



LEADING IN PRODUCTION EFFICIENCY

EcoGun AS AUTO Automatic Air Spray Gun

Operation manual

MSG00019EN, V01



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:

N36210008V
EcoGun AS AUTO



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

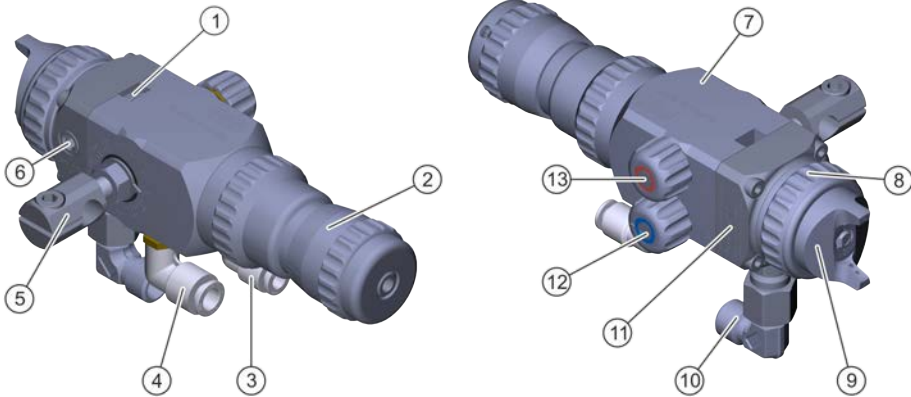


Fig. 1: Product Overview

- | | | | |
|---|------------------------------------------------|----|--------------------------|
| 1 | Leakage groove | 8 | Cap nut |
| 2 | Material flow control | 9 | Air cap |
| 3 | Control air connection (C) | 10 | Material connection (M) |
| 4 | Spraying air connection (A) | 11 | Connector |
| 5 | Retaining bolt with angular gage | 12 | Atomizer air control (R) |
| 6 | Material connection for paint circulation mode | 13 | Horn air control (F) |
| 7 | Housing | | |

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 operation can be done with paint circulation or tap line.

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
 - The alignment of the air cap determines the alignment of the spray jet.
- » Atomizer air pressure

The higher the atomizer air pressure, the higher the atomizing and the finer the spray jet

- » Horn air pressure
 - The higher the horn air pressure, the more oval is the spray jet.
- » Control air pressure
 - Opens the needle and controls the material outflow.
- » Material pressure
 - The higher the material pressure, the higher the material flow

Control air pressure is controlled externally via valves. The horn air pressure and spraying air pressure can be adjusted on the spray gun by means of the horn air pressure (F) and the atomizer air control (R). The spraying air pressure (A) is controlled externally via valves. You can also regulate the material flow via the material flow control, if it is not controlled externally.

2 Safety

2.1 Presentation of Notes

The following notes can appear in this instructions manual.



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.



Contains additional information and recommendations.

2.2 Intended Use

Use

The **EcoGun AS AUTO** spray gun is solely intended for automatic coating of surfaces by one of the following operating methods:

- » as independent, not hand guided, device
- » as part of a semi- or fully automated paint booth
- » as part of a paint robot

The material feed can be effected optionally via the pressure line or under gravitation (flow beaker).

The product is only intended for industrial use within the specified technical data. ↪ 10 "Technical data"

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


Misuse

If used incorrectly, it can cause serious injuries or death.

Misuses include, e. g.:

- » Aiming the spray gun at humans or animals.
- » Atomization of fluid nitrogen
- » Use of unapproved materials
- » Combination of the spray gun with components that are not approved by Dürr Systems for operation.
- » Making conversions or changes on your own
- » Use in explosive areas Ex zone 0

EX labeling

 II 2G T6 X

- II - Device group II: all areas except mining
- 2G - Device category 2 for gas
- T6 - Temperature class T6: Surface temperature, max. 85 °C
- X - Specific conditions for safe operation

The following conditions must be observed for safe operation:

- » Ground spray gun and work piece.
- » Only use conductive lines.
- » Ensure that static electricity can be discharged.

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 are marked with a “+”.

This document is intended for qualified personnel in the industry.

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.

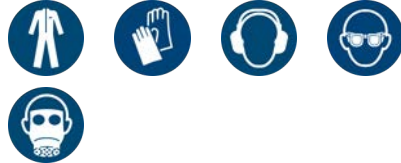
+ additional qualification explosion protection

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

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



2.5 Residual risks

Explosion

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

- » Before carrying out any work, ensure a non-explosive atmosphere.
- » Do not use sources of ignition and open light.
- » Do not smoke.
- » Ground the product.
- » 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 safety data sheets.
- » Ensure that forced ventilation and fire protection equipment are in operation.
- » Do not use any sources of ignition and open light.
- » Do not smoke.

Danger from harmful or irritant substances

Contact with hazardous liquids or vapors, can result in serious injury or death.

Transport, scope of supply and storage

- » Ensure that the forced ventilation is operational.
- » Follow 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 with the product from compressed air and material supply.
- » Relieve the lines.
- » Secure the system against reconnection.

Movable components

There is a risk of death if components or equipment in the vicinity move unexpectedly.

- » Switch off and lock out all system components against being switched on again before working on the product.

Noise

The noise during normal operation may cause severe hearing damage.

- » Wear hearing 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.

3 Transport, scope of supply and storage

3.1 Scope of delivery

The scope of supply includes the following components:

- » Spray gun
- » Tool kit ☞ 11.1 “Replacement parts”

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

Requirements for the warehouse:

- » Do not store outdoors.
- » Store in a dry and 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.

- » It must be possible to disconnect the compressed air supply and material feed to the spray gun and secure it against reconnection.
- » Lines, seals and screw connections must be designed to conform to the spray gun requirements ↪ 10.5 "Operating values".
- » A fastening device capable of securing the spray gun is required.
- » The control air supply must be adjustable.

4.2 Assembly

Stationary assembly

Personnel:

- » Operator
- » + additional qualification explosion protection

Protective equipment:

- » Protective workwear
- » Protective gloves

Observe the following at assembly:

- » Bore of the retaining bolt: 10 mm
- » Nominal diameters: ↪ 10.2 "Connections"

1.



WARNING!

Sources of ignition may cause explosions!

Ensure a non-explosive atmosphere.

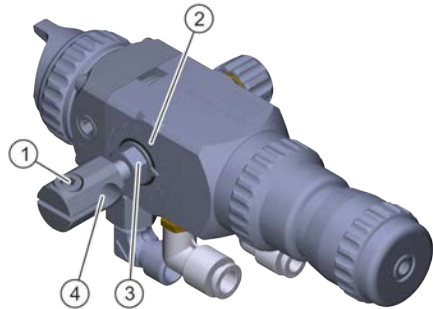


Fig. 2: Assembly

2. Loosen screw (1) using a hexagon socket screwdriver.
3. Slide the spray gun with the bore of the fastening bolt (4) onto the support bracket.
4. Tighten screw (1) using a hexagon socket screwdriver.
5. Loosen locknut (3).
6. Set orientation angle by using angular gage (2).



Alignment is not important. Distance to the work piece: 15 to 25 cm.

7. Tighten the locknut (3).

8. **EX WARNING!**

Statically charges components may cause explosions during operation!

Ground the spray gun through the fastening bore or material connection lines, if the fastening device itself is non-conductive or is not grounded. Ensure housing contract.

» Resistance between housing and grounding terminal $\leq 1 \text{ M}\Omega$.

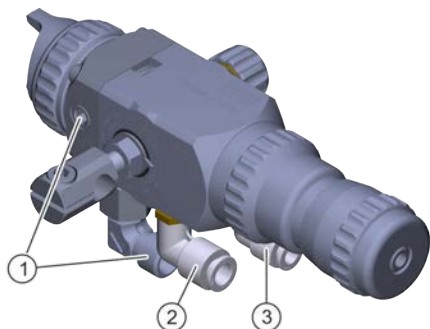


Fig. 3: Connect

9. **i** The spray gun does not work when the lines are not connected correctly.

Connect lines. Ensure correct assignment.

- 1 - Material (M)
- 2 - Spraying air (A)
- 3 - Control air (C)

i Connect lines to both material connections (M) for paint circulation mode.

For tap line mode, connect line to a material connection. Lock the other material connection by means of the sealing screw.

4.3 Setting the spray jet

Personnel:

- » Operator
- » + additional qualification explosion protection

Protective equipment:

- » Protective workwear
- » Protective gloves

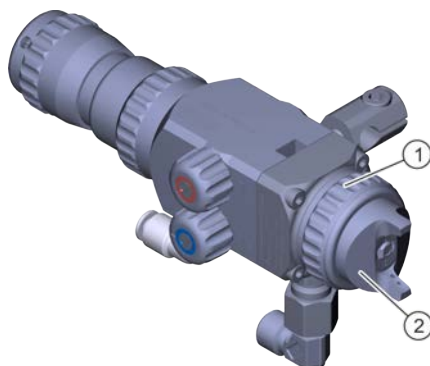


Fig. 4: Setting the spray jet

You can rotate the air cap (2) to any position to change the alignment of the spray jet.

1. Loosen the cap nut (1).

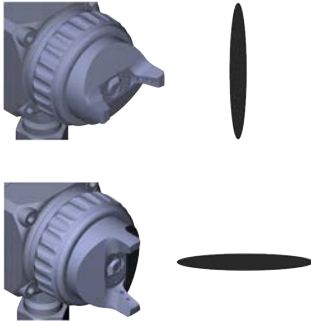


Fig. 5: Air cap alignment

2. Rotate air cap (2) in the required position.
3. Hand tighten the cap nut (1).

5 Commissioning

Personnel:

- » Operator
- » + additional qualification explosion protection

Protective equipment:

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

Depending on the design of the application system, two technicians must be present to execute the commissioning.

- » Technician 1: Operates the controls
- » Technician 2: Check on the spray gun.

1. Actuate the spray gun without material via the control unit or the visualizer.

2. Check the switching behavior.
 - » Does the needle open and close as required?
 - » Are all types of air supply connected?

3. Rinse spray gun. ↪ 6.4 "Rinsing"

4. Connect material.

5. Create a trial spray pattern on a test work piece.

Setting the spray pattern

Personnel:

- » Operator
- » + additional qualification explosion protection

Protective equipment:

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

You can adjust the spray pattern continuously between round and flat.

i You can vary the size of the spray pattern by adjusting the distance between the spray gun and the work piece.

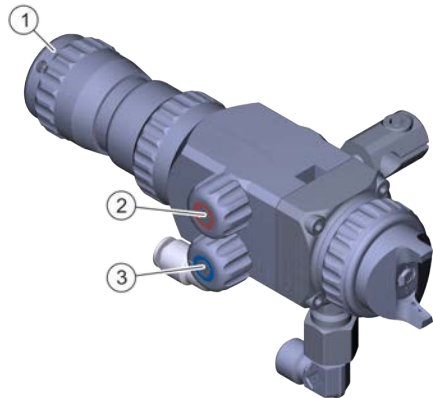


Fig. 6: Setting the spray pattern

1. Set material flow via valves in control cabinet or at material flow control (1).
 - i** Open the material flow control on the spray gun when controlling via the regulation cabinet.
2. Set atomizer air using valves in the control cabinet or on the atomizer air control (R) (3).
 - i** Observe the following characteristic curve.
3. Set horn air using valves in the control cabinet or on the horn air control (F) (2).
 - ⇒ When the horn air is blocked, the spray pattern is round.

Characteristic curve

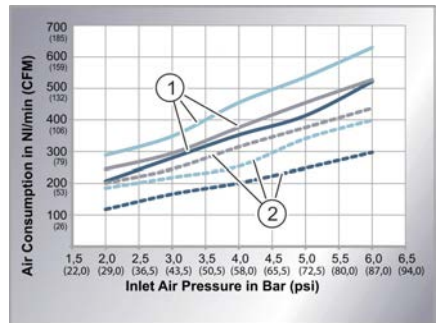


Fig. 7: Characteristic curve

- 1 Flat spray pattern
 - 2 Round spray pattern
- X axis Atomizer air pressure [bar (psi)]
 Y axis Flow rate [NI/min (CFM)]

The characteristic curves show the relation between atomizer air pressure and air consumption when using the air caps PL and HM with a diameter of 1.0 mm as well as the air cap PC with the diameter 1.6 mm.

To achieve the highest possible transfer rate, the air pressure should be kept as low as possible ↪ 6.3 "Selecting air cap", ↪ 10.5 "Operating values".

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 injuries and death can be the consequence.

- Only use rinsing 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.

- Rinse product immediately after each use.

6.2 Checks

1. Perform the following checks during operation:
 - » Check air connection for correct seat and leaks.
 - » 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 PL

The air cap PL is used for:

- » Topcoats
- » Automotive paints
- » Clear coats
- » Mordant

The air cap PL is used for the application of paints with a viscosity up to about 25 s/Ford Becher 4.

Air cap PC

The air cap PC is used for flammable and non-flammable fluid coating materials (1-component paints and 2-component paints). It is used for application of fillers, base coats and topcoats.

Air cap HM (HVLV)

The low mist air cap (HVLV) HM is used for:

- » Finish coat
- » Topcoats
- » Automotive paints
- » Transparent paints
- » Mordant

It is used for the application of paints with a viscosity up to about 20 s/Ford Becher 4.

The air pressure at the gun inlet must not exceed 1.8 bar (26 psi) to achieve the maximum material transfer rate (called HVLV method). 1.8 bar (26 psi) at the gun inlet correspond to 0.7 bar (10 psi) below the air cap. HVLV Test-Set ↪ 11.3 "Accessories"

6.4 Rinsing

6.4.1 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.

6.4.2 General notes

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

6.4.3 Rinsing

Personnel:

- » Operator
- » + additional qualification explosion protection

Protective equipment:

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

The spray gun must be rinsed:

- » 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 rinsing intervals depend on the material used.

1. Rinse the spray gun with an appropriate rinsing agent until the rinsing agent runs clean without any material residue.

7 Cleaning and maintenance

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 safety data sheets.
- Ensure that forced ventilation and fire protection equipment are in operation.
- Do not use sources of ignition and open light.
- Do not smoke.



WARNING!

Risk of injury from 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 injuries and death can be the consequence.

- Use exclusively original replacement parts.

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

Contact with hazardous liquids or vapors, can result in serious injury or death.

- Ensure that the forced ventilation is operational.
- Follow safety data sheets.
- Wear specified protective clothing.

 **WARNING!****Risk of injury due to escaping material and compressed air**

Escaping compressed material can cause serious injury.


Before carrying out any work:

- Disconnect the system, in which the spray gun is installed, from compressed air and material supply.
- Secure the system against reconnection.
- Relieve 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 injuries and death can be the consequence.

- Only use rinsing 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.

 **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 spray gun.

Personnel:

- » Operator
- » + additional qualification explosion protection

Protective equipment:

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

1. Rinse spray gun. ↪ 6.4 “Rinsing”
2. Use a cleaning agent to carefully clean the spray gun. Dry with a soft cloth.

Cleaning the air cap und nozzle

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

Disassembly

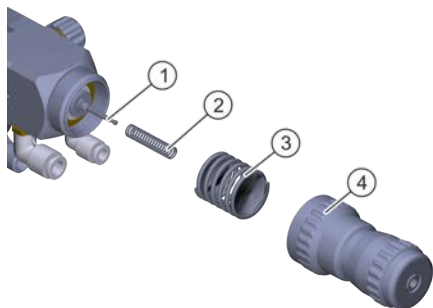


Fig. 8: Disassemble needle.

1. Thread off and remove nozzle (4) with end cap.
2. Remove needle spring (2) and plunger spring (3).

3. Pull back complete needle (1) out of the housing.

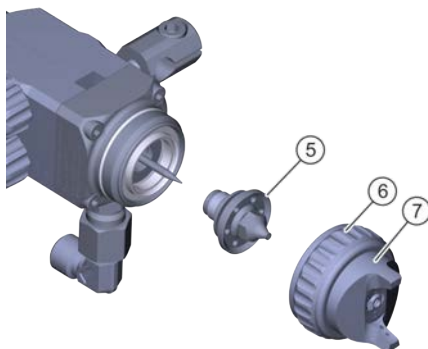


Fig. 9: Disassemble nozzle.

4. Loosen the cap nut (6).
5. Remove cap nut (6) and air cap (7).
6. Unscrew and remove the nozzle (5) with an open-end wrench (SW10).
7. Clean air cap (7) using cleaning agent and cleaning brush ↪ 11.2 “Tools”.
8. Wipe the cleaned air cap (7) dry with a cloth.
9. Clean nozzle (5) in the cleaning bath.

Assembly

10. Insert and tighten nozzle (5).
 - » Tightening torque: 10 Nm
11. Fit the cap nut (6) and air cap (7).
12. Align air cap (7).
13. Hand tighten the cap nut (6).
14. Lubricate needle shank lightly with silicone-free oil. Push in needle (1) carefully into the housing from the back.
15. Insert needle spring (2) and plunger spring (3).
16. Hand tighten the end cap (4).

7.3 Maintenance

7.3.1 Maintenance schedule

The maintenance intervals given below are based on experiential values. Maintenance intervals, adjust individually if necessary.

Interval	Maintenance work
Daily	Check condition and tightness (also of the connections and lines). Check fastening
Before every change of material	Cleaning ↪ 7.2 “Cleaning”.
Monthly	Lubricate internal components ↪ 7.3.2 “Lubrication”.
After each alteration	Check grounding ↪ 4.2 “Assembly”.

7.3.2 Lubrication

Personnel:

- » Operator
- » + additional qualification explosion protection

Protective equipment:

- » Protective workwear
- » Protective gloves

Needle shank, piston, piston sliding surfaces and gasket must be lubricated so that there will not be any leakages.

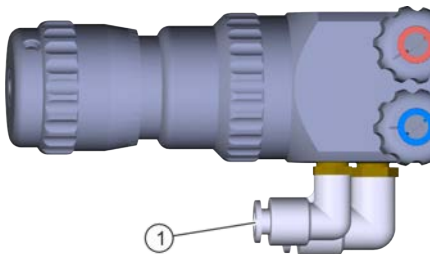


Fig. 10: Lubricating piston components

1. Feed a drop of lubricant (silicone-free oil) at the control air connection (C) (1) using the control air.

8 Faults

8.1 Safety recommendations



CAUTION!

Risk of injury due to spring tension

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

- Removing and installing end cap

! 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.

8.2 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 pattern	Fault identification
	Spray jet is uneven.
	Spray jet is sickle-shaped.

Fault description	Cause	Remedy
No material	Line pinched or broken	Check the line.
	Needle does not open.	Check control air.
Material leaking when needle is closed.	Needle does not close correctly.	Check control air venting. Check operation of needle. Replace needle, if defective, together with the nozzle ↪ 8.3.1 "Replace needle and nozzle."
	Nozzle soiled or defective.	Clean and check the nozzle. If nozzle is defective, replace it along with the needle ↪ 8.3.1 "Replace needle and nozzle."
Air leaks from the material flow control	Piston worn out	Replace piston ↪ 8.3.3 "Replace piston and piston seals."
Air leak from the leakage slot	Gasket worn out	Have it replaced by Dürr Systems.
Material leaks from the leakage-slot	Needle gland worn out	Replace needle gland ↪ 8.3.2 "Replace needle seal".
Spray jet misaligned	Air cap is misaligned.	Rotate air cap into the required position ↪ 4.3 "Setting the spray jet".
Spray jet too strong in center.	Too much material	Reduce material feed. Increase spraying air pressure (A).
	Material too viscous.	Change material consistency.
	Horn air pressure too low	Raise horn air pressure using the horn air control (F).
Split spray jet	Not enough material.	Increase material feed.

Fault description	Cause	Remedy
		Reduce spraying air pressure (A).
	Material too thin.	Change material consistency.
	Horn air pressure too high	Raise horn air pressure using the horn air control (F).
Cone-shaped spray jet	Bores in air cap are soiled.	Clean and check air cap ↪ 7.2 “Cleaning”. Replace air cap if defective ↪ 8.3.1 “Replace needle and nozzle.”.
	Nozzle soiled or defective.	Clean and check the nozzle ↪ 7.2 “Cleaning”. If nozzle is defective, replace it along with the needle ↪ 8.3.1 “Replace needle and nozzle.”.
Sickle-shaped spray jet	Bores in air cap are soiled.	Clean and check air cap ↪ 7.2 “Cleaning”. Replace air cap if defective ↪ 8.3.1 “Replace needle and nozzle.”.
	Nozzle soiled or defective.	Clean and check the nozzle ↪ 7.2 “Cleaning”. If nozzle is defective, replace it along with the needle ↪ 8.3.1 “Replace needle and nozzle.”.
	Cap nut or nozzle is not properly tightened.	Tighten cap nut and nozzle.
Uneven spray jet	Nozzle soiled or defective.	Clean and check the nozzle ↪ 7.2 “Cleaning”. If nozzle is defective, replace it along with the needle ↪ 8.3.1 “Replace needle and nozzle.”.
	Material pressure too low.	Increase material pressure.
	Feed line pinched or broken.	Check the feed line.
	Needle does not close correctly.	Check control air. Check operation of needle. Replace needle, if defective, together with the nozzle ↪ 8.3.1 “Replace needle and nozzle.”.
	Cap nut or nozzle is not properly tightened.	Tighten cap nut and nozzle.

Fault description	Cause	Remedy
	Needle seal worn out.	Replace needle seal ↪ 8.3.2 “Replace needle seal”.

8.3 Troubleshooting

8.3.1 Replace needle and nozzle.

Personnel:

- » Operator
- » + additional qualification explosion protection

Protective equipment:

- » Protective workwear
- » Protective gloves

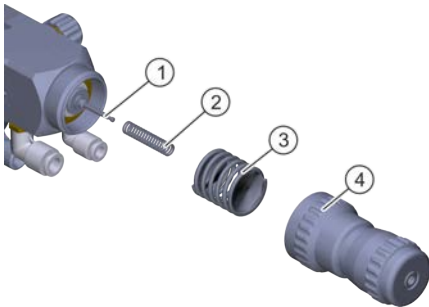


Fig. 11: Disassembling Needle

Disassembly

1. Thread off and remove nozzle (4) with end cap.
2. Remove needle spring (2) and plunger spring (3).
3. Pull back complete needle (1) out of the housing.

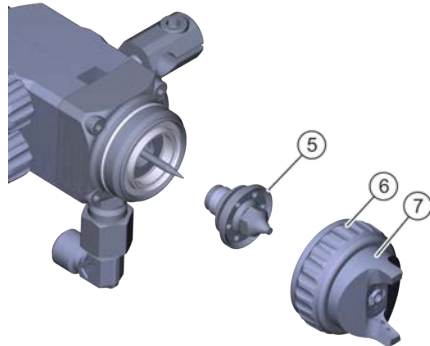


Fig. 12: Disassemble nozzle.

4. Loosen the cap nut (6).
5. Remove cap nut (6) and air cap (7).
6. Unscrew and remove the nozzle (5) with an open-end wrench (SW10).
7. Replace worn out or defective components.

Assembling

8. Insert and tighten nozzle (5).
 - » Tightening torque: 10 Nm



Depending on the use case, use a nozzle with a suitable diameter.

9. Fit the cap nut (6) and air cap (7).
10. Align air cap (7).
11. Hand tighten the cap nut (6).

Faults

12. Lubricate needle shank lightly with silicone-free oil. Push in needle (1) carefully into the housing from the back.
13. Insert needle spring (2) and plunger spring (3).
14. Hand tighten the end cap (4).

8.3.2 Replace needle seal

Personnel:

- » Operator
- » + additional qualification explosion protection

Protective equipment:

- » Protective workwear
- » Protective gloves

Disassembly

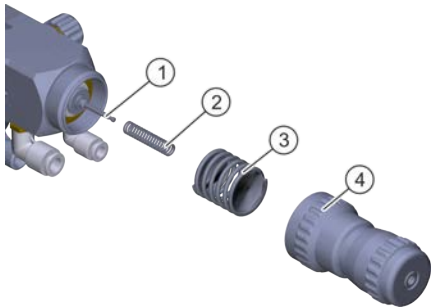


Fig. 13: Disassemble needle.

1. Thread off and remove nozzle (4) with end cap.
2. Remove needle spring (2) and plunger spring (3).
3. Pull back complete needle (1) out of the housing.

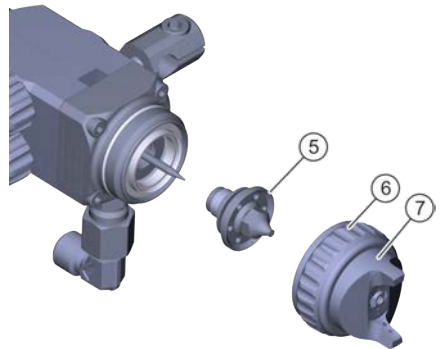


Fig. 14: Disassemble nozzle.

4. Loosen the cap nut (6).
5. Remove cap nut (6) and air cap (7).
6. Unscrew and remove the nozzle (5) with an open-end wrench (SW10).

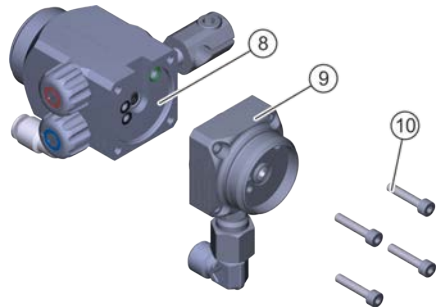


Fig. 15: Disassemble connector

7. Undo the four screws of the connector (10) by means of an internal hexagon socket spanner.
8. Disconnect connector (9) and housing (8) from each other beforehand.

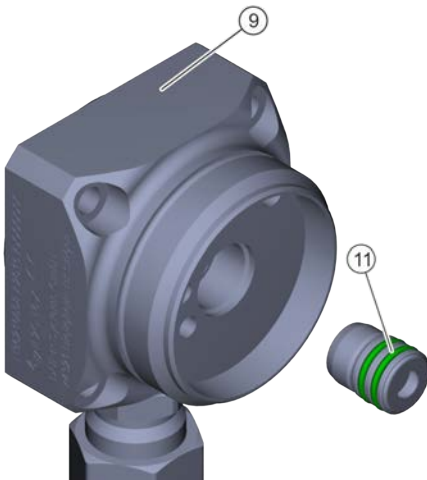


Fig. 16: Remove needle gland

9. Push out needle gland (11) towards the front from the connector (9). Possibly. Use installation wrench.
10. Replace worn out or defective components.

Assembly

11. Insert needle gland (11) in the connector (9). Possibly. Use installation wrench. Observe installation position.
12. Connect connector (9) and housing (8) to each other.
13. Insert the four screws of the connecting piece (9). Tighten using a hexagon socket screwdriver.
14. Insert and tighten nozzle (5).
» Tightening torque: 10 Nm
15. Fit the cap nut (6) and air cap (7).
16. Align air cap (7).
17. Hand tighten the cap nut (6).

18. Lubricate needle shank lightly with silicone-free oil. Push in needle (1) carefully into the housing from the back.
19. Insert needle spring (2) and plunger spring (3).
20. Hand tighten the end cap (4).

8.3.3 Replace piston and piston seals.

Personnel:

- » Operator
- » + additional qualification explosion protection

Protective equipment:

- » Protective workwear
- » Protective gloves

Disassembly

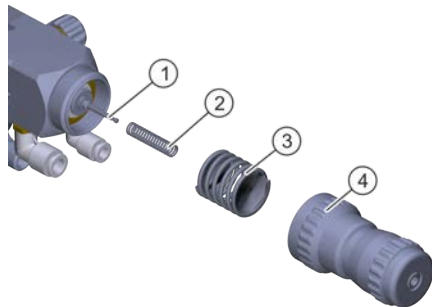


Fig. 17: Disassemble needle.

1. Thread off and remove nozzle (4) with end cap.
2. Remove needle spring (2) and plunger spring (3).
3. Pull back complete needle (1) out of the housing.

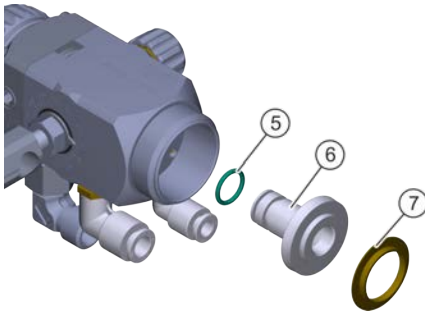


Fig. 18: Disassemble piston.

4. Pull out piston bearing (7) and piston (6) with O-ring (5).
5. Replace worn out or defective components.

Assembly

6. Insert piston (6) with pre-assembled O-ring (5) and piston bearing (7).
7. Lubricate needle shank lightly with silicone-free oil. Push in needle (1) carefully into the housing from the back.
8. Insert needle spring (2) and plunger spring (3).
9. Hand tighten the end cap (4).

9 Disassembly and Disposal

9.1 Safety recommendations

WARNING!

Risk of injury due to escaping material and compressed air

Escaping compressed material can cause serious injury.

Before carrying out any work:

- Disconnect the system, in which the spray gun is installed, from compressed air and material supply.
- Secure the system against reconnection.
- Relieve the lines.

9.2 Disassembly

Personnel:

- » Operator
- » + additional qualification explosion protection

Protective equipment:

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

1. Rinsing ☞ 6.4 “Rinsing”.
2. Disconnect the compressed air supply and material feed. Secure against reconnection.
3. Disconnect all lines.
4. Disassemble the spray gun from the support bracket.

9.3 Disposal



ENVIRONMENT!

Incorrect disposal

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

- Always dispose of components in accordance with their characteristic.
↳ 10.7 “Materials used”
- Collect leaked out operating and auxiliary materials completely.
- Dispose of operating and auxiliary materials according to the disposal provisions in force.
- In case of doubt, refer to the local disposal authorities.

10 Technical data

10.1 Dimensions and weight

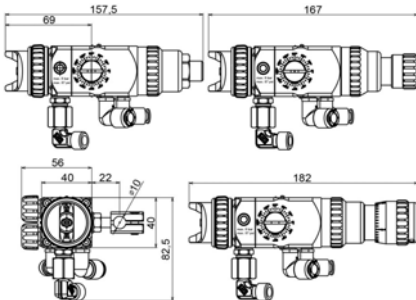


Fig. 19: Dimensions

Detail	Value
Length with tool-adjustable material flow control	157.5 mm
Length with micro-regulation B (manual adjustment)	167 mm

Detail	Value
Length with micro-regulation S (manual adjustment, fine)	182 mm
Width (without support bracket)	56 mm
Height	82.5 mm
Weight	725 g
Nozzle diameter	0.8 to 2.2 mm

10.2 Connections

Connection	Nominal width
Material	M 14 x 1.5 (Ø 8/6 mm)
Control air	Ø 6/4 mm Push-in
Spraying air	Ø 8/6 mm Push-in

10.3 Operating conditions

Detail	Value
Min. ambient temperature	2 °C
Max. ambient temperature	55 °C

10.4 Emissions

Detail	Value
Emission sound pressure level L_{pA} , A – according to EN 14462	88.5 dB
Uncertainty K_{pA}	5 dB
Sound power level L_{WA} , A ₀ – according to EN14462	102.4 dB
Uncertainty K_{WA}	5 dB

Technical data

10.5 Operating values

Detail	Value
Spraying air pressure, maximum	6 bar (87 psi)
Control air pressure, optimum.	4 bar (58 psi)
Material pressure, maximum	6 bar (87 psi)
Air pressure HM air cap (HVLP), maximum	1.8 bar (26 psi)

10.6 Type plate

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

10.7 Materials used

Component	Material
Housing	Stainless steel, aluminum

Component	Material
Compression springs	Stainless steel
Materials in contact with material	Stainless steel
Seals in contact with material	PTFE, PA
Seals without material contact	NBR

10.8 Operating and auxiliary materials

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

10.9 Material specification

Suitable Material:

- » Water-based or solvent based coating materials



Do not use halogen - hydrocarbon based material.

11 Replacement parts, tools and accessories

11.1 Replacement parts

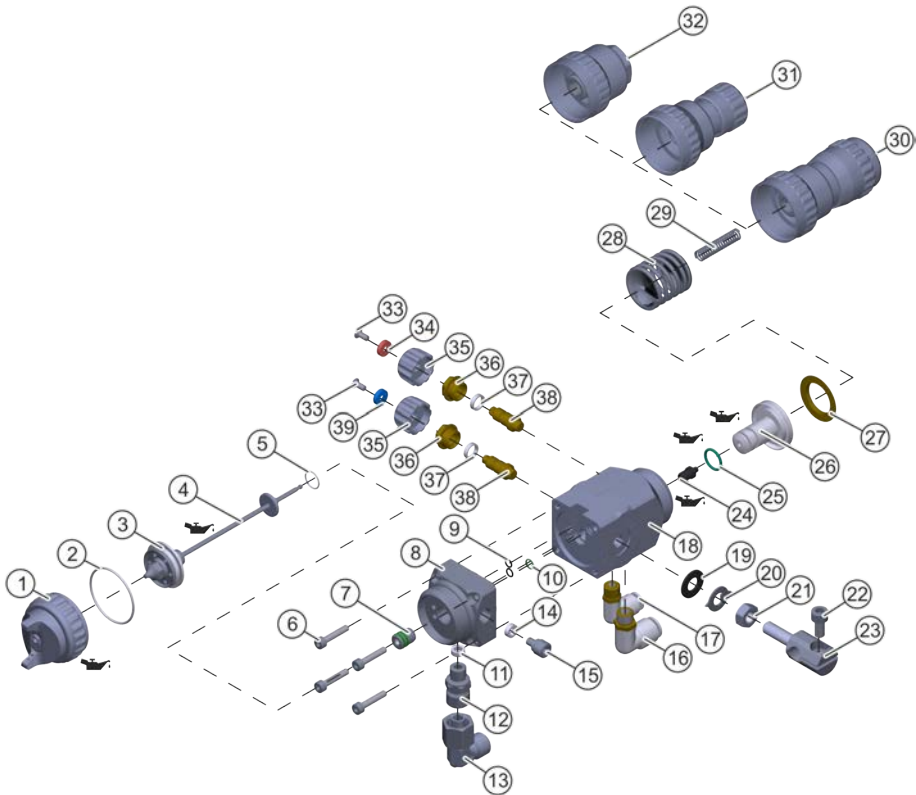


Fig. 20: Exploded view

Klüber Syntheso GLEP1

Item	Description	Quantity	Material no.
1	Air cap	1	↳ "Overview - Air caps and nozzles"
2	O-ring 33 x 1.6	1	
3	Nozzle	1	↳ "Overview - Air caps and nozzles"

Item	Description	Quantity	Material no.
4	Needle	1	↳ "Overview - Air caps and nozzles"
5	O-ring 10x1	1	
6	Screw M 4 x 20	4	
7	Needle gland	1	
8	Connector	1	
9	O-ring 4x1	2	
10	O-ring 5x1	1	
11	Seal	1	
12	Connection nozzle M 14 x 1.5	1	
13	Elbow M 14 x 1.5 8L SST	1	
14	Seal	1	
15	Locking screw G1/8"	1	
16	Elbow plug-in connection D8 1/8"	1	M57310092
17	Elbow plug-in connection D6 1/8"	1	M57310083
18	Housing	1	
19	Washer	1	N66030004
20	Positioning disc	1	
21	Locknut	1	
22	Screw	1	
23	Retaining bolt	1	
24	Gasket	1	
25	O-Ring 11 x 1.8	1	
26	Piston	1	
27	Piston bearing	1	
28	Plunger spring	1	
29	Needle spring	1	

Item	Description	Quantity	Material no.
30	Material flow control B (manual adjustment, fine)	1	N36960072
31	Material flow control S (manual adjustment)	1	N36960073
32	Tool-adjustable material flow control	1	N36960074
33	Countersunk-head screw M 3.5 x 8	2	
34	Color ring (red)	1	
35	Rotary control	2	
36	Control bush	2	
37	Seal	2	
38	Control screw	2	
39	Color ring (blue)	1	

Overview - Air caps and nozzles



Nozzle sets consist of needle and nozzle with or without air cap.
For optional HVLP test set see ↪ 11.3 "Accessories"

Nozzle sets with air cap

Nozzle diameter	Item no.	Nozzle set PL	Nozzle set PC	Nozzle set HM (HVLP)
0.8 mm	1, 3, 4	M09800139	-	-
1.0 mm		M09800140		M09800187
1.2 mm		M09800141		M09800188
1.6 mm		-	M09800183	-
1.8 mm			M09800184	

Nozzle diameter	Item no.	Nozzle set PL	Nozzle set PC	Nozzle set HM (HVLP)
2.0 mm			M09800185	
2.2 mm			M09800186	

Nozzle sets without air cap

Nozzle diameter	Item no.	Nozzle set PL	Nozzle set PC	Nozzle set HM (HVLP)
0.8 mm	3, 4	M09800069	-	-
1.0 mm		M09800070		M09800072
1.2 mm		M09800071		M09800073
1.6 mm		-	M09800074	-
1.8 mm			M09800075	
2.0 mm			M09800076	
2.2 mm			M09800077	

Air caps

Nozzle diameter	Item no.	Material no.
Air cap PL 0.8 to 1.2 mm	1	M35030087
Air cap PC 1.6 to 2.2mm		M35030091
Air cap HM (HVLP) 1.0 to 1.2 mm		M35030092

Seal set N36960040

Denomination	Item no.	Quantity
O-ring 33 x 1.6	2	1
O-ring 10x1	5	1
Needle gland	7	1
O-ring 4x1	9	2
O-ring 5x1	10	1
Gasket	24	1
O-Ring 11 x 1.8	25	1
Piston	26	1

Regulation set N36960048

Denomination	Item no.	Quantity
Countersunk-head screw M 3.5 x 8	33	1
Rotary control	35	1
Control bush	36	1
Seal	37	1
Control screw	38	1
Color ring (blue)	39	1

Spring set N36960094

Description	Item	Quantity
Plunger spring	28	1
Needle spring	29	1

Media connection set M01010200

Denomination	Item	Quantity
Seal	11	1
Connection nozzle M 14 x 1.5	12	1
Elbow M 14 x 1.5 8L SST	13	1

Plugs set N36960096

Denomination	Item no.	Quantity
Seal	14	1
Locking screw G1/8"	15	1

11.2 Tools

Tool set N36960019

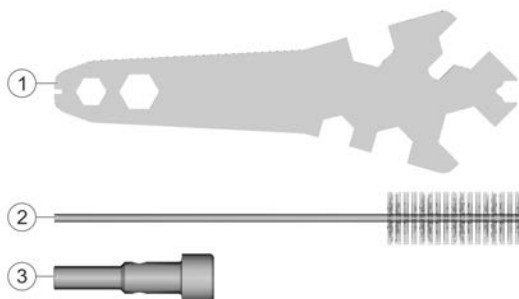


Fig. 21: Tools

Item	Description	Quantity
1	Monkey wrench	1
2	Cleaning brush	1
3	Installation wrench	1
-	Hexagon socket 3 mm	1
-	Hexagon socket 5 mm	1

Tool kit (2 parts) N36960184

Item	Description	Quantity
1	Monkey wrench	1
2	Cleaning brush	1

11.3 Accessories







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

Description	Item no.	Quantity	Material no.
Color ring set (red, yellow, green, blue, black)	34/39	5	N36960088
Cleaning set 21 parts	-	1	N36960038
HVLP test set for HM air cap	-	1	W05010163

Connections

Denomination	Item no.	Material no.
External air control connection	-	M01010195
Hose connection M 14 x 1.5 D6 d4	-	M58100104
Hose connection M 14 x 1.5 D8 d6	-	M58100105
Adapter M 14 x 1.5 – 1/4" NPSM	-	M55070375
Adapter M 14 x 1.5 – 3/8"	-	M55070387

Extensions overview

Extension	Spray pattern	Spray jet shape
NP		Round forward
NS		Round, deviating 20° from the extension axis
LPS		Round forward
		360 degrees round jet

Description	Length	External diameter	Weight	Nozzle diameter	Material no.	
Extension NS 250-8 AS AUTO	250 mm	8 mm	300 g	1.0 mm	M19140018	
Extension NS 250-8 AS AUTO					M19140019	
Extension NS 250-10 AS AUTO		10 mm	320 g		1.2 mm	M19140020
Extension NS 250-10 AS AUTO						M19140021
Extension LPS 300 AS AUTO	300 mm	18 mm	250 g	2.2 mm	M19140022	
Extension LPS 500 AS AUTO	500 mm		300 g		M19140023	

Extension NP 250-8/-10 M19140018/M19140020 and NS 250-8/-10 M19140019/M19140021

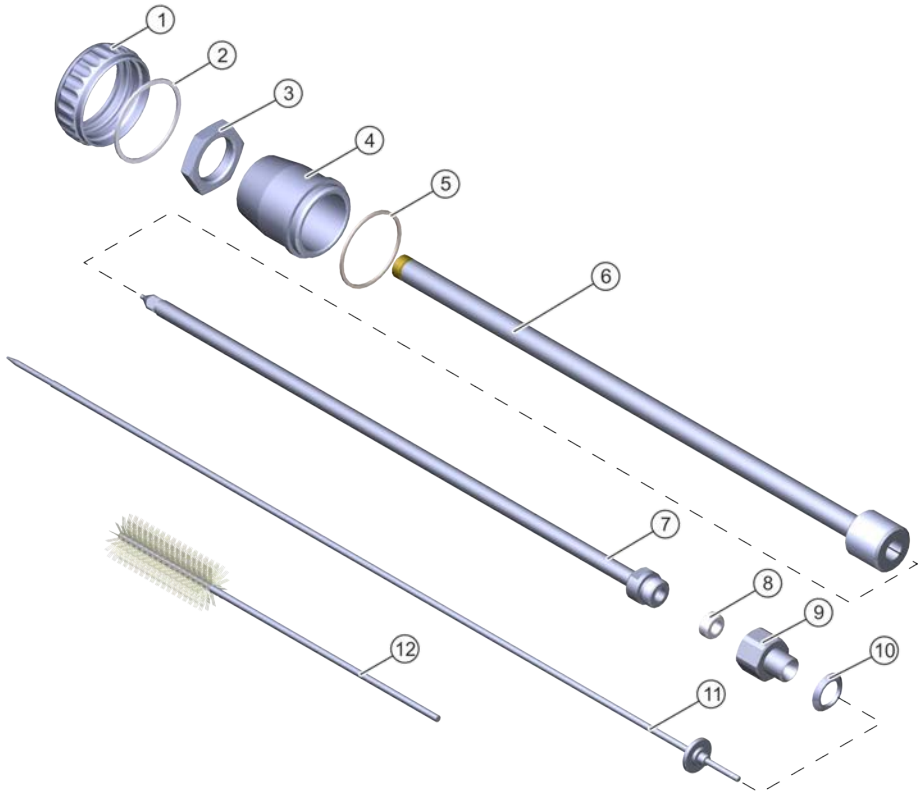


Fig. 22: Extension NP/NS

Item	Description	Material no.
1	Cap nut	
2	Sealing ring Ø 36.5 x Ø 32.7 x 1	
3	Locknut	
4	Housing	
5	Seal Ø 33.7 x Ø 30.6 x 1	
6	Tube external	

Item	Description	Material no.
7	Inner tube with nozzle	
8	Seal	
9	Screw bit	
10	Ball sealer	
11	Needle	
12	Cleaning brush	↳ 11.2 "Tools"



Assembly instructions

- Disassemble air cap, nozzle and needle. ↳ 8.3.1 "Replace needle and nozzle."
- Thread the ball sealer (10).
- Turn in and tighten screw bit (9) with pre-assembled seal (8) and pre-assembled inner tube with nozzle (7) into the gun.
- Push housing (4) with seal (5), pre-assembled outer tube(6) and locknut (3) on to the inner tube (7).
- Fit and tighten cap nut (1) with sealing ring (2).
- Set outer tube (6).
 - » The outer tube (6) is adjustable and allows varying setting positions of the air cap to the nozzle. The farther the nozzle projects over the front side of the air cap, the broader is the spray jet. Projection of the nozzle above the air cap should be minimal.
- Tighten the locknut (3).
- Push in needle (11) carefully into the gun housing from the back.
- Insert needle spring, bearing and set screw again. ↳ 8.3.1 "Replace needle and nozzle."
- Purge the gun with solvent. ↳ 6.4 "Rinsing"
- Set the material flow. ↳ 5 "Commissioning"

Nozzle set for extension NP/NS

Denomination	Item no.	Material no.
Nozzle set for NP/NS 250-8 AS AUTO	7, 8, 11	M09800451
Nozzle set for NP/NS 250-10 AS AUTO	7, 8, 11	M09800452

Seal set for Extension NP/NS N36960181

Description	Item no.	Quantity
Sealing ring Ø 36.5 x Ø 32.7 x 1	2	1
Seal Ø 33.7 x Ø 30.6 x 1	5	1

Description	Item no.	Quantity
Seal	8	1
Ball sealer	10	1

Extension LPS 300/500 M19140022/M19140023

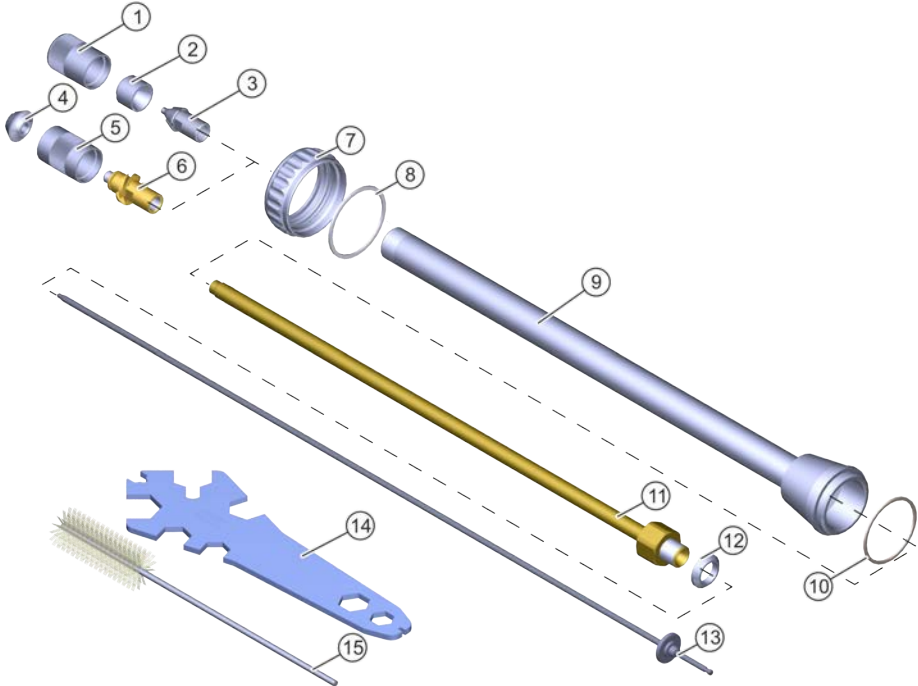


Fig. 23: Extension LPS

Item	Description	Material no.
1	Cap nut	
2	Air cap	
3	Nozzle Ø 2.2 mm	
4	Baffle	
5	Air cap	

Item	Description	Material no.
6	Insert	
7	Cap nut	
8	Sealing ring Ø 36.5 x Ø 32.7 x 1	
9	Outer tube	
10	Seal Ø 33.7 x Ø 30.6 x 1	
11	Tube inner 300 mm Tube inner 500 mm	M34010606 M34010607
12	Ball sealer	
13	Needle	
14	Monkey wrench	↳ 11.2 "Tools"
15	Cleaning brush	



Assembly instructions

- Disassemble air cap, nozzle and needle. ↳ 8.3.1 "Replace needle and nozzle."
- Thread the ball sealer (12). Tighten the gun tight using the inner tube (11).
- Push up outer tube (9) with seal (10).
- Thread on and tighten cap nut (7) with sealing ring (8).
- Insert and tighten nozzle (3).
- Insert air cap (2). Tighten cap nut (1).
- Push in needle (13) carefully into the gun housing from the back.
- Insert needle spring, bearing and set screw again. ↳ 8.3.1 "Replace needle and nozzle."
- Purge the gun with solvent. ↳ 6.4 "Rinsing"
- Set the material flow ↳ 5 "Commissioning",



Note for "360 Degree Circular Jet":

The "360 degrees round jet" (Item 4 – 6) has no injector effect. Air pressure and material pressure must be in a certain ratio to each other so that the air does not press out the material. This ratio depends on the viscosity of the material to be applied and the size of the annular surface between the insert and the air nozzle.

The correct ratio must be checked out. The material pressure may however not be lower than the air pressure.

Nozzle set for extension LPS

Denomination	Item no.	Material no.
Nozzle set C for LPS 300 AS AUTO	4, 5, 6, 13	M09800445
Nozzle set R for LPS 300 AS AUTO	1, 2, 3, 13	M09800439
Nozzle set C for LPS 500 AS AUTO	4, 5, 6, 13	M09800446
Nozzle set R for LPS 500 AS AUTO	1, 2, 3, 13	M09800440

Seal set for extension LPS N36960183

Description	Item no.	Quantity
Sealing ring Ø 36.5 x Ø 32.7 x 1	8	1
Seal Ø 33.7 x Ø 30.6 x 1	10	1
Ball sealer	12	1

11.4 Order



WARNING!

Risk of injury from 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 injuries and death can 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"

Dürr Systems AG
Application Technology
Carl-Benz-Str. 34
74321 Bietigheim-Bissingen
Germany
www.durr.com
Phone +49 7142 78-0
Translation of the original operation manual

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