

Gas Regulator Checklist

Regulators for compressed gases

What is a regulator for?

It takes gas from the cylinder under pressure (up to 300 bar for some types) and delivers it at the pressure and flow rate set by the operator. With a single stage regulator, as the pressure in the cylinder decreases the flow rate decreases. Two-stage regulators contain an intermediate pressure stage, thus delivering a much more stable flow rate regardless of how full the supply cylinder is.

What can go wrong?

If you use the wrong regulator for your gas it can cause a serious accident. For example, Oxygen (and some other gases) at high pressures can react with contaminants such as oils in an explosive manner. Other laboratory gases are flammable, asphyxiants or even toxic, so leaks must be avoided.

Regulators are sensitive, calibrated mechanical items, so parts can wear out, leak, or fail unexpectedly if not properly used and maintained. Some safety features that are present on modern regulators include:

- Captive pressure adjusting screw – if you unwind one and it falls out, discard the regulator.
- Pressure relief feature on the reverse of gauges, in case of internal failure.

Golden rules for regulator selection



Check the gas and the pressure at which it is supplied. Gas pressure should be displayed on the label on the cylinder, along with the name of the gas. This cylinder contains nitrogen, supplied at 200 bar. Colour coding of cylinders recently changed, so

NEVER RELY SOLELY ON THE COLOUR OF THE CYLINDER TO DETERMINE THE IDENTITY OF THE CONTENTS.

Always use a regulator that is correct for that gas. In particular, an oxygen regulator should NEVER be used for any other gas. If it has been, it must be NEVER used for oxygen again.

How to use the regulator

1. Look for signs of damage – do not use if gauges are damaged
2. Check that the threads of the regulator and cylinder are clean. If they are not clean, wipe with a lint free cloth. DO NOT briefly open ('sniff') the cylinder valve to blast out dirt
3. Fit the regulator using the correct spanner (not an adjustable one).
4. NEVER use oil or grease
5. Jointing tape should be avoided unless you have been trained and it is the approved type that is free from hydrocarbons.
6. Undo the captive pressure adjusting screw (fully anticlockwise)
7. Open the valve to the cylinder gently
8. Adjust the pressure adjusting screw to get the output you need.
9. Check for leaks using approved leak detection spray
10. When you don't want gas for an extended period, turn it off at the main cylinder valve

11. To remove the regulator, shut the main valve to the cylinder, vent the gas from the regulator by turning the pressure adjusting screw fully clockwise, allow the gas to escape. Then turn the screw fully anticlockwise and remove the regulator from the cylinder.

12. Whenever changing a cylinder or regulator use the Checklist provided, and record your checks on the relevant sheet.

Gas Regulator Checklist

1	Gas Name on cylinder same as on regulator	Only use Regulator made for specific gas type as some gases may react with components and cause damage or weakness.
2	Age of Regulator < 5years?	Regulators must be replaced /refurbished every 5 years (may be less for corrosive gases)
3	Date last inspected?	Visual inspection required every time cylinder is changed. Annual functional inspection by qualified person is also required.
4	Maximum Inlet pressure greater than cylinder being connected?	Regulator should be clearly marked with MIP.
5	Maximum outlet pressure?	Check regulator is capable of supplying outlet pressure required for task.
6	Supplier logo visible	Important in case incident occurs
7	Pressure adjusting screw OK?	Check this is not removable and can be turned fully anticlockwise with no resistance.
8	Filter present in inlet stem?	Do not use if missing. Report to safety officer
9	Bullnose free of damage?	This forms the seal with the Cylinder valve so cracks, etches or contamination may compromise this seal.
10	Inlet/Outlet threads OK?	Should not be any contamination, damage, oils, greases. Only specified PTFE tape allowed for O2 applications (Cobas Green)
11	Inlet hexagon nut OK?	Ensure correct size spanner (not an adjustable one) is used to fit regulator so don't damage nut or threads by over tightening.
12	Inlet valve at right angle to regulator body?	Any deviation from this may affect gas flow to regulator.

13	Standard number marked?	Ensure regulator complies with appropriate British/European standard number.
14	Any damage to body of regulator?	Any dropping or knocks could affect calibration of unit.
15	HP nut in place?	Should be in place and tight. This should not be unscrewed or tampered with.
16	Relief device OK?	This is a self-resealing pressure release device and prevents unit becoming over pressurised.
17	Gauges OK?	Suitable for gas being used? Any Zero error? Needle straight? Glass not damaged or cracked? Pop out backs of gauges not damaged?
18	Any repairs or modifications?	These should only be done under approved standards, by a competent person and documented in service records. Do not use if you suspect that the device has been tampered with.

18. No modifications or repairs

17. Gauges

- 1. Gas Name
- 2. Age
- 3. Inspection date

16. Relief valve

15 HP Nut

- 14 Body
- 13. Standards

- 4. Max inlet pressure
- 5. Supplier name
- 6. Max outlet pressure
- 7. P.A. Screw captive

- 9. Threads
- 10. Bullnose

12. 90° to outlet

8. Filter

