

## **CRAB RETURN SYSTEM** *ELECTRIC*



**EN** Installation manual

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## PREFACE

### Using this manual

#### Pictograms and symbols

The following pictograms and symbols are used in this manual:

	<b>TIP</b> Suggestions and recommendations to simplify carrying out tasks and actions
	<b>ATTENTION</b> A remark with additional information for the user. A remark brings possible problems to the user's attention.
	<b>CAUTION!</b> Procedures, if not carried out with the necessary caution, could damage the product, the workshop or the environment.

#### Text indicators

Listings indicated by “-” (hyphen) concern enumerations.

Listings indicated by “•” (bullet point) describe steps to perform.

#### Service and technical support

For information about specific adjustments, maintenance or repair jobs which are not dealt with in this manual, please contact the supplier of the product. They will always be willing to help you. Make sure you have the following specifications at hand:

- product name
- serial number

You can find this data on the identification plate.

#### Product indications

Unless specifically stated, the contents of this manual applies to the Crab Return System.

## 1 INTRODUCTION

### 1.1 Identification of the product

The identification plate contains, among other things, the following data:

- product name
- serial number
- supply voltage and frequency
- power consumption

### 1.2 General description

The Crab Return System (CRS) is a (semi)-automatic system designed for the user to return the crab easily with the push of a button or an auto return switch. The CRS can easily be installed upon your STR, MRP or VSRX system. The unit will be provided with a basic manual remote control start set. It is possible to add more remote controls or an automatic return switch to the system to create a maximum ease of use out of the CRS.<sup>1</sup>

### 1.3 Technical specifications

■ Physical dimensions and properties	
Material	<ul style="list-style-type: none"><li>• housing</li><li>• rope</li><li>• pulley gear set</li></ul>
Colour	black
Weight	15 kg (33 lbs)
Rail installation length	up to 35 metres (120 ft)
■ Electrical data	
Power consumption	150W
Mains voltage	100-230V/1ph/50/60Hz
■ Ambient conditions	
Operating temperature:	<ul style="list-style-type: none"><li>• min.</li><li>• nom.</li><li>• max.</li></ul>
	<ul style="list-style-type: none"><li>• -20°C (-4°F)</li><li>• 20°C (68°F)</li><li>• 50°C (122°F)</li></ul>
Max. relative humidity	80%
Outdoor use allowed	no
Storage conditions	<ul style="list-style-type: none"><li>• -10°C - 80°C (14°F - 176°F)</li><li>• relative humidity max. 80%</li></ul>
■ Options and accessories	
Additional remote control   Auto return switch (recommended for fire stations)   End plate   Hydraulic shock absorber   Rope set	

### 1.4 Order information

Description	Art. no.
CRS Electric STR	0000301084
CRS Electric MRP	0000300768
CRS Electric VSRX	0000300636

## 2 PRODUCT DESCRIPTION

### 2.1 Product components

The product consists of the following main components and elements:

- CRS unit
  - motor compartment
  - cover plate with pulley wheel
  - limit switch
  - rope set
  - bracket set crab
  - stop bracket
  - rope brackets
  - remote control
  - fastening material

### 2.2 Tools and requirements

You need the following tools and requirements to install the unit:

- basic tools
- 7 & 9 mm drill bit
- cordless drill

1. Additional remote controls and auto return switch need to be ordered separately

### 3 SAFETY INSTRUCTIONS

#### General

The manufacturer does not accept any liability for damage to the product or personal injury caused by ignoring of the safety instructions in this manual, or by negligence during installation, use, maintenance, and repair of the product mentioned on the cover of this document and any corresponding accessories. Specific working conditions or used accessories may require additional safety instructions. Immediately contact your supplier if you detect a potential danger when using the product.

**The user of the product is always fully responsible for observing the local safety instructions and regulations. Observe all applicable safety instructions and regulations.**

#### User manual

- Everyone working on or with the product, must be familiar with the contents of this manual and must strictly observe the instructions therein. The management should instruct the personnel in accordance with the manual and observe all instructions and directions given.
- Do not change the order of the steps to perform.
- Keep the manual with the product.

#### Users

- The use of this product is exclusively reserved to authorised, trained and qualified users. Temporary personnel and personnel in training can only use the product under supervision and responsibility of skilled operators.
- Stay alert and pay attention to your work. Do not use the product when you are under the influence of drugs, alcohol or medicine.
- The product is not to be used by children or persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.
- Children must be supervised not to play with the product.

#### Technical specifications

Do not change the specifications given in this manual.

#### Modifications

Modification of (parts of) the product is not allowed.

#### Installation

- The installation of this product is exclusively reserved to authorised, trained and qualified technicians.
- The electric connection must be executed in accordance with the local codes and requirements. Ensure compliance with the EMC regulatory arrangements.
- During installation, always use Personal Protective Equipment (PPE) to avoid injury. This also applies to persons who enter the work area during installation.
- Use sufficient climbing gear and safety guards when working on a higher level than 2 metres (local restrictions may apply).
- Do not install the product in front of entrances and exits which must be used for emergency services.
- Mind any gas and water pipes and electric cables.
- Make sure that the workspace is well illuminated.
- Stay alert and pay attention to your work. Do not install the product when you are under the influence of drugs, alcohol or medicine.




#### Use

- Inspect the product and check it for damage. Verify the functioning of the safety features.
- Check the working environment. Do not allow unauthorised persons to enter the working environment.
- Protect the product against water and humidity.
- Make sure the room is always sufficiently ventilated; this applies especially to confined spaces.

- Make sure that the workshop, in the vicinity of the product, contains sufficient approved fire extinguishers (suitable for fire classes ABC).

#### Service, maintenance and repairs

- Obey the maintenance intervals given in this manual. Overdue maintenance can lead to high costs for repair and revisions and can render the guarantee null and void.
- Always use Personal Protective Equipment (PPE) to avoid injury. This also applies for persons who enter the work area.
- Make sure the room is sufficiently ventilated.
- Use tools, materials, lubricants and service techniques which have been approved by the manufacturer. Never use worn tools and do not leave any tools in or on the product.
- Use sufficient climbing gear and safety guards when working on a higher level than 2 metres (local restrictions may apply).
- Clean the area afterwards.

	<b>ATTENTION</b> Service, maintenance and repairs must be performed in accordance with directive TRGS 560 and TRGS 528 by authorised, qualified and trained persons (skilled) using appropriate work practices.
	<b>ATTENTION</b> Before you carry out service, maintenance and/or repair jobs: - fully disconnect the unit from the mains.
	<b>Personal protective equipment (PPE)</b> Always wear protective gloves during service, maintenance and repairs.

### 4 INSTALLATION MRP

#### 4.1 Unpacking

Make sure that the product is complete. The package contains:

- CRS unit
  - motor compartment
  - cover plate
  - limit switch
  - limit switch bracket
  - rope bracket
  - remote control
  - stop bracket
  - bracket set crab
  - fastening materials

Rope set

	Rope set 10m	MRP 20m	MRP 35m
Rope	25 m	45 m	72 m
Curl hook	-	1 pc	2 pcs
Curl hook bracket	-	1 pc	2 pcs
Wire cable clamp	2 pcs	2 pcs	2 pcs
Plymovent label	2 pcs	4 pcs	6 pcs
Fastening materials	1 pc	1 pc	1 pc

## 4.2 Mounting instruction

The system is configured in such a way that the motor will pull the crab towards the motor compartment. In case you would like to switch the pull direction, switch the 2 motor leads. See the supplied electrical diagram.

Please note that the side on which the Crab Return System will be mounted is fixed by the design of the motor compartment and placement of the pulley wheels. If the Crab Return System is used with a Pneumatic Grabber®, all required parts that are mounted on the rail and crab for the pneumatic system have to be on one side, and all parts for the CRS on the opposite side. It is advised to draw a layout prior to installation.

## 4.3 Installation

- With the use of the drill template drill four 9 mm holes at the end of the rail. For the holes on the side use the bottom hole of the template. For the holes on the top use the bottom hole on the template. Refer to fig. 4.3.1 and 4.3.2.
- Repeat this step for the other end of the rail.

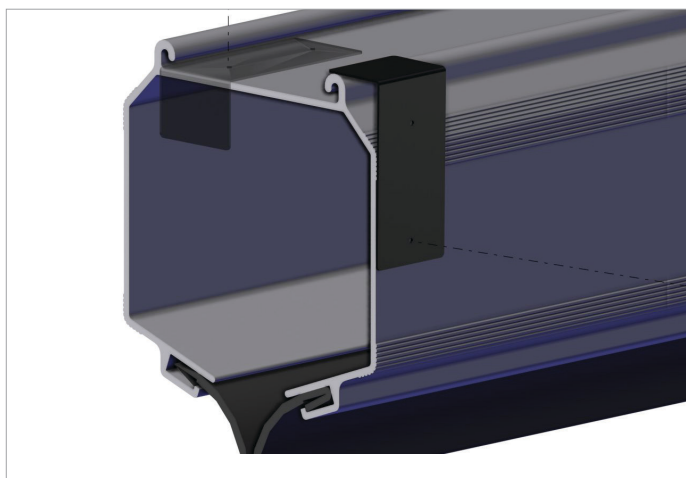


Fig. 4.3.1 Drill template on MRP

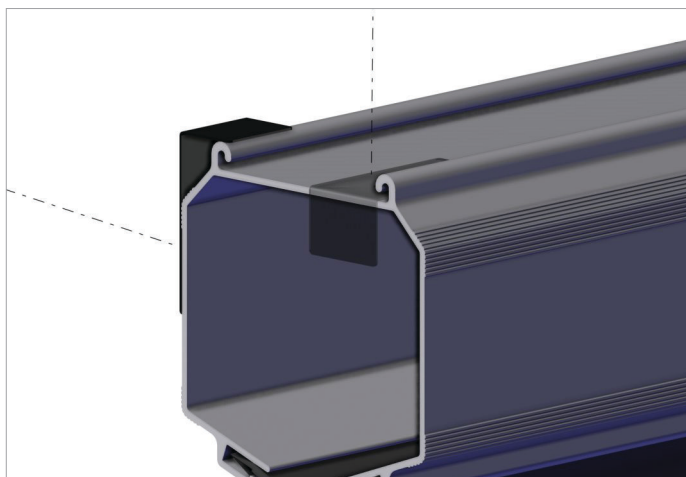


Fig. 4.3.2 MRP drill template

- Mount the motor compartment to one end of the rail and secure with 4x M8x20 bolts and 4x M8 washers using wrench 13 (0,5 in.). Refer to fig. 4.3.3.



### TIP

Mount the cover plate of the CRS after the crab has been prepared and installed.

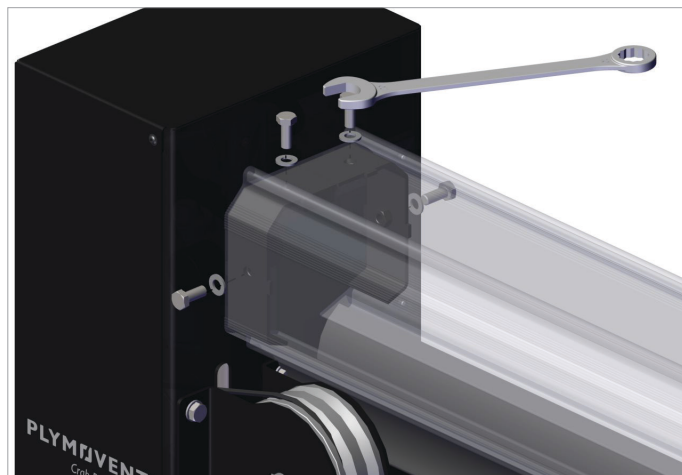


Fig. 4.3.3 Mounting the motor compartment to the rail

- Mount the rope brackets to the crab using 4x M4x20 bolts. (in the case of an existing system with an older crab, make sure to predrill holes in the crab!). Refer to fig. 4.3.4

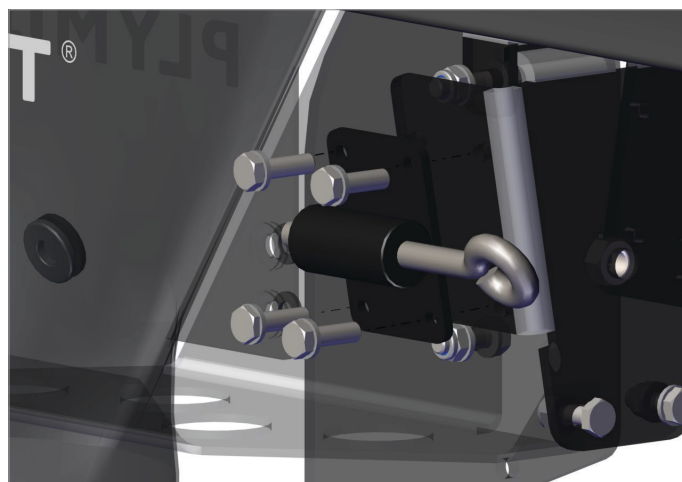


Fig. 4.3.4 Mounting the rope brackets on the crab

- Mount the switch activation bracket to the crab using 2x M6x20 bolts with washers and nuts. (in the case of an existing system with an older crab, make sure to predrill holes in the crab!) Refer to fig. 4.3.5.

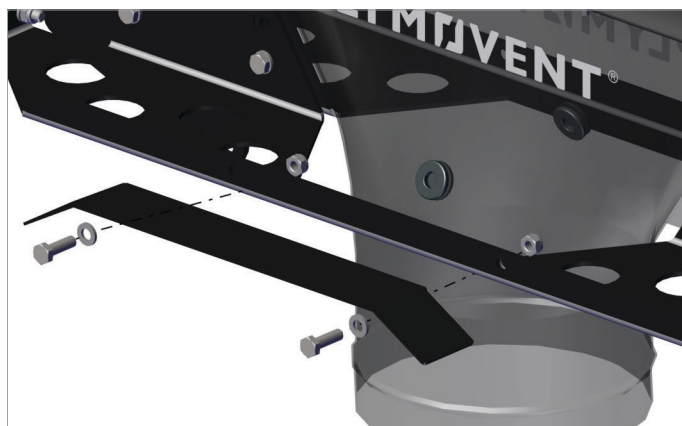


Fig. 4.3.5 Mounting the start/stop bracket on the crab

- In case of a new system, mount the crab in the rail.
- Mount the CRS cover plate to the other end of the rail and secure with 4x M8x20 bolts and 4x M8 washers using wrench 13 (0,5 in.). Refer to fig. 4.3.6.



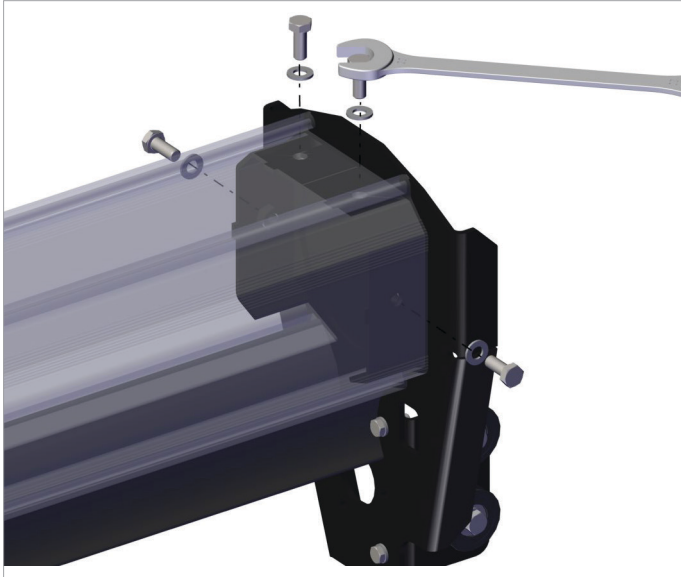


Fig. 4.3.6 Mounting the cover plate

- Mount the shock (for VEX systems) or the hydraulic shock absorber (for FIRE systems, refer to fig. 5.3.6 for the installation of the hydraulic shock absorber) on the coverplate with the provided fastening materials. Refer to fig. 4.3.7

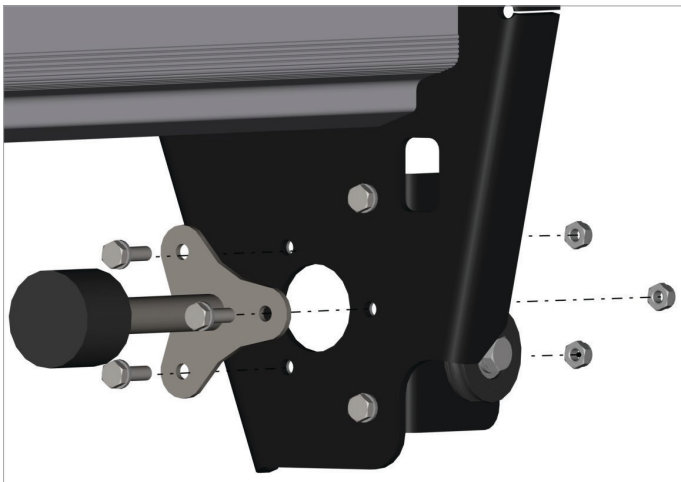


Fig. 4.3.7 Mounting the shock on the cover plate

- Mount the stop bracket to the rail using self-tapping screws 6,3 x 25. Mount the stop bracket 200 mm (8 in.) from the end of the rail. Refer to fig. 4.3.8.
- Mount the limit switch bracket at approx. 25 mm (1 in.) next to the stop bracket using self-tapping screws 6,3 x 25. Please note that the rubber bumper on the crab should almost hit the stop bracket when the limit switch is activated. Refer to fig. 4.3.9.

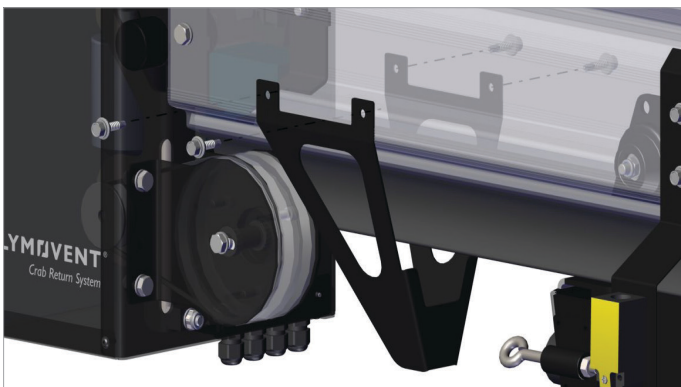


Fig. 4.3.8 Mounting the stop bracket

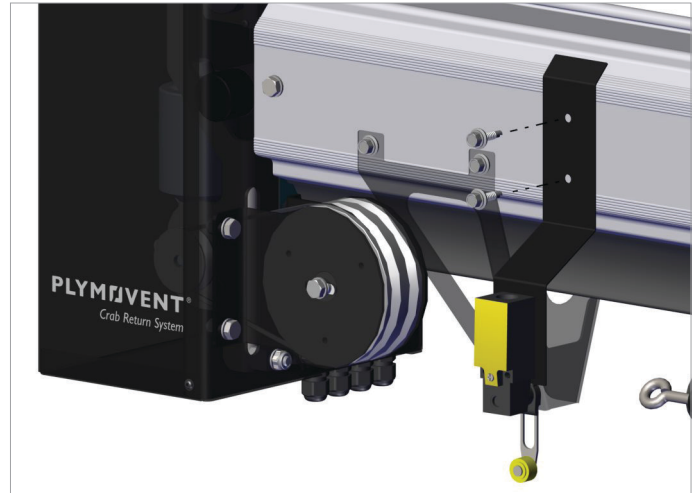


Fig. 4.3.9 Mounting the limit switch bracket

- Mount the second limit switch bracket on the other end of the rail using self-tapping screws 6,3 x 25.
- Mount the rope bracket(s) using self-tapping screws 6,3 x 25. Mount the rope brackets equally divided over the rail. Refer to fig. 4.3.10.

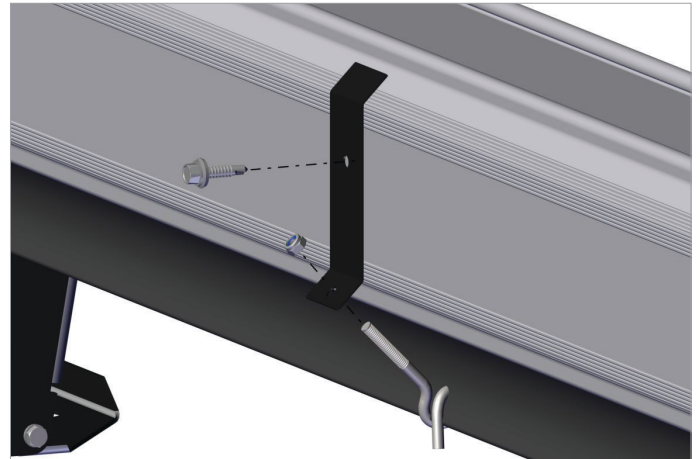


Fig. 4.3.10 Mounting the rope bracket

- Install the rope and tighten firmly. Make sure the tension on the rope is sufficient to create friction between the driven wheel on the motor plate.

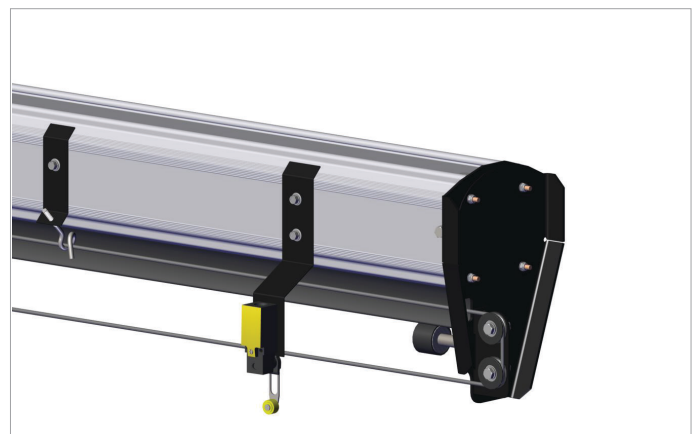


Fig. 4.3.11 Installing the rope

#### 4.4 Electrical connections

- Make the electrical connections according to the supplied electrical diagram.

## 5 INSTALLATION STR

### 5.1 Unpacking

Make sure that the product is complete. The package contains:

- CRS unit
  - motor compartment
  - limit switch (stop)
  - limit switch bracket
  - rope bracket
  - remote control (emergency stop and manual return)
  - stop bracket
  - bracket set crab
  - fastening materials

Rope set

	Rope set 10m	STR 20m	STR 35m
Rope	25 m	45 m	72 m
Curl hook	-	1 pc	2 pcs
Curl hook bracket	-	1 pc	2 pcs
Wire cable clamp	2 pcs	2 pcs	2 pcs
Plymovent label	2 pcs	4 pcs	6 pcs
Fastening materials	1 pc	1 pc	1 pc

### 5.2 Mounting instruction

The system is configured in such a way that the motor will pull the crab towards the motor compartment. In case you would like to switch the pull direction, switch the 2 motor leads. See the supplied electrical diagram.

Please note that the side on which the Crab Return System will be mounted is fixed by the design of the motor compartment and placement of the pulley wheels. If the Crab Return System is used with a Pneumatic Grabber®, all required parts that are mounted on the rail and crab for the pneumatic system have to be on one side, and all parts for the CRS on the opposite side. It is advised to draw a layout prior to installation.

### 5.3 Installation

- With the use of the drill template drill two 9 mm holes on each side of the rail and two 9 mm holes on top of the rail. The drill template should be placed directly in the V-groove (wing) of the rail. Refer to fig. 5.3.1.
- Repeat this step for the other end of the rail.

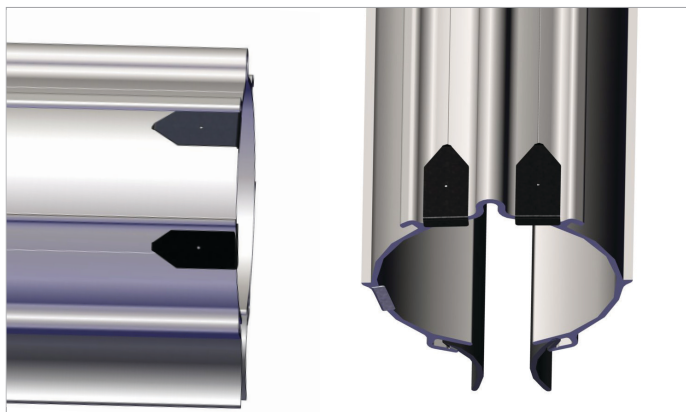


Fig. 5.3.1 Drill template on STR

- Mount the motor compartment to one end of the rail, and secure with 6x M8x20 bolts and 6x M8 washers using wrench 13 (1/2 in.). Refer to fig. 5.3.2.

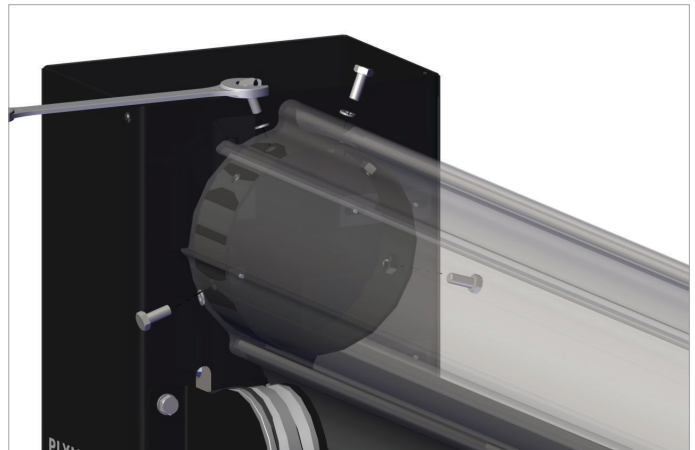


Fig. 5.3.2 Mounting the motor compartment to the rail

**TIP**

Mount the end plate of the CRS after the crab has been prepared and installed.

- Mount the rope brackets to the crab. (in the case of an existing system with an older crab, make sure to predrill holes in the crab!). Refer to fig. 5.3.3

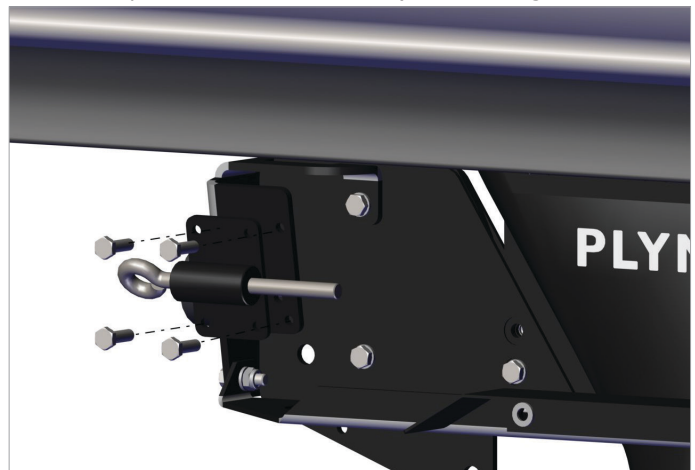


Fig. 5.3.3 Mounting the rope brackets on the crab

- Mount the switch activation bracket to the crab using 2x M6x20 bolts with washers and nuts. (in the case of an existing system with an older crab, make sure to predrill holes in the crab!). Refer to fig. 5.3.4.

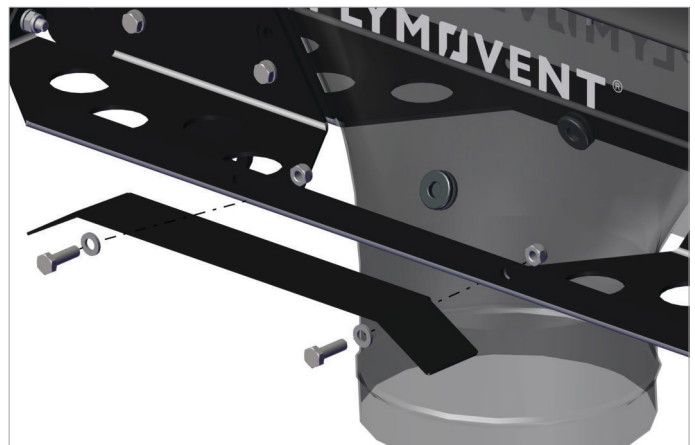


Fig. 5.3.4 Mounting the switch activation bracket on the crab

- In case of a new system, mount the crab in the rail.

- Mount the CRS cover plate to the other end of the rail, and secure with 6x M8x20 bolts and 6x M8 washers using wrench 13 (0,5 in.). Refer to fig. 5.3.5.

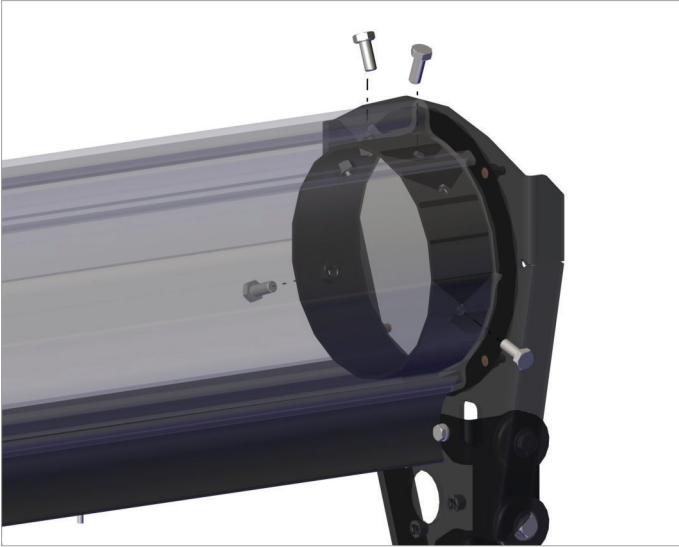


Fig. 5.3.5 Mounting the cover plate

- Mount the shock (for VEX systems, refer to fig. 4.3.7 or fig. 6.3.6 for the installation of the shock) or the hydraulic shock absorber (for FIRE systems) on the coverplate with the provided fastening materials. Refer to fig. 5.3.6

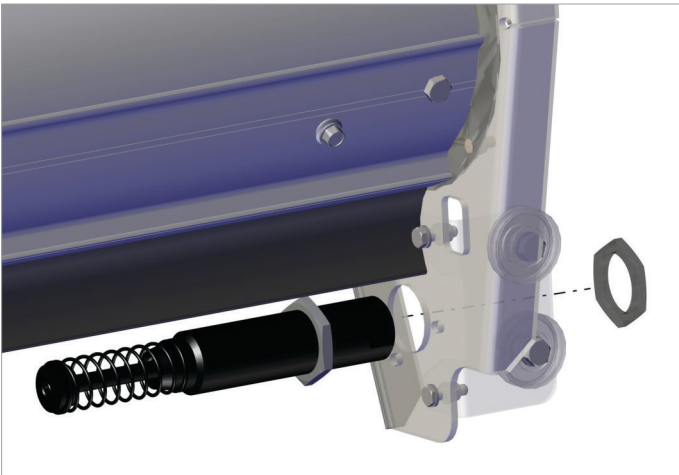


Fig. 5.3.6 Mounting the hydraulic shock on the cover plate

- Mount the stop bracket 200 mm (8 in.) from the end of the rail using self-tapping screws 6,3 x 25. Refer to fig. 5.3.8.



Fig. 5.4.7 Mounting the stop bracket

- Mount the limit switch bracket 25 mm (1 in.) next to the stop bracket self-tapping screws 6,3 x 25. Please note that the rubber bumper on the crab should almost hit the stop bracket when the limit switch is activated. Refer to fig. 5.3.8.

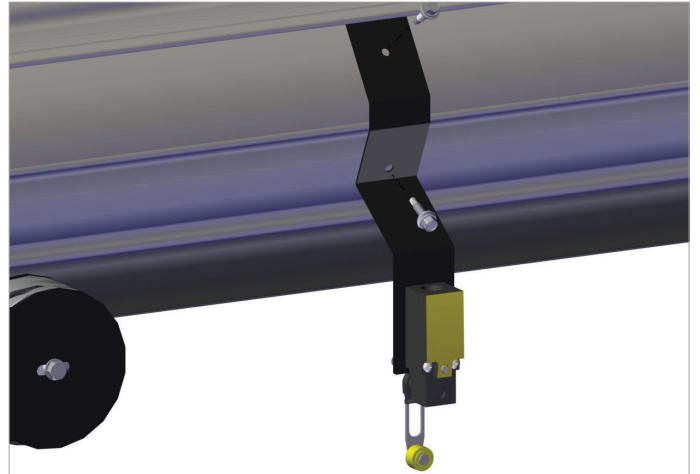


Fig. 5.3.8 Mounting the limit switch bracket

- Mount the second limit switch bracket on the other end of the rail using self-tapping screws 6,3 x 25.
- Mount the rope bracket(s) using self-tapping screws 6,3 x 25. Refer to fig. 5.3.9.



Fig. 5.3.9 Mounting the rope bracket

- Install the rope and tighten firmly. Make sure the tension on the rope is sufficient to create friction between the driven wheel on the motor plate.

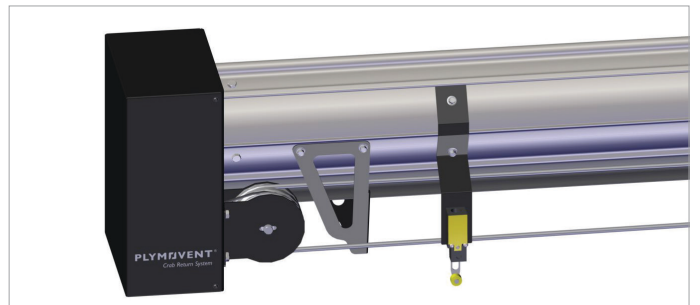


Fig. 5.3.10 Installing the rope

## 5.4 Electrical connections

- Make the electrical connections according to the supplied electrical diagram.



## 6 INSTALLATION VSRX

### 6.1 Unpacking

Make sure that the product is complete. The package contains:

- CRS unit
  - motor compartment
  - end plate with pulley wheel
  - limit switch
  - remote control
  - stop plate (2)
  - fastening materials

Rope set

	Rope set 10m	VSRX 20m	VSRX 35m
Rope	25 m	45 m	72 m
Curl hook	-	1 pc	2 pcs
Curl hook bracket	-	0 pc	0 pcs
Wire cable clamp	2 pcs	2 pcs	2 pcs
Plymovent label	2 pcs	4 pcs	6 pcs
Fastening materials	1 pc	1 pc	1 pc

### Mounting instruction

The system is configured in such a way that the motor will pull the crab towards the motor compartment. In case you would like to switch the pull direction, switch the 2 motor leads. See the supplied electrical diagram.

Please note that the side on which the Crab Return System will be mounted is fixed by the design of the motor compartment and placement of the pulley wheels. If the Crab Return System is used with a Pneumatic Grabber®, all required parts that are mounted on the rail and crab for the pneumatic system have to be on one side, and all parts for the CRS on the opposite side. It is advised to draw a layout prior to installation.

### 6.2 Installation

- With the use of the drill template drill a 9 mm hole on each side of the rail and two on the top of the rail. Refer to fig. 6.3.1.
- Repeat this step for the other end of the rail.

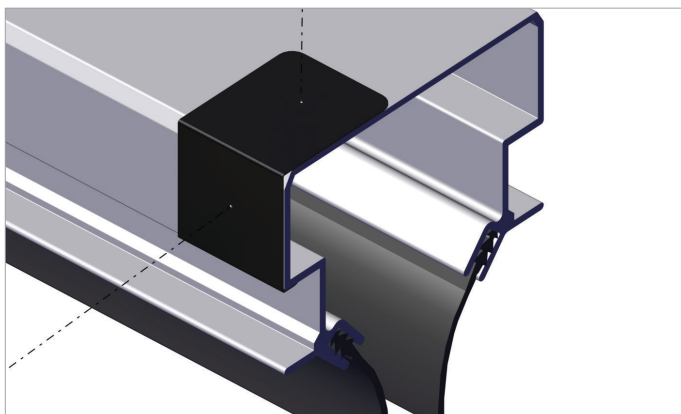


Fig. 6.3.1 Drill template on VSRX

- Mount the motor compartment to one end of the rail, and secure with 4x M8x20 bolts and 4x M8 washers using wrench 13 (0,5 in.). Refer to fig. 6.3.2.

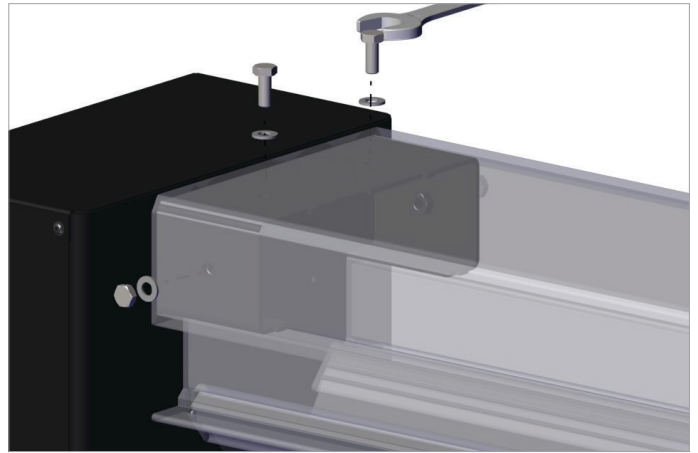


Fig. 6.3.2 Mounting the motor compartment to the rail



#### TIP

Mount the cover plate of the CRS after the crab has been prepared and installed.

- Mount the start/stop bracket to the crab using ..... Refer to fig. 6.3.3.

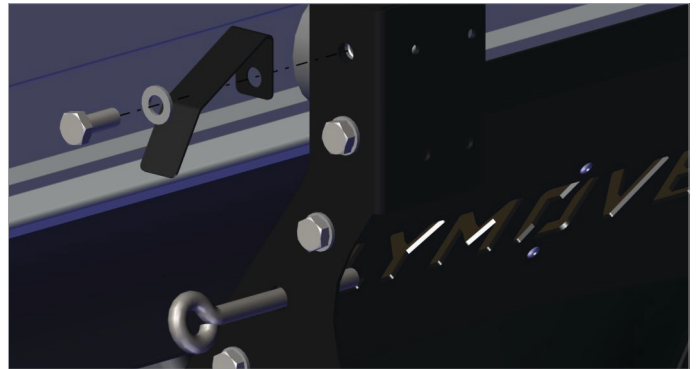


Fig. 6.3.3 Mounting the start/stop bracket on the crab.

- Mount the curl hooks for the rope on the crab. Refer to fig. 6.3.4.



Fig. 6.3.4 Mounting the curl hooks on the crab.

- In case of a new system, mount the crab in the rail.
- Mount the CRS cover plate to the other end of the rail, and secure with 4x M8x20 bolts and 4x M8 washers using wrench 13 (0,5 in.). Refer to fig. 6.3.5.

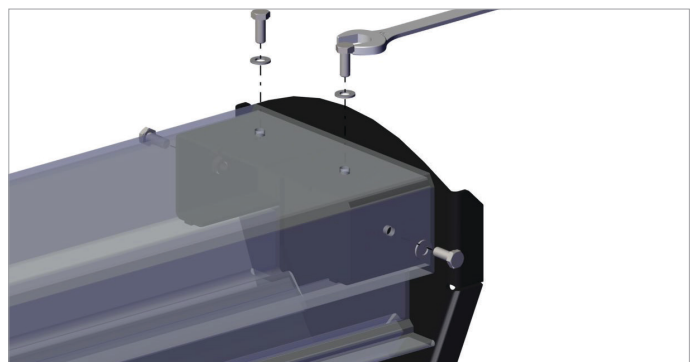


Fig. 6.3.5 Mounting the cover plate

- Mount the shock (for VEX systems) or the hydraulic shock absorber (for FIRE systems, refer to fig. 5.3.6 for the installation of the hydraulic shock absorber) on the coverplate with the provided fastening materials. Refer to fig. 6.3.6

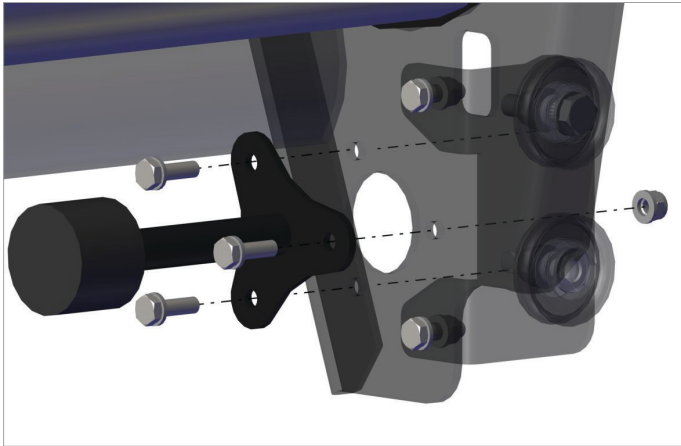


Fig. 6.3.6 Mounting the shock on the cover plate

- Mount the stop bracket 200 mm (8 in.) from the end of the rail using self-tapping screws 6,3 x 25. Refer to fig. 6.3.7.

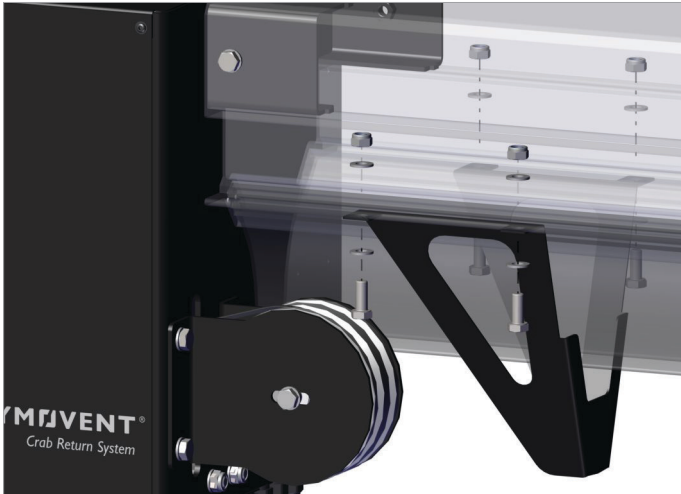


Fig. 6.3.7 Mounting the stop bracket

- Mount the limit switch directly on the rail 1 in. (25 mm) from the stop bracket using the supplied fastening material. Please note that the rubber bumper on the crab should almost hit the stop bracket when the limit switch is activated. Refer to fig. 6.3.8 for the position of the limit switch.
- Mirror the limit switch and repeat this step for the other end of the rail.



Fig. 6.3.8 Mounting the limit switch

- Mount the rope bracket(s) using self-tapping screws 6,3 x 25. Refer to fig. 6.3.9.

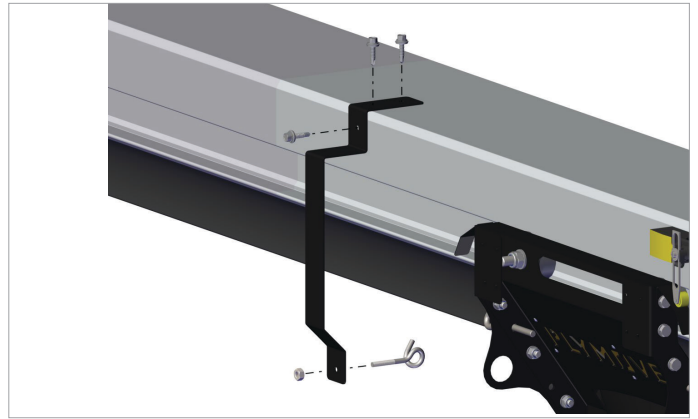


Fig. 6.3.9 Mounting the rope bracket

- Install the rope and tighten firmly. Make sure the tension on the rope is sufficient to create friction between the driven wheel on the motor plate.

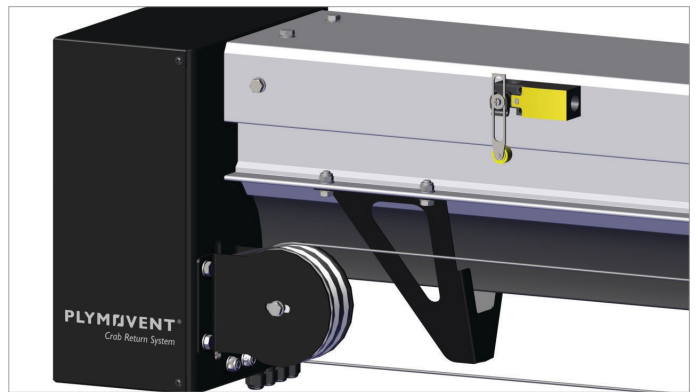


Fig. 6.3.10 Installing the rope

## 6.3 Electrical connections

- Make the electrical connections according to the supplied electrical diagram.

## 7 USE

- Push the start button of the CRS to return the crab to the starting position.
- Push the emergency stop to stop the CRS if required.  
**NOTE:** release (all) the emergency stops by turning the stop to the right and pulling it out to use the CRS again.



### ATTENTION

Always make sure the nozzle is disconnected from the vehicle before returning the crab using the CRS.



### ATTENTION

Make sure the airflow in the rail is terminated by shutting down the fan or closing the (optional) automatic damper when the crab is returning (slip might occur).

## 8 MAINTENANCE

### 8.1 Periodic maintenance

The product has been designed to function for a long time. In order to guarantee this, regular maintenance activities are required which are described in this chapter. The indicated maintenance intervals can vary depending on the specific working and ambient conditions. Therefore we recommend to have the complete product inspected once every year besides the indicated periodic maintenance. For this purpose contact your supplier.

Component	Action	Frequency: every X months	
		X=6	X=12
Motor compartment	Check for loose fastening material.		X
	Clean the outside with a non-aggressive detergent.		X
Rope	Check rope for visible damage e.g. broken threads. Replace if necessary.		X
		X*	
	Check the tension of the rope. If necessary adjust the tension.	X*	

\*) Before every use

Position	Article number	Description
E	0000113914	Motor
F	0000300741	V-belt

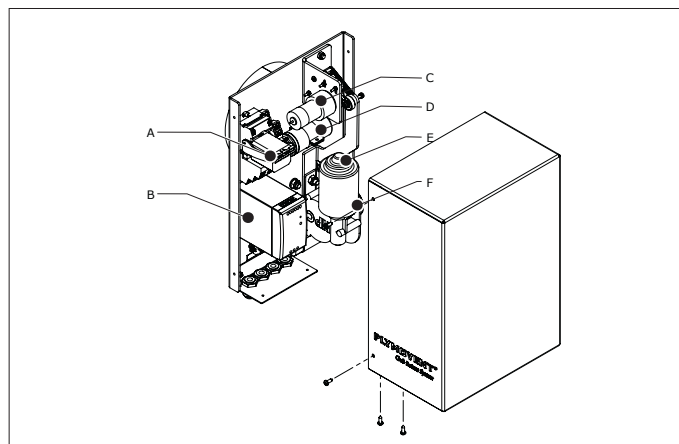


Fig. 10.1 Spare parts

## 9 TROUBLESHOOTING

Problem	Possible cause	Solution
The crab does not return to the starting position	No mains voltage	Connect the mains voltage
	The mains cord is defective	Repair or replace the mains cord
	The start stop actuators malfunction	Check continuity of the actuators
	Loose contacts	Inspect the contacts
The start button or return actuator on the rail is activated but the system does not move	The rope	Adjust the tension of the rope
	The emergency stop is activated	Release the emergency stop
	The power supply is overheated	The power supply will restart after 15 seconds
	The V-belt	Adjust the tension of the V-belt with the micro switches (refer to spare part drawing)

## 10 SPARE PARTS

The following spare parts are available for the product:

Position	Article number	Description
-	0000113944	Rope set 10 m
-	0000113945	Rope set 20 m
-	0000113946	Rope set 30 m
-	0000113963	Limit switch
-	0000300738	3/2 Solenoid Valve
A	0000300737	Relay CRS
B	0000300739	Power supply
C	0000300740	Motor Reductor CRS 24 [VDC] (1 pc)
D	0000300615	Cap. Electric CRS 22000 µF (1 pc)

## 11 DISPOSAL

After life of the product, dispose it of in accordance with federal, state or local regulations.

## 12 ELECTRICAL DIAGRAM

Refer to the separately supplied electrical diagram.

## CE DECLARATION

### CE declaration of conformity for machinery

We, Plymovent, Koraalstraat 9, 1812 RK Alkmaar, the Netherlands, herewith declare, on our own responsibility, that the product(s):

- Crab Return System (CRS)

which this declaration refers to, is/are in accordance with the conditions of the following Directive:

- 2006/42/EU Machine Directive  
- 2014/30/EU EMC

and is/are in conformity with the following harmonized standard(s) and/or other such normative documents + amendments, if any:

EN 12100:2010  
EN 60204-1:2006  
EN 61439-1:2009  
EN 610000-6-1:2007  
EN 610000-6-3:2007

Alkmaar, the Netherlands, June 30<sup>th</sup>, 2022

Kees Janssen  
Product Manager EE

