



## 1. GENERAL DESCRIPTION

This specification defines supply of Road Blocker, Hydraulic Power Unit, Control Circuit, Features and Options designed for 2 mt, 3mt, 4mt, 5mt 6mt and interim sizes intended for use at entrance and exit points that require medium security.

## 2. SYSTEM CONFIGURATION

### 2.1 High-Security Road Blocker

- 2.1.1. Road blocker is composed of a lower body, hinges and mobile upper wherein heavy steel components are used. Unauthorised access is denied to approaching vehicles when the road is closed. Road blocker should be capable of standing to the initial energy in case of an impact, and subsequently transmitting it to the units.
- 2.1.2. Wall thickness of the upper sheet of road blocker's mobile body that faces the road should be minimum 10 mm.
- 2.1.3. Road blocker height from its upper point of mobile body to the road surface should be selectable depending on the safety level between 500 and 800 mm.
- 2.1.4. Road blocker system should have at least 1 piston.
- 2.1.5. Road blocker length is adjustable from minimum 1,8 mt to maximum 5 mt depending on the road.
- 2.1.6. To resist corrosion, the road blocker should be dyed with UV ray resistant RAL1023 traffic yellow finish onto a thick layer of epoxy undercoat to allow drivers to notice the product in day and night.
- 2.1.7. Front side of the road blocker should have warning stripes, a stop-sign in EN 12899, ASTM D 4956 standards.
- 2.1.8. On and off speed of the product is between 4 and 8 seconds.
- 2.1.9. It allows access to heavy duty trucks of medium to small size of 30 tons that are compatible with technical parameters.
- 2.1.10. Road blocker should be equipped with pins to prevent mobile body from falling off during servicing and maintenance.
- 2.1.11. Road blocker hinge system should be concealed and not in contact with the vehicle tyre(s).
- 2.1.12. Road blocker hinge pivot should be minimum 25 mm diameter.
- 2.1.13. Road blocker hinge system should be equipped with maintenance-free bushing system.

## 2.2 HYDRAULIC POWER UNIT (HPU)

- 2.2.1. Hydraulic unit is composed of a high-pressure pump driven by an electric engine that triggers pistons. There should be an electrical guiding valve that moves the product upwards or downwards. Hydraulic system should be optionally equipped with all parts necessary for emergency motion.
- 2.2.2. Electric engine that connects to high pressure pump should be fed by 210-230V/3/50-60Hz or 380-420V/3/50-60Hz in compliance with the mains where it will be assembled.
- 2.2.3. When electricity to hydraulic power unit is optionally disconnected, it should connect to DC engine and accumulator system so that the system continues to function. This particular feature should be specified in advance.
- 2.2.4. Cabin should be made of galvanised sheet in order to protect hydraulic power unit and components against external factors. Two facades of the cabin should be equipped with a service hatch with a locker. The cabin should be dyed with RAL7047 paint.
- 2.2.5. Hydraulic cabin should be equipped with at least 1 thermostatic ventilation system.
- 2.2.6. Road blocker system should enable stable operation from -20 to +70 degrees.

## 2.3 CONTROL AND LOGIC CIRCUIT

- 2.3.1. Control circuit should be equipped with a structure together with any other necessary equipment needed for controlling hydraulic power unit and all necessary accessories; and it should ensure smooth operation of the system.
- 2.3.2. Control card should be equipped with a high performing RISC processor, which should be supported by NanoWatt XLP, capable of extremely low power management.
- 2.3.3. Control circuit should operate at 210-240V 50-60Hz (optionally at 110V 50-60Hz) There should be an internal supply outlet of 12-24V Dc for accessories and equipment.
- 2.3.4. Control circuit should not exceed 100W power consumption under normal operating conditions.
- 2.3.5. Control circuit should be in an individual panel inside the hydraulic unit cabin where all connections and settings are enabled.
- 2.3.6. The control panel should enable setting the auto turning off time, barrier synchronous turning off time, rising bollard synchronous turning off time.
- 2.3.7. Voltage inlet clamp of the control board will be a PCB with rocker switches, and supported with CAGE CLAMP connection technology. The clamp should have CCA EN 60947-7-4 and ENEC 15 EN 60998 certificates for electrical safety.
- 2.3.8. Control should enable connection to the panel with an insert socket.
- 2.3.9. Control card will be a PCB print. The card should have an optional 24VDC or 220VAC outlet to guide the valves in addition to a mini contactor to drive the engine, and adjustable current protection circuit, phase protection circuit, inverter control outlet, buzzer outlet, flasher outlet, optional 24VDC or 220VAC outlet for traffic signalisation light, external contactor outlet. Optionally, an LCD display should be connectable to the card. The card should enable setting the turning on and off time, automatic closing time, and synchronised operation time. The card should have deep switches to select different operation modes. Deep switch modes should have automatic turn off on and off mode, valve deflexion, open-stop-close/ open-close-control modes, and a traffic signalisation mode.

## 2.4 ACCESSORY EQUIPMENT (One or all selectable)

- 2.4.1. 2 remote controls with 4 channels of 433,9 Mhz Rolling code should be provided together with the system.
- 2.4.2. A LOOP detector system should be available for safe operation of the system. Loop detectors should be placed in front of and behind the product. Loop detectors should be activated under normal operation condition, but they should be deactivated when pressing EFO.
- 2.4.3. The system should be equipped with a button-driven system to enable check from the security cabin. The button will have three switches on it: On, off, stop.
- 2.4.4. In case of prolonged power cuts, there should be a manual hand-held valve to pull the product downwards (for clearing the road).
- 2.4.5. Road blocker should be equipped with an optimal-size armed barrier system to enhance visibility. Armed barrier system should operate in synchronisation with the product. (Optional)
- 2.4.6. Road blocker should enable drip pattern sheet to prevent tire migration when a vehicle passes over the product. (Optional)
- 2.4.7. System should be PLC circuit controllable. It should be equipped with whatever is necessary for PLC unit system operation. (Optional)
- 2.4.8. PLC circuit systems should be equipped with a Colour Touch Panel to allow setting and display all related product data. Position of the product should be displayed in a visual mode of operation. It should enable that all past operation data are recorded and monitored. (Optional)
- 2.4.9. In case of prolonged power cuts, there should be a manual hand-held pump to move the product upwards and downwards. (Optional)
- 2.4.10. In case of short-time power cut, there should be a 24V DC engine and accumulator system so that the system is capable of turning on and off. An automated charging unit will be needed for the accumulators. (Optional)
- 2.4.11. In case of a threat when the road is open or is opening, once pressing the EFO (Emergency Fast Operation) button, all safety equipment such as safety photocell or loop detector are deactivated and the road blocker blocks the road swiftly in 1,5 to 2 seconds. System should not operate under any circumstance after pressing the EFO button. There should be a reset button to resume normal operation of the system. (Optional)
- 2.4.12. The system should be equipped with a uniform traffic signalisation light of 200V to warn vehicles and regulate vehicle traffic. High quality LEDs should be used for the traffic lights. Traffic light will be red when the road is blocked, otherwise it will be green when the road is clear. (Optional)
- 2.4.13. Remote control button panel should control the road blocker system. Panel should have keys to activate and deactivate control buttons. It should also have buttons to turn on and off the product. In case of systems equipped with an EFO mechanism, there should be EFO and reset buttons. Buttons should operate at 24VDC voltage level. Button panel should be a desktop model in 215x230x95mm size. (Optional)
- 2.4.14. There should be a buzzer system to warn the user when turning on and off the product. (Optional)
- 2.4.15. Hydraulic power unit should be equipped with an oil heater system designed for extremely cold ambient (Optional)
- 2.4.16. Hydraulic power unit should be equipped with an oil cooling system designed for extremely hot ambient. (Optional)

2.4.17. Road blocker system should have a Windows-based software pack to check with the on-off, location info, operating efficiency, maintenance schedule etc. in a computerized medium. (Optional)

### **3. PERFORMANCE**

#### **3.1. Collision Details**

3.1.1. Road Blocker should pose a nearly impassable obstacle against soft-skinned and pallet-free vehicles for safety and control of regular traffic. Road Blocker's design should be capable of stopping vehicles of speed and weight as given below in accordance with the internationally accepted standards.

3.1.2. Road blocker system should have at least 1 test certificate that is nationally recognised and is compatible with 7.500 kg - 88 Kmph (16,534 Pound at 54,68Mph) K12 standards.

3.1.3. The company should present a video in addition to necessary visuals for the crash test.

3.1.4. 10 finite element analysis test reports and videos produced on different dates and specifications will be provided for the road blocker system.

#### **3.2. Opening Speed**

3.2.1. Under normal operating conditions, the product should turn on and off in 4 to 8 seconds. System should be stoppable at the time of operation and operation direction should be reversible when desired.

3.2.2. Unless a prolonged power cut and manual operation is applicable at EFO system, which will be optional, it will take 1,5 to 2 seconds for the product to switch from emergency fast operation when the product is totally retracted. The road should be in blocked position and on and off function should be deactivated until the EFO system is reset.

#### **3.3. Operating Sustainability and Life**

3.3.1. The product should be capable of moving fully upwards and downward 300 times an hour.

3.3.2. MTTF value of hydraulic power unit valves should be 150 years according to EN ISO 13849 standards. Manufacturer should prove this on a documentary basis.

3.3.3. Road blocker should be guaranteed for 2 (two) years by the manufacturer.

#### **4. MANUFACTURER EXPERIENCE**

- 4.1.1. Road blocker manufacturer should have minimum 14 years of experience. Experience in manufacturing should be proven with official registration documents of the company.
- 4.1.2. Reference list of the manufacturer should include over 190 pcs of road blockers and 80 pcs of under-vehicle search systems project at least at once. Approval for the project obtained from the related ministry and authorised consultant should be presented to us.
- 4.1.3. Road blocker product should have a CE, TS EN 60204-1 Electrical and Safety Test Report, and K12 Crash Test Report.
- 4.1.4. Manufacturer should have TUV CERT ISO 9001-2015, TUV CERT ISO 14001 and TUV CERT OHSAS 18001 quality management certificates and Service Area Compliance Certificate.
- 4.1.5. Manufacturer should have TS 21 HYB, TS 12540 HYB, TS 12870 HYB and TS 13406 HYB certificates so as to be eligible for providing service to safety products.
- 4.1.6. Manufacturer should be employing at least 1 mechanical engineer, 1 electronic engineer, 1 mechatronics engineer. Manufacturer should prove this on a documentary basis.
- 4.1.7. Manufacturer should use robot welding.

#### **5. QUALITY CONTROL TERMS**

- 5.1.1. Once the road blocker system is complete, it will be fully tested before installing. In addition to all tests, the following checks will also be performed in order to verify function and processing speed.
- 5.1.2. FA tests will be performed after road blocker is manufactured and before it is dispatched to the site; a certified FAT certificate will be delivered upon delivery of the product.
- 5.1.3. Assembling manual of the product, user manual, maintenance manual and crash test certificate will be delivered along with the products at the time of final control.
- 5.1.4. The road blocker will have a tag that contains the manufacturer name, product model, serial number and manufacture date.
- 5.1.5. Hydraulic power unit will have a tag that contains manufacturer name, product model, serial number, engine power, operating voltage and manufacture date.
- 5.1.6. Road blocker and its sub systems should be masterfully and carefully made.
- 5.1.7. Master dimensions should be compared with drawings and order dimensions.