Stormwater

Sewer

Fig 1 – **Manhole general arrangement**

Concrete VT Manhole 1800 - 2500

PRODUCT BENEFITS

Strong and Durable	HN-HO-72 Design loading
	100-year design life
Modern Technology	Reduced Manhole lid weight
	High resistance to infiltration & leaking

APPROVAL/STANDARDS

NZS 4058: 1997 Precast Concrete Pipes

NZS 3109: 1997 Concrete Construction

NZS 3114: 1987 Surface Finishes

NZS 3101: Part 1: 2006 Concrete Structures Standard

QUALITY

ISO 9001: 2015 Quality Management Standards

Quality Designed to
100 Years Service Life

Concrete VT Manhole
1800 - 2500

Humes Concrete manholes are designed to meet HN-HO-72 loading requirements for an extensive range of applications.

Applications:

- Stormwater (SW) Manholes
- Wastewater (WW) Manholes
- Pipeline Junction
- Pipeline Re-direction
- Catchment Inlet Access Structure

Extensively used throughout New Zealand, strong, durable, capable of withstanding infiltration and attack from corrosive environments.

Design Specifications & Considerations

When selecting components for a manhole system, it's important to consider several factors: applications (SW, WW, Marine, etc.), diameter, height, riser and lid strength, connections, installation requirements, and accessory options. The Local Council Authority guidance should be followed to determine regional requirements for manhole construction. If regional guidance is not available, refer to the **Concrete Pipe Association of Australasia** (CPAA) *Guidance Note (NZ) – Loads on Circular Precast Concrete Manholes and Access Chambers* for guidance.

Manhole Bedding Preparation

The bedding shall be a uniform, pre-prepared layer of suitable granular material placed on natural, firm ground. For the base, the safe bearing capacity (SBC) should be a minimum of 100 kPa for manhole depths less than 5m, and 150 kPa for manhole depths in excess of 5m. Ensure the bedding base is levelled and compacted beneath the manhole walls and extends at least 150 mm on each side of the wall centreline. This provides uniform support and prevents the formation of a central high spot.

Humes Concrete Manhole Riser

Humes standard Manhole Risers meet Watercare Wastewater Manhole requirements and has allowed 25mm sacrificial layer on the internal walls. Other Supplementary Cementitious Materials (SCMs) or liner options are available as custom product options for specific project requirements.

Fig 2 – Concrete Manhole Riser

Table 1 – Concrete Manhole Riser (North Island only)

INTERNAL DIAMETER (mm)	EFFECTIVE INTERNAL HEIGHT (mm)	OVERALL HEIGHT (mm)	EXTERNAL DIAMETER (mm)	WALL THICKNESS (mm)	MASS	LIFTING PIN (Tonne)	HUMES ITEM CODE
1800	300	320	1990	95	417 kg	5 (x3)	80118040
	600	620	1990	95	841 kg	5 (x3)	80118041
	900	920	1990	95	1,265 kg	5 (x3)	80118042
	1200	1220	1990	95	1,688 kg	5 (x3)	80118043
	1500	1520	1990	95	2,112 kg	5 (x3)	80118044
	1800	1820	1990	95	2,536 kg	5 (x3)	80118045
	2100	2120	1990	95	2,959 kg	5 (x3)	80118046
	2400	2420	1990	95	3,383 kg	5 (x3)	80118047
2100	300	320	2310	105	542 kg	5 (x3)	80118219
	600	620	2310	105	1,087 kg	5 (x3)	80118220
	1200	1220	2310	105	2,177 kg	5 (x3)	80118221
	2400	2420	2310	105	4,357 kg	5 (x3)	80118222
2300*	300	320	2570	135	771 kg	5 (x3)	80118229
	600	620	2570	135	1,544 kg	5 (x3)	80118230
	1200	1220	2570	135	3,092 kg	5 (x3)	80118231
	2400	2420	2570	135	6,187 kg	5 (x3)	80118232
2500*	600	620	2800	150	1,865 kg	10 (x3)	80118240
	1200	1220	2800	150	3,736 kg	10 (x3)	80118241
	2400	2420	2800	150	7,478 kg	10 (x3)	80118242

*Subject to availability

Humes Concrete Manhole Riser on Base

Humes manholes have a flange base 150mm wide external foot to provide anti-floatation resistance. Humes flanged bases are manufactured in a 2-stage process. Benching is completed on-site by installer.

Fig 3 – Concrete Manhole Riser on Base

Drawing 1 – VT Base & Riser

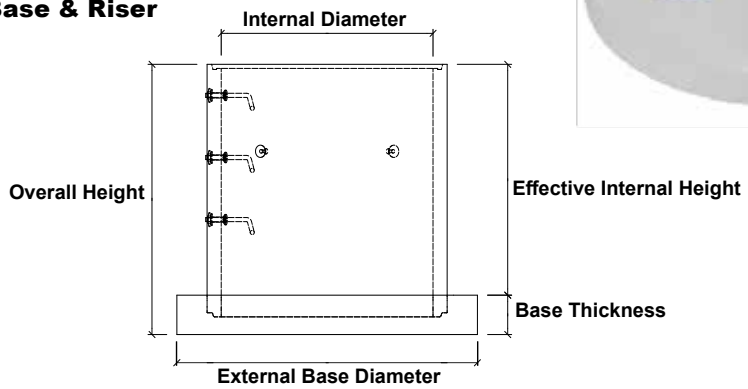


Table 2 – Concrete Manhole Riser on Base (North Island only)

INTERNAL DIAMETER (mm)	EFFECTIVE INTERNAL HEIGHT (mm)	OVERALL HEIGHT (mm)	EXTERNAL BASE DIAMETER (mm)	FLANGED BASE WIDTH (mm)	BASE THICKNESS (mm)	WALL THICKNESS (mm)	MASS	LIFTING PIN (Tonne)	HUMES ITEM CODE
1800	475	720	2,290	150	220	95	2,942 kg	5 (x3)	80130900
	775	1,020	2,290	150	220	95	3,336 kg	5 (x3)	80130901
	1,075	1,320	2,290	150	220	95	3,790 kg	5 (x3)	80130902
	1,375	1,620	2,290	150	220	95	4,213 kg	5 (x3)	80130903
	1,675	1,920	2,290	150	220	95	4,637 kg	5 (x3)	80130904
	1,975	2,220	2,290	150	220	95	5,061 kg	5 (x3)	80130905
	2,275	2,520	2,290	150	220	95	5,485 kg	5 (x3)	80130906
2100	475	720	2,610	150	220	105	3,826 kg	5 (x3)	80130907
	1,075	1,320	2,610	150	220	105	4,916 kg	5 (x3)	80130908
	2,275	2,520	2,610	150	220	105	7,095 kg	5 (x3)	80130909
2300*	475	720	2,870	150	220	135	4,808 kg	5 (x3)	80118237
	1,075	1,320	2,870	150	220	135	6,355 kg	5 (x3)	80118238
	2,275	2,520	2,870	150	220	135	9,450 kg	5 (x3)	80118239
2500*	475	720	3,100	150	220	150	5,703 kg	10 (x3)	80118246
	1,075	1,320	3,100	150	220	150	7,533 kg	10 (x3)	80118247
	2,275	2,520	3,100	150	220	150	11,274 kg	10 (x3)	80118248

*Subject to availability

Humes Concrete Manhole Lids

Humes Manhole lids are designed and manufactured in accordance with NZTA Bridge Manual, NZS 3101, NZS 3109 and CPAA Guidelines. Humes manhole lids are 175mm or 200mm thick for **HN-HO-72** loading. 200mm and 225mm thick lids are available for **Watercare** applications. Humes manhole lids are standard with a 610mm opening and offset for ease access to safety steps. 540mm openings and centrally located options are available as made to order items.

Fig 4 – Concrete Manhole Lid

Table 3 – Concrete Manhole Lid Load Class

LOAD TYPE	DESCRIPTION	LOAD RATING (kN)
LD20	Lightly Trafficked Areas – Light vehicles only	20kN Wheel Load
HD60	Residential and Secondary Roads – Bridge manual rating not required	60kN Wheel Load
HN-HO-72	Bridge Manual Loading – Major road and state highways	60–120kN Wheel Load

Table 4 – Concrete Manhole Lids

NORMAL LID DIAMETER (mm)	OUTSIDE DIAMETER (mm)	OPENING SIZE (mm)	LID THICKNESS (mm)	LID LOAD CLASS	MASS	EXPOSURE	LIFTING PIN (Tonne)	HUMES ITEM CODE
1800	2050	610	175	HN-HO-72	1,292 kg	Normal	5 (x3)	80120091
	2050	610	200	HN-HO-72	1,480 kg	Watercare	5 (x3)	80120092
2100	2370	610	200	HN-HO-72	2,030 kg	Normal	5 (x3)	80120093
	2370	610	225	HN-HO-72	2,287 kg	Watercare	5 (x3)	80120094
2300*	2630	610	200	HN-HO-72	2,531 kg	Normal	5 (x3)	80120095
	2630	610	225	HN-HO-72	2,853 kg	Watercare	5 (x3)	80120096
2500*	2860	610	200	HN-HO-72	3,021 kg	Normal	10 (x3)	80120097
	2860	610	225	HN-HO-72	3,404 kg	Watercare	10 (x3)	80120098

*Subject to availability

MANHOLE JOINT – UNIVERSAL

Riser to lid joint connection: Preformed grey sealant strips based on high molecular weight cross linked butyl rubber. This product has a moderate amount of surface tack and deforms readily under moderate loading.

To ensure a watertight seal, do not stretch the strip to fit the joint diameter.

Riser to riser joint connections: Self-adhering black butyl mastic extruded into a ready to use tape form for non-structural permanent, weather-tight sealing of concrete surfaces. Adheres immediately, does not shrink and is unaffected by prolonged climate exposure.

Please refer to manufacturer's instructions for use.

MANHOLE STEPS

Standard step rungs are mild steel hot dipped galvanised units, 20mm diameter, 230mm width and 150mm depth; of plain or stepped (safety) type. Step rungs are supplied complete with nuts and steel and rubber washers.

Provision is made in the Riser sections for step rungs to be fitted at 300mm intervals. Stainless steel and plastic-coated step rungs are available, as are various types of ladders.

Post installation, all step rungs to have the external recessed pocket and any exposed step thread covered with Humebond epoxy mortar, ensuring a maximum watertight seal.

Fig 5 – Universal Joint

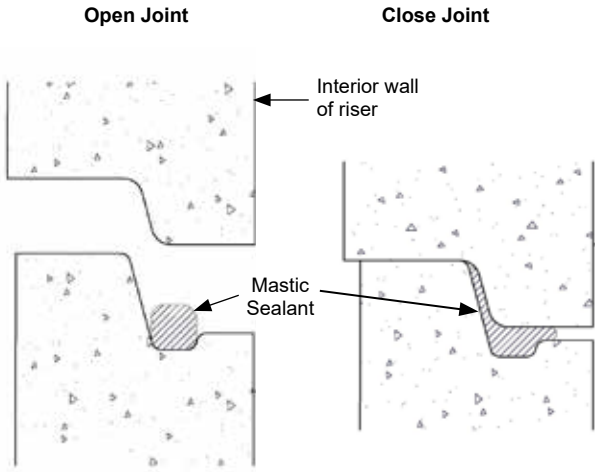
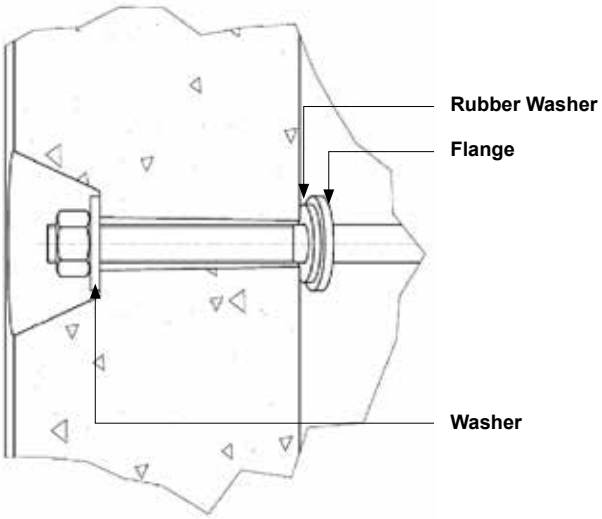


Fig 6 – Step

Fig 7 – Step connection

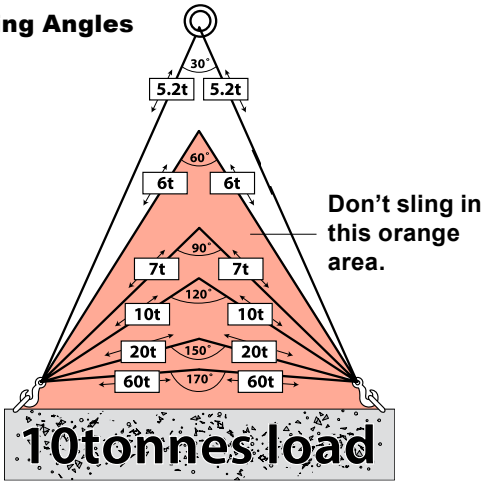


Handling Requirements

**THE LONGER THE SLINGS,
THE LOWER THE LOAD ON ANCHORS.**

For example, at an included angle of 170° the load on each sling is six times the weight of the actual load being lifted.

Fig 8 – Sling Angles



NB – Never make sling length shorter than the distance between two anchors.

Fig 9 – Riser on base, 1800 Diameter and above

Fig 10 – Manhole Lid, 1800 Diameter and above

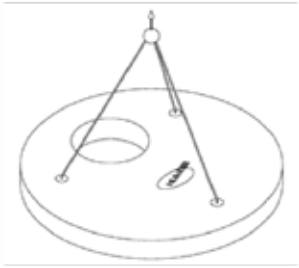
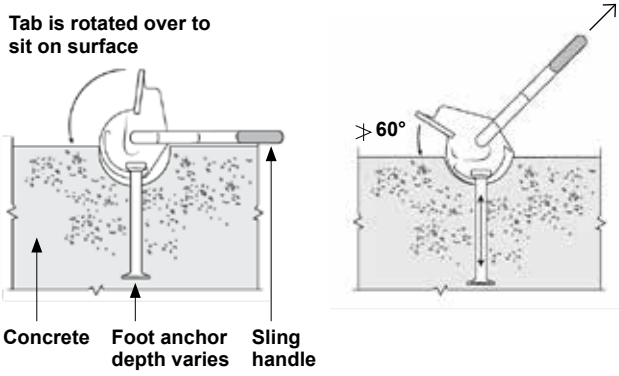
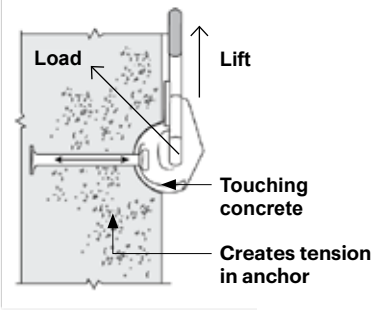


Fig 11 – Swiftlift clutch operation





Refer to Humes Streetware guide for certified access covers and grates.

For further technical details or advice free phone 0800 502 112 or visit www.humes.co.nz

All queries regarding product suitability, purpose or installation should be directed to the nearest **Humes Sales Centre** for service and assistance.

Quality Designed to 100 Year Service Life

Buyers and users of the products described in this brochure must make their own assessment of the suitability and appropriateness of the products for their particular use and the conditions in which they will be used. All queries regarding product suitability, purpose or installation should be directed to the nearest **Humes Sales Centre** for service and assistance.