

Liquid Gas Cylinder (LGC)



SOXAL Liquid Gas Cylinder (LGC)



A Liquid Gas Cylinder (LGC) is a portable super-insulated vacuum vessel holding liquid nitrogen, oxygen, argon and carbon dioxide.

OPERATING INSTRUCTIONS (Refer to Diagram on the facing page)

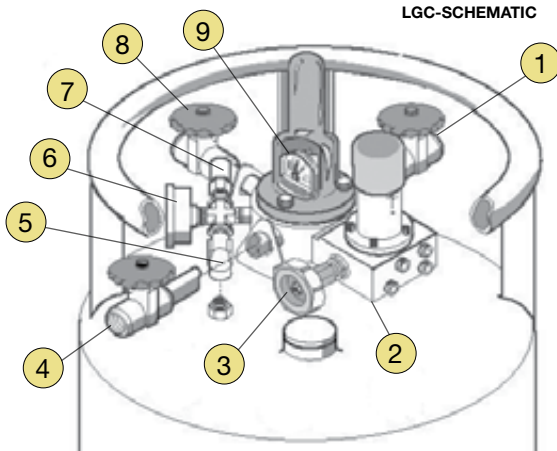
For Gas Withdrawal		For Liquid Withdrawal	
1	Connect adaptor and regulator on to the Gas Use Valve (8) outlet.	1	Connect one end of the stainless steel liquid transfer hose to the Liquid Use Valve (1) outlet on the LGC and the other end of the hose to the user's equipment.
2	Open Pressure Building Valve (3) and also the Gas Use Valve (8). The pressure will reach the pre-set operating pressure and maintain it.	2	Liquid withdrawal from a liquid cylinder is normally performed at low pressures to minimise flash vaporization losses. Therefore, the Pressure Building Valve (3) is normally kept closed during liquid transfer. If pressure exceeds user's requirement, the excessive pressure can be released through the Vent Valve (4).
3	Do not attempt to adjust the Pressure Building Regulator (2) as it has been factory-set to achieve correct operation.	3	Higher service pressure can be obtained by opening the Pressure Building Valve (3) up to the desired pressure and then shutting it.
4	When gas is no longer required, first shut the Pressure Building Valve (3) and then shut the Gas Use Valve (8).	4	Keep transfer hose as short as possible to minimise gas loss.
5	If the LGC is kept unused over an extended period or if the Pressure Building Valve (3) is left open after use, there is a possibility that the Pressure Building Valve (7) will release the excessive pressure. This is a normal phenomenon. The pressure can also be reduced by slightly opening the Vent Valve (4) in a well ventilated area.	5	Lines between the two valves must be equipped with a safety release valve.
6	Formation of ice on the outer shell is expected in cases where the draw-off rate of gas is excessive under prolonged usage.	6	When filling an open neck dewar, fit a phase separator on the end of the transfer hose to minimise flash-off and spillage.



An LGC is normally supplied as an intermediate gas system between a bulk storage tank or Vacuum Insulated Evaporator (VIE) which can be used individually or in conjunction with a manifold system.

Gas or liquid can automatically be dispensed at a pre-set pressure by means of an inbuilt vaporiser and pressure regulator.

LGC-SCHMATIC



Nomenclature:

- | | | |
|-------------------------------|-------------------------|--------------------------|
| 1 Liquid Use Valve | 4 Vent Valve | 8 Gas Use Valve |
| 2 Pressure Building Regulator | 5 Bursting Disc | 9 Liquid Level Indicator |
| 3 Pressure Building Valve | 6 Pressure Gauge | |
| | 7 Pressure Relief Valve | |

Accessories

	GAS WITHDRAWAL ADAPTOR	PHASE SEPARATOR
LINE REGULATORS	FLEXIBLE HOSE INSULATION SLEEVE	LIQUID WITHDRAWAL FLEXIBLE HOSE



CROSS-SECTION OF LGC

Handling Precautions



Our LGC is designed to withstand normal handling and vibration in transit. Nevertheless, there are various precautions that need to be adhered to for the safe handling of the LGCs.

Usage and Storage

- Store and use in a well ventilated area.
- Close all valves when LGC is not in use.
- Apply no oil or grease on any fittings on the vessel or its connecting pipe work or hoses.

Transport

- Keep the vessel upright for use and transportation.
- Do not manoeuvre the trolley on uneven surfaces as it may topple and injure the users.
- Never remove the vessel from its trolley frame.
- Avoid rough handling, dropping or striking. As there is a vacuum between the outer and inner vessels, a blow on the outer vessel can render the LGC unserviceable.



Handling Cryogenic Liquids

- Care must be taken to avoid contact with liquid or any uninsulated parts of the vessel as it can cause severe cold burns.
- Protective clothing (leather gloves, face-shields, aprons etc) should be worn.

Maintenance

- Do not attempt to carry out maintenance to the LGC on your own.
- Contact SOXAL in case of any suspected defect or malfunction.
- Do not change identification lettering or labelling on the LGC, make modifications or alterations to the LGC or fittings.



CONVERSION FACTORS

Gas Type	m ³ at 27°C & 1 atm		Weight in kg
	1 kg	1 litre	1 litre
Nitrogen	0.878	0.710	0.808
Argon	0.615	0.858	1.390
Oxygen	0.769	0.877	1.140
Carbon Dioxide	0.557	-	-

GAS CAPACITY

Nitrogen	Argon	Oxygen	Carbon Dioxide
117.1 m ³	121.8 m ³	127.5 m ³	174.0 kg

SPECIFICATIONS

Materials	Inner vessel	Stainless steel	
	Insulation	Multiple layer wrapped with high vacuum super insulant	
	Outer shell	Carbon steel/stainless steel	
Dimensions	Diameter	510 mm	
	Height	1550 mm	
	Water capacity	165 litre	
Weight (w/o trolley)	Empty	113 kg	
	Full	Nitrogen	242 kg
		Argon	310 kg
		Oxygen	277 kg
		Carbon Dioxide	300 kg

Pressure range: 5-12 bar

Gas withdrawal

Flow rate: 9m³/hr continuous without external vaporizer.

Boil off rate: Maximum (with liquid nitrogen) 2.2% per day.

For further information, please contact:

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