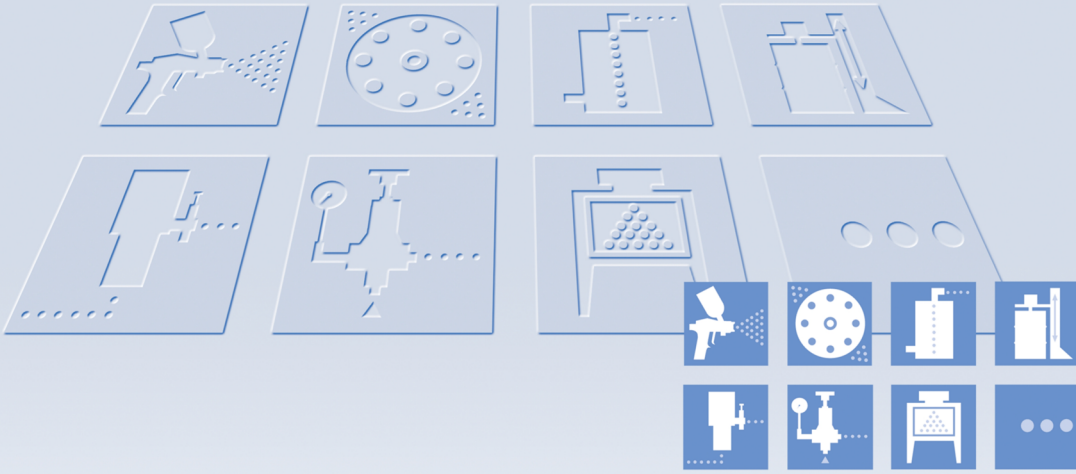
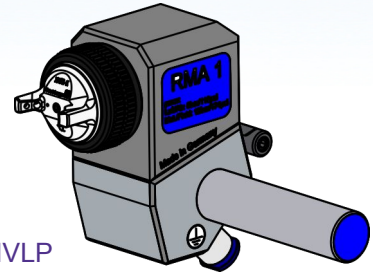


GB

Operating instructions
Automatic spray gun RMA 1 ■ RMA 1 HVLP



T-Dok-736-GB-Rev.3

Item number: 200-0444 ■ 200-0445 ■ 200-0446 ■ 200-0454 ■ 200-0455

Translation of the original operating instructions

Krautzberger

Thank you for selecting a Krautzberger product.

This product has been manufactured following state-of-the-art manufacturing procedures and extensive quality assurance measures. We promise you a product of the highest quality.

If you have questions, requests or suggestions, please contact us. We are always glad to assist you.

Information about the operating manual

This manual provides important information on how to work with the device safely and efficiently. The manual is part of the device and must always be kept in the immediate proximity of the device so that it is accessible to the personnel at all times.

The personnel must have read and understood this manual before starting any work. Compliance with all specified safety information and instructions is a basic requirement for safe working conditions.

In addition, the local occupational safety regulations and general safety rules apply for the area of application of the device.

Due to optional finishing variants, it is possible that the figures shown in this operating manual deviate from your device.

Information about explosion protection

Many of our competitors have been marking their products with the Ex symbol as a matter of principle for some time now.

At Krautzberger we do not do that.

We engineer and manufacture our products in line with currently applicable directives.

If the labelling on the product is required, it is affixed to the product as the result of the necessary analysis of ignition sources. If no labelling is affixed, the analysis of ignition sources and previous experience with the assessment of the suitability of products for use in a potentially explosive area have shown that the product described in this operating manual does not represent a potential source of ignition, with the exception of an electrostatic charge.

Taking into account the potential equalisation (provided by proper earth connection), the use in an area at risk for explosions is permitted in accordance with the currently valid directives.

Table of contents

1 Information about the operating manual

This operating manual enables safe and efficient use of the product. The operating manual is a component of the product and must be kept in the immediate vicinity of the device so that it is accessible to personnel at all times.

Personnel must have read this operating manual carefully, and understood it, prior to commencing any work. Compliance with all safety information and instructions provided in this operating manual is a basic prerequisite for ensuring safety when working.

The local occupational safety regulations and general safety rules for the product's area of use also apply.

Due to optional equipment differences, the illustrations in this operating manual may not be representative of your product.

Operating manual in chosen language

DE	Eine digitale Form dieser Betriebsanleitung ist über folgenden QR-Code in vielen Sprachen verfügbar. Eine Registrierung ist vorab erforderlich.
GB	A digital version of this operating manual is available in many languages via the following QR code. Registration is required in advance.
FR	Une version numérique de ce mode d'emploi est disponible dans de nombreuses langues via le code QR suivant. L'inscription est obligatoire à l'avance.
ES	Una versión digital de estas instrucciones de funcionamiento está disponible en muchos idiomas a través del siguiente código QR. Es necesario registrarse con antelación.
IT	Una versione digitale di queste istruzioni per l'uso è disponibile in molte lingue tramite il seguente codice QR. La registrazione è richiesta in anticipo.

Fig. 1: QR code

2 Function and identification

2.1 Function

Automatic spray guns are used for

- Automatic coating/marking of surfaces
- Dosing of fluids
- Placement of adhesive or marking points

Typical spray media include paints, dyes, adhesives, glazes, enamels, release agents, etc.

The spray medium is fed into the automatic spray gun under pressure. The pressure is typically generated by pumps or pressure containers. The automatic spray gun is controlled via compressed air.

For precision control of the automatic spray guns, electrically-activated solenoid valves can be used.

The spray medium is atomised using compressed air. The geometry of the spray jet and the sprayed quantity of the spray medium can be adjusted using the following measures:

- Selection of the air and material nozzle
- Change of atomiser air pressure
- Change of spray medium pressure

Optional equipment:

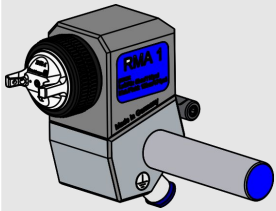
Automatic spray gun:

- Main element (stainless steel or aluminium, hard-coated)

Adapter:

- Connections: From behind (the connections can be made using nipples, screw-type or plug connectors of different sizes)
- Fastening: Clamp or screw-type fastening of the adapter

2.2 Identification

Scope of delivery	Type	Item number
	with adapter and conventional nozzle system	200-0444
	without adapter and with conventional nozzle system	200-0445
	with adapter and HVLP nozzle system *	200-0454
	without adapter and with HVLP nozzle system *	200-0455
	Adapter	200-0446
	Operating manual	T-Dok-736

* HVLP = **H**igh **V**olume **L**ow **P**ressure

Serial number

The serial number of the automatic spray gun is located on the main element. It serves as a unique identifier.

3 Using this operating manual

3.1 Information about the operating manual

- Knowledge of the fundamental safety instructions and safety regulations is a basic requirement for safe handling and defect-free operation of the product.
- This operating manual contains the most important information about enabling safe operation of the product.
- This operating manual and, in particular, the safety instructions are to be observed by all persons who work on or with the product.
- Furthermore, the rules and regulations for accident prevention in force at the respective operating site are to be observed.

3.2 Symbols in this operating manual

Safety instructions

This operating manual uses symbols to identify safety instructions. The safety instructions are preceded by signal words that indicate the severity of the hazard.

DANGER!

This combination of symbol and signal word indicates an immediate dangerous situation, which will cause death or severe injuries if it is not averted.

WARNING!

This combination of symbol and signal word indicates a potentially dangerous situation which can cause death or severe injuries if it is not averted.

CAUTION!

This combination of symbol and signal word indicates a potentially dangerous situation which can cause slight injuries if it is not averted.

NOTICE!

This combination of symbol and signal word indicates a potentially dangerous situation which can cause property and environmental damage if it is not averted.

ENVIRONMENT!

This combination of symbol and signal word indicates potential dangers to the environment.

Tips and recommendations

This symbol highlights useful tips and recommendations as well as information for efficient and defect-free operation.

Example for safety instructions in operating instructions

Safety instructions can refer to specific, individual operating instructions. Such safety instructions are embedded in the operating instructions so that they do not disrupt the reading flow when performing the action. The signal words described above are used.

1. Loosen the screw.
2. **CAUTION!**

   Pinching hazard at the lid!

   Carefully close the lid.
3. Tighten the screw.

Special safety instructions

The following symbols are used in safety instructions to draw attention to specific hazards:

Warning signs	Type of danger
	Warning – hot surface.
	Warning – danger zone.

Additional markings

The following markings are used in this manual to highlight operating instructions, outcomes, lists, references, and other elements:

Identification	Explanation
	Step-by-step instructions
⇨	Results of procedural steps
	References to sections in this manual and other applicable documents
■	Lists without specified order
[Button]	Operating elements (e.g. buttons, switches), display elements (e.g. signal lights)
'Display'	Screen elements (e.g. pushbuttons, assignment of function keys)

3.3 Personnel requirements

This manual identifies the qualifications of the personnel for the different scopes of work as listed below:

Qualified personnel
Due to their specialised professional training, knowledge, and experience as well as knowledge of the industry-specific standards and regulations, qualified personnel are in a position to perform assigned tasks and to identify and avert potential risks on their own.

Specialised personnel
Due to their specialised professional training, knowledge, and experience as well as knowledge of the industry-specific standards and regulations, qualified personnel are in a position to perform assigned tasks and to identify and avert potential hazards on their own.

User
The user is familiar with the basic regulations on occupational safety and accident prevention.

3.4 Personal protective equipment

Personal protective equipment is used to protect persons against adverse effects on their health and safety when working.

Personnel must wear personal protective equipment while carrying out the different tasks on and with the machine.

In the course of regular, recurring trainings, the owner should inform operating personnel that working without protective equipment can be detrimental to their health.

Protective equipment is selected according to the ambient conditions at the owner's premises and the raw materials that are used. The information provided by the material manufacturer on the safety data sheet must be adhered to in order to ensure the proper selection of protective equipment.

The recommended personal protective equipment is described below:

Light respiratory protection

Light respiratory protection is used as protection against hazardous dusts.

Protective gloves

Protective gloves protect hands from friction, abrasion, puncture wounds, or deeper injuries, as well as from contact with hot surfaces.

Safety goggles

Safety goggles are used to protect the eyes from airborne components and splashes of liquid.

Protective clothing

Protective clothing are tight fitting work clothes with low tear resistance, with tight sleeves, and without any protruding parts.

Safety shoes

Safety shoes protect the feet against crushing, falling parts or slipping on slippery ground.

Safety helmet

The helmet protects the head from falling parts and oscillating loads on the one hand, and it can protect it from injuries in cramped situations on the other.

4 Safety and responsibility

4.1 Responsibility of the owner

Owner

The owner is the person, who operates the product for commercial or economic purposes themself or who allows a third party to use/apply it and who is responsible for the legal product responsibility for the protection of the user, personnel and third parties.

Owner responsibilities

The product is used in an industrial environment. The owner of the product is therefore subject to statutory obligations regarding occupational safety.

In addition to the safety information in this operating manual, the country-specific safety, occupational safety and environmental protection regulations applicable to the product's area of use must be adhered to.

Furthermore, the owner is responsible for making sure that the product is always in perfect technical condition. Therefore, the following applies:

- The owner must ensure that the maintenance intervals described in this operating manual are adhered to.
- The owner must have all safety equipment checked regularly for functionality and completeness.

4.2 Intended use

The automatic spray gun is used to spray paints, colours, adhesives, glazes, enamels, release agents, as well as other fluids. The nozzle size depends on the spray viscosity of the spray fluid.

The intended use also includes the compliance with all the information in this operating manual.

4.3 Specification for the operation of a complete machine

- The operation without CE-marking is prohibited.
- Prior to its use, the automatic spray gun must be assembled to form a complete machine.
- Only operate the automatic spray gun after proper fastening on a suitable carrier construction.

4.4 Predictable misuse

Any use beyond the intended use or any other use constitutes misuse.

- Always carry out installation and commissioning in accordance with the steps described in this operating manual.
- Always observe the applicable country-specific safety, accident prevention, occupational safety, and environmental protection regulations etc. for the area of use for the automatic spray gun.
- Ensure that the hose lines used meet the requirements with regard to pressure, chemical, and mechanical loads.
- Do not use highly abrasive, chemically aggressive, very hot or very cold spray media without first consulting Krautzberger GmbH.
- Adhere to the safety data sheets of the spray medium manufacturer.
- Only use the manufacturer's OEM parts.
- Only operate the automatic spray gun after proper fastening on a suitable supporting structure.
- Do not hold the automatic spray gun in your hand during operation.

- Only operate the automatic spray gun while adhering to the values specified in (*Chapter 14 'Technical data' on page 44*).
- Make sure that the connected compressed air is oil-free and free from solid matter.
- Operate the automatic spray gun with processed, dried compressed air (air quality pursuant to DIN ISO 8573-1: quality class 4).
- Never point the compressed air at living beings.

WARNING!

Misuse of the automatic spray gun can cause dangerous situations.

No claims of any kind can be asserted due to damage resulting from misuse!

4.5 General safety instructions

WARNING!

Life threatening risk of injury or property damage through the application of hazardous media!

The application of hazardous media can lead to death, serious injuries or property damage.

– Ensure the resistance of the machine against the medium that is to be applied.
– Always adhere to the safety data sheet of the medium that is to be applied.

CAUTION!

Risk of injury through compressed air!

Uncontrolled leaks of compressed air can lead to serious injuries!

– Prior to any work on the device, all compressed-air lines must be closed and bleed if necessary.

WARNING!

Sound pressure level

Depending on the operating conditions, the sound pressure of the device may cause hearing damage.

Take suitable action to reduce the impact of the existing sound pressure level. The owner is responsible for the type and implementation of suitable measures, which may depend on the local conditions.

Outdoor operation and operation in exterior areas!

Use suitable measures to protect the device during the operation from environmental impacts in an exterior area through:

– *Moisture*
– *UV radiation*
– *Frost, etc.*

4.6 Residual risks

The automatic spray gun made by Krautzberger GmbH has been manufactured based on state-of-the-art technology and generally accepted technical safety regulations.

Nonetheless, its use can pose a threat to the life or health of users or third parties, damage the automatic spray gun itself or cause other property damage.

- The automatic spray gun must only be used as intended.
- The automatic spray gun must only be operated in a defect-free condition.
- Any faults impacting the safety must be remedied immediately.

4.7 Course of action in an emergency

In principle, the applicable national, regional and internal company regulations concerning the course of action in case of an emergency must be adhered to and if necessary respective safety measures must be taken on the system owner's side.

5 Transport, storage, and packaging

5.1 Transport

- The automatic spray gun is protected by cardboard packaging.
- The cardboard packaging can be reused for storage.

5.2 Storage

Store the automatic spray gun under the following conditions:

- Store the automatic spray gun in the original packaging.
- Do not store outside.
- Store in a dry and dust-free environment.
- Keep away from any aggressive media.
- Protect from UV radiation.
- Avoid mechanical shocks.
- Storage temperature: 15 to 40 °C.
- Relative atmospheric humidity: max. 60%.

5.3 Packaging

The automatic spray gun is packaged in accordance with the anticipated transport conditions and the packaging needs to protect it against transport damage, corrosion, and other damage.

- Remove packaging material.
- Remove potentially present transport safety restraints.

6 Overview

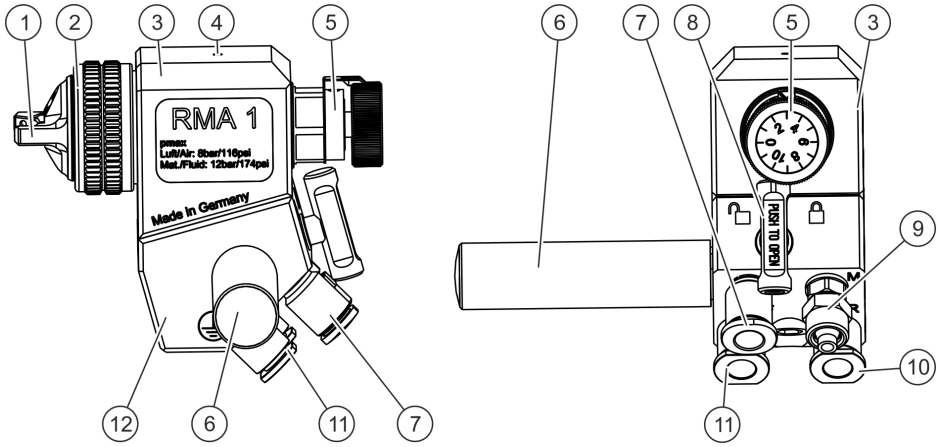


Fig. 2: Overview

1 Air nozzle
2 Cap nut
3 Main element
4 Leakage hole
5 Needle stroke adjustment screw (optional design with cover)
6 Retaining bolt
7 Connection for control air
8 Lever for adapter plug connector *
9 Connection for material supply (input "M")
10 Connection for round jet air
11 Connection for flat jet air
12 Adapter

The connections are marked with letter abbreviations.

* optional / dependent on configuration

7 Installation

7.1 Safety

Personnel:

- Specialised personnel

Protective equipment:

The selection of the protective equipment depends on the installation conditions on site. Always observe the applicable country-specific safety, accident prevention, occupational safety, and environmental protection regulations for the proper selection of the protective equipment.

WARNING!

Danger of injury due to improper assembly!

Recoil forces and vibrations occur during the operation. In case of insufficient fastening, the automatic spray gun may come loose and cause serious injuries or property damage.

Note:

– Ensure sufficient fastening of the automatic spray gun.

CAUTION!

Risk of injury due to sharp edges!

Sharp edges and pointed corners can cause abrasions and cuts on the skin.

Note:

– Proceed cautiously when working on or near sharp edges and pointed corners.
– Wear protective gloves, if in doubt.

7.2 General installation information

Adhere to the following general information for installation:

- Always carry out installation and commissioning in accordance with the steps described in this operating manual.
- Ensure that the utilised hose lines fulfil the requirements with respect to pressure, chemical, and mechanical loads.
- Only operate the automatic spray gun after proper fastening on a suitable supporting structure.
- Make sure that the connected compressed air is oil-free and free from solid matter.
- Operate the automatic spray gun with processed, dried compressed air (air quality pursuant to DIN ISO 8573-1: quality class 4).
- Vibration and recoil forces may occur on the automatic spray gun during the operation. Ensure sufficient fastening.
- Never point the compressed air at living beings.

7.3 Installing the automatic spray gun

Changing the installation position of the automatic spray gun

To change the installation position of the automatic spray gun, the retaining bolt (Fig. 3/2) can be screwed into the adapter (Fig. 3/1) from the other side.

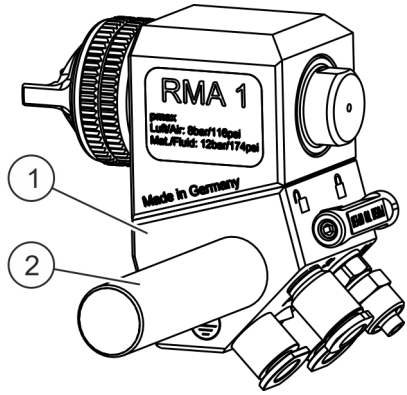


Fig. 3: Installing the automatic spray gun

1. Fasten the adapter (Fig. 3/1) with the retaining bolt (Fig. 3/2) to a suitable construction.
2. The main element is either plugged in or screwed on (*Chapter 7.4 'Changing the main elements' on page 20*) depending on the design.

7.4 Changing the main elements

7.4.1 Plugged-in design

Removing the main elements

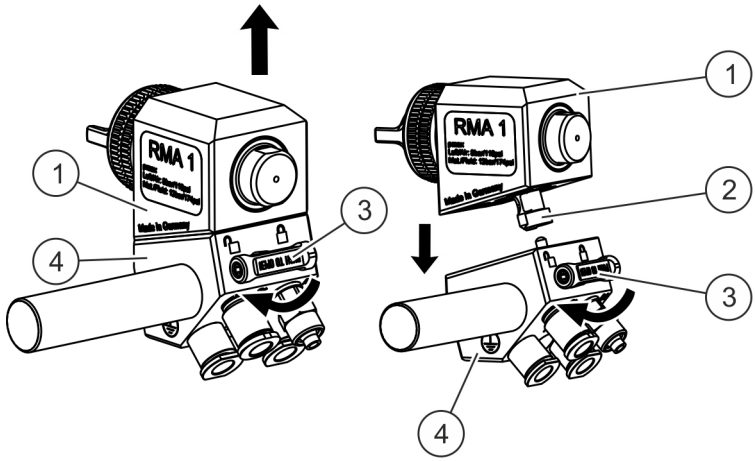


Fig. 4: Removing the main elements - plugged in design

1. Turn the lever (Fig. 4/3) to the unlocking position.

   The unlocking and locking positions are indicated by the symbols and .

2. Press the lever (Fig. 4/3) in and pull the main element (Fig. 4/1) off the adapter (Fig. 4/4).

Mounting the main elements

1. Turn the lever (Fig. 4/3) to the unlocking position.
2. Insert the main element (Fig. 4/1) with the clamp bolt (Fig. 4/2) into the adapter (Fig. 4/4) and allow them to lock into place.
3. Turn the lever (Fig. 4/3) to the locking position.

7.4.2 Screw-type design

Removing the main elements

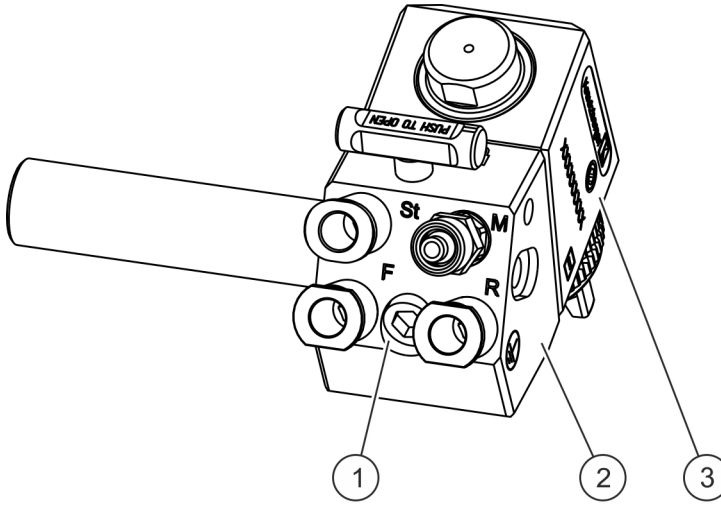


Fig. 5: Removing the main elements - screw design

1. Loosen the screw (Fig. 51).
2. Remove the main element (Fig. 5/3) from the adapter (Fig. 5/2).

Mounting the main elements

1. Push the main element (Fig. 5/3) onto the adapter (Fig. 5/2).
2. Screw on the main element (Fig. 5/3) and adapter (Fig. 5/2) with the screw (Fig. 5/1).

7.5 Connecting the automatic spray gun

WARNING!

Danger of injury due to improper connection!

When the material supply is pressurised, e.g. from pressure containers or with pumps, the range of the material jet can increase by a multiple in case of atomiser air failure. This presents a hazard to people and property.

– Make sure that the material supply is interrupted if the atomiser air pressure drops off quickly.
– It is recommended to regulate the atomiser air pressure via a filter pressure reducer.

The connections for material input, control air and flat jet air as well as round jet air are marked with letter abbreviations.

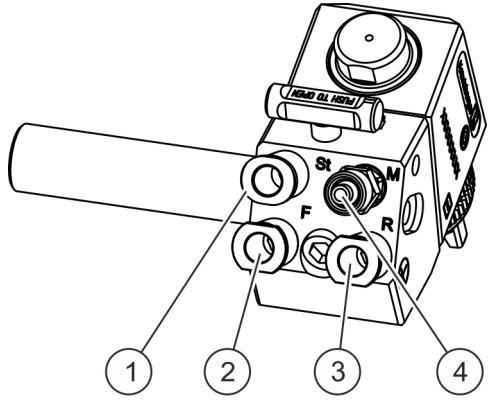


Fig. 6: Connecting the automatic spray gun

1. Connect the material line to connection "M" (Fig. 6/4).

2. Connect the control air to connection "St" (Fig. 6/1).

3. Connect the round jet air to connection "R" (Fig. 6/3).

4. Connect the flat jet air to connection "F" (Fig. 6/2).

7.6 Connection diagram

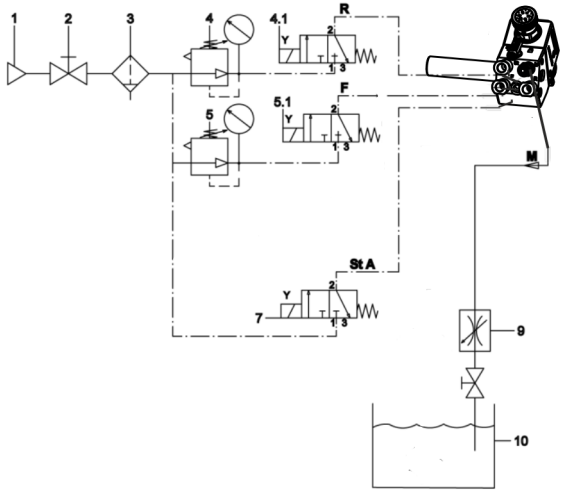


Fig. 7: Connection diagram

1	Compressed air connection	7	Solenoid valve for control air
2	Ball valve	9	Backflow pressure regulator
3	Oil/water separator	10	Container
4	Compressed air regulator round jet	F	Flat jet air
4.1	Solenoid valve round jet air ON	R	Round jet air
5	Pressure jet regulator flat jet	ST A	Open control air
5.1	Solenoid valve flat jet air ON	M	Material connection

7.7 Preliminary air control

Absolutely adhere to the preliminary air control "F" and "R" according to the scheme. Otherwise, fluid can escape non-atomised from the fluid nozzle at the beginning of the spraying procedure and when ending the spray procedure, the nozzles can be soiled or clogged.

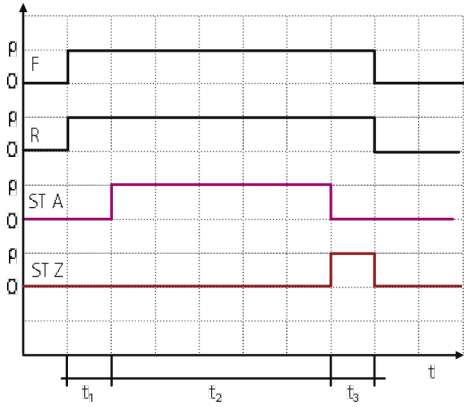


Fig. 8: Preliminary air control

F	Flat jet air
R	Round jet air
ST A	Control air ON
ST Z	Control air OFF (double controller)
p	Air ON
0	Air OFF
t	Time
t_1	Time until the atomiser air is stable
t_2	Automatic spray gun in operation
t_3	Time until the nozzle is blown clean

8 Operation

8.1 Safety

Personnel:

- User
- Specialised personnel

Protective equipment:

The selection of the protective equipment depends on the utilised medium of the system owner. The information provided by the medium manufacturer indicated on the safety data sheet must be adhered to in order to ensure the proper selection of protective equipment.

WARNING!

Risk of injury due to improper operation!

Improper operation can lead to serious personal injuries or property damage.

Note:

– Never point compressed air at people.
– Check the material and compressed air hose lines before each use for damage and tight fit.
– Adhere to the spray media manufacturer's specifications in the safety data sheet.
– Make sure that the connected compressed air is oil-free and free of solid matter.

WARNING!

Risk of death, risk of injury or property damage due to hazardous media!

Potential consequences: The application of hazardous media can lead to death, severe injuries or property damage.

When handling hazardous substances, ensure that the current safety data sheets of the hazardous substance manufacturer are available. The necessary measures can be derived from the content of the safety data sheet. Since the hazardous potential of a material can be reassessed at any time due to lessons learned, the safety data sheet must be checked regularly and replaced if necessary.

The system owner is responsible for the presence and the up-to-date status of the safety data sheet and the associated generation of the risk assessment of the effected workstations.

CAUTION!

Risk of injury through compressed air!

Uncontrolled leaks of compressed air can lead to serious injuries!

– Prior to any work on the device, all compressed-air lines must be closed and bleed if necessary.

WARNING!

Risk of injury due to hot surfaces!

The surfaces of components can become very hot during operation. Direct contact with hot surfaces causes severe skin burns.

– Do no touch hot surfaces during operation, wear protective gloves if necessary.
– Ensure that all surfaces have sufficiently cooled down prior to starting any work.

WARNING!

Sound pressure level

Depending on the operating conditions, the sound pressure of the device may cause hearing damage.

Take suitable action to reduce the impact of the existing sound pressure level. The owner is responsible for the type and implementation of suitable measures, which may depend on the local conditions.

8.2 General information about first commissioning and commissioning

Adhere to the following general information for commissioning:

- Only carry out the commissioning of the automatic spray gun pursuant to the steps described in this operating manual.
- Check the material and compressed air hose lines for damage and tight fit before each use.
- Always observe the applicable country-specific safety, accident prevention, occupational safety, and environmental protection regulations applicable for the area of use for the automatic spray gun.
- Do not use highly abrasive, chemically aggressive, very hot or very cold spray media without first consulting Krautzberger GmbH.
- Adhere to the safety data sheets of the spray medium manufacturer.
- Only operate the automatic spray gun while adhering to the values specified in (↳ *Chapter 14 'Technical data' on page 44*).
- Only operate the automatic spray gun after proper fastening on a suitable supporting structure.
- Do not hold the automatic spray gun in your hand during operation.

- Never point the compressed air at living beings.
- Adhere to the operating manuals for the respective components.

8.3 Shutting down

8.3.1 Temporary shutdown

End the spray process by switching off the control air (connection "St").

8.3.2 Long-term shutdown

1. End the spray process by switching off the control air (connection "St").
2. Close the material supply and switch off the material pressure pump if necessary.
3. If necessary, clean the automatic spray gun (*Chapter 9.3 'Cleaning the automatic spray gun' on page 30*).

8.4 Commissioning

1. Switch on the compressed air supply.
2. Where applicable, switch on the material pressure pump or pressurised container for the spray medium.
3. Point the automatic spray gun at a test surface.
4. **WARNING!**

   Vibrations caused by pulsation-generating compressor units!

   Vibrations caused by pulsation-generating compressor units (pumps, compressors) can be transferred to the spray gun via hose lines and lead to neurological or vascular disorders.

   Note:

   – Take breaks between spray processes.
   – Use pulsation-dampening devices (pressure compensation container, etc.).

   Begin the spray process by switching on the control air.
5. Adjust the spray pattern (*Chapter 8.5 'Adjusting the spray pattern' on page 27*).
6. End the spray process by switching off the control air.
7. Direct the automatic spray gun at the workpiece.
8. **WARNING!**

   Sound pressure level

   Begin the spray process by switching on the control air.

8.5 Adjusting the spray pattern

Air and material nozzles are available in various sizes. There are 4 different families:

- **Round jet** – cone-shaped jet in front of the nozzle.
- **Flat jet** – width-adjustable jet for flat-shaped application.
- **Rotary jet** – a rotary pulse produces a highly "swirled" spray jet; for difficult work piece geometries (angular sections etc.).
- **Full-cone rotary jet** – a rotary pulse produces a highly "swirled" spray jet; for difficult work piece geometries (back cuts, etc.).

The spray pattern can be adjusted with the following measures:

- Change the atomiser air pressure.
- Change the pressure of the spray medium.
- Select another nozzle size.

Too-high air pressure causes unnecessarily high air consumption and too-strong atomisation of the spray medium. It is recommended that you first adjust the spray pattern by varying the air and spray medium pressure. If you cannot achieve satisfactory results this way, you should experiment with other nozzle sizes.

8.6 Adjusting the needle stroke

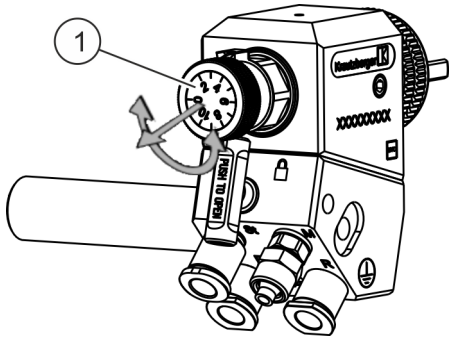


Fig. 9: Adjusting the needle stroke

1. Pull out the needle stroke adjustment screw (Fig. 9/1) to unfasten it.
2. Adjust the needle stroke by turning the needle stroke adjustment screw (Fig. 9/1).
3. Push in the needle stroke adjustment screw (Fig. 9/1) to fasten it again.

9 Maintenance

9.1 Safety

Personnel:

- Specialised personnel

Protective equipment:

The selection of the protective equipment depends on the maintenance conditions on-site and the medium used by the owner. The applicable country-specific safety, accident prevention, occupational safety, and environmental protection regulations must be adhered to for the proper selection of the protective equipment and the information given by the spray medium manufacturer on the safety data sheet must be taken into consideration.

WARNING!

Risk of injury through the use of incorrect spare parts!

The use of incorrect or defective spare parts can cause hazards for the personnel as well as damage, malfunctions or complete failure.

– Only use OEM parts from Krautzberger or Krautzberger-approved spare parts.
– In case of questions, always contact our Customer Care department.

CAUTION!

Risk of injury through compressed air!

Uncontrolled leaks of compressed air can lead to serious injuries!

– Prior to any work on the device, all compressed-air lines must be closed and bleed if necessary.

CAUTION!

Risk of injury due to sharp edges!

Sharp edges and pointed corners can cause abrasions and cuts on the skin.

Note:

– Proceed cautiously when working on or near sharp edges and pointed corners.
– Wear protective gloves, if in doubt.

Hose and pipelines

Even with intended use, the service life of hose and pipelines is limited due to environmental influences. For the sake of prevention, all hose and pipelines should be replaced regularly according to their load.

9.2 Maintenance schedule

The following sections describe the maintenance work that is required for optimal and fault-free operation of the automatic spray gun. Check wearing parts such as seals, material and air nozzles and material needles at regular intervals. The level of wear depends on the abrasiveness of the spray medium used. Escaping air and spray medium as well as the deterioration of the spray pattern are signs that parts are worn. Contact Krautzberger Customer Care should you have any questions about maintenance work and maintenance intervals.

Interval	Maintenance work	Personnel
before performing any maintenance work	Clean the automatic spray gun (↳ *Chapter 9.3 'Cleaning the automatic spray gun' on page 30*).	Qualified personnel
If needed	Change the material nozzle and air nozzle (↳ *Chapter 9.4 'Changing the material nozzle and the air nozzle' on page 32*).	
	Change the material needle (↳ *Chapter 9.5.1 'Design with needle stroke adjustment screw' on page 33*).	
	Change the needle seals (↳ *Chapter 9.6 'Changing the needle seals' on page 36*).	

Always replace the material nozzle and material needle at the same time (↳ Chapter 9.4 'Changing the material nozzle and the air nozzle' on page 32) and (↳ Chapter 9.5.1 'Design with needle stroke adjustment screw' on page 33).

9.3 Cleaning the automatic spray gun

WARNING!

Risk of injury due to improper cleaning!

– Adhere to the safety data sheets of the cleaning agent manufacturer.
– Do not fully immerse the automatic spray gun in cleaning agent.

1. Suspend operation (*Chapter 8.3 'Shutting down' on page 27*).
2. Switch off the system and secure it against a restart.
3. Connect the cleaning agent to material supply connection "M".
4. Switch on the compressed air supply.
5. Where applicable, switch on the pump or pressure container for the cleaning agent.
6. **WARNING!**

   Sound pressure level

   Begin the spray process by switching on the control air (connection "St").
7. Spray until the cleaning agent runs clear.
8. Interrupt the supply of the cleaning agent by switching off the pump or the pressure container.
9. Blow out the cleaning agent residue by briefly switching on the control air.
10. Switch off the compressed air supply and secure it against a restart.
11. Clean the outside of the automatic spray gun with a cloth dipped in cleaning agent.
12. Remove the material and air nozzle (*Chapter 9.4 'Changing the material nozzle and the air nozzle' on page 32*) and clean with a soft brush. Do not use hard or sharp-edged objects. We recommend our brush set. Please contact our Customer Care department for this purpose.
13. Slightly grease the sliding parts. We recommend Krautzberger special grease. Please contact our Customer Care department for this purpose.

9.4 Changing the material nozzle and the air nozzle

Removing the nozzles

1. Clean the automatic spray gun (*Chapter 9.3 'Cleaning the automatic spray gun' on page 30*).

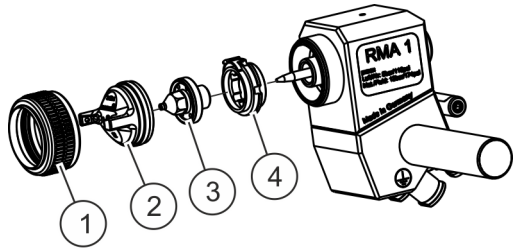


Fig. 10: Changing the material nozzle and the air nozzle

2. Unscrew the cap nut (Fig. 10/1) and air nozzle (Fig. 10/2) from the main element.
3. Take the air nozzle out of the cap nut.
4. Unscrew the material nozzle (Fig. 10/3).

Attaching the nozzles

The air distributor ring (Fig. 10/4) is only required for flat jet nozzles. When fitting the automatic spray gun with round or rotary jet nozzles, the air distributor ring is not mounted but it is included in the scope of delivery.

1. **WARNING!**

   Risk of injury through the use of incorrect spare parts!

   Screw in the new material nozzle.
2. Insert the air nozzle in the cap nut (Fig. 10/1) and screw it back onto the main element.

9.5 Changing the material needle

9.5.1 Design with needle stroke adjustment screw

Removing the material needle

1. Clean the automatic spray gun (*Chapter 9.3 'Cleaning the automatic spray gun' on page 30*).

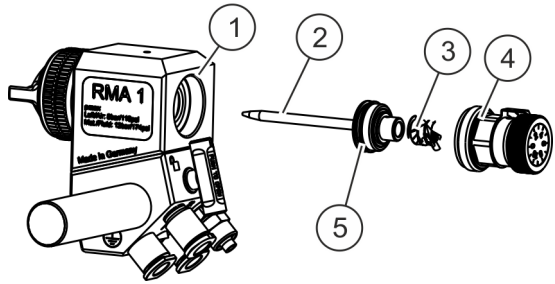


Fig. 11: Removing the material needle

2. Unscrew the needle stroke adjustment screw (Fig. 11/4).
3. Remove the pressure spring (Fig. 11/3).
4. Pull out the control piston (Fig. 11/5) from the main element (Fig. 11/1) together with the material needle (Fig. 11/2).
5. **CAUTION!**

   Risk of injury due to material needles!

   Remove the material needle (Fig. 11/2) from the control piston (Fig. 11/5).

Installing the material needle

1. **WARNING!**

   Risk of injury through the use of incorrect spare parts!

   CAUTION!

   Risk of injury due to material needles!

   Insert the new material needle into the control piston (Fig. 11/5).

2. Push the control piston and the mounted material needle into the main element (Fig. 11/1).
3. Press in the pressure spring (Fig. 11/3) with the needle stroke adjustment screw (Fig. 11/4).
4. Tighten the needle stroke adjustment screw (Fig. 11/4).
5. After assembly, check all parts for tight fit.
6. Check moving parts for free range of motion.

9.5.2 Design with cover

Removing the material needle

1. Clean the automatic spray gun (*Chapter 9.3 'Cleaning the automatic spray gun' on page 30*).

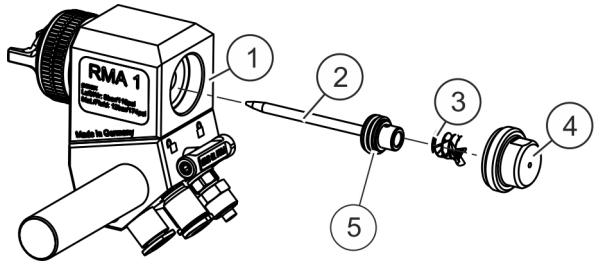


Fig. 12: Removing the material needle

2. Unscrew the cover (Fig. 12/4).
3. Remove the pressure spring (Fig. 12/3).
4. Pull out the control piston (Fig. 12/5) from the main element (Fig. 12/1) together with the material needle (Fig. 12/2).
5. **CAUTION!**

   Risk of injury due to material needles!

   Remove the material needle (Fig. 12/2) from the control piston (Fig. 12/5).

Installing the material needle

1. **WARNING!**

   Risk of injury through the use of incorrect spare parts!

   CAUTION!

   Risk of injury due to material needles!

   Insert the new material needle into the control piston (Fig. 12/5).

2. Push the control piston and the mounted material needle into the main element (Fig. 12/1).
3. Press in the pressure spring (Fig. 12/3) and the cover (Fig. 12/4).
4. Screw on the cover (Fig. 12/4).
5. After assembly, check all parts for tight fit.
6. Check moving parts for free range of motion.

9.6 Changing the needle seals

Removing the needle seals

1. Remove the material needle (*Chapter 9.5.2 'Design with cover' on page 35*).

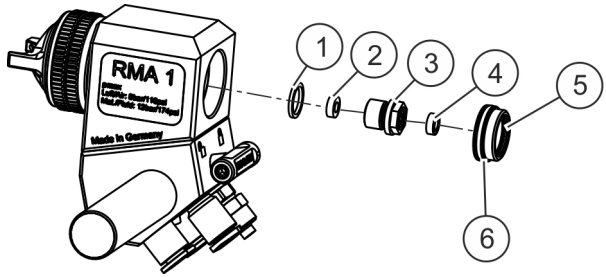


Fig. 13: Removing the needle seals

2. Remove the piston (Fig. 13/5) and the O-ring (Fig. 13/6). Check the O-ring for damage and replace it if necessary.
3. Unscrew the needle guide (Fig. 13/3) from the main element and remove the slotted rings (Fig. 13/2 and 4) with an O-ring picker.
4. Check the condition of the slotted rings and replace if necessary. Pay attention to the correct installation position.
5. Remove the O-ring (Fig. 13/1) from the needle guide, check the condition and replace if necessary.

Inserting the needle seals

1. **WARNING!**

   Risk of injury through the use of incorrect spare parts!

   Put the O-ring back on the needle guide (Fig. 13/3).

2. Reinsert the needle guide fitted with the O-ring and the two slotted rings in the correct installation position into the main element.

3. Reinstall material needle (*Chapter 9.5.2 'Design with cover' on page 35*).

NOTICE!

Lightly grease springs, threads and seals with the "Krautzberger special grease" during installation.

"Krautzberger special grease" can be purchased from Krautzberger GmbH. See the last page for contact details.

10 Faults

Personnel:

- Qualified personnel

If the fault is not listed in the following tables or if it cannot be eliminated with the measures described, contact Krautzberger Customer Care.

Spray pattern	Error	Cause	Remedy
	Normal flat jet spray pattern		
	Spray pattern too concentrated towards the top and towards the bottom	■ Dirty air nozzle ■ Dirty material nozzle	Clean the nozzles (*Chapter 9.3 'Cleaning the automatic spray gun' on page 30*).
	Spray pattern concentrated on the left or right side	■ Dirty air nozzle ■ Dirty material nozzle	Clean the nozzles (*Chapter 9.3 'Cleaning the automatic spray gun' on page 30*).
	Heavy application in the centre of the spray pattern	Too much material	Reduce the material supply.
		Material too thick	Thin the material.
	Split spray pattern	Insufficient material	Increase the material supply
		Flat jet air pressure too high	Reduce the flat jet air pressure.
	Spray pattern too thin	Cap nut loose	Tighten the cap nut

Spray pattern	Error	Cause	Remedy
	Material jet comes out in spurts or rapid bursts	Insufficient material supply	Increase the material supply
		Blocked material path	Clean the nozzles (*Chapter 9.3 'Cleaning the automatic spray gun' on page 30*).
		Loose or damaged material nozzle	Tighten or replace (*Chapter 9.4 'Changing the material nozzle and the air nozzle' on page 32*).
		Worn needle seal	Replace the needle seal (*Chapter 9.6 'Changing the needle seals' on page 36*).
	Leakage on the clamping screw	Defective needle seal	Replace the needle seal (*Chapter 9.6 'Changing the needle seals' on page 36*).
	Material nozzle drips	Worn or damaged material needle	Change the material needle (*Chapter 9.5.2 'Design with cover' on page 35*).
		Dirty or damaged material nozzle	Clean (*Chapter 9.3 'Cleaning the automatic spray gun' on page 30*) or replace (*Chapter 9.4 'Changing the material nozzle and the air nozzle' on page 32*) the material nozzle.
-	Spray pattern change after assembly. Round and flat jet air can no longer be regulated separately.	Air distributor ring installed wrong way	Remove the air distributor ring and install it correctly.

10.1 Material discharge from the leakage hole

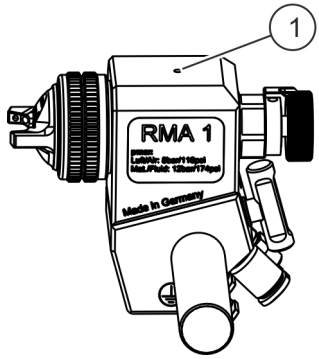


Fig. 14: Material discharge

If material is discharged from the leakage hole (Fig. 14/1) on the main element, the condition of the needle seal needs to be checked and, if necessary, replaced (*Chapter 9.6 'Changing the needle seals' on page 36*).

10.2 Customer Care

Krautzberger GmbH

Customer service

Stockbornstr. 13

65343 Eltville am Rhein

+49 6123 698-222

customercare@krautzberger.com

11 Spare parts

– *Only use OEM parts from Krautzberger or Krautzberger-approved spare parts.*
– *In case of questions, always contact our Customer Care department.*

Spare parts order – General

To make spare part ordering easier, please provide the following information:

– *Serial number*
– *Model / product name*
– *Designation*
– *Item number according to spare parts list*
– *Quantity*
– *Desired shipping method (post, freight, sea, air, express)*
– *Delivery address*

A complete spare parts overview is available on the website of Krautzberger GmbH:

www.krautzberger.com

12 Accessories

A wide range of accessories is available for the automatic spray gun. For further information, visit us on the Internet (www.krautzberger.com) or contact your Krautzberger specialist dealer, consultant or our office staff. Here are a few examples:

- Air nozzles
- Fluid needles
- Fluid nozzles
- Arm extension for robot
- etc.

13 Disassembly and disposal

13.1 Safety

Personnel:

- Qualified personnel

Protective equipment:

The selection of the protective equipment depends on the environmental conditions at the site of the owner and the coating material that is used. To ensure the proper selection of personal protective equipment, the information provided by the spray material manufacturer indicated on the safety data sheet must be adhered to.

13.2 Disassembly

WARNING!

Risk of injury due to improper disassembly!

Prior to starting the disassembly:

- Switch off the device and secure it against a restart.
- Physically disconnect the entire power supply from the device, and discharge any energy stored in the machine.
- Remove and dispose of operating and auxiliary material as well as remaining processing materials in an environmentally friendly manner.

Afterwards, properly clean components and modules and take them apart in compliance with applicable local occupational health & safety regulations as well as environmental protection regulations.

13.3 Disposal

ENVIRONMENT!

Danger to the environment due to incorrect disposal!

Incorrect disposal may cause dangers to the environment.

If no return or disposal agreement has been made, recycle the dismantled parts:

- Scrap metals.
- Recycle plastic components.
- Sort remaining components based on the respective material and dispose of them accordingly.
- Properly dispose of potential spray media residue separately from the device.

If in doubt, obtain information about environmentally-appropriate disposal from the local authorities or specialised disposal companies.

14 Technical data

14.1 Dimensions and weight

Specification	Value	Unit
Width (without retaining bolts)	32	mm
Width (with retaining bolts)	86.5	mm
Retaining bolt diameter	14	mm
Height	69	mm
Length	82	mm
Connection for spray medium (M) female *	4/6 (hose)	mm
Connection for atomiser air (R, F) female *	4/6 (hose)	mm
Connection for control air (St) female *	4/6 (hose)	mm
Weight, aluminium design	approx. 0.21	kg
Weight, stainless steel housing	approx. 0.47	kg

* female = internal thread

14.2 General specifications

Specification	Value	Unit
Working pressure, control air (St)	min. 0.4 / 4; max. 0.8 / 8	MPa / bar
Working pressure, spray medium (M)	max. 1.2 / 12	MPa / bar
Working pressure, atomiser air (R, F)	max. 0.8 / 8	MPa / bar
Sound pressure level (depends on the nozzle)	approx. 73 - 96	dB(A)
Spray medium temperature	max. +50	°C

14.3 Dimensions

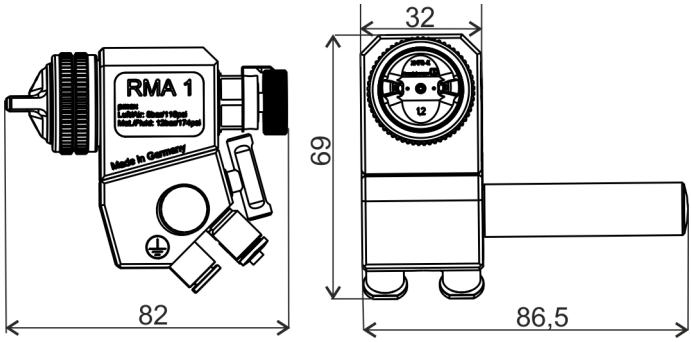


Fig. 15: Dimensions

15 Declaration of Incorporation

Krautzberger

EC-installation explanation by machine guideline in 2006 / 42 / the EC appendix II 1st B

The manufacturer

Krautzberger GmbH
Stockbornstr. 13
65343 Eltville
Deutschland

hereby declares, that the following product

Product -/ Project name:	Automatic Spray Gun RMA 1, RMA 1 HVLP
Article number::	200-0444, 200-0445, 200-0446, 200-0454, 200-0455

to the following basic requirements of the guideline corresponds:
see appendix "list of the kept requirements after appendix I of the EC-machine guideline in 2006 / 42 / the EC"

The commissioning of this product is prohibited so long, until the machine or the layout in which this product should be installed or from which shows it a component, corresponds to the regulations of all relevant guidelines.

Followers harmonised norms were applied:

EN 1953:1998+A1:2009

EN ISO 12100-1:2003/A1:2009 Part1

EN ISO 12100-2:2003/A1:2009 Part 2

EN ISO 14121-1:2007

The following national or international norms (or parts / clauses from it) and specifications were applied:

EN 13966-1

For the product the special technical bases were constructed according to appendix VII shares B, at reasonable desire these bases of a state place can be transmitted by post, e-mail, messenger.

Name and address of the person who is authorised to put together the technical documents

Andreas Lotz
c/o Krautzberger GmbH
Stockbornstr. 13
65343 Eltville
Deutschland

Place: Eltville am Rhein
Date: 30.09.2019

Blumrich

Jörg Blumrich(Head of Design/Development)

Seite **1** von **1**

Fig. 16: Declaration of Incorporation

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