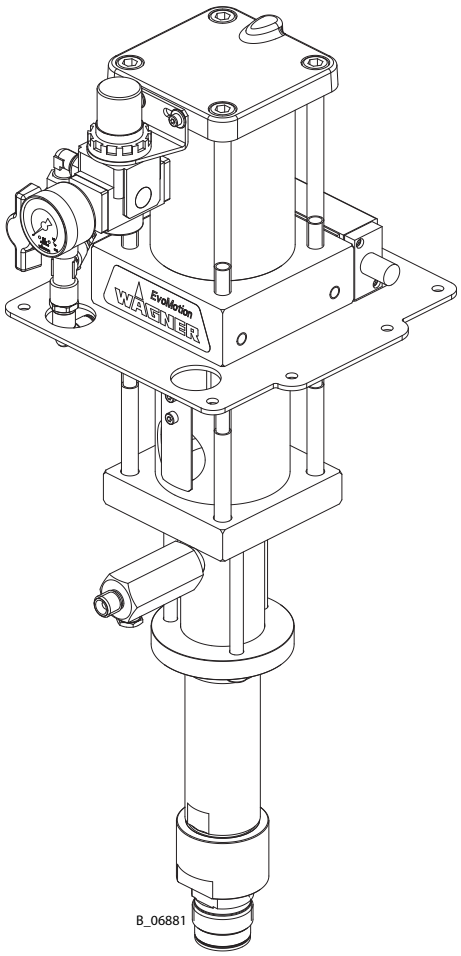


Piston Pump

EvoMotion 20-30

Translation of the original operating manual

CE Ex II 2 G Ex h IIB T3/T4 Gb X

For professional use.
Always observe the information in this manual, particularly the safety instructions and the warning instructions. Store the manual in a safe place.

Edition: 09/2020

TABLE OF CONTENTS

1 ABOUT THESE INSTRUCTIONS

1.1 PREFACE

The operating manual contains information about safely operating, maintaining, cleaning and repairing the device. The operating manual is part of the device and must be available to the operating and service personnel.

The device may only be operated by trained personnel and in compliance with this operating manual. Operating and service personnel should be instructed according to the safety instructions.

This equipment can be dangerous if it is not operated according to the instructions in this operating manual.

1.2 WARNINGS, NOTICES AND SYMBOLS IN THESE INSTRUCTIONS

Warning instructions in this manual highlight particular dangers to users and to the device and state measures for avoiding the hazard.

These warning instructions fall into the following categories:

⚠	**DANGER**	Immediate risk of danger. Non-observance will result in death or serious injury.
⚠	**WARNING**	Potential danger. Non-observance may result in death or serious injury.
⚠	**CAUTION**	Potentially dangerous situation. Non-observance may result in minor injury.
ⓘ	**NOTICE**	Potentially dangerous situation. Non-observance may result in damage to property.
ℹ	**Info**	Provides information about particular characteristics and how to proceed.

Explanation of warning notice:

⚠ WARNING

This notice warns you of a danger!

Possible consequences of not observing the warning notice.

- The measures for preventing the hazard and its consequences.

1.3 GENERAL CHARACTERS AND SYMBOLS

The characters and symbols in this operating manual indicate the following:

✓ Requirement that must be fulfilled before an action can be performed.

1. Step 1 of an action to be performed with several action steps.
   - Second level action step
2. Step 2
   ⇨ Intermediate result of an action

⇨ Result of a complete action

- Action to be performed with an action step

1. Numbered list, first level
   – Numbered list, second level

- Non-numbered list, first level
  - Non-numbered list, second level

[8] = cross-reference on page

♦ = wearing parts

⋆ = included in service set

● = not part of the standard equipment but available as a special accessory

1.4 LANGUAGES

The operating manual is available in the following languages:

Original operating manual

Language	Order no.
German	2333552

Translation of the original operating manual

Language	Order no.	Language	Order no.
English	2333553	French	2333554
Italian	2333555	Spanish	2333556
Russian	2367119	Dutch	2367640
Czech	2401723	Portuguese	2406203

Additional languages upon request or at: www.wagner-group.com

1.5 ABBREVIATIONS

Order no.	Order number
ET	Spare part
K	Marking in the spare parts lists
Pos	Position
Stk	Number of pieces
2K	Two components
DH	Double stroke
DN	Nominal diameter
Nr.	Number
PE	polyethylene
PTFE	Polytetrafluorethylene
SSt	Stainless steel
T	PTFE

1.6 TERMINOLOGY FOR THE PURPOSE OF THIS MANUAL

Cleaning

Cleaning	Manual cleaning of devices and device parts with cleaning agent.
Flushing	Internal flushing of paint-wetted parts with flushing agent.
Product pressure generator	Pump or pressure tank.

Personnel qualifications

Trained person	Is instructed in the tasks assigned to him/her, the potential risks associated with improper behavior as well as the necessary protective devices and measures.
Electrically trained person	Is instructed by an electrician about the tasks assigned to him/her, the potential risks associated with improper behavior as well as the necessary protective devices and measures.
Electrician	Can assess the work assigned to him/her and detect possible hazards based on his/her technical training, knowledge and experience in relevant provisions.
Skilled person in accordance with TRBS 1203 (2010/Revision 2012)	A person, who, based on his/her technical training, experience and recent vocational experience, has sufficient technical knowledge in the areas of explosion protection, protection from pressure hazards and electric hazards (if applicable) and is familiar with the relevant and generally accepted rules of technology so that he/she can inspect and assess the status of devices and coating systems based on workplace safety.

2 CORRECT USE

2.1 DEVICE TYPE

Pneumatic piston pump and spray packs:

EvoMotion 20-30

2.2 TYPE OF USE

The device is suitable for processing liquid products like paints and lacquers:

- Non-ignitable products.
- Products in accordance with their classification in explosion class IIB.

WAGNER explicitly prohibits any other use!

The device may only be operated under the following conditions:

- Use the device only to work with the materials recommended by WAGNER.
- Do not deactivate safety fixtures.
- Use only WAGNER original spare parts and accessories.
- The operating personnel must be trained on the basis of this operating manual.
- Follow the instructions in the operating manual.

2.3 FOR USE IN POTENTIALLY EXPLOSIVE AREAS

The device can be employed in explosion hazard zones (Zone 1) (see Chapter Identification [▸▸ 10]).

2.4 PROCESSIBLE WORKING MATERIALS

Fluid materials like paints and lacquers.

Application	EvoMotion 20-30
Water-based products	↗
Solvent-based products	↗
Low viscosity (< 40 sec. DIN no. 4)	↗
Medium viscosity (40–60 sec. DIN no. 4)	↗
High viscosity (> 60 sec. DIN no. 4)	↘
UV-sensitive products	→
Shear-sensitive products	↘
Humidity-sensitive products	↘

Signs and definitions:
↗ recommended
→ limited suitability
↘ not suitable

NOTICE

Abrasive working materials and pigments!

Greater wear of product-wetted parts.

- Use the application-oriented model (flow rate/cycle, product, valves, etc.) as indicated in the Chapter Technical Data.
- Check if the fluids and solvents being used are compatible with the pump construction materials as indicated in the Chapter Materials of Paint-wetted Parts.
- Use suitable device combinations (packings, valves etc.)

Wear caused by abrasive working materials is not covered by the warranty.

Typical applications

Application	EvoMotion 20-30
Furniture industry	↗
Kitchen manufacturers	↗
Joinery	↗
Window factories	→
Steel-processing industry	→
Construction of vehicles	↗
Shipbuilding	↘

Signs and definitions:
↗ recommended
→ limited suitability
↘ not suitable

2.5 MISUSE

Misuse can lead to physical injury and/or property damage! Special attention must be paid that:

- No dry coating products, e.g., powder are processed.
- No food, medicine or cosmetics are processed. It is important to note that the device's materials are not food-safe.

3 IDENTIFICATION

3.1 EXPLOSION PROTECTION IDENTIFICATION

As defined in Directive 2014/34/EU (ATEX), the device is suitable for use in potentially explosive areas.

Device type	**EvoMotion 20-30** Piston Pump
Manufacturer	Wagner International AG 9450 Altstätten Switzerland

II 2 G Ex h IIB T3/T4 Gb X

CE	European Communities
Ex	Symbol for explosion protection
II	Device class II
2	Category 2 (zone 1)
G	Ex-atmosphere gas
Ex	Ignition protection
h	Ignition protection for non-electrical devices
IIB	Explosion group
T3	Maximum surface temperature < 200 °C; 392 °F (without drying protection active)
T4	Maximum surface temperature < 135 °C; 275 °F (with drying protection active)
Gb	Zone 1 high safety level
X	Special notes (see Chapter Identification "X")

3.2 IDENTIFICATION "X"

The maximum surface temperature corresponds to the permissible product temperature. This and the permissible ambient temperature can be found in Chapter Technical data.

Safe Handling of WAGNER Spray Devices

Mechanical sparks can form if the device comes into contact with metal.
In an explosive atmosphere:

- Knocking or pushing metal against metal is to be avoided.
- Do not drop the device.

Maximum surface temperature

The maximum surface temperature of the piston pump can be reached if it runs dry.

– Ensure that the piston pump is filled with sufficient working or flushing agent.
– Ensure that the separating agent tank is filled with sufficient separating agent.

Ignition temperature of the coating product

- Ensure that the ignition temperature of the surrounding gases (pumping product, cleaning agents) is higher than the maximum permitted surface temperature of the device.

Ambient temperature

The permissible ambient temperature range is: 5 °C to 50 °C; 41 °F to 122 °F.

Electrostatic surface spraying

- Do not spray device parts using electrostatic equipment.

Cleaning

If there are deposits on the surfaces, the device may form electrostatic charges. Flames or sparks can form during discharge.

- Remove deposits from the surfaces to maintain conductivity.
- Use only a damp cloth to clean the device.

Air in the pump fluid

Ignitable gas mixtures can form if air enters the pump fluid.

- Prevent the pump from taking in air and running dry.
- If air has been taken in, fix the leak. Then, fill slowly and in a controlled manner until the air has escaped.

Air in the pumped fluid can be caused by damaged packings.

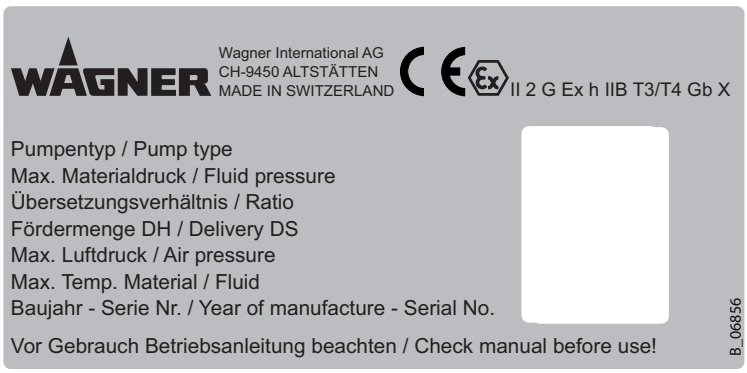
- Avoid operating the pump with damaged packing.
- Ensure that the separating agent tank is filled with sufficient separating agent.
- Periodically check that the pump is working smoothly, paying special attention to the presence of air in the pumped fluid.

Filling and emptying

Ignitable gas mixtures can form in the fluid section or product hoses if the pump must be emptied for maintenance and/or repair purposes.

- Empty and fill the device slowly and in a controlled manner.
- Avoid potentially explosive atmosphere in the surroundings.

3.3 TYPE PLATE



Example type plate

1	Manufacturer and CE identification	6	Maximum air inlet pressure
2	Pump type	7	Maximum product temperature
3	Maximum product pressure	8	Model year - serial number
4	Pump ratio	9	Read operating manual before use!
5	Flow rate per double stroke		

4 BASIC SAFETY INSTRUCTIONS

4.1 SAFETY INSTRUCTIONS FOR THE OPERATOR

- Keep this operating manual at hand near the device at all times.
- Always follow local regulations concerning occupational safety and accident prevention regulations.

4.1.1 Electrical Devices and Equipment

Danger of electric shock!

Danger to life from electric shock:

- Prepare device in accordance with the local safety requirements with regard to the operating mode and ambient influences.
- May only be maintained by skilled electricians or under their supervision. With open housings, the mains voltage poses a danger.
- Operate device in accordance with the safety regulations and electrotechnical regulations.
- Do not disconnect any plug connections during operation.
- Label plug connections with the warning "Do not disconnect when energized".
- Must be repaired immediately in the event of problems.
- Decommission if device poses a danger or is damaged.
- Must be de-energized before work is commenced.
  - Secure the device against being switched back on without authorization.
  - Inform personnel about planned work.
  - Observe electrical safety regulations.
- Ground all devices to a common grounding point.
- Only operate the device with a properly installed socket with a protective ground wire connection.
- Keep liquids away from electrical devices.

4.1.2 A Safe Work Environment

Danger due to dangerous fluids or vapors!

Severe or fatal injuries due to explosion danger or inhalation, swallowing or contact with the skin or eyes.

- Ensure that the floor in the working area is static dissipative in accordance with EN 61340-4-1 (resistance must not exceed 100 MΩ).
- Paint mist extraction systems/ventilation systems must be fitted on site according to local regulations.
- Make sure that the ground connection and potential equalization of all system parts are reliable and continuous and can withstand the expected stress (e.g., mechanical stress, corrosion).
- Ensure that product hoses/air hoses adapted to the working pressure are used.
- Ensure that personal protective equipment is available and is used.

- Ensure that all persons within the working area wear static dissipative shoes. Footwear must comply with EN 20344. The measured insulation resistance must not exceed 100 MΩ.
- Ensure that during spraying, persons wear static dissipative gloves. The grounding takes place via the spray gun's handle or its trigger.
- Protective clothing, including gloves, must comply with EN 1149-5. The measured insulation resistance must not exceed 100 MΩ.
- Ensure that there are no ignition sources such as naked flames, sparks, glowing wires, or hot surfaces in the vicinity. No smoking.
- Ensure that the pipe joints, hoses, equipment parts and connections are permanently, technically leak-proof:
  - Periodic preventative maintenance and service (replacing hoses, checking tightness strength of connections, etc.)
  - Regular monitoring of leaks and defects via visual inspection and odor testing, e.g., daily before commissioning, at the end of work or weekly.
- Ensure that maintenance and safety checks are performed regularly.
- In the event of defects, immediately bring the device or system to a stop and arrange to have repairs carried out immediately.

4.1.3 Personnel Qualifications

Danger due to incorrect use of device!

Risk of death due to untrained personnel.

- Ensure that the operating personnel has been instructed by the operator in accordance with the operating manual and the operating instructions. The device must only be operated, maintained and repaired by trained personnel. Refer to the operating instructions for information about the required personnel qualifications.

4.2 SAFETY INSTRUCTIONS FOR THE PERSONNEL

- Always observe the information in this manual, particularly the safety instructions and the warning instructions.
- Always follow local regulations concerning occupational safety and accident prevention regulations.

Danger due to high-voltage field!

Danger to life from malfunction of active implants.

- Persons belonging to a risk group according to EMF guideline 2013/35/EU (e.g., carriers of active implants), must not enter the high-voltage area.

4.2.1 Personal Safety Equipment

Danger due to dangerous fluids or vapors!

Serious or fatal injuries due to inhalation, swallowing or contact with the skin or eyes.

- When preparing or working with lacquer and when cleaning the device, follow the working instructions of the manufacturer of the lacquers, solvents and cleaning agents being used.
- Implement the prescribed safety measures, in particular the wearing of safety glasses, safety clothing and protective gloves as well as the use of protective hand cream.
- Use a mask or breathing apparatus if necessary.

- For sufficient health and environmental safety: Operate the device in a spray booth or on a spraying wall with the ventilation (extraction) switched on.
- Wear suitable protective clothing when working with hot products.

4.2.2 Safe Handling of WAGNER Spray Devices

Danger due to injection of lacquer or flushing agent into the skin!

The spray jet is under pressure and can cause dangerous injuries.

Avoid injection of lacquer or flushing agents:

- Never point the spray gun at people.
- Never reach into the spray jet.
- Perform the following measures before any work on the device, in the event of work interruptions and malfunctions:
  - Switch off the energy/compressed air supply
  - Relieve the pressure from the spray gun and device
  - Securing the Spray Gun Against Actuation
  - Disconnect the control unit from the mains
  - In the event of functional faults, remedy the fault as described in the Troubleshooting chapter
- If needed, the liquid ejection devices must be checked by experts (e.g., WAGNER service technician) at least every 12 months for their work-safe condition in accordance with DGUV regulation 100-500 Chapter 2.29 and Chapter 2.36.
  - For shut down devices, the examination can be suspended until the next start-up.

In the event of skin injuries caused by lacquer or flushing agents:

- Note the lacquer or flushing agent that you have been using.
- Consult a doctor immediately.

Danger due to recoil forces!

Actuating the trigger can causes strong recoil forces. Thereby, the user can lose his balance and injure himself when falling.

Avoid risk of injury from recoil forces:

- Ensure that you have firm footing when operating the spray gun.

4.2.3 Grounding the Device

Danger due to electrostatic charge!

Risk of injury, explosion hazard and damage to the device.

Friction, flowing liquids and air or electrostatic coating processes create charges. Flames or sparks can form during discharge. Correct grounding of the entire spraying system prevents electrostatic charges.

- Ensure that all devices and tanks are grounded before each spraying process.
- Make sure that the ground and potential equalization of all system parts are performed reliably and continuously and can withstand the expected stress (e.g., mechanical stress, corrosion).
- Ground the work pieces to be coated.
- Ensure that all persons inside the working area are grounded, e.g., that they are wearing static dissipative shoes.

- Wear static dissipative gloves when spraying. The grounding takes place via the spray gun's handle or its trigger.

4.2.4 Product Hoses

Danger due to bursting of product hose!

The product hose is under pressure and may cause dangerous injuries.

- Ensure that the hose material is chemically resistant to the sprayed products and the flushing agents used.
- Ensure that the product hoses and the fittings are suitable for the pressure generated.
- Ensure that the following information can be seen on the high-pressure hose:
  - Manufacturer
  - permissible operating pressure
  - Date of manufacture
- Make sure that the hoses are laid only in suitable places. Hoses should not be laid in the following places under any circumstances:
  - in high traffic areas
  - on sharp edges
  - on moving parts
  - on hot surfaces
- Ensure that the hoses are never run over by vehicles (e.g., fork lifts), or that the hoses are never put under pressure from the outside in any other way.
- Ensure that the hoses are never kinked. Observe maximum bending radii.
- Ensure that no work is ever performed with a damaged hose.
- Make sure that the hoses are never used to pull or move the device.
- The electrical resistance of the product hose, measured at both valves, must be less than 1 MΩ.
- Suction hoses may not be subjected to pressure.

Several liquids have a high expansion coefficient. In some cases, their volume can rise with consequent damage to pipes, fittings, etc. and cause fluid leakage.

When the pump sucks liquid from a closed tank, ensure that air or a suitable gas can enter the tank. In this way a negative pressure is avoided. The vacuum could implode the tank (squeeze) and can cause it to break. The tank would leak and the liquid would flow out.

The pressure created by the pump can be a multiple of the input air pressure.

4.2.5 Cleaning and Flushing

Danger due to cleaning and flushing!

Explosion hazard and damage to the device.

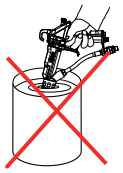
- Non-ignitable cleaning agents and flushing agents should preferably be used.
- When carrying out cleaning work with flammable cleaning agents, make sure that all equipment and resources (e.g., collection tank, funnel, transport cart) are conductive or static dissipative and grounded.
- Observe the specifications of the lacquer manufacturer.
- Ensure that the flash point of the cleaning agent is at least 15 K above the ambient temperature or that cleaning is undertaken at a cleaning station with technical ventilation.

- Never use chloride or halogenated solvents (such as trichloroethane and methylene chloride) with devices containing aluminium or galvanized/zinc-plated parts. They may react chemically thus producing an explosion danger.
- Take measures for workplace safety.
- It should be noted that when the device is put into operation or emptied: depending on the coating product used, depending on the rinsing agent (solvent) used, there may briefly be a mixture inside the pipes and equipment which can ignite.
- Only use electrically conductive tanks for cleaning and flushing agents.
- The tanks must be grounded.

An explosive gas/air mixture forms in closed tanks.

- Never spray into a closed tank when using solvents for flushing.

External Cleaning



When cleaning the exterior of the device or its parts, also observe the following:

- Relieve the pressure from the device.
- De-energize the device electrically.
- Disconnect the pneumatic supply line.
- Use only moistened cloths and brushes. Never use abrasive agents or hard objects and never spray cleaning agents with a gun. Cleaning the device must not damage it in any way.
- Ensure that no electric component is cleaned with or immersed into solvent.

4.2.6 Touching Hot Surfaces

Danger due to hot surfaces because of hot coating products!

Risk of burn injuries

- Only touch hot surfaces if you are wearing protective gloves.
- When operating the device with a coating product with a temperature of > 43 °C; 109 °F, apply a warning label to the device that says "Warning - Hot Surface."

Instruction label: Order no. 9998910

Protection label: Order no. 9998911

Info

Order the two labels together.

4.2.7 Maintenance and Repair

Danger due to improper maintenance and repair!

Danger to life and equipment damage.

- Only a WAGNER service center or a suitably trained person may carry out repairs and replace parts.
- Repair or replacement of devices or parts of devices are only allowed to be performed outside the hazard area by qualified personnel.
- Use only WAGNER original spare parts and accessories.
- Do not change or modify the device; if change is necessary, contact WAGNER.
- Only repair and replace parts that are listed in the accessories and spare parts chapter and that are assigned to the device.

- Do not use any defective components.
- Before all work on the device and in the event of work interruptions:
  - Relieve the pressure from the spray gun, product hoses and all devices.
  - Secure the spray gun against actuation.
  - Switch off the energy and compressed air supply.
  - Disconnect the control unit from the mains.
- Observe the operating and service manual for all work.

4.2.8 Protective and Monitoring Equipment

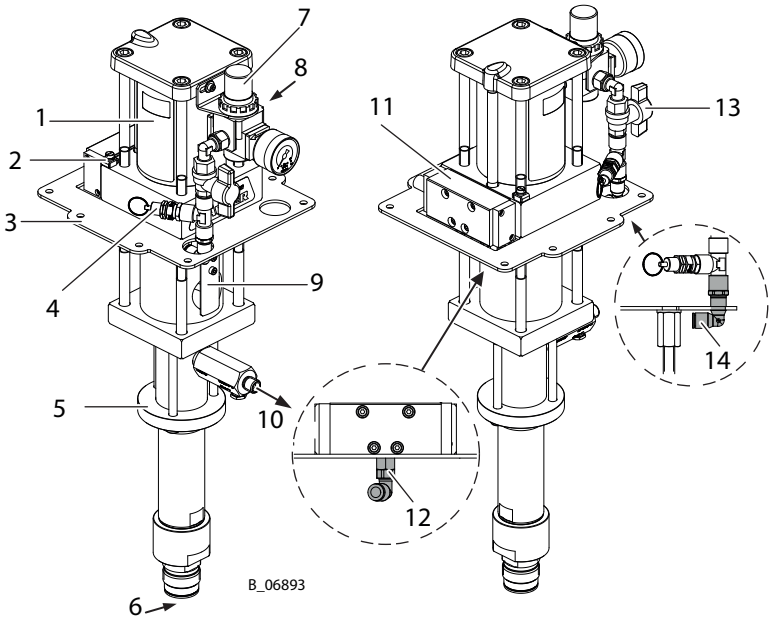
Danger due to removal of protective and monitoring equipment!

Danger to life and equipment damage.

- Protective and monitoring equipment must not be removed, modified or rendered unusable.
- Regularly check for perfect functioning.
- If defects are detected on protective and monitoring equipment, the system must not be operated until these defects are remedied.

5 DESCRIPTION

5.1 COMPONENTS



1	Air motor	8	Air input
2	Grounding connection	9	Separating agent container
3	Mounting flange	10	Product output
4	Safety valve (vent)	11	Reversing Valve
5	Fluid section	12	Air inlet into the reversing valve
6	Product input	13	Ball valve
7	Air pressure regulator	14	Air outlet to the reversing valve

5.2 MODE OF OPERATION

The piston pump is driven with compressed air (8). This compressed air moves the air piston in the air motor (1) and the associated pump pistons in the fluid section (5) up and down. At the end of each stroke, the compressed air is redirected by a reversing valve (11). The working material is sucked up during the upwards stroke and is continuously conveyed towards the product output (10) in both stroke directions.

5.2.1 Air motor

The air motor with its pneumatic reverse (11) does not require pneumatic oil. The compressed air is fed to the motor via an air regulator (7) and the ball valve (13). The air motor is fitted with a safety valve (4) in accordance with Chapter Protective and Monitoring Equipment [▸▸ 19].

5.2.2 Fluid section

The fluid section has been designed as a piston pump with exchangeable ball valves. The hard chrome-plated pump piston runs in two fixed packings which are self-adjusting by means of a pressure spring, thus resulting in a long service life. Between the air motor and the fluid section there is a separating agent cup (9) for holding the separating agent.

5.3 PROTECTIVE AND MONITORING EQUIPMENT

Safety valve

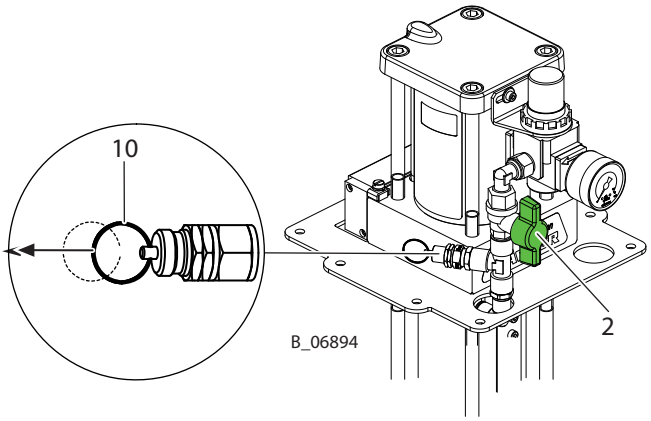
⚠ WARNING

Overpressure!

Danger to life from bursting device components.

- Never change the safety valve setting.

The air motor is fitted with a safety valve. The safety valve (10) has been set and sealed at the factory. In case of pressures over and above the permissible operating pressure, the spring-loaded valve, automatically opens and releases the excess pressure. As well as handling pressure limits, the valve is also used as a pressure relief valve for the air motor.



Process for manually relieving pressure

1. Close ball valve (2).
2. Pull the ring on the safety valve (10) and hold it until the pressure in the air motor has been equalized.

5.4 SCOPE OF DELIVERY

Piston pump consisting of:

-	Fluid section
-	Air motor
-	Connection set for air motor - fluid section
-	Air pressure regulator for air motor

The standard equipment includes:

Stk	Order no.	Designation
1	9992504	Separating agent 250 ml
1	2333552	Operating manual, in German
1	See Chapter	Declaration of Conformity
1	See Chapter Languages [▸▸ 6]	Operating manual in the local language

The delivery note shows the exact scope of delivery. Accessories: see Chapter Accessories [▸▸ 50].

5.5 DATA

5.5.1 Materials of Paint-wetted Parts

Paint-wetted part	Product
Pump housing	Stainless steel
Piston	Stainless steel
Valve balls	Stainless steel
Valve seats	Stainless steel
Static seals	PTFE
Packings	PE / T

PE = Polyethylene UHMW

T = Polytetrafluorethylene (PTFE)

Positions of the individual parts: See Chapter Spare Parts [▸▸ 53].

5.5.2 Recommended Packings

WAGNER packings for this device:

Code	Product	Color
PE	Ultra high molecular weight polyethylene	transparent
T	PTFE	white

Each product has the following properties, which influence the packings:

Designation	PE	T
Mechanical stability	good	poor
Friction coefficient	good	very good
Sealing force	good	good
Chemical resistance	very good	very good
Temperature resistance	very good	poor

5.5.3 Technical Data

Description	Units	Evo Motion 20-30
Pump ratio		20:1
Volume flow per double stroke (DH)	cm^3 / cc	30
Maximum operating pressure	MPa bar psi	13.5 135 1958
Maximum possible strokes in operation	DH/min	60
Maximum recommended strokes per minute in continuous operation	DH/min	40
Minimum/maximum air inlet pressure	MPa bar psi	0.2–0.8 2–8 28–116
Compressed air quality: free from oil and water	Quality standard 7.5.4 according to ISO 8573.1, 2010	
		7: Particle concentration 5–10 mg/m^3

Description	Units	Evo Motion 20-30
		5: Humidity: pressure dew point ≤ 7 °C
		4: Oil content ≤ 5 mg/m³
Air inlet diameter (internal thread)	mm; inch	8.0; 0.31
Minimum diameter of the compressed air supply line	mm; inch	9.0; 0.35
Air consumption at 0.6 MPa; 6 bar; 87 psi per double stroke	nl; scf	3.9; 0.14
Air motor piston diameter	mm; inch	80; 3.15
Air motor piston stroke	mm; inch	60; 2.4
Sound pressure level at maximum permissible air pressure*	dB(A)	72
Sound pressure level at 0.6 MPa; 6 bar; 87 psi air pressure*	dB(A)	69
Sound pressure level at 0.4 MPa; 4 bar; 58 psi air pressure*	dB(A)	65
Product input (outside thread)	mm	M36×2
Product output (outside thread)	inch	NPS 1/4"
Weight	kg; lb	11.0; 24.7
Product pH value	pH	3.5–9
Maximum product pressure at pump inlet	MPa bar psi	2 20 290
Product temperature	°C °F	5–80 41–176
Ambient temperature - Assembly and operation	°C °F	5–50 41–122
Ambient temperature - Storage	°C °F	-20–60 -4–140
Relative humidity	%	10–95 (without condensation)
Allowable inclination for operation	∠°	± 10

* Measured A-rated emission sound pressure level at distance of 1 m, LpA1m in accordance with DIN EN 14462: 2015. Reference measurements have been made by Suva (Swiss National Accident Insurance Fund).

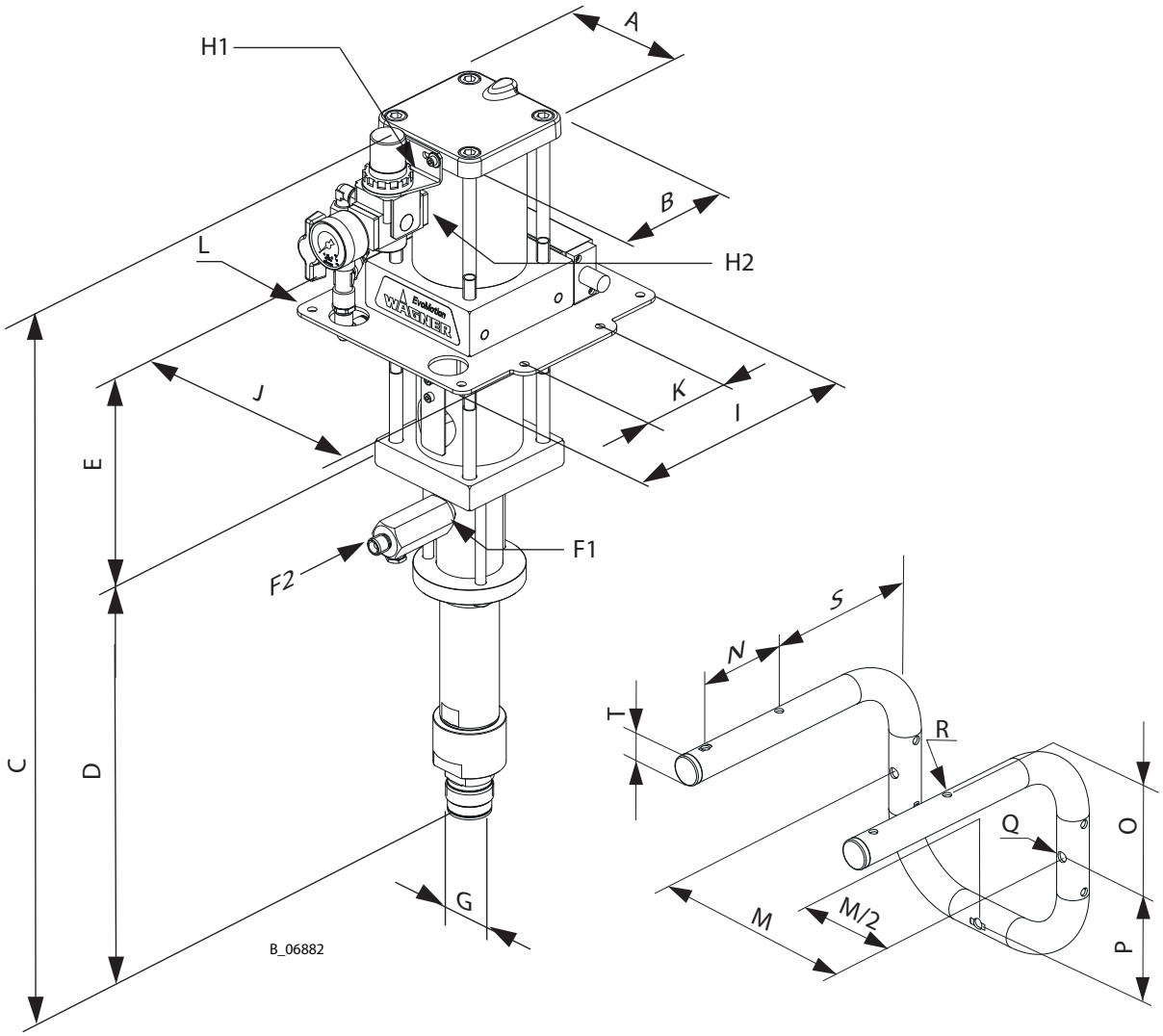
⚠ WARNING

Exhaust air containing oil!

Risk of poisoning if inhaled.

- Provide compressed air free from oil and water.

5.5.4 Dimensions and Connections

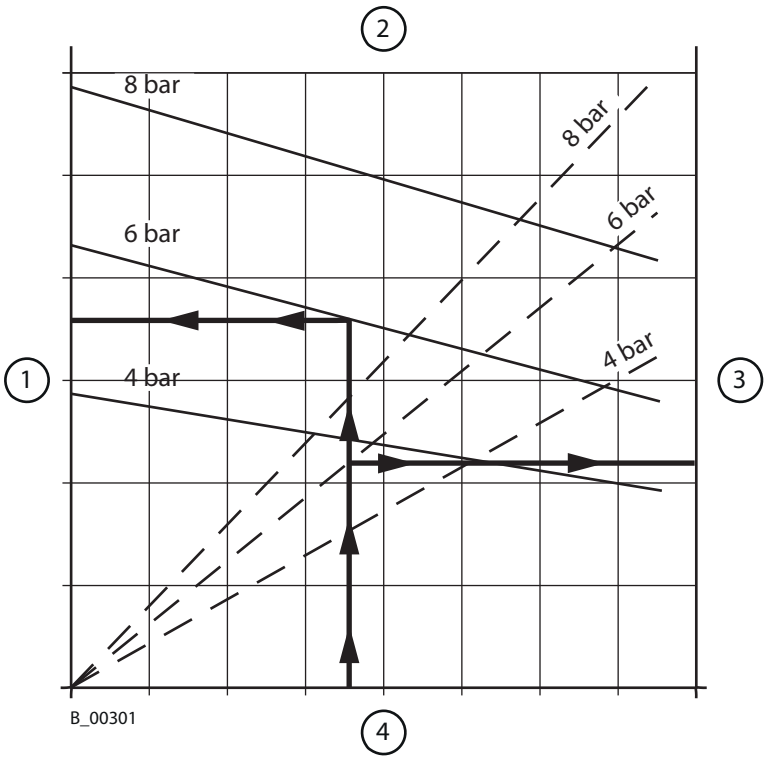


Pos	mm	inch
A	104	4.09
B	108.5	4.27
C	613.7	24.2
D	201	7.91
E	134.5	5.3
F1	G 3/8"	
F2	NPS 1/4"	
G	M36×2	
H1	G 1/4"	
H2	ø 8	ø 0.31
I	210	8.27
J	207	8.15
K	80	3.15
L	ø 7	ø 0.28

Pos	mm	inch
M	182	7.17
N	80	3.15
O	106	4.17
P	96.5	3.8
Q	ø 9	ø 0.35
R	ø 7	ø 0.28
S	149	5.87
T	ø 25	ø 0.98

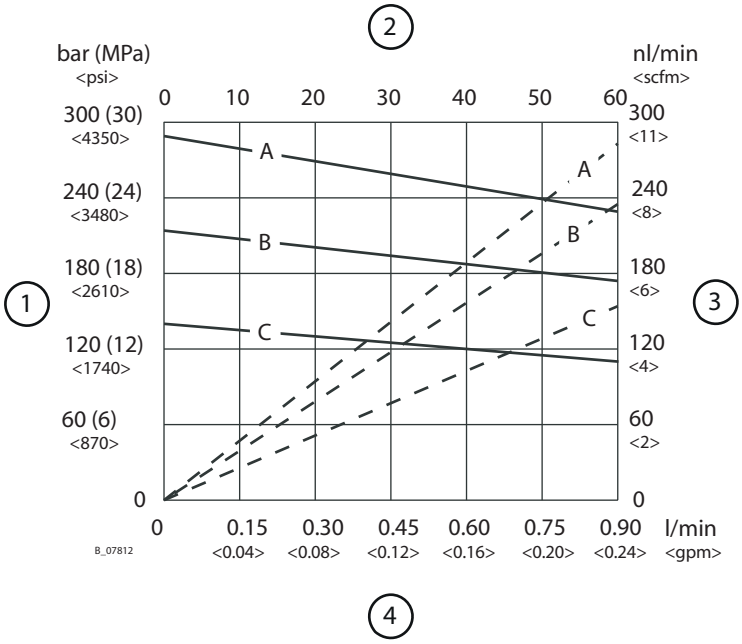
5.5.5 Performance Diagrams

Example



1	Product pressure in bar; (MPa); <psi>	3	Air consumption in nl/min.; <scfm>
2	Stroke frequency in DH/min.	4	Flow rate of water in l/min.; <gpm>

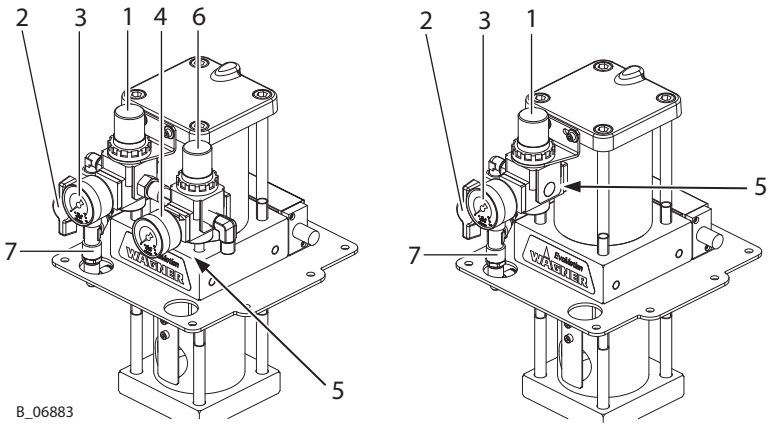
EvoMotion 20-30



1	Product pressure in bar; (MPa); <psi>	A	Characteristic curve for air pressure 8 bar; 0.8 MPa; 116 psi
2	Stroke frequency in DH/min.	--	--
3	Air consumption in nl/min.; <scfm>	B	Characteristic curve for air pressure 6 bar; 0.6 MPa; 87 psi
4	Flow rate of water in l/min.; <gpm>	C	Characteristic curve for air pressure 4 bar; 0.4 MPa; 58 psi

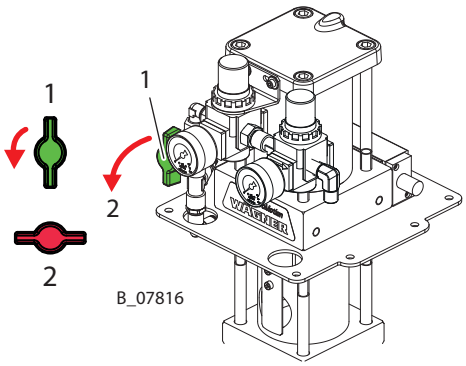
5.6 OPERATING ELEMENTS

5.6.1 Pressure Regulator Unit



1	Pressure regulator	5	Compressed air input
2	Ball valve	6	Pressure regulator – AirCoat air (option)
3	Pressure gauge (air inlet pressure)	7	Safety and motor pressure relief valve (see Chapter Protective and Monitoring Equipment [▸▸ 19])
4	Pressure gauge – AirCoat air (option)		

Ball valve positions:

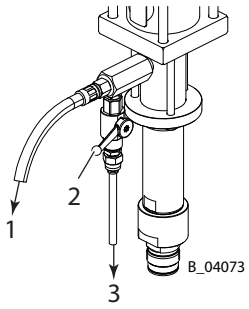


1	Open: working position	2	Closed: the air motor can still be under pressure

5.6.2 Return valve

Installing a return valve is absolutely necessary for carrying out a complete depressurization of the pump (see Chapter Pressure Relief / Work Interruption [▸▸ 34]).

The suitable return valves (ball valves), return pipes and hoses for the device can be found in the accessories list.



1	Product output	3	Material return line
2	Return valve		

6 ASSEMBLY AND COMMISSIONING

6.1 TRAINING OF ASSEMBLY/COMMISSIONING PERSONNEL

- The assembly and commissioning personnel must have the technical skills to safely commission the device.
- When assembling, commissioning and carrying out all work, read and follow the operating manuals and safety regulations for the additionally required system components.

A skilled person must check to ensure that the device is in a reliable state after it is assembled and commissioned.

6.2 STORAGE CONDITIONS

Until the point of assembly, the device must be stored in a dry location, free from vibrations and with a minimum of dust. The device must be stored in closed rooms.

Die Lufttemperatur am Lagerort muss in einem Temperaturbereich zwischen -20 °C und +60 °C; -4 °F und +140 °F liegen.

The relative air humidity at the storage location must be between 10 and 95% (without condensation).

6.3 INSTALLATION CONDITIONS

The air temperature at the installation site must be in a range between 4 °C and 40 °C; 39 °F and 104 °F.

The relative air humidity at the installation site must be between 10 and 95% (without condensation).

6.4 TRANSPORTATION

The pump can be moved on a trolley or manually without lifting equipment or a crane.

6.5 ASSEMBLY AND INSTALLATION

⚠ WARNING

Inclined ground!

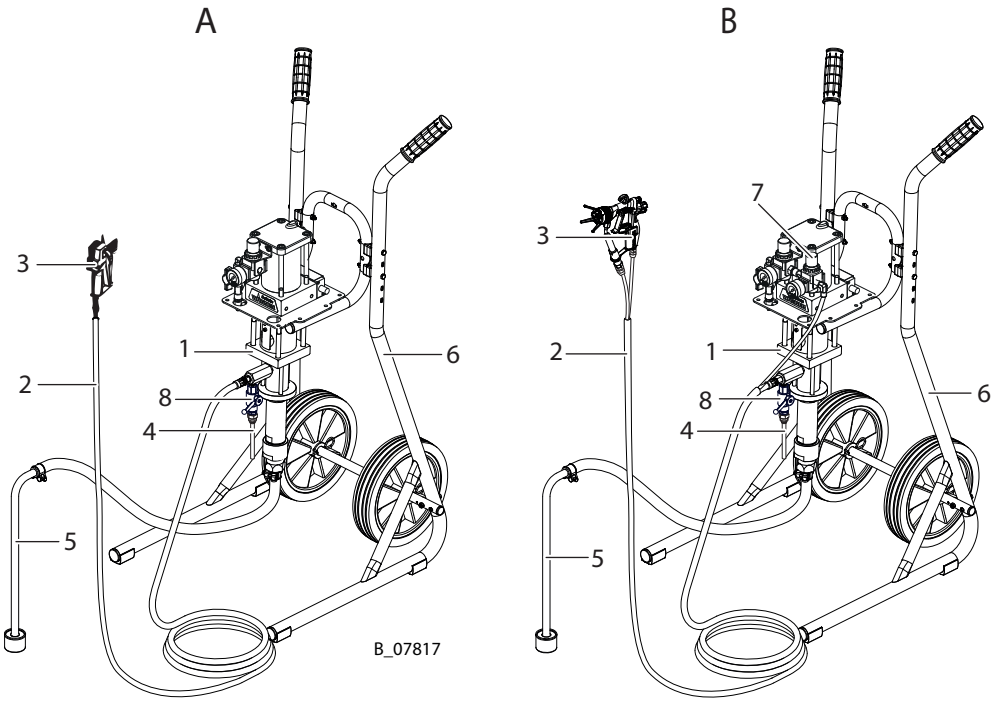
Risk of accidents if the device rolls away/falls.

- Place device on level ground and secure it.
- If the floor is inclined, position the feet of the trolley towards the gradient.
- Secure the trolley.

Info

Ensure that the national explosion prevention rules and regulations are observed when setting up the device.

This pump can be used as part of a spraying system for Airless or AirCoat applications. Individual supplement components for this pump can be found in the Wagner accessories catalogue, or can be put together with a spraypack configurator. The nozzles must be selected according to the spray gun operating manual. In the case of spraypack orders, the pumps (1) are already pre-mounted on a trolley (6) or on a frame at the factory.



Examples: Airless System (A) and AirCoat System (B)

1	Pump	5	Suction system
2	High pressure hose	6	Sliding tables
3	Spray gun	7	Pressure regulator
4	Return tube	8	Return valve

1. Mount pump (1) on frame, trolley (6) or wall mount.
2. Mount an AirCoat system with the pressure regulator (7) and secure the thread at the air inlet to the pump (1) with Loctite® 270.
3. Fit suction system (5).
4. Mount the return valve (8) for pressure relief or product circulation.
5. Mount return tube (4) or return hose.
6. Connect high-pressure hose (2) and spray gun (3) according to spray gun operating manual.

6.5.1 Ventilation of the Spray Booth

– Operate the device in a spray booth approved for the respective working materials.
- or -
– Operate the device on an appropriate spraying wall with the ventilation (extraction) switched on.
– Observe national and local regulations for the exhaust air speed.

6.5.2 Air Supply Lines

⚠ WARNING

Hose connections!

Risk of injury and damage to the device.

- Do not mix up hose connections of product hose and air hose.

- Ensure that only dry, clean atomizing air is used in the spray gun! Dirt and moisture in the atomizing air worsens the spraying quality and spray pattern.

6.5.3 Product Supply Lines

⚠ DANGER

Bursting hose, bursting threaded joints!

Danger to life from injection of product.

- Ensure that the hose material is chemically resistant to the sprayed products.
- Ensure that the spray gun, fittings and product hose between the device and the spray gun are suitable for the pressure generated in the device.
- Ensure that the following information can be seen on the high-pressure hose:
  - Manufacturer
  - Permissible operating pressure
  - Date of manufacture.

6.6 GROUNDING

⚠ WARNING

Discharge of electrostatically charged components in atmospheres containing solvents!

Explosion hazard from electrostatic sparks.

- Clean the pump only with a damp cloth.

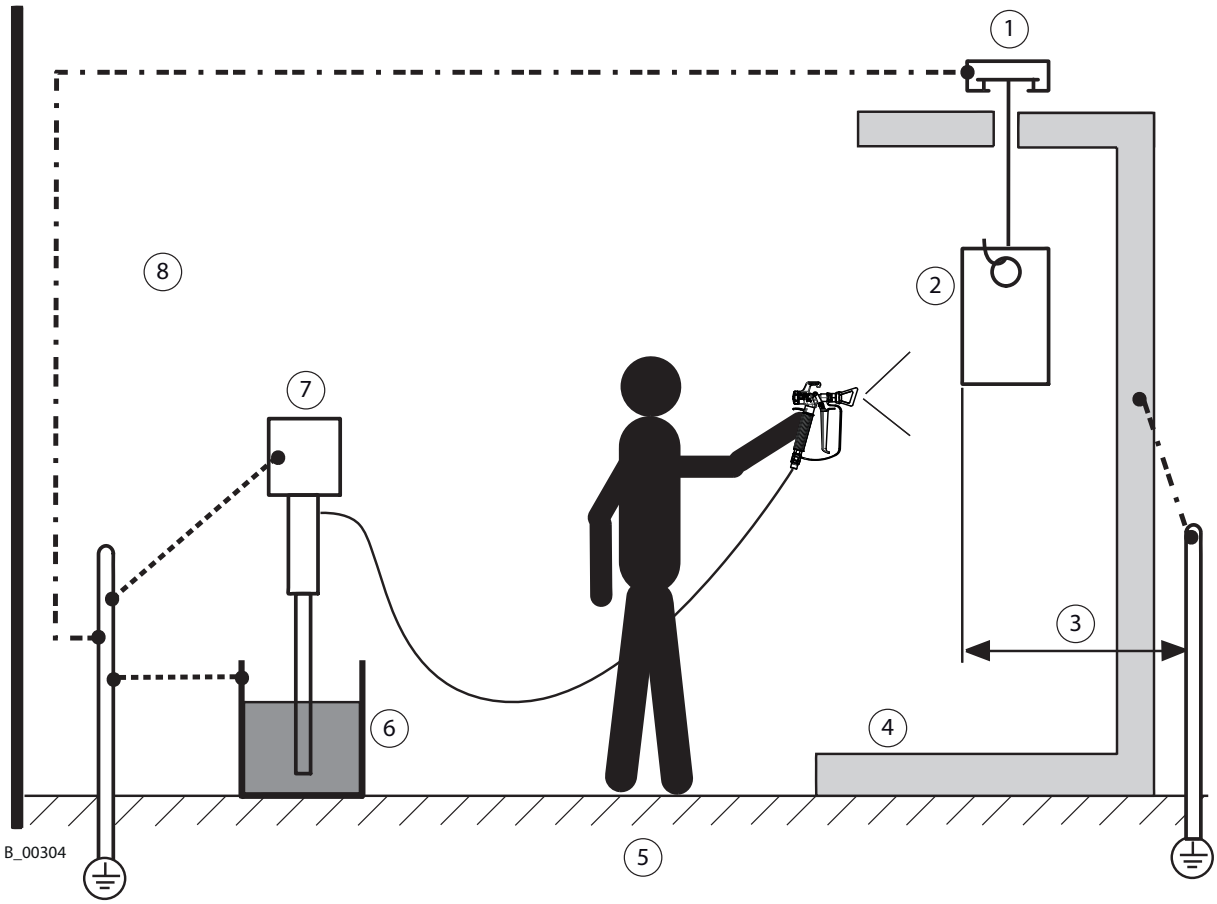
⚠ WARNING

Heavy paint mist if grounding is insufficient!

Risk of poisoning.

Insufficient paint application quality

- Ground all device components.
- Ground the work pieces to be coated.

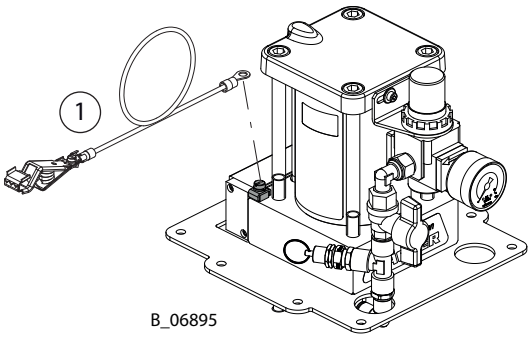


Grounding scheme (example)

Pos	Part / workstation	Cable cross section
1	Conveyor	16 mm²; AWG6
2	Work piece	--
3	$R_{max} < 1$ MΩ	--
4	Spraying stand Alternative: Spray booth	16 mm²; AWG6
5	Floor, static dissipative	--
6	Product tank	6 mm²; AWG10
7	Pump	4 mm²; AWG12
8	Ex zone	--

Info

Safe operation of the pump is only guaranteed with a grounding connection. Connect all grounding cables using a short and direct route.



1	Grounding cable

1. Screw on grounding cable with eyelet.
2. Clamp the grounding cable clip to a grounding connection on site.
3. Ground the product tank to an on-site grounding connection.
4. Ground the other parts of the system to an on-site grounding connection (16 mm2; AWG 6).

Ex zone

All devices and equipment must be suitable for use in potentially explosive areas.

– All paints, flushing agents and waste tanks have to be electrically conductive.
– All tanks must be grounded.

6.7 COMMISSIONING

⚠ WARNING

Gas mixtures can explode if there is an incompletely filled pump!

Danger to life from flying parts.

- Ensure that the pump and suction system are always completely filled with flushing agent or working medium.
- Do not spray the device empty after cleaning.

ⓘ NOTICE

Impurities in the spraying system

Spray gun blockage, products harden in the spraying system.

- Flush the spray gun and paint supply with a suitable flushing agent before commissioning.

Emergency stop, see Chapter Emergency Stop [▸▸ 33].

6.7.1 Preparation

Before every commissioning, the following points should be observed as laid down in the operating manual:

1. Secure spray gun with safety lever.

2. Check the permissible pressures.
3. Check all connections for leaks.
4. Check hoses for damage in accordance with chapter Safety Checks and Maintenance Intervals [▸▸ 39].
5. Fill the separating agent in accordance with Chapter Filling with Separating Agent [▸▸ 40].

6.7.2 Fill the Pump with Flushing Agent

The devices are tested during manufacturing with emulsifying oil, pure oil or solvent.

Possible residues must be flushed out of the circuits with a solvent (flushing agent) before commissioning.

- Fill the empty device with flushing agent in accordance with Chapter Filling the Empty Pump [▸▸ 43].

6.7.3 Pressure Tightness Test

⚠ WARNING

Overpressure!

Risk of injury from bursting components.

- The operating pressure must not exceed the value shown on the type plate.

1. Gradually increase the pressure in pump with the pressure regulator until maximum pressure is reached. Maintain the pressure for 3 minutes and check all connection points for leaks.
2. Carry out pressure relief in accordance with Chapter Pressure Relief / Work Interruption [▸▸ 34].

6.7.4 Verifying a Safe Operational Condition

A skilled person must check to ensure that the device is in a reliable state after it is assembled and commissioned. This includes:

- Carry out safety checks in accordance with Chapter Safety Checks and Maintenance Intervals [▸▸ 39].

6.7.5 Filling with Working Product

- Proceed in accordance with Chapter Filling the Empty Pump [▸▸ 43].

7 OPERATION

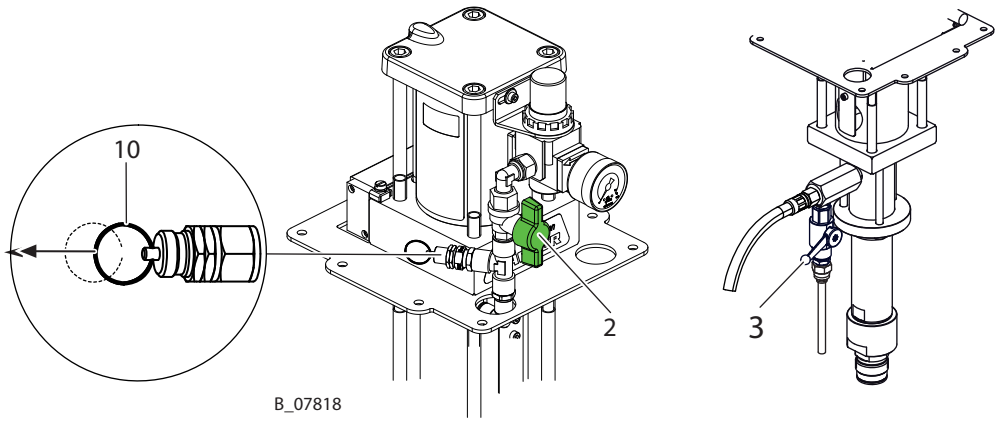
7.1 TRAINING THE OPERATING PERSONNEL

- The operating personnel must be qualified to operate the entire system.
- The operating staff must be familiar with the potential risks associated with improper behavior as well as the necessary protective devices and measures.
- Before work commences, the operating personnel must receive appropriate system training.

7.2 EMERGENCY STOP

In the case of unforeseen occurrences immediately:

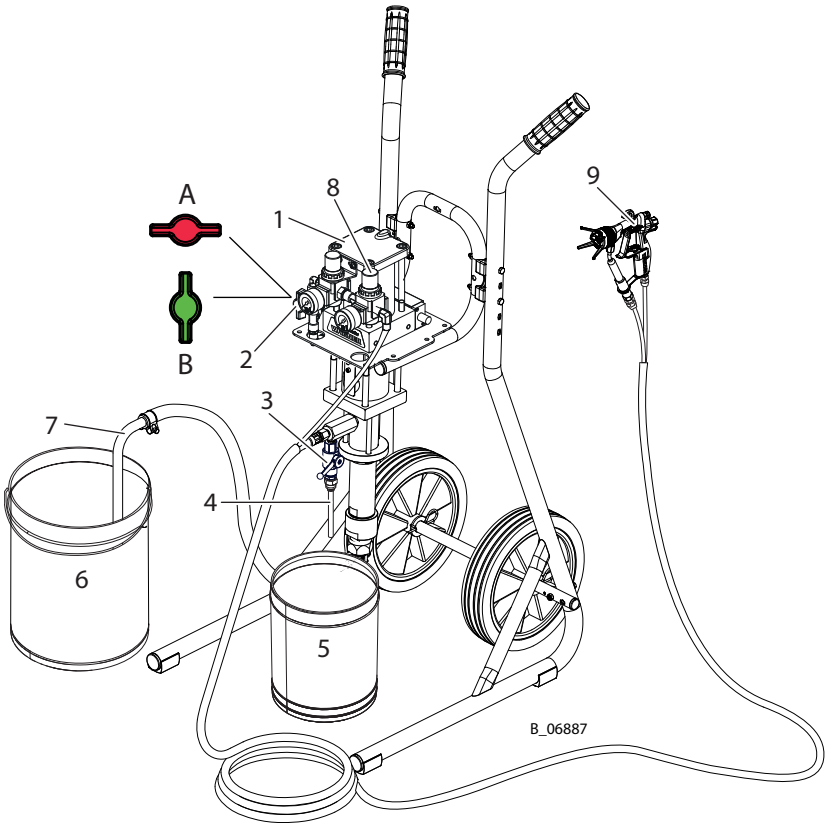
1. Close ball valve (2).
2. Open the safety valve (10) until the piston pump is entirely depressurized. Relieve the product-conveying parts of pressure via the return valve (3).



7.3 TASKS

Ensure that:
commissioning is carried out in accordance with Chapter Commissioning [▸▸ 31].

1. Carry out a visual inspection: Personal protective equipment, grounding and all devices ready for use.
2. Secure spray gun and insert nozzle into the spray gun.
3. Close return valve (3).
4. Slowly open the ball valve (2).
5. Set required working pressure on the pressure regulator (1).
6. Optimize spray pattern in accordance with the spray gun's operating manual.
7. Start work process.



System example EvoMotion 20-30 for the AirCoat procedure.

A	closed	B	open

7.4 PRESSURE RELIEF / WORK INTERRUPTION

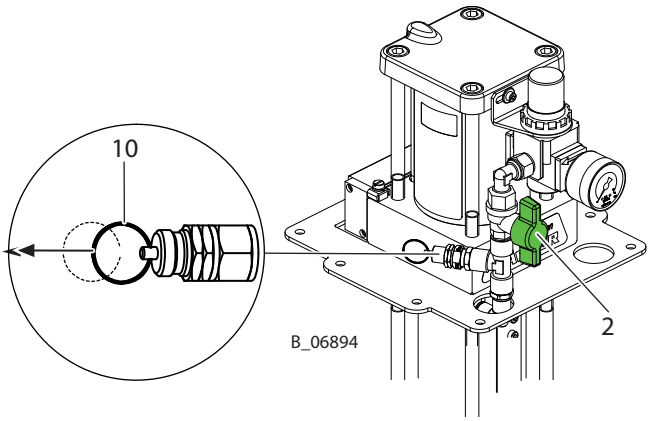
The pressure must always be relieved:

- after the spraying tasks are finished,
- before servicing or repairing the system,
- before carrying out cleaning tasks on the system,
- before moving the system to another location,
- before something needs to be checked on the system,
- before the nozzle or the filter is removed from the spray gun.

The components for pressure relief on a CE-compliant spraying system include:

- Air cock with pressure relief valve mounted between the compressed air source and the pneumatic pump. In this case, the pressure relief valve is the safety valve (10).
- Outlet equipment (return valve) mounted between pump and spray gun.

Process for relieving pressure



1. Close the spray gun.
2. Close ball valve (2).
3. Release the system of pressure by opening the spray gun.
   ⇨ Attention: If a blocked nozzle is preventing relief, first carry out the additional steps 4 and 5, then clean the nozzle.
4. Close and secure the spray gun.
5. Open and close the return valve (3) slowly to completely depressurize the system.

Pressure relief of the air (in case of longer work interruptions)

1. Carry out pressure relief of the product (as mentioned above).
2. Ensure that the ball valve (2) is closed.
3. Pull the ring on the safety valve (10) and hold it until the pressure in the air motor has been equalized.

NOTICE

Hardened working product in the spraying system when 2K product is processed!

Using 2K materials can destroy the pump and spraying system.

- Observe the manufacturer's processing rules, particularly in regards to the pot life.
- Flush thoroughly before the end of the pot life.
- The pot life is decreased by warmth.

7.5 BASIC FLUSHING

Regular flushing

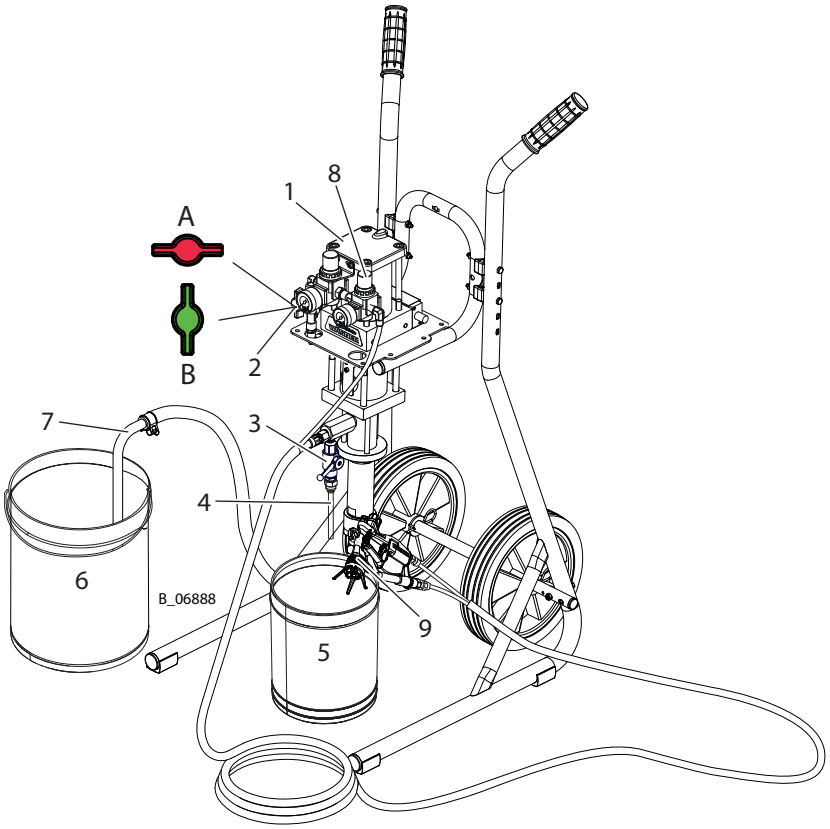
– Regular flushing, cleaning and maintenance ensures the pump's high conveying and suction capacity.
– The cleaning and flushing agents used must be compatible with the working material.
– Do not flush hardener pumps with water. Only flush them using suitable flushing agents (solvents).

⚠ WARNING

Incompatibility of cleaning/flushing agent and working medium!

Risk of explosion and danger of poisoning by toxic gases.

- Examine the compatibility of the flushing and cleaning agents and working media on the basis of the safety data sheets.



A	closed	B	open

Preparation

1. Visual check: personal safety equipment, grounding and all devices ready to use.
2. Place an empty, grounded collection tank (5) under the return tube (4).
3. Place the suction hose (7) in the grounded tank with flushing agent (6).
4. Adjust the pressure regulator (1) to approx. 0.05 MPa; 0.5 bar; 7.25 psi.

Flushing via the return valve

1. Open return valve (3).
2. Slowly open the ball valve (2).
3. Adjust the air pressure on the pressure regulator (1) so that the pump runs smoothly.
4. Flush the system until clean flushing agent flows into the tank (5).
5. Close ball valve (2).
6. As soon as there is no pressure remaining in the system, close the return valve (3).

Flushing via the gun

1. In case of AirCoat systems, carry out the basic flushing without atomizing air.

2. Point the spray gun, without nozzle, into the tank (5) and open it.
3. Slowly open the ball valve (2).
4. Rinse until clean flushing agent flows from the spray gun.
5. Close ball valve (2).
6. As soon as there is no pressure remaining in the system, close the spray gun.
7. Secure the spray gun.
8. Dispose of the contents of the tank (5) according to the local regulations.

External Cleaning

1. Clean the outside of the system.
2. Fully assemble the system.
3. Relieve the pump's pressure according to Chapter Pressure Relief / Work Interruption [▸▸ 34].
4. Dispose of the contents of the tank (5) according to the local regulations.

7.6 FILLING WITH WORKING PRODUCT

After basic flushing, the pump can be filled with working material.

- Proceed according to Chapter Filling the Empty Pump [▸▸ 43], but use working product instead of flushing agent.

8 CLEANING AND MAINTENANCE

8.1 CLEANING

8.1.1 Cleaning Personnel

Cleaning work should be undertaken regularly and carefully by qualified and trained personnel. They should be informed of specific hazards during their training.

The following hazards may arise during cleaning work:

- risk to health from inhaling solvent vapors,
- use of unsuitable cleaning tools and aids.

8.1.2 Decommissioning and Cleaning

The device should be cleaned for maintenance purposes, etc. Ensure that no remaining product dries on and sticks to the device.

1. Interrupt the work sequence in accordance with Chapter Pressure Relief / Work Interruption [▸▸ 34].
2. Carry out basic flushing in accordance with Chapter Basic Flushing [▸▸ 35].
3. Empty system in a controlled manner according to Chapter Emptying Pump [▸▸ 41].
4. Service spray gun in accordance to its operating manual.
5. Clean and check the suction system and the suction filter.
6. Clean the outside of the system.
7. Fully assemble the system.
8. Check fill level of the separating agent in accordance with Chapter Filling with Separating Agent [▸▸ 40].
9. Fill the system with flushing agent in accordance with Chapter Filling the Empty Pump [▸▸ 43].

8.1.3 Long-term Storage

If storing the system for a prolonged period of time, thorough cleaning and corrosion protection are necessary. Replace the water or solvent in the product pump with a suitable preserving oil and fill the separating agent tank with separating agent.

1. Carry out decommissioning and cleaning (steps 1 to 8) in accordance with Chapter Decommissioning and Cleaning [▸▸ 38].
2. Fill the system with preservation agent in accordance with Chapter Filling the Empty Pump [▸▸ 43].
3. Empty the system in a controlled manner in accordance with Chapter Emptying Pump [▸▸ 41] and seal the openings.

8.2 MAINTENANCE

8.2.1 Maintenance Personnel

Maintenance work should be undertaken regularly and carefully by qualified and trained personnel. They should be informed of specific hazards during their training.

The following hazards may arise during maintenance work:

- risk to health from inhaling solvent vapors,
- use of unsuitable tools and aids.

A skilled person must ensure that the device is checked for being in a reliable state after maintenance work is completed.

8.2.2 Maintenance Instructions

⚠ DANGER

Incorrect maintenance/repair!

Danger to life and equipment damage.

- Only a WAGNER service center or a suitably trained person may carry out repairs and replace parts.
- Use only WAGNER original spare parts and accessories.
- Only repair and replace parts that are listed in the spare parts chapter and that are assigned to the device.
- Before all work on the device and in the event of work interruptions:
  - Relieve the pressure from the spray gun, product hoses and all devices.
  - Secure the spray gun against actuation.
  - Switch off the energy and compressed air supply.
  - Disconnect the control unit from the mains.
- Observe the operating and service manual for all work.

Prior to maintenance

It should be ensured that the device is in the following state before carrying out any work on it:

- Flush and clean the system according to Chapter Decommissioning and Cleaning [▸▸ 38].
- Relieve the pressure from the pump, product hose and spray gun.
- Secure spray gun with safety lever.
- Interrupt the air supply.

After maintenance

- Carry out safety checks in accordance with Chapter Safety Checks and Maintenance Intervals [▸▸ 39].
- Put the system into operation and check for leaks as described in Chapter Commissioning [▸▸ 31].
- Have the system checked for safe condition by a skilled person.
- Carry out functional check in accordance with Chapter Function Test after Repair Work [▸▸ 48].

8.2.3 Safety Checks and Maintenance Intervals

Every day

1. Check grounding: see Chapter Grounding [▸▸ 29].
2. Check hoses, tubes and couplings: see Chapter Product Hoses, Pipes and Couplings [▸▸ 40]
3. Check the level of separating agent in the separating agent tank and top up, if necessary, in accordance with chapter Filling with Separating Agent [▸▸ 40].
4. For each decommissioning, the process according to Chapter Decommissioning and Cleaning [▸▸ 38] must be followed.

5. If the pump has to be emptied for maintenance work, proceed according to Chapter Emptying Pump [▸▸ 41].

Weekly

1. Check system for damage.
2. Check that the safety fixtures function properly (see Chapter Protective and Monitoring Equipment [▸▸ 19]).

Yearly or as required

1. In accordance with DGUV regulation 100-500, Chapters 2.29 and 2.36:
   - Have the liquid ejection devices checked by an expert (e.g. WAGNER service technician) as required, but no later than every 12 months to ensure that they are in safe working order.
   - For shut down devices, the examination can be suspended until the next start-up.

8.2.4 Filling with Separating Agent

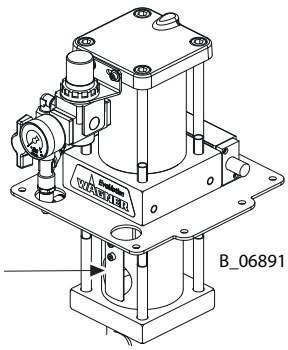
NOTICE

Piston pump dry run

High wear/damage to the packings.

Paint or solvent can escape if the seals are dry.

- Ensure that the separating agent tank is filled with sufficient separating agent.



Pour the supplied separating agent into the separating agent cup.

Filling level: 1 cm; 0.4 inch under the cup edge.

Separating agent: order no. 9992504

Inclination angle of the pump

Maximum permissible inclination of pump for moving, transportation etc. after filling with separating agent is ± 30°. The pump must be vertical during operation.

8.2.5 Product Hoses, Pipes and Couplings

The service life of the complete hoses between product pressure generator and application device is reduced due to environmental influences even when handled correctly.

1. Check hoses, pipes, and couplings every day and replace if necessary.
2. Before every commissioning, check all connections for leaks.
3. Additionally, the operator must regularly check the complete hoses for wear and tear as well as for damage at intervals that he/she has set. Records of these checks must be kept.

4. Replace the complete hose if one of the following two periods is exceeded:
   - 6 years from the date of the hose crimping (see fitting embossing).
   - 10 years from the date of the hose imprinting.

Fitting embossing (if present)	Meaning
xxx bar	Pressure
yymm	Crimping date (year/month)
XX	Internal code

Hose imprinting	Meaning
WAGNER	Name / manufacturer
yymm	Date of manufacture (year/month)
xxx bar (xx MPa) e.g. 270 bar (27MPa)	Pressure
XX	Internal code
DNxx (e.g., DN10)	Nominal diameter

8.2.6 Emptying Pump

⚠ WARNING

Gas mixtures can explode if there is an incompletely filled pump!

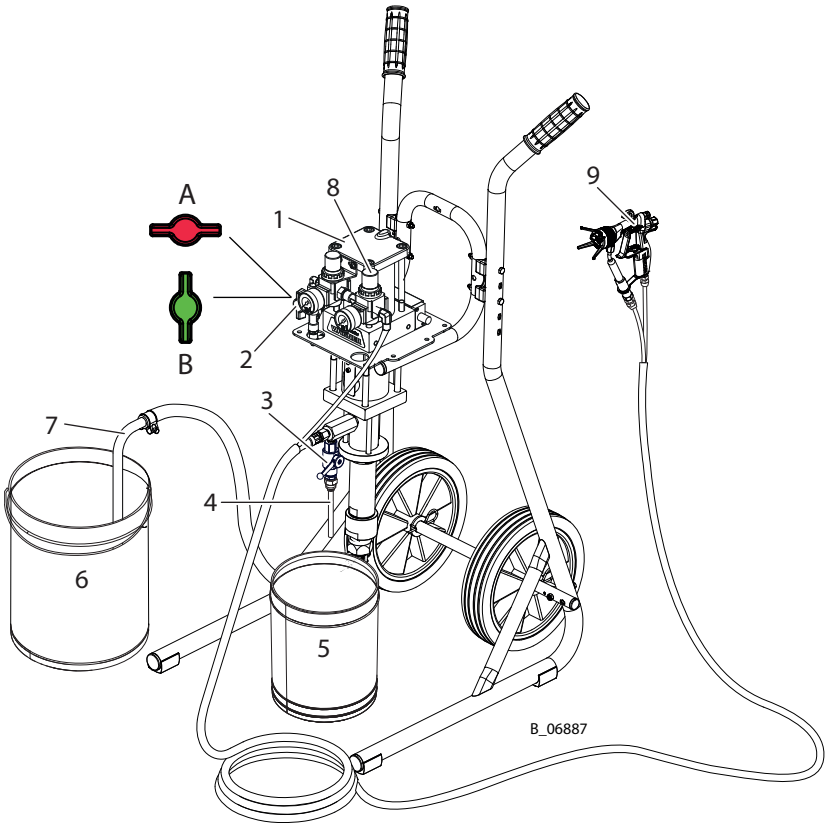
Danger to life from flying parts.

Ignition of potentially explosive surrounding atmosphere.

- Empty and fill the device slowly and in a controlled manner.
- Avoid potentially explosive atmosphere in the surroundings.

Info

If the pumping product becomes heated, switch off all heaters and let the product cool off.



System example EvoMotion 20-30 for the AirCoat procedure.

A	closed	B	open

1. Visual check: personal safety equipment, grounding and all devices ready to use.
2. Place an empty, grounded collection tank (5) under the return tube (4).
3. Place the suction hose (7) in an empty, grounded tank (6).
4. Close pressure regulator (1) (0 MPa; 0 bar; 0 psi).

Emptying via return line

1. Open return valve (3).
2. Slowly open the ball valve (2).
3. Slowly dial up the air pressure at the pressure regulator (1) until the pump operates smoothly (approx. 0.05 MPa; 0.5 bar; 7.25 psi).
4. Be ready for the switch from working product to air. Turn down pressure regulator (1) far enough that the pump is still running normally (approx. 0–0.05 MPa; 0–0.5 bar; 0–7.25 psi).
5. As soon as working product is no longer flowing from the return tube (4), close the ball valve (2).
6. Close return valve (3).

Emptying up to the gun

1. Point the spray gun, without nozzle, into the tank (5) and open it.
2. Slowly open the ball valve (2). Be ready for the switch from working product to air.
3. As soon as no more working product is flowing, close the ball valve (2).
4. Close and secure the spray gun.

5. Carry out pressure relief in accordance with Chapter Pressure Relief / Work Interruption [▸▸ 34].
6. Dispose of the contents of the tank (5) according to the local regulations.

8.2.7 Filling the Empty Pump

⚠ WARNING

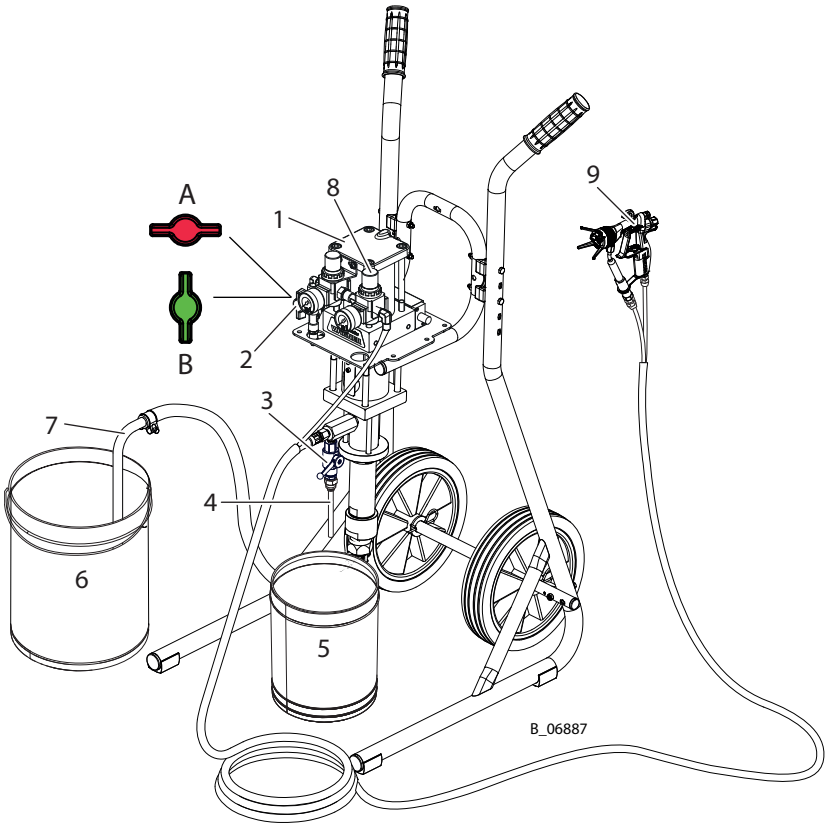
Gas mixtures can explode if there is an incompletely filled pump!

Danger to life from flying parts.

Ignition of potentially explosive surrounding atmosphere.

- Empty and fill the device slowly and in a controlled manner.
- Avoid potentially explosive atmosphere in the surroundings.

Before each filling, the nozzle must be removed from the spray gun. Here, the specifications in the spray gun operating manual must be followed. In case of AirCoat systems, carry out the filling of the system without atomizing air (8).



System example EvoMotion 20-30 for the AirCoat procedure.

A	closed	B	open

1. Carry out a visual inspection: Personal protective equipment, grounding and all devices ready for use.
2. Place an empty, grounded collection tank (5) under the return tube (4).
3. Place suction hose (7) in the tank with working material (6).
4. Close the pressure regulator (1) (0 MPa; 0 bar; 0 psi)
5. Open return valve (3).

6. Slowly open the ball valve (2).
7. Slowly turn air pressure up on the pressure regulator (1) and only until the pump is running regularly.
8. Close ball valve (2) as soon as pure working product starts coming from the return tube (4).
9. Close return valve (3).
10. Point the spray gun (9), without nozzle, into the tank (5) and pull the trigger.
11. Slowly open the ball valve (2).
    Be prepared for the switch from air to working product and avoid backspray.
12. As soon as pure working product without air bubbles is flowing, close the ball valve (2).
13. Close and secure the spray gun.
14. Carry out pressure relief in accordance with Chapter Pressure Relief / Work Interruption [▸▸ 34].
15. Dispose of the contents of the tank (5) according to the local regulations.

9 TROUBLESHOOTING AND RECTIFICATION

Malfunction	Cause	Remedy
The pump does not work.	The pump does not start or stops.	Open and close ball valve on the pressure regulator unit or briefly disconnect compressed air supply.
	No pressure indication on the pressure gauge (air pressure regulator defective).	Disconnect compressed air supply briefly or repair or change pressure regulator.
	Spray nozzle is clogged.	Clean the nozzle according to the instructions.
	Insufficient compressed air supply.	Check compressed air supply.
	Filter insert in spray gun is clogged.	Clean the parts and use a suitable working material.
	Fluid section or high-pressure hose is blocked (e.g., 2K product hardened).	Dismount and clean fluid section, replace high-pressure hose.
	Sometimes, the pump stops at a switching point.	Press the starter on the reverse valve and restart the pump. Clean the slide on the reversing valve carefully and, if necessary, lubricate it with a light layer of oil.
Poor spray pattern.	See the gun instructions.	
Irregular operation of product pump: Spray jet collapses (pulsation).	Viscosity is too high.	Thin spraying product.
	Spraying pressure is too low.	Increase incoming air pressure. Use a smaller nozzle.
	Valves are clogged.	Clean pump. If necessary, leave it to soak in cleaning agent.
	Foreign body in suction valve.	Dismantle suction valve housing, clean and check valve seat.
	Diameter of compressed air line too small.	Assemble a larger supply line -> chapter Technical Data [▸▸ 20]
	Valves, packings, or pistons are worn out.	Replace the parts.
	Pressure regulator filter is clogged.	Check and clean it if necessary.
The pump runs evenly, but does not suck up any product.	The suction system's union nut is loose; the pump is taking in air.	Tighten union nut.
	Suction filter is clogged.	Clean filter.
	Ball in suction or piston valve is stuck.	Clean balls and valve seats.
The pump is working with a closed spray gun.	Packings, valves, or pistons are worn out.	Replace the parts.
The air motor is iced up	There is a lot of condensation water in the air supply.	Install a water separator.

If none of the causes of malfunction mentioned are present, the defect can be remedied by a WAGNER service center.

10 REPAIRS

10.1 REPAIR PERSONNEL

Repair work should be undertaken carefully by qualified and trained personnel. They should be informed of specific hazards during their training.

The following hazards may arise during repair work:

- risk to health from inhaling solvent vapors,
- use of unsuitable tools and aids.

A skilled person must check to ensure that the device is in a reliable state after it is repaired. A function test should be performed.

10.2 REPAIR NOTES

⚠ DANGER

Incorrect maintenance/repair!

Danger to life and equipment damage.

- Only a WAGNER service center or a suitably trained person may carry out repairs and replace parts.
- Use only WAGNER original spare parts and accessories.
- Only repair and replace parts that are listed in the spare parts chapter and that are assigned to the device.
- Before all work on the device and in the event of work interruptions:
  - Relieve the pressure from the spray gun, product hoses and all devices.
  - Secure the spray gun against actuation.
  - Switch off the energy and compressed air supply.
  - Disconnect the control unit from the mains.
- Observe the operating and service manual for all work.

Before Repair Work

It should be ensured that the device is in the following state before carrying out any work on it:

1. Flush and clean the system according to Chapter Decommissioning and Cleaning [▸▸ 38].
2. Interrupt the air supply.

After Repair Work

1. Carry out safety checks in accordance with Chapter Safety Checks and Maintenance Intervals [▸▸ 39].
2. Put the system into operation in accordance with Chapter Commissioning [▸▸ 31] and check for leaks in accordance with Chapter Function Test after Repair Work [▸▸ 48].
3. Have the system checked for safe condition by a skilled person.
4. Carry out functional check in accordance with Chapter Function Test after Repair Work [▸▸ 48].

10.3 TOOLS

The following tools are required for assembling and disassembling the device (if possible, always bring entire tool sets with you):

- Torque wrench 4.5 Nm; 3.3 lbft / 20; 14.7 / 30; 22.1 / 35; 25.8
- Circlip pliers 30mm (inside)
- Set of slot-head screwdrivers
- Set of Phillips screwdrivers
- Set of Allen wrenches
- Set of wrenches

10.4 CLEANING THE PARTS AFTER DISASSEMBLY

⚠ WARNING

Incompatibility of cleaning agent and working medium!

Risk of explosion and danger of poisoning by toxic gases.

- Examine the compatibility of the cleaning agents and working media on the basis of the safety data sheets.

Please note:

1. Thoroughly clean all reusable parts with a suitable cleaning agent.
2. All dismantled parts have to be clean and dry after cleaning. Care should be taken that these parts remain free of solvents, grease or sweat from the hands (salt water). Perform cleaning and mounting tasks wearing gloves.

10.5 ASSEMBLY OF THE DEVICE

In Chapter Spare Parts [▸▸ 53] the order numbers for device spare parts can be found, as well as for wearing parts such as seals.

1. Defective parts, O-rings and seal sets must always be replaced.
2. Use greases and glues in accordance with Chapter Spare Parts [▸▸ 53].
3. Observe torque specifications in Chapter Spare Parts [▸▸ 53].

Assembly aids:

Order no.	Quantity	Designation	Smaller tanks
9992590	1 pc ≙ 50 ml	Loctite® 222	
9992511	1 pc ≙ 50 ml	Loctite® 243	
9992528	1 pc ≙ 50 ml	Loctite® 270	
9992831	1 pc ≙ 50 ml	Loctite® 542	
9998808	1 pc ≙ 18 Kg!	Mobilux® EP 2 grease	400 g tube ≙ order no. 2355418
9992616	1 pc ≙ 1 kg can	Molykote® DX grease	50 g tube ≙ order no. 2355419
9992609	1 pc ≙ 100 g	Anti-seize paste	
9992816	1 pc ≙ 70 g	Miranit contact adhesive	

Brand notice

The brands specified in this document are property of the respective owners. Loctite®, for example, is a registered brand of Henkel.

11 FUNCTION TEST AFTER REPAIR WORK

After all repairs, the device must be checked for safe condition before recommissioning. The necessary scope of inspection and testing depends on the repair carried out and must be documented by the repair personnel.

Activity	Aid tools
1.1 Filling with separating agent	
▸ See Chapter Filling with Separating Agent [▸▸ 40].	
1.2 EX-relevant inspections	
1. Check the ground connection between the corresponding ground connection of the pump and the frame/trolley, and between the individual parts of the frame/trolley: <100 kΩ 2. Check conductivity between the piston and the grounding connection: <100 kΩ **These tests are Ex-relevant!**	Ohmmeter (Measurement voltage 500...1000 VDC)
1.3 Testing for leaks	
1. Connect the air motor to the air supply (7 bar). 2. To perform a tightness check on the device, the product pressure with the flushing agent is slowly increased in increments until the maximum pressure indicated on the type plate is reached. 3. Close pump outlet. 4. In each position (with upstroke and downstroke), let sit for 0.5-1 minute(s) and listen for audible blowing off. 5. When the air supply is turned off, a drop in pressure must be watched for. 6. Check seal of following modules: - fluid section - mounted valves and regulators	Air motor: Test medium: Compressed air Leak spray Fluid section: Test medium: Suitable flushing agent
1.4 General inspections	
1. Check the tightening torques of various screws; see Chapter Spare Parts [▸▸ 53]. 2. Check all fittings. 3. Empty device in a controlled manner (Chapter Emptying Pump [▸▸ 41]) and depressurize (Chapter Pressure Relief / Work Interruption [▸▸ 34]). 4. Check the functionality of the frame or transport trolley.	Torque wrench Visual check

12 DISPOSAL

12.1 DEVICE

When the devices must be scrapped, please differentiate the disposal of the waste materials.

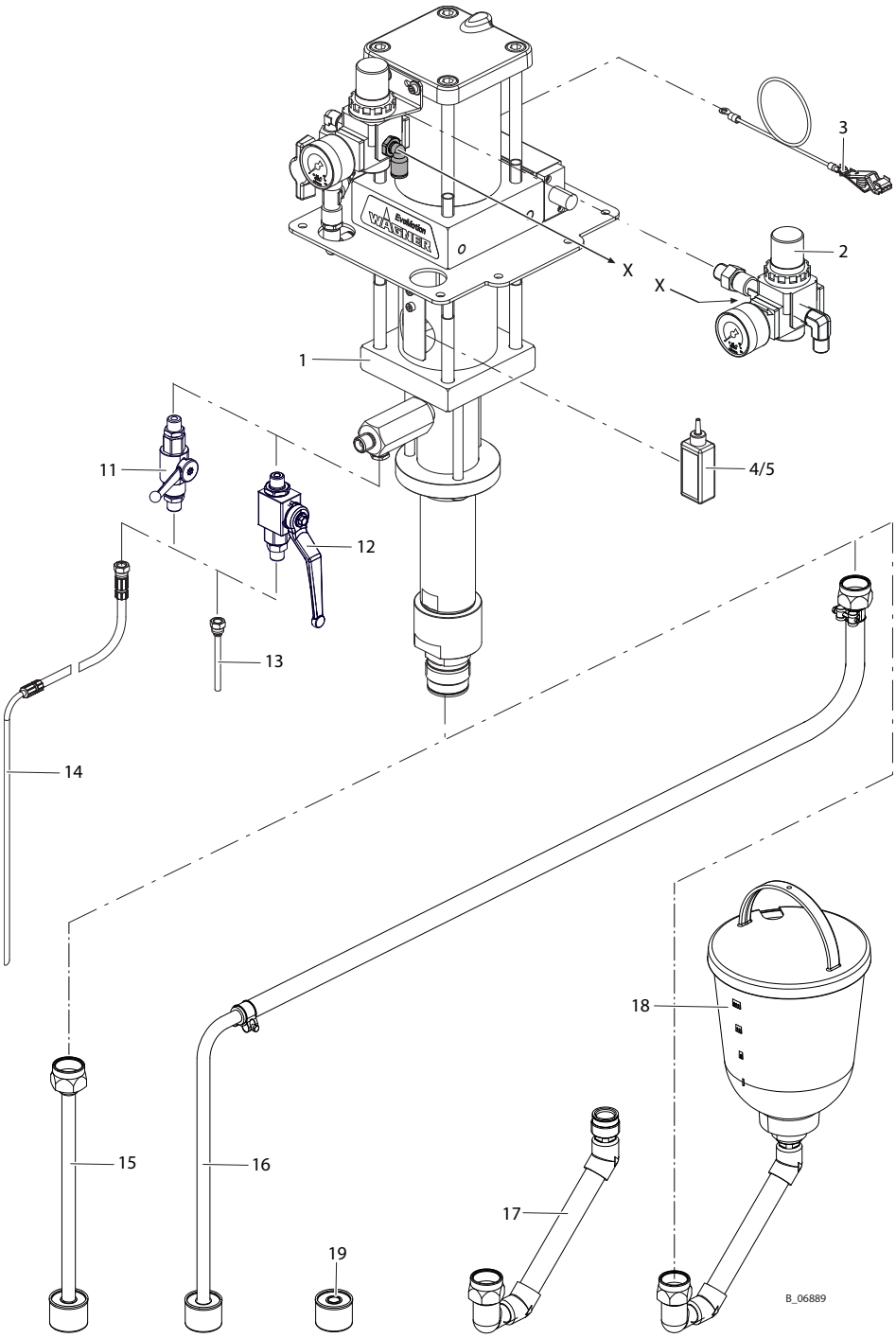
The following materials have been used:

- Stainless steel
- Aluminum
- Elastomers
- Plastics
- Carbide

12.2 CONSUMABLE PRODUCTS

Consumable products (lacquers, adhesives, flushing and cleaning agents) must be disposed of in accordance with all applicable legal requirements.

13 ACCESSORIES

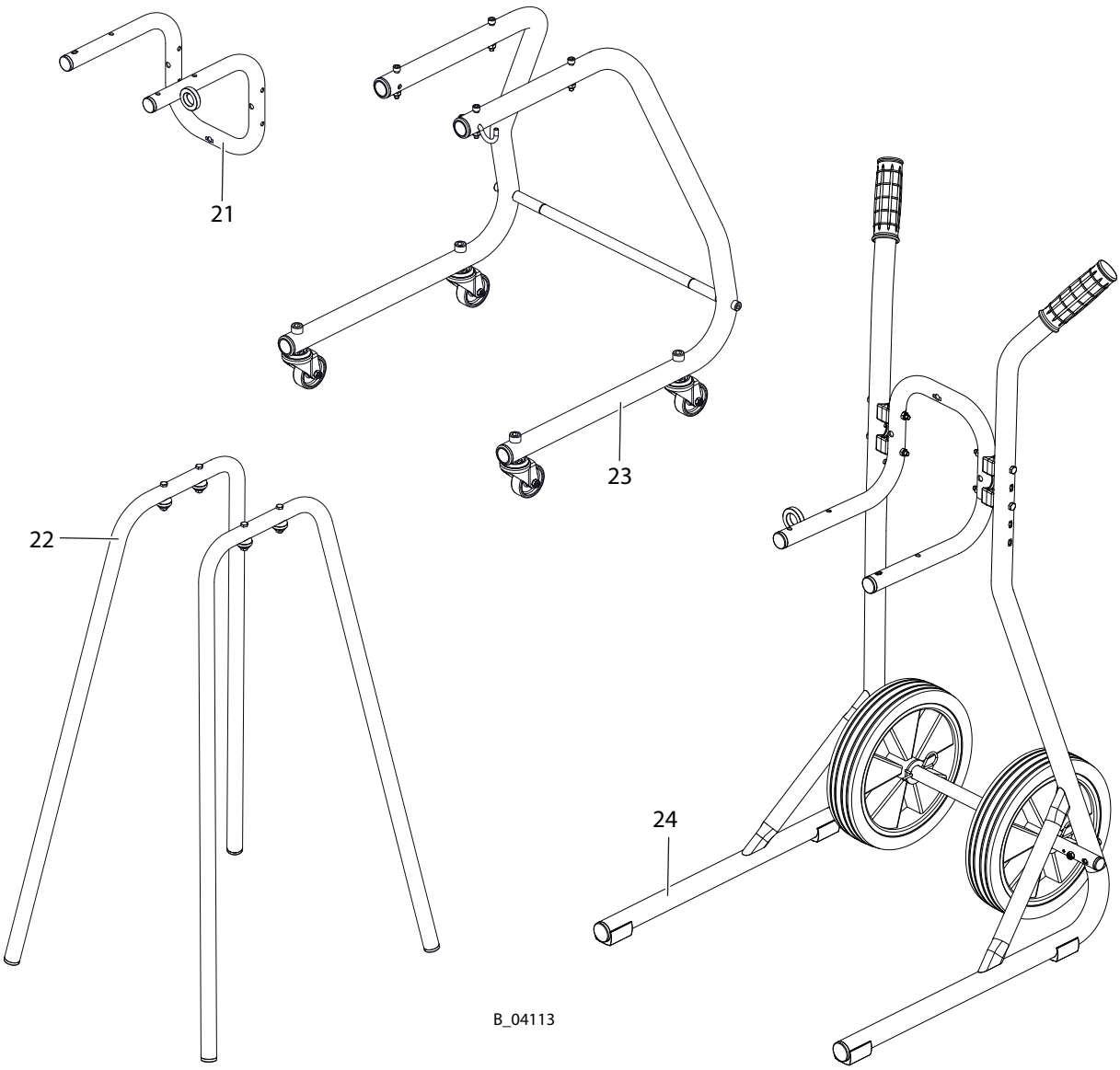


Pos	K	Order no.	Designation
1		2329452	EvoMotion 20-30 PE/T
2	♦	T6145.00A	AirCoat regulator set
3		236219	Grounding cable, complete 3 m; 9.8 ft
4		9992504	Separating agent 250 ml

Pos	K	Order no.	Designation
5		9992505	Separating agent 500 ml
11	♦	2334488	Ball valve, R1/4"-G1/4"-PN350-SSt
12	♦	2334472	Ball valve R1/4"-G1/4"-PN350-CS
13	♦	2331752	Return tube, DN6-G1/4"-100mm-PA
14	♦	2329046	Return hose DN6-G1/4“-PA
15		2324158	Suction tube DN16-SSt, complete
16	♦	2324110	Suction hose, DN16-SSt, complete
17		2323225	Suction elbow for hopper SSt
18	♦	2332169	Hopper set, 5 l for piston pump
19	♦	2323396	Suction filter, DN16-18 mesh-SSt

♦ = wearing parts

13.1 WALL MOUNT AND TROLLEY



Pos	K	Order no.	Designation
21		2332143	Wall mount 4“, complete
22		2332374	4-leg stand
23		T6196.00	Trolley, 4 wheels
24		2325901	Trolley 4", complete

14 SPARE PARTS

14.1 HOW CAN SPARE PARTS BE ORDERED?

Always supply the following information to ensure delivery of the right spare part:

Order number, designation and quantity

The quantity need not be the same as the number given in the "Stk" column in the lists. This number merely indicates how many of the respective parts are used in each component.

The following information is also required to ensure smooth processing of your order:

- billing address
- delivery address
- name of the person to be contacted in the event of any queries
- type of delivery (normal mail, express delivery, air freight, courier etc.)

Identification in spare parts lists

Explanation of column „K“ (marking) in the following spare parts lists:

♦ Wearing parts. Wearing parts are not included in the warranty.

⋆ = included in service set

● not part of the standard equipment but available as a special accessory

Explanation of order no. column:

-- Item not available as spare part.

/ Position does not exist.

14.2 NOTES ON USING SPARE PARTS

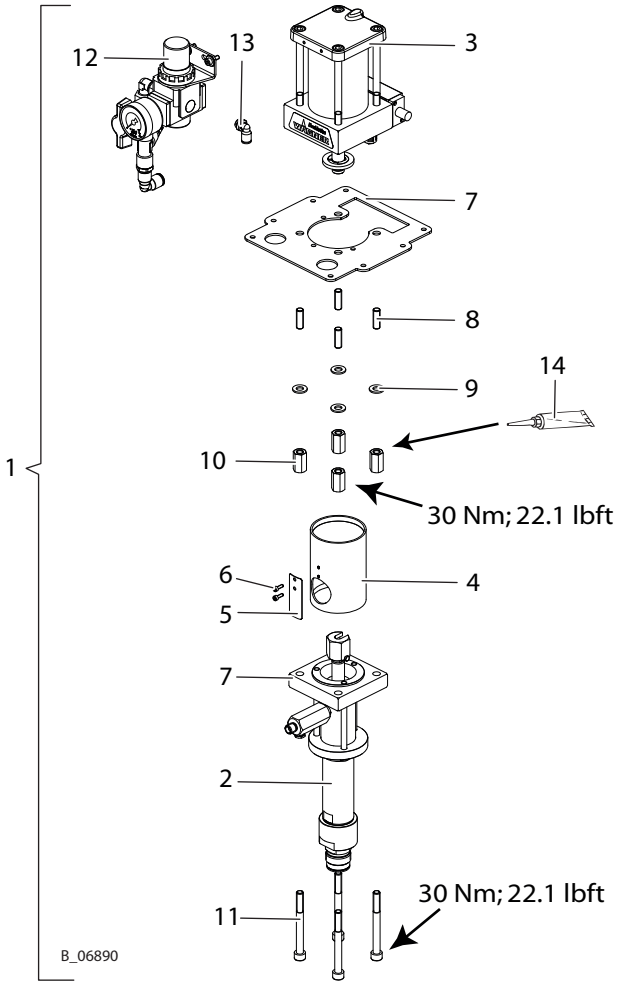
⚠ DANGER

Incorrect maintenance/repair!

Danger to life and equipment damage.

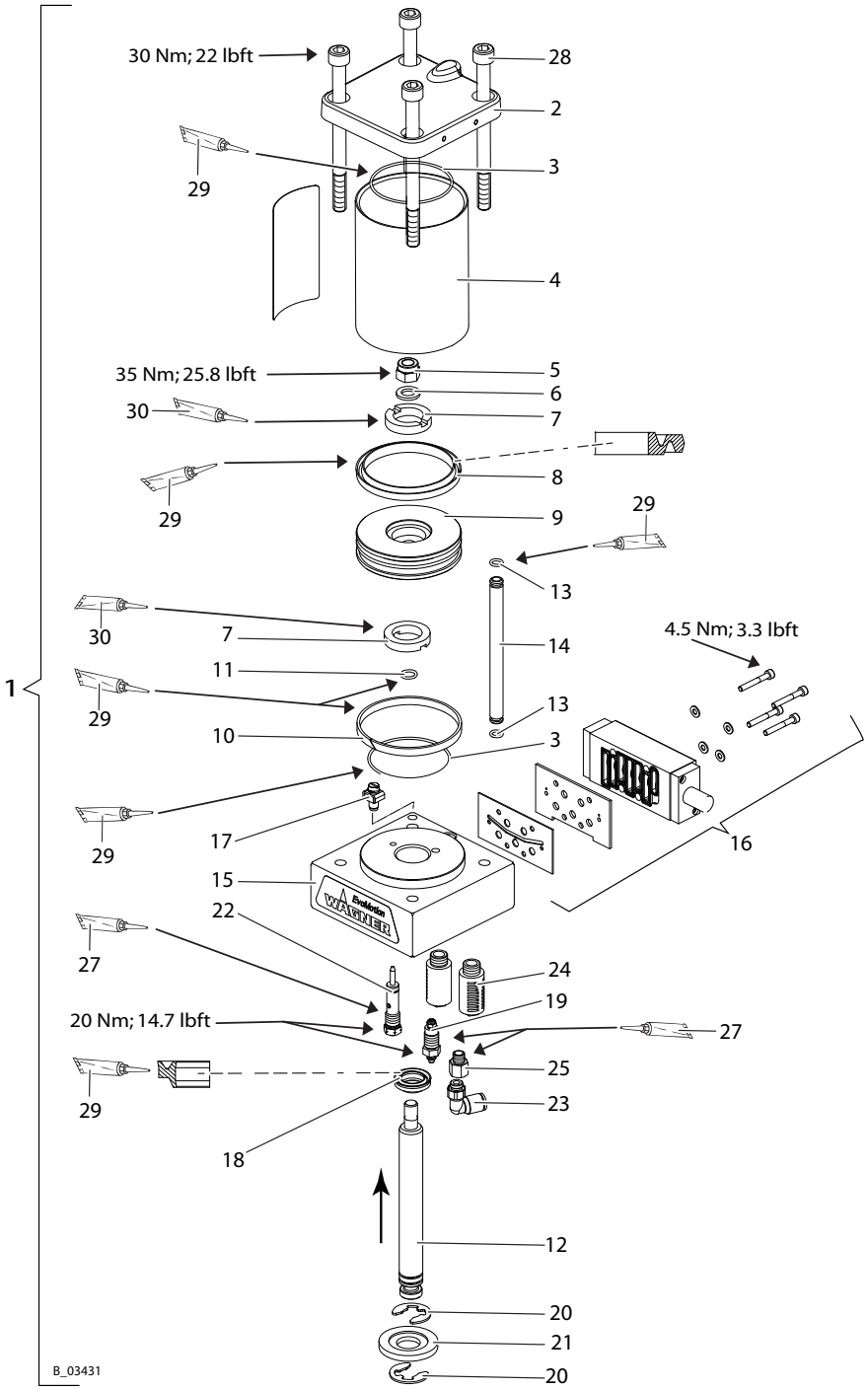
- Only a WAGNER service center or a suitably trained person may carry out repairs and replace parts.
- Use only WAGNER original spare parts and accessories.
- Only repair and replace parts that are listed in the spare parts chapter and that are assigned to the device.
- Before all work on the device and in the event of work interruptions:
  - Relieve the pressure from the spray gun, product hoses and all devices.
  - Secure the spray gun against actuation.
  - Switch off the energy and compressed air supply.
  - Disconnect the control unit from the mains.
- Observe the operating and service manual for all work.

14.3 OVERVIEW OF THE COMPONENTS



Pos	K	Stk	Order no.	Designation
1		1	2329452	EvoMotion 20-30 PE/T
2		1	2329639	Fluid section 30 PE/T EM
3		1	U3B08018060	Air motor M80 EM
4		1	A359.71A	Spacer
5		1	E516.71A	Safety fixture spacer
6		2	9900353	Hexagon socket head cap screw
7		1	2332394	Holder plate
8		4	9901115	Threaded bolt
9		4	9920106	Washer
10		4	2332990	Hexagon extension nut
11		4	9906024	Hexagon socket head cap screw
12		1	2318437	Set - pump air regulator
13		1	9998253	Male stud elbow, 8-1/4
14		1	9992590	Loctite® 222 50 ml; 50 cc

14.4 AIR MOTOR



Installation instructions

Mount piston rod (12) always from bottom to top by the assigned rod seal (18).

Pos	K	Stk	Order no.	Designation
1		1	U3B08018060	Air motor EM M80
2		1	F132.91C	Motor flange, upper, M50 EM
3	♦★	2	L108.06	O-ring
4		1	2369375	Cylinder motor

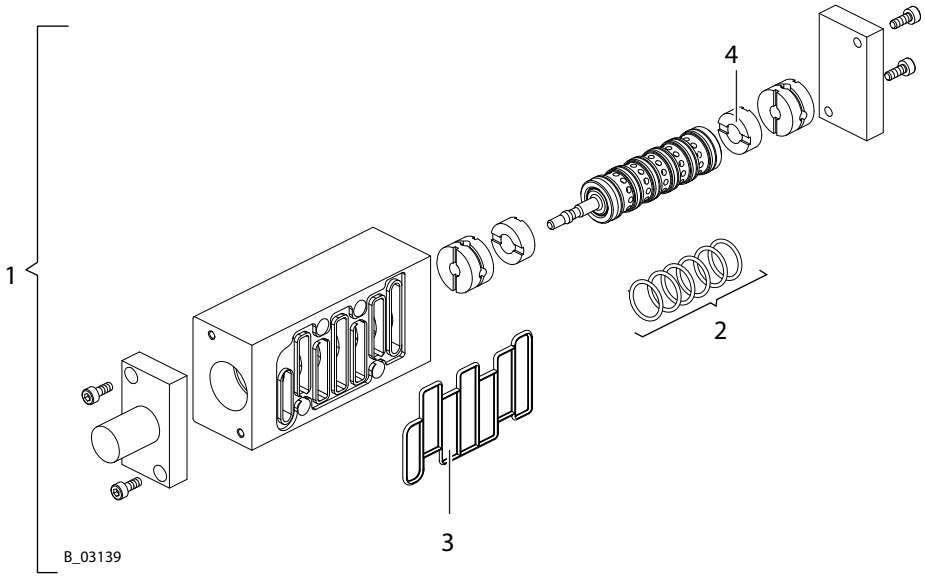
Pos	K	Stk	Order no.	Designation
5		1	3055157	Hexagon nut with clamp
6		1	9920106	Washer
7	♦⋆	2	G903.06	Damper
8	♦⋆	1	L413.06	Seal DE 80
9		1	A164.01	Motor piston
10	♦⋆	1	L802.08	Sliding ring
11	♦⋆	1	L110.06	O-ring
12		1	D404.12	Piston rod, M80 EM
13	♦⋆	2	L109.06	O-ring
14		1	A408.12	Air tube, M80 EM
15		1	T616.00C	Motor flange, complete M80 EM, at bottom
16	♦	1	P498.00KNE	Reversing valve ISO N/1 (see Chapter Reversing Valve [▸▸ 57])
17		1	367258	Grounding, complete
18	♦⋆	1	L403.06	Rod seal
19	♦⋆	1	2339340	Sensor Down
20		2	K606.02	Lock washer for shaft
21		1	A160.01A	Washer
22	♦⋆	1	2341115	Pilot valve
23		1	9992757	Threaded elbow fitting
24	♦	2	H505.07	Silencer
25		1	M432.00	Reducing fitting
27		1	9992831	Loctite® 542
28		4	9907241	Hexagon socket head cap screw
29		1	9998808	Mobilux® EP 2 grease
30		1	9998157	Loctite® 480
	●	1	T910.00	Service set EM air motor M80

♦ = wearing parts

⋆ = Included in service set

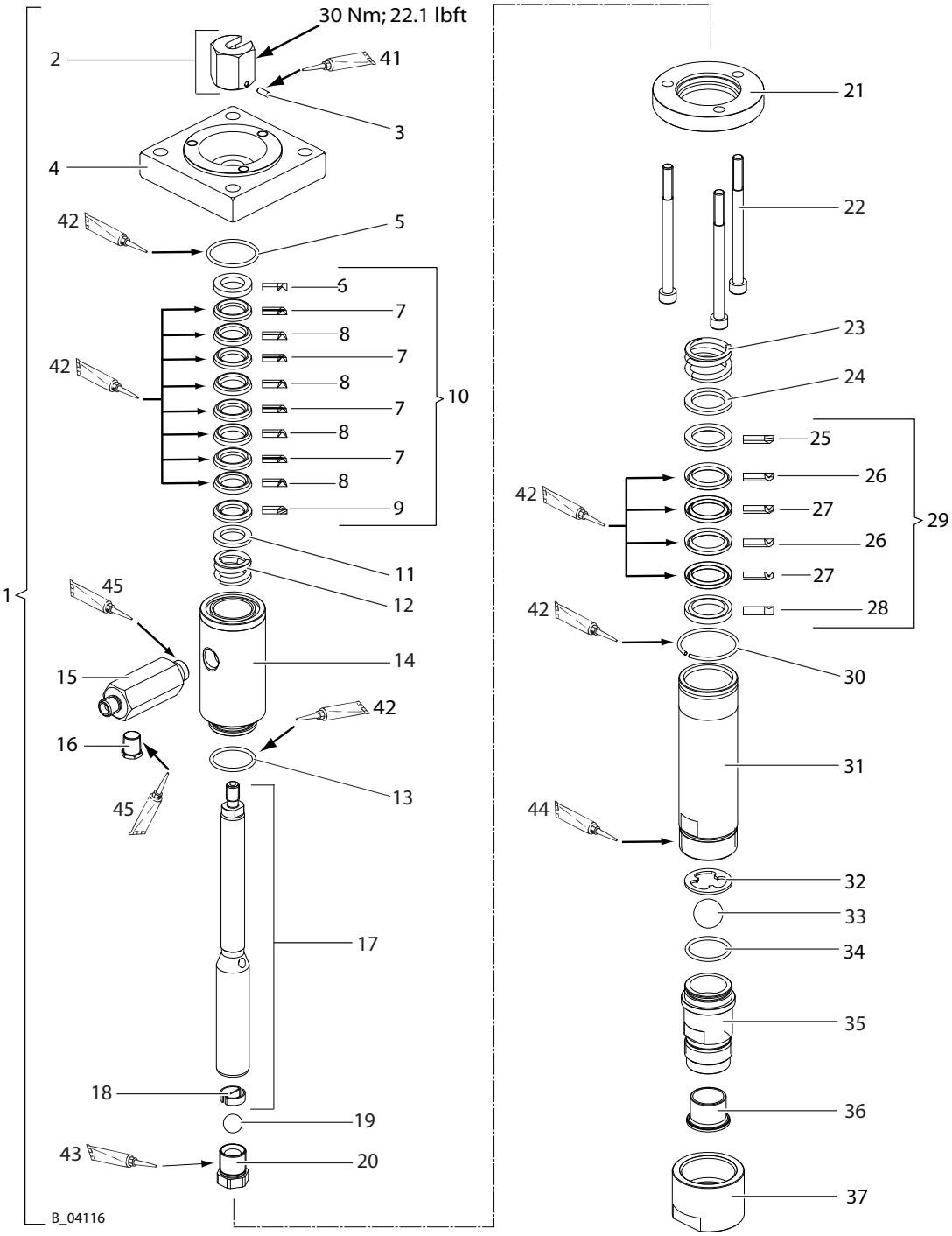
● = Not part of the standard equipment but available as an accessory.

14.5 REVERSING VALVE



Pos	K	Stk	Order no.	Designation
1		1	P498.00	Reversing Valve
2		6	9971123	O-ring
3		1	P521.00	Reversing valve seal
4		2	P520.00	Damper

14.6 FLUID SECTION 30



Pos	K	Stk	Order no.	Designation
1		1	2329639	Fluid section 30 PE/T, complete
2		1	T6158.00	Connector
3		1	2394356	Grub screw with hexalobular socket
4		1	B0388.62	Connecting flange 30
5	♦⋆	1	L112.06	O-ring

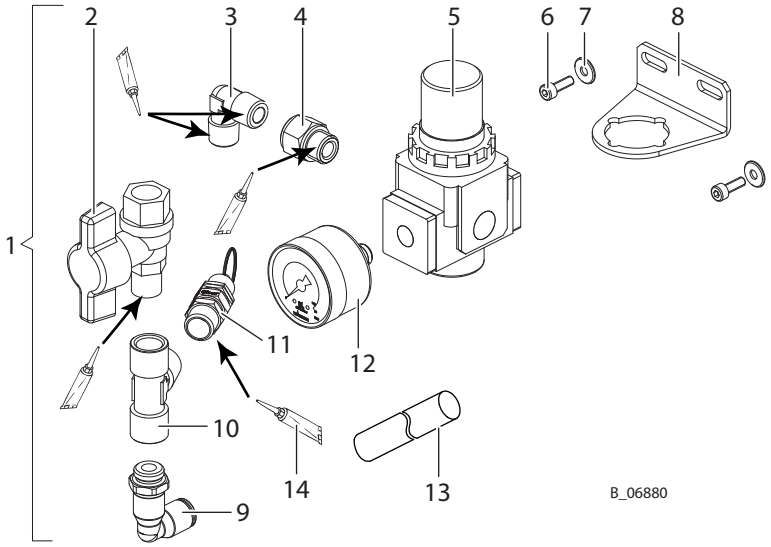
Pos	K	Stk	Order no.	Designation
6	♦⋆	1	G119.08	Support ring, outside
7	♦⋆	4	G101.08E	Sealing collar PE 18/29
8	♦⋆	4	G101.05	Sealing collar T 18/29
9	♦⋆	1	G120.08	Support ring, inside
10	♦●	1	T920.00D	Packing PE/T, complete 18/29
11		1	A114.03	Support ring plate
12	♦	1	H203.03	Spring
13	♦⋆	2	L170.06	O-ring
14		1	B0391.03	Tube 30
15		1	B0461.03	Fitting DF-MM-R3/8"-1/4"NPS-PN350
16		1	2323718	Hexagon plug
17	♦	1	T6181.00	Piston 30
18		1	A156.03	Support spring
19	♦	1	K802.03	Ball
20	♦	1	A155.03	Valve screw 30
21		1	B0387.62	Pump flange, lower
22		3	9907087	Hexagon socket head cap screw
23	♦	1	H222.03	Pressure spring
24		1	B0099.03	Ring
25	♦⋆	1	G185.05	Support ring, inside
26	♦⋆	2	G152.05	Sealing collar T 25/36
27	♦⋆	2	G152.08E	Sealing collar PE 25/36
28	♦⋆	1	G184.05	Support ring, outside
29	♦●	1	T941.00G	Packing PE/T, complete 25/36
30		1	K640.02	Round wire snap ring for shafts
31		1	B0392.03	Cylinder 30
32		1	A961.03B	Ball stopper
33	♦	1	K802.03	Ball
34	♦⋆	2	L170.06	O-ring
35	♦	1	2323833	Inlet fitting
36		1	2329898	Sealing sleeve
37		1	B0389.03	Valve screw 30
41		1	9992590	Loctite® 222
42		1	9998808	Mobilux® EP 2 grease
43		1	9992831	Loctite® 542
44		1	9992609	Anti-seize paste
45		1	9992528	Loctite® 270
	●	1	T940.00G	Service set EM 20 PE/T

♦ = wearing parts

⋆ = Included in service set

● = Not part of the standard equipment but available as an accessory.

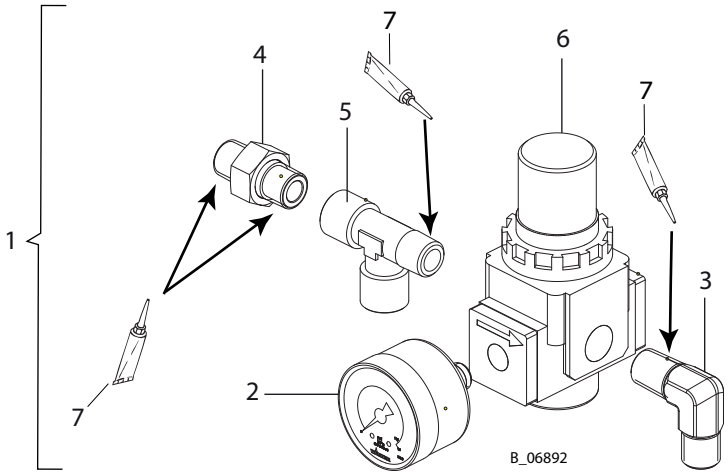
14.7 AIR REGULATOR SET FOR EVOMOTION



Pos	K	Stk	Order no.	Designation
1		1	2318437	Set - pump air regulator
2		1	M101.00	Ball valve, FM
3		1	9998039	Screw fitting ellbow
4		1	9985682	Reducer
5		1	2384362	Pressure regulator
6		2	9900353	Socket cap screw
7		2	9920308	Washer
8		1	2384363	Supporting bracket
9		1	9999138	Male stud elbow
10		1	M297.00	T-connection
11		1	P484.00C1	Safety valve 1/4", blue ring
12		1	9998677	Pressure gauge 0-10 bar (d40)
13		1	9982078	Hose, black AD8 x 1.25 (32 cm)
14		1	9992831	Loctite® 542

♦ = wearing parts

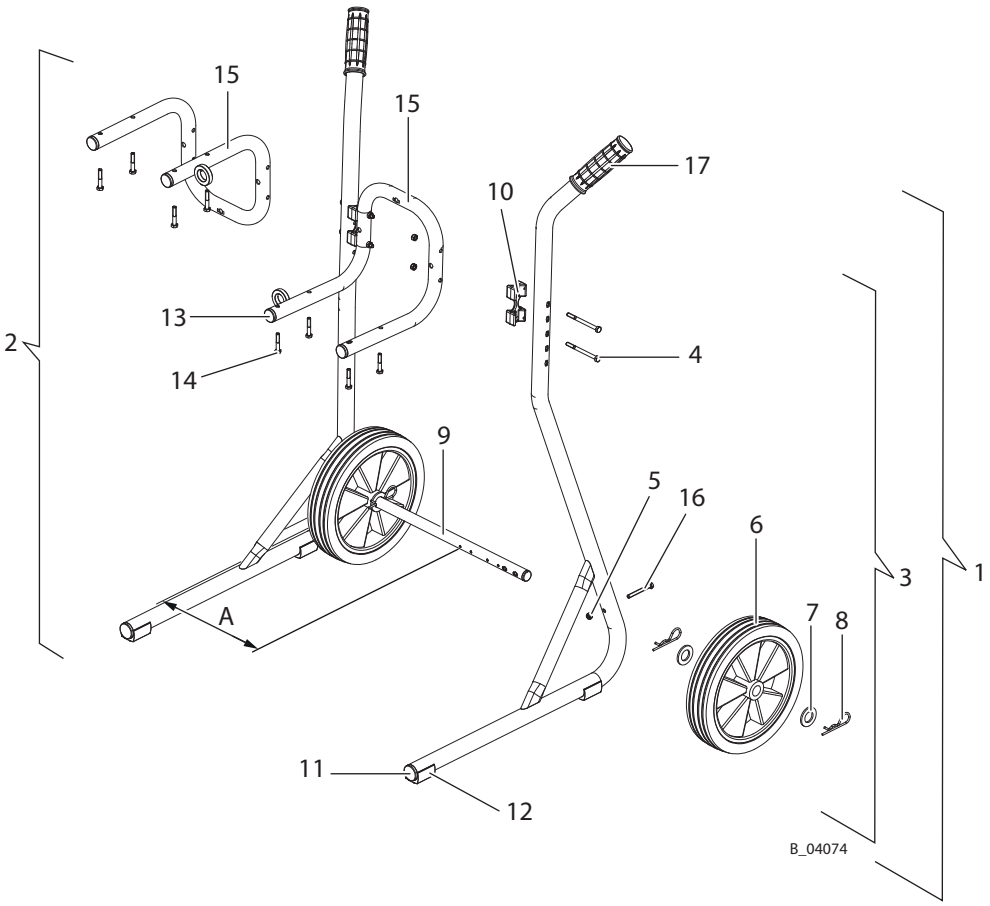
14.8 AIR REGULATOR SET FOR AIRCOAT AIR



Pos	K	Stk	Order no.	Designation
1		1	T6145.00A	AirCoat regulator set
2	♦	1	9998677	Pressure gauge 0-1 MPa; 0-10 bar; 0-145 psi (d40)
3		1	2389277	Elbow with taper
4		1	9998719	Detachable double fitting
5		1	9985694	T-piece
6	♦	1	2384362	Air pressure regulator, 1/4”
7		1	9992528	Loctite® 270

♦ = wearing parts

14.9 TROLLEY 4"



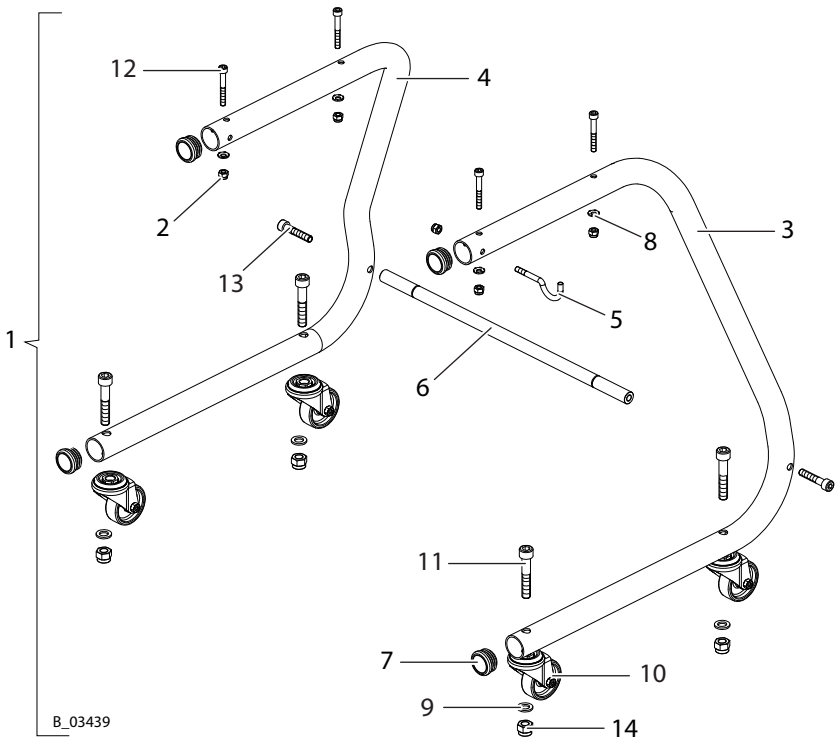
Distance A = EvoMotion

Pos	K	Stk	Order no.	Designation
1		1	2325901	Trolley, complete
2		1	--	Frame left 4" (welded)
3		1	--	Frame right 4“ (welded)
4		4	9907140	Hexagon screw DIN931, M6x75
5		6	9910204	Self-locking hexagon nut, M6
6	♦	2	2304440	Wheel, D250
7		4	340372	Washer
8		4	9995302	Cotter pin
9		1	--	Wheel axle 4“
10	♦	2	367943	Connecting part 4“
11		2	--	Tube plug, ribbed
12		2	--	Saddle feet for round tubes
13		2	--	Plug
14		4	9900218	Hexagon screw

Pos	K	Stk	Order no.	Designation
15		1	2332143	Wall mount
16		2	3061695	Hexagon screw without shaft, M6x55
17	♦	2	9998747	Handle

♦ = wearing parts

14.10 TROLLEY, 4 WHEELS



Pos	K	Stk	Order no.	Designation
1		1	T6196.00	Trolley, 4 wheels
2		5	9910204	Hexagon nut with clamp
3		1	E3107.92B	Frame, right
4		1	E3107.92C	Frame, left
5		1	H009.62	Spray gun hook
6		1	H1156.62	Frame pin
7		4	R204.07	Plug
8		4	3155404	Contact washer, M08
9		4	9920106	Washer
10	♦	4	R120.00F	Wheel
11		4	9900311	Hexagon socket head cap screw
12		4	9900389	Hexagon socket head cap screw
13		2	9900309	Hexagon socket head cap screw
14		4	3055157	Hexagon nut with clamp

♦ = wearing parts

15 DECLARATION OF CONFORMITY

15.1 EU DECLARATION OF CONFORMITY

We hereby declare that the supplied version of the pneumatic piston pumps and their spray packs:

EvoMotion 20-30

complies with the following guidelines:

2006/42/EC
2014/34/EU (ATEX Directive)

Applied standards, in particular:

DIN EN ISO 12100:2010	EN 14462:2015
EN 809: 1998+A1:2009+AC:2010	EN 12621:2006+A1:2010
EN ISO 4413:2010	EN 1127-1:2011
EN ISO 4414:2010	EN ISO 80079-36:2016
EN ISO 13732-1:2008	EN ISO 80079-37:2016

Applied national technical standards and specifications, in particular:

DGUV regulation 100-500 Chapter 2.29
DGUV regulation 100-500 Chapter 2.36
TRGS 727

Identification:

CE Ex II 2 G Ex h IIB T3/T4 Gb X

EU Declaration of Conformity

The EU Declaration of Conformity is enclosed with this product. If needed, further copies can be ordered through your WAGNER dealer by specifying the product name and serial number.

Order number:

2312813

Order number 2333553
Edition 09/2020

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Version E

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