

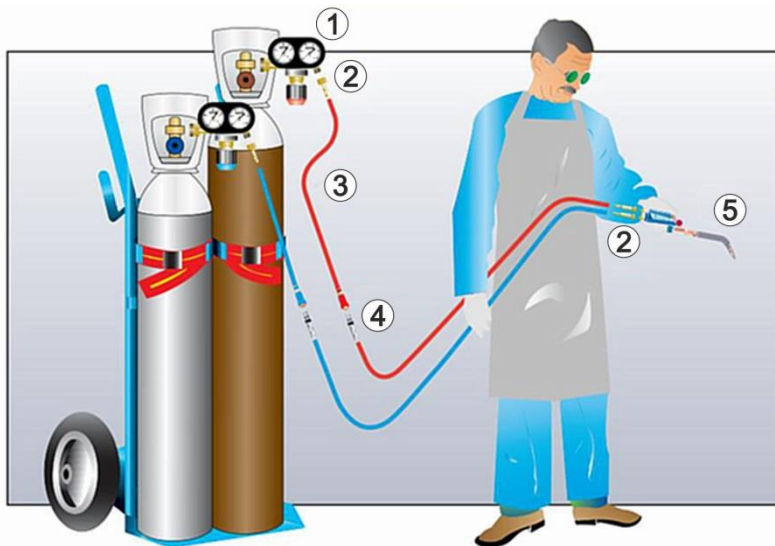
Recommendations for maintenance of Flame equipment in oxy-gas welding, cutting and related processes (heating, brazing, gouging, forming, ...)

This document presents “the state of the art” for the maintenance of the equipment used by oxy-gas flame process (commonly used for welding, cutting and related processes) – These recommendations are for manual use, even if the keys recommendations for regulators, hoses, coupling devices, flashback arrestors, and blow pipe are also available for automated application

An Equipment type used by an operator includes:

- A cylinder of oxygen
- A cylinder of fuel gas
- pressure regulator (1)
- Flashback arrestor (2)
- Rubber hose (3)
- Quick connector and/or Flashback arrestor (4)
- A blowpipe (5)

Example of equipment



The user and/or the employer has to take the necessary measures in order to guarantee that working tools, throughout their use, are duly kept, by an adequate maintenance, at the original required level of safety.

Manufactures guide lines and instruction of the equipment producer must be strictly respected

The sound engineering practice recommends a systematic replacement, at the latest each five years after the commissioning, even in absence of any incidents

1. Pressure Regulators (1) (B see nota below)

- Applicable standard: EN **ISO** 2503
- Visual test / verification /Tightness Test
- At each replacement of gas cylinder or equipment. Visual test of:
 - good conditions of threads, seals, pressure gauges, inlet/outlet couplings
 - absence of grease or oily residues
 - Tightness test of couplings under operating pressure
- Annually
 - External Tightness test under operating pressure
 - Internal Tightness test
 - Visual test of general conditions like marking, corrosion and damages Revision or replacement – see nota below (A) (C)
- It is reasonable to replace pressure regulators after no more than 5 years of service, even if they are still operating correctly

2. Hose connections and quick-action couplings (4)

- Applicable standard
 - Hose connections : EN 560
 - Specification for hose assemblies:- EN 1256
 - Quick action couplings: EN 561
- Visual test / Verification / Tightness Test
 - At each replacement of gas cylinder or equipment
 - Verification of proper operation of the closing mechanism
 - Tightness test of couplings under operating pressure
 - Annually
 - Tightness test with connected Coupling under operating pressure
 - Tightness test with disconnected Coupling under operating pressure
 - Revision or replacement (A) (C)
 - Replacement in case of functional failure, or every five years maximum

3. Hoses (3)

- Applicable standard
 - for rubber hoses : EN ISO 3821
- Visual test / verification / tightness test
 - At each replacement of gas cylinder or equipment
 - Verification of hose colors according to gas type (Blue for oxygen, red for acetylene , orange for propane and red/orange for all common fuel gases)
 - Visual test to check the good conditions and integrity of hoses.
 - Tightness test has be done every 3 months
 - Annually
 - Visual test on bent hoses to check the absence of breaks, cracks, kinks and swollen spots.
 - Revision or replacement (A) (C)
 - Replacement:
 - if the visual test reveals damage

- The date on the hose is the date of manufacture and not the date of utilization limit.
- The replacement of these hoses is recommended every 5 years by manufacturers; however it is necessary to:
 - Regularly check the condition of hoses and leaks;
 - Consider replacing them when they have been damaged due to a shock or from the appearance of cracks; they often appear near hose connection. More generally change them as often as conditions of use requires

4 Flashback arrestors and Check valves (1 and 3)

- Applicable standard: EN ISO 5175-1
- Visual test / verification / tightness test
 - At each replacement of gas cylinder or equipment
 - Verification of:
 - Presence
 - Colors according to gas type
 - Visual test and tightness test for safety device and quick-action couplings
 - Safety devices used with compressed air **should never be used with oxygen after**
 - Annually
 - Visual test
 - External tightness test
 - Internal tightness test (Non return valve)
 - Flow rate
 - Revision or replacement (A) (C)
 - Replacement: in case of no flow because of activated thermal cut-off valve or every five years maximum since initial commissioning, according to strenuousness levels.

5. Blowpipes (5)

- Applicable standard: EN ISO 5172— CEN TR 13259 (other blowpipes)
- Visual test / verification / tightness test
 - At each replacement of gas cylinder or equipment
 - Visual test of good conditions of tips and tightness test of connections
 - Check valves to ensure they are leak tight
 - Check that nozzle is in good conditions and check for any leakage
 - Revision or replacement
 - It is reasonable to overhaul or replace blowpipes after no more than 5 years of service, even if they are still operating correctly

 <p>European Welding Association</p>	<p>Recommendations for maintenance of Flame equipment in oxy-gas welding, cutting and related processes (heating, brazing, gouging, forming, ...)</p>	<p>Date : 04/2018 Revised TCE flame Pages : 4 / 4</p>
<p>EWA \ TC FLAME</p>		

Nota:

(A) Equipment revision shall be executed by the manufacturer or by maintenance/repair technicians authorized by the manufacturer (if exists). In case of malfunction, equipment shall be overhauled or replaced.

(B) It does not apply to pressure regulators incorporated into the gas cylinder valve, which shall be maintained by the gas supplier.

(C) Contact your local supplier for safety information about gas and materials used. The described equipment is designed for professional use. Use suitable tools for all operations described above. Some countries may have more specific legislation to be applied

Some additional recommendations:

- Secure the gas cylinders before use either at the workstation or on a suitable trolley.
- During maintenance, working area has to have a good ventilation and/or a fume extraction system.
- Use appropriate personal safety equipment: goggles, gloves, apron.
- Do not carry gas cylinders in a vehicle not designed for the purpose (vehicle ventilated, cylinders stowed, verify the closing of valves...)

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