

# MELTER

Rameshwar Metacast Pvt. Ltd.



ROAD



FOOTPATH



PARKING



INDUSTRIES

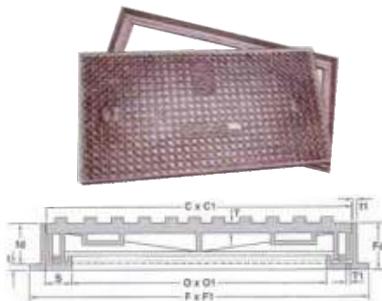


GARDEN

## CAST IRON & DUCTILE IRON **MANHOLE COVERS**



# CAST IRON CASTING



RECTANGULAR COVER WITH FRAME

SIZE (MM)	Frame Dimensions						Thickness of Frame	Cover Dimensions			
	CLEAR OPENING		FRAME OUTER		Depth			Cover Outer	Thikness of Cover		
O	O1	F	F1	Fd	Fd	t	t1	C	C1	t	t1
450x600(LD)	450	600	650	800	45	35	10	540	690	10	5
450x600(MD)	450	600	650	800	90	80	15	540	600	20	12
150x900(HD)	450	900	670	1220	115	100	15	560	1010	30	15
600x900(EHD)	600	900	650	1150	135	120	15	740	1040	30	15

CIRCULAR COVER WITH SQUARE FRAME

SIZE (MM)	Frame Dimensions						Thickness of Frame	Cover Dimensions			
	CLEAR OPENING		FRAME OUTER		Depth			Cover Outer	Thikness of Cover		
O	O1	F	F1	Fd	Fd	t	t1	C	C1	t	t1
350 Dia (LD)	350	-	530	530	55	45	10	420	-	10	5
370 Dia (LD)	370	-	550	550	55	45	10	540	-	10	5
450 Dia (MD)	450	-	620	620	70	60	10	520	-	10	5
480 Dia (MD)	480	-	650	660	80	70	10	550	-	10	5
500 Dia (MD)	500	-	750	750	90	80	15	590	-	20	12
500 Dia (MD)	500	-	750	750	115	100	15	588	-	25	15
560 Dia (HD)	660	-	820	820	125	110	16	668	-	25	15
600 Dia (HD)	600	-	900	900	125	110	16	735	-	30	15
560 Dia (EHD)	660	-	830	830	145	130	16	668	-	30	15
600 DIA (EHD)	600	-	900	900	155	140	16	735	-	30	15

SQUARE COVER WITH FRAME

SIZE (MM)	Frame Dimensions						Thickness of Frame	Cover Dimensions			
	CLEAR OPENING		FRAME OUTER		Depth			Cover Outer	Thikness of Cover		
O	O1	F	F1	Fd	Fd	t	t1	C	C1	t	t1
400x400(LD)	400	400	600	600	40	30	10	490	490	10	5
450x450(MD)	450	450	650	650	40	30	10	540	540	10	5
560x560(HD)	560	560	800	800	125	110	15	648	648	25	15
560x560(EHD)	560	560	830	830	145	130	15	668	668	30	15



NOTE : # This Marked Items are Without Hinge

All dimensions are mm.

Max Load: \*Grade A-15 = 1.5 MT. (LD) | \* Grade B-125 = 12.5 MT. (MD)

Pictures and drawings shown are just an indication.

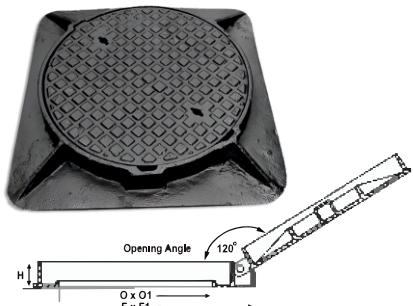
Grade C-250 = 25.0 MT. (HD) | \*Grade D-400 = 40.0 MT. (EHD)

Tolerance on weight: -5%

\*Grade E-600 = 60 MT. (EHD) | \*Grade F-900 = 90.0 MT. (EHD)



# DUCTILE IRON MANHOLE COVERS, FRAMES & GRATINGS

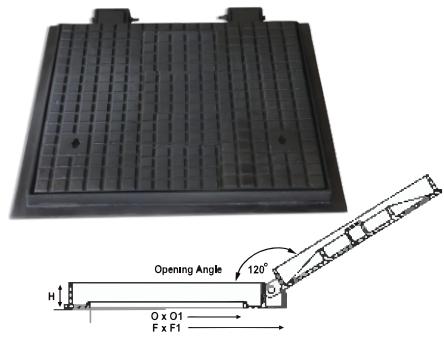


A15 Solid Top		A15	5 Tonnes
B15 Solid Top		B15	12.5 Tonnes
C250 Solid Top		C250	25 Tonnes
D400 Double Tringular		D400	40 Tonnes
D400 Solid Top		B125	40 Tonnes
E600		B125	65 Tonnes
F900		B125	85 Tonnes

## CIRCULAR COVER AND SQUARE FRAME

ITEM CODE	SIZE (MM)	GRADE	Frame Dimensions		
			CLEAR OPENING	FRAME OUTER	HEIGHT (MM)
MC1	350 Dia	A-15 (LD)	350 Dia	470x470	40
MC2	450 Dia	C-250(HD)	450 Dia	600x600	100
MC3	500 Dia	A-15 (LD)	500 Dia	625x625	40
MC4	500 Dia	B-125(MD)	500 Dia	650x650	75
MC5	500 Dia	C-250(HD)	500 Dia	650x650	100
MC6	525 Dia	A-15 (LD)	525 Dia	650x650	40
MC7	525 Dia	B-125(MD)	525 Dia	665x665	75
MC8	525 Dia	C-250(HD)	525 Dia	685x685	100
MC9	560 Dia	A-15 (LD)	560 Dia	690x690	40
MC26	560 Dia	B-125(MD)	560 Dia	710x710	75
MC27	560 Dia	C-250(HD)	560 Dia	710x710	75
MC28	560 Dia	D-400(EHD)	560 Dia	750x750	100
MC12	600 Dia	A-15 (LD)	600 Dia	730x730	40
MC24	600 Dia	B-125(MD)	600 Dia	750x750	75
MC25	600 Dia	C-250(HD)	600 Dia	750x750	75
MC15	600 Dia	C-250D/S(HD)	600 Dia	770x770	75
MC17	600 Dia	D-400(EHD)	600 Dia	765x765	100

## RECTANGULAR COVER AND RECTANGULAR FRAME



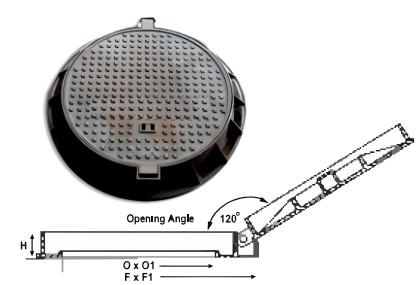
ITEM CODE	SIZE (MM)	GRADE	Frame Dimensions		
			CLEAR OPENING	FRAME OUTER	HEIGHT (MM)
MR1	450x600	A-15 (LD)	450x600	580x730	40
MR2	450x600	B-125(MD)	450x600	675x825	75
MR3	450x600	C-250(HD)	450x600	620x765	80
MR4	450x900	A-15 (LD)	450x900	585x1030	40
MR18	450x900	B-125(MD)	450x900	580x1030	75
MR14	450x900	C-250(HD)	450x900	580x1030	75
MR7	600x900	A-15 (LD)	600x900	745x1040	40
MR19	600x900	B-125 (MD)	600x900	740x1040	75
MR17	600x900	C-250 (HD)	600x900	740x1040	75
MR10	450x900	D-400 (EHD)	450x900	615x1060	100
MR11	600x900	D-400 (EHD)	600x900	775x1070	100
MR12	900x1200	D-400 (EHD)	900x1200	1100x1400	100

## TANK COVER AND FRAME

ITEM CODE	SIZE (MM)	GRADE	Frame Dimensions		
			CLEAR OPENING	FRAME OUTER	HEIGHT (MM)
TC1	600 DIA TC	A-15 (HD)	600 DIA TC	755x755	30
TC2	600 DIA TC	B-125(MD)	600 DIA TC	776x776	50
TC8	600 DIA TC	D-400(EHD)	600 DIA TC	780 DIA	100
TC10	600 DIA TC	IC	600 DIA TC	670 DIA	30

## CIRCULAR COVER AND CIRCULAR FRAME

ITEM CODE	SIZE (MM)	GRADE	Frame Dimensions		
			CLEAR OPENING	FRAME OUTER	HEIGHT (MM)
MC 19	560 DIA	C-250(HD)	560 DIA	710 DIA	75
MC 23	560 DIA	D-400(EHD)	560 DIA	700 DIA	75



NOTE : # This Marked Items are Without Hinge

All dimensions are mm.

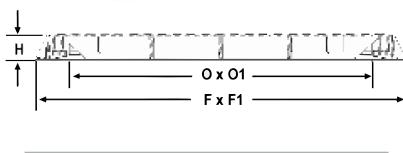
Pictures and drawings shown are just an indication.

Tolerance on weight: -5%

Max Load: \*Grade A-15 = 1.5 MT. (LD) | \* Grade B-125 = 12.5 MT. (MD)

Grade C-250 = 25.0 MT. (HD) | \*Grade D-400 = 40.0 MT. (EHD)

\*Grade E-600 = 60 MT. (EHD) | \*Grade F-900 = 90.0 MT. (EHD)



## DOUBLE SEAL COVER AND FRAME

ITEM CODE	SIZE (MM)	GRADE	Frame Dimensions		
			CLEAR OPENING	FRAME OUTER	HEIGHT (MM)
MR20	450x900 D/s	B-125 (MD)	450x900	650x1100	75
MR21	450x900 D/s	C-250 (HD)	450x900	650x1100	75
MR22	600x900 D/s	B-125 (MD)	600x900	800x1100	75
MR23	600x900 D/s	C-250 (HD)	600x900	800x1100	75
MS33	600x600 D/s	B-125 (MD)	600x600	775x775	75
MS34	600x600 D/s	C-250 (HD)	600x600	775x775	75
MS35	750x750 D/s	B-125 (MD)	750x750	980x980	75
MS36	750x750 D/s	C-250 (HD)	750x750	980x980	75



## SQUARE COVER AND SQUARE FRAME

ITEM CODE	SIZE (MM)	GRADE	Frame Dimensions		
			CLEAR OPENING	FRAME OUTER	HEIGHT (MM)
MS1	300x300	A-15 (LD)	300x300	385x385	30
MS2	300x300	C-250 (HD)	300x300	445x445	75
MS3	450x450	A-15 (LD)	450x450	560x560	40
MS4	450x450	B-125 (MD)	450x450	590x590	75
MS5	560x560	C-250D/S (HD)	560x560	740x740	75
MS6	600x600	A-15 (LD)	600x600	730x730	40
MS23	600x600	B-125 (MD)	600x600	725x725	75
MS24	600x600	C-250 (HD)	600x600	725x725	75
MS9	750x750	C-250 (HD)	750x750	895x895	75
MS30	800x800	A-15 (LD)	800x800	920x920	50
MS10	800x800	B-125 (MD)	800x800	950x950	75
MS11	800x800	C-250 (HD)	800x800	970x970	100
MS26	900x900	A-15 (LD)	900x900	1020x1020	50
MS27	900x900	B-125 (MD)	900x900	1050x1050	75
MS28	900x900	C-250 (HD)	900x900	1050x1050	75
MS29	900x900	D-400 (EHD)	900x900	1065x1065	100
MS14	900x900 (4500)	C-250 (HD)	900x900	1060x1060	100
MS15	300x300	D-400 (EHD)	300x300	460x460	100
MS17	600x600	D-400 (EHD)	600x600	775x775	100
MS20	300x300	B-125 (MD)	300x300	445x445	75
MS21	450x450	C-250 (HD)	450x450	590x590	75
MS22	750x750	B-125 (MD)	750x750	895x895	75
#MS31	600x600	E-600 (EHD)	600x600	800x800	105
#MS32	600x600	F-900 (EHD)	600x600	800x800	105

## GRATING AND FRAME

ITEM CODE	SIZE (MM)	GRADE	Frame Dimensions		
			CLEAR OPENING	FRAME OUTER	HEIGHT (MM)
GF1	450x450	A-15 (LD)	450x450	555x555	50
GF26	450x450	C-250 (HD)	450x450	630x630	90
GF3	450x500	C-250 (HD)	450x500	550x600	100
GF4	450x600	A-15 (LD)	450x600	560x705	50
GF5	500x600	C-250 (HD)	500x600	685x780	90
GF24	600x600	B-125 (MD)	600x600	700x725	75
GF25	600x600	C-250 (HD)	600x600	700x725	75
GF26	600x600	D-400 (EHD)	600x600	690x690	100
GF10	750x750	C-250 (HD)	750x750	850x850	100
GF11	800x800	B-125 (MD)	800x800	900x900	75
GF12	800x800	C-250 (HD)	800x800	900x900	75
GF13	300x300	A-15 (LD)	300x300	350x350	40
GF19	300x300	C-250 (HD)	300x300	350x350	75
GF14	550x550	C-250 (HD)	550x550	650x650	75
GF22	600x900	A-15 (LD)	600x900	675x975	60
GF27	600x900	B-125 (MD)	600x900	675x975	60
GF15	600x900	C-250 (HD)	600x900	750x1050	100
GF23	600x900	D-400 (EHD)	600x900	750x1050	100
GF16	900x900	C-250 (HD)	900x900	1050x1050	100

## TREE GRATING AND FRAME

ITEM CODE	SIZE (MM)	GRADE	Frame Dimensions		
			CLEAR OPENING	FRAME OUTER	HEIGHT (MM)
TR1	1200x1200	1200x1200	45DIA	1240x1240	30

NOTE : # This Marked Items are Without Hinge

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Tolerance on weight: -5%

All dimensions are mm.

Max Load: \*Grade A-15 = 1.5 MT. (LD) | \* Grade B-125 = 12.5 MT. (MD)

Grade C-250 = 25.0 MT. (HD) | \*Grade D-400 = 40.0 MT. (EHD) | \*Grade E-600 = 60 MT. (EHD) | \*Grade F-900 = 90.0 MT. (EHD)



## LOCATION AND LOAD CLASS....

The procedure for installing manhole covers and grating depends on the installation location, the corresponding Traffic loads and the planned surface layer. Installation locations are assigned to classes A15 through F900 as per EN 124. The standard Manhole structure must be suitable for the Traffic load. The planner/Engineer is responsible for choosing the correct load class.

## INSTALLATION

- The frame must always be in full contact with the mortar bed and capable of bearing. If the substructure is not executed correctly, subsequent traffic load will cause loosening, premature wear, rattling, or even destruction of the cover
- Prepare the mortar bed install the frame with full contact and align at the correct height.
- When installing thin-walled frames which are not torsion-free make sure the cover is already fitted.
- In case of subsequent height adjustments always execute a new mortar bed throughout.

## PREPARATION BEFORE INSTALLATION

- All Manhole Cover or Grating should be checked for correctness in size with chamber or Gully
- All Manhole Cover or Grating is of appropriate class for its location.
- All Manhole Cover or Grating must be checked to ensure perfect working order. Never Install damaged parts!
- The civil engineering contractor is responsible for the correct installation of manhole covers or Grating observe all technical regulations.
- Before installation clean and wet the underside of the frame.
- Use suitable lifting gear for loading and for transporting Manhole Cover or Grating on site. Use appropriate tools for lifting out and/or inserting covers to avoid damage . Before inserting the cover always clean the bearing surfaces and check the setting area for cleanliness and correct seating and ensure that the closing device is in perfect working order and serviceable.
- The planner/ Engineer is responsible for choosing a suitable installation method, mortar quality and the manhole cover or Grating position with respect to driving direction

## DIFFERENCE BETWEEN CAST IRON CASTING AND DUCTILE IRON CASTING

NO	Points	Ductile Iron (DI )	Cast Iron (Ci)
1	Definition	A specially prepared Iron treated in the molten condition with a small percentage of Magnesium,Cerium & Other agents that will cause a large proportion of its Carbon to occur as Spheroidal type of Graphite form	An Iron having a chemical composition such that after solidification a large portion of its Carbon is distributed through the casting as Free or Graphic Carbon in Flake form.
	A) Other popular Name B) Microstructure	Spheroidal Graphite (SG) or Nodular Iron, Spheroid	Grey Cast Iron (FG).Flake
2	FRACTURED SURFACE	Ductile Iron' presents a bright steely surface when fractured.	Cast Iron' always present a gray sooty surface when fractured.
3	CHEMICAL COMPOSITION Elements:Carbon (C) Silicon (S) Manganese (Mn) Sulphur Phosphorous (P) Magnesium (Mg)	Percentage: 3.5-4.0 24-2.8 0.3-0.5 0.02 Max 0.05-0.07 0.03-0.045	Percentage: 2.5-4.0 1.0-3.0 0.4-1.0 0.05-0.25 0.05-1.0 -
4	SPECIFICATIONS 1) Product 2) Raw Material	EN-124 IS-1865/1991	IS-1726/1991 IS-210/1993
5	MATERIAL GRADE	SG-500/7	FG-150
6	TENSILE STRENGTH	500 N/mm <sup>2</sup>	FG-150
7	HARDNESS	160-240 HBS	130-180 HBS
8	ELONGATION (%)	7% min. due to elongation, material is ductile, hence does not give sudden fractum	No elongation, hence material is brittle. can give sudden fracture
9	IMPACT RESISTANCE	High' sudden impact resistance.	Low' sudden impact resistance.
10	SECTION THICKNESS	Lesser section thickness, hence lesser weight.	More section thickness, hence more weight.
11	LOAD BEARING CAPACITY	More load bearing capacity in test condition, impact load & movable load. Light duty-1.5 MT load Medium duty-12.5 MT load Heavy duty 25 MT load	Comparatively less load bearing capacity although weight & section thickness is more.Light duty-2.5 MT load Medium duty-10 MT load Heavy duty- 20 MT load
12	HANDLING	Due to lesser weight, easy in handling during transportation, installation & maintenance during service conditions	Due to more weight, comparatively difficult to handle during transportation, installation & maintenance during service conditions
13	LOCKING ARRANGEMENTS	One end of the Cover is hinged with frame, hence no extra cost is incurred.	Galvanised chain alongwith hook can be provided to Cover & Frame, hence incurs extra cost.
14	COST	Overall cost is less by @10-20% than Cr.	Comparatively more costly than 'Dr
15	YIELD STRENGTH	320 N/mm <sup>2</sup>	-----

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Tolerance on weight: -5%

Max Load: \*Grade A-15 = 1.5 MT. (LD) | \* Grade B-125 = 12.5 MT. (MD)

Grade C-250 = 25.0 MT. (HD) | \*Grade D-400 = 40.0 MT. (EHD)

\*Grade E-600 = 60 MT. (EHD) | \*Grade F-900 = 90.0 MT. (EHD)

## GRADES AND TYPES :

Grades	Grades Designation	Load in Tonnes	Diameter of Block in (mm)
Light - Duty	LD	2.5	300
Medium ~ Duty	MD	10	300
Heavy - Duty	HD	20	300
Extra Heavy - Duty	EHD	35	300

## PRODUCT CHARACTERISTICS :

MATERIAL	FG - 150GRADE OF IS-210/78
<b>Tolerance (Dimensions)</b>	Tol. in (mm)
0, 01 C, c1 F, f1 fd, fd (Weight)	+5 -5 +5 +2 -5%
<b>Coatings</b>	Surface coating is done by bitumen/Tar base
<b>Chemical Properties</b>	C : 3.3% - 5%      Si : 1.7% - 2% Mn : 4% - 5%      P : 15% approx. S : 0.5% - Max.
<b>Mechanical Properties</b>	• Specific density - 7.15 kg/dm <sup>3</sup> • Tensile Strength - 150BN/mm <sup>2</sup> • Hardness (BHN) - 215max. • Crushing Strength - 400N/mm <sup>2</sup>



**RAMESHWAR**  
Metacasting Pvt. Ltd.

## RAMESHWAR METACASTING PVT. LTD.

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