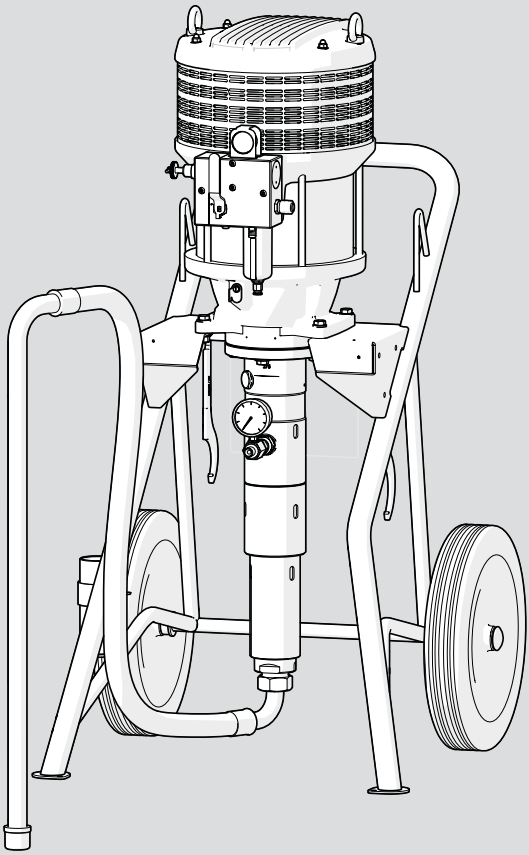
Operation manual

because it works

HIGH PRESSURE CLEANER



Original operation manual
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1 Foreword

Dear valued customer,

We are delighted that you have chosen one of our high pressure cleaners.

This operation manual is directed at the operating and maintenance personnel. It contains all information required in order to handle this device.

The device operator must ensure that the operating and maintenance personnel always have access to a copy of the operation manual in a language that they understand.

In addition to the operation manual, further information is also essential for the safe operation of the device. Read and observe the directives and accident prevention regulations valid in your country.

We recommend enclosing all relevant directives and accident prevention regulations with the operation manual.

If questions should arise, we shall be happy to assist you.

We wish you excellent working results with your high pressure cleaner

WIWA Wilhelm Wagner GmbH & Co. KG**.**

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2 Safety

This device has been designed and manufactured considering all safety aspects. It reflects current engineering practice and the valid accident prevention regulations. The device left the factory in faultless condition and guarantees a high level of technical safety. However, improper operation and misuse will pose a risk to:

- the life and limb of the operator or third parties,
- the device and other property of the owner,
- efficient work with the device.

It is fundamentally prohibited to implement any method of work that has a negative influence on the safety of the operating personnel and the device. All persons involved in the installation, commissioning, operation, care, repair and maintenance of the device must have read and understood the operation manual beforehand - in particular the "Safety" chapter.

Your safety depends on it!

We recommend that the device owner has this confirmed in writing.

2.1 Explanation of symbols

Safety notes warn of potential accident risks and describe the measures required for accident prevention. In the **WIWA** operation manual, safety notes are highlighted and labeled as follows:

DANGER

Signals a risk of accidents that are very likely to result in serious injuries and even death, if the safety note is not observed!

WARNING

Signals a risk of accidents that may result in serious injuries and even death, if the safety note is not observed!

CAUTION

Signals a risk of accidents that may result in injuries, if the safety note is not observed!

Signals important information for working correctly with the device.
A failure to observe this may result in damage to the device or its environment.

Various pictograms are used in the safety notes for accident risks that may result in injury, depending on the hazard source - examples:

General risk of accident

Risk of explosion due to explosive atmosphere

Risk of explosion due to explosive substances

Risk of accident due to electricity or electrostatic charge

Risk of crushing due to lifting movements

Risk of cutting injuries due to rotating device parts

Risk of burning due to hot surfaces

Risk of freezing due to cold surfaces

The first line of the safety instructions indicates the personal protective equipment that must be worn. This is also highlighted and labeled as follows:

Wear protective clothing
Signals an instruction to wear the prescribed protective clothing, in order to prevent skin injuries due to spray material or gases.

Use eye protection
Signals an instruction to wear protective goggles, in order to prevent eye injuries due to material spray, gases, vapors or dust.

Use ear defenders
Signals an instruction to wear ear defenders, in order to prevent damage to hearing caused by noise.

Use respiratory protection
Signals an instruction to use respiratory protection, in order to prevent damage to the respiratory tract caused by gases, vapors or dust.

Wear protective gloves
Signals an instruction to wear protective gloves in order to prevent injuries due to aggressive chemicals, fire injuries when processing heated materials, or freezing due to contact with very cold surfaces.

Wear safety shoes
Signals an instruction to wear safety shoes, in order to prevent foot injuries due to falling, toppling or rolling objects, as well as slipping on slippery floors.

Signals references to directives, work instructions and operation manuals that contain very important information and must be observed.

2.2 Safety notes

Always remember that the device operates at high pressures and can cause life-threatening injuries if handled incorrectly!

Always observe and follow all information in this operation manual and in the separate operation manuals for the optional accessories.

2.2.1 Working pressure

WARNING

Parts that are not designed for the maximum permissible working pressure may rupture and cause serious injuries.

- ➤ It is essential to observe the prescribed maximum working pressures for all parts. With varying working pressures, the lowest value always applies as the maximum working pressure for the complete device.
- ➤ Material hoses and hose assemblies must comply with the maximum working pressure, including the required safety factor.
- ➤ Material hoses may not exhibit leakage, kinks, signs of wear or bulges.
- ➤ Hose assemblies must be tight.

2.2.2 Risks due to the high pressure jet

WARNING

The high pressure jet is very sharp and can cause serious injuries through its cutting action, or by penetrating the skin or eyes. If the high pressure jet is pointed at electrical units or sockets, this could cause an electric shock. The object to be cleaned can be damaged in the event of sensitive surfaces and too little spraying distance (e.g. rubberized vehicle parts such as tires, gaskets etc.).

- ➤ Never aim the high pressure cleaner gun at yourself, other persons or animals!
- ➤ Never hold your fingers or hand in front of the high pressure cleaner gun!
- ➤ Never reach into the high pressure jet!
- ➤ Never aim the high pressure jet at electrical units, sockets or at the device itself.
- ➤ Always hold the high pressure cleaner gun securely with both hands during the work, since the high pressure jet generates a recoil.
- ➤ Always check if the high pressure cleaner is suitable for the object to be cleaned.
- ➤ Always observe the manufacturer's instructions and maintain a sufficient spraying distance from parts with sensitive surfaces (min. 30 cm).

WARNING

An unintended ejection of material from the high pressure cleaner gun can cause personal injury and property damage.

- ➤ Do not clamp the trigger of the high pressure cleaner gun during operation!
- ➤ Secure the high pressure cleaner gun whenever interrupting work!
- ➤ Prior to each commissioning, always check the high pressure cleaner gun lock!

2.2.3 Risks due to electrostatic charge

WARNING

The high flow velocities can result in an electrostatic charge. Static discharges can result in fire and explosions.

- ➤ Ensure that the device is correctly grounded outside of EX zones!
- ➤ Only use electrically conductive material hoses. All original material hoses from **WIWA** are conductive and designed for our devices.

WARNING

Dirty devices can become electrostatically charged. Fire and explosion can be triggered by severe static discharges.

- ➤ Keep the device clean.
- ➤ Always perform the cleaning work outside of EX zones.

2.2.4 Explosion protection

WARNING

Devices that are not explosion-protected must not be used in operating facilities that fall under the explosion protection ordinance!

Explosion-protected devices can be identified by the corresponding ⟨Ex⟩ mark on the type plate and/or the ATEX declaration of conformity provided!

Explosion-protected devices fulfill the requirements of the ATEX Directive for the device group, device category and temperature class cited on the type plate or in the declaration of conformity.

The owner is responsible for designating the zoning in accordance with ATEX Directive, Appendix II, No. 2.1–2.3 in accordance with the stipulations of the responsible regulatory body. The owner is required to check and ensure that all technical data and labeling comply with the applicable stipulations according to ATEX.

Please note that some parts have their own type plate with separate labeling according to ATEX. In this case, the lowest explosion protection of all labels displayed applies for the entire device. The owner is required to implement appropriate safety measures for applications in which a failure of the device could lead to dangers to personnel.

WARNING

The spray mist from liquids containing solvents is highly flammable, explosive and toxic!

➤ Never use liquids containing solvents, such as paint thinners, gasoline or oil, as cleaning solutions.

2.2.5 Health risks

CAUTION

When handling cleaning agents, oils, greases, and other chemical substances, observe the safety and proportioning instructions of the manufacturer and the generally applicable regulations.

CAUTION

The device may not be used to remove materials that contain hazardous substances (e.g. asbestos).

2.3 Safety signs

The safety signs attached to the device, such as for example the safety card (see Fig. 1), indicate possible hazard points and must be observed.

The symbols on the safety signs correspond to the labeling of the safety notes described in chap. 2.1 on page 6.

The safety signs may not be removed from the device. Damaged and illegible safety signs must be replaced immediately.

Also read and observe the safety notes in the operation manual!

Fig. 1: Safety card

2.4 Safety features

WARNING

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

- ➤ Put the device out of operation immediately if you detect safety equipment defects or any other faults on the device.
- ➤ Only put the device back into operation once the faults have been fully rectified.

The device is equipped with the following safety features:

- ➤ Safety valve (only with pneumatic drive)
- ➤ Compressed air shut-off valve (only with pneumatic drive)
- ➤ Ground cable

Check the safety features on the device:

- ➤ Prior to commissioning,
- ➤ Always prior to starting work,
- ➤ After all set-up work,
- ➤ After all cleaning, maintenance, and repair work.

Checklist on the pressureless device:

- ☑ Seal on the safety valve OK?
- ☑ Safety valve externally free of damage?

☑ Mobility of the compressed air shut-off valve OK?
☑ Ground cable externally free of damage?
☑ Connections of the ground cable to the device and the circuit board OK?

Checklist on the pressurised device:

☑ Function of the safety valve OK?

2.4.1 Safety valve

The safety valve on the air motor prevents the maximum permissible air inlet pressure from being exceeded. If the air inlet pressure exceeds the permanently set threshold value, the safety valve discharges.

The Fig. 2 shows the installation location of the safety valve for device type 60012 (left) as well as for device types 230027, 270049 and 333037 (right).

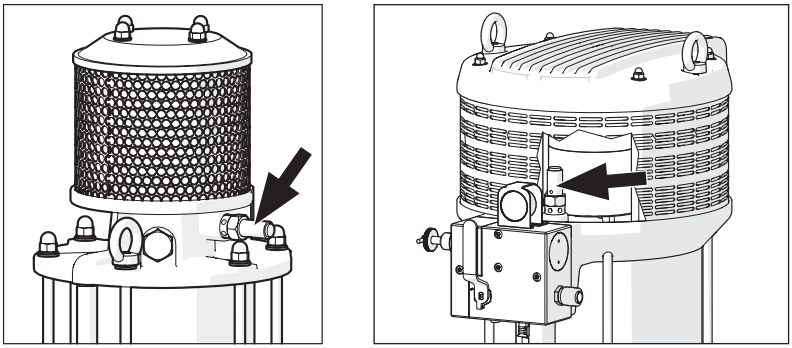


Fig. 2: Installation locations of the safety valve

In order to check the function of the safety valve, briefly increase the air inlet pressure to approx. 10% above the maximum permissible pressure according to the type plate - the safety valve must discharge.

WARNING

If the maximum permissible air inlet pressure is exceeded, parts may rupture. The consequences may be personal injuries and property damage.

➤ Never operate the device without a safety valve or with a defective safety valve!
➤ If it is necessary to replace the safety valve, please refer to the machine card for the order number.
➤ Make sure that the new safety valve is set and sealed to the maximum permissible air inlet pressure for the device (see type plate or machine card).

2.4.2 Compressed air shut-off valve

The air supply of the device can be interrupted with the compressed air shut-off valve.

The Fig. 3 shows the compressed air shut-off valve on the device type 60012 (left) as well as on device types 230027, 270049 and 333037 (right).

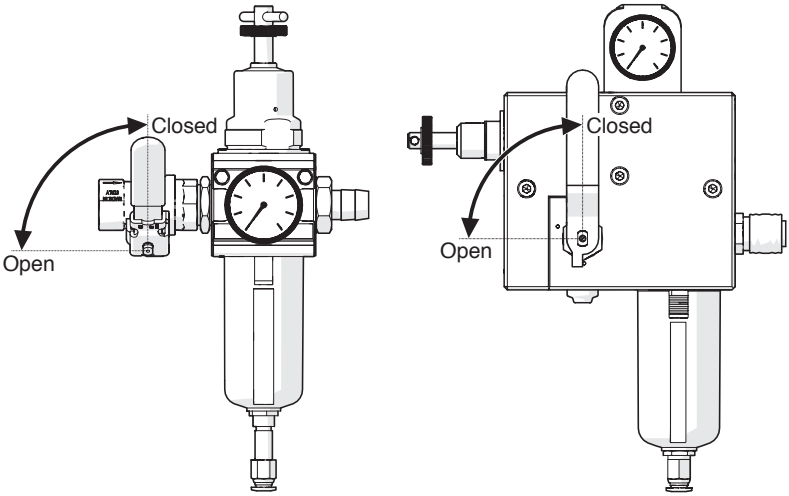


Fig. 3: Compressed air shut-off valve

The functional principle:

- ➤ Open ⇨ Position ball valve in the flow direction
- ➤ Close ⇨ Position ball valve transverse to the flow direction

After shutting off the air, the device remains under pressure.
It is therefore necessary to fully relieve the pressure prior to any maintenance and repair work.

2.4.3 Ground cable

The ground cable serves to prevent an electrostatic charging of the device. The ground cable is already connected to the cart at the time of delivery.

If the ground cable is lost or defective, it must be replaced immediately!

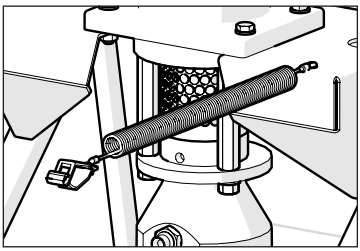


Fig. 4: Ground cable

2.5 Operating and maintenance personnel

2.5.1 Obligations of the device owner

The device owner:

- is responsible for training the operating and maintenance personnel,
- must instruct the operating and maintenance personnel on the proper handling of the device, and on wearing the correct work clothing and protective equipment,
- must make work aids, such as e.g. lifting gear for transporting the device or container, available to the operating and maintenance personnel,
- must make the user manual accessible to the operating and maintenance personnel and must ensure that this remains constantly available,
- must ensure that the operating and maintenance personnel have read and understood the user manual.

Only then are they permitted to put the device into operation.

2.5.2 Personnel qualifications

Differentiation is made between 2 groups of personnel, depending on their qualifications:

- Instructed operator has received verified instruction from the device owner regarding the tasks entrusted to him and the possible risks in the event of incorrect conduct.
- Trained personnel are capable - due to instruction provided by the device manufacturer - of carrying out maintenance and repair work on the device, independently recognizing possible dangers and avoiding risks.

2.5.3 Authorized operator

Activity	Qualification
Set-up and operation	Instructed operator
Cleaning	Instructed operator
Maintenance	Trained personnel
Repair	Trained personnel

Children, young persons under the age of 16 and untrained personnel may not work with high pressure cleaners!

2.5.4 Personal protective equipment

The operating personnel must wear the necessary protective equipment. The high pressure cleaner may not be operated in the presence of persons without sufficient protective equipment.

Wear protective clothing
Always wear protective clothing prescribed for your work environment (e.g. anti-static protective clothing in potentially explosive atmospheres).

Use eye protection
Wear protective goggles to prevent eye injuries due to material spray, gases, vapors, or dust.

Use ear defenders
The high pressure jet can generate a high sound pressure level. If the sound pressure level exceeds the permissible limit values, the operator and other persons in the vicinity must wear suitable ear defenders.

Wear safety shoes
Wear antistatic safety shoes, in order to prevent foot injuries due to falling, toppling or rolling objects, as well as slipping on slippery floors.

2.6 Warranty and liability

Except when otherwise stipulated,

- ➤ our General Terms and Conditions (GTC) apply for deliveries within Germany,
- ➤ our Orgalime SE 01 apply for deliveries to all other countries.

2.6.1 Spare parts

- ➤ When maintaining and repairing the device, only use original spare parts from **WIWA**.
- ➤ If spare parts are used, that have not been produced or supplied by **WIWA**, the warranty is voided and all liability shall be excluded.

2.6.2 Accessories

- ➤ If you use original accessories from **WIWA**, their suitability for use in our devices is guaranteed.

- If you use third-party accessories, these must be suitable for the device - in particular with respect to the working pressure, the current connection data, the connection variables, and use in Ex-zones, if applicable. **WIWA** will not be liable for any damage or injuries due to these parts.
- It is essential to observe the safety provisions applicable to the accessories. You can find these safety provisions in the separate operation manuals for the accessories.

2.7 How to respond in an emergency

2.7.1 Bringing the device to a standstill and relieving the pressure

In an emergency, bring the device to an immediate standstill and relieve the pressure.

1. Close the compressed air shut-off valve.
2. Hold the high pressure cleaner gun into a collecting vessel.
3. Release the high pressure cleaner gun and fire it until the spraying pressure is completely relieved.
4. Let go of the high pressure cleaner gun trigger and engage the trigger lock.

2.7.2 Leakage

WARNING

In case of leakage, material may escape under very high pressure and cause serious physical injuries and property damage.

- Bring the device to an immediate standstill and relieve the pressure.
- Tighten threaded connections and replace defective parts (must be performed by trained personnel).
- Do not seal leakage at connections and on high pressure hoses with the hand or by wrapping.
- Do not patch high pressure hoses!
- Check hoses and threaded connections for leak-tightness when starting the device up again.

2.7.3 Injuries

A doctor must be consulted immediately for injuries during the handling of high pressure cleaners!

3 Device description

The high pressure cleaner operates with a high pressure jet, with which stubborn impurities or layers of paint can be removed.

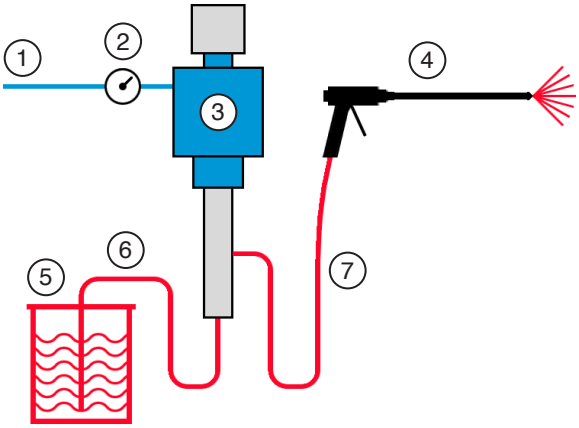


Fig. 5: Functional diagram

No.	Designation
1	Connection to the compressed air supply or hydraulic unit
2	Regulator cluster with pressure regulator and pressure gauge
3	High pressure pump, consisting of an air motor or hydraulic motor and a fluid pump
4	High pressure cleaner gun
5	Container with cleaning solution
6	Suction intake
7	Material hose

The high pressure cleaner is connected to a compressed air or hydraulic supply depending on the device type. The inlet pressure is infinitely adjustable with a pressure regulator. The set inlet pressure can be read on a pressure gauge.

Water is generally used as the cleaning solution. If necessary, a cleaning agent can be added to the water. The cleaning solution is conveyed from the container with a suction hose to the high pressure cleaner and, from there, is supplied under high pressure to the high pressure cleaner gun via a material hose.

3.1 Intended use

The high pressure cleaner is intended for professional use during cleaning work in the industrial sector, such as e.g.

- Facades
- Vehicles
- Containers
- Paving slabs
- Stables
- Removing old paint
- Machines

Intended use also includes:

- observing the technical documentation and
- complying with the operating, maintenance and servicing guidelines.

3.2 Improper use

Any use other than that stipulated in the technical documentation is deemed to be improper use and will void the warranty.

Improper use applies in particular if

- the device is used to remove materials that are harmful to health, such as e.g. materials containing asbestos or solvents,
- unauthorized modifications or changes are implemented,
- the safety features are removed, modified or bypassed,
- spare parts are installed that were not manufactured or delivered by **WIWA** (see chap. 2.6.1 on page 16),
- accessories are used that are not suitable for the device (see chap. 2.6.2 on page 16).
- the device is operated outside of the operating limits according to the type plate.

3.3 Device design

The high pressure cleaners from **WIWA** can be equipped with both a pneumatic drive and a hydraulic drive. The series with a pneumatic drive is broken down into several types, which primarily differ in the size of the air motors and fluid pumps (see technical data in chap. 8.1 on page 38).

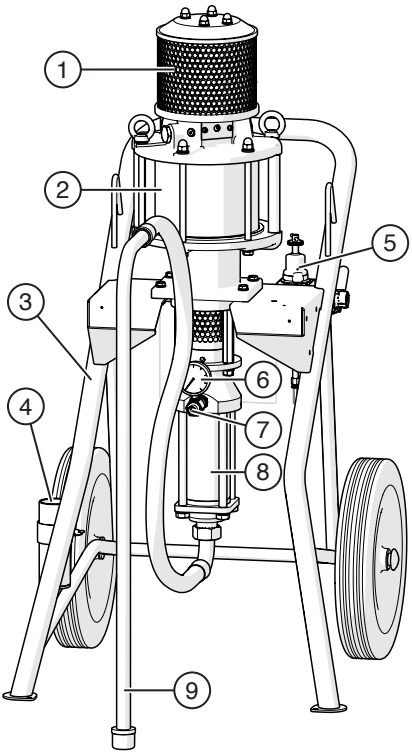


Fig. 6: Type 60012

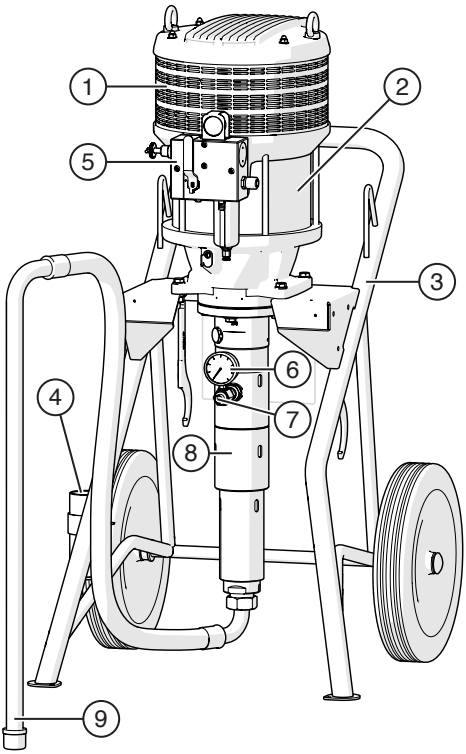


Fig. 7: Types 230027, 270049 and 333037

No.	Designation
1	Muffler
2	Air motor
3	Cart
4	Mounting for the suction
5	Regulator cluster or maintenance unit
6	Pressure gauge for displaying the material pressure

No.	Designation
7	Connection for the material hose
8	Fluid pump
9	Suction for the cleaning solution

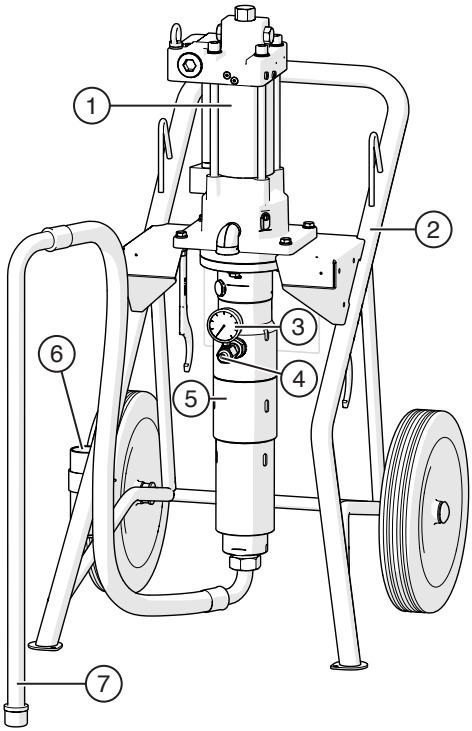


Fig. 8: Type 60001

No.	Designation
1	Hydraulic motor
2	Cart
3	Pressure gauge for displaying the material pressure
4	Connection for the material hose
5	Fluid pump
6	Mounting for the suction
7	Suction for the cleaning solution

3.4 Regulator cluster and maintenance unit

Depending on the device type, pneumatically operated high pressure cleaners are equipped with a regulator cluster or maintenance unit, on which the air inlet pressure can be regulated and read.

The Fig. 3 shows the regulator cluster on the device type 60012 (left) as well as the maintenance unit on the device types 230027, 270049 and 333037 (right).

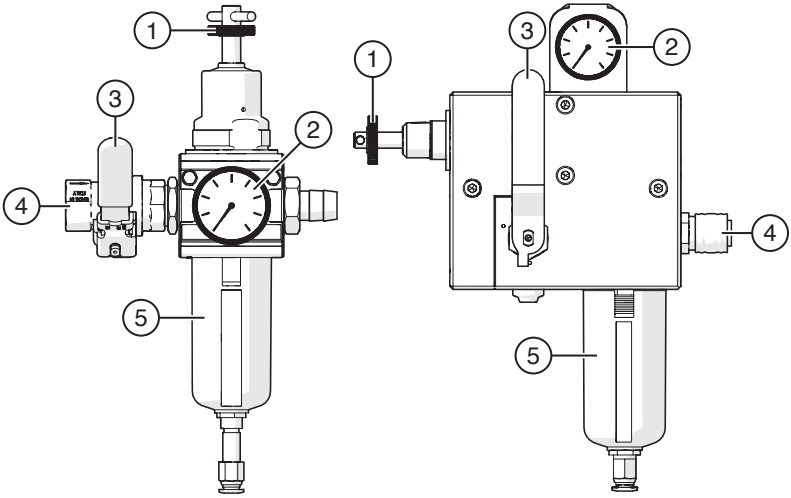
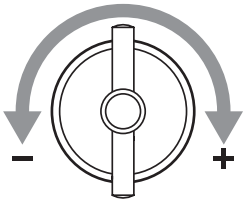


Fig. 9: Regulator cluster and maintenance unit

No.	Designation
1	Compressed air regulator
2	Pressure gauge for displaying the air inlet pressure
3	Compressed air shut-off valve
4	Compressed air connection
5	Water separator

Functional principle of the compressed air regulator:

- ➤ To increase the pressure, turn clockwise,
- ➤ To decrease the pressure, turn counter-clockwise



3.5 Optional expansions and accessories

An extensive range of accessories is available for the high pressure cleaners from **WIWA**.

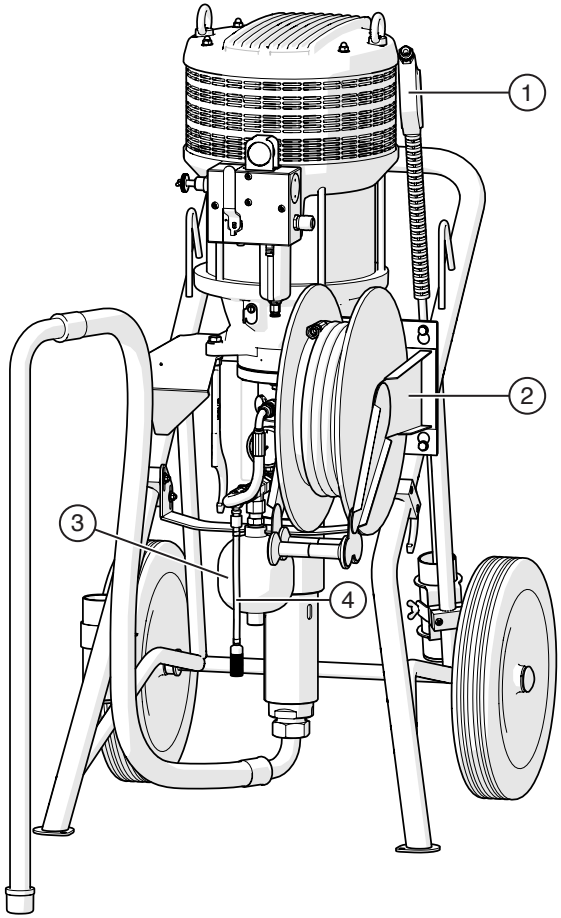


Fig. 10: Example of a high pressure cleaner with full equipment

No.	Designation
1	High pressure cleaner gun with material hose and mounting
2	Hose reel
3	Pulsation damper
4	Foam injection

3.5.1 High pressure cleaner gun with material hose and mounting

The high pressure cleaner gun, the material hose and the mounting for the high pressure cleaner gun are combined in an attachment kit.

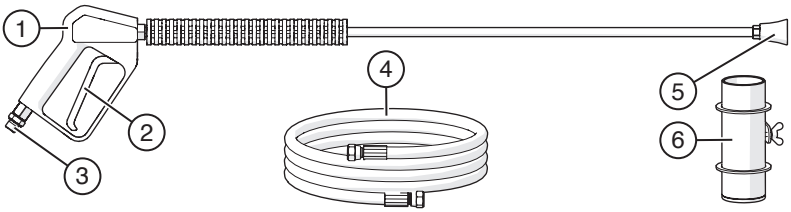


Fig. 11: High pressure cleaner gun with material hose and mounting

No.	Designation
1	High pressure cleaner gun
2	Trigger
3	Connection for the material hose
4	15 m material hose
5	Nozzle protector with spray nozzle (exchangeable)
6	Mounting for the high pressure cleaner gun

The high pressure cleaner gun is opened by actuating the trigger. The cleaning solution is conveyed to the spray nozzle. The spray nozzle atomizes the cleaning solution into a high pressure jet.

By releasing the trigger, the high pressure cleaner gun is closed and the discharge of cleaning solution from the spray nozzle is ended. The high pressure pump stops.

The high pressure cleaner gun must be secured during work interruptions in order to prevent an unintended actuation of the trigger. To do so, fold the trigger lock out of the trigger as shown in Fig. 12 and engage it in the gun grip.

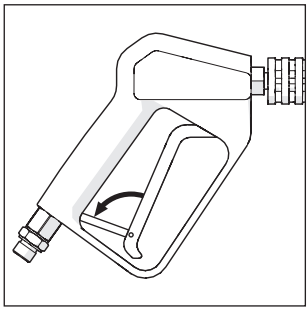


Fig. 12: Trigger lock

The material hose is used to connect the high pressure cleaner gun to the material outlet of the high pressure cleaner.

The mounting for the high pressure cleaner gun is screwed onto the frame of the high pressure cleaner. The high pressure cleaner gun can be set down in the mounting during work interruptions.

3.5.2 Hose reel

The material hose can be automatically rolled up using the hose reel.
It is installed in the material flow between the material outlet of the high pressure cleaner and the material hose.

The hose reel has several stopping points, through which the material hose can be pulled out to different lengths. The individual stopping points are audible through a clicking noise.
To roll up the material hose, pull it somewhat past the current stopping point and then let it roll up automatically.

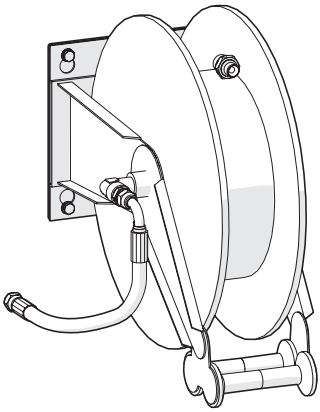


Fig. 13: Hose reel

3.5.3 Pulsation damper

The pulsation damper balances the pulsations of the high pressure pump and therefore ensures a consistent conveying speed and output.

It is installed in the material flow between the material outlet of the high pressure cleaner and the material hose.

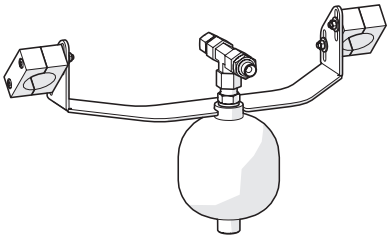


Fig. 14: Pulsation damper

3.5.4 Foam injection

Using the foam injection, foam can be added into the cleaning solution. The foam injection is installed in the material flow between the material outlet of the high pressure cleaner and the material hose.

The injector (see Fig. 15, no. 1) generates a negative pressure, through which the foam is suctioned into the cleaning solution that is flowing through. The replaceable nozzle (see Fig. 15, no. 2) is equipped with 2 different-sized nozzles for operation with foam (large nozzle) and without foam (small nozzle).

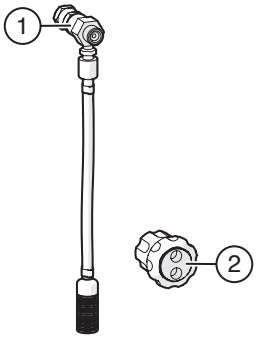


Fig. 15: Foam injection

4 Transport, installation, and assembly

The device left the factory in faultless condition, packaged correctly for transport.

Check the device at the time of receipt for any transport damage and for completeness.

4.1 Transport

When transporting the device, observe the following information:

- When loading the device, ensure sufficient load-bearing capacity of the lifting gear and lifting accessories. The dimensions and weight of the device can be found on the machine card and type plate.
- Place the device on a transport pallet for lifting. There are two crane eyes on the motor, which are only used for assembly and disassembly of the high pressure pump.
  Do not lift the device by means of the crane eyes!
- Never stand under suspended loads or in the loading area. There is a risk of death here!
- When lifting or loading the device, do not transport any other objects (e.g. material drum) with the device.

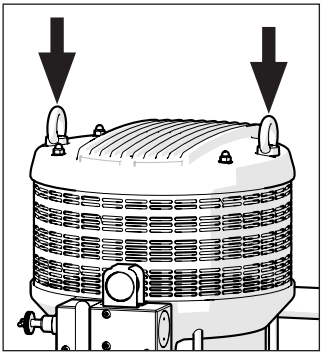


Fig. 16: Crane eyes

- Secure the load on the transport vehicle to prevent sliding and falling.

If the device has previously been in operation, please observe the following:

- Disconnect the entire energy supply to the device - even for short transport distances.
- Empty the device prior to transport - residual liquids may still leak during transport.
- Remove all loose parts (e.g. tools) from the device.

4.2 Installation site

Ambient temperature	minimum		maximum	
	0 °C	32 °F	40 °C	104 °F

WARNING

If the device is used outdoors, a life-threatening situation may arise for the operating personnel due to lightning.

- ➤ Never operate a device outdoors during a storm!
- ➤ The owner must ensure that a device that is used outdoors is equipped with suitable lightning protection equipment.

Position the device horizontally on ground that is level, firm and free of vibrations. The device may not be tilted or tipped. Make sure that all controls and safety features are easy to reach.

Safety measures at the installation site:

- ➤ For safe operation of the device, stability and sufficient free space must be guaranteed.
- ➤ Keep the working area clean, especially all walking and standing areas. Remove any spilled cleaning solution immediately.
- ➤ Always observe the processing instructions of the material manufacturer.
- ➤ Protect all items neighboring the object against possible damage due to spray mist.

4.3 Assembly

WARNING

If untrained personnel carry out assembly work, they endanger themselves and others, and risk the operational safety of the device.

- ➤ All assembly work may only be carried out by personnel trained for this!

WARNING

Parts that are not designed for the maximum permissible working pressure of the high pressure cleaner may rupture and cause serious injuries.

- ➤ Prior to installing accessories, make sure that these are designed for the maximum permissible working pressure of the high pressure cleaner.

WARNING

During assembly work, ignition sources may arise
(e.g. due to mechanical sparks, electrostatic discharge, etc.).

➤ Carry out all assembly work outside of potentially explosive areas.

4.3.1 Connecting the material hose and high pressure cleaner gun

1. Connect the material hose to the material inlet of the high pressure cleaner gun (see Fig. 17 left).
2. Connect the material hose to the material outlet of the high pressure cleaner (see Fig. 17 right).

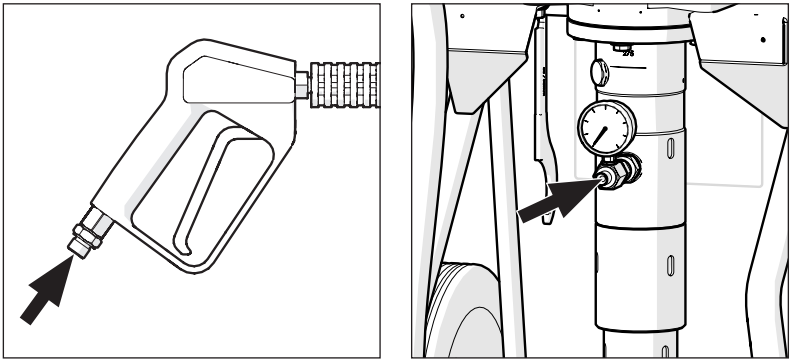


Fig. 17: Connections for the material hose

In order to prevent damage to the material hose:

➤ Do not pull the material hose with loops or over sharp edges.

➤ Do not bend the material hose.

4.3.2 Grounding the device

WARNING

The high flow velocities can result in an electrostatic charge. Static discharges can result in fire and explosions.

➤ Connect the ground cable for the device to an electrically conductive object outside of EX zones.

4.3.3 Connecting the compressed air supply

High pressure cleaners with pneumatic drives are connected to the operator-side compressed air supply.

CAUTION

Lines laid on walking surfaces are a tripping hazard capable of causing injuries to the operating personnel.

➤ Place the compressed air line so that a tripping hazard for the operating personnel cannot result.

So that the required quantity of air is guaranteed, the compressor output must comply with the air requirement of the device and the diameter of the air supply hoses must match with the connections.

Operation with contaminated or moist compressed air leads to damage in the device's pneumatic system.

➤ Use only dried, oil-free and dust-free compressed air, which corresponds to compressed air quality grade 4 according to DIN ISO 8573-1!

1. Make sure that
   - ➤ the compressed air shut-off valve is closed and
   - ➤ the compressed air regulator is completely throttled back.
2. Connect the compressed air line to the compressed air connection of the regulator cluster or maintenance unit (see Fig. 9 on page 22).

4.3.4 Connecting the hydraulic supply

High pressure cleaners with hydraulic drives are connected to a hydraulic unit provided by the owner.

Hydraulic unit requirements	
Conveyed volume per double stroke	0.94 l
Maximum oil temperature	60 °C

For the operation of the device, the following are furthermore required:

- ➤ a hydraulic valve to regulate the oil pressure, with a pressure limit at a max. of 145 bar,
- ➤ a hydraulic accumulator,
- ➤ a pressure gauge for checking the oil pressure,
- ➤ a thermometer for checking the oil temperature,
- ➤ a filter.

5 Operation

Prerequisites:

- ➤ The high pressure cleaner must be correctly installed and connected to a suitable compressed air or hydraulic supply.
- ➤ Only put the high pressure cleaner into operation if you are equipped with the prescribed protective equipment. Details on this can be found in chap. 2.5.4 on page 16.
- ➤ The cleaning solution must be available in sufficient quantity.

5.1 Putting the device into operation

Checklist prior to commissioning:

- ➤ Check if a system separator is necessary to protect the drinking water.
- ➤ Check if all safety features are present and fully functional.
- ➤ Check the release agent level of the high pressure pump and refill it if necessary.
- ➤ During commissioning, check if all parts of the high pressure cleaner are leak-tight and tighten the connections if necessary.
- ➤ Make sure that the high pressure cleaner is properly grounded (see chap. 4.3.2 on page 28).

1. Place the suction in the container with the cleaning solution.
2. Make sure that the compressed air regulator is turned all the way down.
3. Open the compressed air shut-off valve.
4. Set the compressed air regulator to approx. 2 bar.
5. Hold the high pressure cleaner gun into a collecting vessel.
6. Release the high pressure cleaner gun and fire it until pure cleaning solution escapes.
7. Set the required working pressure on the compressed air regulator.

5.2 Relieving the pressure

1. Close the compressed air shut-off valve.
2. Hold the high pressure cleaner gun into a collecting vessel.
3. Release the high pressure cleaner gun and fire it until the spraying pressure is completely relieved.
4. Let go of the high pressure cleaner gun trigger and engage the trigger lock.

5.3 Decommissioning

The work process during decommissioning depends on whether the high pressure cleaner is only going to be taken out of operation temporarily or for longer periods or permanently

5.3.1 Temporary decommissioning

1. Relieve the pressure as described in chap. 5.2 on page 30.
2. Set down the high pressure cleaner gun in the mounting provided for this on the frame of the high pressure cleaner.

5.3.2 Long-term or final decommissioning

1. Relieve the pressure as described in chap. 5.2 on page 30.
2. Set down the high pressure cleaner gun in the mounting provided for this on the frame of the high pressure cleaner.
3. Shut off the air supply on the compressor.
4. Relieve the pressure in the compressed air line from the compressor to the compressed air connection of the high pressure cleaner.
5. Disconnect the compressed air line from the compressed air connection of the high pressure cleaner.

5.4 Storage

Store the device in a place where it is protected against dirt, moisture, frost, and heat.

Storage temperature	minimum		maximum	
	0 °C	32 °F	40 °C	104 °F

5.5 Disposal

It is necessary to collect residues of cleaning agents, oils, greases and other chemical substances according to the legal regulations for recycling or disposal. The official local waste water protection laws apply.

At the end of the device's use, it must be put out of use, disassembled and disposed of according to the legal regulations.

Disassemble the device and separate the materials - metals must be taken to a scrap metal depot, plastic parts can be disposed of with household waste.

6 Maintenance

WARNING

If untrained personnel carry out maintenance and repair work, they endanger themselves and others, and risk the operational safety of the device.

➤ Maintenance and repair work on electrical parts may only be performed by specialist personnel with electrical qualifications — all other maintenance and repair work may only be performed by **WIWA** customer service or specially trained personnel.

WARNING

During maintenance work, ignition sources may develop (e.g. due to mechanical sparks, electrostatic discharge, etc.).

➤ Carry out all maintenance work outside of potentially explosive areas.

Observe the maintenance information in the operation manual for the optional accessories.

Prior to maintenance and repair work:

1. Shut off the compressed air supply.
2. Completely relieve the pressure in the device.

WARNING

If parts of the device are clogged, it is not possible to fully relieve the pressure. During disassembly work, residual pressure may escape and cause serious injuries.

➤ Protect yourself against suddenly ejecting material by covering threaded connections with a cloth while loosening them.

➤ Loosen threaded connections particularly cautiously and allow the pressure to escape slowly.

➤ Remove the blockages (see fault table in chap. 7 on page 37).

After completion of the maintenance and repair work, check the function of all safety features and faultless function of the device.

6.1 Regular testing

The device must be regularly inspected and maintained by a specialist:

- prior to first commissioning,
- after changes to / the servicing of parts of the installation that affect safety,
- after an interruption to operation lasting more than 6 months,
- although at least every 12 months.

In the case of devices that have been put out of use, the test can be delayed until the next time commissioning takes place.

The results of the tests must be recorded in writing and stored until the next test. The test certificate or a copy of this must be available at the device's place of use

6.2 Maintenance schedule

It is necessary to collect residues of cleaning agents, oils, greases and other chemical substances according to the legal regulations for recycling or disposal. The official local waste water protection laws apply.

Time frame	Activity	For further reading
Prior to each commissioning	Check release agent level in the high pressure pump	Chap. 6.2.2 on page 35
1 time per week	Check and clean the water separator (only for pneumatically operated high pressure cleaners)	Chap. 6.2.1 on page 34
	Visual inspection of the compressed air, hydraulic and material hoses	Chap. 6.2.4 on page 36
Every 3 years	Inspection of the compressed air, hydraulic and material hoses by a specialist and replacement if necessary	Chap. 6.2.4 on page 36

6.2.1 Checking and cleaning the water separator

The water separator filters moisture and particles of dirt (>5 µm) from the compressed air. This prevents condensation water from penetrating the device, and the static charging of the pneumatic hoses.

Any condensation water that occurs is semi-automatically drained via the drain valve.

No.	Designation
1	Locking slide
2	Container
3	Drain valve
4	Drainage hose

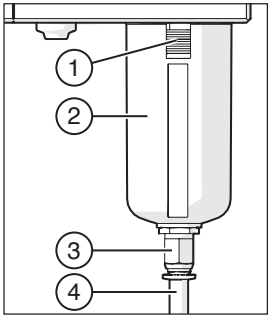


Fig. 18: Water separator

1. Guide the drainage hose into an empty collecting vessel.

The drain valve opens as soon as the compressed air shut-off valve is closed.

2. Press the locking slide on the container of the water separator upward and unscrew the container counter-clockwise.

Be aware of the o-ring that is used to seal the container.
It can slip during disassembly or even fall out.

3. Check if the o-ring is correctly seated - insert it correctly if necessary.
4. Check the container for dirt residues and clean if required.

Use only water, soap, or a similar neutral product for cleaning the container.

5. Screw the container back down on the water separator.

6.2.2 Checking the release agent level in the high pressure pump

The release agent cup for the high pressure pump must be filled with release agent to keep the wear of the packing as low as possible.

Check the release agent level in the high pressure pump before each commissioning and refill the release agent with the help of the dosage bottle if necessary.

The high pressure pump of the device type 60012 is equipped with an open release agent cup (see Fig. 19).

At maximum filling, the release agent is up to the edge of the release agent cup.

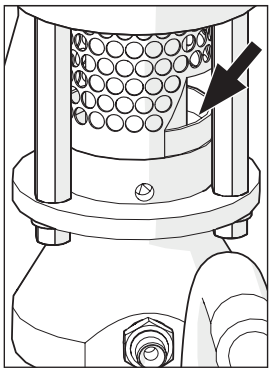


Fig. 19: Release agent cup

The high pressure pumps of the device types 230027, 270049, 333037 and 60001 are equipped with a closed release agent cup.

To check the release agent level, unscrew the screw plug from the release agent cup (see Fig. 20).

At maximum filling, the release agent is up to the bottom edge of the threaded hole.

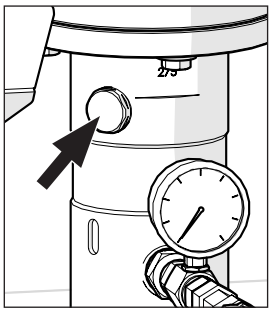


Fig. 20: Screw plug

6.2.3 Replacing the packing of the high pressure pump

If the cleaning solution leaks into the release agent, the packing of the high pressure pump is worn and must be replaced.

CAUTION

The replacement of the pump packing may only be performed by trained personnel or by **WIWA** customer service.

➤ Contact your **WIWA** customer service.

6.2.4 Checking the compressed air, hydraulic and material hoses

Check the compressed air, hydraulic and material hoses weekly for externally visible damage, such as kinks, cracks, signs of wear or bulges.

Improper use and impermissible stress are the most frequent causes of damage. Damaged hoses must be replaced immediately.

Hose lines are subject to a natural aging even with proper use and permissible stress. Their duration of use is thereby limited. Therefore, the compressed air, hydraulic and material hoses must be checked by a specialist every 3 years.

The duration of use of a hose line, including any possible storage duration, should not exceed 6 years.
The manufacturing date of a hose line (month/year) is stamped on the ferrule.

6.3 Operating fluid

Operating fluid	WIWA order number
Release agent (0.5 l) [1]	0163333
Locking agent (50 ml) [2]	0163333
Lubricant (acid-free grease, 0.4 kg) [2]	0163333
Lubricant for stainless steel [2]	0163333

[1] The release agent is also available in larger containers upon request

[2] Materials required during maintenance and repair work (see information in the spare parts lists)

6.4 Special tool

The device types 230027, 270049, 333037 and 60001 are delivered with 2 hook wrenches for the assembly and disassembly of the fluid pump.

Wrench size	Art. no.
80/90 mm	0660287
110/115 mm	0660288

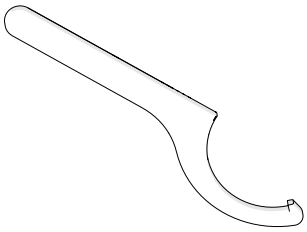


Fig. 21: Hook wrench

7 Troubleshooting

Fault	Possible cause	Remedy
High pressure pump does not work	Compressed air supply interrupted	Check compressed air supply
	Suction filter clogged	Clean suction filter
	Suction hose or suction pipe clogged	Clean suction hose and / or suction pipe
	Ball valve clogged	Disassemble and clean fluid pump
	Air motor defective	Notify **WIWA** customer service
High pressure pump runs consistently, but does not suction any material	Ball sticks in the inlet valve (dried material)	Lift the ball in the inlet valve through the inlet hole, therefore releasing it
	Screw connection of the suction hose or suction pipe leaking	Tighten screw connection of the suction hose or suction pipe, re-seal the screw connection if necessary
	Suction filter clogged	Clean suction filter
High pressure pump runs inconsistently and the output has decreased	Valves dirty	Clean fluid pump and possibly leave standing in thinner
	Valves, packings or piston rod worn	Replace worn parts
	Conveying pressure too low	Increase air inlet pressure
	Suction filter clogged	Clean suction filter
	Air motor defective	Notify **WIWA** customer service
High pressure pump runs when high pressure cleaner gun is closed	Valves, packings or piston rod worn	Replace worn parts
Air motor freezes	Number of strokes is too high	Reduce air inlet pressure
	High humidity	Empty water separator more often
Although the pressure gauge displays pressure, no cleaning solution escapes when the high pressure cleaner gun is open	Spray nozzle clogged	Clean spray nozzle

8 Technical information

8.1 Technical data

Type	60012	230027	270049	333037	60001
Item number	0665428	0665429	0665447	0665448	0665449
Drive	pneumatic				hydraulic
Motor	D200/120	D230/120	D270/120	D333/120	D100/120
Fluid pump	600/120 RS 100	360/120 RS 450	275/120 RS 500	550/120 RS 300	550/120 RS 300
Output per double stroke (DS)	600 cm³	360 cm³	275 cm³	550 cm³	550 cm³
Output at 60 DS/min	36 l/min	21.6 l/min	16.5 l/min	33 l/min	33 l/min
Pressure ratio	12:1	27:1	49:1	37:1	1.7:1
Max. inlet pressure	7 bar 101 psi	8 bar 116 psi	5 bar 72 psi	6.5 bar 94 psi	145 bar 2102 psi
Max. working pressure	84 bar 1218 psi	216 bar 3132 psi	245 bar 3552 psi	240.5 bar 3487 psi	247 bar 3581 psi

8.2 Machine card

The machine card contains all important and safety-relevant data and information for the device:

- precise designation and manufacturer's data,
- technical data and limit values,
- equipment and test confirmation,
- procurement data,
- device components and accessories supplied with article and spare parts numbers,
- a list of the supplied documentation.

8.3 Type plate

The type plate is located on the side on the cart.

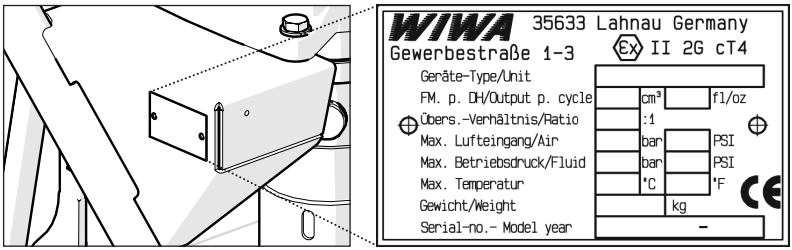


Fig. 22: Position and example of a type plate

It contains the most important technical data for the device:

- the device type,
- the output per double stroke in cm³ and fl/oz,
- the pressure ratio,
- the maximum permissible air inlet pressure and working pressure in bar and PSI,
- the maximum material application temperature in °C and °F,
- the weight in kg and lbs as well as
- the serial number and the production year.

Please ensure that the data on the type plate matches with the information on the machine card. In case of errors or a missing type plate, please inform us immediately.

because it works

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