

INSTALLATION SECTION

CTU Series



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INSTALLATION



Installation, operation and maintenance of the gas piping, valves, burner and control circuits are covered by the following American Standards:

1. Uniform Mechanical Code
2. National Fire Protection Association No. 54
3. Installation of Gas Appliances and Gas Piping (ASA Z21.30)
4. Installation of Domestic Gas Conversion Burners (ASA Z21.8)
5. Requirements for Installation of Gas Equipment in Large Boilers (Z21.3)

Installation and replacement of gas piping or gas appliances and repair of gas appliances shall be performed only by a **qualified installing agency**. A "**qualified installing agency**" is defined as any individual, firm, company or corporation which either in person or through a representative is engaged in and is responsible for the installation or replacement of gas piping on the outlet side of the meter, or of the service regulator when a meter is not provided, or the connection, installation or repair of gas appliances, who is experienced in such work, familiar with all precautions required, and has complied with all the requirements of the authority having jurisdiction.

It is the responsibility of the distributor and/or purchaser to know the local "**authority having jurisdiction**" (normally the local utility company); and, for contracting with a **qualified installing agency** to perform the installation, start-up, and any maintenance of the gas system for this machine.

 **NOTE: Improper Installation done by non-qualified or non-licensed personnel may void the warranty on the machine.**

COLMAC INDUSTRIES, INC

UNCRATING AND SHIPMENT INSPECTION

Your Colmac finishing tunnel should be uncrated and carefully checked for shipping damage.

Upon delivery, visually inspect the crate and visible parts for shipping damage. If the crate or cover is damaged or signs of possible damage are evident, have the carrier note the condition on the shipping paper before the shipping receipt is signed. **Carrier must** have signed for damage before any damage claims can be processed.

Check for internal damage or unsecured parts.

Recommended Moving Procedure

Use spreader bars to lift and move tunnel (Figure 1). Using only a sling could bend the panels. Use Figure 1A to figure lift points.

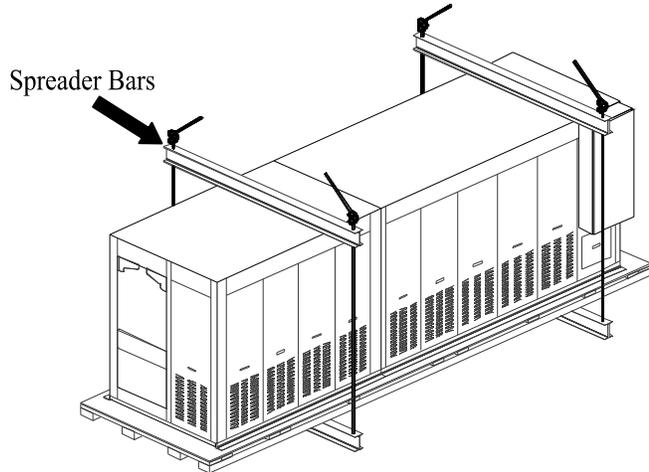


Figure 1 (CFS Tunnel shown)

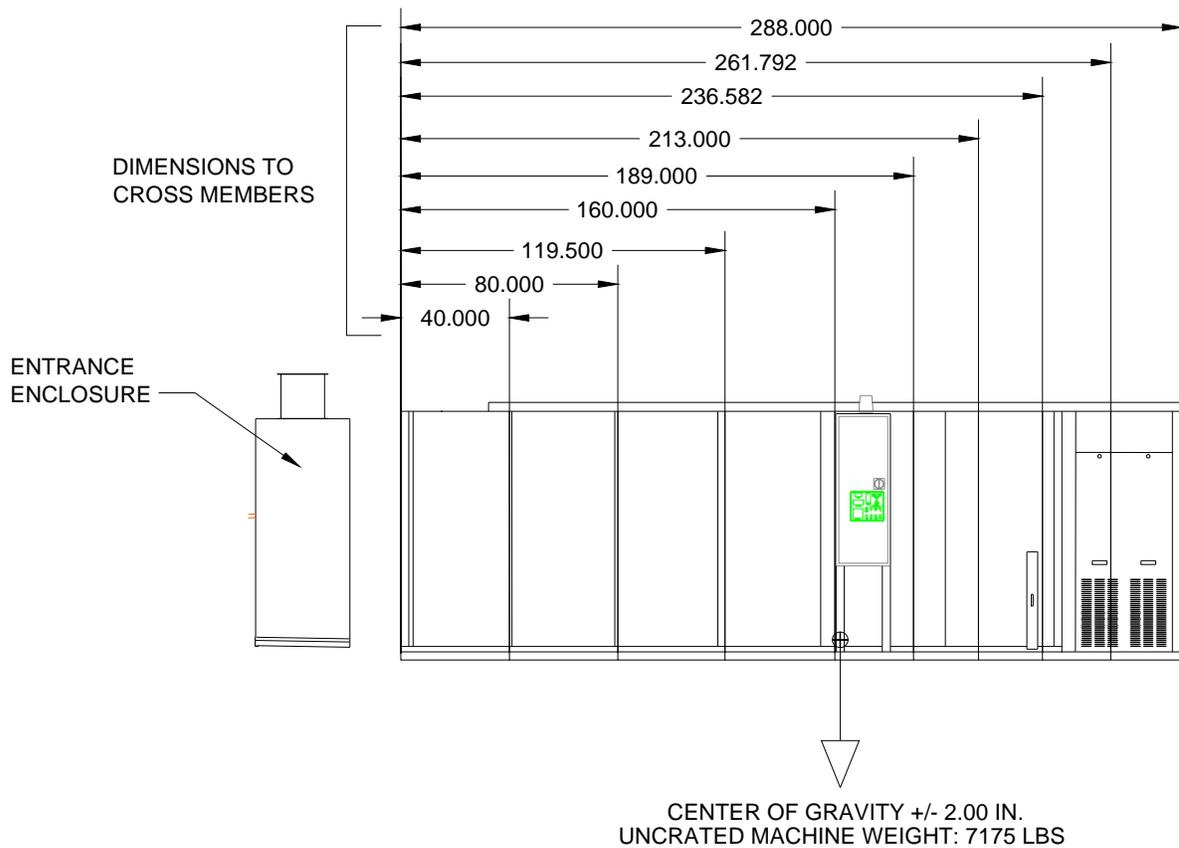


Figure 1A

PLACEMENT

The tunnel finisher should be set on a smooth, level floor. Make sure the machine is level. It is not necessary to bolt or lag this machine to the floor. There must be a minimum clearance 24 inches (610mm) between the back and sides of the tunnel and any wall or other machines to allow for cleaning of burner lint screen. Careful consideration should be given to the placement of the machine so that the best productive flow is possible through the plant.

Lift the tunnel from the pallet with a forklift or crane. While machine is lifted, install leveling pads by first removing the top nut, leaving the bottom bolt and washer on the pad, and inserting into each 1/2-inch hole on the angle iron. Set the machine down and adjust the leveling pads. Factory recommended height to set leveling pads is 3 inches.

ENTRANCE ENCLOSURE HOOD

✓ **IMPORTANT** – Seal all mating surfaces with silicone sealer after installation.

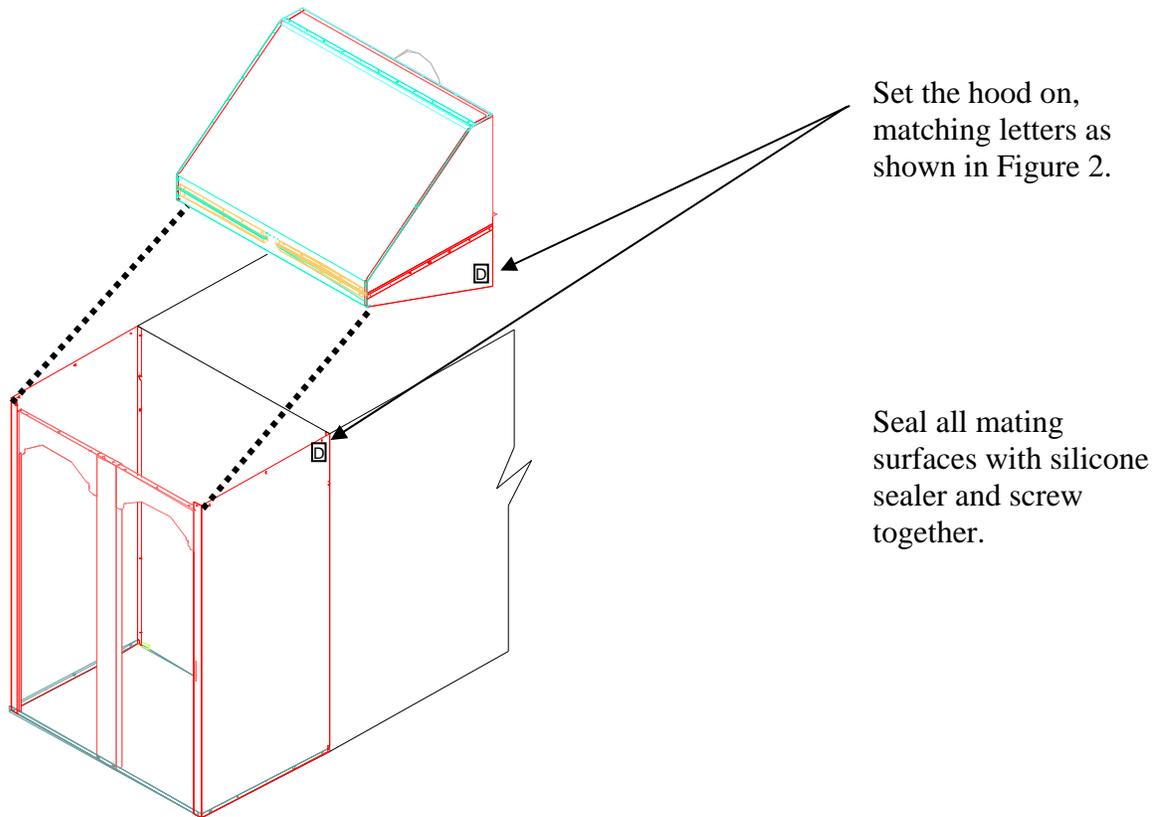


Figure 2

SUPPLY CONNECTIONS

CAUTION: This machine uses a natural gas burner system that can be converted to propane or butane. This system should not be exposed to synthetic or petroleum dry cleaning solvents. Such exposure will be hazardous to the machine and the garments being processed. If dry cleaned garments are to be finished in the machine, be sure they have been completely dried and deodorized.

✓ **NOTE:** During the winter season the factory will run anti-freeze through the steam system and then blow it out to prevent frozen pipes in shipment. Before operating, open traps and purge, and also, check solenoid steam valves to be sure they are not stuck.

ELECTRICAL

WARNING!!

Machine Must Be Electrically Grounded!

Failure to attach an EARTH ground could result in damage to any solid state device!

DO NOT USE PLUMBING FOR GROUNDING!!!

The CTU has a manual disconnect which should be connected to the facility power system in accordance with local codes. Consult installation specification drawings to determine total amperage requirements of your system. Make sure the electrical supply voltage is the same as required by this machine.

✓ **NOTE:** *Do not wire any auxiliary equipment into the control box.*



Figure 3

At the first trial of the electrical connection, make sure the blower rotation is as marked with the arrow on the motor (Figure 3). Be sure to check the blower for rotation (Figure 4).

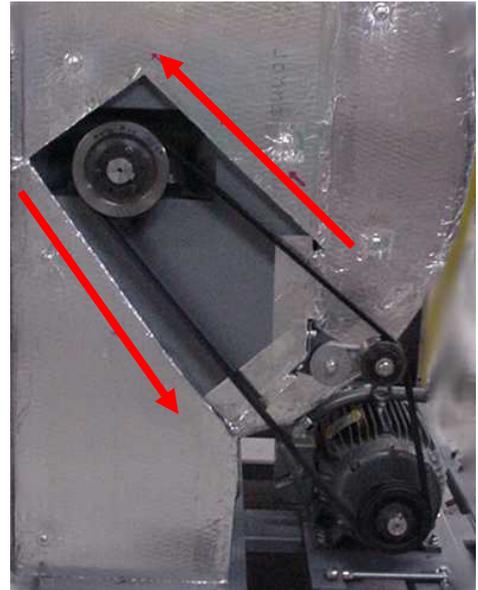


Figure 4

GAS

➔ *SPECIAL WARNING!!* ➔

All installation and adjustments must be accomplished by a qualified installing agency!

✓ IMPORTANT INSTALLATION INFORMATION

Refer to the succeeding Tables, 1 and 2 in this section.

To be sure of adequate gas supply, the piping that supplies the gas to the machine must be sized in accordance with the governing code. Because of the relative low operating pressure of the tunnel, the size of pipe and length of the piping run must be properly installed.

PIPE SIZING TABLE FOR 1PSI (28"W.C.)(0.07ATM)										
Capacity of pipes of different diameters and lengths in cubic feet per hour. For an initial pressure of 1 psig with a 10% pressure drop and a gas of 0.6 specific gravity.										
Pipe Size of Schedule 40 Pipe	Total Equiv. Length of Pipe in Feet									
(Inches)	50	100	150	200	300	400	500	1000	1500	2000
1	740	520	430	370	300	260	230	170	130	120
1 1/4	1,540	1,090	890	760	630	540	490	350	280	250
1 1/2	2,330	1,650	1,350	1,160	960	830	740	530	420	380
2	4,550	3,210	2,640	2,260	1,870	1,610	1,440	1,040	830	750

Table 1

PIPE SIZING TABLE FOR 2PSI (55"W.C.)(0.14ATM)										
Capacity of pipes of different diameters and lengths in cubic feet per hour. For an initial pressure of 2 psig with a 10% pressure drop and a gas of 0.6 specific gravity.										
Pipe Size of Schedule 40 Pipe	Total Equiv. Length of Pipe in Feet									
(Inches)	50	100	150	200	300	400	500	1000	1500	2000
1	1,080	760	620	540	440	380	340	240	190	170
1 1/4	2,250	1,590	1,300	1,120	910	790	710	500	410	350
1 1/2	3,410	2,410	1,970	1,700	1,390	1,200	1,070	760	620	530
2	6,640	4,700	3,840	3,310	2,700	2,350	2,090	1,480	1,210	1,040

Table 2

Tables 1 & 2 show the gas supplied at 1psi and 2psi respectively. These tables are for *reference only*. Be sure that you comply with your *local* code authority.

Determine plant gas pressure before connecting the gas line to the machine.

Incoming gas pressure *should have been* determined before placing the machine order. If this was not done, it may be necessary to use a different incoming gas regulator or change the spring that was supplied. The label on the regulator determines spring sizes. The standard service regulator is supplied with an orange spring – maximum incoming pressure: 193"w.c. (7psi)(0.476atm), output range: 12"w.c (0.43psi)(0.03atm) to 28"w.c. (1psi)(0.07atm). (Reference Table 3).

SPRING	OUTPUT	SEAT	INPUT MAX
ORANGE	12" w.c. (0.43psi)(0.03atm) to 28" w.c. (1psi)(0.07atm)	5/16	193" w.c. (7psi)(0.476atm)

Table 3

Maximum service regulator inlet pressure: 7psi (0.476atm)(193"w.c.)
Set tunnel inlet pressure at: 0.75psi (0.05atm)(21"w.c.) (See Figure 5)

(NOTE: 1psi = 28"w.c.)

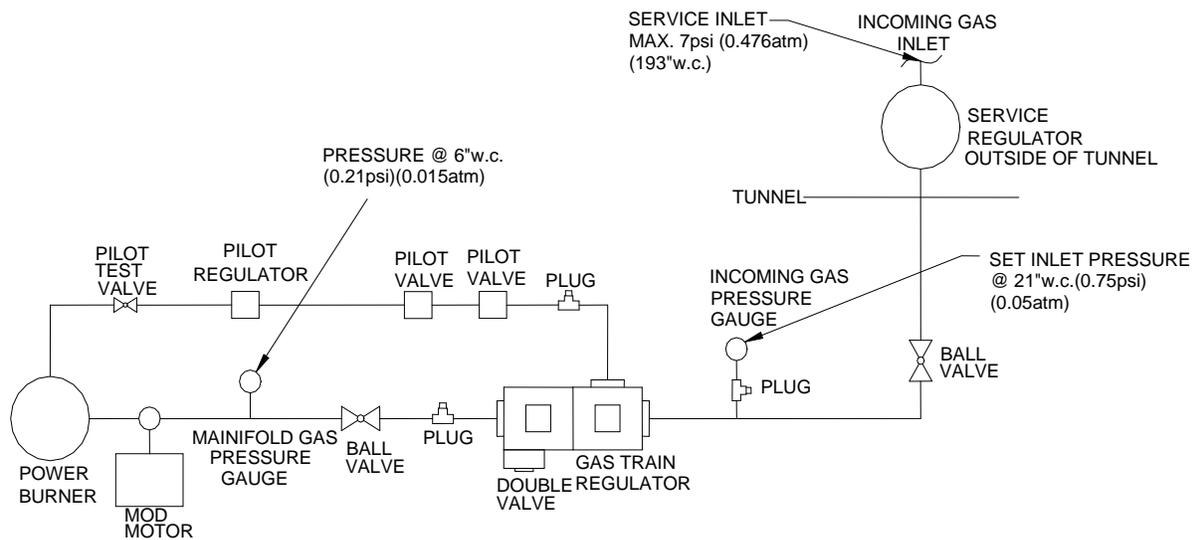


Figure 5 GAS TRAIN

- 1) Locate the gas inlet pipe stored on the floor under the blower (see the installations drawing in the SPECIFICATION sections).
- 2) Remove the pipe plug. Use pipe compound or thread sealant, properly threaded pipes and careful assembly procedure so that there is no cross threading, etc., which might cause damage.
- 3) Hook up gas line.
- 4) Adjust the incoming gas service to deliver. 21" w.c. (0.75psi)(0.05atm) at the equipment's incoming pressure gauge.

Contact the Colmac Service Department if gas supply is not sufficient to operate tunnel.

Check manifold gas pressure by bringing the tunnel up to set point temperature and then letting it idle at set point for 5 to 10 minutes. Verify that the manifold gas pressure gauge remains at the factory setting of 6"w.c. (0.21psi)(0.015atm). Any changes in the gas train regulator setting to compensate for differences in heating value of the natural gas should be accomplished using the manifold gas pressure gauge and the final pressure setting recorded.

- a) If the gas contains propane or other components which produce a heating value significantly greater than 1000Btu/cu.ft., the gas train regulator may be re-adjusted to deliver gas at a pressure less than the factory setting. This will prevent air temperature over-shoot during machine operation.
 - b) If the natural gas has a heating value significantly lower than 1000Btu/cu.ft., and the operating temperature can not be maintained, the gas train regulator may be re-adjusted to deliver gas at a pressure up to 10"w.c. at the manifold gas pressure gauge.
- 5) Before starting the machine, purge the air out of the gas line. This is accomplished by pulling the plug out of the pilot line. Purge the air out until there is a smell of gas. Then, put the plug back.

VENTING

It is important that the exhaust system has sufficient airflow to dispose of combustion gases. It is recommended that a professional heating and ventilating contractor designs and installs the exhaust system. It is recommended that for adequate airflow, the exhaust duct develop no more than 1.5" static pressure. The number of bends should be kept to a minimum.

Special attention must be paid to the installation of the duct attached to the exhaust blower. The air in this line is highly saturated with water vapor, which rapidly condenses on the inner walls of the duct, especially if the ambient temperature is cool. This ducting should be installed in a way that minimizes leakage.

This is accomplished by installing the duct sections exactly opposite to the way a normal stovepipe is joined, as shown Figure 6. With this method of joining the duct, any liquid condensing on the inside walls of the duct will remain inside and flow back to the blower housing where it will be drained into the evaporator pan in the steam section.

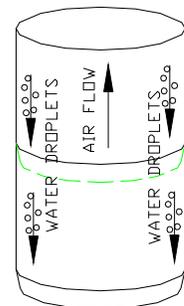


Figure 6

Horizontal runs should be installed in the same manner but with a slight slope to promote drainage toward the blower.

Sealing the duct joints with a silicone or similar compound will further reduce leakage. The duct should have jacketed pipe when venting through the roof, especially when the run is short.

In the event the plant has a high negative pressure, a make-up air system may be required. For the CTU tunnel, there is an optional make-up air system available from Colmac with its own blower.

✓ **NOTE:** The duct should have a back draft damper in cold climates to prevent freezing in the steaming section when the machine is not operating.

PROPER STEAM HOOK-UP

The steam and return system connections are very important. Poor steam quality or incorrect connections directly affect its performance. (Reference Figure 7)

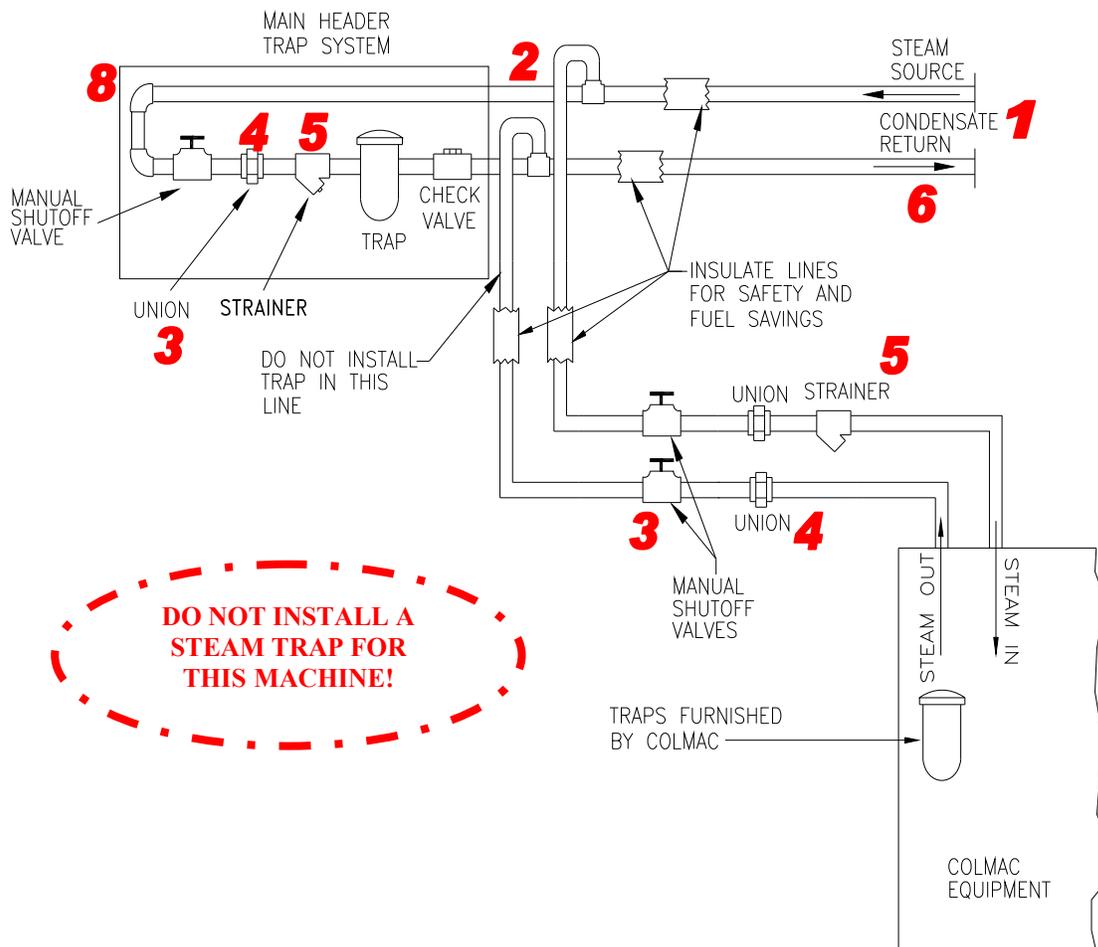


Figure 7

1. To insure adequate steam supply, the steam line should be 1-1/2" (38mm) or larger and the return line should be 3/4" (19mm). The factory recommends the larger supply sizes to compensate for line loss. Since the machine is equipped with steam traps, no additional traps are required. Never put one (1) trap in line with another, as the traps will no longer function. Be sure to check all steam connections for leaks. A strainer should be put into the steam line. All steam lines should be insulated to prevent loss of heat and possible injury to personnel.
2. **Supply Line:** Connect the steam line to the top of the steam headers as shown in Figure 7 to insure a clean, dry steam supply.
3. **Shut-off valves** installed ahead of the union and strainer on the "steam-in" and "steam-out" lines and between the union and return header on the "Main Header Trap System" (8), will simplify shut-off for repair and maintenance. "Ball" or "Gate" type valves are recommended for maximum flow.
4. **Unions** placed between the shut-off valve and the machine will simplify hook-up and disconnection between the steam supply and the machine.
5. The **strainer** is important to insure that the steam is free of foreign materials that could foul electric valves, traps and other components in the steam system of the machine.
6. **Condensate Return System:** Connect the condensate, return pipe to the top of the return header to prevent foreign material from being drained back into the return system of the machine.
7. **Do not install a steam trap for this machine.** Your Colmac Machine has traps and a check valve already installed as part of the return system. If a trap is installed outside the machine, the steam and return systems will not function properly.
8. To assure clean, unsaturated steam to your equipment, the main steam header(s) should be trapped. This will help prevent condensate in the steam lines and increase the efficiency of the steam-heated equipment.

