



# **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.*



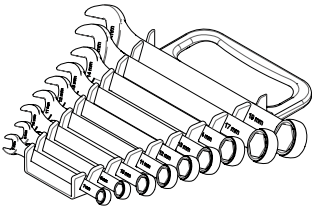
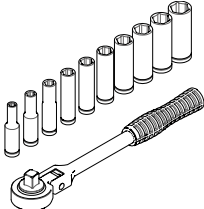
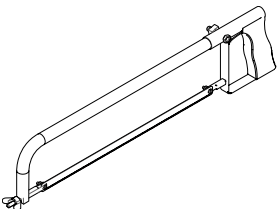
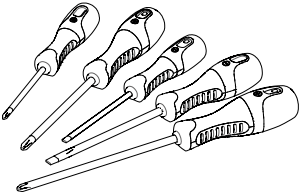
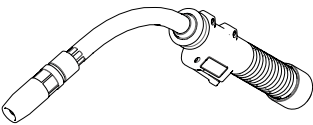
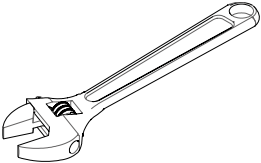
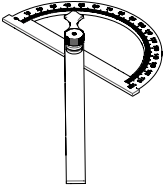
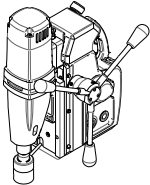
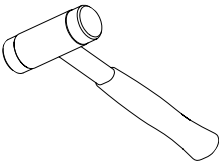
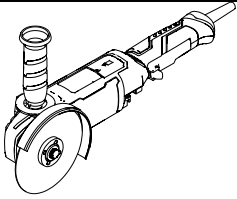
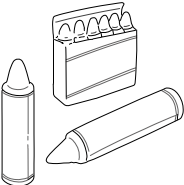
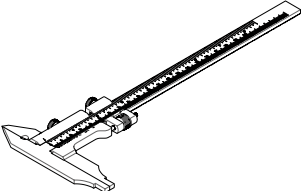
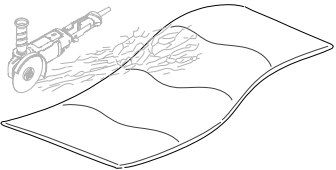
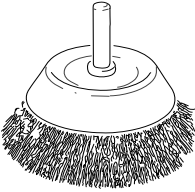
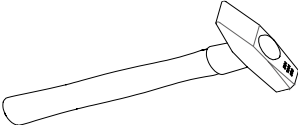
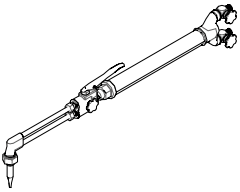
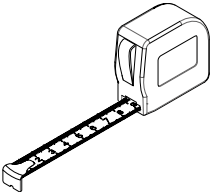
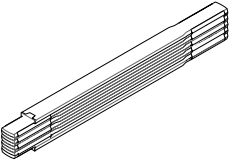
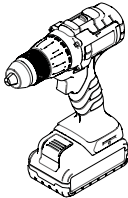
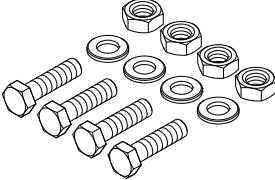

## WARNING

### **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.

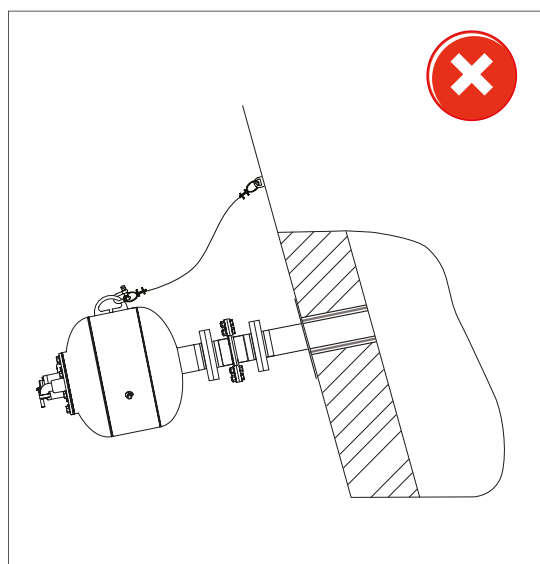
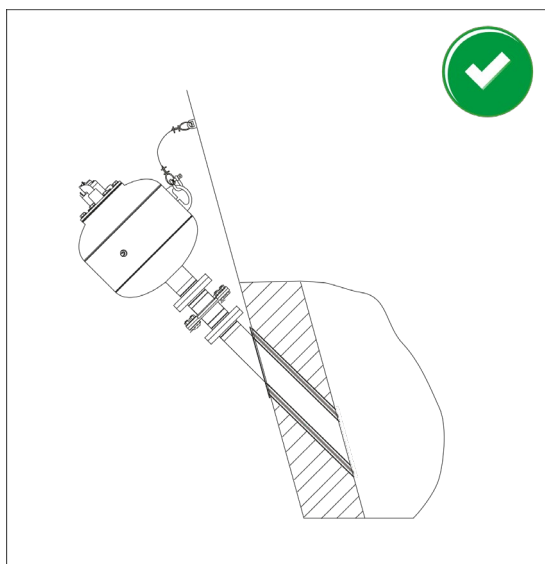
- *Use suitable aids if the load is > 25 kg per person!*
- *Identify the centre of gravity! Ensure that the Air Cannon cannot tilt during the lifting process!*
- *Attach lifting equipment to the handles on the side of the air cannon.*

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

Protect the product from vibrations, impacts, and moisture.

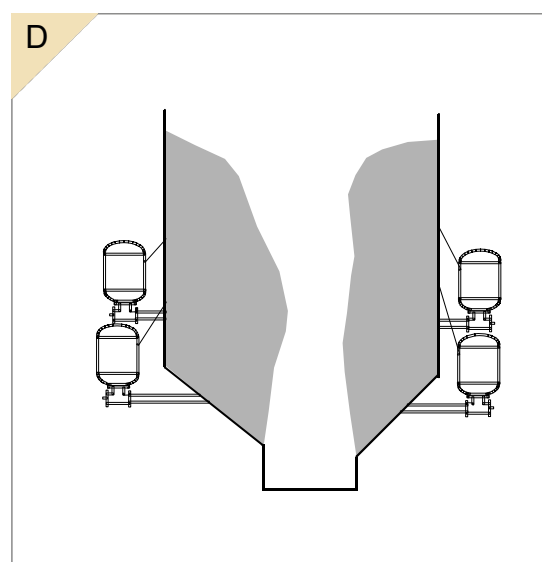
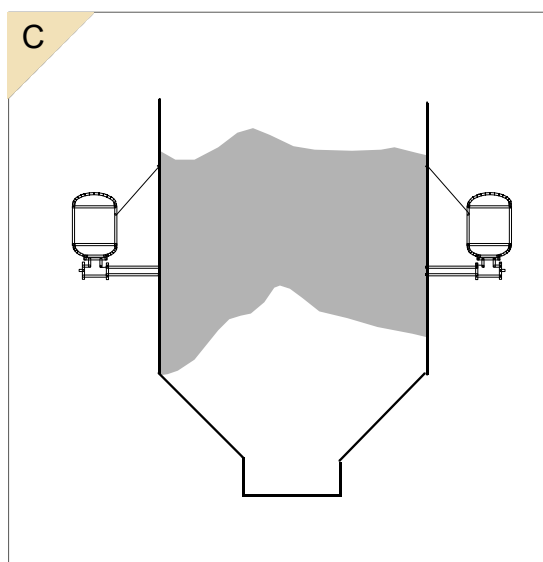
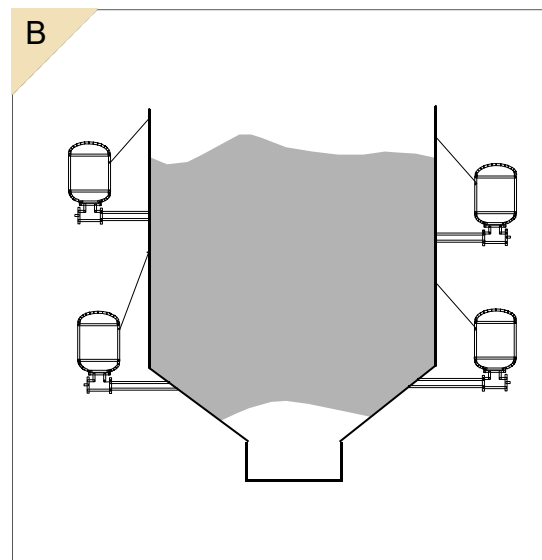
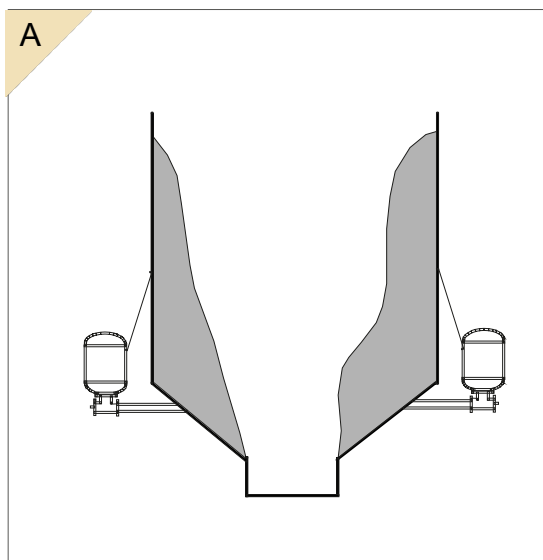
Store the product in a dry, cool place.

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

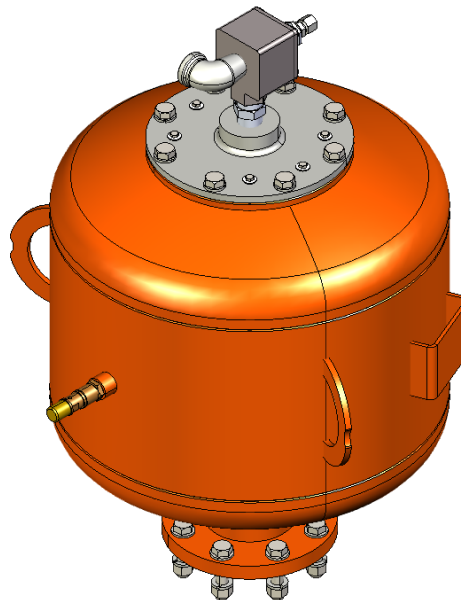
Only materials that cannot be reasonably recycled may be disposed of. Disposal must be carried out professionally.

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



# **Typhoon Air Cannon**



## **Installation Instructions Part 2**

**Version: 00  
Language: ENG  
M3813E UK-03/25**

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## 7 General

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### NOTE

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

### 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-aaaFD-bbcde-fghj+E	
<b>a</b>	<b>Tank size in litre</b> 035: 35 070: 70 150: 150
<b>b</b>	<b>Tank pressure range in bar (max.)</b> 08: 8 10: 10
<b>c</b>	<b>Tank temperature range in °C</b> D: -30 - +150
<b>d</b>	<b>Certification standard</b> C: CE certification G: TR CU certification
<b>e</b>	<b>Tank finish</b> P: Powder coated (RAL 2004) C: Special painted C5M (RAL 2004) Z: Zinc plated
<b>f</b>	<b>Piston options</b> 0: Dual seal piston 1: Full aluminium piston
<b>g</b>	<b>Additional option</b> 0: -
<b>h</b>	<b>Additional option</b> 0: -
<b>j</b>	<b>Additional testing</b> 0: No tests 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	Diameter [mm]	Tank length [mm]	Overall length [mm]	Weight [kg]
38005-035FD-XXXX+E	400	541	711	51
38005-070FD-XXXX+E	500	588	758	62
38005-150FD-XXXX+E	600	830	1000	86

Air Pressure [bar]	38005-035FD- XXXX+E [L]	38005-070FD- XXXX+E [L]	38005-150FD- XXXX+E [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 Martin® Typhoon Air Cannon System consists of one or more Air Cannons mounted on a storage vessel. The Air Cannon charges when the tank is filled with plant compressed air or nitrogen between 3 bar and 8,6 bar (A, Figure 1) that is controlled by a 3-way normally open solenoid valve. Air fed through the valve assembly-mounted quick exhaust valve (QEV) passes through the piston and into the tank (B). When tank pressure equals line pressure, airflow is static and the cannon is ready to discharge (C). By activating the solenoid valve, the air supply is shut off and the air line between the QEV and solenoid is emptied. This allows the QEV to quickly release the pressure holding the piston. The piston is instantly forced back by the pressure stored in the tank which then exits through the discharge pipe, releasing the energized air pressure stored in the tank. This blast of air is directed through the discharge pipe and into the storage vessel (D).

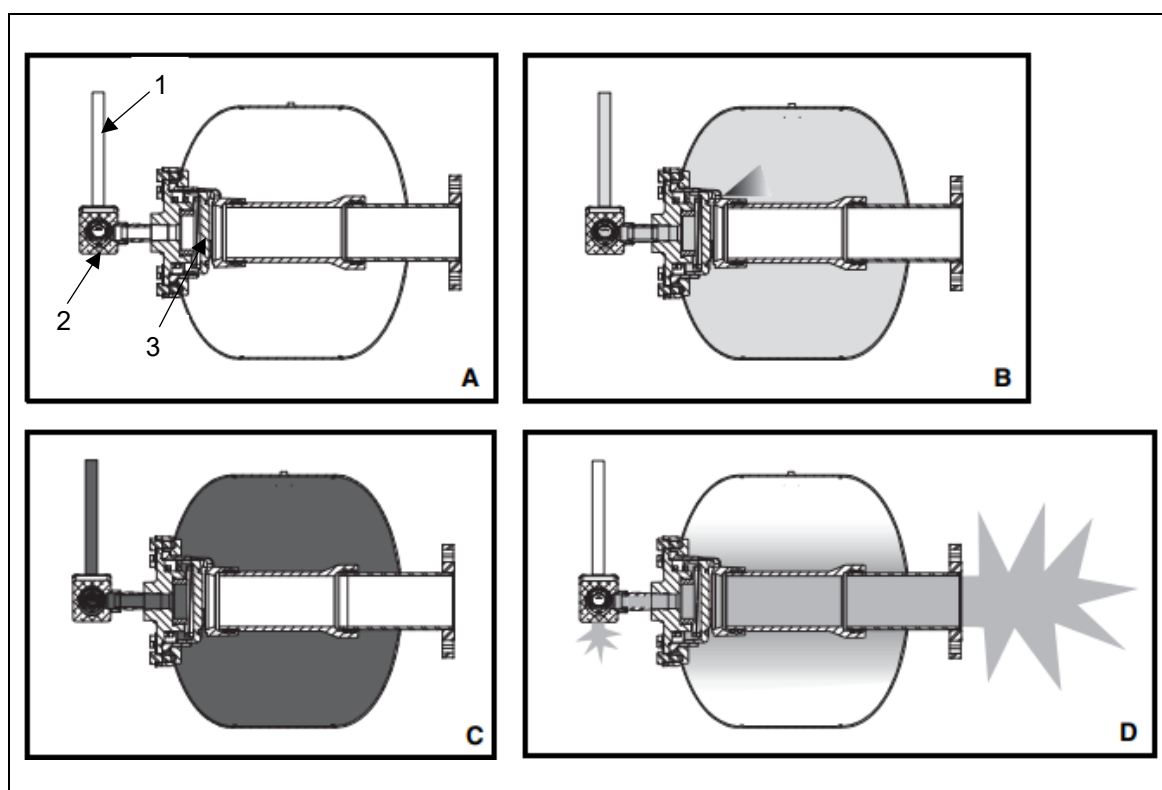


Figure 1: Functional principle of the Air Cannon

Pos.	Description	Pos.	Description
1	Compressed air feed	2	Quick exhaust valve (QEV)
3	Piston	--	--

## 8 Installation

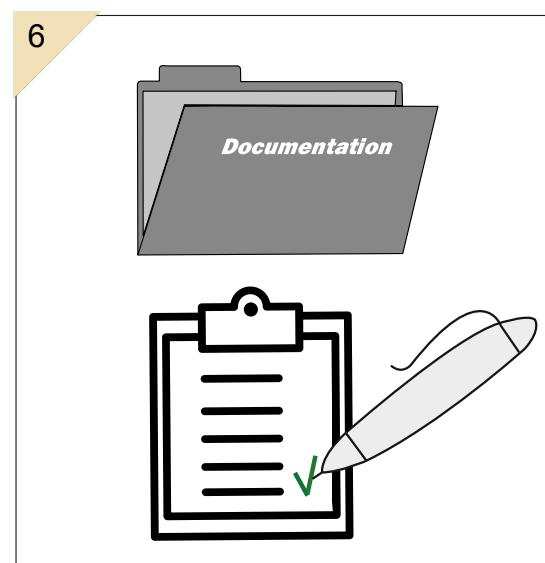
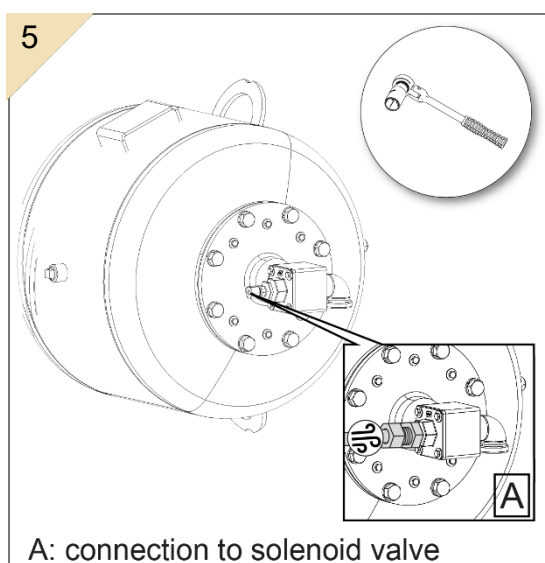
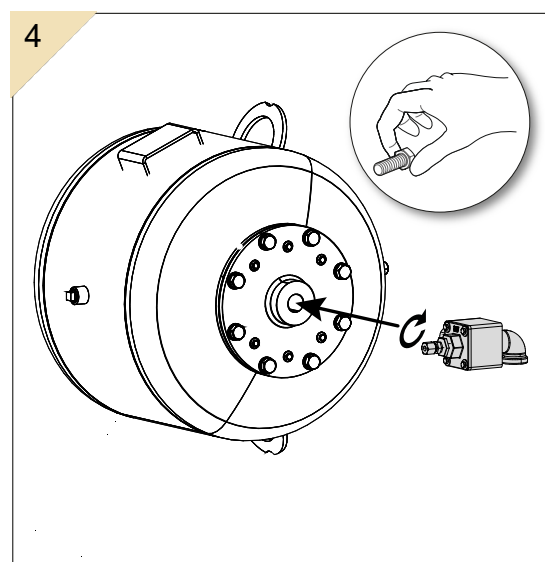
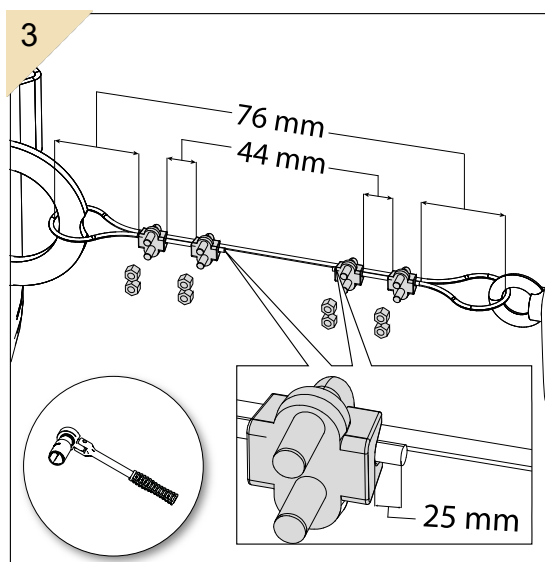
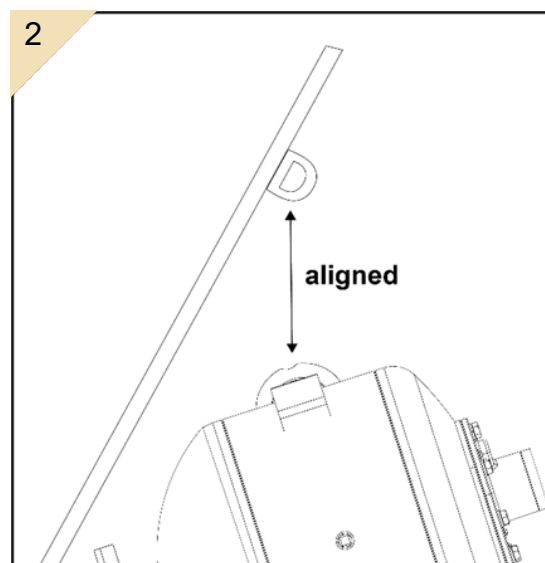
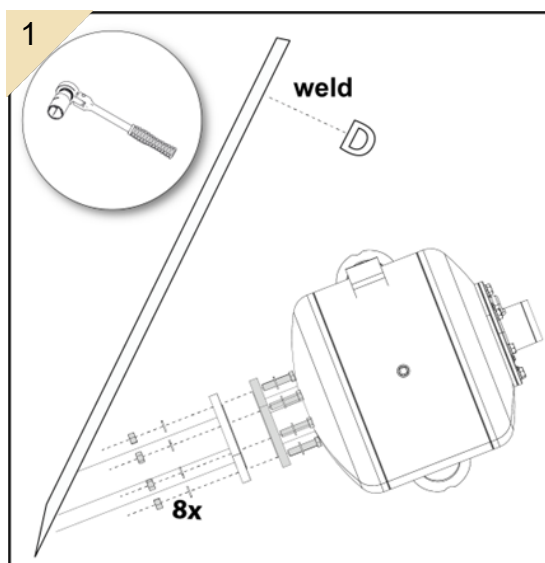
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### 8.1 Commissioning

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 Typhoon Air Cannon



### 8.3 Air Cannon Air Supply

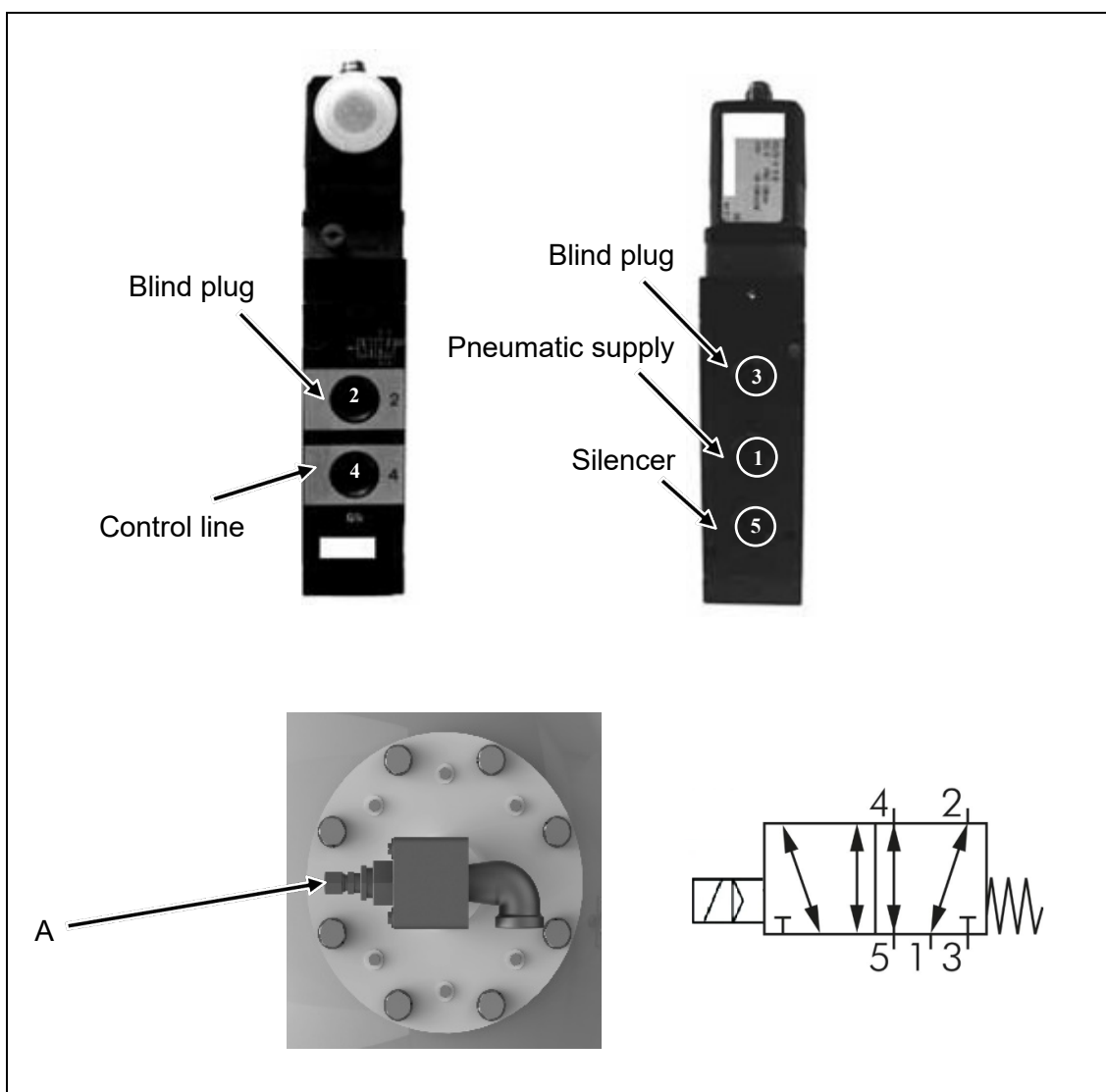


Figure 2: Pneumatic connection of the 5/2-way solenoid

Pos.	Description	Pos.	Description
A	Connection to 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 for 2" and 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

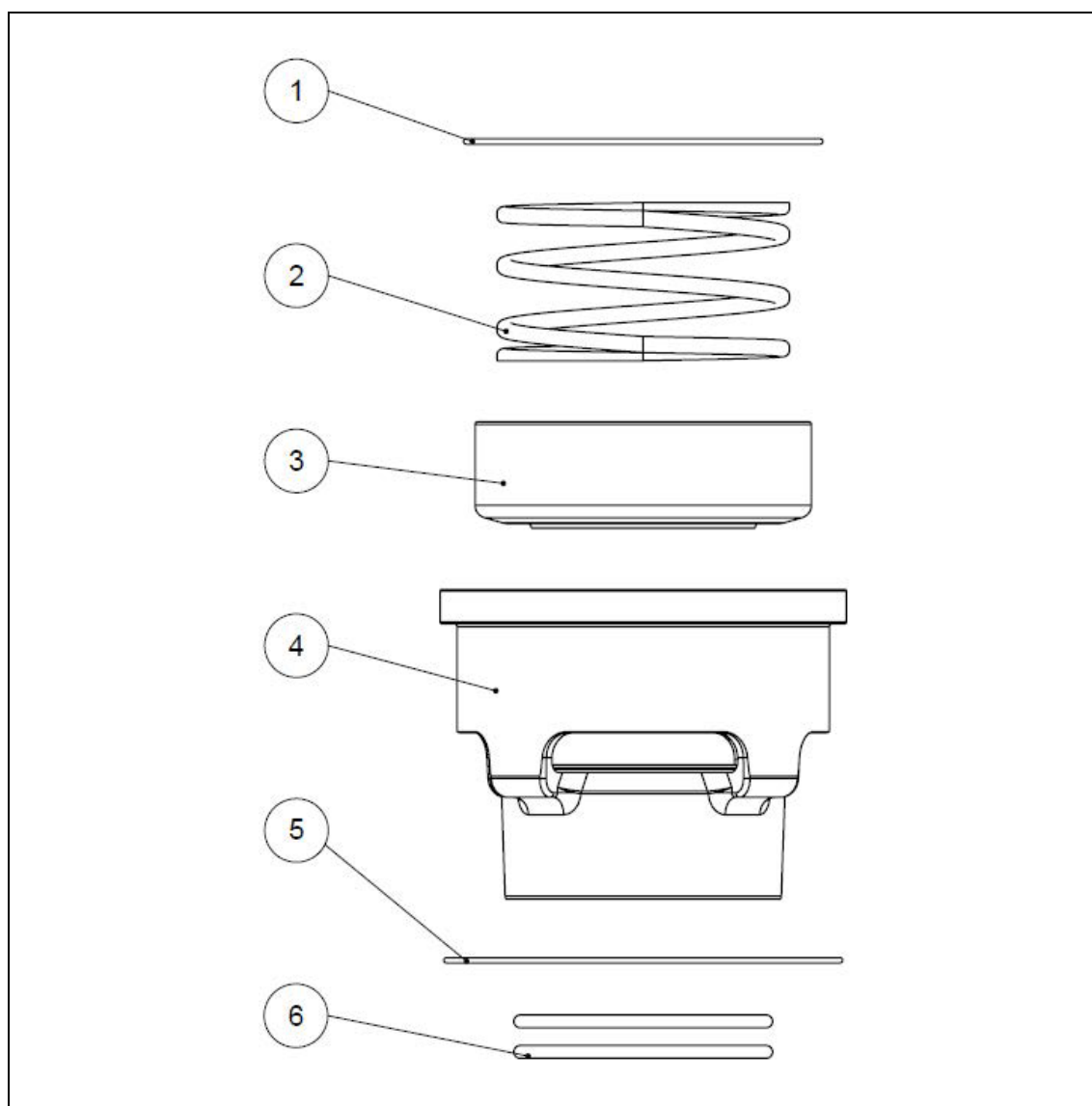
#### 9.4 Repair Kit for 1" Quick Exhaust Valve (QEV): Part No. 36060

Item	Qty.	Description	P/N
1	1	Air inlet valve	37790-B
2	1	Spring compression OD Ø49,2mm	34671

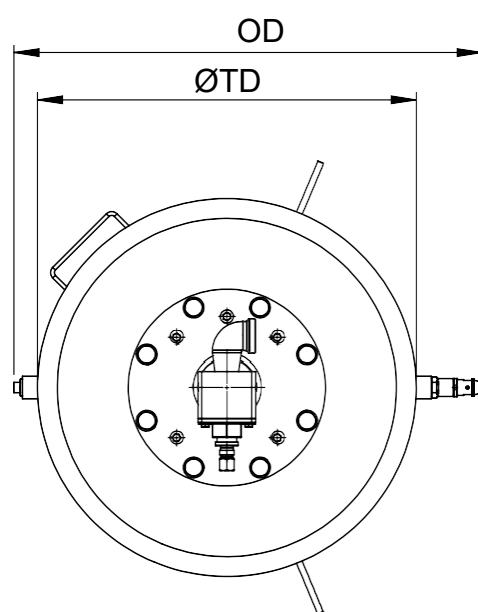
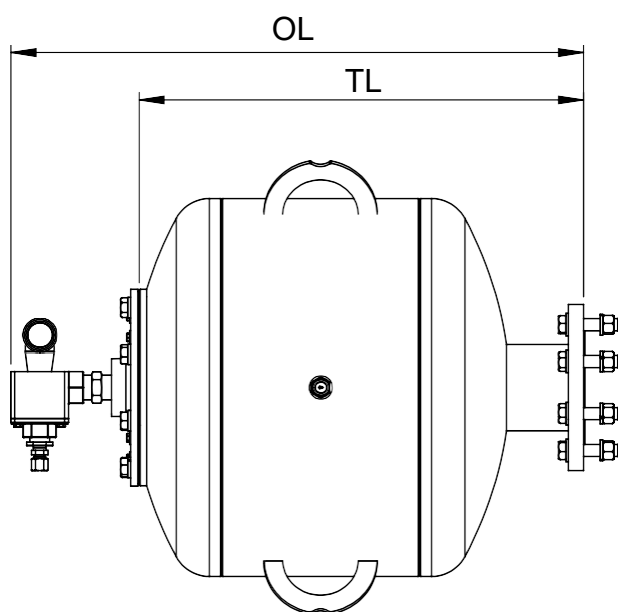
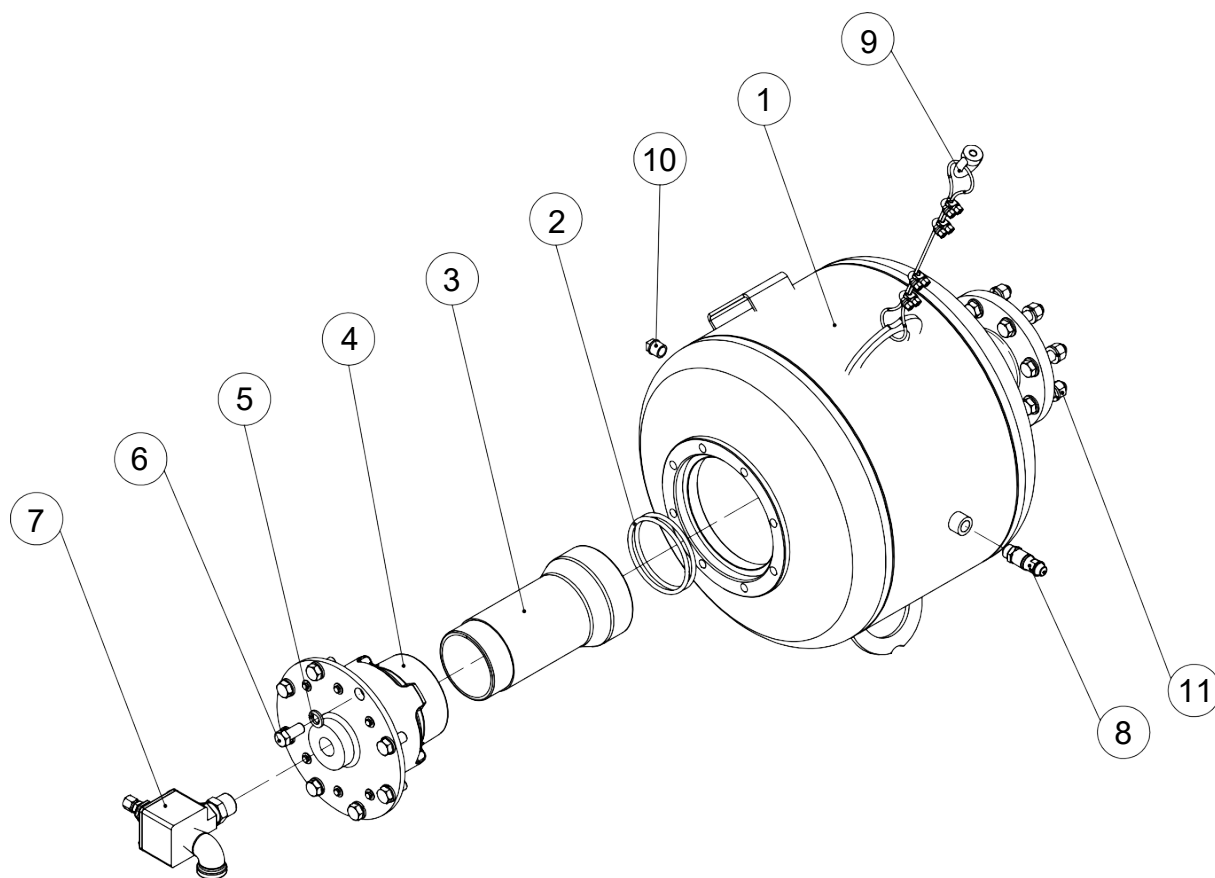


## 9.5 Martin® Main Piston Rebuild Kit: Part No. 38426-E

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



## 9.6 Typhoon Air Cannon – 38005-XXXFD-XXXXX-XXX+E

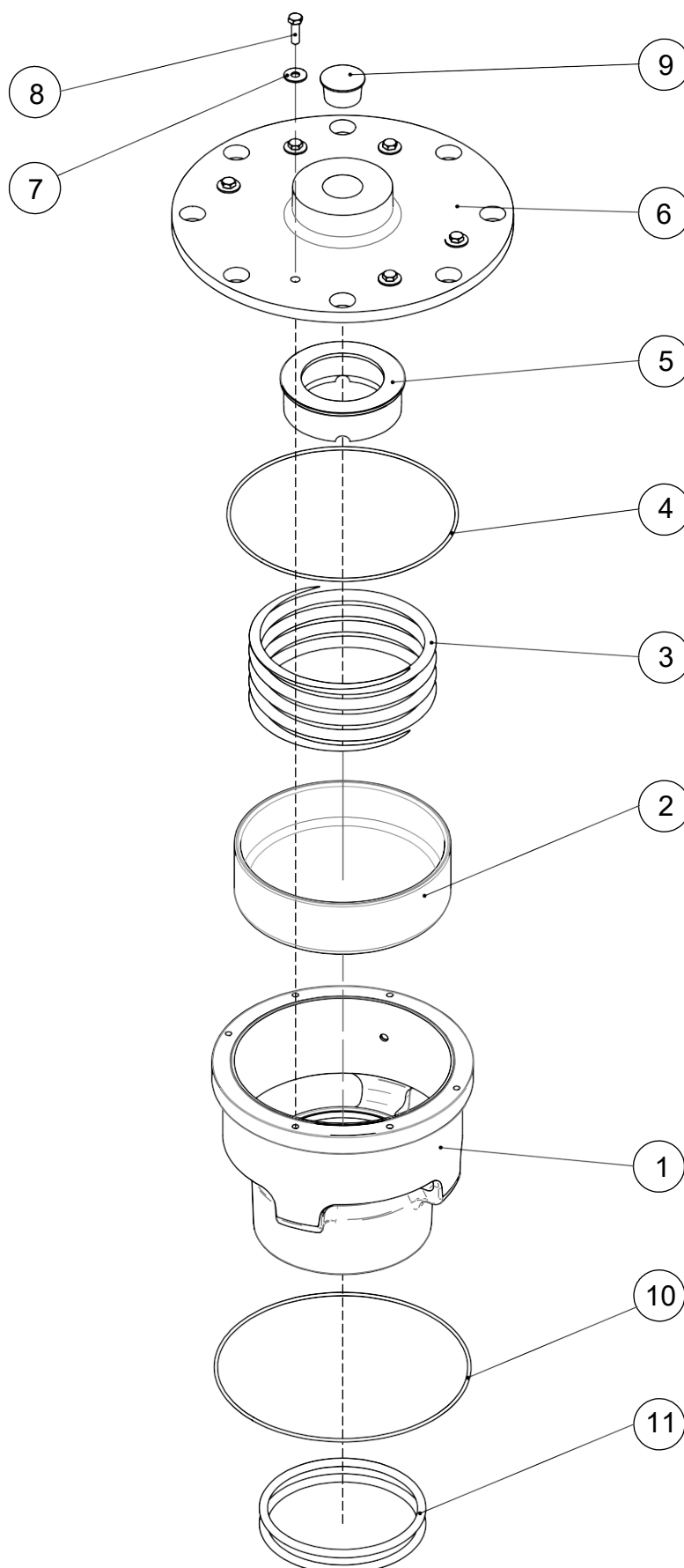




Item / Pos.	Qty / Anz.	Description / Beschreibung	P/N / Teile-Nr.
1	1	Air-Cannon-Tank / Luftkanonenbehälter	s.C. / s.T.
2	2	Silicon O-Ring / Silikonring	20771-S
3	1	Inner pipe / Innenrohr	38602
4	1	Typhoon valve ASM / Ventilbaugruppe	38071-FD-E
5	8	Washer spring M16 - DIN 127, (1.0032) galv. / Federring	41090-16AZP
6	8	HHC screw M16 x 35 - DIN 933, (1.0032) galv. / Sechskantschraube	41081-16035BZP88
7	1	Accessory-Kit 1" for 2" and 4" air cannons with 8 and 10 mm pipe- or hose-installation / Anbausatz	41126-XHV4/2-08
8	1	Safety relief valve G1/2" (10 bar) / Federsicherheitsventil	21680-10+E
9	1	Safety cable kit / Sicherheitskabelsatz	32271+E
10	1	Drain Plug - 1/2" / Gewindestopfen	40044
11	1	Screw set with flat gasket DN 100 / Schraubensatz mit Flachdichtung	41037

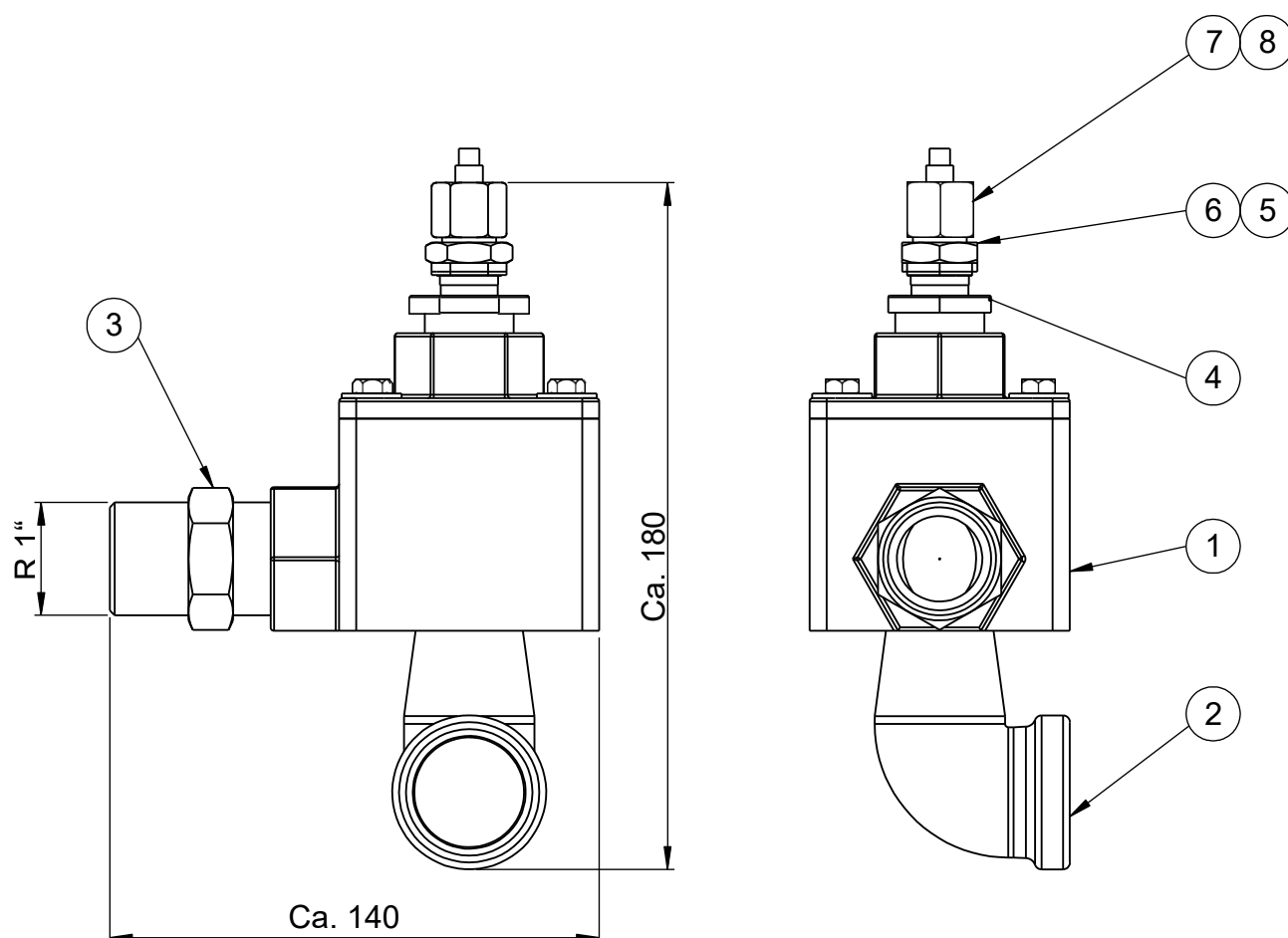
Part number / Teilenummer	Part no. item / Teile Nr. Pos.	DIM				Weight / Gewicht
		TD	OD	OL	TL	[kg]
38005-035FD-XXXXX-XXXX+E	38603-03510-XXX+E	400	518	710	541	53
38005-070FD-XXXXX-XXXX+E	38603-07010-XXX+E	500	618	758	588	70
38005-150FD-XXXXX-XXXX+E	38603-15010-XXX+E	600	718	1000	830	106

## 9.7 Typhoon Valve – 38071-FD+E



Item / Pos.	Qty / Anz.	Description / Beschreibung	P/N / Teile-Nr.
1	1	Hurricane basket 4" / Korb	37897-E
2	1	Piston 4" / Kolben	38022
3	1	Compression spring 4" / Druckfeder	35077
4	1	O-Ring ID Ø171,1mm x 2,6mm Viton / O-Ring	35078
5	1	VITON Bumper / Dämpfungsring	37793
6	1	Typhoon 4" valve body cap / Ventildeckel	35073-FD-E
7	6	Washer compression 1/4" / Federscheibe	11521
8	6	HHC Screw M6 x 22 / Sechskantschraube	36530
9	1	Plug plastic 1" / Plastikstopfen	36011
10	1	O-Ring ID Ø190,2mm x 2,6mm Viton / O-Ring	38066
11	2	O-Ring ID Ø113,6mm x 7mm Silicon / O-Ring	20771-S

## 9.8 QEV – 41126-XHV4/2-08



Item / Pos.	Qty. / Anz.	Description / Beschreibung	P/N / Teile-Nr.
1	1	QEV 1" for XHV valve (metric) / QEV 1" (Metrisch)	35669-E
2	1	Elbow 90° - R1" (I/O) / Winkel 90° (I/A)	41124
3	1	Double nipple 1" / Doppelnippel	36009+E
4	1	Reducer 3/4" OD - 3/8" ID / Reduzierstück	31108+E
5	1	Screwed connection with sleeve fitting 3/8" conical up 8/6 mm pipe / Gerade Einschraubverschraubung	40028-388P
6	1	Reinforcement bushing 8/7mm for PA-hose 8/6mm / Verstärkungshülse	41127-08
7	1	Straight cutting ring fitting R3/8" - 10 mm / Gerade Schneidringverschraubung	40028-3810P
8	1	Reinforcement bushing 8/7mm for PA-hose 10/8mm / Verstärkungshülse	41127-10

## 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 Air Cannon valves and solenoid valves before performing other repair work. Damaged valves which can no longer be moved or are stuck in one position cause symptoms which can correspond to the conditions listed below. Check the electrical and pneumatic connections to all valves. To quickly localise the possible cause of the fault, Martin Engineering recommends beginning the search at the Air Cannon. During the course of this, a manual functional test of the Air Cannon should be carried out and then the manual override operation at the solenoid valve.

The possible causes and remedies for problems which may occur are described in the following table. If any of the recommended remedies does not solve your problem, please contact Martin Engineering or one of its representatives.

Symptom	Cause	Remedy
The Air Cannon does not fill.	No compressed air supply.	Ensure that the compressor is switched on and the compressed air supply pressurised.
	Ball valves closed.	Check whether the ball valves are completely opened on all the Air Cannons.
	Maintenance unit incorrectly installed, filter dirty and/or improperly adjusted.	The default setting (ex-works) of the secondary pressure is 0 bar. By lifting and then rotating in the clockwise direction, the desired value can be set and/or the filter cleaned. Check the direction of flow of the maintenance unit - see marking.
	Vessel plug is missing.	Check whether all connections to pressure vessel have been closed.
	Quick exhaust valve (QEV) wrongly installed.	Check whether the filling and control lines have been fitted correctly to the connections. See section 3.8 QEV
	QEV dirty, incorrectly assembled or damaged.	Clean, repair (Section 3.4 Repair kit) or replace QEV.
	Filling and control lines are kinked, blocked or leaking.	Repair filling and control lines.
	5/2-way solenoid valves have incorrect pneumatic connections.	Check the connections. Also refer to Section 2.3 Air Cannon supply. Port 1 = inlet, Port 2 = filling and control lines (Normally open), Port 5 = exhaust
	3/2-way solenoid valve used is normally closed.	Use solenoid valve that is normally open.
	Material in the pressure vessel or valve.	Clean pressure vessel and check for root cause.
	Pressure vessel has a leak.	Check vessel for damage and Replace pressure vessel if needed (operation not possible till replaced).
	Pressure vessel seal has a leak.	Replace pressure vessel seal.

Symptom	Cause	Remedy
	Compressed air supply pipe is blocked.	Remove blockage and check filter.
Air Cannon is always under pressure, but Air Cannon does not fire.	No pressure in pressure vessel, pressure gauge faulty.	Check functioning of pressure gauge, replace if necessary.
Pressure gauge on pressure vessel does not indicate a pressure, Air Cannon can however be fired.	No pressure in pressure vessel, pressure gauge faulty.	Check functioning of pressure gauge, replace if necessary.
Air Cannon fires neither via electrical signal, nor via manual override of the solenoid valve.	Filling and control lines leaking, kinked or blocked.	Inspect the control line for leaking connections, too small bend radiuses or dirt. Replace if necessary.
	Filling and control lines not properly connected.	Check whether the filling and control lines are connected to the appropriate solenoid valve and to the Air Cannon.
	Filling and control lines are too long or have the wrong diameters.	Make sure that the filling and control lines with 10/8 mm diameter are not longer than 7,5 m.
Air Cannon cannot be fired electrically.	Duration of electrical control signal too short.	Make sure, for correct functioning, that the solenoid valve remains activated for 2 seconds.
	Manual override of the solenoid valve locked.	Unlock manual override – see MV (solenoid valve) documentation.
	Solenoid valve defective.	Check the functioning with the manual override of the valve; replace solenoid valve if necessary.
	Electrical connections of the solenoid valves mistakenly interchanged or faulty.	Make sure that the electrical connections are flawless. Compare supply voltage with voltage at the equipment. Check whether signals are sent.
The Air Cannon does not fire or fires for too short a time.	Discharge connection of the Air Cannon is blocked.	Check the 1" screw-in elbow at the quick exhaust valve (QEV). It may not be closed.
	QEV dirty or damaged.	Clean or replace QEV.
	QEV wrongly installed or connected.	Check whether QEV is properly connected to the

Symptom	Cause	Remedy
		Typhoon valve. Ensure that the filling and control lines are connected to the input connector of the QEV (see marking).
	Foreign material in the Typhoon valve.	Remove the Typhoon valve, dismantle and clean it, replace parts if necessary.
Air Cannon fires accompanied by A “stuttering” noise and a slowly falling pressure gauge reading.	Discharge duct or nozzle blocked.	Free/clean discharge duct.
	Safety shield is closed.	Open the safety shield.
The Air Cannon fires slowly or has no effect.	Operating pressure too low.	Set the operating pressure to between 3 and 8,6 bar.





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