



Fiberglass Reinforced Polymer  
**Manhole Tops**







## THE COMPANY

M.M. is an industrial entity that has gained a **40 years' experience** in design and manufacture of **glassfiber reinforced polymer** products major in **gratings** and **structures** (parapets, gangways, stairways, ladders, fencing, gates, etc).

The experience, the innovation, the professionalism and the capacity to understand the customers' needs makes of M.M. the perfect partner for the actualization of the most various FRP projects.

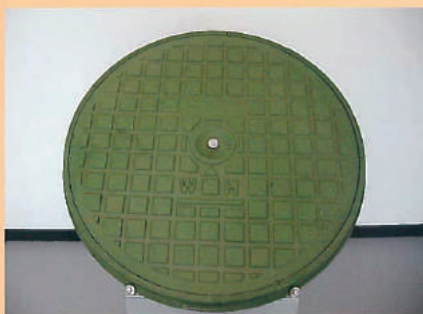
The research and the development of new solutions and products have always been the two main company's focuses.

The manufacture of **FRP** manhole tops has been made for first by M.M. in the nineties by means of a mold for the production of round manholes  $\varnothing$  600 certified by DNV according to the EN 124 norm.

## CHIUSINO CIRCOLARE IN VETRORESINA

DISPOSITIVO DI CORONAMENTO E CHIUSURA IN FRP

classe B125



Certificato DNV n. 0021-2001-PC-VEN C



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## MANUFACTURING PROCESS AND MATERIAL

For the EN 124:2015 norm requirements, the production process of the manhole covers turns out to be of C3 class ("Composite material C3" Point 4.2 Type of composite materials).

It's a compression molding process made in a closed mold with controlled temperature (SMC) by using thermosetting resins (polyester resin), short glass fibers (chopped strand) and other additives.



## ADVANTAGES



### HIGH LOAD RATING AND STRENGTH

They are conceived to meet **A15/B125/C250/D400** load ratings according to **EN 124:2015** norm.

The composite manhole tops have similar hardness values than the cast iron ones but with overwhelming **advantages on stretch recovery and bend resistance**.



### LIGHTNESS

Compared to cast iron manhole tops, the composite ones are roughly **30% lighter**. Lightness permits an easier manageability upon installation and servicing which clearly allows to save time, manpower and resources.

The installation could be safely carried out by a single worker.

Moreover, the reduced weight meaningfully reduces the transport costs.



### THEFT PREVENTION

The composite manhole tops have no value for thieves on the contrary of the cast iron ones.

This fact reduces potential accidents and further maintenance costs caused by thefts.



### SAFETY

For an improved safety level, the locking could be directly molded on the top.

When well-sealed, **it avoids the leaks of harmful gases**.

Non-heat-conducting.



### SLIP RESISTANCE

The antiskid surface guarantees safe use conditions even with bad weather.



### WATERPROOF



### DIELECTRICAL PROPERTIES

The composite manhole top is non-conductive and protects the pedestrians from possible tension leakages especially in humid and wet environments.



**NEVER LIKE THIS**



**THEFT PREVENTION**



#### PERMEABLE TO ELECTROMAGNETIC WAVES

The radio signal passes freely through the manhole top allowing surveys without removing it.



#### LESS NOISE AND VIBRATIONS

The composite manhole top muffles noises and disturbances caused by vehicle passages.



#### DURABILITY

Virtually a durability of more than 30 years just like the roads.



#### CORROSION RESISTANCE



#### THERMAL RESISTANCE

Resistant to a range of high and low temperature from -40°C to 200°C. The composite manhole top particularly fits in extreme weather conditions.



#### UV RESISTANCE



#### CUSTOMIZATION

The composite materials allow original and innovative designs. Could be customized upon request with customers' logos and proper patterns. The resolution of the surface design turns out clearer than the ones in cast iron or other materials.



#### RESPECTING THE ENVIRONMENT

Boasts a minor energy consumption with consequent lower carbon dioxide emissions than cast irons ones during the production process. The new material, the technology and the simple production process allow this reduction.

## CERTIFICATION

**ICMQ**  
Profuct  
Certification



Manufacturing matters, type tests, labeling, quality control according **EN124:2015** norm.  
Certificate issued by **ICMQ**.

CERTIFICATO N°	P 187		CERTIFICATE N°
AZIENDA	M.M. S.r.l.		COMPANY
Via Antonio Zanussi, n° 300-302 - 33100 - Udine (UD)			
UNITA' PRODUTTIVA	Impianto "B"		PRODUCTION UNIT
OGGETTO DEL CERTIFICATO	SCOPE OF THE CERTIFICATE		
DISPOSITIVI DI CORONAMENTO E CHIUSURA PER ZONE DI CIRCOLAZIONE UTILIZZATE DA PEDONI E DA VEICOLI Gully tops and manhole tops for vehicular and pedestrian areas			
NORME DI RIFERIMENTO	REFERENCE STANDARDS		
EN 124-5:2015			
SISTEMA DI CERTIFICAZIONE	CERTIFICATION SYSTEM		
Condizioni Generali di Contratto per la Certificazione di prodotti - CP DOC 228 General Agreement Conditions for the product certification - CP DOC 228 Regolamento particolare per dispositivi di coronamento e chiusura in materiale composito CP DOC 243 Particular rules for gully tops and manhole tops in composite material - CP DOC 243			
PRODOTTI	PRODUCTS		
L'elenco dei prodotti oggetto della certificazione è allegato al presente certificato The list of the certified products is annexed to this certificate			
PRIMA EMISSIONE First issue	EMISSIONE CORRENTE Current issue	SCADENZE Expiry Date	
20/03/2017	20/03/2017	31/12/2017	
IL DIRETTORE GENERALE ING. LORENZO ORSENIGO			



# CLASSIFICATION AND INSTALLATION SITES



## A15\_kN 15 load test

Exclusively pedestrian and cycling areas.



## B125\_kN 125 load test

Sidewalks, pedestrian and assimilated areas, rest areas and multi-story car parkings.



## C250\_kN 250 load test

For gully tops installed in gutter areas alongside the sidewalks extending up to maximum 0,5 m on the carriageway and maximum 0,2 m from the border on the sidewalk.

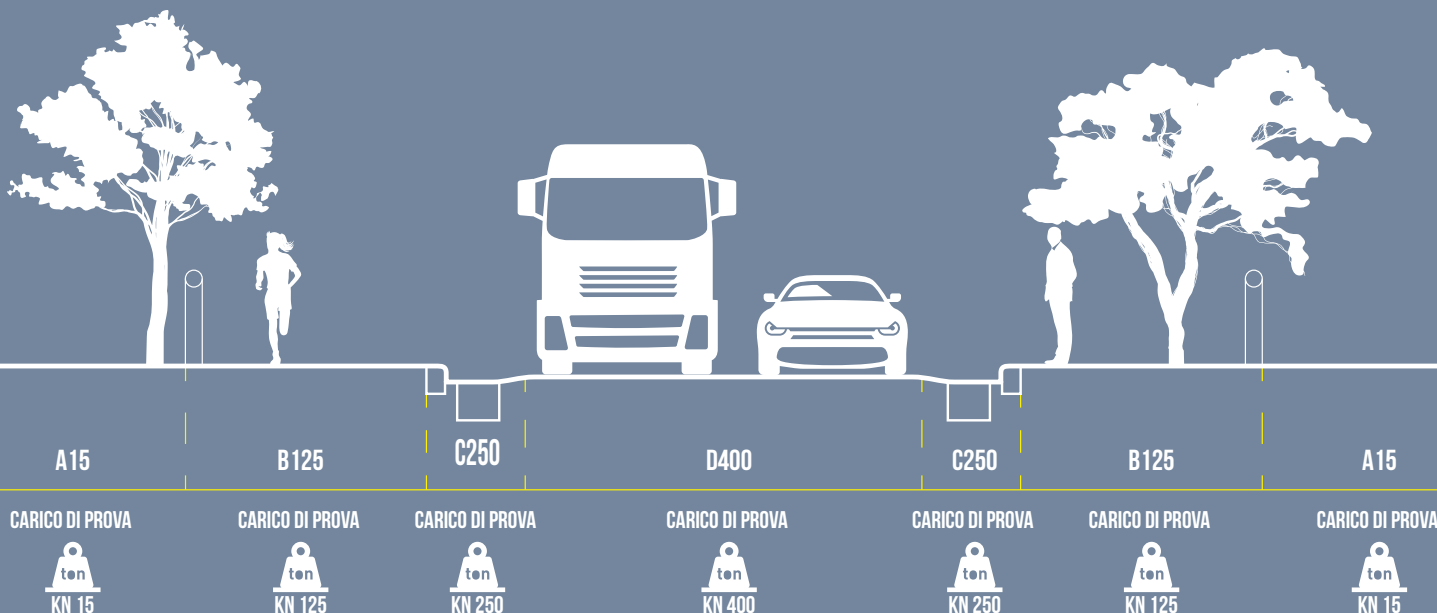


## D400\_kN 400 load test

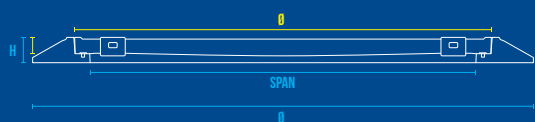
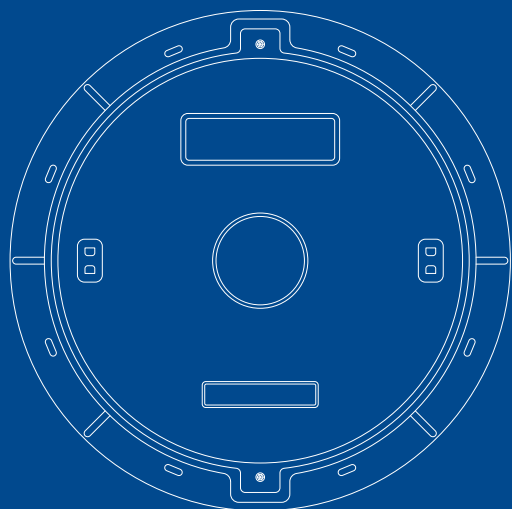
Carriageways (including pedestrian ways), road shoulders and parking areas for all types of vehicles.



## VARIOUS SHAPES AND DIMENSIONS



# ROUND MANHOLE TOPS



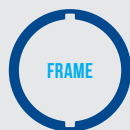
FRAME



TOP






## MEASURES AND WEIGHTS



FRAME

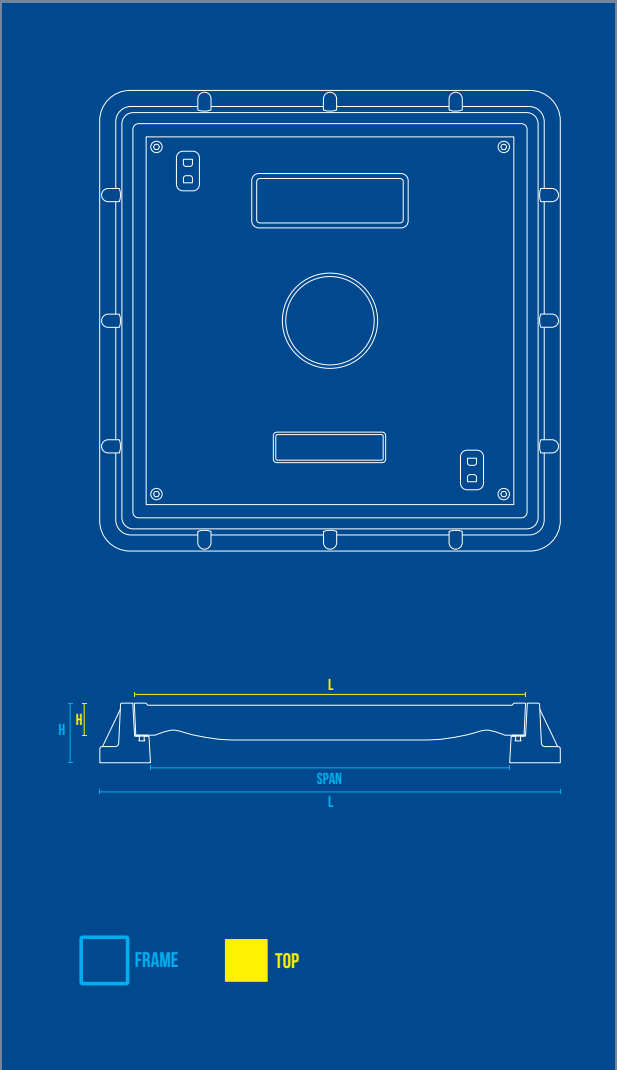


TOP


	MODEL	Ø SPAN	Ø	H	KG	Ø	H	KG	SEALING	FIXING
	B125T/550 _ 001	550 mm	700 mm	35 mm	2,8 kg	600 mm	25 mm	13,8 kg	no	2 screws
	B125T/600 _ 001	600 mm	780 mm	40 mm	7,4 kg	650 mm	26 mm	15,6 kg	si	2 screws
	B125TC/600 _ 001	600 mm	745 mm	55 mm	8,4 kg	650 mm	35 mm	18,2 kg	no	120° hinge + lock
	C250T/600 _ 001	600 mm	760 mm	60 mm	8,6 kg	650 mm	40 mm	25,6 kg	si	serratura
	C250TC/700 _ 001	700 mm	910 mm	75 mm	16,3 kg	750 mm	50 mm	37,2 kg	si	180°hinge + lock
	C250T/840 _ 001	840 mm	1065 mm	113 mm	19,8 kg	840 mm	70 mm	55,0 kg	si	no
	D400T/600 _ 001	600 mm	785 mm	100 mm	30,4 kg	650 mm	40 mm	17,6 kg	si	lock
	D400TC/600 _ 001	600 mm	805 mm	100 mm	36,0 kg	690 mm	50 mm	17,0 kg	si	180°hinge + lock
	D400TC/600 _ 002	600 mm	790 mm	100 mm	31,6 kg	650 mm	48 mm	13,4 kg	si	120°hinge + lock
	D400TC/700 _ 001	700 mm	910 mm	100 mm	20,5 kg	750 mm	50 mm	45,5 kg	si	180°hinge + lock
	D400T/900 _ 001	900 mm	1083 mm	100 mm	20,5 kg	987 mm	35 mm	72,0 kg	si	no



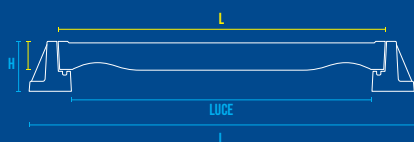
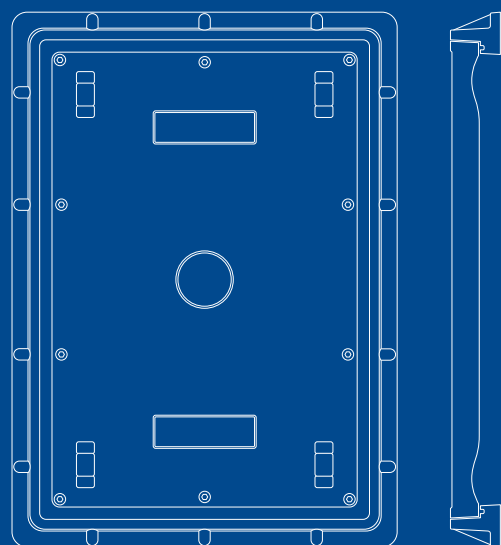
# SQUARE MANHOLE TOPS



## MEASURES AND WEIGHTS

	FRAME					TOP			SEALING	FIXING
	MODEL	SPAN	L	H	KG	L	H	KG		
 125 kN	B125Q/360 _ 001	360x360 mm	515x515 mm	55 mm	7,1 kg	400x400 mm	40 mm	8,2 kg	no	no
	B125Q/450 _ 001	450x450 mm	590x590 mm	35 mm	2,8 kg	500x500 mm	25 mm	12,2 kg	no	2 screws
	B125Q/550 _ 001	550x550 mm	673x673 mm	35 mm	3,4 kg	600x600 mm	25 mm	18,0 kg	no	4 screws
	B125Q/600 _ 001	600x600 mm	750x750 mm	35 mm	4,0 kg	650x650 mm	25 mm	22,2 kg	no	4 screws
	B125Q/900 _ 001	900x900 mm	1150x1150 mm	70 mm	26,1 kg	1000x1000 mm	40 mm	55,0 kg	no	4 screws
 400 kN	D400Q/550 _ 001	550x550 mm	705x705 mm	100 mm	19,0 kg	600x600 mm	50 mm	34,0 kg	si	no
	D400Q/600 _ 001	600x600 mm	770x770 mm	100 mm	21,5 kg	655x655 mm	50 mm	43,5 kg	si	4 screws
	D400QT/600 _ 001	600 mm	850x850 mm	100 mm	20,5 kg	690 mm	50 mm	36,0 kg	si	180°hinge + lock

# RECTANGULAR MANHOLE TOPS



## MEASURES AND WEIGHTS

MODEL	SPAN	FRAME				TOP			SEALING	FIXING
		L	H	KG		L	H	KG		
D400R _ 001	600x900	1070x760 mm	100 mm	27,2 kg		650x950 mm	65 mm	63,0 kg	si	4 screws

## STREETFURNITURE

Composite manhole TOPS can be made in different colors to fit perfectly in the surrounding environment.



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