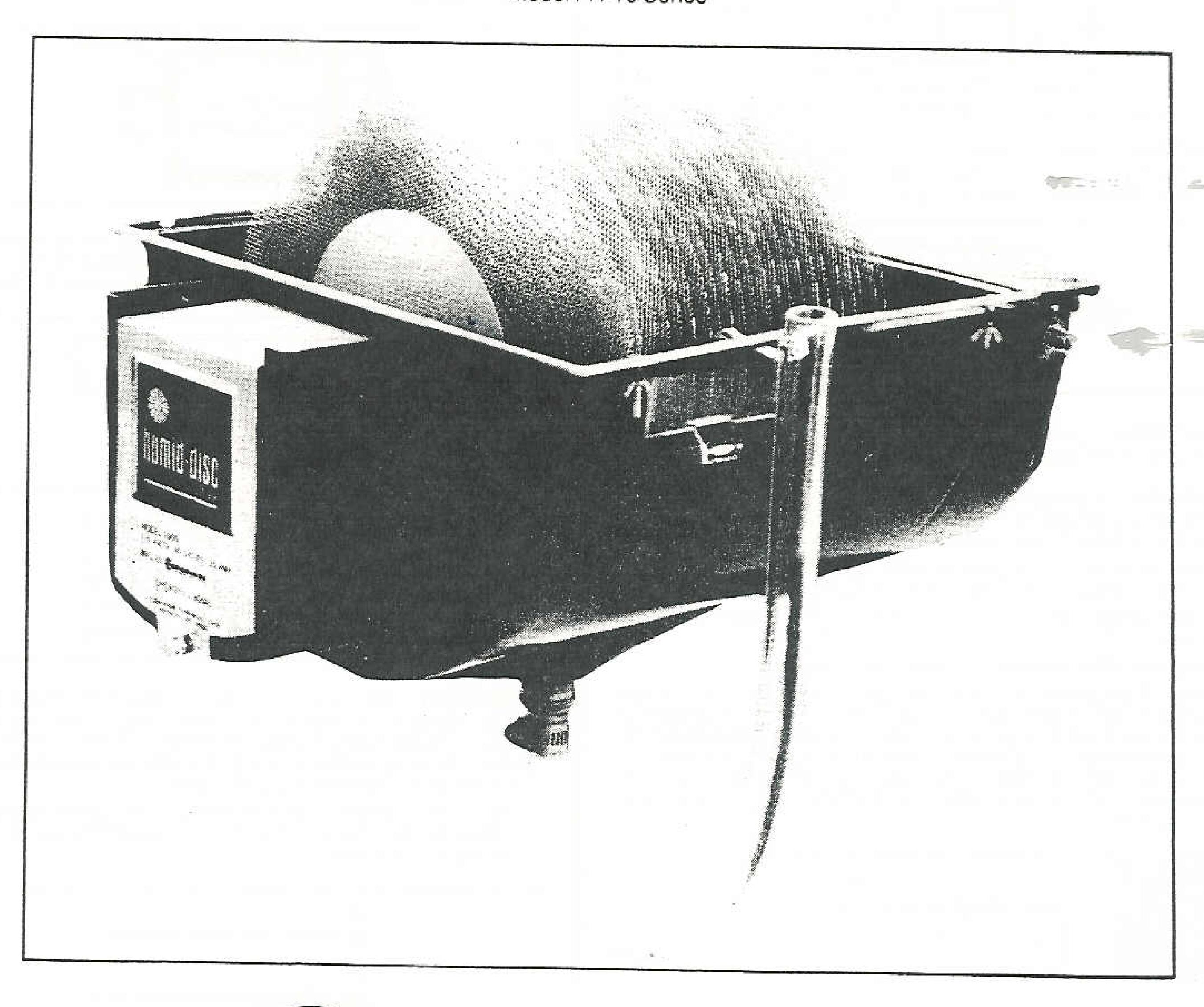


# INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

Model FH-1000 Series Model FH-16 Series



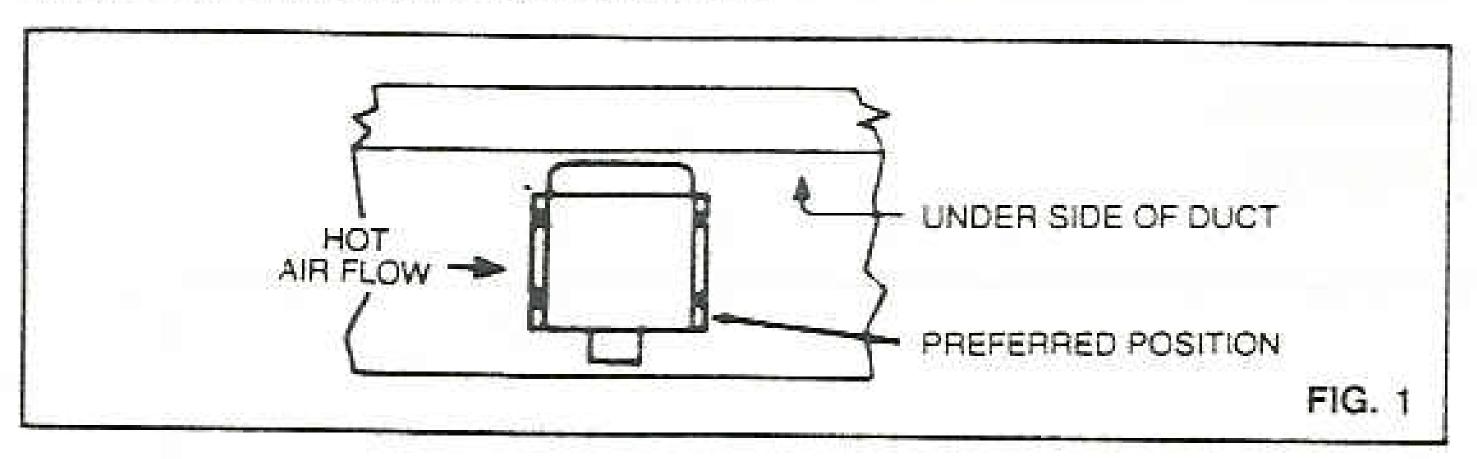


# HUMIDIFIER INSTALLATION

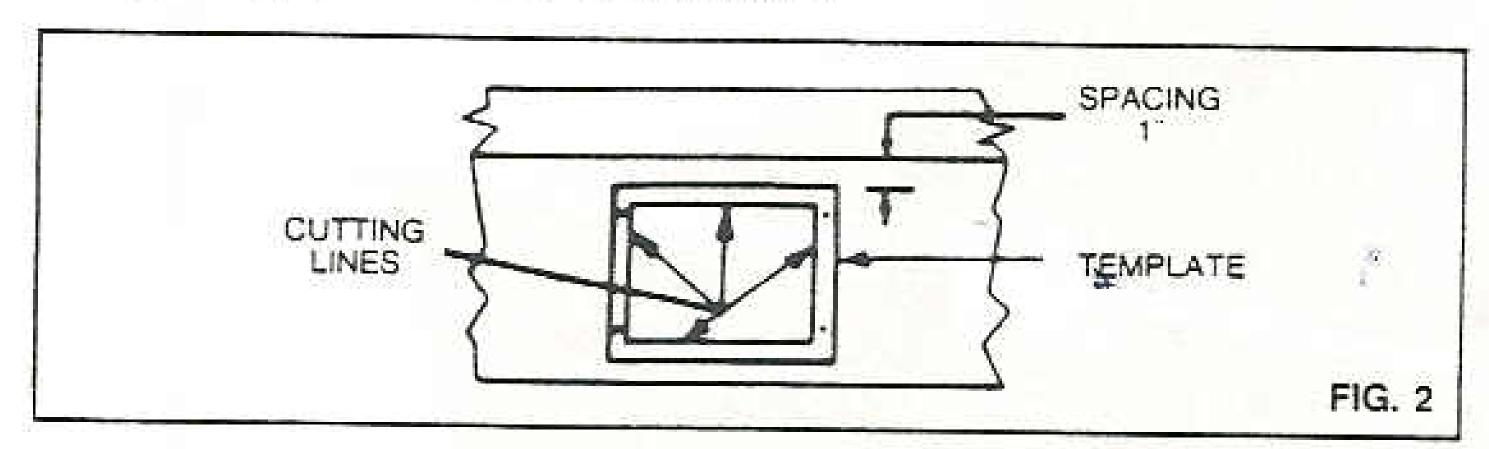
### Instructions and Service Guide Installation instructions for installing on warm air Ducts

**Step One** The humidifier is designed for installation in any HOT AIR DUCT of your forced air furnace. Examine the duct-work leading horizontally from your furnace and select a hot air duct at least 12 inches wide and as close to the furnace proper as you can conveniently work. Recirculation by the furnace blower will keep an even humidity throughout your home regardless of the duct used.

Fig. 1 Illustrates a view of the duct from beneath it, looking up. Position at right angle to the direction of the hot air flow.



**Step Two** Attach the paper template, supplied with this unit, to the duct by duct tape, masking tape or other suitable material. Position the template at the right angle position as shown in Fig. 2.



Step Three Center punch and drill the 4 holes as indicated in Fig. 2. A 1/4" or larger drill is required. Holes can be as large as 1/2" diameter.

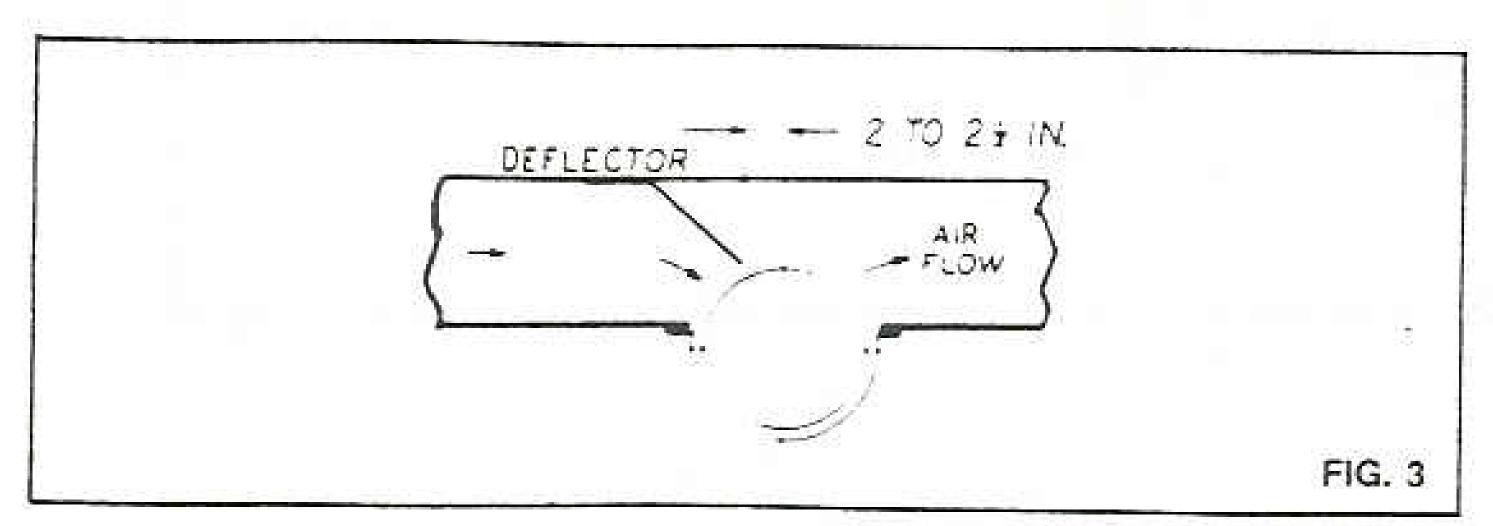
**Step Four** If they are available, use both left and right hand tin snips to cut the rectangular opening in the duct. The opening may be cut with regular snips, but it's easier to use the right and left hand snips.

To start cutting, drill a hole large enough to accept the point of the tin snips inside the rectangular shape indicated by the dotted line.

Proceed cutting on the dotted line. Save this piece of metal for use in the next step.

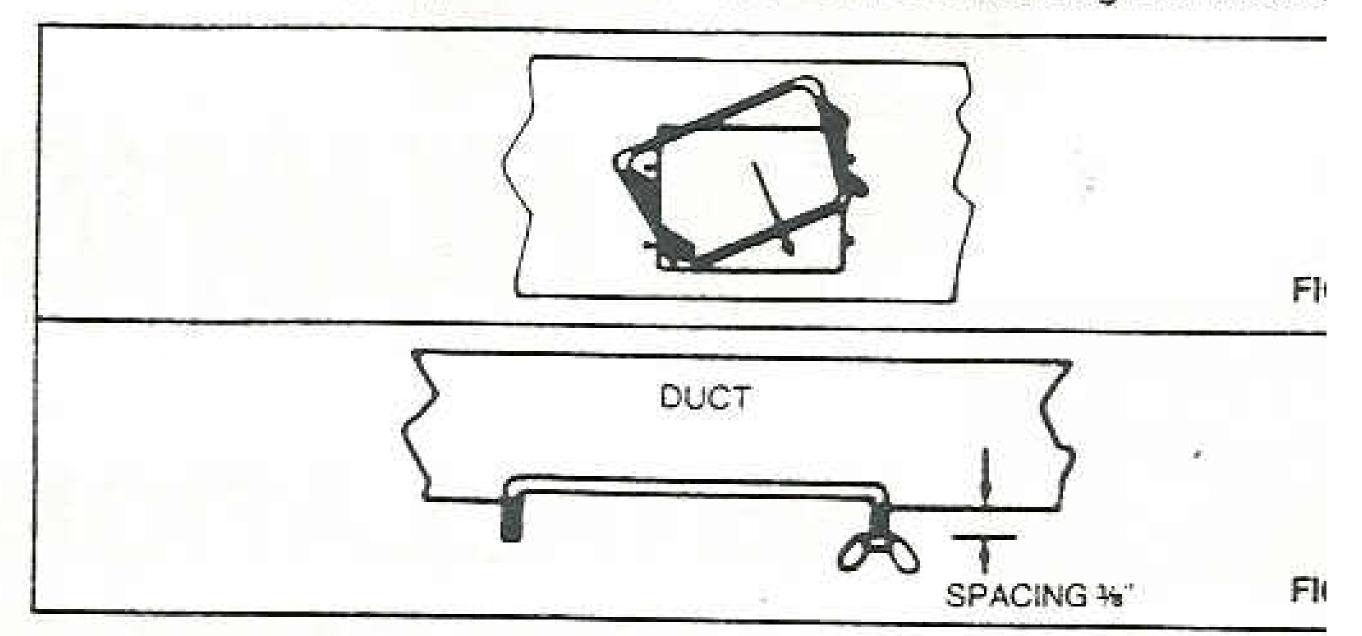
You are now at the most important point of the installation!

Because of the uneven air flow in some parts of a furnace duct, it is very important to place a deflector in the roof of the duct 2 inches upstream of humidifier as in Fig. 3. Use the two sheet metal screws (packed with the fasteners) to mount such a deflector. Use the metal removed from the duct to form the deflector. The deflector should be at least as long as the humidifier and about 4 to 5 inches wide. Mount the deflector at a right angle to the air flow in the duct.

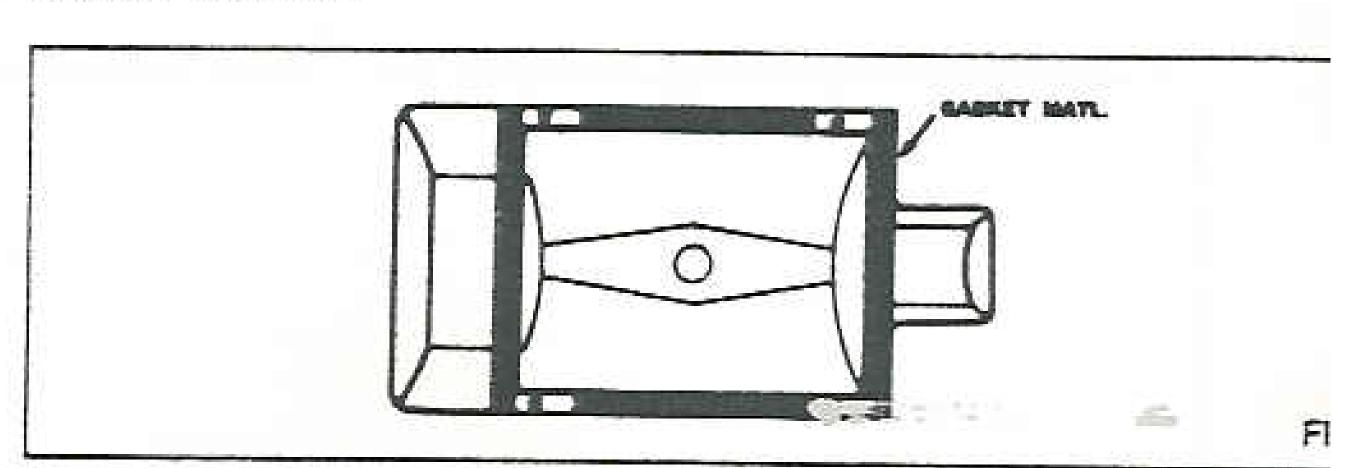


**Step Five** As shown in Fig. 4, angle the metal frame which fits around the top of your humidifier into the opening and lower it so that the bolts stick down through the 4 holes you drilled previously. Thread on two of the wing nuts (included in the parts bag) to one side of the frame. Leave a space of

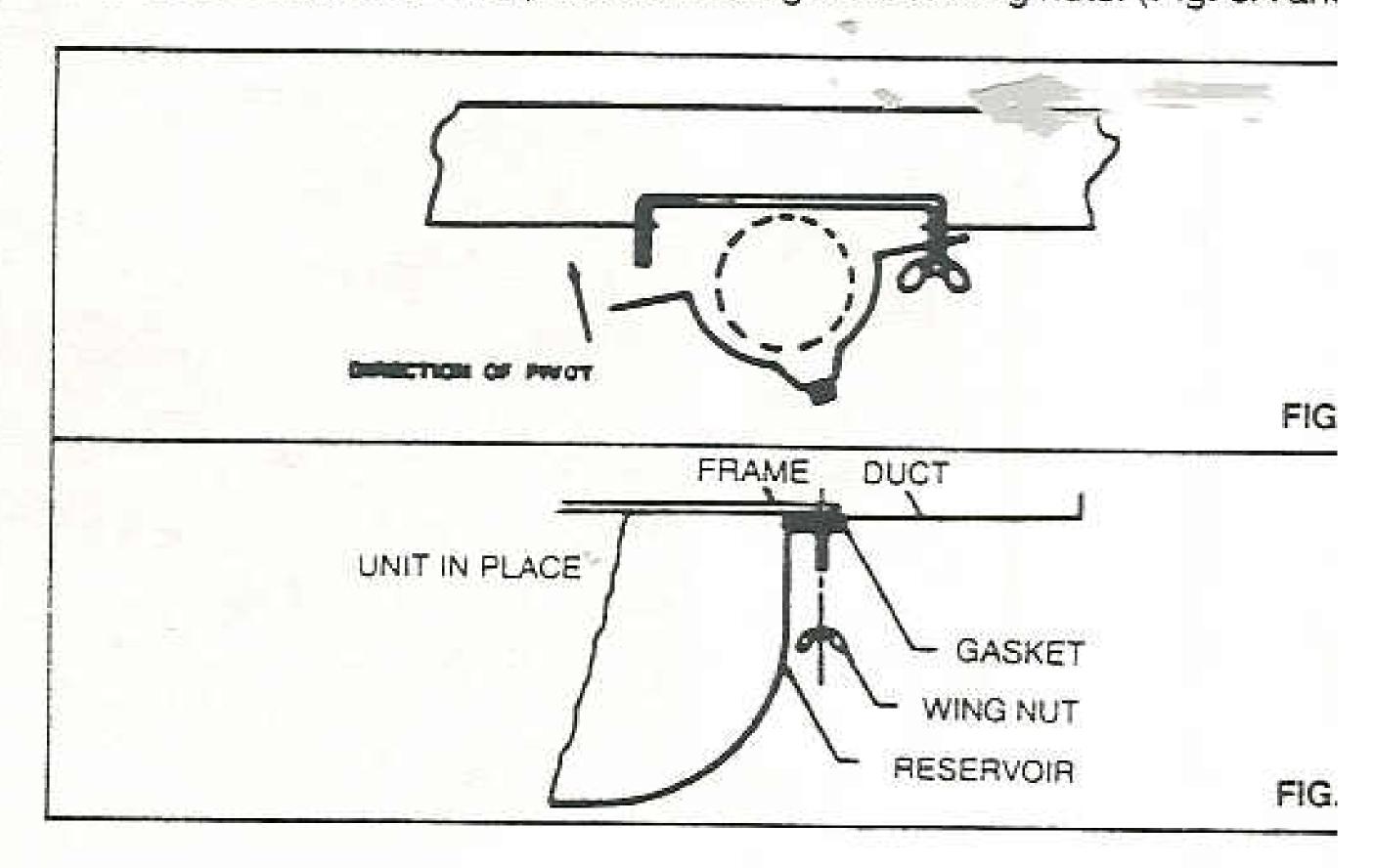
about ¾" between the wing nut and the furnace duct. (See Fig. 4B). The frame will not only support the water reservoir, but will strengthen the duc



**Step Six** Four lengths of special gasket material are provided, frame is in place, fit each length of gasket material to the flange humidifier (see Fig. 5). Note that the gasket has a backing which c pressure sensitive adhesive. Peel off this backing and place each len gasket in position.

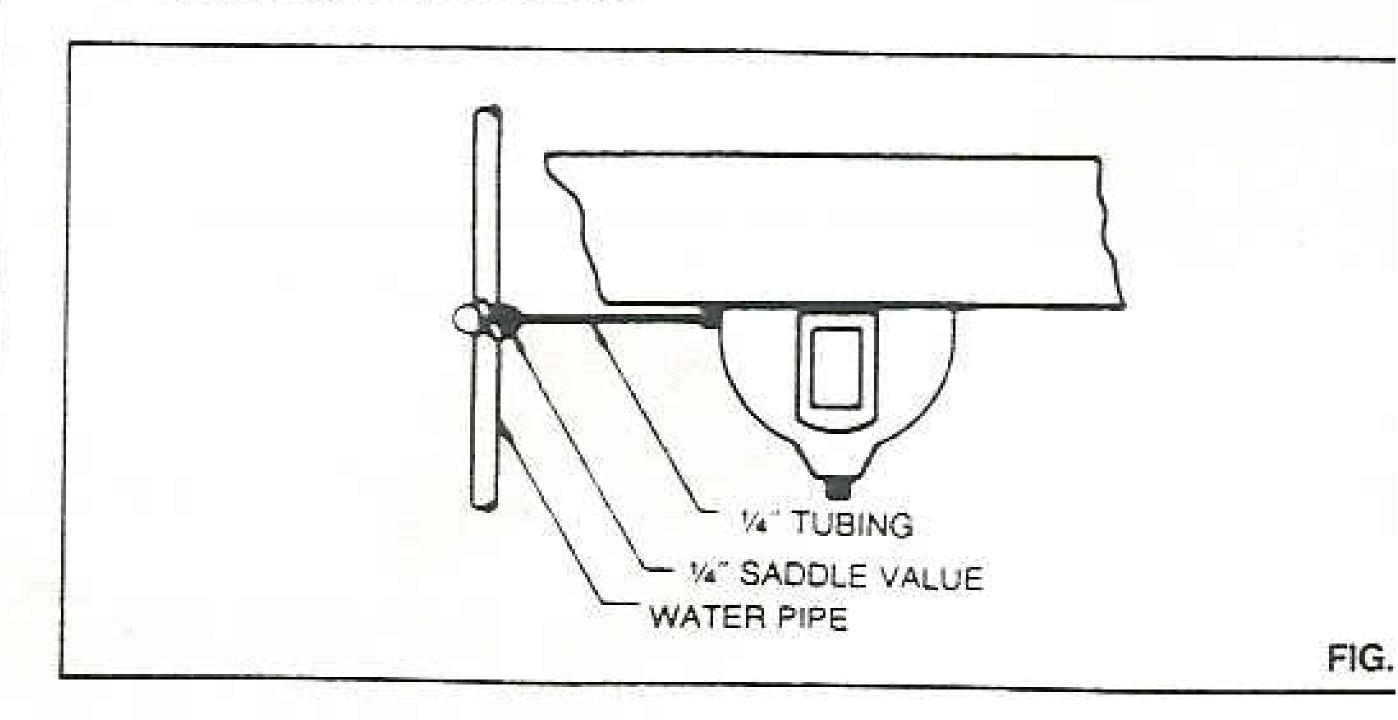


Step Seven Carefully lift the humidifier flange into the space be the wing nuts (which were previously threaded on) and the duct. Now the reservoir into its final position and tighten all wing nuts. (Fig. 6A and



**Step Eight** Attach the saddle-valve included to the nearest cold pipe available and run copper tubing from the saddle-valve to the wate on your humidifier. A wing nut type compression nut and ring for attachir tubing to the water inlet are provided. (The required length of tubing capurchased at any hardware or plumbing store.)

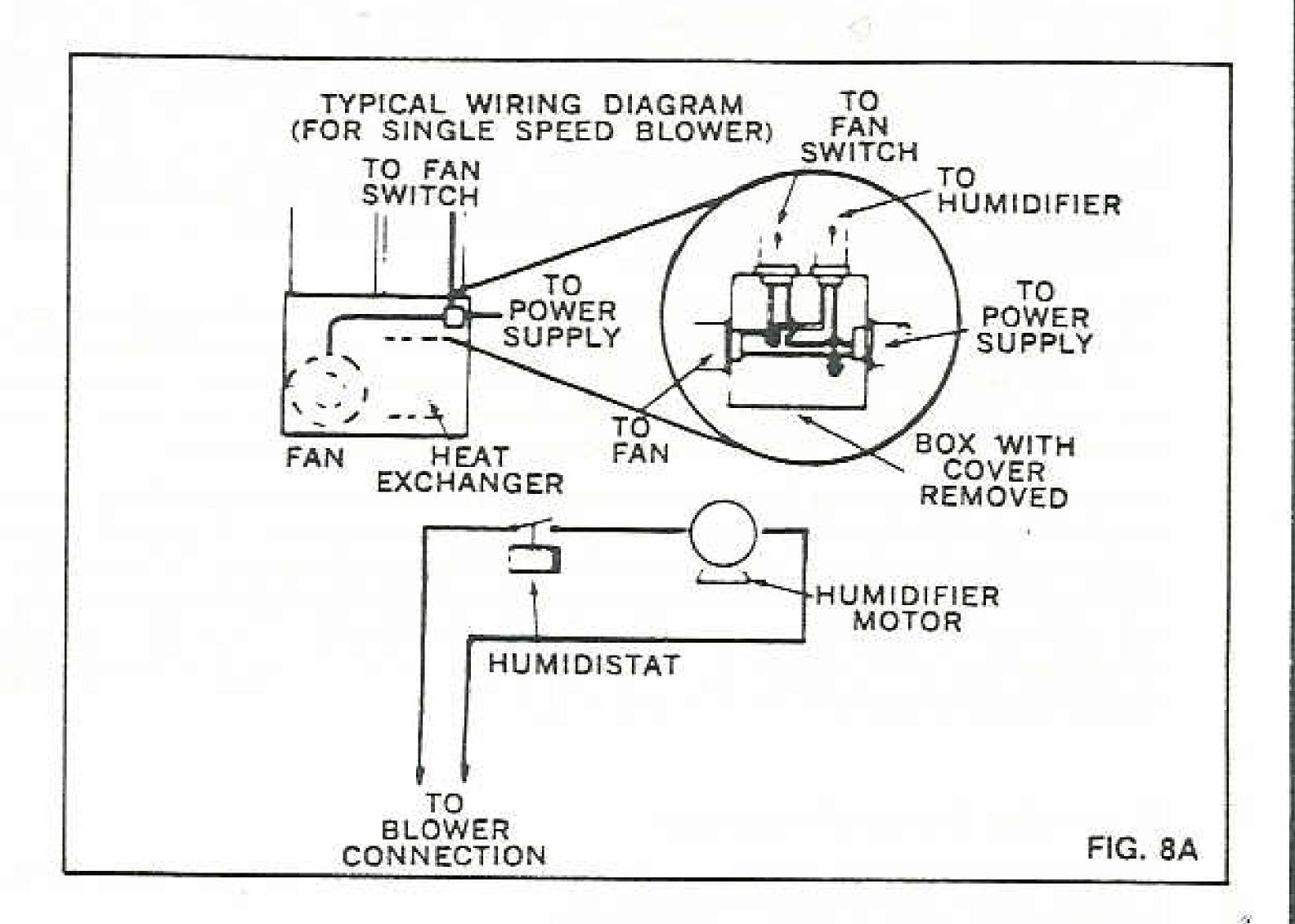
NOTE: If, under extremely high water pressures an overflow condition e the Model FH-1000 has an adjustable float. Loosen the knurled nut a fitting, and adjust as required.



**Step Nine** It is recommended that a humidistat be installed with the humidifier to achieve maximum operating efficiency. This will insure properly controlled humidity in the home.

Since your humidifier operates only when your furnace fan is running, the supply connection coming from the humidifier motor must be controlled by a switch.

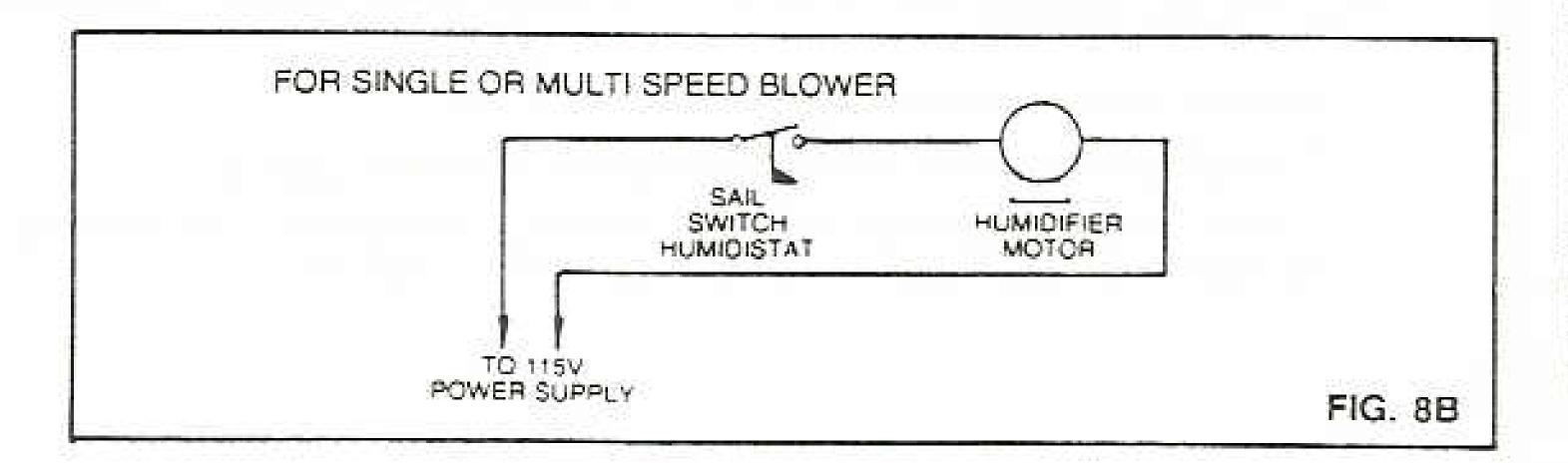
CAUTION: YOU ARE WORKING WITH 115 VOLTS. BEFORE MAKING ANY CONNECTIONS, DETERMINE WHICH OF THE FOLLOWING DIAGRAMS IS TO BE USED AND REMOVE THE PROPER FUSE AS INDICATED. AFTER MAKING ALL CONNECTIONS, BE SURE TO REPLACE THE FUSE.



(a) For systems with a single speed fan only, the humidifier can be connected to the furnace fan as shown in Fig. 8A. (The fan switch, already on your furnace, then controls the humidifier.) When using this configuration remove the fuse controlling the furnace fan.

CAUTION: When a multi-speed blower is in the furnace, a sail-switch humidistat MUST be used to prevent motor coil burnout as a result of high voltage feedback when the furnace blower operates at high speeds for air conditioning.

(b) In this configuration, the humidifier and sail-switch are connected in "SERIES" directly to a 115 volt power supply as shown in Fig. 8B. When following this arrangement, remove the fuse controlling the applicable power supply.



**Step Ten** Start enjoying properly humidified air, automatically, all winter long . . . for years.

# INSTALLATION INSTRUCTIONS For installing on the warm air plenum

#### Step One The Plenum Adaptor

The plenum adaptor allows the humidifier to be installed on the side of the hot air plenum, on the actual jacket of the furnace itself, or on any other suitable vertical surface.

The principle of the adaptor is simple. Hot, dry air is forced by the blower in the adaptor hood, where the moistened discs are turning. The air picks i moisture and then passes through a flexible hose into the cold air returning. There the moistened air mixes up with other air and in two or three secondas passed through the heat exchanger and is on its way into the home.

This circulation occurs because the furnace blower creates pressure on the hot air, or supply, side of the furnace and at the same time creates a suction the cold air side.

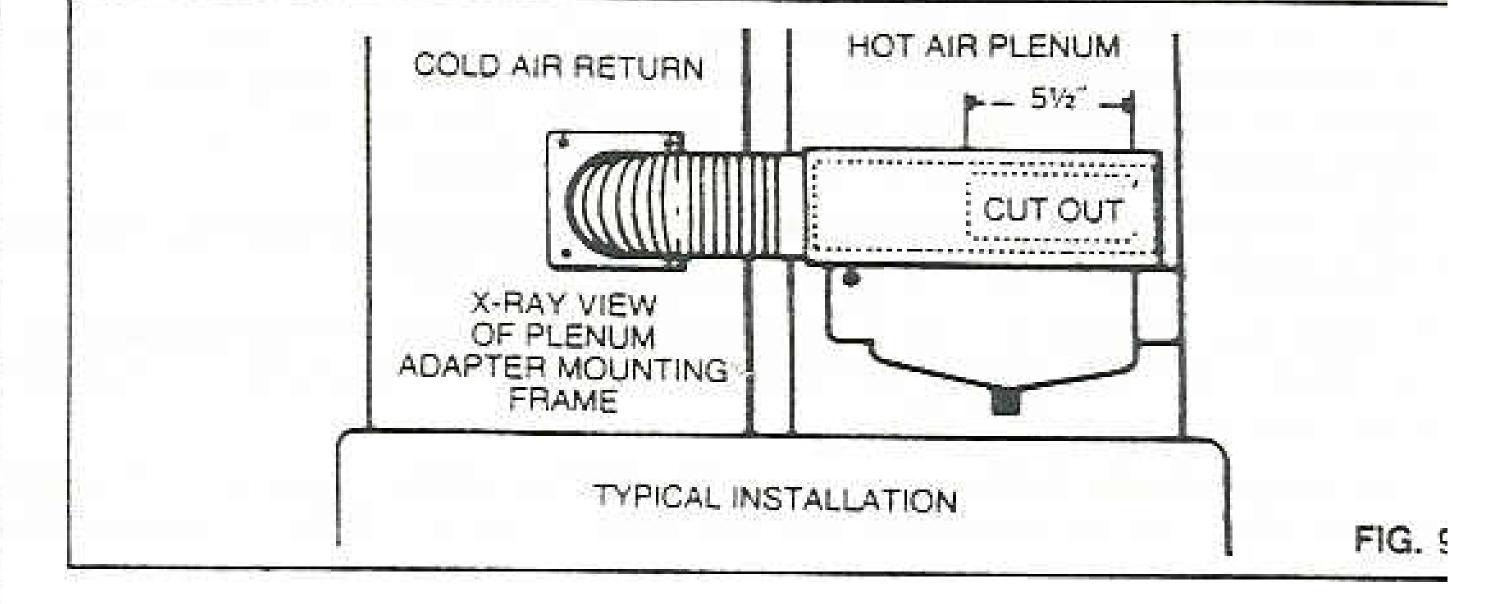
No harm can come to the furnace or heat exchanger because of this moistenair, as the moisture is in vapor form. Actually, much higher humidities, at more actual moisture, are passed through the furnace during hot hum summer weather than when the humidifier is working.

#### Step Two Mounting The Adaptor

On occasion, when there is no possible way to mount the adaptor on the hair supply side of the furnace, a successful installation can be made with the adaptor mounted on the cold air return plenum, and the hot air ducted to the adaptor. The distance the hot air is ducted, however, must be kept as short possible. The sharp drop in temperature caused by ducting of the hot air vidrastically affect the air's capacity to absorb moisture.

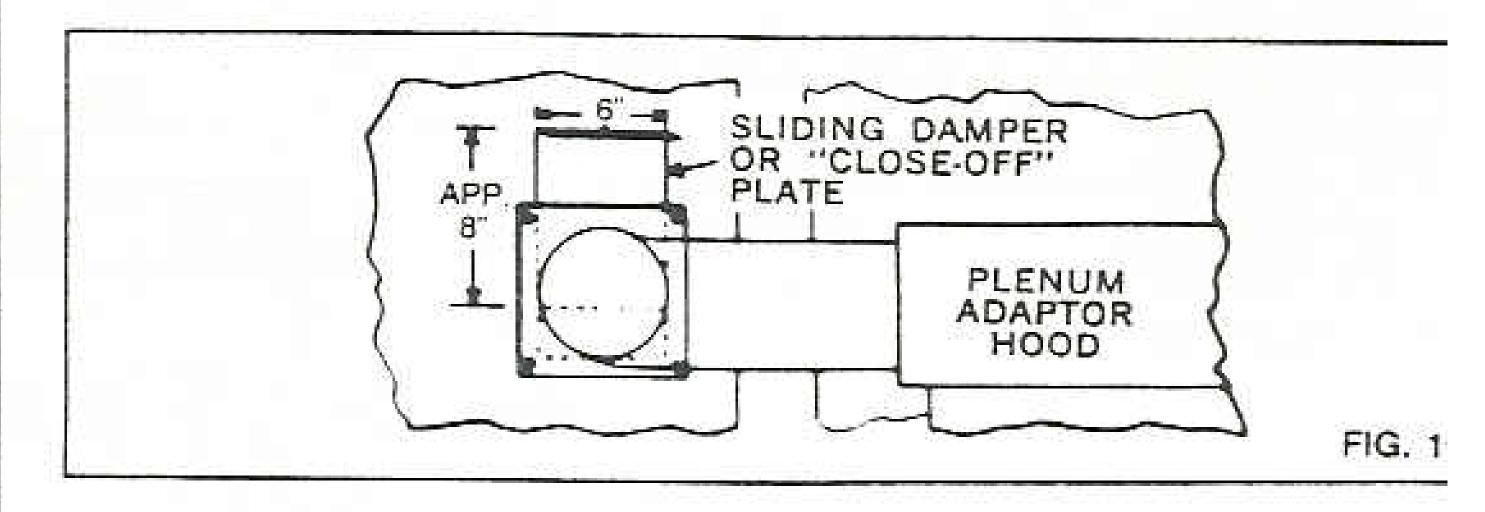
The only critical point in mounting a plenum adaptor is cutting the opening which allows the hot air to enter the adaptor. This opening should be only 51 wide, and 4" high and cut at the opposite end from which the flexible tubic leaves the adaptor. If a humidistat is mounted in the cold air return on this tylof installation, do not mount it below the point where the moistened air enter the cold air return. Naturally, this would distort the humidistat's sensir Mount the humidistat to the side or above the opening. (Fig. 9)

A simple manual humidity control may be made by cutting a piece of metal x 8" and sliding it between the cold air starting collar and the cold air plenui. See the drawing in Figure 10. Raising the slide will allow more air to pa through. Lowering it will cut off some of the humidified air. A little experimentican soon determine for you which position will be best under different outdo temperatures.



## Effects Of An Adaptor On Air Conditioning

If the humidifier Plenum Adaptor mounting is used, a damper or "close-o plate should be installed during the air conditioning season. Enough air c recirculate through the shut down humidifier to cause the air condition evaporator coil to frost up. Closing off the opening will prevent any difficul The plate described in Figure 9 will serve the purpose.



For Service Instructions Turn Page

## TIPS ON SERVICING YOUR HUMIDIFIER

#### 1. Draining The Unit

Regular draining of your humidifier is important. During the first two weeks of operation, the unit's output is extremely high. A considerable amount of lime and other residue is left suspended in the water in the reservoir. After two weeks, remove the drain cap on the bottom of the unit, and drain approximately one bucketful of water. After this original draining, follow this draining schedule:

- 0- 5 grains hard water once per heating season\*
- 5-10 grains hard water twice per heating season\*
- 10-20 grains hard water -- four times per heating season\*
- 20 and above one each month during the heating season\*

This draining process should be followed even though your home has a water softener. Regular draining removes the excess time deposits which are washed off in the reservoir, and will lengthen the life of the discs.

\*Contact your water department for the grains of hardness of your local water supply.

#### 2. Cleaning The Unit

First, unless the discs are thicker than approximately 1/8", we suggest they not be cleaned. They may well be working more efficiently with the extra surface created by the lime. The only time the reservoir needs cleaning is when the layer of lime on the inside surface has thickened to the point where the discs touch or when the discs appear to be limed thicker than 1/8".

For cleaning either the reservoir, the disc assembly, or both, first remove the unit from its mounting and fill it to the normal level with water. Second, if it is possible to set it somewhere near the furnace, plug the unit in with the furnace fan running so that the discs are turning.

If the unit cannot be plugged in so that the discs are turning during the cleaning, manually remove them and turn them over several times during the cleaning.

#### (a) For ALUMINUM disc units.

Pour two pints of household vinegar or regular residential humidifier cleaner into the reservoir. Allow the discs to turn for about fifteen minutes or until the mineral deposits have dissolved.

#### (b) For BRONZE disc units ONLY.

Pour from two to four pints of Muriatic Acid into the unit. This acid is inexpensive and obtainable at most hardware stores. It cannot damage any part of the humidifier. In most cases, the cleaning process is complete in from five to ten minutes. Rather irritating fumes can be generated, so be sure the area is well ventilated.

If the unit cannot be plugged in so that the discs are turning during the cleaning, manually remove them and turn them over several times during the cleaning.

Muriatic Acid is a weak solution of hydrochloric acid. You weaken it even further when you dilute it with the water in the reservoir. However, IT IS AN ACID and must be considered dangerous for children.

The straight Muriatic Acid can damage clothing and any spilled directly on your hands should be washed off immediately. We also suggest that you discard any surplus that you do not use.

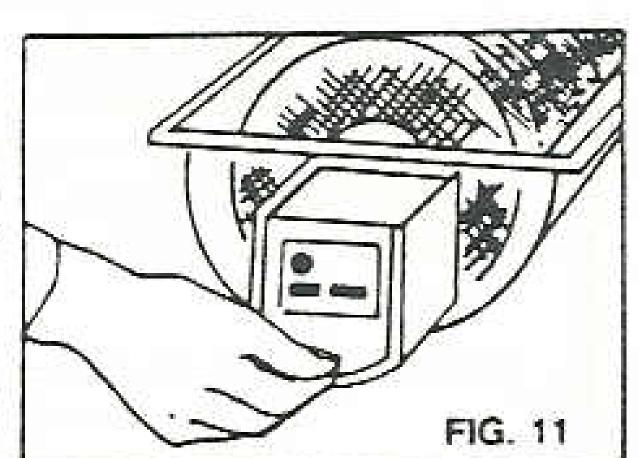
#### After completing 2(a) OR (2b).

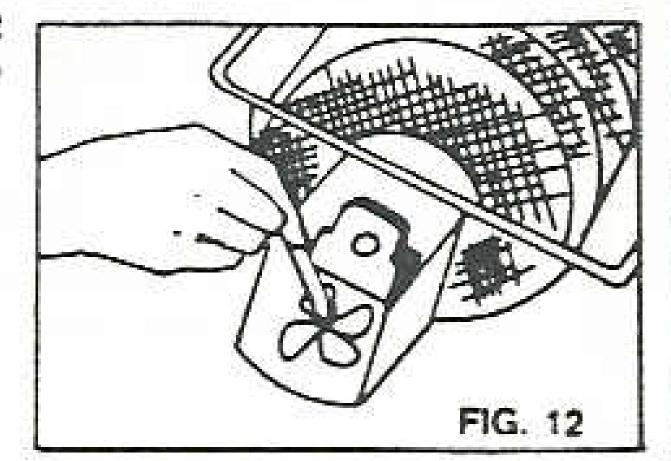
Rinse the discs and reservoir with cold water. Remount the reservoir, reconnect the water and electricity and allow the reservoir to fill with clean water.

#### 3. Oiling The Humidifier Motor

Oil your humidifier motor annually. It takes just a few seconds and will increase the lifespan of your motor by many years.

- A. Remove power cord.
- B. Remove cover gently by turning knurled screw (Fig. 11)
- C. Put 5 drops of good quality electric motor oil at openings indicated by pencil. (Not 3-in-1 oil.) Figure 12.
- D. Replace cover.





#### 4. Over Humidification

Your humidifier will maintain relative humidity between 30 and 45 percent wher sized and installed. 35 to 40% is considered perfect at room temperature. Your I may maintain this level without a humidistal through natural law; however a hur recommended. In simple terms, dry air will pick up a lot of moisture swiftly. Mois will pick up additional moisture at a progressively slower rate. Air passes bet discs in about 1/10 of a second. As it begins to approach the optimum 35 to 40° picks up less and less on each passage through the furnace. Because the burner is constantly taking air from the house and forcing it up the chimney, from constantly infiltrating the house. This fresh air needs humidity. The net result mixture of air passing approximately six times through the humidifier from the enters the house until it is forced out through the chimney. This limits the a moisture the air has an opportunity to pick up and provides the natural or mentioned. It is practically impossible for a property sized and installed humbring the humidity in a home above 50%.

The humidifier, being a machine, has no way of knowing whether or not the himake" 35 to 40%: Where there is any surface in the house (the most common ex such a surface are the windows) cooled below the dew point temperature, conc will result. The cooler that surface gets, the more condensation will take pla surface drops below 32 degrees, the condensation freezes and icing results.

In a properly constructed home with Thermo Pane windows or properly fitt windows, research has shown that an outside temperature of zero will just begin condensation on windows. Improper construction, metal casement windows, in fitted storm windows, will start this condensation before zero is reached and may we the installation of a humidistat to cut the inside relative humidity to a tolerable Remember that the humidistat is only a device for the inputting a ceiling on the level and does not increase the humidifiers capacity.

#### 5. Under-Humidification

If the humidifier is not maintaining a reading somewhere in the range of 30 to 45 average winter weather, look for other causes.

Here are the most common causes of underhumidification in the der of their cast

- A. The water valve has not been turned on, or the waterline is clogged.
- B. A fireplace flue has been left open. This not only increases heating costs, brings in more fresh air than the humidifier can handle.
- C. The adaptor opening has been cut improperly. (See instructions on install
- D. No deflector has been mounted or the deflector has been mounted in the position.
- E. The wrong size unit has been installed.
- F. The bedroom windows are opened at night. This has the same effect as a flue being open and contrary to popular belief, actually tends to dry the h more.
- G. A fresh air intake has been installed on the furnace (rare in a home inst Same effect as E. above.
- H. The motor is inoperative because of lack of oiling.
- I. The discs are lined thicker than 1/6" and the entire unit needs cleaning.
- J. A zoned heating system has automatic dampers in the ducts and the himay have been installed on a duct that is closed most of the time.

#### CAUTION

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