Oxygen and other Compressed Medical Gas Rules and Regulations

Complying with the Law

BACKGROUND

Cylinders containing gases (i.e. oxygen, nitrogen, nitrous oxide) are under high pressure and can be a combustion, explosion, fire and projectile hazard. Oxygen cylinders need to be handled carefully and secured properly. Gas piping in a central oxygen system also presents a fire hazard. Hazards within a central oxygen supply system include an oxidation potential (oxygen can react violently with hydrocarbons such as oil and grease). For these reasons certain regulatory agencies set standards for the handling and distribution of compress gas.

Regulatory agencies:

OSHA (Occupational Safety and Health Administration):

Requires oxygen cylinders to be stored in a well protected, well ventilated location away from combustible materials. They should also be secured and located where they will not be knocked over. www.osha.gov

AAHA (American Animal Hospital Association):

Requires all medical gas tanks to be chained

NFPA (National Fire Protection Association):

Beginning to have set regulations for Veterinary Hospitals. The standards should be known and communicated to clinics and hospitals installing new systems. Standards are spelled out in NFPA 99 www.nfpa.org

CGA (Compressed Gas Association):

Develops and promotes safety standards for the safe use and installation of compressed gas. Standards spelled out in the Handbook of Compressed Gas. www.cganet.com

Local Agencies/Zoning Committees:

Hospitals and clinics should be instructed to check with local agencies regarding regulations for their area. These include zoning boards, state agencies, area fire codes, and city regulations. These agencies have become much stricter about veterinary facilities.
Medical Gas Supply Definitions

**Central Oxygen Supply**: a system that consists of a remote oxygen source and supply tubing that is piped to other areas. Same as for all medical gas.

**H Cylinder**: Large tank used as a central oxygen source and holds 6,910 liters.

**E Cylinder**: Small tank usually attached to the anesthesia machine via a pin index yoke and holds 655 liters.

**Manifold**: A device for connection oxygen or any medical gas system and consists of a regulator and a header.

**Header**: Portion of a manifold with knobs used to turn the medical gas on and off.

**Regulator**: A device/gauge used to convert the high pressure in a cylinder to a lower pressure (50 PSI for O2).

**Pressure Gauge**: A gauge used to indicate the percentage of gas left in a cylinder.

**Check Valve**: Prevents the back flow from one devise to another (i.e. cylinder to concentrator).

**Lead or Pig Tail**: The tubing leading from the manifold to the oxygen cylinder.

**Type L Copper Pipe**: Hard drawn seamless pipe.

**Type K Copper Pipe**: Hard drawn seamless pipe, larger the type L.

**DISS**: Diameter Index and Safety System, standard used for Oxygen, Nitrous Oxide, Air, Nitrogen and Suction. Each type has its own pitch (thread type and size) and is not interchangeable.

**Coding**: The designated color for Oxygen is green, Nitrogen, blue, Nitrous Oxide?

**Quick Connect or Coupler**: a connection used to allow the quick connection of all medical gases. Quick connects are male, couplers are female. Ohio or Omeda, Chemtron, Puritan Bennett, Schrader and Oxeyquip are the different styles.
Relevant Requirements
From the NFPA and CGA

The regulations for installing a central Medical Gas Supply in a Veterinary Clinic are getting stricter all of the time. In many locals they are equivalent to what Dentists are required to have for Nitrous oxide and Oxygen. One should be familiar with the guidelines used in other health industries and relay the information.

H Cylinders:

- All cylinders should be secured and located in such a manner to prevent falling over. (Chained in place).
- Use cylinder valve protection caps when cylinder is not in use.
- Do not store cylinders in a closed space (i.e. in a closet).
- Medical Gases must be dispensed via a regulator.
- The contest of the cylinder must be clearly marked.

Manifolds:

- Connect to a common header.
- Have a check valve at each lead.

Medical Gas Supply Tubing

- Pipes, fittings and valves must be free of internal oil, grease and other oxidizable materials.
- Pipes should be cleaned of all oxidizable materials and then plugged, capped or sealed.
- Use Type K or L hard copper pipe not less than ½” Blue should be used for oxygen supply. For the medical gases “cleaned” copper pipe should be use.
- Threaded joints should be limited to pressure gauges, alarm switches and similar devices.
- Threaded joints should be accessible – not behind walls or ceilings.
- Pipe whenever possible should be installed overhead.
- Pipes should be protected from freezing, corrosion, or physical damage.

*It is highly recommended that it is safest to purchase cleaned copper medical gas pipe. Cleaned and capped is about $.25 to $.50 cents more than un-cleaned.
## GETTING STARTED

**MEDICAL GAS HOSES, ASSEMBLIES AND OUTLETS**

### SPECIFY LENGTH OF HOSE FOR EACH ASSEMBLY

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tubing per Foot</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J0540</td>
<td>Green O2 hose per foot</td>
<td>Green</td>
</tr>
<tr>
<td>J0540N</td>
<td>Nitrogen Hose per foot</td>
<td>Black</td>
</tr>
<tr>
<td>J0540W</td>
<td>WAGD Hose per foot</td>
<td>Purple</td>
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<tr>
<td><strong>Assemblies for Oxygen</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J0538A</td>
<td>FE DISS X MALE OHIO</td>
<td>Specify length of hose per foot for each assembly</td>
</tr>
<tr>
<td>J0538B</td>
<td>DISS Fe X DISS FE</td>
<td>specify length of hose per foot for each assembly</td>
</tr>
<tr>
<td>J0538C</td>
<td>FEMALE DISS X FE OHIO</td>
<td>specify length of hose per foot for each assembly</td>
</tr>
<tr>
<td>J0538E</td>
<td>FE OHIO x MALE OHIO</td>
<td>specify length of hose per foot for each assembly</td>
</tr>
<tr>
<td>J0538F</td>
<td>FE CHEMTRON x FE DISS</td>
<td>specify length of hose per foot for each assembly</td>
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<tr>
<td>J0538M</td>
<td>MALE CHEMTRON X FE DISS</td>
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<td><strong>Assemblies for Nitrogen</strong></td>
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<tr>
<td>J0538NS</td>
<td>Fe DISS x FE SCHRADER</td>
<td>specify length of hose per foot for each assembly</td>
</tr>
<tr>
<td>J0538FND</td>
<td>order 2 FE DISS</td>
<td>specify length of hose per foot for each assembly</td>
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<tr>
<td><strong>Assemblies for WAGD</strong></td>
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<td></td>
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<tr>
<td>J0538WADD</td>
<td>FE DISS X FE DISS</td>
<td>specify length of hose per foot for each assembly</td>
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<tr>
<td>J0538WDC</td>
<td>FE CHEMTRON X FE DISS</td>
<td>specify length of hose per foot for each assembly</td>
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<tr>
<td>J0538WCM</td>
<td>MALE CHEMTRON X FE DISS</td>
<td>specify length of hose per foot for each assembly</td>
</tr>
<tr>
<td>J0538 WDO</td>
<td>FE OHIO X FE DISS</td>
<td>specify length of hose per foot for each assembly</td>
</tr>
</tbody>
</table>

**Sample Order**

1. J0538B DISS FE x DISS FE with 10 ft J0540
1. J0538C DISS FE x OHIO FE with 3 ft J0540
13. J0540 For above assemblies

**JORGENSEN ALSO OFFERS SPECIAL ORDER ASSEMBLIES WITH DIFFERENT CONNECTIONS INCLUDING NITROUS OXIDE AND AIR**
<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>J0537Q</td>
<td>Female Ohio O2 Recessed Wall Outlets</td>
</tr>
<tr>
<td>J0537R</td>
<td>Male DISS Recessed Wall Outlets</td>
</tr>
<tr>
<td>J0537S</td>
<td>Male DISS Surface Wall Outlet</td>
</tr>
<tr>
<td>J0537T</td>
<td>Female Ohio O2 Surface Wall Outlet</td>
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<tr>
<td>J0537V</td>
<td>Male DISS O2 Ceiling Outlet</td>
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<tr>
<td>J0537NC</td>
<td>Nitrogen DISS Ceiling Outlet</td>
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<tr>
<td>J0537NW</td>
<td>Nitrogen DISS Wall Outlet</td>
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<tr>
<td>J0537NSWC</td>
<td>Nitrous Oxide Chemtron Wall Outlet</td>
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<tr>
<td>J0537NSC</td>
<td>Nitrous Oxide DISS Ceiling Outlet</td>
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<tr>
<td>J0537AVD</td>
<td>Vacuum DISS Ceiling Outlet</td>
</tr>
<tr>
<td>J0537VAC</td>
<td>Vacuum Chemtron Wall Outlet</td>
</tr>
</tbody>
</table>

**WE CAN ALSO DO WAGD AND AIR OUTLET SPECIAL ORDER**

ALL ORDERS MUST BE APPROVED BY JORGENSEN LABORATORIES BEFORE SUBMITTING

EMAIL jortech@jorvet.com or info@jorvet.com

Any Hose Assembly Over 20 Feet in Length Requires a Waiver Release Form
MANIFOLDS FOR OXYGEN, NITROGEN, AIR AND NITROUS OXIDE

OXYGEN

J0533MH  dual H tank manifold, manual
J0533EM  dual H tank manual manifold with port for alarm switch
- J0533PS  port switch for alarm
- J0533AV  audio visual alarm can be located anywhere in facility

I usually recommend the J0533EM as if they ever want to add an alarm later they can. With the J0533MH that isn’t possible.

J0560AS  dual auto switch manifold with port for alarm
J0533TAV  alarm for the J0560AS only

THESE ARE ALL DUAL TANK MANIFOLDS, WE CAN SPECIAL ORDER ALL MANIFOLDS WITH MORE PIGTAILS TO HAVE MORE TANKS ATTACHED.

NITROGEN

J0533NH  dual tank manifold, manual

NITROUS OXIDE AND AIR MANIFOLDS CAN BE SPECIAL ORDER

REGULATORS

Some clinics don’t have the space or do not want a manifold set up. They can use a regulator on an E tank or H tank

J0533  single step O2 regulator for H tank
J0533E  pressure regulator for E tank
J0533N  single step Nitrogen regulator for H tank.

WE CAN ALSO ORDER REGULATORS FOR NITROUS OXIDE AND AIR.