



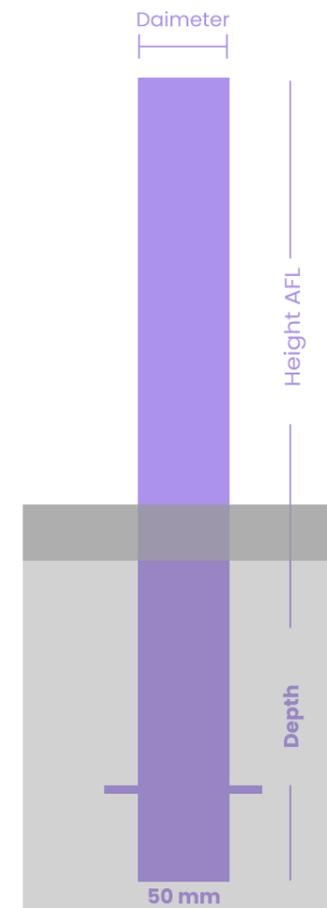
**STAINLESS
STEEL**

BOLLARDS

SSD

STAINLESS STEEL

DEEP FIXED BOLLARD



	SSD1	SSD2	SSD3	SSD4	SSD5	SSD6	SSD7
Diameter	101.6 mm 4 Inch	114.3 mm 4.5 Inch	141.3 mm 5.5 Inch	168.3 mm 6.5 Inch	219.1 mm 8.5 Inch	273.0 mm 10.7 Inch	323.9 mm 12.7 Inch
Wall Thickness (mm)	2.11 3.05 5.74	2.11 3.05 3.96	2.77 3.40 6.55	2.77 3.40 4.78	2.77 3.76 6.35	3.40 4.19 4.78	3.96 4.57 4.78
Foundation Area (mm)	300 300 mm	350 350 mm	400 400 mm	500 500 mm	650 650 mm	800 800 mm	950 950 mm
Height/Depth (mm/mm)	700/200 - 800/200 - 900/300 - 1000/350 - 1100/400						
Material	Stainless Steel, 316 ASTM A312						
Top Cap	Flat or Angle						
Finish	No. 4 (satin), No. 6 (dull satin) or No. 8 (mirror) ASTM A480						
Weight (kg) @ 1000 mm height (per wall thickness)	7.1 10.2 18.7	8 11.5 14.8	13 15.9 29.1	15.6 19 26.5	20.3 27.5 45.8	31.1 38.2 43.5	43 49.5 51.8
Impact Resistance/Car Speed (kJ/KPH) 1.5t Car	0.5/2.7 0.7/3.2 1.1/4.3	0.6/3.1 0.8/3.7 1/4.1	1.1/4.3 1.4/4.8 2.5/6.5	1.6/5.2 1.9/5.7 2.7/6.7	2.7/6.8 3.6/7.9 5.9/10.1	5.1/9.4 6.3/10.4 7.1/11	8.4/12 9.6/12.8 10/13.1
Options	Reflective band Name Plate/Logo Custom Cap LED Bead-blasted Anti-Fingerprint coating			Imm Groove Chain Holders Concrete Filling Trim Ring Dome Top Powder coated			

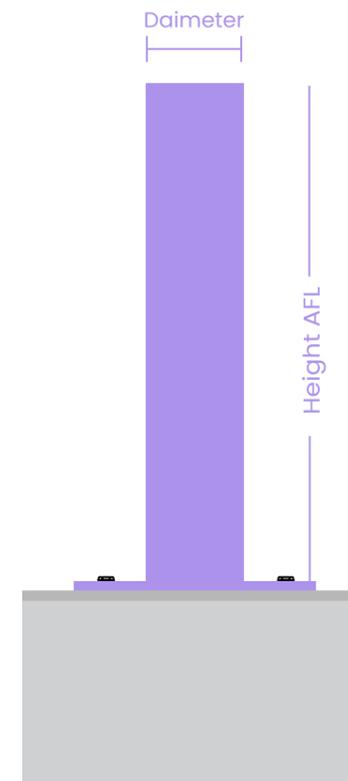
Corrosion restoration
Heat tint/free-iron removal and passivation in accordance with ASTM A967 (ref. ASTM A380).



SSB

STAINLESS STEEL

BOLTED FIXED BOLLARD



	SSB1	SSB2	SSB3	SSB4	SSB5	SSB6	SSB7
Diameter	101.6 mm 4 Inch	114.3 mm 4.5 Inch	141.3 mm 5.5 Inch	168.3 mm 6.5 Inch	219.1 mm 8.5 Inch	273.0 mm 10.7 Inch	323.9 mm 12.7 Inch
Wall Thickness (mm)	2.11 3.05 5.49	2.11 3.05 5.74	2.11 3.05 3.96	2.77 3.40	2.77 3.76 6.35	3.40 4.19 4.78	3.96 4.57 4.78
Height (mm)	700 - 800 - 900 - 1000 - 1100						
Material	Stainless Steel, 316 ASTM A312						
Top Cap	Flat or Angle						
Base Plate Size (mm)	200 200 10	250 250 12	300 300 16	350 350 20	400 400 25	450 450 25	
Bolts	4 M12 100 mm	4 M16 120 mm	4 M16 120 mm	4 M20 150 mm	4 M20 160 mm	8 M24 200 mm	8 M24 200 mm
Finish	No. 4 (satin), No. 6 (dull satin) or No. 8 (mirror) ASTM A480						
Weight (kg) @ 1000 mm height (per wall thickness)	8.5 10.8 16.5	11.9 14.5 21.7	13.4 16.6 19.7	23.0 25.6	34.7 39.9 53.6	55.0 60.3 64.2	72.3 77.2 78.8
Impact Resistance/Car Speed (kJ/KPH) 1.5t Car	0.5/2.7 0.6/3.2 1/4.2	0.6/3 0.8/3.6 1.4/4.8	0.9/3.7 1.2/4.5 1.5/5.1	1.6/5.1 1.9/5.7	2.7/6.7 3.5/7.8 5.8/10	5/9.3 6.2/10.3 7/11	8.2/11.9 9.5/12.8 9.9/13

Options

- Reflective band
- Name Plate/Logo
- Custom Cap
- Bead-blasted
- Anti-Fingerprint coating
- Imm Groove
- Base Plate cover
- Chain Holders
- Dome Top
- Powder coated

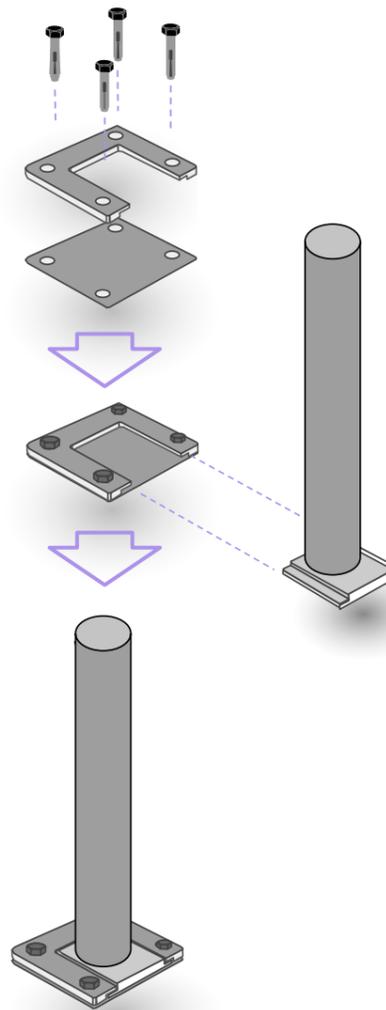
Corrosion restoration
Heat tint/free-iron removal and passivation in accordance with ASTM A967 (ref. ASTM A380).



RSB

STAINLESS STEEL

SLIDE-OUT REMOVABLE BOLLARD



Corrosion restoration
Heat tint/free-iron removal and passivation in accordance with ASTM A967 (ref. ASTM A380).

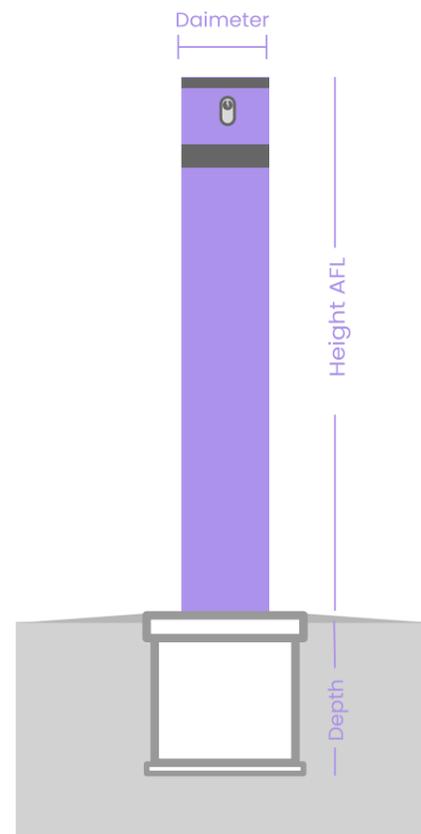
	RSB1	RSB2
Diameter	88.9 mm 3.5 Inch	101.6 mm 4 Inch
Wall Thickness (mm)	2.11 3.05	
Height (mm)	700 - 800 - 900 - 1000 - 1100	
Material	Stainless Steel, 316 ASTM A312	
Top Cap	Flat or Angle	
Base Plate	Galvanized Steel 160x160x18mm	
Bolts	4 x M12 x 100mm	
Finish	No. 4 (satin), No. 6 (dull satin) or No. 8 (mirror) ASTM A480	
Weight (kg) @ 1000 mm height (per wall thickness)	8.2 10.2	8.5 10.8
Impact Resistance/ Car Speed (kJ/KPH) 1.5t Car	0.4/2.4 0.5/2.8	0.5/2.7 0.7/3.2
Options	Reflective band Name Plate/Logo Custom Cap Anti-Fingerprint coating	1mm Groove Internal Cam Lock Dome Top Bead-blasted Powder coated



RSD

STAINLESS STEEL

LIFT-OUT REMOVABLE BOLLARD



RSD1 **RSD2** **RSD3** **RSD4** **RSD5**

	RSD1	RSD2	RSD3	RSD4	RSD5
Diameter	101.6 mm 4 Inch	114.3 mm 4.5 Inch	141.3 mm 5.5 Inch	168.3 mm 6.5 Inch	219.1 mm 8.5 Inch
Wall Thickness (mm)	2.11 3.05 5.74	2.11 3.05 3.96	2.77 3.40 6.55	2.77 3.40 4.78	2.77 3.76 6.35
Height/Depth (mm/mm)	700/200 - 800/200 - 900/250 - 1000/250 - 1100/250				
Material	Stainless Steel, 316 ASTM A312				
Top Cap	Flat or Angle				
Foundation Area (mm)	300x300	350x350	400x400	500x500	650x650
Finish	No. 4 (satin), No. 6 (dull satin) or No. 8 (mirror) ASTM A480				
Weight (kg) @ 1000 mm height (per wall thickness)	11.4 14.3 22.1	14.0 17.2 20.3	20.6 23.2 36.3	27.2 30.4 37.4	37.0 43.6 60.7
Impact Resistance/Car Speed (Kj/KPH) 1.5t Car	0.4/2.4 0.5/2.9 0.9/3.9	0.5/2.7 0.7/3.3 0.8/3.7	0.9/3.9 1.1/4.3 2/5.8	1.3/4.6 1.6/5.1 2.1/6	2.2/6.1 2.9/7 4.8/9

Drainage
If soil is impermeable or groundwater is high, provide a **positive drain** to a nearby drain/sump (by others).

Corrosion restoration
Heat tint/free-iron removal and passivation in accordance with ASTM A967 (ref. ASTM A380).

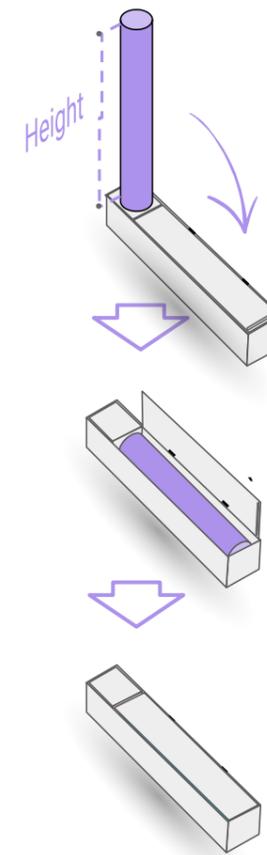
Options	Reflective band Name Plate/Logo Custom Cap Bead-blasted Anti-Fingerprint coating	1mm Groove Internal Cam Lock Hole Cover Dome Top Powder coated
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FSD

STAINLESS STEEL

IN-GROUND FOLD-DOWN BOLLARD



	FSD1	FSD2	FSD3	FSD4	FSD5	FSD6
Diameter	73.0 mm 3 Inch	88.9 mm 3.5 Inch	101.6 mm 4 Inch	114.3 mm 4.5 Inch	141.3 mm 5.5 Inch	168.3 mm 6.5 Inch
Wall Thickness (mm)	2.11 3.05 5.16	2.11 3.05 5.49	2.11 3.05 5.74	2.11 3.05 3.96	2.77 3.40 -	2.77 3.40 4.78
Height (mm)	700 - 800 - 900 - 1000 - 1100					
Material	Stainless Steel, 316 ASTM A312					
Top Cap	Flat or Angle					
Finish	No. 4 (satin), No. 6 (dull satin) or No. 8 (mirror) ASTM A480					
Options	Reflective band Name Plate/Logo Custom Cap Anti-Fingerprint coating			1mm Groove Internal Cam Lock Dome Top Powder coated		

		700	800	900	1000	1100
Model / Height						
FSD1 73mm	1150x475x275 18 kg	1250x475x275 21 kg	1350x475x275 23 kg	1450x475x275 26 kg	1550x475x275 28 kg	
FSD2 89mm	1150x490x290 24 kg	1250x490x290 27 kg	1350x490x290 30 kg	1450x490x290 34 kg	1550x490x290 37 kg	
FSD3 102mm	1150x500x300 28 kg	1250x500x300 33 kg	1350x500x300 37 kg	1450x500x300 41 kg	1550x500x300 45 kg	
FSD4 114mm	1150x515x315 23 kg*	1250x515x315 26 kg*	1350x515x315 29 kg*	1450x515x315 32 kg*	1550x515x315 36 kg*	
FSD5 141mm	1150x540x340 24 kg*	1250x540x340 28 kg*	1350x540x340 31 kg*	1450x540x340 35 kg*	1550x540x340 38 kg*	
FSD6 168mm	1150x570x370 40 kg	1250x570x370 46 kg	1350x570x370 52 kg	1450x570x370 58 kg	1550x570x370 64 kg	

Drainage
If soil is impermeable or groundwater is high, provide a positive drain to a nearby drain/sump (by others).

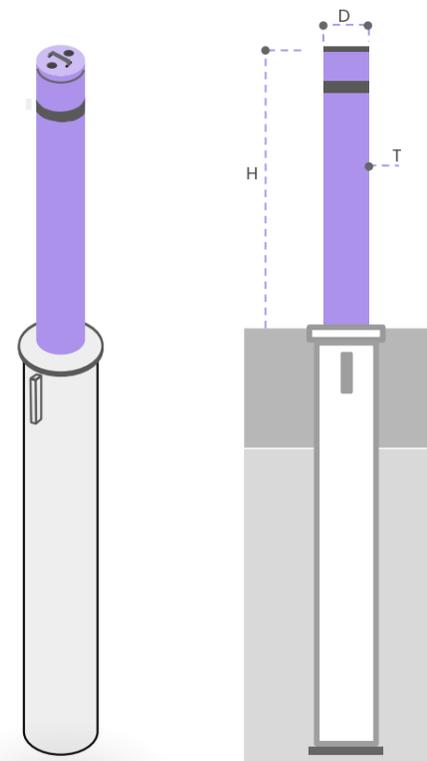
Corrosion restoration
Heat tint/free-iron removal and passivation in accordance with ASTM A967 (ref. ASTM A380).



MSD

STAINLESS STEEL

MANUAL RETRACTABLE BOLLARD



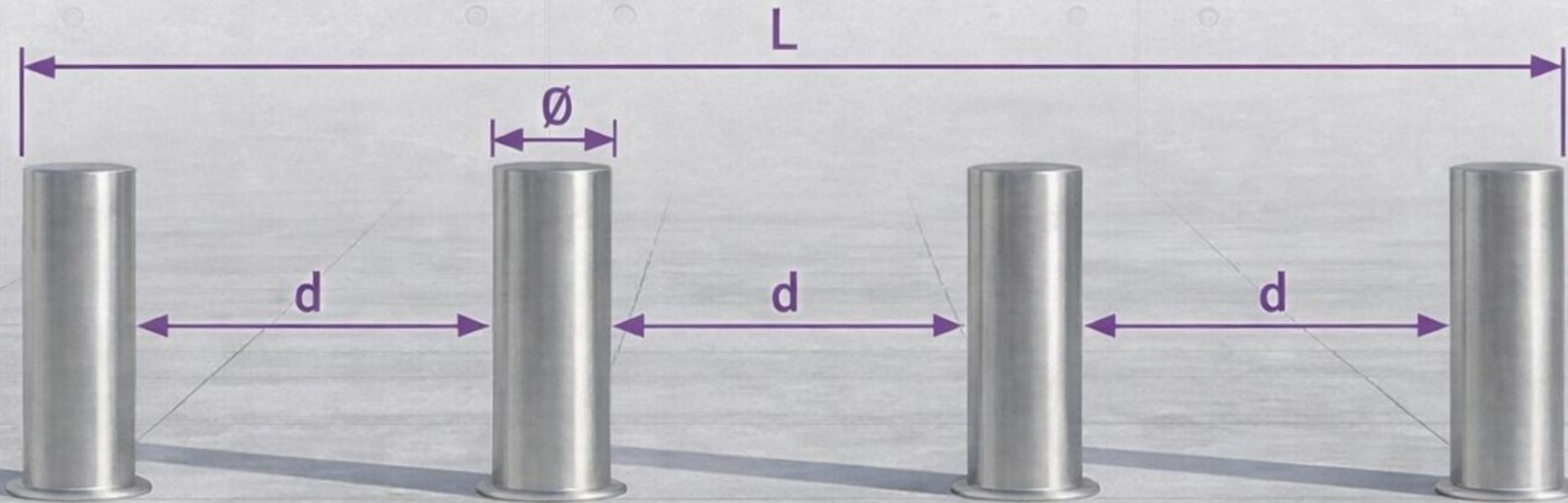
	MSD1	MSD2
Material	Stainless Steel, 316 ASTM A312	
Length	Above Ground 900 mm Below Ground 1500 mm	
Bollard/Socket Diameter	101.6/114.3 mm 4 Inch/4.5 Inch	114.3/141.3 mm 4.5/5.5 Inch
Bollard/Socket Wall Thickness (mm)	2.11/3.05	
Foundation Size	350x350x1600 mm C40 Concrete	
Finish	No. 4 (satin), No. 6 (dull satin) or No. 8 (mirror) ASTM A480	
Weight	20 kg	24 kg
Impact Resistance/ Car Speed (Kj/KPH) 1.5t Car	0.3/2	0.3/2.3
Options	Reflective band Name Plate/Logo Anti-Fingerprint coating	Imm Groove Internal Cam Lock Bead-blasted Powder coated

Drainage
If soil is impermeable or groundwater is high, provide a positive drain to a nearby drain/sump (by others).

Corrosion restoration
Heat tint/free-iron removal and passivation in accordance with ASTM A967 (ref. ASTM A380).

Corrosion restoration
Heat tint/free-iron removal and passivation in accordance with ASTM A967 (ref. ASTM A380).

DISTANCE BETWEEN BOLLARDS



$$N = \frac{L - d}{\text{Ø} + d}$$

$$d = \frac{L - (\text{Ø} * N)}{N + 1}$$

- L (mm) = Passage width for vehicle access
- N = Number of bollards required
- Ø (mm) = Bollard diameter
- d (mm) = Distance between bollards



A brand of QUA LLC

Dubai, UAE, P.O. Box 20394
info@ebollard.ae

UAE, Dubai
+971 50 348 3932

KSA, Riyadh
+966 54 419 8592

KSA, Jeddah
+966 54 118 2816

