OZAK, founded in 1974, is the first and leading pedestrian and vehicle passage control systems manufacturer in Turkey. OZAK’s manufacturing expertise includes product groups of road blockers, bollards, arm barriers, tyre killers and turnstiles. OZAK, providing high quality and reliable solutions, has manufacturing facilities with 24,000 m² covered area is the correct choice for many companies in a broad geography covering more than 75 countries.

The product range includes “vehicle” and “pedestrian” passage control system in following type of products:

- Road Blockers
- Turnstiles
- Speed Gates
- Arm Barriers
- Bollards
- Tyre Killer / Spike Barrier
- Custom Designed Turnstiles and Passage Control Systems

OZAK has a comprehensive reference range with its applications in Europe, Americas, Middle East, Arabian Peninsula, Far East and Asia for;

- Stadium Complexes
- State Institutions
- Industrial Plants
- Airport Premises
- Universities and other Education Institutions
- Hotels, Tourism and Historical Facilities
- Military and Defence Facilities
- Power Plants
- Sites which require vehicle access control especially classified as under high risk

OZAK, investing in human resources, technology and environmental protection; thanks to its talented designers and engineers, design and build products using the state of the art technologies and flexible manufacturing processes. R&D activities are handled by a team of professionals and each team member offers his utmost contribution to provide the customers with the solutions which meet overall demands of the security sector based on the vision of cost effective innovations and international standards.
Fields of Use

- Airports
- Military Bases
- Hotels
- Residential Areas
- Government Buildings
- Diplomatic Premises
- Car Park Entries
- Harbour Entries
- Industrial Sites
- National Borders
- Construction Sites
- Oil Refineries
- Prisons
- Power Plants
- Financial Institutions
HRB ROAD BLOCKER
(Heavy Duty Model)

Power
- Standard 380V 3-Phase 50/60 Hz, 3.3 - 5.5 KvA motor (varies depending on blocker size).
  Opt. 220V, 110V 1-Phase 50/60 Hz, or 24V DC (for some models/sizes only).

Control Pack
- 24V DC powered and PLC control unit is placed in power unit cabinet.
  Solenoids 24V DC (Ops.12V DC / 220V AC)

Speed
- Standard Operation ~2.5 - 6 sec. (ascend/descend) depending on unit dimensions.
  Emergency raise up (upwards) by optional hydraulic accumulator ~1.5 sec. and may vary depending on unit dimensions.

IP Rating
- IP 55 - Hydraulic Power Unit,
  IP 58 - Blocker Cabinet (underground unit),
  IP 67 - Electronics (optional), protection with housing/box,
  IP 68 - Hydraulic Piston

Crash / Impact Rating
- M50 P1 (K-12) crash tested and certified (HRB 30 R 90) according to ASTM 2656-07,
  Designed and produced to withstand H30.

Axle Load Resistance
- 50T

Hydraulic Cylinder Unit
- Heavy duty, dust sealed electrostatic powder coated hydraulic cylinder.
  Models between 1- 4 meter widths contain a single piston.
  (Double piston versions are optionally available for models 3.5 & 4 meter widths).
  Models between 4.5 - 6.5 meter widths contain double pistons.
  Cylinder unit features a safety valve against leakage and hose failure.

H = 60 cm / L x W x D (mm)

<table>
<thead>
<tr>
<th>Model</th>
<th>Width</th>
<th>Raising Height</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRB 10R60</td>
<td>x = 1,0m Blocker Unit Width, 65-50cm Raising Height</td>
<td>1275 x 1170 x 975</td>
<td></td>
</tr>
<tr>
<td>HRB 15R60</td>
<td>x = 1,5m Blocker Unit Width, 65-50cm Raising Height</td>
<td>1275 x 1670 x 975</td>
<td></td>
</tr>
<tr>
<td>HRB 20R60</td>
<td>x = 2,0m Blocker Unit Width, 65-50cm Raising Height</td>
<td>1275 x 2170 x 975</td>
<td></td>
</tr>
<tr>
<td>HRB 25R60</td>
<td>x = 2,5m Blocker Unit Width, 65-50cm Raising Height</td>
<td>1275 x 2670 x 975</td>
<td></td>
</tr>
<tr>
<td>HRB 30R60</td>
<td>x = 3,0m Blocker Unit Width, 65-50cm Raising Height</td>
<td>1275 x 3170 x 975</td>
<td></td>
</tr>
<tr>
<td>HRB 35R60</td>
<td>x = 3,5m Blocker Unit Width, 65-50cm Raising Height</td>
<td>1275 x 3670 x 975</td>
<td></td>
</tr>
<tr>
<td>HRB 40R60</td>
<td>x = 4,0m Blocker Unit Width, 65-50cm Raising Height</td>
<td>1275 x 4170 x 975</td>
<td></td>
</tr>
<tr>
<td>HRB 45R60/2p</td>
<td>x = 4,5m Blocker Unit Width, 65-50cm Raising Height (2 pistons)</td>
<td>1275 x 4670 x 975</td>
<td></td>
</tr>
<tr>
<td>HRB 50R60/2p</td>
<td>x = 5,0m Blocker Unit Width, 65-50cm Raising Height (2 pistons)</td>
<td>1275 x 5170 x 975</td>
<td></td>
</tr>
<tr>
<td>HRB 55R60/2p</td>
<td>x = 5,5m Blocker Unit Width, 65-50cm RaisingHeight (2 pistons)</td>
<td>1275 x 5670 x 975</td>
<td></td>
</tr>
<tr>
<td>HRB 60R60/2p</td>
<td>x = 6,0m Blocker Unit Width, 65-50cm Raising Height (2 pistons)</td>
<td>1275 x 6170 x 975</td>
<td></td>
</tr>
<tr>
<td>HRB 65R60/2p</td>
<td>x = 6,5m Blocker Unit Width, 65-50cm Raising Height (2 pistons)</td>
<td>1275 x 6670 x 975</td>
<td></td>
</tr>
</tbody>
</table>

H = 90 cm / L x W x D (mm)

<table>
<thead>
<tr>
<th>Model</th>
<th>Width</th>
<th>Raising Height</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRB 10R90</td>
<td>x = 1,0m Blocker Unit Width, 90-70cm Raising Height</td>
<td>1680 x 1170 x 1270</td>
<td></td>
</tr>
<tr>
<td>HRB 15R90</td>
<td>x = 1,5m Blocker Unit Width, 90-70cm Raising Height</td>
<td>1680 x 1670 x 1270</td>
<td></td>
</tr>
<tr>
<td>HRB 20R90</td>
<td>x = 2,0m Blocker Unit Width, 90-70cm Raising Height</td>
<td>1680 x 2170 x 1270</td>
<td></td>
</tr>
<tr>
<td>HRB 25R90</td>
<td>x = 2,5m Blocker Unit Width, 90-70cm Raising Height</td>
<td>1680 x 2670 x 1270</td>
<td></td>
</tr>
<tr>
<td>HRB 30R90</td>
<td>x = 3,0m Blocker Unit Width, 90-70cm Raising Height</td>
<td>1680 x 3170 x 1270</td>
<td></td>
</tr>
<tr>
<td>HRB 35R90</td>
<td>x = 3,5m Blocker Unit Width, 90-70cm Raising Height</td>
<td>1680 x 3670 x 1270</td>
<td></td>
</tr>
<tr>
<td>HRB 40R90</td>
<td>x = 4,0m Blocker Unit Width, 90-70cm Raising Height</td>
<td>1680 x 4170 x 1270</td>
<td></td>
</tr>
<tr>
<td>HRB 45R90/2p</td>
<td>x = 4,5m Blocker Unit Width, 90-70cm Raising Height (2 pistons)</td>
<td>1680 x 4670 x 1270</td>
<td></td>
</tr>
<tr>
<td>HRB 50R90/2p</td>
<td>x = 5,0m Blocker Unit Width, 90-70cm Raising Height (2 pistons)</td>
<td>1680 x 5170 x 1270</td>
<td></td>
</tr>
<tr>
<td>HRB 55R90/2p</td>
<td>x = 5,5m Blocker Unit Width, 90-70cm Raising Height (2 pistons)</td>
<td>1680 x 5670 x 1270</td>
<td></td>
</tr>
<tr>
<td>HRB 60R90/2p</td>
<td>x = 6,0m Blocker Unit Width, 90-70cm Raising Height (2 pistons)</td>
<td>1680 x 6170 x 1270</td>
<td></td>
</tr>
<tr>
<td>HRB 65R90/2p</td>
<td>x = 6,5m Blocker Unit Width, 90-70cm Raising Height (2 pistons)</td>
<td>1680 x 6670 x 1270</td>
<td></td>
</tr>
</tbody>
</table>

*Design and specifications are subject to change without notice.
**System**

- Down, Up, Emergency and external sensor inputs/outputs (e.g. Loop Detector, Beam Detector, Signalization, Remote Control, etc.).
- System alerts with an audio signal during lowering and raising operation.
- A loud siren output in case of alarm or emergency.
- Can be lowered or raised automatically in case of emergency (User's preference).
- Can be lowered and raised manually in case of power failure or during the maintenance service with manual pump and manual valve feature.
- Automatic raise up mode deploys (optionally with synchronized loop detector) the road blocker after the vehicle has passed over.
- Sensor controlled stopping both at the top and bottom positions of the blocker unit

**Power Unit**

- Motor, hydraulic pump and solenoid valves are contained in an easily accessible hot-dip-galvanized and electrostatic powder painted cabinet with a built-in lock lid. (Opt. Stainless Steel Cabinet)

**Blocker Cabinet**

- All parts are colored with industrial paint with two components.
- U-shaped profile structure for maximum strength.
- The blocker and cabinet are designed so that no vehicle crushing effect can displace it after embedded or installed in to the ground.

**Blocker Unit**

- All parts are colored with industrial paint with two components.
- The construction is aesthetically and functionally completed with reflecting strips and warning signs.
- The system is specially designed to have a flattened surface level with the top plate so that vehicles can pass over smoothly and quietly. With the help of hidden hinge system feature during the upward/downward running operation the gap at the blocker top plate back-edge and cabinet housing stays at 2mm maximum providing a critically important safety feature during operation of the road blocker.
- The blocker unit is made of a reinforced construction strengthened by 6mm thick special design, V-formed, vertical solid steel panels distanced between 350-550mm along the blocker width and assembled together with the main chassis for evenly distributed impact absorption. All vertical impact absorption panels have special shape and contain hook type holders (patent pending 2015/12506) for high impact resistance and are installed with equal distance to each other and supported by 4 pieces of 30x10mm solid steel beams to further strengthen the construction.

<table>
<thead>
<tr>
<th>Impact Absorbing Panel Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blocker Size</strong></td>
</tr>
<tr>
<td>1 mt</td>
</tr>
<tr>
<td>1,5 mt</td>
</tr>
<tr>
<td>2 mt</td>
</tr>
<tr>
<td>2,5 mt</td>
</tr>
<tr>
<td>3 mt</td>
</tr>
<tr>
<td>3,5 mt</td>
</tr>
<tr>
<td>4 mt</td>
</tr>
<tr>
<td>4,5 mt</td>
</tr>
<tr>
<td>5 mt</td>
</tr>
<tr>
<td>5,5 mt</td>
</tr>
<tr>
<td>6 mt</td>
</tr>
<tr>
<td>6,5 mt</td>
</tr>
<tr>
<td><strong>Single Piston</strong></td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>8</td>
</tr>
<tr>
<td>8</td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td><strong>Double Piston</strong></td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td>12</td>
</tr>
<tr>
<td>12</td>
</tr>
<tr>
<td>12</td>
</tr>
<tr>
<td>15</td>
</tr>
<tr>
<td>18</td>
</tr>
<tr>
<td>18</td>
</tr>
</tbody>
</table>

To stop severe impact loads there is an additional 6mm (optionally 10mm) thick sheet metal attached to the vertical impact absorption panels.

- At the frontal crash-facing section, there is replaceable 3mm thick steel sheet with rounded form to handle light impacts.
- Resistance of crash surface consisting of 6mm+3mm sheet metal is equal to resistance of a 74mm thick sheet metal due to it’s construction structured with vertical solid panels and 30x10mm solid bars behind.
- Top panel where the vehicle pass over is made of 10/11mm thick non-slip surface steel hot-dip galvanised before paint.
- The system moves up and down with 50mm diameter stainless steel hinges (example: 3 meter blocker contains 7 pieces of 50mm diameter stainless steel hinges).
- Blocker unit raises 45° angle from the ground level and equipped with built in indicators on side and front panels.
- A top lid is provided for easy access for service and maintenance on the top plate.

**Control System**

- Manual Control Button Unit:
  - Provided with an IP67 CRM yellow box including 3 switches for downwards, upwards, stop (optional emergency operation), can stop the blocker motion with the command/signal coming from detector, equipped with built-in LED visual indications and 10 mt cable.

**Compatibility with Access Control Systems**

- Can be utilized through, card reader, finger print, biometric systems and similar any kind of access control systems (by third parties)

**Optional Unit**

- With the optional model “RB CONT.UNIT.V.001” users can monitor the diagnostic functions, can be accessed through LAN, RS485 protocols. System is provided inside a metal cabinet that also includes the other functional switches like downward, upward, stop, emergency operations.
- With the built in 124x68 LCD screen, all status of the operation and system diagnostic can be monitored through messaging functions like oil status, loop or beam detectors status, water level inside the cabinet, blocker position according to user preference, any.bmp files can be displayed.
- The system is driven by the PLC.

**Optional Features and Accessories**

- Traffic lights (red-green), Traffic light Pole, Loop Detector (double/single contact), Beam Detector, 220V or 24V DC motor, Remote Control (receiver and transmitter are 3 channels), UPS, Photoscell Sensor (receiver+ transmitter with 50cm height pole), RB CONT. UNIT.V.001 Control Unit, Intercom, External Buttons, Emergency Submersible Pump (9000 l/h or 18000 l/h), Hydraulic Accumulator for emergency fast raise up (1 piston or 2 pistons systems), Surface Frame (sizes: from 250mm to 1000mm), Oil Cooler, Oil Heater, Heater for electronic components, hot-dip galvanization for cabinet, blocker and impact surface units, double effect hydraulic unit, double speed hydraulic unit, ground mounting plate, powered audio signal (siren), PLC diagnostic monitor, IP67 box (for PLC, SMPS, connectors etc inside power unit).

**Installation**

- Easy Installation with C30 grade concrete.

*Design and specifications are subject to change without notice.
CERTIFIED

M50 P1 (K12)
ASTM F2656-07

for crash test video

Max P1 Limit

Maximum Penetrating Force

Maximum Penerating Force

for crash test video
RRB ROAD BLOCKER
(Reinforced Model)

Power
- Standard 380V 3-Phase 50/60 Hz, 3.3 - 5.5 kVA motor (varies depending on blocker size).
  Opt. 220v, 110V 1-Phase 50/60 Hz, or 24V DC (for some models/sizes only).

Control Pack
- 24V DC powered and PLC control unit is placed in power unit cabinet.
  Solenoids 24V DC / Opts. 12V DC / 220V AC

Speed
- Standard Operation ~ 4 - 6 sec. (ascend/descend) (opt. 2.5 - 4 sec.) depending on unit dimensions.
  Emergency raise up (upwards) by optional hydraulic accumulator ~ 1,5 sec. and may vary depending on unit dimensions.

IP Rating
- IP 55 - Hydraulic Power Unit,
  IP 58 - Blocker Cabinet (underground unit),
  IP 67 - Electronics (optional), protection with housing/box,
  IP 68 - Hydraulic Piston

Crash / Impact Rating
- Designed and produced to withstand M50 P1 (K-12).

Axle Load Resistance
- 50T

Hydraulic Cylinder Unit
- Heavy duty, dust sealed electrostatic powder coated hydraulic cylinder.
  Models between 1 - 4 meter widths contain a single piston.
  (Double piston versions are optionally available for models 3.5 & 4 meter widths).
  Models between 4.5 - 6.5 meter widths contain double pistons.
  Cylinder unit features a safety valve against leakage and hose failure.

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*Design and specifications are subject to change without notice.*
Hydraulic Power Unit:
- Strengthened industrial pump,
- 60 lt oil tank capacity with magnetic metal collector and particle filter,
- Built-in oil level and temperature indicator,
- 70-80 Bar pressure; maximum running pressure is 120 Bar,
- 10 mt R2 (double wire braided mesh) reinforced hydraulic hose.

System:
- Down, Up, Emergency and external sensor inputs/outputs (e.g., Loop Detector, Beam Detector, Signalization, Remote Control, etc.).
- System alerts with an audio signal during lowering and raising operation.
- A loud siren output in case of alarm or emergency.
- Can be lowered or raised automatically in case of emergency (User's preference).
- Can be lowered and raised manually in case of power failure or during the maintenance service with manual pump and manual valve feature.
- Automatic raise up mode deploys (optionally with synchronized loop detector) the road blocker after the vehicle has passed over.
- Sensor controlled stopping both at the top and bottom positions of the blocker unit
- Down, Up, Emergency and external sensor inputs/outputs (Down, Up, Emergency and external sensor inputs/outputs (e.g., Loop Detector, Beam Detector, Signalization, Remote Control, etc.).
- System alerts with an audio signal during lowering and raising operation.
- A loud siren output in case of alarm or emergency.
- Can be lowered or raised automatically in case of emergency (User's preference).
- Can be lowered and raised manually in case of power failure or during the maintenance service with manual pump and manual valve feature.
- Automatic raise up mode deploys (optionally with synchronized loop detector) the road blocker after the vehicle has passed over.
- Sensor controlled stopping both at the top and bottom positions of the blocker unit.

Power Unit:
- Motor, hydraulic pump and solenoid valves are contained in an easily accessible hot-dip-galvanized and electrostatic powder painted cabinet with a built-in lock lid. (Opt. Stainless Steel Cabinet)
- Cabinet Dimensions: 1000 mm x 570 mm x 1200 mm (W x L x H).

Blocker Cabinet (underground unit):
- All parts are colored with industrial paint with two components.
- U-shaped profile structure for maximum strength.
- The blocker and cabinet are designed so that no vehicle crashing effect can displace it after embedded or installed in to the ground.

Blocker Unit (impact blocking unit):
- All parts are colored with industrial paint with two components.
- Hop dip galvanised vehicle pass through surface (top plates).
- The construction is aesthetically and functionally completed with reflecting strips and warning signs.
- The hinge system is specially designed to have a flattened surface level with the top plate so that vehicles can pass over smoothly and quietly. With the help of hidden hinge system feature during the upward/downward running operation the gap at the blocker top plate back-edge and cabinet housing stays at 2mm maximum providing a critically important safety feature during operation of the road blocker.
- The blocker unit is made of a reinforced construction strengthened by 6mm thick special design, vertical solid steel panels distanced between 350-550mm along the blocker width and assembled together with the main chassis for evenly distributed impact absorption. All vertical impact absorption panels have special shape and contain hook type holders (patent pending 2015/12506) for high impact resistance and are installed with equal distance to each other and supported by 4 pieces of 30x10mm solid steel beams to further strengthen the construction.

<table>
<thead>
<tr>
<th>Impact Absorbing Panel Quantity</th>
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</thead>
<tbody>
<tr>
<td>Blocker Size</td>
</tr>
<tr>
<td>Single Piston</td>
</tr>
<tr>
<td>Double Piston</td>
</tr>
</tbody>
</table>

To stop severe impact loads there is an additional 6mm thick sheet metal attached to the vertical impact absorption panels.

The system moves up and down with 50mm diameter stainless steel hinges (example: 3 meter blocker contains 7 pieces of 50mm diameter stainless steel hinges).

The hinge system is specially designed to have a flattened surface level with the top plate so that vehicles can pass over smoothly and quietly. With the help of hidden hinge system feature during the upward/downward running operation the gap at the blocker top plate back-edge and cabinet housing stays at 2mm maximum providing a critically important safety feature during operation of the road blocker.

The blocker unit is made of a reinforced construction strengthened by 6mm thick special design, vertical solid steel panels distanced between 350-550mm along the blocker width and assembled together with the main chassis for evenly distributed impact absorption. All vertical impact absorption panels have special shape and contain hook type holders (patent pending 2015/12506) for high impact resistance and are installed with equal distance to each other and supported by 4 pieces of 30x10mm solid steel beams to further strengthen the construction.

A top lid is provided for easy access for service and maintenance on the top plate.

Control System:
- Manuel Control Button Unit:
  - Provided with an IP67 CRM yellow box including 3 switches for downwards, upwards, stop (optional emergency operation), can stop the blocker motion with the command/signal coming from detector, equipped with built-in LED visual indications.

Compatibly with Access Control Systems:
- Can be utilized through, card reader, finger print, biometric systems and similar any kind of access control systems (by third parties).

Optional Unit:
- With the optional model “RB CONT.UNIT.V.001” users can monitor the diagnostic functions, can be accessed through LAN, RS485 protocols. System is provided inside a metal cabinet that also includes the other functional switches like downward, upward, stop, emergency operations.

Optional Features and Accessories:
- Traffic lights (red-green), Traffic light Pole, Loop Detector (double/single contact), Beam Detector, 220V or 24V DC motor, Remote Control (receiver and transmitter are 3 channels), UPS, Photocell Sensor (receiver+transmitter with 50cm height pole), RB CONT.UNIT.V.001 Control Unit, Intercom, External Buttons, Emergency Submersible Pump (9000 lt/h or 18000 lt/h), Hydraulic Accumulator for emergency fast raise up (1 piston or 2 pistons systems), Surface Frame (sizes: from 250mm to 1000mm), Oil Cooler, Oil Heater, Heater for electronic components, hot-dip galvanization for cabinet, blocker and impact surface units, double effect hydraulic unit, double speed hydraulic unit, ground mounting plate, powered audio signal (siren), PLC diagnostic monitor, flashing light indicators, round shaped front panel, oil level sensor, optional speed, IP67 box (for PLC, SMPS, connectors etc inside power unit).

Installation:
- Easy Installation with C30 grade concrete.
RB
ROAD BLOCKER
(Residential Model)

Power
- Standard 380V 3-Phase 50/60 Hz, 3.3 - 5.5 kVA motor (varies depending on blocker size).
- Opt. 220V, 110V 1-Phase 50/60 Hz; or 24V DC (for some models/sizes only).

Control Pack
- 24V DC powered and PLC control unit is placed in power unit cabinet.
- Solenoids 24V DC (Opt.12V DC / 220V AC)

Speed
- Standard Operation ~4 - 6 sec. (ascend/descend) (opt. 2.5 - 4 sec.) depending on unit dimensions.
- Emergency raise up (upwards) by optional hydraulic accumulator ~1.5 sec. and may vary depending on unit dimensions.

IP Rating
- IP 55 - Hydraulic Power Unit,
- IP 58 - Blocker Cabinet (underground unit),
- IP 67 - Electronics (optional), protection with housing/box,
- IP 68 - Hydraulic Piston

Crash / Impact Rating
- Designed and produced to withstand M40 P1 (K-8).

Axle Load Resistance
- 40T

Hydraulic Cylinder Unit
- Heavy duty, dust sealed electrostatic powder coated hydraulic cylinder.
  Models between 1- 4 meter widths contain a single piston.
  (Double piston versions are optionally available for models in 4 meter widths).
  Models between 4.5 - 6.5 meter widths contain double pistons.
  Cylinder unit features a safety valve against leakage and hose failure.

*Design and specifications are subject to change without notice.
RB ROAD BLOCKER

Hydraulic Power Unit:
- Strengthened industrial pump,
- 60 lt oil tank capacity with magnetic metal collector and particle filter,
- Built-in oil level and temperature indicator,
- 70-80 Bar pressure; maximum running pressure is 120 Bar
- 10 mt R2 (double wire braided mesh) reinforced hydraulic hose.
- Down, Up, Emergency and external sensor inputs/outputs (e.g. Loop Detector, Beam Detector, Signalization, Remote Control, etc.).
- System alerts with an audio signal during lowering and raising operation.
- A loud siren output in case of alarm or emergency.
- Can be lowered or raised automatically in case of power failure or during the maintenance service with manual pump and manual valve feature.
- Automatic raise up mode deploys (optionally with synchronized loop detector) the road blocker after the vehicle has passed over.
- Sensor controlled stopping both at the top and bottom positions of the blocker unit.

System:
- Motor, hydraulic pump and solenoid valves are contained in an easily accessible hot-dip-galvanized and electrostatic powder painted cabinet with a built-in lock lid. (Opt. Stainless Steel Cabinet)
- Cabinet Dimensions: 1000 mm x 570 mm x 1200 mm (W x L x H).
- All parts are colored with industrial paint with two components.
- U-shaped profile structure for maximum strength.
- The blocker and cabinet are designed so that no vehicle crashing effect can displace it after embedded or installed in to the ground.

Power Unit:
- All parts are colored with industrial paint with two components.
- U-shaped profile structure for maximum strength.

Blocker Cabinet (underground unit):
- Hop dip galvanized vehicle pass through surface (top plates).
- The hinge system is specially designed to have a flattened surface level with the top plate so that vehicles can pass over smoothly and quietly.
- Top panel where the vehicle pass over is made of 8/9mm thick non-slip surface steel hot-dip galvanised before paint.
- The system moves up and down with 50mm diameter stainless steel hinges (example: 3 meter blocker contains 7 pieces of 50mm diameter stainless steel hinges).
- Blocker unit raises 45° angle from the ground level and can be equipped with equipped with optional flashing light indicators on side and front panels.
- A top lid is provided for easy access for service and maintenance on the top plate.

Blocker Unit (impact blocking unit):
- Provided with an IP67 CRM yellow box including 3 switches for downwards, upwards, stop (optional emergency operation), can stop the blocker motion with the command/signal coming from detector, equipped with built-in LED visual indications.
- Can be utilized through, card reader, finger print, biometric systems and similar any kind of access control systems (by third parties).

Control System:
- Provided with an IP67 CRM yellow box including 3 switches for downwards, upwards, stop (optional emergency operation), can stop the blocker motion with the command/signal coming from detector, equipped with built-in LED visual indications.
- Can be utilized through, card reader, finger print, biometric systems and similar any kind of access control systems (by third parties).

Optional Unit:
- With the optional model “RB CONT.UNIT.V.001” users can monitor the diagnostic functions, can be accessed through LAN, RS485 protocols. System is provided inside a metal cabinet that also includes the other functional switches like downward, upward, stop, emergency operations.
- With the built in 124x68 LCD screen, all status of the operation and system diagnostic can be monitored through messaging functions like oil status, loop or beam detectors status, water level inside the cabinet, blocker position according to user preference, any .bmp files can be displayed. The system is driven by the PLC.

Optional Features and Accessories:
- Traffic lights (red-green), Traffic light Pole, Loop Detector (double/single contact), Beam Detector, 220V or 24V DC motor, Remote Control (receiver and transmitter are 3 channels), UPS, Photocell Sensor (receiver+ transmitter with 50cm height pole), RB CONT. UNIT.V.001 Control Unit, Intercom, External Buttons, Emergency Submersible Pump (9000 lt/h or 18000 lt/h), Hydraulic Accumulator for emergency fast raise up (1 piston or 2 pistons systems), Surface Frame (sizes: from 250mm to 1000mm), Oil Cooler, Oil Heater, Heater for electronic components, hot-dip galvanization for cabinet, blocker and impact surface units, double effect hydraulic unit, double speed hydraulic unit, ground mounting plate, powered audio signal (siren), PLC diagnostic monitor, flashing light indicators, round shaped front panel, oil level sensor, optional speed, IP67 box (for PLC, SMPS, connectors etc inside power unit).

Installation:
- Easy Installation with C30 grade concrete.

*Design and specifications are subject to change without notice.*
RB
ROAD BLOCKER
(Surface Mount)

Power : Standard 380V 3-Phase 50/60 Hz, 3.3 - 5.5 kVA motor (varies depending on blocker size).
Opt. 220V, 110V 1-Phase 50/60 Hz; or 24V DC (for some models/sizes only).

Control Pack : 24V DC powered and PLC control unit is placed in power unit cabinet.
Solenoids 24V DC (Ops.12V DC / 220V AC)

Speed : Standard Operation ~2.5 - 6 sec. (ascend/descend) depending on unit dimensions.
Emergency raise up (upwards) by optional hydraulic accumulator ~1.5 sec. and may vary depending on unit dimensions.

IP Rating : IP 55 - Hydraulic Power Unit,
IP 58 - Blocker Cabinet (underground unit),
IP 67 - Electronics (optional), protection with housing/box,
IP 68 - Hydraulic Piston

Crash / Impact Rating : Designed and produced to withstand impacts at M40 (K8) level as per ASTM 2656-07.

Axle Load Resistance : 50T

Hydraulic Cylinder Unit : Heavy duty, dust sealed electrostatic powder coated 50 mm hydraulic cylinder.
Models between 1 - 4 meter widths contain a single piston.
(Double piston versions are optionally available for models 3,5 & 4 meter widths).
Models between 4,5 - 6,5 meter widths contain double pistons.
Cylinder unit features a safety valve against leakage and hose failure.

Hydraulic Power Unit : Strengthened industrial pump,
60 lt oil tank capacity with magnetic metal collector and particle filter.
Built-in oil level and oil temperature indicator.
70-80 Bar pressure; maximum running pressure is 120 Bar.
10 mt R2 (double wire braided mesh) reinforced hydraulic hose.

*Design and specifications are subject to change without notice.
**RB ROAD BLOCKER** (Surface Mount)

**System**
- Down, Up, Emergency and external sensor inputs/outputs (e.g. Loop Detector, Beam Detector, Signalization, Remote Control, etc.).
- System alerts with an audio signal during lowering and raising operation.
- A loud siren output in case of alarm or emergency.
- Can be lowered or raised automatically in case of emergency (User’s preference).
- Can be lowered and raised manually in case of power failure or during the maintenance service with manual pump and manual valve feature.
- Automatic raise up mode deploys (optionally with synchronized loop detector) the road blocker after the vehicle has passed over.
- Sensor controlled stopping both at the top and bottom positions of the blocker unit.

**Power Unit**
- Motor, hydraulic pump and solenoid valves are contained in an easily accessible hot-dip-galvanized and electrostatic powder painted cabinet with a built-in lock lid. (Opt. Stainless Steel Cabinet)

**Blocker Cabinet** (underground unit)
- All parts are colored with industrial paint with two components.
- U-shaped profile structure for maximum strength.
- The blocker and cabinet are designed so that no vehicle crashing effect can displace it after embedded or installed in to the ground.

**Blocker Unit** (impact blocking unit)
- All parts are colored with industrial paint with two components.
- Hop dip galvanised vehicle pass through surface (top plates).
- The hinge system is specially designed to have a flattened surface level with the top plate so that vehicles can pass over smoothly and quietly. With the help of hidden hinge system feature during the upward/downward running operation the gap at the blocker top plate back-edge and cabinet housing stays at 2mm maximum providing a critically important safety feature during operation of the road blocker.
- Top panel where the vehicle pass over is made of 8/9mm thick non-slip surface steel hot-dip galvanised before paint.
- The system moves up and down with 50mm diameter stainless steel hinges (example: 3 meter blocker contains 7 pieces of 50mm diameter stainless steel hinges).
- Blocker unit raises 25° angle from the ground level.
- A top lid is provided for easy access for service and maintenance on the top plate.

**Control System**
- Manual Control Button Unit:
  - Provided with an IP67 CRM yellow box including 3 switches for downwards, upwards, stop (optional emergency operation), can stop the blocker motion with the command/signal coming from detector, equipped with built-in LED visual indications and 10 mt cable.
- Compatibility with Access Control Systems:
  - Can be utilized through, card reader, finger print, biometric systems and similar any kind of access control systems (by third parties)

**Optional Unit**
- With the optional model “RB CONT.UNIT.V.001” users can monitor the diagnostic functions, can be accessed through LAN, RS485 protocols. System is provided inside a metal cabinet that also includes the other functional switches like downward, upward, stop, emergency operations.
- With the built in 124x68 LCD screen, all status of the operation and system diagnostic can be monitored through messaging functions like oil status, loop or beam detectors status, water level inside the cabinet, blocker position according to user preference, any.bmp files can be displayed.
- The system is driven by the PLC.

**Optional Features and Accessories**
- Traffic lights (red-green), Traffic light Pole, Loop Detector (double/single contact), Beam Detector, 220V or 24V DC motor, Remote Control (receiver and transmitter are 3 channels), UPS, Photocell Sensor (receiver + transmitter with 50cm height pole), RB CONT. UNIT.V.001 Control Unit, Intercom, External Buttons, Hydraulic Accumulator for emergency fast raise up (1 piston or 2 pistons systems), Surface Frame (sizes: from 250mm to 1000mm), Oil Cooler, Oil Heater, Heater for electronic components, hot-dip galvanization for cabinet, blocker and impact surface units, double effect hydraulic unit, double speed hydraulic unit, powered audio signal (siren), PLC diagnostic monitor, IP67 box (for PLC, SMPS, connectors etc inside power unit).
- LED indicator on front oil level sensor.

**Installation**
- Easy Installation with C30 grade concrete.

*Design and specifications are subject to change without notice.*
# Road Blockers

## General Technical Specifications (embedded series)

<table>
<thead>
<tr>
<th></th>
<th>HRB (Heavy Duty Road Blocker)</th>
<th>RRB (Reinforced Road Blocker)</th>
<th>RB (Residential Type Road Blocker)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Axle Load</strong></td>
<td>50 T.</td>
<td>50 T.</td>
<td>40 T.</td>
</tr>
<tr>
<td><strong>Panel Thicknesses</strong></td>
<td>Solid 6 mm (at every 35-55 cm)</td>
<td>Solid 6 mm (at every 35-55 cm)</td>
<td>Solid 4 mm panels</td>
</tr>
<tr>
<td><strong>Flashing Light</strong></td>
<td>Standard</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td><strong>Round Front Panel</strong></td>
<td>Standard</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td><strong>Top Plate</strong></td>
<td>10/11 mm</td>
<td>8/9 mm</td>
<td>8/9 mm</td>
</tr>
<tr>
<td><strong>Oil Level Sensor</strong></td>
<td>Standard</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td><strong>Impact Resistance</strong></td>
<td>M50 P1 (K-12) tested &amp; certified (HRB 30 R 90), Designed and produced to withstand H30.</td>
<td>Designed and produced to withstand M50 P1 (K-12),</td>
<td>Designed and produced to withstand M40 P1 (K-8).</td>
</tr>
<tr>
<td><strong>Front Panel Thickness</strong></td>
<td>30+6 (opt. 10)+3mm</td>
<td>30+6mm</td>
<td>4 (mm)</td>
</tr>
<tr>
<td><strong>Speed</strong></td>
<td>2.5 / 6 sn</td>
<td>4 / 6 sn (Opt. 2.5 / 4 sn)</td>
<td>4 / 6 sn (Opt. 2.5 / 4 sn)</td>
</tr>
</tbody>
</table>

### Standard Features and Built-in Properties

- **HRB** (Heavy Duty Road Blocker)
  - 380V 3-Phase AC.
  - IP 67 manual control button unit 3 functions.
  - Emergency button.
  - Down/descend button (manual) in case of power off or maintenance.
  - PLC control unit.
  - 24 V DC control.
  - 24 V DC solenoids.
  - Automatic/manual programmable access authorisation.
  - Outputs (siren, light, beam, flashes).
  - Movement buzzer.
  - Special design hinge structure spread on the total width of the blocker without gap.
  - Unladen piston connection at top and bottom positions of the blocker enabling free-standing of the piston.
  - Galvanised sheet metal main body side covers.
  - Hot dip galvanized vehicle pass through surface (top plates).
  - 60 lt oil tank.

- **RRB** (Reinforced Road Blocker)
  - IP 55 - Hydraulic Power Unit, IP 58 - Blocker Cabinet (underground unit), IP 68 - Hydraulic Piston.

- **RB** (Residential Type Road Blocker)
  - 

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*Note: All features and specifications are subject to change without notice.*
<table>
<thead>
<tr>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground mounting apparatus.</td>
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<tr>
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</tr>
<tr>
<td>25 cc hand pump (manual)</td>
</tr>
<tr>
<td>Oil level and temperature indicator.</td>
</tr>
<tr>
<td>Protective valve for oil hose.</td>
</tr>
<tr>
<td>Oil tank with particulate filter.</td>
</tr>
<tr>
<td>Oil tank with magnetic metal collector.</td>
</tr>
<tr>
<td>Hot dip galvanised power &amp; control unit cabin</td>
</tr>
<tr>
<td>-5°C / +55°C (Opt. -30°C / +70°C)</td>
</tr>
<tr>
<td>Ground mounting apparatus.</td>
</tr>
<tr>
<td>Easy installation.</td>
</tr>
<tr>
<td>Solid impact absorption panels.</td>
</tr>
<tr>
<td>Maximum reinforced static construction cabin.</td>
</tr>
<tr>
<td>Service access lid (screwed).</td>
</tr>
<tr>
<td>Reinforced industrial paint with two components in yellow and black colors.</td>
</tr>
<tr>
<td>High visibility with yellow and black diagonal stripes on impact surface.</td>
</tr>
<tr>
<td>Reflective marking.</td>
</tr>
<tr>
<td>Optional Features</td>
</tr>
<tr>
<td>PLC diagnostic monitor (LAN).</td>
</tr>
<tr>
<td>Hot dip galvanisation both for cabinet and blocker unit</td>
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<tr>
<td>Hot dip galvanisation for impact surface</td>
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<tr>
<td>Optional speeds for RRB and RB.</td>
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<tr>
<td>Accumulator for emergency fast raise up (app.1.5sn speed).</td>
</tr>
<tr>
<td>Traffic lights (red-green).</td>
</tr>
<tr>
<td>Traffic lights (red-green), dia:100mm or 200mm</td>
</tr>
<tr>
<td>Loop detector.</td>
</tr>
<tr>
<td>Beam detector.</td>
</tr>
<tr>
<td>Photocell.</td>
</tr>
<tr>
<td>Remote control (wireless).</td>
</tr>
<tr>
<td>Rain water drainage pump (emergency submersible pump).</td>
</tr>
<tr>
<td>Rounded front panel (recommended for residential use for safety).</td>
</tr>
<tr>
<td>Ground mounting plate.</td>
</tr>
<tr>
<td>Oil level sensor.</td>
</tr>
<tr>
<td>1 phase 220 V AC or 24V DC Motor.</td>
</tr>
<tr>
<td>UPS,</td>
</tr>
<tr>
<td>Oil cooler.</td>
</tr>
<tr>
<td>Oil heater.</td>
</tr>
<tr>
<td>Component heater.</td>
</tr>
<tr>
<td>IP 67 control box (for PLC, SMPS, connectors, circuit breakers, loop detector (if any), relays).</td>
</tr>
<tr>
<td>Surface frames in optional sizes (25cm to 100cm).</td>
</tr>
<tr>
<td>Audio Signal (Siren, powered).</td>
</tr>
</tbody>
</table>
M40 (K8)
ASTM 2656-07
ÖZAK actual penetration: P1
(0,82 mt).

Penetration allowance for P1 level from bollard.
M50 Installation
Power
- Standard 380V 3-Phase 50/60 Hz, 2,2-5,5 kW motor (depending on the number of bollards in the set to be fed).
  Opt. 220V, 110V 1-Phase 50/60 Hz, or 24V DC (for some models/sizes only).

Control Pack
- 24V DC powered and PLC control unit is placed in power unit cabinet.
  Solenoids 24V DC (Op. 12V DC / 220V AC)

Speed
- Standard Operation ~2.5 - 5 sec. (ascend/descend) (depending on the number of bollards in the set to be fed).
  Emergency raise up (upwards) by optional hydraulic accumulator ~1,5 sec.

IP Rating
- IP 55 - Hydraulic Power Unit,
- IP 58 - Underground Structure,
- IP 67 - Electronics (optional), protection with housing/box,
- IP 68 - Hydraulic Piston

Crash / Impact Rating
- M50 (K-12) & M40 (K-8) crash tested and certified according to ASTM 2656-07 (HBD 275 H 90 only).

Axle Load Resistance
- 70T

Hydraulic Cylinder Unit
- Heavy duty, double acting, electrostatic powder coated, dust sealed hydraulic cylinder.

Hydraulic Power Unit
- Strengthened industrial pump,
- 45-60 lt (depending on the number of bollards in the set to be fed) oil tank capacity with magnetic metal collector and particle filter.
- Built-in oil level and oil temperature indicators and oil level sensor with low oil level warning.
- 30-80 Bar (depending on the number of bollards in the set to be fed) pressure;
  10mt R2 (double wire braided mesh) reinforced hydraulic hose.
- Interconnecting hoses for multiple bollard installations will be supplied.

System
- Down, Up, Emergency and external sensor inputs/outputs (e.g. Loop Detector, Beam Detector, Signallization, Remote Control, etc.).
  System alerts with an audio signal during lowering and raising operation.
  A loud siren output in case of alarm or emergency.
  Can be lowered or raised automatically in case of emergency (user’s preference, optional at no cost), programmed to stop as standard.
  Can be lowered and raised manually in case of power failure or during the maintenance service with manual pump and manual discharge feature.
  Automatic raise up mode deploys (optionally with synchronized loop detector) the bollard after the vehicle has passed over.

Power Unit
- Motor, hydraulic pump and solenoid valves are contained in an easily accessible hot-dip-galvanized and electrostatic powder painted cabinet with a built-in lock lid. (Opt. Stainless Steel Cabinet)
  Cabinet Dimensions: 1000 mm x 570 mm x 1200 mm (W x L x H).

Underground Structure
- Bollard Anchorage Casing:
  Ø338 / 420 mm steel casing hot dip galvanized and structured for maximum strength.
  Casing is designed so that no vehicle crashing effect can displace it after embedded or installed into the ground. Ground assembly is supported with bars.
  Hydraulic hose and cable entry openings enabling to use either of the three directions as per hydraulic power unit position and site conditions.
  Designed for easy access to hydraulic hose and cable connections.
  Ground mounting plate with installation holes for bolt type easy ground fixing.
  Includes cut-out for connection of submersible pump for rainwater drainage.

Main Housing:
- Ø324 / 406 mm hot dip galvanised steel, structured to provide main housing for the bollard cylinder.
  Bollard cylinder pivoted with and moves through replaceable 5 rails (inner raling) made of special non-metal and positioned with equal distances from eachother for maximum rigidity and minimum material fraction.
  Contains the hydraulic cylinder lower connection.
  Thanks to the bollard anchorage casing, the main housing can be easily replaceable together with the bollard cylinder in case of a damage in any kind.

*Design and specifications are subject to change without notice.
**Above Ground Structure:**

Bollard Cylinder (impact blocking unit):
Ø270 and 324mm hot-dip galvanised steel with 10mm wall thickness and eccentrically 65-90mm solid steel and composite impact surface, colored with electrostatic powder coating in RAL9006 as standard (other RAL colors are optionally available).

Demountable bollard top plate made of aluminium with 360° visible red flashing LED indicators.

Furnished with red, white or yellow reflecting strips compliant to "E" standard.

Special star-formed, vertical 10 mm solid steel inlls for evenly distributed impact absorption.

Bollard cylinder pivoted with and moves through replaceable 5 rails (outer railing) made of special non-metal and positioned with equal distances from eachother for maximum rigidity and minimum material fraction.

Contains the hydraulic cylinder upper connection.

Road Surface Plate:
15 mm steel hot-dip galvanised, colored with electrostatic powder coating in RAL9006 (other RAL colors are optionally available).

Easy disassembly by its bolt type connection.

Dust sealant / wiper seal.

**Control System**

Manual Control Button Unit:
Provided with an IP67 CRM yellow box and 10mt cable including 3 switches for downwards, upwards, stop (optional emergency operation), equipped with built-in LED visual indications.

Compatibility with Access Control Systems:
Can be utilized through, card reader, finger print, biometric systems and similar any kind of access control systems (by third parties).

**Optional Features and Accessories**

Traffic Lights (red-green), Traffic Light Pole, Loop Detector (double/single antenna), Beam Detector, 220V or 24V DC Motor, Remote Control (receiver and transmitter are 3 channels), UPS, Photocell Sensor (receiver + transmitter with 50cm height pole), RB CONT. UNIT.V.001 Control Unit, Intercom, External Buttons, Emergency Submersible Pump, Hydraulic Accumulator for Emergency Fast Raise-up, Oil Cooler, Oil Heater, Heater for Electronic Components, Powered Audio Signal (siren), PLC Diagnostic Monitor, IP67 box (for PLC, SMPS, connectors etc inside power unit).

**Installation**

Easy Installation with C30 grade concrete. Possible to install multiple units. In case of multiple unit installation, 1200mm gap between the bollards is recommended for M40 certified installations.

For M50 certified installations; minimum 2 bollards shall be installed keeping the gap between bollards at 800mm.

*Design and specifications are subject to change without notice.
RBD
REINFORCED BOLLARD

Power
- Standard 380V 3-Phase 50/60 Hz, 2.2-5.5 kW motor (depending on the number of bollards in the set to be fed).
- Opt. 220V, 110V 1-Phase 50/60 Hz; or 24V DC (for some models/sizes only).

Control Pack
- 24V DC powered and PLC control unit is placed in power unit cabinet.
- Solenoids 24V DC (Ops.12V DC / 220V AC)

Speed
- Standard Operation ~2.5 - 5 sec. (ascend/descend) (depending on the number of bollards in the set to be fed).
- Emergency raise up (upwards) by optional hydraulic accumulator ~1.5 sec.

IP Rating
- IP 55 - Hydraulic Power Unit,
- IP 58 - Underground Structure,
- IP 67 - Electronics (optional), protection with housing/box,
- IP 68 - Hydraulic Piston

Crash / Impact Rating
- Designed and produced to stop a vehicle weighing 6800 kg and travelling with 30 miles/hour according to ASTM 2656-07 standard at M30 (K-4) level.

Axle Load Resistance
- 50T

Hydraulic Cylinder Unit
- Heavy duty, double acting electrostatic powder coated, dust sealed hydraulic cylinder.

Hydraulic Power Unit
- Strengthened industrial pump, 45-60 lt (depending on the number of bollards in the set to be fed) oil tank capacity with magnetic metal collector and particle filter.
- Built-in oil level and oil temperature indicators with low oil level warning.
- 30-80 Bar (depending on the number of bollards in the set to be fed) pressure;
- 10mt R2 (double wire braided mesh) reinforced hydraulic hose.
- Interconnecting hoses for multiple bollard installations will be supplied.

System
- Down, Up, Emergency and external sensor inputs/outputs (e.g. Loop Detector, Beam Detector, Signalization, Remote Control, etc.).
- System alerts with an audio signal during lowering and raising operation.
- A loud siren output in case of alarm or emergency.
- Can be lowered or raised automatically in case of emergency (user’s preference, optional at no cost), programmed to stop as standard.
- Can be lowered and raised manually in case of power failure or during the maintenance service with manual pump and manual discharge feature.
- Automatic raise up mode deploys (optionally with synchronized loop detector) the bollard after the vehicle has passed over.

Power Unit
- Motor, hydraulic pump and solenoid valves are contained in an easily accessible hot-dip-galvanized and electrostatic powder painted cabinet with a built-in lock lid. (Opt. Stainless Steel Cabinet)
- Cabinet Dimensions: 1000 mm x 570 mm x 1200 mm (W x L x H).

Underground Structure
- Bollard Anchorage Casing:
  Ø338 / 420 mm steel casing hot dip galvanized and structured for maximum strength.
  Casing is designed so that no vehicle crashing effect can displace it after embedded installed into the ground. Ground assembly is supported with bars.
  Hydraulic hose and cable entry openings enabling to use either of the three directions as per hydraulics power unit position and site conditions.
  Designed for easy access to hydraulic hose and cable connections.
  Ground mounting plate with installation holes for bolt type easy ground fixing.
  Includes cut-out for connection of submersible pump for rainwater drainage.

Main Housing:
Ø324 / 406 mm hot dip galvanized steel, structured to provide main housing for the bollard cylinder.
Bollard cylinder pivoted with and moves through replaceable 5 rails (inner railing) made of special non-metal and positioned with equal distances from eachother for maximum rigidity and minimal material fraction.
Contains the hydraulic cylinder lower connection.
Thanks to the bollard anchorage casing, the main housing can be easily replaceable together with the bollard cylinder in case of a damage in any kind.

*Design and specifications are subject to change without notice.
Above Ground Structure: Bollard Cylinder (impact blocking unit):
Ø270 and 324mm hot-dip galvanised steel with 10mm wall thickness and eccentrically 65-90mm solid steel and composite impact surface, colored with electrostatic powder coating in RAL9006 as standard (other RAL colors are optionally available).

Demountable bollard top plate made of aluminium with 360° visible red flashing LED indicators.

Furnished with red, white or yellow reflecting strips compliant to “E” standard.

Special star-formed, vertical 5mm solid steel infills for evenly distributed impact absorption.

Bollard cylinder pivoted with and moves through replaceable 5 rails (outer railing) made of special non-metal and positioned with equal distances from each other for maximum rigidity and minimum material fraction.

Contains the hydraulic cylinder upper connection.

Road Surface Plate:
15mm steel hot-dip galvanised, colored with electrostatic powder coating in RAL9006 (other RAL colors are optionally available).

Easy disassembly by its bolt type connection.

Dust sealant / wiper seal.

Control System: Manual Control Button Unit:
Provided with an IP67 CRM yellow box and 10mt cable including 3 switches for downwards, upwards, stop (optional emergency operation), equipped with built-in LED visual indications.

Compatibility with Access Control Systems:
Can be utilized through card reader, fingerprint, biometric systems and similar any kind of access control systems (by third parties).

Optional Features and Accessories:
Traffic Lights (red-green), Traffic Light Pole, Loop Detector (double/single antenna), Beam Detector, 220V or 24V DC Motor, Remote Control (receiver and transmitter are 3 channels), UPS, Photocell Sensor (receiver + transmitter with 50cm height pole), RB CONT. UNIT.V.001 Control Unit, Intercom, External Buttons, Emergency Submersible Pump, Hydraulic Accumulator for Emergency Fast Raise-up, Oil Cooler, Oil Heater, Heater for Electronic Components, Powered Audio Signal (siren), PLC Diagnostic Monitor, IP67 box (for PLC, SMPS, connectors etc inside power unit), oil level sensor.

Installation: Easy Installation with C30 grade concrete. Possible to install multiple units. In case of multiple unit installation, 1200mm gap between the bollards is recommended.

*Design and specifications are subject to change without notice.
TBD
TRAFFIC BOLLARD

Power
- Standard 380V 3-Phase 50/60 Hz, 2,2-5,5 kW motor (depending on the number of bollards in the set to be fed).
  Opt. 220V, 110V 1-Phase 50/60 Hz; or 24V DC (for some models/sizes only).

Control Pack
- 24V DC powered and PLC control unit placed in power unit cabinet.
  Solenoids 24V DC (Ops.12V DC / 220V AC)

Speed
- Standard Operation ~1,8 - 4 sec. (ascend/descend)
  Emergency raise up (upwards) by optional hydraulic accumulator ~1,5 sec.

IP Rating
- IP 55 - Hydraulic Power Unit,
- IP 58 - Underground Structure,
- IP 67 - Electronics (optional), protection with housing/box,
- IP 68 - Hydraulic Piston

Crash / Impact Rating
- -

Axle Load Resistance
- 50T

Hydraulic Cylinder Unit
- Heavy duty, double acting electrostatic powder coated, dust sealed hydraulic cylinder.

Hydraulic Power Unit
- Strengthened industrial pump, 45-60 lt (depending on the number of bollards in the set to be fed) oil tank capacity with magnetic metal collector and particle filter.
  Built-in oil level and oil temperature indicators with low oil level warning.
  30-80 Bar (depending on the number of bollards in the set to be fed) pressure;
  10mt R2 (double wire braided mesh) reinforced hydraulic hose.
  Interconnecting hoses for multiple bollard installations will be supplied.

System
- Down, Up, Emergency and external sensor inputs/outputs
  (e.g. Loop Detector, Beam Detector, Signalization, Remote Control, etc.).
  System alerts with an audio signal during lowering and raising operation.
  A loud siren output in case of alarm or emergency.
  Can be lowered or raised automatically in case of emergency (user's preference, optional at no cost), programmed to stop as standard.
  Can be lowered and raised manually in case of power failure or during the maintenance service with manual pump and manual discharge feature.
  Automatic raise up mode deploys (optionally with synchronized loop detector) the bollard after the vehicle has passed over.

Power Unit
- Motor, hydraulic pump and solenoid valves are contained in an easily accessible hot-dip-galvanized and electrostatic powder painted cabinet with a built-in lock lid. (Opt. Stainless Steel Cabinet)
  Cabinet Dimensions: 1000 mm x 570 mm x 1200 mm (W x L x H).

Underground Structure
- Bollard Anchorage Casing:
  Ø284 / 338 mm steel casing hot dip galvanized and structured for maximum strength.
  Casing is designed so that no vehicle crashing effect can displace it after embedded or installed into the ground.
  Hydraulic hose and cable entry openings enabling to use either of the three directions as per hydraulic power unit position and site conditions.
  Designed for easy access to hydraulic hose and cable connections.
  Ground mounting plate with installation holes for bolt type easy ground fixing.
  Includes cut-out for connection of submersible pump for rainwater drainage.

Main Housing:
Ø273 / 324 mm hot dip galvanized steel, structured to provide main housing for the bollard cylinder.
Bollard cylinder pivoted with and moves through replaceable 5 rails (inner railing) made of special non-metal and positioned with equal distances from eachother for maximum rigidity and minimum material fraction.
Contains the hydraulic cylinder lower connection.
Thanks to the bollard anchorage casing, the main housing can be easily replaceable together with the bollard cylinder in case of a damage in any kind.

*Design and specifications are subject to change without notice.
Above Ground Structure:
- **Bollard Cylinder (impact blocking unit):**
  - Ø220 / 270mm stainless steel sleeve on hot-dip galvanised steel with 10mm wall thickness.
  - Demountable bollard top plate made of aluminium with 360° visible red flashing LED indicators.
  - Furnished with red, white or yellow reflecting strips compliant to "E" standard.
  - Bollard cylinder pivoted with and moves through replaceable 5 rails (outer railing) made of special non-metal and positioned with equal distances from eachother for maximum rigidity and minimum material fraction.
  - Contains the hydraulic cylinder upper connection.

- **Road Surface Plate:**
  - 15 mm steel hot-dip galvanised, colored with electrostatic powder coating in (other RAL colors are optionally available).
  - Easy disassembly by its bolt type connection.
  - Dust sealant / wiper seal.

Control System:
- **Manual Control Button Unit:**
  - Provided with an IP67 CRM yellow box and 10mt cable including 3 switches for downwards, upwards, stop (optional emergency operation), equipped with built-in LED visual indications.

Optional Features and Accessories:
- Traffic Lights (red-green), Traffic Light Pole, Loop Detector (double/single antenna), Beam Detector, 220V or 24V DC Motor, Remote Control (receiver and transmitter are 3 channels), UPS, Photocell Sensor (receiver + transmitter with 50cm height pole), RB CONT. UNIT.V.001 Control Unit, Intercom, External Buttons, Emergency Submersible Pump, Hydraulic Accumulator for Emergency Fast Raise-up, Oil Cooler, Oil Heater, Heater for Electronic Components, Powered Audio Signal (siren), PLC Diagnostic Monitor, IP67 box (for PLC, SMPS, connectors etc inside power unit), oil level sensor.

Installation:
- Easy Installation with C30 grade concrete. Possible to install multiple units. In case of multiple unit installation, 1200mm gap between the bollards is recommended.

*Design and specifications are subject to change without notice.*
**FIXED BOLLARD**

![Fixed Bollard Image]

**Operation**
- Fixed, non-retractable

**Diameter**
- 220mm - 324mm (other diameters available optionally)

**Height (Above Ground)**
- 500-1200mm (other heights available optionally)

**Installation**
- Ground embedding, easy fixed.

**Options and Accessories**
- Different material and colour options, 360° visible LED indicator.

---

*Shape and sizes are for reference only. Fixed bollards can be identical with your retractable bollard or are available in any other specific shape and dimension.*

<table>
<thead>
<tr>
<th></th>
<th>HBD 270 S.../ HBD 324 S...</th>
<th>RBD 270 S.../ RBD 324 S...</th>
<th>TBD 220 S.../ TBD 270 S...</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wall Thickness</strong></td>
<td>10mm + 65/90mm special star formed solid beams of 10mm thickness.</td>
<td>10mm +65/90mm special star formed solid beams of 5mm thickness.</td>
<td>10 mm</td>
</tr>
<tr>
<td><strong>Impact Resistance Crash Test</strong></td>
<td>Designed and produced to withstand M50 (K12)</td>
<td>Designed and produced to withstand M40 (K8)</td>
<td>Designed and produced to withstand M30 (K4)</td>
</tr>
<tr>
<td><strong>Visibility</strong></td>
<td>Reflecting strips compliant to &quot;E&quot; standard, red/white/yellow colours.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Installation</strong></td>
<td>Easy installation with adjustable balance pedestals and C30 grade concrete.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Design and specifications are subject to change without notice.*
### HYDRAULIC BOLLARDS TYPICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>CODE</th>
<th>TYPE</th>
<th>DIAMETER (D) (mm)</th>
<th>HEIGHT (H) (mm)</th>
<th>UNDERGROUND DIMENSIONS (mm) (A x B x C)</th>
<th>CONCRETE OUTER DIMENSIONS (mm) (W x L x X)</th>
<th>MOTOR</th>
<th>SPEED* Raise/Lower (seconds)</th>
<th>COLOR</th>
<th>FIELDS OF INSTALLATION</th>
<th>CRASH TEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBD 324 H 90</td>
<td>Heavy Duty Bollard: Anti-Terror</td>
<td>324</td>
<td>900</td>
<td>690 x 600 x 1500</td>
<td>1500 x 2000 x 1750</td>
<td>380V - 50/60 Hz 3 Phase 2.2 kW Opt. 220V</td>
<td>3 - 5</td>
<td>RAL-9006 on hot dip galvanized steel</td>
<td>HBD</td>
<td>-</td>
</tr>
<tr>
<td>HBD 324 H 80</td>
<td></td>
<td>324</td>
<td>800</td>
<td>690 x 600 x 1400</td>
<td>1500 x 2000 x 1650</td>
<td>2.5 - 4</td>
<td></td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>HBD 324 H 70</td>
<td></td>
<td>324</td>
<td>700</td>
<td>690 x 600 x 1300</td>
<td>1500 x 2000 x 1550</td>
<td>2.5 - 4</td>
<td></td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>HBD 275 H 90</td>
<td></td>
<td>270</td>
<td>900</td>
<td>690 x 600 x 1500</td>
<td>1500 x 2000 x 1750</td>
<td>3 - 5</td>
<td></td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>HBD 270 H 80</td>
<td></td>
<td>270</td>
<td>800</td>
<td>690 x 600 x 1400</td>
<td>1500 x 2000 x 1650</td>
<td>2.5 - 4</td>
<td></td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>HBD 270 H 70</td>
<td></td>
<td>270</td>
<td>700</td>
<td>690 x 600 x 1300</td>
<td>1500 x 2000 x 1550</td>
<td>2.5 - 4</td>
<td></td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>RBD 324 H 90</td>
<td>Reinforced Model</td>
<td>324</td>
<td>900</td>
<td>690 x 600 x 1500</td>
<td>1500 x 2000 x 1750</td>
<td>380V - 50/60 Hz 3 Phase 2.2 kW Opt. 220V</td>
<td>3 - 5</td>
<td>RAL-9006 on hot dip galvanized steel</td>
<td>RBD</td>
<td>-</td>
</tr>
<tr>
<td>RBD 324 H 80</td>
<td></td>
<td>324</td>
<td>800</td>
<td>690 x 600 x 1400</td>
<td>1500 x 2000 x 1650</td>
<td>2.5 - 4</td>
<td></td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>RBD 324 H 70</td>
<td></td>
<td>324</td>
<td>700</td>
<td>690 x 600 x 1300</td>
<td>1500 x 2000 x 1550</td>
<td>2.5 - 4</td>
<td></td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>RBD 275 H 90</td>
<td></td>
<td>270</td>
<td>900</td>
<td>690 x 600 x 1500</td>
<td>1500 x 2000 x 1750</td>
<td>3 - 5</td>
<td></td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>RBD 270 H 80</td>
<td></td>
<td>270</td>
<td>800</td>
<td>690 x 600 x 1400</td>
<td>1500 x 2000 x 1650</td>
<td>2.5 - 4</td>
<td></td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>RBD 270 H 70</td>
<td></td>
<td>270</td>
<td>700</td>
<td>690 x 600 x 1300</td>
<td>1500 x 2000 x 1550</td>
<td>2.5 - 4</td>
<td></td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>TBD 270 H 90</td>
<td>Traffic Control</td>
<td>270</td>
<td>700</td>
<td>690 x 600 x 1105</td>
<td>900 x 900 x 1220</td>
<td>380V - 50/60 Hz 3 Phase 1.5 kW Opt. 220V</td>
<td>1.8 - 3.5</td>
<td>304 Grade Stainless Steel Opt. Powder coated on Hot-dip galvanized steel</td>
<td>TBD</td>
<td>-</td>
</tr>
<tr>
<td>TBD 270 H 80</td>
<td></td>
<td>270</td>
<td>600</td>
<td>690 x 600 x 1005</td>
<td>900 x 900 x 1120</td>
<td>2 - 4</td>
<td></td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>TBD 270 H 70</td>
<td></td>
<td>270</td>
<td>500</td>
<td>690 x 600 x 905</td>
<td>900 x 900 x 1020</td>
<td>1.8 - 3.5</td>
<td></td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>TBD 220 H 90</td>
<td></td>
<td>220</td>
<td>700</td>
<td>630 x 610 x 1105</td>
<td>800 x 800 x 1220</td>
<td>2 - 4</td>
<td></td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>TBD 220 H 80</td>
<td></td>
<td>220</td>
<td>600</td>
<td>630 x 610 x 1005</td>
<td>800 x 800 x 1120</td>
<td>1.8 - 3.5</td>
<td></td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>TBD 220 H 70</td>
<td></td>
<td>220</td>
<td>500</td>
<td>630 x 610 x 905</td>
<td>800 x 800 x 1020</td>
<td>2 - 4</td>
<td></td>
<td></td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Different heights are optionally available:**
- HBD: from 700 to 1200 mm
- RBD: from 700 to 1200 mm
- TBD: from 500 to 1200 mm

**Subject to change based on the number of bollards to be fed in case of multiple installations.**

**Any other RAL color is optionally available.**

**FIELDS OF INSTALLATION:**

**HBD - Heavy Duty Bollard:**
- Military and defence facilities,
- Power plants,
- Diplomatic premises,
- Airports,
- Prisons,
- High threat sites, etc.

**RBD - Reinforced Bollard:**
- Government offices,
- Financial institutions,
- Industrial high risk sites, etc.

**TBD - Traffic Control Bollard:**
- Shopping centers,
- Hotels,
- Pedestrian roads, municipal areas,
- Residences,
- Car park entries,
- Universities and other educational buildings,
- Low risk buildings, etc.
### General Technical Specifications (hydraulic series)

<table>
<thead>
<tr>
<th>Feature</th>
<th>HBD (Heavy Duty Bollard)</th>
<th>RBD (Reinforced Bollard)</th>
<th>TBD (Traffic Bollard)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wall Thickness</td>
<td>10mm + 65/90mm special star formed solid beams of 10mm thickness.</td>
<td>10mm + 65/90mm special star formed solid beams of 5mm thickness.</td>
<td>10 mm</td>
</tr>
<tr>
<td>Oil Level Sensor (PLC)</td>
<td>Standard</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td>Impact Resistance Crash Test</td>
<td>M50 (K 12) &amp; M40 (K 8) tested &amp; certified (HBD 275 H 90).</td>
<td>Designed and produced to withstand M30 (K4)</td>
<td>-</td>
</tr>
<tr>
<td>Ground Assembly Supporting Bars</td>
<td>Standard</td>
<td>Standard</td>
<td>V form</td>
</tr>
<tr>
<td>Speed</td>
<td>2.5 - 5 sec. (single unit installation)</td>
<td>2.5 - 5 sec. (single unit installation)</td>
<td>1.8 - 4 sec. (single unit installation)</td>
</tr>
</tbody>
</table>

**Standard Features and Built-in Properties**

- **Axle Load:** 70 T., 50 T., 50 T.

- **Finish:** Electrostatic powder coated, Electrostatic powder coated, Stainless steel sleeve.

- **Speed:** 2.5 - 5 sec. (single unit installation), 2.5 - 5 sec. (single unit installation), 1.8 - 4 sec. (single unit installation)

**Special Notes:**

- **380V 3-Phase AC.**
- **IP 67 manual control button unit 3 functions.**
- **Emergency button.**
- **Down/descend valve (manual) in case of power off or maintenance.**
### Optional Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLC diagnostic monitor</td>
<td>(LAN).</td>
</tr>
<tr>
<td>Accumulator for emergency fast raise up</td>
<td>(app.1.5sn speed).</td>
</tr>
<tr>
<td>Traffic lights</td>
<td>(red-green), dia:100mm or 200mm</td>
</tr>
<tr>
<td>Traffic light pole</td>
<td></td>
</tr>
<tr>
<td>Loop detector</td>
<td></td>
</tr>
<tr>
<td>Beam detector</td>
<td></td>
</tr>
<tr>
<td>Photocell</td>
<td></td>
</tr>
<tr>
<td>Remote control (wireless)</td>
<td></td>
</tr>
<tr>
<td>Rain water drainage pump</td>
<td>(emergency submersible pump).</td>
</tr>
<tr>
<td>Oil level sensor</td>
<td></td>
</tr>
<tr>
<td>1 phase 220 V AC or 24 V DC Motor</td>
<td></td>
</tr>
<tr>
<td>UPS</td>
<td></td>
</tr>
<tr>
<td>Oil cooler</td>
<td></td>
</tr>
<tr>
<td>Oil heater</td>
<td></td>
</tr>
<tr>
<td>Component heater</td>
<td></td>
</tr>
<tr>
<td>IP 67 control box</td>
<td>(for PLC, SMPS, connectors, circuit breakers, loop detector (if any), relays).</td>
</tr>
<tr>
<td>Different materials and colors</td>
<td></td>
</tr>
<tr>
<td>Audio Signal</td>
<td>(Siren, powered).</td>
</tr>
</tbody>
</table>
BR1S / BR3S / BR6S ARM BARRIER

for PUBLIC & RESIDENTIAL AREA CAR PARKS...

- Easy to install and use,
- Durable body structure,
- Wide options and accessories alternatives,
- Compatible with any kind of access control system.

*Design and specifications are subject to change without notice.
**GENERAL FEATURES**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Dimensions</td>
<td>360 x 290 x 1010 (height) mm</td>
</tr>
<tr>
<td>Body Material – Finish</td>
<td>Galvanised steel – electrostatic powder coated</td>
</tr>
<tr>
<td>Body Colour</td>
<td>Orange (RAL 1033)</td>
</tr>
<tr>
<td>Access to Body Interiors</td>
<td>Through locked lids on the top and side</td>
</tr>
<tr>
<td>Arm (Barrier) Length</td>
<td>up to 6.0 m</td>
</tr>
<tr>
<td>Arm (Barrier) Material</td>
<td>Aluminium</td>
</tr>
<tr>
<td>Arm Colour</td>
<td>Anodized (opt. electrostatic powder coated in RAL colours)</td>
</tr>
<tr>
<td>Body Substructure / Stand</td>
<td>Concrete, 500 x 500 x 250 (height) mm</td>
</tr>
<tr>
<td>Power</td>
<td>220 V. 60/50 Hz. AC (%±10)</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>Stand-by: 8 W, During operation: 220-270 W depending on the arm length.</td>
</tr>
<tr>
<td>Locking / Interlock</td>
<td>Mechanical reduction</td>
</tr>
<tr>
<td>Operation</td>
<td>Electromechanical</td>
</tr>
<tr>
<td>Operation Speed</td>
<td>1 - 6 sec.</td>
</tr>
<tr>
<td>Manual Control</td>
<td>By manual lever</td>
</tr>
<tr>
<td>Operation Temperature, Humidity</td>
<td>-20°C/+68°C (Opt. -50°C with heater positive), RH 95% non-condensing.</td>
</tr>
<tr>
<td>IP Grade</td>
<td>IP 54, suitable for outdoor usage</td>
</tr>
<tr>
<td>Net Weight</td>
<td>~45 kg (without arm)</td>
</tr>
<tr>
<td>Options and Accessories</td>
<td>• Safety sensor (photocell), loop detector,</td>
</tr>
<tr>
<td></td>
<td>• Top flashing indicator, LED indicator and diffuser on the arm (flashing in 4 different types), traffic light,</td>
</tr>
<tr>
<td></td>
<td>• Arm resting post, support leg, folding arm, under arm curtain barrier, rubber cushion for arm, under arm impact sensor,</td>
</tr>
<tr>
<td></td>
<td>• Battery and charging unit, wireless remote control (receiver &amp; transmitter), manual remote control</td>
</tr>
</tbody>
</table>

*Design and specifications are subject to change without notice.*
**SURFACE MOUNT TYRE KILLER (TKS)**

| Operation | Uni-directional  
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Spikes retract independent from each other with the movement of the vehicle passing in the free flow direction. Gets back to its normal position by balance.</td>
</tr>
</tbody>
</table>

| Free Flow Direction | One way only. |

| Spikes | 10mm thick, 55mm high (other heights optionally available) electro galvanised steel, independently moving in the free flow direction.  
|         | Multi-pivoting of the spike shaft (at every 80mm) prevents deformation on the shaft after entry attempts from forbidden direction. |

| Body | 70mm body height from road surface (excl. spikes), fully hot dip galvanised steel material, reinforced structure, wedge type connection before welding for maximum strength delivering weights directly on the ground enabling the utmost axle load resistance. Anti-slip passage surface, edges ended with angular end tips. Modular body structure allowing multiple bodies connected together to obtain the required total width. Includes water drainage holes. |

| Finish | Spikes: Electrostatic powder coated over electro galvanised steel in yellow color (other colors are optionally available). Body: Electrostatic powder coated over hot-dip galvanised non-slippery steel in black color (other colors are optionally available). |

| Operation Temperature, Humidity | Unlimited (freezing of moving parts shall be avoided). |

| Recommended max speed | 5 km/h |

| Axle Load Capacity | Thanks to the insert / wedge type connections 50 Tons. |

| Installation | Easy and rapid installation directly on road surface without digging and civil works. |

*Design and specifications are subject to change without notice.*
<table>
<thead>
<tr>
<th>Operation</th>
<th>Uni-directional</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Spikes retract independent from each other with the movement of the vehicle passing in the free flow direction. Gets back to its normal position by balance.</td>
</tr>
<tr>
<td>Free Flow Direction</td>
<td>One way only.</td>
</tr>
<tr>
<td>Spikes</td>
<td>10mm thick, 110mm high (other heights optionally available) electro galvanised steel, independently moving in the free flow direction. Multi-pivoting of the spike shaft (at every 75mm) prevents deformation on the shaft after entry attempts from forbidden direction.</td>
</tr>
<tr>
<td>Body</td>
<td>Body embedded into ground, fully hot dip galvanised steel material, reinforced structure, wedge type connections before welding for maximum strength delivering weights directly on the ground enabling the utmost axle load resistance. Can be produced according to the required total width. Includes water drainage holes.</td>
</tr>
<tr>
<td>Finish</td>
<td>Spikes: Electrostatic powder coated over electro galvanised steel in yellow color (other colors are optionally available). Body: Electrostatic powder coated over hot-dip galvanised in black color (other colors are optionally available).</td>
</tr>
<tr>
<td>Operation Temperature, Humidity</td>
<td>Unlimited (freezing of moving parts shall be avoided).</td>
</tr>
<tr>
<td>Recommended max. Speed</td>
<td>5 km/h</td>
</tr>
<tr>
<td>Axle Load Capacity</td>
<td>Thanks to the insert/wedge type connections 50 Tons.</td>
</tr>
<tr>
<td>Installation</td>
<td>Easy installation with bolts and concrete anchorage.</td>
</tr>
</tbody>
</table>

*Design and specifications are subject to change without notice.*