2MHB HYDRAULIC AUTOMATIC BOLLARDS

User Manual

CONTENTS

1. OVERVIEW 5

2. MAIN TECHNICAL PARAMETERS 9

3. STRUCTURE CHARACTERISTICS AND WORKING PRINCIPLE 11

4. INSTALLATION AND ADJUSTMENT 15

5. OPERATING PROCEDURES 18

6. SAFETY PROTECTION AND ACCIDENT HANDLING 20

7. PREVENTIVE MAINTENANCE 20

8. ANALYSIS AND TROUBLESHOOTING OF COMMON FAULTS 22

9. TRANSPORT AND STORAGE 27

10. SUPPORT 27

11. INSTALLATION DRAWING 28

Copyright © 2M Technology, Ltd. 2020. All rights reserved.
Any part of this manual, including words, pictures, graphics, etc., is attributed to 2M Technology, Ltd. or its subsidiaries (hereinafter referred to as “our company” or “2M”). No unit or individual may extract, copy, translate or modify all or part of this manual in any way without written permission. Unless otherwise agreed, we do not provide any express or implied declaration or warranty to this manual.

ABOUT THIS MANUAL

This manual is used as a guide. Photos, figures, diagrams and illustrations provided in the manual are only used for interpretation and description purposes, and may differ from specific products. Please refer to the physical objects. Due to product version upgrade or other needs, our company may update this manual. If you need the latest version of the manual, please visit the company’s official website (www.2MTechnology.net).
2M recommends that you use this manual under the guidance of professionals.

TRADEMARK DECLARATION

2M TECHNOLOGY is 2M’s registered trademark. Other trademarks covered by this manual are owned by their respective owners.

STATEMENT OF RESPONSIBILITY

- To the maximum extent permitted by law, the products described in this manual (including its hardware, software, firmware, etc.) are provided “as-is “(subject to the actual provision if any changes are made) with possible defects, errors or malfunctions. Our company does not provide any form of express or implied warranty, including but not limited to warranty of merchantability, quality satisfaction, suitability for a particular purpose, non-aggression of third party rights, etc.; Nor is compensation for any special, incidental, accidental or indirect damage caused by the use of this manual or the use of its products, including but not limited to loss of commercial profits, loss of data or documentation.
- It is at your own risk to connect the product to the Internet, including but not limited to the product may be subject to network attack, hacker attack, virus infection and so on, our company is not responsible for the problems caused by the abnormal work of the product, information leakage and so on, but we will provide you with product related technical support in time.
- When using this product, please strictly follow the applicable law. If this product is used to violate the rights of third parties or other improper usages, the Company shall not be liable.
- If the contents of this manual conflict with the applicable law, the provisions of the law shall prevail.

INTRODUCTION

The purpose of this section is to ensure that users can use the product correctly through this manual to avoid danger or property loss in operation. Before using this product, please read the product manual carefully and keep it properly for future reference.

ACCESS TO INFORMATION

Access the company's official website (www.2MTechnology.net) for instructions, application tools and development materials.

OVERVIEW

This manual is for the 2MHB of Hydraulic Automatic Bollards, introduces the characteristics and construction plan of Hydraulic Automatic Bollards, and can understand the products and construction according to this document.

SYMBOLIC CONVENTION

For symbols that appear in the document, see the following table:

SYMBOL	NOTE
 **Description**	Description of the text, indicating the supplement and interpretation of the text.
 **Attention**	Note the text to remind users of important operations or to guard against potential damage and property damage.
 **Warning**	Warning type text indicating potential risk, if not avoided, may cause injury, equipment damage or operation interruption
 **Danger**	Dangerous text, indicating a high potential risk, if not avoided, may cause a significant risk of casualties.

SAFETY PRECAUTIONS

 **Warning**

- Equipment installation and use process must strictly abide by electrical safety regulations of the nations and usage places.
- In wiring, disassembling and other operations, please be sure to disconnect the equipment power supply. Do not operate with electricity.
- If the equipment has smoke, odor, or noise, please turn off the power immediately and unplug the power cord, contact the dealer or service center in time.
- If the equipment is not working properly, please contact the shop that buys the equipment or the nearest service center, do not disassemble or modify the equipment in any way. (We are not liable for any problems caused by unapproved modifications or repairs).

Attention

- Please do not install the equipment to the ramp. To avoid steps on the road. To avoid installing equipment where surface vibration is large or undetectable (neglect of this item may cause damage to bollards, vehicles or related personnel).
- Please do not use equipment in high temperature, low temperature or high humidity environment. Specific temperature, humidity requirements refer to the automatic bollards parameter table.
- Equipment should be stored in dry non-corrosive gas environment and to avoid direct sunlight.
- Please keep all the original packing materials of the automatic bollards properly so that when there is a problem, use the packing material to pack the automatic bollards or accessories and send them to the agent or return to the manufacturer for handling. Our Company shall not be liable for any accidental damage in transit caused by non-original packaging materials.

Description

- Quality requirements for installation and maintenance personnel Have a qualification certificate or experience in the installation and maintenance of lifting barrier system, in addition to the following knowledge and operational skills.

  − Basic knowledge and installation skills of lifting barrier system and components.
  − Basic knowledge and operation skills in wiring and electronic wiring.
  − Basic network security knowledge and skills, and can read the contents of this manual.

- Requirements for lifting equipment

  − Use safe lifting equipment suitable for installation location and installation mode.
  − The lifting equipment has sufficient lifting height to reach the installation position.
  − Lifting equipment has good safety performance.

1. OVERVIEW

1.1 PRODUCT PROFILE

1.1.1 PRODUCT CHARACTERISTICS

- Hydraulic drive, lifting speed less than 4 seconds, fast lifting speed, easy maintenance, high reliability, long service life;
- Cylinder top with LED warning lights design, high brightness, no blind spot warning vehicles;
- It adopts the design of strengthened cylinder mounting tray, thickened outer cylinder and thickened stainless steel face plate, which is firm and reliable in installation in order for anti-pressure and anti-collision, beautiful and wear-resistant when using;
- The cylinder adopts nylon guide block orientation, flexible operation, simple structure, high operation reliability and superior collision resistance;
- The drop position of the cylinder is supported by the bottom of the cylinder, and the anti-vibration performance is high;
- The automatic bollards adopts an integrated assembly structure, the structure is simple, easy to assemble/ disassemble and maintain;
- The drainage hole is arranged at the bottom and the heel of the cylinder, which can adopt the way of seepage and side drainage, the construction is simple, and the excavation depth of the foundation pit is reduced;
- Emergency release function: the cylinder can descend under the condition of power off;
- The leading power unit is integrated micro-hydraulic system, hydraulic system is highly integrated, reduce leakage

pollution, without fear of high frequency use;
- Upper outgoing line and upper reserved maintenance line: easy wiring, good waterproof cable, equipment will not crush the cable during the usage;
- Side lead mode, equipment operation will not wear cable;
- The overall waterproofing is good, conforms to the national standard IP68 grade; the control cabinet conforms to the national standard IP65 grade;
- Control system reserves a variety of external signals and control interface, connected to different sensing equipment, to achieve intelligent control functions such as access control system, fire control linkage, license plate recognition, vehicle detector, infrared shooting, Bluetooth, radio frequency RFID and etc.;
- The control system is equipped with over voltage, over current, leakage and short circuit protection functions. The anti-electric strength conforms to the national standard and is safe and reliable to use.

1.1.2 APPLICATION SCENARIOS

This series of automatic bollards are widely used in government departments, power systems, petrochemical, hospitals, banks and other places. Through equipment lifting restrictions on passing vehicles, effective protection of the main facilities and personnel safety is not infringed.

1.2 PRODUCT COMPOSITION

2MHB Hydraulic Automatic Bollards products are composed of Cylinder, control system (control cabinet), manual button box and remote control.

Single control cabinet standard configuration: each group can control no more than 6 sets of automatic bollards (that is 1 towing 6). Two groups standard configuration, that is, a single control cabinet can control 12 sets of automatic bollards. According to the demand can be extended to 4 groups, that is, a single control cabinet can control 24 sets of automatic bollards. Install more automatic bollards, multiple control cabinets can be used in combination.

HYDRAULIC AUTOMATIC BOLLARD CYLINDER

CONTROL SYSTEM (CONTROL CABINET):

HYDRAULIC AUTOMATIC BOLLARD CYLINDER

CONTROL SYSTEM (CONTROL CABINET):

1.3 ENVIRONMENTAL CONDITIONS AND WORKING SAFETY REQUIREMENTS FOR PRODUCT USAGE

- The automatic bollards can be used normally at ambient temperature
- -40°C ~70°C
- Noise less than 40 dB during operation of automatic bollards blocking main body
- Do not install the equipment to the ramp. To avoid steps on the road. To avoid installing equipment where surface vibration is large or undetectable (neglect of this item may cause damage to automatic bollards, vehicles or related personnel);
- In wiring, disassembling and other operations, please be sure to disconnect the equipment power supply. Do not operate with electricity.
- Smoke, odor, or noise, please turn off the power immediately and unplug the power cord, contact the dealer or service center in time.

2. MAIN TECHNICAL PARAMETERS

2.1 MAIN PERFORMANCE PARAMETERS

NO.	DESCRIPTION	REQUIREMENTS
1	Power adaptive capacity	AC 220 V/380V±10%,50-60 Hz±5%
2	Power consumption (whole machine)	300W
3	Operational noise	Less than 40 dB (A)
4	Rising speed	≤ 4 s
5	Drop rate	≤ 4 s
6	Pressure-keeping performance	30 mm/72 hours
7	Protection level	IP68
8	Control system voltage (V)	DC 12V
9	Operating temperature (°C)	-40°C ~ 70°C/-40°F ~ 21°C
10	Dimensions (WxDxH)	400mm x 400mm x (interception height + 550mm) 15.75" in x 15.75" in. x (interception height + 21.65" in.)

2.2 MAIN STRUCTURAL PARAMETERS

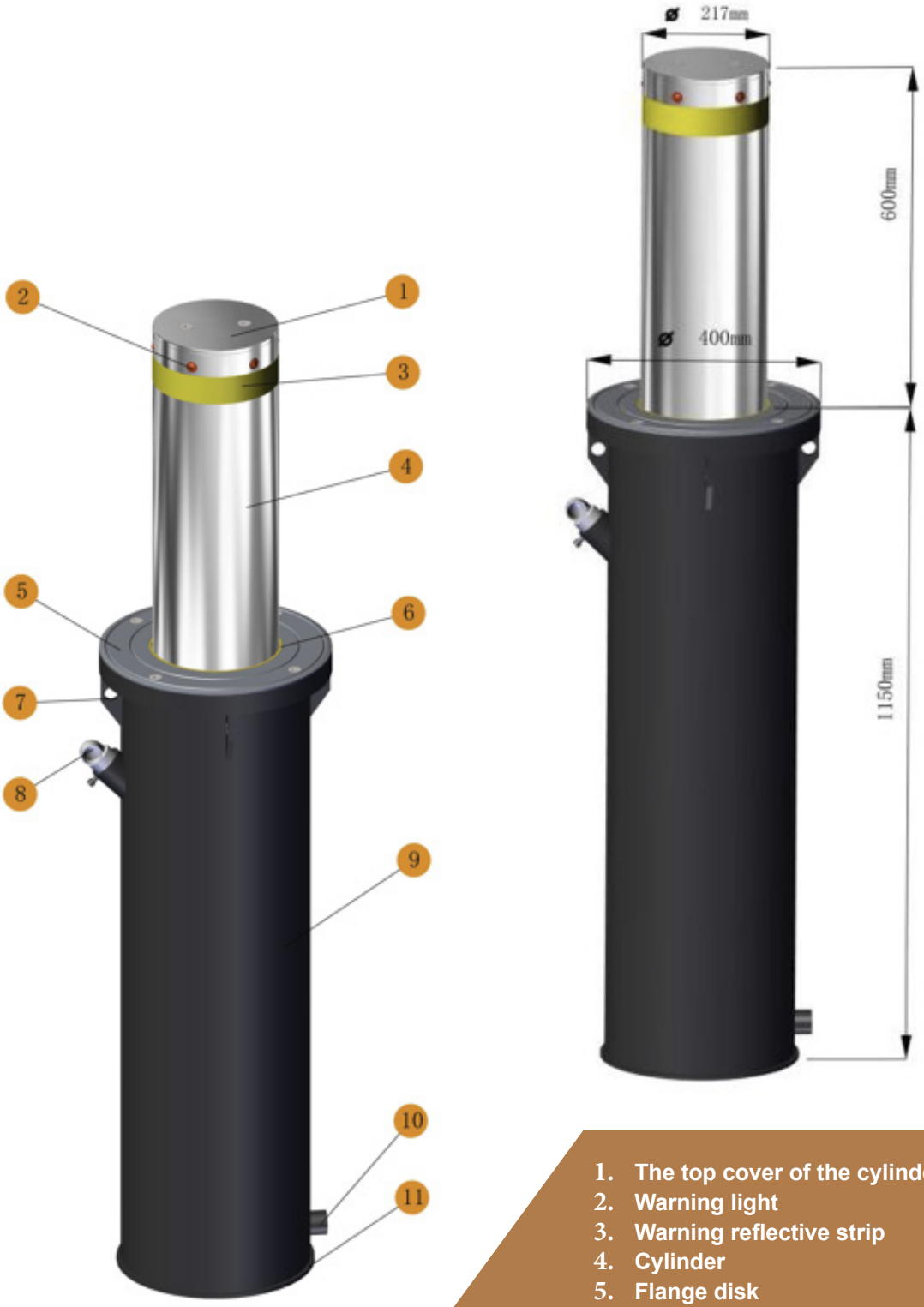
DESCRIPTION	BOLLARD SPECIFICATIONS
Diameter of cylinder	217±2 mm
cylinder wall thickness	6 mm±1 mm
Interception altitude	600/700/800/900/1000 mm±5 mm
cylinder overlap height	160 mm±5 mm
cylinder material	304 stainless steel
Surface treatment	Satin Polish
Flange disc diameter	400 mm±5 mm
Flange plate total thickness	38 mm±1 mm
Flange tray thickness and material	10mm thickness, 304 stainless steel
Length of guide block	120 mm
Guide block thickness	37.5 mm
Routing	Barrel line
Disassembly Mode	Integrated Disassembly

2.3 CONTROL SYSTEM PARAMETERS

NO.	DESCRIPTION	SPECIFICATIONS
1	Input voltage	AC 220V/380V±10%, 50-60 Hz±5%
2	Control mode	Wired, Wireless, Bluetooth, TCP/IP Network, Mobile APP, WEB
3	Protection level	IP65
4	Outer Box Material	Carbon steel paint/stainless steel
5	Control functions	Release/no-walk, counting, fire-fighting linkage, emergency rise, anti-top, traffic light warning, 3G/4G, local control, remote control
6	Interface form	RS485/232/422, TCP/IP, CAN etc
7	Box size	500mm x 600mm x 200mm/19.7" x 23.6" x 7.9" (in.)

3. STRUCTURE CHARACTERISTICS AND WORKING PRINCIPLE

3.1 SHAPE CHART AND DIMENSIONS OF LIFT CYLINDER



1. The top cover of the cylinder
2. Warning light
3. Warning reflective strip
4. Cylinder
5. Flange disk
6. Dust-proof ring
7. Reinforcement bar
8. Outlet bend
9. Outer cylinder tube
10. Drains
11. Lift column chassis

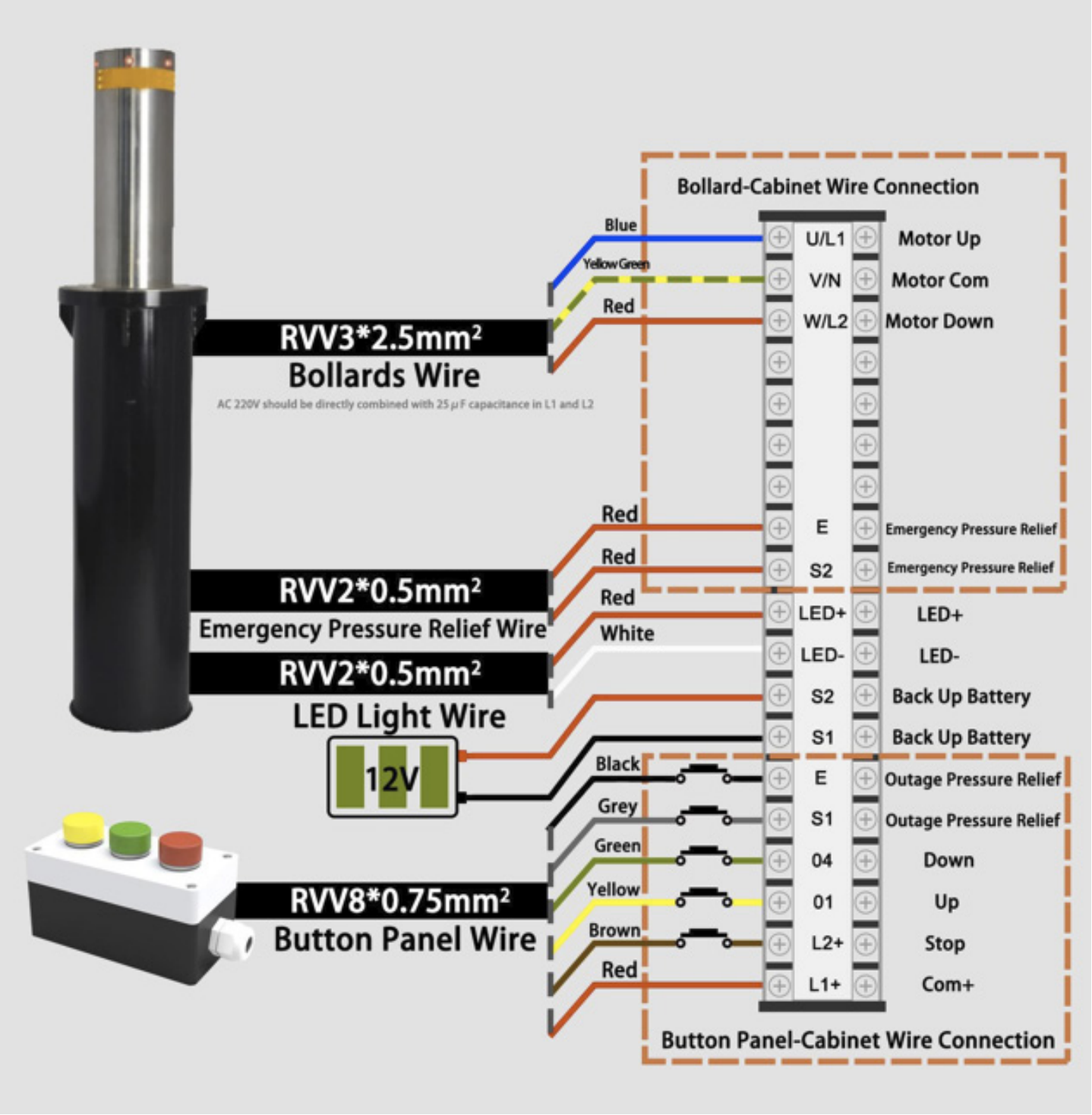
3.2 CONTROL SYSTEM (CONTROL CABINET)

Hydraulic Automatic Bollards control system can be configured ES60M(General)/ES60G(PLC) two models of control cabinet, the two control cabinet control mode slightly different.

3.2.1 INTERNAL INSTALLATION CHART

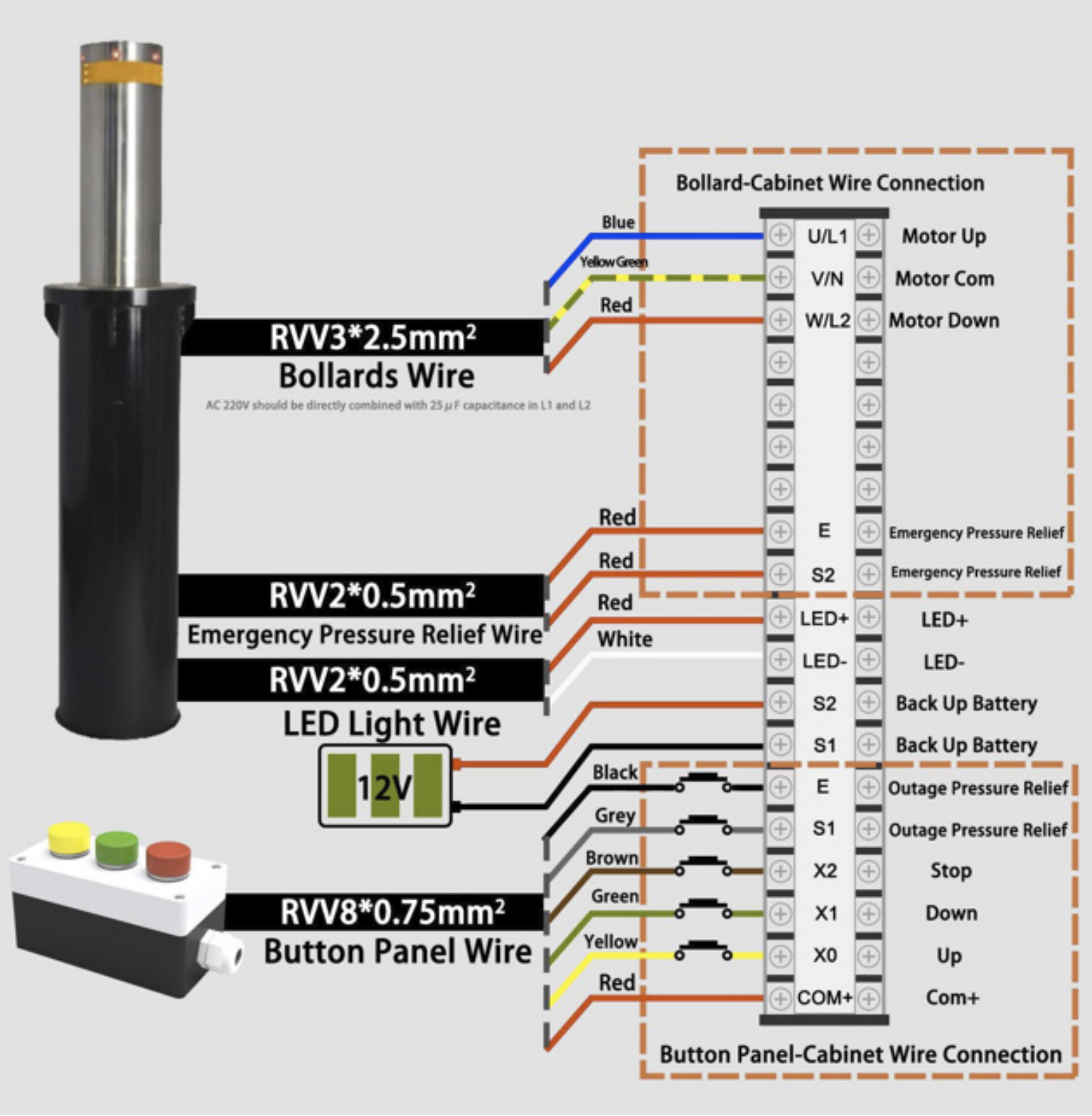
3.2.2 INSTALLATION WIRING DIAGRAM

- ES60M (General) control cabinet installation wiring diagram



3.2.2 INSTALLATION WIRING DIAGRAM

- ES60M (General) control cabinet installation wiring diagram



3.3 WORKING PRINCIPLE

- Control system: signal from signal input (remote control / button box) to control system, control system through domestic logic circuit system or PLC programmable logic control system for signal processing, according to instructions, control output relay, Thus drive AC contractor suction, start power unit motor, distribution box type ES60M (General)/ES60G (PLC) ;
- Control system can choose relay logic circuit system or PLC programmable logic control system. In addition to button box, remote control and other conventional operation control equipment, but also with other entrance and exit management equipment and central management platform linkage control equipment;
- After the motor starts, the gear pump is rotated, the hydraulic oil is compressed into the hydraulic cylinder through the integrated valve, the hydraulic cylinder is telescopic, and the hydraulic cylinder is connected with the automatic bollards to intercept part, so as to realize the function of controlling the traffic of the vehicle.

4. INSTALLATION AND ADJUSTMENT

4.1 SITE SURVEY

Observe the surrounding environment according to the customer's designated installation location, and record the following points:

- According to the site environment and customer use requirements, confirm the best installation location to ensure convenient and smooth installation and achieve the overall aesthetic effect;
- Cement pavement, asphalt pavement, paving masonry pavement;
- Confirm the road surface restoration mode;
- Whether there are green belts, drainage wells, communication wells, open network power facilities;
- And to the relevant personnel to determine the location of pipelines, types, buried depth and other information;
- The installation area near the well cover open observation line direction;
- Verify the position of the power supply and meet the requirements of the equipment: 380 V or 220 V (380 V, three-phase five-wire system); inform the relevant personnel to lead the main power supply to the equipment control cabinet;
- Confirm the distance and direction of the control cabinet to the electric well and button box (within 10 meters of the principle of proximity);
- Draw on the survey sheet and let the responsible person confirm;
- Single group control can not exceed 6 sets, if there is excess should be a good record;
- Whether the two groups and above are linked;
- Initially determine the Rain Water discharge mode, reasonable selection of stone seepage layer or drainage pipe.

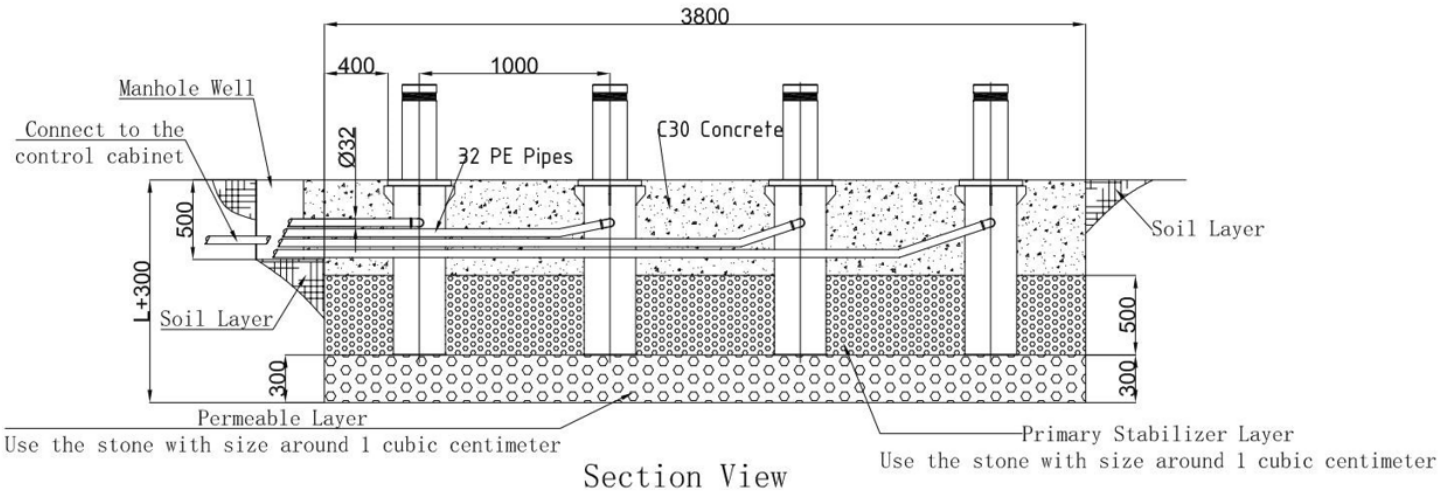
4.2 UNSEALING AND INSPECTION

After the equipment is transported to the site, the packaging should be removed and the appearance of the equipment should be checked. If serious bumps and falls are found, the installation conditions should be tested to confirm that the damaged equipment should not be installed again.

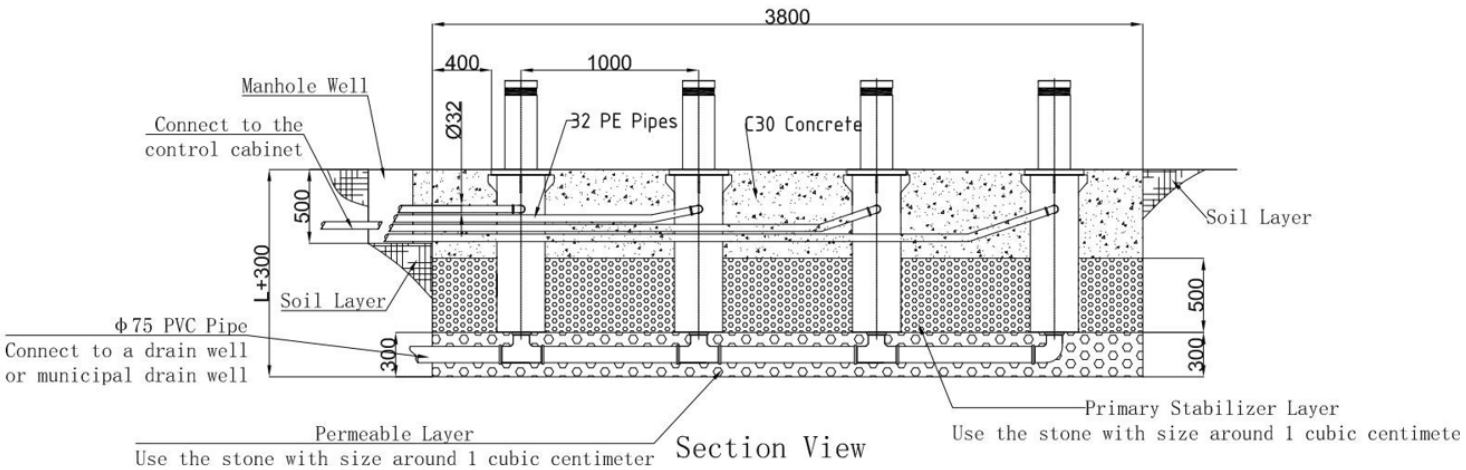
4.3 ASSEMBLY AND INSTALLATION

4.3.1 INSTALLATION CONSTRUCTION DRAWINGS

- Construction drawing of seepage mode



- Construction Drawings for Seepage and Drainage



4.3.2 INSTALLATION CONSTRUCTION BASIC PROCESS AND BASIC REQUIREMENTS: (SEE INSTALLATION CONSTRUCTION CODE FOR DETAILS)

Excavation Foundation Trench

- **Basic requirements:** according to the product shape size to dig foundation groove, general foundation groove size
- **Length:** according to the number of cylinders and site road conditions to determine the size;
- **Width:** 800 mm;
- **Depth:** L+300 mm (including 300 mm seepage layer or drainage pipe)

Setting Rain Water Discharge Layer

Basic requirements: In the case of no drainage pipe, remember to wrap the equipment reserved drain with plastic or soft cloth to prevent backfill stone or cement from entering the cylinder, resulting in equipment failure.

- **Seepage layer:**
  About 300 mm of stone are cushioned up at the bottom of the foundation groove as the seepage layer, and the seepage layer is rammed and leveled to prevent the equipment from collapsing and to adjust the height and horizontal position.
- **Seepage and drainage:**
  At the bottom of the foundation groove, 300 mm of stone is used as the seepage layer, and the drainage pipe is connected at the bottom side of each equipment. When the cylinder enters rain water, it enters the drainage pipe through the drain port and finally introduces the drainage well.

Equipment terminal wiring waterproof

Basic requirements:

- Connector and reserved cable 500 mm stored in the outer cylinder and between the movable baffle, reserved cable at the exit to mark and bind firmly, to prevent drag;
- Cable joints at least three layers of insulation and two layers of waterproof, and tight must not have gaps (remember);
- Cable reservation not less than 500 mm on one side of electric well;
- Each equipment connected cable is marked separately in electric well, which is convenient for later debugging and wiring identification;

Adjust equipment level and installation position

Basic requirements:

- Cylinder height is consistent, the flatness error between cylinders is within 5 mm;
- According to the height of the pavement, the cylinder follows the height of the pavement, and the middle value of the pavement height is taken as the pavement horizontal line, and the error of higher than the pavement level is within 5 mm;
- Fixed with stone after leveling, fixed height 500 mm, avoid moving when pouring cement.

Placement and fixing of cable pipes

Basic requirements:

- Each automatic bollards cable with a separate Φ32PE pipe through the electric well, after wearing the pipe with wire tied together fixed, the equipment outlet hole with foam glue or plastic seal, to prevent cement into;
- Avoid PE tube being flattened when threading, replace it as soon as found;
- Observe the cable mark of the outlet line at all times during the threading process, and prohibit the reservation of cable in the cylinder (remember);
- 20 mm of pipe-piercing barrel outlet with elbow.

Backfill Stone Stabilizer

- After the wire pipe is fixed, measure the flatness of the cylinder again. If it is confirmed that there is no problem, start to backfill the stone evenly, first backfill the stone around the bottom of the cylinder, after the initial stability, the backfill can be unified.
- Backfill shall not exceed 500 mm from the bottom of the cylinder;
- It is forbidden to backfill soil and engineering residue.

Concrete pouring

Basic requirements:

- Protect the upper surface of the cylinder with tape and bubble pad, prevent the concrete from entering into the gap of the equipment when pouring, and affect the normal debugging and use;
- Generally, the C30 tank type commercial concrete is used for pouring. When the weather is cold (the temperature is lower than zero degree), the concrete needs to add antifreeze according to the requirement. The process of pouring concrete must be even and slow, not directly pouring to the cylinder and line pipe;
- After the concrete pouring is finished, the equipment needs to be measured again to ensure that the flatness and perpendicularity of the equipment do not change, if any changes need to be adjusted immediately;
- 4 hours after it has been poured the cement pavement can be smoothed out.
- 24 hours after pouring - people may pass, after 48 hours - small car, may pass, after 72 hours - trucks may pass.

Installation of control cabinets and commissioning

Basic requirements:

- Distribution box fixed, should be based on the principle of proximity, that is, distribution box and cylinder cable line distance of 10~15 meters (less than 10 meters optimal);

- The cable is connected to the distribution box according to the wiring diagram to ensure the correct, no virtual connection, false connection, flying short connection and other phenomena;
- It is strictly forbidden to take electricity from the socket (remember);
- Group control wiring, according to the wiring cable mark in the distribution well, all cables by group re-check the mark, respectively connected to the distribution box;
- Before commissioning, the wiring and waterproofing should be checked for correct and reliable.

4.3.3 CONSTRUCTION EQUIPMENT, TOOLS AND RELATED MATERIALS

4.3.3.1 Equipment

- Pavement cutting machine: used for cement ground cutting;
- Excavator (with broken hammer): used for trenching;
- Residue truck: used for residue transportation.

4.3.3.2 Tools

- Ink bucket: used for ground slotted size marking;
- Infrared leveler: for equipment leveling;
- Engineering line: for equipment leveling;
- Angle grinder: for cable pipe or drainage pipe and other pipe cutting;
- Impact drill: used for fixing control cabinet or laying line pipe;
- Water drill drilling machine: used for wall opening;
- Concrete vibrating rod: used for cement pouring vibration, eliminate concrete honeycomb face;

4.3.3.3 Main construction materials and consumables

- Backfill stone: used for seepage layer laying or equipment initial stability;
- C30 concrete: used for cement pouring to finally stabilize the equipment foundation;
- Φ32PE pipe: used to control cable wiring protection;
- RVV national standard soft sheath cable: used to control signal and power transmission;
- Insulation tape: for cable joint protection and insulation treatment;
- High-voltage self-adhesive tape: for cable joint waterproof treatment;
- Φ50PVC pipe: drainage pipe layout for drainage treatment.

4.4 KEY POINTS FOR EQUIPMENT ADJUSTMENTS

- Before lowering the cylinder, measure the approximate position of the cylinder and mark it. The operator drops the cylinder into the foundation pit according to the mark, the spacing of the cylinder is measured by the box ruler, and the flatness of the cylinder is measured by infrared ray;
- Using infrared measurement to evaluate the ground height difference, take a value on the middle side as the ground horizontal line, the technician can choose a square type according to the actual situation on the spot, the technician must explain to the customer the advantages and disadvantages of each way;
- According to the height of the pavement, the cylinder follows the height of the pavement, and the middle value of the pavement height is taken as the pavement horizontal line, and the error of higher than the pavement level is within 5 mm;
- Cylinder spacing error shall not be greater than 20mm;
- Cylinder height is consistent, the flatness error between cylinders is within 5mm.

5. OPERATING PROCEDURES

5.1 PRECAUTIONS BEFORE USE

- Check whether the control system is electrified and whether the input voltage meets the requirements;
- Check the remote control battery for electricity;
- Check the safety signs of the equipment before use, and read the instruction book carefully;
- Please pay attention to whether pedestrians and vehicles are in a safe area to avoid accidents;

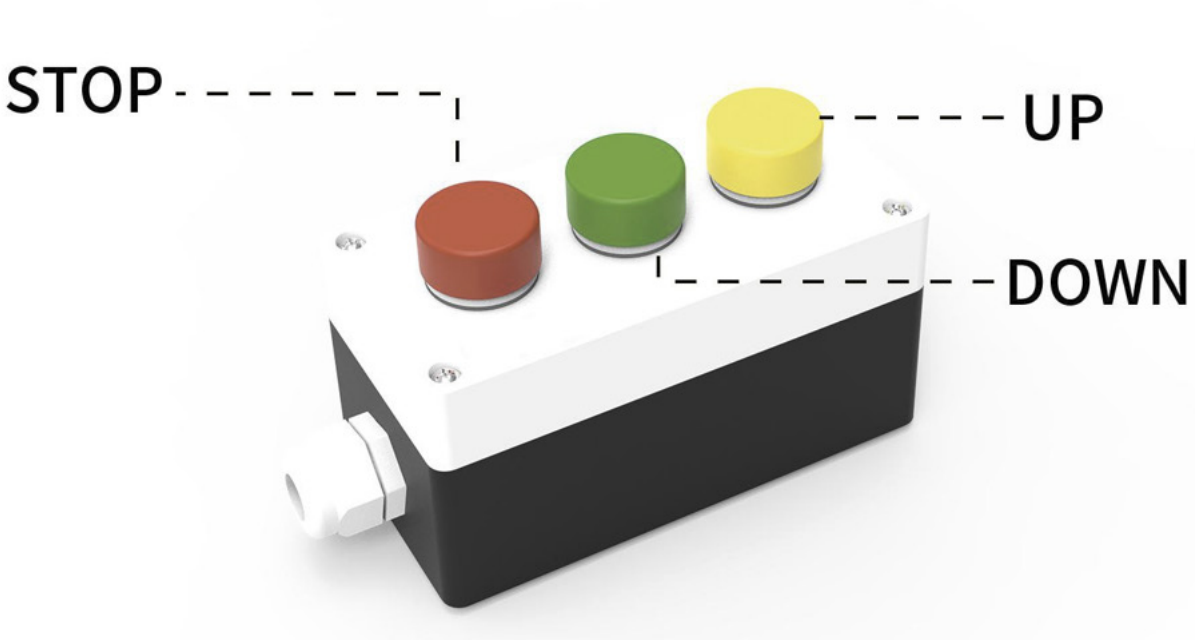
5.2 DAILY OPERATIONAL APPROACH

5.2.1 WIRELESS REMOTE CONTROL OPERATION

There are 3 keys on the wireless remote control (optional according to the customer's different needs), which control the device ▲(up), ▼(down), ■ (stop).

5.2.2 EXTERNAL BUTTON BOX OPERATION

Use this button to make the device rise and fall, during the action is not completed can use the stop key to achieve the device action stop.



5.2.3 EMERGENCY RESPONSE MEASURES

When the equipment is in the rising state and the power grid is cut off, the control cabinet control system can not start normally because of the power failure. There are 12V lead-acid batteries in control cabinet. In order not to affect the normal passage of the vehicle, press the pressure relief combination button — the drop button and the stop button at the same time. Manually apply downward pressure until the cylinder drops to the ground level.

5.3 RELEASE/BAN OPERATION

- Release operation (drop) to realize the state of effective passage space after the drop of automatic bollards;
- Release operation can be achieved by manual operation of wired button box drop button (green), wireless remote control drop button (▼), or through other control system linkage control;
- No operation (rise), to achieve the automatic bollards after the rise of the entrance and exit channel to form an effective state of blocking space;
- Forbidden operation can be achieved by manual operation of wired button box drop button (yellow), wireless remote control drop button (▲), or through other control system linkage control;
- When the operation is prohibited, ensure that there are no vehicles and personnel around the equipment to avoid damage;
- Wired button box, wireless remote control, linkage signal are point arterial impulse signal, signal input time should not exceed 1 second.

6. SAFETY PROTECTION AND ACCIDENT HANDLING

- Avoid frequent rise and fall in a short period of time, otherwise it will cause the motor to heat, causing the motor to stop running or damage;
- When the cylinder work abnormal state, after the rise or fall operation, need to press a stop key to avoid electrical components damage and can not stop, so that the motor burned;
- It is strictly forbidden to fill sediment and debris in the gap around the cylinder, so as not to affect the normal rise and fall of the cylinder;
- It is strictly forbidden to carve the surface of the cylinder, causing damage to the cylinder;
- During the operation of the equipment, it is forbidden that the personnel or heavy objects are above the cylinder, which results in the overload operation of the equipment, resulting in the damage of the equipment and the injury of the personnel;
- Equipped with special remote control equipment, after use, the remote control should be properly placed, turn off the remote control power switch, to prevent accidents and injuries caused by mis-operation;
- If the equipment has heating function, when the temperature is less than 0ºC, turn on the heating switch to ensure the lifting speed, when the ambient temperature reaches 10ºC, the heating switch must be turned off.

7. PREVENTIVE MAINTENANCE

Regular inspection and maintenance are the basis for ensuring that equipment works at optimal efficiency. Note the following when maintaining equipment:

- For electrical maintenance ensure all power is OFF and completely disconnected. Be sure to have prominent maintenance signs.
- 12V charge of lead-acid battery should be clamped to the positive and negative electrode of the battery according to the color of the charger, then plug the charger plug into the charging socket in the control cabinet, and then unplug the plug after the charger indicator light becomes green charging.
- List of equipment maintenance contents and cycles

MAINTENANCE	EVERY DAY	MONTHLY	QUARTERLY	ANNUAL
Check that the cylinder surface is clean	✔			
Check the gap for debris	✔			
Check the remote control battery is charged	✔			
Check that the empty button is normal		✔		
Check that terminal screws are not loose		✔		
Check for loose component screws		✔		
Check the equipment to make sure it goes up and down smoothly	✔			
Overall surface dust removal		✔		
Remove dirt and dust on the surface of electrical control cabinet			✔	
Remove dust in the electrical control cabinet			✔	
Hydraulic control system cleaning			✔	✔
Ensure there is no loosening of the transmission mechanism			✔	
Mechanical fixed structure clean			✔	
Lubricate all sliding parts			✔	
Ensure 12V Lead acid battery is charged			✔	

8. ANALYSIS AND TROUBLESHOOTING OF COMMON FAULTS

8.1 TROUBLESHOOTING LIST

- Common causes of equipment failures and troubleshooting methods are shown in the table below:

ISSUE	EXCLUSION OF CRITICAL POINTS	CAUSES AND SOLUTIONS
Single lift cylinder not in place	Check all cylinders for impact or scratching	Contact manufacturer to replace impact or scrape cylinder
	Check whether there are any sundries between the guide rail and the nylon guide block, increase the friction between the nylon guide block and the guide rail, and cause the lifting stuck	Remove debris
	Check if the lifting time is too short (the north winter low temperature inside the hydraulic oil viscosity is large, resulting in lifting is not in place)	Adjust relay time (return time after temperature rise)
	Check for oil leakage (lift cylinder out)	Add the same type of hydraulic oil
	Check that the fastening screws are loose	Fasten relevant screws
	Check for deformation of mechanical structure	Adjust the deformation mechanism and contact the manufacturer to replace it if necessary
The rising or falling cylinder of the same group is not in place	Check all cylinders for impact or scratching	Contact manufacturer to replace impact or scrape cylinder
	Check that the voltage is 380V/220V normal operating voltage	Contact electrical workers to repair circuits
	Check capacitance loss (equipment operating voltage 220 V)	Replacement of capacitors
	Check the effect of temperature (low temperature in northern winter, high viscosity of hydraulic oil inside the core, resulting in not in place)	Adjust relay time (return time after temperature rise)
No movement of a single ascending or descending cylinder	Check whether there are any sundries between the guide rail and the nylon guide block, increase the friction force between the nylon guide block and the guide rail, and cause the lifting card to die	Remove debris
	Check for oil leakage (lift the main body of the automatic bollards)	Add the same type of hydraulic oil
	Check that the line is damaged	Repair of damaged lines
	Measuring electrical resistance	Contact manufacturer to change machine

ISSUE	EXCLUSION OF CRITICAL POINTS	CAUSES AND SOLUTIONS
No movement of ascending or descending cylinder of the same group	Check that the leakage protector is not closed or tripped	Closed leakage protection switch
	Check leakage protector for tripping	Closed leakage protection switch
	Check the upper end of the leakage protector for voltage or phase deficiency.	If there is a lack of phase voltage, contact the power staff to check whether there is a lack of phase voltage in the main power supply box to assist in repair.
	Check switching power supply, power indicator is normal and check output voltage is 12 V	Replace switching power supply.
	Check that the manual button is normal	Replace damaged button
	Check that the remote is normal	According to the remote control battery power shortage, replace the battery; Remote control damaged and failed, replace remote control
	Check that the intermediate relay and time relay are normal (logic circuit control cabinet)	Replacement of intermediate or time relays of the same specification
	Detect capacitance damage (equipment operating voltage 220 V)	Replacement of capacitance of specifications
	Check that the output voltage (start-up voltage) is normal	Repair power line, if there is a lack of phase voltage need to check and fasten the corresponding virtual terminal
	Detect terminal output line shedding	Fasten shedding terminals and line cables

ISSUE	EXCLUSION OF CRITICAL POINTS	CAUSES AND SOLUTIONS
Leakage protector tripping	Check that the type of leakage protector matches	Select Matching Leakage Protector
	Check leakage protector output wire loose	Tighten the output terminal screw of the leakage protector
	Check for short circuit of AC contact or external wire	Exclude Spurs and Other Short Circuit Points
	Check that the operating voltage is too low or too high	Contact electrical workers to overhaul power supply facilities
	Check if the cylinder is pressed or damaged	Repair of damaged cables
	Check if there is water in the outer cylinder of the automatic bollards, and whether the connection head is waterproof	Measure the line leakage resistance with a rocker meter ,≤20 MΩ, as cable leakage fault, check or replace cable
	Check if the motor is leaking and measure if the phase resistance of the motor line is abnormal	Contact manufacturer to change machine
	Check if the route is damaged or destroyed	Measure the line leakage resistance with a rocking meter ,≤20 MΩ, as cable leakage fault, replace or repair damaged or damaged lines
	Overload of single-phase power equipment in main power supply is excessive, resulting in three-phase imbalance	Contact Power Staff to Adjust Main Power Load
Abnormal sound in control cabinet	Check for loose electrical components inside	Fastening Loose Components
	Check if lines and terminals are loose and disconnected	Fasten loose virtual terminal
	Check the contact or for frequent suction	Replace contactor or contactor coils
	Check that the measured voltage is stable	Contact electrical workers to overhaul power supply facilities
Warning lights are not on	Check that the joints are in good condition	Reconnect lamp beads
	Lights burn	Replace lamp beads of the same type
	Line damage	Repair lines
	Damage to switching power supply	Replacement of switching power supply
	Check that the intermediate relay of the control bead is damaged or loosened	Replacement and fastening of loose parts
	Check that all routes connecting the bead are broken or loose	Repair of broken and loose virtual terminals

ISSUE	EXCLUSION OF CRITICAL POINTS	CAUSES AND SOLUTIONS
Point movement occurs during lifting of automatic bollards	Check for damage to intermediate relay contacts	Replacement of intermediate relays with specifications
	Line terminals fall off	Fasten the terminals
Failure of remote control key	Check that the remote control handle lock key is not open or damaged	Turn on the lock key and change the remote handle
	Check that the antenna is fully pulled out	Pull-out antenna
	Check that the remote control handle battery is dead	Replacement of batteries
	Check that the remote handle keys are damaged	Replace remote control handle
	Remote Control Receiver Connection Lines Off or Loose	Fastening loose or shedding terminals
	Damage to receiving antenna	Repair of antenna or replacement
Surface depression of stainless steel cylinder	Check the hard limit below the cylinder structure for heavy pressure deformation	Correction of deformation hard down limit or replacement of hard down limit
When the automatic bollards rises, the cylinder shakes	Check that the cylinder is in place	Single (or same group) cylinder up/down not in place
	Check for loose screws on lifting face plate	Adjust and tighten nuts
	Check that the core fixing nut is loose	Fasten core fixing screws
	To check if the cylinder has not performed lift operation for a long time (≥12 h); and	Daily lift operations in accordance with relevant maintenance regulations
	Mis-operation of remote or manual buttons	Repeat up operation
Shaking of middle cylinder during rising of automatic bollards	Damage to nylon guide block	Replacement of nylon guide block
	Check that the core fixing nut is loose	Fasten core fixing screws
The cylinders slide automatically	Check for oil leaks	First remove the oil leakage point, after refueling many times lift, such as failure still contact manufacturers to replace the core
	To check if the cylinder has not performed lift operation for a long time (≥12 h); and	Daily lift operations in accordance with relevant maintenance regulations
	Mis-operation of remote or manual buttons	Repeat up operation
	Check that the operation log is too long to operate	Up and down at least once a day as required by operation and maintenance

ISSUE	EXCLUSION OF CRITICAL POINTS	CAUSES AND SOLUTIONS
The single automatic bollard reacted slowly, and the others in one group began to rise, this bollard began to move	Check the single equipment line for virtual connection, lack of phase (380 V three-phase motor)	Exclude virtual or phase-deficiency circuits
	Check for low ambient temperature	Multiple elevations to be compared with the same group
	Detection of gas in internal piping of core equipment	Open the refueling port, rise and fall not less than 5 times to exhaust, pay attention to keep the refueling port and oil port screw clean
	Check if the core has been replaced	Core reaction speed is inconsistent, reaction is too slow, time difference is more than 2s, contact manufacturers to replace the core

8.2 LIST OF VULNERABLE PARTS

NO.	DESCRIPTION	SPECIFICATIONS	NUMBER OF PIECES
1	Remote control battery	23A 12 V	1 piece
2	LED new lamp bead		6 pieces
3	Reflective tape	Customizable	1 strip
4	Intermediate relay	NXJ-DC-12V-421	1 piece

8.3 LIST OF COMMON TOOLS AND CONSUMABLES FOR MAINTENANCE

NO.	DESCRIPTION	SPECIFICATIONS	PURPOSE
1	Hand watch	500 MHz	Measuring electrical leakage resistance
2	Multimeter	General purpose	Measuring voltage, circuit switching
3	Inner hexagonal wrench	6, 8, 10	Disassemble equipment
4	Cross screwdriver	Medium	Disassemble equipment
5	Word screwdriver	Medium	Disassemble equipment
6	Live wrench	Medium	Disassemble equipment
7	Measuring instrument		Measuring line for electricity
8	Waterproof tape		Cable waterproof
9	Electrical tape		Wiring Protection

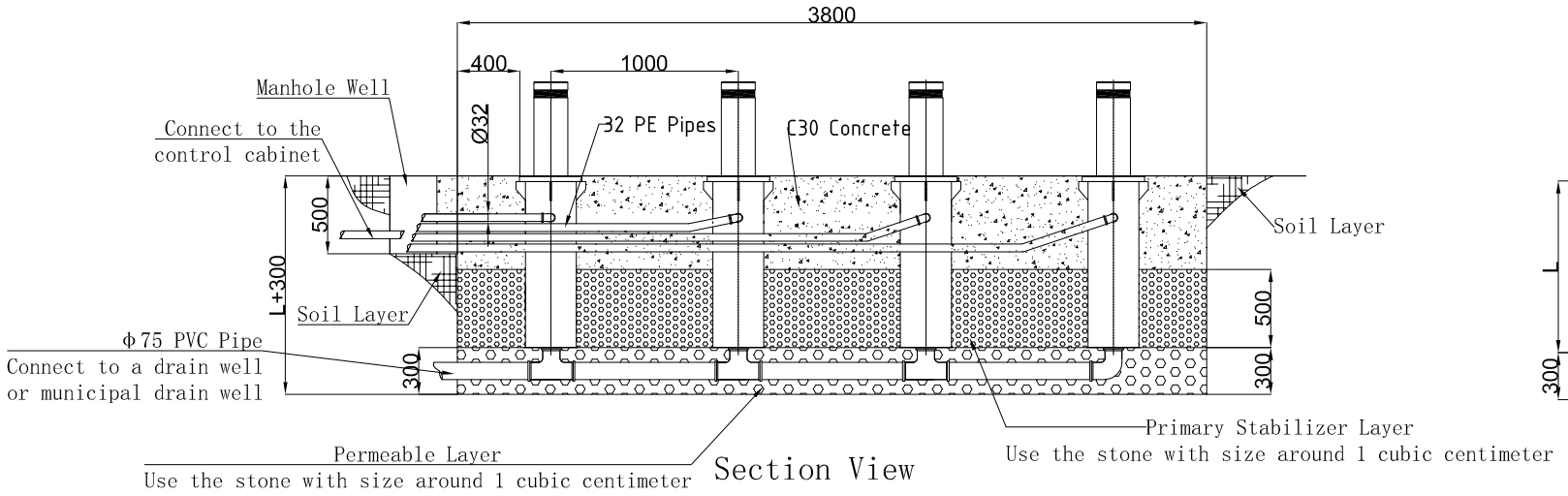
9. TRANSPORT AND STORAGE

- When the product is shipped, it should be light and light, prevent heavy pressure and collision, prevent rough loading and unloading, and strictly prohibit the erosion of chemicals;
- Products should be stored in a ventilated, dry, light-proof warehouse, should be more than 100 mm from the ground, should not be stored with corrosive substances, and away from heat sources.

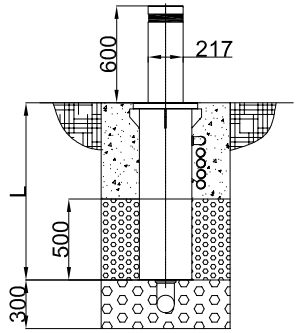
10. SUPPORT

- Company website: www.2MTechnology.net
- Sales: sales@2mtechnology.net
- Phone Number: 1-877-962-1737

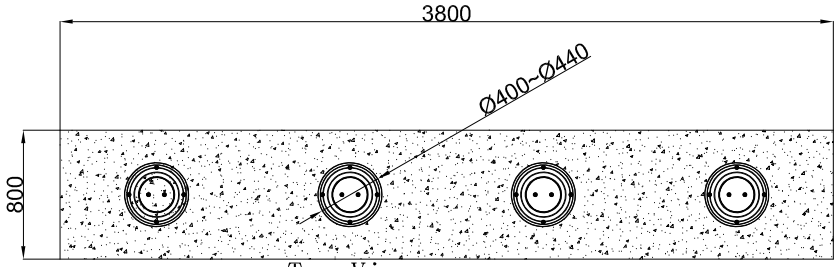
11. INSTALLATION DRAWING



Section View



Side Profile



Top View

Before Installation

1. Confirm the installation size and surrounding environment conditions are appropriate before excavating the foundation pit.
2. Confirm that the pit wall is solid. If the foundation pit collpases, corresponding support should be provided, and the supporting method should be seelcted by itself.
3. The foundation pit should be kept dry. If there is groundwater, the water should be drained completely.
4. The depth of drainage layer is determined according to the actual height of the equipment.
5. Level, add equipment into the foundation pit and fix it with gravel.
6. Embed the equipment pipe and connect the elctrical circuit.
7. Once the position is set, concrete should be poured in slowly to prevent the equipment from becoming unlevel.
8. It is forbidden to use sand or secondary waste dregs for backfilling
9. Installation of relevant equipment sahll meet the requirements of products ans national standards
10. In the process of construction, if the design is not consistent with the site, it can be adjusted according to the site situtaion without affecting the apperance and use conditions
11. After placing the equipment in the foundation pit and adjusting the postion, the flange on the upper surface of the cylinder must be in the horizontal position
12. The upper surface of the column shall be at the same level, and the actual height can be adjusted to the actual situation on site.
13. C30 concrete must be used
14. The size of the foundation pit shown in the figure is the minimum requirements. Look at your local regulations







802 Greenview Dr. Suite 100,
Grand Prairie TX. 75050 USA
Toll Free: 1-866-708-5401
Fax: (+1) 972-999-4113
sales@2MTechnology.net