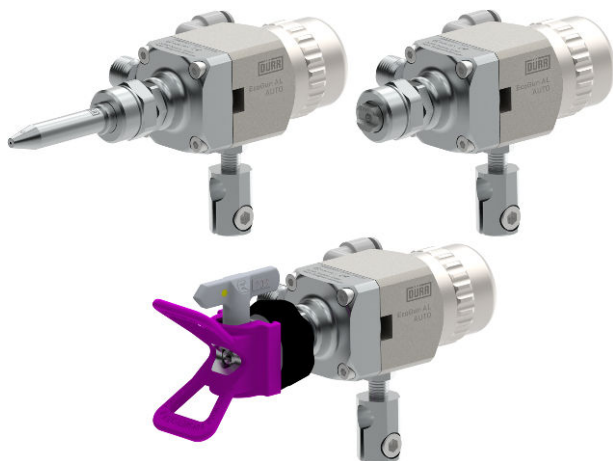


**LEADING IN
PRODUCTION
EFFICIENCY**



EcoGun AL AUTO

Automatic Airless Spray Gun

Operation manual

MSG00012EN, V04

N36250001V

www.durr.com

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:

N36250001V
EcoGun AL 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

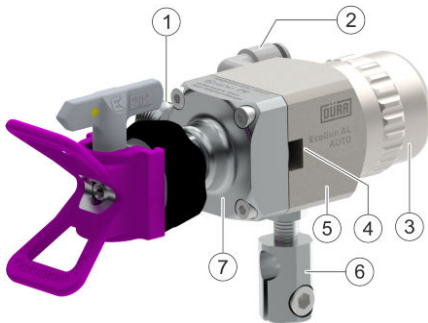


Fig. 1: Product overview (example)


- 1 Material connection (M)
- 2 Control air connection (C)
- 3 End cap
- 4 Leakage groove
- 5 Housing
- 6 Support bracket with angular gauge
- 7 Connecting piece

1.2 Short description

The spray gun is used for coating surfaces in high pressure areas. Compressed air is used to control the opening and closing of the needle. The coating material being atomized is fed through high pressure lines. The operation can be done with paint circulation or tap line.

Use a nozzle with a suitable diameter, depending on the requirement.

If a reversible nozzle is used, in case of a blockage, the reversible nozzle can be rotated and purged without disassembly.

 Follow the special instructions for spray jet screen and the related reversible nozzle.

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

- Control air pressure
Opens the needle and controls the material outflow.
- 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
The higher the bore diameter, the more the material flowing out. The greater the angle, the wider is the spray pattern.

Control air pressure and material pressure are controlled externally via valves.

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 **EcoGun AL AUTO** spray gun is only intended for use in industry and craftsmanship.

The **EcoGun AL 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 fully automated paint booth
- as part of a paint robot

The material is fed through a high pressure line.

The use is only permitted within the specified technical data ↪ 11 “Technical data”.

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

Wrong use

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.
- Do not atomize liquid nitrogen.
- Apply unapproved materials.
- Combination of the spray gun with components that are not approved by Dürr Systems for operation.
- Use hoses that are approved for the material and the operating pressure.
- Making conversions or changes on your own.
- Use spray gun in explosive areas of Ex zones 0 and 2.

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:

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

Danger from harmful or irritant substances

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

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

Escaping material

Material 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.
- Secure system personalized from being switched on again.
- Depressurize the lines.

Moving parts

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

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

Noise

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


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

Hot surfaces

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

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

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.

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

Mechanic

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

Furthermore, he has the following knowledge:

- Directives, Standards and Rules of Engineering
- Local conditions
- Technical Measures for occupational safety and health

The mechanic is responsible for the following activities on equipment and components:

- Assembly
- Waiting
- Maintenance
- Disassembly

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”.

2.5 Personal protective equipment

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



Eye protection

Protects eyes from dust, paint drops and particles.



Protective gloves

Protect the hands from:

- mechanical forces
- Thermal forces
- Chemical effects



Protective workwear

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



Respiratory protection device

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



Use ear protection

Protects from auditory damage due to noise.

3 Transport, scope of supply and storage

3.1 Scope of delivery

The scope of supply includes the following components:

- Spray gun with variant-specific equipment
- Material connection kit
- Spray gun support bracket
- Tool kit ↪ 12.2 "Tools"

Nozzle and nozzle holder must be ordered separately.

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

4 Assembly

4.1 Requirements for the Installation point

- The control air supply and the material feed to the spray gun must be interrupted and secured against reconnection.
- Lines, seals and screw connections must be designed to conform to the requirements of the spray gun ↪ 11.5 "Operating values".
- A support bracket capable of securing the spray gun is required.
- The control air supply must be adjustable.
- The material must be fed through a filter to avoid clogging of the nozzle.

4.2 Assembly

Stationary assembly

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Protective workwear
- Protective gloves

Observe the following at assembly:

- Bore of the retaining bolt: 10mm
- Nominal diameters: ↴ 11.2 "Connections"

1.



WARNING!

Sources of ignition may cause explosions!

Ensure a non-explosive atmosphere.

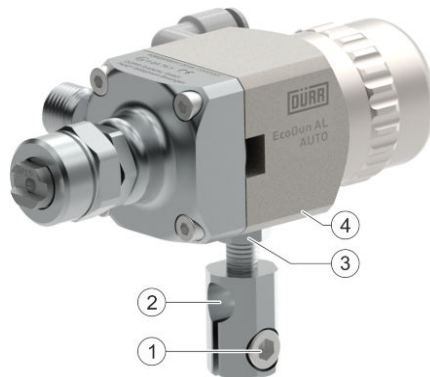


Fig. 2: Assembly

2. Loosen screw (1) using a hexagon socket screwdriver.
3. Slide the spray gun with the bore of the retaining bolt (2) onto the support bracket.
4. Tighten screw (1) using a hexagon socket screwdriver.

5. Loosen locknut (3).
6. Set orientation angle on the housing (4) by using the angular gauge.



Alignment is not important. Distance to the work piece: 25 to 30 cm

7. Tighten the locknut (3).

8.



WARNING!

Statically charges components may cause explosions during operation!

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


- Resistance between housing and grounding terminal $\leq 1M\Omega$.

9. Provide material filter in the material line corresponding to the use of the spray gun.

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



Fig. 3: Connect

10.  The spray gun does not work when the lines are not connected correctly.

Connect lines. Ensure correct assignment.

- 1 - Material (M)
- 2 - Control air (C)



Connect lines to both material connections for paint circulation mode.
For tap line mode, connect line to a material connection. Close the other material connection by means of the sealing screw.

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:
 - Air supply is enabled.
 - Needle opens and closes correctly.
 3. Purge spray gun ↪ 6.4 “Purging”.
 4. Install specified nozzle with nozzle holder.
 5. Connect material. Create a trial spray pattern on a test work piece.

Setting the spray pattern


Personnel:

- Mechanic
- + additional qualification explosion protection


Protective equipment:

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

- Protective gloves

 You can vary the size of the spray pattern by adjusting the distance of the spray gun to the work piece and the selected nozzle size.

1. Use valves in control cabinet to adjust the material pressure.
2. Adjust material quantity by means of the nozzle size. Adjust material pressure air through valves in the control cabinet.

 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.

6 Operation

6.1 Safety recommendations



WARNING!

Danger of explosion due to chemical reactions

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

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

! NOTICE!

Material damage due to dried material residues

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

- Purge product immediately after each use.

6.2 Select nozzles

Reversible nozzle

For a large number of coating materials
Allows for a quick removal of nozzle blockages without having to remove the nozzle.

Flat spray nozzle, standard

Cost-effective nozzle for a large number of coating materials
For sealing the interface between spray gun connection and nozzle, an additional seal is required.

Attachment with cap nut

Flat spray nozzle, fine finish

Nozzle with pre-atomizer for coating materials and surfaces, which are subject to extremely high requirements regarding the coating quality.
Because of the integrated seal, no additional seal between spray gun connection and nozzle is required.

Attachment with cap nut

Nozzles for adhesives and high-viscosity materials

For applying (without atomizing) highly viscous coating materials and sealing materials, such as adhesive, PVC, sealing compound, etc.

Attachment with cap nut

6.3 Checks

1. Perform the following checks during operation:
 - Check spray gun for cleanliness.
 - Check O-rings for correct seating and tightness.
 - Check material pressure in relation to the nozzle used.
 - Check nozzle for blockage.
 - Check spray gun for material leakage.

6.4 Purging

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 purging, use fluid to remove inner soiling from components.

6.4.3 Purging

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 purged:

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



Additional purging intervals depend on the material used.

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

7 Cleaning

7.1 Safety recommendations



WARNING!

Danger of fire and explosion

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

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



WARNING!

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 relevant safety data sheets.
- Wear specified protective equipment.
- 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:

- Switch off compressed air and material supply of the main system and secure personally against switching 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.



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. Purge spray gun ↪ 6.4.3 “Purging”.
2. Use a cleaning agent to carefully clean the spray gun. Dry with a soft cloth.

8 Maintenance

8.1 Safety notes



WARNING!

Unsuitable spare parts in explosive areas

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

- Use exclusively original spare parts.



WARNING!

Danger from harmful or irritant substances

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

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



WARNING!

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:

- Switch off compressed air and material supply of the main system and secure personally against switching on again.
- Depressurize the lines.



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

8.2 Maintenance schedule

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

Interval	Maintenance work
daily	Check state and tightness of the spray gun as well as connections and lines.
	Check fastening.
	Check spray gun for material leakage from the leakage groove.
monthly	Lubricate piston ↪ 8.3 "Lubrication".
before every change of material	Clean ↪ 7.2 "Cleaning".
after each alteration	Check grounding ↪ 4.2 "Assembly".

8.3 Lubrication

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Protective workwear
- Protective gloves

Piston components must be lubricated so that there will not be any leakages.



Fig. 4: Lubricate piston components

1. Add a few drops of lubricant over the control air at the control air connection (C) (1).

9 Faults

9.1 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 seal seat

If you only replace the needle or only the nozzle seal seat, it could damage spray gun components. This can compromise the tightness of the spray gun. The jet pattern deteriorates.

- Replace nozzle seal seat, needle and needle gland always in combination.

! NOTICE!


Property damage due to improper handling


Mechanical load can damage needle and nozzle.

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

9.2 Defects table

Fault description	Cause	Correction
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 operation of needle. Replace needle, if defective, together with the nozzle seal seat and needle gland → 9.3.4 "Replace needle and seals."

Fault description	Cause	Correction
	Nozzle seal seat is contaminated or damaged (especially in POM version)	Clean and check the nozzle seal seat. ↪ 9.3.3 “Replace nozzle seal seat”. Dürr Systems recommends: <ul style="list-style-type: none"> ▪ Replace nozzle seal seat, if defective, together with needle and needle gland. New, recently appearing leakage will be avoided. ▪ Always filter coating material. Avoid contamination with materials that cause damage.
	Needle spring worn out	Replace needle spring ↪ 9.3.5 “Replace needle spring.”.
Material leaks at the leakage groove	Needle seal worn out	Replace needle seal ↪ 9.3.4 “Replace needle and seals.”.
	Needle worn out	Check operation of needle. Replace needle, if defective, together with the nozzle seal seat and needle gland ↪ 9.3.4 “Replace needle and seals.”.
Air leaks from the end cap	Piston sleeve worn out	Replace piston sleeve ↪ 9.3.6 “Replace piston.”.
Air leaks at the leakage groove	Molded seal worn out	Replace molded seal ↪ 9.3.6 “Replace piston.”.
Weak spray jet	Material pressure too low.	Increase material pressure.
	External filter clogged	Check external filter. Replace if clogged.
	Nozzle diameter too small	Insert nozzle with a larger diameter ↪ 9.3.2 “Replace reversible nozzle”.
Spray jet distinctly smaller than originally (about 25%) 	Nozzle worn out	Replace nozzle ↪ 9.3.2 “Replace reversible nozzle”.
Uneven spray jet or bad jet pattern quality	Nozzle soiled or defective	Remove nozzle blockage ↪ 9.3.1 “Remove nozzle blockage in a reversible nozzle”.

Fault description	Cause	Correction
		Clean and check the nozzle. Replace nozzle if defective ↪ 9.3.2 "Replace reversible nozzle".
	Material pressure too low.	Increase material pressure.
	Material too viscous	Change material consistency.
	Infeed line pinched or broken	Check infeed line.
	Needle does not fully open.	Check Control air. Check operation of needle. Replace needle, if defective, together with the nozzle seal seat and needle gland ↪ 9.3.4 "Replace needle and seals.".
Spray nozzle keeps getting clogged	Material pigmented is too large for the selected nozzle diameter	Select material with smaller pigmentation. Insert nozzle with a larger diameter ↪ 9.3.2 "Replace reversible nozzle".
	Mesh width of the external filter too large	Insert filters with smaller mesh width.

9.3 Troubleshooting

9.3.1 Remove nozzle blockage in a reversible nozzle

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Protective workwear
- Protective gloves

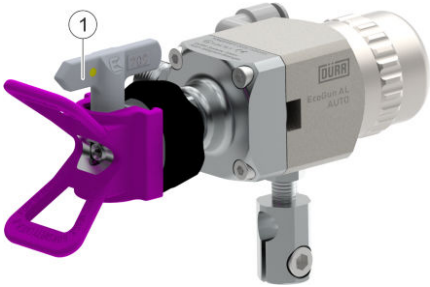


Fig. 5: Blow the nozzle free

1. Rotate the nozzle by 180° such that the tip of the arrow of the adjusting lever (1) points to the spray gun.

2. Briefly actuate the spray gun.
3. Rotate the nozzle by 180° such that the tip of the arrow of the adjusting lever (1) again points to the front.

9.3.2 Replace reversible nozzle

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Protective workwear
- Protective gloves



Follow the special instructions manual for spray jet screen and the reversible nozzle.

1. Unscrew spray jet screen.

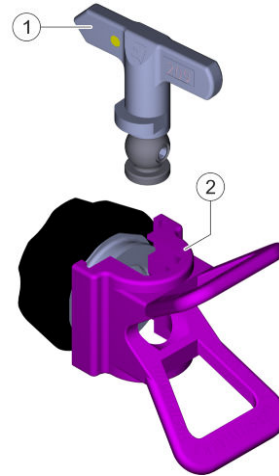


Fig. 6: Replace reversible nozzle

2. Turn the adjustment lever of the reversible nozzle (1) by 90°.
3. Pull reversible nozzle (1) upwards to the outside.
4. Replace worn out or defective reversible nozzle.
5. Insert reversible nozzle (1) in spray jet screen (2).
6. Rotate the adjustment lever of the reversible nozzle (1) such that the tip of the arrow points to the front.

9.3.3 Replace nozzle seal seat

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Protective workwear
- Protective gloves

Disassembly

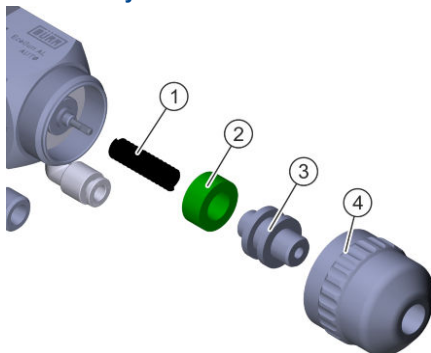


Fig. 7: Relieve the piston

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

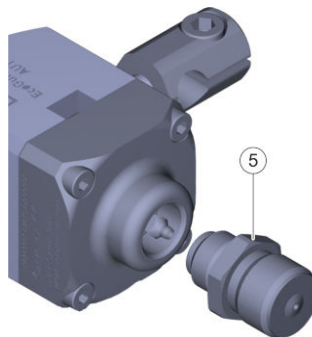


Fig. 8: Disassemble nozzle seal seat

5. Unscrew the nozzle seal seat (5) using a monkey wrench.
6. Replace worn out or defective nozzle seal seat.

Assembly

7. Insert nozzle seal seat (5) and tighten it.
 - Tightening torque: 20Nm
8. Insert needle spring (1).
9. Insert limiting ring (2).
10. Insert spring seat (3).
11. Fit end cap (4). Tighten by hand.

9.3.4 Replace needle and seals.

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Protective workwear
- Protective gloves

Disassembly

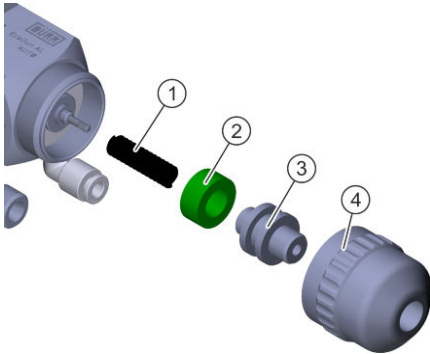


Fig. 9: Relieve the piston

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

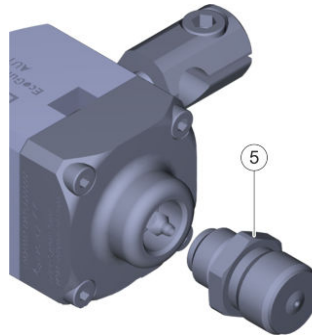


Fig. 10: Disassemble nozzle seal seat

5. Unscrew the nozzle seal seat (5) using a monkey wrench.

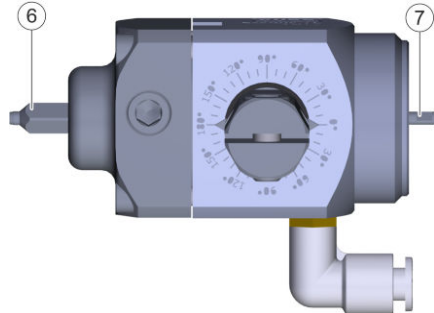


Fig. 11: Disassemble needle

6. Firmly hold needle holder (7) using a monkey wrench. Unscrew needle (6) using an installation wrench.

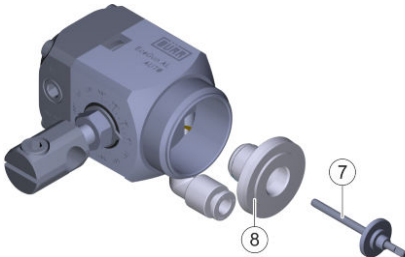


Fig. 12: Disassembling Piston

7. Pull out needle holder (7).
8. Pull out piston (8).

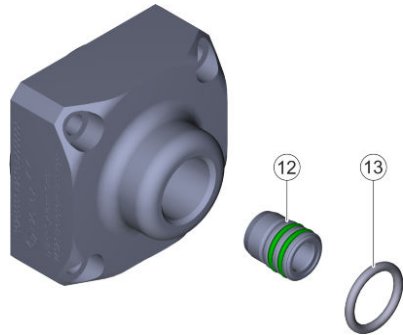


Fig. 14: Remove seals from connecting piece

11. Carefully lever out O-ring of the nozzle seal seat (13) from the connecting piece using a screwdriver.
12. Push out needle gland (12) towards the front.

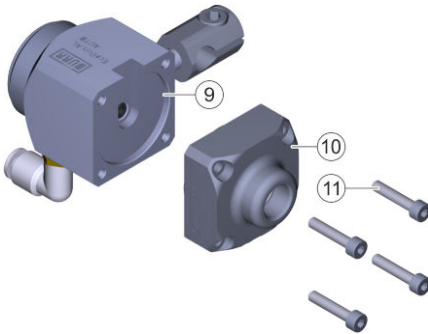


Fig. 13: Disassemble connecting piece

9. Thread out the four screws of the connecting piece (11) using an Allen wrench.
10. Separate connecting piece (10) and housing (9) from each other.

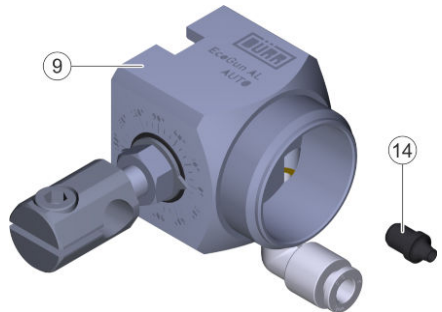


Fig. 15: Remove molded seal

13. Push back molded seal (14) out of the housing (9).

14. Replace worn out or defective components.

Assembly

15. Insert molded seal (14) into the housing. Ensure correct installation position.
16. Insert needle gland (12) in the connecting piece using an installation wrench. Ensure correct installation position.
17. Insert O-ring of the nozzle seal seat (13).
18. Combine connecting piece (10) and housing (9) with each other.
19. Insert the four screws of the connecting piece (11). Tighten using an Allen wrench.
20. Insert piston (8).
21. Insert needle holder (7).
22. Firmly hold needle holder (7). Push in the needle from the front and tighten it.
23. Insert nozzle seal seat (5) and tighten it.
 - Tightening torque: 20Nm
24. Insert needle spring (1).
25. Insert limiting ring (2).
26. Insert spring seat (3).
27. Fit end cap (4). Tighten by hand.

9.3.5 Replace needle spring.

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Protective workwear
- Protective gloves

Disassembly

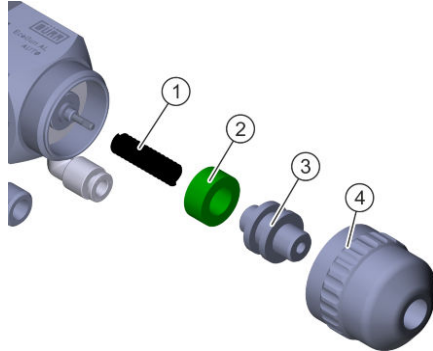


Fig. 16: Relieve the piston

1. Thread off and remove nozzle (4) with end cap.
2. Remove spring seat (3).
3. Remove limiting ring (2).
4. Remove needle spring (1).
5. Replace worn out or defective components.

Assembly

6. Insert needle spring (1).
7. Insert limiting ring (2).
8. Insert spring seat (3).
9. Fit and hand tighten end cap (4).

9.3.6 Replace piston.

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Protective workwear
- Protective gloves

Disassembly

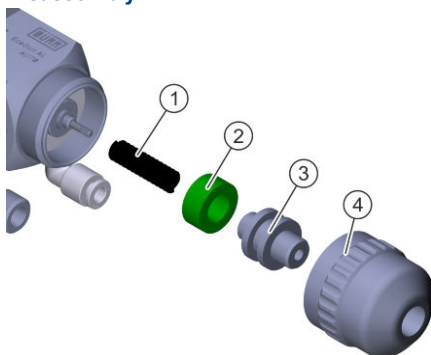


Fig. 17: Relieve the piston

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

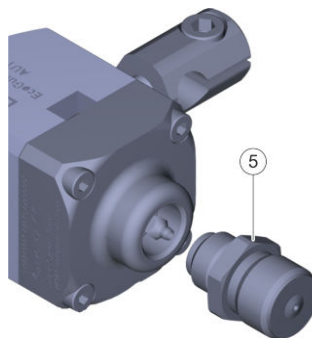


Fig. 18: Disassemble nozzle seal seat

5. Unscrew the nozzle seal seat (5) using a monkey wrench.

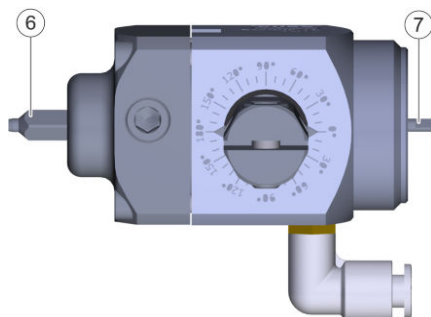


Fig. 19: Disassemble needle

6. Firmly hold needle holder (7) using a monkey wrench. Unscrew needle (6) using an installation wrench.

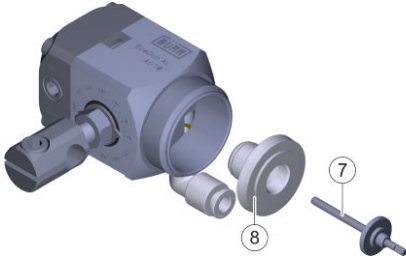


Fig. 20: Disassembling Piston

7. Pull out needle holder (7).
8. Pull out piston (8).
9. Replace worn out or defective components.

Assembly

10. Insert piston (8).
11. Insert needle holder (7).
12. Firmly hold needle holder (7). Push in the needle from the front and tighten it.
13. Insert nozzle seal seat (5) and tighten it.
 - Tightening torque: 20Nm
14. Insert needle spring (1).
15. Insert limiting ring (2).
16. Insert spring seat (3).
17. Fit end cap (4). Tighten by hand.

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:

- Switch off compressed air and material supply of the main system and secure personally against switching on again.
- Depressurize the lines.

10.2 Disassembly

Personnel:

- Operator
- + additional qualification explosion protection

Protective equipment:

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

1. Purging ↪ 6.4.3 "Purging".
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.

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 Dimensions and weight

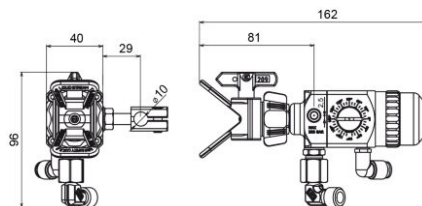


Fig. 21: Dimensions

Detail	Value
Length (without nozzle)	118mm
Width (without support bracket)	40mm
Height	96mm
Weight (without support bracket, connection set and nozzle)	456g

11.2 Connections

Connection	Nominal width
Nozzle connection thread	11/16" - 16UN 7/8" - 14UNF
Material	G1/4" M14x1.5 external thread (G1/8" in the connecting piece)
Control air	Ø6/4 mm Push-in

Technical data

11.3 Operating conditions

Detail	Value
Ambient temperature, minimum	5°C
Ambient temperature, maximum	40°C

11.4 Emissions

Detail	Value
Emission sound pressure level L_{pA} , A – according to EN 14462	81dB
Uncertainty K_{pA}	5dB
Sound power level L_{WA} , A – according to EN14462	93dB
Uncertainty K_{WA}	5dB

11.5 Operating values

Detail	Value
Control air pressure	4 to 6bar
Material pressure, max.	300bar
Material pressure, max. (during operation with extensions)	250bar
Material temperature, max.	60°C

Compressed air quality

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

11.6 Type plate

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

- Product name
- Material number
- Year of manufacture
- Serial number
- Ex labeling
- Manufacturer
- CE labeling

11.7 Materials used

Component	Material
Housing	Nickel plated aluminum
Connecting piece	Stainless steel
Compression springs	Stainless steel
Materials in contact with material	Stainless steel
Seals in contact with material	PTFE PE-UHMW PA FKM
Seals without material contact	Ultramid® (PA) PTFE NBR

11.8 Operating and auxiliary materials

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

Designation	Material
Screw locking, intermediate strength, green	Loctite 290

11.9 Material specification

Suitable Material:

- Flammable and inflammable coating materials



Do not use halogen - hydrocarbon based material.

12 Spare parts, tools and accessories

12.1 Spare parts

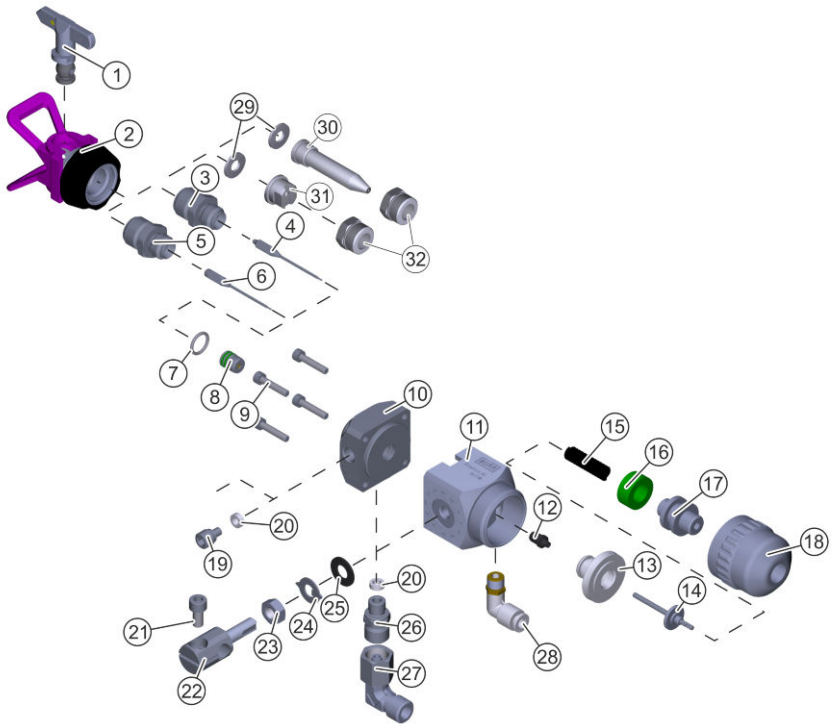


Fig. 22: Exploded view

Spare parts, tools and accessories



Item	Denomination	Quantity	Material no.
1	Reversible nozzle	1	↵ "Reversible nozzles"
2	Spray jet screen 11/16" - 16UN	1	M60020001
3	Nozzle seal seat S (1.5mm material passage)	1	↵ "Spare part sets"
4	Needle S (D3/32" / D1.5)	1	M32020207
5	Nozzle seal seat B (2.5mm material passage)	1	↵ "Spare part sets"
6	Needle B (D4,0 / D1.5)	1	M32020206
7	O-Ring 10.82 x 1.78	1	M08030807
8	Needle gland	1	M08280043
9	Hexagon socket screw	4	D09120193
10	Connecting piece	1	---
11	Housing	1	---
12	Molded seal	1	N36960059
13	Piston	1	
14	Needle holder	1	
15	Needle spring	1	
16	Limiting ring	1	N36960103
17	Spring seat	1	
18	End cap	1	
19	Locking screw G1/8"	1	↵ "Spare part sets"
20	Sealing ring	1	M08280039
21	Screw	1	N66030004
22	Retaining bolt	1	
23	Locknut	1	
24	Positioning disc	1	
25	Washer	1	
26	Unions	1	↵ "Spare part sets"
27	Elbow fitting	1	↵ "Spare part sets"
28	Elbow plug-in connection	1	M57310083
29	Seal	1	M08280085

Item	Denomination	Quantity	Material no.
30	Nozzle	1	↳ "Nozzles for adhesives and high-viscosity materials"
31	Nozzle (flat spray nozzle)	1	↳ "Flat spray nozzles, standard and fine finish"
32	ÜWM	1	M30010350


Variants of the spray gun

Description	Material number	Material passage Nozzle holder thread Material connection	Scope of Supply
EcoGun AL AUTO S 1116 M14	N36250105	1.5mm 11/16" - 16UN M14x1.5 Use ¹	Spray gun <ul style="list-style-type: none"> ▪ with variant-specific equipment and needle seal seat made of POM * ▪ Material connection set for tap line or material flow ▪ Spray gun support bracket ▪ Tool kit Nozzle and nozzle holder must be ordered separately.
EcoGun AL AUTO B 1116 M14	N36250106	2.5mm 11/16" - 16UN M14x1.5 Use ²	
EcoGun AL AUTO S 1116 G14	N36250136	1.5mm 11/16" - 16UN G1/4" Use ¹	
EcoGun AL AUTO B 1116 G14	N36250129	2.5mm 11/16" - 16UN G1/4" Use ²	
EcoGun AL AUTO B 78 G14	N36250132	2.5mm 7/8" - 14UNF G1/4" Use ²	

Spare parts, tools and accessories

- * - Needle seal seat made of hard metal can be ordered separately.
- 1 - Use for acid cleaning agents, oils, paints, acryl paints and dispersion paints
- 2 - Use for coating materials with higher viscosity, e.g. latex paints, filler, adhesives, PVC, spray spatula

Reversible nozzles

Reversible nozzles 10° to 50°						
						
Nozzle size mm / inch	Flow rate (L/ min) ^{2 3} .	Spray jet angle spray jet width mm (inch) ¹				
		10°	20°	30°	40°	50°
		51-76 (2-4)	102-152 (4-6)	152-203 (6-8)	203-254 (8-10)	254-305 (10-12)
0.18 / 0.007	0.18	M09020475	M09020476			
0.23 / 0.009	0.25	M09020477	M09020478	M09020479	M09020480	
0.28 / 0.011	0.37	M09020481	M09020482	M09020483	M09020484	M09020485
0.33 / 0.013	0.57	M09020487	M09020488	M09020489	M09020490	M09020491
0.38 / 0.015	0.72	M09020495	M09020496	M09020497	M09020498	M09020499
0.43 / 0.017	0.98	M09020503	M09020504	M09020505	M09020506	M09020507
0.48 / 0.019	1.30		M09020511	M09020512	M09020513	M09020514
0.53 / 0.021	1.52			M09020518	M09020519	M09020520
0.58 / 0.023	1.83			M09020525	M09020526	M09020527
0.63 / 0.025	2.13			M09020532	M09020533	M09020534



Nozzle size mm / inch	Flow rate (L/ min) ^{2,3}	Spray jet angle spray jet width mm (inch) ¹				
		10°	20°	30°	40°	50°
		51-76 (2-4)	102-152 (4-6)	152-203 (6-8)	203-254 (8-10)	254-305 (10-12)
0.68 / 0.027	2.50			M09020539	M09020540	M09020541
0.73 / 0.028	2.95			M09020546	M09020547	M09020548
0.78 / 0.030	3.42			M09020553	M09020554	M09020555

Reversible nozzles 60° to 90°



Nozzle size mm / inch	Flow rate (L/min) ^{2,3}	Spray jet angle spray jet width mm (inch) ¹			
		60°	70°	80°	90°
		305-356 (12-14)	356-406 (14-16)	406-457 (16-18)	457-508 (18-20)
0.28 / 0.011	0.37	M09020486			
0.33 / 0.013	0.57	M09020492	M09020493	M09020494	
0.38 / 0.015	0.72	M09020500	M09020501	M09020502	
0.43 / 0.017	0.98	M09020508	M09020509	M09020510	
0.48 / 0.019	1.30	M09020515	M09020516	M09020517	

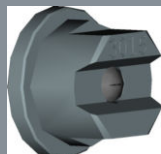


Nozzle size mm / inch	Flow rate (L/min) ^{2 3}	Spray jet angle spray jet width mm (inch) ¹			
		60°	70°	80°	90°
		305-356 (12-14)	356-406 (14-16)	406-457 (16-18)	457-508 (18-20)
0.53 / 0.021	1.52	M09020521	M09020522	M09020523	M09020524
0.58 / 0.023	1.83	M09020528	M09020529	M09020530	M09020531
0.63 / 0.025	2.13	M09020535	M09020536	M09020537	M09020538
0.68 / 0.027	2.50	M09020542	M09020543	M09020544	M09020545
0.73 / 0.028	2.95	M09020549	M09020550	M09020551	M09020552
0.78 / 0.030	3.42	M09020556	M09020557	M09020558	M09020559

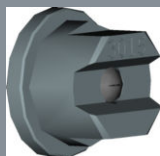
- ¹ - Spray jet at 300mm spray distance with water
- ² - Flow rate at 100bar pressure with water, deviation from nominal value of up to ±15% acceptable
- ³ - Use the following formula for flow rate (Q2) for new operating pressure (P2):
 $Q2 = Q1 \cdot \sqrt{P2/P1}$. P1 = 100bar, Q1 = flow rate according to table

Flat spray nozzles, standard and fine finish

Flat spray nozzles, standard and fine finish, 40° to 60°

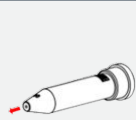



Nozzle size mm / inch	Flow rate (L/min) ^{2 3}	Flat spray nozzle, air-less	Spray jet angle spray jet width mm (inch) ¹		
			40°	50°	60°
			203-254 (8-10)	254-305 (10-12)	305-356 (12-14)
0.15 / 0.006	0.14	Fine finish	M09020881	M09020882	
0.18 / 0.007	0.18	Standard			
0.20 / 0.008	0.22	Fine finish	M09020883	M09020884	M09020728
0.23 / 0.009	0.25	Standard	M09020901	M09020902	M09020903
0.25 / 0.010	0.33	Fine finish	M09020885	M09020887	M09020888
0.28 / 0.011	0.37	Standard	M09020904	M09020905	M09020906
0.30 / 0.012	0.47	Fine finish	M09020890	M09020891	M09020892
0.33 / 0.013	0.57	Standard	M09020908	M09020909	M09020910
0.35 / 0.014	0.65	Fine finish	M09020895	M09020896	M09020897
0.38 / 0.015	0.72	Standard	M09020913	M09020914	M09020915
0.43 / 0.017	0.98	Standard	M09020918	M09020919	M09020920

Flat spray nozzles, standard and fine finish, 70° to 90°


Nozzle size mm / inch	Flow rate (L/min) ^{2 3}	Flat spray nozzle, airless	Spray jet angle spray jet width mm (inch) ¹		
			70°	80°	90°
			356-406 (14-16)	406-457 (16-18)	457-508 (18-20)
0.25 / 0.010	0.33	Fine finish	M09020889	M09020729	
0.28 / 0.011	0.37	Standard	M09020907		
0.30 / 0.012	0.47	Fine finish	M09020893	M09020730	M09020894
0.33 / 0.013	0.57	Standard	M09020911	M09020912	
0.35 / 0.014	0.65	Fine finish	M09020898	M09020899	M09020900
0.38 / 0.015	0.72	Standard	M09020916	M09020917	
0.43 / 0.017	0.98	Standard	M09020921	M09020922	M09020923

Nozzles for adhesives and high-viscosity materials
Nozzles for adhesives and high-viscosity materials

Nozzle	Material number	Size in mm	External diameter in mm	Usable length in mm ¹	Material
	M09090046	1.0	10.3	52	Stainless steel 1.4305
	M09090047	1.5	10.3	52	Stainless steel 1.4305
	M09090044	2.2	10.3	52	Stainless steel 1.4305

Nozzle	Material number	Size in mm	External diameter in mm	Usable length in mm"	Material
	M09090048	3.0	10.3	52	Stainless steel 1.4305
	M09090049	3.6	10.3	52	Stainless steel 1.4305
	M09020985	1.0	6	205	Stainless steel 1.4305

Spare part sets

Sets		
Description	Item no.	Part no.
CONNECTION FLUID KPL. 1.5/HM 11/16"	3, 7	N36960290
CONNECTION FLUID KPL. 2.5/HM 11/16"	5, 7	N36960291
CONNECTION FLUID KPL. 2.5/HM 7/8" - 14UNF	5, 7	N36960303
CONNECTION FLUID KPL. 1.5/POM 11/16"	3, 7	N36960292
CONNECTION FLUID KPL. 2.5/POM 11/16"	5, 7	N36960293
CONNECTION FLUID KPL. 2.5/POM 7/8" - 14UNF	5, 7	N36960302
Piston set	12, 13, 14	N36960059
Repair kit	15, 16, 17	N36960103
Material connection set M14x1.5	20, 26, 27	M01010199
Material connection set M14x1.5	19 (1x), 20 (2x), 26 (2x)	N36960270
Material connection set G1/4"	19 (1x), 20 (2x), 26 (2x)	N36960271
Material connection set 1/4"NPSM	19 (1x), 20 (2x), 26 (2x)	N36960272

12.2 Tools

Tool set N36960019

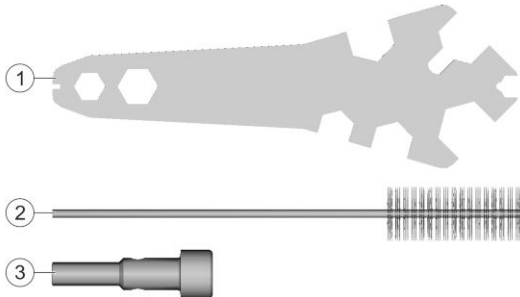


Fig. 23: Tools

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

12.3 Accessories



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

Elbow fitting for circulation mode

Description	Item	Quantity	Material no.
90°-elbow union G1/4" – 1/4" NPSM in stainless steel, adjustable	–	1	M55030173
90°-elbow union G1/4" – G1/4" in stainless steel, adjustable	–	1	M55030171

Cleaning sets

Description	Material no.
Cleaning set (17 parts)	N36960037
Cleaning set (21 parts)	N36960038
Cleaning needles 33mm 0.011" -0.017" (12 pcs)	W33130004
Cleaning needles 33mm 0.017" -0.021" (12 pcs)	W33130005

Extensions

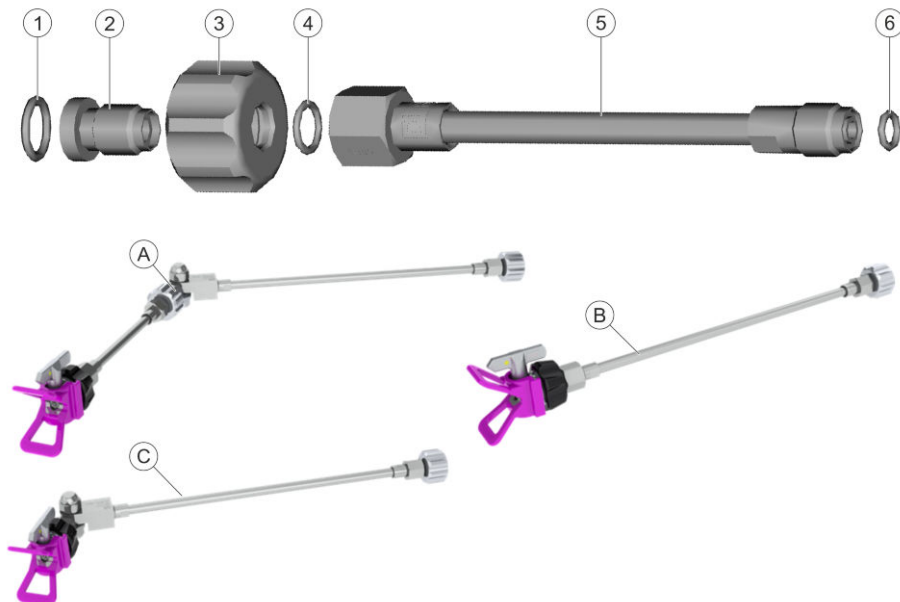


Fig. 24: Extensions



If the spray gun with extension as part of a paint robot or as part of a fully automated paint booth is to be used, consult Dürr Systems. Too high moving speeds can cause property damage.

Item no.	Description	Material no.
1	O-Ring 9.5 x 1.8	-
2	Insert	-
3	Cap nut 11/16" - 16UN	-
4	Seal	-
5	Tube	-
6	O-Ring 6.3 x 1.78	-

Item no.	Description	Material no.
1, 4, 6	Seal set	N36960179
-	150mm	M19140001
-	300 mm	M19140002
-	450mm	M19140003
-	600 mm	M19140004
-	900 mm	M19140005

The following combinations can be used for operating the extensions:

- Two extensions with swivel joint and adapter (A)
- Extension with adapter (B)
- Extension with swivel joint (C)

Adapter

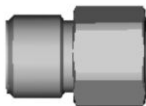


Fig. 25: Adapter

Description	Material no.
11/16" - 16 UN 1/2" - 20 UNF	M01010201

Swivel joint

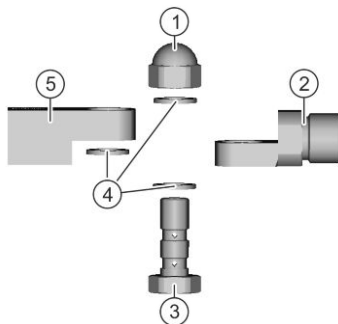


Fig. 26: Exploded view of swivel joint

Item no.	Description	Material no.
1	Nut	-
2	Rotary part 11/16" - 16UN	-
3	Screw	-
4	Seal set	N36960180
5	Fixed part 1/2" - 20UNF	-
-	Swivel joint 11/16" - 16 UN 1/2" - 20 UNF	M22150012

12.4 Order



WARNING!

Unsuitable spare parts in explosive areas

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

- Use exclusively original spare parts.



WARNING!

Unsuitable spare parts

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

- Use exclusively original spare parts.

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





LEADING IN
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