

MANHOLE AND GULLY COVERS



HEAVY DUTY MANHOLE COVERS MEETING ALL INTERNATIONAL SPECIFICATIONS



CONTENTS

Introduction	2
Technical Specification of Marmox Material	3
Applications	4
Tests & Anti – theft	6
Watertight	7
Lock & Hinge	8
Sound Impact Absorbing Rubber Ring	10
Chemical resistance	11
Certificates	12
Installation Instructions	13
A 15 - Class of Marmox Manhole Covers	14
B 125 - Class of Marmox Manhole Covers	16
C 250 - Class of Marmox Manhole Covers	18
D 400 - Class of Marmox Manhole Covers	20
E 600 - Class of Marmox Manhole Covers	22
F 900 - Class of Marmox Manhole Covers	24
Covers and Frames Special Designs	26
Drainage Manhole Covers	29
Gas Valves Covers	31
Manhole Steps	32

WHY CHOOSE MARMOX MANHOLE AND GULLY COVERS

The ever increasing traffic density and the loading requirements of public streets have led to a growing demand for improved quality of manhole covers.

Due to the rise of steel prices over the last years, together with high risk of theft, steel is no longer a viable solution for manhole covers.

The Marmox Co. in Egypt, ISO 9001 certified, specialises in producing heavy-duty and innovative polymeric products for the building industry, based on epoxy, polyester, acrylics and polyurethane.

After a long and intensive research, the Marmox Egypt Co. has developed an innovative product for manhole covers. This product is based on a newly developed high strength reinforced acrylic concrete.

Marmox Manhole Covers exceed conventional solutions in strength, durability, corrosion resistance and accuracy.

These covers meet all international specifications (all classes) and are available in standard sizes as well as customised to order.

Marmox Manhole Covers are the cost-effective replacement of the traditional manhole covers.

ADVANTAGES

1. Cost effective.
2. Reasonable weight and easy to handle.
3. No risk of theft due to low scrap value.
4. Very high impact and abrasion resistance.
5. Strong, durable and highly chemical resistant.
6. Fulfills with all standards specification requirements.
7. Standard sizes available and also customised to order.
8. Manufactured from newly developed very high strength polymeric materials.



TECHNICAL SPECIFICATION OF MARMOX MATERIAL

PROPERTY	MEASUREMENT METHOD	VALUES	UNIT
Density	DIN 53472	2.45 (±5%)	g/cm ³
Bending Strength	DIN 1164	300 (±5%)	kg/cm ²
Compressive Strength	DIN 1164	1150 (±5%)	kg/cm ³
Tensile Strength	DIN 53455	150 (±5%)	kg/cm ²
Modulus of Elasticity	DIN 53457	2.5 x 10 ⁵	kg/cm ²
Surface Hardness	DIN 53505	≤ 80	
Linear Thermal Coefficient of Expansion	VDE 0304/1	1.5 x 10 ⁻⁵ / 1° C	
Water Absorption	DIN 53495	< 0.1%	
Chemical Resistance		Highly Resistant	
Environmental Aspects		Environmentally Friendly	
Fire Resistance	DIN 4102	Fire Resistant (A2)	

CLASSES OF MARAMOX MANHOLE COVERS

GROUP	MIN. CLASS	PLACE OF INSTALLATION
1	A-15	Areas which can only be used by pedestrians and pedal cyclists
2	B-125	Footways, pedestrian areas and comparable areas, car parks or car parking decks
3	C-250	For gully tops installed in the area of curbside channels of roads which when measured from the curbside, extends a maximum of 0.5m into the carriage way and a maximum of 0.2m into the footway
4	D-400	Carriage ways of roads (including pedestrian streets), hard shoulders and parking areas, for all types of road vehicles
5	E-600	Areas imposing high wheel roads, e.g. decks, aircraft
6	F-900	Areas imposing particularly high wheel loads, e.g. aircraft pavements

APPLICATIONS

A15



Areas which can only be used by pedestrians and bedal cyclists



B 125



Footways, pedestrian areas and comparable areas, cark park or parking decks



C 250



Footways, pedestrian areas and comparable areas, cark park or parking decks



D 400



Carriage ways of roads (including pedestrian streets), hard shoulders and parking areas, for all types of road vehicles



E 600



Areas imposing high wheel roads, e.g. decks, aircraft



F 900



Areas imposing particularly high wheel loads, e.g. aircraft pavements



TESTS

Marmox Manhole Covers comply with European Standard EN 124.

The tests are regular internal steps in our production process in order to ensure the quality and safety for all our products manufactured in different sizes and types.



ANTI-THEFT

The thieves are searching continuously for the recyclable Iron Covers to melt and resell.

Marmox Manhole Covers do not contain any metallic materials and are made from polymeric concrete material which is not recyclable. Therefore, this will prevent the accidents which can occur as a consequence of stealing Cast Iron Covers.

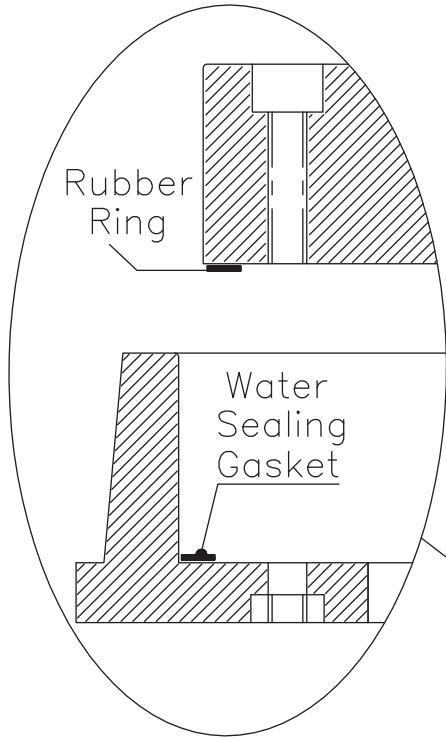


WITH MARMOX MANHOLE COVERS NO RISK, STALL AND MOREOVER NO ROAD ACCIDENTS

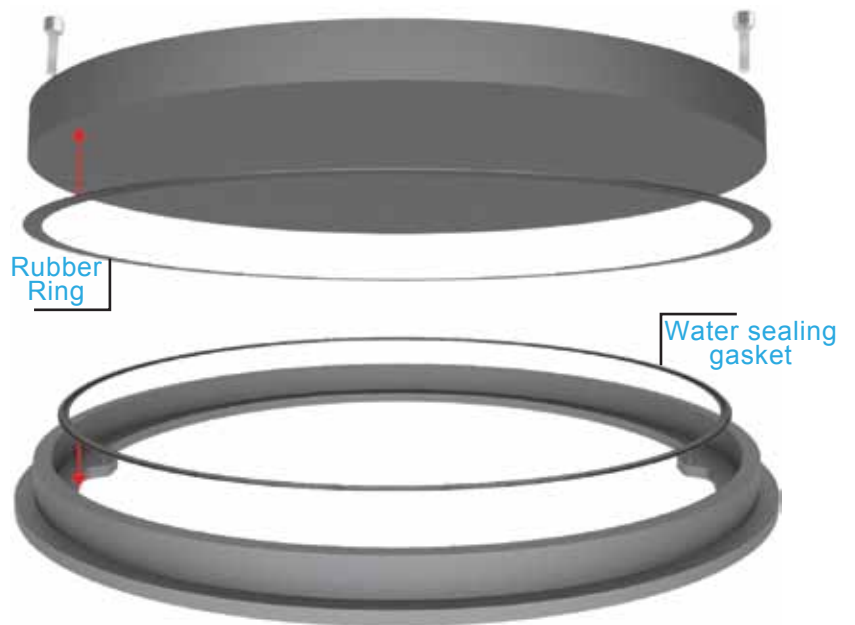
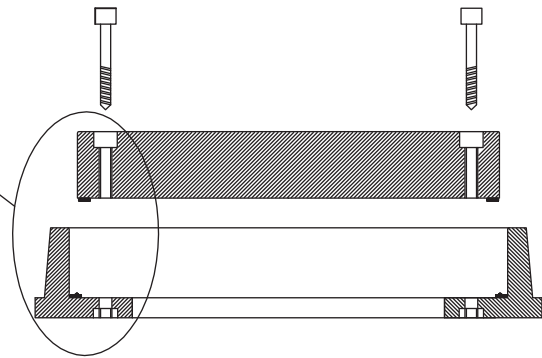
WATERTIGHT

Watertight Manhole Covers with water sealing gasket and tightening screws

For electric , telecommunication , Hand holes and Manhole Covers

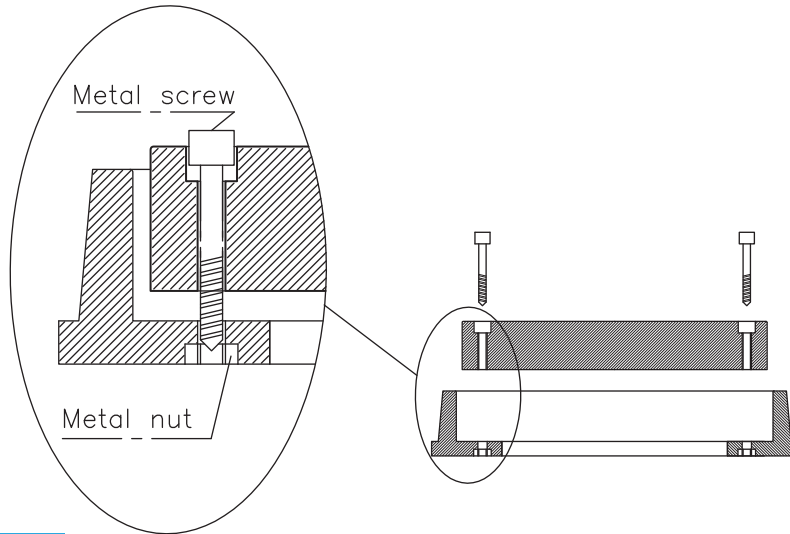


ALL WATERTIGHT MANHOLE COVERS MUST BE INSTALLED BY FIXING SCREWS



COVERS WITH LOCK SYSTEM

For Safety, Marmox provide a Secure Lock System that is made of special head screws with a special tool that must be Used for opening and lifting the covers



OPENING INSTRUCTION



Step 1 :
To lock the cover to the frame be sure that the lock holes are accurately aligned together and use the screwing T-tool until the screw head is fully flush with the cover top surface.



Step 2 :
Use the same T-tool for unlocking when needed.

LIFTING INSTRUCTION



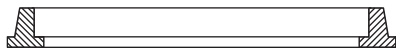
Step 1 :
To left up the cover use the screw side of the T-tool and screw it in the metal nut fixed at cover bottom and pull up the cover from the frame.



Step 2 :
Keep the T-tool tied to the cover to reinstall the cover in the frame after maintenance.

COVER WITH HINGE SYSTEM

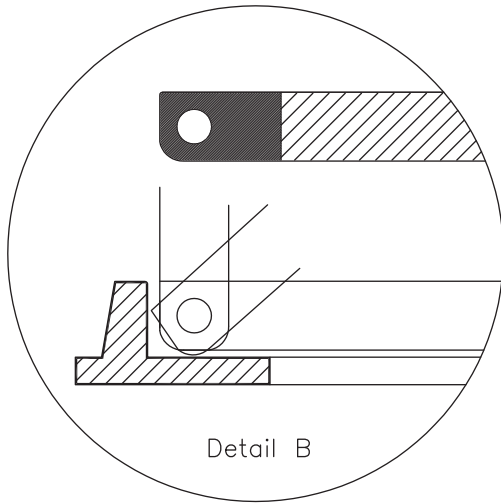
The hinged system, for all types of manhole and drainage covers



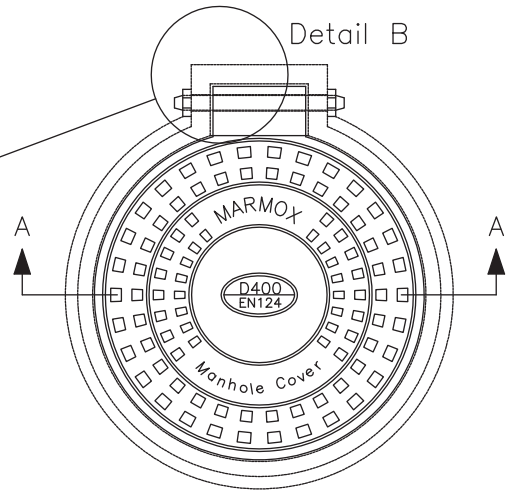
FRAME SECTION (A-A)



COVER SECTION (A-A)



Detail B



PLAN



OPENING TOOL



Lock Screw



Lock Key

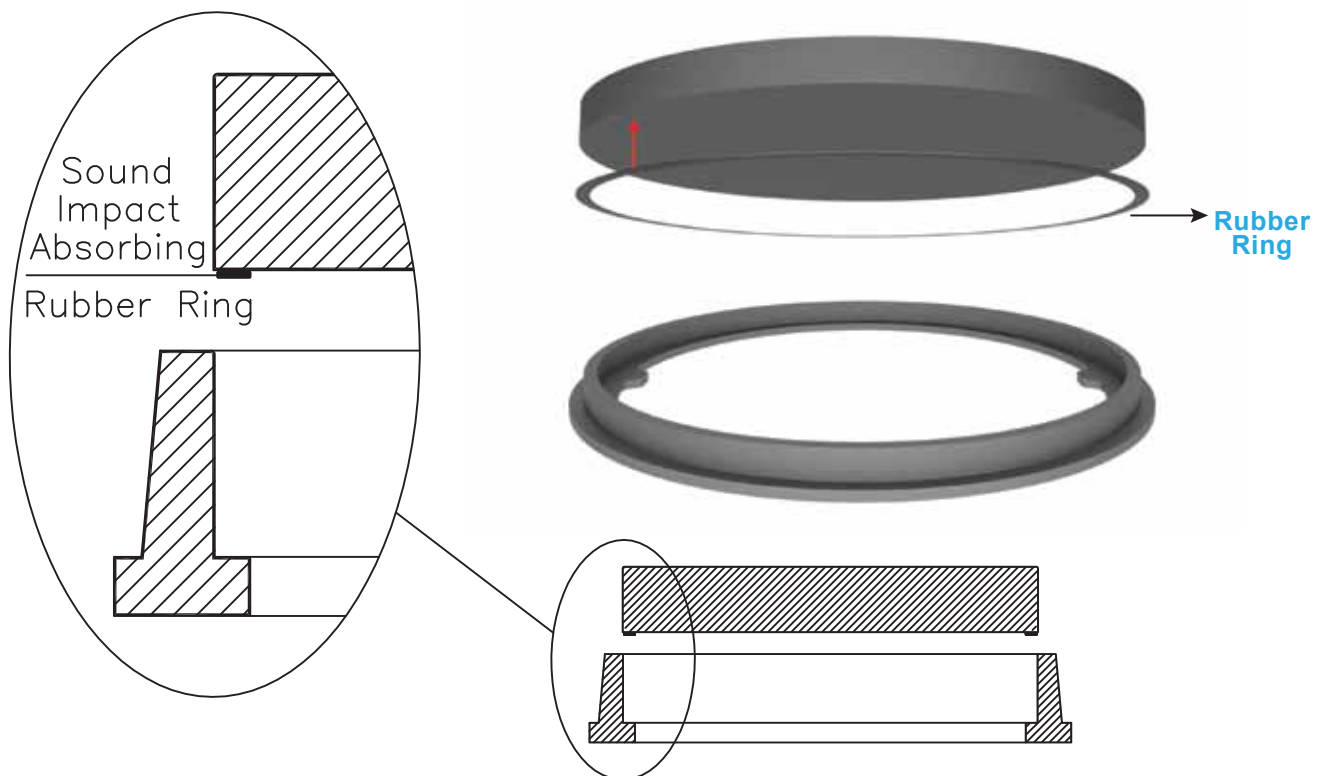
Screw Side for Lifting

T-tool

SOUND IMPACT ABSORBING RUBBER RING

Sound impact absorber: the prefabricated design of the material with high properties absorb the sound of impact.

The Manhole Covers with Impact Sound Absorbing Rubber Ring absorbs the sound completely and eliminate any noise of impact from the traffic.

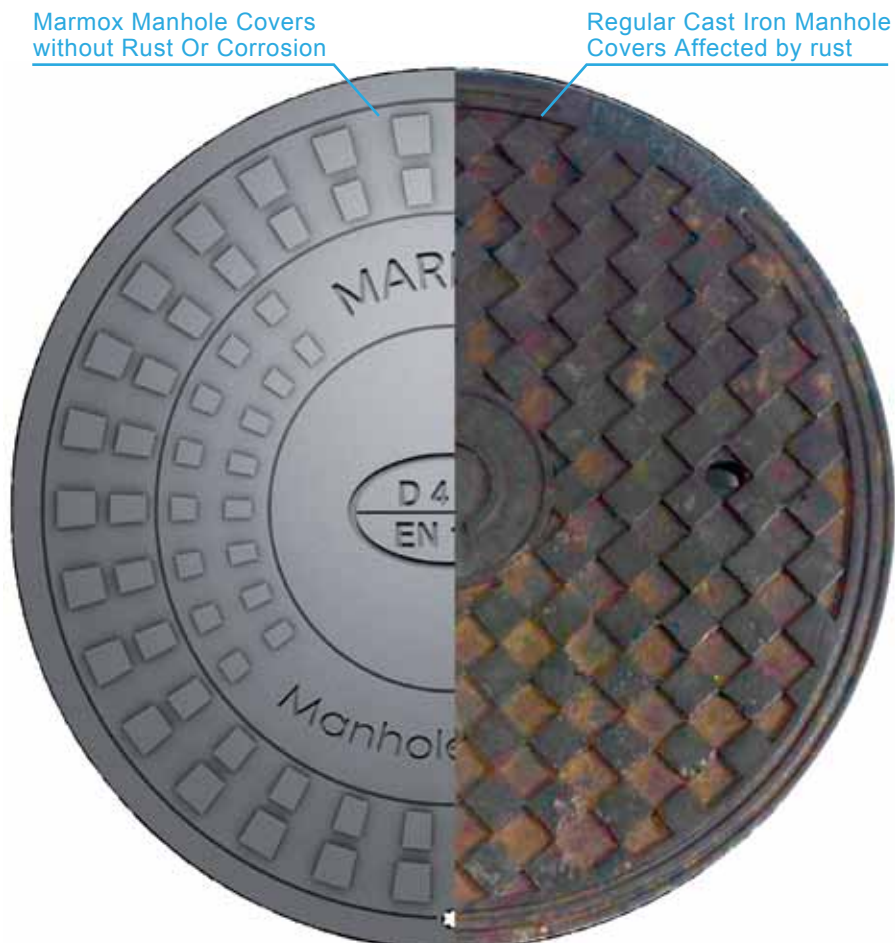


CHEMICAL RESISTANCE

Polymeric concrete is one of the resistant materials against all kind of chemical products without any reaction to contact, deformation or disintegration.

SAMPLE No.	TEST	NOTES
1	Sulphuric acid 10%	No effect
2	Hydrochloric acid 10%	No effect
3	Kerosin	No effect
4	Sodium Hydroxide solution	No effect
5	Sodium chloride	No effect
6	Sulphate solution	No effect
7	Sulphate solution	No effect
8	Nitrate solution	No effect

All test above mentioned are performed by NATIONAL RESEARCH CENTER, Egypt



CERTIFICATES

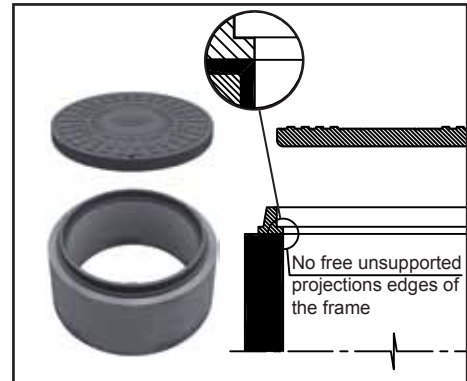
Based on the Company's strategies and in order to meet the needs of all the stakeholders involved in the processes of production/supply and to ensure consistency in the quality of the goods manufactured the concept of high-quality manufacturing is guaranteed by the certificated.

Consequently each project comply with the reference specification and certificates. Marmox Egypt is ISO 9001 certified and Marmox manhole covers products is approved by National Organization For Potable Water & Sanitary Drainage.

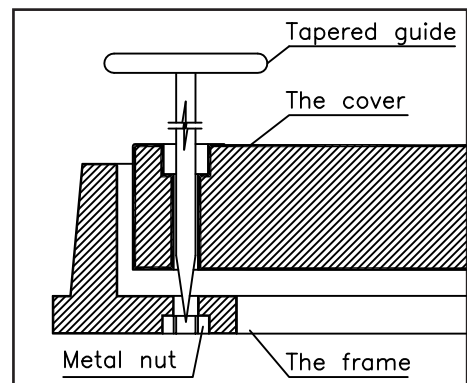


INSTALLATION INSTRUCTIONS

1. The frame must be installed fully supported on the manhole enclosure topping surface without any free unsupported projections inside the free opening.
2. Protect the metal nut fixed in the frame to receive the lock from any dirt or material waste.



3. Use tapered installation guide tool to ensure accurate alignment and verticality of the screw and nut holes.
4. Use any greasing material to coat the screw so that it will be unscrewed easily for maintenance.



5. To lock the cover to the frame be sure that the lock holes are accurately aligned together and use the screwing T-tool until the screw head is fully flush with the cover top surface.
6. Use the same T-tool for unlocking when needed.



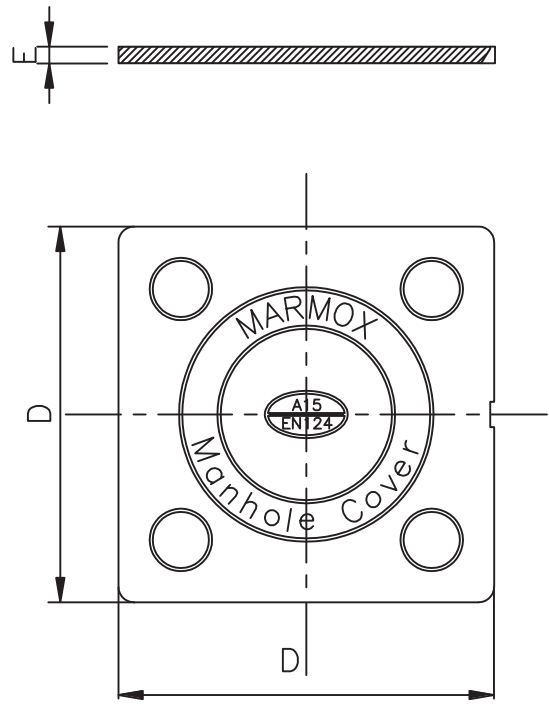
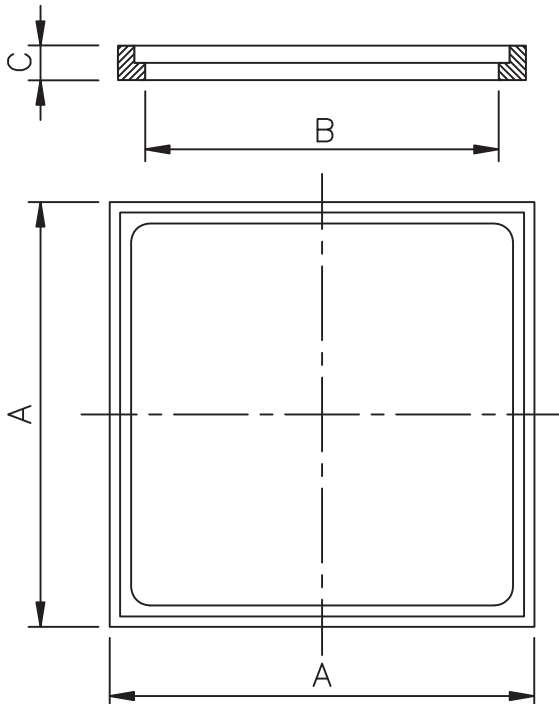
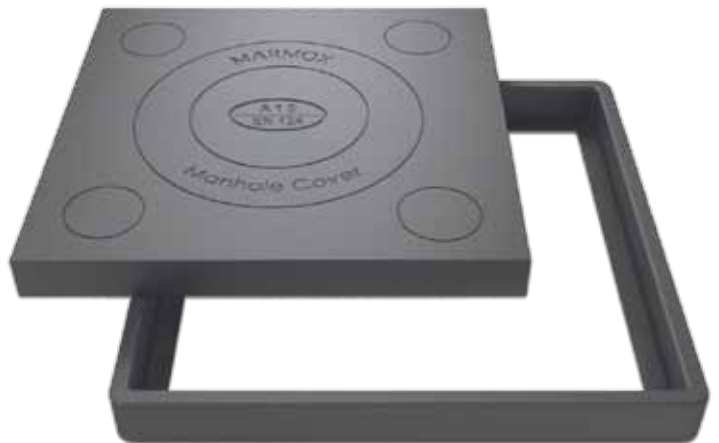
7. To left up the cover use the screw side of the T-tool and screw it in the metal nut fixed at cover bottom and pull up the cover from the frame.
8. Keep the T-tool tied to the cover to reinstall the cover in the frame after maintenance.



A15 SQUARE - EN 124

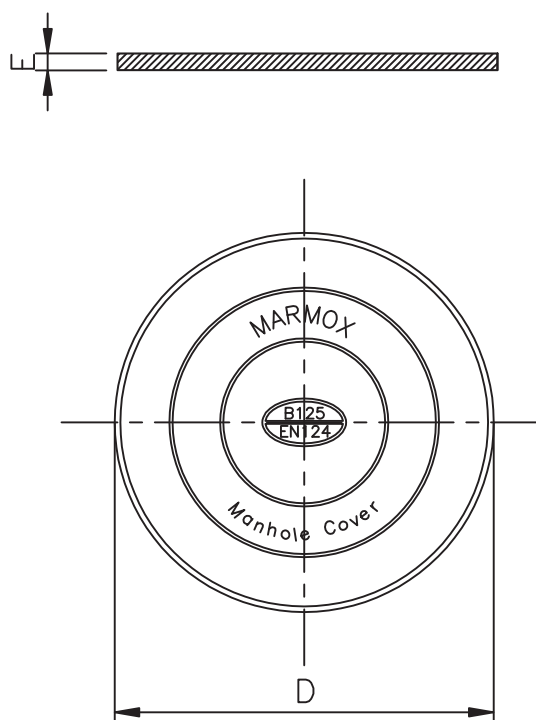
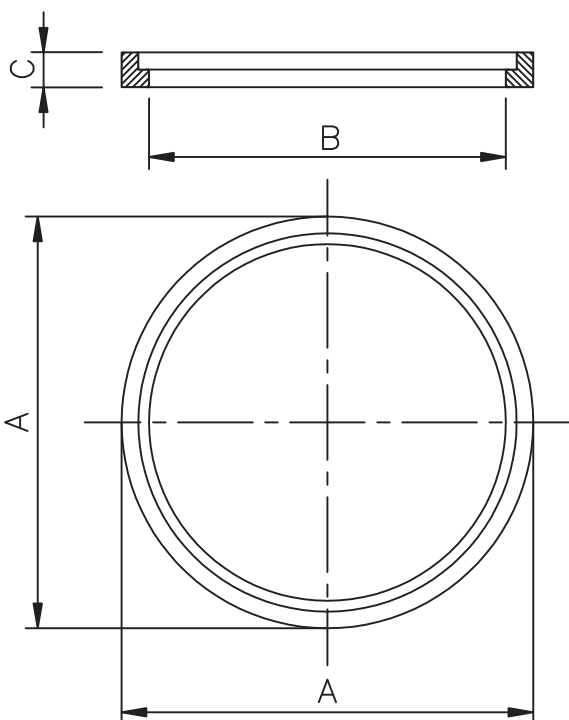
Pedestrian, pedal cyclist areas, footways, car parks and parking decks

DESCRIPTION	FRAME DIMENSIONS		COVER DIMENSIONS			WEIGHT (kg)
	A x A (mm)	B x B (mm)	C (mm)	D x D (mm)	E (mm)	
A15 SQ 200 x 200	220 x 220	175 x 175	25	200 x 200	15	4.0
A15 SQ 300 x 300	320 x 320	275 x 275	27	300 x 300	17	4.7
A15 SQ 400 x 400	430 x 430	375 x 375	29	400 x 400	17	9.5
A15 SQ 500 x 500	550 x 550	475 x 475	29	500 x 500	17	16.5
A15 SQ 600 x 600	740 x 740	600 x 600	40	625 x 625	25	28.5
A15 SQ 700 x 700	750 x 750	670 x 670	40	700 x 700	25	39
A15 SQ 800 x 800	900 x 900	800 x 800	40	820 x 820	25	51
A15 SQ 900 x 900	950 x 950	870 x 870	50	900 x 900	30	59
A15 SQ 1000 x 1000	1000 x 1000	870 x 870	90	900 x 900	30	69



A15 ROUND - EN 124

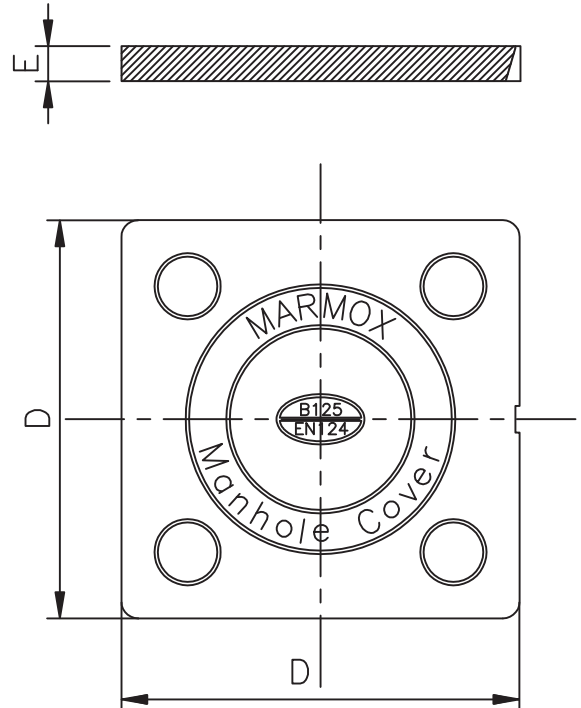
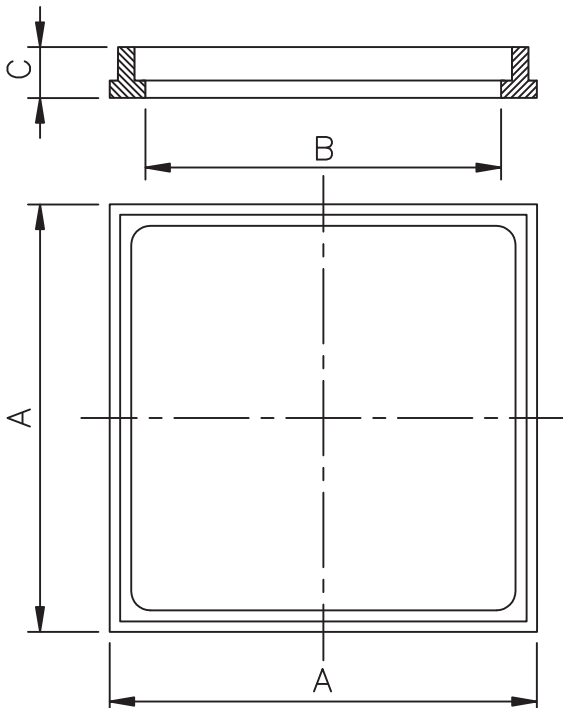
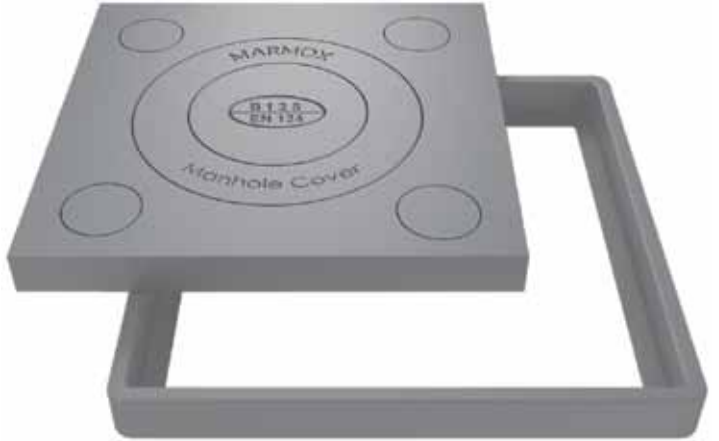
DESCRIPTION	FRAME DIMENSIONS			COVER DIMENSIONS		WEIGHT (kg)
	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	
A15 RD 200	Ø 250	Ø 170	40	Ø 200	20	4.5
A15 RD 300	Ø 350	Ø 270	40	Ø 300	20	8.5
A15 RD 500	Ø 600	Ø 500	45	Ø 540	25	23
A15 RD 600	Ø 720	Ø 600	50	Ø 630	25	27



B125 SQUARE - EN 124

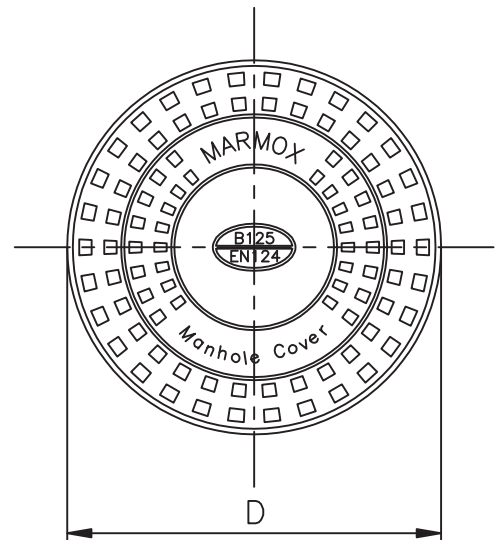
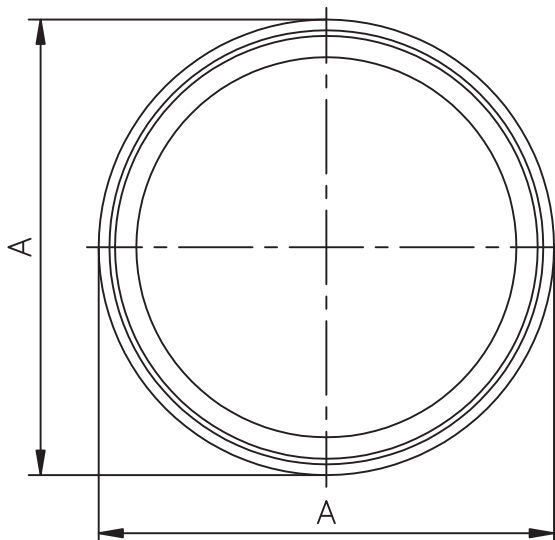
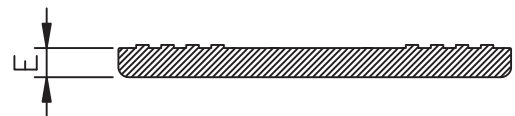
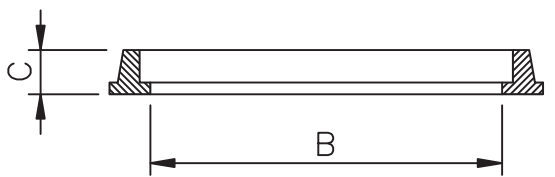
Footways, pedestrian areas and comparable areas, car parks or car parking decks

DESCRIPTION	FRAME DIMENSIONS		COVER DIMENSIONS			WEIGHT (kg)
	A x A (mm)	B x B (mm)	C (mm)	D x D (mm)	E (mm)	
B125 SQ 600 x 600	740 x 740	600 x 600	80	625 x 625	60	81.5
B125 SQ 800 x 800	900 x 900	800 x 800	80	820 x 820	60	105
B125 SQ 900 x 900	950 x 950	870 x 870	85	900 x 900	60	149



B125 ROUND - EN 124

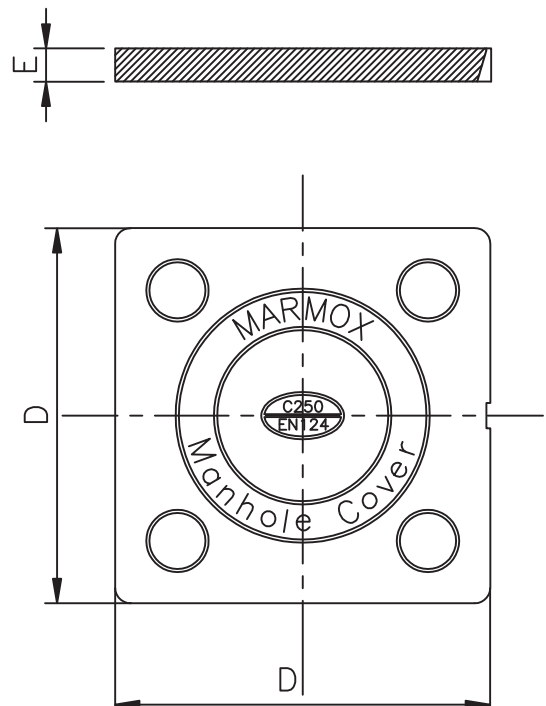
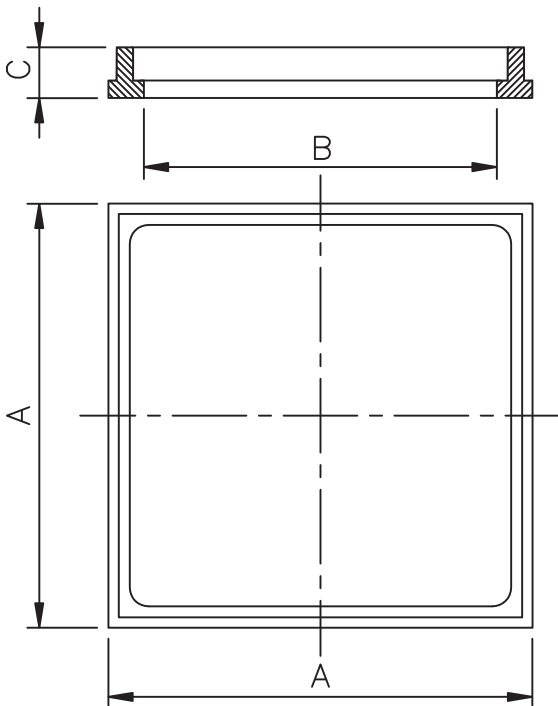
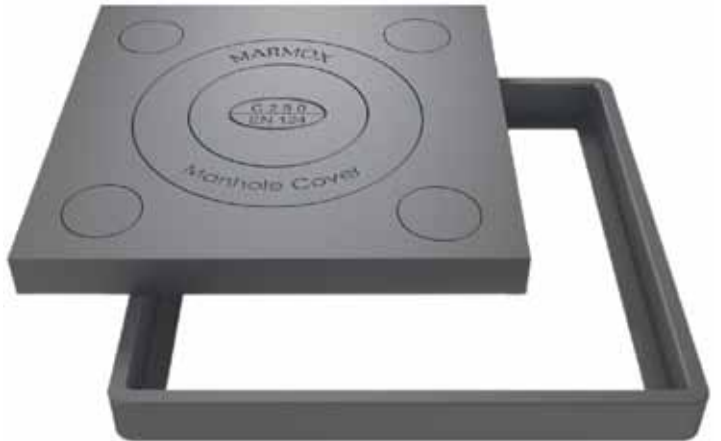
DESCRIPTION	FRAME DIMENSIONS			COVER DIMENSIONS		WEIGHT (kg)
	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	
B125 RD 300	Ø 380	Ø 250	75	Ø 300	55	16
B125 RD 500	Ø 600	Ø 500	75	Ø 540	55	38
B125 RD 600	Ø 740	Ø 600	80	Ø 630	60	55
B125 RD 760	Ø 870	Ø 700	80	Ø 760	60	80
B125 RD 800	Ø 930	Ø 760	80	Ø 800	60	101



C250 SQUARE - EN 124

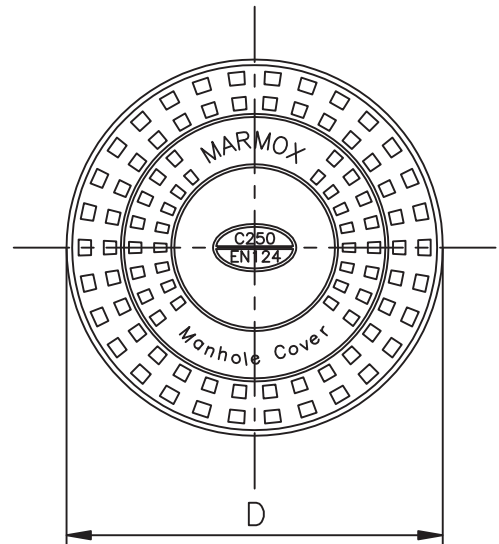
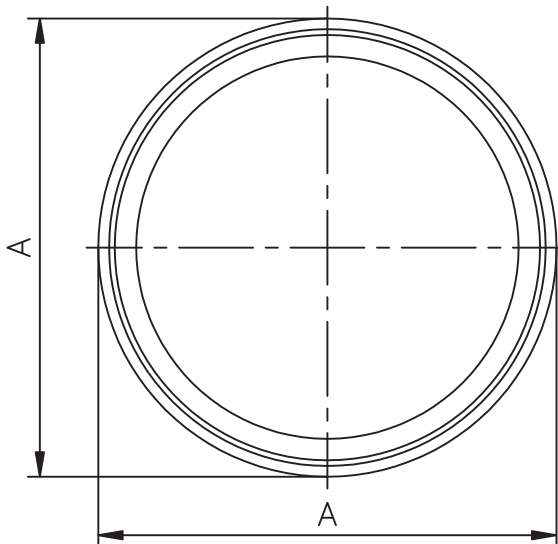
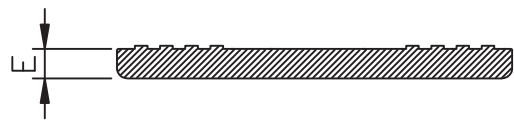
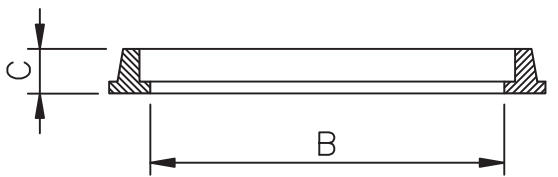
Carriage ways of roads (including pedestrian streets), hard shoulders and parking areas, for all types of road vehicles.

DESCRIPTION	FRAME DIMENSIONS		COVER DIMENSIONS			WEIGHT (kg)
	A x A (mm)	B x B (mm)	C (mm)	D x D (mm)	E (mm)	
C250 SQ 600 x 600	740 x 740	600 x 600	80	625 x 625	60	82
C250 SQ 800 x 800	900 x 900	800 x 800	95	820 x 820	75	161
C250 SQ 900 x 900	950 x 950	870 x 870	100	900 x 900	80	218



C250 ROUND - EN 124

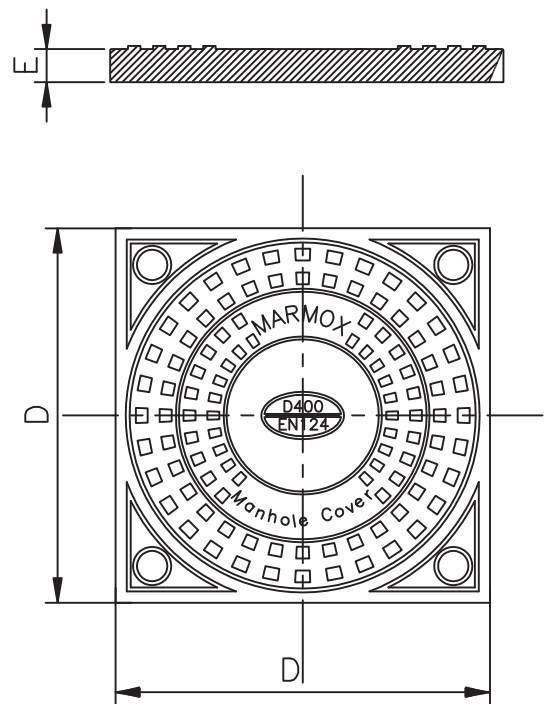
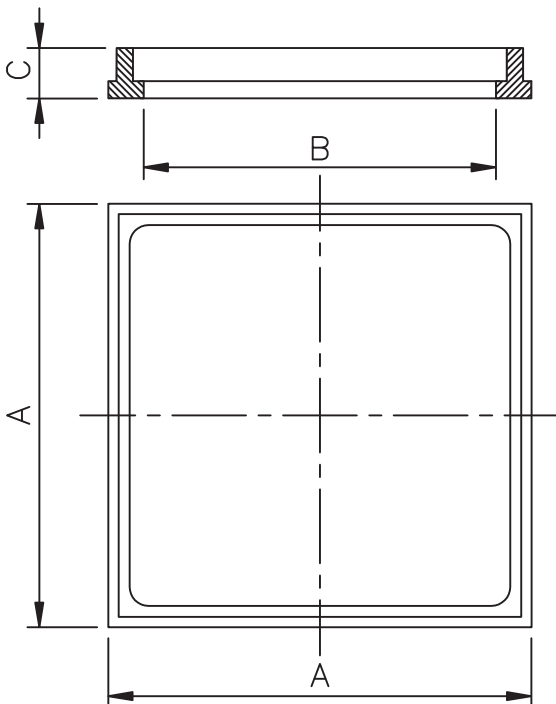
DESCRIPTION	FRAME DIMENSIONS			COVER DIMENSIONS		WEIGHT (kg)
	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	
C250 RD 300	Ø 380	Ø 250	75	Ø 300	55	17
C250 RD 500	Ø 600	Ø 500	75	Ø 540	55	40
C250 RD 600	Ø 740	Ø 600	85	Ø 630	60	58
C250 RD 760	Ø 870	Ø 700	85	Ø 760	60	85
C250 RD 800	Ø 930	Ø 760	85	Ø 800	60	106



D400 SQUARE - EN 124

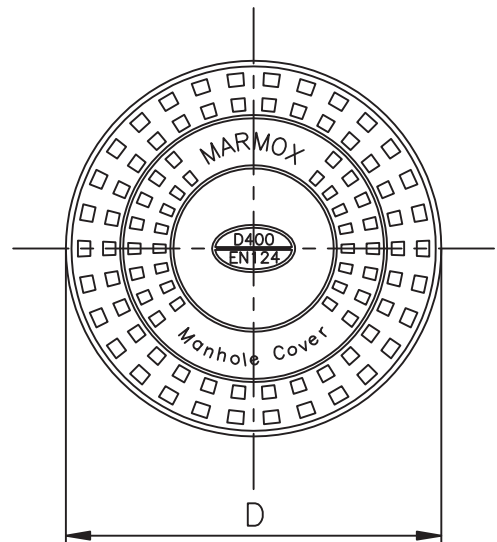
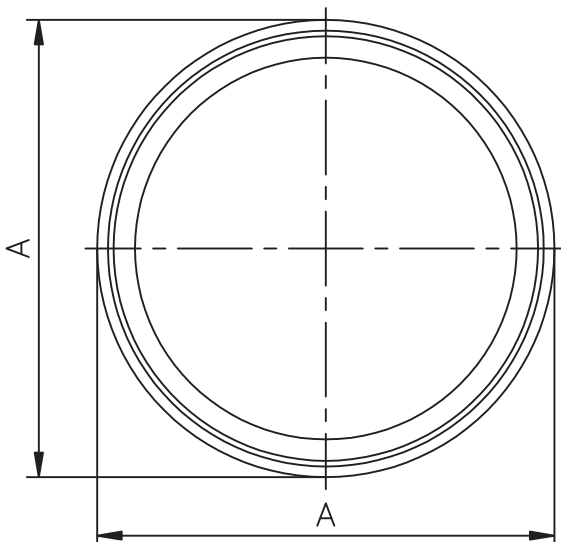
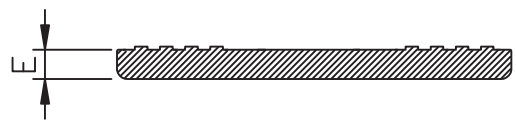
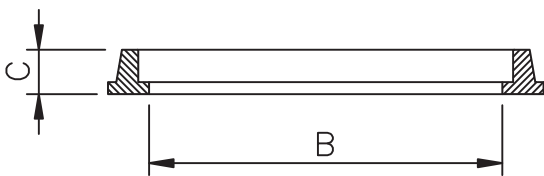
Carriage ways of roads (including pedestrian streets), hard shoulders and parking areas, for all types of road vehicles.

DESCRIPTION	FRAME DIMENSIONS			COVER DIMENSIONS		WEIGHT (kg)
	A x A (mm)	B x B (mm)	C (mm)	D x D (mm)	E (mm)	
D400 SQ 600 x 600	740 x 740	600 x 600	95	625 x 625	60	86
D400 SQ 800 x 800	900 x 900	800 x 800	95	820 x 820	75	163
D400 SQ 900 x 900	950 x 950	870 x 870	100	900 x 900	80	220



D400 ROUND - EN 124

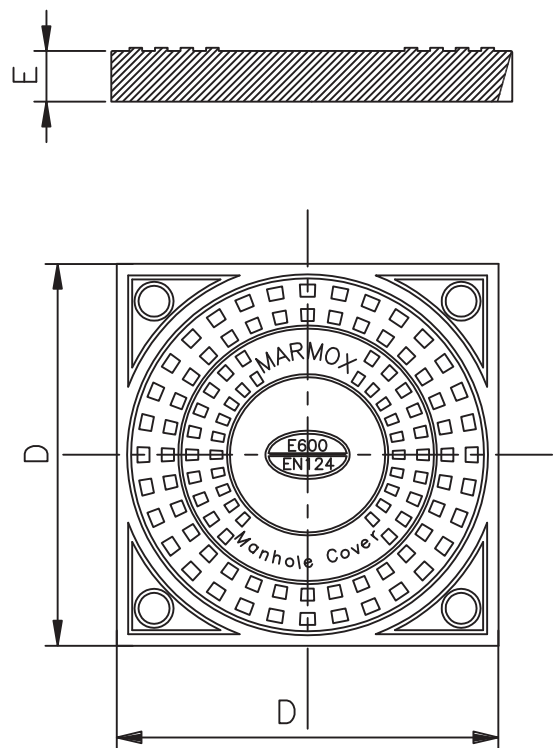
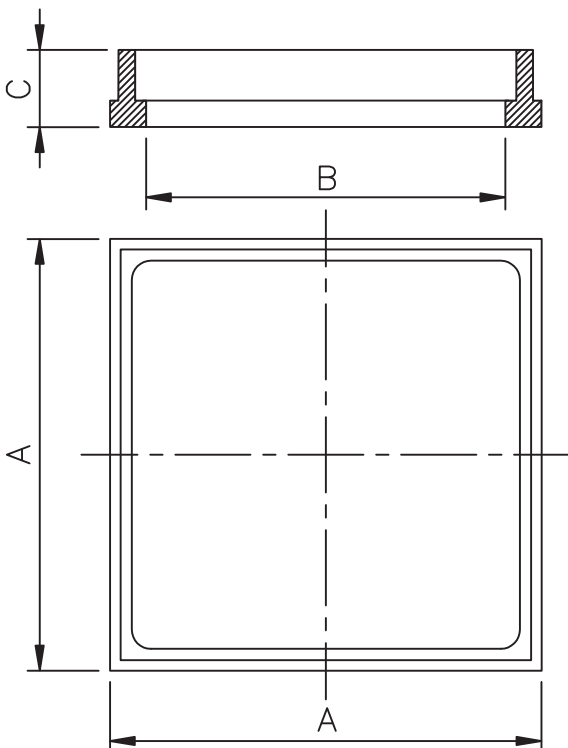
DESCRIPTION	FRAME DIMENSIONS			COVER DIMENSIONS		WEIGHT (kg)
	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	
D400 RD 300	Ø 380	Ø 250	95	Ø 300	70	23
D400 RD 500	Ø 600	Ø 500	95	Ø 540	70	68
D400 RD 600	Ø 740	Ø 600	100	Ø 630	75	79
D400 RD 760	Ø 870	Ø 700	100	Ø 760	75	99
D400 RD 800	Ø 930	Ø 760	100	Ø 800	75	121



E600 SQUARE - EN 124

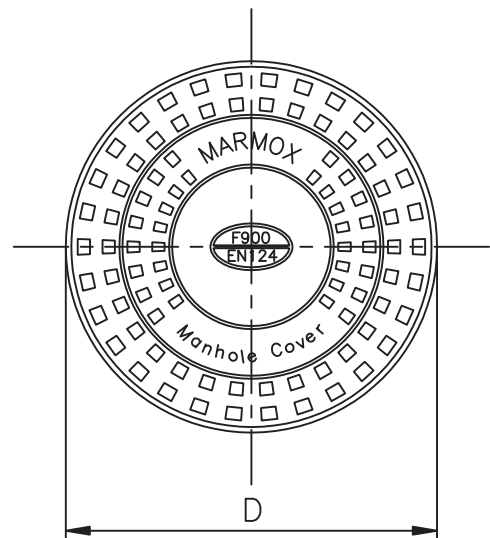
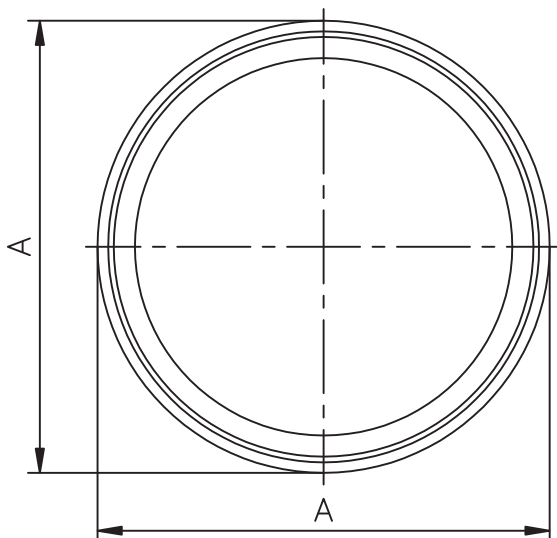
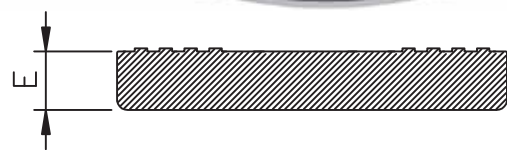
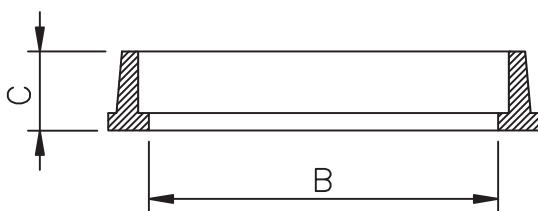
Areas imposing high wheel roads, e.g. decks, aircraft pavements

DESCRIPTION	FRAME DIMENSIONS		COVER DIMENSIONS			WEIGHT (kg)
	A x A (mm)	B x B (mm)	C (mm)	D x D (mm)	E (mm)	
E600 SQ 600 x 600	740 x 740	600 x 600	140	625 x 625	100	111
E600 SQ 800 x 800	900 x 900	800 x 800	140	820 x 820	100	177
E600 SQ 900 x 900	950 x 950	870 x 870	140	900 x 900	100	220



E600 ROUND - EN 124

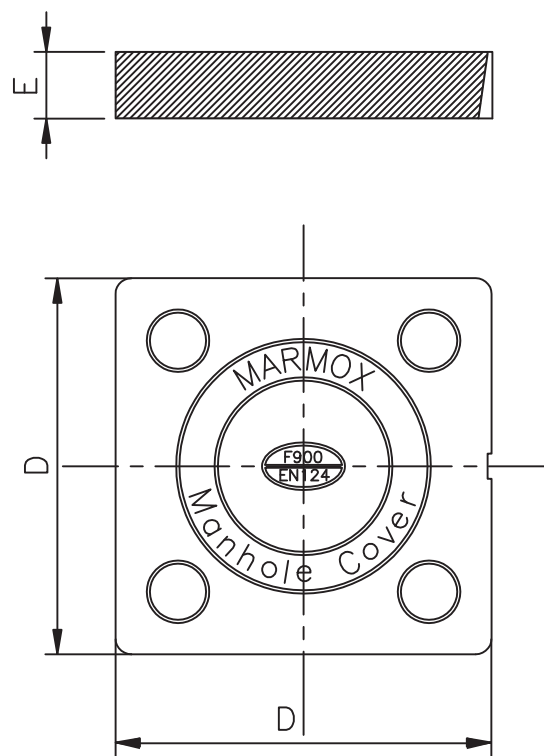
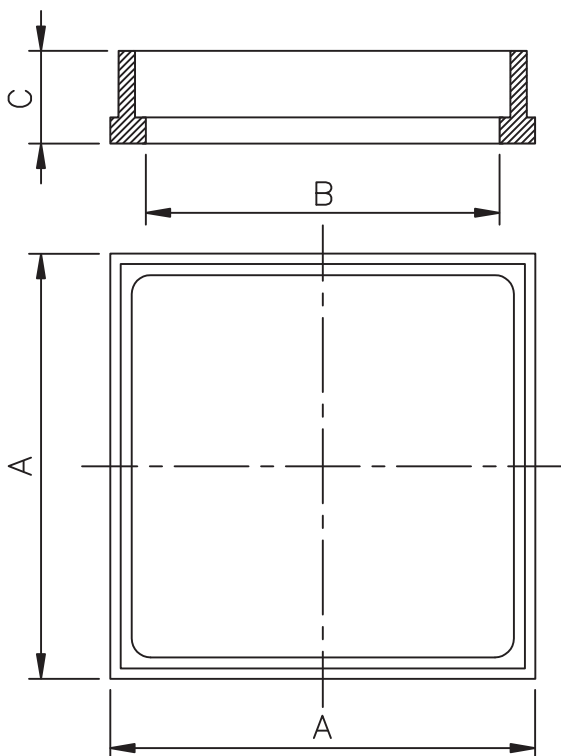
DESCRIPTION	FRAME DIMENSIONS			COVER DIMENSIONS		WEIGHT (kg)
	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	
E600 RD 600	Ø 740	Ø 600	140	Ø 630	100	102
E600 RD 760	Ø 870	Ø 700	140	Ø 760	100	146
E600 RD 800	Ø 930	Ø 760	140	Ø 800	100	162



F900 SQUARE - EN 124

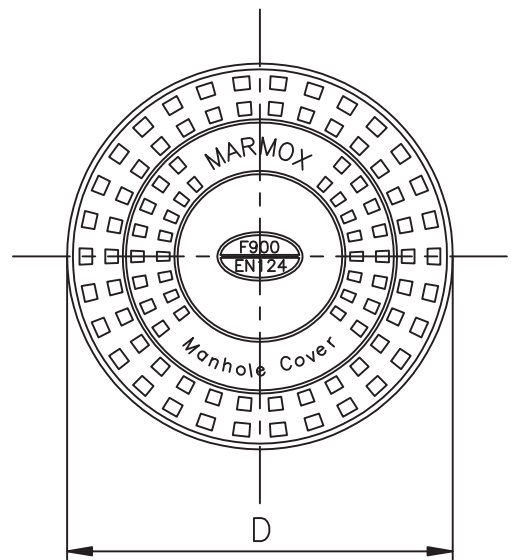
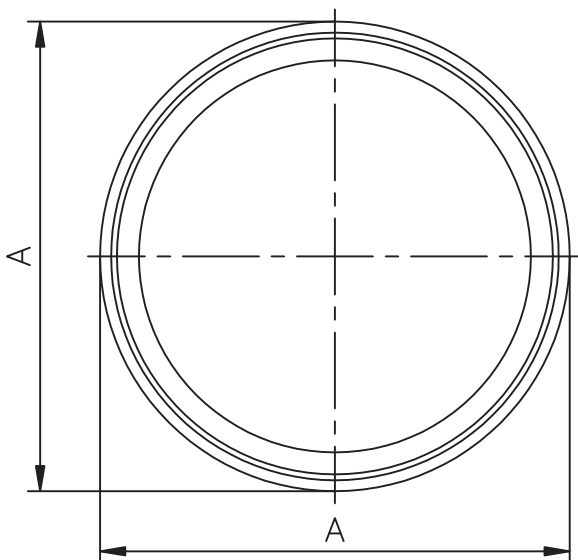
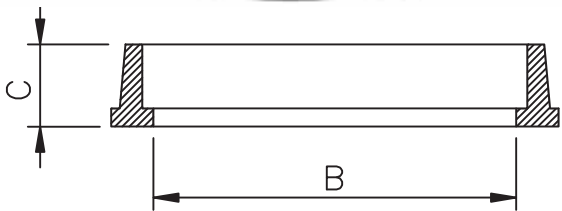
Areas imposing particularly high wheel loads, e.g. aircraft pavements

DESCRIPTION	FRAME DIMENSIONS		COVER DIMENSIONS			WEIGHT (kg)
	A x A (mm)	B x B (mm)	C (mm)	D x D (mm)	E (mm)	
F900 SQ 600 x 600	740 x 740	600 x 600	160	625 x 625	120	134.0
F900 SQ 800 x 800	900 x 900	800 x 800	160	820 x 820	120	215.0
F900 SQ 900 x 900	950 x 950	870 x 870	160	900 x 900	120	265.0



F900 ROUND - EN 124

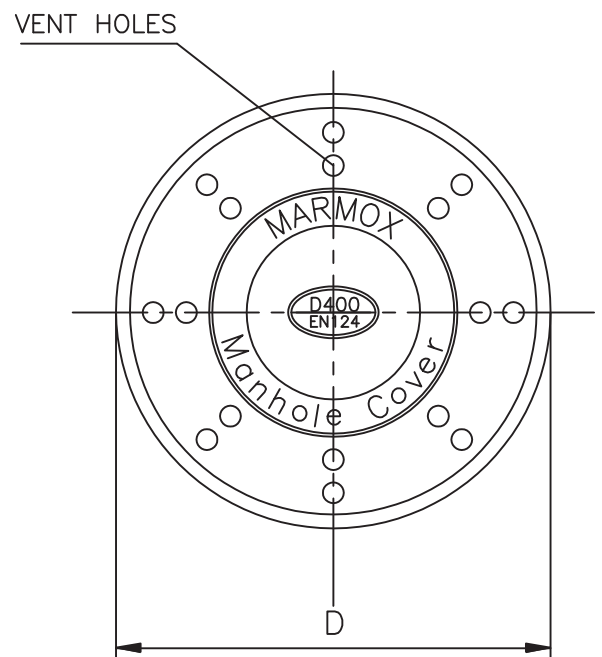
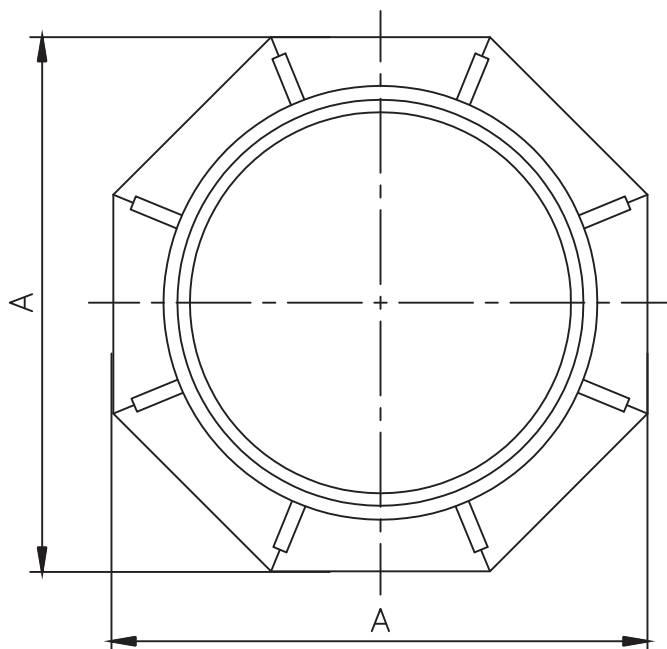
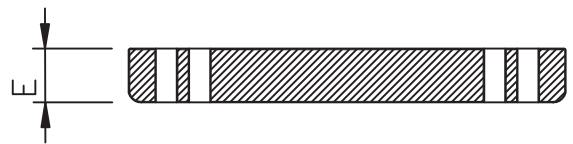
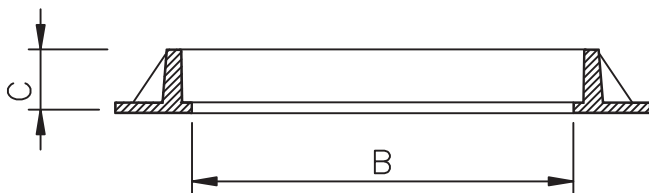
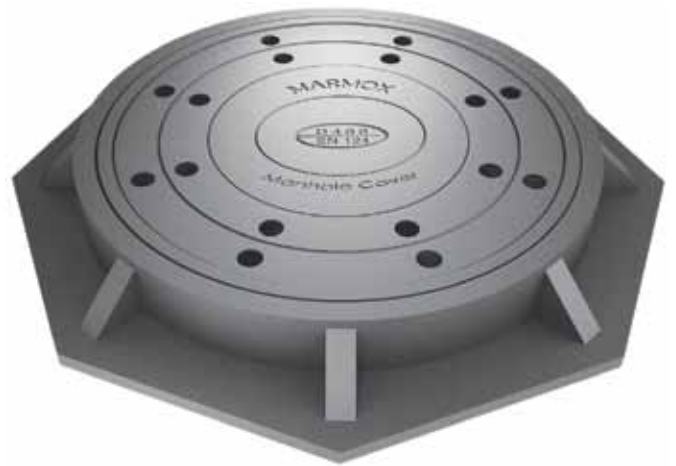
DESCRIPTION	FRAME DIMENSIONS			COVER DIMENSIONS		WEIGHT (kg)
	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	
F900 RD 600	Ø 740	Ø 600	160	Ø 630	120	123.0
F900 RD 760	Ø 870	Ø 700	160	Ø 760	120	172.0
F900 RD 800	Ø 930	Ø 760	160	Ø 800	120	189.0



SPECIAL DESIGN COVER AND SPECIAL FRAMES TYPES: SP1 RD

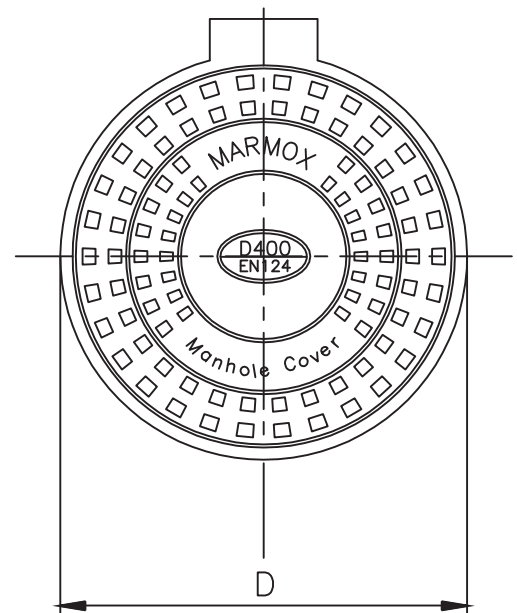
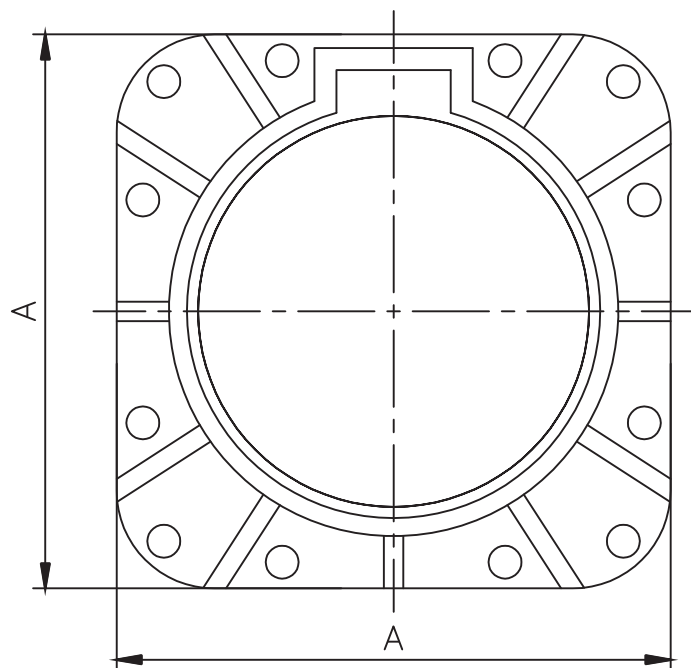
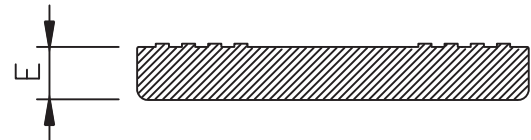
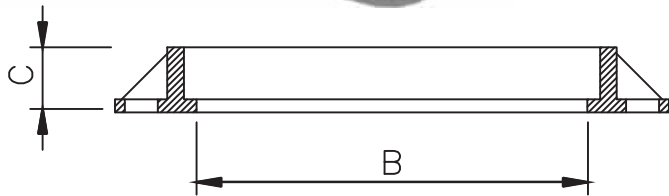
All dimensions below are available for D400 category; all other categories are available.

DESCRIPTION	FRAME DIMENSIONS			COVER DIMENSIONS		WEIGHT (kg)
	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	
SP1 RD600	850 x 850	Ø 600	100	Ø 630	75	106



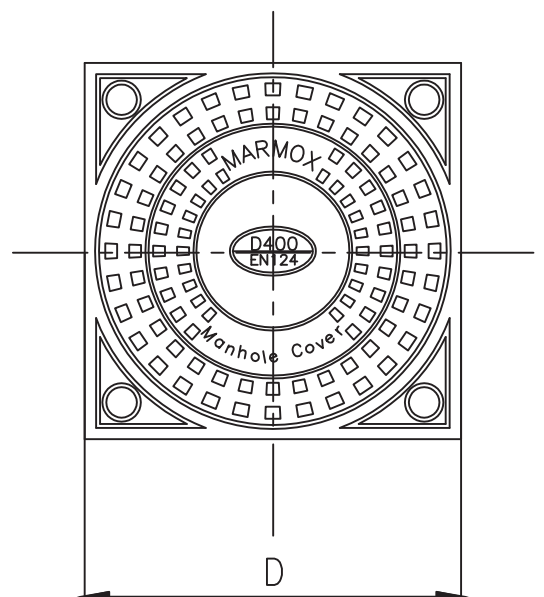
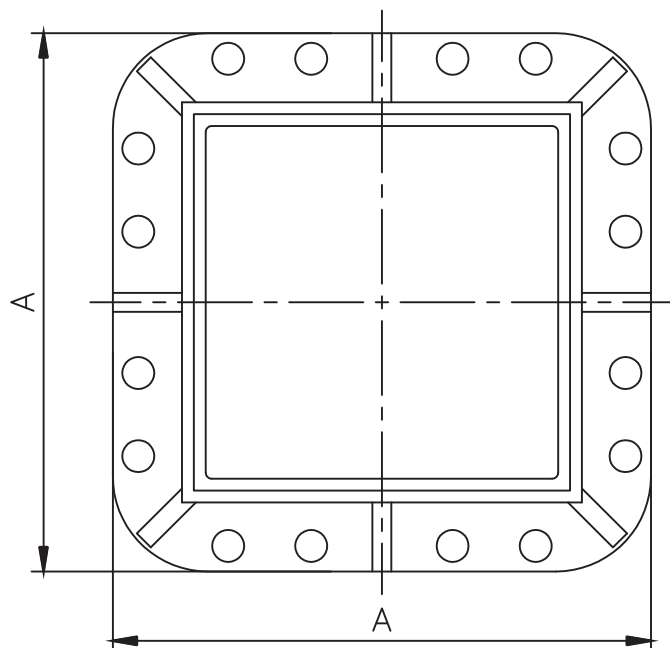
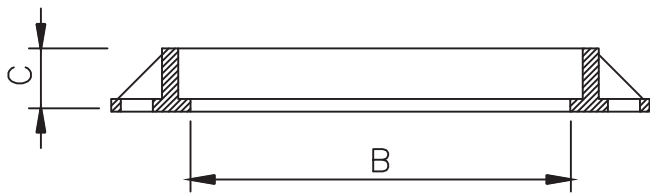
SPECIAL DESIGN COVER AND SPECIAL FRAMES TYPES: SP2 RD

DESCRIPTION	FRAME DIMENSIONS		COVER DIMENSIONS			WEIGHT (kg)
	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	
SP2 RD600	850 x 850	Ø 600	100	Ø 630	75	104



SPECIAL DESIGN COVER AND SPECIAL FRAMES TYPES: SP3 SQ

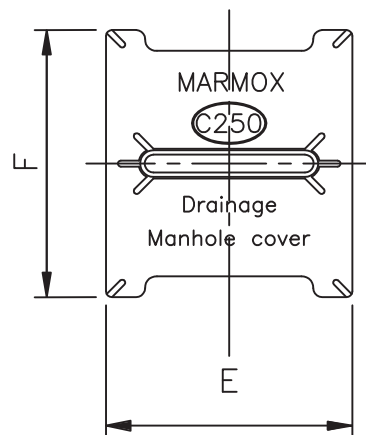
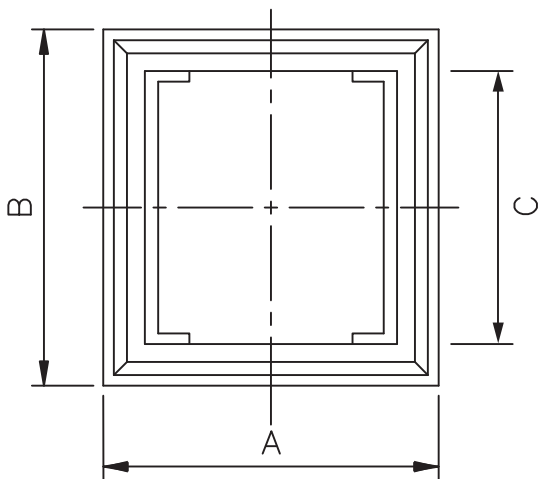
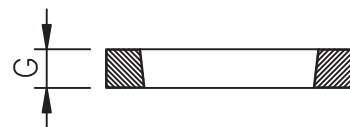
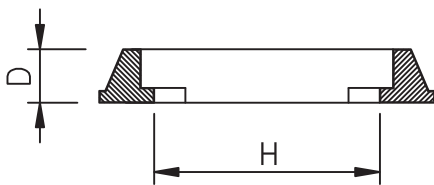
DESCRIPTION	FRAME DIMENSIONS		COVER DIMENSIONS			WEIGHT (kg)
	AxA (mm)	BxB (mm)	C (mm)	DxD (mm)	E (mm)	
SP3 SQ 600 x 600	850 x 850	600 x 600	100	625 x 625	75	118



DRAINAGE MANHOLE COVERS

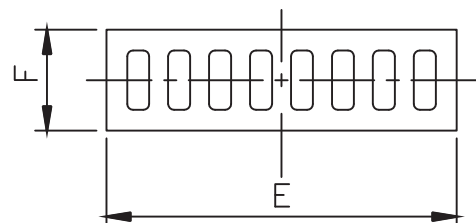
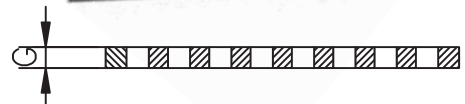
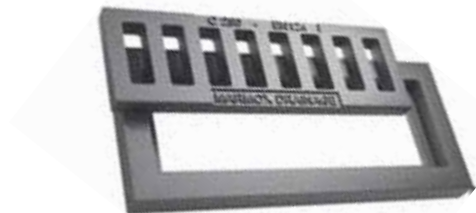
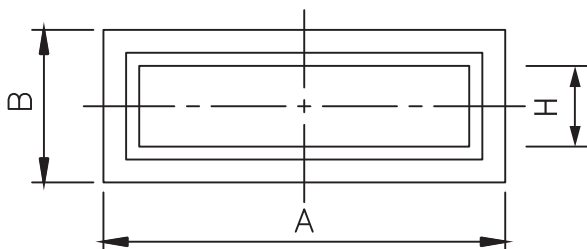
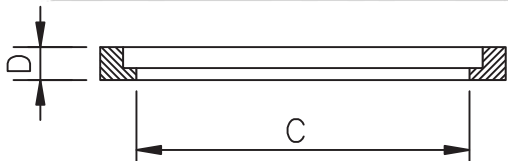
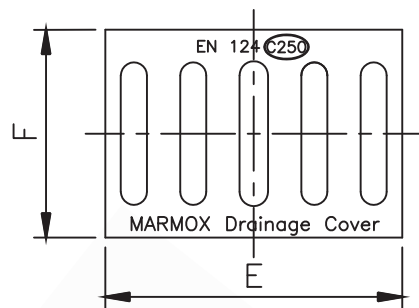
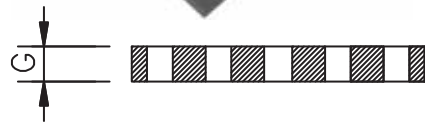
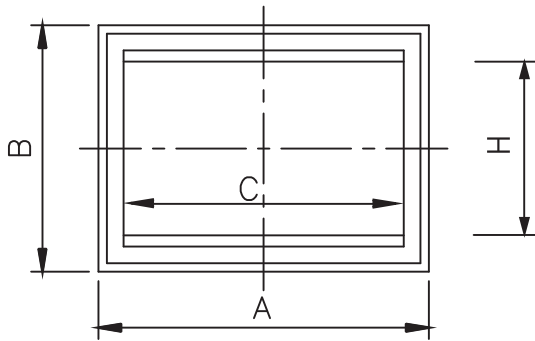
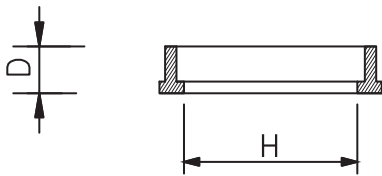
For gully tops installed in the area of curbside channels of roads which when measured from the curbside, extends a maximum of 0.5m into the carriage way and a maximum of 0.2m into the footway

DESCRIPTION	FRAME DIMENSIONS				COVER DIMENSIONS				WEIGHT (kg)
	A (mm)	B (mm)	C (mm)	H (mm)	D (mm)	E (mm)	F (mm)	G (mm)	
DRG C250 SQ	545	595	460	355	100	405	450	65	45.5



DRAINAGE MANHOLE COVERS

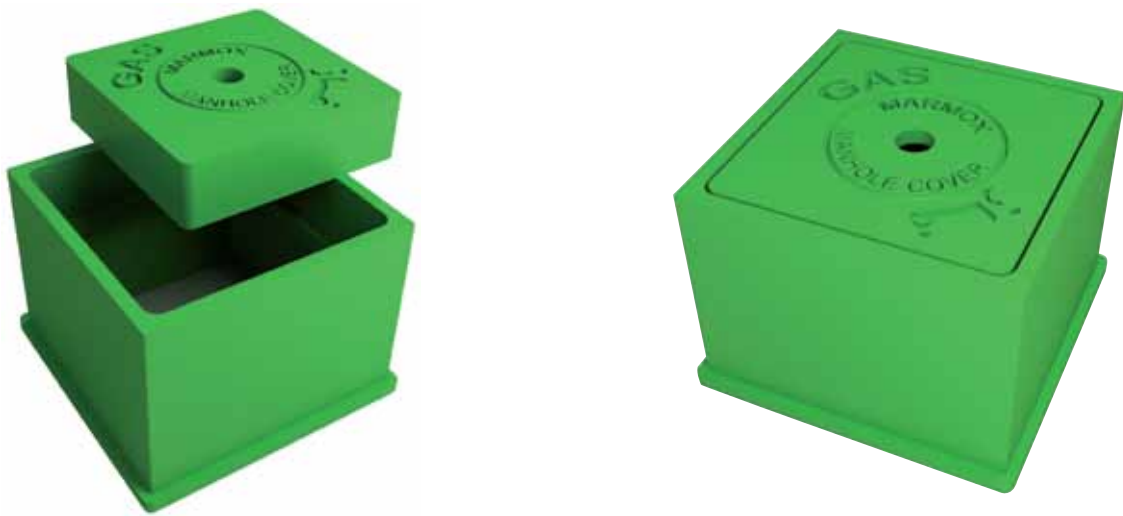
DESCRIPTION	FRAME DIMENSIONS				COVER DIMENSIONS				WEIGHT (kg)
	A (mm)	B (mm)	C (mm)	H (mm)	D (mm)	E (mm)	F (mm)	G (mm)	
DRG C250 RECT	630	480	505	300	90	500	350	65	36.0
DRG B125 LINEAR	675	225	535	140	55	590	170	35	16.0
DRG C250 LINEAR	675	225	535	140	75	590	170	55	32.0



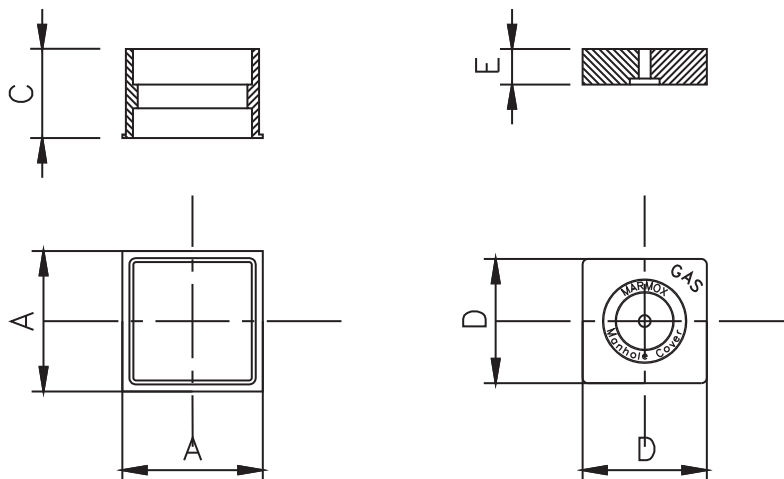
GAS MANHOLE COVERS

For gas valves on top of pedestrian streets, pedal cyclists and car parks

DESCRIPTION	FRAME DIMENSIONS		COVER DIMENSIONS			WEIGHT (kg)
	A x A (mm)	B x B (mm)	C x C (mm)	D x D (mm)	E (mm)	
GAS B125	240 x 240	180 x 180	150	200 x 200	60	7.5
GAS B125	180 x 180	120 x 120	150	140 x 140	60	5.5

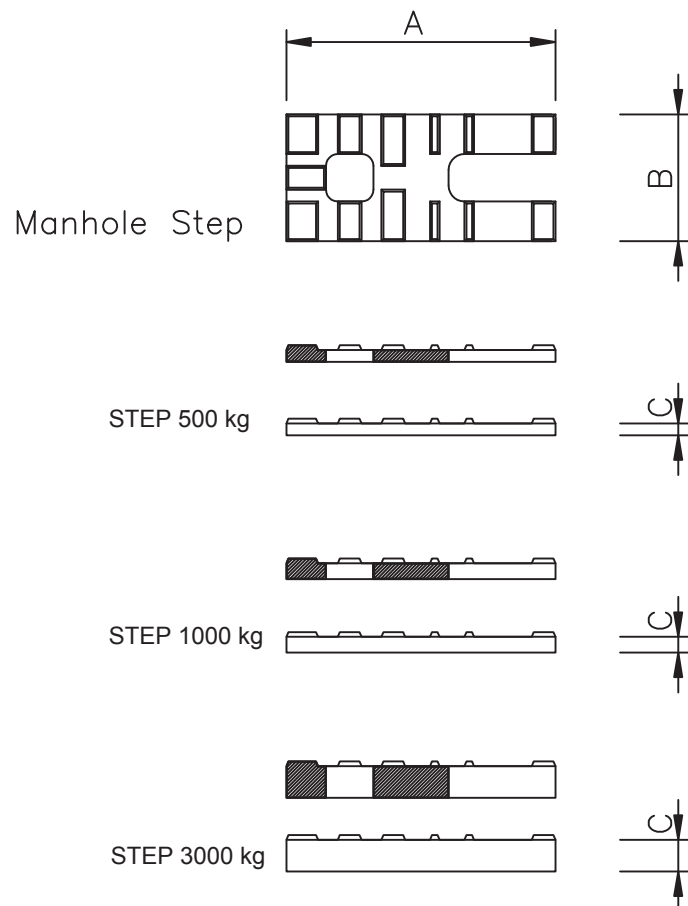


MARMOX GAS COVERS ARE SUITABLE FOR GAS VALVE HOLES, FILLING STATIONS AND FLAMMABLE LIQUID TANKS



MANHOLE STEPS

STEP TYPE	FRAME DIMENSIONS		COVER DIMENSIONS	WEIGHT (kg)
	A (mm)	B (mm)	C (mm)	
STEP 500 kg	310	150	15	1.5
STEP 1000 kg	310	150	20	2.0
STEP 3000 kg	310	150	40	4.0



WWW.MARMOX.COM

