

## Model 7990 & 7990C Vacuum Station Inlet Tester

### Instrument Description

These instruments are designed to test the pressure and flow capability of a vacuum station inlet. When used properly, the 7990 gauge reading will indicate the pressure and flow capability as a percent of the NFPA 99 standard. Your Model 7990C tester can also be used to qualify outlets to the CSA standard.

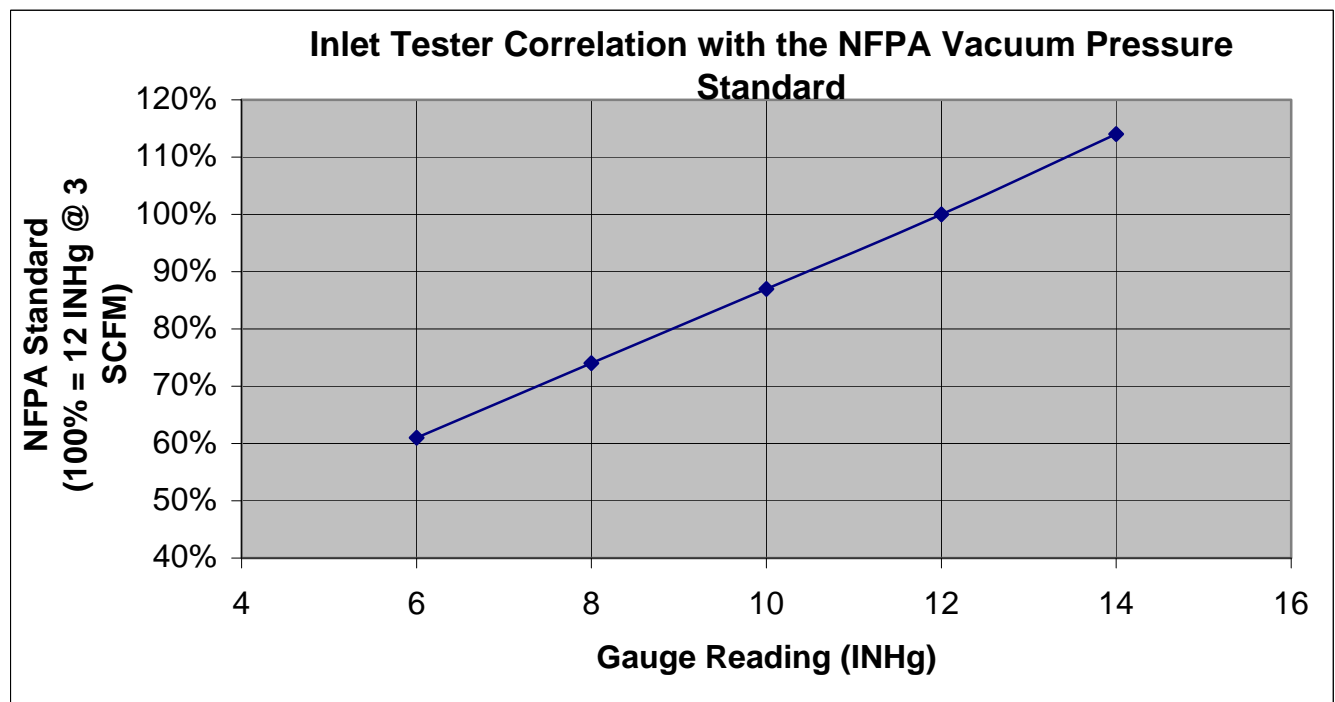
The NFPA 99 standard (NFPA 99 5.1.12.3.10.4) states that hospital minimum pressure requirements for vacuum station inlets shall be 12 inHg at 3 SCFM. Note: 12 inHg = 305 mmHg.

The Canadian Standard (CSA Z7396.1-06 §C.6.5.1.3) states that the pressure drop for vacuum shall not exceed 20kPa (6.0inHg) for outlets in service or 13kPa (3.8inHg) for new installations.

The Tester has a two-position switch for measuring STATIC (non-flowing) and DYNAMIC (flowing) vacuum pressure. When switched to the 'INLET VACUUM' position, the gauge measures the non-flowing vacuum pressure directly. Typically this will be between 18 and 24 inHg for most hospitals. In the second position, 'NFPA STANDARD', the gauge responds to the airflow and vacuum pressure collectively to provide a direct indication of the supply capability of the vacuum station inlet.

### Directions for Use NFPA Standard

1. Attach the appropriate fitting to the hose on the 7990. The fitting should be of 'New Quality'.
2. Connect the Tester to the vacuum station inlet to be tested.
3. Turn the switch to the 'INLET VACUUM' position and read the gauge. This is the 'static' vacuum pressure of the system. It may change over time (several minutes) as the system bleeds down and then pumps up.
4. Turn the switch to the 'NFPA STANDARD' and read the gauge. Note that there will be an audible air leak through the orifice near the hose connection. **Caution: Do not occlude this orifice when taking readings.** If the reading is in the 'Green', the inlet (including fittings) is at or above the NFPA standard. If it's in the yellow, it is below the NFPA standard.
5. Correlate the gauge reading, in the 'NFPA STANDARD' switch position, to the vacuum station inlet performance using the following graph.



## Directions for Use CSA Standard

1. Attach the appropriate fitting to the hose on the 7990C.
2. Connect the Tester to the vacuum station inlet to be tested.
3. Turn the switch to the 'INLET VACUUM' position and read the gauge. This is the 'STATIC' vacuum pressure of the system. It may change over time (several minutes) as the system bleeds down and then pumps up.
4. Turn the switch to the 'NFPA STANDARD' and read the gauge. This is the 'DYNAMIC' reading. Note that there will be an audible air leak through the orifice near the hose connection. **Caution: Do not occlude this orifice when taking readings.**
5. Subtract the DYNAMIC reading from the STATIC reading. The difference between the two numbers cannot be greater than 6.0inHg for outlets in service or 3.8inHg for new installations.

## Interpreting Instrument Readings

If the reading, with the switch in the 'NFPA Standard' position, is in the yellow . (below the NFPA standard) or if the CSA pressure drop is too high, one of two situations are possible. - -

- 1) The most likely scenario is the pump is working properly, but that particular inlet may be occluded. If the static reading, with the switch in the 'Inlet Vacuum' position, indicates a fairly high reading (>20 INHg), the pump system is probably OK and just the inlet is occluded and needs cleaning. Check other inlets nearby and compare readings. Clean/Replace the outlet until code flow / pressure drop can be obtained.
- 2) The pump may not be 'strong' enough to generate the minimum vacuum pressure at that inlet at that point in the day. Take readings at different times during the day. Also verify this reading at other inlets.

## Fittings

The Tester is calibrated with a non-restrictive fitting such as a DISS. If other fittings are used with this Tester, they may restrict flow as much as 20%. **The reading obtained with any fitting is valid.** The NFPA states that minimum vacuum pressure must be maintained 'at the station inlet'. The CSA standard calls out that the manufacturer's gas-specific connector must be used. Neither standard gives an allowance for different fittings. When the Inlet Tester is used with more flow restrictive fittings, it may indicate a station inlet that is below the standard.

## Calibration

The Inlet Tester is calibrated at the factory. When the NFPA standard of 12 inHg and 3 SCFM is supplied to the Tester, the gauge will indicate 12 inHg with the switch in the 'NFPA Standard' position.

For the 7990C a 5/64" diameter orifice has been installed into the unit at the factory.

To maintain the factory calibration, the orifice on the hose end of the instrument should be kept clean and free of debris. The instrument should be sent back to the factory for calibration every two years. Call 800-642-4945 for more information.

## Disassembly and Cleaning

The instrument can be disassembled and cleaned as follows:

1. Remove the switch valve retaining ring and remove the switch valve, spring and detent ball.
2. Remove the retaining ring on the bottom of the gauge and pull out the gauge components – clear view tube, red piston, white diaphragm, and spring.
3. Do not remove the orifice on the top of the main body.
4. Clean soiled parts in a mixture of warm water and detergent. Thoroughly dry.
5. Lubricate the switch valve with synthetic lubricant (Boehringer P/N 1895), insert into the body and remove. Inspect for dry areas and wipe excess. Lubricate should fully cover the valve and body mating surfaces.
6. Assemble the unit in reverse order.

## Instrument Specifications

Materials: Hard Anodized Aluminum, Polycarbonate, Silicone, Delrin

Inlet Fitting: 1/8-27 NPT

Measurement Accuracy: ±5% Flowing and Non-Flowing

Weight: 0.8 lbs

Size: 1½" Ø x 5¾" H (without hose or fittings)