



# GROUNDWORKS

# ADJUSTABLE SHUTTERS

## User Guide



GENERATION  
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ALTRAD

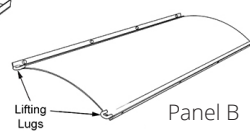
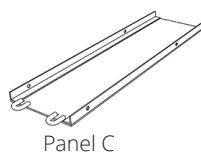
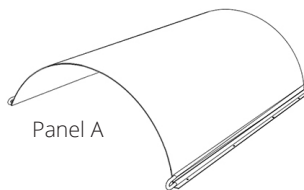
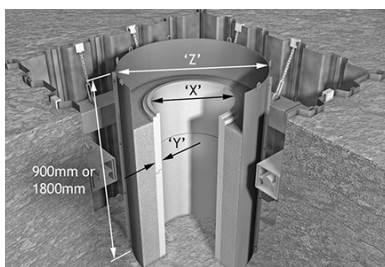
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## Adjustable Steel Manhole Shutters

Generation Groundworks Hires Adjustable Steel Manhole Shutters are intended to be used as a temporary circular formwork shutter to support the placement of an insitu concrete surround of uniform thickness to pre-cast concrete manhole rings. They accommodate all standard sizes of manhole rings using a combination of 3 panel types, A, B and C. There are two panel heights, 900mm and 1800mm.

## Identification of Components and Dimensions

Panel Type	Width (mm)	900mm High Panel	1800mm High Panel
		Weight (kg)	Weight (kg)
A	1530	27.5	55
B	620	12.5	25
C	250	6.0	12

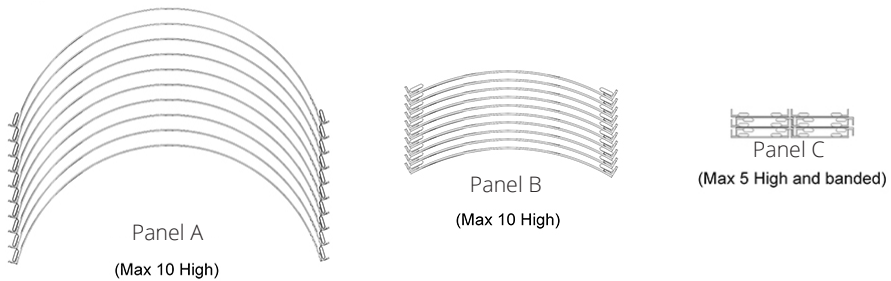


"X" Nominal Internal Diameter of Manhole (mm)	"Y" Thickness (mm)	Number of Sections Required to Form Shutter			"Z" External Diameter of Concrete (mm)	Theoretical Thickness of Concrete (mm)	Volume of Concrete Surround (m <sup>3</sup> )	
		A	B	C			900	1800
675	65	2	1	0	1171	182	0.51	1.02
900	75	2	2	0	1368	159	0.54	1.09
1050	85	3	0	1	1541	160	0.63	1.25
1200	100	3	1	1	1738	169	0.75	1.50
1350	112	3	2	0	1855	141	0.68	1.36
1350	112	3	2	1	1935	181	0.90	1.80
1500	115	4	0	1	2028	150	0.79	1.58
1500	115	4	0	2	2107	189	1.02	2.05
1800	115	4	2	0	2342	156	0.96	1.93
2100	120	5	1	0	2632	146	1.03	2.05
2100	120	5	1	1	2712	186	1.33	2.66
2400	135	6	0	1	3002	166	1.33	2.66
2700	162	6	2	0	3316	146	1.31	2.62
2700	162	6	2	1	3396	186	1.69	3.38
3000	210	7	1	1	3686	133	1.34	2.68
3000	210	7	2	0	3800	190	1.94	3.89

## Stacking and Handling

The Shutter Sections are normally supplied coated with a concrete release agent to help protect against concrete contamination. It is recommended that protective gloves be worn when handling or slinging the Shutters. Unloading and slinging operations should be carried out by experienced and competent personnel using suitable plant and lifting equipment when required. Each Shutter is provided with 2 Lifting Lugs. Assembled panels should be lifted with chains and load spreaders to avoid distortion. Manhole Shutters are extremely flexible. Lorry drivers must ensure that adequate precautions are taken to secure to the lorry bed.

Stacking of Shutters is illustrated below.



## Usage

The Shutters are intended to provide up to 190mm thickness of concrete around the external diameter of pre-cast rings. They **MUST NOT BE USED** to form in-situ concrete cover greater than this thickness. The Shutters are not intended for multiple height pours. **DO NOT** attempt to mount one set of shutters on top of another set to achieve additional pouring height .

Generation UK Manhole Shutters are not compatible with similar products from other suppliers. They should therefore be stored and used separately. Before use check that each Shutter has its full complement of pins and wedges. One side of the Shutter should have a pin by each connector hole, the other side a wedge. Ensure that all the wedges at each joint are correctly engaged before concrete is poured. The wedges are made captive by a single hammer blow from above. **DO NOT** use excessive force to tighten each flange joint.

During usage periodically check:

- There are no splits or holes in the pan or main body of each Shutter.
- That the connector holes are intact and not split at the outer edge.
- That the lifting lugs have not been damaged.
- That the pins and wedges are kept clean from concrete allowing easy striking and reforming of the panels.
- That the flange faces of each connection are free from concrete therefore allowing a flush and tight flange connection and are not distorted.

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