

User Manual

Road Blocker

Applicable model: ZK-RB1000

Version: 1.0

Date: 11/2018

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1. Product Overview

The hydraulic road blocker is a vehicle passageway management device that controls passageway opening and closing by controlling movable flaps. The product can be used independently or with an electronic dock gate system, parking lot system, and other systems. It is applicable to vehicle passage control in fields such as customs, military bases, important government departments, airports, prisons, nuclear stations, hydropower stations, ports, liquefied gas stations, oil depots, and logistic warehouses.

The road blocker mainly consists of a host shelf, a hydraulic transmission station, and an electronic control system.

1. Host shelf:

The road blocker mainly comprises a flap or lifting body and an engine base integrated in a steel structure that is welded with 16 mm A3 mold steel plates and channel steel compliant with international standards. It has no internal electric parts or wires and is secure and waterproof. It is buried in a specified position on a lane or near a gate and controls vehicle passage based on the instructions of on-duty personnel.

2. Hydraulic transmission station:

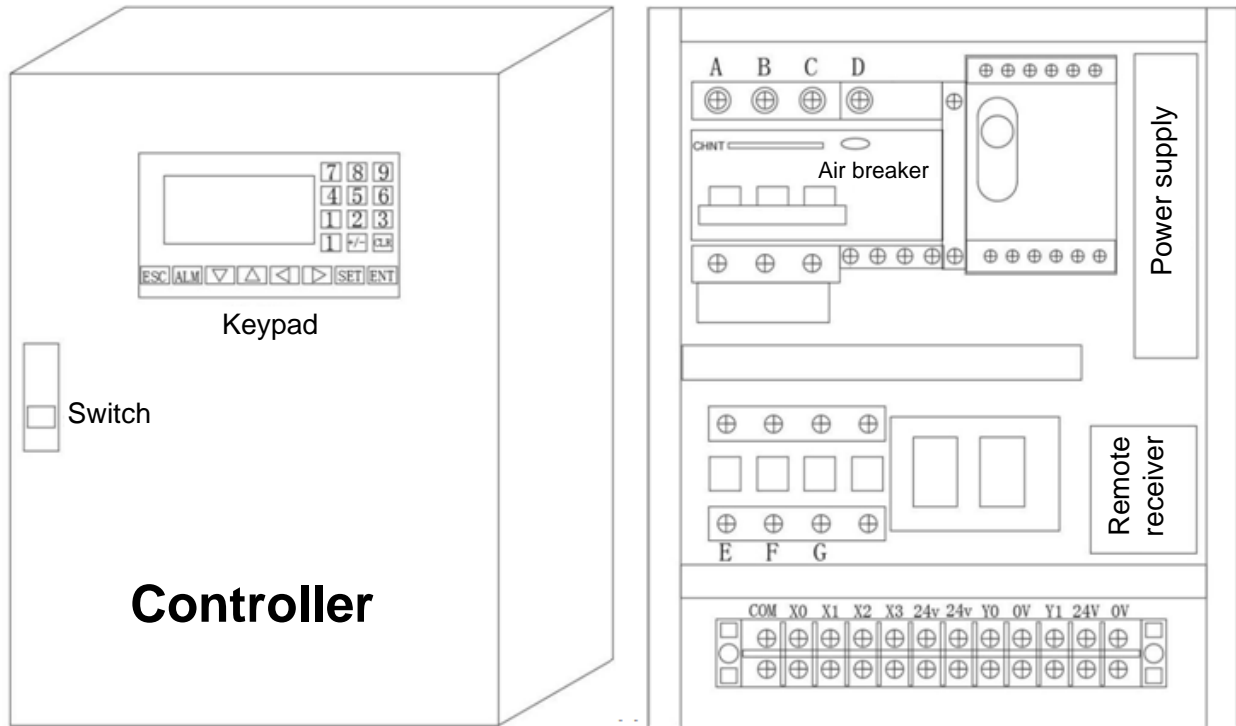
The hydraulic transmission station mainly comprises an oil tank, a manual oil pump, a full set of hydraulic solenoid valves, a high-power motor, an oil pump, an oil cylinder, an oil meter, an oil leveler, an external level indicator, and high pressure wire braided oil pipes compliant with national standards. It provides the power source for the road blocker system. It is installed on one side of the road blocker and used with the road blocker. The rising and falling speeds can be changed by using a regulating valve. The flaps can be lifted up and down manually in the power-off state.

3. Electronic control system:

The automatic electronic control system comprises a primary control board, a secondary control board, a residual current circuit breaker, and a contact noise-free contactor with a long service life. It features precise startup time setting (which prevents the impact generated by the oil cylinder at the end of stroke and thus improves the service life of the oil cylinder) and automatic rising setting (a ground induction coil is added to lift up the bar when vehicles pass). The automatic controller comprises a control cabinet, a remote, and manual buttons for use by on-duty personnel.

2. Control Cabinet and Hydraulic Transmission Station

➤ Control cabinet



➤ Keypad screen



Keypad use instructions:

ESC: Exit

ALM: Alarm

SET: Set

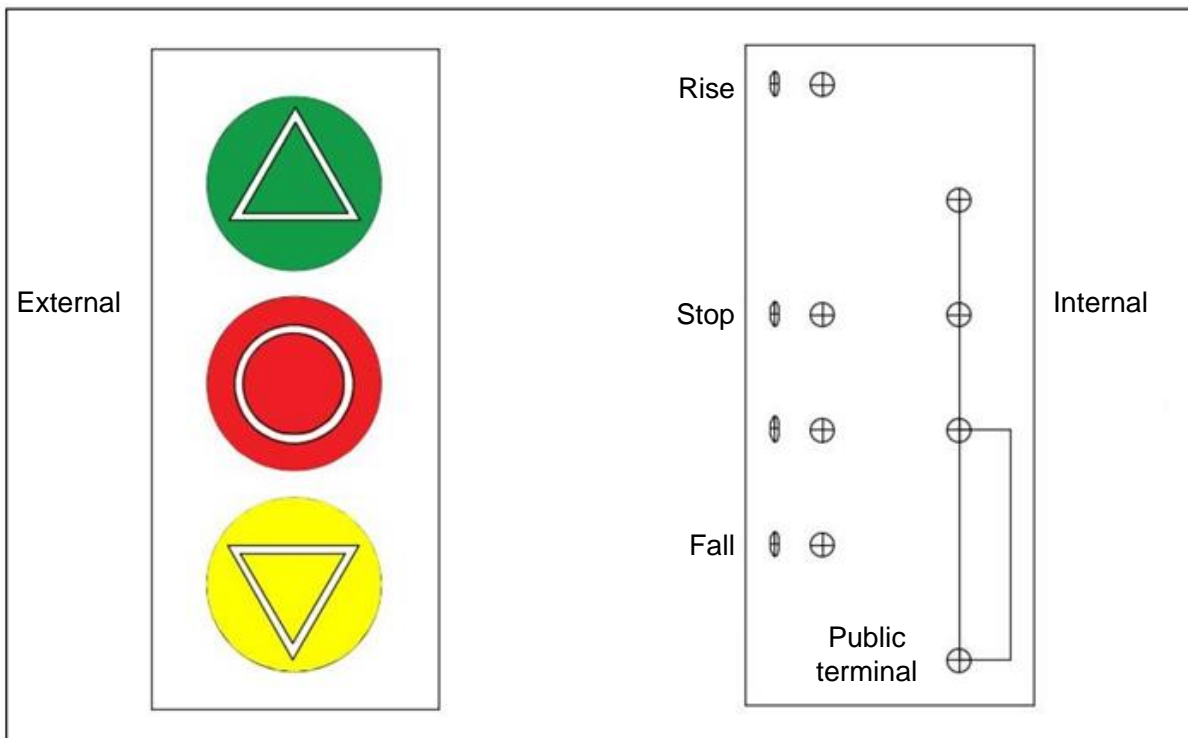
ENT: Enter

CLR: Clear

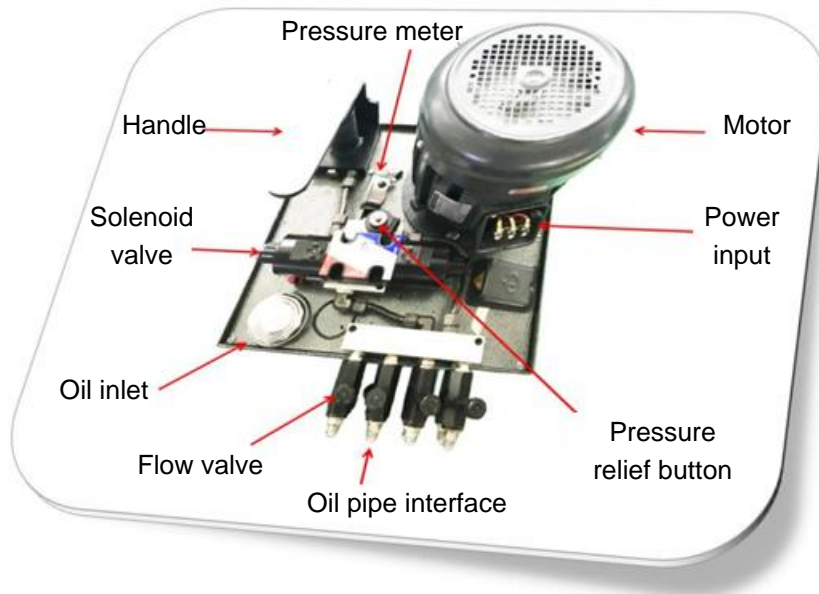
You can adjust the lifting time by using the keypad. After power-on, press and hold the right arrow key on the

operation interface until the rising and falling time is displayed. Then, enter the rising time by using the numeric keypad and press **ENT**; enter the falling time and press **ESC** to exit the time setting screen. The lifting time is set by default or set by onsite technical engineers, and does not need to be modified in normal cases. You can enter the **Rise**, **Fall**, and **Stop** screens through the keypad. You can control lifting by pressing the up and down keys.

➤ **Manual buttons**

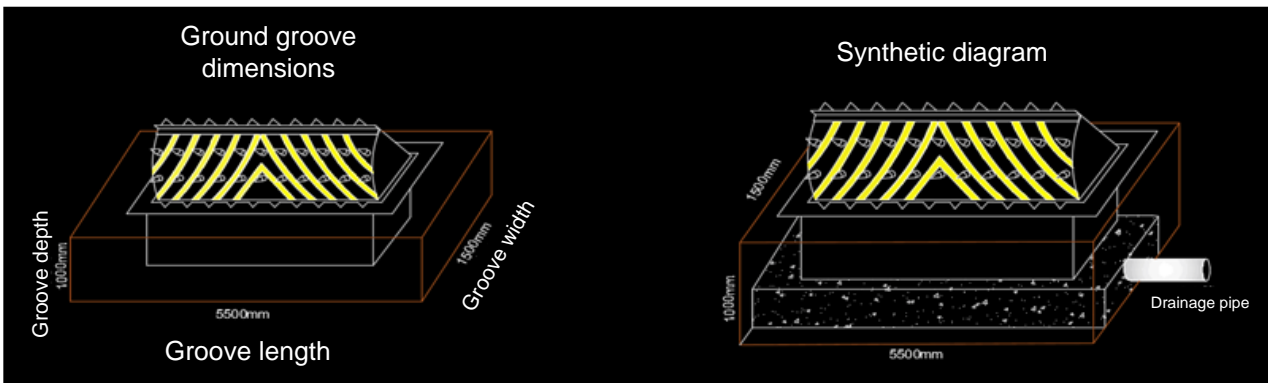
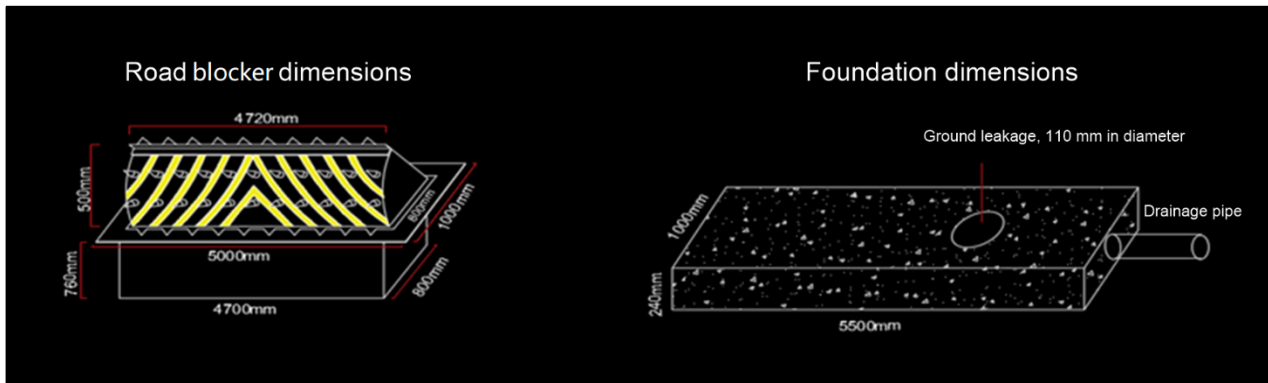


➤ **Hydraulic transmission station**



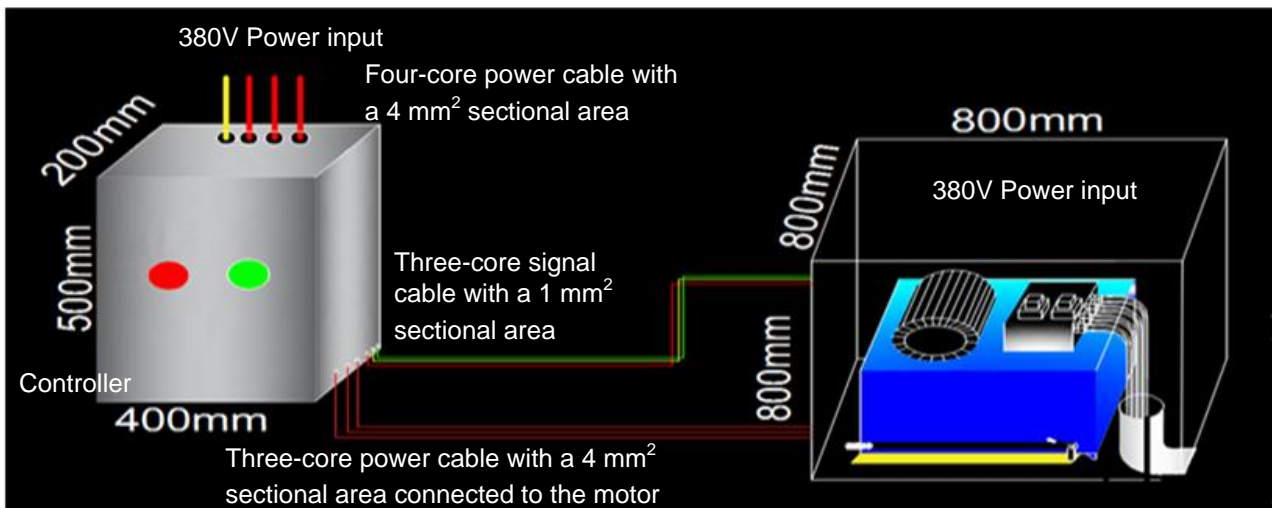
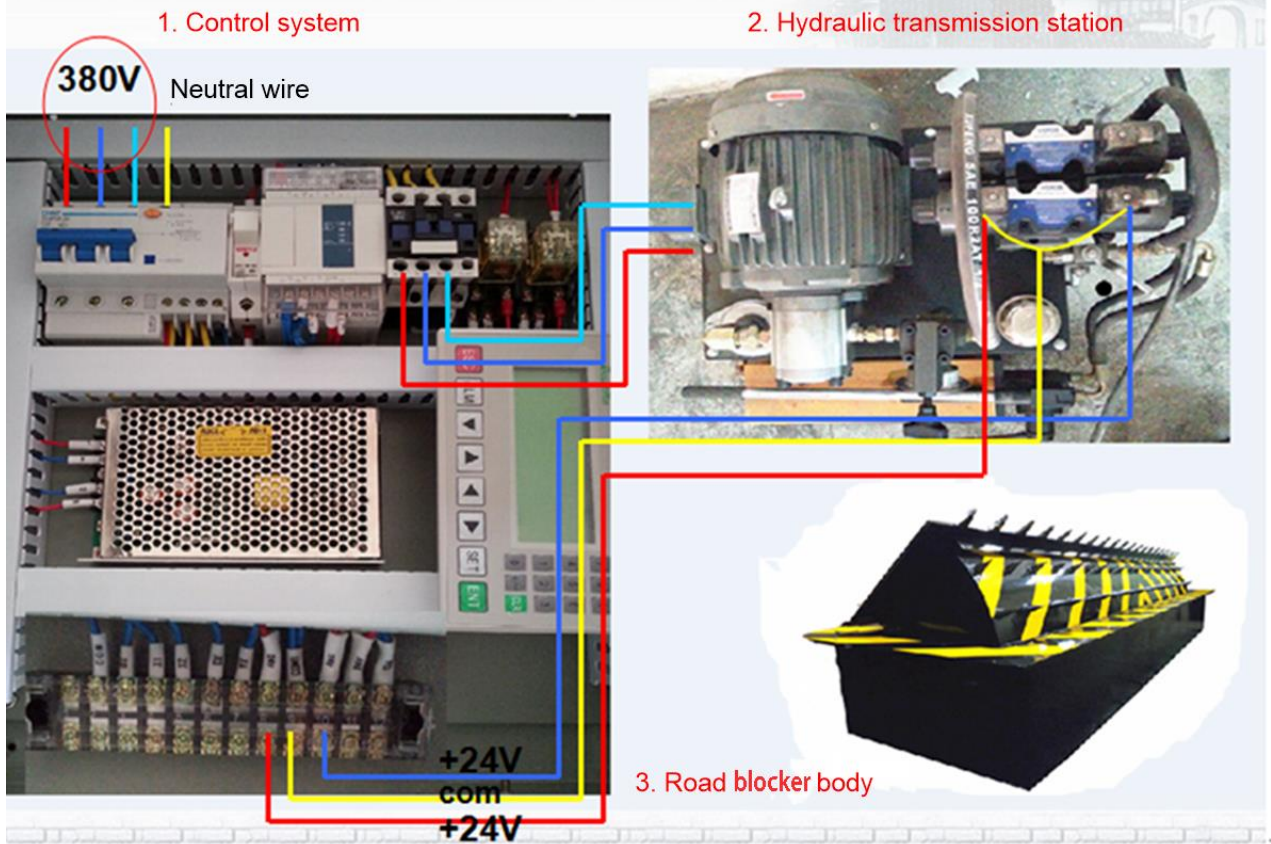
3. Installation Steps

- (1) Dig a ground groove according to the area required by the road blocker, build a foundation, and complete drainage. Ensure that a 380V power supply is connected to the construction site. Embed all the required pipes and wires. Dig a square groove at the specified vehicle access junction to accommodate the host shelf of the road blocker. For example, a 5 m road blocker requires a groove measuring 5500 mm (L) × 1500 mm (W) × 1000 mm (D).
- (2) After a ground groove is dug, cast concrete at the bottom of the groove and reinforce the concrete with steel wires to form a foundation 240 mm high, with a high degree of accuracy on the horizontal plane. The base of the host shelf may be in full contact with the steel bars at the bottom to provide drainage for the permeated part so that the entire host shelf bears forces. You can reserve a gutter measuring 150 mm (W) × 20 mm (D) in the middle of the groove base for drainage purposes.
- (3) Put the road blocker into the ground groove. If multiple road blockers exist, keep the oil pipes in the same direction, draw ropes for leveling, and determine spacing.



- (4) Determine the position of the hydraulic transmission station, connect the road blocker to the hydraulic transmission station by using oil pipes, and wrap the oil pipes inside PVC jackets. Connect each road blocker to a group of interfaces (upper and lower interfaces form a group) on the hydraulic transmission station. If the up and down buttons of the remote do not correspond to rising and falling during commissioning, exchange the upper and lower oil pipes. When connecting oil pipes, seal the pipes by using sealing tapes and ensure that they are connected securely.
- (5) Determine the position of the control cabinet, fix the control cabinet in the determined position, and turn the air breaker to OFF. Connect the 380 V power supply to ABCD of the control cabinet by using four-core wires with a 4 mm² sectional area. Note that D indicates the neutral wire. Connect EFG of the control cabinet to the 380 V power input port of the hydraulic transmission station by using three-core wires with a 4 mm² sectional area. Connect Y0, 0V, and Y1 to the rising end, common terminal, and falling end of the solenoid valve respectively by using three-core wires with a 1 mm² sectional area.

Hydraulic road blocker wiring diagram



- (6) Open the oil inlet, pour in about 60 liters of hydraulic oil, and tighten the cover.
- (7) Perform commissioning of the manual lifting unit. Press the handle repeatedly to lift up the road blocker.
When the road blocker reaches the highest point, press the pressure relief button and make the road blocker rotate so that it drops to the lowest point.

- (8) Power on the road blocker and turn the air breaker to ON. Set the rising and falling time on the keypad of the control cabinet. Hold the wireless remote and observe the rotation direction of the motor. If the motor rotates in the arrow direction, it is normal; otherwise, adjust the order of the three 380 V power cables of the motor. If the motor rotates in the right direction, observe the pressure gauge and adjust the pressure adjustment switch (a Torx rotary switch) to ensure proper pressure (normally at about 60).
- (9) If the road blocker speed is too fast or slow, adjust the flow valve and pressure adjustment switch (a Torx rotary switch). Repeat the operation on multiple faulty road blockers.
- (10) Map COM, X0, X1, and X2 to the common terminal, Rise, Fall, and Stop manual buttons by using four-core wires with a 1 mm² sectional area to test the manual buttons.
- (11) Place an iron box cover on the hydraulic transmission station after adjustment. Fill in the ground groove with concrete or soil and stones, and restore the construction site. This completes the installation process.

4. Precautions

- (1) Motor direction: Connect a 380 V power supply and observe motor rotation. If the motor rotates in the wrong direction, adjust the order of the power cables. If the motor does not rotate, check whether it is powered off. If the motor overheats, stop using the motor until it cools down.
- (2) Oil pipe connection: Connect the hydraulic oil pipes securely, seal them with sealing tapes, and ensure that no foreign substances exist inside the oil pipes.
- (3) Hydraulic oil selection: Use antifreezing hydraulic oil when road blockers are used in areas with excessively low temperatures in winter.

5. Usage and Maintenance

➤ Daily usage and maintenance

Daily usage and maintenance involve the host shelf, hydraulic system, and control system of the hydraulic road blocker. For the host shelf, clear the residual substances below the movable flaps and dredge the drainage pipeline. For the hydraulic system, observe the oil level indicated by the oil level gauge and the readings of the pressure meter. For the electronic control system, prevent dust and water ingress. Always keep the systems clean to prolong the service life of the road blocker.

➤ **500-hour maintenance**

- 1) Clear the residual substances and dirt on the host shelf and movement parts of the road blocker.
- 2) Check and tighten the bolts at connection junctions.
- 3) Check the connected pipes and lines once.

➤ **3500-hour maintenance**

- 1) Replace the hydraulic oil in the hydraulic transmission station once.
- 2) Clean the hydraulic oil tank once.
- 3) Replace the oil filter element.

6. Troubleshooting

- (1) Pressure: If the road blocker speed is too fast or slow, adjust the flow valve and pressure adjustment switch (a Torx rotary switch). If the road blocker lifts abnormally, the hydraulic oil may evaporate a lot or the oil pipeline ruptures causing oil leakage. In this case, check whether the hydraulic oil is sufficient. If the problem is due to oil evaporation, supplement hydraulic oil. If the oil pipeline ruptures or the hydraulic transmission station has oil leakage, replace the oil pipeline and hydraulic transmission station. It is recommended that the hydraulic oil be replaced every two years.
- (2) Remote: If the wireless remote malfunctions but the manual buttons are normal, replace the battery. If the problem persists, the receiver may be faulty. In this case, replace the receiver and perform commissioning.
- (3) Solenoid valve: If the manual buttons and remote do not work, observe the indicators on the solenoid valve. Press the up and down buttons of the remote, and one of the indicators on the solenoid valve lights on. If no indicator lights on, the solenoid valve is faulty.
- (4) Oil cylinder: More than two road blockers share the same hydraulic transmission station. If a road blocker fails to operate even when the remote and hydraulic transmission station are normal, locate the oil pipeline of the faulty road blocker, exchange the oil pipeline with that of a normal road blocker, and check whether the faulty road blocker resumes operation. If no, the pipeline or the internal oil cylinder of the road blocker is damaged. If an independent road blocker encounters the preceding problem, the oil pipeline or oil cylinder is damaged. In this case, replace the oil pipeline or oil cylinder. To do so, remove the screws from the panel of the road blocker and lift the movable plate in the middle.

| Symptom | Cause | | Solution | |
|---|-------|---|----------|--|
| The road blocker fails to start. | 1 | The power supply is not connected. | 1 | Check and connect the power supply. |
| | 2 | The fuse is broken. | 2 | Replace the fuse. |
| | 3 | The controller contactor is in poor contact. | 3 | Check the controller contactor. |
| The movable flaps of the road blocker are not closed tightly. | 1 | Residual substances exist in the closing position of the movable flaps. | 1 | Clear the residual substances. |
| | 2 | The pressure is insufficient. | 2 | Check the oil pressure. |
| The oil cylinder does not work after startup. | 1 | The solenoid valve does not work. | 1 | Repair or replace the solenoid valve. |
| | 2 | The internal sealing kit of the oil cylinder is damaged. | 2 | Repair or replace the internal sealing kit. |
| | 3 | The pressure is insufficient. | 3 | Check whether the pressure indicated by the oil pressure gauge meets requirements. |
| The movable flaps act slowly. | 1 | Flows are limited by the throttle. | 1 | Adjust the throttle. |
| | 2 | The oil cylinder encounters inner leakage. | 2 | Repair or replace the oil cylinder. |
| | 3 | The oil pipe connector is not tightened properly. | 3 | Tighten the connector properly. |

- (1) If you cannot rectify faults on your own, contact our after-sales service department promptly and rectify the faults under correct instructions. Do not dismantle the road blocker on your own in order to avoid any unnecessary losses.
- (2) If any problems or faults cannot be rectified, contact our after-sales service department promptly. We will dispatch professional personnel for maintenance and operation.
- (3) Website: www.zkteco.com

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