

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 compressed 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 device 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 than 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 content 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 used.

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

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

		MEDICAL GAS OUTLETS		
	J0537Q	Female Ohio O2 Recessed Wall Outlets		
	J0537R	Male DISS Recessed Wall Outlets		
	J0537S	Male DISS Surface Wall Outlet		
	J0537T	Female Ohio O2 Surface Wall Outlet		
	J0537V	Male DISS O2 Ceiling Outlet		
	J0537NC	Nitrogen DISS Ceiling Outlet		
	J0537NW	Nitrogen DISS Wall Outlet		
	J0537NSWC	Nitrous Oxide Chemtron Wall Outlet		
	J0537NSC	Nitrous Oxide DISS Ceiling Outlet		
	J0537AVD	Vacuum DISS Ceiling Outlet		
	J0537VAC	Vacuum Chemtron Wall Outlet		
	WE CAN ALSO DO WAGD AND AIR OUTLETS SPECIAL ORDER		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.