Translation of the Original Operating Manual

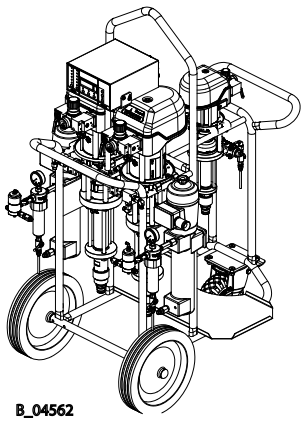
TwinControl

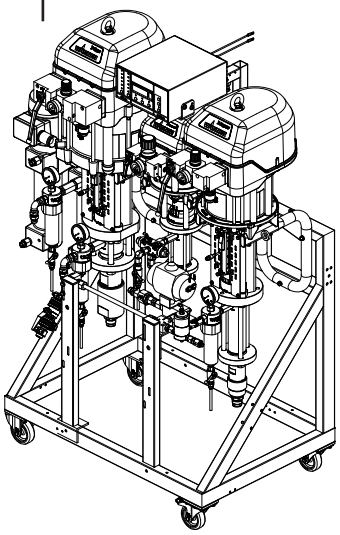
EvoMotion	5-60	Leopard	35-70
		Leopard	35-150
Wildcat	10-70	Leopard	48-110
		Leopard	18-300
Puma	28-40	Leopard	8-600
Puma	15-70		
Puma	15-150	Jaguar	75-150
Puma	21-110	Jaguar	55-200
Puma	8-300	Jaguar	38-300
Puma	3-600		
		Tiger	72-300

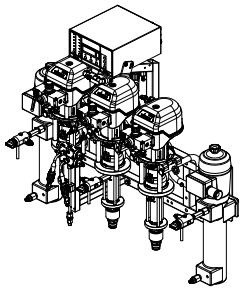
Version 10/2016

Valid for systems with software version V 4.xx

Electronically Controlled 2K Systems for Lacquers







CE

CE 0102 Ex II 2 G Ex ia IIB T4

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1 ABOUT THESE INSTRUCTIONS

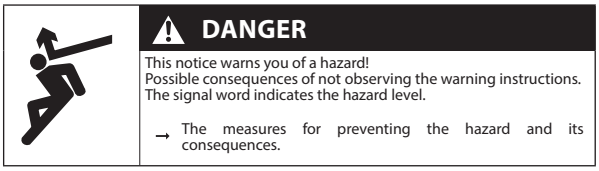
1.1 PREFACE

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.

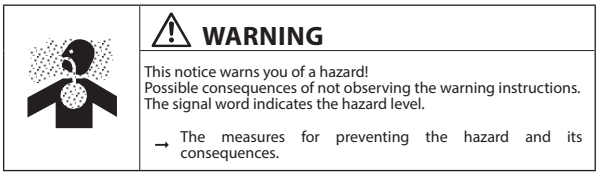
1.2 WARNINGS, NOTICES AND SYMBOLS IN THESE INSTRUCTIONS

Warning instructions in this operating 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:

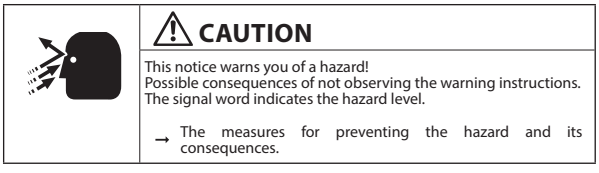
Danger - immediate risk of danger.
Non-observance will result in death or serious injury.



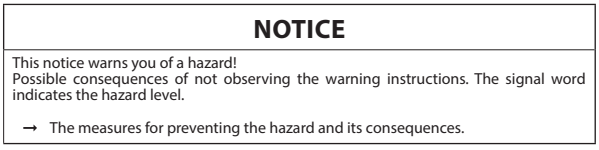
Warning - possible imminent danger.
Non-observance may result in death or serious injury.



Caution - a possibly hazardous situation.
Non-observance may result in minor injury.



Notice - a possibly hazardous situation.
Non-observance may result in damage to property.



Note - provides information about particular characteristics and how to proceed.

1.3 LANGUAGES

The operating manual is available in the following languages:

Language	Order No.	Language	Order No.
German	2339287	English	2339321
French	2339322	Italian	2339323
Spanish	2339330	Japanese	2344161

Spare parts for the TwinControl systems and TwinControl accessories are to be found in two separate spare parts catalogs. The catalogs are available in the following languages:

Spare parts catalog for TwinControl Finishing
(Small frame / small trolley / small wall):

Language	Order No.	Language	Order No.
German	2339290	English	2339331

Spare parts catalog for TwinControl Protective Coating (PC)
(Large frame / large trolley):

Language	Order No.	Language	Order No.
German	2339293	English	2339332

Compact disk (CD) TwinControl
→ see Chapter 1.4

1.3.1 OPERATING MANUALS FOR THE INDIVIDUAL COMPONENTS

Operating manual **EvoMotion 5-60**

Language	Order No.	Language	Order No.
German	2333562	English	2333563
French	2333564	Italian	2333565
Spanish	2333566		

Operating manual **Wildcat 10-70, 18-40**
Puma 28-40, 15-70, 21-110, 15-150
Leopard 35-70, 35-150, 48-110

Language	Order No.	Language	Order No.
German	2333537	English	2333538
French	2333539	Italian	2333540
Spanish	2333541		

Operating manual **Puma 8-300, 3-600**
Leopard 18-300, 8-600
Jaguar 38-300

Language	Order No.	Language	Order No.
German	2333547	English	2333548
French	2333549	Italian	2333550
Spanish	2333551		

Operating manual **Jaguar 75-150, 55-200**
Tiger 72-300

Language	Order No.	Language	Order No.
German	2340281	English	2340282
French	2340285	Italian	2340284
Spanish	2340286		

Operating manual **EvoMotion 5-125**
(Accessory, use as feed pump)

Language	Order No.	Language	Order No.
German	2316595	English	2316596
French	2316597	Italian	2316599
Spanish	2316600		

Operating manual **Paint valves and dosing valves PV, DV, GA (PTFE, DN 2.6)**
For valves PV 400, DV 400, GA 400

Language	Order No.	Language	Order No.
German	2343270	English	2343275
French	2343276	Italian	2343277
Spanish	2343278		

Operating manual **Paint valves and dosing valves PV, DV, GA**
For valves PV 100 (Low-pressure systems)

Language	Order No.	Language	Order No.
German	2336797	English	2336798
French	2336799	Italian	2336800
Spanish	2336801		

Operating manual **Paint valves and dosing valves PV 530, DV 530**
For valves PV 530, DV 530

Language	Order No.	Language	Order No.
German	2372892	English	2372893
French	2372895	Italian	2372897
Spanish	2372900		

Operating manual **GA 400AL automatic airless spray gun**
For valve GA 400AL (soft circulation)

Language	Order No.	Language	Order No.
German	350939	English	350941
French	350946	Italian	350948
Spanish	350949		

Operating manual **Continuous-flow heater**

Language	Order No.	Language	Order No.
German	65860	English	65860
French	65860	Italian	65860

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

1.4 COMPACT DISK (CD) TWINCONTROL

All operating documents specified previously are also available as PDF files on a compact disk (CD). The CD is included in the system's scope of delivery.

The **Order No.** is: 2339342

1.5 ABBREVIATIONS IN THE TEXT

Stk	Number of pieces
Pos	Position
K	Marking in the spare parts lists
Order No.	Order number
DH	Double stroke
SSt	Stainless steel
FEP	Fluorine elastomer
PA	Polyamide
DN	Nominal diameter
GFB	Gun flush box
2K	Two components
PC	Protective Coating: Heavy duty corrosion protection
TC	TwinControl
AIS	Adaptive Injection System
ESTA	**E**lectro**sta**tically raised device

In text and in the control unit:	
A	A component
B	B component
S	Flushing agent
AS	Flush on A side
BS	Flushing on B side
MV	Mixing ratio
JS	Job total
P	Pot life
F_P	Flow / pot life

1.6 TERMINOLOGY FOR THE PURPOSE OF THIS MANUAL

Cleaning	Manual cleaning of devices and device parts with cleaning agent
Flushing	Internal flushing of paint-wetted parts with flushing agent
Staff 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 the context of TRBS 1203 (2010 / Revision 2012)	A person who, based on his/her technical training, experience and recent vocational experience, has sufficient technical knowledge 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. → Additional requirements for skilled persons are given in the TRBS 1203 (2010/Revision 2012): Expert knowledge in the areas of protection against excessive pressure, electrical hazards, and explosion protection (where applicable).

2 CORRECT USE

2.1 DEVICE TYPES

A)	**TwinControl, turbine**
B)	**TwinControl, cable with mains power supply**

2.2 TYPE OF USE

A) Systems with turbine
The device is suitable for processing 2K liquid products such as paints and lacquers in accordance with their classification into explosion classes IIA or IIB.

B) Systems with mains power supply
The device is suitable for processing 2K liquid products such as paints and lacquers.

2.3 FIELD OF APPLICATION

2.3.1 SYSTEMS WITH TURBINE

The system with turbine complies with Explosion Protection Directive 2014/34/EC (Atex) and can be used as a Category 2 device in Ex Zone 1.
It is designed with ignition protection type "intrinsic safety" and has the marking:

CE 0102 Ex II 2 G Ex ia IIB T4

The remote control (accessory) may be used along with a system with a turbine in potentially explosive areas (zone 1, zone 2). The same applies to the 2A switchbox (accessory).

2.3.2 SYSTEMS WITH MAINS POWER SUPPLY

The system with mains power supply (cable) must **not** be operated in potentially explosive areas (zone 0, 1, 2).
The remote control (accessory) may **not** be used along with a system with a mains power supply (cable) in potentially explosive areas. The same applies to the 2A switchbox (accessory).

2.4 SAFETY PARAMETERS

WAGNER accepts no liability for any damage arising from incorrect use.

- → Use the device only to work with the products recommended by WAGNER.
- → Only operate the device as a whole.
- → Do not deactivate safety fixtures.
- → Use only WAGNER original spare parts and accessories.

The 2K system may only be operated under the following conditions:

- → The operating personnel must be trained on the basis of this operating manual.
- → The safety regulations listed in this operating manual must be observed.
- → The operating, maintenance and repair information in this operating manual must be observed.
- → The statutory requirements and accident prevention regulation standards in the country of use must be observed.

2.5 PROCESSIBLE WORKING MATERIALS

Low-viscosity to high-viscosity 2K paints (e.g., epoxy, PU, DD) with a pot life of more than 5 minutes.

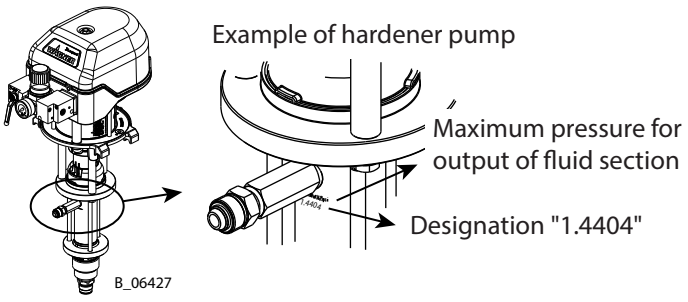
- 2K water-based priming
- 2K solvent-based priming
- 2K PUR priming
- 2K PUR lacquers
- 2K epoxy priming
- 2K epoxy lacquers
- 2K high-solid priming
- 2K high-solid lacquers
- 2K Materials with acidic hardeners (only with TwinControl systems for acidic hardeners)

→Solvent and water-based 2K products should not be processed using the same system.

TwinControl for acidic hardeners

Check products for compatibility: see Chapter 5.5.1

Parts made of stainless steel 1.4404 are labeled with "1.4404" (see example).



WARNING: Acidic hardeners can burn and injure skin, tissue and organs.

→ Observe the lacquer manufacturer's safety data sheets and take prescribed safety measures.

NOTICE

Abrasive working materials and pigments!
Greater wear of parts carrying the product.

- → Do not use any grainy and abrasive working materials with large, sharp-edged pigments.
- → Use application-oriented pumps (flow rate/cycle, product, valves, etc.).
- → Check if the fluids and solvents used are compatible with the pump construction materials.
- → For explanations of the models and construction materials, consult the technical data in Chapters 5.5.4 / 5.5.5 as well as the operating manuals for the pumps and valves or contact a WAGNER service technician.

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

2.6 REASONABLY FORESEEABLE MISUSE

The forms of misuse listed below may result in physical injury or property damage:

- → coating work pieces which are not grounded;
- → unauthorized conversions or modifications to the system;
- → processing dry or similar coating products, e.g., powder;
- → using defective components, spare parts or accessories other than those described in the "Accessories" chapter of this operating manual;
- → continuing work with a defective or kinked product hose;
- → working with incorrectly set values;
- → processing food.

2.7 RESIDUAL RISKS

Residual risks are risks which cannot be ruled out even in the event of correct use.
If necessary, warning and prohibition signs at the relevant points of risk indicate residual risks.

Residual risk	Source	Consequences	Specific measures	Lifecycle phase
Skin contact with lacquers and cleaning agents	Handling of lacquers and cleaning agents	Skin irritation, Allergies	Wear protective clothing Observe safety data sheets	Operation, Maintenance, Disassembly
Lacquer in air outside the defined working area	Lacquering outside the defined working area	Inhalation of substances hazardous to health	Observe work and operation instructions	Operation, Maintenance

3 IDENTIFICATION

3.1 EXPLOSION-PROOF CE MARKING FOR DEVICES WITH TURBINES

TwinControl – Turbine

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

Identification	Explanations
Wagner International AG	Company name
CH- 9450 Altstätten	Address
TwinControl	Name of device
CE 0102 Ex	II 2 G Ex ia IIB T4 ZELM 08 ATEX 0385 X +5 °C < Ta < +40 °C
CE	CE mark (European Communities)
0102	Number of the notified body that is used by WAGNER in the production monitoring phase (PTB Germany in this case)
Ex	Explosion-proof equipment
II	Device class II (not mining)
2	Category 2 device (suitable for zone 1)
G	Ex-atmosphere gas
Ex	Electrical device corresponds to ignition protection type
ia	Ignition protection type "Intrinsic safety" EN 60079-11, safety level "ia"
IIB	Device category (gas) IIB (ethylene, city gas)
T4	Temperature class T4: maximum surface temperature 135 °C; 275 °F
ZELM 08	Test center and year of issue
ATEX	French abbreviation for "ATmosphères EXplosibles"
0385	Certificate number
X	Special instructions exist for safe operation (see Chapter 3.2.).
Ta	Permissible ambient temperature range during operation: +5 °C < Ta < +40 °C +41 °F < Ta < +104 °F

3.2 IDENTIFICATION X

Special notices regarding TwinControl control unit with turbine
→ See Chapter 5.5.2

Explosion protection identification and special notices regarding pumps
→ See operating manuals for pumps

3.3 CE MARK FOR DEVICES WITH MAINS POWER SUPPLY

TwinControl, cable with mains power supply

CE

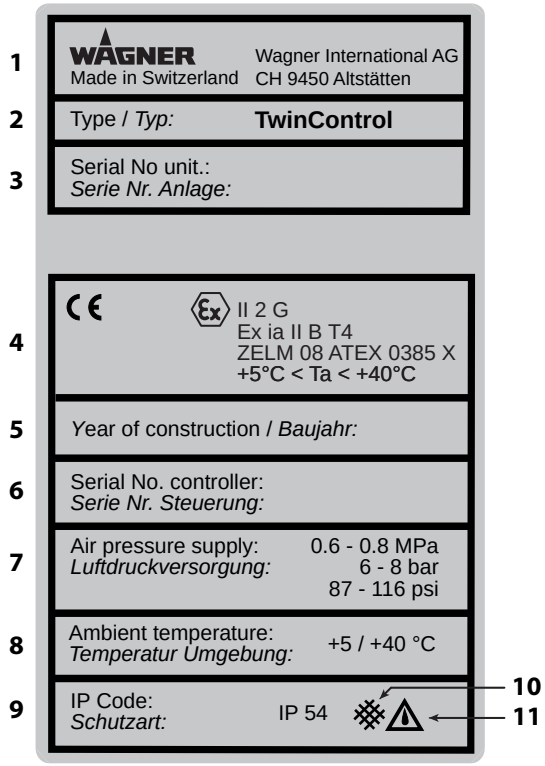
The system with mains power supply (cable) must **not** be operated in potentially explosive areas (zone 0, 1, 2).

The remote control (accessory) may **not** be used along with a system with a mains power supply (cable) in potentially explosive areas. The same applies to the 2A switchbox (accessory).

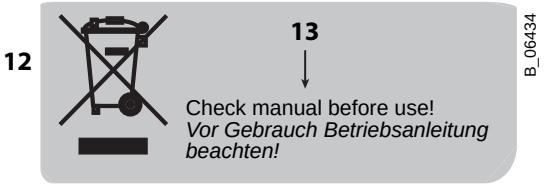
Identification	Explanations
Wagner International AG	Company name
CH- 9450 Altstätten	Address
CE	CE mark (European Communities)
TwinControl	Name of device

3.4 TYPE PLATES

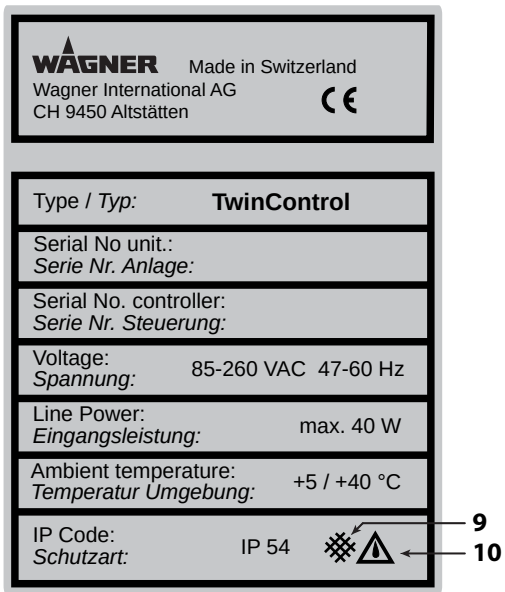
TwinControl – Turbine



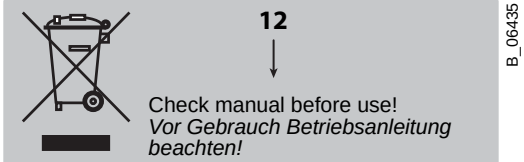
1 Manufacturer
2 Device type: TwinControl
3 Serial number of system
4 CE identification
5 Year of manufacture
6 Serial number of controller
7 Air pressure supply
8 Ambient temperature
9 Protection class
10 Dust protected
11 Splash water protected
12 Do not dispose of used electrical equipment with household refuse.
13 Read operating manual before use!



TwinControl – Cable with Mains Power Supply



1 Manufacturer and CE mark
2 Device type: TwinControl
3 Serial number of system (year of manufacture – consecutive number)
4 Serial number of controller
5 Voltage
6 Maximum input power
7 Ambient temperature
8 Protection class
9 Dust protected
10 Splash water protected
11 Do not dispose of used electrical equipment with household refuse.
12 Read operating manual before use!



4 GENERAL 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.

4.1.1 ELECTRICAL EQUIPMENT

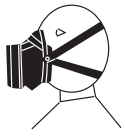
Electrical devices and equipment
→ To be provided in accordance with the local safety requirements with regard to the operating mode and ambient influences.
→ May only be maintained by skilled electricians or under their supervision. With open housings, there is a danger from line voltage.
→ Must be operated in accordance with the safety regulations and electrotechnical regulations.
→ Must be repaired immediately in the event of problems.
→ Must be decommissioned if they pose a hazard or are damaged.
→ Must be de-energized before work is commenced on active parts. Inform staff 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 PERSONNEL QUALIFICATIONS

→ Ensure that the device is only operated, maintained and repaired by trained persons.

4.1.3 SAFE WORK ENVIRONMENT

→ Ensure that the floor in the working area is static dissipative in accordance with EN 61340-4-1 (resistance must not exceed 100 megohms).
→ Paint mist extraction systems/ventilation systems must be fitted on site according to local regulations.
→ Ensure that product / 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 megohms.
→ Ensure that during spraying, persons wear static dissipative gloves. The grounding takes place via the spray gun handle or the trigger.
→ Protective clothing, including gloves, must comply with EN 1149-5. The measured insulation resistance must not exceed 100 megohms.

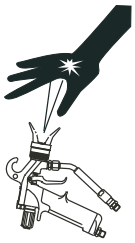


→ Ensure that there are no ignition sources such as naked flames, sparks, glowing wires, or hot surfaces in the vicinity. No smoking.
→ Ensure that the pipe joints, hoses, equipment parts and connections are permanently, technically leak-proof:
  - Periodic preventative maintenance and service (replacing hoses, checking tightness strength and 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.
→ In the event of defects, immediately bring the device or system to a stop and arrange to have repairs carried out immediately.

4.2 SAFETY INSTRUCTIONS FOR STAFF

→ Always follow the information in this manual, particularly the general safety instructions and the warning instructions.
→ Always follow local regulations concerning occupational safety and accident prevention.
→ In electrostatics application: Anyone fitted with a pacemaker must not enter the high-voltage area!

4.2.1 SAFE HANDLING OF WAGNER SPRAY DEVICES



The spray jet is under pressure and can cause dangerous injuries.
Avoid injection of paint or flushing agents:
→ Never point the spray gun at people.
→ Never reach into the spray jet.
→ Before all work on the device, in the event of work interruptions and functional faults:
  - Switch off the energy/compressed air supply.
  - Relieve the pressure from the spray gun and device.
  - Secure the spray gun against actuation.
  - In the event of functional faults, remedy the fault as described in the "Troubleshooting" chapter.
→ If necessary or at least every 12 months, the liquid ejection devices should be checked for safe working conditions by an expert (e.g., WAGNER Service Technician) in accordance with the guidelines for liquid ejection devices (ZH 1/406 and BGR 500 Part 2 Chapter 2.29 and 2.36).
  - For shut down devices, the examination can be suspended until the next start-up.
→ Follow the "Pressure Relief Procedure":
  - If pressure relief is required.
  - If the spraying work is interrupted or stopped.
  - Before the device is cleaned on the outside, checked or serviced.
  - Before the spray nozzle is installed or cleaned.

In the event of skin injuries caused by paint or flushing agents:
→ Note the paint or flushing agent that you have been using.
→ Consult a doctor immediately.

Avoid risk of injury from recoil forces:
→ Ensure that you have firm footing when operating the spray gun.
→ Only hold the spray gun briefly in a position.

4.2.2 GROUNDING THE DEVICE

Friction, flowing liquids and air or electrostatic coating processes create charges. Flames or sparks can form during discharge. Grounding prevents electrostatic charging.

- → Ensure that the device is grounded. → See Chapter "Grounding".
- → 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 handle.
- → The spray substance supply (spray substance tank, pump, etc.) must be grounded.

4.2.3 PRODUCT HOSES

- → Ensure that the hose material is chemically resistant to the sprayed products and the used flushing agents.
- → Ensure that the product hose is 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 or
  - 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.
- → Make sure that the hoses are never used to pull or move the equipment.
- → The electrical resistance of the product hose, measured at both valves, must be less than 1 megohm.
- → 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. Thus 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 is a multiplication of the inlet air pressure.

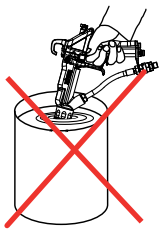
4.2.4 CLEANING AND FLUSHING

- → Relieve the pressure from the device.
- → De-energize the device electrically.
- → Preference should be given to non-flammable cleaning and flushing agents.
- → 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.

- → Take measures for workplace safety (see Chapter 4.1.3).
- → When commissioning or emptying the device, please note that an explosive mixture may temporarily exist inside the lines and components of equipment:
  - depending on the coating product used,
  - depending on the flushing agent (solvent) used,
  explosive mixture inside the lines and items of equipment.
- → Only electrically conductive tanks may be used 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:
- → 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.



4.2.5 HANDLING HAZARDOUS LIQUIDS, VARNISHES AND PAINTS

- → 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.
- → Take the specified protective measures. In particular, use personal protective equipment: safety goggles, protective clothing and gloves, as well as respiratory protection and skin protection cream if necessary.
- → 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.

4.2.6 TOUCHING HOT SURFACES

- → 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: identify the unit with a warning label that says "Warning - Hot Surface".

  - Instruction label Order No. 9998910
  - Protection label Order No. 9998911

  Note: Order the two stickers together.

4.3 USE IN AREAS SUBJECT TO EXPLOSION HAZARDS

Only the system with turbine may be used in potentially explosive areas. The following safety regulations must be observed and followed.

4.3.1 SAFETY REGULATIONS

Safe handling of WAGNER spray devices

Mechanical sparks can form if the device comes into contact with metal.
In an explosive atmosphere:
→ Do not knock or push the device against steel or rusty iron.
→ Do not drop the device.
→ Use only tools that are made of a permitted material.

Ignition temperature of the pumped product
→ Check that the ignition temperature of the pumped product is higher than the max. allowable surface temperature.

Medium supporting atomizing
→ To atomize the product, use only weakly oxidizing gases, e.g., air.

Surface spraying, electrostatics

→ 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.

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

4.3.2 OPERATION WITHOUT FLUID

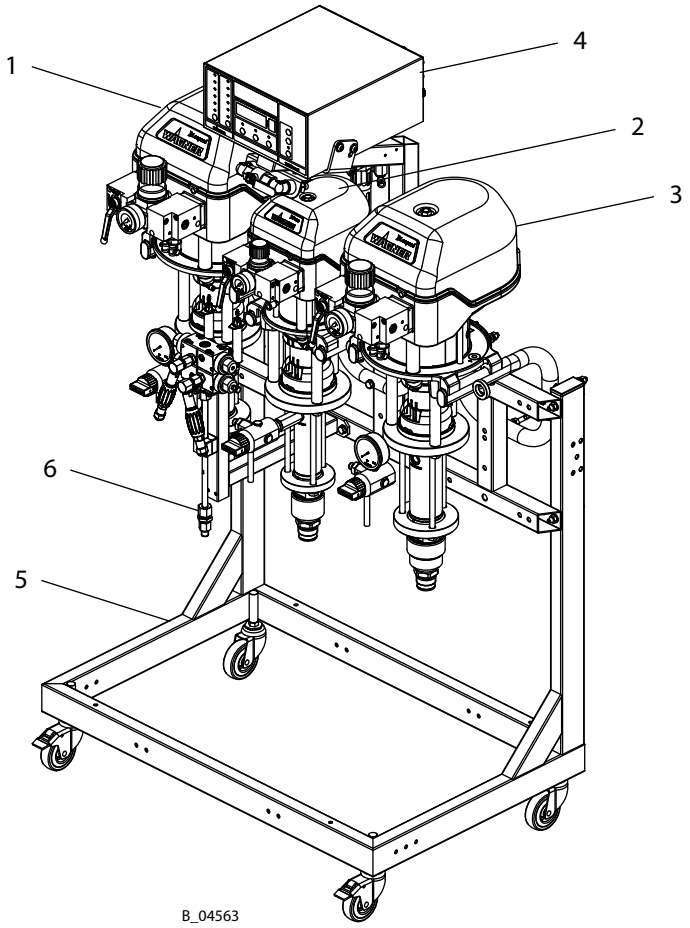
Avoid running the pump so that it sucks in air (without fluid inside). The air, combined with the vapor of flammable fluids, can generate internal areas with an explosion hazard.
Periodically check that the pumps are working smoothly, paying special attention to the presence of air in the pumped fluid, which may be caused by damaged packings.
→ Avoid operating the pump with damaged packing.
→ Ensure that the separating agent tank is filled with sufficient separating agent.

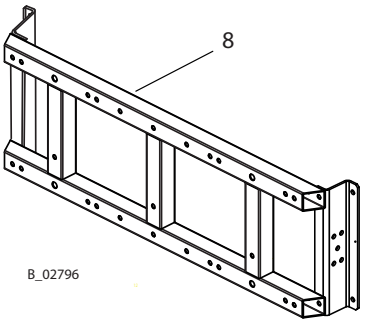
5 DESCRIPTION

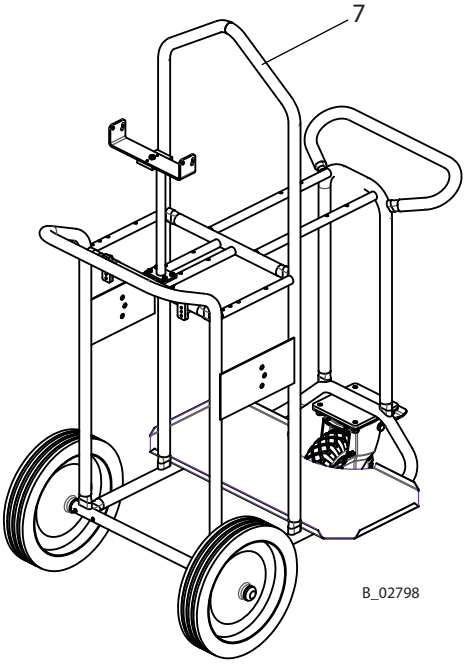
5.1 COMPONENTS

1	Pneumatic pump for A component
2	Flushing pump "S"
3	Pneumatic pump for B component
4	TwinControl control unit

5	Frame
6	Mixing unit
7	Trolley
8	Wall mount







5.1.1 TWINCONTROL FINISHING AND PROTECTIVE COATING

Depending on size, various suspensions are available for TwinControl systems:

	TwinControl Finishing	TwinControl Protective Coating (PC)
Suspension	Small frame Small trolley Small wall	Large frame Large trolley
Pump A	5-60*, 10-70, 28-40, 15-70, 15-150, 21-110, 8-300, 3-600, 35-70, 35-150, 48-110, 18-300, 8-600	75-150, 55-200, 38-300, 72-300
Spraying procedure	Airless AirSpray AirCoat	Airless

* 5-60 not on trolley

5.2 MODE OF OPERATION

The TwinControl system consists of 5 function units: The pneumatically operated high-pressure pumps for A and B components and for flushing agents, the mixing unit and the control unit. The two product components are brought to high-pressure by the pumps and an adjustable, predefined mixing ratio is intermixed in the static mixer, from where it is conveyed to the spray gun.

The system can be operated with one or more spray guns, depending on size and output. Various functions are controlled by the control unit, such as: flushing, pot life monitoring or mixing ratio.

Basic principle
The lacquer flows continuously and the hardener is metered (injected) into the lacquer in portions in intermittent cycles with a slightly higher pressure.

Operation
The required mixing ratio is entered on the electronic controller, and the system can then be started by pressing the button on the electronic controller. This opens product valve A. The hardener valve B is then opened in pulses, and hardener is metered in according to requirements (mixing ratio).

5.3 PROTECTIVE AND MONITORING EQUIPMENT

The following functions are provided for system safety:

- External release: e.g., interlock with spray booth's exhaust air

5.4 SCOPE OF DELIVERY

TwinControl systems consist of the following materials:
- Pneumatic pump with stroke measurement for the A component
- Pneumatic pump with stroke measurement for the B component
- Pneumatic pump for flushing agent (versions without also possible)
- Control unit (turbine or cable connection)
- Frame or trolley or wall mount (wall mount not with PC)
- Static mixing unit (only with internal mixer)
- Diverse product valves

The system's scope of delivery also includes:

	Order No.
Separating agent 250 ml; 250 cc	9992504
CE Declaration of Conformity	See Chapter 14
Operating manual, German	2339287
Operating manual in the local language	See Chapter 1.3
Compact disk for TwinControl (CD): The CD features the spare parts catalog for the TwinControl units and the operating manuals along with a list of spare parts for the individual device components.	2339342
Instruction sheet, transportation	2305117
Supplement for TwinControl with password protection	2304064

The delivery note shows the exact scope of delivery.
Accessories: see Chapter 12.

5.5 TECHNICAL DATA

5.5.1 MATERIALS OF PAINT-WETTED PARTS

TwinControl (without pumps)	Stainless steel, FEP, HM, PA, PE, POM, PTFE
Pumps	See operating manuals for pumps (Order No. see Chapter 1.3.1)
TwinControl systems for acidic hardeners:	
- from B pump (input) to mixing head valve (output)	1.4404, 1.4408, 1.4571, FEP, HM, PE, PTFE
- Mixing tube, additional	1.4301

FEP = Fluorine elastomer
HM = Carbide
PA = Polyamide
PE = Polyethylene
POM = Polyoxymethylene
PTFE = Polytetrafluorethylene

5.5.2 CONTROL UNITS WITH TURBINES

TwinControl control units with turbine	**Unit**	
Minimum/maximum input air pressure	MPa; bar; psi	0.6–0.8; 6–8; 87–116
Nominal air consumption	NL/min	125
Permissible ambient temperature range	°C °F	+5 ... +40 +41 ... +104
Protection class		IP 54
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/m³ 5: Humidity: pressure dew point ≤ +7 °C 4: Oil content ≤ 5 mg/m³
Explosion Protection Identification (see Chapter 3.1)		CE 0102 Ex II 2 G Ex ia IIB T4

Rated safety data

Potentiometer connection A or B in Ex ia IIB type ignition protection:

Connection of maximum values		Potentiometer A and B
Maximum high voltage	U_0 [V]	12.6
Maximum current	I_0 [mA]	73.6
Maximum power	P_0 [mW]	232
Maximum external capacity	C_0 [uF]	7.3
Maximum external inductivity	L_0 [mH]	26

The abovementioned values for the maximum permissible external capacities and inductances are only valid as long as they do not occur simultaneously. If the external reactances are present simultaneously, the values are to be taken from the following table.

Maximum permissible external inductance	L_0 [mH]	0.1	0.2	0.5	1	2	5	10	20
Maximum permissible external capacity	C_0 [uF]	7.3	6	4.6	3.7	3.1	2.3	1.9	1.4

Remote control connection in Ex ia IIB type ignition protection:

Connection of maximum values		Connection RC
Maximum high voltage	U_0 [V]	12.6
Maximum current	I_0 [mA]	154
Maximum power	P_0 [mW]	484
Maximum external capacity	C_0 [uF]	7.3
Maximum external inductivity	L_0 [mH]	6

The abovementioned values for the maximum permissible external capacities and inductances are only valid as long as they do not occur simultaneously. If the external reactances are present simultaneously, the values are to be taken from the following table.

Maximum permissible external inductance	L_0 [mH]	0.1	0.2	0.5	1.0	2.0	5.0
Maximum permissible external capacity	C_0 [uF]	7.3	5.9	4.4	3.5	2.7	1.8

Service connection
Only for connection to relevant programming devices and only outside the potentially explosive area, or if an atmosphere not capable of explosion is present.

Special notices (identification X)

1. The notices in the operating manual must be observed, particularly regarding grounding and connecting the equipotential bonding, and integrating the equipment into an existing system for equipotential bonding.
2. Opening the housing in environments with explosive gas atmospheres is not permitted.
3. Plugging in the service connector in explosive environments is not permitted, and may only be carried out by authorized maintenance personnel.
4. Maintenance and service tasks inside the housing may only be performed by authorized personnel.
5. No changes in the pressure control valve (inside the housing of the TwinControl control unit) for the turbine or at the relief valves may be made.
6. A maintenance plan must be prepared for the TwinControl control unit, or this unit must be integrated into an existing maintenance plan.
7. In order to prevent soiling inside the housing of the TwinControl control unit, the integrity of the front film must be checked at regular intervals. In the event of damage, the equipment must be removed from the Ex zone immediately and put out of operation, and repaired by WAGNER.
8. When designing and installing the compressed air system, it must be ensured that no explosive atmosphere can arise within the system.
9. Only WAGNER potentiometers may be connected to the potentiometer connections.
10. The remote control may only be used in an environment at risk of explosion if used along with a system with a turbine. The remote control cable must be laid securely and safely protected from damage. The maximum permitted cable length is 75 m; 246 ft.
11. If the complete TwinControl system is operated as part of a water varnish coating system connected to high voltage, the green-yellow ground cables must be removed and replaced with black cables with the same cross-section. Grounding symbols must be made unrecognizable.
12. The device does not comply with Chap. 6.3.12 of DIN EN 60079-11: 2007-08.
13. The device is suitable for Overvoltage Category II and may only be operated if all connections are inserted or provided with protective caps. Degree of Pollution 3 for the environment is then permissible.
    Permissible storage temperature: -20 °C; -4 °F ... +60 °C; +140 °F.
    Relative humidity (no dew) < 95%.
14. The 2A switchbox may only be used in an environment at risk of explosion if used along with a system with a turbine.

5.5.3 CONTROL UNITS WITH MAINS POWER SUPPLY (CABLE)

TwinControl control units with cable connection	Unit	
Input voltage	VAC	85–260
Input power	W	maximum 40
Input frequency	Hz	47-440
Permissible ambient temperature range	°C °F	+5 < Ta < +40 +41 < Ta < +104
Protection class		IP 54
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/m³ 5: Humidity: pressure dew point ≤ +7 °C 4: Oil content ≤ 5 mg/m³	

5.5.4 ENTIRE SYSTEM

Working areas		Unit	Limit values
Inlet air pressure		MPa bar psi	0.6–0.8 6–8 87–116
Maximum permissible number of strokes by pumps in two-component operation		DH/min.	30
Maximum recommended strokes per minute of pumps in 2K operation		DH/min.	20
Maximum product pressure levels			see Chapter 5.5.5
Product pH value	without acidic hardeners	pH	3.5 ... 9
	System for acidic hardeners: Check products for compatibility (see Chapter 5.5.1)		
Product temperature		°C; °F	+5 ... +60; +41 ... +140
Ambient temperature		°C; °F	+5 ... +40; +41 ... +104

Minimum flow rate
The minimum flow rate depends on the pump size, mixing ratio, static mixer and setting for pressure and hardener valve stroke. Tests are required for volumes of less than 1 stroke a minute (of A or B).

⚠ WARNING

Exhaust air containing oil!
Risk of poisoning if inhaled.

→ Provide water-free and oil-free compressed air

Inputs / outputs and mixing ratio	Unit	for A pump						
		EvoMotion 5-60	Puma 28-40	Puma 15-70	Puma 15-150	Puma 21-110	Puma 8-300	Puma 3-600
TwinControl air inlet	inch	G 1/2"						
Mixer product outlet	inch	NPS 1/4					NPS 3/8	
A/B mixing ratio volume		0.1:1–20:1					0.1:1–10:1	
Dosing precision *	%	± 2						

Inputs / outputs and mixing ratio	Unit	for A pump								
		Leopard 35-70	Leopard 35-150	Leopard 48-110	Leopard 18-300	Leopard 8-600	Jaguar 75-150	Jaguar 55-200	Jaguar 38-300	Tiger 72-300
TwinControl air inlet	inch	G 1/2"					G 1"			
Mixer product outlet	inch	NPS 1/4		NPS 3/8						
A/B mixing ratio volume		0.1:1–20:1			0.1:1–10:1					
Dosing precision *	%	± 2								

* The target mixing ratio at a precision level of ± 2% is achieved after each completed cycle (injection of hardener into base paint).

Precision of ± 2% is achieved under the following conditions:

- Proper use of the system in compliance with the operating manuals.
- Correct calibration and function of volume measuring sensors in accordance with Chapter 6.7.4.
- Correct adjustment of the compression ratio between the base paint and hardener in accordance with chapter 8.6.
- Correct adjustment of the hardener metering valve stroke, or use of the AIS.
- Exact setting of the system to suit the product used, in accordance with the processing specifications stipulated by the product manufacturer.
- For a homogenous density of the base lacquer and hardener it might be necessary to make respective preparations in tanks, for example by applying an agitator.
- Correct use of the system in accordance with the specific operating conditions such as the permitted product and ambient temperature, permitted viscosity and flow rate.
- Regular maintenance must be carried out by a qualified person (e.g., WAGNER Service Technician) in accordance with Chapter 9.2.

5.5.5 PUMPS

EvoMotion / Wildcat / Puma	Unit	EvoMotion 5-60	Wildcat 10-70	Wildcat 18-40	Puma 28-40	Puma 15-70	Puma 15-150	Puma 21-110	Puma 8-300	Puma 3-600
Pump ratio		5:1	10:1	18:1	28:1	15:1	15:1	21:1	8:1	3:1
Volume flow per double stroke (DH)	cm^3; cc	60	70	40	40	70	150	110	300	600
Maximum product pressure on mixer **	MPa	4.0		14.4	22.4	12		16.8	6.4	2.4
	bar	40		144	224	120		168	64	24
	psi	580		2089	3249	1740		2436	928	348
Maximum product pressure at pump inlet	MPa	0.5		2.0						0.5
	bar	5		20						5
	psi	73		290						73
Product inlet (outside thread)		M 36x2								G1½"
Pump product outlet (outside thread)	mm		M 24x1.5							
Pump product outlet (inside thread)	inch	G 3/8"								
Pump air inlet diameter (inside thread)	inch		G 1/2"							
Pump air inlet diameter	mm; inch	8.0; 0.31								
Sound pressure level	See operating manuals for pumps and valves									

Leopard / Jaguar / Tiger	Unit	Leopard 35-70	Leopard 35-150	Leopard 48-110	Leopard 18-300	Leopard 8-600	Jaguar 75-150	Jaguar 55-200	Jaguar 38-300	Tiger 72-300
Pump ratio		35:1	35:1	48:1	18:1	8:1	75:1	55:1	38:1	72:1
Volume flow per double stroke (DH)	cm^3; cc	70	150	110	300	600	150	200	300	300
Maximum product pressure on mixer **	MPa	25.0		38.0	13.8	6.2	53	44	27	53
	bar	250		380	138	62	530	440	270	530
	psi	3626		5511	2000	900	7687	6382	3916	7687
Maximum product pressure at pump inlet	MPa	2.0								
	bar	20								
	psi	290								
Product inlet (outside thread)		M 36x2				G 1½"			M 36x2	
Product inlet connection (inside thread)							G 1½"			G 1½"
Pump product outlet (outside thread)	mm	M 24x1.5								
Pump air inlet diameter (inside thread)	inch	G 1/2"					G 1"			
Sound pressure level	See operating manuals for pumps and valves									

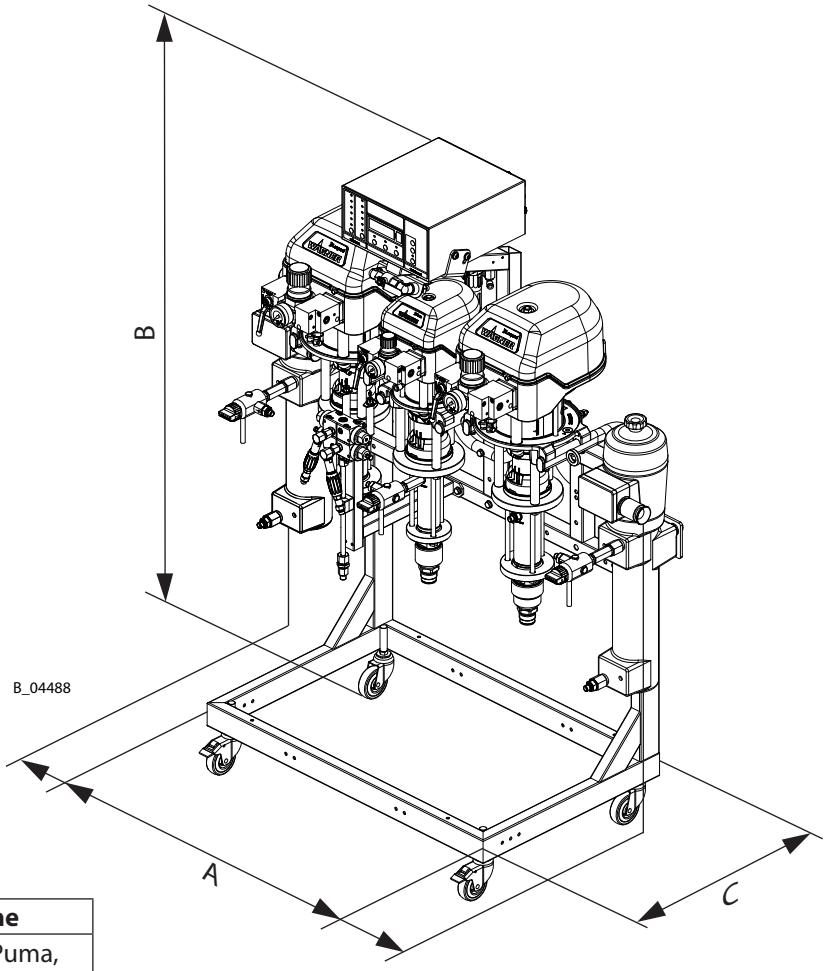
** All high-pressure components must be designed in line with the highest maximum pressure of the pumps used.

5.5.6 WEIGHTS

Sample configurations

Suspension	Pumps	Weight			
		Turbine		Cable	
		kg	lb	kg	lb
Frame	3x EvoMotion 5-60	87	192	86	190
Wall	3x EvoMotion 5-60	76	168	75	165
Frame	3x Puma 28-40	95	209	94	207
Frame	2x Leopard 35-70, 1x Puma 28-40	113	249	112	247
Frame	2x Leopard 48-110, 1x Puma 28-40	142	313	141	311
Trolley	2x Leopard 48-110, 1x Puma 28-40	159	351	158	349
Frame	2x Jaguar 75-150, 1x Leopard 35-70	198	437	197	434
Trolley	2x Jaguar 75-150, 1x Leopard 35-70	224	494	223	492
Frame	1x Tiger 72-300, 1x Jaguar 75-150, 1x Leopard 35-70	235	518	234	516
Frame	2x Tiger 72-300, 1x Leopard 35-70	264	582	263	580

5.5.7 DIMENSIONS



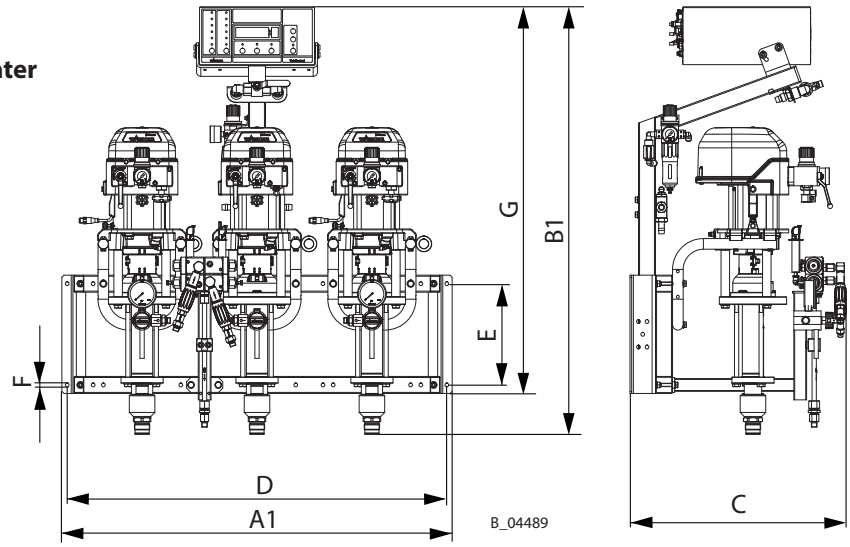
TwinControl on small frame		
Pumps	EvoMotion, Wildcat, Puma, Leopard	
	without heater	**with heater A + B**
	mm; inch	mm; inch
A	860; 33.9	1205; 47.5
B	1551; 61.1	
C	550; 21.7	

TwinControl on large frame		
Pump	Jaguar	
	without heater	**with heater A + B**
	mm; inch	mm; inch
A	1015; 40.0	1428; 56.2
B	1655; 65.2	
C	738; 29.1	

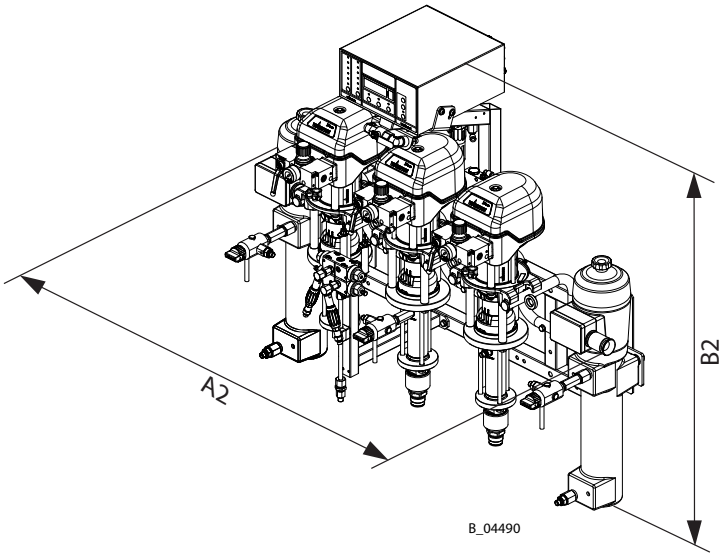
TwinControl on large frame			
Pump	Tiger		
	without heater	**with heater A + B**	**Double heater on A side**
	mm; inch	mm; inch	mm; inch
A	1015; 40.0	1428; 56.2	1616; 63.6
B	1715; 67.5		
C	747; 29.4		

TwinControl on wall												
Type	**5-60**	**28-40**	**15-70**	**15-150**	**21-110**	**8-300**	**3-600**	**35-70**	**35-150**	**48-110**	**18-300**	**8-600**
	mm; inch											
A1	917; 36.1											
B1	1022; 40.2	1005; 39.6	1020; 40.2	1243; 48.9		1187; 46.7	1202; 47.3	1015; 40.0	1239; 48.8		1183; 46.6	1197; 47.1
C	512; 20.2											
D	892; 35.1											
E	238; 9.4											
f	9; 0.35											
G	909; 35.8											
with heater												
A2	1210; 47.6											
B2	1114; 43.9			1243; 48.9		1187; 46.7	1202; 47.3	1114; 43.9	1239; 48.8		1183; 46.6	1197; 47.1

Without heater

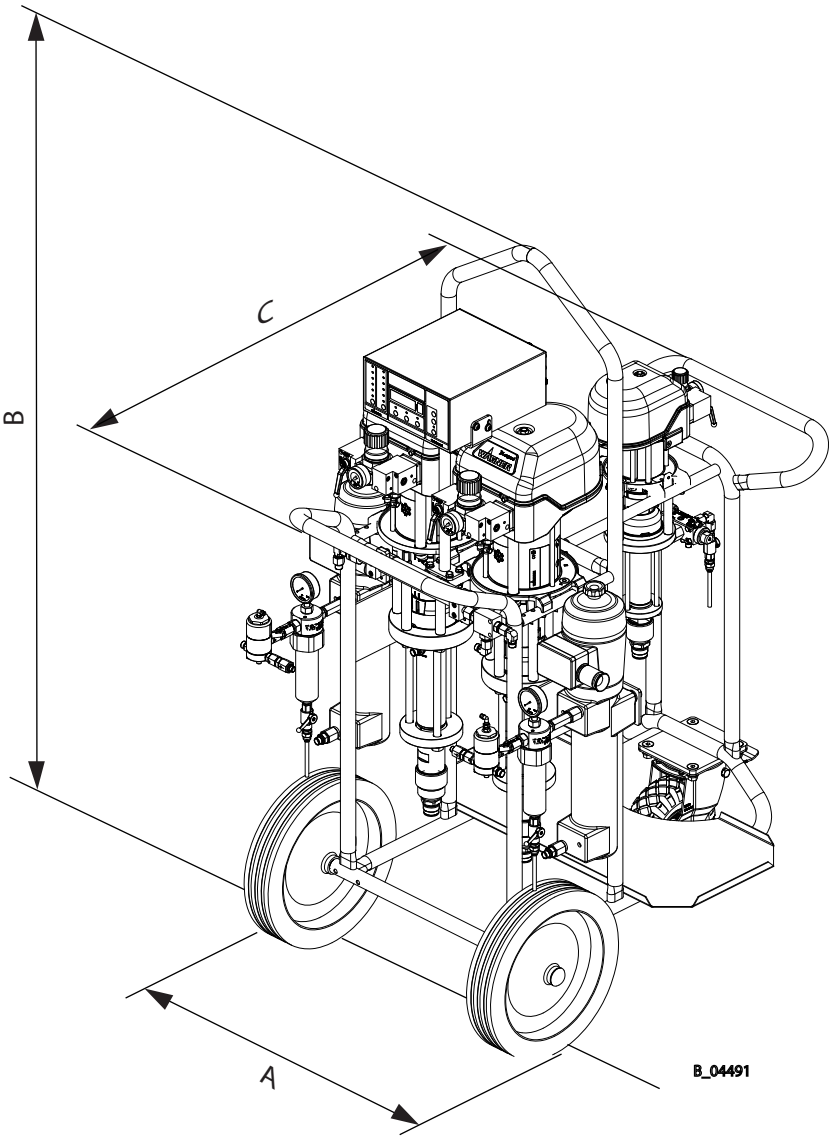


With heater



TwinControl on small trolley		
Pumps	Wildcat, Puma, Leopard	
	without heater	**with heater A + B**
	mm; inch	mm; inch
A	820; 32.3	899; 35.4
B	1787; 70.4	
C	1225; 48.2	1243; 48.9

TwinControl on large trolley		
Pumps	Jaguar, Tiger	
	without heater	**with heater A + B**
	mm; inch	mm; inch
A	1035; 40.8	
B	1845; 72.6	
C	1314; 51.7	1377; 54.2



5.6 PRINCIPLE DIAGRAM

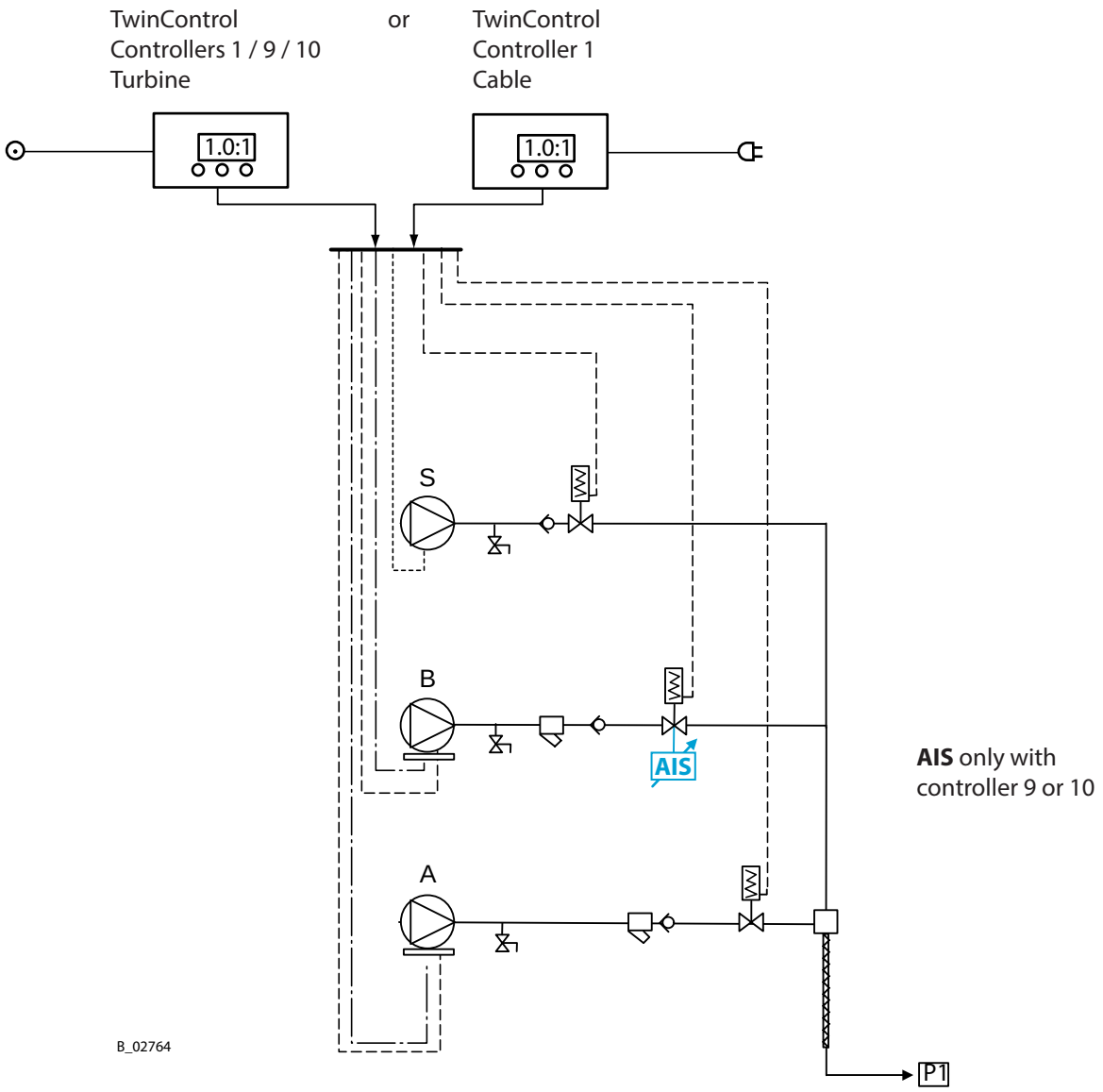
5.6.1 CONTROLLERS 1 / 9 / 10 FOR PUMPS 5-60 TO 35-150

Use with A pumps 5-60, 10-70, 28-40, 15-70, 15-150, 21-110, 35-70, 35-150 with single-acting product valves with spring reset.

Controllers 1 / 9 / 10 for turbine: The turbine generates the current from compressed air.

Controller 1 for cable: Controller with electrical mains connection.

For differences in controllers 1, 9 and 10: see Chapter 5.6.3



AIS only with controller 9 or 10

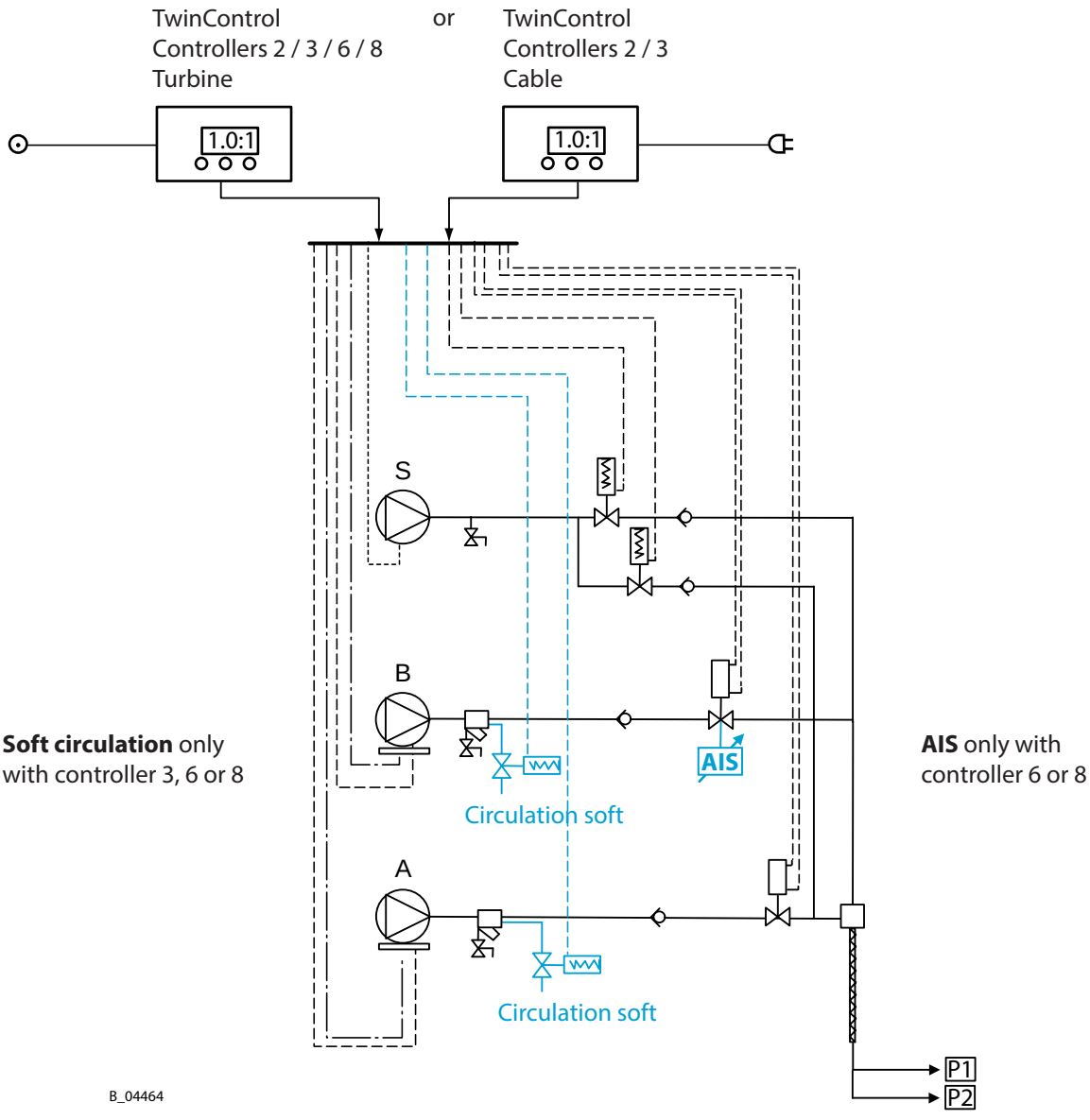
5.6.2 CONTROLLERS 2 / 3 / 6 / 8 FOR PUMPS 48-110 TO 8-600

Use with A pumps 48-110, 75-150, 55-200, 8-300, 38-300, 72-300, 3-600,18-300, 8-600 with double-acting product valves.

Controllers 2 / 3 / 6 / 8 for turbine: The turbine generates the current from compressed air.

Controllers 2 / 3 for cable: Controller with electrical mains connection.

For differences in controllers 2, 3, 6 and 8: see Chapter 5.6.3



Soft circulation only with controller 3, 6 or 8

AIS only with controller 6 or 8

5.6.3 OVERVIEW OF TWINCONTROL CONTROLLERS

	Controller						
	1	**2**	**3**	**6**	**8**	**9**	**10**
A pumps = 5-60, 10-70, 28-40, 15-70, 15-150, 21-110, 35-70, 35-150	×	×	×	×	×	×	×
A pumps = 48-110, 75-150, 55-200, 8-300, 38-300, 72-300, 3-600,18-300, 8-600		×	×	×	×		
Circulation A, B			×	×	×		
Circulation soft			×	×	×		
GFB (gun flush box)	(*)	(*)	×		×	(*)	(*)
AIS				×	×	×	×
Flushing B		×	×	×	×		
External mixer			×	×		×	
Automatic electrostatic system	(**)	(**)	(**)			(**)	(**)
Air flushing	×						×
External horn	×	×	×	×	×	×	×
External release	×	×	×	×	×	×	×

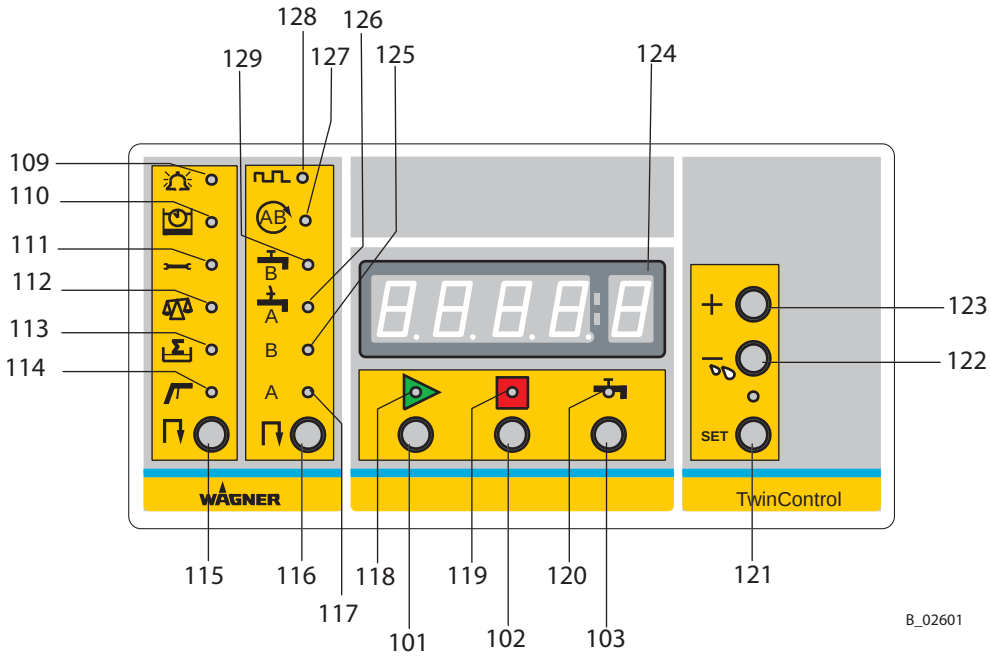
(*) GFB connection kit must be fitted, Order No. 2302563

(**) Automatic electrostatic system must be fitted, Order No. 2334530

5.7 OPERATING ELEMENTS AND CONNECTIONS OF CONTROL UNIT

Front

The front of the TwinControl control unit is the same on all 6 device variants.

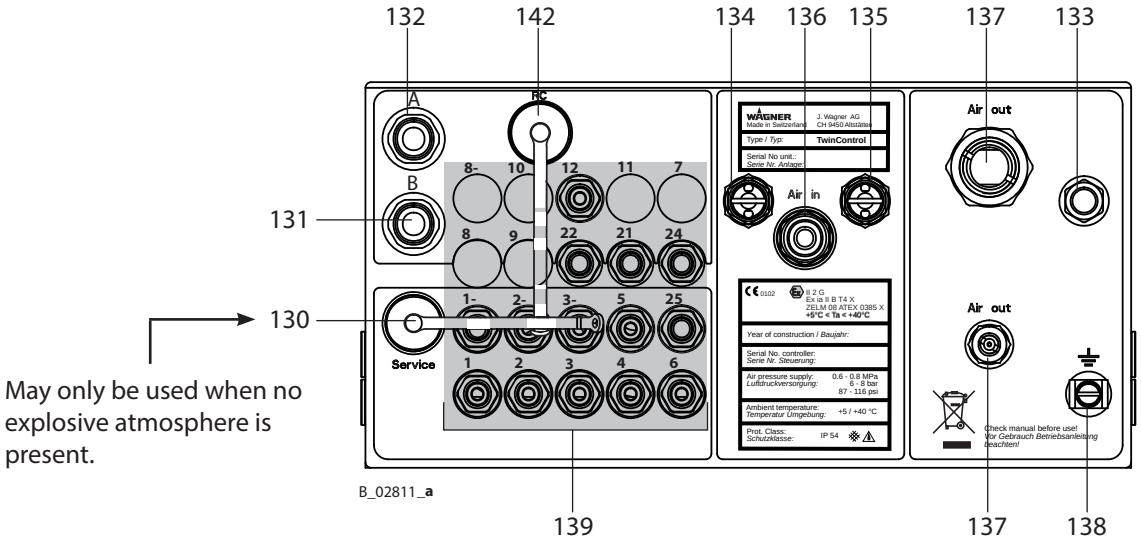


101	Push button [Start]
102	Push button [Stop]
103	Push button [Flush AB]
109	Alarm LED
110	Pot life illuminated display
111	Service functions illuminated display
112	Calibrate illuminated display
113	Totals illuminated display
114	Work illuminated display
115	Push button [Main menu selection]
116	Push button [Sub-menu selection]
117	A component illuminated display
118	Start illuminated display
119	Alarm LED
120	Flush AB illuminated display

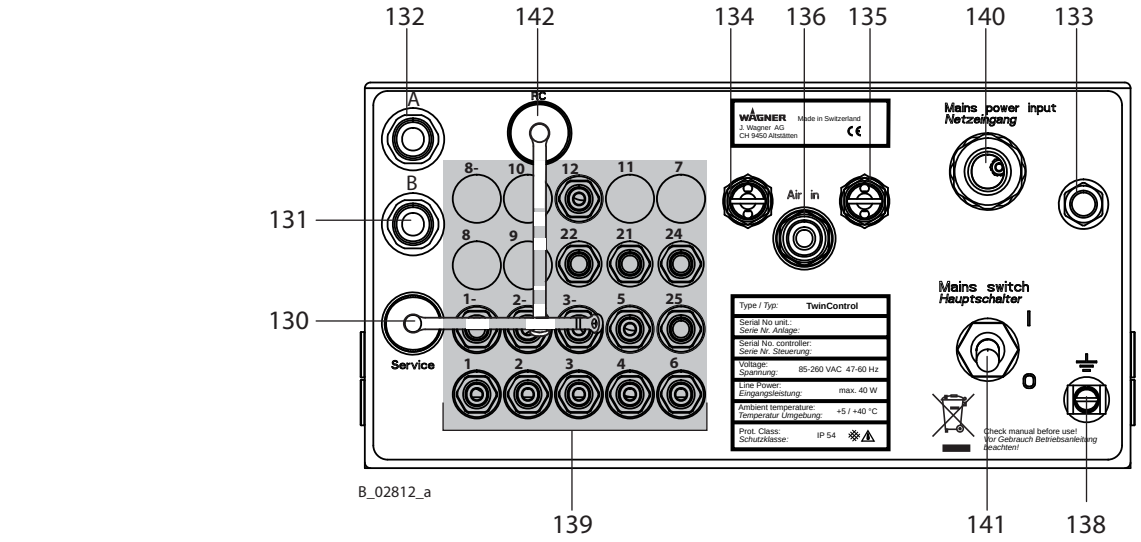
121	Push button [SET]
122	a) Push button [-] b) Push button [Check for leaks]
123	Push button [+]
124	Display in the display unit
125	B component illuminated display
126	Flushing agent A illuminated display
127	Circulation mode illuminated display (option)
128	B-valve cycle display
129	Flushing agent B illuminated display

Basic operating principles: see Chapter 7.3

Rear TwinControl control unit with turbine



Rear TwinControl control unit with cable connection

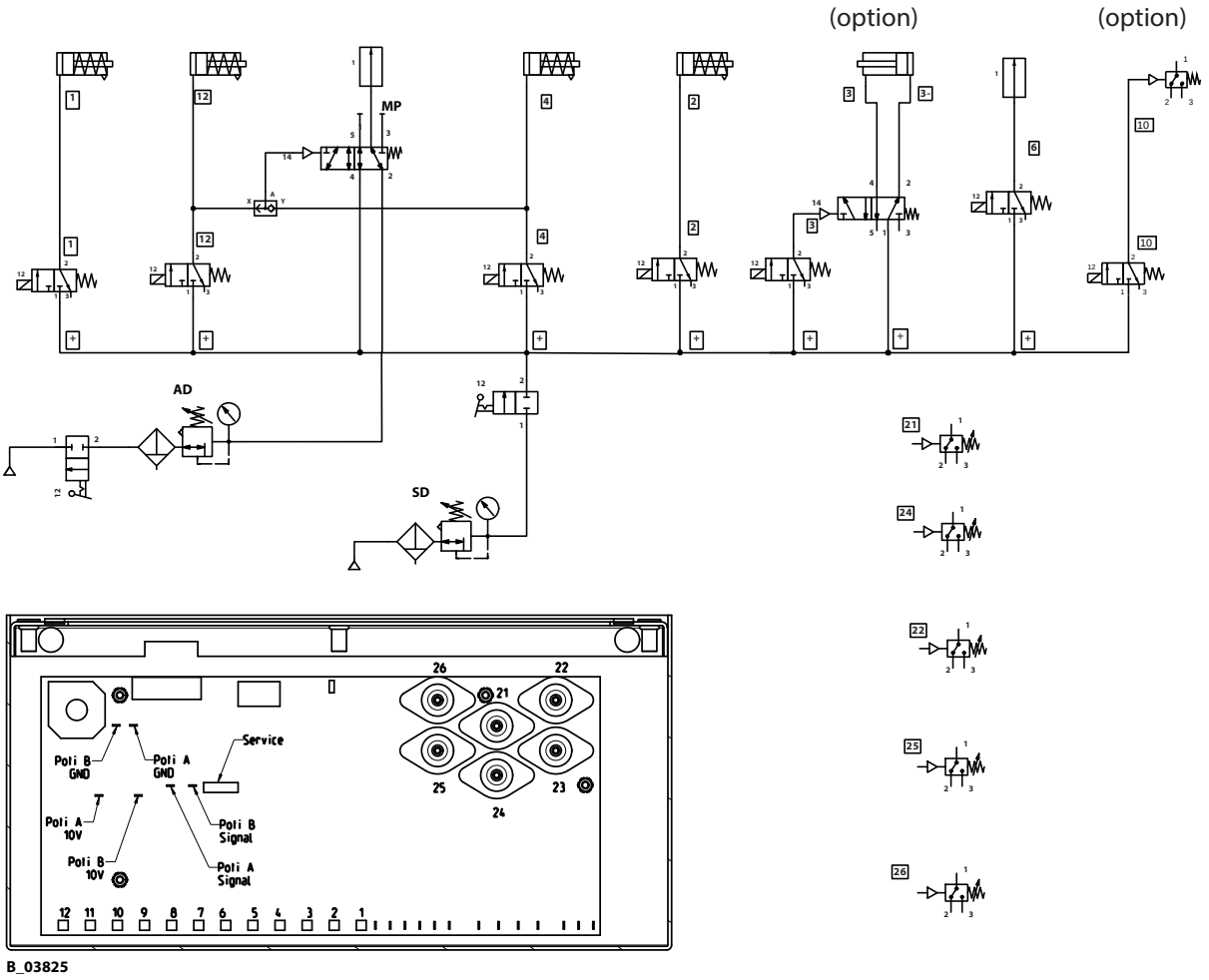


130	Connection socket service / TwinData
131	Connection for stroke measurement B / sensor B
132	Connection for stroke measurement A / sensor A
133	Silencer
134	Pressure relief valve 1 turbine
135	Pressure relief valve 2 turbine

136	Air inlet
137	Air outlet Exhaust air
138	Grounding connection
139	**Connections for control air** → For connection numbers, see pneumatic diagram (Chapter 5.8)
140	Mains cable
141	Main switch
142	Remote control connection

5.8 PNEUMATIC DIAGRAM

5.8.1 TWINCONTROL 1



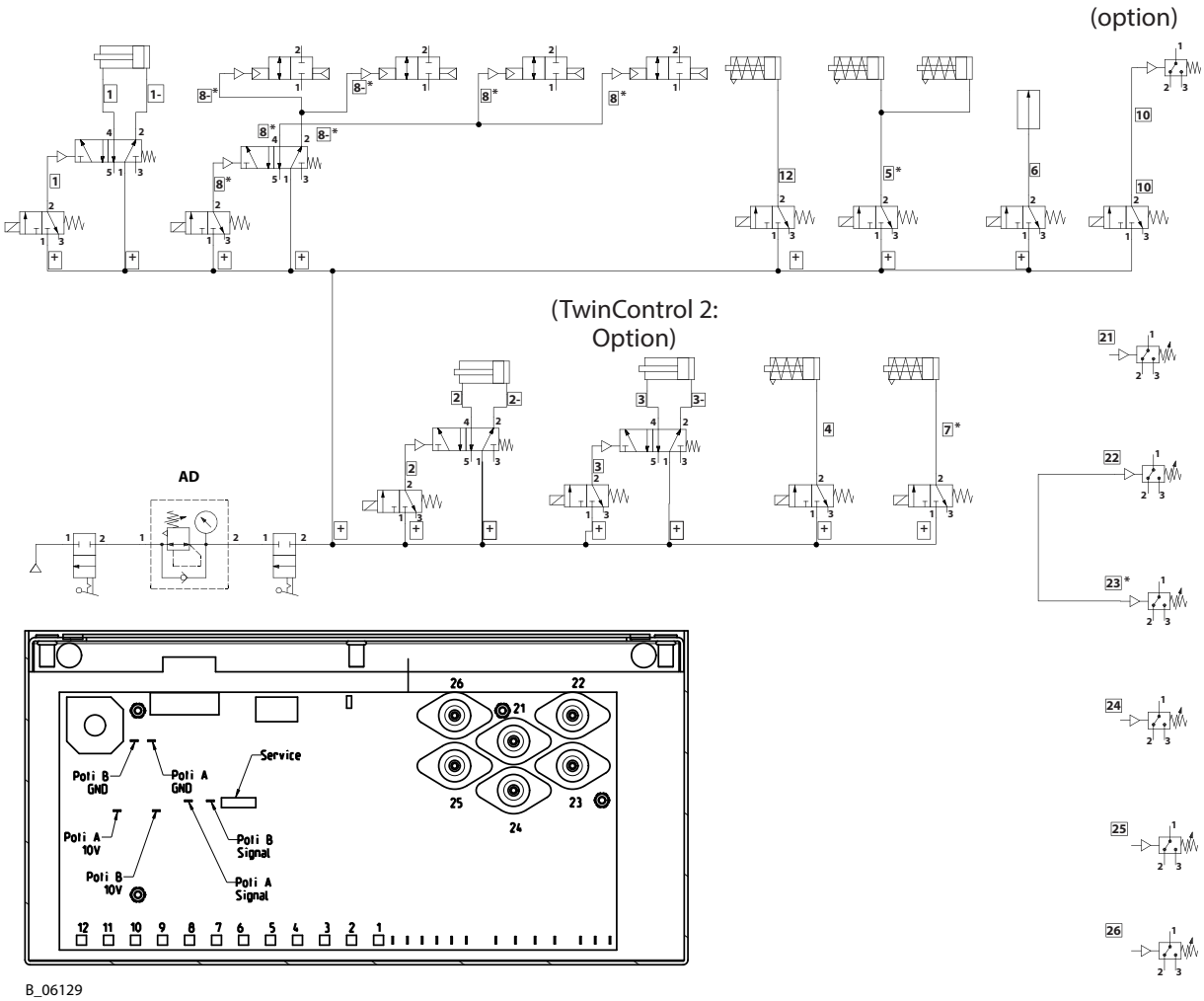
Connection numbers for control unit 1 (at rear)

K	Description
1	Product valve A
2	Hardener valve B
3	Gun flush box (option)
4	Flushing valve air
6	External horn
10	Automatic electrostatic system (option)
12	Flushing
21	Changeover signal pump A
22	Changeover signal flushing pump
24	Changeover signal pump B
25	External release

Further designations

K	Description
+	Air supply
26	System compressed air monitoring
AD	Air regulator for operating pressure
SD	Control air pressure 0.6-0.8 MPa; 6-8 bar; 87-116 psi
MP	Product pressure regulator, pneumatic

5.8.2 TWINCONTROL 2 / TWINCONTROL 3



Connection numbers for control units 2/3 (at rear)

K	Description
1	Product valve A
2	Hardener valve B
3 *	Gun flush box
4	Flushing BS
5 *	Circulation valve A, B
6	External horn
7 *	Hardener valve, external mixer
8 *	Air motor for spraying / air motor for soft circulation A+B
10	Automatic electrostatic system (option)

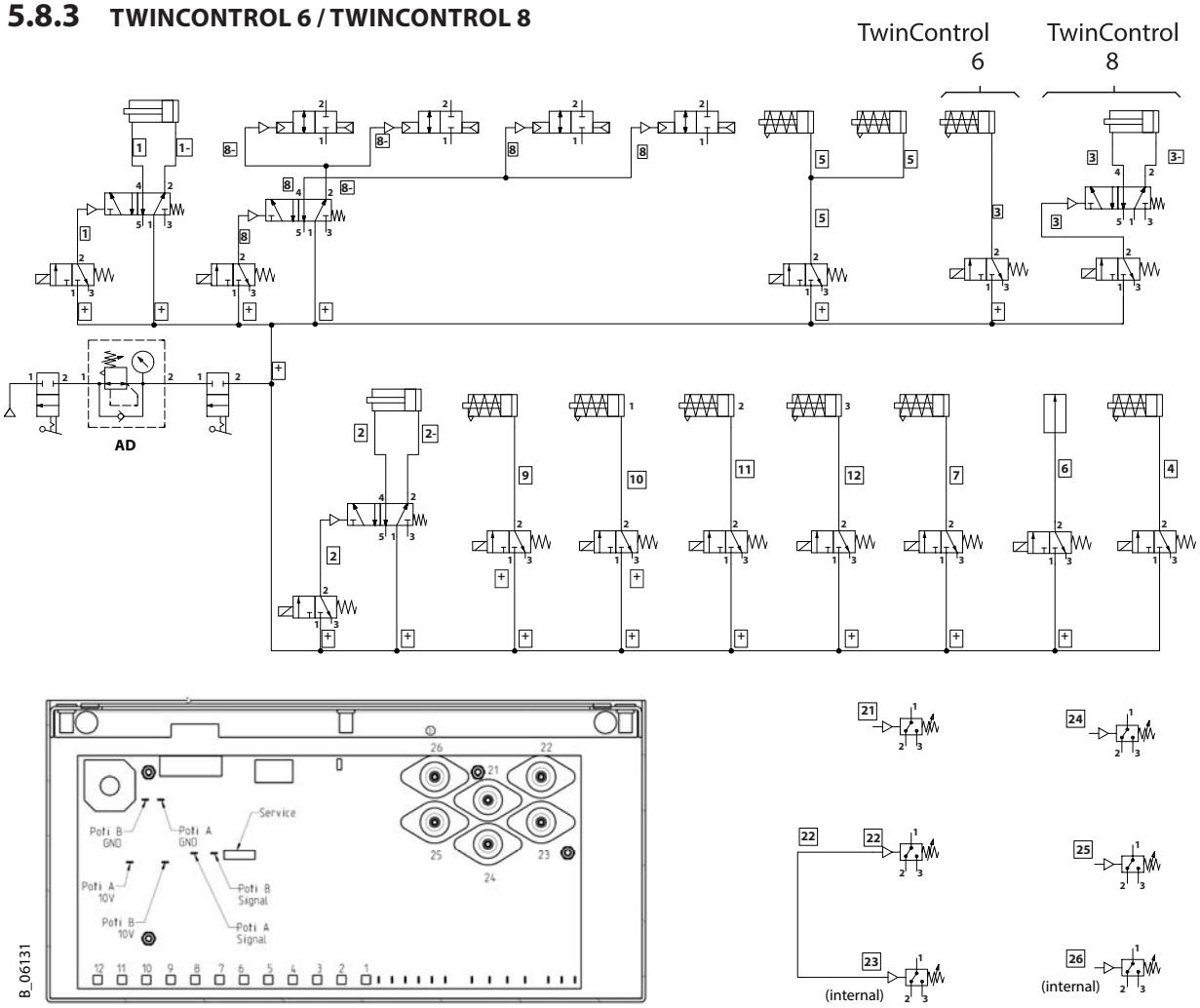
K	Description
12	Flushing AS
21	Changeover signal pump A
22	Changeover signal flushing pump A
23	Changeover signal flushing pump B
24	Changeover signal pump B
25	External release

Further designations

K	Description
+	Air supply
26	System compressed air monitoring
AD	Air regulator for operating pressure

* TwinControl 2: Option

5.8.3 TWINCONTROL 6 / TWINCONTROL 8



Connection numbers for control units 6/8 (at rear)

K	Description
1	Product valve A
2	Hardener valve B
3	TwinControl 6: Flushing AS TwinControl 8: Gun flush box
4	Flushing BS
5	Circulation valve A, B
6	External horn
7	TwinControl 6: Hardener valve, external mixer TwinControl 8: Flushing AS
8	Air motor for spraying / air motor for soft circulation A+B

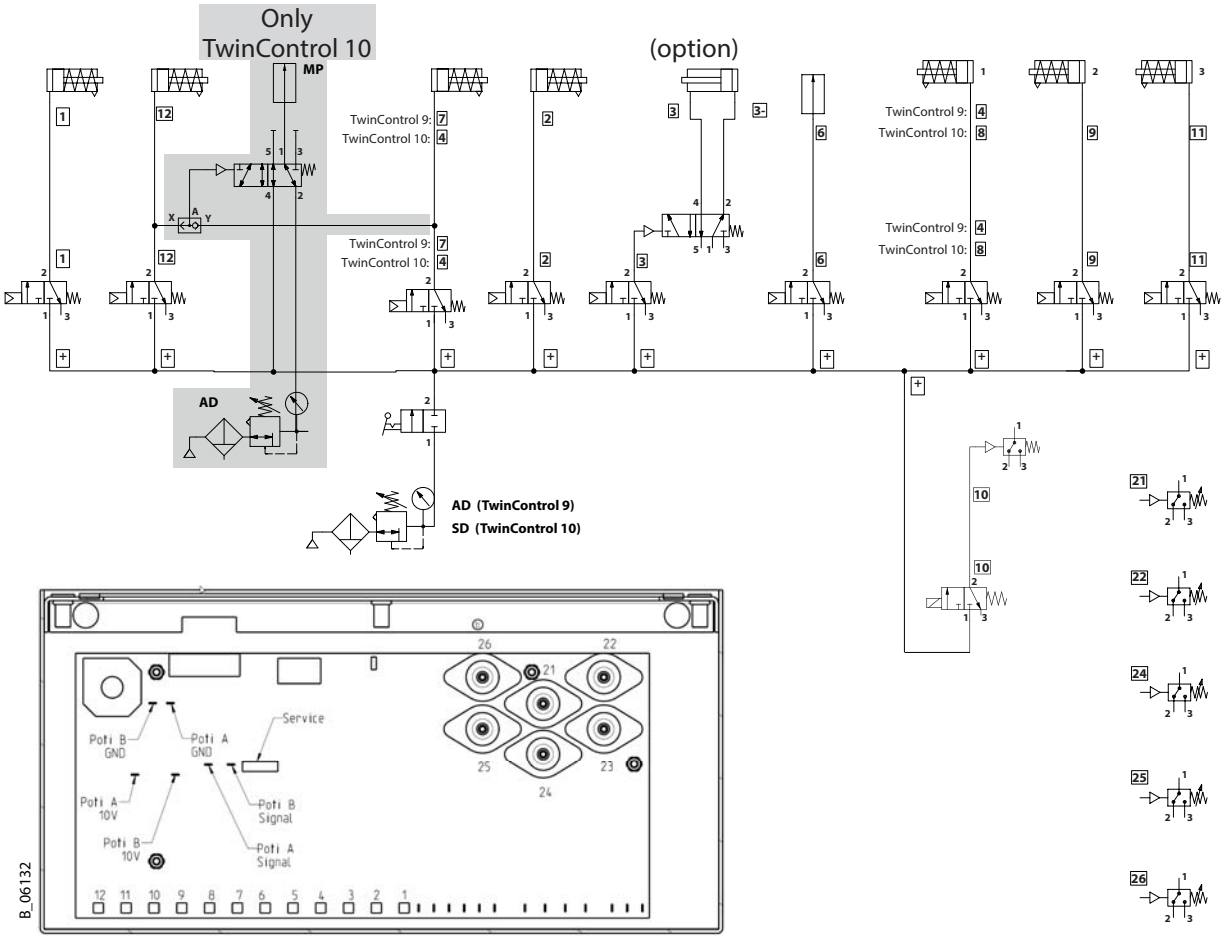
K	Description
9	AIS / control valve B (for AIS assembly on large valves)
10	AIS / stepping motor B Z1
11	AIS / stepping motor B Z2
12	AIS / stepping motor B Z3
21	Changeover signal pump A
22	Changeover signal flushing pump A
23	Changeover signal flushing pump B
24	Changeover signal pump B
25	External release

Further designations

K	Description
+	Air supply
26	System compressed air monitoring
AD	Air regulator for operating pressure

5.8.4 TWINCONTROL 9 / TWINCONTROL 10

From software version 4.2x



Connection numbers for control units 9/10 (at rear)

K	Description
1	Product valve A
2	Hardener valve B
3	Gun flush box (option)
4	TwinControl 9: Stepping motor B Z1 TwinControl 10: Flushing air
6	External horn
7	TwinControl 9: Hardener valve, external mixer TwinControl 10: --
8	TwinControl 9: -- TwinControl 10: Stepping motor B Z1
9	Stepping motor B Z2
10	Automatic electrostatic system (option)
11	Stepping motor B Z3

K	Description
12	Flushing AS
21	Changeover signal pump A
22	Changeover signal flushing pump
24	Changeover signal pump B
25	External release

Further designations

K	Description
+	Air supply
26	System compressed air monitoring
AD	Air regulator for operating pressure
SD	TwinControl 10: Control air pressure 0.6-0.8 MPa; 6-8 bar; 87-116 psi
MP	TwinControl 10: Product pressure regulator, pneumatic

5.9 LIST OF SERVICE FUNCTIONS

Software version V 4.0x / 4.1x / 4.2x			
Pos	**Unit**	**Description**	
Filling			
AB	cc	Mixed product in the hose	Adjustable
A	cc	Volume A product from product valve to mixing block	Adjustable
B	cc	Volume B product from product valve to mixing block	Adjustable
Flushing recipes			
F1	1 or 2	Definition (0=Not used;1=A product; 2=B product)	Adjustable
up to	0-9999.9	Quantity	Adjustable
F20	cc/sec	Measuring unit (0=cc; 1=sec)	Adjustable
F31	3-20	Starting stage for repetition	Adjustable
F32	3-20	Final stage for repetition	Adjustable
F33	0-200	Number of repetitions	Adjustable
System parameter			
P0	cc	Q Control	Adjustable
P1	cc	Actual value for Q Control	Display
P2	%	Mixing tolerance	Adjustable
P3	%	Actual value for mixing tolerance	Display
P4	ADC	Actual value for position of stroke sensor A	Display
P5	ADC	Actual value for position of stroke sensor B	Display
P6	min-1	Turbine frequency in revolutions per min (nominal value 38000 to 45000)	Display
P7		Pot life reset	
P100	0 or 1	Password (0 = no, 1 = yes) for level 1	Adjustable
P101		Current software version	Display
P102	DH/min.	Running dry protection, pump A	Adjustable
P103	DH/min.	Running dry protection, pump B	Adjustable
P104	DH/min.	Maxi. number of double strokes pump A where not masked	Adjustable
P105	DH/min.	Max. number of double strokes pump B where not masked	Adjustable
P106	min	Pot life post-alarm	Adjustable
P107	% of stroke	Tolerance limit A for reversal point	Adjustable
P108	ADC	Reverse point stroke sensor A down actual value	Adjustable
P109	ADC	Reverse point Stroke sensor A up actual value	Adjustable
P110	% of stroke	Tolerance limit B for reversal point	Adjustable
P111	ADC	Reverse point Stroke sensor B down actual value	Adjustable
P112	ADC	Reverse point Stroke sensor B up actual value	Adjustable
P113	0,1,2,3	Measuring unit (0 = liters,1 = US gallons, 2 = British gallons, 3 = conversion factor, can be set)	Adjustable
P114	0 or 1	Gun flush box (0 = no, 1 = yes)	Adjustable
P115	0 or 1	Manual leak inspection (0 = no, 1 = yes)	Adjustable
P116	mm/min	Leak warning limit A	Adjustable
P117	mm/min	Leak error limit A	Adjustable
P118	mm/min	Leak warning limit B	Adjustable
P119	mm/min	Leak error limit B	Adjustable

Software version V 4.0x / 4.1x / 4.2x			
Pos	**Unit**	**Description**	
P120	0-6	Front display in mix mode and/or if gun is closed: 0 = Mixing ratio (MR); 1 = Flow rate or pot life (F_P); 2 = Job sum (JS); 3 = MR and F_P in turn; 4 = MR and JS in turn; 5 = F_P and JS in turn; 6 = MR and F_P and JS in turn.	Adjustable
P121	0-6	Front display if [Stop] has been pressed: 0 = Mixing ratio (MR); 1 = Pot life (P) only; 2 = Job sum (JS); 3 = MR and P in turn; 4 = MR and JS in turn; 5 = P and JS in turn; 6 = MR and P and JS in turn.	Adjustable
P122	0 or 1	Feed function with pulses of A (0 = off, 1 = on)	Adjustable
P123	sec	0.0–10.0s cycle duration of feed function	Adjustable
P124	%	0-100% of the cycle duration A valve should be open	Adjustable
P125	%	For 0-100% of the filling quantity, filling function should be on	Adjustable
P126	0 or 1	Feed sequence (0 = AB, 1 = BA)	Adjustable
P127	0-9999	Password for level 1	Adjustable
P128	0-9999	Password for level 2	Adjustable
P129	0-9999	Password for level 3	Adjustable
P130	0-9999	Password for level 4	Adjustable
P131	min	Time delay for alarm No. 18 flush program is not running (1-10 min)	Adjustable
P132	1,2,3	1 = Save customer settings; 2 = Load customer settings; 3 = Load factory settings (only displayed in stop mode)	Adjustable
P133	0-999 DH/min.	Maximum double strokes of flush pump A per min	Adjustable
P134	0-999 DH/min.	Maximum double strokes of flush pump B per min	Adjustable
P135	0-99999	Number of A valve * 1000 cycles for service message	Adjustable
P136	0-99999	Number of B valve * 1000 cycles for service message	Adjustable
P137	0 or 1	0 = Batch mode off; 1 = Batch mode on	Adjustable
P138	0 or 1	Batch mode start via external signal (0 off, 1 = on)	Adjustable
P139	0 or 1	0 = Normal start, 1 = If start is pressed for more than 2 sec, separate filling of A and B will not be undertaken	Adjustable
P140	0 or 1	0 = emergency flushing off; 1 = emergency flushing on	Adjustable
P141	0 or 1	0 = No flushing after error message; 1 = Flushing after error message	Adjustable
P142	0 or 1	0 = Password for mixing ratio batch mode quantity ; 1 = No password for MR and batch mode quantity	Adjustable
P143	0 or 1	0 = flow monitoring off; 1 = flow monitoring on	Adjustable
P144	0-99999 cc/min.	Minimum flow	Adjustable
P145	0-99999 cc/min.	Maximum flow	Adjustable
P146	0.0-20.0s	Delay time until alarm when flow is outside limit	Adjustable
P147	0 or 1	Calibration of the components A and B with predefined quantity	Adjustable
P148	0-99999 cc/min.	Calibration quantity for component A	Adjustable
P149	0-99999 cc/min.	Calibration quantity for component B	Adjustable

Software version V 4.0x / 4.1x / 4.2x			
Pos	**Unit**	**Description**	
P150	0,1,2	0 = No calibration in mixing mode. 1 = Calibration in mixing mode (A valve is in mixing block and is not opened). 2 = Calibration in mixing mode (A valve is not in mixing block and is opened).	Adjustable
P151	0 or 1	Calibration in mixing mode with predefined quantity	Adjustable
P152	0 or 1	Start calibration in mixing mode with predefined quantity via external signal (0 = off, 1 = on)	Adjustable
P153	0-99999 cc/min.	Calibration quantity for calibration in mixing mode	Adjustable
P154	0,1,2,3	0 = No circulation, 1 = Soft circulation, 2 = Circulation at operating pressure	Adjustable
P155	0,1	Circulation A 0 = Product valve A remains closed during circulation. 1 = Product valve A opens during circulation.	Adjustable
P156	0,1	Circulation B 0 = Product valve B remains closed during circulation. 1 = Product valve B opens during circulation.	Adjustable

Totals

P200	Liters	Total A not zero adjustable	Display
P201	Liters	Total A not zero adjustable x * 100000 liters	Display
P202	Liters	Total B not zero adjustable	Display
P203	Liters	Total B not zero adjustable x * 100000 liters	Display
P204	Liters	Total Flushing A not zero adjustable	Display
P205	Liters	Total for flushing B not zero adjustable	Display
P206	Cycles	Number of A valve cycles zero adjustable	Display
P207	Cycles	Number of A valve cycles * 100000 zero adjustable	Display
P208	Cycles	Number of A valve cycles not zero adjustable	Display
P209	Cycles	Number of A valve cycles * 100000 not zero adjustable	Display
P210	Cycles	Number of B valve cycles zero adjustable	Display
P211	Cycles	Number of B valve cycles * 100000 zero adjustable	Display
P212	Cycles	Number of B valve cycles not zero adjustable	Display
P213	Cycles	Number of B valve cycles * 100000 not zero adjustable	Display

AIS

P300	Pulses	Number of dosing valve cycles after the AIS has performed a calculation (3–100)	Adjustable
P301	%	AIS warning limit (opening time of the dosing valve in percent)	Adjustable
P302	%	AIS lower limit (opening time of the dosing valve in percent)	Adjustable
P303	%	AIS upper limit (opening time of the dosing valve in percent)	Adjustable
P304	sec	Valve > open, AIS open	Adjustable
P305	sec	Repetition interval AIS open (for P304)	Adjustable
P306	Steps	AIS open at stop	Adjustable
P307	cc/min	AIS min flow	Adjustable
P308	%	Current opening time of the dosing valve in percent	Display
P309	Steps	Current AIS position. Start value = 1,000	Display

5.10 DRY RUNNING PROTECTION

In the event of hose breakage on the high-pressure side or idle running due to lack of product, the pump runs too quickly. The system automatically closes the product valves and issues a fault.

Prevention

→ Perform the maintenance work stated in Chapter 9.2 daily.
→ Ensure a sufficient product supply at all times.
→ In the case of unforeseen occurrences, immediately perform emergency stop in accordance with Chapter 8.4.

5.11 HEATER (OPTION)

The electric, continuous-flow heater with explosion protection is downstream of the pump. The coating product can only be heated to maximum 80 °C. The continuous-flow heater is fitted with a temperature limiter.

The temperature is set using the temperature regulator. The coating product temperature is read off the thermometer on the coating product output.

→ For description, see heater operating manual.

5.12 AIS DOSING SYSTEM (OPTION)

The hardener dosing valve's stroke is regulated automatically via the AIS (option). The AIS (Adaptive Injection System) dosing system optimizes injection amounts and cycles and adapts these continually to the changing flow rates. Thereby, the AIS ensures optimum dosing and constant coating quality.

5.13 AUTOMATIC ELECTROSTATIC SYSTEM FOR ELECTROSTATIC GUN GM5000 (OPTION)

The TC VM5000 automatic electrostatic system serves as an additional safety device for the safe use of the TwinControl 2-component system with a GM5000 electrostatic gun.

However, the user has a duty to proceed in compliance with the instructions in Chapter 8.9.

The automatic electrostatic system can be used to transfer the approval signal from a TwinControl system (as of version 4.03) to a VM5000 control unit. To do so, the pneumatic signal is transferred to the pressure switch when the electrostatic system for the GM5000 gun may be switched on (after filling). The pressure switch switches at a set pressure of e.g., 2 bar. The pressure switch is connected to the VM5000 control unit via the interface cable. The remote control function must be set in the VM5000.

The controller for the automatic electrostatic system is contained in control unit 3 and can also be retrofitted in all other TwinControl device types.

5.14 CONNECTION KIT FOR GUN FLUSH BOX (OPTION)

The GFB connection kit is used as a link between the TwinControl system and a Gun Flush Box. The installed connection kit records the following test functions:
- Is a gun used in the gun flush box?
- Is the GFB lid closed?
- Is the gun in the gun flush box for flushing open?

The GFB connection kit is contained in control unit 3 and can also be retrofitted in all other TwinControl device types.

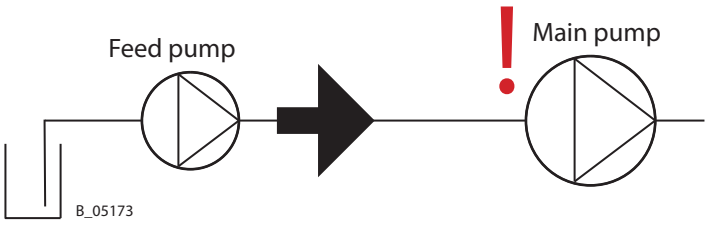
5.15 FEED PUMP (OPTION)

A feed pump can be used with high-viscosity products or longer feed lines.

Dimensioning of the feed pump

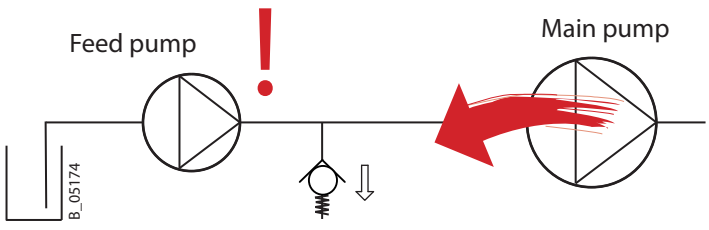
→ The piston pumps pump the working material to the product output with up and down strokes but only draw in new product on the up stroke. The feed pump therefore has to pump twice the volumetric flow.

→ The maximum product pressure at the pump inlet of the TwinControl pump must not be exceeded.



Protection of feed pump

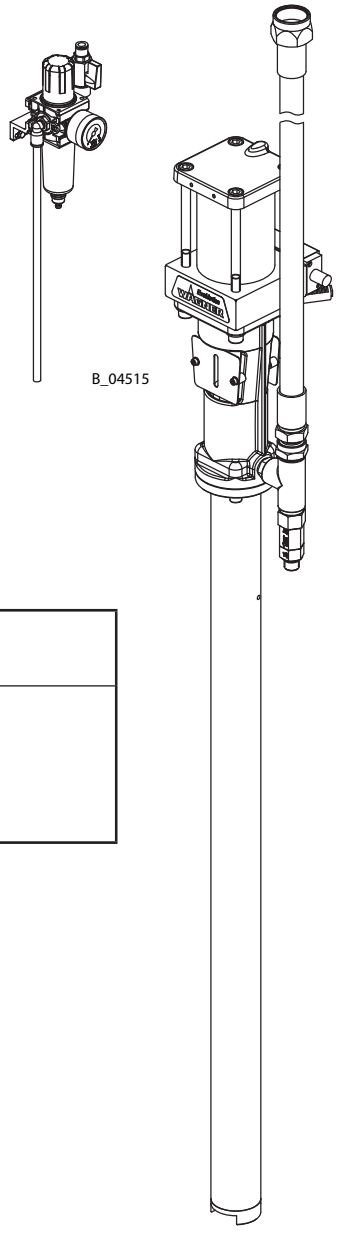
→ If the maximum pressure of the feed pump is lower than the maximum pressure of the main pump, this could be exceeded if the main pump malfunctions. The feed pump and connection line must therefore be protected from excessive overpressure. An overpressure valve must then be installed between the feed pump and main pump. Observe the flow direction during installation.



Pressure relief valve

5.15.1 EVOMOTION 5-125 FEED PUMP

Use with protective coating systems with pumps 75-150, 55-200, 38-300, 72-300. With these pumps, the maximum product pressure at the pump inlet is 2 MPa; 20 bar; 290 psi. With a pump ratio of 5:1, the inlet air pressure of the feed pump must be limited to 0.4 MPa; 4 bar; 58 psi.



EvoMotion 5-125	Unit	Values
Pump ratio		5:1
Volume flow per double stroke (DH)	cm^3; cc	125
Maximum possible strokes in operation	DH/min.	60
Inlet air pressure*	MPa; bar; psi	0.2-0.8; 2-8; 28-116
Maximum operating overpressure*	MPa; bar; psi	4; 40; 581

* Observe the information below:

NOTICE

Maximum product pressure at pump inlet
Damage to pump and seals.

→ Operate feed pump 5-125 at maximum 0.4 MPa; 4 bar; 58 psi air pressure.

6 ASSEMBLY AND COMMISSIONING

6.1 TRAINING ASSEMBLY/COMMISSIONING STAFF

⚠ WARNING

Incorrect installation/operation!
Risk of injury and damage to the device.

→ The assembly and commissioning staff 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 installed 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.

The air temperature at the storage location must be between -20 °C and +60 °C (-4 °F and +140 °F).

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

Long-term storage

→ If the system is not going to be used for a long time, lubricate it by pumping emulsified oil (or plain oil) through the feeding lines.
→ When resuming work operation, proceed as described in the chapter entitled, "Basic Cleaning".

6.3 INSTALLATION CONDITIONS

The air temperature at the installation site must be in a range between 0 °C and 40 °C; 32 °F and 104 °F.

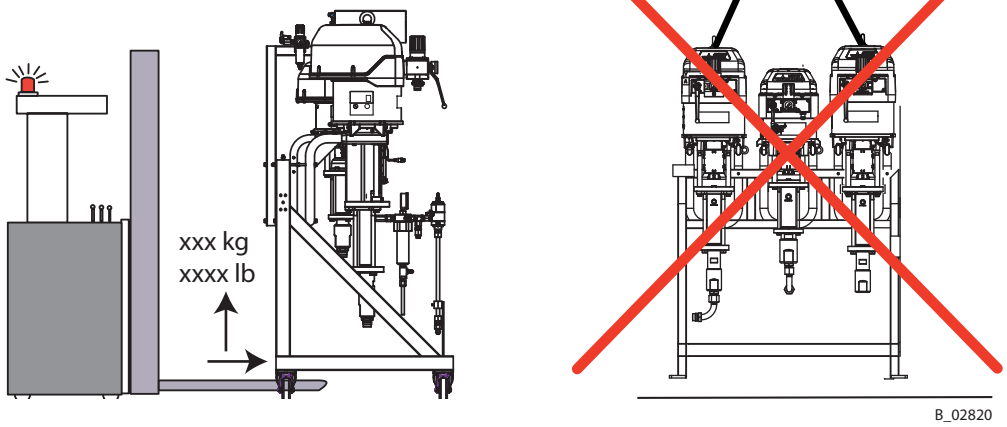
The relative air humidity at the installation site must be between 10 and 95% (without condensation).

6.4 TRANSPORTATION

The complete system can be safely transported in a wooden crate.
The dimensions of the transport crate can be defined with the help of the information on device dimensions in Chapter 5.5.7. Weights for sample configurations can be found in Chapter 5.5.6.

When lifting the system, always make sure that it remains in balance.

Units mounted on frame

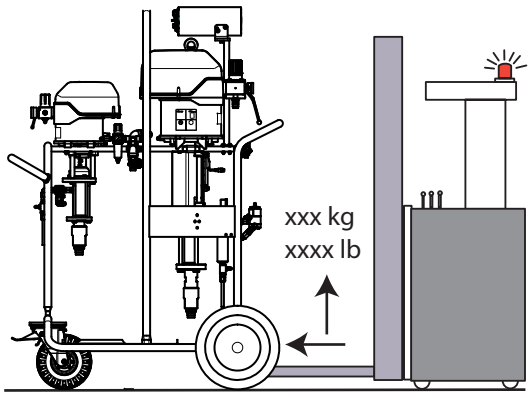


⚠ WARNING

Inclined ground!
Risk of accidents if the device rolls away/falls.

→ Place the device on horizontal floor.
→ The wheels should be fixed or replaced by leveling feet and secured.
→ Do not tilt the device during shifting / transporting.

Device mounted on trolley



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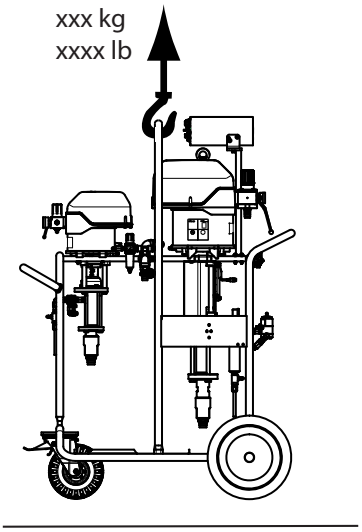

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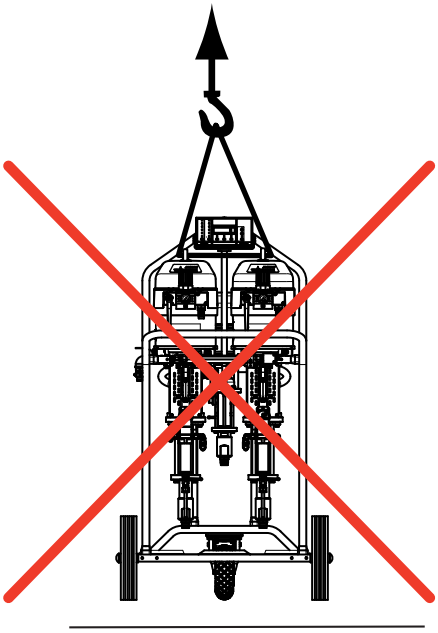

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6.5 ASSEMBLY AND INSTALLATION

The system is installed and commissioned by the WAGNER Service Department or by an expert representative. When removing from the packaging, check the system parts for possible transport damage.

⚠ WARNING

Electric shock hazard inside the control unit!
Danger to life from electric shock.

→ May only be installed/maintained by skilled electricians or under their supervision.
→ Operation according to the safety regulations, fire protection and electrotechnical rules.
→ Must be de-energized before work is commenced on active parts.

⚠ WARNING

Toxic and/or flammable vapor mixtures!
Risk of poisoning and burns.

→ Operate the device in a spray booth approved for the 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.

⚠ WARNING

Inclined ground!
Risk of accidents if the device rolls away/falls.

→ Place the device on horizontal floor.
→ The wheels should be fixed or replaced by leveling feet and secured.
→ Do not tilt the device during shifting / transporting.

6.5.1 PNEUMATIC CONNECTIONS

→ Check whether the line pressure is sufficient. It must be between 0.6-0.8 MPa; 6-8 bar; 87-116 psi.

⚠ WARNING

Overpressure!
Risk of injury from bursting components.

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

→ Check whether efficient filter systems and condensate precipitators are available in the air line.

→ The compressed air must be free of oil and water. Quality Standard 7.5.4 according to ISO 8573.1, 2010 must be observed:
7: Particle concentration 5–10 mg/m³
5: Humidity: pressure dew point ≤ +7 °C
4: Oil content ≤ 5 mg/m³

→ Every day, discharge all impurities and the condensate (if any) accumulated in the equipment air filter.

⚠ WARNING

Brittle filter pressure regulator!
The tank on the filter pressure regulator becomes brittle through contact with solvents and can burst.
Flying parts can cause injury.

→ Do not clean the tank on the filter pressure regulator with solvents.

6.5.2 PRODUCT CONNECTIONS

→ Fit intake systems in accordance with operating manuals for pumps.
→ Connect high-pressure hose and gun to the TwinControl mixer unit as laid down in the operating manual for the gun.

6.6 GROUNDING

⚠ WARNING

Fire, explosion and electric shock hazard
Danger to life by electric shock and explosion.

→ The device must be electrically connected to the equipotential bonding (ground); the ground in the electrical system is not sufficient.
→ A qualified electrician must complete all grounding and wiring connections and check the resistance.
→ Operation according to the safety regulations, fire protection and electrotechnical rules.
→ Must be de-energized before work is commenced on active parts.

⚠ WARNING

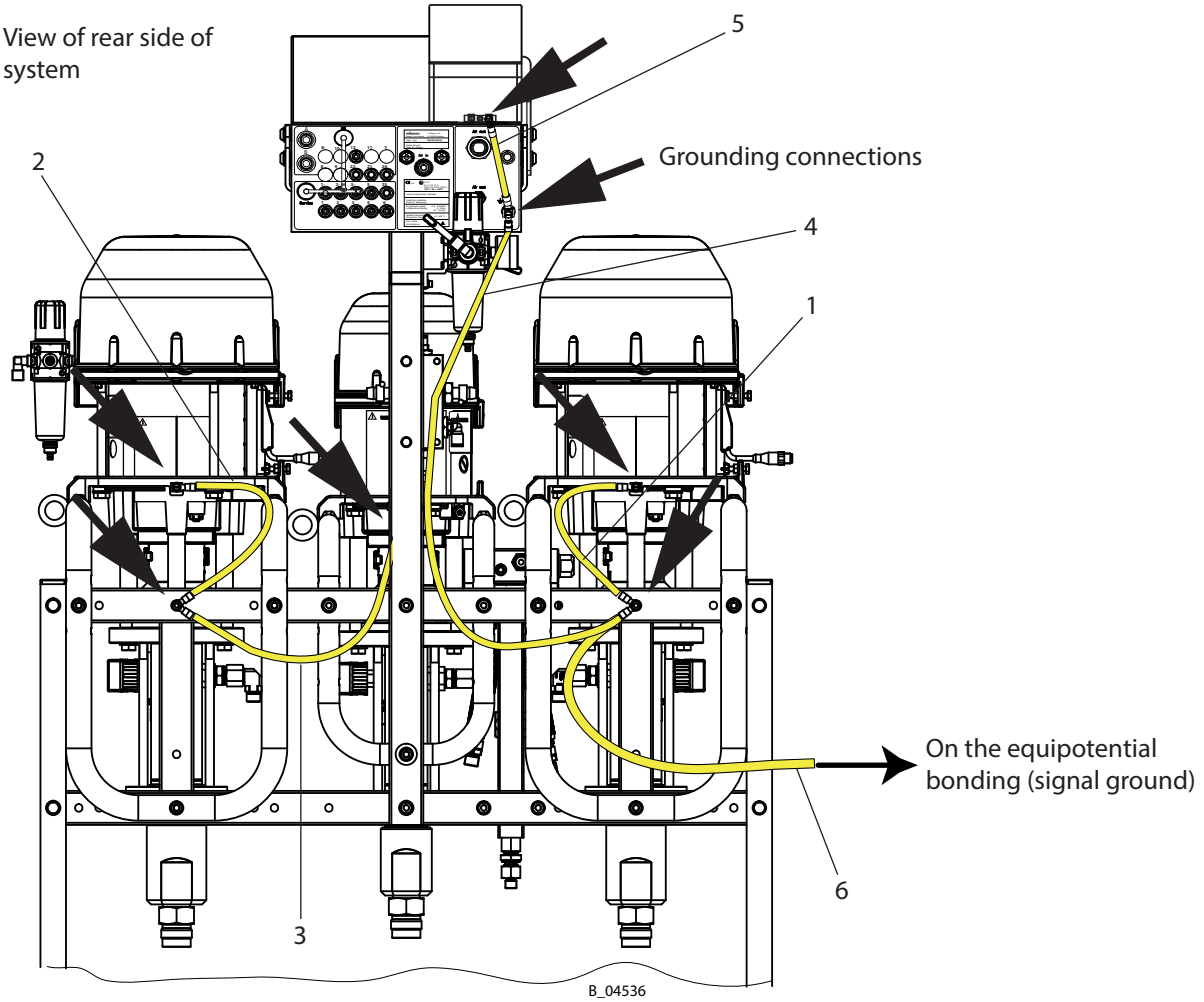
Heavy paint mist if grounding is insufficient!
Danger of poisoning.
Insufficient paint application quality.

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

Ex zone

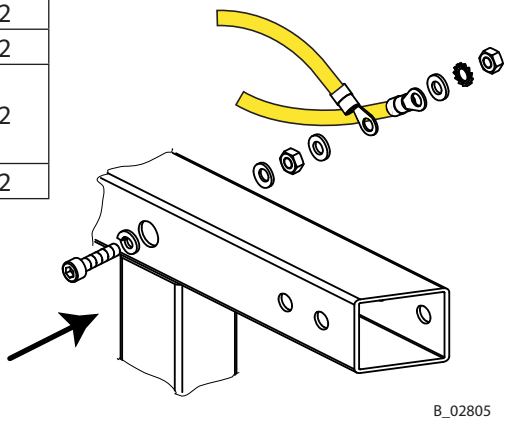
All devices and equipment must be suitable for use in potentially explosive areas.

6.6.1 GROUNDING OF COMPONENTS ON FRAME OR TROLLEY



Connect all **ground cables** using a short and direct route.

Pos	**from - to**	**Cable**
1	A pump on frame	4 mm²; AWG 12
2	B pump on frame	4 mm²; AWG 12
3	Flushing pump on frame	4 mm²; AWG 12
4	Control unit on frame	4 mm²; AWG 12
5	2A switchbox (option) or reversing box (ESTA remote control, option) on control unit	4 mm²; AWG 12
6	Frame to signal ground	4 mm²; AWG 12

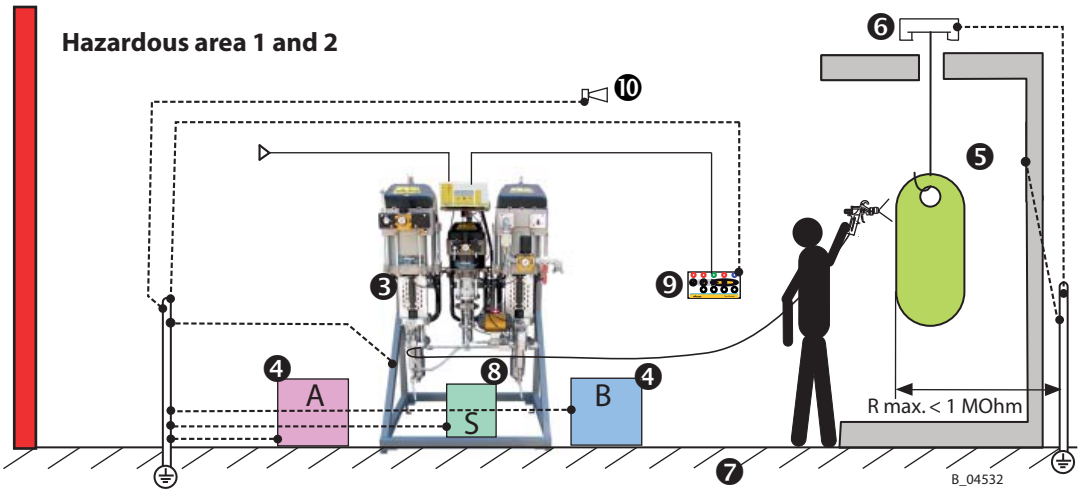


Grounding ound connection point on frame. View of operating side of system.

Cable cross sections	
TwinControl frame	4 mm²; AWG 12
Paint tank / collection tank	6 mm²; AWG 10

Cable cross sections	
Conveyor	16 mm²; AWG 6
Spray booth	16 mm²; AWG 6
Spraying stand	16 mm²; AWG 6

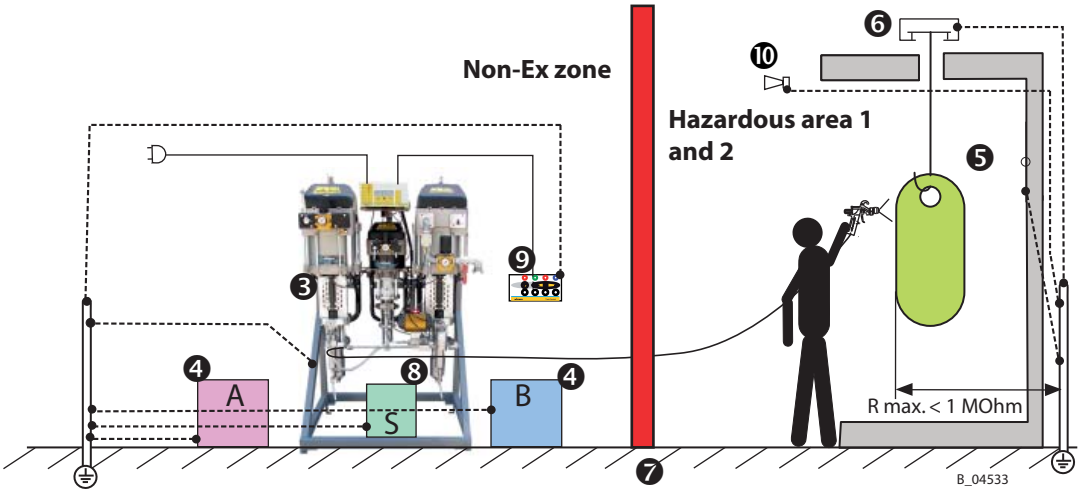
6.6.2 EXAMPLE OF GROUNDING SCHEME FOR TWINCONTROL WITH TURBINE



Legend - - - - Grounding cables ——— Fluid hoses

3	TwinControl frame	**5**	Work piece	**7**	Floor, static dissipative	**9**	Remote control (option)
4	Paint tank	**6**	Conveyor	**8**	Flushing agent tank	**10**	Horn (option)

6.6.3 EXAMPLE OF GROUNDING SCHEME FOR TWINCONTROL WITH MAINS POWER CONNECTION (CABLE)



Legend - - - - Grounding cables ——— Fluid hoses

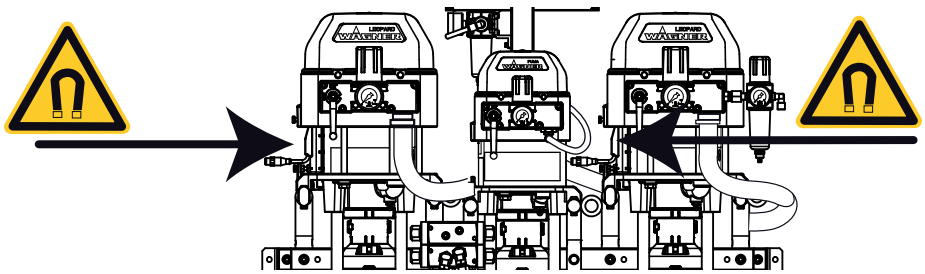
3	TwinControl frame	**5**	Work piece	**7**	Floor, static dissipative	**9**	Remote control (option)
4	Paint tank	**6**	Conveyor	**8**	Flushing agent tank	**10**	Horn (option)

6.7 COMMISSIONING

Observe the safety instructions in Chapter 4, Chapter 7.2 and Chapter 8.2.

6.7.1 PREPARATION FOR COMMISSIONING

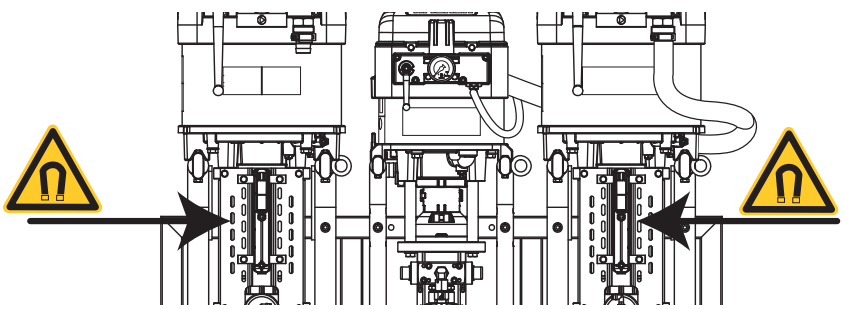
- → Make sure that the device and all other conductive parts within the work area are grounded.
- → Connect spray gun without nozzle with high-pressure hose to the mixing unit and secure with safety clip.
- → Check hoses for damage.
- → Check that all product-conveying connections are correctly connected.
- → Check all connecting parts for leaks.
- → Check that all connections carrying air are connected correctly according to the pneumatic diagrams in Chapters 5.8.1, 5.8.2 or 5.8.3.
- → Visually check the permissible pressures for all the system components.
- → Check level of separating agent in the pumps and top up if necessary.
- → Provide and ground a product tank for A and B components, a tank for flushing agent and an empty tank for return flow.
- → Connect the system to the air supply.



NOTICE

Magnetic fields!
Danger of damage to electronic devices and magnetic data carriers.

→ Ensure that electronic devices and magnetic data carriers are removed from the danger area.



6.7.2 BASIC FLUSHING AND PRESSURE TIGHTNESS TEST

The devices are tested in the factory with emulsifying oil, pure oil or solvent.
Possible residues must be flushed out of the circuits with a solvent (flushing agent) before commissioning.

⚠ 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.

Always carry out basic flushing and the pressure tightness test:
- Before putting the new system into operation for the first time.
- Before using the system again after prolonged storage.
- Before servicing the system.

Please note:
- Do not insert the nozzle into the gun yet. Gun secured.
- Keep the pump pressure as low as possible during flushing.
- Operating manuals for the affected components must be known.

Process

1. Connect compressed air supply. Switch the system on.
2. Place intake systems for the three pumps in a grounded tank with flushing agent. Use a separate, grounded tank for each pump. Provide and ground an additional, empty tank.
3. Place the three return pipes/hoses in an empty, grounded waste tank.
4. Set a low pressure (approx. 0.05 MPa; 0.5 bar; 7 psi) on the pressure regulators for the 3 pumps.
5. Select "Work" in main menu.
6. **Flushing and pressure tightness test for pump A:**
   - 6.1. Open return valve of pump A. Close the return valve again as soon as clean flushing agent comes out.
   - 6.2. Select component "A" in sub-menu  and press [Start].
   - 6.3. Release gun. While holding the metal part of the gun against the grounded, empty bucket and while pointing it into the bucket, pull the gun trigger until the hose content is emptied and clean flushing agent comes out. Close and secure gun with trigger.
   - 6.4. Gradually increase pressure in pump A with the pressure regulator until maximum pressure is reached. Maintain the pressure for 3 minutes and check all connection points of the A-product circuit for leaks.
   - 6.5. Relieve pressure of A-product circuit:
     - Close compressed air regulator of pump A (0 bar).
     - Open return valve of pump A and close again.

⚠ WARNING

Overpressure!
Risk of injury from bursting components.

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

- Release gun. While holding the metal part of the gun against the grounded, empty bucket and while pointing it into the bucket, pull the gun trigger until no further pressure is present.
- Close and secure gun.

6.6. Close product valve by pressing [Stop].

7. **Flushing and pressure tightness test for pump B:**
   7.1. Open return valve of pump B. Close the return valve again as soon as clean flushing agent comes out.
   7.2. Select component "B" in sub-menu B and press [Start].
   7.3. Release gun. While holding the metal part of the gun against the grounded, empty bucket and while pointing it into the bucket, pull the gun trigger until the hose content is emptied and clean flushing agent comes out. Close and secure gun.
   7.4. Gradually increase pressure in pump B with the pressure regulator until maximum pressure is reached. Maintain the pressure for 3 minutes and check all connection points of the B-material circuit for leaks.
   7.5. Relieve pressure of B-material circuit:
   - Close compressed air regulator of pump B (0 bar).
   - Open return valve of pump B and close again.
   - Release gun. While holding the metal part of the gun against the grounded, empty bucket and while pointing it into the bucket, pull the gun trigger until no further pressure is present.
   - Close and secure gun.

   7.6. Close product valve by pressing [Stop].

8. **Flushing and pressure tightness test for flushing pump:**
   8.1. Open flushing pump's return valve and close again.
   8.2. Select flushing valve AS in sub-menu: and press [Start].
   8.3. Release gun. While holding the metal part of the gun against the grounded, empty bucket and while pointing it into the bucket, pull the gun trigger until the hose content is emptied and clean flushing agent comes out. Close and secure gun.
   8.4. Gradually increase pressure in the flushing pump with the pressure regulator until maximum pressure is reached. Maintain the pressure for 3 minutes and check all connection points for leaks.
   8.5. Relieve pressure of flushing agent circuit:
   - Close compressed air controller of of flushing pump.
   - Open return valve of flushing pump and close again.
   - Release gun. While holding the metal part of the gun against the grounded, empty bucket and while pointing it into the bucket, pull the gun trigger until no further pressure is present.
   - Close and secure gun.

   8.6. Close flushing valve by pressing [Stop].
   8.7. If there is a separate B flushing valve (controller 2 or 3): Select flushing valve BS in the sub-menu and then repeat steps 8.3 to 8.6.

6.7.3 FILLING THE SYSTEM

NOTICE

Interchange of the two components A and B!
Device damage by hardened product.

→ Label device components and paint tank so that the components A and B are not mixed up.

Prerequisites

- At the start, all pumps should be filled with flushing agent as after basic flushing (Chapter 6.7.2).
- Do not insert the nozzle into the gun yet. Gun secured.
- Operating manuals for the affected components must be known.

Process

1. Connect compressed air supply.
2. Place the intake hoses of the three pumps in the corresponding grounded tanks: Flushing agent for flushing pump, master product for pump A and hardener product for pump B.
3. Place return hoses of pumps A and B in empty, grounded tanks.
4. Set a low pressure (approx. 0.05 MPa; 0.5 bar; 7 psi) on the pressure regulators for the 3 pumps.
5. Select "Work" in main menu.
6. **Filling pump A:**
   - 6.1. Open return valve of pump A. As soon as pure working material comes out, close return valve again.
   - 6.2. Select component "A" in sub-menu A and press [Start].
   - 6.3. Release gun. While holding the metal part of the gun against the grounded, empty bucket and while pointing it into the bucket, pull the gun trigger until the hose content is emptied and pure working material, without air inclusions, comes out. Close and secure gun.
   - 6.4. Relieve pressure of A-product circuit:
     - Close compressed air regulator of pump A (0 bar).
     - Open return valve of pump A and close again.
     - Release gun. While holding the metal part of the gun against the grounded, empty bucket and while pointing it into the bucket, pull the gun trigger until no further pressure is present.
     - Close and secure gun.
   - 6.5. Close product valve by pressing [Stop].
7. **Filling pump B:**
   - 7.1. Open return valve of pump B. As soon as pure working material comes out, close return valve again.
   - 7.2. Select component "B" in sub-menu B and press [Start].
   - 7.3. Release gun. While holding the metal part of the gun against the grounded, empty bucket and while pointing it into the bucket, pull the gun trigger until the hose content is emptied and pure working material, without air inclusions, comes out. Close and secure gun.

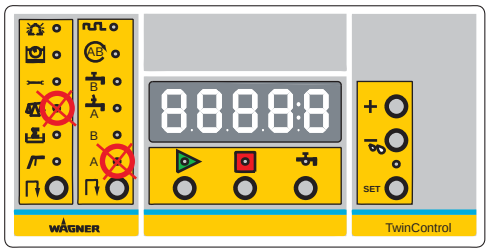
7.4. Relieve pressure of B-material circuit:
- Close compressed air regulator of pump B (0 bar).
- Open return valve of pump B and close again.
- Release gun. While holding the metal part of the gun against the grounded, empty bucket and while pointing it into the bucket, pull the gun trigger until no further pressure is present.
- Close and secure gun.

7.5. Close product valve by pressing [Stop].

8. **Setting up return for circulation mode:** Place the return hoses of the three pumps in the corresponding intake tanks: return of pump A in master product, return of pump B in hardener product. Dispose of the contents of the waste tank according to the local regulations.
9. The system is ready to start. Continue with calibration (Chapter 6.7.4) or spraying (Chapter 8.6). If not continuing with work straight away, flush the system (Chapter 8.7).

6.7.4 CALIBRATING THE SYSTEM

→ The system is volumetrically calibrated in the factory, therefore it does not have to be calibrated with the product. However, if a calibration is required, proceed as follows:



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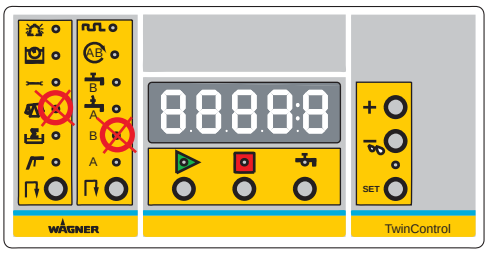

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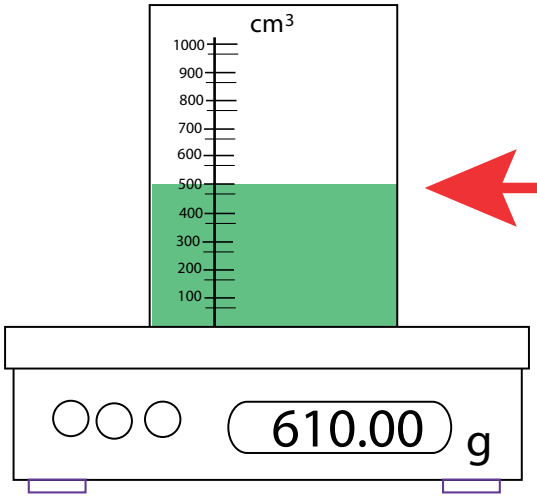
1. The product to be calibrated is first of all conveyed manually as far as the gun.
2. Set the pump pressure to 0.5 MPa; 5 bar; 73 psi and select the nozzle so that the product flow rate corresponds to the subsequent production process.
3. Start the calibration process for the A side with the [Start] button.
4. A minimum of 5 pump double strokes are discharged into a measuring cup with the gun (use tubing to protect against overspray if necessary). The flow rate measured by the control is shown on the display.
5. Press the [STOP] button.
6. The quantity discharged into the measuring cup in cm3 is entered by pressing [SET] and [+] [-] and confirmed by pressing [SET].
   Interrupting process: The calibration process can be interrupted without saving by pressing the [Stop] button.
7. The control has now calculated and saved the new K factor and displays it.

8. Repeat the calibration in order to check it.
   Large deviations may be due to the following error causes:
   - Air in the lines → Fill the lines with product and check the intake system.
   - Large proportion of air bubbles in product in measuring cup → Determine product weight with scale and calculate the volume based on the density.
9. Calibrate the B component in the same way as the A component.
10. The K factor can be entered directly for the flushing pump (in cm^3 per double stroke).
11. Flush system.

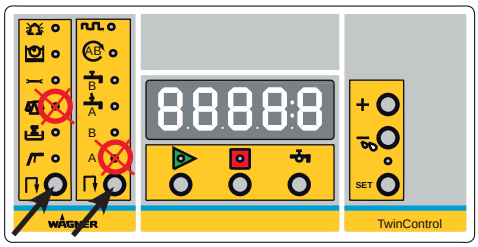
6.7.4.1 METHOD OF CALIBRATION (SIMPLE PRACTICAL VARIANT)

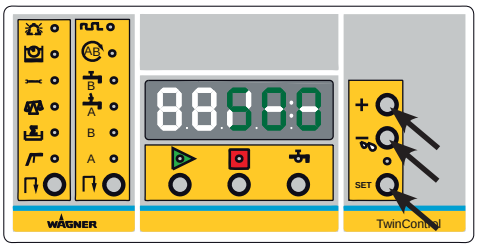
1. Manually measure precisely e.g., 500 cm3 of A product into a measuring cup and establish the product weight in "g" grams.
   Note:
   For pumps larger than 150 cm^3/DH a greater reference flow rate must be established. Rule of thumb: At least 3 double strokes of pump.
2. The product to be calibrated is first of all conveyed manually as far as the gun.
3. Set the pump pressure to 0.5 MPa; 5 bar; 73 psi and select the nozzle so that the product flow rate corresponds to the subsequent production process.
4. Set calibration from A side on control device.
5. Start the calibration process for the A side with the [Start] button.
6. Use the gun to add the weight in "g" indicated above for 500 cm3 of A product into a measuring cup (use tubing to protect against overspray if necessary).
   The flow rate measured by the control is shown on the display.
7. Press the [STOP] button.
8. Enter the preselected reference amount in "cm3" (500 = example) by pressing [SET] and [+] [-] and confirm by pressing [SET].
   Interrupting process:
   The calibration process can be interrupted without saving by pressing the [Stop] button.
9. The control has now calculated and saved the new K factor and displays it.



e.g., weigh out 500 cm^3 (= 0.5 liter) of A product.

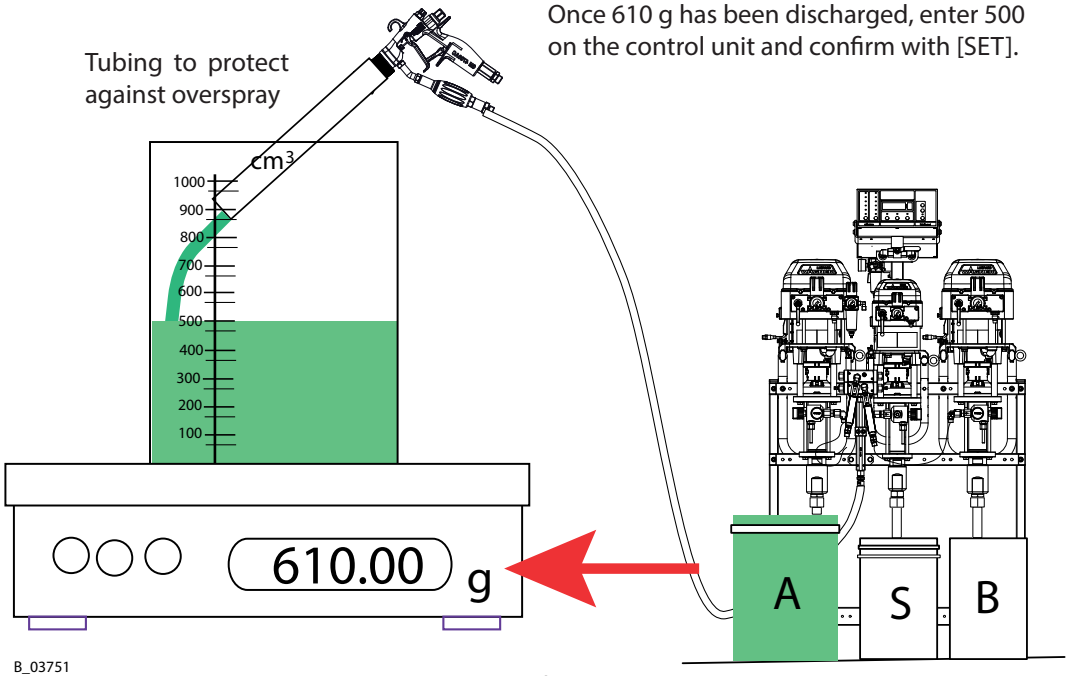
Set calibration A on the control unit.





Once 610 g has been discharged, enter 500 on the control unit and confirm with [SET].

Tubing to protect against overspray



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Use gun to transport the 610 g of A product measured above into tank.

7 CONTROLLER

7.1 TRAINING THE OPERATING STAFF

⚠ WARNING

Incorrect operation!
Risk of injury and damage to the device.

→ The operating staff 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 staff must receive appropriate system training.

7.2 SAFETY INSTRUCTIONS

→ Observe safety instructions in Chapter 4.

⚠ WARNING

Incorrect operation!
Risk of injury and damage to the device.

→ If contact with lacquers or cleaning agents causes skin irritation, appropriate precautionary measures must be taken, e.g., wearing protective clothing.
→ The footwear worn by operating staff must comply with EN ISO 20344. The measured insulation resistance must not exceed 100 megohms.
→ The protective clothing, including gloves, must comply with EN ISO 1149-5. The measured insulation resistance must not exceed 100 megohms.

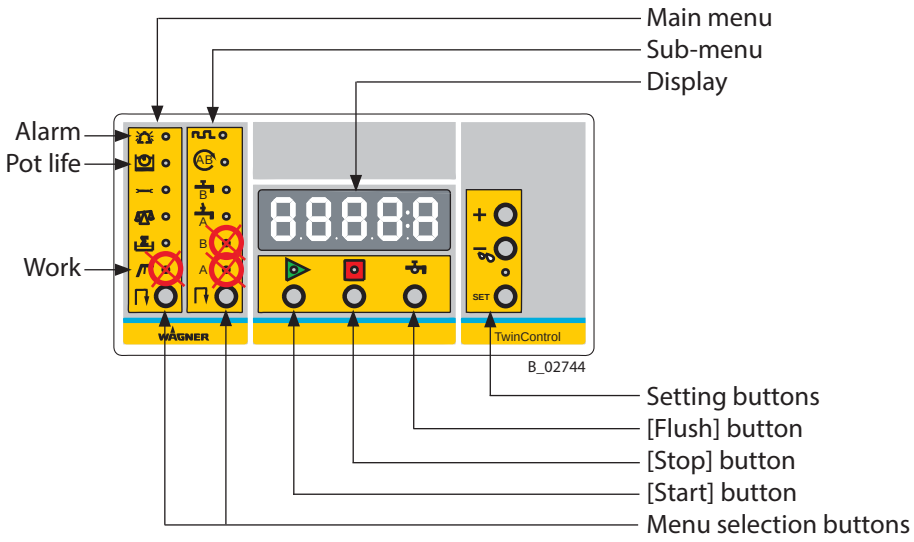
⚠ WARNING

Unintentional putting into operation!
Risk of injury

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 unit.
→ Secure the spray gun against actuation.
→ In the event of functional faults: remedy the fault as described in the "Troubleshooting" chapter.

7.3 OPERATING THE CONTROL UNIT

For the meaning of all symbols/illuminated displays → see Chapter 5.7



Base position
When switched on, the control unit is in its base position. The three lamps "Work", "A" and "B" are illuminated in the base position. Depending on system status, other lamps might light up or flash.

Returning to base position
→ Press the [Stop] button once or twice.

Triggering action
1. Main menu selection (depending on personal authorization)
2. Sub-menu selection
3. [Start] or [Flush]

[Start] button

Main menu	Sub-menu	Function of the [Start] button
Work	A + B	Start of work cycle
	A	A valve opens
	B	B valve opens
	Flushing agent A	A flushing valve opens
	Flushing agent B	- With separate A and B flushing hoses → B flushing valve opens - If only one flush hose is connected directly to mixer → [Start] button has no function
	Circulation operating mode (option)	Circulation of A and B product

[Stop] button

Device status	Function of [Stop] button
Program running	Terminates active program. Resets all valves to original status.
Program not running	Returns to base position
Setting input [SET]	Terminates input without saving
Alarm	Acknowledges alarm → Fault rectification (Chapter 10)

Alarm
If there is a disturbance, the systems stops and the alarm display lights up. An error code appears on the display.
→ Acknowledge with [Stop] button
→ Fault rectification in accordance with Chapter 10

Pot life
- Pot life display lights up → Pot life running.
- Pot life display flashing → Display shows the remaining pot life.

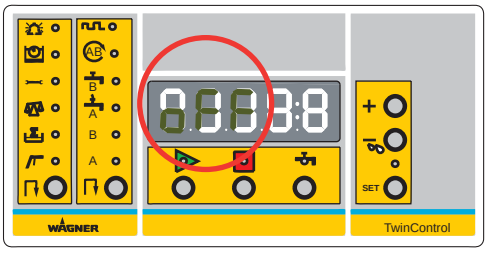
Display in the display unit
- When working → in accordance with system parameter P120 (see Chapter 5.9).
- After pressing [Stop] button → in accordance with system parameter P121 (see Chapter 5.9).

7.3.1 ENTERING NUMBERS [SET]

Explanation for the button functions

Change numbers → [SET], [+] (higher) or [-] (lower)	Terminate data input → [Stop] button
Save numbers → [SET]	Into main menu → 2x [Stop] button

If the indication "OFF" appears after making an entry in the display, then the input authorization must be enabled.



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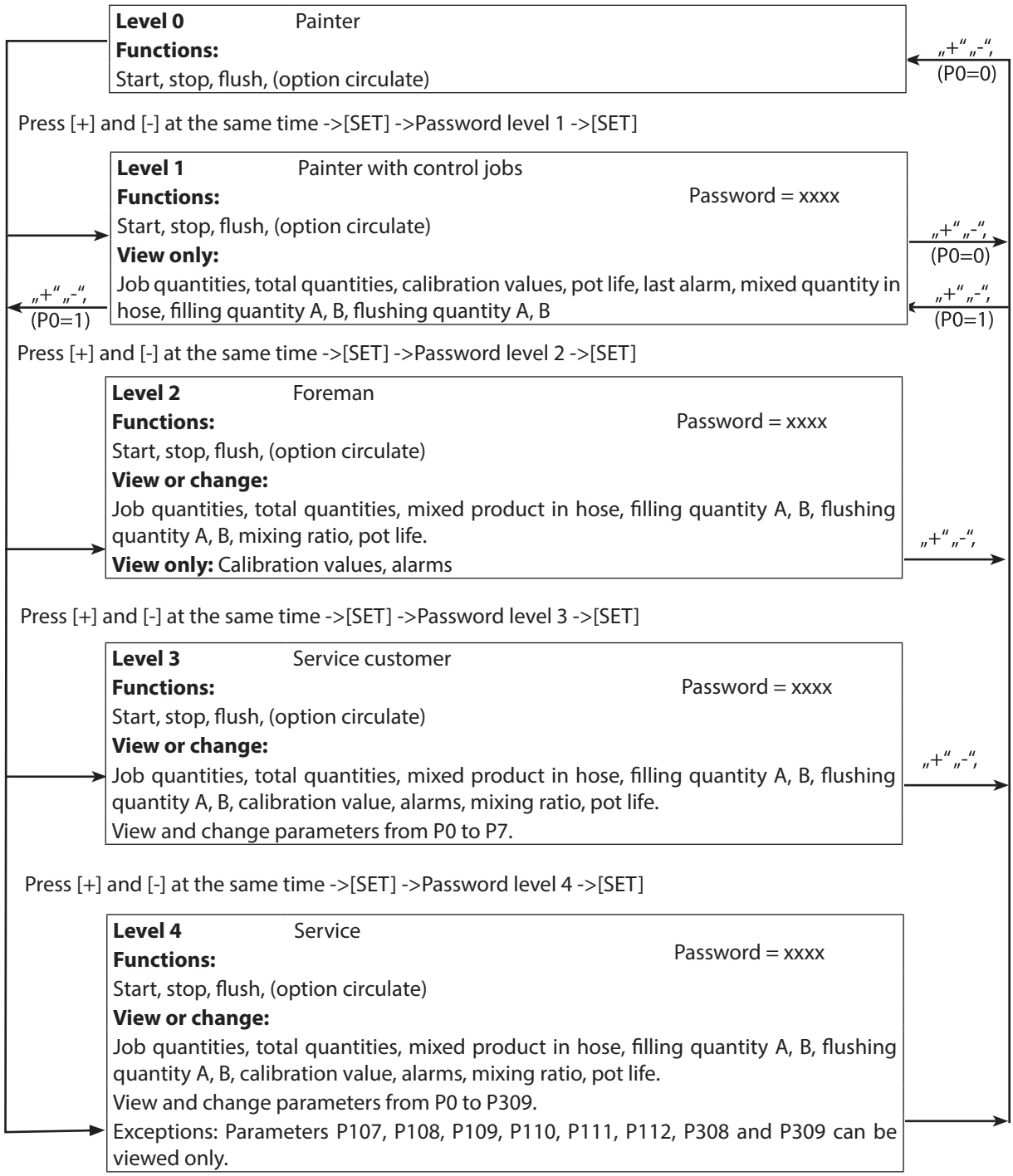
7.4 PASSWORD PROTECTION AND USER FUNCTIONS

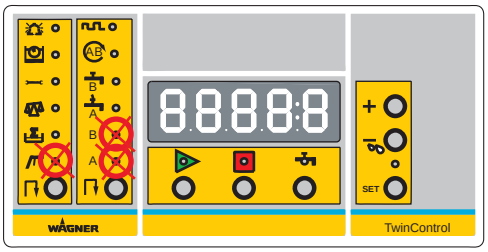
Valid for systems with software version V4.00 and above



The passwords, which are set by WAGNER at the time of the equipment delivery, are not contained in the manual for safety reasons. The valid passwords are communicated to the customer separately.

7.5 BASIC FUNCTIONS FOR THE SPRAYER

Base position
System is ready to start
[Start] button-> system starts mixing



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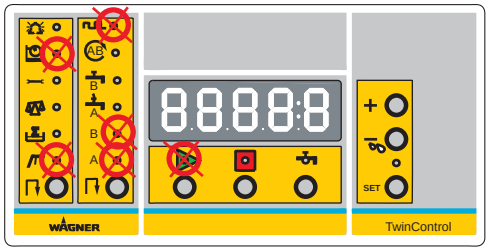
System is mixing
Pot life LED flashing -> pot life running
Work LED flashing -> filling
Work LED illuminated -> system ready to spray
B-valve cycle display -> flashes in B-valve cycle
Display -> See Chapter 5.9 -> P120



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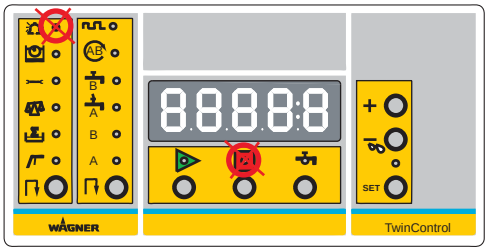
Automatic stop in case of error
Alarm LED on
Stop LED on
Error code is displayed



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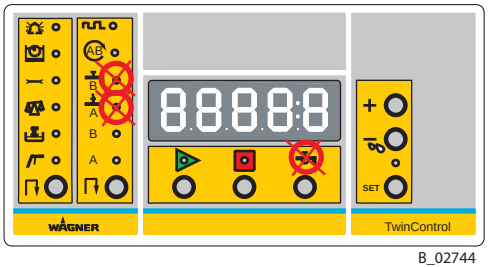
Flushing
The flushing program runs automatically. The flushing program must have been defined in advance under service level 3 (with password protection). Also refer to flushing stages F1 to F33 in the service functions list in Chapter 5.9 and how to define the flushing program in Chapter 7.6.2.

Emergency flushing
If the flushing button is pressed for 3 seconds or more, only the stages involving flushing agent are undertaken (actions 3 or 4).



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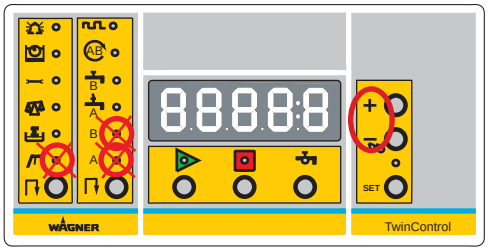
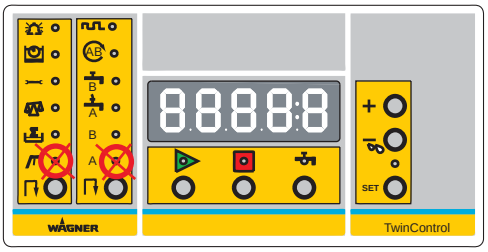
7.6 EXTENDED FUNCTIONS WITH PASSWORD PROTECTION

Adjusting the mixing ratio
Press [SET] -> change value with + - push button.
Press [SET] again to confirm new value
(Abort with STOP push button).



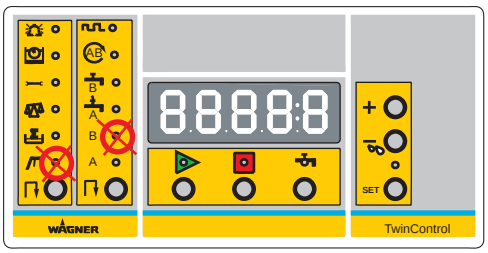
B_02744

Manual mode / Totals
Only convey A component
(START / STOP).
Displays job total A in cm^3.



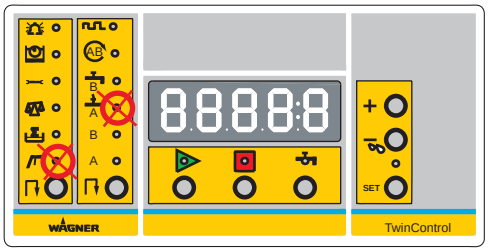
B_02744

Manual mode / Totals
Only pump B component
(START / STOP).
Displays job total B in cm^3.



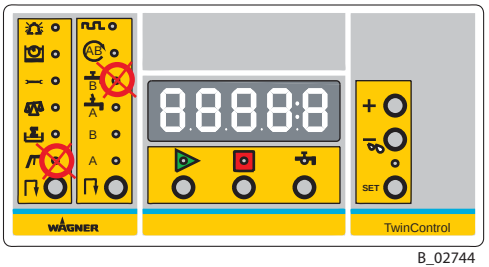
B_02744

Only convey flushing agent A
(START/STOP)
Displays job total for flushing agent A in cm^3.
Only valid for types 48-110, 75-150, 72-300.



B_02744

Only convey flushing agent B
(START/STOP)
Displays job total flushing agent B in cm^3.
Only valid for types 48-110, 75-150, 72-300.



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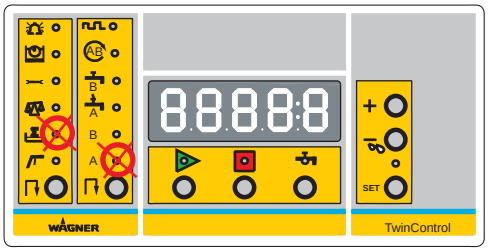
Total amount A
Set to "0": Press [SET] push button > 2 seconds.
Display in liters.



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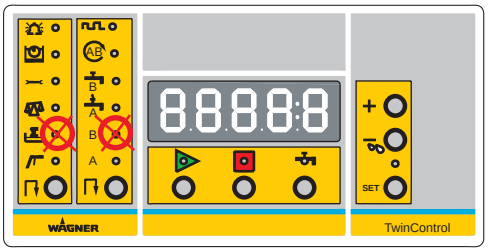
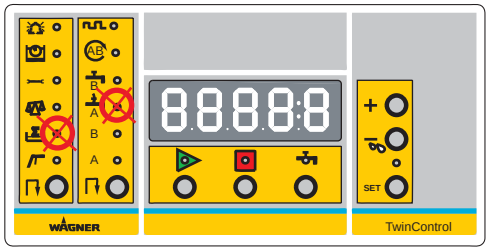
Total amount B
Set to "0": Press [SET] push button > 2 seconds.
Display in liters.



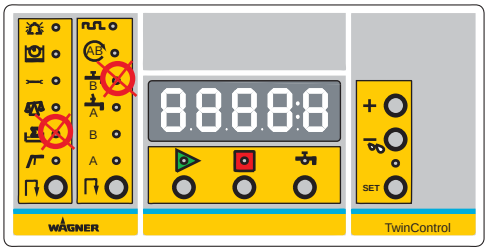
B_02744

Total amount flushing A
Set to "0": Press [SET] push button > 2 seconds.
Display in liters.



B_02744

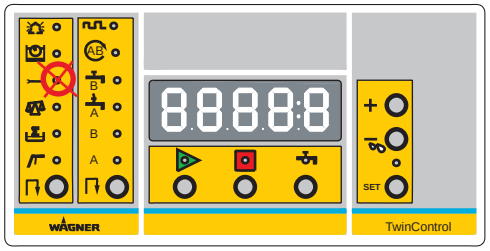
Total amount flushing B
Set to "0": Press [SET] push button > 2 seconds.
Display in liters.



B_02744

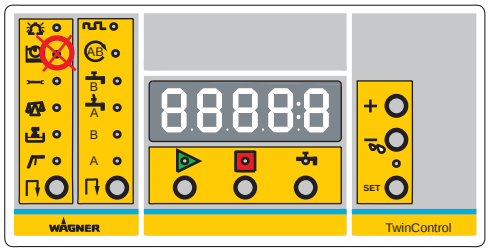
Service
Service parameters P0 - P7
Configuration parameters P100 - P154
Totals P200 - P213
(Also see Chapter 5.9)

Change from P0 to P1...P2, ... with [+] -button.
Return with [-] -button.



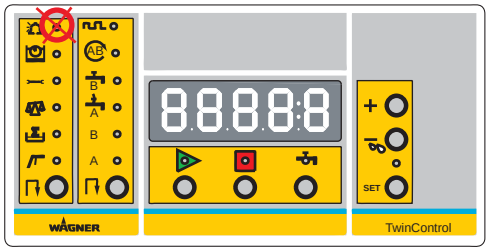
B_02744

Pot life
Set the pot life.
[SET], set with [+] [-], [SET].



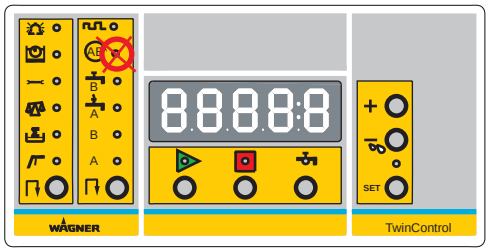
B_02744

Error messages
Display of last 28 error messages.
View with ±.



B_02744

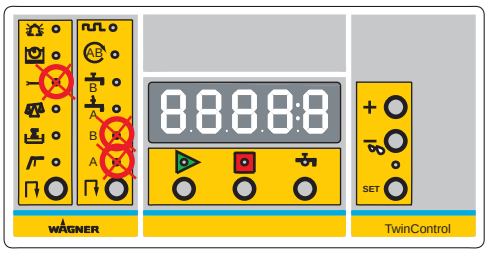
Circulation of A and B component
(only possible if option available)



B_02744

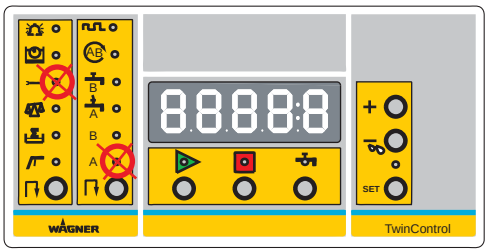
Service (password entry required for PO)

Content of spray hose with mixed product [cm^3]



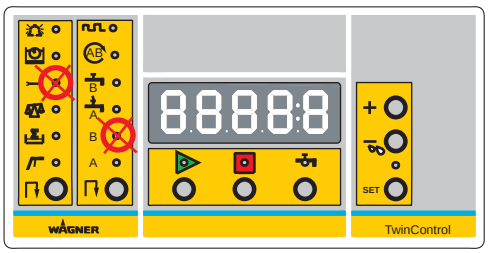
B_02744

Flow rate valve A up to mixing block [cm^3]



B_02744

Flow rate valve B up to mixing block [cm^3]

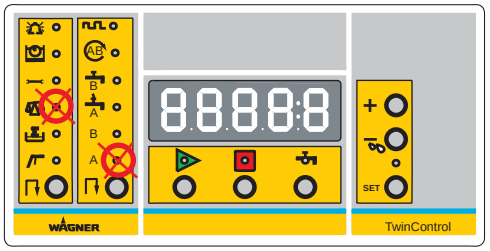


B_02744

7.6.1 CALIBRATING

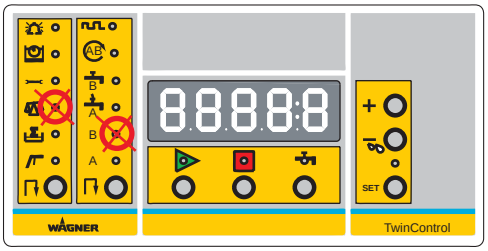
(Password entry required for PO)

Calibrate A
[Start] -> Open gun -> With spray pressure, pump out around 5 double strokes into measuring cup -> Gun closed -> [SET] -> Enter measurement in measuring cup in cm^3 -> [SET] (Abort [Stop] button)



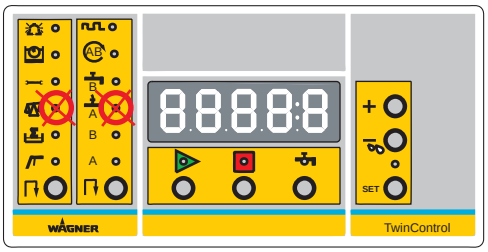
B_02744

Calibrate B
[Start] -> Open gun -> With spray pressure, pump out around 5 double strokes into measuring cup -> Gun closed -> [SET] -> Enter measurement in measuring cup in cm^3 -> [SET] (Abort [Stop] button)



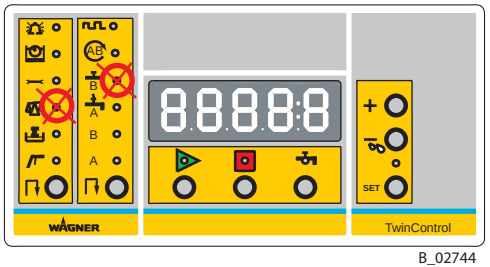
B_02744

Calibration Flushing A
Direct input in cm3/DH of flushing pump



B_02744

Calibrate flushing B
Direct input in cm3/DH of flushing pump

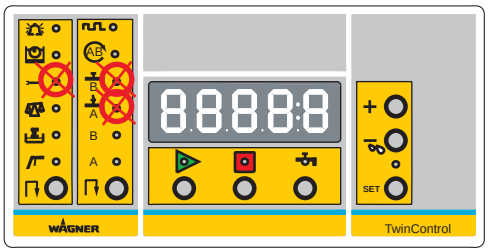


B_02744

7.6.2 FLUSHING PROGRAMS

Defining flushing program

The flushing steps can be defined in the mode shown under parameters F1 to F20.



B_02744

Programming a flushing program

- Press **[SET]** during program stage F1 (to F20). A appears on the left to enter the action. Use [+] or [-] button to select the value. For input values, see description of action in Table 2.
- Press **[SET]**.
- Enter the amount using the [+] or [-] button.
- Press **[SET]**.
- Enter the measuring unit cc (= ml) or sec using [+] or [-] button.
- Press **[SET]** (the measuring unit displayed is saved).
- The [+] or [-] button takes you to the next program stage (F2 or Fx).

Table 1			
Step "F"	Actions	Quantity	Unit
F1	0-2	0.0-9999.9	cc/sec
F2	0-2	0.0-9999.9	cc/sec
F3	0-5	0.0-9999.9	cc/sec
F4	0-5	0.0-9999.9	cc/sec
F5	0-5	0.0-9999.9	cc/sec
F6	0-5	0.0-9999.9	cc/sec
F7	0-5	0.0-9999.9	cc/sec
F8	0-5	0.0-9999.9	cc/sec
F9	0-5	0.0-9999.9	cc/sec
F10	0-5	0.0-9999.9	cc/sec
F11	0-5	0.0-9999.9	cc/sec
F12	0-5	0.0-9999.9	cc/sec
F13	0-5	0.0-9999.9	cc/sec
F14	0-5	0.0-9999.9	cc/sec
F15	0-5	0.0-9999.9	cc/sec
F16	0-5	0.0-9999.9	cc/sec
F17	0-5	0.0-9999.9	cc/sec
F18	0-5	0.0-9999.9	cc/sec
F19	0-5	0.0-9999.9	cc/sec
F20	0-5	0.0-9999.9	cc/sec

Table 2	
Action	Description of action
0	No activity
1	Product A
2	Product B
3	Flushing A
4	Flushing B
5	Wait time

Table 3		
Step "F"	Step	Description
F31	3-20	Start repetition
F32	3-20	End repetition
F33	1-200	Number of repetitions

Notes:

- F31 must be less than F32.
- With repeated flushing (2 instances of flushing one after another), flushing steps "F1" and "F2" are only performed the first time. During the second flushing cycle, the flushing program starts from step "F3".

Display in the display unit

When the programmed flushing program is called up by pressing the [Flush] push button on the control unit and is running, each of the individual stages is shown briefly on the display.

Examples of flushing programs

for EvoMotion 5-60

Step F	Action	Value	Unit	Remarks
F1	1	10	cc	Material A (press 10cc of A product into spray hose)
F2	2	10	cc	Material B (press 10cc of B material into spray hose)
F3	3	200	cc	Flushing A (press mixed product out of the spray hose)
F4	3	1	sec	Flushing A (solvent for solvent/air flushing)
F5	4	2	sec	Flushing B (air for solvent/air flushing)
F6	3	200	cc	Flushing A (fill spray hose with flushing agent again)
F31	4	-	-	Start of repetition from stage 4
F32	5	-	-	End of repetition at stage 5
F33	10	-	-	Number of repetitions between stage 4 and 5 = 10x

for Puma 28-40

Step F	Action	Value	Unit	Remarks
F1	1	10	cc	Material A (press 10cc of A product into spray hose)
F2	2	10	cc	Material B (press 10cc of B material into spray hose)
F3	3	200	cc	Flush A (flush product hose with 200 cc)

for Leopard 48-110

Step F	Action	Value	Unit	Remarks
F1	1	25	cc	Product A
F2	2	25	cc	Product B
F3	4	200	cc	Flushing B (flush 200 cc on B side)
F4	3	200	cc	Flushing A (flush 200 cc on A side)

7.6.3 CHECK FOR LEAKS IN A AND B FLUID SECTION

Leak testing setting
Via password level 4 where pos. "P115" P115 = 0.

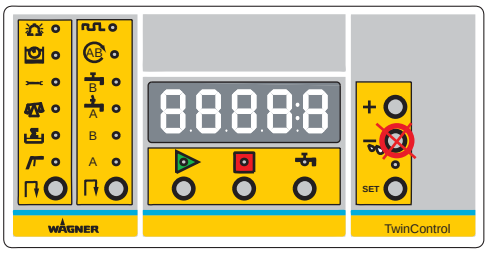
Sensitivity settings

P116	Leak warning limit A (mm/min)
P117	Leak error limit A (mm/min)
P118	Leak warning limit B (mm/min)
P119	Leak error limit B (mm/min)

Leak testing for one stroke direction

1. [Stop]. Secure the gun. Close all return valves.
2. Pumps A and B: Set pressure regulator to working pressure.
3. Press [-] push button for three seconds.

   A pump and B pump (including circulation valves) are checked for leaks for 10 seconds. During the check, the display counts from 10 to 0 and the LED displays for A and B flash alternately. Any leakage is indicated by an error message.



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Changing stroke direction

4. Pumps A and B: Set pressure regulator to zero.
5. Pumps A and B: Place return pipes/hoses in corresponding product tanks.
6. Pumps A and B: Briefly open each return valve. As soon as the stroke direction audibly switches over, close valve.

Leak testing for the other stroke direction

7. Pumps A and B: Set pressure regulator to working pressure.
8. Press [-] push button for three seconds.

Leakage error messages
see Chapter 10.1.

7.6.4 "BATCH MODE" FILLING MODE

The Batch Mode setting allows a recurring and pre-defined flow rate to be discharged via the gun or via an external valve.

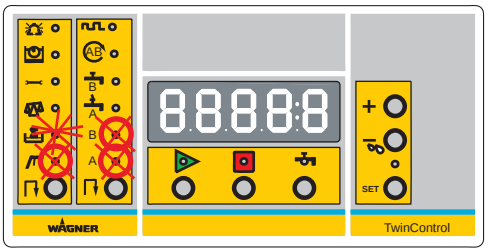
Batch Mode setting
Via password level 4 where pos. "P137" P137 = 1.

Other settings for the Batch quantity to be displayed:
Parameter pos. "P120" and "P121" must be set to one of the following values:
P120; P121 = 2 (job sum) or
P120; P121 = 4 (MR and JS in turn) or
P120; P121 = 5 (P and JS in turn) or
P120; P121 = 6 (MR and JS and P in turn).

Access for changing the Batch quantity
1.) Via password level 2 or
2.) Via parameter pos. "P142" P142 = 1 (no password protection for MR and Batch quantity).

Changing the Batch quantity

"Total" illuminated display must be flashing.
Press [Set] -> the current nominal value is displayed.
Use the [+] or [-] button to select the nominal value.
Use [SET] to save the new nominal value.



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Operation

Press [Start].
Note:
If filling has not yet taken place, it is undertaken automatically. Filling complete -> System at Stop.
Press [Start] again. The system is running and shifts to Stop when the nominal amount is reached.
The operating cycle can be repeated any number of times.

7.6.5 AIS

Prerequisite: AIS system

The AIS (Adaptive Injection System) automatically regulates the dosing valve stroke. A stepping motor increases or decreases the stroke in steps.

AIS settings (password level 4)

Parameter	Explanation	Unit	Values	Default
P300	Number of dosing valve cycles after the AIS has performed a calculation. Notice: When starting the mixing mode, the AIS must wait for these cycles, before the adjustment can begin.	Pulses	3–100	3
P301	Warning limit: Minimum injection quality (opening time of the dosing valve in percent). If the value falls below this, a warning is triggered (code 97).	%	0–100	10
P302	Lower injection quality limit (opening time of dosing valve as a percentage). If the value falls below this, the AIS optimizes the injection quality.	%	0–100	50
P303	Upper injection quality limit (opening time of dosing valve as a percentage). If the value falls below this, the AIS limits the injection quality. Thereby smooth operation is ensured.	%	0–100	60
P304	If too little product flows through, the dosing valve is continuously opened for longer than the stated time. The AIS allows more product through.	sec	0.5–25.0	1.5
P305	Repetition interval: For the above function (P304), the AIS undertakes a step every x seconds until the valve is back in cycle.	sec	0.5–25.0	1.5
P306	Number of steps which the AIS is to open when mixing operation is ended.	Steps	0–20	5
P307	Minimum flow rate of all components for AIS to undertake regulation.	cc/min	5–1000	100

AIS Information (view only, password level 4)

Parameter	Explanation
P308	Current opening time of the dosing valve in percent (0–100%)
P309	Current AIS position. The start value (after pressing the START push button) is 1000. Each step of the stepping motor changes the value by 1. A number greater than 1000 increases the flow rate. A number less than 1000 decreases the flow rate.

Preset dosing valve stroke (from password level 2)

Depending on the starting position, some time may be needed to reach the optimum stroke (AIS position). This alignment time can be reduced with an appropriate manual presetting.
The dosing valve stroke can be manually preset, if product B flows (not flushing agent B):

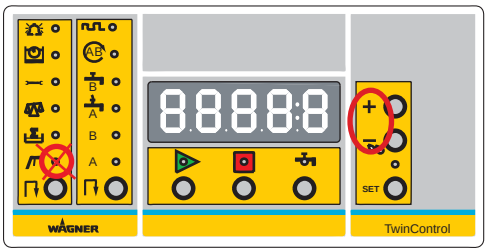
- Main menu "Working", submenu "A+B", START
- Main menu "Working", submenu "B", START
- Main menu "Working", submenu "Circulation operating mode", START
- Main menu "Calibrate", submenu "B", START
- During a flushing step with product B

Procedure

Preset dosing valve stroke when product B flows:

1. Main menu "Work" (see figure)
2. Press push button [-] or [+] several times until the product flow is approximately correct.
   + increases the flow rate
   – decreases the flow rate

Notice: Do not press the SET button.



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In the event of mixing problems:

Check AIS function

Observe for 3 minutes in spray mode with gun open: If the AIS position (P309) is continually counting up or down in the same direction without the opening time of the dosing valve (P308) changing, the AIS is not working. Contact the WAGNER Service Department.

Check AIS stepping motor

Check whether the AIS stepping motor works:

1. Main menu "Working", submenu "B", START
2. Press push button [-] until the product flow stops.

If the stepping motor does not react:

- Check connections.
- Contact the WAGNER Service Department.

AIS error messages

Error code 97: see Chapter 10.1.

8 OPERATION

Below, operation with manual guns is described. For automatic guns the same workflow applies correspondingly.

8.1 TRAINING THE OPERATING STAFF

⚠ WARNING

Incorrect operation!
Risk of injury and damage to the device.

→ The operating staff 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 staff must receive appropriate system training.

8.2 SAFETY INSTRUCTIONS

→ Observe the safety instructions in Chapter 4 and Chapter 7.2.

The operating documents for the pneumatic pumps and other system components should be read through carefully. The appropriate operating manuals are available on the WAGNER CD as PDF files.

Also observe the operating manuals for the components mounted on site.

Automatic electrostatic system
The automatic electrostatic system fitted for the GM5000 electrostatic gun may only be released in spraying mode. Always follow the instructions in the operating manual.

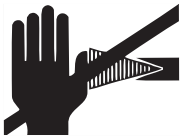
⚠ WARNING

Gas mixtures can explode if there is an incompletely filled device!
Danger to life from flying parts.

→ Ensure that the device is always completely filled with flushing agent or working medium.
→ Do not spray the device empty after cleaning.

8.2.1 GENERAL RULES FOR MAKING ADJUSTMENTS TO THE SPRAY GUN

→ Observe the operating manual of the spray gun.



⚠ WARNING

High-pressure spray jet!
Danger to life from injecting paint or solvent.

- → Never reach into the spray jet.
- → Never point the spray gun at people.
- → Consult a doctor immediately in the event of skin injuries caused by paint or solvent. Inform the doctor about the paint or solvent used.
- → Never seal defective high-pressure parts; instead relieve the pressure from them and replace them.
- → Wear the appropriate protective clothing, gloves, eyewear and respiratory protection.

8.3 FAULTS

If a fault occurs, it is indicated by the following:
- → The system stops and the alarm horn sounds
- → The alarm display lights up (control unit and remote control).
- → A fault is indicated on the display.

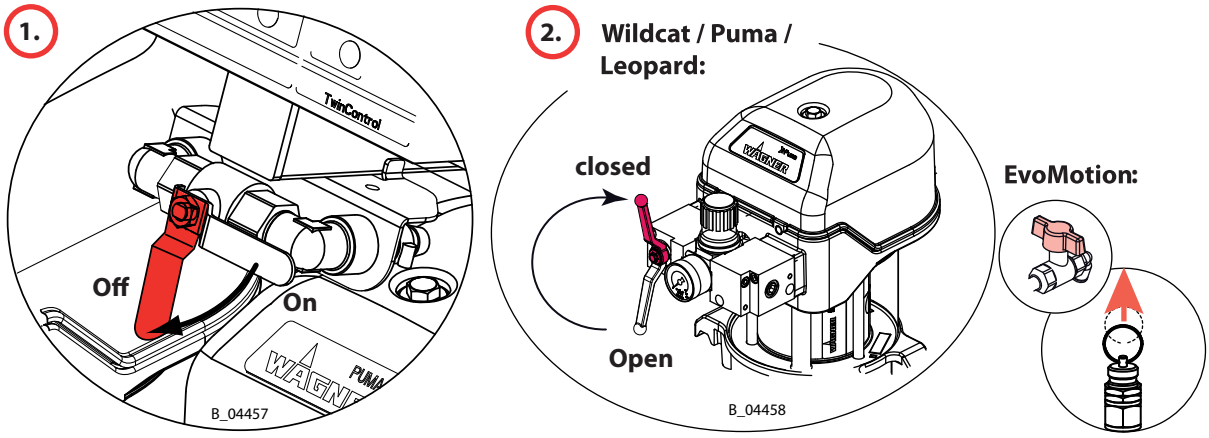
Acknowledge fault
→ With the [Stop] button.

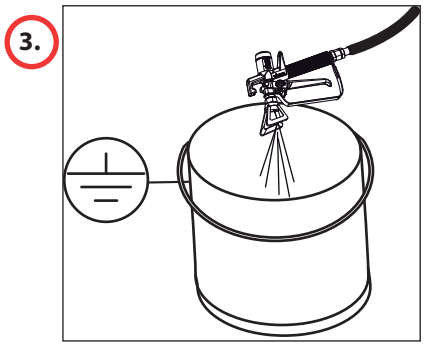
Alarm messages + fault rectification → see Chapter 10.1.

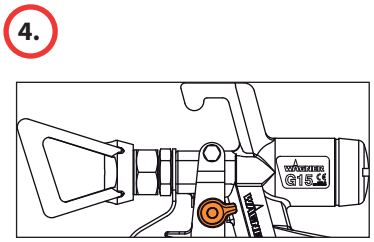
8.4 EMERGENCY DEACTIVATION

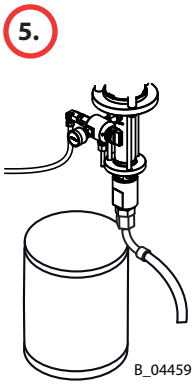
In the case of unforeseen occurrences, immediately:

1. Switch off air supply (1).
2. Vent air motors for all pumps.
3. Hold electrically conductive part of the gun against the metal tank and trigger until no further pressure is present.
4. Secure the gun.
5. Provide collection tank and open return valve for A- and B-component and flushing agent pump. Close all valves again after pressure relief.

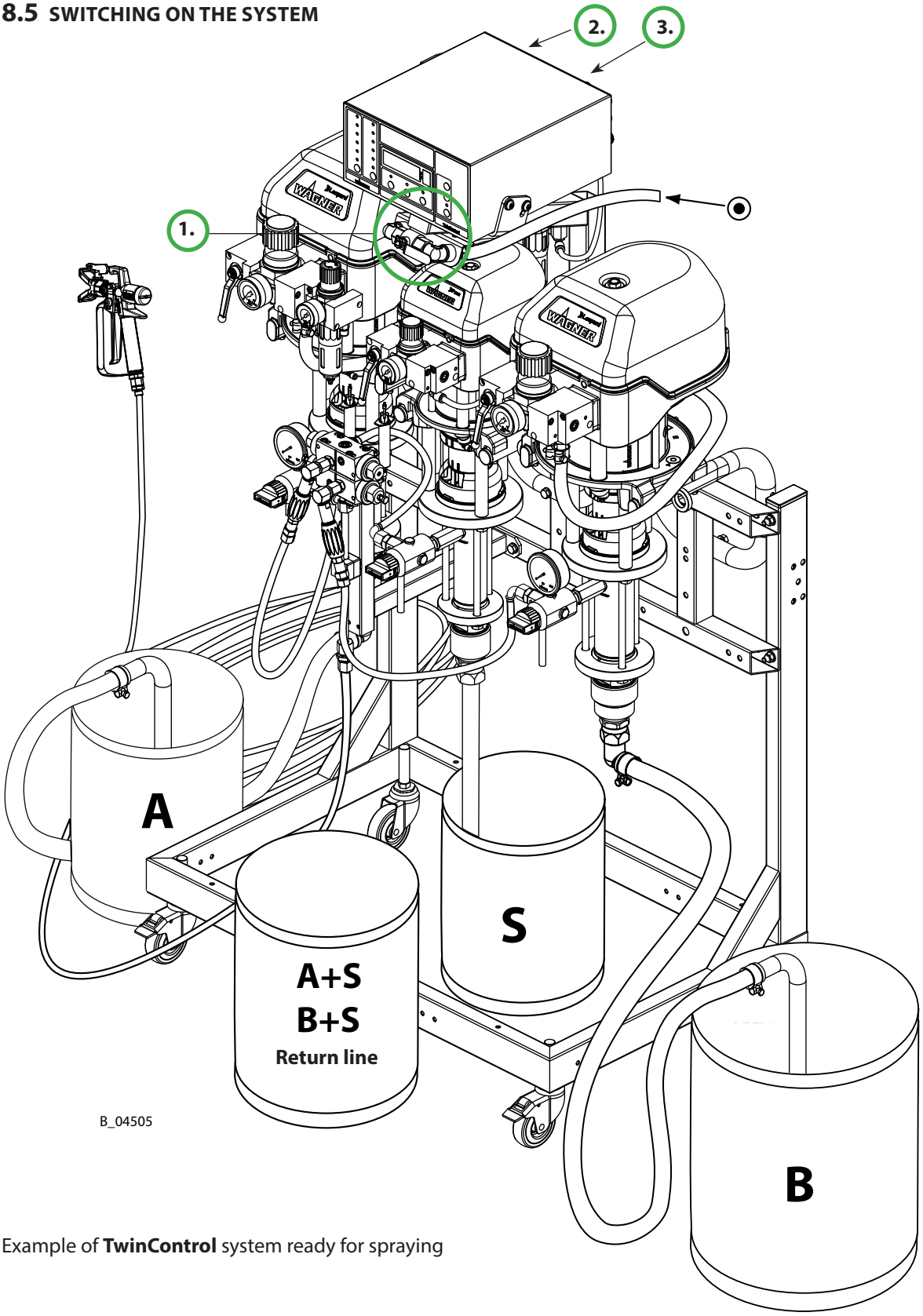




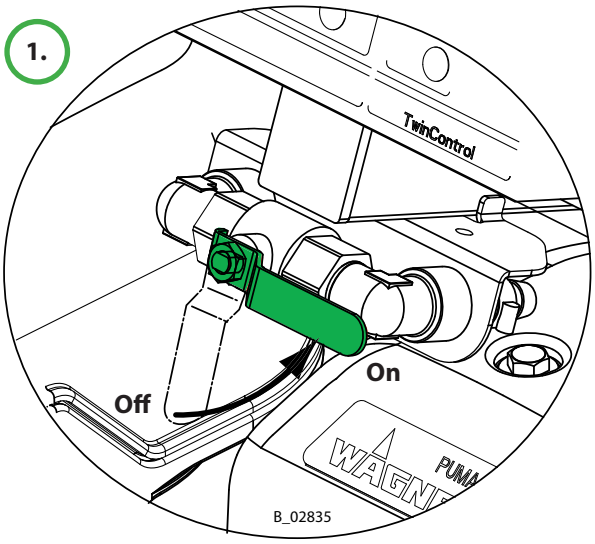




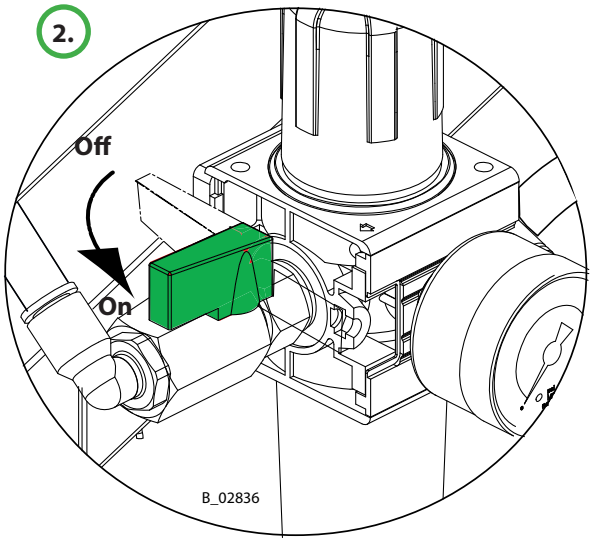
8.5 SWITCHING ON THE SYSTEM



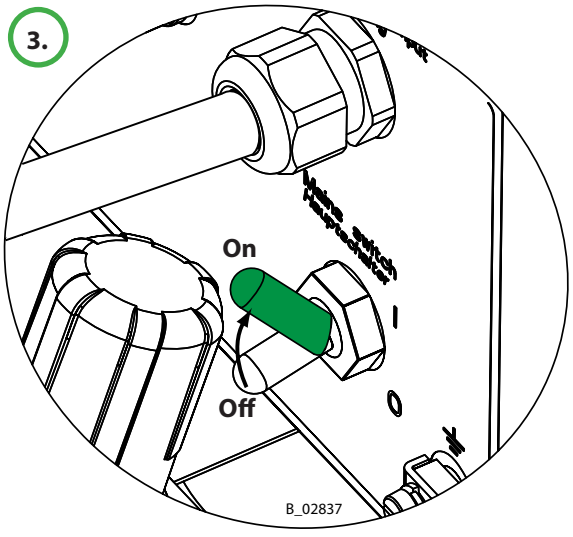
Example of **TwinControl** system ready for spraying



1. Switch on air supply.

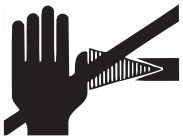


2. Switch on control air.
Note:
For TwinControl with turbine: control air drives turbine, electronic is powered by turbine.



3. Turn on main switch on the control unit.
Note:
Valid only for TwinControl cable versions.

8.6 SPRAYING MODE



⚠ WARNING

High-pressure spray jet!
Danger to life from injecting paint or solvent.

- → Never reach into the spray jet.
- → Never point the spray gun at people.
- → Consult a doctor immediately in the event of skin injuries caused by paint or solvent. Inform the doctor about the paint or solvent used.
- → Never seal defective high-pressure parts; instead relieve the pressure from them and replace them immediately.
- → Wear the appropriate protective clothing, gloves, eyewear and respiratory protection.

Optimum painting results are obtained if:
- The system parameters are set correctly.
- Product data such as the mixing ratio and pot life correspond to the working material.
- The flushing program is defined.
- The supply pressures are constant.
- The pressure regulator for the A pump and B pump are set correctly. A is always around 10% lower than B.
- AIS is used.
  Or without AIS: If the dosing valve (B side) is set using the valve stroke such that as many cycles are undertaken as possible (depending on flow rate and mixing ratio every 0.5–2 seconds). See operating manual for valves (Order No. in Chapter 1.3.1).
- The product pumps A and B can draw in the product perfectly and no cavitation occurs (pump breaking through during down stroke). If necessary, the product must be fed with a feed pump.

Optimum operation is fulfilled under the following conditions:
- The flushing agent pressure for A and B is always present on the device, and the product pressure for the A and B pumps.
- When filling the mixed product in the product hose ensure that the nozzle is inserted in the gun.
- When the flushing process is performed without the nozzle in the gun.
- The level in the A and B product tanks and in the flushing product tank is checked visually, in order to prevent unintended interruptions in the spray process.

Prerequisites

- At the start, all pumps must be filled with working material and the system must be ready to start, as described in Chapter 6.7.3.
- The nozzle is inserted into the gun. Gun secured.
- Operating manuals for the affected components must be known.

Process

1. If necessary, use [Stop] to move control unit into base position:  .
2. Press [Start] button on control unit.
3. **Filling process**: Trigger gun with nozzle and spray into waste bucket. The green start lamp on the control unit flashes during filling.
4. Filling until the green start lamp lights up continuously and no flushing agent or unmixed product comes out. Instead there should be just mixed product.
5. Start the coating process right away and perform without interruption if possible. Note pot life of product at all times.
6. If necessary, adjust air pressure levels of high-pressure pumps. The hardener pressure should be slightly higher than that of the A component.
7. Once spraying work is complete, perform flushing (Chapter 8.7) and / or pressure relief (Chapter 8.8).

NOTICE

Constant supply pressures!
Poor coating result.

→ The supply pressure of component B should be adjusted to a higher value (approx. 10%) than that of component A.
→ The supply pressures should be constant.

8.7 FLUSHING

The system's flushing program flushes the hoses between the mixer and gun and removes any mixed product present.

Flushing must always be carried out:

- before prolonged work interruptions and before the end of work
- before expiry of the pot life
- before a product change

DANGER

Exploding gas / air mixture!
Danger to life from flying parts and burns.

→ Never spray into a closed tank.
→ Ground the tank.

→ If a high-pressure gun is used, remove the spray nozzle before flushing.
Note: Before the spray nozzle is removed, the pressure (see Chapter 8.8) has to be relieved.
→ Wear protective eyewear.
→ Set the flushing agent pressure as low as possible for flushing.

Process

1. Press [Stop] on the control unit.
2. Press]Flush] on the control unit.
3. Hold gun in a grounded tank, carefully open and hold until clean flushing agent comes out and the flushing program is complete.
4. Close and secure gun.

Display in the display unit

While the flushing program is underway, the individual stages and entered data are shown on the display.

Insufficient flushing affect

→ If necessary adjust the flushing pressure on the flushing pump.
→ If necessary, adapt the flushing program. See Chapter 7.6.2 "Defining Flushing Program".
→ Check suitability of flushing agent for the master and hardener materials used. Note manufacturer's recommendations for use.

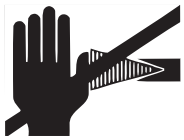
Clean the system → See Chapter 9.1.4

8.8 PRESSURE RELIEF/WORK INTERRUPTION

The pressure must always be relieved when:

- The spraying tasks are finished.
- Servicing the system.
- Carrying out cleaning tasks on the system.
- Moving the system to another location.
- Something needs to be checked on the system.
- The nozzle is removed from the gun.

Please read the general safety instructions in Chapter 4.



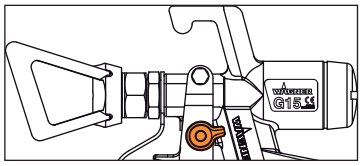
⚠ WARNING

High-pressure spray jet!
Danger to life from injecting paint or solvent.

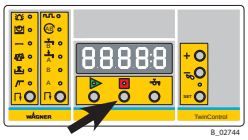
- → Never reach into the spray jet.
- → Never point the spray gun at people.
- → Consult a doctor immediately in the event of skin injuries caused by paint or solvent. Inform the doctor about the paint or solvent used.
- → Never seal defective high-pressure parts; instead relieve the pressure from them and replace them.
- → Wear the appropriate protective clothing, gloves, eyewear and respiratory protection.

Process:

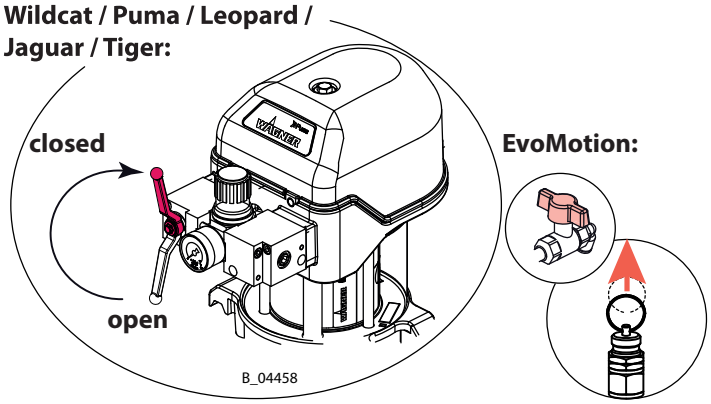
1. Secure the gun.



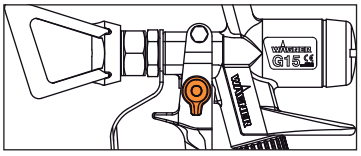
2. Press [Stop].



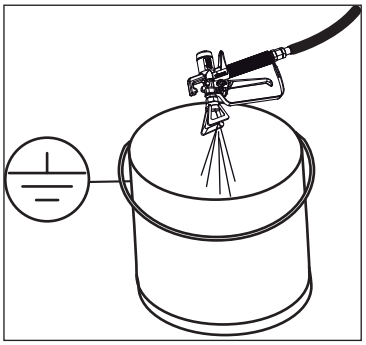
3. Close air valves of A pump, B pump and flushing pump.



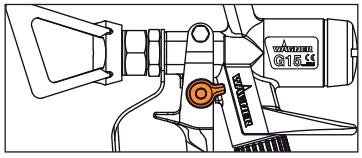
4. Release gun.



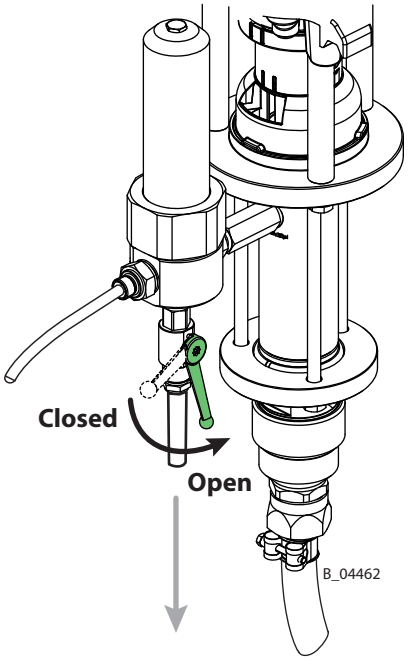
5. Hold electrically conductive part of the gun against the metal tank and trigger until no further pressure is present.

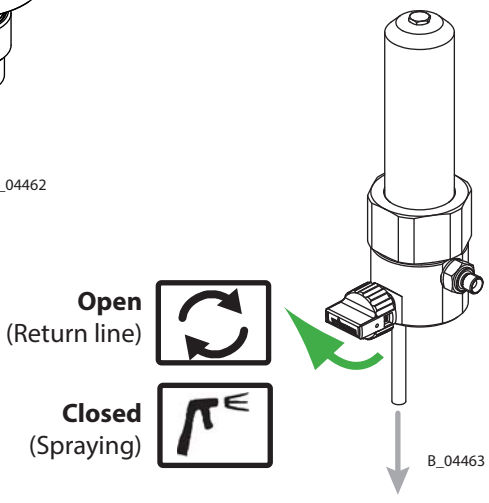


6. Secure the gun.



7. Provide collection tank. Open return ball valve of A pump, B pump and flushing pump. Close all valves again after relieving the pressure.





8.9 AUTOMATIC ELECTROSTATIC SYSTEM SET FOR ELECTROSTATIC GUN GM5000 (OPTION)

The TC VM5000 automatic electrostatic system set serves as an additional safety device for the safe use of the TwinControl 2K system with a GM5000 electrostatic gun. However, the operator has a duty to proceed in compliance with the following instructions.

Four possible operating states of the TwinControl system:

1.	Filling paint	Switch off the electrostatics.
2.	Spraying mode	The electrostatics is enabled.
3.	Work interruption (stop)	Switch off the electrostatics.
4.	Flushing	Switch off the electrostatics.

8.9.1 COMMISSIONING AND SETTINGS

Perform commissioning and parameter settings as described in the operating manuals for the electrostatic guns and control units.

Settings on the pressure switch
The pressure sensor is set to the lower switching point of 2 bar at the factory. If the switching point setting needs to be adjusted, proceed as described in the assembly manual for the automatic electrostatic system set (order No. 2334831).

Settings on the VM5000 control unit
Device configuration settings must be made on the VM5000 control unit. Please follow the safety instructions and instructions in the VM5000 operating manuals.
Make the device configuration settings in the VM5000:
C11: Set remote enable to **on**.

Function test
After commissioning, a function test is required in accordance with the assembly manual for the automatic electrostatic system set, Order No. 2334831.

8.9.2 PAINT FILLING

Safety precautions:
Before product can be preloaded with the TwinControl system, the electrostatic on the VM5000 must be switched off manually. This ensures that under no circumstances will solvent be sprayed if the electrostatics is switched on. The electrostatics can cause ignitable solvent/air mixtures to explode.

1. Switch off the electrostatics on the VM5000 control unit manually as described in the VM5000 operating manuals.
2. Perform product filling as described in this operating manual (TwinControl). The "Work" illuminated display flashes during filling.
3. When filling process is complete, the "Work" illuminated display lights up constantly.

Attention:
The filling quantity must be set correctly. At the end of the filling process, the product hose must be filled with product that can be sprayed up to the end of the gun nozzle. In other words, product that can be sprayed (without solvent) must be coming out of the gun nozzle.

8.9.3 SPRAYING MODE

Safety precautions:
Before spraying mode with electrostatics can get underway, you must check that product that can be sprayed (without solvent) is coming out of the gun nozzle.

1. Press and release the trigger of the spray gun and check that product that can be sprayed (without solvent) is coming out of the gun nozzle. Perform filling paint if necessary and set the correct filling quantity.
2. Switch on the electrostatics on the VM5000 control unit manually as described in the VM5000 operating manuals.
3. Perform spraying mode as described in this operating manual (TwinControl). Ensure that the electrostatics has been set correctly on the GM5000 spray gun as described in the GM5000 and VM5000 operating instructions.

8.9.4 WORK INTERRUPTION (STOP)

1. Switch off the electrostatics on the VM5000 control unit manually as described in the VM5000 operating manuals.
2. Follow the instructions in Chapter 8.8.

8.9.5 FLUSHING

Safety precautions
Before the TwinControl system is flushed, the electrostatics on the VM5000 control unit must be switched off manually. This ensures that under no circumstances will solvent be sprayed if the electrostatics is switched on. The electrostatics can cause ignitable solvent/air mixtures to explode.

1. Switch off the electrostatics on the VM5000 control unit manually as described in the VM5000 operating manuals.
2. Press and release the trigger of the GM5000 spray gun and check that the electrostatics has been switched off.
3. Carry out flushing in accordance with Chapter 8.7. The "Flushing" illuminated display lights up during flushing.

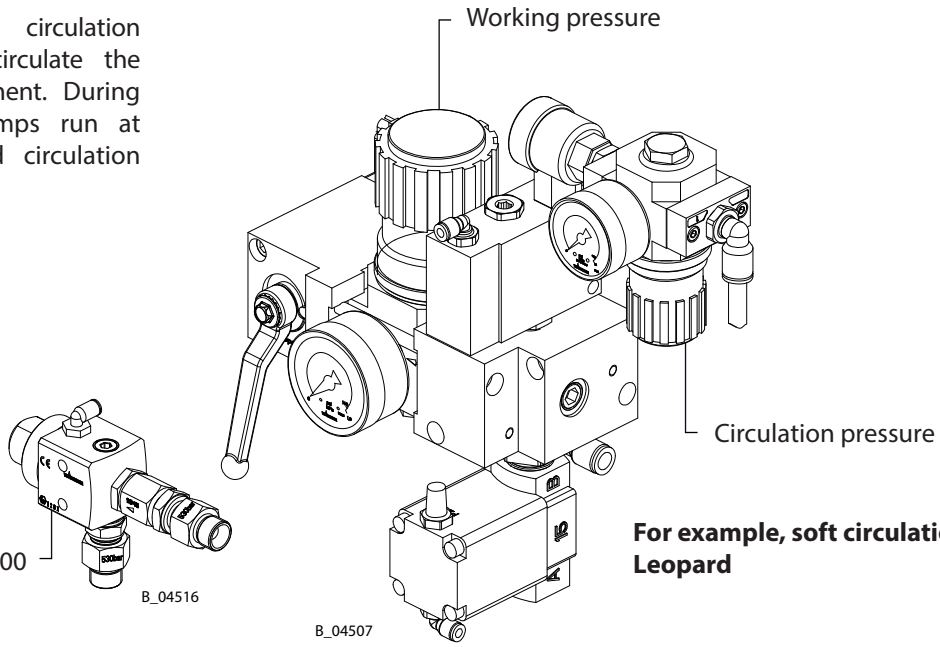
8.10 CONNECTION KIT FOR GUN FLUSH BOX (OPTION)

Software settings and tests

1. Attach the compressed air and increase slowly to the desired value. Switch on the power supply. Watch out for compressed air leaks!
2. Set parameter P114 in accordance with Chapter 7.6 (GFB = 1, yes). For system parameters, see Chapter 5.9.
3. Insert a spray gun into the gun flush box and lock the cover.
4. The trigger mechanism of the gun flush box may not be operated now, i.e. is depressurized at connection no. 3 and is pressurized at no. 3- (see Chapter 5.7 and 5.8).
5. Press the "flushing" button or allow the TwinControl to undercut the pot life. As soon as the pot life alarm is released, el. pneumatic valve no. 20 is actuated. The trigger mechanism of the gun flush box is now operated, i.e. is pressurized at connection no. 3 and is depressurized at no. 3-.

8.11 SOFT CIRCULATION (OPTION)

Systems with soft circulation can automatically circulate the A and/or B component. During circulation, the pumps run at the preset, reduced circulation pressure.



For example, soft circulation Leopard

Soft circulation setting
Via password level 4 where pos. "P154" P154 = 1.
0 = No circulation, 1 = Soft circulation, 2 = Circulation at operating pressure

Separate settings for A and B components

P155 = 1	A component circulating (product valve A opens when circulating)
P155 = 0	A component not circulating (product valve A remains closed)
P156 = 1	B component circulating (product valve B opens when circulating)
P156 = 0	B component not circulating (product valve B remains closed)

Stating circulation
1. Press the [STOP] button.
2. If necessary, place return hoses in the corresponding product tanks.
3. Select circulation mode: 
4. [Start]

Ending circulation
[Stop] → circulation stops and pressure returns to operating pressure.

Maintenance
Check valves regularly for leaks (leakage testing in Chapter 7.6.3). If the valves are leaking, some of the product will flow back to the product tank and the mixing ratio will no longer be right.

8.12 REMOTE CONTROL AND ESTA REMOTE CONTROL (OPTION)

If the control unit cannot be accessed directly from the workplace, the remote control is used for the basic functions: start, stop, flush and circulate.

The ESTA remote control is used with systems with raised electrostatics.

8.12.1 EXPLOSION PROTECTION

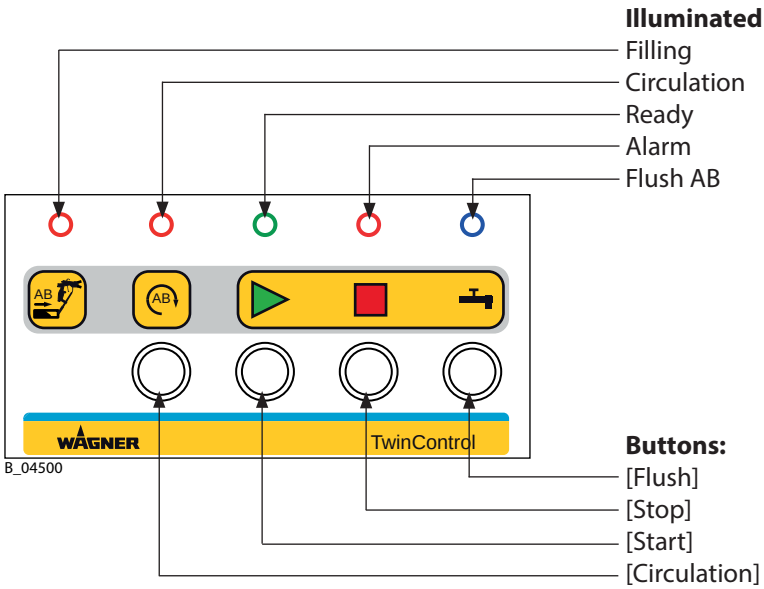
The remote control (accessory) may **not** be used along with a system with a mains power supply (cable) in potentially explosive areas.

The TwinControl remote control may be used along with a system with a turbine in potentially explosive areas (zone 1, zone 2) (see Chapter 2.3).

8.12.2 TWINCONTROL REMOTE CONTROL

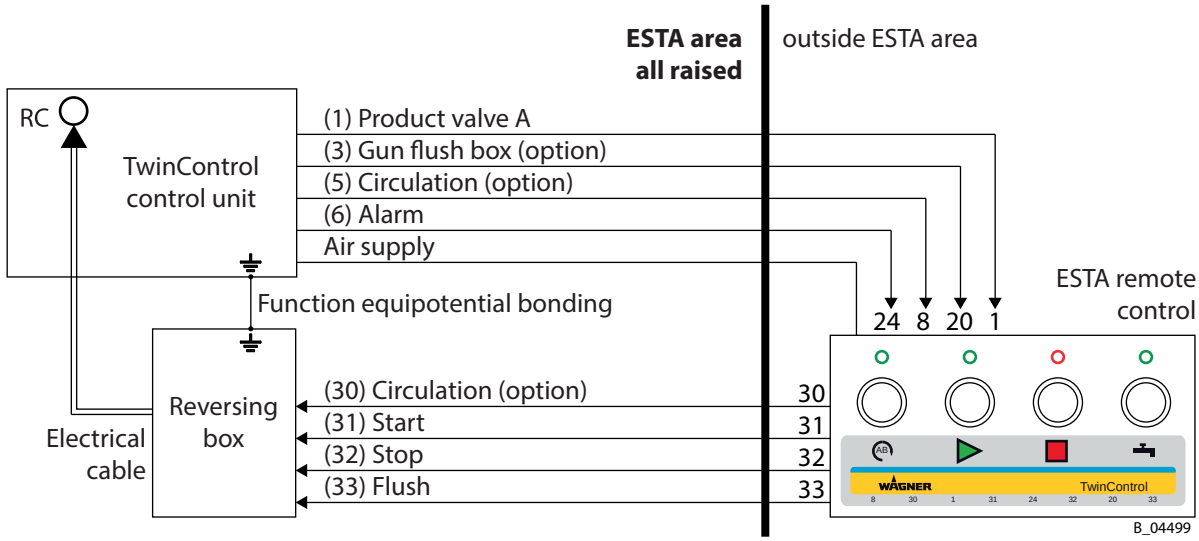
Installation
Connect the remote control to the control unit: Insert the cable into the RC (Remote Control, see Chapter 5.7) connection. Several cables can be connected together up to a maximum length of 75 m; 246 ft. The cable must be installed permanently and protected from mechanical damage. The first fixing point must be no more than 20 cm from the cable gland.

Operation
[Start], [Stop] and [Flush AB] buttons: Same as the corresponding buttons on the control unit.
[Circulation] button: Circulation valves A and B are opened.

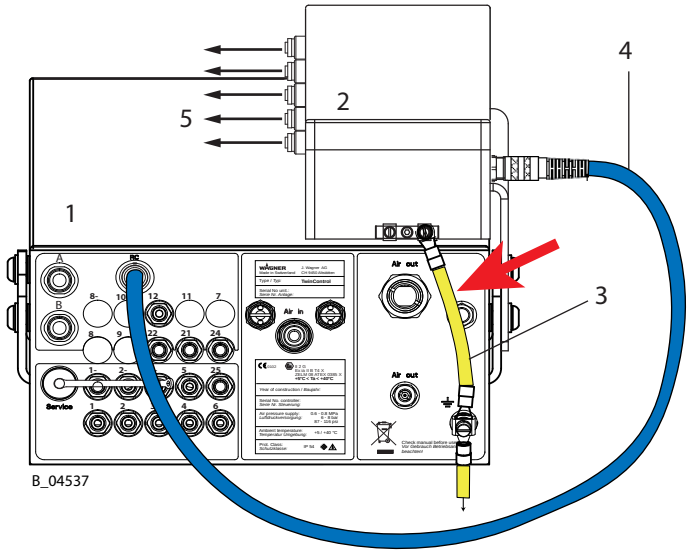


8.12.3 ESTA REMOTE CONTROL

Installation
Pneumatic lines: Connect remote control with control unit and reversing box as shown.
Electric cable: Connect reversing box to control unit (for RC connection/Remote Control, see Chapter 5.7).



Function equipotential bonding
The function equipotential bonding connection must have little induction and be short (see diagram).



Operation
[Start], [Stop] and [Flush AB] buttons: Same as the corresponding buttons on the control unit.
[Circulation] button: Circulation valves A and B are opened.

View of rear of system:
1 Control unit
2 Reversing box
3 Function equipotential bonding
4 Electrical cable
5 Hose connections to ESTA remote control

8.13 EXTERNAL MIXERS (OPTION)

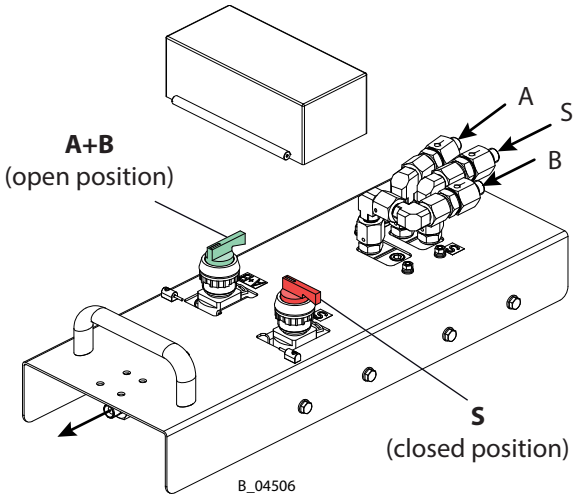
8.13.1 EXTERNAL MIXERS, MANUAL DN2.6 AND DN4

To A pumps 5-60, 10-70, 28-40, 15-70, 15-150, 21-110, 35-70, 35-150.

Inputs: A, B and S components
Switches A+B: Spray on/ off
Switch S: Flushing on/ off

Spraying mode
Switches A+B open, switch S closed.

Flushing mode
1. Close switches A+B
2. Open switch S
3. Perform flushing in accordance with Chapter 8.7
4. Close switch S



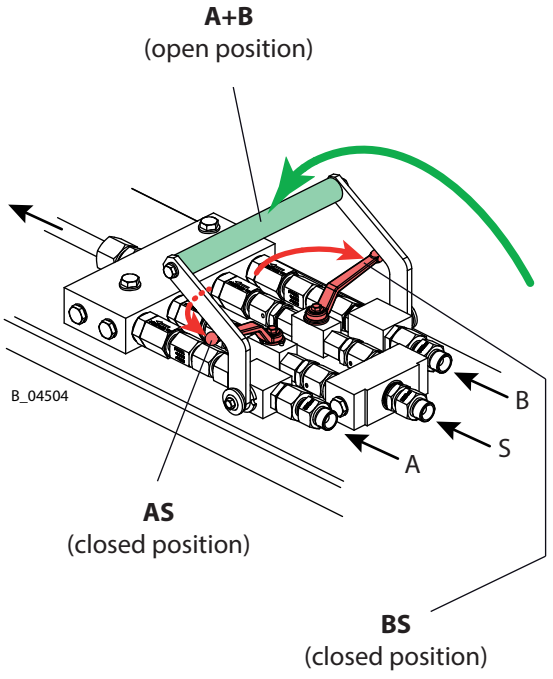
8.13.2 EXTERNAL MIXERS, MANUAL DN8

To A pumps 48-110, 8-300, 3-600, 18-300, 8-600, 75-150, 38-300, 72-300.

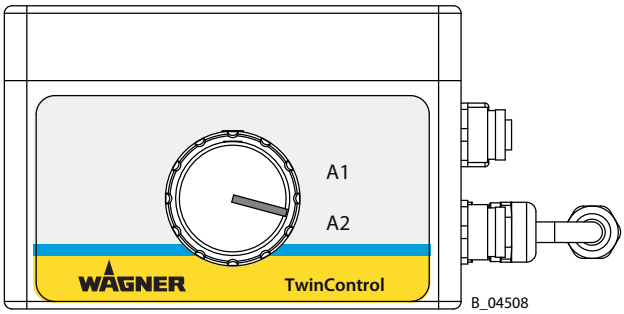
Inputs: A, B and S components
Handle A+B: Spray on/ off
Ball valve AS: Flushing on/ off for A side
Ball valve BS: Flushing on/ off for B side

Spraying mode
Handle A+B open, ball valves AS and BS closed.

Flushing mode
1. Close handle A+B
2. Perform flushing in accordance with Chapter 8.7
   Please note:
   - first flush B side for 5 seconds (ball valve BS open, AS closed),
   - then flush A side until the flushing process is complete (ball valve AS open, BS closed).
3. Close ball valves AS and BS



8.14 2A SWITCHBOX FOR SECOND A PUMP (OPTION)



If two different colors are to be used in turn, a second A pump can be installed. A 2A switchbox is used to switch between pumps A1 and A2. The switchbox switches the following pump signals over and forwards them to the control unit:
- Product valve A (pneumatic)
- Changeover signal pump A (pneumatic)
- Stroke measurement A / sensor A (electric)

Prerequisites

- Pumps A1 and A2 must be the same (model and size).
- Hose from product valve A1 or A2 to mixer block: Same diameter and length.
- Same hardener and same mixing ratio for components A1 and A2.
- Soft circulation is not possible.
- External mixer on request.

Grounding

The switchbox must be grounded. The stroke measurement cables may be extended by 5 meters.

Explosion protection

Explosion protection is retained for systems with turbines, even with the 2A switchbox.

Switching over pump

1. [Stop].
2. [Flush] --> Hold gun in a grounded tank, carefully open and hold until clean flushing agent comes out.
3. Turn switchbox switch as far as the stop.
4. Filling and spraying according to Chapter 8.6.

Always turn switch as far as the stop. The center position will result in a fault message (Code 20: Sensor A at bottom).

9 CLEANING AND MAINTENANCE

9.1 CLEANING

9.1.1 CLEANING STAFF

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

The following hazards may arise during cleaning work:

- Health hazard from inhaling solvent vapors
- Use of unsuitable cleaning tools and aids

9.1.2 SAFETY INSTRUCTIONS

→ Observe safety instructions in Chapter 4.

⚠ WARNING

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.
→ Only repair and replace parts that are listed in the "Spare parts" chapter and that are assigned to the unit.
→ Before all work on the device and in the event of work interruptions:
- Switch off the energy/compressed air supply.
- Disconnect the control unit from the mains.
- Relieve the pressure from the spray gun and device.
- Secure the spray gun against actuation.
→ Observe the operating and service manual for all work.

9.1.3 FILTER CLEANING

→ The filters for the piston pumps and gun should be cleaned in accordance with the corresponding operating manuals.

9.1.3.1 CONDENSATE DRAINAGE FROM THE FILTER PRESSURE REGULATOR

→ Frequently drain the condensate that may accumulate in the air filter.
- Make sure the water level in the filter cup never reaches the max. level marked on the cup itself.

⚠ WARNING

Brittle filter pressure regulator!
The tank on the filter pressure regulator becomes brittle through contact with solvents and can burst.
Flying parts can cause injury.

→ Do not clean the tank on the filter pressure regulator with solvents.

9.1.4 CLEANING THE SYSTEM

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

→ A cleaned system enables simple localization of any leaks and quick repairs.

Procedure:

1. Carry out work interruption → Chapter 8.8.
2. Carry out basic flushing → Chapter 6.7.2.
3. Maintain the gun according to the operating manual.
4. Clean and check the suction systems and suction filter.
5. When using a high-pressure filter: clean and check filter insert and filter housing.
6. Clean the outside of the system.
7. Put the whole system back together.
8. Check the level of the separating agent → See operating manuals for pumps.

⚠ 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.

9.1.5 DECOMMISSIONING

1. Clean the system according to Chapter 9.1.4.
2. Fill the entire system with flushing agent. → As laid down in Chapter 6.7.3 but with flushing agent.

9.1.6 LONG-TERM STORAGE

If storing the system for a prolonged period of time, thorough cleaning and corrosion protection are necessary. For the last rinse, replace the water or solvent in the product pumps with a suitable preservative. Fill separating agent cup with separating agent. Store pump vertically.

Procedure:

1. Clean the system according to Chapter 9.1.4.
2. Fill the entire system with flushing agent. → As laid down in Chapter 6.7.3 but with flushing agent.
3. Fill the entire system with preservative according to Chapter 6.7.3 and the lacquer supplier's instructions.
4. If the discharge duct is to be removed, seal product outlet with plug.
5. If the suction system is to be removed, seal product inlet with plug.
6. Storage according to Chapter 6.2.

9.2 MAINTENANCE

9.2.1 MAINTENANCE STAFF

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

The following hazards may arise during maintenance work:

- Health hazard from inhaling solvent vapors
- Use of unsuitable tools and aids

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

9.2.2 SAFETY INSTRUCTIONS

→ Observe the safety instructions in Chapter 4 and Chapter 9.1.2.

Prior to maintenance

- Cleaning and flushing the device. Chapters 8.7 and 9.1.4.

After maintenance

- Put the system into operation and check for leaks. → Chapter 6.7.

→ In accordance with the guideline for liquid ejection devices (ZH 1/406 as well as BGR 500 Part 2 Chapter 2.29 and Chapter 2.36):
  - The liquid ejection devices should be checked by an expert (e.g., WAGNER service technician) for their safe working conditions as required and at least every 12 months.
  - For shut down devices, the examination can be suspended until the next start-up.

DANGER

Incorrect maintenance/repair!
Danger to life and equipment damage.

→ Repair or replacement of devices or parts of devices are only allowed to be performed outside the hazard area by qualified personnel.

1. Check the level of separating agent in the separating agent cup every day, and top up if necessary.
2. Check and clean the high-pressure filter every day or as required.
3. Every shut down should be carried out as laid down in Chapter 9.1.5!
4. Check hoses, pipes, and couplings every day and replace if necessary.

⚠ WARNING

Maintenance and service tasks
Explosion hazard.

→ Maintenance and service tasks inside the housing may only be performed by trained WAGNER staff, and only in the absence of any atmosphere containing potentially explosive gas.

9.2.3 SERVICE PLUG

⚠ WARNING

Service plug!
Explosion hazard.

→ Do connect the service plug if a potentially explosive gas atmosphere may be present.

9.2.4 CONNECTIONS FOR STROKE MEASUREMENT

Plug connectors A and B on the back of the device are used to connect the potentiometers and may be inserted and removed, even during operation if it is safe to do so (lines are intrinsically safe).

9.2.5 TURBINE

- When replacing the turbine, attention should be paid to the "TC Turbine Set" assembly manual with order No. 2320883.
- When replacing the generator, attention should be paid to the "TC Generator Conversion Set" assembly manual with order No. 2336796.

9.2.6 PRODUCT HOSES, TUBES AND COUPLINGS

DANGER

Bursting hose, bursting threaded joints!
Danger to life from injection of product and from flying parts.

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

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

- → Check hoses, pipes, and couplings every day and replace if necessary.
- → Before every commissioning, check all connections for leaks.
- → 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.
- → Undamaged complete hoses are to be replaced when one of the two following intervals has been 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 (27 MPa)	Pressure
XX	Internal code
DNxx (e.g., DN10)	Nominal diameter

10 TROUBLESHOOTING

Fault display
If a fault occurs, it is indicated by the following:
→ The horn sounds and the system stops.
→ The alarm display lights up (control unit and remote control).
A fault is indicated on the display.

Acknowledge fault
→ With the [Stop] button.

Fault rectification
If the alarm signal sounds, it is advantageous to be able to determine which operating situation has caused the error. Fault rectification can be carried out in accordance with the list in Chapter 10.1.

Incorrect product in spray hose
After a fault, the spray hose is filled with incorrectly mixed product. This incorrect product must be discharged or removed with intermediate flushing.

Defect in control unit
→ Faults caused by a defect in the control unit may only be remedied by a trained expert (e.g., workshop electrician)!

⚠ WARNING

Electric shock hazard inside the control unit!
Danger to life from electric shock.

→ May only be installed/maintained by skilled electricians or under their supervision.
→ Operation according to the safety regulations, fire protection and electrotechnical rules.
→ Must be de-energized before work is commenced on active parts.

Malfunction	Remedy
System does not start up	- Check air supply line connection. - Check the pressure value on the system's pressure gauge for the air supply to the valves. - Check the voltage supply (Does the control panel light up?). - Check the selected valves. - Check the fuses.
System is in operation (a pump is running), but there is no product flow	- Check the supply lines of the components as well as filters (clogging) and suction tubes (leakage). - Check the component level in the supply tanks. - Check the viscosity of the components or the pressure loss.
System does not supply any product, pumps do not run	- Check the mixing tube and feed hoses. - Check the guns and the gun filter. - Clean the lines by flushing or cleaning manually.
The 2K product does not react correctly	- Check the mixing ratio value. - Check the suction lines (leakage). - Check the stroke sensors by carrying out a calibration. - Check the differential pressure between B and A (B approx. 5 - 10% higher than A). - Check AIS function and stepping motor according to Chapter 7.6.5. - Without AIS: Optimize the switching behavior of the hardener dosing valve in spraying mode (0.5 - 2 seconds) via the differential pressure of B to A or via the stroke setting of the valve. - Check the lacquer specifications.
Flow rate is too low	- Check the mixing tube and feed hoses. - Check the guns and the gun filter. - Clean the lines by flushing or cleaning manually. - Increase the pressure of the supply pumps.
Lacquer loss from the bleed bore of a product valve	- Replace the valve needle seal, check the valve needle and housing for damage and if necessary replace the entire valve.
Interruption of circuit over a longer period of time	- With external compressed air, manually open the flushing valve and distributor valve (option).
The system supplies product, but the spray pattern is inadequate	- Ensure that the supply pressures are constant. - The pressure of component B must be 10% higher than that of component A. - Increase the pressure of the supply pumps. - AirCoat: Set the atomizing air correctly. - Check the product filter with pumps and guns. - Replace gun nozzle with a more suitable nozzle (Airless and AirCoat). - Check the viscosity of the product and dilute it in accordance with the lacquer manufacturer's instructions. If necessary correct the mixing ratio. - AirCoat: Ensure that only dry, clean atomizing air is used in the spray gun.
Flow rate is too high	- Replace gun nozzle (Airless and AirCoat). - Check the lines for leakage. - Set the opening of the gun needle correctly (air guns only). - Decrease the pressure of the supply pumps.

10.1 ALARMS AND APPROPRIATE FAULT RECTIFICATION

Software version V 4.0x / 4.1x / 4.2x

Code	Cause	Description of faults	Fault rectification
off	No authorization	Unauthorized input	Release authorization
11	Shortage of the B component	Too little B component in the mixture.	Increase air pressure for B pump or reduce for A. Without AIS: Increase length of stroke of timing valve in B product. With AIS: Check AIS position, manually increase if necessary (see Chapter 7.6.5, parameter P309).
12	B Excess	Too much B component in the mixture.	Reduce air pressure for B pump. Without AIS: Decrease length of stroke of timing valve in B product. With AIS: Check AIS position, manually decrease if necessary (see Chapter 7.6.5, parameter P309).
15	Pot life	Pot life has expired.	Flush or continue operation.
16	Compressed air supply	Compressed air supply less than 0.4 MPa; 4 bar; 58 psi.	Increase compressed air supply.
17	External release	No external release.	Activate external release. see Chapter 5.8.
18	Flushing problem	Flush program is not running.	Open compressed air for A and B product pump. Remove gun. Check gun flush box.
19	Pot life	Flushing must be undertaken first.	Flushing
20	Sensor A at bottom	Stroke sensor A cable breakage or sensor signal lost (sensor is in lower idle position).	Intake problem: A pump is cavitating, improve supply of product. Switch A pump to circulation and pass lower reversal point. Check plug connection for sensor A. If second A pump present: 2A switchbox switch must be at stop.
21	Sensor B at bottom	Stroke sensor B cable breakage or sensor signal lost (sensor is in lower idle position).	Intake problem: B pump is cavitating, improve supply of product. Switch B pump to circulation and pass lower reversal point. Check plug connection for sensor B.
24	Sensor A initialization	Stroke sensor A initialization error.	Switch system off and turn back on.
25	Sensor B initialization	Stroke sensor A initialization error.	Switch system off and turn back on.
26	Sensor A reversal points	Stroke sensor A problem with reversal points.	Calibrate A. Replace stroke sensor if necessary.

Software version V 4.0x / 4.1x / 4.2x

Code	Cause	Description of faults	Fault rectification
27	Sensor B reversal points	Stroke sensor B problem with reversal points.	Calibrate B. Replace stroke sensor if necessary.
30	Downward speed A	Pump A sags in downward stroke, pump cavitating.	Check product supply.
31	Downward speed B	Pump B sags in downward stroke, pump cavitating.	Check product supply.
32	Upward speed A	Pump A sags in upward stroke, pump cavitating.	Check product supply. Leak check, check piston valve.
33	Upward speed B	Pump B sags in upward stroke, pump cavitating.	Check product supply. Leak check, check piston valve.
40	Alarm password	The software is not enabled.	Enter software password. WAGNER AG password (only possible on PC).
41	Wrongly adjusted air pressure	Turbine speed too low.	Check turbine. Adjust air pressure (WAGNER technician).
42	Wrongly adjusted air pressure	Turbine speed too high.	Check turbine. Adjust air pressure (WAGNER technician).
61	Warning leakage A up	The A fluid section has a slight leak in the upward stroke.	Check circulation valve. / Schedule an inspection of the A fluid section.
62	Warning leakage A down	The A fluid section has a slight leak in the downward stroke.	Check circulation valve. / Schedule an inspection of the A fluid section.
63	Alarm leakage A up	The A fluid section has a large leak in the upward stroke.	Check circulation valve. / Schedule inspection of the A fluid section.
64	Alarm leakage A down	The leak in the A pump in the downward stroke exceeds the error limit.	Check circulation valve. / Schedule inspection of the A fluid section.
65	Alarm leakage B up	The B fluid section has a slight leak in the upward stroke.	Check circulation valve. / Schedule an inspection of the B fluid section.
66	Alarm leakage B down	The B fluid section has a slight leak in the downward stroke.	Check circulation valve. / Schedule an inspection of the B fluid section.
67	Alarm leakage B up	The B fluid section has a large leak in the upward stroke.	Check circulation valve. / Schedule inspection of the B fluid section.
68	Alarm leakage B down	The leak in the B pump in the downward stroke exceeds the error limit.	Check circulation valve. / Schedule inspection of the B fluid section.
70	Number of strokes from A pump too high	A product pump is too fast.	Restrict stroke rate.
71	Number of strokes from B pump too high	B product pump is too fast.	Restrict stroke rate.
72	Number of strokes from A flushing pump too high	A flushing pump is too fast.	Restrict stroke rate.

Software version V 4.0x / 4.1x / 4.2x

Code	Cause	Description of faults	Fault rectification
73	Number of strokes from B flushing pump too high	B flushing pump is too fast.	Restrict stroke rate.
80	A valve worn out	A valve has too many cycles.	Inspect A valve.
81	B-valve worn out	B valve has too many cycles.	Inspect B valve.
85	Failure	The factory settings are not saved.	Contact the WAGNER hotline.
86	Failure	The back-up settings are not saved.	Contact the WAGNER hotline.
90	EEPROM alarm	Reading or writing to the EEPROM is not possible.	Contact WAGNER service.
91	ADC alarm	Reading the potentiometer values is not possible.	Contact WAGNER service.
92	Alarm K factor Pump A	The current K factor is outside the valid range.	Recalibrate pump. Check range setting of pump.
93	Alarm K factor Pump B	The current K factor is outside the valid range.	Recalibrate pump. Check range setting of pump.
94	Flow is too high	The current flow is above the set value.	Check nozzle and pump pressure.
95	Flow is too low	The current flow is below the set value.	Check nozzle and pump pressure.
96	Gun signal missing	The gun signal is not present.	Check gun monitoring.
97	AIS fell short of warning limit	AIS: Falls short of minimum injection quality (opening time of the dosing valve in percent, see Chapter 7.6.5, parameter P301).	- If the stroke of the dosing valve is far from its ideal position, the adjustment can take a long time under some circumstances. Preset dosing valve stroke (see Chapter 7.6.5, parameter P309) - Reduce air pressure for B pump. - Check whether valve closes. Clean valve. - Check stroke sensor. - Check whether nozzles, mixer or filter are clogged. - Check the level of the paint tank, condition of the feed pumps, etc.

10.2 CONVERSION OF THE DIFFERENT MIXING RATIO SPECIFICATIONS

It is very important that the data sheets of the paint supplier are available, so that the correct mixing ratio can be entered.

→ Some paint suppliers indicate the mixing ratio by weight, others by volume.

→ Since the flow meters measure in volumetric terms, we need the specification in volume.

Conversion of mixing proportion from gravimetric to volumetric:

Example:

10	Parts of component A by weight and
1	Parts of component B by weight
or	
10g	Component A
1g	Component B
or	weight. parts 10:1
or	10:1 by weight (A grav : B grav)

→ The density or spec. volume of components A and B must be known or determined beforehand.

Density:

$$P_A = \frac{G_A}{V_A} = \frac{0.15\ gr}{0.1\ cm^3} = 1.5\ \frac{gr}{cm^3} = 1.5\ \frac{Kg}{L}$$

$$P_B = \frac{G_B}{V_B} = \frac{0.1\ gr}{0.1\ cm^3} = 1\ \frac{gr}{cm^3} = 1\ \frac{Kg}{L}$$

Legend:

G= Weight

V= Volume

Mixing ratio:

$$Mvol = Avol \div Bvol = \frac{Agrav.}{P_A} \div \frac{Bgrav.}{P_B}$$

$$Mvol = \frac{10gr}{1.5\ \frac{gr}{cm^3}} \div \frac{1\ gr}{1\ \frac{gr}{cm^3}} = 6.67 \div 1$$

Other volumetric mixing ratio specifications:

6.67	Parts of component A by volume
1	Parts of component B by volume

10.3 HOSE VOLUME TABLE

Di = Inside diameter hose
L = Hose length
Vol = Product volume in the hose

Di [mm]	L [m]	Vol [L]
4	5	0.06
4	7.5	0.09
4	10	0.13
4	12.5	0.16
4	15	0.19
4	20	0.25
4	25	0.31
4	30	0.38
4	40	0.5
4	50	0.63
5	5	0.1
5	7.5	0.15
5	10	0.2
5	12.5	0.25
5	15	0.29
5	20	0.39
5	25	0.49
5	30	0.59
5	40	0.79
5	50	0.98
6	5	0.14
6	7.5	0.21
6	10	0.28
6	12.5	0.35
6	15	0.42
6	20	0.57
6	25	0.71
6	30	0.85
6	40	1.13
6	50	1.41
8	5	0.25
8	7.5	0.38
8	10	0.5
8	12.5	0.63
8	15	0.75
8	20	1.01
8	25	1.26
8	30	1.51
8	40	2.01
8	50	2.51

Di [mm]	L [m]	Vol [L]
10	5	0.39
10	7.5	0.59
10	10	0.79
10	12.5	0.98
10	15	1.18
10	20	1.57
10	25	1.96
10	30	2.36
10	40	3.14
10	50	3.93
12	5	0.57
12	7.5	0.85
12	10	1.13
12	12.5	1.41
12	15	1.7
12	20	2.26
12	25	2.83
12	30	3.39
12	40	4.52
12	50	5.65
16	5	1.01
16	7.5	1.51
16	10	2.01
16	12.5	2.51
16	15	3.02
16	20	4.02
16	25	5.03
16	30	6.03
16	40	8.04
16	50	10.05
20	5	1.57
20	7.5	2.36
20	10	3.14
20	12.5	3.93
20	15	4.71
20	20	6.28
20	25	7.85
20	30	9.42
20	40	12.57
20	50	15.71

11 DISPOSAL

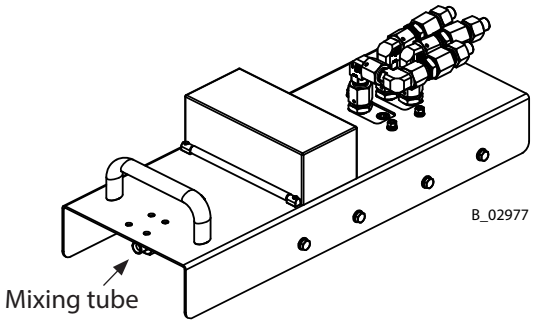
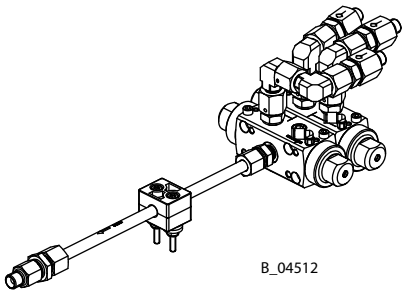
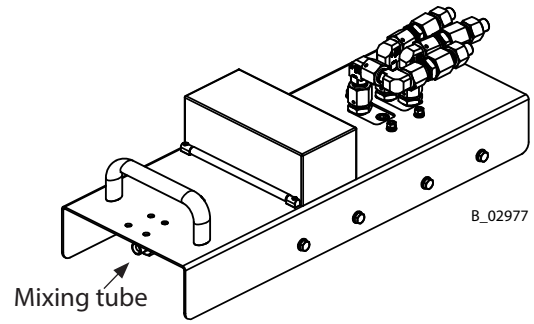
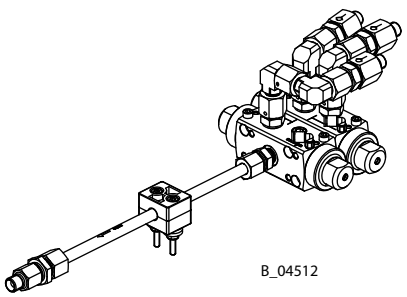
When the equipment must be scrapped, please differentiate the disposal of the waste materials.
The following materials have been used:

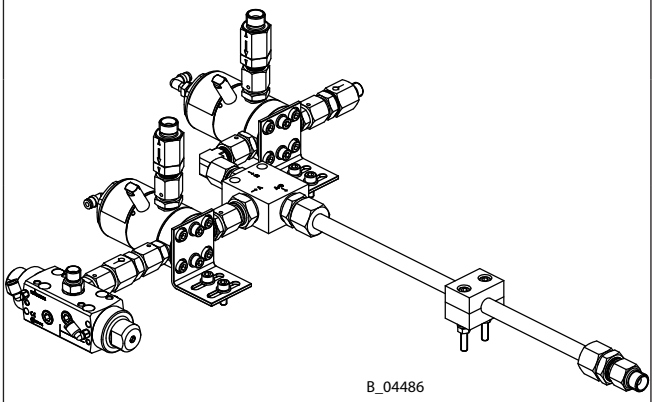
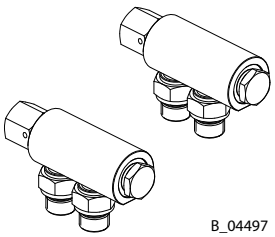
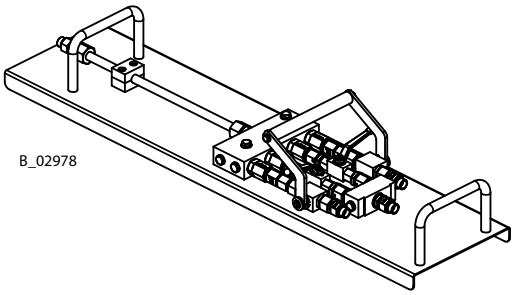
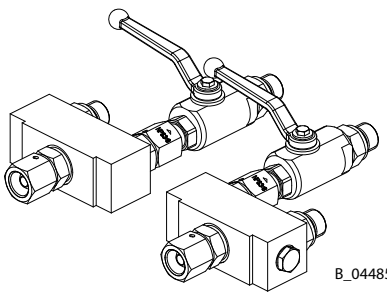
- → Steel
- → Aluminum
- → Plastics
- → Carbide

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

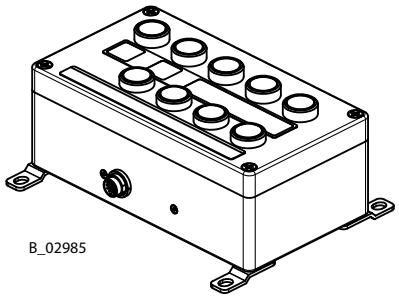
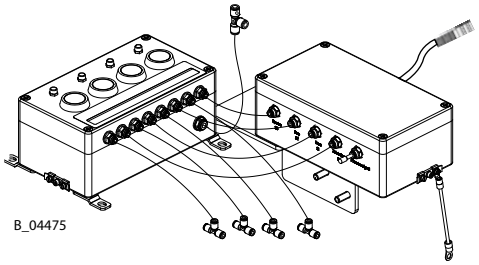
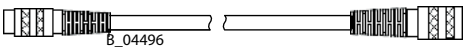
12 ACCESSORIES

12.1 MIXER

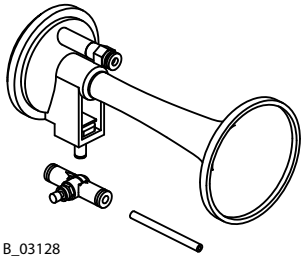
Order No.	Designation	
2338297	**External mixer, manual DN 2.6** for A pumps 5-60, 10-70, 28-40, 15-70, 15-150, 21-110, 35-70, 35-150	
2339620	**External mixer, automatic DN 2.6** for A pumps 5-60, 10-70, 28-40, 15-70, 15-150, 21-110, 35-70, 35-150 Prerequisite: Controller 3, 6 or 9	
2338298	**External mixer, manual DN 4** for A pumps 5-60, 10-70, 28-40, 15-70, 15-150, 21-110, 35-70, 35-150	
2339621	**External mixer, automatic DN 4** for A pumps 5-60, 10-70, 28-40, 15-70, 15-150, 21-110, 35-70, 35-150 Prerequisite: Controller 3, 6 or 9	

Order No.	Designation	
2339617	**External mixer, automatic DN 4 / DN 10VA as of 48-110** for A pumps 48-110, 8-300, 3-600, 18-300, 8-600, 75-150, 55-200, 38-300, 72-300 Prerequisite: Controller 3, 6 or 9	 B_04486
2339628	**Circulation G3/8" for external mixer, automatic DN 4**	 B_04497
2338300	**External mixer, manual DN 8** for A pumps 48-110, 8-300, 3-600, 18-300, 8-600, 75-150, 55-200, 38-300, 72-300	 B_02978
2338301	**Circulation** for external mixer, manual DN 8	 B_04485

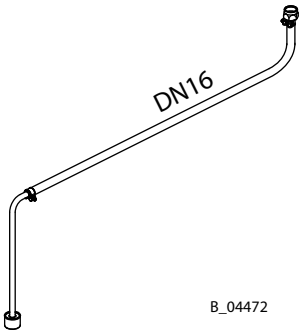
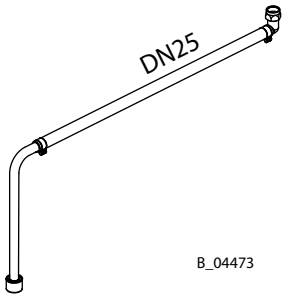
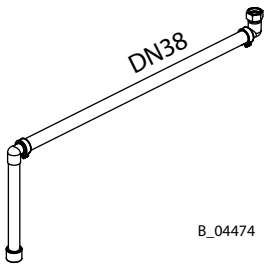
12.2 REMOTE CONTROL

Order No.	Designation	
2308874	**TwinControl remote control** including 15 m; 49 ft cable. Maximum permissible cable length: 75 m; 246 ft. **Note:** If used in a system with a mains power supply (cable) -> Can only be used in areas not at risk of explosion. When used in a system with turbine -> Can be used in Ex zones (Zone 1 and Zone 2).	 B_02985
2308879	**Cable 15 m; 49 ft**. Extension for TwinControl remote control. Maximum permissible cable length: 75 m; 246 ft.	 B_03757
2313533	**ESTA remote control** including cable	 B_04475
2311371	**Cable** for ESTA remote control Length 1 m; 3.3 ft.	 B_04496

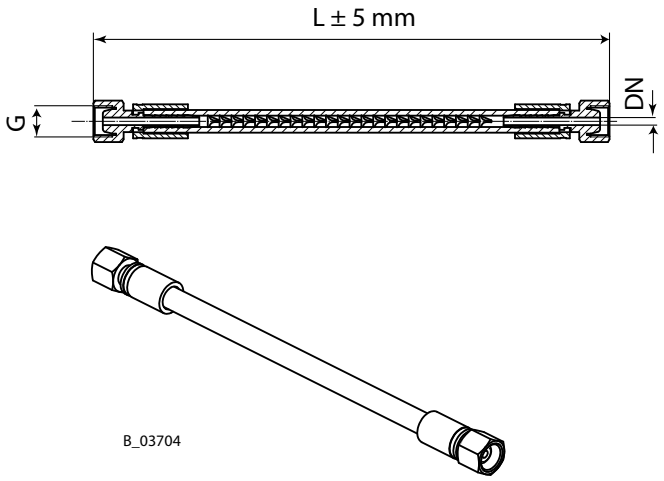
12.3 HORN ALARM

Order No.	Designation	
2312343	**Set External pneumatic horn**	 B_03128

12.4 SUCTION HOSES

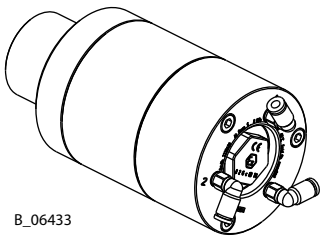
Order No.	Designation	
2324110	**Suction hose DN16-SSt, complete** for: - EvoMotion 5-60 - Wildcat 10-70, 18-40 - Puma 28-40, 15-70, 21-110 - Leopard 35-70	 B_04472
2324116	**Suction hose DN25-SSt, complete** for: - all pumps	 B_04473
2329592	**Suction hose DN38-SSt, complete** for: - Puma 8-300, 3-600 - Leopard 18-300, 8-600 - Jaguar 55-200, 38-300 - Tiger 32-300	 B_04474

12.5 MIXING HOSES

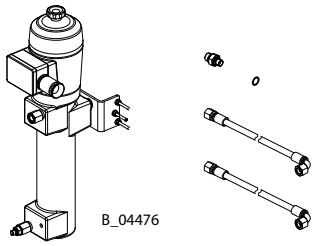
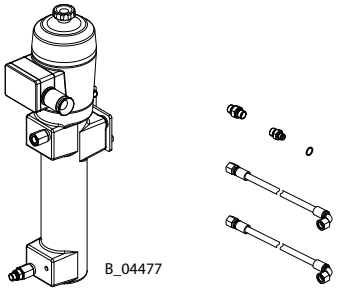
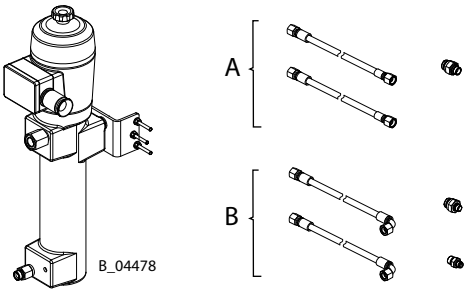
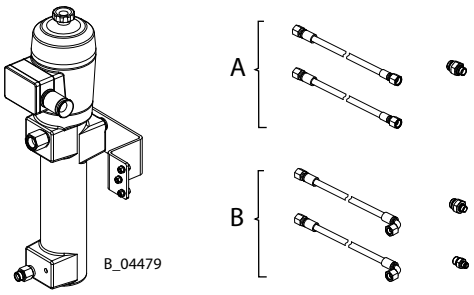


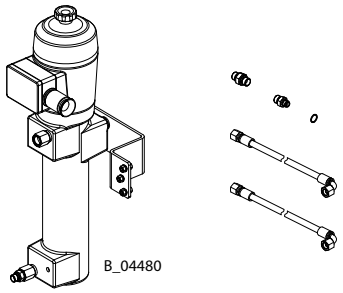
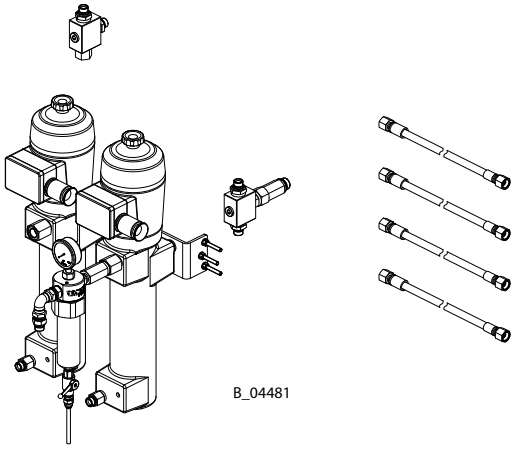
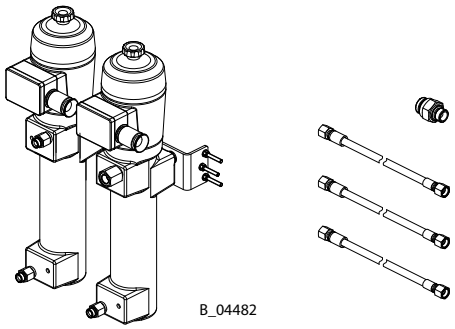
Order No.	Designation	DN	L	G
2312390	Mixing hose 32	4	235	G1/4"
2312393	Mixing hose 96	4	455	G1/4"
2312396	Mixing hose 32	6	315	G1/4"
2312399	Mixing hose 96	6	715	G1/4"
2312402	Mixing hose 32	10	387	G3/8"
2312405	Mixing hose 96	10	921	G3/8"
2317130	Mixing hose 32 GXP	10	460	G3/8"

12.6 AIS

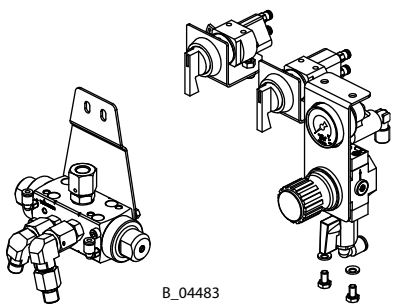
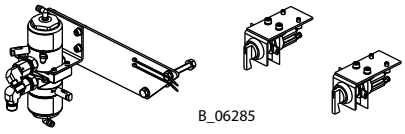
Order No.	Designation	
2371157	**AIS set including conversion of control unit 1 to 9 / 10** - Control unit 9: no air flushing - Control unit 10: no soft circulation For software version 4.0x and 4.1x, an update to 4.2 is necessary.	 B_06433

12.7 HEATER

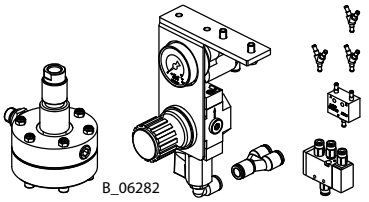
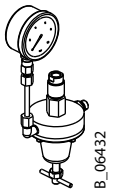
Order No.	Designation	
2338290	**Heater set A or B** for TwinControl pumps 5-60, 10-70, 28-40, 15-70, 15-150, 21-110, 35-70, 35-150	
2338294	**Heater set A or B for TwinControl pumps 8-300, 3-600, 48-110, 18-300, 8-600;** and for 75-150 (without trolley)	
2338291	**Heater set A** for TwinControl pumps 55-200 (without trolley), 72-300 (without trolley) and 38-300 (without trolley)	
2340906	**Heater set B** for TwinControl pumps 55-200 (without trolley), 72-300 (without trolley) and 38-300 (without trolley)	
2338292	**Heater set A trolley** for TwinControl pumps 55-200 (mit Trolley), 72-300 (with trolley) and 38-300 (with trolley)	
2340907	**Heater set B trolley** for TwinControl pumps 55-200 (with trolley), 72-300 (with trolley) and 38-300 (with trolley)	

Order No.	Designation	
2338293	**Heater set A, B trolley** for TwinControl pump 75-150 (with trolley)	 B_04480
2338295	**Double parallel heater set** for TwinControl pumps 55-200 (without trolley), 72-300 (without trolley) and 38-300 (without trolley)	 B_04481
2338296	**Double serial heater set** for TwinControl pumps 55-200 (without trolley), 72-300 (without trolley) and 38-300 (without trolley)	 B_04482

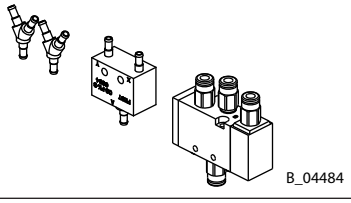
12.8 SPLITTER VALVE

Order No.	Designation	
2338302	**Splitter valve DN 2.6 TC, 400 bar** For A pumps 28-40, 15-70, 15-150, 21-110, 35-70, 35-150. Not possible with external mixer.	
2338303	**Splitter valve DN 4 TC, 100 bar** For A pumps 5-60, 10-70. Not possible with external mixer.	
2371352	**Splitter valve PV 530-4 TC, DN 4, 530 bar** For A pumps 48-110, 8-300, 18-300, 3-600, 8-600, 75-150. Notice: The mounting bracket fits the frame (not the trolley or wall) Not possible with external mixer.	

12.9 PRODUCT PRESSURE REGULATOR

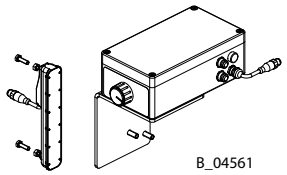
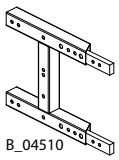
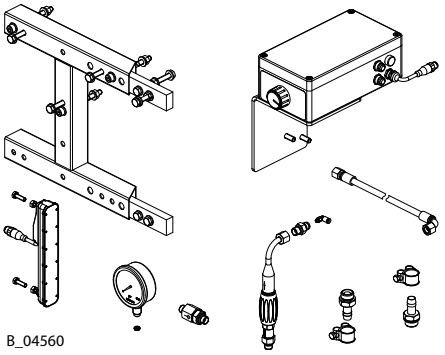
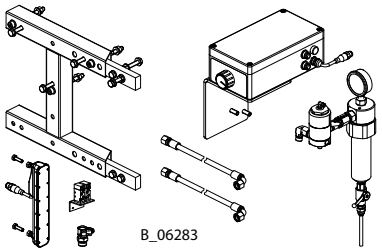
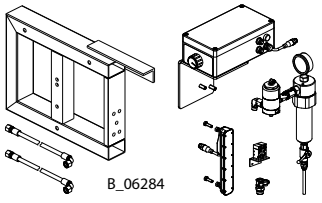
Order No.	Designation	
2315965	**Product pressure regulator set 0.8 MPa; 8 bar; 116 psi pneumatic** (including flushing pressure set) for TwinControl 5-60 and 10-70	
2315994	**Product pressure regulator set 0.8 MPa; 8 bar; 116 psi mechanical** for TwinControl 5-60 and 10-70	

12.10 FLUSHING PRESSURE SET

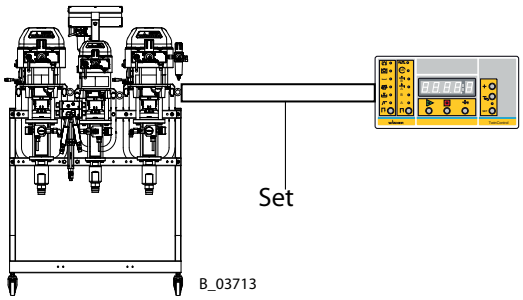
Order No.	Designation	
2315985	**Flushing pressure set** 8 bar for TwinControl 5-60 and 10-70 Sets flushing pressure to maximum. Is included in product pressure regulator set 2315965.	

12.11 ADDITIONAL PARTS FOR SECOND PAINT (2A)

→ For requirements, see Chapter 8.14.
→ If heaters are used, the second A pump needs a separate bracket. (Instead of the 2A extension)

Order No.	Designation	
2340959 **2340820**	**Switchbox 2A-HM1 (TC)** with stroke measurement 1 **Switchbox 2A-HM2 (TC)** with stroke measurement 2 Without pump, Spraypack and additional parts.	 B_04561
2339639	**Extension 2A** Lateral extension for small frame for **assembling of** second A pump. For systems without a heater.	 B_04510
2341205 **2340707** **2341006**	**Expansion set 2A-HM1 (TC)** for TwinControl A pumps 28-40, 15-70, 35-70 **Expansion set 2A-HM1-ND (TC)** for TwinControl A pumps 5-60, 10-70 **Expansion set 2A-HM2 (TC)** for TwinControl A pumps 15-150, 21-110, 35-150 Extension 2A (for systems without a heater), switchbox 2A incl. stroke measurement, inline filter, hoses and fittings. Without pump and Spraypack.	 B_04560
2344231	**Expansion set 2A-HM2 (TC)** for TwinControl A pumps 48-110, 8-300, 18-300, 3-600, 8-600 Extension 2A (for systems without a heater), switchbox 2A incl. stroke measurement, high-pressure filter, hoses and fittings. Without pump and Spraypack.	 B_06283
2348739	**Expansion set 2A-HM2 (TC)** for TwinControl A pumps 75-150 Extension 2A for large frames (for systems without a heater), switchbox 2A incl. stroke measurement, high-pressure filter, hoses and fittings. Without pump and Spraypack.	 B_06284

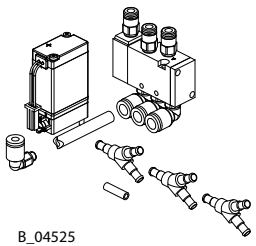
12.12 EXTENSION CABLES

Order No.	Designation	
2320609	**Controller connecting set for TwinControl approx. 5 m; 16.4 ft.** The extension set allows the control unit to be fitted separately from the system. The set can be used for control units of type 1 and 2.	 B_03713
2316481	**Extension cable for stroke measurement 5 m; 16.4 ft.** Can be used to extend the potentiometer for the stroke measurement on TwinControl systems. Maximum extension 5 m; 16.4 ft.	 B_03712

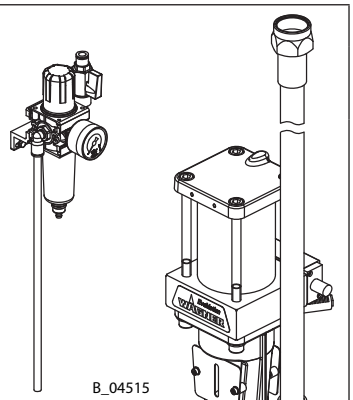
12.13 TC VM5000 AUTOMATIC ELECTROSTATIC SYSTEM

Order No.	Designation
2334530	**Automatic electrostatic system** The TC VM5000 automatic electrostatic system set serves as an additional safety device for the safe use of the TwinControl 2K system with a GM5000 electrostatic gun. Prerequisite: Controller 1, 2, 3, 9 or 10

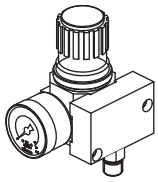
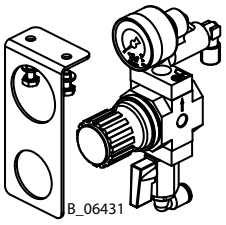
12.14 GFB CONNECTION KIT

Order No.	Designation	
2302563	**Connection kit for Gun Flush Box (GFB)** Installation in control unit 1, 2, 9 or 10. The kit is already installed in controllers 3 and 8. The GFB connection kit is used as a link between the TwinControl system and a Gun Flush Box.	 B_04525

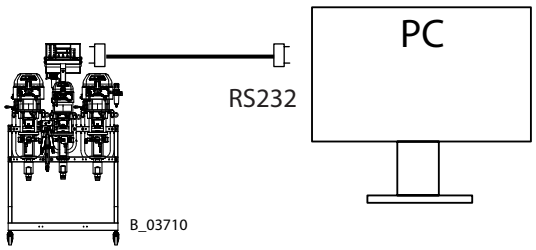
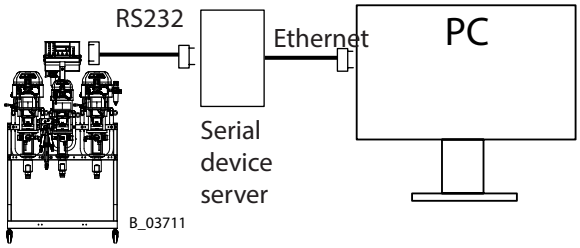
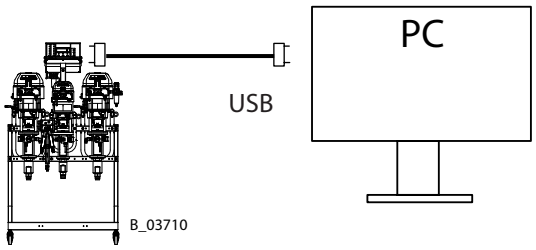
12.15 FEED PUMP

Order No.	Designation	
2329966	**Feed pump set 5-125 (3/4")** For pumps 75-150, 55-200, 38-300, 72-300	 B_04515

12.16 AIRCOAT REGULATOR

Order No.	Designation	
2328611	**AirCoat regulator** For A pumps: Wildcat, Puma, Leopard	 B_04501
2336769	**AirCoat regulator 5-60** For A pumps EvoMotion 5-60	 B_06431

12.17 ARCHIVING SOFTWARE

Order No.	Designation	
2317811	**TwinData RS-232 archiving software** consisting of: - RS-232 cable communication - PC data archiving manual GER - PC data archiving manual ENG - Archiving software	
	The RS-232 cable of TwinData RS-232 archiving software can also be connected to a network. A factory-provided **RS-232 Serial Device Server** is required.	
2309015	**TwinData USB archiving software** consisting of: - USB to TTL cable (service) - PC data archiving manual GER - PC data archiving manual ENG - Archiving software	

13 SPARE PARTS

13.1 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 quantity column "**Stk**" on the list. 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:
- Address for the invoice
- Address for delivery
- Name of the person to be contacted in the event of any queries
- Type of delivery (normal mail, express delivery, air freight, courier, etc.)

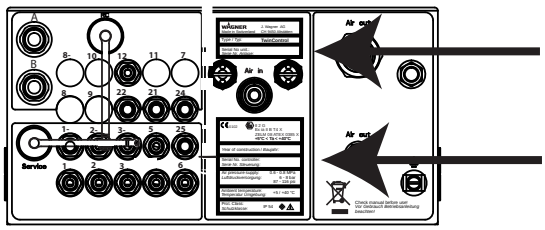
Identification in spare parts lists.

Explanation of column "**K**" (labeling) in the following spare parts lists:

◆ Wearing parts
Note: These parts are not covered by warranty terms.

● Not part of standard equipment, available, however, as additional extra.

Note:
The parameters used by WAGNER and the special properties of each 2K TwinControl system are documented upon delivery and stored in the WAGNER archive.
If the customer wishes to modify the 2K TwinControl system or prior to inspections, the technical customer service team must always be provided with the serial number of the system in question.
The serial number can be found on the rear of the control unit.



B_03752

DANGER

Incorrect assembly/installation!
Danger to life and equipment damage.

→ Only a WAGNER service center or a suitably trained person may carry out assembly and installation of parts.
→ Only mount and replace parts that are listed in the scope of delivery or 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 pressure from spray guns and devices.
- Secure spray guns against actuation.
- Switch off the energy/compressed air supply.
- Disconnect the control unit from the mains.
→ Observe the operating and service manual for all work.

13.2 WHERE CAN YOU FIND SPARE PARTS?

Spare parts for the TwinControl systems and the TwinControl accessories are to be found in the following spare parts catalogs (German and English):

- **Finishing spare parts catalog** for systems with small frame / small trolley / small wall.
- **PC spare parts catalog** for systems with large frame/large trolley.
- Further spare parts for TwinControl components, which are not contained in the spare parts catalog, can be found on the **compact disk (CD) TwinControl** in the appropriate operating manuals, in all languages available.

→ Order No., see Chapter 1.3.

13.3 TURBINE

- When replacing the turbine, attention should be paid to the "TC Turbine Set" assembly manual with order No. 2320883.
- When replacing the generator, attention should be paid to the "TC Generator Conversion Set" assembly manual with order No. 2336796.

14 WARRANTY AND CONFORMITY DECLARATIONS

14.1 IMPORTANT NOTES REGARDING PRODUCT LIABILITY

As a result of an EC regulation effective from January 1, 1990, the manufacturer shall only be liable for his product if all parts originate from him or are approved by him, and if the devices are properly mounted, operated and maintained.
The manufacturer will not be held liable or will only be held partially liable if third-party accessories or spare parts have been used.
With genuine WAGNER accessories and spare parts, you have the guarantee that all safety regulations are complied with.

14.2 WARRANTY CLAIM

Full warranty is provided for this device:
We will at our discretion repair or replace free of charge all parts which within 36 months in single-shift, 18 months in double-shift or 9 months in triple-shift operation from date of receipt by the purchaser are found to be wholly or substantially unusable due to causes prior to the sale, in particular faulty design, defective materials or poor workmanship.
The type of warranty provided is such that the device or individual components of the device are either replaced or repaired as we see fit. The resulting costs, in particular shipping charges, road tolls, labour and material costs will be borne by us except where these costs are increased due to the subsequent shipment of the device to a location other than the address of the purchaser.
We do not provide warranty for damage that has been caused or contributed to for the following reasons:
Unsuitable or improper use, faulty assembly or commissioning by the purchaser or a third party, normal wear, negligent handling, defective maintenance, unsuitable coating products, substitute products and the influence of chemical, electrochemical or electrical agents, except when the damage is attributable to us.
Abrasive coating products such as red lead, emulsions, glazes, liquid abrasives, zinc dust paints and so forth reduce the service life of valves, packings, spray guns, nozzles, cylinders, pistons etc. Signs of wear traced back to these products are not covered by this warranty.
Components that have not been manufactured by WAGNER are subject to the original warranty of the manufacturer.
Replacement of a component does not extend the period of warranty of the device.
The device should be inspected immediately upon receipt. To avoid losing the warranty, we or the supplier company are to be informed in writing about obvious faults within 14 days upon receipt of the device.
We reserve the right to have the warranty compliance met by a contracting company.
The services provided by this warranty are dependent on evidence being provided in the form of an invoice or delivery note. If the examination discovers that no warranty claim exists, the costs of repairs are charged to the purchaser.
It is clearly stipulated that this warranty claim does not represent any constraint on statutory regulations or regulations agreed to contractually in our general terms and conditions.

Wagner International AG

14.3 DECLARATION OF CONFORMITY

14.3.1 DEVICES WITH TURBINE

Herewith we declare that the supplied version of control units:

TwinControl **Version: Turbine**

complies with the following guidelines:

2006/42/EC	2014/34/EU	2014/30/EU	2011/65/EU	2012/19/EU

Applied standards, in particular:

EN ISO 12100:2010	EN ISO 4414:2010	EN ISO 13732-1:2008
EN 14462:2015	EN 12621: 2006+A1: 2010	EN 60079-0:2006
EN 60079-11:2007	EN 1127-1:2011	EN 13463-1:2009
EN 13463-5:2011	EN 61000-6-2:2005+B:2011	EN 61000-6-4:2007+A1:2011
		EN ISO/IEC 80079-34:2011

Applied national technical standards and specifications, in particular:

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

EC type examination certificate:

Zelm 08 Atex 0385 X, Zelm Ex Prüf-und Zertifizierungsstelle, D-38124 Braunschweig (notified body no. 0820)

EC quality certificate for the quality assurance system:

PTB 03 ATEX Q019

Identification:

CE 0102 Ex II 2 G
Ex ia IIB T4
ZELM 08 ATEX 0385 X
+5 °C < Ta < +40 °C

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: 393916

14.3.2 DEVICES WITH CABLE FOR MAINS POWER SUPPLY

Herewith we declare that the supplied version of control units:

TwinControl **Version: Cable with mains power supply**

complies with the following guidelines:

2006/42/EC	2014/35/EU	2014/30/EU	2011/65/EU	2012/19/EU

Applied standards, in particular:

EN ISO 12100:2010	EN 60204-1:2006+A1:2009+B:2010	EN ISO 4414:2010
EN 14462:2015	EN 12621: 2006+A1: 2010	EN ISO 13732-1:2008
EN 61000-6-2:2005+B:2011	EN 61000-6-4:2007+A1:2011	EN ISO 9001: 2008

Applied national technical standards and specifications, in particular:

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

Identification:

CE

EC Declaration of Conformity
The EC 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: 393915

Order No. 2339321
Version 10/2016

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