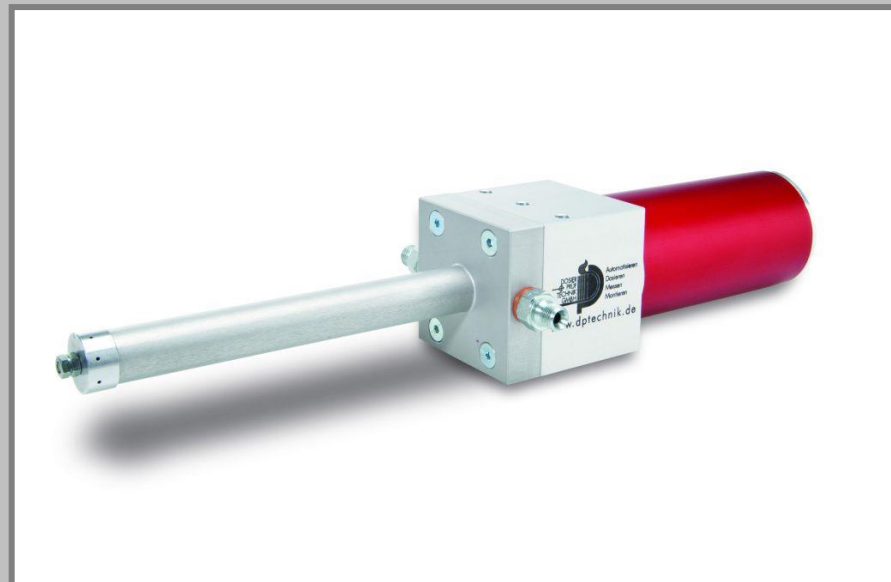


DOSIER
PRÜF
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Automatisieren
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Montieren

Rotor greasing unit RBE 02 Operating manual



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Operating manual

Rotor lubrication unit RBE 02

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If the product described here is modified without the approval of the manufacturer, the manufacturer bears no liability for damages. Furthermore, all warranty claims are void in this case.

-Translation of the original instructions-

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This operating manual provides the general description of the system's function and information for using it.

Dosier und Prüftechnik GmbH is available for special problem solutions and repair or service work.

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1 General Information

This section is mandatory reading for every user of the system.

This operating manual will familiarize the operator of the unit with:

- the function
- the operation
- and the service

The dosing unit is called the "system" in the operating manual.

1.1 Safekeeping of this manual





Keep this operating manual on the equipment! The operating manual must always be readily available.

1.2 Safety symbols and information

The following danger designations and symbols are used in this operating manual:



Dangers:

Dangers are marked with triangles representing a symbol for danger.

General danger	
Danger of electric shock	
Danger from heat	
Danger of crushing or shearing	

Prohibitive signs


Are marked with a symbol of what is prohibited inside a circle that is crossed out.

No smoking	
No access for unauthorized persons	

Notes

Are represented by the information symbol "i" and provide more information.

Example:

For further information, see the technical description of the manufacturer	
--	---



1.3 Organizational procedures

- This operating manual must always be kept readily available at the machine.
- Personnel must be informed before beginning work on the sources of danger and the safety instructions in the manual and on the equipment.
- The required personal safety equipment must be made available by the operating company.
- All existing safety equipment must be checked regularly. This also applies to the completeness and legibility of the safety instructions at the system.
- The operating company must make the locations and operation of fire extinguishers known.

1.4 Operating personel

The system may only be operated by personnel trained and authorized by D+P Dosier- und Prüftechnik GmbH. Any additional requirements, qualifications, and competences are listed in each section. The completed training is to be recorded in the handover report. These people are entitled to instruct additional personnel in operating the machine according to the operating manual.

In the following a brief overview:

working area	competence
Installation, transport and storage	professionals
commissioning	Fachpersonal
Operation and decommissioning	trained personnel
upgrade	professionals
Service and Maintenance	professionals
Troubleshooting	professionals

definition according to DIN EN 60204-1:

Instructed personnel:

A person who is taught by a specialist on the tasks assigned and the possible hazards of improper conduct and was required, trained and instructed in the required safety devices and protective measures.

professionals:

A person who can judge their assigned work due to their professional training, knowledge and experience and knowledge of the relevant standards and identify possible hazards.

1.5 Warranty

Warranty for components (excluding wear parts) is limited to one year. D+P, Dosier- und Prüftechnik GmbH makes no guarantee for further error-free operation of the system after this time has expired, because possible maintenance or service work is required due to operational wear. Therefore, get in contact with D+P, Dosier- und Prüftechnik GmbH immediately after the given guarantee time has expired to discuss further actions.

All components used by D+P, Dosier- und Prüftechnik GmbH are CE-conforming and are built to the requirements taking into account the installation requirements of the manufacturer. Also refer to documents supplied with the operating manual of the installed components. These are supplied in a separate file and must be kept accessible by the operating company near the system!

For other products which are not recommended by D+P Dosier- und. Prüftechnik GmbH or for modifications, which are not performed by D+P Dosier- und Prüftechnik GmbH, no claims for possible safety risks in connection with the machine can be made.

Original replacement parts, additional equipment or other products from or recommended by D+P Dosier- und Prüftechnik GmbH, as well as the corresponding expert consulting and service work can be requested from D+P Dosier- und Prüftechnik GmbH - customer service:

1.6 Intended use

The rotor lubrication unit RBE 02 is used for radial lubrication of interior contours with low viscosity greases (NLGI class 1). The rotor lubrication unit may not be used for longer times (> 2min) in continuous operation. A switch on time of 50% is to be strived for

WARNING! All other uses can lead to hazards and is prohibited!



1.7 Improper use

HINWEIS: The owner of the system is responsible for consequences resulting from improper use!



Any other use as for the intended purposes are not allowed and can lead damage to persons, equipment or property.

- The use in areas with fire and explosion hazard is prohibited.

Work with the system is improper when:

- Use of other, unauthorized media (oils, fats or colors, etc.).
- Impermissible modifications or repairs with other components are performed
- Repeal or bypassing of safety devices
- Use of components or tools, which not approved from the D+P, Dosier- und Prüftechnik GmbH.
- Replacement parts that are not from the manufacturer or approved by D+P, Dosier- und Prüftechnik GmbH are used
- The rotor lubrication unit RBE 02 may not be operated continuously. High case temperatures (80 ° C) would result.

1.8 Technical data

Mechanical data

<u>Machine dimensions width</u>	
<ul style="list-style-type: none"> Lance with 70 mm Lance with 150 mm 	about 280 mm about 350 mm
Machine dimensions depth	about 60 mm
Machine dimensions height	about 60 mm
Volume	about 0,001 m ³
Weight	about 3 kg
Maximum speed	NLGI-Klasse 1
Starting torque	15.000-18.000 U/min
Maximum recoverable viscosity	0,4 Nm
Max capacity	1 cm ³ /s

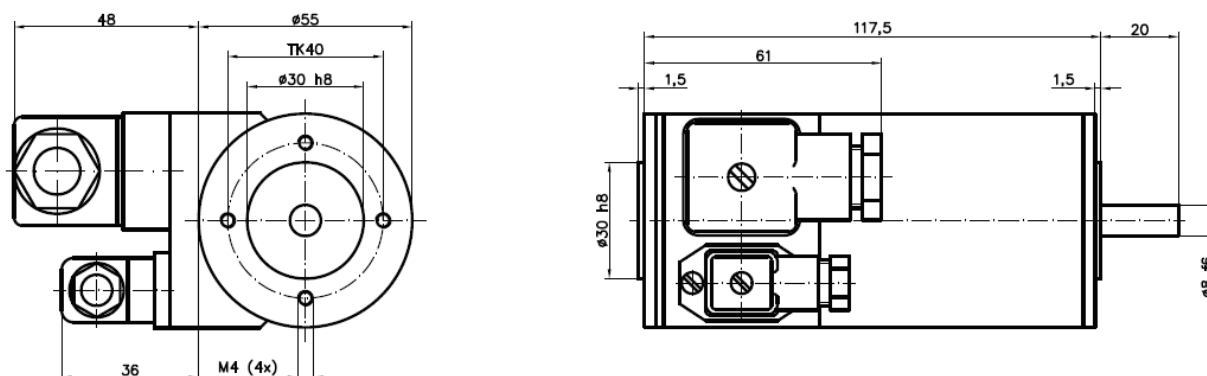
Electrical data

Voltage	24 V DC
Supply breaker	10 A (Träge)
Max. Power	500 W

Ambient conditions

Temperature	10 - 50°C
Humidity	50% - max. 70%
Installation conditions	Flat industrial floor
Noise	About 66 dB (A) with anti-vibration mounting (Depending on use and construction)

1.9 Dimensions of drive motor



2 Basic safety instructions

This operating manual contains the most important safety instructions for operating the system safely.

2.1 Obligations and liability

Instructions and safety regulations in the manual must be followed: The basic requirement for safe handling and smooth operation is knowledge of the safety instructions and safety regulations. This operating manual, especially the safety instructions in each section, must especially be followed by persons who work on the machine.

In addition, the valid regulations for accident prevention for the location of use must be followed. The system is built to the state-of-the-art standards and recognized safety regulations. Its use can still present risks to the user or third parties or negative influences to the machine or other property. Therefore, the equipment is only to be used:

- For the intended use
- In a completely safe condition

Malfunctions which affect safety are to be immediately repaired.

Basically our "General Sales and Delivery Conditions" apply. These are available to the operating company at the closing of the contract, at the latest. Warranty and liability claims for personal injury and property damage are excluded if they are caused by one or more of the following reasons:

- Not intended use of the system.
- Improper use of the system when installing, commissioning, operating, and servicing.
- Operating the system with safety and protective equipment that is not installed properly or is defective.
- Unauthorized structural modifications to the system.
- Faulty service and monitoring of equipment parts that are subjected to wear.
- Improperly performed repairs
- Catastrophic accidents caused by foreign bodies and Acts of God.

2.2 Safety equipment

All safety covers and safety systems must be properly installed and functional before each commissioning of the machine. This must be checked before each commissioning of the equipment.

2.3 Special safety equipment

The distribution unit is **not** a complete machine and does **not** have the required safety equipment for operation.

2.4 Informal safety measures

This and accompanying operating instructions (refer to the section "Annex") must always be kept at the system. The operators must be familiar with the safety regulations. In addition, the generally valid and local regulations for accident prevention and for environmental protection are to be made available and to be followed.



2.5 Training of personnel

Only personnel trained by D+P or authorized persons may work on the system. All legal regulations (e.g. minimum age) must be observed.

The responsibilities of the personnel are to be clearly established by the operating company for:

- setting up and commissioning,
- operation,
- inspection and service,
- troubleshooting and maintenance

Personnel in training may only work on the system under supervision of an experienced person.

2.6 Safety measures in normal mode

- Only operate the machine if all safety and protective equipment is fully functional.
- Before turning on the system, make sure that no one is in danger when the equipment starts up.
- Check the system for noticeable external damage and the functionality of the safety equipment at least once per day/shift.
- If it is available, don't install the system at eye level, otherwise you must attach a protection system.

2.7 Dangers

Danger from energy

- Never work on the electrical supply without an electrically qualified person.
- Check regularly the electrical equipment of the system. Remove loose connections or damaged cables immediately.
- If you are working on live parts, take a second person who can stop the system in an emergency.

Danger from mechanical energy

- Never open the protection covers of the machine when it is operated. Risk of injury by moving mechanism.

Danger from static charge

- Static charge on the system cannot always be avoided for technical reasons. Take appropriate measures when training operating personnel.

Special risks

- Please pay attention to the free accessible rotor of the rotor greasing unit RBE 02. Special measures against risks of injury, like e.g. against winding of hair or uncontrolled grease distribution, shall be taken additionally. Moreover, in case of a rotor head break, parts of the rotor head could be thrown out! Therefore the rotor has to be installed in a manner that parts will not be thrown out of the system at eye level.
- The rotor shall be mounted so that it cannot be touched by mistake. The case may reach a temperature of up to 80°C, if the rotor runs at IMPERMISSIBLE non-stop operation! The infeed axis can cause contusions. Please take care that danger points are covered / kept safe to access.

2.8 OEM manuals and other documents

The general documentation includes the OEM manuals of the manufacturer. These documents describe the integrated components and assemblies to be purchased. These documents must also be followed in all points concerning the system.

2.9 Service, inspection, repair and trouble shooting

Specified service and inspection work must be performed in a timely manner (see Section 6.5 Service plan). Secure all operating media, such as pneumatics and electrical equipment, against accidental start-up. Before all service, inspection and repair work on the system:

- Secure danger areas.
- Disconnect the system from power and compressed air.
- Secure the system against accidental starting (Lock the main power switch and remove the key)
- Place a warning sign against re-starting.

After all service, inspection and repair work:

- Check all loosened screwed connections for a tight fit and re-tighten if necessary.
- Check all loosened pneumatic hoses for a tight fit.
- Check all safety and protective equipment for function.

2.10 Structural modifications

No unauthorized modifications to the machine may be performed without the written approval of D+P, Dosier- und Prüftechnik GmbH. All structural modifications require written approval.

The following activities are understood as modifications, attachments or structural measures:

- Bridging and circumvention of the safety systems
- Removal of any equipment components and especially the removal of safety equipment

Equipment parts that are not in good condition must be replaced immediately. Use only original replacement and wear parts! It is not guaranteed that externally procured parts are designed and manufactured in accordance with loading and safety.

2.11 Do this after a collision

- Stop system immediately.
- Visual inspection of the lance and the rotor.
- Check the parallelism between rotational Write and lance.
- Turning the rotor by hand and listen for grinding noises possible.

ATTENTION! With a grinding noise on or in the rotor, the system DOES NOT operate more.
Please immediately contact the company D + P, Dosier- und Prüftechnik GmbH.



NOTE: After restart, the first 5 doses must be monitored and taken into vibration.



2.12 Fire fighting measures

- A fire extinguisher is always to be kept near the system.
- When fighting fire, always turn the machine off at the main power switch. Otherwise, it will be impossible to fight electrical fires effectively.
- Use only Class ABC fire extinguishers when fighting fire on machines connected to power.
- The fire extinguisher must be controlled in periodic intervals and checked for function.

3 Delivery

This section is mandatory reading for the maintenance and service personnel. It provides information on transport, installation and connection of the system.

3.1 General instructions

Ambient conditions

The operating company must ensure that the ambient conditions of the machine are available or will be created. All information required for this is described in Section 9 Technical data.

Media supply

The operating company must have all the required supply media available. All specifications or information required for this is described in Section 9: Technical data.

3.2 Transport

Check the lifting equipment and accessories for:

- Sufficient carrying power
- Perfect condition.



Follow the regulations for accident prevention of the liability insurance association responsible for your company.
Fasten loads carefully.
Never walk under hanging loads.

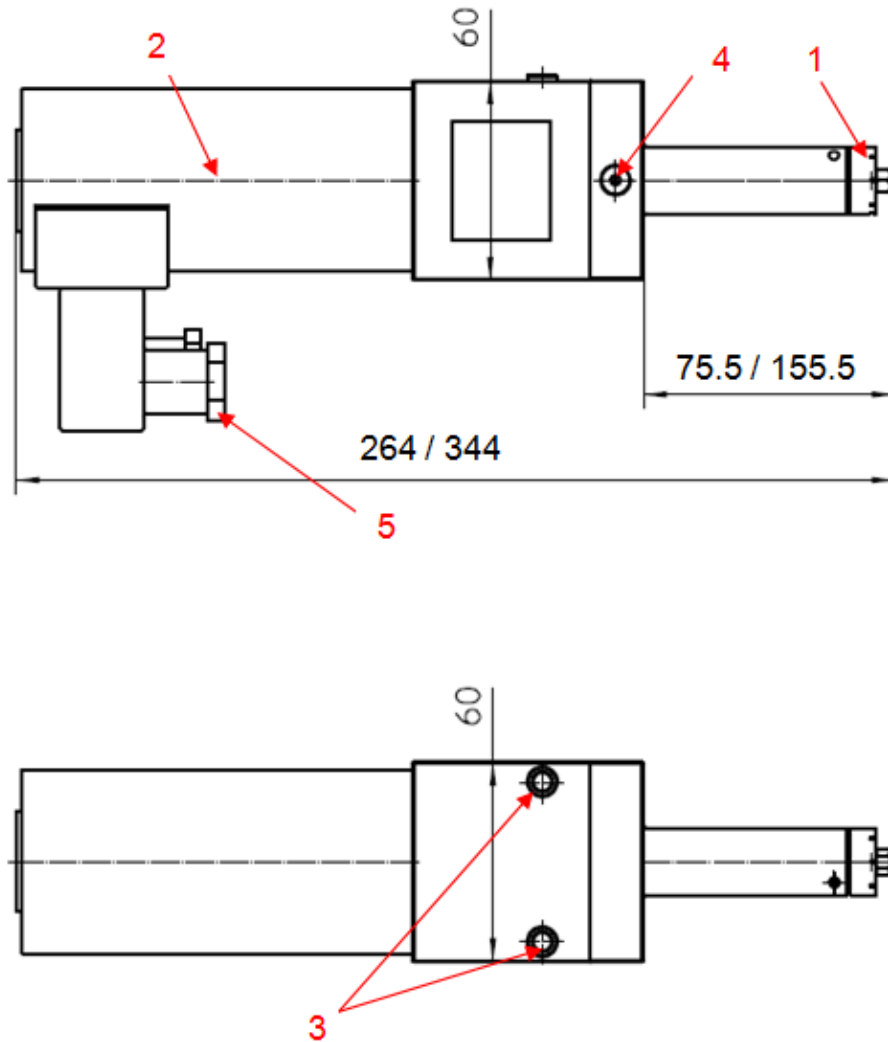


3.3 Scope of delivery

Check the system immediately upon delivery for transport damage. Notify D+P, Dosier- u. Prüftechnik GmbH or their representative immediately in case of any defects. Compare the scope of delivery with the following list:

- Rotor lubrication RBE 02
- Operating manual RBE 02
- 2 pce centering bushings (Ø9h7)

4 System description

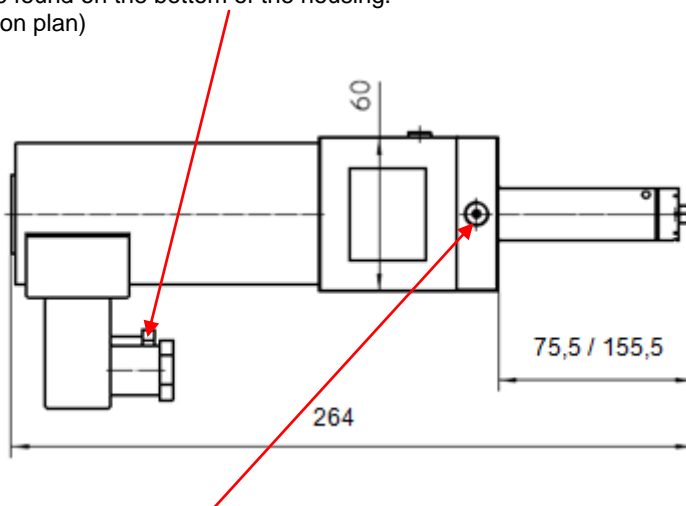


- 1) Rotor
- 2) Electric motor
- 3) Mounting holes $\varnothing 5,5\text{mm}$, with fundamental tolerances on both sides $\varnothing 9\text{ H7 mm}$
- 4) Grease connection G1/8
- 5) Electrical connection

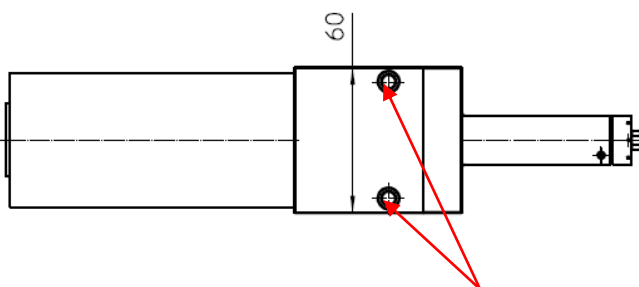
5 Assembly and installation

Service and maintenance work may only be performed by technical personnel or sufficiently trained personnel. Before performing service and maintenance work, remove residual pressure and cut off material supply and pneumatic air supply. Only use original parts from D+P, Dosier- u. Prüftechnik GmbH

The connection plugs are found on the bottom of the housing.
(See page 8 for connection plan)



The G1/8" connection for the medium has been placed on the side.



At the rotor lubrication unit are 2 holes (5.5 mm diameter) attached with double-sided fundamental tolerances (\varnothing 9 mm H7). The two supplied centering bushings (\varnothing 9 mm h7) are used to align the rotor lubrication unit.

ATTENTION! Cable connection may only be performed by trained technical personnel. The relevant safety regulations and rules are to be followed!



Do not wire while power is being supplied!

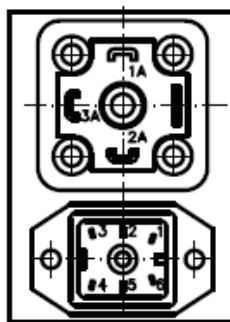
Do not place or remove plugs while power is on!

5.1 RBE 02 connection and plug layout

5.1.1 Plug layout

Steckerbelegung SV-A & SV-E BL

1A) = Motorphase C	(blau)
2A) = Motorphase B	(braun)
3A) = Motorphase A	(rot)
1) = Sensor A	(grün)
2) = Sensor B	(gelb)
3) = Sensor C	(weiß)
4) = Sensor Gnd	(blau)
5) = Sensor +Vc	(rot)
6) = NC	



5.1.2 Plug layout drive controller

- See OEM manual for the drive

5.1.3 Wiring advice

- See OEM manual for the drive
- On wiring within a complete D+P dosing system with the dosing system DS 01 and the proportional dosing valve PDV one has to pay attention that the bus lines do not run parallel to the RBE 02 cables (voltage peaks and current peaks may disturb the bus communication!)
- The high-pressure hose from the PDV to the RBE, must NOT be longer than one meter.



5.2 Checking the installation

5.2.1 Electrical connections

Check the following points:

- Correct connection of the power supply.
- Correct installation of the power supply wire (min 3x2, 5mm²)
- Correct installation of the motor- and encoder cable (min 4x1mm² und 7x0,25mm²)
- Correct operation of the security elements, see Chapter 2 in which the function of the elements is described.

5.2.2 Check the medium connection and pressure

Check the following points:

- Shut off valve is open.
- The air pressure at the inlet of the barrel pump must be at the set value.



6 Operating, operation

6.1 Requirements for responsible personnel

The operator must have read and understood the operating manual. In addition, the operator must be informed about the general safety instructions (see Basic safety instructions).

6.2 Measures before switching

- Commissioning completed fully (see section 5 Commissioning).
- Remove all objects, e.g., tools, from the machine interior and the system frame!

6.3 Safety regulations for operation

The system must only be operated for its intended use. In addition, the machine must only be operated in a completely safe condition. During operation of the system the following dangers must be considered.

Health dangers can occur when using lubricants / oils. Therefore the safety data sheet of the lubricants/oils uses must be followed exactly and if necessary resort to the safety measures given therein.

During service work increased caution should absolutely be taken if removal of the protective enclosure was possibly necessary. There is a risk of crushing or shearing in the entire system area.

6.4 Required safety equipment

- Wear a safety goggle
- Wear a hairnet

6.5 Residual risks

- Look at Chapter 2

7 Maintenance

7.1 Replacement parts

Only use original replacement parts for maintenance and service work. Replacement parts relevant to the function of the system may only be purchased from D+P Dosier- und Prüftechnik GmbH or supplied with the approval of D+P, Dosier- und Prüftechnik GmbH.

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7.2 Safety

Maintenance on the system is only to be performed after reading and fully understanding Section 3. Also follow all danger instructions in the individual sections.

7.3 Service guidelines

- Service work must only be performed by authorized personnel according to the following service plan.
- It is shown in the service plan whether the service work is to be performed by an operator, a company mechanic or a company electrician.
- For all service activities the General safety instructions in Section 2, and the additional safety instructions in this section, must be followed.
- All service work must be performed according to the service plan according to schedule.

7.4 General cleaning

- Only use lubricants very sparingly. Only resin and acid-free lubricants must be used.
- Be sure to use cleaning agents very sparingly near bearings (bearing mounted components).

7.5 Service plan

No.	Work to be performed	Measurement and test variables for operating and auxiliary materials	Frequency	Responsible	Comments
1	Visual inspection of the lance and the rotor		D	Worker	
2	Control parallelism between rotary disk and lance		M	Mechanic	
3	OEM-Components				See separate operating instructions
4	Soiling	Cleaning agent	D	Operation	

Frequency: D= daily, W= weekly, M= monthly, S=semi-annually, A= annually

8 Storing

The System may only be stored in dry locations protected from the weather.

8.1 Storage conditions

The system must only be stored under the following conditions:

- Temperature 10 – 50 °C
- Relative humidity 0 –60 % (not condensing)

8.2 Taking the system out of operation

- Turn off the power and unplug the unit from the mains
- Remove all media connections.
- Cover the System with plastic film to protect it from dust

9 Disposal

9.1 Personnel qualifications

The operating company may recycle or dispose of the system under compliance with the legal regulations. To disassemble the system properly and to separate the materials practically, knowledge of mechanical work and the differentiation of waste materials is necessary.

9.2 Additional qualifications

In case there are hazardous substances according to Guideline 2008/98/EC to be disposed of, the person disposing must have additional knowledge in the following areas:

- Risks and dangers
- Disposal regulations
- Regulations for accident prevention
- First Aid measures

Safety regulations

Read Section 2: "Basic Safety Instructions", before disposing of the system. Follow all the danger instructions contained in it and also read the data sheets in the appendix.

9.3 Legal principles

9.3.1 Responsibilities

According to the EC Directive 2008/98/EC, the operating company is responsible for disposal of the machine according to regulations. For this the system can be transferred to a licensed private or public collection company or the recycling or disposal may be carried out by the operating company itself.

Note: If the operating company of the equipment leaves the disposal to a collection company, an operating manual must also be given to the company. The operating manual contains important information for disposal of the system

9.3.2 Obligation for notification

Companies that dispose of or recycle their own waste, are subject to local approval and control. You can be released from the obligation to obtain a permit under certain conditions, as long as the requirements of environmental protection are met. These companies are subject to notification requirement. More information is available at the responsible agency for the environment.

9.3.3 Environmental protection constraints

Waste must be recycled or disposed of so as not to endanger the health of humans. Only processes or methods are to be used that do not damage the environment. Especially make sure that

- air, water and soil are not polluted,
- animals and plants are not endangered,
- no noise or odor nuisance occurs,
- the surroundings and landscape are not negatively affected.



9.3.4 Sorting

After the system is disassembled, the individual parts must be sorted into waste groups according to the list in the current European Waste Catalogue (EWC) or similar documents. The EWC catalogue applies to all waste, regardless of whether they are to be disposed of or recycled.

9.3.5 Waste management

Waste management must be performed according to the local waste management plans. These especially cover:

- The type, quantity and origin of the waste
- General technical specifications
- Special provisions for certain waste
- Suitable areas for waste sites and special disposal facilities

The plans include the following information

- Natural persons or legal entities authorized for waste management
- Estimated costs of recycling and disposal
- Measures for economizing the collection, sorting and handling waste
- Labels for special wastes

9.3.6 Other components

The components of the system are made of the following materials:

- Aluminum (housing, cover plates, profiles, etc.)
- Copper (electrical cables)
- Steel (workpiece holders, bearings, fasteners such as screws, etc.)
- Plastics (control elements, hoses, cladding, covers, films, etc.)
- Rubber (seals)
- Electrical equipment (cables, motors, components)

10 Declaration of Incorporation

Declaration of Incorporation

according to directive 2006/42 EC (Machine Directive), Appendix II B

Company: **D+P**
Dosier- und Prüftechnik GmbH
Emil-Eigner-Straße 3
86720 Nördlingen, Germany
Phone: +49 (0) 9081/27593-0
Fax: +49 (0) 9081/27593-10

Responsible for documentation: Sven Ratka
Phone: +49 (0) 9081/27593-297

Date of creation of Declaration of Incorporation: 28th October 2014

Product: **Type: Rotor Greasing Unit RBE 02**
Year of manufacture: from 2014

The manufacturer declares that the above-named product is an incomplete machine in terms of the machine directive. This product is intended exclusively for insertion into a machine or incomplete machine and for that reason does not meet all the requirements for the machine directive.

Special technical documents according to Appendix VII part B have been created. The authorized person for the compilation of the technical documentation is obliged to transmit the documents on reasonable request to the national authorities. Transfer may be by post in paper form or in electronic form.

Commissioning of the products is prohibited until it has been determined that the machine has been installed into the above-mentioned product, and meets all basic specifications of the machine directive.
The above-mentioned product fulfils the specifications of the following pertinent guidelines:

EC directives used:

- Machine Directive 2006/42/EC, Appendices I and II B

Harmonized standards used:

- DIN EN ISO 12100:2010 Safety of machinery – Basic concepts, general principles

Nördlingen
City

28.10.2014
Date


Tobias Faals
CEO
D+P, Dosier- und Prüftechnik GmbH

11 Annex to Declaration of incorporation

List of basic health and safety regulations used and complied with for the design and construction of machines for the product given on page 1 of the Declaration of Incorporation.

Number Appendix I	Description	applicable	met	not met
1.	Essential health and safety requirements			
1.1.2.	Principles of safety integration	X		X
1.1.3.	Materials and products	X		X
1.1.4.	Lighting			
1.1.5.	Design of machinery to facilitate its handling			
1.1.6.	Ergonomics			
1.1.7.	Operating positions			
1.1.8.	Seating			
1.2.	Controls and command equipment			
1.2.1.	Safety and reliability of controls			
1.2.2.	Control elements			
1.2.3.	Starting up			
1.2.4.	Stopping			
1.2.4.1.	Normal stop			
1.2.4.2.	Operational stop			
1.2.4.3.	Emergency stop			
1.2.4.4.	Assembly of machinery			
1.2.5.	Selection of control or operating modes			
1.2.6.	Failure of the power supply			
1.3.	Protection against mechanical hazards			
1.3.1.	Risk of loss of stability			
1.3.2.	Risk of break-up during operation	X		X
1.3.3.	Risks due to falling or ejected objects	X		X
1.3.4.	Risks due to surfaces, edges or angles	X	X	
1.3.5.	Risks related to combined machinery			
1.3.6.	Risks related to variations in operating conditions			
1.3.7.	Risks related to moving parts	X		X
1.3.8.	Choice of protection against risks arising from moving parts	X		X
1.3.8.1.	Moving transmission parts	X		X
1.3.8.2.	Moving parts involved in the process	X		X
1.3.9.	Risk of uncontrolled movements			
1.4.	Required characteristics of guards and protective devices			
1.4.1.	General requirements	X		X
1.4.2.	Special requirements for guards	X		X
1.4.2.1.	Fixed guards	X		X
1.4.2.2.	Interlocking movable guards	X		X
1.4.2.3.	Adjustable guards restricting access	X		X
1.4.3.	Special requirements for protective devices	X		X

1.5.	Risks due to other hazards			
1.5.1.	Electrical supply	X	X	
1.5.2.	Static electricity			
1.5.3.	Energy supply other than electricity			
1.5.4.	Errors of fitting			
1.5.5.	Extreme temperatures	X		X
1.5.6.	Fire			
1.5.7.	Explosion			
1.5.8.	Noise	X	X	
1.5.9.	Vibrations	X	X	
1.5.10.	Radiation			
1.5.11.	External radiation			
1.5.12.	Laser radiation			
1.5.13.	Emissions of hazardous materials and substances	X		X
1.5.14.	Risk of being trapped in a machine			
1.5.15.	Risk of slipping, tripping or falling			
1.5.16.	Lightning			
1.6.	Maintenance			
1.6.1.	Machinery maintenance	X	X	
1.6.2.	Access to operating positions and servicing points for maintenance	X		X
1.6.3.	Isolation of energy sources	X		X
1.6.4.	Operator intervention	X		X
1.6.5.	Cleaning of internal parts			
1.7.	Information			
1.7.1.	Information and warnings on the machinery	X		X
1.7.1.1.	Information and information devices	X	X	
1.7.1.2.	Warning devices			
1.7.2.	Warning of residual risks	X	X	
1.7.3.	Marking of machinery	X	X	
1.7.4.	Operating manual	X	X	
1.7.4.1.	General principles for the drafting of instructions	X	X	
1.7.4.2.	Contents of the operating instructions	X	X	
1.7.4.3.	Sales literature	X	X	