

Pre-installation Requirements for Multi-Fuel Boilers With S700 Burner

Important!! Read and understand this information and review with any contractors involved in your installation. If the installation will be for new construction, also review with your building/general contractor early in the project.

For the INOV8 boiler to operate properly, it is essential that several key issues be reviewed well before installation and early in the planning stages for new construction projects. This document addresses these important topics to insure you have a correct installation. All connection sizes related to the installation of the fuel side of the boiler are detailed in the attached Boiler System Specification Sheet.

Note that detailed installation instructions will be found in the Owner's Manual you will receive with the portion of your boiler that comes from INOV8. Also note that instructions in the INOV8 manual supercede any that accompany the individual components of the boiler system, i.e. draft inducer, boost pump, etc. If you have questions, or need additional assistance, you may also contact the technical support team at INOV8 International.

Location of Boiler

There are several key aspects of boiler location that must be considered. While it may not be possible to optimize all factors in every installation (especially when adding a boiler to an existing building) they all must be addressed.

Chimney options/location

The most critical factor in the installation of your INOV8 boiler is a properly designed, located, and functioning chimney. A good draft (air movement up the chimney) is essential to the safe and reliable operation. Refer to the Boiler Specification Sheet for the required chimney size. While we cannot address all possible chimney installation options, these are some key points to consider:

- Chimney diameter is based on the size BTU input of the boiler – see the specification sheet. Note - the chimney connection on the boiler does not imply the chimney size. In all cases it must be increased to the appropriate size.
- Insulated chimney pipe must be used from a point 18 inches below the ceiling to the top of the chimney. Single wall can be used from the ceiling connection to the boiler connection. Note that the use of insulated chimney pipe is not only to protect combustible materials from 400 or 500° temperatures, it also assists draft and helps minimize condensation inside the chimney.
- A dedicated chimney is required. DO NOT combine several heating devices into one common chimney.
- A minimum of 15 feet of vertical chimney is required above the flue exit of the boiler for chimneys that go straight up (without bends, offsets etc).
- If at all possible, run your chimney straight up from the boiler and out through the roof. This will provide the best draft.
- If you must offset the chimney to avoid an obstruction, use a mild angle and keep the chimney running as vertically as possible (no 90 degree angles or horizontal runs).
- Note that using any angles, offsets, or elbows will slow flue gasses and require additional chimney height to compensate.
- Use only a short (less than 2 foot) horizontal section of chimney to exit through an exterior wall as a last resort. Avoid this if at all possible.

- While it may be possible to use an existing chimney, including masonry, we strongly recommend installing a new chimney dedicated to your INOV8 boiler. Masonry chimneys when cold are difficult to get the chimney to draft properly.
- If the facility has exhaust fans or exhaust systems of any kind that blow inside air to the outside, negative building pressure will result. This will cause a back draft down the chimney with carbon monoxide fumes and boiler shut down. In this case, you will need either a make up air unit or an optional sealed combustion kit on your boiler.

Regulations and codes

Boiler installation, location, and chimney requirements may be regulated by local codes in addition to national standards for oil burning equipment.

- The national standards are found in ANSI and NFPA-31. The main requirements of these codes pertain to the safe storage and operation of heating equipment.
- In most locals boilers must be installed in a separate boiler room.
- Consult with appropriate local inspectors to see if additional or more stringent local codes may apply in your area.

Accessibility for service and maintenance

The burning of waste oil products is very different than typical boiler applications burning clean fuels. Due to the additives and contaminants typically found in waste oils, more frequent cleaning and servicing of a waste oil boiler is required. As a result, it is important to locate the boiler where there is good access on BOTH the burner and chimney ends. The burner door needs to swing open for cleaning and a boiler brush is as long as the boiler. The chimney end will have a draft inducer installed. Both the chimney and inducer require frequent access for cleaning. Additional suggestions include:

- Don't run hard pipe for oil or air delivery lines all the way to the burner. The boiler is constructed to allow the burner to be swung out either right or left on a hinged door for servicing and that can't happen with rigid plumbing. Run at least the last few feet of oil delivery and vent return line through reinforced plastic hose with enough slack to allow the swing-out.
- Locate the boiler and tank as close to each other as possible. To avoid the need for an auxiliary oil pump, the boiler should be less than 50 feet from the tank and not more than 8 feet above the tank. Note that these are approximate distances only. Actual limits will depend greatly on line size, viscosity of fuel, temperature of fuel etc.
- For ease of venting the storage tank (required in most areas), it is desirable to locate the tank on an outside wall.
- It is very effective to run a loop of copper tubing around the top of the boiler casting to preheat incoming oil. This will be covered by the insulated boiler jacket. This is especially important when the boiler room is below 70 degrees Fahrenheit.

Compressed Air Requirements

A continuous supply of 100 PSI of compressed air is required at all times for burner operation. The burner includes an air pressure regulator rated at 160 PSI that has a 1/4" NPT inlet fitting. Install flexible hose the last few feet before the air regulator in order to open the door for servicing. It is also a good idea to install a quick-disconnect where the air line joins to the burner's air regulator. The burner on the boiler will need the following requirements of compressed air:

- Minimum 3.0 CFM and 38 PSI. Boilers with BTUs higher than 500,000 will need up to 100 PSI of air pressure. A dual regulator setup that accompanies the burner will reduce the air pressure to what is required.
- Minimum of 3/8" reinforced hose or copper.
- Install a trap and valve on the air line to catch and dispose of water that will accumulate in the line.

Note! The boiler requires this air supply at all times when it is in operation. Be sure that your compressor is of sufficient size and duty cycle to supply these continuous needs.

Electrical Requirements

- 120-volt service.
- Dedicated circuit with 30-amp fuse or circuit breaker (unit will draw a maximum of 30 amps when operating).
- Minimum of 10-gauge wiring.

Shopping List

For a typical installation, the following items will need to be supplied by the customer or the installing contractor.

- Chimney – The exact size is determined by the Boiler Specification Chart provided by INOV8. Insulated chimney pipe is to be installed from 18” below the ceiling to the top of the chimney. Single wall is allowed inside the boiler room. Finish the chimney with a rain cap, storm collar, flashing brackets, cleanout T and sealant.
- Air supply line – recommend at least 3/8” I.D. of pipe, copper or reinforced hose.
- Oil supply line – at least 1/2" copper or reinforced oil hose, fittings, and hose clamps.
- Oil return line – ¼” copper or plastic line, fittings, and hose clamps.
- Important note - compression fittings must NEVER be used in the suction, oil delivery line.

Bench Tank – (optional) if purchased the following is included:

- 300 gallon work bench storage tank with 30 gallon inner containment for settling purposes
- Plugs for two ¾” openings in tank – we recommend that you install ball valves in these openings before oil is put in the tank.
- Tank Gauge

Boost Pump – (optional) if purchased the boost pumps include a floating pickup assembly that has a check valve connected to the filter mount, a non bypass filter, one double tap bushing (3/4” x 2”) and a strainer. In addition, see the items included with the two different pumps:

Suntec Gear Pump (electrically driven), includes

- Relay (90-291Q)

Husky Diaphragm Pump (pneumatically driven), includes

- Air Regulator & gauge assembly