



Guardian[®]

Agricultural Animal
Confinement Building
Brood Heater

AD060	17.6 kW
AD100	29.3 kW
AD250	73.3 kW
AD325	95.3 kW

Propane-Vapor Withdrawal, Butane
Propane withdrawal or Natural Gas

View this manual online at www.lbwhite.com

Attention

This brood heater has been designed and developed as a direct gas-fired circulating brood heater for the heating of agricultural animal confinement buildings, and is approved for indoor or outdoor mounting. If you are considering using this product for any application other than it's intended use, contact your local agent or the L. B. White Company, LLC in the U.S.A. at 001-608-783-5691.

www.lbwhite.com



Congratulations!

You have purchased the finest agricultural building brood heater available.

Your new L.B. White brood heater incorporates the benefits from the most experienced manufacturer of brood heating products using state-of-the-art technology.

We, at L.B. White, thank you for your confidence in our products and welcome any suggestions or comments you may have... contact us toll free at 001-608-783-5691, or email us at customerservice@lbwhite.com.

**SEE ASSEMBLY
INSTRUCTIONS
INSIDE**

**Please refer to important
elevation information on
inside cover.**



SCAN THIS

with your smartphone or
visit <http://i.youku.com/lbwhite>
to view maintenance
videos for L.B.White heaters.*

* Requires an app like QR Droid
for Android or for iPhone

WORLD PROVIDER - INNOVATIVE HEATING SOLUTIONS

411 Mason Street, Onalaska, WI 54650 • 001-608-783-5691 • 001-608-783-6115 (fax) • www.lbwhite.com

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WARNING

Standard products are manufactured to operate at optimum efficiency at elevations between 0 and 610 m above sea level.

If operated at higher elevations the product will not function correctly and may function in an unsafe nature.

Products providing proper operation for alternate elevations may be available.

If you require a high elevation product, did not specify when ordering, and/or the box this unit came in does not have an alternate altitude designation sticker please contact technical support.

**GENERAL HAZARD WARNING**

- FAILURE TO COMPLY WITH THE PRECAUTIONS AND INSTRUCTIONS PROVIDED WITH THIS BROOD HEATER CAN RESULT IN:
 - DEATH
 - SERIOUS BODILY INJURY OR BURNS
 - PROPERTY DAMAGE OR LOSS FROM FIRE OR EXPLOSION
 - ASPHYXIATION DUE TO LACK OF ADEQUATE AIR SUPPLY OR CARBON MONOXIDE POISONING
 - ELECTRICAL SHOCK
- READ THIS OWNER'S MANUAL BEFORE INSTALLING OR USING THIS PRODUCT.
- ONLY PERSONS WHO CAN READ, UNDERSTAND, AND FOLLOW THE INSTRUCTIONS SHOULD USE OR SERVICE THIS BROOD HEATER.
- SAVE THIS OWNER'S MANUAL FOR FUTURE USE AND REFERENCE.
- OWNER'S MANUALS AND REPLACEMENT LABELS ARE AVAILABLE AT NO CHARGE. SEE WEBSITE, OR FOR ASSISTANCE, CONTACT L.B. WHITE AT 001-608-783-5691.

**WARNING**

- PROPER GAS SUPPLY PRESSURE MUST BE PROVIDED TO THE INLET OF THE BROODHEATER.
- REFER TO DATA PLATE FOR PROPER GAS SUPPLY PRESSURE.
- GAS PRESSURE IN EXCESS OF THE MAXIMUM INLET PRESSURE SPECIFIED AT THE BROOD HEATER INLET CAN CAUSE FIRES OR EXPLOSIONS.
- FIRES OR EXPLOSIONS CAN LEAD TO SERIOUS INJURY, DEATH, OR BUILDING DAMAGE.
- GAS PRESSURE BELOW THE MINIMUM INLET PRESSURE SPECIFIED AT THE BROOD HEATER INLET MAY CAUSE IMPROPER COMBUSTION.
- IMPROPER COMBUSTION CAN LEAD TO ASPHYXIATION OR CARBON MONOXIDE POISONING AND THEREFORE SERIOUS INJURY OR DEATH.

**WARNING**
FIRE AND EXPLOSION HAZARD

- NOT FOR HOME OR RECREATIONAL VEHICLE USE.
- INSTALLATION OF THIS BROOD HEATER IN A HOME OR RECREATIONAL VEHICLE MAY RESULT IN A FIRE OR EXPLOSION.
- FIRE OR EXPLOSIONS CAN CAUSE PROPERTY DAMAGE OR LOSS OF LIFE.

**WARNING**
FIRE, BURN, INHALATION, AND EXPLOSION HAZARD

- KEEP SOLID COMBUSTIBLES A SAFE DISTANCE AWAY FROM THE BROOD HEATER.
- SOLID COMBUSTIBLES INCLUDE WOOD, PAPER PRODUCTS, FEATHERS, STRAW AND DUST.
- DO NOT USE THE BROOD HEATER IN SPACES WHICH CONTAIN OR MAY CONTAIN VOLATILE OR AIRBORNE COMBUSTIBLES.
- VOLATILE OR AIRBORNE COMBUSTIBLES INCLUDE PIT GASES, GASOLINE, SOLVENTS, PAINT THINNER, DUST PARTICLES OR UNKNOWN CHEMICALS.
- FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN A FIRE OR EXPLOSION.
- FIRE OR EXPLOSIONS CAN LEAD TO PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

FOR YOUR SAFETY

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

FOR YOUR SAFETY

If you smell gas:

1. Open windows.
2. Don't touch electrical switches.
3. Extinguish any open flame.
4. Immediately call your gas supplier.

Specifications

		AD060	AD100	AD250	AD325
Maximum Input per hour (kW)		17.6	29.3	73.3	95.3
Ventilation Air Required to Support Combustion (m3/hour)		408	680	1,869	2,888
Burner Manifold Pressure (kPa/mbar/Inches W.C.)	Propane Gas	2.50/25.5/10.0			N/A
	Natural Gas	1.0/10.0/4.0			0.87/8.7/3.5
	Butane/Propane	2.00/20.0/8.0	2.24/22.4/9.0		N/A
Gas Supply Pressure Acceptable at the inlet of the brood heater for purpose of input adjustment (kPa/mbar/Inches W.C.)	Propane	MAX.	3.40 /34.0/13.5		
		MIN.	2.74/27.4/11.0		
	Natural Gas	MAX.	3.40/34.0/13.5		
		MIN.	1.75/17.5/7.0		
	Butane/Propane	MAX.	3.40/34.0/13.5	N/A	
		MIN.	2.74/27.4/11.0	N/A	
Motor Characteristics (Watts/RPM)	Ball Bearing				
	50/1450	150/1300	186/1150	373/950	
Electrical Supply (Volts/Hz/Phase)	220-240/50/1			220-240/50/1 230/60/1	220-240/50/1
Amp Draw	Starting	1.2	2.0	3.5 (220-240/50/1) 4.5 (230/60/1)	5.4
	Continuous	0.4	1.2	2.6 (220-240/50/1) 3.5 (230/60/1)	2.6
Dimensions LxWxH (cm)	54x36x46	75x36x46	78x46x72	91.5x56.5x76	
Minimum safe distances from nearest combustible materials	Top	0.3m			
	Sides	0.3m			
	Back	0.3m			
	Blower Outlet	1.83m			
	Gas Supply	Propane Gas Supply - 1.83m Natural Gas Supply - N/A			
Gas Consumption per hour	Propane Gas (kg)	1.26	2.10	5.26	N/A
	Natural Gas (m3)	1.70	2.83	7.08	9.20
	Butane/Propane (kg)	1.26	2.10	5.26	N/A

Note: Butane/propane models are configured to produce full rate output when running on butane fuel. When the heater is operating on propane fuel, the heating rate of the unit will be approximately 11% less than fuel rated output.

General Information

This Owner's Manual includes all accessories commonly used on this brood heater. However, depending on the configuration purchased, some accessories may not be included.

When calling for technical service assistance, or for other specific information, always have model number, configuration number and serial number available. This information is contained on the dataplate. The dataplate is located on the interior of either the burner end or motor end door.

This manual will instruct you in the operation and care of your unit. Have your qualified installer review this manual with you so that you fully understand the brood heater and how it functions.

The gas supply line installation, installation of the brood heater, and repair and servicing of the brood heater requires continuing expert training and knowledge of gas brood heaters and should not be attempted by anyone who is not so qualified. See page 6 for definition of the necessary qualifications. A detailed Installation and Service Guide is available, at no charge, to qualified personnel by contacting the local L.B. White distributor, dealer or the L.B. White Company.

Contact your local L.B. White distributor or the L.B. White Company, LLC for assistance, or if you have any questions about the use of the equipment or its application.

The L.B. White Company, LLC has a policy of continuous product improvement. It reserves the right to change specifications and design without notice.

Safety Precautions

WARNING

Asphyxiation Hazard

- Do not use this brood heater for heating human living quarters.
- Do not use in unventilated areas.
- The flow of combustion and ventilation air must not be obstructed.
- Proper ventilation air must be provided to support the combustion air requirements of the brood heater being used.
- Refer to the specification section of the brood heater's Owner's Manual, heater dataplate, or contact the L.B. White Company to determine combustion air ventilation requirements of the brood heater.
- Lack of proper ventilation air will lead to improper combustion.
- Improper combustion can lead to carbon monoxide poisoning leading to serious injury or death. Symptoms of carbon monoxide poisoning can include headaches, dizziness and difficulty breathing.
- Symptoms of improper combustion affecting livestock can be disease, lower feed conversion, or death.

Fuel Gas Odor

Propane gas and natural gas have man-made odorants added specifically for detection of fuel gas leaks. If a gas leak occurs, you should be able to smell the fuel gas .

THAT'S YOUR SIGNAL TO GO INTO IMMEDIATE ACTION!

- Do not take any action that could ignite the fuel gas. Do not operate any electrical switches. Do not pull any power supply or extension cords. Do not light matches or any other source of flame. Do not use your telephone.
- Get everyone out of the building and away from the area immediately.
- Close all fuel supply valves.
- Propane gas is heavier than air and may settle in low areas. When you have reason to suspect a propane leak, keep out of all low areas.
- Use your neighbor's phone and call your fuel gas-supplier and your fire department. Do not re-enter the building or area.
- Stay out of the building and away from the area until declared safe by the firefighters and your fuel gas supplier.
- FINALLY, let the fuel gas service person and the firefighters check for escaped gas. Have them air out the building and area before you return. Properly trained service people must repair the leak, check for further leakages, and then relight the heater for you.

Odor Fading - No Odor Detected

- Some people cannot smell well. Some people cannot smell the odor of the man-made chemical added to propane or natural gas. You must determine if you can smell the odorant in these fuel gases.
- Learn to recognize the odor of propane gas and natural gas. Local propane gas dealers and your local natural gas supplier (utility) will be more than happy to give you a "scratch and sniff" pamphlet. Use it to become familiar with the fuel gas odor.
- Smoking can decrease your ability to smell. Being around an odor for a period of time can affect your sensitivity to that particular odor. Odors present in animal confinement buildings can mask fuel gas odor.
- The odorant in propane gas and natural gas is colorless and the intensity of its odor can fade under some circumstances.
- If there is an underground leak, the movement of gas through the soil can filter the odorant.
- Propane gas odor may differ in intensity at different levels. Since propane gas is heavier than air, there may be more odor at lower levels.
- Always be sensitive to the slightest gas odor. If you continue to detect any gas odor, no matter how small, treat it as a serious leak. Immediately go into action as discussed previously.

Attention - Critical Points to Remember!

- LPG has a distinctive odor. Learn to recognize these odors. (Reference Fuel Gas Odor and Odor Fading sections above.
- If you have not been properly trained in repair and service of LPG and natural gas brood heaters, then do not attempt to light the heater, perform service or repairs, or make any adjustments to the brood heater on the fuel system.

Even if you are not properly trained in the service and repair of the brood heater, ALWAYS be consciously aware of the odors of LPG and natural gas.

- A periodic sniff test around the brood heater or at the brood heater's joints; i.e. hose, connections, etc., is a good safety practice under any conditions. If you smell even a small amount of gas, CONTACT YOUR FUEL GAS SUPPLIER IMMEDIATELY. DO NOT WAIT!

1. Do not attempt to install, repair, or service this brood heater or the gas supply line unless you have continuing expert training and knowledge of gas heaters.

Qualifications for service and installation of this equipment are as follows:

- a. To be a qualified gas brood heater service person, you must have sufficient training and experience to handle all aspects of gas-fired brood heater installation, service and repair. This includes the task of installation, troubleshooting, replacement of defective parts and testing of the brood heater. You must be able to place the brood heater into a continuing safe and normal operating condition. You must completely familiarize yourself with each model brood heater by reading and complying with the safety instructions, labels, Owner's Manual, etc., that is provided with each heater.
 - b. To be a qualified gas installation person, you must have sufficient training and experience to handle all aspects of installing, repairing and altering gas lines, including selecting and installing the proper equipment, and selecting proper pipe and tank size to be used. This must be done in accordance with all local, state and national codes as well as the manufacturer's requirements.
2. All installations and applications of L.B. White brood heaters must meet all relevant local, state and national codes. Included are LPG, natural gas, electrical, and safety codes. Your local fuel gas supplier, a local licensed electrician, the local fire department or similar government agencies, or your insurance agent can help you determine code requirements.
 3. Do not move, handle, or service the brood heater while in operation or connected to a power or fuel supply.
 4. This brood heater may be installed in areas subject to washdown. This brood heater may only be washed on the external case assembly—see Cleaning Instructions. Do not wash the interior of the brood heater. Use only compressed air, soft brush or dry cloth to clean the interior of the brood heater and it's components. After external washdown, do not operate this brood heater until it is completely dry. In any event, do not operate the brood heater for at least one hour after external washdown.
 5. For safety, this brood heater is equipped with a manual reset high-limit switch and an air proving switch. Never operate this brood heater with any safety device that has been bypassed. Do not operate this brood heater unless all of these features are fully functioning.
 6. Do not operate the brood heater with its door open or panel removed.
 7. Do not locate fuel gas containers or fuel supply hoses anywhere near the blower outlet of the brood heater.
 8. Do not block air intakes or discharge outlets of the brood heater. Doing so may cause improper combustion or damage to brood heater components leading to property damage or animal loss.
 9. The hose assembly shall be visually inspected on an annual basis. If it is evident there is excessive abrasion or wear, or if the hose is cut, it must be replaced prior to the brood heater being put into operation. The hose assembly shall be protected from animals, building materials, and contact with hot surfaces during use. The replacement hose assembly shall be that specified by the manufacturer. See parts list.

10. Check for gas leaks and proper function upon brood heater installation, before building repopulation or when relocating.
11. This brood heater should be inspected for proper operation by a qualified service person before building repopulation and at least annually.
12. Always turn off the gas supply if the brood heater is not going to be used.
13. This brood heater is wired for a three-wire electrical system. There is a hot lead, neutral lead and ground lead. The brood heater may or may not incorporate a plug in the power cord to the brood heater and the plug may or may not incorporate a pin for the ground wire. In any case, the brood heater must be properly connected into a grounded electrical supply using the ground lead in the power cord. Failure to use a properly grounded electrical supply can result in electrical shock, personal injury or death.
14. Direct ignition brood heaters will make up to three trials for ignition. If ignition is not achieved, the control system will lock out the gas control valve. If gas is smelled after system lock out has occurred, immediately close all fuel supply valves. Do not relight until you are sure that all gas that may have accumulated has cleared away. In any event, do not relight for at least 5 minutes.
15. In a hanging type installation, rigid pipe or copper tubing coupled directly to the brood heater may cause gas leaks during movement, and therefore must not be used. Use only gas hose assemblies that are rated and approved for L.P.gas and natural gas in a hanging type of installation.
16. Installations not using the gas hose supplied with this appliance must connect dimensionally using American National Standard Wrought Steel and Wrought Iron Pipe B36/10-1970. (Aluminum piping or tubing shall not be used.) Copper tubing when used for conveying natural gas, shall be internally tinned or equivalently treated to resist sulphur.

General Installation Instructions

WARNING

Fire or Explosion Hazard

Can cause property damage, severe injury or death.

- Disconnect power supply before wiring to prevent electrical shock or equipment damage.
- To avoid dangerous accumulation of fuel gas, turn off gas supply at the appliance service valve before starting installation, and perform gas leak test after completion of installation.
- Do not force the gas control knob. Use only your hand to turn the gas control knob. Never use any tools. If the knob will not operate by hand, the control should be replaced by a qualified service technician. Force or attempted repair may result in fire or explosion.

1. Read all safety precautions and follow L. B. White recommendations when installing this brood heater. If during the installation or relocating of brood heater, you suspect that a part is damaged or defective, call a qualified service agency for repair or replacement.
2. Make sure the brood heater is properly positioned before use and is hung level, using a level. Observe and obey all minimum safe distances of the heater to the nearest combustible materials. Minimum safe distances are given on the brood heater nameplate and on page 4 of this manual.
3. Ensure the brood heater has the proper second stage gas regulator for the application. A regulator must be connected to the gas supply so that gas pressure at the inlet to the gas valve is regulated within the range specified on the brood heater's dataplate at all times. Contact your gas supplier, or the L. B. White Co., Inc. if you have any questions
4. Do not exceed input rating stamped on the dataplate of the brood heater. Do not exceed the burner manifold pressure stated on the dataplate. Do not use an orifice size different than specified for the specific input rating of this heater, fuel type configuration and altitude.
5. The brood heater may be installed either indoors or outdoors. When the brood heater is mounted outdoors, use only the ductwork supplied in the outdoor mounting kit.
6. For brood heaters intended for outdoor installation, the heater is to be installed at least 46 cm above the ground or to a height that would prevent lockage of heater's air inlet.
7. The brood heater's gas regulator (with pressure relief valve) should be installed outside of building. Any regulators inside the buildings must be properly vented to the outside. Local, state and national codes always apply to regulator installation.
8. All gas pressure regulators must be installed in strict accordance with the manufacturer's safety instructions. These instructions accompany each regulator.
9. Insure that all accessories that ship within the brood heater have been removed from inside of brood heater and installed. This pertains to air diverters, hose, regulators, etc.
10. Make certain that a sediment trap is installed at the gas valve inlet to prevent foreign materials (pipe compound, pipe chips and scale) from entering the gas valve. Debris blown into the gas valve may cause that valve to malfunction resulting in a serious gas leak that could result in a possible fire or explosion causing loss of products, building or even life. A properly installed sediment trap will keep foreign materials from entering the gas valve and protect the safe functioning of that important safety component.
11. Any brood heater connected to a piping system must have an accessible, approved manual shut off valve installed within 1.83 meters of the brood heater it serves.
12. Check all connections for gas leaks using approved gas leak detectors. Gas leak testing is performed as follows:

WARNING

Fire and Explosion Hazard

- Do not use open flame (matches, torches, candles, etc.) in checking for gas leaks.
 - Use only approved leak detectors.
 - Failure to follow this warning can lead to fires or explosions.
 - Fires or explosions can lead to property damage, personal injury or loss of life.

- Check all pipe connections, hose connections, fittings and adapters upstream of the gas control with approved gas leak detectors.
 - In the event a gas leak is detected, check the components involved for cleanliness and proper application of pipe compound before further tightening.
 - Furthermore tighten the gas connections as necessary to stop the leak.
 - After all connections are checked and any leaks are stopped, turn on the main burner.
 - Stand clear while the main burner ignites to prevent injury caused from hidden leaks that could cause flashback.
 - With the main burner in operation, check all connections, hose connections, fittings and joints as well as the gas control valve inlet and outlet connections with approved gas leak detectors.
 - If a leak is detected, check the components involved for cleanliness in the thread areas and proper application of pipe compound before further tightening.
 - Tighten the gas connection as necessary to stop the leak.
 - If necessary, replace the parts or components involved if the leak cannot be stopped.
 - Ensure all gas leaks have been identified and repaired before proceeding.
13. A qualified service agency must check for proper operating gas pressure upon installation of the brood heater.
14. Light accordance to instructions on the brood heater or within owner's manual.
15. It is extremely important to use the proper size and type of gas supply line to assure proper functioning of the brood heater. Contact your fuel gas supplier for proper line sizing and installation.
16. This brood heater is configured for use with either LPG vapor withdrawal only. Do not use the brood heater in an L.P. gas liquid withdrawal system or application. If you are in doubt, contact the L. B. White Co., Inc.
17. Eventually, like all electrical/mechanical devices, the thermostat can fail. Thermostat failure may result in either an underheating or overheating condition which may damage critical products and/or cause animal injury or death. Critical products and/or animals should be protected by a separate back-up control system that limits high and low temperatures and also activates appropriate alarms.
18. Take time to understand how to operate and maintain the brood heater by using this Owner's Manual. Make sure you know how to shut off the gas supply to the building and also to the individual brood heater. Contact your fuel gas supplier if you have any questions.
19. Any defects found in performing any of the service or maintenance procedures must be eliminated and defective parts replaced immediately. The brood heater must be retested by properly qualified service personnel before placing the brood heater back into use.

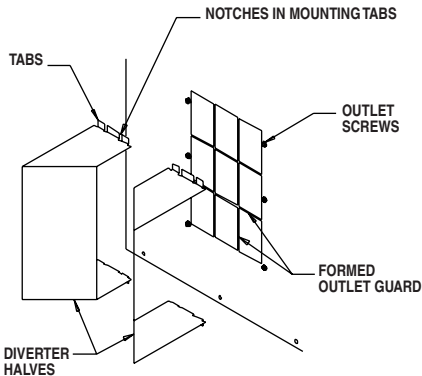
Air Diverter Installation Instructions

(Must be ordered separately)

(Appearance of the outlet on brood heater may vary from model to model.)

1. Outlet to provide direction to the heated air as it exits the brood heater. Installation options include installing the diverters in such a way as to broadly NOTCHES IN MOUNTING TABS distribute the air in two 45 degree paths or to focus the air flow in one 45 degree direction. See Fig. 1.
2. The air diverters may require hand forming prior to installation. Make 90 degree bends utilizing the perforations provided. The diverter should then have the shape shown in Fig. 1.
3. The air diverter's tabs on each half will pop into the blower outlet between the inside of the case assembly and the blower housing outlet. If the notched tabs do not pop into the blower outlet, loosen (do not remove) the blower outlet screws. Doing this provides a gap into which you can insert the tabs. Retighten the screws after installation.

FIG. 1

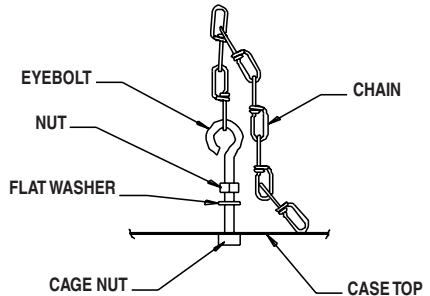


Alternative Air Diverter Installations



1. Assemble according to the illustration and tighten all eyebolts securely. See Fig. 2.

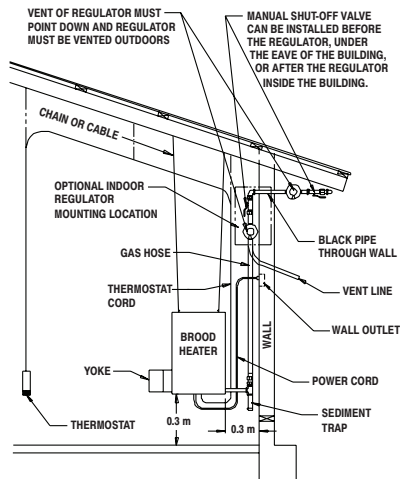
FIG. 2



2. Be sure the brood heater is securely fastened and is hanging level. (Check crosswise and lengthwise using a level).
3. See Fig. 3 for typical indoor installation. In any animal confinement building, consideration must be given to making sure the brood heater is located away from the livestock so that livestock cannot knock the brood heater, tear it loose from its mounting, or damage the brood heater or its gas supply line in any way. Make sure you observe and obey minimum clearance distances to combustible materials as stated in the specification section of this owner's manual and on the brood heater itself.

FIG. 3

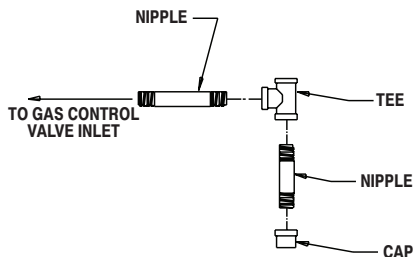
NOTE: REGULATORS SHOULD ALWAYS BE MOUNTED OUTDOORS. IF CIRCUMSTANCES FORCE INSTALLING THE REGULATOR INDOORS, THE REGULATOR'S VENT MUST BE VENTED OUTDOORS USING VENT LINE NO SMALLER THAN VENT OPENING.



Sediment Trap Assembly

Assemble the tee, nipples and cap together and tighten securely. See Fig. 4. The sediment trap assembly must always be mounted in a vertical position. Make sure pipe thread compound that is resistant to both L.P. gas and natural gas is used in making all connections. **Check all connections for gas leaks using approved gas leak detectors.**

FIG. 4



Thermostat Installation (Must be ordered separately)

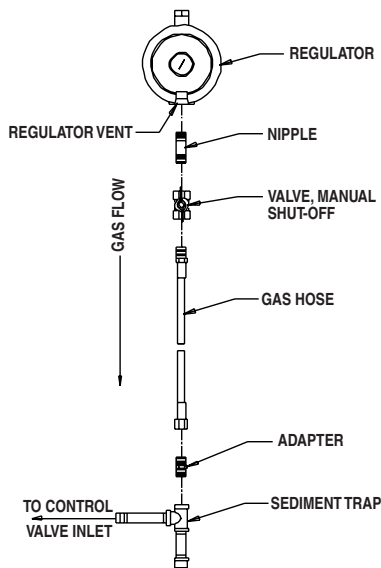
To Connect the Direct Wired Thermostat Kit to the Control Box on the Brood Heater:

- Open the control box.
- Remove the yellow wire connected between the 24 volt output of the transformer and terminal W of the ignition control.
- Remove the plastic hole plug at the back or bottom of the control box. Run the wiring of the thermostat kit through this hole.
- Connect the black lead of the thermostat kit to the 24 volt output terminal of the transformer.
- Connect the white lead of the thermostat kit to terminal W of the ignition control.
- Install the strain relief (supplied on thermostat cordset) around the cord at the entry hole of the control box.
- Close and latch the control box.
- Start the brood heater and check for proper operation.

Manual Shut-Off Valve, Hose and Regulator Assembly

- Always use approved pipe thread compound suitable for use with L.P. gas or natural gas on the threaded connections.
- Assemble the components together according to Fig. 5. This view is to show general assembly of the components only. The regulator must always be mounted so its vent, regardless of location on the regulator, is always pointed downward.
- Tighten all connections securely.
- Check all connections for gas leaks using approved gas leak detectors.**

FIG. 5

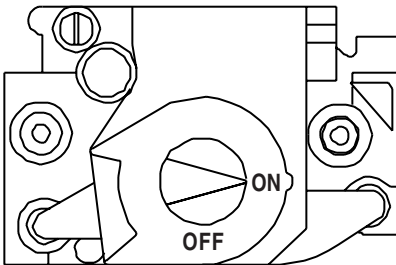


Start-Up Instructions

Follow steps 1 - 6 on initial start-up after brood heater installation by a qualified gas heater service person. For normal start-up, simply turn thermostat above room temperature. The brood heater will start.

1. Open all manual fuel supply valves and check for gas leaks using approved leak detectors. The gas control valve on the brood heater has a manual shut-off feature incorporated into the valve assembly. Make sure the indicator on the valve is turned to the "on" position. See Fig. 6.

FIG. 6



2. Connect the electrical cord to an approved electrical outlet.
3. Set the thermostat (if supplied) to desired room temperature.
4. This brood heater includes a direct ignition control module for purposes of controlling the timing of the ignition process of the heater as well as monitoring of the safety functions. The control module is contained within the control enclosure. On the control module is a red light emitting diode (LED). This LED indicates the status of the brood heater. The LED is visible external of the control enclosure through the viewing window. A constant light from the LED is an indicator that the brood heater is functioning correctly. Any flash pattern by the LED is indicative that there is a problem in the operation of the brood heater. Refer to the troubleshooting decal on the access panel at the fan motor end of the brood heater for assistance in troubleshooting. Only qualified and properly trained personnel shall service or repair the brood heater.

5. On a call for heat, the motor will start up and run for five (5) seconds. This "pre-purge" is a safety feature and a normal operational characteristic prior to ignition taking place. After five (5) seconds, the igniter will begin to spark.

NOTE: It is normal for air to be trapped in the gas hose on new installations. The brood heater may attempt more than one trial for ignition before the air is finally purged from the line and ignition takes place.

6. The ignition control will make up to three trials for ignition. Each trial for ignition will take approximately ten (10) seconds. The first three trials for ignition will occur within 40 seconds if ignition is not achieved. A 15 minute "wait period" will then begin after the third trial for ignition has taken place. After the 15 minute time span has elapsed, three more trials for ignition will take place. If ignition is not achieved at this final trial, the system will "lock out", and a three flash pattern will be indicated by the LED.

Shut-Down Instructions

If the brood heater is to be shut down for cleaning, maintenance or repair, follow steps 1 - 5. Otherwise, simply turn thermostat to "off" or "no heat" for standard shut down.

1. Close all manual fuel supply valves.
2. With the brood heater lit, allow heater to burn off excess fuel in gas supply hose.
3. Turn the indicator on the gas control to "off".
4. Turn thermostat to "off" or "no heat" position.
5. Disconnect the brood heater from the electrical supply.

Cleaning Instructions



WARNING

Fire, Burn, and Explosion Hazard

- This brood heater contains electrical and mechanical components in the gas management, safety and airflow systems.
- Such components may become inoperative or fail due to dust, dirt, wear, aging, or the corrosive atmosphere of an animal confinement building.
- Periodic cleaning and inspection as well as proper maintenance are essential to avoid serious injury or property damage.

1. Before cleaning, shut off all gas supply valves and disconnect electrical supply.
2. The brood heater should have dirt or dust removed periodically:
 - a. After each flock or between building repopulation, give the brood heater a general cleaning using compressed air or a soft brush on its interior and exterior. At this time, dust off the motor case to prevent the motor from overheating and shutting the brood heater down.
 - b. At least once a year, give the brood heater a thorough cleaning. At this time, remove the fan and motor assembly and brush or blow off the fan wheel, giving attention to the individual fan blades. Additionally, make sure the burner air inlet venturi ports and the throat of the casting are free of dust accumulation and the area between the heat chamber top and inside case is also free of dust.
 - c. When washing with water, observe and obey the Warning within these Cleaning Instructions. This same Warning is also supplied on the brood heater.



WARNING

This brood heater may be washed only on the external case assembly provided:

- A. The brood heater is disconnected from the electrical supply.
- B. All access panels are securely closed.
- C. Water spray nozzle shall not discharge within 1.83 m of the brood heater.
- D. The water pressure does not exceed 3.1 BAR for 10 seconds on each side of the brood heater.
- E. The brood heater is not reconnected to electrical supply for a minimum of 1 hour or until the brood heater is thoroughly dry.

Improper cleaning of the brood heater can cause severe personal injury or property damage due to water and/or cleaning solution:

1. In electrical components, connections and wires causing electrical shock or component failure.
2. On gas control components causing corrosion which can result in gas leaks and fire or explosion from the leak.

Clean internal components of the brood heater with a soft, dry brush or cloth, or compressed air.

Maintenance Instructions

BEFORE EACH USE:

- Have your gas supplier check all gas piping annually for leaks or restrictions in gas lines. Also, at this time have your gas supplier clean out the sediment trap of any debris that may have accumulated.
- The brood heater's surrounding area shall be kept clear and free from combustible materials, gasoline, and other flammable vapors and liquids.
- Regulators must be periodically inspected to make sure the regulator vents are not blocked. Debris, insects, insect nests, snow, or ice on a regulator can block vents and cause excess pressure at the appliance.
- Review all brood heater markings (ie. warnings, start-up/shutdown, electrical wiring, diagrams, etc.) for legibility. Ensure that none are cut, torn, or otherwise damaged. Any damaged markings must be replaced immediately by contacting L.B. White Co., Inc. Markings are available at no cost.
- Replace the complete gas hose assembly if defects are found.
- Inspect the brood heater's electrical connections. Replace any terminals that are corroded.
- Leak check the brood heater's gas connections according to instructions within this manual.

ANNUALLY:

- Have your gas supplier check all gas piping annually for leaks or restrictions in gas lines. Also, at this time have your gas supplier clean out the sediment trap of any debris that may have accumulated.
- Regulators can wear out and function improperly. Have your gas supplier check the date codes on all regulators installed and check delivery pressures to the appliance to make sure that the regulator is reliable.
- Test the brood heater's high limit switch annually. Refer to instructions within this manual.

Service Instructions



WARNING Burn Hazard

- Brood heater surfaces are hot for a period of time after the brood heater has been shut down.
- Allow the brood heater to cool before performing service, maintenance, or cleaning.
- Failure to follow this warning will result in burns causing injury.



WARNING Fire and Explosion Hazard

- Do not disassemble or attempt to repair any brood heater components or gas train components.
- All component parts must be replaced if defects are found.
- Failure to follow this warning will result in fire or explosions, causing property damage, injury, or death.

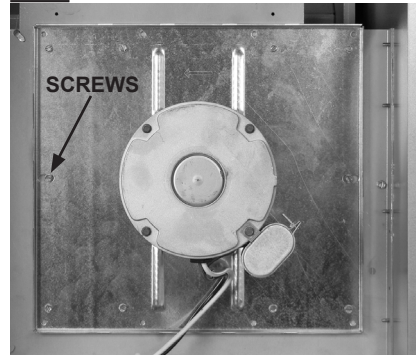
1. Close the fuel supply valve to the brood heater and disconnect the electrical supply before servicing unless necessary for your service procedure.
2. Open side panels for access to brood heater components.
3. Disconnect the appropriate electrical leads for the component being replaced.
4. The thermostat, and high limit switch can be tested by jumpering the suspect part out of the electrical circuit:
 - Reconnect the electrical supply and open fuel supply valves.
 - If the brood heater lights, the component is defective and must be replaced.
 - Do not operate the brood heater with the component jumpered. Replace the part immediately.
 - An alternate method for checking the components is to perform a continuity check.
5. Do not jumper the air proving switch. If jumpered, the ignition control will not allow heater operation. Test the air proving switch for continuity. If defective, replace the switch

6. For reassembly, reverse the respective service procedure. Ensure gas connections are tightened securely.
7. After servicing, start the brood heater to ensure proper operation. Check for gas leaks with approved leak detectors.
8. Clean the brood heater's orifice with compressed air or a soft, dry rag. Do not use files, drills, broaches, etc. to clean the orifice. Doing so may enlarge the hole, causing combustion or ignition problems. Replace the orifice if it cannot be cleaned properly.

Fan and Motor Wheel Assembly

1. Remove the motor mounting plate screws and lift the fan and motor assembly from the housing. See Fig. 7, AD250 shown.
2. Loosen the square head set screw(s) on the fan wheel.
3. Pull the fan wheel from the motor shaft. Use a wheel puller if necessary.
4. Remove the four (4) nuts securing the motor to the mounting plate.

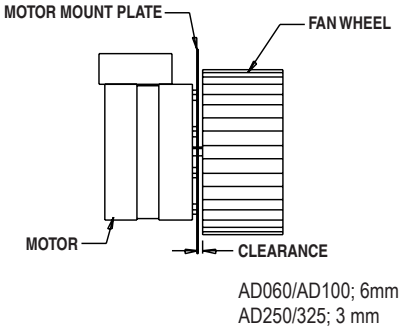
FIG. 7



NOTES:

- a. Fan wheel to motor mount plate spacing must be adjusted to the clearance specified in Fig. 8 before tightening the fan wheel to the motor shaft.

- Make sure that set screw(s) of the fan are on the flats of motor shaft when tightening.

FIG. 8

Air Proving Switch

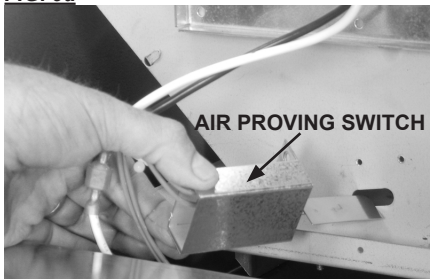
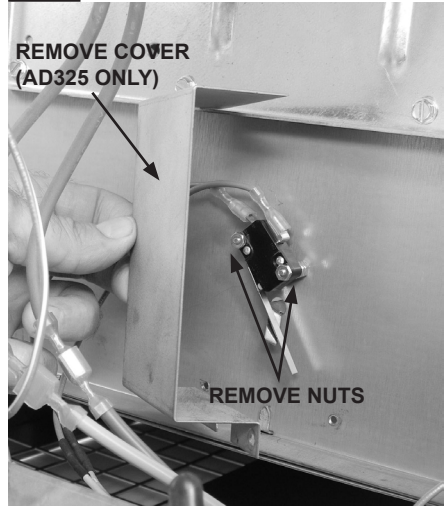
The air proving switch is located on the fan housing at the motor end of the brood heater. It must work properly to allow an ignition cycle. If the air proving switch contacts are closed before the ignition control starts the fan motor, or do not close on a call for heat after the fan motor starts, ignition will not occur. See Fig. 9a or 9b.

AW060/AW100/AW250 service (Fig. 9a):

- Remove the two (2) sheet metal screws holding the switch with bracket to blower housing.
- Remove the assembly by turning the switch so the paddle on the switch arm can be pulled through the oblong hole on side of fan housing.

AW325 service (Fig. 9b):

- Remove the two mounting nuts and slide the switch from its mounting screws.

FIG. 9a**FIG. 9b**

Flapper (Sail)

The flapper, located within the housing at the blower discharge, works in conjunction with the air proving switch in proving that proper air flow has been achieved by the fan and motor before allowing an ignition cycle to continue. See Fig. 10.

If the flapper is binding, its arm will not engage the air proving switch and ignition will not occur.

Ensure the flapper lifts freely, that it does not bind on the fan housing and that it is free of dust and other debris.

FIG. 10

Igniter and Flame Sensor Assembly

- Refer to Fig. 11 (AD100/250/325) or Fig. 12 (AD060) for servicing of the igniter assembly.
- The igniter/sensor assembly may require cleaning due to accumulations of dust and dirt over a period of time, affecting its ability to ignite fuel gas and sense burner flame. Cleaning will require igniter/sensor removal.
- If spark appears to be weak, rub the igniter electrode with emery cloth or steel wool to remove any buildup.
- If the spark appears strong but the brood heater cycles off, rub the sensor rod with emery cloth or steel wool to remove any build-up.
- Ensure the igniter gap to burner is 4 mm and the igniter tip is positioned over the burner port according to the illustration below.

FIG. 11

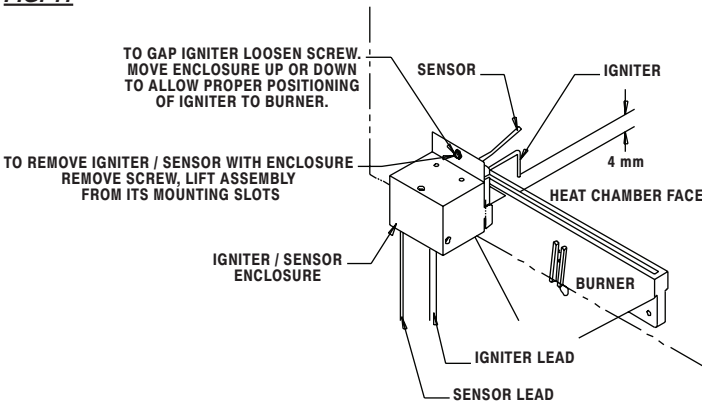
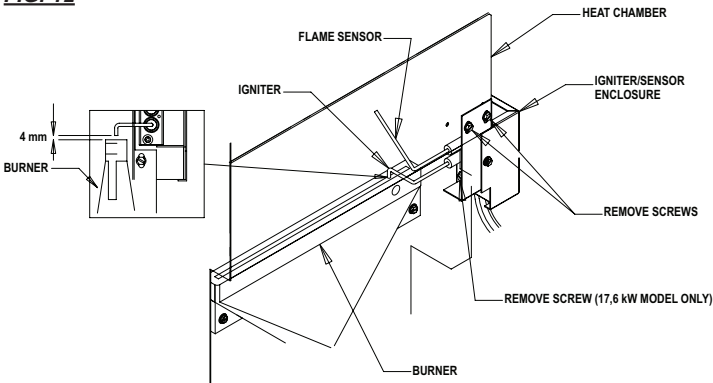


FIG. 12



Manual Reset High Limit Switch

WARNING Fire Hazard

- Do not operate the brood heater with the high limit switch bypassed.
- Operating the brood heater a bypassed high limit switch may lead to overheating, possibly resulting in a fire, with subsequent damage to the brood heater, building damage, or loss of livestock.

This brood heater uses a high limit heat switch for the purpose of over heat protection. It is connected between the ignition control and the gas control valve.

The switch has normally closed contacts. If an over-heat condition occurs, the switch contacts will open, thereby opening the circuit to the gas control valve.

Model AD060/AD100/AD250: The high limit switch is located on the heat chamber, See Fig. 13a and 13b.

Model AD325: The high limit switch is located on the fan housing side panel at the motor end of the heater. See Fig. 14a and 14b.

FIG. 13a



FIG. 13b

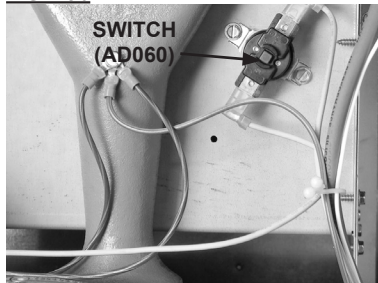


FIG. 14a

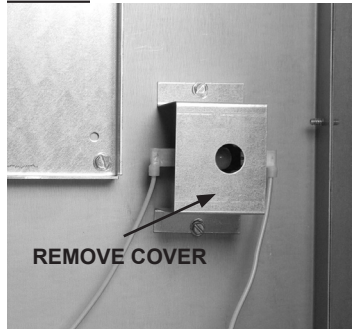
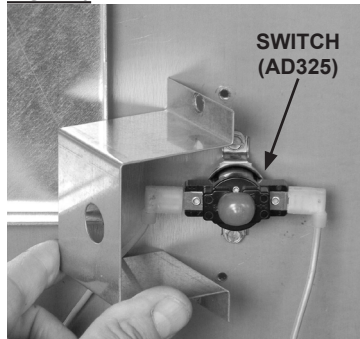


FIG. 14b

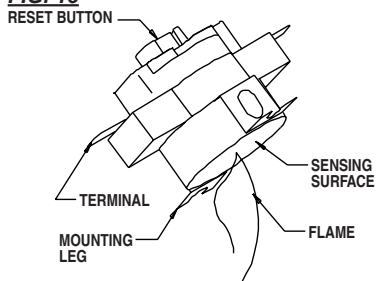


The high limit switch should be tested a minimum of once per year when the heater is given a thorough cleaning.

1. Remove the switch. Holding the switch by one of its mounting legs, apply a small flame only to the sensing portion on the back of the switch. See Fig. 15. Do not melt the plastic housing of the switch when conducting this test.
2. Within a minute, you should hear a pop coming from the switch, which indicates the contacts of the switch have opened. Check for lack of electrical continuity across the switch terminals to verify contacts have opened.

3. Allow the switch cool down for about a minute before firmly pressing the reset button on the switch.
4. Check for electrical continuity across the switch terminals to make sure the contacts have closed.
5. Reinstall the switch back into the brood heater. Reconnect the brood heater to its electrical supply. Start the brood heater and check for proper operation.

FIG. 15



Gas Control Valve and Burner Orifice

- Remove the following in the order given:
 - Gas hose and sediment trap from the inlet of gas the control valve.
 - AD250: Plastic bushing at gas inlet hole. See Fig. 16.
 - Two screws at the inlet of the gas control valve securing the valve to its mounting bracket or to the case. See Fig. 16.
 - Bolt with washer securing the manifold to the burner and base. See Fig. 17.
- Lift and pivot the gas valve with manifold as needed so burner orifice clears the burner. See Fig. 18.
- Replace components as needed.

FIG. 16

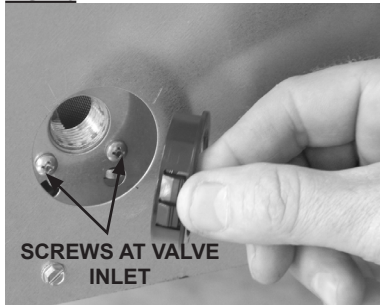


FIG. 17

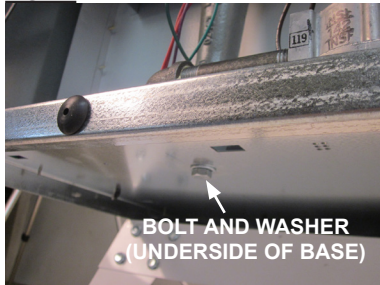
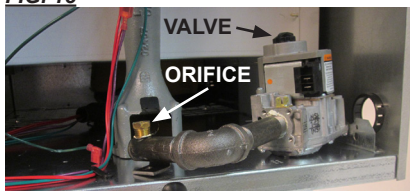


FIG. 18



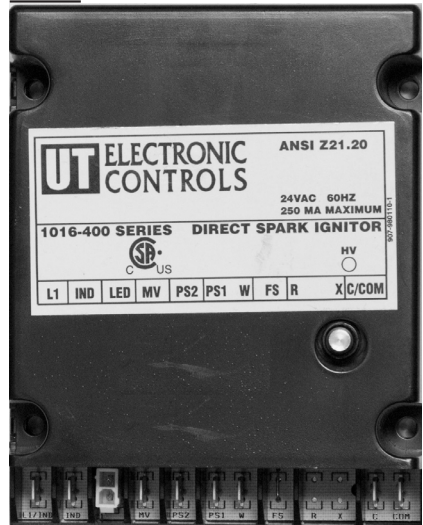
Ignition Control

The control sends and receives voltages to operate or verify operation of components. Refer to the following and Fig. 19 to understand the ignition control's terminal designators if doing voltage checks on the control.

- L1:** 220 VAC to control from power supply
- IND:** 220 VAC from control to fan motor
- LED:** Connection for control's diagnostic light
- MV:** 24 VAC from control to high limit switch and then to gas control valve.
- PS2:** 24 VAC from air proving switch back to control
- PS1:** 24 VAC from control to air proving switch
- W:** 24 VAC from transformer to control (without this voltage the ignition control will not function)
- FS:** Microamperage from control to flame sensor for proving burner flame
- R:** No terminal
- X:** No terminal
- C/COM:** Control and burner ground

Also refer to "Operation Sequence" within this manual as needed to understand operation of the ignition control during a call for heat.

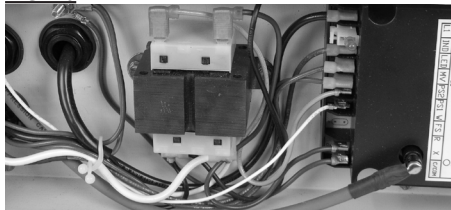
FIG. 19



Transformer

Located in the control box, the transformer reduces 220 VAC to 24 VAC for operation of the ignition control. Without 24 VAC from the transformer, the red diagnostic light will not be on and the ignition control will not function.

FIG. 20



Gas Pressure Checks

WARNING

- Do not disassemble the gas control valve.
- Do not attempt to replace any components of the gas control valve.
- The gas control valve must be replaced if any physical damage occurs to the control valve assembly.
- Failure to follow this warning will result in fire or explosions, leading to injury or death, and property damage.

- The following explains a typical procedure to be followed in checking gas pressures.
- The gas pressures will vary depending upon fuel type.

Consult the dataplate on the brood heater or page 4 in this manual for specific pressures to be used in conjunction with this procedure.

Gas pressure measured at the inlet to the gas valve is Inlet Pressure and gas pressure measured at the outlet of the gas valve is Burner Manifold Pressure.

A. Preparation

1. Obtain two pressure gauges capable of reading up to 9 kPa in. W.C.
2. Disconnect the heater from the electrical supply and close the fuel supply valve to the brood heater inlet.

3. Open the burner access panel.

4. Brush or blow off any dust and dirt on or in the vicinity of the gas control valve.

B. Gauge Installation

1. Locate the inlet and outlet pressure taps, see Fig. 21. Remove the pressure tap plug using a 3/16 in. allen key.

FIG. 21

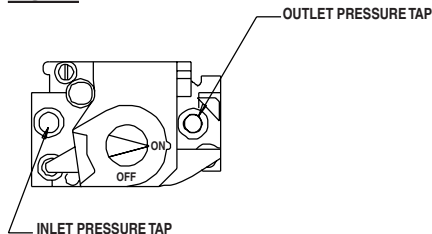
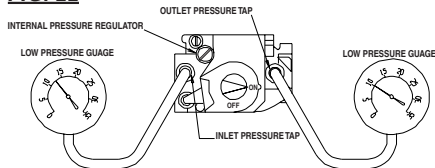


FIG. 22



EXAMPLE SHOWS PRESSURE FOR PROPANE GAS!
ALWAYS REFER TO PRESSURE ON DATAPLATE

2. Securely connect a pressure gauge to each pressure tap.
3. Open the fuel supply valves to the heater and reconnect the heater electrical supply.
4. Start the heater

C. Reading Pressures

1. With the brood heater operating, the pressure gauges should read the pressures specified on the dataplate.
2. Do the readings at the inlet and outlet pressure gauges agree with that specified on the dataplate? If so, then no further checking or adjustment is required. Proceed to section D.
3. If the inlet pressures do not agree with that specified on the dataplate, then the regulator controlling gas pressure to the brood heater requires adjustment.

4. If the inlet pressures are correct and the burner manifold pressure does not agree with that specified on the dataplate, then the gas control valve's internal pressure regulator requires adjustment. See Fig. 22 for regulator location.

D. Completion

1. Once the proper inlet and burner manifold pressures have been confirmed and/or properly set, close the fuel supply valve to the brood heater and allow the brood heater to burn off any gas remaining in the gas supply line.
2. Disconnect the brood heater from its electrical supply.
3. Remove the gauges and connecting hoses.
4. Install pressure tap plugs and tighten securely. Check for gas leaks.

Troubleshooting Guide

READ THIS ENTIRE SECTION BEFORE BEGINNING TO TROUBLESHOOT PROBLEMS.



WARNING

Electrical Shock and Burn Hazard

- Do not attempt to service or repair this brood heater unless you are a properly trained and qualified gas heater service person.
- Troubleshooting this system may require operating the unit with line voltage present and gas on. Use extreme caution when working on the brood heater.
- Failure to follow this warning may result in property damage, personal injury or death.

The following troubleshooting guide provides systematic procedures for isolating equipment problems. This guide is intended for use by a QUALIFIED GAS HEATER SERVICE PERSON. DO NOT ATTEMPT TO SERVICE THESE BROOD HEATERS UNLESS YOU HAVE BEEN PROPERLY TRAINED.

TEST EQUIPMENT REQUIRED

The following pieces of test equipment will be required to troubleshoot this system with minimal time and effort.

- Digital Multimeter - for measuring voltage and resistance.
- Low Pressure Gauge - (L.B. White Part No. 00764) for checking inlet and manifold pressures of the gas control valve against dataplate rating.

INITIAL PREPARATION

- Visually inspect brood heater for apparent damage.
- Check all wiring for loose connections and worn insulation.

Refer to the system operation sequence in this section to gain an understanding as to how the brood heater operates. Understanding the operation sequence of the ignition module and related components is essential as it will relate directly to problem solving provided by the flow charts.

The ignition control module is self-diagnostic. The red light on the module will flash a specific pattern depending upon the problem which is diagnosed. To effectively use the flow charts, you must first identify what the problem is by the flashing pattern of the L.E.D. (light emitting diode) diagnostic light. If the light is flashing, the flash pattern will be followed by a pause and then a repeat of the flash pattern until the problem is corrected.

Problems.....	Page
L.E.D. Diagnostic light <u>not</u> on	
during a call for heat	26
L.E.D. diagnostic light flashing:	
A. Long Flash (2 seconds ON/2 seconds OFF).....	26
B. One Time.....	26
C. Two Times.....	27
D. Three Times.....	28
E. Four Times.....	28
F. Five Times	28

Components should be replaced only after each step has been completed and replacement is suggested in the flow chart.

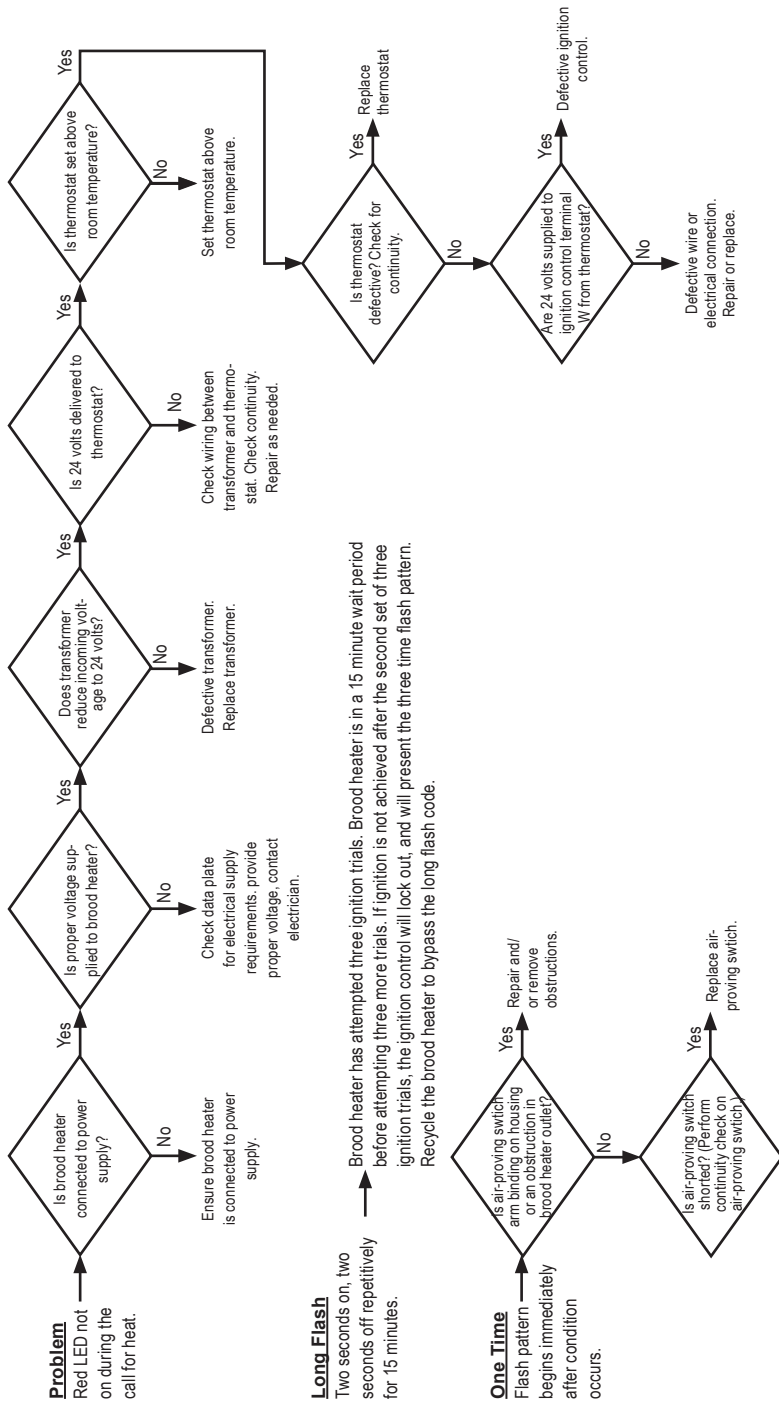
SPARK IGNITION OPERATION SEQUENCE:

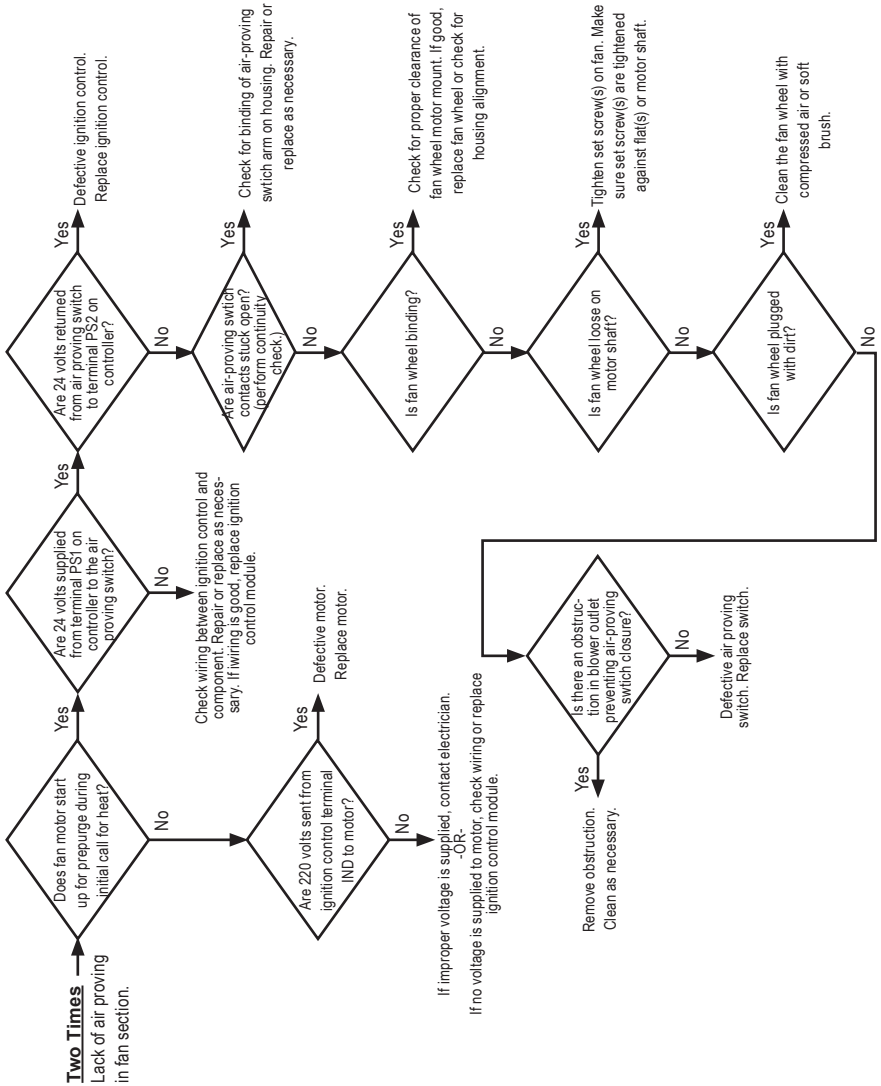
- 220 volts is sent to transformer and to ignition control terminal L1.
- 24 volts is sent from transformer to the thermostat.
- A call for heat occurs.
- Thermostat returns 24 volts to ignition control terminal W.
- Red light on ignition control is illuminated.
- Ignition control performs an internal safe start check.
 - Internal components are tested.
 - Ignition control sends 24 volts from terminal PS1 to the air proving switch.
- Ignition control begins safety lockout timing.
- Ignition control sends 220 volts from terminal IND to start the fan motor for prepurge.
 - Air proving switch is checked for proper operation.
 - Air proving switch closes and 24 volts are returned to ignition control terminal PS2.
- Ignition control powers the igniter and igniter sparks.
- Ignition control sends 24 volts to gas control through high limit switch.
- Ignition occurs.
 - Igniter continues to spark until flame proving occurs.
 - Igniter spark is discontinued.
 - Gas valve stays open.

- Room warms to desired temperature.
 - Thermostat is satisfied.
 - Heater shuts down.
- Process begins again on call for heat.

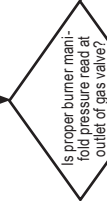
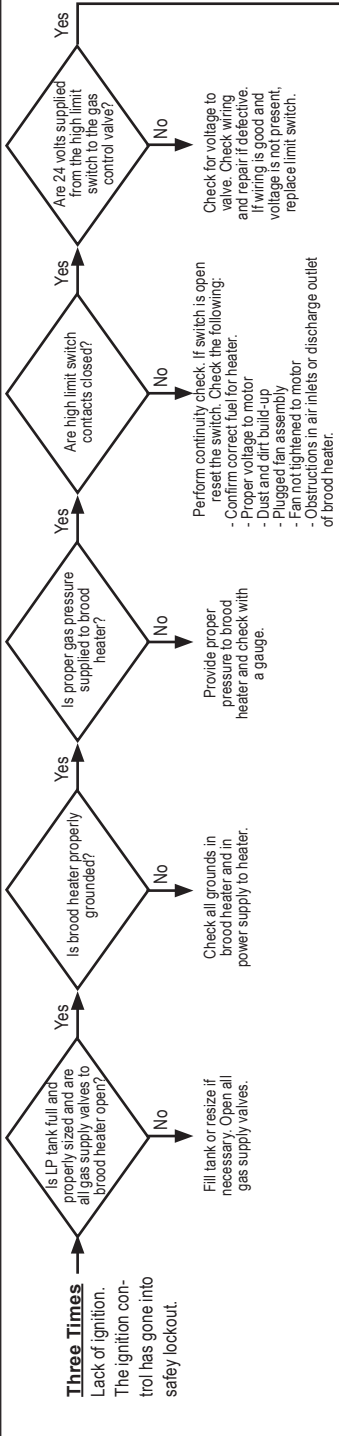
MULTIPLE IGNITION TRIAL SEQUENCE

- First trial for ignition takes approximately 10 seconds
- Two more trials for ignition will occur.
 - Second and third trial follow immediately if first trial fails.
- Ignition control starts a 15 minute "Wait" period to allow ignition interruption to pass.
- Ignition control repeats 3 Ignition attempts after 15 minute wait period
- If ignition control does not prove flame after third Trial, the control goes into safety lockout (3 flash pattern).
 - Igniter shuts down
 - Fan motor stops
 - Gas valve closes
- To retry ignition, reset the ignition system by:
 - Unplugging the brood heater and plug it back in
 - **OR** --
 - Turn Thermostat to "Off" or "No Heat" and then back to above room temperature





Three Times
Lack of ignition.
The ignition control has gone into safety lockout.

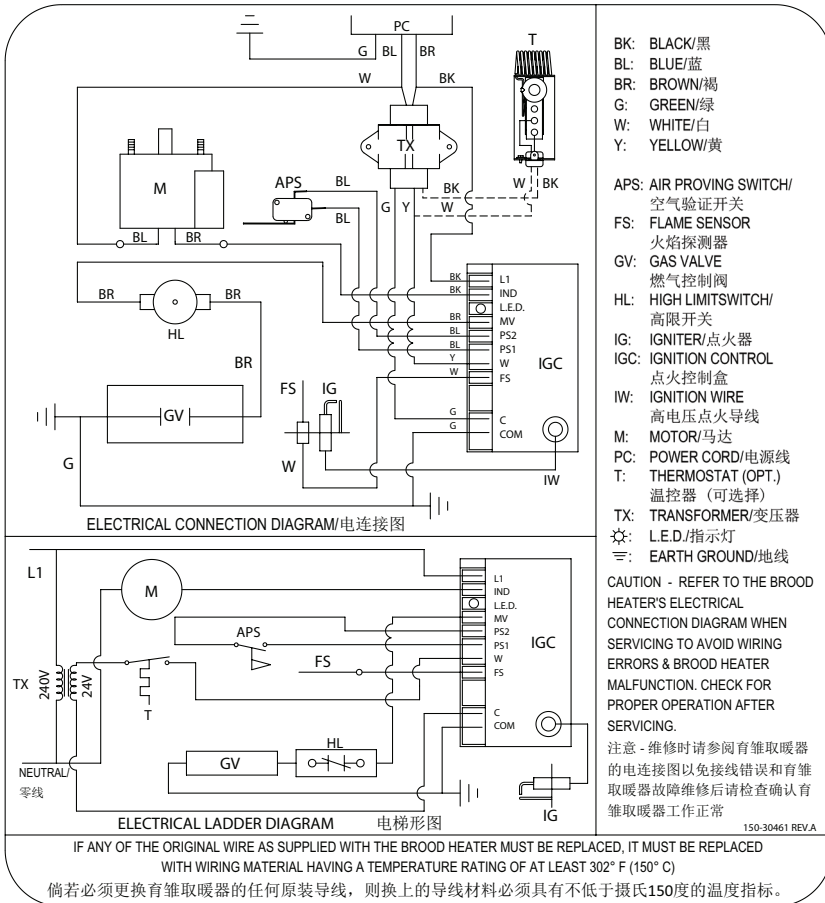


Four Times
Flame Sense Degradation. Clean sensor, check all ground connections.

Five Times
If DSI board does not reset, then replace the board. (Internal board fault).
If DSI board resets, then have qualified electrician check power source for power quality problems. (Frequency, line noise, line spikes, loose connections, too small wire gauge.)

Close gas supply valve to brood heater.
Disconnect ignitor cable from ignition control. Place the tip of a screwdriver about 3mm, from where ignitor cable was connected to control. Turn the brood heater on. If spark does not jump from ignition control to screwdriver, replace ignition control. If spark is seen, replace the igniter/sensor assembly.

Electrical Connection & Ladder Diagram



Brood Heater Component Function

Air Proving Switch

Safety device used to insure that the proper air flow is being achieved before the gas valve is opened.

Burner

Cast iron component used to channel gas and provide an area at which the fuel may ignite.

Burner Orifice

Brass metering device used to feed gas to burner at a specific rate.

Fan Housing

Chamber used for compressing air for efficient air movement.

Fan Wheel

Component used in conjunction with the motor and fan housing to pull the hot air from heater and blow it into room for heating (also known as a "squirrel cage").

Gas Control Valve

A device which consists of a low pressure regulator and electrical solenoids which are used for the control of gas flow to the burner assembly. A feature of the control is a built in gas shut off which is used to isolate the brood heater from its gas supply when servicing.

Gas Hose

Flexible connector used to convey gas from supply line in building to brood heater.

Heat Chamber

Metal "fire box" within the appliance that provides an area where burner flame mixes with combustion air thereby providing heat.

High Limit Switch

Safety device wired into the control system which is used to break an electrical circuit to the gas control valve in event of overheat situation.

Ignition Control Module

Controls the ignition sequence and operation of the brood heater as well as monitoring the safety services. A major service feature is the board's ability to diagnose component and flame failure by means of a diagnostic light located within the module. This light will provide a specific flash pattern repetitively, depending on the type of component failure that has occurred.

Igniter/Flame Sensor Assembly

This assembly consists of two components mounted adjacent on the same bracket.

-- Spark Igniter: Electrical ignition device used on automatic ignition control systems. Ignites gas by a spark.

-- Flame Sensor: Also known as a flame rod or flame probe, this device works in conjunction with the ignition module in proving that burner flame has been established.

Motor

Electric device used to force preheated air through the brood heater and to circulate heat within a certain area. Converts electrical energy into mechanical energy.

Regulator

The heart of any gas supply installation. Used to deliver a working pressure to the appliance under varying conditions in tank pressure.

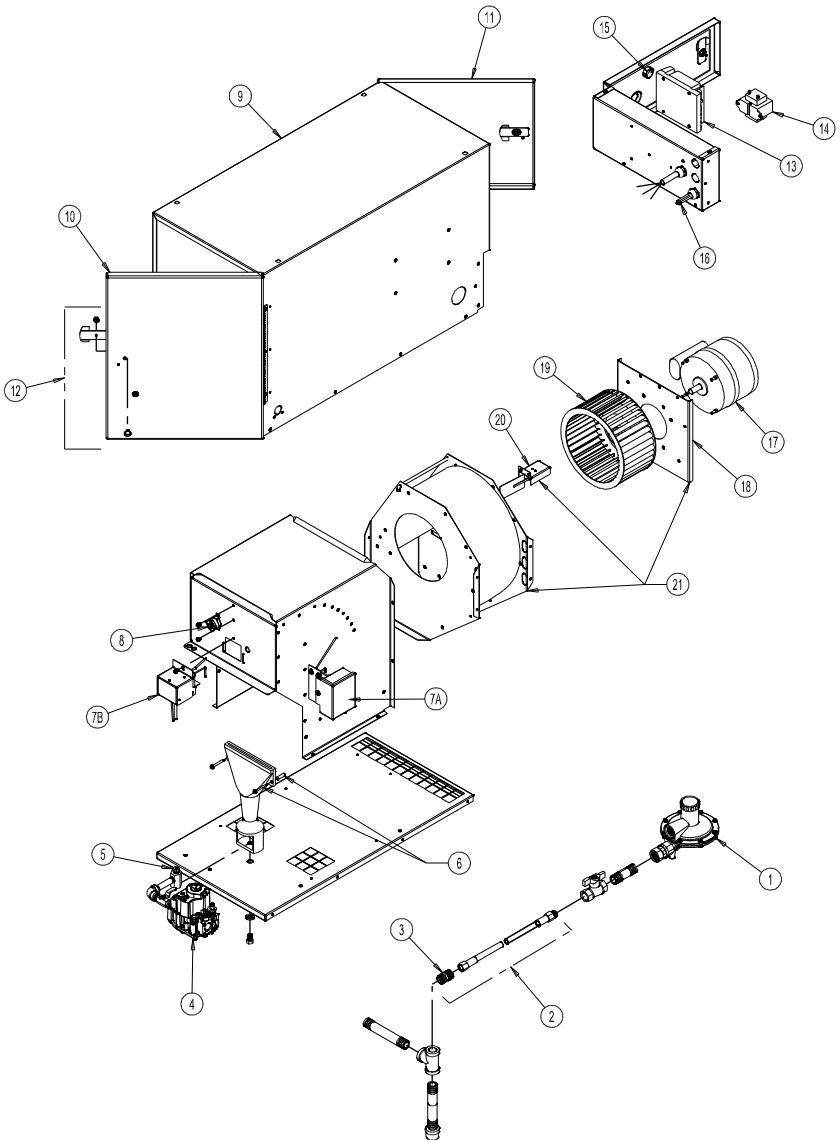
Thermostat

Electrical device used as an automatic "on/off" switch which will respond to changes in temperature in a certain area.

Transformer

This device is responsible for reducing a higher incoming voltage (220 V.A.C.) to a lower outgoing voltage. The lower voltage (24 V.A.C.) is essential to operate the ignition control module.

Service Parts Identification Schematic AD060 / AD100

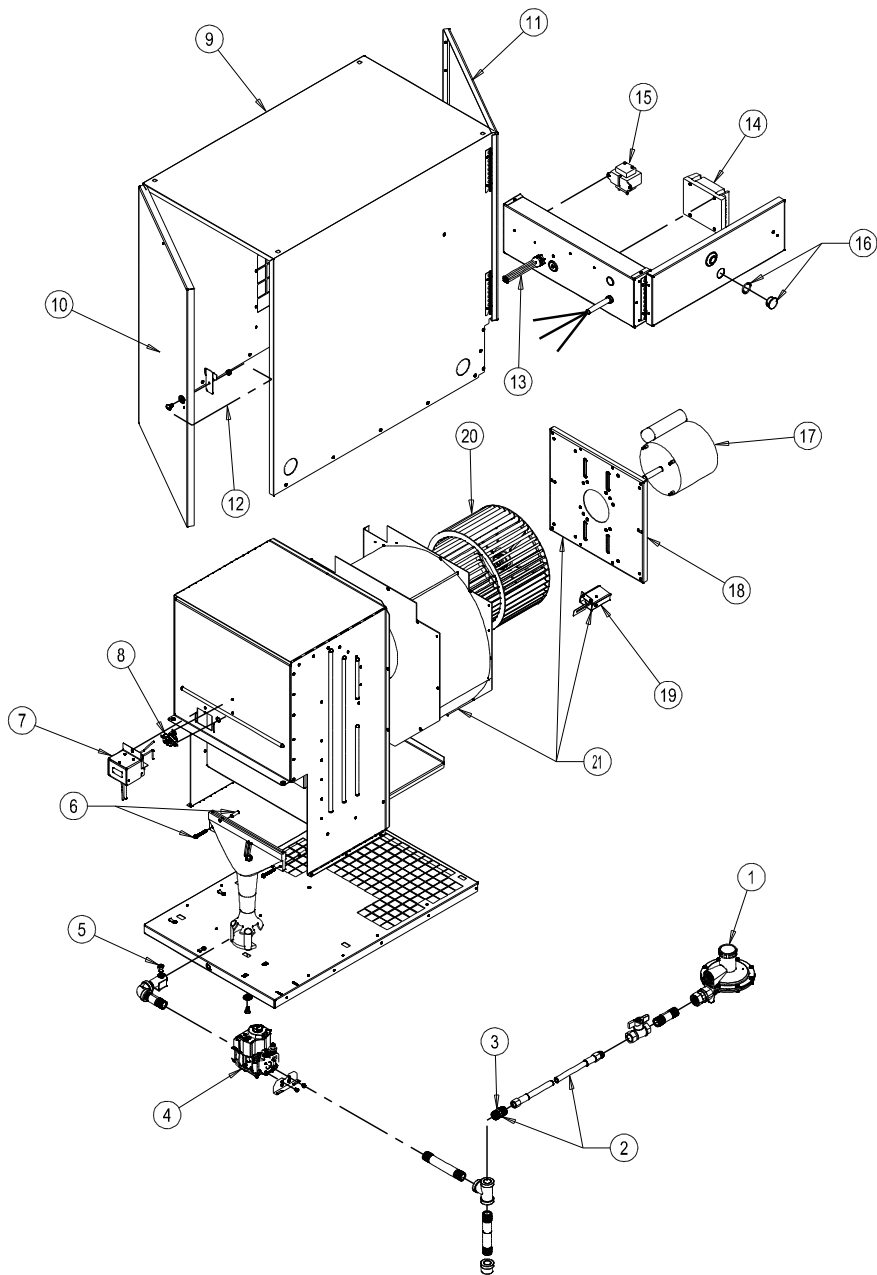


Parts List - AD060 / AD100

Item	Description		Part
1	Regulator, 2nd stage, vent over outlet	Butane/Propane Gas	550-06553*
	Regulator, 2nd stage, vent over side	Butane/Propane Gas	550-06665*
	Regulator, 2nd stage, vent over side	Natural Gas	500-07087*
2	Hose, 1/2" I.D. x 10' w/ 1/2 NPT x 1/2 NPS Hose Adapter		550-20714*
3	Adapter, hose, 1/2 NPT x 1/2 NPS		500-25873*
4	Gas control valve	AD060 / 100 Propane Gas	522076
		AD060 / 100 Natural Gas	522078
		AD060 and 100 Butane	573216
5	Orifice, burner	AD060 Butane /Propane Gas	570225
		AD100 Butane / Propane Gas	572410
		AD060 Natural Gas	570226
		AD100 Natural Gas	573012
6	Burner mounting hardware		570211
7a	Igniter / sensor assembly	AD060	573165
7b		AD100	570021
8	High limit switch	AD060	503933
		AD100	573099
9	Case assembly with doors and latches, galvanized steel / stainless steel	AD060	573430/573584
	Case assembly with doors and latches, galvanized steel / stainless steel	AD100	573426/573585
10	Door, burner end, galvanized steel / stainless steel		573440/573587
11	Door, motor end, galvanized steel / stainless steel		573429/573588
12	Latch kit		570228
13	Ignition control		524900
14	Transformer, 220/24 v.		571900
15	Window plug with o-ring		570002
16	Wire kit with harness (all brood heater wiring)		573166
17	Motor, ball bearing	AD060	572971
		AD100	571929
18	Motor mount	AD060	573344
		AD100	570383
19	Fan wheel	AD060	572969
		AD100	571928
20	Air proving switch	AD060	570027
		AD100	573038
21	Fan housing, with air proving switch motor mount	AD060	572990
		AD100	573039

*Accessory - Not supplied with heater

Parts List - AD250



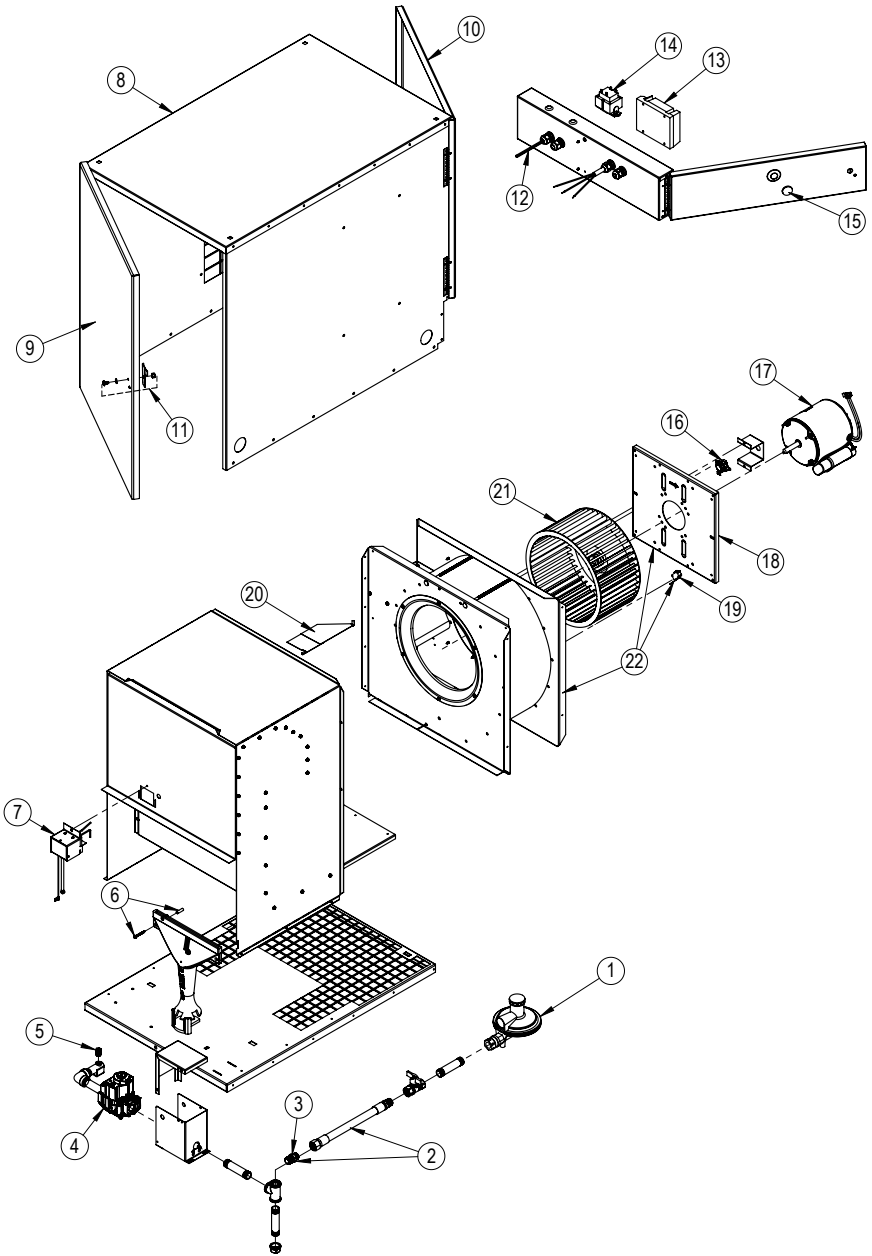
Service Parts Identification Schematic

AD250

Item	Description		Part
1	Regulator, 2nd stage, vent over outlet	Butane/Propane Gas	550-06553*
	Regulator, 2nd stage, vent over side	Butane/Propane Gas	550-06665*
	Regulator, (5 PSIG Inlet, 13.5 outlet)	Natural Gas	500-24414*
2	Hose, 1/2" I.D. x 10' w/ 1/2 NPT x 1/2 NPS Hose Adapter		550-20714*
3	Adapter, Hose, 1/2 NPT x 1/2 NPS		500-25873*
4	Gas control valve	Propane Gas	522076
		Natural Gas	522078
		Butane Gas	573186
5	Burner orifice	Butane / Propane Gas	570053
		Natural Gas	570054
6	Burner mounting hardware		570211
7	Igniter and sensor assembly		570021
8	High limit switch		505566
9	Case assembly with doors and latches, galvanized steel/stainless steel		572421 / 573586
10	Door/burner end, galvanized steel / stainless steel		570062 / 573589
11	Door, motor end, galvanized steel / stainless steel		572420 / 573590
12	Latch kit		570228
13	Wire kit, with harness (all brood heater wiring)		570103
14	Ignition control		524900
15	Transformer, 220/24 volt		571900
16	Window plug with o-ring		570002
17	Motor, ball bearing 240/50/1		571902
	230/60/1		508635
18	Motor mount		570251
19	Air proving switch		500-24157
20	Fan wheel		570481
21	Fan housing with air proving switch, and motor mount		524167

*Accessory - Not supplied with heater

Parts List - AD325



www.lbwhite.com

* Accessory - Must be ordered separately.

Service Parts Identification Schematic

AD325

Item	Description	Part
1	Regulator, (5 PSIG Inlet, 13.5 Outlet)	Natural Gas 500-24414*
2	Hose, 1/2" I.D. x 10' w/ 1/2 NPT x 1/2 NPS Hose Adapter	550-20714*
3	Adapter, Hose, 1/2 NPT x 1/2 NPS	500-25873*
4	Gas control valve	Natural Gas 550-22190
5	Burner orifice	Natural Gas 570162
6	Burner mounting hardware	570211
7	Igniter and sensor assembly	570021
8	Case assembly with doors and latches, stainless steel	573633
9	Door, burner end, stainless steel	573634
10	Door, motor end, stainless steel	573635
11	Latch kit	570228
12	Wire kit, with harness (all brood heater wiring)	570103
13	Ignition control	524900
14	Transformer, 220/24 volt	571900
15	Window plug with o-ring	570002
16	High limit switch	505566
17	Motor, ball bearing	572666
18	Motor mount	570251
19	Air proving switch	502680
20	Flapper sail	570212
21	Fan wheel	570440
22	Fan housing with air proving switch, and motor mount	500-08798

* Accessory - Not supplied with heater

Notes

Notes

Warranty Policy

HEATER

L.B. White Company, LLC warrants that the component parts of its brood heater are free from defects in material and workmanship, when properly installed, operated, and maintained in accordance with the Installation and Maintenance Instructions, safety guides and labels contained with each unit. If, within 12 months from the date of purchase by the end user, any component is found to be defective, L.B. White Company, LLC will at its option, repair or replace the defective part or brood heater, with a new part or brood heater, F.O.B., Onalaska, Wisconsin. Registering your product online with L.B.White will automatically qualify a unit and its component parts for warranty consideration. If a product has not been registered with L.B.White, a copy of the bill of sale will be required to establish warranty qualification. If neither is available, the warranty period will be 12 months from date of shipment from L.B. White.

PARTS

L.B. White Company, LLC warrants that replacement parts purchased from the company and used on the appropriate L.B. White equipment are free from defects both in material and workmanship for 12 months from the date of purchase by the end user. Warranty is automatic if a component is found defective within 12 months of the date code marked on the part. If the defect occurs more than 12 months later than the date code but within 12 months from the date of purchase by the end user, a copy of a bill of sale will be required to establish warranty qualification.

The warranty set forth above is the exclusive warranty provided by L.B. White, and all other warranties, including any implied warranties or merchantability or fitness for a particular purpose, are expressly disclaimed. In the event any implied warranty is not hereby effectively disclaimed due to operation of law, such implied warranty is limited in

duration to the duration of the applicable warranty stated above. The remedies set forth above are the sole and exclusive remedies available hereunder. L.B. White will not be liable for any incidental or consequential damages directly or indirectly related to the sale, handling or use of the equipment, and in any event L.B. White's liability in connection with the equipment, including for claims based on negligence or strict liability, is limited to the purchase price.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

To register your product and ensure full warranty, go to http://www.lbwhite.com/customer_care_center/product-registration/. Please have the serial number(s) and model(s) handy for the products you are registering.

Service

Contact your local L.B. White dealer for replacement parts and service. You may also call the L.B. White Company, LLC at 001-608-783-5691, for assistance, or email us at customerservice@lbwhite.com. Be sure that you have your brood heater model number and configuration number when calling.



WORLD PROVIDER - INNOVATIVE HEATING SOLUTIONS

411 Mason Street, Onalaska, WI 54650

001-608-783-5691

001-608-783-6115 (fax)

www.lbwhite.com



Guardian

农用牲畜棚舍育雏取暖器

AD060	17.6 千瓦
AD100	29.3 千瓦
AD250	73.3 千瓦
AD325	95.3 千瓦

丙烷、丁烷或者天然气三种燃料配置

本手册可于www.lbwhite.com网站在线查看

所有用户请注意

本育雏取暖器是作为向农用牲畜棚舍供暖的燃气直燃循环育雏取暖器而设计和开发, 经批准可安装于室内或室外。倘若您想要把本产品用于非其预期用途的任何场合, 请联系当地代理或美国L. B. White, 后者的电话是 001-608-783-5691。
www.lbwhite.com



恭喜!

您购买了时下最好的农用棚舍育雏取暖器。

您的新L.B.White育雏取暖器包含了由最富经验的供暖产品制造商采用最新技术, 为您带来更大收益。

我们L.B.White公司全体同仁真诚感谢您对本公司产品的信赖, 并且欢迎您提出宝贵意见或建议.....
请拨001-608-783-5691致电本公司。

**请参见
内部装配
说明**

请查阅内部海拔信息



扫描本QR码
用您的智能电话或访问
<http://i.youku.com/lbwhite>即可
观看L.B.White公司育雏取暖器的
维护录像。*

* 须在您的安卓或苹果手机上安装二维码识别应用程序

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警告

标准设备应置于海拔 0 - 610 米处方可实现最大工作效率。

海拔过高将会导致设备无法正常运作，同时伴随一定风险。
公司正考虑推出可用于不同海拔高度的设备。

如果您需要在高海拔地区使用本产品，但在订购时又无法知悉该型号产品所适用的海拔高度，请联系我们寻求技术支持。

通用危害警告

- 不遵守随本育雏取暖器提供的注意事项和说明能够导致：
 - 死亡
 - 严重身体受伤或烧伤
 - 由起火或爆炸造成的财产损失或损失
 - 通风不良或一氧化碳中毒引起窒息
 - 触电
- 安装或使用本产品前请通读本《用户手册》。
- 本育雏取暖器应由经过适当培训的维修人员进行修理或安装。
- 请保存本《用户手册》以备日后使用和参考。
- 《用户手册》和更换标签可免费提供。如需协助，请拨打001-608-783-5691与L.B.White公司联系。

警告

- 在育雏取暖器的燃气入口处必须提供适当的燃气供应压力。
- 适当的燃气供应压力请参阅育雏取暖器的参数标牌。
- 在育雏取暖器入口处高于最大入口压力的燃气压力能够造成起火或爆炸。
- 起火或爆炸能够导致严重受伤、死亡、棚舍毁损或牲畜损失。
- 在育雏取暖器入口处低于规定最小入口压力的燃气压力可能造成不当燃烧。
- 不当燃烧能够导致窒息或一氧化碳中毒，因此可能给人畜带来严重伤害或死亡。

警告

起火与爆炸危险

- 不适合住宅或休闲车使用。
- 在住宅或休闲车内安装本育雏取暖器可能导致起火或爆炸。
- 起火或爆炸能够造成财产损失或人身伤亡。

警告

起火与爆炸危险

- 请确定在固体可燃物与育雏取暖器之间保持安全的距离。
- 固体可燃物包括木头或纸制品、羽毛、秸秆及粉尘。
- 请勿在包含或可能包含挥发性或空气中可燃物的空间内使用本育雏取暖器。
- 挥发性或空气中可燃物包括汽油、溶剂、漆料稀释剂、粉尘颗粒或不明化学物质。
- 不遵守这些指示可能导致起火或爆炸。
- 起火或爆炸能够造成财产损失或人身伤亡。

为了您的安全

请勿在本育雏取暖器或任何其育雏取暖器附近存放或使用汽油或其他易燃气体或液体。

为了您的安全

倘若闻到燃气的味道：

1. 打开窗户。
2. 请勿触摸电开关。
3. 熄灭任何明火。
4. 立即打电话给燃气供应商。

规格

		AD060	AD100	AD250	AD325	
最大输入/小时(千瓦)		17.6	29.3	73.3	95.3	
支持燃烧的必要通风量 (立方米/小时)		408	680	1,869	2,888	
在燃烧器歧管入口处实现 输入调节的合格入口燃气 供应压力(千帕/毫巴/英 寸水柱)	丙烷	2.50/25.5/10.0			-	
	天然气	1.0/10.0/4.0			0.87/8.7/3.5	
	丁烷丙烷	2.00/20.0/8.0		2.24/22.4/9.0	N/A	
在育雏取暖器入口处 实现输入调节的合格 入口燃气供应压力 (千帕/毫巴/英寸水 柱)	丙烷	最大	3.40/34.0/13.5			
		最小	2.74/27.4/11.0			
	天然气	最大	3.40/34.0/13.5			
		最小	1.75/17.5/7.0			
	丁烷 丙烷	最大	3.40/34.0/13.5			-
		最小	2.74/27.4/11.0			-
马达特征瓦/转/分		滚珠轴承				
		50/1450	150/1300	186/1150	373/950	
电源(伏/赫/相)		220-240/50/1		220-240/50/1 230/60/1	220-240/50/1	
电流(安)	启动	1.2	2.0	3.5 (220-240/50/1) 4.5 (230/60/1)	5.4	
	连续运行	0.4	1.2	2.6 (220-240/50/1) 3.5 (230/60/1)	2.6	
尺寸 长x宽x高(厘米)		54x36x46	75x36x46	78x46x72	91.5x56.5x76	
与邻近可燃材 料的最小安全 距离(米)	上面	0.3				
	两侧	0.3				
	背面	0.3				
	鼓风机出口	1.83				
	燃气供应	液化气供应- 1.83 天然气- 不适用				
燃气耗量/小时	丙烷	1.26	2.10	5.26	-	
	天然气	1.70	2.83	7.08	9.20	
	丁烷丙烷	1.26	2.10	5.26	-	

注意: 丁烷/丙烷型号配置中表明使用丁烷为燃料时输出全部功率。当育雏取暖器使用丙烷为燃料运行时, 供暖功率会减少约11%的输出。

一般信息

本《用户手册》涵盖本育雏取暖器通常使用的全部选项和附件。然而，用户购买的配置可能并未包括某些选项或附件。

在打电话寻求技术服务协助或其他具体信息时，请切记准备好型号、配置号及序号。这些信息都在参数标牌上。参数标牌位于燃烧器端或马达端门的内侧。

本手册将告诉您如何操作和保养您的设备。请让合格安装人员与您一起浏览本手册，从而让您完全理解此育雏取暖器及其工作原理。

燃气供应管线安装、育雏取暖器安装、以及育雏取暖器维修，都需要持续的专家培训和对燃气育雏取暖器的知识，并且不应由非合格人员来尝试进行。必要资格的定义请见第6页。

如需协助，或有关于本设备或其应用的任何疑问，请咨询您当地的绿博温特(L. B. White)经销商或者绿博温特(L. B.White)。

绿博温特(L. B. White)的方针是不断完善其产品，并因此保留不经通知而更改规格与设计的权利。

安全注意事项

警告 窒息危险

- 请勿用本育雏取暖器向人类住所供暖。
- 请勿用于不通风场所。
- 不得堵塞燃烧和通风气流。
- 必须提供适当通风，从而可以支持所用育雏取暖器的助燃空气要求。
- 请参阅育雏取暖器的《用户手册》、育雏取暖器的参数标牌，或者与L.B. White公司联系，确定育雏取暖器的助燃空气通风要求。
- 缺乏适当的通风将导致不当燃烧。
- 不当燃烧能够让人一氧化碳中毒，从而造成严重伤害或死亡。一氧化碳中毒的症状可能包括头痛、头晕、呼吸困难。
- 不当燃烧影响牲畜的症状可能为疾病、饲料转化率降低或死亡。

燃气气味

液化石油气和天然气含有人造添加剂，目的在于能够探测到燃气泄漏。倘若发生燃气泄漏，您应能够闻到气味。

这是您需要立即采取行动的信号！

- 请勿采取任何有可能点燃燃气的行动。请勿操作电开关。请勿拔出任何电源或延长线插头。请勿划着火柴或有任何其他火焰。请勿使用电话。
- 立即通知所有人撤离该棚舍并远离该区域。
- 关闭所有燃气供应阀。
- 液化石油气比空气重且可能在低洼区域沉积。如果有理由怀疑泄漏，请远离所有低洼区域。
- 借用邻居的电话打给燃气供应商和消防队。请勿重新进入该棚舍或区域。
- 留在该棚舍外面并远离该区域，直至消防人员和燃气供应商确认已经安全。
- 最后，让燃气维修人员和消防人员检查有无燃气泄漏。在返回前让他们给该棚舍和区域通风。必须由经过适当培训的维修人员修复该泄漏，确认没有其他泄漏，然后为你重新点燃有关设备。

气味消退 -- 没有闻到气味

- 有些人嗅觉不好。有些人闻不到液化气或天然气中所添加的人造化学物质的气味。您必须确定您能够闻到这些燃气中的添加剂。
- 请学习识别液化气和天然气的气味。当地燃气经销商会很高兴向您提供“刮开后闻闻”纸片。请借此来熟悉燃气的气味。
- 吸烟能够令您的嗅觉减退。长时间闻某种气味也会影响您对该气味的敏感性。
- 液化气和天然气中的添加剂没有颜色，并且其气味强度在某些情况下能够消退。
- 倘若有地下泄漏，燃气在土壤中的流动有可能滤掉添加剂。
- 液化气气味的强度可能随高度变化。因为液化气比空气重，低处的气味可能比较强。
- 请始终对燃气气味保持高度警惕。倘若您不断闻到任何燃气气味，不管多么轻微，都应该作为严重泄漏对待。请立即采取如前所述的行动。

注意 -- 需要牢记的关键点!

- 液化气和天然气具有独特的气味。学习识别这些气味。（请参阅前面的“燃气气味”和“气味消退”两节。）
- 如果您未曾接受维修液化气和天然气育雏取暖器育雏取暖器的适当培训，请勿试图点燃育雏取暖器，进行维修，或者对使用液化气或天然气燃料系统的育雏取暖器育雏取暖器做出任何调整。

即便您未曾接受维修育雏取暖器的适当培训，请始终对液化气和天然气的气味保持高度警惕。

- 围绕育雏取暖器及在育雏取暖器的连接处（例如软管和接头 等等）定期进行“嗅闻测试”，在任何情况下都属于良好的安全实践。倘若闻到哪怕很轻微的气味，立即与燃气供应商联系。切勿拖延!
1. 除非您有持续的专家培训和对燃气育雏取暖器的知识，请勿试图安装或维修育雏取暖器或燃气供应管线。

下面是维修和安装本设备的资格条件:

- a. 成为合格的燃气育雏取暖器检修人员，您必须拥有足够的培训和经验，来处理燃气育雏取暖器安装与维修的各种问题，包括育雏取暖器的安装、故障检修、问题零件更换及测试等任务。您必须能够让育雏取暖器进入安全正常连续工作状态。您必须通过阅读和遵守每台育雏取暖器随附的安全须知、标签、《用户手册》等资料，完全熟悉每个型号的育雏取暖器。
- b. 要成为合格的燃气安装人员，您必须有足够的培训和经验来处理燃气管线安装、修理及更改的各项任务，包括选择和安装适当的设备，以及选择要使用的适当管道和储罐规格。这些工作的完成必须遵守所有当地、省市及国家规范，并且符合制造商的要求。

2. L. B. White 育雏取暖器的全部安装和应用都必须遵守当地、包括适用的燃气系统、燃气安装、电气及安全规范。您当地的燃气供应商、有执照电工、消防队或类似的政府部门、或您的保险代理，将能够帮助您确定规范要求。
3. 请勿移动、搬运或维修在运行中或接有电源或燃料的育雏取暖器。
4. 本育雏取暖器可安装在易于清洗的区域。本育雏取暖器只可清洗外壳组件一见“清洁说明”。请勿洗涤育雏取暖器的内部。请只使用压缩空气、软刷或干布清洁育雏取暖器内部及其部件。外部冲洗后，在育雏取暖器完全干燥前请勿操作。在任何情况下，外部清洗后须等至少一个小时，方可再次使用育雏取暖器。
5. 为了安全起见，本育雏取暖器配备了手动重置高限开关和空气验证开关。绝对不可绕开任何安全装置操作本育雏取暖器。除非所有这些装置均功能完全正常，否则请勿操作本育雏取暖器。
6. 倘若育雏取暖器的门开着或移除，请勿操作。
7. 请勿把燃气容器或燃料供应软管定位在育雏取暖器出风口处。
8. 请勿阻挡育雏取暖器的空气入口或排放出口，否则可能造成不当燃烧或育雏取暖器部件损坏，从而导致财产或牲畜损失。
9. 软管组件须每年一次目视检查。倘若看到过度磨损，或者软管有切口，则在运转育雏取暖器前必须更换该软管。此软管组件在使用中须针对人畜流动、棚舍材料及与高温表面的接触加以保护。该软管组件须由制造商指定。请见零件清单。

10. 在育雏取暖器安装后、牲畜入住棚舍前或搬移时，检查有无燃气泄漏且功能是否正常。
11. 在重新迁移入牲畜前且至少每年一次，应由合格维修人员检查育雏取暖器是否工作正常。
12. 倘若育雏取暖器近期内不会用于给牲畜供暖，请始终确保关闭燃气供应。
13. 育雏取暖器配备三线电力系统。火线、零线和地线。育雏取暖器的电源线可带或者不带插头，并且插头带有或者没有地线插销。在任何情况下，育雏取暖器必须使用电源线中的地线正确连接至接地电源。未能正确使用接地插座会导致触电、人身伤害或者死亡。
14. 直燃式育雏取暖器会有三次试点火的过程。如果点火失败，控制系统就会封锁燃气阀门。如果在控制系统封锁之后闻到了燃气，请立即关掉所有燃气供应阀。不要重新点火，直到你可以确定所有聚集的燃气都吹散了。任何情况下，在至少五分钟内不要重新点火。
15. 就悬挂式安装而言，与育雏取暖器直接连接的刚性管道或铜管可能造成燃气在运动中泄漏，因此绝对不得采用。在悬挂式安装中只可使用经认可用于液化气和天然气的燃气软管组件。
16. 倘若在安装时不采用本育雏取暖器附带的燃气软管，则必须用适当规格的BS1387中等载荷镀锌钢管连接。（切勿使用铝管。）当用于输送天然气时，铜管须内部镀锡或有等效处理以耐硫。

安装说明



警告

起火或爆炸危险

能够造成财产损失、严重受伤或死亡。

- 在接线前切断供电以防触电或设备受损。
- 为了避免燃气的危险积聚，开始安装前在设备检修阀处关闭燃气供应，并且在安装完毕后进行燃气泄漏测试。
- 请勿强行燃气控制旋钮。燃气控制旋钮只可用手转动。绝对不可使用任何工具。倘若该旋钮不能用手操作，则该控制必须由合格维修技师进行更换。强行或试图修理可能导致起火或爆炸。

1. 在安装本育雏取暖器时请阅读全部安全注意事项并遵循L.B.White公司的建议。倘若在育雏取暖器的安装或搬移过程中，您怀疑有零件受损或有缺陷，请找合格维修单位来修理或更换。
2. 在使用前确定育雏取暖器已经正确定位且水平悬挂。遵守育雏取暖器与最近可燃材料的所有最小安全距离。最小安全距离在育雏取暖器铭牌和本手册第4页上列出。
3. 确定育雏取暖器有对其应用适当的二级燃气调压阀。在燃气供应管线上必须连接一个调压阀，从而确保燃气阀入口处的燃气压力始终维持在育雏取暖器参数铭牌上规定的范围内。请联系L. B. White公司。
4. 请勿超出育雏取暖器参数铭牌上压印的输入额定值。请勿超出参数铭牌上声明的燃烧器歧管压力。请勿使用与本育雏取暖器的具体输入额定值、燃料类型配置及海拔高度所规定的节流孔口径不同的规格。
5. 此育雏取暖器可用于室内或室外。如果要吧育雏取暖器安装在室外，请只使用室外安装套件中提供的管道系统。

6. 在室外安装中，育雏取暖器的安装应在地面以上至少46厘米处或积雪不会阻挡育雏取暖器空气入口的高度。
7. 此机的燃气调压阀（带释压阀）应安装在棚舍外面。棚舍内的任何调压阀必须可向室外适当放空。调压阀安装须始终遵守当地、省市及国家规范。
8. 所有燃气压力调压阀都必须严格按照制造商的安全须知进行安装。每个调压阀都附带有对此的说明。
9. 确定在育雏取暖器内一同运到的全部附件都已取出并安装，这包括空气分离器、软管、调压阀等等。
10. 确定在燃气阀门入口安装一个沉积物捕集器，从而防止异物（管道填塞料、碎屑、鳞片）进入燃气阀门。吸入燃气阀门的碎片或会令阀门失灵，引起严重的燃气泄漏，进而导致可能的起火或爆炸，造成产品、棚舍、甚至生命损失。正确安装的沉积物捕集器将阻止异物进入燃气阀门，从而保障该重要安全部件的安全工作。
11. 与管道系统连接的任何育雏取暖器都必须有一个易于接近的经认可手动截流阀，该阀门的安装位置与所供气的育雏取暖器的距离应在1.83米之内。
12. 使用经认可的泄漏探测器对所有燃气接点进行燃气泄漏检查。燃气泄漏测试应按如下说明完成：



警告

起火与爆炸危险

- 请勿使用明火（火柴、火炬、蜡烛等等）来检查燃气泄漏。
- 请只使用经认可的泄漏探测器。
- 失于遵从本警告能够导致起火或爆炸。
- 起火或爆炸能够造成财产损失或人身伤亡。

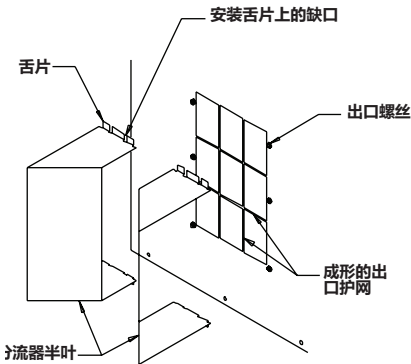
- 用经认可的泄漏探测器检查育雏取暖器燃气控制上游的全部管道接点、软管接点、配件及联管件。
 - 万一探测到燃气泄漏，检查有关部件是否洁净，在进一步旋紧前适当施加管道填塞料。
 - 酌情进一步旋紧该等燃气接点以停止泄漏。
 - 在全部接点都已检查完毕且任何泄漏都已停止后，启用主燃烧器。
 - 在主燃烧器点火的过程中站远一些，以免因隐蔽泄漏的回火而受伤。
 - 当主燃烧器在工作时，用经认可的泄漏探测器检查全部管道接点、软管接点、配件及联管件，以及燃气控制阀的入口和出口接点。
 - 倘若探测到泄漏，检查有关部件的螺纹区域是否洁净，在进一步旋紧前适当施加管道填塞料。
 - 酌情旋紧该燃气接点以停止泄漏。
 - 倘若泄漏无法停止，酌情更换有关的零部件。
 - 在继续运行前确认已经发现并修复全部燃气泄漏。
13. 育雏取暖器安装完毕后必须由合格维修单位检查运行燃气压力是否适当。
 14. 依照育雏取暖器上或《用户手册》内的说明点火。
 15. 为了确保育雏取暖器正常工作，极其重要的一点在于采用适当尺寸与类型的燃气供应管线。请与燃气供应商联系，取得适当的管线尺寸确定和安装。
 16. 本育雏取暖器已配置为只使用液化石油气或者天然气。请勿将育雏取暖器用于液体汽化系统或应用。如有任何疑虑，请咨询美国L.B.White公司。
 17. 如同所有机电装置一样，恒温器最终有可能失灵。恒温器故障可能造成供暖不足或过度的情况，因而可能损坏关键产品和（或）造成牲畜伤亡。需要备用控制系统加以保护；该系统需要限制最高和最低温度并发出适当的警报。
 18. 请花些时间学习本《用户手册》，从而弄懂如何操作和保养本育雏取暖器。确定您知道如何切断向棚舍及单个育雏取暖器的燃气供应。如有任何疑问，请咨询当地燃气供应商。
 19. 在进行任何维修程序时发现的任何缺陷都必须消除，并且有问题的零件必须立即更换。育雏取暖器再次投入使用前必须由合格维修人员重新测试。

空气分流器安装说明 (零配件 - 须单独订购)

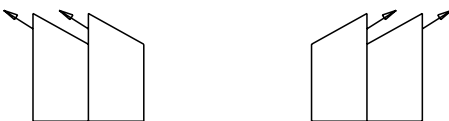
(育雏取暖器出口的外观可能因型号不同而异。)

1. 空气分流器可安装在育雏取暖器的出口，从而为育雏取暖器吹出的暖风确定方向。请参阅图1。空气分流器的安装可让暖风有两个45度路径或沿一个45度方向流动。
2. 空气分流器在安装前可能需要手工成形。请使用提供的穿孔做出90度弯曲。分流器的两个半叶应具有图1中所示的形状。
3. 空气分流器每个半叶上的舌片将弹入到鼓风机出口内在外壳组件内部与鼓风机外壳出口之间。倘若带缺口的舌片无法弹入到鼓风机出口内，松开鼓风机出口螺丝。这将提供插入舌片的空隙。安装后重新旋紧螺丝。

图1

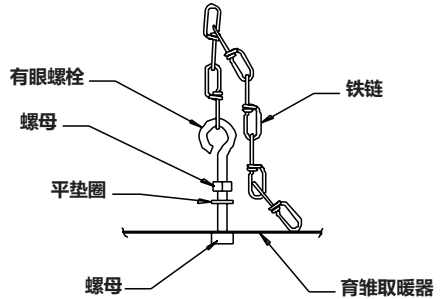


替代的空气分流器设置



1. 按照图2组装，牢牢上紧全部有眼螺栓。

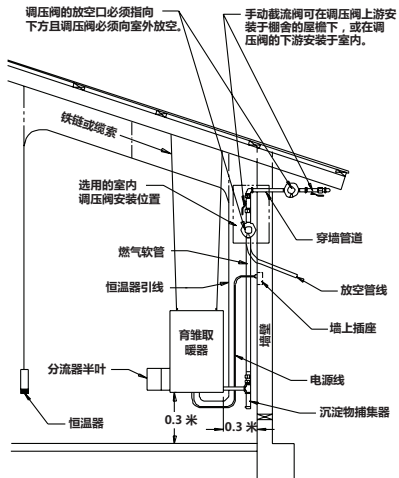
图2



2. 确定育雏取暖器得到可靠拴系且水平悬挂。(请沿横向和纵向检查。)
3. 图3所示为典型室内安装。在任何牲畜棚舍内都必须考虑周全，确保育雏取暖器远离牲畜，以免牲畜撞到育雏取暖器，令后者松脱其固定，或者以任何方式损坏育雏取暖器或其燃气供应管线。请确定遵守本《用户手册》规格节内和育雏取暖器参数标牌上声明的与可燃材料的最小净空距离要求。

图3

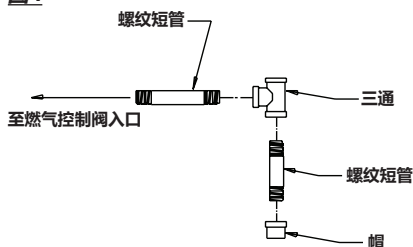
附注：调压阀应总是安装在室外。倘若由于特殊情况而不得不把调压阀安装在室内，调压阀的放空阀必须使用放空管线排放到室外；该管线不得小于放空管的开口。



沉积物捕集器组件

将三通、螺纹短管及帽组装并牢靠旋紧。沉积物捕集器组件必须总是垂直安装。请使用耐液化气的螺纹脂。使用经认可的泄漏探测器对所有燃气接点进行燃气泄漏检查。

图4



恒温器安装

(零配件 - 须单独订购)

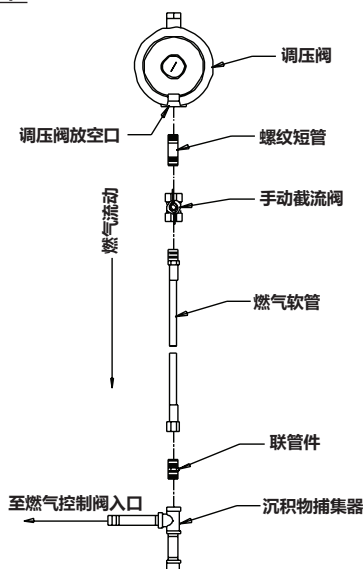
直接将恒温器套件与育雏取暖器的控制盒连接:

- 打开控制盒。
- 取下将变压器的24伏输出与W端子连接的黄色导线。
- 取下控制盒背后或底部的塑料孔塞，让恒温器套件的导线穿过此洞。
- 将恒温器套件的黑色导线连接到变压器的24伏输出端子上。
- 将恒温器套件的白色导线连接到点火控制盒的W端子上。
- 在控制盒的入口孔处围绕导线安装张力释放套（已随恒温器导线组件提供）。
- 关闭并扣住控制盒。
- 启动育雏取暖器并检查是否工作正常。

手动截流阀、软管及调压阀组件

- 在螺纹接点总是使用经认可适合液化气应用的螺纹脂。
- 按照插图组装所有部件。此图只是要显示这些部件的通常组装。
- 牢靠旋紧所有接点。
- 使用经认可的泄漏探测器对所有燃气接点进行燃气泄漏检查。

图5

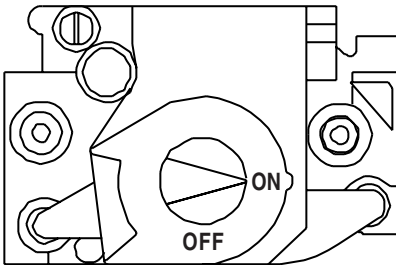


启动说明

在育雏取暖器由合格燃气育雏取暖器维修人员安装完毕后，请采取首次启动的第1至6步。正常启动时只需把恒温器设定在室温之上，育雏取暖器就会启动。

1. 开启所有手动燃料供应阀门，用经认可的泄漏探测器检查有无燃气泄漏。育雏取暖器上的燃气控制阀组件包括了手动截流功能，位于燃气控制与接线盒内。打开该盒，确认阀门上的指针已经转到“开”位置。关闭并扣住该盒。见图6。

图6



2. 把电源线连接到经认可的电源插座上。
3. 把恒温器（若已提供）设定在希望的室温上。
4. 育雏取暖器本身包括一个直接点火控制模块，为了给控制点火过程计时和监测安全功能。控制模块在控制外壳内。在控制模块上有一个红色的发射二极管（LED）。这个LED指示灯代表了育雏取暖器的运行状态。LED灯在控制盒外可以直接观测到。LED灯一直亮着说明育雏取暖器运行正常。任何不同的LED的灯闪都表明了育雏取暖器在运行中出现了问题。根据附在育雏取暖器风机侧开门处的故障诊断的贴纸来帮助诊断问题。只有合格的经过培训的人员方可维修育雏取暖器。
5. 在重启加热的时候，风机会启动并运行5秒。这个预加热的过程是在点火之前一个安全特性和正常的操作特征。5秒之后，点火器会开始点火。

附注：新安装的燃气软管内夹带有空气是正常现象。育雏取暖器可能需要不止一次试点火，才能把管线内的空气最终清除并实现点火。

6. 这个点火控制会有六次试点火。每一次的试点火会持续大概10秒。如果点火失败，第一个三次试点火会在40秒内发生。在第三次试点火之后，会有一个15分钟的等待时间，再进行点火。十五分钟过去之后，再有三次试点火。如果点火在最后一次试点火结束后仍失败，系统将会封锁，出现三闪的指示灯标志。

停机说明

倘若育雏取暖器因为清洁、保养或修理而需要停机，请采取第1到5步；否则只需把恒温器转到关闭或无供暖，即可实现标准停机。

1. 关闭全部手动燃料供应阀门。
2. 在育雏取暖器有火时，让育雏取暖器烧掉燃气供应软管内的多余燃料。
3. 把燃气控制上的指针转到关位置。
4. 把恒温器转到关闭或无供暖位置。
5. 把育雏取暖器与电源断开。

清洁说明



警告

起火、烧伤及爆炸危险

- 本育雏取暖器的燃气管道、安全及空气流等系统均包含机电部件。
- 由于粉尘、脏污、磨损、老化，或因牲畜棚舍内的腐蚀性气氛，此等部件可能失灵或出现故障。
- 定期清洁与检查，以及适当的保养，乃是避免严重受伤或财产损失的必要措施。

1. 清洁前请关闭所有燃气供应阀门并断开电源。
2. 育雏取暖器上的脏污或粉尘应定期清除：
 - a. 在每群牲畜走后或在棚舍重新迁入牲畜前，用压缩空气或软刷对育雏取暖器内外进行一次全面清洁。此时应清除马达壳上的粉尘，以防止运行过热而导致育雏取暖器停运。
 - b. 至少每年一次，对育雏取暖器进行一次彻底清洁。此时应拆下风机与马达总成，用刷子或压缩空气清洁风机叶轮，注意清洁每个风机叶片。确定燃烧器空气入口的文氏管口和铸件喉部均无粉尘积聚，并且热室顶部与机壳内侧之间也没有粉尘。此外还应按照本《用户手册》的维护说明，拆下火焰传感器并加以清洁。
 - c. 当用水洗时，务请遵守本清洁说明中的警告。同样的警告也已贴在育雏取暖器上。



警告

本育雏取暖器只可清洗外壳组件，并且前提是：

- A. 育雏取暖器已经与电源断开。
- B. 全部检修面板均已牢靠关闭。
- C. 喷水头在喷水时与育雏取暖器的距离不少于2米。
- D. 育雏取暖器每面冲洗10秒，水压不得超过3.1巴。
- E. 育雏取暖器在至少一个小时内或彻底干燥前不与电源重新连接。

对育雏取暖器的不当清洁能够造成严重人员伤亡或财产损失，这是由于水和（或）清洗液：

1. 进入电部件、接点及导线内，造成触电或部件故障。
2. 在燃气控制部件上造成腐蚀，从而导致燃气泄漏且由此引起火灾或爆炸。

请用柔软干刷或布或压缩空气清洁育雏取暖器的内部零件。

维护指导

每次使用前：

- 每年一次，请燃气供应商检查全部燃气管线有无泄漏或阻碍，并且清除沉积物捕集器内可能积累的任何异物。
- 育雏取暖器周围须保持空旷，不得有可燃材料、汽油及其他易燃气体和液体。
- 调压阀必须定期检查，确定调压阀放空口未被阻挡。调压阀上的碎片、昆虫、虫巢或冰雪能够阻挡放空口并造成育雏取暖器处压力过高。
- 确认育雏取暖器上所有的标志都是看得清的（警示牌，开始/停止，电路图，图表等）。确保没有被剪、撕裂或者各种损坏。任何损坏的标签都可以立即联系 L.B.White公司进行免费更换。
- 如果发现缺陷，则应更换全部的燃气管线组件。
- 观察育雏取暖器的电子连接处。如果任何接线端有被腐蚀的情况请立即更换。
- 根据本手册中的说明，检查育雏取暖器的气体连接泄漏问题。

每年：

- 每年一次，请燃气供应商检查全部燃气管线有无泄漏或阻碍，并且清除沉积物捕集器内可能积累的任何异物。
- 调压阀有可能用坏和失灵。请燃气供应商查看所有已安装调压阀的日期码，并且检查向育雏取暖器输送的压力，从而确保调压阀在可靠工作。
- 每年检查育雏取暖器的高限开关。参阅本手册中的说明。

维护说明

警告 烧伤危险

- 在育雏取暖器停运后，育雏取暖器表面在一段时间内仍然很热。
- 请等育雏取暖器凉下来，然后再进行维护、保养或清洁。
- 失于遵从本警告将导致烧伤。

警告 起火与爆炸危险

- 请勿分解或企图修理任何育雏取暖器部件或燃气阀组部件。
- 所有零部件，倘若发现问题，都必须更换。
- 失于遵从本警告将导致起火或爆炸，从而造成财产损失或人身伤亡。

1. 除非您的维护程序必须使用燃料和（或）带电，否则在维护前请关闭燃料供应阀门并断开电源。

2. 打开侧面板以接近育雏取暖器部件。

3. 断开要更换部件的电线。

4. 将所怀疑的零件短接，进而从电路中排除，能够测试恒温器和高限开关：

- 重新连接电源并打开燃料供应阀门。
- 倘若育雏取暖器点火，则该部件有问题且必须更换。
- 勿在短接该部件的情况下操作育雏取暖器。立即更换该零件。
- 检查部件的一个替代方法是进行导通检查。

5. 请勿短接空气验证开关，否则点火控制盒将不会允许育雏取暖器运转。请测试空气验证开关的导通，并且更换有问题的开关。

6. 重新组装时请反过来执行相应的维护程序。确定旋紧所有燃气接点。

7. 维护后请启动育雏取暖器以确定工作正常。使用经认可的泄漏探测器检查有无燃气泄漏。

8. 用压缩空气或柔软干布清洁育雏取暖器的节流孔。请勿使用锉刀、钻头、拉刀等清洁节流孔，否则可能加大该孔，造成燃烧或点火问题。更换不能适当清洁的节流孔。

马达与风机叶轮总成

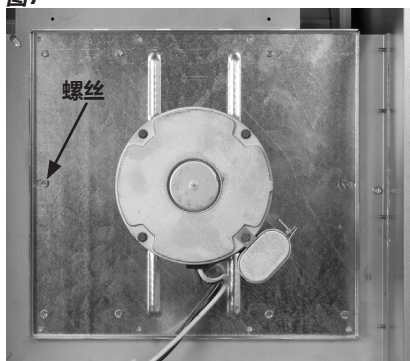
1. 取下马达安装板的螺丝，把风机与马达总成从外壳里提出来。见图7。

2. 松开风机叶轮上的方头定位螺钉。

3. 把风机叶轮从马达轴杆上拔下来。如有必要可使用卸轮器。

4. 取下马达安装板上固定马达的四（4）个螺母。

图7

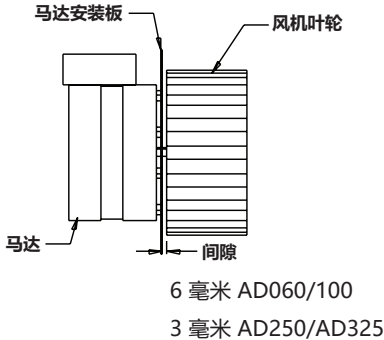


附注：

- a. 在把风机叶轮固定在马达轴杆上之前，必须按照下表中规定的间隙调整风机叶轮与马达安装板的间隔。

- 确定风机的定位螺钉在旋紧时处于马达轴杆的平面上。

图8



空气验证开关

空气验证开关位于育雏取暖器马达端的风机外壳上。此开关必须工作正常，育雏取暖器才可以开始点火过程。倘若空气验证开关在点火控制启动风机马达前就已闭合，或者在风机马达启动后收到供暖信号时不闭合，点火就不会发生。见图9a/9b。

如要维护AD060,AD100,AD250,图9a:

- 取下将此开关与支架固定在鼓风机外壳上的两 (2) 个金属板螺丝。
- 转动此开关，让开关臂上的桨片能够从风机外壳侧面上的长方形孔中拉出，然后取下整个组件。

AD325维修(图9b)：

- 取下两个装配螺帽，将空气验证开关从装配螺钉中取出

图9a

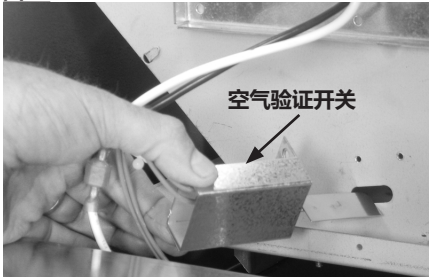
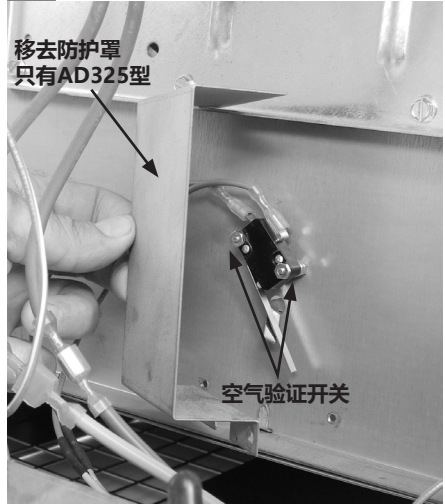


图9b



拨片 (帆状) AD325型

拨片位于风箱鼓风机出风的位置，和空气验证开关一起作用，在点火循环继续之前，检验风机是否可以达到正确的空气流。

如果拨片卡住了，拨片不会和空气验证开关啮合，点火不会进行。

确保拨片无阻碍的抬起，没有被风机卡住，没有尘土和其他碎屑杂物。

图10



点火器和火焰探测器

- 根据图11(AD100/250/AD325)或者图12(AD060), 来检修点火装置。
- 点火器/传感装置可能需要清理, 由于一段时间内灰尘和脏污的聚集, 影响点燃燃气和感应火焰的能力。清理的时候需要取下点火器/探头。
 - 如果电火花变弱, 用金刚砂布或者钢丝绒擦拭点火棒, 除去杂质。
 - 如果电火花够强育雏取暖器停止运行, 用金刚砂布或者钢丝球擦拭探测棒上的堆积杂质。
- 确保点火器的距离是3 毫米, 并且点火器的尖端在燃烧器端口上方, 根据下图所示。

图11

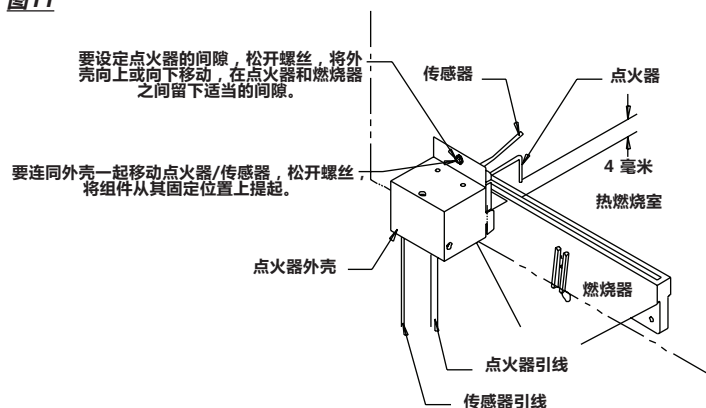
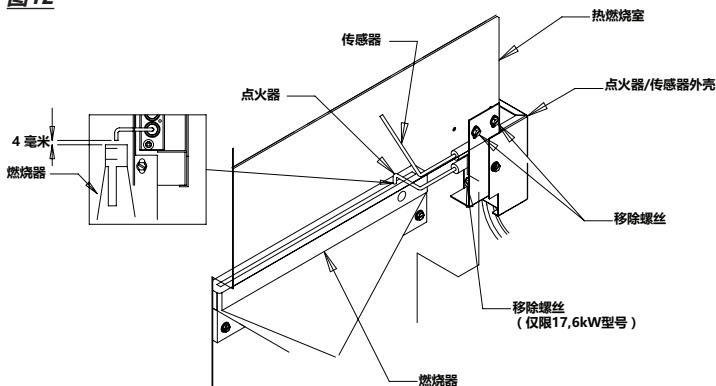


图12



测试手动重置高限开关

警告

起火危险

- 请勿在将高限开关旁通的情况下操作育雏取暖器。
- 在将高限开关旁通后操作育雏取暖器可能造成过热，因此可能起火，导致育雏取暖器或棚舍毁坏或牲畜损失。

本育雏取暖器利用一个高限热开关进行过热保护。该限制位于热室上，见图14。它连接在点火控制盒与燃气控制阀之间。

此开关具有两个常闭触点。倘若发生过热情况，此开关的触点将会分开，从而让燃气控制阀的电路开路。此高限开关应每年在彻底清洁时至少测试一次。

AD060/AD100/AD250型：高限开关位于燃烧腔，见图13a和13b。

AD325型：高限开关位于取暖器马达风扇罩的侧板上，见图14a和14b。

图13a

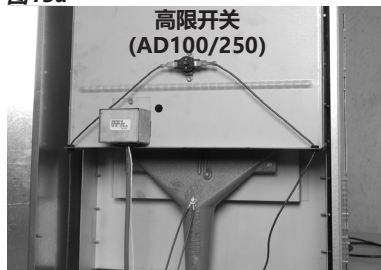


FIG. 13b

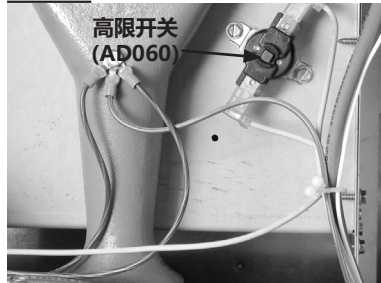
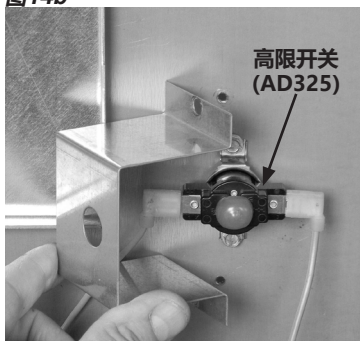


图14a



图14b



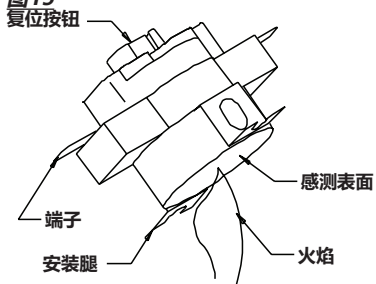
每年应至少对高限位开关进行一次测试（对取暖器进行彻底清洁时）。

1. 拆下此开关。握住开关的一个安装腿，用一个小火焰对准开关背面的感测部分。见图15。进行这个测试时注意不要烧熔开关的塑料外壳。
2. 在一分钟内应该就会听到开关里的爆裂声，这表明开关的触点已经分开。检查开关的两个端子之间是否不导电，以核实触点已经分开。
3. 让开关冷却大约一分钟，然后用力按下其

上的复位按钮。

4. 检查开关的两个端子之间是否导电，以核实触点已经接合。
5. 把该开关重新安装到育雏取暖器内。重新连接育雏取暖器的电源。启动育雏取暖器并检查是否工作正常。

图15



燃烧器节流孔和燃气控制阀

- 按照列出的顺序拆除下列项目：
 - 从燃气控制阀的入口拆除燃气管和沉积物捕集器。
 - 燃气入口孔处的塑料套。见图16。
 - 燃气控制阀入口处把阀门固定在其安装支架上的两个螺丝。见图16。
 - 把歧管固定到燃烧器和基座上的螺栓与垫圈。见图17。
- 酌情将燃气阀门与歧管提起并转动，让燃烧器节流孔脱离燃烧器。见图18。
- 酌情更换部件。

图16

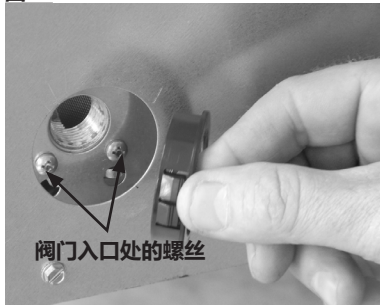


图17

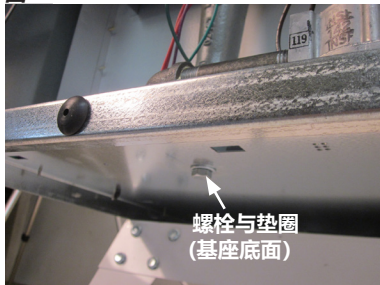


图18



点火控制盒

此控制盒会发送和接收多个电压以操作部件或检验部件的工作。如要对点火控制盒进行电压检查，请参阅下面内容及图19，弄清楚其端子标记。

L1: 至控制盒的交流220伏电。

IND: 由控制盒到马达的交流220伏。

LED: 和控制盒诊断灯线束相连

MV: 由控制盒到高限开关并然后到燃气控制阀的交流24伏。

PS2: 交流24伏由空气验证开关返回到控制盒。

PS1: 由控制盒到空气验证开关的交流24伏。

W: 来自变压器的交流24伏。
(无此电压点火控制盒将不能工作)

FS: 由控制盒到火焰传感器以验证燃烧器有火焰的微安级电流。

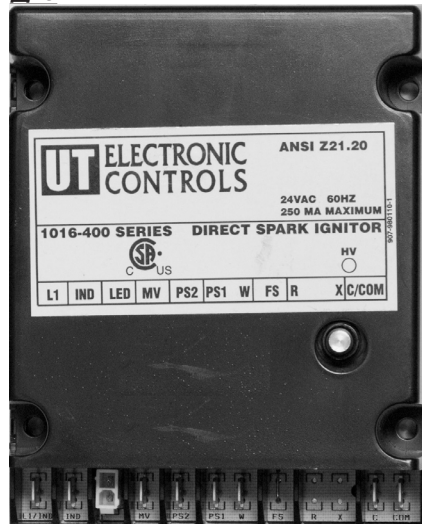
R: 无接口

X: 无接口

C/COM: 控制盒的地线。

为了弄清点火控制盒在收到供暖信号时的运作，也请参阅本手册的“动作序列”节。

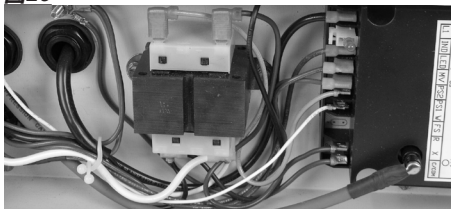
图19



变压器

把交流220伏降至交流24伏，从而向点火控制盒供电。没有来自此变压器的交流24伏，红色诊断指示灯不会发光，点火控制盒也不能工作。变压器的位置和输出端子参照请见图16。

图20



燃气压力检查

警告

- 请勿拆解燃气控制阀。
- 请勿试图更换燃气控制阀的任何部件。
- 倘若燃气控制阀总成有任何实际损伤，则必须整个更换该阀。
- 失于遵从本警告将导致起火或爆炸，从而造成财产损失或人身伤亡。

■ 下面解释了检查燃气压力的典型程序。

■ 取决于燃料类型，燃气压力会有不同。

请查看育雏取暖器上的参数标牌或本手册第4页，找到本程序应使用的具体压力数值。

在燃气阀门入口处测得的燃气压力为入口压力，在燃气阀门出口处测得的燃气压力为燃烧器歧管压力。

A. 准备

1. 取得两个能够测量至少9千帕的压力表。
2. 把育雏取暖器与电源断开，关闭至育雏取暖器入口的燃料供应阀门。

3. 打开燃烧器检修面板。

4. 用刷子或压缩空气清除燃气控制阀上及附近的任何粉尘与污物。

B. 仪表安装

1. 找到入口压力与出口压力抽头（见图21）。用3/16英寸内六角扳手取下压力抽头塞。

图21

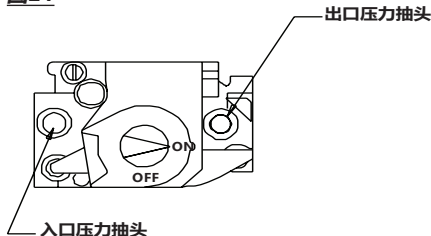
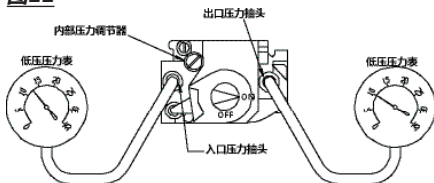


图22



落列显示的是所测的压力
始终参考参数标牌上的压力值

2. 在每个压力抽头上可靠连接一个压力表。

3. 打开通往育雏取暖器的燃料供应阀门，重新接通育雏取暖器的供电。

4. 启动育雏取暖器。

C. 读取压力

1. 在育雏取暖器运转中，这些压力表的读数应与参数标牌上的规定压力相符。
2. 入口和出口压力表的读数是否都与参数标牌上的规定压力相符？如果都符合，则无需进一步检查或调整。请转到第D节。
3. 倘若入口压力与参数标牌上的规定数值不符，则控制向育雏取暖器供气压力的调节阀需要调整。

4. 倘若入口压力正确，但燃烧器歧管压力与参数标牌上的规定数值不符，则燃气控制阀的内部压力调节器需要调整。调节器的位置见图22。

D. 完成

1. 一旦适当的入口压力和燃烧器歧管压力得到证实和（或）适当设置，关闭通往育雏取暖器的燃料供应阀门，让育雏取暖器烧完燃气供应管线内剩余的燃气。
2. 把育雏取暖器与电源断开。
3. 拆除这些压力表及连接软管。
4. 装回压力抽头塞并牢靠旋紧。检查有无燃气泄漏。

故障检修指南

开始故障检修前请通读本节。



警告

触电与烧伤危险

- 除非您经过了适当培训并且是符合资质的燃气取暖器检修人员，否则请不要尝试检修或维修此育雏取暖器。
- 对本系统进行故障检修可能需要对育雏取暖器进行带电电气操作。在育雏取暖器上工作时要极其小心。
- 失于遵从本警告能够造成财产损失和人身伤亡。

后面几页上的故障检修流程图提供了隔离设备问题的系统程序。这些图仅供合格的燃气育雏取暖器维修人员使用。除非您曾经得到适当培训，否则请勿维修这些育雏取暖器。

必要的测试设备

为了用最少的时间和精力来检修本育雏取暖器，您将需要下列测试设备。

- 数字万用表 - 用于测量交流和直流电压及电阻。
- 低压压力表 (00764) 用于按照参数标牌额定值检查燃气控制阀的入口与出口压力。

初始准备

- 目视检查育雏取暖器有无任何明显损伤。
- 检查全部导线有无松动的接头和磨损的绝缘层。

参阅本节中的系统动作序列，弄懂育雏取暖器在收到供暖信号时如何运作。弄懂点火模块和相关部件的动作序列很有必要，因为这直接关系到如何按照流程图解决问题。

点火控制模块具有自诊断能力。取决于诊断出来的问题，该模块上的红色指示灯将按照特定模式闪光。为了有效地使用流程图，您必须首先确定LED（发光二极管）诊断指示灯的闪光模式指明了什么问题。倘若该指示灯在闪光，其闪光模式之后会有一个停顿，然后会重复该闪光模式，直至有关问题得到纠正。在检修任何问题时，请从下表中找到要参考的页号。

问题 页号

LED诊断指示灯在收到供暖信号时没有发光 26

LED诊断指示灯在闪光:

A. 长闪 (2秒亮、2秒暗) 26
 B. 一次 26
 C. 两次 27
 D. 三次 28
 E. 四次 28
 F. 五次 28

只有在完成了每个步骤且流程图中建议要更换时，才应更换部件。

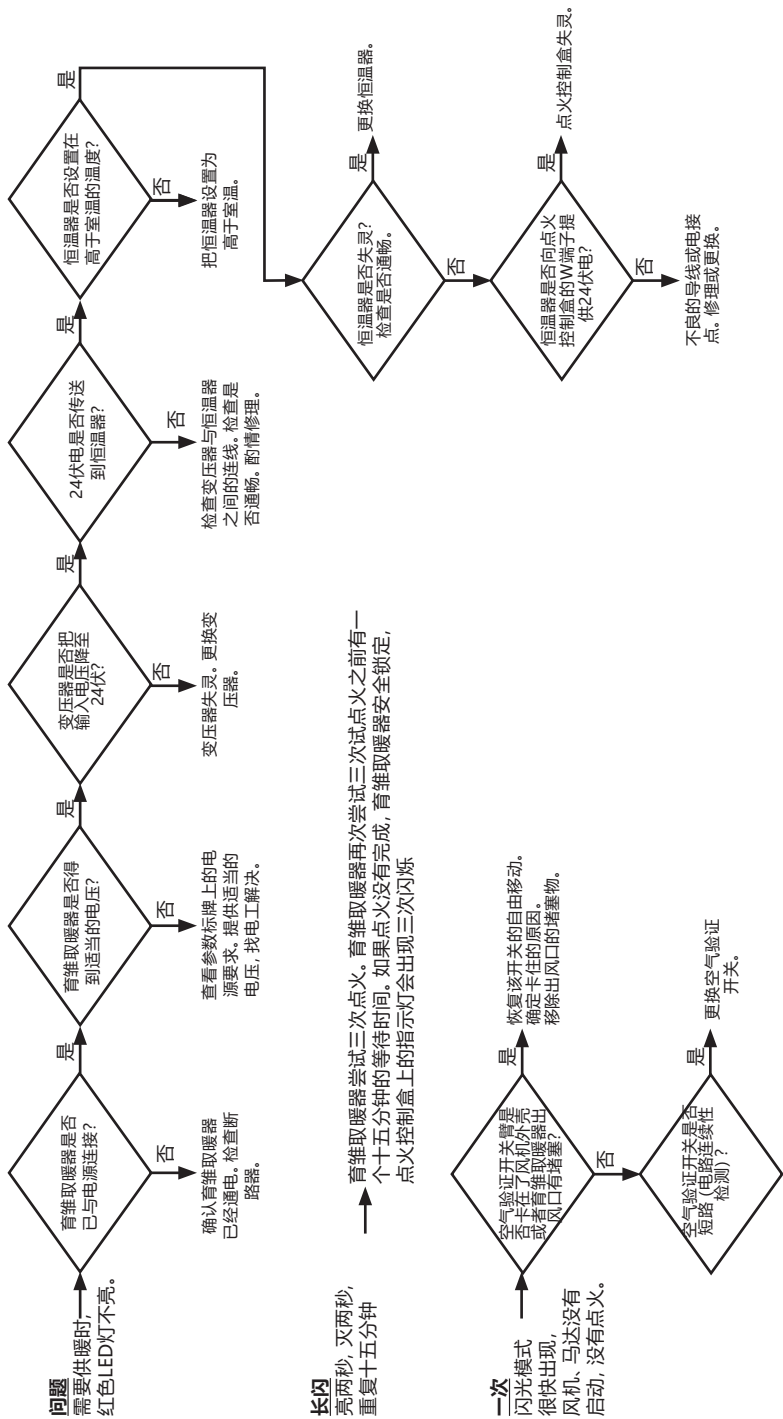
电子点火方式的运行顺序:

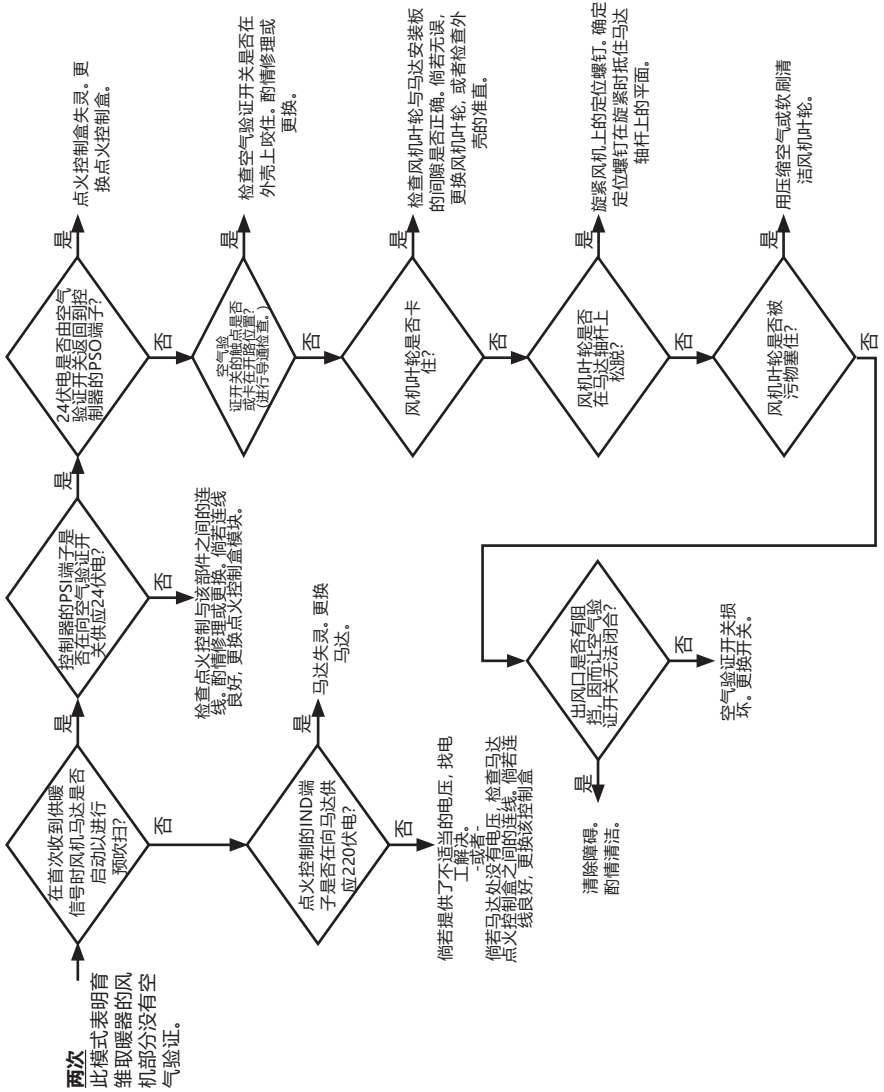
- 220伏电传给变压器和点火控制盒的端口L1
- 24伏电从变压器传给温控器
- 要求供暖
- 温控器返还24伏电至点火控制盒端口W
- 在控制盒上的红色指示灯亮起
- 点火控制盒自身也是内置的安全启动检测装置
 - 内部组件已检测
 - 点火控制盒从PS1端口发送24伏电给空气验证开关
- 点火控制盒开始安全锁定的计时
- 点火控制盒从IND端口发送220伏电启动风机进行预扫风。
 - 空气验证开关检测是否运行正常
 - 空气验证开关关闭，24伏电信号返还给点火控制盒PS2端口
- 点火控制盒启动点火器，点火器产生电火花
- 点火控制盒发送24伏电，通过高限开关给燃气控制阀

- 点火发生
 - 点火器持续产生电火花，直到检测到火焰
- 点火停止
 - 燃气控制阀持续打开
- 舍内加热至预设温度
 - 温控器探测达到预设温度
 - 育雏取暖器停止
- 一旦再次要求加热，此过程重头开始。

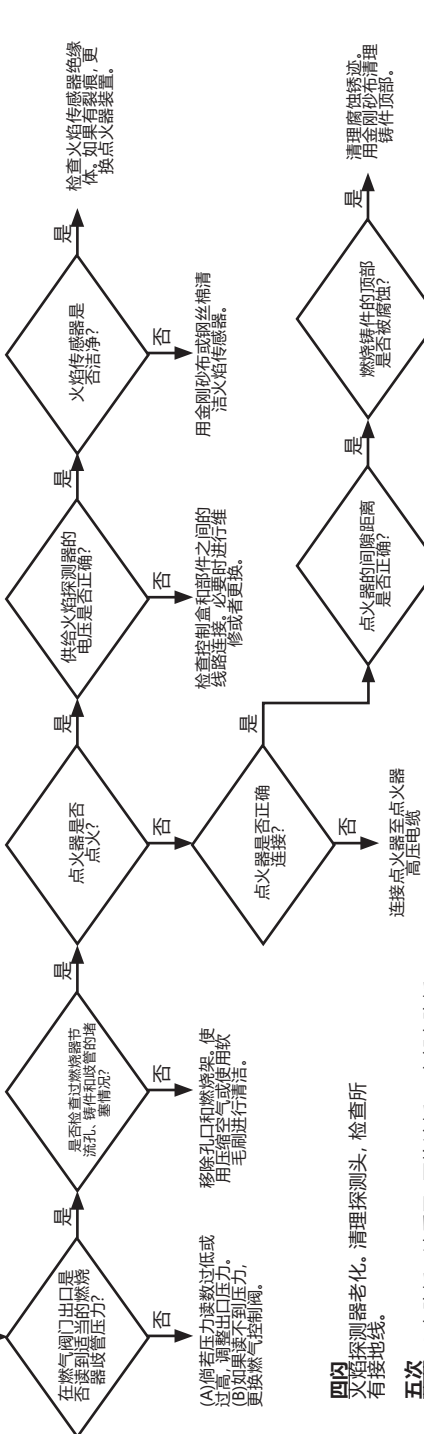
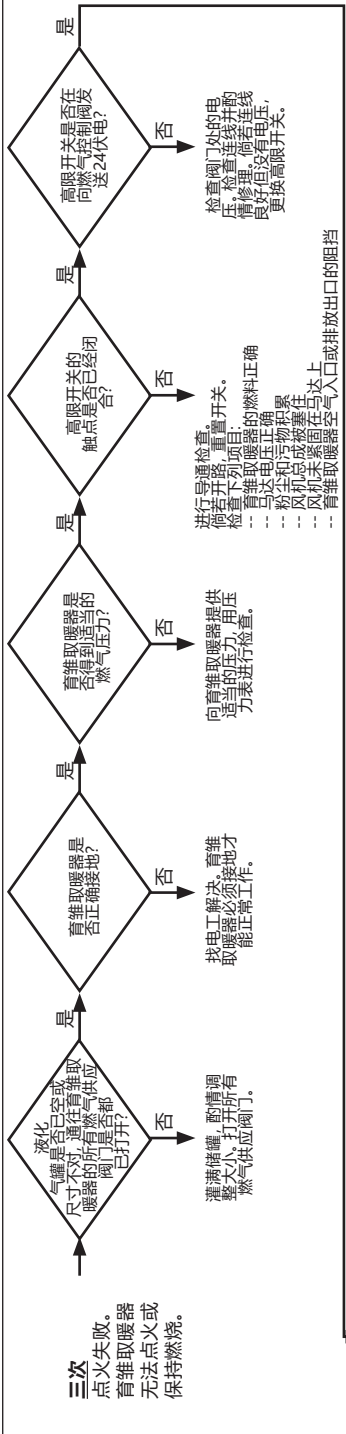
多次点火试验顺序

- 第一次试点火大概需要十秒
- 随后还有五次试点火的机会
 - 第二次和第三次试点火会接着发生，如果第一次试点火失败。
- 点火控制会开始一个十五分钟的等待时间，来允许点火中断问题自行解决
- 通过十五分钟等待时间后，点火控制重复三次点火尝试
- 如果点火控制在第三次试点火后不能检测到火焰，控制盒会进入安全锁定状态（指示灯三次闪烁）
 - 点火器停止
 - 风机停止
 - 燃气控制阀关闭
- 为了重新启动点火，通过以下方式重置点火系统
 - 拔下育雏取暖器的电源，再重新插回去
 - **或者** --
 - 将温控旋至关闭或者无加热，然后旋回至室温以上





三次点火失败。 育推取热器无法点火或保持燃烧。

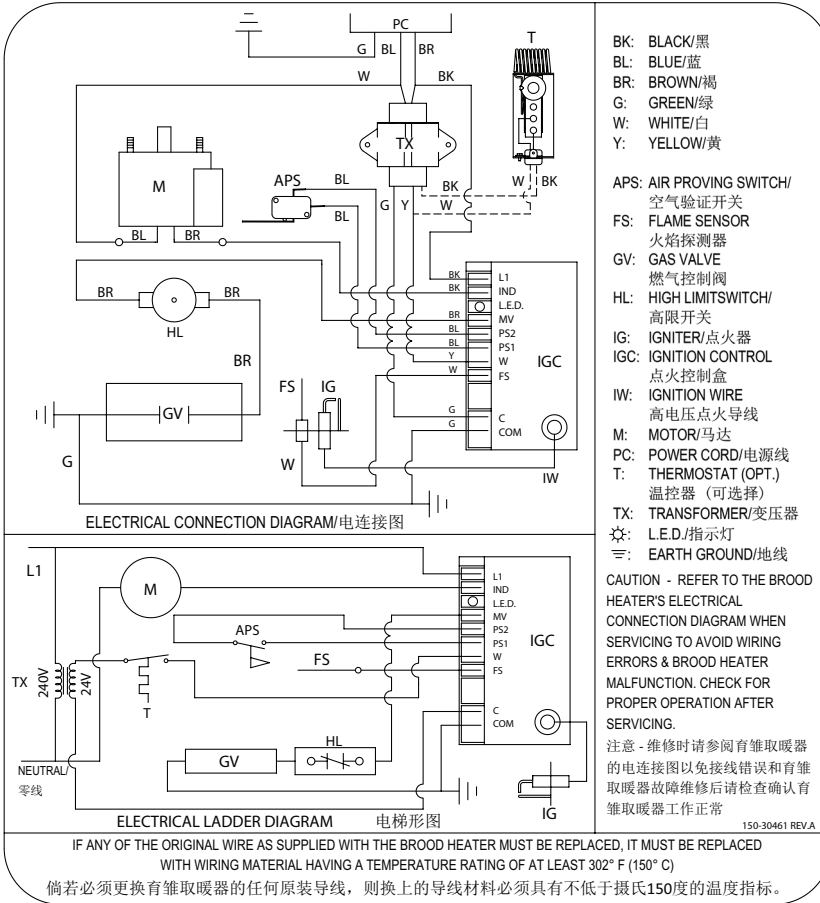


四次火焰探测器老化，清理探头，检查所有接地线。

五次倘若 DSI 电路板无法重置，更换该板。(内部电路板故障。) 如果 DSI 电路板可以重置，请合格电工查找电源的供电质量问题。(频率、线路噪声或尖峰、接点松动或导线规格规格不够。)

关闭育推取热器的燃料供应阀门。从控制盒上断开点火器电缆把燃芯力的尖端放到点火器电缆距离控制阀高的3毫米。必打并育推取热器。如果有看到电火花，更换点火控制盒。

电连接与梯形图



育雏取暖器部件功能

空气验证开关

安全装置，用于确定在开启燃气阀门前已有适当的空气流。

燃烧器

铸铁部件，用于引导燃气流动和提供燃料点火的区域。

燃烧器节流孔

黄铜计量装置，用于以特定速率向燃烧器供给燃气。

风机外壳

用于为实现高效率空气移动而压缩空气的腔室。

风机叶轮

与马达和风机外壳合用的部件，通过吸取育雏取暖器内的热空气并吹入室内来达到供暖的目的（又称为鼠笼）。

燃气控制阀

由低压调节器和电磁阀构成的装置，用于控制供应燃烧器总成的燃气流。此控制带有内置的燃气截流阀，用于在维护时把育雏取暖器与其燃气供应隔离。

燃气管

柔软的连接件，用于把燃气从棚舍供应管路传送到育雏取暖器。

热室

育雏取暖器内的金属火箱，提供了燃烧器火焰与助燃空气混合从而产生热量的地方。

高限开关

与控制系统连线的安全装置，用于在发生过热情况时切断通往燃气控制阀的电路。

点火控制模块

控制育雏取暖器的点火序列和工作并监视各安全装置。其主要维护功能之一，在于电路板能够用该模块上的一个诊断指示灯来诊断部件故障和火焰问题。取决于所发生的部件故障类型，这个指示灯将重复发出特定的闪光模式。

点火器/火焰探测装置

这个装置包括两个部件，相邻安装在同一支架内。

- 电火花点火器：电子点火装置，用于自动点火控制系统。用电火花点燃燃气。
- 火焰传感器：也被称作火柱或者火焰探头，这个装置和点火装置同时发生，来检验燃烧器内是否有火焰产生。

马达

电动装置，用于推动已预热空气通过育雏取暖器点火器在特定区域内让热量循环。把电能转换为机械能。

调节阀

任何燃气供应设备的核心，用于在储罐压力多变的情况下向育雏取暖器递送工作压力。

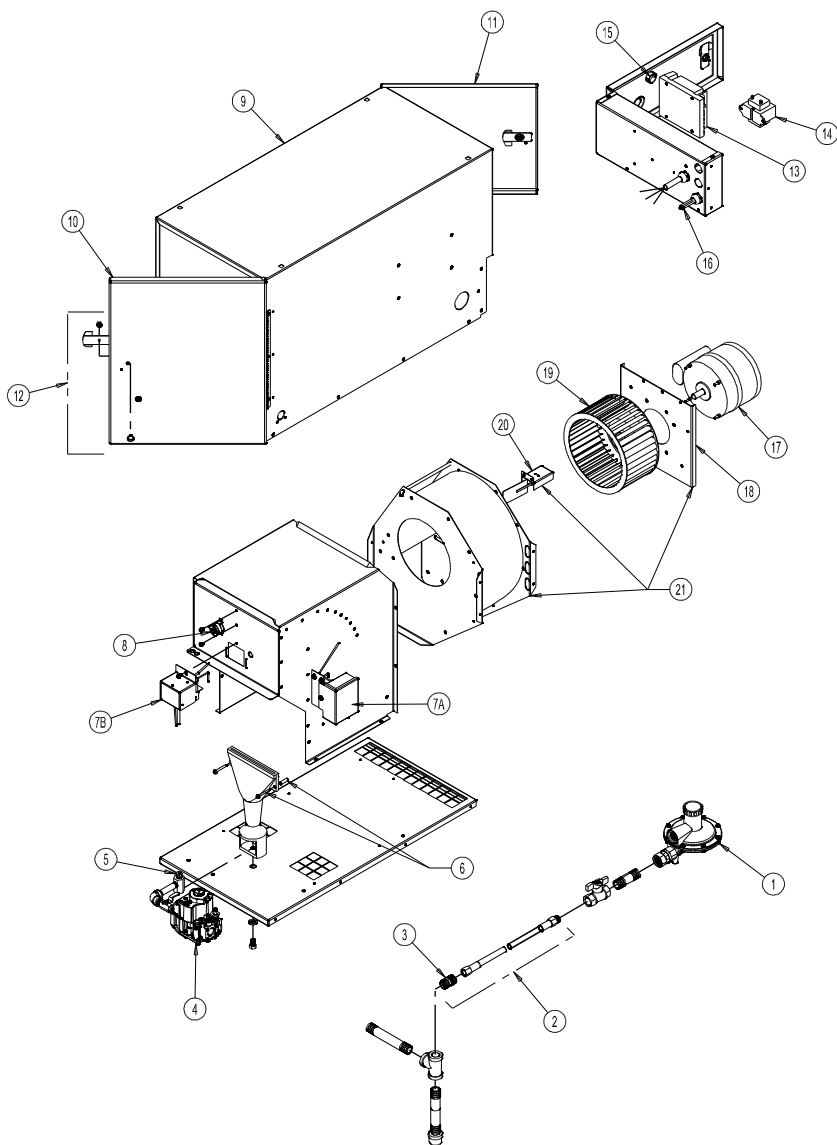
恒温器

用作自动开关的电装置，会对特定区域的温度改变做出响应；其连线能够让恒温器内的触点在温度升高或降低时分开或闭合。

变压器

电控制装置，用于接收较高的输入电压并产生较低的输出电压以操作某些控制系统。

零件标识 零件示意图 AD060/AD100

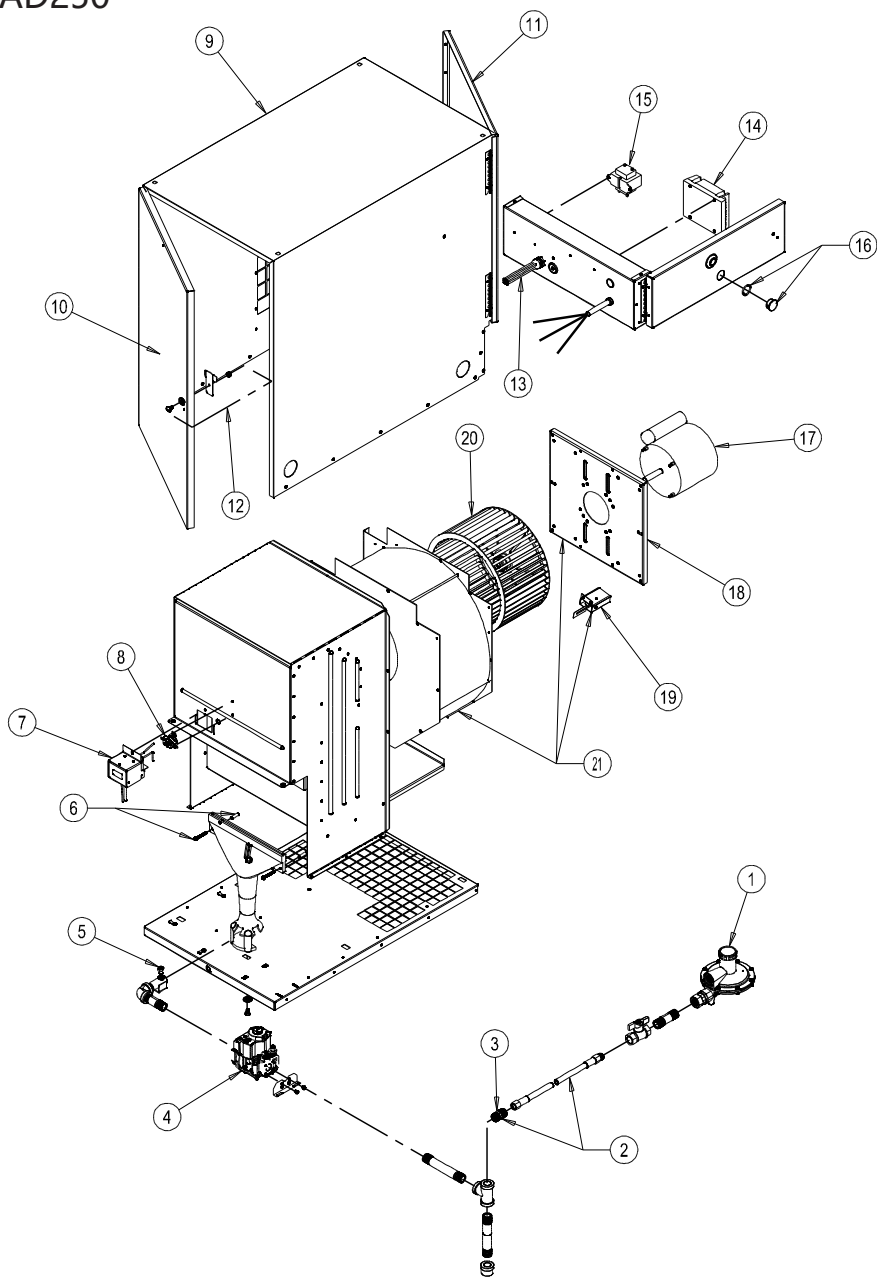


零件清单 - AD060 / AD100

项目	描述	零件号
1	二级调压阀, 出口上放空	液化气, 丁烷/丙烷
	二级调压阀, 侧面放空	液化气, 丁烷/丙烷
	二级调压阀, 侧面放空	天然气
2	软管, 1/2英寸内径 x 10英尺, 带1/2 NPT x 1/2 NPS软管联管件	550-20714*
3	1/2 NPT x 1/2 NPS联管件	500-25873*
4	燃气控制阀	AD060/100 液化气
		AD060/100 天然气
		AD060/100 丁烷/丙烷
5	燃烧器节流孔	AD060 液化气, 丁烷/丙烷
		AD100 液化气, 丁烷/丙烷
		AD060 天然气
		AD100 天然气
6	燃烧器安装五金件	570211
7a	点火器和火焰探测器	AD060
7b		AD100
8	高限开关	AD060
		AD100
9	机箱组件, 带五金件, 镀锌钢材/不锈钢	AD060
	机箱组件, 带五金件, 镀锌钢材/不锈钢	AD100
10	右门, 带铰链和门锁 镀锌钢材/不锈钢	573440/573587
11	左门, 带铰链和门锁 镀锌钢材/不锈钢	573429/573588
12	门门锁	570228
13	点火控制盒	524900
14	变压器, 220/24V	571900
15	LED指示灯查看窗, 带密封圈	570002
16	电线束	573166
17	马达, 带滚珠轴承	AD060
		AD100
18	马达安装板	AD060
		AD100
19	风机叶轮	AD060
		AD100
20	空气验证开关	AD060
		AD100
21	风机外壳, 带空气验证开关和马达安装板	AD060
		AD100

*附件 - 不与取暖器一起提供

零件标识 零件示意图 AD250

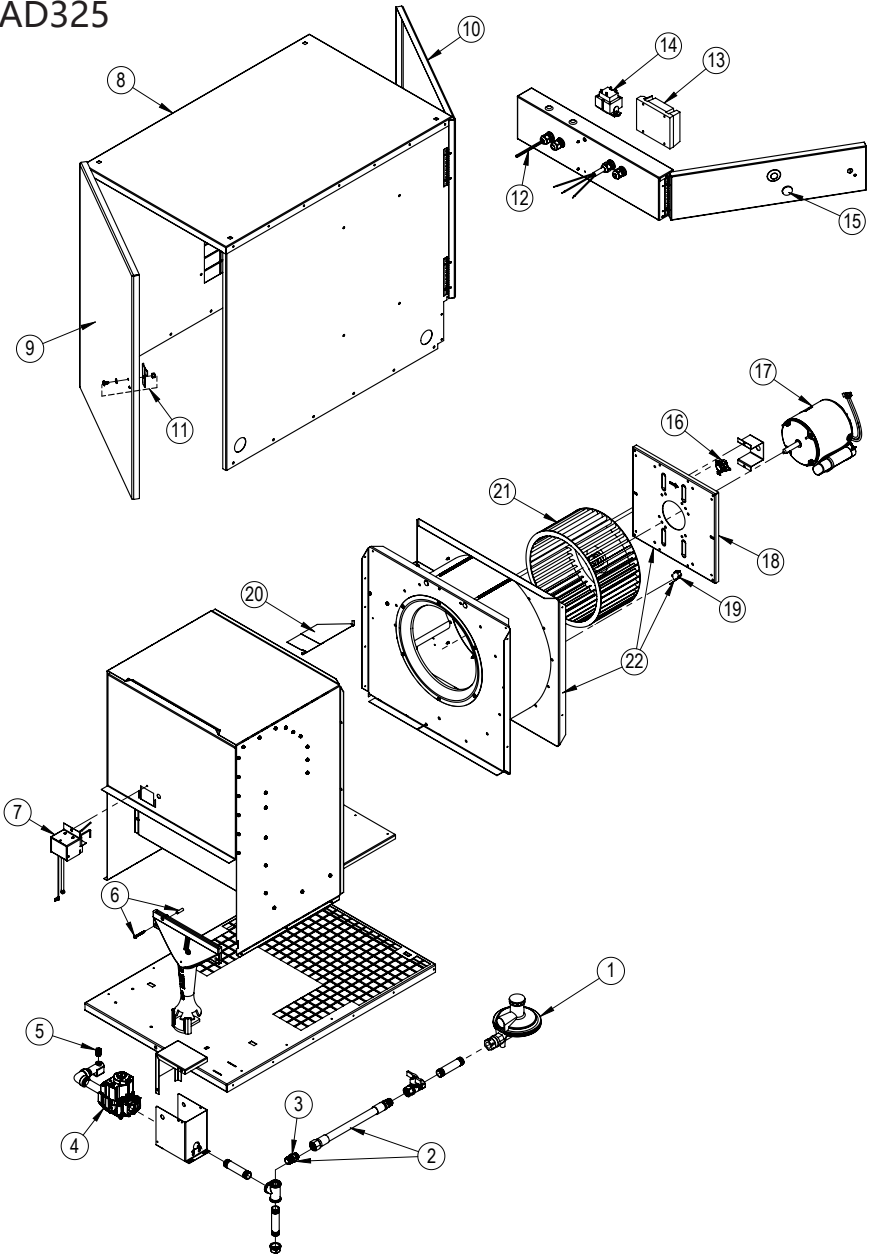


零件清单 - AD250

项目	描述	零件号	
1	二级调压阀, 出口上放空	液化气, 丁烷/丙烷	550-06553*
	二级调压阀, 侧面放空	液化气, 丁烷/丙烷	550-06665*
	调压阀 (35KPa进气压力, 3.4KPa出口压力)	天然气	500-24414*
2	软管, 1/2英寸内径 x 10英尺, 带1/2 NPT x 1/2 NPS软管联管件		550-20714*
3	1/2 NPT x 1/2 NPS联管件		500-25873*
4	燃气控制阀	液化气	522076
		天然气	522078
		丁烷	573186
5	燃烧器节流孔	液化气, 丁烷/丙烷	570053
		天然气	570054
6	燃烧器安装五金件		570211
7	点火器和火焰探测器		570021
8	高限开关		505566
9	机箱组件, 带镀锌钢材/不锈钢		572421 / 573586
10	燃烧器侧门 镀锌钢材/不锈钢		570062 / 573589
11	马达侧门 镀锌钢材/不锈钢材		572420 / 573590
12	门门锁		570228
13	电线束		570103
14	点火控制盒		524900
15	变压器 220/24伏		571900
16	LED指示灯查看窗, 带密封圈		570002
17	马达, 带滚珠轴承 230/50/1		571902
	230/60/1		508635
18	马达安装板		570251
19	空气验证开关		500-24157
20	风机叶轮		570481
21	风机外壳, 带空气验证开关和马达安装板		524167

*附件 - 不与取暖器一起提供

零件标识 零件示意图 AD325



零件清单 - AD325

项目	描述	零件号
1	调压阀 (输入35KPa, 输出3.4KPa)	天然气 500-24414*
2	软管, 1/2英寸内径 x 10英尺, 带1/2 NPT x 1/2 NPS软管联管件	550-20714*
3	1/2 NPT x 1/2 NPS联管件	500-25873*
4	燃气控制阀	天然气 550-22190
5	燃烧器节流孔	天然气 570162
6	燃烧器安装五金件	570211
7	点火器和火焰探测器	570021
8	机箱组件, 带门和门锁 不锈钢	573633
9	燃烧器端门 不锈钢	573634
10	马达端门 不锈钢	573635
11	门门锁	570228
12	电线束	570103
13	点火控制盒	524900
14	变压器 220/24伏	571900
15	LED指示灯查看窗, 带密封圈	570002
16	高限开关	505566
17	马达, 带滚珠轴承	572666
18	马达安装板	570251
19	空气验证开关	502680
20	拨片	570212
21	风机叶轮	570440
22	风机外壳, 带空气验证开关和马达安装板	500-08798

* 附件 - 不与取暖器一起提供

备注

备注

保修原则

育雏取暖器

美国L.B.White保证其育雏取暖器的零部件，在依照每台设备包含的安装与保养说明、安全指南及标签而适当安装、操作及保养的情况下，没有材料与工艺缺陷。倘若在自最终用户购买日期起12个月内，任何部件经认定有缺陷，美国L.B.White将依其选择，以美国威斯康星州奥纳拉斯卡FOB的形式用新的零件或育雏取暖器修理或更换该有缺陷的零件或育雏取暖器。

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零件

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