



LEADING IN PRODUCTION EFFICIENCY

# EcoGun 2100 Manual Spray Gun Air Assist

Operation manual

MSG00004EN, V05



### 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:

N36220002V  
EcoGun 2100



### 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

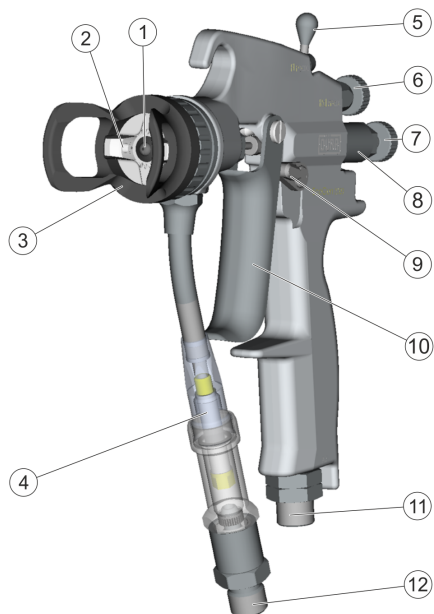


Fig. 1: Overview

- 1 Nozzle
- 2 Air cap
- 3 Cap nut with spray jet screening
- 4 Filter
- 5 Flat jet control (FI)
- 6 Circular jet control (Rd)
- 7 Withdrawal force control
- 8 Plug
- 9 Retainer lever
- 10 Trigger
- 11 Air connection, rotatable
- 12 Material connection, ball bearing mounted

### 1.2 Short description

The spray gun is for coating surfaces with or without compressed air. The atomized coating material is fed through high pressure lines.

The following factors influence the spray jet and on the spray pattern:

- » Alignment of the air cap
- » Spraying air pressure  
The higher the spraying air pressure, the finer is the atomization and the softer are the spray pattern edges.
- » Material pressure  
The higher the material pressure, the higher the material flow and thus the finer the atomization.  
The lower the material pressure, the higher is the efficiency and the smaller is the overspray generated.
- » Nozzle size  
The larger the nozzle size, the more the material flowing out.  
The greater the angle, the wider is the spray pattern.

## 2 Safety

### 2.1 Presentation of Notes

The following notes can appear in this instruction:

**!** **DANGER!**


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

**!** **WARNING!**

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 material pressure level high pressure spray gun **EcoGun 2100** with pump support in the high-pressure range is meant exclusively for hand guided coating of surfaces. It is for coating surfaces with flammable and non-flammable paints, within the specified technical data ↪ 11 "Technical data".

The material pressure level high pressure spray gun **EcoGun 2100** is only intended for use in industry and craftsmanship. The **EcoGun 2100** spray gun is approved for use in 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.
- » Reaching into the spray jet.
- » Atomization of fluid nitrogen
- » Use of unapproved materials
- » Combination of the spray gun with components that are not approved by Dürr Systems for operation.
- » Unauthorized modifications
- » Use in explosive areas Ex zone 0

## EX labeling

 II 2G T60 °C X

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

The following conditions must be observed for safe operation with flammable materials:

- » Ground spray gun through the cables and pump.
- » Only use conductive hoses.
- » Ensure that static electricity can be discharged.

## 2.3 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.

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

- » Ensure that the flashpoint of the fluid is at least 15 K above the ambient temperature.
- » 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.

- » Spray gun Check regularly for leakage. Observe local regulations and maintenance schedule.
- » Ensure that the forced ventilation is operational.
- » Follow the safety data sheet.
- » Wear specified protective equipment.

### Escaping material

Material leaking under high pressure can penetrate the body. Even if the injury looks like a harmless cut wound, the penetrating material leads to amputation, serious injuries can cause death.

- » Do not try to seal leakages using body parts, gloves or towels.
- » If there are injuries, seek medical attention immediately.

Before working on the product:

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

### 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 normal operation the surfaces of components can get extremely hot. Contact with it can cause burns.

Before carrying out any work:

- » Check the temperature.
- » Do not touch hot surfaces.
- » Let components cool down.
- » Wear protective gloves.

## 2.4 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.

#### 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 high pressure

In addition, the mechanic has knowledge of regulations and safety measures for high pressure systems > 20 bar.

### + 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".

## 2.5 Personal protective equipment

When working in explosive areas, the protective clothing, including gloves, must meet the requirements of DIN EN 1149-5. Footwear must meet the requirements of EN ISO 20344 and EN 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:



## 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.
- » Store Spray gun only when dry.
- » 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.
- » A hook or a lug must be provided for hanging the spray gun.




### Working environment and grounding

The flooring of the working area must be anti-static according to DIN EN 50050-1:2014-03, measurement according to DIN EN 1081:1998-04. The antistatic flooring prevents electrostatic charges from building up. Dangerous flashovers are prevented.

### 4.2 Connecting

 Use electrostatically conductive hoses that can withstand at least 4x the operating pressure  $\hookrightarrow$  11.5 "Operating values".

 Pay attention to the details about compressed air quality  $\hookrightarrow$  11.6 "Compressed air quality". Higher compressed air quality raises the spray quality and extends the life span of the spray gun.

Personnel:

- » Operator
- » + additional qualification explosion protection
- » + Additional qualification high pressure

Protective equipment:

- » Safety boots

Requirements:

- » The spray gun is locked.

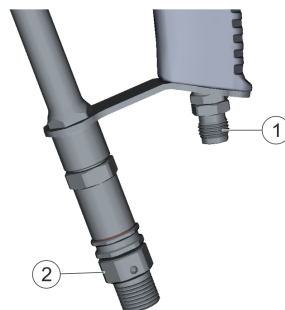


Fig. 2: Connect spray gun

1. Screw air hose to the connection (1).
2. Screw material hose to the connection (2).

## 5 Commissioning

Personnel:

- » Operator
- » + additional qualification explosion protection
- » + Additional qualification high pressure

Protective equipment:

- » Protective workwear
- » Use ear protection
- » Safety boots
- » Protective gloves
- » Face protection
- » Respiratory protection device

1. Pull the trigger of the spray gun without material.
2. Check for correct opening and closing of the needle.
3. Ensure that spraying air is present.

**! NOTICE!**

**Discoloration due to residual paint particles in the filter**

Use filters only for one color.

- Select filter for paint pipe ↪ “Filter”.



The mesh width of the filter must be smaller than the nozzle size.

- Purge nozzle ↪ 6.6 “Rinsing”.

**EX WARNING!**

Statically charges components may cause explosions during operation!

Ground spray guns and work pieces through the cables and the pump.

**Filter**

Filter color	Filter size	Nozzle size	Examples of materials
Red	200 mesh	<0.33mm/0.013"	Paints, oils, stripper
Yellow	100 mesh	0.33 - 0.38mm / 0.013 - 0.015"	Filler, primers, dispersion paints
White	50 mesh	0.38 - 0.73mm / 0.015 - 0.029"	Latex paints, enamel
Green	30 mesh	>0.78mm/0.031"	Corrosion protection paints, spray spatula

**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.



**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 fluid is at least 15 K above the ambient temperature.
- 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.
- Check grounding.



**WARNING!**

**Danger from harmful or irritant substances**

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

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

**6.2 General notes**

Perform the following checks during operation:

- » All hoses are in order.
- » All connections are in order.
- » The air cap is clean.
- » The spray gun is clean.
- » The connection between the material connection and the tapering seal on the material feed line is correct.

**6.3 Adjustment**

**6.3.1 Withdrawal force**

Personnel:

- » Operator
- » + additional qualification explosion protection
- » + Additional qualification high pressure

Protective equipment:

- » Protective workwear
- » Respiratory protection device
- » Face protection
- » Use ear protection
- » Protective gloves
- » Safety boots

1. Select nozzle ↪ 6.3.4 “Spray pattern”.
2. Align spray jet ↪ 6.3.4 “Spray pattern”.
3. Set the material pressure.



Keep the material pressure as low as possible. Lower material pressure reduces the wear on the nozzle and increases the efficiency coefficient of the spray gun.

4. Adjust flat jet ↪ 6.3.4 “Spray pattern”.
5. Adjust circular jet ↪ 6.3.4 “Spray pattern”.

For easier operation of the spray gun, adjust the triggering force to the material pressure.

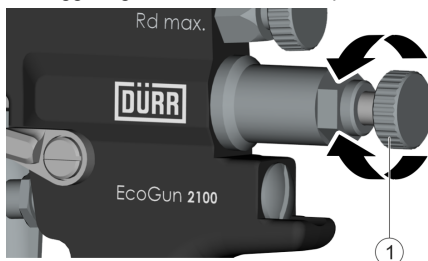


Fig. 3: Adjusting the withdrawal force

Perform one of the following steps:

1. Screw-in adjusting screw (1) completely.
  - ⇒ This raises the withdrawal force.
2. Unscrew adjusting screw (1) completely.
  - ⇒ This reduces the withdrawal force.

### 6.3.2 Pilot air

Personnel:

- » Operator
- » + additional qualification explosion protection

Protective equipment:

- » Protective workwear
- » Respiratory protection device
- » Face protection
- » Use ear protection
- » Protective gloves
- » Safety boots

To avoid drop formation, set the pilot air when driving the withdrawal lever.

Requirements:

- » The spray gun is locked ↪ 6.5 “Secure spray gun.”.
- » Removal of needle is complete ↪ 8.3.3 “Remove the needle”.

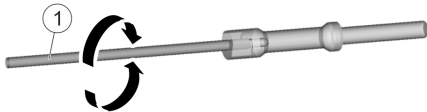


Fig. 4: Screw in / screw out the needle

1. Turn the needle (1) out.  
⇒ The pilot air is increased.
2. Turn the needle (1) in.  
⇒ The pilot air is reduced.
3. Install needle ↪ 8.3.4 “Install the needle.”.

### 6.3.3 Selecting air cap

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

#### Air cap for hexagonal nozzle

The air cap for hexagonal nozzles is the most frequently used air cap type. The air cap is used for different water-based paints, solvent-based paints and colors.

The air cap for hexagonal nozzles has two different versions:

- » For a spray jet angle from 10 to 30°
- » For spray jet angle from 40 to 130°

A label on the air cap identifies the type of version.

#### Air cap for circular nozzles

The air cap for round nozzles is used for clear coats and quick drying coating materials. It has slit air ducts for the horn air.

### 6.3.4 Spray pattern

#### Select nozzle

Personnel:

- » Operator
- » + additional qualification explosion protection
- » + Additional qualification high pressure

Protective equipment:

- » Protective workwear
- » Respiratory protection device
- » Face protection
- » Protective gloves
- » Safety boots

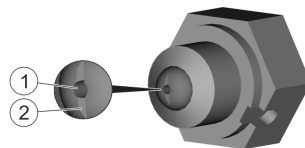


Fig. 5: Select nozzle

Observe the following when selecting the nozzle:

- » The larger the nozzle size (1), the more material can escape.
- » The greater the angle (2), the wider is the spray pattern.

1. Select a suitable nozzle.
2. Select an air valve suitable for the nozzle.
3. Install nozzle ↪ 8.3.6 “Install the nozzle”.

### Align spray jet

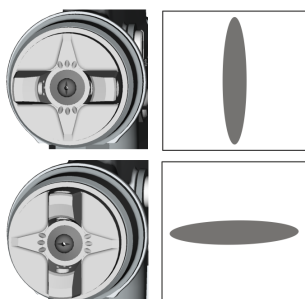


Fig. 6: Align air cap

The spray pattern is set correctly, if a horizontal or vertical spray jet is in the form of an ellipse. The position of the air cap and of the nozzle determines the direction of the spray pattern.

Personnel:

- » Operator
- » + additional qualification explosion protection
- » + Additional qualification high pressure

Protective equipment:

- » Protective workwear
- » Respiratory protection device
- » Face protection
- » Use ear protection
- » Protective gloves
- » Safety boots

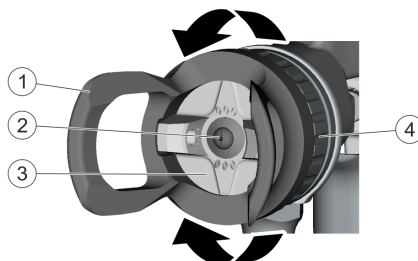


Fig. 7: Align spray jet

1. Tilt up retainer lever by 90°.  
⇒ The spray gun is locked.
2. Rotate screening (1) in clockwise direction into the required position. For that purpose, rotate the cap nut (4).  
⇒ The air valve (3) and the nozzle (2) rotate along.
3. Tilt down retainer lever by 90°.  
⇒ The spray gun is unlocked.

### Adjust flat jet

The horn air is mixed with the material jet via the flat jet control.

Personnel:

- » Operator
- » + additional qualification explosion protection
- » + Additional qualification high pressure

Protective equipment:

- » Protective workwear
- » Respiratory protection device
- » Face protection
- » Use ear protection
- » Protective gloves
- » Safety boots

Perform one of the following steps:

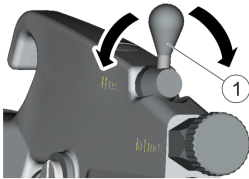


Fig. 8: Adjust flat jet

1. Swivel lever (1) to the right.  
⇒ Less horn air is mixed.
2. Swivel lever (1) to the left.  
⇒ A lot of horn air is mixed into.

### Adjust circular jet

The shaping air is mixed with the material jet via the flat jet control.

Personnel:

- » Operator
- » + additional qualification explosion protection
- » + Additional qualification high pressure

Protective equipment:

- » Protective workwear

- » Respiratory protection device
- » Face protection
- » Use ear protection
- » Protective gloves
- » Safety boots

Perform one of the following steps:

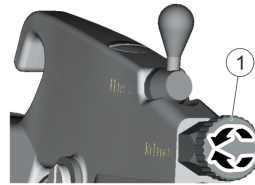


Fig. 9: Adjust circular jet

1. Turn the adjusting screw (1) clockwise.  
⇒ The spray pattern becomes larger.
2. Turn the adjusting screw (1) counter-clockwise.  
⇒ The spray pattern becomes smaller.

### Setting the spray pattern



Fig. 10: Ideal spray pattern

Personnel:

- » Operator
- » + additional qualification explosion protection
- » + Additional qualification high pressure

Protective equipment:

- » Protective workwear
- » Respiratory protection device
- » Face protection
- » Use ear protection
- » Safety boots
- » Protective gloves

1. Close the spraying air supply completely.



If spraying air is blocked, atomization is done exclusively through material pressure (airless mode).

2. Adjust material quantity by means of the nozzle size and material pressure.

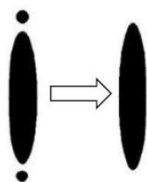


Fig. 11: Rectify the offshoot

3. Open spraying air supply, tilt flat jet control to the left, until the spray pattern no longer has any offshoots.

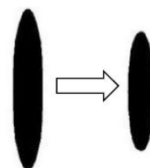


Fig. 12: Shorten spray pattern

4. Adjust the length of the spray pattern by opening the circular jet control.

## 6.4 Painting

Personnel:

- » Operator
- » + additional qualification explosion protection
- » + Additional qualification high pressure

Protective equipment:

- » Protective workwear
- » Respiratory protection device
- » Face protection
- » Use ear protection
- » Protective gloves
- » Safety boots

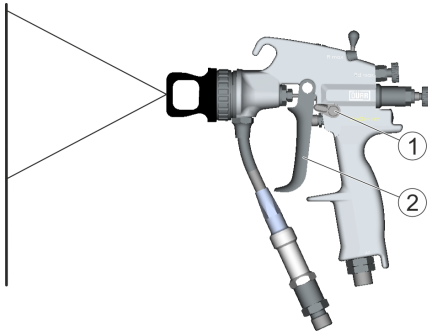


Fig. 13: Painting process

1. Tilt down retainer lever (1) by 90°.
  - ⇒ The spray gun is unlocked.
2. Drive the trigger (2) up to the first center of pressure.
  - ⇒ The pilot air starts.
3. Drive the trigger (2) completely.
  - ⇒ The high pressure spray medium starts.
4. Guide the spray gun at a 90° angle at a distance of 25 to max. 30cm from the surface to be painted.



The distance can vary for effect coatings.

5. After completing the coating process, tilt the retainer lever down by 90°.
  - ⇒ The spray gun is locked.



To avoid formation of drops after completing the painting process, leave the pilot air valve open for another 1 - 2 seconds.



### 6.5 Secure spray gun.

Personnel:

- » Operator
- » + additional qualification explosion protection
- » + Additional qualification high pressure

Protective equipment:

- » Protective workwear
- » Face protection
- » Use ear protection
- » Safety boots
- » Protective gloves



Fig. 14: Lock spray gun

1. Purge spray gun ↪ 6.6 "Rinsing".
2. Set pump pressure to 0bar and /or switch off pump for material pressure and compressed air.
3. Drive the trigger (1) completely.  
⇒ The pump and hoses are relieved.

### 6.6 Rinsing

#### 6.6.1 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.

#### 6.6.2 Rinsing spray gun

##### ! 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.

##### ! NOTICE!

##### Clogged air channels

If the material or rinsing agent reaches into the air channels, air channels can clog up. This can result in faulty painting results.

- Keep spray gun horizontal or directed downwards during the rinsing process.

Rinse the spray gun in the following cases:

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



Rinsing intervals depend on the material used.

Personnel:

- » Operator
- » + additional qualification explosion protection
- » + Additional qualification high pressure

Protective equipment:

- » Protective workwear
- » Respiratory protection device
- » Face protection
- » Use ear protection
- » Safety boots
- » Protective gloves

Requirements:

- » Material pressure is present.
1. Ensure proper disposal of the exiting material and rinsing agent.
  2. Unscrew and remove compressed air hose from the compressed air connection.
  3. Rinse the spray gun with an appropriate detergent until the detergent runs clean without any material residue.
  4. Screw in compressed air hose in the compressed air connection.
  5. Shut off detergent supply.
  6. Pull trigger.
    - ⇒ The air channels are blown free.

## 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 fluid is at least 15 K above the ambient temperature.
- 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.
- Check grounding.



#### **WARNING!**

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

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

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



**WARNING!**

**Material escaping under pressure**

Material leaking under high pressure can penetrate the body. Even if the injury looks like a harmless cut wound, the penetrating material leads to amputation, serious injuries can cause death.

- Do not try to seal leakages using body parts, gloves or towels.
- If there are injuries, seek medical attention immediately.

Before working on the product:

- Disconnect the system, in which the product is installed, from compressed air and material supply.
- Secure the system against 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.



**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

### Clean the nozzle

Clean the nozzle after each change of material.

Personnel:

- » Operator
- » + additional qualification explosion protection

Protective equipment:

- » Use ear protection
- » Face protection
- » Respirator mask
- » Protective workwear
- » Protective gloves

1. Remove nozzle ↪ 8.3.5 "Dismantling the nozzle".
2. Blow compressed air through the air valve from the front.
3. Clean the nozzle in the cleaning bath.
4. Install nozzle ↪ 8.3.6 "Install the nozzle".

### Clean filter.

Clean the filter thoroughly as required to avoid encrustation of the deposits. Encrusted deposits make removal difficult.

Personnel:

- » Operator
- » + additional qualification explosion protection

Protective equipment:

- » Use ear protection
- » Face protection
- » Respirator mask
- » Protective workwear
- » Protective gloves

1. Remove filter ↪ 8.3.1 "Remove the filter".
2. Clean the filter with a brush.



Do not use a wire brush.



If up to 20% of the filter is still clogged after cleaning, replace the filter ↪ 8.3.1 "Remove the filter".

3. Install filter ↪ 8.3.2 "Install filter".
4. Remove nozzle ↪ 8.3.5 "Dismantling the nozzle".
5. Purge the spray gun quickly without the nozzle ↪ 6.6 "Rinsing".
6. Install nozzle ↪ 8.3.6 "Install the nozzle".

## 8 Maintenance

### 8.1 Safety notes



#### WARNING!

#### Unsuitable replacement parts in explosive areas

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

- Use exclusively original replacement parts.

**WARNING!****Danger from harmful or irritant substances**

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

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

**WARNING!****Material escaping under pressure**

Material leaking under high pressure can penetrate the body. Even if the injury looks like a harmless cut wound, the penetrating material leads to amputation, serious injuries can cause death.

- Do not try to seal leakages using body parts, gloves or towels.
- If there are injuries, seek medical attention immediately.

Before working on the product:

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

## 8.2 Maintenance schedule



The position numbers of the components refer to the chapter ↪ 12.1 “Replacement parts”.



The intervals of some maintenance work depend on the used materials. It can be adapted to the operating conditions.

Interval	Maintenance work
after each use	Purge spray gun ↪ 6.6 “Rinsing”.
after each change of material and paint	Clean nozzle (4) and filter (45) ↪ 7.2 “Cleaning”.
weekly / after each disassembly	Check grounding of connections and lines. Lubricate needle shank (53) ↪ 8.3.3 “Remove the needle”.
every 3 months / after every removal / after every thorough cleaning with solvent	Lubricate O-ring on the air regulation (13). Lubricate bearing of the trigger (29). Lubricate bearing of the retainer lever (22).

### Lubrication



#### NOTICE!

#### Painting defects due to lubricant containing silicone

If residues containing silicone reach into the material channels and air channels of the spray gun, it can produce imperfect painting results.

- Only use silicone-free oil or grease.

### 8.3 Dismantle and assemble

#### 8.3.1 Remove the filter.

##### Remove small filter

Personnel:

- » Operator
- » + additional qualification explosion protection
- » + Additional qualification high pressure

Protective equipment:

- » Face protection
- » Protective workwear
- » Protective gloves

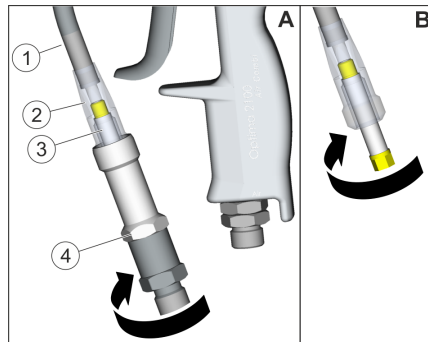


Fig. 15: Remove small filter

1. Lock spray gun ↪ 6.5 “Secure spray gun.”.

2. Unscrew material connection (4) on the key surface using a SW 17mm spanner. Simultaneously support the upper paint pipe (1) using a SW 11mm spanner.
3. Thread out filter (2) downwards from the bottom paint pipe (3).  
⇒ The filter is removed.

### Remove the large filter

Personnel:

- » Operator
- » + additional qualification explosion protection
- » + Additional qualification high pressure

Protective equipment:

- » Face protection
- » Protective workwear
- » Protective gloves

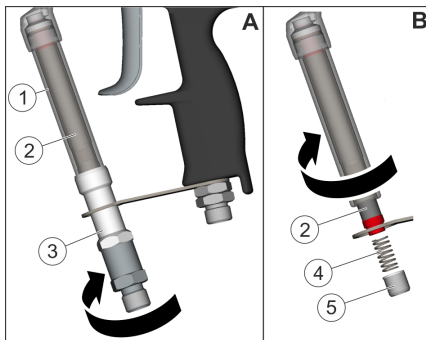


Fig. 16: Remove the large filter

1. Lock spray gun ↪ 6.5 “Secure spray gun.”.
2. Unscrew material connection (3) on the key surface using a SW 17mm spanner. Simultaneously, counter-support paint pipe (1) using an SW 13mm spanner.
3. Remove the sleeve (5).

4. Remove the spring (4).
5. Thread out the filter (2) downwards from the paint pipe.  
⇒ The filter is removed.

### 8.3.2 Install filter

#### Install small filter

Personnel:

- » Operator
- » + additional qualification explosion protection
- » + Additional qualification high pressure

Protective equipment:

- » Face protection
- » Protective workwear
- » Protective gloves

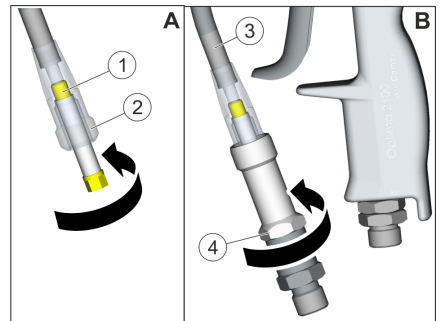


Fig. 17: Install small filter

1. Thread-in filter (1) into the lower paint pipe (2).  
⇒ The filter projects out of the paint pipe by about 18mm. The filter is installed.
2. Screw material connection (4) on the bottom paint pipe (2) using an SW 17mm spanner. Simultaneously support the upper paint pipe (3) using a SW 11mm spanner.

3. Remove nozzle ↪ 8.3.5 "Dismantling the nozzle".
4. Purge the spray gun quickly without the nozzle ↪ 6.6 "Rinsing".
5. Install nozzle ↪ 8.3.6 "Install the nozzle".

### Install large filter

Personnel:

- » Operator
- » + additional qualification explosion protection
- » + Additional qualification high pressure

Protective equipment:

- » Face protection
- » Protective workwear
- » Protective gloves

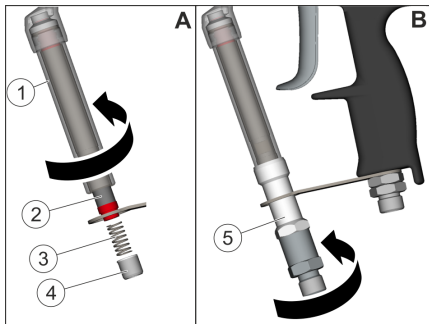


Fig. 18: Install large filter

1. Insert filter (2) into the paint pipe (1).  
⇒ The filter projects out of the paint pipe by about 4mm. The filter is installed.
2. Insert spring (3).
3. Insert sleeve (4).
4. Screw material connection (5) onto the paint pipe (1) using a SW 17mm spanner. Simultaneously, counter-support paint pipe (1) using an SW 13mm spanner.

5. Remove nozzle ↪ 8.3.5 "Dismantling the nozzle".
6. Purge the spray gun quickly without the nozzle ↪ 6.6 "Rinsing".
7. Install nozzle ↪ 8.3.6 "Install the nozzle".

### 8.3.3 Remove the needle

Personnel:

- » Operator
- » + additional qualification explosion protection
- » + Additional qualification high pressure

Protective equipment:

- » Face protection
- » Protective workwear
- » Protective gloves

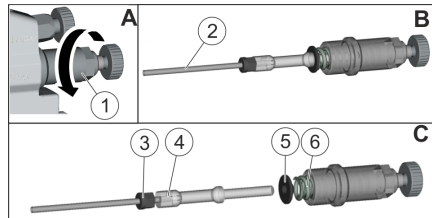


Fig. 19: Remove needle

1. Lock spray gun ↪ 6.5 "Secure spray gun".
2. Unscrew plug (1).
3. Pull out needle (2) with spring (6) and pressure disc (5) on rear part of the needle (4).  
⇒ Removal of needle is complete.



**8.3.4 Install the needle.**

Personnel:

- » Operator
- » + additional qualification explosion protection
- » + Additional qualification high pressure

Protective equipment:

- » Face protection
- » Protective workwear
- » Protective gloves

Requirements:

- » Removal of needle is complete.

1. Tighten needle driver (3).  
Support needle rear part (4) simultaneously.
2. Insert pressure disc (5).
3. Insert compression spring (6).
4. Screw in plug (1).
5. Tighten plug (1).  
⇒ Removal of needle is complete.

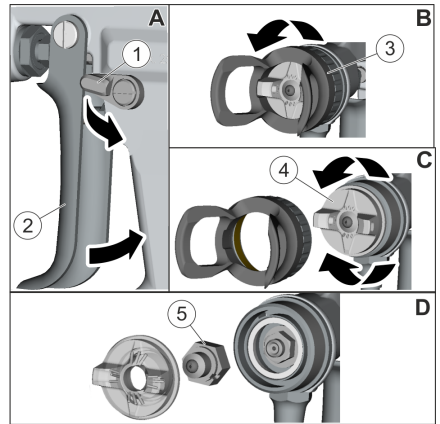


Fig. 20: Remove nozzle

1. Lock spray gun ↙ 6.5 “Secure spray gun.”.
2. Unscrew cap nut (3) with air cap (4).
3. Remove nozzle (5).  
⇒ Removal of nozzle is complete.

**8.3.5 Dismantling the nozzle**

Personnel:

- » Operator
- » + additional qualification explosion protection
- » + Additional qualification high pressure

Protective equipment:

- » Face protection
- » Protective workwear
- » Protective gloves

### 8.3.6 Install the nozzle

Personnel:

- » Operator
- » + additional qualification explosion protection
- » + Additional qualification high pressure

Protective equipment:

- » Face protection
- » Protective workwear
- » Protective gloves

Requirements:

- » Removal of nozzle is complete.

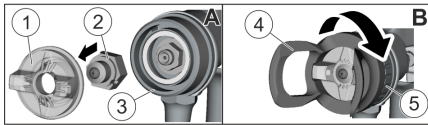


Fig. 21: Install nozzle

1. Insert nozzle (2) into the air cap (1).
2. Push in air cap (1) with nozzle (2) into the inlet for material supply (3).
3. Screw on cap nut (5) and tighten it.
4. Rotate screening (4) in clockwise direction into the required position.  
⇒ The air cap (1) is aligned.

Installation of nozzle is complete.

### 8.3.7 Remove packing seal.

The sealing collar consists of the following components:

- » 3x cap seal
- » 3x O-ring

Personnel:

- » Operator
- » + additional qualification explosion protection
- » + Additional qualification high pressure

Protective equipment:

- » Face protection
- » Protective workwear
- » Protective gloves

Requirements:

- » The spray gun is locked.
- » Removal of nozzle is complete.
- » Removal of needle is complete.

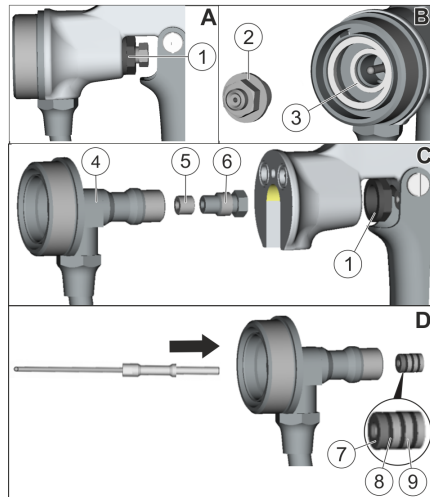


Fig. 22: Remove sealing collar

1. Unscrew seal retainer screw (2) with socket wrench SW 10mm.
2. Remove sealing ring (3).
3. Unscrew hexagonal nuts (1).
4. Pull out inlet for material supply (4) towards the front.  
⇒ The hexagonal nut falls out.
5. Unscrew gland (6).

6. Remove spacing sleeve (5).
7. Push with the back of the needle against the seal washer (7).  
Push out cap seals (9) and O-rings (8).

### 8.3.8 Install packing seal

Personnel:

- » Operator
- » + additional qualification explosion protection
- » + Additional qualification high pressure

Protective equipment:

- » Face protection
- » Protective workwear
- » Protective gloves

Requirements:

- » Removal of nozzle is complete.
- » Removal of needle is complete.

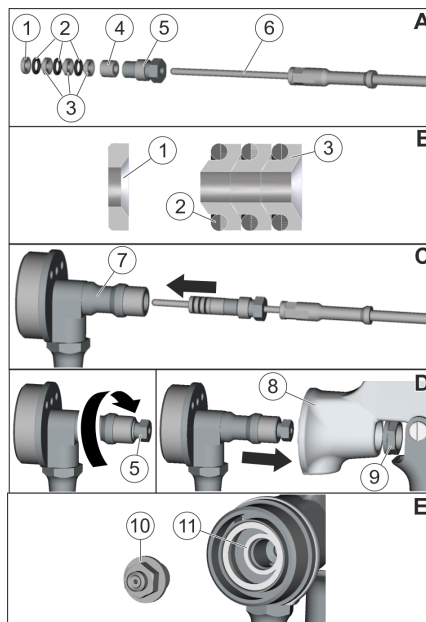



Fig. 23: Install sealing collar

1. Pull up gland (5) and spacing sleeve (4) on the needle (6).
2. Pull up cap seal (3) with the bevels to the needle and O-rings (2) on the needle (6) alternately.
3. Pull up sealing disc (1) with bevel up to the O-ring (2) on the needle (6).
4. Guide needle into the inlet for material supply (7).
5. Lightly screw in gland (5).

 Do not tighten the gland too much, so that the needle can be guided in.

6. Pull out needle.

7. Insert inlet for material supply (7) into the housing (8).
8. Place hexagonal nut (9) on the inlet for material supply (7) and tighten.
9. Insert seal retainer screw (10) and sealing ring (11).
10. Install seal retainer screw (10).
11. Install nozzle ↪ 8.3.6 "Install the nozzle".
12. Install needle ↪ 8.3.4 "Install the needle".
13. Tighten the gland (5) by hand.

## 9 Faults

### 9.1 Defects table



The position numbers of the components refer to the chapter ↪ 12.1 “Replacement parts”.

Fault description	Cause	Remedy
Paint flow reduces.	Filter clogged	Clean filter (40, 45) ↪ 7.2 “Cleaning”.
	Viscosity of the material too high	Thin down the spraying material.
	Material pressure too low	Increase the air intake pressure of the pump.
Uneven spray jet	Nozzle clogged	Clean nozzle (4) ↪ 7.2 “Cleaning”, ↪ 9.2.2 “Replace nozzle”.
	Filter in the spray gun clogged	Clean or replace filter (40, 45) ↪ 7.2 “Cleaning”.
	Nozzle worn out	Replace nozzle (4) ↪ 9.2.2 “Replace nozzle”.
	Viscosity of the material too high	Thin down the spraying material.
	Air holes in air cap are soiled	Clean air cap (2) with a plastic brush. Do not use a wire brush.
Spray gun blows.	Valve defective	Replace valve (19) ↪ 9.2.6 “Replace valve pin seal”.
	Valve pin seal worn out	Replace valve pin seal (24) ↪ 9.2.6 “Replace valve pin seal”.
	Valve spring has lost its tension.	Replace valve spring (16) ↪ 9.2.6 “Replace valve pin seal”.
Air escapes on the flat jet control.	O-ring not tight	Replace O-ring (13) ↪ 9.2.7 “Replace O-ring on the circular jet control .”.
Colorations occur.	Residual paint particles in the filter	Replace filter (40, 45) ↪ 8.3.1 “Remove the filter.”.
Spray gun sprays upon closing.	Seal washer or needle ball worn out	Replace seal retainer screw (6) ↪ 9.2.3 “Replace seal retainer screw and sealing rings.” or needle (51) ↪ 9.2.1 “Replace the needle.”.

Fault description	Cause	Remedy
	Needle spring has lost its tension.	Replace needle spring (55) ↪ 8.3.3 "Remove the needle".
	Needle gland tightened too much, needle cannot move.	Loosen needle gland (50) ↪ 8.3.7 "Remove packing seal."
	Needle and needle seal soiled	Clean needle (51) and needle seal ↪ 8.3.3 "Remove the needle".
	Seal retainer screw worn out	↪ 9.2.3 "Replace seal retainer screw and sealing rings."
Material escapes at the needle gland.	Needle gland tightened too lightly	Re-tighten needle gland (50) ↪ 8.3.7 "Remove packing seal."
	Needle seal worn out	Replace needle seal ↪ 9.2.4 "Replace packing seal".
Paint gun has too little or no air.	Needle driver position has been displaced.	Adjust pilot air again ↪ 6.3.2 "Pilot air".
Spray pattern too small	Nozzle worn out	Replace nozzle (4) ↪ 9.2.2 "Replace nozzle".
	Shaping air pressure too high	Reduce the shaping air pressure on the circular jet control ↪ 6.3.4 "Spray pattern".
Too little paint	Filter clogged	Clean or replace filter (40, 45) ↪ 8.3.1 "Remove the filter."
Retainer lever is difficult to move.	Lever bearing too dry	Lubricate lever bearing (22).
Trigger is difficult to drive.	Lever bearing too dry	Lubricate lever bearing (29).

## 9.2 Troubleshooting

### 9.2.1 Replace the needle.

Personnel:

- » Operator
- » + additional qualification explosion protection

» + Additional qualification high pressure

Protective equipment:

- » Face protection
- » Protective workwear
- » Protective gloves

## Faults

1. Remove needle ↪ 8.3.3 "Remove the needle".
2. Unscrew needle driver (3) using a spanner SW 6. Support needle rear part (4) simultaneously.
3. Insert new needle with existing spring and pressure disc.
4. Install needle ↪ 8.3.4 "Install the needle".

### 9.2.2 Replace nozzle

Personnel:

- » Operator
- » + additional qualification explosion protection
- » + Additional qualification high pressure

Protective equipment:

- » Face protection
- » Protective workwear
- » Protective gloves

If the spray pattern is 25% smaller than original, the nozzle is worn out.

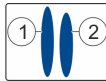


Fig. 24: Spray pattern

- 1 Nozzle in order
  - 2 Nozzle worn out
1. Remove nozzle ↪ 8.3.5 "Dismantling the nozzle".

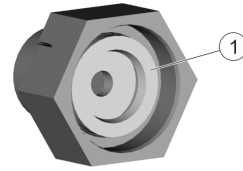


Fig. 25: Check seal

2. Check seal (1) for damage. Replace damaged seal.
3. Install new nozzle ↪ 8.3.6 "Install the nozzle".

### 9.2.3 Replace seal retainer screw and sealing rings.

Personnel:

- » Operator
- » + additional qualification explosion protection
- » + Additional qualification high pressure

Protective equipment:

- » Face protection
- » Protective workwear
- » Protective gloves

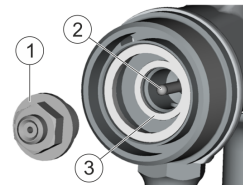


Fig. 26: Replace seal retainer screw

1. Remove nozzle ↪ 8.3.5 "Dismantling the nozzle".
2. Remove needle ↪ 8.3.3 "Remove the needle".

3. Unscrew seal retainer screw (1) with socket wrench SW 10mm.
4. Replace seal retainer screw (1), sealing ring (3).
5. Check needle ball (2) for damages.
6. Screw in seal retainer screw (1) and tighten.
7. Install needle ↪ 8.3.4 "Install the needle".
8. Install nozzle ↪ 8.3.6 "Install the nozzle".

#### 9.2.4 Replace packing seal

Personnel:

- » Operator
- » + additional qualification explosion protection
- » + Additional qualification high pressure

Protective equipment:

- » Face protection
  - » Protective workwear
  - » Protective gloves
1. Remove needle ↪ 8.3.3 "Remove the needle".
  2. Remove nozzle ↪ 8.3.5 "Dismantling the nozzle".
  3. Remove sealing collar ↪ 8.3.7 "Remove packing seal".
  4. Replace sealing collar.
  5. Install sealing collar ↪ 8.3.8 "Install packing seal".
  6. Install nozzle ↪ 8.3.6 "Install the nozzle".
  7. Install needle ↪ 8.3.4 "Install the needle".

#### 9.2.5 Replace seal washer.

Personnel:

- » Operator
- » + additional qualification explosion protection

- » + Additional qualification high pressure

Protective equipment:

- » Face protection
  - » Protective workwear
  - » Protective gloves
1. Remove needle ↪ 8.3.3 "Remove the needle".
  2. Remove nozzle ↪ 8.3.5 "Dismantling the nozzle".
  3. Remove sealing collar ↪ 8.3.7 "Remove packing seal".
  4. Replace sealing disc.
  5. Install sealing collar ↪ 8.3.8 "Install packing seal".
  6. Install nozzle ↪ 8.3.6 "Install the nozzle".
  7. Install needle ↪ 8.3.4 "Install the needle".



### 9.2.6 Replace valve pin seal

Personnel:

- » Operator
- » + additional qualification explosion protection
- » + Additional qualification high pressure

Protective equipment:

- » Face protection
- » Protective workwear
- » Protective gloves

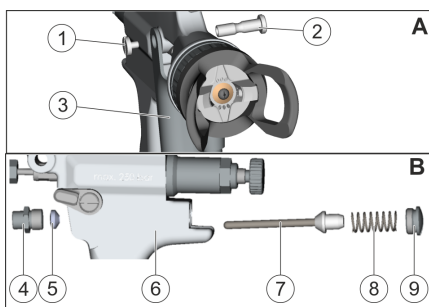


Fig. 27: Replace valve pin seal

1. Remove needle ↪ 8.3.3 "Remove the needle".
2. Loosen the lever screw (1).  
Support the lever axle (2) simultaneously using the slotted screwdriver.  
⇒ The trigger (3) is released.
3. Unscrew valve gland (4).
4. Unscrew sealing screw (9).
5. Remove compression spring (8).
6. Pull out valve pin (7).
7. Replace seal (5).
8. Insert valve pin (7) into the housing (6).

9. Clean sealing screw (9).

Only use silicone-free cleaning agents.

10. Wet sealing screw (9) with the sealing compound.
11. Insert compression spring (8).
12. Screw in sealing screw (9).
13. Screw in valve gland (4).
14. Place trigger (3).
15. Insert lever axle (2).
16. Screw in lever screw (1). Support the lever axle (2) simultaneously using the slotted screwdriver.

9.2.7 Replace O-ring on the circular jet control .

Personnel:

- » Operator
- » + additional qualification explosion protection
- » + Additional qualification high pressure

Protective equipment:

- » Face protection
- » Protective workwear
- » Protective gloves

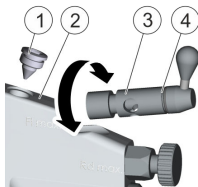


Fig. 28: Replace O-ring on the circular jet control

1. Lock spray gun ↪ 6.5 "Secure spray gun."
2. Unscrew sealing screw (1).
3. Unscrew flat jet control (3).
4. Pull off O-ring (4).
5. Wet new O-ring (4) with oil.
6. Pull up new O-ring (4).
7. Screw flat jet control (3) into the housing (2).  
⇒ Flat jet control latches in.
8. Clean sealing screw (1) ↪ 7.1 "Safety recommendations".
9. Wet sealing screw (1) with the sealing compound.
10. Screw in sealing screw (1).

## 10 Disassembly and Disposal

### 10.1 Safety recommendations



**WARNING!**

**Material escaping under pressure**

Material leaking under high pressure can penetrate the body. Even if the injury looks like a harmless cut wound, the penetrating material leads to amputation, serious injuries can cause death.

- Do not try to seal leakages using body parts, gloves or towels.
- If there are injuries, seek medical attention immediately.

Before working on the product:

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

## 10.2 Disassembly

Personnel:

- » Operator
- » + additional qualification explosion protection
- » + Additional qualification high pressure

Protective equipment:

- » Protective workwear
- » Respiratory protection device
- » Face protection
- » Use ear protection
- » Safety boots
- » Protective gloves

1. Rinse ↪ 6.6 "Rinsing".
2. Disconnect the compressed air supply and material feed. Secure against reconnection.



### NOTICE!

Release connections using suitable tool.

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.
  - ↪ 11.7 "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 small filter	598g
Weight with large filter	648g

### 11.2 Connections

Detail	Value
Air connection	G 1/4" NPT 1/4"
Material connection	G 1/4" NPSM 1/4" M16 x 1.5

### 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

**Emission sound pressure level  $L_{pA}$ , A – assessed according to EN 14462**

Circular jet/ value
» 1.0 bar = 67 dB
» 1.5 bar = 71 dB
» 2.5 bar = 78 dB
Uncertainty $K_{pA}$ 5 dB
Flat jet / value
» 1.0 bar = 69 dB
» 1.5 bar = 74 dB
» 2.5 bar = 79 dB
Uncertainty $K_{pA}$ 5 dB

### 11.5 Operating values

Detail	Value
Spraying air pressure, maximum	8bar
Spraying air pressure, recommended	1.0 to 2.5bar
Material pressure, maximum	250bar

### Air consumption

Round jet and flat jet
1.0bar = 134.0NL/min

Round jet and flat jet
2.0bar = 218.0NL/min
3.0bar = 296.0NL/min
Flat jet
1.0bar = 72.0NL/min
2.0bar = 115.0NL/min
3.0bar = 154.0NL/min

### 11.6 Compressed air quality

- » Purity classes following ISO 8573-1::2010 1:3:1 1:4:1
- » 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 Materials used

Component	Material
Housing	Anodized aluminum
Compression springs	Stainless steel
Materials in contact with material	Stainless steel
Seals in contact with material	PTFE, FEPM
Seals without material contact	NBR, FKM

### 11.8 Operating and auxiliary materials

Material	Material number
Grease tube Syntheso GLEP 1, 100g (for seals and threads)	W32020010

### 11.9 Material specification

Suitable Material:

- » Flammable and non-flammable paints



Do not use materials containing organochlorine compounds (e.g. trichloroethane, chloromethane).

12 Replacement parts, tools and accessories

12.1 Replacement parts

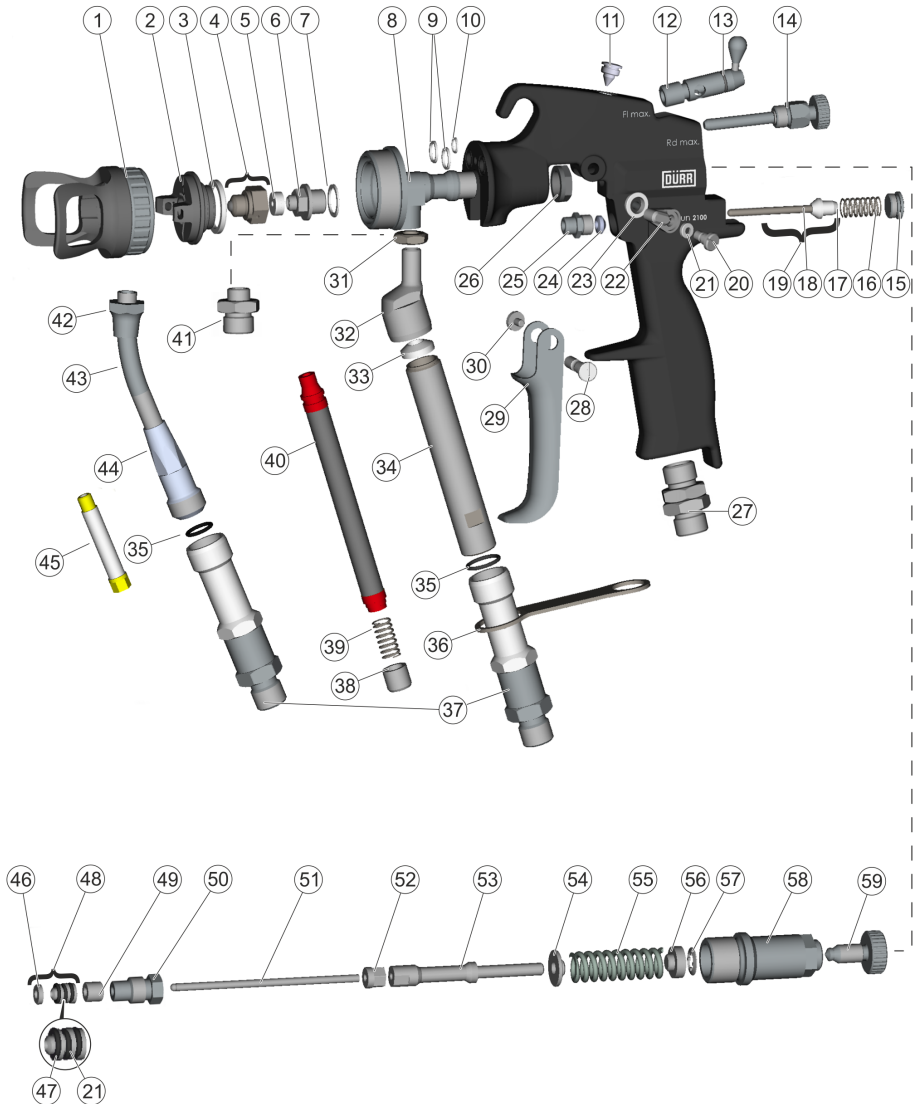


Fig. 29: Exploded view

Item	Denomination	Quantity	Material number
1	Cap nut with spray jet screen (black) for hexagonal nozzles	1	M60020002
	Cap nut with spray jet screen (blue) for round nozzles	1	M60020008
2	Air cap	1	↳ "Overview - Air caps and nozzles"
3	Seal	1	M08280049
4	Nozzle	1	↳ "Overview - Air caps and nozzles"
5	Seal for hexagonal nozzles	1	M08280047
	Seal for round nozzles	1	M08280048
6	Seal retainer screw	1	M41060165
7	Sealing ring, aluminum	1	M08010529
8	Material supply inlet	1	M01010194
9	Seal	2	Included in N36960029
10	O-ring 3.5 x 1.0	1	
11	Sealing screw	1	M41090173
12	Flat jet control	1	M21200005
13	O-ring 7.0 x 1.0	1	
14	Circular jet control	1	
15	Sealing screw M10x1	1	Included in N36960066
16	Compression spring of valve	1	
17	Seal of valve	1	
18	Valve pin	1	
19	Valve, complete	1	
20	Screw	1	N36960031
21	O-ring 4.0 x 1.2	4	
22	Retainer lever	1	
23	Washer	1	

Item	Denomination	Quantity	Material number
24	Seal	1	Included in N36960066
25	Valve gland	1	
26	Hexagonal nut of needle	1	M30030100
27	Air connection G 1/4"	1	M01200001
	Air connection 1/4" NPT	1	M01200002
28	Lever axle	1	N36960030
29	Trigger	1	
30	Lever screw	1	
31	Hexagonal nut of material connection	1	N36960158
32	Paint pipe connection	1	
33	Seal	1	
34	Paint tube	1	
35	O-ring 12.0 x 1.5	1	
36	Paint pipe support bracket	1	
37	Connection of medium, rotatable NPSM 1/4"	1	M01010188
	Connection of medium, rotatable G 1/4"	1	M01010182
	Connection of medium, rotatable M16x1,5	1	M01010181
38	Sleeve	1	↳ "Filter sets"
39	Compression spring of filter	1	↳ "Filter sets"
40	Filter 30 mesh, green	1	M13060013
	Filter 50 mesh, white	1	M13060012
	Filter 100 mesh, yellow	1	M13060011
	Filter 200 mesh, red	1	M13060010
41	Reducer nipple M8x1/NPSM 1/4"	1	M56100465
	Reducer nipple M8x1/G 1/4"	1	M56100466
42	Locknut	1	N36960157
43	Paint pipe, top	1	
44	Paint pipe, bottom	1	



Item	Denomination	Quantity	Material number
45	Filter 80 mesh, white	1	M13060009
	Filter 150 mesh, yellow	1	M13060008
	Filter 295 mesh, red	1	M13060007
46	Sealing washer	1	M08220051
47	Cap seal	3	
48	Sealing collar, 6-piece	1	
49	Spacing sleeve	1	Included in N36960068
50	Needle gland	1	
51	Needle piece	1	
52	Needle driver	1	
53	Needle piece rear	1	M32010089
54	Pressure disc, large	1	N36960067
55	Compression spring of needle	1	
56	Pressure disc, small	1	M39100074
57	Notched ring ZA 4.0	1	N36960036
58	Plug	1	
59	Adjusting screw	1	

## Overview - Air caps and nozzles

**Nozzle labeling example**
**411"/428 VZ**

- 4 - Spray jet angle (examples: 1 = 10°, 2 = 20°, 3 = 30°, 4 = 40°, etc.)
- 11" - Nozzle size in inches (examples: 07 = 0.007in, 09 = 0.009in, 11 = 0.011in, etc.)
- 28 - Nozzle size in mm (example: 18 = 0.18mm, 23 = 0.23mm, 28 = 0.28mm, etc.)
- VZ - With pre-atomizer

**Hexagonal nozzles**

Nozzle size in mm	Nozzle size in inch	Spray jet angle	Spray jet width in mm <sup>1</sup>	Flow rate in L/min <sup>2 3</sup>	Material number	Item
0.18	0.007	10°	51 to 76	0.18	M09020372	4
0.18	0.007	20°	102 to 152	0.18	M09020373	
0.18	0.007	30°	152 to 203	0.18	M09020374	
0.18	0.007	40°	203 to 254	0.18	M09020375	
0.23	0.009	10°	51 to 76	0.25	M09020376	
0.23	0.009	20°	102 to 152	0.25	M09020377	
0.23	0.009	30°	152 to 203	0.25	M09020378	
0.23	0.009	40°	203 to 254	0.25	M09020379	
0.23	0.009	50°	254 to 305	0.25	M09020380	
0.23	0.009	60°	305 to 356	0.25	M09020381	
0.28	0.011	10°	51 to 76	0.37	M09020382	
0.28	0.011	20°	102 to 152	0.37	M09020383	
0.28	0.011	30°	152 to 203	0.37	M09020384	
0.28	0.011	40°	203 to 254	0.37	M09020385	
0.28	0.011	50°	254 to 305	0.37	M09020386	
0.28	0.011	60°	305 to 356	0.37	M09020387	
0.28	0.011	70°	356 to 406	0.37	M09020388	

Nozzle size in mm	Nozzle size in inch	Spray jet angle	Spray jet width in mm <sup>1</sup>	Flow rate in L/min <sup>2 3</sup>	Material number	Item
0.33	0.013	10°	51 to 76	0.57	M09020389	
0.33	0.013	20°	102 to 152	0.57	M09020390	
0.33	0.013	30°	152 to 203	0.57	M09020391	
0.33	0.013	40°	203 to 254	0.57	M09020392	
0.33	0.013	50°	254 to 305	0.57	M09020393	
0.33	0.013	60°	305 to 356	0.57	M09020394	
0.33	0.013	70°	356 to 406	0.57	M09020395	
0.33	0.013	80°	406 to 457	0.57	M09020396	
0.38	0.015	10°	51 to 76	0.72	M09020397	
0.38	0.015	20°	102 to 152	0.72	M09020398	
0.38	0.015	30°	152 to 203	0.72	M09020399	
0.38	0.015	40°	203 to 254	0.72	M09020400	
0.38	0.015	50°	254 to 305	0.72	M09020401	
0.38	0.015	60°	305 to 356	0.72	M09020402	
0.38	0.015	70°	356 to 406	0.72	M09020403	
0.38	0.015	80°	406 to 457	0.72	M09020404	
0.38	0.015	90°	457 to 508	0.72	M09020405	
0.43	0.017	10°	51 to 76	0.98	M09020406	
0.43	0.017	20°	102 to 152	0.98	M09020407	
0.43	0.017	30°	152 to 203	0.98	M09020408	
0.43	0.017	40°	203 to 254	0.98	M09020409	
0.43	0.017	50°	254 to 305	0.98	M09020410	
0.43	0.017	60°	305 to 356	0.98	M09020411	
0.43	0.017	70°	356 to 406	0.98	M09020412	
0.43	0.017	80°	406 to 457	0.98	M09020413	
0.43	0.017	90°	457 to 508	0.98	M09020414	
0.48	0.019	10°	51 to 76	1.30	M09020415	

Nozzle size in mm	Nozzle size in inch	Spray jet angle	Spray jet width in mm <sup>1</sup>	Flow rate in L/min <sup>2 3</sup>	Material number	Item
0.48	0.019	20°	102 to 152	1.30	M09020416	
0.48	0.019	30°	152 to 203	1.30	M09020417	
0.48	0.019	40°	203 to 254	1.30	M09020418	
0.48	0.019	50°	254 to 305	1.30	M09020419	
0.48	0.019	60°	305 to 356	1.30	M09020420	
0.48	0.019	70°	356 to 406	1.30	M09020421	
0.48	0.019	80°	406 to 457	1.30	M09020422	
0.48	0.019	90°	457 to 508	1.30	M09020423	
0.53	0.021	10°	51 to 76	1.52	M09020424	
0.53	0.021	20°	102 to 152	1.52	M09020425	
0.53	0.021	30°	152 to 203	1.52	M09020426	
0.53	0.021	40°	203 to 254	1.52	M09020427	
0.53	0.021	50°	254 to 305	1.52	M09020428	
0.53	0.021	60°	305 to 356	1.52	M09020429	
0.53	0.021	70°	356 to 406	1.52	M09020430	
0.53	0.021	80°	406 to 457	1.52	M09020431	
0.53	0.021	90°	457 to 508	1.52	M09020432	
0.60	0.023	10°	51 to 76	1.95	M09020433	
0.60	0.023	20°	102 to 152	1.95	M09020434	
0.60	0.023	30°	152 to 203	1.95	M09020435	
0.60	0.023	40°	203 to 254	1.95	M09020436	
0.60	0.023	50°	254 to 305	1.95	M09020437	
0.60	0.023	60°	305 to 356	1.95	M09020438	
0.60	0.023	70°	356 to 406	1.95	M09020439	
0.60	0.023	80°	406 to 457	1.95	M09020440	
0.60	0.023	90°	457 to 508	1.95	M09020441	
0.70	0.027	10°	51 to 76	2.70	M09020442	

Nozzle size in mm	Nozzle size in inch	Spray jet angle	Spray jet width in mm <sup>1</sup>	Flow rate in L/min <sup>2 3</sup>	Material number	Item
0.70	0.027	20°	102 to 152	2.70	M09020443	
0.70	0.027	30°	152 to 203	2.70	M09020444	
0.70	0.027	40°	203 to 254	2.70	M09020445	
0.70	0.027	50°	254 to 305	2.70	M09020446	
0.70	0.027	60°	305 to 356	2.70	M09020447	
0.70	0.027	70°	356 to 406	2.70	M09020448	
0.70	0.027	80°	406 to 457	2.70	M09020449	
0.70	0.027	90°	457 to 508	2.70	M09020450	

<sup>1</sup> - Spray jet at 300mm spraying distance with water

<sup>2</sup> - Flow rate at 100bar pressure with water

<sup>3</sup> - Use the following formula for flow rate (Q2) for new operating pressure (P2):  
 $Q2 = Q1 \cdot \sqrt{P2/P1}$ , P1 = 100bar, Q1 = flow rate according to table

### Circular nozzles

Nozzle size in mm	Nozzle size in inch	Spray jet angle	Spray jet width in mm <sup>1</sup>	Flow rate in L/min <sup>2 3</sup>	Material number	Item
0.18	0.007	10°	51 to 76	0.18	M09020731	4
0.18	0.007	20°	102 to 152	0.18	M09020684	
0.18	0.007	30°	152 to 203	0.18	M09020690	
0.18	0.007	40°	203 to 254	0.18	M09020696	
0.23	0.009	10°	51 to 76	0.25	M09020732	
0.23	0.009	20°	102 to 152	0.25	M09020685	
0.23	0.009	30°	152 to 203	0.25	M09020691	
0.23	0.009	40°	203 to 254	0.25	M09020697	
0.23	0.009	50°	254 to 305	0.25	M09020717	
0.23	0.009	60°	305 to 356	0.25	M09020702	
0.28	0.011	20°	102 to 152	0.37	M09020686	
0.28	0.011	30°	152 to 203	0.37	M09020692	

Nozzle size in mm	Nozzle size in inch	Spray jet angle	Spray jet width in mm <sup>1</sup>	Flow rate in L/min <sup>2 3</sup>	Material number	Item
0.28	0.011	40°	203 to 254	0.37	M09020698	
0.28	0.011	50°	254 to 305	0.37	M09020718	
0.28	0.011	60°	305 to 356	0.37	M09020703	
0.28	0.011	70°	356 to 406	0.37	M09020710	
0.33	0.013	20°	102 to 152	0.57	M09020687	
0.33	0.013	30°	152 to 203	0.57	M09020693	
0.33	0.013	40°	203 to 254	0.57	M09020699	
0.33	0.013	50°	254 to 305	0.57	M09020719	
0.33	0.013	60°	305 to 356	0.57	M09020704	
0.33	0.013	70°	356 to 406	0.57	M09020711	
0.33	0.013	80°	406 to 457	0.57	M09020713	
0.38	0.015	20°	102 to 152	0.72	M09020688	
0.38	0.015	30°	152 to 203	0.72	M09020694	
0.38	0.015	40°	203 to 254	0.72	M09020700	
0.38	0.015	50°	254 to 305	0.72	M09020720	
0.38	0.015	60°	305 to 356	0.72	M09020705	
0.38	0.015	70°	356 to 406	0.72	M09020712	
0.38	0.015	80°	406 to 457	0.72	M09020740	
0.38	0.015	90°	457 to 508	0.72	M09020748	
0.43	0.017	30°	152 to 203	0.98	M09020695	
0.43	0.017	40°	203 to 254	0.98	M09020701	
0.43	0.017	50°	254 to 305	0.98	M09020722	
0.43	0.017	60°	305 to 356	0.98	M09020707	
0.43	0.017	70°	356 to 406	0.98	M09020736	
0.43	0.017	80°	406 to 457	0.98	M09020746	
0.43	0.017	90°	457 to 508	0.98	M09020714	
0.48	0.019	30°	152 to 203	1.30	M09020733	

Nozzle size in mm	Nozzle size in inch	Spray jet angle	Spray jet width in mm <sup>1</sup>	Flow rate in L/min <sup>2 3</sup>	Material number	Item
0.48	0.019	40°	203 to 254	1.30	M09020734	
0.48	0.019	50°	254 to 305	1.30	M09020735	
0.48	0.019	60°	305 to 356	1.30	M09020708	
0.48	0.019	70°	356 to 406	1.30	M09020737	
0.48	0.019	80°	406 to 457	1.30	M09020747	
0.48	0.019	90°	457 to 508	1.30	M09020743	
0.53	0.021	50°	254 to 305	1.52	M09020723	
0.53	0.021	60°	305 to 356	1.52	M09020709	
0.53	0.021	70°	356 to 406	1.52	M09020738	
0.53	0.021	80°	406 to 457	1.52	M09020741	
0.53	0.021	90°	457 to 508	1.52	M09020749	
0.58	0.023	50°	254 to 305	1.83	M09020724	
0.58	0.023	60°	305 to 356	1.83	M09020745	
0.58	0.023	70°	356 to 406	1.83	M09020739	
0.58	0.023	80°	406 to 457	1.83	M09020742	
0.58	0.023	90°	457 to 508	1.83	M09020744	

<sup>1</sup> - Spray jet at 300mm spraying distance with water

<sup>2</sup> - Flow rate at 100bar pressure with water

<sup>3</sup> - Use the following formula for calculating flow rate (Q2) for new operating pressure (P2):  
 $Q2 = Q1 \cdot \sqrt{P2/P1}$ , P1 = 100bar, Q1 = flow rate according to table.

### Air caps

Air cap	Item	Material number
Air cap for hexagonal nozzles (10 to 30°)	2, 3	M35030077
Air cap for hexagonal nozzles (40 to 130°)	2, 3	M35030078
Air cap for circular nozzles	2, 3	M35030229

**Filter sets**

Components	Item	Material number
Compression spring, sleeve, Filter 630 µm 30 mesh, green	38, 39, 40	N36960032
Compression spring, sleeve, Filter 320 µm 50 mesh, white		N36960033
Compression spring, sleeve, Filter 160 µm 100 mesh, yellow		N36960034
Compression spring, sleeve, Filter 65 µm 200 mesh, red		N36960035

**Repair kits**

Denomination	Components	Material number
Repair kit	Seal retainer screw (6), air control for flat jet (12, 13), sealing screw (11), sealing screw M10x1 (15), compression spring of valve (16), valve pin (18), valve gland (25), lever axle (28), lever screw (30), needle piece (51), compression spring of needle (55)	N36960028
Seal set	Seal (3), seal for round and hexagonal nozzles each 1x (5), sealing ring, aluminum (7), seal 2 pcs. (9), O-ring 3.5x1.0 2 pcs. (10), O-ring 7.0 x 1.0 (13), valve seal (17), seal 2 pcs. (24), seal (33), O-ring 12 x 1.5 (35), O-ring 4.0 x 1.2, 4 pcs. (21), cap seal 3 pcs. (47)	N36960029
Trigger, complete	Lever axle (28), trigger (29), lever screw (30)	N36960030
Detent	Screw (20), O-ring 4.0 x 1.2 (21), retainer lever (22), spacer (23)	N36960031
Closure	Notched ring ZA 4.0 (57), plug (58), adjusting screw (59)	N36960036
Valve pin set	Compression spring of valve (16), valve complete (19), seal (24), valve gland (25), sealing screw M10x1 (15)	N36960066



Denomination	Components	Material number
Compression spring set	Pressure disc, large (54), compression spring of needle (55)	N36960067
Needle piece, complete	Sealing disc (46), spacing sleeve (49), sealing collar, 6 parts (48), needle gland (50), needle piece (51), needle driver (52)	N36960068

### Paint pipe sets

**! NOTICE!**

**Incorrect Disassembly and Assembly**

Paint tube connection parts and material connection parts are mounted by the purchaser with Loctite 638.

- Heat paint tube connection parts and material connection parts to 150 °C before disassembly.  
Otherwise you cannot disassemble the connection parts or it causes property damage.
- Use Loctite 638 for technically correct assembly. Follow manufacturer's operating instructions.  
Otherwise it results in leakages on the spray gun.

### Paint pipe set, short/ small filter N36960157

Denomination	Item	Quantity	Material number
O-ring 12.0 x 1.5	35	1	M08030815
Locknut	42	1	
Paint pipe, top	43	1	
Paint pipe, bottom	44	1	

### Paint pipe set, long/ large filter N36960158

Denomination	Item	Quantity	Material number
Hexagonal nut of material connection	31	1	
Paint pipe connection	32	1	
Seal	33	1	
Paint tube	34	1	

Denomination	Item	Quantity	Material number
O-ring 12.0 x 1.5	35	1	M08030815
Paint pipe support bracket	36	1	

## 12.2 Tools

The following tool kit is included in the scope of supply:

Denomination	Components	Material number
Tool kit	Double open end wrench 6 x 7 2 pcs., single head wrench SW 8mm	N36960039

## 12.3 Accessories



A complete overview of the accessories is available from the Dürr Webshop.

Denomination	Item	Quantity	Material number
Connection G 1/4" with bend-protection for hose 6 x 8	-	1	M01010214

## Cleaning sets

Denomination	Item	Quantity	Material number
Cleaning set (21 parts)	-	1	N36960038
Cleaning needle 33mm 0.011" - 0.017" (12 pcs)	-	1	W33130004
Cleaning needle 33mm 0.017" - 0.021" (12 pcs)	-	1	W33130005
Nozzle cleaning set	-	1	N36960267

### Push-on nipple

Denomination	Item	Quantity	Material number
Push-on nipple for quick-action coupling, fixed D7.2 (EU)	-	1	M01010185
Push-on nipple for quick-action coupling, fixed D5 (US)	-	1	M01010786
Push-on nipple for quick-action coupling, fixed D7.5 (ASIA)	-	1	M01010187

## 12.4 Order



### WARNING!

#### Unsuitable replacement parts in explosive areas

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

- Use exclusively original replacement parts.



### WARNING!

#### Unsuitable replacement parts

Replacement 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 replacement parts.

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

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