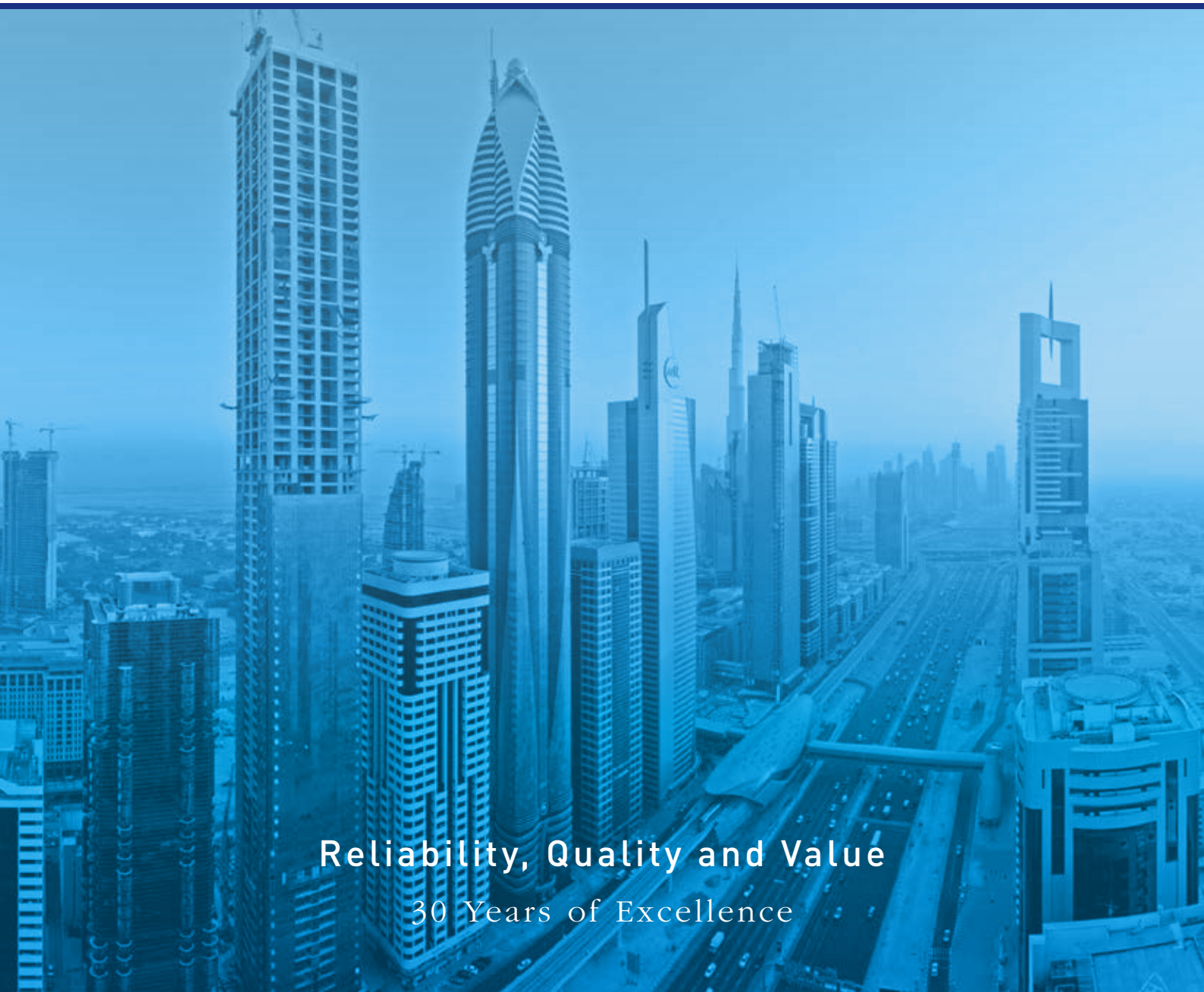
MPI ATLAS

# MODERN PLASTIC INDUSTRY L.L.C.

## UPVC SOIL & DRAINAGE PIPES & FITTINGS



Reliability, Quality and Value

30 Years of Excellence

# P R O F I L E

## INTRODUCTION

Modern plastic industry is a part of AL SHIRAWI GROUP OF COMPANIES which is one of the largest and most diversified business conglomerates in the Arabian Gulf. From its inception in 1971 as a trading and contracting company, the Group has broadened its scope to encompass a cross section of products, services and industries ranging from printing, heavy fabrication, engineering, electromechanical, electronics, trucks and logistics.


Established in 1987, Modern Plastic industry (MPI) has pioneered the manufacturing of UPVC pressure pipe fittings in the UAE. Today Modern Plastic has a wide range of SWR drainage, high pressure UPVC, CPVC, PP Compression Fittings and pipes.

MPI products have been used extensively in the irrigation, construction, plumbing and landscaping industry and are playing a significant role in the development of the Gulf region and Middle East.

Subsequently the company started manufacturing Drainage systems under the "**ATLAS**" brand.

## STATE-OF-THE-ART FACILITY

MPI UPVC Drainage systems are manufactured in a state-of-the-art facility at Dubai Investment Park with Precision moulds for fittings and high quality State-of-the-art Microprocessor based Injection Moulding Machines and High Quality Extrusion Machines for pipes.

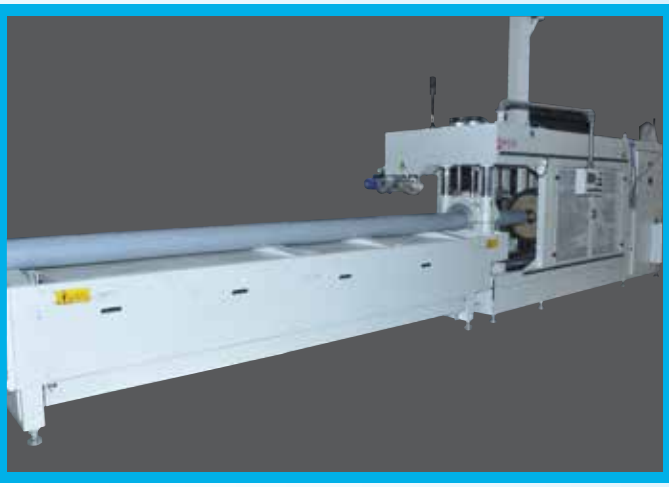
Technology is the backbone of ongoing development and the right design selection headed by a team of experienced and well-trained professionals complements the development process.

MPI has established an in-house tool room with the latest CNC machines and EDM machines, which are used to manufacture moulds as per the needs of market

## QUALITY CONTROL

As the UPVC Drainage systems are specially designed to meet the harsh climate conditions of the Gulf region, MPI places emphasis on Quality, Reliability and the Economy. Strict in-house Quality control is backed by testing through independent laboratories of international repute to certify the quality of pipes and fittings.

MPI places great emphasis on customer satisfaction through quality products. The company's operational excellence is evident through its established Quality Management System, which complies with the ISO 9001-2008 standard,certified by British Standard Institute(BSI) UK. Also the company's products have been awarded the prestigious Kite-mark certification of BSI, UK.



## A COMPLETE SOLUTION

With the growing demand to create to cater to the construction industry MPI has a complete range of UPVC Drainage Pipes and Fittings from 1 1/4" to 16"(32mm to 400mm) conforming to the British Standards BS EN 1401. MPI products are manufactured par excellence to the international standards and ensure a complete solution of "Piping System" for plumbing applications.

**Modern Plastic is one of the largest companies in the Middle East to manufacture a wide range of UPVC H.P. Water supply & Drainage pipes and Fittings certified by UK BSI Kite-mark standards**.

## GLOBAL PRESENCE

MPI has been the leader in the Gulf market mainly because it can offer the widest range of UPVC Drainage Pipes and Fittings which are specially designed to meet the harsh climatic conditions with more emphasis of Quality, Reliability and Economy.

MPI is managed by a team of experienced and well trained professionals, and markets its range of products in the AGCC region, the Middle East, Africa, Europe, CIS Country and the Asian subcontinent.

MPI ATLAS

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UKAS MANAGEMENT SYSTEMS
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# ATLAS UPVC DRAINAGE SYSTEMS

**Atlas** UPVC Drainage Systems offer a comprehensive range of pipes and fittings for waste, soil and Drainage applications to cater to the growing needs of the building construction industry.

## STANDARDS

**Atlas** UPVC pipes and fittings are manufactured as per the following standards.

- Above ground : BS EN 1329-1 : 2000
  This standard supercedes BS 4514 : 1993 and BS 5255 : 1989
- Below Ground : BS EN 1401-1 : 2009
  This standard supercedes BS 4660 : 1989 and BS 5481 : 1977

## KITE-MARK

**Atlas** UPVC Drainage Fittings are available with the prestigious Kite mark license which is awarded by the British Standards Institute(BSI).

## RANGE

**Atlas** UPVC Pipes and Fittings are available in sizes from 1 1/4" (36mm) to 16" (400mm).

## ADVANTAGES OF UPVC DRAINAGE SYSTEMS

| | | |
|---|---|---|
| Light weight | : | Hence transport and handing is simple and convenient. |
| Chemical Resistance | : | Excellent chemical resistance of UPVC to acids, alkalies,and oxidizing and reducing agents makes it suitable for all applications. |
| High Flow rate | : | The smooth internal bore gives excellent flow properties which remain constant throughout the service life of the system. |
| Non-Flammable | : | UPVC does not support combustion and is self-extinguishing. |
| Non- Conductive | : | UPVC is a non-conductor and hence not attacked by galvanic or electrolytic action. |
| Weather Resistance | : | Specially blended UV stabilized compound offers an excellent outdoor weathering performance. High durability. |
| Easy Installation | : | Tough, impact-resistant and easy to install. |
| Corrosion Resistance | : | UPVC is non-corrosive and hence constant contact with water does not deteriorate the material. |
| Aesthetic Superiority | : | UPVC is aesthetically far superior to conventional systems. |

## INSTALLATION PROCEDURES

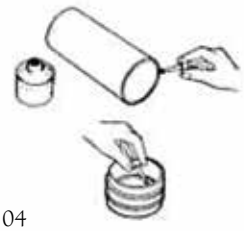
- During installation, the pipeline should be adequately supported by providing pipe support brackets as per support distances shown in the chart.

**Maximum Support Distances (BS 5572 : 1994)**

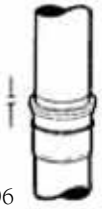
| Pipe Size | Vertical (in mtrs) | Horizontal (in mtrs) |
|---|---|---|
| 82mm | 2 | 0.9 |
| 110mm | 2 | 1 |
| 160mm | 2 | 1 |

- PVC pipelines expand or contract with change in temperature. This thermal expansion and contraction should be allowed for in the design.
- In case of a change in direction of the pipeline, an adequate support should be provided.

## SOLVENT CEMENT JOINTING

| | | |
|---|---|---|
|  01 Cut the spigot end of the pipe square |  02 All burrs from the internal and external surfaces should be removed. |  03 The spigot should be marked with a pencil line at a distance equivalent to the socket depth. Clean the surface with in the marked area. |
|  04 Apply uniform coat of solvent cement on the external surface of the pipe and a lighter coat on the internal surface of the fitting. |  05 Insert the pipe end in to the socket of the pipe/ fitting and push it in upto the mark. |  06 Remove the excess solvent cement and hold the joint firmly in position for 30 seconds to dry. |

## RUBBER RING JOINTING

| | | |
|---|---|---|
|  01 Cut pipe square. |  02 Chamfer the end of the pipe. Remove all burrs, dust and dirt. |  03 Apply lubricant on the external surface of the chamfered end of the pipe and on the rubber gasket. |
|  04 Check that the ring seal is in position in the housing. |  05 Push the pipe fully in to the socked and mark the pipe depth in the socket with marker. |  06 Withdraw the pipe until the mark is 12mm away from the socket before fixing. This gap between the pipe end and the socket register is very essential for thermal expansion/contraction. |

**Note:** For proper design, architects' approved drawing for sanitary systems shall form the basis. All relevant code of practice/ building regulations must be strictly followed.

# Atlas Drainage Pipes

**Atlas** Drainage Systems offer a complete range of pipes and fittings for waste. Soil and Drainage applications to cater to the growing needs of the building construction industry.

## STANDARDS

**Atlas** UPVC Pipes and fittings are manufactured as per the following standards:

- Above Ground : BS EN 1329-1 : 2000
  This standard supercedes BS 4514 : 1993 and BS 5255 : 1989.
- Below Ground : BS EN 1401-1 : 2009
  This standard supercedes BS 4660 : 1989 and BS 5481 : 1977

## RAW MATERIAL

The raw material used is 100% UPVC virgin material, with necessary additives/chemicals needed to facilitate the manufacturing process.

## APPEARANCE

The internal and external surface of the pipes are smooth, clean and free from surface defects.

## COLOUR

The pipes are coloured throughout the wall as follows:

- Above Ground : BS EN 1329-1 : Grey
- Below Ground : BS EN 1401-1 : Orange Brown / Terra Cotta

## EFFECTIVE LENGTH

All Pipes are manufactured in 4mm and 6/5.8m lengths.

## SOCKETS

The pipes are supplied as follows:

- 32mm, 36mm(1 1/4”), 43mm(1 1/2”) & 56mm (2”) pipes are supplied with plain ends.
- 82mm(3”), 110mm(4”),160mm(6”),200mm(8”), 250mm(10”), 315mm(12”) & 400mm(16”) pipes are supplied with solvent cement socket or rubber ring socket.

## GENERAL PHYSICAL PROPERTIES OF UPVC

| Sr. | Characteristics | value |
|---|---|---|
| 1 | Specific Gravity | 1.41 |
| 2 | Thermal Conductivity | 160 W/m°c |
| 3 | Specific Heat | 1040 J/Kg/°c |
| 4 | Flammability | UPVC is self-extinguishing and will not support combustion. |
| 5 | Tensile Strength | >45 MN/Sq cm at 20°c |
| 6 | Vicat Softening Temperature | Min 79°c |
| 7 | Poissons Ratio | 1:3 |

## MECHANICAL AND PHYSICAL PROPERTIES: UPVC PIPES

| Sr. | Characteristics | Requirement | Testing Method |
|---|---|---|---|
| 1 | Impact Resistance(Round the clock method) | TIR<10% AT 0°C | EN 744 |
| 2 | Vicat Softening Temperature(VST) | >79°C | EN 727 |
| 3 | Longitudinal Reversion | <5% at 150°C | EN 743(Method B;Air) |
| 4 | Resistance to DCM Acid | No attack any part of surface of pipe at 15°C | EN 580 |
| 5 | Water Tightness of Rubber Ringing Joint | No leakage at 0.5 bar | EN 1277 |
| 6 | Elevated Temperature Cycling(ETC) | No leakage | EN 1055 |
| 7 | Long Term performance of TPE seals | 90 days>1.3 bar<br>100 years>0.6 bar | prEN 1989 |
| 8 | Resistance to internal pressure | No failure during the test period of 1000 hrs at 60°C, 10Mpa | EN 921 |

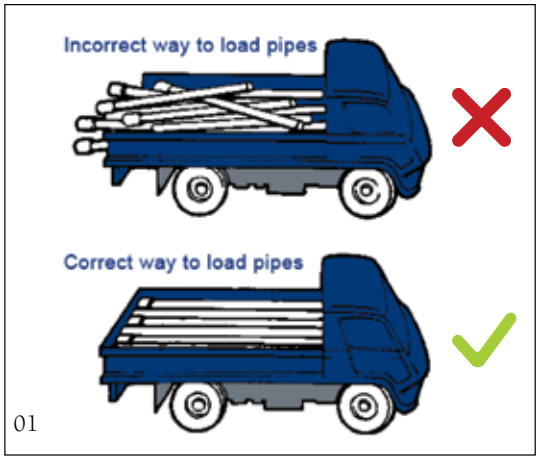
## CHEMICAL RESISTANCE

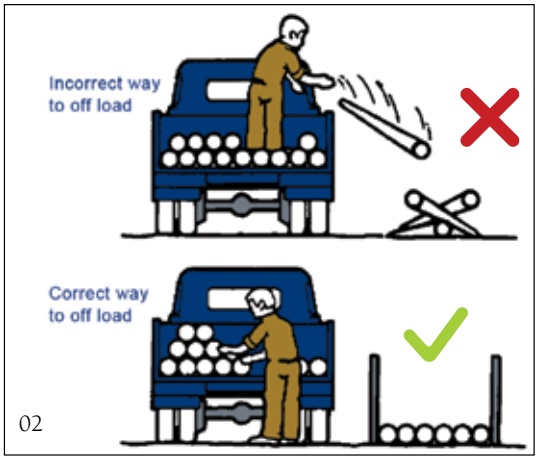
UPVC Drainage Systems are suitable to be used with a number of acids, alkalies, salts and water-miscible solvents.

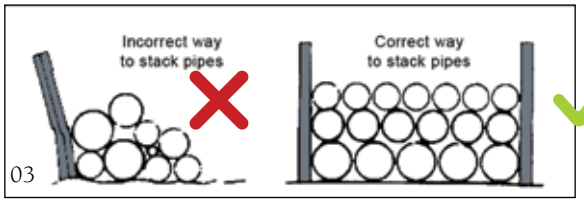
UPVC Drainage Systems are not resistant to aromatic and chlorinated hydrocarbons.

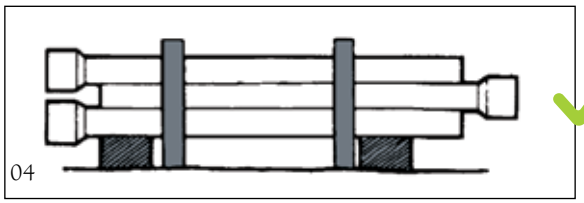
More detailed and specific information is available in the British Standard BS 5955-7:1983 Formerly CP 312-3:1973.

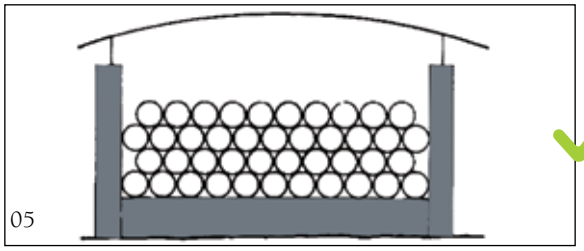
# ON SITE STORAGE AND HANDLING




## STORAGE

- The pipes should be kept on a flat surface or on level ground free from stones and sharp objects. Refer (3)
- The maximum stack should be 7 layers high under normal conditions or 1.5 mtr high & 3.0 mtr wide and 6 layers high in hot conditions. Refer (5)
- Ideally a stack should contain pipes of the same Diameter.If this is not possible nesting of the smaller pipes inside the larger pipes may be done. The larger diameter pipes should always be kept at the bottom of the stack. Refer(3)
- Direct exposure to sunlight(UV rays) can affect the pipes and fittings, causing decolouration and deterioration in the seal rings.
- It is recommended that the pipes should not be exposed to direct sunlight, it should be covered by opaque tarps sheets. Refer(5)
- While storing socketed pipes, it is recommended that alternate layers should have sockets in the opposite direction. Refer(4)

## HANDLING

- Reasonable care should be taken while handling of pipes, during unloading from vehicle, pipes should not be dropped / mishandled from the vehicle. Refer (1)
- Pipes should never be dragged along hard surfaces. In case of mechanical lifting, avoid using metal chains and hooks to come in direct contact with the pipes. It is recommended to provide protected slings and padded supports. Refer(2)

## TRANSPORTATION

- General UPVC pipes are supplied in prepacked bundles of standard quantity.
- In case loose pipes being transported, the larger diameter and heavier pipes should be placed at the bottom of the load and smaller diameter pipes on top. Refer (5)
- The pipes should be loaded in such a way that the overhang should be less than a meter. Refer(1)



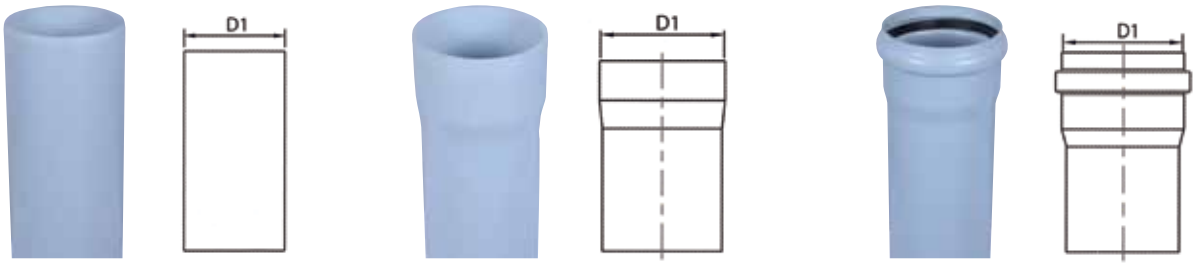
# ABOVE GROUND UPVC SOIL & WASTE PIPES BS EN 1329

## (Supercedes BS 5255 & BS 4514)

**Atlas** UPVC SOIL & WASTE Pipes are manufactured as per the following dimensions:

**ABOVE GROUND SOIL & WASTE PIPES: BS EN1329 - 1:2000**

| Sr. | Nominal Size DN/OD | Mean Outside Dia(D1) | | Wall Thickness | |
|---|---|---|---|---|---|
| | | Min | Max | Min | Max |
| 1 | 32mm | 32 | 32.2 | 3.0 | 3.5 |
| 2 | 36mm(1 1/4") | 36.2 | 36.5 | 3.0 | 3.5 |
| 3 | 40mm | 40 | 40.2 | 3.0 | 3.5 |
| 4 | 50mm | 50 | 50.2 | 3.0 | 3.5 |
| 5 | 43mm(1 1/2") | 42.8 | 43.1 | 3.0 | 3.5 |
| 6 | 56mm(2") | 55.8 | 56.1 | 3.0 | 3.5 |
| 7 | 75mm(2 1/2") | 75 | 75.3 | 3.0 | 3.5 |
| 8 | 82mm(3") | 82 | 82.3 | 3.0 | 3.5 |
| 9 | 110mm(4") | 110 | 110.3 | 3.2 | 3.8 |
| 10 | 160mm(6")B | 160 | 160.4 | 3.2 | 3.8 |
| 11 | 160mm(6”)BD | 160 | 160.4 | 4.0 | 4.6 |
| 12 | 200mm(8")B | 200 | 200.5 | 3.9 | 4.5 |
| 13 | 200mm(8”)BD | 200 | 200.5 | 4.9 | 5.6 |
| 14 | 250mm(10")B | 250 | 250.5 | 4.9 | 5.6 |
| 15 | 250mm(10”)BD | 250 | 250.5 | 6.2 | 7.1 |
| 16 | 315mm(12")B | 315 | 315.6 | 6.2 | 7.1 |
| 17 | 315mm(12”)BD | 315 | 315.6 | 7.7 | 8.7 |

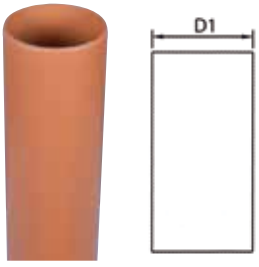


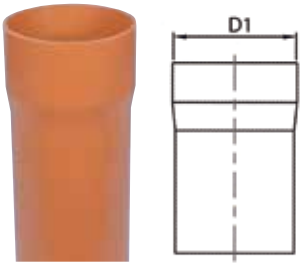
# BELOW GROUND UPVC DRAINAGE PIPES BS EN 1401

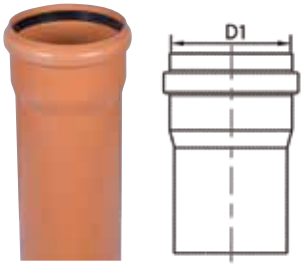
## (Supercedes BS4660 & BS5481)

BELOW GROUND SOIL & WASTE PIPES: BS EN1401 - 1:2009

| Sr. | Nominal Size DN/OD | Mean Outside Dia(D1) | | Wall Thickness | |
|---|---|---|---|---|---|
| | | Min | Max | Min | Max |
| 1 | 110mm (4”) | 110 | 110.3 | 3.2 | 3.8 |
| 2 | 160mm (6”)SN2 | 160 | 160.4 | 3.2 | 3.8 |
| 3 | 160mm (6”) SN4 | 160 | 160.4 | 4.0 | 4.6 |
| 4 | 200mm (8”) SN2 | 200 | 200.5 | 3.9 | 4.5 |
| 5 | 200mm (8”) SN4 | 200 | 200.5 | 4.9 | 5.6 |
| 6 | 250mm (10”) SN2 | 250 | 250.5 | 4.9 | 5.6 |
| 7 | 250mm (10”) SN4 | 250 | 250.5 | 6.2 | 7.1 |
| 8 | 315mm (12”) SN2 | 315.0 | 315.6 | 6.2 | 7.1 |
| 9 | 315mm (12”) SN4 | 315.0 | 315.6 | 7.7 | 8.7 |
| 10 | 400mm (16”) SN2 | 400.0 | 400.7 | 7.9 | 8.9 |
| 11 | 400mm (16”) SN4 | 400.0 | 400.7 | 9.8 | 11.0 |



# ATLAS ABOVE GROUND UPVC SOIL & WASTE FITTINGS

**Atlas** Above Ground UPVC Soil&Waste Fittings are available in two options: Push Fit joints and solvent Cement Joints

The fittings are available in Light Grey Colour matching the colour of the pipes. The fittings are manufactured as per UK BSI Kite-mark standards.

## PUSH FIT FITTINGS

In the Push Fit Joints, the plain end of the pipes or spigot of the fittings can be joined to the push fit fittings using a suitable lubricant.

The Push Fit Joints have a unique sealing system using a retaining ring which includes a rubber ring made of EPDM rubber which offers reliable leak proof joints. This rubber ring takes care of thermal expansion and contraction in the drainage systems. The Push Fit Fittings are easy to install and also easy to dismantle in case any adjustments are required to the system while it helps in easy maintenance during service life.

## SOLVENT JOINTS

These fittings are for solvent cement jointing. The plain end of the pipes or spigot end of the fittings can be easily joined with socket end of the fittings by cleaning and applying a suitable solvent cement coat. The strong solvent welded bonds ensure an excellent cleaning and chemical bonding, to withstand the internal pressure in the system.

1 1/4"(36mm), 1 1/2"(43mm)&2"(56mm) pipes and fittings are also available in mUPVC material.

## MECHANICAL AND PHYSICAL PROPERTIES

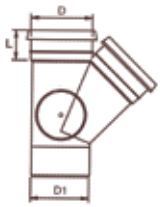
**Atlas** UPVC Soil & Waste Fittings are manufactured as per following:

| Sr | Characteristics | Requirement | Testing Method |
|---|---|---|---|
| 1 | Effects of Heating | Depth of crack/de-lamination, blisters<50% wall thickness around injection point | EN 763(Method A) |
| 2 | Vicat Softening Temperature(VST) | >79°C | EN 727 |
| 3 | Water Tightness | No leakage | EN 1053 |
| 4 | Air Tightness | No leakage | EN 1054 |
| 5 | Elevated Temperature Cycling(ETC) | No leakage | EN 1055 |
| 6 | Resistance to internal Pressure | No failure during the test period of 1000 hrs at 60°C, 6.3 MPa | EN 921 |

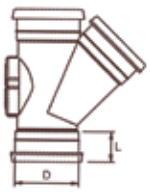
# ABOVE GROUND UPVC SOIL & WASTE FITTING BS EN 1329

## (Supercedes BS 5255 & BS 4514)

| "Y" 45° Female / Female | | | Rubber Ring |
|---|---|---|---|
| **Size** | **D** | **DI** | **L** |
| 36mm (1 1/4") | 36 | - | 25 |
| 40mm | 40 | - | 27 |
| 50mm | 50 | - | 31 |
| 43mm (1 1/2") | 43 | - | 26 |
| 56mm (2") | 56 | - | 28.5 |
| 75mm (2 1/2") | 75 | - | 25 |
| 82mm (3") | 82 | - | 26 |
| 110mm (4") | 110 | - | 40 |
| 160mm (6") | 160 | - | 60 |
| 200mm (8") | 200 | - | 61 |



| "Y" 45° Male / Female | | | Rubber Ring |
|---|---|---|---|
| Size | D | DI | L |
| 36mm(1 1/4") | 36 | 36.2 | 25 |
| 40mm | 40 | 40 | 27 |
| 50mm | 50 | 50 | 31 |
| 43mm (1 1/2") | 43 | 43 | 26 |
| 56mm (2") | 56 | 56 | 28.5 |
| 75mm (2 1/2") | 75 | 75 | 25 |
| 82mm (3") | 82 | 82 | 26 |
| 110mm (4") | 110 | 110 | 40 |
| 160mm (6") | 160 | 160 | 60 |
| 200mm (8") | 200 | 200 | 61 |



| "Y" 45° Female / Female Access Opening | | | Rubber Ring |
|---|---|---|---|
| **Size** | **D** | **DI** | **L** |
| 75mm (2 1/2") | 75 | - | 25 |
| 82mm (3") | 82 | - | 26 |
| 110mm (4") | 110 | - | 40 |
| 160mm (6") | 160 | - | 60 |
| 200mm (8") | 200 | - | 61 |

# ABOVE GROUND UPVC SOIL & WASTE FITTINGS BS EN 1329

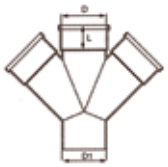
## (Supercedes BS 5255 & BS 4514)

### "Y" 45° Male / Female Access Opening — Rubber Ring

| Size | D | DI | L |
|---|---|---|---|
| 75mm (2 1/2") | 75 | 75 | 25 |
| 82mm (3") | 82 | 82 | 26 |
| 110mm (4") | 110 | 110 | 40 |
| 160mm (6") | 160 | 160 | 60 |
| 200mm (8") | 200 | 200 | 61 |

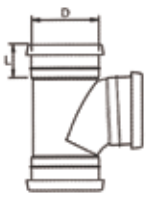
### DOUBLE "Y" 45° Female / Female — Rubber Ring

| Size | D | DI | L |
|---|---|---|---|
| 82mm (3") | 82 | - | 26 |
| 110mm (4") | 110 | - | 40 |



### DOUBLE "Y" 45° Male / Female — Rubber Ring

| Size | D | DI | L |
|---|---|---|---|
| 82mm (3") | 82 | 82 | 26 |
| 110mm (4") | 110 | 110 | 40 |

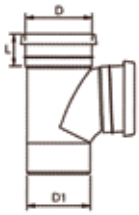


### TEE 87.5° Female / Female — Rubber Ring

| Size | D | DI | L |
|---|---|---|---|
| 36mm(1 1/4") | 36 | - | 25 |
| 40mm | 40 | - | 27 |
| 50mm | 50 | - | 31 |
| 43mm (1 1/2") | 43 | - | 27 |
| 56mm (2") | 56 | - | 30.5 |
| 75mm (2 1/2") | 75 | - | 25 |
| 82mm (3") | 82 | - | 26 |
| 110mm (4") | 110 | - | 40 |
| 160mm (6") | 160 | - | 60 |
| 200mm (8") | 200 | - | 61 |

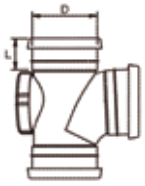
# ABOVE GROUND UPVC SOIL & WASTE FITTINGS BS EN 1329

## (Supercedes BS 5255 & BS 4514)



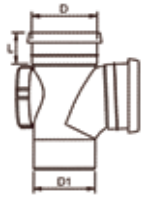
### TEE 87.5° Male / Female — Rubber Ring

| Size | D | DI | L |
|---|---|---|---|
| 36mm (1 1/4") | 36 | 36.2 | 25 |
| 40mm | 40 | 40 | 27 |
| 50mm | 50 | 50 | 31 |
| 43mm (1 1/2") | 43 | 43 | 26 |
| 56mm (2") | 56 | 56 | 28.5 |
| 75mm (2 1/2") | 75 | 75 | 25 |
| 82mm (3") | 82 | 82 | 26 |
| 110mm (4") | 110 | 110 | 40 |
| 160mm (6") | 160 | 160 | 60 |
| 200mm (8") | 200 | 200 | 61 |



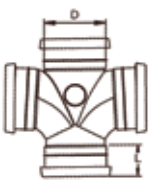
### TEE 87.5° Female / Female Access Opening — Rubber Ring

| Size | D | DI | L |
|---|---|---|---|
| 75mm (2 1/2") | 75 | - | 25 |
| 82mm (3") | 82 | - | 26 |
| 110mm (4") | 110 | - | 40 |
| 160mm (6") | 160 | - | 60 |
| 200mm (8") | 200 | - | 61 |



### TEE 87.5° Male / Female Access Opening — Rubber Ring

| Size | D | DI | L |
|---|---|---|---|
| 75mm (2 1/2") | 75 | 75 | 25 |
| 82mm (3") | 82 | 82 | 26 |
| 110mm (4") | 110 | 110 | 40 |
| 160mm (6") | 160 | 160 | 60 |
| 200mm (8") | 200 | 200 | 61 |



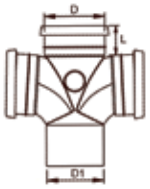
### DOUBLE Tee 87.5° Female / Female — Rubber Ring

| Size | D | DI | L |
|---|---|---|---|
| 82mm (3") | 82 | - | 26 |
| 110mm (4") | 110 | - | 40 |

# ABOVE GROUND UPVC SOIL & WASTE FITTINGS BS EN 1329

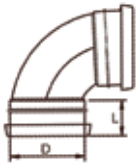
## (Supercedes BS 5255 & BS 4514)

### DOUBLE Tee 87.5° Male / Female — Rubber Ring



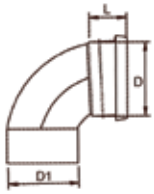

| Size | D | DI | L |
|---|---|---|---|
| 82mm (3") | 82 | 82 | 26 |
| 110mm (4") | 110 | 110 | 40 |

### BEND 87.5° Female / Female — Rubber Ring



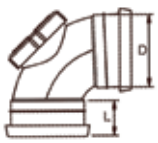

| Size | D | DI | L |
|---|---|---|---|
| 36mm(1 1/4") | 36 | - | 25 |
| 40mm | 40 | - | 27 |
| 50mm | 50 | - | 31 |
| 43mm (1 1/2") | 43 | - | 27 |
| 56mm (2") | 56 | - | 30.5 |
| 75mm (2 1/2") | 75 | - | 25 |
| 82mm (3") | 82 | - | 26 |
| 110mm (4") | 110 | - | 40 |
| 160mm (6") | 160 | - | 60 |
| 200mm (8") | 200 | - | 61 |

### BEND 87.5° Male / Female — Rubber Ring




| Size | D | DI | L |
|---|---|---|---|
| 36mm (1 1/4") | 36 | 36.2 | 25 |
| 40mm | 40 | 40 | 27 |
| 50mm | 50 | 50 | 31 |
| 43mm (1 1/2") | 43 | 43 | 26 |
| 56mm (2") | 56 | 56 | 28.5 |
| 75mm (2 1/2") | 75 | 75 | 25 |
| 82mm (3") | 82 | 82 | 26 |
| 110mm (4") | 110 | 110 | 40 |
| 160mm (6") | 160 | 160 | 60 |
| 200mm (8") | 200 | 200 | 61 |

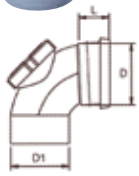
### BEND 87.5° Female / Female Access Opening — Rubber Ring




| Size | D | DI | L |
|---|---|---|---|
| 75mm (2 1/2") | 75 | - | 25 |
| 82mm (3") | 82 | - | 26 |
| 110mm (4") | 110 | - | 40 |

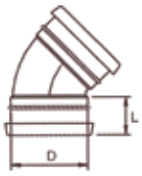
# ABOVE GROUND UPVC SOIL & WASTE FITTINGS BS EN 1329

## (Supercedes BS 5255 & BS 4514)



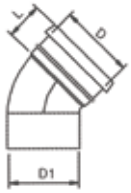
### BEND 87.5° Male / Female Access Opening — Rubber Ring

| Size | D | DI | L |
|---|---|---|---|
| 75mm (2 1/2") | 75 | 75 | 25 |
| 82mm (3") | 82 | 82 | 26 |
| 110mm (4") | 110 | 110 | 40 |



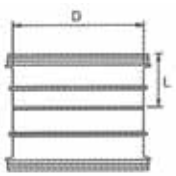
### BEND 45° Female / Female — Rubber Ring

| Size | D | DI | L |
|---|---|---|---|
| 36mm (1 1/4") | 36 | - | 25 |
| 40mm | 40 | - | 27 |
| 50mm | 50 | - | 31 |
| 43mm (1 1/2") | 43 | - | 26 |
| 56mm (2") | 56 | - | 28.5 |
| 75mm (2 1/2") | 75 | - | 25 |
| 82mm (3") | 82 | - | 26 |
| 110mm (4") | 110 | - | 40 |
| 160mm (6") | 160 | - | 60 |
| 200mm (8") | 200 | - | 61 |



### BEND 45°Male / Female — Rubber Ring

| Size | D | DI | L |
|---|---|---|---|
| 36mm (1 1/4") | 36 | 36.2 | 25 |
| 40mm | 40 | 40 | 27 |
| 50mm | 50 | 50 | 31 |
| 43mm (1 1/2") | 43 | 43 | 26 |
| 56mm (2") | 56 | 56 | 28.5 |
| 75mm (2 1/2") | 75 | 75 | 25 |
| 82mm (3") | 82 | 82 | 26 |
| 110mm (4") | 110 | 110 | 40 |
| 160mm (6") | 160 | 160 | 60 |
| 200mm (8") | 200 | 200 | 61 |



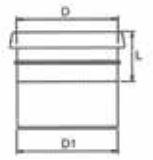
### COUPLER DOUBLE SOCKET — Rubber Ring

| Size | D | DI | L |
|---|---|---|---|
| 36mm (1 1/4") | 36 | - | 25 |
| 40mm | 40 | - | 28 |
| 50mm | 50 | - | 30 |
| 43mm (1 1/2") | 43 | - | 27 |
| 56mm (2") | 56 | - | 30.5 |
| 75mm (2 1/2") | 75 | - | 25 |
| 82mm (3") | 82 | - | 26 |
| 110mm (4") | 110 | - | 40 |
| 160mm (6") | 160 | - | 60 |
| 200mm (8") | 200 | - | 61 |

# ABOVE GROUND UPVC SOIL & WASTE FITTINGS BS EN 1329

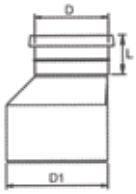
## (Supercedes BS 5255 & BS 4514)

### COUPLER SINGLE SOCKET — Rubber Ring




| Size | D | DI | L |
|---|---|---|---|
| 36mm (1 1/4") | 36 | - | 25 |
| 40mm | 40 | - | 28 |
| 50mm | 50 | - | 30 |
| 43mm (1 1/2") | 43 | - | 27 |
| 56mm (2") | 56 | - | 30.5 |
| 75mm (2 1/2") | 75 | - | 25 |
| 82mm (3") | 82 | - | 26 |
| 110mm (4") | 110 | - | 40 |
| 160mm (6") | 160 | - | 60 |
| 200mm (8") | 200 | - | 61 |

### LEVEL INVERTER TAPER — Rubber Ring

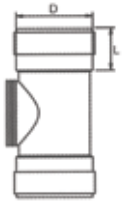



| Size | D | DI | L |
|---|---|---|---|
| 56X43mm (2X1$^{1/2}$") | 56 | 43 | 27 |
| 75X50mm | 75 | 50 | 40 |
| 82X56mm (3X2") | 82 | 56 | 43 |
| 110X56mm (4X2") | 110 | 56 | 43 |
| 110X75mm (4X2 1/2") | 110 | 75 | 48 |
| 110X82mm (4X3") | 110 | 82 | 48 |
| 160X110mm (6X4") | 160 | 110 | 58 |
| 200X160mm (8X6") | 200 | 160 | 60 |

### ACCESS PLUG & CAP — Rubber Ring


| Size | D | DI | L |
|---|---|---|---|
| 36mm (1 1/4") | - | 36.2 | - |
| 40mm | - | 40 | - |
| 50mm | - | 50 | - |
| 43mm (1 1/2") | - | 43 | - |
| 56mm (2") | - | 56 | - |
| 75mm (2 1/2") | - | 75 | - |
| 82mm (3") | - | 82 | - |
| 110mm (4") | - | 110 | - |
| 160mm (6") | - | 160 | - |
| 200mm (8") | - | 200 | - |

### ACCESS PIPE — Rubber Ring




| Size | D | DI | L |
|---|---|---|---|
| 75mm (2 1/2") | 75 | - | 25 |
| 82mm (3") | 82 | - | 26 |
| 110mm (4") | 110 | - | 40 |
| 160mm (6") | 160 | - | 42 |

# ABOVE GROUND UPVC SOIL & WASTE FITTINGS BS EN 1329

## (Supercedes BS 5255 & BS 4514)

### BOSS PIPE Female / Female — Rubber Ring

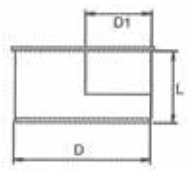
| Size | D | DI | L |
|---|---|---|---|
| 110mm (4") | 110 | - | 40 |
| 160mm (6") | 160 | - | 42 |

### BOSS PIPE Male / Female — Rubber Ring

| Size | D | DI | L |
|---|---|---|---|
| 110mm (4") | 110 | 110 | 40 |
| 160mm (6") | 160 | 160 | 42 |

### VENT COWL — Rubber Ring

| Size | D | DI | L |
|---|---|---|---|
| 50mm | 50 | - | - |
| 56mm (2") | 56 | - | - |
| 75mm (2 1/2") | 75 | - | - |
| 82mm (3") | 82 | - | - |
| 110mm (4") | 110 | - | - |
| 160mm (6") | 160 | - | - |

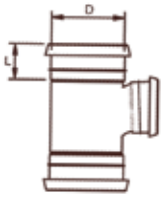


### REDUCER BUSH — Rubber Ring

| Size | D | DI | L |
|---|---|---|---|
| 50X40MM | 50 | 40 | 30 |
| 56X43mm (2X1 1/2") | 56 | 43 | 27 |
| 56X32mm | 56 | 32 | 27 |
| 75X50mm | 75 | 50 | 40 |
| 75X40mm | 75 | 40 | 40 |
| 82X56mm (3X2") | 82 | 56 | 43 |
| 110X56mm (4X2") | 110 | 56 | 48 |
| 110X75mm (4X2 1/2") | 110 | 75 | 48 |
| 110X82mm (4X3") | 110 | 82 | 48 |
| 160X110mm (6X4") | 160 | 110 | 58 |
| 160X82mm (6x3") | 160 | 82 | 58 |
| 160X75mm (6X2 1/2") | 160 | 75 | 58 |

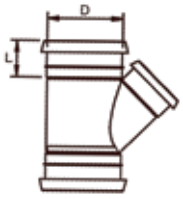
# ABOVE GROUND UPVC SOIL & WASTE FITTINGS BS EN 1329

## (Supercedes BS 5255 & BS 4514)



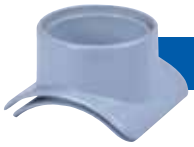
### REDUCER TEE — Rubber Ring

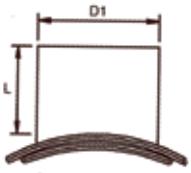
| Size | D | DI | L |
|---|---|---|---|
| 82X56mm (3X2") | 82 | - | 43 |
| 110X56mm (4X2") | 110 | - | 48 |
| 110X75mm (4X2 1/2") | 110 | - | 48 |
| 110X82mm (4X3") | 110 | - | 48 |
| 160X82mm (6X3") | 160 | - | 58 |
| 160X110mm (6X4") | 160 | - | 58 |



### REDUCER Y — Rubber Ring

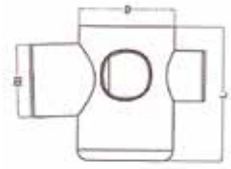
| Size | D | DI | L |
|---|---|---|---|
| 110X75mm (4X2 1/2") | 110 | - | 40 |
| 110X82mm (4X3") | 110 | - | 43 |
| 160X110mm (6X4") | 160 | - | 60 |





### PATCH BOSS ADAPTOR — Rubber Ring

| Size | D | DI | L |
|---|---|---|---|
| 110X56mm (4X2") | - | 56 | 31 |
| 110X43mm (4X1 1/2") | - | 43 | 21 |
| 160X56mm (6X2") | - | 56 | 58 |



### FLOOR TRAP — Rubber Ring

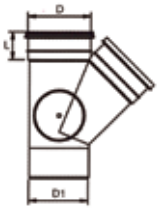
| Size | D | DI | L | Seal |
|---|---|---|---|---|
| 110X82X56mm (4X3X2″) | 110 | 82 / 56 | 135 | 50 |
| 110X82X43mm (4X3x1 1/2″) | 110 | 82 / 43 | 135 | 50 |
| 160X110X50mm | 160 | 110/50 | 171 | 70 |
| 110X75X50mm | 110 | 110/75 | 135 | 50 |

# ABOVE GROUND UPVC SOIL & WASTE FITTINGS BS EN 1329

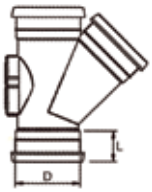
## (Supercedes BS 5255 & BS 4514)

UPVC Drainage Pipes are manufactured as per the following Dimensions:

| "Y" 45° Female / Female | | | Solvent |
|---|---|---|---|
| **Size** | **D** | **DI** | **L** |
| 36mm (1 1/4") | 36 | - | 18 |
| 40mm | 40 | - | 27 |
| 50mm | 50 | - | 31 |
| 43mm (1 1/2") | 43 | - | 26 |
| 56mm (2") | 56 | - | 28.5 |
| 75mm (2 1/2") | 75 | - | 45 |
| 82mm (3") | 82 | - | 48.5 |
| 110mm (4") | 110 | - | 51 |
| 160mm (6") | 160 | - | 60 |
| 200mm (8") | 200 | - | 61 |



| "Y" 45° Male / Female | | | Solvent |
|---|---|---|---|
| **Size** | **D** | **DI** | **L** |
| 36mm (1 1/4") | 36 | 36.2 | 18 |
| 40mm | 40 | 40 | 27 |
| 50mm | 50 | 50 | 31 |
| 43mm (1 1/2") | 43 | 43 | 26 |
| 56mm (2") | 56 | 56 | 28.5 |
| 75mm (2 1/2") | 75 | 75 | 45 |
| 82mm (3") | 82 | 82 | 48.5 |
| 110mm (4") | 110 | 110 | 51 |
| 160mm (6") | 160 | 160 | 60 |
| 200mm (8") | 200 | 200 | 61 |



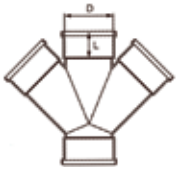
| "Y" 45° Female / Female Access Opening | | | Solvent |
|---|---|---|---|
| **Size** | **D** | **DI** | **L** |
| 75mm (2 1/2") | 75 | - | 45 |
| 82mm (3") | 82 | - | 48.5 |
| 110mm (4") | 110 | - | 51 |
| 160mm (6") | 160 | - | 60 |
| 200mm (8") | 200 | - | 61 |

# ABOVE GROUND UPVC SOIL & WASTE FITTINGS BS EN 1329

## (Supercedes BS 5255 & BS 4514)

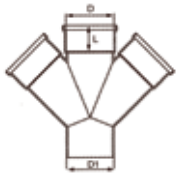
### "Y" 45° Male / Female Access Opening — Solvent

| Size | D | DI | L |
|---|---|---|---|
| 75mm (2 1/2") | 75 | 75 | 45 |
| 82mm (3") | 82 | 82 | 48.5 |
| 110mm (4") | 110 | 110 | 51 |
| 160mm (6") | 160 | 160 | 60 |
| 200mm (8") | 200 | 200 | 61 |



### DOUBLE "Y" 45° Female / Female — Solvent

| Size | D | DI | L |
|---|---|---|---|
| 82mm (3") | 82 | - | 48.5 |
| 110mm (4") | 110 | - | 51 |



### DOUBLE "Y" 45° Male / Female — Solvent

| Size | D | DI | L |
|---|---|---|---|
| 82mm (3") | 82 | 82 | 48.5 |
| 110mm (4") | 110 | 110 | 51 |

### TEE 87.5° Female / Female — Solvent

| Size | D | DI | L |
|---|---|---|---|
| 36mm (1 1/4") | 36 | - | 18 |
| 40mm | 40 | - | 27 |
| 50mm | 50 | - | 31 |
| 43mm (1 1/2") | 43 | - | 27 |
| 56mm (2") | 56 | - | 30.5 |
| 75mm (2 1/2") | 75 | - | 45 |
| 82mm (3") | 82 | - | 48.5 |
| 110mm (4") | 110 | - | 51 |
| 160mm (6") | 160 | - | 60 |
| 200mm (8") | 200 | - | 61 |

# ABOVE GROUND UPVC SOIL & WASTE FITTINGS BS EN 1329

## (Supercedes BS 5255 & BS 4514)

### TEE 87.5° Male / Female — Solvent

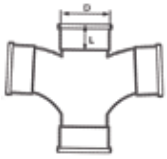
| Size | D | DI | L |
|---|---|---|---|
| 36mm (1 1/4") | 36 | 36.2 | 25 |
| 40mm | 40 | 40 | 27 |
| 50mm | 50 | 50 | 31 |
| 43mm (1 1/2") | 43 | 43 | 26 |
| 56mm (2") | 56 | 56 | 28.5 |
| 75mm (2 1/2") | 75 | 75 | 45 |
| 82mm (3") | 82 | 82 | 48.5 |
| 110mm (4") | 110 | 110 | 51 |
| 160mm (6") | 160 | 160 | 60 |
| 200mm (8") | 200 | 200 | 61 |

### TEE 87.5° Female / Female Access Opening — Solvent

| Size | D | DI | L |
|---|---|---|---|
| 75mm (2 1/2") | 75 | - | 45 |
| 82mm (3") | 82 | - | 48.5 |
| 110mm (4") | 110 | - | 51 |
| 160mm (6") | 160 | - | 60 |
| 200mm (8") | 200 | - | 61 |

### TEE 87.5° Male / Female Access Opening — Solvent

| Size | D | DI | L |
|---|---|---|---|
| 75mm (2 1/2") | 75 | 75 | 45 |
| 82mm (3") | 82 | 82 | 48.5 |
| 110mm (4") | 110 | 110 | 51 |
| 160mm (6") | 160 | 160 | 60 |
| 200mm (8") | 200 | 200 | 61 |

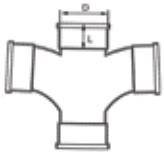


### DOUBLE TEE 87.5° Female / Female — Solvent

| Size | D | DI | L |
|---|---|---|---|
| 82mm (3") | 82 | - | 48.5 |
| 110mm (4") | 110 | - | 51 |

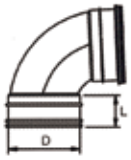
# ABOVE GROUND UPVC SOIL & WASTE FITTINGS BS EN 1329

## (Supercedes BS 5255 & BS 4514)



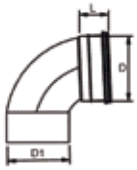
### DOUBLE TEE 87.5° Male / Female — Solvent

| Size | D | DI | L |
|---|---|---|---|
| 82mm (3") | 82 | 82 | 48.5 |
| 110mm (4") | 110 | 110 | 51 |



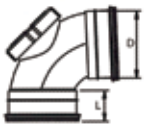
### BEND 87.5° Female / Female — Solvent

| Size | D | DI | L |
|---|---|---|---|
| 36mm (1 1/4") | 36 | - | 25 |
| 40mm | 40 | - | 27 |
| 50mm | 50 | - | 31 |
| 43mm (1 1/2") | 43 | - | 27 |
| 56mm (2") | 56 | - | 30.5 |
| 75mm (2 1/2") | 75 | - | 45 |
| 82mm (3") | 82 | - | 48.5 |
| 110mm (4") | 110 | - | 51 |
| 160mm (6") | 160 | - | 60 |
| 200mm (8") | 200 | - | 61 |



### BEND 87.5° Male / Female — Solvent

| Size | D | DI | L |
|---|---|---|---|
| 36mm (1 1/4") | 36 | 36.2 | 25 |
| 40mm | 40 | 40 | 27 |
| 50mm | 50 | 50 | 31 |
| 43mm (1 1/2") | 43 | 43 | 26 |
| 56mm (2") | 56 | 56 | 28.5 |
| 75mm (2 1/2") | 75 | 75 | 45 |
| 82mm (3") | 82 | 82 | 48.5 |
| 110mm (4") | 110 | 110 | 51 |
| 160mm (6") | 160 | 160 | 60 |
| 200mm (8") | 200 | 200 | 61 |

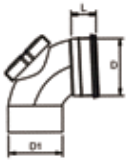


### BEND 87.5° Female / Female Access Opening — Solvent

| Size | D | DI | L |
|---|---|---|---|
| 75mm (2 1/2") | 75 | - | 45 |
| 82mm (3") | 82 | - | 48.5 |
| 110mm (4") | 110 | - | 51 |

# ABOVE GROUND UPVC SOIL & WASTE FITTINGS BS EN 1329

## (Supercedes BS 5255 & BS 4514)



| BEND 87.5° Male / Female Access Opening | | | Solvent |
|---|---|---|---|
| **Size** | **D** | **DI** | **L** |
| 75mm (2 1/2") | 75 | 75 | 45 |
| 82mm (3") | 82 | 82 | 48.5 |
| 110mm (4") | 110 | 110 | 51 |

| BEND 45° Female / Female | | | Solvent |
|---|---|---|---|
| **Size** | **D** | **DI** | **L** |
| 36mm (1 1/4") | 36 | - | 18 |
| 40mm | 40 | - | 27 |
| 50mm | 50 | - | 31 |
| 43mm (1 1/2") | 43 | - | 26 |
| 56mm (2") | 56 | - | 28.5 |
| 75mm (2 1/2") | 75 | - | 45 |
| 82mm (3") | 82 | - | 48.5 |
| 110mm (4") | 110 | - | 51 |
| 160mm (6") | 160 | - | 60 |
| 200mm (8") | 200 | - | 61 |

| BEND 45° Male / Female | | | Solvent |
|---|---|---|---|
| **Size** | **D** | **DI** | **L** |
| 36mm (1 1/4") | 36 | 36.2 | 25 |
| 40mm | 40 | 40 | 27 |
| 50mm | 50 | 50 | 31 |
| 43mm (1 1/2") | 43 | 43 | 26 |
| 56mm (2") | 56 | 56 | 28.5 |
| 75mm (2 1/2") | 75 | 75 | 45 |
| 82mm (3") | 82 | 82 | 48.5 |
| 110mm (4") | 110 | 110 | 51 |
| 160mm (6") | 160 | 160 | 60 |
| 200mm (8") | 200 | 200 | 61 |

| COUPLER DOUBLE SOCKET | | | Solvent |
|---|---|---|---|
| **Size** | **D** | **DI** | **L** |
| 36mm (1 1/4") | 36 | - | 18 |
| 40mm | 40 | - | 28 |
| 50mm | 50 | - | 30 |
| 43mm (1 1/2") | 43 | - | 27 |
| 56mm (2") | 56 | - | 30.5 |
| 75mm (2 1/2") | 75 | - | 45 |
| 82mm (3") | 82 | - | 48.5 |
| 110mm (4") | 110 | - | 51 |
| 160mm (6") | 160 | - | 60 |
| 200mm (8") | 200 | - | 61 |

# ABOVE GROUND UPVC SOIL & WASTE FITTINGS BS EN 1329

## (Supercedes BS 5255 & BS 4514)


### LEVEL INVERTER TAPER — Solvent

| Size | D | DI | L |
|---|---|---|---|
| 56X43mm (2X1 1/2") | 56 | 43 | 27 |
| 75X50mm | 75 | 50 | 40 |
| 82X56mm (3X2") | 82 | 56 | 43 |
| 110X56mm (4X2") | 110 | 56 | 43 |
| 110X75mm (4X2 1/2") | 110 | 75 | 48 |
| 110X82mm (4X3") | 110 | 82 | 48 |
| 160X110mm (6X4") | 160 | 110 | 58 |
| 200X160mm (8X6") | 200 | 160 | 60 |


### ACCESS PLUG & CAP — Solvent

| Size | D | DI | L |
|---|---|---|---|
| 36mm (1 1/4") | - | 36.2 | - |
| 40mm | - | 40 | - |
| 50mm | - | 50 | - |
| 43mm (1 1/2") | - | 43 | - |
| 56mm (2") | - | 56 | - |
| 75mm (2 1/2") | - | 75 | - |
| 82mm (3") | - | 82 | - |
| 110mm (4") | - | 110 | - |
| 160mm (6") | - | 160 | - |
| 200mm (8") | - | 200 | - |


### ACCESS PIPE — Solvent

| Size | D | DI | L |
|---|---|---|---|
| 75mm (2 1/2") | 75 | - | 40 |
| 82mm (3") | 82 | - | 43 |
| 110mm (4") | 110 | - | 48 |
| 160mm (6") | 160 | - | 58 |
| 200mm (8") | 200 | - | 61 |


### BOSS PIPE Female / Female — Solvent

| Size | D | DI | L |
|---|---|---|---|
| 110mm (4") | 110 | - | 51 |
| 160mm (6") | 160 | - | 60 |
| 200mm (8") | 200 | - | 61 |

# ABOVE GROUND UPVC SOIL & WASTE FITTINGS BS EN 1329

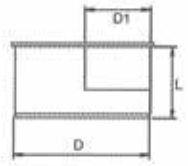
## (Supercedes BS 5255 & BS 4514)

### BOSS PIPE Male / Female — Solvent

| Size | D | DI | L |
|---|---|---|---|
| 110mm (4") | 110 | 110 | 51 |
| 160mm (6") | 160 | 160 | 60 |
| 200mm (8") | 200 | 200 | 61 |

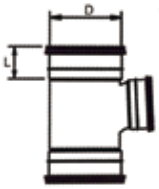
### VENT COWL — Solvent

| Size | D | DI | L |
|---|---|---|---|
| 50mm | 50 | - | - |
| 56mm (2") | 56 | - | - |
| 75mm (2 1/2") | 75 | - | - |
| 82mm (3") | 82 | - | - |
| 110mm (4") | 110 | - | - |
| 160mm (6") | 160 | - | - |
| 200mm (8") | 200 | - | - |




### REDUCER BUSH — Solvent

| Size | D | DI | L |
|---|---|---|---|
| 50x40mm | 50 | 40 | 30 |
| 56X43mm (2X1$^{1/2}$") | 56 | 43 | 27 |
| 56x32mm | 56 | 32 | 27 |
| 75X50mm | 75 | 50 | 40 |
| 75X40mm | 75 | 40 | 40 |
| 82X56mm (3X2") | 82 | 56 | 43 |
| 110X56mm (4X2") | 110 | 56 | 48 |
| 110X75mm (4X2 1/2") | 110 | 75 | 48 |
| 110X82mm (4X3") | 110 | 82 | 48 |
| 160X110mm (6X4") | 160 | 110 | 58 |
| 160X82mm (6X3") | 160 | 82 | 58 |
| 160X75mm (6x2 1/2") | 160 | 75 | 58 |




### REDUCER TEE — Solvent

| Size | D | DI | L |
|---|---|---|---|
| 82X56mm (3X2") | 82 | - | 43 |
| 110X56mm (4X2") | 110 | - | 48 |
| 110X75mm (4X2$^{1/2}$") | 110 | - | 48 |
| 110X82mm (4X3") | 110 | - | 48 |
| 160X82mm (6X3") | 160 | - | 58 |
| 160X110mm (6X4") | 160 | - | 58 |

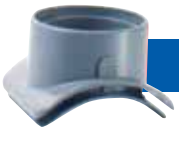
# ABOVE GROUND UPVC SOIL & WASTE FITTINGS BS EN 1329

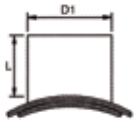
## (Supercedes BS 5255 & BS 4514)

### REDUCER "Y"

Solvent

| Size | D | DI | L |
|---|---|---|---|
| 110X75mm (4X2 1/2") | 110 | - | 40 |
| 110X82mm (4X3") | 110 | - | 43 |
| 160X110mm (6x4") | 160 | - | 60 |

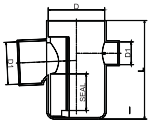




### PATCH BOSS ADAPTOR

Solvent

| Size | D | DI | L |
|---|---|---|---|
| 110X56mm (4X2") | 110 | 56 | 48 |
| 110X50mm | 110 | 50 | 48 |
| 160X56mm (6X2") | 160 | 56 | 58 |



### FLOOR TRAP

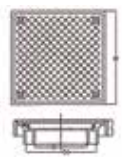
Solvent

| Size | D | DI | L | Seal |
|---|---|---|---|---|
| 110X82X56mm (4X3X2") | 110 | 82/56 | 162 / 182 | 50/70 |
| 110X82X43mm (4X3X1 1/2") | 110 | 82/43 | 162 / 182 | 50/70 |
| 110X75X50mm | 110 | 75/50 | 162 / 182 | 50 |

### FLOOR TILE & COVER

Solvent

| Size | D | DI | L |
|---|---|---|---|
| 110 mm | - | 110 | 12.5 |



### RODDING POINT

Solvent

| Size | D | DI | L |
|---|---|---|---|
| 110 mm | 110 / 82 | - | 21 / 21 |

## FEMALE BEND 90°

Solvent

| Size | D | DI | L |
|---|---|---|---|
| 43X1 1/2" | 43 | 1 1/2" BSP | 27 |
| 50X1 1/2" | 50 | 1 1/2" BSP | 31 |
| 56mm (2") | 56 | 2" BSP | 28.50 |

## FEMALE SOCKET

Solvent

| Size | D | DI | L |
|---|---|---|---|
| 43X1 1/2" | 43 | - | 27 |
| 50mm | 50 | - | 31 |
| 56mm (2") | 56 | - | 28.50 |

## End Plug

Solvent

| Size | D | DI | L |
|---|---|---|---|
| 50mm | 50 | - | 30 |
| 75mm (2 1/2") | 75 | - | 40 |
| 82mm (3") | 82 | - | 43 |
| 110mm (4") | 110 | - | 48 |

## End CAP

Solvent

| Size | D | DI | L |
|---|---|---|---|
| 36mm (1 1/4") | 36 | - | 18 |
| 40mm | 40 | - | 26 |
| 50mm | 50 | - | 30 |
| 56mm (2") | 56 | - | 27 |
| 75mm (2 1/2") | 75 | - | 40 |
| 82mm (3") | 82 | - | 43 |
| 110mm (4") | 110 | - | 48 |
| 160mm (6") | 160 | - | 58 |
| 200mm (8") | 200 | - | 60 |

## AC CONVERTABLE SOCKET

Solvent

| Size | D | DI | L |
|---|---|---|---|
| 43mmX1" | 43 | 33.5 | 21 |

## CONCENTRIC REDUCER BUSH

Solvent

| Size | D | DI | L |
|---|---|---|---|
| 43X36mm (1 1/2X1 1/4") | 43 | 36 | 21 |
| 50X32mm | 50 | 32 | 27 |
| 200X160mm (8X6") | 200 | 160 | 58 |

## DRAINAGE DESIGN PRINCIPLES

The European Standard EN 12056-2 has the status of a British Standard
Gravity drainage systems inside buildings.
The BS EN 12056 is made up of the following 5 parts

***Part 1: General and performance requirement***
***Part 2: Sanitary pipework ,layout and calculation***
***Part 3: Roof drainage, layout and calculation***
***Part 4: Wastewater lifting plants,layout ad calculation***
***Part 5: Installation and testing instructions for operation,maintenance and use***

Part 2 gives guidance on the minimum design requirement for internal building sanitary drainage system.
The Standard highlights four types of drainage system:

1. Single stack system with partly filled branch discharge pipes
   - Sanitary appliances connected to partly filled branch discharge pipes are designed with a filling degree of 0.5 (50 %) and are connected to a single discharge stack
2. Single discharge stack with small bore discharge branch pipes
   - Sanitary appliances are connected to small discharge pipes. The small bore discharge pipes are designed with a filling degree of 0.7 (70 %) and are connected to a single discharge stack
3. Single stack system with full bore branch discharge pipes
   - Sanitary appliances are connected to full bore discharge pipes. The full bore branch discharge pipes are designed with a filling degree of 1.0 (100 %) and each branch discharge pipe is separately connected to a single discharge stack
4. Separate discharge stack system
   - Drainage system type 1,2 and 3 may also be divided into black water stack serving WCs and Urinals,and a Grey water stack serving other appliances
     Double Stack - 110 mm Soil pipe & 110 mm Waste pipe
     Three Pipe System - 110 mm soil pipe / 110 mm vent pipe / 110 mm waste water
5. For Buildings less than 20 stories height,Appliances located on Ground Floor shall NOT be connected to vertical stack discharging at GR Level
6. For Buildings greater than 20 stories height,Appliances located on Ground Floor and 1st Floor, shall NOT be connected to vertical stack discharging at GR Level
7. For all bends that are at base of stack, provide a 45 or 90 Degree Long Radius type Bends.

## DRAINAGE PIPE'S STRUCTURAL DESIGN

The structural performance of u PVC pipes is assessed as the ability of the pipe to resist deformation under soil and traffic loads. The accepted long- term limit for deformation is 6 % of the vertical diameter,and is determined for the particular pipe according to its loading installation conditions.

## DRAINAGE PIPE'S FLEXIBILITY

The PVC pipes themselves are flexible. However ,where part of the pipe is embedded in concrete (e.g. at a manhole) an additional flexibility should be provided by the use of two R/R Sockets with 600 mm long rocker pipe piece in between ,placed very close to the concrete face,which will help offset the ground settlements around the civil structure in future.

The drainage pipes with R/R push fit joints , themselves will stand cold bending to a radius of 250 X pipes Dia ,as each R/R pipe joint can absorb 2 ½ Degree linear angular deflection in the line.

## VENTILATION SYSTEM

All drainage pipework system are full of air until an appliance is discharged ;once this occurs ,the air within the pipework fluctuates. These pressure fluctuations,if not balanced ,can adversely affect the water trap seals;therefore ,to limit pressure fluctuations,vent piping is traditionally employed.

Vent pipes from manholes and vertical stacks shall be extended 2 meters above the roof & the end of which shall be fitted with vent cowls.

*General guideline for the sizing of ventilating pipes and stack.*

| Size of branch discharge pipe or discharge stack dia "D" | Size of branch ventilating pipe of stack |
|---|---|
| Smaller than 75 mm Dia | 2/3 D (25 mm min) |
| Dia of 75 mm and above | ½ D |

## Rodding Eyes / Access Points

It is essential that adequate provision is made for the testing and maintenance of the above-ground drainage system. Suitable accessibility via access covers,plugs and caps should be provided to enable all traps,discharge pipes and stack to be tested,cleaned and cleared of any obstructions as and when necessary.
Access points must be air and water tight,quick and easy to remove & fully accessible to facilitate cleaning

### Rodding Eyes / Access points should be located:

- Access points should be carefully sited to allow the service entry for cleaning and testing
- At the base of all soil and waste stacks above the spill-over level of the highest connection on a branch run, typically 1200 mm above finished floor level
- At every change of direction,on vertical stacks and horizontal pipe runs
- At regular intervals on long horizontal runs typically
  - at 15m interval on pipework up to 110 mm
  - at 24 m intervals on pipework 160 mm and above
- where more than 1 WC is connected to a branch
- All vertical stack shall be provided with Rodding Eye at junction on every floor
- The size of the Rodding points within a building should generally be the same size as the pipework, up to 160 mm & for larger pipework 160 mm Rodding point should be adequate.

## AIR TEST

- The length of drain or sewer to be tested including any connections should be effectively plugged.
- Air is then pumped into the test length by suitable means (e.g. hand pump) until pressure of 100 mm of water in indicated on the manometer connected to the system.
- A suitable time should be allowed for stabilization of air temperature.
- The air pressure should not fall below 75 mm of water during a period of five minutes,without further pumping

## WATER TEST

- Suitable strutted testing plugs are inserted at the lower end of the drain or sewer and at the head of any connections.
- A suitable bend together with a vertical length of pipe Is fitted at the head of the sewer or drain to provide the necessary test head. The system is then filled with water
- A test pressure of 1.5 m head above the crown of the pipe is applied at the higher end of the drain or sewer ensuring that the resultant head at the lower end does not exceed 4 m. Where gradient are steep,it may be necessary to test in sections to avoid exceeding this figure.
- The sewer or drain under test should be left filled with water for 1-2 hours.
- The loss of water over a period of 30 minutes should be measured,by adding known quantities of water every 10 minutes to maintain the original level in the stand pipe. The loss of water should not exceed the equivalent 1 litre / hour / linear meter / meter of nominal diameter. The source of any leakage should be visible and the defective part of the work should be removed and made good.
- During the water test,strutting precautions should be taken to prevent any movement of the drain or sewer.

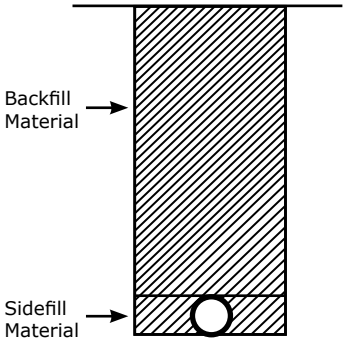
## DRAINAGE PIPES INSTALLATIONS BELOW GROUND

### TRENCH PREPARATION

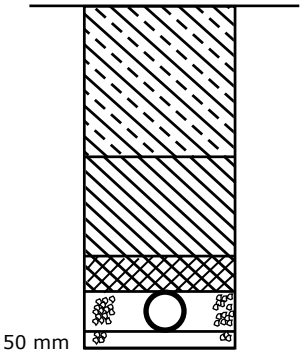
The trench should not be excavated too far in advance of pipe laying and should be back filled as soon as possible. Trench width should be as narrow as practicable but not less than the pipe OD+300 mm to enable proper compaction of sidefill. Trench sides should be correctly supported.

**Pipes laid at depths greater than 900 mm cover in roads, 600 mm in fields**

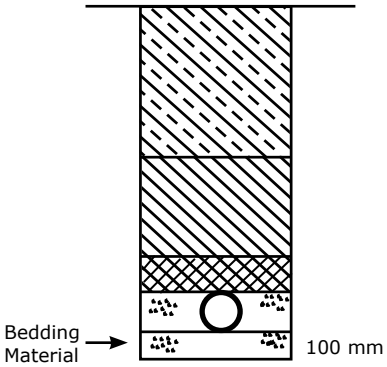
Pipes laid in as dug subsoil suitable as bedding material




Pipes laid in subsoil unsuitable as bedding material which does not puddle when walked on 110 and 160 mm dia only

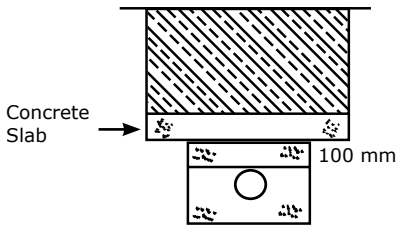



Pipes laid in subsoil unsuitable as bedding material




Suitable material – granular material in accordance with BS5955 Part 6 : 1980 Appendix A maximum particle size -10 mm (110 dia), 14 mm (160 dia), 20 mm (200 dia +)

**Pipes laid at depths less than 900 mm cover in roads,600 mm in fields**




Note: Concrete surround,pipes may be protected at shallow depths using a 150 mm thick concrete surround with allowance for flexibility at pipe joints using compressible boards which should be equal in size to the concrete cross section

As dug back fill / side-fill maximum particle size 10 mm (110 dia) 14 mm (160 mm) 20 mm (200 mm dia and over)

10 mm single – sized aggregate (complying with BS 882)

NB - Where back fill above pipe contains stones greater than 40 mm or cover to pipe exceeds 2m in poor ground extend the bedding material to 100 mm above the pipe crown

300 mm back fill free from stones greater than 40 mm(unless granular material extends 100 mm above pipe - see above)

As dug back fill

| Granular material in accordance with BS5955 part 6 1980 : table 2 | |
|---|---|
| Pipe dia (mm) | Material (complying with BS 882) mm |
| 110 | 10 , single sized |
| 160 | 10, 14 single sized, 14-5 graded |
| 200 | 10, 14, 20 single sized, 14 -5, 20-5 graded |

## RECOMMENDED CONSTRUCTION AND BEDDING

*The following recommendations should be adopted when laying in the situations listed*

| LOCATION | DEPTH TO CROWN OF PIPE | BEDDING MATERIAL | BEDDING DETAILS |
|---|---|---|---|
| Fields Gardens (elsewhere than under roads) | 0.6 meters to 6.0 meters | Excavated material with C.F. Value not greater than 0.3 or Imported granular material | As Fig 1. Fig 2 ,or Fig 3 |
| Fields Gardens (elsewhere than under roads) | Less than 0.6 meters | Construction as detailed in Fig.4 | Fig.4 |
| Under Roads | Less than 0.9 meters (below final surface) | Construction as detailed in Fig.4 | Fig.4 |
| Under Roads | 0.9 meters to 1.2 meters (below final surface) | Excavated material with C.F. Value not greater than 0.15 or Imported granular material | As Fig 1. Fig 2 ,or Fig 3 |
| Under Roads | 1.2 meters to 6.0 meters (below final surface) | Excavated material with C.F. Value not greater than 0.3 or Imported granular material | As Fig 1. Fig 2 ,or Fig 3 |

These requirements apply to trenches in stable soils. In less stable soils, i.e. soft clays , silts or fine sands,it may be desirable to double the thickness of granular bedding and surround given in Figures 1 to 3 and extra care should be taken in compaction.

## AVERAGE QUANTITIES OF SOLVENT CEMENT, CLEANER AND LUBRICANT REQUIRED FOR U PVC PIPE JOINTS USING 500 ML CONTAINERS

| SOLVENT CEMENT | | SOLVENT CLEANER | | LUBRICANT | |
|---|---|---|---|---|---|
| SIZE OF PIPE | QTY (500 ML) | SIZE OF PIPE | QTY (500 ML) | SIZE OF PIPE | QTY (500 ML) |
| 1 1/4" / 36 mm | 86 | 1 1/4" / 36 mm | 57.35 | 1 1/4" / 36 mm | 0 |
| 1 1/2" / 43 mm | 62 | 1 1/2" / 43 mm | 41.35 | 1 1/2" / 43 mm | 0 |
| 2" / 56 mm | 38 | 2" / 56 mm | 25.35 | 2" / 56 mm | 0 |
| 2 1/2" / 75 mm | 24 | 2 1/2" / 75 mm | 16 | 2 1/2" / 75 mm | 0 |
| 3" / 82 mm | 17 | 3" / 82 mm | 11.35 | 3" / 82 mm | 44 |
| 4" / 110 mm | 10 | 4" / 110 mm | 6.7 | 4" / 110 mm | 39 |
| 6" / 160 mm | 4.5 | 6" / 160 mm | 3 | 6" / 160 mm | 22 |
| 8" / 200 mm | 2.6 | 8" / 200 mm | 1.75 | 8" / 200 mm | 16 |
| 10" / 250 mm | 1.7 | 10" / 250 mm | 1.15 | 10" / 250 mm | 11 |
| 12" / 315 mm | 1.2 | 12" / 315 mm | 0.8 | 12" / 315 mm | 9 |
| 16" / 400 mm | 0.7 | 16" / 400 mm | 0.5 | 16" / 400 mm | 6 |

### Typical Appliances outlet sizes

| | | |
|---|---|---|
| WC | - | 110 mm / 4 “ |
| W H Basin | - | 36 mm / 1 1/4” |
| Kitchen Sink | - | 43 mm / 1 1/2” |
| Floor Drain | - | 82 mm / 3” |
| Bath Tub / Shower | - | 42 mm / 1 1/2” |
| Washing Machine | - | 43 mm / 1 1/2” |
| Balcony Drain | - | 56 mm / 2” |

### Stack Sizes shall be as follows Above ( G+7) story Bldgs

| | | |
|---|---|---|
| Soil Pipes | - | 160 mm |
| Waste Pipes | - | 160 mm |
| Vent Pipes | - | 110 mm |
| Rain Water Pipes | - | 110 mm |
| Balcony Drain Pipes | - | 56 mm |
| A/C Drain Pipes | - | 36 mm |

### Stack Sizes shall be as follows upto ( G+7) story Bldgs

| | | |
|---|---|---|
| Soil Pipes | - | 110 mm |
| Waste Pipes | - | 110 mm |
| Vent Pipes | - | 82 mm |
| Rain Water Pipes | - | 110 mm |
| Balcony Drain Pipes | - | 56 mm |
| A/C Drain Pipes | - | 36 mm |

## RAIN WATER DRAINAGE

The drainage of Roofs & Paved areas shall be according to BS 6367

Rain water pipes are not to be connected to sewer lines,they shall free discharge above ground

All O.T.S. S (4x4 M & less ) should have floor traps for rainwater connected to the nearest Gully traps or Waste stack.

Other O.T.S. S shall have RW drain for rain water which is free discharge to outside

For all air well, Access doors should be provided at the lower level of well

## TRAPS

Traps should be designed to ensure that

- deposits do not accumulate
- they are fully accessible,and capable of being removed / dismantled
- they are attached immediately beneath its outlet, or as close as possible
- there is no reduction in cross - sectional area
- they are self cleansing
- there is no more than one-trap on the discharge pipe work from any pipework

Minimum depth of trap seals

- 75 mm - WHB, SINK, BIDETS , FLOOR GULLY, URINAL, WM, DW
- 50 mm - SHOWER, BATH, WC.

## THERMAL EXPANSION / MOVEMENT

All pipework materials will expand and contract with changes in temperature,both from atmospheric ambient temperature and from the temperature of the waste discharge through the pipework.

• It is necessary to Calculate the theoretical thermal movement distances to allow the pipework system to be designed to accommodate expansion, and Determine where the expansion joints are required and anchor these location to the structure. The remaining pipework must be adequately supported and allowed to move freely.

### *Change in pipe length can be calculated from the following formula*

$$\Delta L = \alpha \times L \times \Delta T$$

Where

**Δ L = Change in length (mm)**
**α = Coefficient of linear expansion = 0.08 mm/M/Deg.C**
**Δ T = Change in temperature ( Deg. C)**
**L = Total Pipe length in Meters**

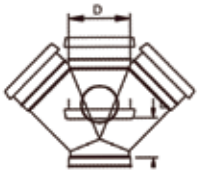
## SOIL AND TRAFFIC LOAD (KN/M)

| Type of Load | Pipe diameter (mm) | | | | | |
|---|---|---|---|---|---|---|
| | **110** | **160** | **200** | **250** | **315** | **400** |
| **Depth of Cover 0.9m** | | | | | | |
| Wide Trench Soil | 2.0 | 2.9 | 3.6 | 4.5 | 5.7 | 7.2 |
| Main Traffic | 11.4 | 14.3 | 18.2 | 23.8 | 28.1 | 35.5 |
| Light Traffic | 9.2 | 11.5 | 14.7 | 19.1 | 22.6 | 28.6 |
| Field Traffic | 5.3 | 6.7 | 9.0 | 14.0 | 14.7 | 16.7 |
| **Depth of Cover 1.2m** | | | | | | |
| Wide Trench Soil | 2.6 | 3.8 | 4.8 | 6 | 7.6 | 9.6 |
| Main Traffic | 8.6 | 10.9 | 14.0 | 18.2 | 21.4 | 27.1 |
| Light Traffic | 6.2 | 7.8 | 10.0 | 12.9 | 15.2 | 19.3 |
| Field Traffic | 3.6 | 4.6 | 5.8 | 7.6 | 8.9 | 11.2 |
| **Depth of Cover 1.8m** | | | | | | |
| Wide Trench Soil | 4.0 | 5.8 | 7.2 | 9.0 | 11.3 | 14.4 |
| Main Traffic | 5.9 | 7.5 | 9.7 | 12.6 | 14.9 | 18.9 |
| Light Traffic | 3.3 | 4.1 | 5.2 | 6.8 | 8.1 | 10.3 |
| Field Traffic | 1.9 | 2.4 | 3.0 | 4.0 | 4.7 | 6.0 |
| **Depth of Cover 2.4m** | | | | | | |
| Wide Trench Soil | 5.3 | 7.7 | 9.6 | 12.0 | 15.1 | 19.2 |
| Main Traffic | 4.6 | 5.7 | 7.3 | 9.6 | 11.4 | 14.5 |
| Light Traffic | 1.9 | 2.5 | 3.2 | 4.1 | 4.9 | 6.3 |
| Field Traffic | 1.2 | 1.5 | 1.9 | 2.4 | 2.8 | 3.6 |
| **Depth of Cover 3.0m** | | | | | | |
| Wide Trench Soil | 6.6 | 9.6 | 12.0 | 15.0 | 18.9 | 24.0 |
| Main Traffic | 3.6 | 4.5 | 5.8 | 7.5 | 8.9 | 11.2 |
| Light Traffic | 1.3 | 1.7 | 2.2 | 2.9 | 3.4 | 4.2 |
| Field Traffic | 0.7 | 1.0 | 1.3 | 1.7 | 1.9 | 2.3 |
| **Depth of Cover 4.0m** | | | | | | |
| Wide Trench Soil | 8.8 | 12.8 | 16.0 | 20.0 | 25.1 | 32.0 |
| Main Traffic | 2.5 | 3.2 | 4.2 | 5.4 | 6.4 | 8.0 |
| Light Traffic | 0.8 | 0.1 | 1.4 | 1.7 | 2.0 | 2.5 |
| Field Traffic | 0.4 | 0.6 | 0.7 | 1.0 | 1.1 | 1.4 |
| **Depth of Cover 4.9m** | | | | | | |
| Wide Trench Soil | 10.8 | 15.7 | 19.6 | 24.5 | 30.9 | 39.2 |
| Main Traffic | 1.9 | 2.5 | 3.2 | 4.0 | 4.7 | 5.9 |
| Light Traffic | 0.5 | 0.7 | 0.9 | 1.2 | 1.3 | 1.7 |
| Field Traffic | 0.3 | 0.4 | 0.4 | 0.7 | 0.8 | 1.0 |
| **Depth of Cover 6.1m** | | | | | | |
| Wide Trench Soil | 13.4 | 19.5 | 24.4 | 30.5 | 38.4 | 48.8 |
| Main Traffic | 1.3 | 1.7 | 2.2 | 2.7 | 3.2 | 4.1 |
| Light Traffic | 0.3 | 0.5 | 0.6 | 0.7 | 0.8 | 1.1 |
| Field Traffic | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 |

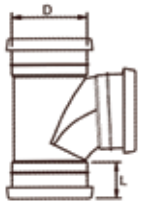
# BELOW GROUND UPVC DRAINAGE PIPES BS EN 1401

## (Supercedes BS 4660 & BS 5481)

| "Y" 45° Male / Female & Female / Female | | | Rubber Ring |
|---|---|---|---|
| **Size** | **D** | **DI** | **L** |
| 110mm (4") | 110 | - | 40 |
| 160mm (6") | 160 | - | 60 |
| 200mm (8") | 200 | - | 61 |

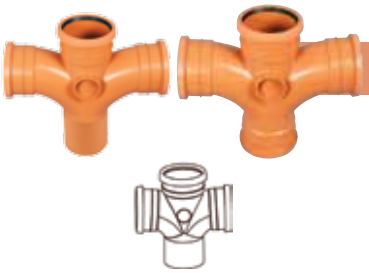


| DOUBLE "Y"45° Male / Female & Female / Female | | | Rubber Ring |
|---|---|---|---|
| **Size** | **D** | **DI** | **L** |
| 110mm (4") | 110 | - | 40 |



| TEE 87.5° Male / Female & Female / Female | | | Rubber Ring |
|---|---|---|---|
| **Size** | **D** | **DI** | **L** |
| 110mm (4") | 110 | - | 40 |
| 160mm (6") | 160 | - | 60 |
| 200mm (8") | 200 | - | 61 |

| P-TRAP Solvent Type | | | Solvent |
|---|---|---|---|
| **Size** | **D** | **DI** | **L** |
| 110mm (4") | 110 | 110 | 48 |



## DOUBLE TEE 87.5° Male / Female & Female / Female — Rubber Ring

| Size | D | DI | L |
|---|---|---|---|
| 110mm (4") | 110 | 110 | 40 |



## BEND 87.5° Male / Female & Female / Female — Rubber Ring

| Size | D | DI | L |
|---|---|---|---|
| 110mm (4") | 110 | - | 40 |
| 160mm (6") | 160 | - | 60 |
| 200mm (8") | 200 | - | 61 |

## BEND 45° Male / Female & Female / Female — Rubber Ring

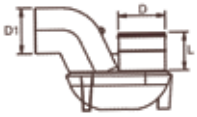
| Size | D | DI | L |
|---|---|---|---|
| 110mm (4") | 110 | - | 40 |
| 160mm (6") | 160 | - | 60 |
| 200mm (8") | 200 | - | 61 |

## COUPLER Female / Female — Rubber Ring

| Size | D | DI | L |
|---|---|---|---|
| 110mm (4") | 110 | - | 40 |
| 160mm (6") | 160 | - | 60 |
| 200mm (8") | 200 | - | 61 |

## P-TRAP — Rubber Ring

| Size | D | DI | L |
|---|---|---|---|
| 110mm (4") | 110 | 110 | 85 |

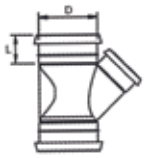


# BELOW GROUND UPVC DRAINAGE PIPES BS EN 1401

## (Supercedes BS 4660 & BS 5481)

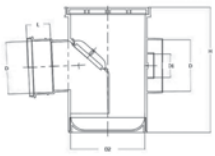
### REDUCER Y — Rubber Ring

| Size | D | DI | L |
|---|---|---|---|
| 110X75mm (4X2 1/2") | 110 | - | 40 |
| 110X82mm (4X3") | 110 | - | 43 |
| 160X110mm (6X4") | 200 | - | 60 |



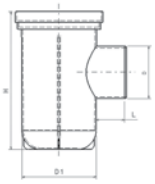
### 160 X110 DIA BOTTLE GULLY TRAP WITH OPTIONAL BACK INLETS & CIRCULAR GRID — Rubber Ring

| D | D1 | D2 | H | L |
|---|---|---|---|---|
| 110 | 50 | 160 | 268 | 51 |



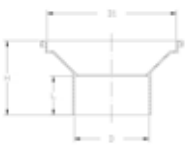
### 160 X110 DIA BOTTLE GULLY TRAP, ROUND BOTTOM & CIRCULAR GRID

| D | D1 | H | L |
|---|---|---|---|
| 110 | 160 | 290 | 61.5 |



### 110 DIA ROUND HOPPER WITH GRID

| D | D1 | H | L |
|---|---|---|---|
| 110 | 190 | 110 | 45 |



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Jebel Ali
PO Box 31550
Dubai
United Arab Emirates

Holds Certificate No: **FM 51169**

and operates a Quality Management System which complies with the requirements of ISO 9001:2008 for the following scope:

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For and on behalf of BSI: Frank Lee, EMEA Compliance & Risk Director

Original Registration Date: 07/07/1999 Effective Date: 30/10/2015
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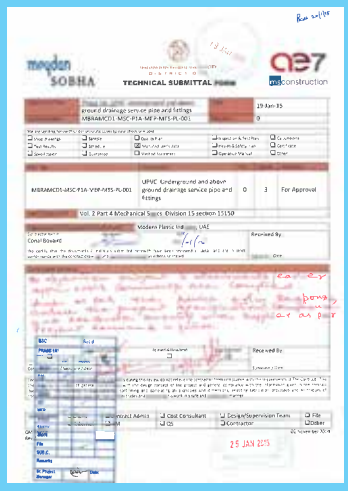
Witnessing Report



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MATERIAL SUBMITTAL APPROVAL REQUEST

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