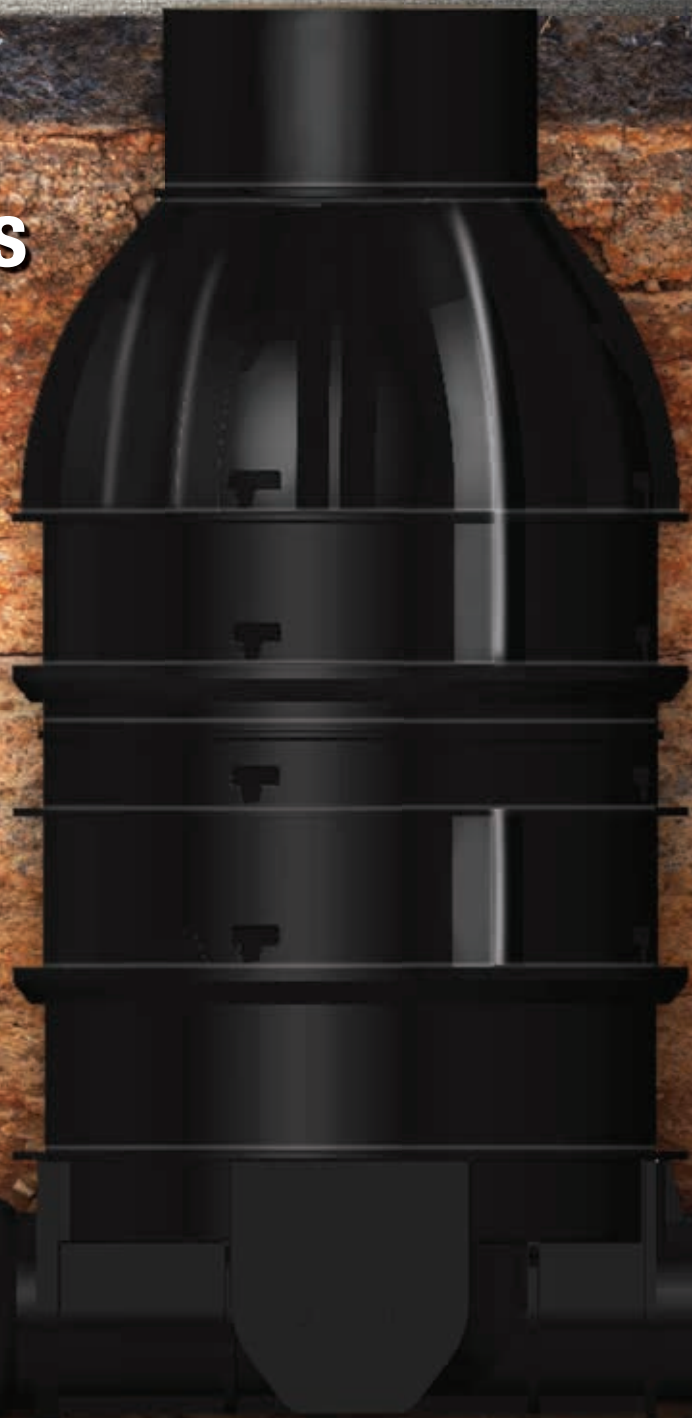




**Upgrading India's
drainage system
to meet global
standards.**

CORFIT[®]
MANHOLE CHAMBERS





India, today is on a mission to transform its cities in to smart cities across the country for a better living for the citizens. For an efficiently working smart city, it is of utmost importance to have an equally efficiently running drainage network. This network ensures that the environment remains clean and provides a healthy and hygienic life for the citizens.

Modern Underground buried drainage / sewerage & storm water systems require inspection and person access points at strategic locations for services like Inspection & Cleaning of sewers for their proper functioning. These inspection / cleaning and person access points of sewer are provided with manhole.

Prince Piping Systems is committed to deliver products that contribute in the efficient running of the smart cities. With a legacy of over 35 years, we understand the needs of our customers and have been continuously delivering product that make a difference. Introducing Manhole Chambers which facilitate in inspection, cleaning & maintenance of sewers with easy access to a person



ABOUT CORFIT MANHOLE & INSPECTION CHAMBERS

Corfit Manhole and Inspection Chambers are made from PE (Polyethylene) material. Polyethylene material is resistant to acids, bases and organic compounds, thus Corfit Manhole and Inspection Chambers can withstand aggressive substances like sulphuric acid and hydrogen sulphide which are found in every sewer.

These are integral to underground drainage systems and are installed where multiple drainage lines are connected. It is used for inspection, maintenance and removal of debris which is generated through the flow of sewer waste. These are used in sewerage/drainage networks. For maintenance of sewer manhole entry diameter were maintained for person entry and steps were provided to reach the person safely to base of the Manhole chamber.

CORFIT MANHOLE AND INSPECTION CHAMBER STANDARDS:

Manufactured under guidelines of BS EN 13598 1 & 2

BS EN 13598-1 For Inspection Chamber &

BS EN 13598-2 For Manhole Chamber.



CORFIT MANHOLE AND INSPECTION CHAMBER USAGE:

It is used in Commercial & Municipal sewerage/drainage networks

In general, Manhole / Inspection Chambers typically used in the following instances:

- Where a branch pipe meets the main drainage pipe in the underground drainage system
- When there is straight run of underground drain, Manhole / Inspection Chambers needs to be installed at specific interval for maintenance purpose.
- Where there is change in direction of drainage
- When there is change in gradient
- When there is change in drainage size.



CORFIT MANHOLE AND INSPECTION CHAMBER FEATURES:



Socket, spigot and side inlet connections with rubber sealing ring



Resistant to floating due to ribs and collar provided on external surface of riser/shaft



Abrasion resistant



Smooth inside invert surface for high hydraulic capacity



Chemical resistant



About 2° slope provided for gravity flow in Inspection Chamber base



Light weight

CORFIT MANHOLE CHAMBERS

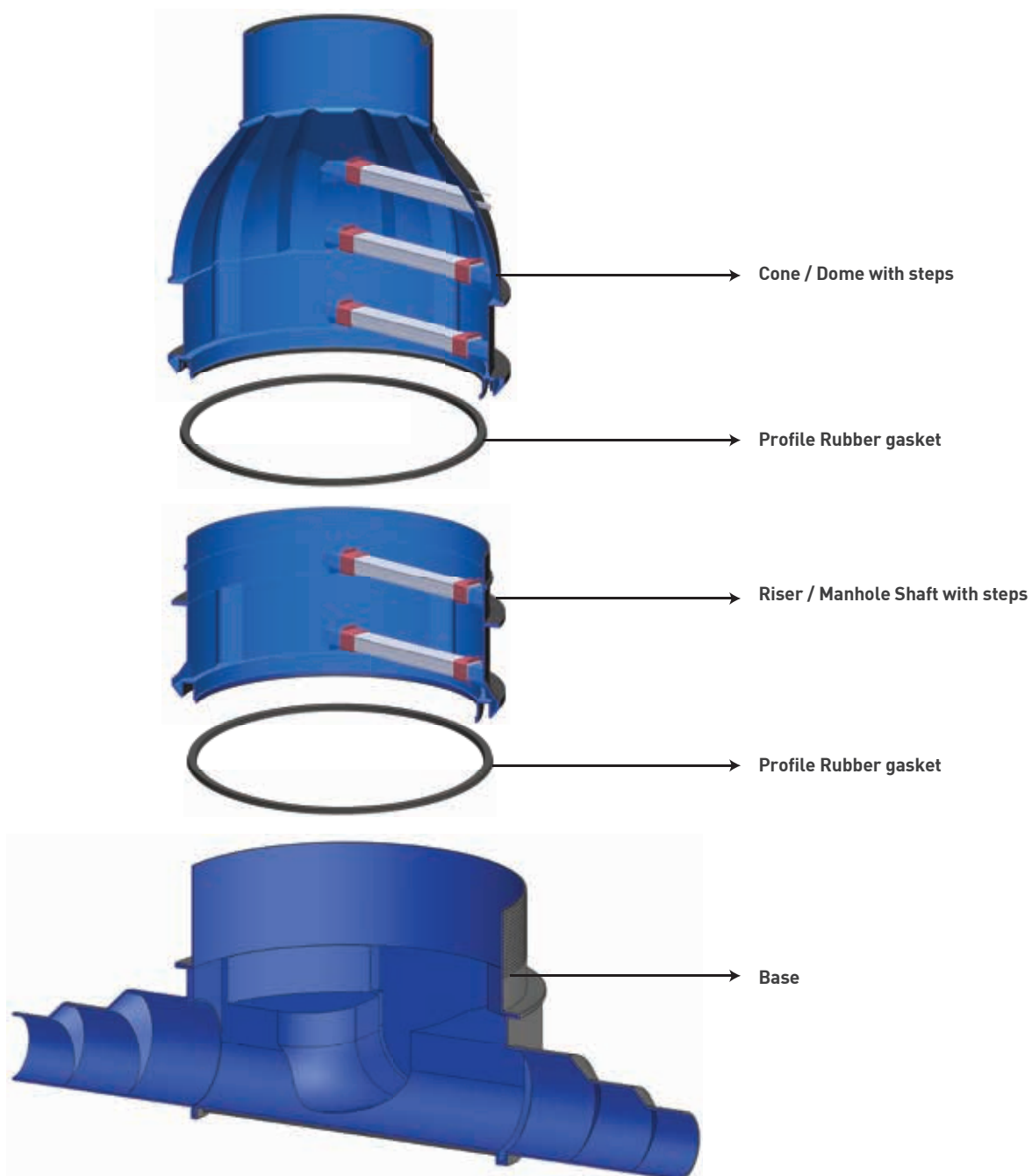
Prince Corfit PE Manholes assembly consist of :

Base

Riser / Shaft with steps

Cone / Dome with steps and

Elastomeric sealing elements / Profile Rubber gasket



PRODUCT RANGE

Item description	Main Inlet	Side Inlet	Main Outlet	Product Image	Type of Manhole Base
1000mm Base , 3Inlets and 1Multi outlet suitable for UPVC pipes	110, 160, 200, 250 & 315mm.	110, 160, 200, 250 & 315mm.	200, 250 & 315mm. 110mm, 160 & 200mm.		
1000mm Base , 2Inlets and 2Multi outlet suitable for UPVC pipes	200, 250 & 315mm.	110, 160, 200, 250 & 315mm.	200, 250 & 315mm. 110mm, 160 & 200mm.		
1000mm Base , 3Inlets and 1 outlet suitable for DWC pipes	250 & 300mm	100, 150 & 200mm*	250 & 300mm		

Note:- * For connecting DWC Pipe to use Rubber ring, Short length of UPVC pipe & Connector

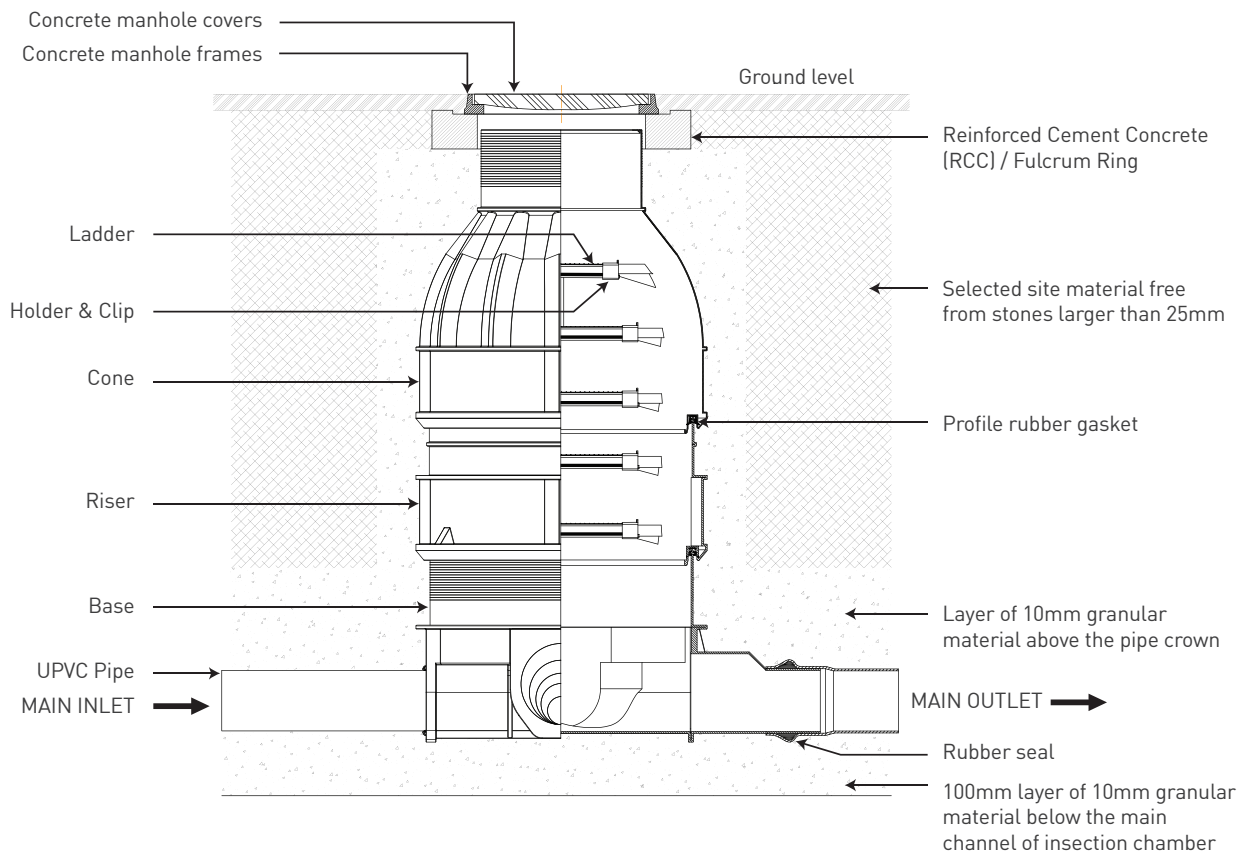
MAXIMUM RECOMMENDED INVERT DEPTH : Manhole = 6meter

JOINTING METHOD : Rubber Ring

Manhole Part	Total Height (mm)	Effective Height / Invert Depth (mm)
Base	750	700
Riser	580	510
	315	250
Cone	1180	1110
	1330	1260
	1480	1410

Note:- For height / invert depth adjustment, to use combination of Riser & Top Cone.

CROSS SECTIONAL VIEW OF MANHOLE CHAMBERS



MANHOLE INSTALLATION PROCEDURE

1. PREPARATION OF MANHOLE BASE AND HANDLING ON SITE

- Prepare manhole base for inlet and outlet connection according to site requirement.
- Flat base end inlet connection to be cut using hole saw cutter and outlet spigot connection with pipe cutter.
- Install rubber seals on the cut portion of flat end, few degree of flexibility is possible with these seals for pipe connection with manhole base.
- Ladder steps are factory fitted in riser and cone parts of manhole, check the fitment of ladder with clip and clip holder on projected portion before installation.
- Handle base and other manhole component while lowering in trench with swing arm of JCB equipment which is available on site. Use nylon sling for lifting of manhole components.
- If JCB is not available on-site handle base and other manhole components manually by two persons.

2. TRENCH PREPARATION FOR MANHOLE & INLETS AND OUTLET PIPE CONNECTION

- For manhole trench shall be 600mm wider than manhole diameter and 150-200mm more than inlet pipe invert level.
- Prepare 150mm sand filled bed for manhole base placement.
- Position the base on 150mm sand bed & connect the main inlet connection with manhole base.
- Level the manhole base using spirit bubble level scale for horizontalness.
- Connect side inlets and main outlet sewer pipes with manhole base.
- Manhole base is having inbuilt slope with respect to main inlet and outlet flow channel.
- If inlet connections are not possible on pre-marked location of base inlet pipe can be connected on riser using back-drop connection procedure.

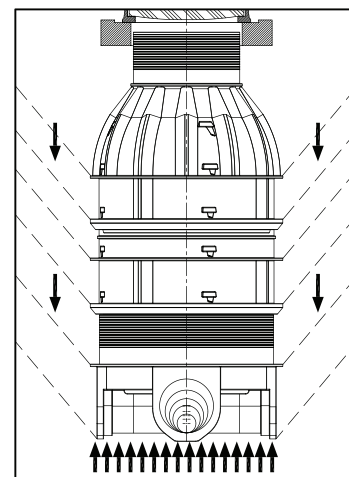
3. BACKFILLING & COMPACTION

- Base is ready with inlets & outlet connection, start backfilling with sand/ granular material around the manhole with 300mm layer and compact the backfilled with vibrating compactor.
- Ensure backfilled is properly haunch below the pipe and manhole and compacted.
- Assemble the risers on base using profile type rubber sealing element use rubber lubricant with rubber seal for ease of assembly of manhole components and follow the procedure of 300mm layer backfilling and compaction as stated above.
- Finally assemble cone at the top of manhole assembly and backfilled around the cone in 300mm layer backfilled and compaction manner till the PCC layer.
- 75mm PCC layer shall be laid in minimum 3.0-meter diameter periphery from manhole center or 3.0 x 3.0 meter square area.
- Assemble concrete fulcrum ring around the entry portion of cone on minimum 75mm PCC layer. Ensure fulcrum ring shall not touch with manhole assembly.
- Fix the manhole cover and frame on fulcrum ring and pour the concrete around the fulcrum ring and manhole frame up to frame top i.e. final ground level.
- In case of higher ground water and manhole is situated on heavy traffic area minimum section of RCC concrete shall be 150mm with 150mm steel reinforcement of 12.0mm.

UPLIFT PREVENTION

During designing stage of Manhole and Inspection chamber ribs and rings has in-cooperated on external surface of PE Manhole and Inspection chamber. These ribs and rings interlock with soil to prevent floatation/uplifting of manholes and chambers in areas where high water ground tables are present.

This stability calculations shows that, 1000m manhole has a co-efficient of safety >1.8.



QUALITY TEST

- Visual Appearance
- Dimension
- Structural integrity
- Manhole step and loader test
- Positive & Negative pressure test
- Water tightness
- Load bearing capacity
- Impact test
- Ring stiffness

HANDLING, STORAGE & TRANSPORTATION

- During loading, transportation and unloading every precaution should be taken to prevent damage.
- Manholes shall be stored on clean, level, and dry ground to prevent undue scratches, or gouging.
- The handling of manholes shall be done in such a manner that there is no damage.
- Use nylon sling or cushioned cable while unloading from vehicle and while shifting with the help of unloading equipment's/devices.
- Do not dropped, dragged or bumped against the other objects during unloading, shifting and jointing practices.



CORFIT INSPECTION CHAMBER

Corfit Inspection chamber is a single piece unit, it provides leak-free joints of inlet/outlet connections, making it easy to install

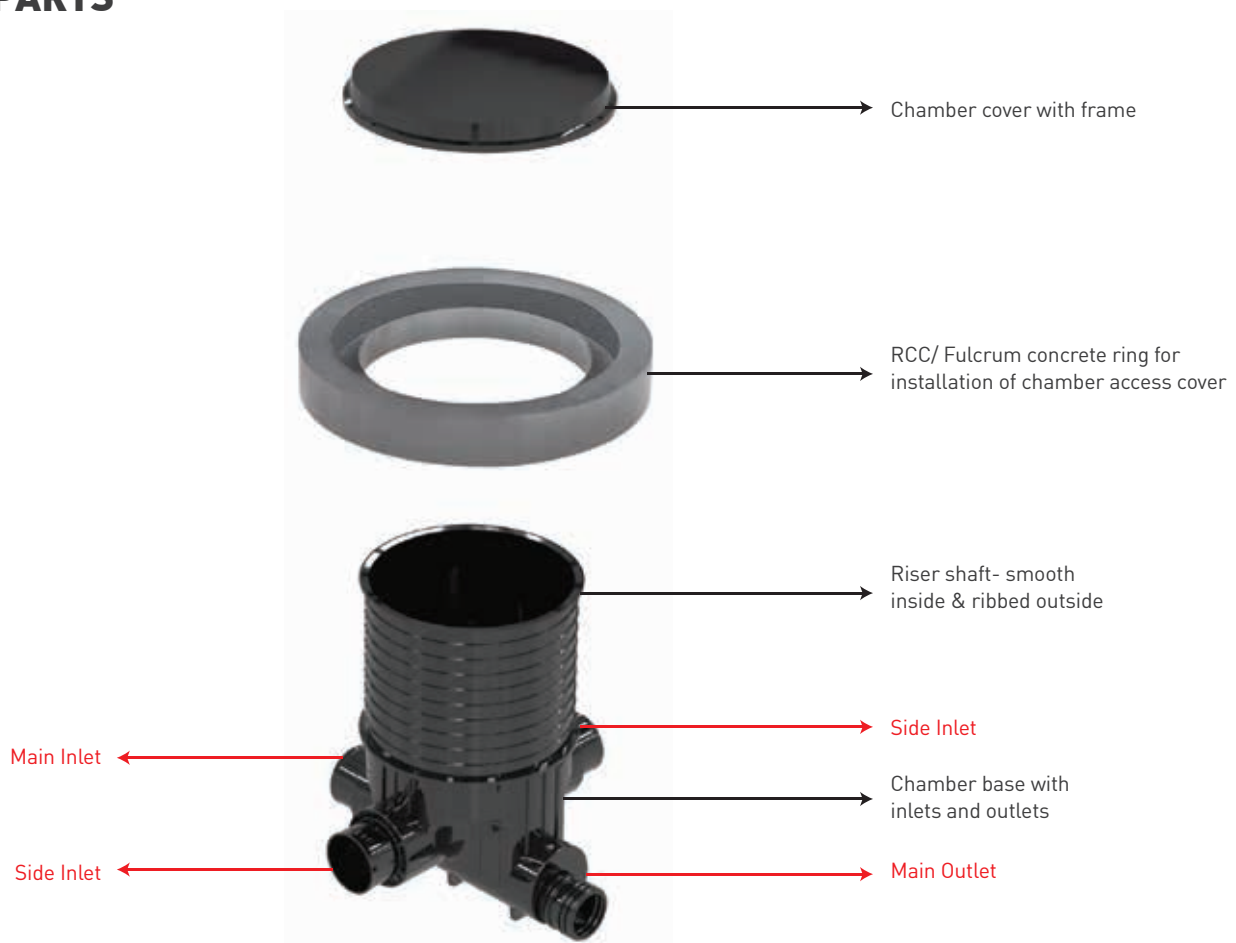
PRODUCT RANGE

Inspection Chambers are available in sizes 315mm & 600mm and suitable for invert depth.

- For 600mm diameter the invert depth 1.25metre
- For 315mm diameter the invert depth 0.75metre

Note: Open & closed side inlet is available in 600mm. As per site requirement, the required size and side to be cut before installation

PARTS



SIZES: 315MM & 600MM

Inspection Chambers are available in sizes 315mm & 600mm and suitable for invert depth.

- For 600mm diameter the invert depth 1.25metre
- For 315mm diameter the invert depth 0.75metre



315mm Inspection Chamber



600mm Inspection Chamber with open side inlets



600mm Inspection Chamber with all 3 inlet closed & spigot type multi outlet

Note: Open & closed side inlet is available in 600mm. As per site requirement, the required size and side to be cut before installation.

JOINTING METHOD : Rubber Ring Joint

COMPATIBLE WITH UNDERGROUND PIPING SYSTEMS

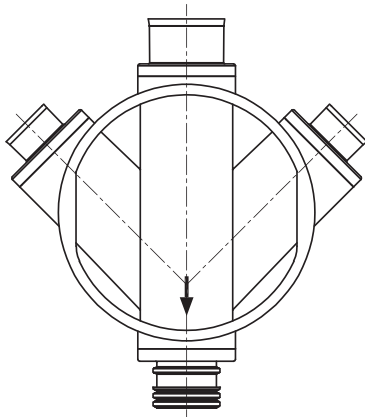
The base of Corfit Inspection Chamber is compatible with below underground drainage pipes:

Size of Inspection Chamber	uPVC Pipe Sizes	Corfit DWC Pipe Sizes
600mm base	110mm	100mm
	160mm	150mm
	200mm	200mm
	250mm	250mm
	315mm	300mm
315mm base	110mm*	100mm

It is also compatible with other underground drainage pipes available in the market as per the above mentioned standards.

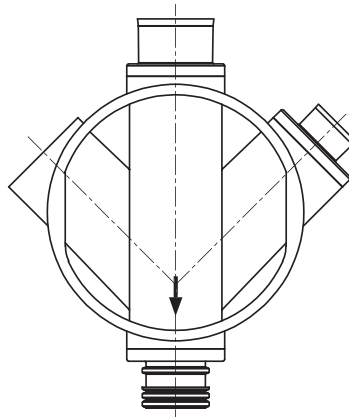
Note: *For the marked sizes, adaptors need to be used.

TYPES OF INSPECTION CHAMBERS



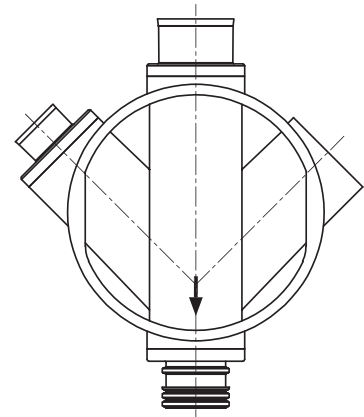
LH & RH - 45°
INLETS

Size: 600mm



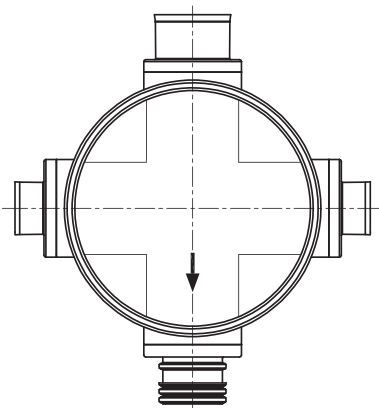
RH - 45°
INLET

Size: 600mm



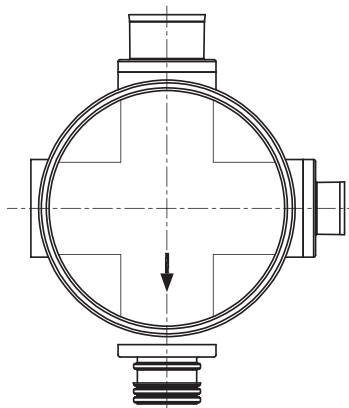
LH - 45°
INLET

Size: 600mm



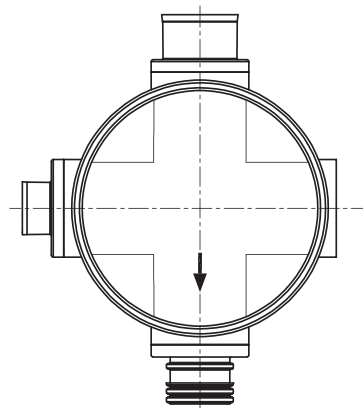
LH & RH - 90°
INLETS

Size: 315 & 600mm



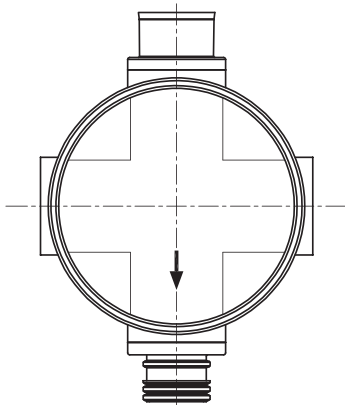
RH - 90°
INLET

Size: 600mm



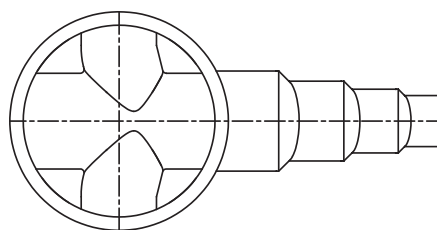
LH - 90°
INLET

Size: 600mm



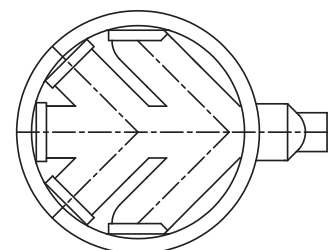
STRAIGHT

Size: 600mm



Single side
multi outlet (UPVC)

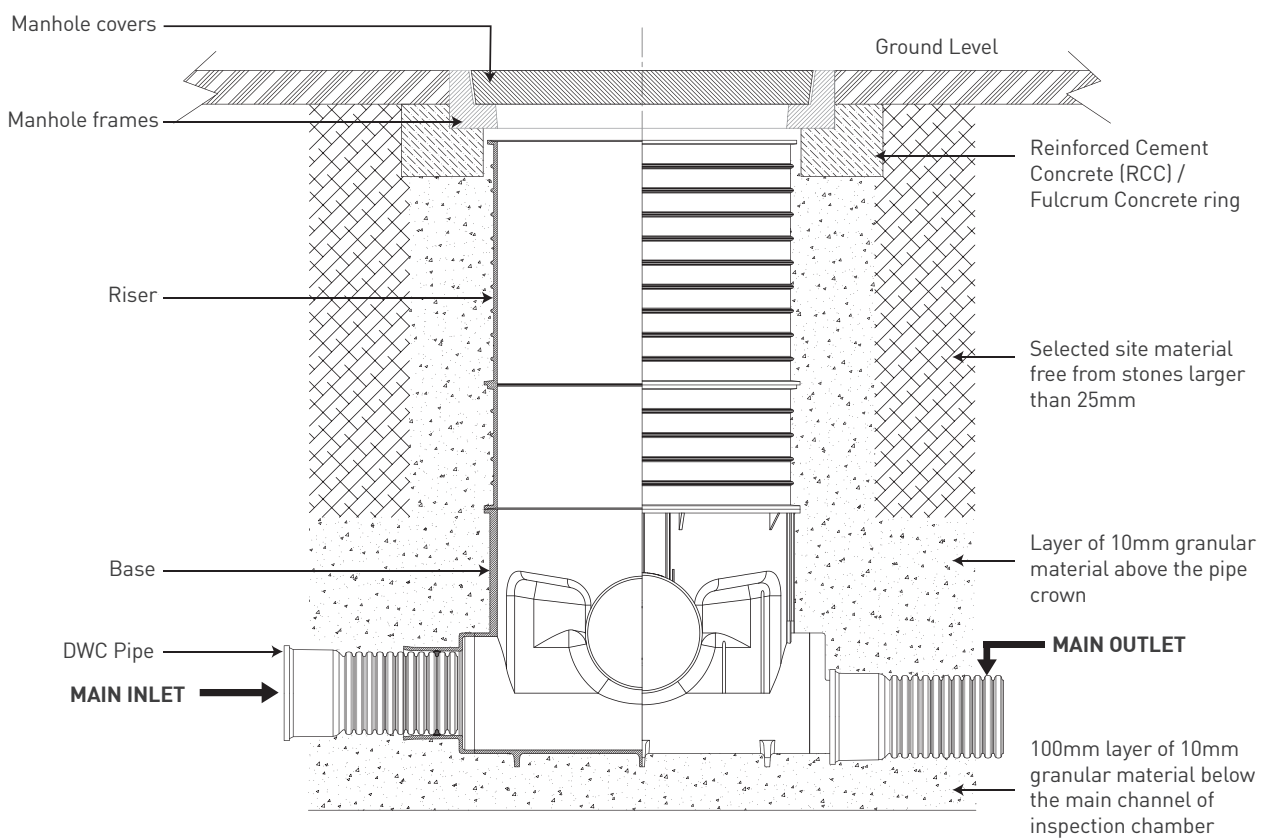
Size: 600mm



Single side
multi outlet (UPVC)

Size: 600mm (5-way)

CROSS SECTIONAL VIEW OF INSPECTION CHAMBER INSTALLATION



CORFIT INSPECTION CHAMBER INSTALLATION PROCEDURE:

1. Ensure the trench excavation is at least 300mm wide on each side of the chamber base considering the characteristics of natural soil.
2. Level the trench bottom and prepare bedding of minimum 100mm sand. Ensure that sand and trench base do not have sharp edges, big size stones or sand particles.
3. Clean the chamber base socket and riser pipe. Then apply lubricants on the rubber ring.
4. Position the chamber on the bed and connect the main trunk sewer line to chamber inlet. In case, sand bedding is low, increase the height and connect the chamber base inlet to main sewer line.
5. Use the spirit bubble level scale for leveling the top of the chamber base.
6. Cover the main sewer pipe 200-300mm with backfilled/sand material.

7. The chamber is now firmly set on the main sewer line and is ready to connect laterals.
8. Connect laterals and trunk outlet to chamber base sockets. All unused inlets, if open, should be plugged.
9. Cut the inspection chamber with the help of a fine-toothed saw to fit into the required height.
10. Inspection chambers are provided with ribs at a distance of 50mm for 600mm diameter and at 32mm for 315mm diameter to cut according to invert depth suitability as per site condition.
11. Fill granular material (similar to bedding material) around the chamber.
12. Backfilling of the trench should be carried out in successive uniform compacted layers of 200-300mm with good practice around entire circumference of the inspection chamber. Ensure backfill material from stone size of 40mm (1½"), lumps clay greater than 90mm (3") and timber or other material that could prevent sound compaction.
13. Prevent the compactor equipment/ backfill material from knocking with inspection chamber during compaction & backfill.
14. It is necessary to compact the soil with the minimum Standard Proctor Density (SPD) of $\geq 90\%$ with regular to heavy traffic.
15. Keep backfill level 60mm/ 90mm below the top of the inspection chamber.
16. Put the RCC/ Fulcrum concrete ring having minimum height of 85mm around the top of inspection chamber. The purpose of RCC/ Fulcrum concrete ring is to transmit the vehicle load towards the lower layers of the road, thus avoiding direct loading on the chamber.
17. The distance between outer diameter of inspection chamber and inside of fulcrum concrete ring must be minimum 10mm on each side. This assures the weight (static load of chamber cover and vehicular load) is not transferred directly on chamber assembly.





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