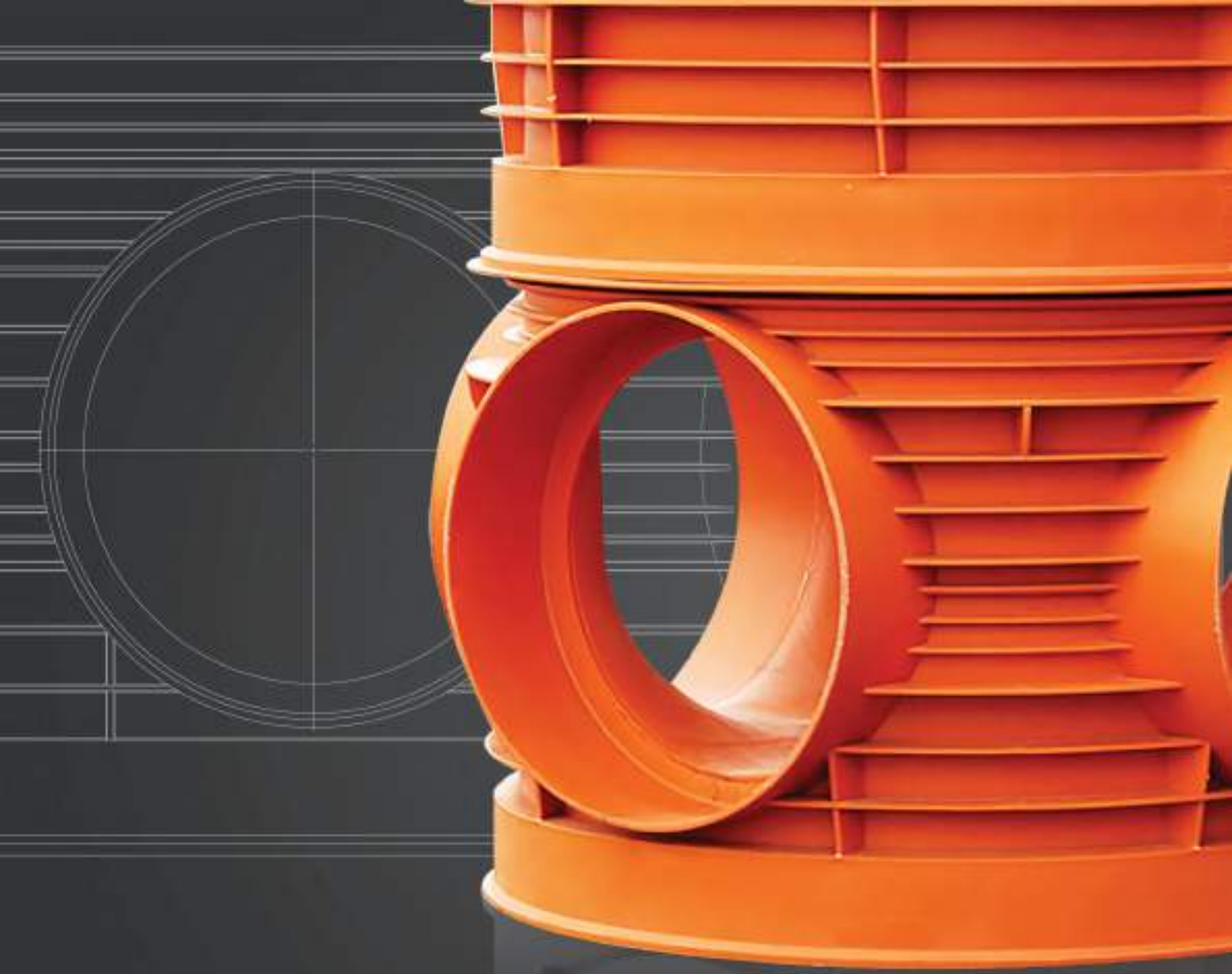


INTER CONSTRUCTION

PRODUCTION OF **POLYETHYLENE AND POLYPROPYLENE PRODUCTS**

Macedonian quality

www.inter-construction.com.mk

Procurement, transport and installation of sewage manholes and chambers with diameter: DN1000, DN800, DN600/DN630, DN400 made of following parts (conus, injected raiser and base). Steps to be class I according EN 13101 standard and made of GRP (glass reinforced plastics).

Manholes and chambers should be produced using injection technology with high quality PP material without adding additives or gases in production process.

The wall thickness of the manhole elements should not be less than 10 mm and it should be reinforced with 40-60 mm ribs.
The company must be certified according to ISO 9001; ISO 14001 and ISO 45001.

FOR TECHNOLOGY

Injection technology is a sophisticated process of production.
This technology is the best method for high productivity of products with ideal surfaces.

The advantages of using this technology are:

- Flexibility
- Fast, efficient and effective production
- Economy
- Enables production of elements of different sizes and shapes
- Safer production

MATERIAL

The new generation Futura manholes are made of polypropylene PP and/or PE (polyethylene) according to EN standards 13598-1 and EN 13598-2.
These materials have been used successfully for several decades in the production of plastic manholes.

Polypropylene and polyethylene meet the strict environmental and technology requirements.
The advantages of PE / PP materials are of great importance for general use in the sewer systems.

The most important advantages include:

- high resistance in abrasive environments
- corrosion resistance
- good fluid flow properties
- environmentally friendly materials
- 100% waterthigtness joints
- flexibility
- security

QUALITY CONTROL

Any material that enters as raw material in company and each product throughout production is subject to strict control in order to ensure high quality.

APPLICATION

The role of the manhole is to control the right working of sewer systems. According to the standards, the manholes are set at a certain distance when the channel is in a straight line or when it is horizontal / vertical breach of the canal route.

Manholes are installed when there is changing in the diameter of the pipes and when connecting on two or more channels in one position.
Depending on the situational solution of sewerage network and terrain configuration, i.e. leveling plan manholes can be:

- Initial manhole
- Assembling manhole
- bed drop manhole
- Water draining manhole-road gully

Sewer system to work properly it is necessary right design, perform and installi manholes and other elements.

There are several parameters which affect the design:

- Depth and groundwater level
- soil condition
- Trench
- traffic loads
- Other external influences

Static calculations according to ATV A-127 standard

For static calculation of manholes there are different international regulations. These calculations for Futura manholes are performed with the help of software where the forces acting on the structure of the manholes are analyzed and explained.

STANDARDS

- EN 13598-2 - Plastic piping systems for underground drainage and sewerage without pressure – unplasticized poly (vinyl chloride), (PVC-U), polypropylene (PP) and polyethylene (PE) – Part 2: Specifications for manholes and control chambers.
- EN 124 - Gutter and sewer covers for carriageways and pedestrian areas - Part 1: Definitions, classifications, general principles of performance design and test methods.
- EN 476 General requirements for components applicable to sewer and drainage pipes.
- EN 681-1 - Elastomeric seals - Requirements for sealing materials for supply pipe joints and water drainage - Part 1: Vulcanized rubber.

GENERAL CHARACTERISTICS

Due to environmental pollution, global warming, the emergence of the greenhouse effect on a large scale began to raise public environmental awarenes through various world-class projects. The European Union's environmental policy is based on high standards and fostering innovation. This is what the new era of manholes - Futura Manholes

EASY INSTALLATION

Futura manholes are telescoped which means easier and cheaper transport. In addition to facilitating transportation, the light weight also saves time and cost during installation - up to 80% savings from installation time of the project.

Experience shows that by using Futura manholes the clients can reduce the cost up to 80%. Statistics indicate that in one working day the number of installed manholes made of traditional materials is 2-3, while in plastics from 10 to 12 manholes.

TEMPERATURE RESISTANCE

Futura manholes are product that is exposed to various temperatures. The shape of the manhole remains unchanged when exposed to direct sunlight, and also at low temperatures.

CHEMICAL RESISTANCE

The characteristic of resistance of the PE and PP to the chemical aggression is already known. The characteristics of these manholes are defined in the EN 13598-1/2 standard, in which is confirmed that the manholes made of PE and PP are resistant in a wide spectrum of PH values, The list that contains the values about the chemical resistance can be delivered upon the request of the customers.

LONG TERM

They are made of PE / PP and completely exclude possible problems and damages that occur in other manholes in traditional materials that have been used so far.

FAST PRODUCTION AND DELIVERY

Plastic injection technology is highly productive per unit time.
The elements of Futura shafts are designed so that there is no need for finishing. Depending on the needs of the buyer there is a possibility to make certain changes.

MAINTENANCE AND OPERATION

Working and maintaining with Futura elements means cost savings of more than 50% for the entire project. The construction and maintenance of sewage elements (manholes, pipes, fittings, etc.) costs 25% on average of the total cost.

RESISTANCE TO MECHANICAL STROKES

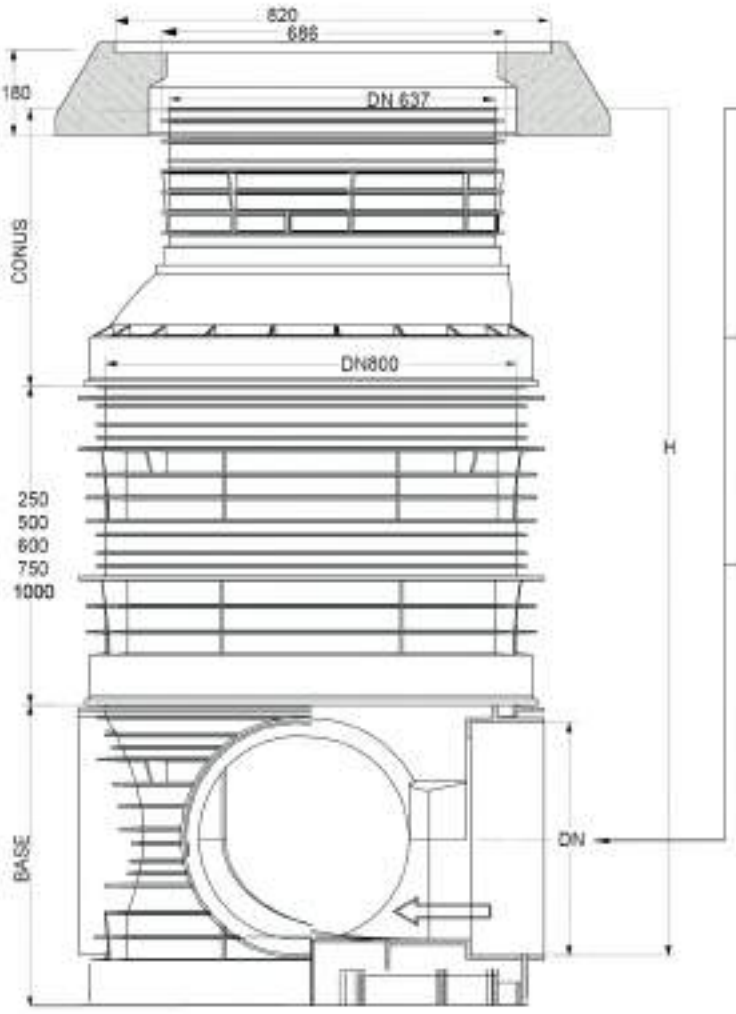
PE / PP are elastic materials that do not crack and therefore Futura manholes are resistant to shocks and falls under certain conditions that may occur during installation.

POSSIBILITIES FOR DIFFERENT CONNECTIONS

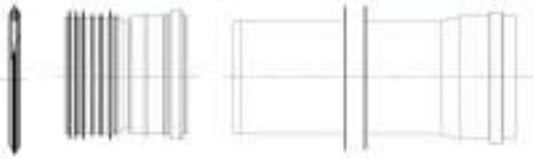
Futura manholes are the only one on the market that offer the possibility of connecting different models of pipes from different manufacturers:

- ID ribbed pipe
- OD ribbed pipe
- OD smooth pipe

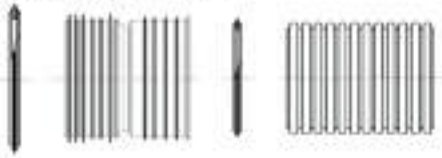
Futura manholes also can be produced together with the pipe connection provided in the project.



DN/OD, EN 13476-2, EN 1852-1, EN 14758-1



DN/OD, EN 13476-3



DN/ID, EN 13476-3

The pipe should be clean and lubricated with LUBRICANT NEUTREX or similar.

The manhole can be supplied compact with fully welded elements or with a specially designed rubber seal between the joints of each element.

This rubber ensures the stability of the elements and waterproofing. The rubber seal is produced in accordance with the requirements of the standards EN 681-1 and EN 13259.

CONNECTION EXTRUSION WELDING

CONNECTION ON SITE WITH SEAL

LEAKING MANHOLES

Manholes made of traditional materials are permeable. Futura manholes thanks to the material and specially designed rubber seal offer 100% waterproofing. Futura manhole is the only one on the market that offers a connection in any dimension.

DAMAGED STEPS

Steps that corrode as a result of the humid environment pose a risk to the safety of the worker.
Futura manholes offer multiple solutions on various types of anti-corrosion ladders (from PE, PP, GRP, stainless steel, aluminum and others.)

BAD LINK CONNECTION

Compared to sewer networks made of traditional materials manholes where it can not be guarantee for waterproofing, Futura manholes provide a waterproof connection to any type of pipe, regardless of material and size.
Futura manholes are supplied with openings for easy lifting of the elements.

1) PE smooth
2) Cast iron
3) Polypropylene
4) Clay
5) GRP (FIBERGLASS)
6) PVC
7) Corrugated pipes

MATERIAL CHARACTERISTICS

Due to mechanical stress, ground and water pressures that can occur as a result of natural disasters, manholes made of traditional materials burst and leak.
Thanks to the superior connection between the strength, elasticity and flexibility of the materials from which Futura manholes are made, they do not crack and are durable in various environments.

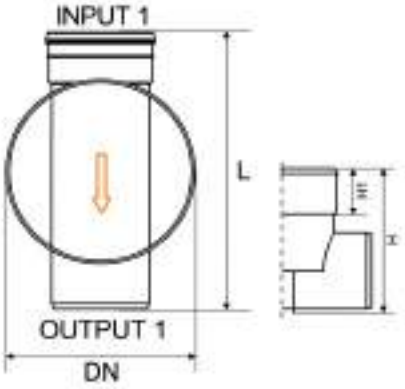
FUTURA MANHOLES
DN400

PRODUCT DESCRIPTION FOR PRIJECTS

Futura DN400 are produced from PP/PE with reinforcement.

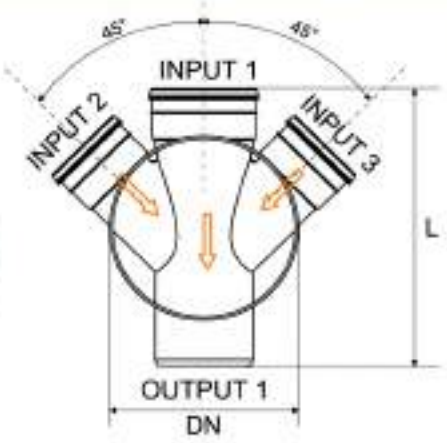
They are easy to be used for connection with vertically set raiser pipes with ribbed or smooth surface.

Inside the base there is a injected channel which can be with one or more entrances. Different connection types available.



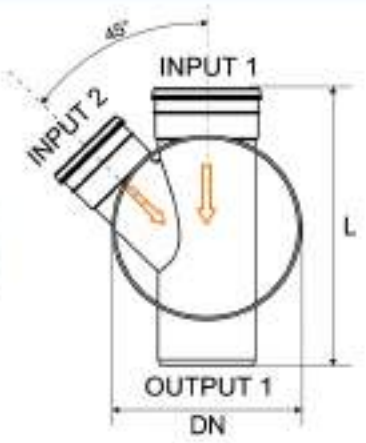
BS 400.200/160	
DN	400
H	415
H1	155
L	580
Input 1/Output1	DN 200/160

dimensions (mm)



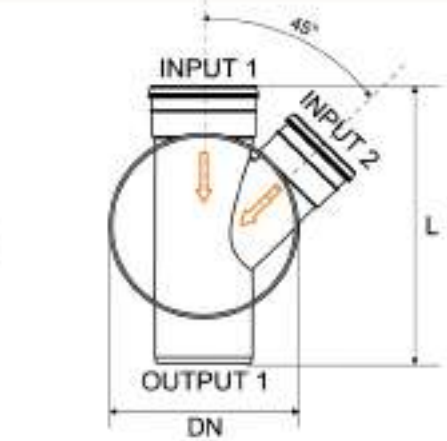
BS 400.200/160 2x45°	
DN	400
H	415
H1	155
L	580
Input 1/Output1	DN 200/160
Input 2, 3	DN 160

dimensions (mm)



BS 400.200/160 1X135°	
DN	400
H	415
H1	155
L	580
Input 1/Output1	DN 200/160
Input 2	DN 160

dimensions (mm)



BS 400.200/160 1X225°	
DN	400
H	415
H1	155
L	580
Input 1/Output1	DN 200/160
Input 2	DN 160

dimensions (mm)

While preparing specification for materials required for an investment, total numbers of individual inspection chamber components should be indicated:

- base
- riser pipe
- cover

INPUT PARAMETERS ARE:

(Ht) CHAMBER UNIT HEIGHT
The distance between base unit up to cover end. For the calculations we label also:

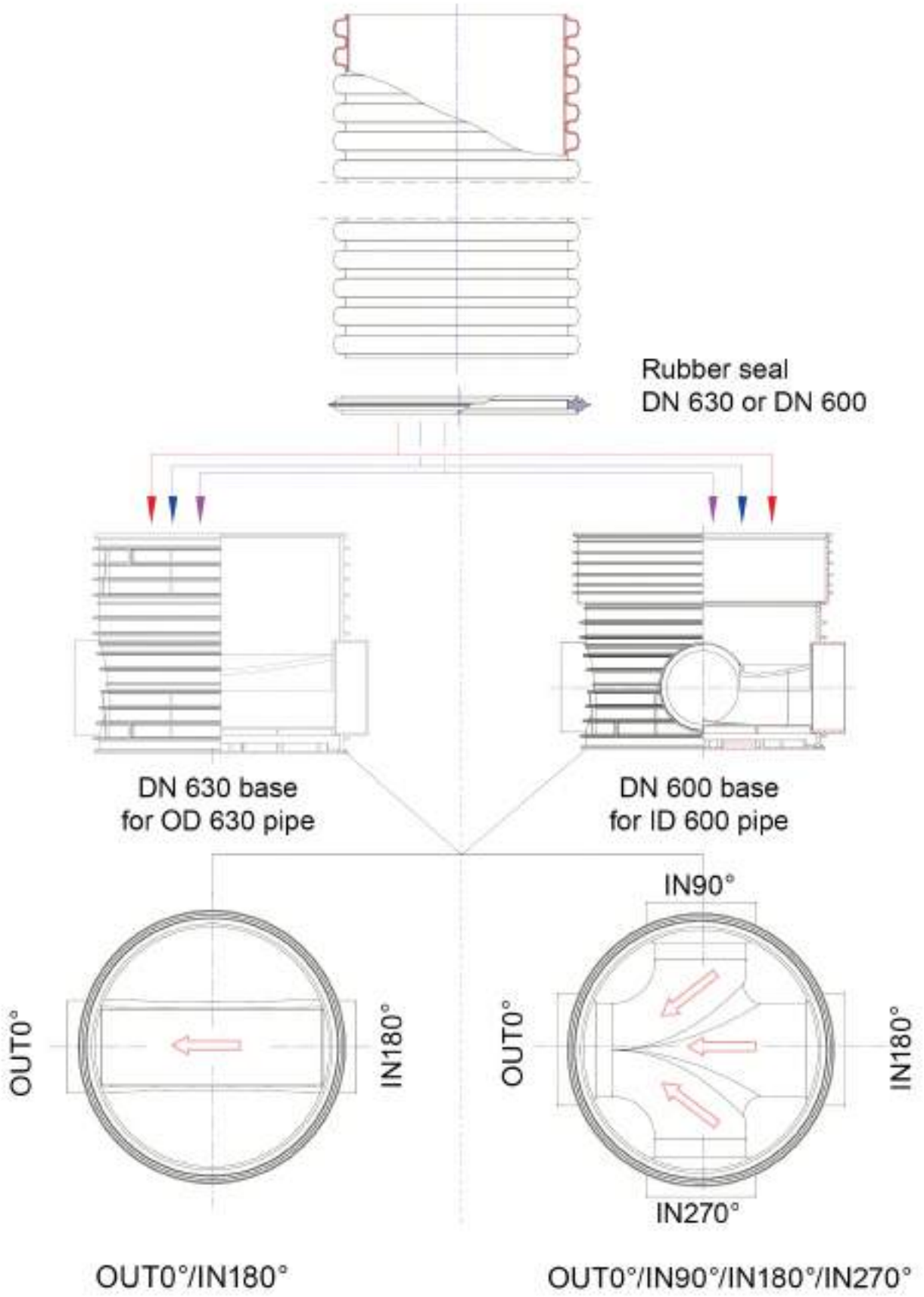
(Hb) BASE UNIT HEIGHT
Distance from base unit bell in which riser pipe is installed and bottom of base

(Hp) HEIGHT OF RAISER PIPE

FUTURA MANHOLES
DN630/DN600

PRODUCT DESCRIPTION FOR PROJECTS

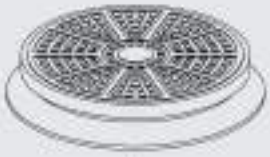
The Futura program covers chambers **DN630** and **DN600**. They are adapted for connection with vertically placed pipes, ribbed or smooth. Inside the base there is a horizontal channel which can be with one or more entrances.


Rubber seal
DN 630 or DN 600
DN 630 base
for OD 630 pipe
DN 600 base
for ID 600 pipe
OUT0°
IN180°
IN90°
OUT0°
IN180°
IN270°
OUT0°/IN180°
OUT0°/IN90°/IN180°/IN270°

CONNECTION OF FUTURA DN 630/600

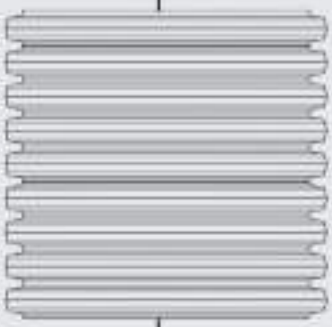
Acceptable traffic load SLW60

Acceptable ground water table 5 m



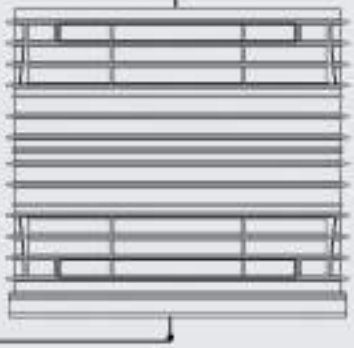
Seal

PP/PE pipe ID 600, corrugate



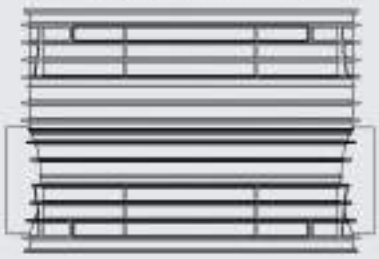
PP/PE pipe OD 630, corrugate

PP/PE Futura raiser

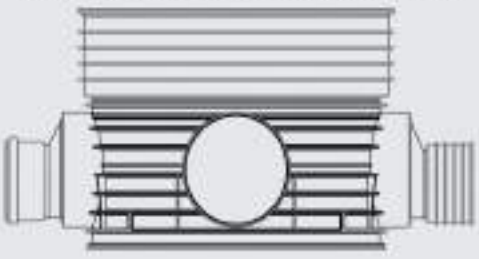


Seal

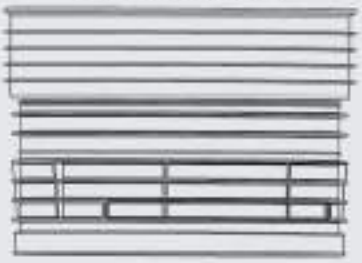
Straight line base - available for ID-OD corrugate or smooth wall connection



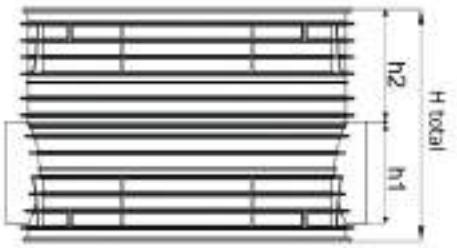
Cross line base - available for ID-OD corrugate or smooth wall connection



Base DN630/DN600 blind base chamber



BASE DN 630/600 – TYPE 1 (0-180)°



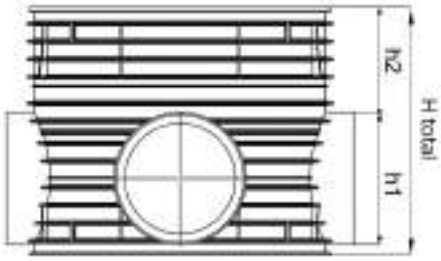
INDEX	Htotal	h1	h2	DN	CONNECTION
BS.630.160	562	225	268	637	DN 160 (ID - OD)*
BS.630.200	562	225	268	637	DN 200 (ID - OD)*
BS.630.250	562	271	236	637	DN 250 (ID - OD)*
BS.630.300/315	562	330	176	637	DN 300/315 (ID - OD)*

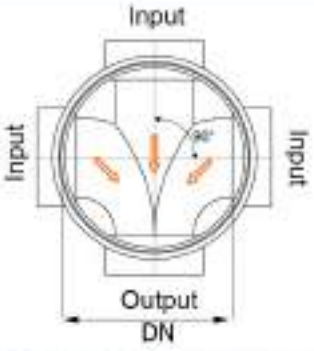
dimensions (mm)

INDEX	Htotal	h1	h2	DN	CONNECTION
BS.600.160	600	225	187	685	DN 160 (ID - OD)*
BS.600.200	600	225	187	685	DN 200 (ID - OD)*
BS.600.250	600	271	187	685	DN 250 (ID - OD)*
BS.600.300/315	600	330	187	685	DN 300/315 (ID - OD)*

dimensions (mm)

BASE DN 630/600 – TYPE 2 (0-90-180-270)°





INDEX	Htotal	h1	h2	DN	CONNECTION
BS.630.160	562	225	268	637	DN 160 (ID - OD)*
BS.630.200	562	225	268	637	DN 200 (ID - OD)*
BS.630.250	562	271	236	637	DN 250 (ID - OD)*
BS.630.300/315	562	330	176	637	DN 300/315 (ID - OD)*

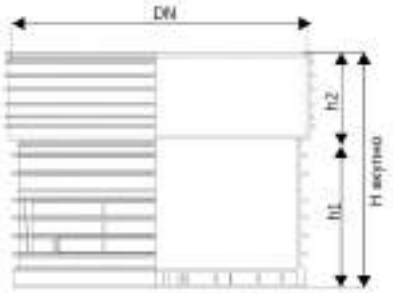
dimensions (mm)

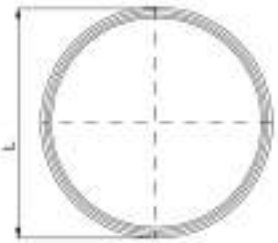
INDEX	Htotal	h1	h2	DN	CONNECTION
BS.600.160	600	225	187	685	DN 160 (ID - OD)*
BS.600.200	600	225	187	685	DN 200 (ID - OD)*
BS.600.250	600	271	187	685	DN 250 (ID - OD)*
BS.600.300/315	600	330	187	685	DN 300/315 (ID - OD)*

dimensions (mm)

*availability for different pipe connections

BASE DN 630/600 – BLIND BASE

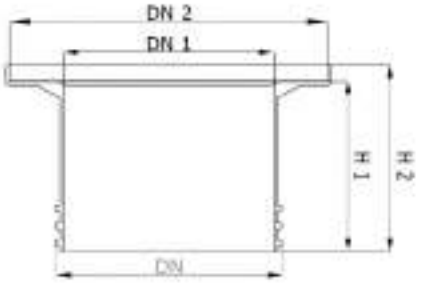




INDEX	Htotal	h1	h2	DN	CONNECTION
BS.600	520-775	275-545	186	600	(Corrugate or smooth connection)

dimensions (mm)

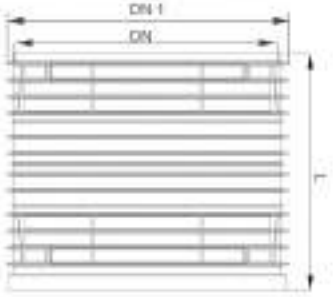
TELESCOPE ADAPTER



INDEX	DN	DN1	DN2	H1	H2
DN 630	547	508	770	408	450
DN 600	588	540	770	450	500

dimensions (mm)

RAISER



INDEX	TOTAL
DN	637
DN 1	686
L	650

dimensions (mm)

SEAL

INDEX	ID	b	h
DN 630	462	47	43,5
DN 600	505	55	49

dimensions (mm)

FUTURA MANHOLES
DN800

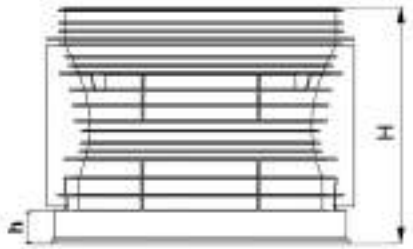
PRODUCT DESCRIPTION FOR PROJECTS

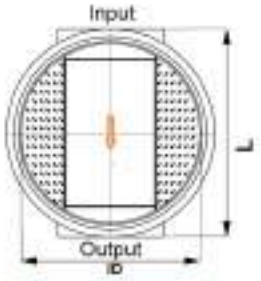
Procurement, transport and installation of sewage manholes and chambers with diameter: DN 1000, DN 800, DN 600/DN 630, DN 400 made of following parts (cone, injected raiser and base).

Manholes and chambers should be produced using injection technology using high quality PP material without adding additives or gases in production process. The wall thickness of the manhole elements should not be less than 10 mm and it should be reinforced with 40-60 mm ribs. Steps to be class I according EN 13101 standard and made of GRP (glass reinforced plastics).

The company must be certified according to ISO 9001; ISO 14001 and ISO 45001.

BASE DN 800 – TYPE 1 (0-180)°

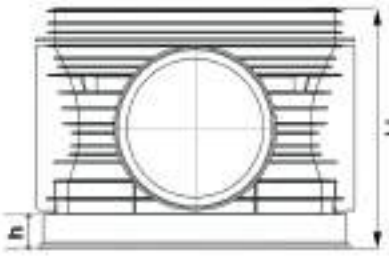


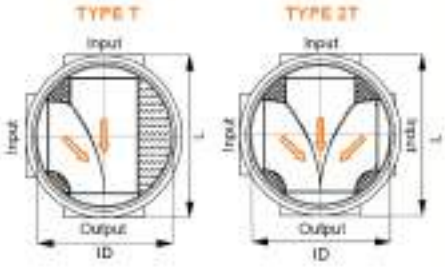


INDEX	H	L	ID	h	INPUT/OUTPUT
BS.800.400	690	930	800	150	DN 160-400 (corrugate or smooth connection)

dimensions (mm)

BASE DN 800 – TYPE 2 (0-90-180-270)°

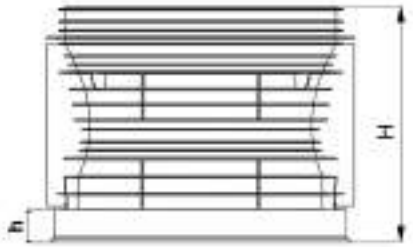


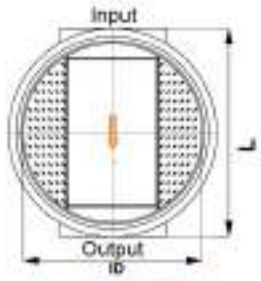


INDEX	H	L	ID	h	INPUT/OUTPUT
BS.800.400	690	930	800	150	DN 160-400 (corrugate or smooth connection)

dimensions (mm)

BASE DN 800 – TYPE 3

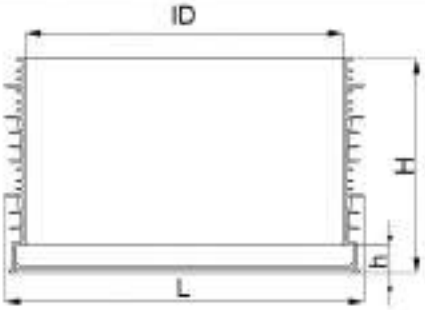




INDEX	H	L	ID	h	INPUT/OUTPUT
BS.800.600	1040	930	800	150	DN 500 - DN 600 (corrugate or smooth connection)

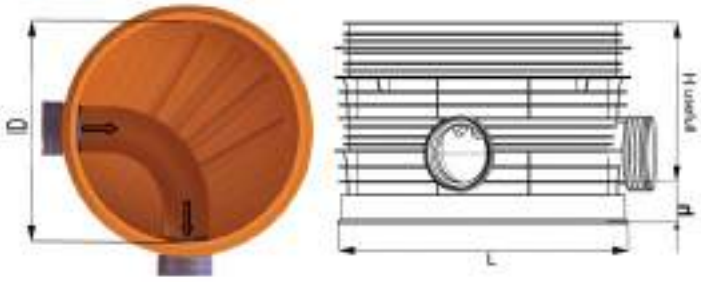
dimensions (mm)

BLIND BASE DN 800



BLIND BASE DN 800	
ID	800mm
H	690mm
h	90mm
L	930mm

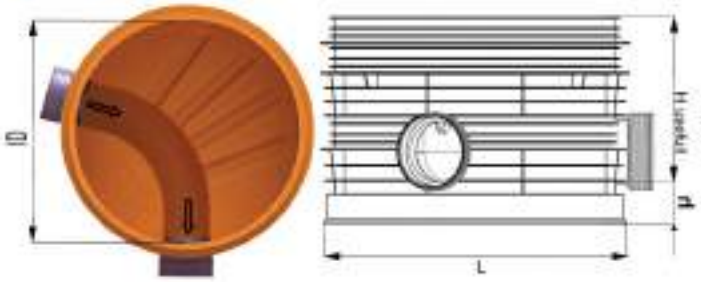
BASE DN 800 - 90°



INDEX	H	L	ID	h	INPUT/OUTPUT
BS.800-90	540	930	800	150	DN 160-300*

dimensions (mm)

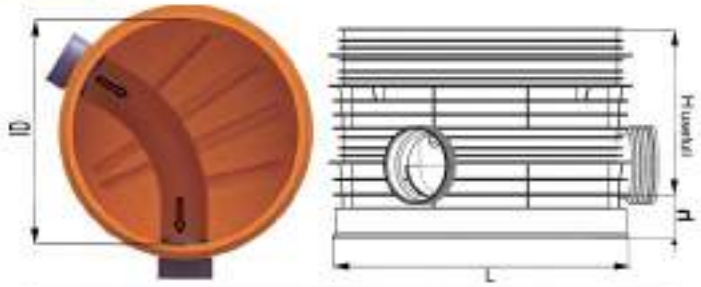
BASE DN 800 - 105°



INDEX	H	L	ID	h	INPUT/OUTPUT
BS.800-105	540	930	800	150	DN 160-300*

dimensions (mm)

BASE DN 800 - 120°



INDEX	H	L	ID	h	INPUT/OUTPUT
BS.800-120	540	930	800	150	DN 160-300*

dimensions (mm)

BASE DN 800 - 135°

INDEX	H	L	ID	h	INPUT/OUTPUT
BS.800-135	540	930	800	150	DN 160-300*

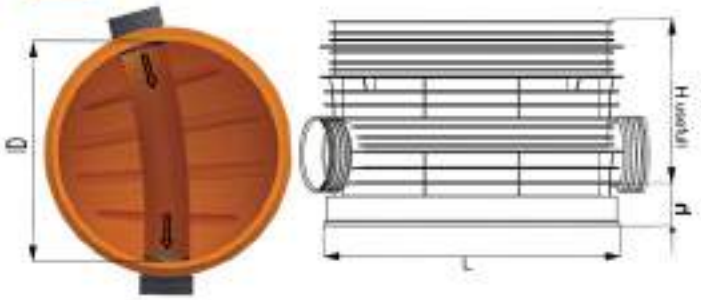
dimensions (mm)

BASE DN 800 - 150°

INDEX	H	L	ID	h	INPUT/OUTPUT
BS.800-150	540	930	800	150	DN 160-300*

dimensions (mm)

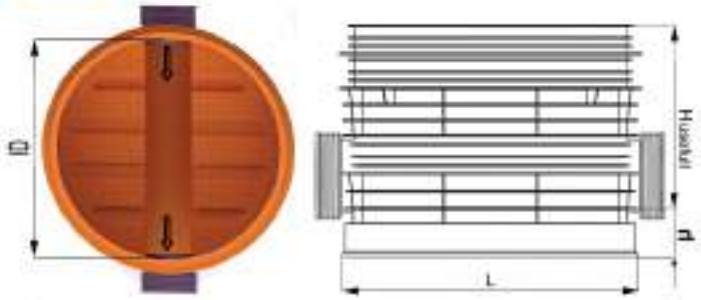
BASE DN 800 - 165°



INDEX	H	L	ID	h	INPUT/OUTPUT
BS.800-165	540	930	800	150	DN 160-300*

dimensions (mm)

BASE DN 800 - 180°

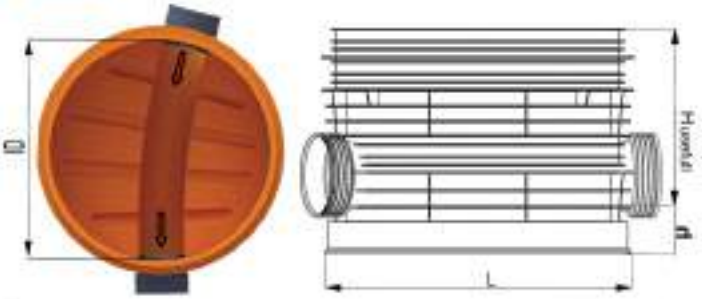


INDEX	H	L	ID	h	INPUT/OUTPUT
BS.800-180	540	930	800	150	DN 160-300*

dimensions (mm)

*availability for different pipe connections

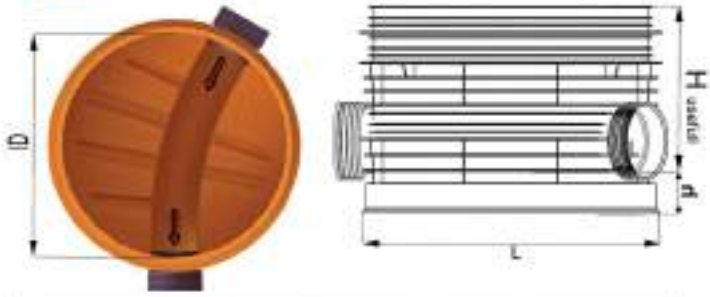
BASE DN 800 - 195°



INDEX	H	L	ID	h	INPUT/OUTPUT
BS.800-195	540	930	800	150	DN 160-300*

dimensions (mm)

BASE DN 800 - 210°



INDEX	H	L	ID	h	INPUT/OUTPUT
BS.800-210	540	930	800	150	DN 160-300*

dimensions (mm)

BASE DN 800 - 225°

INDEX	H	L	ID	h	INPUT/OUTPUT
BS.800-225	540	930	800	150	DN 160-300*

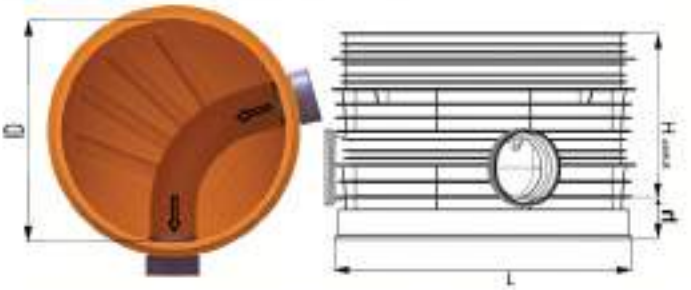
dimensions (mm)

BASE DN 800 - 240°

INDEX	H	L	ID	h	INPUT/OUTPUT
BS.800-240	540	930	800	150	DN 160-300*

dimensions (mm)

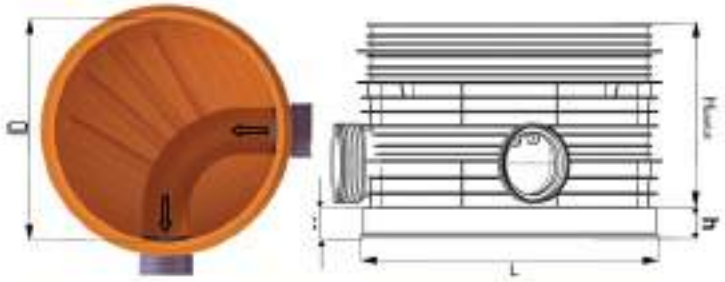
BASE DN 800 - 255°



INDEX	H	L	ID	h	INPUT/OUTPUT
BS.800-255	540	930	800	150	DN 160-300*

dimensions (mm)

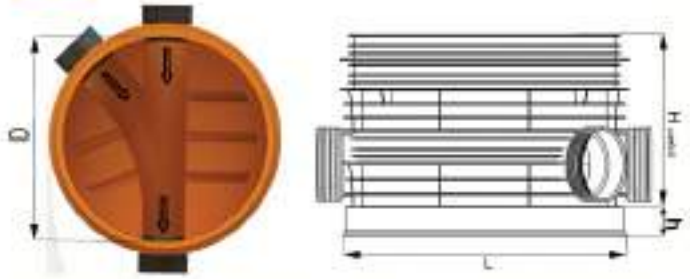
BASE DN 800 - 270°



INDEX	H	L	ID	h	INPUT/OUTPUT
BS.800-270	540	930	800	150	DN 160-300*

dimensions (mm)

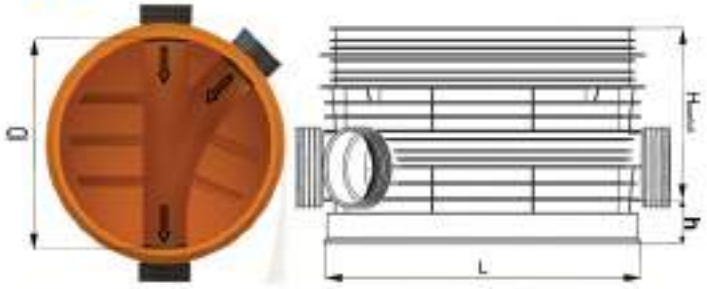
BASE DN 800 - 1X135°



INDEX	H	L	ID	h	INPUT/OUTPUT
BS.800-1x45	540	930	800	150	DN 160-300*

dimensions (mm)

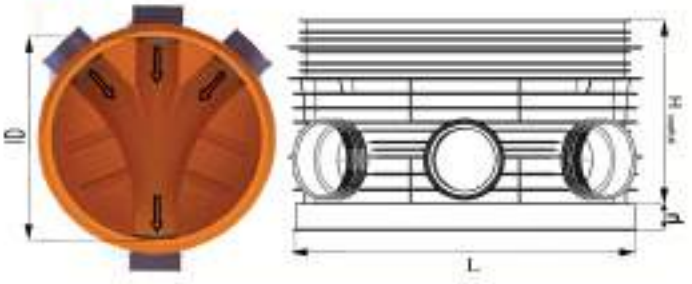
BASE DN 800 - 1X225°



INDEX	H	L	ID	h	INPUT/OUTPUT
BS.800-1x45	540	930	800	150	DN 160-300*

dimensions (mm)

BASE DN 800 - 2X45°

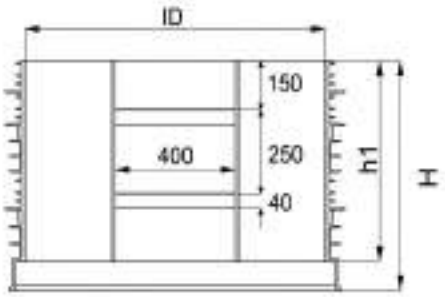


INDEX	H	L	ID	h	INPUT/OUTPUT
BS.800-2x45	540	930	800	150	DN 160-300*

dimensions (mm)

*availability for different pipe connections

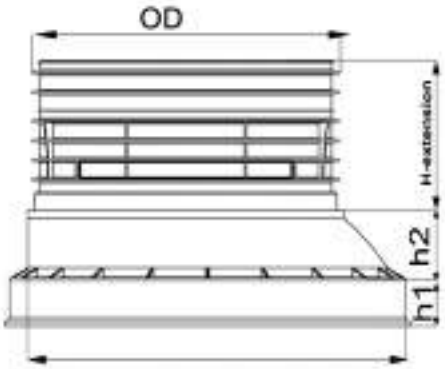
EXTENSION DN 800



H	h1	ID
340	250	800
590	500	800
690	600	800
840	750	800
1090	1000	800

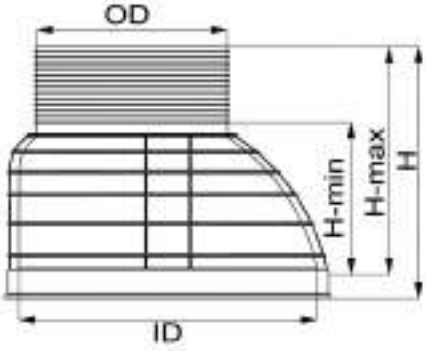
dimensions (mm)

CONE DN 800 – TYPE 1



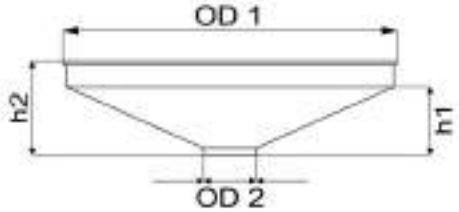
h1	90mm
h2	150mm
H raiser	310mm
ID	800mm
OD	686mm

COVER DN 800 – TYPE 2

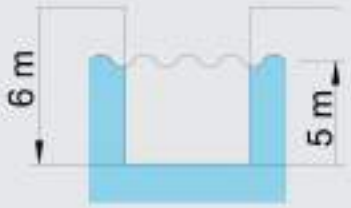


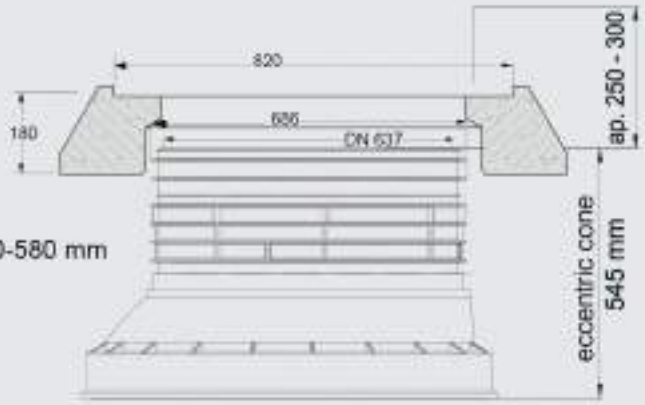
H	760mm
H_{min}	420mm
H_{max}	670mm
OD	645mm
ID	800mm

TANGENT CONE DN 800



OD1	800mm
OD2	160mm
h-1	220mm
h-2	270mm



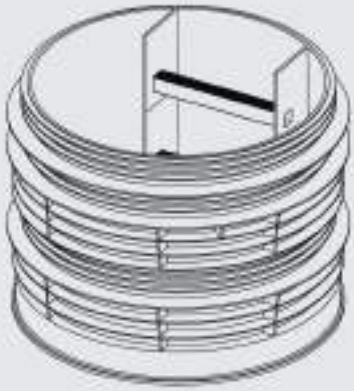


Cone (i) 800/637
Eccentric cone height: 280-580 mm

cone

seal

integrate ladder
class 1 – EN 13101



Raiser (i) ID 800
With GRP ladders class I
acc. EN 13598-2, EN 13101

Different height
available

- 250 mm
- 500 mm
- 600 mm
- 750 mm
-1000 mm

raiser

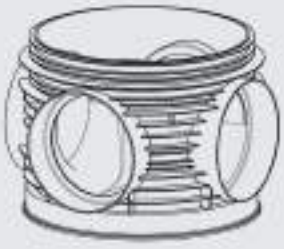
Seal (i) ID 800
EN 681-1; EN 13259

seal

Straight line base - available for ID-OD corrugate or smooth wall connection

Angle line base - available for ID-OD corrugate or smooth wall connection

Cross line base ID-OD corrugate or smooth wall connection



Blind base

FUTURA MANHOLES
DN1000

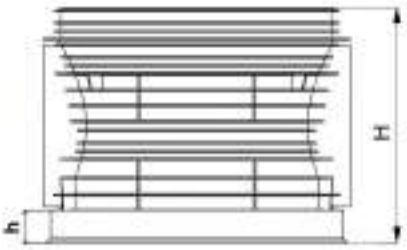
PRODUCT DESCRIPTION FOR PROJECTS

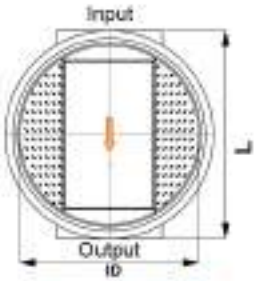
Procurement, transport and installation of sewage manholes and chambers with diameter: DN 1000, DN 800, DN 600/DN 630 ,DN 400 made of following parts (cone, injected raiser and base).

Manholes and chambers should be produced using injection technology using high quality PP material without adding additives or gases in production process. The wall thickness of the manhole elements should not be less than 10 mm and it should be reinforced with 40-60 mm ribs. Steps to be class I according EN 13101 standard and made of GRP (glass reinforced plastics).

The company must be certified according to ISO 9001; ISO 14001 and ISO 45001.

BASE DN 1000 – TYPE 1 (0-180)°

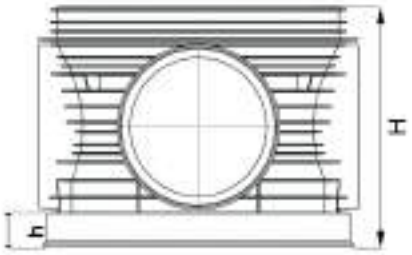


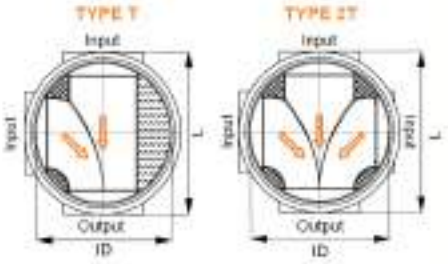


INDEX	H	L	ID	h	INPUT/OUTPUT
BS.1000.400	690	1130	1000	150	DN 160-400 (corrugate or smooth connection)

dimensions (mm)

BASE DN 1000 – TYPE 2 (0-90-180-270)°

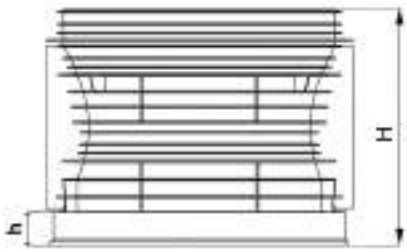


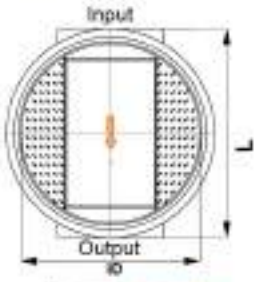


INDEX	H	L	ID	h	INPUT/OUTPUT
BS.1000.400	690	1130	1000	150	DN 160-400 (corrugate or smooth connection)

dimensions (mm)

BASE DN 1000 – TYPE 3

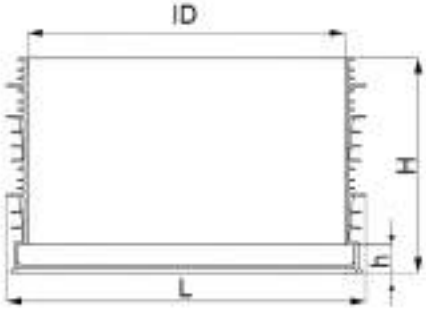




INDEX	H	L	ID	h	INPUT/OUTPUT
BS.1000.600	1040	1130	1000	150	DN 500 - DN 600 (corrugate or smooth connection)

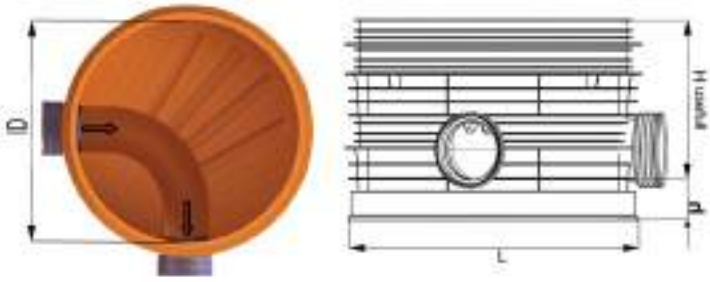
dimensions (mm)

BLIND BASE DN 1000



BLIND BASE DN 1000	
ID	1000mm
H	690mm
h	90mm
L	1130mm

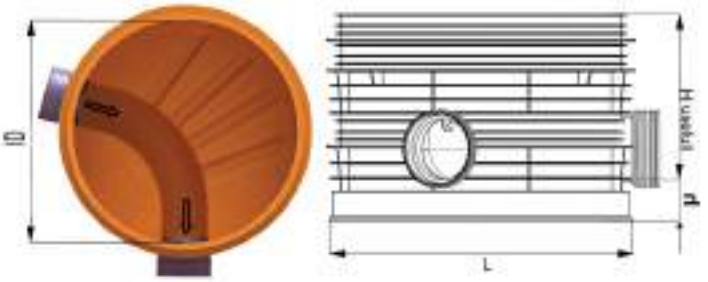
BASE DN 1000 - 90°



INDEX	H	L	ID	h	INPUT/OUTPUT
BS.1000-90	540	1130	1000	150	DN 160-300*

dimensions (mm)

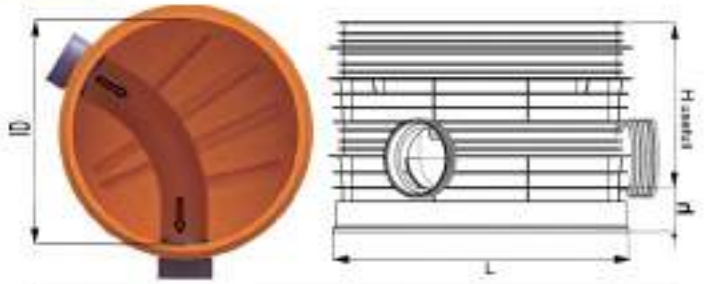
BASE DN 1000 - 105°



INDEX	H	L	ID	h	INPUT/OUTPUT
BS.1000-105	540	1130	1000	150	DN 160-300*

dimensions (mm)

BASE DN 1000 - 120°



INDEX	H	L	ID	h	INPUT/OUTPUT
BS.1000-120	540	1130	1000	150	DN 160-300*

dimensions (mm)

BASE DN 1000 - 135°

INDEX	H	L	ID	h	INPUT/OUTPUT
BS.1000-135	540	1130	1000	150	DN 160-300*

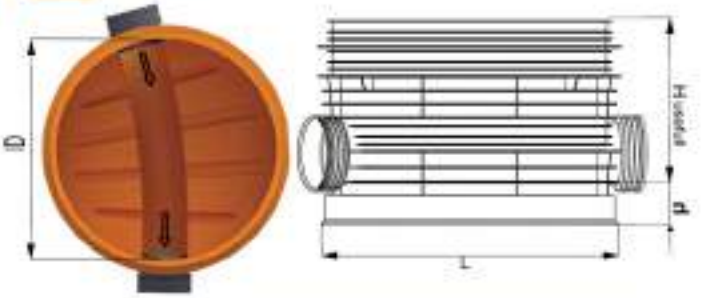
dimensions (mm)

BASE DN 1000 - 150°

INDEX	H	L	ID	h	INPUT/OUTPUT
BS.1000-150	540	1130	1000	150	DN 160-300*

dimensions (mm)

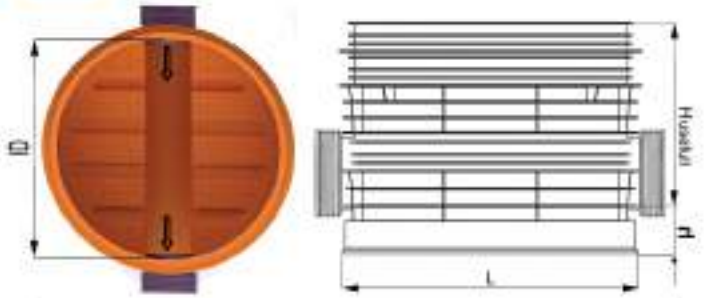
BASE DN 1000 - 165°



INDEX	H	L	ID	h	INPUT/OUTPUT
BS.1000-165	540	1130	1000	150	DN 160-300*

dimensions (mm)

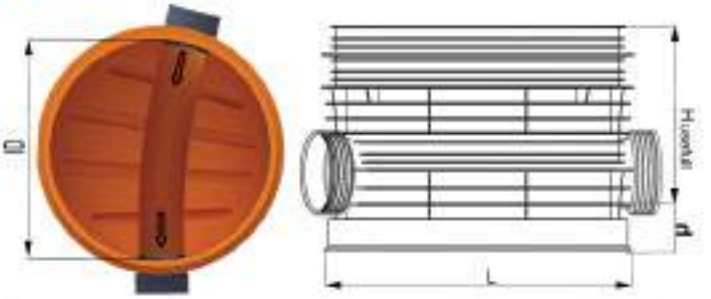
BASE DN 1000 - 180°



INDEX	H	L	ID	h	INPUT/OUTPUT
BS.1000-180	540	1130	1000	150	DN 160-300*

dimensions (mm)

BASE DN 1000 - 195°



INDEX	H	L	ID	h	INPUT/OUTPUT
BS.1000-195	540	1130	1000	150	DN 160-300*

dimensions (mm)

*availability for different pipe connections

BASE DN 1000 - 210°

INDEX	H	L	ID	h	INPUT/OUTPUT
BS.1000-210	540	1130	1000	150	DN 160-300*

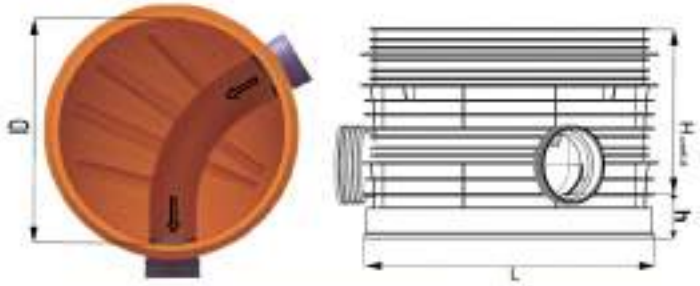
dimensions (mm)

BASE DN 1000 - 225°

INDEX	H	L	ID	h	INPUT/OUTPUT
BS.1000-225	540	1130	1000	150	DN 160-300*

dimensions (mm)

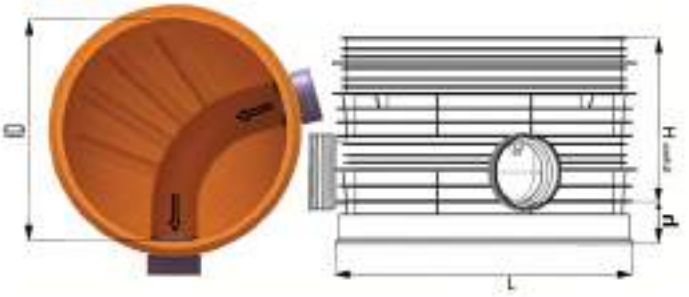
BASE DN 1000 - 240°



INDEX	H	L	ID	h	INPUT/OUTPUT
BS.1000-240	540	1130	1000	150	DN 160-300*

dimensions (mm)

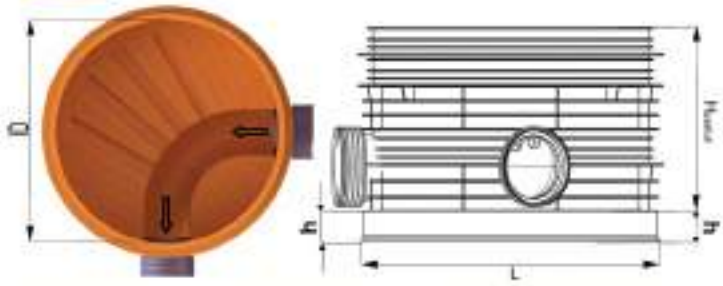
BASE DN 1000 - 255°



INDEX	H	L	ID	h	INPUT/OUTPUT
BS.1000-255	540	1130	1000	150	DN 160-300*

dimensions (mm)

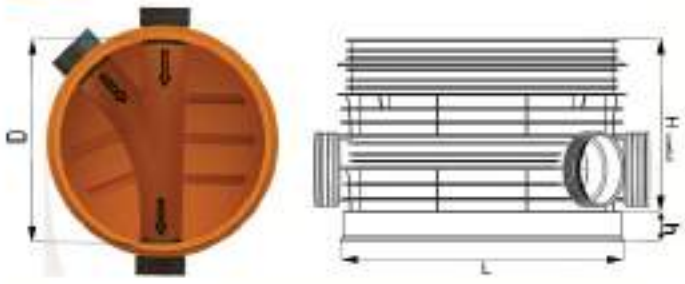
BASE DN 1000 - 270°



INDEX	H	L	ID	h	INPUT/OUTPUT
BS.1000-270	540	1130	1000	150	DN 160-300*

dimensions (mm)

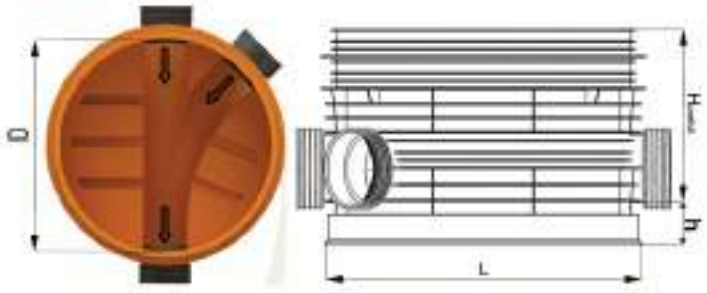
BASE DN 1000 - 1X135°



INDEX	H	L	ID	h	INPUT/OUTPUT
BS.1000-1x45	540	1130	1000	150	DN 160-300*

dimensions (mm)

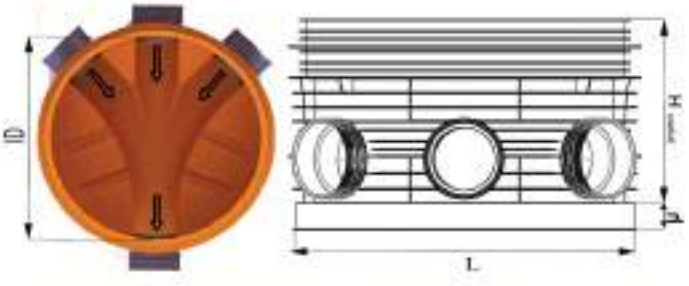
BASE DN 1000 - 1x225°



INDEX	H	L	ID	h	INPUT/OUTPUT
BS.1000-1x45	540	1130	1000	150	DN 160-300*

dimensions (mm)

BASE DN 1000 - 2x45°

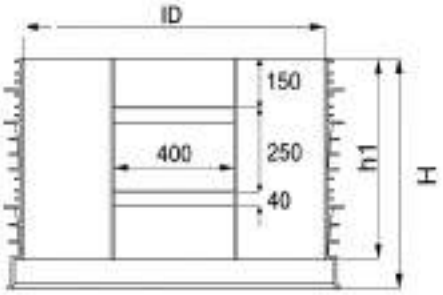


INDEX	H	L	ID	h	INPUT/OUTPUT
BS.1000-2x45	540	1130	1000	150	DN 160-300*

dimensions (mm)

*availability for different pipe connections

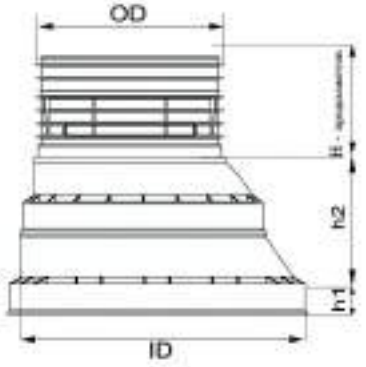
EXTENSION DN 1000



H	h1	ID
340	250	1000
590	500	1000
690	600	1000
840	750	1000
1090	1000	1000

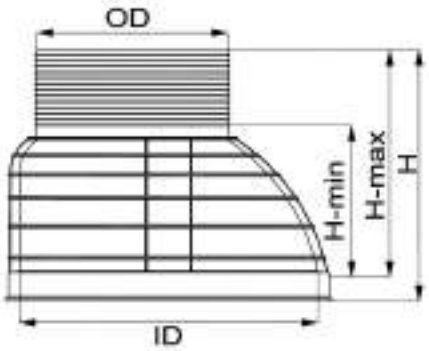
dimensions (mm)

CONE DN 1000 – TYPE 1



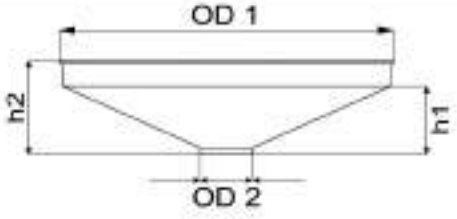
h1	——	90mm
h2	——	390mm
H_{raiser}	——	310mm
ID	——	1000mm
OD	——	686mm

COVER DN 1000 – TYPE 2



H	——	870mm
H_{min}	——	520mm
H_{max}	——	770mm
OD	——	645mm
ID	——	100mm

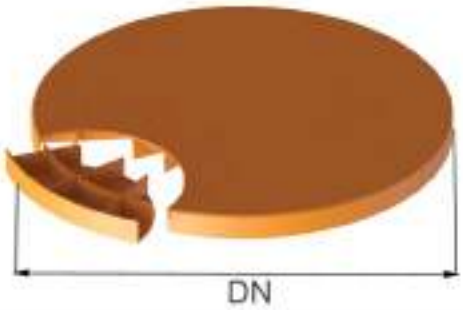
TANGENT CONE DN 1000



OD1	——	1000mm
OD2	——	160mm
h-1	——	220mm
h-2	——	270mm

INJECTED BOTTOM FOR MANHOLES AND CHAMBERS

INDEX	DN (mm)
Bottom for manhole	DN 600
	DN 800
	DN 1000

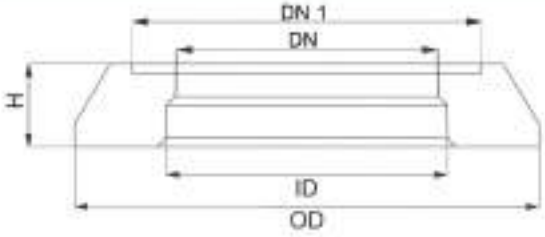


COVER A15

INDEX	Diameter (mm)
Cover in diameter	DN 400
Cover in diameter	DN 600
INDEX	L1-L2 (mm)
Sqare cover	600x600

REINFORCED CONCRETE RING WITH FIBERS

INDEX	Concrete ring			
ID	OD	DN	DN 1	DN
690	1040	625	820	180



RUBBER SEAL FOR CONCRETE RING

INDEX	Diameter (mm)
Seal	645
H	38

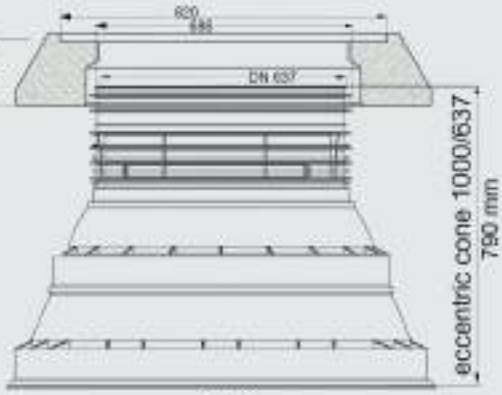
IN SITU Seals

Knife diameter (mm)	OD 110	ID 110	OD 160	ID 160	OD 200	ID 200	OD 250	ID 250	OD 315	ID 300
OD/ID	114	125	166	193	208	240	262	295	337	337

There is a specially designed waterproof rubber for dimension of apertures OD 110, OD 160, OD 200, OD 250 and OD 315.

The opening of the base is made with special knife for each dimension that is 100% waterproof. The rubber is situated on the already made opening of the base, and before you put it pipe in it, the rubber must be covered with grease Lubricant Neutrex or something similar.

Cone (i) 1000/637
Eccentric cone height: 280-580 mm

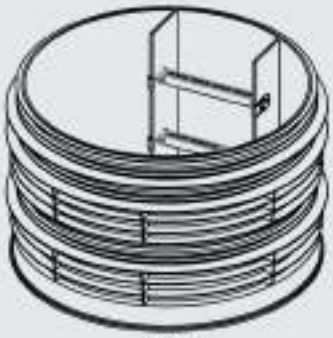


cone

seal

integrate ladder
class 1 – EN 13101

Raiser (i) ID 1000
With GRP ladders class I
acc. EN 13598-2, EN 13101



raiser

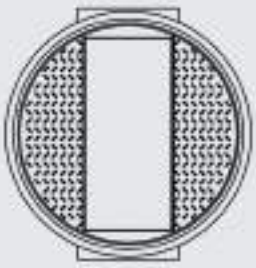
Different height
available

- 250 mm
- 500 mm
- 600 mm
- 750 mm
-1000 mm

Seal (i) ID 1000
EN 681-1; EN 13259

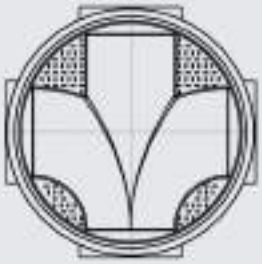
seal

Straight line base - available for ID-OD corrugate or smooth wall connection



Angle line base - available for ID-OD corrugate or smooth wall connection

Cross line base ID-OD corrugate or smooth wall connection



Blind base

1. Storage

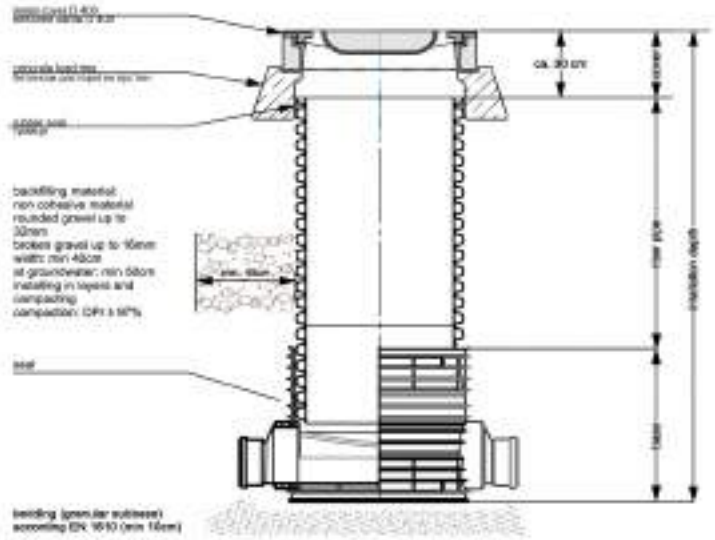
Keep the elements placed vertically on the surface. In case of exposure to external influences for a long period of time, additional protection is required.

2. General information

FUTURA manholes are delivered ready for installation.

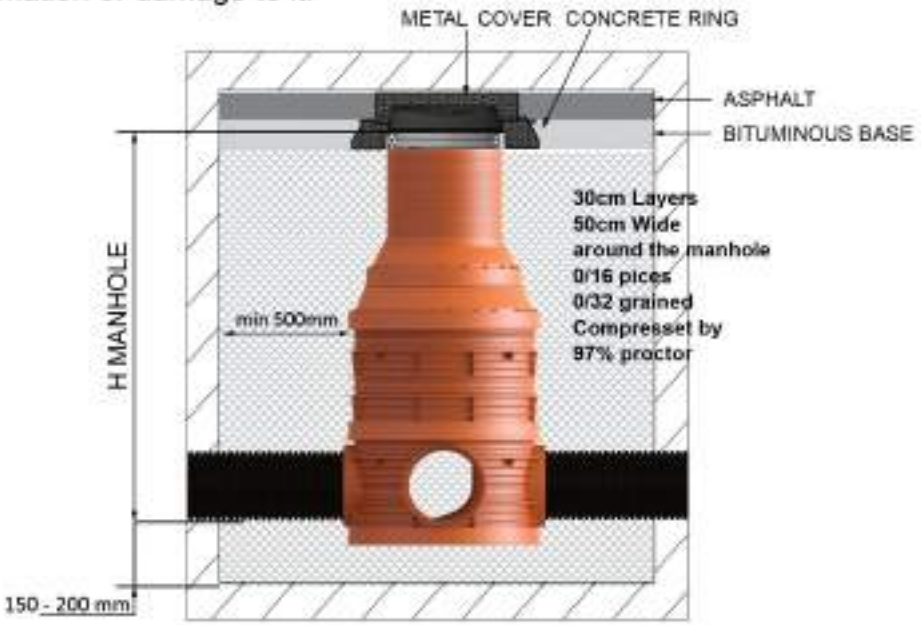
3. Positioning of the manholes

The manholes are placed on a sandy surface which should be hard, and should be used a separating material suitable for lateral filling or compaction. The separated material should have dimensions of 0-32 mm and crushed material of 0-16 mm. The bedding (granular subbase) should be made in layers of at least 10 cm and compacted up to 97% according to Procter. In case of presence of groundwater, the bedding should be 30 cm made of concrete MB15. Due to low weight manual installation is possible, but in a case of machine handling tying ropes is possible only arround the base and special openings on manhole parts intended for it.



4. Compaction around the manhole

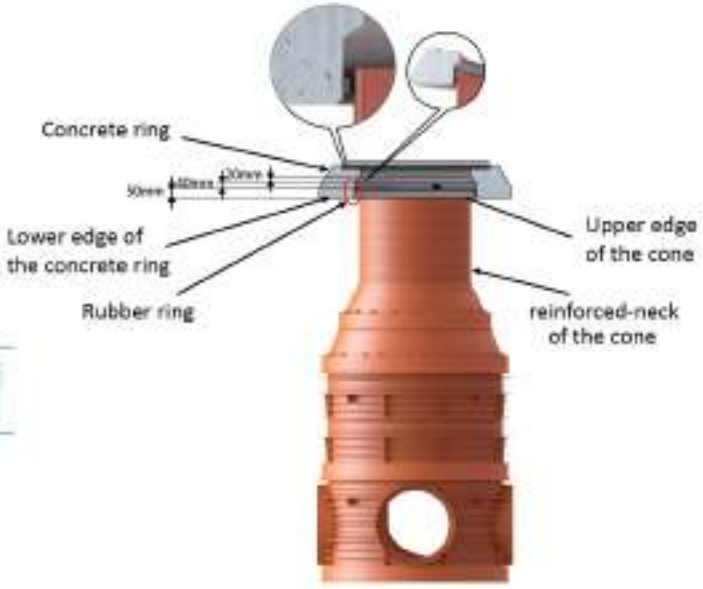
The same material from the sand bedding is used for compaction, and the compacted material should be in layers of max 30 cm to 97% according to Procter 50 cm in width around the manhole. The filling around the manholr and under it is important to be according to Procter, to prevent any possible deformation or damage to it.

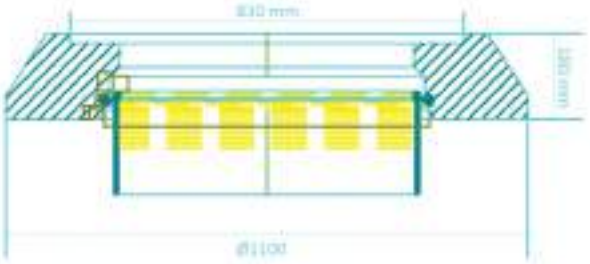


INSTALLATION OF CONCRETE RING

In case of heavy traffic, it is necessary to place a concrete ring on the cone. This concrete ring must not come directly into contact with the manhole cone. The empty space above the cone and the concrete ring should be 40 mm, and a rubber seal is placed between the cone and the ring. The cone should be possible to move up to 50mm inside concrete ring.

In this way the static and dynamic load will not be transferred to the body of the manhole but to the compacted sand and the substrate around the manhole. Concrete ring is not required in case of installation where there is no traffic and can be used directly on polyethylene cover or metal cover B125.





STORAGE AND TRANSPORT INSTRUCTIONS

1. When storing and transporting the components of the manholes is made, it is important not to allow happening that one point of the manholes be burdened, i.e. in no case should they be stored on sharp and pointed objects.
2. The manhole should be unloaded from the truck with the help of forklifts, with the help of belts, from the truck to the ground surface without throwing from a height.
3. When moving, do not pull on sharp edges or sharp objects.
4. The storage height depends of course on the geometry of the segments to be stored, but storage heights higher than 2.5 m are not recommended.
5. The products can be stored outdoors because they have UV protection.
6. For storage periods of more than 2 years, it is advisable to protect them from direct exposure to high solar radiation.Freezing is not a problem with the components of FUTURA manholes but it is necessary to carefully manage the elements at low temperatures. In case of extremely low temperatures, the elasticity of the rubber sealing rings may decrease, which may cause installation difficulties.
7. Products should be kept out of contact with organic solvents and direct flame.
8. Modular manholes are supplied complete.
9. Each part of the manhole has its own identification number.

CERTIFIED IQNet MANAGEMENT SYSTEM

EXACT

ЗНАК ЗА КАЧЕСТВО БАВ

quality austria
SYSTEM CERTIFIED
ISO 9001:2015 No. AT-163186
ISO 14001:2015 No. AT-81067/6
BS OHSAS 45001:2018 No. AT-805669

2

INTERHOL MANHOLES

GENERAL CHARACTERISTIC OF INTERHOL MANHOLES

Rotomoulding is a technology of production, used for making products in large volumes. Advantages of these products, compared to other technologies are:

- Economic
- Consistency of quality
- Allows freedom in shaping the products

Interhol manhole are produced from polyethylene LLDPE, MDPE, HDPE and polypropylene PP according to the standard EN13598 from environmentally high quality materials that can be easily recycled and heat treated. For chambers, manholes with internal diameter 400 mm (DN / ID400), 600 mm (DN / ID <800) are used, in accordance with EN13598-1. For easy and permanent access of the persons in the manhole in accordance with the requirements of the standard EN 13598-2 larger then diameter DN> 800mm manholes are used.

Interhol chambers and manholes produced of polyethylene and polypropylene are products with high quality technical characteristics and advantages over manholes made of traditional materials and exclude possible problems and damage such as:

- Rusted steps
- Leaks and mixing with underground waters
- Difficulties during assembling and transport issues because of the huge weight
- Impossibilities for connections between the PE pipes and the concrete manholes

Charachteristic	Unit	Standard	Value	
Melt Flow Index (MFI)	g/10min	ISO 1133	LLDPE/MDPE/HDPE 4-6	PP 1.3-1.5
Density	g/cm³	ISO 1183	0.935-0.945	0.9
Flexular modulus	Mpa	ISO 178	600-750	1100-1300

Table: Charachteristic of materials (PE and PP)

USES

Due to the characteristics INTERHOL manhole have versatile purpose:

- Sanitary – sewer systems
- Landfills
- Chemical plants
- Sewage systems
- Water meter systems

STANDARDS

- EN 13598-1 Plastic pressurless pipe system, underground drainage and sewer. PVC-U, PP and PE.Specifications for manholes of accessories including shallow inspection chambers.
- EN 13598-2 Plastic pressurless pipe system, underground drainage and sewer. PVC-U, PP and PE. Specifications for manholes and inspection chambers in a traffic environment and deep underground installations.
- EN 476 Common requests for components used in drainage and sewer.
- EN 14982 Determination of the class of stiffness.
- EN 14802 Determinations of the resistance in case of traffic or other external burdens.
- DIN 4124 Excavation, trenches, width of working space, leverage.
- EN 1610 Construction and testing of drainage and sewer.

IMPORTANT CHARACTERISTICS OF THE INTERHOL MANHOLE

To meet the criterion of wastewater ecology, manholes made of traditional material that was standard for decades, today are increasingly being replaced by polyethylene and polypropylene manholes that are completely waterproof. The legislation requires protection of the environment, ie. primarily groundwater protection - therefore the installation of waterproof materials is recommended.

TEMPERATURE RESISTANCE

The INTERHOL Manholes are continuously exposed to different temperatures. The form of the manhole remains unchanged even during extremely high summer temperatures. These manholes cannot be damaged from the low temperatures, neither from the boiling wastewaters from the industries. PE and PP is stabile on a temperature range from -35° to +60° C.

FAST PRODUCTION

The Interhole manholes are delivered right away, as a full compact package or with the elements and the rubber that is used for their assembly. They can also be delivered with welded pipe connectors or with separate connectors that can be mounted on field with rubber.

WATERPROOFNESS

PE and PP INTERHOL Manholes are 100% waterproof, the possibility of leaks does not exist. The compactness guaranties the characteristic of being waterproof. The welded junction of the manhole and the polyethylene pipes is also very compact.

CHEMICAL RESISTANCE

The characteristic of resistance of the PE and PP to the chemical aggression is already known. The characteristics of these manholes are defined in the EN 13598-1/2 standard, in which is confirmed that the manholes made of PE and PP are resistant in a wide spectrum of PH values. The list that contains the values about the chemical resistance can be delivered upon the request of the customers.

LONG LIFETIME

These manholes that are produced from PE and PP completely exclude possible problems or damages that can show up while using the other traditional manholes used until now. The characteristics of the PE and PP as a material, have a very important role in the steadiness and endurance of the product. In this case Interhol manholes are extraordinary product that has very high quality that enable long lifetime.

SMALL WEIGHT

Compared to the concrete manholes that have huge weights, making it easier to transport and to manipulate on field and during the assembly.

MAINTANANCE AND SECURITY

The white color of the interior of these manholes not only eases the process of inspection and controlling, but also gives a high level of security and safety of the workers. This high level of security can be achieved with the utilization of the scales that have specific design and enable easy entering and going down to the bottom of the manhole. The scales are part of every element of the manhole.

RESISTANCE TO MECHANICAL STROKES

PE/PP are elastic materials that do not crack and therefore Interhol manholes are resistant to shocks and falls under certain conditions that may occur during installation.

MANHOLE ASSEMBLING

Depending from the clients requests the manhole is delivered on field fully welded or in elements that are assembled with rubber. First way to obtain a compact manhole is to produce it as a monolithic, the wanted height in one compact part. With maximum height up to 2350 mm.

The second way is with welding of the elements with extruder during which is used a polyethylene / polypropylene wire. The heating of the surface of the elements of the manhole and the melted PE/PP wire from the extruder are joined and they form a whole that is 100% waterproof.

The third way to obtain consistency is to assemble specially designed rubber between the joining of every element. This rubber gives full stability to the elements and waterproofness.





RUBEBR SEAL

There is a specially designed waterproof rubber for dimension of apertures OD 110, OD 160, OD 200, OD 250 and OD 315. The opening of the base is made with special knife for each dimension that is 100% waterproof. The rubber is situated on the already made opening of the base, and before you put it pipe in it, the rubber must be covered with grease Lubricant Neutrex or something similar.





CONNECTIONS

On the base directly can be welded PP or PE socket according to the required dimensions. These fittings allow easy and quick connection of manhole to drain line. It is important, the pipe which is associated with this connection to be clean and covered with grease Lubricant Neutrex or something like that.

Because Interhol manholes have a standard dimensions for different pipe connection they can be connected with other types of materials different than polyethylene/polypropylene pipes.

Types of materials of pipes that can be connected to interhol manhole are:

1) Polyethylene

2) Cast iron

3) Polypropylene

4) Clay

5) GRP (FIBERGLASS)

6) PVC

7) Corrugated pipes

INTERHOL
TECHNICAL CHARACHTERISTICS

PRODUCT DESCRIPTION FOR PROJECTS

Revision and revision bed-drop manholes with a diameter of DN 1000 mm, DN 800, DN 600 made of following elements (cone, raiser and bottom base) made of 100% PE (polyethylene), PP (polypropylene) environmentally high quality materials according to the standards EN-13598-1 / 2, Interhol manholes are with compact reinforced walls.

Interhol manholes have a compact PE, PP molded ladder.

The required height of the manhole can be delivered completely welded or in the elements that are joined in the field with a specially designed rubber seal. Inlet / outlet connection elements can be welded to the shaft or a specially designed waterproof seal can be used.


CONE
RAISERS
BASE

BASE DN 630/600

This chambers are usually used at:

- initial drainage chamber
- inspection chamber
- house connection chamber
- space limited area

Interhol DN600 chambers makes easy planning of market needs . Ideal as a final or initial chamber, it saves space and costs.

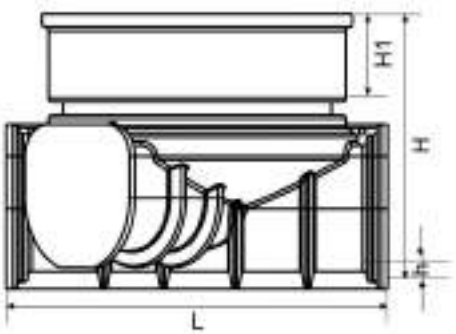
With the Interhol DN600 chamber costs are reduced.

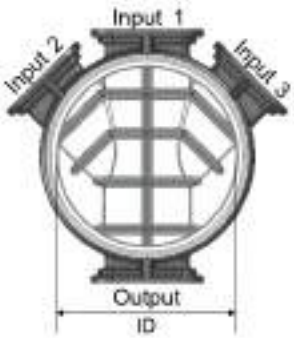
Maintenance and repair costs are reduced because during the life cycle they are much cheaper compared to manholes made of traditional materials.

BASE ID 600

Index	H	H1	L	ID	h	Inlet 1,2 and 3/Outlet
BS 2x45°600.300	450	50	900	600	40	OD315

dimensions (mm)





As a basis for Interhol shafts, 3 different forms of bases are used, which are made in order to meet the technical requirements during installation:

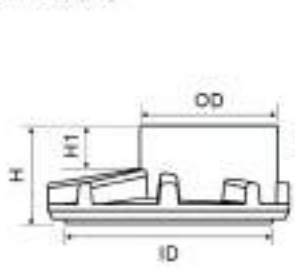
1. First base (input / output at an angle of 180°) - BS
2. 45-degree base (3 input / 1 output at an angle of 45°) - BS 2x45
3. 90-degree base (3 input / 1 output at an angle of 90°) - BS TEE

These bases are produced with dimensions of DN400, DN630/DN600, DN800 and DN1000. Wastewater does not remain at the bottom of the base, thus minimizing the occurrence of unpleasant gases.

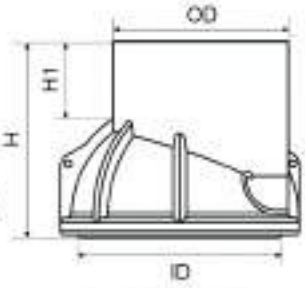
COVER ID 800

ELEMENT	H	H1	ID	OD
CAP LF 800/1	430	180	800	645
CAP DM 800/1	715	240	800	645
CAP DM 800/2	960	480	800	645

dimensions (mm)



1 CAP LF 800

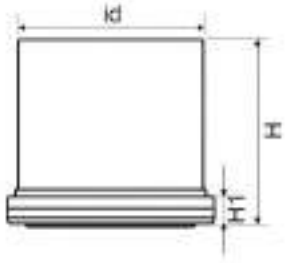


2 CAP DM 800

EXTENSION COVER

ELEMENT	H	H1	id
CAP EX 600	600	100	645

dimensions (mm)

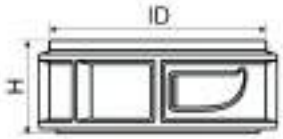


CAP EX 600

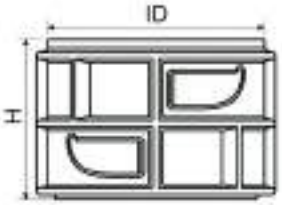
RAISER ID 800

INDEX	H	ID
EX 250.800	250	800
EX 500.800	545	800
EX 750.800	780	800
EX 1000.800	1000	800

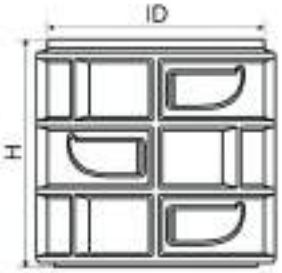
dimensions (mm)



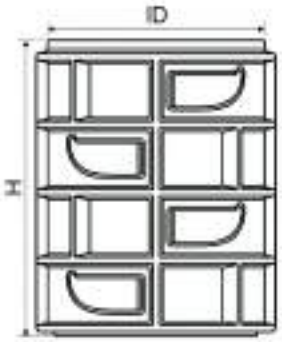
1 EX.250.800



2 EX.500.800



3 EX.750.800

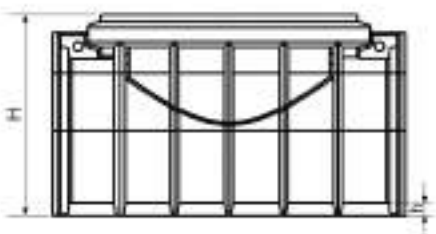


4 EX.1000.800

BASE ID 800 TYPE 1

INDEX	H	L	ID	h	input/ output
BS 800.400	650	1100	800	70	OD/ID 110-400

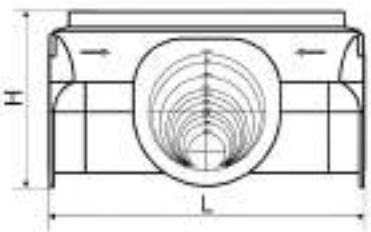
dimensions (mm)

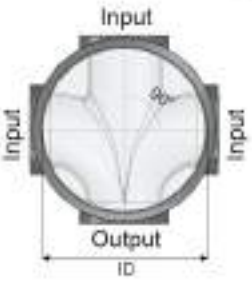


BASE ID800 TYPE 2

INDEX	H	L	ID	input/ output
BS TEE 800.500	650	950	800	OD/ID 110-500

dimensions (mm)





Due to the different heights of the manholes that exist and to meet them, Interhol manholes have 5 different raisers that are assembled in order to get the required height.

1.) Extension 250mm (EX.250)
2.) Extension 500mm (EX.500)
3.) Extension 750mm (EX.750)
4.) Extension 1000mm (EX.1000)
5.) Cascading extension 500mm (KAS-EX.500)

The bed drop raiser is a specially designed solution in order to have the connection of the inlet pipe to the required height.

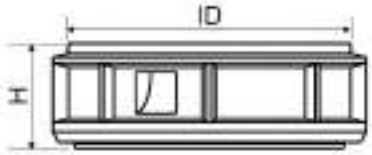
The maximum durability and long life of our product is guaranteed not only by the quality material, but also by the excellent design in which special attention is paid to the horizontal and vertical ribs that make it statically durable.

Another very important segment of these elements are the steps that are compactly produced during the construction of the element itself. Its design as well as the white interior of the manhole gives the worker additional security.

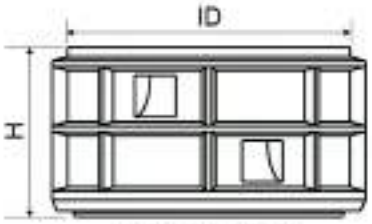
RAISER ID 1000

INDEX	H	ID
EX 250.1000	310	1000
EX 500.1000	535	1000
EX 750.1000	770	1000
EX 1000.1000	1020	1000

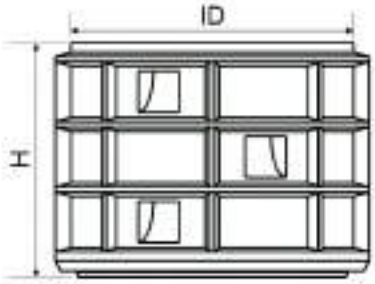
dimensions (mm)



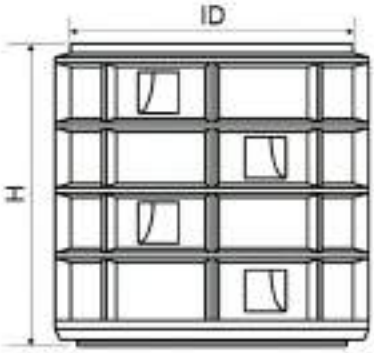
EX 250.1000



EX 500.1000



EX 750.1000

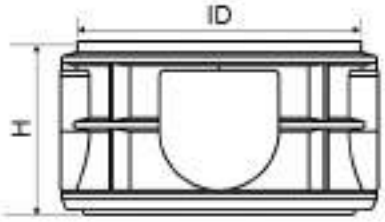


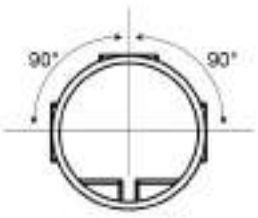
EX 1000.1000

BED DROP (CASCADE) RAISER ID 1000

INDEX	H	ID	INPUT
KAS EX 500.1000	535	1000	OD/ID 110-400

dimensions (mm)

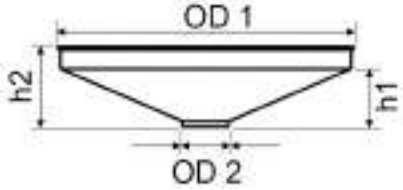


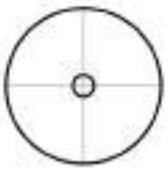


TANGENTEN CONE OD 1000

INDEX	OD 1	OD 2	h1	h2
Tangenten cone	1000	160	200	270

dimensions (mm)





CONE

Interhol conus is produced in dimensions ID800 and ID1000 is available in 4 types to meet the height needs, which are:

1.) Low cover (CAP LF / 1)
2.) Low cover with extension (CAP LF / 2)
3.) High cover (CAP DM / 1)
4.) High cover with extension (CAP DM / 2)

Reinforcing ribs are making this element resistant to direct loads and durable.

The durability and stability of these elements is also supported by their thick walls. Special opening are placed on the elements themselves for easier handling and installation. The white color inside the lids guarantees the safety at the entrance of the manhole, and also this safety is increased by the steps that is designed on the element itself and is an integral part of the other elements of the Interhol manholes.

In case the height needs to be shortened, the conus has factory-made lines that can be cut, and also if it is necessary to add a certain height, the cover can be upgraded with an additional extension ring.

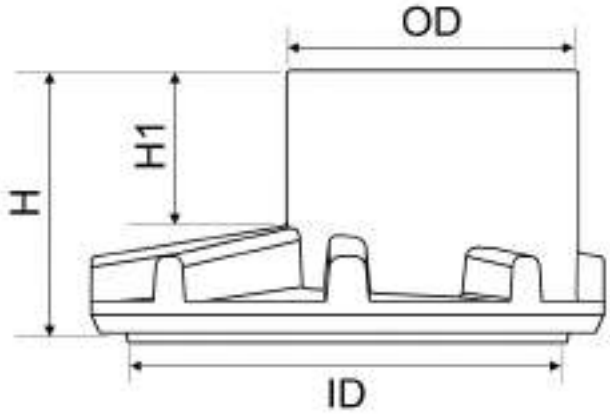
To meet the required heights, there is an additional extension for the lids (CAP EX 600), if necessary in the field. It is designed to be placed on top of the lid.

This part fits for all diameter of manholes.

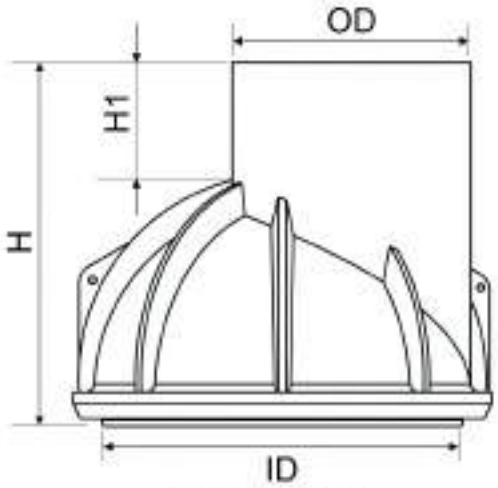
CONE DN 1000

INDEX	H	H1	ID	OD
CAP LF 1000/1	430	180	1000	645
CAP LF 1000/2	680	425	1000	645
CAP DM 1000/1	830	180	1000	645
CAP DM 1000/2	1080	425	1000	645
CAP DM 1000/3	1330	675	1000	645

dimensions (mm)



1 CAP LF 100

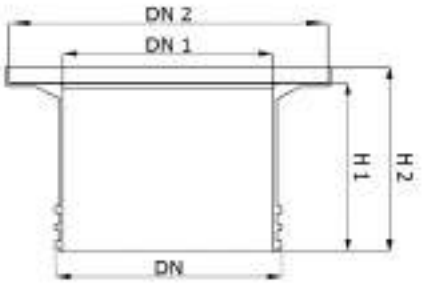


2 CAP DM 1000

TELESCOPIC ADAPTER

INDEX	DN	DN 1	DN 2	H 1	H 2
DN 630	547	508	770	408	450
DN 600	588	540	770	450	500

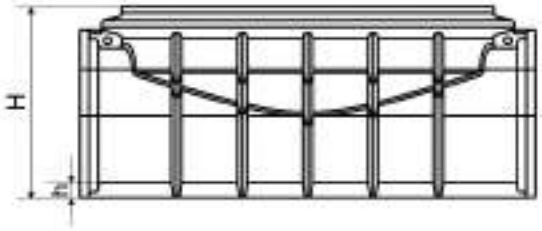
dimensions (mm)

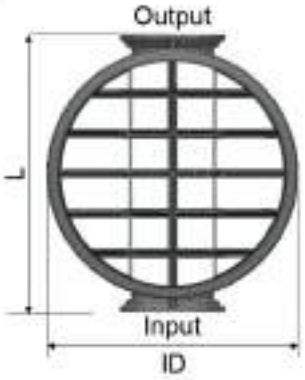


BASE ID 1000 TYPE 1

INDEX	H	L	ID	h	input/output
BS 1000.400	530	1250	1000	40	OD/ID 110 - 400
BS 1000.600	870	1180	1000	90	OD/ID 110 - 600

dimensions (mm)

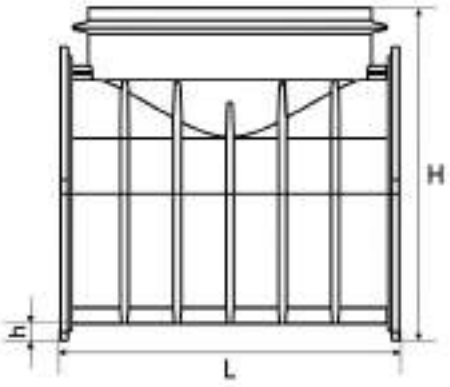




BASE ID 1000 TYPE 2

INDEX	H	L	ID	h	input/output
BS 1000.800	1200	1230	1000	120	OD/ID 800

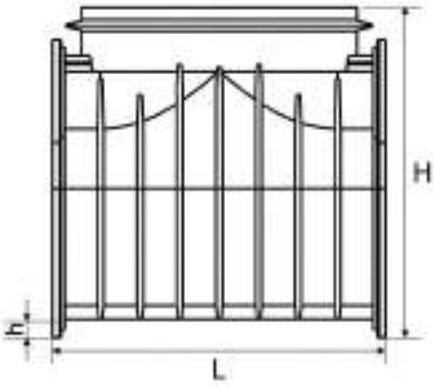
dimensions (mm)

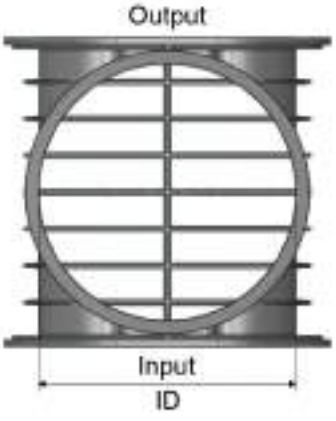


BASE ID 1000 TYPE 3

INDEX	H	L	ID	h	input/output
BS 1000.1000	1400	1250	1000	120	OD/ID 1000

dimensions (mm)

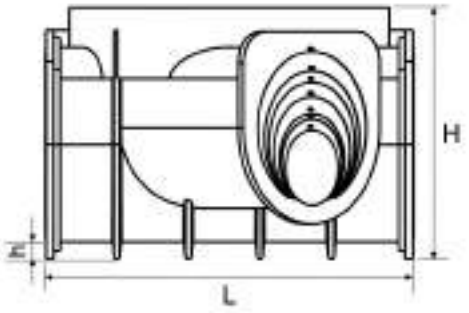


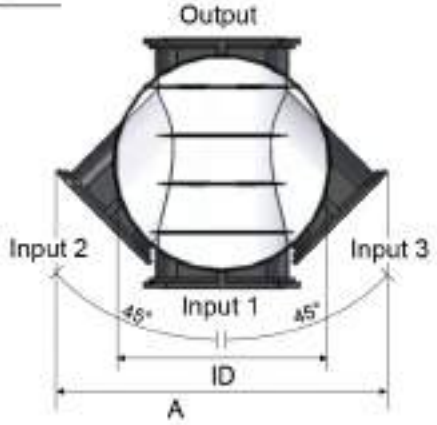


BASE ID 1000 TYPE 4

INDEX	H	L	A	ID	h
BS 2x45° 1000.600	870	1300	1750	1000	90
Input 2-3		Input 1		Output	
OD/ID 110 - OD500		OD/ID 110 - 600		OD/ID 110 - 600	

dimensions (mm)

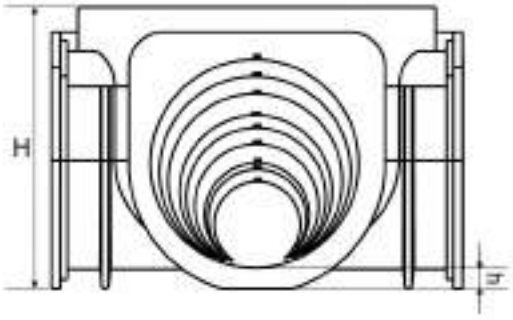


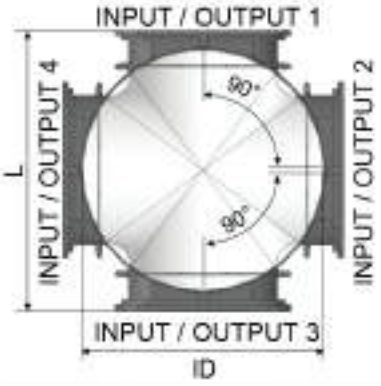


BASE ID 1000 TYPE 5

INDEX	H	L	ID	h	input/output
BS TEE 1000.600	870	1300	1000	90	OD/ID 110 - 600

dimensions (mm)

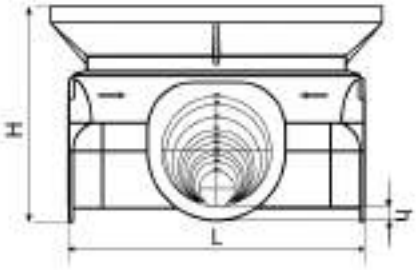


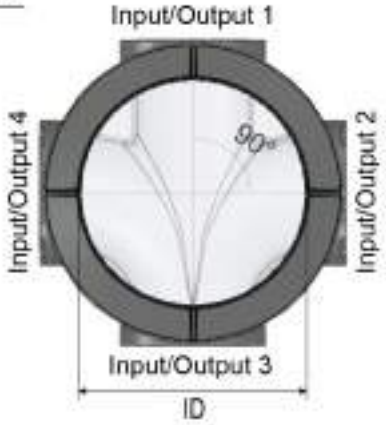


BASE ID 1000 TYPE 6

INDEX	H	L	ID	h	input/output
BS TEE 1000.500	850	1300	1000	90	OD/ID 110 - 600

dimensions (mm)





MANHOLES FOR VARIOUS APPLICATION

- Telescopic water meter manhole
- Cable manholes

Both types are intended for water meters, electrical and telecommunication systems. Advantages using this manholes are: easy access, quick installation, easy adjustable height, possible for entrance from different sides, freezing protection.

TELESCOPE MANHOLE

Telescopic base

Telescopic raiser – circle

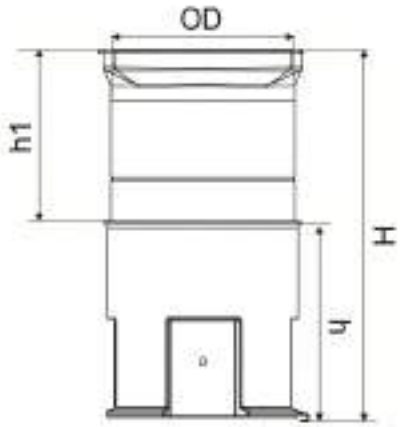
Telescopic raiser – square

Telescopic raisers can be used for extension of the base and all of Interhol cones. It can be in circle DN600 mm and square 600x600 mm.

TELESCOPE MANHOLE OD 600

INDEX	OD	H	h	h1
Telescopic manhole	610	1100	600	500

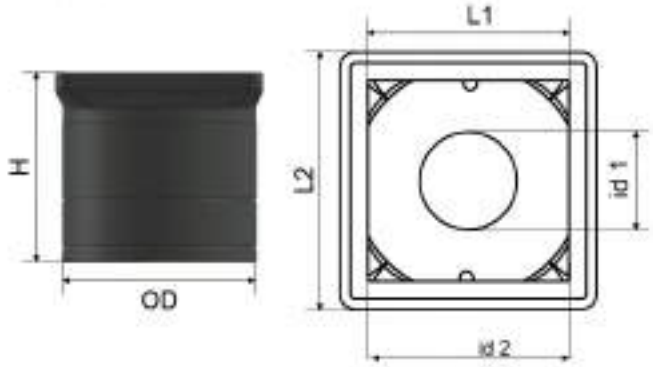
dimensions (mm)



TELESCOPE ADAPTER OD 600

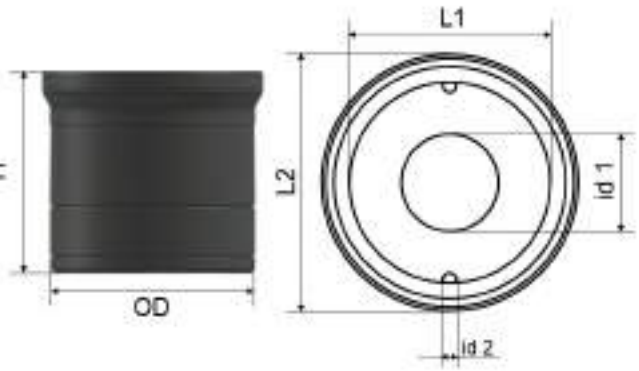
INDEX	OD	H	L1	L2	id1	id2
Square	610	600	500	650	250	35

dimensions (mm)



INDEX	OD	H	L1	L2	id1	id2
round	610	600	510	660	250	35

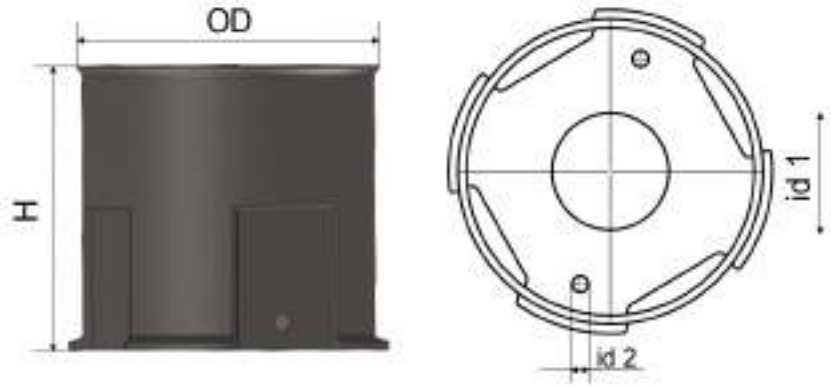
dimensions (mm)



TELESCOPE BASE OD 600

INDEX	OD	H	Id1	id2
Base	630	600	250	35

dimensions (mm)



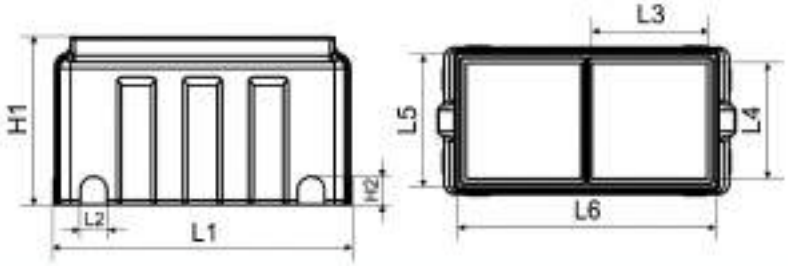
CABLE MANHOLE

The cable manhole is made of PE and PP and is used to access the necessary installation of cable lines, revisions or repairs. They are easily accessible due to technical solutions and have high load capacities.

CABLE MANHOLE

INDEX	H1	H2	L1	L2	L3	L4	L5	L6
CABLE MANHOLE	800	120	1410	100	550	550	640	1240

dimensions (mm)



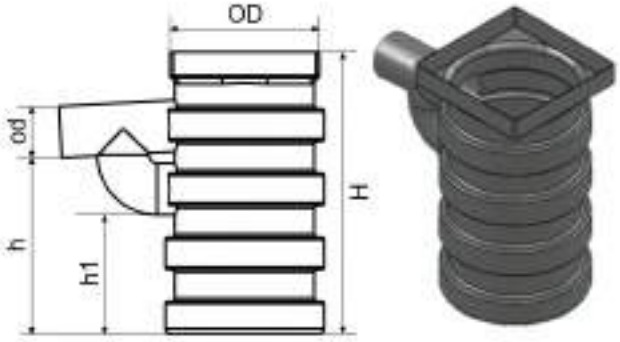
ROAD GULLY

The road gully with its excellent hydraulic property, offers quick and simple installation, easy cleaning and inspection. It serves to collect the atmospheric water that flows into the manholes. It is installed in front of the shaft and has a monolithic structure, consisting of a siphon part. It is suitable for connecting all standardized sewer pipes.

ROAD GULLY OD 500

INDEX	OD	H	h	h1	input/output
Road gully	500	900	550	370	OD 160

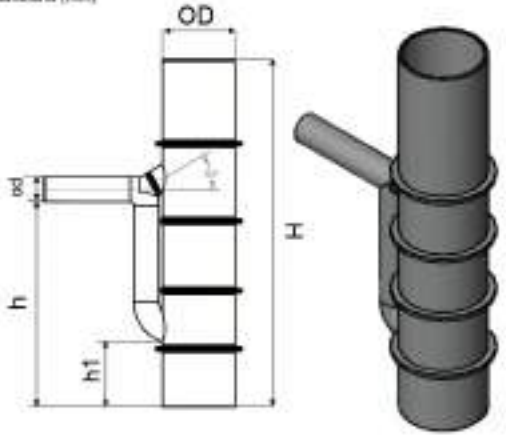
dimensions (mm)



ROAD GULLY OD 315

INDEX	OD	H	h	h1	input/output
Road gully	315	1500	890	370	OD 110

dimensions (mm)



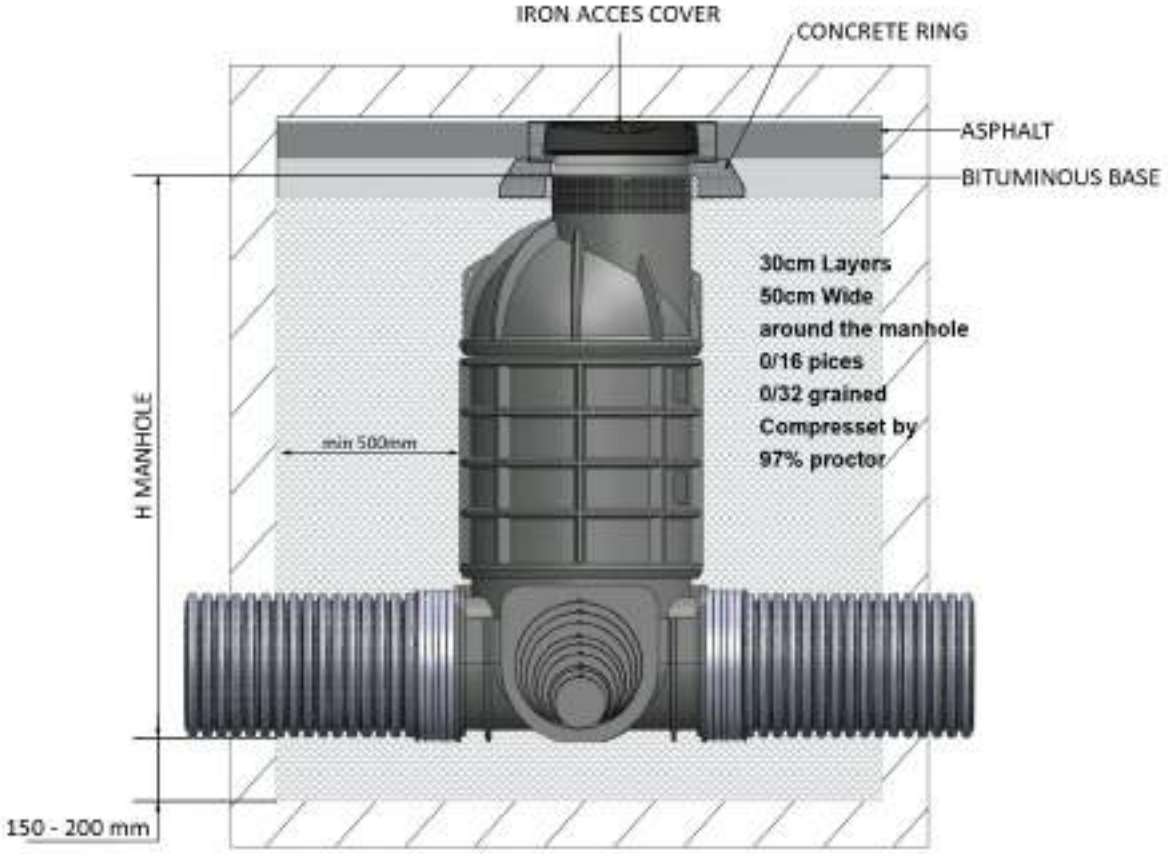
INSTRUCTIONS FOR INSTALLATION OF THE INTERHOL MANHOLE

PE and PP manholes must be placed on a sandy surface which should be hard and to use a material suitable for lateral filling or compaction. The separated material can be with dimensions from 0 to 32 mm and crushed material with size from 0 to 16 mm.

The bedding (granular subbase) should be made in layers of at least 10 cm and compacted up to 97% according to Procter. In case of presence of groundwater, the bedding should be 30 cm made of concrete MB15. Due to low weight manual installation is possible, but in a case of machine handling tying ropes is possible only arround the base and special openings on manhole parts intended for it.

COMPACTION AROUND THE MANHOLE

The same material from the sand bedding is used for compaction, and the compacted material should be in layers from 30 cm maximum to 97% according to Procter and 50 cm wide around the manhole. The filling around the manhole and under it is important to be according to Procter, to prevent any possible deformation and distortion of the manhole.

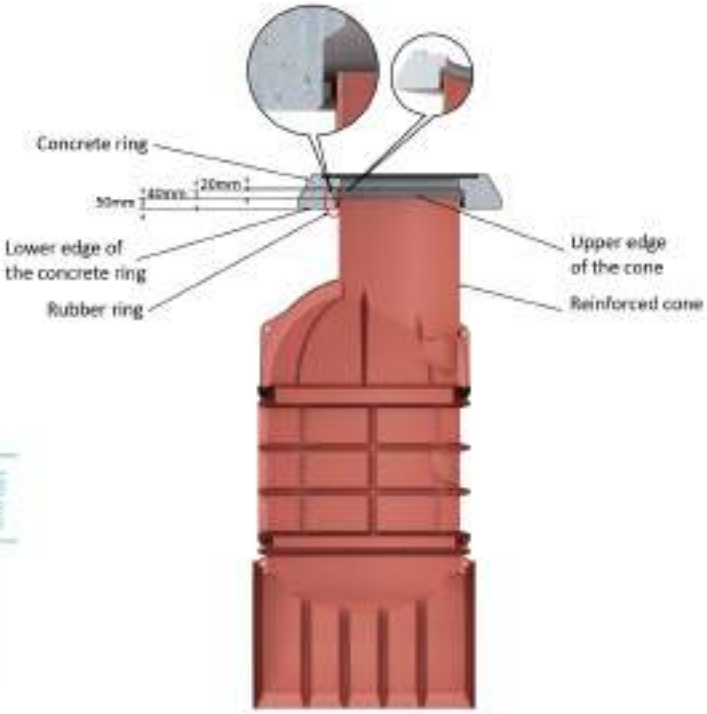


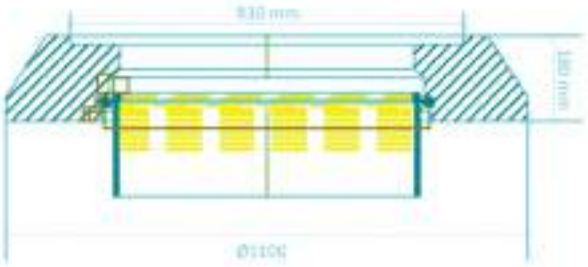
MANHOLE HEIGHT

PLACEMENT OF A CONCRETE RING

In case of heavy traffic, it is necessary to place a concrete ring on the cover. This concrete ring must not come into direct contact with the manhole cover. The empty space above the lid and the concrete ring should be 40 mm and a rubber band is placed between the lid and the ring. The lid should penetrate the 50mm concrete ring.

In this way the static and dynamic load will not be transferred to the body of the manhole but to the compacted sand and the substrate around the manhole. Concrete ring is not required in case of installation where there is no traffic and can be used directly polyethylene cover or metal cover B125.



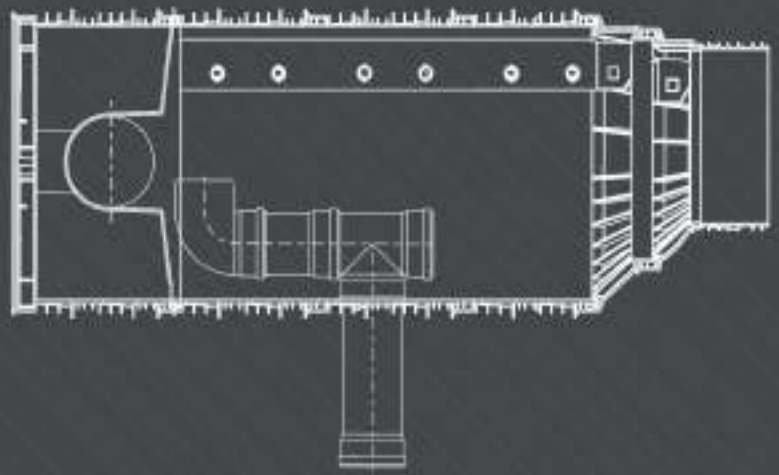


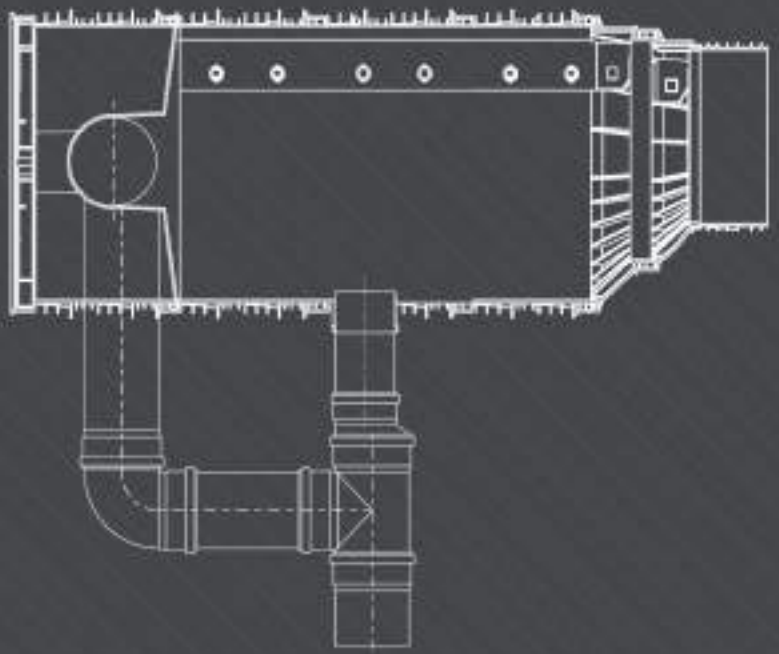
STORAGE AND TRANSPORT INSTRUCTIONS

1. When storing and transporting the components of the shafts, care should be taken not to allow point loading, ie in no case to be stored on sharp and pointed objects.
2. The shafts should be unloaded from the truck with the help of forklifts, with the help of belts, from the truck to the ground surface without throwing from a height.
3. When moving, do not drag on sharp edges or sharp objects.
4. The storage height depends of course on the geometry of the segments that will be stored, but storage heights higher than 2.5 m are not recommended.
5. The products can be stored outdoors because they have UV protection. For storage periods of more than 2 years, it is advisable to protect them from direct exposure to high solar radiation.
6. Freezing is not a problem for the components of the Interhol manholes but it is necessary to carefully manage the elements at low temperatures.
In case of extremely low temperatures, the elasticity of the rubber sealing rings may decrease, which may cause installation difficulties.
7. Products should be kept away from contact with organic solvents and direct flame action.
8. Modular shafts are supplied complete.
9. Each part of the shaft has its own identification number.

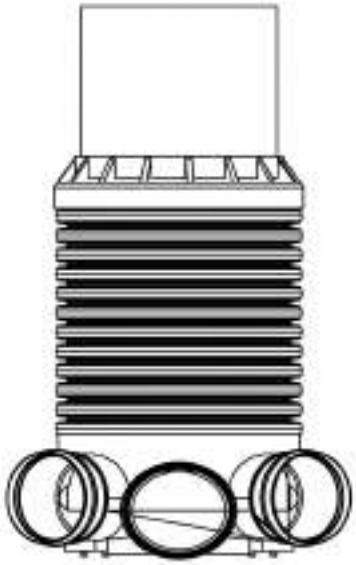
INTERHOL – FUTURA

TECHNICAL SOLUTIONS



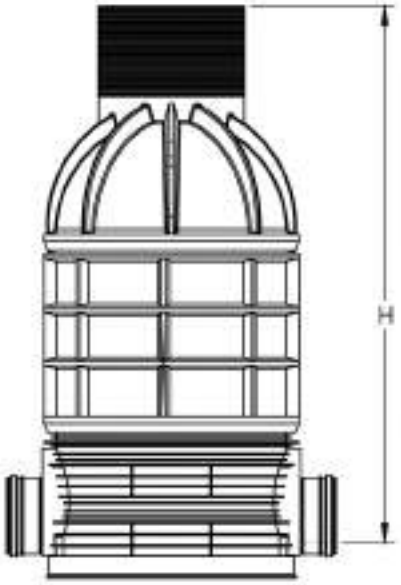


REDUCED BASE DN 400/DN 315



Solution for DN400 manhole reduced to DN315 smooth raiser. Thanks to the specially made fittings we offer a solution for reducing the pipe raisers of various dimensions.

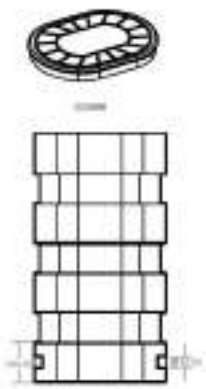
INTERHOL BASE WITH FLAT BOTTOM



Projects where the construction of the manhole must be made of:

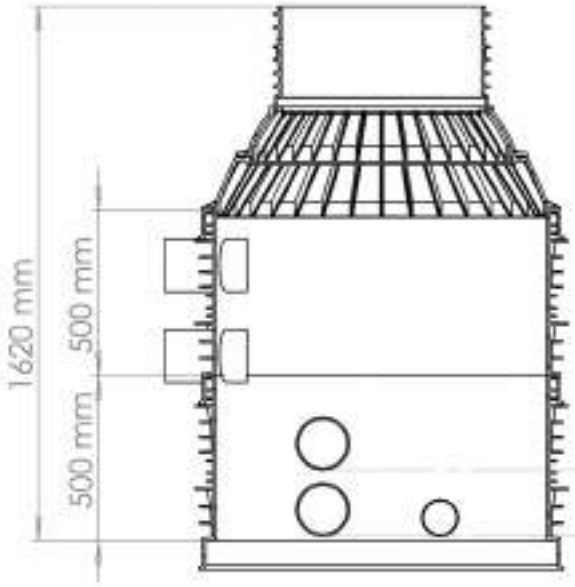
1) Base with flat bottom
2) Raiser
3) Cone

WATER METER MANHOLE

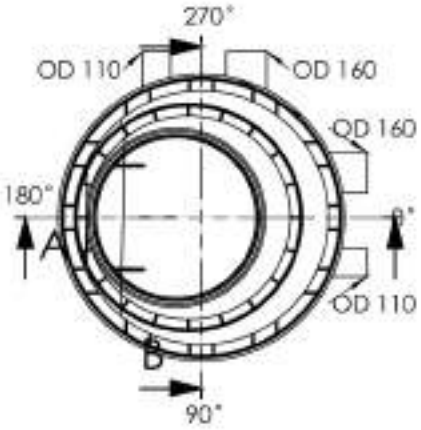


For more detail information
www.inter-construction.com.mk

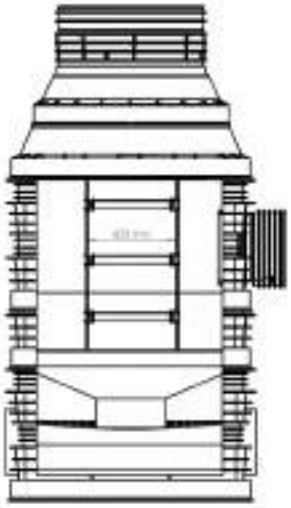
CABLE MANHHOLE



Specially made cable manholes where the cable entry sockets are made according to the client's needs.

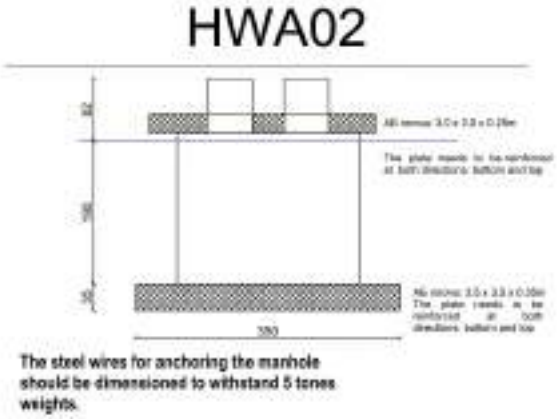


SPEED REDUCING MANHOLES



Manholes where flow speed is reduced thanks to the product tangent cone for reducing speed flow.

SPECIAL CUSTOM MADE



Specially produced manholes with a diameter higher than 1200mm.

OIL AND GREASE SEPARATORS

GENERAL CHARACTERISTICS OF INTER-ECO SEPARATORS

Oil separators serve to separate the oils from the water before it is discharged to a recipient. Oils by their origin can be from: animal, vegetable or petrochemical (oil, gasoline and oil).

Oil separators should be provided on surface water drainage systems from highways, roads, gas stations, parking lots and other places, where there is a risk of discharge into reciprocating atmospheric water contaminated with oil. To be effective, oil separators need to be properly designed, constructed and installed and, most importantly, properly maintained.

Depending on the place of discharge of water from the separation system (surface water, sewage), oil separators are divided into two groups (class I and class II), depending on the reduced oil concentration (5mg / l and 100mg / l) of the effluent to be supplied by the appropriate separator.

Oil separators can be with 100% maximum flow protection and can be bypassed or with a certain percentage of maximum flow protection.

For the best protection of the environment, when choosing the type and size of oil separators should take into account:

- the place of discharge from the separator,
- the sensitivity of the area, activities of the environment.

Therefore, the clients should accordingly do:

- correct choice of oil separator
- application of the standard
- technical solution and size of the separators
- specification for construction or installation and marking
- maintenance measures and equipment
- waste management

RIGHT CHOICE OF OIL SEPARATOR

Depending on the location of the discharge, as well as the sensitivity of the area, the client should make an appropriate choice of class (class I and class II / 5mg / L) and type (with or without bypass) of the oil separator.

Oil separator without bypass ,to fully cover the maximum flow (Q max) is used when there is a risk of regular oil contamination and predictable risk of significant leaks, for example vehicle maintenance areas and gas stations.

Oil separators with bypass, ie for partial (P % of Q max) coverage of the maximum flow are used when the risk of not providing treatment of higher flows to the maximum is acceptable.

STANDARDS

Interhol oil separators are designed produced according EN 858-a i EN 858-2.

TECHNICAL SPECIFICATION OF OIL SEPARATORS

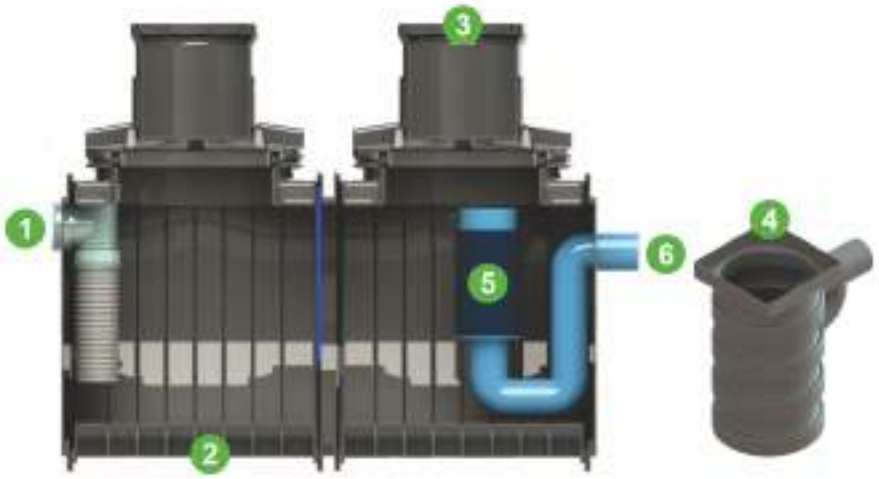
Interhol oil separators are made of polyethylene. The material used can be 100% recyclable, and no shovels, masons, concrete mixers or building materials are required for installation. The construction consists of three parts: a settler, a separator and a sampling manhole.

HOW OIL SEPARATORS WORK

(1) The polluted water enters through the inlet pipe, which is shaped to reduce splash. From here the water enters the first chamber, where the solids and larger droplets of oil and grease are separated by gravity.

(2) The polluted water, which still contains oils, passes through a coalescence filter. Due to the structure of the filter, the smaller oil droplets fuse together and form large doroplets that now can be separated, and the process of separating water and oils begins. As the separated oil level reaches the maximum designed limit there is a danger of the oil passing into the drain pipe, an automatic system is activated which closes the outlet.

(3) The treated water comes out of the separator, which is designed to hold the oil particles. These separators are lightweight compared to concrete, which greatly facilitates their installation. Due to the nature of the material from which they are made, separators made of polymeric materials are characterized by long service life, homogeneous structure of the shaft, low wear and exceptional chemical resistance. Because they are delivered as fully manufactured products, they can be used in places with high groundwater levels because they have good water resistance.



OIL SEPARATOR AS READY PRODUCT

1. Inlet
2. First chamber
3. Cover
4. Sample manhole
5. Coalescent fiter
6. Outlet

Class I

Class I - reduced oil concentration does not exceed 5 mg / l.

Coalescence separators work on the same principle as gravitational separators.

This filter is made of high quality polymers and has two functions:

1) positively affects the flow within the separator
2) wastewater filtration

The first class separators are equipped with a built-in coalescence filter, an automatic closing system, and an electronic alarm system can be installed. They are used in places where oils are found in everyday work, such as car repair services, gas stations.

NS [L/s]	Volume [L]	Dimensions AxBxC	Cover	Connection [mm]
NS 1.5	1200	1130X1000X1500	DN 600	DN 110
NS 3	1500	1130X1000X2000	DN 600	DN 160
NS 6	2000	2400X1000X1800	DN 600	DN 200
NS 10	2500	2400X1900X1950	DN 600	DN 250
NS 15	3000	1680X1900X1950	DN 600	DN 250
NS 20	5000	2400X1900X1950	DN 600	DN 300
NS 30	7000	3200X1900X1950	DN 600	DN 300
NS 40	9000	4000X1900X1950	DN 600	DN 300
NS 50	11000	4500X1900X1950	DN 600	DN 300

dimensions (mm)

IN ACCORDANCE WITH EN 858-1 in EN 858-2

Bypass 10%

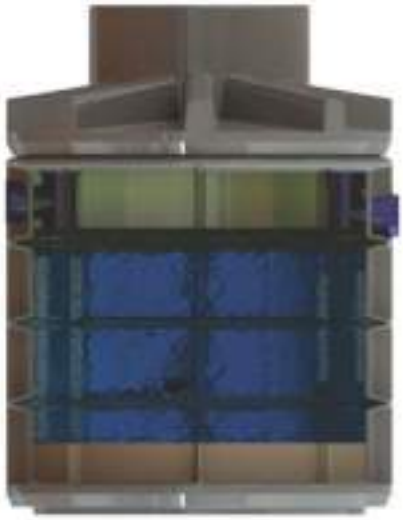
Bypass 20%

Class II

Reduced oil concentrations may exceed 5 mg / l.

The second class separators are equipped with an automatic closing system and an electronic alarm system can be installed.

Used in places where oils are found in everyday work such as car repair services, gas stations.



NS [L/s]	Volume [L]	Dimensions AxBxC	Cover	Connection [mm]
NS 1.5	1200	1130X1000X1500	DN 600	DN 110
NS 3	1500	1130X1000X2000	DN 600	DN 160
NS 6	2000	2400X1000X1800	DN 600	DN 200
NS 10	2500	2400X1900X1950	DN 600	DN 250
NS 15	3000	1680X1900X1950	DN 600	DN 250
NS 20	5000	2400X1900X1950	DN 600	DN 300
NS 30	7000	3200X1900X1950	DN 600	DN 300
NS 40	9000	4000X1900X1950	DN 600	DN 300
NS 50	11000	4500X1900X1950	DN 600	DN 300

dimensions (mm)

GREASE SEPARATORS

Volume [L]	NG	Dimensions (mm)	Connection [mm]
1000	2	Ø1300x1500	110
1500	4	Ø1250x1300x2300	160
3000	7	Ø2000x1800x2050	

dimensions (mm)

They are designed in accordance with the EN1825 standard, and are used to separate the fats found in the wastewater from restaurants, meat and food industry, etc.

WASTEWATER TREATMENT TANKS

OPERATION PHASES OF WASTEWATER TANKS

1 CHARGING PHASE

Primary treatment involves the phase of filling the 1st chamber with wastewater.

Solids are retained in the 1st chamber and further the wastewater passes to the other half of the tank (2nd chamber).

2 PHASE OF AERATION

Biological treatment of wastewater with microorganisms takes place in the 2nd chamber.

The so-called active mud can multiply with millions of microorganisms, thus purifying the water.

3 IDLE PHASE

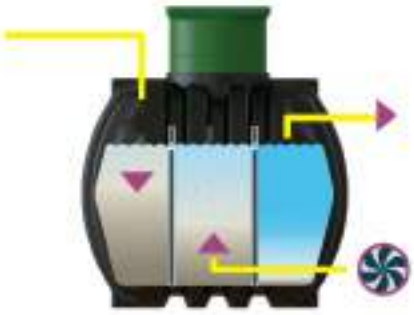
The third phase is the dormant phase. At this stage the "mercury mud" sinks to the bottom of the tank.

This ensures that clean water forms in the upper part of the tank.

4 PHASE OF USE

The purified water is empty (river, sea...) or used for irrigation.

POSITION FOR SETTING THE CHAMBER PLATE



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Users [maximum]	Max. day flow [L/d]	Max.load [kg BSB5/d]	Total volume [ltrs]
2-4	600	0,24	3200
4-6	900	0,36	5000
6-8	1200	0,48	7000
8-10	1500	0,60	9000
10-12	1800	0,72	11000
12-18	2700	1,08	13000
18-24	3600	1,44	15000
24-30	4500	1,80	17000
30-36	5400	2,88	19000
36-40	6000	2,40	21000
40-46	6900	2,76	23000
46-52	7800	3,12	25000

More than 50 users.

Users [maximum]	Max. day flow [L/d]	Max.load [kg BSB5/d]	Total volume [ltrs]
80	12000	4,80	33000
100	15000	6,00	41000
120	18000	7,20	43000
150	22500	9,00	51000
200	30000	12,00	73000

One systems consist of: IK tank, telescope adapter and cover.

1

Locking mechanisam

Tank lids are equiuped with locking mechanisam.

2

Lids

Inter reservoirs for treatment plants have two types of lids. We offer a square lid and a round lid.

The dimensions of the square lid are 600x600mm, and the diameter of the circular lid is 600mm. The connection of the tank and the lid is with rubber bands that effectively prevent dirt from entering the tank. This means that leakage is not POSSIBLE.

3

Reinformcement

Inter-Construction tanks are high quality stable thankfully to the good construction. The tanks are durable during transport and the rigidity has already been proven, not only through computer simulation during the development process but also in practice through various projects.

4

DN - input and output

Tanks has opening from the side where can be installed following dimensions: DN110, DN160, DN200, DN250 or any ither needed dimensions.

Proper operation requires proper control and maintenance. Visual inspection is required on every 14 days.

The amount of accumulated fat must be checked - at least once a month, and mandatory after each heavy rain, etc.

When reaching the maximum amount of oil / fat you need:

1) complete emptying of the system
2) extraction of the sediment from solid substances
3) fill the separator with clean water to the level of the outlet pipe

For proper operation of separators or treatment plants it is very important to pay attention to:

Base preparation:

For the installation of the separator, the dimensions of the same should be taken into account and when digging the trench, they should be observed. For proper installation of the vessel, the size of the trench should be adjusted according to the type of separator. The distance from the building must be at least 1m. In case of modular installation, the distance between two separators or more should be at least 1m.

Substrate preparation:

The separator should be placed on the correct surface. It must be firm and compact. It is necessary to use a suitable material for filling with dimensions 0-32 mm and crushed material with size 0-16 mm. The substrate should be made in layers of 15-20 cm. and compacted to 97% according to Procter. In case of presence of groundwater, the substrate should be 30 cm made of concrete MB15. Due to the light weight of the shaft, manual (manual) mounting of the separator is possible.

Compaction around the tank:

The same material is used for compaction from the sand substrate, with dimensions of 0-32 mm and crushed material with size from 0-16 mm, and the compacted material should be in layers from 30 cm to 97% according to Procter and 50 cm in width around the separator. The filling around the separator and below it is important to be according to Procter, to prevent any deformation.

When ordering the oil / fat separator, A15 covers can be delivered at the request of the customer.

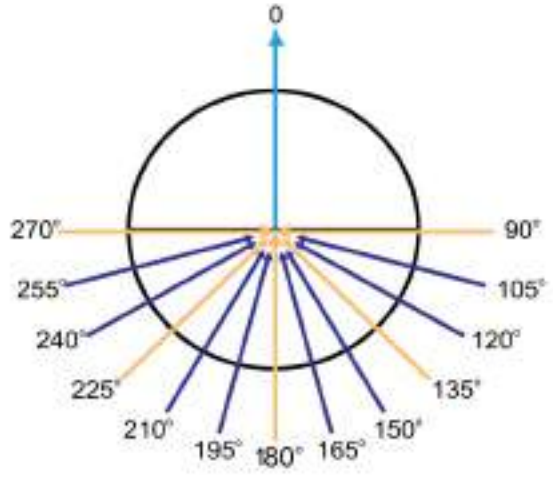
INTER CONSTRUCTION

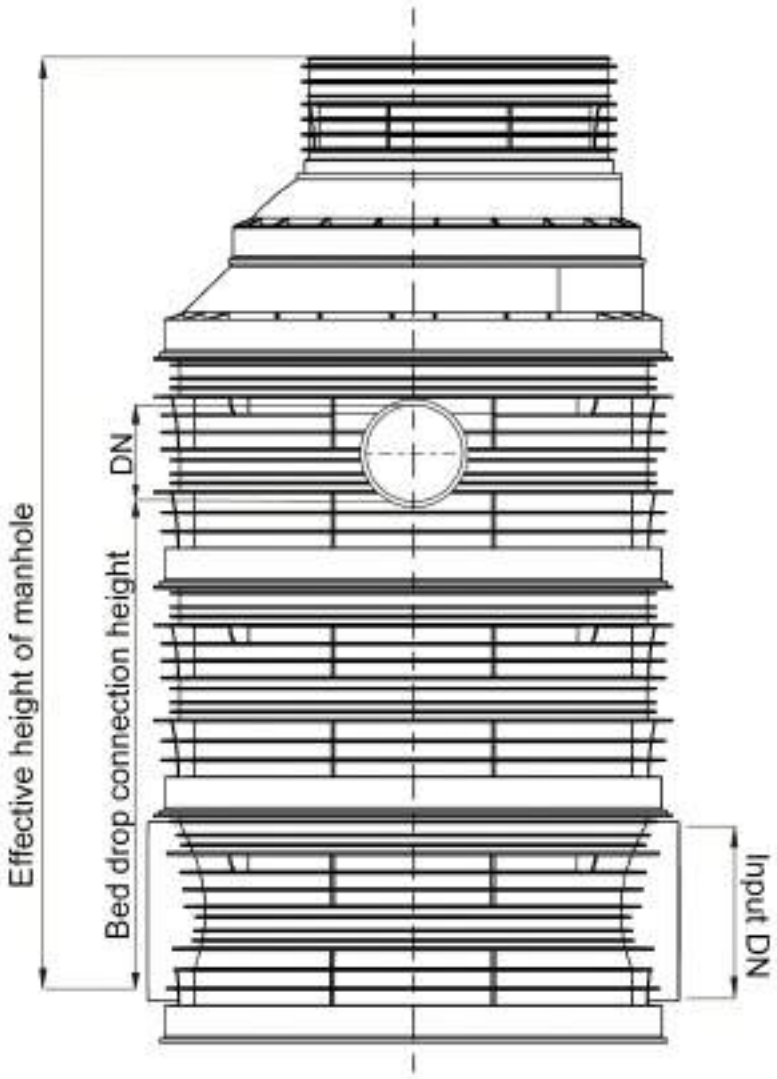
Company name:

Project:

Manhole type: PE PP Interhol Futura

Manhole diameter DN





NO:	CODE	DIAMETER OF THE MANHOLE	HEIGHT OF THE MANHOLE	INPUT CONNECTORS										OUTPUT CONNECTOR	QUANTITY	PRICE EURO PCS	PRICE EURO PCS
		DN (mm)	H (m)	Ø D1 (mm)		Ø D2 (mm)		Ø D3 (mm)		Ø D4 (mm)		Ø D5 (mm)		Ø D6 (mm)			
				DN	angle	DN	angle	DN	angle	DN	angle	DN	angle				
1																	
2																	
3																	
4																	