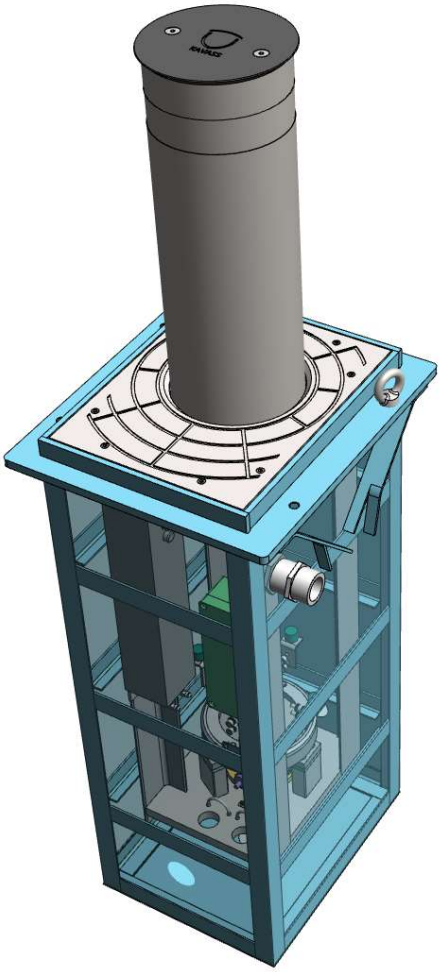
KAVASS SECURITY TECH LIMITED

Operating Manual

Hydraulic Auto Bollard



Please read the instructions prior to performance any task!

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Catalog

1.General **5**
1.1 information on this manual 5
1.2 Explanation of symbols 5
1.3 Limitations of liability 6
1.4 Copyright 7
1.5 Technical progress 7
1.6 Warranty terms 7
1.7 Customer service 7
2.Safety **8**
2.1 Correct use in accordance to the instructions 8
2.2 Responsibility of the owner 8
2.3 Personnel requirements 9
2.3.1 Qualifications 9
2.4 Personal protective equipment 10
2.5 Basic dangers 11
2.6 Safety devices 12
2.7 Labelling 13
2.8 Spare parts 13
3.Technicial data **14**
3.1 Specification and areas of application 14
4.Design and function **16**
4.1 Design 16
4.2 Configuration options 17
4.3 Function of main components 18
4.3.1 Foundation pit 18
4.3.2 Bollard body 19
5. Transport and storage **19**
5.1 Safety instruction for transport 19
5.2 Transport inspection 20
5.3 Transport 20
5.4 Storage 20

6. Installation and initial commissioning **21**
6.1 Safety instructions for installation and initial commissioning 21
6.2 Installation 21
6.2.1 Excavation 21
6.2.2 Preparation for installation of foundation pit 22
6.2.3 Assembly of foundation pit 22
6.2.4 Installation of foundation pit 23
6.2.5 Electrical cabling 24
6.2.6 Cable connection 24
6.2.7 Cable feed/cable strain relief 25
6.2.8 Installation of the bollard into foundation pit 25
6.3 Electrical connection 27
6.3.1 Layout and components of control unit 28
7. Operation **30**
7.1 Safety instruction for operation 30
7.2 Operating of the bollard system 30
7.2.1 Opening 30
7.2.2 Closing 30
8. Maintenance **31**
8.1 Annual maintenance 32
9. Spare parts **33**
9.1 Spare parts list 33

1. General

1.1 Information on this manual

This manual enables safe and efficient handling of the bollard system. This manual is an integral part of equipment and must be kept in close proximity to the equipment where it is permanently accessible to the personnel.

Before starting any work, the personnel must have read the manual thoroughly and understood its contents. Compliance with all specified safety instructions and operating instructions is vital to ensure safe operation. In addition, local accident prevention regulations and general safety instructions must be observed for the operational area of the equipment. Illustrations in this manual are intended to facilitate basic understanding and may differ from the actual configuration.

1.2 Explanation of symbols

Safety instructions are marked with symbols in these instructions. The safety instructions are always introduced by signal words which express the extent of danger.

	**DANGER!** This combination of symbol and signal word indicated an immediately dangerous situation which could cause death or severe injuries if not avoided.

	**WARNING!** This combination of symbol and signal word indicated a possibly dangerous situation which could cause death or severe injuries if not avoid.

	**CAUTION!** This combination of symbol and signal word indicates a possibly dangerous situation which could cause slight injuries if not avoided.

	**NOTICE!** This combination of symbol and signal word indicates a possibly dangerous situation which could cause property and environment damage if it is not avoided.

	This symbol highlights useful tips and recommendations as well as information designed to ensure efficient and smooth operation.

1.3 Limitations of liability

The bollard system has been safely engineered, manufactured and tested according to the state-of-the art and has left the factory in technically faultless safe condition. All details and instructions in this manual have been complied under consideration of the valid standards and regulations, the state-of-the art and our many years of knowledge and experience.

The manufacturer assumes no liability for damage in the following cases:

- Non-observance of this manual
- Use deviating from the intended use
- Assignment of untrained person
- Unauthorized retrofitting
- Technical changes
- Use of non-approved spare parts.

For special models, additional ordering options or in cases where the most recent technical changed have been implemented, the actual scope of delivery may deviate from the explanations and representations described here.

The duties and obligations agreed upon in the delivery contact apply in full , as well as the general terms and conditions, the terms of delivery of the manufacturer and the valid legal regulations applicable at the time of conclusion of the contract.

1.4 Copyright

The manual must be treated with confidentiality. It is indented exclusively for people involved with the product. The handing over of the manual to third parties is not allowed without written permission from the manufacturer.

	The information, texts, drawings, pictures and other illustrations are copyrighted and are subject to industrial property rights. Any misuse of the contents of this manual is in breach of copyright and liable to prosecution.

1.5 Technical progress

The manufacturer reserves the right to adjust technical data to the technical development progress without special notification. The manufacturer will provide information about the up-to-datedness as well as possibly changed and extension of this operation manual.

1.6 Warranty terms

The warranty terms are included in the manufacturer's terms and conditions.

1.7 Customer service

Our customer service is at your disposal for any questions and technical information

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2. Safety

This section provides and overview of all important safety aspects for the protection of people as well as for safe and fault-free operation. Additional task-related safety instructions are in the sections about the individua life phases.

Non-observance of the procedures and safety instructions in this manual can pose a significant risk.

2.1 Correct use in accordance to the instructions

The bollard system has been designed and manufactured to be used as s security bollard. The intended use is as a means for access control of vehicles at an outer perimeter. Normally, the bollard system will be integrated into entrances and exits of commercial premises and car parks as well as of government building, airport port and sports center with a middle security level.

Any additional or different use above and beyond the correct use in accordance to the instructions is deemed as an incorrect use.

	**Warning!** **Danger due to misuse!** Non-intended or improper use or use by untrained or not instructed person may result in dangerous situations for the user or third party and property damage. • Do not step on the bollard • Do not use the bollard as a seat or playground equipment • Keep sufficient distance from the bollard during operation

2.2 Responsibility of the owner

The term" owner" refers to the person who himself operates equipment for trade or commercial purposes or who surrenders the equipment to a third party for use and who bears the legal product liability for protecting the user, the person or third parties during operation.

The equipment is used in the commercial sector. The owner of the equipment is therefore subject to legal obligations pertaining to work safety.

In addition to the safety instructions contained in this manual the safety, accident-prevention and environment -protection regulations applicable to the field of application of the equipment must be observed. The following applies in particular:

The owner must find out about the applicable health and safety regulations and conduct a risk assessment of additional dangers due to the special conditions at the place of applications of the equipment based on which he must subsequently implement appropriate instructions for the operation of the equipment.

The owner must verify over the entire life cycle of the equipment whether the instructions issued by him are in compliance with the current status of regulations and adjust these if necessary.

The owner must ensure that all staff handling the equipment have read and understood this manual. Additionally, he must train the person at regular intervals and inform them of possible dangers.

The owner must provide the required person protective equipment.

The owner must clearly regulate and determine responsibilities for assembly, installation, operation, configuration, and troubleshooting.

Additionally, the owner must also ensure that the equipment is always in perfect working condition.

2.3 Personnel requirements

2.3.1 Qualifications

<table>
<tr>
<td>  </td>
<td>WARNING!
Risk of injury due to use of unsuitably qualified person!
If unqualified person works on the equipment then dangers arise which may result in injuries and damage to property.
• Special activities should therefore only be carried out by the person named in the relevant chapter of the instructions.
• Keep unqualified person away from the danger area.</td>
</tr>
</table>

The following personnel qualifications for the various areas of activity are listed within this manual;

- **Trained person**
  was instructed by the owner of his/her assigned tasks and the possible risks and dangers in case of improper use.
- **Qualified person**
  is due to his/her professional training, knowledge and experiences as well as knowledge of the relevant standards and regulations able to carry out his/her assigned tasks and to independently detect and avoid possible risks and dangers.
- **Qualified electrical technician**
  is due to his/her professional training, knowledge and experiences as well as knowledge of the relevant standards and regulations able to correctly connect and commission electrical equipment and to independently detect and avoid possible risks and dangers.

Authorized person is to be restricted to those persons who can be expected to carry out their work reliably. Persons whose ability to respond is influenced by drugs, alcohol or medicine, are not authorized.

2.4 Personal protective equipment

Personal protective equipment must be worn during installation and maintenance to minimize the risk of injuries

To wear generally

Protective clothing
is tight-fitting work clothing with low tensile strength, tight-fitting sleeves and without protruding parts

Safety shoes
as protection against heavy falling objects, slipping on slippery surface and injurie caused by nails left lying about.

Gloves
as protection against abrasions and lacerations.

To ware during special work (refer to separate notification in the instructions)

Hard hat
as protection against heavy falling or flying objects.

Protective glasses
as projection of the eyes against flying objects, dust and fluid splashing.

2.5 Basic dangers

The following section describes remaining risks which can arise from the device even with proper use.

In order to reduce the risks of personal injury and avoid dangerous situations, the safety instructions and warnings listed here and in the other sections of these instructions must be followed.

Electrical current

DANGER!
Life-threatening danger from electrical current
There is an immediate, life-threatening danger from electrical

	shock if live parts are touched. Damaged insulation or single components can be life-threatening. • If the insulation is damaged then immediately disconnect the voltage supply and have repairs carried out. • Only allow work on the electrical system to be performed by qualified electrical technician. • If working on the electrical system disconnect the voltage supply and check for absence of voltage. • Disconnect the voltage supply before carrying out maintenance, manual operation of the bollard during power failure, cleaning or repair works and secure against un authorized or unintended switching on. • Do not bridge or disable any fuses.

Moving parts

	**WARNING!** **Risk of injury due to moving parts** Rotating and/or linear-moved parts may cause severe injuries. • Do not reach into or handle moving parts during operation. • Do not open covers during operation. • Take into account the after-run time: Make sure that there are no moving parts before opening the covers.

2.6 Safety devices

	**WWARNING!** **Life-threatening danger due to non-functioning safety devices** Safety devices ensure maximum safety during operation and must not be disabled. Safety can only be guaranteed with intact safety devices. • Check if the safety devices are operational and correctly installed before starting work.
	Refer to chapter" Design and function" for detailed information regarding the position of the safety devices.

2.7 Labelling

The following symbols and instruction notices are found on and in the equipment. They refer to the immediate area in which they are attached.

	**WARNING!** **Risk of injury in case of illegible or missing labelling** Over the course of time stickers and symbols on the machine become dirty or unrecognizable in another manner so that danger is not recognized and necessary operating instructions cannot be followed. As a result, there is the risk of injury. • Always keep all safety, warning and operating instructions on the machine in easily legible condition. • Replace damaged signs or stickers immediately.

Follow operating instruction only use the marked object after reading the operating instructions.

Electric voltage only qualitied electrical technicians are allowed to work in this area. Unauthorized persons must not enter the working area or open the market cabinet.

2.8 Spare parts

	**CAUTION!** **Risk of injury due to use of incorrect spare parts** Use of incorrect or faulty spare parts may result in dangers to the person as well as damages, malfunctions or total failure. • Only use original spare parts from the manufacturer or approved by manufacturer. • Always contact the manufacturer in case of doubt.

	Loss of guarantee Use of non-approved spare part results in loss of the manufacture's guarantee.

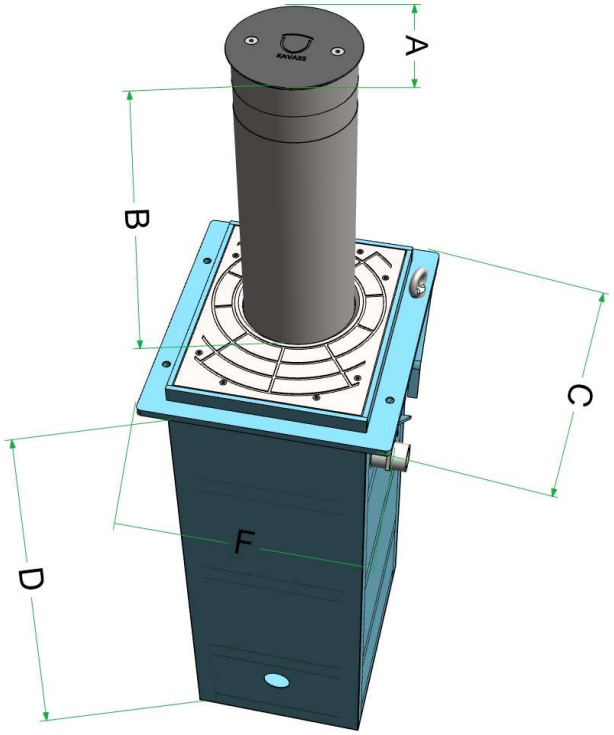
Always purchase spare parts from an appointed dealer or directly from manufacturer. For contacted details see Page 2.

3. Technical data

3.1 Specification and areas of application

Table 1: Bollard size

Size	Model 1	Model 2
A	220mm	220mm
B	600mm	900mm
C	550mm	550mm
D	1102mm	1402mm
F	460mm	460mm
Bollard weight	180kg	220kg
Foundation pit weight	55kg	65kg
Excavation size:	1050*960*1392mm	1050*960*1692mm



Picture 1: Size

Concrete type:	C 30
Operational safety:	Optional light barriers and/or loop detector
Scope of application:	Vehicle access control to airport premises and embassies as well as all other high security areas

Performance characteristics

Table 2: Technical data for single and multiple units

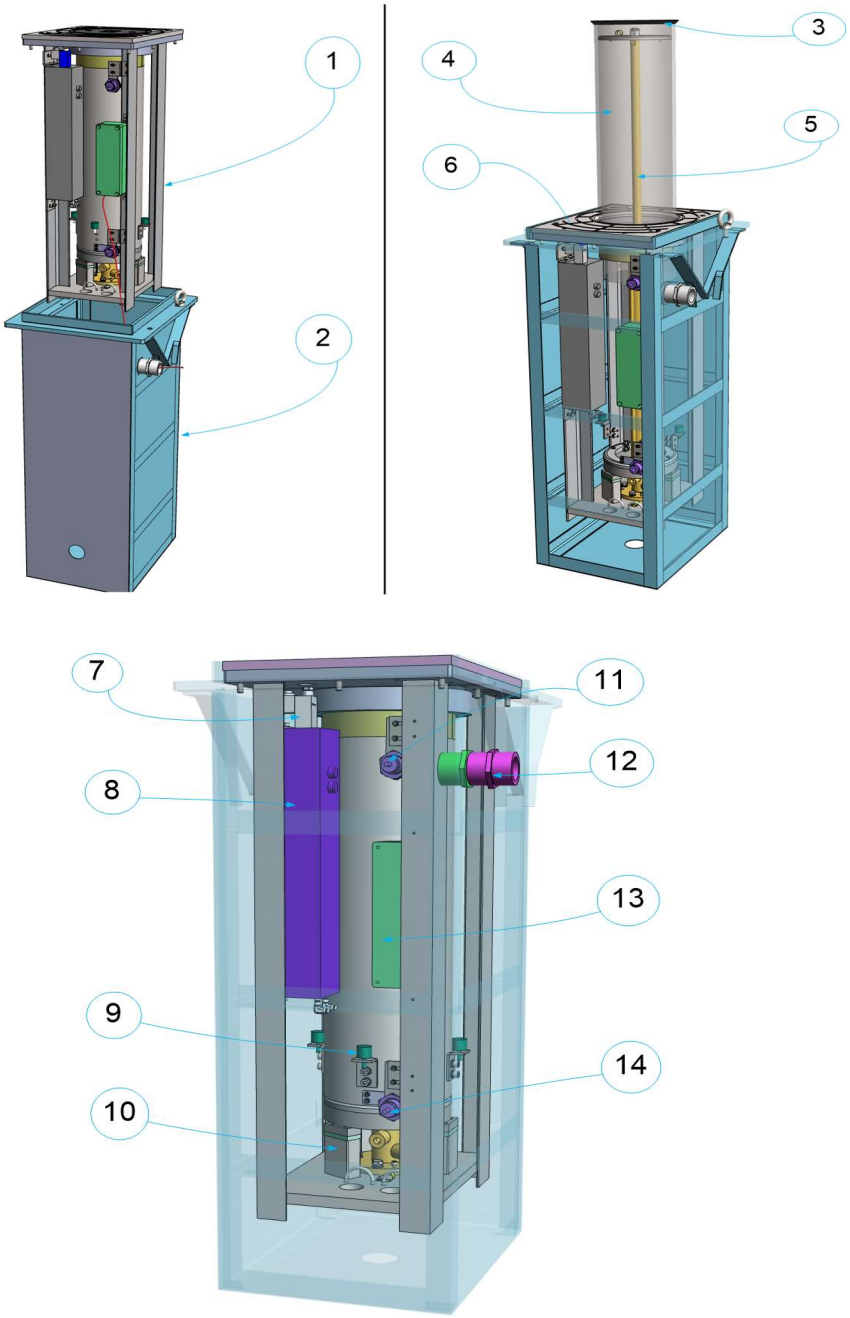
	Max. power consumption	Supply voltage
Single unit	1.82W	230 V AC
Double unit		230 V AC
Triple unit		230 V AC
Quadruple unit		230 V AC
Penta unit		230 V AC

Connected load drive	1200 w per bollard
Drive:	230 Volt AC, 50 Hz
Capacitor:	2 x 20 µF – 400 V
IP rating:	IP 67
Max. pressure:	50 bars
Max. flow rate of the pump:	4L/min (6L/min is optional)
Minimum raising time:	4 Sec (bollard height:600mm) 5 Sec (bollard height:900mm)
Minimum raising time (using EFO): EFO is optional	1.2 Sec (bollard height:600mm) 1.5 Sec (bollard height:900mm)
Minimum lowering time:	2.0 Sec (bollard height:600mm) 2.5 Sec (bollard height:900mm)
Continuous duty:	At 45 sec. cycle time
Impact Load:	750KJ
Control system:	Relay signal, TTL signal
Corrosion protection foundation pit:	Aluminum zinc coating
Corrosion protection (bollard made in carbon steel):	High quality 2-component coating (Base coat: cataphoretic paint, covering coat: polyester paint)
Surface treatment (bollard made in SS)	Hairline polish
Ambient operating temperature:	-20℃ to + 55 ℃

4. Design and function

4.1 Design

The products are hydraulic operated, automated high security bollards. The cylinder is activated by means of a built-in hydraulic aggregate.

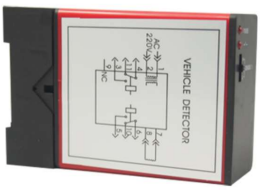


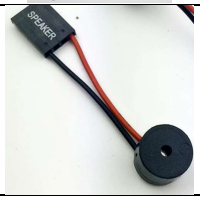
Picture 2: Bollard construction

Item	Parts
1	Bollard main structure
2	Foundation pit
3	LED lamp
4	Cylinder
5	Oil Piston
6	Flange
7	Oil filler plug
8	Hydraulic unit
9	4 stop pints, up
10	4 stop point, down
11	Magnetic contact, up
12	Cable routing hole
13	Junction box
14	Magnetic contact, down

4.2 configuration options

Table 2: equipment options

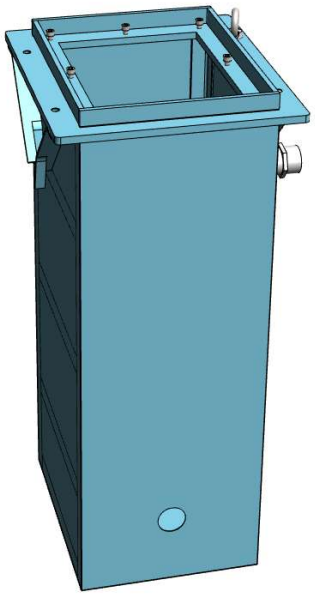
Heater	Heater for bollard use environment≤-15℃	
Loop detector	• Two-channel loop detector • Induction loop ready for use	 
Infrared sensor	Two beams human detection active infrared	

Push button	Push button Raise- Lower	
Traffic light	Red/Green traffic light, 230 V/AC	
Buzzer	Buzzer for safety warning	

4.3 Function of main components

4.3.1 Foundation pit

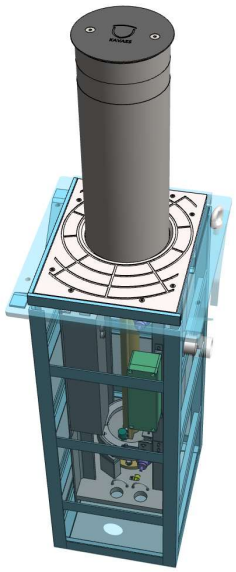
The foundation pit helps to guide and stabilize the bollard and is combined with the steel reinforcement the connection element to the foundation and surrounding soil.



Picture 3: Foundation pit

4.3.2 Bollard body

The bollard body consists of a steel frame construction. The bollard frame is the supporting element for the moving unit and is fitted with fastening elements, guiding elements, sealing elements, and hydraulic components.



Picture 4: Bollard body

5. Transport and storage

5.1 Safety instruction for transport

	NOTICE! **Property damage from improper transport!** Transport units can fall or topple over with improper transport. As a result, a considerable extent of property damage can arise. • Proceed with caution when unloading the transport units at the tine of delivery as well as during inhouse transport and observe the symbols and instructions on the packing. • Only use the attachment points provided. • Only remove packing briefly before assembly. • Components must only be transported with vehicles with are approved for public traffic based on their load-bearing capacity. The regulations for accident prevention, in particular as applicable to working with suspended loads, must be observed.

	• Components must be securely fastened against shifting during transport by means of wedges and lashing straps. • The more detailed safety instructions of the used transportation equipment such as fork lift or crane must be observed.

5.2 Transport inspection

Immediately inspect the delivery for completeness and transport damage on receipt. Proceed as follows in the event of externally apparent transport damage:

Do not accept the delivery or only accept it subject to reservation.

Note the extent of the damage on the transport documentation or the shipper's delivery note.

Initiate complaint procedures.

	Issue a complaint in respect of each defect immediately following detection. Damage compensation claims can only be asserted within the applicable complaint deadlines.

5.3 Transport

The hydraulic bollard is delivered fully assembled with the exception of the foundation pit and accessories which are also enclosed (exception: steel reinforcement to be supplied by third party on site).

- Normal transport is by means of a lorry with the bollard lying horizontally on a plywood pallet.
- Load and unload using a forklift truck or crane.

5.4 Storage

Put down the bollard on any level surface using the supplied plywood pallet if it is not to be laced into the installed foundation pit immediately upon delivery.

6. Installation and initial commissioning

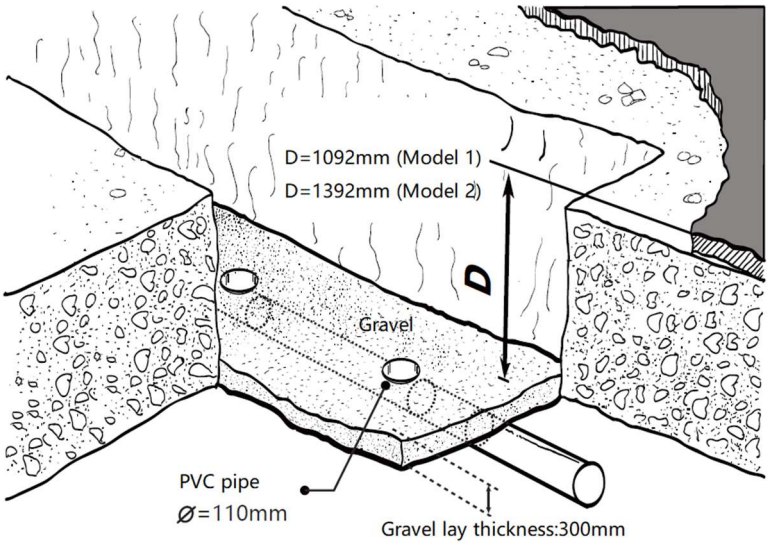
6.1 Safety instructions for installation and initial commissioning

	**WARING!** **Life-threatening danger due to incorrect installation and initial commissioning!** Installation errors may result in life-threatening situations or considerable extent of property damage. • Installation and initial commissioning must only be carried out by personnel of the manufacturer or personnel approved by the manufacturer. • Consult the manufacturer also in case of subsequent re-location.

6.2 Installation

6.2.1 Excavation

- Carry out excavation as per Picture 5.
- Put drainage pipe into excavation pit.



Picture 5: Excavation pit

	Compact the gravel well to prevent any future subsidence due to compression.

6.2.2 Preparation for installation of foundation pit

Prior to installation

- Check the installation position against the layout plan
- Check the depth of the excavation
- Check that the gravel in the excavation has been well compacted.
- Check that drainage system work well. Water should be drained from pit in 30 minutes.
- Check the correct position of the hollow pipes for the electrical cabling.
- Check the quantity, cross section and length of the laid cables in the hollow pipe. The cables must protrude at least 2.5m from the hollow pipe.

6.2.3 Assembly of foundation pit

The following is included in the scope of supply of the product:

- Bolts M10*20
- Installation instructions

These tools are auxiliary means are required for the installation and are not included in the scope of supply:

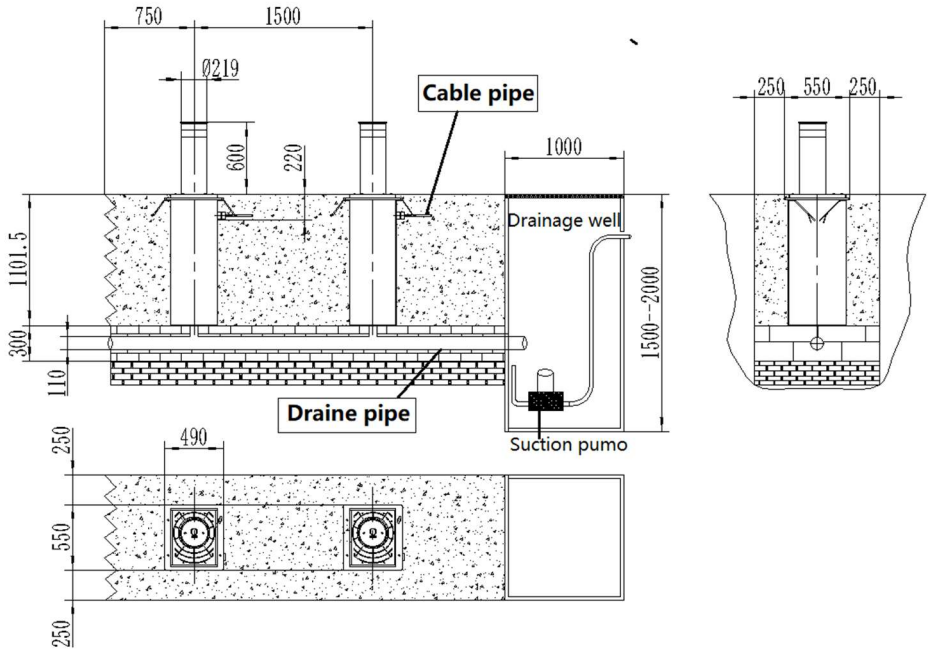
- Hand tools (shovel and pickaxe, etc.) for refinishing of excavation
- Typical bench tools (hammer, Allen key, screw driver etc.)
- Water level (ideally one fitted with magnets for fastening)

Ware protective gloves during installation wok!

6.2.4 Installation of foundation pit

	A crane or excavator may serve as a useful tool for the installation of the foundation pit.

Concrete type: C30 grain size 10-30



Picture 6: Installation draw

Working steps:

Lower foundation pit into the excavated pit (pay attention to the drainage pipe position)

- Make sure that the foundation pit is perfectly upright.
- Insert a conduit of 45mm inner diameter or a cable inlet into foundation pit.
- Check the horizontal and vertical orientation with a water level.
- After installation, the upper edge of the counter frame has to protrude 10mm over the road surface, so as to minimize the amount of rainwater ingress. Bond the counter frame to the road surface as indicated in Picture 7 to reduce the risk of anyone stumbling over the protruding edge.

Picture 7: Road surface connection

- Brace foundation pit with suitable material and check its orientation.
- Fill the excavated area around the foundation pit with concrete up to approximately 100mm below finished floor level.
- Allow at least 7 days for the concrete to set correctly (full concrete strength is reached after 28 days)
- Ensure a sufficient protection of the excavated pit and foundation pit during foundation work as well as curing of concrete.

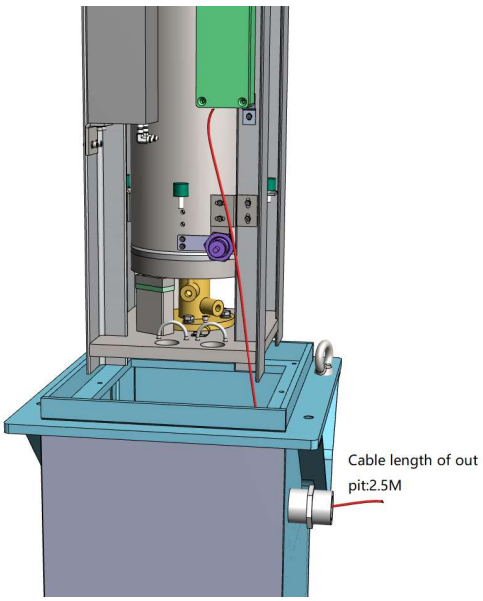
6.2.5 Electrical cabling

A multi-core cable is required to connect the bollard control unit.

The maximum length of the connecting cable is 50M.

The cable must be installed in an installation tube with Ø 45mm inner diameter.

6.2.6 Cable connection



Picture 8: Cable

	Alteration of the factory-provided cabling or the connection of non-approved accessories is not allowed and will void all warranties.

6.2.7 Cable feed/cable strain relief

- Cut of installation hose at the cable entry of the foundation pit
- Insert connection cable and cut to length
- Secure cable to the cable guide (see picture 8)
- Feed cable to connection box and connect

6.2.8 Installation of the bollard body into foundation pit

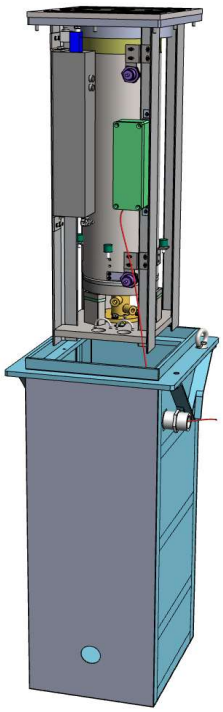
A crane or excavator is required for the installation. Follow the instructions given in Chapter 5.3" Transport"

The following is included in the scope of supply of the product:

- Eye bolts M20, cylinder-head bolt M10*45, Cylinder-head bolt M10*130, grey top crown plate and bolt caps
- Installation instruction

These tools and auxiliary means are required for the installation and are not included in the scope of supply:

- Typical bench tools (hammer, Allen key, screw driver etc.)



Picture 9: Cable route

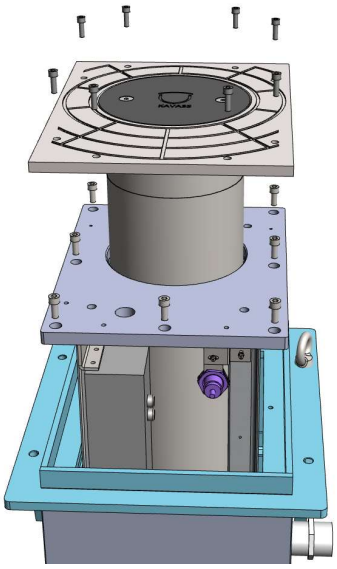
	CAUTION! **Risk of injury due to heavy components!** There is the risk of flingers being crushed when lifting and lowering the bollard body into the foundation pit. Keep finger away from the danger area.

Working steps:

- Conduct cable connection (see Chapter6.3.1)
- Screw eye bolts into top of the bollard body, they serve as attachment points for the lifting straps or chains.
- Position bollard body above foundation pit. Pay attention to the orientation of the bollard body. The connection box at the bollard body must show in the direction of the cable feed (Picture 9)
- Lower bollard body into the foundation pit, fasten it with the 8 No. M10*45 bolts and tighten screws using 200Nm torque.

	Pay attention to the position of the cable between the foundation pit and the bollard body as well as to the connection box on side of the bollard body when lowering the bollard body into the foundation pit

- Remove eye bolts
- Place grey top crown plate on top and fastened it with the 8 no. M10 bolts (Pic.10)



Picture 10: connect bollard with pit

6.3 Electrical connection

DANGER!

Life-threatening danger from electrical current!

There is an immediate, life-threatening danger from electrical shock if live parts are touched.

- All electrical work must only be carried out by qualified electrical technicians.
- Keep unqualified personnel away from the danger area.
- Disconnect the voltage supply before carrying out the electrical connections and secure against unauthorized or unintended switching on.
- Install a suitable residual current protective device with a trigger threshold of 0.03 A upstream of the system.
- Install a circuit breaker with all-pole disconnection.

If the bollard was delivered from the factory with all of the specified operating devices included, these devices have already been wired at the factory and checked for proper function.

Alteration of the factory-provided cabling or the connection of non-approved accessories is not allowed and will void all warranties.

The bollard control unit should be mounted at a height of between 0.4m and 2.0m above the floor level

NOTICE!

Property damage from installation of improper operating devices!

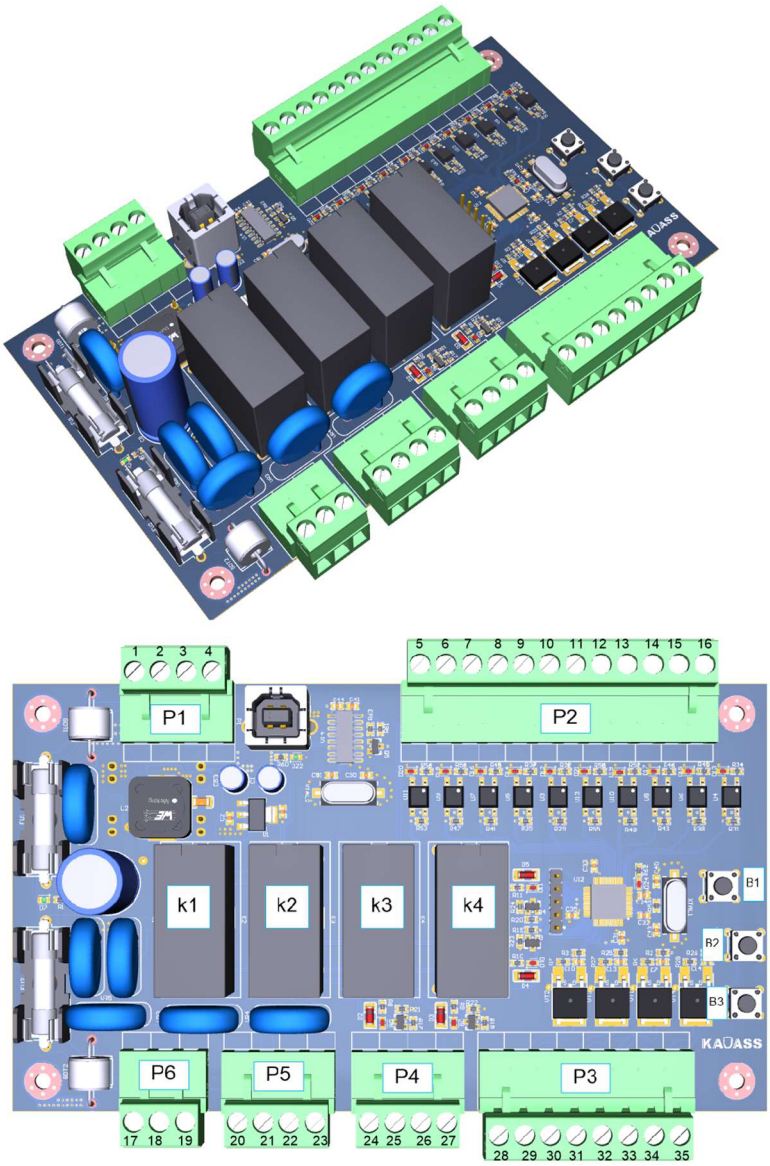
Reliable operation of the bollard system is not guaranteed in case of installation of improper operating devices. As a result, damage to the bollard system can arise.

- The duration of any impulse given by the operating devices for an individual release operation may not exceed 500ms.
- The inputs of the bollard control unit may only be connected to potential free/floating contacts.

Technician data control unit:

Supply voltage:	230V 50Hz
Max. drive load:	1200 W
Supply voltage for accessories:	24 Volt Dc
Max. current for accessories:	500 mA
Temperature range on site:	-20℃ to + 55 ℃
Safety fuse	F1=F2 5A-300V

6.3.1 Layout and components of control unit



Picture 11: Control board

B1	B2	B3
Reset	Up	Down

P1	P2	P3	P4	P5	P6
DC24V Power terminal	External device terminal	Bollard LED Buzzer Traffic light	Solenoid valve terminal	Motor termina l	AC220V Power terminal

K1	K2	K3	K4
Motor FWD relay	Motor REV relay	Solenoid valve 1 relay	Solenoid valve 2 relay

Wire terminal function

1	2	3	4
GND	GND	24V+	24V+
DC24V power			

5	6	7	8	9	10
Ground	Reserved	Loop detector 2	Loop detector 1	Pressure detector	Down limited switch

11	12	13	14	15	16
Up limited switch	Down 2	Up 2	Down 1	Up 1	Ground

17	18	19	20	21	22	23	24
Reserved	24V+	Traffic light	24V+	Buzzer	24V+	Bollard top led	24V+

25	26	27	28
Ground	Solenoid valve 2	Ground	Solenoid valve 1

29	30	31	32
MOTOR2	MOTOR1	MOTOR	PGND
REV	FWD	COM	Ground

33	34	35
N	L	Earth
AC220V		

7. Operation

7.1 Safety instruction for operation

WARNING!

Risk of injury due to improper operation!

Improper operation can lead to injuries and property damage.

- Read this operating manual carefully before operating the bollard system for the first time.
- Carry out all operating steps in accordance with the instruction in this manual
- Make sure that all covers are safety devices are installed and operating correctly before operating the bollard system

By handing over the keys to the bollard system and marking reference to this operating manual the owner authorizes the recipient to operate the bollard system.

7.2 Operating of the bollard system

7.2.1 Opening

Bollard can be lowered by means of command/control devices (e.g. remote controller, push button).

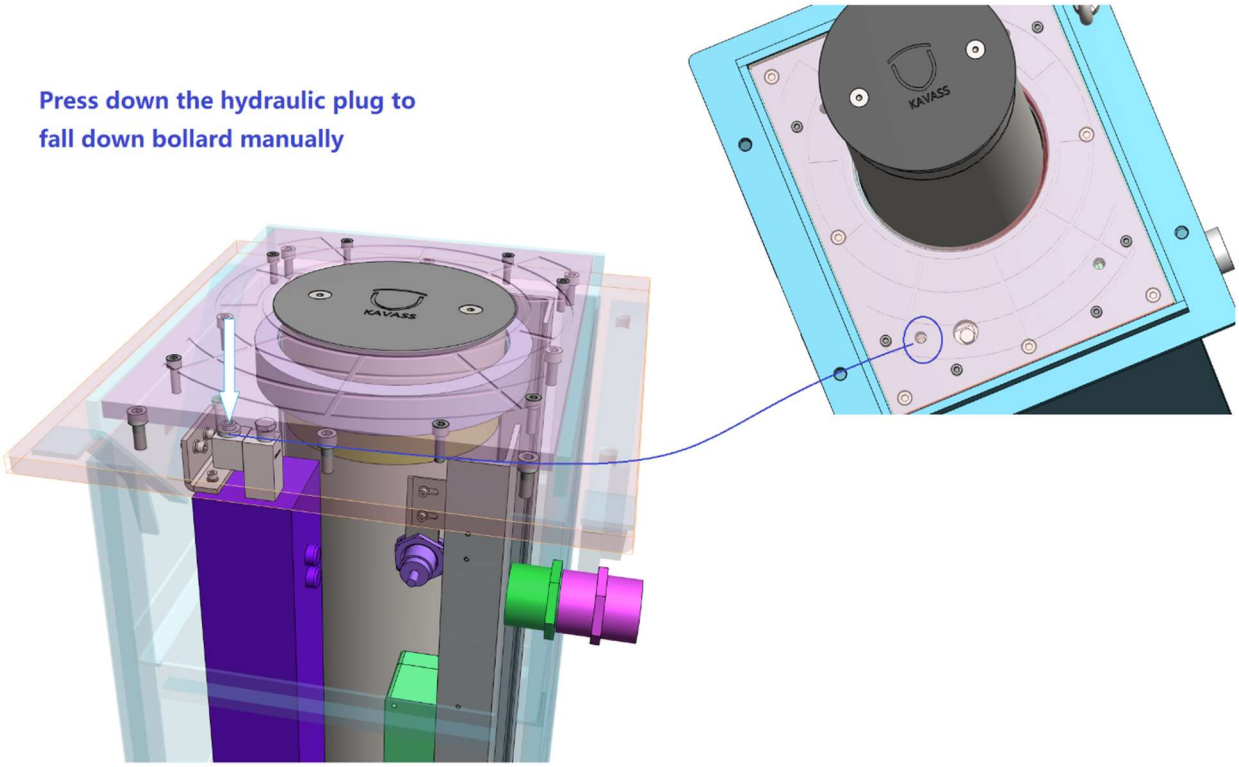
7.2.2 Closing

The bollard will either close automatically after the pre-set time has lapsed (this function is optional and should be submitted before bollards delivered from supplier factory) or if the bollard receives an appropriate

command from a control device.

Manual operation

The bollard system can be operated manually in case of power failure. The panic valve on the hydraulic aggregate will normally cause the bollard to lower/open.



Picture 12: Manual operation

8. Maintenance

	**WARNINIG!** **Risk of injury due to improperly conducted maintenance!** • Maintenance of the bollard system must only be carried out by qualified personnel familiar with the required maintenance work. • Keep unqualified personnel away from the danger area. • Allow for sufficient working space before starting work. • Keep the working space neat and tidy. Tools and components which are lying around are potential

	causes for accidents. • Pay attention to the correct installation of components when removing components. Reinstall all components applying the required screw tightening torque. • Switch off the main power prior to commencing work and secure against unauthorized or unintended switching on. The test run (functional check) is an exception from this. • Do not remove or manipulate safety devices.

	Protection of the environment Remove leaking or excess grease from lubrication points and discharge in accordance with the applicable local regulations to protect the environment during maintenance operations.

8.1 Annual maintenance

Conduct mainly visual inspections and function tests in order to establish the integrity, overall condition and good working order of the components and safety devices. Carry out the following tasks and note them in the inspection records/assembly reports.

- Vacuum foundation pint to remove deposited materials (dust, sand etc.)
- Check and clean drainage
- Clean and lubricate central guiding rod (use a silicone or molybdenum desulphated based lubricant)
- Inspect and replace as needed the lower end-position buffers
- Check for and if necessary repair any oil leaks affecting the pump cylinder unit
- Perform a general check that all screws and bolts on bollard are correctly fastened
- Clean the drive cylinder and if necessary, touch up the paintwork
- Check oil level in the pump cylinder unit and top up with oil if necessary
- Check the proper function of the flashing light and the buzzer built into the bollard head.
- Check the proper function of the safety devices (induction loops,

light barriers, etc.)

- Check the proper function of all impulse /control devices
- Visually inspect control unit
- Verify that the EFO system (optional) works correctly

9. Spare parts

WARNING!

Risk of injury due to use of incorrect spare parts!

Use of incorrect or faulty spare parts may result in damages, malfunctions or total failure.

Only use original spare parts from the manufacturer

Purchase spare parts directly from the manufacturer.

9.1 Spare parts list

Table 3: Spare parts list

Item	Spare parts	Quantity per bollard
HB-SP01	Control board	1
HB-SP02	Power supply	1
HB-SP03	Limited switch	2
HB-SP04	Hydraulic unit	1
HB-SP05	Solenoid	1
HB-SP06	LED lamp	1
HB-SP07	Oil piston	1
HB-SP08	3M reflective tape	1
HB-SP09	Up stop point	4
HB-SP10	Down stop point	4
HB-SP11	Junction box	1
HB-SP12	Eye bolts	2
HB-SP13	M10 screw	14
HB-SP14	Push button	1 (Optional)
HB-SP15	Loop detector	1 (Optional)
HB-SP16	Infrared sensor	1 (Optional)
HB-SP17	Traffic light	1 (Optional)
HB-SP18	Remote controller	2 (Optional)
HB-SP19	Heater device	1 (Optional)
HB-SP20	EFO	1 (Optional)