

## BHC-P-10.6 Gas Cylinders

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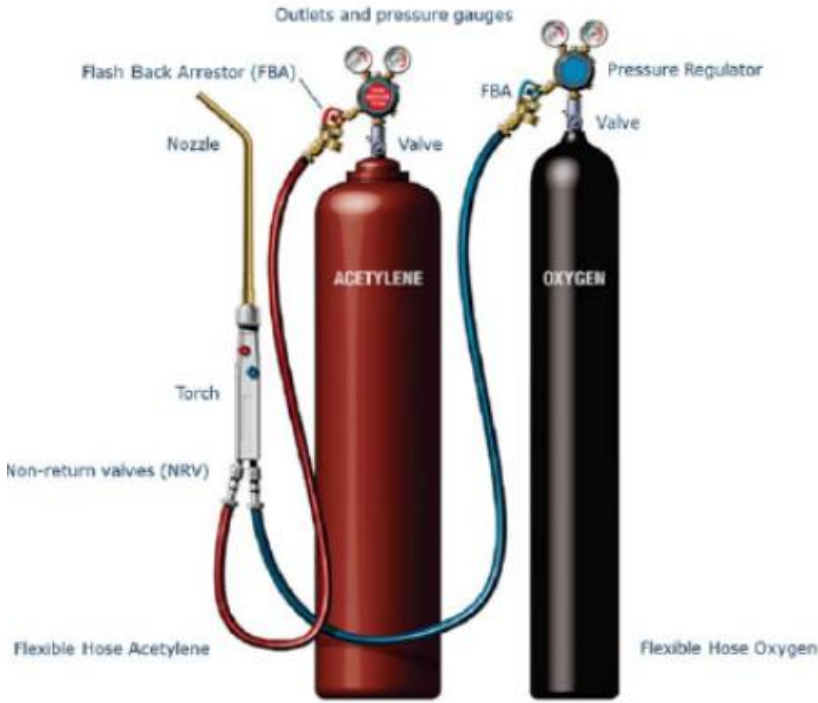
Revision register		
Date	Version	Description - reason for change
01/05/2015	1	New procedure
20/01/2021	2	Review and update following issue of v6 of BG Standards to include requirements

Item	Details	Reference	Responsibility
1.0	<b>Purpose</b>		
1.1	To inform BHC Management and Contractors of the Group requirements which detail the arrangements for the safe storage and use of LPG and compressed gas cylinders on site. This is in line with BGCS14 Gas Cylinders.	BGCS14	
2.0	<b>Scope</b>		
2.1	Applies to all work activities involving gas cylinders used on site where BHC are acting in the role of principal contractor or client.		
3.0	<b>Definitions</b>		
3.1	LPG                                      Liquefied petroleum gas e.g. propane, butane.		
4.0	<b>Main requirements</b>		
4.1	<b>Permit to work</b>  All works involving gas cylinders and associated equipment must be subject to a specific risk assessment and method statement (RAMS) and controlled under a hot works permit.  The permit must include: <ul style="list-style-type: none"> <li>• Identification of any combustible materials and control measures to protect them;</li> <li>• Flashback arrestors fitted to all cylinders;</li> <li>• Fire fighting provision is readily available;</li> <li>• Fire retardant overalls;</li> <li>• A fire watch is to be carried out during and for a period after the works have been completed;</li> <li>• How to raise the alarm in an emergency.</li> </ul>	BHC-F-10f	Project Manager
4.2	<b>Storage</b>  Gas cylinders must be stored in a dry, safe, secure place on a flat surface which is caged and in the open air. They must be upright and chained to prevent them falling over and all stores will display hazard warning and contents signage.  Quantities of gas cylinders stored are to be kept to an absolute minimum.  Gas cylinders containing flammable gas must not be stored in part of a building used for other purposes. Store gas cylinders away from sources of ignition and other flammable materials.  Gas cylinders must be clearly marked to show what they contain and the hazards associated with their contents. Toxic and corrosive gases are to be separated from all other gases by at least one metre.  All valves on cylinders must be protected by safety caps.  LPG cylinders are not to be stored within six of: <ul style="list-style-type: none"> <li>• Compressed gas cylinders (including acetylene);</li> <li>• Building;</li> <li>• The site boundary.</li> </ul>		Project Manager/ Contractor
4.3	<b>Transporting cylinders</b>  Suitable cradles, slings or clamps must be used when lifting cylinders with a hoist or crane.		

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	<p>Gas cylinders must not be carried directly on the forks of lift trucks. They must be secured with a gas bottle carrier or other device that will prevent them from falling.</p> <p>Cylinder trolley should be used to manually manoeuvre cylinders and the use of smaller cylinders where there is a need to regularly change locations should be considered.</p>		Project Manager/ Contractor
4.4	<p><b>Inspection and use of gas cylinders</b></p> <p>Always use the correct colour of hose for the appropriate gas (blue – oxygen, red – acetylene, orange – propane, black - non-combustible gases).</p> <p>Hoses and gas cutting equipment (e.g. nozzles) must be examined before use for signs of damage, blockages, wear or leaks. Damaged or defective equipment must not be used and is to be reported to the Project Manager:</p> <ul style="list-style-type: none"> <li>Flexible hoses must show the year and name of manufacture and have been checked for general wear, cracking or other damage;</li> <li>Flexible hoses must be tested under pressure with a leak detection fluid before use;</li> <li>A flash back arrestor must be fitted correctly and show no sign of damage;</li> <li>A BS marked regulator must be included in the connection between the cylinder and appliance;</li> <li>Wrapping leaking hoses or fittings with tape or repairing connections with non-approved fastenings, such as jubilee-clips, is prohibited.</li> </ul> <p>Inspections carried out by a competent person shall be carried out and recorded at least weekly.</p> <p>During use, unprotected hoses must not be run across traffic routes or positioned in other locations where they could incur damage from construction activities.</p> <p>Gas cylinder valves must be turned completely off and hoses depressurised when work is finished and hoses should be coiled up and stored correctly when not in use.</p>	BHC-F-10i	Project Manager  Contractor
4.5	<p><b>LPG heaters</b></p> <p>Electric heaters should be prioritised over the use of LPG flame heaters. Where this is not possible, the use of LPG flame heaters must be controlled through the issue of a hot work permit, and only where there is an adequate supply of fresh air or purpose built vents that are free from obstruction.</p> <p>Blow heaters may be used subject to risk assessment before second fix stage as long as the following checks are made before the hot work permit is issued:</p> <ul style="list-style-type: none"> <li>The heater is not aimed directly at doorways or combustible materials;</li> <li>There is an agreed process for the regular monitoring of the heaters where it has been agreed that they will be left unattended for periods, which considers the ongoing condition of the equipment and the build-up of waste materials from other trades that could cause a fire hazard.</li> </ul>	BHC-F-10f	Project Manager  Contractor
4.6	<p><b>Additional requirements specific to acetylene</b></p> <p>Acetylene must not be stored or used on site unless the Project Manager (in liaison with the Health and Safety department) has approved its use. Approval will NOT be given unless the Contractor wishing to use it has justified a business case IN WRITING stating that there is no safer alternative that can be used.</p> <p>A hot work permit will be issued by the site management for <b>each set</b> of oxy/acetylene cylinders to be used, and, on each occasion they are used.</p> <p>Prior to the permit being issued, the Contractor must provide the Principal Contractor with:</p> <ul style="list-style-type: none"> <li>A copy of the annual inspection checks (as required by the British Compressed Gas Association guidance CP7 'The Safe Use of Oxy-Fuel Gas Equipment');</li> <li>Written confirmation that the cylinders, hoses, gauges, regulators, etc., to be used have been inspected by a competent person and are considered safe for use;</li> <li>Written confirmation that the oxy/acetylene equipment operator is competent to use such equipment.</li> </ul> <p>Additional requirements:</p> <ul style="list-style-type: none"> <li>Where there is no practical alternative and Acetylene must be used, its presence must be minimised and the number of spare cylinders stored on site should be kept to the absolute minimum;</li> <li>Acetylene cylinders should be removed from the workplace and returned to the storage area as soon as the period of work has been completed. The cylinders should be removed from the site as soon as their use is complete;</li> </ul>	BHC-F-10f	Project Manager/ Contractor

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	<ul style="list-style-type: none"> <li>No equipment (cylinders, hoses, gauges, regulators etc) shall be permitted to be used on site without first the relevant BHC manager viewing their condition;</li> <li>Under no circumstances should the equipment have 'running repairs' undertaken. Things like taped hoses, PTFE tape on threads, or deformed pressure gauges should render this equipment as being unfit for use and it should be withdrawn;</li> <li>All equipment shall be stored in a secure compound on site, pre-arranged with the BHC site team. All hoses and regulators shall be stored in these areas as well, so that damage does not occur as a result of being stored in site boxes, where contact with other equipment is likely.</li> </ul> <p>The amount and location of any Acetylene on site must be recorded in the Emergency Response Plan, and provided to the Fire and Rescue Services in the event of a fire.</p> <p>Regulators, flashback arrestors, hoses and blowpipes used must be designed for acetylene and oxygen, respectively, and marked and manufactured to the correct BS EN ISO Standards.</p> <p>Cylinder valves will be operated either by a 'cylinder key' or a 'hand wheel'.</p> <p>Typical equipment used in oxy/acetylene gas welding and similar processes is shown in the diagram below:</p>  <p style="text-align: center;">Typical oxy-acetylene equipment configuration</p>		
4.7	<b>Hot work on vehicles and other mobile plant</b> <p>Hot work must never be carried out on a wheel with a tyre attached, even if that tyre has been deflated.</p> <p>Hot work near rubber tyres can cause the degradation of the rubber tyre and its lubricating oils. Flammable vapours can be produced and ignited. Re-inflation of a heat-damaged tyre may cause the tyre to explode.</p>		Project Manager/ Contractor
4.8	<b>Hot work on tanks and pipelines</b> <p>No work must take place on any pipeline or tank unless the contents of that tank or pipeline have either:</p> <ul style="list-style-type: none"> <li>Been identified as non-combustible; or</li> <li>Been identified as combustible and the tank or pipeline isolated, emptied, cleaned, purged and certified as safe for hot work.</li> </ul> <p>Under no circumstances should hot work be carried out on any drum or barrel (for example to cut the top off), unless the precautions above are followed. Wherever possible cold cutting techniques should be used.</p>		Project Manager/ Contractor
4.9	<b>Training and competence</b>		

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Item	Details	Reference	Responsibility
	The Contractor must provide assurance that anyone who examines or uses a gas cylinder and associated equipment is suitably trained and has the necessary skills to carry out the job safely. They should also understand the risks associated with the gas cylinder and its contents.		Contractor Supervisor
5.0	<b>Guidance documents and references</b>		
5.1	<b>Legislation and guidance</b> HSE Information Sheet (INDFG 327), Working Safely with Acetylene HSG168 Fire safety in construction		
5.2	<b>Group Standard and Guidance</b> BGCS14 Gas Cylinders		
6.0	<b>Appendices</b>		
6.1	N/A		

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