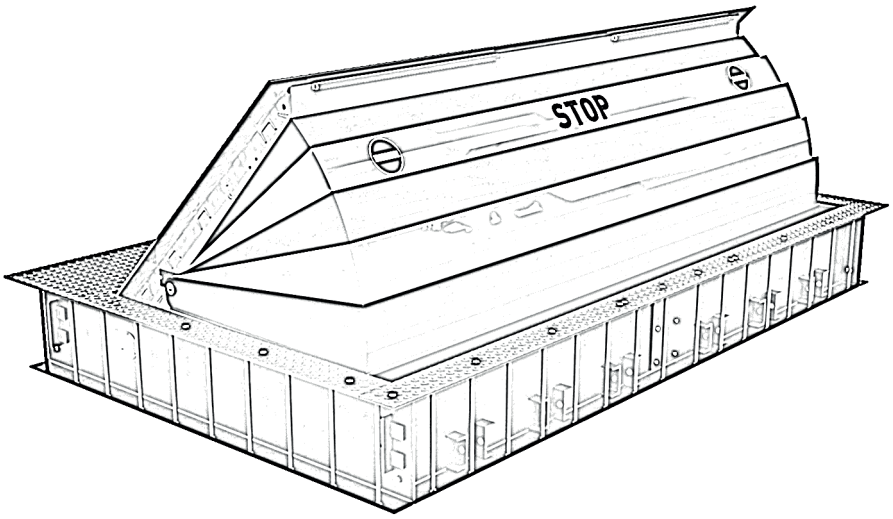
CAME

Shallow-Mount Road Blocker K12
HRBXXP90 SHLW

FA01902-EN



INSTALLATION, MAINTENANCE AND USER MANUAL

EN English

1 - GENERAL INFORMATION ABOUT THE USER MANUAL

Thank you for trusting us by choosing the CAME Road Blocker for transit control and security.

This document is designed to support installers, users, system integrators and operators, as well as to provide full details about the product and how to install it.

To protect human health and safety, each step in this user manual should be read carefully before installing the product and performing start-up.

- The purpose of this document is to support all parties in complying with safety requirements.
- This product should only be used for the purpose for which it was designed.
- Any other use will be considered dangerous. Any operation not expressly listed in this manual is prohibited.
- CAME cannot be held responsible for any damage caused by improper, incorrect or unreasonable use.
- This product is defined by the Machinery Directive (2006/42/EC) as partly completed machinery.
- Partly completed machinery means an assembly which is almost machinery but which cannot in itself perform a specific application.
- Partly completed machinery is only intended to be incorporated into or assembled with other machinery or other partly completed machinery or equipment thereby forming machinery to which the Machinery Directive (2006/42/EC) applies.
- The final installation must comply with the Machinery Directive (2006/42/EC) and the European reference standards in force.
- The safe and correct installation of the product relies on the suitability of the technical specifications, installation methods and use which are clearly stated in the technical documentation.
- To ensure the safe operation of your product with maximum performance and service life, please follow the instructions contained in this manual and keep it for future reference.
- In case of an unexpected error or operational problem, please consult the explanations in this document.
- Do not allow children or unauthorised people to come near the equipment during work. The manufacturer is not liable in case of non-compliance with the safety rules provided.
- In order to increase safety, loop detectors, safety photocells and similar safety equipment must be used.
- In case of violation of the requirements stated in the operational documents and the rules to be followed during operations, the Road Blocker's high voltage, high pressure and moving parts may pose a risk to human health and life.
- The device must be installed, wired, connected and tested according to good professional practice, in compliance with the standards and laws in force.
- Check that the temperature ranges given are suitable for the installation site.
- Prohibit access to unauthorised personnel during installation and commissioning.

Operators performing hydraulic and electrical maintenance, start-up, installation and repairs/modifications must have received training for this product model. Training must be given by the manufacturer or the manufacturer's representative. The manufacturer is not liable for safety weaknesses or damage that may occur due to interventions by untrained people.

DANGER! Only transport the Road Blocker facing down.

The area where the Road Blocker is located must contain warning signs in compliance with the regulations of the country where it is installed.

For the Road Blocker to operate safely, other warning signs must be placed at a proper distance from the Road Blocker area.

All vehicles passing over the Road Blocker must first stop in front of it.

Please contact us for more information.

For technical support or spare part replacement, contact customer services at https://www.came.com/global/en/contact-us or via the telephone number on the website.

Safety measures and important parts that need attention are also indicated with symbols. The symbols and warnings used are explained below.

DANGER! This warning symbol indicates dangerous situations that may arise suddenly and cause serious injuries if the necessary precautions are not taken.

WARNING! This warning symbol indicates possible dangerous situations that will cause serious injuries if the necessary precautions are not taken.

ATTENTION! This warning symbol indicates possible dangerous situations that will cause injuries requiring medical attention if the necessary precautions are not taken.

This symbol indicates that there is important information about the product that will be useful.

This symbol indicates high voltage and risk of electric shock.

2.1. Safety warnings

WARNING! For the safety and proper operation of the Road Blocker, all installation and repair work must be carried out by authorised technical personnel only. Never operate without making sure that all individuals and objects have been moved away from the Road Blocker and its surroundings. During operations such as installation, start-up, maintenance/repair, the Road Blocker must be closed to traffic with appropriate warning signs. SUITABLE TRAFFIC SAFETY MEASURES MUST BE TAKEN BEFORE THE INTERVENTION!

2.2. Handling and installation instructions

Handling guidelines
1. Lift the Road Blocker from the transport vehicle using a suitable forklift/crane.
2. Using the eye bolts on the four corners of the Road Blocker, hoist it with the help of a crane of suitable strength and place it on the ground.

Ground installation (construction work)
1. A competent construction contractor is recommended.
2. It must be ensured that ground installation is completed in full compliance with the installation instructions.

2.3. Instructions for the installer

- Please read all instructions in the manual carefully before installation and start-up.
- This manual is intended for professional installers and authorised personnel only.
- The manufacturer is not responsible for any personal or financial loss that may occur due to incorrect installation, use, maintenance and service of CAME equipment.
- The area where the installation will be made must be carefully evaluated and determined in terms of suitability for the installation, operation and maintenance of the equipment. The equipment should not be installed on stream beds, coastal areas exposed to salty water, sloping surfaces and other areas subject to landslides and other similar risks.
- In order to prevent flooding in the area where the installation will be made, the customer must have adequate, functioning drainage infrastructure to provide water drainage. CAME cannot be held responsible for malfunctions, damage, accidents and safety problems due to incorrect selection of the installation site, faulty installation or drainage infrastructure shortages, floods or similar.
- The disposal of packaging materials following installation must be in accordance with the required standards.
- If the product is found to be faulty or defective, please contact the CAME Technical Service Department.
- Speed limit signs, surface warning signs and appropriately spaced bumps that can be easily seen from a distance and that allow drivers to safely slow down and stop before entering the equipment operating area must be put in place.
- Appropriate risk assessment before the equipment's start up operation should be performed and methods for use should be agreed upon and established.
- The person responsible for the installation of the product is obliged to take and implement the safety measures specified in this document and comply with all applicable laws, regulations and safety standards during installation.

WARNING! Installation, maintenance and service operations for this equipment must be carried out by qualified technical personnel who have been trained on the subject, using appropriate tools and equipment in accordance with the manufacturer's instructions. Do not install the product in extreme weather conditions such as heavy rain, snowfall or storms, or when visibility is low.
The use of components and materials not specified in this manual and not included in the shipping content, as well as any changes to the product content, are prohibited. The manufacturer is not liable for any safety weaknesses or damage that may arise from this situation. Before equipment start-up in the area where it will be installed, all traffic-control and safety measures must be implemented in order to ensure the safety of human life and property. The product must be installed when the power is off.

DANGER! Never perform any work on the Road Blocker if it is not in the FULLY DOWN POSITION.

Check for the presence of the plate displaying the manufacturer and product details on the product.
The product, designed and manufactured following the European Union directives, must be marked in accordance with CE standards.

2.4. Instructions for the user

- All safety instructions in this manual are important. The specified operating rules and safety instructions must be followed carefully.
- Product components should never be modified.
- This product should only be used for the purpose for which it was designed.

WARNING! It must be ensured that all fixed and remote control buttons only be used by trained, competent and responsible personnel. The Road Blocker is made of heavy elements and moving parts that can cause injuries if safety conditions are not observed. In case of malfunctions, do not attempt to repair or adjust the Road Blocker yourself. Cut off the electricity supply and ask for the technical intervention of expert personnel. If repairs or changes to system settings become necessary, close the passageway and do not use it until the original safety conditions have been restored.
OPERATIONS THAT ARE NOT NECESSARY AND NOT SHOWN IN THE MANUAL ARE STRICTLY PROHIBITED.

- The manufacturer is not liable for safety violations or any improper use of the product by the user.
- Working near a moving Road Blocker should be avoided.
- Always disconnect the power supply before performing any cleaning or maintenance.
- Never use the Road Blocker without first making sure there are no people or objects on or around it.
- Do not allow any intervention when the Road Blocker is not completely in the DOWN POSITION.
- If there is an evident fault with the hydraulic components (oil leakage, unusual noise or vibration), do not try to start the unit. Contact the authorised service personnel.

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OPERATIONS THAT ARE NOT NECESSARY AND NOT SHOWN IN THE MANUAL ARE STRICTLY PROHIBITED.

DANGER! Unauthorised and untrained people must never be allowed to perform operations on the hydraulic power unit or control buttons, use or tamper with the equipment, or change any setting, connection or mode of operation.

- Traffic control lights and signs must be located at the appropriate height and position to provide high visibility and allow drivers and pedestrians to stop safely before the equipment enters the operating area.
- A properly placed loop detector system must be in place to prevent accidental lifting of the Road Blocker when a vehicle is on it. In order to prevent accidents that may occur when this system (RECOMMENDED FOR USE) is not available, the Road Blocker and its surroundings must be carefully observed by the user before each down/up movement.
- An optional arm barrier that works in sync with the equipment should be used where possible.
- Operator control buttons should be placed on the security building wall in a location where approaching traffic can be clearly observed and the risk of accidental button pressing is minimal.
- To ensure the equipment operates safely and correctly, the Periodic Maintenance Table attached to this document must be regularly followed and implemented by qualified technical personnel.
- The product owner is obliged to have one or more members of authorised personnel responsible for controlling the system and directing vehicle users to the correct entrances and exits.
- User personnel should be trained. Training should include instructions on occupational safety and known hazards, including normal and emergency use.

2.5. Residual risks

The automation has been designed and built in accordance with the current MACHINERY DIRECTIVE.
A risk analysis has highlighted the following residual risks that cannot be completely eliminated.
- Risk of entrapment
- Risk of collision due to the Road Blocker not being signalled correctly due to low visibility
- Danger of tripping in the vertical plane due to the Road Blocker being caught during its movement
- Danger of tripping in the vertical plane due to the presence of a person or object on the Road Blocker

An appropriate risk assessment should be carried out by the access manager. This should be done taking into account the environment in which the Road Blocker is installed. Operating methods should be agreed on and determined before the equipment is used.

2.6. Terms of use

- A vertical sign is recommended to warn users of the presence of the obstacle and notify them of the traffic rules
- Adding a traffic light improves safety (red and green light).
- For safety reasons, CAME recommends vehicles stop in front of the Road Blocker and wait for it to fully lower (and change from a red to a green light if the device has a light) before passing.
- Since CAME cannot be held responsible for any misuse or non-compliance with safety rules, the access operator must inform the users about the transition and working function.
- Frequently check the installation according to the periodic maintenance manual to detect possible defects and signs of wear or damage to moving parts and all connection points and devices. The inspection performance and the presence of any faults must be recorded in the maintenance log.

2.7. Use limitations

- In case of use or modification of components not supplied by CAME (unless CAME has given written permission), CAME declines any liability for the safe and correct operation of the Road Blocker.
- Never modify the original parts in the system.
- Using the Road Blocker for lifting weights or for other purposes not expressly stated is strictly prohibited.
- The Road Blocker covers a very wide area. This means that magnetic sensors are only used to detect vehicles, allow checks and operate lights. Sensors do not make the Road Blocker's surface safe. The roadblocker should be operated visually.

2.8. Tools and equipment

Make sure you have all the general equipment required for assembly.
Due to the weight of the Road Blocker, suitable lifting equipment should be used to ensure safety and avoid damaging the equipment during installation. Select equipment with features that comply with applicable regulations and are compatible with the Road Blocker. The equipment required for assembly is as follows:
- C 30 quality concrete
- Diameter 100 mm pipe 12 meters (for hydraulic hoses and cable)
- Diameter 100 mm pins or T-pipes and elbows (for water drainage)
- Construction machine for opening the Road Blocker installation hole
- Forklift or the machine mentioned in the above point for unloading the products from the vehicle to the site and hole
- Construction equipment for digging the drain pipe from the opened hole to the water drain
- A shovel or construction equipment (where there is concrete) for digging to lay the hydraulic hoses from the opened hole to the power unit
- A pipe, minimum diameter 40 mm, and a shovel or construction equipment (where there is concrete) for digging to lay the cables between the loop detector and the traffic light and the power unit
- A pipe, minimum diameter 40 mm, and a shovel or construction equipment (where there is concrete) for digging to lay the power cable between the power unit and the area from which power will be received
- A pipe, minimum diameter 40 mm, and a shovel or construction equipment (where there is concrete) for digging and excavating to lay the control cable between the power unit and the area where the manual control will be placed
- 3 x tubes of chemical anchor for installing the power unit and traffic light.

The tools and protective equipment for occupational health and safety to be used during assembly are as follows:


Protective clothing - work clothing - knee pads


Protective glasses


Protective shoes - work shoes


Protective gloves

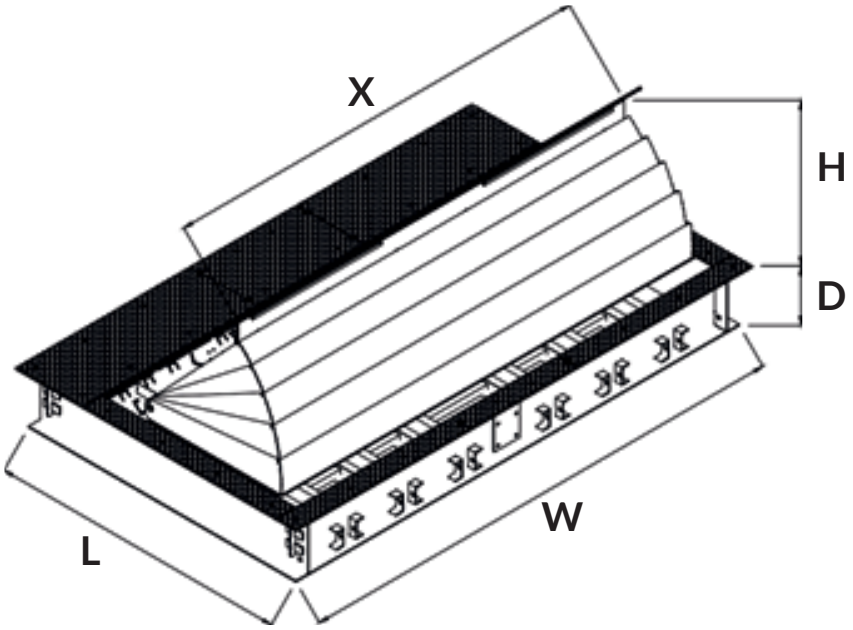

Safety helmet

3 - ROAD BLOCKER GENERAL INFORMATION

Road Blockers are designed to provide a high level of protection where vehicle-based threats and deterrence in protected areas may occur. Besides providing protection against potential threats, they can also be used for vehicle access control or for traffic-regulation purposes in high security zones. The system can also stop high-tonnage vehicles, causing severe damage to the vehicle's power train, engine, steering system and wheels.

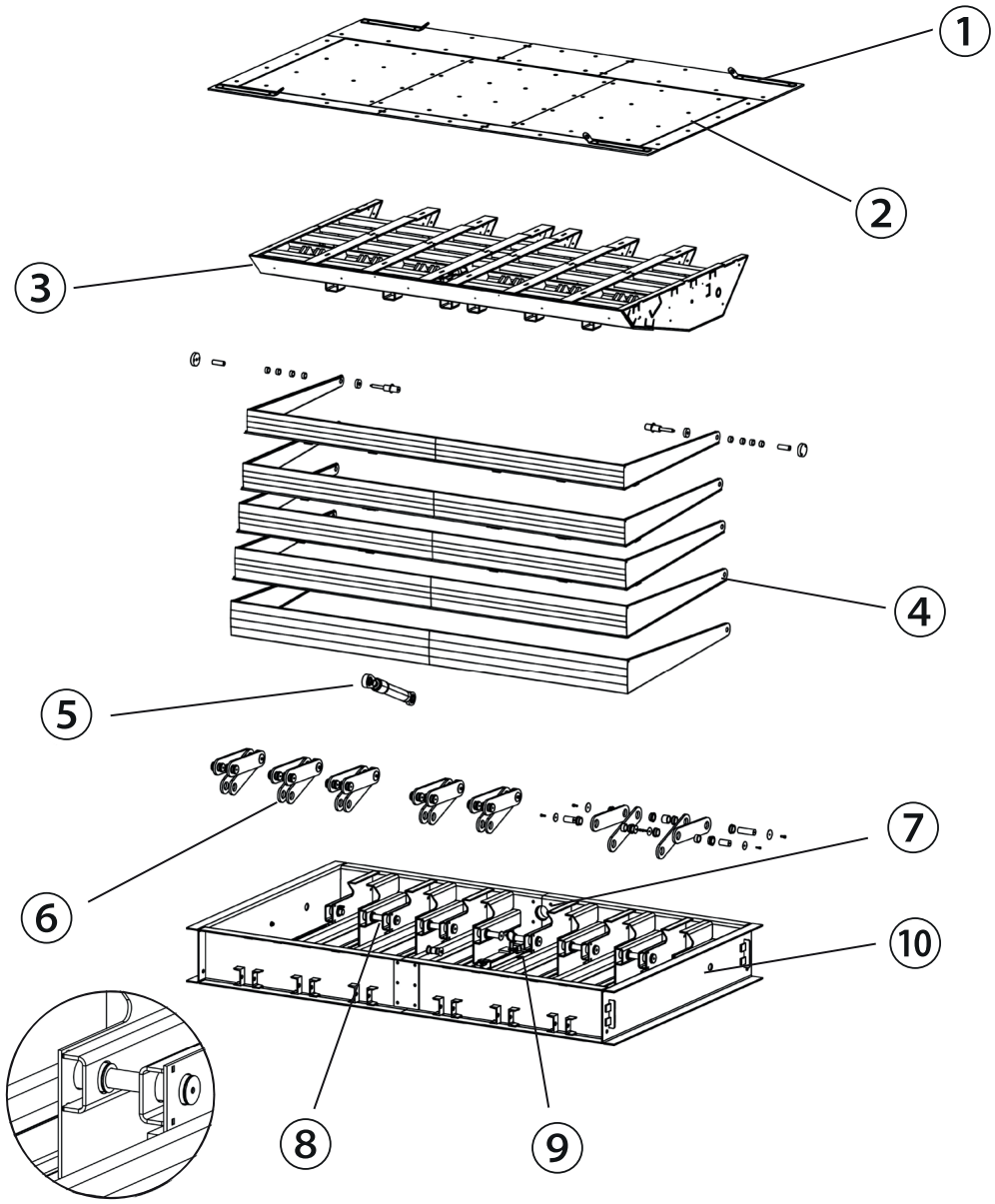
3.1. Road Blocker general features

Type	HRB20	HRB25	HRB30	HRB35	HRB40	HRB45	HRB50	HRB55	HRB60
IP class	IP 68 - Hydraulic piston								
Operating oil temperature	-0°C / 55°C (opt. -20°C / 70°C)								
Cylinder unit	Dust-protected hydraulic cylinder for severe conditions.								
Nominal width (m)	2	2.5	3	3.5	4	4.5	5	5.5	6
Mobile board weight (kg)	1,010	1,220	1,440	1,660	1,850	2,100	2,310	2,530	2,740
No. cylinders	1	1	1	2	2	2	2	2	2
Bore size (mm)	63	63	63	63	63	63	63	63	63
Rod diameter (mm)	45	45	45	45	45	45	45	45	45
Pression on pushing area (bar)	70	80	90	50	60	60	70	75	80
Flow rate for ascent in 6 s (l/min)	10	10	10	20	20	20	20	20	20
Flow rate for ascent in 1.5 s (l/min)	40	40	40	80	80	80	80	80	80



Product code	Collision Unit Width - mm (X)	Dimensions - mm (LxWxD)	Estimated Total Weight (kg)	Total width (mm)
HRB 20P 90 SHLW	2,000	2,200 x 2,450 x 400	2,300	2,550
HRB 25P 90 SHLW	2,500	2,200 x 2,950 x 400	2,600	3,050
HRB 30P 90 SHLW	3,000	2,200 x 3,450 x 400	3,000	3,550
HRB 35P 90 SHLW	3,500	2,200 x 3,950 x 400	3,300	4,050
HRB 40P 90 SHLW	4,000	2,200 x 4,450 x 400	3,700	4,550
HRB 45P 90 SHLW	4,500	2,200 x 4,950 x 400	4,100	5,050
HRB 50P 90 SHLW	5,000	2,200 x 5,450 x 400	4,350	5,550
HRB 55P 90 SHLW	5,500	2,200 x 5,950 x 400	4,700	6,050
HRB 60P 90 SHLW	6,000	2,200 x 6,450 x 400	5,000	6,550

3.2. Road blocker structure



The Road Blocker structural components are as follows:

1. Crane lifting flats (eye bolts)
2. Vehicle transition surface
3. Road Blocker collision unit
4. Telescopic front panel
5. Hydraulic piston
6. Road Blocker underground unit - collision unit switch connection
7. Hydraulic hose and cable pass-through hole
8. Joint connection structure
9. Lowering and rising limit sensors
10. Road Blocker underground unit

4 - ROAD BLOCKER CONSTRUCTION ENGINEERING, INSTALLATION AND COMMISSIONING

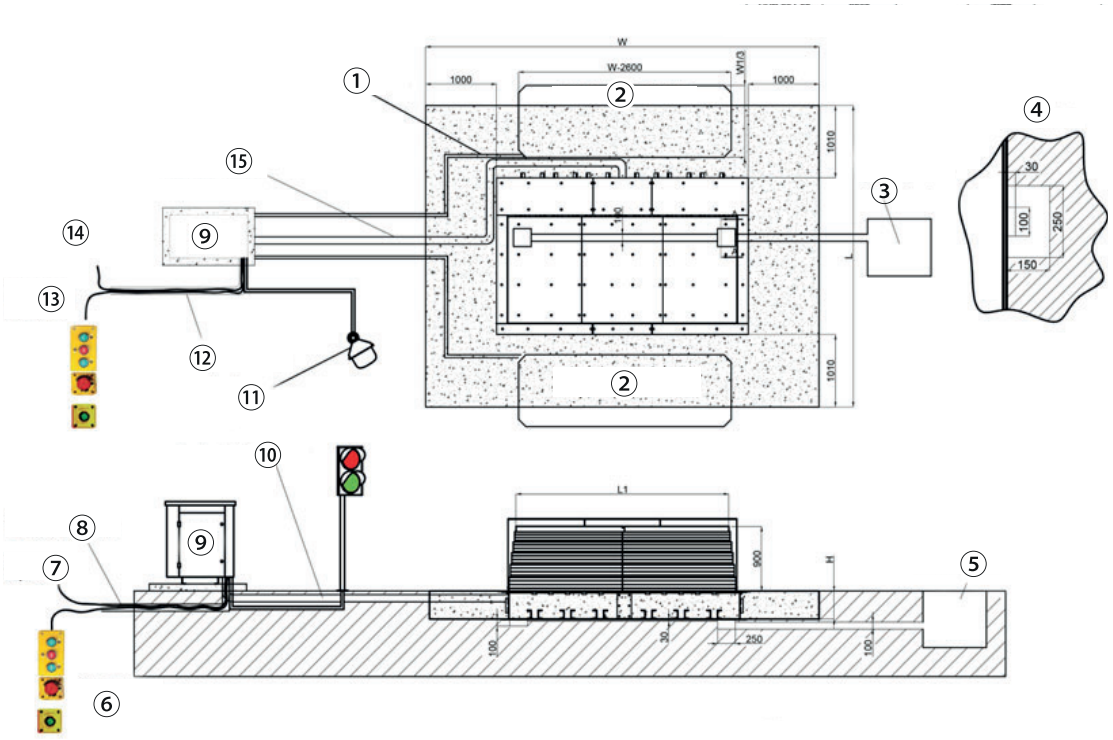
4.1. Road blocker construction engineering and installation

During assembly and installation, the area should be arranged as required by regulations and standards. Pedestrian and vehicular traffic is prohibited and the area must be closed and marked with appropriate means during this period. Protections will be removed after the start-up tests.
When selecting the installation area: • Check soil resistance and hardness. • Check there are no mains lines (gas, telephone, electricity, water, etc.). • Check the possibility of burying the cable casing between the hydraulic power unit and the Road Blocker to the depth required by the applicable standards in the country. • Check the power line connectivity to the hydraulic power unit. • Check protection against flowing water. • When the Road Blocker is in the lowered position, make sure there are no obstacles around it that could cause pedestrians or cyclists to stumble.
The Road Blocker is equipped with lifting loops for easy handling. Use appropriate tools to operate the Road Blocker safely. The Road Blocker must be lifted and moved in a levelled position.

DANGER! • Make sure that there are no underground infrastructure in the assembly area! • Do not allow strangers to enter the assembly area! • Observe the safety regulations for occupational health and safety throughout the installation!

See below for the complete installation diagram of the Road Blocker and hydraulic power unit with other system elements.

Road Blocker and hydraulic power unit: other system elements and full installation list



Product code	W	L	L1	H
HRB 20P 90 SHLW	4550	4200	2000	400
HRB 25P 90 SHLW	5050	4200	2500	400
HRB 30P 90 SHLW	5550	4200	3000	400
HRB 35P 90 SHLW	6050	4200	3500	400
HRB 40P 90 SHLW	6550	4200	4000	400
HRB 45P 90 SHLW	7050	4200	4500	400
HRB 50P 90 SHLW	7550	4200	5000	400
HRB 55P 90 SHLW	8050	4200	5500	400
HRB 60P 90 SHLW	8550	4200	6000	400

1. Loop detector cable way (Ø 40mm)
2. Loop detector
3. Water drainage pit to which the drainage pipes are connected (in a suitable place)
4. Detail of the drainage pit
5. Water drainage pit to which the drainage pipes are connected (in a suitable place)
6. 10 m standard control cable
7. Power cable
8. Power and control cable ways (Ø 100mm)
9. Hydraulic power unit
10. Hydraulic pipe and cable way towards the Road Blocker (Ø 100mm)
11. Traffic light cable way (Ø 40mm)
12. Power and control cable ways (Ø 100mm)
13. 10 m standard control cable
14. Power cable
15. Hydraulic pipe and cable way towards the Road Blocker (Ø 100mm)

Summary of assembly procedure

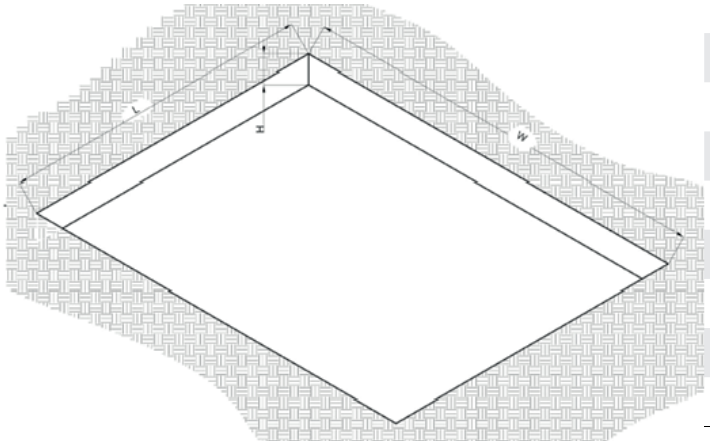
1. Dig the hole for installation. 2. Determine the Road Blocker drainage system and prepare the hole. 3. Position and handle the Road Blocker correctly. 4. Connect the drainage system. 5. Construct and connect the Road Blocker reinforcement. 6. Connect the pipe through which the Road Blocker, hydraulic hose and electrical connections will pass. 7. Pour the concrete after the structure is built.
Perform the installation by following the detailed steps and drawings in the assembly procedure below. If your situation is different to the one specified in the manual, please contact the manufacturer.

WARNING! IT IS DANGEROUS AND PROHIBITED FOR INSTALLERS TO PERFORM OPERATIONS THAT ARE NOT REQUIRED AND NOT SHOWN IN THE MANUAL. Installation operations must be carried out by competent and experienced personnel who have gone through the necessary training. During assembly, attention should be paid to safety precautions and occupational health and safety rules.

4.1.1. Digging an installation hole of appropriate dimensions for the selected Road Blocker.

- Make the necessary markings on the excavation area according to the Road Blocker dimensions.
- Use a suitable construction machine to dig a hole of an appropriate size for the Road Blocker, according to the dimensions specified in the table.

DRAWING 6: Installation pit drawing
All measurements are in millimetres



Product code	W	L	H
HRB 20P 90 SHLW	4550	4200	400
HRB 25P 90 SHLW	5050	4200	400
HRB 30P 90 SHLW	5550	4200	400
HRB 35P 90 SHLW	6050	4200	400
HRB 40P 90 SHLW	6550	4200	400
HRB 45P 90 SHLW	7050	4200	400
HRB 50P 90 SHLW	7550	4200	400
HRB 55P 90 SHLW	8050	4200	400
HRB 60P 90 SHLW	8550	4200	400

The ground safety stress for the excavated pit should be at least ½ kg/cm2; if it is not, it should be brought to this level.
When the ground is brought to this level, there is no need to concrete the ground during installation.

4.1.2. Determining the Road Blocker drainage system and preparing the hole.

1. The ground safety tension of the installation hole should be at least 1/2 kg/cm^2; if it is not, it should be brought to this level.
2. Place manholes and drainage pipes – the number of which varies depending on the Road Blocker size – in the excavated hole at regular intervals.
3. Connect the manholes and drainage pipes to the drainage. With a suitable slope in the drainage hole, water is transferred to the mains water system.

If there is no suitable slope from the drainage well to the mains water system, or if there is a risk of the drainage hole overflowing, the accumulated water is discharged with an optional submersible pump placed at the bottom of the drainage well.

4.1.3. Positioning and handling the Road Blocker correctly in the area

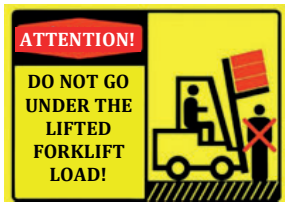
WARNING! During transportation, safety rules must be observed according to appropriate standards.
Rope lifting operations must be done with construction machines that have a work permit and appropriate features. The presence of unauthorised persons during the rope lifting operations is prohibited.
The measures specified in the handling safety instructions below must be carefully followed before installation.

Precautions when transporting the equipment

1. The forklift and crane must be used by authorised personnel who have an operator license.
2. All occupational health and safety, forklift and crane general safety and operating instructions must be followed.

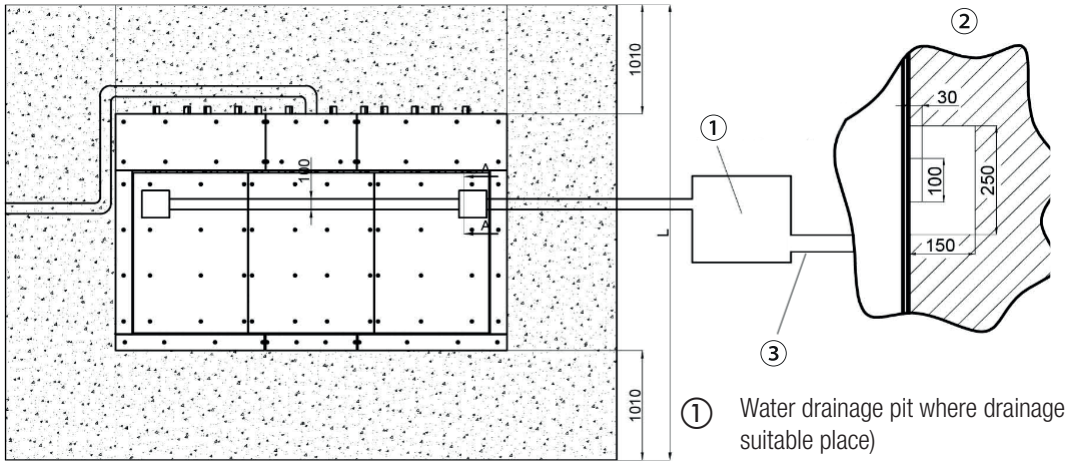
Positioning the Road Blocker

1. Open the Road Blocker packaging.
2. Check whether the Road Blocker has undergone any structural deformation during transportation.
3. Attach ropes to the eye bolts on the upper surface of the Road Blocker.
4. Lift the Road Blocker using the construction machinery and place it in the assembly hole in the designated position.



4.1.4. Connecting the drainage system

Assemble the Road Blocker and drainage system as shown in DRAWING below and connect to the system.

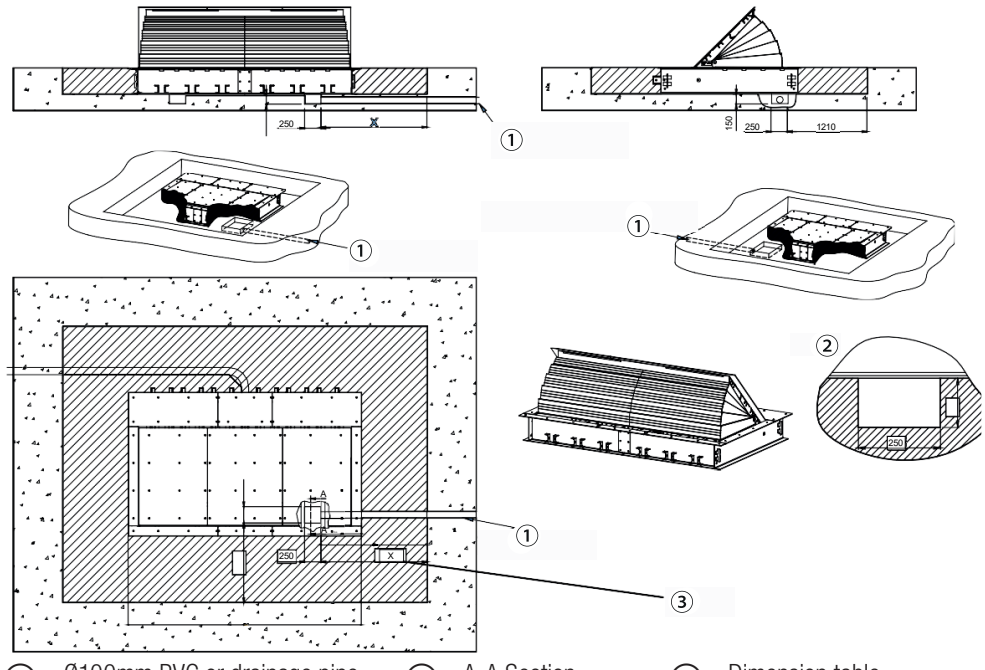


① Water drainage pit where drainage pipes are connected (in a suitable place)

② Drainage pit section

③ Mains rain system connection pipe

If there is no suitable slope from the drainage hole to the mains water system, or if there is a risk of the drainage hole overflowing, the accumulated water is discharged with an optional submersible pump placed at the bottom of the drainage well.



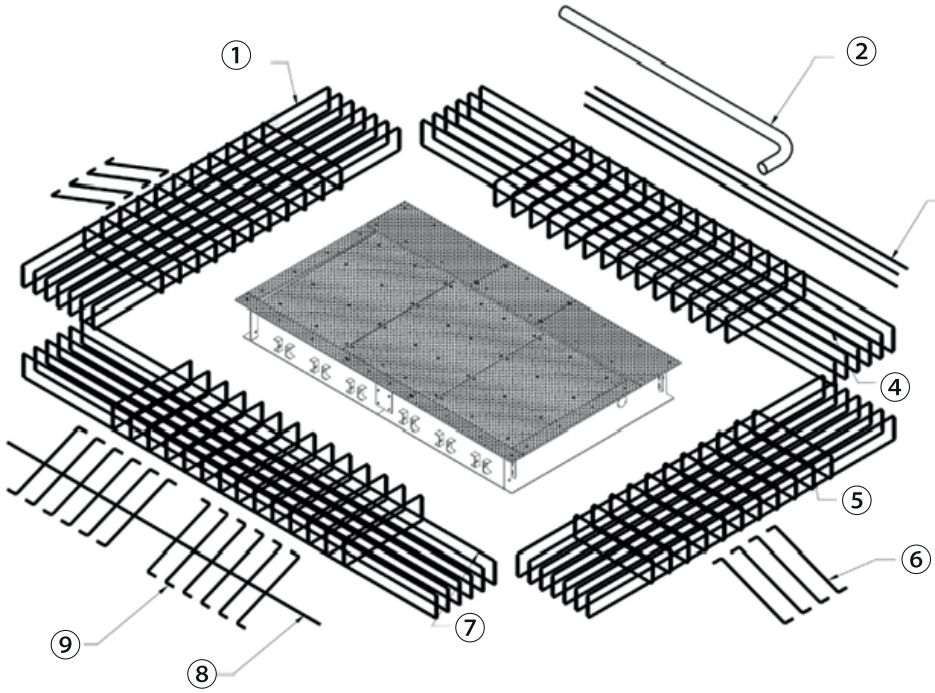
Product code	X LENGTH (mm)
HRB 20P 90 SHLW	1604
HRB 25P 90 SHLW	1826
HRB 30P 90 SHLW	1614
HRB 35P 90 SHLW	1753
HRB 40P 90 SHLW	1772
HRB 45P 90 SHLW	1560
HRB 50P 90 SHLW	1463
HRB 55P 90 SHLW	1463
HRB 60P 90 SHLW	1463

① Ø100mm PVC or drainage pipe ② A-A Section ③ Dimension table

The number of manholes may vary depending on the Road Blocker size.

4.1.5. Constructing and connecting the Road Blocker reinforcement

Below is an overview of the iron reinforcement sets and other parts.
DRAWING 9: Road blocker iron reinforcement sets and other components.

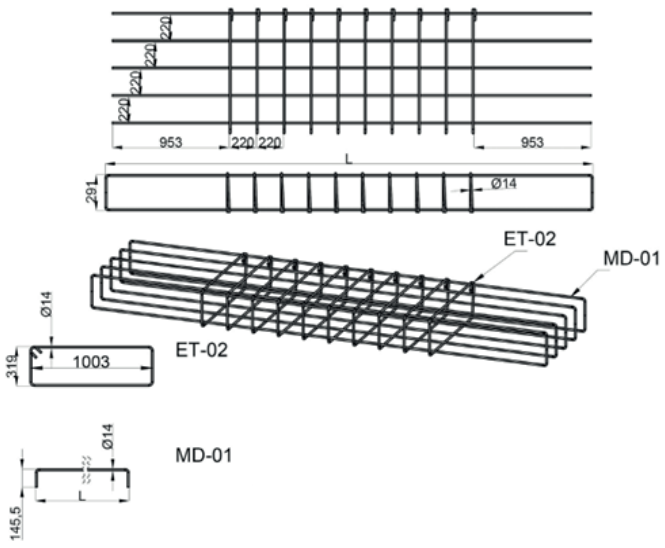


1. Right iron reinforcement set
2. Ø 100 mm pipe for cable and hydraulic hose in PVC or similar
3. C06
4. Rear reinforcement set
5. Left iron reinforcement set
6. C03
7. Front iron reinforcement set
8. C06
9. C03

All dimensions are in millimetres.

Right and left iron reinforcement sets

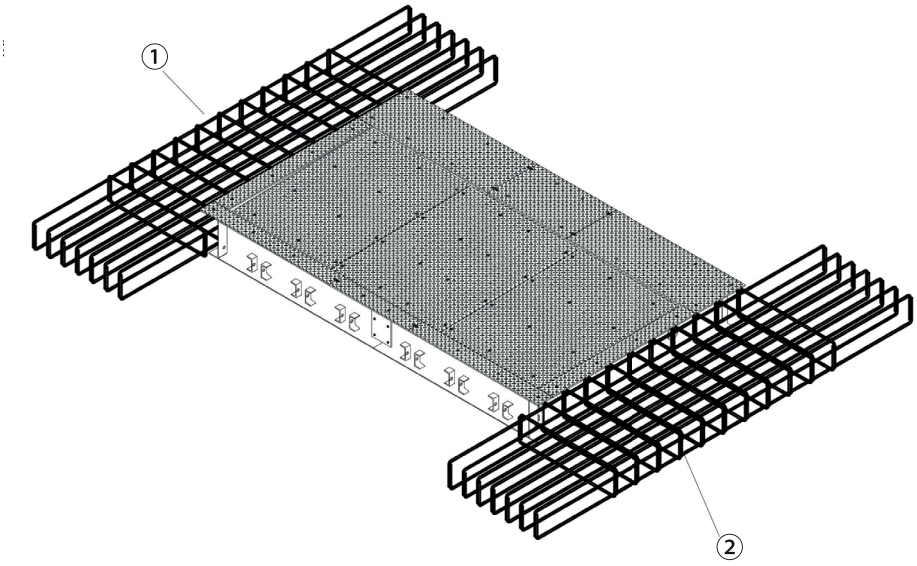
All dimensions are in millimetres.



Product code	ET-02	MD-01	L
HRB 20P 90 SHLW	10 pieces	10 pieces	2,900
HRB 25P 90 SHLW	10 pieces	10 pieces	3,400
HRB 30P 90 SHLW	10 pieces	10 pieces	3,900
HRB 35P 90 SHLW	10 pieces	10 pieces	4,400
HRB 40P 90 SHLW	10 pieces	10 pieces	4,900
HRB 45P 90 SHLW	10 pieces	10 pieces	5,400
HRB 50P 90 SHLW	10 pieces	10 pieces	5,900
HRB 55P 90 SHLW	10 pieces	10 pieces	6,400
HRB 60P 90 SHLW	10 pieces	10 pieces	6,900

4.1.6. Installing the Road Blocker's right and left iron reinforcement sets.

The right and left iron reinforcement sets mentioned above are prepared according to the Road Blocker dimensions and placed on the right and left sides of the Road Blocker.

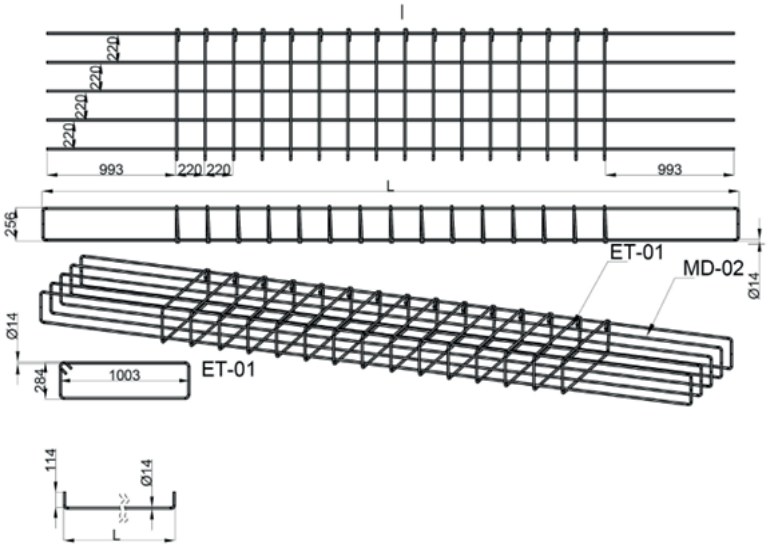


① Right iron reinforcement set assembly

② Left iron reinforcement set assembly

All dimensions are in millimetres.
Please do not scale this drawing. Work only in the dimensions shown. This document was designed by CAME. All rights reserved.

Front and rear iron reinforcement sets



Product code	ET-01	MD-02	L
HRB 20P 90 SHLW	12 pieces	10 pieces	4,300
HRB 25P 90 SHLW	14 pieces	10 pieces	4,800
HRB 30P 90 SHLW	16 pieces	10 pieces	5,300
HRB 35P 90 SHLW	18 pieces	10 pieces	5,800
HRB 40P 90 SHLW	20 pieces	10 pieces	6,300
HRB 45P 90 SHLW	22 pieces	10 pieces	6,800
HRB 50P 90 SHLW	24 pieces	10 pieces	7,300
HRB 55P 90 SHLW	26 pieces	10 pieces	7,800
HRB 60P 90 SHLW	28 pieces	10 pieces	8,300

All dimensions are in millimetres.
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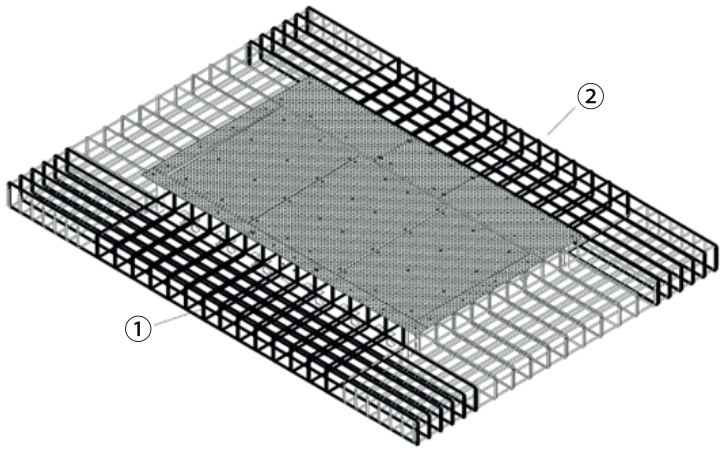
4.1.7. Installing the Road Blocker's front and rear iron reinforcement sets.

The front/rear reinforcement sets specified in DRAWING above are prepared according to the Road Blocker dimensions and placed on the front and rear of the Road Blocker.

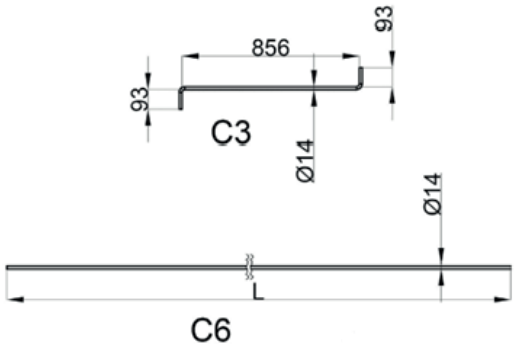


① Front iron reinforcement set assembly

② Rear iron reinforcement set assembly

All dimensions are in millimetres.
Please do not scale this drawing. Work only in the dimensions shown. This document was designed by CAME. All rights reserved.

The number of iron rods – which varies depending on the width of the Road Blocker – should be as follows.
Drawing of the components connecting the iron reinforcement and the Road Blocker



Product code	C3	C6	L
HRB 20P 90 SHLW	16 pieces	4 pieces	3,000
HRB 25P 90 SHLW	18 pieces	4 pieces	3,500
HRB 30P 90 SHLW	20 pieces	4 pieces	4,000
HRB 35P 90 SHLW	22 pieces	4 pieces	4,500
HRB 40P 90 SHLW	24 pieces	4 pieces	5,000
HRB 45P 90 SHLW	26 pieces	4 pieces	5,500
HRB 50P 90 SHLW	28 pieces	4 pieces	6,000
HRB 55P 90 SHLW	30 pieces	4 pieces	6,500
HRB 60P 90 SHLW	32 pieces	4 pieces	7,000

All dimensions are in millimetres.
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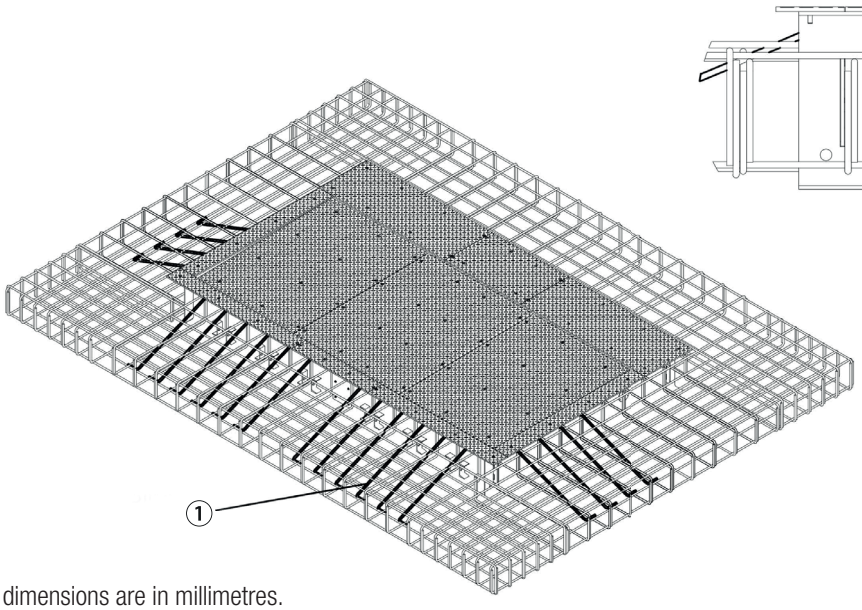
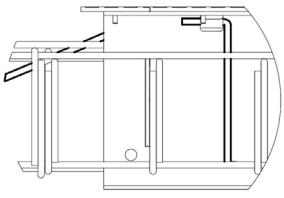
4.1.8. Connecting C3 iron rods to the Road Blocker

Depending on the Road Blocker dimensions, iron rods are generated in the sizes and quantities specified in DRAWING above. They enable the iron reinforcement to be connected to the Road Blocker.
IRON BAR ASSEMBLY





① 20 pcs C3 iron bar

All dimensions are in millimetres.
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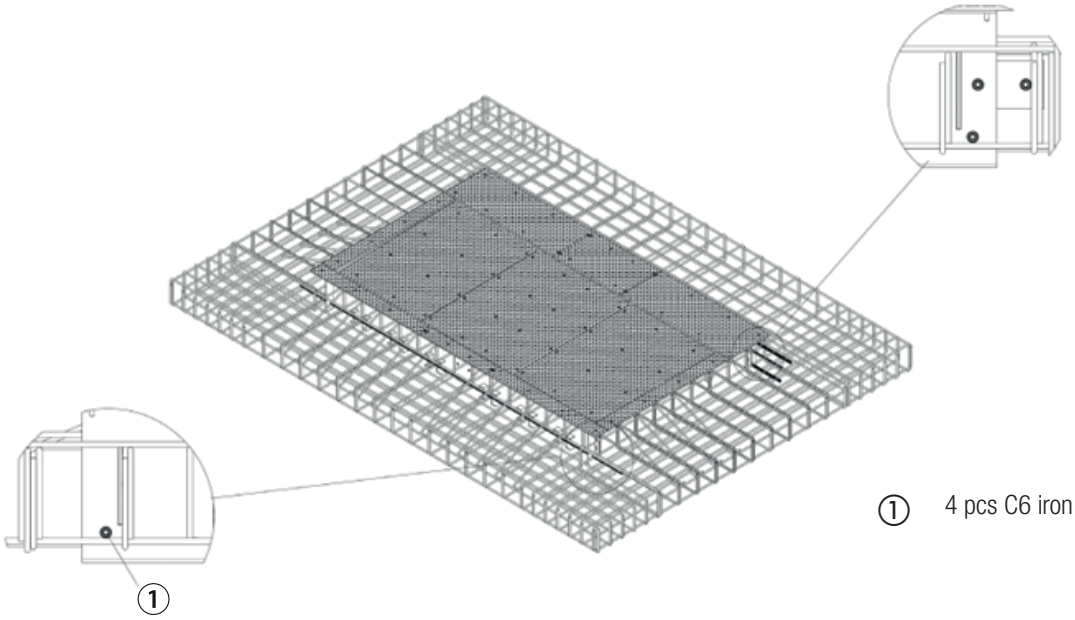
4.1.9. Connecting all the reinforcements to the Road Blocker with C6 iron rods

Depending on the Road Blocker dimensions, iron rods are generated in the sizes and quantities specified in DRAWING 16. They enable the iron reinforcement to be connected to the Road Blocker.

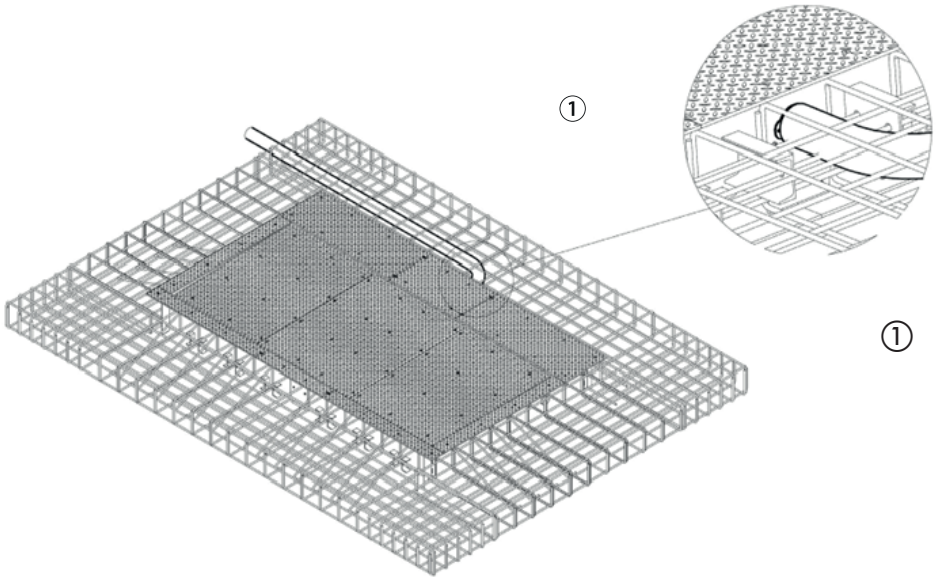


1 4 pcs C6 iron bar

All dimensions are in millimetres.
Please do not scale this drawing. Work only in the dimensions shown. This document was designed by CAME. All rights reserved.

4.1.10. Laying the pipe for the cables and hydraulic hoses

Ensure that the PVC, or similar, pipe for the electrical cables and hydraulic hoses connecting the hydraulic power unit and the Road Blocker is connected to the Road Blocker through the iron reinforcement.

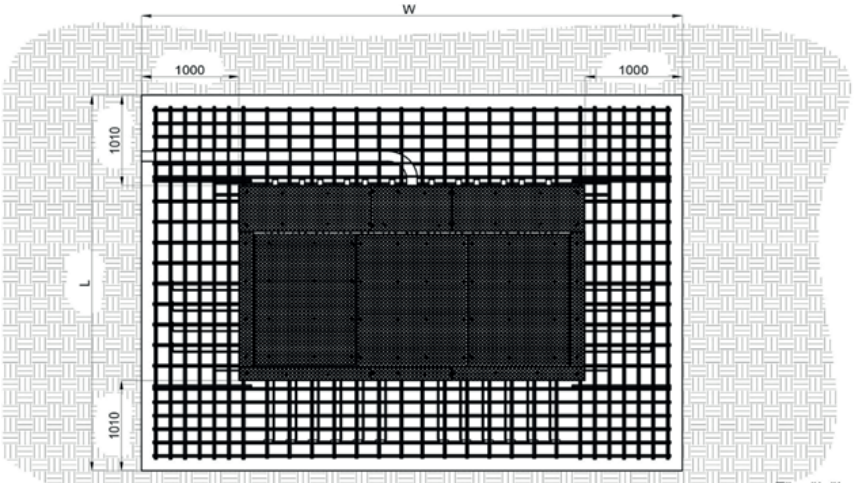


1 Ø 100 mm diameter PVC or similar pipe for cable and hydraulic hose

It is recommended to pass the hydraulic hoses and sensor electrical cables through the pipe before concreting.

4.1.11. Pouring C30 quality concrete after the structure below is built

PVC or similar pipe installation for cable and hydraulic hose



After the iron reinforcement has been installed, pour C30 concrete in the area surrounding the iron reinforcement.

All dimensions are in millimetres.

4.2. Post-installation checklist

Complete the checklist below after installation.

Company responsible for installation	
Date	
Installation location	
Name, surname and signature	
Model no.	
Serial no.	

Checklist

A	Installation checklist	√	Description
1	Road Blocker barriers properly installed at road level		All covers and fasteners are in place and tightened
2	Barriers and traffic within the operator's uninterrupted field of vision		
3	Control buttons conveniently and securely fixed		Buttons cannot be pressed accidentally
4	Traffic speed limit and warning signs		Speed limit signs, road signs and speed bumps have been prepared
5	Appropriate, visible traffic lights (red/green)		Traffic lights are in a convenient location and are easily visible
6	Water evacuation/drainage system and submersible pump in working order (where applicable)		
7	Hydraulic hose and connections properly installed		No crushing, damage, sharp corners, twists or loose connections in the hoses
12	Operator trained for the safe and correct use of the operation site		

B	Function checklist	√
1	System in proper working order, no excessive noise or vibrations	
2	Road Blocker LED and warning lights in working order (where applicable)	
3	Lifting/lowering functions with manual pump working properly	
4	Oil leakage check after first operation	Oil level topped up after first start-up

5 - CONNECTION AND FIRST START-UP

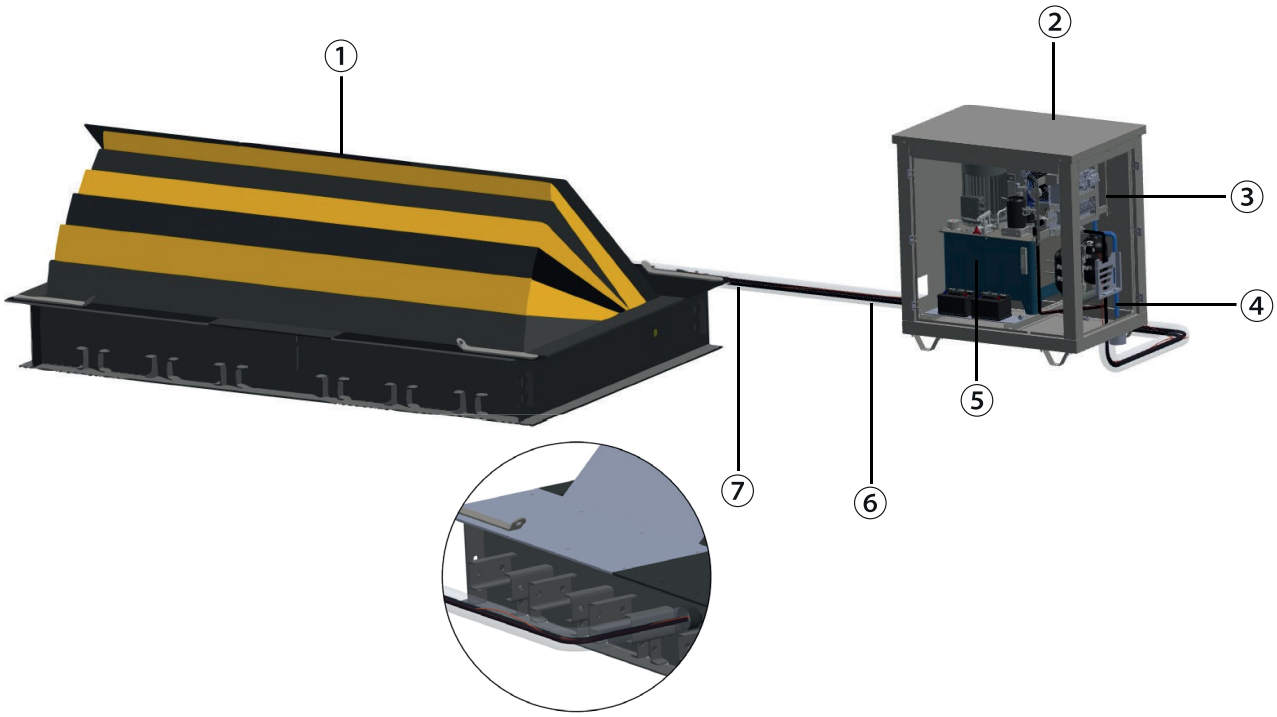
5.1. Power supply and connections installation

Before connecting the Road Blocker, carefully examine the power supply and hydraulic connection diagrams.

WARNING! The Road Blocker must only be connected by suitably qualified professionals.
The Road Blocker should be connected in accordance with the instructions in this manual and taking into account the occupational health and safety rules.

Make the auxiliary connections to the Road Blocker without the power supply.
When connecting the Road Blocker to the hydraulic power unit with the limit sensor cable and hydraulic pipes, earth it appropriately.
The limit sensor cable and hydraulic pipes must be routed through plastic or corrugated conduits.

The limit sensor cable and hydraulic pipes must be routed through plastic or corrugated conduits. Check the Road Blocker general wiring diagram below**.**
Drawing 22: Road Blocker general connection diagram



① Road Blocker	④ Main supply cable	⑥ Hydraulic hoses
② Hydraulic power unit	⑤ Hydraulic unit	⑦ Limit sensor cable
③ Electronic control unit		

5.2. Surface plates positioning

After verifying the tests and completing the checklist, visually check the cylinder for oil leaks and reinsert the plate to close the Road Blocker. Remove area protections. Prepare the Road Blocker for use.

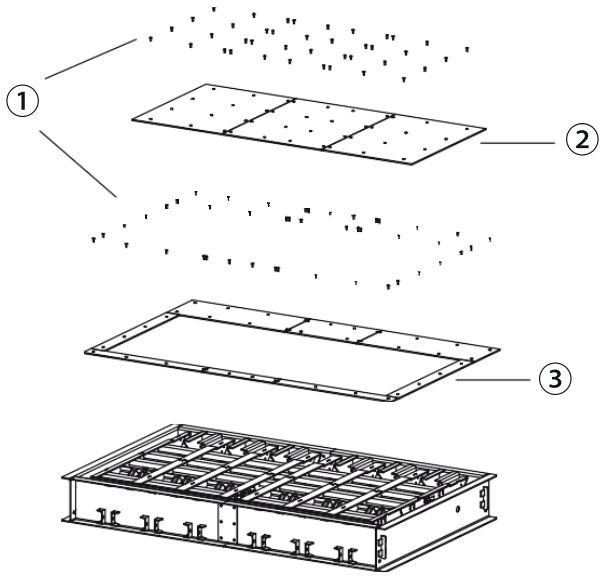
After the Road Blocker commissioning process has been completed, check the oil level in the oil tank again while the Road Blocker is in the DOWN position.

6 - DISASSEMBLY/REASSEMBLY PROCEDURES

6.1. Procedure for removing/installing surface transition plates for access to the hydraulic cylinder, connection scissors, limit switches, hinges and telescopic panel, and for general cleaning and maintenance

DANGER! For all operations to be performed on the Road Blocker, NEVER get inside the Road Blocker. Always perform the operations from the outside by removing the surface panels.

DANGER! The Road Blocker must be in the DOWN position for all interventions, for occupational health and safety reasons. Before the intervention, the authorised person must wear the necessary protective equipment.



1. Surface transition plate mounting bolts
2. Collision unit (movable unit) surface transition plates
3. Outdoor unit (fixed) surface transition plates

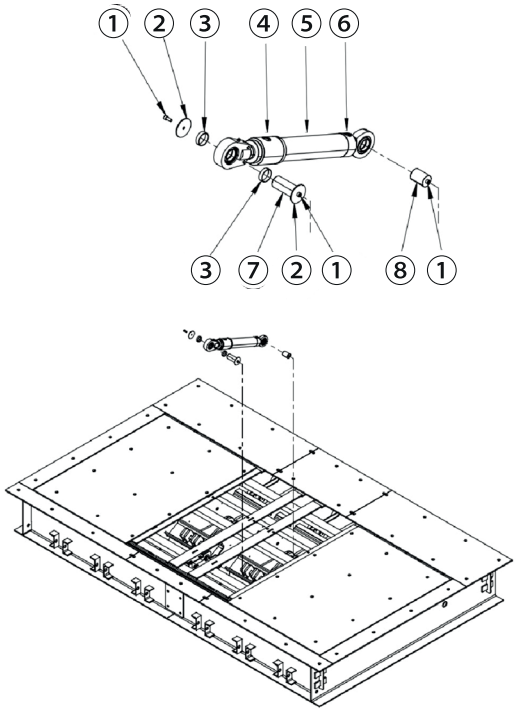
Replace any faulty screws during reassembly.

6.2. Hydraulic cylinder removal/assembly procedure

DANGER! Road Blocker must be in the DOWN position during all interventions, for occupational health and safety reasons. Before the intervention, the authorised person must wear the necessary protective equipment.

DANGER! Perform all operations on the Road Blocker from the outside by removing the surface panels. Never get inside the Road Blocker.

Drawing 27: Hydraulic cylinder procedure



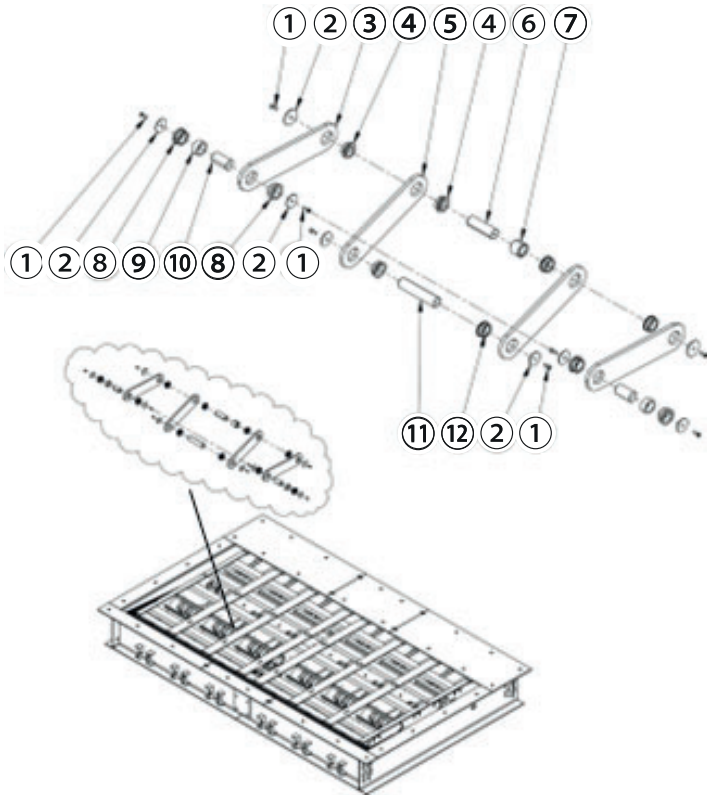
1. M10 x 25 cylinder connecting rod screw
2. Shaft connection washer
3. Shaft connecting ring
4. Hydraulic hose B line inlet
5. Hydraulic cylinder
6. Hydraulic hose A line inlet
7. Cylinder upper connecting shaft
8. Cylinder lower connecting shaft

6.3. Shear key disassembly/reassembly procedure

DANGER! Road Blocker must be in the DOWN position during all interventions, for occupational health and safety reasons. Before the intervention, the authorised person must wear the necessary protective equipment.

DANGER! For all operations to be carried out on the Road Blocker, NEVER go inside the Road Blocker. Perform the operations from the outside by removing the surface panels.

Drawing 28: Shear key assembly



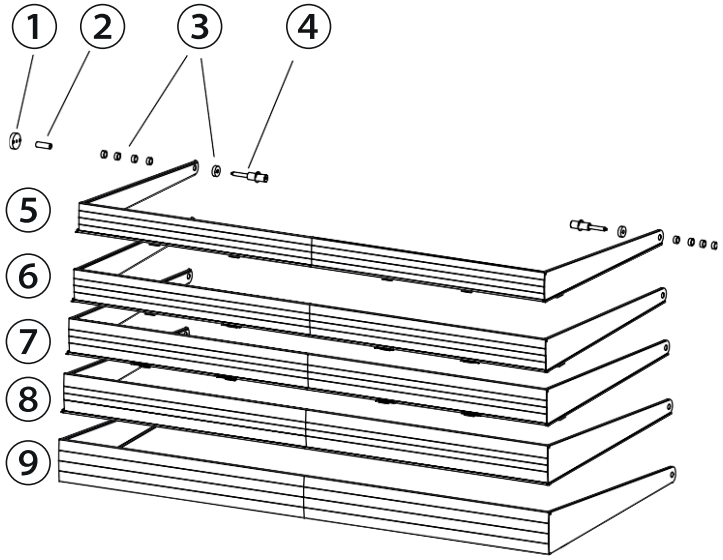
1. Shear key connecting shaft screw
2. Spring connecting shaft washer
3. Upper share connection
4. Shear key middle link shaft ring
5. Lower shear connection
6. Shear key middle connection shaft
7. Shear key middle connection shaft ring
8. Shear key upper connection shaft bushing
9. Shear key upper connection shaft ring
10. Shear key upper connection shaft
11. Shear key lower connection shaft
12. Shear key lower connection shaft ring

6.4. Telescopic panel removal/reassembly procedure

DANGER! While the Road Blocker is in a lifted position, de-energise the Road Blocker by manually lifting the telescopic panels, and ensure safety with a support wedge that will prevent it from falling down.

DANGER! For all operations to be performed on the Road Blocker, NEVER get inside the Road Blocker. Remove the surface panels and perform the operations from the outside. Before the intervention, the authorised person must wear the necessary protective equipment.

Drawing 29: Telescopic panel procedure



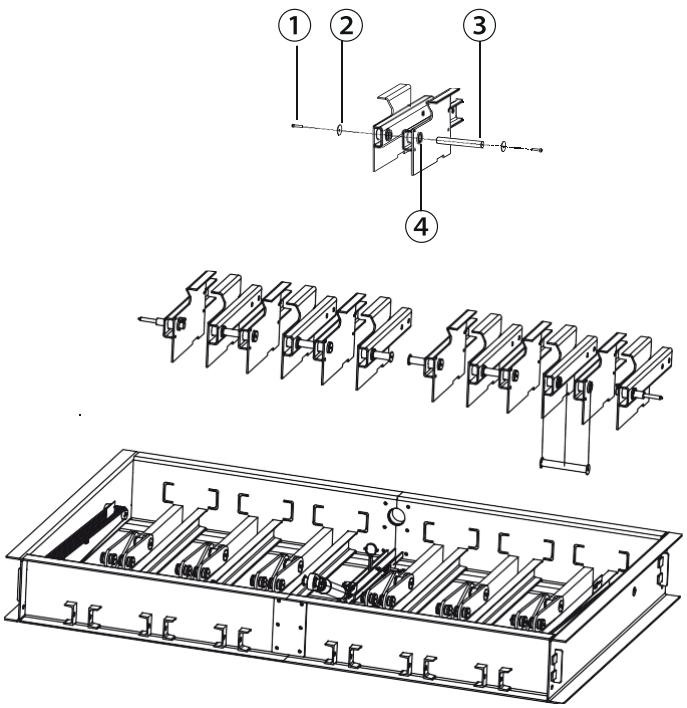
1. Telescopic panel connection support flange
2. Telescopic panel connection nut
3. Telescopic panel connection rings
4. Telescopic panel connecting shaft
5. Telescopic panel 1
6. Telescopic panel 2
7. Telescopic panel 3
8. Telescopic panel 4
9. Telescopic panel 5

6.5. Hinge disassembly/reassembly procedure

DANGER! For occupational health and safety reasons, the Road Blocker must be in the DOWN position for all interventions. Before the intervention, the authorised person must wear the necessary protective equipment.

DANGER! For all operations to be carried out on the Road Blocker, NEVER go inside the Road Blocker. Perform the operations from the outside by removing the surface panels.

Drawing 30: Hinge procedure



1. Hinge shaft
2. Hinge washer
3. Hinge shaft
4. Hinge bush

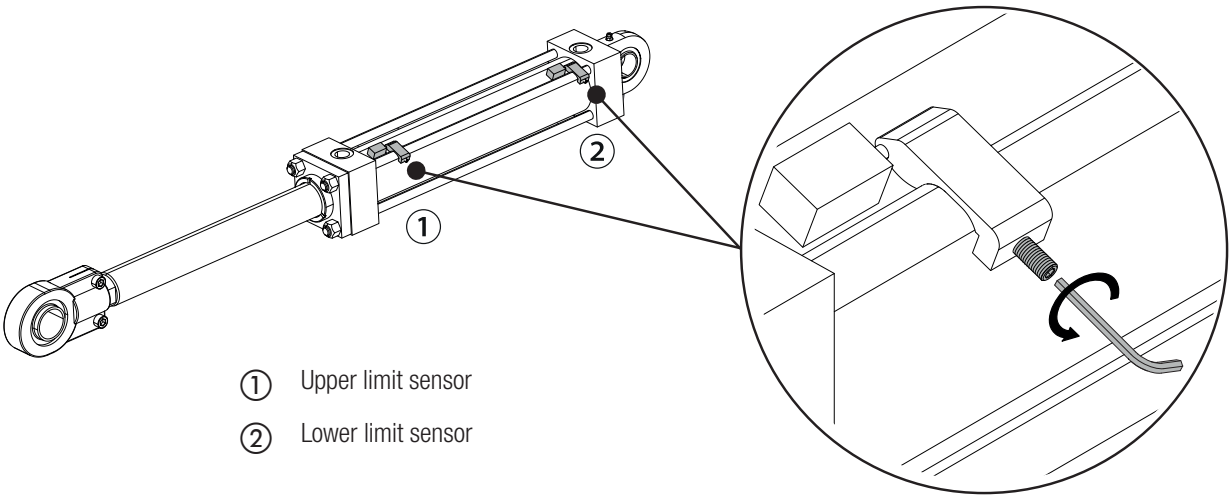
6.6 Limit switch replacement and adjustment procedure

DANGER! Road Blocker must be in the DOWN position during all interventions, for occupational health and safety reasons. Before the intervention, the authorised person must wear the necessary protective equipment.

DANGER! For all operations to be carried out on the Road Blocker, NEVER go inside the Road Blocker. Perform the operations from the outside by removing the surface panels.

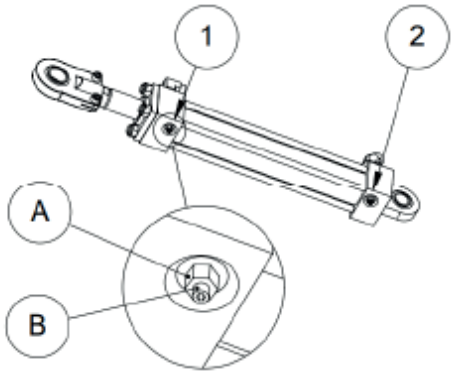
Drawing 31: Limit switch procedure

Disconnect the power supply by removing the connector, unscrewing the grub screw (a) and replacing the sensor. Tighten the grub screw again and reconnect the power supply with the connector.



1. Upper limit sensor
2. Lower limit sensor

6.7. Procedure for adjusting the cylinder dampers



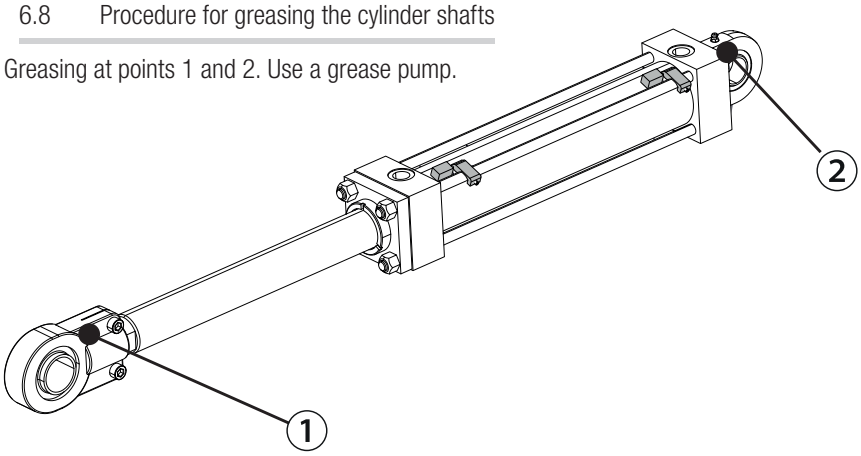
Loosen the locknut, screw in the central screw to increase damping or unscrew to reduce damping.

① High damper

② Low damper

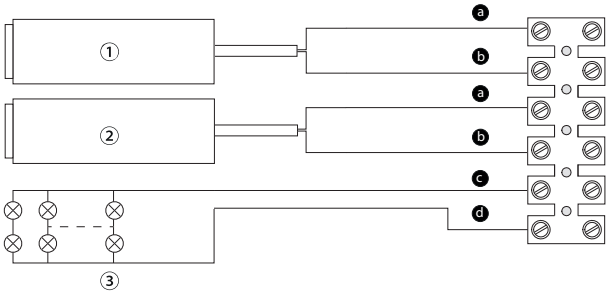
6.8 Procedure for greasing the cylinder shafts

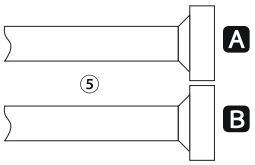
Greasing at points 1 and 2. Use a grease pump.

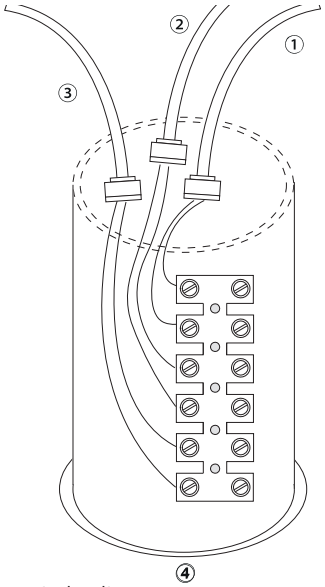


Electrical and hydraulic connections

WARNING! Make sure the poles of the limit switch sensor cables are correctly connected.

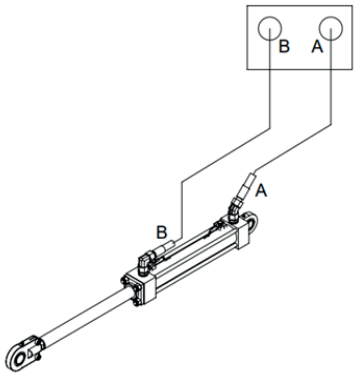






① Lower limit sensor
② Upper limit sensor
③ Flash lights
④ IP 67 Terminal box
⑤ Hydraulic hoses
a Brown (+)
b Blue (-)*
c Black
d Red

* bBlue (-): Terminal 14 on the control unit.



Connect hose A to the “A” connection on the manifold on the hydraulic power unit. Connect hose B to the “B” connection on the manifold on the hydraulic power unit.

Limit sensors	
Voltage	3-110 V AC/DC
Max current (at 25°C)	0.25 A
Protection rating	IP 67 EN60529
Visual signal	LED
Cable	2 x 0.25 mm2

Flash lights	
Voltage	24 V DC
Max. power	1 W

Hoses	Hose fitting	
	≤ 3 m	> 3 m
Rear head side	15L - M18x1.5	18L - M22x1.5
Rod side	15L - M18x1.5	15L - M18x1.5

Please contact us for more information.

For technical support or spare part replacement, contact customer services at https://www.came.com/global/en/contact-us or via the telephone number on the website.

7 - SYSTEM MAINTENANCE

During the maintenance process, the area where the Road Blocker is located must be closed to pedestrian and vehicle traffic.
It is recommended that the following Road Blocker maintenance be performed within the specified periods, even if the system is not in use. Considering the occupational health and safety rules, the necessary protective equipment/tools should be worn/used during maintenance.
Maintenance should only be performed by authorised technical personnel after the Road Blocker has been disconnected from the power supply.

HYDRAULIC ROAD BLOCKER PERIODIC MAINTENANCE TABLE

PC	ITEM/OPERATION	COMMISSIONING			MAINTENANCE		
		Same day of	1 week after	1 month after	Every 6 months	Every year	Every 2 years
1	Hydraulic cylinder:						
1.1	Absence of leakage					X	
1.2	Condition of the bolts, pins and joints					X	
1.3	Greasing					X	
2	Limit switch sensors:						
2.1	Conditions, position, detection					X	
3	Drainage / Cleanliness:						
3.1	Cleanliness of the Roadblocker bottom	X				X	
3.2	Absence of water, efficiency of the drain	X				X	
3.3	Check hinges and pins					X	
4	Cover plates:						
4.1	Tightening of screws	X				X	
4.2	Condition of screws and threads					X	
5	Floor covering:						
5.1	Condition and cleanliness	X					X
5.2	No shortage	X					X

PC1: Hydraulic cylinder:
PC1.1: Absence of leakage:
Visually check the cylinder and the bottom of the Roadblocker for oil.
If there is a lot of oil, wipe it off and determine the source of the leak.
PC1.2.: Condition of the shafts:
Visually check the 2 shafts and ball joints for wear or sticking.
PC1.3.: Greasing:
Send grease to each grease gun
PC2: Limit switch sensors:
PC2.1: Conditions, position, detection test:
Check the condition of the 2 sensors, the tightening on the track and the display on the PLC.
To do this, lower the Roadblocker, secure it and remove the central cover plate.
PC3: Drainage / Cleanliness:
PC3.1: Cleanliness of the Roadblocker bottom:
Clean the inside of the Roadblocker (leaves, waste, etc.).
To do this, lower the Roadblocker, secure it and remove the finishing plates.
PC3.2: Absence of water, efficiency of the drain:
After heavy rain, check for water.
To do this, lower the Roadblocker, secure it and remove one of the finishing plates.
PC4: Cover plates:
PC4.1: Tightening of screws:
Check the tightness of each screw with a hexagonal spanner.
PC4.2: Condition of screws and threads:
Remove the screws, check the threads, grease the screws.
Damaged screws must be replaced.
PC5: Floor covering:
PC5.1: Condition and cleanliness:
Check that the ground around the Roadblocker is always clean.
PC5.2: No shortage:
Check that there are no holes in the lining and plug them if necessary.

8 - OPERATIONS LOG

When an intervention is required, photocopy the logbook, complete it thoroughly and keep the document.

OPERATIONS LOG FORM	
REPORT DATE	
COMPANY NAME	
CONTACT REPRESENTATIVE	
FORM NO.	

PRODUCT CODE	PRODUCT MODEL	SERIAL NO.

PROBLEM	RESULT

CAME

CAME.COM

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