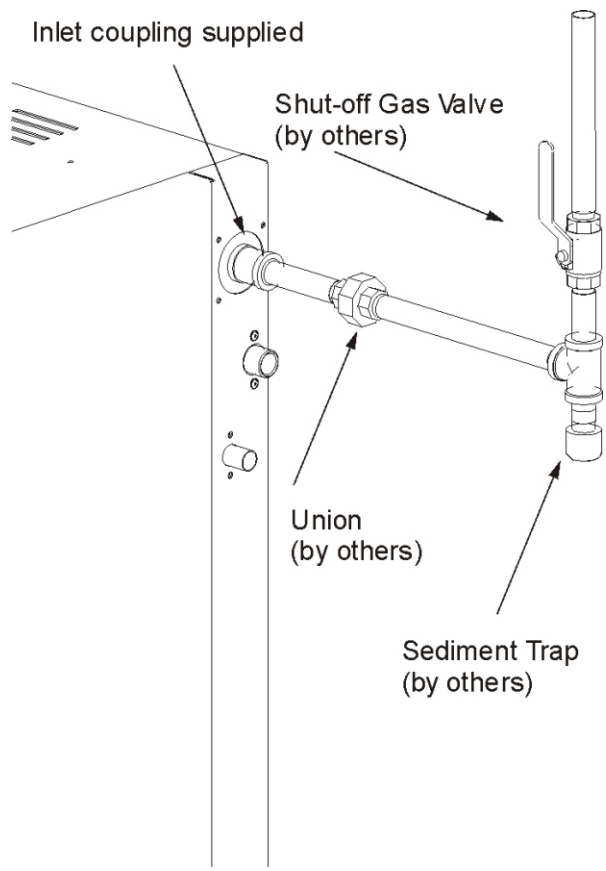




Quick Start Installation Guide



Mounting
Plumbing
Electrical
Steam Distribution



Installation Requirements

1. Installation of piping must be in accordance with local codes, and ANSI Z233.1, "National Fuel Gas Code," in the United States or CSA B149.1 installation codes in Canada.
2. In all installations, a certified manual shut off valve, located outside the cabinet, must be installed. When black iron gas pipe is used, a sediment trap must be located ahead of the humidifier gas controls.
3. Leak test all gas connections external to the humidifier, using a commercial soap solution made to detect leaks. Bubbles indicate gas leakage. Seal all leaks before placing the humidifier in operation.
4. Do not use Teflon tape on gas line pipe threads. A flexible sealant suitable for use with natural gas and propane gas is recommended.
5. All gas piping should be adequately supported to prevent any strain on inlet piping.
6. A 1/8" NPT plugged tapping, accessible for test gage connection, must be installed immediately upstream of the gas supply connection to the appliance.

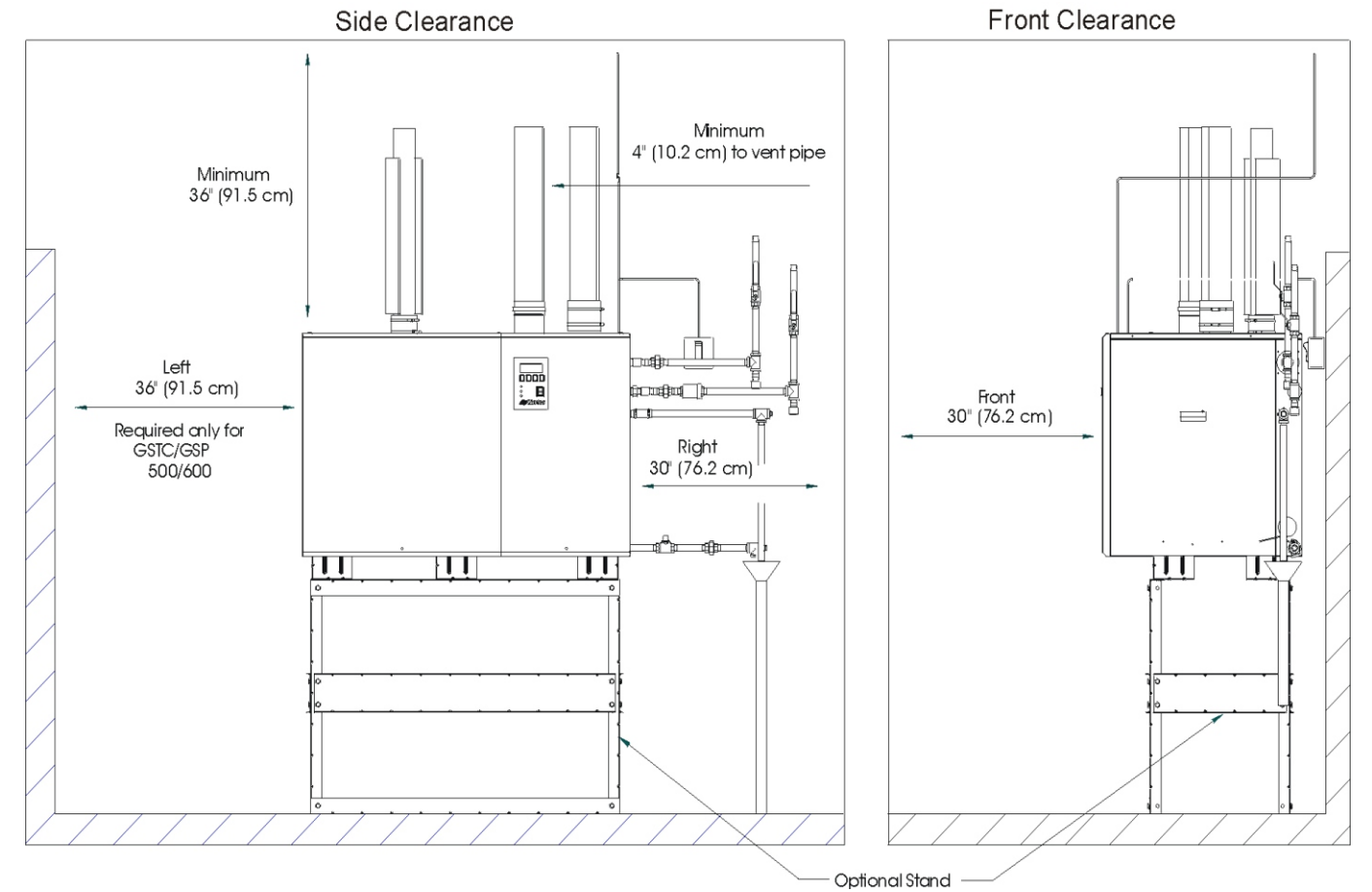
Max & Min Gas Pressure

Gas	Inches w.c.	
	Min	Max
Natural	4.5	9.0
Propane	9.0	13.0

Gas Inlet Pipe Size

Model	NPT
GS 100	1/2"
GS 200	3/4"
GS 300/400	1"
GS 500/600	1-1/4"

**NOTE: Nortec does not accept responsibility for installation code violations.*



**NOTE: The clearances above are for reference only and are the minimum required for maintenance of the humidifier.*

Model	Net/Full Weight – lbs (kg)
100	266/416 (120/180)
200	354/855 (160/266)
300	485/954 (217/432)
400	529/974 (239/441)
500	659/1340 (298/607)
600	703/1360 (318/616)

Mounting

Mount either floor mounted or on a Nortec supplied mounting stand.

1. Install on a level platform in an area with ambient temperature 41-104°F (5-40°C) and relative humidity 5- 80% (non-condensing).
2. Ensure mounting surface is strong enough to support the full weight of the humidifier. If mounting using the optional stand, assemble stand according to the provided instructions and secure stand to the floor via the holes in the leg support plates.
3. Install in location where the electrical power, the plumbing connections, the gas supply and the vents can be connected.

4. Locate the humidifier as close as possible to the steam distributor location, net output will be reduced as a result of heat loss through the steam line. The steam distributor should be at least 36" (91 cm) above the humidifier.
5. Avoid mounting humidifier on combustible surfaces including (but not limited to) carpet, tile, or certain insulating materials.
6. Clearance dimensions shown are for reference only and are the minimum required for maintenance of the humidifier. Consult local and national codes before final location and installation.
7. Be sure to follow any local codes or regulations.

Install Requirements

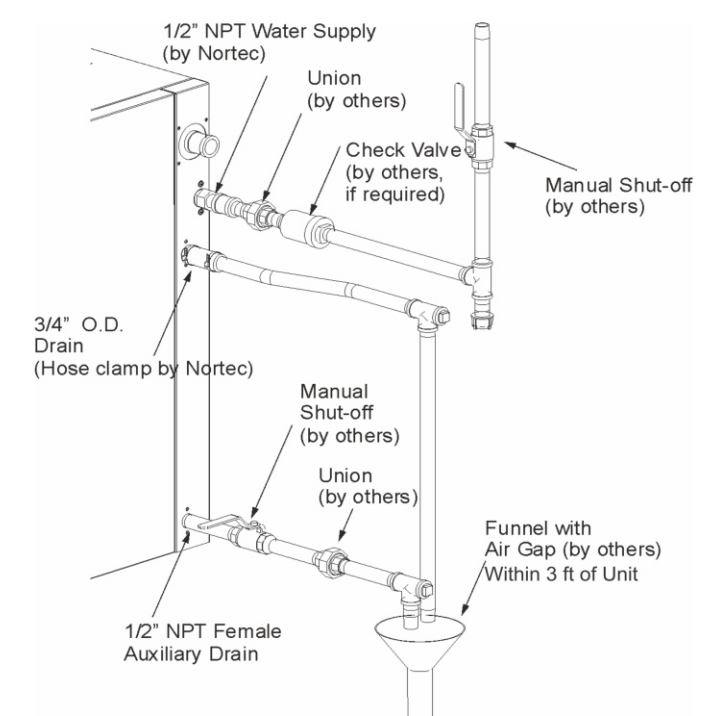
1. An external disconnect switch must be installed close to the unit to allow for power interruption during servicing and/or maintenance.
2. The humidifier should only be connected to primary power (main power) after all installation work has been completed.
3. Humidifiers require field wiring to primary voltage terminal blocks. Depending on the unit, power requirement must be 120 Vac or 208-240 Vac, 15 A, 20 A or 30 A separately fused circuit, single phase.
4. When installed, the appliance must be electrically grounded in accordance with local codes or, in the absence of local codes, with the National Electrical Code, ANSI/NFPA 70, and/or the CSA C22.1 Electrical Code, if an external electrical source is utilized.
5. All wiring is to be done in accordance with local and national codes by a licensed electrician.

	Voltage (V)	Rated Amps (A)	Suggested Breaker (A)
GSTC/GSP 100 Indoor	120	2.1	15
	208-240	1.1	15
GSTC/GSP 200 Indoor	120	3.7	15
	208-240	1.9	15
GSTC/GSP 300 Indoor	120	5.3	15
	208-240	2.7	15
GSTC/GSP 400 Indoor	120	6.8	15
	208-240	3.5	15
GSTC/GSP 500 Indoor	120	8.4	15
	208-240	4.3	15
GSTC/GSP 600 Indoor	120	10	15
	208-240	5.2	15
GSTC Outdoor 100	120	6.3	15
	208-240	3.2	15
GSTC Outdoor 200	120	7.4	15
	208-240		15
GSTC Outdoor 300	120	13.7	20
	208-240	6.9	15
GSTC Outdoor 400	120	15.2	20
	208-240	7.7	15
GSTC Outdoor 500	120	21	30
	208-240	10.6	15
GSTC Outdoor 600	120	22.6	30
	208-240	11.5	15

WARNING Wiring needs to be preformed by a licensed Electrician.

Water Supply

1. Supplied fill valve (1/2" NPT). Fill rate 10 l/min all unit sizes. Size of piping is a minimum 1/2" copper; recommend 3/4" up to within 4 feet of unit.
2. Standard fill valves are sized for water pressure ranging from 30 to 80 psig (ideally 55 to 60 psig). This pressure should be measured at the humidifier if the water pressure is suspect.
3. Supply and install a shut off valve and union in the water supply line dedicated to the humidifier to facilitate servicing.
4. If water hammer occurs, install a shock arrester on the fill water line just before the inlet to the fill valve. Water hammer will damage the fill valve.
5. A 1" air gap is designed into the fill system of the GS humidifier. Some local plumbing codes may still require the installation of a double check valve on the fill line to the humidifier to prevent contamination of the supply water system. Verify with local codes and install if necessary.
6. Provide potable/softened/RO/DI water with the following properties:
 Conductivity: 0-1500 micro-Siemens
 Hardness: 0-12 gpg
 Alkalinity: 6.5-7.5 pH
 Chloride: 0-40 ppm



**NOTE: All water supply and drain line connections should be installed in accordance with local plumbing codes. Nortec does not accept responsibility for installation code violations.*

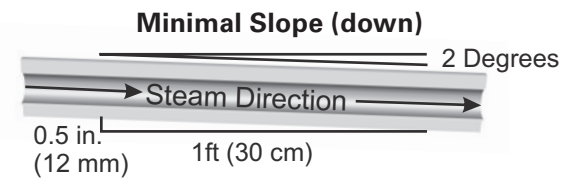
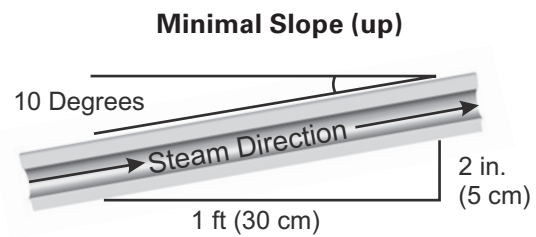
Drain Line(s)

1. Use 3/4" O.D. drain lines from the unit to the air gap.
2. The drain water line must be piped to an air gap within 3 ft (1 m) of the humidifier.
3. The drain line should not end in a sink used frequently by personnel, or where plumbing codes prohibit it.
4. Never install PVC piping as a drain line material. Always use material suitable for with-standing 140°F (60°C).
5. Keep drain lines as short as possible. Keep drain lines sloped down.

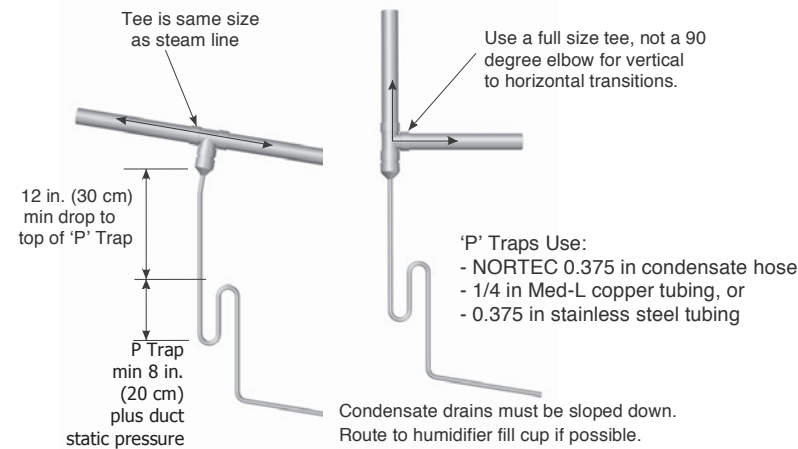
Steam Distribution

Install Requirements

1. The use of steam line other than copper, stainless steel tube or Nortec supplied steam line will void the warranty and may adversely affect the operation of the humidifier.
2. Steam lines must not have any restrictions which could allow steam pressure to build in the tank.
3. The first vertical 12 inches of steam line off the humidifier must not have any bends or turns.
4. Slope the steam line. If the slope is with the flow of steam, then slope 1/2 inch for every horizontal run of 12 inches. If the slope is against the flow of steam, then slope 2 inches for every horizontal run of 12 inches.



5. Insulate the steam line with 1.0 inch (2.5 cm) pipe insulation (minimum).
6. Support Steam line so weight is not on the unit.
7. Trap condensate at low points/elbows (Use full size 'T' for traps).
8. Install a condensate trap every 15 feet / 4.5 meters of steam line.



Steam Line Sizing

Humidifier	Steam output [lb]	MED-L copper tube nominal steam line size	Stainless steel tube diameter (wall thickness 0.065")	Steam loss per foot in condensation [lb/ft]	Steam line maximum equivalent length
GS 100	100	1-1/2"	1-3/4"	0.11	90 ft
GS 200	200	3"	3"	0.16	90 ft
GS 300	300	3"	3"	0.16	180 ft
GS 400	400	4"	4"	0.22	180 ft
GS 500	500	4"	4"	0.22	220 ft
GS 600	600	4"	4"	0.22	260 ft

Effective Lengths of Typical Steam-Line Fittings

Nominal tube size	Standard 90°-elbow	Standard 45°-elbow	Side-outlet tee	Gate valve*	Globe valve*
1-1/2"	3.5 ft	1.75 ft	7 ft	0.8 ft	34 ft
1- 3/4"	3.5 ft	1.75 ft	7 ft	0.8 ft	34 ft
3"	5 ft	2.5 ft	11 ft	1.1 ft	54 ft
4"	8 ft	4 ft	15 ft	1.6 ft	80 ft

*Valve in full open position.

Use only stainless steel tube for reverse osmosis and deionized water application.

Steam hose (Nortec Supplied, part 1328820, 1 3/4") can be used for 100 lb/hr (45 kg/hr) applications. Use one hose per 100 lb/hr (45 kg/hr) of output.

Combustion Air

General Requirements

1. Provide for adequate combustion and ventilation air in accordance with sections 5.3, air for combustion and ventilation, of the national fuel gas code, ANSI z223.1, or sections 7.2, 7.3, 7.4 of CSA B149.1 installation codes, or applicable provisions of the local building codes.
2. The required free area of supply air opening is:
13 in. Sq. (8,387 mm²), for GS 100
23 in. Sq. (14,839 mm²), for GS 200
35 in. Sq. (22,581 mm²), for GS 300
47 in. Sq. (30,323 mm²), for GS 400
59 in. Sq. (38,064 mm²), for GS 500
71 in. Sq. (45,806 mm²), for GS 600
3. Cabinet top and bottom contain air openings to provide combustion air to the forced draft blower. Do not block these openings.
4. Excessive exposure to contaminated combustion air will result in safety and performance related problems. Known contaminants include halogens, ammonia, and chlorides, excessive dust, lime or dirt. Excessive exposure of electronics to the contaminants will also result in performance related problems. Contact Nortec technical services if you have any questions. If contaminants exist, isolate the unit from the contaminated space.
5. Be sure to follow any local codes or regulations.

Sealed Combustion Guidelines

1. Installation of the combustion air supply line must be carried out by adequately qualified personnel. All local regulations relating to the provision of air supply systems must be observed and adhered to.
2. The air supply line and the exhaust must individually not exceed a respective equivalent length of 70 ft. (21 m). The vent pipe diameter must be maintained over the overall length of the vent.
3. The air supply line should be approximately as long as the flue gas venting and must be supported at every 5 ft. (1.5 m) and additionally at every pipe bend. At low temperatures, water condensation can form on the outside of the pipe. To prevent this, it is recommended that the supply air line is insulated and an in line heat is added. Consult factory.
4. Attach the air supply line to the manifold using a hose clamp or hose coupling if required. See Figure 6.
5. The air intake terminal and the flue gas terminal must end at an outside location. See Figure 8: Location of air intake and flue gas terminal must comply with all local and national regulations.

WARNING

Air supply line should not obstruct any services going to the humidifier front and right side cabinet panels.

Refer to GS Venting Guide or Installation Manual for information about venting a GS unit.

All information contained in this Quick Start Guide is for general information purposes only. For complete Nortec installation/operation recommendations for your Nortec equipment, please refer to the installation manual for your specific system, accessories, and components.

All electrical connections must be installed in accordance with local and national electrical code requirements by a licensed electrician.

All water supply and drain line connections must be installed in accordance with local plumbing codes by a licensed plumber.

Nortec does not accept any liability for installations of humidity equipment installed by unqualified personnel or the use of parts/components/equipment that are not authorized or approved by Nortec.



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