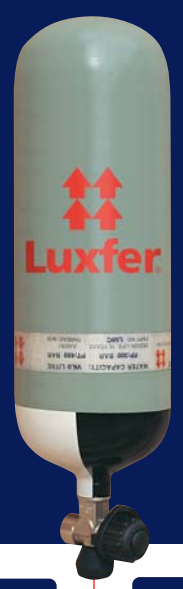
STEP-BY-STEP fitness check



The number one choice for SCBA users throughout the world – Luxfer's Carbon Composite Cylinder has been designed to deliver outstanding performance even under extreme pressure:

- Ergonomically designed for manoeuvrability and comfort.
- Ultra-lightweight specifications.
- Reduces physiological stress and air usage.
- Exceptional strength and durability.
- All cylinders conform to EN 12245 or ISO 11119-2 (previously HSE-AL-FW2).

Luxfer Gas Cylinders

1 CARE AND MAINTENANCE

We recommend that these basic, regular maintenance procedures be followed for all Luxfer composite cylinders:

- Ensure lubricants, if used, and components are compatible with both the cylinder and the gas mixture.
- Keep the inside of the cylinder free from moisture, oil, dirt and other contaminants.
- Avoid completely discharging your cylinder.
- Never artificially heat your cylinder.
- Never remove, obscure or alter cylinder labels or markings.
- For cylinder drying and repainting see section 8 of the Luxfer Composite Manual.
- Ensure cylinder remains below 82ºC for extended periods of operation.
- Never use corrosive, caustic or acidic paint strippers or solvents to remove paint.
- Never repaint the cylinder with paints that require curing at elevated temperatures.

2 PRE-FILL CHECK LIST

IS THE CYLINDER WITHIN ITS RETEST PERIOD?

Either 5 or 3 years after the test date on the label. (see step 5)

Cylinders manufactured from February 2002 onwards, carrying the CE mark, can automatically be extended to a 5-year retest. (*subject to national regulations)

Cylinders manufactured before this date should be competently inspected at a 3-year interval and if acceptable can be extended to a 5-year retest period.

NO

DO NOT FILL!
Cylinder must be retested!
To be retested by a retest station authorised to test composite cylinders.
See section 5 of the Luxfer Composite Manual.
Visit www.luxfercylinders.com for information on 5-year requalification from 3-year retest.

YES

IS THERE ANY EXTERNAL DAMAGE TO THE CYLINDER?

We recommend an external inspection for damage before each fill.

See section 6 of the Luxfer Composite Manual.

YES

ASSESS THE TYPE OF DAMAGE

1. PHYSICAL DAMAGE
ie. Abrasion, cuts, impact, delamination, heat or fire, chemical attack, illegible label.
LEVEL 1 – MINOR
Continue with fill – go to step 3.
LEVEL 2 – REPAIRABLE
Once repaired, have cylinder hydrostatically tested and put back into service.
LEVEL 3 – MAJOR/CONDEMNED
Do not use! Withdraw from service! Refer back to Luxfer for advice!
See section 6 of the Luxfer Composite Manual to understand the difference between Level 1, 2 & 3.

2. HEAT DAMAGE
If there are any concerns that the cylinder has been heated above 82ºC for extended periods of time or if the cylinder is showing signs of discolouration, then the cylinder should be retested.

NO

IS THERE ANY INTERNAL DAMAGE TO THE CYLINDER?

We recommend an internal inspection every 5 years according to EN ISO 11623.

Each cylinder must be inspected internally to national standards or in accordance with EN ISO 11623. More frequent internal inspection is recommended if cylinders are charged with breathing air that is not dried or cleaned to recommended levels or when water may have been drawn into the cylinder.

REJECT fully wrapped composite cylinders with internal isolated corrosion pit(s) estimated to be over 0.76 mm.

REJECT fully wrapped cylinders with sidewall line and broad-spread corrosion when one or more interior pit in the line corrosion is deeper than 0.5 mm or if the broad-spread corrosion is deeper than 0.5 mm.

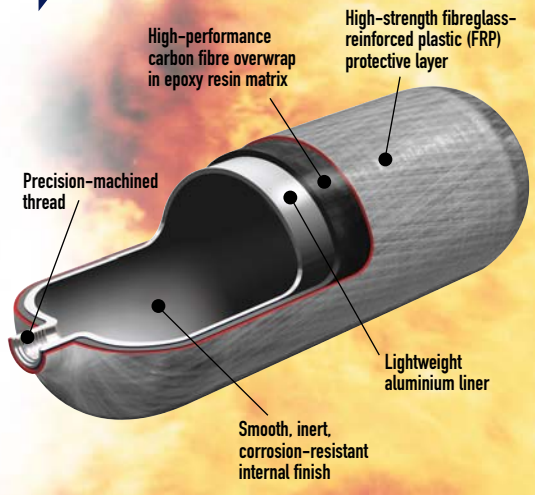
REJECT all fully wrapped composites that exhibit bulges or dents on the inside of the liner.

YES

DO NOT FILL!
See section 5.4, 6 & 9 of the Luxfer Composite Manual.

NO

FILL
Go to step 4.



3 VALVE REMOVAL AND INSERTION

REMOVING THE VALVE:

- Safely vent cylinder.
- Remove valve using proper tools and holding fixture so that cylinder fibre windings and valve are not damaged.
- Inspect threads of valve and cylinder for damage.
- Clean 'O' ring groove.

INSERTING THE VALVE:

- Internally inspect and ensure the cylinder is clean and dry.
- Ensure a suitable sealing method is used.
- Use a manual torque wrench.
- Ensure lubricants/sealing materials are approved for the gas service.
- Always use a new 'O' ring compatible with the gas service.
- Make sure 'O' ring, cylinder groove, and valve and cylinder threads are clean.

See section 8.1 and 8.3 of the Luxfer Composite Manual.

Valves should be fitted to the recommended torque levels:

THREAD	TORQUE RANGE
M18 x 1.5	80–100 Nm (60–75 ft lbs)
0.750–16 UNF–2B	100 Nm (74 ft lbs)
0.625–18 UNF–2B	61–68 Nm (45–50 ft lbs)

4 FILLING

Fill with clean, dry, filtered air only.

Ensure the compressor is properly maintained so that air quality complies with the appropriate standard.

See section 4.3 of the Luxfer Composite Manual.

MAXIMUM MOISTURE CONTENT (COMPRESSED AIR):

Bar	mg/m³	DEW POINT
200	35	-51ºC
300	27	-53ºC

Luxfer recommends either of the following processes for every fill:

SLOW FILL:

- By filling slowly, you will greatly reduce generated heat.
- We recommend a maximum charging rate of 30 bar/min or less.

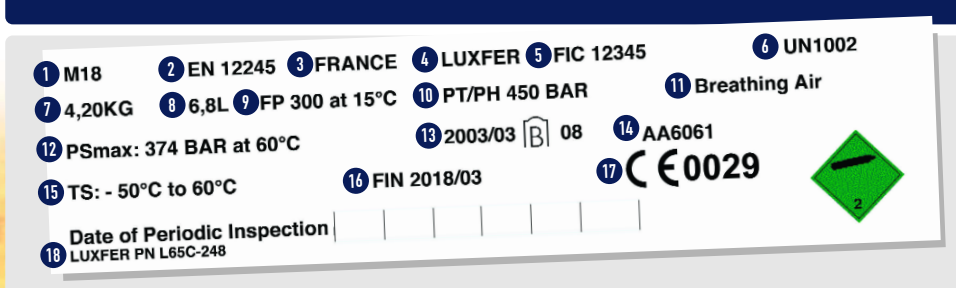
QUICK FILL:

- By filling quickly, there will be a higher generation of heat, requiring topping up to reach full-rated, maximum service pressure.
- Luxfer composite cylinders can be filled to a higher pressure of up to 10% maximum above normal filling pressures to compensate for developed pressure.

IMPORTANT: Some movement of the composite material during filling and discharging may cause a crackling noise, which is normal and no reason for concern. In addition, when the cylinder is pressurized, a slight opening in the composite material sometimes appears where the neck meets the shoulder; this is caused by differences in relative expansion of the neck and shoulder composite structures. Since the neck-to-shoulder transition is a low-stress area, such crack-like openings are strictly cosmetic and not a cause for concern.

See section 5.2 of the Luxfer Composite Manual.

5 WHAT YOUR LABEL TELLS YOU



1. Cylinder thread identity
2. The design specification (eg EN 12245)
3. Country of manufacture
4. Manufacturer's mark
5. The cylinder serial number
6. UN number (referencing gas content)
7. Empty weight of cylinder
8. Minimum water capacity in litres
9. Filling pressure in bar
10. Test pressure in bar
11. Gas content
12. Maximum developed pressure
13. Date (month and year) of the first hydrostatic pressure test
14. The aluminium alloy of the liner
15. Operating temperature range
16. End of life date
17. Mark of conformity and notified body reference number according to the pressure equipment directive (97/23/EC)
18. Luxfer part number

Please display this poster in a prominent place in SCBA maintenance areas.

Produced by: Luxfer Gas Cylinders. www.luxfercylinders.com Tel: + 44 (0) 115 980 3800 Fax: + 44 (0) 115 980 3899

For additional copies of this poster, please contact customerservices@luxfer.net