

# Manifold Systems

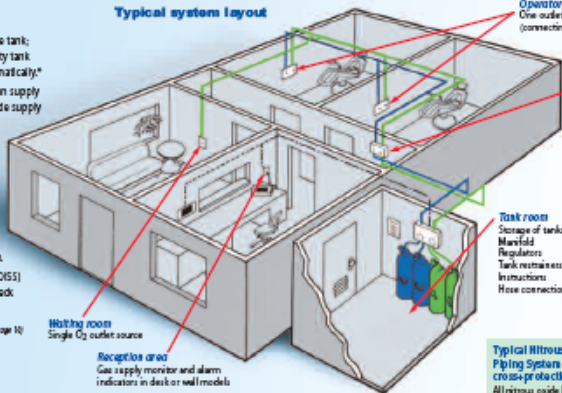
Porter provides unmatched safety, security and convenience

Porter Sentinel Manifold System

- ✓ Automatic changeover to reserve tank; memory of tank usage and empty tank indicator all accomplished automatically.\*
- ✓ Fail-safe protection - loss of oxygen supply pressure shuts down nitrous oxide supply pressure.\*
- ✓ Cross-protection diameter in-docked tubing connections.
- ✓ Swivel tubing connections allow for easy connection of piping in up or down configuration.
- ✓ Pressure relief valves for operator equipment protection.
- ✓ Diameter in-docked inlet fittings (DIS) with O-ring seal back-up and check valves.

\*Applies to Vanguard manifold systems (see page 10)

## Typical system layout



**Operator**  
One outlet station per operator (connecting O<sub>2</sub>, N<sub>2</sub>O, and Vac.)

**Zone Valve**  
Required when tank room is in a remote location.

**Tank room**  
Storage of tanks  
Manifold Regulators  
Tank restraints  
Hose connections

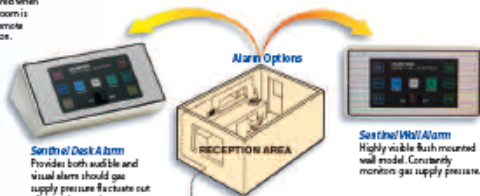
**Waiting room**  
Single O<sub>2</sub> outlet source

**Reception area**  
Gas supply monitor and alarm indicators in desk or wall models

## NFPA 99 Requirements for Central Supply Systems

1. No more than 3000 cubic feet of gas in the tank room.
2. Gas stored in a locked cabinet or room.
3. At least 72 sq. inches of vent area in cabinet or room.
4. A separate regulator for each cylinder of gas.
5. A pressure relief valve set at 75 psf.
6. A check valve downstream of each regulator.
7. Line pressure gauges for each gas.
8. Type K or L, pre-cleaned, degreased capped copper piping ONLY.
9. Flexible tubing with minimum burst pressure of 1000 psig.
10. Flexible tubing must NOT go through wall or partition.
11. System must be tested for leaks with dry nitrogen for 24 hours at 150 psi.
12. Line pressure set at 50-55 psf.
13. All joints must be silver soldered with 1000°F melting point.
14. An audible and visual alarm, set at 40 psf low, and 60 psf high, must be in a constantly monitored area.
15. A remote shut-off must be used if gases are stored in a remote area, i.e. outside, in the basement, etc.
16. Automatic changeover (Vanguard system) required if tanks are stored in a remote area.

The Sentinel System provides immediate audible, and highly visible alarms, should gas supply pressure begin to fluctuate out of the normal operating zone. The compact, high precision alarms are available in on-desk or flush-mounted wall models.



## Alarm Options

**Sentinel Desk Alarm**  
Provides both audible and visual alarms should gas supply pressure fluctuate out of normal operating zone.

**Sentinel Wall Alarm**  
Highly visible flush mounted wall model. Constantly monitors gas supply pressure.

## Electrical connection



**Sentinel Manifold**  
Both gases are manifolded through this compact unit. Analog gauges indicate system pressures.

## Typical Nitrous Oxide/Oxygen Central Piping Systems Incorporating Porter's cross-protection system

All nitrous oxide lines are 3/8" O.D. copper piping. All oxygen lines are 1/2" O.D. copper piping. Unless deliberately tempered with, nitrous oxide and oxygen lines cannot be crossed. The use of two different pipe sizes eliminates the greatest cause for concern and potential problems connected with the installation of central piping systems, meeting NFPA 99 recommended guidelines.



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