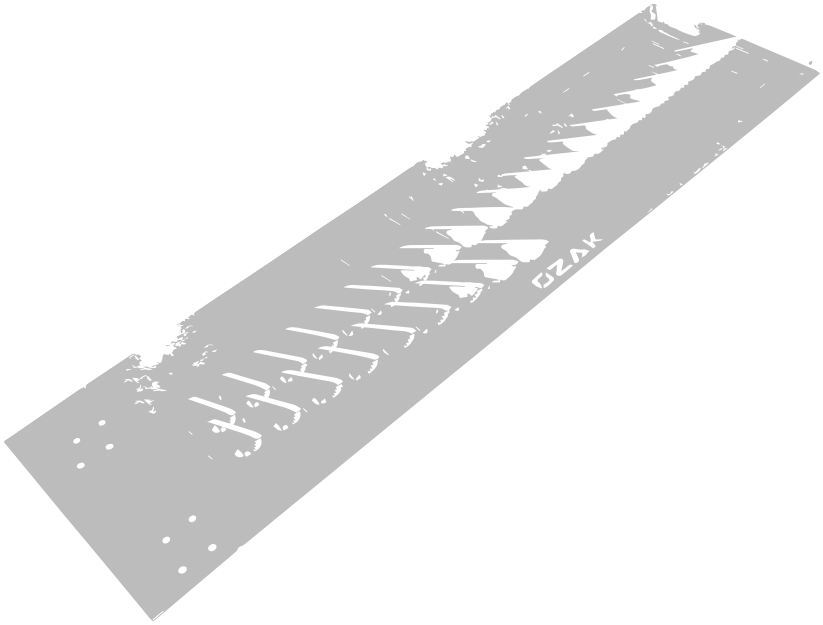
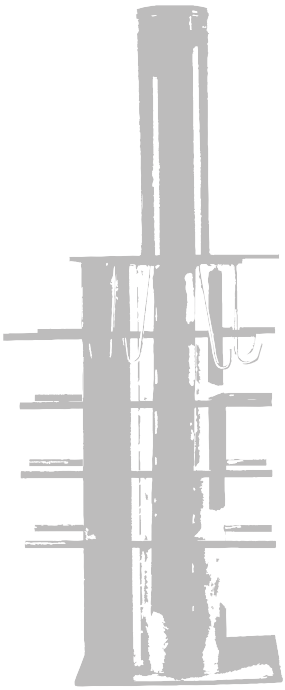
ÖZAK





ROAD BLOCKERS
BOLLARDS
TYRE KILLERS

www.ozak-t.com

OZAK, founded in 1974, is the first and leading pedestrian and vehicle passage control systems manufacturer in Turkey. In addition to its expertise in road blocker manufacturing, OZAK manufactures product groups such as turnstiles and bollards. OZAK; providing high quality and reliable solutions, has manufacturing facilities with a total area of 14.000 m2 of which 9600 m2 covered 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**
- **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.

ACCESS TECHNOLOGIES

ozak-t.com


Airports


Military Bases


Hotels


Residential Areas


Government Buildings


Diplomatic Premises

Car Park Entries


Harbour Entries


Industrial Sites


National Borders


Construction Sites

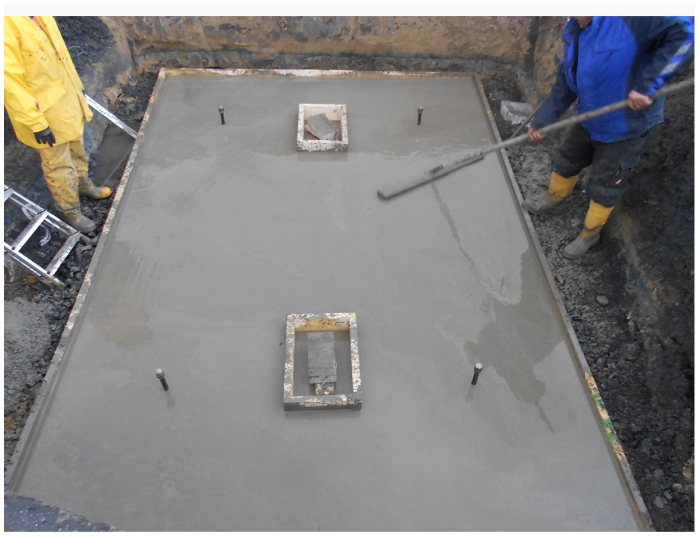

Oil Refineries


Prisons


Power Plants

Financial Institutions

ROAD BLOCKER

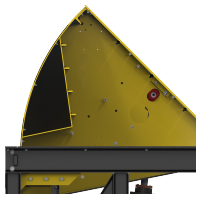


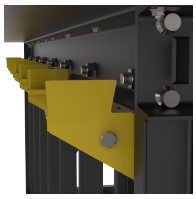

CTS


ÖZAK
NR-D
Systeme GmbH


NR-D
Systeme GmbH
CTS
ÖZAK
TURNIKE-TURNSTILE
ÖZAK
NR-D
Systeme GmbH

HRB
ROAD BLOCKER
(Heavy Duty Model)



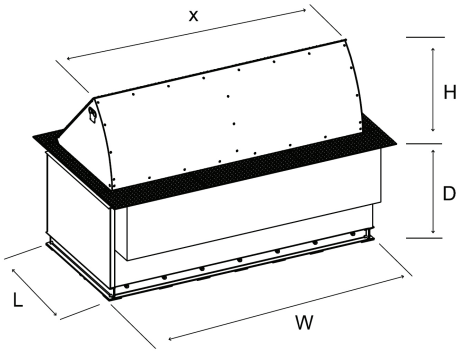


Power : Standard 380V 3-Phase 50/60 Hz, 3,3 - 5,5 KvA motor (varies depending on blocker size).
Opt. 220V, 110V 1-Phase 50/60 Hz; or 24V DC

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.

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.



			H = 60 cm / L x W x D (mm)
Raising Height 65-50 cm	HRB 10R60	x = 1,0m Blocker Unit Width, 65-50cm Raising Height	1275 x 1170 x 975
	HRB 15R60	x = 1,5m Blocker Unit Width, 65-50cm Raising Height	1275 x 1670 x 975
	HRB 20R60	x = 2,0m Blocker Unit Width, 65-50cm Raising Height	1275 x 2170 x 975
	HRB 25R60	x = 2,5m Blocker Unit Width, 65-50cm Raising Height	1275 x 2670 x 975
	HRB 30R60	x = 3,0m Blocker Unit Width, 65-50cm Raising Height	1275 x 3170 x 975
	HRB 35R60	x = 3,5m Blocker Unit Width, 65-50cm Raising Height	1275 x 3670 x 975
	HRB 35R60/2p	x = 3,5m Blocker Unit Width, 65-50cm Raising Height (2 pistons)	1275 x 3670 x 975
	HRB 40R60	x = 4,0m Blocker Unit Width, 65-50cm Raising Height	1275 x 4170 x 975
	HRB 40R60/2p	x = 4,0m Blocker Unit Width, 65-50cm Raising Height (2 pistons)	1275 x 4170 x 975
	HRB 45R60/2p	x = 4,5m Blocker Unit Width, 65-50cm Raising Height (2 pistons)	1275 x 4670 x 975
	HRB 50R60/2p	x = 5,0m Blocker Unit Width, 65-50cm Raising Height (2 pistons)	1275 x 5170 x 975
	HRB 55R60/2p	x = 5,5m Blocker Unit Width, 65-50cm Raising Height (2 pistons)	1275 x 5670 x 975
	HRB 60R60/2p	x = 6,0m Blocker Unit Width, 65-50cm Raising Height (2 pistons)	1275 x 6170 x 975
	HRB 65R60/2p	x = 6,5m Blocker Unit Width, 65-50cm Raising Height (2 pistons)	1275 x 6670 x 975

			H = 90 cm / L x W x D (mm)
Raising Height 90-70 cm	HRB 10R90	x = 1,0m Blocker Unit Width, 90-70cm Raising Height	1680 x 1170 x 1270
	HRB 15R90	x = 1,5m Blocker Unit Width, 90-70cm Raising Height	1680 x 1670 x 1270
	HRB 20R90	x = 2,0m Blocker Unit Width, 90-70cm Raising Height	1680 x 2170 x 1270
	HRB 25R90	x = 2,5m Blocker Unit Width, 90-70cm Raising Height	1680 x 2670 x 1270
	HRB 30R90	x = 3,0m Blocker Unit Width, 90-70cm Raising Height	1680 x 3170 x 1270
	HRB 35R90	x = 3,5m Blocker Unit Width, 90-70cm Raising Height	1680 x 3670 x 1270
	HRB 35R90/2p	x = 3,5m Blocker Unit Width, 90-70cm Raising Height (2 pistons)	1680 x 3670 x 1270
	HRB 40R90	x = 4,0m Blocker Unit Width, 90-70cm Raising Height	1680 x 4170 x 1270
	HRB 40R90/2p	x = 4,0m Blocker Unit Width, 90-70cm Raising Height (2 pistons)	1680 x 4170 x 1270
	HRB 45R90/2p	x = 4,5m Blocker Unit Width, 90-70cm Raising Height (2 pistons)	1680 x 4670 x 1270
	HRB 50R90/2p	x = 5,0m Blocker Unit Width, 90-70cm Raising Height (2 pistons)	1680 x 5170 x 1270
	HRB 55R90/2p	x = 5,5m Blocker Unit Width, 90-70cm Raising Height (2 pistons)	1680 x 5670 x 1270
	HRB 60R90/2p	x = 6,0m Blocker Unit Width, 90-70cm Raising Height (2 pistons)	1680 x 6170 x 1270
	HRB 65R90/2p	x = 6,5m Blocker Unit Width, 90-70cm Raising Height (2 pistons)	1680 x 6670 x 1270

Axle Load Resistance : 50T

Hydraulic Cylinder Unit : Heavy duty, 63mm diameter, dust sealed 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 sensor with low oil level warning.
70-80 Bar pressure; maximum running pressure is 120 Bar.
10 mt R2 (double wire braided mesh) reinforced hydraulic hose.

CERTIFIED
CERTIFIED
CERTIFIED

M50 P1 (K12)
ASTM F2656-07

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

HRB ROAD BLOCKER

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 button 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, 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.

Impact Absorbing Panel Quantity												
Blocker Size	**1 mt**	**1,5 mt**	**2 mt**	**2,5 mt**	**3 mt**	**3,5 mt**	**4 mt**	**4,5 mt**	**5 mt**	**5,5 mt**	**6 mt**	**6,5 mt**
Single Piston	4	4	6	6	8	8	10					
Double Piston						10	12	12	15	15	18	18

To stop severe impact loads there is an additional 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.
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 :
Manuel Control Button Unit:
Provided with an IP67 CRM yellow box including 3 switches for downwards, upwards, stop (optional emergency operation), can stop the block motion with the command/signal coming from detector, equipped with built-in LED visual indications and 10 mt cable.
Control unit optionally can be utilized through finger print, biometric systems and similar access control systems.

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 indudes 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 (7800 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 cylinder, double speed hydraulic cylinder, 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.

CERTIFIED

CERTIFIED

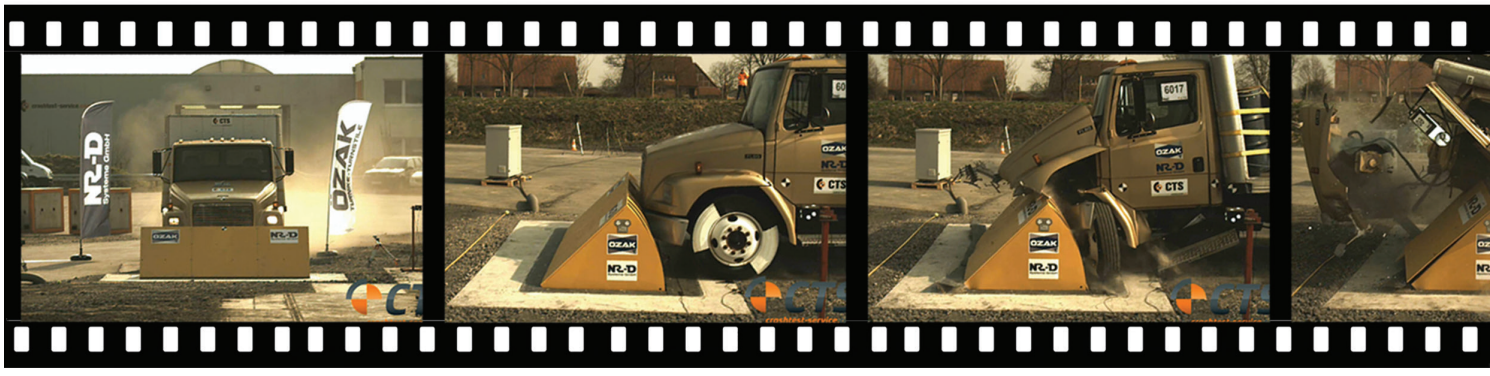
CERTIFIED

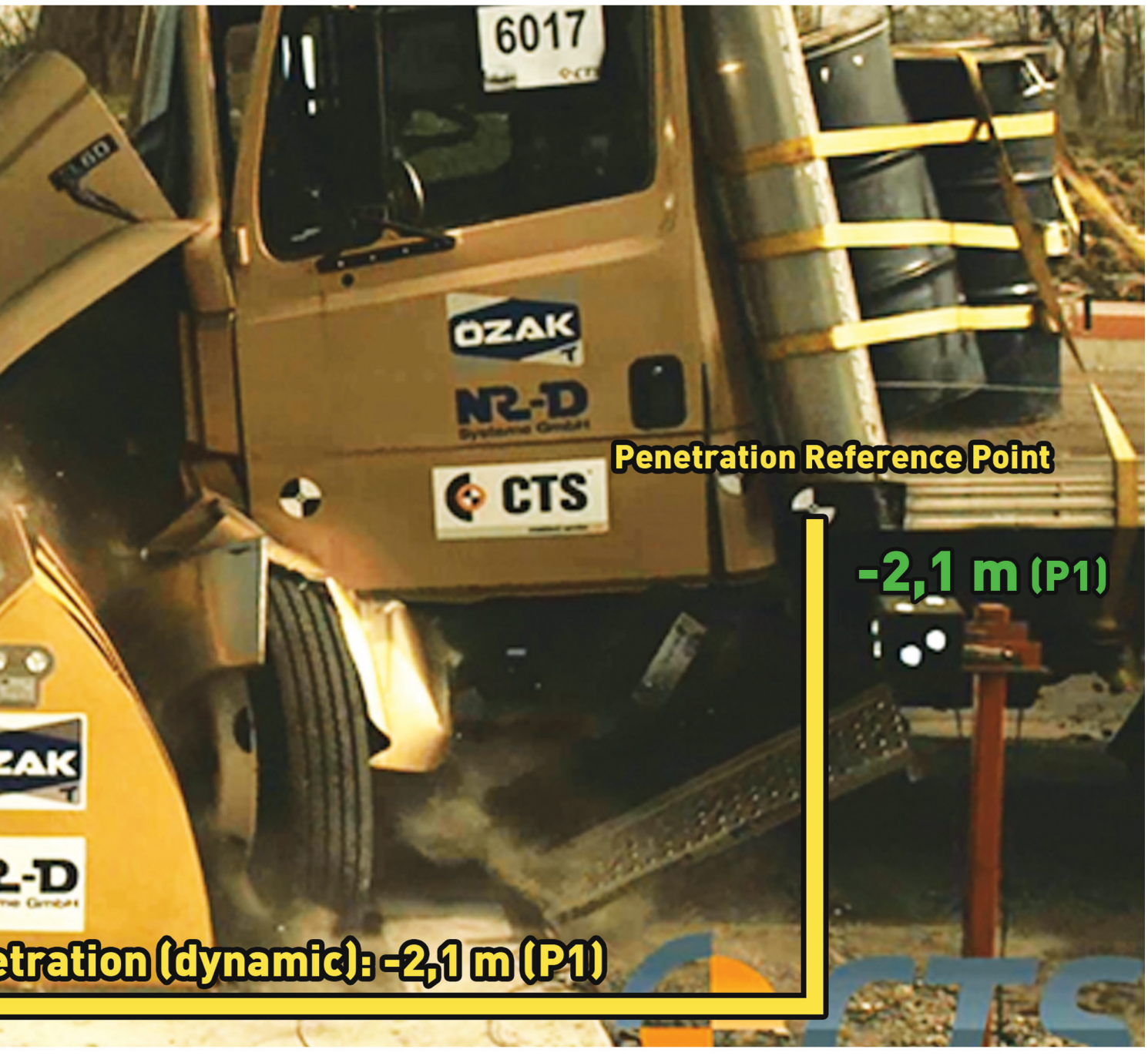
M50 P1 (K12)
ASTM F2656-07

for crash test video

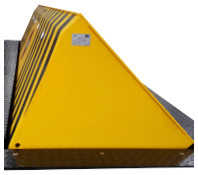
Max P1 Limit

Maximum Pene




6017
OZAK
NR-D
CTS
Penetration Reference Point
-2,1 m (P1)
etration (dynamic): -2,1 m (P1)

RRB
ROAD BLOCKER
(Reinforced Model)

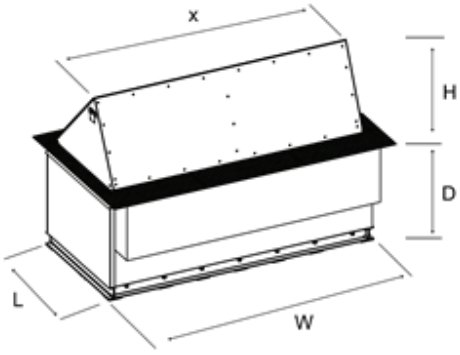


Power : Standard 380V 3-Phase 50/60 Hz, 3,3 - 5,5 KvA motor (varies depending on blocker size).
Opt. 220v, 110V 1-Phase 50/60 Hz; or 24V DC

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 ~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.

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



			H = 60 cm / L x W x D (mm)
Raising Height 65-50 cm	RRB 10F60	x = 1,0m Blocker Unit Width, 65-50cm Raising Height	1275 x 1170 x 975
	RRB 15F60	x = 1,5m Blocker Unit Width, 65-50cm Raising Height	1275 x 1670 x 975
	RRB 20F60	x = 2,0m Blocker Unit Width, 65-50cm Raising Height	1275 x 2170x 975
	RRB 25F60	x = 2,5m Blocker Unit Width, 65-50cm Raising Height	1275 x 2670 x 975
	RRB 30F60	x = 3,0m Blocker Unit Width, 65-50cm Raising Height	1275 x 3170 x 975
	RRB 35F60	x = 3,5m Blocker Unit Width, 65-50cm Raising Height	1275 x 3670 x 975
	RRB 35F60/2p	x = 3,5m Blocker Unit Width, 65-50cm Raising Height (2 pistons)	1275 x 3670 x 975
	RRB 40F60	x = 4,0m Blocker Unit Width, 65-50cm Raising Height	1275 x 4170 x 975
	RRB 40F60/2p	x = 4,0m Blocker Unit Width, 65-50cm Raising Height (2 pistons)	1275 x 4170 x 975
	RRB 45F60/2p	x = 4,5m Blocker Unit Width, 65-50cm Raising Height (2 pistons)	1275 x 4670 x 975
	RRB 50F60/2p	x = 5,0m Blocker Unit Width, 65-50cm Raising Height (2 pistons)	1275 x 5170 x 975
	RRB 55F60/2p	x = 5,5m Blocker Unit Width, 65-50cm Raising Height (2 pistons)	1275 x 5670 x 975
	RRB 60F60/2p	x = 6,0m Blocker Unit Width, 65-50cm Raising Height (2 pistons)	1275 x 6170 x 975
	RRB 65F60/2p	x = 6,5m Blocker Unit Width, 65-50cm Raising Height (2 pistons)	1275 x 6670 x 975

			H = 90 cm / L x W x D (mm)
Raising Height 90-70 cm	RRB 10F90	x = 1,0m Blocker Unit Width, 90-70cm Raising Height	1680 x 1170 x 1270
	RRB 15F90	x = 1,5m Blocker Unit Width, 90-70cm Raising Height	1680 x 1670 x 1270
	RRB 20F90	x = 2,0m Blocker Unit Width, 90-70cm Raising Height	1680 x 2170 x 1270
	RRB 25F90	x = 2,5m Blocker Unit Width, 90-70cm Raising Height	1680 x 2670 x 1270
	RRB 30F90	x = 3,0m Blocker Unit Width, 90-70cm Raising Height	1680 x 3170 x 1270
	RRB 35F90	x = 3,5m Blocker Unit Width, 90-70cm Raising Height	1680 x 3670 x 1270
	RRB 35F90/2p	x = 3,5m Blocker Unit Width, 90-70cm Raising Height (2 pistons)	1680 x 3670 x 1270
	RRB 40F90	x = 4,0m Blocker Unit Width, 90-70cm Raising Height	1680 x 4170 x 1270
	RRB 40F90/2p	x = 4,0m Blocker Unit Width, 90-70cm Raising Height (2 pistons)	1680 x 4170 x 1270
	RRB 45F90/2p	x = 4,5m Blocker Unit Width, 90-70cm Raising Height (2 pistons)	1680 x 4670 x 1270
	RRB 50F90/2p	x = 5,0m Blocker Unit Width, 90-70cm Raising Height (2 pistons)	1680 x 5170 x 1270
	RRB 55F90/2p	x = 5,5m Blocker Unit Width, 90-70cm Raising Height (2 pistons)	1680 x 5670 x 1270
	RRB 60F90/2p	x = 6,0m Blocker Unit Width, 90-70cm Raising Height (2 pistons)	1680 x 6170 x 1270
	RRB 65F90/2p	x = 6,5m Blocker Unit Width, 90-70cm Raising Height (2 pistons)	1680 x 6670 x 1270

Axle Load Resistance : 30T

Hydraulic Cylinder Unit : Heavy duty, 63mm diameter, dust sealed 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 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.*

RRB ROAD BLOCKER

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 button 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.

Impact Absorbing Panel Quantity												
Blocker Size	**1 mt**	**1,5 mt**	**2 mt**	**2,5 mt**	**3 mt**	**3,5 mt**	**4 mt**	**4,5 mt**	**5 mt**	**5,5 mt**	**6 mt**	**6,5 mt**
Single Piston	4	4	6	6	8	8	10					
Double Piston						10	12	12	15	15	18	18

All vertical impact absorption panels are installed with equal distance to each other and supported by 4 pieces of 30x10mm solid steel beams to further strengthen the construction.
To stop severe impact loads there is an additional 6mm thick sheet metal attached to the vertical impact absorption panels.
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.

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 block motion with the command/signal coming from detector, equipped with built-in LED visual indications.
Control unit optionally can be utilized through finger print, biometric systems and similar access control systems.

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 indudes 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 :

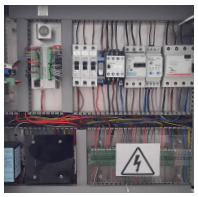
Traffic lights (red-green), Traffic light Pole, Loop Detector (double/single contact), Beam Detector, 220V or 24V DC motor, Remote Control (receiver and transmitter are 3 channels), UPS, Photocell Sensor (receiver+ transmitter with 50cm height pole), RB CONT. UNIT.V.001 Control Unit, Intercom, External Buttons, Emergency Submersible Pump (7800 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 cylinder, double speed hydraulic cylinder, ground mounting plate, powered audio signal (siren), PLC diagnostic monitor, flashing light indicators, round shaped front panel, oil level sensor, optional speed, 60 lt oil tank for models with single piston, 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
(Residential Model)

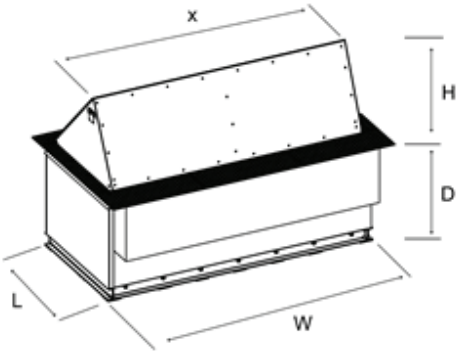


Power : Standard 380V 3-Phase 50/60 Hz, 3,3 - 5,5 KvA motor (varies depending on blocker size).
Opt. 220V, 110V 1-Phase 50/60 Hz; or 24V DC

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 ~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.

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



			H = 60 cm / L x W x D (mm)
Raising Height 65-50 cm	RB 10F60	x = 1,0m Blocker Unit Width, 65-50cm Raising Height	1275 x 1170 x 975
	RB 15F60	x = 1,5m Blocker Unit Width, 65-50cm Raising Height	1275 x 1670 x 975
	RB 20F60	x = 2,0m Blocker Unit Width, 65-50cm Raising Height	1275 x 2170x 975
	RB 25F60	x = 2,5m Blocker Unit Width, 65-50cm Raising Height	1275 x 2670 x 975
	RB 30F60	x = 3,0m Blocker Unit Width, 65-50cm Raising Height	1275 x 3170 x 975
	RB 35F60	x = 3,5m Blocker Unit Width, 65-50cm Raising Height	1275 x 3670 x 975
	RB 40F60	x = 4,0m Blocker Unit Width, 65-50cm Raising Height	1275 x 4170 x 975
	RB 40F60/2p	x = 4,0m Blocker Unit Width, 65-50cm Raising Height (2 pistons)	1275 x 4170 x 975
	RB 45F60/2p	x = 4,5m Blocker Unit Width, 65-50cm Raising Height (2 pistons)	1275 x 4670 x 975
	RB 50F60/2p	x = 5,0m Blocker Unit Width, 65-50cm Raising Height (2 pistons)	1275 x 5170 x 975
	RB 55F60/2p	x = 5,5m Blocker Unit Width, 65-50cm Raising Height (2 pistons)	1275 x 5670 x 975
	RB 60F60/2p	x = 6,0m Blocker Unit Width, 65-50cm Raising Height (2 pistons)	1275 x 6170 x 975
	RB 65F60/2p	x = 6,5m Blocker Unit Width, 65-50cm Raising Height (2 pistons)	1275 x 6670 x 975

			H = 90 cm / L x W x D (mm)
Raising Height 90-70 cm	RB 10F90	x = 1,0m Blocker Unit Width, 90-70cm Raising Height	1680 x 1170 x 1270
	RB 15F90	x = 1,5m Blocker Unit Width, 90-70cm Raising Height	1680 x 1670 x 1270
	RB 20F90	x = 2,0m Blocker Unit Width, 90-70cm Raising Height	1680 x 2170x 1270
	RB 25F90	x = 2,5m Blocker Unit Width, 90-70cm Raising Height	1680 x 2670 x 1270
	RB 30F90	x = 3,0m Blocker Unit Width, 90-70cm Raising Height	1680 x 3170 x 1270
	RB 35F90	x = 3,5m Blocker Unit Width, 90-70cm Raising Height	1680 x 3670 x 1270
	RB 40F90	x = 4,0m Blocker Unit Width, 90-70cm Raising Height	1680 x 4170 x 1270
	RB 40F90/2p	x = 4,0m Blocker Unit Width, 90-70cm Raising Height (2 pistons)	1680 x 4170 x 1270
	RB 45F90/2p	x = 4,5m Blocker Unit Width, 90-70cm Raising Height (2 pistons)	1680 x 4670 x 1270
	RB 50F90/2p	x = 5,0m Blocker Unit Width, 90-70cm Raising Height (2 pistons)	1680 x 5170 x 1270
	RB 55F90/2p	x = 5,5m Blocker Unit Width, 90-70cm Raising Height (2 pistons)	1680 x 5670 x 1270
	RB 60F90/2p	x = 6,0m Blocker Unit Width, 90-70cm Raising Height (2 pistons)	1680 x 6170 x 1270
	RB 65F90/2p	x = 6,5m Blocker Unit Width, 90-70cm Raising Height (2 pistons)	1680 x 6670 x 1270

Axle Load Resistance : 15T

Hydraulic Cylinder Unit : Heavy duty, 63mm diameter, dust sealed 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.

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.

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

RB ROAD BLOCKER

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 button 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 4mm 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 solid steel beams to further strengthen the construction.

Impact Absorbing Panel Quantity												
Blocker Size	**1 mt**	**1,5 mt**	**2 mt**	**2,5 mt**	**3 mt**	**3,5 mt**	**4 mt**	**4,5 mt**	**5 mt**	**5,5 mt**	**6 mt**	**6,5 mt**
Single Piston	4	4	6	6	8	8	10					
Double Piston						10	12	12	15	15	18	18

To stop severe impact loads there is an additional 4mm thick sheet metal attached to the vertical impact absorption panels.
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.

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 block motion with the command/signal coming from detector, equipped with built-in LED visual indications.
Control unit optionally can be utilized through finger print, biometric systems and similar access control systems.

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).

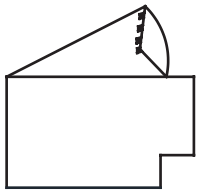
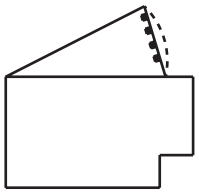
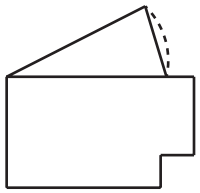
Optional Unit:
With the optional model "RB CONT.UNIT.V.001" users can monitor the diagnostic functions, can be accessed through LAN, RS485 protocols. System is provided inside a metal cabinet that also indudes the other functional switches like downward, upward,stop, emergency operations.
With the built 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 (7800 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 cylinder, double speed hydraulic cylinder, ground mounting plate, powered audio signal (siren), PLC diagnostic monitor, flashing light indicators, round shaped front panel, oil level sensor, optional speed, 60 lt oil tank for models with single piston, IP67 box (for PLC, SMPS, connectors etc inside power unit).

Installation :
Easy Installation with C30 grade concrete.

Road Blockers

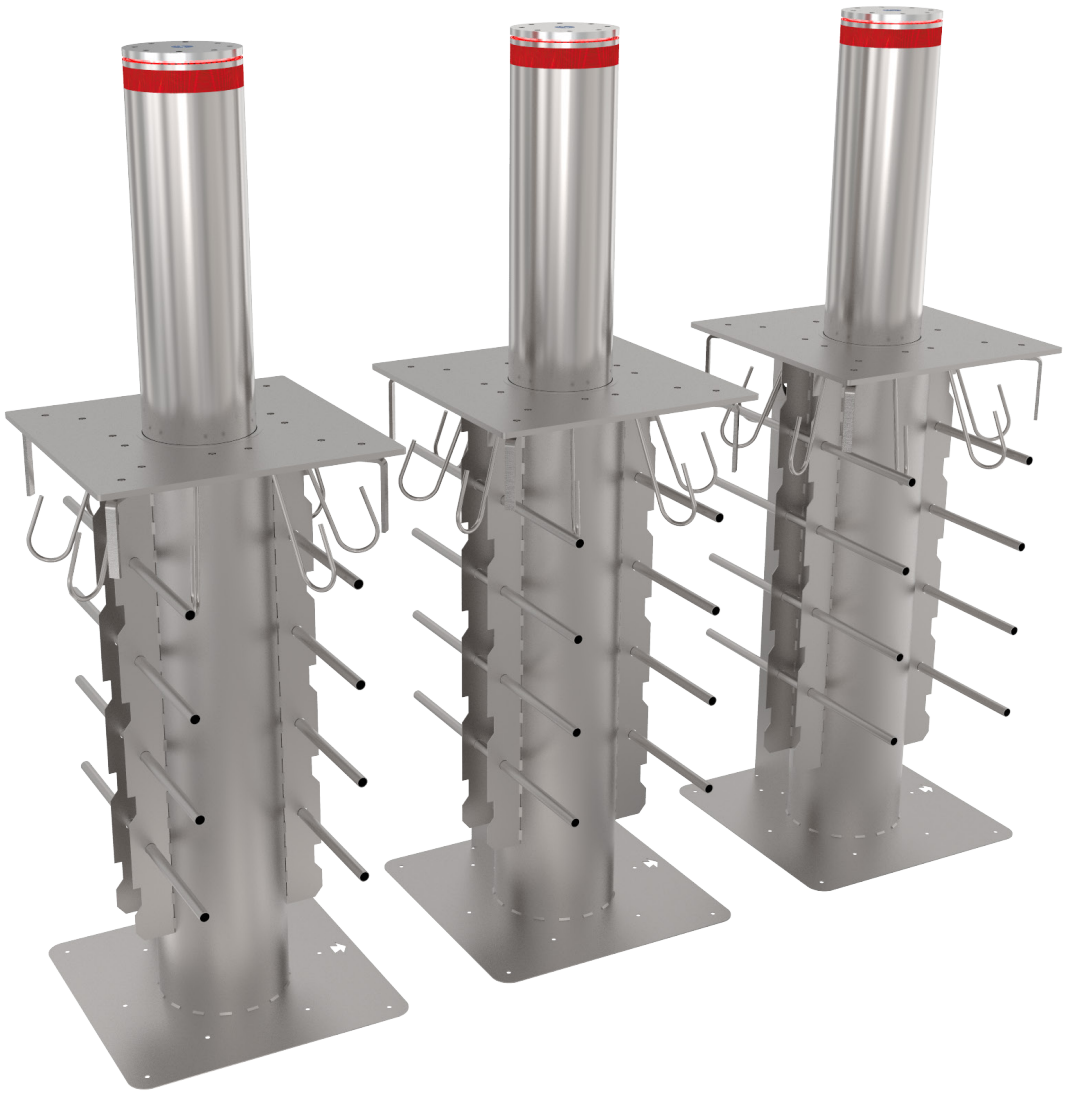
General Technical Specifications

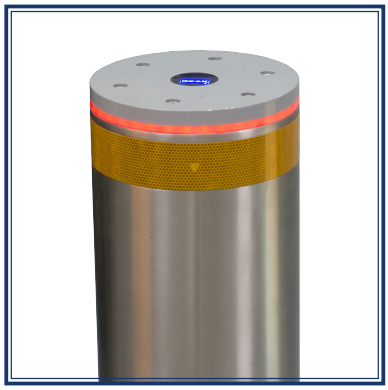
	HRB (Heavy Duty Road Blocker)	RRB (Reinforced Road Blocker)	RB (Residential Type Road Blocker)
			
Standard Features and Built-in Properties			
Axle Load	50 T.	30 T.	15 T.
Panel Thicknesses	Solid 6 mm (at every 35-55 cm)	Solid 6 mm (at every 35-55 cm)	Solid 4 mm (at every 35-55 cm)
Flashing Light	Standard	Optional	Optional
Round Front Panel	Standard	Optional	Optional
Top Plate	10/11 mm	8/9 mm	8/9 mm
Oil Level Sensor	Standard	Optional	Optional
Impact Resistance (Crash Test)	M50 P1 (K-12) tested & certified (HRB 30 R 90). Designed and produced to withstand H30.	Designed and produced to withstand M50 P1 (K-12).	Designed and produced to withstand M40 P1 (K-8).
Front Panel Thickness	32+10+3 mm	32±6 mm	4 (mm)
Speed	2,5 / 6 sn	4 / 6 sn (Opt. 2,5 / 4 sn)	4 / 6 sn (Opt. 2,5 / 4 sn)
		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.			

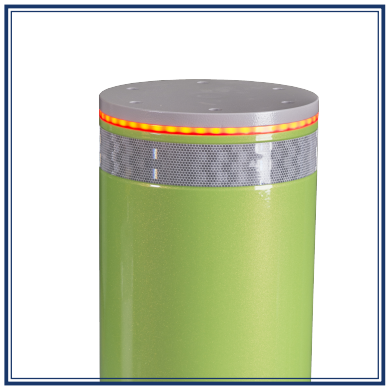
Solid impact absorbtion panels.
Maximum reinforced static construction cabin.
Service access lid (screwed).
Reinforced industrial paint with two components in yellow and black colors.
High visibility with yellow and black diagonal stripes on impact surface.
Reflective marking.
Hose for Hydraulic Oil (10mt)
25 cc hand pump (manual).
Oil level and temperature indicator.
Protective valve for oil hose.
Oil tank with particule filter.
Oil tank with magnetic metal collector.
Hot dip galvanised power & control unit cabin
-5°C / +55°C (Opt. -30°C / +70°C)
Ground mounting apparatus.
Easy installation.

Optional Features
PLC diagnostic monitor (LAN).
Hot dip galvanisation both for cabinet and blocker unit
Hot dip galvanisation for impact surface
Double effect hydraulic movement.
Double speed.
Optional speeds for RRB and RB.
Accumulator for emergency fast raise up (app.1,5sn speed).
Traffic lights (red-green).
Traffic lights (red-green), dia:100mm or 200mm
Loop dedector.
Beam dedector.
Photocell.
Remote control (wireless).
Rain water drainage pump (emergency submersible pump).
Rounded front panel (recommended for residential use for safety).
Ground mounting plate.
Oil level sensor.
1 phase 220 V AC or 24 V DC Motor.
UPS.
Oil cooler.
Oil heater.
Component heater.
IP 67 control box (for PLC, SMPS, connectors, circuit breakers, loop detector (if any), relays) .
Surface frames in optional sizes (25cm to 100cm).
Audio Signal (Siren, powered).

BOLLARD








ÖZAK

HBD
HEAVY DUTY BOLLARD

M40 P1 (K8)
ASTM F2656-07

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

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 the number of bollards in the set to be fed).
Emergency raise up (upwards) by optional hydraulic accumulator ~1,5 sec.

Crash / Impact Rating : M40 P1 (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 50 mm diameter, honed at H8 quality pipe, 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, 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 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 hyraulic power unit position and site conditons.
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 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.*

HBD BOLLARD

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 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 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 elctrostatic 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.

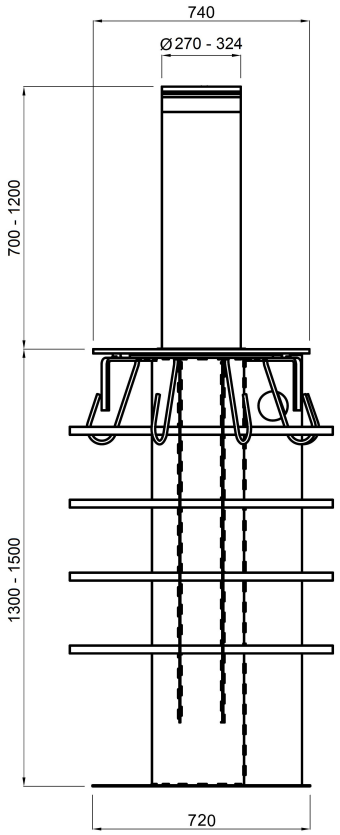
Compatibility with Access Control Systems:
Can be utilized through, card reader, finger print, biometric systems and similar any kind of access control systems (by third parties).

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.



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

CERTIFIED

CERTIFIED

CERTIFIED

M40 P1 (K8)
ASTM 2656-07

for crash test video

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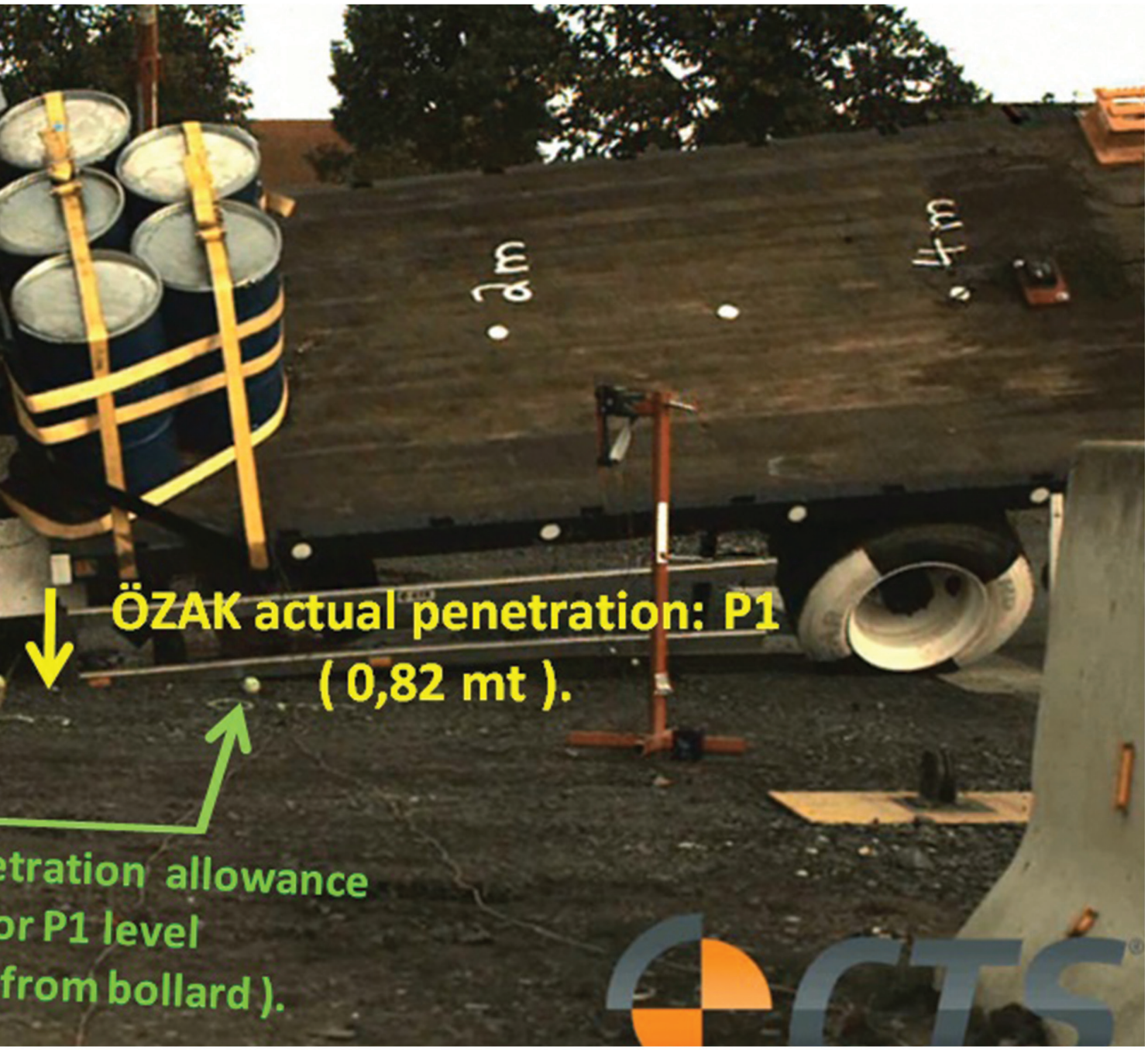
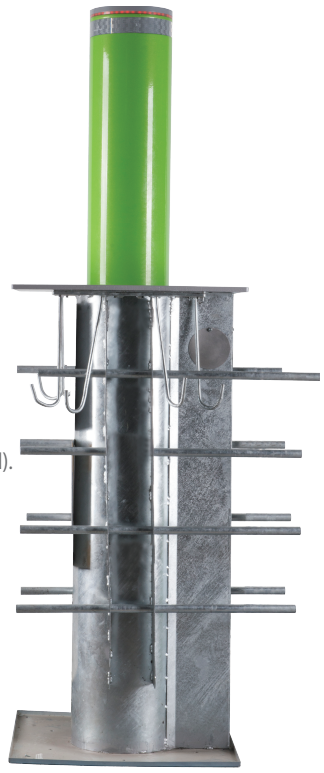
ÖZAK
NR-D
Systeme GmbH
CTS


ÖZAK actual penetration: P1
(0,82 mt).
etration allowance
or P1 level
from bollard).
CTS


ÖZAK
NR-D
CTS

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

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 the number of bollards in the set to be fed).
Emergency raise up (upwards) by optional hydraulic accumulator ~1,5 sec.

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 : 70T

Hydraulic Cylinder Unit : Heavy duty, double acting 40 mm diameter, honed at H9 quality pipe, 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 hyraulic power unit position and site conditons.
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 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.*

RBD BOLLARD

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 5 mm 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 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 elctrostatic 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.

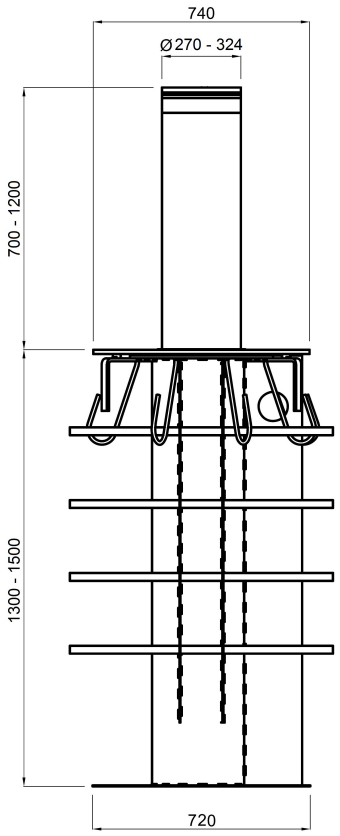
Compatibility with Access Control Systems:
Can be utilized through, card reader, finger print, biometric systems and similar any kind of access control systems (by third parties).

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), 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

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 ~2 - 4 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.

Crash / Impact Rating : -

Axle Load Resistance : 50T

Hydraulic Cylinder Unit : Heavy duty, double acting 40 mm diameter, honed at H9 quality pipe, 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 hyraulic power unit position and site conditons.
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 galvanised 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.*

TBD BOLLARD

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 elctrostatic 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.

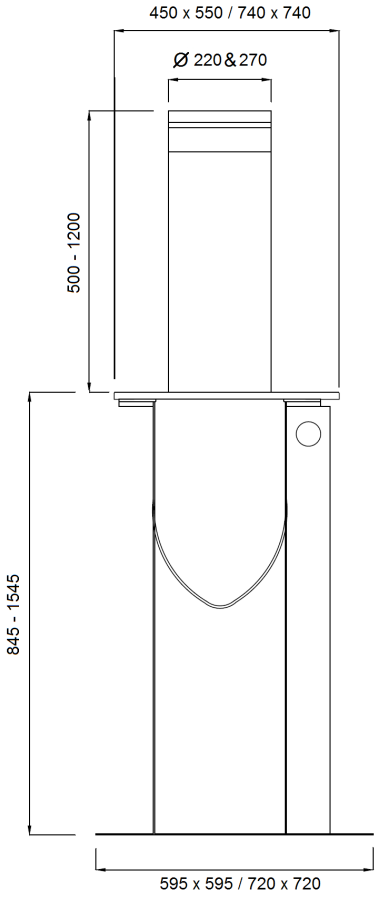
Compatibility with Access Control Systems:
Can be utilized through, card reader, finger print, biometric systems and similar any kind of access control systems (by third parties).

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), 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.



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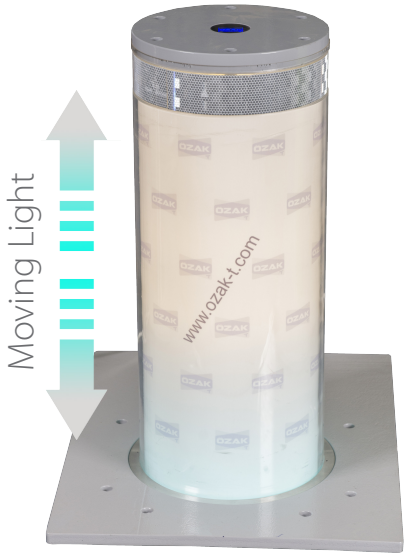
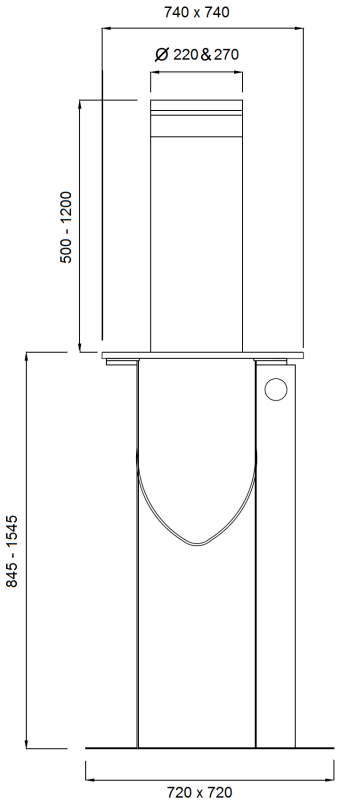
LBD
ILLUMINATED BOLLARD



Designed and developed to be used with digital video players and can be furnished with illuminated advertisement material thanks to the built-in interior lightning moving and stable.

Speed	:	Standard Operation ~4 sec. (ascend/descend) (depending on the number of bollards in the set to be fed).
Axle Load Resistance	:	Passenger car
Underground Structure	:	**Bollard Anchorage Casing:** Ø338 mm steel casing hot dip galvanized and structured for maximum strength. **Main Housing:** Ø324 mm hot dip galvanised steel, structured to provide main housing for the bollard cylinder.
Above Ground Structure	:	**Bollard Cylinder (illuminated unit):** Ø250mm acrylic covered steel.



*** Please refer to the TBD specifications for the data not given above**

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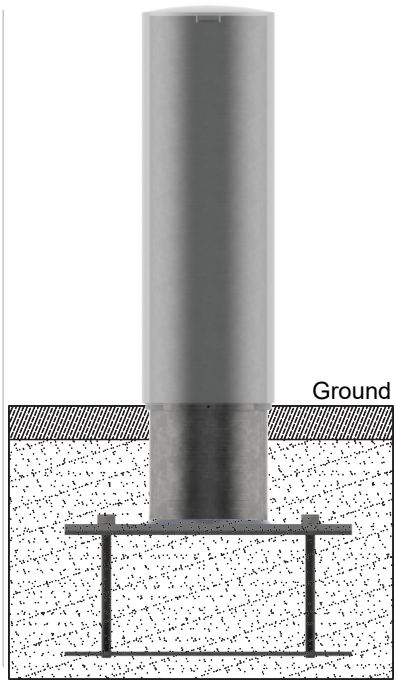
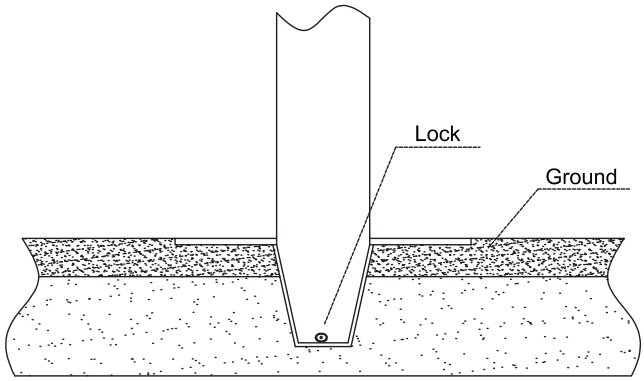
FIXED/STATIC AND REMOVABLE BOLLARDS



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

Operation	: Fixed, non-retractable
Diameter	: 220mm - 324mm (other diameters available optionally)
Height (Above Ground)	: 500-1200mm (other heights available optionally)
Inner Unit Body Material	: by agreement depending on the project
Outer Unit Body Material	: by agreement depending on the project
Inner Unit Body Finish	: Hot dip galvanised
Outer Unit Body Finish	: by agreement depending on the project
Installation	: Ground embedding, easy removable or fixed.



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Bollards

General Technical Specifications

	HBD (Heavy Duty Bollard)	RBD (Reinforced Bollard)	TBD (Traffic Bollard)
			

Standard Features and Built-in Properties			
Axle Load	70 T.	50 T.	50 T.
Wall Thickness	10mm + 65/90mm special star formed solid beams of 10mm thickness.	formed solid beams of 5mm thickness.	10 mm
Oil Level Sensor (PLC)	Standard	Optional	Optional
Impact Resistance Crash Test	M40 P1 (K 8) tested&certified (HBD 275 H 90).	Designed and produced to withstand M30 (K4)	-
Hydraulic Cylinder Unit	Ø50mm, H8 honed.	Ø40mm, H9 honed.	Ø40mm, H9 honed.
Ground Assembly Supporting Bars	Standard	Standard	V form
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)	3 - 4 sec. (single unit installation)
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			

Double acting hydraulic movement.
PLC control unit.
24 V DC control.
24 V DC solenoids.
Automatic/manual programmable access authorisation.
Outputs (siren, light, beam, flashes).
Movement buzzer.
Hot dip galvanised steel main body.
Easy accesibility for servicing.
Aluminium top plate with 25mm thickness.
360 °C with high visibility flashing LED's in red.
Reflecting strips compliant to "E" standard, red/white/yellow colors.
Hose for Hydraulic Oil (10mt)
Hoses for Hydraulic Oil (for interconnection in case of multiple installations).
25 cc hand pump (manual).
Oil level and temperature indicator.
45 / 60 lt oil tank capacity (depending on the number of bollards in case of multiple installations).
Oil tank with particule filter.
Oil tank with magnetic metal collector.
Hot dip galvanised power & control unit cabin.
-5°C / +55°C (Opt. -30°C / +70°C)
Easy installation.

Optional Features
PLC diagnostic monitor (LAN).
Accumulator for emergency fast raise up (app.1,5sn speed).
Traffic lights (red-green), dia:100mm or 200mm
Traffic light pole.
Loop dedector.
Beam dedector.
Photocell.
Remote control (wireless).
Rain water drainage pump (emergency submersible pump).
Oil level sensor.
1 phase 220 V AC or 24 V DC Motor.
UPS.
Oil cooler.
Oil heater.
Component heater.
IP 67 control box (for PLC, SMPS, connectors, circuit breakers, loop detector (if any), relays) .
Different materials and colors.
Audio Signal (Siren, powered).

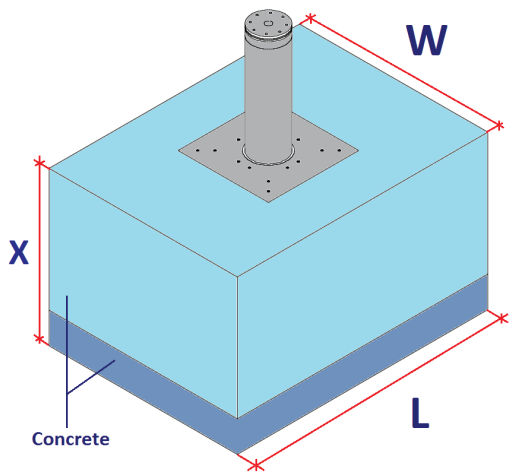
HYDRAULIC BOLLARDS TYPICAL SPECIFICATIONS

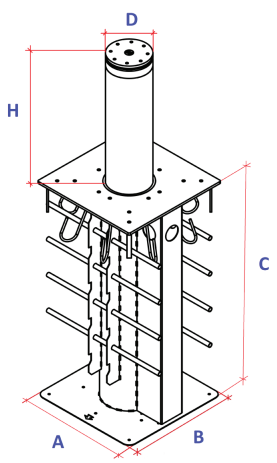
CODE	TYPE	DIAMETER -D- (mm)	HEIGHT ★ -H- (mm)	UNDERGROUND DIMENSIONS (mm) (A x B x C)	CONCRETE OUTER DIMENSIONS (mm) (W x L x X)	MOTOR ★★	SPEED ★★ Raise/Lower (seconds)	COLOR ★★★	FIELDS OF INSTALLATION	CRASH TEST
HBD 324 H 90	Heavy Duty Anti-Terror	324	900	720 x 720 x 1500	1500 x 2000 x 1750	380V - 50/60 Hz 3 Phase 2,2 kW Opt. 220V	5	RAL-9006 on hot dip galvanised steel	HBD	-
HBD 324 H 80		324	800	720 x 720 x 1400	1500 x 2000 x 1650		4,5			-
HBD 324 H 70		324	700	720 x 720 x 1300	1500 x 2000 x 1550		4			-
HBD 275 H 90		270	900	720 x 720 x 1500	1500 x 2000 x 1750		5			✓
HBD 270 H 80		270	800	720 x 720 x 1400	1500 x 2000 x 1650		4,5			-
HBD 270 H 70		270	700	720 x 720 x 1300	1500 x 2000 x 1550		4			-
RBD 324 H 90	Reinforced Model	324	900	720 x 720 x 1500	1500 x 2000 x 1750	380V - 50/60 Hz 3 Phase 2,2 kW Opt. 220V	5	RAL-9006 on hot dip galvanised steel	RBD	-
RBD 324 H 80		324	800	720 x 720 x 1400	1500 x 2000 x 1650		4,5			-
RBD 324 H 70		324	700	720 x 720 x 1300	1500 x 2000 x 1550		4			-
RBD 270 H 90		270	900	720 x 720 x 1500	1500 x 2000 x 1750		5			-
RBD 270 H 80		270	800	720 x 720 x 1400	1500 x 2000 x 1650		4,5			-
RBD 270 H 70		270	700	720 x 720 x 1300	1500 x 2000 x 1550		4			-
TBD 270 H 70	Traffic Control	270	700	720 x 720 x 1045	900 x 900 x 1150	380V - 50/60 Hz 3 Phase 1,5 kW Opt. 220V	3,5	304 Grade Stainless Steel Opt. Powder coated on Hot-dip galvanised steel	TBD	-
TBD 270 H 60		270	600	720 x 720 x 945	900 x 900 x 1050		3			-
TBD 270 H 50		270	500	720 x 720 x 845	900 x 900 x 950					-
TBD 220 H 70		220	700	595 x 595 x 1045	750 x 750 x 1150		3,5			-
TBD 220 H 60		220	600	595 x 595 x 945	750 x 750 x 1050		3			-
TBD 220 H 50		220	500	595 x 595 x 845	750 x 750 x 950					-
LBD 250 H 90	Illuminated (Lighted)	250	900	720 x 720 x 1245	900 x 900 x 1350	380V - 50/60 Hz 3 Phase 1,5 kW Opt. 220V	4	Acrylic panel on hot dip galvanised steel	LBD	-
LBD 250 H 70		250	700	720 x 720 x 1045	900 x 900 x 1150					-
LBD 250 H 50		250	500	720 x 720 x 845	900 x 900x 950					-

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





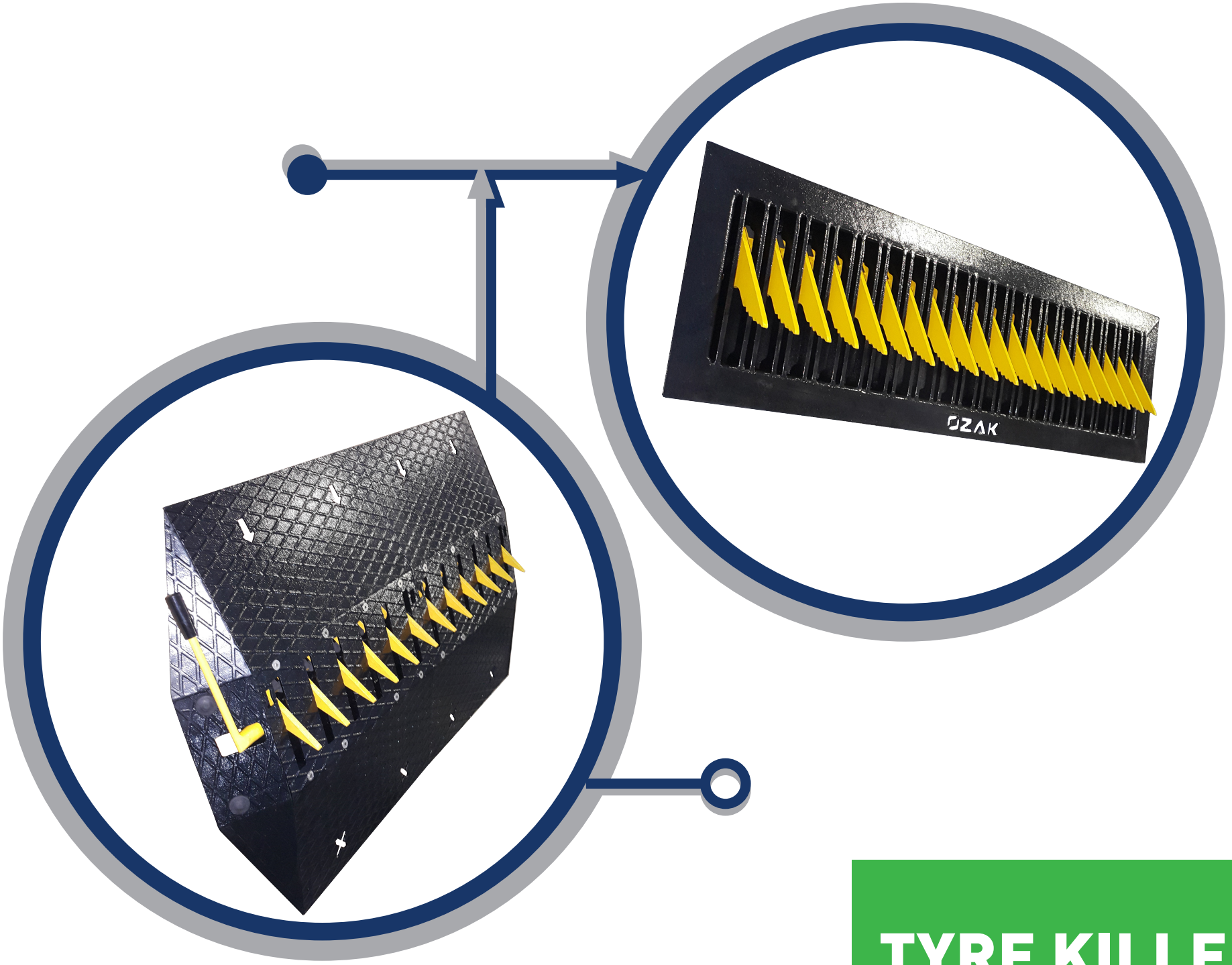
FIELDS OF INSTALLATION:

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.

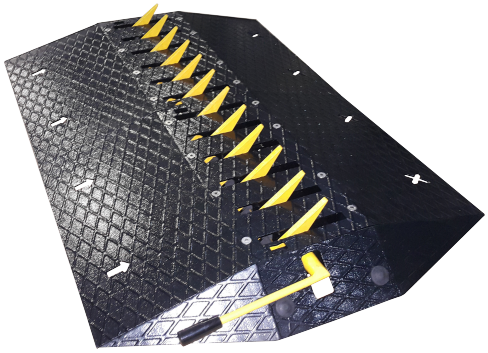
TBD - Traffic Control Bollard:
- Shopping centers,
- Hotels,
- Pedestrian roads, municipal areas,
- Residences,
- Car park entries,
- Universities and other educational buildings,
- Low risk buildings, etc.

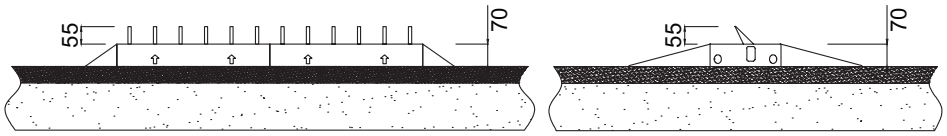
LBD - Lighted Bollard (Full body moving or stable LED illuminated advertisement area) :
- Commercial premises, etc.



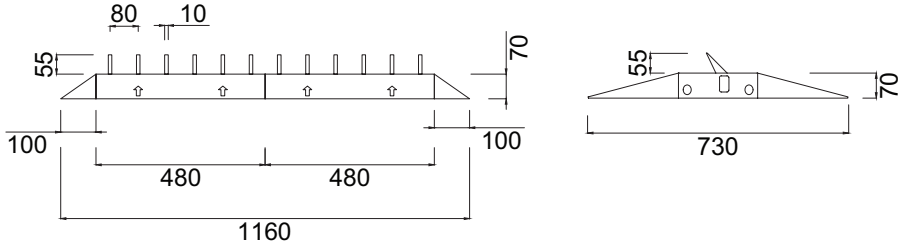
TYRE KILLER

SURFACE MOUNT TYRE KILLER (TKS SERIES)



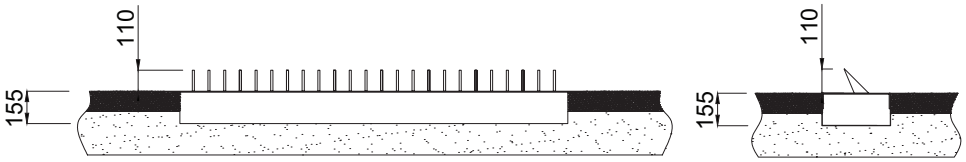


	TKS _ _ _ - M	TKS _ _ _ - A	TKS _ _ _ - F
Operation	Bi-directional Spikes retract independent from each other with the movement of the vehicle passing in the free flow direction. Gets back to its normal position by balance. Passage release in restricted direction by the solid shaft controlled by lever supplied, spikes move altogether.	Bi-directional 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. Passage release in restricted direction by the solid shaft controlled by motor, spikes move altogether.	Uni-directional 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.
Release Mechanism	Lever	Motor	N/A
Power	N/A	110/220 V 50-60Hz	N/A
Controls	Manual Control Lever (can be controlled from either sides)	Manual Control Button	N/A
Free Flow Direction	One way free, one way manually controlled by lever.	One way free, one way controlled by motor, compatible to be used by any kind of access control system (by third parties).	One way only.
Spikes	10mm thick, 55mm high (other heights optionally available) hot dip 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 hot-dip 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).	-20 / +68°C (-50 with opt. heater unit), RF 95% non-condensing	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.		
Optional Features and Accessories	-	Wireless Remote Control (receiver/transmitter), traffic light.	-

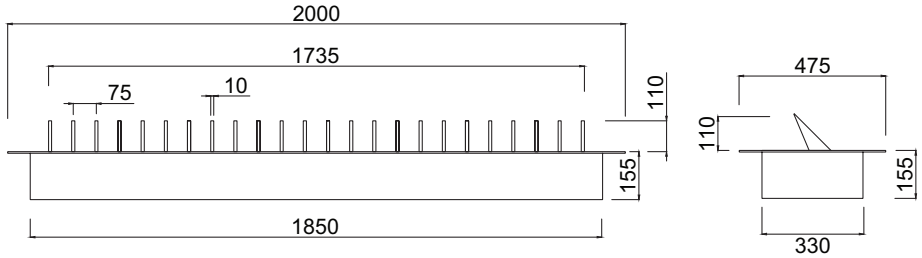


Design and specifications are subject to change without notice.

EMBEDDED MOUNT TYRE KILLER (TKU SERIES)



	TKU _ _ M _ _ _	TKU _ _ A _ _ _	TKU _ _ F _ _ _
Operation	Bi-directional 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. Passage release in restricted direction by the solid shaft controlled by lever supplied, spikes move altogether.	Bi-directional 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. Passage release in restricted direction by the solid shaft controlled by motor, spikes move altogether.	Uni-directional 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.
Release Mechanism	Lever	Motor	N/A
Power	N/A	110/220 V 50-60Hz	N/A
Controls	Manual Control Lever (can be controlled from either sides)	Manual Control Button	N/A
Free Flow Direction	One way free, one way manually controlled by lever.	One way free, one way controlled by motor, compatible to be used by any kind of access control system (by third parties).	One way only.
Spikes	10mm thick, 110mm high (other heights optionally available) hot dip 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.		
Body	Body embeddded 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.		
Finish	Spikes: Electrostatic powder coated over hot-dip 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).		
Operation Temparature, Humidity	Unlimited (freezing of moving parts shall be avoided).	-20 / +68 C (-50 with opt. heater unit), RF 95% non-condensing.	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 installation with bolts and concrete anchorage.		
Optional Features and Accessories	-	Wireless Remote Control (receiver/transmitter), traffic light.	-



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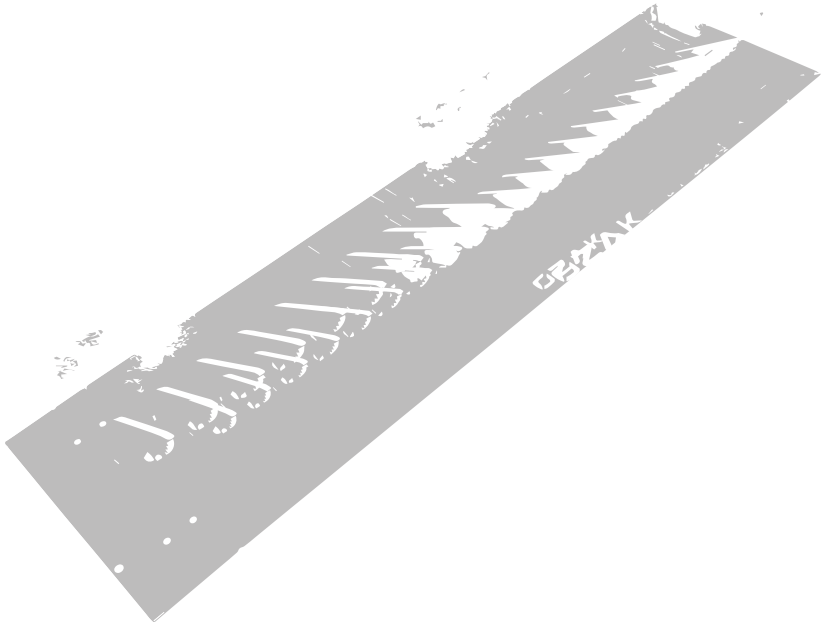

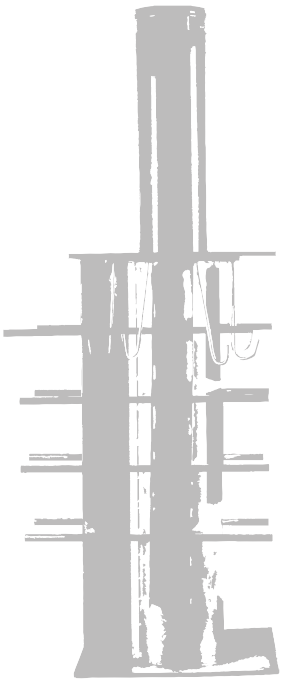

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