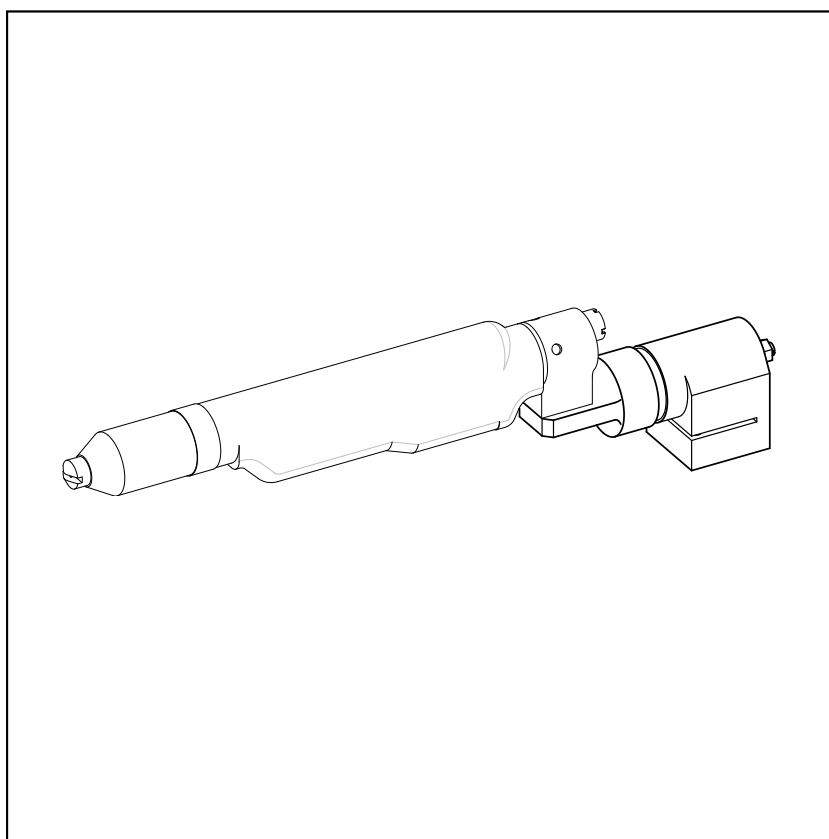

Operating instructions and spare parts list

Collision protection for automatic guns



Translation of the original operating instructions

Documentation Collision protection for automatic guns

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General safety regulations

This chapter sets out the fundamental safety regulations that must be followed by the user and third parties using the Collision protection for automatic guns.

These safety regulations must be read and understood before the Collision protection for automatic guns is used.

Safety symbols (pictograms)

The following warnings with their meanings can be found in the Gema operating instructions. The general safety precautions must also be followed as well as the regulations in the operating instructions.



DANGER!

danger due to live electricity or moving parts. Possible consequences: Death or serious injury



WARNING!

Improper use of the equipment could damage the machine or cause it to malfunction. Possible consequences: minor injuries or damage to equipment



INFORMATION!



useful tips and other information

Conformity of use

1. The Collision Protection is built to the latest specification and conforms to the recognized technical safety regulations and is designed for the normal application of powder coating.
2. Any other use is considered as non-conform. The manufacturer is not responsible for any damage resulting from this, the risk for this is assumed by the user alone! If the Collision protection for automatic guns is to be used for other purposes or other substances outside of our guidelines then Gema Switzerland GmbH should be consulted.
3. Observance of the operating, service and maintenance instructions specified by the manufacturer is also part of the conformity

of use. The Collision protection for automatic guns should only be used, maintained and started up by trained personnel, who are informed about and are familiar with the possible hazards involved.

4. Start-up (i.e. the execution of a particular operation) is forbidden until it has been established that the Collision protection for automatic guns has been set up and wired according to the guidelines for machinery (2006/42 EG). EN 60204-1 (machine safety) must also be observed.
5. Unauthorized modifications to Collision protection for automatic guns exempts the manufacturer from any liability from resulting damage.
6. The relevant accident prevention regulations, as well as other generally recognized safety regulations, occupational health and structural regulations are to be observed.
7. Furthermore the country-specific safety regulations must be observed.

Explosion protection	Protection type	Temperature class
  0102 II 2 D	IP54	T6 (Zone 21) T4 (Zone 22)

Special security measures

Installation

Installation work to be done by the customer must be carried out according to local safety regulations.

Grounding/Earthing

All parts of the gun holder and the collision protection must be grounded. The ground connection must be prepared by the customer.

Set-up

All work on the collision protection should only be carried out when the gun movement drive and high-voltage are switched off.

Repairs

Repairs must be carried out by trained personnel only.



Note:
For further information see the more detailed Gema Safety regulations!

About this manual

General information

This operating manual contains all important information which you require for the working with the Collision protection for automatic guns. It will safely guide you through the start-up process and give you references and tips for the optimal use of your new powder coating system.

Information about the function mode of the individual system components - reciprocators, booths, powder gun controls, powder guns etc. - you will find in the corresponding enclosed documentations.

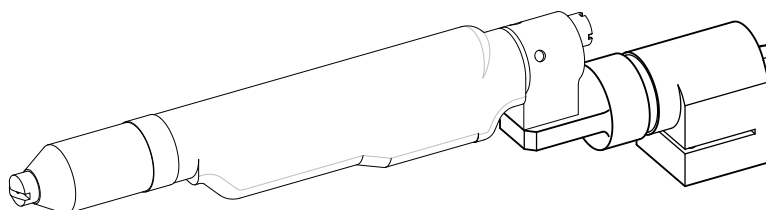
Function description

Collision protection for automatic guns

Field of application

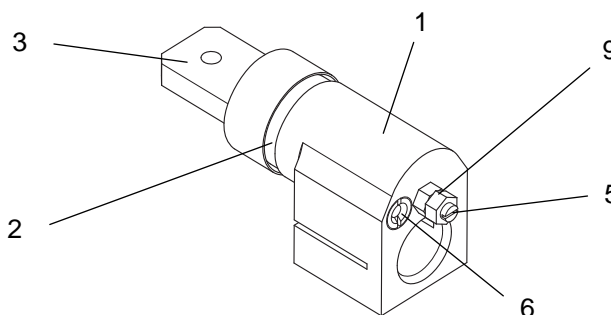
The collision protection is the link between the gun holder and the automatic powder gun. It is built-in to protect the gun. When a coating object is incorrectly hung or the gun is wrongly set, comes in contact with the gun, the conveyor chain and /or the gun movement is switched off through the collision protection.

The collision protection can be subsequently integrated into any powder coating system.



Collision protection

Mechanical structure



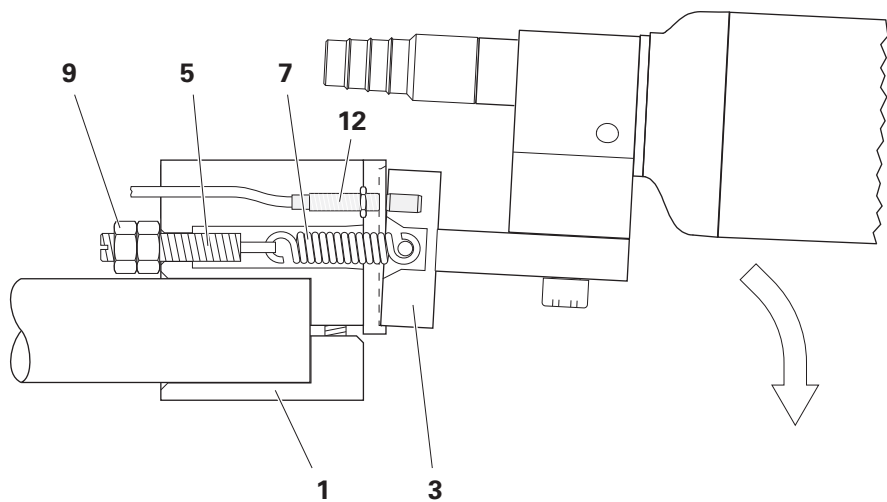
Collision protection - mechanical structure

- | | |
|----------------|--------------------|
| 1 Body | 5 Tensioning screw |
| 2 Switch plate | 6 Locking ring |
| 3 Adapter | 9 Hexagon nut |

Function

The collision protection can be fitted in the Ø 30 mm hole (1) on the gun holder tube. The automatic gun can be fitted on the adapter (3) with a screw. The holder for the automatic gun is pulled onto the body of the collision protection by the tension spring (7). Centering and accurate positioning of the gun after a collision is given by the centering pin. The tension or tripping force can be set with the tensioning screw (5) and the nuts (9). This force must be set on start-up, according to the gun type, and assembly position. The built-in proximity switch (12) is damped in normal position and with its control signal gives the release of the plant. If the gun is deflected in any direction, then this signal is disconnected.

If only the first gun in a booth is fitted with a collision protection, further guns can be fitted with dummy pieces (order no. 1001 210 - for horizontal gun positioning). The position of the nozzle on all guns is the same.



Collision protection - function

Technical data

Collision protection for automatic guns

Dimensions

Collision protection	
Gun tube	Ø 30 mm
Weight	550 gr

Electrical data

Proximity switch	
Cable length	12 m
Function	PNP - normally open
Operating voltage	10-30 VDC
Current consumption	< 10 mA
max. Power load	100 mA
Protection type	IP67

Start-up

Preparation for start-up

Before starting up the collision protection the following points must be observed:

1. Observe the safety regulations
2. Check that the collision protection, and the gun are screwed tight
3. Check that the Adapter **(3)** sits correctly
4. Check the setting of the tripping force
5. Check the function of the proximity switches by manually tripping the gun
6. Check that the cable of the proximity switch is laid out so that it is not damaged when the gun moves
7. Check the correct positioning of the gun
8. The cable of the collision protection is not placed together with other cables in same cable channel

Carrying out the start-up

The start-up must take place in the following sequence:

1. Check that all guns are in the correct positions
2. Check if the interlocking signal is present
3. Check the tripping force

Function check

Setting the tripping force

The tensioning screw must not be turned to set the tripping force. This will lead to damage to the tensioning spring (7).

The setting on the collision protection should only be carried out when the gun movement drive and high voltage are switched off.

The tripping force can be set with the nut on the tensioning spring. The tripping force is dependent on the following factors:

- Gun and nozzle type
- Assembly position
- Gun movement (direction and speed)

The tripping force is to be set as low as possible in order to keep the danger of damage as small as possible.

Procedure:

1. Unscrew the nut (9) on the tensioning screw only so that the gun remains in the starting position
2. Switch on the gun movement with a slow speed. If the collision protection is tripped, then the nut must be tightened
3. Slowly increase the speed and adjust the tripping force until the collision protection does not react at the maximum speed

Setting the switching signal



Attention:

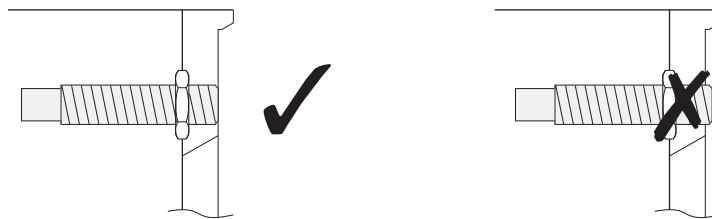
Stretching or rotation must not be applied to the cable of the proximity switch!

The switching signal is created by the proximity switch, which is fitted in the switch plate. The proximity switch should be built-in flush with the switch plate, but it can also be set back 0.5 mm. If the proximity switch stands out of the switch plate, it can be damaged by a blow from the adapter (3).

If the proximity switch must be reset, then proceed as follows:

1. Loosen the cable fixture (6)
2. Unscrew the three counter-sunk screws (10)

3. Push out the switch plate by pushing the cable through the cable locking ring
4. Loosen the nut and reset the proximity switch by turning it



Setting the switching signal

Troubleshooting guide

Problem fixing

Fault	Error/solution
No control signal present	<ul style="list-style-type: none"> - No power supply to the proximity switch present - Adapter does not sit correctly in the switch plate - Powder between the adapter and the switch plate - Assembly distance of the proximity switch too great
Control signal always present	<ul style="list-style-type: none"> - Electric cable wired incorrectly - Proximity switch defect - Metallic powder sintered on the proximity switch
Only intermittent control signal (fluttering)	<ul style="list-style-type: none"> - Tripping force set too weak (Error signal present, above all on reverse travel) - Contact distance of the proximity switch too great - External interference in the signal cable

Maintenance

Maintenance after the tripping of the collision protection

1. Clean the surface between the adapter (3) and the switch plate (2)
2. Reset the gun in its normal position
3. Check the interlocking signal

Daily maintenance

- Clean the collision protection externally with compressed air

Weekly maintenance

- Check the tripping force and reset, if necessary

Spare parts list

Ordering spare parts

When ordering spare parts for powder coating equipment, please indicate the following specifications:

- Type and serial number of your powder coating equipment
- Order number, quantity and description of each spare part

Example:

- **Type** Collision protection for automatic guns
Serial number 1234 5678
- **Order no.** 203 386, 1 piece, Clamp - Ø 18/15 mm

When ordering cable or hose material, the required length must also be given. The spare part numbers of this yard/meter ware is always marked with an *.

The wear parts are always marked with a #.

All dimensions of plastic hoses are specified with the external and internal diameter:

Example:

Ø 8/6 mm, 8 mm outside diameter (o/d) / 6 mm inside diameter (i/d)



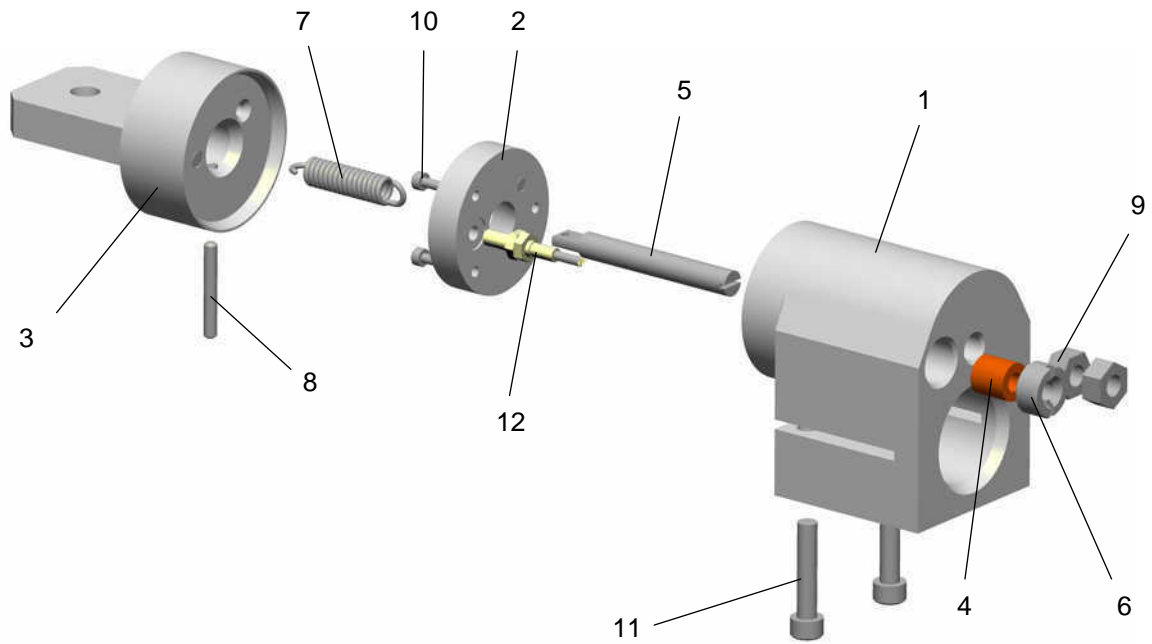
WARNING!

Only original Gema spare parts should be used, because the hazardous location approval will be preserved that way! The use of spare parts from other manufacturers will invalidate the Gema guarantee conditions!

Collision protection for automatic guns - spare parts list

	Collision protection for automatic guns - complete	1001 199
1	Body	1001 195
2	Switch plate - complete	1000 275
3	Adapter - complete	1001 198
4	Rubber sleeve - Ø 6/12 mm	104 329
5	Tensioning screw	1000 315
6	Locking ring	363 863
7	Tension spring - 1.8x7.2x39.2 mm	254 177
8	Set screw - M4x30 mm	254 193
9	Hexagon nut - M8	215 570
10	Hexagon socket screw - M3x12 mm	1000 316
11	Hexagon socket screw - M6x30 mm	216 445
12	Proximity switch	254 207
	Protective sleeve for enamel applications (not shown)	1001 196

Collision protection for automatic guns - spare parts



Collision protection for automatic guns