# Safe Work Instruction

## Transport of Gas Cylinders

### Hazards and Personal Protective Equipment required when handling Gas Cylinders:

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Protective Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressed Gases Pressure Hazard</td>
<td>No Naked Flames</td>
</tr>
<tr>
<td>Explosive Risk if contents leak and ignite</td>
<td>Enclosed Footwear</td>
</tr>
<tr>
<td>Potential Asphyxiant in case of leak</td>
<td>Safety glasses</td>
</tr>
<tr>
<td>Flammable Gas may be present</td>
<td>Leather gloves</td>
</tr>
<tr>
<td>Oxidizing Gas may be present</td>
<td>Hearing Protection</td>
</tr>
<tr>
<td>Toxic or Corrosive Gas may be present</td>
<td>On Hand</td>
</tr>
</tbody>
</table>

### Warnings:

- **DO NOT**: roll or drag a gas cylinder or lift the gas cylinder by the valve or by the protective cap.
- Where possible avoid dropping or subjecting cylinders to impact when moving as this can damage the cylinder and valve and some gases react to shock.
- **DO NOT** attempt to catch a falling cylinder as this can result in serious injury. Let the cylinder fall and move away from the direction of impact. Cylinders are designed to withstand an impact.
- If the cylinder was dropped or retrieved from a horizontal position, once placed in an upright position wait 60 min before using (4hrs for Acetylene).
- **DO NOT** transport any gas cylinder in the driver or passenger compartment of a vehicle.
- **DO NOT** travel with a full or empty cylinder inside a lift. Ensure no person can enter the lift during transport.

### Approval / Competencies / Supervision required

*Supervisor to demonstrate and instruct on the correct process.*

### Resources / conditions required when using
• Identify the gas from the gas cylinder label and determine the properties and hazards of the gas from the SDS.

• Assess and put on appropriate PPE (refer to SOP and Risk Assessment). Training in manual handling and edge rolling of gas cylinder required

• When using a lift: Ensure that lift has a yellow safety chain and No Entry sign and arrange a second person to meet the lift.

• When using vehicular transport:
  Carry a copy of the SDS
  Determine whether a DG diamond needs to be attached to car. (Classes 2.1; 2.3; other PGI substance in the load and total quantity of DG’s exceed 250L or kg)
  Use an open vehicle: flatbed utility with sides or a box trailer
  Total weight of the cylinders should not exceed 250kg

• Ensure suitable wall brackets of the right height and size for the gas cylinder are in place in the new location.

Instructions – step by step (insert pictures where applicable)

Preparation for Moving gas cylinder:
1. Select a route that is level and has a firm surface.
   Minimize the travel distance.
   Avoid steep gradients, rough, slippery or soft surfaces and stairs.
   Ensure there is sufficient space to maneuver a trolley through doorways or narrow openings.
2. Clear any obstructions from the route and secure doors in an open position (where practical).
3. Locate a suitable Gas Cylinder Trolley with brackets and safety straps, at the right height and size for the cylinder. Inspect the trolley for defects, wheel condition and ease of movement.

Select a 4-wheeled trolley if a door needs to be opened, using a lift, moving a G size cylinder or moving a gas affected by shock.
A 2-wheel trolley is maneuverable in small spaces, but the operator has to support the weight of the gas cylinder and trolley.

4. If using a lift: Organize a second person to meet the lift at the appropriate floor.
5. Prepare the gas cylinder:
   • Gas cylinder valve must be closed
   • Any connecting equipment must be removed
   • Test cylinder valve for leaks.
   • Put the valve outlet plug/cap in place and valve protection device on.
   • Cylinder and emergency pressure relief valves must be in good condition and face away from operator.

Moving a Gas Cylinder:
6. Determine the size and the weight of the gas cylinder (this information is given on the cylinder label. Try gently rocking it to gauge your ability to move it.)
7. Look at the cylinder and assess how you would achieve a positive handgrip where hands are below shoulder height and above mid-thigh height. **Wet, hot or cold cylinders may be difficult to grip.**

8. Using gloves, unchain/unstrap the cylinder and ease it out of the wall brackets with a tip and roll motion. For distances less than 5m on a flat, firm surface:
   - ‘Edge roll’ the cylinder by using one hand to support the cylinder (preferably by the neck and definitely not by holding the valve wheel) while the other rotates the cylinder away from the body. The cylinder is tilted slightly away from the body.

   [Image of a person performing edge rolling]

   **Edge Rolling**

   **For longer distances use a trolley:**
   1. Position the trolley close to the gas cylinder and use edge rolling to move the gas cylinder onto the trolley.
   2. Ensure the cylinder is in an upright position when the trolley tray is resting on the ground and secured firmly in brackets with safety straps to the trolley. Ensure relief valves and cylinder valves are not facing the operator.
   3. Assess: the load height for visibility, the force required to move the trolley and the stopping distance. *(If using a 2-wheel trolley check that you can support the weight of the trolley)*
   4. Follow the planned route.
   5. Keep both hands on the trolley and do not leave unattended (unless in a lift).

   *If a door needs to be opened, park the trolley safely so the cylinder is balanced and will not topple, and the trolley will not roll. Put the trolley brake on.*

**Using a lift to transport a gas cylinder:**

**Loading the Gas Cylinder into the lift**
1. Wheel the gas cylinder and trolley into the lift.
2. While keeping the lift doors open, select the required floor and place the yellow safety chain with No Entry sign across the entrance to the lift.
3. Exit the lift.

**Unloading the gas cylinder from the lift**
The second person meets the lift at the selected floor:
While keeping the lift doors open:
The second person removes the yellow safety chain and no entry sign from the lift entrance.
Then wheels the gas cylinder and trolley out of the lift.

[Image of a lift entrance with yellow chain and no entry sign]

**Using Vehicular Transport:**
1. For larger cylinders use a hoist or 2-person lift to place cylinder on the tray
2. Place cylinders in an upright position against the headboard.
3. Restrain cylinder/s by lashing them to the vehicle headboard/body using webbing straps or a purpose built frame. Apply at least 2 horizontal straps. Wrap the straps around the gas cylinder
   *Webbing straps must be at least 38 mm wide with a minimum lashing capacity of 1000kg*
   When at destination use a hoist or 2-person lift to move cylinder off the tray and onto the gas cylinder trolley
Gas cylinders must not be transported on public transport or in Uber’s or Taxis.

**When at Gas Cylinder Storage Location:**
1. Position the trolley close to the wall brackets that will be used to hold the cylinder
2. Maneuver the gas cylinder off the trolley using ‘edge rolling’ technique.
3. Use the tip and roll motion to ease the cylinder into the wall brackets
4. Chain or strap the cylinder into the wall brackets so that it is firmly secured

**Emergency Shutdown:**
See Emergency procedures for situations with gas cylinders

**Fire, spills, exposure:**
See SWI Emergency procedures for situations with gas cylinders

**First Aid:**

**Clean up and Waste Disposal**
See SWI Waste gas and gas cylinder disposal

**Other related procedures and supporting documents (maintenance, codes, standards)**

- Flowchart Gas cylinder requisition, installation, use, maintenance & disposal
- Risk Assessment Compressed gas cylinder use
- Guideline Evaluation of atmospheric risk from gases in enclosed workspaces
- Atmospheric risk analysis tool
- SOP Infrastructure requirements for compressed gas cylinders
- SWI Transport of gas cylinders
- SWI Installation, use and disconnection of compressed gas cylinders
- SWI Safety inspection and maintenance for compressed gas cylinders and lab infrastructure
- SWI Waste gas and of gas cylinder disposal
- SWI Emergency procedures for situations involving gas cylinders
- Checklist Installation of gas cylinders

AS4332-2009 (Amt 1 2016) The storage and handling of gases in cylinders
AS2865-2009 Confined Spaces

BOC Australia *Guidelines for Gas Cylinder Safety*, viewed 24 October 2018

British Compressed Gas Association *Guidance Note 3: Safe Cylinder Handling and the application of the manual handling operations regulations to gas cylinders* Rev 3 2016, viewed 23 October 2018


National Transport Commission ‘Australian Code for the Transport of Dangerous Goods by Road and Rail’
Publication Date: 7 May 2018 Downloaded 30/11/2018

ASSESSED AS COMPETENT:

<table>
<thead>
<tr>
<th>Name/Position</th>
<th>Date</th>
<th>Assessor:</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>