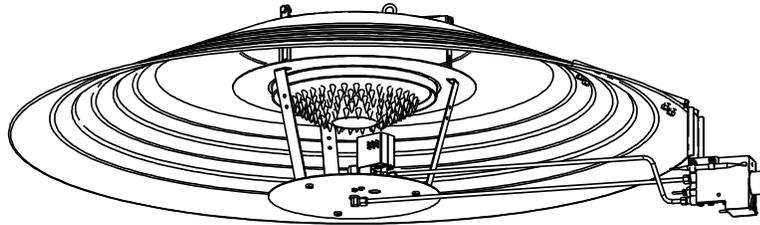




SINGLE JET BROODER

MODELS: SSJ30-N/L (2B, 3, 9, 5E)

INSTALLATION AND OPERATION INSTRUCTIONS



FOR YOUR SAFETY

! WHAT TO DO IF YOU SMELL GAS

Do not try to light any appliance. Extinguish any open flame. Open windows. Do not touch any electrical switch; do not use any telephone in your building. **Immediately call your gas supplier from a neighbor's telephone. Follow the gas supplier's Instructions.**

If you cannot reach your gas supplier, call the fire department.

!IMPORTANT: SAVE THIS MANUAL FOR FUTURE REFERENCE.

DO NOT store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

CONSIGNES DE SÉCURITÉ

! QUE FAIRE SI UNE ODEUR DE GAZ EST DÉCELÉE?

NE mettre en fonction aucun appareil. Éteindre toute flamme nue. Ouvrir les fenêtres. NE PAS toucher aux commutateurs. NE PAS utiliser de téléphone dans le bâtiment. **Appeler immédiatement le fournisseur de gaz en utilisant le téléphone d'un voisin. Suivre les instructions du fournisseur de gaz.**

Si le fournisseur de gaz ne peut être joint, appeler le service des Incendies.

! IMPORTANT : CONSERVER LE PRÉSENT MANUEL POUR RÉFÉRENCE ULTÉRIEURE.

NE PAS stocker ni utiliser d'essence ou d'autres vapeurs/liquides inflammables près de cet appareil ou de tout autre appareil

Scan warranty QR code on the right to register your product.



OWNER/INSTALLER: For your safety this manual must be carefully read before installing, operating or servicing this brooder. This brooder is intended for use with either Natural Gas or Propane Gas. It must be installed by a qualified service person or a licensed contractor in accordance with state and local codes. In the absence of these codes, the installation must conform to the National Fuel Gas Code ANSI Z223.1 (latest edition) also know a NFPA54 or the CAN/CGA-B149.1/2 Installation Code in Canada.

▲WARNING: Improper installation, adjustment, alteration, service or maintenance can cause injury, property damage or death. Refer to this manual. For assistance or additional information, consult a qualified installer, service agency or the gas supplier.

INSPECT all combustion air openings into the building and, if necessary, clear as they become blocked by litter, dust, feathers or other matter.

INSPECT and clean the brooder filters on a regular basis to allow proper brooder operation.

FOR YOUR SAFETY: EXHAUST FANS **MUST** be operating on an appropriate cycle when brooders are operating to avoid a high concentration of carbon monoxide. When used without fresh air, this brooder may give off carbon monoxide, an odorless and poisonous gas. **CARBON MONOXIDE POISONING MAY LEAD TO DEATH.** Early signs of carbon monoxide poisoning resemble the flu with headaches, dizziness and nausea. If you experience these signs, **GET FRESH AIR IMMEDIATELY!** Have the brooders serviced as soon as possible and check the ventilation in the house.

These brooders are designed for agricultural applications for poultry houses and may operate with the use of either Natural Gas or Liquid Propane (LP) Gas. Check the brooder's nameplate to determine the correct gas type before proceeding with installation.



WARNING:

This product can expose you to chemicals including ceramic fibers, which are known to the State of California to cause cancer, and carbon monoxide, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.p65warnings.ca.gov.

TABLE OF CONTENTS

<u>Section</u>	<u>Description</u>	<u>Page</u>
1)	GENERAL INFORMATION	2
2)	BROODER SPECIFICATIONS	2
3)	BROODER CONTROL OPTIONS	3
3A)	BROODER ACCESSORIES	3
4)	BROODER ASSEMBLY	6
4A)	CERAMIC CONE AND PAN ASSEMBLY	6
4B)	CANOPY AND HANGER ASSEMBLY	7
4C)	CONTROL ARM, PILOT AND BURNER JET ASSEMBLY	8
4D)	CONTROL ARM AND BURNER JET ASSEMBLY	10
4E)	IGNITION CONTROL ASSEMBLY	10
4F)	ELECTRODE AND CABLE ASSEMBLY	11
4G)	GAS VALVE WIRE CONNECTIONS	11
4H)	COMPLETE BROODER ASSEMBLY VIEWS	12
5)	MINIMUM CLEARANCES TO COMBUSTIBLES	12
6)	BROODER INSTALLATION	13
7)	GAS CONNECTIONS	14
7A)	INSTRUCTIONS FOR GAS LEAKS AND GAS PRESSURE TESTING	16
7B)	GAS PIPE SIZING EXAMPLE	19
8)	ELECTRICAL CONNECTIONS (PILOT CONTROLS)	20
8A)	ELECTRICAL CONNECTIONS (DSI CONTROLS)	21
9)	LIGHTING AND SHUTDOWN INSTRUCTIONS	24
10)	VENTILATION	27
11)	MAINTENANCE	27
12)	TROUBLESHOOTING	28
12A)	BURNER OPERATION AND TROUBLESHOOTING	29
13)	REPLACEMENT PARTS GUIDE	31
14)	WARRANTY	35

1. GENERAL INFORMATION

This brooder is a self-contained infrared radiant brooder for agricultural locations where flammable gases or vapors are not generally present.

Installation of the brooders must be in accordance with all applicable codes shown in the instructions and/or the local codes and authorities having jurisdiction. In the absence of local codes, the brooder must be installed in accordance to the National Fuel Gas Code ANSI Z223.1/NFPA54 in the U.S. or the CAN/CGA-B149.1/2 Installation Code in Canada. Clearances to combustibles as outlined in the manual should always be observed.

Inspect all openings and filters regularly and clean as necessary. This is necessary because litter, dust, feathers and other matter can become airborne, clog openings and filters and adversely affect brooder operation and performance.

Every brooder should be located with respect to building construction and other equipment so as to permit access to the brooders. Each installer shall use skillful and reliable installation practices when locating the brooders and must give consideration to service accessibility.

This brooder is for **INDOOR INSTALLATION ONLY** and is used in an **UNVENTED** mode. The term *Unvented* actually means *Indirect Vented*. While the products of combustion are expelled into the building, national codes require ventilation in the building to dilute these products of combustion. This ventilation must be provided by gravity or mechanical means. Ventilation requirements are addressed further in these instructions.

This heater complies with **IAS U.S. No. 8-94 (Draft No. 2)** and **CAN-1-2-20-M85**.

Copies of the National Fuel Gas Code (ANSI Z223.1-latest edition) are available from the CSA at 8501 E. Pleasant Valley Rd., Cleveland, OH 44131 or 55 Scarsdale Road, Don Mills, Ontario M3B 2R3. All NFPA codes are available from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

2. BROODER SPECIFICATIONS

INPUT RATING	<i>Propane Gas:</i>	30,000 Btu/hr	8.79 Kw
	<i>Natural Gas:</i>	30,000 Btu/hr	8.79 Kw
GAS SUPPLY PRESSURE	<i>Propane Gas:</i>	12" - 14" W.C.	30.0 - 35.0 mbar
	<i>Natural Gas:</i>	7" - 14" W.C.	17.4 - 35 mbar
MANIFOLD PRESSURE	<i>Propane Gas:</i>	11" W.C.	27.4 mbar
	<i>Natural Gas:</i>	6" W.C.	14.9 mbar
MAIN BURNER ORIFICE SIZE	<i>Propane Gas:</i>	#52 (0.064)	
	<i>Natural Gas:</i>	#41 (0.096)	
PILOT ORIFICE SIZE	<i>Propane Gas:</i>	#79 (0.015)	
	<i>Natural Gas:</i>	#76 (0.020)	
MOUNTING HEIGHT		34"	864mm
BROODER SPACING		25' - 40'	7.6m - 12.2m
BROODER SIZE	<i>Canopy Diameter:</i>	34" or 46"	864mm or 1,168mm
	<i>Brooder Height:</i>	12"	305mm
WEIGHT [□]		18.6 lbs	8.44 kg
VENTILATION REQUIRED	<i>Per Brooder:</i>	120 CFM	204 m ³ /hr
GAS CONSUMPTION	<i>Propane Gas:</i>	0.32 GPH	1.21 L/hr
	<i>Natural Gas:</i>	0.30 Therm	31.65 MJ/hr
ELECTRICAL SUPPLY	<i>Model 2 Control ONLY</i>	24 VAC, 1 Ph, 60Hz, 0.5A	24 VAC, 1 Ph, 60Hz, 0.5A
	<i>Model 5 Control ONLY</i>	24 VAC, 1 Ph, 60Hz, 0.8A	24 VAC, 1 Ph, 60Hz, 0.8A

□ with Galvanized Canopy

3. BROODER CONTROL OPTIONS

Control No. 2B For single or multi-zone installations using central or multiple thermostats. This 24-volt, AC, zone-type control also can operate on DC voltage as a back up. The gas valve includes a built-in regulator. A 24-volt power supply is required. Brooder can be operated by a 24-volt thermostat, computer or an environmental controller. 100% gas safety shut-off valve.

Control No. 3 A modulating type HI/LO control with integral thermostat. No electrical supply is needed. Upon call for heat, the valve will open from pilot to low fire (approximately 22,000 Btu/hr) and modulate between low and high fire (30,000 Btu/hr) as necessary to maintain desired temperature setting. As the thermostat is being satisfied, the valve will modulate down to low fire and then drop to pilot upon being satisfied. 100% gas safety shut-off valve.

Control No. 9 An individual, non-electric, fully automatic ON/OFF control with integral thermostat, which operates on millivolts generated by the pilot. No electrical supply is needed. Integral thermostat features a wide temperature range for easy adjustment. 100% gas safety shut-off valve.

Control No. 5D Designed for single or multi-zone installations using one or more thermostats. A zone control (available as an accessory, Part #43619050) is required to provide a 24-volt power supply to each brooder. **Note: Brooders equipped with optional 120-Volt transformer do not use the Zone Control.**

The burner is controlled with a Direct Spark Ignition (DSI) module, which is designed to provide 100 percent gas shut off of the main valve in the event that the main burner flame is not sensed. **Note: Match up gas control arm suffixes with DSI box package numbers listed below.**

Complete Model Identification:

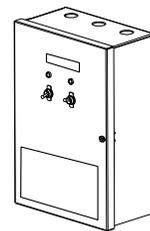
Model No. and Suffix	Gas Control Suffix	Gas Type	Description	Direct Spark Package No.
SSJ30-N2B	N2B	Natural	RS 7000ERLC Gas Valve	N/A
SSJ30-L2B	L2B	Propane	RS 7000ERLC Gas Valve	N/A
SSJ30-L3	L3	Propane	SIT 630 Gas Valve (modulating)	N/A
SSJ30-N9	N9	Natural	SIT 630 Gas Valve (non-modulating)	N/A
SSJ30-L9	L9	Propane	SIT 630 Gas Valve (non-modulating)	N/A
SSJ30-N5E	N5D	Natural	WR 36J22 Gas Valve/Fenwal Module	44475040 (24V)
SSJ30-L5E	L5D	Propane	WR 36J22 Gas Valve/Fenwal Module	44475050 (120V)

3A. BROODER ACCESSORIES

A) Zone Control Panel Model ZCP22, Part #43619050

This is a power supply control which utilizes a 375VA transformer to provide the required 24VAC for single or multiple groups (zones) of **No. 2B or 5E** brooders. Refer to electrical section of manual for allowable heater quantities per transformer.

Use power inverter kit #43619070 for battery back-up.

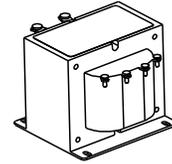


Zone Control Power Supply (with 375VA Transformer)

B) Power Inverter Kit (for battery back-up), Part #43619070 (Not Shown)

This provides temporary 120VAC to the brooder zone control (power supply) panel during power outages. The kit includes a battery trickle charger, changeover relay and power inverter to convert 12 volt DC into 120 volt AC. **(For No. 2B brooders only.)**

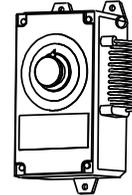
- C) Transformer Replacement – 375VA 120/240VAC – 24VAC, Part #30222070



Transformer
120/240 - 24VAC
375VA

- D) Thermostat – Environmental (EW-4-20), Part #30525010

Ratings: SPDT 120/240VAC, 16A Full Load
Temperature range: -40 Deg. F to 104 Deg. F +/- 2.5 Deg. F
Differential
Housing: Watertight ABS plastic meets NEMA 4x and NEC Article 547-4 requirements for use in harsh environments.
Adjustable dial allows thermostat to be recalibrated.



Environmental
Thermostat

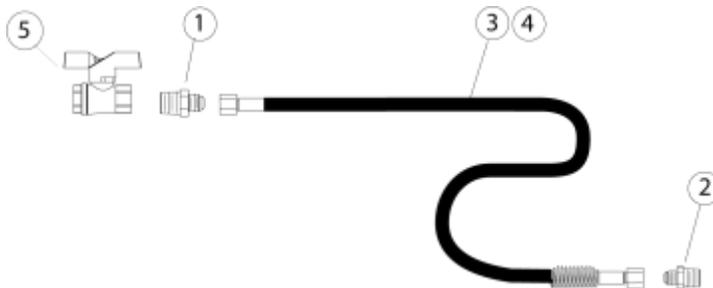
- E) Hose Kits - No. 3, 9 Controls:

Part No. 30522060 - 6FT Hose with 3/8" swivel female flare fittings and 6" spring. **Ball valve not included.**
Part No. 30522100 - 10FT Hose with 3/8" swivel female flare fittings and 6" spring. **Ball valve not included.**

Part No. 30522069 - 6FT Hose with 3/8" swivel female flare fittings and 6" spring. **Includes ball valve.**
Part No. 30522109 - 10FT Hose with 3/8" swivel female flare fittings and 6" spring. **Includes ball valve.**

Kit Components:

Item Number	Part Number	Description	Qty
1	30241000	MALE FTG 45 FLARE 3/8 TUBE x 1/2 MPT (for gas shut-off valve)	1
2	30241010	MALE FTG 45 FLARE 3/8 TUBE x 3/8 MPT (for main gas valve)	1
3	30523060	HOSE, 3/8 ID x 6FT with 3/8" F SWIVEL FITTINGS and 6" Spring	1
4	30523100	HOSE, 3/8 ID x 10 FT with 3/8" F SWIVEL FITTINGS and 6" Spring	1
5	30285000	Manual Gas Shut-Off Ball Valve 1/2 FPT	1



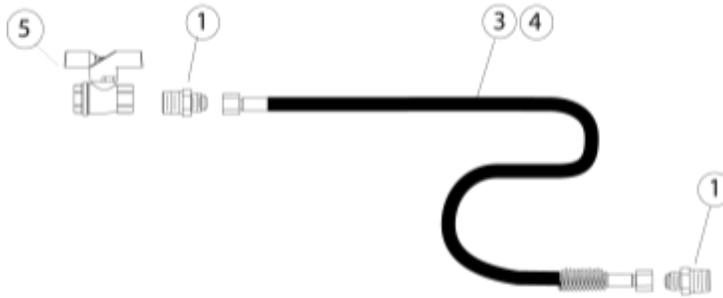
F) Hose Kits – No. 2B, 5D Controls:

Part No. 30522061 - 6FT Hose with 3/8" swivel female flare fittings and 6" spring. **Ball valve not included.**
 Part No. 30522101 - 10FT Hose with 3/8" swivel female flare fittings and 6" spring. **Ball valve not included.**

Part No. 30522068 - 6FT Hose with 3/8" swivel female flare fittings and 6" spring. **Includes ball valve.**
 Part No. 30522108 - 10FT Hose with 3/8" swivel female flare fittings and 6" spring. **Includes ball valve.**

Kit Components:

Item Number	Part Number	Description	Qty
1	30241010	MALE FTG 45 FLARE 3/8 TUBE x 1/2 MPT (for gas shut-off and main gas valve)	2
2	n/a	n/a	-
3	30523060	HOSE, 3/8 ID x 6FT with 3/8" F SWIVEL FITTINGS and 6" Spring	1
4	30523100	HOSE, 3/8 ID x 10 FT with 3/8" F SWIVEL FITTINGS and 6" Spring	1
5	30285000	Manual Gas Shut-Off Ball Valve 1/2 FPT	1

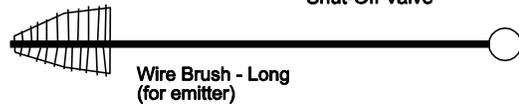


G) Manual Gas Shut-Off Ball Valve – 1/2"NPT, Part #30285000



Manual Gas Shut-Off Valve

G) Wire Brush – Long, Part #43295020
 Wire Brush – Short, Part #43295010



Wire Brush - Long (for emitter)



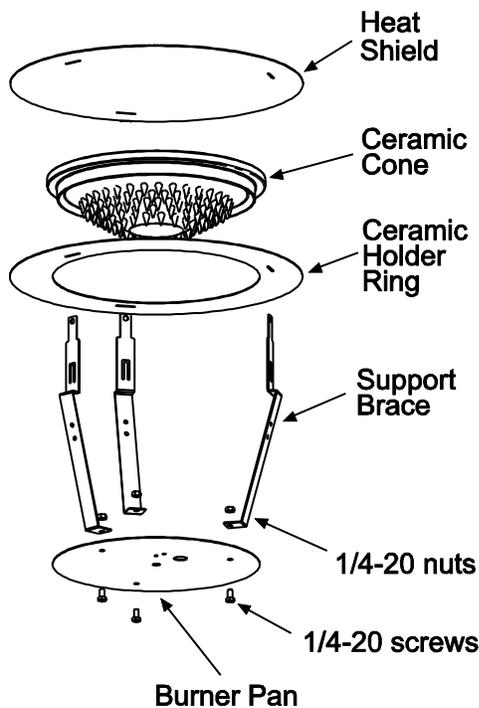
Wire Brush - Short (for burner & pilot)

4. BROODER ASSEMBLY

Make sure that all components are present before assembling the brooder:

Qty.	Description	Qty.	Description
(1)	Control Arm <i>(includes Pilot Assembly on 2B,, 3 and 9 models)</i>	(3)	Support Brace
(1)	Control Arm Mounting Bracket	(1)	Single Jet Burner Tube
(1)	Fastener Kit	(1)	Windshield <i>(Pilot models only)</i>
(1)	Burner Pan	(1)	Ceramic Cone
(1)	Ceramic Holder Ring	(1)	Canopy <i>(46" or 34")</i>
(1)	Center Hanger	(1)	Ignition Control <i>(5E models only)</i>
(1)	End Hanger	(1)	Ignition Control Bracket <i>(5E models only)</i>
(1)	Safety Pan	(1)	Electrode & Bracket <i>(5E models only)</i>
(1)	Ceramic Heat Shield		

NOTE: The Fastener Kit contains all the screws, washers and nuts required for brooder assembly of each control type. Discard any extra fasteners not required for a particular control type. Tools required to assemble the brooder are as follows: Adjustable Wrench, 3/8" End Wrench, 7/16" End Wrench, Flat Blade Screwdriver, and Pliers.



4A. CERAMIC CONE AND PAN ASSEMBLY

1. Loosely attach the three (3) support braces to the burner pan using three (3) 1/4-20 screws and nuts from the fastener kit. Align the braces with the slotted holes located in the ceramic holder ring and slide through the upper portion of the braces. See Figure 1. Tighten the screws and nuts.

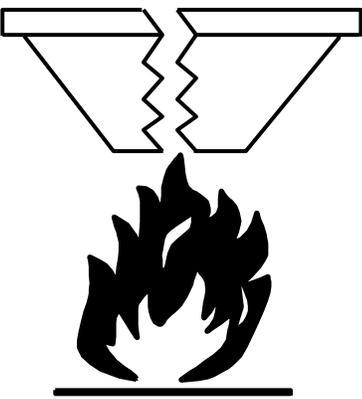
2. Place the ceramic cone into the hole of the ceramic holder ring.

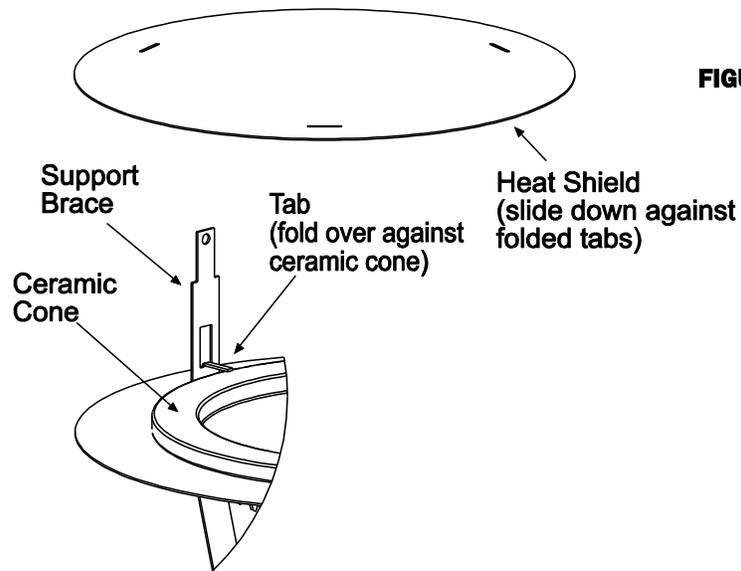
3. Fold the center tab of each support brace over against the ceramic cone using a screwdriver and a pair of pliers. See Figure 2.

NOTE: BE CAREFUL NOT TO CRACK THE CERAMIC CONE.

4. Place the heat shield onto the support braces and slide down against the folded tabs.

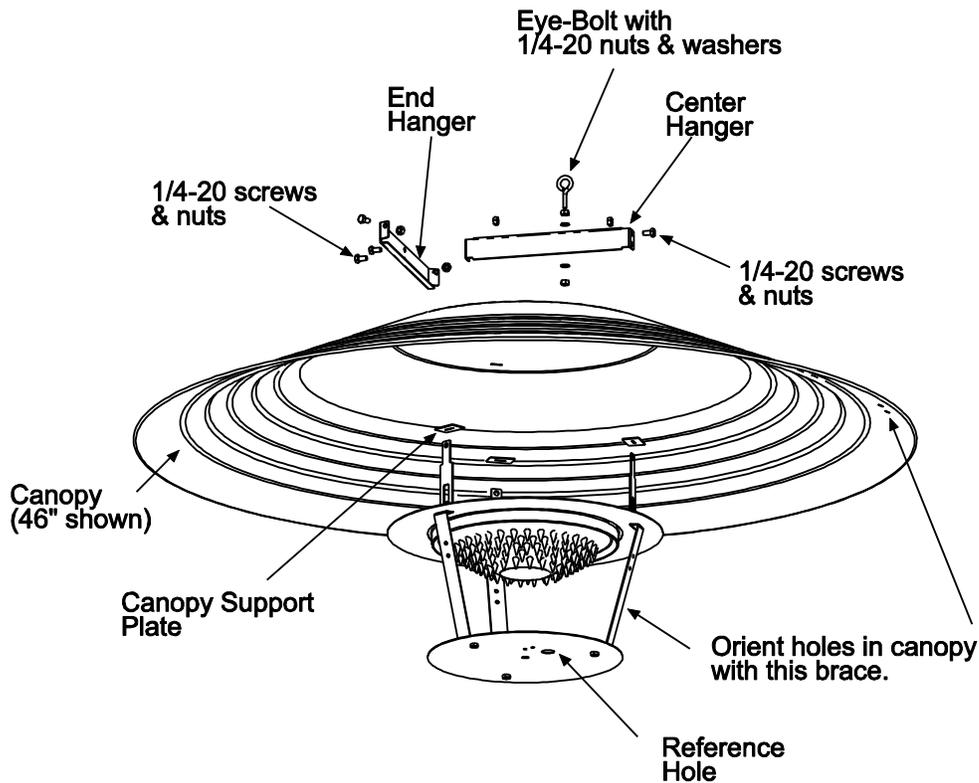
FIGURE 1

 WARNING	
	<p><u>FIRE HAZARD</u></p> <p>DO NOT turn on the brooder with a cracked ceramic cone. Replace the cone before attempting to re-light the brooder.</p> <p>Failure to follow these instructions may result in death, serious injury or property damage.</p>



4B. CANOPY AND HANGER ASSEMBLY

1. Place the three (3) canopy support plates over each support brace. Place the canopy over the assembly so that the support braces slide through the slotted holes of the canopy. **NOTE:** Orient the two (2) holes in the canopy with the support brace closest to the large hole located in the burner pan. See Figure 3.



2. Assemble the end and center hangers to the support braces using five (5) 1/4-20 screws and nuts from the fastener kit. Assemble the eyebolt to the center hanger using two (2) 1/4-20 nuts and washers. See Figures 3 and 4.

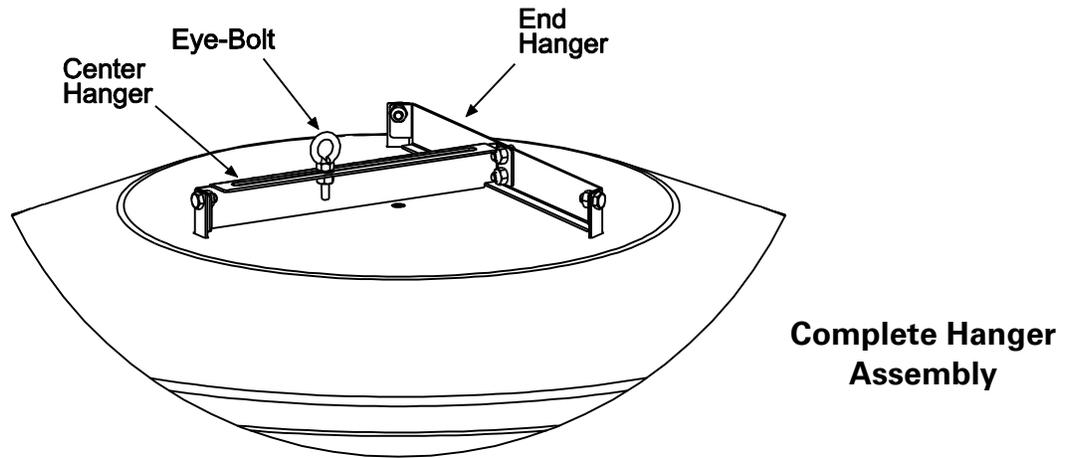


FIGURE 4

4C. CONTROL ARM, PILOT AND BURNER JET ASSEMBLY (Pilot Controls 2B, 3 and 9 Only)

1. Gently pull the thermocouple out and away from the pilot assembly. Take care not to crimp the capillary portion of the thermocouple.

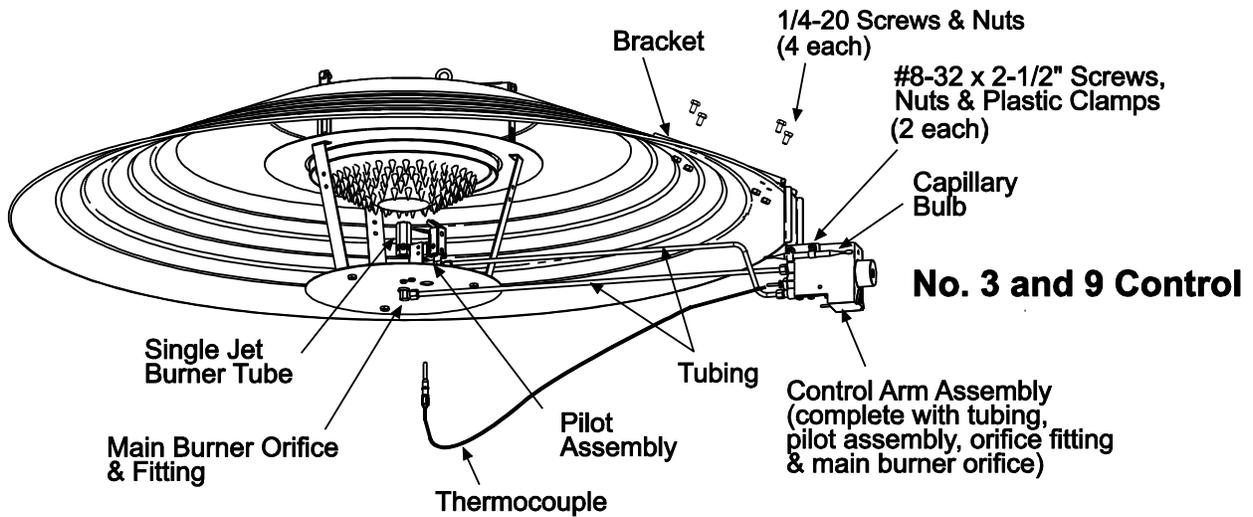


FIGURE 5

- Place the bracket for the gas control arm over the canopy and secure using four (4) 1/4-20 screws, washers and nuts from the fastener kit. See Figures 5 and 5a. **NOTE:** Mounting the control bracket to a 34" canopy requires use of the set of holes located at the end portion of the control bracket only. See Figure 7. Attach the gas valve to the control arm bracket using the fasteners indicated above and below for the 2B, 3 and 9 controls.

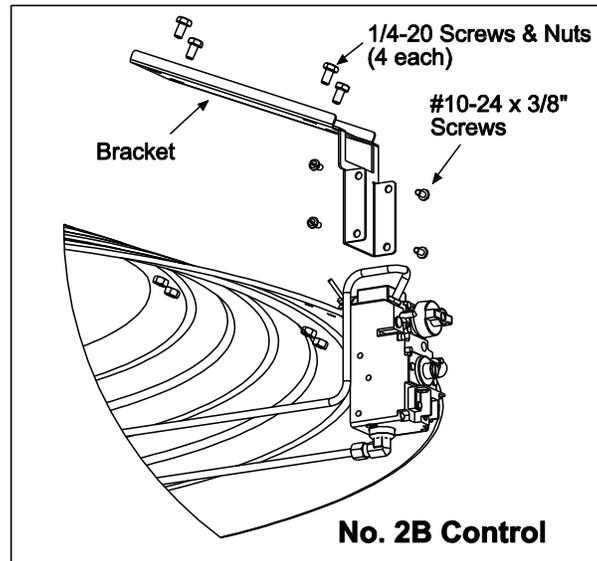


FIGURE 5a

- Secure the pilot assembly to the burner pan using two (2) #10-24 screws and nuts from the fastener kit. See Figure 6.
- Reattach the thermocouple to the pilot assembly by sliding it through the large hole located in the burner pan and into the pilot assembly until it snaps into position.

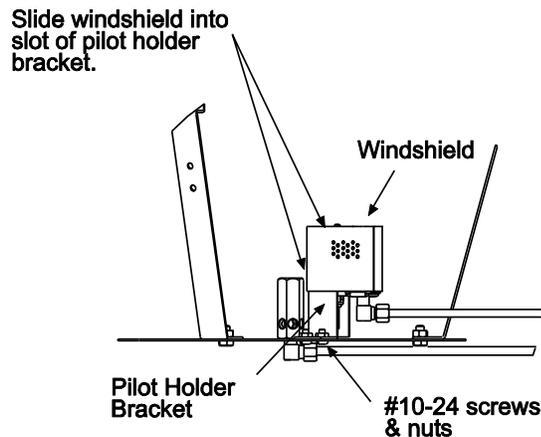
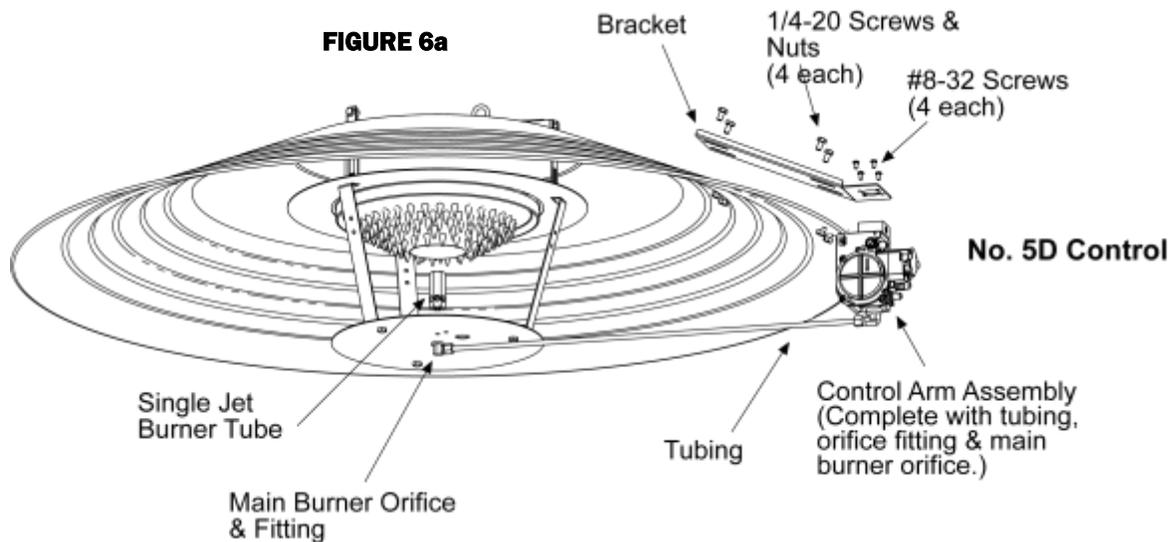


FIGURE 6

- Slide the main burner and orifice fitting through the center hole located in the burner pan. **NOTE:** The tubing may need to be bent slightly by hand for alignment with the fitting. Take care not to crimp the tubing.
- Screw the single jet burner tube onto the orifice fitting until it is snug against the burner pan. See Figure 6. Use an adjustable wrench or pliers to hold the fitting in place while tightening the burner tube.
- Slide the windshield into the slotted portion of the pilot holder bracket. See Figure 6.

4D. CONTROL ARM AND BURNER JET ASSEMBLY (DSI 5D Controls Only)

1. Place the bracket for the gas control arm over the canopy and secure using four (4) 1/4-20 screws and nuts from the fastener kit. See Figure 6a. **NOTE:** Mounting the control bracket to a 34" canopy requires use of the set of holes located at the end portion of the control bracket only. See Figure 7.
2. Attach the gas valve to the bracket and secure using four (4) #8-32 screws on control no. 5D.



3. Slide the main burner and orifice fitting through the center hole located in the burner pan. **NOTE:** The tubing may need to be bent slightly by hand for alignment with the fitting. Take care not to crimp the tubing.
4. Screw the single jet burner tube onto the orifice fitting until it is snug against the burner pan. See Figure 6a. Use an adjustable wrench or pliers to hold the fitting in place while tightening the burner tube.

4E. IGNITION CONTROL ASSEMBLY (DSI 5D Controls Only)

1. Pre-attach the box support bracket to the underside of the ignition control assembly using one (1) #10-24 hex locknut from the fastener kit. See Figure 6b.
2. Pre-attach the box support brace to the box support bracket using (1) #10-24 x 3/8" screw from the fastener kit. See Figure 6b.

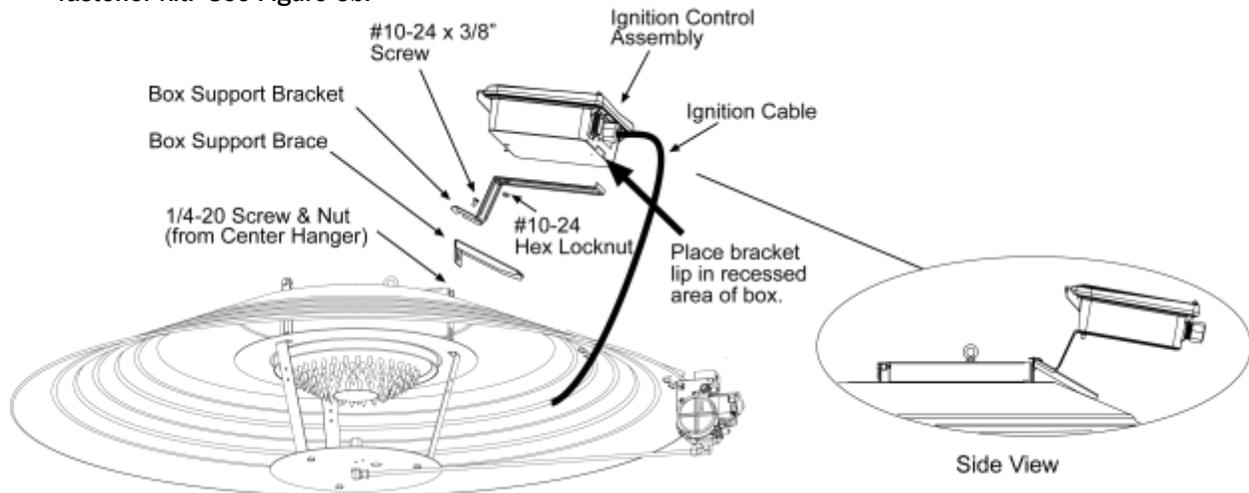
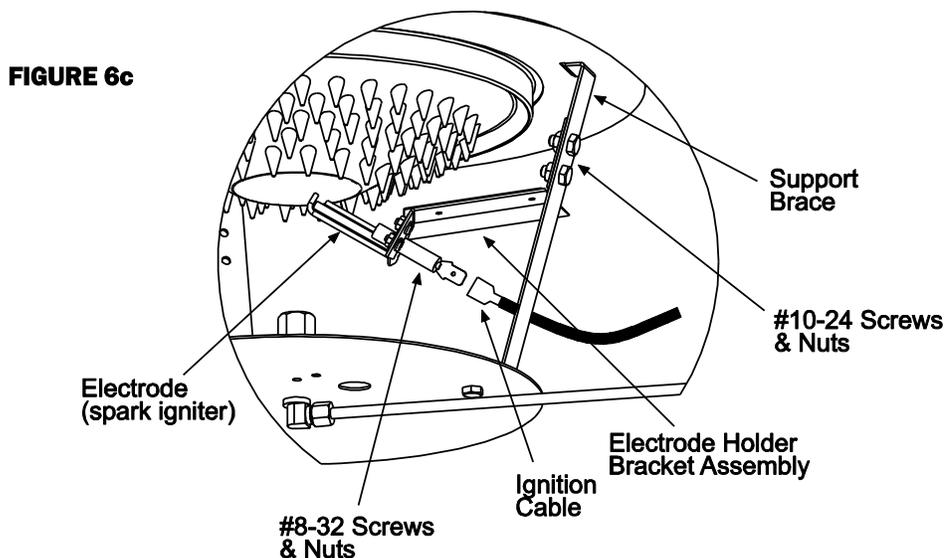


FIGURE 6b

2. Loosen the 1/4-20 screw and nut (installed earlier) from the end portion of the center hanger. Position the ignition control assembly so that the slotted hole of the support brace is centered between the end of the center hanger and the head of the 1/4-20 screw. Slide the bracket down until it is flush against the canopy to prevent the ignition control assembly from twisting. See Figure 6b.
3. Re-tighten the 1/4-20 screw and nut.

4F. ELECTRODE AND CABLE ASSEMBLY (DSI Controls 5D Only)

1. Fasten the electrode holder bracket assembly to the support brace using two (2) #10-24 screws and nuts. See Figure 6c. **NOTE:** The electrode holder bracket is attached to the support brace located in-line with the control arm tubing.
2. Place the electrode (spark igniter) onto the holder bracket and secure using two (2) #8-32 screws and nuts. See Figure 6c.
3. Slide the ignition cable quick connect terminal over the electrode until it snaps in place.



4G. GAS VALVE WIRE CONNECTIONS

1. **DSI Controls 5D:** Locate the two (2) blue wires from the ignition control assembly (**control no. 5D** only). Connect these to the valve terminals shown in Figure 6d. Refer to the wiring diagram location in Section 8, *Electrical Connections*.
2. **Pilot Controls 2B:** Connect the 24V supply wires (field supplied) to the gas valve of **control no. 2B**. See Figure 6d.

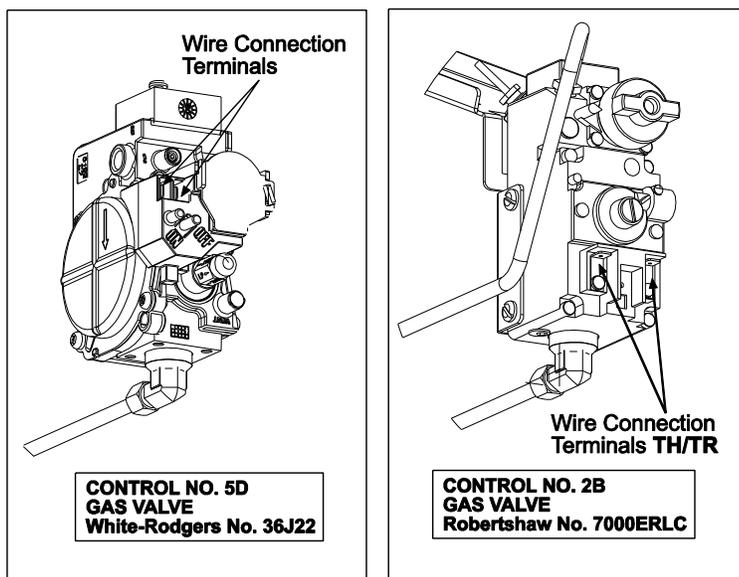


FIGURE 6d

4H. COMPLETE BROODER ASSEMBLY VIEWS (Pilot Models Shown)

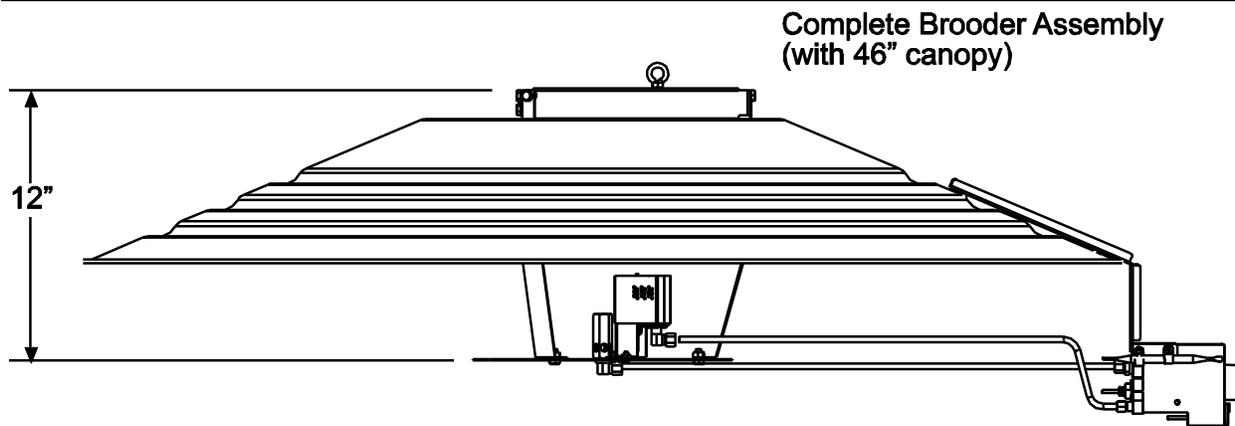
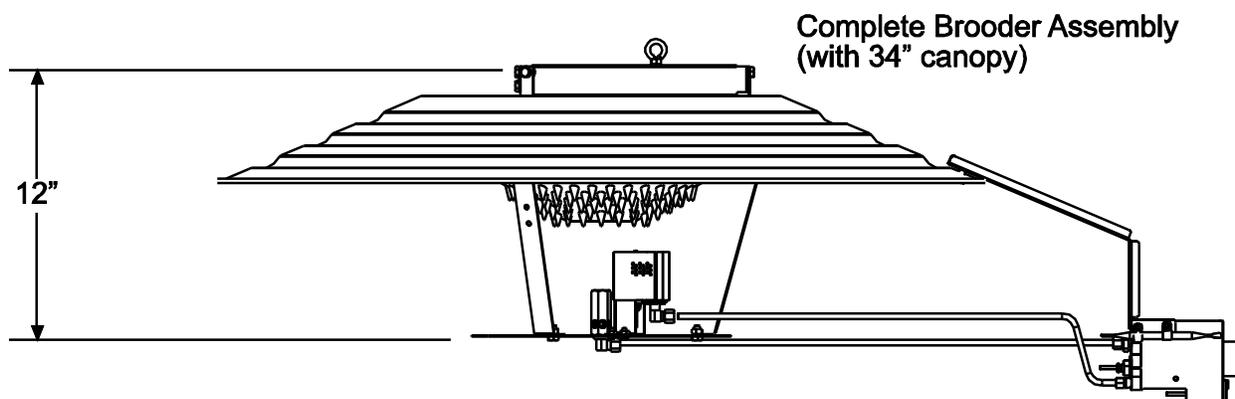


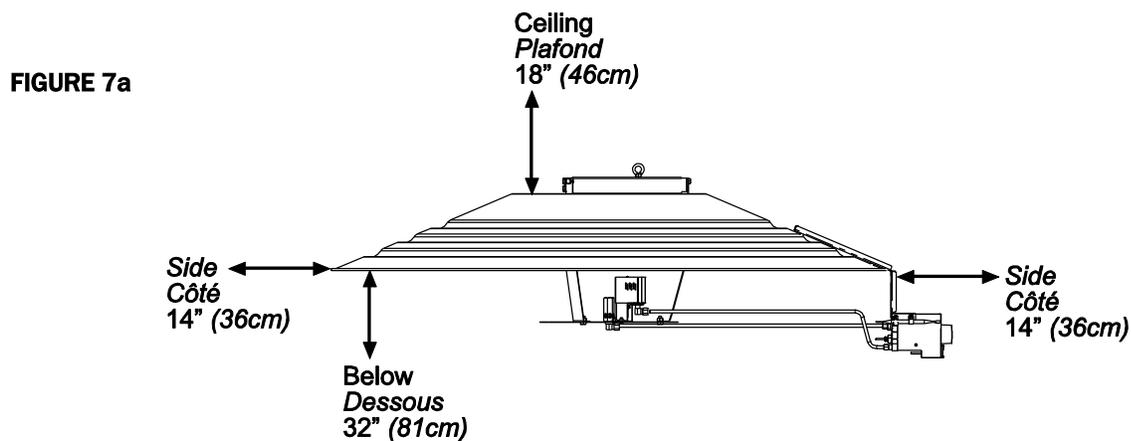
FIGURE 7



▲WARNING: ONCE THE BROODER IS ASSEMBLED AND BEFORE IT IS FIRST FIRED, YOU MUST CHECK FOR GAS LEAKS! USE A SOAP AND WATER SOLUTION AND APPLY AT ORIFICE FITTING AND FIELD CONNECTION AT THE GAS VALVE.

5. MINIMUM CLEARANCES TO COMBUSTIBLES

Minimum clearances to combustible materials shall be measured from the outer surface of the canopy as shown in the following table:



6. BROODER INSTALLATION

1. Locate brooders approximately 25' to 40' (8m to 12m) apart, in a row, as needed for bird comfort and building heat loss. If more than one row is desired, stagger rows for best heat distribution.
2. Suspend the brooder at the desired height above the floor (litter) level, normally 34" (864mm) minimum. For brooders connected to a winch (to allow for adjustment of brooder height), connect each brooder using a chain or cable suitable for the weight of each brooder. See Figure 7b. **DO NOT USE ROPE.** Size the winch and cable so that it is capable of handling the total weight of all brooders and gas piping involved. **NOTE:** Connect a safety chain to each brooder and anchor it to the house structure above each brooder to prevent it from falling onto the litter if the cable/chain breaks or the winch fails. **THE GAS HOSE SHOULD NEVER BE USED AS A SAFETY CHAIN!**
3. Connect the gas line and electrical supply (if required) to each brooder as outlined in Sections 7 and 8. **NOTE:** After connection of the gas line, make sure that the brooder is suspended with the control side approximately $\frac{1}{2}$ " (13mm) below the other side of the brooder to prevent hot products of combustion from damaging the gas control valve.
4. Slight adjustments can be made to level the brooder by loosening the nuts that are securing the eyebolt. Slide the eyebolt in the direction required as above.

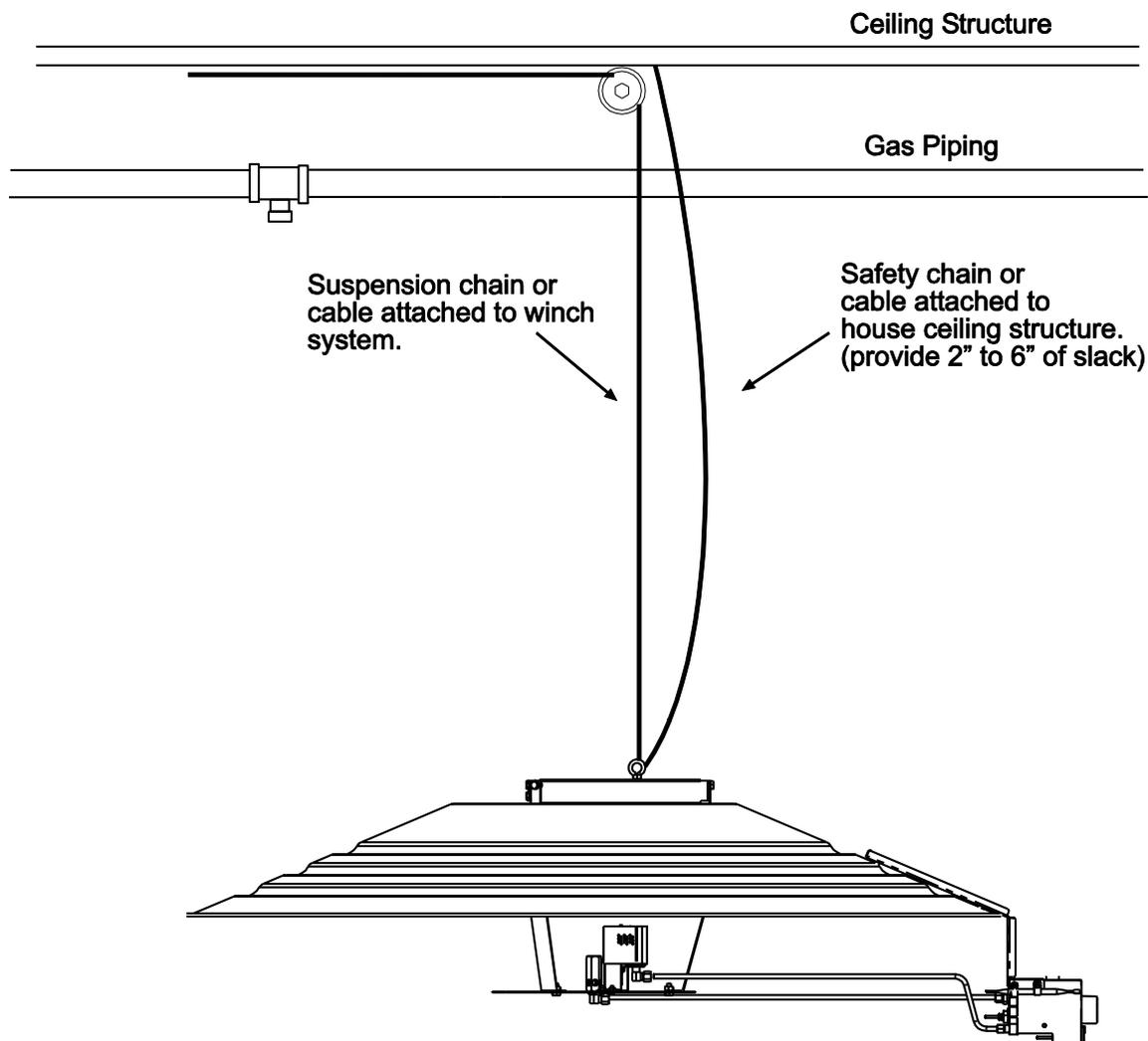
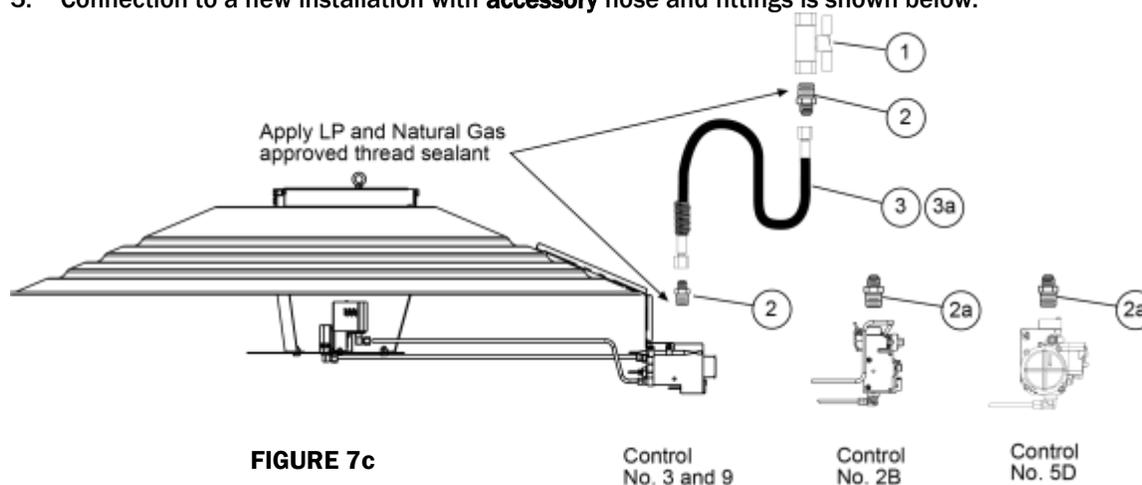


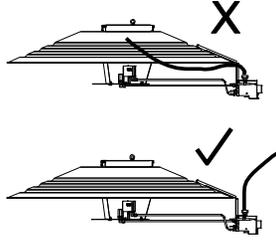
FIGURE 7b

⚠ WARNING	
	<p style="text-align: center;">FIRE HAZARD</p> <p>A safety chain must be connected from the hanging bracket to a fixed part of the building structure directly above the brooder.</p> <p>The safety chain will prevent the brooder from falling to the floor in the event that the main suspension system fails.</p> <p>Failure to follow these instructions may result in death, serious injury or property damage.</p>

7. GAS CONNECTIONS

- Gas piping for the house must be sized to be capable of satisfying the entire demands of the house should all equipment be operating at the same time. Please use Table 1 (taken from the National Fuel Gas Code) for the sizing of piping for the house. An example using this table is shown.
- Connect to the supply tank or manifold in accordance with the latest edition of the National Fuel Gas Code (ANSI Z223.1) and/or local codes. Authorities having jurisdiction should be consulted before the installation is made. Refer to the latest edition of CAN/CGA B.149-1/2 Installation Codes for Gas Burning Appliances and Equipment in Canada.
- Pipe joint compounds must be resistant to the action of liquefied petroleum (LP) gases.
- Gas connections to individual brooders shall be made using flexible gas connectors, or they can utilize rubber hosing suitable for LP gas usage (to allow movement of the brooders for cleaning, etc.). Check with the authorities having jurisdiction and/or local codes prior to choosing an individual gas connection method.
- Connection to a new installation with **accessory** hose and fittings is shown below:



⚠ WARNING		
		<p style="text-align: center;">FIRE HAZARD</p> <p>Tighten flexible gas hose and components securely.</p> <p>Flexible gas hoses must be installed without any twists or kinks in them. DO NOT allow the hose to touch any portion of the brooder canopy during operation.</p> <p>Failure to do so may result in death, serious injury or property damage.</p>

Item Number	Part Number	Description
1	30285000	VALVE, MANUAL BALL 1/2"
2	30241000	MALE FTG 45FLARE 3/8TUBE \times 3/8MPT
2a	30241010	MALE FTG 45FLARE 3/8TUBE \times 1/2MPT
3	30523060	HOSE, 3/8ID \times 6FT with 3/8"F SWIVEL FITTINGS
3a	30523100	HOSE, 3/8ID \times 10FT with 3/8"F SWIVEL FITTINGS

Make sure connection is secure before turning on the gas. See section 7a for procedures to test for gas leaks before putting the brooders into operation.

- Suspend the gas hose line to the ceiling structure using safety cable. This will reduce the potential that the hose can touch the canopy when the brooder is lowered or raised.

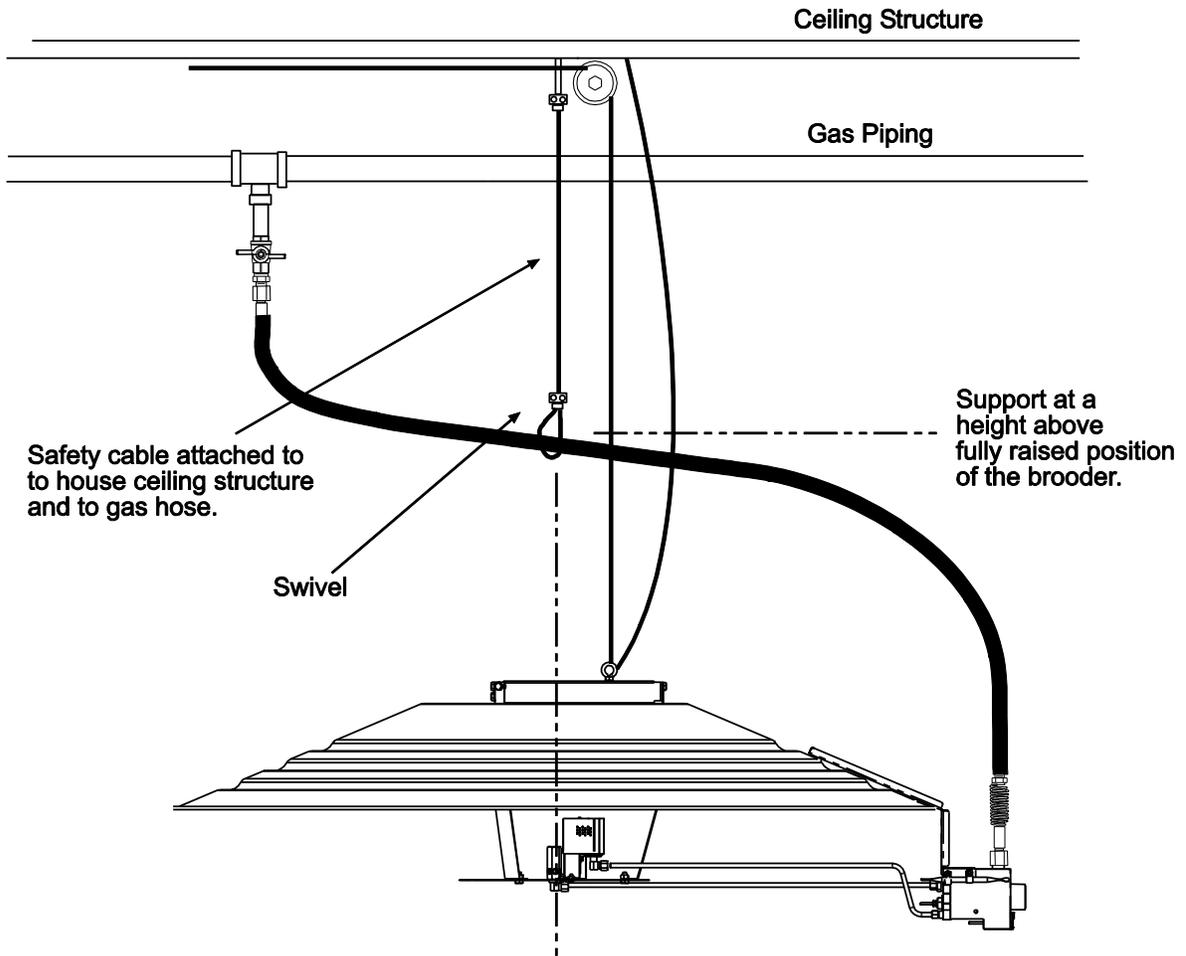
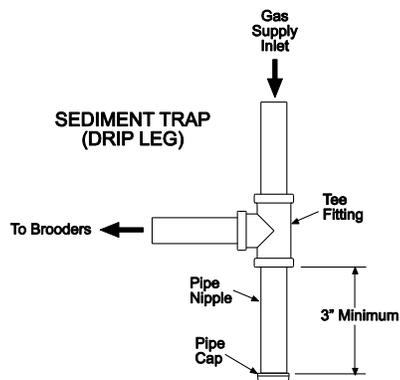


FIGURE 7d

- It is strongly recommended that a field installed manual shut-off valve be installed in the gas piping to each brooder. This will allow service of individual brooders without having to shut down the entire gas supply system. When installing the gas line, it is recommended to connect a sediment trap (shown below) in the gas line at a point before the gas line enters the house. This trap or “drip leg” acts to trap impurities and water that can condense out of the gas. It helps to keep impurities from entering the appliance and causing potential damage to gas valves, etc. Periodically remove the cap from the drip leg and drain any accumulation of dirt and/or water.

FIGURE 8



- After all gas connections and adjustments are made, check all gas connections for leaks (not just the gas connections at the brooders) using a heavy soap suds solution or by using one of the methods listed in Appendix D of the National Fuel Gas Code. **▲WARNING: DO NOT USE AN OPEN FLAME OF ANY KIND TO TEST FOR LEAKS!**
- It is recommended that a pressure gauge be installed at the end of the gas piping run to allow you to check the gas supply pressure in the system. This needs to be capable of accurately measuring in units of inches of water column or mbar.

7A. INSTRUCTIONS FOR GAS LEAKS AND GAS PRESSURE TESTING

▲WARNING: DO NOT OMIT THESE TESTS!

TESTING THE INSTALLATION FOR GAS LEAKS:

- Inspect all connections and appliance valves to be sure connections are wrench-tight and that all appliance valves are closed, including the pilot valves.
- Connect a low-pressure test set to the low pressure piping system just upstream of the appliance regulators and control. NOTE: A dry gauge manometer is available as an accessory (Part No. 43649000).
- Fully open the LP gas container valve slowly to pressurize the piping system. Once the system is pressurized and stabilized, close the container valve tightly.
- Observe the indicated pressure on the low-pressure test set gauge. This reading should be approximately equivalent to the set delivery pressure of the final stage regulator. Now, slowly open one burner valve or pilot valve on the appliance to vent off just enough gas to reduce the pressure on the test gauge by 1” water column, then close the burner or pilot valve.

If the pressure remains unchanged on the gauge for at least 10 minutes, the system can be assumed leak-tight. If a drop in pressure does occur, it indicates a leak in the system.

If the pressure drop occurs, check the joints, connectors, and other possible points of leakage with an approved, high quality leak detection solution. **NEVER USE A MATCH OR OPEN FLAME TO CHECK FOR LEAKS.** Once a leak has been located and repaired, repeat Steps 3 and 4. If there is an increase in pressure, it indicates that the LP gas container valve is not shut off tightly. Shut off the valve tightly and repeat Step 4.

NOTE: Do not expose final stage piping to excessive heat or direct sunshine during the leak test. Pressure build-up in the line due to heat may compensate for pressure loss due to leaks. This will prevent the gauge reading from indicating system leaks.

▲WARNING: Gas Pressure Testing is to be performed only by qualified personnel.

CHECK GAS INLET (SUPPLY) PRESSURE:

1. Be sure the valve is in the “OFF” position before removing the pressure tap plug at the valve. Connect a low-pressure test set (water manometer or dry gauge) to the 1/8” NPT Inlet Pressure Tap connection. (Refer to Figures 9, 9a and 9b for each control valve type.) Turn the valve to the “ON” position. **DO NOT EXCEED THE PRESSURES SHOWN IN THE GAS PRESSURE TABLE.**
2. Turn the valve back to the “OFF” position before removing the test set and replacing the plug. Repeat the gas leak test at the plug.

FIGURE 9

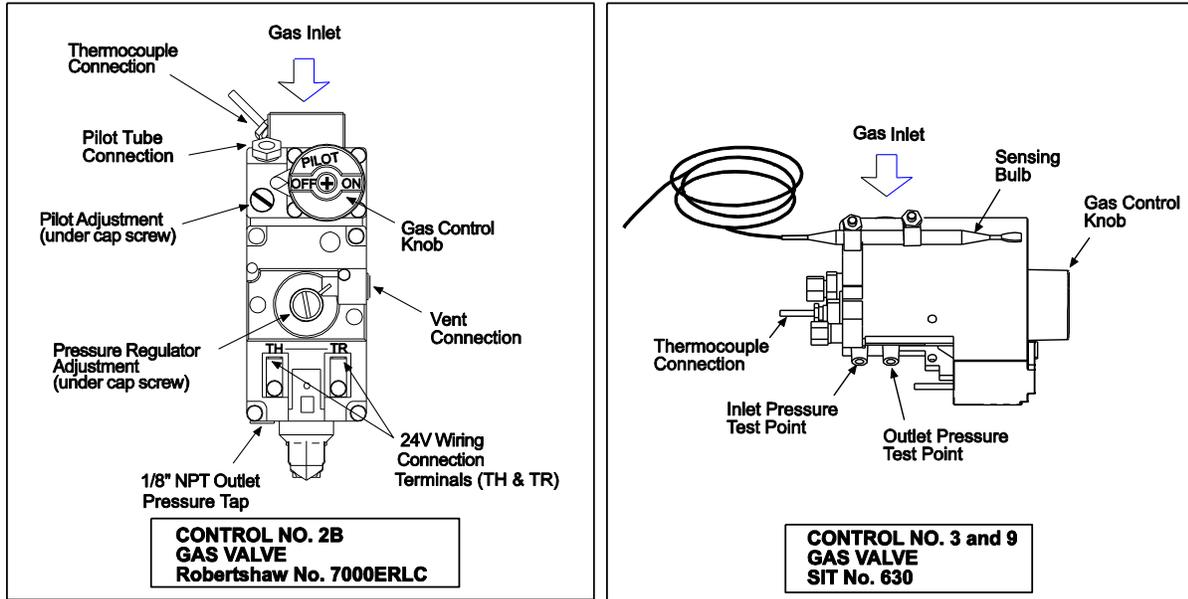


FIGURE 9a

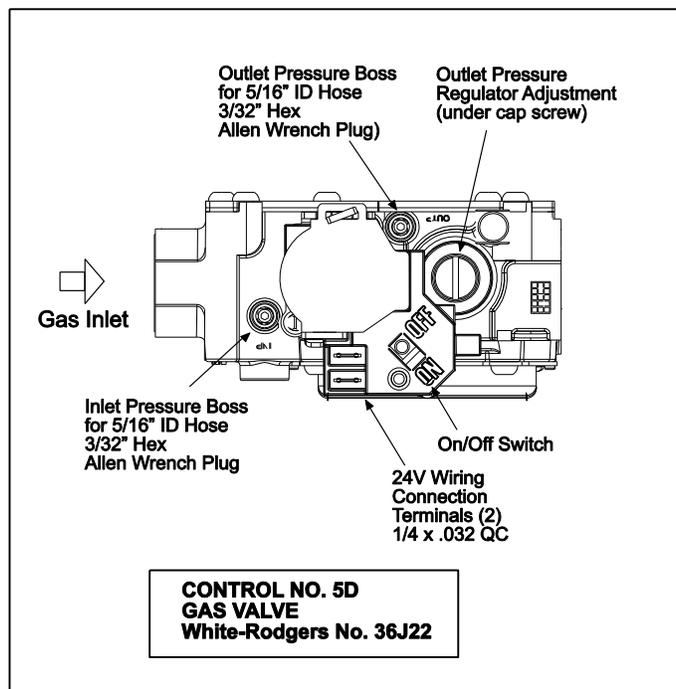


FIGURE 9b

***CHECK GAS OUTLET (MANIFOLD) PRESSURE:**

1. Be sure that the valve is in the "OFF" position before removing the pressure tap plug at the valve. With the main burner operating, check the manifold pressure using a lower-pressure test set connected to the 1/8" NPT Outlet Pressure Tap. (Refer to Figures 9, 9a and 9b for each control valve type.) Controls No. 2B and 5D have combination valves with built-in appliance regulators. These regulators are factory set and should not require adjustment. They should provide the correct manifold pressure at the varying supply pressures noted in the Gas Pressure Table below. **DO NOT EXCEED THE PRESSURES SHOWN IN THE GAS PRESSURE TABLE.**
2. If manifold gas pressure adjustment is required, remove the cover screw. (See Figures 9, 9a and 9b for valve drawings.) Using a small screwdriver, turn the adjusting screw clockwise ↻ to increase or counter clockwise ↻ to decrease the gas pressure to the burner.
3. Turn the valve back to the "OFF" position before removing the manometer and replacing the plug. Repeat the gas leak test at the plug.

GAS PRESSURE TABLE				
BROODER MODEL	GAS TYPE	MANIFOLD PRESSURE	SUPPLY PRESSURE	
			<i>Minimum</i> ♦	<i>Maximum</i>
SSJ30-N5E	Natural Gas	6" WC (14.9 mbar)	7.0" WC (17.4 mbar)	14" WC (34.9 mbar)
SSJ30-L5E	Propane Gas	11" WC (27.4 mbar)	12" WC (29.9 mbar)	14" WC (34.9 mbar)

♦ Minimum permissible gas supply pressure for the purpose of input adjustment.

PRESSURE READINGS

CONTROL NUMBERS 3 AND 9 ONLY:

1. INLET PRESSURE can be checked by turning the captured screw (see Figure 9a) counter clockwise ↻ 2 or 3 turns and then placing the tubing from the gauge over the test point.
2. OUTLET PRESSURE can be checked in the same manner as described above by using the captured screw.

▲WARNING: After taking pressure readings, be sure to turn captured screws clockwise ↻ firmly to reseal. Do not over torque. The appliance regulator is not adjustable.

REGULATOR LOCK-UP AND LEAKAGE:

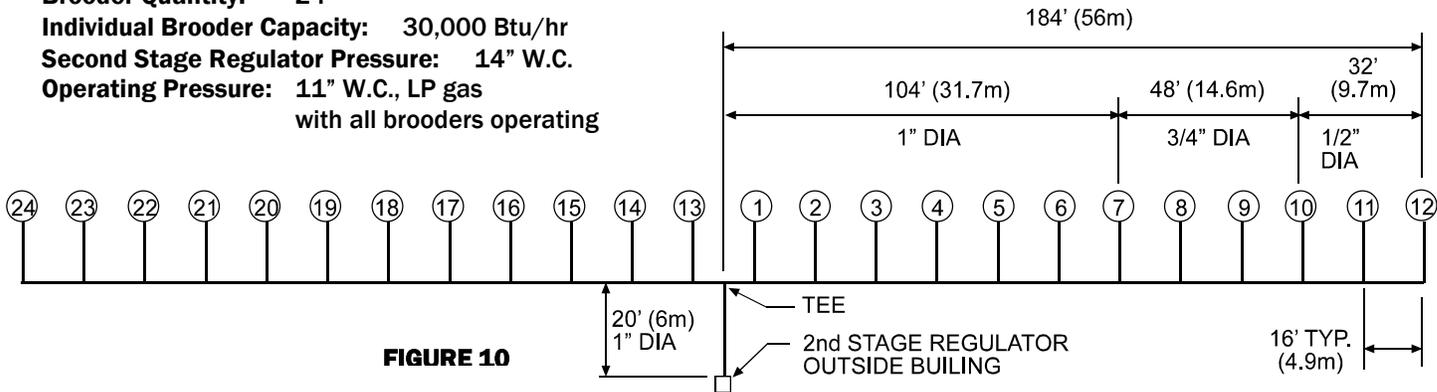
After the leak testing and delivery pressure tests have proven satisfactory, the regulator lock-up and leakage test may be performed. The lock-up pressure of the final stage regulator should be slightly higher than, but not more than, 120% of the set delivery pressure. For example, on a delivery pressure setting of 12" water column, the maximum allowable lock-up pressure is 14.4" water column.

To perform the lock-up and leakage test, follow these steps:

1. With the LP tank valve fully open, shut off all appliance valves so there is no demand for gas. This includes shutting off all pilots.
2. A slight rise in pressure will occur under these conditions. This rise should be no more than 120% of the delivery pressure. This is the lock up pressure. **NOTE:** A quick rise in pressure above the allowable lock-up point could indicate undersized piping, a worn seat disc or foreign material in the seating area. **This condition must be corrected before putting the system in service.**
3. Continue the test for five minutes or more. If a creeping rise in pressure is noticed, the final stage regulator seat is not closing off properly. The regulator must be replaced or repaired, and the system retested, before putting the system in service.

7B. GAS PIPE SIZING EXAMPLE

House Size: 40' x 400'
 Brooder Quantity: 24
 Individual Brooder Capacity: 30,000 Btu/hr
 Second Stage Regulator Pressure: 14" W.C.
 Operating Pressure: 11" W.C., LP gas
 with all brooders operating



STEP 1. Gas should be run at high pressure from the LP tank to the second stage regulator at the house. Using the above house configuration example, calculate the gas pipe sizing. First, calculate the total distance from the second stage regulator to the furthest brooder. In Figure 10 above, that distance equals 204' (20' + 184'). Using Table 1, look up the row for 200' and select the smallest pipe size that has the capacity for the flow of the end brooder (30,000). The smallest pipe size is 1/2" with a capacity of up to 58,000 Btu/hr over 200'.

STEP 2. Calculate the distance from the second furthest brooder to the secondary regulator. In the example, that distance equals 188'. Using Table 1, look up the row for 188'. As 188' is not listed, you will use the next distance up, in this case, 200'. Then select the smallest pipe size that has the capacity for the flow of both the furthest (#7) and second furthest (#6) brooders, which combines to 60,000 Btu/hr. The smallest pipe size is 1/2" with a capacity of up to 58,000 Btu/hr over 200'. Repeat this process for each brooder until you reach the Tee. Table 2 shows the completed example.

STEP 3. At the Tee, calculate the total distance to the secondary regulator. In this example, that equals 20'. Using Table 1, look up the row for 20' and select the smallest pipe size that has the capacity for the flow of all the brooders connected to the pipe system (720,000). The smallest pipe size is 1" with a capacity of up to 788,000 Btu/hr over 20'.

TABLE 1. – LP Gas Pipe Sizing Between Single or Second Stage Regulator and Brooders Per ANSI Z223.1 National Fuel Gas Code-1992

	Tubing Size, O.D. Type L						Nominal Pipe Size, I.D. 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"	3"	4"
10 Ft.	39	92	199	329	501	935	291	608	1,146	2,353	3,525	6,789	19,130	39,018
20 Ft.	26	62	131	216	346	630	200	418	788	1,617	2,423	4,666	13,148	26,817
30 Ft.	21	50	107	181	277	500	161	336	632	1,299	1,946	3,747	10,558	21,535
40 Ft.	19	41	90	145	233	427	137	287	541	1,111	1,665	3,207	9,036	18,431
50 Ft.	18	37	79	131	198	376	122	255	480	985	1,476	2,842	8,009	16,335
60 Ft.	16	35	72	121	187	340	110	231	435	892	1,337	2,575	7,256	14,801
80 Ft.	13	29	62	104	155	289	94	198	372	764	1,144	2,204	6,211	12,668
100 Ft.	11	26	55	90	138	255	84	175	330	677	1,014	1,954	5,504	11,227
125 Ft.	10	24	48	81	122	224	74	155	292	600	899	1,731	4,878	9,950
150 Ft.	9	21	43	72	109	202	67	141	265	544	815	1,569	4,420	9,016
200 Ft.	8	19	39	66	100	187	58	120	227	465	697	1,343	3,783	7,716
250 Ft.	8	17	36	60	93	172	51	107	201	412	618	1,190	3,353	6,839
300 Ft.	–	–	–	–	–	–	46	97	182	374	560	1,078	3,038	6,196
350 Ft.	–	–	–	–	–	–	43	89	167	344	515	992	2,795	5,701
400 Ft.	–	–	–	–	–	–	40	83	156	320	479	923	2,600	5,303

Maximum propane capacities listed are based on 1/2" W.C. pressure drop at 11" W.C. setting - Capacities in 1,000 BTU/hr.

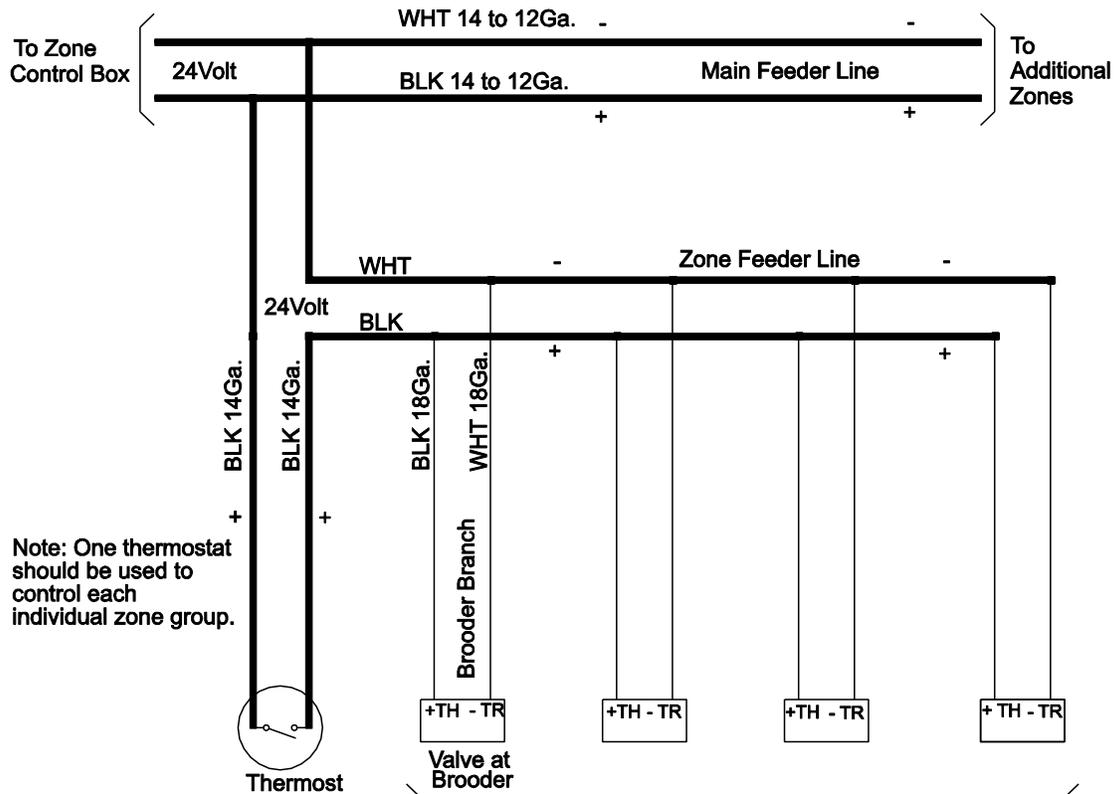
TABLE 2.

Brooder #	Distance from Regulator (ft.)	Flow Capacity Required (Btu/hr)	Distance Used from Table (ft.)	Smallest Pipe Size and Capacity From Table
12 and 24	204	30,000	200	½" – 58,000
11 and 23	188	60,000	200	½" – 58,000 See Note 1
10 and 22	170	90,000	200	¾" – 120,000
9 and 21	154	120,000	150	¾" – 141,000
8 and 20	138	150,000	150	¾" – 265,000
7 and 19	122	180,000	125	1" – 292,000
6 and 18	106	210,000	100	1" – 330,000
5 and 17	90	240,000	100	1" – 330,000
4 and 16	74	270,000	80	1" – 372,000
3 and 15	58	300,000	60	1" – 435,000
2 and 14	42	330,000	40	1" – 541,000
1 and 13	26	360,000	30	1" – 632,000

Note 1: The pipe size for 60,000 Btu/hr is ¾" in this example because the cut off for ½" is 58,000 Btu/hr at 200 ft.

8. ELECTRICAL CONNECTIONS (Controls No. 2B) ZONE CONTROL PILOT IGNITION

1. All electrical wiring shall conform to the latest edition of the National Electrical Code (ANSI/NFPA No. 70), or the code legally authorized in the locality where the installation is made. **DO NOT** use phone cable for electric supply wiring.
2. The electrical system must be electrically grounded in accordance with the National Electrical Code (ANSI/NFPA No. 70-latest edition) or the Canadian Electrical Code (C22.1 Part 1-latest edition) as appropriate.



This schematic represents a group of four (4) brooders controlled by one (1) thermostat. Additional zones should be wired per this schematic to maintain correct polarity for DC operation.

SCHEMATIC - FIGURE 11

3. The brooders with the **No. 3** and **No. 9** control options do not require any electrical supply because they generate their own electricity and operate thermostatically off this power.
4. Each brooder with the **No. 2B** control option requires a 24 volt-power supply via a 24 volt transformer. The 24 volt transformer **MUST** be large enough to operate the number of brooders connected to it (see table below). This is calculated as follows:

No. of Brooders x 16.8VA x 1.25 Safety Factor = Transformer Size

No. Brooders	Minimum Transformer VA
14	294
15	315
16	336
17	357
18	378
19	399
20	420
21	441
22	462
23	483
24	504

An optional Zone Control Power Supply Panel is available as an accessory (Part #43619050) to provide the required 24VAC for each **No. 2B** brooder. The Zone Control comes equipped with a 375VA transformer.

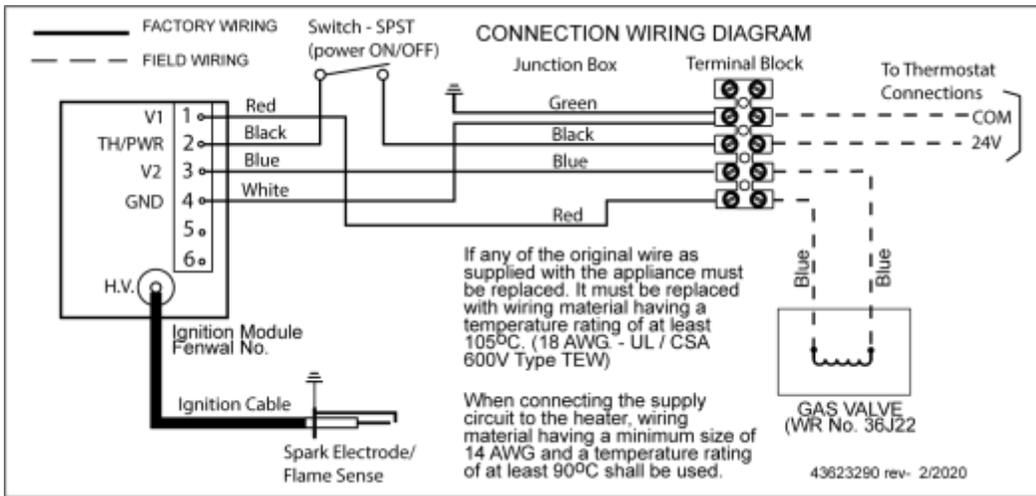
NOTE: If you plan to use the Zone Control with its DC back-up power supply capabilities, special attention must be given to individual brooder wiring because the DC electrical power is polarity sensitive. All brooders must be connected the same way (i.e., the same power leg must be connected to the same terminal on every brooder). While this will not affect brooder operation on 24VAC, brooders that are not hooked up in this manner will not work properly on DC power. Refer to Figure 11 for a typical wiring schematic. These **No. 2B** control brooders must be supplied with a thermostat for temperature control (either with or without the Zone Control Panel).

5. A Thermostat (available as an accessory, Part #30525010, or an environmental controller, etc.) is also required for each brooder or group of brooders as shown in the schematic. The schematic (Figure 11) shows a group of four (4) brooders controlled by one (1) thermostat. Additional zone groups having more or less brooders can be added. These should be wired the same as shown in the schematic. Contact the factory for pricing and availability for the Zone Control and Thermostat.

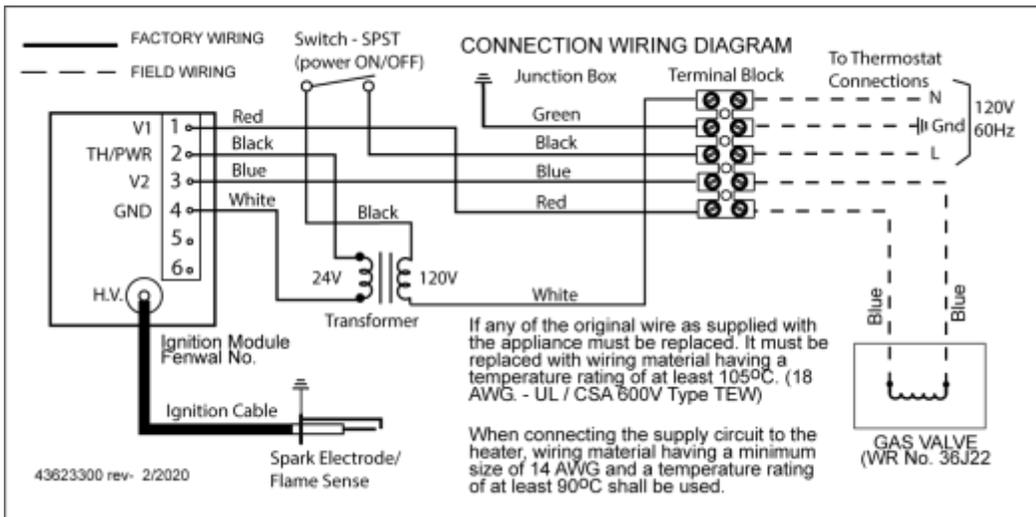
8A. ELECTRICAL CONNECTIONS (Complete Brooder Model No. 5E) DIRECT SPARK IGNITION

1. All electrical wiring shall conform to the latest edition of the National Electrical Code (ANSI/NFPA No. 70), or the code legally authorized in the locality where the installation is made. **DO NOT** use phone cable for electric supply wiring.
2. The electrical system must be electrically grounded in accordance with the National Electrical Code (ANSI/NFPA No. 70-latest edition) or the Canadian Electrical Code (C22.1 Part 1-latest edition) as appropriate.

A. INTERNAL CONNECTION WIRING DIAGRAM – 24V Power Supply



B. INTERNAL CONNECTION WIRING DIAGRAM – 120V Power Supply (optional)

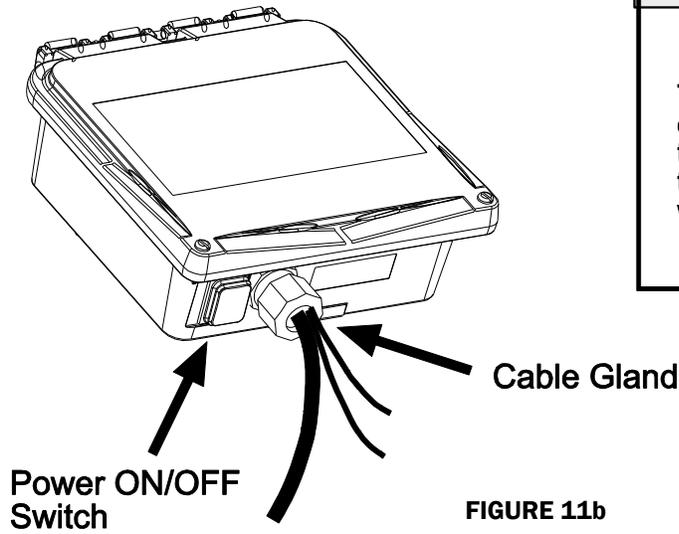


Terminal Designations	
TH/PWR	Thermostat Input
GND	System Ground
GV1	Valve Power
GV2	Valve Ground
HV	High Voltage Cable
1, 2	Main Gas Valve

- Each brooder with the **No. 5D** control option requires a 24 volt-power supply via a 24 volt transformer. The 24 volt transformer **MUST** be large enough to operate the number of brooders connected to it (see table listed earlier for **No. 2B** controls). An optional Zone Control Power Supply Panel is available as an accessory (Part #43619050) to provide the required 24VAC for each **No. 5D** brooder. The Zone Control comes equipped with a 375VA transformer.
- A Thermostat (available as an accessory, Part #30525010 or an environmental controller, etc.) is also required for each brooder or group of brooders as shown in the schematic. The schematic (Figure 11c) shows a group of four (4) brooders controlled by one (1) thermostat. Additional zone groups having more or less brooders can be added. These should be wired the same as shown in the schematic.

Contact the factory for pricing and availability for the Zone Control and Thermostat.

Ignition Control Assembly

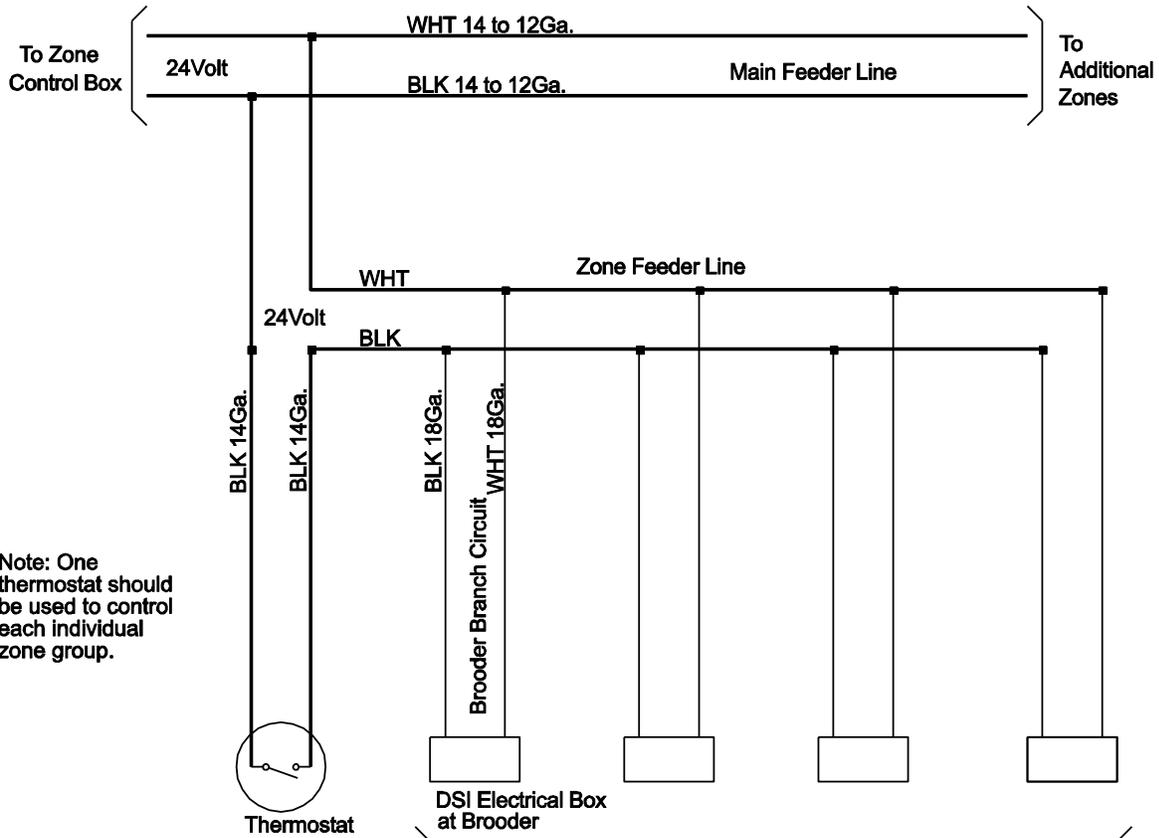


! CAUTION

Avoid Equipment Failure.

The cable gland used for field connections of the power supply wiring **MUST** be tightened to prevent water from entering the box and causing condensation to form which may result in ignition failure.

FIGURE 11b



Note: One thermostat should be used to control each individual zone group.

This schematic represents a group of four (4) brooders controlled by one (1) thermostat. Additional zones should be wired as shown.

SCHMATIC
FIGURE 11c

9. LIGHTING AND SHUTDOWN INSTRUCTIONS

◆ NO. 2B CONTROL (#7000ERLC VALVE)

1. Turn gas control knob counterclockwise ∩ to “PILOT”.
2. Push and hold down the red reset button on the 2A controls or black knob on 2B controls while you light the pilot. Immediately light the pilot. Continue to hold the control/reset button or knob down for about one (1) minute after the pilot is lit. If it goes out, wait five (5) minutes before trying to relight the pilot. **NOTE:** If the reset button (2A controls) does not pop up when released, stop and immediately call your service technician or gas supplier.
3. If the pilot will not stay lit after several tries, turn the gas control knob clockwise ∩ to “OFF” and call your service technician or gas supplier.
4. When the pilot flame remains lit, turn the gas control knob counterclockwise ∩ to “ON”.
5. Turn on electrical power supply to the brooder.
6. Adjust the wall mounted thermostat to change the temperature setting. Adjust as desired for bird comfort.
7. **NOTE:** To turn off the main burner only, turn the gas control knob clockwise ∩ to “PILOT”. For complete shutdown, turn the gas control knob clockwise ∩ to “OFF”.

◆ NO. 3 and NO. 9 CONTROLS (#0.630.501 and #0.630.566 VALVES)

1. Turn the gas cock dial on the control valve to the “PILOT” position. Depress the dial and light the pilot burner.
2. Hold the dial in for one (1) minute after the pilot is lit. Release the dial. If pilot flame fails to light, wait five (5) minutes before trying to relight.
3. If pilot flame fails to establish after a second attempt, refer to the fault-finding chart.
4. When the pilot flame is established, turn the gas cock dial to the “ON” position and set the thermostat to call for heat. The main burner will ignite.
5. Adjust the remote thermostat to change the temperature setting. Adjust as desired for bird comfort.

NOTE: TO TURN OFF THE MAIN BURNER only, turn the gas cock dial to the “PILOT” position. FOR COMPLETE SHUTDOWN of main burner and pilot, press in the gas cock dial and turn to the “OFF” position.

6. If the brooder is to be taken down for inspection or maintenance, turn the ON/OFF ball valve (if equipped) on the connecting kit hose to the “OFF” position and disconnect the hose from the control valve inlet.

APPROXIMATE TEMPERATURE VERSUS CONTROL KNOB POSITION

Thermostat Range	CONTROL KNOB POSITION						
	1	2	3	4	5	6	7
°C	21°	26°	30°	33°	39°	43°	47°
°F	70°	79°	86°	91°	102°	109°	117°

◆ NO. 5D CONTROL (#36J22 VALVE)

1. Turn on the gas and electrical supply. Rotate the gas valve lever counterclockwise ∩ to the “ON” position. **Note:** The no. 5D control has an ON/OFF toggle switch.
2. Set the thermostat to call for heat.
3. Ignition should occur immediately.
4. If the burner fails to light, or flame is not detected during the first trial for ignition (a period of approximately 10 seconds) the gas valve is de-energized and the control goes through an interpurge delay of approximately 15 seconds before another ignition attempt. The control will attempt two additional ignition trials before going into lockout, and the valve relay will be de-energized immediately.
5. If the heater does not light, shut off the gas completely for 5 minutes before attempting to relight.

6. If the thermostat is still calling for heat after one hour, the control will automatically reset and attempt to ignite the burner again.
7. **▲CAUTION:** The heater must be grounded. Poor grounding will give nuisance lockouts, particularly during momentary power interruptions.
8. To shut down the heater, push the gas valve lever or switch to the “OFF” position and turn off the gas and electrical supply.

NOTE: THE LIGHTING AND SHUTDOWN INSTRUCTIONS ARE ALSO SHOWN ON THE PERMANENT NAMEPLATE LABEL ATTACHED TO THE HEATER.

9A. CONSIGNES D'ALLUMAGE ET D'EXTINCTION

◆ COMMANDE N° 2B - (ROBINET N° 7000ERLC)

1. Tourner le bouton de commande de gaz dans le sens inverse des aiguilles d’une montre (↺) sur « PILOT » (VEILLEUSE).
2. Tout en appuyant sur le bouton rouge de réinitialisation, allumer la veilleuse avec une allumette. Une fois la veilleuse allumée, maintenir le bouton de contrôle/réinitialisation enfoncé pendant une (1) minute. Si la veilleuse s'éteint, patienter cinq (5) minutes avant d'essayer de la rallumer. **REMARQUE :** Si le bouton de réinitialisation ne ressort pas lorsque vous le relâchez, arrêtez tout et communiquez immédiatement avec le technicien en entretien ou le fournisseur de gaz.
3. Si la veilleuse ne reste pas allumée après plusieurs essais, tourner le bouton de commande de gaz dans le sens des aiguilles d’une montre (↻) sur « OFF » (ARRÊT) et appeler le technicien en entretien ou le fournisseur de gaz.
4. Si la veilleuse reste allumée, tourner le bouton de commande de gaz dans le sens inverse des aiguilles d’une montre (↺) sur « ON » (MARCHE).
5. Rétablir l’alimentation électrique de la couveuse.
6. Au moyen du thermostat mural, régler la température afin d'obtenir une chaleur de confort optimale pour vos volailles.
7. **REMARQUE :** Pour éteindre uniquement le brûleur principal, tourner le bouton de commande de gaz dans le sens des aiguilles d’une montre (↻) sur « PILOT » (VEILLEUSE). Pour éteindre complètement l'appareil, tourner le bouton de commande de gaz dans le sens des aiguilles d’une montre (↻) sur « OFF » (ARRÊT).

◆ COMMANDES N° 3 ET 9 - (ROBINET N° 0630501)

1. Tourner la molette de réglage de gaz du robinet de commande sur « PILOT » (VEILLEUSE). Relâcher doucement la molette et approcher une fine bougie allumée près de la veilleuse.
2. Une fois la veilleuse allumée, maintenir la molette enfoncée pendant une (1) minute. Relâcher la molette. Si l'allumage de la veilleuse échoue, recommencer la procédure.
3. Si l'allumage de la veilleuse échoue une deuxième fois, consulter le tableau de dépannage.

4. Quand la veilleuse reste allumée, tourner la molette de réglage de gaz sur « ON » (MARCHE) et régler le thermostat pour une demande de chaleur. Le brûleur principal s'allumera.
5. Au moyen du thermostat à distance, régler la température afin d'obtenir une chaleur de confort optimale pour vos volailles.

REMARQUE : POUR ÉTEINDRE UNIQUEMENT LE BRÛLEUR PRINCIPAL, tourner la molette de réglage de gaz sur « PILOT » (VEILLEUSE). POUR ÉTEINDRE COMPLÈTEMENT L'APPAREIL (brûleur principal et veilleuse), appuyer sur la molette de réglage de gaz et la tourner sur « OFF » (ARRÊT).

6. Pour démonter la couveuse afin de procéder à son entretien ou à son inspection, tourner le robinet à bille de MARCHE/ARRÊT (ON/OFF) installé sur le flexible de kit de connexion (le cas échéant) sur « OFF » (ARRÊT) et débrancher le tuyau de l'alimentation du robinet de commande.

◆ **COMMANDE S° 5D (ROBINET N° 36J22)**

1. Ouvrir l'alimentation en gaz et en électricité. Tourner le levier du robinet à gaz dans le sens inverse des aiguilles d'une montre (↺) sur « ON » (MARCHE).
2. Régler le thermostat pour une demande de chaleur.
3. L'allumage devrait se produire immédiatement.
4. Si le brûleur ne s'allume pas ou si la flamme n'est pas détectée lors de la première tentative d'allumage (période d'environ 10 secondes), le robinet à gaz se met hors tension et la commande est retardée d'environ 15 secondes avant de procéder à la tentative d'allumage suivante. Le système procédera à deux tentatives d'allumage supplémentaires avant de se verrouiller et le relais de la valve se mettra immédiatement hors tension.
5. Si le radiateur ne s'allume pas, fermer le gaz complètement pendant 5 minutes avant de tenter un autre allumage.
6. Si le thermostat demande toujours de la chaleur au bout d'une heure, le système se réinitialisera automatiquement et procédera à une autre tentative d'allumage du brûleur.
7. **▲ATTENTION** : Le radiateur doit être mis à la masse. Une mise à la masse inadéquate entraînera des verrouillages inopportuns, particulièrement durant les pannes de courant momentanées.
8. Pour éteindre le chauffage, mettre le levier du robinet à gaz sur « OFF » (ARRÊT) et couper l'alimentation en gaz et en électricité.

REMARQUE : LES CONSIGNES D'ALLUMAGE ET D'EXTINCTION SONT ÉGALEMENT INDIQUÉES SUR L'ÉTIQUETTE SIGNALÉTIQUE PERMANENTE FIXÉE AU RADIATEUR.

10. VENTILATION

	<p>Minimum ventilation required is 120 CFM per brooder. Lower ventilation rates may result in poor gas/air mixture causing high carbon monoxide levels and distortion to the emitter assembly. The minimum ventilation is also required when pre-heating any building even without any birds present.</p> <p>Failure to follow these guide lines may result in death, serious injury, property damage or illness from Carbon Monoxide poisoning.</p>
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FOR YOUR SAFETY: Exhaust fans must be operating on an appropriate cycle when heating the building to avoid high concentrations of carbon monoxide and water vapor.

The temptation, particularly during the winter months, is to close up the poultry house to conserve heat and save money. This must be resisted, particularly during the heating up period prior to the arrival of the stock, because the lack of ventilation can restrict the required amount of combustion air for the brooders causing them to burn improperly and produce levels of carbon monoxide which could be harmful to people and the stock.

▲WARNING: Carbon Monoxide is an odorless and poisonous gas. Extended exposure to carbon monoxide may lead to death. Early signs of carbon monoxide poisoning resemble the flu, including headaches, dizziness and/or nausea. If you experience these signs, **GET FRESH AIR IMMEDIATELY**. Have the brooders serviced as soon as possible and check the ventilation in the house.

The National Fuel Gas Code requires a minimum of 4 CFM per 1000 Btu/hr of brooder input for ventilation. This requirement means that a total of 120 CFM is required per brooder. Ventilation requirements may vary depending on other equipment that may be located in the building requiring ventilation. All ventilation requirements should be addressed before sizing the necessary gravity or mechanical means to accomplish this ventilation.

While ventilation is necessary for proper brooder operation and proper growing conditions for the stock, excessive ventilation can result in high fuel consumption. Adjust the ventilation as necessary for optimum performance of the brooders and growing conditions for the stock.

11. MAINTENANCE

To keep your brooder in good operating condition, we recommend that after each crop you follow the maintenance schedule below:

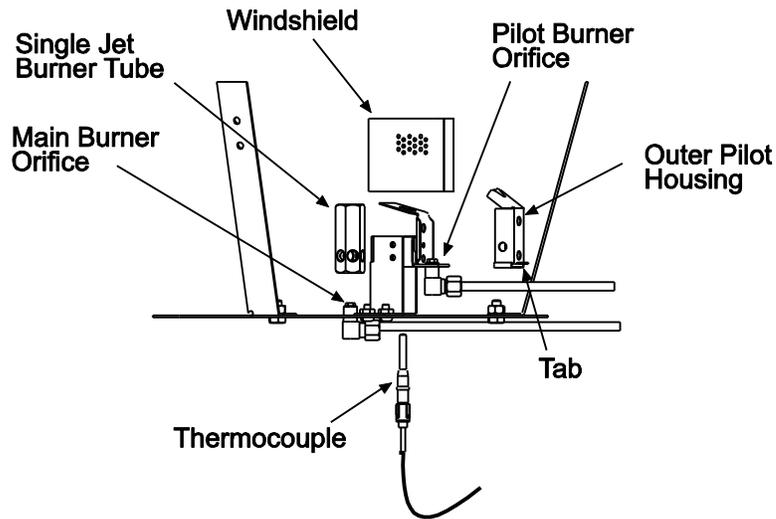
▲CAUTION: Turn the gas and electric supply (if equipped) OFF and allow the brooder to cool down before attempting any maintenance.

1. Unscrew the single jet burner tube from the main burner orifice fitting. Remove the main burner orifice from the fitting and clean the orifice by soaking it in acetone. Refer to Figure 12. Dry the orifice by blowing compressed air through it. **NOTE: DO NOT attempt to clean the orifice by passing a wire through the orifice as this will increase the orifice hole and result in over firing of the brooder.** Apply pipe thread sealant (resistant to LP Gas) to the threads of the orifice and replace it into the orifice fitting.
2. Clean around the burner ports with a bristle brush (available as an accessory, Part No. 43295010). After cleaning the burner ports, compressed air can be blown into the burner ports to blow any trash out of the burner through the burner tube.
3. Remove the pilot burner orifice (No. 2B, 3 and 9 Models Only) and clean as above for the main burner orifice. Access to the pilot burner can be made by first sliding the windshield off the pilot assembly. Next, remove the outer pilot housing from the pilot assembly by pulling the tab with a pair of pliers. After cleaning, reassemble the pilot in reverse order.
4. Clean the outside surfaces of the ceramic cone with a large wire brush (available as an accessory, Part No. 43295020); then use compressed air to remove any burnt dust or dirt particles from the cone.
5. Remove and clean the thermocouple (No.2B, 3 and 9 Models Only) when necessary.

NOTE: After reassembly of all components, check the gas connections at the burner and the gas valve for leaks. Use a heavy soapsuds solution. **DO NOT** use an open flame to check for gas leaks.

PILOT MODELS 2B, 3 AND 9 ONLY

FIGURE 12



12. TROUBLESHOOTING (PILOT CONTROLS 2B, 3 AND 9 ONLY)

TROUBLE	POSSIBLE CAUSE	SOLUTIONS
<i>Pilot will not stay lit when lighting the pilot...</i>	<ul style="list-style-type: none"> ◆ There is air in the gas line. ◆ The pilot orifice is clogged. ◆ The thermocouple is defective. ◆ The pilot safety valve is defective. 	<ul style="list-style-type: none"> ◆ Bleed the air out or continue to ignite the brooder until all the air is purged. ◆ Remove and clean the orifice as necessary. ◆ Replace the thermocouple. ◆ Replace the gas valve.
<i>Brooder shuts off on pilot safety (i.e. pilot goes out)...</i>	<ul style="list-style-type: none"> ◆ The pilot orifice is clogged. ◆ The supply pressure is insufficient. ◆ The thermocouple is defective. ◆ The pilot safety valve is defective. 	<ul style="list-style-type: none"> ◆ Remove and clean the orifice as necessary. ◆ Check the manifold gas pressure and adjust as necessary. ◆ Replace the thermocouple. ◆ Replace the gas valve.
<i>Brooder is not glowing red...</i>	<ul style="list-style-type: none"> ◆ The supply gas pressure is too low. ◆ The gas piping size is incorrect. ◆ The orifice is clogged. ◆ The orifice size is incorrect. 	<ul style="list-style-type: none"> ◆ Check the manifold gas pressure and adjust as necessary. ◆ If you are not sure of the performance, use the NFPA 54 gas pipe sizing table in this manual. ◆ Remove and clean the orifice as necessary. ◆ See the instructions for correct orifice size and replace if necessary.
<i>Brooder will not attain the desired temperature...</i>	<ul style="list-style-type: none"> ◆ There is insufficient heat in the building for heat loss (i.e., not enough brooders). ◆ The thermostat sensing bulb is incorrectly placed. ◆ The thermostat is out of calibration. 	<ul style="list-style-type: none"> ◆ Conduct a heat loss and add brooders or other source of heat as necessary. ◆ Reposition the sensing bulb as necessary for proper operation. NOTE: The sensing bulb should be shielded from direct radiation to prevent short cycling of the brooder. ◆ Recalibrate (if possible) or replace.

12A. BURNER OPERATION AND TROUBLESHOOTING (COMPLETE DSI MODELS 5E ONLY)

A) TROUBLESHOOTING CHART (COMPLETE DSI MODELS 5E ONLY)

TROUBLE	POSSIBLE CAUSE	SOLUTIONS
<i>Brooder is not glowing red...</i>	<ul style="list-style-type: none"> ◆ The supply gas pressure is too low. ◆ Improper size of gas piping. ◆ The orifice is clogged. ◆ Incorrect orifice size. 	<ul style="list-style-type: none"> ◆ Check the manifold gas pressure and adjust if necessary. ◆ If you are not sure of the performance, use the NFPA 54 gas pipe sizing table in these instructions. ◆ Clean the orifice. ◆ See the instructions for correct orifice size and replace if necessary.
<i>Brooder will not attain the desired temperature...</i>	<ul style="list-style-type: none"> ◆ There is insufficient heat in the building for heat loss (i.e., not enough brooders). ◆ The thermostat sensing bulb is incorrectly placed. ◆ The thermostat is out of calibration. 	<ul style="list-style-type: none"> ◆ Conduct heat loss and add brooders or other source of heat as necessary. ◆ Reposition as necessary for proper operation. NOTE: The sensing bulb should be shielded from direct radiation to prevent short cycling of the brooder. ◆ Recalibrate (if possible) or replace.
<i>Flames flaring up, outside of emitter surface...</i>	<ul style="list-style-type: none"> ◆ The gas pressure is too high. ◆ Incorrect orifice size. ◆ Incorrect type of gas supplied to the brooder. ◆ Not enough combustion air. 	<ul style="list-style-type: none"> ◆ Check the manifold gas pressure and adjust if necessary. ◆ See instructions for correct orifice size and replace if necessary. ◆ Check the nameplate to identify the correct type of gas the brooder is equipped to operate using. ◆ Clean the inside of the burner with a wire brush and blow out with compressed air.

ADDITIONAL TROUBLESHOOTING (COMPLETE DSI MODELS 5E ONLY)



13. REPLACEMENT PARTS GUIDE

Item#	Part#	Description	QTY			
			SSJ30-2B	SSJ30-9	SSJ30-3	SSJ30-5E
1	02129090	Washer, Flat ¼"	2	2	2	2
1a	02336010	O-Ring Retainer	-	-	-	2
2	02140060	HHCS, ¼-20 x ½"	12	12	12	12
3	02167010	Locknut, Keps ¼-20	14	14	14	14
4	02167020	Locknut, Keps #10-24	2	2	2	3
4a	02167040	Locknut, Keps #8-32	-	2	2	2
5	02168010	PHMS, #10-24 x 3/8"	6	2	2	3
6	02123220	PHMS, #8-32 x 2-1/2"	-	2	2	-
6a	02166010	PHMS, #8-32 x 3/8"	4	-	-	6
6b	02345010	PHMS, #4-20 x 5/8" Thread Cut "Plastite"	-	-	-	2
6c	02337010	PHMS, #6-19 x 1/4" Thread Cut "Plastite"	-	-	-	2
6d	02174040	PHMS, #6-32 x 3/8"	-	-	-	2
6e	02168160	PHMS, #10-24 x 7/8"	-	-	-	3
6f	02212020	Sheet Metal Screw #8 x ½" B Point	-	-	-	2
7	02309000	Eyebolt, ¼-20 x 2"	1	1	1	1
8	03214010	Orifice Holder (1/4 tube x 1/8 NPT)	2	2	2	1
9	03602090	Compression Fitting (1/4 tube x 3/8 MPT)	-	1	1	-
9a	03213040	Compression Elbow (1/4 tube x 1/2 MPT)	1	-	-	1
10	03600010	Compression Sleeve (1/4 tubing, not shown)	3	3	3	2
11	03601010	Compression Nut (1/4 tubing, not shown)	3	3	3	2
12	03527000	Break Away Ftg (1/4 tubing & valve, not shown)	1	1	1	-
13	03260520	Main Burner Orifice (#52) - LPG	1	1	1	1
14	03260410	Main Burner Orifice (#41) - Nat Gas	1	1	1	1
15	03260790	Pilot Burner Orifice (#79) - LPG	1	1	1	-
16	03260760	Pilot Burner Orifice (#76) - Nat Gas	1	1	1	-
17	03577020	Cable Clamp (thermostat bulb)	-	2	2	-
18	30531010	Gas Valve (SIT #630) - Nat/LP Gas, Non-Mod	-	1	-	-
18a	30531040	Gas Valve (SIT #630) - LPG, Mod	-	-	1	-
18b	30641070	Gas Valve (RS #7000ERLC) - Nat Gas	1	-	-	-
18c	30641050	Gas Valve (RS #7000ERLC) - LP Gas	1	-	-	-
18d	30755030	Gas Valve (WR #36J22) - Nat Gas	-	-	-	1
18e	30755110	Gas Valve (WR #36J22) - LP Gas	-	-	-	1
19	30642010	Thermocouple, 36" (with snap-in clip)	1	1	1	1
20	43307130	Tube, Main Burner	1	1	1	1
21	43307100	Tube, Pilot Burner	-	1	1	-
21a	43307140	Tube, Pilot Burner	1	-	-	-
22	43999000	Plate, Canopy Support	3	3	3	3
23	43539049	Instruction Manual (not shown)	1	1	1	1
24	43991020	Burner Pan	1	1	1	1
25	43991030	Ceramic Holder Ring	1	1	1	1
25a	43991040	Ceramic Heat Shield	1	1	1	1

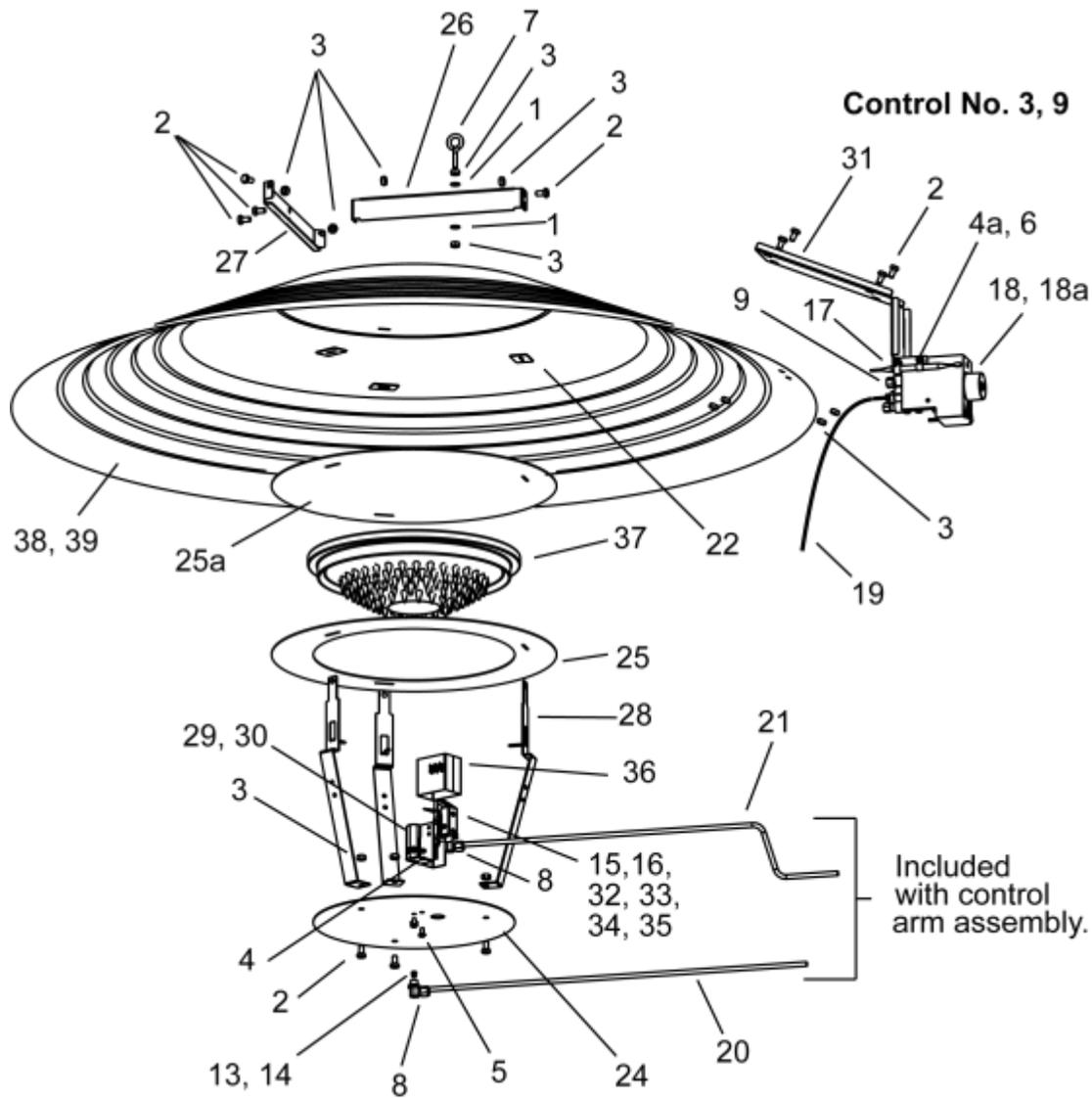
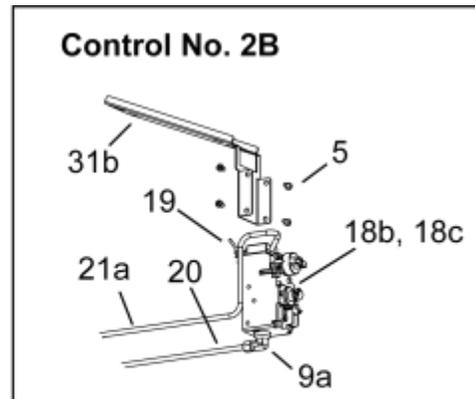
26	43992040	Hanger, Center	1	1	1	1
27	43992050	Hanger, End	1	1	1	1
28	43993060	Brace, Support	3	3	3	3
29	43994000	Single Jet Burner Tube, LPG	1	1	1	1
30	43994010	Single Jet Burner Tube, Nat Gas	1	1	1	1
31	43995010	Bracket (SIT Valve)	-	1	1	-
31a	43995060	Bracket (White-Rodgers Valve)	-	-	-	1
31b	43995030	Bracket (Robertshaw Valve)	1	-	-	-
32	43997010	Pilot Assembly Complete, LP Gas	1	1	1	-
33	43997020	Pilot Assembly Complete, Nat Gas	1	1	1	-
34	43997990	Pilot Housing Sub-Assembly	1	1	1	-
35	43996010	Pilot Housing (Outer)	1	1	1	-
36	44002010	Windshield (perforated)	1	1	1	-
37	43954000	Ceramic Cone	1	1	1	1
38	43303341	Canopy, 34" (aluminum)	1	1	1	1
39	43303461	Canopy, 46" (aluminum)	1	1	1	1
40	43534080	Kit, Complete Fastener (not shown)	1	1	1	1
41	30216040	Spark Electrode, #PSE-GF21 (with 1/4" QC)	-	-	-	1
42	30634431	Ignition Cable, 43" (with 1/4" QC)	-	-	-	1
43	44451100	Junction Box Complete (plastic)	-	-	-	1
44	44452100	O-Ring Gasket - Junction Box	-	-	-	1
45	30279970	Transformer 120/24 Volt (special order)	-	-	-	1
46	30632110	Ignition Module, #35-602907-015	-	-	-	1
46a	43275040	Module Plate - Circuit Board	-	-	-	1
47	44450150	Wire Harness - w/Terminal Block (24V)	-	-	-	1
47a	44450160	Wire Harness - w/Terminal Block (120V)	-	-	-	1
48	30381010	Rocker Switch - SPST (power ON/OFF)	-	-	-	1
49	30635040	Cord Connector, 1/2"	-	-	-	1
49a	30635049	Locknut 1/2"	-	-	-	1
50	43637130	Electrode Bracket Assembly	-	-	-	1
51	43536190	DSI Support Bracket (plastic box)	-	-	-	1
52	43536220	DSI Support Brace (plastic box)	-	-	-	1
53						
54						

Screws, nuts and washers are standard hardware items and can be purchased at any local hardware store.

ALL ILLUSTRATIONS ARE INTENDED TO GIVE THE GENERAL IMPRESSION OF UNITS ONLY. WE RESERVE THE RIGHT TO ALTER ANY SPECIFICATION WITHOUT NOTICE.

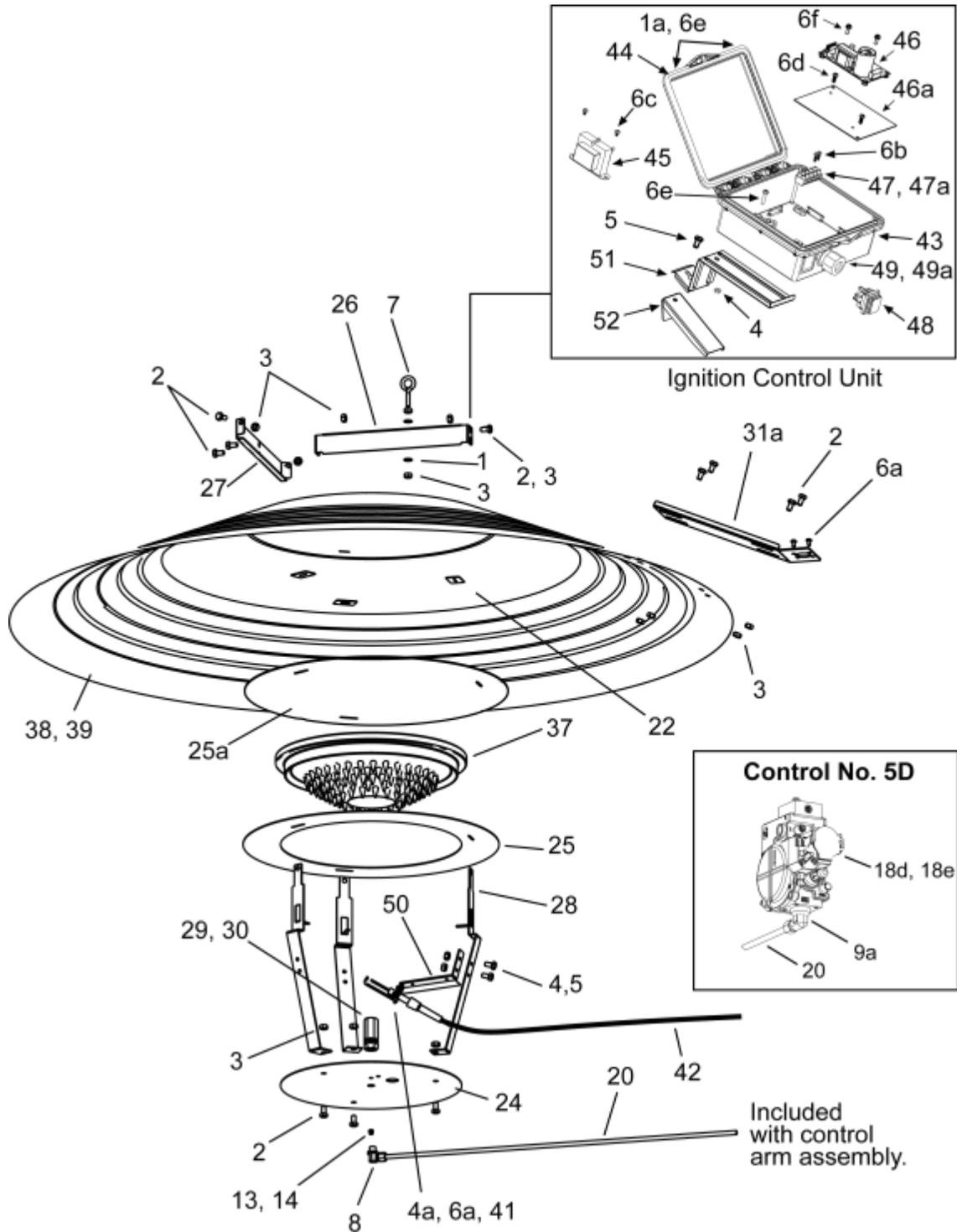
PILOT MODELS

SSJ30-2B, SSJ30-3 and SSJ30-9



DSI MODELS

SSJ30-5E





GAS-FIRED PRODUCTS LIMITED WARRANTY

LIMITED WARRANTY

Gas-Fired Products, Inc. (GFP), the manufacturer, warrants the original owner of any Space-Ray Poultry Heating Product that it will be free from defects in material or workmanship under normal use and service. The heater(s) shall be installed, used and maintained strictly in accordance with the manufacturer's instructions. The manufacturer's sole obligation under this warranty is limited to furnishing replacement parts, F.O.B. Charlotte, NC, for 12 months from the date of installation, or 18 months from the date of shipment by the manufacturer, whichever period expires first. Labor charges for the removal of defective parts or the installation of replacement parts are not included. Additionally, the manufacturer will at any time during a 36 month period after installation or 42 months from the date of shipment by the manufacturer, whichever period expires first, furnish at no cost to the original owner, replacement parts for the heaters that have the model number prefix: PCA/PCS, PBF, FUS and PCA SS (Defender) tube heaters.

ADDITIONAL WARRANTY ON MODEL SRB40, TRU40 AND LoPro BROODER EMITTERS:

Additionally, the manufacturer will at any time during a 36 month period after installation or 42 months from the date of shipment by the manufacturer, whichever period expires first, furnish at no cost to the original owner, replacement emitter assemblies or heat exchanger tubes which have become inoperative by reason of any defect in our workmanship, materials or construction. The manufacturer will not be responsible for labor charges incurred for removal or installation of emitters. Any transportation charges involved in the return or repair are excluded.

ADDITIONAL WARRANTY ON MODEL PCA, PBF CALORIZED TUBE HEATER HEAT EXCHANGER:

Additionally, the manufacturer will at any time during a 120 month period after installation or 126 months from the date of shipment by the manufacturer, whichever period expires first, furnish at no cost to the original owner, replacement emitter assemblies or heat exchanger tubes which have become inoperative by reason of any defect in our workmanship, materials or construction. The manufacturer will not be responsible for labor charges incurred for removal or installation of emitters. Any transportation charges involved in the return or repair are excluded.

WARNING: Manufacturer's warranty shall not apply and GFP is not responsible for damages caused with regard to: (a) circumstances where gas pressure to each heater is higher than that specified for each heater; (b) circumstances where the type of gas is different than the type of gas noted on the name plate for each heater; (c) water damage to gas controls; (d) circumstances where any acid or acid-based product causes damage to the metal components; or (e) any heater or component part which has been repaired or replaced with other than factory parts, modified in any way, misused or damaged, or which has been used contrary to the manufacturer's written instructions.

LIMITATION OF WARRANTY: THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. WITHOUT LIMITING THE FOREGOING, THE MANUFACTURER EXPRESSLY EXCLUDES ANY AND ALL IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND ANY IMPLIED WARRANTY OF MERCHANTABILITY FOR ITS PRODUCTS.

If any provision of this warranty is found to be void, unenforceable or unconscionable, then that portion is hereby severed and the remainder of this warranty is hereby saved and shall remain in force.

EXCLUSIVE REMEDY: The sole and exclusive remedy under this warranty is the replacement of the defective parts or brooders as hereinabove specified. THE MANUFACTURER DOES HEREBY EXPRESSLY EXCLUDE ANY AND ALL LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES UNDER THIS OR ANY OTHER WARRANTY. Without intending to limit the aforesaid exclusion, THE MANUFACTURER DOES HEREBY EXCLUDE ANY LIABILITY UNDER THIS OR ANY OTHER WARRANTY FOR INJURIES OR COMMERCIAL LOSSES TO PROPERTY THAT RESULT FROM THE OPERATION, PROPER OR IMPROPER, OF ITS PRODUCTS.

ADDITIONAL TERMS: Manufacturer assumes no liability for delay in performing its obligations under this warranty. Manufacturer assumes no liability for failure in performing its obligations there under if failure results directly or indirectly from any cause beyond its control, including but not limited to acts of God, acts of Government, floods, fires, shortages of materials, strikes and other labor difficulties or delays or failures of transportation facilities.

This is a Non-Residential product. Installation and service shall be by a Licensed Contractor and in accordance with National and Local Codes. When presenting warranty claims, proof of date of purchase must be submitted.

No Representative is authorized to assume for the manufacturer, any liability except as set forth above.

For the name of your nearest distributor in case of claim under this warranty, contact: Space-Ray Poultry Heating Products / Gas-Fired Products, Inc. / 305 Doggett St., P.O. Box 36485 / Charlotte, NC 28236 / Phone: (704) 372-3488 / Fax: (704) 332-5843 / email: info@spaceray.com.

FOR YOUR RECORDS:

Space-Ray Brooder Model Number: _____ Date Installed: _____
Serial Numbers: _____

Scan warranty QR code on the right to register your product.



For replacement parts, please contact your local distributor or:
SPACE-RAY
1700 Parker Drive • Charlotte, NC 28208
Phone (704) 372-3488 • Fax (704) 332-5843 • info@spaceray.com