

# Safety guidelines for oxygen valves

Installation, maintenance and operating instructions



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**READ THESE INSTRUCTIONS FIRST!**

These instructions provide information about safe handling and operation of the valve.

If you require additional assistance, please contact the manufacturer or manufacturer's representative.

**SAVE THESE INSTRUCTIONS!**

Addresses and phone numbers are printed on the back cover.

# 1 General

This manual provides important safety information regarding the installation, operation and maintaining of Neles valves in oxygen service. This manual is complementary to specific valve Installation, Maintenance and Operating instructions (IMOs). Carefully read these instructions in-parallel with the valve IMO, and save for future reference. A copy of the IMO is available in the original valve packaging or from your nearest authorized Neles distributor or representative. IMOs can also be downloaded from Neles web-site at [www.neles.com/valves](http://www.neles.com/valves).

## WARNING

1. Personnel who design, build, operate, and maintain oxygen systems must have special knowledge of how to safely handle oxygen and the potential hazards that are involved.
2. All materials will react with gaseous or liquid oxygen at certain pressures and temperatures. The reaction can be extremely rapid, causing fire or explosion. Correct process system design, valve material selection – both metallic and non-metallic – and overall cleanliness of components in contact with oxygen is essential for safe operation in oxygen.
3. Valves suitable for oxygen service have been specially cleaned, tested, sealed and packaged, and marked by the factory in accordance with proven procedures. Do not install and use valves in oxygen that have not been fully prepared for this service.
4. Do not contaminate oxygen clean valves prior to installation.
5. Proper system design, valve type selection, material selection, and use of valves in Oxygen is the responsibility of the user. Refer to European Industrial Gas Association (EIGA) Document 13/02 – Oxygen Pipeline and Piping System or Compressed Gas Association (CGA) publication G-4.4 – Oxygen Pipeline and Piping Systems, and ensure compliance with local regulations.
6. If you do not fully understand these instructions, and are not trained in the hazards of oxygen, do not perform any action on oxygen valves.
7. Failure to follow these guidelines can result in fire, injury, and death.

## 1.1 Materials

The Purchaser and End User are responsible for selection and specifying materials of construction of the valve as well as selecting a valve type that is suitable for the service. Failure to ensure suitability can result in fire, death or serious injury.

On request, Neles valves can be delivered with BAM (Federal Institute for Materials Research and Testing, Bundesanstalt für Materialforschung und –prüfung) or WHA (Wendell Hull & Associates, Inc.) qualified soft parts – such as gaskets, seals and packing rings – which have been tested and qualified for oxygen service.

## WARNING:

Lubricants used to assemble oxygen valves must be qualified for oxygen service. Liquid and/or gaseous oxygen, as well as pressure, temperature, and operating conditions, may require different lubricants to be used. Acceptability of any lubricant used needs to be verified and approved by the purchaser and end user prior to valve installation and use. Failure to use the appropriate lubricant can cause fire, injury, and death.

# 2 Preparation of valves for oxygen

Valves delivered by Neles for oxygen service are specially prepared, (cleaned, inspected, tested, packed and labeled) according to a validated oxygen preparation procedure.

Oxygen valves have been specially cleaned to remove contaminants that may react with oxygen. Only when necessary, valves are assembled using oxygen compatible lubricants.

After preparations for oxygen service are complete, valves are sealed to avoid contamination during handling and shipping. The exterior of the packaging is marked with an “Oxygen Valve” label.

# 3 Installation

**IMPORTANT:** Before installation of any valve into a pipeline, factory-attached tags must be checked against the purchase order to ensure that the valve has been processed for oxygen service and that the valve type and materials of construction conform to requirements of the service.

Preferred direction on installation must be checked from the Installation, Maintenance and Operation instructions (IMO).

Standard piping practices must be followed. Recommendations by the pipe flange gaskets manufacturer must be followed concerning the suitability of the gasket material for oxygen service, and proper tightening of the pipe flange bolts.

## WARNING

Cleanliness during installation must be followed to avoid contamination of valve after removal of the factory packaging.

# 4 Disassembly, assembly, and maintenance

Disassembly, assembly, maintenance procedures, and precautions for all valves sizes and styles are provided in specific valve Installation, Maintenance and Operation instructions (IMOs). In order to ensure proper preparation of oxygen valves in accordance with original factory procedures, Neles recommends valves be serviced at Neles service centers.

## 5 Requirements for Assembly of oxygen valves

### WARNING:

Prior to assembly, all components and required tools must be cleaned to remove contamination in accordance with a procedure that is qualified to be effective in cleaning for oxygen service.

Tools used in the reassembly work must also be cleaned in similar manner prior to their use.

The valve must be reassembled in a clean area. Lubrication should only be used when required by the assembly instructions in the valve IMO to aid assembly of parts. Examples of the acceptable lubricants qualified for oxygen service is listed below:

- KLUEBERALFA YV 93-1202 ([www.klueber.com](http://www.klueber.com))
- Halocarbon 25-10M ([www.halocarbon.com](http://www.halocarbon.com))
- Turmoxygen LCO 36 ([www.lubcon.com](http://www.lubcon.com))
- Gleitmo 599 ([www.fuchs-lubritech.com](http://www.fuchs-lubritech.com))
- Fluorolube gr-554 ([www.gabepro.com](http://www.gabepro.com))
- Krytox NRT 8908 ([www.chemours.com](http://www.chemours.com))

### WARNING:

Valve pressure and temperature ratings can vary, and lubricant temperature and pressure limits vary by manufacturer. Use only the lubricant approved for use in the valve. Contact Neles if lubricant is required and you are not certain which lubricant to use.

### CAUTION:

If a ball valve is supplied with an upstream vent hole through the ball (body marked with a flow direction arrow), the ball valve must be assembled with the vent hole in the opposite direction of the flow arrow when the valve is in the closed position.

## 6 Spare parts

### WARNING:

Use only original manufacturer replacement parts to ensure materials are approved for use in oxygen. Failure to use correct materials can lead to fire, personal injury, and death. Please specify in your order that the spare parts will be used in Oxygen service.

For further information on spare parts and service, or assistance, please visit our web-site at [www.neles.com/products](http://www.neles.com/products).

## 7 Welding notes

### WARNING:

Welding and/or grinding stainless steel and other alloys containing chromium metal may cause the release of hexavalent chromium. Hexavalent chromium(VI) or Cr(VI), is known to cause cancer. Be sure to use all appropriate personal protective equipment (PPE) when welding metals containing chromium.

### NOTE:

A qualified welder must do the installation welding. The welder and welding procedure should be qualified in accordance with the ASME Boiler and Pressure Vessel Code Section IX or other applicable regulation.

### CAUTION:

To prevent damage to the seat and seals, do not allow the temperature of the seat and body seal area to exceed 94 °C (200 °F). It is recommended that thermal chalks be used to check the temperature in these areas during welding.

### CAUTION:

Ensure that any weld splatter does not fall onto the valve closing members eg. ball or seats. This may damage critical seating surfaces and cause leaks.

### CAUTION:

Follow important safety instructions when welding Neles valve, operation and maintenance in oxygen service,

Subject to change without prior notice.

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