

INSTALLATION INSTRUCTIONS

CARTRIDGE VALVE

2489.14.1001



Document: Installation instructions Document
number: 2.7541.00.0623.0100000 Language:



In the German language, this document is the original version in the EU language of the manufacturer and is labelled with the German national flag.

In the language of a country of use, this document is a translation of the original version and labelled with the national flag of the country of use.

This document is referred to as "instructions" in the following text.

Number of pages in this manual including the title page: 16

These instructions are valid for the product

2489.14.1001

Cartridge valve

This document was created by

FIBRO GMBH

August-Läpple-Weg

DE 74855 Hassmersheim

Phone: +49 (0) 62 66 73 0

Fax: +49 (0) 62 66 73 237

E-mail: info@fibro.de

Internet: www.fibro.de

© All rights to this document are subject to copyright of the author.

Without the prior written permission of FIBRO GMBH, this document must not be copied or reproduced, either in full or in part.

The instructions are intended only for the operator of the described only and must therefore not be made available to uninvolved third parties - in particular to competitors.

Contents

1	Safety	4
1.1	Safety instructions	4
1.2	General instructions	5
2	Assembly	7
2.1	Replacing the cartridge valve	7
2.2	Fill with nitrogen	9
3	Indexes	13
3.1	Third-party products	13
3.2	Glossary	13
3.3	Index of figures	13
3.4	Index	14
4	Appendix	15
4.1	Personal notes	15

1 SAFETY

The statements in this document apply exclusively to the handling of the described product and are intended for trained and authorised personnel.

These personnel must have the required training, experience and product knowledge as well as special tools to be able to work on the product correctly.

Personnel must read and understand this document in its entirety before starting the work.

Any exchange of spare parts without special training, without knowledge of this document and without the special tools can pose a danger and cause accidents resulting in serious injury or death.

Most accidents when handling the product are attributed to non-observance of the basic safety rules.

Detecting a possible hazard can prevent an accident before it occurs. Safety information in this document warns of possible hazards. FIBRO GMBH cannot predict all circumstances that could pose possible hazards. As a result, the warnings in this document are not all inclusive.

If a tool, activity, working method or practice is not expressly suggested by FIBRO GMBH, users must ensure it is safe both for themselves and others.

The information, descriptions and illustrations in this document are based on information available at the time of writing this document.

Figures show examples of the described product and are not according to scale.

1.1 Safety instructions

These instructions contain safety notices intended to draw attention to possible dangers that should be observed to prevent injury.

The pertinent text describes

- the type of danger
- the source of danger
- the options for preventing injuries
- the consequences in case of non-observance of the warning notices

The safety instructions are emphasised by a colour signal bar with warning triangle and signal word.

The signal bars have the following meaning:



DANGER!

A safety notice on a red signal bar with the signal word DANGER designates a hazard with a high risk level which, if not avoided, will result in death or severe injury.



WARNING!

A safety notice on an orange signal bar with the signal word WARNING designates a hazard with a medium risk level which, if not avoided, might result in death or severe injury.



CAUTION!

A safety notice on a yellow signal bar with the signal word CAUTION designates a hazard with a low risk level which, if not avoided, could result in minor or moderate injury.

1.2 General instructions

In addition to the safety notices, these instructions contain information that must be observed to prevent property damage.

The pertinent text describes

- the possible reason for property damage
- the possibilities for preventing property damage

Notices of possible property damage are emphasised by a blue signal bar and the signal word **ATTENTION**.

NOTICE

Notices for the prevention of property damage are not related to possible injuries.



WARNING!

Filled gas springs are under high internal pressure.

Before repairing, drain the nitrogen completely.

- ▶ To drain, open the valve carefully and only slightly
- ▶ Wear safety glasses. Eye injuries due to nitrogen leaks
- ▶ After removing the locking screw, never bend directly over the valve. Never direct the fill opening towards persons
- ▶ Only unscrew the valve when there is no more nitrogen flowing out and the piston rod can be pushed in by hand. Injuries due to valve flying out.
- ▶ If assembled incorrectly, parts may be propelled out after filling. Observe the precise installation position of the spare parts. Never direct the piston rod towards persons. Injuries possible due to parts flying out.



WARNING!

Use of wrong spare parts

Installation of wrong spare parts leads to a loss in safety.

- ▶ Parts may be ejected due to the internal pressure after filling with nitrogen.
- ▶ Always ensure prior to the repair that the right spares kit is used.
- ▶ PED-gas springs have a separate spares kit. Individual components are not compatible to the previous version. For the PED-gas springs the cylinder, installation kit and piston rod are marked at their upper end by grooves. Adhere to marking.
- ▶ PED-components and non-PED-components must not be mixed. Injuries due to parts blowing off.

NOTICE

Damages during repair

Always use protective jaws when clamping a gas spring into a vice. Ensure a clean environment.

- ▶ Grooves, bumps or other damages can cause leakages.
- ▶ Never exercise undue force to the gas spring during repair. Protect against damages.
- ▶ Let nitrogen flow in slowly during the filling process. The valve of the gas spring can be damaged.
- ▶ For the filling process, only use pure nitrogen N₂ of Grade 5.0 purity or higher.

Highest permissible filling pressure: 150 bar (2175 psi).

For safe maintenance further, applicable documents are necessary. The information in these documents have to be adhered to.



Gas spring operating instructions



Safety data sheet "Exchange of spare parts"



Operating instructions filling and control fitting.

2 ASSEMBLY



The cartridge valve is used to control active gas springs (KF) 2489.14.

During a return stroke of an active gas spring, the piston rod does not extend automatically, instead, it must be brought to its start position with the help of the cartridge valve.

2.1 Replacing the cartridge valve

The following components must be disassembled and reassembled when replacing the cartridge valve:

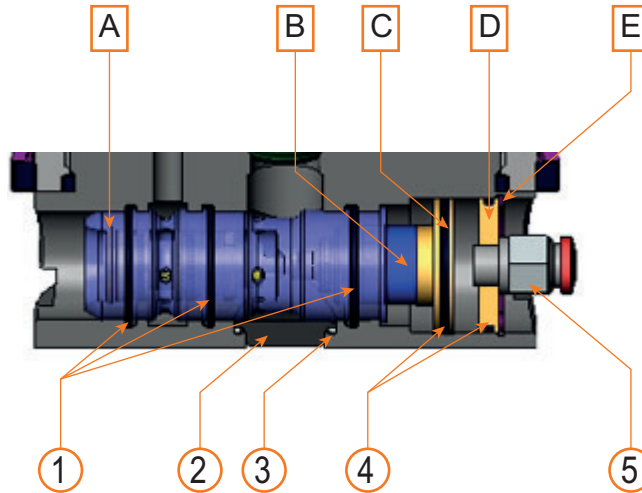


Fig. 2-1 Replacement components

Pos.	Description	Article number
A	Cartridge valve 1500, 3000, 5000, 7500 Cartridge valve 7500 Version up to 02.2022 Cartridge valve 1500, 3000 with gas cooler Cartridge valve 5000 with gas cooler Cartridge valve 7500 with gas cooler Cartridge valve 7500 with gas cooler, version up to 02.2022	2489.14.1001 2489.14.1001.075.E 2489.14.1001.030.N 2489.14.1001.050.N 2489.14.1001.075.N 2489.14.1001.075.NE
B	Spacer tube 1500 Spacer tube 3000 Spacer tube 5000 Spacer tube 7500	2489.14.1001.01500 2489.14.1001.03000 2489.14.1001.05000 2489.14.1001.07500
C	Compressed-air washer	2489.14.1001.004
D	Compressed-air washer	2489.14.1001.004
E	Circlip	2489.14.1001.005
1	O-ring, cartridge valve	2489.14.1001.002
2	Bottom lock washer	2489.14.00,001
3	O-ring, bottom lock washer	2489.14.00,002
4	O-ring, compressed-air washer	2489.14.1001.003
5	Straight push-in fitting	2489.00.43.01.01

Disassembling the cartridge valve

- ✘ Allen wrench 3 mm to unscrew the locking screw
- ✘ Valve tool to release the gas and to unscrew the valve
- ✘ Snap-ring pliers to remove and insert the circlip
- ✘ Permanent magnet to hold the bottom lock washer
- ✘ Mounting sleeve
- ✘ Rubber mallet

1. Release pressure from gas spring.
 - a) Unscrew the locking screw with the 3 mm Allen key.
 - b) Screw the threaded end of the valve tool into the fill opening until the valve opens.
 - c) Allow nitrogen to flow out slowly and completely.



In case of loop line systems, remove all connections (measuring couplings).

2. Remove the valve.
 - a) Push in the piston rod completely and place the gas spring with the piston rod down on a level surface.
 - b) After bleeding, use the other end of the valve tool to unscrew the valve completely from the thread.
 - c) Remove the valve from the fill opening using the valve tongs.
3. Remove the retaining ring.
 - a) Remove the retaining ring with the snap-ring wrench.
4. Remove the cartridge valve.
 - a) Place the permanent magnet onto the bottom of the gas spring to prevent the bottom lock washer from falling out.
ATTENTION! Remove the locking screw (X) at the bottom before hammering out the cartridge valve.
 - b) Align the mounting sleeve and hammer out the compressed-air washer with plug-in fitting, compressed-air washer with spacer tube and cartridge valve.

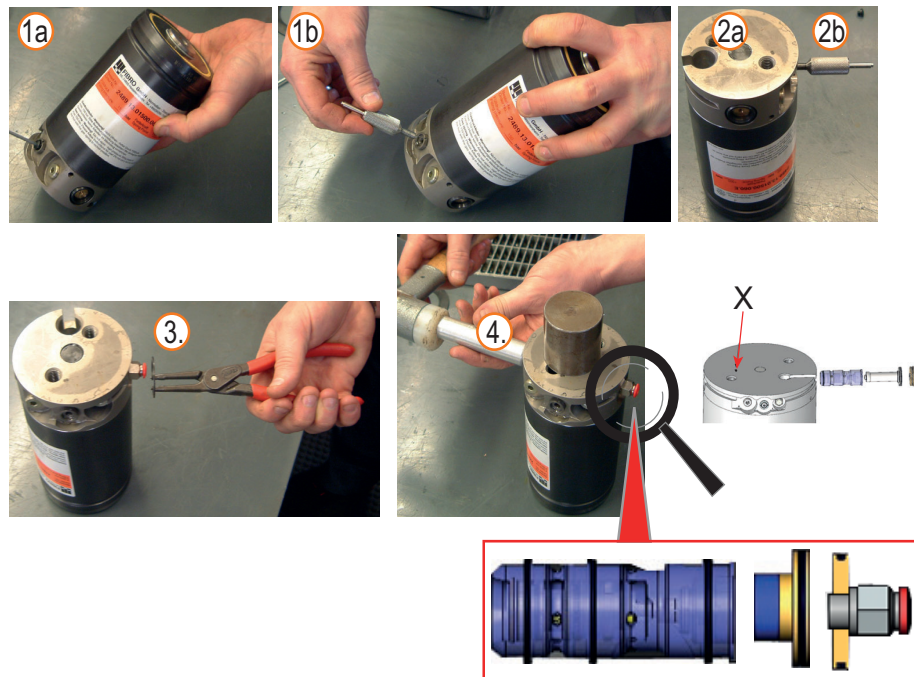


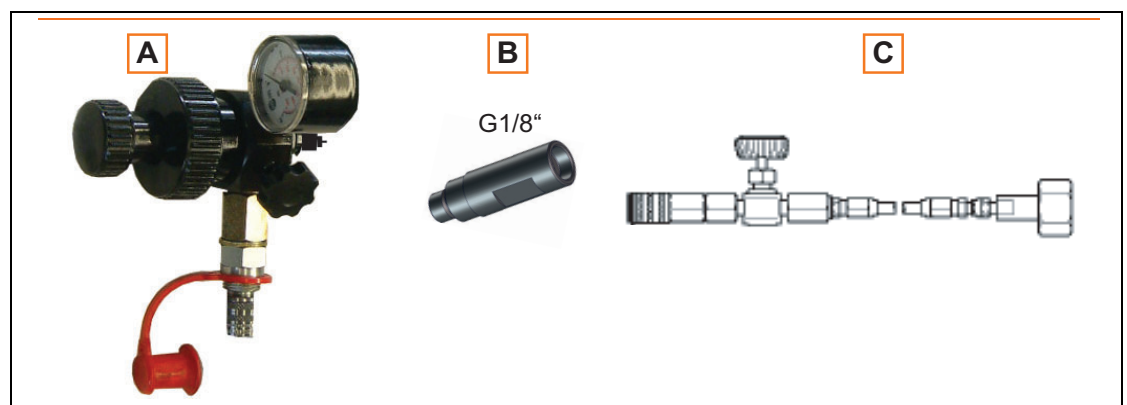
Fig. 2-2 Disassembling the cartridge valve

Mounting the cartridge valve

1. Align the cartridge valve.
2. Insert the cartridge valve.
 - a) Use the rubber mallet to carefully hammer in the cartridge valve.
 - b) Align the mounting sleeve and hammer in the cartridge valve to the stop. Make sure it is flush with the cylinder pipe!
 - c) ATTENTION! Insert the locking screw (X) at the bottom and tighten!
3. Apply a light coat of oil to the compressed-air washer with spacer tube and push into the mounting opening.
4. Apply a light coat of oil to the compressed-air washer with plug-in fitting and push into the mounting opening.
5. Use the snap-ring pliers to insert the retaining ring. Make sure it is fitted correctly!
6. Screw in the valve.
7. Fill gas spring with nitrogen (see Chapter 2.2 "Fill with nitrogen" on page 9).

2.2 Fill with nitrogen

Pos.	Description	Article number
[A]	Filling and checking equipment	2480.00.32.21
[B]	G1/8" filling adapter (For gas springs with G1/8" filling connection thread. For gas springs with M6 filling connection thread, the filling and checking equipment can be screwed in directly in the fill opening.)	2480.00.32.11
[C]	Filling hose	2480.00.31.02
	Cylinder pressure reducer (optional)	2480.00.32.07



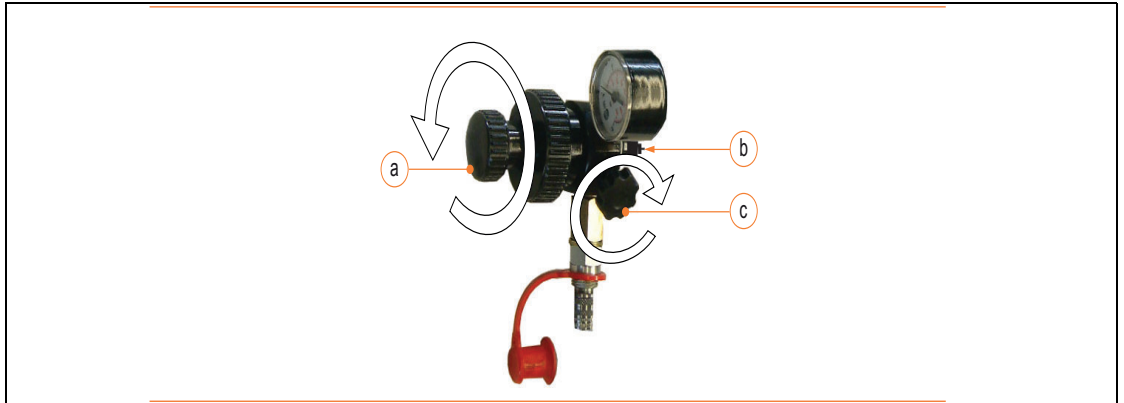
Observe the operating instructions for the filling and checking equipment 2480.00.32.21.

NOTICE

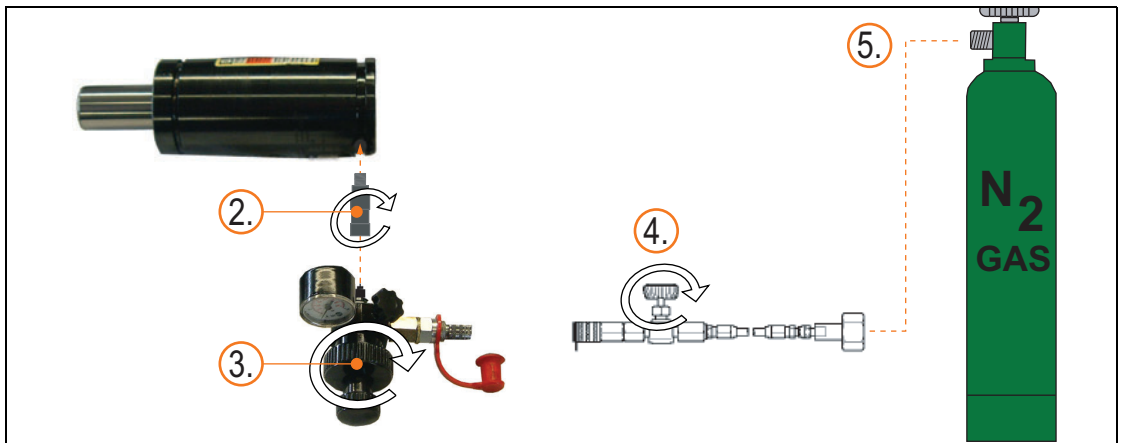
For gas springs with G1/8" filling connection thread

For gas springs with M6 filling connection thread, the filling and checking equipment can be screwed in directly in the fill opening.

- 1) Prepare filling and checking equipment.
 - Turn the small knob (a) to the left as far as it will go. This will move the release pin (b) into the retracted position.
 - Close the outlet valve (c).



- 2) Screw the filling adapter into the fill opening of the gas spring. Tighten hand-tight.
- 3) Place the filling and checking equipment onto the filling adapter. Screw on by turning the large knob.
- 4) Close the shut-off valve on the filling hose.
- 5) Screw the screw connection on the filling hose onto the nitrogen cylinder.



- 6) Attach the bayonet lock of the filling hose to the filling and checking equipment.
- 7) Open the nitrogen cylinder by turning the knob on the cylinder valve.

NOTICE

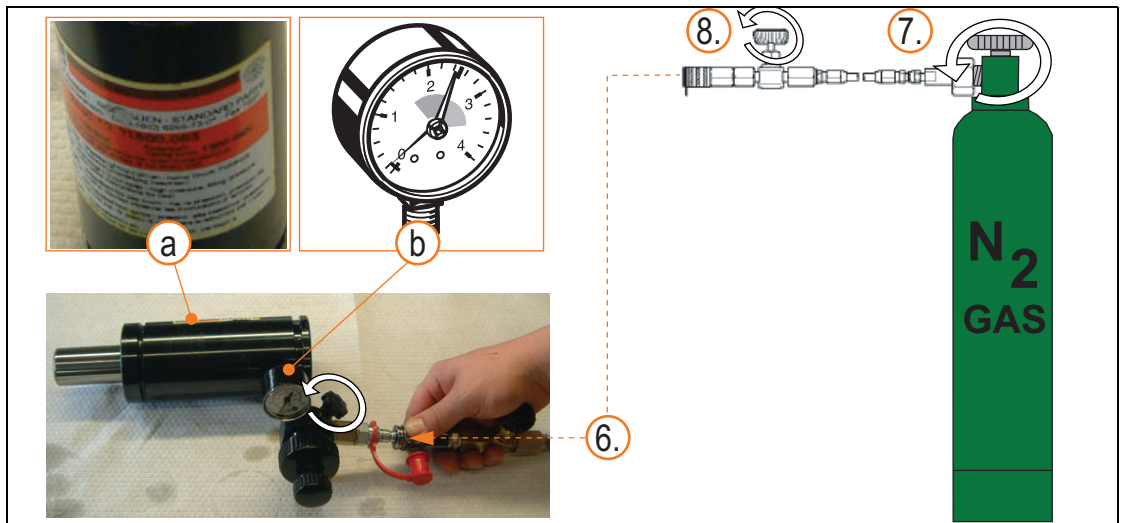
Damage to the valve in the gas spring.

- ▶ Slowly open the locking valve on the filling hose
- ▶ Carefully allow the nitrogen to flow in.

- 8) Slowly open the locking valve on the filling hose. The manometer (b) displays the filling pressure.



The permissible filling pressure is printed on the sticker (a).



- 9) After reaching the filling pressure, close the shut-off valve on the filling hose.
- 10) Close the nitrogen cylinder on the cylinder valve knob.
- 11) Re-open the locking valve on the filling hose.
- 12) Open the drain valve on the filling and checking equipment.
 - Pressure and residual nitrogen will escape from the fittings and filling hose.
- 13) Loosen and unscrew the screw connection of the filling hose on the nitrogen cylinder.
- 14) Detach the filling hose on the bayonet lock from the filling and checking equipment
- 15) Unscrew the fitting from the filling adapter by turning the large knob.
- 16) Unscrew the filling adapter.

17) Clamp the gas spring in an inclined position (around 30°) in a vice. Piston rod points diagonally downwards.

⚠ WARNING!

Risk of injury. Escaping nitrogen

Never bend over the gas spring valve.

- ▶ Wear safety glasses.

18) Check that nitrogen is flowing out of the gas spring valve.



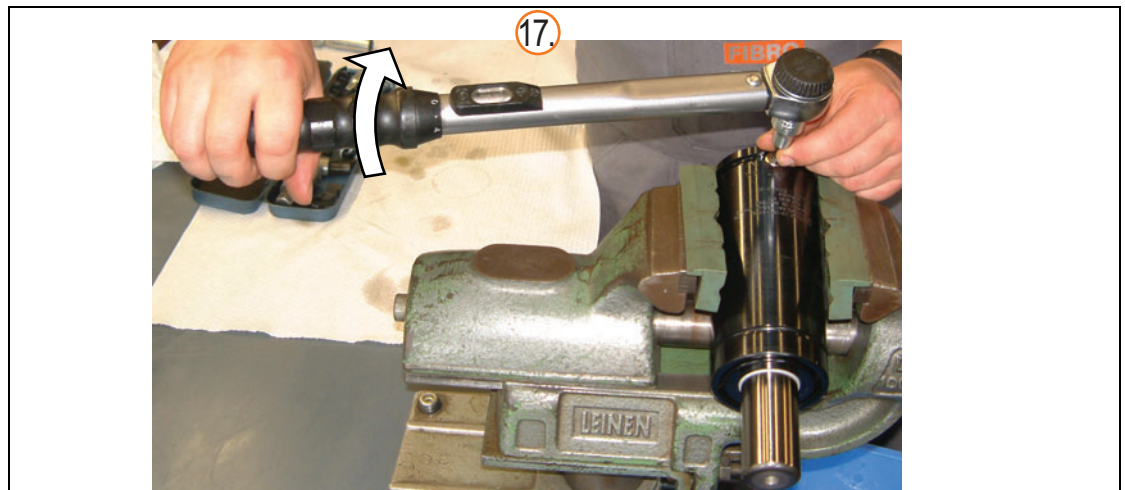
If nitrogen is escaping, replace the valve.

19) Screw the locking screw into the fill opening of the gas spring. Tighten to a tightening torque of 2 Nm (1.5 lb-ft) for M6; 15 - 18 Nm (11-13 lb-ft) for G1/8".

- 3 mm wrench size for M6 locking screw
- 5 mm wrench size for G1/8" locking screw



The locking screw has a sealing function and must always be fitted.



3 INDEXES

3.1 Third-party products

The product contains no components from third-party companies.

3.2 Glossary

Term	Explanation
Instructions	General designation for this document.
Tightening torque	Torque to which a screw or bolt may be tightened.
Residual risk	Hazard which could not be entirely eliminated by means of constructive measures.
Safety instruction	Instruction in manuals and handbooks related to possible physical injuries.
Safety information	Information about the safe handling of a

3.3 Index of figures

Fig. 2-1	Replacement components	7
Fig. 2-2	Disassembling the cartridge valve	8

3.4 Index

B

Bottom lock screw 7

C

Cartridge valve 7

Circlip 7

Compressed-air washer 7

Copyright 2

D

Dangers

possible 4

Documents, applicable 6

F

Figures 4

Filling pressure

permissible 6

H

Hazard 4

I

Injuries

preventing 4

P

Personnel

trained 4

Push-in fitting

straight 7

R

Replacement components 7

S

Safety information 4

Safety notices 4

Safety rules

basic 4

Signal bar 4

Signal word 4

Spacer tube 7

More information at

www.fibro.de/downloads-springs-gas-springs/



FIBRO GMBH

Business Area Standard Parts
August-Läpple-Weg
74855 Hassmersheim
Germany
T +49 6266 73-0
info@fibro.de
www.fibro.com

THE LÄPPLE GROUP

LÄPPLE AUTOMOTIVE
FIBRO
FIBRO LÄPPLE TECHNOLOGY
LÄPPLE AUS- UND WEITERBILDUNG