

**LEADING IN  
PRODUCTION  
EFFICIENCY**



## **EcoGun 249**

### **Manual spray boiler pistol**

#### **Operation manual**

MSG00014EN, V02

N36200007V

### Information about the document

This document describes the correct handling of the product.

- Read the document prior to every activity.
- Prepare the document for the application.
- Pass on the product only together with the complete documentation.
- Always follow safety instructions, handling instructions and specifications of every kind.
- Illustrations can deviate from the technical construction.

### Validity range of the document

This document describes the following product:

N36200007V  
EcoGun 249



### Hotline and Contact

If you have queries or would like technical information, please contact your dealer or sales partner.

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## 1 Product overview

### 1.1 Overview

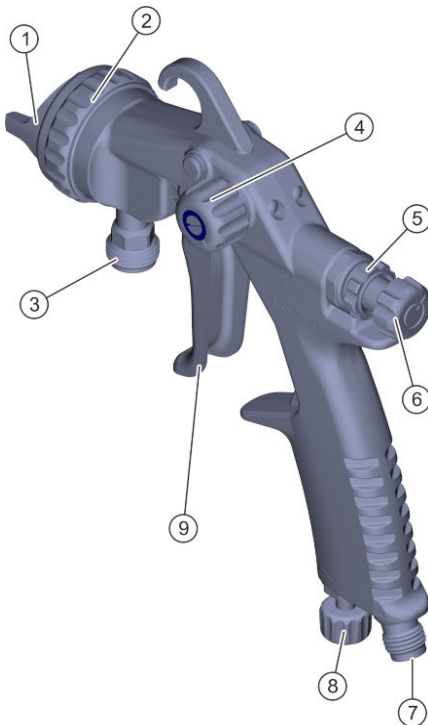


Fig. 1: Overview

- 1 Air cap
- 2 Cap nut
- 3 Material connection
- 4 Flat jet control
- 5 Locknut
- 6 Material flow control
- 7 Air connection
- 8 Air control

### 9 Trigger

### 1.2 Short description

The spray gun is intended for surface coating. Compressed air is used to apply material. The coating material is fed through lines. The spray gun is hand-held.

Use a suitable nozzle set with air cap, depending on the requirement ↪ 6.3 “Selecting air cap”.

The following factors influence the spray jet and therefore the result:

- Alignment of the air cap ↪ 6.5 “Alignment of the air cap”
- Material quantity ↪ 5 “Commissioning”
- Air pressure ↪ 5 “Commissioning”
- Horn pressure ↪ 5 “Commissioning”

The spray gun uses a self-adjusting needle package. The needle packing automatically regulates the material-related wear of the needle gland seal. In addition, the needle packing can be readjusted mechanically.

## 2 Safety

### 2.1 Presentation of Notes

The following notes can appear in this instruction:



High risk situation that can lead to serious injuries or death.



Medium risk situation that can lead to serious injuries or death.



**CAUTION!**

Low risk situations that can lead to minor injuries.



**NOTICE!**

Situations that can lead to material damage.



**ENVIRONMENT!**

Situations that can lead to environmental damage.



Additional information and recommendations.

**2.2 Intended Use**

**Use**

The **EcoGun 249** spray gun is used exclusively for manual coating of surfaces. Compressed air is used to apply material.

The material is fed via a pressure line.

The use is only permitted in the industrial area within the specified technical data ↗ 11 "Technical data".

The atomizer is approved for use in explosive areas of Ex zones 1 and 2.

**Misuse**

Not using as intended entails danger to life.

Examples of wrong use are:

- Aiming the spray gun at humans or animals.
- Use of unapproved materials
- Installation of unapproved components and components that are not approved for operation by Dürr Systems.
- Atomize liquid nitrogen.
- Conduct work on the application device without the recommended personal protective equipment.
- Use in areas with Ex zone 0
- Making conversions or changes on your own.

**Ex labeling**

 II 2G T60°C X

- II - Device group II: all areas except mining
- 2G - Device category 2 for gas
- T60 °C - Surface temperature, max. 60°C
- X - Specific operating conditions for safe operation

The following conditions must be observed for safe operation:

- Ground spray gun and work piece.
- Only use conductive air hoses.
- Ensure that static electricity can be discharged.
- Use compressed air quick release couplings exclusively for non-flammable materials.

## 2.3 Staff qualification



### WARNING!

#### Inadequate qualification

Wrong estimation of dangers can cause serious injury or death.

- Only sufficiently qualified persons may execute all work.
- Some work requires additional qualification. Additional qualifications of specialized personnel are marked with a "+".

This document is intended for qualified personnel in industry and craftsmanship.

The following describes the different qualifications required for the work in this document. The required qualification is presented prior to the individual tasks in the appropriate chapters.

#### Operator

The operator is trained specifically for the field of work in which he works.

Furthermore, the operator possesses the following knowledge:

- Technical Measures for occupational safety and health

The operator is responsible for the following work:

- Operate and monitor the system/ product.
- Introduce measures in the event of faults.
- Clean system/ product.

#### + additional qualification explosion protection

In addition to the knowledge of the various specialist fields, the mechanic has knowledge of regulations and safety measures when working in potentially explosive areas.

Dürr Systems offers special product training for ☎ "Hotline and Contact".

## 2.4 Personal protective equipment

When working in explosive areas, the protective clothing, including gloves, must meet the requirements of EN 1149-5. Footwear must meet the requirements of ISO 20344 and IEC 61340-4-3. The volume resistivity must not exceed 100MΩ.

Wear the specified personal protective equipment when working. Provide the following personal protective equipment:



#### Eye protection

Protects eyes from dust, paint drops and particles.



#### Protective gloves

Protect the hands from:

- mechanical forces
- Thermal forces
- Chemical effects



#### Protective workwear

Tight fitting workwear with low tear strength, tight sleeves and no hanging parts.



#### Respiratory protection device

The respiratory protection device protects from hazardous gases, vapors, dust and similar materials and media. The version of the respiratory protection device must be suitable for the media used as well as their usage.



#### Safety boots

Protect feet from crushing, falling items and slipping.



#### Use ear protection

Protects from auditory damage due to noise.

## 2.5 Residual risks

### Explosion

Sparks, open flames and hot surfaces can cause explosions in explosive atmospheres. Serious injury and death could be the consequence.

- Before carrying out any work, make sure that there is no explosive atmosphere.
- Do not use sources of ignition and open light.
- Do not smoke.
- Ground the spray gun.
- Ground the work piece.
- Only use conductive lines.
- Use compressed air quick release couplings exclusively for non-flammable materials.

Flammable coating materials and their detergents and cleaning agents can cause a fire or an explosion.

- Ensure that the flashpoint of the cleaning agent is at least 15K above the ambient temperature or clean Product at the cleaning areas with active technical ventilation, in painting booths, according to EN 16985.
- Note explosion group of the fluid.
- Follow the safety data sheet.
- Ensure that forced ventilation and fire protection equipment are in operation.
- Do not use sources of ignition and open light.
- Do not smoke.
- Ground the spray gun.

### Danger from harmful or irritant substances

Serious injuries or death can result if you come into contact with dangerous fluids or steam.

- Product Check regularly for leakage. Observe local regulations and maintenance schedule.
- Ensure that the forced ventilation is operational.
- Follow the relevant safety data sheets.
- Wear specified protective equipment.

### Escaping material

Material escaping under pressure can cause serious injuries.

Before working on the product:

- Disconnect the system, in which the product is installed, from compressed air and material supply.
- Secure system personalized from being switched on again.
- Depressurize the lines.

### Noise

The sound pressure level during operation may cause severe hearing damage.

- Wear ear protection.
- Do not spend more time than necessary in the work area.

### Hot surfaces

During operation, the surfaces of components can get extremely hot. Contact with it can cause burns.

- Do not touch hot surfaces.
- Before carrying out any work:
  - Let components cool down.
  - Wear protective hand gloves.

### 3 Transport, scope of supply and storage

#### 3.1 Scope of delivery

The scope of supply includes the following components:

- Spray gun
- Tool kit ↪ 12.2 “Tools”

Inspect delivery on receipt for completeness and integrity.

Report defects immediately ↪ “Hotline and Contact”.

#### 3.2 Handling of packaging material



#### **ENVIRONMENT!**

##### **Incorrect disposal**

Incorrectly disposed packaging material can damage environment.

- Dispose of material no longer required in an environment-friendly manner.
- Observe local disposal specifications.

#### 3.3 Storage

Storage provisions:

- Do not store outdoors.
- Product only store when in a clean and dry condition.
- Store in a dust-free place.
- Do not expose to aggressive media.
- Protect from solar radiation.
- Avoid mechanical vibrations.
- Temperature: 10°C to 40°C
- Relative humidity: 35% to 90%

### 4 Assembly

#### 4.1 Requirements for the Installation point

- The compressed air supply to the spray gun must be interrupted and secured against reconnection.
- The compressed air supply must be adjustable.
- Lines, seals and screw connections must be designed to conform to the requirements of the spray gun ↪ 11 “Technical data”.
- The workplace must have a mechanical ventilation.

#### **Working environment and grounding**

The flooring of the working area must be anti-static acc. to EN 50050-1, measurement after EN 1081. The antistatic flooring prevents electrostatic charges from building up. Dangerous flashovers are prevented.



### 4.2 Assembly

Protective equipment:

- Protective workwear
- Protective gloves

1.



#### **WARNING!**

Sources of ignition may cause explosions!

Ensure a non-explosive atmosphere.

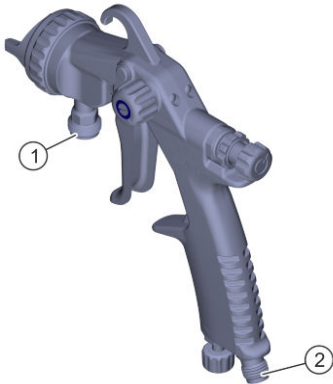


Fig. 2: Assembly

2. Connect lines. Ensure correct assignment.

- 1 - Material
- 2 - Atomizer air

- Respiratory protection device
- Use ear protection

Requirements:

- Material hose and air hose were assembled ↪ 4.2 "Assembly".
1. Rinse the spray gun before filling it with paint ↪ 6.7 "Purging":
    - For easily flammable coating materials with solvent
    - For not easily flammable coating materials with water
  2. Create a trial spray pattern on a test work piece.

## 5 Commissioning

Protective equipment:

- Protective gloves
- Safety boots
- Protective workwear
- Eye protection

### Setting the spray pattern

### Setting the material flow

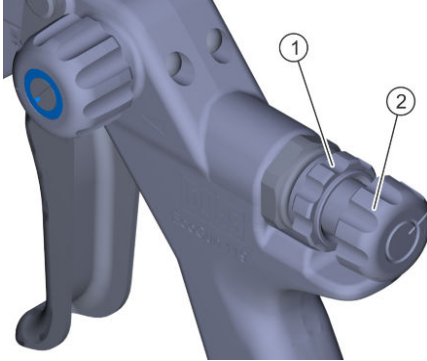


Fig. 3: Setting the material flow

1. Set the material quantity.
  - Loosen locknut (1).
  - Turn set screw (2) in required direction.
    - Right turn: less material
    - Left turn: more material
  - Tighten locknut (1).



Turn stop screw to the right but not up to the stop. The needle can then no longer move properly.

Reduce the material quantity with a smaller nozzle set, not with the material flow control. The material quantity is increased with a larger nozzle set.

### Set total air pressure

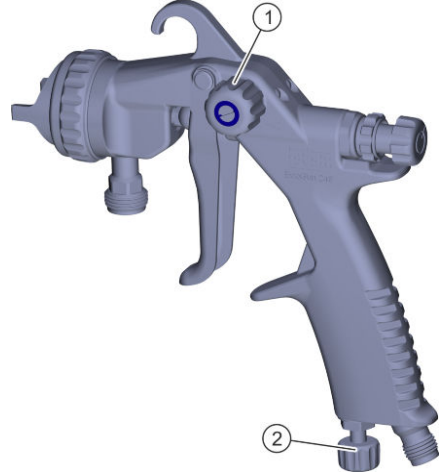


Fig. 4: Setting the total air and jet width

2. Set the total air pressure by turning the total air control (2).
  - Right turn: Lower total air pressure
  - Left turn: higher total air pressure



Observe the following characteristic curve.

### Set horn air pressure

3. Set horn air pressure by turning the flat jet control (1).
  - Right turn: Flat jet minimum
  - Left turn: Flat jet maximum



You can turn the flat jet control continuously and adjust the spray pattern from flat to round jet.

### Characteristic curves

The characteristic curves show the air flow rate for various nozzle sets and air caps for different air pressures.

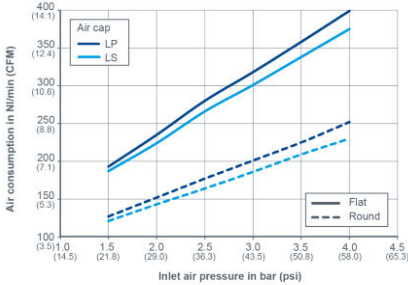


Fig. 5: Characteristic curve

LP Nozzle set with air cap LP  
 LS Nozzle set with air cap LS  
 X-Achse Atomizer air pressure and control air pressure [bar (psi)]  
 Y-Achse Flow rate Air consumption [Nl/min (CFM)]

## 6 Operation

### 6.1 Safety recommendations



#### WARNING!

#### Danger of explosion due to chemical reactions

Material, halogenated hydrocarbon-based rinsing agent or cleaning agent can chemically react with aluminum components of the product. Chemical reactions can cause explosions. Serious injury and death could be the consequence.

- Only use purging agents and cleaning agents that do not contain any halogenated hydrocarbons.

#### ! NOTICE!

#### Material damage due to dried material residues

If material residues dry in the product, that can harm components.

- Purge product immediately after each use.

### 6.2 General notes

- Perform the following checks during operation:
  - Check O-rings for correct seating and tightness.
  - Check air car for cleanliness.
  - Check nozzle for cleanliness.

### 6.3 Selecting air cap

You can convert the spray gun for various uses by swapping the air cap.

#### Air cap LP

The air cap LP is used for low-viscosity (up to 30 s/DIN cup, 4 mm) flammable coating materials (1-component paints and 2-component paints) and non-flammable coating materials. The air cap is used primarily for the final painting.

#### Air cap LS

The air cap LS is used for abrasive coating materials such as enamel and glaze.

## 6.4 Changing the air cap

Protective equipment:

- Protective workwear
- Protective gloves

### Removing the air cap

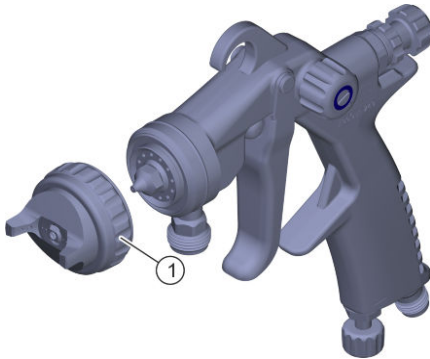


Fig. 6: Removing the air cap

1. Loosen cap nut (1).
2. Remove the air cap (1).

### Assembling air cap

3. Place the air cap (1).
4. Align the air cap as required ↪ 6.5  
"Alignment of the air cap".
5. Tighten cap nut (1).

## 6.5 Alignment of the air cap

Personnel:

- Operator
- + additional qualification explosion protection

Protective equipment:

- Protective workwear
- Protective gloves

The position of the air cap determines the alignment of the spray pattern.

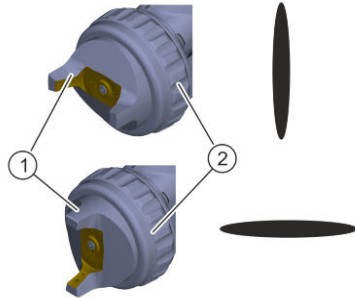


Fig. 7: Air cap alignment

1. Lightly loosen cap nut (2).
2. Turn the air cap (1) as required for the desired spray pattern.
3. Tighten cap nut (2) by hand.

## 6.6 Guiding the spray gun

Protective equipment:

- Protective gloves
- Safety boots
- Protective workwear
- Eye protection
- Respiratory protection device
- Use ear protection

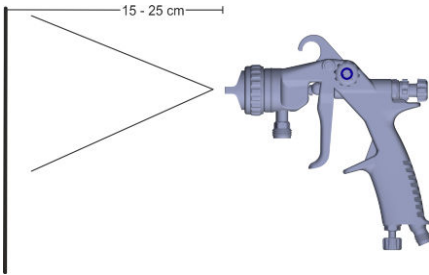


Fig. 8: Guiding the paint gun

1. Guide the spray gun as follows:
  - Guide spray gun at 90 degrees to the surface.
  - Maintain a distance of 15 to max. 25 cm to the surface.



The distance can vary for effect coatings.

## 6.7 Purging

### 6.7.1 Safety recommendations

#### ! NOTICE!

#### Material damage due to unsuitable rinsing agent

If the rinsing agent reacts chemically with the components or the material, components get damaged.

- Use only the rinsing agents that are compatible with the components and the material.
- Refer to safety data sheet of material manufacturer.

### 6.7.2 General notes

When purging, use fluid to remove inner soiling from components.


### 6.7.3 Purging spray gun

Protective equipment:

- Use ear protection
- Eye protection
- Respiratory protection device
- Protective workwear
- Protective gloves

Purging spray gun:

- After end of work
- Before every change of material
- Prior to cleaning
- Prior to dismantling
- Before a long time of non-use
- Before placing in storage

 Additional purging intervals depend on the material used.

### Preparation for purging

1. Disconnect the air hose from the spray gun.

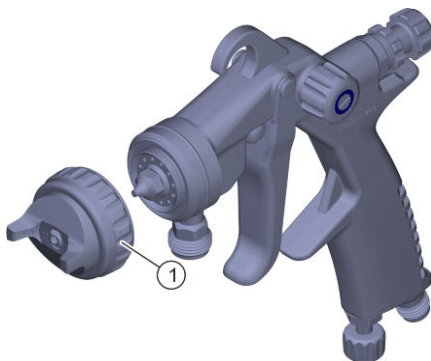


Fig. 9: Removing the air cap

2. Loosen cap nut (1).
3. Remove the air cap (1).

### Purging

4. Keep collecting tray ready.

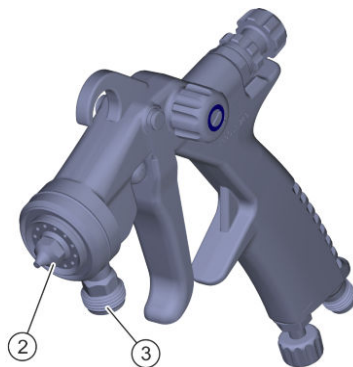


Fig. 10: Purging spray gun

5. Keep the spray gun slightly at an angle above the collecting tray, nozzle pointing towards the ground.
6. Purge the spray gun with an appropriate rinsing agent through the material connection (3), until the rinsing agent runs clean without any material residue. Use a brush to carefully clean the nozzle holes (2).
7. Ensure proper disposal of the exiting material and rinsing agent.
8. Connect the compressed air hose to the spray gun.
9. Operate trigger lever until no more rinsing agent flows out.

### Final work

10. Place the air cap (1).
11. Tighten cap nut (1).

## 7 Cleaning

### 7.1 Safety recommendations



#### **WARNING!**

##### **Danger of fire and explosion**

Flammable coating materials and their detergents and cleaning agents can cause a fire or an explosion.

- Ensure that the flashpoint of the cleaning agent is at least 15K above the ambient temperature or clean product at the cleaning areas with active technical ventilation, in painting booths, according to EN 16985.
- Note explosion group of the fluid.
- Observe the security data sheets of the media being used.
- Ensure that forced ventilation and fire protection equipment are in operation.
- Do not use sources of ignition and open light.
- Do not smoke.
- Check grounding.



#### **WARNING!**

##### **Unsuitable spare parts in explosive areas**

Spare parts not compliant with the specifications of the ATEX directives can cause explosions in an explosive atmosphere. Serious injury and death could be the consequence.

- Use exclusively original spare parts.



#### **WARNING!**

##### **Danger from harmful or irritant substances**

Serious injuries or death can result if you come into contact with dangerous fluids or steam.

- Product Check regularly for leakage. Observe local regulations and maintenance schedule.
- Ensure that the forced ventilation is operational.
- Follow the relevant safety data sheets.
- Wear specified protective equipment.
- Avoid contact (e.g. with eyes, skin).



#### **WARNING!**

##### **Escaping material and compressed air**

Escaping material under pressure can cause serious injuries.

Before carrying out any work:

- Disconnect the system, in which the product is installed, from compressed air and material supply.
- Secure system personalized from being switched on again.
- Depressurize the lines.



**WARNING!**

**Danger of explosion due to chemical reactions**

Material, halogenated hydrocarbon-based rinsing agent or cleaning agent can chemically react with aluminum components of the product. Chemical reactions can cause explosions. Serious injury and death could be the consequence.

- Only use purging agents and cleaning agents that do not contain any halogenated hydrocarbons.



**CAUTION!**

**Risk of injury due to spring tension**

The set screw of the spray gun is under spring tension. If you remove the set screw, the spring tension could cause the set screw to jump out unexpectedly and cause light injuries.

- Remove and install set screw.



**NOTICE!**

**Unsuitable cleaning agents**

Unsuitable cleaning agents can damage the product.

- Only use cleaning agents approved by the material manufacturer.
- Follow safety data sheets.
- Place heavily soiled components in a cleaning bath.
  - Only place those parts in the cleaning bath, which are suitable for the cleaning bath.
  - Use only electrically conductive containers.
  - Ground the container.
  - Do not use ultrasound baths.

- Use alcohols (isopropanol, butanol) for non-flammable coating materials.
- Remove dried non-flammable coating materials using a material manufacturer-approved organic thinner.
- When cleaning with flammable detergent, do not spray into a closed container. An explosive gas-air mixture can form inside closed containers.



**NOTICE!**

**Damage due to unsuitable cleaning tools**

Unsuitable cleaning tools can damage the product.

- Only use cloths, soft brushes and paintbrushes.
- Do not use abrasive cleaning tools.
- Do not poke blocked nozzles with metallic objects.
- Do not use compressed air for cleaning.
- Do not use any thinner spray guns.
- Do not use high pressure for cleaning agents.

**7.2 Cleaning**

Protective equipment:

- Use ear protection
- Eye protection
- Respiratory protection device
- Protective workwear
- Protective gloves

1. Purge spray gun ↪ 6.7 “Purging”.
2. Separate material hose and air hose from the spray gun.



3. Remove material residues with a cloth or a soft brush.
4. Clean the spray gun carefully and dry it with a soft cloth.

### Cleaning the air cap und nozzle

Protective equipment:

- Protective workwear
- Protective gloves

For a thorough cleaning you can remove the air cap and the nozzle.

### Disassembly

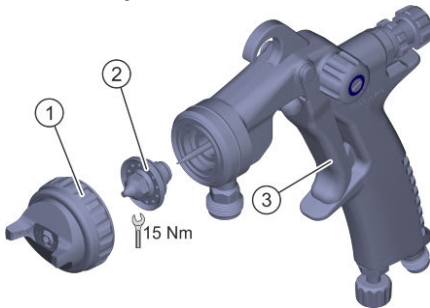


Fig. 11: Disassemble air cap and nozzle

1. Loosen cap nut (1).
2. Remove air cap (1).
3. Push trigger lever (3) through. Keep it pressed.  
⇒ The needle is pushed backwards so that it will not be damaged during disassembly of the nozzle.
4. Unscrew nozzle (2) and remove using monkey wrench.
5. Release the trigger lever (3).

6. Clean air cap using cleaning agent and cleaning brush ↪ 12.2 "Tools".
7. Wipe the cleaned air cap dry with a cloth.
8. Clean the nozzle in the cleaning bath.
9. Clean nozzle seat with a cloth or a soft brush.

### Assembly

10. Push trigger lever (3) through. Keep it pressed.  
⇒ The needle is pushed backwards so that it will not be damaged during assembly of the nozzle.
11. Insert and tighten nozzle (2).  
Tightening torque: 15Nm
12. Release the trigger lever (3).
13. Fit air cap (1).
14. Tighten cap nut (1).

## 8 Maintenance

### 8.1 Safety recommendations



#### **WARNING!**

##### **Danger of fire and explosion**

Flammable coating materials and their detergents and cleaning agents can cause a fire or an explosion.

- Ensure that the flashpoint of the cleaning agent is at least 15K above the ambient temperature or clean product at the cleaning areas with active technical ventilation, in painting booths, according to EN 16985.
- Note explosion group of the fluid.
- Observe the security data sheets of the media being used.
- Ensure that forced ventilation and fire protection equipment are in operation.
- Do not use sources of ignition and open light.
- Do not smoke.
- Check grounding.



#### **WARNING!**

##### **Unsuitable spare parts in explosive areas**

Spare parts not compliant with the specifications of the ATEX directives can cause explosions in an explosive atmosphere. Serious injury and death could be the consequence.

- Use exclusively original spare parts.



#### **WARNING!**

##### **Danger from harmful or irritant substances**

Serious injuries or death can result if you come into contact with dangerous fluids or steam.

- Product Check regularly for leakage. Observe local regulations and maintenance schedule.
- Ensure that the forced ventilation is operational.
- Follow the relevant safety data sheets.
- Wear specified protective equipment.
- Avoid contact (e.g. with eyes, skin).



#### **WARNING!**

##### **Escaping material and compressed air**

Escaping material under pressure can cause serious injuries.

Before carrying out any work:

- Disconnect the system, in which the product is installed, from compressed air and material supply.
- Secure system personalized from being switched on again.
- Depressurize the lines.



**WARNING!**

**Danger of explosion due to chemical reactions**

Material, halogenated hydrocarbon-based rinsing agent or cleaning agent can chemically react with aluminum components of the product. Chemical reactions can cause explosions. Serious injury and death could be the consequence.

- Only use purging agents and cleaning agents that do not contain any halogenated hydrocarbons.



**CAUTION!**

**Risk of injury due to spring tension**

The set screw of the spray gun is under spring tension. If you remove the set screw, the spring tension could cause the set screw to jump out unexpectedly and cause light injuries.

- Remove and install set screw.



**NOTICE!**

**Unsuitable cleaning agents**

Unsuitable cleaning agents can damage the product.

- Only use cleaning agents approved by the material manufacturer.
- Follow safety data sheets.
- Place heavily soiled components in a cleaning bath.
  - Only place those parts in the cleaning bath, which are suitable for the cleaning bath.
  - Use only electrically conductive containers.
  - Ground the container.
  - Do not use ultrasound baths.

- Use alcohols (isopropanol, butanol) for non-flammable coating materials.
- Remove dried non-flammable coating materials using a material manufacturer-approved organic thinner.
- When cleaning with flammable detergent, do not spray into a closed container. An explosive gas-air mixture can form inside closed containers.



**NOTICE!**

**Damage due to unsuitable cleaning tools**

Unsuitable cleaning tools can damage the product.

- Only use cloths, soft brushes and paintbrushes.
- Do not use abrasive cleaning tools.
- Do not poke blocked nozzles with metallic objects.
- Do not use compressed air for cleaning.
- Do not use any thinner spray guns.
- Do not use high pressure for cleaning agents.

## 8.2 Maintenance schedule



If a maintenance assistant is used in the system visualizer, the maintenance intervals of the maintenance assistant are valid.

The maintenance intervals given below are based on experiential values. Adjust maintenance intervals individually with increased requirements.

Interval	Maintenance work
After each use	Clean ↪ 7 "Cleaning".
Daily	Check state and tightness of the spray gun as well as of the connections and lines.
Weekly	Lubricate lever bearing ↪ 8.3 "Lubrication".

## 8.3 Lubrication

The following components must be lubricated with a silicone-free grease:

- O-rings and seals
- Bearing
- Set screw and threads
- Needle gland
- Lever bearing



Lubricate internal components at the time of maintenance work, which include disassembly of the concerned components any way.

Recommended lubricant: SYN-THESO GLEP 1 ↪ 11.9 "Operating and auxiliary materials"

## 9 Faults

### 9.1 Safety recommendations

#### **! NOTICE!**

##### **Property damage due to improper replacement of needle and nozzle**

Replacing only the needle or only the nozzle could damage spray gun components. This can compromise the tightness of the spray gun. The spray pattern deteriorates.

- Observe order of replacement steps (needle – nozzle).
- Observe order of assembly steps (nozzle – needle).
- Always replace nozzle and needle at the same time.






### **! NOTICE!**

#### **Property damage due to improper handling**

Mechanical load can damage needle and nozzle.

- Handle with care during installation and dismantling.
- Do not subject the needle to any mechanical pressure.
- Avoid collisions of components to be assembled and disassembled with the needle.
- Do not excessively tighten components.

## 9.2 Defects table

Visualizer of typical spray pattern problems		
Spray pattern	Fault identification	
	Spray jet is distorted.	
	Spray jet is bent or tapered.	
	Spray jet is too thick in the middle.	
	Spray jet is split.	
	Spray jet is uneven.	

Fault description	Cause	Remedy
No material	Line pinched or broken	Check the line.
Material escapes at the needle gland.	Needle gland worn out	Replace needle gland ↗ 9.3.3 "Replace needle gland".
	Needle gland loose	Tighten needle gland sensitively.
Air escapes between valve pin and housing.	Valve seal worn out	Replace valve seal ↗ 9.3.2 "Replace valve set".
Spray gun is losing air with non-actuated trigger.	Valve pin or valve seat is defective or worn.	Replace the valve pin or valve seat ↗ 9.3.2 "Replace valve set".

Fault description	Cause	Remedy
Spray jet is distorted.	Air cap is misaligned	Rotate air cap into the required position ↪ 6.5 "Alignment of the air cap".
Spray jet is bent or tapered.	Bores in air cap are soiled	Clean and check air cap. Replace air cap if defective ↪ 7 "Cleaning".
	Nozzle soiled or defective	Clean and check the nozzle. If nozzle is defective, replace it along with the needle ↪ 9.3.1 "Replace needle and nozzle".
Spray jet is too thick in the middle.	Material too viscous	Change material consistency.
	Horn air pressure too low	Decrease the horn air pressure via the flat jet control.
	Air pressure too low	Increase the air pressure via the total air control.
Spray jet is split.	Material too thin	Change material consistency.
	Horn air pressure too high	Decrease the horn air pressure via the flat jet control.
	Air pressure too high	Decrease the air pressure via the total air control.
Spray jet is uneven. The spray pattern quality is bad.	Cap nut or nozzle is not properly tightened	Tighten cap nut and nozzle ↪ "Cleaning the air cap und nozzle".
	Needle gland worn out	Replace needle gland ↪ 9.3.3 "Replace needle gland".

## 9.3 Troubleshooting

### 9.3.1 Replace needle and nozzle.

Protective equipment:

- Protective workwear
- Protective gloves

### Disassembly

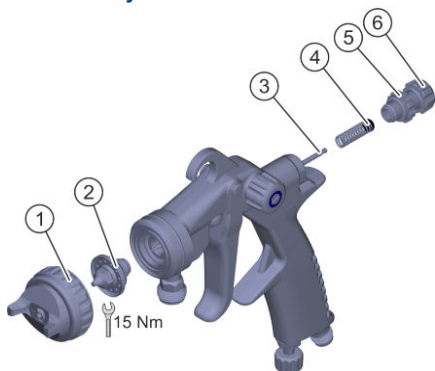


Fig. 12: Disassemble needle and nozzle

11. Fit air cap (1).
12. Tighten cap nut (1).
13. Push needle (3) carefully into the housing.
14. Push needle spring and bearing (4) onto the needle.
15. Set and screw-in set screw (6) with the locknut (5).
16. Tighten locknut (5).

1. Loosen locknut (5).
2. Unscrew and remove set screw (6) with the locknut (5).
3. Push trigger lever through.  
⇒ The needle (3) is pushed a little backwards out of the housing.
4. Remove bearing and needle spring (4).
5. Remove (3) needle.
6. Loosen cap nut (1).
7. Remove air cap (1).
8. Unscrew nozzle (2) and remove using monkey wrench.
9. Replace worn out or defective components.

### Assembly

10. Insert and tighten nozzle (2).  
Tightening torque: 15Nm



### 9.3.2 Replace valve set

#### Personnel:

- Operator
- + additional qualification explosion protection

#### Protective equipment:

- Protective workwear
- Protective gloves

#### Tool:

- M68900005 - Assembly plug
- W02020421 - Tool for sealing ring assembly 9x6
- W02020422 - Tool for O-ring assembly 13x1
- W02020423 - Tool for saddle seal assembly 12.3x9.3
- W02020226 - Assembly tool for sealing rings

#### Disassembly

1. Disassemble air cap, nozzle and needle  
↳ 9.3.1 "Replace needle and nozzle."

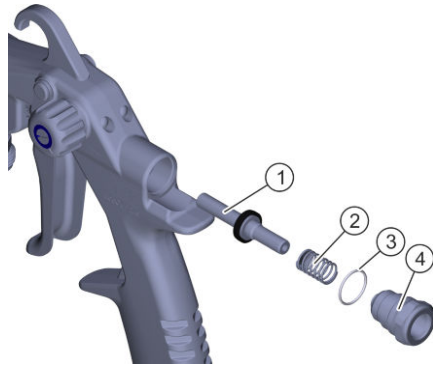


Fig. 13: Disassemble valve seal

2. Thread off bushing (4).
3. Remove compression spring (2).
4. To replace the O-ring (3), lever out the O-ring (3) from the housing using a sharp object (or Dürr tool W02020226).
5. Push trigger lever through.  
⇒ The valve pin (1) is pushed a little backwards and out from the housing.
6. Remove valve pin (1).

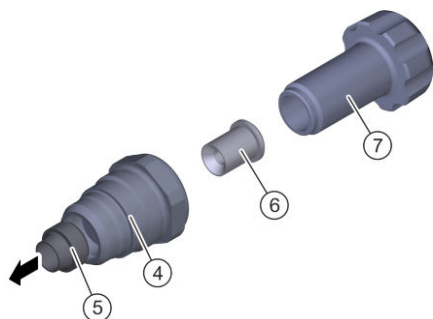


Fig. 14: Disassemble bushing seal

7. Insert the assembly plug (M68900005) (6) in the bushing (4).
8. Screw-in set screw (7) in the bushing (4) using the assembly plug (6).  
 ⇒ The seal (5) is pushed out from the bushing (4).

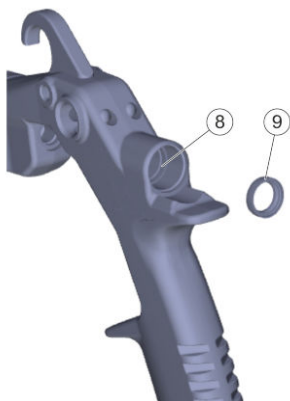


Fig. 15: Disassemble valve seat

9. Lever out the valve seat (9) from the housing opening (8) using a sharp object (or Dürr tool W02020226).

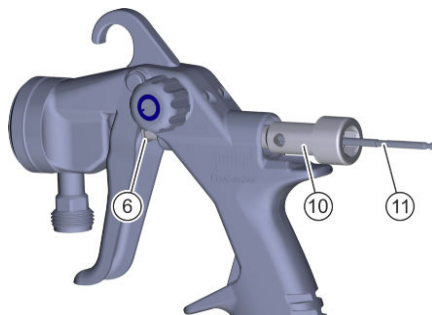


Fig. 16: Disassemble seal

10. Push in assembly plug (6) carefully into the gun housing from the center of the gun.
11. Push in installation wrench (10) carefully into the gun housing from behind.
12. Push in dismantled needle (11) through the installation wrench (10) into the gun housing.
13. Push trigger lever through.  
 ⇒ The seal on the inside is pushed onto the installation wrench (10).
14. Pull out needle (11).

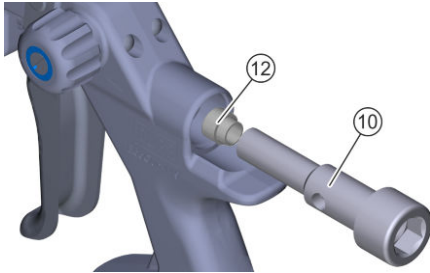


Fig. 17: Disassemble seal

15. Pull out the installation wrench (10) with seal (12).
16. Pull out assembly plug (6).
17. Replace worn out or defective components.

### Assembly

18. Spray the seal seat in the housing with cleaner (e.g. Loctite SF 7063). Let cleaner air dry.
19. Lubricate installation wrench (or Dürr tool W02020421) lightly with Syntheso GLEP 1.
20. Thread seal (12) onto installation wrench (or DÜRR tool W02020421).
21. Coat primer (e.g. Loctite 770) thinly on the exterior surface of the seal (12) on the integrated O-ring.
22. Coat the exterior surface in the front part of the seal (in front of the O-Ring) with contact adhesive (e.g. Loctite 454). Immediately push the seal with the installation wrench (10) into the housing. Press in seal.
23. Pull out installation wrench (10).

⇒ The seal (12) remains in the housing.



The contact adhesive must harden for at least an hour before additional assemble steps.

24. Lubricate installation wrench (or Dürr tool W02020421) lightly with Syntheso GLEP 1.

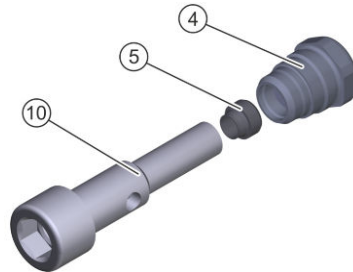


Fig. 18: Assemble the bushing seal

25. Thread seal (5) on the installation wrench (10).
26. Lubricate exterior surface of the seal with Syntheso GLEP 1.
27. Push the installation wrench (10) with seal into the bushing (4). Press in seal. ⇒ Pull out installation wrench (10). Seal (5) remains in the bushing (4).

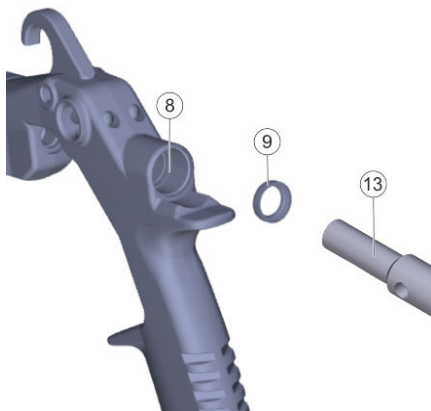


Fig. 19: Installing valve

28. Thread valve seat (9) onto the Dürr tool W02020423 (13). Insert valve seat with the tool into the housing opening (8).
29. Lightly lubricate valve pin (1) with Syntheso GLEP 1.
30. Insert valve pin (1).
31. Thread O-ring (3) onto Dürr tool W02020422. Press O-ring (3) into the housing using Dürr tool W02020422.  
⇒ Pull tool out of the housing. The O-ring remains in the housing.
32. Insert compression spring (2).
33. Screw-in bushing (4) into the housing.
34. Install air cap, nozzle and needle  
↳ 9.3.1 "Replace needle and nozzle."

### 9.3.3 Replace needle gland

Protective equipment:

- Protective workwear

- Protective gloves

### Disassembly

1. Remove needle ↳ 9.3.1 "Replace needle and nozzle."

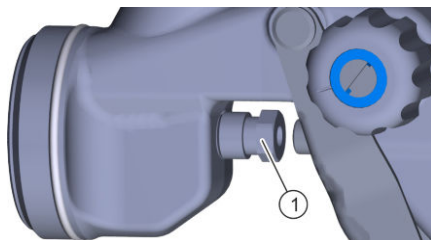


Fig. 20: Disassemble gland bolt

2. Loosen gland bolt (1) and remove it.

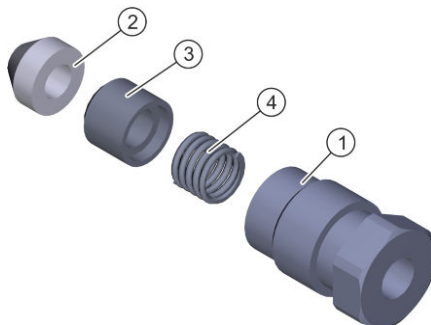



Fig. 21: Disassemble needle packing

3. Remove needle gland (2) with spring guide (3) and gland spring (4).


4. Replace worn out or defective components.

### Assembly

5.  See that the alignment of the components to be installed is correct.

Push in needle carefully into the housing, until the needle tip comes out in the area of the trigger.


6. String gland bolt (1).
7. String gland spring (4).
8. String spring guide (3).
9. String needle gland (2).
10. Tighten gland bolt (1) sensitively.

 If there are leakages in operation after you replace the needle gland, you have to tighten the gland bolt a little more.

11. Install needle ↗ 9.3.1 "Replace needle and nozzle."

### 9.3.4 Set delay time

Abrasive media wear out the needle. Delay time must be set in case of progressed wear of the needle.

 The delay time can be set only with multi-part, hardened needles.

Personnel:

- Operator
- + additional qualification explosion protection

Protective equipment:

- Protective workwear
- Protective gloves

### Disassembly

1. Remove needle ↗ 9.3.1 "Replace needle and nozzle."

### Setting

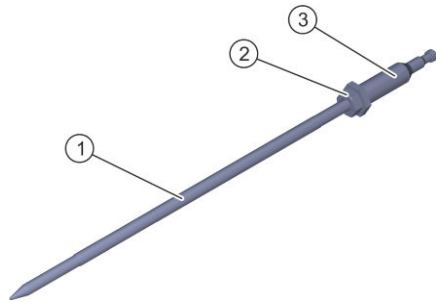


Fig. 22: Set delay time

2. Loosen locknut (2).

3. Keep the needle (1) fixed. Rotate needle stop (3).
  - Turn it to the right to reduce the delay time.
  - Turn it to the left to increase the delay time.

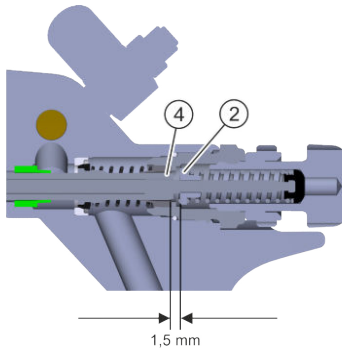



Fig. 23: Adjust distance of locknut to housing

⇒ The recommended distance from the locknut (2) to the valve pin (4) is about 1.5mm.

 A rotation of the needle corresponds to 0.5mm.

4. Tighten locknut (2).

### Assembly

5. Install needle ↪ 9.3.1 “Replace needle and nozzle.”.

## 10 Disassembly and Disposal

### 10.1 Safety recommendations

 **WARNING!**

#### Escaping material and compressed air

Escaping material under pressure can cause serious injuries.

Before carrying out any work:

- Disconnect the system, in which the product is installed, from compressed air and material supply.
- Secure system personalized from being switched on again.
- Depressurize the lines.

### 10.2 Disassembly

Personnel:

- Operator
- + additional qualification explosion protection

Protective equipment:

- Use ear protection
- Eye protection
- Respiratory protection device
- Protective workwear
- Protective gloves

1. Rinse the spray gun ↪ 6.7 “Purging”.
2. Disconnect the compressed air supply and material feed. Secure against reconnection.
3. Disconnect all lines.

### 10.3 Disposal



#### ENVIRONMENT!

##### Improper waste disposal

Improper waste disposal threatens the environment and prevents re-use and recycling.

- Clean components before their disposal.
- Always dispose of components in accordance with their characteristics.
  - ↳ 11.8 "Materials used"
- Collect leaked out utilities and auxiliaries completely.
- Dispose of work equipment soaked in coating materials or operating substances according to the disposal provisions in force.
- Dispose of utilities and auxiliaries according to the disposal provisions in force.
- In case of doubt, refer to the local disposal authorities.

## 11 Technical data

### 11.1 Weight

Detail	Value
Weight (with LP air cap, 1.2-mm nozzle, air flow control and 3/8" direct connection)	520g

### 11.2 Connections

Connection	Nominal width
Material	3/8" UNI (for BSP thread and NPSM thread) / M14x1.5
Air	G 1/4"

### 11.3 Operating conditions

Detail	Value
Maximum allowable material temperature when operating with protective gloves	40 °C
Maximum allowable material temperature when operating with heat-resistant protective gloves	60 °C

### 11.4 Emissions

Detail	Value
Emission sound pressure level $L_{pA}$ , A – according to EN 14462	88.5 dB
Uncertainty $K_{pA}$	5dB
Sound power level $L_{WA}$ , A – according to EN14462	102.4 dB
Uncertainty $K_{WA}$	5dB

### 11.5 Operating values

Detail	Value
Max. air pressure	6.9 bar
Air pressure, optimum	2.5 to 3.5 bar
Material pressure, max.	6.9 bar

### 11.6 Compressed air quality

- Purity classes in accordance with ISO 8573-1: 1:4:2
- Limitations for purity class 4 (pressure dew point max.):
  - $\leq -3^{\circ}\text{C}$  at 7bar absolute
  - $\leq +1^{\circ}\text{C}$  at 9bar absolute
  - $\leq +3^{\circ}\text{C}$  at 11bar absolute

### 11.7 Type plate

The type plate is placed on the housing and features the following details:

- Product designation
- Material number
- Year of manufacture
- Serial number
- EX labeling
- Manufacturer
- CE labeling

### 11.8 Materials used

Component	Material
Housing	Nickel-plated or anodized aluminum
Compression springs	Stainless steel
Materials in contact with material	Stainless steel
Seals in contact with material	PTFE PTFR with 25% coal

Component	Material
Seals without material contact	PE PTFE POM

### 11.9 Operating and auxiliary materials

Material	Material number
Grease tube Syntheso GLEP 1, 100g (for seals and threads)	W32020010
Loctite 577 (Thread sealant)	W31010005

### 11.10 Material specification

Suitable Material:

- Ignitable coating materials
- Non-inflammable coating materials



Do not use halogen - hydrocarbon based material.



## 12 Spare parts, tools and accessories

### 12.1 Spare parts

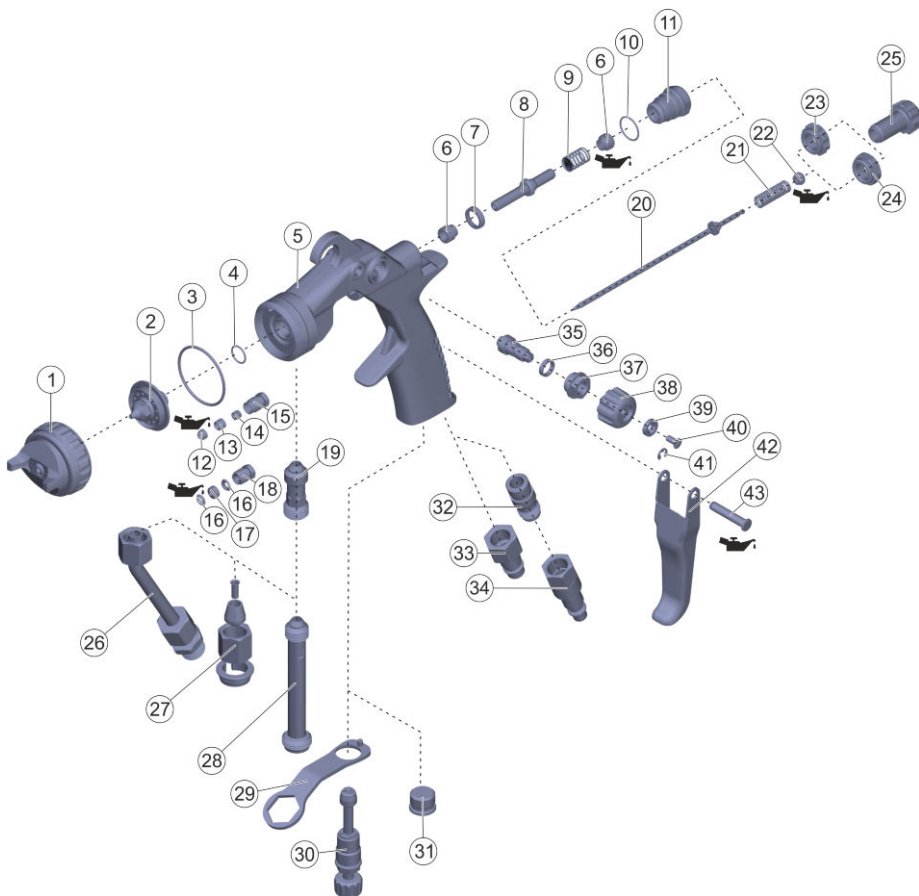


Fig. 24: Exploded view

Item	Denomination	Quantity	Material no.
1	Air cap	1	☞ "Overview - Air caps and nozzles"
2	Nozzle with seal	1	
-	Seal	1	M08190079
3	O-ring 33.3x1.6	1	Seal kit nozzle, air cap: N36960076
4	O-Ring 9.3x1	1	
5	Housing	1	
6	Seal 9x6 PE-UHMW/FKM	2	Valve set EcoGun 116/246/249: N36960306
7	Valve seat 12.3x9.3	1	
8	Valve pin complete with seal	1	
9	Valve pin spring	1	
10	O-ring 13x1	1	
11	Bushing	1	M05010179
12	Needle gland	1	M08280242
13	Spring guide	1	
14	Gland spring	1	
15	Gland bolt	1	
16	Packing washer	2	Repair kit ceramic needle seal: N36960104
17	Ceramic needle gland	1	
18	Ceramic gland bolt	1	
19	Material connection 3/8" UNI	1	M01220001
	Material connection M14x1.5	1	M01220002
20	Needle	1	☞ "Overview - Air caps and nozzles"
21	Needle spring	1	☞ "Closure set N36960044" and ☞ "Valve set automotive N36960140"
22	Bearing	1	
23	Locknut	1	
24	Locknut automotive	1	
25	Set screw	1	
26	Paint pipe 3/8" UNI	1	M34040030*
	Paint pipe M14x1.5	1	M34040016*
27	Hose connection	1	☞ 12.3 "Accessories"

## Spare parts, tools and accessories



Item	Denomination	Quantity	Material no.
28	Paint pipe 3/8" UNI	1	M55060296
29	Paint pipe support bracket	1	M19023637
30	Air flow control	1	M21200002
31	Plug	1	M48010243
32	Air connection G1/4"	1	M01010213
33	Push-on nipple for quick-action coupling	1	↳ 12.3 "Accessories"
34	Push-on nipple for quick-action coupling	1	↳ 12.3 "Accessories"
35	Control screw	1	↳ "Flat Jet Control Set (Blue Color Ring) N36960111"
36	Seal	1	
37	Control bush	1	
38	Rotary control	1	
39	Color ring	1	
40	Screw	1	
41	Safety washer	1	
42	Trigger	1	Trigger set: N36960043
43	Trigger pin	1	

\* Material connection M01220002 (19) and paint pipe support bracket M19023637 (29) are necessary for assembly.

## Overview - Air caps and nozzles



Nozzle sets consist of needle and nozzle with or without air cap.

### Nozzle sets with air cap LP

Nozzle diameter	Nozzle description	Needle description	Item no.	Material no.
1.0mm	10 LP	10 LP	1, 2, 20	M09800090
1.2mm	12 LP	12 LP		M09800091
1.4mm	14 LP	14 LP		M09800189

### Nozzle sets with air cap LS

Nozzle diameter	Nozzle description	Needle description	Item no.	Material no.
1,4 mm*	14 LD	LXD	1, 2, 20	M09800145
1.8 mm*	18 LD	LXD		M09800146
2.2 mm*	22 LD	LXD		M09800147

\* - Nozzle and needle are hardened.

### Nozzle sets without air cap

Nozzle diameter	Nozzle description	Needle description	Item no.	Material no.
1.0mm	10 LP	10 LP	2, 20	M09800055
1.2mm	12 LP	12 LP		M09800056
1.4mm	14 LP	14 LP		M09800190
1,4 mm*	14 LD	LXD		M09800082
1.8 mm*	18 LD	LXD		M09800083
2.2 mm*	22 LD	LXD		M09800084

\* - Nozzle and needle are hardened.

Air caps		
Air cap type	Item no.	Material no.
LP	1	M35030082
LS		M35030084

#### Repair set needle seal N36960023

Description	Item no.	Quantity
Needle gland	12	1
Spring guide	13	1
Gland spring	14	1
Gland bolt	15	1

#### Closure set N36960044

Description	Item no.	Quantity
Needle spring	21	1
Bearing	22	1
Locknut	23	1
Set screw	25	1

#### Valve set automotive N36960140

Description	Item no.	Quantity
Needle spring	21	1
Bearing	22	1
Locknut automotive	24	1
Set screw	25	1

#### Flat Jet Control Set (Blue Color Ring) N36960111

Description	Item no.	Quantity
Control screw	35	1
Seal	36	1
Control bush	37	1

Description	Item no.	Quantity
Rotary control	38	1
Color ring	39	1
Screw	40	1

## 12.2 Tools

### Tool kit N36960045

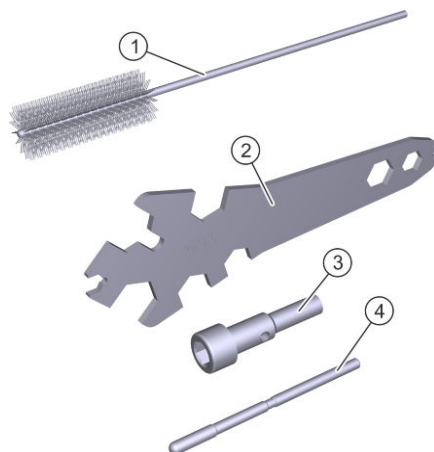


Fig. 25: Tools

Description	Item no.	Quantity
Cleaning brush	1	1
Monkey wrench	2	1
Installation wrench	3	1
Assembly rod	4	1

### Screw wrench W09010021

Description	Item no.	Quantity
Screw wrench SW5,5/7	-	1

### Additional tools

The following tools are not included in the scope of delivery.

Description	Material no.
Tool sealing ring assembly/disassembly	W02020226
Tool for O-ring assembly 33.3x1.6	W02020420
Tool for sealing ring assembly 9x6	W02020421
Tool for O-ring assembly 13x1	W02020422
Tool for saddle seal assembly 12.3x9.3	W02020423
Tool for O-ring assembly 9.3x1/10x1	W02020424
Assembly plug	M68900005

### 12.3 Accessories



For an overview of the accessory, see the price list available at Dürr webshop or on request, ☎ "Hotline and Contact".

Description	Item no.	Quantity	Material number
Hose connection M14x1.5 D8 d6	27		M58100105
Push-on nipple for quick-action coupling, fixed D7,2 d10/12 (EU)	33		M01010185
Push-on nipple for quick-action coupling, pivoted and rotatable D7.2 d10/12 (EU)	34		M01300006
Color ring set (red, yellow, green, blue, black)	39		N36960088
Cleaning set 17 parts			N36960037
Cleaning set (21 parts)			N36960038
Regulator, compressed air 0-7bar 1/4"out-1/4"in			N26050282
Connection air G1/4" 8x6 kink protection			M01010214
Quick change coupling for air G1/4" - external threads			N40030046
Quick change coupling for paint G3/8" - external threads			N40040062
Push-on nipple for quick change coupling for paint G3/8" - internal threads			M58940013
DIN cup 4mm			N08010047

Description	Item no.	Quantity	Material number
DIN cup 2 mm			N08010053
DIN cup 6 mm			N08010054

## 12.4 Order



### WARNING!

#### Unsuitable spare parts in explosive areas

Spare parts not compliant with the specifications of the ATEX directives can cause explosions in an explosive atmosphere. Serious injury and death could be the consequence.

- Use exclusively original spare parts.



### WARNING!

#### Unsuitable spare parts

Spare parts of third-party suppliers may possibly not be able to hold the loads. Serious injury and death could be the consequence.

- Use exclusively original spare parts.

Ordering spare parts, tools and accessories as well as information on products that are listed without order number ↗ "Hotline and Contact".











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MSG00014EN, V02

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