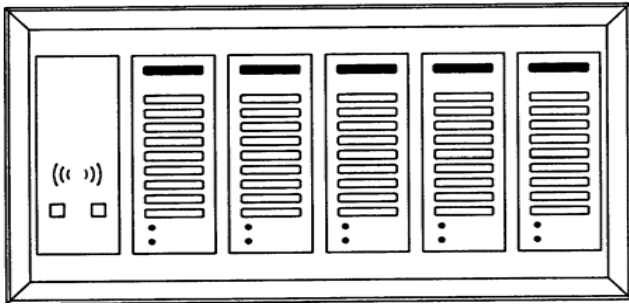
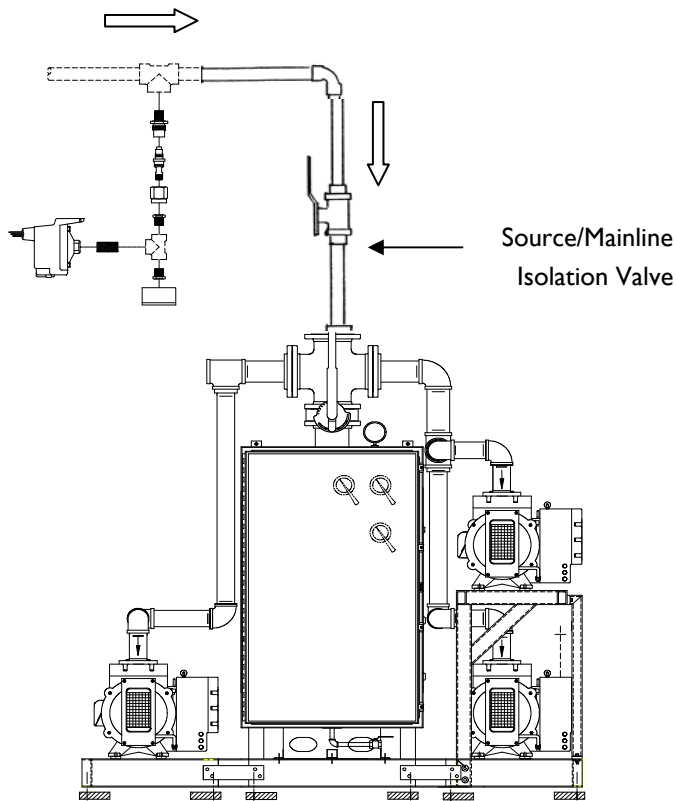


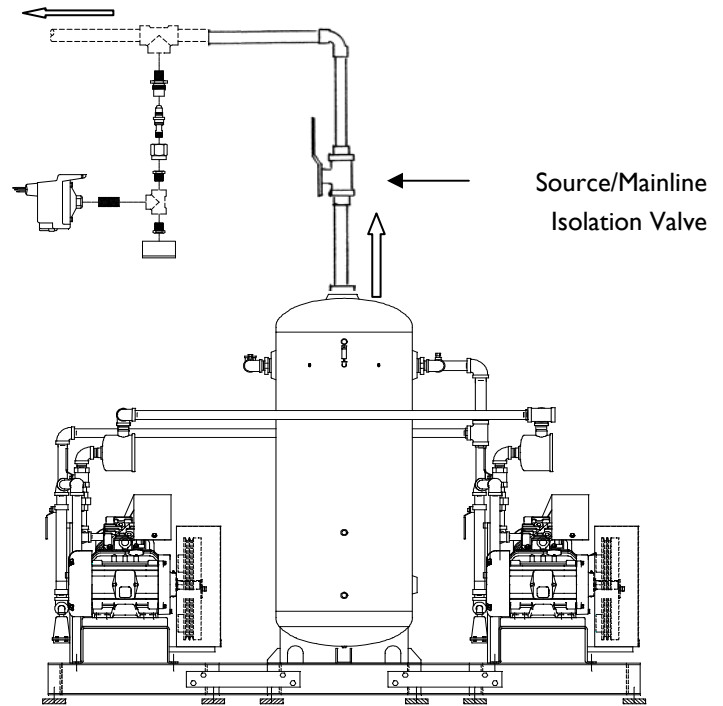
# SUGGESTED MEDICAL GAS MASTER ALARM POINTS FOR LEVEL I FACILITIES



MASTER ALARM #1  
MAY BE LOCATED IN SECURITY  
(Requires 24 Hours/Day Surveillance)



## MECHANICAL ROOM



### SUGGESTED ALARM POINTS FOR: MEDICAL/SURGICAL VACUUM PUMPS

#### RESERVE VACUUM PUMP RUNNING

5.1.3.6.8 / 5.1.9.2.4(9) / 5.1.9.5.2 / 5.1.9.5.4(4)

(Termination point located in vacuum control panel)

#### MAIN LINE VACUUM LOW 5.1.9.2.4(8)

(Terminal point from main line vacuum switch)

### WASTE ANESTHETIC GAS VACUUM PUMPS

#### RESERVE VACUUM PUMP RUNNING

5.1.9.5.2 / 5.1.3.7.4.1 / 5.1.9.2.4(9) / 5.1.9.5.4(5)

(Termination point located in vacuum control panel)

#### MAINLINE EVACUATION LOW 5.1.9.2.4(8)

(Termination point from main line vacuum switch)

### SUGGESTED ALARM POINTS FOR: MEDICAL AIR COMPRESSOR (All Types)

#### RESERVE COMPRESSOR RUNNING 5.1.9.5.4(1) / 5.1.3.5.14.5

(Termination point located in compressor control panel)

#### MAINLINE PRESSURE HIGH 5.1.9.2.4(7)

(Termination point from mainline pressure switch)

#### MAINLINE PRESSURE LOW 5.1.9.2.4(7)

(Termination point from mainline pressure switch)

#### CARBON MONOXIDE HIGH 5.1.9.4.5(2) / 5.1.3.5.15(2)

(Termination point from CO monitor)

#### DEW POINT HIGH 5.1.9.2.4(10) / 5.1.3.5.15(1)

(Termination point located in compressor control panel)

### Also, For Reciprocating (Piston type) Compressors

#### HIGH TEMPERATURE 5.1.3.5.14.3 / 5.1.9.5.4(9) / 5.1.3.5.14.4(1)

(Termination point located in compressor control panel)

#### RECEIVER FLOODED (see note #1) 5.1.3.5.14.1 / 5.1.9.5.4(7)

(Termination point located in compressor control panel)

### Also, For Liquid Ring Compressors:

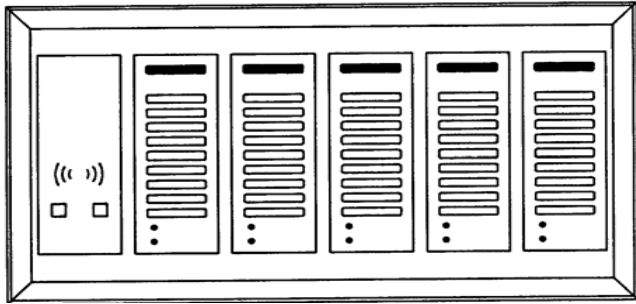
#### RECEIVER FLOODED 5.1.3.5.14.1 / 5.1.9.5.4(7)

(Termination point located in compressor control panel)

#### HIGH WATER SEPARATOR 5.1.3.5.14.2 / 5.1.9.5.4(8)

(Termination point located in compressor control panel)

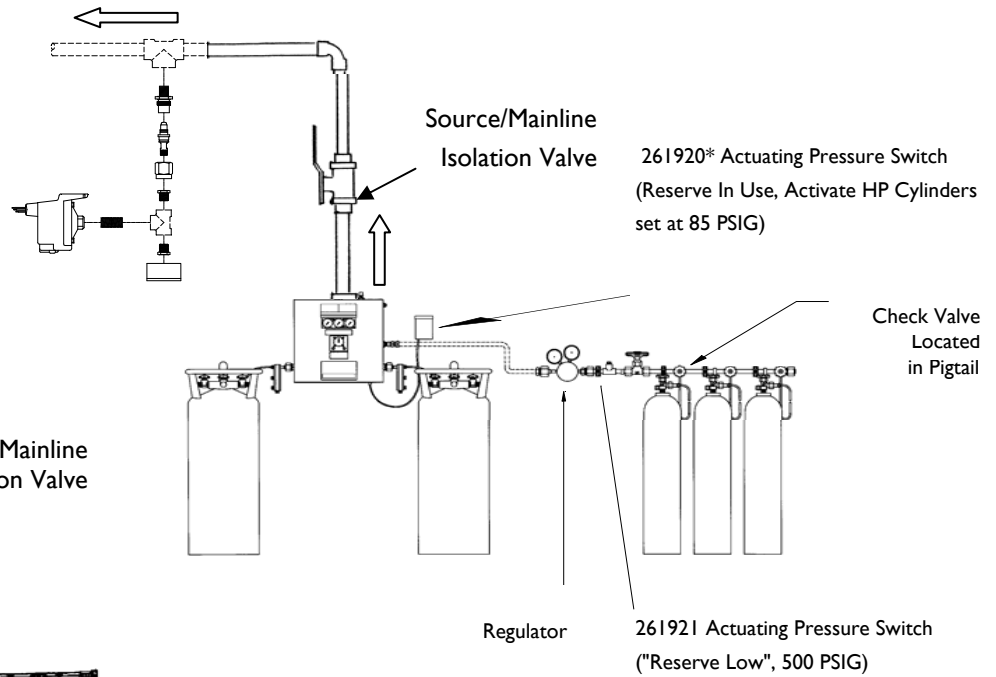
# SUGGESTED MEDICAL GAS MASTER ALARM POINTS FOR LEVEL I FACILITIES



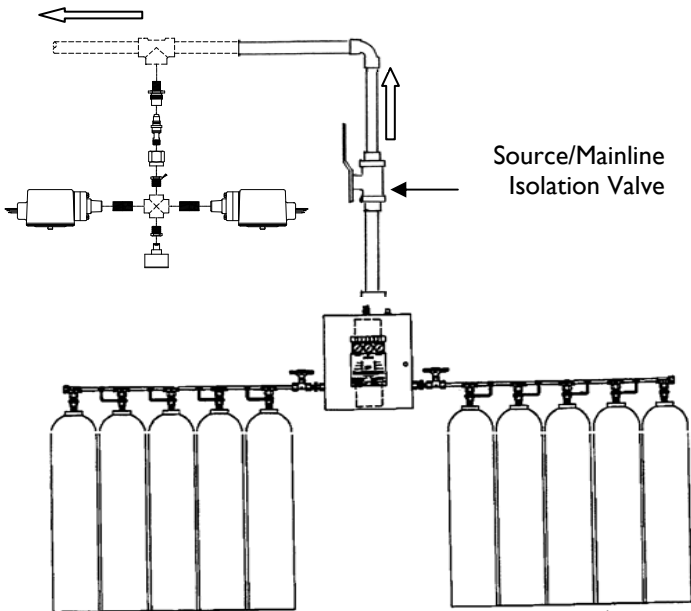
MASTER ALARM #2  
MAY BE LOCATED IN ENGINEERING DEPARTMENT/AREA

## MEDICAL GAS ROOM

### Typical Oxygen (O<sub>2</sub>), Medical Air (Air), Nitrous Oxide (N<sub>2</sub>O), Carbon Dioxide (CO<sub>2</sub>) Installation



### Typical Nitrogen (N<sub>2</sub>) Installation



### SUGGESTED ALARM FUNCTIONS FOR: MANIFOLDS WITHOUT RESERVE

CYLINDER BANK CHANGEOVER 5.1.9.2.4(1) / 5.1.3.4.10.6

(Termination point located in power supply)

MAINLINE PRESSURE HIGH 5.1.9.2.4(7)

(Termination point from mainline pressure switch)

MAINLINE PRESSURE LOW 5.1.9.2.4(7)

(Termination point from mainline pressure switch)

### SUGGESTED ALARM FUNCTIONS FOR:

#### MANIFOLDS WITH RESERVE

CYLINDER BANK CHANGEOVER 5.1.9.2.4(1) / 5.1.3.4.12.9(1)

(Termination point located in power supply)

RESERVE IN USE 5.1.9.2.4(3) / 5.1.3.4.15.5 / 5.1.3.4.12.9(3)

(Terminal point from actuating pressure switch 261920\*)

RESERVE LOW 5.1.3.4.12.9(4) / 5.1.9.2.4(5)

(Terminal point from actuating pressure switch 261921\*)

MAINLINE PRESSURE HIGH 5.1.9.2.4(7)

(Termination point from mainline pressure switch)

MAINLINE PRESSURE LOW 5.1.9.2.4(7)

(Termination point from mainline pressure switch)

**Vacuum/Compressor Alarm Termination Points  
Located inside System Control Panel  
(Lower Left hand Corner)**

LA Lag Vacuum/Compressor Alarm

RF Receiver Flooded Alarm

High Temperature Alarm

HT1 Compressor 1

HT2 Compressor 2

HT3 Compressor 3

HT4 Compressor 4

High Water Separator Alarm

HW1 Compressor 1

HW2 Compressor 2

HW3 Compressor 3

HW4 Compressor 4

**Mainline Pressure/Vacuum witch Connections**

Mainline Pressure Switch High, Oxygen (O2), Medical Air (AIR), Nitrous Oxide (N2O), Carbon Dioxide (CO2)

Orange Wire – NC

Brown Wire – Common

Mainline Pressure Switch/Low

Oxygen (O2), Medical Air (Air), Nitrous Oxide (N2O),

Carbon Dioxide (CO2)

Red Wire – NC

Purple Wire – Common

Mainline Vacuum Switch/Low

Blue Wire – NC

Purple Wire – Common

Mainline Pressure Switch High, Nitrogen (N2)

N.C. – NC

C. – Common

Mainline Pressure Switch Low, Nitrogen (N2)

N.C. – NC

C. – Common

All Gases from High Pressure Manifold

Reserve in Use/Cylinder Changover

Terminal #6 – NC

To Alarm Ground Terminal #7 – Common

Dew Point/CO Monitor

Yellow Relay, DewPoint – C & NC

Red Relays, CO – C & NC

NOTES:

1. Liquid air compressor and reciprocating air compressors with water cooled heads and/or water cooled aftercoolers.
2. Mainline pressure switches for oxygen, nitrous oxide, medical air and carbon dioxide will provide both "High" and "Low" pressure alarm functions. A similar switch is provided for medical/surgical vacuum and/or waste anesthetic gas evacuation, but only a "Low Vacuum" function is required. Nitrogen requires two separate switches, one for "High" and one for "Low"
3. Per NFPA 99, 2002 (5.1.8.2.3.) "All pressure switches, pressure gauges and pressure sensing devices downstream of the source valve shall be provided with a gas specific demand check fitting to facilitate servicing, testing or replacement."
4. Cable requirement for area alarm module to remote sensors; master alarm to source equipment.  
18-22 gauge shielded, twisted pair  
Multi-conductor twisted pair cable cab be used when connecting multiple sensors.

**SUGGESTED ALARM FUNCTIONS FOR BULK  
OXYGEN SYSTEM**

**CRYOGENIC BULK GAS UNITS WITH CRYOGENIC  
RESERVE**

LIQUID LEVEL LOW 5.1.9.2.4(2) / 5.1.3.4.13.6(1)

RESERVE IN USE 5.1.9.2.4(3) / 5.1.3.4.13.6(2)

MAIN LINE PRESSURE HIGH 5.1.9.2.4(7)

MAIN LINE PRESSURE LOW 5.1.9.2.4(7)

RESERVE LOW 5.1.9.2.4(5) / 5.1.3.4.11.6(3)

CHANGEOVER 5.1.9.2.4(1) / 5.1.3.4.13.6(5)

RESERVE PRESSURE LOW 5.1.9.2.4(6) / 5.1.3.4.11.6(4) (Not Functional)

**CRYOGENIC BULK GAS UNITS WITH CYLINDER  
RESERVE**

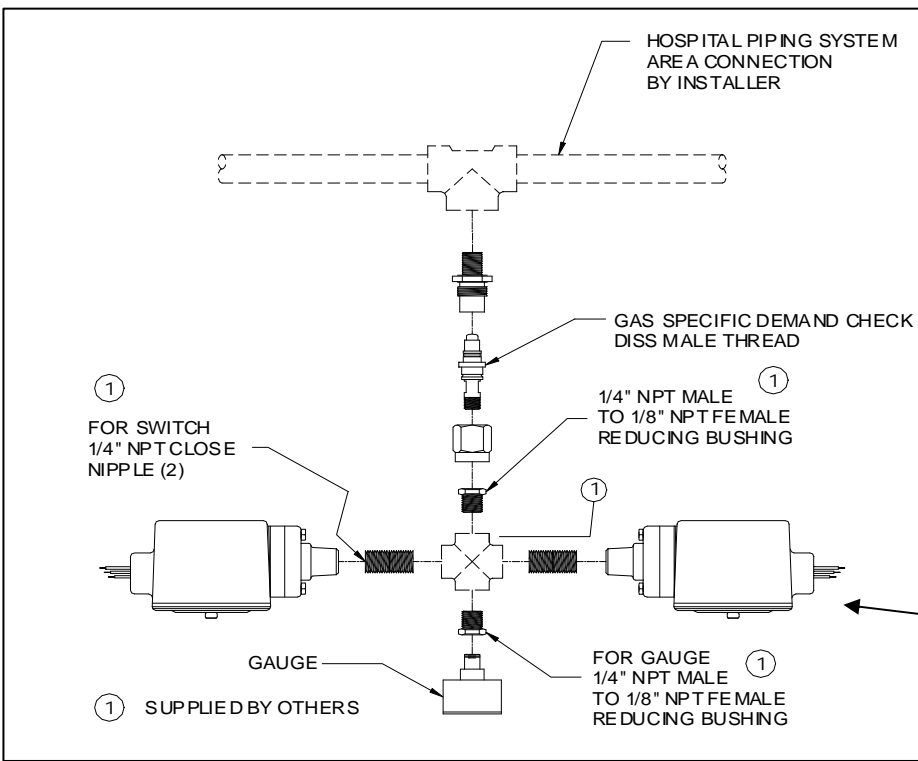
LIQUID LEVEL LOW 5.1.3.4.13.6(1) / 5.1.9.2.4(2)

RESERVE IN USE 5.1.9.2.4(3) / 5.1.3.4.13.6(2) / 5.1.3.4.13.5

MAIN LINE PRESSURE HIGH 5.1.9.2.4(7)

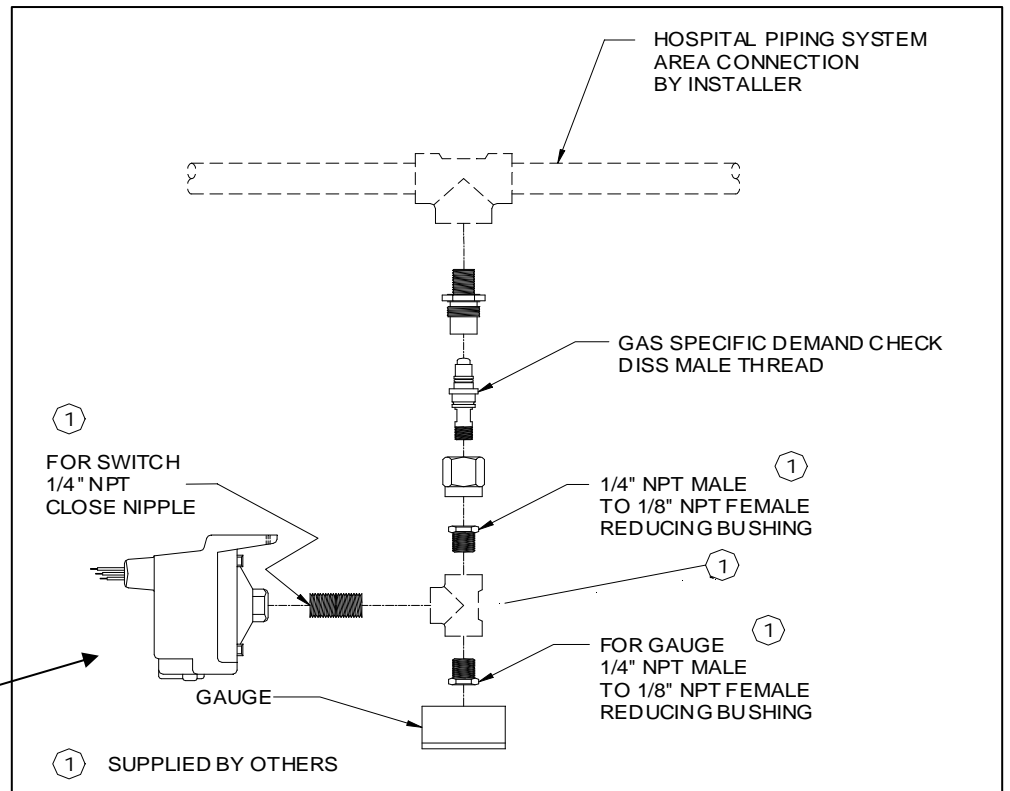
MAIN LINE PRESSURE LOW 5.1.9.2.4(7)

CHANGEOVER 5.1.9.2.4(1) / 5.1.3.4.13.6(5)



Mainline Pressure Switches

**Typical Nitrogen (N2) Installation**



Mainline Pressure/Vacuum Switch

**Typical Oxygen (O2), Medical Air (Air), Nitrous Oxide (N2O), Carbon Dioxide (CO2) and Vacuum Installation**