707SM

Duct Mount
Centrifugal Atomizer
Humidifier

Manual for:
Installation - Operation - Maintenance

Caution: Read installation and rules carefully for safe operation.
Exercise the usual precautions when working with electricity

TRION®

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Dear Owner:

Congratulations on your choice of a Trion humidifier. Your family can now look forward to breathing more comfortable air, winter after winter. We know, because we have been engaged in the design and production of humidification equipment for home and industry for over 50 years. Today, as then, we are committed to providing advanced products that improve the quality of the air you breathe.

The following information will familiarize you with the operation of your new humidifier and provide helpful tips on how to obtain maximum performance from your unit.

INTRODUCTION

All humidifiers, air conditioners, refrigerators and dehumidifiers require periodic cleaning and maintenance to insure efficient and safe operation.

The benefits of a properly humidified environment (35-50%) are enjoyed by everyone living in such an comfortable environment. These benefits include both personal comfort and the preservation of furniture, draperies, carpets, wooden floors and cabinets, paintings, pianos, etc. - all hygroscopic materials. A hygroscopic material is one that has the ability to give up or absorb moisture. Your home will be more comfortable at a lower temperature (i.e.: 68° F) at 30-40% Relative Humidity (RH) than at 71° to 72° F without controlled humidity. Since every degree of temperature setback represents about 3% of your heating costs, this can represent a possible 9-12% annual saving.

During the heating season, cold air is brought into the house and heated. When heated, this air dries out and greatly increases its capacity to hold more moisture. By using a humidifier, we provide a source of water to satisfy this increased moisture holding capability, rather than having it drawn from our body surface and the surrounding hygroscopic furnishings in the home.

With the energy crisis of the mid-70's, home builders and owners have become more conscious of energy conservation. To conserve energy, homes have become tighter in construction to provide less infiltration of cold outside air and less exhaust of heated inside air. This has been accomplished by using more insulation, tighter storm windows, weather stripping and being more personally conscious of tightly closing doors and windows in general.

The tighter environment in which we now live is also a more stagnant environment and has brought about an increasing concern about "Indoor Air Quality." The air in the home is not being allowed to change as frequently.

As stated, a properly maintained and efficiently operating humidifier is a source of improved Indoor Air Quality and personal comfort. The necessity to clean your humidifier is substantially the result of impurities coming in through your water supply which feeds the humidifier. Other household dust, containing biological and microbial contaminants, finds its way into the air handling system and ultimately, the humidifier.

The humidifier is not the source of these impurities.

To enjoy the benefits of a properly humidified environment, periodic cleaning is necessary to control both water and household impurities. Film or scum, which can contain bacteria or fungi, may appear on the water surface, the sides, or bottom of your humidifier. A crusty deposit or scale may also appear and is composed of minerals that have settled out of the water.

To improve the efficiency of your humidifier, and to reduce the possibility of a health hazard, it is recommended that you take the following precautions:

- Follow the manufacturer's recommended cleaning and maintenance instructions
- The amount of minerals and other impurities in a water source can vary greatly and hence, the frequency of cleaning also varies.
- During the heating season, check for film or scale build-up on a monthly basis and establish a proper cleaning schedule.
- Do not allow film or scale to build up on the unit, evaporator pad, or any moving part and reduce the efficiency of the humidifier.
- An algaecide, such as a humidifier cleaning tablet or bacteriostatic liquid/powder, can be used to combat algae build-up, should it become evident.
- At the end of the winter humidification season, drain and thoroughly clean your humidifier as part of the summer shut down.

Like your heating system and air conditioning unit, periodic maintenance and cleaning are required to ensure the safe and efficient operation of your humidifier. This cleaning necessity is also likened to weekly house cleanings and periodic maintenance of your automobile for its safe and efficient operation.

SPECIFICATIONS

	707SM
Type of Unit	Centrifugal Atomizing
Duct Mounting	Return
GPD @ 140° F	6.0 maximum
GPD @ 120° F	6.0 maximum
GPD @ 100° F	6.0 maximum
Voltages	120V
Unit W x D x H	$10^{1}/_{2}$" diameter
Duct Opening W x H	$3^{3}/_{4}$" diameter
Shipping Weight	11 lbs.
Standard Equipment	Self-piercing saddle valve
Features	Independent mounting bracket Operates on less current than a 100 watt light bulb All brass valve assembly Mounts on face of vertical return duct or side of horizontal return 2 Year Warranty

OPERATION OF HUMIDIFIER

Your centrifugal atomizer type humidifier operates on the principle of breaking down water droplets into a fine mist and atomizing the moisture into the air.

If applicable, set the humidistat in the recommended range of 30-40% relative humidity for automatic humidity control during the heating season (a lower setting may be used to control condensation on single pane windows). During the first heating season, check the mineral build-up every month to establish the proper cleaning schedule. Clean the unit at the end of each heating season, or whenever mineral deposits appear to be impeding the discharge of the water mist.

When shutting the humidifier down for the summer months, start with cleaning any mineral accumulation from the unit. Leave the water turned off and the unit dry. If the furnace fan is to be used for cooling purposes, disconnect the power cord from the humidifier or turn the humidistat to the OFF position if applicable.

MAINTENANCE INSTRUCTIONS

Your humidifier is constructed from quality materials to assure superior performance during normal operation. The motor bearings are permanently lubricated and do not require oiling. The motor is also thermal overload protected against extreme conditions.

To clean the unit:

1. Turn the power to the furnace OFF.
2. Disconnect the motor leads or turn off the electric switch to the humidifier, if provided.
3. Turn off the water supply from the saddle valve and remove water line from humidifier.
4. Remove the discharge dome by pressing in on the sides and lifting upward.
5. Lift the entire atomizing assembly from the water reservoir pan.
6. Remove the pump from the end of the impeller shaft. If the pump is stuck in the motor drive shaft, run hot water over the end of the shaft for a few seconds to loosen the pump.
7. Flush water through the impeller tube, ensuring that the six holes at the top of the impeller tube are open and clear of mineral deposits. A pipe cleaner works well for this cleaning operation.
   NOTE: The impeller tube and pump can become clogged by algae formations prevalent in certain water sources. The addition of 10 drops of Clorox bleach or Trion humidifier tables (which may be purchased from your local Trion dealer) to the water reservoir pan each week.
8. Replace the pump into the impeller shaft.
9. Carefully rotate the impeller to ensure it turns freely. Do not force the impeller shaft to turn or breakage could result.
10. With the atomizing assembly removed, clean the water reservoir pan thoroughly. We suggest either a 50/50 water and white vinegar solution or Trion liquid humidifier cleaner.
11. Reconnect the water line and motor leads to the humidifier and turn on the water supply from the saddle valve.

SELECTING A LOCATION FOR THE UNIT

When selecting a location for the installation of your humidifier, there are certain conditions that must be met for its proper operation.

- Mount the humidifier on the vertical cold air return duct.
- Locate the humidifier at least (4) linear feet upstream of either the furnace fan and/or filter and any turn in the duct. This will ensure that condensation does not collect within the duct and cause oxidation (rust).
- Mount the humidifier at least (6) linear feet (preferably 10 feet) upstream from any electronic air cleaner. Failure to follow this recommendation can cause excessive nuisance arcing and/or power supply failure.
- If the duct seams inside the duct are not flat, locate the humidifier at least (3) linear feet upstream from the seam.
- If the humidification needs of the home require more than one humidifier, each unit should be installed a minimum of (3) linear feet apart.
- **DO NOT** use this humidifier on the discharge (or warm air supply) side of a forced air heating system. This will reduce the efficiency of the humidifier and may cause operational problems.
- **DO NOT** mount the humidifier in a furnace jacket.
- **DO NOT** install the humidifier where freezing conditions could occur.
- **DO NOT** install on gravity hot air systems.

INSTALLATION INSTRUCTIONS
PHYSICAL INSTALLATION

Remember to select a location that is readily accessible for periodic inspection and cleaning of your humidifier. Allow a minimum of 2" clearance in front of the humidifier and 2" below the water pan to allow for maintenance and repair.

CAUTION:
Only a trained service person should install this humidifier. Do not connect the unit to power source until installation is complete. A thorough checkout of the unit installation should be completed before operation. Failure to follow these directions may void the manufacture's original warranty.

Prior to installing this product...

1. Read the rules and instructions carefully to ensure safe operation. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings given on the product to make sure it is suitable for your application.
3. Mount the installation template on the side of the cold air return air duct with the center line of the template lined up with the center line of the return air duct. The narrow side of the duct may be used if space permits.
4. Check the template with a level to ensure proper installation of the humidifier.
5. Drill (4) $^{1}/_{8}$" diameter holes (marked with an X on the template) for the mounting of the wire bracket with $^{1}/_{4}$" sheet metal screws provided.
6. Cut out the circles marked on the template. Do not cut this opening undersized.
7. With a hammer and a heavy piece of metal, straighten the metal edges to prevent injury to yourself and damage to the humidifier.
8. Attach the wire mounting bracket to the duct with the (4) $^{3}/_{4}$" sheet metal screws provided.
9. Move the side adjusting arms vertically until the shelf is level. Mark the duct and drill (2) $^{1}/_{8}$" holes. Fasten the arms in this position with (2) $^{3}/_{4}$" sheet metal screws provided.

10. The float and valve assembly has already been factory adjusted to maintain 1 - 1 1/2" of water in the water reservoir pan at normal water pressure. If necessary, bend the float arm to the required position to maintain the water level at other water pressures.
11. Before mounting the humidifier in its final position, carefully rotate the impeller assembly by hand to ensure it moves freely. Mount the humidifier with the float and valve assembly connection facing the most convenient location, but providing the least obstruction to traffic. Be sure that the water reservoir pan feet do not rest on the wire bracket and that the water reservoir pan is level.
12. The discharge dome should approach the opening in the duct, however, it should not extend into the duct. There will be no heat loss due to the negative pressure of the cold air return duct (the air flow will create a vacuum in the duct).
13. Install the saddle valve on the closest cold water supply (see the instructions on the package). If applicable, connect the saddle valve before any type of water softener.

IMPORTANT:
In installations where accidental overflow could cause water damage, connect the hose from the overflow tube to a drain. Do not use a soldered joint because the overflow tube will become heated and warp the water reservoir pan.

14. After the saddle valve has been installed, but before attaching the water line to the float and valve assembly, turn the saddle valve to the open position. This will allow the water to void the line of any debris that my have accumulated during the installation process.
15. Attach the 1/4" copper or plastic tubing to the float and valve assembly with the appropriate hardware.
    CAUTION: The float and valve assembly must not turn when tightening the compression fittings on the water line.
16. Check the water level in the water reservoir pan to ensure it is 1 - 1 1/2" deep.

ELECTRICAL INSTALLATION

This humidifier is intended to be wired directly to the integrated control panel on your furnace. The electrical tap will provide power to the humidifier whenever the circulating air blower is in operation.

Read the instructions in the furnace installation manual carefully before attempting installation or operation. Failure to follow these instructions may result in improper installation and therefore, void the manufacturer's warranty.

1. Remove the cover from the junction box in the furnace jacket.
2. Connect the humidifier line to the (2) leads that run to the furnace blower motor. This connection provides for the automatic operation of the humidifier during the heating season.
3. The humidifier will only operate when the furnace blower is in operation.
4. Trion recommends that a humidistat is installed in the system to provide optimum performance when continuous air circulation is desired.
5. If a humidistat is not used in the installation, install an ON/OFF switch in its place. This provides a simple, yet effective, method of turning the humidifier off during the summer months when humidification is not desired.
6. Set the furnace controls and humidistat for the desired conditions (30-40% RH is recommended). Operation of this unit is automatic.
7. On a new humidifier installation, it is recommended that the humidifier be run continuously for several days to raise the level of humidity present in the house.

Humidifier Capacity Selection Guide

Sq. Footage of Home	Tight House	Average House	Loose House
1000	0.5 GPD	5.0 GPD	10.0 GPD
1500	3.0 GPD	10.0 GPD	16.5 GPD
2000	5.0 GPD	14.0 GPD	24.0 GPD
2500	7.5 GPD	19.0 GPD	30.5 GPD
3000	10.0 GPD	23.5 GPD	37.5 GPD
4000	14.5 GPD	33.0 GPD	51.5 GPD

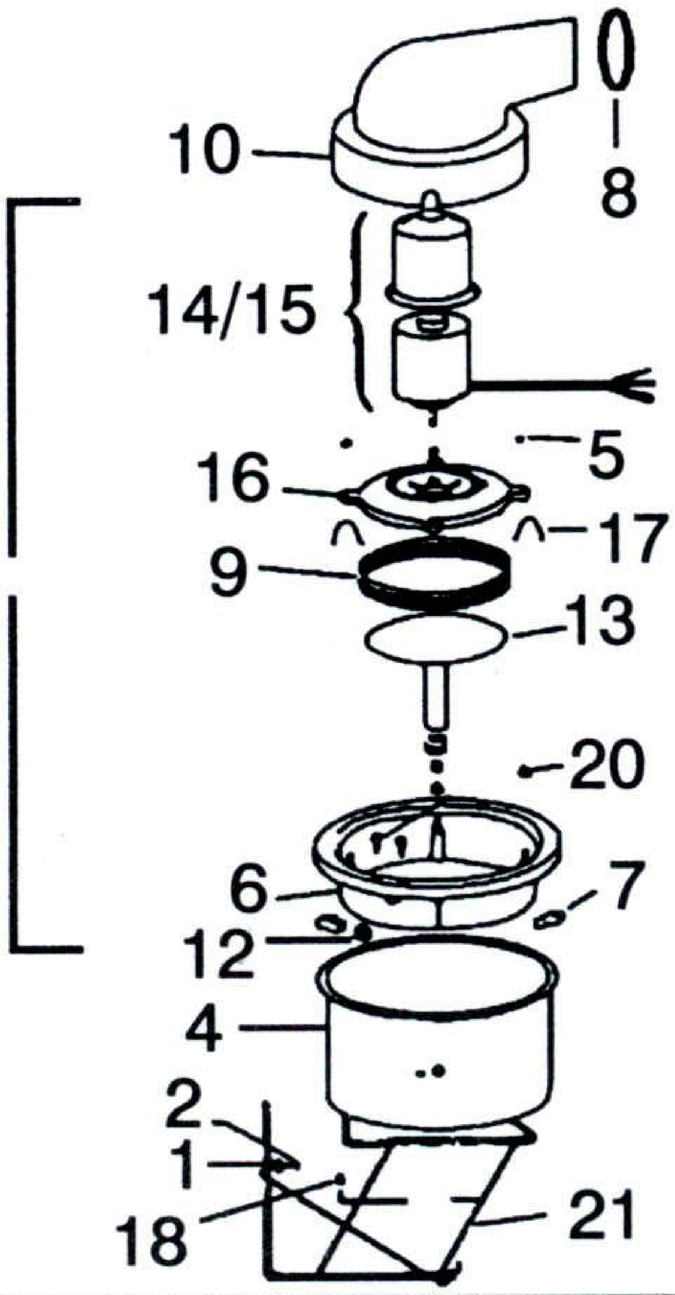
For reference only - calculations based on:

- Indoor temperature of 70° F and 35% Relative Humidity
- Outside temperature of 20° F and 70% Relative Humidity
- 8' Ceiling height
- Internal moisture gain of 1 lb. Per hour
- Furnace on-time of 70%

This chart uses A.R.I. standard designations:

- A Tight House is assumed to be well insulated with vapor barriers, tight storm doors and windows and a dampered fireplace. Air change rate of .50 changes per hour.
- An Average House is insulated and has a dampered fireplace, but there are no vapor barriers and storm windows and doors are assumed loose. Air change rate of 1.0 change per hour.
- A Loose House is generally one constructed before 1930, having little or no insulation, no storm doors or windows, no weather stripping or vapor barriers and often, no effective dampering of fireplaces. Air change rate is as high as 1.5 per hour.

UNIT DIAGRAM AND PARTS LIST



Ref.#	Description	707SM
1	#10 Flat Washer	191
2	#10 x 3/4" Sheet Metal Screws (6)	188
3	Atomizing Assembly with Junction Box	154-3
4	Bottom Pan with Fittings	47B
5	Brass Hex Nuts (6)	10-32
6	Center Pan	35
7	Center Pan Supporters (4)	23
8	Channel Rubber for Discharge Opening	29
9	Diffusing Screen	45
10	Discharge Dome	40
11	Float & Valve Assembly	92
12	Grommet	16
13	Impeller with Set Screw & Pump	D98A
14	Motor 120V with Motor Cover	30-310A
15	Motor 220V with Motor Cover	30-2-310A
16	Motor Base	34A
17	Retainer Clips for Screen to Motor Base (2)	19
18	Rubber End Bumpers (3)	187
19	Sheet Metal Screws (6)	22
20	Vibration Dampeners (4)	90
21	Wire Mounting Bracket	186