

TECHNICAL BULLETIN

USE OF GASKETS IN HIGH PRESSURE MEDICAL OXYGEN CYLINDER SERVICE

Millions of high pressure medical oxygen cylinders are safely used daily to provide oxygen to patients. Most small medical oxygen cylinders in service in North America, and in some other countries, use a CGA 870 post valve outlet connection requiring a sealing gasket in place that fits between the outlet of the cylinder valve and the inlet of the regulator. These sealing gaskets, also known as sealing washers, are a critical component of the oxygen supply system and are safe when used properly.

This technical bulletin provides guidelines for the safe use of sealing gaskets in high pressure medical oxygen cylinders with post valves at patient and end user locations. This technical bulletin does not apply to cylinder fill plants, valves not designed to accept a sealing washer such as the CGA 540 threaded connection, or portable liquid cylinder outlets.

Gaskets

There are two basic categories of sealing gaskets in use today and they are briefly described as follows:

- **Crush style gaskets** are usually made of nylon or other polymer and are the most commonly used gaskets in service today, see Figures 1 and 2. Crush style gaskets are designed for a single use application. When a new full cylinder is first connected to a regulator, a new gasket should be used.

NOTE—Crush style gaskets can be different colors.



Figure 1—Plain nylon gaskets



Figure 2—Top hat gaskets

- **Elastomeric sealing gaskets** usually have an elastomeric compound such as Viton®, ethylene-propylene diene monomer (EPDM), or Buna-N supported by a metallic ring, see Figure 3.



Figure 3—Elastomeric sealing gasket

CAUTION: Before handling any gasket, ensure hands and gloves are clean, dry, and free of oil, dirt, grease, hand lotions, sanitizers, or creams, etc. If gloves are used, do not use hand lotion, sanitizers, or creams before

putting on gloves or before handling gaskets. If gloves are not used, wash hands with soap (such as dish soap that does not contain lotion) and warm water, and dry hands thoroughly with a clean paper towel or hand towel.

Pre-use inspection of gaskets

Before using or reusing any gasket on a valve or regulator sealing connection, the gasket shall be inspected visually to ensure that it is suitable for use. Gaskets shall not be used when:

- the gasket has been permanently deformed;
- the gasket is damaged in any way that could interfere with the sealing characteristics such as splits/cracks, chips, frays, deformations, or gouges;
- the gasket has dirt, oil, grease, or other contaminants that could contribute to an oxygen ignition; or
- there is evidence of a condition that could cause a leak or improper seal in the connection.

NOTE—In addition to inspecting the gasket, check the gasket sealing surface on the valve and the regulator to make sure they are not damaged and are free of any dirt, oil, or other contaminants that could contribute to an oxygen ignition or leak.

Proper installation and connection guidelines

- Use only the gasket that the equipment supplier provides or recommends or those gaskets provided by the gas supplier. Do not attempt to manufacture or substitute your own gasket;
- Make sure the gasket fits within the seating surface area of the valve-to-regulator connection without any overlap or direct contact with the flowing stream of oxygen;
- Use only one gasket to make the sealing connection. Multiple gaskets shall never be used in any sealing application;
- Tighten the handle on the regulator connection by hand. Do not use any tools or devices;
- Do not use additional sealing compounds such as Teflon[®] tape or paste or any lubricants such as oils, grease, etc., with the gasket or on the clamping screw;
- After installation, open the post valve slowly and fully;
- Listen for any hissing or leaking sounds that could indicate an improper seal. If a complete seal is not achieved, close the valve immediately and reinspect all equipment being used. If a complete seal still cannot be achieved, close the valve immediately, do not use the equipment, and contact the equipment or gas supplier; and
- Once a leak-free seal is established, do not use the regulator or valve assembly as a handle to carry the cylinder because a leak can result.

Manufacturer recommendations

Follow the equipment supplier recommendations concerning any specific type of crush gasket or elastomeric sealing gasket. The equipment is supplied with the proper gasket and the equipment supplier should be consulted to specify the correct type of replacement gasket.

Storage and packaging recommendations

Keep gaskets in the original unopened package until needed. Store gaskets in a clean, dry area in clean packages and keep them free from dirt, oil, grease, and other contaminants.