

Operating instructions and spare parts list

DOK-075 E

Rev. 0

Automatic Spray Gun

Typ: Mikro-2

Artikel-No.: 2820-...-....	(circular jet, top material connection)
2828-...-....	(circular jet, circulation material connection)
2836-...-....	(circular jet, top material connection)
2838-...-....	(flat jet, circulation material connection)

- keep for future use -

CE

Krautzberger 

Contents

	Page
1. Hazard and warning notes	3
2. Use for intended purpose	5
3. Basic design, functional principle	6
4. Mounting	7
5. Air and material feed (schematic drawing 140-0612)	8
6. Startup	9
6.1 Connections	9
6.2 Mode of operation, spray profile adjustment	10
7. Troubleshooting, operating faults, spray profile errors	12
8. Replacing parts	12
9. Operational interruptions, cleaning, maintenance	14
10. Disposal	14
11. Technical data	14
12. Special designs	16
13. Declaration of Conformity	17
14. Parts list/Spare parts list	18
15. Exploded view, spare parts drawing (140-0172)	19
16. List of accessories	20
17. Accessories drawing (140-0613)	21
18. Dimension sheet (140-0471)	22



1. Hazard and warning notes!

- Assembly of the automatic spray gun, type Mikro-2, and connection of the compressed air and material feed should be effected only by suitably qualified personnel! Check the mounting device and the connections from time to time!
- Always wear the protective equipment (e.g. protective clothing, goggles, breathing protection, ear muffers, gloves etc.) recommended by the supplier of the coating substance during maintenance, cleaning or repair work and when changing materials!
- Comply with the explosion protection regulations when using potentially flammable and explosive coating substances! Keep away from sources of ignition and open flames! **N.B.** The solenoid valves are **not** explosion-protected!
- Comply with the warning and hazard instructions of the supplier of the coating material (and, if necessary, of the detergent) with regard to emission, fire or explosion hazard or other hazards (where applicable)!
In case of doubt, consult the supplier(s)!
- When mixing different components and/or when using solvents or thinning agents to make coating materials, take steps to ensure that no substances with increased hazard potential are created (e.g. flammability, explosion hazard, increased explosive tendency through spraying with air, toxicity, increased toxicity due to chemical reaction with air etc.)! Avoid increased hazard potential caused by undesired chemical reactions! In case of doubt, consult the supplier(s) of the components! Where necessary, take protective measures and effect special notification of the particular hazard!
- When using substances such as solvents which can generate an increased explosion potential due to atomisation or spraying in air, take protective measures and effect special notification of the particular hazard! In case of doubt, consult the supplier(s) of the components!
- The compatibility of the parts of the automatic spray gun which come into contact with the material cannot be guaranteed with all potential coating substances (see chart "Parts in contact with the material" in Section 11, Technical Data).
In case of doubt, consult Krautzberger GmbH!
- Under no circumstances should the spray jet be directed at people or animals!
- Do not stand in the area of the material jet!
Angle of material in front of nozzle: up to approx. 180° depending on setting.
Length of material jet in front of nozzle: depends on setting (e.g. water with a material pressure of 4 bar sprayed through a 1 mm material nozzle hits a disc measuring 2 metres in diameter at a distance of 10 metres).
- Never direct the spray jet at electrical equipment or systems!
- During spraying, the coating substance escapes into the surrounding air:
depending on the coating substance, there may be a risk of environmental, fire,

explosion and health hazards. Therefore only use spraying equipment in the specially designed surroundings!

- Only work in adequately ventilated areas! If necessary, make use of suitable extraction systems!
- Ensure adequate earthing (e.g. connection to the building earth at the steel retaining bolt (art. no. 6922-080-1358) or – during mounting – via a screw in the thread (G) on the bottom of the automatic spray gun).

Radiators or water pipes do not provide sufficient earth contact!

- During breaks in operation or when shutting down the equipment as well as prior to dismantling or the start of repair and maintenance work, you should ensure that the automatic spray gun is no longer under pressure (close material feed, open control air until material pressure has dissipated, close control and atomiser air supply)!
- During breaks in operation (e.g. work breaks), shut off the air supply! In particular, shut off the control air! Check whether material escapes! Repair if necessary!
- Prior to each repeat startup, check the connections and settings and monitor the automatic spray gun for seal tightness (no uncontrolled air and/or material discharge)!
- Adhere to the pressures and temperatures listed under "Technical Data"!
- When working at temperatures above 43°C, attach protective devices and post notification concerning the risk of combustion due to coating substance and/or heated air, and draw particular attention to risks resulting from leakage or bursting of the spray gun!
- Ensure that neither spraying nor air or material discharge can be activated accidentally or by defects in the unit as long as one or more persons are in the hazard zone.
- Take steps to ensure that no alterations can occur or be made to the control and/or atomiser air feed or the material pressure during setting and maintenance work without the knowledge or consent of the setup technician!
- Check wearing parts at appropriate intervals and replace if necessary!
- Only use spare parts and accessories from Krautzberger GmbH! Krautzberger GmbH does not assume liability for damage if parts from other suppliers are used!
- The instructions and notes of EN 1953 "Spraying Equipment for Coating Substances; Safety Requirements" are to be adhered to, in particular the warning, hazard and safety notes pertaining to risks and safety requirements and/or measures.

Hazards which exceed those normally expected with the use of spraying equipment have not come to our attention in the handling of the automatic spray gun type Mikro-2. If, however, accidents or hazardous situations occur during practical applications, please notify us accordingly.

2. Use for intended purposes

The automatic spray gun type Mikro-2 is designed to allow automatic (not manual) coating of metal, plastic, ceramics, wood, paper and other suitable surfaces. Typical coating substances are, for example, lacquers, paints, water-soluble lacquer systems, marking inks, adhesives, release agents etc. The gun is also suitable for precision metering of small fluid volumes.

The atomiser air feed and material discharge are controlled externally. The scope and shape of the jet can be influenced by the choice of nozzle (type and size), the atomiser air pressure and, in certain cases, the material pressure as well as (to a limited degree) via the limitation of the needle stroke. Depending on the requirements posed by the material to be processed and/or the shape of the surface to be coated, the following nozzle versions can be used (also see the separate list on the application options of nozzles):

- **Circular jet:** conical jet in front of the nozzle
- **Flat jet:** broad, oval jet for flat-shaped application. The width of the flat jet is not adjustable; by turning the air nozzle, you can „switch“ between flat jet vertical, flat jet horizontal and circular jet.
- **Rotary jet:** a rotary pulse produces a highly "swirled" spray jet; for difficult workpiece geometries (curves around angular sections); recommended, for example, for adhesive application.
- **Full-cone rotary jet:** swirling spray jet created by a special rotary pulse; for difficult workpiece geometries; recommended, for example, for shapes with undercuts.

Applications

In the standard version, all parts coming into contact with the material are made of brass. The automatic spray gun is also available with stainless steel lining on request.

The automatic spray gun is of extremely compact design, and this makes it particularly suitable for applications where space is limited – e.g. in spraying machines or spraying robots as well as in production lines or serial conveyor belts. Typical applications include:

- systematic coating of small parts or small surfaces
- internal coating of objects
- precision metering of fluids, creams, pastes, gels etc. into small containers (e.g. yoghurt cup or smaller)
- positioning of adhesive points
- marking of objects – e.g. in production lines or on serial conveyor belts, using minimum quantities of marking fluid either sprayed directly onto the object or dabbed onto an object using a sponge or brush after metering of an exact dose.

Notes

- ☞ The coating substances approved by the manufacturer of the coating substance for spraying may be used; however, Krautzberger offers special designs for
 - substances dissolved in CFC-containing solvents
 - abrasive or
 - corrosive materials.

- ☞ If the automatic spray gun is used in an automatic metering system, the air nozzle is no longer needed. However, we advise users to attach a circular jet nozzle to protect the material nozzle and the material needle.

3. Basic design, mode of operation

The design, the various versions and the typical features are shown in the diagram 140-0172; drawing 140-0613 shows accessories, while dimension sheet 140-0471 shows the dimensions. The schematic drawing 140-0612 shows the options for compressed air and material feed.

The automatic spray gun is supplied as standard with a top material connection – either for connection of the circular jet nozzle system (main element (15)) or the flat jet nozzle system (main element (40)). Main elements designed for circulation connection (15 or 40) with two threaded boreholes on the side (M) are also available. The automatic spray gun is also available with rotary or full-cone rotary jet nozzle. Circular jet nozzles with a protective collar to protect the nozzle system against damage are also available.

The following chart shows the available versions:

Order/Article nos. for the automatic spray gun type Mikro-2		
Material feed	top (flow or hose connection)	right and left on side (circulation connection)
	Article no.	Article no.
Brass, nickel-plated, circular jet	2820-...-....	2828-...-....
Brass, nickel-plated, flat jet	2836-...-....	2838-...-....
Brass, nickel-plated, circular jet, MGV 3/2*)	2883-...-....	
Brass, nickel-plated, circular jet, twin control	2899-...-....	2889-...-....
Brass, nickel-plated, flat jet, twin control	2885-...-....	
Brass, nickel-plated, flat jet, MGV 3/2*)	2887-...-....	2874-...-....
Stainless steel lining, circular jet	2860-...-....	2872-...-....
Stainless steel lining, flat jet	2861-...-....	2873-...-....

*) MGV 3/2 = 3/2-way solenoid valve (opens via air pressure, closes via spring pressure)

Control and atomiser air are fed to the automatic spray gun through plastic hoses via the rapid screw connections (115) located under the closing piece (35). The left-hand connection is connected to the control air supply (St) and the right-hand one to the atomiser air supply (Z). The material flow opens when the control air flows into the chamber in front of the gasket (27) on the valve shaft (26) and pushes the shaft backwards together with the material needle (37 or 38). If you close the control air supply (thus effecting venting), the valve spring (30) pushes the valve shaft back towards the front together with the material needle into the material nozzle, and this closes the material supply.

If more precise control is required – for example, if you want to fill small containers – we recommend the use of a 3/2-way solenoid valve, as the latter can control the air

flow far more precisely over time. As the precision of material needle control also depends on the air cushion – in other words, the size of the air chambers – we have also provided the option of installing the solenoid valve for the control air directly in front of the valve opening air chamber on the bottom of the main element.



If the air is controlled using a solenoid valve, the control air constantly exerts pressure on the control air input (control air rapid screw connection (115)). If a current flows, the solenoid valve opens the control air feed by pushing the valve shaft (26) backwards together with the material needle (37), thus releasing the material flow. If the current is switched off, the solenoid valve closes the control air feed and effects venting. The valve spring (30) pushes the valve shaft (26) forwards together with the material needle (37), thus interrupting the material flow. The duration of spraying is therefore exactly the same as the duration of the electrical signal.

If the material is to be metered in extremely small quantities and/or extremely rapidly, you can also use compressed air – instead of the valve spring (30) – to close the material flow. The so-called 3/2-way air control of a single-action piston, in which the valve spring (30) effects closing, can be replaced by the so-called 5/2-way air control of a double-action piston. Opening and closing of the material flow is effected using compressed air pressed into different chambers. This renders the valve spring almost redundant.

In the case of air control via solenoid valve(s), the shortest possible opening and closing times are approx. 0.06 seconds.

The volume of material discharge is primarily determined by the size of the material nozzle and the material pressure. A limited degree of fine adjustment (e.g. to coordinate several automatic spray guns in a system) can be achieved via the regulator bolt (34; turning clockwise reduces the needle stroke by 0.007 mm per index step).

Notes

-  If control and/or atomiser air cannot be connected to the back end of the automatic spray gun (e.g. insufficient space), we advise you to feed the air from the bottom. To this end, remove the sealing screws (113) from the bottom of the unit, unscrew the rapid screw connections (115) from the rear ports, seal the ports at the back using the sealing screws (113), and screw the rapid screw connections (115) into the ports on the bottom. You can also use swivel screw connections (114) in place of the rapid screw connections (115).
-  The main element (40) of the flat jet nozzle system is bigger than the main element (15) of the circular jet nozzle system. Accordingly, it is necessary to adjust the material needle. The material needle (38) belongs to the main element (40) and the material needle (37) to the main element (15). You can set the exact length using the front nut. The rear nut is used to lock the front nut.

4. Mounting

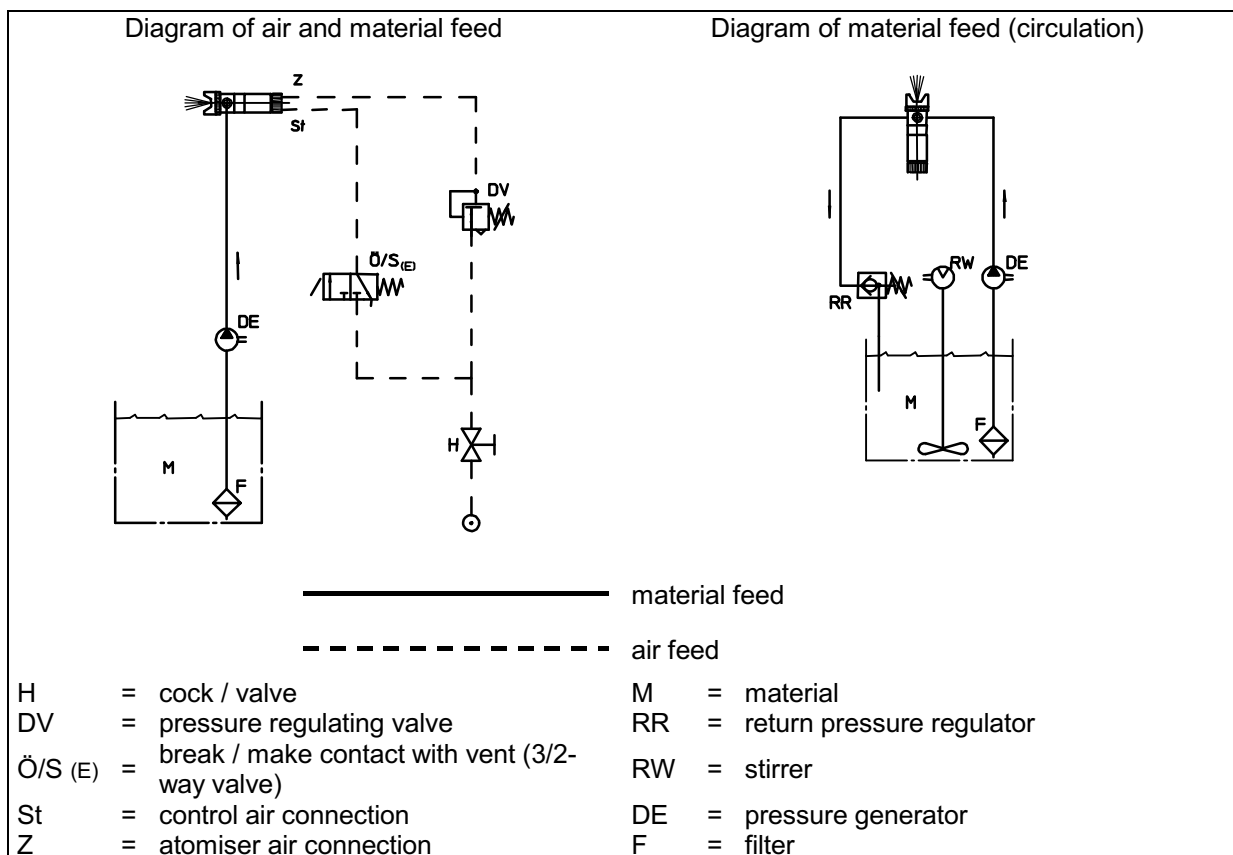
There are two ways of mounting the automatic spray gun. Either you can push it over the retaining bolt (no. 6922-080-1358) together with the borehole (B) and screw it in place; or you can insert an M6 screw through a suitable holder and screw it into the threaded borehole (G) on the bottom of the unit. You can also screw on an earthing lead in both cases.

i Notes

☞ If the automatic spray gun is not properly secured, it may loosen itself during operation (due to vibration, for example), and this could lead to displacement due to recoil as well as, under certain circumstances, the uncontrolled discharge of coating substance

⚠ Caution - mounting should only be connected up by suitably trained personnel!

5. Air and material feed



6. Startup

6.1 Connections

- Atomiser air to input (Z); (designation stamped using arrows next to the connection; atomiser air connection either at rear right or bottom – optional)
- Control air for opening and (after venting) closing of the material flow to input (St); (designation stamped using arrows next to the connection; control air connection either bottom or rear left – optional)
- Material connection
 - Without material circulation:
Route material feed from a storage container by pump or pressure feed via a material hose to the material connection (M) of the automatic spray gun. Connect using suitable connecting components (see list of accessories) depending on the available space or other relevant circumstances.
 - With material circulation:
Connect the material flow and return flow with two material connections (M). Depending on the available space or other relevant circumstances, combine the two opposite connections at the side or the top connection with a side connection, then seal the superfluous connection borehole using a sealing screw (101) and gasket (102).



Caution

Compressed air and material feed should only be connected up by suitably trained personnel! Ensure that the pressures and temperatures listed under "Technical Data" are not exceeded!



Notes

- ☞ If a 5/2-way air control unit is used to open and close material flow, we refer users to a separate set of operating instructions.
- ☞ Air and material feed are connected via internal threads (e.g. nipple or nozzle-type connection depending on application). If you not sure about the best connection method, consult your supplier or Krautzberger GmbH.
- ☞ Material feed can be effected via a container (under the intrinsic hydrostatic pressure of the coating substance), a pressurised container or pumps. In the case of circulation connection (e.g. when applying settling coating substances), seal the top material feed port using the seal (102) and the sealing screw (101). Material circulation is only possible using the circulation pumping method.
- ☞ In the case of material feed under pressure (e.g. from pressure containers or via pumps), ensure that the material feed is interrupted if the atomiser air pressure falls rapidly due to, for example, loosening of a hose connection, bursting of the hose or similar.
- ☞ Without atomiser air feed, the range of the material jet may be multiplied many times, depending on the material! It is important to ensure that the control air is immediately interrupted if there is a fall in atomiser air pressure in order to prevent material discharge. In particularly critical cases, a spray jet monitor should be installed (using, for example, a light barrier). The spray jet monitor must be

switched in such a way that the air feed is interrupted and vented if there is a rapid fall in atomiser air pressure or that the material feed is interrupted by other means.

- ☞ The automatic spray gun must always be operated using filtered air.
- ☞ The atomiser air pressure should be regulated via a proportional regulating valve or a pressure reducer.

Checking the connections

- Interrupt
 - material feed
 - control air supply and
 - atomiser air feed.

No air or material must be discharged from the automatic spray gun.

- Fully open the regulator bolt (34) by turning to the left
- Open the control air supply (the needle in the material nozzle must retract, and air must flow out of the central borehole of the circular jet air nozzle and, if applicable, from the humped boreholes of the flat jet air nozzle)
- Close control air supply
- Connect or open material supply

Neither air nor material must be discharged from the automatic spray gun.

Caution

Prior to starting work, ensure that the control air connection and the atomiser air connections have not been interchanged! Risk of uncontrolled material discharge!

6.2 Mode of operation / Spray profile adjustment

- Close control air supply
- "Open" material feed (see following instructions)
- Open atomiser air supply
- Open control air supply (material needle (37 or 38) is pushed back by the air pressure and releases **first** the atomiser air, **then** the material flow)

The coating substance is sprayed. It is generally now necessary to adjust the spray profile.

- Fully open the regulator bolt (34) (see following instructions)
- Set the atomiser air pressure
- Set the spray profile by turning the flat jet air nozzle (1) – if present

Notes

- ☞ In the 45° position, the flat jet nozzle supplies a circular jet. The jet increasingly turns into a flat jet the more the nozzle is turned in horizontal or vertical direction.

- ☞ Depending on the type of material feed, the material feed is "opened"
 - by opening the connection valve
 - or by applying pressure to the storage container
 - or by switching the material pump on
 - or by filling the coating substance into the storage container, from where the coating substance then flows into the automatic spray gun under its intrinsic hydrostatic pressure.

- ☞ If material feed is effected under intrinsic hydrostatic pressure, the material pressure cannot be regulated.

- ☞ The spray profile depends on, among other things, the viscosity of the material and the workpiece geometry. The spray profile is optimised via regulation of the material pressure on the material pressure regulator.

- ☞ The material feed should only be altered if the desired spray profile cannot be achieved as described above. The material volume is altered by varying the material pressure and/or the nozzle size.

- ☞ A limited degree of fine adjustment (for example, to coordinate several automatic spray guns in a system) can be effected via the regulator bolt (34).

Setting the opening point of the material needle

- Close the air supply
- Close the regulator bolt (34) in a clockwise direction
- Open the material feed
- Open the control air supply
- Slowly open the regulator bolt (34) anti-clockwise until material is discharged.

Notes

- ☞ One revolution of the regulator bolt moves the needle by 0.4 mm and corresponds to 55 latching positions

- ☞ Excessive air pressure not only leads to unnecessarily high air consumption but also generates heavy misting of the coating substance.

- ☞ Insufficient air pressure results in an unsatisfactory spray profile.

- ☞ Select a low material pressure wherever possible!

- ☞ Rinse the automatic spray gun through with detergent prior to first startup!

- ☞ The automatic spray gun is now ready for operation.





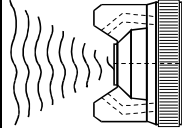
Caution

When setting the spray profile, take steps to ensure that no changes can occur or be made to the settings (parameters) without the knowledge or consent of the set-up technician.

 **Caution**

Do not loosen the valve sealing screw (31) under any circumstances! The valve shaft and the material needle may be ejected at speed!

7. Troubleshooting, operating malfunctions, spray profile defects

Defect	Possible cause	Remedy
 Normal spray profile (flat jet)	./.	./.
 Excessive spray profile toward the top and bottom or spray profile veers markedly to left or right	Soiled air nozzle and/or soiled material nozzle	Clean nozzles
 Heavy application in the centre of the spray profile	Too much material or excessively thick material	Reduce material feed or dilute material
 Split spray profile	Insufficient material	Increase material feed
 Surging or halting material jet	Insufficient material in pressure vessel, blocked material path, loose or damaged material nozzle, worn needle packing	Refill pressure vessel, clean material route, tighten or replace nozzle, replace needle packing
Material leakage on needle guide	Gaskets defective	Replace gaskets
Material nozzle drips	Worn or damaged needle, damaged material nozzle	Replace needle, clean or replace material nozzle

8. Changing parts

⇒ Material needle

- Unscrew the closing piece, cmpl. (35)
- Pull out parts (26 to 30)
- Unscrew the sealing screw (29) from the valve shaft (26)
- Pull out the needle spring (28) and the material needle (37 or 38)

Assembly is performed in the reverse order. Lightly lubricate the moving parts (e.g. art. no. 7026-120-0351 from Krautzberger GmbH; supplied in 250 g cans).

⇒ Air and material nozzle

- Unscrew the air nozzle (3, 4, 6 or 8) or clamping nut (13) or remove the jam nut (14) and remove/unscrew the air nozzle (1, 2, 5 or 7)
- Unscrew the material nozzle (9, 10, 11 or 12)

Assembly is performed in the reverse order. Lightly lubricate the moving parts (e.g. art. no. 7026-120-0351 from Krautzberger GmbH; supplied in 250 g cans).

⇒ **Needle gaskets**

First, remove the material needle as described above. Then

- Remove the cover clamp (39)
- Unscrew the needle guide (18)
- Pull out the gasket (17) using a wire hook
- Replace gasket (16) if necessary
- Carefully push in the new gasket (17) (ensure firm seat!)
- Turn the needle guide (18) back in
- Unscrew the screw (20)
- Pull out the gasket set (21) – consisting of three single gaskets – using a wire hook (ensure that you do not damage any threads!)
- Press the new gasket set (21) into place, and lubricate with a drop of acid-free machine oil
- Loosely screw in the screw
- Insert the material needle, compl. (see above)
- Tighten the screw (20), making sure it does not quite restrict the motion of the material needle (but do not tighten to the extent that the gaskets might be crushed!)

Assembly is performed in the reverse order. (Lightly lubricate the moving parts using a suitable grease, e.g. article no. 7026-120-0351 from Krautzberger GmbH; supplied in 250 g cans)

Notes

- ☞ Always change the material nozzle (9, 10, 11 or 12) and the material needle (37 or 38) together!
- ☞ When changing the material needle, check the setting length of the new material needle (37 or 38) once again prior to mounting, and adjust if necessary; unscrew the locknut, turn the stop nut to the correct dimension (see drawing 140-0172); fix the nut.
- ☞ When changing the nozzles, ensure firm seat of the new nozzle!
- ☞ Occasionally check moving parts for freedom of motion and re-lubricate if necessary!

9. Operating breaks, cleaning, maintenance

Wearing parts such as material nozzles (9 to 12), air nozzles (1 to 8), material needle (37 or 38), material needle gaskets (17 and 21), valve shaft (26) and other gaskets as well as fastening components should be checked at appropriate intervals and replaced if necessary (e.g. if the material needle does not close sufficiently or if there

is uncontrolled discharge of coating substance or air, or displacement of the automatic spray gun on the fastening device).

Caution

Close the supply of control and atomiser air as well as the material feed during maintenance and repair work.



Notes

- ☞ The automatic spray gun is never to be dismantled into its individual parts except when this is necessary for repair or maintenance purposes. When cleaning and during material change, the gun should be rinsed through using a detergent recommended by the supplier of the coating substance until it is discharged clear.
- ☞ The automatic spray gun should never be completely immersed in detergent! This could destroy the gaskets and rinse out the lubricant.
- ☞ If the automatic spray gun is to be dismantled when work has been completed, ensure that no residues of toxic, flammable or explosive material or detergent remain in the automatic spray gun (avoidance of hazard during storage or transport).
- ☞ Do not clean material and air nozzles using hard, sharp-edged objects! (*The following are recommended for cleaning of the nozzles: round brush, article no. 7025-120-0055 or flat brush, article no. 7025-120-0053 from Krautzberger GmbH.*)
- ☞ A cloth soaked in detergent is recommended for external cleaning.

10. Disposal

Following dismantling of the automatic spray gun, the metal parts can be sorted and forwarded to a recycling process; the non-metal parts should be disposed of as is appropriate.

11. Technical data

Operating pressures / Operating temperature

Max. material pressure:	0.6 MPa (6 bar)
Max. material temperature:	100°C
Max. atomiser air pressure:	1.2 MPa (12 bar)
Min. control air pressure:	0.6 MPa (6 bar)
Max. control air pressure:	1 MPa (10 bar)
Max. air temperature:	50°C

Connections (see dimension sheet 140-0471)

Material:	G1/8 IG
Atomiser air:	plastic hose, dia. 3/5
Control air:	plastic hose, dia. 3/5

Weight (standard version without add-on parts): approx. 320 g

Material spray zone

Angle of material jet in front of nozzle: up to approx. 180° depending on setting
 Length of material jet in front of nozzle: depends on setting (e.g. water with a material pressure of 4 bar **without** atomiser air feed sprayed through a 1 mm material nozzle hits a disc measuring 2 metres in diameter at a distance of 10 metres).

Noise emission

Continuous sound pressure level: < 85 dB (A)

Available nozzles (material, size)

Material nozzles

Flat/Circular jet:	stainless steel	0.2 – 1.8 mm
	st. steel, hardened	0.2 – 1.8 mm
Rotary jet:	stainless steel	0.8 – 1.8 mm
	st. steel, hardened	0.8 – 1.8 mm
Full-cone rot. jet:	stainless steel	0.2 – 1.8 mm

Air nozzles standard design: brass, nickel plated

Special equipment

Material filters (118) can be installed upstream of the material nozzle to prevent blockages – e.g. due to bonding of material particles.

Parts in contact with the material

Part designation	Standard version		Version on request	
	Made of	Art. no.	Made of	Art. no.
Main element	brass, nickel-plated	2820-080-1057	stainless steel	2860-080-0193
Transition nipple	brass, nickel-plated	2800-040-1239	stainless steel	-
Rapid screw	connection aluminium	6903-030-0797		
Angle screw	connection plastic	6903-030-0820	stainless steel	
Needle guide	brass, nickel-plated	2800-080-0045	stainless steel	2860-080-1619
Gasket	UHMW-PE	2800-010-0035	PTFE	2800-010-0635

12. Special versions

The automatic spray gun type Mikro-2 is available in a number of special versions for special applications (please see separate operating instructions).

Feature	Application / Advantage
Stainless steel design	highly acidic or alkaline material
With material circulation	for settling materials
With 3/2-way solenoid valve	short switching times
With 5/2-way solenoid valve	twin control, extremely short switching times
With rinsing tank	prevents blockage in the needle/needle guide
Automatic metering unit	without air atomisation

Nozzle extensions

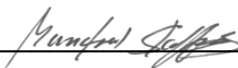
Nozzle extensions are particularly suitable for the coating of cavities such as pipes, canisters, cans or other containers. In many cases it is possible to adapt the length and shape of the nozzle extension to the special requirements on the customer's premises. Ready-made nozzle extensions are also available (see Krautzberger GmbH order catalogue).



Caution

When working with a nozzle extension, note that explosive mixtures can be created extremely easily due to the interaction of flammable materials and air in cavities! Ensure adequate ventilation!

13. Declaration of conformity

CE		Declaration of conformity	
under the terms of the EC Directive 89/392 EEC and the amendment directives 91/368/EEC, 93/44/EEC and 93/68/EEC Krautzberger GmbH, Stockbornstrasse 13, D-65343 Eltville			
Design of unit:	Automatic spray gun		
Type designation:	Mikro-2		
Make:	Krautzberger GmbH		
Serial no.:	2820-000, 2828-000, 2836-000, 2838-000		
The automatic spray gun type Mikro-2 was developed, designed and produced in compliance with the EC Directive 89/392/EEC.			
The following harmonised standards were applied:			
<input type="checkbox"/> EN 292, Safety of Machines, Plant and Equipment			
<input type="checkbox"/> EN 1953, Spraying Equipment for Coating Substances, Safety Requirements (German version prEN 1953: 1995)			
The following documents are fully available:			
<input type="checkbox"/> Overall diagram of the automatic spray gun type Mikro-2			
<input type="checkbox"/> Detailed and complete diagrams for the checking of compliance of the automatic spray gun type Mikro-2 with the basic safety and health safety requirements			
<input type="checkbox"/> A list of the basic requirements from EC Directives, standards and specifications applied during the development, design and production of the automatic spray gun type Mikro-2			
<input type="checkbox"/> A description of the solutions to prevent hazards arising from use of the automatic spray gun type Mikro-2			
<input type="checkbox"/> A copy of the operating instructions			
<u>18.02.1999</u>			
Head of design at Krautzberger GmbH			

14. Spare parts list for the automatic spray gun type Mikro-2

tem	Article No.	Designation	Item	Article No.	Designation
			23	2800-010-0033	Gasket
* 1	2836-060-....	Air nozzle, flat jet	24	2800-030-0043	Threaded ring
* 2	2836-060-....	Air nozzle, circular jet	25	2800-080-0406	Threaded ring, compl.
* 3	2800-060-....	Air nozzle, circular jet, with protective collar	26	2800-040-1197	Valve shaft
* 4	2800-060-....	Air nozzle, circular jet	27	2800-010-0002	Gasket
* 5	2836-060-....	Air nozzle, rotary jet	28	2800-020-0023	Needle spring
* 6	2800-060-....	Air nozzle, rotary jet	29	2800-040-1199	Sealing screw
* 7	2836-060-....	Air nozzle, full-cone rotary jet	30	2800-020-0022	Valve spring
* 8	2800-060-....	Air nozzle, full-cone rotary jet	31	2800-040-1203	Valve sealing screw
* 9	2836-050-....	Material nozzle, flat jet	32	2800-020-0024	Detent spring
* 10	2800-050-....	Material nozzle, circular	33	2800-040-1201	Circlip
* 11	2800-050-....	Material nozzle, rotary jet	34	2800-040-1202	Regulator bolt
* 12	2800-050-....	Material nozzle, full-cone rotary jet	35	2800-080-0408	Closing piece, compl.
13	2836-040-1459	Clamping nut	36	2800-040-0212	Scale disk
14	2836-040-1460	Jam nut	* 37	2800-070-....	Material needle, compl.
15	2820-080-1057	Main element, circular jet	* 38	2836-070-....	Material needle, compl.
15	2828-080-0417	Main element, circular jet, circulation	39	2800-040-1204	Cover clamp
15	2860-080-0193	Main element, circular jet, stainless steel lining	40	2836-080-0419	Main element, flat jet
15	2872-080-0426	Main element, circular jet, circulation, stainless steel lining	40	2838-080-0422	Main element, flat jet, circulation
16	2800-010-0034	Gasket	40	2861-080-0195	Main element, flat jet, stainless steel lining
17	2800-010-0035	Gasket, UHMW-PE (standard)	40	2873-080-0196	Main element, flat jet, circulation, stainless steel lining
17	2800-010-0635	Gasket, PTFE	*	2800-090-....	Nozzle set, circular jet ●
18	2800-080-0045	Needle guide (incl. item 17, UHMW-PE)	*	2800-090-....	Nozzle set, rotary jet ●
18	2800-060-1619	Needle guide stainless steel (incl. item 17, UHMW-PE)	*	2800-090-....	Nozzle set, full-cone rotary jet ●
19	2860-080-1429	Needle guide, compl. (item 16, 18)	*	2836-090-....	Nozzle set, flat jet ●
20	2800-040-1240	Screw	*	2836-090-....	Nozzle set, circular jet ●
21	2800-010-0689	Gasket (doz., 3 pcs each required)	*	2836-090-....	Nozzle set, rotary jet ●
22	2800-010-0030	Gasket, Viton (standard)	*	2836-090-....	Nozzle set, full-cone rotary jet ●
22	2800-010-0215	Gasket, PTFE		2800-010-0692	Gasket set

* Please state type and size when ordering these parts.

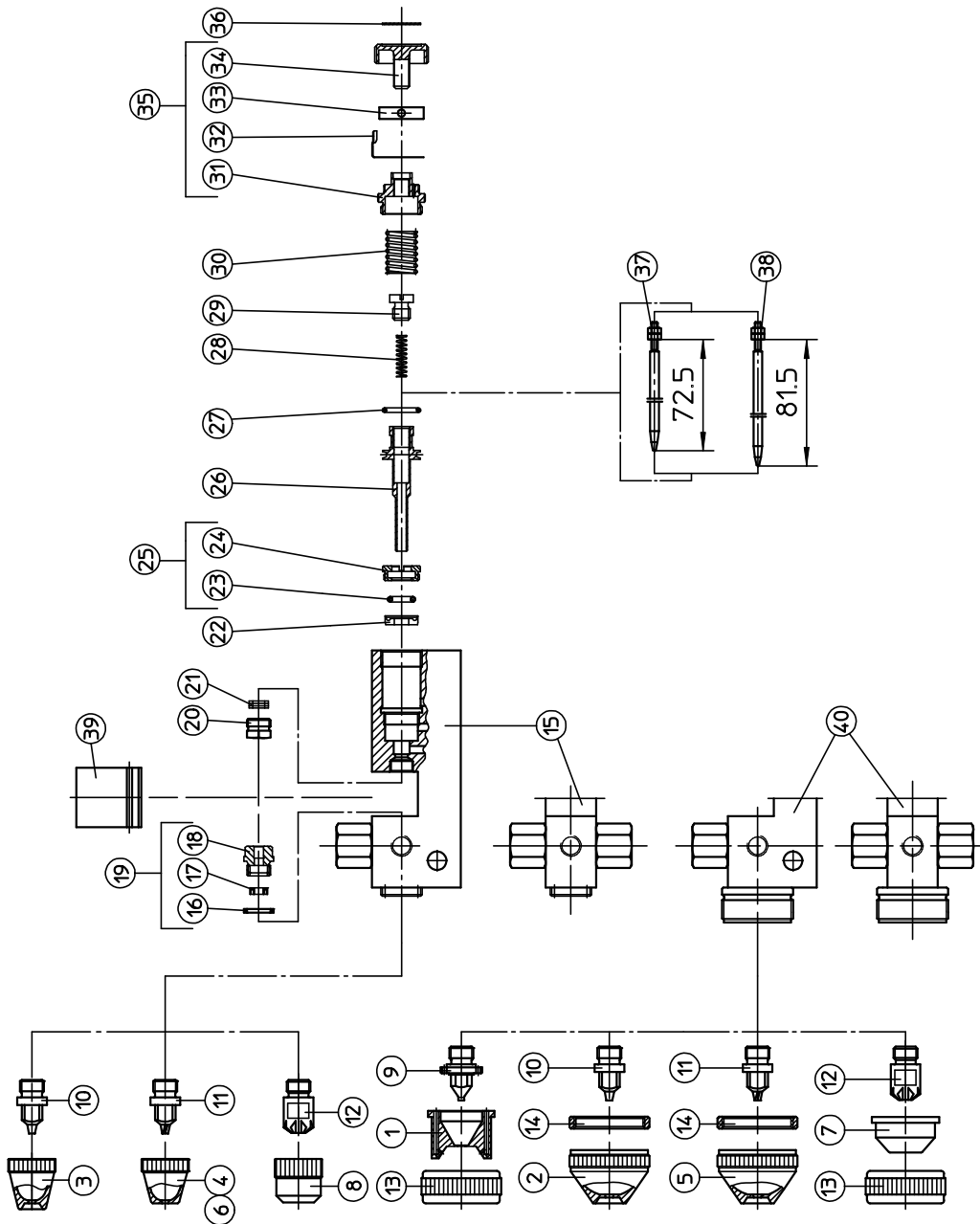
- Circular jet nozzle system
- Flat jet nozzle system

Available nozzle sizes: 0.2, 0.3, 0.5, 0.65, 0.8, 1.0, 1.2, 1.5, 1.8; other sizes and versions on request

Material nozzles and needles are in stainless steel version as standard

15. Exploded view, spare parts drawing

140-0172
06.02.97



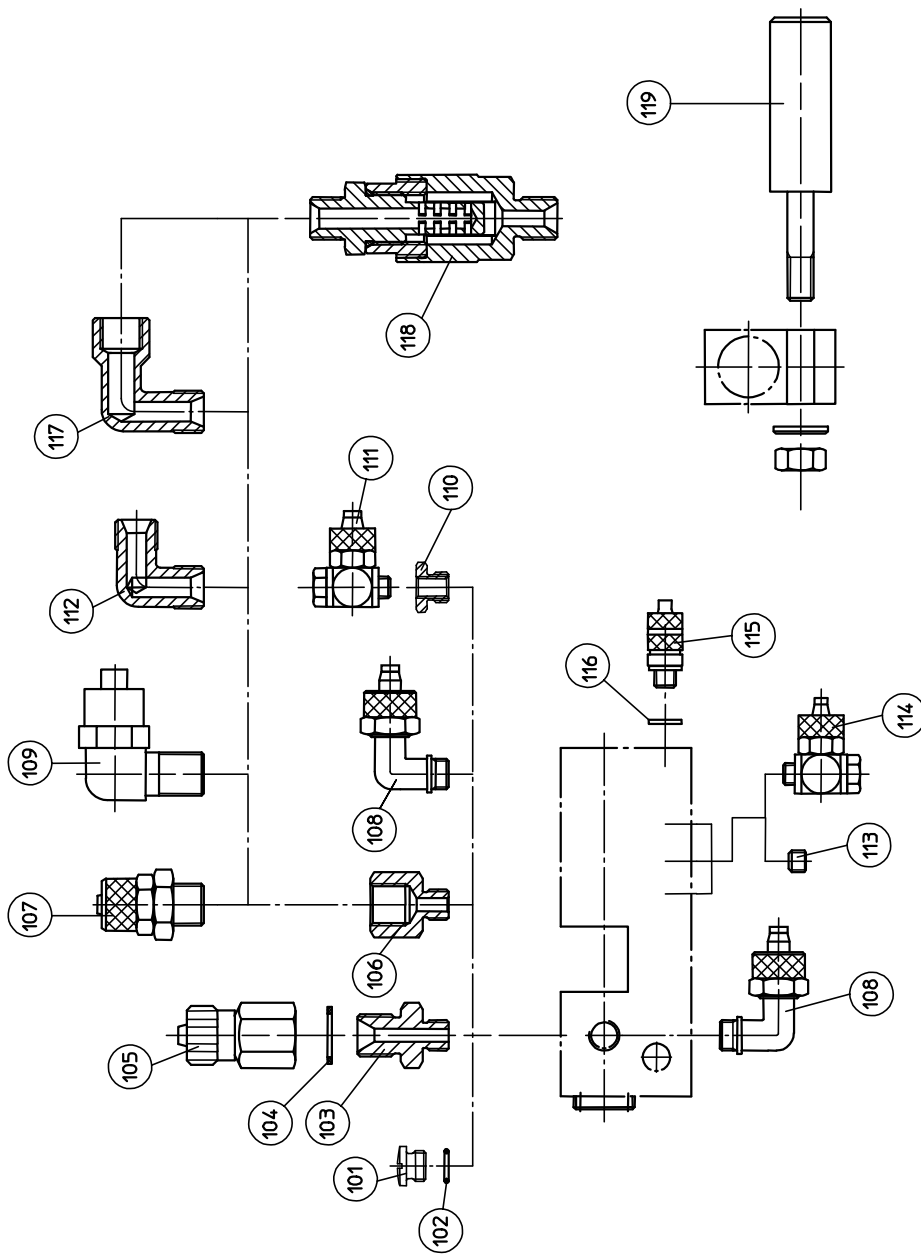
16. List of accessories for the automatic spray gun type Mikro-2

Item	Article no.	Designation
101	2800-040-1205	Sealing screw
102	2800-010-0032	Gasket
103	2800-040-1236	Double nipple (G 1/8 x M7x0.75)
104	2800-010-0023	Gasket
105	6903-030-0813	Rapid screw connection (G 1/8i x PK-4)
106	2800-040-1239	Transition nipple (G 1/8i x M7x0.75a)
107	6903-030-0797	Rapid screw connection (G 1/8a x PK-4)
108	2800-040-1238	Angle screw connection (M7x0.75a x PK-4)
109	6903-030-0820	Angle screw connection (G 1/8a x PK-4)
110	2800-040-1237	Reducing nipple (M5i x M7x0.75a)
111	6903-030-2428	Swivel screw connection (M5a x PK-4)
112	6920-030-2148	Angle (G 1/8a)
113	2800-030-0129	Sealing screw
114	6903-030-2427	Swivel screw connection (M5a x PK-3)
115	6903-030-2023	Rapid screw connection (M5a x PK-3)
116	6903-010-0204	Gasket
117	6920-030-2161	Angle (G 1/8a-i)
118	8217-090-1499	Material filter, size 1
118	8217-090-1500	Material filter, size 2
118	8217-090-1501	Material filter, size 3
118	8217-090-1502	Material filter, size 4
118	8217-090-1498	Material filter, size 5 (standard)
118	8217-090-1503	Material filter, size 6
118	8217-090-1504	Material filter, size 12
119	6922-080-1358	Retaining bolt with washer and nut
	7026-120-0513	Gasket

17. Accessories drawing

140-0613
28.0199

17. Zubehörzeichnung



18. Dimension sheet

