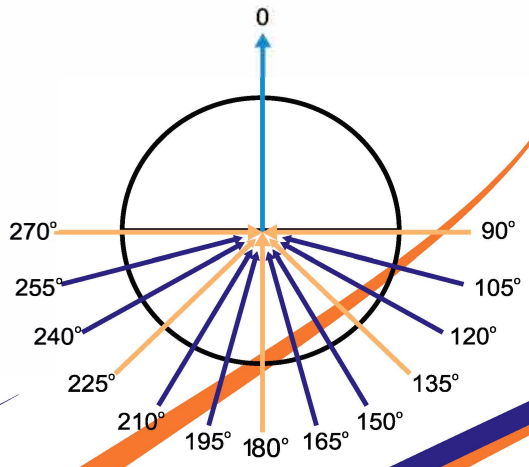
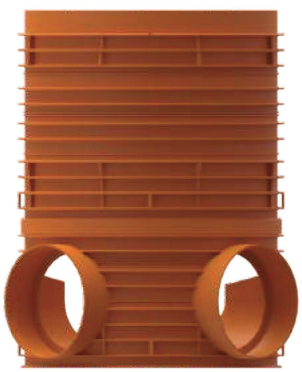
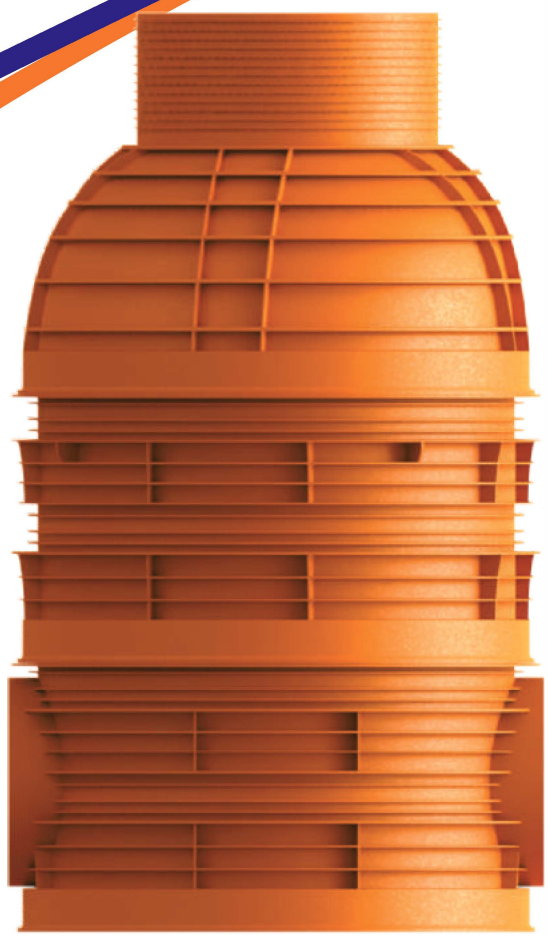
POLYETHYLENE AND POLYPROPYLENE

NEW GENERATION MANHOLES

FUTURA







CERTIFIED IQNet MANAGEMENT SYSTEM

qualityaustria
SYSTEM CERTIFIED
ISO 9001:2008 No. AT-10310/0
ISO 14001:2004 No. AT-01397/0
BS OHSAS 18001:2007 No. AT-00569/0

Injection technology is high sofisticated technology.
It is the best method for high-performance of products with ideal surfaces.

The advantages of using this technology are:

- flexibility
- quick, efficient and effective production
- economy
- enables production of elements with different sizes and shapes
- safe production

MATERIALS

The new generation INTERHOL manholes - Futura is made of polypropylene and polyethylene PE PP according standard EN 13598-1, EN 13598-2.
Environmental and high quality materials that can be easily recycled and thermally treated.

Table no1: Characteristics of polyethylene

Feature	Unit	Standard	Value
Melt flow index (230°C/2.16 kg)	g/10min	ISO 1133	4,5
Density	g/cm^3	ISO 1183	0,957
Tensile modulus (1mm/min)	MPa	ISO 178	1700

Table no.2 Characteristics of polypropylene

Feature	Unit	Standard	Value
Melf flow index (190°C/2.16 kg)	g/10min	ISO 1133	3,5-4
Density	g/cm^3	ISO 1183	0,907
Tensile modulus (1mm/min)	MPa	ISO 178	1350

Due to environmental pollution, global warming, the phenomenon of the greenhouse effect in large frames began to raise public environmental awareness through a variety of projects worldwide.
The EU policy in the field of environment is based on high standards and encouraging innovation.
That talks about this new era of manholes - Future manholes.

Temperature resistance
Future manholes are constantly exposed on influence by different temperatures.
The form of the manhole remains unchanged under bright sunny effect during the summer, and also can not harm it low temperatures, or even hot waste water from industries.
Future manholes are stable at temperatures from -35 to +60 degrees Celsius.
100% waterproofness Future manholes are 100% leak-proof.
It compactness guarantees the waterproofness.

Long life
Made of PE and PP completely exclude the possible problems and damages that may occur in other traditional manholes that have been used. All the characteristics that contain PE and PP as materials, have an important role in the strength and durability of the product.
In this case Future manholes are an excellent product with high quality features that ensure long life.

Maintenance and security
The smooth inner surface of Future manholes prevents the collection of sediment that provides a high coefficient of flow of wastewater. This important feature allows an extension of the lifespan of the manhole at the same time maintaining it. Security is provided through a specially designed non-slip stairs that are an integral element of the manhole. It can be made from several materials (PE, PP, aluminum, iron) depending on the claim.

Adjustable
Future manholes are adjustable in each domain: the height of the manhole, size socket connection to any kind of tube.

Chemical resistance
The characteristic resistance of PE and PP chemical aggression is well known.
The features of Future manholes are defined in the standard EN 13598-1/2, which confirms that the shafts of PE and PP are water resistant to a wide range of PH values, such as domestic and other waste water, rainwater, surface and underground water. The list of chemical resistance FUTURE manholes can be produced at the request of customers.

Resistance of mechanical strokes
PE and PP are resilient and adaptable materials that do not break, so Future manholes are resistant to shocks and falls that may occur during installation.

Fast delivery and development
Plastic injection technology is highly productive per unit time.
Depending on the needs of the buyer is able to perform certain changes of the product.

Light weight and easy to manipulate
Low weight facilitates transport in two segments:
- Do not exceed the maximum permissible weight of transportation;
- Reduces the cost of transportation for use of all airspace in the transport vehicle.

Manipulative vehicle (forklift, crane or robot) can easily be lift, move and load Future elements.
Saving time and expense during installation.
Thanks to the low weight Future manholes are mounted easily and quickly without the need to use heavy machinery which saves time and costs for installation.

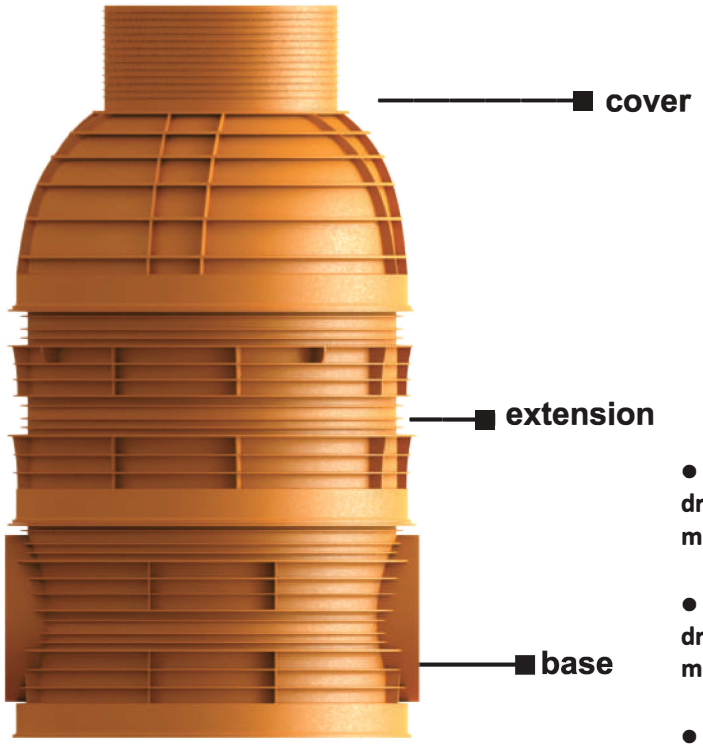
USES

Due to the characteristics FUTURE manhole have versatile purpose :

- SANITARY – SEWER SYSTEMS
- LANDFILLS
- CHEMICAL PLANTS
- SEWAGE SYSTEMS

The manholes are usually positioned:

- AT THE BEGINNING OF THE CHANNEL
- WHERE THE CHANNEL CHANGES THE DIMENSIONS
- WHERE THE CHANNEL CHANGES THE DIRECTION
- WHERE IT CHANGES THE LONGITUDINAL FALL OF THE CHANNEL



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**

- **EN 13598 -2 1 Plastic pressurless pipe system, underground drainage and sewer. PVC-U, PP and PE. Specifications for manholes and inspection chambers in a traffic environment**

- **EN 476 Common requests for components used in**

- **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,**

- **EN 1610 Construction and testing of drainage and sewer**

ADDITIONAL CONNECTIONS WITH FUTURA

Depending of client request manhole can be delivered on site as: welded or separately as elements connected with seals.

First wat to obtain a compact manhole is with welding the elements with an extruder where is used PE/PP wire. The heating of the PE/PP surface of the elements of manhole and the melted PE/PP wire from the extruder machine are joint together and they form a connection which is 100% waterproof.

The second way to obtain consistency is to assemble specially designed rubber/seal between every element. This seal gives full stability to the elements and waterprofness.

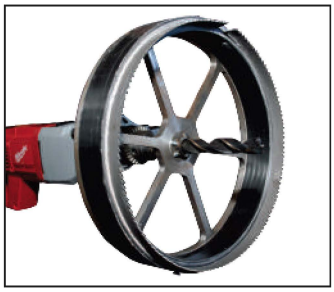
2. Socket

Futura manhole are unique products where the Futura base is produces together with the socket, but depending of customer needs on the base can be directly welded PE/PP socket according the needed dimensions.

This socket allows easy and quick connection of the manhole with the sewage line.

3. Seal

There is a specially designed waterproof rubber with different dimensions. Base openings are made with special knife for each dimension, for correctly placement to the opening.
The seal is stated on already made opening of the basis, and before you put it pipe in it the seal must be covered with grease: Lubricant Neutrex or similar.



PAST AGAINST THE FUTURE
ADVANTAGES OF FUTURA MANHOLES

- **WATER TIGHTNESS&SHOCK RESISTANCE**

Concrete manholes are produced from water permeable concrete. That talks that with difficult it can be guarantee the tightness and resistance of the systems to the waste water composed of agents.

vice versa

Futura manholes thanks to the material and specially designed rubber seal offers 100% guarantee of impermeability , resistance to acid, chemical agents and different kind of aggressive materials (according EN 1277, EN 12061).

- **DAMAGED STEPS**

Concrete manholes have steps that corrode due to the wet environment therefore represent a huge security risk to the worker.

vice versa

Futura manholes for that purpose have more anti-corrosive type of steps (PE,PP, fiberglass, stainless steel, aluminimum etc.) that are integrated part of the manhole without using welding technology or adhesive.

- **BAD LINK CONNECTIONS**

The old water/sewage networks in the past were made with concrete or metal pipes.

- ***vice versa***

Futura manholes offers you mixture of every kind of pipe, size and material with integrated fabric manufactured waterflow- angle channel.

- **MATERIAL FEATURES**

Concrete manholes are mixture of sand and cement which is elastic and flexible. Due to mechanical stress, earth and water pressures arising as a result of natural disasters, concrete manholes are keen of crack.

- ***vice versa***

Futura manholes thanks to the superior blend of strength, flexibility and elasticity of materials used for manufacturing do not have craks and are durable in various environments. Futura manholes have reinforced external structure and are produced using high injection technology in different diameters in line with: 13598-2; 13598-1; EN- 14802; etc...

- **DAMAGED COVER**

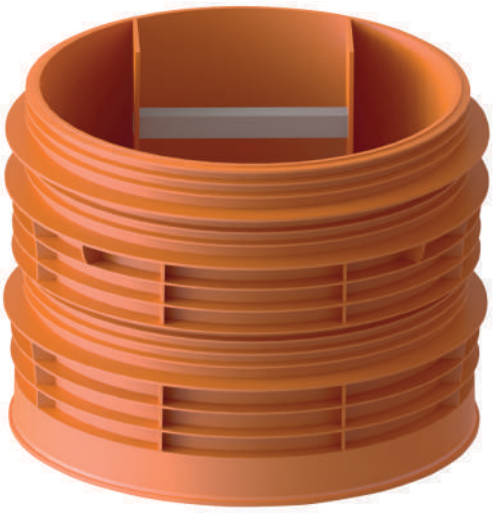
The lack of suitable framework or concrete ring causes damage to the manhole cover.

- ***vice versa***

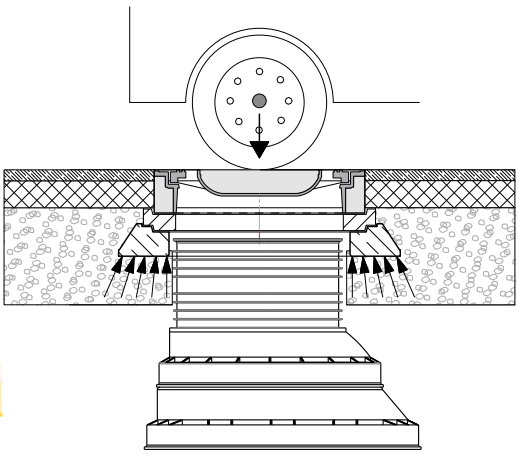
Futura offers you concrete ring where heavy loads are guided to the ground.

- **UNDERGROUND WATER**

Futura offers : reinforced waterflow bottom and additional flat double bottom if it is needed.



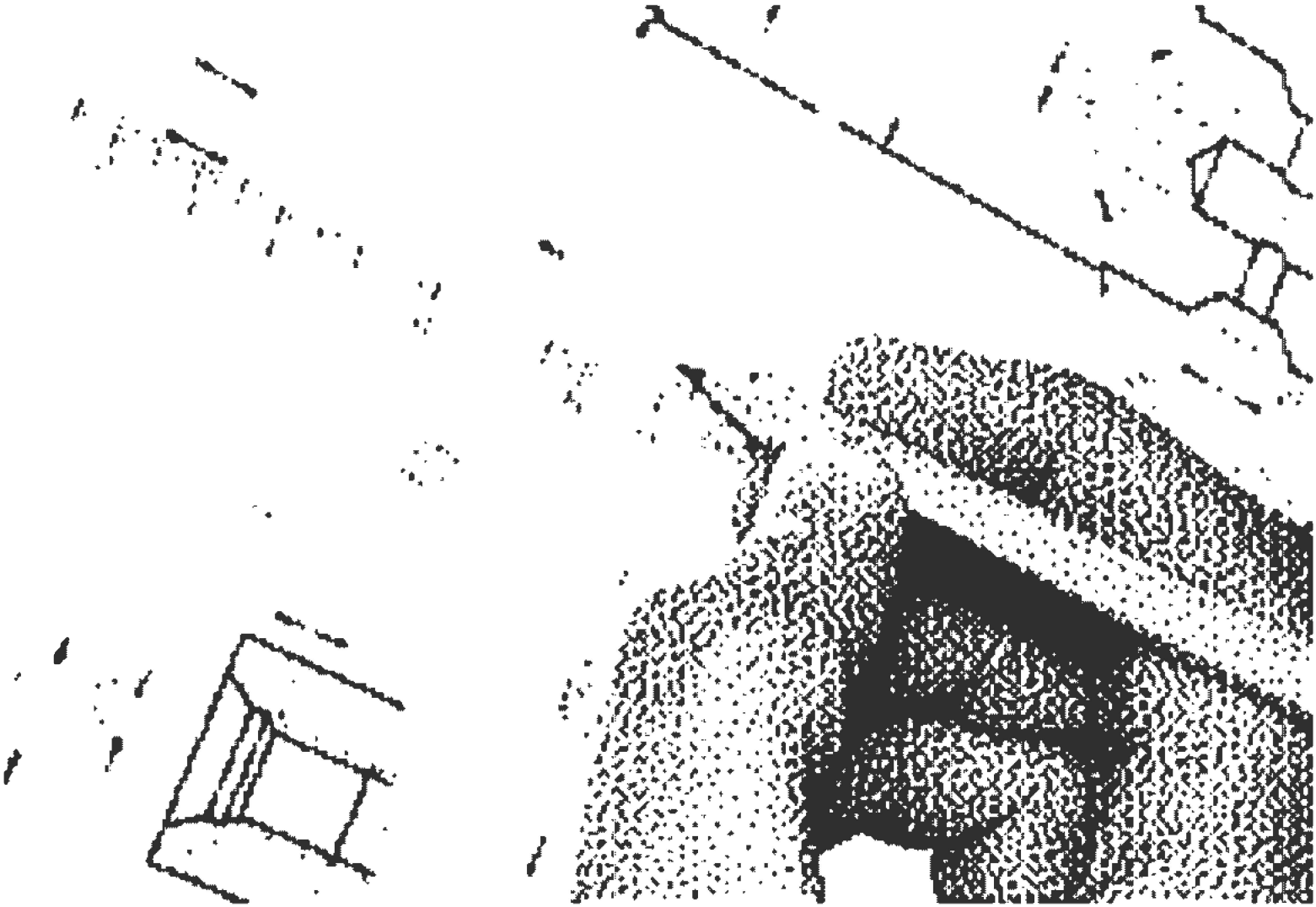
1) Polyethylene - Полиетиленски мазни
2) Cast iron - Лиено железо
3) Polypropylene - Полипропиленски
4) Clay - Глина
5) GRP (FIBERGLASS)
6) PVC - ПВЦ
7) Corrugated pipes - Ребраски цевки



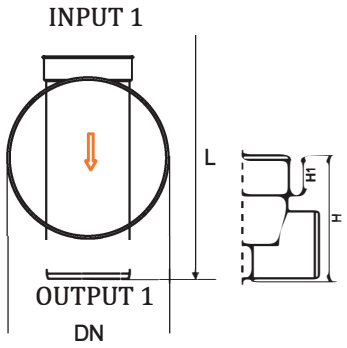
IDS

TECHNICAL CHARACTERISTICS

FUTURA
- new generation manholes



BS OD 400

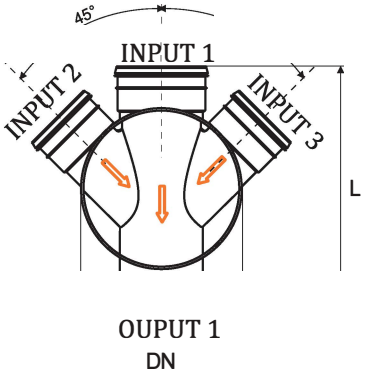


BS 400.200/160

DN	400
H	415
H1	155
L	580
INPUT 1/ OUTPUT 1	DN 200/160

dimensions (mm)

BS OD 400 2x45°

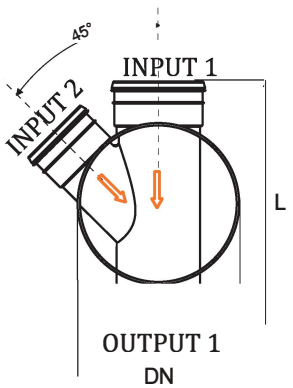


BS 400.200/160 2x45°

DN	400
H	415
H1	155
L	580
INPUT 1/ OUTPUT 1	DN 200/160
INPUT 2 , 3	DN 160

dimensions (mm)

BS OD 400 1x45° R

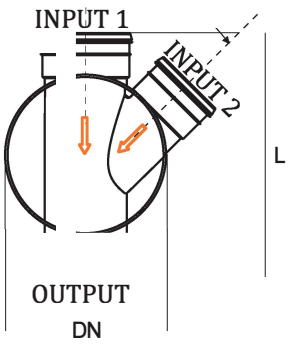


BS 400.200 1x45° R

DN	400
H	415
H1	155
L	580
INPUT 1/ OUTPUT 1	DN 200/160
INPUT 2	DN 160

dimensions (mm)

BS OD 400 1x45° L

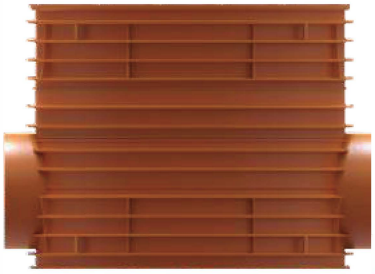


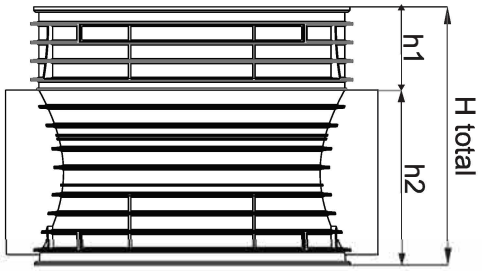
BS 400.200 1x45° L

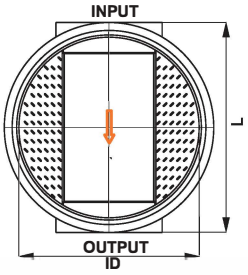
DN	400
H	415
H1	155
L	580
INPUT 1/ OUTPUT 1	DN 200/160
INPUT 2	DN 160

dimensions (mm)

BASE DN 600 -straight flow







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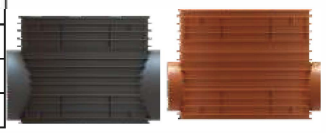
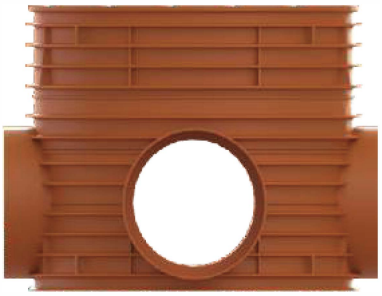
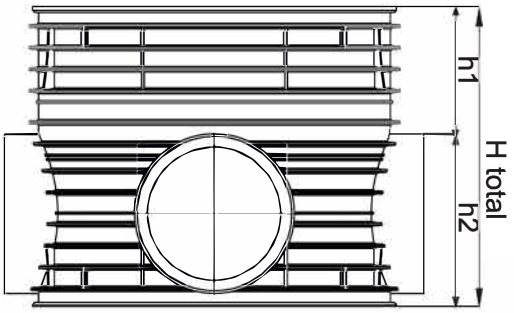
BS 600.160	556	267	289	637	OD 160
BS 600.200	556	267	289	637	OD/ID 200
BS 600.250	556	236	320	637	OD/ID 250
BS 600.300	556	180	376	637	OD/ID 315/300

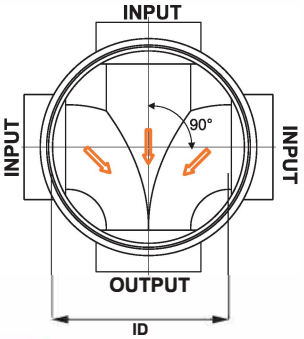
dimensions (mm)



BASE DN 600 -TEE



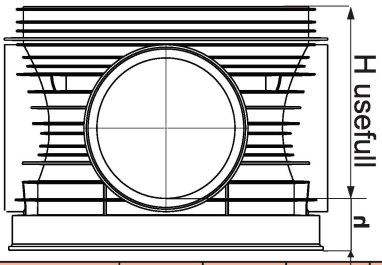


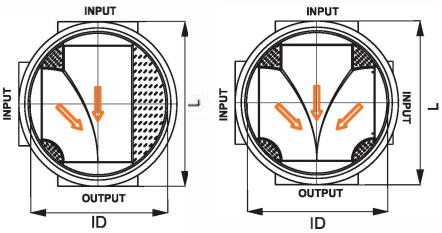


INDEX	Htotal	h1	h2	ID	Input/Output
BS 600.160	556	267	289	637	OD 160
BS 600.200	556	267	289	637	OD/ID 200
BS 600.250	556	236	320	637	OD/ID 250
BS 600.300	556	180	376	637	OD/ID 315/300

dimensions (mm)

BASE DN 800.400- T, 2T





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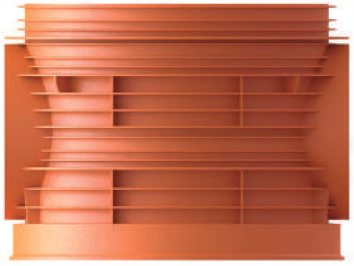
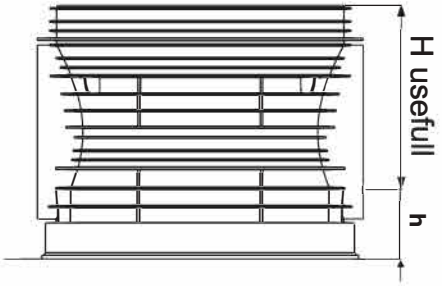
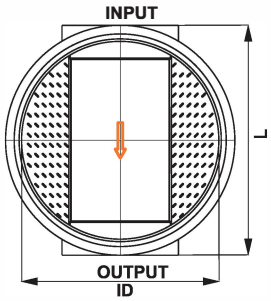
dimensions (mm)

BASE DN 800.400 straight flow







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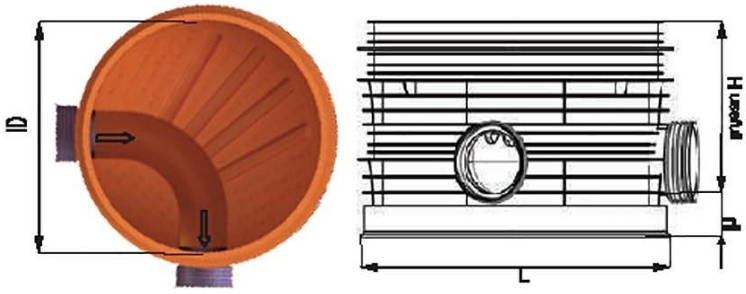
BASE 800 - 90°



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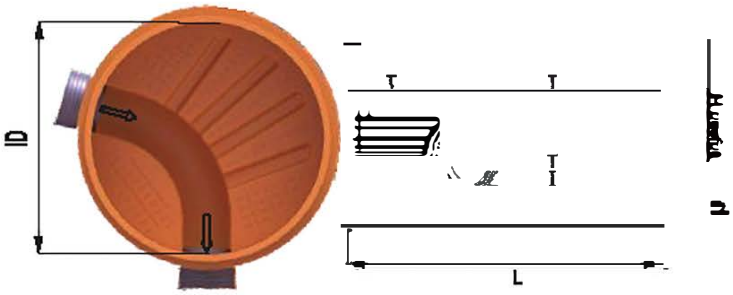
BS 800	540	930	800	150	OD/ID 160-300

BASE 800 - 105°



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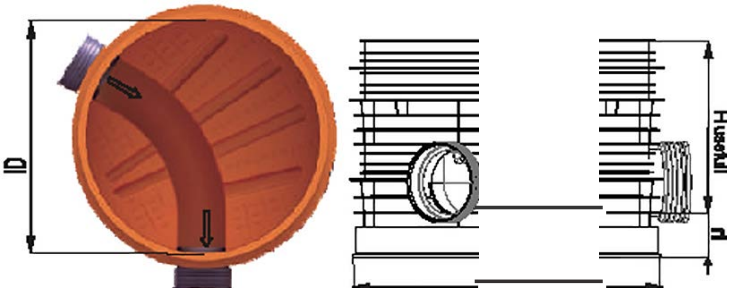
BASE 800 - 120°



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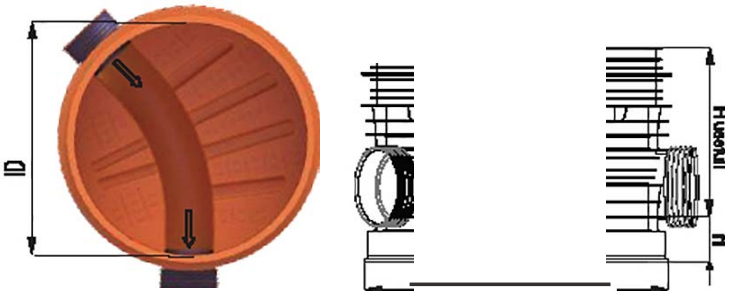
BASE 800 - 135°



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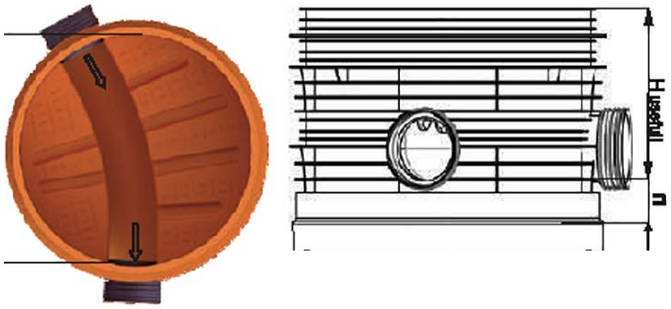
BASE 800 - 150°



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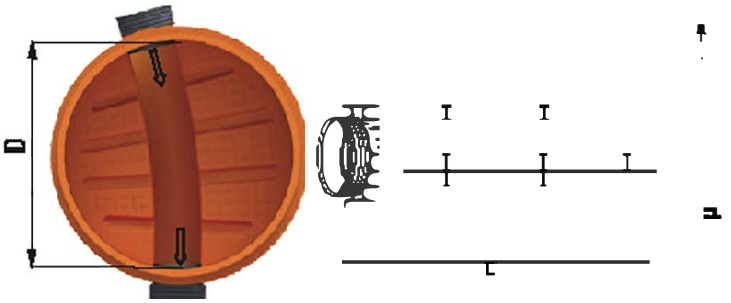
BASE 800 - 165°



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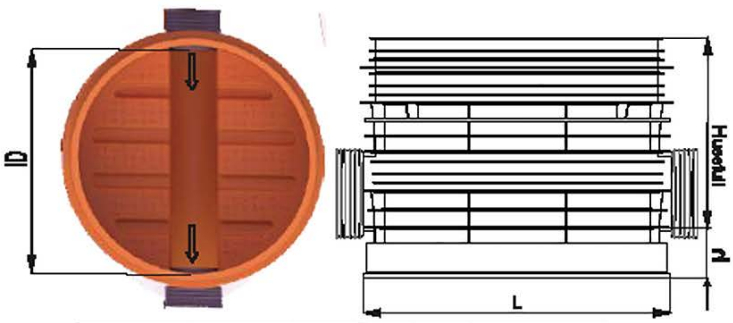
BASE 800 - 180°



INDEX	H usefull	L	ID	h	Input/Otput
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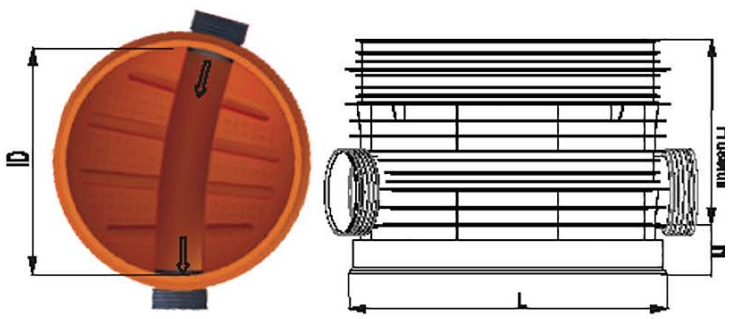
BASE 800 - 195°



INDEX	H usefull	L	ID	h	Input/Otput
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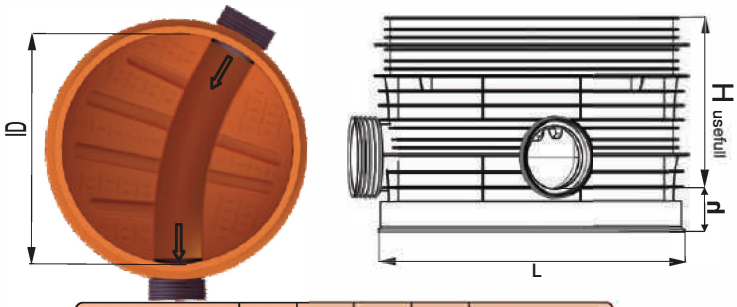
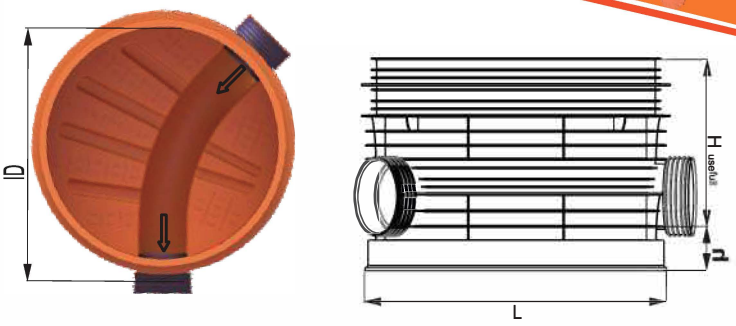
BASE 800 - 210°



INDEX	H	L	ID	h	Input/Otput
BS 800	540	930	800	150	OD/ID 160-300

dimensions (mm)

BASE 800 - 225°



index	H	L	ID	h	Input/Otput
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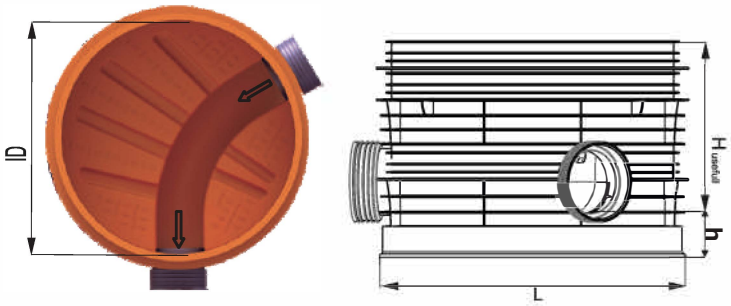
dimensions (mm)

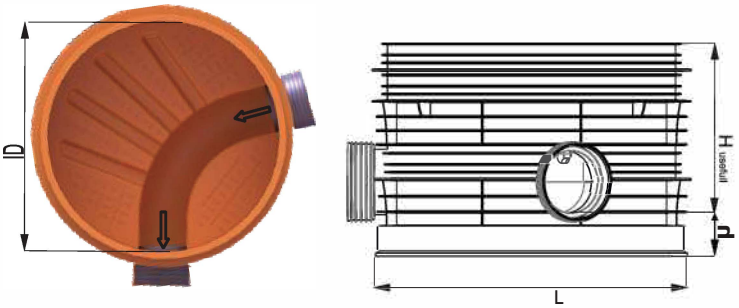
BASE 800 - 240°



index	H	L	ID	h	Input/Otput
BS 800	540	930	800	150	OD/ID 160-300

dimensions (mm)

BASE 800 - 255°



index	H	L	ID	h	Input/Otput
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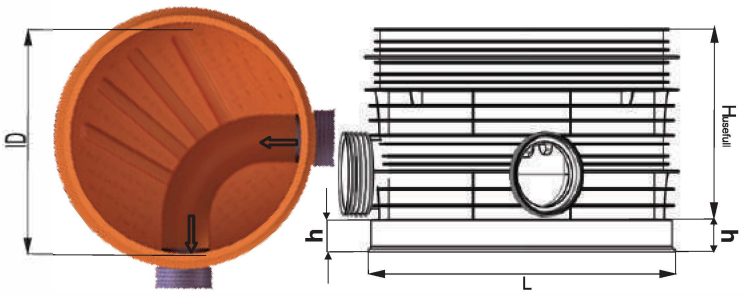
dimensions (mm)

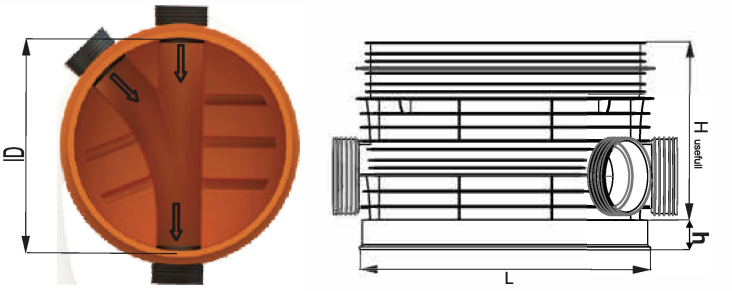
BASE 800 - 270°



index	H	L	ID	h	Input/Otput
BS 800	540	930	800	150	OD/ID 160-300

dimensions (mm)

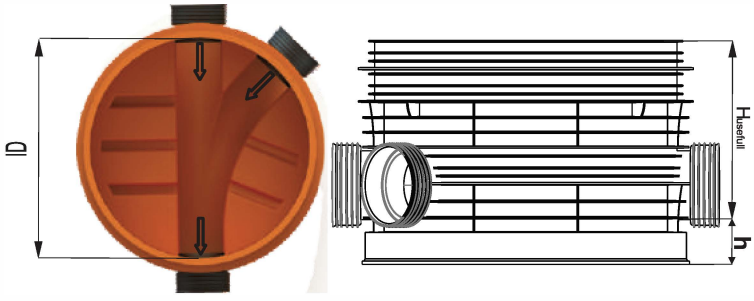
BASE 800 - 1x45° L



index	H	L	ID	h	Input/Otput
BS 800	540	930	800	150	OD/ID 160-315

dimensions (mm)

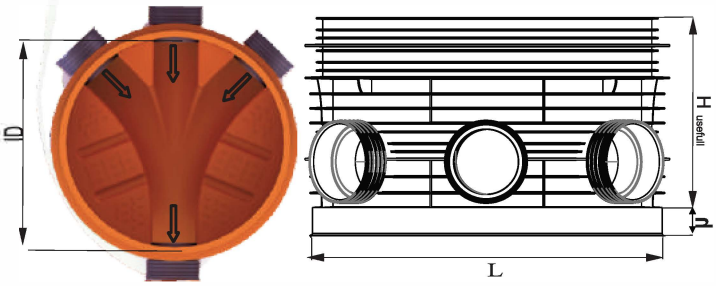
BASE 800 - 1x45° R



index	H	L	ID	h	Input/Otput
BS 800	540	930	800	150	OD/ID 160-315

dimensions (mm)

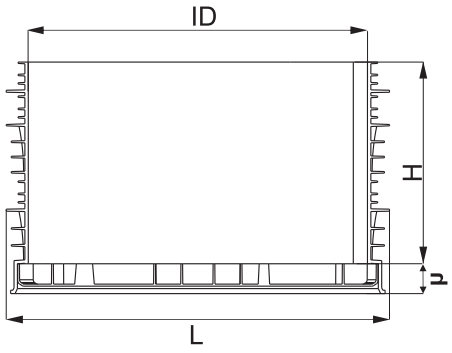
BASE 800 - 2x45°



index	H	L	ID	h	Input/Otput
BS 800	540	930	800	150	OD/ID 160-315

dimensions (mm)

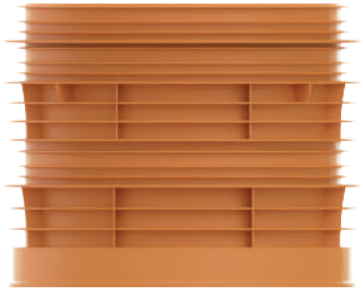
BASE DN 800-Blind base

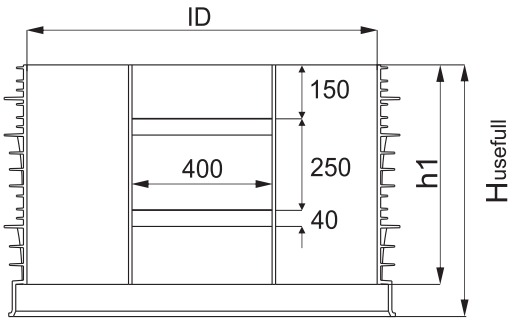


BS 800-BLIND BASE	
DN	as it is needed
H	690
h	90
L	930
ID	800

dimensions (mm)

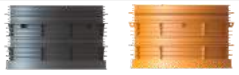
EXTENSION 800



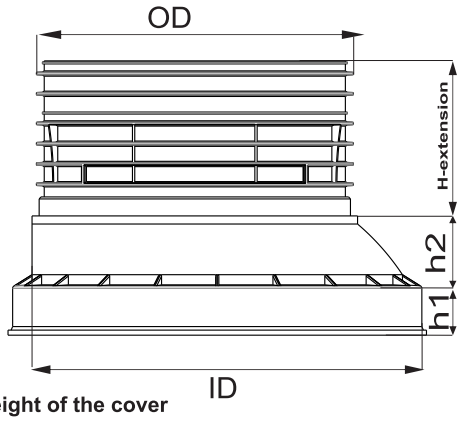


EXTENSION 800		
h1	H usefull	ID
340	250	800
590	500	800
690	600	800
840	750	800
1090	1000	800

dimensions (mm)



COVER 800-TYPE 1

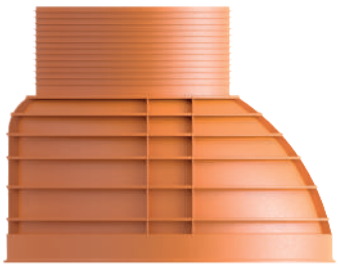


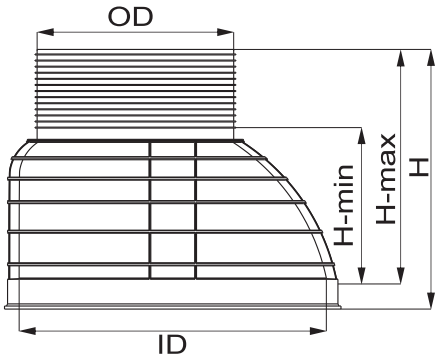
possibilities of reducing/increasing the height of the cover

COVER ID800 -TYPE 1	
h1	90
h2	150
H-extension	310
ID	800
OD	686

dimensions (mm)

COVER 800-TYPE 2

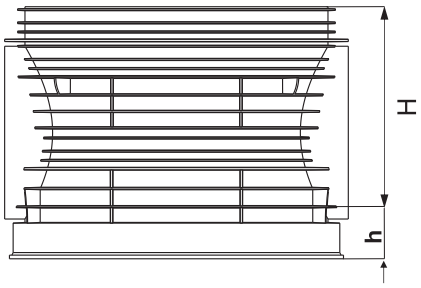


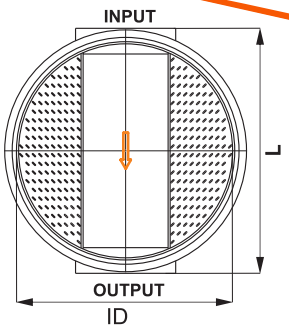


COVER ID800-TYPE2	
H	760
H-min	420
H-max	670
OD	645
ID	800

dimensions (mm)

BASE DN 1000.400 straight flow

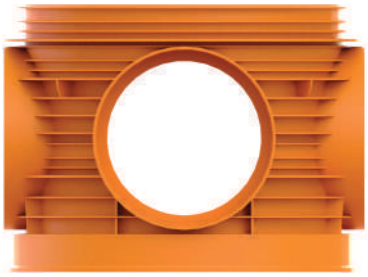


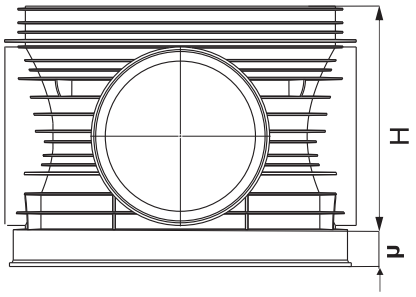


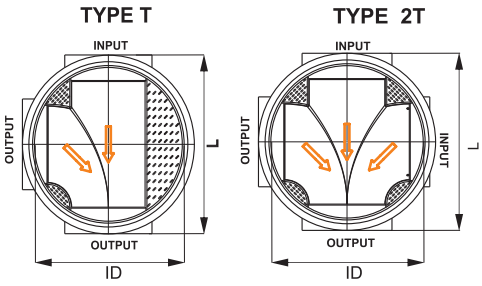
INDEX	H usefull	L	ID	h	Input/Output
BS 1000.400	540	1130	1000	150	OD/ID 110 - 400

dimensions (mm)

BASE DN 1000.400-T, 2T



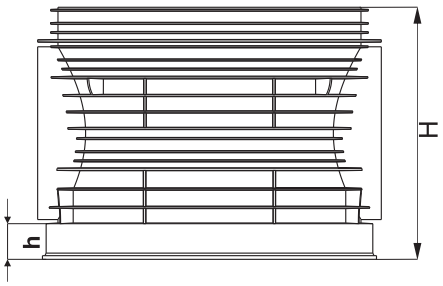


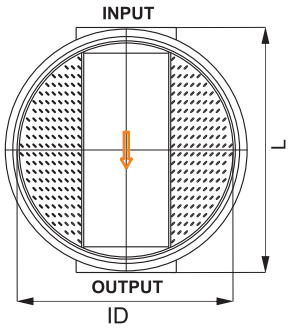


INDEX	H usefull	L	ID	h	Input/Output
BS 1000.400 T, 2T	540	1130	1000	150	OD/ID 110 - 400

dimensions (mm)

BASE DN 1000.600 straight flow

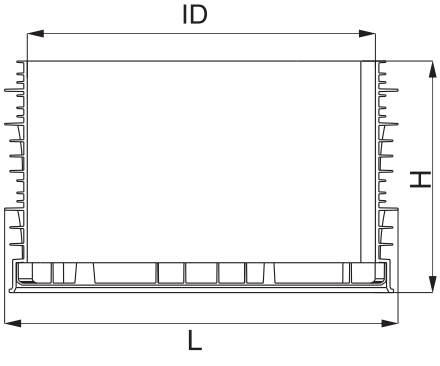




INDEX	H usefull	L	ID	h	Input/Output
BS 1000.600	1040	1130	1000	90	OD/ID 110 - 600

dimensions (mm)

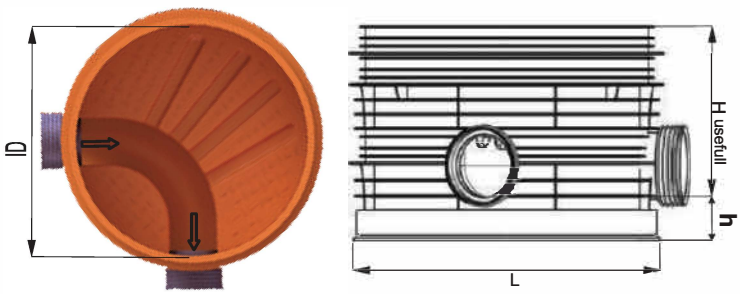
BASE DN 1000-Blind base



BS 1000-blind base	
DN	as it is needed
H	690
L	1130
ID	1000

dimensions (mm)

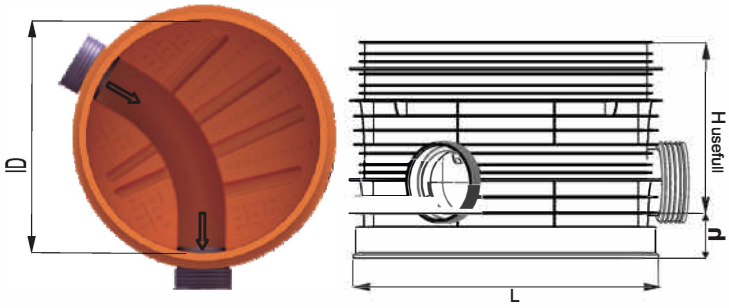
BASE 1000 - 105°



INDEX	H usefull	L	ID	h	Input/Otput
BS 1000	540	1130	1000	150	OD/ID 160-300

dimensions (mm)

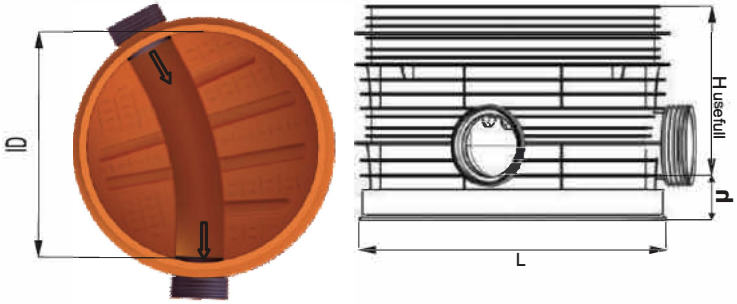
BASE 1000 - 120°



INDEX	H usefull	L	ID	h	Input/Otput
BS 1000	540	1130	1000	150	OD/ID 160-300

dimensions (mm)

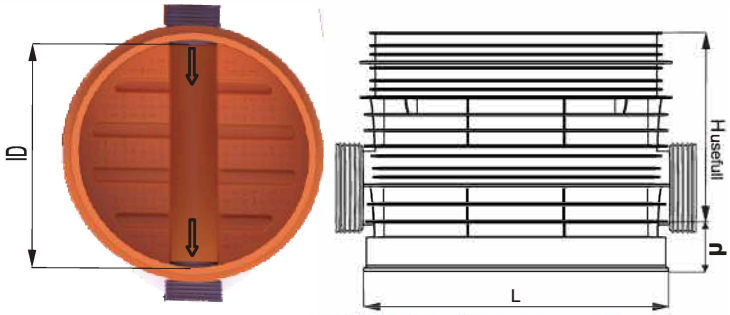
BASE 1000 - 150°



INDEX	H usefull	L	ID	h	Input/Otput
BS 1000	540	1130	1000	150	OD/ID 160-300

dimensions (mm)

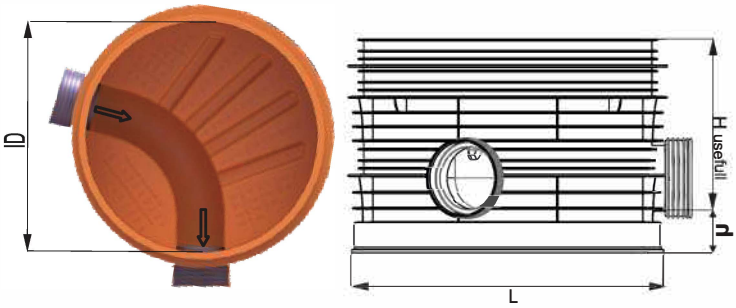
BASE 1000 - 180°



INDEX	H usefull	L	ID	h	Input/Otput
BS 1000	540	1130	1000	150	OD/ID 160-300

димензии (mm)

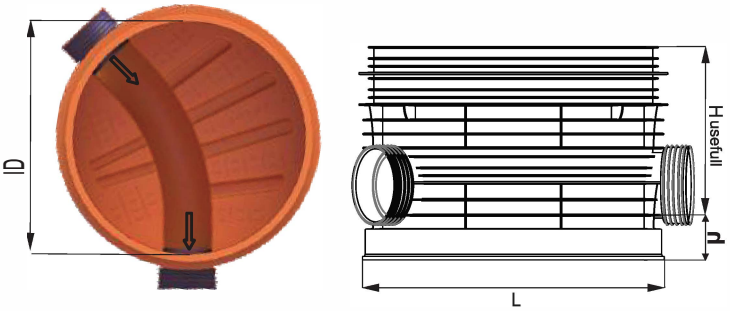
BASE 1000 - 105°



INDEX	H usefull	L	ID	h	Input/Otput
BS 1000	540	1130	1000	150	OD/ID 160-300

dimensions (mm)

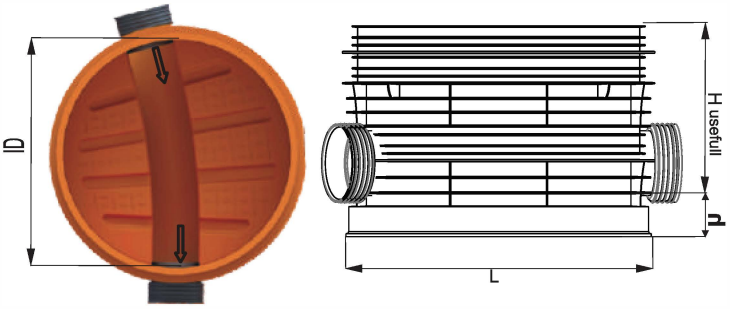
BASE 1000 - 135°



INDEX	H usefull	L	ID	h	Input/Otput
BS 1000	540	1130	1000	150	OD/ID 160-300

dimensions (mm)

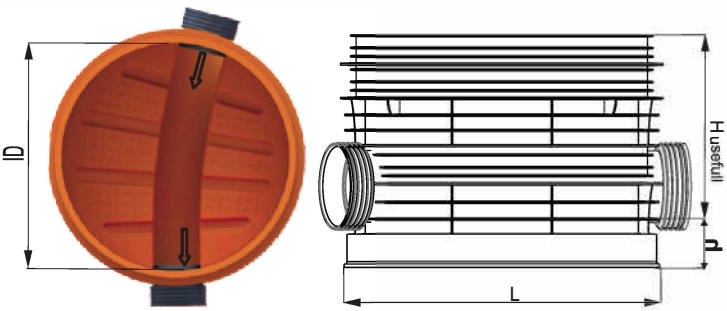
BASE 1000 - 165°



INDEX	H usefull	L	ID	h	Input/Otput
BS 1000	540	1130	1000	150	OD/ID 160-300

dimensions (mm)

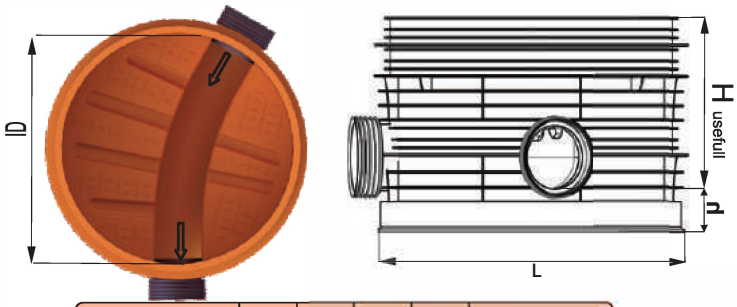
BASE 1000 - 195°



INDEX	H usefull	L	ID	h	Input/Otput
BS 1000	540	1130	1000	150	OD/ID 160-300

dimensions (mm)

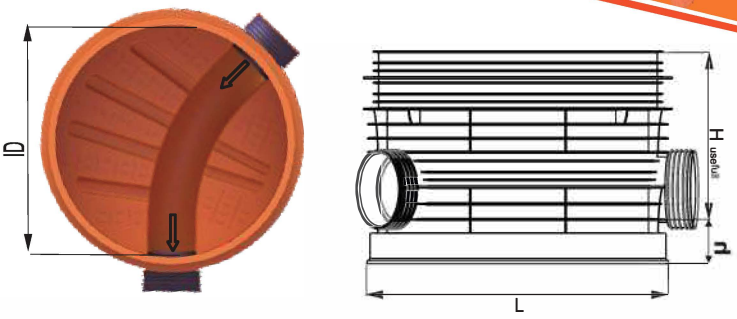
BASE 1000 - 210°



INDEX	H	L	ID	h	Input/Otput
BS 1000	540	1130	1000	150	OD/ID 160-300

dimensions (mm)

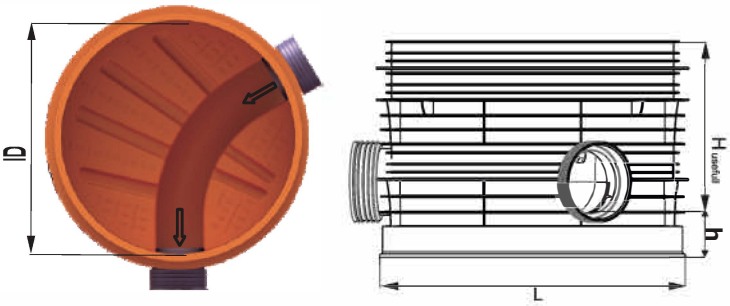
BASE 1000 - 225°



INDEX	H	L	ID	h	Input/Otput
BS 1000	540	1130	1000	150	OD/ID 160-300

dimensions (mm)

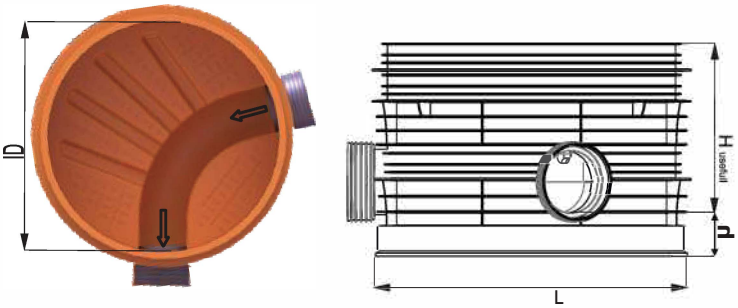
BASE 1000 - 240°



INDEX	H	L	ID	h	Input/Otput
BS 1000	540	1130	1000	150	OD/ID 160-300

dimensions (mm)

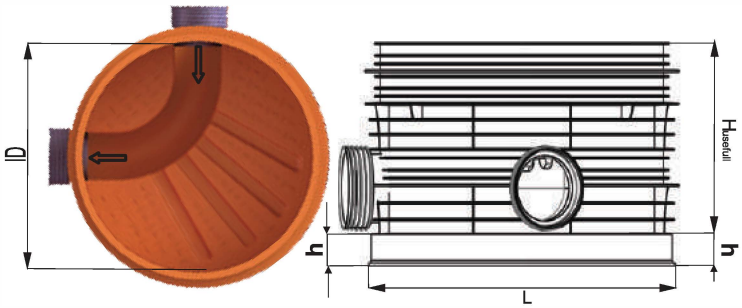
BASE 1000 - 255°



INDEX	H	L	ID	h	Input/Otput
BS 1000	540	1130	1000	150	OD/ID 160-300

dimensions (mm)

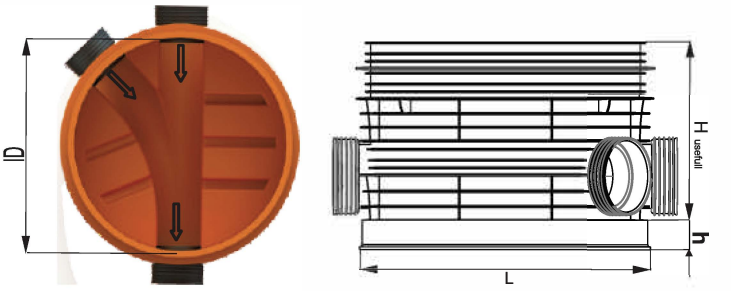
BASE 1000 - 270°



INDEX	H	L	ID	h	Input/Otput
BS 1000	540	1130	1000	150	OD/ID 160-300

dimensions (mm)

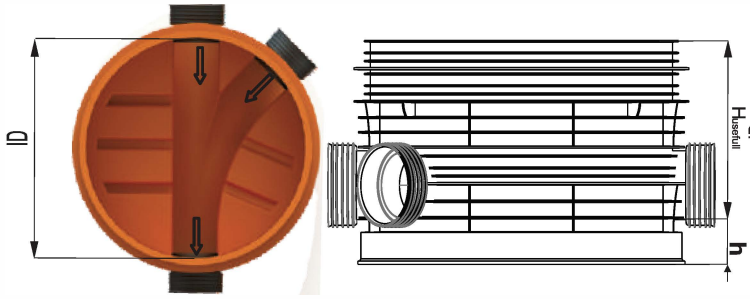
BASE 1000 - 1x45° L



INDEX	H	L	ID	h	Input/Otput
BS 1000	540	1130	1000	150	OD/ID 160-315

dimensions (mm)

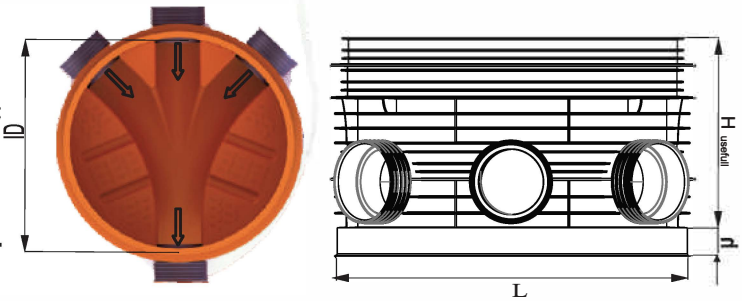
BASE 1000 - 1x45° R



INDEX	H	L	ID	h	Input/Otput
BS 1000	540	1130	1000	150	OD/ID 160-315

dimensions (mm)

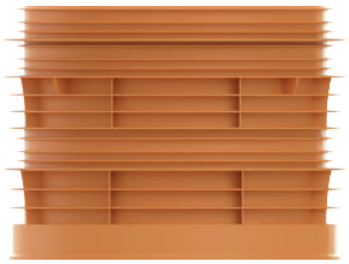
BASE 1000 - 2x45°

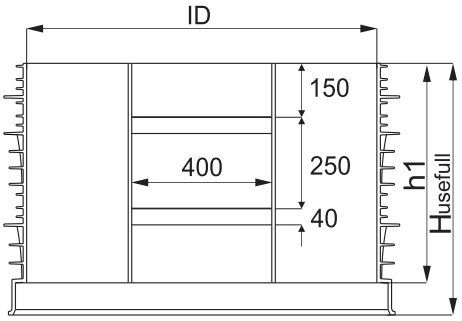


INDEX	H	L	ID	h	Input/Otput
BS 1000	540	1130	1000	150	OD/ID 160-315

dimensions (mm)

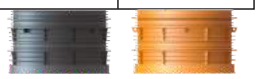
EXTENSION 1000



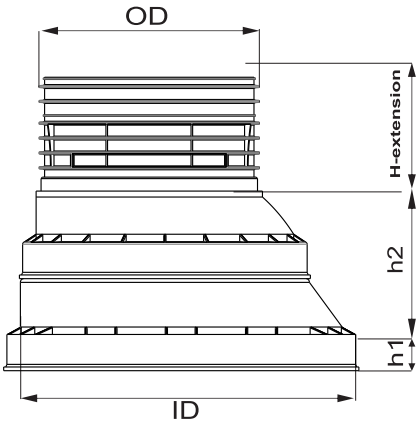


EXTENSION 1000		
h1	**H usefull**	**ID**
340	250	1000
590	500	1000
690	600	1000
840	750	1000
1090	1000	1000

dimension (mm)



COVER 1000-TYPE 1

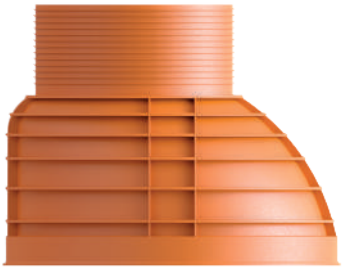


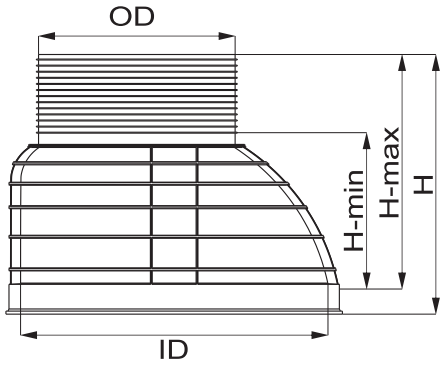
possibilities for reducing / increasing the height of the cover

COVER ID1000 -TYPE 1	
h1	90
h2	390
H-extension	310
ID	1000
OD	686

dimensions (mm)

COVER 1000-TYPE 2

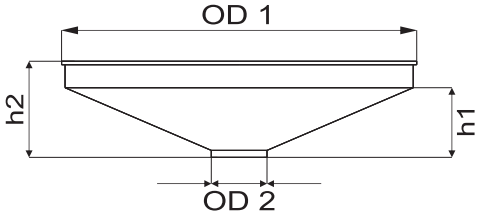




COVER ID1000-TYPE 2	
H	870
H-min	520
H-max	770
OD	645
ID	1000

dimensions (mm)

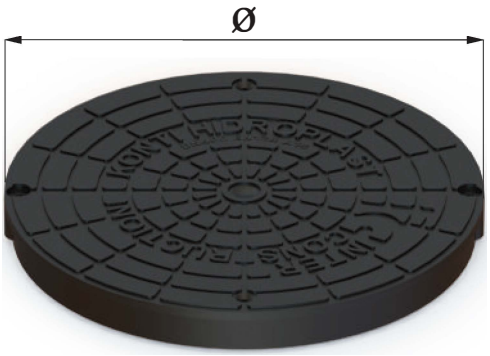
TANGENTEN CONUS OD 1000



TANGENT CONUS OD1000	
OD 1	1000
OD 2	160
h-1	220
h - 2	270

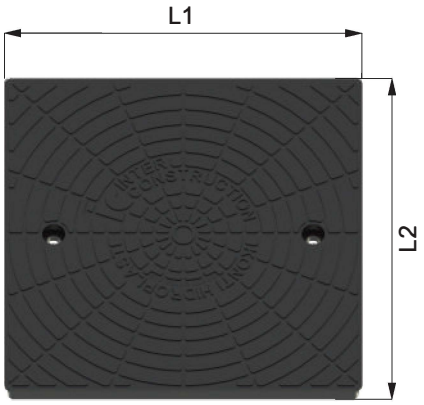
dimensions (mm)

ROUND COVER



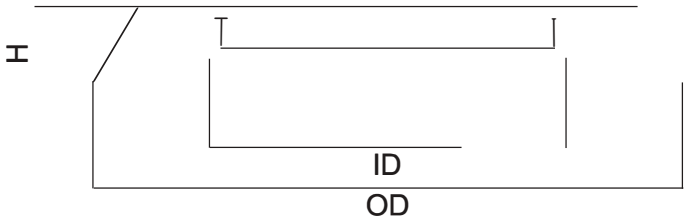
index	diameter (mm)	
cover	Ø 400	Ø 600

SQUARE COVER



index	diameter (mm)	
square cover	L1 = 600	L2 = 600

CONCRETE RING REINFORCED WITH FIBER GLASS

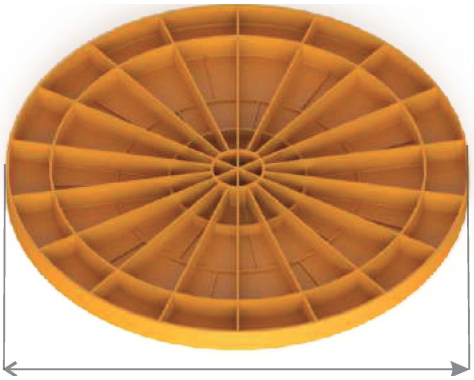


index	diameter (mm)	
concrete ring	OD/ID =1100/665	H = 180

SEAL FOR CONCRETE RING

index	diameter (mm)	
seal	Ø = 645	H = 38

REINFOCED DOUBLE BOTTOM according customer needs

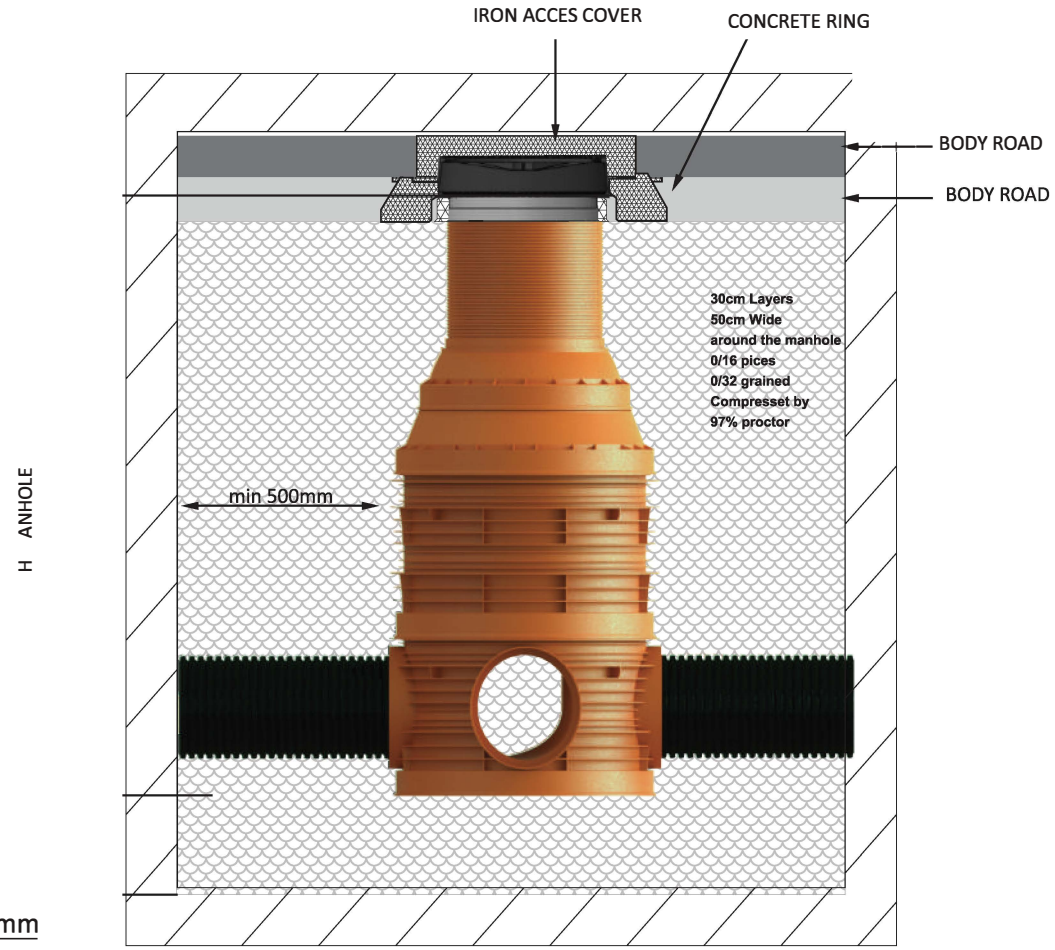


DN=1000 mm
DN=800 mm

SEAL FOR MANHOLE

OD / ID	Diameter of knife (mm)
OD 110	114
ID 110	125
OD 160	166
ID 160	193
OD 200	208
ID 200	240
OD 250	262
ID 250	295
OD 315	337
ID 300	355

PE and PP manholes must be set on sandy surface which should be a hard, and to used material that fits on lateral charging or fillings (compression). The dimensions of the separated material should be from 0 to 32 mm, and dimensions of the crushed material should be from 0 to 16 mm.
The surface should be made in layers of 15 to 20 cm and filled (compressed) to 97% by Procter. In case of presence of groundwater, the surface should be 30 cm made of concrete MB 15. Due to low weight the manual installation is possible, in case of machine handling tying the ropes and ribbons is allowed only around the button, bases manhole or to apertures intended for it.



MANHOLE FILLINGS

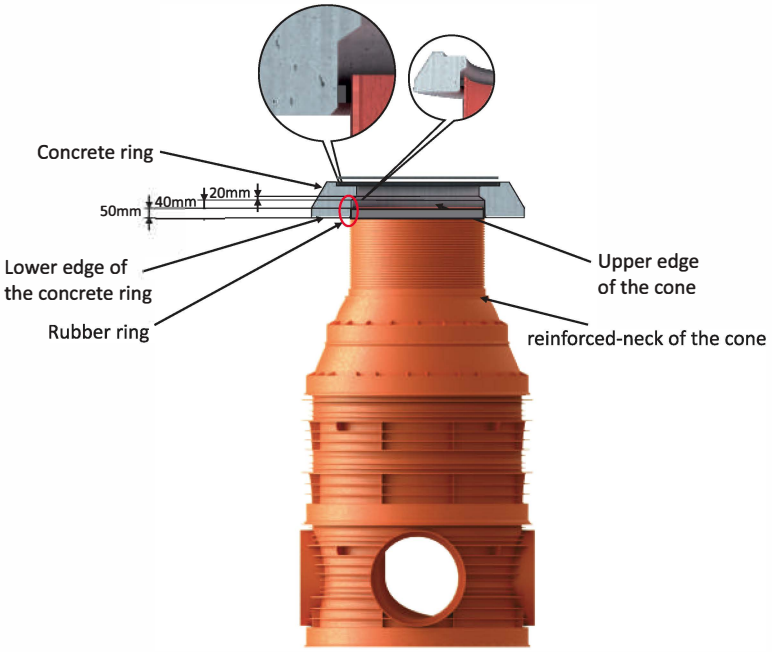
You have to use same material as for the foundation. Fill the manhole correctly , grained material has to compressed by layers of 30 cm max, up to 97% of Procter, at least 50 cm wide from manhole.
Filling around and under the manhole is important to prevent possible deformation and leaning.

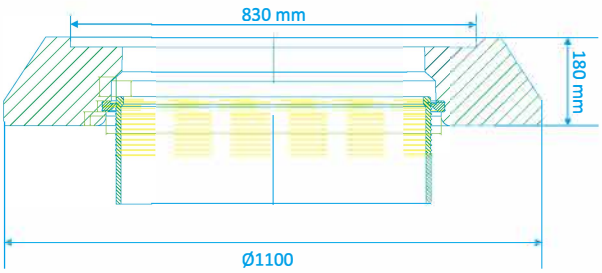
MANHOLE HEIGHT

SET UP OF CONCRETE RING

In case of heavy traffic, it is necessary to put a concrete ring on the cone. This concrete ring must not be in touch with the cone of the manhole. The empty space above the cone and the concrete ring should be 40mm, and between the cone and the ring a rubber is set up.
The cone should penetrate in the concrete ring 50mm.

In this way the static and dynamic burdening will not be transferred on the body of the manhole but on the pressed sand and the base around the manhole.
The concrete ring is not necessary in case of installation where there is no traffic and can be used a direct polyethylene / polypropylene cover or metal cover B 125.





STORAGE AND TRANSPORT INSTRUCTIONS

1. During storage and transport of manhole components storing over sharp and spiny objects is not allowed therefore avoiding point overloading.
2. While unloading manholes from trucks to the forklifts should be used assisted by straps, without throwing it from height.
3. While moving, pulling over sharp edges or sharp objects be avoided.
4. Storage height depends of the geometry of the components, but heights above 2.5 m are not recommended.
5. The products can be stored outdoors because they have UV protection. If storage period is longer than 2 years, protection from direct sunlight is needed.
6. Freezing is not an issue for components of Interhol manholes because PE and PP are stable until - 35°C. Although elasticity of rubber sealing rings might be reduced, which might cause installation difficulties.
7. Products should be kept out of contact with organic solvents and direct flame exposure.
8. Module components are delivered together.
9. Every components of the manhole has its ID number.

FUTURA TECHNICAL SOLUTIONS

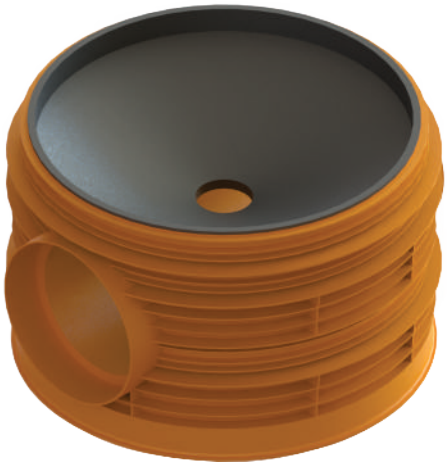
Technical solutions INTERHOL

Sometimes it is necessary to be designed specific solutions, and in that case we use INTERHOL elements in order to be satisfied the needs of the customers, while at the same time to meet the norms and standards.

Inter Construction pays special attention to design, and even more of the functionality of their products.

Variants of special solutions of manholes:

- Sewage flow and right-angle flow manholes
- sewage-collecting tanks
- collection tanks
- manhole covers for installation systems
- underground tanks
- oil separators
- treatment plants



Manholes for reducing the speed flow INTERHOL - tg

At the steep terrains , many elements need to be placed at a short distance, and that means high fees for materials and excavation.
Inter Construction offers solutions for reducing costs if manholes and other elements are adapted to the profile of the terrain.
The technical solution that offers Inter Construction is tangentially manhole.

waste treatment tanks

oil separators

Using Interhol elements it can be performed manholes with sedimention item for cleaning sludge from the water.
Also items can be used for making tight storage tanks, that can be mounted exploatation measurement or other equipment.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CERTIFICATE
IQNet and Quality Austria
hereby certify that the organization
INTER CONSTRUCTION LTD
MK-1480 Gevgelija, Industriska zona Nr. 2, (Prdejci),
for following field of activities
Design, Developement and Production of polyethylene and polypropylene plastic products.
has implemented and maintains a
QUALITY MANAGEMENT SYSTEM
which fulfills the requirements of the following standard
ISO 9001:2008
Issued on: 2014-04-28
Validity date: 2017-04-27
Quality Austria certified since: 2011-04-28
Registration Number: AT-10310/0


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Succeed with Quality
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INTER CONSTRUCTION LTD
QUALITY MANAGEMENT SYSTEM
ISO 9001:2008


EXACT
„СЕРТИФИКАЦИЯ" ЕАД
CERTIFICATE
№ 0361 - II
Product: ROTOMOLDING MANHOLE – INTERHOLE
Trade mark: INTERHOL
Manufacturer: KONTI HIDROPLAST DOOL
UL. INDUSTRISKA BB 1480 GEVGELIA, MACEDONIA
Abide by: БДС EN 13598 – 2:2009
Issued on: 21.12.2010
Valid until: 20.12.2013


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has implemented and maintains an
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which fulfils the requirements of the following standard
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Institut IGH d.d.
IGH Cert
POTVRDA O TVORNIČKOJ KONTROLI PROIZVODNJE
1/05-ZGP-1139
INTER CONSTRUCTION Ltd
HRN EN 13598-2:2009
Zagreb, 29. travnja 2011.


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MK-1480 Gevgelija, Industriska zona Nr. 2, (Prdejci),
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Design, Developement and Production of polyethylene and polypropylene plastic products.
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ENVIRONMENTAL MANAGEMENT SYSTEM
which fulfils the requirements of the following standard
ISO 14001:2004
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ISO 14001:2004


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