COMPRESSED AIR VALVED CYLINDER ASSEMBLIES FOR BREATHING PROTECTION APPARATUS AND BREATHING AIR SUPPLY UNITS

Instructions for Use

Dräger

Approvals

The Dräger compressed air valved cylinder assemblies are designed for Dräger compressed air breathing apparatus conforming to either one of the following technical standards, EN137, EN402 or EN1146. The assemblies are designed and manufactured to the requirements of the Pressure Equipment Directive (PED) 97/23/EC. The following Conformity Assessment Modules apply; Module B (Valved Cylinders) and Module D (Production). For approval certificate numbers, refer to the Declaration of Conformity - Dräger Valved Cylinders (Lloyds) - Pt No. 3356518.

Notified Body: Lloyds Register Verification (Notified Body No. 0038), 71, Fenchurch Street, London, EC3M 4BS, United Kingdom.

For Your Safety

- Strictly follow the instructions for use - Use the equipment for the purpose specified in this instruction, or as confirmed in writing by Dräger.
- Use and maintenance of compressed air cylinders requires knowledge and compliance with National Regulations, Laws and Standards governing the use of compressed gas (air) cylinders in the country of use.
- Only trained competent personnel should inspect and service compressed air cylinders at regular intervals and a record kept of such inspections and service.
- Only trained and competent personnel should carry out the charging of the compressed air cylinders.
- Any requirement for removal and/or replacement of the valve from the cylinder or any necessary repair of the compressed gas cylinder MUST only be carried out by trained competent personnel.
- Dräger recommends that a Service Contract be obtained from your Dräger Branch or Agent.
- Contact Dräger for details of Service Contracts and Service Training Courses.
- Use only original Dräger Spare Parts for service and maintenance.
- Use only original Dräger Test Equipment for service and maintenance.
- Notify Dräger if there is a component fault or failure.

Liability for proper function or damage

The liability for the proper function of the compressed air cylinders is irrevocably transferred to the owner or operator to the extent that the compressed air cylinders are serviced or repaired by personnel not employed or authorised by DrägerService or if the cylinders are used in a manner not conforming to their intended use. Dräger cannot be held responsible for damage caused by noncompliance with the recommendations given above. The warranty and liability provisions of the terms of sale and delivery of Dräger are likewise not modified by the recommendations given above.

Intended Use

These instructions for use are intended for trained and competent users of breathing protection equipment and breathing air supply units as a guide for assembly, safe operation, disassembly, service and safe handling of compressed air valved cylinder assemblies with steel, aluminium or composite cylinders.

Approved Dräger compressed air containers (cylinders) when fitted with an approved Dräger valve are manufactured according to the requirements of the Pressure Equipment Directive 97/23/EC (valid for all of Europe) and marked with the CE-identification. They have undergone a design approval assessment and an individual test or production monitoring by the Certification Notified Body for Pressure Equipment Directive.

Note: This instruction for use contains information and details as required by the guidelines for Pressure Equipment Directive Regulations 97/23/EC.

The valve types used are generally available in either 200bar or 300bar pressure versions with the valve to cylinder thread connections suitable for use with a wide range of approved and certified compressed air cylinders, e.g. G5/8 as per EN144-2. Contact Dräger for details of variants.

Cylinder assemblies supplied by Dräger are normally charged (pressurised to nominal cylinder pressure. - e.g. 300bar) at an ambient temperature of 15ºC with breathable quality air meeting the air quality standard as defined in the requirements of the relevant National Standards, e.g. EN12021.

When used in combination with approved and certified compressed air breathing equipment the cylinder assemblies provide the breathing equipment wearer with an independent source of breathable quality air. This combined system provides respiratory protection in a contaminated, or oxygen deficient gaseous atmosphere.
Available duration to the wearer is dependant on capacity (volume) of cylinder selected and the breathing work rate of the wearer.

Use

The compressed air cylinder must be assembled and secured to the carrying system and pneumatics of the appropriate breathing protection apparatus as described in the relevant Instructions for Use provided with the equipment.

Before assembly to the breathing protection apparatus, the protection cap or screw plug, if fitted, must be removed from outlet of the cylinder valve. Refer to the relevant Instructions for Use for the breathing protection apparatus for the removal of the compressed air cylinders.

Following secure assembly of the compressed gas cylinder to the associated breathing protection apparatus a function test must be carried out to confirm the integrity of the final assembly, i.e HP Leak Test. Refer to the relevant instruction for use for the breathing protection apparatus.

Operating the Valve

- Do not use any tools. Open or close the valve of the compressed air cylinder using only one hand.
- Do not turn the hand wheel of the valve of the compressed air cylinder by force.
- Immediately after use 'Close' the valve of the compressed air cylinder to avoid moisture entering the cylinder.
- Do not empty the compressed air cylinder. Dräger recommend that a minimum pressure of 2bar should remain in the cylinder.

After Use 'Close' the valve of the compressed air cylinder then remove from the breathing protection apparatus.

Caution – Equipment damage. Do Not apply excessive force or use tools to open or close a ratchet valve.

To open a ratchet valve, turn the handwheel anticlockwise (looking at the handwheel) until the valve reaches the fully open stop. Then turn the handwheel clockwise (less than 60º) to engage the first ratchet. (Engaging the first ratchet will prevent inadvertent closing of the valve.)

To close the valve, pull the handwheel away from the valve to disengage the ratchet and simultaneously turn the handwheel clockwise until the valve is fully closed (no further rotation is possible).

Service and Test Intervals

Refer to the Service and Test Interval Chart.

Important Note - Services carried out by persons not authorised by Dräger, e.g. changing of valve spare parts, will result in loss of liability by Dräger and of the conformity rating (CE-marking and conformity declaration) for compressed air cylinders for breathing protection apparatus. Following manufacture or inspection of compressed air valved cylinder assemblies by Dräger, an anti-tamper seal (Dräger label) is affixed across the joint between the cylinder neck and the valve body. The seal is a mark of genuineness and indicates that this joint is subject to approval in accordance with the Pressure Equipment Directive and that special guidelines are to be followed after it has been destroyed: during maintenance or repair only valves of the same type may be used, otherwise the conformity evaluation (CE) will expire and the declaration of conformity will become invalid.

Inspection

After use, if necessary, carefully clean the compressed air valved cylinder assembly to allow for a full inspection of the assembly. Inspections should be carried out before charging the compressed air cylinder.

Safety Note: Check the Test Date, shown on the label placed on the cylinder by the last Testing Station or by the date stamp. Do Not use or recharge the cylinder if it is past the next required test date. Arrange for the re-certification of the cylinder by an accredited authority.

It is the responsibility of the user to ensure that personnel allocated to the inspection are trained and competent in the care, maintenance and safe handling of valved compressed air cylinder assemblies in accordance to the relevant national regulations in the country of use.

Carbon Composite Cylinders

Reference should be made to the maintenance and testing manual Ref. 3351362 for damage criteria and allowable limits for the inspection of carbon composite air cylinders. This document is available from Dräger on request.

- Cylinders with abrasions, indentations, grooves or fibre separation that are longer than 20 mm or deeper than 0.25 mm must be scrapped.
- Cylinders with dents, separation of layers of the resin or the composite material or with other structural damage must be scrapped.
- Cylinders where the composite material, the labels or the paint is burnt or blackened or the resin has melted, must be scrapped.
- If the cylinder has been in contact with acids, the pressure must be vented and DrägerService must be contacted to seek advice of how to proceed.
- If the label is not legible, contact DrägerService. If the cylinder can be identified without doubt, DrägerService can put a new label on the cylinder. Otherwise the cylinder must be scrapped.
- With cylinders which have been subjected to significant impact through being dropped and/or similar, the pressure must be vented and the cylinder passed to DrägerService for evaluation.

Charging

After use and following venting or re-certification, the compressed air cylinders must be charged (filled) with breathable quality air meeting the air quality standard as defined in the requirements of the relevant National Standards, e.g. EN12021.

Before charging, the compressed air cylinders must be visually inspected and checked to ascertain suitability for repeated use and that they are within the repeat inspection period.

Only charge cylinders which:

- Conform to National Standards.
- Are labelled or stamped with the 'test date' and 'test mark' of the accredited Testing Authority, and have not exceeded the test interval indicated on the cylinder by the last Testing Station
- Show no damage that could be dangerous, e.g. a damaged valve body or hand wheel or a leaking compressed air cylinder valve.
- Are in good condition, showing no signs of damage, corrosion or moisture (water droplets) in the threaded port connection of the valve.
- Are compatible with the charging gas (i.e. breathing air).

The cylinder(s) must be charged to the correct rated charging pressure (working pressure) as shown on the body of the cylinder and the body of the valve, e.g. 200bar or 300bar. Do Not overcharge. The compressed air cylinders do not have a safety device for overcharging scenario (no safety valve). To prevent overcharging of the selected cylinder Dräger recommend that a pressure-limiting device be fitted to the charging compressor.

It is important to follow the 'Charging Instructions' as specified by the compressor manufacturer. Charge the cylinder to the correct pressure as shown on the charging label of the cylinder. Do Not over charge. Charging can induce an increase in temperature of the compressed air and cylinder resulting in an incomplete charge. To minimise this affect Dräger recommend a charging rate of 27bar/minute. Following charging re-check the cylinder pressure at ambient temperature. 'Top-up' charge if necessary.

For information: When charging carbon composite compressed air cylinders, a crack can appear in the lacquer coating at the bottle neck, and the filler material at the bottom of the compressed gas cylinder. This is caused by the differential expansion of the composite material of the cylinder body and the cylinder neck or the filler material, and has no influence on the structure of the compressed air cylinder and does not in any way reduce the operating safety.

Certification

It is a requirement that compressed air cylinders must be periodically inspected and safety pressure tested and re-certified for continued use. An accredited testing station in the country of use must carry out these inspections and tests.

Safety Note: Check the Test Date, shown on the label placed on the cylinder by the last Testing Station or by the date stamp. Do Not use the cylinder if it is past the next required test date. Arrange for the re-certification of the cylinder by a competent retest facility in the country of use.

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Steel, Aluminium and Carbon Composite Cylinders

Compressed air cylinders for breathing protection apparatus, the internal inspection and safety pressure test within the EC is every five years or in line with the requirements of the national competent authority of the country in which the cylinder is placed in service.

- Steel compressed air cylinders generally have an unlimited working life provided they have been used correctly and had regular repeat inspections and tests.
- For composite compressed air cylinders, the working life may be determined from the cylinder stamp markings. For cylinders with a limited working life, the end of life date is prefixed with the term FIN or FINAL. For composite cylinders with a non-limited working life, the label is marked with NLL. Achievement of the designed working life, is dependant upon correct use and regular repeat inspections and tests.
- Countries outside the EC may have different national re-certification time limits. It is the responsibility of the user to ensure that compressed air cylinder assemblies comply with the relevant national regulations in the country of use.

Repairs

If it is necessary to repair any compressed air cylinder, DrägerService must be contacted. Following any repair of a compressed air cylinder the cylinder must undergo a further inspection and safety pressure test and re-certified for continued use inspection.

Marking

- Steel compressed air cylinders have a serial number engraved on the shoulder of the compressed gas cylinder and are stamped with the 'test date' and 'test mark' of the accredited Testing Authority.
- Composite compressed air cylinders have a serial number on the label and the 'test date' and 'test mark' of the accredited Testing Authority.
- Aluminium compressed air cylinders have a serial number engraved on the shoulder of the compressed gas cylinder and are stamped with the 'test date' and 'test mark' of the accredited Testing Authority.

Handling, Transport, Storage

Use and maintenance of compressed air cylinders requires knowledge and compliance with National Regulations, Laws and Standards governing the use of compressed air cylinders in the country of use.

- Be aware of potential hazards. Only trained and competent personnel familiar with the hazards associated with compressed air cylinders and the proper handling techniques should handle compressed air cylinders.
- Inform personnel about the hazards in handling and storing compressed air cylinders. Cylinders containing compressed air can be heavy and awkward to move. Improper handling of cylinders can result in sprains, strains, falls, bruises, or broken bones. Take all necessary precautions to prevent accidents.
- Do Not carry the cylinder by holding the hand-wheel of the valve. Hold the body of the valve or the cylinder body.
- Secure cylinders when in storage or transit. They must be protected against heat, chemicals and fire. During transport and storage screw the appropriate sealing plug (closing screw) into the valve connection.
- Store cylinders in designated storage area for compressed air cylinders. Segregate full and empty cylinders.
- During storage the cylinder valve must be kept 'Closed'. If the cylinder is completely emptied of pressure Do Not leave the valve open. Dräger recommend that a minimum pressure of 2bar should remain in the cylinder. Compressed air cylinders that have inadvertently been emptied and the valve has remained 'Open' may have possible internal contamination. The cylinder must be dried out as they may contain moisture.
- Visually inspect stored cylinders on a routine basis, or at least monthly, for any indication of leakage or problems.
- Storage temperature for charged compressed air cylinders: –30ºC to 60ºC

	Description	Before Use	After Use	Every Month
Valved Cylinder Assembly	Clean and Inspect		❍	
	Charge Cylinder to correct working pressure		❍	
	Check charged pressure	❍		❍
	Safety pressure test and recertification according to National Standards for the cylinder type			
Cylinder Valve	*Basic Overhaul (when necessary or at time of cylinder recertification)			

* Basic overhaul only applies to the valve and includes replacement of all the sealing components and following visual inspection the replacement of damaged or suspect valve components.

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