



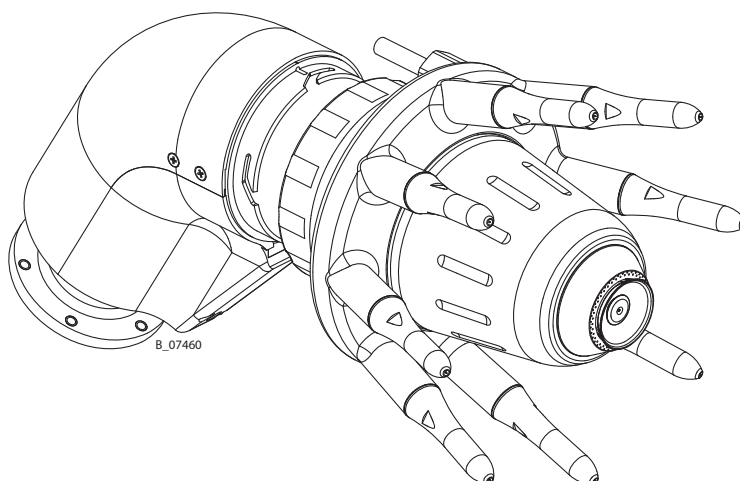
## Translation of the Original Operating Manual

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

Version 01/2021

### TOPFINISH RobotBell 1 ECH

High-speed rotary atomizer  
with external charging





VERSION 01/2021

ORDER NUMBER DOC2422158

**TOPFINISH RobotBell 1 ECH**

OPERATING MANUAL



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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 manual highlight particular dangers to users and to the device and state measures for avoiding the hazard. These warning instructions fall into the following categories:

 **DANGER** Immediate risk of danger.  
Non-observance will result in death or serious injury.

 **WARNING** Potential danger.  
Non-observance may result in death or serious injury.

 **CAUTION** Potentially dangerous situation.  
Non-observance may result in minor injury.

 **NOTICE** Potentially dangerous situation.  
Non-observance may result in damage to property.

**Note:** Provides information about particular characteristics and how to proceed.

#### Explanation of warning notice:

##### **LEVEL OF DANGER**

**This notice warns you of a danger!**

Possible consequences of not observing the warning notice.

→ The measures for preventing the hazard and its consequences.



### 1.3 LANGUAGES

The operating manual is available in the following languages:

#### Original operating manual

Language	Order no.
German	2422157

#### Translation of the original operating manual

Language	Order no.
English	2422158

Additional languages on request or at: [www.wagner-group.com](http://www.wagner-group.com)

### 1.4 ABBREVIATIONS

Order no.	Order number	SW	Wrench size (tool)
ET	Spare part	HV	High voltage
K	Marking in the spare parts lists	OF	Optical Fiber
Pos	Position		
Stk	Number of pieces	--	--

### 1.5 TERMINOLOGY FOR THE PURPOSE OF THIS MANUAL

Cleaning	
Cleaning	Manual cleaning of devices and device parts with cleaning agent
Flushing	Internal flushing of paint-wetted parts with flushing agent
Product pressure generator	Pump or pressure tank
Personnel qualifications	
Trained person	Is instructed in the tasks assigned to him/her, the potential risks associated with improper behavior as well as the necessary protective devices and measures.
Electrically trained person	Is instructed by an electrician about the tasks assigned to him/her, the potential risks associated with improper behavior as well as the necessary protective devices and measures.
Electrician	Can assess the work assigned to him/her and detect possible hazards based on his/her technical training, knowledge and experience in relevant provisions.
Skilled person in the context of DGUV 209-052	A person who, based on his/her technical training, experience and recent vocational experience, has sufficient technical knowledge in the area of electrostatic coating 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 can also be found in TRBS 1203 (2010/amendment 2012): Expert knowledge in the areas of protection against excessive pressure, electrical hazards, and explosion protection (where applicable).



## 1.6 DEVICE-SPECIFIC TERMINOLOGY IN THIS MANUAL

Designation	Mode of Operation
Stop air (STA)	Air inlet on rear of high-speed rotary atomizer. The drive speed is reduced by the stop air.
Dump (DM)	Outlet opening on rear of high-speed rotary atomizer to dispose of the waste liquid produced when flushing the device.
Bell flushing (FB)	The bell flushing (FB) is an air inlet on the rear of the high-speed rotary atomizer.
Bell Plate	Bell-shaped plate, which rotates when in operating status and atomizes the product.
Main needle valve (CA)	Selector valve in front part of the high-speed rotary atomizer for releasing flow rate.
High-voltage cable	Cable used to connect the high-speed rotary atomizer to the cascade.
Cascade	High-voltage generator.
Bearing air (BA)	Air inlet on rear of air bearing for mounting the motor.
Steering air (SA)	Steering airs SA1/SA2 are air inlets on the rear of the high-speed rotary atomizer. Steering airs control the spray pattern of the high-speed rotary atomizer.
Air outlet	Air outlet openings on the rear of the high-speed rotary atomizer for removing exhaust air from the high-speed rotary atomizer using air hoses.
Product valve (M)	The product valve is always open during operation and is only closed to disconnect the high-speed rotary atomizer from the valve block of the product supply for maintenance purposes or to fit a spray gun. Closing the product valve (M) allows the high-speed rotary atomizer or spray gun to be removed without disconnecting the complete hose.
Valve block	Valve blocks in various designs, together with the integrated valves, allow the various media (air/product) to be opened and closed.
Electrode ring with electrode fingers	The electrode ring is comprised of 8 electrode fingers. High voltage is transferred to the ambient air via the electrode fingers. The air is ionized and thus the product flowing through is charged.

## 2 CORRECT USE

### 2.1 DEVICE TYPE

**Topfinish RobotBell 1 ECH:** air-bearing high-speed rotary atomizer for robots (60° variant)

### 2.2 TYPE OF USE

The device is suitable for applying liquid products (atomizing in a low-pressure process), in particular water-based or solvent-based coating products, under the influence of electrostatic forces.

When processing water-based lacquers, the paint supply must be carried out isolated.

WAGNER explicitly prohibits any other use!

The device may only be operated under the following conditions:

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

### 2.3 FOR USE IN POTENTIALLY EXPLOSIVE AREAS

The device is suitable for use in potentially explosive areas as defined in Directive 2014/34/EU, (see Explosion protection marking Chapter 3.1).



### 2.4 PROCESSIBLE WORKING MATERIALS

This high-speed rotary atomizer can be used to process both ignitable liquid coating products (solvent-based lacquers) and non-ignitable liquid coating products (water-based lacquers).

Product	Bell Plate		
	smooth	with teeth	with double teeth
Primer	√	√√	x
BaseCoat	√	√√	x
Clear lacquers	x	√	√√
Metallic lacquers	√	√	x
UV lacquers	√√	√	x
Epoxy lacquers	√	√	x
PU lacquers	√	√	√
Acrylic lacquers	√	√	x
1K product	√	√	√
2K products	x	√	√
Abrasive products	√√	√	x
Frequent paint changes	√√	√	xx
High mixing capacity	x	√	√

√ = suitable

√√ = very suitable

x = less suitable

xx = unsuitable

### 2.4.1 IGNITABLE LIQUID COATING PRODUCTS

When using ignitable coating products, the coating system must be equipped with an on-site extinguishing system. In case of a fire alarm, the high voltage, the air supply and the product supply must immediately be switched off. If possible, the complete lacquer supply system must have a grounded setup. In order to keep the discharge energy at the high-speed rotary atomizer as low as possible, the high-speed rotary atomizer must be connected to the high-voltage power supply using an attenuated high-voltage line ( $R =$  approx.  $50 \text{ k}\Omega/\text{m}$ ) with a length of at minimum 5 m.

The discharge energy of this system can be more than 350 mJ; in this case, it is classified as a type C-L ( $W < 2 \text{ J}$ ) or type D-L ( $W > 2 \text{ J}$ ) in accordance with EN 50176. There is a risk of energy capable of acting as an ignition source and a risk of electric shock. The complete system must be safely grounded before being accessed by people.

With a grounded lacquer supply system, coating lacquers, primers, corrosion protection, structure paints and other coatings with a resistance of  $> 50 \text{ k}\Omega$  (in accordance with the WAGNER/Ransburg scale) are suitable for processing. For highly conductive products ( $R < 50 \text{ k}\Omega$ ) and for products with very high electrical resistance (approx.  $> 5 \text{ M}\Omega$ ), the electrostatic effect has little or no effect, meaning that there is little to no "paint wrap-around" present on the sprayed object. The suitability of the spray product can be read from the actual values for the high voltage (kV) and for the spray current ( $\mu\text{A}$ ).

- High kV value, low  $\mu\text{A}$  value (no wrap-around) = Paint with excessive electrical resistance
- Low kV-value, high  $\mu\text{A}$ -value (no wrap-around) = Excessive conductivity of the paint

With a non-grounded lacquer supply system, coating products with a resistance of  $< 50 \text{ k}\Omega$  can also be used.

### 2.4.2 NON-IGNITABLE LIQUID COATING PRODUCTS

If water-based lacquers are used, the entire system (high-speed rotary atomizer with lacquer supply) is brought to high-voltage potential. The system corresponds to type A-NL ( $W < 350 \text{ mJ}$ ) or type B-NL ( $W > 350 \text{ mJ}$ ), depending on the structure in accordance with EN 50348. If the system is classified to Type B-NL, a danger exists through electric shock.

The complete system must be safely grounded before being accessed by people.

Contact WAGNER and/or the lacquer manufacturer if you encounter application problems.

### 2.4.3 CATEGORIZATION OF PRODUCTS

A large portion of stationary electrostatic lacquer spraying systems are currently being converted to water-based lacquers. At the same time, fire and explosion protection for these systems can be simplified considerably if the water-based lacquers in use can demonstrably be considered non-ignitable.

Water-dilutable lacquers are, in principle, divided into 3 groups (EN 50176 and EN 50348 standards):

**Green:** Non-ignitable (non-combustible) lacquers

**Yellow:** Hard to ignite lacquers

**Red:** Ignitable lacquers

As a rule, the lacquer manufacturer determines in which of these three groups a coating product is classified. In case no information can be obtained in this regard from the lacquer manufacturer or lacquer supplier, a classification can be performed using the following formula. Before performing the classification using these formulas, it is mandatory to request classification from the lacquer manufacturer or lacquer supplier.

### 2.4.3.1 GREEN: NON-IGNITABLE

Lacquers in this group have the following composition:

$$\text{wt. \% H}_2\text{O} > 1.70 \times \text{wt. \% LM} + 0.96 \times \text{wt. \% ORG}$$

Where:

wt. %	Weight percent
H <sub>2</sub> O	Water
LM	Liquid organic phase (solvent mainly consisting of higher ethylene glycol esters)
ORG	Solid organic phase (solids mainly consisting of binding agents and pigments)

Such lacquers behave like water with respect to flammability in liquid form (liquid phase) and in sprayed form. Cleaners and thinners must also be non-ignitable. A possible cleaner and thinner is, for example, water with less than 35 weight percent 1:1 butylene glycol/N-propanol.

Lacquers in this group are categorized as non-ignitable liquid coating products.

When using non-ignitable spray products, the requirements of EN 50348 (mainly protection against contact) must be complied with.

### 2.4.3.2 YELLOW: HARD TO IGNITE

Lacquers in this group have the following composition:

$$\text{wt. \% H}_2\text{O} > 1.50 \times \text{wt. \% LM} + 0.49 \times \text{wt. \% ORG}$$

Spray patterns of these lacquers cannot be ignited by sparks with an energy < 4 J. Explosion protection in the spray area is not usually necessary if ignition sources with an energy of more than 2 J do not occur.

Lacquers in this group are categorized as hard to ignite.

The requirements of EN 50176 must be complied with when using spray products that are hard to ignite.

### 2.4.3.3 RED: IGNITABLE

Lacquers that do not meet the criteria for non-ignitable or hard to ignite.

Lacquers in this group are categorized as ignitable liquid coating products.

The requirements of EN 50176 must be complied with when using ignitable spray products.

Please contact your local WAGNER dealer and the lacquer manufacturer if you encounter application problems.

## 2.5 MISUSE

Misuse can lead to physical injury and/or property damage!

Special attention must be paid that:

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

### 3 IDENTIFICATION

#### 3.1 EXPLOSION PROTECTION IDENTIFICATION

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

Device type: High-speed rotary atomizer  
 Manufacturer: J. Wagner GmbH  
 88677 Markdorf  
 Germany



  II 3G T6 X

CE European Communities  
 Ex Symbol for explosion protection  
 II Device class II  
 3 Category 3 (zone 2)  
 G Ex-atmosphere gas  
 T6 Temperature class  
 X Special notice  
 W Maximum discharge energy



#### 3.2 IDENTIFICATION "X"

The maximum surface temperature corresponds to the permissible product temperature. This and the permissible ambient temperature have been listed in the [5.5.2](#) "Technical Data" chapter.

##### Safe Handling of WAGNER Spray Devices

Mechanical sparks can form if the device comes into contact with metal.

In an explosive atmosphere:

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



##### Ignition temperature of the coating product

- Ensure that the ignition temperature of the coating product is above the maximum surface temperature.

##### Medium supporting atomizing

- To atomize the product, use only weakly oxidizing gases, e.g., air.

##### Electrostatic surface spraying

- Do not spray device parts using electrostatic equipment.



##### Cleaning

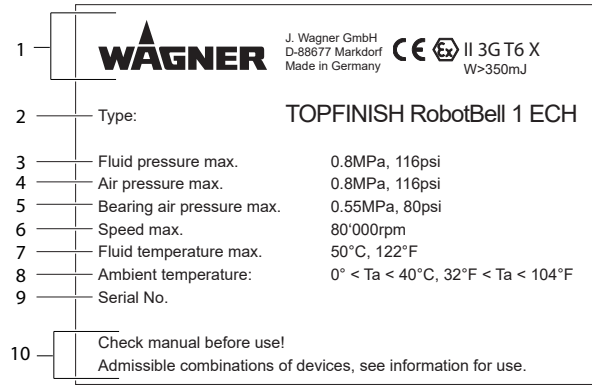
If there are deposits on the surfaces, the device may form electrostatic charges. Flames or sparks can form during discharge.

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





**3.3 TYPE PLATE**



B\_07456

Pos	Designation
1	Manufacturer and CE identification
2	Type
3	Maximum product pressure
4	Maximum air pressure
5	Maximum air bearing pressure
6	Maximum speed
7	Maximum product temperature
8	Ambient temperature
9	Serial number
10	Read operating manual before use!

## 4 BASIC SAFETY INSTRUCTIONS

### 4.1 SAFETY INSTRUCTIONS FOR THE OPERATOR

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



#### 4.1.1 ELECTRICAL DEVICES AND EQUIPMENT

##### **Danger of electric shock!**

Danger to life from electric shock.

- Prepare device in accordance with the local safety requirements with regard to the operating mode and ambient influences.
- May only be maintained by skilled electricians or under their supervision. With open housings, the mains voltage poses a danger.
- Operate device in accordance with the safety regulations and electrotechnical regulations.
- Must be repaired immediately in the event of problems.
- Decommission if device poses a danger or is damaged.
- Must be de-energized before work is commenced. Inform personnel about planned work. Observe electrical safety regulations.
- Ground all devices to a common grounding point.
- Only operate the device with a properly installed socket with a protective ground wire connection.
- Keep liquids away from electrical devices.



#### 4.1.2 A SAFE WORK ENVIRONMENT

##### **Danger due to dangerous fluids or vapors!**

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

- Ensure that the floor in the working area is static dissipative in accordance with EN 61340-4-1 (resistance must not exceed 100 MΩ).
- Paint mist extraction systems/ventilation systems must be fitted on site according to local regulations.
- Make sure that the ground connection and potential equalization of all system parts are reliable and continuous and can withstand the expected stress (e.g., mechanical stress, corrosion).
- Ensure that product hoses/air hoses adapted to the working pressure are used.
- Ensure that personal protective equipment (see Chapter [4.2.1](#)) is available and is used.
- Make sure that all people within the work area wear static dissipative shoes. Footwear must comply with EN 20344. The measured insulation resistance must not exceed 100 MΩ.
- Protective clothing, including gloves, must comply with EN 1149-5. The measured insulation resistance must not exceed 100 MΩ.
- Ensure that there are no ignition sources such as naked flames, sparks, glowing wires, or hot surfaces in the vicinity. Do not smoke.



- Ensure that the pipe joints, hoses, equipment parts and connections are permanently, technically leak-proof:
  - Periodic preventative maintenance and service (replacing hoses, checking tightness of connections, etc.).
  - Regular monitoring of leaks and defects via visual inspection and odor testing, e.g., daily before commissioning, at the end of work or weekly.
- Ensure that maintenance and safety checks are performed regularly.
- In the event of defects, immediately bring the device or system to a stop and arrange to have repairs carried out immediately.

#### 4.1.3 PERSONNEL QUALIFICATIONS

##### **Danger due to incorrect use of device!**

Risk of death due to untrained personnel.

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

#### 4.2 SAFETY INSTRUCTIONS FOR THE PERSONNEL

- Always observe the information in this manual, particularly the safety instructions and the warning instructions.
- Always follow local regulations concerning occupational safety and accident prevention regulations.
- In electrostatics applications: anyone who belongs to a risk group according to EMF Directive 2013/35/EU (e.g., those with active implants), must not enter the high-voltage area.



##### 4.2.1 PERSONAL SAFETY EQUIPMENT

##### **Danger due to dangerous fluids or vapors!**

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

- When preparing or working with lacquer and when cleaning the device, follow the working instructions of the manufacturer of the lacquers, solvents, and cleaning agents being used.
- Take the specified protective measures. In particular, wear safety goggles, protective clothing and gloves, as well as hand 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.



##### **Danger due to noise pollution!**

Hearing damage due to noise pollution.

- Wear ear protection.



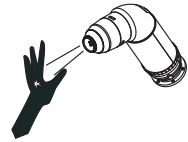


#### 4.2.2 SAFE HANDLING OF WAGNER SPRAY DEVICES

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

The spray jet is under pressure and can cause dangerous injuries. Avoid injection of lacquer or flushing agents:

- Never point the high-speed rotary atomizer at persons.
- Never reach into the spray jet.
- 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 high-speed rotary atomizer and device.
  - Secure the high-speed rotary atomizer against actuation.
  - Disconnect the control unit from the mains.
  - In the event of functional faults: remedy the fault as described in the "Troubleshooting" chapter.
- Carry out the work steps as described in the "Pressure relief" chapter:
  - 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 lacquer or flushing agents:**

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

#### 4.2.3 GROUNDING THE DEVICE

##### **Danger due to electrostatic charge!**

Explosion hazard and damage to the device.

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

Correct grounding of the entire spraying system prevents electrostatic charges.

- Ensure that the unit is grounded for every spraying operation.
- 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.
- The spray substance supply (spray substance tank, pump, etc.) must be grounded.



#### 4.2.4 PRODUCT HOSES

##### **Danger due to bursting of product hose!**

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

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



#### 4.2.5 ELECTRICAL CONNECTION CABLES

- Properly lay connection cables and check them regularly.
- Immediately replace damaged connection cables.
- Ensure that no work is ever performed with a damaged connection cable.
- Do not lay connection cables on routes used by product handling vehicles and not through doors/gates.
- Do not route connection cables near aisles or walkways in order to avoid tripping.

#### 4.2.6 CLEANING AND FLUSHING

##### **Danger due to cleaning and flushing!**

Explosion hazard and damage to the device.

- De-energize the device electrically.
- Pneumatically deactivate paint and flushing agent valves (CA, DM, M and FB).  
Deactivating the paint and flushing agent valves relieves the pressure on the device.
- Preference should be given to non-ignitable cleaning and flushing agents.
- When carrying out cleaning work with flammable cleaning agents, make sure that all equipment and resources (e.g., collection tank, funnel, transport cart) are conductive or static dissipative and grounded.
- Observe the specifications of the lacquer manufacturer.
- Ensure that the flash point of the cleaning agent is at least 15 K above the ambient temperature or that cleaning is undertaken at a cleaning station with technical ventilation.
- Explosive gases are produced when aluminum comes into contact with halogenated hydrocarbons. To clean aluminum, do not use liquids containing halogenated hydrocarbons.
- Take measures for workplace safety (see Chapter [4.1.2](#)).
- When commissioning or emptying the device, please note that:
  - depending upon the coating product used,
  - depending on the flushing agent (solvent) used.
 an explosive mixture may temporarily exist inside the lines and components of equipment.
- Only electrically conductive tanks may be used for cleaning and flushing agents.
- The tanks must be grounded.



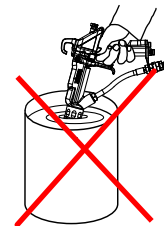
An explosive gas/air mixture forms in closed tanks.

- 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:

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



#### 4.2.7 TOUCHING HOT SURFACES

##### **Danger due to hot surfaces because of hot coating products!**

Risk of burn injuries.

- Only touch hot surfaces if you are wearing protective gloves.
- When operating the device with a coating product with a temperature of > 43 °C; 109.4 °F:
  - Identify the device with a warning label "Warning – hot surface".

##### **Order no.**

9998910 instruction label

9998911 protection label

**Note:** Order the two stickers together.



#### 4.2.8 MAINTENANCE AND REPAIR

##### **Danger due to improper maintenance and repair!**

Danger to life and equipment damage.

- Only a WAGNER service center or a suitably trained person may carry out repairs and replace parts.
- Use only WAGNER original spare parts and accessories.
- Do not change or modify the device; if change is necessary, contact WAGNER.
- Only repair and replace parts that are listed in Chapter 14 and Chapter 15 that are assigned to the device.
- Do not use any defective components.
- Exclusively use accessories listed in Chapter 14 and that are assigned to the unit.
- Before all work on the device and in the event of work interruptions:
  - Relieve the pressure from the high-speed rotary atomizer and all devices.
  - Secure the high-speed rotary atomizer against actuation.
  - Switch off the energy and compressed air supply.
  - Disconnect the control unit from the mains.
- Observe the operating and service manual for all work.

#### 4.2.9 PROTECTIVE AND MONITORING EQUIPMENT

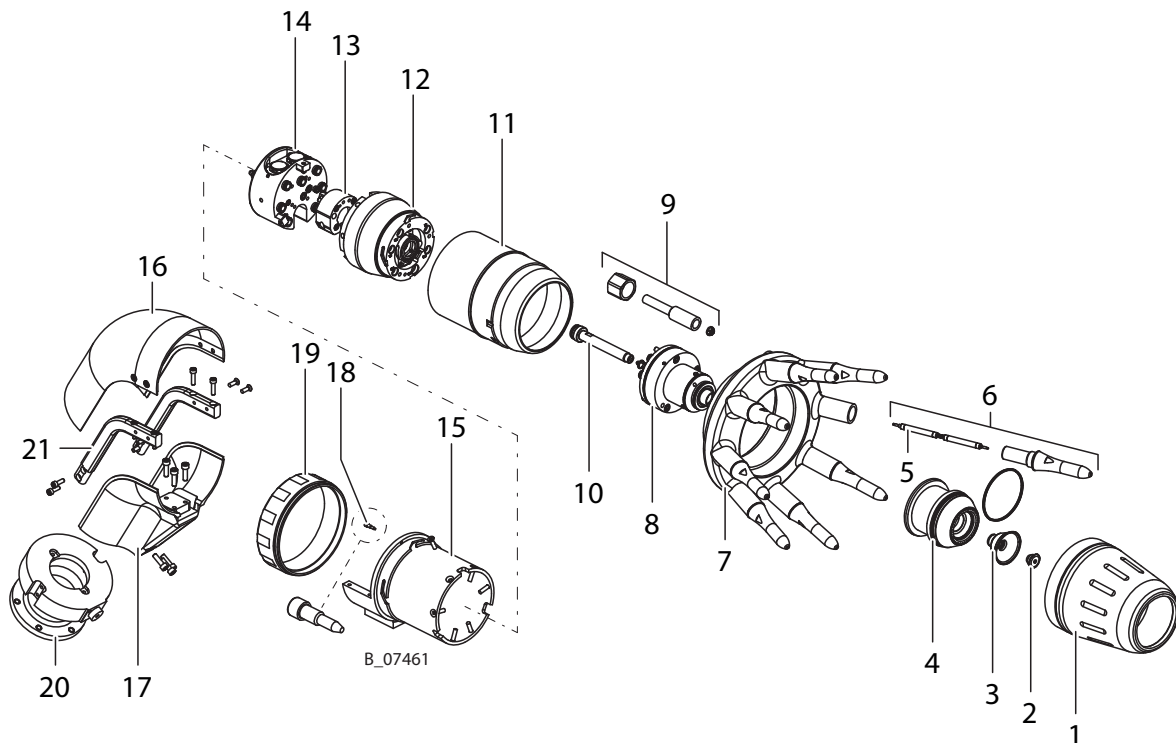
##### **Danger due to removal of protective and monitoring equipment!**

Danger to life and equipment damage.

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

## 5 DESCRIPTION

### 5.1 COMPONENTS



Pos	Designation	Pos	Designation
1	Union nut, LLR	11	Insulating ring
2	Distributor	12	Adapter piece
3	Bell	13	Transition flange
4	Air control ring	14	Valve block
5	Resistor package	15	Casing
6	Electrode finger, cpl.	16	Upper casing, complete
7	Electrode ring	17	Lower casing, complete
8	Bearer ring	18	Rotation lock
9	HS connection	19	Union nut
10	Product tube	20	Flange, complete
21	Connecting angle, complete		

## 5.2 FUNCTIONAL DESCRIPTION

The high-speed rotary atomizer consists of the carrier ring (5), the mounted air control ring (4), the corresponding elbow fitting (6) the valve block (14) and the carrier bars for the robot adapter. The connection flange (12) is used to mount the device by the customer. The optical fiber (8) is used to detect signals for speed control.

Product is fed to the device via the valve block (13) and the product tube (9) located in the axis center. This is then distributed evenly on the surface of the bell (2) via the distributor (1).

The deposited product is atomized finely in the radial direction at the outer bell edge through the acting centrifugal forces. The electrostatic effect supports this process. Both the atomizing cone diameter as well as the kinetic energy of the atomized product in the axial direction are influenced by the steering air flowing through the air deflecting ring (4). With the steering airs SA1 and SA2, and the electrostatic, the direction and geometry of the spray pattern can be customized to meet the specific needs.

Specific cleaning of the bell on the inside and outside is possible by means of the bell flushing valve (FB) without having to flush the entire product channel.

If working with water-based lacquer, the system is linked to the rest of the system via the lacquer pillar (ion conductor) such that the paint supply has to be isolated as well.

### 5.2.1 FUNCTIONAL DESCRIPTION OF THE INDIVIDUAL COMPONENTS

Designation	Function
Bell Plate	The bell plate atomizes the product. The bell plate is selected depending on the product to be processed. By selecting knurled bell plates, the drop size can be reduced.
Air bearing/drive	The drive is an air motor driven by compressed air. It is mounted using an air bearing. The results of atomization depend on the centrifugal force, generated by the bell plate rotating. The size of the product droplet decreases as the speed of rotation of the hollow shaft increases.
Air control ring	The air control ring creates the diameter of the spray pattern and conveys the product particle to the work piece using kinetic energy.
Product tube	The product tube centers the product nozzle in the center of the bell plate. The product tube transports the media (lacquer, flushing agent) to the bell plate.
Product Nozzle	The product nozzle regulates the application rate flowing into the bell plate. The size of the product nozzle is selected depending on the viscosity of the coating product and the desired layer thickness.
Valve block	In its basic version, the valve block serves as an interface to the supply pipes.
Electrode ring	The product moved forward by the bell plate and air deflector ring is charged by the ionized air when passing the fingers of the electrode ring. This is especially suitable for products that have good conductivity.

## 5.3 ATOMIZATION PROCESS

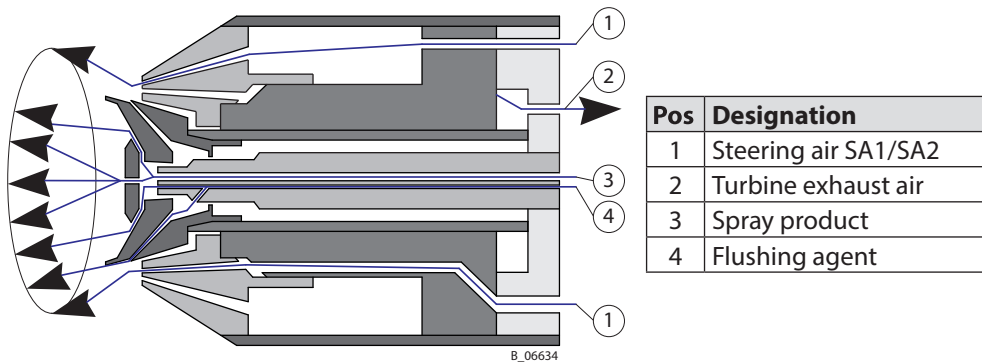
### 5.3.1 SPRAYING PROCESS

During high-speed rotary atomization, the spray product is atomized radially at the circumference of the rotating bell under low-pressure of approx. 0.03 to 0.40 MPa; 0.3 to 4.0 bar; 4.35-58.02 psi.

The steering air can be used to vary the atomizing cone diameter.

The spray pattern can be influenced by the following points:

- Product pressure/flow rate
- Rotation
- Bell diameter
- Pressure of steering air approx. 0.03 to 0.40 MPa; 0.3 to 4.0 bar; 4.35-58.02 psi
- Applied high voltage



Spray product (3) is fed through the central drill hole of the product tube.

The spray pattern is formed with the steering airs (1):

Steering air SA1: outer air for shaping.

Steering air SA2: inner air to advance the product.

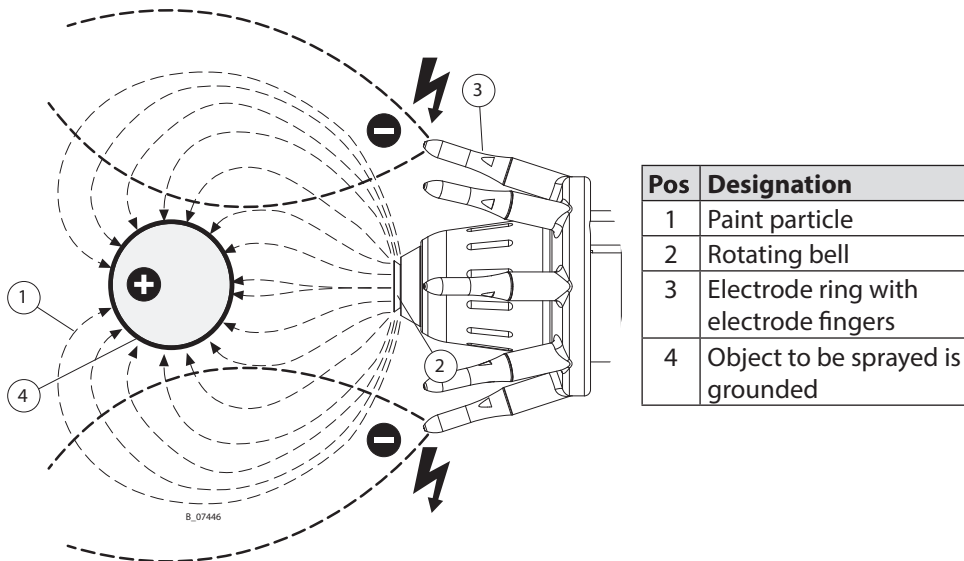
Flushing agent (4) is fed in the outer annular gap of the product tube and is applied through the central hole of the distributor.

The turbine exhaust air (2) is removed to the rear.

### 5.3.2 THE ELECTROSTATIC EFFECT

The high-speed rotary atomizer generates an electrostatic field of force via the applied high voltage.

The paint particles atomized by the rotating bell are now transported by kinetic and electrostatic energy to the grounded work piece and distributed finely across the entire sprayed object.



#### Advantages:

- High application effectiveness
- Even coating thickness
- Coating hidden locations
- Improved edge covering
- Low over spray



## 5.4 SCOPE OF DELIVERY

### 5.4.1 STANDARD VARIANT

Stk	Order no.	Designation
1	2421053	High-speed rotary atomizer TOPFINISH RobotBell 1 ECH

The basic equipment includes:

Stk	Order no.	Designation
1	2422148	CE Declaration of Conformity
1	2422157	Operating manual, German
1	see Chapter <a href="#">1.3</a>	Operating manual in local language

The high-speed rotary atomizer consists of the premounted basic device as well as the accessories required explicitly for this purpose.

Accessories	
→	Bells in various diameters and products with corresponding air deflecting rings
→	Distributor
→	Product nozzles (various bore diameters)
→	Valve Blocks
→	Optical-fiber cables and speed sensor

## 5.5 DATA

### 5.5.1 MATERIALS OF PAINT-WETTED PARTS

Metals	
Aluminium (Consistal®)	Stainless steel 1.4305

### 5.5.2 TECHNICAL DATA

Description	TOPFINISH RobotBell 1
Maximum high voltage	80 kV
RPM monitor	Optical fiber with speed sensor / 2 pulses per rotation
Electric product resistance*	> 50 kΩ
Shaft bearing	Air Bearing
Maximum speed	80,000 rpm
Bearing air quality	Particle filter < 0.01 μm; < 0.01 micron Oil separator < 0.01 mg/m <sup>3</sup> at 20 °C; < 0.1 mgr/cu yd at 68 °F Dew point 7.5 °C; 46 °F
Air quality Drive/stop/steering air	Particle filter < 5 μm; < 5 micron Oil separator < 0.6 mg/m <sup>3</sup> at 20 °C; < 7.1 mgr/cu yd at 68 °F Dew point 16 °C; 61 °F
Bearing air pressure	5.5 bar; 80 psi
Bearing air consumption	59 nl/min at 0 rpm; 2.0 scfm at 0 rpm 52 nl/min at 60,000 rpm; 1.8 scfm at 60,000 rpm
Drive air pressure	0–8 bar; 0–116 psi
Drive air consumption maximum	345 nl/min; 12.2 scfm
Stop air pressure	0–6 bar; 0–87 psi
Steering air pressure	0.2–4.5 bar; 3–65 psi
Average steering air consumption	200 nl/min; 7.06 scfm
Maximum steering air consumption	450 nl/min; 15.89 scfm
Product pressure	typically 50–200 kPa/max. 800 kPa (0.5–2.0 bar); 7–29 psi/max. 116 psi
Flow rate**	25–800 ml/min; 25–800 cc/min
Spray jet diameter approx.***	70–800 mm; 3–32 inch
Product connections	see Chapter <a href="#">5.5.5</a>
Air supply connections	see Chapter <a href="#">5.5.5</a>
Max. product temperature	50 °C; 122 °F
Turbine air temperature	15 °C up to 50 °C; 59 °F up to 122 °F
Ambient temperature	0 °C up to 40 °C; 32 °F up to 104 °F
Sound level at 0.2 MPa; 2 bar; 29 psi steering air, 40,000 1/min 600 ml/min; cc/min****	
Max. acceleration	1g
Weight approx.	8.2 kg; 18.08 lbs

\* According to WAGNER/Ransburg scale (valid only for solvent-based paints)

\*\* Depending on product nozzle and product pressure

\*\*\* Depending on bell diameter and steering air

\*\*\*\* The A-rated emission sound pressure level at a distance of 1 m, LpA1m and the sound power level LWA were determined in accordance with noise standard EN 14462 with reference to framework standards EN ISO 11202 - Accuracy Class 3 and EN ISO 3746.

#### WARNING

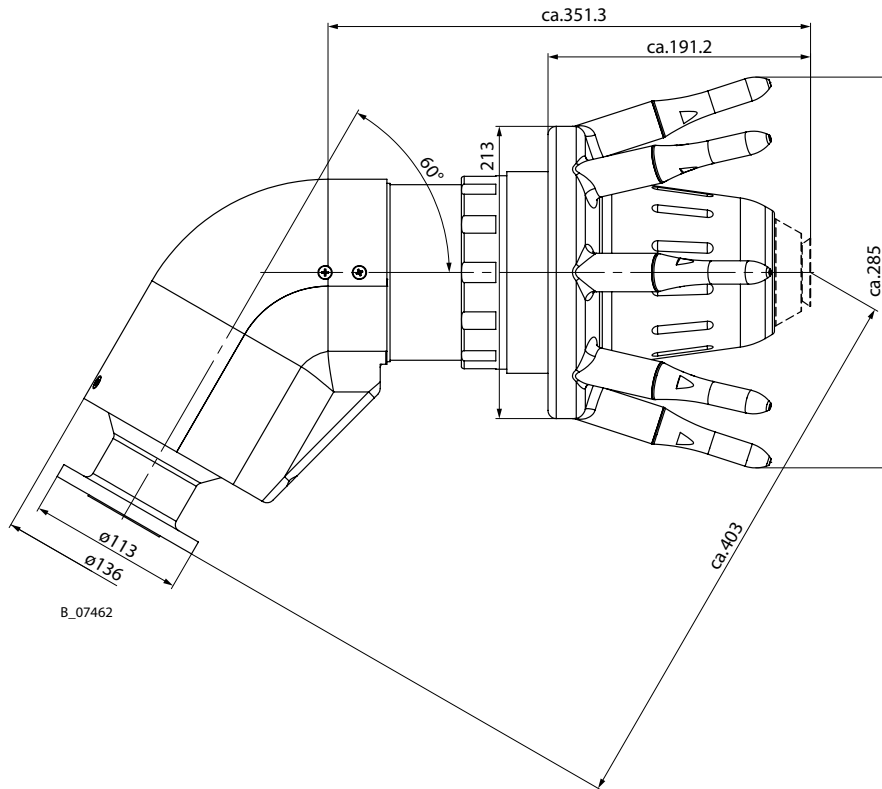
##### Exhaust air containing oil!

Risk of poisoning if inhaled.

→ Provide compressed air free from oil and water.



**5.5.3 DIMENSIONS OF 60° MODEL**



Weight: approx. 8.2 kg; 18.08 lbs

**5.5.4 AIR CONSUMPTION**

**Air consumption of steering airs:**

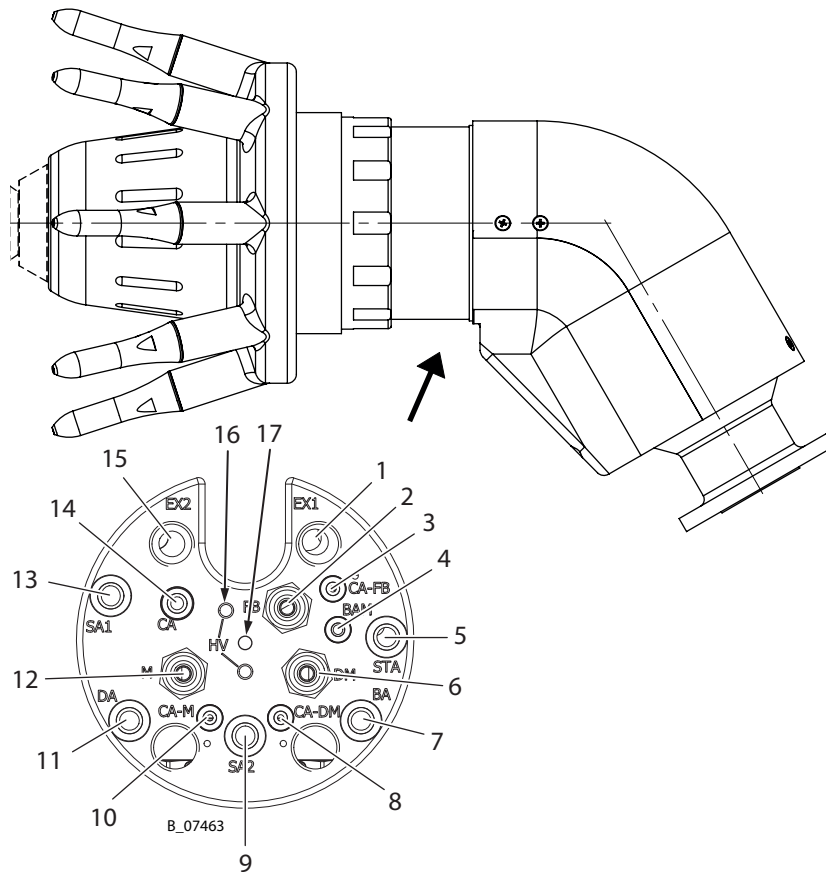
Pressure [bar]	Steering air SA1 [nl/min]	Steering air SA2 [nl/min]
0.5	33	32
1.0	63	55
1.5	88	78
2.0	112	97
2.5	140	122
3.0	168	145
3.5	195	168
4.0	217	193
4.5	243	212
5.0	270	263

**Air consumption of bearing air:**

Pressure [bar]	Bearing air [nl/min]
5	67

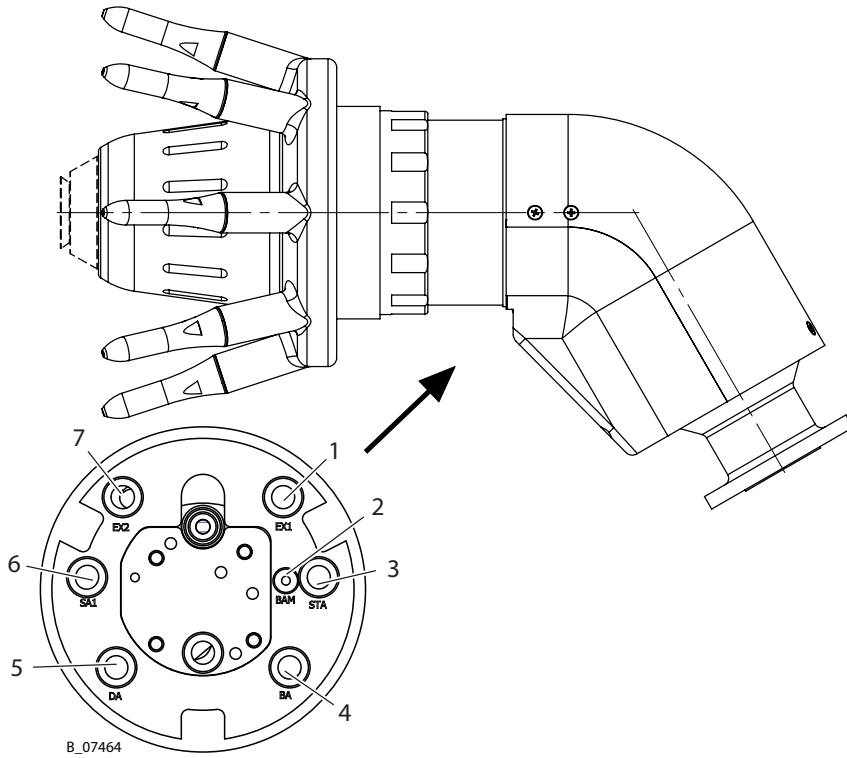


**5.5.5 CONNECTIONS ON VALVE BLOCK - 1-PAINT**



Pos	Connections	Short description	Connecting dimensions
1	Bearing air venting	EX1	ø 12 mm; 0.472 inch
2	Bell flushing	FB	ø 5x8 mm; 0.197x0.315 inch
3	Control air - bell flushing	CA-FB	ø 4 mm; 0.157 inch
4	Bearing air monitoring	BAM	ø 4 mm; 0.157 inch
5	Stop air	STA	ø 8 mm; 0.315 inch
6	Return/dump	DM	ø 5x8 mm; 0.197x0.315 inch
7	Bearing air	BA	ø 8 mm; 0.315 inch
8	Control air dump	CA-DM	ø 4 mm; 0.157 inch
9	Steering air 2 (inner holes)	SA2	ø 8 mm; 0.315 inch
10	Control air product	CA-M	ø 4 mm; 0.157 inch
11	Drive air	DA	ø 8 mm; 0.315 inch
12	Product	M	ø 5x8 mm; 0.197x0.315 inch
13	Steering air 1 (outer holes)	SA1	ø 8 mm; 0.315 inch
14	Control air	CA	ø 6 mm; 0.236 inch
15	Turbine air venting	EX2	ø 12 mm; 0.472 inch
16	High voltage	HV	
16	High voltage	HV	
17	Grounding	--	M5x0.8x10/14
-	Optical fiber cable	BWC	

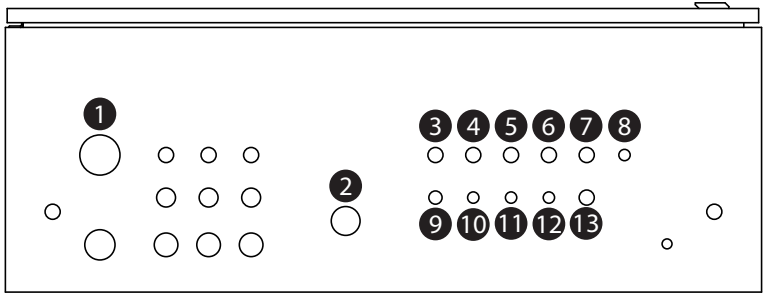
**5.5.6 CONNECTIONS ON ADAPTER PIECE**



Pos	Connections	Short description	Connecting dimensions
1	Bearing air venting	EX1	ø 12 mm; 0.472 inch
2	Bearing air monitoring	BAM	ø 4 mm; 0.157 inch
3	Stop air	STA	ø 8 mm; 0.315 inch
4	Bearing air	BA	ø 8 mm; 0.315 inch
5	Drive air	DA	ø 8 mm; 0.315 inch
6	Steering air 1 (outer holes)	SA1	ø 8 mm; 0.315 inch
7	Turbine air venting	EX2	ø 12 mm; 0.472 inch
--	Steering air 2 (inner holes), not visible in this figure.	SA2	ø 8 mm; 0.315 inch



**5.5.7 CONNECTIONS ON CONTROL CABINET RBC 1E (SINGLE-PAINT VALVE BLOCK)**



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Pos	Description
1	Air supply connection
2	Optical fiber connection
3	Steering air 1 (SA1) connection
4	Steering air 2 (SA2) connection
5	Drive air (DA) connection
6	Stop air (STA) connection
7	Bearing air (BA) connection
8	Bearing air monitoring (BAM) connection
9	Control air (CA) connection
10	Control air product (CA-M) connection
11	Control air dump (CA-DM) connection
12	Control air bell flushing (CA-FB) connection
13	Mains air connection

## 6 ASSEMBLY AND COMMISSIONING

### 6.1 TRAINING OF ASSEMBLY/COMMISSIONING PERSONNEL

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

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

### 6.2 STORAGE CONDITIONS

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

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).

### 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 high-speed rotary atomizer TOPFINISH RobotBell 1 ECH can be moved manually. Take care that the bell is not damaged.

### 6.5 AIR QUALITY, AIR QUANTITY AND AIR PRESSURE

The required air quality (see Chapter [5.5.2](#)) must be complied with, to ensure a long life for the high-speed rotary atomizer. Furthermore, every kind of air contamination impacts negatively on the spray and/or paint result.

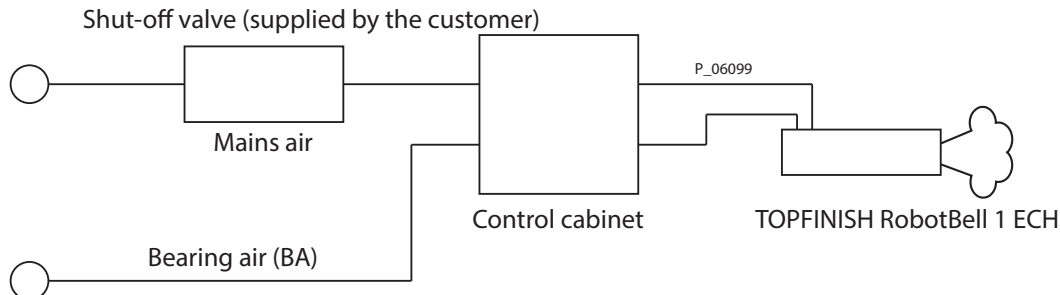
The air filter should be fitted as close as possible to the valves and/or applicator. The filter units must be regularly checked and cleaned/replaced as required.

Do not use PTFE tape and adhesives in the supply pipe for the bearing air because they may cause damage to the air bearing.

The air bearing must either be operated using a WAGNER controller or monitored on site using an air filter (5 µm). The WAGNER controller contains the safety technology needed.

The bearing air (BA) has to be supplied separately without a shut-off valve supplied by the customer. In accordance with local requirements, equip the mains air supply with a shut-off valve supplied by the customer if required. If necessary, this shut-off valve can be shut off if a fire alarm sounds or under other conditions.

The air supply to the bearing air, on the other hand, must be ensured at all times. A drop in the bearing air (BA), with the hollow shaft rotating, may damage the air bearing. In extreme cases, total loss of the air bearing is possible.



The bearing air (BA) should only be shut off if the bell plate is stationary. In this case, WAGNER recommends a delay time of 200 s in the chain of stopping the bell plate and shutting down the bearing air. The WAGNER controller includes this safety interlock and monitors the bearing air (BA) by means of a pressure switch and the air hose (BAM) as an input into the pressure switch.

If pressure fluctuations or power cuts occur more frequently, we would recommend integrating an additional buffer tank to supply air for the bearing air. This buffer tank should have a capacity of at least 25 l.

Opening of the product valves by means of an interlock should only be possible as of a speed of 10,000 rpm.

## 6.6 ASSEMBLY AND INSTALLATION

### National regulations

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

### 6.6.1 TYPICAL ELECTROSTATIC SPRAYING SYSTEM

#### Note:

The TOPFINISH RobotBell 1 high-speed rotary atomizer must be combined with various components to form an electrostatic spraying system.

The air system shown in the figure is only one example of an electrostatic spraying system.

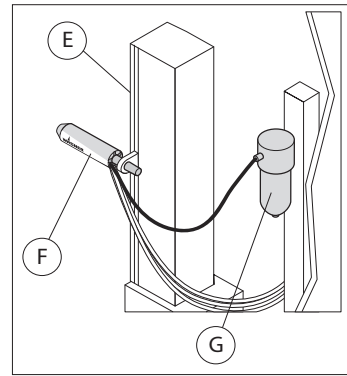
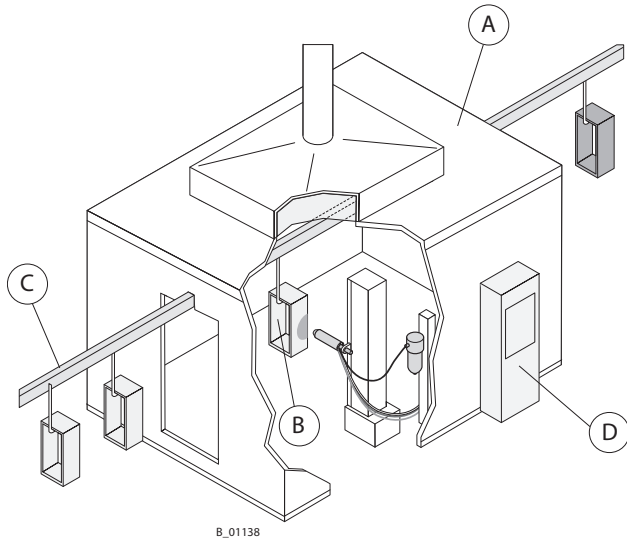
Your WAGNER retailer would be happy to assist you in creating a spraying system solution that meets your individual needs.

Once the installation is complete, the capacity of the entire system must be measured and the maximum discharge energy calculated from this.

The type classification according to EN 50176 (type B-L, type C-L or type D-L) or EN 50348 (type A-NL or type B-L) can be made on the basis of these values.

The values calculated and the type classification must be documented accordingly.





Pos	Designation
A	Spray booth
B	Work piece
C	Conveyor
D	Control cabinet
E	Reciprocator
F	Electrostatic high rotation atomizer
G	Air filter

### 6.7 SETTING UP STATIONARY ELECTROSTATIC SYSTEMS

The high-speed rotary atomizer is a component of a stationary coating system. When setting up permanent coating systems, EN 50176 (ignitable coating products) or EN 50348 (non-ignitable coating products) must be observed. One of the requirements is that activation of the high voltage is only possible by using a key. But it must be possible to switch off the high voltage without a key.

If using ignitable coating products (category 3G), requirements include a safe shutdown after the first spark discharge at the latest.

**⚠ DANGER**

**Exploding gas air mixture due to a sparkover!**

Danger to life from flying parts and burns.

- Ground all device components.
- Ground the work pieces to be coated.
- Observe the minimum distance between the atomizer bell, the grounded unit components and the work pieces to be coated. The minimum distance is 250 mm; 9.84 inch.





**⚠ DANGER**

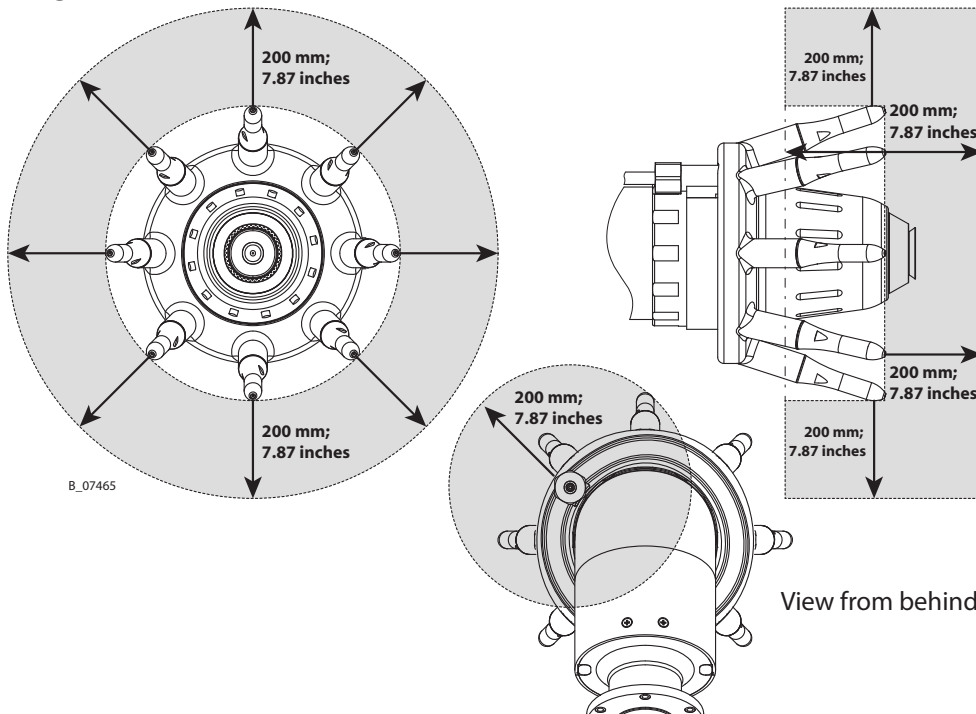
**Discharge of electrostatically charged components in atmospheres containing solvents!**

Explosion hazard from electrostatic sparks or flames.

- Ground all device components.
- Ground the work pieces to be coated.
- Observe the minimum distance between the atomizer bell, the grounded unit components and the work pieces to be coated. The minimum distance is 200 mm; 7.87 inch.



**Danger zone:**



The distance between the work pieces and the parts of the spray system under high voltage must be large enough to prevent a sparkover during normal operation. A minimum distance of 200 mm; 7.87 inch is recommended in the area of the atomizer bell and cylindrical cover. If required by the application or if demanded by the design, these distances can also be shorter. In this case it is necessary to check that sparkovers do not occur.

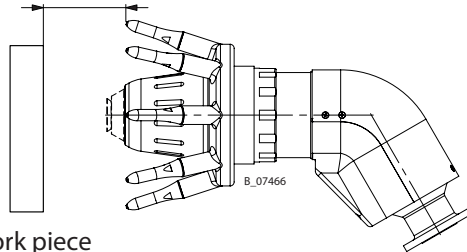
Failure to observe the distances may result in high-voltage sparkover, damage and greater contamination.

The distance between the bell plate and work piece to be coated should be selected with care.

High voltages increase the risk of electric sparkover. Minimum distances can be found in the following table.

High voltage (HV) in kV	Minimum distance in mm
50	125
60	150
70	175
80	200
100	250

Minimum distance in mm



Work piece

Sparkovers may arise for reasons other than electric charges from the device itself. To prevent sparkovers, conductive work clothes (conductive safety boots and gloves) must also be worn.

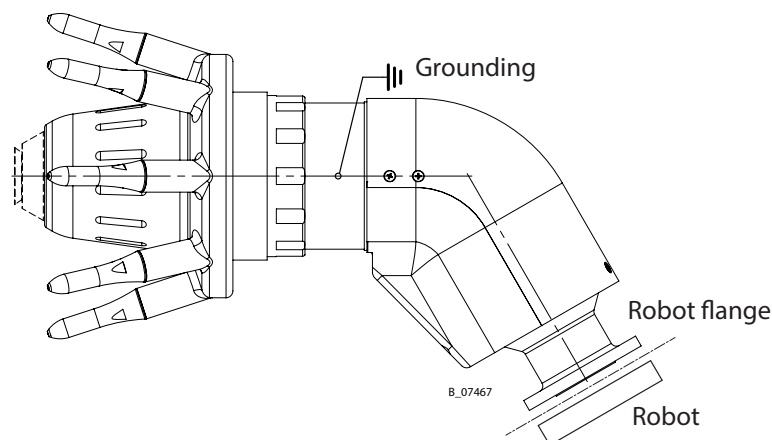
### 6.7.1 ASSEMBLY OF THE HIGH-SPEED ROTARY ATOMIZER ON THE ROBOT

The high-speed rotary atomizer can flexibly be mounted.

The TOPFINISH RobotBell 1 ECH can be fitted directly on a Fanuc Paint Robot P50 or P250. Assembly on other robots is also possible if the corresponding adapter plates are used (see Chapter 14.14).

The high-speed rotary atomizer has three lines for the media (product M, flushing agent FB and return/circulation DM).

If necessary, cover dump outlets that are not used with corresponding valve plugs.



#### Material needed:

a)	Pre-assembled hose sets for product, air, high voltage and optical fiber (see Chapter 14.8)
	or
a)	4x air hose $\varnothing$ 4/2.7 mm, of appropriate length
	1x air hose $\varnothing$ , 6/4 mm, of appropriate length
	5x air hose $\varnothing$ 8/6 mm, of appropriate length
b)	Pre-assembled high-voltage cable (high-voltage cable and connector plug) (see Chapter 14.10) of appropriate length
c)	Optical fiber (see Chapter 14.7)
d)	Product line of the appropriate length
e)	Dump line (waste line) of the appropriate length
f)	Flushing agent line for flushing the bell plate of the appropriate length
g)	Grounding cable, min. $\varnothing$ of 2.5 mm, in the appropriate length

**Tools needed:**

- Allen wrench, size 5, for socket cap screws for fastening on the robot
- Allen wrench, size 3, for optical fiber
- Wrench, size 8, for product nozzle
- Wrench, size 12, for the hoses for product, dumping and flushing agent
- Teach tip (order no. 2393703)
- Socket (order no. 2396538)

**Procedure:**

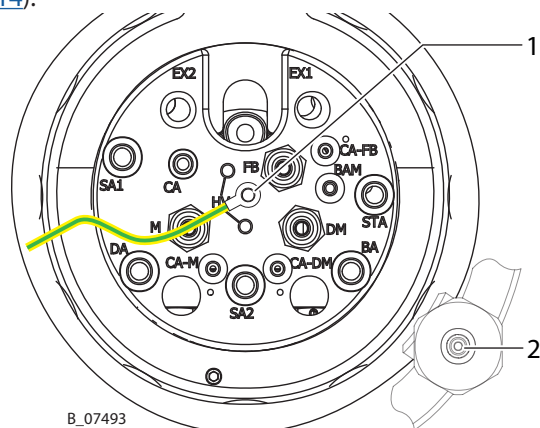
1. "Master" robot in advance (axes set to 0°).
2. Fasten high-speed rotary atomizer on robot with six M5x20 socket cap screws and A5.4 washers via the robot flange.

**! NOTICE****Twisting of hoses and lines during operation!**

Interruption of air and product supply.

→ Assembly of the high-speed rotary atomizer on the robot must take place in the neutral position.

3. The high-speed rotary atomizer is then connected to the robot with the hose set (see Chapter [14.8](#)) or it is connected with lines suitable for product and air, as described below.
4. Connect the air hoses for bearing air (BA), bearing air monitoring (BAM), drive air (DA) and stop air (STA).  
Ensure that the assignment of the drive air (DA) and the stop air (STA) is correct, thereby the direction of rotation of the high-speed rotary atomizer is not influenced negatively.  
A wrong direction of rotation causes damage to the high-speed rotary atomizer.
5. Mount and connect the air hoses for steering air (SA1/SA2).
6. Connect air hoses for main needle valve (CA), product release (M), dump (DM) and bell flushing (FB).
7. If necessary, fix product tube in order to fit the nozzle.  
The nozzle can be fitted with ease once the air bearing has been removed.
8. Fit product nozzle in accordance with the planned application rate.  
Different product nozzles with different application rates are available (see Chapter [14](#)).



9. Connect grounding cable (1). Screw cable lug into the center of the valve block using an M5 screw.  
Connect the high-voltage cable (2) and secure it from being pulled out!
10. Connect the product hoses for the dump return line (DM).

11. Connect the product hoses for the product supply line (M).
12. Connect the product hoses for the flushing agent supply line (FB).
13. Connect the air hoses for controlling to all the valves.

**Laying hoses**

To minimize wear, grease all hose areas inside the robot with Vaseline.

The hose lengths of the various hoses must be selected to ensure a sufficient reserve in all the robot's working positions.

14. Slide supplied sleeve onto the optical fiber and fasten it (see Chapter [14.7](#)).
15. Fit optical fiber for recording speed and lock accordingly with locking pin. Once assembly is complete, close off selector valve with cover.

**Assembly of Optical Fiber:**

The optical fiber is very prone to kinks and/or bending radii. These may cause damage to it. Assemble the optical fiber with great care.

16. Secure cable for optical fiber and high-voltage cable to carrier bars with cable ties.
17. Mount the air deflector ring in accordance with the selected bell diameter.
18. Mount the casing.
19. Mount the bell with mounted distributor to the drive shaft by locking the drive spindles.

They are locked by pressing and holding down the locking button (see picture below).



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20. Slide union nut air ring up to stop and lock it with the bayonet fitting. There may be no gap at the rear of the union nut!
21. Provide traction relief using cable ties, for example.

### 6.7.2 VENTILATION OF THE SPRAY BOOTH

The electrostatic spraying equipment may only be operated in defined spraying areas and in accordance with the EN 16985 standard or under comparable ventilation conditions.

- The electrostatic spraying equipment must be locked to the technical ventilation so that the coating product supply and the high voltage are not effective as long as the technical ventilation is not operated with the minimum exhaust air volume flow or a larger exhaust air volume flow.
- Operate the device in a spray booth approved for the working materials.
- Observe national and local regulations for the exhaust air speed.
- Ensure that the excess coating product (overspray) will be collected up safely.

### 6.7.3 AIR SUPPLY LINES

Ensure that only dry, clean atomizing air penetrates the high-speed rotary atomizer! Dirt and moisture in the atomizing air worsens the spraying quality and spray pattern.

#### **WARNING**

##### **Hose connections!**

Risk of injury and damage to the device.

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



### 6.7.4 PRODUCT SUPPLY LINES

#### **NOTICE**

##### **Impurities in the spraying system!**

High-speed rotary atomizer blockage, product hardens in the spraying system.

- Flush high-speed rotary atomizer and paint supply with suitable flushing agent.

### 6.8 GROUNDING

#### **WARNING**

##### **Discharge of electrostatically charged components in atmospheres containing solvents!**

Explosion hazard from electrostatic sparks.

- Clean the pump only with a damp cloth.



#### **WARNING**

##### **Heavy paint mist if grounding is insufficient!**

Danger of poisoning.

Insufficient paint application quality.

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



When working with solvent-based paints, a conductive connection (potential equalization cable) must be established between the original container and the device.

When working with water-based paints, all components conveying product must be isolated.

**OPERATING MANUAL**



In particular, ensure that all components have the same potential in order to minimize high voltage problems.

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

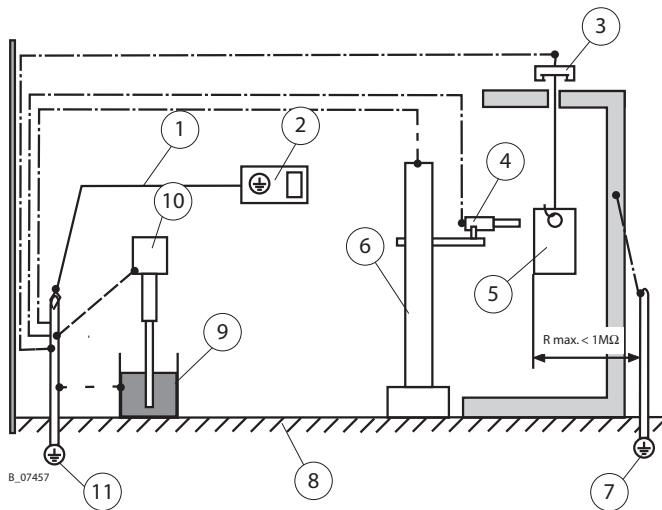
**A poorly grounded work piece causes:**

- very bad wrap around
- uneven coating
- back spraying to the high-speed rotary atomizer, i.e. contamination

**Prerequisites for perfect grounding and coating are:**

- clean suspension for the workpiece to be coated,
- grounding of spray booth, conveyor system and suspension equipment on the building side in accordance with the operating manuals or the manufacturer's information
- grounding of all conductive parts within the working area
- the grounding resistance of the work piece must not exceed 1 MΩ (megohm)
- only connect high-voltage generator and/or ground switch to signal ground (e.g., water pipe)

Grounding schema (example):



Pos	Designation
1	Grounding cable
2	Control unit
3	Conveyor
4	High-speed rotary atomizer
5	Work piece
6	Spraying stand

Pos	Designation
7	Signal ground
8	Floor, static dissipative
9	Paint tank
10	Pump
11	Signal ground
--	--

Cable cross sections	
Pump	4 mm <sup>2</sup> , AWG 11
Paint tank	4 mm <sup>2</sup> , AWG 11
Conveyor	16 mm <sup>2</sup> , AWG 5
Booth	16 mm <sup>2</sup> , AWG 5
Spraying stand	16 mm <sup>2</sup> , AWG 5

## 6.9 COMMISSIONING

### 6.9.1 PRESETTINGS

- Limit high voltage to a max. of 80 kV
- Limit current to approx. 500  $\mu$ A
- Ideal operation with 70 kV and 350  $\mu$ A, to minimize the wear of the air deflector ring and the electrode fingers
- Switching the high voltage off during coating pauses in order to avoid unnecessary stress on the electrode fingers and air deflector ring
- Ensure good grounding of the work pieces
- Ensure high air humidity in the booth (> 60%)
- Select the smallest possible bell plate
- When using aggressive water-based lacquers, use a titanium bell plate
- Regularly clean the air deflector ring and the fingers to minimize the discharge currents

Lacquer type	Speed of bell plates	Overlap	Distance to work piece
Water-based paint, primer	30,000-45,000 rpm	50%	200–250 mm
Water-based paint, basic paint	30,000-45,000 rpm	60%	180–250 mm
Solvent-based paint, primer	45,000 rpm	50%	200–250 mm
Solvent-based lacquer, Clear Coat	25,000-45,000 rpm	60%	190–250 mm
Solvent-based lacquer, clear lacquer	45,000 rpm	60%	180–250 mm

### 6.9.2 SAFETY CHECKS

→ Carry out safety checks in accordance with Chapter [8.2.3](#).

### 6.9.3 LACQUER PREPARATIONS

The viscosity of the lacquer is of great importance. Adjust the viscosity according to the application. The best spraying results are obtained with values between 15 and 30 DIN/4 seconds (measured in immersion flow cup DIN 4 mm; 0.16 inches).

In the case of application problems contact the lacquer manufacturer.

### 6.9.4 VISCOSITY CONVERSION TABLE

Millipascal x Sec (mPas)	Centipoise	Poise	DIN Cup 4 mm; 0.16 inch	Ford Cup 4	Zahn 2
10	10	0.1		5	16
15	15	0.15		8	17
20	20	0.2		10	18
25	25	0.25	14	12	19
30	30	0.3	15	14	20
40	40	0.4	17	18	22
50	50	0.5	19	22	24
60	60	0.6	21	26	27
70	70	0.7	23	28	30
80	80	0.8	25	31	34
90	90	0.9	28	32	37
100	100	1	30	34	41
120	120	1.2	33	41	49
140	140	1.4	37	45	58
160	160	1.6	43	50	66
180	180	1.8	46	54	74



200	200	2	49	58	82
220	220	2.2	52	62	
240	240	2.4	56	65	
260	260	2.6	62	68	
280	280	2.8	65	70	
300	300	3	70	74	
320	320	3.2			
340	340	3.4			
360	360	3.6	80		
380	380	3.8			
400	400	4	90		

### 6.9.5 OPERATING INSTRUCTIONS FOR SAFE OPERATION

#### CAUTION

##### **Cutting effect of rapidly rotating edges!**

Danger of injury due to touching the rapidly rotating bell.

- Ensure that the bell stands still before anyone touches it.
- Secure the high-speed rotation atomizer against actuation.



#### CAUTION

##### **Incorrect assembly!**

Risk of injury and damage to the device.

- The shaft and bell cone and thread are to be checked for damage and dirt every time before the bell is mounted. Dirt and/or damage lead to an unbalanced bell.
- Tighten the bell and ensure that the bell is mounted cleanly on the shaft cone.
- No persons should be located in the hazard area during operation.
- Excessive imbalance leads to damage to the drive turbine and, in an extreme case, to the bell being hurled out.



#### NOTICE

##### **Damage to the drive turbine!**

Incorrect handling causes damage to the drive turbine.

- Ensure that bearing air is applied before commissioning, during/after operation of the atomizer, and up until the drive turbine has come to a complete stop.
- Ensure that the bearing air is applied to the drive shaft before turning the drive shaft by rotating the driver shaft manually or by drive air.
- Regular rinsing cycles ensure that the imbalance caused by paint deposits on the bell is low.  
Excessive imbalance causes damage to the drive turbine.
- Ensure that the air quality meets the technical requirements.
- Ensure that a separate microfilter is present in the bearing air supply line.
- Ensure that a coarse filter is positioned upstream in the supply line if the air quality is poor.
- Ensure that the maximum flow rate, as per Chapter [5.5.2](#) "Technical data", is not exceeded under any circumstances. Otherwise product/flushing agent can enter the drive turbine.
- Ensure that the maximum speed in accordance with Chapter [5.5.2](#) "Technical data" is not exceeded under any circumstances.

**Note:**

- A suitable pressure switch for monitoring the bearing air is listed in Chapter [14.12](#).
- Suitable filters for bearing air, drive and stop air are listed in Chapter [14.11](#).
- Warranty claims are void in case of damage due to incorrect handling!
- O-rings have to be greased lightly with Vaseline.
- In order to avoid back-spraying, ensure that shaping air with min. 0.03 MPa; 0.3 bar; 4.35 psi is applied for approx. 2-3 seconds before opening/after closing all the product inlets.
- Air guidance of the steering air is one of the factors influencing the evenness of the atomizer pattern. The steering air ring must not be damaged or dirty.
- To limit the flushing agent amount with a local flush pressure regulator or a flush agent throttle is imperative.
- Carry out the basic setting using the adjusting part.

**Procedure:**

1. Apply bearing air (BA) at the high-speed rotary atomizer.
2. Preset pressure for bearing air to 0.55 MPa; 5.5 bar; 80 psi.  
WAGNER recommends installing a pressure switch, which shuts the high-speed rotary atomizer down automatically when the pressure falls below 0.54 MPa, 5.4 bar; 78 psi. Spindle rotation without bearing air may cause damage.  
The presence of bearing air should be checked by briefly turning the spindles by hand. If the spindle cannot be turned with ease, the bearing air setting should be checked again.
3. Set product pressure to 0.1 MPa; 1.0 bar; 14.50 psi.
4. Put the supply system for coating product and flushing agent into operation.
5. Use solvent to check the system for leaks.
6. Flush high-speed rotary atomizer with solvent, flushing through the flushing valve (FB).
7. Set the speed of the high-speed rotary atomizer via the external control system to 5,000–10,000 rpm and power up the high-speed rotary atomizer slowly.
8. Check whether there are any vibrations on the high-speed rotary atomizer.
9. Set speed to 25,000 rpm using external control system.
10. Set steering airs SA1 and SA2 to 0.03 MPa; 0.3 bar; 4.35 psi to prevent the spray jet titling to the rear.
11. Open product valve.
12. Check spray jet geometry.

**Note:**

If the high voltage is not switched on, a turbulent (wobbling) spray pattern may result. This effect is eliminated by switching on the high voltage.

13. Adjust spray pattern geometry if required by adjusting the pressure (0.05 MPa; 0.5 bar; 7.25 psi – 0.4 MPa; 4.0 bar; 58.02 psi).  
If necessary, use a larger or smaller bell plate.
14. Calibrate spray product and solvent (for description, see Chapter [6.9.6](#)).
15. Switch on and set high voltage (20–70/100 kV).

**Note:**

If necessary, this optimization should be tested with another product nozzle or another bell diameter. Verify safe operational conditions.

### 6.9.6 CALIBRATION

1. Remove front cover.
2. Lock spindle by pressing and holding locking button.
3. Remove bell plate with tool (see Chapter [14.15](#)).
4. Slide appropriate hose onto nozzle and guide into a suitable measuring cup.
5. Switch off steering airs SA1 and SA2.
6. Depending on the size of the measuring cup, discharge product for 1 minute or twice for 30 seconds.
7. Compare the calculated application rate with the table.
8. If the application rate is too low, you may need to use a larger bell plate.

**Note:**

When calibrating with flushing agent, a volume of 500 ml in 1 minute may not be exceeded. Adjust flushing agent pressure accordingly on pressure regulator.

### 6.9.7 VERIFYING A SAFE OPERATIONAL CONDITION

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

This includes:

- Carry out safety checks in accordance with Chapter [8.2.3](#).



## 7 OPERATION

### 7.1 TRAINING THE OPERATING PERSONNEL

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

### 7.2 EMERGENCY DEACTIVATION

In the case of unforeseen occurrences immediately:

1. Switch off control unit.
2. Relieve pressure according to the operating manual of the product pressure generator.
3. Close the compressed air supply.

### 7.3 TASKS

Ensure that:

- the regular safety checks are carried out in accordance with Chapter [8.2.3](#);
- commissioning is carried out in accordance with Chapter [6.9](#).
- Observe superordinate operating manual.

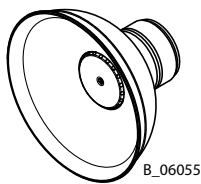
#### 7.3.1 ADJUSTING THE SPRAY PATTERN

The spray jet diameter can be adapted individually by modifying the steering air (SA).

Advancement: → kinetic energy via steering air 2.

→ shape of the spray pattern (small / large) via steering air 1.

Larger or smaller spray patterns can be achieved by using different bell diameters.



Bell ø 50 mm; 1.97 inch

#### Note:

1. The flow rate can be changed by:
  - changing the product pressure or
  - Use of another nozzle (see Chapter [14.3](#)).
2. The quality of the distributor and bell are critical for ensuring the spray pattern.

## 7.4 PRESSURE RELIEF/WORK INTERRUPTION

The pressure must always be relieved:

- when the spraying tasks are finished,
- before carrying out maintenance work on the spraying system,
- before carrying out cleaning tasks on the spraying system,
- before moving the spraying system to another location,
- if something must be checked on the spraying system,
- if the bell is removed from the high-speed rotary atomizer

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

- Air cock with pressure relief hole mounted between compressed air source and pneumatic pump.
- Product pressure relief valve mounted between pump and high-speed rotary atomizer.

### Pressure Relief Procedure:

1. Switch off high voltage.
2. Deactivate valves in valve block via the controller.
3. Deactivate main needle valve.
4. Switch off steering airs SA1 and SA2.
5. Use stop air (STA) to set speed to "0".  
A value between 50–100 rpm is shown in the controller display.

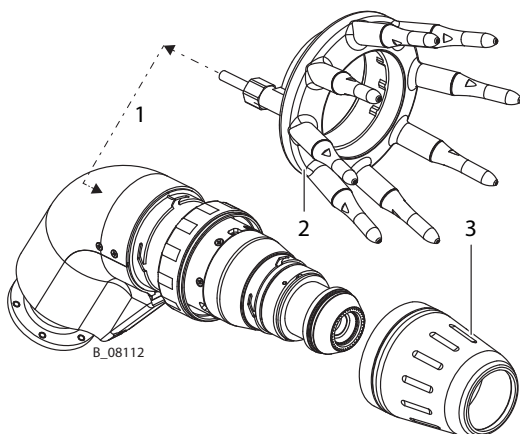
### Note:

Always follow the procedure described above if pressure relief is specified in the instructions.

## 7.5 FOR INTERNAL CHARGING AND USE OF SOLVENT-BASED PAINTS

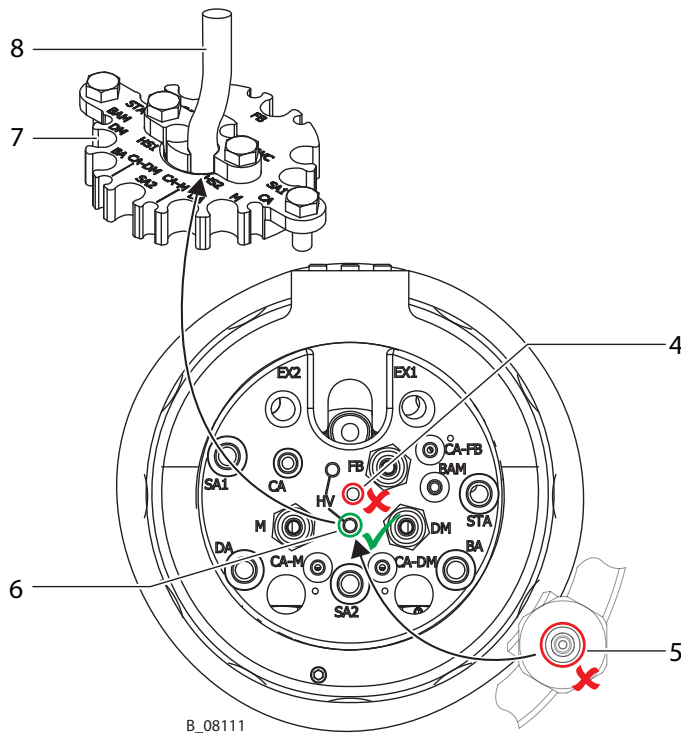
When working with solvent-based paints, a conductive connection (potential equalization cable) must be used between the original tank and the device (see Chapter [6.8](#)). To do so, the device must be converted from external to internal charging (see Chapter [7.6](#))

## 7.6 CONVERSION FROM EXTERNAL TO INTERNAL CHARGING



### Preparation:

- Pull off union nut (3) by turning gently (bayonet fitting), remove electrode ring (2) and disconnect grounding.  
Pull off HV cable (1) of electrode ring (2).
- Then remount the union nut (3).

**Procedure:**

- Unscrew grounding (4), insulate contact and secure it from slipping out!
- Unplug the HV plug (5) on the valve block and plug it into one of the connections (6) labeled with HV.
- Clamp HV cable (8) using traction relief (7) at the rear on the connection flange of the Topfinish RobotBell 1 ECH, as shown in the figure, and in this way, secure it from being pulled out!

**7.7 BASIC FLUSHING**

- Proceed in accordance with Chapter 8.
- Observe superordinate operating manual.

**Regular flushing**

- The spray gun must be cleaned and flushed daily.
- The cleaning and flushing agents used must be compatible with the working material.

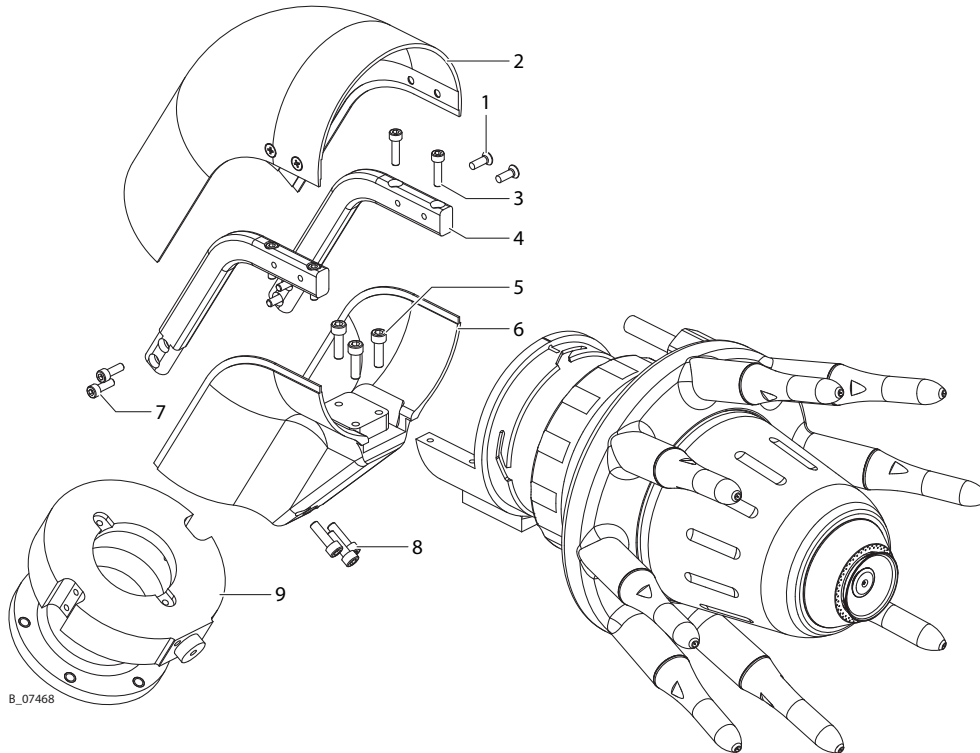
 **WARNING**
**Incompatibility of flushing / cleaning agent with the working medium!**

Risk of explosion and danger of poisoning by toxic gases.

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

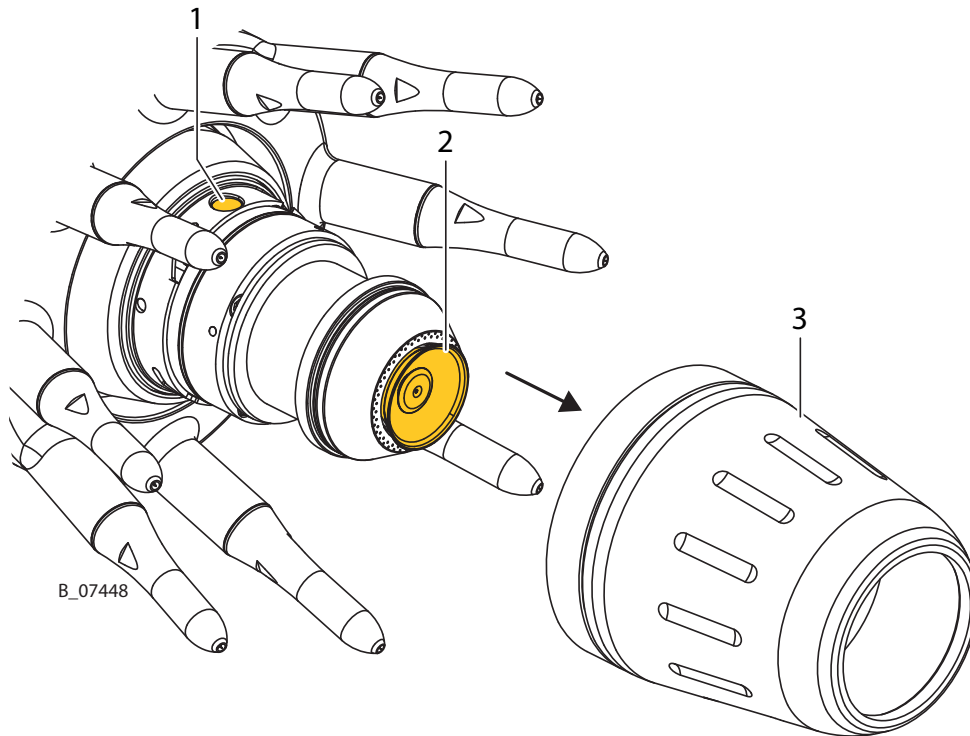


### 7.7.1 REMOVING/FITTING THE CASING



1. Unscrew countersunk head screw M5x15 / 6 pieces (1) and remove upper casing.
2. Unscrew cylinder head screw M5x20 (3) and cylinder head screw M6x20 (5) and remove lower casing together with the flange (9) and the connecting angle (4).
3. Remove cylinder head screw M5x15 (7) and cylinder head screw M6x20 (8) and remove the complete flange (9).
4. Assembly is carried out in the reverse order.

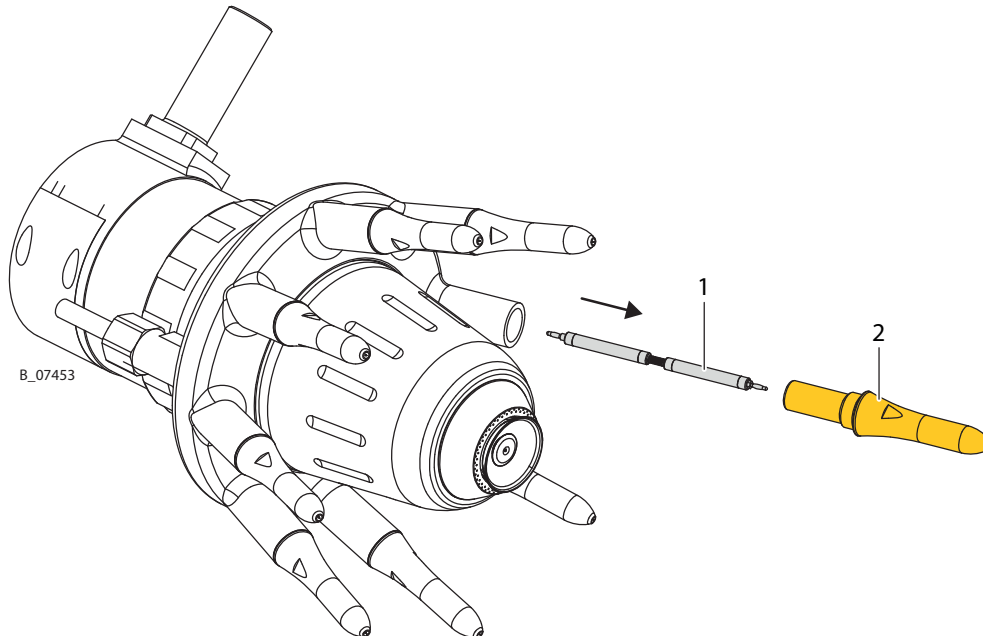
### 7.7.2 CHANGING BELL PLATE

**Work steps:**

1. Pull union nut (3) off of air ring by hand, by gently turning (bayonet fitting).
2. Press and hold down locking button (1).
3. With locking button pressed and held, unscrew bell plate (2).
4. Screw on other bell plate and check firm seating.
5. Slide union nut air ring up to stop and lock it with the bayonet fitting.  
There may be no gap at the rear of the union nut!

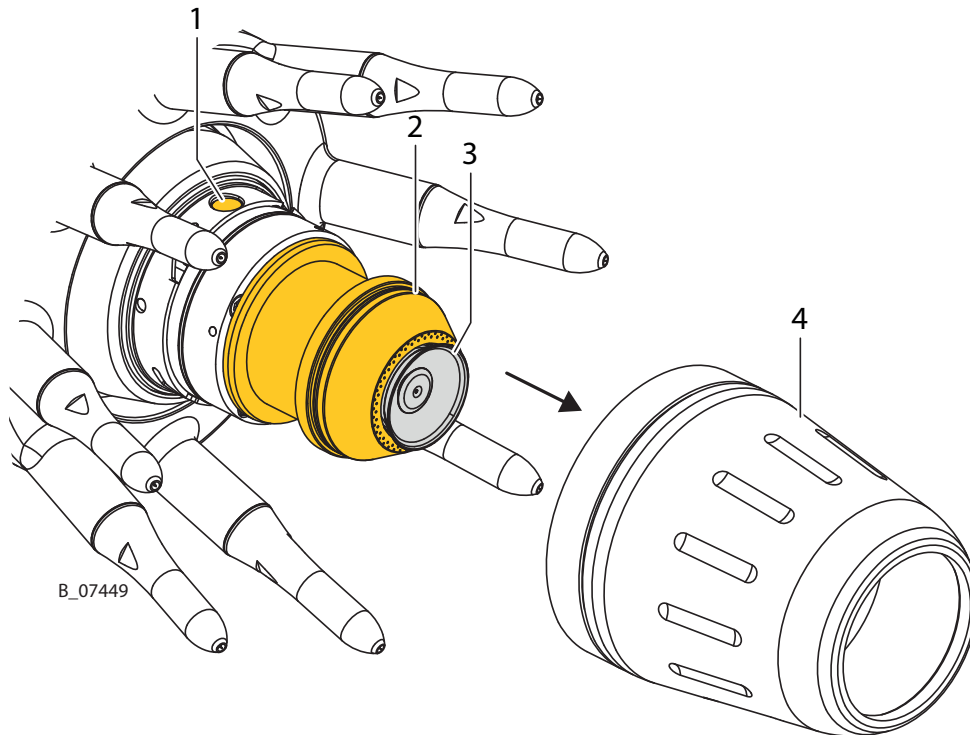


### 7.7.3 CHANGING COMPLETE ELECTRODE FINGER OR RESISTOR PACKAGE

**Work steps:**

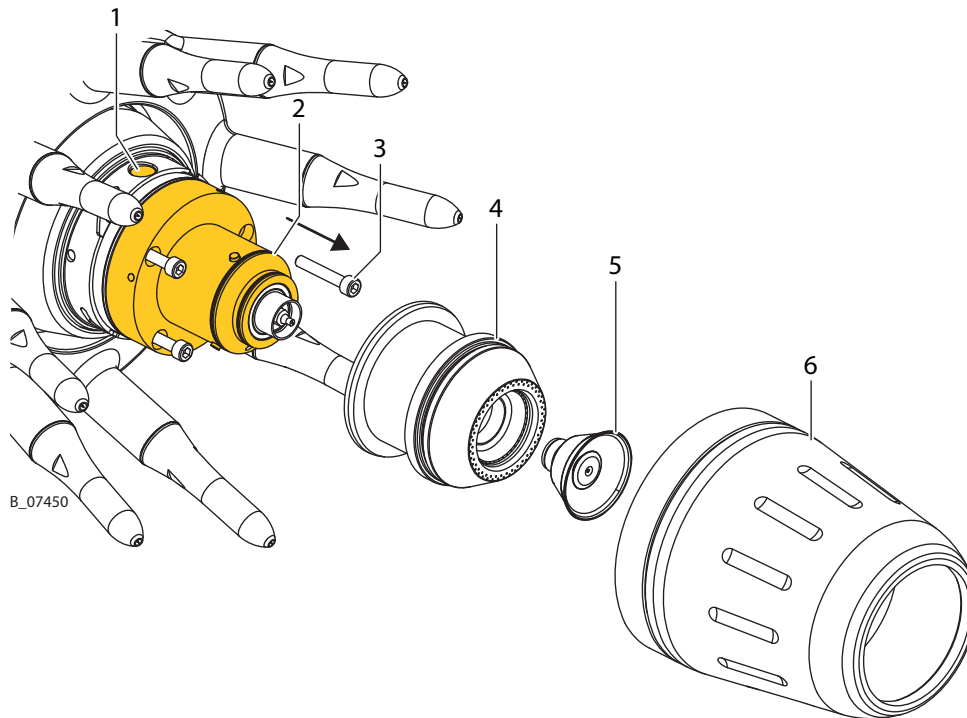
1. Unscrew electrode finger (2) from electrode ring, with a size 18 open-end wrench.
2. Carefully pull out resistor package (1) and replace it.  
Or:
3. Completely replace electrode finger, if necessary.
4. Screw complete electrode finger back on using a size 18 open-end wrench.

#### 7.7.4 CHANGING AIR CONTROL RING

**Work steps:**

1. Pull union nut (4) off of air ring by hand, by gently turning (bayonet fitting).
2. Press and hold down locking button (1).
3. With locking button pressed and held, unscrew bell plate (3).
4. Pull air deflector ring (2) off of carrier ring, by gently turning (bayonet fitting).
5. Slide another air control ring onto carrier ring.
6. With locking button pressed and held, screw on bell plate and check for firm seating.
7. Slide union nut air ring up to stop and lock it with the bayonet fitting.  
There may be no gap at the rear of the union nut!

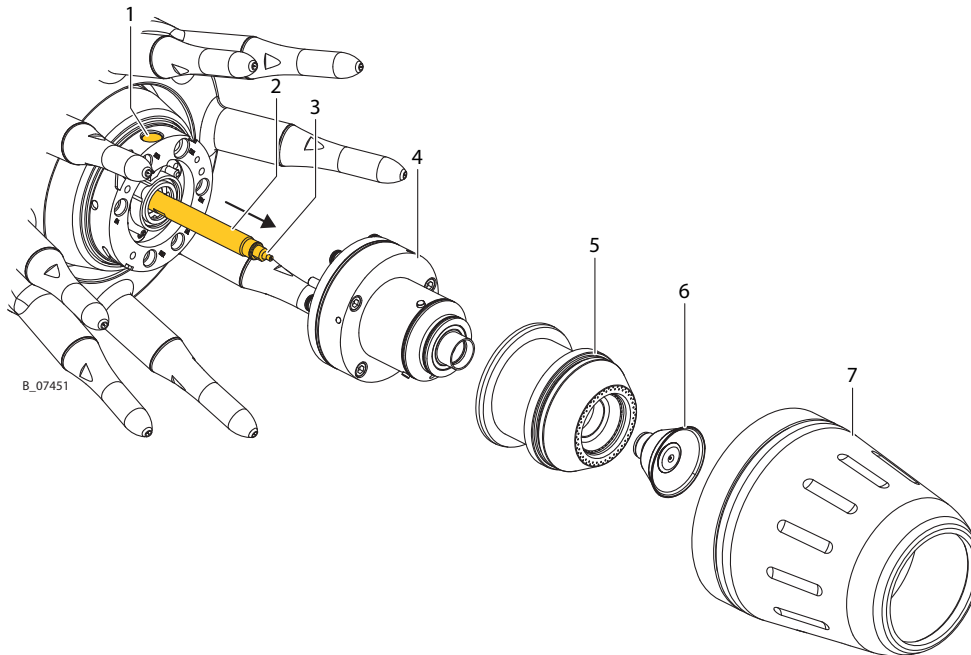
### 7.7.5 CHANGING CARRIER RING



#### Work steps:

1. Pull union nut (6) off of air ring by hand, by gently turning (bayonet fitting).
2. Press and hold down locking button (1).
3. With locking button pressed and held, unscrew bell plate (5).
4. Pull air deflector ring (4) off of carrier ring, by gently turning (bayonet fitting).
5. Loosen Allen screws M6x35 (3) with a size 5 hexagon socket wrench on carrier ring and unscrew them.
6. Pull off carrier ring (2).
7. Fit another carrier ring (tightening torque 1 Nm; 0.74 lb ft).
8. Slide air control ring onto carrier ring.
9. With locking button pressed and held, screw on bell plate and check for firm seating.
10. Slide union nut air ring up to stop and lock it with the bayonet fitting.  
There may be no gap at the rear of the union nut!

### 7.7.6 CHANGING PRODUCT NOZZLE



#### Work steps:

1. Pull off union nut (7) by gently turning (bayonet fitting).
2. Press and hold down locking button (1).
3. With locking button pressed and held, unscrew bell plate (6).
4. Pull air deflector ring (5) off of carrier ring, by gently turning (bayonet fitting).
5. Loosen Allen screws on carrier ring (4) and unscrew.
6. Pull off carrier ring.
7. Counterhold product pipe (2) with the flat of a size 12 open-end wrench.
8. Unscrew product nozzle (3).
9. Fit another product nozzle.
10. Fit carrier ring (tightening torque 1 Nm; 0.74 lb ft).
11. Slide air control ring onto carrier ring.
12. With locking button pressed and held, screw on bell plate and check for firm seating.
13. Slide union nut air ring up to stop and lock it with the bayonet fitting.  
There may be no gap at the rear of the union nut!

## 8 CLEANING AND MAINTENANCE

### 8.1 CLEANING

#### 8.1.1 CLEANING PERSONNEL

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

The following hazards may arise during cleaning work:

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

#### 8.1.2 FLUSHING HIGH-SPEED ROTARY ATOMIZERS (INSIDE)

##### ⚠ NOTICE

##### Flushing agent in the air duct!

Functional faults caused by swollen seals.

- Always point the high-speed rotary atomizer down when cleaning.
- Ensure that neither paint nor flushing agent enters the air duct.
- Never immerse the high-speed rotary atomizer in cleaning agent

The high-speed rotary atomizer/the device must be cleaned every day. The cleaning/flushing agents used for cleaning or flushing must correspond with the working material.

1. Switch off the high voltage.
2. Move robot into cleaning position.
3. Switch off robot.
4. Set steering airs to 0.3 MPa; 3.0 bar; 43.51 psi.
5. Set speed of bell plate on controller to 20,000 rpm.
6. Close product valve and control air valves.
7. Thoroughly flush inside and outside of bell plate.

##### Note:

If cleaning is not sufficient:

- shorten cleaning intervals or
- increase pressure of steering airs or
- increase speed

### 8.1.3 CLEANING HIGH-SPEED ROTARY ATOMIZER (OUTSIDE)

#### DANGER

**Discharge of electrostatically charged components in atmospheres containing solvents!**

#### **Explosion hazard!**

Due to a built-up layer of coating products on the outside of the high-speed rotary atomizer, discharges can occur due to creepage distance.

→ Clean the high-speed rotary atomizer as necessary.



1. Switch off the high voltage.
  2. Move robot into cleaning position.
  3. Switch off robot.
  4. Set speed of bell plate on controller to "0" rpm.
  5. Close product valve and control air valves.  
No product or solvent may leak out or escape.
  6. Wipe down outside of high-speed rotary atomizer with a cloth and suitable cleaning agent.
- Note:**  
Do not use abrasive agents!
7. Dry outside of high-speed rotary atomizer with a dry cloth or compressed air.

### 8.1.4 FLUSHING ENTIRE SYSTEM

1. Switch off the high voltage.
2. Move robot into cleaning position.
3. Switch off robot.
4. Set steering airs to 0.3 MPa; 3.0 bar; 43.51.
5. Set speed of bell plate on controller to 20,000 rpm.
5. Open product valve.
6. Open main needle valve.
7. Switch on solvent supply.
8. Switch on (activate) all components carrying product.
9. Set flushing pressure (see Chapter [6.9.2](#)).
10. Flush the system thoroughly.
11. Close product valve and control air valve.
12. Leave steering airs switched on for 2-3 seconds to remove all residue of flushing agent from the system.

## 8.2 MAINTENANCE

### 8.2.1 MAINTENANCE PERSONNEL

Maintenance work should be undertaken regularly and carefully by qualified and trained personnel. They should be informed of specific hazards during their training. The following hazards may arise during maintenance work:

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

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

## 8.2.2 MAINTENANCE INSTRUCTIONS

### DANGER

#### Incorrect maintenance/repair!

Danger to life and equipment damage.

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



#### Prior to maintenance

- Flush and clean the system → Chapter [8](#).

#### After maintenance

- Carry out safety checks in accordance with Chapter [8.2.3](#).

## 8.2.3 SAFETY CHECKS

### Every day

- Check grounding: see Chapter [6.8](#).
- Check hoses, tubes and couplings: see Chapter [6.9.2](#)

### Weekly

- Check system for damage.
- Check that the safety fixtures function properly (see Chapter [4.2.9](#)).

### Yearly or as required

- In accordance with DGUV regulation 100-500 Chapter 2.29 and 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.

### 8.2.3.1 CHANGE INTERVALS FOR KEY COMPONENTS

The values provided below are averages, which may vary depending on lacquer type, lacquer application rate and bell plate speed. WAGNER recommends replacing these components as stated as a form of preventive maintenance in order to avoid reductions in quality and unforeseeable production stops.

Component	Change interval
Consistal bell plate	5000 h
Titanium bell plate	8000 h
Distributor disc	1500 h
Air Bearing	< 10000 h
Product valve	8000 h

### 8.2.4 MAINTENANCE PROCEDURES

The maintenance intervals should be adapted by the operator depending on the level of use and if necessary the level of soiling. If in doubt, we recommend contacting J. Wagner GmbH's specialist personnel. The valid health and safety specifications and safety instructions provided in Chapter 4 must be adhered to for all maintenance work.

Maintenance work	Time stamp
Clean air control ring	every 4 to 8 hours
Clean bell plate	every 4 to 8 hours
Disassemble and clean air deflector ring	daily
Remove and clean bell plate	daily

For safe operation of the high-speed rotary atomizer, intervals are defined for all recurring checks.

These checks serve to check the condition of the high-speed rotary atomizer.

The checks needed are described in the tables below.

Location	Description	Inspection interval	Type of inspection	Inspection criteria
High-speed rotary atomizer	Soiling of the electrode ring due to atomized product	every 2 h	Visual inspection	No product deposits on the electrode fingers
Spray booth	Contamination by product in the booth	daily	Visual inspection	No product deposits on the components
Spray booth	Supply and exhaust air	daily	Function test	Undertake check during operation
Spray booth	Temperature and humidity	daily	Measurement	Measured values in nominal range
Spray booth	Air settling rate	daily	Measurement	Measured values in nominal range
High-speed rotary atomizer	Vibrations	daily	Listening check and visual inspection	Determine vibrations with suitable measuring device (limit value with fitted bell 3mm/s)
High-speed rotary atomizer	Operating noise	daily	Listening check and visual inspection	No operating noise present
High-speed rotary atomizer	Damage to the housing	daily	Visual inspection	No damage
High-speed rotary atomizer	Housing contamination	daily	Visual inspection	No abnormal contamination of the housing
High-speed rotary atomizer	Union nuts for half shells	daily	Visual inspection	Check whether thread has been greased sufficiently with Vaseline
High-speed rotary atomizer	Air control ring	daily	Visual inspection	Check whether air control ring has been greased sufficiently with Vaseline
High-speed rotary atomizer	External air	daily	Listening check	No external air audible
High-speed rotary atomizer	Product losses	daily	Visual inspection	No visible leaks
High-speed rotary atomizer	Mount	daily	Visual inspection	High-speed rotary atomizer is attached correctly
Bell Plate	Damage on bell plate	daily	Visual inspection	No damage on bell plate
Bell Plate	Product	daily	Visual inspection	Product exiting bell plate correctly
Valve block	Damage to optical fiber	daily	Visual inspection	No damage to optical fiber
Valve block	Mount	daily	Visual inspection	Valve block attached correctly
Speed control	Speed of bell plate	daily	Visual inspection	Does the bell plate turn easily by hand?
Speed control	Speed of bell plate	daily	Visual inspection	No major deviations between actual and nominal speed
Product feed	Product Supply Lines	daily	Visual inspection	Product supply lines not damaged



## OPERATING MANUAL



Location	Description	Inspection interval	Type of inspection	Inspection criteria
Product feed	Product Supply Lines	daily	Visual inspection	Product supply lines not bent
Product feed	Product Supply Lines	daily	Visual inspection	Product supply lines not interrupted
High voltage	High voltage	daily		Discharge currents in nominal range?
Reciprocator	Motion sequence	daily	Visual inspection	No abnormal movements
Reciprocator	Operating noise	daily	Listening check and visual inspection	No operating noise present
Spray booth	Door interlock of booth	weekly	Function test	Coating must be interrupted immediately if a booth door is opened.
Spray booth	Grounding Check	weekly	Measurement	The grounding resistance of the work piece must not exceed 1 MΩ.
Spray booth	Check linkage.	weekly	Visual inspection	Check linkage for contamination.
Spray booth	Contamination in the bell cleaning station	weekly	Visual inspection/function check	Check for large-scale dirt.
High-speed rotary atomizer	Housing contamination	daily	Visual inspection	Check for dirt, clean if necessary.
High-speed rotary atomizer	Contamination of bell plate after flushing	daily	Visual inspection	Check for dirt, clean if necessary.
High-speed rotary atomizer	Check product application rate.	weekly	Measurement	Calibrate, compare actual and set value.
High-speed rotary atomizer	Check flushing agent application rate.	weekly	Measurement	Calibrate, compare actual and set value.
High-speed rotary atomizer	Spray pattern	weekly	Visual inspection	Comparison of the size of the spray pattern with the target spray pattern
High-speed rotary atomizer	Check for leaks.	weekly	Visual inspection	Check whether hose screw connections and valve block are leaking.
High-speed rotary atomizer	Damage on bell plate	weekly	Visual inspection	Check bell plate for damage and wear.
High-speed rotary atomizer	Product nozzle contamination	weekly	Function test	Check product nozzle for contamination by product or flushing agent.
High-speed rotary atomizer	Check intermediate piece for external air.	weekly	Listening check	Check whether foreign air is escaping from the intermediate piece.
High-speed rotary atomizer	Product distributor contamination	weekly	Visual inspection	Check product distributor for contamination.
High-speed rotary atomizer	Screw connections	weekly	Function test	Check screw connections and replace if necessary (PEEK screws).
High-speed rotary atomizer	Measure air pressure and air volume at air inlet.	monthly	Measurement	Check whether the set values are reached.
High-speed rotary atomizer	Product valve	monthly	Visual inspection/function check	Clean, check function and check for leaks.
High-speed rotary atomizer	Optical Fiber	monthly	Visual inspection	Check for damage.
High-speed rotary atomizer	Optical Fiber	monthly	Visual inspection	Check for contamination.
High-speed rotary atomizer	Product tube contamination	monthly	Visual inspection	Check the product tube for contamination.
High-speed rotary atomizer	Check function of product and flushing valves.	six-monthly	Function test	Check whether the valves are switching correctly.

Location	Description	Inspection interval	Type of inspection	Inspection criteria
High-voltage supply	High voltage	weekly	Function test	Check actual and set values for high voltage supply.
High-voltage supply	HV cable	weekly	Visual inspection	Check for brittle points or black spots.
Controller	Speed control	monthly	Function test	Does the speed control quickly control the speed?
Supply	Product Supply Lines	monthly	Visual inspection	Product supply lines not damaged
Supply	Product Supply Lines	monthly	Visual inspection	Product supply lines not bent
Supply	Product Supply Lines	monthly	Visual inspection	Product supply lines not interrupted

#### 8.2.4.1 PRODUCT HOSES, PIPES AND COUPLINGS

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

- Check hoses, pipes, and couplings every day and replace if necessary.
- 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.
- The complete hose is to be replaced as soon as 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	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

## 9 TROUBLESHOOTING AND RECTIFICATION

### 9.1 AIR BEARING

Functional fault	Cause	Remedy
Noise from the high-speed rotary atomizer	– Bearing air is insufficient, thus the turbine hits against the bearing	– Check bearing air and increase if necessary Check why an error message does not appear (bearing air monitoring)
	– Imbalance of the bell plate	– Replace bell plate.
	– Pollution of the air bearing	– Check air filter
		– Repair or replace the air motor – Contact the WAGNER service department
	– Air hose for bearing air (BA) bent when assembling the high-speed rotary atomizer	– Check routing of air hose for bearing air (BA)
	– Product and/or solvent in the air bearing	– Check product and solvent pressure
		– Exhaust opening on the bell plate clogged
		– Repair or replace the air motor – Contact the WAGNER service department
– Rotary speed too high	– Optical fiber defective – Check optical fiber	
– Occurrence of resonance vibrations caused by incorrect assembly of the high-pressure rotary atomizer.	– Disassemble the high-speed rotary atomizer and identify the cause of the noise.	
– Spindle may be running in the wrong direction of rotation.	– Check whether air hoses for drive air (DA) and stop air (STA) have been swapped.	
Vibrations on high-speed rotary atomizer	– Bell plate damaged	– Replace bell plate.
	– Paint residue dried onto bell plate	– Clean bell plate or replace if necessary.

## 9.2 PRODUCT VALVES

Functional fault	Cause	Remedy
Product valve does not open	– Product pressure too low	– Check and, if necessary, increase product pressure (< 0.5 MPa; 5.0 bar; 73 psi).
	– Air line pinched or damaged by movement of the robot	– Check air hose and replace if necessary.
	– Functional fault of the product valve caused by pollution with product	– Replace product valve.
	– O-rings in the area of the thread are damaged.	– Replace O-rings.
	– Product hose kinked or product supply interrupted	– Check product hose and product supply.
	– No compressed air available	– Check function of the valve according to the circuit and pneumatic diagrams and replace valve if necessary.
	– Control function causes a problem	– Check software and hardware of the control cabinet.
	– No release for supply and exhaust air and therefore, the control cabinet is locked internally	– Activate release for supply and exhaust air.
	– Ventilation hole blocked	– Clean ventilation hole.
	– Product valve (M) on valve block closed – The high-speed rotary atomizer has two product valves. One valve is for the trigger function (CA) and the second product valve (M) is for the valve block.	– Ensure product release.
– Product valve (M) has no function. The function can be restored by replacing the product valve.	– Replace or repair the product valve.	
Product valve does not close	– Valve seat of the product valve contaminated	– Clean the product valve.
	– O-ring at the thread of the valve is damaged	– Replace O-rings.
	– Valve needle is stuck	– Replace product valve.
	– Control function causes a problem	– Check software and hardware of the control cabinet.
Product valve responds too slowly	– Check cable length.	– Shorten cable or install ex-protected valves.
		– If necessary, install quick exhaust valves to improve the closing of the valves.
Product or solvent escaping from opening on product valve	– Packing in product valve leaking	– Replace product valve.

### 9.3 ATOMIZATION

Functional fault	Cause	Remedy
Atomization not fine enough	- No high voltage	- Activate high voltage.
	- Knurl of the bell not optimal	- Use different knurling.
	- Speed of the bell plate not sufficient	- Increase speed of the bell.
	- Product flow rate too high	- Reduce flow rate.
	- Shaping air set incorrectly	- Adjust shaping air accordingly.
	- Air in the product line	- Check product line for air inclusions.
	- Damages to the bell edge	- Replace bell plate.
Atomized lacquer product backfires and coats the high-speed rotary atomizer.	- Bell plate is clogged	- Clean bell plate
	- Steering airs SA1 and SA2 are set too low.	- Minimum pressure of steering airs SA1 and SA2 0.04 MPa; 0.4 bar; 5.80 psi
	- Insufficient grounding of work piece	- Check grounding connection.

### 9.4 SPRAY PATTERN GEOMETRY

Functional fault	Cause	Remedy
Spray pattern too wide	- Air control ring dirty	- Clean air control ring
	- Steering airs SA1 and SA2 are set too low.	- Increase values for steering airs.
	- Bell plate too large	- Order/use smaller bell plate. Note that the air control ring has to be adapted accordingly.
	- Speed of the bell plate too small	- Increase speed of the bell plate.
	- High-voltage too low or poor grounding of the work piece	- Increase high-voltage or optimize grounding.
Spray pattern too narrow	- Steering airs SA1 and SA2 are set too high.	- Reduce values for steering airs.
	- Bell plate too small	- Order and/or use bigger bell plate. Note that the air control ring has to be adapted accordingly.
	- Speed of the bell plate too high	- Reduce speed of the bell plate.
	- High-voltage set too high	- Reduce high voltage.

## 9.5 PRODUCT APPLICATION

Functional fault	Cause	Remedy
Paint pucker on the work piece	– Product nozzle too large	– Use smaller product nozzle.
	– Bell plate runs over The product isn't just flowing via the product discharge openings.	– Reduce flow rate.
	– The product builds up on the bell plate.	– Flush the high-speed rotary atomizer in shorter intervals.
	– There is a sill flap formation on the outer edge of the bell plate. These lacquer threads tear at a certain length and fall onto the work piece.	– Order and/or use bigger bell plate. – Contact lacquer supplier or WAGNER application-technician.
	– Dirty bell plate	– Accordingly adjust flushing intervals for the inner and outer flushing.
	– Pulsation in the spray pattern (Wobbling of spray pattern)	– Use smaller product nozzle.

## 9.6 BELL PLATE

Functional fault	Cause	Remedy
The bell plate cannot be mounted on the shaft.	– There are lacquer residues on the thread.	– Properly remove lacquer residues.
	– The thread is damaged.	– Replace air bearing.
	– Shaft not locked with the locking bolt	– Operate push button to lock the shaft, this way the shaft is locked and the bell plate can be mounted with no trouble.
The bell plate drops while moving.	– The shaft is stopped abruptly.	– Accordingly adjust the program for the motion path.
	– Check whether the work piece has touched the bell plate.	– Replace bell plate. – Check bearing for imbalance.
	– The shaft stops as a result of a functional fault with the air bearing.	– Check air pressure in the access to the air bearing
		– Check if lacquer or solvent entered into the air bearing

## 9.7 OPTICAL FIBER

Functional fault	Cause	Remedy
The bell plate is turning, but the speed is not displayed	- Optical fiber defective	- Replace the optical fiber.
	- Drive air contains oil	- Provide clean compressed air.
	- Dirty rotor turbine	- Clean turbine wheel or replace air bearing if necessary.
		- Contact the WAGNER service department
No high-voltage effect	- Soiled electrode ring	- Clean fingers on electrode ring
	- High-voltage cable not connected	- Check connection of high-voltage cable
	- Product cannot be charged	- Contact product manufacturer

## 9.8 ELECTRODE FINGERS

Functional fault	Cause	Remedy
Quick soiling of the electrode fingers	- Poor grounding of the work piece	- Check and improve grounding
	- Too low of kinetic energy of the steering airs	- Increase pressure of steering airs
	- Product cannot be charged easily	- Increase the air humidity in the booth with a humidifier
	- Atomizer moves through its own spray pattern	- Adapt movement program accordingly

## 10 REPAIR WORK

### 10.1 REPAIR PERSONNEL

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

The following hazards may arise during repair work:

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

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

### 10.2 REPAIR NOTES

#### DANGER

##### **Incorrect maintenance/repair!**

Danger to life and equipment damage.

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



##### **Before Repair Work**

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

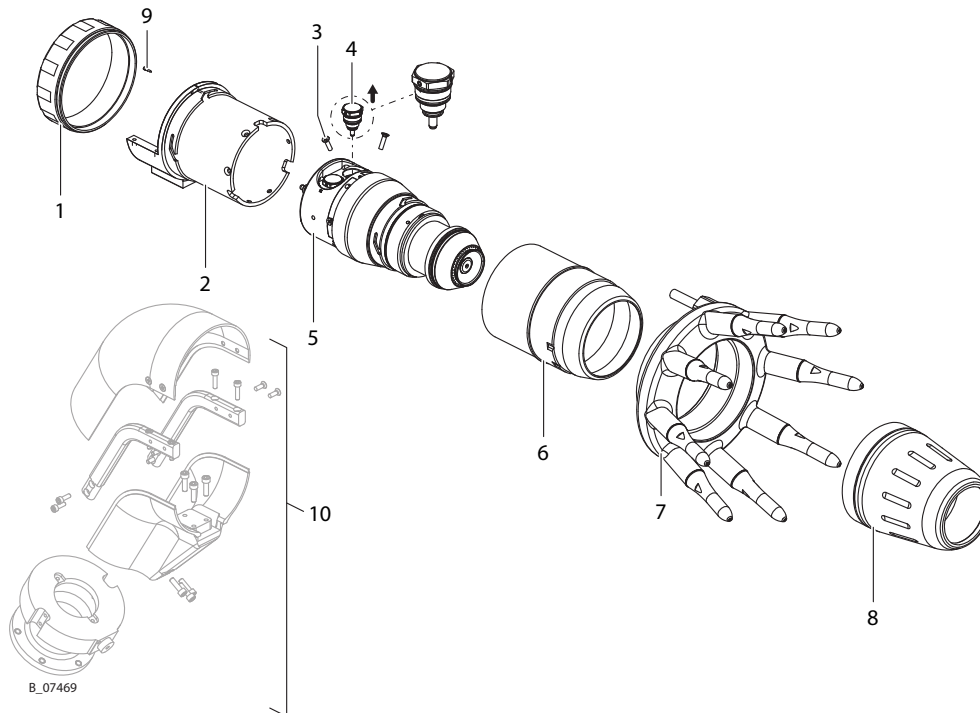
- Flush and clean the system. → Chapter [7.5](#)
- Interrupt the air supply.

##### **After Repair Work**

- Carry out safety checks in accordance with Chapter [8.2.3](#).
- Put the system into operation and check for leaks as described in Chapter [6.9](#).
- Have the system checked for safe condition by a skilled person.
- If necessary, carry out a function test in accordance with Chapter [11](#).



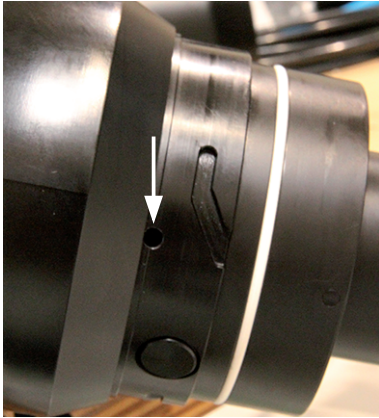
### 10.3 CHANGING VALVE



#### Procedure

1. Take off casing (10) (see Chapter [7.7.1](#), points 1 and 2)
2. Unscrew union nut (1) and pull off (8) by gently turning (bayonet fitting).
3. Remove electrode ring (7), unscrew anti-twist device (9) and pull off insulating ring (6) by gently turning (bayonet fitting).
4. Unscrew countersunk screw with recessed head M5x20 (3), 6 pieces, and pull off pos. 2.
5. Use a size 24 socket wrench to unscrew valve (4) from valve block (5).
6. Screw new valve (4) into the valve block (5) and tighten with a size 24 socket wrench.

## 10.4 REPLACING OPTICAL FIBER



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### Procedure

1. Switch off high voltage.
2. Move robot into cleaning position.
3. Switch off robot.
4. Thoroughly flush the high-speed rotary atomizer.
5. Set speed to "0" on controller.
6. Close all valves via the controller.
7. Unscrew front cover with hook wrench and remove it
8. Take off rear casing.
9. Loosen Allen screws with a size 2 Allen wrench (see photo).
10. Pull optical fiber cable to the rear and out off valve block.

## 10.5 REMOVING THE BARS DURING CONVERSION OR FOLLOWING A CRASH

In case of a collision, a technical damage inspection is to be carried out by the operator or by the WAGNER service department.

### Tools Required

Allen wrench, size 6

Wrench, size 17


### Procedure

1. Switch off high voltage.
2. Move robot into cleaning position.
3. Switch off robot.
4. Thoroughly flush the high-speed rotary atomizer.
5. Set speed to "0" on controller.
6. Close all valves via the controller.
7. Completely remove high-speed rotary atomizer from robot.
8. The rods are removed from the rear flange piece (robot connection plate).
9. Pull exhaust air hoses (EX1, EX2) out of the hose fittings.  
To do this, slide black clamping rings towards bell plate and at the same time pull out hose in the opposite direction.
10. Loosen both socket cap screws with size 6 Allen wrench.
11. Use wrench size 17 to remove both air screw connections.
12. Use size 6 Allen wrench to unscrew both socket cap screws.

## 11 FUNCTION TEST AFTER REPAIR WORK

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

## 12 DISPOSAL

	<b>NOTICE</b>
	<p><b>Do not dispose of used electrical equipment with household refuse!</b></p> <p>In accordance with European Directive 2012/19/EU on the disposal of used electrical equipment and its implementation in national law, this product may not be disposed of with the household refuse, but must be recycled in an environmentally correct manner. WAGNER or one of our dealers will take back your used WAGNER electric or electronic equipment and will dispose of it for you in an environmentally-friendly way. To arrange this, please contact one of our service centers, one of our representatives or us directly.</p>

The consumable products (lacquers, adhesives, solvents) must be disposed of in accordance with the applicable specific standards.

## 13 INSPECTIONS

### 13.1 INSPECTIONS IN ACCORDANCE WITH DIN 50176

If the system is used for electrostatic coating with ignitable liquid coating products (solvent-based lacquers), the inspection in accordance with DIN EN 50176: 2010-04 as per table 3 must be performed.

#### 13.1.1 OVERVIEW OF INSPECTIONS

Section	Type of inspection	Requirements
1	Inspection for safe operational condition	Safe operational condition of the complete system
2	Inspection of technical ventilation	Effectiveness of technical ventilation
3	Switch-off of the high voltage in voltage-controlled and constant voltage operating modes	Safe switch-off of high voltage
4	Switch-off of high voltage in constant current operating mode	Safe switch-off of high voltage
5	Protection against excessively high discharge energy	Safe discharge of all high-voltage conducting parts after switching off high voltage
6	Protection against ignition of cleaning agents	After switching off the high voltage and before using ignitable solvents, safely discharge all parts carrying high voltage.
7	Protection against direct contact	Safe switch-off of the high voltage for access to live system parts

Section	Type of inspection	Requirements
8	Grounding inspection	Grounding of the complete system
9	Locking device/Entry protection	Safe switch-off of the high voltage for access to live system parts
10	Inspection of fire extinguishing system	Inspection of local fire extinguishing system
11	Inspection of conductive parts in the coating product system	Inspection of conductive parts of the coating product supply for grounding and potential
12	Minimum distance in air	Minimum distance between grounded and high-voltage conducting parts

Further inspections must be performed in accordance with EN 12215.

### 13.1.2 INSPECTION INTERVALS IN ACCORDANCE WITH TABLE 4 OF DIN EN 50176: 2010-04

Section	Inspection point	Inspection interval category 2	Inspection interval category 3
1	Safe operational condition of the complete system	12 months	12 months
2	Effectiveness of technical ventilation	Continuously	Continuously
3	Overcurrent cut-out	Whenever the system is switched on	Whenever the system is switched on
4	Undervoltage cut-out	Whenever the system is switched on	Whenever the system is switched on
5	Discharge energy	Weekly	Weekly
6	Ignition protection for ignitable cleaning agents	Before all cleaning tasks	Weekly
7	Anti-contact guard	Weekly	Weekly
8	Grounding measures	Weekly	Weekly
9	Locking device/Entry protection	Weekly	Weekly
10	Fire extinguishing system	6 months	6 months
11	Conductive parts of the coating product system	Weekly	Weekly
12	Minimum distance in air	Weekly	Weekly

### 13.2 INSPECTIONS IN ACCORDANCE WITH DIN EN 50348

If the system is used for electrostatic coating with non-ignitable liquid coating products (water-based lacquers), the inspection in accordance with DIN EN 50348: 2010-05 as per Table 3 must be performed.

#### 13.2.1 OVERVIEW OF INSPECTIONS

Section	Type of inspection	Requirements
1	Inspection for safe operational condition	Safe operational condition of the complete system
2	Inspection of technical ventilation	Effectiveness of technical ventilation
3	Switch-off of the high voltage in voltage-controlled and constant voltage operating modes	Safe switch-off of high voltage
4	Switch-off of high voltage in constant current operating mode	Safe switch-off of high voltage

Section	Type of inspection	Requirements
5	Protection against excessively high discharge energy	Safe discharge of all high-voltage conducting parts after switching off high voltage
6	Protection against direct contact	Safe switch-off of the high voltage for access to live system parts
7	Grounding inspection	Grounding of the complete system
8	Locking device/Entry protection	Safe switch-off of the high voltage for access to live system parts
9	Inspection of conductive parts in the coating product system	Inspection of conductive parts of the coating product supply for grounding and potential
10	Minimum distance in air	Minimum distance between grounded and high-voltage conducting parts

Further inspections must be performed in accordance with EN 12215.

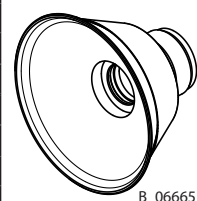
### 13.2.2 INSPECTION INTERVALS IN ACCORDANCE WITH TABLE 4 OF DIN EN 50348: 2010-05

Section	Inspection point	Inspection interval
1	Safe operational condition of the complete system	12 months
2	Effectiveness of technical ventilation	Continuously
3	Overcurrent cut-out	Weekly
4	Undervoltage cut-out	Weekly
5	Discharge energy	Weekly
7	Anti-contact guard	Weekly
8	Grounding measures	Weekly
9	Entry protection	Weekly
11	Conductive parts of the coating product system	Weekly
12	Minimum distance in air	Weekly

## 14 ACCESSORIES

### 14.1 BASIC DEVICE

Order no.	Description	∅ mm; inch
2372511	Basic device Consistal D30 smooth, complete	30; 1.18
2372512	Basic device Consistal D30 with teeth, complete	30; 1.18
2372513	Basic device Consistal D30 with double teeth, complete	30; 1.18
2372514	Basic device Consistal D50 smooth, complete	50; 1.97
2372515	Basic device Consistal D50 with teeth, complete	50; 1.97
2372516	Basic device Consistal D50 with double teeth, complete	50; 1.97
2372517	Basic device Consistal D70 smooth, complete	70; 2.76
2372520	Basic device Consistal D70 with teeth, complete	70; 2.76
2372519	Basic device Consistal D70 with double teeth, complete	70; 2.76
2372521	Basic device Titanium D30 smooth, complete	30; 1.18
2372522	Basic device Titanium D30 with teeth, complete	30; 1.18
2372523	Basic device Titanium D30 with double teeth, complete	30; 1.18
2372524	Basic device Titanium D50 smooth, complete	50; 1.97
2372525	Basic device Titanium D50 with teeth, complete	50; 1.97
2372527	Basic device Titanium D50 with double teeth complete	50; 1.97
2372528	Basic device Titanium D70 smooth, complete	70; 2.76
2372529	Basic device Titanium D70 with teeth, complete	70; 2.76
2372530	Basic device Titanium D70 with double teeth, complete	70; 2.76



### 14.2 DISTRIBUTOR DISC

Order no.	Description
2372246	Distributor disc



### 14.3 PRODUCT NOZZLE

Order no.	Description
2371466	Product nozzle 0.8 mm, complete
2371467	Product nozzle 1.1 mm, complete
2371468	Product nozzle 1.4 mm, complete
2371469	Product nozzle 1.7 mm, complete



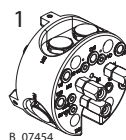
### 14.4 AIR DEFLECTOR RINGS

Order no.	Description
2372462	Air deflector ring 30, complete
2394136	Air deflector ring 30 HVLP, complete
2372463	Air deflector ring 50, complete
2394137	Air deflector ring 50 HVLP, complete
2372464	Air deflector ring 70, complete
2394138	Air deflector ring 70 HVLP, complete



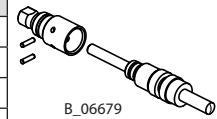
### 14.5 VALVE BLOCK

Order no.	Description
2372279	Valve block, M/DM/FB (1-paint)



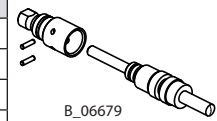
#### 14.6 OPTICAL FIBER, 9.9 M WITH SLEEVE

Order no.	Description
2383286	Optical Fiber, 9.9 m with Sleeve
Consists of:	
2335584	Optical fiber, 9.9 m
2382097	Sleeve for optical fiber, complete



#### 14.7 OPTICAL FIBER, 15 M WITH SLEEVE

Order no.	Description
2383289	Optical Fiber, 15 m with Sleeve
Consists of:	
387101	Optical fiber 15 mm
2382097	Sleeve for optical fiber, complete



#### 14.8 ROBOT HOSE SETS

##### 14.8.1 AIR HOSE SET, 10 M

Order no.	Stk	Designation
2373986		Air hose set, 10 m
Consists of:		
700370	5	Hose, PU $\varnothing$ 8/5.5 mm blue, 10 m
700371	1	Hose PU $\varnothing$ 6/4 mm blue 10 m
2348719	4	Hose, PEN $\varnothing$ 4/2.7 mm blue, 10 m
2383812	1	Wire labeling
3051200	2	Cable tie, 360x4.8 mm
3051199	2	Cable tie, 140x3.6 mm
9982016	1	Protective hose, 9 m
2335584	1	Optical fiber, 9.9 m

##### 14.8.2 AIR HOSE SET, 15 M

Order no.	Stk	Designation
2373994		Air Hose Set, 15 m
Consists of:		
700370	5	Hose PU $\varnothing$ 8/5.5 mm 15 m
700371	1	Hose PU $\varnothing$ 6/4 mm blue 15 m
2348719	4	Hose, PEN $\varnothing$ 4/2.7 mm blue, 15 m
2383812	1	Wire labeling
3051200	2	Cable tie, 360x4.8 mm
3051199	2	Cable tie, 140x3.6 mm
9982016	1	Protective hose, 14 m
387101	1	Optical fiber 15 mm

##### 14.8.3 PRODUCT HOSE SET AND 10 M OPTICAL FIBER

Order no.	Stk	Designation
2373997		Air hose set, 10 m
Consists of:		
2341659	3	Hose, PFA $\varnothing$ 8/5 mm transparent, 10 m
3051200	2	Cable tie, 360x4.8 mm
3051199	2	Cable tie, 140x3.6 mm
9982016	1	Protective hose, 9 m

#### 14.8.4 PRODUCT HOSE SET AND 15 M OPTICAL FIBER

Order no.	Stk	Designation
2373999		Air Hose Set, 15 m
Consists of:		
2341659	3	Hose, PFA $\varnothing$ 8/5 mm transparent, 15 m
3051200	2	Cable tie, 360x4.8 mm
3051199	2	Cable tie, 140x3.6 mm
9982016	1	Protective hose, 14 m

#### 14.9 MISCELLANEOUS

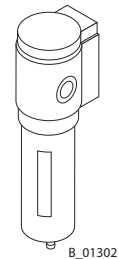
Order no.	Description	$\varnothing$ mm; inch
2341659	Product hose, PFA	8/5; 0.32/ 0.20
2348719	Air hose, PEN	4/2.7; 0.16/ 0.11
2338911	Air hose, PEN	6/4; 0.24/0.16
3202593	Air hose, PTFE	8/6; 0.32/0.24

#### 14.10 CABLE SETS

Order no.	Description
2373613	Cable set, RBC-HS with discharger
2373614	Cable set, RBC-HS with ground switch

#### 14.11 AIR FILTER

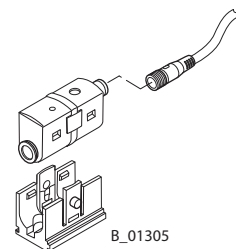
Order no.	Description
9999330	Air filter, 40 $\mu$ m
9999331	Air filter, 5 $\mu$ m
9999332	Air filter, 0.01 $\mu$ m
9999334	Filter cartridge, 40 $\mu$ m
9999335	Filter cartridge, 5 $\mu$ m
9999336	Filter cartridge, 0.01 $\mu$ m



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#### 14.12 SPEED / BEARING AIR MONITORING

Order no.	Description
387100	Speed sensor
9956125	Pressure switch
9956126	Cable for pressure switch



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#### 14.13 CONTROL CABINETS

Order no.	Description
2373752	Control cabinet, RBC-1E
	Cabinet with discharger, RBC-1E HS
	Cabinet with quick discharger and ground switch, RBC-1 E HS
2422066	HS cabinet RBC-1 E for external charging
	Cascade cabinet for quick charging



**14.14 ADAPTER PLATES**

Order no.	Description
	Kawasaki Paint Robot, KF 193, KF 263

**14.15 TOOLS**

Order no.	Description
2384297	Installation tool, 30 mm
2384302	Installation tool, 50 mm
2384304	Installation tool, 70 mm
2384305	Hook wrench
2385642	The pushing out mandrel for the distributor disc
2393703	Teach tip
2396538	Socket

**14.16 MISCELLANEOUS**

Order no.	Description
9982016	Protective hose weave, 50 mm

## 15 SPARE PARTS

### 15.1 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:

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

#### Identification in spare parts lists

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

- ◆ Wearing parts. Wearing parts are not included in the warranty terms.
- ★ Included in service set

#### Note:

These parts are not covered by warranty terms.

- Not part of standard equipment, however, available as special accessory.

Explanation of order no. column

- Item not available as spare part.
- / Position does not exist.

### DANGER

#### Incorrect maintenance/repair!

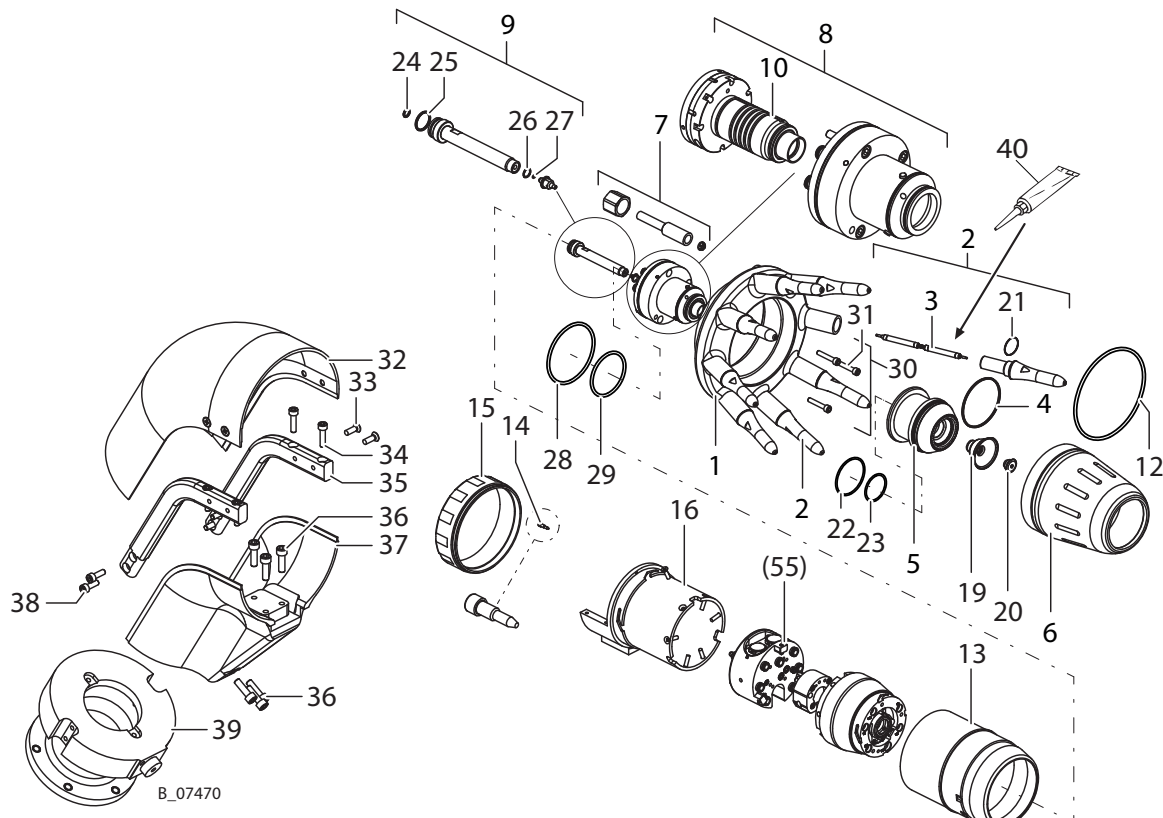
Danger to life and equipment damage.

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





**15.2 SPARE PARTS LIST FOR TOPFINISH ROBOTBELL 1**



Pos	K	Stk	Order no.	Designation
1		1	2407866	Electrode ring, cpl.
2	◆	8	2407859	Electrode unit
3*	◆	8	2407856	HS resistor
4**	◆	1	2393707	O-ring, ø70x2
5		1	see Chapter 14.4	Air deflector ring, complete
6		1	2407867	Union nut, LLR
7	◆	1	2420982	HS connection, cpl.
8		1	2421293	Carrier ring, complete
9		1	2372283	Product tube, complete
10		1	2372256	Bearing cartridge
12	◆	1	2407911	O-ring, ø132x2 VITON
13		1	2421329	Insulating ring, Bell 1S ECH
14		1	2420983	Pin for anti-twist device
15		1	2407846	Union nut, HS ring
16		1	2420985	Casing, cpl.
19	◆	1	see Chapter 14.1	Basic device
20	◆	1	2372246	Distributor disc
21*	◆		2407910	O-ring, ø22x1.5 KALREZ
22	◆	1	2382361	O-ring
23	◆	1	2382360	O-ring
24	◆	1	2393705	O-ring

◆ = wearing parts

-> For service sets, see Chapter 15.3-15.6.

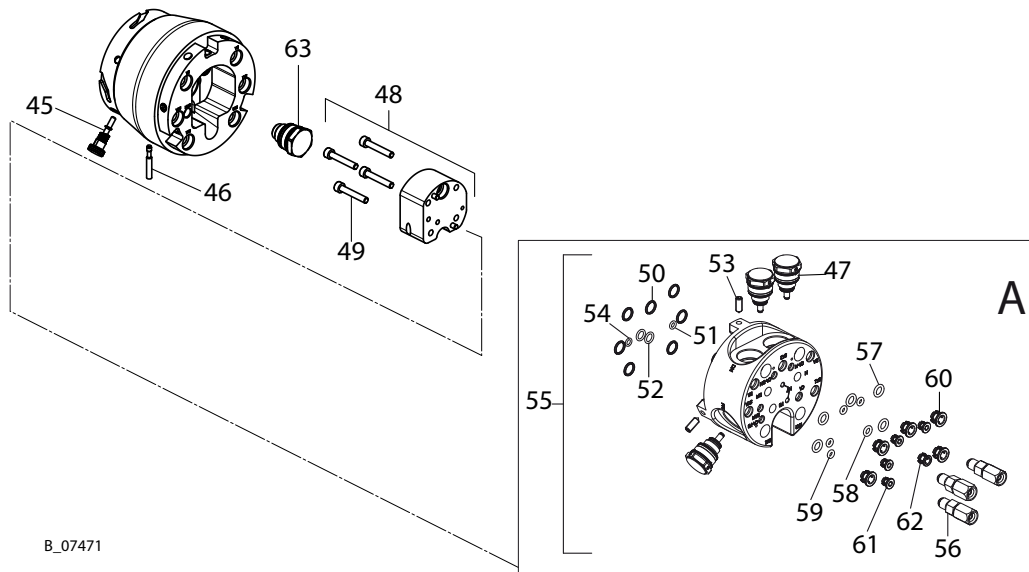
OPERATING MANUAL



Pos	K	Stk	Order no.	Designation
25	◆	1	2393706	O-ring
26	◆	1	9971327	O-ring
27	◆	1	2382356	O-ring
28	◆	1	2382370	O-ring
29	◆	1	2382369	O-ring
30		1	2383264	Screw set
31		1	2382379	Socket cap screw
32		1	2420991	Upper casing
33		4	2407891	Countersunk screw, M5x15
34		4	2407904	Hex. socket head cap screw M5x20
35		2	2420989	Connecting angle
36		6	2407905	Hex. socket head cap screw M6x20
37		1	2420990	Lower casing
38		4	2407903	Hex. socket head cap screw M5x15
39		1	2407852	Flange, complete
40		1	2423189	synthetic lubricant, Anderol 757
		1	2423860	Grease gun, synthetic lubricant

◆ = wearing parts

-> For service sets, see Chapter 15.3-15.6.



B\_07471

**A: Valve block, 1 paint**

Pos	K	Stk	1-paint 80 kV	Designation
45		1	2372265	Complete pin - fixing the shaft
46		1	2372263	Optical fiber fixing
47		3	2342424	Needle valve
48		1	2384188	Transition flange, complete
49		4	3209022	Socket cap screw (hexagon socket)
50	◆	7	3208966	O-ring
51	◆	1	2382363	O-ring

◆ = wearing parts

-> For service sets, see Chapter 15.3-15.6.

Pos	K	Stk	1-paint 80 kV	Designation
52	◆	2	2382364	O-ring
53		3	2382403	Grub screw
54	◆	1	2382365	O-ring
55		1	2372279	Valve block
56		3	2372249	Threaded hose coupling
57	◆	5	2390887	O-ring
58	◆	1	2390888	O-ring
59	◆	4	2390889	O-ring
60		5		Retaining element, D8
61		4		Retaining element, D4
62		1		Retaining element, D6
63		1		Needle valve

◆ = wearing parts

-> For service sets, see Chapter [15.3-15.6](#).

◆ = wearing parts

### 15.3 O-RING SET - AIR DEFLECTOR RING

Order no.	Designation	Consisting of spare parts items
2383262	O-Ring Set - Air Deflector Ring	4, 18, 19

### 15.4 O-RING SET - PRODUCT TUBE

Order no.	Designation	Consisting of spare parts items
2383263	O-ring set - product tube	20, 21, 22, 23

### 15.5 O-RING SET AIR BEARING

Order no.	Designation	Consisting of spare parts items
2383265	O-ring set air bearing	24, 25

### 15.6 BOLT SET

Order no.	Designation	Consisting of spare parts items
2383264	Bolt set	26



## 16 EU DECLARATION OF CONFORMITY

Herewith we declare that the supplied version of:

**TOPFINISH RobotBell 1 ECH**

complies with the following guidelines:

2006/42/EC
2014/34/EU

Applied standards, in particular:

EN ISO 12100: 2010	EN 50348:2010
EN 1953:2013	EN 50176:2009
EN ISO 13732-1:2008	EN 1127-1:2019
EN 14462:2015	EN ISO 80079-36:2016

Applied national technical standards and specifications, in particular:

DGUV regulation 100-500 Chapter 2.29	DGUV 209-052
DGUV regulation 100-500 Chapter 2.36	
TRGS 727	

Quality certificate:

DEKRA ISO 9001:2015
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**Identification:** II 3G T6 X

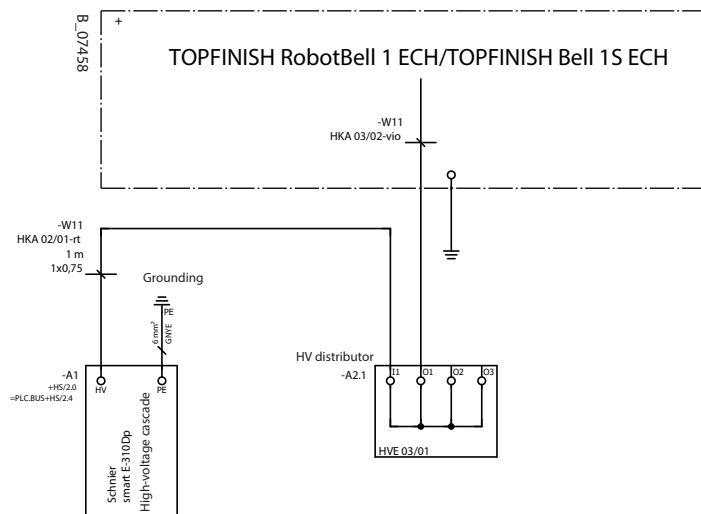
**EU Declaration of Conformity**

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

**Order number:** 2422148

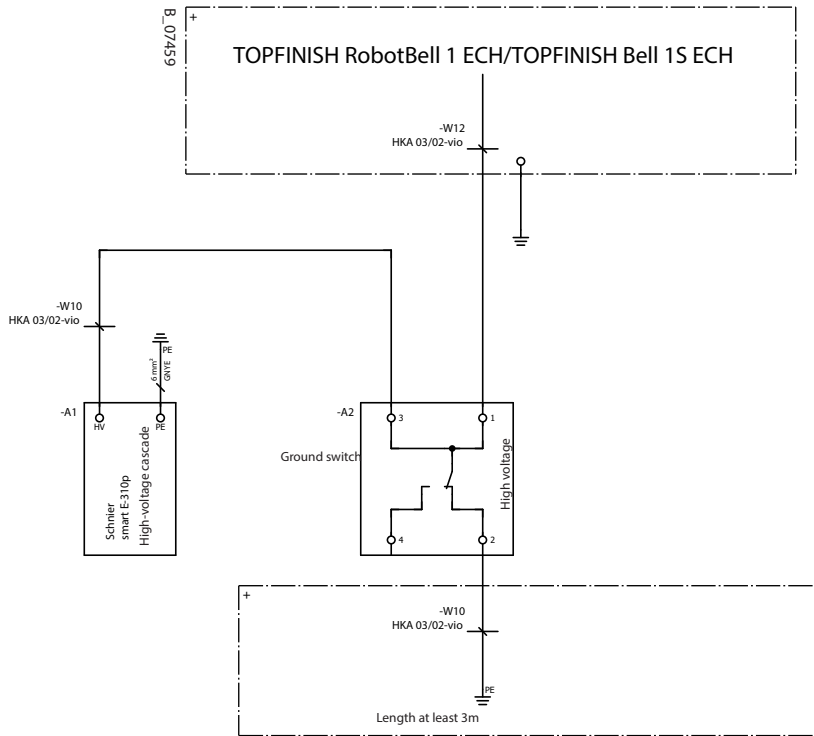
## 17 CONNECTION PLANS

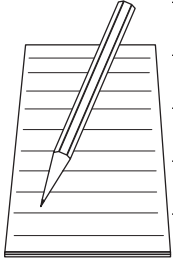
### 17.1 HIGH-VOLTAGE SYSTEM WITH DISCHARGER





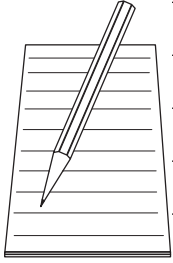
**17.2 HIGH-VOLTAGE SYSTEM WITH GROUND SWITCH**



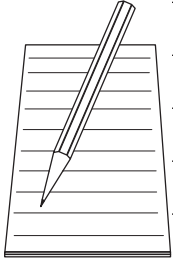


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# WAGNER



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Subject to changes without notice