



CENTRAL AXIS MAINTENANCE SHAFT



AS/NZS4999

**COMPATIBLE WITH
POLYVINYL CHLORIDE
(PVC) PIPING SYSTEMS.**

Version 1.0

clover 



**For further information
relating to Central Axis
Maintenance Shaft or
any other Clover product
contact your local Clover
sales office for assistance.**

The products shown form part of our continuous improvement program and as such the product designs, specifications and materials may be changed without notice.

All warranties relating to accuracy, completeness, or suitability for any particular purpose and all liability for any loss, damage or costs incurred relating to the use of this information are excluded.

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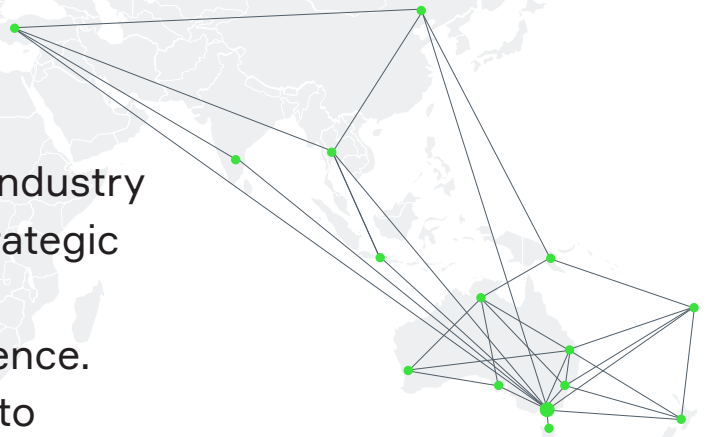
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WE ARE CLOVER, AN INTEGRATED PIPELINE INFRASTRUCTURE BUSINESS

Led by a passionate team of industry professionals, we combine strategic project consultation, product innovation and service excellence. We work with global partners to specify world-leading pipelines across Australia and the Asia Pacific region.



Future facing pipeline infrastructure

We believe in new ways of doing—
at Clover, we do things differently.
We don't rest on the past, or
the present, we're committed to
consistent innovation that supports
existing communities and establishes
new ones.

Australia's most complete pipeline infrastructure provider.

We partner with our clients to offer holistic design-led packages that go beyond supply and delivery—bridging the gap between planning, source and supply of pipeline infrastructure systems.

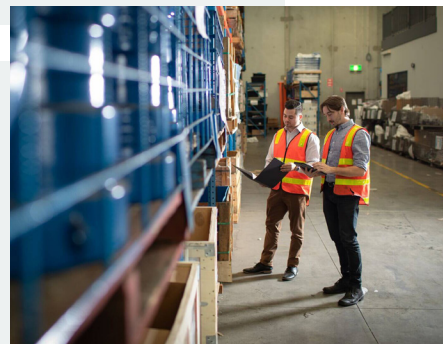
PLAN

Clover's inhouse engineering team combines specialist technical knowledge, creative thinking and on-the-job experience, to offer our clients a range of project planning and design consultation services.



SOURCE

Constantly pushing to challenge what's achievable, Clover harnesses an extensive global network of product partners to bring our clients the competitive advantage that comes with choice, availability and cutting edge innovation.



SUPPLY

In a project based industry, timing is everything. At Clover, our approach to supply and distribution is based around a dedication to consistency, responsiveness and service excellence.



The PVC Central Axis Maintenance Shaft offers a new solution to traditional manholes in sewer applications.

- Designed for easy passage of camera and cleaning equipment, meaning that no individuals are required to access or clean the maintenance shaft directly. Water authorities are preferring to prevent person access to sewers for safety (hazardous gasses, confined spaces). Therefore, the system saves time spent on cleaning and inspection without endangering lives — making it safer.
- The PVC Maintenance Shaft is cost competitive, coming in several thousand dollars less expensive than concrete access manholes. Multiplied across all replaced concrete manholes in your system, this solution saves tens of thousands in the short and long term.
- The product is easier to install, when compared to a complex concrete formwork. Where a manhole may take 1-2 weeks, a Maintenance Shaft takes hours. There is no requirement of waiting for concrete to set, and each one can be installed concurrently — reducing cost of labour and improving productivity.
- Aymroo's Maintenance shafts are the only ones of their kind to be manufactured from PVC. A PVC Maintenance Shaft is compatible with 90% of all sewer installations across Australia and New Zealand, requiring no additional adaptors to connect to other materials.
- Due to most sewage applications being constructed from PVC, the maintenance shaft fits in seamlessly alongside PVC pipes and fittings — creating a uniform system. This contrasts with traditional concrete manholes, which often require various additional configurations to maintain compatibility.
- Other maintenance shafts made from polyethylene and/or polypropylene do not join well in PVC systems, requiring glue or additional adaptors — often resulting in unpreventable leaks over time.
- The PVC construction is lightweight, robust and strong. This allows for easier handling for installers, and lower weight when shipping. Its lightness can also be attributed to its compact size. The compact size of the product means that its small footprint requires less excavation and reduced spoil.
- The system has better hydraulic properties due to the smoothness of PVC when compared to concrete. The high friction caused by concrete in wastewater applications reduces hydraulic performance.

Design Features

The design features of the Central Axis Maintenance Shaft are bespoke and are tailored to meet the specific requirement of your project. Clover can supply the product within 3-5 working days, and it is manufactured in Australia entirely to your specifications.

The custom design process can achieve any deflection, grade and inlet height to allow for a flexible, unique fit. The extensive range of configurations and tailor made outcomes mean that your pipeline system can operate at its best. Each Maintenance Shaft will be customised to the desired grade and angle using a custom-built CNC machine. Each inlet takes approximately 60 seconds to cut, at an accuracy of ± 0.02 accuracy. Deflections intersect at the riser point for easier sewer designing and tighter fitment around property boundaries.

The PVC Maintenance Shaft is designed for access within a wastewater application, and the pipe geometry ensures good flow characteristics. The base design includes a sculpted channel to help direct flow, with 2 stage grade to assist with outflow. The outlet neck of the product is designed to cater for connections to larger maintenance equipment and allows for easier passing of rodding and CCTV equipment.



Maintenance Shafts and Accessories

The PVC Central Axis Maintenance Shaft offers a new solution to traditional manholes in waste water applications.

		NAME	FEATURES
	Central Axis Maintenance Shaft		<ul style="list-style-type: none"> Centrally terminating configuration for more flexibility. 225mm or 300mm riser connections for flexibility in various authorities. CNC machine cut for accurate deflection and grade fabricated inlets. PVC material directly suited to 80% of Australia's sewer pipe systems. Ability to adapt to RRJ PVC or other pipe systems. Entirely Australian made, moulded to fabrication. Tested & analysed to requirements of WSA137.
	Inline Maintenance Shaft		<ul style="list-style-type: none"> Straight through maintenance shaft. Available with 225mm or 300mm Riser & Locking Cap. Available in 150/225/300mm.
	Terminal Elbow		<ul style="list-style-type: none"> End of line Termination Elbow Maintenance Shaft. Available with 225mm or 300mm Riser & Locking Cap. Available in 150/225/300mm.
	Maintenance Shaft Elbow		<ul style="list-style-type: none"> Change of direction Maintenance Shaft. Available in any deflection 1-90°. Available with 225mm or 300mm Riser & Locking cap Available in 150/225/300mm.
	Maintenance Shaft 45° Junction		<ul style="list-style-type: none"> 45° branch line Junction Maintenance Shaft. Must be specified left or right (L or R). Available with 225mm or 300mm Riser & Locking Cap. Available in 150/225/300mm.



**Maintenance
Shaft 90°
Junction**

- 90° branch line Junction Maintenance Shaft.
- Can be supplied in opposed configuration.
- Available with 225mm or 300mm Riser & Locking Cap.
- Available in 150/225/300mm.



**Riser
Junction**

- Inlet for house connection to Maintenance Shaft.
- M&F or F&F available.
- Made to suit maintenance equipment.
- Available in 150/225/300mm.



**Maintenance
Shaft Cover
- Class B & D**

- Complies with AS3996.
- Gas and Water Tight.
- Compatible with all Maintenance Shaft Risers.



**Maintenance
Shaft Cover
- Top Hat
Class D**

- Complies with AS3996.
- Gas and Water Tight.
- Compatible with all Maintenance Shaft Risers.



Vario Bends

- DN150 x 635mm Radius M&F incl. curved socket adaptor.
- DN150 x 300mm Radius M&M.

Key Features

- Australian-made, high strength injection moulded PVC components.
- Purpose designed and bespoke for each application.
- Designed for optimum performance and compact in size.
- Compatibility with existing PVC systems, including SWJ or RRJ connections. Available with standard Solvent Cement Joint (SCJ) or optional Rubber Ring Joint (RRJ) types (adaptors for other pipe types available on request).
- Suits 100mm, 150mm or 225mm pipe systems, and either 225mm or 300mm riser connections.
- Complements our existing range of Inline and Terminal MS fittings and accessories.

Place your order today

We want to make the ordering process as simple as possible, so follow the steps below when placing a request for your central axis PVC Maintenance Shaft:

- Request a specialised order form from our website or by visiting your local Clover office.
- This form will allow you to enter deflection, height and grade data which can then be uploaded directly to the manufacturer.
- This data is transmitted to the CNC cutting equipment. This reduces the likelihood of data entry errors and reduces the delay before fabrication can begin.
- **All PVC Maintenance Shafts are Australian made and are ready within 3-5 working days.**

Testing and Certifications

At Clover, we value products that are the best in the industry, and certified for quality. It's why we value testing and manufacturing to Australian requirements — making our products recommended and suitable for installations across the country.

The Maintenance Shaft system is manufactured to the requirements of AS/NZS4999, specific to PVC-U maintenance shafts.

It has also been accredited by the Water Services Association of Australia (WSAA) Product Appraisal 137, which is industry standard for maintenance shafts and sewage chambers.

Due to its various unique properties, the PVC Maintenance Shaft system is recommended as an alternative to manholes by WSAA members and associates. Most major water authorities have also approved the system for installation across Australia.

The system has also undergone the following tests for performance:

- Batch testing includes a mandatory vacuum test on every unit.
- FEA Stress analysis completed within requirements for depths up to 6m.



StandardsMark Licence

WSA 137 for Maintenance Shafts and Maintenance Chambers for Sewerage.



WSAA Product Appraisal

Polyvinyl Chloride, Unplasticised (PVC-U) Maintenance Shafts.

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