Evobell 3500

High-speed rotary atomizers

Translation of the Original Operating Manual

Version 03/2015

WAGNER

B_01132
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1 ABOUT THESE INSTRUCTIONS

This operating manual contains information on the operation, repair and maintenance of the device.

→ Always observe these instructions when operating the device.

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

Compliance with these instructions constitutes an integral component of the guarantee agreement.

1.1 LANGUAGES

The operating manual is available in the following languages:

<table>
<thead>
<tr>
<th>Language</th>
<th>Code</th>
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<tbody>
<tr>
<td>German</td>
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<td>387849</td>
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<td>Romanian</td>
<td>2319593</td>
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1.2 WARNINGS, NOTICES AND SYMBOLS IN THESE INSTRUCTIONS

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

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

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

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

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

Note - provides information about particular characteristics and how to proceed.
2 GENERAL SAFETY INSTRUCTIONS

2.1 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.

2.1.1 ELECTRICAL EQUIPMENT

Electrical devices and equipment

→ To be provided in accordance with the local safety requirements with regard to the operating mode and ambient influences.
→ May only be maintained by skilled electricians or under their supervision.
→ Must be operated in accordance with the safety regulations and electrotechnical regulations.
→ Must be repaired immediately in the event of problems.
→ Must be decommissioned if they pose a hazard.
→ Must be de-energized before work is commenced on active parts. Inform staff about planned work. Observe electrical safety regulations.

2.1.2 PERSONNEL QUALIFICATIONS

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

2.1.3 SAFE WORK ENVIRONMENT

→ Ensure that the floor in the area where you are working is static dissipative in accordance with EN 61340-4-1.
→ Ensure that all persons within the working area wear static dissipative shoes, e.g. shoes with leather soles. The measured insulation resistance must not exceed 100 megohms.
→ The insulation resistance of protective clothing, including gloves, must not exceed 100 megohms.
→ Paint mist extraction systems must be fitted on site according to local regulations.
→ Ensure that the following components of a safe working environment are available:
  – Product/air hoses adapted to the working pressure
  – Personal safety equipment (breathing and skin protection)
→ Ensure that there are no ignition sources such as naked flames, sparks, glowing wires, or hot surfaces in the vicinity.
→ No smoking.

2.2 SAFETY INSTRUCTIONS FOR STAFF

→ Always follow the information in this manual, particularly the general safety instructions and the warning instructions.
→ Always follow local regulations concerning occupational safety and accident prevention.
2.2.1 SAFE HANDLING OF WAGNER SPRAY DEVICES

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

→ Never point the high-speed rotary atomizer at people.
→ Never reach into the spray jet.
→ Before all work on the device and in the event of work interruptions:
   – Secure the high-speed rotary atomizer against actuation.
   – Relieve the pressure from the high-speed rotary atomizer and device.

In the event of skin injuries caused by paint or cleaning agents:

→ Note down the paint or cleaning agent that you have been using.
→ Consult a doctor immediately.

2.2.2 PRODUCT HOSES

→ Ensure that the hose material is chemically resistant to the sprayed products.
→ Ensure that the material hose is suitable for the pressure generated in the device.
→ Ensure that the product hose is not conductive.
→ Ensure that the product hose has a sufficiently high disruptive strength or that is also isolated to ground.

2.2.3 CLEANING

→ De-energize the device electrically.
→ Disconnect the pneumatic supply line.
→ Relieve the pressure from the device.
→ Non-flammable cleaning agents should preferably be used.
→ Flammable cleaning liquids may only be used if, after switching off the high-voltage supply, all high-voltage conducting parts are discharged to a discharge energy of less than 0.24 mJ before they can be accessed.
→ Ensure that the flash point of the cleaning agent is at least 5 K above the ambient temperature.
→ For cleaning, only use solvent-damped cloths and brushes. Never use hard objects or spray on cleaning agents with a gun.
   An explosive gas/air mixture forms in closed tanks.
→ When cleaning devices with solvents, never spray into a closed tank.
→ Ground the tank. Only use electrically conductive tanks.
2.2.4 HANDLING HAZARDOUS LIQUIDS, VARNISHES AND PAINTS

- When preparing or working with lacquer and when cleaning the device, follow the working instructions of the manufacturer of the lacquers, solvents and cleaning agents being used.
- Take the specified protective measures, in particular wear safety goggles, protective clothing and gloves, as well as skin protection cream if necessary.
- Use a mask or breathing apparatus if necessary.
- For sufficient health and environmental safety: Operate the device in a spray booth or on a spraying wall with the ventilation (extraction) switched on.
- Wear suitable protective clothing when working with hot products.

2.2.5 TOUCHING HOT SURFACES

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

Order No.
9998910 Instruction label
9998911 Protection label

2.3 CORRECT USE

WAGNER accepts no liability for any damage arising from incorrect use.
- Use the device only to work with the products recommended by WAGNER.
- Only operate the device as a whole.
- Do not deactivate safety fixtures.
- Use only WAGNER original spare parts and accessories.
2.4 USE IN AN EXPLOSION HAZARD AREA

2.4.1 CORRECT USE

The device is suitable for processing liquid products in accordance with the classification into explosion classes.

2.4.2 EXPLOSION PROTECTION IDENTIFICATION

As defined in Directive 94/9/EC (ATEX 95), the device is suitable for use in potentially explosive areas.

![Symbol for explosion protection]

II 3G T6 X
CE: European Communities
Ex: Symbol for explosion protection
I: Device class II
3: Category 3 (Zone 2)
G: Ex-atmosphere gas
X: Note on special operating conditions in accordance with operating manual

2.4.3 IDENTIFICATION "X"

See Chapter 4.1.1

2.4.3.1 MAXIMUM SURFACE TEMPERATURE

The high-speed rotary atomizer's maximum surface temperature depends on the temperature of the coating product.

The high-speed rotary atomizer is suitable for coating products with a maximum temperature of +60 °C; +140 °F.

**Ambient temperature**

Permissible ambient temperature: +10 °C to +50 °C; +50 °F to +122 °F.

2.4.3.2 PROCESSIBLE WORKING MATERIALS

The Evobell 3500 is a component of stationary equipment for electrostatic coating with flammable liquid coating products, in accordance with EN 50176. With a grounded paint supply system, the spraying system meets the requirements of category 3G type B-L.

However, non-flammable liquid coating products may also be processed with the Evobell 3500. In this case, the requirements of EN 50348 (Stationary electrostatic application equipment for non-ignitable liquid coating material) must be complied with. Depending on design, the spraying system is categorized as type A-NL (discharge energy W < 350 mJ) or type B-NL (W > 350 mJ). This categorization must be carried out before commissioning the system, and marked accordingly on the system.
2.4.3.3 SAFETY INSTRUCTIONS

⚠️ DANGER

Exploding gas air mixture through 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 200 mm; 8 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.
→ Maintain the minimum distance between the cylindrical cover of the atomizer and the grounded components. The minimum distance is 100 mm; 4 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; 8 inch is recommended in the area of the atomizer bell and a minimum distance of 100 mm; 4 inch in the area of the 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.
Safe handling of WAGNER spray devices
Mechanical sparks can form if the device comes into contact with metal.

In an explosive atmosphere:
→ Do not knock or push the device against steel or rusty iron.
→ Use only tools that are made of a permitted material.

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.

Surface spraying, electrostatics
→ Do not spray device parts using electrostatic equipment.

Cleaning
If there are deposits on the surfaces, the device may form electrostatic charges. Flames or sparks can form during discharge.
→ Remove deposits from the surfaces to maintain conductivity.
→ Use only a damp cloth to clean the device.

2.5 SETTING UP STATIONARY ELECTROSTATIC SYSTEMS

The high-speed rotary atomizer is a component of a stationary spraying system. When setting up stationary spraying systems, comply strictly with EN 50176. 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.
3 WARRANTY AND CONFORMITY DECLARATIONS

3.1 IMPORTANT NOTES REGARDING PRODUCT LIABILITY

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

3.2 WARRANTY CLAIM

Full warranty is provided for this device:
We will at our discretion repair or replace free of charge all parts which within 24 months in single-shift, 12 months in 2-shift or 6 months in 3-shift operation from date of receipt by the purchaser are found to be wholly or substantially unusable due to causes prior to the sale, in particular faulty design, defective materials or poor workmanship. The type of warranty provided is such that the device or individual components of the device are either replaced or repaired as we see fit. The resulting costs, in particular shipping charges, road tolls, labour and material costs will be borne by us except where these costs are increased due to the subsequent shipment of the device to a location other than the address of the purchaser.
We do not provide warranty for damage that has been caused or contributed to for the following reasons:
Unsuitable or improper use, faulty assembly or commissioning by the purchaser or a third party, normal wear, negligent handling, defective maintenance, unsuitable coating products, substitute products and the influence of chemical, electrochemical or electrical agents, except when the damage is attributable to us.
Abrasive coating products such as red lead, emulsions, glazes, liquid abrasives, zinc dust paints and so forth reduce the service life of valves, packings, spray guns, nozzles, cylinders, pistons etc. Wear and tear due to such causes are not covered by this warranty.
Components that have not been manufactured by WAGNER are subject to the original warranty of the manufacturer.
Replacement of a component does not extend the period of warranty of the device.
The device should be inspected immediately upon receipt. To avoid losing the warranty, we or the supplier company are to be informed in writing about obvious faults within 14 days upon receipt of the device.
We reserve the right to have the warranty compliance met by a contracting company. The services provided by this warranty are dependent on evidence being provided in the form of an invoice or delivery note. If the examination discovers that no warranty claim exists, the costs of repairs are charged to the purchaser.
It is clearly stipulated that this warranty claim does not represent any constraint on statutory regulations or regulations agreed to contractually in our general terms and conditions.
J. Wagner AG
3.3 CE DECLARATION OF CONFORMITY

Hereewith we declare that the supplied version of
- Evobell 3000 high-speed rotary atomizer 387001
- Evobell 3500 high-speed rotary atomizer 387051

complies with the following guidelines:
- 94/9/EC
- 2006/42/EC

Applied standards, in particular:
- DIN EN 50176: 2010-04
- DIN EN ISO 12100-1: 2004-04
- DIN EN 1953: 1998-12
- DIN EN ISO 13732-1: 2006-12
- DIN EN 13463-1: 2009-07
- DIN EN 13463-5: 2004-03
- DIN EN 1953: 1998-12
- DIN EN ISO 12100-1: 2004-04
- DIN EN ISO 13732-1: 2006-12
- DIN EN 13463-1: 2009-07
- DIN EN 13463-5: 2004-03

Applied national technical standards and specifications, in particular:
- BGR 500/Part 2, Chap. 2.29, Chap. 2.36
- TRBS 2153

Identification:

EC Certificate of Conformity
The CE certificate 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:
Evobell 3500 387890

3.4 NATIONAL TECHNICAL SPECIFICATIONS

a) BGV A3 Electrical devices and equipment
b) BGR 500 Part 2, Chapter 2.29 "Working with Coating Products"
   BGR 500 Part 2, Chapter 2.36 "Working with Liquid Ejection Devices"
c) TRBS 2153 Avoidance of ignition dangers due to electrostatic charges
d) BGR 180 Equipment for cleaning work pieces with solvents
e) ZH 1/406 Guidelines for liquid ejection devices
f) BGI 740 Painting rooms and equipment
g) BGI 764 Electrostatic coating

Note: All titles can be ordered from Heymanns Publishing House in Cologne, or they can be found on the Internet.
4 DESCRIPTION

4.1 FIELDS OF APPLICATION, USE IN ACCORDANCE WITH THE INSTRUCTIONS

EVOBELL 3500 is an air-bearing high-speed rotary atomizer. The device is suitable for atomizing liquid products, in particular coating products, under the influence of electrostatic forces.

4.1.1 PROCESSIBLE MATERIALS

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

When using flammable liquid coating products

If possible, the complete paint supply system must have a grounded setup. In order to keep the discharge energy at the high-speed rotary atomizer below 350 mJ, the high-speed rotary atomizer has to be connected to a WAGNER resistance block (R = 640 MΩ) or to the high-voltage power supply over an attenuated high-voltage line (R = approx. 50 kΩ/m) with a length of at least 5 m. In this case, the system is classified as Type B-L (W < 350 mJ) in accordance with EN 50176. As a result, this poses a risk of energy capable of acting as an ignition source but no risk of electric shock.

With a grounded paint supply system, coating paints, primers, corrosion protection, structure paints and other coatings with a resistance of > 50 kΩ (in accordance with the WAGNER/Ransburg scale) are suitable for processing. For highly conductive materials (R < 50 kΩ) and for materials with very high electrical resistance (approx. > 5 MΩ), 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 (μA).

→ High kV value, low μA value (no wrap-around) = Paint with excessive electrical resistance
→ Low kV-value, high μA-value (no wrap-around) = Excessive conductivity of the paint

With an ungrounded paint supply system, coating products with a resistance of < 50 kΩ can also be used. With an ungrounded paint supply system, the high-speed rotary atomizer has to be connected to the high-voltage supply using an attenuated high-voltage line (R = approx. 50 kΩ/m) with a length of at least 5 m. The discharge energy of this kind of system can be more than 350 mJ; in this case, it is classified as a type C-L (W < 2 J) or type D-L (W > 2 J) in accordance with EN 50176. As a result, this poses 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.

When using non-flammable liquid coating products

If water paints are used, the entire system (high-speed rotary atomizer with paint supply) is brought to high-voltage potential. The system corresponds to type A-NL (W < 350 mJ) or type B-NL (W > 350 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.

In the event of application problems, consult your WAGNER branch and/or the paint manufacturer.

### 4.1.2 CATEGORIZATION OF WORKING MATERIALS

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

Water-dilutable paints are in principle divided into 3 groups:

- **Green**: Non-flammable (non-combustible) paints
- **Yellow**: Paints with low flammability
- **Red**: Flammable paints

### Non-flammable:

Paints in this group have the following composition:

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

Where:

- \( \text{wt\%} \): Weight percent
- \( \text{H}_2\text{O} \): Water
- \( \text{LM} \): Liquid organic phase (solvent mainly consisting of higher ethylene glycol esters)
- \( \text{ORG} \): Solid organic phase (solids mainly consisting of binding agents and pigments)

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

Paints in this group are categorized as non-flammable liquid coating products.

When using non-flammable spray products, the requirements of EN 50348 (mainly protection against contact) must be complied with.
Not readily flammable:

Paints in this group have the following composition:

\[ \text{wt\% } H_2O > 1.50 \times \text{wt\% LM} + 0.49 \times \text{wt\% ORG} \]

Spray clouds of these paints 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.

Paints in this group are categorized as difficult to ignite.

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

Flammable:

Paints that do not meet the criteria for non-flammable or difficult to ignite.

Paints in this group are categorized as flammable liquid coating products.

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

Please contact your local WAGNER dealer and the paint manufacturer if you encounter application problems.
4.2 SCOPE OF DELIVERY

The high-speed rotary atomizer consists of the premounted basic device as well as the accessories required explicitly for this purpose (see Chapter 9).

Accessories:
- Bells in diverse diameters and products with corresponding air guides
- Distributor variants
- Product tubes (drill hole diameter)
- Valve blocks
- Resistance block (if solvent paints are used)
- Optical-fiber cables and speed sensor

4.2.1 EVOBELL 3500 MODEL IDENTIFICATION

To order the high-speed rotary atomizer, please use the model identification 387051-A11D1FGHI in connection with the tables listed below.

Example:

```
387051 - A 1 1 D 1 F G H I
```

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<tr>
<th>Order number</th>
<th>Bell diameter</th>
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<tr>
<td>Distributor model</td>
<td>Table “D”</td>
<td></td>
</tr>
<tr>
<td>Product tube diameter</td>
<td>Table “F”</td>
<td></td>
</tr>
<tr>
<td>Valve block</td>
<td>Table “G”</td>
<td></td>
</tr>
<tr>
<td>Used product</td>
<td>Table “H”</td>
<td></td>
</tr>
<tr>
<td>Adjusting and mounting tool</td>
<td>Table “I”</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Number</th>
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<tbody>
<tr>
<td>1</td>
<td>36 mm; 1.42 inches</td>
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<tr>
<td>2</td>
<td>50 mm; 1.97 inches</td>
</tr>
<tr>
<td>3</td>
<td>70 mm; 2.76 inches</td>
</tr>
<tr>
<td>4</td>
<td>T 70 mm; 2.76 inch</td>
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### Table D - Distributor model

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<td>20 x d2.3</td>
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### Table F - Product tube diameter

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<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ø 0.8 mm; 0.031 inch</td>
</tr>
<tr>
<td>2</td>
<td>Ø 1.1 mm; 0.043 inch</td>
</tr>
<tr>
<td>3</td>
<td>Ø 1.6 mm; 0.063 inch</td>
</tr>
<tr>
<td>4</td>
<td>Ø 2.2 mm; 0.087 inch</td>
</tr>
<tr>
<td>5</td>
<td>T Ø 1.6 mm; 0.063 inch</td>
</tr>
<tr>
<td>6</td>
<td>T Ø 2.0 mm; 0.079 inch</td>
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</table>

### Table G - Valve block

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<thead>
<tr>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 x product, 1 x dump, 1 flush</td>
</tr>
<tr>
<td>2</td>
<td>2 x product, 2 x dump, 2 flush</td>
</tr>
</tbody>
</table>

### Table H - Used product

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Solvent-based paint</td>
</tr>
<tr>
<td>2</td>
<td>Water-based paint</td>
</tr>
</tbody>
</table>

### Table I - Adjusting and mounting tool

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No</td>
</tr>
<tr>
<td>2</td>
<td>Yes</td>
</tr>
</tbody>
</table>
4.3 DATA

4.3.1 MATERIALS OF PAINT-WETTED PARTS
→ Consistal®
→ 1.4305

4.3.2 TECHNICAL DATA

<table>
<thead>
<tr>
<th>Description</th>
<th>Evobell 3500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum high-voltage</td>
<td>100 kV</td>
</tr>
</tbody>
</table>
| RPM monitor                        | Optical fiber with speed sensor
4 pulses per revolution             |
| Electric product resistance*       | > 50 kΩ               |
| Shaft bearing                      | Air bearing           |
| Maximum speed                      | 70,000 rpm (40,000 bell d70) |
| Bearing air quality                | Particle filter < 0.5 μm
Oil separator < 0.01 mg/m³ at 20 °C
Dew point 7.5 °C                     |
| Air quality Drive / braking / shaping air | Particle filter < 5 micron
Oil separator < 0.6 mg/m³ at 20 °C
Dew point 16 °C                     |
| Bearing air pressure               | 500 ± 50 kPa (5 ± 0.5 bar)    |
| Bearing air consumption            | 52 nl/min              |
| Drive air pressure                 | 0 - 550 kPa (0 - 5.5 bar) |
| Drive air consumption maximum      | 470 nl/min             |
| Stop air pressure                  | 0 - 550 kPa (0 - 5.5 bar) |
| Shaping air pressure               | 20 - 500 kPa (0.2 - 5 bar) |
| Shaping air consumption maximum    | 800 nl/min             |
### Evobell 3500

**Description**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Evobell 3500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product pressure</td>
<td>Typically 50 - 200 kPa / max. 800 kPa (typically 0.5 - 2.0 bar / max. 8 bar)</td>
</tr>
<tr>
<td></td>
<td>Typically 7 - 29 psi / max. 116 psi</td>
</tr>
<tr>
<td>Flow rate**</td>
<td>25 - 600 ml/min</td>
</tr>
<tr>
<td></td>
<td>25 - 600 cc/min</td>
</tr>
<tr>
<td>Spray jet diameter approx.***</td>
<td>70 - 800 mm</td>
</tr>
<tr>
<td></td>
<td>3 - 32 inch</td>
</tr>
<tr>
<td>Product connections</td>
<td>See Chapter 4.3.3</td>
</tr>
<tr>
<td>Air supply connections</td>
<td>See Chapter 4.3.3</td>
</tr>
<tr>
<td>Max. product temperature</td>
<td>+60 °C</td>
</tr>
<tr>
<td></td>
<td>+140 °F</td>
</tr>
<tr>
<td>Turbine air temperature</td>
<td>+15 °C to +50 °C</td>
</tr>
<tr>
<td></td>
<td>+59 °F to +122 °F</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>+10 °C to +50 °C</td>
</tr>
<tr>
<td></td>
<td>+50 °F to +122 °F</td>
</tr>
<tr>
<td>Sound level at 2 bar of shaping air</td>
<td>75 dB(A)</td>
</tr>
<tr>
<td>40,000 rpm</td>
<td>600 ml/min</td>
</tr>
<tr>
<td>600 ml/min; cc/min****</td>
<td>25 - 600 ml/min</td>
</tr>
<tr>
<td>Acceleration maximum</td>
<td>1g</td>
</tr>
<tr>
<td>Weight approx.</td>
<td>3.8 kg</td>
</tr>
<tr>
<td></td>
<td>8.4 lb</td>
</tr>
<tr>
<td>Dimension D1</td>
<td>125 mm</td>
</tr>
<tr>
<td></td>
<td>4.92 inch</td>
</tr>
<tr>
<td>Dimension D2</td>
<td>50 mm</td>
</tr>
<tr>
<td></td>
<td>1.97 inch</td>
</tr>
<tr>
<td>Dimension L1</td>
<td>700 mm (T-version 715 mm)</td>
</tr>
<tr>
<td></td>
<td>27.56 inch (T-version 28.15 inch)</td>
</tr>
<tr>
<td>Dimension L2</td>
<td>225 mm</td>
</tr>
<tr>
<td></td>
<td>8.86 inch</td>
</tr>
</tbody>
</table>

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

** Depending on product tube and product pressure (see Paragraph 9.1)

*** Depending on bell diameter and shaping 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.

![Turbine air pressure at loads of 0-600 ml/min; cc/min (water)](image-url)
Turbine air consumption at loads of 0-600 ml/min; cc/min (water)

Rotational speed [rpm]

Shaping air consumption in relation to applied pressure

Shaping air [bar]; [psi]
4.3.3 CONNECTION DESIGNATIONS AND DIMENSIONS

4.3.3.1 CONNECTIONS TO THE DRIVE UNIT

(Designations on the adapter plate)

<table>
<thead>
<tr>
<th>Air connections</th>
<th>Short description</th>
<th>Connection dimensions (⌀ inside x ⌀ outside) mm; inch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bearing air</td>
<td>BA</td>
<td>6 x 8 mm; 0.24 x 0.31 inch</td>
</tr>
<tr>
<td>Drive air</td>
<td>DA</td>
<td>8 x 10 mm; 0.31 x 0.39 inch</td>
</tr>
<tr>
<td>Stop air</td>
<td>STA</td>
<td>6 x 8 mm; 0.24 x 0.31 inch</td>
</tr>
<tr>
<td>Shaping air - 2x</td>
<td>SA</td>
<td>8 x 10 mm; 0.31 x 0.39 inch</td>
</tr>
<tr>
<td>Product valves</td>
<td>---</td>
<td>4 x 6 mm; 0.16 x 0.24 inch</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product connection</th>
<th>Short description</th>
<th>Connection dimensions (⌀ inside x ⌀ outside) mm; inch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bell flushing</td>
<td>FB</td>
<td>4 x 6 mm; 0.16 x 0.24 inch</td>
</tr>
</tbody>
</table>

Short description legend:

*BA* = Bearing Air / *DA* = Drive Air / *STA* = Stop Air / *SA* = Shaping Air / *FB* = Flushing Bell
4.3.3.2 VALVE BLOCK CONNECTIONS

(Number of connections depends on the valve block variant)

<table>
<thead>
<tr>
<th>Product connections</th>
<th>Short description</th>
<th>Connection dimensions (Ø inside x Ø outside) mm; inch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product inlet 1</td>
<td>M1</td>
<td>4 x 6 mm; 0.16 x 0.24 inch</td>
</tr>
<tr>
<td>Dump output 1</td>
<td>DM1</td>
<td>4 x 6 mm; 0.16 x 0.24 inch</td>
</tr>
<tr>
<td>Product inlet 2</td>
<td>M2</td>
<td>4 x 6 mm; 0.16 x 0.24 inch</td>
</tr>
<tr>
<td>Dump output 2</td>
<td>DM2</td>
<td>4 x 6 mm; 0.16 x 0.24 inch</td>
</tr>
<tr>
<td>Air flushing inlet *</td>
<td>FA</td>
<td>4 x 6 mm; 0.16 x 0.24 inch</td>
</tr>
<tr>
<td>Product flushing inlet</td>
<td>FM</td>
<td>4 x 6 mm; 0.16 x 0.24 inch</td>
</tr>
</tbody>
</table>

Short description **legend:**

**M1** = Material 1 / **DM1** = Dump Material 1 / **M2** = Material 2 / **DM2** = Dump Material 2 / **FA** = Flushing Air / **FM** = Flushing Material

* The air flushing inlet is intended for air flushing, but can also be used for a 2nd flushing agent
4.4 FUNCTIONAL DESCRIPTION

4.4.1 DESIGN OF THE HIGH-SPEED ROTARY ATOMIZER

<table>
<thead>
<tr>
<th>Designation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Casing</td>
</tr>
<tr>
<td>B</td>
<td>Resistance block</td>
</tr>
<tr>
<td>C</td>
<td>Optical fiber</td>
</tr>
<tr>
<td>D</td>
<td>Evobell 3500 drive unit</td>
</tr>
<tr>
<td>E</td>
<td>Evobell 3500 pre-assembled</td>
</tr>
<tr>
<td>F</td>
<td>Valve block assembly</td>
</tr>
<tr>
<td>G</td>
<td>Product tube</td>
</tr>
<tr>
<td>H</td>
<td>Air guide assembly</td>
</tr>
<tr>
<td>I</td>
<td>Bell, assembly</td>
</tr>
<tr>
<td>J</td>
<td>Distributor</td>
</tr>
<tr>
<td>K</td>
<td>Bell flushing valve</td>
</tr>
<tr>
<td>L</td>
<td>Bearing tube</td>
</tr>
</tbody>
</table>
4.4.2 FUNCTION OF THE HIGH-SPEED ROTARY ATOMIZER

The high-speed rotary atomizer consists of the premounted basic device (E), which consists of the drive unit (D) and the bearing rods.
The bearing tube (L) is used by the customer to mount the device.
The optical fiber (C) is used to detect signals for speed control.
Product is fed to the device via the valve block (F) and the product tube (G) lying in the axis center. This is then distributed evenly on the surface of the bell (I) via the distributor (J).
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 shaping air flowing through the air guide (H).
Specific cleaning of the bell is possible by means of the bell flushing valve without having to flush the entire product channel.
The resistance block (B) or attenuated high-voltage cable is required as a connection from the high-voltage supply and atomizer (if flammable spray products are used) to reduce a possible spark gap when the bell approaches the potential to ground. The resistance block and attenuated high-voltage cable decouple the capacities and attenuate the discharge. The discharge is reduced. The resistance block and attenuated high-voltage cable act as voltage splitters. As the current increases (e.g. as the bell approaches an object), the voltage at the edge of the bell decreases. This eventually leads to a sparkover.
If a water-based paint is being used, the system is connected to the rest of the system via a paint column (ion conductor), reducing the effectiveness of the resistance block.
The casing (A) serves as a shield for the applied high voltage, but also acts as a protective cover for the entire atomizer.
4.5 ATOMIZATION PROCESS

4.5.1 SPRAYING PROCESS

At the high-speed rotary atomizer, the sprayed product is atomized radially at the circumference of the bell under low pressure approx. 0.05 to 0.30 MPa; 0.5 to 3.0 bar; 7.25 to 43.5 psi.

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

The spray scheme can be influenced by the following points:

→ Product pressure/flow
→ Rotational speed
→ Bell diameter
→ Distributor model
→ Shaping air pressure approx. 0.05 - 0.3 MPa; 0.5 - 3.0 bar; 7.25 - 43.5 psi
→ Applied high voltage

Explanation:

1 = Shaping air  
2 = Spray product  
3 = Cleaning agent  
4 = Turbine exhaust air

Spray product (2) is fed through the central drill hole of the product tube and is distributed in the distributor through the many drill holes.

Cleaning agent (3) is fed in through two channels:
- In the outer annular gap of the product tube through the central drill hole of the distributor to the inside of the bell.
- Through the adapter plate (A) and the support ring (T) to the outer rear side of the bell.
4.5.2 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.

Explanation:
1 = Paint particle
2 = Rotating bell
3 = Object to be sprayed is grounded

Advantages.
- High application effectiveness
- Even coating thickness
- Coating hidden locations
- Improved edge covering
- Low over spray
The installation shown above is only intended as an aid for selecting and assembling an electrostatic rotary atomizer. It is not an actual system design. The particular type and size system for your operation must be customized for your needs. For assistance in designing a system, contact your WAGNER representative.
5 COMMISSIONING AND OPERATION

5.1 INSTALLATION AND CONNECTION

5.1.1 TYPICAL ELECTROSTATIC SPRAYING SYSTEM

WARNING

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

→ The entire system is to be evaluated by the operator in accordance with Directive 1999/92/EC (ATEX 137) before the first commissioning!
→ When commissioning and for all work, read and follow the operating manual and safety regulations for the additionally required system components.

NOTICE

Impurities in the spraying system!
Dirt and humidity in the hose system can cause damage to the atomizer, as well as the drive turbine in particular.

→ Hose length between filter bearing air and atomizer ≤ 10 m; 11 yd.
→ Hose length between filter (drive, stop, atomizer air) and atomizer ≤ 30 m; 33 yd.

Note:
The Evobell 3500 high-speed rotary atomizer must be used with various components as a part of 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.

The high-speed rotary atomizing system may only be commissioned by trained and skilled specialist personnel. Ensure that the operating personnel have familiarized themselves with the additional operating manuals and safety specifications of all the system components. After completion of the installation, the capacity of the complete system must be measured and documented accordingly.

<table>
<thead>
<tr>
<th>High-voltage generator (type, model)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Measured capacity</td>
<td>--</td>
</tr>
</tbody>
</table>
Evobell 3500

OPERATING MANUAL

<table>
<thead>
<tr>
<th>Pos</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Spray booth</td>
</tr>
<tr>
<td>B</td>
<td>Work piece</td>
</tr>
<tr>
<td>C</td>
<td>Conveyor</td>
</tr>
<tr>
<td>D</td>
<td>Control cabinet</td>
</tr>
<tr>
<td>E</td>
<td>Reciprocator</td>
</tr>
<tr>
<td>F</td>
<td>Electrostatic high-speed rotary atomizer</td>
</tr>
<tr>
<td>G</td>
<td>Air filter (see accessories)</td>
</tr>
</tbody>
</table>
5.1.2 VENTILATION OF THE SPRAY BOOTH

**WARNING**

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

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

5.1.3 AIR SUPPLY

**WARNING**

Electrically conductive air lines!
Danger through electrically conductive air lines.

→ Ensure that the air lines are not electrically conductive.

The use of suitable air filters (see Chapter 9.9) ensures that only dry, clean atomizing air enters the atomizer.

→ Dirt and moisture in the shaping air reduce the spraying quality and the appearance of the finished piece.
→ Dust and humidity in the bearing, drive or stop air causes damage to the drive turbine.

5.1.4 PRODUCT SUPPLY

**WARNING**

Bursting hose!
Danger due to escaping product mist. Contamination of the device and device components.

→ Ensure that the hose material is chemically resistant to the sprayed products.
→ Ensure that the high-speed rotary atomizer and pressure hose between the device and the high-speed rotary atomizer are suitable for the pressure generated in the device.
5.1.5 GROUNDING

**WARNING**

**Electrically conductive product supply lines!**

Danger due to electrically conductive product supply lines.

→ Ensure that the product supply lines are not electrically conductive.

**WARNING**

**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.

**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.

A conductive connection (potential equalization cable) must be established between original bundles and the equipment.

**A poorly grounded work piece causes:**

→ Very bad wrap around.
→ Uneven coating.
→ Back spraying to the atomizer, i.e. contamination.
Prerequisites for perfect grounding and coating are:

- Clean work piece suspension.
- Grounding of spray booth, conveyor system and suspension 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).
- Connect the control unit only to the signal ground (e.g. water pipe).

Grounding scheme (example)

![Grounding scheme diagram]

**Explanation:**

1 = Grounding cable  
2 = Control unit  
3 = Conveyor  
4 = Evobell  
5 = Work piece  
6 = Spraying stand  
7 = Signal ground  
8 = Floor, static dissipative  
9 = Paint tank  
10 = Pump  
11 = Signal ground

Minimum cable cross-sections:

- Control unit: 4 mm², AWG 11
- Pump: 4 mm², AWG 11
- Paint tank: 4 mm², AWG 11
- Conveyor: 16 mm², AWG 5
- Booth: 16 mm², AWG 5
- Spraying stand: 16 mm², AWG 5
5.1.6  PAINT PREPARATIONS

The viscosity of the lacquer is of great importance.
The best spraying results are obtained with values between approx. 14 and 24 DIN-s
(measured in immersion flow cup DIN 4 mm; 0.16 inch).
In the case of application problems contact the paint producer.

5.1.7  VISCOSITY CONVERSION TABLE

<table>
<thead>
<tr>
<th>milli Pascal x x Sec mPas</th>
<th>Centipoise</th>
<th>Poise</th>
<th>DIN Cup 4 mm 0.16 inch</th>
<th>Ford Cup 4</th>
<th>Zahn 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>10</td>
<td>0.1</td>
<td>5</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>15</td>
<td>0.15</td>
<td>8</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>20</td>
<td>0.2</td>
<td>10</td>
<td>18</td>
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<tr>
<td>25</td>
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<tr>
<td>30</td>
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<td>0.3</td>
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<td>30</td>
<td>34</td>
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<td>120</td>
<td>120</td>
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<td>33</td>
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<td>140</td>
<td>140</td>
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<td>37</td>
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<td>43</td>
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<td>46</td>
<td>54</td>
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<td>200</td>
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<td>2</td>
<td>49</td>
<td>58</td>
<td>82</td>
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<tr>
<td>220</td>
<td>220</td>
<td>2.2</td>
<td>52</td>
<td>62</td>
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<td>240</td>
<td>240</td>
<td>2.4</td>
<td>56</td>
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<tr>
<td>260</td>
<td>260</td>
<td>2.6</td>
<td>62</td>
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<tr>
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<tr>
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<td>400</td>
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<td>4</td>
<td>90</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5.2 OPERATING INSTRUCTIONS FOR SAFE OPERATION

**DANGER**

Incorrect maintenance/repair!
Risk of injury and damage to the device.

→ The shaft and bell cone are to be checked for damage and dirt every time before the bell is mounted. Dirt and/or damage lead to an unbalanced bell.
→ Excessive imbalance leads to damage to the drive turbine and, in extreme cases, can lead 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.
→ Before turning the drive shaft by hand or using drive air, ensure that the bearing air is applied to the drive shaft.
→ Regular flushing cycles ensure that any imbalance that occurs due to paint deposits on the bell is minimal.
   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 product flow in accordance with the "Technical data" is not exceeded under any circumstances. Otherwise product/cleaning agent can enter the drive turbine.
→ Ensure that the maximum speed in accordance with the "Technical data" is not exceeded under any circumstances.

Note:

→ A suitable pressure switch for monitoring the bearing air can be found in the accessories chapter.
→ Suitable filters for bearing air, drive and stop air can be found in the accessories chapter.
→ 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. 0.04 MPa; 0.4 bar; 5.80 psi is applied for approx. 2-3 seconds before opening/after closing all the product inlets.
5.3 COMMISSIONING

5.3.1 GENERAL RULES FOR HANDLING THE HIGH-SPEED ROTARY ATOMIZER

→ Observe safety instructions in Chapter 2.

**DANGER**

High-voltage field!
Danger to life from malfunction of heart pacemakers.

Make sure that persons with pacemakers:
→ Do not work with the electrostatic high-speed rotary atomizer.
→ Do not stop or stand in the area near the electrostatic high-speed rotary atomizer or the work piece.

**DANGER**

Cutting effect of rapidly rotating edges!
Danger of injury due to touching the rapidly rotating bell.

→ Ensure that the bell has come to a stop before any contact by persons.
→ Secure the atomizer against actuation.

**WARNING**

Unintentional putting into operation!
Risk of injury.

Before any work on the device and in the event of work interruptions:
→ Switch off the high-voltage generation.
→ Relieve the pressure in the high-speed rotary atomizer and device.
→ Secure the atomizer against actuation.
5.3.2 PREPARATION FOR STARTING UP

**DANGER**

Incorrect maintenance/repair!
Risk of injury and damage to the device.

- The shaft and bell cone are to be checked for damage and dirt every time before the bell is mounted. Dirt and/or damage lead to an unbalanced bell.
- Excessive imbalance leads to damage to the drive turbine and, in extreme cases, can lead to the bell being hurled out.

**WARNING**

Unintentional putting into operation!
Risk of injury.

Before any work on the device and in the event of work interruptions:
- Switch off the high-voltage generation.
- Relieve the pressure in the high-speed rotary atomizer and device.
- Secure the atomizer against actuation.

**NOTICE**

Damage to the drive turbine!
Damage to the drive turbine due to unsuitable filter system.

- The use of suitable air filters ensures that the necessary air quality is maintained.
- Ensure that only dry, clean atomizing air enters the atomizer.
- Dirt and humidity in the air supplies causes damage to the drive turbine.
Installation of the rotary atomizer in a sample device:

Notes:
The high-speed rotary atomizer can flexibly be mounted.
Ceiling installation, wall installation or assembly on reciprocators, etc. is possible depending
on the type of electrostatic high-speed rotary atomizing system.
Cover dump outlets that are not used with corresponding valve plugs.

1. Fasten the atomizer via the bearing tube “A” on the customer’s premises to the
   reciprocator “C” via the tool holding fixture “B”.
2. Connect the air hoses for bearing air (BA), drive air (DA) and stop air (STA).
3. Connect the air hoses for shaping air (SA).
4. Install the valve block with product tube into the atomizer.
5. Check the installation position of the product tube using special tools and correct if
   necessary (Chapter 5.4.7).
6. Connect the product hoses for the dump return line (DM1/DM2).
7. Connect the product hoses for the product supply line (M1/M2).
8. Connect the product hoses for the flushing agent supply line (FA/FM).
9. Connect the product hose for the flushing agent supply line (FB) to the adapter
    plate.
10. Connect the air hoses for controlling to all the valves.
11. Mount the optical-fiber cables for speed detection.
12. Mount the air guide in accordance with the selected bell diameter.
13. Connect the high-voltage cable to the resistance block.
14. Slide on the casing and fasten it by means of the bayonet connection.
15. Mount the bell with mounted distributor to the drive shaft.
16. Check the product tube for the correct installation positions.
5.4 WORK

5.4.1 PREPARATIONS FOR SPRAYING
1. Apply bearing air (BA) at the high-speed rotary atomizer.
2. Set the operating pressure for the product supply to 0.1 MPa; 1 bar; 14.5 psi.
3. Put the supply system for coating product and flushing agent into operation.
4. Set the pressure for the shaping air (SA) to min. 0.05 MPa; 0.5 bar; 7.25 psi and apply the shaping air (SA).
5. Set the speed of the atomizer via an external control system to 20,000 rpm and power up the atomizer slowly.
6. Flush the valve block and product tube for a few seconds using the rearmost flushing valve (FM).
7. Apply the high voltage via the resistance block (60 – 80 kV).
8. Open the product valve and optimize the created spray cloud by modifying the setting values for speed, high-voltage, product pressure and shaping air (SA).

Note:
If necessary, this optimization has to be tested with another product tube or another bell diameter.

5.4.2 ADJUSTING THE SPRAY PATTERN

The spray jet diameter can be adapted individually by modifying the shaping air (SA). Larger or smaller spray patterns can be achieved by using different bell diameters.

Bell Ø 36 mm; 1.42 inch
Bell Ø 50 mm; 1.97 inch
Bell Ø 70 mm; 2.76 inch
T variant
Bell Ø 70 mm; 2.76 inch

Note:
1. The quantity of product can be changed by:
   → changing the product pressure or
   → employment of another product tube (see accessories).
2. The quality of the distributor and bell are critical for ensuring the spray pattern.
5.4.3 REMOVING/ATTACHING THE CASING

⚠️ WARNING

Unintentional putting into operation!
Risk of injury.

Before any work on the device and in the event of work interruptions:
→ Switch off the high-voltage generation.
→ Relieve the pressure in the high-speed rotary atomizer and device.
→ Secure the atomizer against actuation.

Remove the casing

→ Turn the casing counterclockwise and pull it off the basic body.

Attach the casing

→ Slide on the casing and fasten it using the bayonet connection.
5.4.4 REPLACING THE BELL

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
</table>
| **Unintentional putting into operation!**  
Risk of injury. |

Before any work on the device and in the event of work interruptions:
- Switch off the high-voltage generation.
- Relieve the pressure in the high-speed rotary atomizer and device.
- Secure the atomizer against actuation.

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
</table>
| **Damage to the bell!**  
Damage to the bell due to incorrect tool usage or incorrect assembly. |

- Only dismount the bell using the original tool in order to prevent damage.
- Mounting of bells only with inserted distributor to avoid tilting the receiver cone.

**Note:**
The bell, distributor and air guide are interdependent in size.  
Three diameter sizes are offered for the bell, distributor and air guide.

- Ø 36 mm; 1.42 inch
- Ø 50 mm; 1.97 inch
- Ø 70 mm; 2.76 inch

If you change the bell diameter, the distributor and air guide have to be replaced as well.

<table>
<thead>
<tr>
<th>DANGER</th>
</tr>
</thead>
</table>
| **Incorrect maintenance/repair!**  
Risk of injury and damage to the device. |

- The shaft and bell cone are to be checked for damage and dirt every time before the bell is mounted. Dirt and/or damage lead to an unbalanced bell.
- Excessive imbalance leads to damage to the drive turbine and, in extreme cases, can lead to the bell being hurled out.
Disassembly:

→ Place the tool on the bell with the clamping ring unlocked.
→ Lock the bell with the clamping ring.
→ Pull off the bell tool with the bell smoothly in the axial direction.

Assembly:

→ Manually position the bell on the cone in the axial direction.

Note:
→ The bell is fastened on the drive cone by means of holding force (F).
5.4.5 REMOVING THE DISTRIBUTOR

**WARNING**

Unintentional putting into operation!
Risk of injury.

Before any work on the device and in the event of work interruptions:
- Switch off the high-voltage generation.
- Relieve the pressure in the high-speed rotary atomizer and device.
- Secure the atomizer against actuation.

---

**NOTICE**

Impurities in the distributor!
Blockage, products harden on the distributor.

- Flush the distributor with a suitable cleaning agent.

---

**NOTICE**

Damage to the distributor!
Damage to the distributor through incorrect tool usage.

- Only dismount the distributor by hand and using the original tool in order to prevent damage.
- Only mount the distributor by hand in order to prevent damage.

---

**Note:**
The bell, distributor and air guide are interdependent in size. Three diameter sizes are offered for the bell, distributor and air guide.

- Ø 36 mm; 1.42 inch
- Ø 50 mm; 1.97 inch
- Ø 70 mm; 2.76 inch

If you change the bell diameter, the distributor and air guide have to be replaced as well.
**Disassembly:**

1. Dismount the bell from the device (see 5.4.4).
2. Place the tool axially on the bell.
3. Press in the tool by hand.
4. Remove the distributor and bell from the tool.

**Assembly:**

1. Press the distributor manually in the axial direction on the bell.
T variant disassembly:

→ Dismount the bell from the device (see 5.4.4).
→ Place the bell on a suitable soft surface and press distributor out of the bell with a suitable arbor.

T variant assembly:

→ Grease the O-ring (order No. 2312821) with Vaseline and insert it into the groove of the bell (arrow).
→ Place bell on a suitable soft surface and carefully press the distributor in.
5.4.6 REMOVING THE AIR GUIDE

⚠️ WARNING
Unintentional putting into operation!
Risk of injury.

Before any work on the device and in the event of work interruptions:
→ Switch off the high-voltage generation.
→ Relieve the pressure in the high-speed rotary atomizer and device.
→ Secure the atomizer against actuation.

NOTICE
Dirt in the air guide!
Blocking of the annular gap and of the distributor channels, product hardening in the air guide.

→ Flush the distributor channels and air guide with a suitable cleaning agent.

NOTICE
Damage to the air guide!
Damage to the air guide due to incorrect handling and incorrect tool usage.

→ Only dismount the air guide using the original tool in order to prevent damage.
→ Only mount the air guide by hand in order to prevent damage.

Note:
The bell, distributor and air guide are interdependent in size.
Three diameter sizes are offered for the bell, distributor and air guide.

→ Ø 36 mm; 1.42 inch
→ Ø 50 mm; 1.97 inch
→ Ø 70 mm; 2.76 inch

If you change the bell diameter, the distributor and air guide have to be replaced as well.
Disassembly:

1. Remove the casing.
2. Loosen the outer ring from the distributor ring using the special tool.
3. Remove the outer ring from the distributor ring and clean it.
4. Loosen the distributor ring using a special tool and remove it from the support ring.
5. Remove the O-ring and clean the distributor ring.

Assembly:

1. Replace the O-ring, axially place the outer ring on the distributor ring and tighten it by hand.
2. Axially place the air guide on the support ring and tighten it by hand.
3. Attach the casing.
### 5.4.7 REPLACING THE PRODUCT TUBE/VALVE BLOCK

<table>
<thead>
<tr>
<th><strong>WARNING</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Impurities of the valve block!</strong></td>
</tr>
<tr>
<td>Blocking of the product channels, hardening of the products in the valve block and product tube.</td>
</tr>
</tbody>
</table>

→ Flush the material tube and valve block with suitable cleaning agent.

<table>
<thead>
<tr>
<th><strong>NOTICE</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unintentional putting into operation!</strong></td>
</tr>
<tr>
<td>Risk of injury.</td>
</tr>
<tr>
<td>Before any work on the device and in the event of work interruptions:</td>
</tr>
<tr>
<td>→ Switch off the high-voltage generation.</td>
</tr>
<tr>
<td>→ Relieve the pressure in the high-speed rotary atomizer and device.</td>
</tr>
<tr>
<td>→ Secure the atomizer against actuation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>NOTICE</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Damage to the valve block and product tube!</strong></td>
</tr>
<tr>
<td>Damage to the product tube and valve block through incorrect handling.</td>
</tr>
<tr>
<td>→ Only dismount/mount the product tube by hand or using the original tool in order to prevent damage.</td>
</tr>
</tbody>
</table>
Disassembly:

- Loosen the catch and swing it out.
- Pull off the valve block.
- Unscrew the product tube from the valve block by hand or using the original tool.
  **Attention**: Left-handed thread

Assembly:

- Mount the new product tube with a new seal.
  **Attention**: Left-handed thread
- Grease the O-rings lightly with 9992698 Vaseline.
- Screw the product tube by hand in until the latching cam of the valve block meshes into the groove of the product tube.
- Insert the valve block and product tube axially into the adapter plate until they latch in.
- Fasten the valve block to the adapter plate using the catch.
Check the installation position of the product tube

Apply the test tool and check the optimal installation position of the product tube.
Adjust the distance of the product tube tip with the special tool if required.

Note:
In order to achieve an optimal spraying result, the setting value between the tip of the product tube and the test tool should amount to ≤ 0.5 mm; 0.02 inch.
5.4.8 REPLACING THE RESISTANCE BLOCK/HIGH-VOLTAGE CABLE

**WARNING**

Unintentional putting into operation!
Risk of injury.

Before any work on the device and in the event of work interruptions:
- Switch off the high-voltage generation.
- Relieve the pressure in the high-speed rotary atomizer and device.
- Secure the atomizer against actuation.

**Disassembly:**

- Loosen the cable screw-in connection and remove the high-voltage cable from the resistance block.
- Loosen the fastening screw at the support plate, remove the support plate.
- Pull the resistance block axially away from the adapter plate.
Assembly:

1. Insert the resistance block.
2. Attach the support plate to the resistance block with the fastening screw.
3. Connect the high-voltage cable to the resistance block.
4. Insert the high-voltage cable into the resistance block as far as it will go and fasten it to the resistance block with the cable screw-in connection.
6 CARE AND MAINTENANCE

→ Observe safety instructions in Chapter 2.

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

### NOTICE

<table>
<thead>
<tr>
<th>Flushing agent in the air duct!</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional faults caused by swollen seals.</td>
</tr>
</tbody>
</table>

→ Never immerse the high-speed rotary atomizer in cleaning agent.

### WARNING

**Incorrect maintenance/repair!**
Risk of injury and damage to the device.

→ Repairs and part replacement may only be carried out by specially trained staff or a WAGNER service center.
→ Before all work on the device and in the event of work interruptions:
  - 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.
→ Observe the operating manual and service manuals at all times when carrying out work.
6.1 DECOMMISSIONING AND CLEANING

**DANGER**

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

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

**WARNING**

**Explosive atmosphere!**
Explosive gases are produced when aluminum comes into contact with halogenated hydrocarbons.

→ To clean aluminum, do not use liquids containing halogenated hydrocarbons.

**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 cleaning agent enters the air duct.

**Note:**
Methylene chloride is not recommended as a flushing or cleaning solvent with this atomizer or any other system components.

**Cleaning:**
1. Switch off the high voltage.
2. Release the pressure on the atomizer and device.
3. Connect the cleaning agent supply.
4. Thoroughly flush the atomizer.
5. Release the pressure on the atomizer and device.
6. Clean the atomizer with a cleaning agent recommended by the paint manufacturer and dry it with a cloth or air blow gun.
6.2 MAINTENANCE WORK

6.2.1 VISUAL INSPECTION OF CONNECTIONS AND COMPLETE HOSES

- Check that the connections to the drive unit, the bell flushing valve and the valve block are tight.
- In case of leaks, replace the hose connections.
- Replace porous, damaged complete hoses.
6.2.2 VALVE BLOCK VISUAL INSPECTION

→ Check the valve block for leaks.
→ In case of leaks, remove and disassemble the valve block (see Chapter 8.2).

6.2.3 VISUAL INSPECTION OF THE BELL FLUSHING VALVE

→ Check the bell flushing valve.
→ In case of leaks, remove and disassemble the bell flushing valve (see Chapter 8.3).

6.2.4 VISUAL INSPECTION OF THE RESISTANCE BLOCK

→ Check the resistance block for damage.
→ Check the high-voltage cable for tight fitting.
→ Replace a damaged resistance block, porous or damaged high-voltage cable.

6.2.5 VISUAL INSPECTION OF THE SENSOR

→ Check the sensor for tight fitting.
→ Check the sensor for soiling and damage.
→ Clean the soiled sensor carefully using a corresponding cleaning agent and soft cloth.
→ Replace any damaged sensors and porous or damaged sensor cables.

6.2.6 VISUAL INSPECTION OF THE BELL

→ Check the bell for soiling and damage.
→ Clean the soiled bell with a cleaning agent.
→ Replace a damaged bell.

6.2.7 VISUAL INSPECTION OF THE DISTRIBUTOR

→ Check the distributor for soiling, blockages and damage.
→ Clean the soiled distributor with a cleaning agent.
→ Replace a damaged distributor.

6.2.8 VISUAL INSPECTION OF THE AIR GUIDE

→ Check the air guide for tight fitting.
→ Check for soiling in the distributor drill holes and channels for shaping air.
→ Clean the soiled distributor drill holes with a cleaning agent.
→ Check the air guide for leaks and damage.
→ In case of leaks or damage replace the air guide or O-ring.

6.2.9 VISUAL INSPECTION OF THE PRODUCT TUBE

→ Check the product tube for soiling.
→ Clean the soiled product tube with a cleaning agent.
→ Check the product tube for leaks and damage.
→ In case of leaks or damage replace the O-ring or complete product tube.
6.3 INSPECTIONS IN ACCORDANCE WITH DIN EN 50176

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

6.3.1 OVERVIEW OF INSPECTIONS

<table>
<thead>
<tr>
<th>Section</th>
<th>Type of inspection</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
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<td>Inspection for safe operational condition</td>
<td>Safe operational condition of the complete system</td>
</tr>
<tr>
<td>2</td>
<td>Inspection of technical ventilation</td>
<td>Effectiveness of technical ventilation</td>
</tr>
<tr>
<td>3</td>
<td>Switch off of the high voltage in voltage-controlled and constant voltage operating mode</td>
<td>Safe switch off of high voltage</td>
</tr>
<tr>
<td>4</td>
<td>Switch off of high-voltage in constant current operating mode</td>
<td>Safe switch off of high voltage</td>
</tr>
<tr>
<td>5</td>
<td>Protection against excessively high discharge energy</td>
<td>Safe discharge of all high-voltage conducting parts after switching off high voltage</td>
</tr>
<tr>
<td>6</td>
<td>Protection against ignition of cleaning agents</td>
<td>Safe discharge of all high-voltage conducting parts after switching off high voltage before use of flammable solvents</td>
</tr>
<tr>
<td>7</td>
<td>Protection against direct contact</td>
<td>Safe switch off of the high voltage for access to live system parts</td>
</tr>
<tr>
<td>8</td>
<td>Grounding inspection</td>
<td>Grounding of the complete system</td>
</tr>
<tr>
<td>9</td>
<td>Locking device/Entry protection</td>
<td>Safe switch off of the high voltage for access to live system parts</td>
</tr>
<tr>
<td>10</td>
<td>Inspection of fire extinguishing equipment</td>
<td>Inspection of local fire extinguishing equipment</td>
</tr>
<tr>
<td>11</td>
<td>Inspection of conductive parts in the coating product system</td>
<td>Inspection of conductive parts of the coating product supply for grounding and potential</td>
</tr>
<tr>
<td>12</td>
<td>Minimum distance in air</td>
<td>Minimum distance between grounded and high-voltage conducting parts</td>
</tr>
</tbody>
</table>

Further inspections must be performed in accordance with EN 12215.
### 6.3.2 INSPECTION INTERVALS IN ACCORDANCE WITH TABLE 4 OF DIN EN 50176: 2010-04

<table>
<thead>
<tr>
<th>Section</th>
<th>Inspection point</th>
<th>Inspection interval category 2</th>
<th>Inspection interval category 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Safe operational condition of the complete system</td>
<td>12 months</td>
<td>12 months</td>
</tr>
<tr>
<td>2</td>
<td>Effectiveness of technical ventilation</td>
<td>Continuously</td>
<td>Continuously</td>
</tr>
<tr>
<td>3</td>
<td>Overcurrent cut-out</td>
<td>Whenever the system is switched on</td>
<td>Whenever the system is switched on</td>
</tr>
<tr>
<td>4</td>
<td>Undervoltage cut-out</td>
<td>Whenever the system is switched on</td>
<td>Whenever the system is switched on</td>
</tr>
<tr>
<td>5</td>
<td>Discharge energy</td>
<td>Weekly</td>
<td>Weekly</td>
</tr>
<tr>
<td>6</td>
<td>Ignition protection for flammable cleaning agents</td>
<td>Before all cleaning tasks</td>
<td>Weekly</td>
</tr>
<tr>
<td>7</td>
<td>Anti-contact guard</td>
<td>Weekly</td>
<td>Weekly</td>
</tr>
<tr>
<td>8</td>
<td>Grounding</td>
<td>Weekly</td>
<td>Weekly</td>
</tr>
<tr>
<td>9</td>
<td>Locking device/Entry protection</td>
<td>Weekly</td>
<td>Weekly</td>
</tr>
<tr>
<td>10</td>
<td>Fire extinguishing equipment</td>
<td>6 months</td>
<td>6 months</td>
</tr>
<tr>
<td>11</td>
<td>Conductive parts of the coating product system</td>
<td>Weekly</td>
<td>Weekly</td>
</tr>
<tr>
<td>12</td>
<td>Minimum distance in air</td>
<td>Weekly</td>
<td>Weekly</td>
</tr>
</tbody>
</table>
6.4 INSPECTIONS IN ACCORDANCE WITH DIN EN 50348

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

6.4.1 OVERVIEW OF INSPECTIONS

<table>
<thead>
<tr>
<th>Section</th>
<th>Type of inspection</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Inspection for safe operational condition</td>
<td>Safe operational condition of the complete system</td>
</tr>
<tr>
<td>2</td>
<td>Inspection of technical ventilation</td>
<td>Effectiveness of technical ventilation</td>
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<tr>
<td>3</td>
<td>Switch off of the high voltage in voltage-controlled and constant voltage operating mode</td>
<td>Safe switch off of high voltage</td>
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<td>4</td>
<td>Switch off of high-voltage in constant current operating mode</td>
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<tr>
<td>5</td>
<td>Protection against excessively high discharge energy</td>
<td>Safe discharge of all high-voltage conducting parts after switching off high voltage</td>
</tr>
<tr>
<td>6</td>
<td>Protection against direct contact</td>
<td>Safe switch off of the high voltage for access to live system parts</td>
</tr>
<tr>
<td>7</td>
<td>Grounding inspection</td>
<td>Grounding of the complete system</td>
</tr>
<tr>
<td>8</td>
<td>Locking device/Entry protection</td>
<td>Safe switch off of the high voltage for access to live system parts</td>
</tr>
<tr>
<td>9</td>
<td>Inspection of conductive parts in the coating product system</td>
<td>Inspection of conductive parts of the coating product supply for grounding and potential</td>
</tr>
<tr>
<td>10</td>
<td>Minimum distance in air</td>
<td>Minimum distance between grounded and high-voltage conducting parts</td>
</tr>
</tbody>
</table>

Further inspections must be performed in accordance with EN 12215.
### 6.4.2 INSTRUCTION INTERVALS IN ACCORDANCE WITH TABLE 4 OF DIN EN 50348: 2010-05

<table>
<thead>
<tr>
<th>Section</th>
<th>Inspection point</th>
<th>Inspection interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Safe operational condition of the complete system</td>
<td>12 months</td>
</tr>
<tr>
<td>2</td>
<td>Effectiveness of technical ventilation</td>
<td>Continuously</td>
</tr>
<tr>
<td>3</td>
<td>Overcurrent cut-out</td>
<td>Weekly</td>
</tr>
<tr>
<td>4</td>
<td>Undervoltage cut-out</td>
<td>Weekly</td>
</tr>
<tr>
<td>5</td>
<td>Discharge energy</td>
<td>Weekly</td>
</tr>
<tr>
<td>7</td>
<td>Anti-contact guard</td>
<td>Weekly</td>
</tr>
<tr>
<td>8</td>
<td>Grounding</td>
<td>Weekly</td>
</tr>
<tr>
<td>9</td>
<td>Entry protection</td>
<td>Weekly</td>
</tr>
<tr>
<td>11</td>
<td>Conductive parts of the coating product system</td>
<td>Weekly</td>
</tr>
<tr>
<td>12</td>
<td>Minimum distance in air</td>
<td>Weekly</td>
</tr>
</tbody>
</table>
## TROUBLESHOOTING AND RECTIFICATION

<table>
<thead>
<tr>
<th>Functional fault</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insufficient product output</td>
<td>- Product tube Ø is too small</td>
<td>- Select a larger product tube Ø</td>
</tr>
<tr>
<td></td>
<td>- Product pressure too low</td>
<td>- Increase product pressure</td>
</tr>
<tr>
<td></td>
<td>- Product viscosity too high</td>
<td>- Thin spray product in accordance with</td>
</tr>
<tr>
<td></td>
<td>- Filter in paint supply clogged</td>
<td>the manufacturer’s instructions</td>
</tr>
<tr>
<td></td>
<td>- Product tube blocked</td>
<td>- Clean or replace filter</td>
</tr>
<tr>
<td></td>
<td>- Damaged seals</td>
<td>- Clean or replace the product tube</td>
</tr>
<tr>
<td>Poor spray pattern</td>
<td>- Incorrectly adjusted product pressure</td>
<td>- Readjust product pressure or shaping air</td>
</tr>
<tr>
<td></td>
<td>or shaping air</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Wrong product tube Ø</td>
<td>- Select a different product tube Ø</td>
</tr>
<tr>
<td></td>
<td>- Spray product viscosity too high</td>
<td>- Thin spray product in accordance with</td>
</tr>
<tr>
<td></td>
<td>- Product pressure too high</td>
<td>the manufacturer’s instructions</td>
</tr>
<tr>
<td></td>
<td>- Bell or distributor damaged</td>
<td>- Reduce the product pressure</td>
</tr>
<tr>
<td></td>
<td>- Damaged seals</td>
<td>- Insert a new bell or distributor</td>
</tr>
<tr>
<td>Product tube/valve block leaks</td>
<td>- Damaged seals</td>
<td>- Replace the seals</td>
</tr>
<tr>
<td>Poor wrap-around</td>
<td>- Poor grounding at object</td>
<td>- Check grounding of object or hanger with</td>
</tr>
<tr>
<td></td>
<td>- Paint resistance too high / too low</td>
<td>ohmmeter</td>
</tr>
<tr>
<td>Back-spray</td>
<td>- Object not grounded</td>
<td>- Check the paint resistance</td>
</tr>
<tr>
<td></td>
<td>- Distance between atomizer and work piece</td>
<td>(see Chapter 4.1.1)</td>
</tr>
<tr>
<td></td>
<td>- No shaping air</td>
<td>- Reduce the distance between atomizer and</td>
</tr>
<tr>
<td></td>
<td>- Air-passages damp</td>
<td>work piece</td>
</tr>
<tr>
<td>No wrap-around</td>
<td>- No high-voltage</td>
<td>- Apply the shaping air</td>
</tr>
<tr>
<td></td>
<td>- Check grounding</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Clean and dry air-passages</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Check the paint resistance</td>
<td></td>
</tr>
<tr>
<td>Unusual vibration (noise</td>
<td>- Bell and distributor damaged</td>
<td>- Insert a new bell and distributor</td>
</tr>
<tr>
<td>development)</td>
<td>- Receiver cone or drive turbine damaged</td>
<td>- Replace the drive turbine</td>
</tr>
<tr>
<td></td>
<td>- Check the paint resistance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Check the paint resistance</td>
<td></td>
</tr>
</tbody>
</table>
8 REPAIR WORK

→ Observe safety instructions in Chapter 2.

---

DANGER

Discharge of electrostatically charged components in atmospheres containing solvents!
Explosion hazard from electrostatic sparks or flames.

Before any maintenance work or repair work:
→ Switch off the high voltage.
→ Ground the atomizer and device components.
→ Ensure that a hazardous atmosphere does not exist in the working area (e.g. it is sufficiently ventilated).
→ Ensure that any possible static charging of the casing parts is discharged completely (by means of a grounding rod, for example).

---

WARNING

Incorrect maintenance/repair!
Risk of injury and damage to the device.

→ Repairs and part replacement may only be carried out by specially trained staff or a WAGNER service center.
→ Before all work on the device and in the event of work interruptions:
   - 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.
→ Observe the operating manual and service manuals at all times when carrying out work.

---

WARNING

Defective parts!
Leakage caused by defective parts.
The resulting spray jet can inject product into the body (skin, eyes etc.).

→ Always replace defective parts, o-rings and seal sets.
Defective parts!
Risk of injury and damage to equipment due to defective parts.

→ Always replace defective parts.
8.1 DRIVE UNIT REPLACEMENT
8.1.1 DISASSEMBLING THE DRIVE UNIT

**WARNING**

Incorrect maintenance/repair!
Risk of injury and damage to the device.

→ Protect the receiver cone of the shaft from damage.
→ Tape over the cone or cover it with a protective cap.

1

2

3

4

5
1. Replace bell using the special tool.
2. Turn the casing counterclockwise and pull it off the basic body.
3. Loosen the catch and swing it out and pull the valve block off the adapter plate.
4. Manually loosen the outer ring, unscrew it from the distributor ring and replace the O-ring (use the hook wrench SW 60-90; if required).
5. Manually loosen the distributor ring, unscrew it from support ring and replace the O-rings (use the hook wrench SW 60-90; if required).
6. Loosen the fastening screws using an Allen key size M8. Pull the support ring carefully from the adapter plate.

**Note:**
- The turbine sits loosely on the adapter plate and is held by the support ring.
- Protect the turbine from falling!
- Pull the turbine off of the adapter plate by hand.
7. Pull the air ducts (1) off of the adapter plate and replace the O-rings.
WARNING

Defective parts!
Risk of injury and damage to equipment due to defective parts.

→ Disassembling and repairing the turbine is prohibited!
→ Always replace a damaged turbine.
8.1.2 DRIVE UNIT ASSEMBLY

**WARNING**

Incorrect maintenance/repair!
Risk of injury and damage to the device.

→ Protect the receiver cone of the shaft from damage.
→ Tape over the cone or cover it with a protective cap.

1. Insert the air channels (1), grease the O-rings lightly with Vaseline.
2. Fasten the turbine with new O-rings by hand to the base plate and place the support ring with the new O-rings on the turbine.
3. Screw in the fastening screws (secured with Loctite 222) by hand and tighten them with 10-12 Nm; 7.37-8.85 lbft.

**Note:**

- The positioning pins of the turbine must engage in the drill holes of the adapter plate.
- The positioning pin in the support ring must engage in the drilled hole of the adapter plate.
- Observe the tightening torque for the fastening screw.
- Grease the O-rings lightly with Vaseline.
8.2 VALVE BLOCK REPLACEMENT

8.2.1 VALVE BLOCK DISASSEMBLY
1. **Remove the valve block with product tube from the adapter plate**
   - Remove the product tube from the valve block. Attention: Left-handed thread

2. **Disassemble the valve block**
   - Unscrew the material valve (2) from the valve support (1).
   - Remove the O-rings (4) and (16).
   - Unscrew the screw-in connection elbow joint (3).
   - Unscrew the swivelling screw-in connections (5).

   Remove the flange from the valve support
   - Unscrew the screws (7) from the valve support (1) using an Allen key size M4.
   - Take off the flange (6) and remove the sealing product (8).

**Note:**
- The screw (14) is secured with Loctite 542.
- Only remove the screw if necessary.

Remove the intermediate piece from the flange.
- Loosen the screws (15) using an Allen key size M4, pull the intermediate piece (10) from the flange (6).
- Remove O-rings (11), (13) and (18).

**8.2.2 ASSEMBLING THE VALVE BLOCK**

**Note:**
- Grease the O-rings lightly with Vaseline.

Push in the blade springs (12) on the side and center them in the middle.
Mount the intermediate piece to the flange.
- Insert the intermediate piece (10) into the flange (6) with new O-rings and seals.
- Moisten the screw thread (14) slightly with Loctite 542, insert the screw and screw in using an Allen key size M4.
Mount the add-on pieces to the valve support.
- Screw the flange (6) with the new O-ring to the valve block.
- Moisten the thread of the swivelling screw-in connection (5) slightly with Loctite 270, insert the swivelling screw-in connection into the valve block and screw it in with an open-end wrench.
- Insert the product valves (2) with new O-rings into the valve block.
Note:

→ Observe the torque of 3-5 Nm; 2.21-3.69 lbft.
→ Screw in the product valves (2) and tighten with 3-5 Nm; 2.21-3.69 lbft.

8.3 BELL FLUSHING VALVE REPLACEMENT

8.3.1 BELL FLUSHING VALVE DISASSEMBLY
1. **Remove the bell flushing valve from the connection fitting (4)**

2. **Disassemble the bell flush valve**
   - Unscrew the product valve (1) from the housing (6).
   - Remove the O-rings (2) and (3).
   - Unscrew the swivelling screw-in connection (5) from the housing (6).

### 8.3.2 BELL FLUSHING VALVE ASSEMBLY

**Note:**
- Grease the O-rings lightly with Vaseline.

Assemble the bell flushing valve
- Screw the product valve (1) with new O-rings into the housing (6).
- Screw the swivelling screw-in connection (5) into the housing (6).
- Screw the bell flushing valve into the connection fitting (4).

**Note:**
- Observe the torque of 3-5 Nm; 2.21-3.69 lbft.
- Screw in the product valves (2) and tighten with 3-5 Nm; 2.21-3.69 lbft.
8.4 BEARING TUBE/STAY BAR REPLACEMENT

8.4.1 BEARING TUBE/STAY BAR DISASSEMBLY

Remove the bearing tube

→ Remove the nuts for the bearing tube (4).
→ Unscrew the bearing tube (1) from the clamping piece (2).
→ Remove screw-in connections (5) and (6).
→ Remove the air supply connections (7).
→ Remove the connection plug (8).

Note:
→ The screw-in connections (5) and (6), air connections (7) and connection plug (8) are secured with Loctite 542. Torque (7, 8) 8±1 Nm; 5.9 ± 0.74 lbft.

Remove the stay bars

→ Take the clamping piece (2) off from the stay bars (9).
→ Remove the stay bars (9) from the adapter plate (10).

Note:
→ The stay bars (9) are secured with Loctite 542.
8.4.2 BEARING TUBE/STAY BAR ASSEMBLY

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Damage to the turbine!</td>
</tr>
<tr>
<td>Soiling of the supply lines, in particular of the bearing air cause damage to the turbine. Stay bars and connection fittings have to be sealed tight with Loctite 542.</td>
</tr>
<tr>
<td>➔ Be sure to avoid soiling of the supply lines due to excessive use of bonding agent!</td>
</tr>
<tr>
<td>➔ Never use PTFE tape or similar thread sealants.</td>
</tr>
</tbody>
</table>

Mount the stay bars and bearing tube

➔ Moisten the ends of the bearing tubes (9) with Loctite 542 slightly and insert them into the adapter plate (10).
➔ Insert the clamping piece (2) at the ends of the stay bars (9).
➔ Slightly moisten the ends of the screw-in connections (5) and (6), the air connections (7) and the end of the connection plug (8) with Loctite 542 and insert it into the clamping piece (2).
➔ Screw the bearing tube (1) into the clamping piece (2).
➔ Tighten the nuts for the bearing tube (4).
9 ACCESSORIES

9.1 PRODUCT TUBES (ATTENTION: LEFT-HANDED THREAD)

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Description</th>
<th>Volume flow (ml/min; cc/min)</th>
<th>Bore (mm; inch)</th>
</tr>
</thead>
<tbody>
<tr>
<td>387151</td>
<td>Product tube d 0.8</td>
<td>270; (270)</td>
<td>0.8; 0.031</td>
</tr>
<tr>
<td>387152</td>
<td>Product tube d 1.1</td>
<td>470; (470)</td>
<td>1.1; 0.043</td>
</tr>
<tr>
<td>387153</td>
<td>Product tube d 1.6</td>
<td>700; (700)</td>
<td>1.6; 0.063</td>
</tr>
<tr>
<td>387154</td>
<td>Product tube d 2.2</td>
<td>1040; (1040)</td>
<td>2.2; 0.087</td>
</tr>
<tr>
<td>2303890</td>
<td>Product tube T d 1.6</td>
<td>700; (700)</td>
<td>1.6; 0.063</td>
</tr>
<tr>
<td>2303891</td>
<td>Product tube T d 2.0</td>
<td>900; (900)</td>
<td>2.0; 0.079</td>
</tr>
</tbody>
</table>

*Water volume flow at approx. 0.01 MPa; 1 bar; 14.5 psi product pressure*
## 9.2 Bells

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Description</th>
<th>d mm; inch</th>
</tr>
</thead>
<tbody>
<tr>
<td>387108</td>
<td>Bell 36 aluminum</td>
<td>36; 1.42</td>
</tr>
<tr>
<td>387109</td>
<td>Bell 50 aluminum</td>
<td>50; 1.97</td>
</tr>
<tr>
<td>387110</td>
<td>Bell 70 aluminum</td>
<td>70; 2.76</td>
</tr>
<tr>
<td>2303928</td>
<td>Bell T 70 aluminum</td>
<td>70; 2.76</td>
</tr>
</tbody>
</table>

## 9.3 Distributor

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Description</th>
<th>Hole pattern dimensions in mm; inch</th>
</tr>
</thead>
<tbody>
<tr>
<td>387138</td>
<td>Distributor offset 36 (32 x d 1.5)</td>
<td>32 x Ø 1.5</td>
</tr>
<tr>
<td>2357614</td>
<td>Distributor 36 Al (32 x d 1.5)</td>
<td>32 x Ø 1.5</td>
</tr>
<tr>
<td>387135</td>
<td>Distributor offset 36 (20 x d 2.3)</td>
<td>20 x Ø 2.3</td>
</tr>
<tr>
<td>2357610</td>
<td>Distributor 36 Al (20 x d 2.3)</td>
<td>20 x Ø 2.3</td>
</tr>
<tr>
<td>387139</td>
<td>Distributor offset 50 (32 x d 1.5)</td>
<td>32 x Ø 1.5</td>
</tr>
<tr>
<td>2348399</td>
<td>Distributor 50 Al (32 x d 1.5)</td>
<td>32 x Ø 1.5</td>
</tr>
<tr>
<td>387136</td>
<td>Distributor offset 50 (20 x d 2.3)</td>
<td>20 x Ø 2.3</td>
</tr>
<tr>
<td>2351468</td>
<td>Distributor 50 Al (20 x d 2.3)</td>
<td>20 x Ø 2.3</td>
</tr>
<tr>
<td>387140</td>
<td>Distributor offset 70 (32 x d 1.5)</td>
<td>32 x Ø 1.5</td>
</tr>
<tr>
<td>2351452</td>
<td>Distributor 70 Al (32 x d 1.5)</td>
<td>32 x Ø 1.5</td>
</tr>
<tr>
<td>387137</td>
<td>Distributor offset 70 (20 x d 2.3)</td>
<td>20 x Ø 2.3</td>
</tr>
<tr>
<td>2351321</td>
<td>Distributor 70 Al (20 x d 2.3)</td>
<td>20 x Ø 2.3</td>
</tr>
<tr>
<td>2303925</td>
<td>Distributor offset T 70 (1 x d 2.0)</td>
<td>1 x Ø 2.0</td>
</tr>
</tbody>
</table>

## 9.4 Air Guide

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>387103</td>
<td>Air guide 36 assembly</td>
</tr>
<tr>
<td>387104</td>
<td>Air guide 50 assembly</td>
</tr>
<tr>
<td>387105</td>
<td>Air guide 70 assembly</td>
</tr>
<tr>
<td>2303933</td>
<td>Air guide T 70 assembly</td>
</tr>
</tbody>
</table>
## 9.5 Valve Block

<table>
<thead>
<tr>
<th>Order number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>387116</td>
<td>Valve block assembly 2M/2D/2F EB3500</td>
</tr>
<tr>
<td>387117</td>
<td>Valve block assembly 1M/1D/1F EB3500</td>
</tr>
</tbody>
</table>

## 9.6 Resistance Block

<table>
<thead>
<tr>
<th>Order number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>387102</td>
<td>Resistance block</td>
</tr>
<tr>
<td>387335</td>
<td>Support plate</td>
</tr>
<tr>
<td>9900758</td>
<td>Socket cap screw</td>
</tr>
</tbody>
</table>

## 9.7 High-Voltage Cable with Plug/Eyelet

<table>
<thead>
<tr>
<th>Order number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9956066</td>
<td>HV cable (per meter, no fabrication)</td>
</tr>
<tr>
<td>9956067</td>
<td>HV connector plug</td>
</tr>
<tr>
<td>9956071</td>
<td>M5 HV connection eyelet</td>
</tr>
<tr>
<td>9956072</td>
<td>M6 HV connection eyelet</td>
</tr>
<tr>
<td>9956073</td>
<td>M8 HV connection eyelet</td>
</tr>
</tbody>
</table>
### 9.8 HOSES

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Description</th>
<th>Dimensions $\phi \times \phi$ (mm:inch)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9982072</td>
<td>PUR air hose, black (per meter)</td>
<td>2.5 x 4; 0.10 x 0.16</td>
</tr>
<tr>
<td>9981914</td>
<td>PUR air hose, blue (per meter)</td>
<td>6 x 8; 0.24 x 0.31</td>
</tr>
<tr>
<td>9987116</td>
<td>PUR air hose, blue (per meter)</td>
<td>8 x 10; 0.31 x 0.40</td>
</tr>
<tr>
<td>9987004</td>
<td>PTFE product hose transparent (per meter)</td>
<td>4 x 6; 0.16 x 0.24</td>
</tr>
</tbody>
</table>

### 9.9 AIR FILTER

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9999330</td>
<td>40 $\mu$m air filter</td>
</tr>
<tr>
<td>9999331</td>
<td>5 $\mu$m air filter</td>
</tr>
<tr>
<td>9999332</td>
<td>0.01 $\mu$m air filter</td>
</tr>
<tr>
<td>9999334</td>
<td>40 $\mu$m filter cartridge</td>
</tr>
<tr>
<td>9999335</td>
<td>5 $\mu$m filter cartridge</td>
</tr>
<tr>
<td>9999336</td>
<td>0.01 $\mu$m filter cartridge</td>
</tr>
</tbody>
</table>
9.10 SPEED/BEARING AIR MONITORING

<table>
<thead>
<tr>
<th>Order number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>387100</td>
<td>Speed sensor</td>
</tr>
<tr>
<td>387101</td>
<td>Optical fiber</td>
</tr>
<tr>
<td>9956125</td>
<td>Pressure switch</td>
</tr>
<tr>
<td>9956126</td>
<td>Cable for pressure switch</td>
</tr>
</tbody>
</table>

9.11 ELBOW SCREW-IN CONNECTIONS

<table>
<thead>
<tr>
<th>Order number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>387267</td>
<td>Elbow screw-in connection assembly d6/4</td>
</tr>
<tr>
<td>2357826</td>
<td>Elbow screw-in connection assembly d8/5</td>
</tr>
</tbody>
</table>

9.12 MISCELLANEOUS

<table>
<thead>
<tr>
<th>Order number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>387903</td>
<td>Valve plug set</td>
</tr>
<tr>
<td>387190</td>
<td>Adjusting and mounting tool d 36</td>
</tr>
<tr>
<td>387191</td>
<td>Adjusting and mounting tool d 50</td>
</tr>
<tr>
<td>387192</td>
<td>Adjusting and mounting tool d 70</td>
</tr>
<tr>
<td>387980</td>
<td>Articulated hook wrench 90/5</td>
</tr>
</tbody>
</table>
10 SPARE PARTS

10.1 HOW CAN SPARE PARTS BE ORDERED?

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

Order number, designation and quantity
The quantity need not be the same as the number given in the quantity column “Stk” on the list. This number merely indicates how many of the respective parts are used in each component.

The following information is also required to ensure smooth processing of your order:
- Address for the invoice
- Address for delivery
- Name of the person to be contacted in the event of any queries
- Type of delivery (normal mail, express delivery, air freight, courier etc.)

Identification in spare parts lists.

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

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

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

⚠️ WARNING

Incorrect maintenance/repair!
Risk of injury and damage to the device.

- Repairs and part replacement may only be carried out by specially trained staff or a WAGNER service center.
- Before all work on the device and in the event of work interruptions:
  - 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.
- Observe the operating manual and service manuals at all times when carrying out work.
10.2  EVOBELL 3500 SPARE PARTS LIST
## Evobell 3500 Spare Parts List

<table>
<thead>
<tr>
<th>Pos</th>
<th>K</th>
<th>Stk</th>
<th>Order No.</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>♦</td>
<td>1</td>
<td>3871..</td>
<td>Distributor --&gt; see accessories</td>
</tr>
<tr>
<td>2</td>
<td>♦</td>
<td>1</td>
<td>3871..</td>
<td>Bell --&gt; see accessories</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>387941</td>
<td>Outside ring 36 mm; 1.42 inch</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>387943</td>
<td>Outside ring 50 mm; 1.97 inch</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>387945</td>
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♦ = Wearing parts  
♦ = Not part of the standard equipment but available as a special accessory  
★ = Included in service set  
* = Number depends of the valve block model
### Evobell 3500 spare parts list

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◆ = Wearing parts  
● = Not part of the standard equipment but available as a special accessory  
★ = Included in service set  
* = Number depends of the valve block model
## Service sets and spare part modules

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Order no. 387841

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