



# **Air Cannons and all Related Equipment**



## **Installation Instructions Part 1**

**Version: 00  
Language: ENG  
M9500E UK-03/25**

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# 1 General

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## NOTE

Before starting work these installation instructions must be read and understood completely.

## 1.1 About These Installation Instructions

These installation instructions apply for Air Cannons and Related Equipment, hereinafter referred to as Product. These installation instructions are intended for those persons who install Air Cannons and Related Equipment, commission them, and monitor their usage.

The installation instructions must be kept for the lifetime of the Air Cannon and be made available in an orderly condition to all persons entrusted with work with and on the Air Cannon.

## 1.2 Intended Usage

The Product is designed and constructed exclusively for the purpose of clearing and preventing bulk material blockages. They may only be used on stationary equipment and must be permanently installed. When installing and operating the Product, ensure that no people or animals are at risk of injury from bursts of compressed air or flying particles.

The Product may only be used:

- with air or nitrogen N<sub>2</sub> as the medium for compressed air blasting,
- in industrial applications above ground,
- in line with the technical data indicated in the documentation and
- in the mounting position indicated in the documentation

The technical specifications stated in this installation manual must be strictly adhered to, as otherwise, damage to the product and its surroundings cannot be excluded. The product must only be operated in technically flawless condition and as intended. The operator is solely responsible for any damage resulting from improper use.

The intended use of the Product also entails the following constraints:

- Before they initially start working with the equipment, workers must be instructed on how it functions and informed of all relevant work safety issues

- Workers must wear any personal protective equipment that may be required
- The requirements specified in the installation manual must be observed in full.
- Compliance with all applicable operating instructions provided by the plant operator
- Follow the instructions contained in this documentation
- Follow all applicable national rules and guidelines
- The regular performance of the maintenance work as prescribed in this installation manual

Operating the Product outside these constraints or making unapproved modifications to the Product shall be considered misuse.

The Product may not be used in potentially explosive atmospheres, as it is not designed for this.

Operation in and with flammable gases is prohibited.

### **1.3 Limitation of Liability**

It is the operator's responsibility to ensure that the product is used in compliance with all applicable local laws and regulations. The manufacturer assumes no liability for damages or operational disruptions resulting from non-compliance with these requirements.

Additionally, the manufacturer assumes no liability for damages or operational disruptions arising from the following circumstances:

- Operator Errors
- Failure to follow the documentation
- Improper use of the product
- Use by unqualified personnel
- Unauthorized modifications, alterations, or improperly executed repairs
- Unapproved technical changes
- Use of spare or accessory parts not approved by the manufacturer

## 2 Safety

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### 2.1 General Safety Instructions



#### **DANGER**

##### **Electric Shock**

There is a risk of direct or indirect electrical contact with the electrical equipment (e.g., control cabinets, electrical installations within the system, etc.).

- *Only qualified electricians following local regulations and guidelines for electrical installations are permitted to work on the electrical equipment.*
- *All work must be performed in accordance with all local and national electrical safety rules.*
- *Before working on any energized components, the power supply must be switched off at the main switch and secured to prevent accidental re-energization.*
- *The electrical equipment is locked to prevent access by unauthorised persons.*
- *The operating personnel must immediately notify the supervisor of any defects or damage to the electrical equipment.*
- *Only insulated tools must be used when working on the electrical equipment.*



#### **DANGER**

##### **Dangerous concentration of inert gases**

When the air cannons are operated with nitrogen N<sub>2</sub> or carbon dioxide CO<sub>2</sub>, the inert gases are released into the atmosphere. Inert gases are undetectable and in high concentrations can cause asphyxiation.

- *Always ensure sufficient ventilation.*
- *Observe all occupational health and safety regulations.*
- *After exposure to high concentrations, move affected person into the fresh air and respire with a self-contained breathing apparatus. Keep the person calm and warm and consult a doctor.*



## DANGER

### Projectiles/Flying Materials

Discharging an Air Cannon can cause materials to be thrown about, potentially resulting in lethal injuries.

- *Do not open any access hatches to the application where the Product is mounted.*
- *If the Product is installed in an open tank, clear the safety area before discharging.*



## DANGER

### Hazard from Damaged Components

There is a risk of life-threatening injury or serious harm due to damaged components

- *Do not operate the product if any components are damaged.*
- *Inspect the product for any visible damage before starting work.*
- *If damage is detected, immediately shut down the control system and secure it to prevent accidental re-energization, then notify the responsible personnel*



## WARNING

### Risk of Explosion

Exceeding the permissible operating pressure can cause the pressure vessel to burst.

- *Refer to the safety valve documentation for further information.*
- *Never use a safety valve with a pressure limit above the permissible operating pressure of the pressure vessel.*



## WARNING

### Risk of Explosion

Flying sparks or mechanical stresses can cause the Air Cannon vessel to explode.

- *Never weld the Air Cannon vessel and never subject it to mechanical loads such as clamping or mechanical stresses.*
- *Vent the Air Cannon before performing any installation or maintenance work.*



## WARNING

### Risk of Explosion

Using a cutting torch or welding gear in enclosed spaces is particularly dangerous.

- *Before such use, check the gas and dust content of the air.*

## 2.2 Recommended Safety Measures for Installation and Maintenance



## DANGER

### Danger Due to Electrical Voltage and Pressurised Parts

Failure to properly isolate energy sources before installation or maintenance can result in severe injury or death.

- *Ensure that all energy sources (e.g., electrical, pneumatic, hydraulic) are properly shut off, depressurized, and secured.*
- *Follow the applicable local Lockout-Tagout-Tryout (LOTOTO) procedures and regulations to prevent accidental re-energization.*
- *Only qualified personnel should perform maintenance tasks.*
- *Wear personal protective equipment.*

## 2.3 Intended Service Life and Periodic Inspection

The operator is responsible for ensuring proper operation and conducting periodic inspections in compliance with applicable local and regional regulations.

The intended service life of the Product is determined by two factors: the number of operating cycles and the age of the pressure vessel. Inspection intervals and maintenance requirements must adhere to applicable national or regional laws, which may specify limits based on both the vessel's operational age and its load cycles. The permitted number of load cycles is documented in the accompanying pressure vessel documentation provided with the Product.

It is the operator's responsibility to comply with prescribed inspection intervals and ensure adherence to all relevant legal requirements for periodic inspections and maintenance.

## 2.4 Personnel Qualification

Only authorised and qualified personnel may be entrusted with work with and on the Product. Persons are considered qualified if they have the qualification of a skilled worker and meet all the following requirements:

- completed professional training or at least 5 years of professional experience in the field,
- technical experience,
- knowledge of the relevant occupational health and safety regulations.

The persons must:

- be able to assess the tasks and risks assigned to them,
- be able to recognise potential dangers in advance,
- be physically and cognitively able to operate the Product
- have been trained and instructed appropriately,
- have read and understood these installation instructions.








Work on earth connections, cabling, switching, control, regulation, automation and all electrical components may be carried out only by trained electricians.



## 2.5 Personal Protective Equipment

Persons carrying out work on cleaners must wear suitable personal protective equipment.

Minimum requirements:

| Symbol  | Meaning                                  |
|---|--|
|    | Wear eye protection                      |
|    | Wear head protection                     |
|    | Wear ear protection                      |
|   | Wear at least ankle-high foot protection |
|  | Use gloves                               |
|  | Use fall protection, if required         |
|  | Wear protective clothing                 |

## 2.6 Safety Markings on the System

The safety markings on the Product must be kept in good condition and clearly visible at all times.

If parts of the system are replaced, ensure that the spare parts are or will be provided with appropriate safety markings.

### 3 Installation of the Product

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#### **DANGER**

##### **Danger Due to Electrical Voltage and Pressurised Parts**

Before performing any work on the Air Cannon system:

- *Shut off the power supply and vent the Air Cannon system.*
- *Lock the system out to prevent unintentional restart.*
- *Observe all applicable standards and regulations.*
- *Follow all on-site safety instructions.*
- *Affix appropriate warning signs.*



#### **DANGER**

##### **Dangerous concentration of inert gases at the installation site**

When the air cannons are operated with nitrogen N<sub>2</sub> or carbon dioxide CO<sub>2</sub>, the inert gases are released into the atmosphere.

- *The air cannons may only be operated with inert gases in well-ventilated spaces.*
- *If the natural ventilation at the installation site is not sufficient, a ventilation system must be provided. The operating company is responsible for ventilation.*



#### **DANGER**

##### **Falling Loads**

The Air Cannon can fall down, resulting in serious injuries or death.

- *Therefore, use the included fall protection device when installing in higher working areas.*



## WARNING

### **Risk of Air Cannons Breaking Off and Being Hurlled Away**

If installed incorrectly, the Air Cannon can be broken off and hurled away by a blast of air.

- *The Air Cannon may not be installed in the vicinity of active vibrators.*
- *It is strictly prohibited to subject the Air Cannon to any kind of welding.*
- *Follow all transport and storage instructions.*
- *Prior to installation, visually inspect the Air Cannon to check for external damage.*
- *Install only on exterior walls that are strong enough to support the weight of the air cannon, including accessories, and withstand the force generated during firing.*



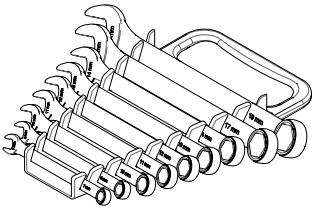
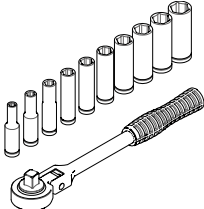
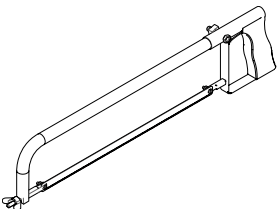
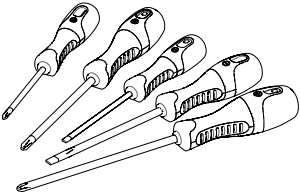
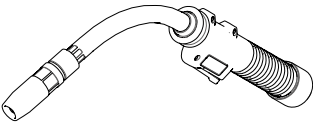
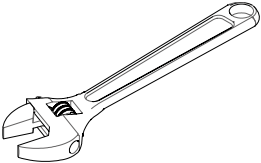
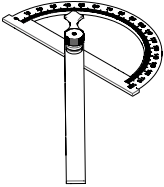
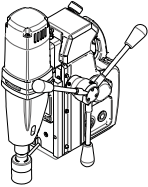
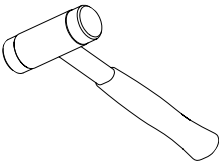
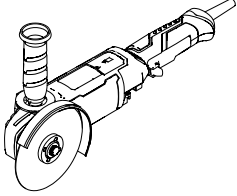
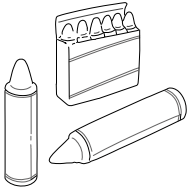
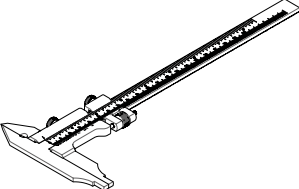
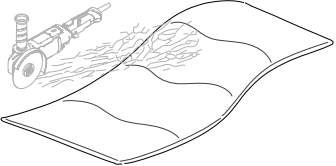
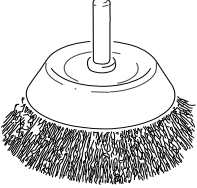
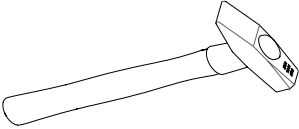
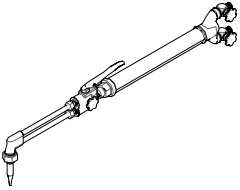
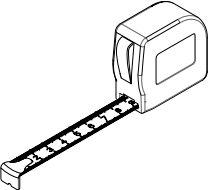
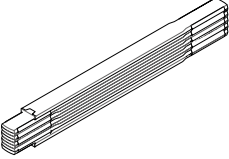
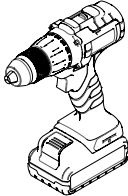
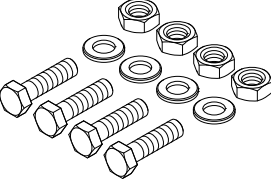

## WARNING

### **Working in Confined Spaces**

Areas in which Air Cannons are installed are often difficult to access and include confined spaces. It is often necessary to work in difficult positions.

- *Determine whether occupational safety measures are necessary that go beyond the usual measures!*

### 3.1 Required Tools and Materials

|   |   |   |
|---|---|---|
|    |    |    |
|    |    |    |
|    |    |    |
|   |   |   |
|  |  |  |
|  |  |  |
|  |  |  |

## 3.2 Unpacking / Transportation / Storage



### WARNING

#### Heavy Weight

The Air Cannons may have weights that require handling by lifting devices. Handling Air Cannons by hand can cause serious skeletal injuries.

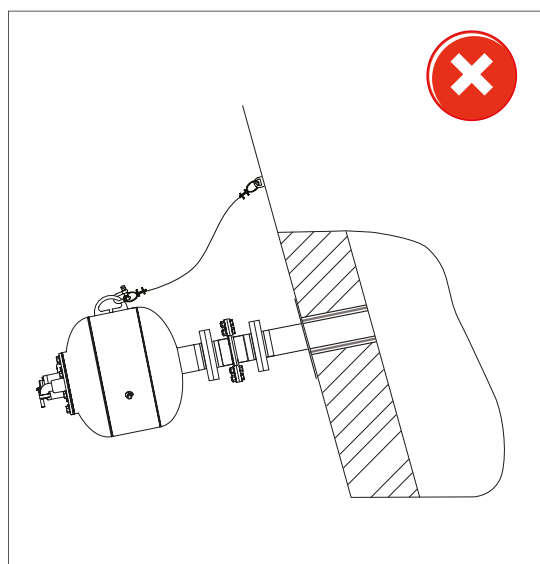
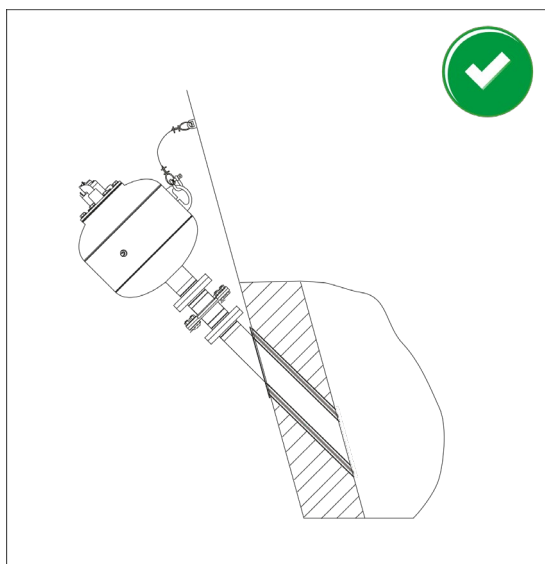
- *Use suitable aids if the load is > 25 kg per person!*
- *Identify the centre of gravity! Ensure that the Air Cannon cannot tilt during the lifting process!*
- *Attach lifting equipment to the handles on the side of the air cannon.*

Upon unpacking, verify that all components are present and undamaged.

Protect the product from vibrations, impacts, and moisture.

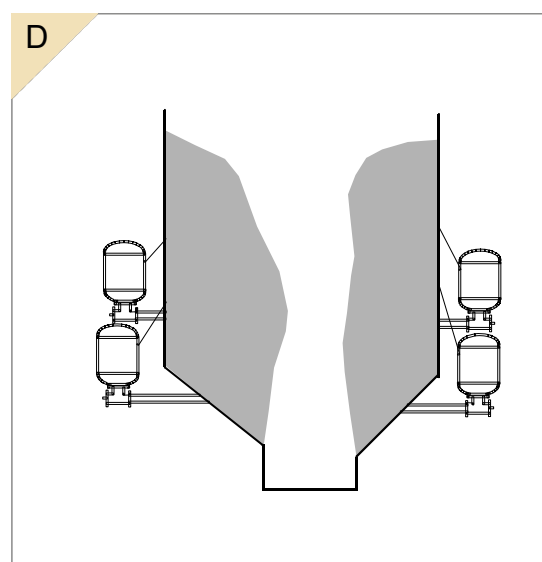
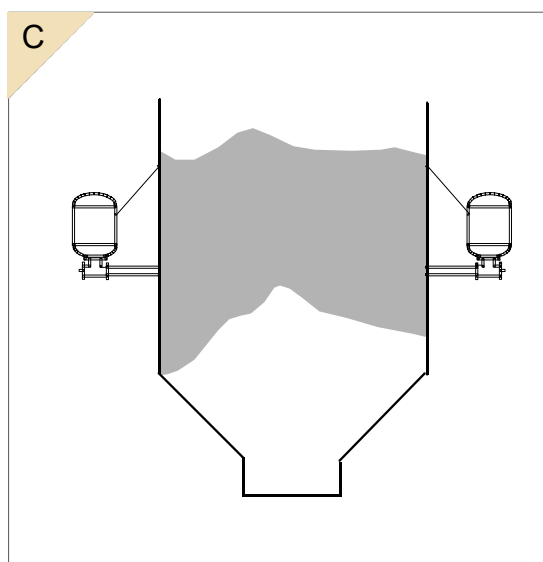
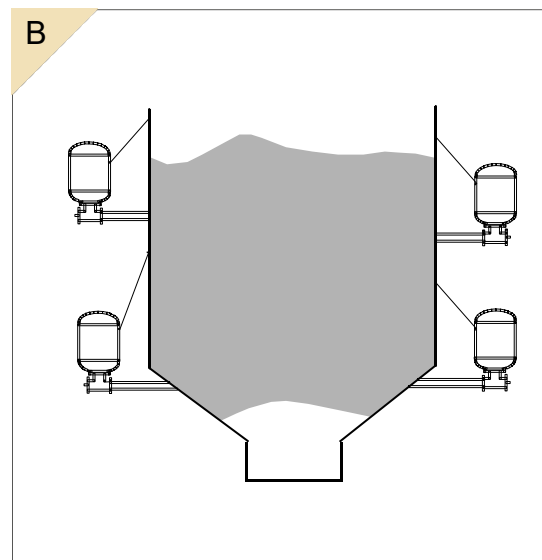
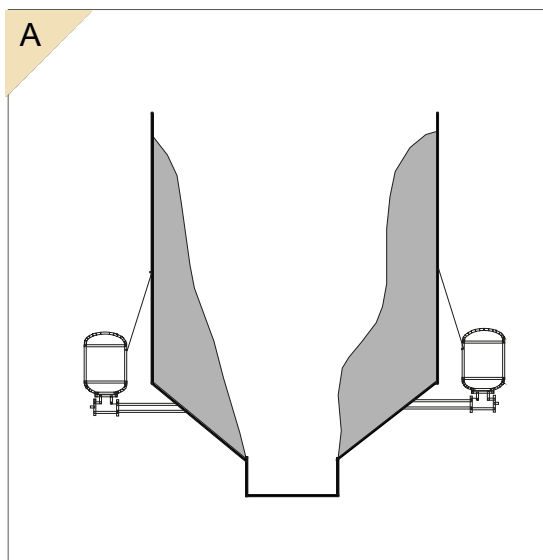
Store the product in a dry, cool place.

## 3.3 Determining the Installation Position



If not installed correctly, material can enter the Air Cannon and damage or destroy its internal parts.

Examples of different types of accumulations:



Silo (A) clinging material

Silo (B and C) bridging

Silo (D) rat-holing







The number and position of the Air Cannons depends on the stored material and the size of the silo. The design is customised by the manufacturer.

To receive support, contact Martin Engineering or a representative.

## 3.4 Placing Labels

### 3.4.1 Safety Label

The safety labels (safety markings) below must be attached to the Air Cannon:

|   |  |
|---|--|
|     | <p><b>Risk of Explosion</b><br/>The Air Cannon may explode or malfunctions may occur.</p> <ul style="list-style-type: none"> <li>• No drilling, riveting, welding, or other modification of the Air Cannon is allowed.</li> <li>• Wear safety glasses.</li> <li>• In addition, the CE approval expires.</li> </ul>                                 |
|   | <p><b>Risk of Sudden Noise</b><br/>When the Air Cannon discharges, there may be a sudden noise.</p> <ul style="list-style-type: none"> <li>• Wear ear protection.</li> </ul>   |
|    | <p><b>Risk of High-Pressure Discharge</b><br/>When the Air Cannon discharges, there may be a risk of high-pressure discharge.</p> <ul style="list-style-type: none"> <li>• Do not open any access hatches to the tank, and do not enter it, as long as the Air Cannons are filled and in operation.</li> </ul>                                     |
|    | <p><b>Risk of Projectiles/Flying Materials</b><br/>When interrupting the compressed air supply by closing the ball valve, the Air Cannons of this equipment may fire.</p> <ul style="list-style-type: none"> <li>• Never close the ball valve before it is ensured that there are no persons in the range of action of the Air Cannons.</li> </ul> |

### 3.4.2 Other Labels

The labels below are attached to the product:

1. Sticker showing the address of the Martin Engineering branch and the designation of the product.

## 4 Specifications

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### 4.1 Compressed Air Specifications

The quality of the compressed air used must be equivalent at least DIN ISO 8573-1:2010 [5:4:4] standard, otherwise Martin Engineering cannot ensure proper and fault-free operation of the Air Cannon.

### 4.2 Values of Tightening Torque During Installation

| Screw size | Standard pre-load force [kN] | Tightening torque [Nm] | Pre-load force [kN] |
|------------|------------------------------|------------------------|---------------------|
| M6         | See valve drawing in Part 2  |                        |                     |
| M12        | 35                           | 70                     | 40                  |
| M16        | 70                           | 170                    | 80                  |
| M20        | 110                          | 300                    | 120                 |

Values of tightening torque during installation - Strength category 8.8



## 5 Maintenance / Repair



### DANGER

#### Danger Due to Electrical Voltage and Pressurised Parts

Before performing any work on the Air Cannon system:

- *Shut off the power supply and vent the Air Cannon system.*
- *Lock the system out to prevent unintentional restart.*
- *Observe all applicable standards and regulations.*
- *Follow all on-site safety instructions.*
- *Affix appropriate warning signs.*



### WARNING

#### Danger of Injury Due to Unapproved Component Parts

Unapproved parts can directly or indirectly cause personal injury or damage to property.

- *Only use accessories and spare parts that are distributed by the manufacturer or are explicitly approved (in writing)!*



### WARNING

#### Risk of Burns Due to Hot Surfaces

There is a risk of burns from hot surfaces or escaping hot gases.

- *Wear appropriate personal protective equipment.*



### CAUTION

#### Hazards Due to Components Thrashing About

Whipping compressed air hoses can cause injuries and property damage.

- *Before the start of maintenance work, the user-side compressed air supply system must be turned off and locked out to prevent unintentional restarting.*
- *Affix warning signs.*

| Interval                          | Task   |
|-----------------------------------|--|
| Weekly                            | Check all air-conducting parts for leaks.<br>Seal or, if necessary, replace any leaking parts.   |
|                                   | Check to ensure that all air-conducting parts are properly attached and installed.<br>Replace any kinked hoses (note bending radius); fix any loose connections.   |
|                                   | Check the functionality of all valves, shut-off devices and the pneumatic service unit.<br>Replace any faulty parts right away.  |
|                                   | Inspect safety valve.<br>Observe the safety valve documentation.   |
|                                   | Check the function of the compressed air service unit (if applicable).<br>Clean the glass and check to ensure the scale is legible; if necessary, replace compressed air service unit.                                     |
|                                   | Check wire rope.<br>Cable clips must be securely attached, and components may not be damaged or corroded.  |
|                                   | Check all warning stickers.<br>Clean warning stickers and immediately replace any illegible warning stickers.  |
| Weekly/<br>biweekly               | Check the oil and water levels of the compressed air service unit.<br>If necessary, refill oil or drain water.   |
| Annually/<br>50,000<br>discharges | Drain Air Cannon condensation water tank (as required).<br>Close pneumatic lines.<br>Depressurise Air Cannon vessel. Open safety valve. Open drain screw and allow condensation water to drain into appropriate container. |
|                                   | Check Air Cannon for corrosion.<br>Repair or, if necessary, replace corroded parts.  |
|                                   | Inspect screw unions and bolts.<br>Retighten screw unions. Reposition or, if necessary, replace bolts  |
|                                   | Inspect weld seams.<br>In case of damaged weld seams, take the Air Cannon out of commission.   |
|                                   | Check Air Cannon valve, piston and nozzle for damage.<br>Replace faulty parts or have them repaired by Martin Engineering.   |
|                                   | Check electrical cables and interfaces.<br>Replace faulty cables and interfaces.   |

## 6 Disassembly / Recycling / Disposal

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1. Disassemble Product by material groups as far as possible.
2. Contact official bodies (disposal centres, authorities) and request information about proper disposal or recycling possibilities.
3. Recycle the different materials.

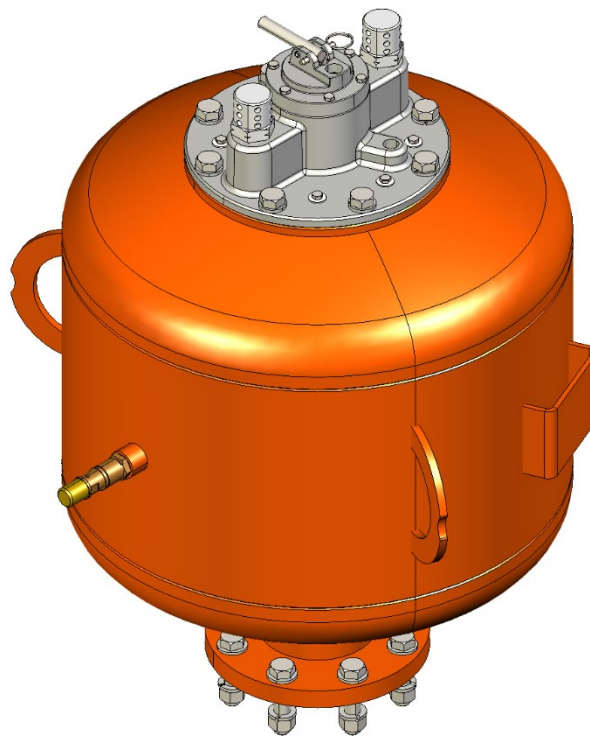
Only materials that cannot be reasonably recycled may be disposed of. Disposal must be carried out professionally.

Material groups that can be fed into a recycling process include:

- Sheet steel
- Steel profiles
- Plastics
- Rubber
- Non-ferrous metals
- Electrical cables
- Electrical components (with copper content)
- Lubricants



# Hurricane Air Cannon



## Installation Instructions Part 2

Version: 00  
Language: ENG  
M3737E UK-03/25

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## 7 General

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### NOTE

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### 7.1 About these Installation Instructions

These installation instructions apply solely for Air Cannons and are intended for those persons who install Air Cannons, commission them, and monitor their usage.

The installation instructions must be kept for the lifetime of the Air Cannon and be made available in an orderly condition to all persons entrusted with work with and on the Air Cannon.

### 7.2 Accompanying Documents

Part 1 of the installation instructions contains essential safety information and is an integral part of this document. It is imperative that these safety instructions are carefully read and followed.

## 7.3 Part Number

| 38005-aaa-bbcde-fghj+E |  |
|------------------------|--|
| <b>a</b>               | <b>Tank size in litre</b><br>035: 35<br>070: 70<br>150: 150  |
| <b>b</b>               | <b>Tank pressure range in bar (max.)</b><br>08: 8<br>10: 10  |
| <b>c</b>               | <b>Tank temperature range in °C</b><br>D: -30 - +150   |
| <b>d</b>               | <b>Certification standard</b><br>C: CE certification<br>G: TR CU certification                           |
| <b>e</b>               | <b>Tank finish</b><br>P: Powder coated (RAL 2004)<br>C: Special painted C5M (RAL 2004)<br>Z: Zinc plated |
| <b>f</b>               | <b>Piston options</b><br>0: Dual seal piston<br>1: Full aluminium piston                                 |
| <b>g</b>               | <b>Additional option</b><br>0: -   |
| <b>h</b>               | <b>Additional option</b><br>0: -   |
| <b>j</b>               | <b>Additional testing</b><br>0: No tests<br>1: 50% NDT of welding at the tank                            |

## 7.4 Technical Data

The Air Cannon is suitable for the following operating parameters:

|                      | Operating parameter |
|----------------------|---------------------|
| Temperature range D: | -30 to +150 °C      |
| Pressure             | 3 to 8,6 bar        |

| P/N               | Dim. A<br>[mm] | Dim. B<br>[mm] | Dim. C<br>[mm] | Weight<br>[kg] |
|-------------------|----------------|----------------|----------------|----------------|
| 38005-035-XXXXX+E | 406            | 658            | 533            | 43             |
| 38005-070-XXXXX+E | 508            | 708            | 584            | 49             |
| 38005-150-XXXXX+E | 610            | 905            | 781            | 78             |

| Air Pressure<br>[bar] | 38005-035-XXXXX+E<br>[L] | 38005-070-XXXXX+E<br>[L] | 38005-150-XXXXX+E<br>[L] |
|-----------------------|--------------------------|--------------------------|--------------------------|
| 1                     | 35                       | 70                       | 150                      |
| 4                     | 140                      | 280                      | 600                      |
| 6                     | 210                      | 420                      | 900                      |
| 8                     | 280                      | 560                      | 1250                     |
| 10                    | 350                      | 700                      | 1500                     |



## 7.5 Operating Principle

The pressure tank (1) of the Air Cannon is loaded by filling it with air (2) up to a maximum pressure of 8,6 bar. The filling operation is complete when the pressure in the pressure tank has reached the pressure level in the supply line (3) and the Air Cannon is ready for use. By activating a solenoid, a positive (pressure-applied) signal is sent to the venting valve, as a result of which the latter gets triggered and the pressure in the valve chamber gets released. This piston is reset immediately by the pressure in the pressure tank and the compressed air is discharged from the pressure tank in the form of an air blast through an outlet pipe or a blow nozzle in the region to be cleaned (4).

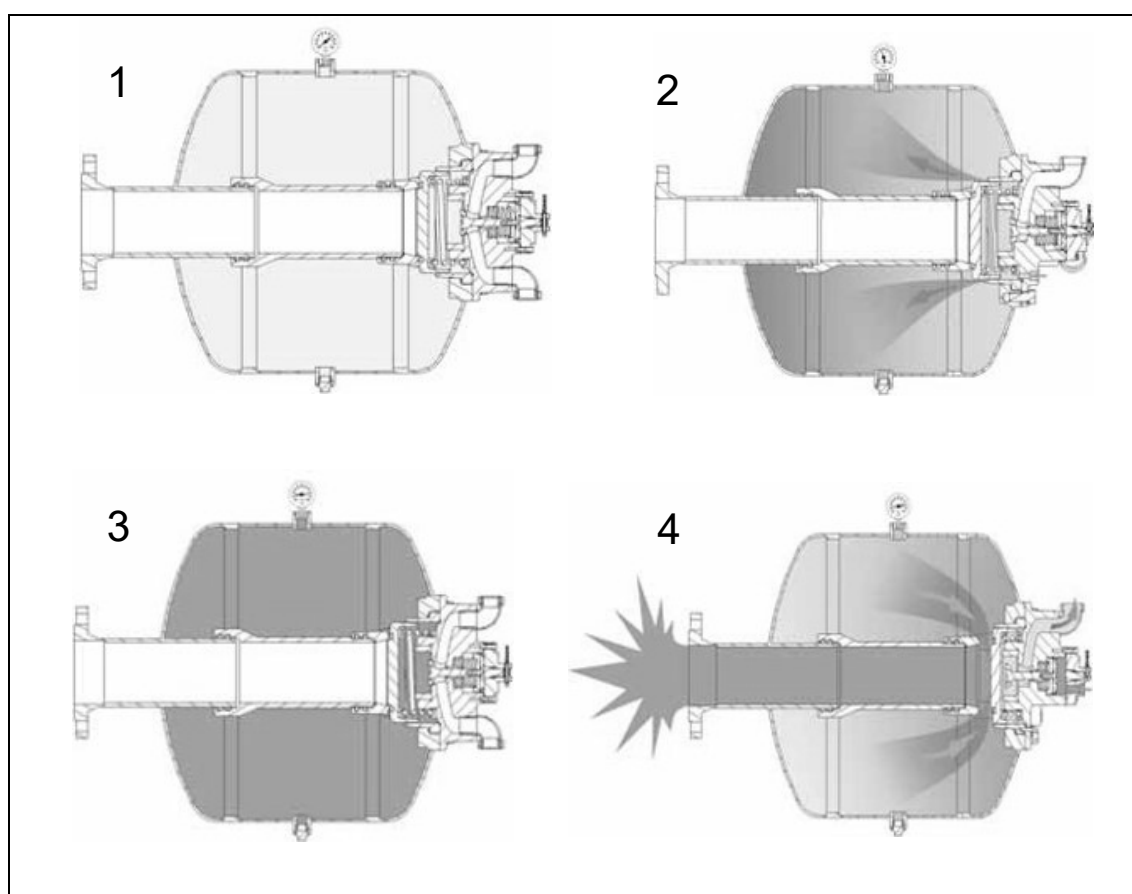


Figure 1: Filling and discharging the Air Cannon

## 8 Installation

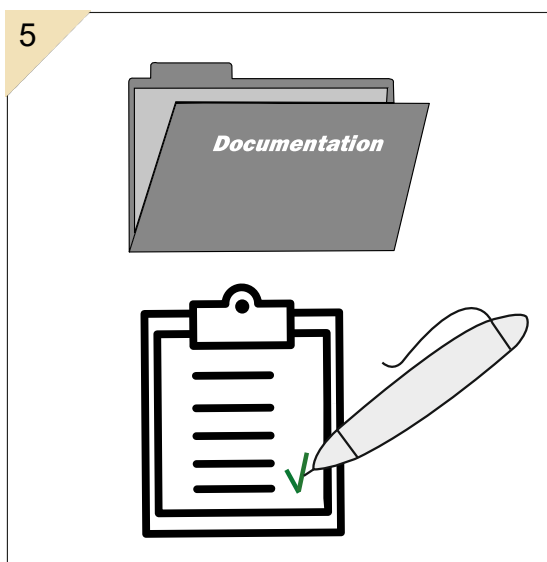
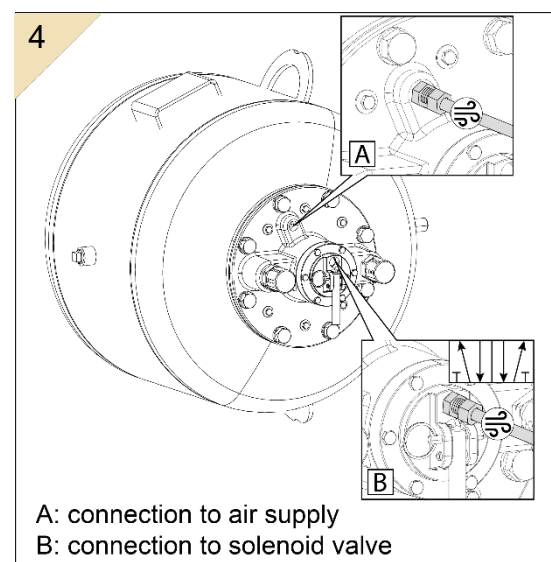
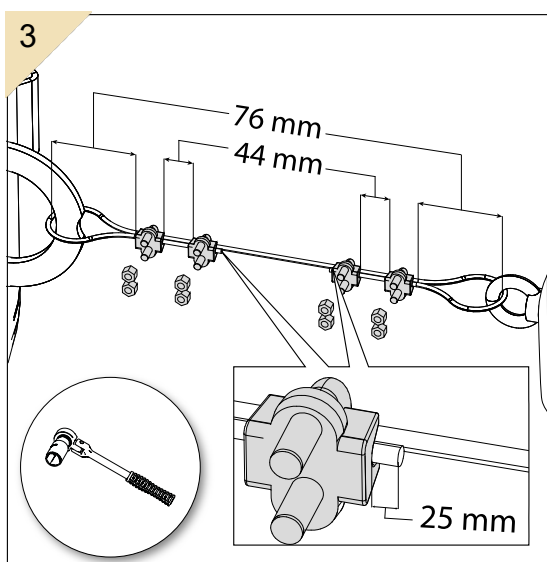
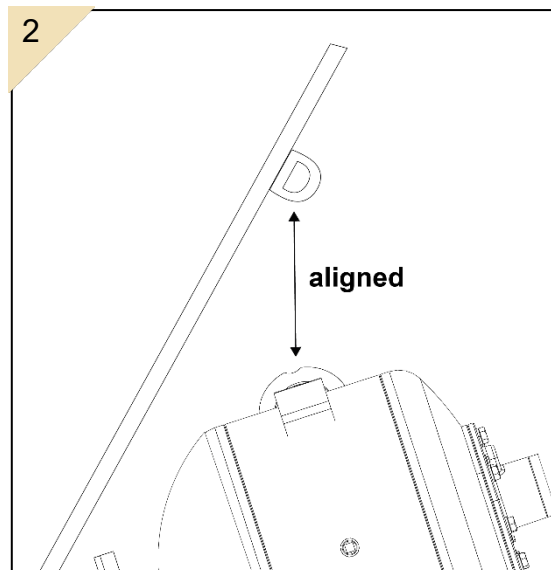
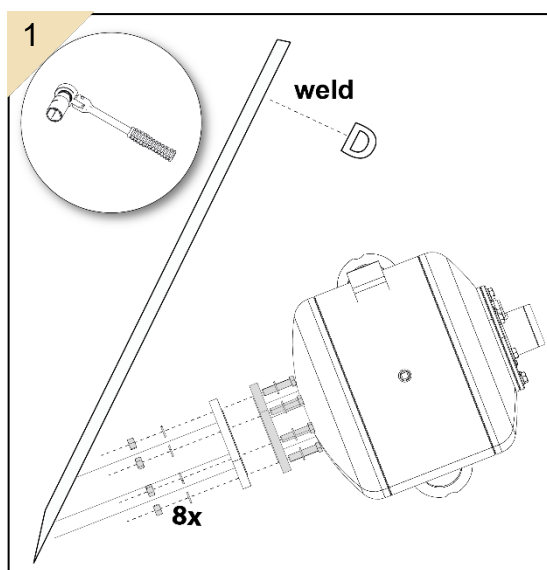
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### 8.1 Commissioning

The commissioning of the Air Cannon must comply with all applicable national and regional regulations. Depending on the classification and size of the pressure vessel, specific procedures or inspections may be required before initial operation.

It is the operator's responsibility to ensure compliance with all legal requirements for commissioning, including obtaining necessary certifications or approvals and verifying that the Air Cannon is installed and operated according to the conditions specified in the accompanying documentation.

## 8.2 Mounting the Hurricane Air Cannon



### 8.3 Air Cannon Air Supply

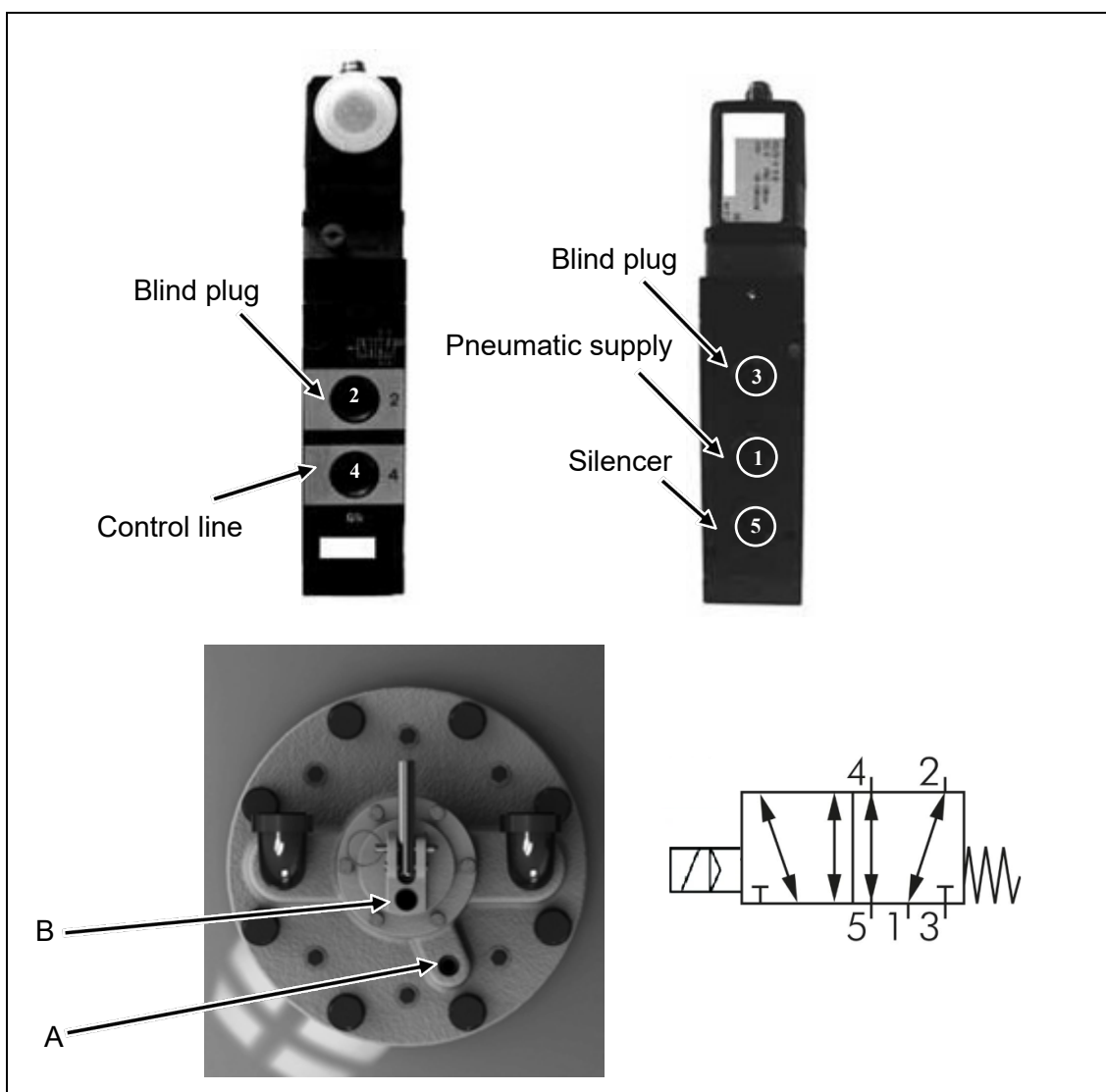


Figure 2: Pneumatic connection of the 5/2-way solenoid

| Pos. | Description              | Pos. | Description                  |
|------|--------------------------|------|------------------------------|
| A    | Connection to air supply | B    | Connection to solenoid valve |

## 9 Accessories and Spare Parts

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### 9.1 Accessories

- Martin® Safety slide: Part No. 38189-4F-E (available only for 4" Air Cannons)
- Air pressure gauge kit: Part No. 34843-FR+E (available only for 4" Air Cannons)



#### NOTE

A large number of nozzles and installation plates are available for Martin Air Cannon installations. They are described and specified in more detail in the installation instructions M3773.

### 9.2 Components and Retrofit Sets for Air Supply

- 1/2" Service unit with filter, pressure regulator and oiler: Part no. 41231
- Filling and control line (ambient temperature): Part no. 41296 / 40010
- Filling and control line (high temperature): Part no. 40496 + 41731
- Pressure gauge attachment kit: Part no. 34843+E
- Solenoid valve cabinet for 1-10 valves: Part no. 41362-XXXXX
- Controller for 1-12 Air Cannons: Part no. 41775-XXXXXXX

### 9.3 Spare Parts

Air Cannon:

- 4" Piston: Part no. 38022-XXX
- Basket with bearing: Part no. 37897-E
- Inner Pipe: Part no. 38602
- Safety valve (8 bar): Part no. 21680+E
- Safety valve (10 bar): Part no. 21680-10+E
- Air pressure gauge: Part no. 30437-WIKA+E

Service unit with filter, pressure regulator and oiler:

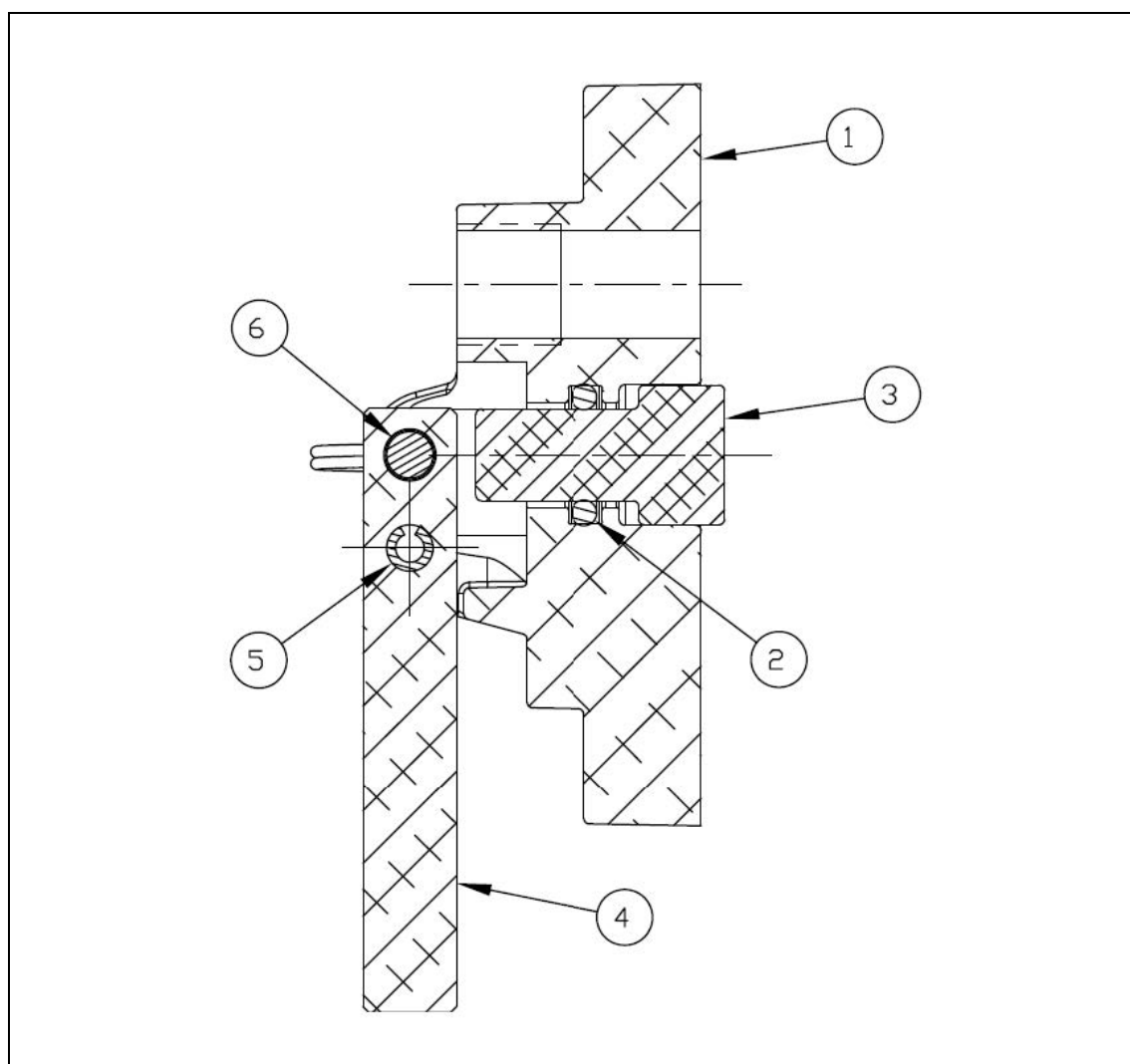
- 1/2" Filter: Part no. 41231-FR
- 1/2" Oiler: Part no. 41231-OE

Solenoid Bank:

- 5/2-way solenoid valve: Part no. 41380-XXXXX
- 1/2" Ball valve with venting bore hole (Lockable): Part no. 40073
- 1/2" Check valve: Part no. 40210-012BR

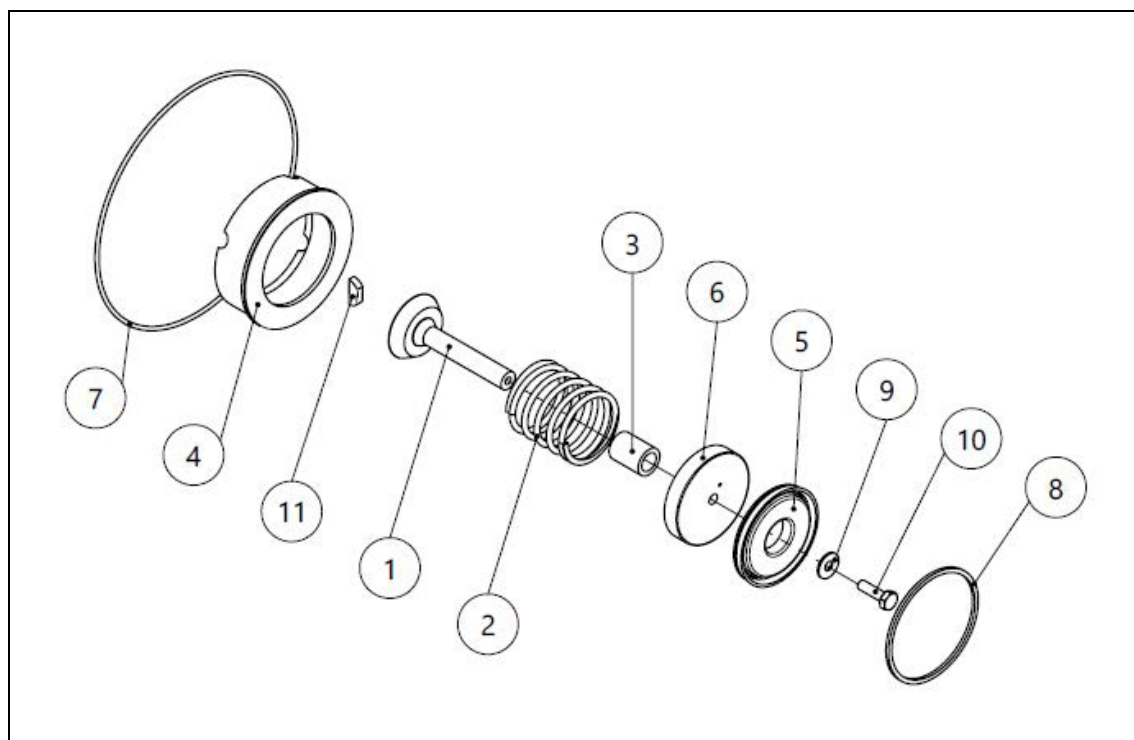
## 9.4 Martin® Valve Cap Replacement Kit: Part No. 38136-E

| Item | Qty. | Description                                 | P/N     |
|------|------|---|---------|
| 1    | 1    | Valve body end cap                          | 37776-E |
| 2    | 1    | O-Ring Ø13mm ID x Ø3,5mm CS                 | 37795   |
| 3    | 1    | Plunger stem for exhaust valve              | 37791   |
| 4    | 1    | Handle                                      | 37792   |
| 5    | 1    | Locking pin ISO 13337, D= 6mm, length= 30mm | 32403   |
| 6    | 1    | Pin quick release 1/4 x 1,63"               | 37796   |
| 7    | 1    | O-Ring Ø73mm ID x Ø2,6mm CS                 | 37794   |



## 9.5 Martin® 4" Valve Rebuild Kit: Part No. 38137-4

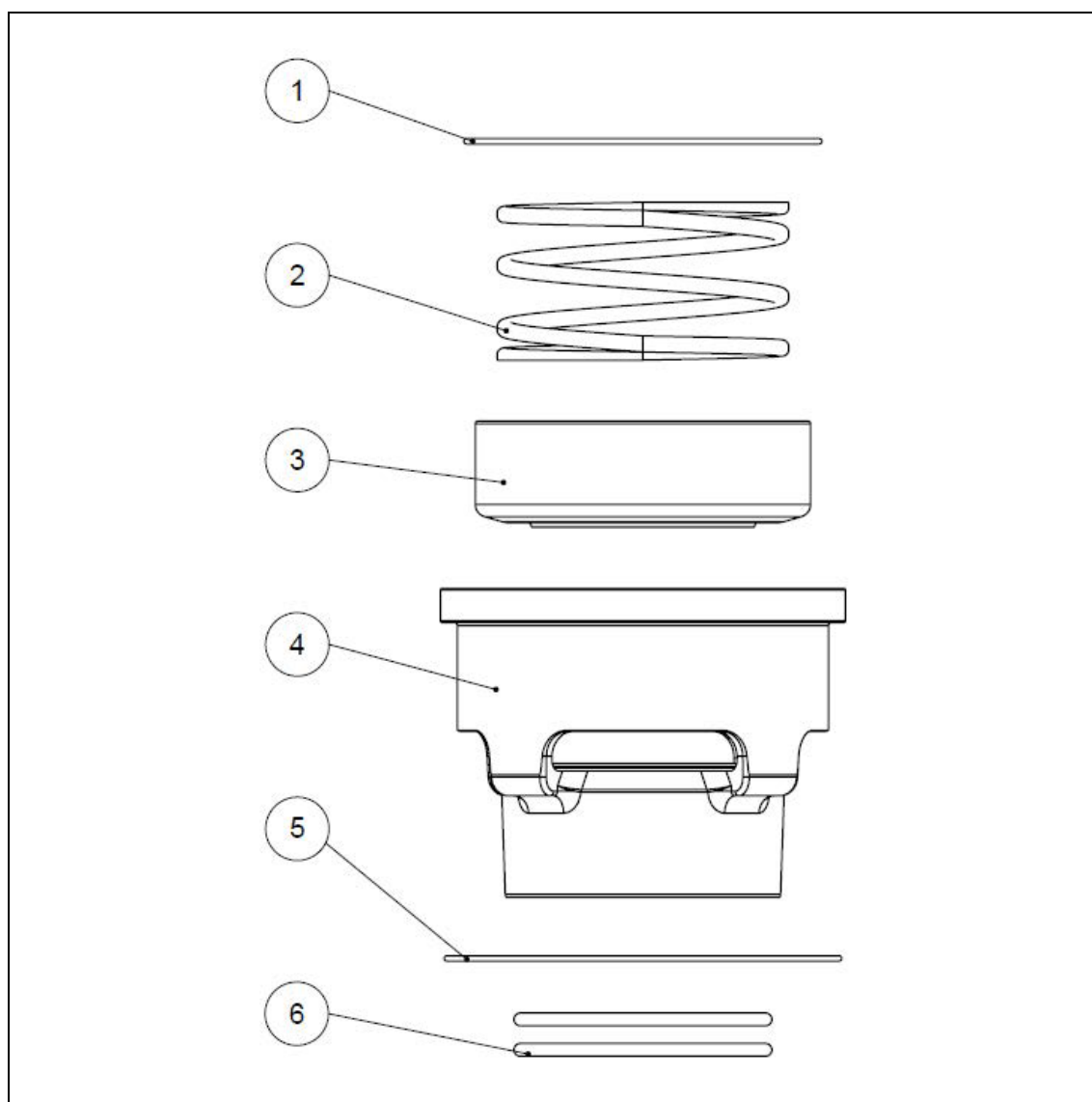
| Item | Qty. | Description                                | P/N     |
|------|------|--|---------|
| 1    | 1    | Air inlet valve                            | 37790-B |
| 2    | 1    | Spring compression OD Ø49,2mm              | 34671   |
| 3    | 1    | Sleeve bearing bronze                      | 37287-1 |
| 4    | 1    | Viton Bumper                               | 37793   |
| 5    | 1    | Lip Seal Puck                              | 38634   |
| 6    | 1    | Valve body piston 4" & 6"                  | 38635   |
| 7    | 1    | O-Ring 171,1mm ID x 2,6mm CS Viton         | 35078   |
| 8    | 1    | O-Ring 2-7/8"                              | 37794   |
| 9    | 1    | Washer compression 1/4"                    | 11521   |
| 10   | 1    | Screw HHC 1/4-20NC x 7/8 GR 5 ZP W/Loctite | 39348   |
| 11   | 1    | Woodruff key                               | 16345   |



The tightening torque for position 10 is **16Nm**.

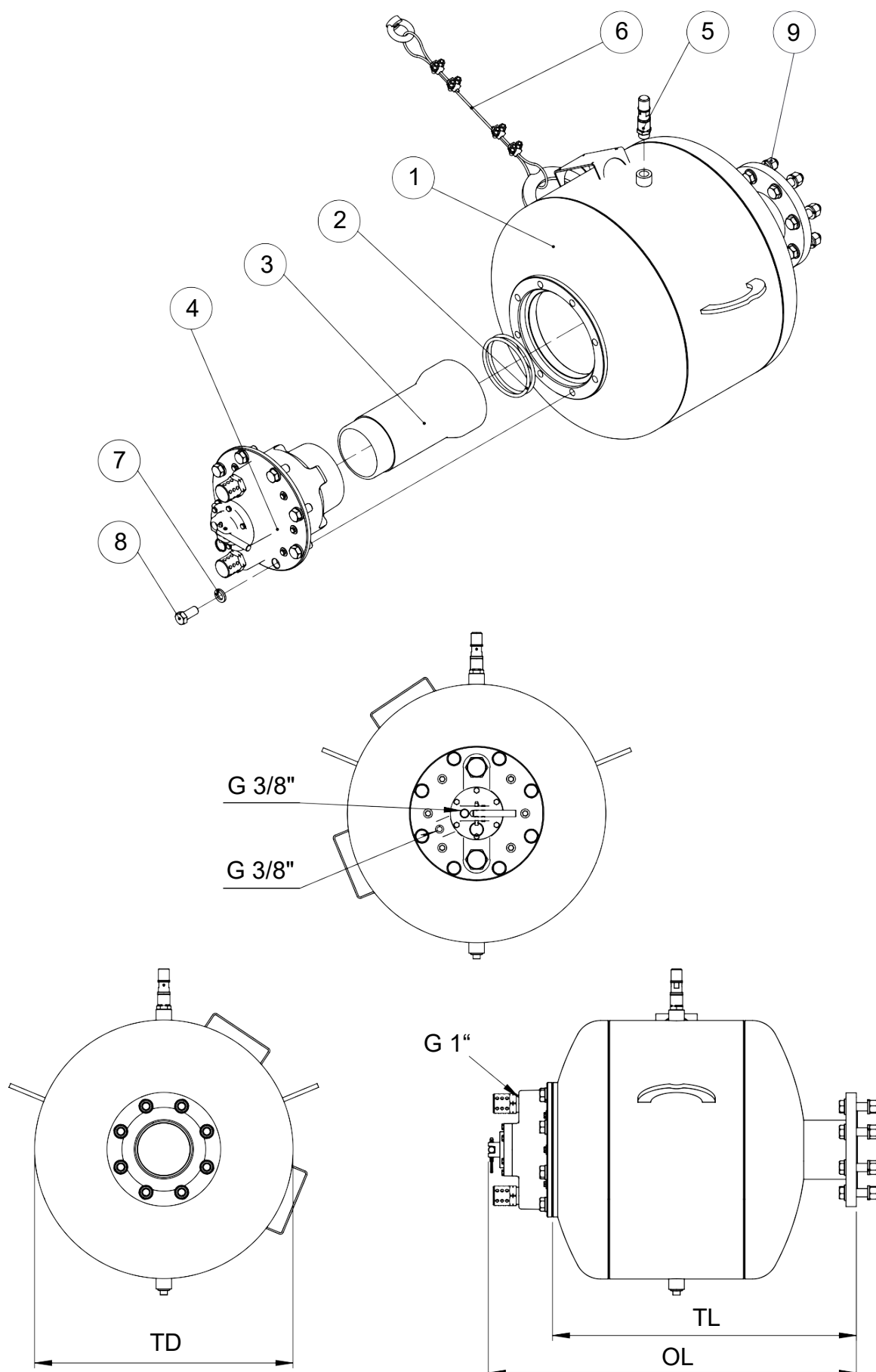
## 9.6 Martin® Main Piston Rebuild Kit: Part No. 38426-E

| Item | Qty. | Description                        | P/N     |
|------|------|------------------------------------|---------|
| 1    | 1    | O-Ring 171,4mm ID x 2,4mm CS Viton | 35078   |
| 2    | 1    | Compression Spring                 | 35077   |
| 3    | 1    | Piston 4"                          | 38022   |
| 4    | 1    | Hurricane, Typhoon valve basket 4" | 37897-E |
| 5    | 1    | O-Ring 7-11/16"                    | 38066   |
| 6    | 2    | Silicon O-Ring                     | 20771-S |





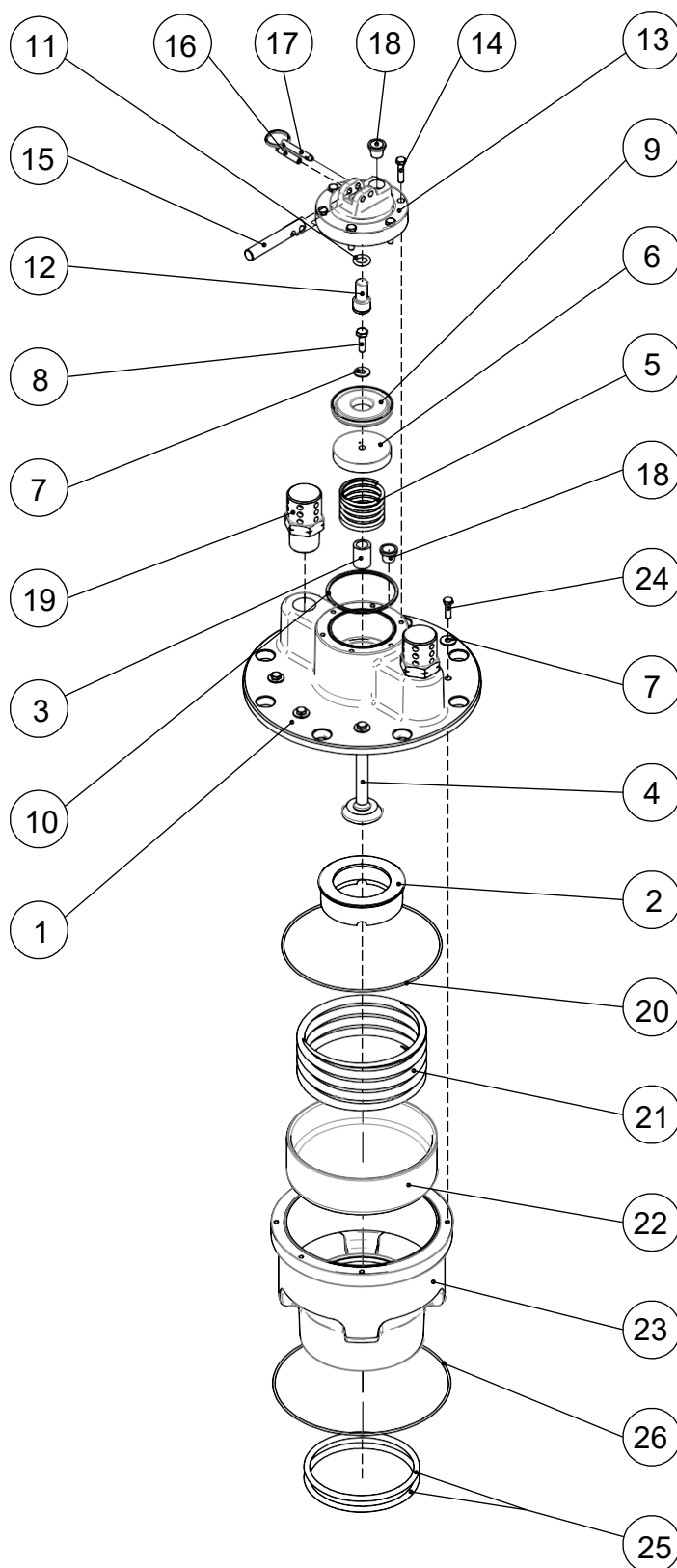
## 9.7 Hurricane Air Cannon – 38005-XXXXXX-XXX+E



| Item / Pos. | Qty. / Anz. | Description / Beschreibung  | P/N / Teile-Nr.  |
|-------------|-------------|---|------------------|
| 1           | 1           | Hurricane 4" Air-Cannon-Tank / Hurricane 4" Luftkanonenbehälter     | s.C. / s.T.      |
| 2           | 2           | O-Ring ID Ø113,6mm x 7mm Silicon / O-Ring                           | 20771-S          |
| 3           | 1           | Inner pipe / Innenrohr  | 38602            |
| 4           | 1           | Hurricane valve cap 4" / Entlüftungsventildeckel                    | 38071-E          |
| 5           | 1           | Safety relief valve G1/2" (10 bar) / Federsicherheitsventil         | 21680-10+E       |
| 6           | 1           | Safety cable kit / Sicherheitskabelsatz                             | 32271+E          |
| 7           | 8           | Washer spring M16 - DIN 127, (1.0032) galv. / Federring             | 41090-16AZP      |
| 8           | 8           | HHC screw M16 x 35 - DIN 933, (1.0032) galv. / Sechskantschraube    | 41081-16035BZP88 |
| 9           | 1           | Screw set with flat gasket DN 100 / Schraubensatz mit Flachdichtung | 41037            |

| Assy P/N / Baugruppen-Nr. | DIM  |     |     | Part no. Item /<br>Teile-Nr. Pos. | Weight /<br>Gewicht |
|---------------------------|------|-----|-----|-----------------------------------|---------------------|
|                           | TD   | OL  | TL  | 1                                 | [kg]                |
|                           | [mm] |     |     |                                   |                     |
| 38005-035-XXXXX-XXXX+E    | 400  | 665 | 541 | 38603-03510-EXP+E                 | 55                  |
| 38005-070-XXXXX-XXXX+E    | 500  | 713 | 588 | 38603-07010-EXP+E                 | 69                  |
| 38005-150-XXXXX-XXXX+E    | 600  | 955 | 830 | 38603-15010-EXP+E                 | 104                 |

## 9.8 Hurricane Valve – 38071-E+E



The tightening torque for positions 8 and 14 is **16Nm**.  
Pos. 24 is tightening with **8Nm**

| Item / Pos. | Qty. / Anz. | Description / Beschreibung  | P/N / Teile-Nr. |
|-------------|-------------|---|-----------------|
| 1           | 1           | Valve body cap 4" / Ventilgehäusedeckel                             | 37775-H-E       |
| 2           | 1           | VITON Bumper / Dämpfungsring  | 37793           |
| 3           | 1           | Sleeve bearing bronze / Bronzefuchse                                | 37287-1         |
| 4           | 1           | Air inlet valve / Lufteinlassventil                                 | 37790-B         |
| 5           | 1           | Compression spring 1,9" / Druckfeder                                | 34671           |
| 6           | 1           | Valve body piston 4" & 6" / Ventildeckelkolben                      | 38635           |
| 7           | 7           | Washer compression 1/4" / Federscheibe                              | 11521           |
| 8           | 1           | Screw HHC 1/4-20NC X 7/8 GR 5 ZP with Loctite / Sechskantschraube   | 39348           |
| 9           | 1           | Lip Seal Puck / Scheibe mit Dichtlippe                              | 38634           |
| 10          | 1           | O-Ring ID Ø72,7mm x 2,6mm Nitrile / O-Ring                          | 37794           |
| 11          | 1           | O-Ring ID Ø12,3mm x 3,5mm Nitril / O-Ring                           | 37795           |
| 12          | 1           | Plunger stem / Stößel   | 37791           |
| 13          | 1           | Valve body end cap 4" & 6" / Ventilgehäusedeckel Endkappe           | 37776-E         |
| 14          | 6           | HHC Screw M6 x 25 / Sechskantschraube                               | 37866           |
| 15          | 1           | Handle / Hebel  | 37792           |
| 16          | 1           | Spring pin 1/4" x 1-1/4", stainless steel (1.4571) / Hohlspannstift | 32403           |
| 17          | 1           | Detent pin 1/4" / Sperrstift  | 37796           |
| 18          | 2           | Plug plastic 3/8" / Plastikstopfen                                  | 11659           |
| 19          | 2           | Air Cannon Diffuser G1" / Diffusor                                  | 39468-E         |
| 20          | 1           | O-Ring ID Ø171,1mm x 2,6mm Viton / O-Ring                           | 35078           |
| 21          | 1           | Compression spring 4" / Druckfeder                                  | 35077           |
| 22          | 1           | Piston 4" / Kolben  | 38022           |
| 23          | 1           | Hurricane basket 4" / Korb  | 37897-E         |
| 24          | 6           | HHC Screw M6 x 22 / Sechskantschraube                               | 36530           |
| 25          | 2           | O-Ring ID Ø113,6mm x 7mm Silicon / O-Ring                           | 20771-S         |
| 26          | 1           | O-Ring ID Ø190,2mm x 2,6mm Viton / O-Ring                           | 38066           |

## 10 Troubleshooting

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### NOTE

The Air Cannon can be used in many different processes. Malfunctions other than those listed in these installation instructions can therefore occur. In this case, either Martin Engineering or one of its representatives can assist with the positioning or with special solutions.

Check the condition of all solenoids before doing any other repair work. Damaged solenoids, which can no longer be moved or have got jammed in one position, lead to symptoms that may be equivalent to the conditions or states listed below. Check the electrical connections to all solenoids.

The following table contains the description of possible causes and remedies for problems that may occur under certain circumstances. If the remedial measures recommended do not solve the problem, please contact Martin Engineering or one of its representatives.

| Symptom                             | Cause  | Remedy   |
|-------------------------------------|--|--|
| The Air Cannon does not get filled. | Compressed air supply.   | Ensure that the compressor is switched on and that the compressed air lines are under pressure.  |
|                                     | Ball valve.  | Check whether the ball valve at all Air Cannons are completely open.   |
|                                     | Maintenance unit is mounted incorrectly, or it has not been adjusted properly.   | The factory setting of the secondary pressure is 0 bar. Adjust the value desired by lifting and then turning the maintenance unit clockwise. Check the flow direction on the maintenance unit - see marking. |
|                                     | Solenoids.   | Check the air connections. Also refer to 2.3 Cannon air supply. Connection 1 = inlet, Connection 4 = outlet, Connection 5 = ventilation  |
|                                     | Tank plug is missing.  | Check whether all the connections on the pressure tank have been sealed.   |
|                                     | Filling connection of the Air Cannon.  | Check whether the filling connection to the compressed air supply has been connected.  |
|                                     | Pneumatic connections of the solenoids.  | Check all pipe connections. Check for leaks. Check the direction of flow in the pipelines.   |
| The Air Cannon is not fired.        | Electrical connections of the solenoids.   | Ensure that the electrical connections are proper and correct. Check the voltage. Check whether the signals are being sent.  |
|                                     | Pressure in the pressure tank.   | Check the indication of the gauge.   |
| The Air Cannon is not firing        | The blow-off port is clogged: The Air Cannon is making stuttering noises while discharging and the gauge indicator is dropping only gradually or does not come down to zero. | Remove the blockage or clogging.   |

| Symptom                                  | Cause  | Remedy  |
|--|--|---|
|  | The control line is not air-tight or is clogged. | Replace damaged line or remove clogging.  |
|  | The control line is too long.                    | Reduce the control line to a maximum of 60 m.   |
|  | The working pressure is too low.                 | Make sure the operating pressure is between 4 to 8,6 bars.  |
|  | The control signal acts for a very short time.   | Ensure that the solenoid remains activated long enough for it to work properly (at least 1 second, no more than 2 seconds). |
| The Air Cannon Is always under pressure. | The gauge is not correct.                        | Ensure that the gauge drops to "Zero" in less than 0.5 seconds.   |
| The Air Cannon fires but has no effect.  | The manual thermo safety shield is closed.       | Open the thermo safety shield.  |



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