

INSTALLATION SECTION

CFS Narrow Body GWG Installation Manual



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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 (ANSI Z21.30).
4. Installation of Domestic Gas Conversion Burners (ANSI 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 pipeline components 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.

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. Remove all of the quick release panels and main lint screens. Keep them in order so they can be replaced in position after installation. Check again for internal damage or unsecured parts.

Some components required for assembly may be stored behind lift off panels of the machine, inside finishing chamber, or in the control box. Remove these and set aside for later assembly.

Open the additional parts crates and check contents.

The tunnel finisher should be set on a smooth, level floor. Make sure the machine is level. Leveling pads may be used if necessary.

It is not necessary to bolt or lag this machine to the floor.

LEVELING PAD INSTALLATION (OPTIONAL)

To assist in leveling the tunnel during installation and to reduce corrosion under the deck place, the tunnel may be installed with leveling pads. Figure 1 shows the installation location for the leveling pads.



Figure 1 - Tunnel Leveling Pad

Lift the tunnel from the pallet with a forklift. While machine is elevated, install leveling pads by first removing the top nut, leaving the bottom bolt and washer on the pad and inserting into each 1/2" (12.7mm) hole on the angle iron (Figure 1). Set the machine down and adjust the leveling pads.

SUPPLY CONNECTIONS

Caution: This machine uses either a natural gas or propane burner system. 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.

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. Also, check solenoid steam valves to be sure they are not stuck.

ELECTRICAL

Machine Must Be Electrically Grounded!
Failure to attach an EARTH ground could result in damage to any solid state device!

The CFS tunnel has a control box(s) which contain a manual disconnect which should be connected to the facility power system. Refer to the supplied wiring and installation diagrams for assistance in connecting the CFS tunnel to facility power.

When connecting power to the tunnel follow all local electrical codes.

Consult supplied wiring diagrams to determine total amperage requirements of your system. Verify the electrical voltage is the same as required by this machine.

Carefully observe the rotational direction of all motors. The motor should rotate as marked by the arrow painted on each motor (Figure 2).

Do not wire any auxiliary equipment into the control box.



Figure 2 - Blower Motor with Direction Indicator

GAS

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

Important Installation Information

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. The size of pipe and length of the piping run must be installed properly.

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

Maximum inlet pressure - 7psi (0.476atm)

Connect the incoming gas service regulator that was shipped with your tunnel as follows:

1. Locate the gas inlet pipe on top of the tunnel (see installation drawings in the "**Installation**" section).
2. Remove pipe cap.
3. Screw regulator on with arrow on casting pointed **downward** (Figure 3).

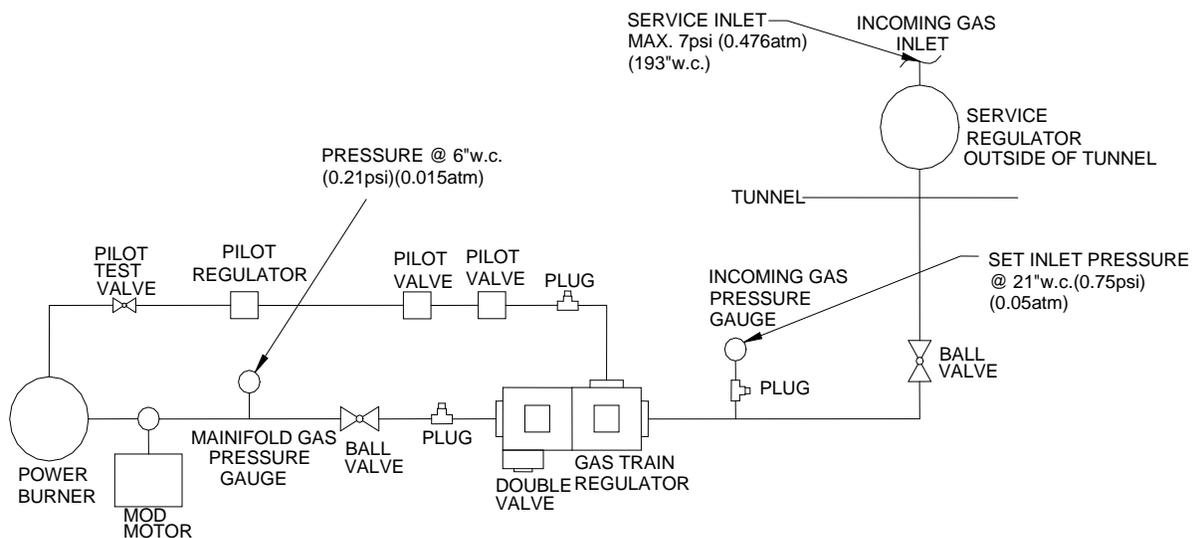


Figure 3 - Gas Plumbing Diagram

4. Use pipe compound or thread sealant, properly threaded pipes and careful assembly procedure so that there is no cross threading, etc., which will cause damage.

5. Apply wrench or vise pressure only to the flat areas around the pipe tapings at the end being threaded to the pipe to avoid possible fracture of the regulator body, which could result in leakage.
6. Hook up gas line.
7. Adjust the incoming gas service regulator to deliver 15" w.c. at the equipment pressure gauge.

NOTE: Before shipment, Colmac has adjusted the incoming gas service regulator to the closed position.

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

Check gas pressure downstream of the main burner regulator. Verify that it remains at the factory setting of 12" w. c. using a calibrated water column gauge. Any changes in the main burner regulator setting to compensate for differences in heating value of the natural gas should be accomplished using a calibrated water column gauge and the final pressure setting recorded.

- a. If the gas contains propane or other components which produce a heating value significantly greater than 1000 Btu/cu. ft., it will be necessary to change the gas orifice on the burner assembly. Contact the Colmac Service Department to determine the correct orifice size for the gas you are using.
- b. If the natural gas has a heating value significantly lower than 1000 Btu/cu. ft. and the operating temperature can not be maintained, it will be necessary to change the gas orifice on the burner assembly. Contact the Colmac Service Department to determine the correct orifice size for the gas you are using.

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 (Inches)	Total Equiv. Length of Pipe in Feet									
	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 - Gas Pipe Sizing (1 PSI)

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 (Inches)	Total Equiv. Length of Pipe in Feet									
	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 - Gas Pipe Sizing (2 PSI)

- c. Natural gas can be considered to have 1000 Btu/cu. ft. anywhere in the country. As such, pipe capacity is very important. A 400,000 Btu/hr burner will require no less than 400 cu.ft./hr to be supplied to the burner. These tables give gas capacities in cu. ft./hr for various diameters of pipe at various lengths.

Tables 1 and 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.

For fittings, add equivalent of straight pipe.

Equivalent Resistance of Bends, Fittings, and Valves, Length of Straight Pipe in Feet

		45° Ell	90° Ell	180° Close return bends	Tee
Nominal pipe size, inches	Inside dia. <i>d</i> , in. Sched. 40	<i>L</i> = equivalent length in feet of Sched. 40 (standard weight) straight pipe			
1/2	0.622	0.73	1.55	3.47	3.10
3/4	0.824	0.96	2.06	4.60	4.12
1	1.049	1.22	2.62	5.82	6.90
1-1/4	1.380	1.61	3.45	7.66	6.90
2	2.067	2.41	5.17	11.5	10.3

Table 3 - Resistance of Bends

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 4)

Maximum service regulator inlet pressure: 7psi (0.476atm)(193" w.c.)

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 4

Set tunnel inlet pressure at: 0.54psi (0.036atm)(15" w.c.)

Before starting the machine, purge the air out of the gas line.

- 1) Remove purge plug (Figure 4)
- 2) Purge air until the gas is smelled
- 3) Re-install purge plug

DO NOT TRY TO IGNITE BURNER SYSTEM(S) FOR AT LEAST 5 MINUTES

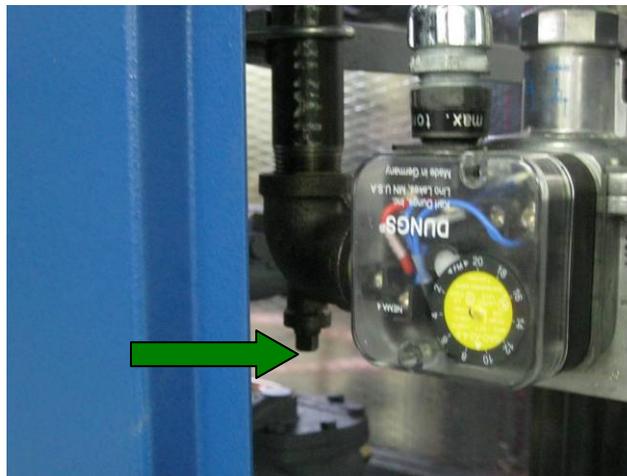


Figure 4 - Purge Plug

HIGH-LOW GAS PRESSURE SAFETY SWITCH

The natural gas system is equipped with high and low gas pressure safety switches that will turn the gas off if the pressure rises above or drops below the factory settings (Figure 5). Factory settings are: High- 28" w.c. and Low - 9" w.c. Recommended pressure settings are printed on the side of the tunnel, near the gas shut off valve(s).

In the event of a fault, the main gas regulator's high and low pressure switches are configured to auto-reset or be manually reset (depending on tunnel model).

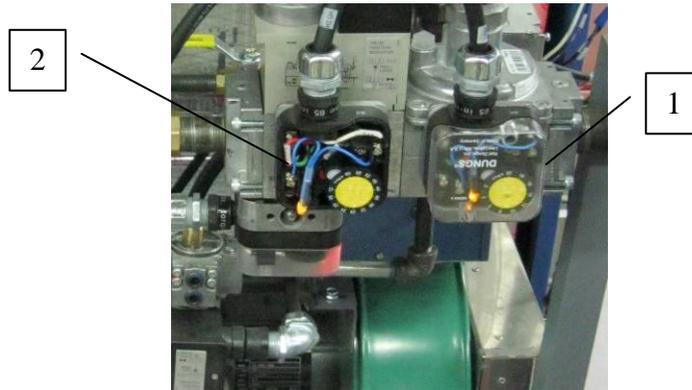


Figure 5 - Gas Pressure Safety Switches

"HIGH PRESSURE SAFETY" (1)

"LOW PRESSURE SAFETY" (2)

VENTING

It is recommended that a professional heating and ventilating contractor design and install an exhaust system that has sufficient air flow to dispose of combustion gases and moist air from the tunnel. Each exhaust blower **must** have a separate exhaust duct.

Ducting for entrance and exit exhaust should be designed to minimize leakage and should be insulated if possible. Ducting for entrance and exit exhaust is shown in Figure 6.

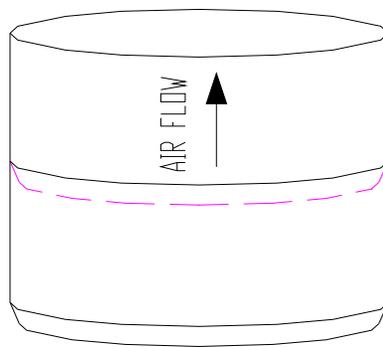


Figure 6 - Entrance and Exit
Exhaust Ducting

If required, horizontal runs should be installed in the same manner as the entrance and exit exhaust, but with a slight slope to promote drainage toward the blower.

NOTE: Both exhaust vents should use a back draft damper in cold climates to prevent freezing in the steaming section when the machine is not operating.

PROPER STEAM GENERATOR HOOK-UP

The steam generator has all the proper gas line and internal water plumbing completed when shipped.

Incoming water supply should be connected to the supplied flexible hose as highlighted by the white arrow in Figure 7.

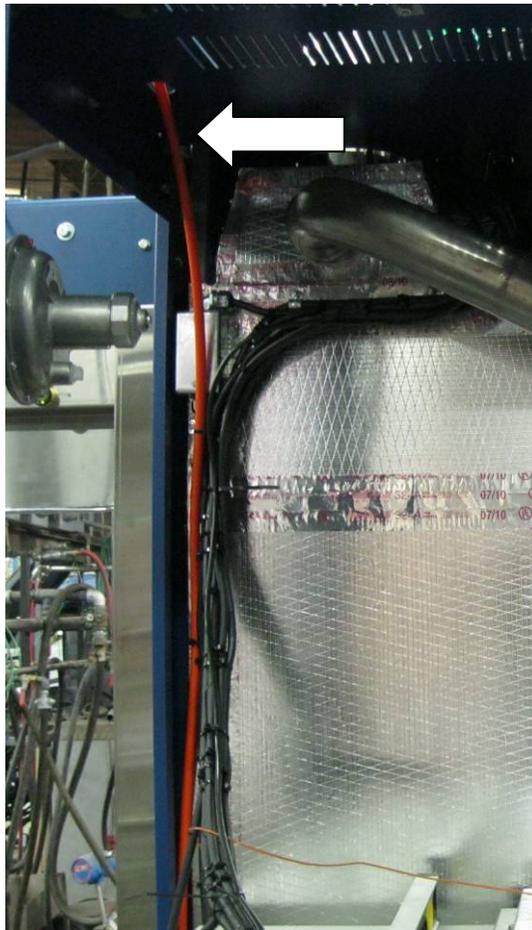


Figure 7 - Incoming Water Supply Hose

Incoming water supply may also be connected directly to the steam generator as detailed by the red arrow in Figure 8.

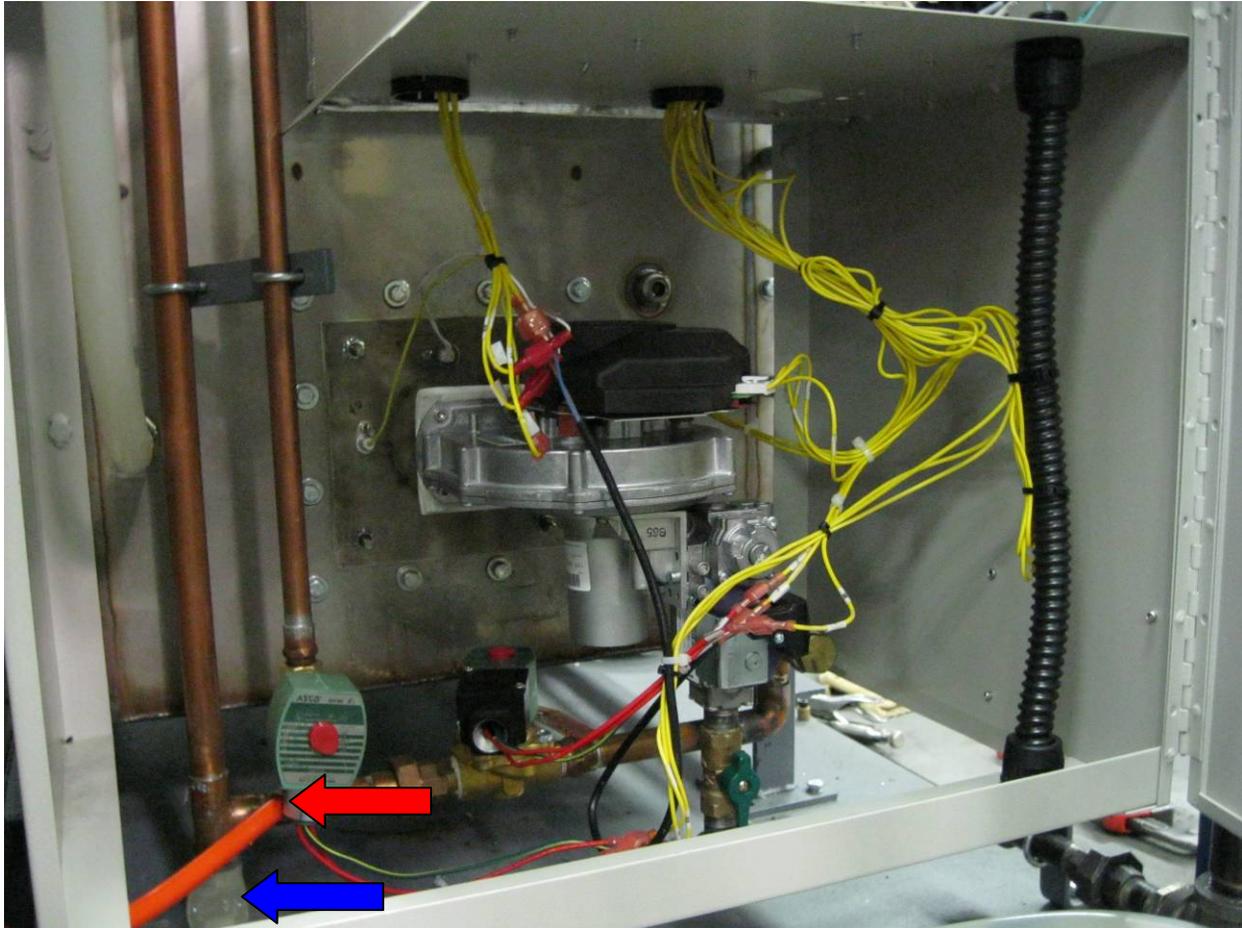


Figure 8 - Alternative Water Supply Connection and Drain Hose Connection

A drain hose should be connected to the steam generator to allow proper and safe evacuation of water from the unit, as shown by the blue arrow in Figure 8. The water drained from the unit will be very hot (212F); caution should be used with the high temperature water, and all local drainage codes should be followed.

Reference the steam generator manual for all connection procedures.

