

User's Handbook: WIWA Airless

☐ **Herkules 35061**

☒ **Herkules 35075**

☐ **Herkules 48046**

☐ **Herkules 48057**

☐ **Herkules 60028**

☐ **Herkules 60036**



Declaration of Conformity

We, **WIWA Wilhelm Wagner GmbH & Co. KG**
Gewerbestraße 1 – 3
D-35633 Lahnau

hereby declare in sole responsibility that the product **Airless Farbspritzgerät**,

machine types: Herkules 35061; 35075; 48046; 48057; 60028; 60036

to which this declaration relates complies with the following standards and documents,

in accordance with the EC Machinery Directive
98/ 37 EC:

- **DIN EN 292 Part 1**, edition 11.91 (German version EN 292-1 : 1991)
- **DIN EN 292 Part 2**, edition 06.95 (German version EN 292-2 : 1991 + A1 : 1995)
- **DIN EN 1050**, edition 01.97 (German version EN 1050 : 1996)
- **DIN EN 983**, edition 09.96 (German version EN 983 : 1996)
- **Third Ordinance of the Equipment Safety Act** (January 18, 1991)

The following standard was used for noise measurements:

- **DIN EN ISO 3744**, edition 11.95 (German version EN ISO 3744 : 1995)

in accordance with the EC Guideline 94/9/EG,
Appendix VIII:

- **DIN EN 1127-1** edition 1997-10 (German version EN 1127-1;1997)
- **DIN EN 13463-1** edition 2001-01 (German version EN 13463-1;2001)

The required documentation is on file at:
TÜV Anlagentechnik GmbH,
EU-Code 0035

The equipment listed is classified in Group II,
Category 2G.

Lahnau, 01.07.2003

Place, date



Heidrun Wagner-Turczak
Managing Director

Safety Information

0

First read, then start

0.1



Remember that Airless Paint Spraying Equipment works under extreme pressure and that high levels of spraying pressure are created!

- Never hold your finger or hand in front of the gun and never reach into the spray.
- Never point the spray gun towards yourself, other people or other living creatures.
- Always pay close attention to the references and specifications found in the user's handbook!

Before each usage, be especially certain to:

- Check the grounding conditions (for the unit and the object to be sprayed).
- Check the seal of all connecting and mounted parts.
- Observe the maximal allowed pressure of the unit and accessory parts.

Before beginning any work on the equipment and at any pause during operation, be absolutely required to:

- Turn off the spraying equipment at the air pressure stop valve.
- Release the pressure found in the spraying gun and hose.
- Secure the spraying gun.

Pay attention to safety!

The accident prevention regulation "Handling of Coating Materials" (VBG 23) and the guidelines covering fluid sprayers ZH1/406 from the German Employer's Liability Insurance Association are to be observed without fail. To ensure a safe operating environment, the condition of fluid sprayers must be inspected by an expert every 12 months or sooner, if deemed necessary. A written record of the inspection results is to be kept.

Remaining paint and solvent are to be disposed of according to legal regulations. This also applies for environmentally friendly water lacquer or enamel systems.



In case of injuries, consult a physician or go to the next hospital without delay. If paint/material or solvent has gone into the skin, the physician has to be informed about the type of paint/material or the solvent applied. Therefore, always ensure that the product specification sheet, with address and telephone number of the manufacturer, is at your disposal!

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This User's Handbook must always be available to operating staff



The operating authority of the equipment must ensure, that a user's handbook is available to the operator, in a language which he understands.

Dear customer!

Thank you for your decision to purchase WIWA equipment.

In the user's handbook, you can find all information required for the proper handling of your WIWA Airless Paint Spraying Machine. However, for safe operation, there are further essential details which you should adhere to:

Please read and observe the guidelines valid for your country.

In Germany, the "Richtlinien für Flüssigkeitsstrahler" (Guidelines for fluid sprayers) published by: Hauptverband der Gewerblichen Berufsgenossenschaften (Industrial Employer's Liability Insurance Association), are valid.

Manufacturer's notes and operating guidelines for coating and pumping materials should be observed at all times.

No method of operation should be exercised which impairs the safety of WIWA products and the operating personnel.

We wish you much success and excellent working results when applying your WIWA Airless Paint Spraying Machine.

WIWA Wilhelm Wagner GmbH & Co. KG

Copyright

The copyright for this user's handbook remains with WIWA Wilhelm Wagner GmbH & Co. KG. The user's handbook is intended for preparation, operating and maintenance staff. It contains technical regulations and drawings which may not, in whole or in part, be copied, distributed or be used by or passed on as information to others for whatever purposes without authorisation.

WIWA Wilhelm Wagner GmbH & Co. KG
Gewerbestra-ße 1/3 • 35633 Lahnau
Tel.: 06441/609/0 • Fax.: 06441/6095/0

This user's handbook is only valid in conjunction with the machine card which is presented in chapter 9.3 of the user's handbook for the equipment you have purchased. Please ensure that the data on the type plate corresponds with the information on the machine card. If they do not correspond or the user's handbook has been compiled wrongly or the type plate is missing we would ask you to inform us immediately.

Note:

We reserve the right to make changes to the contents of this handbook. WIWA Wilhelm Wagner GmbH & Co. KG is not liable for any mistakes found in this documentation or any assessable damages resulting from its delivery or usage, as far as legally allowed.

The manufacturer reserves the right to make technical changes in order to improve the products, which may not be documented in this user's handbook.

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Safety

2

Description of symbols

2.1

The signs and symbols used in this manual have the following meaning:



STOP

marks a section of text which is especially relevant to safety. Special attention should be paid to this section and it's contents strictly observed.



SMOKING PROHIBITED

marks a situation in which a fire hazard arises through the use of flammable or explodable solid, fluid or gaseous materials.



WARNING

marks a situation which could be dangerous. If not observed, death or very serious injuries could result.



DANGER OF EXPLOSION

marks a situation, where there is danger of explosion. Observation of this information is absolutely essential.



ELECTRICAL VOLTAGE

marks a situation, where there is a danger of explosion through an electostatic charge.
Observation of this information is absolutely essential.



USE EAR PLUGS

For health reasons, it is very important to pay attention to this warning.



USE BREATHING PROTECTION

For health reasons, it is very important to pay attention to this warning.



HEALTH DANGER

marks materials which are hazardous to your health.
Observation of this information is absolutely essential.



FIRST AID

In case of injuries or accidents, these instructions should be absolutely adhered to.

Safety

2

Warning instructions located on the machine

2.2

Warning signs and symbols which have been placed on the machine are there to inform of possible dangers and must be observed.

Warning signs and symbols may not be removed from the machine.

Damaged and illegible warning signs and symbols are to be replaced immediately.



picture 2.2.1

The following signs are located on the machine:

- On the high pressure filter (picture 2.2.1):
Warning sign covering the grounding of the machine

The proprietor is required according to the German Accident Prevention Regulation (Unfallverhütungsvorschrift), VGB 23, to ensure that the machine is properly grounded. Please, observe our instruction manual.



picture 2.2.2

- On the material pump cylinder:
Nameplate (picture 2.2.2)

Please observe that the information located on the nameplate corresponds to data found on the machine card (Chapter 9.3). We request immediate notification should there be any discrepancies or if the nameplate is missing.

Safety	2
Dangers arising from the equipment	2.3



This machine was designed and built in accordance with all safety aspects. It corresponds with the present standards of technical regulations and current rules for accident prevention.

It left the factory in perfect condition and warrants a high level of safety. However, the following dangers exist if operated incorrectly or used inappropriately:

- to life and limb of operator or third persons
- for the machine and other property belonging to owner of machine
- for the efficient working of the machine

All personnel involved in the starting, operation and maintenance of the machine must read the following notes carefully and observe them. It is a matter of their safety! We recommend that the machine operation management have this confirmed in writing.



Additionally, please pay attention to the following:

Please, read and observe the guidelines valid for your country.

In Germany the "Richtlinien für Flüssigkeitsstrahler" (Guidelines for liquid sprayers) Published by: Hauptverband der Gewerblichen Berufsgenossenschaften, are valid. We recommend adding a copy of all guidelines and accident prevention regulations into the user's manual.

Manufacturer's notes and operating guidelines for coating material and pumping material should be observed at all times.

In principle, no method of working should be exercised which impairs the safety of WIWA products or the operating personnel.

Safety

2

Application of the machine

2.4



These units have been designed to spray lacquers and varnishes, paints, high-viscosity, coarsely pigmented two-component tar and epoxy materials, bitumen, high-built materials, low solvent and solvent-free coatings, insulating material, antifouling, glassflake materials, flame resistant and fibre-filled coatings. They are optimal for coating large surfaces and providing thick coatings.

A particular advantage of these units is the additional air hose leading to the air motor, which prevents icing from occurring.

Other usage is not in line with regulations. Before WIWA equipment is used for other purposes or with other materials, and, therefore, not according to the regulations, permission should be obtained from the manufacturer, as the guarantee is otherwise invalid. The observation of technical documentation and the compliance with specified operational, maintenance and starting guidelines are mandatory in accordance with the valid regulations.

Using this equipment in areas requiring protection from explosions

Marking:  **II 2G cT4**

This equipment fulfills the explosion-proof requirements found in the guideline 94/9/EC (ATEX 95 for the type of explosion, equipment category and temperature class found on the nameplate).

This equipment is able to be installed in areas requiring Zone I explosion protection. Due to the possibility that explosive gases and overspray may be created, this unit is to be considered as Group II, Equipment Category 2G.

The flash point for the materials being sprayed, as well as the solvent being used, must be **above** 200°C. This corresponds to the temperature class T3.

When operating this equipment, the User's Handbook must be followed closely. **The required inspection and maintenance intervals must be adhered to strictly. All information found on the unit's signs or plates must be adhered to and not exceeded. Do not allow this unit to be overloaded.** It is the responsibility of the operator of this equipment to determine the explosion risk (zone determination according to EC regulation 94/9/EC, Appendix II, Nr. 2.1-2.3) in the area of usage, in accordance with local regulatory authority guidelines. **Furthermore, it is the responsibility of the operator on-site to check and ensure that the technical specifications and markings according to ATEX are compliant with local requirements.**

Please observe that some components have their own nameplate with separate markings according to ATEX. **The marking with the lowest rating for explosion protection becomes valid for the entire system.** If the intended application could lead to injury of personnel if this equipment malfunctions, on-site precautions and preventive measures must be implemented.

If this equipment appears to be malfunctioning or behaving strangely during operation, the unit must be shut down immediately and WIWA Customer Service contacted as soon as possible.

It must be ensured that the unit is grounded either separately or together with the equipment it is mounted to (maximum resistance $10^6 \Omega$, picture 2.4.1 ground / potential equalization).



picture 2.4.1
ground screw on the high
pressure filter

Safety	2
Machine surroundings	2.5



Rebuilds and changes

For safety reasons, it is not allowed to carry out rebuilds or changes without authorization.

Protective equipment may not be dismantled, changed or neglected.

If using components which are not produced or delivered by WIWA, warranty coverage is negated as well as liability.

The machine may only be operated within the prescribed limits and machine parameters.



Danger caused by attachments and spare parts

If you use original attachments and original spare parts from WIWA Wilhelm Wagner GmbH & Co. KG, the compatibility with our equipment is guaranteed. It is, however, essential that the safety regulations of the attachments and spare parts are observed. You can find these safety regulations in the User's Handbook located with the spare parts lists.

If you use attachments and spare parts from another source, WIWA cannot guarantee the safety of the entire system. In this case, our guarantee does not cover any damage or injury caused by such attachments and spare parts.



Emissions

It is possible for solvent vapours to occur, depending on the materials used.

Therefore, please ensure the workplace is sufficiently ventilated in order to avoid damage to health and property. Always observe the processing information given by the material manufacturer.



The sound pressure level of the equipment is below 85 db(A).

Nevertheless, appropriate means of noise protection should be made available to the operating staff.

The operator is responsible for compliance with the rules covering the prevention of accidents due to „noise“ (VGB 121). Therefore, pay special attention to the environmental conditions at the site, e. g. noise can be increased if the machine is installed in or on hollow bodies.

Exact details regarding noise emission are mentioned in the Chapter 9.1 Technical specification.

Safety

2

Sources of danger

2.6/1



picture 2.6.1



picture 2.6.2
Tap lock in closed position



picture 2.6.3



Remember that WIWA Airless Paint Spraying Machine work under extreme pressure procedures and that they can cause life-endangering injuries if used inappropriately.

Pay attention to the following notes:

- Material hoses must conform with maximum working pressure, whereby a safety factor must be included in the statement.
Material hoses are never to be „patched“!
- **Never** point the spray gun towards yourself, other people or other living creatures.
- **Never** hold your finger or hand in front of the gun and **never** reach into the spray.
- **Never** try to seal leaks on joints and high pressure hoses with your hand or by binding the spot. Should a leak occur, the whole system (gun, hose, pressure filter, pump, etc.) are to be depressurized **immediately**. Defective parts are to be replaced.
- If working with heated materials, always wear the proper hand protection.
BURN DANGER!
- The gun is to be secured and the safety device checked during **every** interruption while working, regardless how short (picture 2.6.1).
- The entire system is to be depressurized **before** maintenance and cleaning work is carried out. The compressed air tap lock **must** be closed (picture 2.6.2).
- **Never** spray solvents or materials containing solvents into a narrow-necked can or barrels with bung hole. **DANGER OF EXPLOSION!**
- Please, always use an open container. Due to possible electro static charges, it is imperative to ensure that the spraying gun has contact to the container walls when working with metal containers.
It is possible for a static charge to occur due to the high flow speeds during the airless spraying procedure. Static charges can lead to fire and explosions. The equipment **must**, therefore, always be appropriately grounded (picture 2.6.3). The original WIWA airless spray machine is fitted with a ground cable as standard. If lost or defective, please, order an immediate replacement (order no.: 0474487)
- Never use this equipment outdoors during a thunderstorm.
- Spraying machines which are not protected against explosions may not be used in workplaces which fall under the regulation covering explosion protection. Pneumatically driven airless spraying machines are not affected by this. Should, however, additional electrically driven accessories be mounted to these machines, such as agitators or heaters, the regulation covering explosion prevention must be checked for compliance.
Plugs for heaters, agitators, etc. which are not protected against explosions may only be plugged into sockets located outside of areas that fall under the

Safety

2

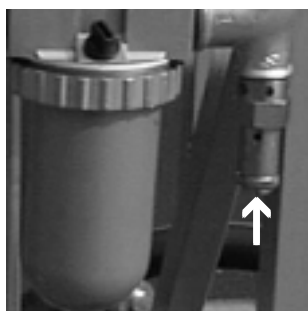
Sources of danger

2.6/2

regulation covering explosion prevention, even if the accessory being used is explosion protected.



picture 2.6.4



picture 2.6.5

- Due to electro static charges, only conductive material hoses should be used. All original WIWA material hoses are conductive and compatible with our equipment. The maximum admissible working pressure on the hoses **must** correspond to the maximum operating pressure of each airless machine.
- If the material being used clogs or clumps within the machine, remnant pressure may still exist despite depressurization efforts. This must be kept in mind when carrying out repairs! **Special care** must be taken when dismantling the high pressure filter, material hoses and high pressure spray gun to ensure that no accidents occur due to escaping remnant pressure. We recommend covering the material hoses' fittings with a cloth during unscrewing, in order to capture any fluid which might escape.
- When working on the high pressure filter (picture 2.6.4), for example to change the filter, the machine must first be turned off and depressurized.
- **Never** remove the safety valve fitted and sealed on the operation side and never adjust its setting (picture 2.6.5). Should the safety valve need replacing, please see the machine card for its order number (Chapter 9.3).
- Please ensure that new safety valves are set and sealed to the maximum permitted air inlet pressure for the WIWA spray machine (see type plate/machine card, chapter 9.3).
- During operation, ensure that sufficient feed of material is available to the pump in order to avoid heating due to friction, caused when the material pump runs dry.
Observe closely:
 - no empty feed containers may be present during operation
 - the suction system may not be clogged, buckled or defect in any other way
 - if the unit stops processing material, shut it down immediately
- In closed or pressurised systems where aluminium or galvanised parts come into contact with the solvent, dangerous chemical reactions can occur if 1.1.1-Trichlorethylene, Methylene Chloride or other solvents containing halogenated chlorinated hydrocarbons (CFCs) are used. If you wish to work with the above solvents or with lacquers and paints which contain them, we recommend you contact either WIWA customer services or WIWA directly.
- We call your attention to the fact that a series of airless equipment including versions which are rust and acid-proof is available for such materials.

Safety

2

Sources of danger

2.6/3

- The maximum operating pressures given by us are to be adhered to in principle for all WIWA parts (eg. pump, heater, hoses, gun, safety valve). By differing allowable operating pressures, the lowest value is always the maximum allowable operating pressure for the entire system.
Example:
Pump up to 420 bar
Material hose up to 600 bar
Spraying gun up to 500 bar
Easy clean up to 350 bar
The maximum allowable operating pressure for this system would be 350 bar.



- Smoking, open flames or any other possible ignition sources are not allowed anywhere near the area of operation

Safety

2

Operating staff

2.7



Authorised Operators

People under the age of 16 should not operate this equipment. The management in charge of the operation of the machine must make the user's handbook available to the operator and must make sure that he has read and understood it. Only then may the system be put into operation.

We recommend the manager has this confirmed in writing. The operator of the machine is obliged to report any changes in the machine which might affect its safety to the manager, as he must ensure that the machine is functional.

The responsibilities for the different activities on the system must be laid down clearly and adhered to. No unclear competences may remain as these could endanger the safety of the users.

The operator must make sure that only authorised persons work on the machine. He is responsible to third parties in the working vicinity of the system.

The operator of the equipment is obliged to repeat instructions about dangers and safety measures at regular intervals (at least once a year, for young persons twice a year).

Personal protective equipment



We call to your attention that the valid guidelines and requirements in accordance with work surroundings (mining, closed areas etc.) must be absolutely adhered to.

Please, wear the prescribed protective clothing at all times, as solvent vapours and solvent splashes cannot be completely avoided.

The sound pressure level of the equipment is below 85 db(A). Nevertheless, appropriate noise protection means should be made available to the operating staff.

Although spraying fog is kept to a minimum when the correct pressure setting and proper method of operation are observed, the operating painter should wear a protective breathing mask.

Never use solvent or other materials which present a health hazard for cleaning skin. Only suitable skin protective, skin cleansing and skin care materials may be used.

Safety

2

Installation Site

2.8



Safety measures at installation site

The system must have a fixed position and sufficient space to ensure safe operating. The passage to the safety fittings must not be blocked.

Keep the working area, especially all gangways and standing areas, clean. Remove spilled paint or solvent immediately.

Ensure there is sufficient ventilation at the workplace to prevent damage to health and property. Observe the manufacturer's processing instructions at all times.

Despite the fact that no legal regulations exist covering the low-fog airless spraying method, dangerous solvent fumes and particles of paint should be removed of per vacuum.

The owner / operator of this equipment is required to ensure that proper protection against lightning strikes is available.



Comply strictly with the current rules for accident prevention.

Safety	2
Behavior in case of emergency	2.9



Leaks

If leaks occur in the system, it must be shut down immediately and the entire system depressurized:

- Cut off the compressed air supply with the compressed air tap lock.
- Open the drain valve

Replace defective parts immediately.



Injury

- Should an injury occur through contact with liquid spray, we recommend a doctor be called immediately.
- Inform the doctor of the material sprayed (e.g. paint) and the solvent (thinner). Have the product data sheet at hand (address and telephone number of supplier or manufacturer, name of material and material number).
- Memorize where you can call for aid.
- Memorize the local emergency phone numbers.
- In any case, become familiar with the first-aid measures.



Fires

- Read the instructions for fire alarm and escape routes put up in your factory.
- Memorize the local emergency phone numbers.
- Memorize the location and operation of fire alarms, fire extinguishers and sprinkler installations.
- Take care that sufficient information notes/labels for fire prevention are provided.
- Do not apply any other extinguishing agents than those which are prescribed by the manufacturer of the materials.

Safety

2

Protective equipment

2.10



picture 2.10.1

All equipment is delivered with the following protective fitting:

Safety valve (picture 2.10.1)

The safety valve prevents the maximum admissible entry air pressure being exceeded.

In the event that the fixed maximum entry air pressure setting is surpassed, the safety valve blows open.

Grounding cable (picture 2.10.2)

In order to avoid an electro static charge being built, the airless machine must be grounded to an electrically conductive object by using the grounding cable.



picture 2.10.2

Air Supply Shut Off

The compressed air tap lock enables an immediate shut down of the unit.

picture 2.10.3 Tap lock at air maintenance unit: " off "

picture 2.10.4 Tap lock at air maintenance unit: " on "



picture 2.10.3



picture 2.10.4

Gun Safety (picture 2.10.5)

The gun's safety prevents it from being activated accidentally.



picture 2.10.5

All protection devices must be checked!

- Before each commissioning of the machine!
- Before beginning work on or with the machine!
- After all aligning work!
- After cleaning and servicing!
- After maintenance and repair!

Check list for inspecting the protection features when the unit is in a depressurized state

- Inspect the safety valve leading or seal for damage.
- Inspect the safety valve for visible damage.
- Inspect the grounding cable for damage.
- Inspect the grounding cable's connection to the unit and to the conduct.
- Inspect the compressed air tap lock for perfect functioning.
- Inspect the functioning of the airless spraying gun's safety lever.



If a protective device is not fully operative, or another defect is detected on the machine, interrupt the compressed air supply to the machine immediately and open the drain valve.

The machine may be restarted only if perfect operation is restored.

Safety

2

Handling of the machine and auxiliary materials

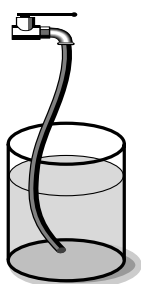
2.11



picture 2.11.1



picture 2.11.2



Alignment, servicing, maintenance and repair of the machine

Alignment when changing production, as well as servicing and cleaning, may be carried out by trained operating personnel only.

Maintenance and repair may be carried out by trained, qualified personnel only.

Before starting work, the compressed air supply of the machine must be shut-off.

picture 2.11.1: Version with the compressed air tap lock located on the maintenance unit.

picture 2.11.2: Version with the compressed air tap lock located on the compressed air regulator.

Make sure that the machine is absolutely free from pressure. For this, hold the drain hose into an open container and open the drain valve.

In any case, the function of all protective devices, as well as perfect function of the machine, must be checked after completion of the work.

Handling of auxiliary materials

When handling auxiliary materials such as paint, solvents, oils, grease and other chemical substances, comply with the safety and dosing instructions of the manufacturer and the generally applicable regulations.

Left over solvents, oils, grease and other chemical substances must be collected according to the legal regulations for recycling and waste disposal.

The local official laws for the protection of waste water must be observed.

Safety

2

Transportation of the machine and additional equipment

2.12



- Interrupt the complete power supply of the machine, even for short transport routes.
- Before transportation, empty the machine.
- Pay attention when loading, with or without hoisting devices!
- When loading the machine with hoisting devices, pay attention to sufficient load capacity.
- Secure the hoist tightly to both eye bolts. Ensure that the load is evenly distributed.
Warning: The maximum load per eye bolt is 100kg (220lbs).
- Never stand under swiveling loads or in the loading area due to exposing your life to danger!!
- Only use suitable transportation vehicles with sufficient load capacity.
- Secure the load on the transportation vehicle against slipping and falling down.
- Ensure that no loose items (i.e. paint cans) are transported with the unit when it is loaded, lifted or suspended.
- Parts or equipment dismounted for transportation purposes must be properly remounted according to application by a specialist before start-up.



picture 2.12.1

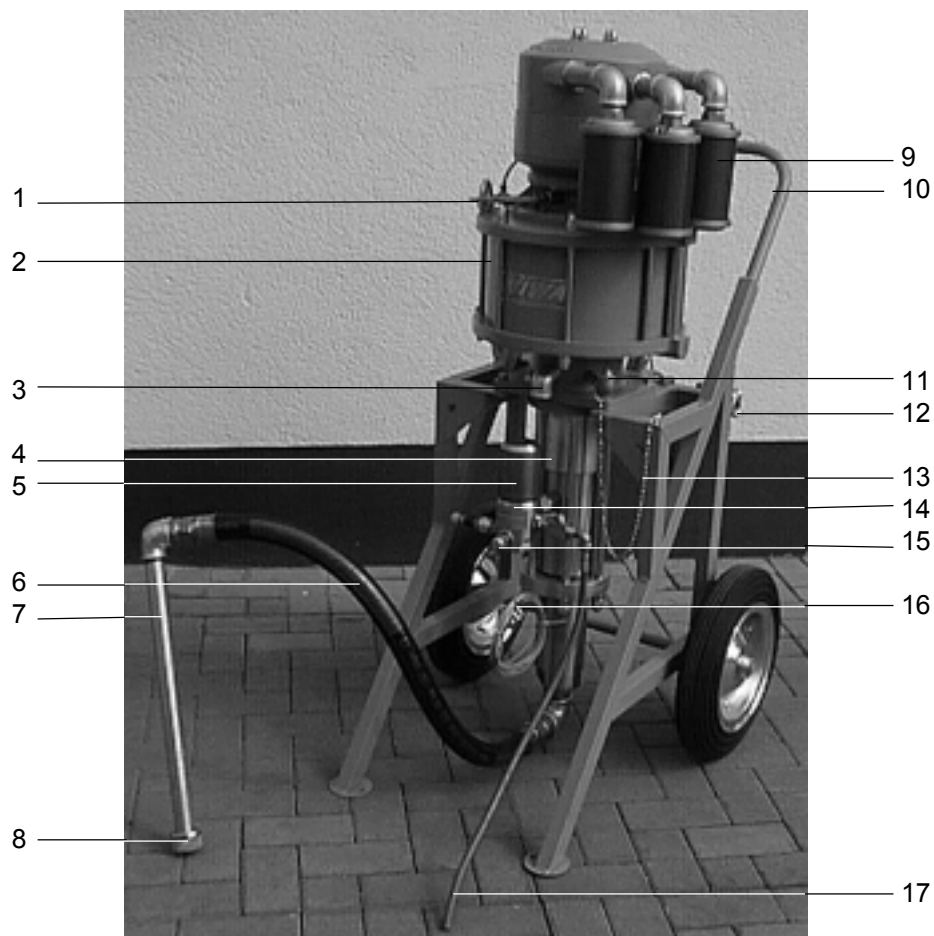
On the air motor's cylinder cover there are two lifting rings (picture 2.12.1) which allow the unit to be lifted safely by means of a hoist.

Machine description

3

Designation of components

/1



- 1 Lifting ring
- 2 Air motor
- 3 Vent hole
- 4 Flushing solvent drainage
- 5 High pressure filter
- 6 Suction hose
- 7 Suction pipe
- 8 Suction sieve
- 9 Muffler
- 10 Cart
- 11 Flushing solvent inlet
- 12 Air maintenance unit with safety valve and air stop cock
- 13 Spanner with chain
- 14 Material pump
- 15 Connection for fluid hose
- 16 Ground cable
- 17 Drain hose

Machine description

3

Designation of components

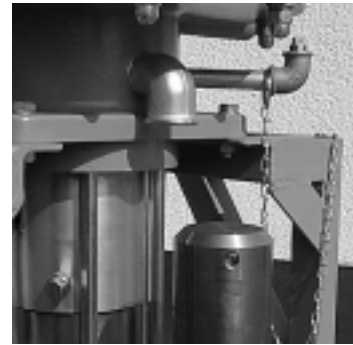
12



1 Lifting screw



2 Air motor



3 Vent hole

4 Flushing solvent drainage

11 Flushing solvent inlet



5 High pressure filter

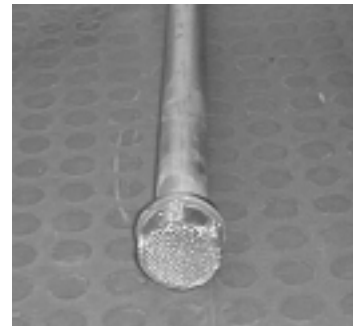
15 Connction for fluid hose

17 Drain hose and valve



6 Suction hose

7 Suction pipe



8 Suction sieve



9 Muffler



10 Cart



12 Air maintenance unit



13 Spanner with chain



14 Fluid section



16 Ground cable

Machine description

3

Designation of components

/3



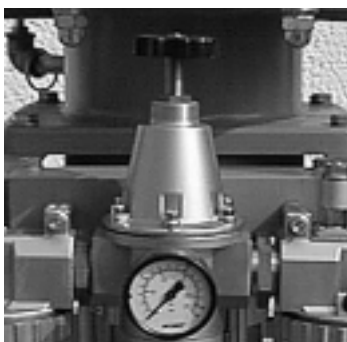
18 Fluid hose



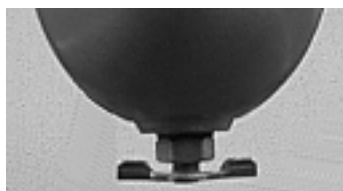
19 Spray gun



20 Tap lock



21 Adjusting screw for air maintenance unit



22 Drain valve for air maintenance unit



23 Safety valve for air maintenance unit



24 Air inlet for air maintenance unit

Start-up

4

Erection and Preparation

4.1/1

Job

You wish to erect the machine at the site and prepare it for operation.

Prerequisite

The material to be worked with is prepared.

All materials to be sprayed should be marked with information on viscosity, processing temperatures, mixing proportions etc. If this is not the case, please, acquire this data from the relevant manufacturer.

The material to be sprayed must be slowly but thoroughly stirred before beginning to work.

When dealing with two-component materials, the working life must be observed. The machine must be flushed and completely cleaned with the specified cleaning agent within the working life as given by the manufacturer. Please, observe that the hardening time shortens by higher temperatures.

It is recommendable to allow the solvent to circulate for a while.

It must be made certain that no particles of paint remain in either the pump or the filter.

WIWA offers a broad selection of special attachments for the optimised preparation of spraying materials, eg.:

- agitators in various sizes
- material pre-warming containers in various sizes
- fluid heaters



Procedure

- The machine is to be set up securely on a level and solid surface. All operating elements must be easily accessible. In order that the necessary volume of air is guaranteed the compressor capacity must comply with the amount of air needed by the machine and the diameter of the air supply hoses must correspond to the joints. Information on air consumption can be found on the machine card (chapter 9.3).



High pressure spraying machines and systems can be integrated into spraying chambers either inside or outside of production facilities. To avoid possible soiling, an outside installation is preferable. Dimensions and weights of the equipment are indicated in Chapter 9.1.



For transportation purposes, some components are packed separately:

1. Fluid hose (picture 4.1.1)
2. Airless spray gun (picture 4.1.2)

- Add these components as pictured (pictures 4.1.1 to 4.1.4).



Airless machines work with high pressures.

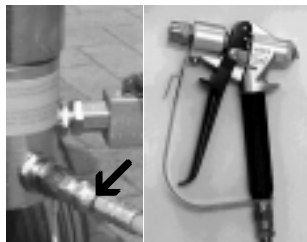
- Inspect all turnable parts, nuts, screws and hose connectons and pull on them tightly to ensure that no material could leak out of these fittings which could lead to injuries.
- In order to prevent static charging, the airless system must be grounded by connecting the ground cable to a conductive object. (picture 4.1.3).

Start-up

4

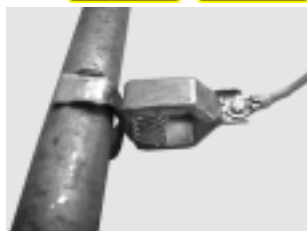
Erection and Preparation

4.1/2

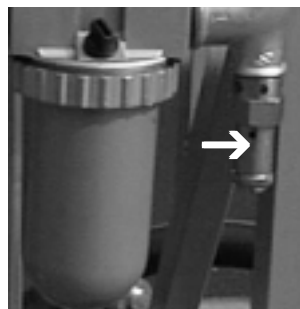


picture 4.1.1

picture 4.1.2



picture 4.1.3



picture 4.1.4

- The object to be coated must also be grounded.
- Please, check the permissible maximum air pressure for the material hose and spray gun. It must be greater than or equal to the maximum operational pressure for the system, which is shown on the type plate on the high pressure pump or on the machine card (chapter 9.3).
- Compare the maximum operating pressure of the safety valve (picture 4.1.4) with the information on the machine card (chapter 9.3) or the type plate. This information must correspond.
- The machine may now be filled with lubricant fluid (see chapter 7.2, Maintenance Plan). We recommend using WIWA lubricant, order no.: 0163333.
- Fill the maintenance unit with pneumatic oil and antifreeze and take the setting as described in chapter 7.3 "Maintenance on the maintenance unit. (This does not apply to machines delivered in a standard version with only a compressed air regulator.)

Please, use only the pneumatic oil listed in chapter 9.1.

For optimal protection we recommend the use of:
WIWA pneumatic oil, order no.: 0632579 or the
WIWA antifreeze, order no.: 0631387

Result

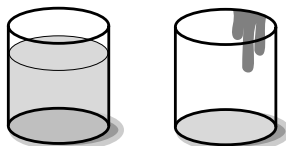
The machine is now ready for operation. Continue with the first cleaning (chapter 4.2).

Start - up

4

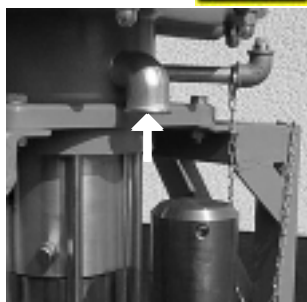
First cleaning

4.2/1



A

B

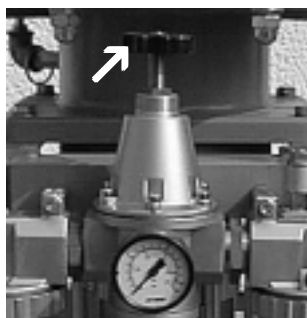


picture 4.2.1



picture 4.2.2

picture 4.2.3



picture 4.2.4



Job

This machine was factory tested after assembly for perfect functioning with a test-medium. The entire system should be flushed with Wash Thinner before spray operation begins so that the material to be sprayed is not affected by the test-medium.

Prerequisite

You will need:

- 1 open container with cleaning material (at least 5 ltr of Wash Thinner or solvent), called container „A“ below.
- 1 empty, open container for the mixture of cleaning material and test-medium, called container „B“ below.

Do not use narrow-necked cans or barrels with bung hole.

- When being used for the first time, the sticker with the text „remove before use“ and the sealing plug is to be removed from the ventilation hole (overflow). The ventilation hole is located in the elbow with the opening facing downward (picture 4.2.1)
- Please, check whether the material hoses comply with the maximum working pressure and the prescribed safety factor. They should not have any leaks, kinks, signs of wear or bulges. The hose fittings must be securely attached and also comply with maximum pressure.
- When using a fluid heater, please, be sure to observe that it is cold during the cleaning process.

Procedure

- Please wear protective clothing at all times, as solvent vapours and splashes of solvent cannot be avoided completely.
 - The main air supply tap must be closed.
 - Attach the material hose to the secured airless spray gun (picture 4.2.2).
 - Connect the material hose with attached gun (without the nozzle) to the outlet of the high pressure filter. (picture 4.2.3).
 - Remove the filter insert from the high pressure filter in accordance with chapter 7.3.
 - Release the locknut on the air pressure regulator (picture 4.2.4). Adjust the air pressure regulator back by turning the regulating screw to the left (until it turns freely).
 - Connect the air maintenance unit or air pressure regulator of the system to the main air supply line.
 - Insert the suction pipe with sieve in the open container „A“.
- Warning! If using a fluid heater, the heater may not be turned on at any time during the cleaning of the entire system. DANGER OF EXPLOSION! Observe the flash point for the solvent being used!**

Start - up

4

First cleaning

4.2/2



picture 4.2.5

- Open the relief tap on the high pressure filter and put the relief hose into the open container „B“.
- Open the main air supply tap.
- Adjust the air regulator to a maximum of 2 bar (30 psi) by slowly turning the regulating screw to the right. (picture 4.2.4).

- Activate the de-icing system by slowly turning the control screw to the right (picture 4.2.5).

We recommend: minimum 1 complete turn
 maximum 3 complete turns

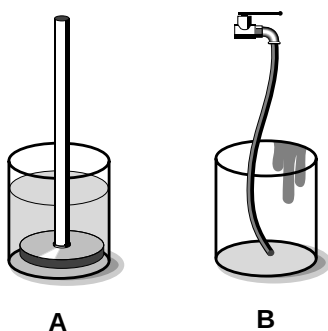
Adjust the de-icing system according to your individual requirements, as factors such as pressure, number of cycles per minute, humidity and ambient temperature can affect the amount of air that is required to avoid ice build-up.

- Allow the Wash Thinner, soiled with the test-medium, to run out of the relief hose into the open container „B“ for at least 10 seconds.

- Close the relief tap.

- Hold the spray gun into the open container „B“ and spray against the inside wall for at least 10 seconds. If using metal containers, the spray gun must always remain in contact with the wall of the container (because of possible electrostatic loading).

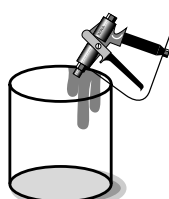
We recommend a cleaning period of approx. one minute for a good cleaning result. In order to avoid the danger of explosion caused by the heating of cleaning material, it should not be pumped for longer periods (a maximum of 5 minutes) of time.



max. 2 bar
min. 10 sec.



B



B

min. 10 sec.
max. 5 min.

Result

The machine is now completely cleansed. Continue with the pressure check (found in chapter 4.3).

Start - up

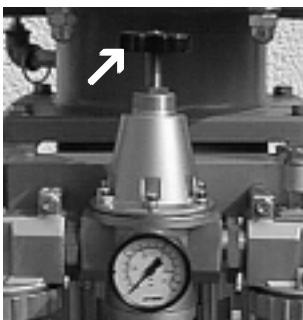
4

First cleaning

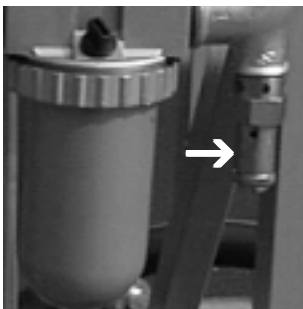
4.3



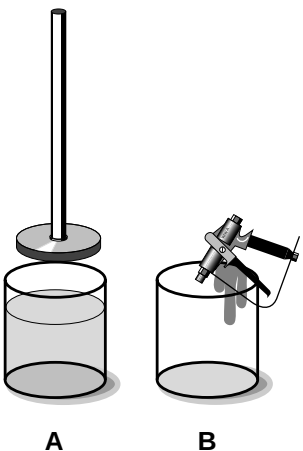
picture 4.3.1



picture 4.3.2



picture 4.3.3



Job

You want to inspect the seal all system components.

Procedure

Warning! If using a fluid heater, the heater may not be turned on at any time while making the pressure test. The entire machine must be cooled completely.

DANGER OF EXPLOSION! Observe the flash point for the solvent being used!

- Close the gun and secure it with the safety catch (picture 4.3.1).
- Set the maximum permitted pressure by turning the regulating screw on the air regulator to the right (picture 4.3.2).

Observe the maximum allowable operational pressure for all accessory components. By differing allowable operating pressures, the lowest value is always the maximum allowable operating pressure for the entire system (see example in chapter 2.6).

If the pressure is increased by approx 10% for a short length of time, the safety valve must blow off (picture 4.3.3).

- Now check that all parts of the system are tight (hose, gun, high pressure filter and joints).
- Now, adjust back the air inlet pressure by turning the regulating screw of the air regulator to the left to approx. 1-2 bar.
- Remove the suction pipe with sieve from the open container „A“ (Wash Thinner).
- To relieve pressure, now disengaged the gun safety catch and hold it into open container „B“.
- Slowly, trigger the gun and pump the remaining wash thinner out of the system completely. Ensure contact with the container wall is maintained.
- Adjust back the air regulator by turning the regulating screw until it moves freely.
- Close the main air supply tap.
- Close gun and secure safety catch.

Result

The start-up procedures are finished. The machine is ready for use.

Operation

5

Equipment preparation

5.1/1



- Please wear protective clothing at all times, as solvent vapours and splashes of solvent cannot be avoided completely.
- Inspect the seal of all system components and tighten the connections, if necessary.

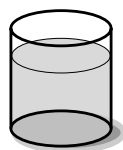
Job

You want to prepare the machine for coating or painting work.

Prerequisite

You will need:

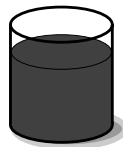
- 1 open container with cleaning material (solvent belonging to the coating material and recommended by the material manufacturer), called container "A" below.
- 1 empty, open container for the soiled cleaning material/material mixture, abbreviated as container "B" below.
- 1 material container, called container "C" below.



A



B



C



Do not use narrow-necked cans or barrels with bung holes.

Procedure

- Place a filter insert which is appropriate for the coating material and suits the spray nozzle being used into the high pressure filter. The mesh opening should always be slightly smaller than the bore of the nozzle used.

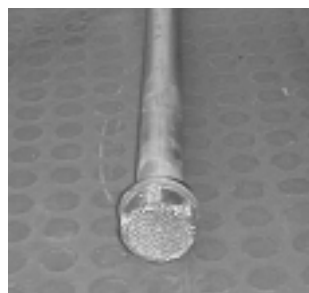


picture 5.1.1

Filter insert	Nozzle size
M 200 (white)	up to 0.23mm/.009"
M 150 (red)	over 0.23mm/.009" up to 0.33mm/.013"
M 100 (black)	over 0.33mm/.013" up to 0.38mm/.015"
M 70 (yellow)	over 0.38mm/.015" up to 0.66mm/.026"
M 50 (orange)	over 0.66mm/.026"

Do not use filter inserts for materials with coarse pigments or fibre-filled materials. The suction sieve, which is fitted as standard, should however stay in the sieve casing or be exchanged for a coarser sieve. The use of a WIWA "Easy Clean" (reversible tip cleaning device) with the appropriate nozzle is especially recommended with such materials. When changing materials, the filter insert in the high pressure filter and the material sieve in the suction system are to be cleaned or replaced.

- The main air supply tap must be closed.
- Adjust back the air regulator by turning the regulating screw to the left until it moves freely (Bilder 5.1.3).
- Connect to main air supply line.
- Insert suction pipe with sieve in open container "A".



picture 5.1.2

Operation

5

Equipment preparation

5.1/2

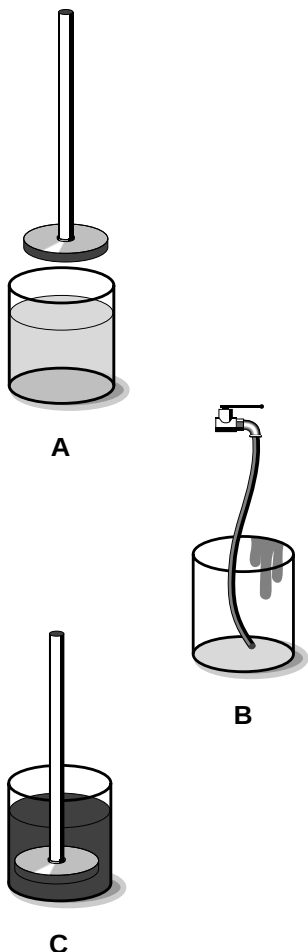


picture 5.1.3



- The relief tap on the high pressure filter must be closed.
- Open main air supply tap.
- Check whether the de-icing control screw is open.
- Disengage safety catch on airless spray gun (without nozzle). Hold gun into open container "B" and trigger.
- Adjust air regulator to 1-2 bar by turning the regulating screw to the right.
- Hold the airless spray gun in such a way that the emerged solvent is sprayed sideways onto the inside wall of the open container "B". When using metal containers, ensure that the spray gun maintains contact with the inside wall of the container (because of possible electrostatic charging). As soon as clean solvent is released, the flushing process can be ended.
- If your system is fitted with an air maintenance unit, you can now set it as described in the "Maintenance and Starting Up of the Air Maintenance Unit" (chapter 7.3).

After long periods without use, you should carry out the following in order to test the tightness of the seals and joints in the equipment, but only with the gun closed and secured:



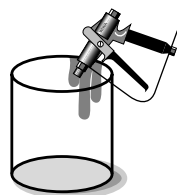
- Increase the pressure on the compressed air regulator to the given maximum air inlet pressure.
- Now inspect the joints on the parts which carry material for tightness.
- Turn the air regulator slowly back to 1-2 bar by turning the regulating screw to the left.
- Now, take the suction pipe out of the solvent container and pump out the solvent remaining in the pump completely.
- Turn the air regulator back by turning the regulator screw to the left until it moves freely.
- Close the main air supply tap.
- Close the spray gun and secure the safety catch.
- Hold the relief hose into open container "B".
- Place the suction pipe with sieve in material container "C".
- Open the main air supply tap and adjust air regulator to 1-2 bar.
- Open the relief tap on the high pressure filter. Close the relief tap when the material to be processed comes out of the relief hose.
- Disengage the safety catch from the spray gun and trigger. Spray the rest of the solvent remaining in the hose and gun into container "B" until the material to be

Operation

5

Equipment preparation

5.1/3



B



processed comes out of the gun. Ensure contact with the container wall.

When using a fluid heater, the following steps must be strictly adhered to:
Before allowing the fluid heaters to heat, the materials to be sprayed must be circulated in a cold condition as there may be solvent residue in the fluid heaters or somewhere else in the systems.

Be certain to ensure that the fluid heaters are turned off during preparation.
RISK OF EXPLOSION! Always observe the flash point of the solvent being used as stated in the manufacturer's data sheet!

- Close the airless spray gun and secure the safety catch.
- Clean the gun outlet with solvent and a brush.
- Mount a spraying tip or an "Easy Clean" (reversible tip cleaning device) with tip (see list of spare parts for spray gun, chapter 9.3).
- Regulate working pressure with the air regulator.

Result

The machine's preparation is completed. You may now commence with coating.

Operation

5

Coating operation

5.2

- Disengage the gun safety catch and trigger to begin coating.

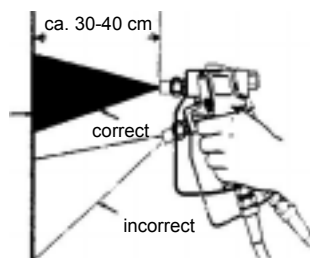
Working pressure

The optimal working pressure is reached when there is an even coating of material with graduated edges.

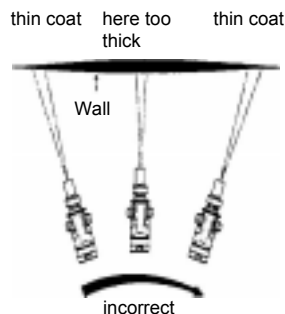
Operate machine with only as much compressed air as is necessary to achieve good atomisation at the recommended spraying distance of 30cm.

If the pressure is too high, it leads to increased material consumption and paint mist.

If pressure is too low, it results in stripes and varying coating thickness.



picture 5.2.1



picture 5.2.2

Spraying - painting

- Hold the spraying gun at a right angle (90°) to the area to be sprayed.
 As soon as the spraying gun is held at another angle, the coating will become uneven and spotted (picture 5.2.1).
- Move your spraying arm evenly.
 Be certain to move at a constant speed and to keep the spraying gun parallel to the area being sprayed.
 Manoeuvre the spraying gun using your arm, not your wrist.
 Waving with the spraying gun leads to an uneven coating (picture 5.2.2).
- Have the spraying gun in motion before pulling the trigger.
 This will assure an even, soft and smooth overlapping of the spray jet and will avoid excessive material being coated when beginning spraying.
 Release the trigger before ending your movement.

Pausing while working

- Secure the trigger when making a pause in working for a couple of minutes.
- Place the tip in a container with applicable solvent. This will prevent the tip from becoming clogged with hardened paint.

Spraying tips

- Replace the spraying tip before it is worn out.
 Worn tips lead to excessive paint consumption and lower the quality of the paint's coating.

Operation

5

Change of material

5.3



picture 5.3.1

1. Shutting down

Carry out all points found in Shutting Down (chapter 6).

2. Filter inspection

When changing materials, also inspect the filter insert:

- Open the drain cock to ensure that the machine is absolutely free of pressure.
- Unscrew the high pressure filters's cap with the spanner (picture 5.3.1).
- Loosen the nut and remove the filter insert (picture 5.3.2).
- Clean the filter insert with solvent. Should the filter insert show any signs of damage, replace it with a new one.
- Reset the filter insert onto the threaded bolt and tighten it by rescrewing the nut.
- Screw the cap back onto the high pressure filter and tighten it with the spanner.



picture 5.3.2

For R and RD version high-pressure filters:

To avoid seizing, lightly grease the threads before assembly.

3. Starting up

Then carry out all points in Starting Up (chapter 4).

Shutting down

6

/1



- Please wear protective clothing at all times as solvent vapours and splashes of solvent cannot be avoided completely.

Job

Once the job is completed, the machine is to be cleaned and shut down.

Prerequisite

You will need:

1 open container with at least 5 ltr of cleaning material (the solvent must correspond to the coating material and be recommended by the material manufacturer), called container "A" below.

1 empty, open container for the soiled cleaning material/material mixture, abbreviated as container "B" below.

1 material container called container "C" below.

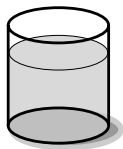
Do not use narrow-necked cans or barrels with bung holes.

Procedure

- Close the main air supply tap.
- Turn back the air regulator by turning the the regulator screw to the left until it moves freely. The pressure gauge must show 0 bar.
- Close and secure the airless spray gun.
- Open the relief tap on the high pressure filter / drain screw for a short time. Allow pressure to escape and close again.
- Remove and clean the standard tip or "Easy Clean" (reversible tip cleaning device) with tip.

We recommend storing the used tip (or "Easy Clean" with tip) in the appropriate solvent. This prevents remaining material from drying out.

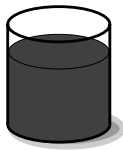
- Take the suction pipe out of the material container "C". Wipe remaining paint from the suction pipe and suction sieve.
- Place the suction pipe with sieve in the open container "A" with the solvent belonging to the coating material.
- Open the main air supply tap and set the air regulator to 1-2 bar by turning the regulating screw to the right.
- Hold the airless spray gun in such a way that the material released or the soiled solvent is sprayed sideways onto the inside wall of the open container „B“. Pump until clean solvent is emitted.



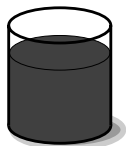
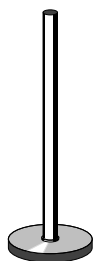
A



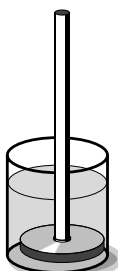
B



C



C



A

Shutting down

6

12

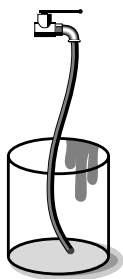
- When using metal containers, ensure that the spray gun maintains contact with the inside wall of the container (because of possible electrostatic charging). As soon as clean solvent is released, the rinsing process can be ended.



B



C



B

Warning! If using a fluid heater, the entire machine must be cooled completely before cleaning it with solvent.
DANGER OF EXPLOSION! Observe the flash point for the solvent being used!

In order to avoid unnecessary material wastage, we recommend spraying the material remaining in the hoses back into material container "C" until solvent is first emitted.

- Close the airless spray gun and secure.
- Turn back the air regulator by turning the regulator screw to the left until it moves freely. The pressure gauge must show 0 bar.
- Open the relief tap / drain screw in order to release pressure.
- Remove and clean the filter insert. Then, screw the high pressure filter's cover back on. We recommend storing the filter insert in solvent.
- Hold the relief hose in container "B".
- Open the main air supply tap.
- Set the air regulator at approx. 1-2 bar and leave the relief tap open for approx. 10 seconds so that the remaining solvent/paint mixture is removed.
- Close the relief tap / drain screw.
- Turn the pressure completely back down using the maintenance unit and air regulator. The pressure gauge must show 0 bar.
Close the air regulator by turning the regulating screw to the left.
- Close the main air supply tap.
- Open the relief tap / drain screw for a short period so that pressure can escape, then close it again.

Maintenance / Repair

7

Checks

7.1



According to the rules for the prevention of accidents „Working with liquid jet systems“ VGB 87 the equipment must be checked and overhauled at regular intervals by a specialist (WIWA Service).

The equipment must be checked:

- before the first start-up,
- after changes and repairs of equipment parts having an effect on safety,
- after an interruption of operation of more than 6 months,
- however at least every 12 months.

For equipment, which has been taken out of operation, the check can be postponed up to the next start-up.

The results of the checks must be recorded in writing and kept until the next check. The checking certificate or a copy of it must be available at the place where the equipment is used.

Maintenance / Repair

7

Maintenance plan

7.2



- Before each start-up check the level of the lubricating liquid and, if necessary, refill lubricating liquid.

Flushing solvent quantity:

The sight glass has to be half filled by flushing solvent.

- Check lubricant once every 50 operating hours for discolouration with spraying material.

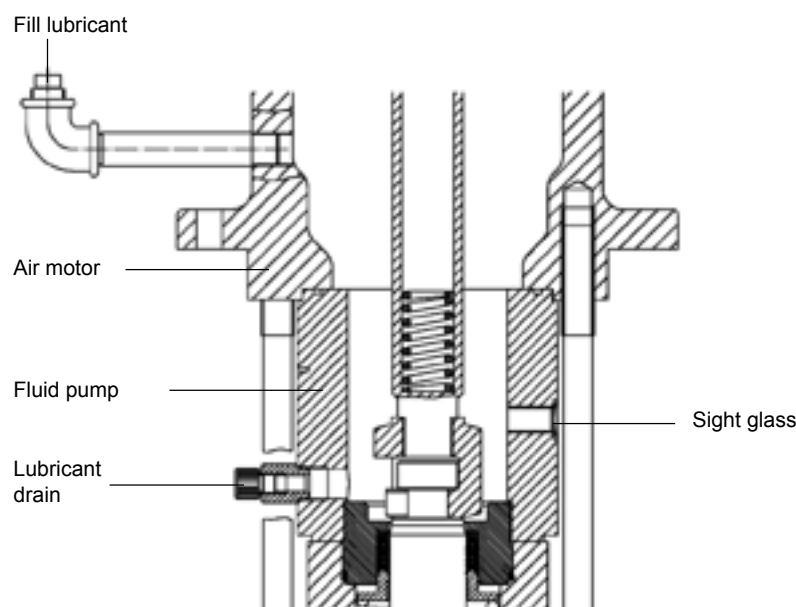
If slightly discoloured:

Change the lubricant. By draining a small amount, the degree of discolouration can be controlled. Once finished, refill an equal amount of clean lubricant to that which was drained.

If heavily discoloured and large proportion of spraying material is present:

Clean the lubricant chamber, change the upper pump packing (see list of spare parts for material pump) and fill with new lubricant. We recommend using WIWA flushing agent, order no.: 0163333.

You will find further maintenance information for each component located in the appendix of each spare parts list.



picture 7.2.1 Filling and draining lubricant

Maintenance / Repair

7

Maintenance of the high pressure filter , Typ 13 Sonder

7.3/1



picture 7.3.1

Always, disconnect the power supply and drain any pressure before starting maintenance work on the high pressure filter.

Clean the filter insert in the high pressure filter daily or after every change of material.

Apply the drain tap often to avoid clogging of the draining system.

Change and clean the filter insert and o-ring

- Unscrew the cap (Pos. 1) with the spanner (Pos. 2) (picture 7.3.1).
- Unscrew the nut (Pos. 21) with a fork wrench and remove the filter insert. (Pos.20)(picture 7.3.2).
- Clean the filter insert (Pos.20).
Use only the appropriate solvent for the material being worked with.
Replace the filter insert should any sign of damage be present..
- Replace the o-ring (Pos.3) should any sign of leakage be present.
- Mount the high pressure filter in reserve order.



picture 7.3.2

For R and RD version high-pressure filters:

To avoid seizing, lightly grease the threads before assembly.

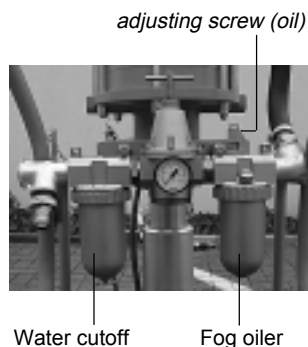
The mentioned position numbers refer to the spare parts lists located in the appendix, chapter 9.3.

Maintenance / Repair

7

Maintenance of the maintenance unit - 3-part

7.3/2



picture 7.3.3
3-part maintenance unit



picture 7.3.4
drain valve on the water cutoff



Lubricant and/or anti-freezing agent (fog oiler)

Check the air motor's lubricant in the fog oiler of the air maintenance unit and refill, if required (picture 7.3.3).

High air humidity can cause icing of the motor.

In case of icing, only use pure anti-freezing agent.

Adjustment of the fog oiler on the air maintenance unit

- Let the air motor run slowly at an air inlet pressure of approx. 4 bar.
- Check the sight glass on the fog oiler to ensure that one drop of lubricant is fed into the compressed air at every 10 - 15 double strokes of the air motor. If this not the case, the adjusting screw (picture 7.3.3) on the fog oiler has to be set accordingly.

Condensed water drain (water cutoff)

- Before each application and in case of high air humidity, the occurring condensed water should be discharged via the drain valve on the water cutoff, even during operation (picture 7.3.4).

Only use the lubricants and anti-freezing agent as indicated in Chapter 9.1.

Disturbances during operation and Trouble-shooting

8

/1

Faults	Probable Causes	Remedies
A) Pump does not work despite triggering the gun (without spray tip) and/or opening the relief tap at the high pressure filter.	1. Air supply tap closed. 2. High pressure filter clogged. 3. Air motor blocked. 4. Air motor defective.	1. open Air supply tap. 2. Clean Filter insert and exchange if necessary. 3. Airless Models Perfect and Effective only: - Press pin (pos. 12, chap. 3.2) with small screwdriver - Use only filtered air 4. - Overhaul Air motor according to the Spare Parts List and Repair Instructions. - Call Customer Service.
B) Pump cycles but will not prime.	1. Suction sieve clogged. 2. Suction hose clogged. 3. Ball at Bottom valve does not rise (becomes stuck). 4. Bottom valve does not close.	1. Clean Sieve. 2. Replace Hose. 3. - Trigger gun without spray tip. - open Relief tap at High pressure filter (see Spare Parts List on High Pressure Filter). - Knock lightly on the side of the Bottom valve with a hammer. - Unscrew Suction system. Using a pin or a screw driver, from underneath release Ball in Bottom valve. 4. Unscrew Bottom valve and clean thoroughly Ball with seat (see Repair Instructions on Material pump).
C) Pump cycles but does not stall when gun is closed.	1. Packing and/or valve worn.	1. Replace with new parts (see Repair Instructions on Material Pump).
D) Pump cycles evenly, but required spraying pressure is not reached.	1. Air supply pressure too low. 2. Spray tip (new) is too big. 3. Spray tip wears off (becomes too big). 4. Air motor frosts (cycling too slow).	1. Increase air pressure at Air regulator. Check that cross-section of air line is correct. 2. Use smaller spray tip or bigger pump. 3. Replace with new spray tip. 4. - Reduce if possible the air inlet pressure. - If not available, install Air maintenance unit with Oiler. Fill Oiler with anti-freeze (Glycol) and adjust according to the operating instructions, standard values: 1 droplet by approx. 10 cycles.

Disturbances during operation and Trouble-shooting

8

/2

Faults	Probable Causes	Remedies
E) Pump cycles unevenly and does not reach the required spraying pressure. (The uneven cycling of the pump is recognizable by the difference of the cycling speed of the upward and downward strokes)	1. The viscosity of the coating material is too high (suction loss). 2. Suction system is not tight (spray jet pulsates). 3. Bottom valve is not tight (pump stalls on the upward stroke when gun is closed). 4. Piston valve is not tight (pump stalls on the downward stroke when gun is closed). 5. Upper or lower packing corroded (wear and tear).	1. - Thin down coating material. - Use bigger pump. 2. Check all seals on fittings of Suction pipe and hose and exchange if necessary (see Spare Parts List on Flexible suction assembly and/or Direct suction assembly). 3. Unscrew Bottom valve. Thoroughly clean Ball with seat, and exchange if necessary (see Repair Instructions on Material Pump). 4. Check and clean Ball with seat of Dual Piston, and exchange if necessary (see Repair Instructions on Material Pump). 5. Exchange packings (see Repair Instructions on Material Pump).

Appendix

9

Technical Specifications and Machinery materials

9.1

	35061	35075	48046	48057	60028	60036
Air motor piston diameter (mm)	300	333	300	333	300	333
Air motor piston stroke (mm)	120	120	120	120	120	120
Pump ratio	61:1	75:1	46:1	57:1	28:1	36:1
Max. free-flow output (ltr/min)	35	35	48	48	60	60
Output per cycle (ccm)	275	275	360	360	550	550
Max. input air pressure (bar)	7	6	8	7	8	8
Max. operating pressure ((bar)	427	450	368	399	224	288
Max. tip size (high pressure filter) (inch)			1/4" NPS(A) (2x3/8")			
Air inlet (maintenance unit) (inch)			1"			

Dimensions (cart mounted): LxWxH (mm) ca: 500x500x1000

Dimensions (wall mounted): LxWxH(mm) ca:

Net weight (cart mounted) (kg) ca: 170

Net weight (wall mounted) (kg) ca: 161

Sound pressure level emitted at the work place:

Running at idle (L_{pAd}) (dB) 84

Running with load (L_{pAd}) (dB) 80

The sound pressure level emitted at the work place has been determined according to the following standard: DIN EN ISO 3744, DIN EN 31200, DIN EN 31201 and DIN 45635-20.

Machinery materials

Pneumatic oil for air maintenance units

The factory supplies ESSO pneumatic oil 100, WIWA Purchase Order No. 0632579 (0.5 liters).

Anti-freezing agent for air maintenance units

For optimum protection we recommend the WIWA anti-freezing agent, WIWA Purchase Order No. 0631387.

Lubricating liquid

We recommend to use the WIWA lubricating liquid, WIWA Purchase Order No. 01633333.

Materials required for maintenance and repair

- Securing material (50 ml), WIWA Purchase Order No. 000015
- Lubricant (acid-free grease), WIWA Purchase Order No. 000025

Appendix	9
Certificate of Training and Operation	9.2

This certificate corresponds to the EU guideline for working substances 85/655/ EWG, Paragraph II, Article 7.

The owner of the following machine has trained the operating personnel.

.....
(Make, Model, Year of Construction, Order Number)

The training was conducted by the following designated person:

.....
(Foreman or responsible Superior, Name, Department)

The persons trained have read and understood the user's handbook for the above mentioned machine, especially the chapter Safety, and are certain that they can operate this machine safely.

.....
(Operating Personnel, Date, Name)

.....
(Personnel for Maintenance and Repair, Date, Name)

.....
(Personnel Electric/ Electronics, Date, Name)

Appendix

9

Machine cart and spare parts lists

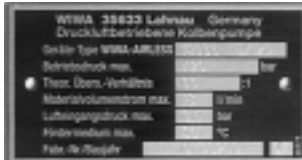
9.3



This user's manual is valid only in connection with the following machine chart:

The machine chart includes all machine specifications and details which are important and relevant for safety:

- exact designation and manufacturing data
- technical specification and limit values
- equipment and checking certificate
- data for purchase
- machine features (machine components and accessories included in the supply with article and spare parts number)



picture 9.3.1

Please pay attention that the machine chart specification is in accordance with the machine label (picture 9.3.1). In case of any deviations or default of a label we would ask you to advise us without delay.

MACHINE CARD FOR WIWA PROFESSIONAL SERIES

Manufacturer: WIWA Wilhelm Wagner GmbH & Co. KG
 35633 Lahnau 1
 Distributor: WIWA Wilhelm Wagner LP
 107 N. Main St.
 Alger, OH 45812
 Telephone: 855-757-0141
 Description: WIWA 75:1 Herkules
Part No. 7000202
 Production Year: 2012
 Customer: Golden State
 Delivery Date: Sept. 2012

Working Pressure (max., in psi) 6615
 Pressure Ratio: 75:1
 Air Inlet Pressure (max., in psi) 75
 Output per cycle (fl.oz.): 9.3

Machine Specifications:

Part No.	Description	Spare Parts Reference Number
0641427	High Pressure Pump consisting of:	
0640818	Air Motor 333/120	0640818
0641416	Material Pump 275/120	0641416
0065285	High-Pressure Filter	0065285
0467782	M30 Filter Insert	
0601578	Safety Valve, 75 psi	
0648095	Air Maintenance Unit	0648095
4300000	Cart	
0652416	Suction Hose	0652416
0638163	Suction Strainer	
0474487	Ground Wire	
0163333	Throat Seal Liquid	
0632579	Pneumatic Oil	

Luftmotor • Air Motor • Motor pneumatique

D333/120

Bestell-Nr. • Order-No. • Référence: **0640818**

Serie • Serie • Série: **001**

Akt.: **16.12.05**

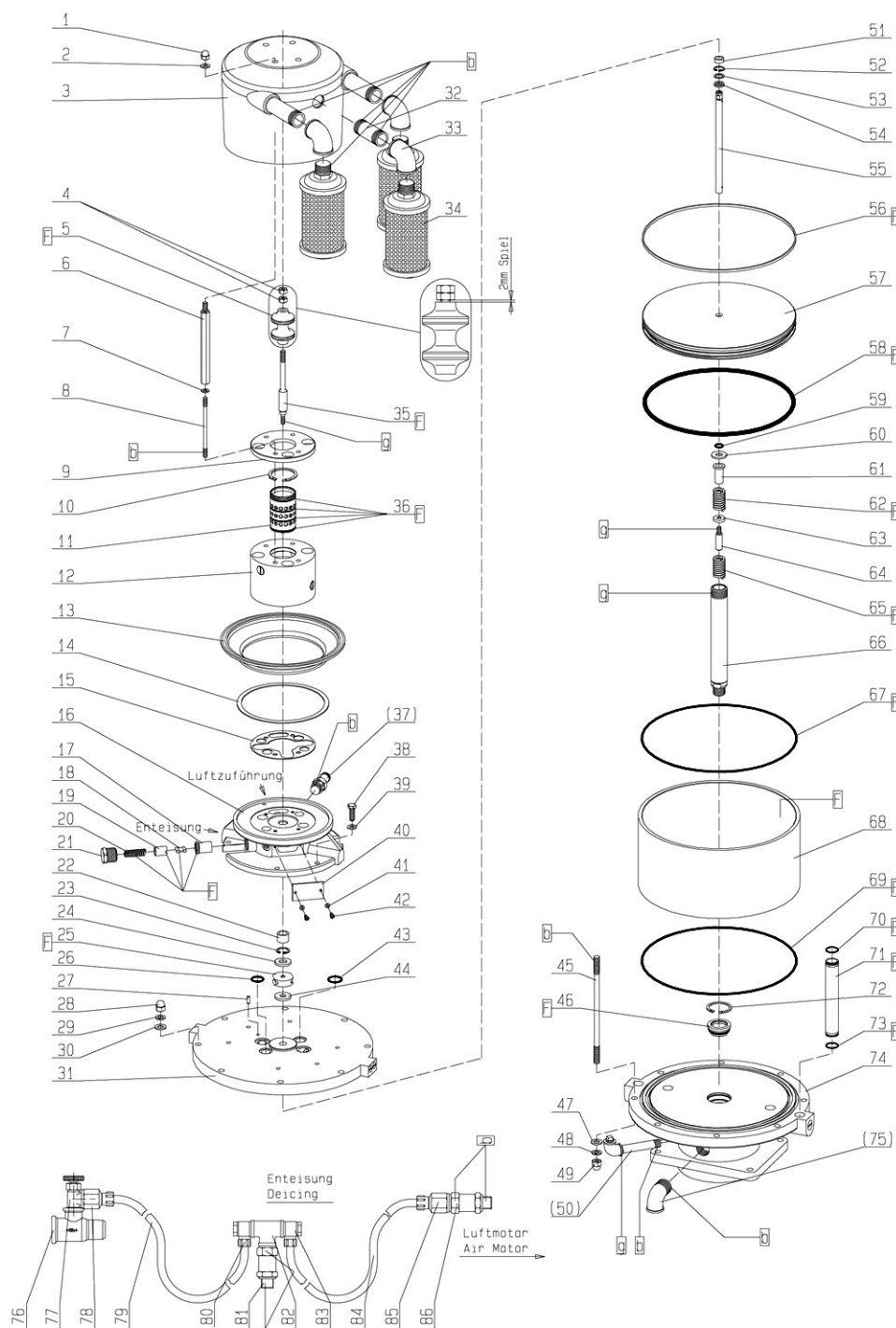


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¹V= Verschleißteile • Wear parts • Pièces d'usure usuelles

²D= Teile des Dichtungssatzes • Parts of seal kit • Pièces de kit de joints

³R= Teile des Reparatursatzes • Parts of repair kit • Pièces de kit de reparation

Pos.-Nr. in Klammern () sind keine Betandteile dieser Baugruppe

• items marked thus () are not part of assembly shown

• Les pièces entre parenthèses ne font pas partiedu sous-groupe

Sicherungsmittel 50ml • Thread sealant 50ml • produit d'étanchéité 50ml

R schwach • light • léger

b mittel • medium • medium

g hochfest • high-streng • hautesistance

Schmiermittel • Lubrication grease • Matière graisse

F Fett, säurefrei • acid-free • sans acide

S Spülmittel • lubricating fluid • produit de nettoyage

M Montagepaste (für R- und RS-Ausführung)

• assembly paste (for version R or RS) • pâte d'assemblage (de version R et RS)

Best.-Nr.: 0000016

Best.-Nr.: 0000015

Best.-Nr.: 0000014

Best.-Nr.: 0000025

Best.-Nr.: 0163333

Best.-Nr.: 0000045

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Luftmotor • Air Motor • Motor pneumatique

D333/120

Bestell-Nr. • Order-No. • Référence: **0640818**

Serie • Serie • Série: **001**

Akt.: **16.12.05**

Pos. Pos. Code	Bestell-Nr. Order-No. Référence	Stück Pieces Pièce	V ¹ / D ² / R ³	Artikelbezeichnung	Part Description	Désignation des articles
1.	0460249	4		Hutmutter	dome nut	écrou borgne
2.	0460613	4		U-Scheibe	washer	rondelle
3.	0644737	1		Gehäuse -Oberteil	housing	carcasse
4.	0460648	2		Mutter	nut	écrou
5.	0638193	1	V, R	Steuerkolben, kpl.	control piston	piston de contrôle
6.	0640826	4		Gewindestück	threaded piece	douille filetée
7.	0460214	4		U-Scheibe	washer	rondelle
8.	0475289	4		Stehbolzen	threaded bolt	boulon
9.	0638173	1		Deckel	cover	couvercle
10.	0638196	1		Sicherungsring	s-ring	anneau >S<
11.	0638185	1		Steuerzylinder	control cylinder	cylindre de contrôle
12.	0638189	1		Steuergehäuse, kpl.	control housing	carcasse de contrôle
13.	0475483	1		Gehäuse-Unterteil	housing	carcasse
14.	0465615	1	D, R	Dichtung	gasket	joint
15.	0638179	1	D, R	Dichtung	gasket	joint
16.	0641833	1		Oberteil, kpl.	upper part cpl.	partie supérieure cpl.
17.	0220779	2		Lagerbuchse	bearing bush	bouchon
18.	0163813	2	V	Schnäpper	toggle	bascule
19.	0220787	2	V	Schnäpperlager	toggle bearing	roulement
20.	0415154	2	V	Druckfeder	spring	ressort
21.	0220760	2		Halteschraube	retaining screw	écrou de retenue
22.	0220671	1		Sinterlager	sintered bearing	coussinet fritté
23.	0461296	1		Sicherungsring	s-ring	anneau >S<
24.	0415278	1	V, R	Dämpfungsscheibe	dampening spacer	rondelle insonorisante
25.	0220752	1	V, R	Mitnehmer	carrier	toc d'entraînement
26.	0604356	2	D, R	O-Ring	o-ring	joint torique
27.	0461288	1		Zylinderstift	cylindrical pin	goupille cylindrique
28.	0463795	6		Hutmutter	dome nut	écrou borgne
29.	0460931	8		Federring	spring ring	rondelle élastique
30.	0461091	8		U-Scheibe	washer	rondelle
31.	0640811	1		Zylinderdeckel, kpl.	cylinder cover	couvercle de cylindre
32.	0631415	3		Langnippel	extension nipple	nipple long
33.	0415200	3		Winkel	elbow	coude
34.	0463825	3		Schalldämpfer	muffler	silencieux
35.	0638181	1		Steuerachse	control axle	axe de contrôle
36.	0632936	4	D, R	O-Ring	o-ring	joint torique
(37.)	***	1		Sicherheitsventil	safety valve	soupape de sécurité

¹V= Verschleißteile • Wear parts • Pièces d'usure usuelles

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³R= Teile des Reparatursatzes • Parts of repair kit • Pièces de kit de reparation

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Sicherungsmittel 50ml • Thread sealant 50ml • produit d'étanchéité 50ml

R schwach • light • léger
b mittel • medium • medium
g hochfest • high-streng • hautesistance

Best.-Nr.: 0000016

Best.-Nr.: 0000015

Best.-Nr.: 0000014

Schmiermittel • Lubrication grease • Matière graisse

F Fett, säurefrei • acid-free • sans acide
S Spülmittel • lubricating fluid • produit de nettoyage
M Montagepaste (für R- und RS-Ausführung)
• assembly paste (for version R or RS) • pâte d'assemblage (de version R et RS)

Best.-Nr.: 0000025

Best.-Nr.: 0163333

Best.-Nr.: 0000045

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Luftmotor • Air Motor • Motor pneumatique

D333/120

Bestell-Nr. • Order-No. • Référence: **0640818**

Serie • Serie • Série: **001**

Akt.: **16.12.05**

Pos. Pos. Code (Forts.)	Bestell-Nr. Order-No. Référence	Stück Pièces Pièce	V ¹ / D ² / R ³	Artikelbezeichnung	Part Description	Désignation des articles
38.	0461385	6		Schraube	screw	vis
39.	0460613	6		U-Scheibe	washer	rondelle
40.	0220736	1		Deckel	cover	couvercle
41.	0460230	2		U-Scheibe	washer	rondelle
42.	0460443	2		Schraube	screw	vis
43.	0310360	2	D, R	O-Ring	o-ring	joint torique
44.	0466875	1	V, R	Dämpfungsscheibe	dampening spacer	rondelle insonorisante
45.	0640809	8		Stehbolzen	threaded bolt	boulon
46.	0478695	1	V, D, R	Führungsbuchse, kpl.	guide bush	coussinet
47.	0461091	8		U-Scheibe	washer	rondelle
48.	0460931	8		Federring	spring ring	rondelle lastique
49.	0463795	8		Hutmutter	dome nut	écrou borgne
(50.)	0163635	1		Einfüllstutzen	filler neck	tube de remplissage
51.	0221295	1		Sinterlager	sintered bearing	coussinet fritté
52.	0461334	1	R	Sicherungsring	s-ring	anneau >S<
53.	0468266	1		Scheibe	disc	disque
54.	0469270	1	V, D, R	Nutring	lip seal	joint
55.	0639761	1		Achse	axle	axe
56.	0638168	1	V, D, R	Führungsband	guide ring	bague de guidage
57.	0640819	1		Kolbenplatte	piston plate	plateau de piston
58.	0638195	1	V, D, R	O-Ring	o-ring	joint torique
59.	0311235	1	V, D, R	O-Ring	o-ring	joint torique
60.	0221368	1	V, R	Scheibe	disc	disque
61.	0221414	1		Anschlagbuchse oben		
62.	0415170	1		Druckfeder	spring	ressort
63.	0638831	1		Scheibe	disc	disque
64.	0221406	1		Anschlagbolzen	stop bolt	boulon de butée
65.	0415170	1		Druckfeder	spring	ressort
66.	0638833	1	V	Motorachse	motor axle	axe de moteur
67.	0638194	1	D, R	O-Ring	o-ring	joint torique
68.	0639759	1	V	Zylinder	cylinder	cylindre
69.	0638194	1	D, R	O-Ring	o-ring	joint torique
70.	0314463	2	D, R	O-Ring	o-ring	joint torique
71.	0639762	2		Belüftungsrohr	air inlet pipe	tube de prise d'air
72.	0461237	1	R	Sicherungsring	s-ring	anneau >S<
73.	0314463	2	D, R	O-Ring	o-ring	joint torique
74.	0640813	1		Unterteil, kpl.	bottom cpl.	patrie inférieure

¹V= Verschleißteile • Wear parts • Pièces d'usure usuelles

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[R] schwach • light • léger
[B] mittel • medium • medium
[G] hochfest • high-streng • hautesistance

Best.-Nr.: 0000016

Best.-Nr.: 0000015

Best.-Nr.: 0000014

Schmiermittel • Lubrication grease • Matière graisse

[F] Fett, säurefrei • acid-free • sans acide

Best.-Nr.: 0000025

[S] Spülmittel • lubricating fluid • produit de nettoyage

Best.-Nr.: 0163333

[M] Montagepaste (für R- und RS-Ausführung)

Best.-Nr.: 0000045

• assembly paste (for version R or RS) • pâte d'assemblage (de version R et RS)

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Luftmotor • Air Motor • Motor pneumatique

D333/120

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Serie • Serie • Série: **001**

Akt.: **16.12.05**

Pos. Pos. Code (Forts.)	Bestell-Nr. Order-No. Référence	Stück Pieces Pièce	V ¹ / D ² / R ³	Artikelbezeichnung	Part Description	Désignation des articles
(75.)	0471666	1		Winkel	elbow	coude
76.	0643956	1		T-Stück	t-piece	pièce en t
77.	0490997	1		Regelventil	control valve	soupape de réglage
78.	0640920	1		Verschraubung	screw fitting	vissage
79.	0632715	1		Druckluftschlauch	compressed air hose	flexible à l'air comprimé
80.	0463175	1		Verschraubung	screw fitting	vissage
81.	0632081	1		Rückschlagventil	non-return valve	soupape de non-retour
82.	0413666	1		T-Stück	T-piece	pièce en T
83.	0463175	1		Verschraubung	screw fitting	vissage
84.	0632715	1		Druckluftschlauch	compressed air hose	flexible à l'air comprimé
85.	0640920	1		Verschraubung	screw fitting	vissage
86.	0632081	1		Rückschlagventil	non-return valve	soupape de non-retour
	0463787	2		ohne Abbildung Ringmutter	not illustrated ring nut	sans illustration crou anneau
	0640899		R	Dichtungssatz	seal kit	jeu de joint
	0640900			Reparaturatz	repair kit	jeu de réparation

*** Bestell-Nr. für Sicherheitsventil siehe Materialkarte -
Order number for safety valve see card of machines -
Référence de soupape de sureté voir carte machine

¹V= Verschleißteile • Wear parts • Pièces d'usure usuelles

²D= Teile des Dichtungssatzes • Parts of seal kit • Pièces de kit de joints

³R= Teile des Reparaturatzes • Parts of repair kit • Pièces de kit de reparation

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Sicherungsmittel 50ml • Thread sealant 50ml • produit d'étanchéité 50ml

[R] schwach • light • léger Best.-Nr.: 0000016
[b] mittel • medium • medium Best.-Nr.: 0000015
[g] hochfest • high-streng • hautesistance Best.-Nr.: 0000014

Schmiermittel • Lubrication grease • Matière graisse

[F] Fett, säurefrei • acid-free • sans acide Best.-Nr.: 0000025
[S] Spülmittel • lubricating fluid • produit de nettoyage Best.-Nr.: 0163333
[M] Montagepaste (für R- und RS-Ausführung) Best.-Nr.: 0000045
• assembly paste (for version R or RS) • pâte d'assemblage (de version R et RS)

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Air Motor 333/120 - 0640818

10.2

Troubleshooting

10.2.1



Before beginning any repairs or maintenance on the unit, read all instructions found in the User's Handbook and observe them closely.

The User's Manual must be available at all times when working on the unit.

In this chapter you will find information pertaining to troubleshooting the air motor. The disassembly and reassembly are described step by step. In addition, you will find an exploded line drawing of the air motor, as well as the related spare parts lists at the conclusion of the troubleshooting section.

- First, check the fault's cause in the table found in Chapter 10.2.1.
- Disassemble the air motor as necessary according to Chapter 10.2.2.
- Once the fault has been repaired, reassemble the air motor according to the instructions found in Chapter 10.2.3. **Please note that the steps are to be followed in the reverse order (from 14 to 1) as they correspond with the steps 1 to 14 in the section on disassembly.**

The assembly instructions include information concerning the use of grease, thread sealant, allowable torque, etc.

Fault	Probable Cause	Solution
A) Inbound air used to drive the motor is leaking from the control piston into the mufflers Pos. 37 (air motor continues to run but becomes slower at the same inbound air pressure)	1. Control piston is worn Pos. 7	1. Replace (Step 1-4)
	2. Lip seal is worn Pos. 57	2. Replace (Step 1-11)
	3. O-ring is worn Pos. 61	3. Replace (Step 1-13)
	4. Gasket is defect Pos. 17	4. Replace (Step 1+2)
	5. O-ring is worn Pos. 62	4. Replace (Step 1-13)
B) Air blows out of the lower motor housing drain hole Pos. 77 (air motor continues to run)	1. Guide bush is worn Pos. 49	1. Replace (Step 1-14)
C) Inbound air used to drive the motor is leaking from the control piston into the muffler Pos. 37 (air motor is blocked)	1. Toggle Pos. 20 is no longer seated in either the toggle bearing Pos. 21 or the carrier Pos. 27 .	1. Repair (Step 1-5)
	2. Guide axle spring Pos. 65 and/or 68 is broken	2. Replace (Step 1-13)
D) Air motor doesn't run.	See (C) above	
E) Air motor is not able to reach its full performance level	1. Insufficient inbound air	1. Check the size of the inbound air line and the compressor's output
	2. Muffler is clogged Pos. 37	2. Replace (Step 1)

Air Motor 333/120 - 0640818

10.2

Disassembly

10.2.2

General Instructions:

- Turn off the inbound air supply and depressurize the unit.
- Disconnect the material pump from the air motor. To accomplish this, follow the instructions found in Chapter 10.1.2.

Procedure:

- Step 1
- Using an open-end wrench (SW 17), remove the 4 dome nuts **Pos. 1** and washers **Pos. 2**.
 - Remove the complete upper housing **Pos. 3** and muffler assembly.
 - Remove the intermediate ring **Pos. 5** and the lower housing **Pos. 15** from the upper housing **Pos. 18**.
 - Remove the gasket **Pos. 16** from the upper housing.
- Step 2
- Using an open-end wrench (SW 17), unscrew the four threaded pins **Pos. 8** and washers **Pos. 9** from the threaded bolts **Pos. 10**.
 - Remove the cover **Pos. 11** from the control housing **Pos. 14**.
 - Remove the control housing **Pos. 14** (incl. **Pos. 12, 13+39**) from the upper housing **Pos. 18**.
 - Remove the gasket **Pos. 17** from the upper housing.
- Step 3
- Using circlip pliers (A3), remove the retaining ring **Pos. 12** from the control housing **Pos. 14**.
 - Use an appropriate punch to tap the control cylinder **Pos. 13** out of the control housing.
Warning! To avoid damage, do **not** pull the control cylinder out of the housing with pliers.
 - Remove the 4 o-rings **Pos. 39** from the control cylinder **Pos. 13**.
- Step 4
- Using two open-end wrenches (SW 17), remove the two nuts **Pos. 6** from the control piston **Pos. 7**.
 - Remove the control piston **Pos. 7**.
- Step 5
- Remove the retaining screw **Pos. 23** with a socket wrench (SW 32).
 - Remove the spring **Pos. 22**.
 - Using circlip pliers (J 2), remove the toggle **Pos. 20** (incl. toggle bearing **Pos. 21**) and the bearing bush **Pos. 19** (if necessary).
 - Repeat these steps for the retaining screw on the other side.
 - Remove the 2 screws **Pos. 45** and washers **Pos. 44**.
 - Remove the cover **Pos. 43** from the upper housing.
- Step 6
- Screw a nut (M 8) onto each of the four threaded bolts **Pos. 10** and counter each with a second nut.
 - Using an open-end wrench (SW 13), remove the 4 threaded bolts from the upper housing.
 - Remove the 6 screws **Pos. 41** and washers **Pos. 42** from the upper housing **Pos. 18** with an open-end wrench (SW 17).
 - Remove the upper housing **Pos. 18** from the cylinder cover **Pos. 33**.
- Step 7
- Remove the compressed air hoses **Pos. 81+86** with an open-end wrench (SW 14).
 - Using an open-end wrench (SW 19), remove the non-return valves **Pos. 83+88** (incl. the fittings **Pos. 82+87**) and the control valve **Pos. 79** (incl. the fitting **Pos. 80**).

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10.2

Disassembly

10.2.2

- Step 8
- Using circlip pliers (J 2), remove the retaining ring **Pos. 25** from the upper housing **Pos. 18**.
 - Use a punch (OD 20mm / 0.8 in.) to tap out the sintered bearing **Pos. 24**.
- Step 9
- Remove the o-rings **Pos. 28+46** from the cylinder cover **Pos. 33**.
 - Remove the dampening spacer **Pos. 26** from the control axle **Pos. 38**.
 - Pull the control axle **Pos. 38** upward and push the dampening spacer **Pos. 47** away from the carrier **Pos. 27** to expose the wrench flats.
 - Use two open-end wrenches (SW 12+14) to remove the control axle **Pos. 38** from the guide axle **Pos. 58**. (If the control axle can not be turned, the connection between the control and guide axles has to be heated with a gas torch to release the grip of the sealant applied to the threadings.)
 - Pull the carrier **Pos. 27** and dampening spacer **Pos. 47** from the control axle **Pos. 38**.
- Step 10
- Remove the 8 dome nuts **Pos. 52**, spring rings **Pos. 51** and washers **Pos. 50** from the bottom housing **Pos. 77** with 2 open-end wrenches (SW 19).
 - Remove the 6 threaded bolts **Pos. 48** together with the washers **Pos. 32**, spring rings **Pos. 31** and dome nuts **Pos. 30** from the cylinder cover **Pos. 33**. Remove the 2 threaded bolts **Pos. 48** with the ring nuts (not pictured) as well.
- Step 11
- Remove the cylinder cover **Pos. 33** from the cylinder.
 - Remove the o-ring **Pos. 70** from the cylinder cover.
 - Carefully remove the lip seal **Pos. 57** from the cylinder cover **Pos. 33** using a small flathead screwdriver.
 - Remove the disc **Pos. 56**.
 - Using circlip pliers (J 2), remove the retaining ring **Pos. 55**.
 - Using a punch (OD 15mm / 0.6 in.), tap out the sintered bearing **Pos. 54**.
 - Pull the 2 air inlet pipes **Pos. 74** and o-rings **Pos. 73+76** out of the cylinder cover **Pos. 33** and bottom housing **Pos. 77**.
- Step 12
- Using 2 open-end wrenches (SW30+SW46), remove the coupling from the motor axle **Pos. 69**.
 - Remove the cylinder **Pos. 71** (incl. piston plate **Pos. 60** and guide axle **Pos. 58**) from the lower housing.
 - Place the cylinder onto an even padded surface.
 - Press the piston plate **Pos. 60** and guide axle **Pos. 58** out of the cylinder (use a rubber mallet, if necessary).
- Step 13
- Remove the o-ring **Pos. 61** and guide ring **Pos. 59** from the piston plate **Pos. 60**.
 - Span the piston plate **Pos. 60** in a bench vise. The motor axle **Pos. 69** must be facing upward.
 - Remove the motor axle **Pos. 69** from the piston plate with an open-end wrench (SW 30). (If the motor axle can not be turned, the connection between the motor axle and piston plate has to be heated with a gas torch to release the grip of the sealant applied to the threadings.)
 - Remove the disc **Pos. 63** and o-ring **Pos. 62** from the piston plate **Pos. 60**.
 - Remove the guide axle **Pos. 58**, the stop bolt **Pos. 67**, the disc **Pos. 66**, the spring **Pos. 65** and the stop guide **Pos. 64** from the motor axle **Pos. 69**.

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10.2

Disassembly

10.2.2

Step 14

- Remove the o-ring **Pos. 72** from the bottom housing **Pos. 77**.
- Using circlip pliers (J 2), remove the retaining ring **Pos. 75** from the bottom housing **Pos. 77**.
- Press the guide bush **Pos. 49** out of the bottom housing **Pos. 77** from below (with the disassembled motor axle, if necessary).

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10.2

Assembly

10.2.3

General Instructions:

- **Please note, the below instructions are numbered in reverse order to correspond to the same steps found in the previous chapter! Begin with Step 14.**
- Before assembly, clean all components thoroughly.
- Replace damaged parts with new ones.
 (Motor axle, guide axle, and cylinder may not show any signs of wear or scoring.)

Procedure:

- Step 14
- Lightly grease the guide bush **Pos. 49**.
 - Place the guide bush **Pos. 49** into the bottom housing **Pos. 77** (use a rubber mallet, if necessary).
 - Use circlip pliers (J 2) to mount the retaining ring **Pos. 75** to the bottom housing **Pos. 77**.
 - Grease the o-ring groove in the bottom housing **Pos. 77** and mount the o-ring **Pos. 72**.
- Step 13
- Place the o-ring **Pos. 62** and the disc **Pos. 63** into the piston plate **Pos. 60**.
 - Apply high-strength thread sealant (i.e. Loctite®) to the threading of the stop bolt **Pos. 67**.
 - Screw the stop bolt **Pos. 67** with disc **Pos. 66** into the guide axle **Pos. 58** (on the side without wrench flats).
 - Span the stop bolt in a bench vise and tighten the guide axle with an open-end wrench SW 12.
 - Grease the spring **Pos. 68** and set it into the motor axle **Pos. 69**.
 - Push the other spring **Pos. 65** over the stop guide **Pos. 64**.
 - Push the stop guide **Pos. 64** with the flange facing upward over the wrench flats of the guide axle **Pos. 58**.
 - Lightly grease the axle and all axle-mounted components.
 - Place the guide axle **Pos. 58** into the motor axle **Pos. 69**.
 - Span the piston plate **Pos. 60** in a bench vise.
 - Apply high-strength thread sealant (i.e. Loctite®) to the threading of the motor axle **Pos. 69**.
 - Push the guide axle **Pos. 58** through the hole in the piston plate.
 - Screw the motor axle into the piston plate **Pos. 60** using an open-end wrench (SW 30).
 - Remove the piston plate **Pos. 60** from the bench vise.
 - Grease the outer rim of the piston plate **Pos. 60**.
 - Fit the o-ring **Pos. 61** and guide ring **Pos. 59** into the groove on the outer rim of the piston plate **Pos. 60**.
 - Apply grease again to the o-ring **Pos. 61**.
- Step 12
- Place the cylinder **Pos. 71** onto the bottom housing **Pos. 77**.
 - Evenly grease the inner wall of the cylinder **Pos. 71**.
 - Grease the motor axle **Pos. 69**.
 - Press the piston plate **Pos. 60** (incl. the complete motor axle assembly) into the cylinder **Pos. 71** through the bottom housing **Pos. 77**.
 Use a rubber mallet to fit the piston plate into the cylinder, if necessary.
Warning! The piston plate should only be pressed into the cylinder until the upper rim is cleared.
 - Use two open-end wrenches (SW 30+46) to mount the coupling onto the motor axle.

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10.2.3

- Step 11**
- Place an o-ring **Pos. 76** onto each of the air inlet pipes **Pos. 74**.
 - Lightly grease the o-rings **Pos. 76**.
 - Place the air inlet pipes **Pos. 74** into the bottom housing **Pos. 77**.
 - Place the o-ring **Pos. 70** into the greased groove in the cylinder cover **Pos. 33**.
 - Set the sintered bearing **Pos. 54** into the cylinder cover **Pos. 33**.
 - Using circlip pliers (J 2), mount the retaining ring **Pos. 55** over the sintered bearing **Pos. 54**.
 - Press the disc **Pos. 56** onto the retaining ring **Pos. 55**.
 - Grease the lip seal **Pos. 57**.
 - Place the lip seal **Pos. 57** onto the disc **Pos. 56** and grease it again.
Warning! Lay the lip seal flatside down into the groove so that the seal's ridge rests into the groove in the cylinder cover.
 - Place an o-ring **Pos. 73** onto each of the air inlet pipes **Pos. 74**.
 - Lightly grease the o-rings **Pos. 73**.
 - Place the cylinder cover **Pos. 33** onto the cylinder **Pos. 71**.
 The cover must fit exactly onto the air inlet pipes.
- Step 10**
- Mount the 8 threaded bolts **Pos. 48**, 16 washers **Pos. 32+50**, 16 spring rings **Pos. 31+51**, and 14 dome nuts **Pos. 30+52** and 2 ring nuts (**not pictured**) hand-tight.
Warning! Mount the threaded bolts with the ring nuts (**not pictured**) opposite of one another (in front of or behind the air inlet pipes).
 - Position the air inlet pipes vertically to the upper and bottom housings.
 - Cross-tighten the eight threaded bolts with two open-end wrenches (SW 19).
- Step 9**
- If the guide axle **Pos. 58** is not positioned outside of the cylinder cover, screw an M 8 (outer threading) bolt through the cylinder cover and into the axle. Pull the axle upward until visible and remove the M 8 bolt.
Or:
 Carefully press the piston plate **Pos. 60** into the cylinder until the axle is visible.
 - Press the dampening spacer **Pos. 47** onto the axle **Pos. 58**.
 - Completely degrease the axle.
 - Set the carrier **Pos. 27** with the hole facing downward onto the axle **Pos. 58**.
 - Apply high-strength thread sealant (i.e. Loctite®) to the threadings of the control axle **Pos. 38**.
 - Using two open-end wrenches (SW 12+14), mount the control axle **Pos. 38** to the guide axle **Pos. 58**.
 - Press the dampening spacer **Pos. 26** onto the control axle.
 - Apply some grease to the upper rim of the larger section (outer diameter) of the control axle.
 - Lightly grease the dampening spacers, carrier and guide axle as well.
 - Place the o-rings **Pos. 28 + 46** onto the cylinder cover **Pos. 33**.
- Step 8**
- Set the sintered bearing **Pos. 24** into the upper housing **Pos. 18**.
 - Using circlip pliers (J 2), set the retaining ring **Pos. 25** into the groove on the upper housing.
- Step 7**
- Mount the de-icing assembly to the upper housing.
 - Screw both non-return valves **Pos. 83+88** (incl. the fittings **Pos. 82+87**) into the two 1/4" holes in the sides of the upper housing.
 - Connect the control valve **Pos. 79+** with the fitting **Pos. 80** to the t-piece located at the air inlet.
 - Connect the valves with the air hoses **Pos. 81+86**. Tighten them with an open-end wrench (SW 14).

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10.2

Assembly

10.2.3

- Step 6
- Place the upper housing **Pos. 18** onto the cylinder cover **Pos. 33**.
Warning! The pin **Pos. 29** on the bottom of the upper housing must fit into the corresponding hole in the cylinder cover.
Position the upper housing so that the air inlet is facing to the rear.
 - Use an open-end wrench (SW 17) to tighten the 6 bolts **Pos. 41** (incl. washers **Pos. 42**) into the upper housing. **Cross-tighten** them evenly.
 - Screw the 4 threaded bolts **Pos. 10** into the upper housing **Pos. 18**.
 - Check the movement of the control axle **Pos. 38**.
It should move smoothly without any sticking. Any friction must be corrected by repositioning the air inlet pipes.
- Step 5
- Position the control axle **Pos. 38** so that the carrier **Pos. 27** is located at the holes for the toggle bearings **Pos. 21**. The grooves in the carrier must face toward the holes.
 - Lightly grease the bearing bush **Pos. 19** and place it into the hole.
 - Grease the toggle bearing **Pos. 21** and toggle **Pos. 20**. Apply the grease to the groove of the toggle bearing to improve the hold on the toggle.
 - Lead the toggle bearing (with toggle) into the bearing bush **Pos. 19**.
The toggle must fit into the groove on the carrier **Pos. 27**. This can be controlled through the opening behind the cover **Pos. 43**.
 - Place the spring **Pos. 22** onto the retaining screw **Pos. 23** and grease the spring well.
 - Screw the retaining screw **Pos. 23** (with spring **Pos. 22**) hand-tight into the upper housing **Pos. 18**.
 - Repeat these steps for the second toggle.
 - Screw each retaining screw two complete turns with a socket wrench (SW 32). Then, use the wrench to apply pressure to each screw until fully tightened.
 - Control the position of each toggle by moving the control axle up and down.
To do this, apply compressed air to one of the holes with an exhaust port at the side of the upper housing. At the same time, cover the other hole.
Repeat this step using the holes without exhaust ports on the side.
 - Mount the cover **Pos. 43** with the 2 screws **Pos. 45** and washers **Pos. 44** to the upper housing.
- Step 4
- Place the control piston **Pos. 7** onto the control axle **Pos. 38**. The longer side (with the groove) must face upward.
 - Screw the two nuts **Pos. 6** onto the control axle **Pos. 38** using two open-end wrenches (SW 17).
Warning! The distance between the countered nuts and the control piston must be 2 mm / .08 in.
 - Lightly grease the control piston.
- Step 3
- Use circlip pliers (A 3) to mount the retaining ring **Pos. 12** to the outermost groove on the control cylinder.
 - Mount the 4 o-rings **Pos. 39** in the grooves on the control cylinder **Pos. 13**.
 - Lightly grease the control cylinder.
 - Place the control housing onto your workbench with the side having the least number of holes facing upward.
 - Place the control cylinder **Pos. 13** into the control housing **Pos. 14** from above until the retaining ring rests on the housing.
Note: You can use a bench vise to press the control cylinder into the control housing.

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10.2

Assembly

10.2.3

- Step 2
- Place the gasket **Pos. 17** onto the upper housing.
Warning! The side with the silver markings must face upward. Ensure that the holes in the gasket are aligned perfectly with the holes found in the upper housing.
 - Press the control housing **Pos. 14** (with the retaining ring facing upward) over the threaded bolts **Pos. 10** and onto the upper housing **Pos. 18**.
 - Place the cover **Pos. 11** onto the control housing **Pos. 14**.
The groove for the retaining ring must be facing downward.
 - Place the 4 washers **Pos. 9** onto the threaded bolts **Pos. 10**.
 - Screw the 4 fittings **Pos. 8** onto the threaded bolts **Pos. 10** using an open-end wrench (SW 17).
Warning! Cross-tighten them evenly to a max. torque of 25 Nm / 18.4 ft.lb.
- Step 1
- Place the gasket **Pos. 16** onto the upper housing.
 - Place one after the other the lower housing **Pos. 15**, the intermediate ring **Pos. 5** and the upper housing **Pos. 3** (with muffler) onto the upper housing **Pos. 18**.
 - Using an open-end wrench (SW 17), cross-tighten the 4 dome nuts **Pos. 1** with washers **Pos. 2** onto the fittings **Pos. 8**.
 - Mount the material pump according to the instructions found in Chapter 10.1.3.

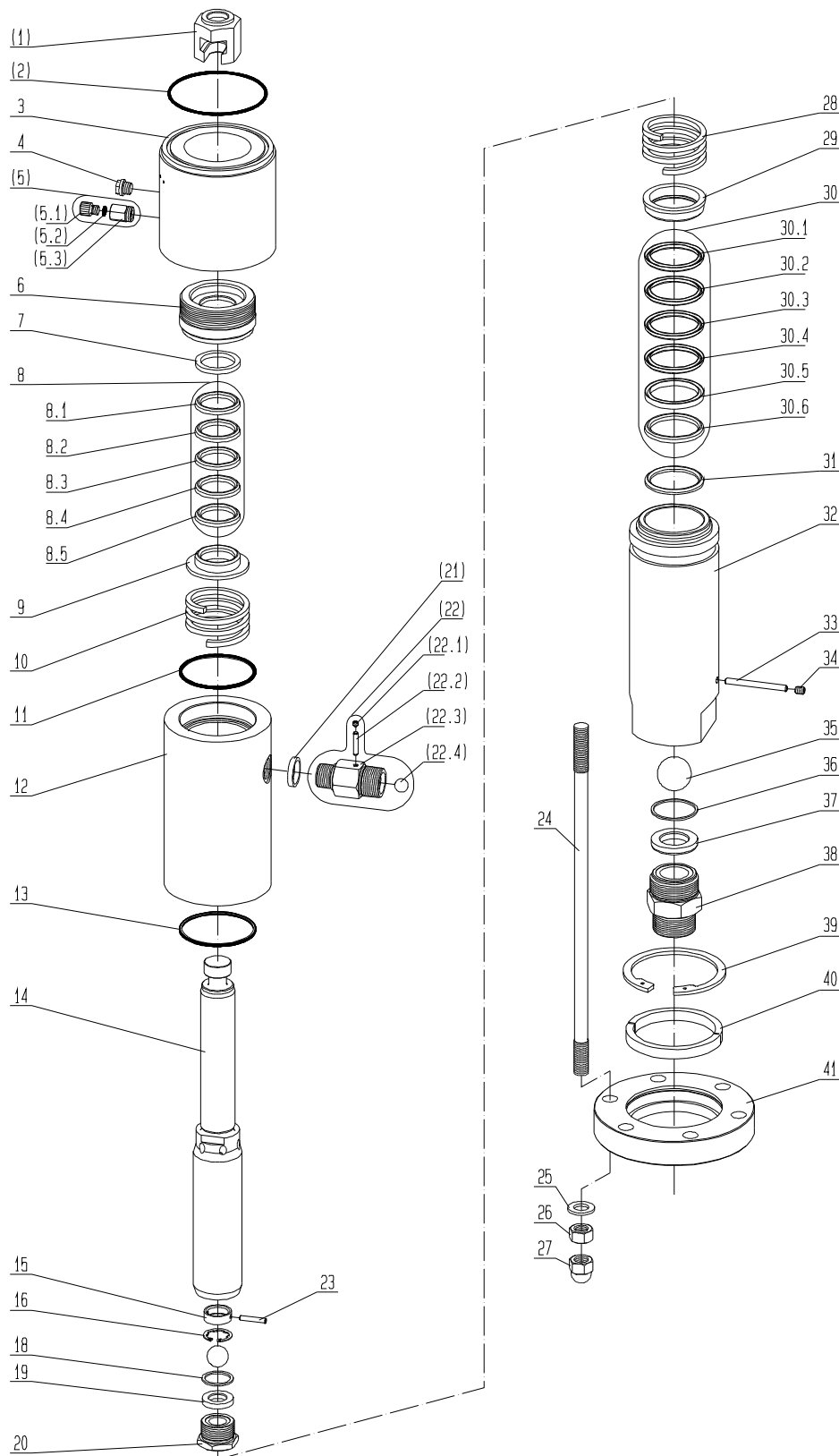
Materialpumpe • Material Pump • Section fluide:

Typ 275/120 - R -

Bestell-Nr. • Order-No. • Référence: **0641416**

Serie • Serie • Série: **001**

Akt.: **08.05**



¹V = Verschleißteile • Wear parts • Pièces d'usure usuelles

²D = Teile des Dichtungssatzes • Parts of seal kit • Pièces de kit de joints

³R = Teile des Reparatursatzes • Parts of repair kit • Pièces de kit de réparation

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Matière grasse (sans acide)

Best.-Nr. 0000015

Best.-Nr. 0000025

Materialpumpe • Material Pump • Section fluide:

Typ 275/120 - R -

Bestell-Nr. • Order-No. • Référence: **0641416**

Serie • Serie • Série: **001**

Akt.: **08.05**

Pos. Pos. Code	Best.-Nr. Order No. Référence	Stück Pieces Pièce	V ¹ /D ² /R ³	Artikelbezeichnung	Part Description	Désignation des articles
(01)	0223506	1		Kupplungsstück	coupling piece	pièce d'accouplement
(02)	0641496	1		O-Ring	o-ring	joint
03	0641465	1		Zwischenkörper	intermediate body	corps intermédiaire
04	0640052	1		Schauglas	sight glass	verre indicateur
(05)	0163686	1		Ablaßventil	drain valve	soupape de décharge
				bestehend aus Pos (5.1)-(5.3):	consisting of pos (5.1)-(5.3):	consistant en pos (5.1)-(5.3):
(05.1)	0210714	1		Ablaßschraube	draining screw	vis de remplissage
(05.2)	0310239	1	D, R	O-Ring	o-ring	joint
(05.3)	0221759	1		Ventilgehäuse	valve housing	corps de vanne
06	0641470	1		Einsatz	insert	insertion
07	0641471	1		Sattelring	saddle ring	bague de retenue
08	0641481	1	V, R	Manschettensatz gemischt	packing ring set mixed	jeu de joints composé
				bestehend aus Pos. 8.1-8.5	consisting of pos 8.1-8.5:	consistant en pos 8.1-8.5:
08.1	0641472	1	V, R	Manschette Teflon schwarz	packing ring Teflon black	joints Teflon
08.2	0641468	1	V, R	Manschette Leder	packing ring leather	joints cuir
08.3	0641472	1	V, R	Manschette Teflon schwarz	packing ring Teflon black	joints Teflon
08.4	0641468	1	V, R	Manschette Leder	packing ring leather	joints cuir
08.5	0641472	1	V, R	Manschette Teflon schwarz	packing ring Teflon black	joints Teflon
09	0641473	1		Gegenring	counter ring	bague de retenue
10	0639226	1		Druckfeder	spring	ressort
11	0465755	1	D, R	Dichtring	gasket	bague d'étanchéité
12	0641475	1		Federgehäuse	spring housing	logement de ressort
13	0465755	1	D, R	Dichtring	gasket	joint
14	0641474	1	V	Doppelkolben	dual piston	piston double
15	0612030	1		Ring	ring	joint
16	0473251	1		K-Ring	K-ring	K-joint
17	0412414	1	V, R	Kugel	ball	bille
18	0223255	1	D, R	Dichtung	gasket	joint
19	0418498	1	V	Ventilplatte	valve plate	plateau de soupape
20	0223263	1		Schraube	screw	vis
(21)	0218618	1		Dichtung	gasket	joint
(22)	0641495	1		Rückschlagventil	non-return valve	soupape de non-retour
				bestehend aus Pos (22.1)-(22.4):	consisting of pos (22.1)-(22.4):	consistant en pos (22.1)-(22.4):
(22.1)	0476862	1		Gewindestift	threaded pin	bouchon fileté
(22.2)	0488755	1		Zylinderstift	cylindrical pin	goupille cylindrique
(22.3)	0641494	1		Ventilgehäuse	valve housing	corps de vanne
(22.4)	0410217	1		Kugel	ball	bille
23	0473243	1		Zylinderstift	cylindrical pin	goupille cylindrique
24	0643417	6		Stehbolzen	threaded bolt	boulon
25	0460389	6		U-Scheibe	washer	rondelle
26	0460966	6		Mutter	nut	écrou
27	0641463	6		Hutmutter	dome nut	écrou borgne
28	0639226	1		Druckfeder	spring	ressort
29	0641476	1		Gegenring	counter ring	bague de retenue
30	0641482	1	V, R	Manschettensatz gemischt	packing ring set mixed	jeu de joints composé
				bestehend aus Pos 30.1-30.6:	consisting of pos 30.1-30.6:	consistant en pos 30.1-30.6:
30.1	0641477	1	V, R	Manschette Teflon schwarz	packing ring Teflon black	joints Teflon
30.2	0641469	1	V, R	Manschette Leder	packing ring leather	joints cuir
30.3	0641477	1	V, R	Manschette Teflon schwarz	packing ring Teflon black	joints Teflon
30.4	0641469	1	V, R	Manschette Leder	packing ring leather	joints cuir
30.5	0641478	1	V, R	Doppelsattelring	dual saddle ring	bague de retenue double
30.6	0641477	1	V, R	Manschette Teflon schwarz	packing ring Teflon black	joints Teflon

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Matière grasse (sans acide)

Best.-Nr. 0000015

Best.-Nr. 0000025

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Materialpumpe • Material Pump • Section fluide:

Typ 275/120 - R -

Bestell-Nr. • Order-No. • Référence: **0641416**

Serie • Serie • Série: **001**

Akt.: **08.05**

Pos. Pos. Code	Best.-Nr. Order No. Référence	Stück Pieces Pièce	V ¹ /D ² /R ³	Artikelbezeichnung	Part Description	Désignation des articles
31	0641479	1		Gegenring	counter ring	bague de retenue
32	0641480	1		Druckzylinder	pressure cylinder	cylindre de pression
33	0638858	1	R	Zylinderstift	cylindrical pin	goupille cylindrique
34	0638682	1		Gewindestift	threaded pin	bouchon fileté
35	0410551	1	V, R	Kugel	ball	bille
36	0223387	1	D, R	Dichtring	gasket	bague d'étanchéité
37	0418501	1	V	Ventilplatte	valve plate	plateau de soupape
38	0639223	1		Doppelnippel	male adaptor	raccord double mâle
39	0471100	1		Sicherungsring	retaining ring	circlip
40	0465542	1		Ring	ring	joint
41	0643418	1		Flansch	flange	collet
	0641556		R	Dichtungssatz	seal kit	jeu de joints
	0641557			Reparatursatz	repair kit	jeu de reparation
8				optional erhältlich	optional	disponible en option
	0641472	V		Manschetten oben	packing ring upper	joints superieures
	0641468	V		Manschette Teflon, schwarz	packing ring Teflon, black	joints Teflon, noir
	0647055	V		Manschette Leder	packing ring leather	joints cuir
	0647056	V		Manschette Teflon, natur, weiß	packing ring Teflon, natur, white	joints Teflon, blanc
	0647057	V		Manschette PUR, rot	packing ring PUR, red	joints PUR, rouge
				Manschette SDM, grün	packing ring SDM, green	joints SDM, vert
30				optional erhältlich	optional lower	disponible en option
	0641477	V		Manschetten unten	packing ring	joints inferieures
	0641469	V		Manschette Teflon, schwarz	packing ring Teflon, black	joints Teflon, noir
	0647058	V		Manschette Leder	packing ring leather	joints cuir
	0647059	V		Manschette Teflon, natur, weiß	packing ring Teflon, natur, white	joints Teflon, blanc
	0647060	V		Manschette PUR, rot	packing ring PUR, red	joints PUR, rouge
				Manschette SDM, grün	packing ring SDM, green	joints SDM, vert

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Material Pump 275/120 R - 0641416

10.1

Troubleshooting

10.1.1



Before beginning any repairs or maintenance on the unit, read all instructions found in the User's Handbook and observe them closely.

The User's Manual must be available at all times when working on the unit.

In this chapter you will find information pertaining to troubleshooting the material pump. The disassembly and assembly are described step for step. In addition, you will find an exploded line drawing of the material pump, as well as the related spare parts lists at the conclusion of the troubleshooting section.

- First, check the faults cause in the table found in Chapter 10.1.1.
- Disassemble the material pump as necessary according to Chapter 10.1.2.
- Once the fault has been repaired, reassemble the material pump according to the instructions found in Chapter 10.1.3.

The assembly instructions include additional information concerning the use of grease, Loc-Tite, allowable torque, etc.

Fault	Probable Cause	Solution
A) Pump operates, but no spray material reaches the spray tip.	1. Suction screen is clogged.	1. Clean the screen.
	2. Suction hose is clogged.	2. Replace hose.
	3. The ball in the bottom valve does not lift (sticks).	3. - Operate spray gun without tip. - Open the drain valve on the high pressure filter. - Tap the bottom valve lightly on the side with a hammer. - Remove suction system and use a rod or screwdriver to loosen the ball in the bottom valve from below.
	4. Bottom valve does not close.	4. Remove bottom valve and clean the ball and seat thoroughly (Steps 1-4 & 8)
B) Pump operates irregularly (noticeable by different speeds for upward and downward strokes) and does not produce the required spraying pressure.	1. Bottom valve leaking (Pump always stops on upwards stroke when spray gun is closed).	1. Remove bottom valve and clean ball and seat thoroughly or replace ball and valve seat as necessary. (Steps 1-4+8)
	2. Piston valve leaking (Pump always stops on downward stroke when spray gun is closed).	2. Clean the ball and seat in the piston valve, and inspect and replace as necessary. (Steps 1-4+9)
	3. Upper or lower packing leaking (worn).	3. Replace packing. (Steps 1-7)
C) Spray material reaches spray gun, but pump does not stop operating when gun is closed.	1. Packing or valve worn.	1. Replace worn parts. (Steps 1-9)

Material Pump 275/120 R - 0641416
Disassembly

10.1
10.1.2

General Instructions:

- For simple disassembly/assembly, place the high-pressure pump in a horizontal position by laying the cart down.

Procedure:

- Step 1
 - Loosen and remove the six cap nuts **Pos. 27** with an open-end wrench SW 24.
 - Use a second open-end wrench SW 24 on the nut **Pos. 26** in the opposite direction, as necessary.
 - Remove the six nuts **Pos. 27** completely, including the six washers **Pos. 25**.
- Step 2
 - Place screwdrivers on both sides in the groove between the flange **Pos. 41** and the spring housing **Pos. 12**.
 - Pry down on the flange.
 - **Attention!** Residual material could be released.
 - Remove the pressure cylinder **Pos. 32** including the counter-ring **Pos. 29** and spring **Pos. 28**.
- Step 3
 - Remove the four threaded bolts **Pos. 24** from the air motor.
 - **Attention!** Do not loosen the two lower bolts. These are needed as support for the spring housing.
 - Place large screwdrivers on both sides in the groove between the spring housing **Pos. 12** and intermediate body **Pos. 3**.
 - Pry off the spring housing **Pos. 12** and pull it away from the dual piston **Pos. 14**.
- Step 4
 - Uncouple the dual piston **Pos. 14** together with the intermediate body **Pos. 3** from the motor axle.
 - Pull the dual piston **Pos. 14** out of the intermediate body **Pos. 3**.
- Step 5
 - Remove the spring **Pos. 10** from the spring housing **Pos. 12**.
 - Using a screwdriver, pry the seals **Pos. 11+13** out of the spring housing **Pos. 12**.
- Step 6
 - Remove the complete packing **Pos. 7-9** from the intermediate body **Pos. 3**.
- Step 7
 - Remove the spring **Pos. 28** and the complete packing **Pos. 29-31** from the pressure cylinder **Pos. 32**.
- Step 8
 - Place the male adapter **Pos. 38** in a stock and tighten on the flats.
 - Loosen the pressure cylinder **Pos. 32** with an open-end wrench SW 75 .
 - Remove the male adapter **Pos. 38** from the stock and unscrew it from the pressure cylinder **Pos. 32**.
 - Remove the valve plate **Pos. 37**, the sealing ring **Pos. 36** and the ball **Pos. 35** from the pressure cylinder **Pos. 32**.
 - Loosen the threaded pin **Pos. 34**, as necessary to remove the cylinder pin **Pos. 33**.

The cylinder pin **Pos. 34** must be heated to loosen the Loctite.

Material Pump 275/120 R - 0641416

10.1

Disassembly

10.1.2

Step 9

- Place the dual piston **Pos. 14** with the wrench flats and the screw **Pos. 20** facing upwards in a stock.
- Loosen and remove the screw **Pos. 20** with a wrench SW 41.
- Remove the valve plate **Pos. 19**, the ball **Pos. 17** and the seal **Pos. 18** from the dual piston **Pos. 14**.
- Loosen the retaining ring **Pos. 16** with circlip pliers for internal rings (size J2, 19-60mm).
Remove the cylinder pin **Pos. 23** and the ring **Pos. 15** from the dual piston **Pos. 14**.

Material Pump 275/120 R - 0641416

10.1

Assembly

10.1.3

General Instructions:

- Clean all parts thoroughly before assembly.
- Replace all damaged parts, as well as seals and used packings.

Procedure:

- Step 9**
- Place the dual piston **Pos. 14** with the wrench flats in a stock. The coupling should face downwards.
 - Place the ring **Pos. 15** and the cylinder pin **Pos. 23** in the dual piston.
 - Secure these parts with the retaining ring **Pos. 16**. For this, use circlip pliers for internal rings, size J2.
 - Place the ball **Pos. 17**, the seal **Pos. 18** and the valve plate **Pos. 19** in the dual piston **Pos. 14**.
 - Grease the threads on the screw **Pos. 20**.
 - Screw in the screw **Pos. 20** into the dual piston **Pos. 14** with an.
 - Remove the dual piston from the stock.
- Step 8**
- Clean the threads of the threaded pin **Pos. 34** as well as the corresponding threaded hole in the pressure cylinder **Pos. 32**.
 - Place the cylinder pin **Pos. 33** in the pressure cylinder **Pos. 32**.
 - Secure the threaded pin **Pos. 34** with hard-setting Loctite.
 - Screw the threaded pin **Pos. 34** into the pressure cylinder.
 - Place the ball **Pos. 35**, the seal **Pos. 36** and the valve plate **Pos. 37** (inset face towards the ball) in the pressure cylinder **Pos. 32**.
 - Grease the threads of the male adapter **Pos. 38**.
 - Screw the male adapter **Pos. 38** into the pressure cylinder **Pos. 32**.
 - Place the male adapter **Pos. 38** in a stock and tighten the pressure cylinder **Pos. 32** with an open-end wrench SW 75.
- Step 7**
- Place the counterring **Pos. 31** in the pressure cylinder **Pos. 32** with the smooth surface down.
 - Place the complete packing in the pressure cylinder **Pos. 32**.
 Assembly order: Teflon packing ring **Pos. 30.6** (crowned surface up), dual saddle ring **Pos. 30.5**, leather packing ring **Pos. 30.4**, Teflon packing ring **Pos. 30.3**, leather packing ring **Pos. 30.2**, Teflon packing ring **Pos. 30.7**, counter ring **Pos. 29** (packing is delivered as a unit).
Attention! The packing should not extend above the pressure cylinder!
 ■ Always use new packings!
- Step 6**
- Place the saddle ring **Pos. 7** with the smooth surface down in the intermediate body **Pos. 3**.
 - Place the complete packing in the intermediate body **Pos. 3**.
 Assembly order: Teflon packing ring **Pos. 8.1** (crowned surface down), leather packing ring **Pos. 8.2**, Teflon packing ring **Pos. 8.3**, leather packing ring **Pos. 8.4**, Teflon packing ring **Pos. 8.5**, counter ring **Pos. 9** (packing is delivered as a unit).
Attention! The packing should not extend above the intermediate body **Pos. 3**. There should be approx. 2-3 mm space between the intermediate body **Pos. 3** and the counter ring **Pos. 9**, otherwise the packing cannot be adjusted later as necessary.
 ■ Always use new packings!

Material Pump 275/120 R - 0641416

10.1

Assembly

10.1.3

- Step 5
 - Place the seals **Pos. 11+13** in the spring housing **Pos. 12**.
 - Place the spring **Pos. 10** in the spring housing **Pos. 12**.

- Step 4
 - Inspect the seal **Pos. (2)**. Replace as necessary.
 - Push the dual piston **Pos. 14** (small end first) through the packing in the intermediate body **Pos. 3**.
 - Couple the dual piston **Pos. 14** in the motor axle of the air motor.
 - Push the intermediate body **Pos. 3** onto the air motor.
 - Adjust the intermediate body **Pos. 3** with the type plate to the front.

- Step 3
 - Screw the threaded bolts **Pos. 24** in the lower piece of the air motor
Attention! Screw the two side bolts only about half way in, and the others completely.
 - Push the spring housing **Pos. 12** with the spring over the dual piston **Pos. 14** onto the intermediate body **Pos. 3**.
 - Adjust the spring housing **Pos. 12** with the material outlet to the front.

- Step 2
 - Push the second spring **Pos. 28** from underneath into the spring housing.
 - Push the complete pressure cylinder **Pos. 32** over the dual piston **Pos. 14** onto the spring housing **Pos. 12**.
Tip: Use the help of a second person.
 - push the flange **Pos. 41** over both side bolts **Pos. 24**.

- Step 1
 - Screw a nut **Pos. 26** onto each of these threaded bolts **Pos. 24** with a washer **Pos. 25**.
 - Alternately tighten both nuts evenly with an open-end wrench SW 24. This will push the pressure cylinder onto the spring housing and the spring housing onto the intermediate body.
 - Screw the rest of the nuts **Pos. 26** with washers **Pos. 25** onto the other threaded bolts **Pos. 24** as soon as the threads become visible.
 - Tighten the pump in an "X" pattern evenly together.
Attention! The pump components must remain square!
 The proper tightening torque is 120 Nm.
 - Screw on the cap nuts **Pos. 27** and tighten them likewise to a torque of 120 Nm.

 - Remount the other components (suction line, high pressure filter, etc.)
 - Inspect the material pump for leaks.

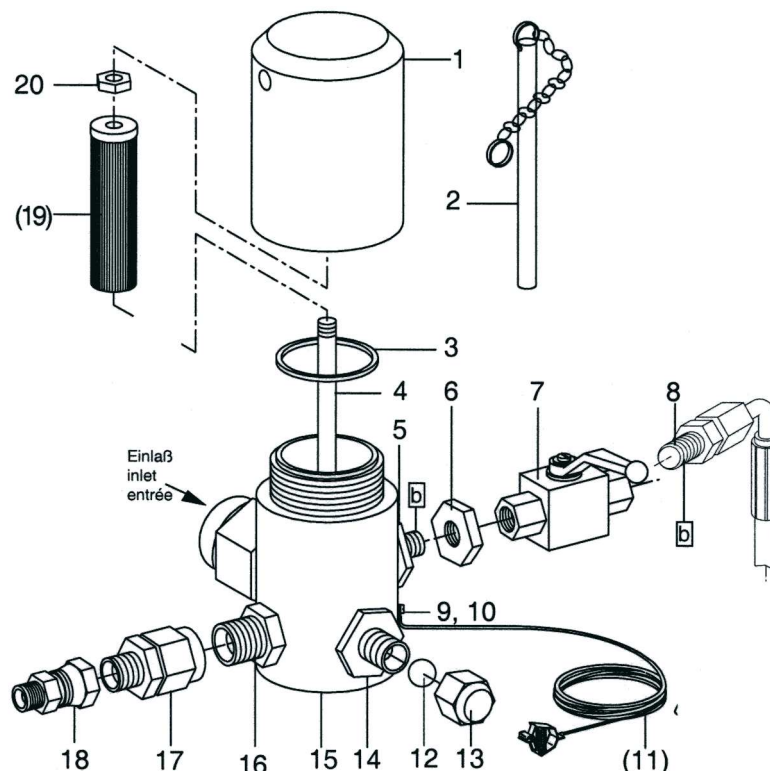
Hochdruckfilter • High pressure filter • Filtre haute pression

Typ 13 - R -

Bestell-Nr. • Order-No. • Référence: **0065285**

Serie • Serie • Série: **002**

Akt.: **11.07.05**



WICHTIG! Vorschriftmäßige Erdung!
WARNING! Ground as prescribed!
ATTENTION! Mettez à la masse

Tabelle 1: Filtereinsätze filter inserts filtre filtre seuls

Maschenweite mesh size maille	Bestell-Nr. Order-No. Référence	Werkstoff Material Matière première
M 30	0467782	Gewebe: Edelstahl
M 50	0162787	Fassung: Kunststoff
M 70 (Standard)	0162779	
M 100	0162760	Screen wire: special steel
M 150	0162752	Rim: plastik
M 200	0162744	Fil toile métallique: acier special
		Support: Matière artificielle

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Pos. Pos. Code	Bestell-Nr. Order-No. Référence	Stück Pièces Pièce	V ¹ / D ² / R ³	Artikelbezeichnung	Part Description	Désignation des articles
1.	0218359	1		Kappe	cap	capot
2.	0414719	1		Stiftschlüssel mit Kette	spanner with chain	clef avec chaîne
3.	0218375	1	V	O-Ring	o-ring	joint torique
4.	0218367	1		Stehbolzen	threaded bolt	boulon
5.	0468029	1		Reduziernippel	reducing nipple	raccord de reduction
6.	0218286	1		Mutter	nut	écrou

¹V= Verschleißteile • Wear parts • Pièces d'usure usuelles

²D= Teile des Dichtungssatzes • Parts of seal kit • Pièces de kit de joints

³R= Teile des Reparatursatzes • Parts of repair kit • Pièces de kit de reparation

Pos.-Nr. in Klammern () sind keine Betandteile dieser Baugruppe

• items marked thus () are not part of assembly shown

• Les pièces entre parenthèses ne font pas partiedu sous-groupe

Sicherungsmittel 50ml • Thread sealant 50ml • produit d'étanchéité 50ml

schwach • light • léger

mittel • medium • medium

hochfest • high-streng • hautesistance

Schmiermittel • Lubrication grease • Matière graisse

Fett, säurefrei • acid-free • sans acide

Spülmittel • lubricating fluid • produit de nettoyage

Montagepaste (für R- und RS-Ausführung)

• assembly paste (for version R or RS) • pâte d'assemblage (de version R et RS)

Best.-Nr.: 0000016

Best.-Nr.: 0000015

Best.-Nr.: 0000014

Best.-Nr.: 0000025

Best.-Nr.: 0163333

Best.-Nr.: 0000045

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Hochdruckfilter • High pressure filter • Filtre haute pression

Typ 13 - R -

Bestell-Nr. • Order-No. • Référence: **0065285**

Serie • Serie • Série: **002**

Akt.: **11.07.05**

Pos. Pos. Code (Forts.)	Bestell-Nr. Order-No. Référence	Stück Pieces Pièce	V ¹ / D ² / R ³	Artikelbezeichnung	Part Description	Désignation des articles
7.	0646988	1		Kugelhahn, beinhaltet	ball valve, includes	vanne, inclus
	0646990			Dichtungssatz für Kugelhahn	seal kit for ball valve	jeu de joints pour vanne
	0646991			Kugel für Kugelhahn	ball for ball valve	bille pour vanne
	0646989			Schaltgriff	handle grip	manette de changement
8.	0646729	1		Entlastungsschlauch	drain hose	flexible de décharge
9.	0460230	1		U-Scheibe	washer	rondelle
10.	0460567	1		Schraube	screw	vis
(11.)	0474487	1		Erdungskabel	ground wire	câble de terre
12.	0410209	1		Kugel	ball	bille
13.	0216011	1		Hutmutter	dome nut	écrou à capuchon
14.	0467766	1		Doppelnippel	male adaptor	raccord double mâle
15.	0472417	1		Gehäuse kpl. bestehend aus:	housing cpl. consisting of:	corps cpl. consistant en:
	0639130	1		Gehäuse	housing	corps
	0639132	1		Anschlussnippel	connecting nipple	raccord double mâle
16.	0631730	1		Doppelnippel	male adaptor	raccord double mâle
17.	0631745	1		Anschlussnippel	connecting nipple	raccord
18.	0161179	1		Anschlussnippel	connecting nipple	raccord
(19.)		1	V	Filtereinsatz (siehe Tabelle)	filter insert (see table)	filtre seul (voir tableau)
20.	0485977	1		Mutter	nut	écrou
				ohne Abbildung	not illustrated	non illustré
	0620238	1		Plastikkappe	plastic cap	capuchon en plastique

¹V= Verschleißteile • Wear parts • Pièces d'usure usuelles

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Pos.-Nr. in Klammern () sind keine Betandteile dieser Baugruppe
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Sicherungsmittel 50ml • Thread sealant 50ml • produit d'étanchéité 50ml

R schwach • light • léger
b mittel • medium • medium
q hochfest • high-streng • hautesistance

Best.-Nr.: 0000016

Best.-Nr.: 0000015

Best.-Nr.: 0000014

Schmiermittel • Lubrication grease • Matière graisse

F Fett, säurefrei • acid-free • sans acide
S Spülmittel • lubricating fluid • produit de nettoyage
M Montagepaste (für R- und RS-Ausführung)
• assembly paste (for version R or RS) • pâte d'assemblage (de version R et RS)

Best.-Nr.: 0000025

Best.-Nr.: 0163333

Best.-Nr.: 0000045

High-Pressure Filter - Model 13 (R)

10.3

Troubleshooting

10.3.1



Before beginning any repairs or maintenance on the unit, read all instructions found in the User's Handbook and observe them closely.

The User's Manual must be available at all times when working on the unit.

This chapter contains information on how to troubleshoot the high-pressure filter. The disassembly and reassembly are described step by step. In addition, you will find an exploded line drawing of the high-pressure filter, as well as the related spare parts lists at the conclusion of the troubleshooting section. The appendix includes the spare parts list for either the Model 13 -R- or the Model 13 -R-/Sonder (special version).

Fault	Probable Cause	Solution
A) Pump does not work, although the spray gun is triggered (without tip) or the filter's drain valve is opened.	1. High-pressure filter is clogged.	1. Clean and/or replace the filter insert.
B) Material leaks out of the gap between the base housing and the cap.	1. O-ring is damaged.	1. Replace the o-ring.



PLEASE NOTE!

- Clean the filter insert daily and whenever the coating material is changed. Replace the filter insert whenever necessary.
- Open the drain valve regularly to avoid it from becoming clogged.
- For R and RD version high-pressure filters:
To avoid seizing, lightly grease the threads before assembly.



WARNING!

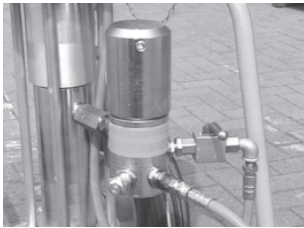
- Whenever work is to performed on the high-pressure filters, the airless pump (or system) must be completely shut down and remaining pressure drained from the highpressure filters (as described in the User's Handbook).
- Exchange any damaged parts for new ones.
- Before starting to work with the unit again, ensure that it has been grounded correctly.

HP Filter - Model 13 (R)

10.3

Disassembly / Assembly

10.3.2



High-pressure filter

Exchanging the filter insert or o-ring

- Close the air tap lock on the airless pump.
- Drain remaining pressure by opening the filter ball valve **Pos. 7**.
- Use the included spanner **Pos. 2** to loosen the filter cap **Pos. 1** and remove it from the filter housing **Pos. 16 (15)***.
- Remove the o-ring **Pos. 3** from the housing **Pos. 16 (15)***.
- Using an open-end wrench (SW 13), remove the nut **Pos. 21 (20)*** from the threaded bolt **Pos. 4**.
- Remove the filter insert **Pos. 20 (19)*** from the threaded bolt **Pos. 4**.
- Clean the filter insert **Pos. 20 (19)*** using the solvent or thinner recommended by the coatings material manufacturer.
- Assemble the parts in reverse order.

Replacing the high-pressure ball valve

- Remove the drain hose **Pos. 9** using an open-end wrench (SW 17).
- Loosen the nut **Pos. 6** with an open-end wrench. Do this while holding the reducing nipple **Pos. 5** in place.
- Loosen the ball valve **Pos. 7** using an open-end wrench (SW 17).
- Mount a new ball valve in the reverse order.

Please note:

* The numbers found in parenthesis refer to Model 13 -R-/Sonder (special version).

Wartungseinheit kpl. • Air Maintenance Unit cpl. • unité d'entretien cpl.

LM 300+333

Bestell-Nr. • Order-No. • Référence: **0648095**

Serie • Serie • Série: **000**

Akt.: **20.07.07**

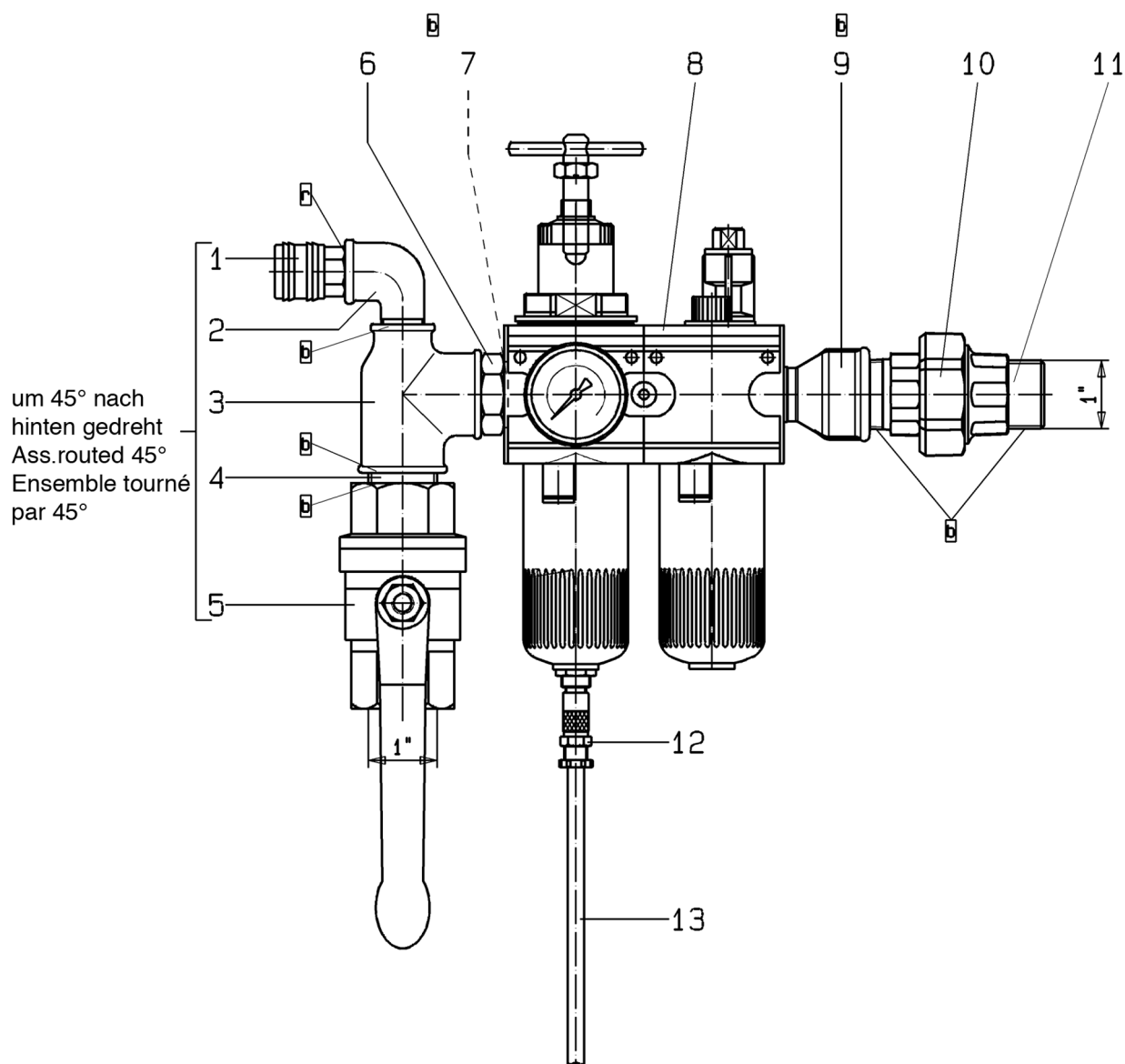


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Pos. Pos. Code	Bestell-Nr. Order-No. Référence	Stück Pieces Pièce	$V^1 / D^2 / R^3$	Artikelbezeichnung	Part Description	Désignation des articles
1.	0411965	1		Kupplung	coupling	accouplement
2.	0411949	1		Winkel	elbow	coude
3.	0621749	1		T-Stück	t-piece	pièce en t
4.	0621730	1		Langnippel	extension nipple	nipple longue
5.	0468622	1	V	Kugelhahn	ball valve	vanne
6.	0648094	1		Doppelnippel	male adaptor	raccord double mâle

Wartungseinheit kpl. • Air Maintenance Unit cpl. • unité d'entretien cpl.

LM 300+333

Bestell-Nr. • Order-No. • Référence: **0648095**

Serie • Serie • Série: **000**

Akt.: **20.07.07**

Pos. Pos. Code (Forts.)	Bestell-Nr. Order-No. Référence	Stück Pièces Pièce	V ¹ / D ² / R ³	Artikelbezeichnung	Part Description	Désignation des articles
7.	0649744	1		Dichtung	gasket	joint
8.	0647298	1	V	Wartungseinheit	maintenance unit	unité d'entretien
9.	0642261	1		Muffennippel	socket nipple	raccord de manchon
10.	0621722	1		Rohrverschraubung	pipe fitting	raccord vissé
11.	0621730	1		Langnippel	extension nipple	nipple longue
12.	0648417	1		Verschraubung	screw fitting	vissage
13.	0643925	0,8m		Schlauch	hose	flexible

¹V= Verschleißteile • Wear parts • Pièces d'usure usuelles

²D= Teile des Dichtungssatzes • Parts of seal kit • Pièces de kit de joints

³R= Teile des Reparatursatzes • Parts of repair kit • Pièces de kit de reparation

³R_G = Teile des Reparatursatzes, groß • Parts of repair kit, big • Pièces de kit de reparation grand

³R_K = Teile des Reparatursatzes, klein • Parts of repair kit, small • Pièces de kit de reparation, petit

Sicherungsmittel / Thread sealant / produit d'étanchéité

Symbol / Symbol / Symbole	Beschreibung / Description / Description	Artikel / Bestell-Nr. Article / Order-No. L'article / Référence
[r]	schwach / light / léger (50 ml)	222 / 0000016
[b]	mittel / medium / medium (50 ml)	243 / 0000015
[schw]	mittel, Kunststoff-Stahl / medium, plastic-steel / medium, plastique-acier (20 ml)	480 / 0000107
[g]	hochfest / high-streng / hautesistance (50 ml) hochfest für Cr/Ni-Teile / for Cr/Ni steel parts / pour parties fabriqué de Cr/Ni (50 ml)	601 / 0000014 2701 / 0000303
[p]	Rohrdichtungspaste / pipe sealant / pâte d'étanchéité pour tuyaux (50 ml)	225 / 0000017
[a]	Aktivator / activator / activateur (500 ml) Aktivator für Kunststoffteile / activator for plastic parts / activateur pour pièces de plastique (10 ml)	734 / 0000018 770 / 0000108
[t]	Gewindeband / threaded tape / ruban de filetage	/ 0000099

Schmiermittel / Lubrication grease / Matière grasse

Symbol / Symbol / Symbole	Beschreibung / Description / Description	Bestell-Nr. Order-No. Référence
[F]	Fett, säurefrei / acid-free / sans acide	0000025
[S]	Spülmittel / lubricating fluid / produit de nettoyage	0163333
[M]	Montagepaste (für R- und RS-Ausführung) / assembly paste (for version R or RS) / pâte d'assemblage (de version R et RS)	0000045

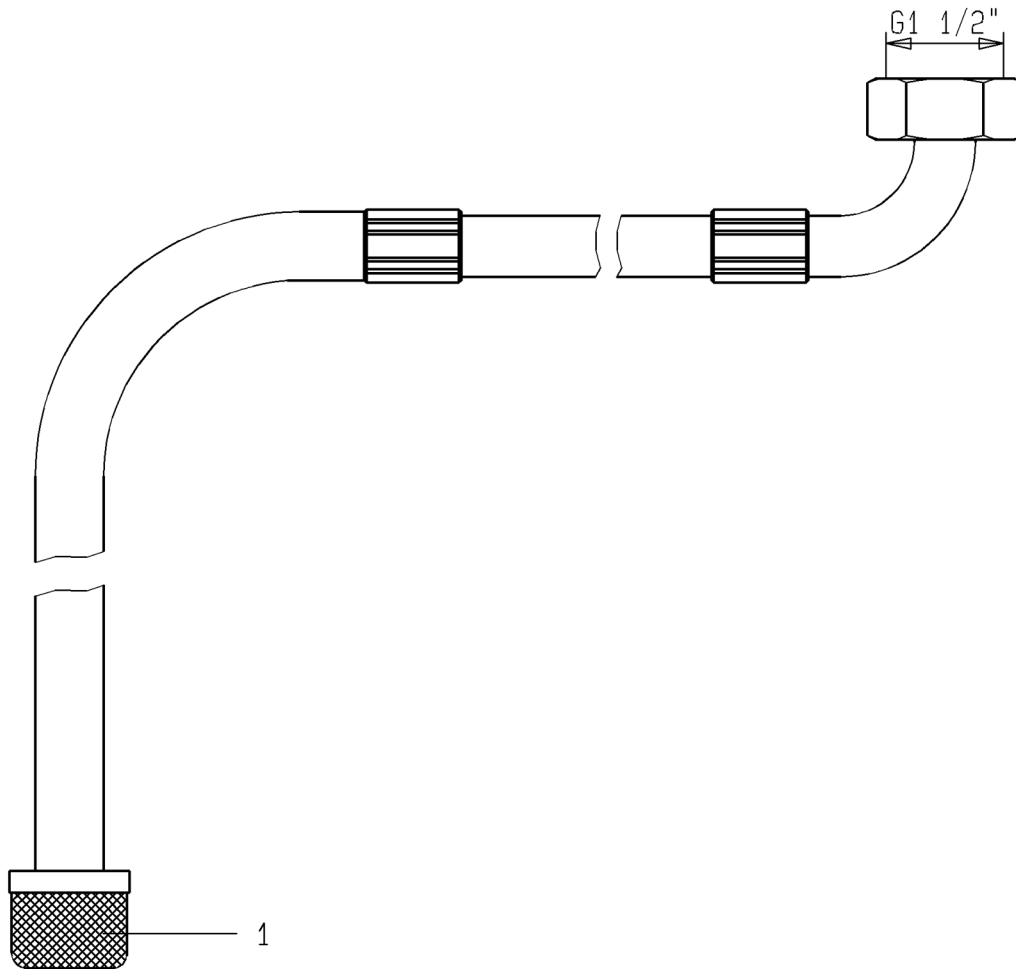


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Pos. Pos. Code	Bestell-Nr. Order-No. Référence	Stück Pieces Pièce	V ¹ / D ² / R ³	Artikelbezeichnung	Part Description	Désignation des articles
1.	0638163	1		Ansaugsieb	suction strainer	filtre d'aspiration

¹V= Verschleißteile • Wear parts • Pièces d'usure usuelles

²D= Teile des Dichtungssatzes • Parts of seal kit • Pièces de kit de joints

³R= Teile des Reparatursatzes • Parts of repair kit • Pièces de kit de reparation

³R_G = Teile des Reparatursatzes, groß • Parts of repair kit, big • Pièces de kit de reparation grand

³R_K = Teile des Reparatursatzes, klein • Parts of repair kit, small • Pièces de kit de reparation, petit

Sicherungsmittel / Thread sealant / produit d'étanchéité

Symbol / Symbol / Symbole	Beschreibung / Description / Description	Artikel / Bestell-Nr. Article / Order-No. L'article / Référence
r	schwach / light / léger (50 ml)	222 / 0000016
b	mittel / medium / medium (50 ml)	243 / 0000015
schw	mittel, Kunststoff-Stahl / medium, plastic-steel / medium, plastique-acier (20 ml)	480 / 0000107
g	hochfest / high-streng / hautesistance (50 ml) hochfest für Cr/Ni-Teile / for Cr/Ni steel parts / pour parties fabriqué de Cr/Ni (50 ml)	601 / 0000014 2701 / 0000303
p	Rohrichtungspaste / pipe sealant / pâte d'étanchéité pour tuyaux (50 ml)	225 / 0000017
a	Aktivator / activator / activateur (500 ml) Aktivator für Kunststoffteile / activator for plastic parts / activateur pour pièces de plasti- que (10 ml)	734 / 0000018 770 / 0000108
t	Gewindeband / threaded tape / ruban de filetage	/ 0000099

Betriebsmittel / Machinery materials / Équipement de production

Symbol / Symbol / Symbole	Beschreibung / Description / Description	Bestell-Nr. Order-No. Référence
F	Fett, säurefrei / acid-free / sans acide	0000025
T	Trennmittel / release agent / agent séparateur bei Verarbeitung von Isozyanat / for application with isocyanate / pour l'application de l'isocyanate	0163333 0640651
M	Montagepaste (für R- und RS-Ausführung) / as- sembly paste (for version R or RS) / pâte d'as- semblage (de version R et RS)	0000045