BRITISH COMPRESSED GASES ASSOCIATION
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TECHNICAL INFORMATION SHEET 22

REVISION 1 - 2016

CONNECTING GAS CYLINDERS

Background

Gas cylinders are manufactured with an open end. To allow a gas to be contained within the cylinder a valve is usually fitted into the open end of the cylinder. The valve may have several functions, including:

- a means of closing an opening in a cylinder;
- providing an inlet port to allow a cylinder to be filled;
- providing closure to contain the contents within the cylinder;
- providing an outlet port to allow the gas to be released; and
- providing a mounting for external components, such as regulators and pipelines.

Gases have a variety of different properties and it is important to understand these different properties before they are handled or used. Information on the gas stored inside the cylinder will be displayed on the cylinder label and your gas supplier can provide a Safety Data Sheet as well as advice on safe use.

When a cylinder is initially obtained from the gas supplier typically the valve outlet will be protected by a cover, for example, a plastic cap, wrapped in tape, etc. In this condition the outlet should be in a clean state and ready for use.

Before connecting a gas cylinder to external equipment a check should be carried out to ensure the valve outlet is in a good mechanical condition and is free from any contamination. Equally the downstream equipment should be checked to ensure it will not damage the cylinder valve or be a source of contamination.

Historically the gases industry in the UK supported the use of a technique usually referred to as ‘snifting’, which is actually a valve outlet clearing procedure. This was a method of clearing dust or other debris from the outlet port of a cylinder valve prior to connecting the regulator or high pressure connection. It involved the momentary opening and closing of the cylinder valve, allowing the short-lived burst of gas to sweep any loose material from the valve outlet. **This procedure is no longer recommended**.

Hazards

The gas is stored in a cylinder under pressure. Many modern cylinders store gas at pressures up to 300 bar.

Gases have many different properties, these can include being flammable and/or toxic. With flammable gases, such as hydrogen, on release there is an additional risk of spontaneous ignition.

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The sudden release of pressurised gas from a valve outlet can cause injury, e.g. burns, eye damage or pressure injection into bodily tissue.

A sudden release of gas can create a loud noise.

Contamination of the valve outlet can result in the contaminant being introduced into the equipment. The contaminant can react with the gas, for example, oil or grease (hydrocarbons) contamination can react with oxygen and cause an ignition. Excessive contamination can prevent an effective seal between the valve outlet and the equipment, creating a leak path.

Procedure

Gases should only be used in well-ventilated areas, ideally outside in the open air, away from any potential sources of ignition.

This procedure may be used with bundles (also known as manifolded cylinder pallets) as well as single cylinders.

As this is a potentially hazardous procedure always carry out a risk assessment to determine sensible measures to control the risk. Guidance is available within BCGA TIS 15, *Model risk assessment for the storage and use of gas cylinders for oxy-fuel applications*.

Before handling cylinders or using gases always wear appropriate Personal Protective Equipment, including safety glasses or goggles, and hearing protection.

WARNINGS:

- Do not apply any oils or greases.
- Do not use an external source of forced air to clean the outlet, such as from an air compressor. This may introduce oil and/or water contamination.
- Always have the valve outlet pointed away from the operator and any other personnel in the immediate area.

1. Ensure the cylinder valve is closed.
2. Remove any existing valve protection cover.
3. Carry out a visual inspection of the valve outlet. Check for mechanical damage. Check for contamination.
4. Any visible material or moisture should be removed by cleaning with a clean, dry, lint free, and oil and grease-free cotton cloth.
5. Check the inlet on the equipment. Ensure it is in good condition, it is mechanically compatible with the valve outlet and there is no contamination.
6. On completion attach the equipment, such as a regulator.
7. Prior to use, slowly open the cylinder valve and carry out a leak check.

Before disconnecting equipment from the valve outlet always ensure the cylinder valve is closed and any remaining excess pressure downstream of the valve is released. Once disconnected fit a protective cover over the valve outlet.

For more information:

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