



because it works

## Operating Manual

# MORTAR PUMP



Type:

○ 410.09



Type:

○ 600.12

Serial number





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# 1 Foreword



The owner of the machine must ensure that its operator always has an operating manual at their disposal in a language they understand.

Operating personnel must always have access to this user manual!

Dear Customer!

We are delighted about your decision to buy one of our machines. The user manual contains all information required to operate and handle your **WIWA®** mortar pump. However, other information is also essential for safe operation:

- Read and comply with the applicable guidelines for your country.
- In Germany, these are the „**Richtlinien für Flüssigkeitsstrahler**“, (Guidelines for Liquid Jets), issued by: the Hauptverband der Gewerblichen Berufsgenossenschaften.
- Moreover you must respect at all times the **manufacturer's instructions and coating or feeder materials**.
- In principle, you must refrain from any work method that could affect the safety of **WIWA®** products and operating personnel.

Wishing you lots of success and good work results, your  
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This operating manual is solely intended for personnel involved in preparation, operation and servicing. It is prohibited to pass on this operating manual for reproduction, utilisation or communication of its contents, unless this has been explicitly permitted. Infringements incur an obligation to pay damage compensation. All rights reserved in the event of registration of the patented design, industrial design or registered design.

This operating manual only applies in conjunction with the machine card that was given to you with the user manual for your equipment. Please check that the type plate data is identical with the information on the machine card. Please notify us immediately if there are discrepancies, if the user manual has been incorrectly compiled or if the type plate is missing.

## 2 Safety

This machine has been designed and manufactured under due consideration of all safety-related aspects. It complies with the current standard of technology and the valid accident prevention instructions. The machine left the factory in perfect condition and guarantees a high level of technical reliability and safety. Nevertheless, there are certain risks that can arise from incorrect operation or misuse:

- to life and limb of the operator or third party,
- to the machine and other material assets of the owner,
- to the efficient working capacity of the machine.

You must refrain from any working methods that could affect the safety of operating personnel and equipment. All the people that are involved in set-up, commissioning, operation, maintenance, repair and servicing of the spray gun must have read and understood the operating manual beforehand, especially the chapter entitled "Safety".

**Your safety is at stake!**

We recommend to the owner of this unit to have this confirmed in writing.

### 2.1 Explanation of symbols

Safety information warns you of potential risks of accidents and tell you the measures that are needed to prevent accidents. In **WIWA** operating manuals, safety information is specially highlighted and marked as follows:



#### DANGER

Indicates danger of accidents; if you ignore the safety notes, there is a high risk of severe injury resulting up to and including death!



#### WARNING

Indicates danger of accidents; if you ignore the safety notes, severe injury can result up to and including death!



#### CAUTION

Indicates danger of accidents; if you ignore the safety notes, severe injury can result!



Indicates important information on correct use of the machine. Ignoring it can result in damage to the machine or in its vicinity.

In the safety notes about the risk of accidents, different pictograms are shown after each hazard source - examples:



General accident risk



Risk of explosion from explosive atmosphere



Risk of explosion from explosive substances



Danger of injury due to electric voltage or electrostatic charging



Risk of crushing by moving machine parts



Risk of burning due to hot surfaces

Mandatory safety instructions concern protective gear to be worn in the first instance. They are particularly highlighted and marked as follows:



**Wear protective clothing**

Indicates the requirement to wear the prescribed protective clothing to protect against skin injuries caused by spraying material or gases.



**Use eye protection**

Indicates the requirement to wear protective goggles to protect against eye injuries caused by gases, fumes or dust.



**Wear ear defenders**

Indicates the requirement to wear ear defenders to prevent your hearing from being damaged by noise.



**Use a respiratory protection mask**

Indicates the requirement to wear a respiratory protection mask to prevent your respiratory tract from being damaged by gases, fumes or dusts.



**Wear protective gloves**

Indicates the requirement to wear protective gloves with lower arm protection to protect against burn injuries caused by heated materials.



**Wear protective footwear**

Wear  
Indicates the requirement to wear protective footwear to prevent injuries to the feet due to objects that may fall or drop and to prevent sliding on slippery floors.



Indicates references to guidelines, work instructions and operating manuals that contain important information which you must observe at all times.

## 2.2 Safety notes



### CAUTION

**Mortar pumps can cause life-threatening injuries if used improperly. Please observe the safety notes below and act accordingly:**



### WARNING

Components that do not comply with the maximum permissible operating pressure can burst and cause serious injury.

- The specified maximum operating pressures must generally be complied with for all components. In case of varying operating pressures, the lowest value is always the one to be taken as the maximum operating pressure for the entire machine.
- Material hoses and hose assemblies must comply with the maximum working pressure, including the required safety factor.
- Material hoses must be leak tight and free of kinks, signs of abrasion or bulges.
- Hose connections must be tight.



### WARNING

If material pumps run dry, the generated friction heat can cause fire or an explosion.

- Always make sure that the material drums do not run dry during operation.
- However, should this happen, stop the corresponding pump immediately and top up material.

## 2.3 Health risks



Follow the safety notes and dosing information of the manufacturer and the generally applicable regulations when handling paints, solvents, oils, greases and other chemical substances.



**CAUTION**

Depending on the materials being applied solvent vapours may be generated which could cause damage to health and objects.

- Always ensure sufficient aeration and ventilation at the workplace.
- Always observe the processing instructions issued by the material manufacturers.



**CAUTION**

Solvents are not suitable for cleaning you skin and can damage your health.

- Use only appropriate skin protection, skin cleaning and skin care products.

In closed or pressurized systems dangerous chemical reactions may occur if parts made of aluminium or galvanized parts come into contact with 1.1.1 - trichloroethane, methylene chloride or other solvents containing halogenated hydrocarbons (CFC's). If you want to process materials containing the afore mentioned substances, we recommend to consult the material manufacturer to clarify the usability of such substances.

For these materials, we have available a range of rust- and acid-proof machines.

## 2.4 Information signs on the device

The warning signs and symbols on the machine refer to possible danger areas and must be respected at all costs.

Warning signs and symbols must not be removed from the device.

Warning signs that are damaged and illegible must be replaced immediately.

**The following signs are located on the device:**

➤ **Type plate**

Please check that the type label data are identical with those on the machine card. In case of discrepancies or if the type plate is **missing**, please **notify** us immediately.

## 2.5 Safety features



### WARNING

If one of the safety features is missing or not fully functional, the operating safety of the machine cannot be guaranteed!

- ▶ If you discover any faults in the safety features or other deficiencies on the machine, stop operation of the machine immediately.
- ▶ Only resume operation of the machine after the fault has been completely eliminated.

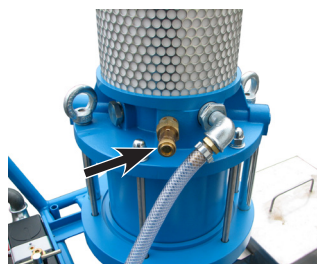
### Check the safety features with the device depressurised:

- ▶ before commissioning!
- ▶ always before starting work!
- ▶ after all setup work!
- ▶ after cleaning, maintenance and repair work!

### Checklist for testing the safety features:

- Is the ground cable undamaged?
- Is the ground cable connected correctly to the device as well as to the conductor?
- Is it possible to activate the compressed air shut-off valve?

### 2.5.1 Safety valve



The safety valve makes sure that the maximum permissible air inlet pressure on the air motor is not exceeded.

The safety valve will open and vent off air when the air inlet pressure exceeds the set limiting value.



### CAUTION

- ▶ Never remove the safety valve that is fitted and lead-sealed at the factory or change its settings.  
If the safety valve needs to be replaced, you can find the corresponding order number on the machine card.
- ▶ When using new safety valves make sure that they have been set to the maximum permissible air inlet pressure of the WIWA mortar pump (see type plate/machine card) and are lead-sealed.

## 2.5.2 Compressed air shut-off valve

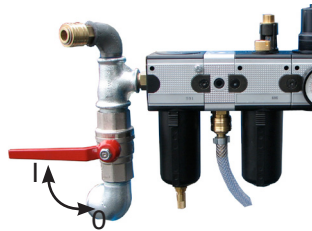


Fig. 2.2

The red compressed air shut-off valve on the air maintenance unit interrupts the air supply for the entire device. After the air supply has been cut off, the device is still under pressure.

## 2.6 Information on explosion protection



### WARNING

Machines that are designed without explosion protection must not be used in workshops that come under the explosion protection ordinance.

**Explosion-protected devices are labelled as such by means of an EC declaration of conformity in accordance with ATEX 94/9/EC and the Ex marking on the type plate.**

Explosion-protected machines meet the explosion protection requirements of Directive 94/9/EC for the explosion group, unit category and temperature class specified on the type plate or in the declaration of conformity.

The operator is responsible for determining the zone allocation according to the Directive of EC 94/9/EC, Appendix II, no. 2.1-2.3 when observing the measures of the responsible inspecting authority. The operator is responsible for checking and ensuring that all technical data and markings according to ATEX correspond with the necessary requirements.

Please note that several components have their own type plate with separate marking according to ATEX. In this case the lowest explosion protection of all attached markings applies for the entire machine. Applications where the malfunction of the unit can lead to danger to personnel must be provided with respective safety measures by the operator.

However, if agitators, heaters or other electrically accessories are additionally mounted, one must check the explosion protection. Plugs for heaters, agitators, etc. that do not have explosion protection, may only be plugged in outside of areas that fall under the explosion protection ordinance, even if the accessory equipment as such is explosion protected.

## 2.7 Notes on warranty

### 2.7.1 Conversions and alterations

- Unauthorized conversions or alterations should not be undertaken on safety grounds.
- Protective equipment should not be dismantled, converted or bypassed.
- Use of components which have not been manufactured or delivered by **WIWA** renders any warranty null and void.
- The machine must only be operated within the specified limiting values and machine parameters.

## Safety

### 2.7.2 Accessories and spare parts

- If you use original accessories and spare parts from **WIWA**, their suitability for use with our machines is guaranteed.
- It is, however, mandatory to respect the safety regulations of the accessories and spare parts. You will find these safety regulations in the corresponding operating manuals for the accessories and spare parts.
- If third-party accessories or spare parts are used, **WIWA** cannot guarantee the safety of the whole machine. Liability for damages or injuries incurred because of the use of those accessories and spare parts becomes null and void.

## 2.8 Operating and maintenance personnel

### 2.8.1 Machine owner's duties

The machine owner:

- is responsible for the training of the operating and maintenance staff,
- must instruct the operating and maintenance staff in correct handling of the machine as well as in wearing the correct work clothing and personal protective equipment,
- must make the user manual available to the operating and maintenance staff and ensure that it always remains available,
- must ensure that the operating and maintenance staff have read and understood the user manual.

Only then may the machine be brought into service.

### 2.8.2 Personnel qualification

A differentiation is made between two groups of people in dependence on their qualifications:

- Instructed operators have been verifiably instructed by the machine owner in the activities they are tasked with and the potential risks connected with them in the case of incorrect behaviour.
- Trained personnel have been instructed by the machine builder such that they are capable of carrying out maintenance and repair work on the system and recognising potential risks on their own initiative and of avoiding these risks.

### 2.8.3 Authorized operating personnel

Activity	Qualification
Setup and operation	Instructed operator
Cleaning	Instructed operator
Servicing	Trained personnel
Repair	Trained personnel



Juveniles under the age of 16 are not allowed to operate this machine.

## 2.8.4 Personal Protective Equipment (PPE)



### Wear protective clothing

Always wear the protective clothing prescribed for your work environment (mining, closed rooms, etc.) and follow the recommendations in the safety data sheet issued by the material manufacturer.



### Use eye protection

Wear protective goggles to protect against eye injuries caused by material splatter gases, fumes or dust.



### Wear ear defenders

Operating personnel should be provided with suitable noise protection equipment. The operator is responsible for adhering to the accident prevention regulation "Noise" (BGV B3). For this reason, pay special attention to the conditions at the installation location – the noise burden, for example, will increase if the system is installed in or on hollow bodies.



### Use a respiratory protection mask

We strongly recommend wearing a respiratory protection mask, even though the paint mist has been minimized in Airless spray painting applications with correct pressure setting and working mode.



### Wear protective gloves

When applying heated materials, you should wear protective gloves with lower arm protection to protect you against burn injuries.



### Wear protective footwear

Wear protective footwear to prevent injuries to the feet due to objects that may fall, drop or roll around and to prevent sliding on slippery floors.

## 2.9 Emergency procedures

### 2.9.1 Leakages

In case of leakages, you must shut down the system **immediately** and the complete system must be depressurized.

- Interrupt the compressed air supply
- Depressurize the entire system
- Replace defective parts immediately.

### 2.9.2 Injuries

If injured by processing materials or solvents, always have the safety data sheet (address, phone number, material designation and material number of supplier or manufacturer) available for the attending physician.

### 2.10 Handling auxiliary materials

Follow the safety notes and dosing information of the manufacturer and the generally applicable regulations when handling paints, solvents, oils, greases and other chemical substances.

Rests of paints, solvents, oils, greases and other chemical substances must be collected in accordance with statutory provisions concerning recycling and waste disposal.

The official local waste water laws are valid.

## 3 Machine Description

### 3.1 Intended use

The WIWA range of mortar pumps is suitable for processing epoxy- and water-based high-density solids and mortars with grain sizes of 0-4 mm such as cement mortar, cement-bonded fire protection materials and filled vinyl esters. You can easily flush through and clean WIWA mortar pumps with thinner. This makes these pumps highly suitable for processing epoxy-based materials too. By using quick-release couplings, you can quickly dismantle, clean and reassemble the material pumps that comprise only a few parts. The feed hopper is detachable. The large-volume pumps are fitted with extra-large outlets and due to the slow pump speed have low wear even with high material throughput.

Possible areas of application include, for example

- the decks of ships and ferries
- concrete repair and building renovation
- water-proofing of basements
- fire protection



**Your unit has been specially adapted to the processing material and is suitable for this purpose only. For the specific Technical Data for your device, refer to the machine card.**

WIWA mortar pumps are not suitable for conventional spraying.

Any other use is deemed not to be the intended use. The manufacturer's approval must be obtained before the unit is used for any other purpose or with other materials, i.e. not in accordance with the intended use, otherwise the warranty will become null and void.

Intended use also includes compliance with the technical documentation and adherence to the prescribed operating, servicing and maintenance guidelines.

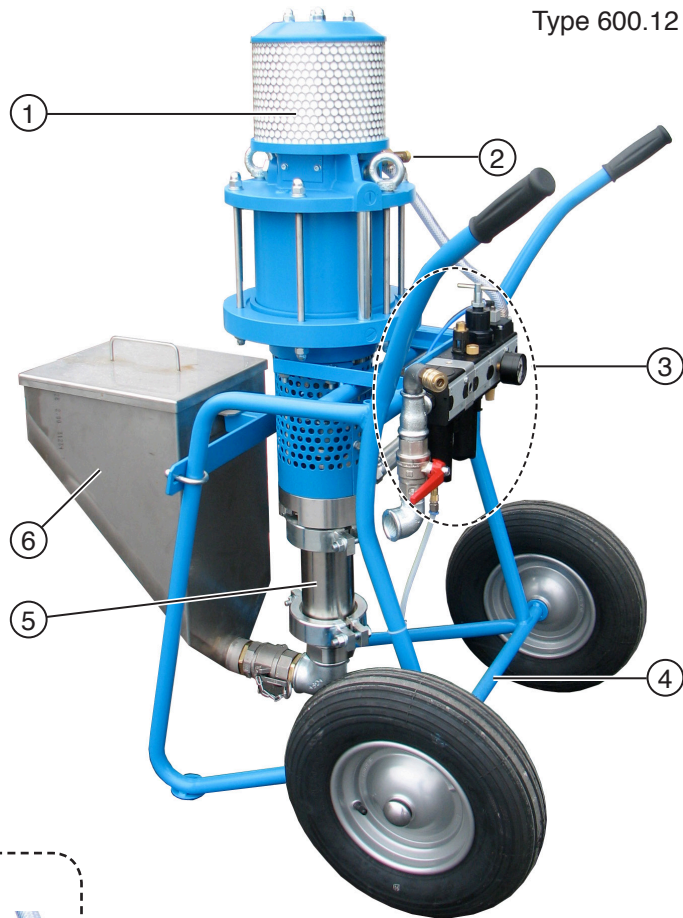
# Machine Description

## 3.2 Machine structure

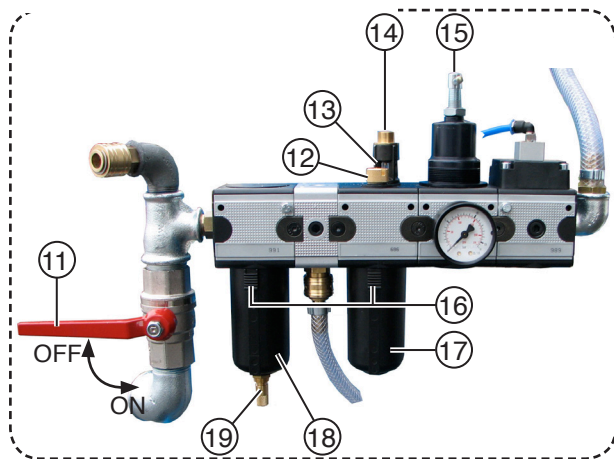
Type 410.09



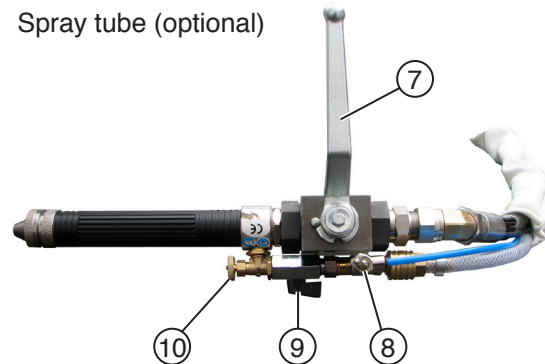
Type 600.12



Detail: ③ Air maintenance unit



Spray tube (optional)



Item	Designation
1	Air motor
2	Safety valve
3	Air maintenance unit (see detail)
4	Cart
5	Material pump
6	Feed drum 25l

Item	Designation
7	Material shut-off valve
8	Control air feed to switch the air motor ON and OFF
9	Atomizer air OPEN/CLOSED
10	Atomizer air regulator
11	Compressed air shut-off valve
12	Oil filler hole
13	Inspection glass
14	Fog oiler setting screw
15	Pneumatic regulator with pressure gauge
16	Slide for opening the containers
17	Oil tank
18	Water separator
19	Drain valve

## **4 Installation and transportation**

### **4.1 Safety measures at the installation location**

- The access to the safety features must be kept clear.
- Always keep the working area, especially all walkways and standing areas, clean and tidy. Clean up spilled paint or solvents immediately.
- Always ensure for sufficient aeration and ventilation at the workplace to avoid damage to health and material objects. Always observe the processing instructions issued by the material manufacturers.
- The owner must protect the machine by implementing appropriate lightning protection measures.
- Strictly comply with the valid accident prevention instructions.

### **4.2 Transporting the machine**

- Disconnect the entire power supply for the machine, even for short transport distances.
- Empty the machine before transport.
- Caution when loading! Risk of injury! Never stand under suspended loads or inside the loading area.
- Ensure sufficient load bearing capacity of the hoisting gear.
- Use only suitable transport vehicles.
- Secure the load on the transport vehicle from slipping and falling off.
- Parts or equipment that have been removed for transport purposes must be attached professionally and in accordance with the intended use before commissioning.

## 5 Assembly

1. Mount the feed drum onto the cart (Fig. 5.1) and bolt the material feed on the container outflow securely to the pump (Fig. 5.2).

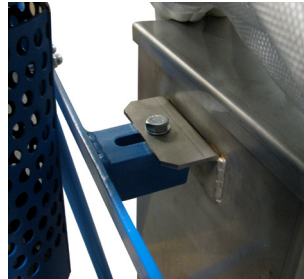


Fig. 5.1



Fig. 5.2

2. Connect the atomizer air hose (e) and the control air pipe (b) to the air maintenance unit (Fig. 5.3).
3. Connect the material hose (d) to the pump (Fig. 5.3).

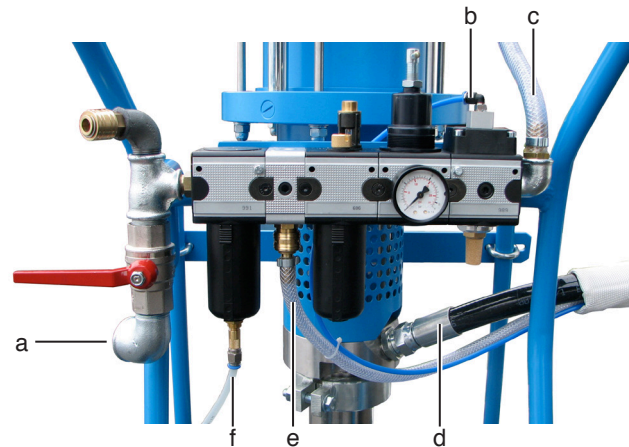


Fig. 5.3

Item	Designation
a	Air hose (on-site)
b	Control air pipe
c	Compressed air supply of air motor
d	Material hose
e	Atomizer air hose
f	Condensate drain

4. Connect the atomizer air hose, the control air pipe and the material hose to the spray tube (Fig. 5.4).

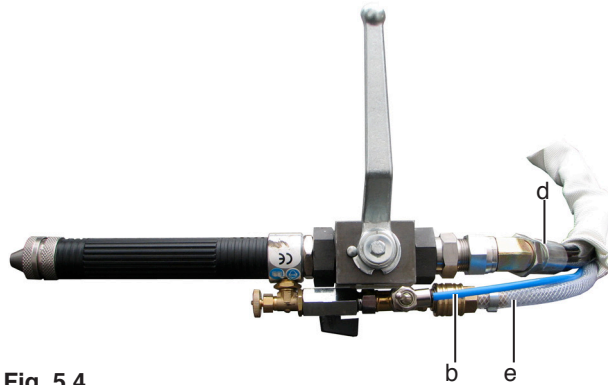


Fig. 5.4

5. Connect the on-site air hose (a) (Fig. 5.3). Keep the compressed air shut-off valve closed.

## 6 Putting into operation

### 6.1 Preparing

- Make sure all system parts are leak-free at all times!  
If the system has been at a standstill for a long time, test if for leaks.
- Check that all the rotatable parts, nuts, screws and hose connections are seated tightly and tighten them if necessary such that no material can emerge from connections and cause injuries.
- Check the stated maximum operating pressures. The specified maximum operating pressures must always be adhered to for all WIWA parts (pump, safety valve, material hose, spray gun, etc.) The data on these parts must match or be higher than the values stated on the type plate and the machine card.
- Top up the fog oiler on the air maintenance unit with pneumatic oil or anti-freeze and make the settings in accordance with Chapter “9.3 Air maintenance unit”.

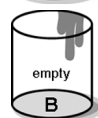
### 6.2 Initial cleaning

The machine was tested with a test medium before it left the factory. Before using the machine for the first time, you must flush out this test medium.

You require:



At least 5l of cleaning agent that matches the processed material. Follow the recommendations of the material manufacturer.



1 empty, open container "B"

## Operation

1. Have you turned the air pressure regulator all the way back?
2. Is the compressed air pipe connected?
3. Fill the cleaning agent into the feed drum
4. Hold the spray tube in container "B", open the material shut-off valve first and then the control air feed on the spray tube.
5. Open the compressed air shut-off valve and set the air pressure regulator to about 2 bar.
6. Allow the cleaning agent to run completely via the spray tube into container "B".
7. Let the pump run for a little while even after all the cleaning agent has been used to ensure that the cleaning agent drains completely from the machine too.
8. Connect the control air feed to the spray tube first and then connect the material shut-off valve.
9. Turn the air pressure regulator all the way back.
10. Close the compressed air shut-off valve.

## 7 Operation

### 7.1 General notes

- ▶ Always follow the processing instructions provided by the material manufacturers. All the materials to be processed should be supplied by the manufacturer with data concerning the viscosity, application temperatures, mixing ratios, etc. If this is not the case, please consult the respective manufacturer about this data.
- ▶ For optimum preparation of the materials, WIWA offers a wide range of accessories, e.g.:
  - agitators in various sizes
  - material preheating containers in different sizes
  - material flow heaters

### 7.2 Spraying



Wear the specified protective clothing.



Flush the machine as described in Chapter 7.3 every time before carrying out recommissioning.

1. Have you closed the compressed air shut-off valve?
2. Have you turned the air pressure regulator all the way back?
3. Have you closed the material shut-off valve and the control air feed on the spray tube?
4. Mix the spraying material well and fill it in the feed drum.



## WARNING

Do not compress the material! Otherwise, the liquid and solid components will separate and this can lead to clogging.

➤ Always start and end the material flow by opening and closing the control air feed.

5. Open the material shut-off valve first and then the control air feed on the spray tube.
6. Open the compressed air shut-off valve and set the air pressure regulator to about 2 bar.
7. Keep running the material into an empty container until clean material comes out.
8. To interrupt the material flow, close the control air feed on the spray tube. The machine is now ready for spraying.



Depending on the hose length, it may be necessary to fill up the feed drum after filling the machine and the hoses.

## 7.2.1 Setting the working pressure

You need different working pressures for different materials. In general, a suitable air inlet pressure is in the range 1.5-3.5 bar.

- You regulate atomizing of the spraying material by means of the air inlet pressure of the pump and by adding atomizer air via the spray tube.
- To set the desired working pressure, hold the spray tube in the feed drum (or any other container) while you test the various pressure settings.

## 7.3 Flushing

Flush the machine if

- you want to fill another material, or
- you want to finish work, or
- you want to decommission the machine.

1. Empty the feed drum by means of the spray tube.
2. End the material flow by closing the control air feed.
3. Regulate the air pressure regulator back to 0 bar.
4. Do not connect the material shut-off valve until no material comes out so that the pressure is entirely released.
5. Remove the nozzle from the spray tube.
6. Fill the feed drum with cleaning agent that matches the material you are processing. Pay attention to the manufacturer's recommendations!
7. Hold the spray tube into a container for contaminated material.
8. Open the material shut-off valve on the spray tube.
9. Open the control air feed on the spray tube.
10. Regulate the air inlet pressure such that the pump runs slowly.

## Decommissioning

11. When the initial quantities of severely contaminated cleaning agent have drained, hold the spray tube in the feed drum and allow the cleaning agent to circulate in the machine like this for a few minutes.
12. Briefly close the control air feed to change the spray tube to a container for contaminated material.
13. Open the control air feed and allow the cleaning agent to drain completely from the feed drum and the machines.
14. Close the control air feed.
15. Regulate the air pressure regulator back to 0 bar.
16. Do not connect the material shut-off valve until no cleaning agent comes out so that the pressure is entirely released.

## 8 Decommissioning



### WARNING

Do not compress the material!

- ▶ Always start and end the material flow by opening and closing the control air feed.

### 8.1 Interrupting work

1. Interrupt the material flow by closing the control air feed on the spray tube.
2. To entirely release the pressure, do not close the material shut-off valve until no material comes out.
3. Close the compressed air shut-off valve before the air maintenance unit.
4. Now, briefly open the material shut-off valve on the spray tube to entirely release the air-side pressure.

### 8.2 Finishing work

#### 8.2.1 Cleaning the machine

1. Depressurize the machine as described in Chapter "8.1 Interrupting work".
2. Flush the machine (Chapter "7.3 Flushing").
3. Dismount the feed drum by releasing the screw fitting at the top and opening the quick connector on the outlet.
4. Dismount the coupling piece from the container
5. Dismount the 90° elbow on the base of the pump and dismantle it into an elbow and a coupling piece.
6. Clean the individual parts thoroughly including the O-ring in the quick connector.
7. Mount all the parts including the feed drum back onto the machine.

### 8.2.2 Filing the machine with solvent

If you want to decommission the machine for a relatively long period of time, fill it with solvent after cleaning to protect the machine from drying out.

1. Follow the instructions in Chapter 8.2.1.
2. Fill the feed drum with solvent.
3. Hold the spray tube in the feed drum.
4. Open the material shut-off valve on the spray tube.
5. Open the control air feed on the spray tube.
6. Regulate the air inlet pressure such that the pump runs slowly.
7. Allow the solvent to circulate in the machine for a few minutes.
8. Close the control air feed.
9. Regulate the air pressure regulator back to 0 bar.
10. Do not connect the material shut-off valve until no cleaning agent comes out so that the pressure is entirely released.
11. Close the compressed air shut-off valve.
12. Clean the spray tube.

## 9 Maintenance/repairs

Before starting work, you must interrupt the compressed air supply to the machine.

Make sure that there is no residual pressure in the machine.

After completing work, you must always check the function of all the protective devices and correct functioning of the machine.

- Relieve the machine pressure before starting maintenance and cleaning work. Disconnect the compressed air supply to the entire system. Close the compressed air shut-off valve and release the pressure.
- In case of material congestion or agglomeration of material in the machine, residual pressures can still be present despite pressure discharge.  
Pay full attention to this when performing repair work!  
Material filters and hoses and the spray gun in particular must be dismantled with the greatest of care to avoid accidents caused by released residual pressures.
- When working on the material filter, e.g. when changing the filter, the machine must be completely switched off and depressurized.

### 9.1 Recurring inspections

In Germany, you must have the machine inspected and serviced regularly by an expert (WIWA Customer Service) in accordance with the accident prevention instructions for "Work with fluid spraying equipment" BGV D15 Chapter 2.36.

**The machine must be inspected:**

- before initial commissioning,
- after the modification or repair of parts of the system which could affect safety,
- after work breaks longer than 6 months,
- but at least every 12 months.

For decommissioned machines, the inspection can be postponed until the next commissioning.

The inspection results must be recorded in writing and kept until the next inspection.

The inspection report or a copy of it must be available at the place of use of the machine.

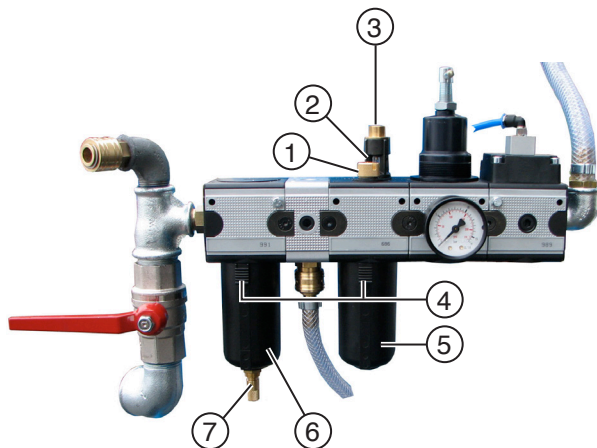
Please observe the specifications that apply in the country of use!

## 9.2 Maintenance plan

	weekly	monthly	annually	
				For more information, refer to
Check setting and oil quantity on fog oiler	x			Chapter "9.3.2 Setting the fog oiler"
Check condensation water container for dirt residues	x			
Clean the hoses		x		
Replace the hoses			x	

Further maintenance notes for the individual components can be found in the appendix to the corresponding spare parts list.

## 9.3 Air maintenance unit



Item	Designation
1	Oil filler screw
2	Inspection glass
3	Fog oiler setting screw
4	Slide for opening the containers
5	Oil tank
6	Water separator
7	Drain valve

Fig. 9.1

### 9.3.1 Checking the fill level of the lubricant (or anti-freeze)

- Check the amount of oil in the oil container (item 5) every day. The maintenance unit must never be operated without oil. Opening containers: Press the slide downwards and turn the container to the left. Ensure correct fit of the O-ring when assembling. To fill the oil container loosen the filler plug and fill the container directly. The maximum oil level is indicated by a groove on the circumference of the container.
- High humidity can cause icing of the motor. In case of icing, you should use pure anti-freeze instead of oil.

### 9.3.2 Setting the fog oiler

- Allow the air motor to run slowly with an air inlet pressure of approx. 4 bar.
- In the inspection glass of the fog oiler (item 2), check whether one drop of lubricant is released into the compressed air after about 10 to 15 double strokes of the air motor. If this is not the case, screw the adjusting screw (item 3) to set metering.

Only use the lubricants and anti-freeze listed in chapter 8.2.

### 9.3.3 Draining the condensation water

- The accumulated condensate is automatically drained off through the drain valve (item 7). Put the hose into an empty collecting vessel.
- Check the bowl regularly for dirt residues and clean it as required.

### 10 Malfuctions and troubleshooting

Fault	Possible cause	Remedy
Pump not running	<ol style="list-style-type: none"> <li>1. Compressed air supply interrupted</li> <li>2. Material hose is blocked</li> <li>3. Ball valves blocked</li> <li>5. Air motor faulty/control unit blocked</li> <li>6. The control air feed on the spray tube is closed</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the compressed air supply</li> <li>2. Carefully clean the material hose or replace it.</li> <li>3. Dismantle and clean pump.</li> <li>5. Contact Customer Service.</li> <li>6. Open the control air feed</li> </ol>
The pump runs evenly but draws in hardly any material or none at all	<ol style="list-style-type: none"> <li>1. The first ball sticks in the valve plate (dried material)</li> <li>2. The material flow is leaky in the screw fitting</li> <li>3. The material flow/container outflow is contaminated</li> <li>4. The viscosity of the conveying material is too high</li> </ol>	<ol style="list-style-type: none"> <li>1. Lift the ball through the inlet hole to release it.</li> <li>2. Tighten the screw fitting of the suction pipe and reseal the screw fittings if necessary.</li> <li>3. Clean the material flow/container outflow.</li> <li>4. Dilute conveyor agent or use a more powerful pump</li> </ol>
Pump is operating irregularly, reduced pump performance	<ol style="list-style-type: none"> <li>1. Ball valves contaminated</li> <li>2. The valves, packings or piston rod are worn out</li> <li>3. Pump pressure too low</li> <li>4. The viscosity of the conveying material is too high</li> <li>5. The material inlet is blocked</li> <li>6. The air motor control is defective.</li> <li>7. The unit is overloaded.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean the machine and possibly leave it at a standstill filled with solvent.</li> <li>2. Replace worn parts.</li> <li>3. Increase the air inlet pressure.</li> <li>4. Dilute conveyor agent or use a more powerful pump</li> <li>5. Clean the material inlet</li> <li>6. Contact Customer Service.</li> <li>7. Use a more powerful pump.</li> </ol>
Pump continues to operate even when discharge points are closed.	<ol style="list-style-type: none"> <li>1. Wear on packing, valves or piston rod</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace worn parts.</li> </ol>
The air motor freezes	<ol style="list-style-type: none"> <li>1. The number of strokes is too high</li> <li>2. Inlet air contains too much condensate</li> <li>3. Very unfavourable operating conditions (high air humidity or temperatures around freezing point)</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce the air inlet pressure. Possibly use a more powerful pump.</li> <li>2. Install a maintenance unit if not already installed. Empty water separator more often.</li> <li>3. Fill the oiler on the air maintenance unit with anti-freeze and set it such that one drop is released every 5 to 10 double strokes.</li> </ol>

## Appendix

# 11 Appendix

## 11.1 Technical data

Type	410.09	600.12
Article No.	0653609	0652595
	Two-wheel cart	Two-wheel cart
Air motor	140/120	200/120
Material pump	410/120 R	600/120 R
Feed drum	25 l hopper with quick fastening	25 l hopper with quick fastening
Maintenance unit	yes	yes
Pressure ratio	9:1	12:1
Max. operating pressure (bar)	72	96 / 1392.3
Pump capacity per double stroke (cm <sup>3</sup> )	410	600
Max. pump capacity with 60 double strokes (litres)	24.6	36
Piston diameter of the air motor (mm)	140	200
Piston stroke of the air motor (mm)	120	120
Max. air inlet pressure (bar)	8	8
Recommended minimum compressor output (l/min)		3000
Air inlet connection (BSP)	1/2"	1"
Material inlet connection (BSP)	1"	1"
Material outlet connection (BSP)	1"	1"
Spraying hose	25' x 1"	25' x 1"
Air consumption of pump	1,200 l/min (nominal value)	2,000 l/min

## 11.2 Accessories

Accessory set	Article No.	Containing:
	0653594	Hose package 10.5 m (7.5 m + 3 m) Spray tube 330 mm with ball valve and nozzle 8.5 mm

### 11.3 Operating materials

Pneumatic oil for air maintenance unit	0.5l	Article No. 0632579
Anti-freeze for air maintenance unit		Article No. 0631387

Materials required for maintenance and repair work

- Securing agent (50 ml), Article No. 000015
- Lubricant (acid-free grease), Article No. 000025

### 11.4 Instruction Certificate

This certificate follows the EC Directive for work equipment 85/655/EEC, section II article 7.

The owner of the machine listed below has instructed the operating personnel.

.....  
(Manufacturer, type designation, year of construction, order-number)

Instruction was conducted by the representative of the owner:

.....  
(Foreman or responsible superior, name, department)

The instructed person has read and understood the user manual for the machine listed above, in particular the chapter entitled Safety and declares that they are able to operate the unit in a safe way.

.....  
(Operating personnel, date, name)

.....  
(Personnel for repair and maintenance, date, name)

.....  
(Personnel for electric / electronics, date, name)

.....  
(Foreman or responsible superior, name, department)

### 11.5 Machine card and lists of spare parts

**This user manual is only valid in conjunction with the attached machine card.**

The machine card contains all the important and safety relevant data and information about the device.

- exact designation and manufacturer data
- technical data and limiting values
- equipment and test certificate
- data of purchasing
- The device (device components and accessories with article and spare parts numbers)

Please ensure that the data on the machine card matches the data on the type plate. In the case of **discrepancies** or if the type plate is missing, please **notify us immediately**.





because it works

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