



**HP ADHESIVES LIMITED**



**TECHNICAL  
MANUAL**

**STRONG DRAIN<sup>TM</sup>**

**Compounding Strength**

## ABOUT US



HP Group, is proud to be the largest manufacturer of Adhesives in Asia. With an annual turnover of over 25 Million USD in only Adhesives and a group turnover of more than 40 Million USD, the HP Group has come a long way for various business streams since its inception in 1978 by the Motwani family. Its interests range from Adhesives, Composite Products, Plumbing Accessories, Textiles, Logistics, Real Estate.

The Composite business is a major project undertaken by the group in 2012 with an investment of 4 million USD, where we have built a full line of SMC manhole cover's and we are the first company to produce this range of covers. We have developed a gigantic volume of SMC business while the industry is still dependent on the traditional Hand Lay-up Module. All the businesses combined, the group is a well-oiled machine with the right mix of talent, technology, capital, and resources, bringing in international expertise to make its product, process, and offering them at par with global standards.

Growth through diversification has been the cornerstone of the success of the HP Group and all its companies. A steady yearly increase in sales, profits, and satisfied customer base has ensured that we haven't looked back – going from strength to strength through our 35 years journey. In this time, the HP Group has achieved many successful milestones, the most recent being its recognition as “the leader of tomorrow” in the chemical space by ET Now – the leading business channel in India. This is attributed to the company's belief that these successes are only the beginning and many more goals await us. It is this fire that will drive the HP Group to the next level of success, along with a target to achieve the USD 100 Million Revenue mark by 2025.



## Approval & Certificates



**MCGM, INDIA**



**KDMC, INDIA**



**NMMC, INDIA**



**NAGPUR METRO, INDIA**



**MSME, INDIA**



**CIDCO, INDIA**



**SIDCGL, INDIA**



**GCC, INDIA**



**MOW, BAHRAIN**



**DEWA, DUBAI**



**AASHTO, U.S.A.**



**OBC, OMAN**

## New Technology

India's only company to have used SMC in manufacturing its manhole covers, HP ADHESIVES LIMITED capitalises on the SHEET MOULDING COMPOUND TECHNOLOGY combined with adequate equipment and a blend of international expertise surpasses the expectations of the global standards, leaving behind the rest of the units still depending on HAND LAY-UP MODULE PROCESSES.

The Sheet moulding compound corresponds to unique dual characteristics of being a process and a reinforced composite material. The resin and relative materials mixed on the site gives the manufacturer greater control over the chemistry and filler of the process. Dispersing the long strands of chopped fibre in a bath of thermoset resin results in better strengthening properties than in HAND LAY-UP MODULE COMPOUND.

**HP ADHESIVES LIMITED STRONGLY BELIEVES THAT INTRODUCING SMC IS A STEP TOWARDS A GIANT LEAP IN THE FUTURE BUSINESS SCENARIOS.**

## What is FRP ?

### FIBRE-REINFORCED POLYMER (FRP)

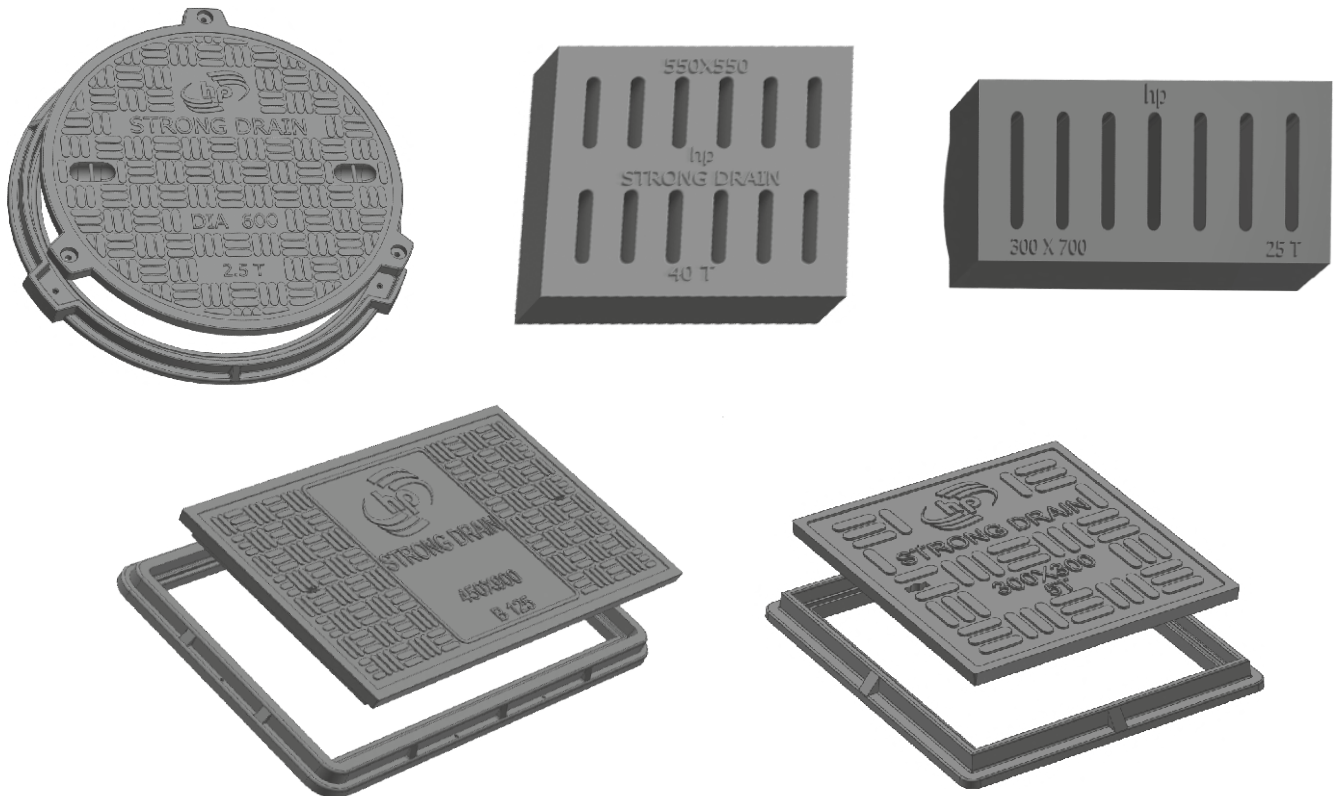
Is a composite material made of a polymer matrix reinforced with fibers? The fibers are usually glass fibers, the polymer is usually an epoxy, vinylester or polyester thermosetting plastic, and phenol formaldehyde resins are still in use. FRP's are commonly used in the aerospace, automotive, marine, construction industries and ballistic armor.

### COMPRESSION MOULDING

When the raw material containing reinforced fibers are compressed & molded at certain pressure & temperature the final outcome would be called an FRP molded product, which qualifies it as a fiber-reinforced polymer. More typically the polymer preform used in compression molding does contain reinforcing fibers. In compression molding, a "preform" or "charge", of SMC, BMC is placed into molding cavity, the mold is closed and the material is formed & cured inside by pressure and heat. Compression molding offers excellent detailing for geometric shapes ranging from pattern and relief detailing to complex curves and creative forms, to precision engineering all within a maximum curing time of 20 minutes.

### ADVANTAGES AND LIMITATIONS

FRP allows the alignment of the glass fibers to suit specific design programs. Specifying the orientation of reinforcing fibers can increase the strength and resistance to deformation of the polymer. Glass reinforced polymers are the strongest and most resistive to deforming forces when the polymers fibers are being exerted with a parallel force.



# Comparison

<b>STRONG DRAIN FRP MANHOLE COVERS</b>	<b>CI / DI MANHOLE COVERS</b>
Free from fear of theft as the material is non-reprocessible and has no resale value	Heavily prone to theft as the material is reprocessible & has high resale value
Easy to handle due to light weight	Difficult to handle due to very heavy weight
No risk of injury due to light weight	High risk of injury due to heavy weight
Does not rust due to chemical - sewage - rain water	Gets rusted with chemical - sewage - rain water
High service life ( min. 30 years ) as it does not corrode and has high impact resistance	Low service life as it corrodes with the service conditions & has low impact resistance
High on aesthetics due to varied colors available	Low on aesthetics
No additional cost to be incurred for the corrosion resistant plate which is required below the cover to protect the cover from corrosion	Additional cost to be incurred for the corrosion resistant plate which is required below the cover to protect the cover from corrosion
The covers are self-pigmented and do not require expensive epoxy painting for protection throughout its life	The covers regularly need expensive epoxy painting to be conducted for protection
The pigments are inbuilt in the material and UV stabilizing. Hence there is no peeling - fading of the colors due to sunlight	The proxy painting peels over a period as it is a secondary process
Locking arrangement if required is available to avoid displacement of covers due to back pressure in low lying areas	
Good resistance to extreme temperature (-100° C to +80° C)	

# Advantages

**HIGH LOAD RATING AND STRENGTH:** Similar hardness in property as cast iron, but major advantages on stretch recovery and bend resistance. Less noise and lower vibration transmissions. Designed to meet and exceed A 15/ B125/C250/ D400/ E600/ F900 loading rating, according to En 124: 1994.

**AGAINST THEFT AND SAFETY OPTIONS:** Comparing with cast iron manhole cover, composite cover has zero theft value and therefore not attractive to thieves, which reduce the potential accident and further maintenance cost caused by theft. Surface anti-slip thread guarantees safe road condition even in extreme weather. Locks are available as an option molded into the cover to improve security rate. Non-electricity conduction and non-heat conduction, UV resistance.

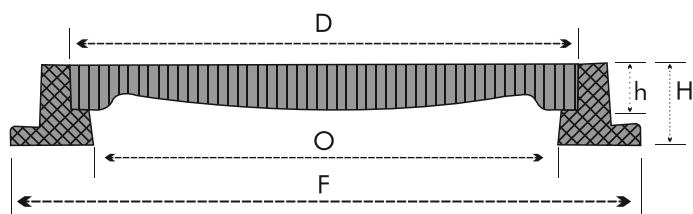
**EASE IN INSTALLATION:** Compared with cast iron manhole covers, composited covers are 30% lighter. Lighter weight allows ease of handling, more loading per vehicle and more convenient transportation. This allows for safe working conditions, where a SINGLE worker is enough for a complete installation without risk of injury. Easy handling and movement reduce maintenance cost.

**DURABLE SERVICE LIFE:** More than 30 years theoretical service life at usual road condition. Anti-corrosion, dust and waterproof, well sealed prevent poisonous gases from leaking out. Higher and lower temperature tolerance.

**FREE DESIGN:** Composite material itself allows for innovative design features. Client logo and their own design are available as an option. Much more clear resolution ratio design than cast iron or of other material.

**CARBON FOOTPRINT SAVING AND ENVIRONMENTAL CARE:** Lower embedded energy carbon emission during manufacturing process than cast iron covers. New material, manufacturing technology and lean production help reduce carbon footprint.

# Circular Manhole Cover



## Dia 530

Unit : mm

Tonnage	Class	Clear Opening O	Cover size D	Frame Size F	Frame Height H	Cover Thickness h	Weight in kg		Key Type	Seal Type
							Frame	Cover		
2.5	2.5T	Dia 530	Dia 574	Dia 652	38	23	6	11.5	Open	Plain
2.5	2.5T	Dia 530	Dia 580	Dia 660	43	30	8	16	Closed	Inverted
5	5T	Dia 530	Dia 580	Dia 660	43	30	8	16	Closed	Inverted
10	10T	Dia 530	Dia 592	Dia 685	52	30	10	20	Open	Plain
12.5	B125	Dia 530	Dia 592	Dia 685	52	30	10	20	Open	Plain
20	20T	Dia 530	Dia 614	Dia 732	73	40	17	27	Open	Plain
25	C250	Dia 530	Dia 614	Dia 732	73	40	17	28	Open	Plain
40	D400	Dia 530	Dia 628	Dia 754	80	45	21	32	Closed	Inverted

## Dia 600

Unit : mm

Tonnage	Class	Clear Opening O	Cover size D	Frame Size F	Frame Height H	Cover Thickness h	Weight in kg		Key Type	Seal Type
							Frame	Cover		
2.5	2.5T	Dia 600	Dia 648	Dia 730	43	30	9	18	Closed	Inverted
5	5T	Dia 600	Dia 648	Dia 730	43	30	9	18	Closed	Inverted
10	10T	Dia 600	Dia 662	Dia 755	52	30	11	24	Open	Plain
12.5	B125	Dia 600	Dia 662	Dia 755	52	30	11	24	Open	Plain
20	20T	Dia 600	Dia 690	Dia 816	80	45	21	38	Open	Plain
25	C250	Dia 600	Dia 690	Dia 816	80	45	21	38	Open	Plain
40	D400	Dia 600	Dia 690	Dia 816	80	45	21	42	Open/Closed	Plain/Double

## Dia 690

Unit : mm

Tonnage	Class	Clear Opening O	Cover size D	Frame Size F	Frame Height H	Cover Thickness h	Weight in kg		Key Type	Seal Type
							Frame	Cover		
2.5	2.5T	Dia 690	Dia 740	Dia 825	43	23	11	23	Closed	Inverted
5	5T	Dia 690	Dia 740	Dia 825	43	23	11	23	Closed	Inverted

# Circular Manhole Cover

## Dia 720

Unit : mm

Tonnage	Class	Clear Opening	O	Cover size	D	Frame Size	F	Frame Height	H	Cover Thickness	h	Weight in kg		Key Type	Seal Type
												Frame	Cover		
2.5	2.5T	Dia 720		Dia 772		Dia 850		43		25		10	30	Open	Plain
5	5T	Dia 720		Dia 772		Dia 850		43		25		10	30	Open	Plain

## Dia 900

Unit : mm

Tonnage	Class	Clear Opening	O	Cover size	D	Frame Size	F	Frame Height	H	Cover Thickness	h	Weight in kg		Key Type	Seal Type
												Frame	Cover		
10	10T	Dia 900		Dia 980		Dia 1083		69		38		20	68	Open	Plain
12.5	B125	Dia 900		Dia 980		Dia 1083		69		38		20	68	Open	Plain
20	20T	Dia 900		Dia 985		Dia 1113		76		45		30	87	Open	Plain
25	C250	Dia 900		Dia 985		Dia 1113		76		45		30	87	Open	Plain

# UG Tank Cover

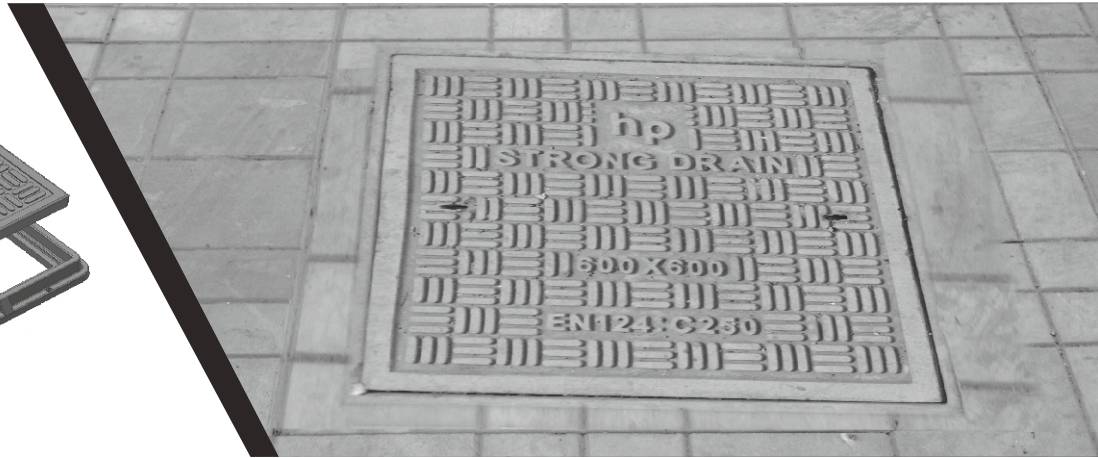
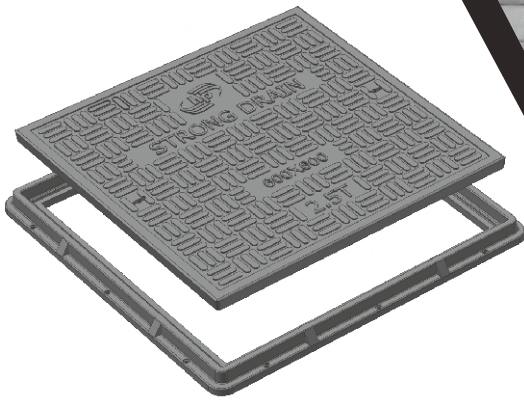


## Dia 600

Unit : mm

Tonnage	Class	Clear Opening	O	Cover size	D	Frame Size	F	Frame Height	H	Cover Thickness	h	Weight in kg		Key Type	Seal Type
												Frame	Cover		
2.5	2.5MT	Dia 600		Dia 660		Dia 805		48		25		11.5	24		
5	5MT	Dia 600		Dia 660		Dia 805		48		25		11.5	24		
10	10MT	Dia 600		Dia 685		Dia 836		60		35		15.5	28		
12.5	B125	Dia 600		Dia 685		Dia 836		60		35		15.5	28		
20	20T	Dia 600		Dia 690		855X855		80		45		35	38		
25	C250	Dia 600		Dia 690		855X855		80		45		35	38		
40	D400	Dia 600		Dia 690		855X855		80		45		35	38		

# Square Manhole Cover



## 300x300

Unit : mm

Tonnage	Class	Clear Opening	O	Cover size	D	Frame Size	F	Frame Height	H	Cover Thickness	h	Weight in kg		Key Type	Seal Type
												Frame	Cover		
2.5	2.5T	300X300		330X330		380X380		30		15		1.6	3.1	Open	Single
5	5T	300X300		340X340		410X410		35		20		4.2	5.8	Closed	Double
10	10T	300X300		352X352		440X440		45		25		6	8	Open	Plain
12.5	B125	300X300		352X352		440X440		45		25		6	8	Open	Plain
25	C250	300X300		363X363		455X455		63		35		8	11	Closed	Double
40	D400	300X300		363X363		455X455		63		35		8	11	Open	Plain

## 450x450

Unit : mm

Tonnage	Class	Clear Opening	O	Cover size	D	Frame Size	F	Frame Height	H	Cover Thickness	h	Weight in kg		Key Type	Seal Type
												Frame	Cover		
2.5	2.5T	450x450		480x480		570x570		40		25		4	9	Open	Single
5	5T	450x450		480x480		570x570		40		25		4	9	Open	Single
10	10T	450X450		513x513		606x606		52		30		12	22	Open	Plain
12.5	B125	450X450		513x513		606x606		52		30		12	22	Open	Plain
20	20T	450X450		535X535		665X665		78		45		20	28	Open	Plain
25	C250	450X450		535X535		665X665		78		45		20	28	Open	Plain
40	D400	450X450		535X535		665X665		78		45		20	33	Open	Plain

## 600x600

Unit : mm

Tonnage	Class	Clear Opening	O	Cover size	D	Frame Size	F	Frame Height	H	Cover Thickness	h	Weight in kg		Key Type	Seal Type
												Frame	Cover		
2.5	2.5T	600x600		642x642		720x720		40		25		9	18	Open	Single
5	5T	600x600		642x642		720x720		40		25		9	18	Open	Single
10	10T	600X600		663X663		756X756		52		30		14	36	Open	Plain
12.5	B125	600X600		663X663		756X756		52		30		14	36	Open	Plain
20	20T	600X600		688X688		816X816		80		45		26	49	Open/Closed	Plain/Double
25	C250	600X600		688X688		816X816		80		45		26	49	Open/Closed	Plain/Double
40	D400	600X600		688X688		816X816		80		45		26	49	Open/Closed	Plain/Double



# Square Manhole Cover

## 750x750

Unit : mm

Tonnage	Class	Clear Opening O	Cover size D	Frame Size F	Frame Height H	Cover Thickness h	Weight in kg		Key Type	Seal Type
							Frame	Cover		
2.5	2.5T	750X750	800X800	885X885	48	28	14	47	Open/Closed	Plain/Inverted
5	5T	750X750	800X800	885X885	48	28	14	47	Open/Closed	Plain/Inverted
10	10T	750X750	810X810	910X910	65	35	18	58	Open	Plain
12.5	B125	750X750	810X810	910X910	65	35	18	58	Open	Plain
20	20T	750X750	836X836	956X956	74	42	30	81	Open	Plain
25	C250	750X750	836X836	956X956	74	42	30	81	Open	Plain
40	D400	750X750	836X836	956X956	74	42	30	81	Open	Plain

## 900x900

Unit : mm

Tonnage	Class	Clear Opening O	Cover size D	Frame Size F	Frame Height H	Cover Thickness h	Weight in kg		Key Type	Seal Type
							Frame	Cover		
2.5	2.5T	900X900	953x953	1066x1066	68	40	27	53	Open	Plain
5	5T	900X900	953x953	1066x1066	68	40	27	53	Open	Plain
10	10T	900X900	960x(482x2)	1066x1066	68	40	27	45x2	Open	Plain
12.5	B125	900X900	960x(482x2)	1066x1066	68	40	27	45x2	Open	Plain
20	20T	900X900	986x(491x2)	1116x1116	80	45	40	64x2	Open	Plain
25	C250	900X900	986x(491x2)	1116x1116	80	45	40	64x2	Open	Plain
40	D400	900X900	986x(491x2)	1116x1116	80	45	40	64x2	Open	Plain

## 1000x1000

Unit : mm

Tonnage	Class	Clear Opening O	Cover size D	Frame Size F	Frame Height H	Cover Thickness h	Weight in kg		Key Type	Seal Type
							Frame	Cover		
2.5	2.5T	1000X1000	1060x1060	1180x1180	65	40	33	77	Open	Plain
5	5T	1000X1000	1060x1060	1180x1180	65	40	33	77	Open	Plain
10	10T	1000X1000	1078x(537x2)	1180x1180	65	40	33	60x2	Open	Plain
12.5	B125	1000X1000	1078x(537x2)	1180x1180	65	40	33	60x2	Open	Plain
20	20T	1000X1000	1089x(543x2)	1220x1220	80	45	46	85x2	Open	Plain
25	C250	1000X1000	1089x(543x2)	1220x1220	80	45	46	85x2	Open	Plain
40	D400	1000X1000	1089x(543x2)	1220x1220	80	45	46	90x2	Open	Plain

## 1200x1200

Unit : mm

Tonnage	Class	Clear Opening O	Cover size D	Frame Size F	Frame Height H	Cover Thickness h	Weight in kg		Key Type	Seal Type
							Frame	Cover		
2.5	2.5T	1200X1200	1287x(641x2)	1396x1396	69	42	46	87x2	Open	Plain
5	5T	1200X1200	1287x(641x2)	1396x1396	69	42	46	87x2	Open	Plain
10	10T	1200X1200	1287x(641x2)	1396x1396	69	42	46	87x2	Open	Plain
12.5	B125	1200X1200	1287x(641x2)	1396x1396	69	42	46	87x2	Open	Plain
20	20T	1200X1200	1308x(651x2)	1438x1438	85	50	65	127x2	Open	Plain
25	C250	1200X1200	1308x(651x2)	1438x1438	85	50	65	127x2	Open	Plain

# Rectangular Manhole Cover



## 450x600

Unit : mm

Tonnage	Class	Clear Opening	O	Cover size	D	Frame Size	F	Frame Height	H	Cover Thickness	h	Weight in kg		Key Type	Seal Type
												Frame	Cover		
2.5	2.5T	450X600		500X650		568X718		37		22		9	18	Closed	Double
5	5T	450X600		500X650		568X718		37		22		9	18	Closed	Double
12.5	B125	450X600		513X663		606X756		52		30		13	28	Open	Plain
25	C250	450X600		538X688		654X804		73		40		22	33	Open	Plain
40	D400	450X600		538X688		654X804		73		40		22	33	Open	Plain

## 450x900

Unit : mm

Tonnage	Class	Clear Opening	O	Cover size	D	Frame Size	F	Frame Height	H	Cover Thickness	h	Weight in kg		Key Type	Seal Type
												Frame	Cover		
2.5	2.5T	450X900		505X956		580X1030		43		25		11	32	Closed	Double
5	5T	450X900		505X956		580X1030		43		25		11	32	Closed	Double
12.5	B125	450X900		516X962		606X1056		52		30		16	43	Open	Plain
25	C250	450X900		532X982		646X1096		70		43		22	54	Open/Closed	Plain/Double
40	D400	450X900		536X986		668X1116		80		45		29	56	Open	Plain

## 600x900

Unit : mm

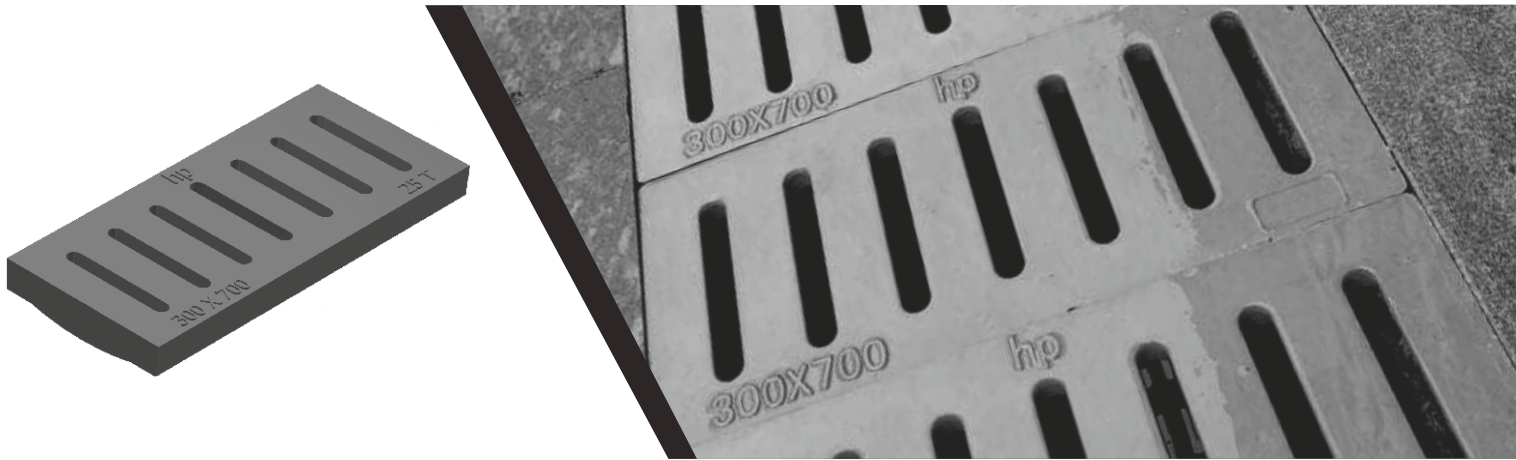
Tonnage	Class	Clear Opening	O	Cover size	D	Frame Size	F	Frame Height	H	Cover Thickness	h	Weight in kg		Key Type	Seal Type
												Frame	Cover		
2.5	2.5T	600X900		658X958		745X1045		56		30		15	42	Closed	Double
5	5T	600X900		658X958		745X1045		56		30		15	42	Closed	Double
12.5	B125	600X900		661X961		750X1050		62		40		18	50	Open	Plain
25	C250	600X900		682X982		798X1098		70		43		25	72	Open/Closed	Plain/Double
40	D400	600X900		686X986		816X1116		80		45		32	78	Open	Plain

## 900x1200

Unit : mm

Tonnage	Class	Clear Opening	O	Cover size	D	Frame Size	F	Frame Height	H	Cover Thickness	h	Weight in kg		Key Type	Seal Type
												Frame	Cover		
2.5	2.5T	900X1200		971x(635x2)		1070x1370		65		40		33	54x2	Open	Plain
5	5T	900X1200		971x(635x2)		1070x1370		65		40		33	54x2	Open	Plain
12.5	B125	900X1200		971x(635x2)		1070x1370		65		40		33	62x2	Open	Plain
25	C250	900X1200		1007x(652x2)		1148x1448		85		45		68	84x2	Open	Plain
40	D400	900X1200		1007x(652x2)		1148x1448		85		45		68	84x2	Open	Plain

# Water Gully Cover



## 450x450

Unit : mm

Tonnage	Class	Clear Opening	O	Cover size	D	Frame Size	F	Frame Height	H	Cover Thickness	h	Weight in kg	
												Frame	Cover
10	10T	450X450		517X517		608X608		60		38		12	20
12.5	B125	450X450		517X517		608X608		60		38		12	20
20	20T	450X450		535X535		665X665		78		45		20	26
25	C250	450X450		535X535		665X665		78		45		20	26
40	D400	450X450		535X535		665X665		78		45		20	28

## 500x600

Unit : mm

Tonnage	Class	Clear Opening	O	Cover size	D	Frame Size	F	Frame Height	H	Cover Thickness	h	Weight in kg	
												Frame	Cover
10	10T	500X600		586X686		715X815		80		45		26	30
12.5	B125	500X600		586X686		715X815		80		45		26	30
20	20T	500X600		586X686		715X815		80		45		26	38
25	C250	500X600		586X686		715X815		80		45		26	38

## 600x600

Unit : mm

Tonnage	Class	Clear Opening	O	Cover size	D	Frame Size	F	Frame Height	H	Cover Thickness	h	Weight in kg	
												Frame	Cover
2.5	2.5T	600X600		663X663		756X756		52		30		14	23
5	5T	600X600		663X663		756X756		52		30		14	23
10	10T	600X600		667x667		758x758		57		35		14	33
12.5	B125	600X600		667x667		758x758		57		35		14	33
20	20T	600X600		687X687		816X816		80		45		26	47
25	C250	600X600		687X687		816X816		80		45		26	47
40	D400	600X600		687X687		816X816		80		45		26	47

# Water Gully Cover

## 600x900

Unit : mm

Tonnage	Class	Clear Opening	Cover size	Frame Size	Frame Height	Cover Thickness	Weight in kg	
							Frame	Cover
2.5	2.5T	600X900	661X961	750X1050	62	40	18	45
5	5T	600X900	661X961	750X1050	62	40	18	45
10	10T	600X900	661X961	750X1050	62	40	18	52
12.5	B125	600X900	661X961	750X1050	62	40	18	52
20	20T	600X900	686X986	816X1116	80	45	32	71
25	C250	600X900	686X986	816X1116	80	45	32	71
40	D400	600X900	686X986	816X1116	80	45	32	71

## 900x900

Unit : mm

Tonnage	Class	Clear Opening	Cover size	Frame Size	Frame Height	Cover Thickness	Weight in kg	
							Frame	Cover
2.5	2.5T	900X900	960X(482x2)	750X1050	62	40	18	45
5	5T	900X900	960X(482x2)	750X1050	62	40	18	45
10	10T	900X900	960X(482x2)	750X1050	62	40	18	52
12.5	B125	900X900	960X(482x2)	750X1050	62	40	18	52
20	20T	900X900	960X(481x2)	816X1116	80	45	32	71
25	C250	900X900	960X(481x2)	816X1116	80	45	32	71
40	D400	900X900	960X(481x2)	816X1116	80	45	32	71

## 750x750

Unit : mm

Tonnage	Class	Clear Opening	Cover size	Frame Size	Frame Height	Cover Thickness	Weight in kg	
							Frame	Cover
20	20T	750X750	836X836	956X956	74	42	30	76
25	C250	750X750	836X836	956X956	74	42	30	76

## 240x640

Unit : mm

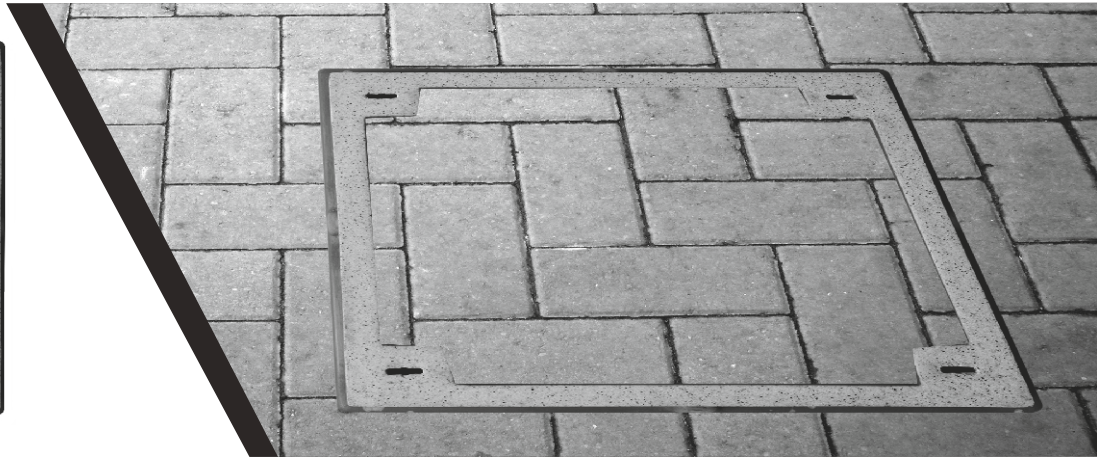
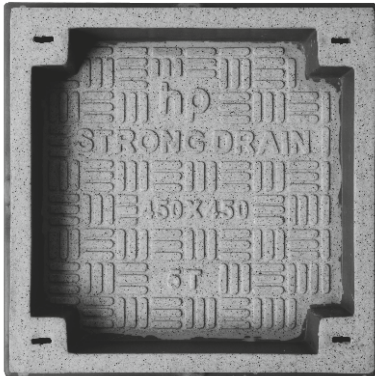
Tonnage	Class	Clear Opening	Cover size	Frame Size	Frame Height	Cover Thickness	Weight in kg	
							Frame	Cover
2.5	2.5T	240X640	300X700	400X800	64	40	15	11
5	5T	240X640	300X700	400X800	64	40	15	11
12.5	B125	240X640	300X700	400X800	64	40	15	15
20	20T	240X640	300X700	400X800	70	40	17	15
25	C250	240X640	300X700	400X800	70	40	17	15
40	D400	240X640	300X700	400X800	70	45	17	20

## 300x620

Unit : mm

Tonnage	Class	Clear Opening	Cover size	Frame Size	Frame Height	Cover Thickness	Weight in kg	
							Frame	Cover
2.5	2.5T	300 X 620	380X700	460 X 860	65	35	18	16
5	5T	300 X 620	380X700	460 X 860	65	35	18	16
20	20T	300 X 620	380X700	460 X 860	70	45	20	21
40	D400	300 X 620	380X700	460 X 860	70	45	20	25

# Recessed Cover



## 300x300

Unit : mm

Tonnage	Class	Clear Opening O	Cover size D	Frame Size F	Frame Height H	Cover Thickness h	Weight in kg		Key Type	Seal Type	Recessed Depth
							Frame	Cover			
2.5	2.5T	300x300	393x393	450x450	92	90	10	12	Closed	Double	80
5	5T	300x300	393x393	450x450	92	90	10	12	Closed	Double	80
12.5	B125	300x300	393x393	450x450	92	90	10	12	Closed	Double	80
25	C250	300x300	393x393	450x450	92	90	10	15	Closed	Double	70

## 450x450

Unit : mm

Tonnage	Class	Clear Opening O	Cover size D	Frame Size F	Frame Height H	Cover Thickness h	Weight in kg		Key Type	Seal Type	Recessed Depth
							Frame	Cover			
2.5	2.5T	450x450	557x557	612x612	105	100	16	25	Closed	Double	80
5	5T	450x450	557x557	612x612	105	100	16	25	Closed	Double	80
12.5	B125	450x450	557x557	612x612	105	100	16	25	Closed	Double	80
25	C250	450x450	580x580	662x662	135	125	20	39	Closed	Double	80
40	D400	450x450	580x580	662x662	135	125	20	39	Closed	Double	80

## 600x600

Unit : mm

Tonnage	Class	Clear Opening O	Cover size D	Frame Size F	Frame Height H	Cover Thickness h	Weight in kg		Key Type	Seal Type	Recessed Depth
							Frame	Cover			
2.5	2.5T	600x600	708x708	768x768	105	85	20	32	Closed	Double	80
5	5T	600x600	708x708	768x768	105	85	20	32	Closed	Double	80
12.5	B125	600x600	708x708	768x768	105	85	20	37	Closed	Double	80
25	C250	600x600	738x738	812x812	137	125	37	59	Closed	Double	80
40	D400	600x600	738x738	812x812	137	125	37	67	Closed	Double	80

## 450x900

Unit : mm

Tonnage	Class	Clear Opening O	Cover size D	Frame Size F	Frame Height H	Cover Thickness h	Weight in kg		Key Type	Seal Type	Recessed Depth
							Frame	Cover			
2.5	2.5T	450x900	574x1024	646x1096	120	110	31	56	Closed	Double	80
12.5	B125	450x900	574x1024	646x1096	120	110	31	56	Closed	Double	80
25	C250	450x900	574x1024	646x1096	120	110	31	75	Closed	Double	60

# Recessed Cover

## 600x900

Unit : mm

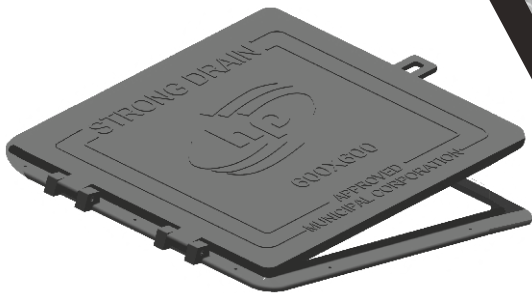
Tonnage	Class	Clear Opening O	Cover size D	Frame Size F	Frame Height H	Cover Thickness h	Weight in kg		Key Type	Seal Type	Recessed Depth
							Frame	Cover			
2.5	2.5T	600x900	708x1008	766x1066	105	100	31	56	Closed	Double	80
5	5T	600x900	708x1008	766x1066	105	100	31	56	Closed	Double	80
12.5	B125	600x900	708x1008	766x1066	105	100	31	56	Closed	Double	80
25	C250	600x900	737x1037	812x1112	137	125	44	100	Closed	Double	80
40	D400	600x900	737x1037	812x1112	137	125	44	100	Closed	Double	80

## 1000x1000

Unit : mm

Tonnage	Class	Clear Opening O	Cover size D	Frame Size F	Frame Height H	Cover Thickness h	Weight in kg		Key Type	Seal Type	Recessed Depth
							Frame	Cover			
20	20T	1000x1000	1134x1134	1212x1212	137	125	61	103x2	Closed	Plain	80
25	C250	1000x1000	1134x1134	1212x1212	137	125	61	103x2	Closed	Plain	80
40	D400	1000x1000	1134x1134	1212x1212	137	125	61	103x2	Closed	Plain	80

# OH Tank Cover



## 600x600

Unit : mm

Tonnage	Clear Opening O	Cover size D	Frame Size F	Frame Height H	Cover Thickness h	Weight in kg	
						Frame	Cover
0.5 MT	600X600	640X640	682X780	35	28	3.5	8

## Dia 600

Unit : mm

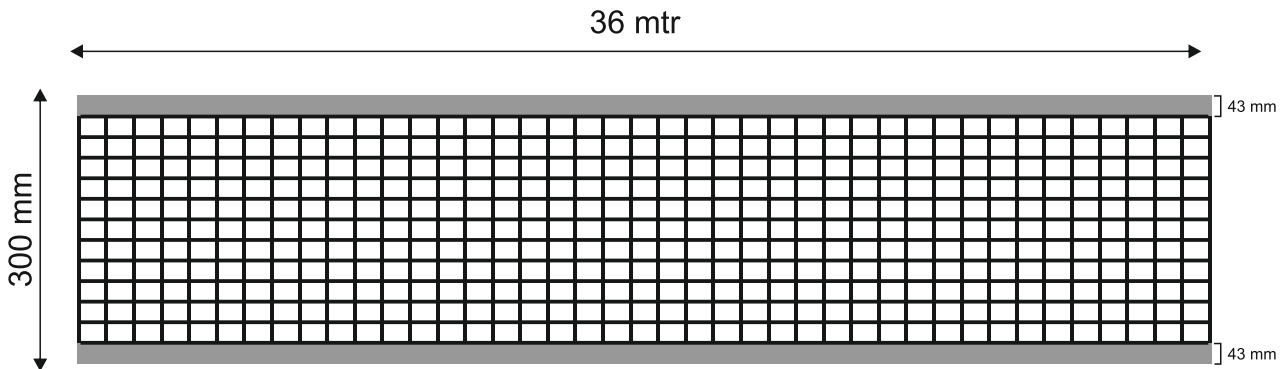
Tonnage	Clear Opening O	Cover size D	Frame Size F	Frame Height H	Cover Thickness h	Weight in kg	
						Frame	Cover
0.5 MT	Dia 600	Dia 645	Dia 765	30	25	3	4

## Dia 450

Unit : mm

Tonnage	Clear Opening O	Cover size D	Frame Size F	Frame Height H	Cover Thickness h	Weight in kg	
						Frame	Cover
0.5 MT	Dia 450	Dia 495	Dia 520	30	25	2	3

# Frp Molded Gratings



## Grating Calculation

★ WIDTH & LENGTH OF GRATING

7	272	7	272	39	1490	71	2709
8	310	8	310	40	1528	72	2747
9	347	9	348	41	1566	73	2784
10	386 ★	10	386	42	1604	74	2823
11	424	11	424	43	1642	75	2860
12	462	12	462	44	1680	76	2898
13	500	13	500	45	1718	77	2936
14	538	14	538	46	1756	78	2974
15	576	15	576	47	1795	79	3012
16	614	16	615	48	1833	80	3050
17	652	17	653	49	1870	81	3088
18	690	18	690	50	1909	82	3127
19	728	19	729	51	1947	83	3165
20	767	20	767	52	1984	84	3202
21	804	21	805	53	2023	85	3240
22	842	22	843	54	2061	86	3279
23	880	23	881	55	2099	87	3316
24	918	24	919	56	2137	88	3355
25	956	25	957	57	2175	89	3398
26	994	26	995	58	2213	90	3430
27	1032	27	1033	59	2251	91	3469
28	1070	28	1071	60	2289	92	3507
29	1108	29	1109	61	2328	93	3545
30	1146	30	1147	62	2365	94	3583
31	1184	31	1185	63	2404	95	3622
32	1221	32	1223 ★	64	2442	96	3660

Grating Size: Opening + Resting Area  
 $300\text{mm} + 43\text{mm} + 43\text{mm}$  (Both Side)  
 = 386 mm

Required: Length / Maximum Width  
 $36000\text{ mm} / 1200\text{ mm}$  (Meter to MM)  
 = 30 pcs

# Frp Molded Gratings

Grating sizes: Height - 30mm

Standard Length Will Be 1221mm

Width	
Holes	Width
1	43
2	82
3	120
4	157
5	196
6	233
7	272
8	310
9	347
10	386
11	424
12	462
13	500
14	538
15	576
16	614
17	652
18	690
19	728
20	767
21	804
22	842
23	880
24	918
25	956
26	994
27	1032
28	1070
29	1108
30	1146
31	1184
32	1221

Length					
Holes	Length	Holes	Length	Holes	Length
1	44	33	1261	65	2480
2	82	34	1299	66	2518
3	120	35	1337	67	2557
4	158	36	1376	68	2594
5	196	37	1414	69	2632
6	234	38	1452	70	2670
7	272	39	1490	71	2709
8	310	40	1528	72	2747
9	348	41	1566	73	2784
10	386	42	1604	74	2823
11	424	43	1642	75	2860
12	462	44	1680	76	2898
13	500	45	1718	77	2936
14	538	46	1756	78	2974
15	576	47	1795	79	3012
16	615	48	1833	80	3050
17	653	49	1870	81	3088
18	690	50	1909	82	3127
19	729	51	1947	83	3165
20	767	52	1984	84	3202
21	805	53	2023	85	3240
22	843	54	2061	86	3279
23	881	55	2099	87	3316
24	919	56	2137	88	3355
25	957	57	2175	89	3398
26	995	58	2213	90	3430
27	1033	59	2251	91	3469
28	1071	60	2289	92	3507
29	1109	61	2328	93	3545
30	1147	62	2365	94	3583
31	1185	63	2404	95	3622
32	1223	64	2442	96	3660

Largest available grating size is 1221mm x 3660mm





# Frp Molded Gratings

Grating sizes: Height - 40mm

Standard Length Will Be 1206mm

Width	
Holes	Width
1	46
2	86
3	126
4	166
5	206
6	246
7	286
8	326
9	366
10	406
11	446
12	486
13	526
14	566
15	606
16	646
17	686
18	726
19	766
20	806
21	846
22	886
23	927
24	966
25	1006
26	1046
27	1086
28	1126
29	1166
30	1206

Length					
Holes	Length	Holes	Length	Holes	Length
1	46	33	1326	65	2606
2	86	34	1366	66	2646
3	126	35	1406	67	2686
4	166	36	1446	68	2726
5	206	37	1486	69	2766
6	246	38	1526	70	2806
7	286	39	1566	71	2846
8	326	40	1606	72	2886
9	366	41	1646	73	2926
10	406	42	1686	74	2966
11	446	43	1726	75	3006
12	486	44	1766	76	3046
13	526	45	1806	77	3086
14	566	46	1846	78	3126
15	606	47	1886	79	3166
16	646	48	1926	80	3206
17	686	49	1966	81	3246
18	726	50	2006	82	3286
19	766	51	2046	83	3326
20	806	52	2086	84	3366
21	846	53	2126	85	3406
22	886	54	2166	86	3446
23	927	55	2206	87	3486
24	966	56	2246	88	3526
25	1006	57	2286	89	3566
26	1046	58	2326	90	3606
27	1086	59	2366	91	3646
28	1126	60	2406		
29	1166	61	2446		
30	1206	62	2486		
31	1246	63	2526		
32	1286	64	2566		

Largest available grating size is 1206mm x 3646mm



# Testing

## GC TESTING

Gas chromatography (GC) is a common type of chromatography used in analytical chemistry for separating and analyzing compounds that can be vaporized without decomposition. Typical uses of GC include testing the purity of a particular substance or separating the different components of a mixture (the relative amounts of such components can also be determined). HP runs all resin and release agents through GC to analyse priority and is the only player in the industry to carry out this practice. This helps us to control the quality of raw material that is used in our final product.

## TENSILE TESTING

Tensile testing, also known as tension testing, is a fundamental materials science and engineering test in which a sample is subjected to a controlled tension until failure. Properties that are directly measured via a tensile test are ultimate tensile strength, breaking strength, maximum elongation and reduction in area. Here as well, we use it to test the strength of all our fiber mat raw material and HP is the only one in this industry to follow this practices.



## LOAD TESTING POST PRODUCTION

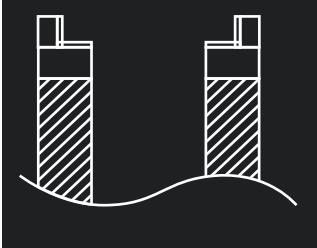
STRONG DRAIN FRP/GRP/COMPOSITE Manhole covers are tested for load bearing and permanent set as per BSEN 124:19991 and Is1726. BESEN 124 is a testing code worldwide for Manhole Covers in cast iron, ductile iron, and other materials also. Permanent set is multiple loading tests to determine the permanent deformation in cover after multiple loading within a short time as specified in the code.



# Installation

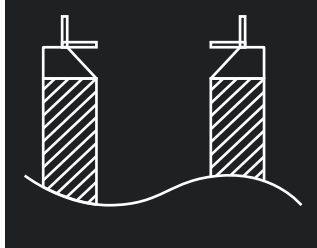
## INSTALLATION

### Do's



Correct installation of frame with complete civil support

### Don't



Incorrect installation of frame without any civil support below

## HANDLING

### Do's



Handle with care

### Don't

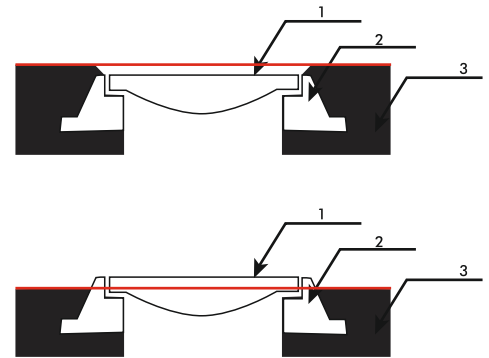
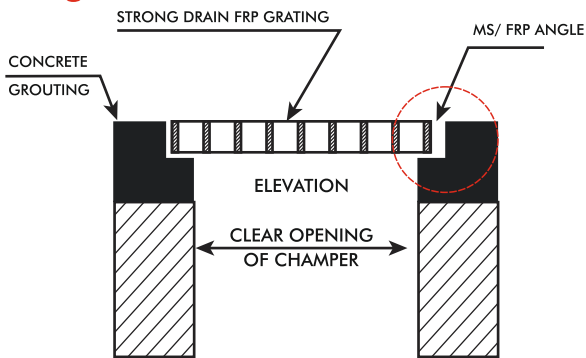


Do not throw the material

## WRONG INSTALLATION OF FRP MANHOLE COVERS & GRATINGS



**Wrong**

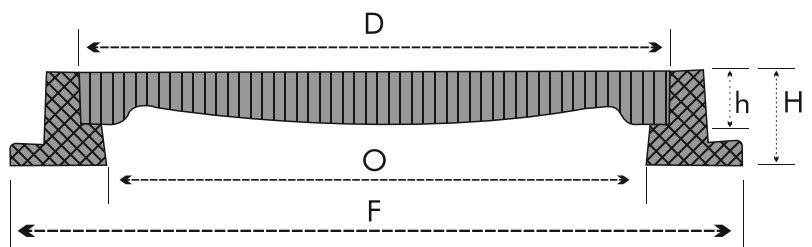
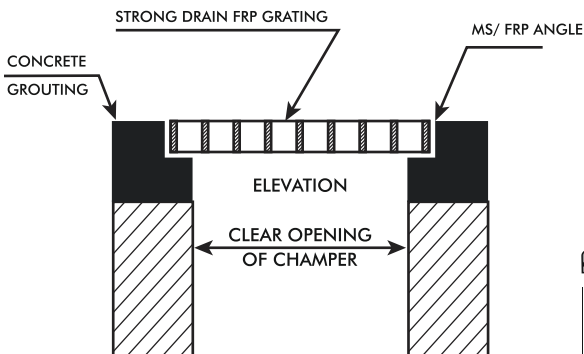


**1. Manhole Cover / Grating 2. Frame 3. Concrete - Road Level**

## STANDARD & CORRECT METHOD OF INSTALLATION OF FRP MANHOLE COVERS & GRATINGS



**Correct**



**STRONG DRAIN**<sup>TM</sup>



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