



ABNOX[®]

Lubrication & Metering Solutions

For Smooth Operations

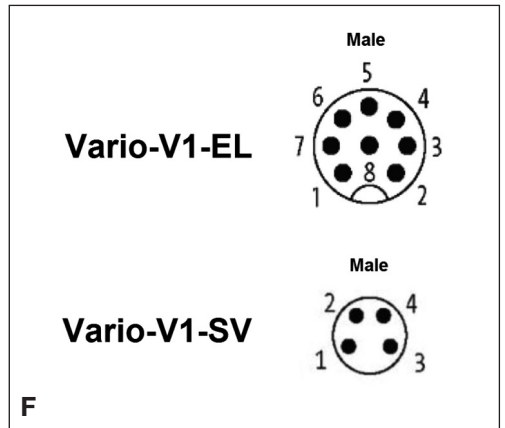
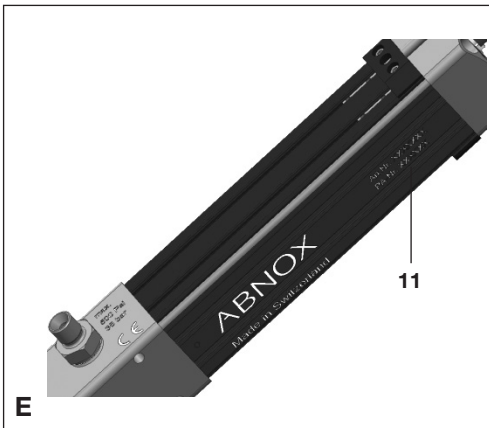
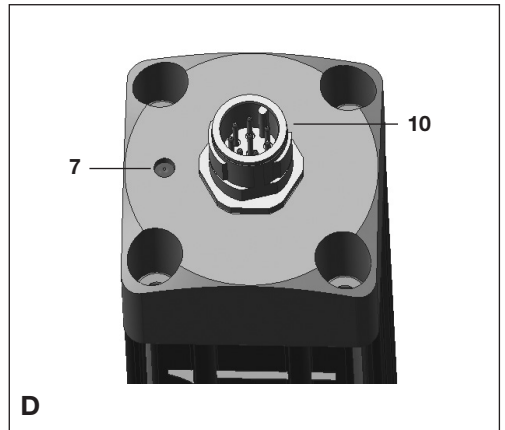
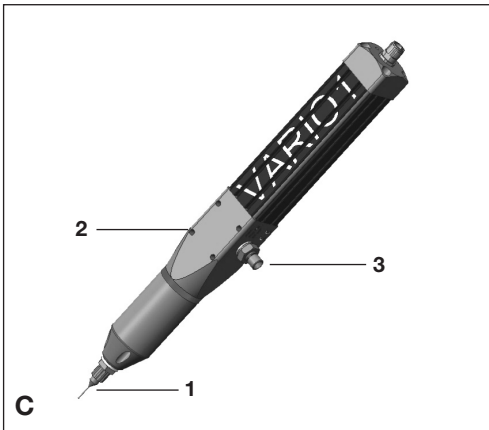
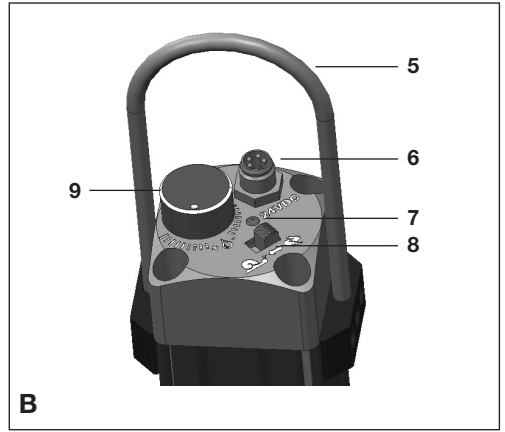
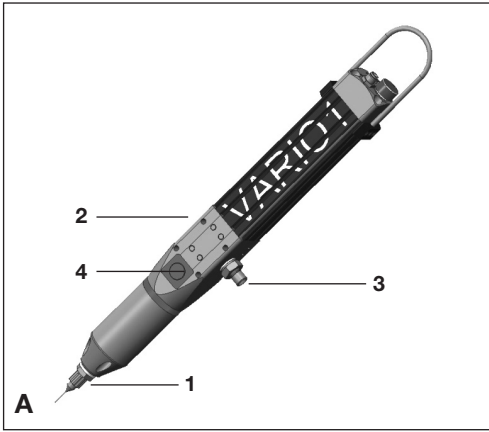
VARIO Dosierventil AXDV-V1

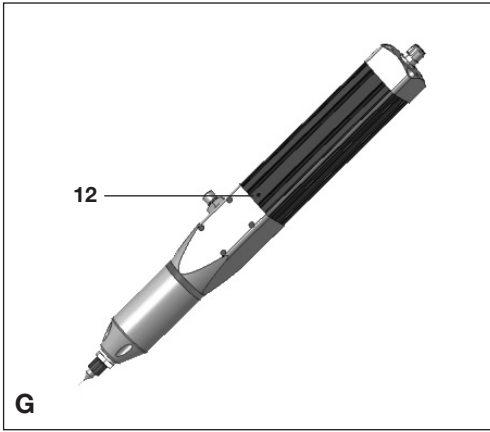
VARIO Metering Valve AXDV-V1



DE Original Betriebsanleitung

EN Translation of the Original
Operating Manual





EG – Konformitätserklärung (DE)

Wir erklären in alleiniger Verantwortung, dass das unter „Technischen Daten“ beschriebene Produkt mit den folgenden Normen oder normativen Dokumenten übereinstimmt: EN ISO 12100:2010-11 gemäss den Bestimmungen der Richtlinien 2014/30/EG & 2006/42/EG. Technische Unterlagen bei: sales@abnox.com

EC – Declaration of Conformity (EN)

We declare under our sole responsibility that the product described under „Technical Data“ is in conformity with the following standards or standardization documents: EN ISO 12100:2010-11 according to the provisions of the directives 2014/30/EG & 2006/42/EG. Technical file at: sales@abnox.com

Cham, 08.02.2019



Matthias Iseli
CEO



Roberto Bernich
Quality Manager

Deutsch	Seite	7-17
English	Page	19-29

Safety instructions	20
Proper Use	20
Obligations of the operating company	20
Basic safety information	20
Safety and hazard symbols	20
Safety notices for using the product	21
Specific hazards	21
Maintenance, upkeep and troubleshooting	21
Warranty and liability	21
Product description	22
Description of the pictured components (Figure A - G)	22
Technical data	23
Assembly / installation	24
Connector assignment	24
Connection	25
Commissioning and initial operation	25
Packaging, transportation and storage	26
Transport damage	26
Storage	26
Training of personnel	26
Troubleshooting, fault resolution	26
Maintenance	27
Replacing the stator	27
Customer service / support	28
Shutdown	28
Drawings and replacement parts	28
Decommissioning and disposal	29
© Publisher's copyright	29
Resale	29

Safety instructions

Read this operating manual carefully to familiarise yourself with the safe and efficient operation of the product. Retain this manual as a reference. This operating manual contains important provisions and information for the safe and proper operation of the product. It is also intended to help operating and maintenance personnel to minimise hazards, repair costs and downtime, and to improve the reliability and service life of the product. It is therefore important to ensure access to this document at all times for any person assigned to the care of the product.

Proper Use

The product may be used only under the intended operating conditions. Any other or further use constitutes improper use. The manufacturer is not liable for damages due to improper use. Proper use also includes:

- Observing and complying with all notices and warnings in this operating manual.
- Performing all inspection and maintenance work.

Obligations of the operating company

The person responsible for the safety of the product has to ensure that:

- Only qualified personnel is assigned to work on the product
- The operating manual is always available to said personnel during all work, and the personnel is obliged to consistently follow it
- The accident prevention rules and regulations applicable for the place of use are observed, and the prescribed maintenance and repair work is carried out

Basic safety information

The following must be observed for the safe handling and trouble-free operation of this product:

- Using the product for other than its intended use is prohibited.
- No changes may be made to the product.
- A safe operating state has to be maintained at all times. We provide device training on request to impart the necessary state of knowledge to your personnel.
- Disconnect the product from all energy sources prior to any maintenance work.

- All lines, hoses and screw connections must be inspected for leaks and externally visible damage at regular intervals. Damage has to be repaired promptly by qualified personnel; damaged parts must be replaced with original parts.
- Protective devices may only be removed after the product is standing still and has been secured to prevent restarting.
- All safety equipment must be installed properly and has to be fully functional each time before the product is put into use.
- The required personal protective equipment must be provided by the operating company.
- All safety and protective devices have to be inspected regularly.

Safety and hazard symbols



WARNING OF A HAZARD

Warnings are information about hazards that may lead to physical injury and/or damage to property.



NOTICE

Notices provide valuable information and user tips.



RISK OF CRUSHING

Warning against risk of crushing



ENVIRONMENTAL HAZARD

Proper disposal of the various materials protects the environment.

Safety notices for using the product

All parts and assemblies were developed and built according to recognised safety-related rules. Nevertheless, improper use or handling may lead to hazards for the user or third parties on the product or other assets.

The product may only be used:

- As intended.
- In safe and proper technical condition.

Specific hazards



ELECTRICAL VOLTAGE

Warning of electrical hazards that may lead to physical injury and/or damage to property.



HYDRAULIC AND PNEUMATIC SYSTEMS

Warning of hydraulic and pneumatic hazards that may lead to physical injury and/or damage to property.

Hazards due to hydraulic and pneumatic energy

Depending on the version, the product works with high hydraulic or pneumatic pressure (see technical data). Sections of the system that need to be opened, such as pressure lines, valves or loads, have to be de-pressurised before the start of repairs. No residual pressure is permitted to remain.

Hazard due to electrical voltage

Contact with live components may cause death.

- Turn off the energy supply and secure it against reconnection prior to assembly, adjustment and maintenance tasks.
- The electrical connection may only be established by a licensed electrician.
- Live components have to be covered.

Hazards due to lubricants

The safety notices and instructions of the lubricant manufacturer have to be observed and followed. The manufacturer of this product assumes no liability whatsoever for incidents caused the failure to observe the provisions, instructions and recommendations of the lubricant manufacturer.

Maintenance, upkeep and troubleshooting

- Prescribed adjustment and maintenance tasks according to the maintenance schedule have to be carried out in a timely manner.
- Inform the operating personnel about adjustment and maintenance task.
- The master switch (if any) has to be turned off.
- Disconnect the energy supply from the network and secure it against unintentional reconnection.
- Pneumatic and/or hydraulic systems must be de-pressurised.
- Check all threaded connections and fittings for tightness.
- All safety devices and operating functions have to be checked after completion of the work



CAUTION

The product always has to be shut off prior to all work.



ENVIRONMENTAL HAZARDS

The various materials/liquids have to be handled properly and disposed of separately according to the respective applicable national regulations.

Warranty and liability

Warranty and liability claims for personal injury and damage to property are excluded when they are due to one or more of the following causes:

- Improper use of the product.
- Worked carried out by other than qualified personnel.
- Improper transportation, storage, assembly, commissioning, operation and maintenance of the product.
- Failure to observe the information in the operating manual regarding safety, transportation, storage, assembly, commissioning, operation, maintenance and setup of the product.
- Operating the product with defective protective devices or improperly installed or non-functional safety and protective devices.
- Structural changes to the product.
- Changing the compression ratios for pressure protection, and operating at pressures higher than intended for the product.

- Insufficient monitoring of machine components that are subject to wear.
- Improper repairs and using third-party components.

Product description

Purpose

Vario metering valves are designed for the variable dosing of low to high-viscosity and abrasive lubricants. By combining the principle of the eccentric screw pump with precision control of the dosing time and rotor speed, the ABNOX Vario metering valve supports the dosing of various lubricant quantities with the highest precision and repeat accuracy.

Precise, even and reliable volumetric dosing is possible thanks to the adjustable application speed and number of rotor rotations.

The Vario metering valve AXDV-V1-EL is suitable for fixed installation in assembly lines with a higher-level control unit. Communication is via an RS232 interface. The Vario metering valve AXDV-V1-SV with variable volume adjustment and 2 delivery volume adjustment possibilities directly on the valve is suitable for manual applications.

When using the Vario metering valves, ensure that the dosing medium is compatible with the valve material. The work pieces of the valve that come into contact with the medium are made of stainless steel or aluminium. The stator is made of NBR with a stainless steel casing.

Marking

Each metering valve is marked with the article number (Art. no.) and production number (PA no.) (Figure E/No. 11).

Scope of delivery/options

AXDV-V1-EL scope of delivery:

- 1 Vario metering valve AXDV-V1-EL (Figure J)
- 1 dispensing tip adapter (G1/8"/LUER)
- 1 dispensing tip set
- 1 translation of the original operating manual

Options for AXDV-V1-EL:

- Art. no. 0007110 programming adapter
- Art. no. 0006996 connection cable 1.5 m
- Art. no. 0006496 material pressure regulator 5 - 50 bar
- Various dispensing tip sets

AXDV-V1-SV scope of delivery:

- 1 Vario metering valve AXDV-V1-SV (Figure I)
- 1 dispensing tip adapter (G1/8"/LUER)
- 1 dispensing tip set
- 1 translation of the original operating manual
- 1 power supply with connection cable
- 1 each power cable CH/USA/CEE

Options for AXDV-V1-SV:

- Art. no. 0006496 material pressure regulator 5 - 50 bar
- Various dispensing tip sets

Description of the pictured components (Figure A - G)

1. Medium discharge/dispensing tip adapter
2. Mounting bores
3. Medium intake
4. Actuating button
5. Mounting bracket
6. M8x1 connector (power supply)
7. LED control lamp
8. Sliding switch (speed)
9. Potentiometer (dosing volume)
10. M12x1 connector
11. Marking (article and production order number)
12. Tell-tale hole

Functionality

By combining an eccentric screw pump with a high-end DC motor and precision control of the dosing time and rotor speed, the ABNOX Vario metering valve supports the dosing of various lubricant quantities with the highest precision and repeat accuracy. Precise, even and reliable volumetric dosing is possible thanks to the adjustable application speed and number of rotor rotations.

The Vario metering valve AXDV-V1-EL (Figure J) is pre-programmed with the basic parameters by default. Variable control via the M12x1 connector is possible using the RS232 interface (Figure D/no. 10).

The manual Vario metering valve AXDV-V1-SV (Figure I) can be connected directly to 100-230 V AC using the included power supply (Figure H) with

connector (Figure B/no. 6). The dosing volume can be adjusted between 0.5 and 2,000 mm³ using the potentiometer (Figure B/no. 9). One of two flow velocities is chosen using the sliding switch (Figure B/no. 8). The pushbutton (Figure A/no. 4) is used to start the dosing process.

Both valve types can be programmed/reprogrammed using the connector (Figure B/no. 6 and Figure D/ no. 10) with the corresponding cable and programming software. This allows the parameters for the digital and analogue inputs to be adapted as needed.

For the latest documentation and software, please visit www.abnox.com, Products – Metering Valves – Vario Metering Valves AXDV-V. For programming, it is important to remain within the range of the maximum and minimum values for the DC motor.

Technical data

Model	AXDV-V1-EL	AXDV-V1-SV
Min. dosing volume [mm ³]	0,5	0,5
Max. dosing volume [mm ³]	-	2000
Delivery volume [cm ³ /min]	bis ca. 14	ca. 2,1 und 11,0 ¹⁾
Max. intake working pressure [bar]	35	35
Medium discharge connection	G1/8" (inkl. Dosiernadeladapter)	G1/8" (inkl. Dosiernadeladapter)
Medium intake connection	G1/8"	G1/8"
Mounting bores [mm]	4 x ø4.2	4 x ø4.2
Min./max. temperature [C°]	10/40	10/40
Connection voltage	24 VDC	100-240 VAC (Netzteil)
Frequency [Hz]	-	50/60
Sealing material	NBR	NBR
Valve weight [kg]	1,1	1,1
Emission level L _{pa} [dB(A)]	< 70	< 70
Nominal motor speed n _N [U/min]	4500	4500
Maximal speed n _{max} [U/min]	5000	5000
Motor current rating I _N [A]	0,77	0,77
Impulses [per minute]	3000	3000
Gear ratio	51:1	51:1

¹⁾ Pre-programmed delivery volume for the two switch positions

Assembly / Installation

The product has to be set up or installed at the intended installation site under consideration of the conditions that follow.

- The applicable legal provisions on site have to be clarified and compliance must be assured.
- The available space has to be clarified prior to installation/setup of the product in order to ensure ongoing safe operation for the personnel and product. The product has to be set up/installed so that ongoing safe operation is assured.
- The product may only be set up and put into operation by qualified personnel with corresponding special training.
- The product is designed for use in rooms protected against the effects of weather (industry standard).
- Operation and storage in aggressive, excessively damp environments or outdoors may lead to corrosion damage.
- The valves can be installed in any position.



CAUTION

Due to changing friction and pressure
Due to the sharp and thin edges, there
is a risk of injury when handling thin
nozzles.

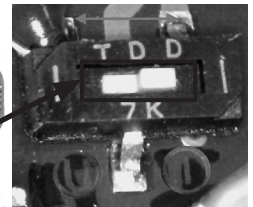
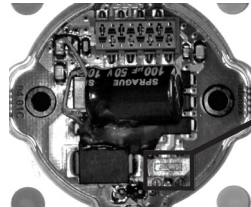
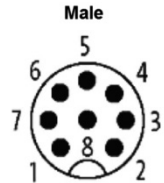
Connector assignment (Figure F)

Vario metering valve AXDV-V1-EL:

PIN	Function	Description
1	24 V DV	Power supply
2	TX	RS232 serial interface
3	0 V DC	Ground reference potential
4	RX	RS232 serial interface
5	Input	3rd input
6	Input	Analogue input 0-10 V / 0-20mA ²⁾
7	Output	Error output
8	nC	Do not connect!

²⁾ By default, the analogue input is 0-10 V. Unscrewing the connection cover reveals a switch on the print. For 0-10 V input, the switch must be set to the left (marking U). For 4-20mA input, the switch must be set to the right (marking I).

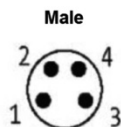
Vario-V1-EL



Vario metering valve AXDV-V1-SV:

PIN	Funktion	Beschreibung
1	24 V DV	Spannungsversorgung
2	RX	RS232 Serial Interface
3	0 V DC	Bezugspotential Masse
4	TX	RS232 Serial Interface

Vario-V1-SV



Connection

Due to electromagnetic regulations, the Vario metering valve AXDV-V1-EL has to be controlled using a < 3 m shielded connection cable.

A power supply with connection cable is included with the Vario metering valve AXDV-V1-SV. If the valve is not connected using the supplied connection cable, a shielded connection cable < 3 m is prescribed as well.

Commissioning and initial operation

- Flush (clean) the lubricant supply hose and then fill it with the lubricant before connecting a metering valve (flushing and bleeding process).
- Connect the supply hose to the medium input (Figure A & C/no. 3).



CAUTION

The Vario metering valves may not be operated with no medium!

Vario metering valve AXDV-V1-EL:

- Connect the metering valve to the superordinate control unit using the connector (Figure D/no. 10) (connector assignment Figure F).
- Check the LED (Figure B & D/no. 7). When the valve is correctly connected to the voltage (24V DC), the LED lights up green.
- The valve is controlled via the RS232 interface.
- For initial operation, bleed the valve by dosing several times until the lubricant dosage is consistent.



NOTICE

Valve programming documentation is found on the ABNOX homepage www.abnox.com under Metering Valves; Vario Metering Valves AXDVV; Model AXDV-V1-EL; Downloads.

Vario metering valve AXDV-V1-SV:

- Connect the metering valve to the power source (100-240V AC/50-60Hz) via the power supply and connector (Figure B/no. 6).
- Check the LED (no. 7). When the valve is correctly connected to the voltage, the LED lights up green.
- For initial operation, operate the actuating button several times to carry out dosing and bleed the valve until the lubricant dosage is consistent.
- Use the sliding switch (Figure B/no. 8) to select one of the two preprogrammed speeds (rabbit ~11 cm³/min and snail ~2.1 cm³/min)



NOTICE

Once dosing is triggered, it cannot be stopped! Dosing automatically completes once it has been started.



NOTICE

The potentiometer should not be adjusted during dosing. Changing the dosing volume also adapts the pull-back quantity to the new volume setting. When the volume is increased, this leads to a risk of sucking in air.



NOTICE

For a high dosing accuracy, keep the distance between the medium discharge and lubricating point short according to the dosing volume.

Packaging, transportation and storage **Storage**

ABNOX prepares the product for transportation to the respective initial destination.

The packing unit must not be subjected to excessive strain. Protect the packaging and contents against exposure to moisture. Keep the temperature between $-20\text{ }^{\circ}\text{C}$ and $+40\text{ }^{\circ}\text{C}$ during transportation.

Operation and interim storage in aggressive, damp environments or outdoors may lead to corrosion and other damage. Maintain the storage temperature in the range of $-20\text{ }^{\circ}\text{C}$ to $+40\text{ }^{\circ}\text{C}$.

Transport damage

If transport damage is found during the receiving inspection, proceed as follows:

- Notify the carrier (shipper etc.)
- Record the damage
- Inform the supplier

Training of Personnel

Only trained and instructed personnel who have read and understood all points of the Operating Manual may work on the product. Likewise the individual operating states must be mastered, and the related safe aspects must be known and they must be able to implement them. Personnel undergoing training may only work on the product under the supervision of qualified personnel.

Troubleshooting, fault resolution



CAUTION

Remediation of any of the faults described below may only be carried out by a trained technician.

Fault	Possible cause	Corrective action
Air in the system	Air pockets in the grease container	Loosen supply hose. Bleed system. Reconnect supply hose.
	Air pockets in the hoses	
	Air pockets in the valve	
Metering valve leak at discharge	Worn stator	Replace stator (see "Replacing the stator")
	Input pressure too high	Reduce input pressure
Leakage from tell-tale hole (Fig. G/no. 12)	Defective shaft seal	Replace seal
The motor turns but no lubricant is ejected	The feed pump is not supplying lubricant	Consult the operating manual for the feed pump
	The connection between the motor and connecting shaft is loose	✓Check the connection and re-tighten the stud screw if needed
Indicator lamp does not light up green	Improper power supply	Check power supply
Valve is properly connected and controlled, but rotor does not turn.	The NBR stator is not compatible with the dosing medium, causing it to swell. This jams the rotor, and the programmed flow monitor shuts the valve off.	Check stator and replace if needed (see "Replacing the stator")

Maintenance

The specified maintenance intervals are for single shift operation. Maintenance has to be carried out more often depending on the field of application, medium and in case of operation in more than one shift.

WHEN	WHAT	HOW	WHO
Daily	Check metering valve for tightness	Visual	Operating company technicians
Weekly	Check all threaded connections and fittings for leaks	Visual	Operating company technicians
Weekly	Check seals for damage and wear	Visual	Operating company technicians
Annually	Complete maintenance	Replace brittle hoses and leaking seals	Operating company technicians

Replacing the stator:

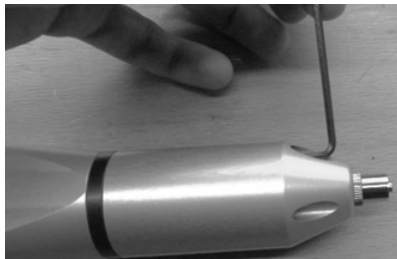
The stator is a wear part. Depending on the operating pressure and dosing lubricant, the stator must be replaced sooner or later.

Removal:

A: An Allen key size 2.5 mm and a vice with soft jaws are required for removal.



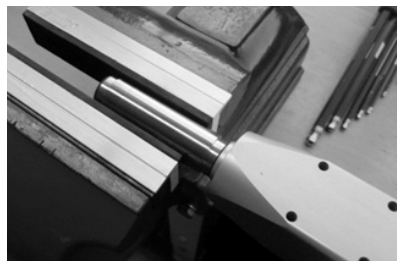
B: Loosen the four screws.



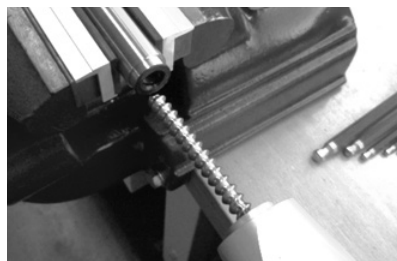
C: Take the handle with screws and ring off the valve.



D: Clamp the stator in the vice and pull it off the rotor with slight rotating movements.



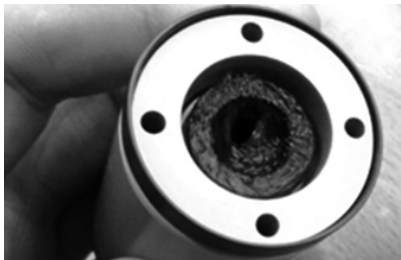
E: Stator and rotor separated.



Installation:

Note the mounting direction for installing a new stator. The rotor may not be installed dry in the stator.

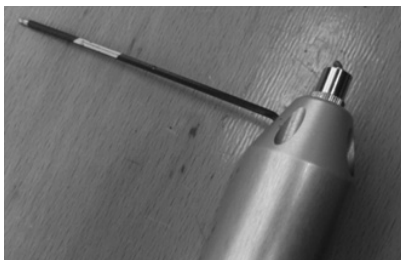
- F: Insert the stator into the handle with the small bevel first. The large bevel has to be on the side where the rotor is inserted.



- G: Slide the rotor into the stator.



- H: Tighten the cylinder head screws using the Allen key (approx. 2.5 Nm).

**CAUTION**

The product always has to be shut off prior to all work. The pneumatic and hydraulic systems have to be de-pressurised. The pressure gauges have to show 0 bar.

Customer Service / Support**ABNOX AG**

Langackerstrasse 25
CH-6330 Cham
Switzerland

Tel. +41 (0) 41 780 44 55
Fax +41 (0) 41 780 44 50
E-Mail info@abnox.com
Internet www.abnox.com

Shutdown**Short interruptions:**

For short interruptions (overnight or at the weekend), turn the product off. No residual pressure is permitted to remain in the system.

Longer interruptions:

For longer interruptions (more than three days), note the following points:

- Disconnect the device from the electricity supply
- No residual pressure is permitted to remain in the system (check the indicators)

**CAUTION**

Risk of accidents and environmental damage: Grease/oil on floors increases the risk of accidents. Properly dispose of grease/oil according to the applicable national regulations (special waste).

Drawings and replacement parts

Accessories, drawings, dimensional drawings and spare parts are included or found under www.abnox.com.

**CAUTION**

Note the mounting direction of the stator. Lubricate the stator and rotor prior to assembly.

Decommissioning and disposal

Observe the following points for decommissioning the product/taking it out of operation:

- Turn the master switch (if any) off
- Disconnect the mains plug (if any) from the network
- No residual pressure is permitted to remain in the system.
- The medium must be removed and properly disposed of.



ENVIRONMENTAL HAZARD

The various materials/liquids have to be handled properly and disposed of separately according to the respective applicable national regulations. Lubricants are considered special waste.

© Publisher's copyright

The duplication, translation or dissemination to third parties of this document requires the express consent of the publisher.

Resale

This operating manual is part of the product and must be included in the scope of delivery in case of resale.

For Smooth Operations



Schmiertechnik

Hand-, elektrisch- und pneumatischbetätigte Abschmier- und Abfüllgeräte zum Fördern von Fetten und Ölen.

Lubrication Technology

Manual, electric and pneumatically activated lubricating and decanting equipment for delivering greases and oils.



Dosiertechnik

Dosierventile, Steuerungselemente, werkstückspezifische Applikationen.

Metering Technology

Metering valves, control elements, part-specific applications.



Fettversorgung

Druckluft und Elektro-Fettversorgungssysteme und Pumpen zum Fördern von mittel- bis hochviskosen Schmierstoffen.

Grease Supply

Compressed air and electrical grease supply systems and pumps for supplying moderately to highly viscous lubricants.



Spanntechnik

Hochdruck Einhand- und Handhebelpressen, Hochdruckventile, pneumatische und elektrische Hochdruckpumpen, Spannsysteme.

Clamping Technology

High pressure one-hand and hand lever pumps, high pressure valves, pneumatic and electrical high pressure pumps, clamping systems.



Kundenlösungen

Entwicklung nach Kundenwunsch von Dosier- und Befüllungssystemen, von Vorrichtungen und Maschinen zum Spannen und Lösen von Werkzeugen und Werkstücken.

Customised Solutions

Development according to customer requirements for metering and greasing systems, from equipment and machines to clamping and releasing of tools and work pieces.

ABNOX®

Lubrication & Metering Solutions

ABNOX AG - Langackerstrasse 25 - CH-6330 Cham - Tel.: +41 41 780 44 55 - Fax: +41 41 780 44 50 - sales@abnox.com

www.abnox.com