO NOT** connect appliance before pressure testing gas piping. Damage to gas valve may result.
9. **DO NOT** grip control body with pipe wrench or vise. Damage may result causing gas leakage. Use inlet or outlet bosses, or special body wrench.
10. **DO NOT** use Gas Cock Dial to adjust gas flow. Turn dial to full "ON".
11. **DO NOT** short gas valve terminals. This will damage wall thermostat and void warranty.
12. Dials must only be operated by hand. **DO NOT** use pliers, wrenches or other tools to turn dials.
13. In changing from natural to L.P. gas, or vice versa, regulator assembly (if so equipped), burner and pilot orifices must be changed.
14. When using L.P. gas caution must be taken to ensure that no raw gas is present in the surrounding area before attempting to put appliances into operation, or when relighting pilot.
15. In case of failure of gas valve to shut off. **DO NOT** shut off electrical power; **TURN OFF GAS SUPPLY** allowing fan (if so equipped) to continue running until heating unit has cooled.
16. Keep all combustible materials away from gas appliances. **DO NOT** allow lint or dust to collect in burner area.



#### WARNING!

**ALL ELECTRICAL CONNECTIONS MUST BE MADE BY A QUALIFIED ELECTRICIAN. ALL LOCAL, STATE AND FEDERAL INSTALLATION CODES MUST BE FOLLOWED.**



## Valve Operating Instructions (7000RZ and S.I.T. Controls) - continued

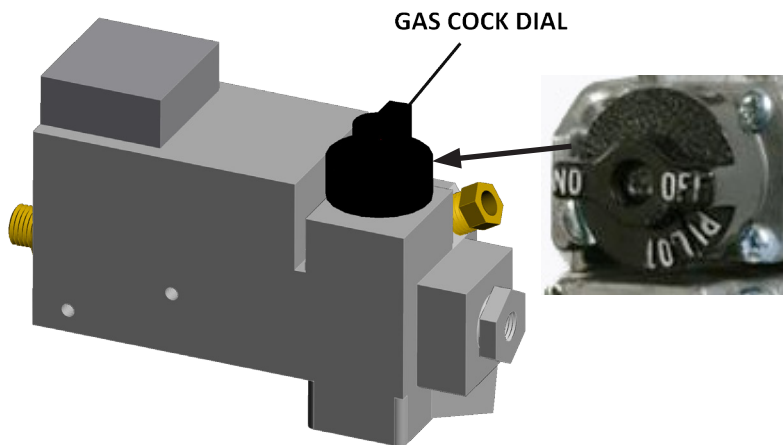
### TO START OPERATION

1. Set the room thermostat to the lowest temperature setting, or "OFF". (when using 7000RZ Zone Valve only)
2. Partially depress and turn control Gas Cock Dial to "OFF" position.
3. Wait five minutes to allow gas which may have accumulated in the main burner compartment to escape.
4. Turn Gas Cock Dial to "PILOT" position.
5. Depress Gas Cock Dial and light Pilot. Hold in depressed position for about 1/2 minute.
6. Release Dial and turn to full "ON" (for the 7000RZ valve) and turn to desired setting (for the S.I.T. Gas Valve).
7. Reset room Thermostat. (when using 7000RZ Zone Valve only)



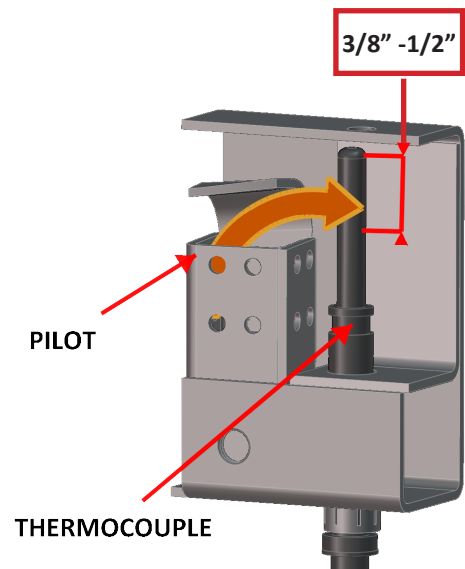
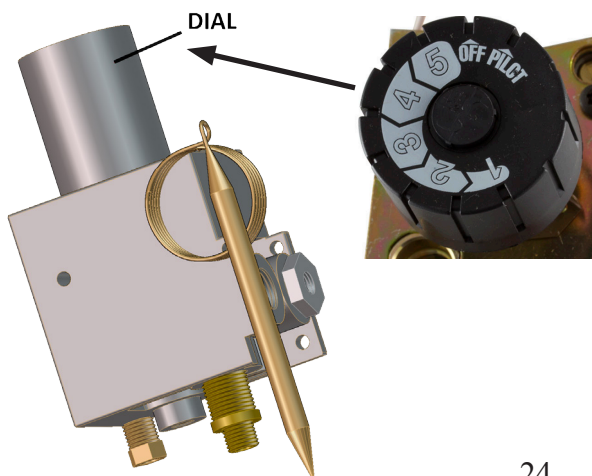
Sufficient time must be allowed for a proper size pilot flame to heat the thermocouple and hold the safety magnet in a locked-up position. Also time must be allowed for air to escape from the lines during the first operation.

### 7000RZ Zone Control Valve (470043)

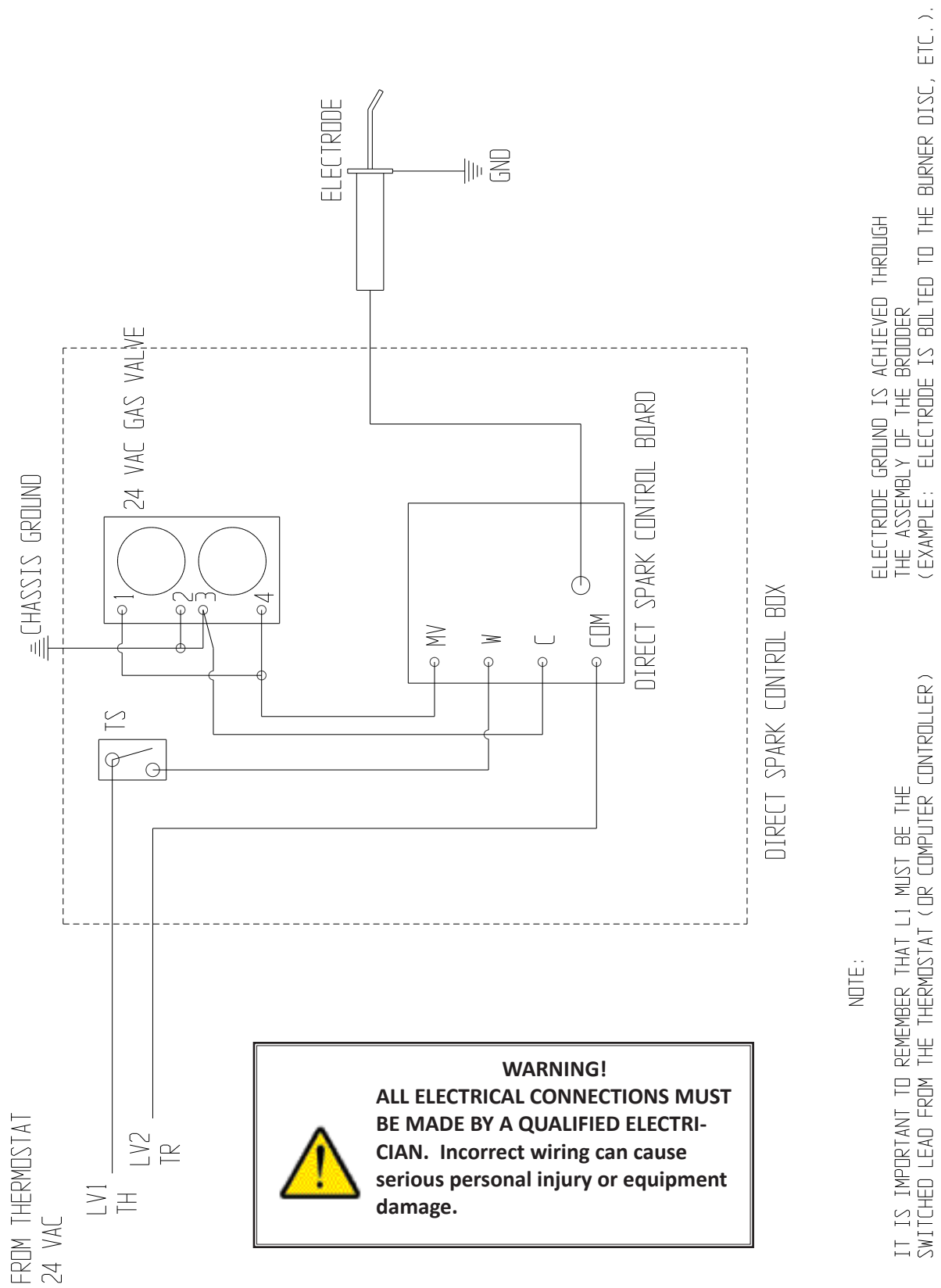


Refer to Installation Instructions shipped with control

### S.I.T. Snap Control Valve (470185)



# Direct Spark Control Wiring





## Gas Pilot Troubleshooting Guide

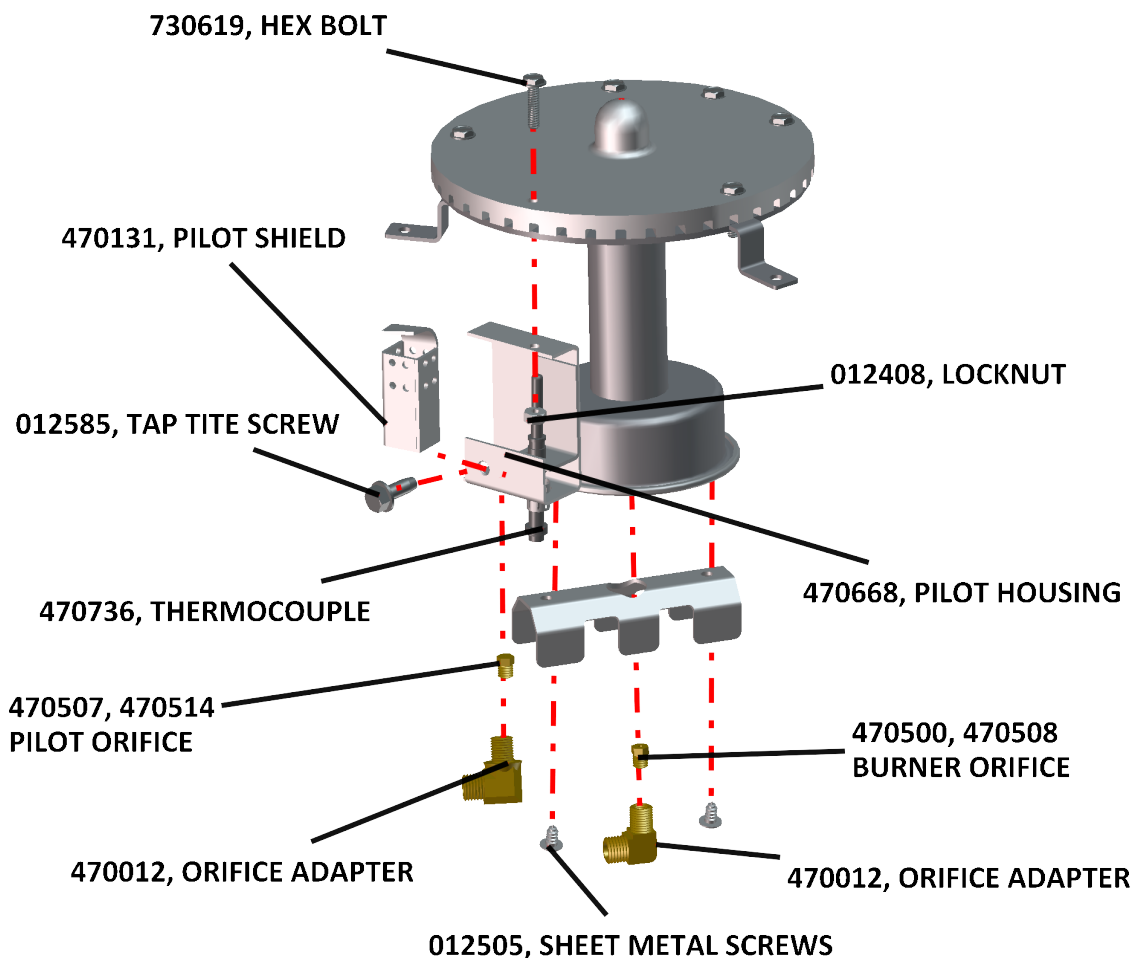
PROBLEM	SOLUTION
Pilot will not light	Gas line obstructed or turned off
	Pilot orifice blocked or obstructed. Clean out orifice as instructed.
Pilot will not stay lit	Be sure thermocouple is positioned with 3/8" of tip in flame
	Check that thermocouple is not connected too tight or too loose to controller. Should be finger tight plus 1/4 turn max.
	Be sure pilot shield is seated in bracket to properly deflect flame toward thermocouple
	If pilot goes out when burner starts, check that you have proper gas pressure.
Burner will not light	Bad control valve
	Burner orifice blocked or obstructed. Clean out orifice as instructed.
	Gas line obstructed or turned off
For Zone controlled systems; perform the following additional checks when burner will not light	Check unit is getting power
	Check transformer is functioning properly 120V in and 24Vout. Minimum of 20V required for gas control valve
	Check that sensing device is functioning properly
	If current at valve is correct, valve/solenoid may be stuck. Tap valve lightly to unstick
	Valve/solenoid may be bad. Disconnecting and connecting the wire at valve terminal should produce small spark and clicking sound. You can also check solenoid coil for continuity with Ohm meter.
	If unit has battery backup, check that relay is working properly. Relay should click when AC power is turned off.
Burner will not stay lit	Be sure pilot shield is seated in bracket to properly deflect flame toward thermocouple
	Check for excessive air movement around brooder
	Check for low gas pressure

## Direct Spark Troubleshooting Guide

PROBLEM	SOLUTION
Brooder does not light	Use torch to light brooder. If it lights then electrode is in wrong position or not sparking properly
Brooder fires but then goes out	Improper grounding. Check chasis ground wire and connection. Be sure polarity is correct. Refer to wiring diagram
Brooder fires with a puff after a short delay	Electrode out of position. Check that it is not shorting on metal parts. The spark must be at the end of electrode and in front of burner parts.
Brooder will spark but will not light	Check output of DSI board to valve (26VAC). Check status of valve. Is solenoid working? Check for continuity. Check position of spark in gas flow and that spark gap is 7/64"
Brooder will not spark	Solenoid may be stuck. Tap top to unstick. Check that coil/solenoid continuity is not open. Check wire connections and grounds.
Brooders from different zone fires unnecessarily when adjacent zone fires	Wiring is incorrect. LV1 and LV2 may be interchanged. See wiring diagram. Check DSI board. The switched thermostat/computer contact must feed terminal TH



## Maintenance Instructions



Normally the pilot and burner will produce a clean blue flame. If the flame is orange-blue, there is too much dust in the air but does not necessarily indicate poor performance. A white-blue flame indicates poor performance, and the burners will need attention. White flames cause carbon to form on the reflector and if allowed to accumulate can fall off and cause a fire. It is important to keep your equipment as clean as possible.

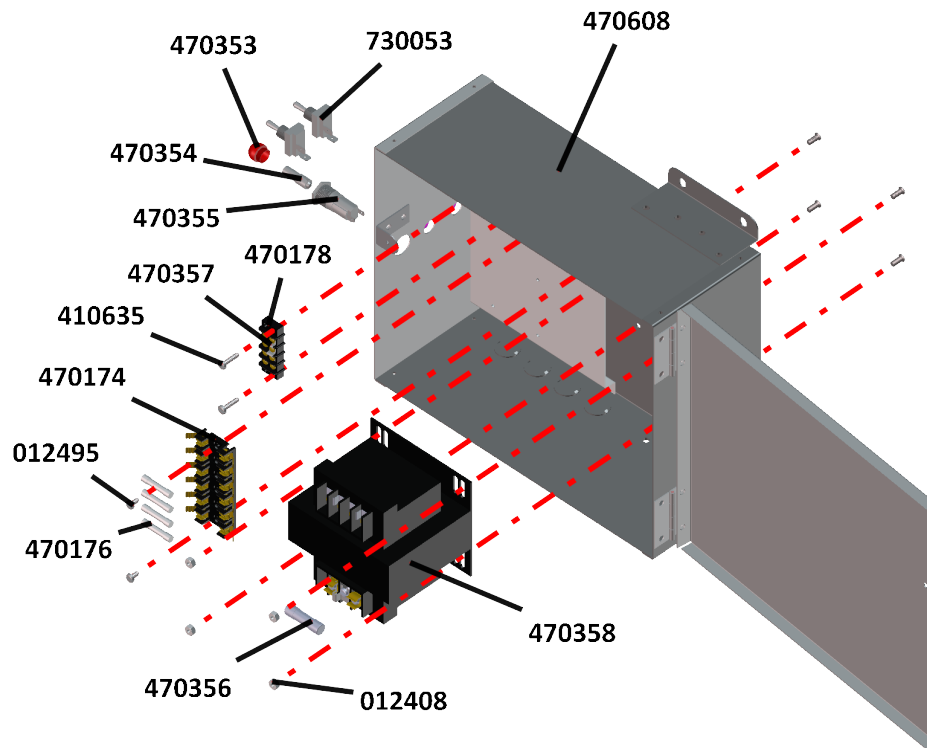
Cleaning instructions are as follows:

- 1) Blow off dust from burner assembly, control unit and brooder with each new brood of birds.
- 2) Clean Pilot orifice. Loosen screw and remove pilot shield and expose orifice. Carefully clean Orifice with brush and proper size orifice drill listed below. ***(The Orifice does not need to be removed to clean but if you do remove the Orifice you must be sure the Orifice is seated properly and remember to apply the proper amount of pipe dope.)***
- 3) Clean Burner orifice. Unscrew burner tube from adapter. Unscrew the screws holding the guard channel in place and unscrew adapter and channel from venturi. Use same method to clean the Burner Orifice as the Pilot Orifice described above. Clean the inside of burner tube with 1" pipe brush and blow clean. Apply proper rated pipe dope to threads on orifice and screw into adapter.

GAS TYPE	BURNER ORIFICE	PILOT ORIFICE
LP GAS	#50	#78
NATURAL	#39	#74
Orifice sizes correspond to drill sizes required for cleaning		



## 470650 Zone Control Unit - GENERATOR



PART #	DESCRIPTION	QTY
<b>470650 ZONE CONTROL UNIT - GENERATOR</b>		
012408	#10-24 HEX KEP LOCKNUT	4
012495	#8 X 3/8" ROUND HEAD PHILLIPS SHEET METAL SCREW	4
410635	#8 X 5/8" SHEET METAL SCREW	2
450460	ORANGE WIRE NUT <i>(not shown)</i>	1
450462	FORK TERMINAL, 14-16 AWG #10 STUD BLUE VINYL <i>(not shown)</i>	6
450497	3/16" FEMALE QUICK CONNECT <i>(not shown)</i>	2
470176	5 AMP TIME DELAY BUSS FUSE	4
470178	4 POLE TERMINAL STRIP	1
470353	LED LENS	1
470354	LED LIGHT	1
470355	LED LIGHT BASE	1
470356	15AMP TIME DELAY FUSE	1
470357	3/8" SPREAD TERMINAL STRIP JUMPER	2
470358	CONTROL TRANSFORMER	1
470608	ZONE CTRL HOUSING ASSY	1
730053	GAYNOR TOGGLE SWITCH	2
730244	#16-14 X 1/4" EXPANDED BARREL FEMALE SPADE CONNECTOR <i>(not shown)</i>	7
730248	14/16GA. QUICK CONNECT <i>(not shown)</i>	4
SPE-000-1039	WIRE, 14AWG, STRANDED, BLACK <i>(not shown)</i>	5.5 ft
SPE-000-1040	14GA. WHITE STANDARD WIRE <i>(not shown)</i>	1.5 ft

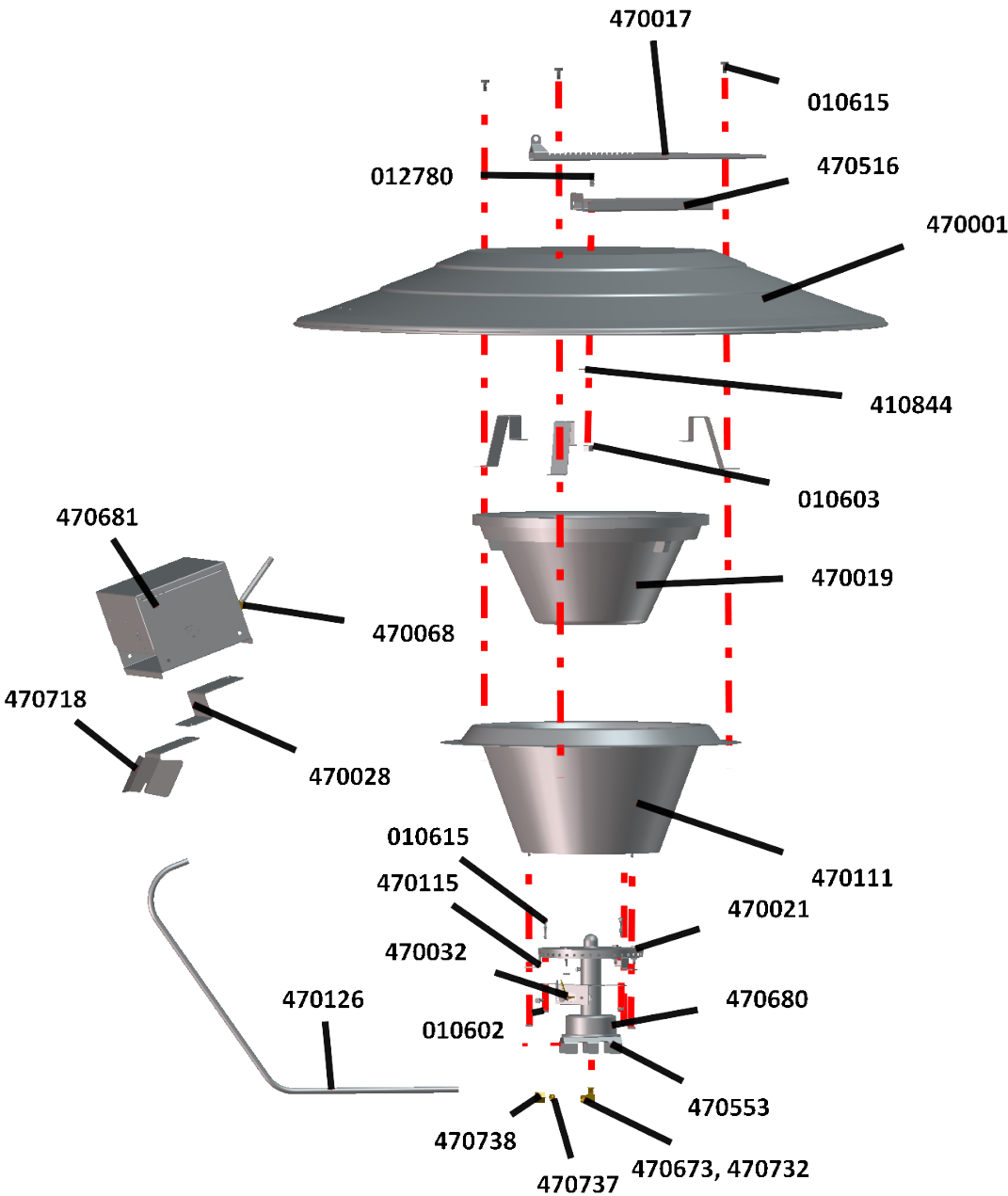


## 470459, 470460 Radiant Glo Brooder Heater - PARTS LIST

PART	DESCRIPTION	QTY
<b>470459, 470460 - Radiant Glo Brooder Heater</b>		
012408	#10-24 HEX KEP LOCKNUT	6
012505	#10 x 3/8" PHILLIPS TRUSS HEAD TYPE A SHEET METAL SCREW	2
012585	1/4-20 X 5/8" TAPTITE SCREW	1
470017	HANGER BRACKET	1
470019	VACUUM FORMED RADIANT	1
470021	BURNER PLATE CASTING	1
470038	SS REFLECT PAN MOUNT BRKT	3
470111	SS GLOW HOUSING ASSY	1
470115	SS GLOW HSG BRACKET	3
470127	3/8" X 25-7/8" BURNER TUBE	1
470129	RIVET, POP 1/8" X 1/16" - 1/8" GRIP, STEEL <i>(not shown)</i>	2
470131	VERTICAL PILOT SHIELD	1
470516	HANGER BASE	1
470553	BURNER ORIFICE GUARD	1
470668	PILOT HOUSING ASSY	1
470669	RADIANT CONTROLLER BASE	1
470671	RADIANT HARDWARE BAG	1
470673	40K - 3/8 LP BURNER ORIFICE <i>( for LP Gas 470459)</i>	1
470674	DUAL PRESS VP LP ORIFICE <i>( for LP Gas 470459)</i>	1
470680	RADIANT VENTURI BURNER ASSY	1
470693	1/4" X 25-3/8" PILOT TUBE	1
470694	SIT SNAP CONTROL CRTN ASSY	1
470731	DUAL VERT NAT PILOT ORIFICE <i>(for Natural Gas 470460)</i>	1
470732	40K NAT BURNER ORIFICE <i>( for Natural Gas 470460)</i>	1
470736	36" THERMOCOUPLE	1
470766	#10-24 X 7/8" SLOTTED HEX MACHINE SCREW	6
<b>470694 - SIT SNAP CONTROL ASSEMBLY</b>		
470067	1/8" X 3-1/2" GALV. NIPPLE	1
470068	1/8" X 45 DEGREE BRASS ELBOW	1
470185	SIT SNAP ACTION CONTROL	1
470186	SIT CONTROL COVER	1
470196	1/8" X 3/8" GALV. BUSHING	1
470539	3/8" X 3/8" PIPE ADAPTER BODY	1
470763	NYLON BULB STRAP <i>(not shown)</i>	1



470473, 470474 Direct Spark Ignition / Radiant Glo Brooder Heater - EXPLODED



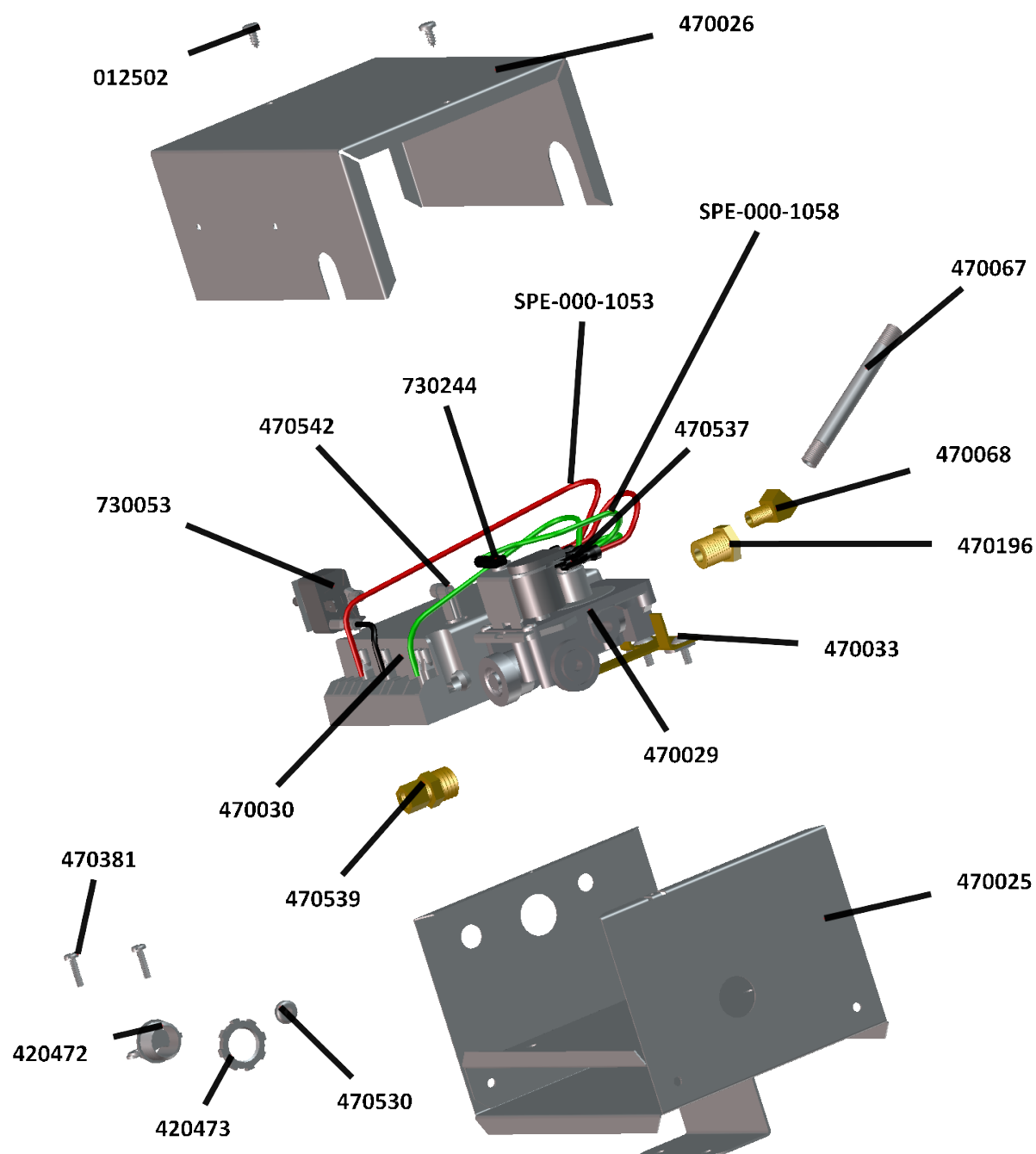


## 470473, 470474 Direct Spark Ignition / Radiant Glo Brooder Heater - Parts List

PART #	DESCRIPTION	QTY
<b>470473</b>		
012408	#10-24 HEX KEP LOCKNUT	8
012505	#10 x 3/8" PHILLIPS TRUSS HEAD TYPE A SHEET METAL SCREW	2
012795	#10-24 X 1/2" UNSLOTTED HEX HEAD MACHINE SCREW	2
470017	HANGER BRACKET	1
470019	VACUUM FORMED RADIANT	1
470021	BURNER PLATE CASTING	1
470032	ELECTRODE SPARK IGNITER - RADIANT	1
470038	SS REFLECT PAN MOUNT BRKT	3
470111	SS GLOW HOUSING ASSY	1
470115	SS GLOW HSG BRACKET	3
470126	3/8" X 27-3/4" BURNER TUBE	1
470516	HANGER BASE	1
470540	IGNITER BRACKET	1
470553	BURNER ORIFICE GUARD	1
470673	40K - 3/8 LP BURNER ORIFICE ( <i>for LP Gas 470473</i> )	1
470680	RADIANT VENTURI BURNER ASSY	1
470681	RADIANT DIRECT SPARK ASSEMBLY	1
470718	DIRECT SPARK HEAT SHIELD	1
470732	49K NAT BURNER ORIFICE ( <i>for Natural Gas 470474</i> )	1
470733	#10-24 X 1" SLOTTED HEX HEAD BOLT	6
470753	RADIANT WD HDWE BAG	1



## 470681 Radiant Direct Spark Assembly





## 470681 Radiant Direct Spark Assembly - Parts List

PART #	DESCRIPTION	QTY
<b>470681 - RADIANT DIRECT SPARK ASSEMBLY</b>		
010711	3/16" X 7/32" TUBULAR RIVET <i>(not shown)</i>	8
012495	#8 X 3/8" ROUND HEAD PHILLIPS SHEET METAL SCREW	2
012791	#10-32 X 1/2" PHILLIPS TRUSS HEAD BOLT	2
350412	3/8" ROMEX CONNECTOR	1
412506	7/8" KNOCKOUT PLUG	1
470025	WD ELECTRIC BOX	1
470026	WD ELECT BOX CO	1
470028	WD ELECT BOX MT	1
470029	DIRECT SPARK SOLENOID VALVE	1
470030	DIRECT SPARK CONTROL BOARD	1
470033	WD VALVE BRACKE	1
470067	1/8" X 3-1/2" GALV. NIPPLE	1
470067	1/8" X 45DEGREE BRASS ELBOW	1
470129	RIVET, POP 1/8" X 1/16"- 1/8" GRIP, STEEL <i>(not shown)</i>	2
470196	1/8" X 3/8" GALV. BUSHING	1
470359	SPARK IGNITER CABLE & BOOT <i>(not shown)</i>	1
470381	#10-32 X 3/4" PHILLIPS HEAD BOLT	2
470382	#8 X 1/2" SELF-DRILLING SCREW	1
470527	WD ELECT BOX BASE W/NUTS	1
470530	1/2" X 3/16" X 7/32" GROMMET	1
470537	16-14 3/16" EXPANDED BARREL FEMALE SPADE CONNECTOR	4
470539	3/8" X 3/8" PIPE ADAPTER BODY	1
470542	90 DEGREE QUICK CONNECT	1
730053	GAYNOR TOGGLE SWITCH	1
730244	#16-14 X 1/4" EXPANDED BARREL FEMALE SPADE CONNECTOR	7
SPE-000-1053	#16 WIRE - RED	1 ft
SPE-000-1058	#16 WIRE - GREEN	1.7 ft
SPE-000-1060	#16 WIRE - BLACK, 600V	.33 ft





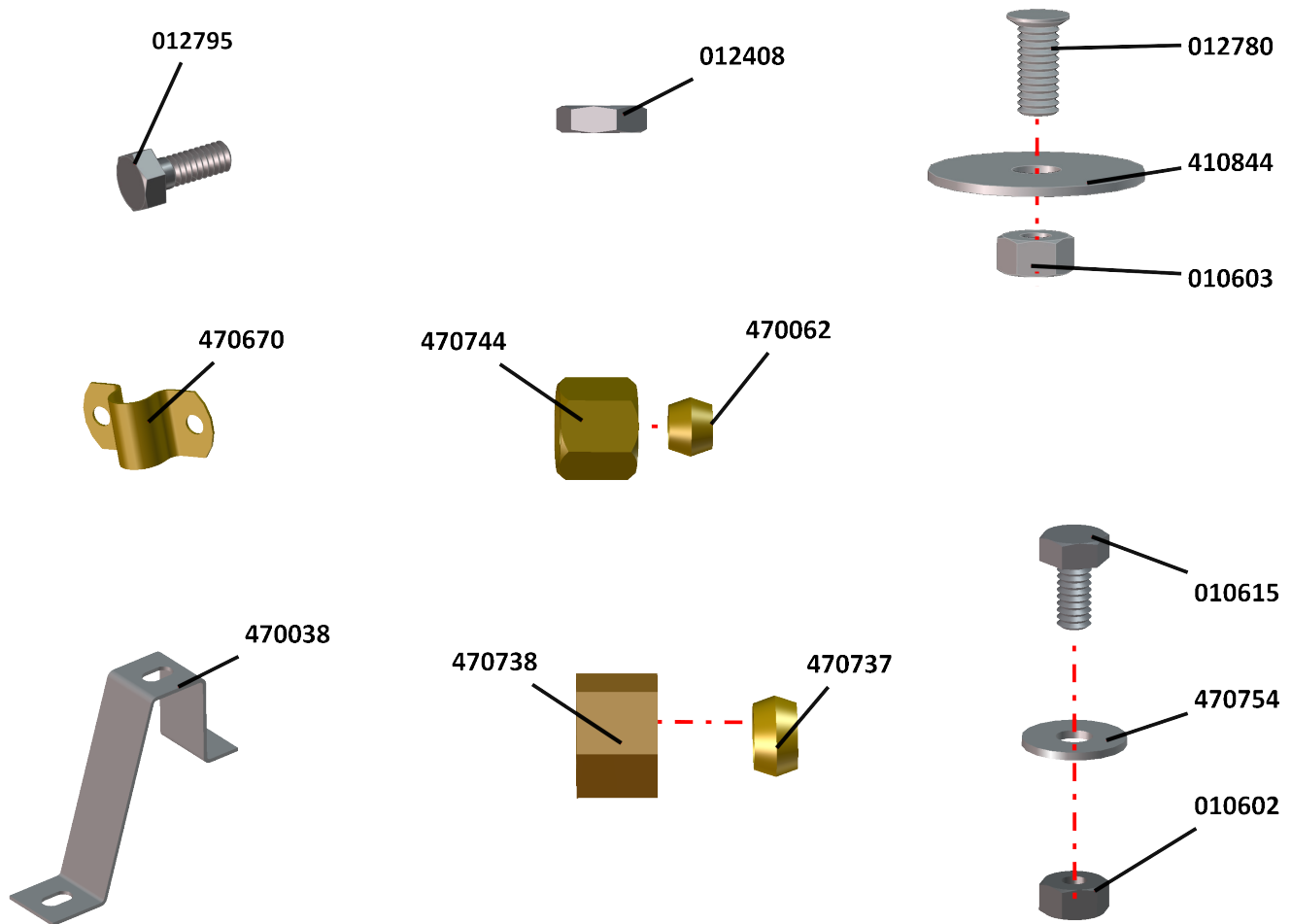


## 470467, 470468 Parts List

PART #	DESCRIPTION	QTY
<b>470467</b>		
012408	#10-24 HEX KEP LOCKNUT	6
012505	#10 x 3/8" PHILLIPS TRUSS HEAD TYPE A SHEET METAL SCREW	2
012585	1/4-20 X 5/8" TAPTITE SCREW	1
470017	HANGER BRACKET	1
470019	VACUUM FORMED RADIANT	1
470021	BURNER PLATE CASTING	1
470038	SS REFLECT PAN MOUNT BRKT	3
470111	SS GLOW HOUSING ASSY	1
470115	SS GLOW HSG BRACKET	3
470127	3/8" X 25-7/8" BURNER TUBE	1
470129	RIVET, POP 1/8" X 1/16" - 1/8" GRIP, STEEL	2
470131	VERTICAL PILOT SHIELD	1
470516	HANGER BASE	1
470553	BURNER ORIFICE GUARD	1
470668	PILOT HOUSING ASSY	1
470669	RADIANT CONTROLLER BASE	1
470671	RADIANT HARDWARE BAG	1
470673	40K - 3/8 LP BURNER ORIFICE ( <i>for LP Gas 470467</i> )	1
470674	DUAL PRESS VP LP ORIFICE ( <i>for LP Gas 470467</i> )	1
470675	RADIANT ZONE CONTROLLER ASSY	1
470677	1/4" X 33" PILOT TUBING	1
470680	RADIANT VENTURI BURNER ASSY	1
470731	40K NAT PILOT ORIFICE ( <i>for Natural Gas 470468</i> )	1
470732	40K NAT BURNER ORIFICE ( <i>for Natural Gas 470468</i> )	1
470736	36" THERMOCOUPLE	1
470766	#10-24 X 7/8" SLOTTED HEX MACHINE SCREW	6
<b>470675 Robertshaw Zone Control</b>		
470043	ROBERTSHAW ZONE CONTROLLER	1
470067	1/8" X 3-1/2" GALV. NIPPLE	1
470196	1/8" X 3/8" GALV. BUSHING	1
470539	3/8" X 3/8" PIPE ADAPTER BODY	1



## Hardware Bag (470671) Detail and Parts List



PART #	DESCRIPTION	QTY
<b>470671 and 470753 RADIANT HARDWARE BAG</b>		
010602	1/4" FINISHED HEX NUT	6
010603	5/16" FINISHED FULL NUT	1
010615	1/4-20 X 1/2" HEX BOLT	6
012408	#10-24 HEX KEP LOCKNUT	7
012780	5/16" X 3/4" THREADED STUD	1
012795	#10-24 X 1/2" UNSLOTTED HEX HEAD MACHINE SCREW	4
410844	1.625" X .375" WASHER	1
470062	1/4" BRASS COMP FERRULE	1
470670	3/8" TUBE RETAINER	1
470737	3/8" BRASS COMP. FERRULE	2
470738	3/8" BRASS COMPRESSION NUT	2
470744	1/4" BRASS COMPRESSION NUT (470671 only)	1
470754	HANGER BRACKET WASHER	3

## Customer Service

My dealer's name:

\_\_\_\_\_

How to contact my dealer:

Street / PO Box \_\_\_\_\_

City \_\_\_\_\_

State / Province \_\_\_\_\_

Zip / Postal \_\_\_\_\_

**Customer Service**

210 E. Main Street  
P. O. Box 117  
Coldwater, OH 45828  
800.998.2526

Phone \_\_\_\_\_

Fax \_\_\_\_\_

E-mail \_\_\_\_\_



**North America:**

Phone: 800.99VALCO  
(800.998.2526)  
Fax: 419.678.2200  
Email: [sales@val-co.com](mailto:sales@val-co.com)

**International:**

Phone: (+1) 419.678.8731  
Fax: (+1) 419.678.2200  
Email: [intl.sales@val-co.com](mailto:intl.sales@val-co.com)

VERSION HISTORY	
1st Edition	12-20-2012