



# *PE Manholes*

Water and sewage applications

Underground cable applications

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*In technical collaboration with Floteks, Turkey*



### Floteks

*Having started its operations in 1982, Floteks is the pioneer of rotational molding technology in Turkey. With its high technology and research and development capability, Floteks is in par with top rotational molders in the world.*

*Having developed many products for automotive, materials handling and construction sectors, Floteks can produce any part from 5 to 25,000 liters.*

*Being a manufacturer for the automotive OEMs for 25 years, Floteks has a comprehensive quality lab.*



### Floteks Expertise in PE Manholes

- *Floteks manholes are designed to be compatible with a wide range of plastic pipes.*
- *All Floteks manholes have been tested by applying pressure on the inside as well as the outside.*
- *All manholes can be produced with a yellow interior for increased visibility.*
- *New manholes can be designed according to your project*

### Vectus Industries

*With a presence across the length & breadth of India and a footprint of over 3 decades, Vectus Industries Limited is one of the leading polymer-based Water Storage and Piping Solutions provider in India. With superior quality and cutting-edge technologies, we feel proud to be a one-stop solution for all kinds of water storage & transfer needs with the most diversified product portfolio in water tanks and plumbing systems. We, at Vectus, strive to transfer water in the most efficient manner by continuously innovating and delivering products to conserve the elixir of life. Our products touch millions of lives across the country, truly making us "India ki Waterline".*

*The company has always believed in constant innovation to keep up with the changing society and its lifestyle. New age thinking and modern approach has helped the company to come up with many one-of-a-kind products.*

*With more than 4300 dealers and distributors, 17 manufacturing plants and 4 depots across the country, Vectus has become one of the leading water storage and piping solutions in the country that adheres to the national and international standards of quality.*

*Keeping abreast with the national and international standards of quality, Vectus Industries is an ISO 9001:2015 Certified company.*

## Floteks Quality: TS EN 13598-2

FLOTEKS A.Ş. manufactures with the latest norms and quality criteria. All the tests for the products are performed with research and development (R&D) policy and Floteks Quality System. Floteks is unique in her 'all under one roof' philosophy.

Floteks manufactures wide range of infrastructure products used in pipe or cable systems for inspection & maintenance services, connections in accordance with the latest standards.

SUBTERRA branded infrastructure products are qualified for the authoritative standard EN 13598-2.

## Quality Certificates: TS EN 13598-2

FLOTEKS SUBTERRA branded thermoplastic Underground Products, PE Manholes and Inspection Chambers, are manufactured in accordance with authoritative standard EN 13598-2. SUBTERRA branded infrastructure products are qualified for Class E - Areas of imposing high wheel loads, e.g. dock and aircraft pavements of EN 13598-2.

## TS 1478 EN 124

FLOTEKS' Polyethylene Cover Series are qualified for Class A15 "Areas which can only be used by pedestrians and pedal cyclists" of EN 124 Standard.

## TS EN ISO 9001:2008 TS EN ISO 14001



TS EN 13598-2



TS EN ISO 9001:2008



TS EN ISO 14001



TS 1478 EN 124

Infrastructure projects shall be carried and supervised by skilled and qualified civil engineers authorized by the contractor. SUBTERRA branded underground products carries out easy & flawless assembly when installed by skilled and qualified civil engineers in accordance with the installation guide and the requirements of civil engineering.

**Plastics raw material tests**

*These tests ensure that the raw material qualifications are in line with the technical specifications provided by the producer.*



**Microscope**

*The microscope is used to see and photograph the small details of the raw material and finished product parts, invisible to the naked eye.*



**Aging test**

*This test shows how plastics used endure environmental effects. To determine color fastness is one of the major functions of the test apparatus.*



**3D measuring equipment**

*With these devices we can control the dimensions of the parts produced.*



**Raw material wall thickness**

*This equipment measures the wall thickness of the products. Checking the wall thickness distribution of the rotomolded parts is crucial.*



- Excavate the hole where the manhole will be installed.
- Treat (if needed) and compact the sub-grade bottom with a compactor.
- Grade and level the bottom of the trench with a bedding layer of granular material.



- Place the manhole on the even surface.
- Fill the trench up to the pipe layer by layer with compaction.
- Connect the pipes in a watertight manner, according to the procedure that will be provided by Floteks.



- Continue filling with proper material, making sure it is filled layer by layer with compaction in each layer.
- Fill the hole up to 5-8 cm below the top of the manhole.
- Place the lid and fill the remaining area with top coat material, compact the top coat material one last time.



Note: Assembly by experienced technicians, according to the instructions provided by Floteks will ensure a long lifetime.

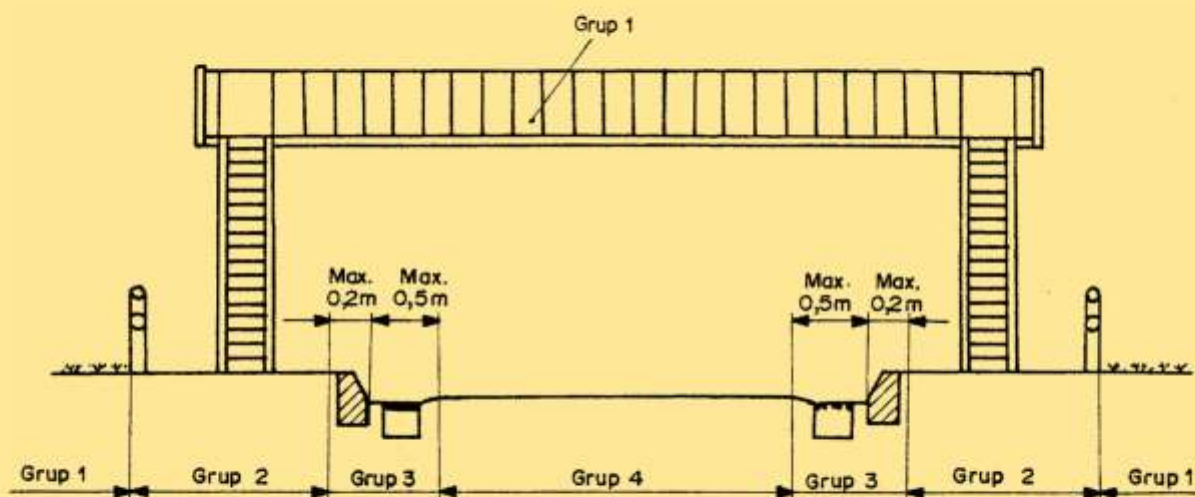
## Installation Areas

Subterranean units are installed frequently to connect and divert lines and perform maintenance and repair operations in infrastructure systems.

Subterra Manholes and Inspection Chambers are designed to a variety of international standards – the most comprehensive being the European Standard: EN 13598-2 and EN 124 Standard

For Vehicular and Pedestrian Areas FLOTEKS offers products rated to the proof loads Class A through Class E.

Please refer to the explanatory diagram and table below:



### Group 1 (A15)

Areas which can only be used by pedestrians and pedal cyclists.

### Group 2 (B 125)

Footways, pedestrian areas and comparable parks or car parking decks.

### Group 3 (C 250)

For manholes installed in the area of curbside channels of roads.

### Group 4 (D 400)

Carriageways of roads (including pedestrian streets), hard shoulders and parking areas, for all types of road vehicles.

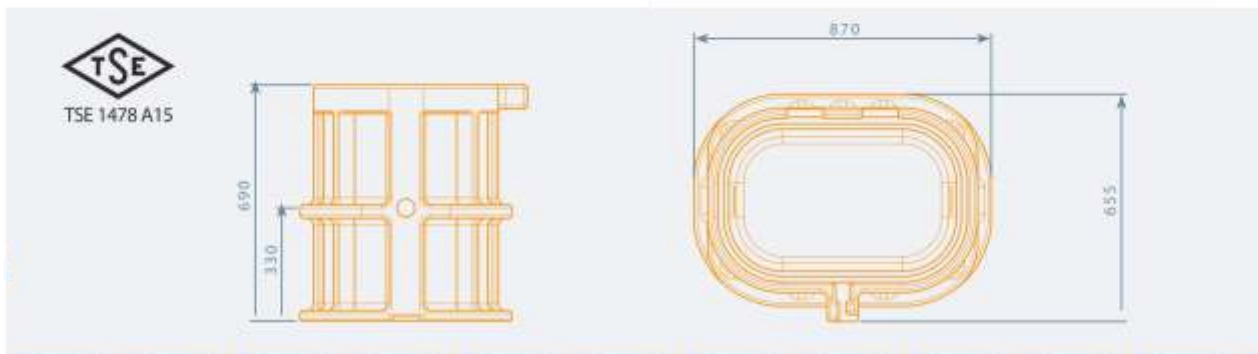
### Group 5 (E 600)

Areas of imposing high wheel loads, e.g. dock and aircraft pavements.

SUBTERRA branded infrastructure products are qualified for Class E - Areas of imposing high wheel loads, e.g. dock and aircraft pavements of EN 13598-2.

## Watermeter Chamber

This product has been designed especially for a customer, to replace a concrete product and benefit from the advantages of plastics.



### Problems with the Concrete Water Meter Chamber

- With a weight of 550 kgs, It requires heavy machinery during loading and installation.
- Assembly is long.
- Cracks and breaks occur during loading-unloading and assembly.
- Cement is degraded in time due to ground water and chemicals.
- Temperature changes causes condensation inside the meter, making it impossible to read.
- During winter, the water meters freeze and become unusable.

### Advantages of the Plastic Water Meter Chamber

- Weighing only 30 kgs, it can be lifted and installed by only one person.
- The speed of assembly has increased 3 times since the plastic chamber was introduced.
- Its flexible material makes it impact resistant.
- Plastic will not degrade with water and chemicals. The plastic chamber has a long lifetime.
- The plastic chamber is 100 % water tight. It allows for water tight connections with plastic pipes.
- The lid is completely filled, making it act as an insulator. The lid also has EN 124 A15 certificate.

Sewage

*Subterra 1200/1250 Series*

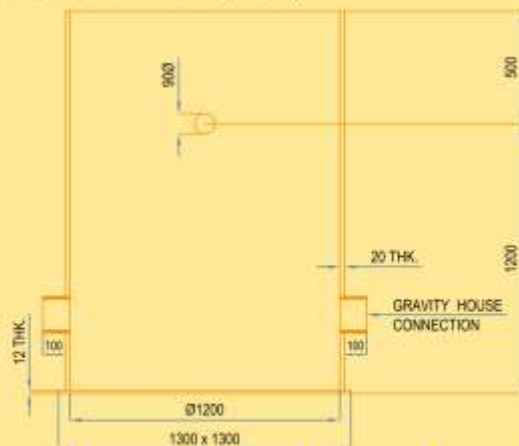


*Inlets/Outlets to the manholes are mostly obtained by welding of pipes to the units in most systems.*

*By unique design of Floteks Subterra inlets and outlets are integrated to the body. By this design Subterra products very nearly eliminate welding process, related quality problems and offer big advantages at site.*

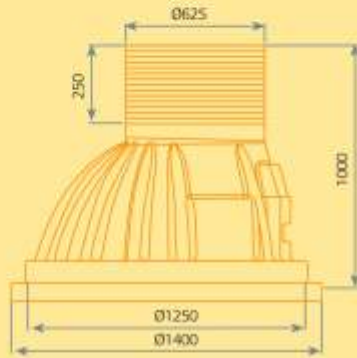


*Chamber HDPE PE100 (1200)*



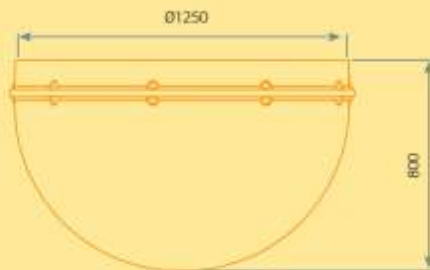
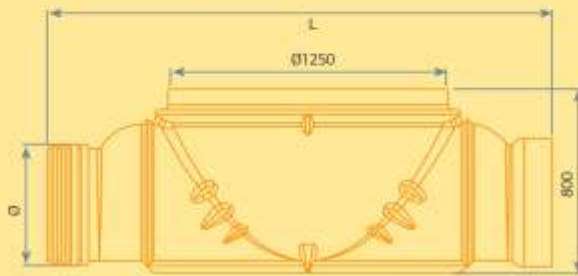


**Cones**



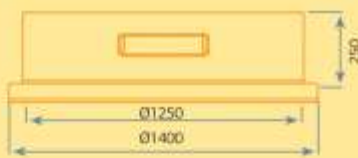
Modular Product	Height (mm)
Subterra 1250 Asymmetrical Cone	750/1000

**Bases**

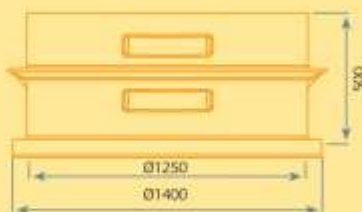


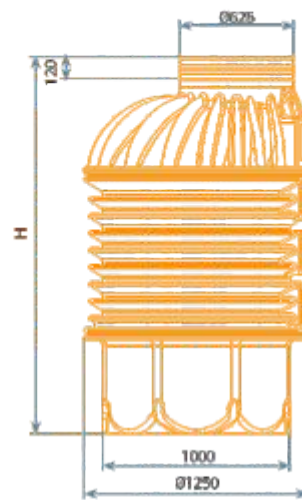
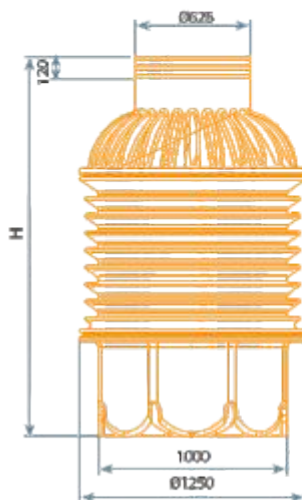
Modular Product	Height (mm)
Subterra 1250 Base With Integrated Pipes	800/1250
Subterra 1250 Base	800/1250

**Risers With PE Ladders**



Modular Product	Height (mm)
Subterra 1250 Riser	250
Subterra 1250 Riser	500
Subterra 1250 Riser	750
Subterra 1250 Riser	1000
Subterra 1250 Riser	1250



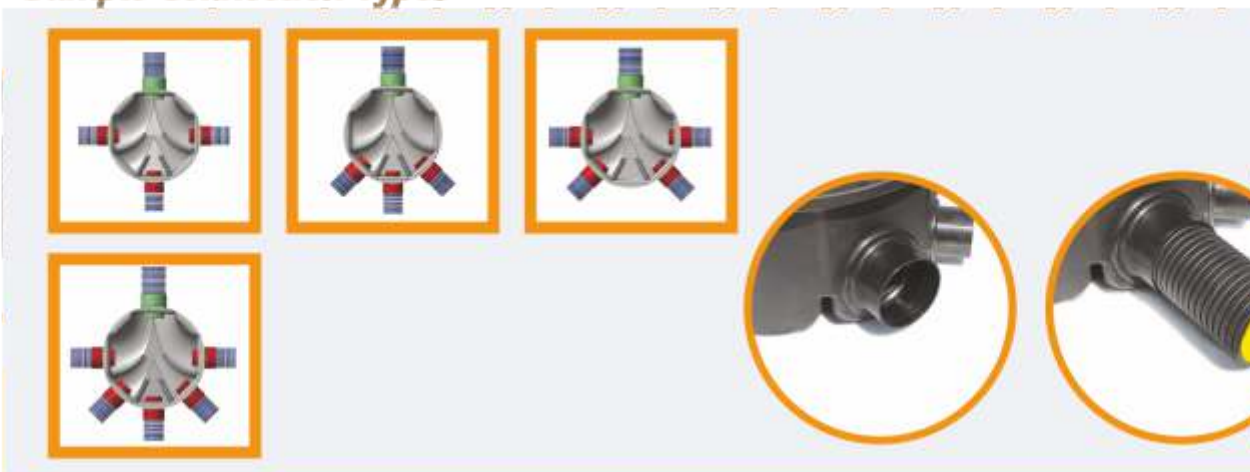


**Single Piece PE Manhole with Ladder**

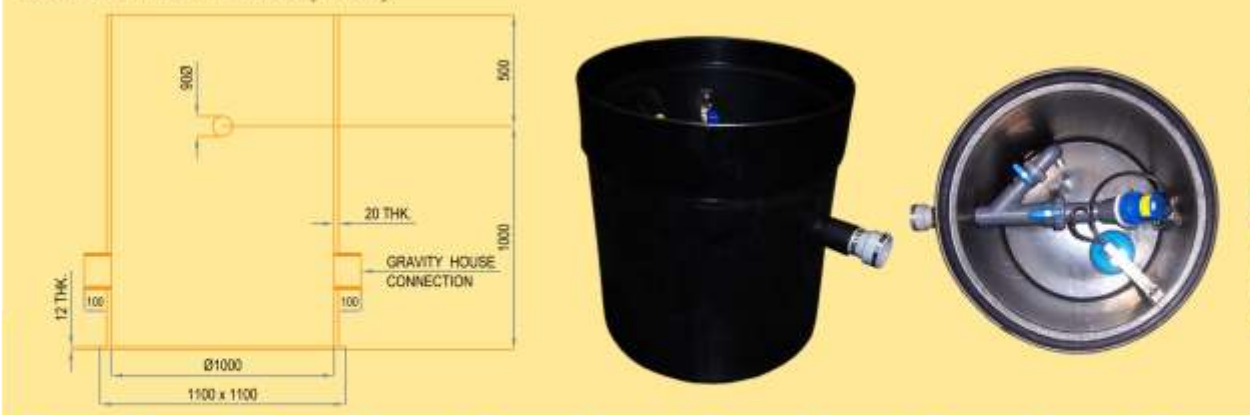
Height (mm)	DN (mm)	Entrance Diameter (mm)	Connecting Pipe Diameters (mm)
1150 - 1250	1000	625	Ø100- Ø150- Ø 200- Ø 250 Ø 300
1150 - 1250	1000	625	Ø100- Ø150- Ø 200- Ø 250 Ø 300
1450 - 1550	1000	625	Ø100- Ø150- Ø 200- Ø 250 Ø 300
1750 - 1850	1000	625	Ø100- Ø150- Ø 200- Ø 250 Ø 300
2050 - 2150	1000	625	Ø100- Ø150- Ø 200- Ø 250 Ø 300
2350 - 2450	1000	625	Ø100- Ø150- Ø 200- Ø 250 Ø 300
2650 - 2750	1000	625	Ø100- Ø150- Ø 200- Ø 250 Ø 300
2950 - 3050	1000	625	Ø100- Ø150- Ø 200- Ø 250 Ø 300

All manholes can be cut 250 mm for precise leveling.

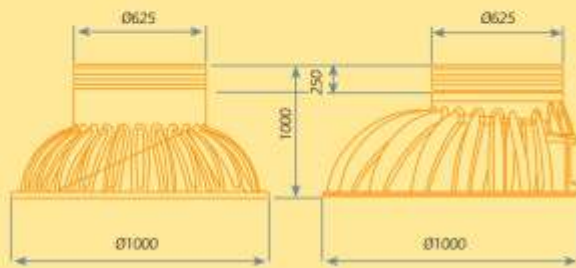
**Sample Connection Types**



**Chamber HDPE PE100 (1000)**

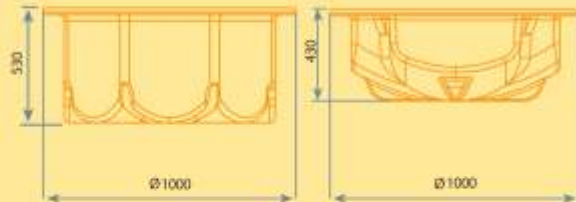
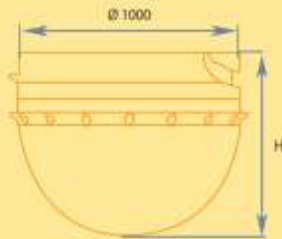
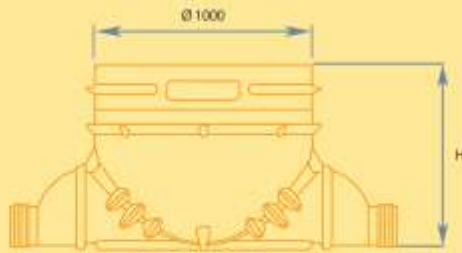


## Cones



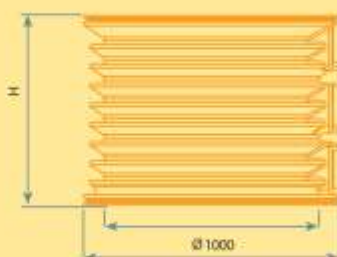
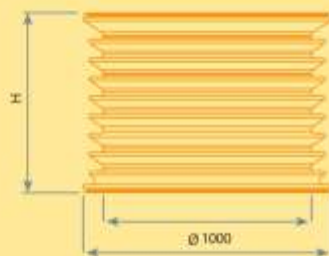
Modular Product	Height (mm)
Subterra 1000 Symmetrical Cone	500/750
Subterra 1000 Asymmetrical Cone	750/1000

## Bases



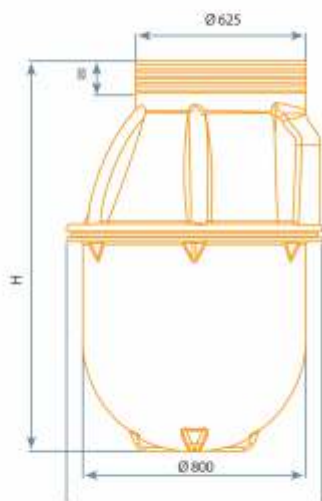
Modular Product	Height (mm)
Subterra 1000 5+1 Way Base	600/800
Subterra 1000 4 Way Flexible Base	500/700
Subterra 1000 Base With Integrated Pipes	750/1000
Subterra 1000 Base	750/1000

## Risers With or Without PE Ladders



Modular Product	Height (mm)
Subterra 1000 Riser	250
Subterra 1000 Riser	500
Subterra 1000 Riser	750
Subterra 1000 Riser	1000

**Subterra 800 Series**



Height (mm)	DN (mm)	Entrance Diameter (mm)	Connecting Pipe Diameters (mm)
1100 - 1200	800	625	Ø100- Ø150- Ø 200- Ø 250 Ø 300 Ø 400
1350 - 1450	800	625	Ø100- Ø150- Ø 200- Ø 250 Ø 300 Ø 400

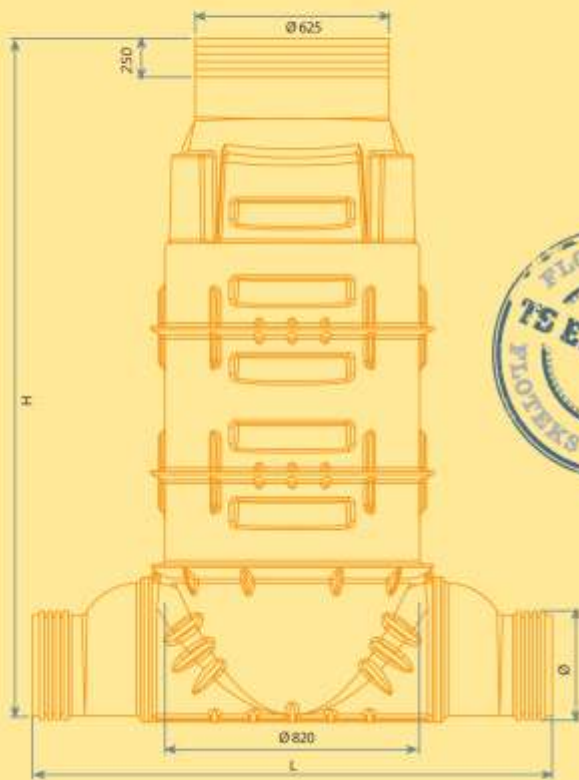
All manholes can be cut 250 mm for precise leveling.



**Chamber HDPE PE100 (800)**



## Subterra 800 Series



### Cones

Modular Product	Height (mm)
Subterra 800 Asymmetrical Cone	750/1000

### Risers With PE Ladders

Modular Product	Height (mm)
Subterra 800 Riser	250
Subterra 800 Riser	500
Subterra 800 Riser	750
Subterra 800 Riser	1000

### Subterra DN 800 Single Piece Plastic Manhole

Height (mm)	DN (mm)	Entrance Diameter (mm)	Connecting Pipe Diameters (mm)
1250	800	625	Ø100- Ø150- Ø 200- Ø 250 Ø 300 Ø 400
1500	800	625	Ø100- Ø150- Ø 200- Ø 250 Ø 300 Ø 400
1750	800	625	Ø100- Ø150- Ø 200- Ø 250 Ø 300 Ø 400
2000	800	625	Ø100- Ø150- Ø 200- Ø 250 Ø 300 Ø 400
2250	800	625	Ø100- Ø150- Ø 200- Ø 250 Ø 300 Ø 400

All manholes can be cut 250 mm for precise leveling.

### Bases

Modular Product	Height (mm)
Subterra 800 Base With Integrated Pipes	550/800
Subterra 800 Base	550/800



Sewage

**Subterra 600 Series**



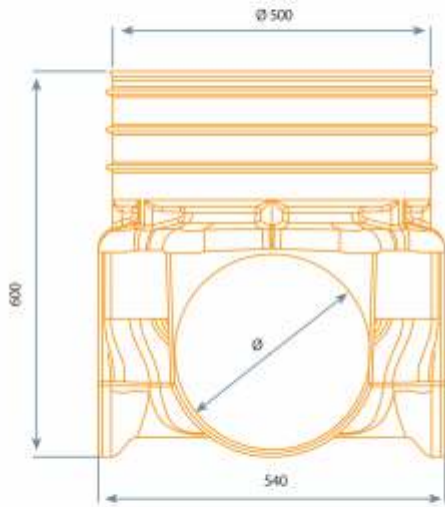
**Bases**

Height (mm)	DN (mm)	Entrance Diameter (mm)	Connecting Pipe Diameters (mm)
800	600	625	$\varnothing 100$ - $\varnothing 150$ - $\varnothing 200$ - $\varnothing 250$ - $\varnothing 300$

All manholes can be cut 100 mm for precise leveling.

**Subterra 500 Series**

Sewage



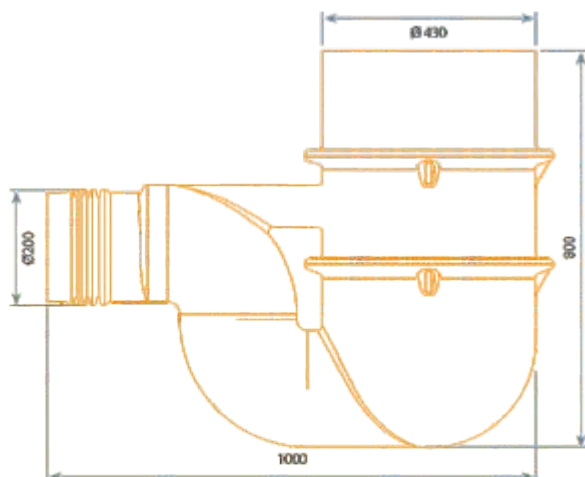
Height (mm)	DN (mm)	Type	Connecting Pipe Diameters (mm)
600	500	Four Way Base	Ø100- Ø150- Ø 200

When assembled with pipes, Ø400 diameter pipes can be used as a riser.



**PE Inlets**

PE Inlets are used in rainwater applications, to accumulate rainwater from roads/open spaces and direct it to the manholes.



**PE Covers**

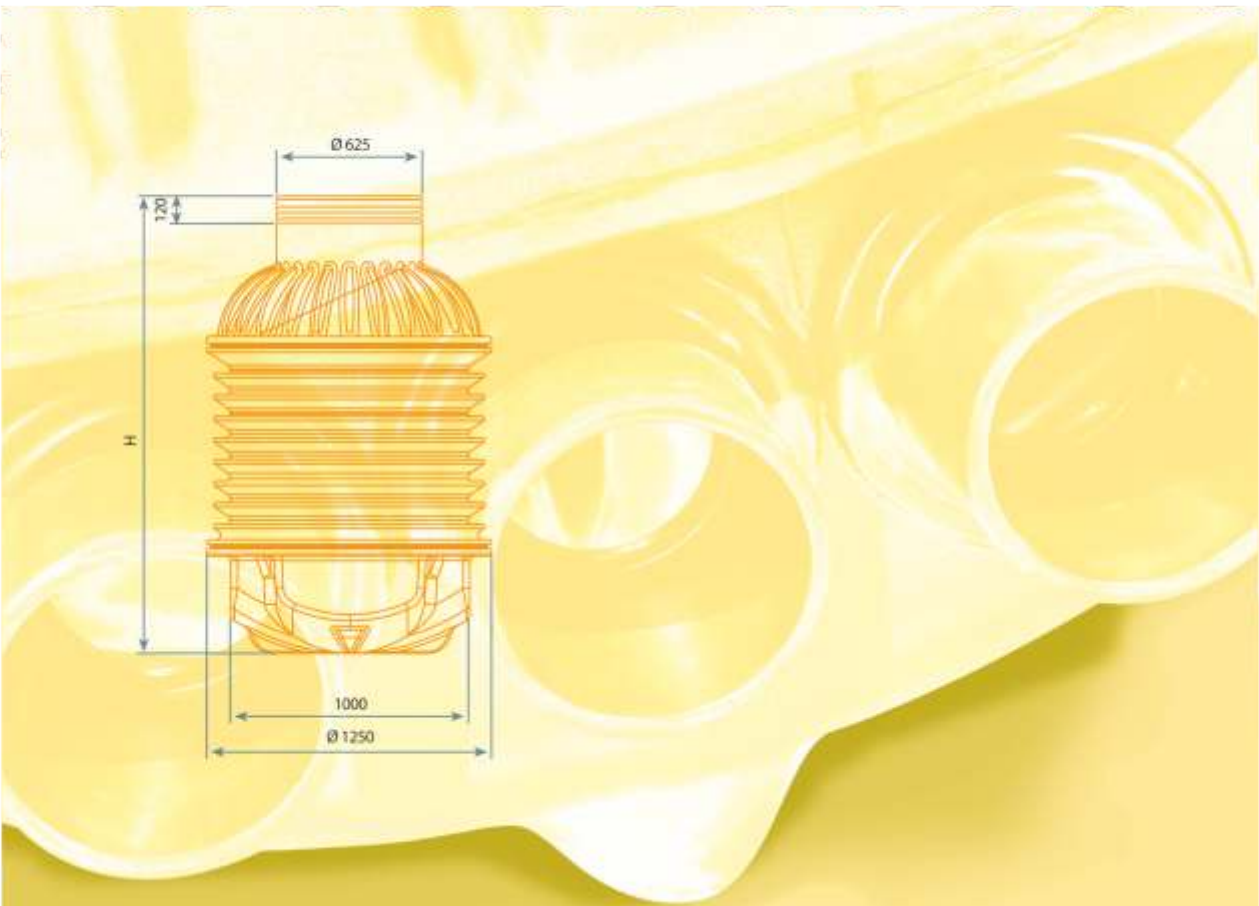


Subterra Pe Cover product range includes flapgate and overtaking models with/without lock for DN 400 and DN 600 Series.

All Subterra PE Covers are qualified for TS 1478 EN 124 Class A15







**Telecom Manhole**

Height (mm)	DN (mm)	Entrance Diameter (mm)	Connecting Pipe Diameters (mm)
950 - 1050 mm	1000	625	Ø100- Ø150
1250 - 1350 mm	1000	625	Ø100- Ø150
1550 - 1650 mm	1000	625	Ø100- Ø150
1850 - 1950 mm	1000	625	Ø100- Ø150

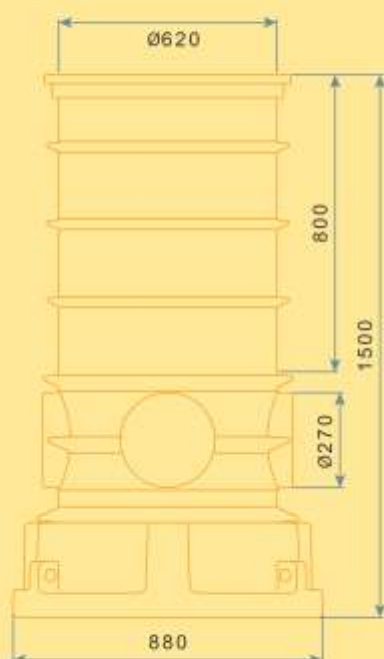
All manholes can be cut 250 mm for precise leveling.



# Drainage Manhole

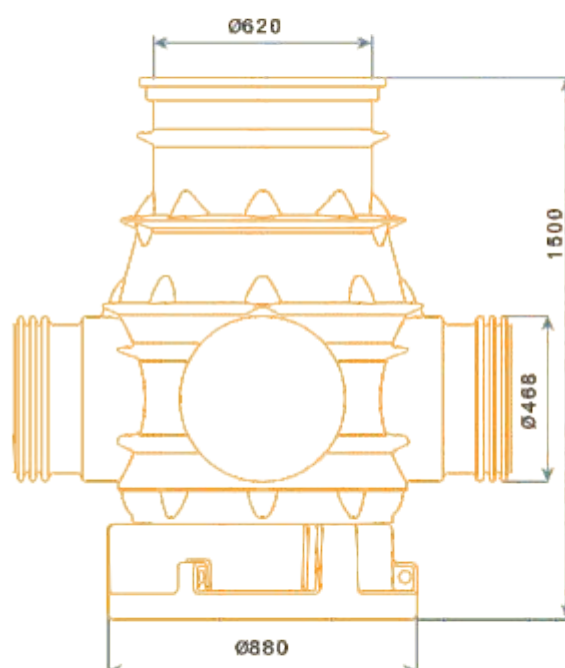
## DN 600 Drainage Manholes

- Pe Base designed with chamber for concrete volume
- Body allows 4 way connections
- Ability to work up to Ø200 mm drainage pipes
- 1200, 1500 and 1800 mm height options
- Screw type connected base and body parts



## DN 800 Drainage Manholes

- Pe Base designed with chamber for concrete volume
- Body allows 4 way connections
- Ability to work up to Ø400 mm drainage pipes
- 1300, 1500 and 1800 mm height options
- Screw type connected base and body parts



## Check Valve Box



*Check valves must be horizontally installed and must be in a manhole/inspection chamber to perform control/maintenance activities.*

## Plastic Valve Box



### Specifications

Body : Modified Polyamide  
 Cover : GG20 Cast  
 Height : Adjustable  
 Heat Resistance : 240 C  
 Load Resistance : D400

### Advantages

- Fast, easy and secure installation
- Possibility for height adjustment
- Life-time parallel with pavement's (asphalt etc.)
- Installation with just one personnel
- Frost and rust proof
- Silent Cover
- Impact Durability
- High Mechanical resistance

## CONCRETE

### Water Tightness

Due to underground waters and chemicals, concrete manholes get thinner in time and crack, causing leakages. In Europe, concrete manhole producers have started to cover the inside of cement manholes with Pe, in an attempt to lower inner corrosion.



## THERMOPLASTIC

Resistance to water and chemicals is very high. Thermoplastic manholes will not leak, protecting the environment.

### Compatibility with Pipes

A connection between a concrete manhole and a pipe can not be leak-proof.

A plastic pipe and a PE manhole can form a leak-proof connection.

### Flexibility

May be damaged by earthquakes.

May be damaged by earthquakes.



### Weight

Due to its high weight, the manhole may crack or break while handling during transportation and assembly.

The weight of a PE manhole is about 5% of a concrete manhole

### Assembly Equipment

Requires heavy equipment.

2 people can easily do the assembly with light equipment. Assembly of PE manholes is easy even in difficult terrain and hard conditions.

### Assembly Time

Assembly is long.



Assembly is short.

### Maintenance

Short lifetime. Requires maintenance.

Lifetime expectancy is 50 years. It will not require maintenance during this period.

### Environment and Global Warming

A concrete manhole emits 33kgs of greenhouse gasses per year. This amount is increased to 423 kgs per year, if the manhole leaks.

A PE manhole emits about 2 kgs greenhouse gasses per year.



### Economic Outlook

Cheap at first purchase. In time, cost rise due to assembly, maintenance and short lifetime.

Seems expensive at first purchase, but is cheaper in the long run with its superior attributes.



It is estimated that 50% of all concrete manholes leak right after installation.

Our firm reserves the right to change any of the products shown on the brochure.



# VECTUS®

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