

\$10.00

# THE BRYAN FURNACE

**RIK-MAR CORPORATION**

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## OWNERS MANUAL

*Residential, Commercial Wood Burning Furnaces*

All installations must be in accordance with local and state codes which may differ from this manual.  
Save these instructions.

U.S. Patent 4,194,688  
Canadian Patent 1,123,295



*Shown With Optional Furnace Stand kit*

*Thank you for choosing the Bryan Furnace for your solid fuel heating needs. Pride, craftsmanship, and a high grade of materials insure that you have chosen a furnace of the highest quality. This quality construction, together with our patented outdoor installation guarantees you the safest, cleanest solid fuel heating system available. With a minimum of maintenance, your furnace should provide you with many years of trouble free service.*

*Please read through these instructions before beginning installation of your furnace. They contain many helpful tips on installing, maintaining, and operating your Bryan Furnace. Check with your local building officials to be in conformance with local building, plumbing, and electrical codes. These instructions can help you now as well as in the future and should be retained for your reference.*

## **TRANSPORTATION DAMAGES**

Before proceeding, please inspect your furnace for any damages which may have occurred in shipping. If you find any damage, please notify your dealer immediately. He will take action to correct the problem.

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# OPERATING INSTRUCTIONS

## How It Works

Your Bryan Furnace is an airtight, natural draft furnace located inside an insulated metal shelter. The blower, located on top of the furnace, pulls cold (return) air from the building, passes it through the shelter where it picks up heat from the combustion chamber, and forces the air back into the building through the hot (supply) air duct. Combustion air for the fire is pulled through the damper box on the door into the combustion chamber and exhaust gases leave through the flue on the top of the furnace. The two air systems are sealed from each other and combustion gases will not normally be released into the building (See Trouble Shooting).

## Operation

Please keep in mind when operating any solid fuel heater that unlike a gas, oil, or electric heater, the fire cannot simply be turned on or off to control building temperature. Once a solid fuel fire is established, it must be allowed to burn to conclusion.

## Firewood

The Bryan Furnace will burn any type of wood up to 12" in diameter and 30" in length. Wood can be burned either with or without grates. Store your fuel in a dry, covered area with good ventilation. Do not stack wood against the building as this invites an insect infestation. Do not store fuel within the furnace installation clearances or within the space required for charging and ash removal.

Firewood varies greatly in quality due to species and moisture content. Wood that is seasoned and dry greatly improves the efficiency of the furnace. Wood of over 20% moisture will not burn well. Pine and some other softwoods burn very quickly with high creosote production and very few coals. If pine must be burned, it should be burned with an open damper in very small quantities. These woods are best used to start hardwood fires.

## CHART ON AVAILABLE HEAT IN WOOD PER CORD

(Based on 20% Moisture In Wood)

TYPE	AVERAGE WEIGHT PER CORD	APPROXIMATE BTU AVAILABLE IN AN AIR-DRIED CORD OF WOOD
Hickory	3,595 lbs.	30,600,000
Maple (Hard)	3,075 lbs.	29,000,000
Beech	3,240 lbs.	27,800,000
Oak (White)	3,750 lbs.	27,700,000
Oak (Red)	3,240 lbs.	26,300,000
Birch (Yellow)	3,000 lbs.	26,200,000
Elm	2,750 lbs.	24,500,000
Tamarack	2,500 lbs.	24,010,000
Maple (Sot)	2,500 lbs.	24,000,000
Cherry	2,550 lbs.	35,500,000
Ash	2,950 lbs.	22,600,000
Spruce	2,100 lbs.	18,100,000
Hemlock	2,100 lbs.	17,910,000
Pine(White)	1,800 lbs.	17,900,000
Aspen	1,900 lbs.	17,700,000
Basswood	1,900 lbs.	17,101,000

## Building a Fire

### CAUTION

Never use chemicals or fluids to start or freshen-up a fire. Do not burn garbage, gasoline, naphtha, engine oil or any other fuel not approved with this unit.

1. Place several pieces of crumpled newspaper on the grate, crisscross the newspaper balls with a couple of handfuls of dry kindling wood 3/4" thickness or less, then several small pieces of dry firewood. Be sure the smokepipe damper is open if one is installed.
2. Ignite the paper. It will take 5 to 10 minutes for the fire to establish itself. Once you have some good red hot burning embers, add larger pieces of wood. All installations are different. You will quickly learn the best way to start your unit.
3. After 30-40 minutes you can adjust the intake damper according to your needs.
4. To reload the furnace containing existing hot coals, rake the coals evenly, add a few smaller pieces over the coals. then load up. Do not use an automatic stoker with this furnace.
5. Never leave the ash clean-out door open to allow more air to the fire as this allows extreme heat to enter the automatic draft control located on the loading door causing damage to the solenoid and thermostat.

### CAUTION

The handle on the ash door can become extremely hot, use care when handling. The ash door must be securely closed whenever the furnace is unattended to prevent dangerous overheating.

## Temperature Adjustment

A solid fuel fire burns cleanest in an environment with an unlimited supply of oxygen. Allowing a fire to burn this way, however, produces a short, very hot fire with most of the released heat going up the flue and the extreme temperatures causing a safety hazard and possibly damaging the furnace. On the other hand, a smothered fire produces an extremely long, smoldering burn which is inefficient and produces large quantities of soot or creosote with the danger of a clogged flue or stack fire.

The Bryan Furnace controls these factors by means of a thermostatically controlled intake damper mounted on the furnace door. As the fire gets hotter, the thermostat automatically decreases the amount of air to the fire to keep it under control. Conversely, as the fire cools off, the damper begins opening to allow the fire more air.

Temperature adjustments are made by turning the knob on the door clockwise for a hotter fire, and counter clockwise for a cooler fire. Make small adjustments with reference to the arrow on the knob and the hotter decal. Wait 15 to 30 minutes between adjustments to allow the fire to reach equilibrium at the new setting.

### **CAUTION**

The damper control mechanism must not be altered for any reason.

\*An additional safety system is built into your Bryan Furnace to control an overtemperature condition. This system consists of a solenoid mounted in a separate compartment above the damper box on the door. If electrical power to the furnace is interrupted, the solenoid will automatically close the damper. Also, if air temperature in the furnace reaches approximately 220° F, the solenoid will shut the damper and it will not re-open until the furnace has cooled to approximately 160° F. **Do not use the overtemperature safety system to control the fire with a maximum damper setting. This causes an extremely inefficient burn with the fire smothered about half of the time. Maximum heat output is achieved by setting the damper so that temperatures do not quite reach an overtemperature condition.**

NOTE: The solenoid will produce a low buzzing sound and the cover will be warm as long as it is receiving electrical power. The noise will cease if the solenoid is closing the damper due to either a power failure or over-temperature. If the solenoid produces a loud chatter, unplug the furnace immediately and see the trouble shooting guide.

### **CAUTION**

Never operate your furnace so that any portion becomes red hot. This is dangerous as well as damaging to the furnace.

## **Creosote and Soot Formation and the Need for Removal**

When wood is burned slowly, it produces tar and other organic vapors, which combine with expelled moisture to form creosote (soot with coal burning). The creosote vapors condense in the relatively cool chimney flue of a slow-burning fire. As a result, creosote residue accumulates on the flue lining. When ignited, this creosote makes an extremely hot fire.

The chimney connector and chimney should be inspected at least twice monthly during the heating season to determine if a creosote build-up has occurred.

If creosote has accumulated, it should be removed to reduce the risk of a chimney fire. If you clean your own chimney and stove pipe, we recommend purchasing the equipment professionals use. Wire brushes are available in enough sizes and shapes to be a snug fit inside any common flue.

**NOTE:** Establish a routine for the storage of fuel, care of the unit and firing techniques. Check daily for creosote build-up until experience shows how often cleaning is necessary. Be aware that the hotter the fire, the less creosote is deposited and weekly cleanings may be necessary in mild weather even though monthly cleanings may be enough in the coldest months. Have a clearly understood plan to handle a chimney fire.

\* **laboratory listed furnaces only**

### CAUTION

In the event of a chimney fire:

1. Close all air inlets and doors on the furnace.
2. Call the fire department.
3. Leave the building safely.

### Ash Removal

The ash door can be opened slightly for a few seconds before servicing to allow smoke to clear. Ashes should be removed frequently.

1. The ash door should not be opened with a full load of burning wood as this allows excess combustion air to enter the chamber and can cause over heating .
2. After Unit has cooled down, open ash door, remove the ash pan using protective gloves and place ashes in acceptable noncombustible container.
3. Do not leave the ash door open while emptying ashes as this allows uncontrolled combustion air to enter fire chamber and can cause overheating.

### CAUTION

Ashes should be placed in a metal container with a tight fitting lid. The closed container of ashes should be placed on a noncombustible floor or on the ground, well away from all combustible materials, pending final disposal. If the ashes are disposed, of by burial in soil or otherwise locally dispersed, they should be retained in the closed container until all cinders have thoroughly cooled.

### Helpful Hints

A small hot fire is more efficient and safer than a large smoldering one. During relatively warm weather, add only enough wood so that the fire will burn out in a desired time. If the building becomes too hot, simply open a window. **Do not unplug the furnace or block the furnace air.**

As your fire burns down, the fan will begin to cycle on and off as it moves the heated air out and the fan control thermostat is cooled. If you desire to run the fan below the thermostat temperature range (+90° ), turn the thermostat override switch (on the bottom of the fan box) to the "on" position. **This will cause the fan to run continuously whether there is heat in the furnace or not.**

After 7 days of 8 to 10 hour burns, open the damper and allow the fire to burn hot for 15 to 20 minutes while in attendance. This will help to minimize creosote or soot buildup.

Combustion air must be available above the fuel bed. Try to stack logs so that air can circulate between them.

Loading and ash doors must be kept tightly closed and gaskets in good condition. Inspect the furnace in the dark for light showing around the door. Door gaskets need to be replaced every year or so.

A small portable generator of sufficient amperage can be used to operate the furnace during an extended power outage. **Do not operate this furnace without electrical power.**





# INSTALLATION INSTRUCTIONS

*Please read completely before starting.*

**NOTICE TO OUR CUSTOMERS:** Your Bryan Furnace is absolutely the safest, cleanest solid fuel burning system available. Your furnace has been assembled from the finest materials available by skilled craftsmen under the supervision of a strict quality control program. Bryan Furnace Works, however, has no control over the handling of your furnace during shipment or installation. The possibility does exist, however remote, that a broken seal will allow some smoke or fumes into the home. **If the possibility of smoke or fumes in the home is absolutely unacceptable, do not install this furnace.** Keep in mind that smoke in the home is a certainty with a fireplace or indoor heater.

## WARNING

The installation of this unit must comply with state and local requirements and be inspected by the state or local building inspector, if required. Only laboratory listed units can be installed indoors.

## General Notes

The air from a solid fuel appliance is considerably hotter than from gas, oil or electric furnaces. **Do not connect this furnace to anything other than metal ductwork.**

Both hot and cold air ducts should be insulated outdoors. In addition, the hot air duct should be insulated for its entire length. **There should be a minimum of 1 “ of insulation between the hot air duct and any flammable surface.**

Your furnace has been tested to determine the minimum safe clearances to combustible materials. The clearances listed below should be adhered to strictly.

Sides of furnace	8”
Rear of furnace	16”
Top of furnace	24”
Front of furnace	48”
Flue pipe (single wall connector to chimney) if used	18”
Ducting	6” for first 16” from rear of unit, then 2”

Do not connect the Bryan Furnace to a chimney serving another appliance.

If the furnace is placed on a flammable surface, the floor must be protected by a fireproof millboard or equivalent. The fireproofing must extend under the furnace and at least 16” in front of and 8” either side of the fuel loading door.

Pull return air from the same area where supply air is being delivered. **Do not pull return air from a small or closed area where another heating appliance is located. The resulting partial vacuum could cause the other appliance to malfunction.**

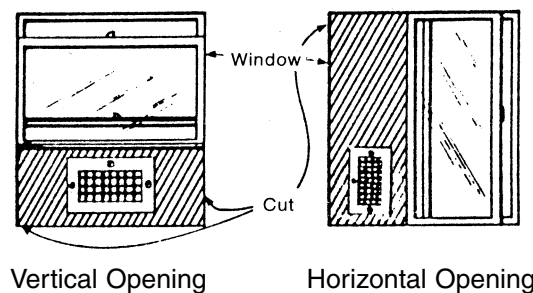
Do not install the hot air inlet directly below a flammable or heat sensitive material (drapes, blinds, plastic, etc.) or those objects can be damaged by rising heat.

## Window or Wall Installation

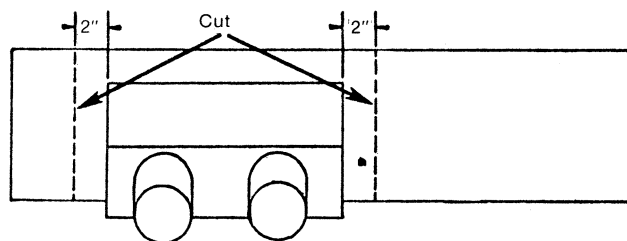
Tools Needed: Drill with 1/8" bit, metal cutting shears, screwdriver, silicone caulking.

ALL parts for installation are provided except the exhaust stack and rain cap. Additional sheet metal work for nonstandard installations can be done at any sheet metal shop.

1. After uncrating, remove all of the parts from inside the furnace, being careful not to bend or damage the sheet metal.
2. Mount the furnace door with the attached pins.
3. If the face plate is to be painted, it is best to do this before installation. With the grill off, mask the cord, wipe the metal with vinegar or other weak acid, and spray paint when dry. **Use a high temperature resistant paint to avoid a fire hazard.**
4. Window Installation - Cut the face plate to size to completely fill the window. The plate can be cut at one or both ends to center the grill as desired. Cutting must be done carefully and the plate should be left long enough so that it will slip into the window frame and the window can then be closed against it to form a seal. Place the strips of insulation provided between the window frame and the face plate to seal and insulate. If the plate is installed vertically, insure that the return air side (with the wire) is on the bottom.



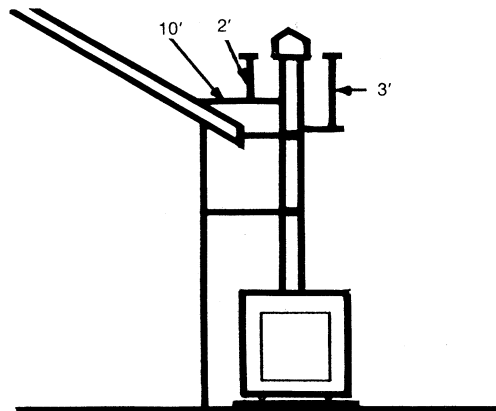
5. Wall Installation - Cut a 14" x 28" opening through the wall (either vertically or horizontally) and line it with 1" fiberglass insulation (provided). Cut the face plate 2" from the duct box on either end (see drawing below). Push the duct box through the wall from the inside and fasten the face plate to the wall. If the plate is installed vertically, insure that the return air side (with the wire) is on the bottom. Slip the rectangular cover plate over the ducts from the outside and fasten it to the wall. Caulk any openings. **The face plate can reach temperatures of over 200°F. If it is mounted on a surface which can be damaged by these temperatures, place 1/4" ceramic spacers between the face plate and the wall.**



6. Decide which way you want the door on the furnace to face. You can position the furnace with the door facing left or right or away from the wall. Position the furnace on bricks, a concrete base or optional furnace stand.

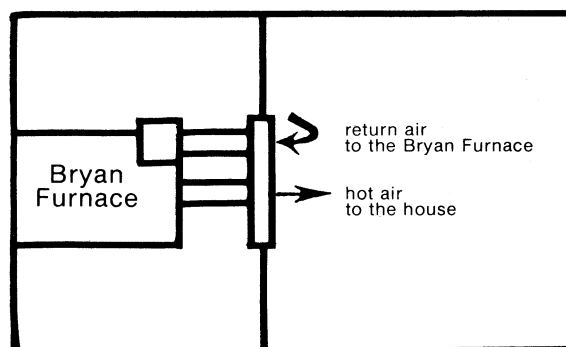
7. Pull the cord from the fan box through the return air duct and plug it into the outlet behind the grill on the face plate. Attach the return air duct to the fan box and face plate using screws. Weatherproof the joints with tape or caulking.

8. Use a listed 6" Class "A" residential type building heating appliance chimney. Metal-Fab Temp/guard 2100 deg. double wall insulated chimney with stainless steel liner is recommended for best performance and longest life. Your furnace is equipped with a 6" double wall insulated starter section manufactured by Metal-Fab, Inc of Wichita, Kansas. Use of an unsuitable chimney can lead to degraded performance, damage to the furnace, and possible voiding of the warranty. The Metal Fab Temp/Guard chimney and cap may be purchased from you dealer or distributor.



9. Plug in the electrical cord inside the building. The furnace must be connected to a single outlet circuit or to a 20 Ampere circuit. **The furnace must be grounded either through The electric cord (third prong) or by driving a copper coated steel rod six (6) feet into the ground and attaching it to the base of the furnace with a 14 gauge copper wire.** Check the operation of the damper to insure that it operates freely and can close completely.

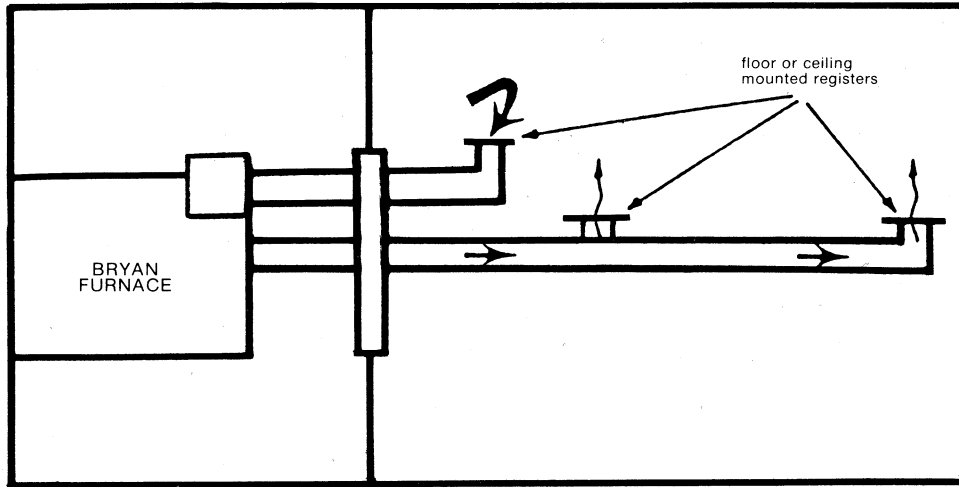
10. Start a fire in the furnace and allow the fan to run until smoke and fumes no longer come out of the warm air opening at the rear of the furnace. Attach the warm air duct to the furnace and duct box with screws. Check for warm air leaks and caulk.



STANDARD WINDOW OR WALL INSTALLATION

## Separate Duct System

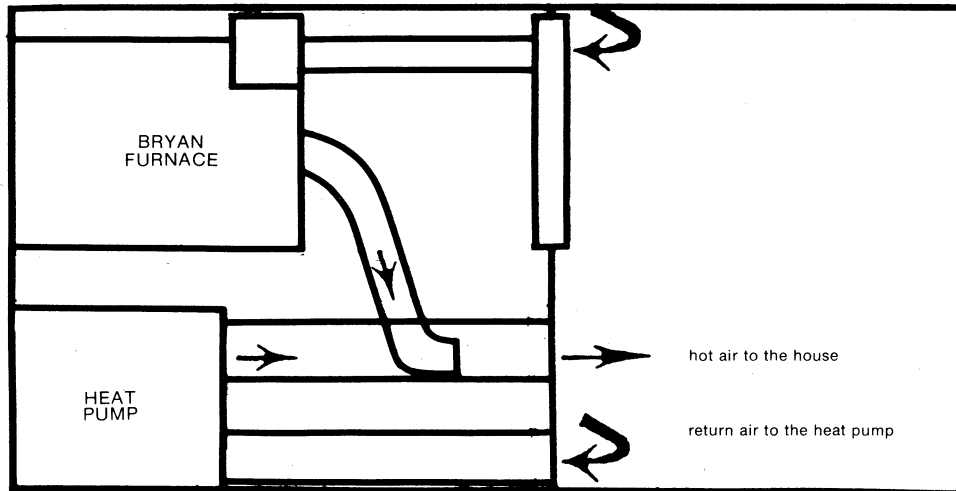
Observe the general rules and the applicable parts under window-wall installation. If possible, run your duct work under the floor to deliver heat at floor level. With the residential model furnace, avoid over fifty (50) feet of duct work or air delivery will be unsatisfactory. With any furnace, the more turns and branches in the ducting, the less air will be delivered. Avoid 90° elbows



## Heat Pump Connection

This installation should be made by a qualified installer.

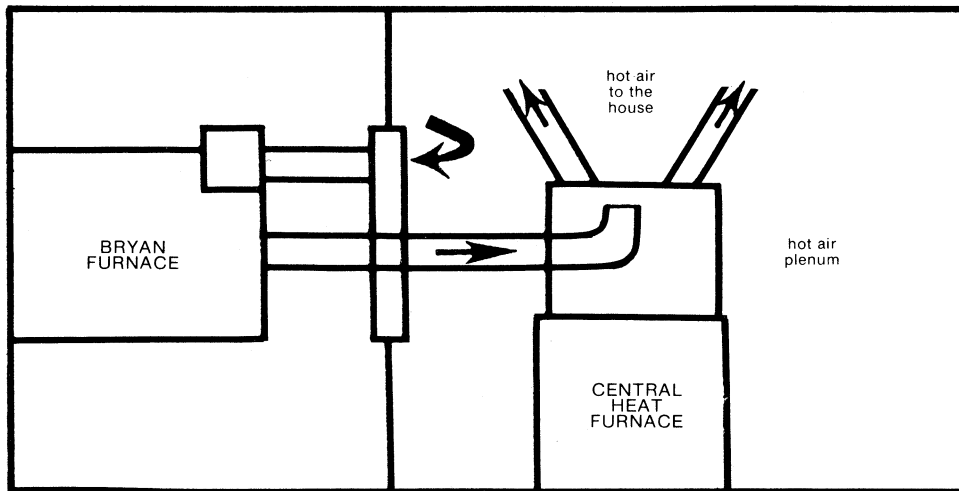
Observe the general rules and the applicable parts under window-wall installation. Install separate turn air duct to the building... the heat pump. Tap into the hot air duct with an elbow or at an angle so that the hot air from the Bryan Furnace is delivered downstream. A plastic joint in the heat pump ductwork will have to be removed, if present. The heat pump can be turned off at the breaker box if desired. **Any obstructions in the heat pump duct must be removed before using it as an air conditioner.**



## Central Heat Connection

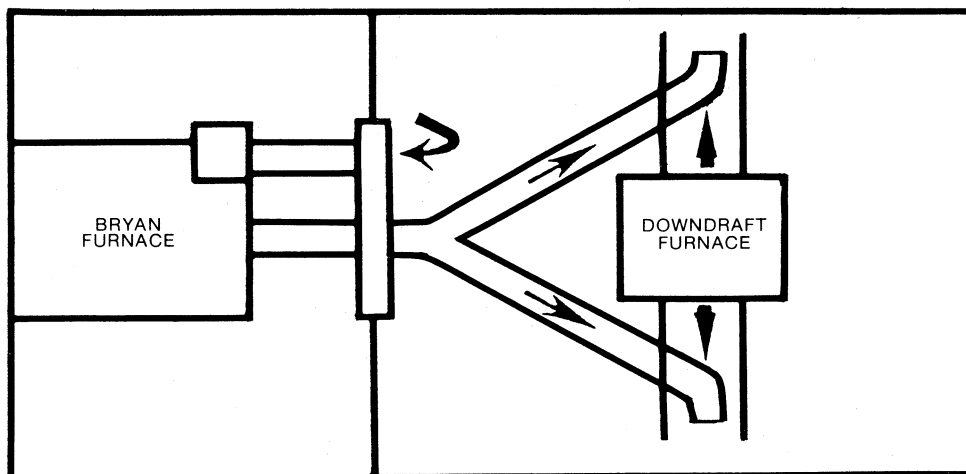
This installation should be made by a qualified installer.

Observe the general rules and the applicable parts under window-wall installation. Run a return air duct separate from the return air for the central furnace or the hot air from the Bryan Furnace may try to short circuit back through the central furnace. Attach the hot air duct to the hot air plenum of the central furnace with an elbow or at an angle so that hot air from the Bryan Furnace is delivered downstream. Insure that hot air from the Bryan Furnace is not delivered so that it passes through an air conditioner coil. **Obstructions in the plenum may have to be moved to operate a central air conditioner.**



CENTRAL HEAT CONNECTION

For a down draft furnace, such as in a mobile home, do not attach the hot duct from the Bryan Furnace to the hot air plenum, or the heat will rise through the central furnace instead of going down the duct work. Split the hot air supply from the Bryan Furnace with a “Y” and install one branch into each of the hot air ducts, again pointed downstream.



DOWNDRAFT FURNACE

### Special Precautions for Indoor Installations (laboratory listed units only)

#### Chimney

The greatest hazard to a solid fuel furnace is an unsuitable chimney. If an existing chimney is to be used, insure that it is a “class A” factory built chimney. Have the chimney inspected to insure that it is clean and in good condition. **Of special danger are class “B” aluminum gas vents which may already be installed and should never be used.** If a new chimney is to be installed, the chimney dealer will be able to provide advice and the necessary parts. Particular attention should be paid to the point where the flue passes through a wall or ceiling. This penetration should always be made with insulated pipe and the proper accessories. The top of the chimney should be at least three (3) feet higher than the roof at the point of exit. With pitched roofs, the top of the chimney must be at least two (2) feet higher than any point on the roof within ten (10) feet of the chimney. Check with your local Building Inspector for local building code compliances. Never use a masonry chimney as they can clog or collect deposits and may cause chimney fire.



## Troubleshooting

Problem	Possible Cause	Solution
Fire will not stay lit.	<p>Fire not well established.</p> <p>Damp or green wood.</p> <p>Insufficient draft.</p>	<p>Keep the furnace door open until the fire is well established. If the access door is closed prior to the development of some coals, the air intake will not function properly.</p> <p>It is advisable to use seasoned wood to build a fire. Later, when a bed of coals is well established, green wood may burn satisfactorily if mixed with seasoned wood.</p> <p>Open damper thermostat for a hotter fire. Check flue for obstructions. Flue may have to be lengthened.</p>
Building is not warm enough.	<p>Unit too small for building - check specifications.</p> <p>Insufficient insulation in building-heat is escaping.</p> <p>Improper installation.</p>	<p>Replace with larger until or have regular furnace help heat the building. <b>If furnace is producing 200°F air at outlet (150° commercial or coal burner) it is performing at or above its rated capacity.</b></p> <p>Reinsulate.</p> <p>Review installation instructions. Check for hot air leaks.</p>
Excessive creosote or soot buildup in stack.	<p>Use of green or wet wood.</p> <p>Burning softwoods with high resin content.</p> <p>Poor draft.</p> <p>Too long of burning times.</p> <p>Flue pipe too cool.</p> <p>Air leaks in flue pipe.</p>	<p>Use seasoned dry wood or burn smaller charges hotter.</p> <p>Avoid using if possible. If you must burn them, burn small charges hotter.</p> <p>See above.</p> <p>Burn smaller-hotter fires.</p> <p>Too cool of fire or improper pipe. <b>Never use a single wall pipe outdoors.</b></p> <p>Check pipe top to bottom.</p>

<b>Problem</b>	<b>Possible Cause</b>	<b>Solution</b>
Smoke or fumes from vent.	Normal for new furnace. Smoke entering through louvers on side of fan box.  Bad weld or broken seal.	Disconnect supply duct until it clears. Reposition or lengthen stack so that smoke does not settle on furnace. Try to avoid smoke from loading door by opening slowly.  If problem persists, louvers can be covered with tape. <b>Closing off louvers will prevent fresh air from being brought into building and can lead to fan overheating. Observe furnace closely to insure that fan does not shut off.</b>  If above do not fix problem, contact your dealer immediately.
Excessive smoke coming out of loading door when loading.	Insufficient draft.	See above.
Puffs of smoke coming through damper box.	Insufficient draft.  Down draft on chimney.	See above.  Check for obstructions near chimney, trees, buildings, etc.
Improper seal around door.	Torn or loose gasket.  Worn or compressed gasket.	Replace gasket.  Reverse latch for tighter fit. Replace gasket.

**WARNING**

Unqualified individuals should not remove the fan box access panel. Personal injury or furnace damage can result.  
**CALL AN ELECTRICIAN OR YOUR DEALER!**

<b>Problem</b>	<b>Possible Cause</b>	<b>Solution</b>
Fan cuts off.	Normal if temperature in furnace drops below 90° F.	Turn switch on bottom of fan box to "on" if you desire fan to run below thermostat temperature range.
Fan will not run with heat in furnace.	No power to furnace. Bad thermostat, relay, or fan.  Fan has overheated.	Check electrical supply.  Turn switch on bottom of fan box to "on" position to attempt to regain fan. Call your dealer or electrician.  Insure louvers on side of fan box are clear. Fan will come on once it cools down.
Fan runs continuously without heat.	Switch on bottom of fan box is in "on" position.  Stuck thermostat or relay.	Move switch to "auto" position.  Replace defective parts.



<b>Problem</b>	<b>Possible Cause</b>	<b>Solution</b>
Damper will not open / solenoid on door is buzzing.	Mechanism is jammed or has become disconnected.	Check for cause through hole in door behind damper box.
*Damper will not open / solenoid on door is not buzzing.	Furnace has lost power.  Furnace has overheated.  Circuit breaker on bottom of fan box has popped.  Transformer, solenoid, or wiring is bad.	Check electrical supply.  Limit switch will close damper if outlet air exceeds 220°F. Set your damper for a cooler fire.  Push in button after insuring that damper mechanism is not jammed. If breaker continues to pop, call your dealer or electrician.  Call your dealer or an electrician.

**\*laboratory listed furnaces only**

### **Additional References**

For further information on using your heater safely, obtain a copy to the National Fire Protection Association publication "Using Coal and Wood Stoves Safely", NFPA No. HS-8- 1974. The address of the NFPA is Battery March Park, Quincy, Ma 02269.

Some additional suggested readings are:

- Havens, David, The Woodburner's Handbook, Brunswick, Maine, Harpswell Press, 1973.  
 Shelton, Jay and Shapiro, Andrew B., The Woodburner's Encyclopedia, Waitsfield, Vermont Crossroads Press, 1976.  
 Gay, Larry, The Complete Book of Heating with Wood, Charlotte, Vermont, Garden Way Publishing, 1974.  
 Self, Charles, Wood Heating Handbook, Blue Ridge Summit, Pennsylvania, Tab Books, 1977.

### **Maintenance**

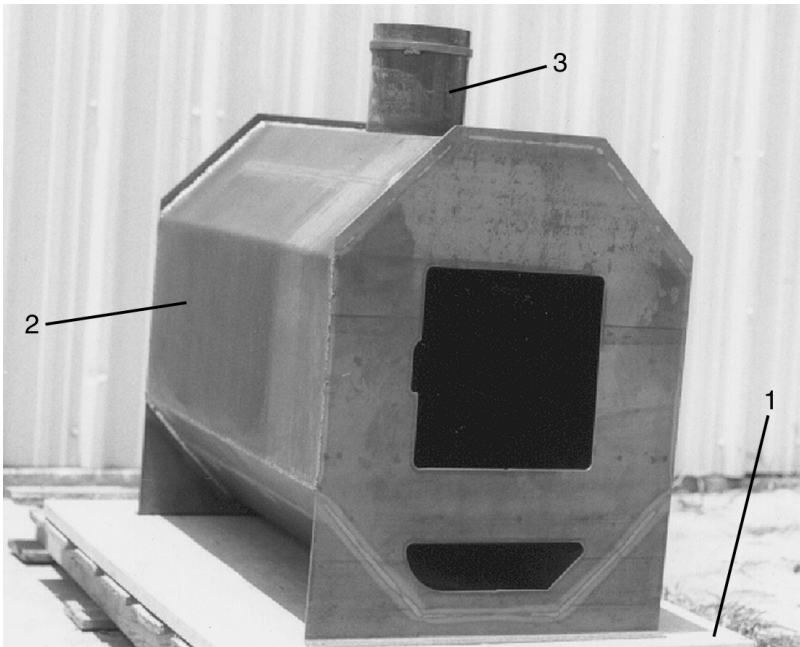
**Unit** - Keep the unit itself clean for extended life. Promptly paint over any rust spots which may appear on the galvanized surfaces with cold galvanizing spray paint available at hardware stores, heating & cooling supply stores, etc.

**Fan - Warning: always disconnect the electrical supply to the furnace before exposing the fan for maintenance.** Every six months, remove the fan box access panel and lightly oil the motor through the two oil holes on the top side of the motor. Periodically remove the return duct at the fan box and clean the squirrel cage to maintain fan efficiency.

### **Parts**

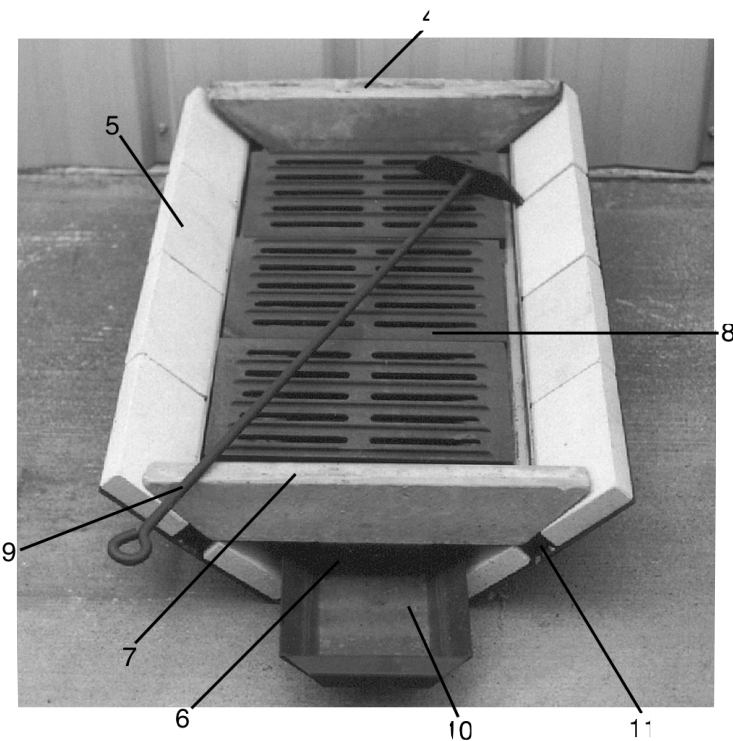
Contact your dealer or the factory for parts. When ordering, simply state the model furnace and part desired. Defective parts being replaced under warranty must be returned to the dealer or factory before new parts will be issued.

# FIREBOX, BRICK AND GRATES



## RESIDENTIAL MODEL 350

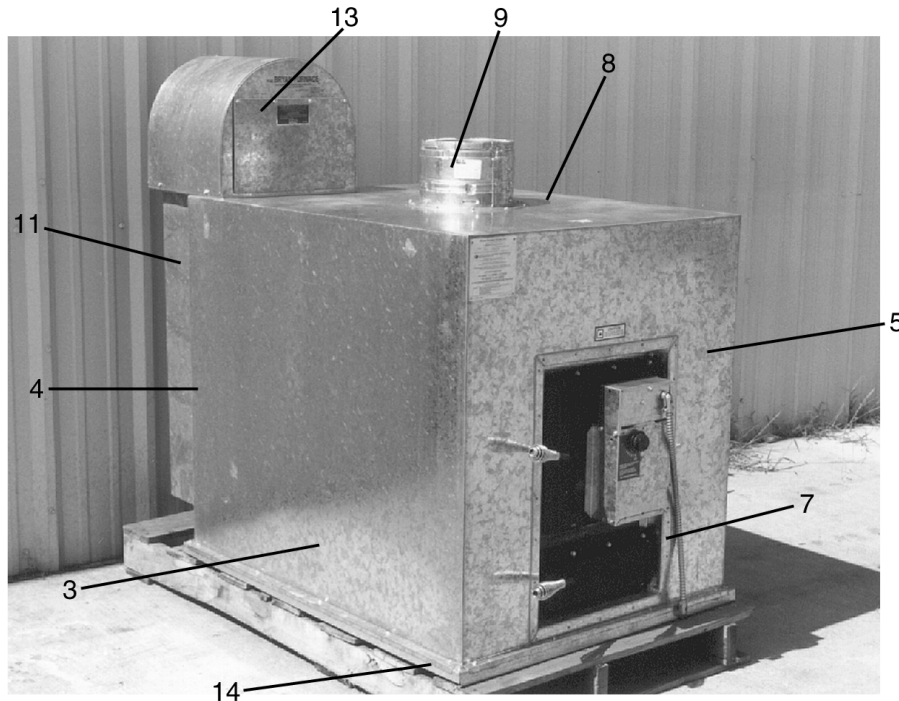
KEY	PART #	DESCRIPTION	QTY
1	960-1370	Base Pan . . . . .	1
2	960-1450	Firebox . . . . .	1
3	950-1304	Firebox Stack Assy . . . . .	1
	1527	Baffle Plate . . . . .	1
4	950-1409	Rear Brick . . . . .	1
5	950-1554	Fire Brick, 1" split . . . . .	16
6	950-1400	Fire Brick, spt tap . . . . .	9
8	904-048	Grate . . . . .	3
9	960-1562	Poker . . . . .	1
10	960-1453	Ash Pan . . . . .	1
11	960-1565	Support, Grate S.S.	



## COMMERCIAL MODEL 300

KEY	PART #	DESCRIPTION	QTY
1	960-1370	Base Pan . . . . .	1
2	960-1455	Firebox . . . . .	1
3	950-1304	Firebox Stack Assy . . . . .	1
	1527	Baffle Plate . . . . .	1
4	950-1409	Rear Brick . . . . .	1
5	950-1401	Fire Brick, 1" split . . . . .	16
6	950-1400	Fire Brick, spt tap . . . . .	9
7	950-1419	Bridge Brick . . . . .	
8	904-048	Grate . . . . .	3
9	960-1562	Poker . . . . .	1
10	960-1453	Ash Pan . . . . .	1
11	960-1565	Support, Grate S.S.	

# SHELTER GROUP



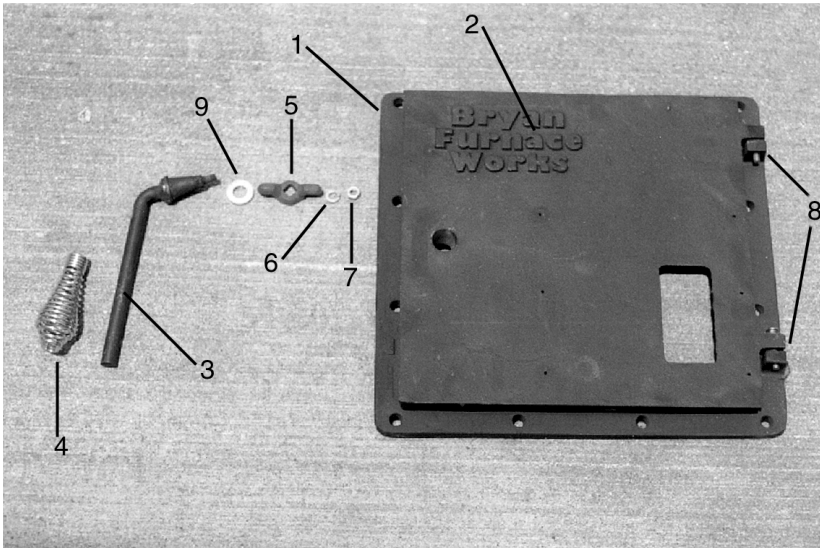
## RESIDENTIAL MODEL 350

## COMMERCIAL MODEL 300

KEY	PART #	DESCRIPTION	QTY
3	1420	Outer Liner . . . . .	1
4	1422	Outer Back . . . . .	1
5	1415	Outer Front . . . . .	1
	960-1558	Inner Liner . . . . .	1
7	960-1452	Galv. Door Frame . . . . .	1
8	960-1376	Adapter Plate . . . . .	1
9	904-037	Starter Collar . . . . .	1
	950-1324	8" Collar . . . . .	1
11	960-1559	Blower Mount w/Duct . . .	1
	950-1325	3" Collar . . . . .	1
13	960-1549	Blower Cover . . . . .	1
14	960-1370	Base Pan . . . . .	1
	950-1380	Insulation Set . . . . .	1
	950-1350	Rope . . . . .	1

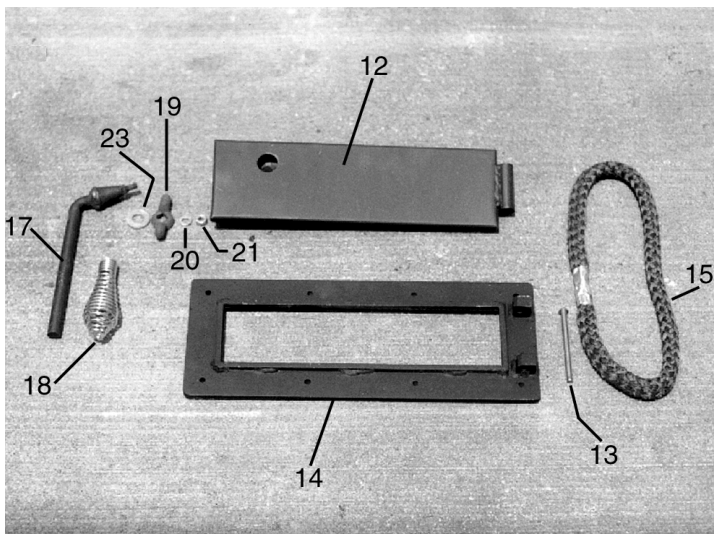
KEY	PART #	DESCRIPTION	QTY
3	1501	Outer Liner . . . . .	1
4	1503	Outer Back . . . . .	1
5	1576	Outer Front . . . . .	1
	960-1456	Inner Liner . . . . .	1
7	960-1452	Galv. Door Frame . . . . .	1
8	960-1376	Adapter Plate . . . . .	1
9	904-037	Starter Collar . . . . .	1
	950-1324	8" Collar . . . . .	1
11	960-1559	Blower Mount w/Duct . . .	1
	950-1325	3" Collar . . . . .	1
13	960-1549	Blower Cover . . . . .	1
14	960-1370	Base Pan . . . . .	1
	950-1542	Insulation Set . . . . .	1
	950-1350	Rope . . . . .	1

## COMMERCIAL MODEL 300 RESIDENTIAL MODEL 350 Door Assemblies



KEY	PART #	DESCRIPTION	QTY
1	904-039	Door Frame, Cast . . . . .	1
2	904-038	Door, Cast . . . . .	1
3	960-1349	Door Handle Assembly . .	1
4	904-073	Wire Grip . . . . .	1
5	904-041	Door Catch . . . . .	1
6	103-015	Lock Washer . . . . .	1
7	103-024	Lock Nut . . . . .	1
8	111-015	Door Hinge Rivet . . . . .	2
	950-1350	Door Rope . . . . .	1
	908-001	Door Glue, 3 oz . . . . .	1
	960-1418	Damper Box Assembly . .	1
		See Page 21	

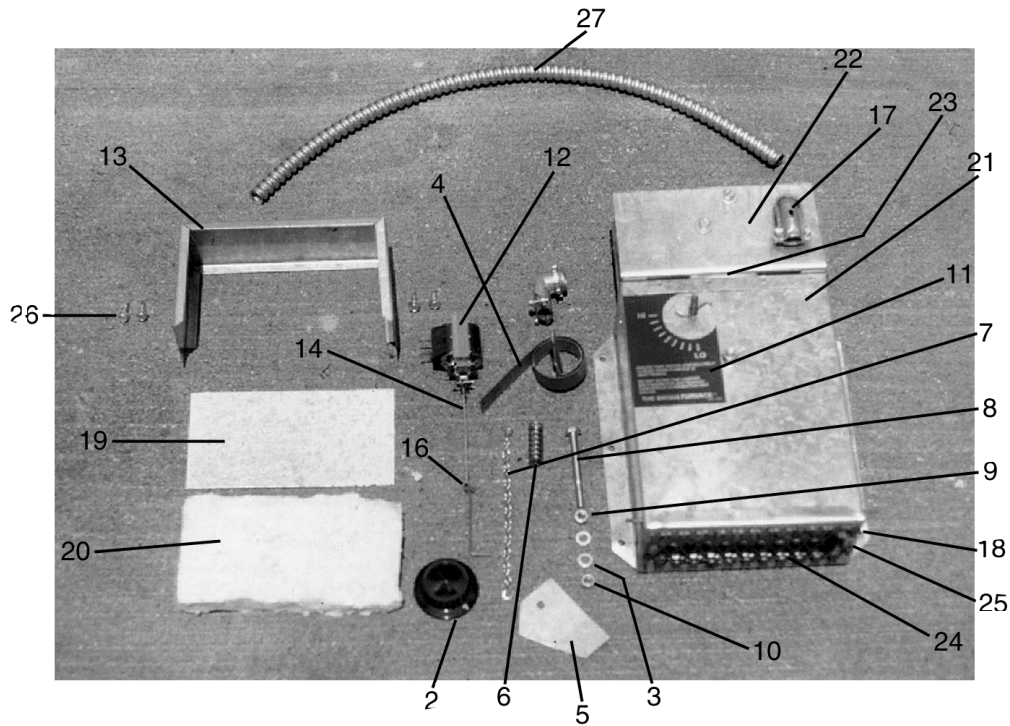
## COMMERCIAL MODEL 300 RESIDENTIAL MODEL 350 Ash Door Assemblies



KEY	PART #	DESCRIPTION	QTY
12	904-042	Ash Door . . . . .	1
13	102-012	Hinge Pin, Ash Door . . .	1
14	904-043	Frame, Ash Door . . . . .	1
15	950-1351	Ash Door Rope . . . . .	1
	908-001	Door Glue, 3 oz . . . . .	1
17	960-1349	Door Handle Assembly . .	1
18	904-073	Wire Grip . . . . .	1
19	904-041	Door Catch . . . . .	1
20	103-015	Lock Washer . . . . .	1
21	103-024	Lock Nut . . . . .	1
22	101-001	Screw, Frame Mounting .	8

# COMMERCIAL MODEL 300 RESIDENTIAL MODEL 350

## Damper Box



KEY	PART #	DESCRIPTION	QTY	KEY	PART #	DESCRIPTION	QTY
	960-1418	Damper Box Assembly Comp.	.1	16	1347	Solenoid Link Wire	.1
2	903-044	Damper Knob	.1	17	603-023	Conduit Fitting, 90 Deg. Mtl.	.1
3	102-017	1/4" Flat Washer	.4	18	903-020	1/8" x 1/2" F/G Sealing Gask	.1
4	705-016	Bi-Metal Damper Spring	.1	19	1539	Heat Baffle	.1
5	1541	Anti-Rotation Bracket	.1	20	950-1426	Insulation Insert	.1
6	705-017	Damper Spring	.1	21	960-1379	Damper Box	.1
7	1335	Damper Chain	.1	22	1534	Solenoid Box Base	.1
8	102-008	Bolt, 1/4" x 2 1/2" HHCS	.2	23	903-017	Spacer Insulation	.1
9	102-021	1/4" Hex Nut	.1	24	1577	Expanded Metal Intake	.1
10	102-011	1/4" Lock Nut	.1	25	1346	Damper Pivot Rod	.1
11	801-068	Damper Decal	.1	26	101-002	#10 x 5/8" Tek Screws	.4
12	607-012	115V Damper Solenoid	.1		908-001	Door Glue, 2 oz	.1
13	1533	Solenoid Cover	.1		111-016	1/8" Pop Rivets	.6
14	950-1417	Solenoid Cable Assembly	.1		101-011	#10 x 3/8" Tek Screw Solenoid	.1
15	111-006	Cotter Pin	.1		101-015	3/16" Flat Washer	.2

# ELECTRICAL SYSTEM

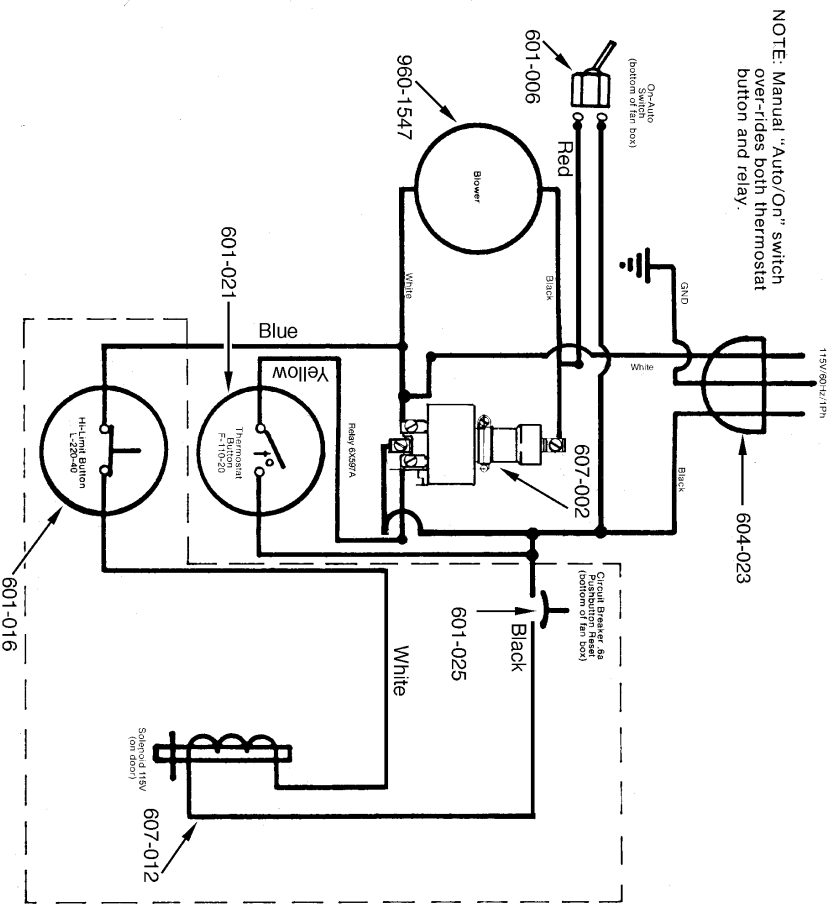
## RESIDENTIAL MODEL 350

PART #	DESCRIPTION	QTY
960-1557	Blower, 350 Res. ....	.1
604-023	115V Pigtail Cord ....	.1
601-021	Thermostat Button ....	.4
601-006	On/Off Switch ....	.1
601-016	Hi-Limit Switch ....	.1
607-012	115V Solenoid ....	.1
603-007	Double Terminal ....	.A/R
601-025	Circuit Breaker ....	.1
603-013	Conduit Fitting, Straight (Plastic) ....	.1
603-012	Conduit Fitting, 90 Deg. (Plastic) ....	.2
604-022	Hi-Temp Wire ....	.A/R
603-011	Liquatite Conduit (Plastic) ....	.A/R
603-023	Conduit Fitting 90 Deg. (Metal) ....	.2
603-022	Greenfield Conduit (Metal) ....	.1
603-021	Loom, Clamp ....	.1

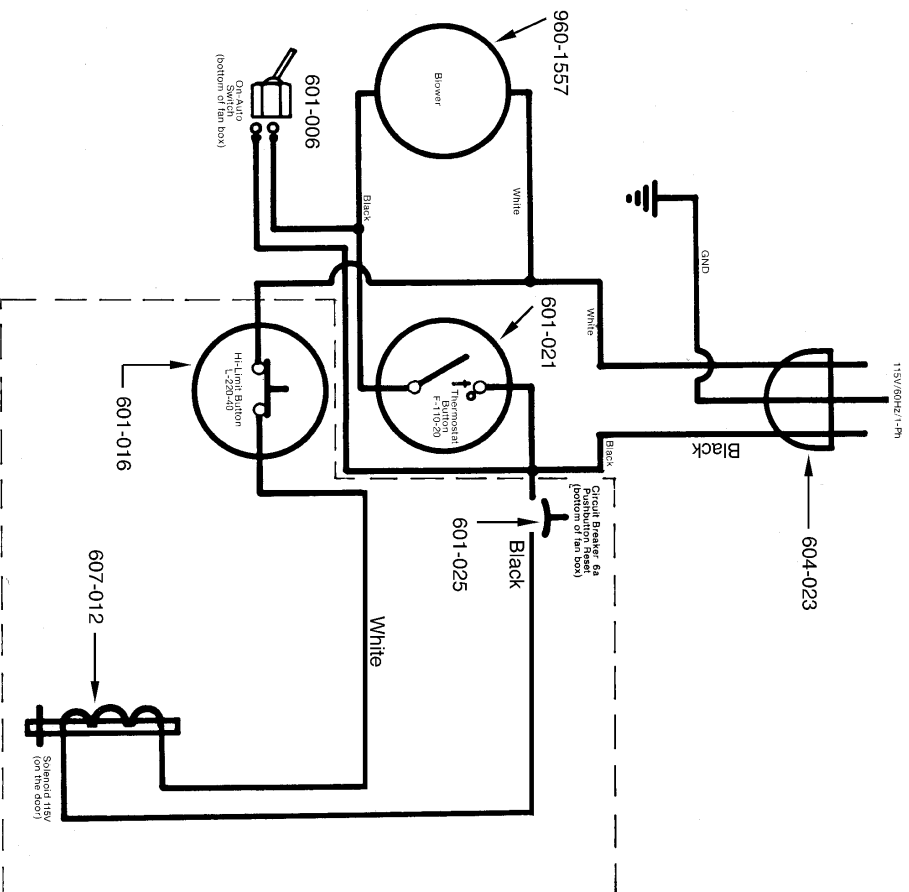
## COMMERCIAL MODEL 350

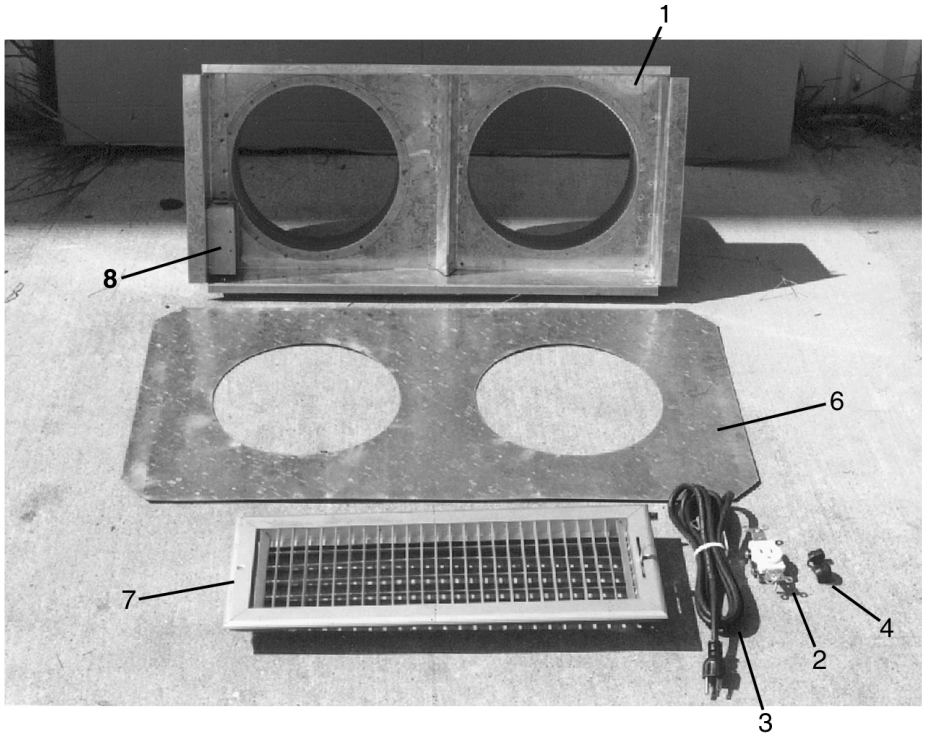
PART #	DESCRIPTION	QTY
960-1547	Blower, 300 Comm. ....	.1
604-023	115V Pigtail Cord ....	.1
601-021	Thermostat Button ....	.1
601-006	On/Off Switch ....	.1
607-012	115V Solenoid ....	.1
601-016	Hi-Limit Switch ....	.1
603-007	Double Terminal ....	.A/R
601-025	Circuit Breaker ....	.1
603-013	Conduit Fitting, Straight (Plastic) ....	.1
603-012	Conduit Fitting, 90 Deg. (Plastic) ....	.1
604-022	Hi-Temp Wire ....	.A/R
603-011	Liquatite Conduit Plastic) ....	.A/R
607-002	Relay, Mercury ....	.1
603-023	Conduit Fitting 90 Deg. (Metal) ....	.2
603-022	Greenfield Conduit (Metal) ....	.1
603-021	Loom, Clamp ....	.1

# WIRING DIAGRAM-COMMERCIAL MODEL 300



# WIRING DIAGRAM-RESIDENTIAL MODEL 350





### MOUNT KIT

KEY	PART #	DESCRIPTION	QTY
1	960-1550	Mount. . . . .	1
2	601-024	115V Outlet . . . . .	1
3	604-023	16/3 SJO Cord . . . . .	1
4	603-015	Strain Bushing . . . . .	2
	603-008	Wire Terminal . . . . .	3
6	950-1532	Flashing Plate . . . . .	1
7	904-047	24" x 12" Grille . . . . .	1
8	603-025	J-Box . . . . .	1
	603-026	J-Box Cover Plate . . . . .	1
10	101-002	#10 x 5/8" Tek Screw . . . . .	6

### CHIMNEY PARTS GROUP

904-044	6" Stack Band
904-049	6" x 48" Double Wall Chimney Pipe
904-050	6" Spark Arrestor Cap
904-054	6" x 24" Double Wall Chimney Pipe (Non-Stock Item)

### FURNACE STAND KIT

970-1554	Furnace Stand Kit
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# SUPPLIES

PART #	DESCRIPTION
101-001	1/4" X 1" Self Drilling Screw, ea.
101-002	#10 x 5/8" Self Drilling Screw, ea.
111-016	18" Pop Rivet
908-014	Refractory Cement, 1 qt.
908-013	Silicone Sealer, 10.3 oz Tube
908-001	Door Gasket Cement, 3 oz.
908-002	Door Gasket Cement, 11 oz.
908-003	Refractory Cement, 1 pint
903-017	Door Rope, Ft. Bulk
921-022	Cold Spray Galvanizing Compound, Spray
921-015	Paint, Black Spray, Hi-Heat, 16 oz.
603-011	3/8" Liqueatite Conduit, fr. (4' min.)
903-020	Gasket Tape, ft.
907-015	Operator & Parts Manual, Bryan Furnace
907-016	Brochure, Bryan Furnace
907-017	Metal-Fab Brochure
909-003	Pallet, Universal
909-004	Box, Universal
903-018	Insulation, sq. ft.
904-075	10" x 54" Flex Duct, 2 per unit
903-040	10" UV Sheath, Pre-cut, 2 per unit
903-041	10" UV Sheath, Bulk

# GENERAL INSPECTION AND CARE FOR YOUR FURNACE

Periodic inspections need to be made on your furnace. Inspect for loose hardware, damaged or worn parts and bad seals on joint areas.

Keep all fasteners tight or properly adjusted.

Replace any damaged or worn parts.

All joints need to be properly sealed to keep moisture out of unit.

Paint any rusted parts.

Wipe unit down with a light film of oil.

## 20-1 OILING BLOWER MOTOR

1. Unplug unit from electrical supply.
2. Remove blower cover.
3. Clean and inspect blower area.
4. Place a few drops of oil into holes. (Holes are marked on motor.)

*Note: Some blowers will need to be removed from unit to access oil holes.*

*Note: Some commercial blowers have sealed bearings and do not require lubrication.*

5. Install blower cover.
6. Plug unit in and test.

## 20-1 ADJUSTING DOOR HANDLE

*Important: All doors must seal tightly for safe operation.*

Periodic adjustments will need to be made with the door handle. As rope seats in and wears it will be necessary to tighten the door handle.

This is done simply by tightening the nut on the back side of latch catch.

If all adjustment has been taken out it may be necessary to remove door catch from handle and rotate catch 180 degrees. This ear is thicker than the other side and will allow for a tighter fit.

## 20-1 REPLACING DOOR ROPES

1. Remove door from unit.
2. Remove old rope from rope channel.
3. Clean all old glue and rust out of rope channel.
4. Apply an even film of high temperature glue all the way around rope channel.
5. Start with one end of rope and push into rope channel. Work all the way around the rope channel.

*Note: Do not start rope on the corner.*

*Note: The rope may need to be pulled or pushed back up to make fit. Make sure the rope is even all the way around door.*

6. Apply glue to each end of rope and glue together.
7. Turn door over and leave until glue has set up.
8. Re-assemble door to furnace.

## 20-2 RE-SEALING DOOR FRAME

1. Remove door from unit.
2. Remove door frame. (Remove all screws in frame)
3. Clean all old cement from frame and shelter assembly.
4. Apply refractory cement generously to frame. Fill corner joints in the shelter assembly.
5. Place frame into shelter assembly and clamp in place.
6. Install screws and tighten.

*Note: If screws will not tighten up, it will be necessary to drill holes out and install 1/4" bolts with nuts.*

7. Remove clamps and clean any excess cement up.
8. Install door on furnace.

## LIMITED WARRANTY

1. We warrant each new furnace manufactured by us and still owned by original purchaser to be free from defects in material and workmanship.
2. This warranty shall become effective from date of purchase and remain in effect for a period of one year for all components with the following exceptions:
  - (A.) The combustion chamber shall remain in effect for a period of five years from date of purchase by original owner.
3. This warranty applies only to defects in material and workmanship. It does not apply to normal worn parts or to damage caused by:
  - (A.) Misuse, neglect, modification, or lack of maintenance.
  - (B.) Use of an accessory or part not manufactured or sold by us.
  - (C.) Alteration or removal of parts.
  - (D.) Smoke or fumes.
4. Reasonable access must be provided to the product for warranty service.
5. This warranty does not cover the following services:
  - (A.) Telephone or rental charges of any type.
  - (B.) Inconvenience, loss of time or income.
  - (C.) Other consequential damages.
6. After receipt and inspection of unit to insure all parts and workmanship are satisfactory, the following parts are not warranted:
  - (A.) Cast iron grates.
  - (B.) Door gaskets and latches.
  - (C.) Fire brick and front or rear refractory.
7. Claims shall be made under this warranty by written notice to Manufacturer's local distributor. If the service is not covered by this warranty, purchaser shall pay for all related labor and material.
8. Our obligation under this warranty shall be limited to repairing a defective part or at our option replacing such part or parts as shall be necessary to remedy any malfunction resulting from defects in material or workmanship as covered by this warranty. We reserve the right to change or improve the design of the product without assuming any obligation to modify any product previously manufactured.
9. Manufacturer hereby disclaims that the furnace is suitable to act as the sole heating unit for any structure.
10. The duration of any implied warranty hereunder is hereby limited to a period of one year from date of purchase.

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## WARRANTY REGISTRATION

This card must be completed and mailed within 10 days of the purchase of your Bryan Furnace for your warranty to come into effect.

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_ Phone \_\_\_\_\_  
Date Purchased \_\_\_\_\_ Model \_\_\_\_\_ Serial No. \_\_\_\_\_  
Dealers Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
Price Paid \_\_\_\_\_ Dealer Installed \_\_\_\_\_ Owner Installed \_\_\_\_\_  
How did you first hear about the Bryan Furnace: Friend \_\_\_\_\_ Dealer \_\_\_\_\_  
Show \_\_\_\_\_ Advertising (type) \_\_\_\_\_ Other \_\_\_\_\_

---

From \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Place  
Stamp  
Here

**RIK-MAR INC.  
P.O. Box 4232  
Bryan, Texas 77805**