Maintenance Access Shafts

For wastewater and stormwater systems

Utilities Solutions

MARLEY

Devonport Naval Base recompression chamber test, showing Marley Maintenance Access Shaft being pressurized for conformance in maintaining air pressure equivalent to the specified external hydrostatic pressure requirements of AS/NZS 4999.

Head test of 6 metres for misalignment of 10 degrees on rubber ring joints.

INTRODUCTION

The Marley Maintenance Access Shaft System has been developed to primarily help local authorities eliminate the problems of stormwater infiltration into the wastewater network and provide a cost effective, safe point of access for maintenance and inspection equipment.

With the development in recent years of CCTV cameras for inspection, and high pressure water jetting units for clearing blockages, in the majority of cases the only access required is from surface level.

As Health and Safety is now at the forefront, most employers are working to limit man entry into the wastewater network while still providing access for maintenance and inspection equipment.

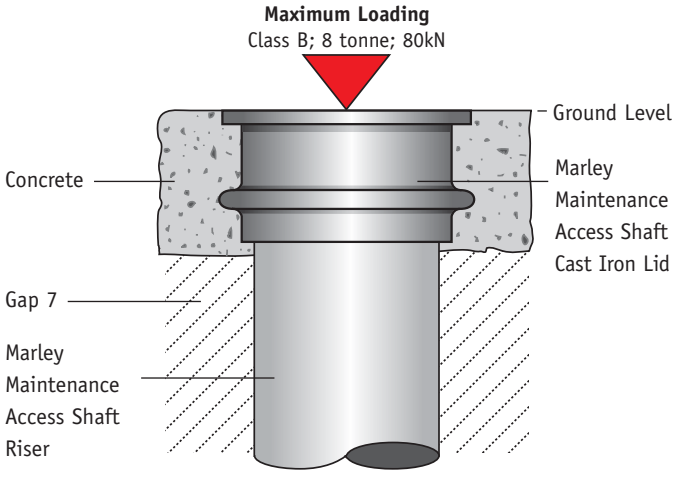
With a comprehensive range of bases, risers, lids and accessories, there is a shaft system available for most situations up to a depth of 4 metres.

STANDARDS AND TESTING

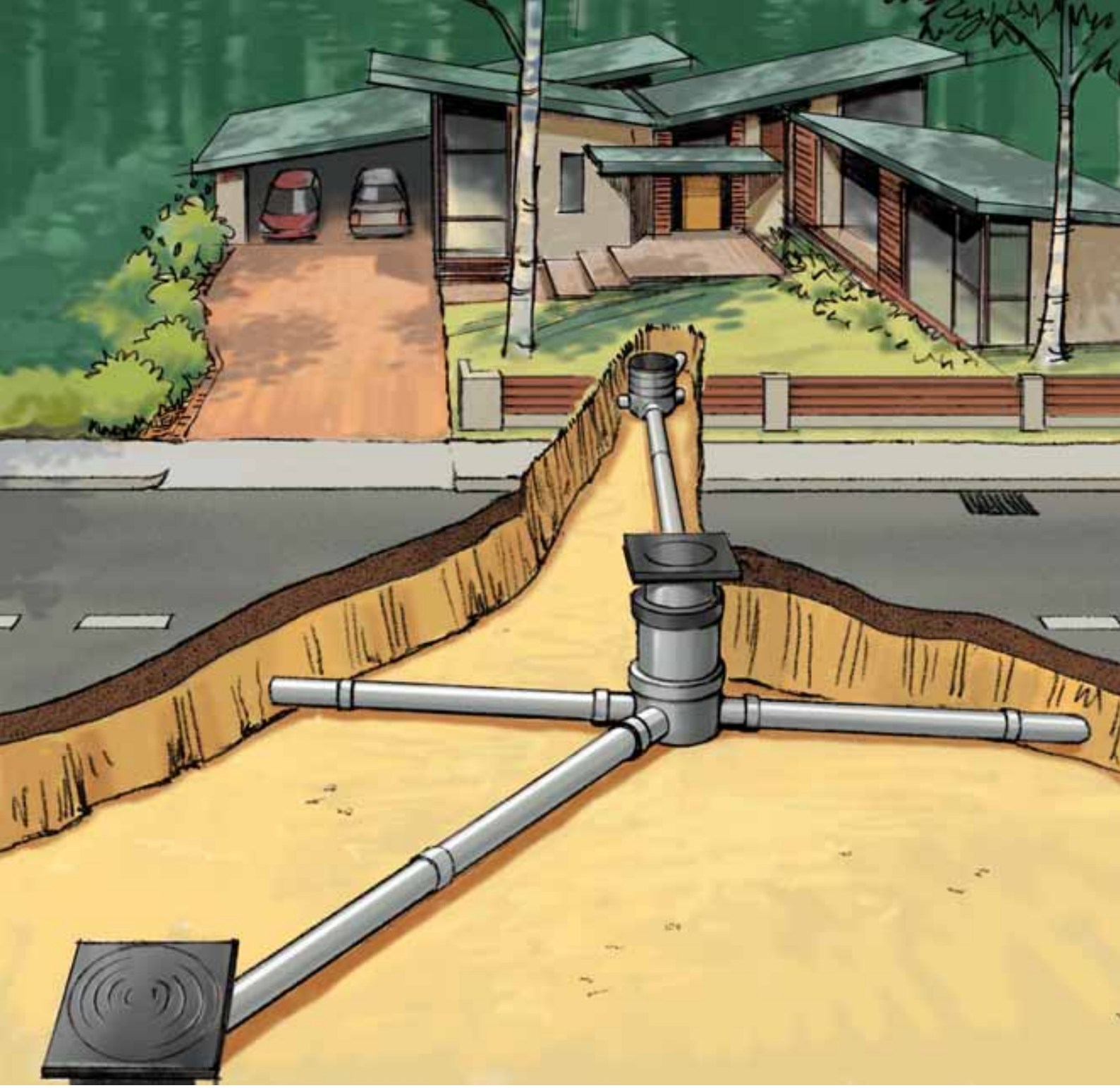
Local Authorities are increasingly requiring products installed in their networks to comply with stringent Australian/New Zealand Standards. This ensures the network will have product and quality uniformity to allow the system to perform as expected over the projected asset life.

The Marley Maintenance Access Shaft System conforms to AS/NZS 4999 “pvc-u mantainance shafts” and the components have been rigorously tested to ensure they perform as expected when installed, conforming to NZ Building Code G13, AS/NZS 3500.2, into the network.

As the Marley Maintenance Access Shaft System is manufactured from the same material as the pipe network it is connecting to, this once again provides uniformity of product and performance.



Telescopic Unit must be used when loading over 1.0 tonne to max 8 tonne.



FEATURES & BENEFITS OF A PVC SYSTEM

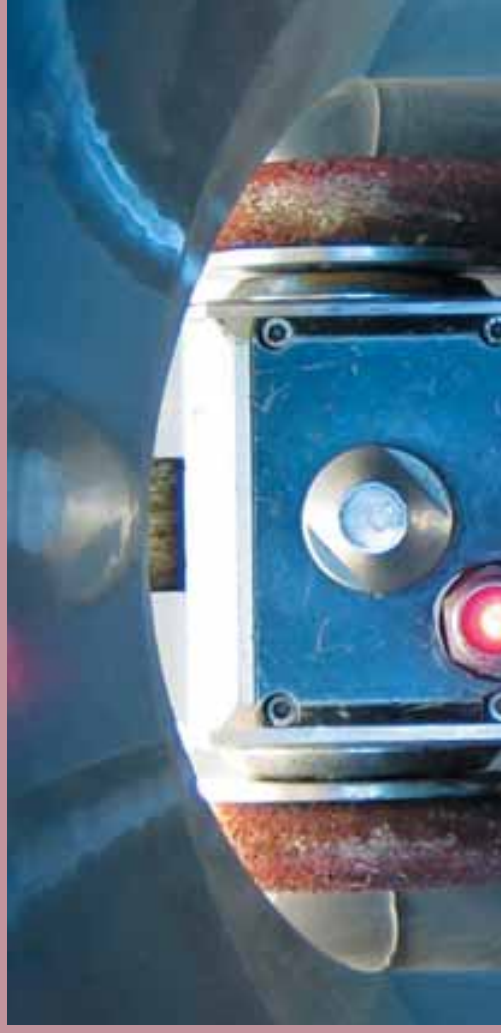
- **PVC Components** – Same material as pipe network ensuring performance uniformity, optimal Hydraulic performance, immune to hydrogen sulphide attack, robust
- **Rubber Ring Joints –** Ensures a watertight system with a flexible seal
- **AS/NZS 4999 Compliance –** Ensures high quality by complying to independent standards
- **Non-man Access –** Eliminates OSH issues and costly maintenance associated with confined access man entry
- **Comprehensive Range –** Provides a solution for most situations to a depth of 4 metres
- **Compliant –** To NZ Building Code G13, AS/NZS 3500.2. No manhole is needed
- **Low Weight –** Very cost effective due to speed and ease of installation, no heavy lifting equipment required, reduces OSH issues, can be installed in all weather and terrains
- **Compact –** Easily transported
- **Low Cost –** Excellent to asset owner and installer
- **Injection Moulded PVC Bases and Lids –** Uniformity of product and quality assurance
- **Extruded PVC Risers –** Online quality assurance checks as per appropriate AS/NZS standards
- **Screw Down 300 mm Diameter Lids –** Limits access to the maintenance contractor and only allows non-man access
- **Telescopic Unit –** Capability of loading max 8 tonne in Telescopic Unit area

CCTV

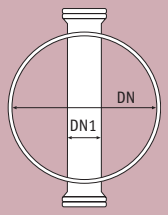
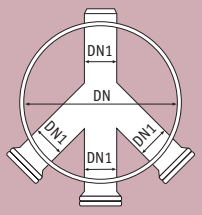
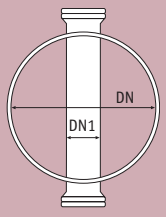
Wastewater networks can now be inspected by using CCTV cameras.

The Marley Maintenance Access Shaft System is designed to provide access for these cameras as per the dimensions laid out in AS/NZS 4999.

The design of the lids, risers and bases for both the 300mm and 375mm diameters ensure ease of entry and exit of the cameras, whether push rod or remote control.



BASE CONFIGURATIONS

Type	Junction	Inspection	Inspection
DN/DN1 (mm)	300/150	375/150 375/175	375/150
			

Pictures show CCTV in 300mm diameter riser and maintenance access base entering 150mm diameter p

1. CCTV camera being lowered down riser shaft.

2. CCTV camera at Maintenance Access base.

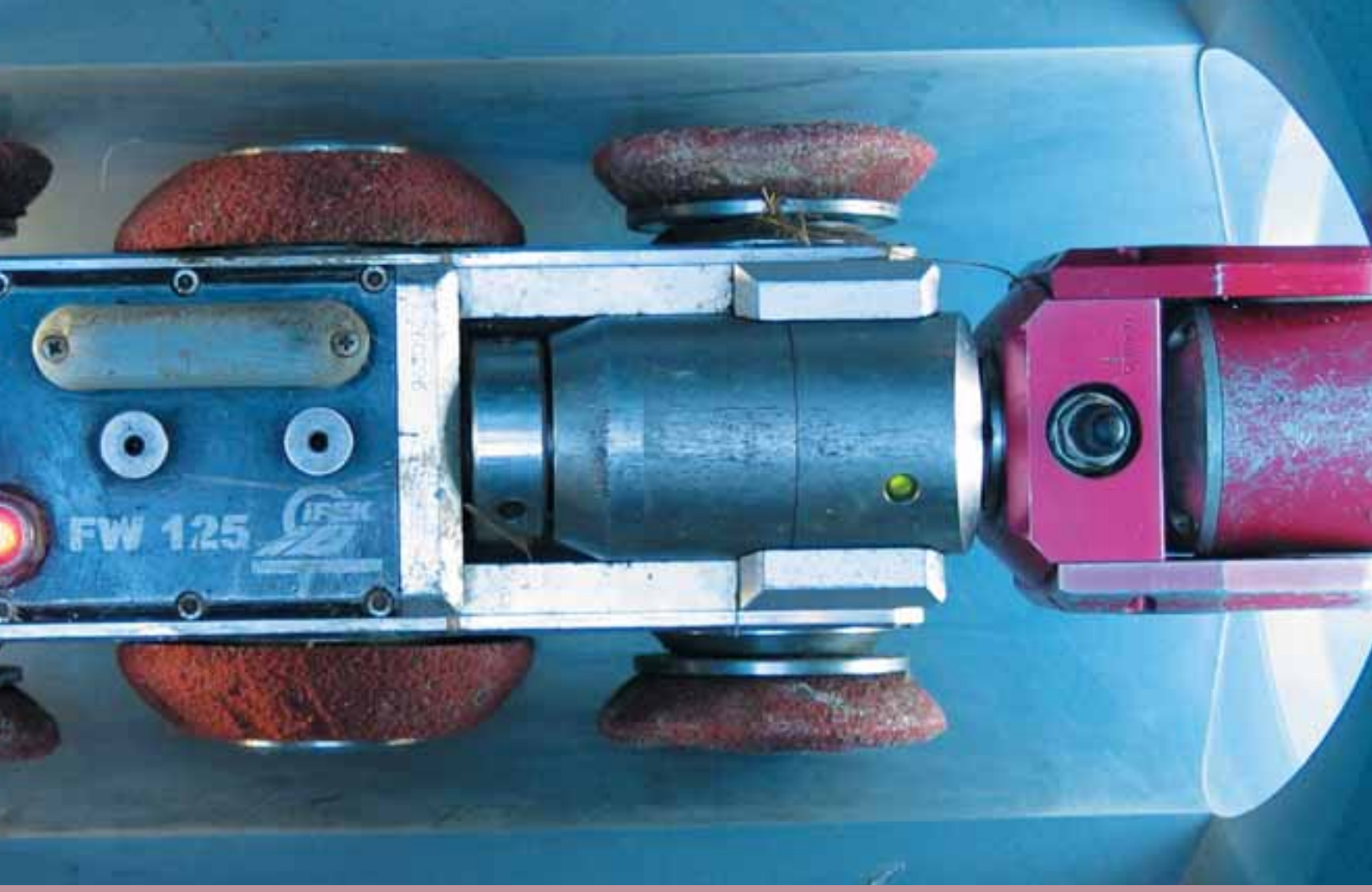
3. CCTV camera re-positioning on Maintenance Access base.

4. CCTV camera ready to enter pipeline.

JETTING

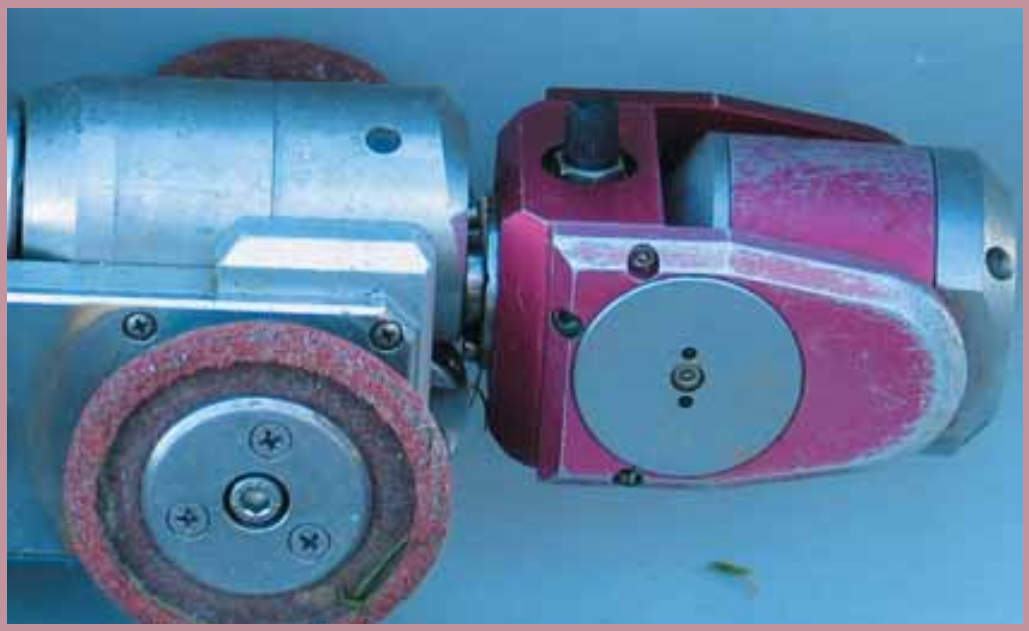
The majority of Local Authorities now use high pressure jetting units to clear blockages in their public wastewater networks. This a quick and efficient solution that does not require man entry into the system, thus negating costly OSH requirements.

The Marley Maintenance Access Shaft System ensures the contractor has a user friendly point of entry to insert the jetting head and hose into the pipe network and a smooth passage to reach the blockage.



ipeline.

5. CCTV camera inspecting pipeline.



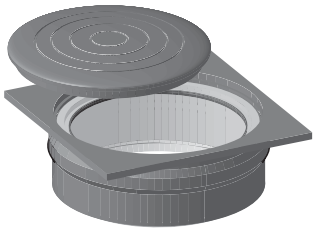
300mm Rigid

NOTE: Use in non loading or light (1 tonne) area

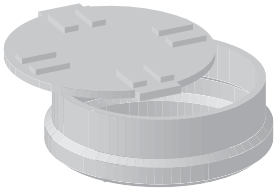
Step 4

- Select Lid Option

- Cast Iron
- PVC



CAST IRON LID

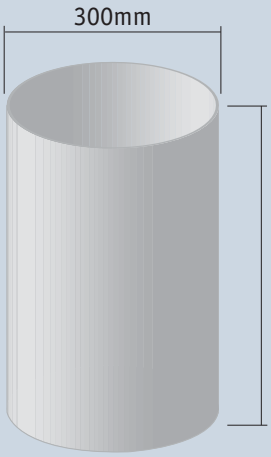


PVC LID

Step 3

- Select Riser Type

- Rigid
  Loading up to 1.0 tonne
- Telescopic
  Loading max 8.0 tonne



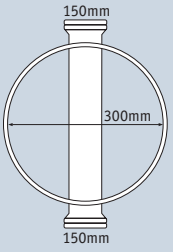
Riser Length Options

1.0m
1.5m
2.0m
3.0m

Step 2

- Select Base Configuration

- Straight through
- Junction



Step 1

- Select Base Size

- 300mm
- 375mm

300mm

ACCESSORIES

INVERT REDUCER

DN	DN1
150	100
175	150

SWEPT BEND

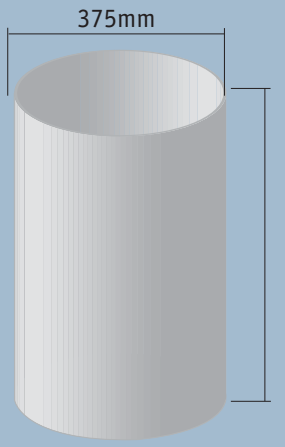
DN

150

375mm Telescopic

NOTE: Use cast iron unit in loading (8 tonne max) area

CAST IRON TELE UNIT

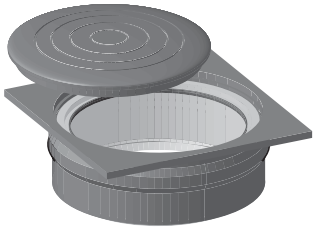


Riser Length Options

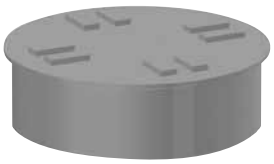
1.0m
1.5m
2.0m
3.0m

375mm Rigid

NOTE: Use in non loading or light (1 tonne) area



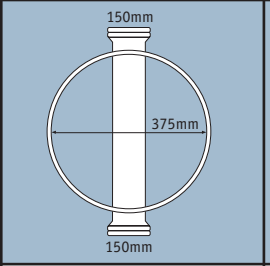
CAST IRON LID

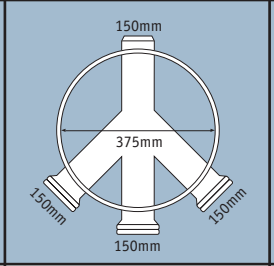


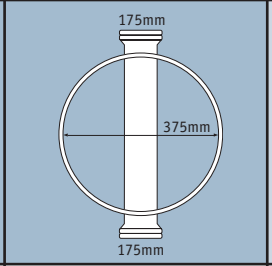
PVC LID

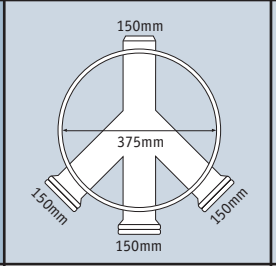
Riser Length Options

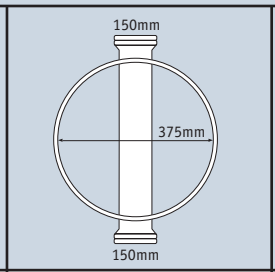
1.5m
2.0m
3.0m

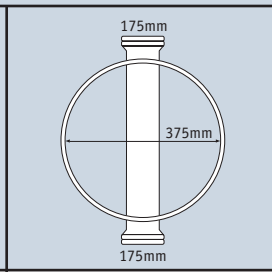












375mm

375mm

375mm

375mm

375mm

375mm

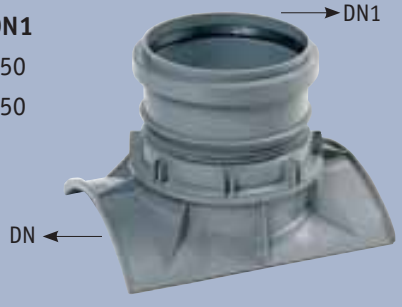
SOCKET PLUG

DN

150

MECHANICAL SADDLE 90°

DN	DN1
300	150
375	150



APPLICATIONS

SUBDIVISIONS

A number of Local Authorities now require surface access points at the boundary of each lot and the public network.

The Marley Maintenance Access Shaft System provides an efficient access point for maintenance and inspection, yet at the same time is non-intrusive for the homeowner when installed in a garden or lawn situation.

In the public lines of a subdivision, the Marley Maintenance Access Shafts are ideal as access points as they can be easily increased or reduced in height by the contractor or drainlayer, and are very fast and easy to install.

MANHOLE RENOVATION

Renovation of existing traditional manholes can be a very costly exercise, especially in difficult terrain.

It is now possible to renovate an old manhole to a dry system by removing the existing benching and connecting the base to the existing pipework using a Marley Maintenance Access Shaft System. This has been found to be an effective and cost efficient way of eliminating wet weather overflows and stormwater infiltration of leaking manholes.

PUBLIC SEWERS

In most circumstances where polyethylene and PVC pipelines are laid, it is no longer a necessity to have man access every 80 to 100 metres or at directional changes.

Due to the performance of polyethylene and PVC pipelines, the required maintenance or periodic inspections or clearing of blockages can now be done from surface level via a Marley Maintenance Access Shaft System.

TRADE WASTE MONITORING

Monitoring of trade wastes from business and industry premises prior to entering the public wastewater network is an important operation of Local Authorities.
The Marley Maintenance Access Shaft System provides a perfect monitoring access point, whether adjacent to a grease trap or outside an existing manufacturing plant. The lids can be easily adapted to allow the monitoring equipment to remain overnight while still having the lid screwed down for security.

New Plymouth District Council - Marley Maintenance Access Shaft trial
Consultant: Chapman Oulsmann Spiers
Contractor: Drainage - Gordan McBride
New Plymouth District Council - Trade Waste Officer has been monitoring the waste going into the councils sewer main, after it left the grease trap, outside the Kiwi Butcher shop in Leach Street.
The benefits are that the Marley Maintenance Access Shafts are very compact, light weight, easily installed, with a range of accessories and lids for various applications and don't interfere with the normal operation of the rest of the system, even when testing is being carried out.

ASSEMBLY

MAINTENANCE ACCESS BASE UNIT

- Prepare compact granular bedding.
- Make sure all rubber rings are clean.
- Lubricate shaft base rubber rings pipe inlet/outlet.
- Manually connect maintenance access base to pipe spigot.
- Repeat the above process for the remaining maintenace access base connections, bearing in mind that the base is now set in position.
- The pipelines to be connected to the maintenance access base should be completely installed, i.e. through to the next inspection point.
- Backfill around the maintenance access base to ensure stability.
- **Air or water testing and line and level testing should be undertaken at this point, prior to the installation of the riser shaft.**

RISER SHAFT AND TELESCOPE UNIT**

- Depending upon riser shaft length, mechanical equipment may be required to assemble the riser.
- A witness mark should be marked at 145mm on the riser shaft before insertion to indicate insertion depth.
- Clean and lubricate maintenance access base rubber ring and riser shaft spigot end (must be chamfered).
- Align and sit riser shaft into maintenance access base socket.
- Where long riser shaft is required, stabilisation of the riser shaft must be ensured.
- Place wooden block over the top of the riser shaft and with controlled mechanical effort start initial compression of the riser shaft into the maintenance access base socket. Proceed until the riser shaft is fully inserted into the base up to the witness mark.
- Fit the telescopic-gasket ring with tele-unit onto the top of the riser shaft (make sure it is fitted correctly).
- Ensure the moulding lugs from the inside edge of the gasket ring have been removed with a stanley blade.
- Leak tightness of the riser shaft may be checked at this point.

RIGID SHAFT AND COVER LID

- Lubricate or solvent weld the top of the rigid shaft and fix the chosen cover (PVC Plug M–F or metal lid).
- A witness mark should be marked at 110mm on the riser shaft before insertion to indicate insertion depth.
- Lubricate maintenance access base rubber ring and rigid shaft spigot (must be chamfered) before insertion.
- Align and sit riser into maintenance access base socket.
- Place wooden block over the top of the rigid shaft and with controlled mechanical effort start initial compression of the rigid shaft into the maintenance access base socket. Proceed until the rigid shaft is fully inserted into the base up to witness mark.

INSTALLATION

LAYOUT

Bedding

Non-cohesive (free running) granular bedding 100mm min depth, such as sand or crushed rock, free from sharp stones larger than 25mm and free from lumps of clay or soil larger than 75mm. In the trafficable loading areas, compacted bedding of Gap.7 bedding should be applied to 100mm min depth.

Side Support

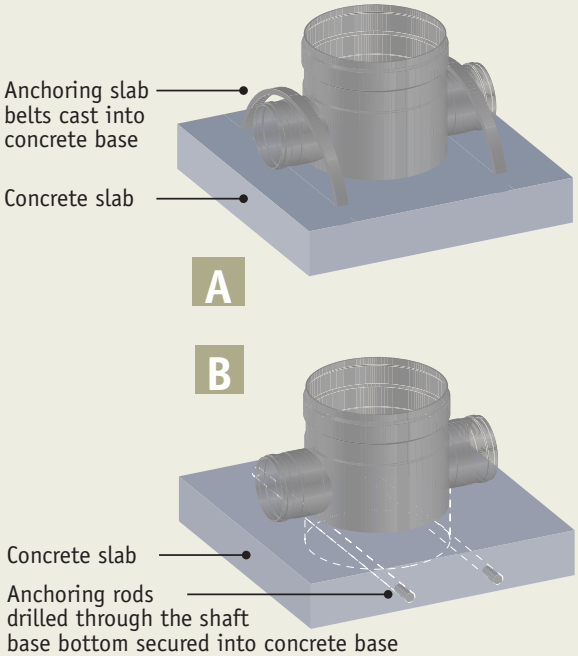
Material selected for maintenance access base and pipe support should be as per the bedding material and should be level and tamped each side of the pipe to a minimum of 150mm above the crown of the pipe and to the socket top/height of the shaft base.

Back Fill

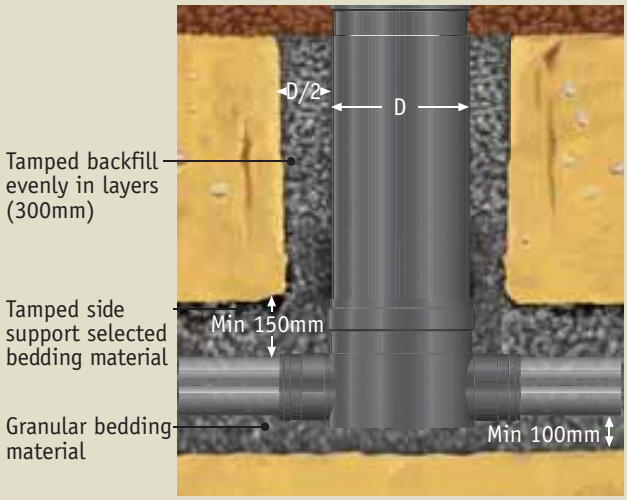
When the pipeline has passed the required testing and the shaft, pipe and fittings are covered and tamped with appropriate side fill, backfilling with excavated or imported material (depending on loading requirements) can proceed. Backfill surrounding the shaft riser within D/2 around the riser, must be tamped in levels of 300mm.

Anchoring

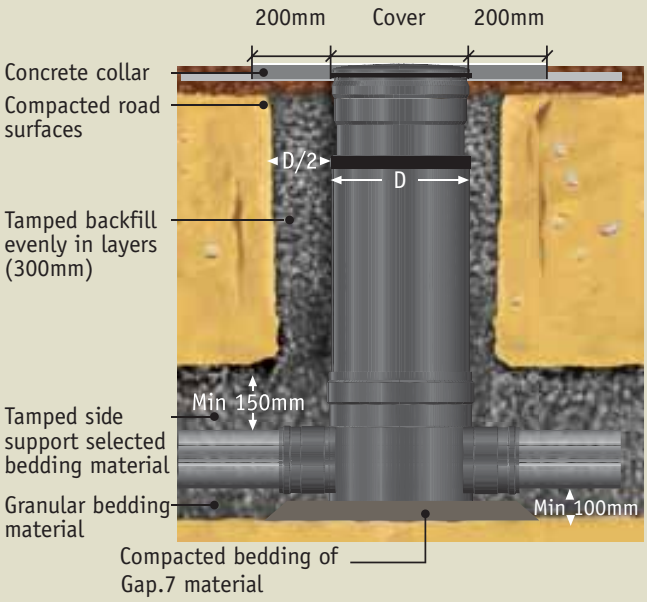
Where anchoring is specified, the following options may be used.



NON LOADING AREA (pedestrian = max.load 1t)



LOADING AREA (traffic = steel lid 8t)



**NOTE: Telescopic Unit must be used in loading area (8 tonne max)

DOMESTIC DRAINAGE

Marley Domestic Maintenance Access Shafts are not large enough for man-entry but allow the drain to be reached by a person laying on the ground to clear drain debris.

Domestic Maintenance Access Shafts have been designed to offer easier and more economical alternatives to traditionally constructed methods.

Manufactured in tough polypropylene and polyethylene material they are impact resistant and are simple and straight-forward to install.

The Access Shaft risers are designed for simple dry-jointing to provide instant watertight joints. Having strengthening ribs and webbing, raising pieces can be simply built up to the required overall height between base and cover.

Domestic Maintenance Access Shaft 230/100 is suitable for **depths up to 0.6m maximum.**

Domestic Maintenance Access base unit has 100 mm inlets at 45°.

Domestic Maintenance Access Shaft 450/100 **may be laid to depths of 1.2m maximum.**

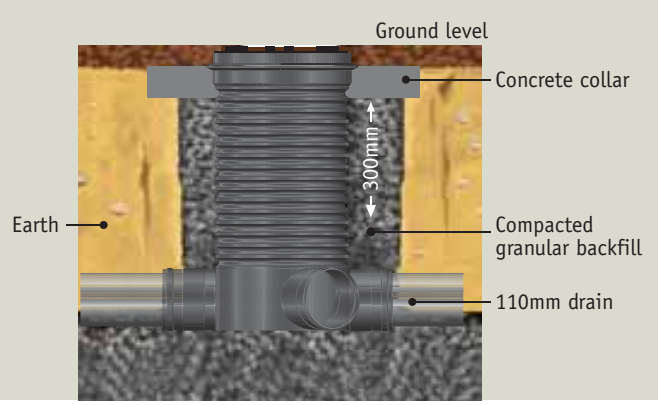
100mm + 150mm outlet/inlet option available.

The dimensions of Domestic Maintenance Access Shafts are large enough to allow standard rodding, clearance of debris and inspection access for drain size up to 150mm.

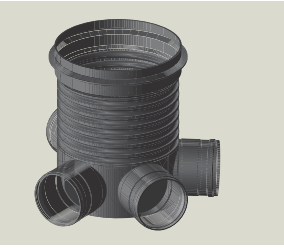
INSTALLATION INSTRUCTION

The Domestic Maintenance Access Shafts must be installed according to Marley instructions.

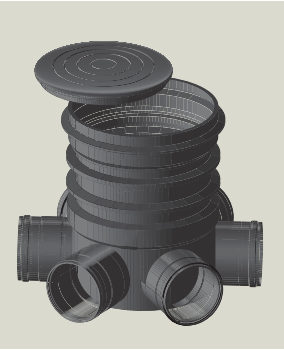
- When making the joint the pipe must be well chamfered, de-burred, cleaned and lubricated using the recommended lubricant. The pipe is pushed into the socket seal allowing a clearance for subsequent expansion, ie the pipes should be pushed home fully and then withdrawn by 10mm.
- Backfilling is carried out using suitable granular material up to a level of 100mm above the crown of the inlet/outlet pipes, and is continued in well compacted layers not more than 300mm.
- Care must be taken to avoid excessive deformation of the Access Shaft wall.
- During backfill, the Access Shaft should be covered.
- Domestic Maintenance Access Shafts are designed for non loading private areas (Class A-10KN/1t AS 3996). If loading is required, different installation must be applied.
- A concrete collar is placed to secure the frame.



DOMESTIC MAINTENANCE ACCESS SHAFT 230/100	
CONFIGURATION	INVERT HEIGHT
Base only	189
Base & 1 riser	394
Base & 2 risers	600



DOMESTIC MAINTENANCE ACCESS SHAFT 450/100	
CONFIGURATION	INVERT HEIGHT
Base only	302
Base & 1 riser	465
Base & 2 risers	628
Base & 3 risers	791
Base & 4 risers	954
Base & 5 risers	1117
Base & 6 risers	1280



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