

PARTS PRICE LIST FOR MAGIC HEAT

1)	C75-MHSC-10	Outer Case Assembly**	\$25.00
2)	C75-MHSI-10	Inner Case Assembly**	48.00
3)	C75-MH-3	Outer Back	9.00
4)	C76-MH-12	Motor	35.00
5)	C76-MH-13	Fan	9.00
6)	C76-MH-14	Cord (Electric)	8.00
7)	C78-MH-15	Thermostat (Wood, Coal and Oil)	8.00
7)	C78-MH-40G	Thermostat - Gas	8.00
*	C75-MH-16	Name Plate	3.00
*	C75-MH-17	Sheet Metal Screws	.50
8)	C78-MH-18	Bushing (Cord)	2.00
*	C75-MH-25	Instructions	2.00
9)	C78-MH-31	Toggle Switch	5.00
9)	C78-MH-31G	Switch - Gas	5.00
*	C78-MH-32	Indicator Plates	1.00
*	C78-MH-32G	Indicator Plates - Gas	1.00
*	C78-MH-34	Ground Wire	2.00
10)	C78-MH-38	Thermostat Leads	3.00
11)	C78-MH-41	Heat Shield	3.00
12)	C78-MH-42F	Junction Box Standard Outside	3.00
13)	C78-MH-42R	Junction Box Standard Inside	3.00
14)	C77-MH-42F	Imperial Outer Junction Box	3.00
15)	C55-77F	Soot Scraper Knob	3.00
16)	C76-MH-1	Frame	9.00
17)	C76-MH-4	Lower Plan (ea)	2.50
18)	C76-MH-5L	Lower Left (with hole)	2.50
19)	C76-MH-5R	Lower Right (with hole)	2.50
*	C76-MH-7	Tubular Clip (ea)	1.00
20)	C76-MH-10A	Knob Hi-Lo	3.00
21)	C76-MH-13	Rheostat	15.00
	C79-MH-45	Wiring Harness	10.00
	C75-MH-3K	Complete Imperial Back Assembly (includes: 3, 4, 6, 8, 9, 10, 11, 13, 14, 20, 21)	60.00
22)		Complete Standard Back Assembly (includes: 3, 4, 6, 8, 9, 10, 11, 12, 13)	48.00

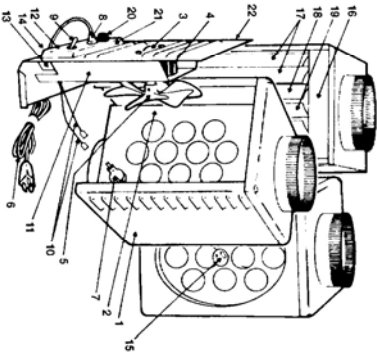
*Not Shown

Prices do not include freight

****NOTE:**

Specify flue diameter and model number for ordering part numbers:
 C75-MHDO-10
 C75-MHSI-10 (Crimped pipe - top/bottom)

PRICES SUBJECT TO CHANGE WITHOUT NOTICE



NELSON PRODUCTS CO. • 100 FRONT STREET • SIOUX RAPIDS, IA 50585
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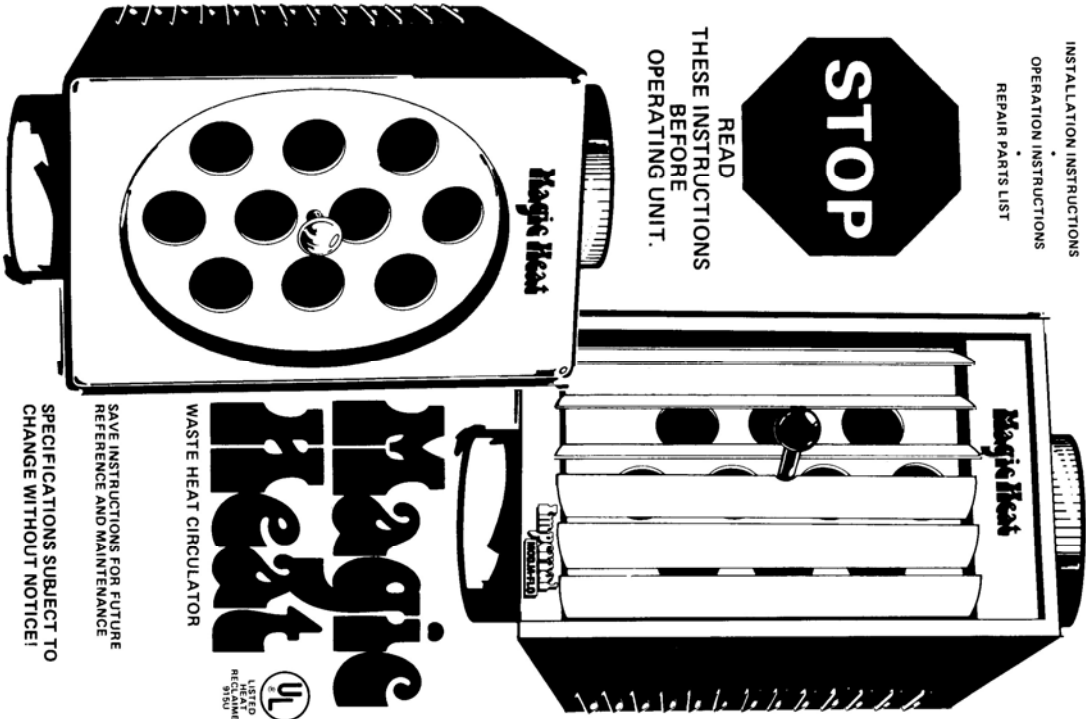
INSTALLATION INSTRUCTIONS

OPERATION INSTRUCTIONS

REPAIR PARTS LIST



READ THESE INSTRUCTIONS BEFORE OPERATING UNIT.



Magic Heat
 WASTE HEAT CIRCULATOR



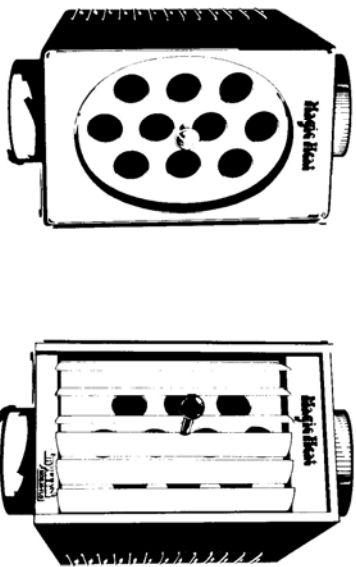
SAVE INSTRUCTIONS FOR FUTURE REFERENCE AND MAINTENANCE
 SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE!

Your Magic Heat is designed to recover a portion of the heat that is normally vented to the outside air. The amount of heat that is recovered from the unit will depend upon the type of fuel that is burned and the type of heating appliance on which the Magic Heat is mounted.

The efficient operation of your Magic Heat depends almost entirely upon the draft in your chimney. Again, the type of fuel that is burned and the type of heating appliance will determine the draft to a great extent.

The Magic Heat unit (which is a true heat-exchanger) is designed in two different models. The standard model incorporates ten recovery tubes, thermostatic control and a constant speed fan which blows the heated air directly into the room. The Imperial model incorporates the same features with the added convenience of louvers and a rheostat. The louvers direct the air to any desired part of the room and the rheostat gives the unit an infinite number of fan speeds.

Both models are installed on your heating appliance in an identical manner.



Models MH-6 thru MH-9
Standard Unit - crimp flue outlet on top
Models MH-6-R thru MH-9-R
Standard Unit - crimp flue outlet
on bottom (for air-tight heaters)

Imperial Models MHL-6 thru MHL-9
Louvered Unit - crimp flue outlet on top
Imperial Models MHL-6-R thru MHL-9-R
Louvered Unit - crimp flue outlet
on bottom (for air-tight heaters)

GENERAL INSTRUCTIONS

CAUTION: The installation of the heat reclaimer is to be made only by a qualified agency, who is engaged and responsible for, or is thoroughly familiar with, the installation and operation of the appropriate fuel-burning appliances and heat reclaimers, who is experienced in such work, familiar with all precautions required, and has complied with all the requirements of the authority having jurisdiction.

The temperature of the flue gases shall be determined before installing the heat reclaimer. The heat reclaimer shall not be installed if the flue gas temperature is less than 280°F or if it exceeds 1000°F ahead of the heat reclaimer.

DO NOT:

1. Mount, operate or use your magic Heat until you read these instructions thoroughly.
2. Neglect to clean your Magic Heat in accordance with the instructions.
3. Unplug unit while it is operating under fire.

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4. Insert any object through louvers that would interfere with the operation or rotation of the fan.
5. Leave the knob of the soot remover closer than four inches to the front face of the unit while it is operating.
6. Restrict air movement through the louvers.
7. Burn high intensity fires for extended periods of time.
8. Plug the unit into an electrical outlet that is operated by a wall-mounted on/off switch.
9. Use aluminum piping on oil or solid fuel burning appliances.
10. Alter Magic Heat or its components in any way. This will invalidate your warranty.
11. Use a Magic Heat that has a smaller flue diameter than the diameter of your heater, fireplace or stove.

12. Burn a fire in your fireplace, stove or heater when the Magic Heat is inoperative, unless back is removed to prevent electrical component damage.

13. Burn unseasoned or green wood in your heater.

14. Install on fireplaces, stoves or heaters with a flue temperature of less than 280°F.

15. Mount Magic Heat on a unit which smokes. Magic Heat will aggravate this situation. Correct smoking situation before mounting Magic Heat.

16. Install Magic Heat closer than 18 inches to any combustible object.

17. Touch Magic Heat while unit is in operation. There is the possibility that severe burns may result. Keep children, clothing and combustible material away from unit.

18. Connect to ductwork that will not allow the operation of the soot scraper daily which is necessary on wood, coal and oil heating appliances.

19. **CAUTION — DO NOT** install Magic Heat in horizontal position on wood, coal or oil burning equipment because of soot, creosote and tar build up. Accumulation of this material will block off flue passage and render Magic Heat inoperative since there is no place for soot to settle when tubes are cleaned. Bad combustion or a chimney fire could result from this type of installation.

DO:

1. If a replacement part is needed and your unit is still under warranty, return the defective part to place of purchase. A new part will not be sent if the defective part is not returned.
2. Scrape the tubes with the soot scraper after each firing for wood and coal burners and at least weekly on oil heat.
3. Burn paper or cardboard every other day to burn away products of combustion (creosote and soot), especially thermostatically controlled wood and coal burning stoves.
4. Have your chimney checked for sufficient draft by a competent heating specialist.
5. Leave your soot scraper knob at least 4 inches from the Magic Heat face while in operation.
6. Keep electrical cord plugged in at all times, except for servicing or when back is removed due to power failure.
7. Keep hands, children, clothing and combustibles away from unit while in operation.
8. Keep electrical cord at least 12 inches from contact with flue pipe.

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9. When corresponding with Magic Heat Corporation concerning Magic Heat, do not neglect to include the serial and model number of your unit. See label on back of Magic Heat unit.

INSTALLATION INSTRUCTIONS

(Also see: *Oil, Gas and Horizontal Installations*)

A. CHIMNEY

Any prefab (all fuel) chimney should be installed according to fireplace or heater manufacturers' specifications.

DO NOT reduce any minimum clearances which may be listed in your heater or fireplace instructions. For wood, coal and oil burning type heaters, a type A or masonry chimney must be used. Check your local or state building codes for proper and safe installation. For further information, ask advice from a competent heating technician or refer to the following National Standards:

Ref. NFPA-No. 54 or ANSI Z223.1

NFPA-No. 31 Oil Burning Equipment

NFPA-No. 211 Chimney, Fireplaces & Venting Systems

DRAFT: At the present time your chimney may have an adequate draft; however with the addition of the Magic Heat your chimney may not draw as efficiently and some amount of smoking could occur. You will notice this smoking during the first few fires after installing Magic Heat. If smoking continues to occur, increase the height of the chimney to correct this problem. This may require more than one length of stack. Your chimney should be capable of developing at least .06" W.C. draft before installing a Magic Heat. After installation, the chimney should develop at least .045" W.C. BELOW Magic Heat.

Restricting the face opening of your free-standing fireplace or Franklin stove will increase draft pull and prevent smoke from spilling into the room. We recommend the use of glass doors on fireplaces and partially closed doors on Franklin stoves.

B. FLUE OR STOVE PIPING

1. Any flue or stove piping below Magic Heat must be 24 gauge metal to provide adequate support. Horizontal run of pipe must pitch upward toward the chimney at least 1/4 inch per foot of run.
2. Any elbow below Magic Heat must be of the nonadjustable type as shown in Figures 2 and 4. We recommend a tee and cap be used on rear or side flue outlets to allow soot to collect. Clean periodically by removal of cap secured with screws.
3. Any flue or stove pipe joint below Magic Heat must be secured by using at least three sheet metal screws as shown in Figures 1-5. **DO NOT USE SOLDER.**
4. Install hand damper (wood and coal) below Magic Heat. See section on Oil Burning Equipment for information concerning barometric dampers.
5. Single wall metal pipe must maintain a horizontal minimum distance of 18 inches from combustible objects.
6. Seal flue pipe where it enters chimney; use furnace cement or high temperature mortar to prevent draft loss.
7. For a new flue or stove pipe, obtain a 12 inch length of 24 gauge flue or stove pipe that is crimped on one end and uncrimped on the opposite end.
8. For an existing flue or stove pipe, you can use 12 inches of the flue or stove pipe that was removed to accommodate your Magic Heat. Be certain to measure the 12 inch length from the crimped end.
9. The corrugated portion of the Magic Heat is the top of your unit. (Exception: Some units are made with the corrugated portion as the bottom, and these models are designated by the letter "R" in bold letters on the box.)

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10. Check to see that the flue or stove pipe is perpendicular to the floor, and the flue or stove pipe including Magic Heat is as straight as possible. This should be done before proceeding to Step 11.

11. Fasten the Magic Heat to the flue or stove pipe by using a self-tapping sheet metal screw. (Example: No. 8 x 3/8 inch sheet metal screw.) Drill a hole slightly smaller than the screw through both sections of flue or stove pipe. Use three screws per joint for stability on every joint (see Figure 5).

12. Secure the electrical cord so that it will not come in contact with or hang near flue or stove pipe. Keep cord at least 12 inches away from flue or stove pipe. Extreme heat of the flue or stove pipe will damage the electrical cord.

13. Connect or plug in your unit to 120V, 60 Hz electrical outlet. This should be one that is not operated by a wall switch. Inadvertent shut-off with a fire in your stove will cause irreparable damage to the electrical system of your Magic Heat. Should power fail, remove back (see: In Case of Power Failure).

14. On wood, coal and oil units, turn toggle switch to on position and unit will turn on. Turn to off position and unit will stop. Leave in off position for automatic operation.

15. On gas models, a momentary contact switch is used to test electrical circuitry. It automatically shuts off when released. Unit will then operate automatically by thermostat.

16. Check all the steps above and see that they have been completed before operating your Magic Heat.

HORIZONTAL INSTALLATIONS FOR MAGIC HEAT

CAUTION: We do not recommend horizontal installations for the Magic Heat on wood, coal or oil stoves due to creosote and soot build up. When mounted in a horizontal position and the soot scraper is used, there is no place for the loose material to drop out, so it stays in the Magic Heat and builds up to a point of plugging the unit. When this happens it could cause a serious fire in the Magic Heat, flue pipe, chimney or, smoke up the house.

The Magic Heat should be supported by wires or steel straps to keep excessive weight from being applied to the flue or stove pipes (see Figure 9).

C. ELECTRICAL WIRING

All electrical connections of Magic Heat terminate in a junction box located at the lower rear of the back. This is to conform with the various local electrical codes and authorities having jurisdiction.

A supply cord is shipped loose with Magic Heat to allow for a portable electrical connection where permitted by local authorities.

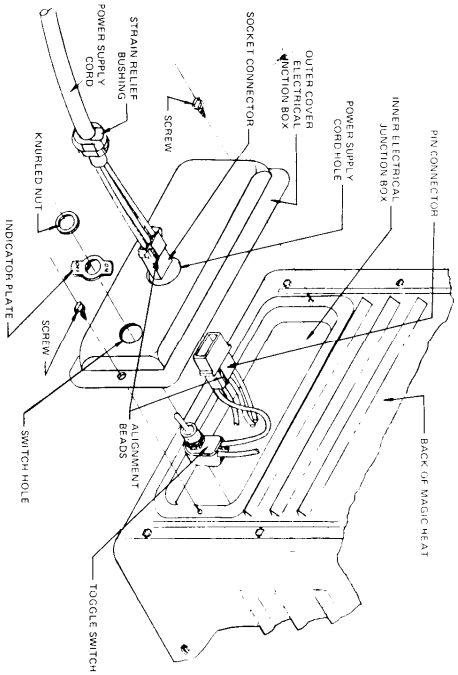
An electrical opening is provided to allow for either portable or permanent connection of electrical service.

FOR PORTABLE ELECTRICAL CONNECTION:

1. Remove 2 screws from outer cover of electrical junction box on the back of Magic Heat unit and remove outer cover. Note all wiring has been factory connected.
2. Lift out toggle "On-Off" switch found inside inner electrical junction box and remove the knurled nut and the "On-Off" indicator plate from the switch.
3. Push the toggle switch through the switch hole from inside the outer cover of the electrical junction box.
4. Place the "On-Off" indicator plate over the toggle switch engaging tab on indicator plate in groove of toggle switch. Be sure the word "On" is in the up position and secure in place with knurled nut.
5. Remove the strain relief bushing found inside the inner electrical junction box and place over outer jacket of power supply cord allowing outer jacket to protrude 1/8" past lead end of strain relief bushing.

5.

6. Grip the strain relief bushing with pliers and feed socket connector through power supply cord opening.
 7. Squeeze the bushing with the pliers and at the same time push bushing through power supply cord opening until flange of bushing is against face of outer cover and release. Bushing should be firmly locked in place. Test by pulling on cord.
 8. Assemble the socket connector of the power supply cord to the pin connector found inside the inner electrical junction box. Be sure to align the raised beads on both connectors before pushing together.
 9. Check electrical circuitry by connecting power supply cord to electrical supply and place "On-Off" switch in "On" position. Motor should start fan rotating. On MHL models, repeat above instructions and turn rheostat knob to check variable speed of motor. On gas units, depress momentary switch to activate motor and fan.
 10. Replace outer electrical junction box cover being sure all wires are inside the flange area of junction box and secure with screws removed in Step 1.
- Note:** When unit is permanently wired, disregard power supply cord and strain relief bushing. Remove the pin connector by cutting the wires as close as possible to connector housing. Follow wiring diagrams Figure 7 and 7A on page 14.



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IN CASE OF POWER FAILURE

If a power failure occurs and it is anticipated to last longer than 15 minutes, we recommend the removal of the back panel assembly to protect the electrical components from the heat generated by the heating appliance, especially wood and coal stoves. The appliance may be kept in use, however, **DO NOT FIRE AT A BURNING RATE THAT ALLOWS HEAT TUBES TO BECOME RED HOT**, as this could damage the tubes and break their air seal. Failure to comply could allow fumes to escape into the living area and cause a hazardous condition (carbon monoxide) to exist.

The removal of the back assembly is also recommended on boilers that are used in the summertime for household hot water, if heat from Magic Heat is undesirable. See following paragraph to remove back assembly.

TO REMOVE BACK, FIRST UNPLUG ELECTRICAL CORD FROM OUTLET.

Remove the ten (10) screws from the back (four on each back corner and one on each side of the Magic Heat at the bottom edge). Drop the back down about 1 1/2 inches and lift out. Remove the two wires from the thermostat. The assembly can now be removed, but be careful not to bend the fan blades.

To reassemble, reverse the above procedure, being careful not to bend or alter the blades on the fan as excessive noise and vibration may result. Be sure the wires are out of the way of the fan. Do not over tighten the screws as they may strip.

OPERATION

CAUTION: Before operation, check to see if all the procedures and steps noted in the installation section have been completed.

Build a fire in your fireplace or heater. During this first firing the film of oil that is on the front face and tubes will burn off. Do not become alarmed! The smoking should cease within 5-10 minutes. After the above stated time, smoke may be evident in the air, but no smoke should be seen coming from Magic Heat. If smoke is still coming out of the unit, discontinue its use after a fair amount of time. Do not attempt to make repairs. Any alteration of Magic Heat or any part of Magic Heat will invalidate the warranty.

Shortly after the fire is started, your Magic Heat will automatically turn on by the thermostat. As your fire cools down, the Magic Heat will automatically turn off.

The manual switch should always be in the "Off" position (fan not running) unless fan is desired (for summer use) when heater is not in operation. Fan will run continuously if switch is "On". Turn unit "Off" by switch, not by disconnecting the power supply cord.

When the unit is operating automatically, the manual on/off switch will not affect the operation of the unit. When unit is operating normally, no attempt should be made to stop its operation. Damage may result to the electrical system if the unit is stopped while under fire.

CAUTION: The thermostat is a safety device as well as a convenience. **DO NOT** attempt to alter its configuration.

CAUTION: Runaway fires in heater produce excessive temperatures that could damage Magic Heat electrical components if subjected to these temperatures for extended periods of time. **DO NOT ALLOW HEAT TUBES TO GET RED HOT.**

CLEANING

CAUTION: Failure to clean the Magic Heat regularly as described could lead to a chimney fire or a smoking appliance.

When installed on wood and coal fired heaters, use your soot scraper several times a day to clean the tubes. In addition to cleaning the tubes daily, burn paper or cardboard every other day to further assist in cleaning the tubes. If cleaning is neglected

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for an extended period of time, there is a possibility that an excessive amount of creosote or other products of combustion may be deposited on the tubes and prevent further use of the soot scraper.

Once a year, have a qualified serviceman remove your Magic Heat from the flue pipe and clean unit thoroughly. A long handled, bristled brush with soap and water, cleaning solvent, steam or a commercially available soot remover should be used for cleaning. After cleaning, apply a light coating of oil to prevent rust.

Ammonia can be used to help clean the Magic Heat. Put some ammonia in a container and place the Magic Heat over it. Cover the outlet and let it set from one to two hours. The creosote should work loose; if not, it may be necessary to repeat the procedure.

CAUTION: Use in well ventilated area, avoid breathing fumes and follow all cautions on ammonia bottle.

It is further recommended that once a day the heating equipment be fired on high fire for some duration of 10 to 15 minutes to burn off soot on heat tubes of Magic Heat, and soot scraper operated during the firing to dislodge any soot deposited on tubes. (Not necessary for gas).

In lieu of the aforementioned, the use of a commercially available soot remover such as Chimney Sweep, Burn Rite, etc., should be used to keep soot and tar build up from accumulating.

CAUTION: DO NOT OVERFIRE YOUR HEATING APPLIANCE

Serious chimney conditions can result from overfiring your heating appliance. These are basically the overheating of the chimney and the accumulating of soot, tars, and fly ash.

Overheating of the chimney will transfer the heat to the combustible material of the building and fire can result.

The most serious condition is the accumulation of soot, tar, creosote and fly ash in the chimney. When this is allowed to accumulate, a serious chimney fire can result when overfiring is attempted. This build up can catch fire and burn with a high heat release. Flames and sparks will shoot out the top of the chimney accompanied by a rattling sound. Flame temperatures up to 3000° F can be developed and chimneys have been known to expand and crack during this type of firing.

This type of a fire will last from 10 to 30 minutes, depending on the thickness of the tar or creosote build up. Thus, it is essential that you keep your Magic Heat, flue or stove pipe and chimney clean as described in these instructions.

A guide as to how much fuel your hand fired appliance can safely burn is listed in the back of this booklet.

To maintain a clean chimney, you can use a chemical in the fire to prevent soot build up, or you can clean it mechanically. While there are various opinions about the effect of chemical cleaners on metal chimney liners, it has been reasonably well established that such cleaners, used as directed, will not damage metal chimney flues.

TO OIL MOTOR: UNPLUG CORD.

Remove the back as described under "In Case of Power Failure" section. Then remove fan blade and six (6) screws that secure heat shield to back. Clean dust away from oil ports. (See Figure 6) and oil motor with two (2) drops of SAE 20 light motor oil.

TO INSTALL MAGIC HEAT ON OIL BURNING HEATING EQUIPMENT

Before installing Magic Heat on oil burning equipment, the following steps must be taken to assure that the burning efficiency of the furnace or stove will not change from its burning efficiency prior to the installation of the Magic Heat.

1. Check stack draft with draft gauge when the heating equipment is in operation. This check point should be between the flue collar of the appliance and the draft regulator or barometric damper control. Use same check point for all checks listed. Draft readings are read in hundredths of an inch of water column-static draft. Example: .035 W.C. is read as 3 1/2 hundredths of an inch of static draft negative. If draft gauge is not available, observe and measure the distance that gate of barometric opens outward or inwardly depending upon the type control used. (See Figure 8). Record same.
2. Check stack flue gas temperature with thermometer when unit is in operation. Record same. Use this same check point for all checks listed. (See Figures 3 & 4).
3. A CO₂ (Carbon Dioxide) reading should be taken. This indicates the amount of excess air passing through the combustion chamber over that required for good combustion. The higher the CO₂, the less excess air is being introduced. Check heating equipment or burner manufacturer's recommendation for proper CO₂ reading. Normally with oil the CO₂ readings will range from 8 to 10 per cent CO₂; however, some manufacturers will recommend higher CO₂ readings. If no CO₂ meter is available, these checks can be normally obtained from your fuel oil supplier.
4. Install Magic Heat between the flue collar and draft regulator. (See Figures 3 & 4); secure with at least three sheet metal screws in both inlet and outlet ends.

Recheck Steps 1 through 3 with heating equipment operating. If draft is lower than previous reading, close barometric damper until same draft reading is obtained. (See Figure 8). Stack temperature and CO₂ reading should now be the same as that previously recorded. When the stack draft temperature and CO₂ readings are the same as before Magic Heat was installed, the burning efficiency will remain the same.

CAUTION: If oil burning odors are ever present, shut system down and check Magic Heat and vent pipe for sooting. Check stack draft for any change and barometric damper for sticking open.

To check for sooting or bad combustion where no instruments are present, take a 16 penny spike and place in the hole where draft temperature and CO₂ readings were taken; leave in place for several hours. Remove spike and observe for soot build up. If spike is only tarnished yellow or tan stained, the combustion is good. If spike is black or sooty, this indicates combustion is poor. Closing of the barometric damper slightly will normally correct this as smoke (or soot) indicates a lack of combustion air.

The proper method is to have your oil dealer check the flue products with a True-Soot Smoke Tester manufactured by Bacharach Instrument Company. This records the smoke spot and indicates the density of the smoke or unburned carbon in the air stream of the flue gases. An indication of spots in the 1 and 2 density is normally regarded as good combustion with No. 3 spot as fair, requiring yearly cleaning of flue pipe and Magic Heat. No. 4 spot is the borderline for smoke and on some heating equipment sooting may occur rapidly and on others only moderately. This should be done by a qualified oil serviceman yearly.

TO INSTALL MAGIC HEAT ON GAS APPLIANCES

CAUTION: The installation of a Magic Heat on a gas heating appliance should not be attempted by anyone who is not experienced with such work, or familiar with the precautions required and is not capable of complying with all the requirements of the authorities having jurisdiction. If you are not familiar with such work and the precautions required to assure clean, safe combustion of the gas and safe operation on the appliance, **DO NOT ATTEMPT TO INSTALL THE MAGIC HEAT UNIT.** Have it done by a qualified installer who is versed on the use and safety of gas heating equipment.

NOTICE: The switch at the back of unit is a momentary contact test switch to check the electrical circuitry. When depressed, motor and fan should operate. When released, motor shuts off. Unit will operate automatically by the thermostat.

Before installing Magic Heat on a gas heating appliance, the following precautionary steps should be conducted to assure that the burning efficiency and combustion of the gas has not been altered from what it was before the Magic Heat was installed.

1. Check chimney draft with draft gauge when heating equipment is "Off", and while in operation. Draft should be taken at sample points on the furnace or heater side and the chimney side of the air diluter (draft diverter). (See Figures 10 & 11). Record these readings.

If draft gauge is not available, use a lighted match and pass around the edges of the draft diverter inlet with the unit in operation. The flame of the match should be drawn into the draft diverter. If flame is blown back into the room, you do not have proper draft. **DO NOT INSTALL MAGIC HEAT.**

Spillage means that either a down draft condition exists in the chimney or the heating appliance is over gased.

This condition must be corrected before Magic Heat can be installed.

2. Check flue gas temperature using a thermometer with unit in operation. This check should be done on both the appliance and chimney side of the draft diverter. (See Figures 10 & 11 for sample points).

If flue gas temperature is not 350° F on chimney side. **DO NOT INSTALL MAGIC HEAT.** Record these temperatures.

3. A combustion check (CO₂ Carbon Dioxide) should be taken with a CO₂ meter. This indicates the amount of excess air passing through the combustion chamber over that required for good combustion.

Check heating manufacturer recommendations for proper CO₂ reading. Normally it will range from 7.8% CO₂.

The higher the CO₂ reading, the less excess air is being introduced. These checks should be taken at sample points shown (Figures 10 & 11) and recorded with flue gas temperatures and draft readings.

The combination of CO₂ reading and flue gas temperature gives the efficiency of the appliance. These readings should be the same after Magic Heat is installed. These checks (draft and CO₂) should be taken at the appliance side of the draft diverter and should be the same as those prior to installation of Magic Heat. Check draft diverter for spillage.

For example: A 6 1/2% CO₂ reading at 350° F stack temperature gives approximately 78% efficiency from the burning gas. A 8 1/2% CO₂ reading at 350° F stack temperature gives approximately 81% efficiency.

An installation is not complete unless this test is conducted to assure that the efficiency of the heating appliance has not been altered by the addition of Magic Heat. If stack draft, CO₂ and flue temperature remain the same on the heater side of the diverter after Magic Heat installation, the efficiency remains the same.

In no case should spillage of gases occur at the inlet of the draft diverter. If there is spillage, **DO NOT INSTALL MAGIC HEAT.**

CAUTION: If at any time, you detect an odor or if eyelids itch or burn or if a headache or nausea develops, discontinue use, call a serviceman immediately and have the venting system and room air checked. **DO NOT** use Magic Heat until this check has been made.

WARNING: Carbon Monoxide is both odorless and colorless, therefore its presence is not detectable by smell. However, Aldehydes which are one of the products of incomplete combustion and associated with Carbon Monoxide (CO) are very strong and easily detectable by nose and burning sensation to the eyes.

Follow these instructions carefully, being certain all checks are made before and after installing Magic Heat. Operate soot scraper at least once a week as a safety precaution against flue stoppage. Check stack vent yearly before each heating season begins. This should be done by a qualified gas heat serviceman.

CHIMNEY FIRES

"THEY CAN LEAVE YOU HOMELESS!"

A lonely chimney standing by itself in the country, where a house once stood, could well have been the result of a chimney fire. Chimney fires are not new; this all too common scene from the past was a product of poor communications and bad heating equipment.

However, things improved. Better equipment, inspected buildings, and better fuels have dropped chimney fires from number three to number eighteen on the National Fire Protection Association's list of leading causes of property damage.

But now all this has changed because of high fuel costs and shortages. People are turning to wood and coal heaters for an extra heat source; however, some heaters are less efficient and do not have the safety devices of modern automatic equipment.

With a wood or coal stove, when a person becomes cold, they open the damper full and stuff more fuel on the fire and let it go. They can now have an overheated stove, which is dangerous.

To understand how a chimney fire can start, you must understand how solid fuels (such as wood and coal) burn. Most solids are complex, organic compounds which break down when burned. Many interesting substances arise from the fire bed and enter the smoke going up the chimney. With a limited air supply, as in a dampened down operation, tar, ammonia, hydrogen sulfide, benzene, toluene, phenol, methone, and carbon monoxide, etc. are produced in a coal fire.

Wood is largely cellulose. Under the same conditions, a wood fire will produce creosote, which in turn breaks down into acetic acid, acetone, methyl alcohol and even turpentine. Both of these fuels produce large amounts of soot.

The basic cause of chimney fires is the chimney becoming overheated and rapidly loses heat to its surroundings. Nearby combustible material becomes overheated and catches fire. Chimneys, including brick, cement, or metal can become overheated for two reasons: (1) over firing for extended periods, and (2) internal fire in the chimney due to soot, tar, creosote, etc.

The most serious condition results from the accumulation of soot, tar and creosote in the chimney. An inch thick layer of highly combustible material can build up on the inside of the chimney in a few months. Green wood and soft woods, such as pine, can cause this build up quickly. This coating will eventually catch fire and burn with disastrous results. Flame and sparks can shoot several feet out of the top of the

chimney, accompanied by a great roaring. This burring in the chimney quickly develops 2,000 to 3,000 degree temperatures. Masonry and/or metal parts expand and crack or break apart causing fire to come out the open spaces. A chimney fire which lasts 10 or 20 minutes can and often does cause a fire in the building.

You can help prevent chimney fires by keeping your chimney clean. To maintain a clean chimney, you can use a chemical on the fire to prevent soot build up, or you can clean it mechanically. Chemical cleaners, if used as directed, will not damage the chimney flue.

Inspect chimney and flue or stove pipe for accumulation of creosote and soot build-up at least once during heating season.

Mechanically cleaning the chimney requires hard work and is messy. The following method is recommended:

1. Remove chimney top and clean it with a wire brush or rub it with a rough canvas or burlap cloth.
2. Disconnect the connecting flue or stove pipe and take it outside, clean each piece like the top was cleaned.
3. Tie a plastic bag around the opening in the bottom of the chimney. Seal it so soot and fly ash will not fly all over the room.
4. Make a bag from canvas or burlap about one inch larger than the chimney and fill it with gravel or small stones and fasten it to a long pole or rope a little longer than the chimney.
5. Insert this bag into the chimney top and push or lower it as you work it up and down against the sides of the chimney.
6. The results will depend upon patience and the amount of effort one is willing to expend on the project.
7. Reassemble the flue or stove pipe and remount the chimney top.

To clean your Magic Heat follow the instructions in your installation/operation manual. **In summary, do not overfire and keep your chimney clean.**

A guide to the amount of fuel a hand-fired stove can safely burn is listed in U.L. Standard for Safety, U.L. 103. After your fire has been started and has settled down to steady operation, the following input rate is suggested:

Chimney Size	Rate BTU/Hr.	Lbs./Hr.* Wood	Lbs./Hr.** Coal
6"	97,000	12.1	6.0
7"	131,000	16.5	8.25
8"	172,400	21.6	10.8
9"	218,000	27.3	13.6

*6" Oak log - 8.8/lbs./ft.

**6" Oak split log - 4.5/lbs./ft.

Place your Magic Heat on the flue pipe so that the bottom of Magic Heat is between the 12 inch minimum and 24 inch maximum distances as shown in Figs. 1 - 4.

Note: 1
Dimension A - 12" MINIMUM
24" MAXIMUM

WOOD AND COAL EQUIPMENT

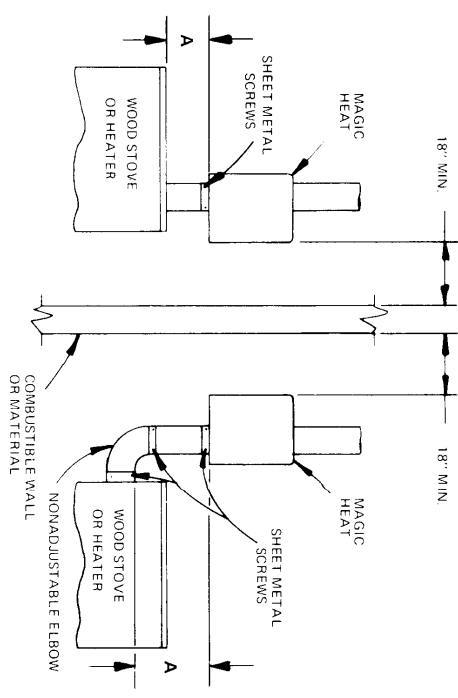


FIGURE 1

FIGURE 2

OIL BURNING EQUIPMENT

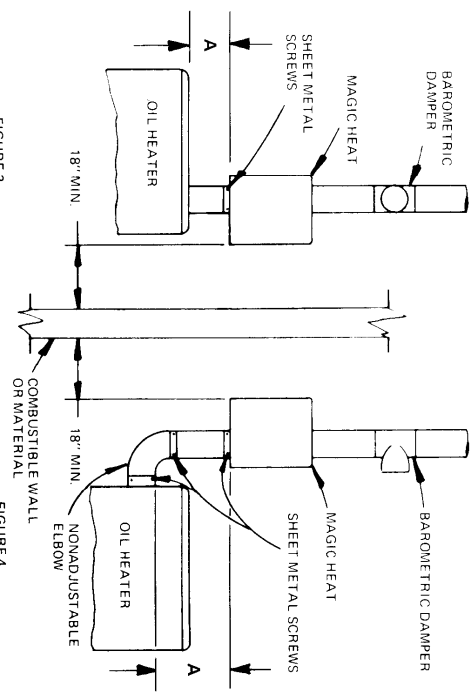
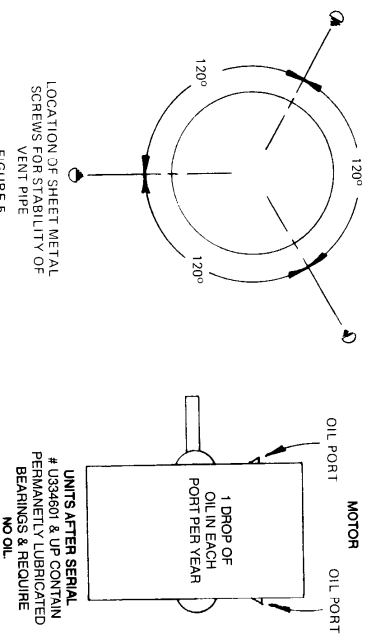


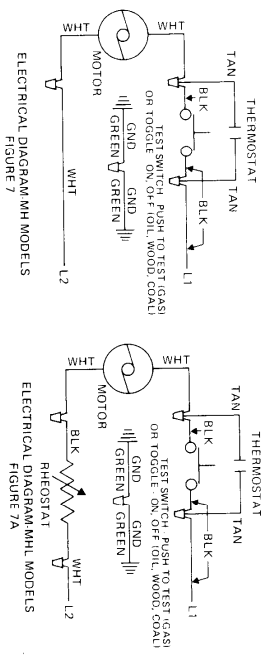
FIGURE 3

FIGURE 4



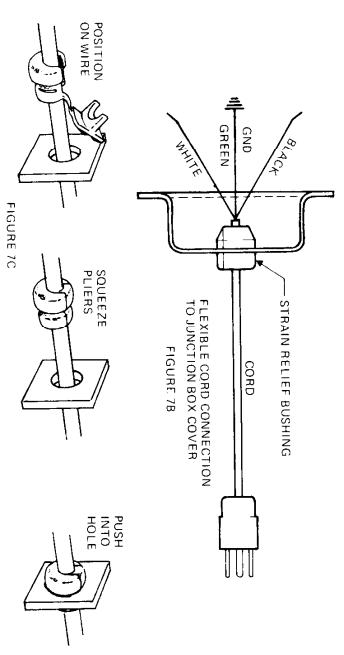
LOCATION OF SHEET METAL SCREWS FOR STABILITY OF VENT PIPE
FIGURE 5

UNITS AFTER SERIAL # U334601 & UP CONTAIN PERMANENTLY LUBRICATED BEARINGS & REQUIRE NO OIL.
FIGURE 6



ELECTRICAL DIAGRAM MM MODELS
FIGURE 7

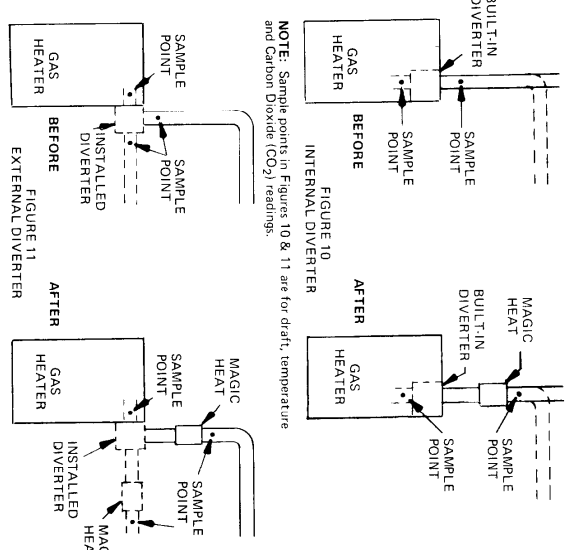
ELECTRICAL DIAGRAM MHL MODELS
FIGURE 7A



BAROMETRIC DAMPER
DISTANCES A & B SHOULD NOT VARY AFTER INSTALLATION. AFTER INSTALLATION, DAMPER IF NECESSARY TO OBTAIN CORRECT DISTANCES.
FIGURE 8

HORIZONTAL SUPPORT MOUNTING BRACKET (USE ON GAS MODELS ONLY) USE SELF-DRILLING SCREW IF NECESSARY TO OBTAIN CORRECT DISTANCES.
FIGURE 9

INSTALLATION OF MAGIC HEAT ON GAS HEATING EQUIPMENT



NOTE: Sample points in Figures 10 & 11 are for draft, temperature and Carbon Dioxide (CO₂) readings.
FIGURE 10
INTERNAL DIVERTER

FIGURE 11
EXTERNAL DIVERTER