Cosmoplast™

HDPE
DRAINAGE SYSTEM TECHNICAL CATALOGUE

Cosmoplast

Cosmoplast, a primary member of Group Harwal, has been at the forefront of the plastic industry in the Gulf region since it's founding in 1976. Through constant growth and product diversification, the company continues to be the largest thermoplastic pipe manufacturer in the region.

Continuously enhancing its capabilities in plastic manufacturing technologies, Cosmoplast now utilizes a diverse range of materials such as uPVC, polyethylene (PE100, PE80, LLDPE), cross linked polyethylene (PEX), random copolymer polypropylene (PP-R), and glass-reinforced plastic (GRP).

Cosmoplast's ongoing research and development programs continue to add new products to its pipeline systems product range that now includes pre-insulated pipes, reinforced thermoplastic pipes, specialized plumbing systems and fabricated uPVC and GRP manhole systems. It's state of the art engineering, design and tool room facilities are fully capable of manufacturing moulds, dies, machinery equipments and other specialized tooling requirements to meet the company's continual expansion and product development requirements.

With this extended product range, Cosmoplast's pipeline systems cater to an extensive range of market sectors and applications covering infrastructure development, plumbing, oil & gas, district cooling, irrigation, landscaping and water extraction.

An ISO 9001 certified company, Cosmoplast has its production facilities based in Sharjah, Abu Dhabi and Dubai converting over 75,000 metric tons of plastic per annum. In addition to these, Cosmoplast also has upcoming facilities in Saudi Arabia, Moscow and Kaliningrad.

COSMOPLAST PIPELINE SYSTEMS PRODUCT RANGE INCLUDES:

INFRASTRUCTURE PIPELINE SYSTEMS (uPVC, PE, GRP)

uPVC and Polyethylene pipeline systems with sizes ranging from 15mm up to 1200mm, well casings and screens and GRP pipeline systems with sizes from 100mm up to 1400mm for applications including

- Water extraction
- Water distribution
- Drainage
- Sewerage
- Gas distribution
- Cable ducting

PLUMBING SYSTEMS (uPVC, PP-R, PEX)

Comprehensive range includes uPVC systems for drainage, random polypropylene (PP-R) [plain and aluminium composite] and cross linked polyethylene (PEX) systems for water and sanitary applications and uPVC high pressure pipes and fittings for water supply and A/C drain. Plumbing accessories such as pipe clamps, polyethylene compression fittings, solvent cements, lubricants and adhesives compliment this product range.

PRE-INSULATED PIPES (HDPE-HDPE, HDPE-GRP, HDPE-STEEL, GRP-HDPE, GRP-GRP, GRP-STEEL)

Jacket – core pipe combination with polyurethane insulation are used for applications such as District Cooling systems, Oil & Gas and other industrial applications. Cosmoplast provides HDPE and GRP pipes as jackets and HDPE, GRP and steel as core pipes.

IRRIGATION SYSTEMS (LLDPE)

Consists of high precision inline drip pipes and landscape and lawn edging. This range also includes saline resistant valves, drainage systems, sprinklers and central controllers.

REINFORCED THERMOPLASTIC PIPES (RTP)

Available in length of upto 500m, with a working pressure of 150 Bar at a temperature of 60 degrees celsius. RTP is used for gas distribution networks, oil flow lines and water injection lines.

ISO 4427/4437
BS EN 1329/1401

ISO 9001 FM 75767

Cosmoplast PE Soil, Waste & Vent System

Introduction

Cosmoplast HDPE drainage system is the ultimate solution for all types of drainage including soil and waste, above ground, below ground and chemical waste.

Cosmoplast HDPE drainage system is suitable for residential and industrial buildings, for laboratories, embedded in concrete or buried underground.

Cosmoplast HDPE pipes and fittings are available in sizes from diameter 32 mm to 315 mm. Bigger sizes can also be fabricated on request.

Material

High-density polyethylene (HDPE) is suitable for producing drainage pipes and fittings for residential and industrial buildings for non-pressure waste at maximum temperatures of 95°C.

The HDPE material is characterized by:

- High flexibility.
- High impact strength.
- Excellent mechanical characteristics.
- High corrosion resistance.
- High chemical resistance.
- Recyclable material.

Physical & mechanical properties of HDPE material

Property	Test Method	Units	PE 80	PE 100
Density (Compound)	ISO 1183	Kg/m^3	956	959
Melt Flow Rate(190°C/5kg)	ISO 1133	g/10 min	0.3	0.25
Tensile Stress at Yield(50mm/min)	ISO 527-2	MPa	22	25
Elongation at Break	ISO 527-2	%	> 600	> 600
Charpy Impact Strength, notched	ISO 179/1eA	kj/m^2	14	16
Carbon Black Content	ASTM D 1603	%	2	2
Vicat Softening Point	ASTM D 1525	°C	118	122
Brittleness Temperature	ASTM D 746	°C	< -70	< -70
ESCR (10% Igepal), F50	ASTM D 1693A	Hrs.	>10,000	>10,000
Thermal Conductivity	DIN 52612	W/m°K	0.4	0.4
Linear Thermal Expansion	ASTM D 696	K^{-1}	1.5x10^{-4}	1.5x10^{-4}

ISO 4427/4437
BS EN 1329/1401

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Standards:

Cosmoplast HDPE drainage pipes and fittings are manufactured according to the European Standard EN1519-1which superseded the German Standards DIN19535-1 and DIN19535-2 .

Dimensions of HDPE drainage pipes according to EN 1519-1

Nominal Outside Diameter (mm)	Mean Outside Diameter (mm)		Wall Thickness (mm) Series S 16 **		Wall Thickness (mm) Series S 12.5	
	Min	Max	Min	Max	Min	Max
32	32.0	32.3	3.0	3.5	3.0	3.5
40	40.0	40.4	3.0	3.5	3.0	3.5
50	50.0	50.5	3.0	3.5	3.0	3.5
56	56.0	56.5	3.0	3.5	3.0	3.5
63	63.0	63.6	3.0	3.5	3.0	3.5
75	75.0	75.7	3.0	3.5	3.0	3.5
80	80.0	80.8	3.0	3.5	3.1	3.6
90	90.0	90.9	3.0	3.5	3.5	4.1
100	100.0	100.9	3.2	3.8	3.8	4.4
110	110.0	111.0	3.4	4.0	4.2	4.9
125	125.0	126.2	3.9	4.5	4.8	5.5
160	160.0	161.5	4.9	5.6	6.2	7.1
200	200.0	201.8	6.2	7.1	7.7	8.7
250	250.0	252.3	7.7	8.7	9.6	10.8
315	315.0	317.9	9.7	10.9	12.1	13.6

Notes:

Series 16 (S 16) is suitable for application area inside buildings and outside buildings fixed on the wall (application area B).

Series 12.5 (S 12.5) is suitable for application area under and within 1metre from the building where the pipes and fittings are buried underground and connected to the soil and waste discharge system of the building (application area D).

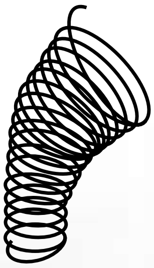
Characteristics and Advantages of Cosmoplast HDPE Drainage System:

Long Durability:

Due to its chemical stability and corrosion resistance, Cosmoplast HDPE drainage pipes and fittings are expected to last for up to 50 years.

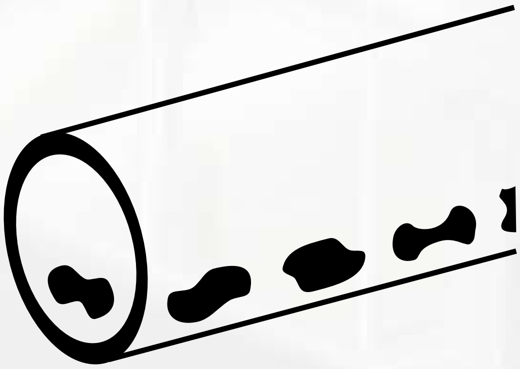
High Flexibility:

Resulted from the high quality virgin HDPE raw material used by Cosmoplast to produce its pipes and fittings. The flexibility of Cosmoplast HDPE pipes and fittings guarantees crush resistance and ultimate performance when pipes are buried in areas subject to traffic and when passing through expansion joints.



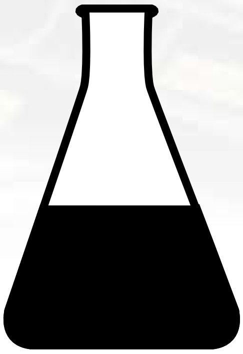
High Corrosion Resistance:

Resulted from the basic characteristics of the HDPE material that ensures high resistance to corrosion.



High Chemical Resistance:

HDPE material has good resistance to acids and excellent resistance to Alkaline and Solvents. HEPE is also resistant to wide range of chemicals which renders the HDPE drainage system the ultimate solution for chemical and industrial drainage networks. The system is insoluble in all inorganic or organic solutions at room temperature.

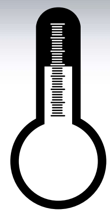


Low noise system:

Thanks to the acoustic insulation feature of the HDPE material which helps in reducing the noise level while system is operational. This property makes Cosmoplast HDPE drainage system ideal for installations in universities, hospitals, hotels...etc.

High resistance to extreme temperatures:

Cosmoplast HDPE drainage system can be safely used with fluids at high temperatures up to 80°C. Short time loading at temperatures up to 100°C is permissible. Cosmoplast HDPE drainage system is also suitable for subzero temperatures and adapts elastically with expansion and contraction resulted from freezing and defrosting.

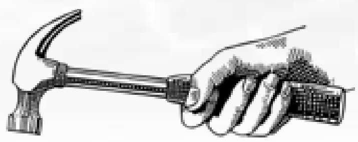


Strict Quality control:

Cosmoplast HDPE pipes and fittings are subjected to several in-house quality control tests during production and on the finished products. They are also subjected to external tests by independent testing institutes to ensure the highest quality.

High Impact resistance:

Cosmoplast HDPE is highly resistant to impacts and therefore unbreakable at room temperatures and at subzero temperatures.



Lightweight:

Cosmplast HDPE drainage system is light in weight compared to the traditional drainage systems which makes it easy for handling, storage and transportation.

Smooth internal Surface:

HDPE pipes and fittings are more resistant to solids build up or scaling.

Application Areas

Drainage systems inside buildings

Cosmoplast HDPE drainage system can be used in residential buildings, commercial buildings, industrial buildings and laboratories.

Installations inside concrete

Cosmoplast HDPE drainage pipes and fittings can be installed inside slaps and concrete thanks to its flexibility and high abrasion resistance.

External and underground drainage

Cosmoplast HDPE drainage pipes and fittings can be installed outside buildings underground thanks to its flexibility and resistance to crush and abrasion.

Installation Techniques

Cosmoplast HDPE drainage pipes and fittings can be jointed in different techniques, as electro-fusion sockets, but fusion sockets, rubber ring (push fit) sockets, and flanged sockets are all applicable for HDPE drainage pipes and fittings.

Electro-Fusion Sockets

This technique is the ideal jointing method on-site, specifically suitable for installations in tight spaces like mechanical shafts. The process is easy and fast resulting reliable connections. Electro-fusion couplings are used in this process, which are available in sizes from ø 40 to 250 mm.

Rubber Ring Sockets

This technique is the ideal solution for compensation of thermal expansion in PE pipes. Rubber ring joints are not resistant to tension forces.

Flanged Sockets

The conventional connection technique connecting HDPE pipes with pipes of other materials like metal and UPVC and for connections to tanks and equipments. Flanged joints are resistant to tensile forces.

This technique is very rarely used in above-ground drainage installations.

Butt Fusion

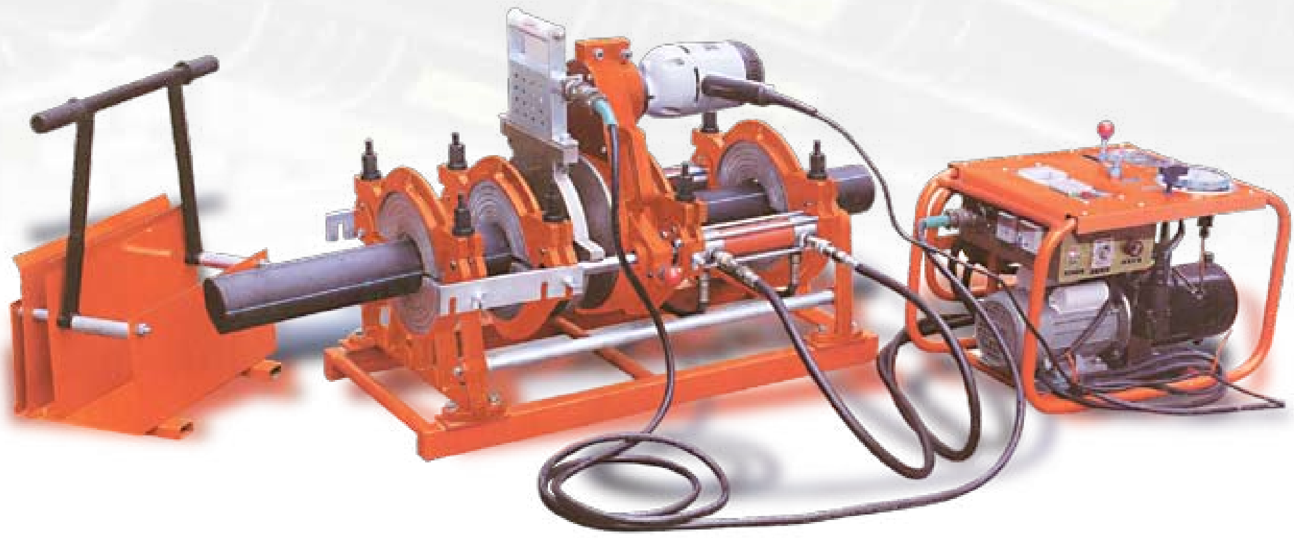
This technique is the ideal way for space-saving connections. Semi or fully automatic welding machines are utilized to achieve butt-fusion connections.

In this technique, both pipe ends are pressed against a hot plate at a constant temperature and pressure. Then pipe ends are pressed on head to head situation so that both pipe ends are fused together.

Light weight **manual butt fusion machines** are suitable for on-site installations for small dimensions ø 75 mm and smaller.

PICTURE TO BE PROVIDES

More sophisticated **automatic butt fusion machines** are utilized for bigger dimensions from 50mm to 315 mm. These machines are suitable for fusing prefabricated connections away from the site.



Pipe Supports and Clamping

- All pipework must be adequately supported whether vertical or horizontal.
- Plastic pipework expands and contracts with changes in temperature - whether ambient temperature or from the nature of the discharge through the pipework. Expansion joints must therefore be provided to accommodate such thermal movement.
- Pipe brackets must be used to anchor expansion joints. Intermediate support must also be provided to steady pipework between the points.
- Horizontal pipework requires more frequent support than vertical pipework (for example, soil stocks)
- On long suspended soil pipe runs (e.g. in basement areas), sliding joints should be installed to control the effects of thermal expansion.
- Pipework should always be supported close to any change of directions (e.g. bends or branches)
- Cosmoplast HDPE drainage pipes and fittings should be installed tension free and with free lateral allowance for thermal expansion compensation.
- Long runs of pipes should not be used in exposed installations unless some precautions are considered to ensure that excessive deformations will not occur in the system due to thermal expansion.
- Suitable sound absorbing brackets with rubber lining should be used to support pipes. Those brackets must be dimensionally compatible to the pipe diameter.
- The fixed bracket creates fixed point in the pipe system. With fixed brackets the pipe or fitting can not be moved through the bracket after screws are tightened. In order to prevent sliding down of vertical pipes, each individual pipe must be secured on one point by a fixed bracket.
- Fixed brackets must be installed directly above the fitting at the bottom of the pipe end. The sliding bracket must be installed at a distance of maximum of two meters above the fixed bracket.
- Every horizontally installed pipe should always be fixed with one fixed bracket. All remaining pipe brackets in horizontal as well as in vertical installation must be tightened in such a way to allow sliding.

- During installation of horizontal pipes, the distance between brackets should be approximately ten times the outside diameter of the pipe. While for vertical installations, brackets are required every 1 to 2 meters depending on the size of the pipe.
- In general, each expansion socket should be fixed with one fixed point bracket.
- The distance between the pipe and the structure to which it is fixed should be kept as small as possible in order to reduce the movement of the connecting rods.
- Pipe brackets should not be installed in areas of diameter reduction and change of directions in the system, this is required to allow for thermal expansion.
- Pipe brackets should be fixed on building materials with high strength in order to assure strong and durable pipe fixing.
- In multi-story buildings, the drainage pipes of diameter 110mm or bigger installed inside the mechanical ducts must be secured by additional fixing against sliding.

Traps

Traps are essential for every discharging unit (wash basin, shower, sink,...etc) in the system. They are required to prevent bad smell from leaking inside the house.

Trap size should be suitable for the discharging unit to which it will be connected, as small traps will cause slow discharge and may cause self-siphoning in addition to the noise generation.

Oversized traps will reduce the flow speed in the trap which makes it difficult to flush the soiling and therefore may cause blockage.

HDPE Aerator

Cosmoplast HDPE Aerator with its unique design, enables the reduction of waste speed inside the stacks.

Advantages and characteristics of Cosmoplast Aerator:

- Reduces the speed of waste inside stacks,
- Elemenates the negative effect of pressure fluctuations inside the stacks.\
- Suitable for high rise buildings (with more than 7 floors) and for applications with high sewage flow rates.
- Increases the flow rate in the waste stack by 40 – 50%.
- Prevents the return flow from the stakc to the to the branches.
- Can be used with HDPE, or with PE and PVC stacks when using the special snap sockets.

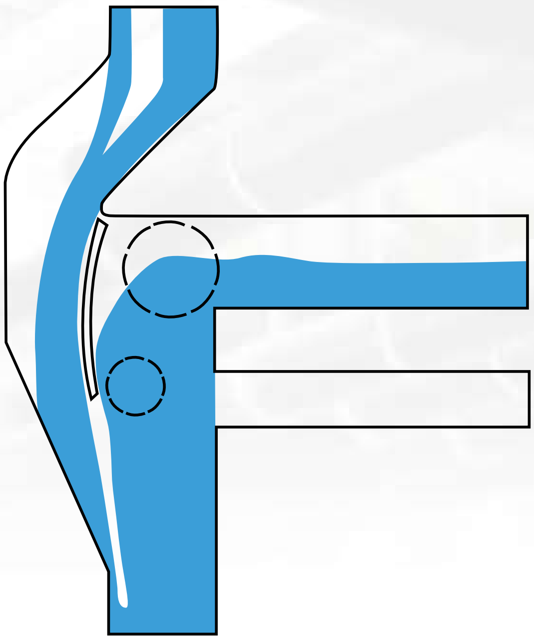
The utilization of Cosmoplast Aerator in the drainage system increases the flow rate of waste inside the the stacks significantly compared to the systems without aerators.

Maximum flow rate in stacks:

	Maximum Flow Rate (l/s)	
	110mm Stack	160mm Stack
Stack without Aerator	4.0 - 5.5	9 - 12.5
Stack with Aerator	7.8 - 8.1	18.0 - 18.2

The operation of the Aerator:

Cosmoplast Aerator with its unique design prevents the direct contact between the waste in the branches from and the waste falling from the upper floors. This process prevents the negative effect of pressure fluctuations in the drainage system.



Installation of Cosmoplast Aerator:

Cosmoplast Aerator can be installed at every floor or every nomber of floors depending on the design conditions.

ISO 4427/4437
BS EN 1329/1401

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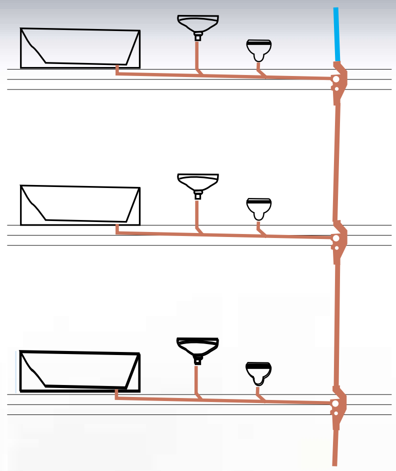
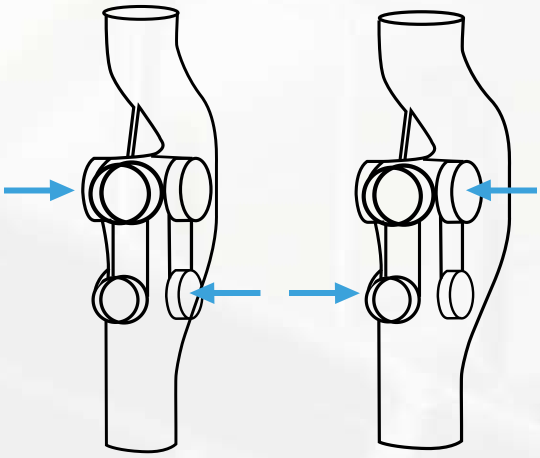
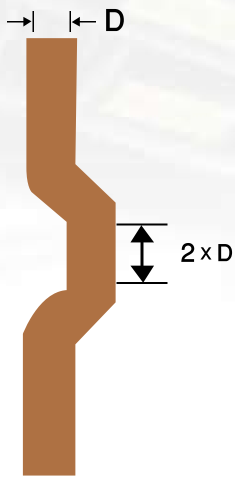


Cosmoplast Aerator has 2 front connections and 4 side connections, all can be used simultaneously. Installations which enables cross flow are not allowed and should not be used, as demonstrated in the below sketches:



The maximum distance between two Aerators is recommended not to exceed 6m. however, in case of installations with distances more than 6m, it is recommended to make speed reduction loop by using four 45° elbows as demonstrated in the below sketch:



The vertical portion should be at least twice the diameter of the stack pipe.

Underground Installation

HDPE drainage pipes can be utilized in underground drainage systems. Trenches should be constructed and backfilling materials should be selected as per the local codes of practice. The below are some recommendations:

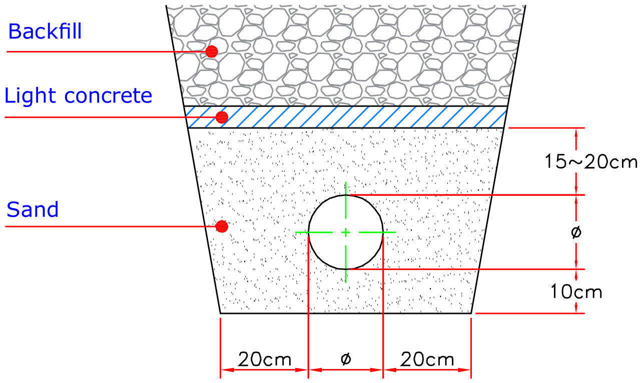


Fig. 1 "trenching in areas with heavy traffic"

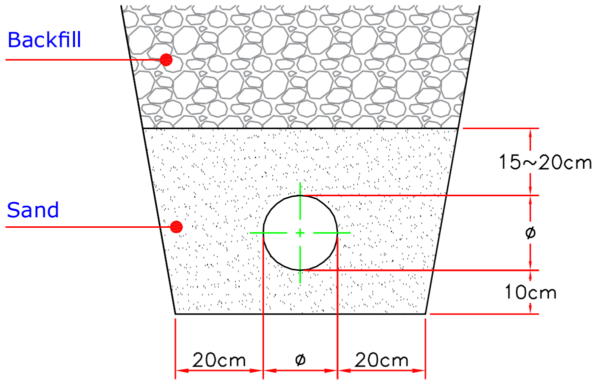


Fig. 2 "trenching in residential areas with light traffic"

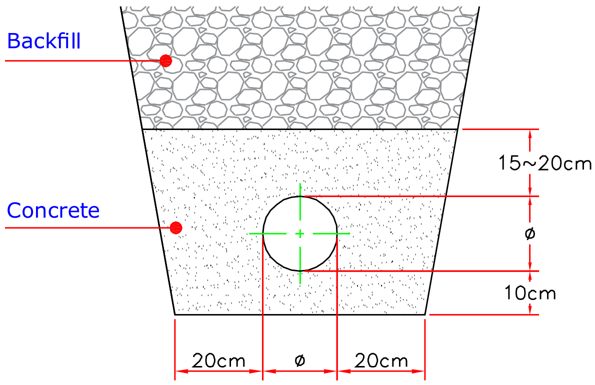


Fig. 3 "trenching inside concrete"

Recommendations for Backfilling:

- Place backfill as soon as the pipes have been bedded, jointed and inspected.
- Use granular material or selected backfill from the trench excavation free from
  1. Stones larger than 40mm.
  2. Clay lumps larger than 100mm
  3. Timber
  4. Frozen material
- Compact backfill in layers not deeper than 300mm
- Avoid mechanical compaction until fill is at least 450mm above pipe work

Handling, Storage and Transportation

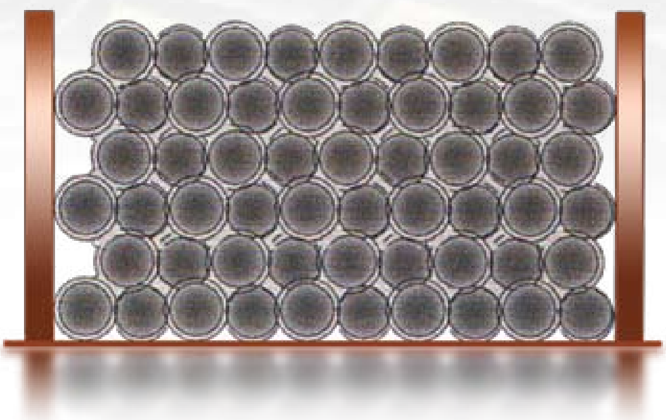
HDPE drainage pipes and fittings should be handled with care considering the resilience of these pipes and fittings. Transportation, storage and handling should be done taking into consideration the below directions and precautions

Handling

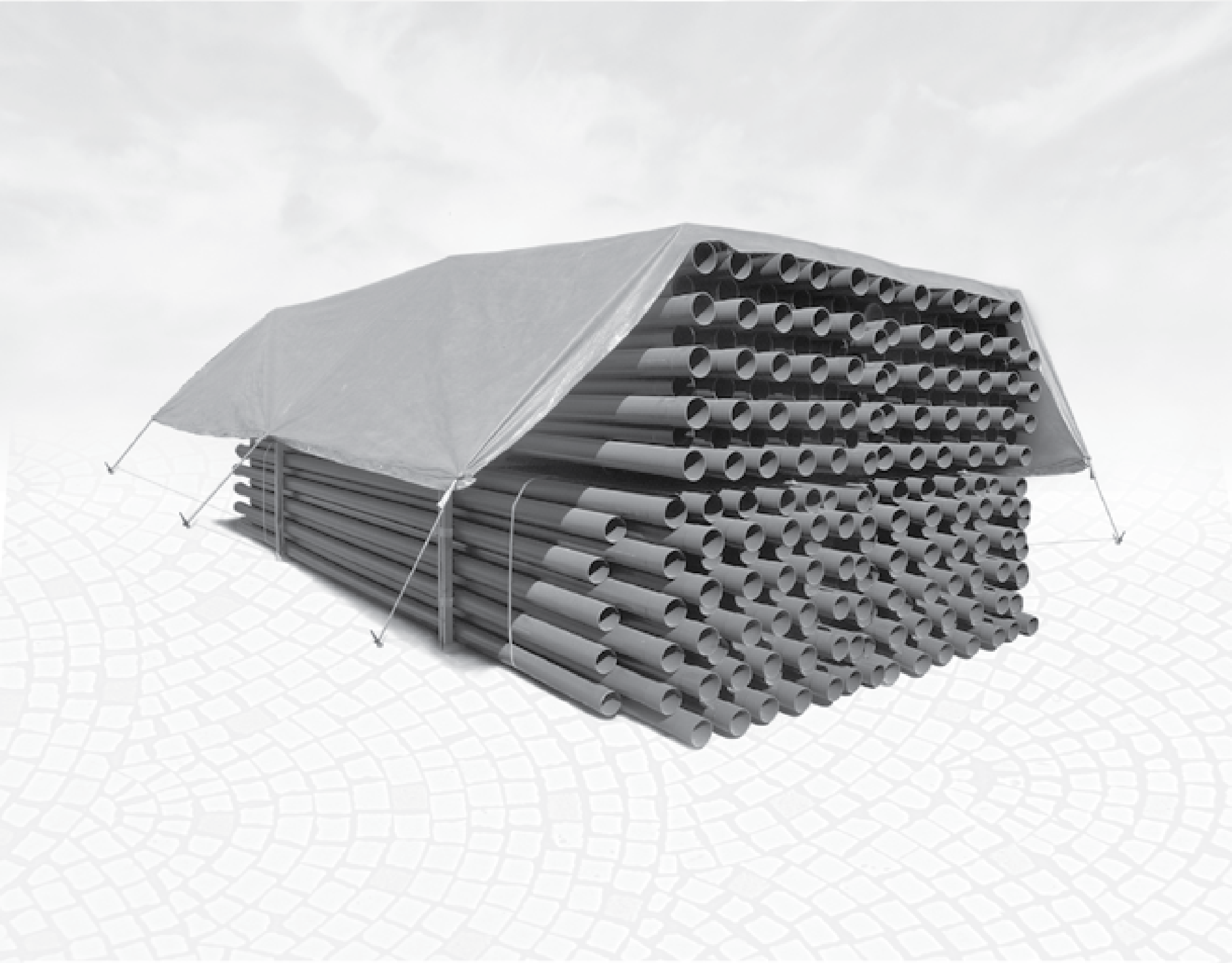
- Take all reasonable care when handling HDPE, particularly in very cold conditions when the impact strength of the material is reduced.
- Do not throw or drop pipes, or drag them along hard surfaces.
- Do not scratch pipes against hard surfaces or drag them along the ground.
- In case of mechanical handling, use protective slings and padded supports. Metal chains and hooks should not make direct contact with the pipe.

Storage

- To avoid deformation over time, pipes should be stacked:
  - » either on a flat base
  - » or on a level ground
  - » or on 75mm x 75mm timber at 1m max. centers.



- Provide side support with 75mm wide battens at 1m centers.
- Maximum stack height is 1.7 meters regardless the pipe diameter.
- Store all materials in well-ventilated, shady conditions
- Avoid direct exposure to sunlight for long periods.
- If stored in the open for long periods or exposed to strong sunlight, cover the stack with opaque sheeting.
- keep fittings in original packaging until required for use
- Ideally, stacks should contain one diameter pipe size only. Where this is not possible, stack largest diameter pipes at base of stack. Small pipes may be nested inside larger pipes.
- Store fittings under cover. Do not remove from cartons or packaging until required.
- Do not place heavy items on top of the pipes.
- Protect the pipes from dirt, gravel or mud, as this could damage the ring seals inside the sockets.
- Pipes should be kept clean as much as possible, as this may save cleaning time while preparing pipes for welding.
- Electro-fusion sockets should be stored indoors inside their original sealed packing to prevent oxidation from sunlight, which can badly affect the welding quality.



Transport

While transport, pipes should be arranged safely on trucks avoiding crossing, bending and over stacking. The pipes should also be fully supported over their total length.

Proper protection should be provided if chains or cords are used to tie down the load in order to avoid damaging the pipes.

Installation: General rules and recommendations:

- Pipe sizing must be determined on a section by section basis.
- Collecting pipes must straight and short as much as possible.
- Change of pipe direction should not be made at angles less than 45° to avoid soil being left behind.
- In any section, the sum of changes in direction should not exceed 135°.
- Eccentric reducers should be used in the horizontal collecting pipes.
- Concentric reducers should not be used on horizontal sections.
- Horizontal connections must be made with 45° Y branches.
- 90° top connections must be avoided when the horizontal pipes are smaller than 110mm as top connections may cause flow disturbance and hydraulic sealing in the horizontal pipes.
- Stacks should be designed in such a way to prevent hydraulic sealing or excessive pressure differences at the points of connections with collecting pipes and bends including the points at the foot of the stacks when connecting to the underground pipes.
- HDPE aerators should be used every 3- 4 stories to ensure better ventilation in the stacks.
- Stacks should be as straight as possible.
- The diameter of the stack should not be smaller than that of any of the collecting pipes connected upstream.
- Connections to the stack should be at right angles to prevent hydraulic sealing in the collecting pipes.
- The length of offset stack sections should not exceed 1.50 m.
- The diameter of ventilations pipes should be the same as stack diameter.
- To avoid sewage smell entering the building, the top of the vent pipe must be at least 1m above the highest point of air entry to the building.

Expansion of PE Pipes:

Plastic materials have relatively high coefficient of thermal expansion (for PE it is 0.2 mm/m °C). PE pipes will expand and contract with temperature variations.

Temperature variations may also occur during construction from high temperature in the sun to low temperature in winter.

Temperature variations also occur during system operation due to the varying temperature of the discharged water and of the environment. Temperature variation of 40°C may be adopted as a maximum mean temperature difference in the connecting collecting pipes in the aboveground drainage. While 20°C temperature variation can be adopted for stacks and underground pipes.

Temperature variation of 60°C may be adopted in areas of hot water discharge.

Expansion sockets should be implemented to absorb expansion in PE pipes.

Expansion Sockets

Expansion sockets must be installed in the pipework at suitable locations so that the change in pipe length resulted from thermal expansion is absorbed inside the expansion sockets.

Pipe clamps are used as fixed points at the expansion sockets above which the pipe should be left free to expand and contract.

Expansion sockets are recommended to be installed on every storey, in which case the floor of each storey serves as fixed point.

Expansion sockets are recommended in vertical installations to avoid the risk of fouling accumulation between the socket and the pipe in horizontal installations.

While installing expansion sockets, pipes should not be fully inserted in the socket up to the stop end, this is essential in order to allow the pipe to expand and contract inside the socket.

During installation, expansion sockets should be sealed with tape to avoid dirt and cement entering between the socket and the pipe during construction.

Rigid installation

When PE drainage pipes are installed in concrete, the expansion and its resulted force will be transferred to and absorbed by the building structure.

Welded joints must be allowed to cool, pressure tested and checked for leak before casting in concrete.

But Fusion Process:

Fusion machine and equipments should be checked before starting the welding process.

The hot plate must be cleaned with alcohol and clean cloth to remove dirt and grease which may badly affect the welding quality.

The hot plate temperature should be 210° C.

The machine clamping brackets and the two pipe supports should be correctly aligned before starting the welding process. Alignment can be done by clamping single piece of pipe in both clamps and both pipe supports.

The clamping brackets must be adjusted to ensure that they hold the pipe tightly.

Oval pipe ends should be made round before welding, this can be done by clamping the pipe with one or more brackets and applying reasonable tension. These brackets should be removed after cooling the welding area.

Proper pipe cutter (preferably roller type) should be used to cut PE pipes to avoid creating burrs or sharp ends.

Procedure for Butt Fusion

Note: The installer should follow the manufacturer's instructions listed in the catalogue of welding machine.

1 The hot plate should be set up to the correct welding temperature.

2. Clamp the pipes with the machine.

3. Use the trimmer on the pipe ends until they no longer contact the blade.

4. Check the pipe ends and ensure that they match precisely. Clamp and trim the pipe ends again if necessary.

5 Move the heating plate to the correct position between the two pipe ends.

6. Press the pipe ends against the hot plate by applying high pressure.

7. Continue heating while applying low pressure until seam of at least 1 mm high has formed.

8. Remove the heating plate quickly.

9 Press the two pipe ends against each other and slowly increase the welding pressure. Refer to the machine manual for the appropriate welding pressure.

10 Maintain fixed welding pressure and leave the welded joint to cool.

11 Check the welded area to ensure that the seam is regular around the pipe circumference. Reject any defected joint.

Electro-Fusion Process

Electro-Fusion process is carried out using special welding machine and PE Electro-Fusion sockets.

The PE Electro-Fusion sockets are provided with 2 socket ends that can be welded in a single operation.

The Electro-Fusion sockets include built in resistance coil in their body, the welding machine sends current through the resistance coil that cause the PE material to melt and therefore the two sides of the socket and the pipes are fused together at the same time.

The electro-fusion sockets have stops on their internal surface up to which the pipe should be inserted inside the socket. These stops can be removed with sharp blade in case the electro-Fusion sockets are to be used as sliding couplers.

The electro-fusion sockets have two pins on the external surface, to which the welding machine is connected while performing the welding process. The two indictors will appear during the welding process to indicate that the welding temperature has been reached.

After performing the electro-fusion process, the internal surface of the socket and the external surface of the pipe will be fused together.

Quality electro-fusion joints are guaranteed only if the socket and pipe surfaces are free from moisture, dirt, grease and oxidation.

PE material forms oxidation layer during production and storage which must be removed before welding. The oxidation layer can be removed by cutting, scraping in combination with cleaning.

The electro-fusion welded joints should not be subjected to any load immediately after welding. They have to be left to cool before moving.

Preparing the joints for Electro-Fusion:

1. Select the correct size of electro-fusion sockets.
2. Ensure that the electro-fusion welding machine is suitable for the pipe diameter to be welded.
3. Ensure that the voltage is appropriate for the welding machine.
4. Ensure that the pipe ends are square cut, free from burs and are not oval.
5. In large installations, it is recommended to seal the pipes with protective caps to avoid rapid excessive cooling resulted from streams of air may flowing through the pipe.
6. In case of humid atmosphere, pipe ends and sockets should be heated to remove moisture.

Procedure for Electro-Fusion:

Note: The installer should follow the manufacturer's instructions listed in the catalogue of the used welding machine.

1. Insert the two ends to be welded in the electro-fusion socket.

2. Connect the machine to the power.
3. Connect the machine connector cables to the electro-fusion socket.

4. Press the machine start button.
5. Keep the joint connected to the machine until the welding indicator lamp extinguishes and the socket pins appear by about 2 mm.

6. If the welding process has is interrupted. Rectify the interruption reason and allow the joint to cool completely then repeat the entire procedure.
7. Allow the joint to cool for few minutes before applying any load on the joint.

Rubber RingJoints

The rubber rings must be kept clean and free from solid dirt and dust. The pipes should be square cut, de-burred and chamfered at around 30° .

Apply Cosmoplast recommended joint lubricant to the rubber ring.

Insert the pipe inside the rubber ring joint until it reaches the internal stops.

Align the pipe and the socket correctly at both sides of the socket.

Protect vertical joint from dirt and construction material during installation by applying sealing tape.

PICTURE TO BE PROVIDED

Testing HDPE Drainage Systems

Pipeworks can be Pressure tested using air under low pressure. This is carried out by closing all openings with pressure test plugs, then applying air pressure of 0.2 to 0.3 bar (0.2 to 0.3 meter of water column). Soapy water should be applied at the joints to detect any possible leak.

Leaks (if found) should be repaired and the pressure test should be repeated until the system passes the test successfully.

Pipework casted in concrete should be tested before casting the concrete to ensure that all joints are watertight. Repairing leaks after casting concrete will be very difficult and costly.

System Maintenance.

Periodical tests and maintenance of drainage systems is essential to ensure proper operation of the system.

In case of blockages not located in the traps, cleaning by using spring of water or high pressure jet can be used.

Periodical tests and maintenance of drainage systems is essential to ensure proper operation of the system.

In case of blockages not located in the traps, cleaning by using spring of water or high pressure jet can be used. Extra care should be taken to avoid damages particularly in bends.

Special drain-clearing liquids are available in the market and can be used by following the instructions on the containers.

Access Fittings

Access fittings should be installed at proper accessible locations in the system to enable cleaning and discharging any blockage that may occur in the system due to solid deposits.

These access fittings enable the insertion of cleaning hoses and springs whenever blockage occurs.

Access fittings are recommended to be installed at locations higher than the discharge level of the fittings, so that the blocked section will not discharge through the access fitting once the cap is opened.

Access Pipes are recommended to be installed on the below locations:

1. On stack pipes at every 3 to 4 stories (15m) to enable multiple access points to the stack and allow the whole stack to be cleaned if needed.
2. At the points of connection between underground and above ground pipework.
3. After pipework sections that include multiple bends and long pipe runs.
4. On pipeworks which are casted in concrete.

Polyethylene Chemical Resistance Table

This table establishes a classification of the chemical resistance of pipe materials to specified fluids over a range of temperatures upto 20°C and 60°C.

Source : ISO / TR 10358 : 1993
The pipe materials covered by this section are:
Low-density polyethylene PE-LD
High-density polyethylene PE-HD

The preliminary chemical-resistance classification given in the table as per ISO / TR 10358: 1993 is as below:

S- Satisfactory
L- Limited
NS- Not Satisfactory

The concentration and / or purity of the fluid is indicated, using the following symbols:
Dil. Sol. = Dilute aqueous solution at a concentration equal to or less than 10 %.
Sol. = Aqueous solution at a concentration higher than 10 %, but not saturated.
Sat. Sol. = Saturated aqueous solution , prepared at 20 C.
tg = At least technical-grade only
tg-s = Technical grade, solid
tg-l = Technical grade, liquid
tg-g = Technical grade, gas
Work. Sol. = Working solution of the concentration usually used in the industry concerned.
Susp. = Suspension used in the industry.

Chemical	Concentration	PE-LD		PE-HD	
		20°C	60°C	20°C	60°C
Acetaldehyde	40%	L	NS	S	L
Acetamde	-	-	-	S	S
Acetic Acid	10%	S	S	S	S
Acetic Acid	60%	S	L	S	S
Acetic Acid, Glacial	Greater than 96%	L	NS	S	L
Acetic anhydride	tg-l	L	NS	S	L
Acetone	tg-l	L	NS	L	L
Acrylonitrile	tg-l	S	S	S	S
Acetylsilicacid	-	S	S	S	S
Adipic Acid	Sat. Sol	S	S	S	S
Allyl Alcohol	tg-l	L	NS	S	S
Allyl Alcohol	96%	-	-	S	S
Allyl Chloride	-	L	NS	L	NS
Aluminium Chloride	Sat.sol	S	S	S	S
Aluminium Fluoride	Susp	S	S	S	S
Aluminium hydroxide	Sat.sol	S	S	S	S
Aluminium nitrate	Susp	S	S	S	S
Aluminium oxychloride	Susp	S	S	S	S
Al/potassium sulphate	Sat.sol	S	S	S	S
Aluminium sulphate	Sat.sol	S	S	S	S
Ammonia, dry gas	tg-g	S	S	S	S
Ammonia, liquid	100%	L	L	S	S
Ammonia, aqueous	Sat.sol	S	S	S	S
Ammonium Carbonate	Sat.Sol	S	S	S	S
Ammonium chloride	Sat.sol	S	S	S	S
Ammonium fluoride	Sol	S	-	S	S
Ammonium hydrogen carbonate	Sat.sol	S	S	S	S
Ammonium hydroxide	10%	S	S	S	S
Ammonium metaphosphate	Sat.sol	S	S	S	S
Ammonium nitrate	Sat.sol	S	S	S	S
Ammonium persulphate	Sat.sol	S	S	S	S
Ammonium sulphate	Sat.sol	S	S	S	S
Ammonium suphide	Sat.sol	S	S	S	S
Ammonium thiocyanate	Sat.sol	S	S	S	S
Amyl acetate	tg-l	NS	NS	L	L
Amyl alcohol	tg-l	L	L	S	L
Amyl chloride	100%	NS	NS	-	-
Aniline	tg-l	NS	NS	S	L
Antimony (III) chloride	Sat.sol	S	S	S	S
Apple juice	Work-Sol	-	-	S	L
Aqua regia	HCl/HNO3=3/1	NS	NS	NS	NS
Asorbic acid	10%	S	S	S	S
Barium bromide	Sat.sol	S	S	S	S
Barium carbonate	Susp	S	S	S	S
Barium chloride	Sat.sol	S	S	S	S
Barium hydroxide	Sat.sol	S	S	S	S
Barium sulphate	Susp	S	S	S	S
Barium sulphide	Sat.sol	S	S	S	S
Beer	Work-Sol	S	S	S	S
Benzaldehyde	tg-l	L	NS	S	L
Benzene	tg-l	NS	NS	L	L
Benzoic acid	Sat.sol	S	S	S	S

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Chemical	Concentration	PE-LD 20°C	PE-LD 60°C	PE-HD 20°C	PE-HD 60°C
Benzyl alcohol	tg-l	S	L	S	S
Bismuth carbonate	Susp	S	S	S	S
Borax	Sat.sol	S	S	S	S
Boric acid	Sat.sol	S	S	S	S
Boron Trifluoride	Sat.sol	S	-	S	-
Bromine, drygas	tg-g	NS	NS	NS	NS
Bromine, liquid	tg-l	NS	NS	NS	NS
Butane, gas	tg-g	-	-	S	S
N Butanol	tg-l	S	L	S	S
Butyric acid	tg-l	L	L	S	L
Calcium carbonate	Susp	S	S	S	S
Calcium chlorate	Sat.sol	S	S	S	S
Calcium chloride	Sat.sol	S	S	S	S
Calcium hydroxide	Sat.sol	S	S	S	S
Calcium hypochlorite	Sol	S	S	S	S
Calcium nitrate	Sat.sol	S	S	S	S
Calcium sulphate	Susp.	S	S	S	S
Calcium sulphide	Dil.sol	-	-	L	L
Calcium hydrogen sulphide	Sol	-	-	S	S
Carbon dioxide, dry gas	tg-g	S	S	S	S
Carbon dioxide, wet	tg-g	S	S	S	S
Carbon disulphide	tg-l	NS	NS	L	NS
Carbon monoxide	tg-g	S	S	S	S
Carbon tetrachloride	tg-l	NS	NS	L	NS
Chlorine, water	Sat.sol	L	L	S	S
Chlorine, aqueous	Sat.sol	NS	NS	L	NS
Chlorine, dry gas	tg-g	NS	NS	L	NS
Chloroacetic acid	Sol	-	-	S	S
Chlorobenzene	tg-l	NS	NS	-	-
Chloroform	100%	NS	NS	NS	NS
Chloromethane, gas	tg-g	L	-	L	-
Chlorosulphonic acid	tg-s	NS	NS	NS	NS
Chrome alum	Sol	S	S	S	S
Chromic acid	Sat.sol	S	S	-	-
Chromic acid	20%	-	-	S	L
Chromic acid	50%	-	-	S	L
Citric acid	Sat.sol	S	S	S	S
Copper (II) chloride	Sat.sol	S	S	S	S
Copper cyanide	Sat.sol	S	S	S	S
Copper (II) fluoride	Sat.sol	S	S	-	-
Copper (II) fluoride	2%	S	S	S	S
Copper (II) nitrate	Sat.sol	S	S	S	S
Copper (II) sulphate	Sat.sol	S	S	S	S
Cresylic acid	Sat.sol	-	-	L	-
Crotonaldehyde	Sat.sol	L	-	-	-
Cyclohexanol	tg-s	L	NS	-	-
Cyclohexanol	100%	-	-	S	S
Cyclohexanone	tg-l	NS	NS	S	L
Decalin	tg-l	-	-	S	L
Developers (photographic)	Work.conc	-	-	S	S
Dextrose	Sol	S	S	S	S
Dimethyl amine gas	tg-g	NS	NS	-	-
Dioctyl phthalate	tg-l	L	NS	S	L
Dioxane	tg-l	-	-	S	S

Chemical	Concentration	PE-LD 20°C	PE-LD 60°C	PE-HD 20°C	PE-HD 60°C
Disodium phosphate	-	S	S	S	S
Ethanol	40%	S	L	S	L
Ethanol	95%	L	L	-	-
Ethyl acetate	100%	L	NS	S	NS
Ethyl chloride, gas	tg-g	NS	NS	-	-
Ethyl ether	tg-l	NS	NS	NS	NS
Ethylene glycol	tg-l	S	S	S	S
Ferric chloride	Sat.sol	S	S	S	S
Ferric Nitrate	Sat.sol	S	S	S	S
Ferric Sulphate	Sat.sol	S	S	S	S
Ferrous chloride	Sat.sol	S	S	S	S
Ferrous sulphate	Sat.sol	S	S	S	S
Fluorine gas, dry	tg-g	NS	NS	NS	NS
Fluorine gas, wet	tg-g	NS	NS	NS	NS
Fluorosilic acid	40%	S	S	S	S
Formic acid	40%	S	S	S	S
Formic acid	98 to 100%	S	S	S	S
Furfuryl alcohol	tg-l	L	NS	S	L
Gas , manufactured	tg-g	-	S	-	-
Gasoline,(fuel)	Work. Sol.	L	NS	S	L
Gelatine	Sol	S	S	S	S
Glucose	Sol	S	S	S	S
Glycerine	tg-l	S	S	S	S
Glycolic acid	30%	S	L	-	-
Glycolic acid	Sol	-	-	S	S
Gas, natural, dry	tg-g	-	-	S	-
Heptane	tg-l	NS	NS	S	NS
Hexachlorophene	-	NS	NS	L	L
Honey		S	S	S	S
Hydrobromic acid	50%	S	S	S	S
Hydrobromic acid	Upto 100%	S	S	S	S
Hydrochloric acid	Upto 36%	S	S	S	S
Hydrochloric acid	Conc	S	S	S	S
Hydrochlorous acid	Conc	S	S	S	S
Hydrocyanic acid	10%	S	S	S	S
Hydrofluoric acid	60%	S	L	S	L
Hydrogen	tg-g	S	S	S	S
Hydrofluoric acid	10%	S	S	S	S
Hydrogen peroxide	10%	S	S	S	S
Hydrogen peroxide	30%	S	L	S	S
Hydrogen peroxide	90%	S	NS	S	NS
Hydrogen sulphide gas,dry	tg-g	S	S	S	S
Hydroquinone	Sat.sol	S	S	S	S
Iodine (in potassium sol)	Sat sol	NS	NS	NS	NS
Iodine (in alcohol)	Work. Sol.	NS	NS	NS	NS
Lactic acid	10%	S	S	S	S
Lactic acid	28%	S	S	S	S
Lactic acid	Upto 100%	S	S	S	S
Lead acetate	Dil.sol	S	S	S	S
Lead acetate	Sat.sol	S	S	S	S
Magnesium carbonate	Susp.	S	S	S	S
Magnesium chloride	Sat.sol	S	S	S	S
Magnesium hydroxide	Sat.sol	S	S	S	S
Magnesium nitrate	Sat.sol	S	S	S	S

Chemical	Concentration	PE-LD		PE-HD	
		20°C	60°C	20°C	60°C
Magnesium sulphate	Sat.sol	S	S	S	S
Maleic acid	Sat.sol	S	S	S	S
Mayonnaik	Work. Sol.	S	S	S	S
Mustard, aqueous	Work. Sol.			S	
Mercury (I) nitrate	Sol	-	-	S	-
Mercury (II) chloride	Sat.sol	S	S	S	S
Mercury (II) cyanide	Sat.sol	S	S	S	S
Mercury	100%	S	S	S	S
Milk	Work. Sol.	S	S	S	S
Mineral oils	Work. Sol.	L	NS	S	L
Molasses	Sol	S	S	S	S
Nickel chloride	Sat.sol	S	S	S	S
Nickel nitrate	Sat.sol	S	S	S	S
Nickel sulphate	Sat.sol	S	S	S	-
Nicotinic acid	Dil.sol	L	L	S	-
Nitric acid	25%	S	S	S	S
Nitric acid	50%	L	NS	L	NS
Nitric acid	70%	S	L	S	L
Nitric acid	50%	NS	NS	NS	NS
Oil and fats	tg-l	L	NS	S	L
Oleic acid	tg-l	L	NS	S	S
Oleum (H2SO4+10%SO3)		NS	NS	NS	NS
Oleum (H2SO4+50%SO3)		NS	NS	NS	NS
Oxalic acid	Sat.sol	S	S	S	S
Oxygen,gas	tg-g	S	-	S	L
Ozone, gas	Sat.sol	NS	NS	L	NS
Phenol	Sol	L	NS	S	S
Phosphine	tg-g	S	S	S	S
Phosphoric Acid	Upto 50%	S	S	S	S
Phosphoric (III) chloride	100%	S	S	S	L
Picnic acid	Sat.sol	S	L	S	-
Potassium bicarbonate	Sat.sol	S	S	S	S
Potassium borate	Sat.sol	S	S	S	S
Potassium bromate	Sat.sol	S	S	S	S
Potassium bromide	Sat.sol	S	S	S	S
Potassium carbonate	Sat.sol	S	S	S	S
Potassium chlorate	Sat.sol	S	S	S	S
Potassium chloride	Sat.sol	S	S	S	S
Potassium chromate	Sat.sol	S	S	S	S
Potassium cyanide	Sol	S	S	S	S
Potassium dichromate	Sat.sol	S	S	S	S
Potassium fluoride	Sat.sol	S	S	S	S
Potsssium hexacyanoferrate (III)	Sat.sol	S	S	S	S
Potassium hexacyanoferrate (II)	Sat.sol	S	S	S	S
Potassium hydrogen carbonate	Sat.sol	S	S	S	S
Potassium hydrogen sulphate	Sat.sol	S	S	S	S
Potassium hydrogen sulphite	Sol	S	S	S	S
Potassium hydroxide	10%	S	S	S	S
Potassium hydroxide	Sol	S	S	S	S
Potassium hypochlorite	Sol.	S	L	S	L
Potassium nitrate	Sat.sol	S	S	S	S
Potassium orthophosphate	Sat.sol	S	S	S	S
Potassium oxalate	Sat.sol	S	S	S	S
Potassium perchlorate	Sat.sol	S	S	S	S

Chemical	Concentration	PE-LD		PE-HD	
		20°C	60°C	20°C	60°C
Potassium persulphate	Sat.sol	S	S	S	S
Potassium sulphate	Sat.sol	S	S	S	S
Potassium sulphide	Sol	S	S	S	S
Potassium sulphite	Sat.sol	S	S	-	-
Potassium thiosulphate	Sat.sol	S	S	S	S
Propargul alcohol	-	S	S	S	S
Propionic acid	tg-l	-	-	S	L
Pyridine	100%	-	-	S	L
Silver acetate	Sat.sol	S	S	S	S
Silver cyanide	Sat.sol	S	S	S	S
Silver nitrate	Sat.sol	S	S	S	S
Sodium acetate	Sat.sol	S	S	S	S
Sodium antimonite	Sat.sol	S	S	S	S
Sodium arsenite	Sat.sol	S	S	S	S
Sodium benzoate	Sat.sol	S	S	S	S
Sodium bicarbonate	Sat.sol	S	S	S	S
Sodium bisulphate	Sat.sol	S	S	S	S
Sodium bisulphate	Sat.sol	S	S	S	S
Sodium bromide	Sat.sol	S	S	S	S
Sodium carbonate	Sat.sol	S	S	S	S
Sodium chlorate	Sat.sol	S	S	S	S
Sodium chloride	Sat.sol	S	S	S	S
Sodium chlorite	2%	S	-	S	-
Sodium Cdlorid	20%	S	-	-	-
Sodium Cyanide	Sat.sol	S	S	S	S
Sodium dichromate	Sat.sol	S	S	S	S
Sodium fluoride	Sat.sol	S	S	S	S
sodium ferrycyanide	Sat.sol	S	S	S	S
Sodikum hexacyanoferrate (III)	Sat.sol	S	S	S	S
Sodium hexacyanoferrate (II)	Sat.sol	-	-	S	S
Sodium hydrogen carbonate	Sat.sol	S	S	S	S
Sodium hydrogen sulphate	Sat.sol	S	S	S	S
Sodium hydrogen sulphite	Sol	S	S	S	S
Sodium hydroxide	40%	S	S	S	S
Sodium hydroxide	Sol	-	-	S	S
Sodium hypochlorite	15%	-	-	S	S
Sodium nitrate	Sat.sol	S	S	S	S
Sodium nitrate	Sat.sol	S	S	S	S
Sodium ortophosphate	Sat.sol	S	S	S	S
Sodium oxalate	Sat.sol	S	S	S	S
Sodium phosphate	Sat.sol	S	S	S	S
Sodium silicate	Sol	S	S	S	S
Sodium sulphate	Sat.sol	S	S	S	S
Sodium sulphide	Sat.sol	S	S	S	S
Sodium sulphite	Sat.sol	S	S	S	S
Sulphur dioxide, dry	tg-g	S	S	S	S
Sulphur trioxide	tg-l	NS	NS	NS	NS
Sulphur acid	10 to 50%	S	S	S	S
Sulphuric acid	10%	S	S	S	S
Sulphuric acid	50%	S	S	S	S
Sulphuric acid	50%to75%	S	S	S	S
Sulphuric acid	98%	L	NS	S	NS
Sulphuric Acid	Fuming	NS	NS	NS	NS
Sulphurous acid	Upto 30%	S	S	S	S

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Chemical	Concentration	PE-LD		PE-HD	
		20°C	60°C	20°C	60°C
Tallow	-	S	L	S	L
Tannic acid	Sol	S	S	S	S
Tartaric acid	Sat.sol	S	S	S	S
Tartaric acid	Sol	S	S	S	S
Tetrahydrofuran	tg-l	NS	NS	-	-
Tetrahydronaphthalene	100%	L	NS	S	L
Thionyl chloride	100%	NS	NS	NS	NS
Tin (II) chloride	Sat.sol	S	S	S	S
Tin (IV) chloride	Sol	S	S	S	S
Tin (IV) chloride	Sat.sol	-	-	S	S
Titanium tetrachloride	Sat.sol	NS	NS	NS	NS
Toluene	tg-l	NS	NS	L	NS
Tribromomethane	-	NS	NS	NS	NS
Trichloroethylene	100%	NS	NS	NS	NS
Triethanolamine	tg-l	S	-	S	-
Triethanolamine	Sol	-	-	S	L
Urea	Sol	S	S	S	S
Urine	-	S	S	S	S
Vegetables oils	tg-l	S	L	S	S
Vinegar		S	S	S	S

Chemical	Concentration	PE-LD		PE-HD	
		20°C	60°C	20°C	60°C
Water		S	S	S	S
Water, brackish	Sat.sol	S	S	S	S
Water,distilled	Sat.sol	S	S	S	S
Water, fresh	Sat.sol	S	S	S	S
Water, mineral	Work. Sol.	S	S	S	S
Water, potable	Work. Sol.	S	S	S	S
Water,sea	Work. Sol.	S	S	S	S
Whiskay	Work. Sol.	S	S	S	S
Wines & sprits	Work. Sol.	S	S	S	S
Wetting agents	-	S	S	S	S
Wines and spirits	Sat.sol	S	S	S	S
Xylene	tg-l	NS	NS	L	NS
Yeast	Sol	S	S	S	S
Zinc bromide	Sat.sol	S	S	S	S
Zinc carbonate	Sat.sol	S	S	S	S
Zinc chloride	Sat.sol	S	S	S	S
Zinc oxide	Sysp	S	S	S	S
Zinc Nitrste	Sat.sol	S	S	S	S
Zinc stearate	-	S	S	S	S
Zinc sulphate	Sat.sol	S	S	S	S

PRODUCT RANGE

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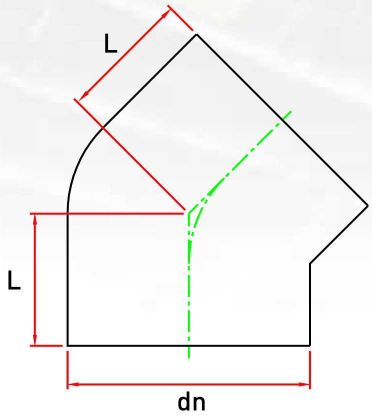
HDPE Drainage Pipes:

Nominal Outside Diameter (mm)	Length (m)
32	5.0 / 5.8
40	5.0 / 5.8
50	5.0 / 5.8
56	5.0 / 5.8
63	5.0 / 5.8
75	5.0 / 5.8
80	5.0 / 5.8
110	5.0 / 5.8
160	5.0 / 5.8
200	5.0 / 5.8
250	5.0 / 5.8
315	5.0 / 5.8

Sizes 80mm & larger are produced in S 12.5'' & S 16''

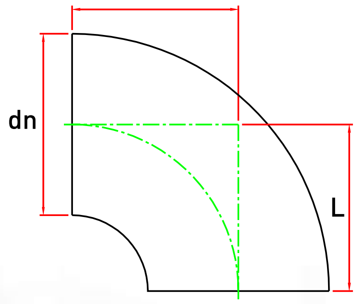
45˚ Elbow

Size (dn)	L mm
40	30
50	44
75	50
110	60
160	70
200	Fabricated
250	Fabricated
315	Fabricated



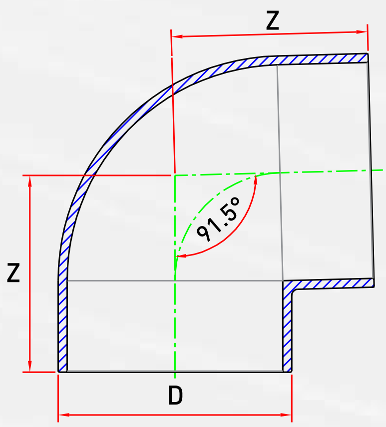
91.5° Elbow (For Butt Fusion)

Size (dn)	L mm
40	30
50	45
75	72.5
110	101
160	219



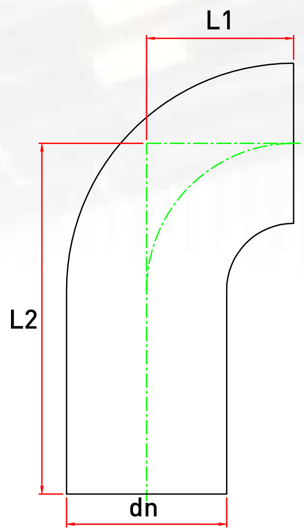
91.5° Elbow (For Butt Fusion & Electro Fusion)

D	Z
40	54
50	59
75	73
110	92
160	116

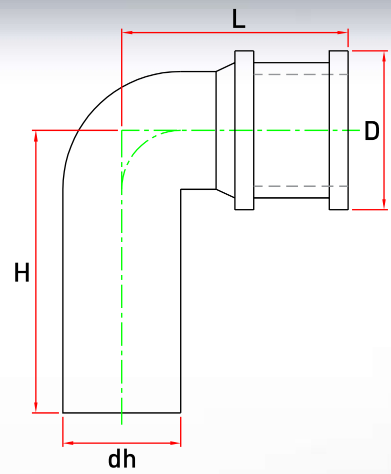


91.5° Long Elbow

Size (dn)	L1	L2
50	40	180
75	70	210
110	100	270

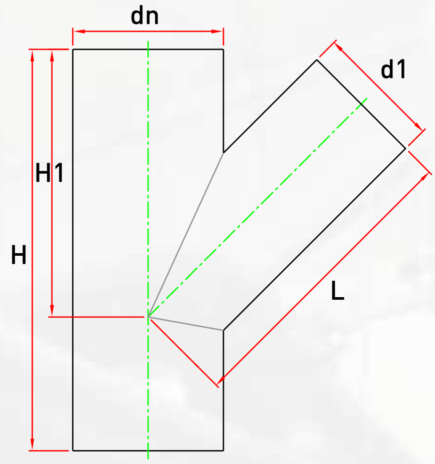


90° Waste Elbow



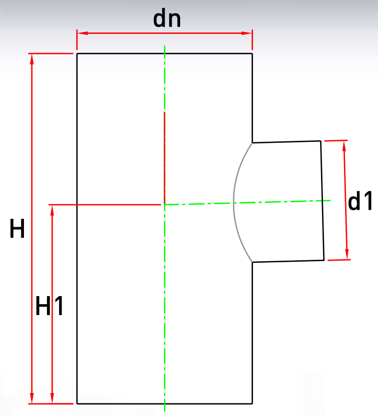
Size (dn)	D	L	H
50	58	57	90

45° Y Branch



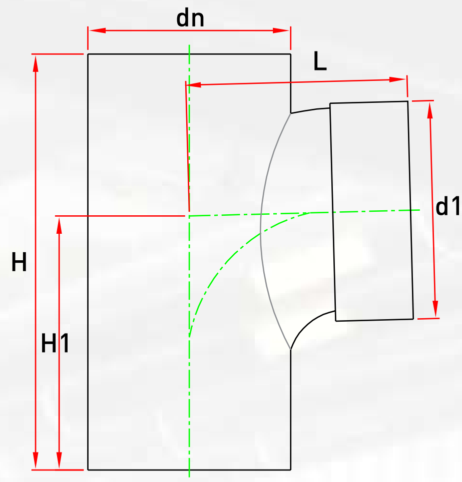
Size dn x d1 x dn	H mm	H_1 mm	L mm
50x40x50	160	93	105
50x50x50	145	98	111
75x75x75	190	128	140
110x110x110	270	178	180
75x50x75	205	140	141
110x50x110	270	194	194
110x75x110	270	183	184
160x75x160	310	255	258
160x110x160	307	240	243
200x75x200	262	252	255
200x110x200	275	270	275

91.5° Tee Branch



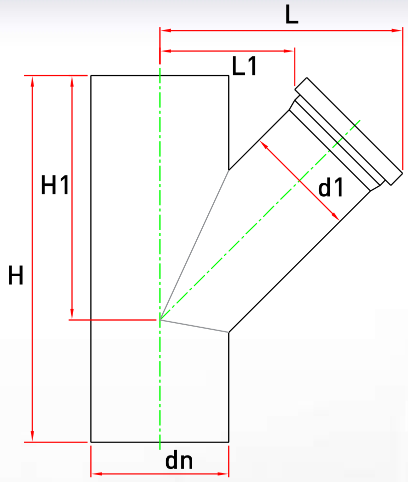
Size dn x d1 x dn	H mm	H_1 mm
50x40x50	144	86
50x50x50	144	87
75x50x75	171	94
75x75x75	166	100
110x50x110	220	125
110x75x110	125	106
110x110x110	220	125
160x50x160	345	210
160x75x160	345	205
160x110x160	345	205

91.5° Swept Tee Branch



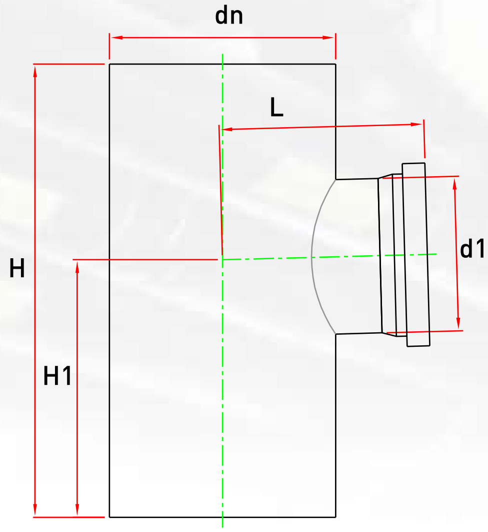
Size dn x d1 x dn	H mm	H_1 mm	L mm
50x50x50	148	91	73
75x75x75	194	114	82
110x110x110	226	138	120
110x50x110	221	135	94
110x75x110	226	138	120

45° Access Pipe



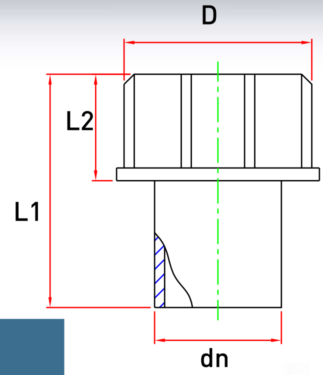
Size (dnxd1xdn)	H mm	H_1 mm	L mm
50x50x50	145	98	140
75x75x75	190	130	190
110x110x110	270	178	214
160x110x160	246	165	110
200x110x200	270	180	110

90° Access Pipe



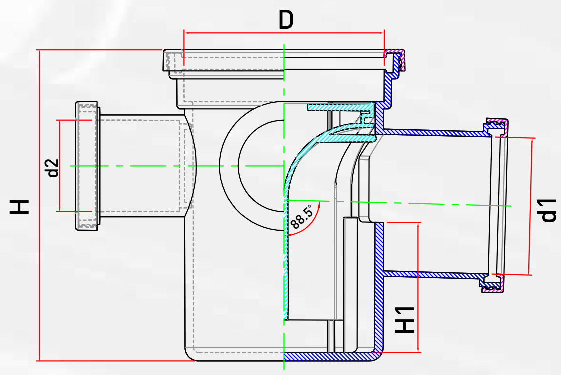
Size (dnxd1)	H mm	H_1 mm	L mm
75x50	175	95	125
110x110	225	125	145

Access Plug



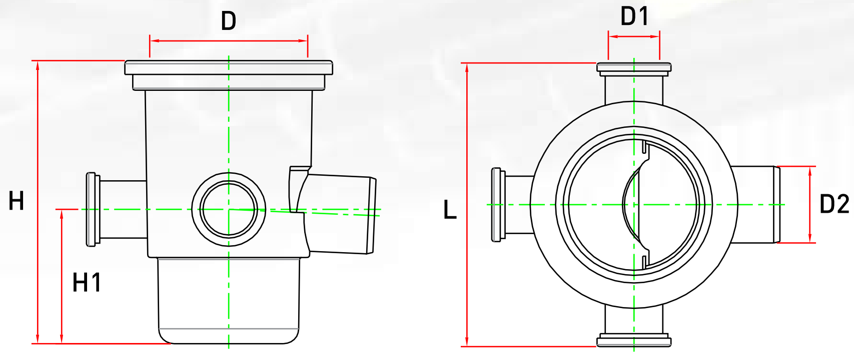
Size (dn)	D	L1	L2
50	83	59.6	33.1
75	120.2	88.1	45
110	146.5	54.1	33

New HDPE Floor Trap



D	D1	D2	H	H1
110	75	50	173	72.5

Floor Trap

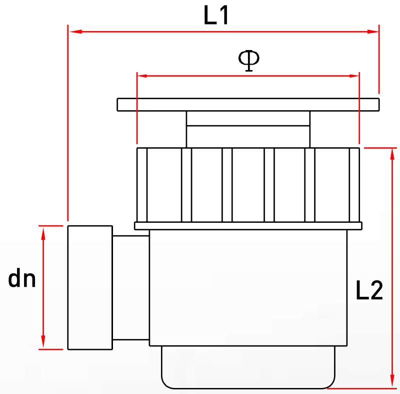


D	D1	D2	H	H1	L
110	50	75	197	110	220

ISO 4427/4437
BS EN 1329/1401

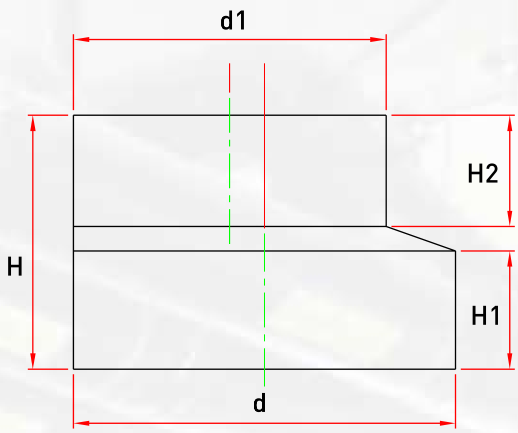
ISO 9001 FM 75767

Floor Drain



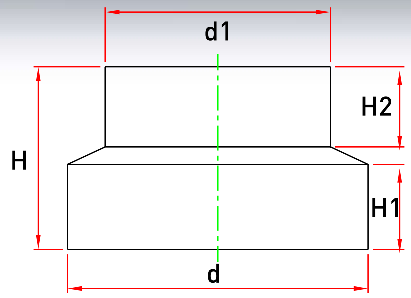
Size (dn)	D	L1	L2
50	90	130	87.3

Eccentric Reducer



Size d x d1	H	H_1 mm	H_2 mm
50x40	80	34	45
75x50	74	33	35
110x50	79	32	33
110x75	75	34	32
160x110	82	33	36
200x160	146	38	42

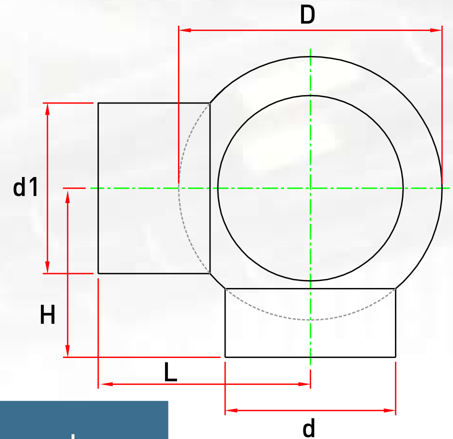
Concentric Reducer



Size (dxd1)	H	H1	H2
200x160	22.1	90	80
250x200	23.8	100	100
315x200	302	150	100
315x250	31.8	150	110
400x250	23.7	50	100
400x315	25.9	60	150

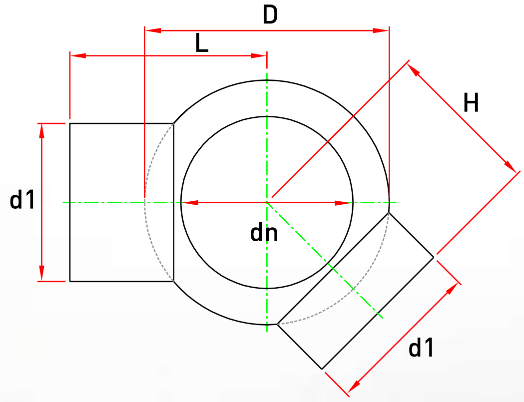
30˚ Y Branch

91.5˚ Double Ball Branch



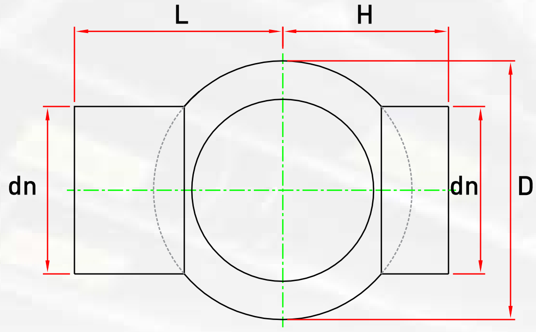
Size (dn)	D	H	L
110x50x110	170	120	137
110x75x110	170	120	137
110x110x110	170	120	137

135° Double Ball Branch



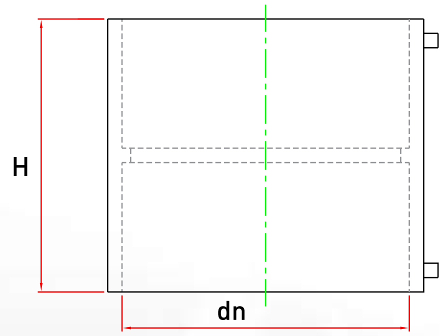
Size (dnxd1xdn)	D	H	L
110x50x110	170	120	137
110x75x110	170	120	137
110x110x110	170	120	137

180° Double Ball Branch



Size (dn)	D	H	L
110x50x110	170	120	137
110x75x110	170	120	137
110x110x110	170	120	137

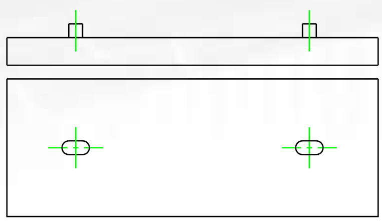
Electro - fusion Coupler



Size (dn)	H
50	60
75	60.5
110	70.5
160	63
200	121
250	131

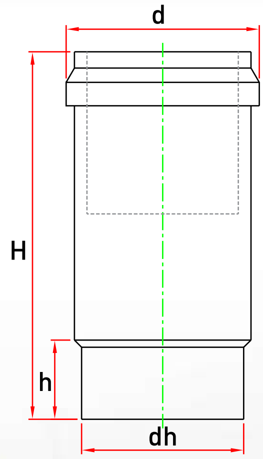
Electro - Fusion Strip Coupler

Size (dn)
75
110
160

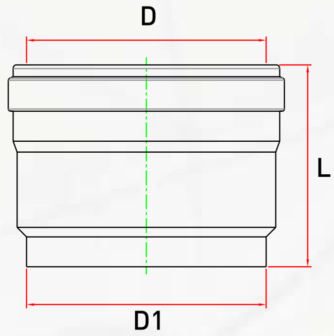


Expansion Socket

Size (dn)	H mm	h mm
75	92	19
110	214	30
160	240	70

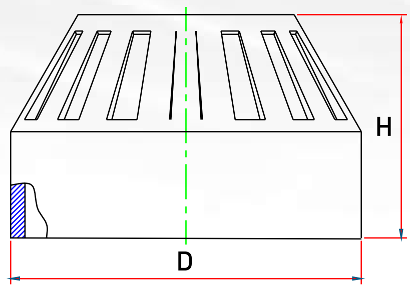


Rubber Ring Socket



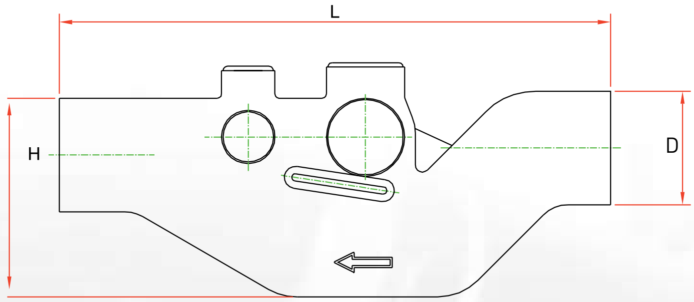
D	D1	L
110	110	95
160	160	135

Vent Cowl



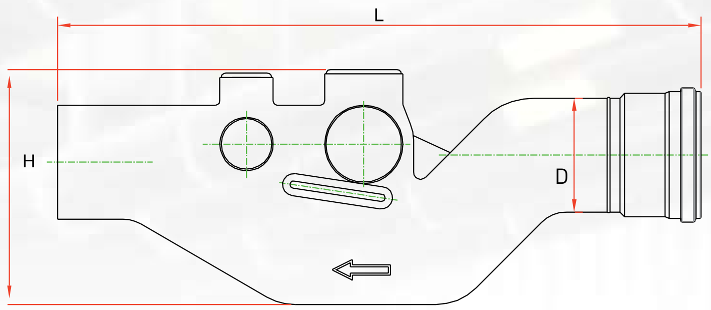
D	H
110	84
160	102

Aerator (Speed Breaker) with Plain Ends



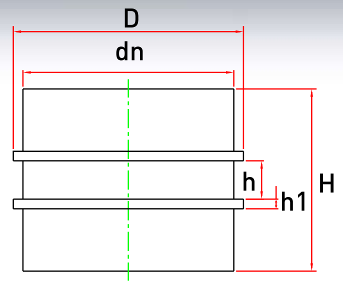
D	H	L
110	240	760
160	280	775

Aerator (Speed Breaker) with Rubber Ring Socket:



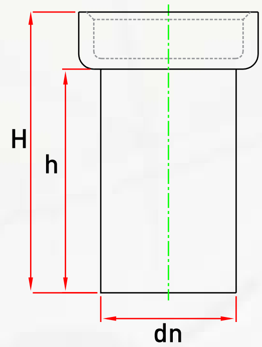
D	H	L
110	270	850
160	280	900

Anchor Pipe



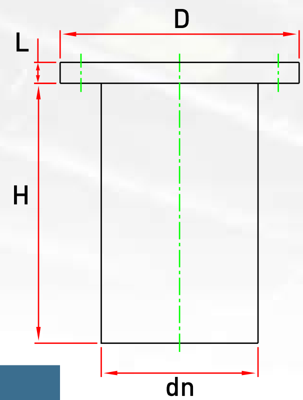
Size (dn)	H	h	h1
200	141	47	15
250	201	47	20
315	—	—	—

Female Threaded Adapter



Size (dn)	H	h
75	120	82
110	135	117

Flange Adapter

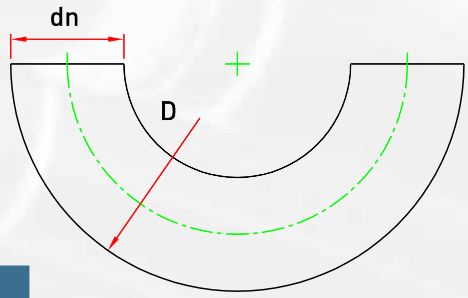


Size (dn)	D	L	H
75			
110	103	8.1	150
160			

GI Flange Ring

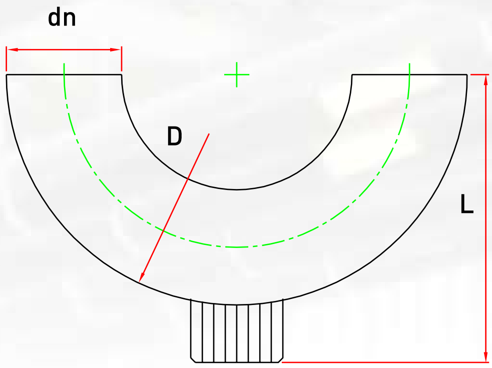
Size (dn)
75
110
160

U Trap



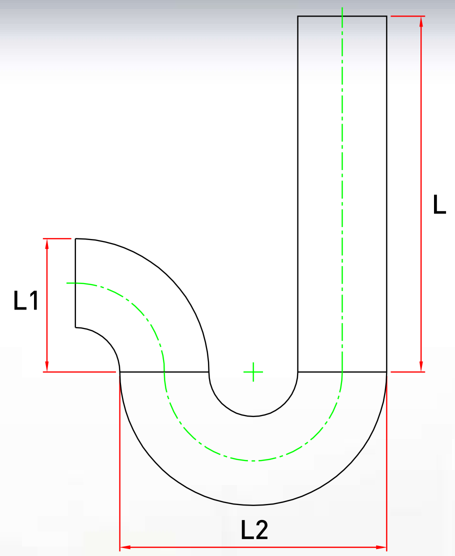
Size (dn)	D
50	75
75	112
110	160

U Trap with Clean Out



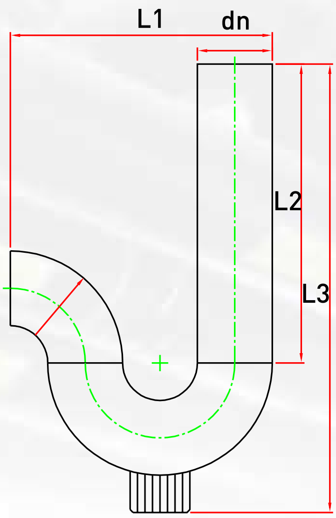
Size (dn)	D	L
50	75	100.8
75	112	137.8
110	160	185.8

P Trap



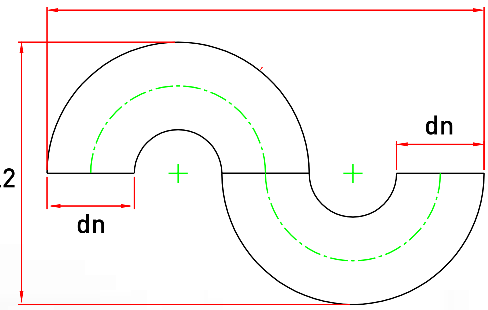
Size (dn)	L	L1	L2
50	180	70	170
75	180	108	253
110	180	150	360

P Trap with Clean Out



Size (dn)	L1	L2	L3
50	170	180	280.8
75	253	180	315.8
110	360	180	365.8

S Trap

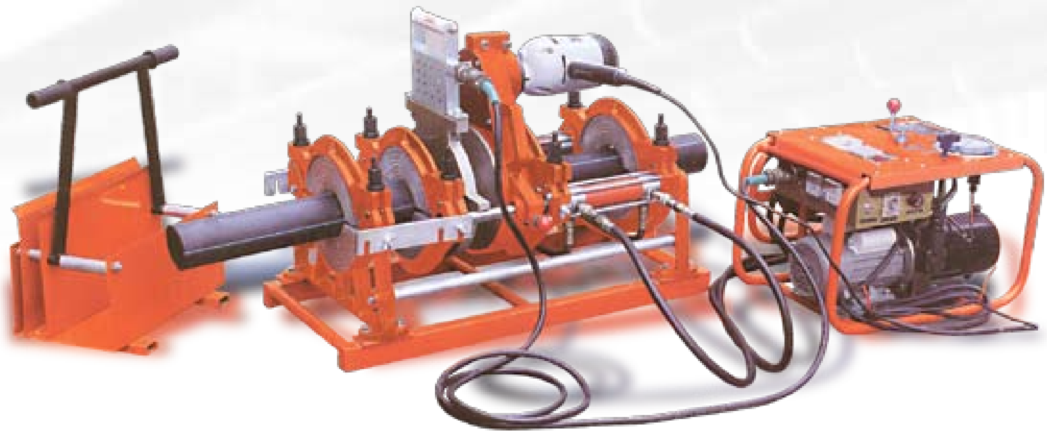


Size (dn)	L1	L2
50	250	150
75	373	224
110	530	320

Electro - Fusion Machine

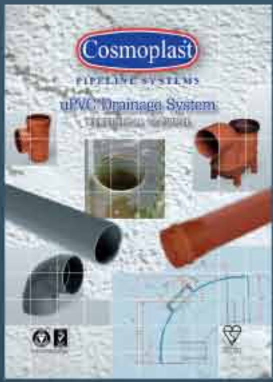
Manual Butt Fusion Machine

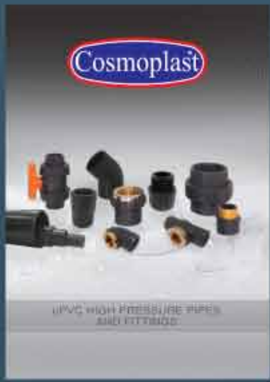
Automatic Butt Fusion Machine

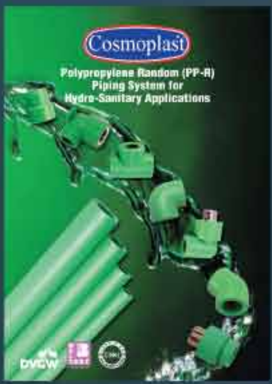


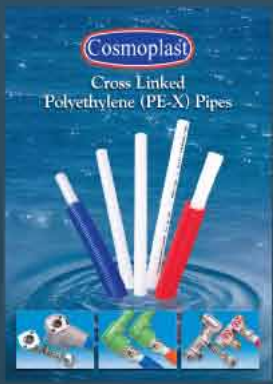
Inline with our product development programme, Cosmoplast reserves the right to modify or change any of the information contained herein without prior notice.

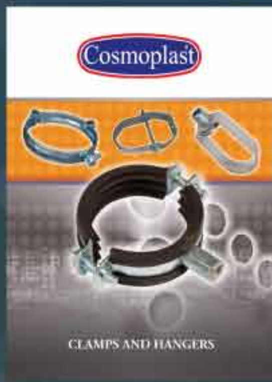
Other Plumbing Systems











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Version 1, Issue 2 / July 2010

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