



Operating Manual

**Automatic spray gun AGR-09 mini,
AGR-09 mini with needle stroke limitation
for low-pressure atomization**

Product No.: S-AGR09GB (Translation)

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REITER GmbH + Co. KG

Oberflächentechnik

Berglenstraße 23 - 25

D-71364 Winnenden

Phone: +49 (0) 71 95 / 185 - 0

Fax: +49 (0) 71 95 / 185 - 30

Internet: www.reiter-oft.de



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1.1 Introduction

This operating instruction contains information for the assembly, maintenance, and care of the automatic spray gun AGR-09 mini. The technical data and procedures contained herein should be considered as standard and may differ depending on the actual installation.

Because every system is designed differently, the automatic spray gun AGR-09 mini must only be placed in operation by personnel authorised by REITER.

To better understand this device and to achieve optimum error-free operation for an extended period, please read this operating instruction carefully. The specified tests and fault identification should be performed before calling for a service technician.

The automatic spray gun AGR-09 mini is subject to additional development and improvements.

1.2 Operating area – Specified normal use

The automatic spray gun AGR-09 mini is designed for processing coatings based on solvents or water. It must only be used to atomise materials that are explicitly listed in the order confirmation. Use of other coating materials can only be considered if there is no possibility of:

- hazard to people or the environment
- harmful effects on the spray gun

In case of doubt, please contact the manufacturer of the automatic spray gun AGR-09 mini.

The automatic spray gun AGR-09 mini is designed for use on a fixed location spraying system and on the hollow wrist or flex arm robots, on automatic machines (hoisting devices), and on tripods.

Any usage beyond what is specified is considered improper use. The manufacturer shall not be responsible for any resulting damages.



Danger of injury or damage!!

This device may be dangerous if it is not operated according to the specifications in this operating instruction.

Note!

During the processing of highly corrosive or very abrasive materials, an increased demand in spare parts can be expected. The suitability must be checked with the material manufacturer based on the substance list.

1.2.1 Usage contrary to intended use

Usage is contrary to intended use if:

- any media other than those specified in the operating instruction are directed through the valves
- operating conditions other than those specified in the operating instruction are present
- safety instructions are not observed during operation, assembly, and maintenance
- unauthorised conversions or modifications are made to the double seat valve that have a negative effect on safety and/or functionality

1.3 Guarantee

Therefore, it is recommended to read this operating manual carefully before start-up, as we cannot be held liable for damage or malfunctions resulting from the non-observance of this operating manual.

During the guarantee period repair work and changes only may be carried out by our assemblers or with our consent.

The system is designed only for the use according to the operating area described in chapter 1.2 „Operating Area“.

Any other use is considered improper and REITER can not be held liable for any possible damage.

1.4 Copyright

The copyright for this operating manual is retained by REITER GmbH + Co. KG Oberflächentechnik. This operating manual is intended for personnel involved in installation, operation and supervision. The operating manual include regulations and technical drawings which may not be copied, distributed, used for commercial purpose or given to others, either in full or in part.

REITER GmbH + Co. KG

Oberflächentechnik
Berglenstraße 23 - 25
D-71364 Winnenden

Phone: +49 (0) 71 95 / 185 - 0
Fax: +49 (0) 71 95 / 185 - 30
eMail: info@reiter-oft.de



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2.1 Explanation of symbols and special directions

2.1.1 Symbol of working safety



This symbol accompanies all special directions for working safety given in this operating manual. Non-observance of these passages marked with this symbol may endanger life and limbs. Observe these directions and take special care in the cases described. Ensure all other operators are informed of these special directions. In addition to the special directions given in this operating manual, the generally valid regulations for safety and prevention of accidents have also to be observed.

2.1.2 Directions for „attention“



This warning is shown at points where special attention needs to be given in order that guidelines, regulations, special directions, and proper work procedures are observed and to prevent damage or destruction of the machine and/or other parts of the plant.

2.2 Basic safety instructions

The spray system with the automatic spray gun AGR-09 mini must only be operated by trained personnel.

A warning sign must be posted in a conspicuous place close to the spraying area. This warning sign should contain the most important functions and safety measures that users must observe.

The dangers present when cleaning spray guns must be clearly highlighted.

The start-up of the system by the user may only be performed after an initial test by an authorised technician prior to the transfer of risk to the user.



2.3 Instructions

Persons who work with the spraying device must be instructed about dangers before beginning their activities.

This instruction must be repeated and documented at least once per year.

2.4 Work stations



Danger!

Danger of fire and explosion!

- Smoking and open flames are strictly prohibited in areas prone to fire and explosion.
- No accumulations of coating materials must be allowed to collect in spray booths, on spraying stands, or anywhere in the entire work area.
- Access doors to the spray booths must remain closed during spraying. Sources of ignition must be avoided.

2.5 Cleaning



Danger!

Danger of fire and explosion!

Accumulations of coating materials must be removed. The following must be cleaned regularly:

- Workpiece fixtures
- Suction devices
- Leakage mist separators and their immediate vicinity

Technical ventilation must be active during cleaning work.

Use only electrically conductive containers for the cleaning fluids. Additionally, these containers must be earthed.

Use only solvents with a flashpoint that is at least 5°C higher than the surrounding temperature. When cleaning the guns, wear suitable protective clothing, such as gloves, safety goggles, etc.

2.6 Requirement for the entering of spray booth



Warning!

Danger of inhaling substances hazardous to your health!

During the spraying operation, no persons are permitted to remain in the spray booth.

The concentration of solvent in the air must be under the limit that is harmful to health. If appropriate, wear suitable protective breathing equipment when entering the spray booth.



2.7 Explosive areas (DIN EN 12215)

The categorisation of danger zones is a significant component of the safety concept for explosion protection. The ignition protection type of equipment and components integrated into the spray booth depends on the limit of concentration for flammable substances by technical ventilation.

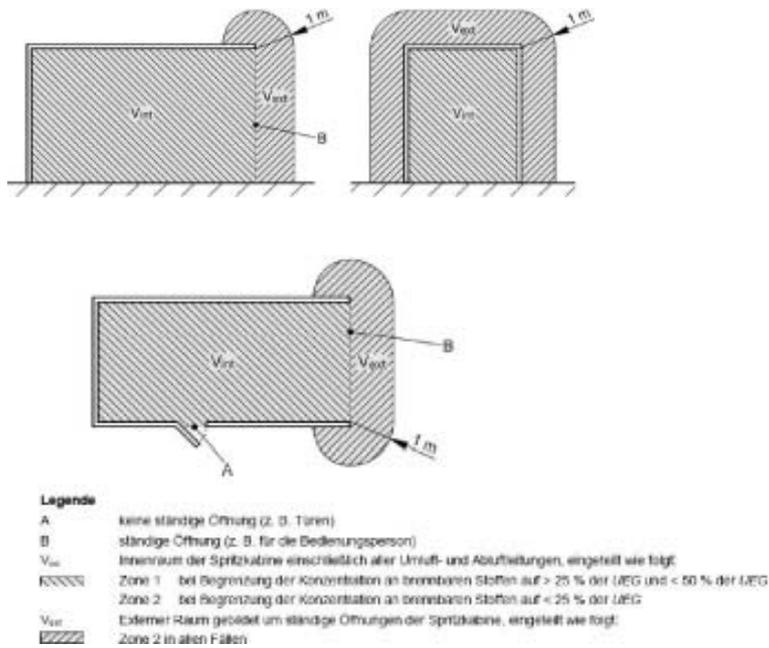
- a) If the concentration of flammable substances is limited to less than 25% of the LEL, the inside of the spray booth, including ambient and exhaust air lines, together with external areas formed around permanent openings at a distance of up to 1 m should be categorised as Zone 2.
- b) If the concentration of flammable substances is between 25% and 50% of the LEL, the inside of the spray booth, including ambient and exhaust air lines, should be categorised as Zone 1.
- c) If the concentration of flammable substances is between 25% and 50% of the LEL, external areas formed around permanent openings at a distance of up to 1 m should be categorised as Zone 2.

This categorisation of areas with explosive atmospheres into zones corresponds to the category for ignition protection type according to prEN 13463-1.

Kategorie	ausgelegt für Art von explosionsfähiger Atmosphäre	einsetzbar in Zone	Auch einsetzbar in Zone
1	Gas-/Luft-Gemisch bzw. Dampf-/Luft-Gemisch bzw. Nebel	0	1 und 2
2	Gas-/Luft-Gemisch bzw. Dampf-/Luft-Gemisch bzw. Nebel	1	2
3	Gas-/Luft-Gemisch bzw. Dampf-/Luft-Gemisch bzw. Nebel	2	—

Example of zone categorisation in a spray booth with open access side (spraying stand)

Categorisation of danger zones into Zone 1 or Zone 2



Example of zone categorisation in a spray booth that is open on top

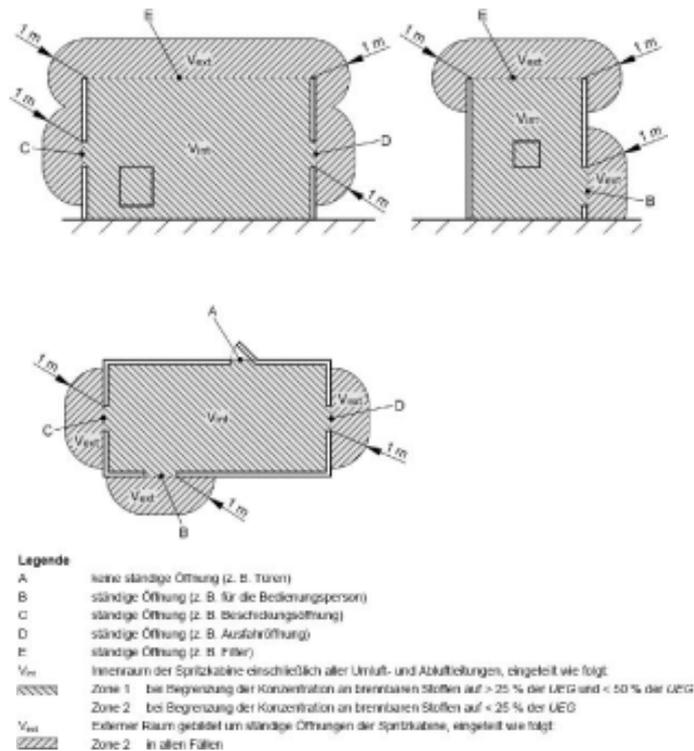




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3.1 Designs

The automatic spray gun AGR-09 mini is available in different designs. They differ in the use of a variety of components and/or the material flow.

The needle stroke limitation on the spray gun „AGR-09 mini with needle stroke limitation“ can be adjusted manually.

Note!

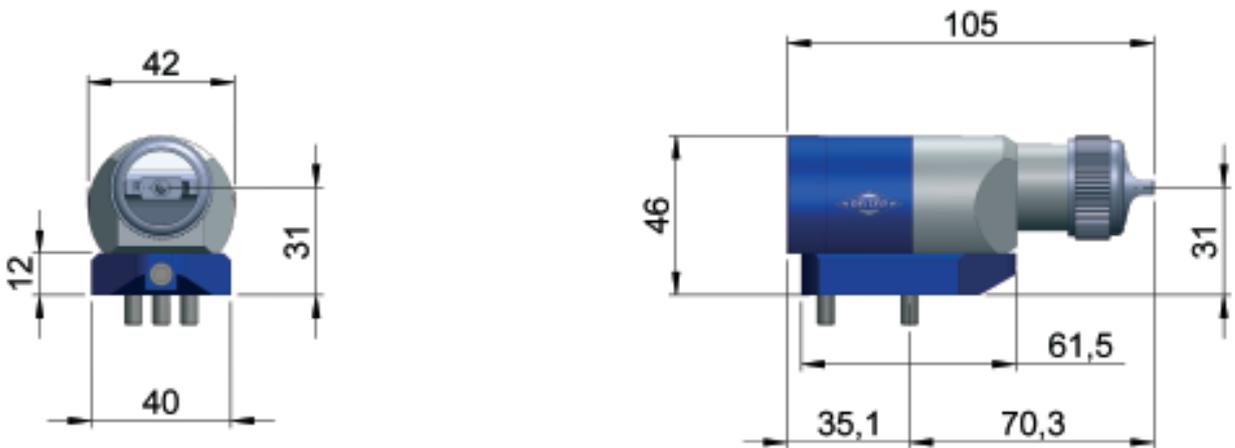
Gun heads marked with an „U“ have two material lines, allowing coating material to circulate through the head so a colour change can be performed while the gun is closed.



3.2 Technical data

3.2.1 Automatic gun AGR-09 mini

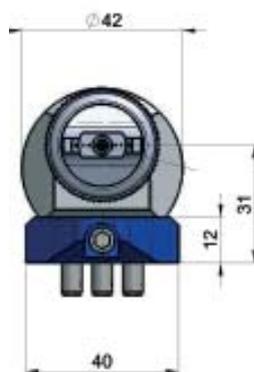
Spray system:	AGR-09 mini	Low-pressure air atomization
Max. pressures:		0 to 14 bar material (MAT) 6 bar control air (CYL) 9 bar atomiser air (ATOM) and fan air (FAN)
Switching times:		< 60 msec. At 5,8 bar control air
Weight:		approx. 450 g
Dimensions:		see sketch
Materials:		
Gun head:		Stainless steel 1.4305
Nozzle (standard):		Stainless steel 1.4305
Paint needle (standard):		Stainless steel 1.4305
Air distribution ring:		Brass, chemically nickel-plated
Air cap:		Brass, chemically nickel-plated
Air cap retaining ring:		Brass, chemically nickel-plated
Material-contacting seals:		VITON for water-based coatings (on request) VITON EX for solvent-based coatings (standard) Perfluorelastomer for highest resistance (on request)



AGR-09 mini with intermediate plate

3.2.2 Automatic gun AGR-09 mini with needle stroke limitation

Spray system: AGR-09 mini with needle stroke limitation	Low-pressure air atomization
Max. pressures:	0 to 14 bar material (MAT) 6 bar control air (CYL) 9 bar atomiser air (ATOM) and fan air (FAN)
Switching times:	< 60 msec. At 5,8 bar control air
Needle stroke grid:	1 rotation = 0,7mm needle stroke limitation
Weight:	approx. 450 g
Dimensions:	see sketch
Materials:	
Gun head:	Stainless steel 1.4305
Nozzle (standard):	Stainless steel 1.4305
Paint needle (standard):	Stainless steel 1.4305
Air distribution ring:	Brass, chemically nickel-plated
Air cap:	Brass, chemically nickel-plated
Air cap retaining ring:	Brass, chemically nickel-plated
Material-contacting seals:	VITON for water-based coatings (on request) VITON EX for solvent-based coatings (standard) Perfluorelastomer for highest resistance (on request)



AGR-09 mini mit
Nadelhubbegrenzung
und Zwischenplatte

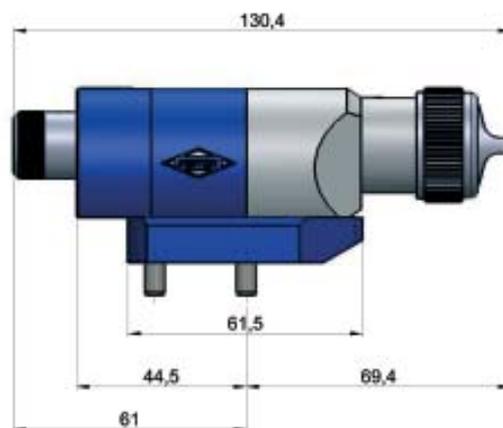




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7.1 Commissioning

The automatic spray gun AGR-09 mini is attached to a intermediate plate. The intermediate plate in turn is fastened to an adapter.

The adapter is attached to the movement device (robot or hoisting device) or to a tripod. All compressed air and material lines are connected to the adapter.

7.2 Usage conditions

Operating temperature: max. 80°C
Ambient temperature: max. 40°C

7.3 Tools and other materials required

The following tools are required for installing and removing the automatic spray gun AGR-09:

- Workstation with vice and soft braces
- Hexagon socket head wrench, size 6
- Hexagon socket head wrench, size 4
- Torque handle with head wrench, size ½"
- Turnscrew
- Gun grease (part no. 65026530)

7.4 Fastening onto intermediate plates

7.4.1 Intermediate plate AGR

Note!

For the intermediate plate (part no. 63316350) the automatic gun AGR-09 mini is fitted with the locking device (part no. 64045940).



1. Fixing gun on the intermediate plate.



2. Fixing automatic gun AGR-09 mini and the „stud with tip“ with a hexagon socket head wrench, size 4

7.5 Adjusting the jet geometry

Note!

The gun has a variable jet geometry to produce a round or flat spray pattern. You should only work with clean, dry, filtered, oil-free air.

1. Select a suitable air flap.
2. Position the air distributing ring to produce the desired jet geometry.
3. Make the appropriate setting for the atomiser air.
4. Make the appropriate setting for the horn air.

7.5.1 Distance to workpiece

Position the automatic gun AGR-09 mini about 15 to 30 cm from the workpiece.



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Note!

The air cap **can** be replaced on the automatic spray gun AGR-09 mini without removing it from the system. For all other maintenance jobs, the automatic spray gun AGR-09 mini **must** be removed from the intermediate plate and replaced by a new one.

8.1 Required tools and lubricants

The following are required for installation and removal:

- Workstation with vice and soft braces
- Hexagon socket head wrench, size 6
- Hexagon socket head wrench, size 4
- Torque handle with socket wrench, size 7
- Turnscrew
- Gun grease (part no. 65026530)

Note!

Needle, needle set and piston should only be exposed to gun grease (part no. 65026530). Other grease can lead to a malfunction of the automatic spray gun AGR-09 mini (unsuitable grease could cause swelling of needle set and piston).

8.2 Removing gun



Caution!

Danger of injury due to lines under pressure!

- When removing the automatic spray gun AGR-09 mini, spray fluid may emerge under high pressure.
- Make certain no paint material gets into the air channels.

Rinse and blow out the material lines, then depressurise them. Wear protective clothing and/or glasses.



Note!

Prior to the installation of the automatic spray gun AGR-09 mini, make sure that the o-rings are in place and that they are lubricated.

1. Loosen stud on intermediate plate
2. Removing automatic gun AGR-09 mini up.

8.3 Removing gun

Note!

Only trained personnel are permitted to install and remove parts of the automatic spray gun AGR-09 mini. The work should be performed on a clean horizontal work surface.

For the assembly and disassembly of the automatic spray gun AGR-09 mini, follow the respective parts list and the exploded drawing.

After the removal and replacement of the automatic spray gun AGR-09 mini on the adaptor, the spraying process can continue, and the defective automatic spray gun AGR-09 mini can be serviced at a suitable location.



1. Screw on retaining ring (1) and remove air cap (2).



2. Loosen and remove the nozzle (3) with socket wrench, size 7.



3. Remove gaskets (4).



4. Loosen two countersunk screws (18).



5. Remove end plate (17).



6. Pull off the head holder (11) towards the back away from the head.



7. Remove the two springs (15 and 16), spring pin (14) and paint needle (13).



8. Press the piston (12) out of the head holder.



9. Unscrew the needle set (9) with a hexagon socket head wrench, size 6.



If the hexagon socket head wrench does not grip, pry the needle set (9) out with a turn screw.

8.4 Cleaning gun parts

After the gun parts have been disassembled, first clean them and then inspect their condition.

Note!

The way in which parts of the gun get dirty can provide information about the cause of failures of the automatic spray gun AGR-09 mini.



**Caution!
Danger of damage!**

Individual components may be destroyed or solvent could get into the air channels. **Do not** immerse the automatic spray gun AGR-09 mini in solvent.

The following are required to clean the automatic spray gun AGR-09 mini:

- suitable solvent
 - an earthed solvent supply
 - cleaning brushes
1. Clean the gun parts with a brush and a suitable solvent and blow dry.
 2. Clean the air and material feed throughs with a small round cleaning brush, a pipe cleaner saturated with solvent, or some similar item.

8.5 Checking components



Caution!
Danger of damage!

Never install defective components in the automatic spray gun AGR-09 mini. Use only original parts.

1. Before installing the automatic spray gun AGR-09 mini, check all components for damage.
2. Replace damaged components with new ones.

8.6 Assembling the spray gun



1. Lay out all components and the required tools on a clean level surface.



2. Screw the needle set (9) into the head (8) with a size 6 hexagon socket head wrench, to a torque of 0,8 Nm.



3. For use with the intermediate plate (part no. 63316350), screw in the locking device.



4. Grease two o-rings (20) and position them in the slots of the head (9).



5. Grease o-rings (10) and position them in the slots of the head holder (11).



6. Grease the piston (12) and insert it into its position in the head holder (11).



7. Stick the head (8) and the head holder (11) together.

Note:

The straight pins will prevent any twisting.



8. Grease the paint needle (13) and stick it into the piston (12).



9. Insert the spring pin (14) into the piston.



10. Push the small spring (16) onto the spring pin.



11. Push the large spring (15) over the small spring.



12. Place the end plate (17) with the countersunk screws (18) on the head holder.



13. Tighten the screws (18) to a torque of 4,5 Nm.



14. Insert gasket (4).



18. Attach and tighten the nozzle (4).



19. Tighten the nozzle to a torque of 10 Nm.
Note: Certainly using socket with hexagon socket, otherwise the nozzle can deform and the needle therefore does not seal any more.



20. Attach air cap (3) with air cap gasket (2).



21. Tighten the air cap with the retaining ring (1).



8.7 Faults

Note!

In case of faults, determine the cause before disassembling to eliminate the error with as little maintenance work as possible.

Fault	Possible causes	Corrective action
Unsatisfactory jet geometry		
Asymmetrical shape	Air hose for air supply blocked or damaged. Air channel and/or air inlet is blocked.	Clean, replace or repair air hose. Blow out and/or clean air channel.
Jet geometry not neat on one side	Air cap damaged or blocked.	Replace or clean air cap.
Very irregular or deformed jet geometry	Wrong air cap/paint nozzle combination. Air and material are not synchronised.	Select the correct combination. Check the programming sequence.
Insufficient air supply		
Atomiser air	Air channel in gun AGR-09 mini on the air line is blocked. Air pressure too low.	Blow out air channel. Increase air pressure.
Paint discharge	Paint nozzle blocked or worn out. Air channels in spray gun AGR-09 mini or the paint line is blocked. Movement of the paint nozzle needle unsatisfactory. Material pressure too low. Blocked material filter. Material valve or material regulator blocked or worn out.	Rinse or replace paint nozzle. Rinse paint channels and/or paint line. Lubricate piston and needle set. Increase material pressure. Clean or replace material filter. Clean material valve or material regulator.
Leakages		
Paint leaks at the back of the spray gun AGR-09 mini	Damage to packing, piston or needle.	Replace damaged components.
Paint leaks between the gun AGR-09 mini and the adapter	O-rings AGMD-93-K5 damaged or missing. Locking device does not seal.	Insert o-rings. Retighten or replace locking device.
Paint leak at the nozzle	Needle and nozzle do not seal.	Replace damaged components.
Steady paint leak at the nozzle.	Worn or damaged paint nozzle socket. Worn or damaged needle. Needle does not seal tightly (control air line is not vented).	Replace paint nozzle. Replace needle. Check nozzle.



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9.1 General Instructions

A stock of the most important spare and wearing parts to wear at the place of installation is an important prerequisite for the constant proper function and availability.

We provide a guarantee only for original spare parts delivered by us.

In case of damage resulting from the use of non-original spare parts and accessories, any liability or guarantee provided by REITER GmbH + Co. KG Oberflächentechnik is excluded.

The stock keeping of spare parts is provision for any the validity of agreements involving system availability, service times and guarantee or systems performance.

9.2 Spare parts order

To the order make use of the spare parts list in the part documentation and parts lists.

All parts which are labeled with „E“ are spare parts,
all parts which are labeled with „V“ are wearing parts.

For the spare parts order the following data shall indicate:

- Order number (see acknowledgment)
- Part number (see parts list)
- Designation (see parts list)
- Parts lists designation



9.3 Disposal the AGR-09 mini

- For disposal clean the AGR-09 mini thoroughly of all media (paint, solvent)
- Disposal of packaging and used parts must be made according to the rules and regulations of the country, in which the device was installed.

9.4 Storage of the AGR-09 mini

The paint valve von the AGR-09 mini has to be stored in a dry and dust free area in its original packaging. Make sure to prevent extreme temperature fluctuations because otherwise condensation can occur, which can cause damages to the device.