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## MODERN PLASTIC INDUSTRY L.L.C



CPVC PRESSURE PIPES \& FITTINGS


Reliability, Quality and Value


## P R O F I L E

## Introduction

Modern Plastic Industry LLC is a part of AL SHIRAWI GROUP OF COMPANIES which is one of the larges and most diversified business conglomerates in the Arabian Gulf. From its inception in 1971 as a tradin and contracting company, the Group has broadened it's 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 manufacuring of CPVC Pipes and Fittings in the UAE. Today Modern Plastic has a wide range of PP Compression fittings and SWR Drainage, High Pressure UPVC \& CPVC Pipes \& Fittings.

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

## State-of-the-art facility

MPI CPVC Pipes and Fittings are manufactured in a state-of-the-art facility at Dubai Investment Park with the state-of-the-art Microprocessor based Injection Moulding Machines and High Quality Precision Moulds for Fittings 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 need of the market.

## Quality Control

As the CPVC Pipe and Fitting systems are specially designed to meet the harsh climate conditions of the Gulf region, MPI places emphasis on Quality, Reliability and Economy. Strict-in-house Quality Contro is backed by testing through independent laboratories of international repute to certify the quality of pipes and fittings. MPl places great emphasis on customer satisfaction through quality products. The company's operational excellence is evident through its established Quality Management Systems, which complies with the ISO 9001:2008 standard, certified by Bristish Standards Institute (BSI) UK. Also some of the company's product have been awarded the prestigious Kite Mark Certification of BSI, UK.

## In-House Quality Control

MPl's products are tested to maintain the quality level in the permissible standard tolerances. We perform he tests as per relevant international standards (DIN, ISO) and acceptance sampling procedures for production quality control and lot testing are done during all production operations

The following quality control tests are performed in our in-house lab.

Physical Test

- Dimensional Check
- Pressure Test
-Heat Reversion test / Effect on Heating Tes
- Vicat Softening Temperature Test
- Impact Test

Apart from this, our products are being tested / assessed by BSI / other certification bodies on a regula basis

## A Complete Solution

MPI has now introduced a complete range of CPVC Pipes and Fittings sizes from 20 mm to 160 mm conforming to DIN 8079 / 8080 ; ISO 15877-2 ; ISO 15877-3.

MPI's products are manufactured par excellence to the international standards and ensure a complete solution of Piping systems for hot and cold water applications

## Global Presence

MPI has been the leader in the Gulf market mainly because it can offer the widest range of CPVC 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 market it's range of products in the GCC region, the Middle East, Africa, Europe and the Asian subcontinent.

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## TECHNICAL SPECIFICATION

## CPVC PIPES AND FITTINGS

## Description

"ATLAS" Pipes and Fittings are the "CPVC (Chlorinated PolyVinyl Chloride) Pipes and Fittings System" for cold and hot water distribution precisely designed for solvent welding jointing.

## Brand \& Marking

"ATLAS" is a registered brand name of "Modern Plastic Industry LLC" within United Arab Emirates for all CPVC Pipes and Fittings manufactured by MPI. All Pipes and Fittings are marked / engraved with brand name, size, category and standard

## Standards

Millimeter Series (DIN Standards)

- CPVC Pipes: DIN 8079 / 8080 ; ISO 15877-2.
- CPVC Fittings: ISO 15877-3.
- Threaded joints: ISO 7-1.


## Working Pressure

All CPVC Pipes and Fittings depending upon the standards are made for permissible continious working pressure PN 16 ; PN 20 and PN 25.

## Types and Ranges

## CPVC Fittings:

Elbow $90^{\circ}$ | Female Elbow $90^{\circ}$ | Elbow $45^{\circ} \mid$ Tee | Female Tee | Reducing Tee | Reducing Female Tee End Cap Plain | Male Thread Adaptor | Female Socket Adaptor | Female Slip Adaptor I Socket Reducer Bush Wye $45^{\circ}$ | Male Adaptor with Brass insert | Female Socket Adaptor with Brass insert | Female Elbow with Brass insert I Female Tee with Brass insert.

CPVC Range:
CPVC Pipes and Fittings are available in Millimeter sizes from 20 mm to 160 mm .

## Raw Material

The raw material used is $100 \%$ CPVC virgin compounded material.

## Appearance

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

## Colour

The colour of the Pipes and Fittings are Cream for DIN Standards.
Effective Length of Pipes
All pipes are manufactured in 3meter / 4meter lengths or as per customer's requirement.

## General Physical Properties of CPVC

| S. No | Characteristics | Value |
| :---: | :---: | :---: |
| 1 | Specific Gravity | 1.5 |
| 2 | Thermal Conductivity | $0.13 \mathrm{~K} \mathrm{CAL} \mathrm{CM} \mathrm{H}{ }^{\circ} \mathrm{C}$ |
| 3 | Specific Heat | $0.25 \mathrm{~K} \mathrm{CAL} / \mathrm{KG} /{ }^{\circ} \mathrm{C}$ |
| 4 | Flammability | CPVC is self-extinguishing |
| 5 | Tensile Strength | $550 \mathrm{Kg} / \mathrm{Sq} \mathrm{cm} \mathrm{at} 20^{\circ} \mathrm{C}$ |
| 6 | Vicat Softening Temperature | $>103^{\circ} \mathrm{C}$ |

## Chemical Resistance

CPVC pressure pipe systems are suitable to be used in a number of acids, alkalies, salts and solvents hat are mixed with water
for more details about specific chemical, please contact the manufacturer.


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## 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.
-The maximum stack should be 7 layers high under normal conditions and 6 layers high in hot conditions.

- 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
- Direct exposure to sunlight (UV rays) can affect the pipes and fittings, causing decolouration and deterioration.
- It is recommended that the pipes should not be exposed to direct sunlight and if kept in open for longer periods of direct sunlight, it shuld be covered by opaque sheets.
While storing socketed pipes, it is recommended that alternate layers should have the sockets in the opposite direction.


## Handling

Reasonable care should be taken while handling of pipes. During unloading from vehicles, pipes should not be dropped mishandled from the vehicle.

- Pipes should never be dragged along hard surfaces. In case of mechanical lifting, avoid using metal chains and hooks in direct contact with the pipes. It is recommneded to provide protected slings and padded supports.


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## TRANSPORATION

- Generally, CPVC 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 diameters pipes on top
- The pipes should be loaded in such a way that the overhang should be less than a meter


## Recommendation for Solvent Cement Jointing of CPVC Fittings

> The socket (Fitting) and spigot (Pipe) to be jointed shall be thoroughly inspected for any damage Proper attention shall be given to spigot chamfer and socket
> The spigot insertion depth shall be measured as the depth from the mouth to the shoulder of the socket. The spigot shall be marked accordingly with marker.
> The mating area of spigot and socket shall be throughly cleaned
Lightly roughen the mating surface of the spigot and socket using clean emery cloth or medium glass paper
> Thoroughly clean again the mating surface and ensure that all mating surfaces are clean and completely dry.
> Apply uniform coat of Primar then solvent cement to the spigot and socket mating surfaces
> Immediately following cement application ensure that the pipe is slowly anchored and push the spigot fully in the socket without turning the pipe. The spigot shall be inserted with a steady continuous motion and held in place for 20 seconds. Remove the excess cement from around the mouth of the socket.
Leave the joint undisturbed for five minutes and then handle with reasonable care.
> The length of drying period before the joint may be subjected to testing or operating pressure depends on the ambient temperature and the tolerances. As a general rule, for temperature not exceeding ambient, allow at least fifteen hours if the test pressure is 15 bar between completing the last joint and carrying out the pressure test. If the piping is to be tested only at operating pressure, e.g. after modification or repairs, then a simple rule is that 1 hour's waiting time for each bar of operationg pressure.

## Safety notes for Solvent Cement

> Solvent cement is flammable and shall be used in well ventilated conditions
> The solvent in the cement evaporates quickly, so it is recommended to close the tin / container immediately after use.
> Avoid cleaning fluid be mixed with solvent cement
> Don't use brush on which solvent cement has previously hardened.
> Solvent cement spilled on the pipe surface should be removed immediately.

| Temperature ( ${ }^{\circ} \mathrm{C}$ ) | Years of service | Pipe Series |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  | PN 16 (S 6.3) | PN 20 (S 5) | PN 25 (S4) |
| 10 | $\begin{gathered} 1 \\ 5 \\ 10 \\ 25 \\ 50 \end{gathered}$ | $\begin{aligned} & 21.2 \\ & 19.9 \\ & 19.4 \\ & 18.7 \\ & 18.3 \end{aligned}$ | $\begin{aligned} & 26.6 \\ & 25.0 \\ & 24.4 \\ & 23.6 \\ & 23.0 \end{aligned}$ | $\begin{aligned} & 33.5 \\ & 31.5 \\ & 30.7 \\ & 29.7 \\ & 28.9 \end{aligned}$ |
| 20 | $\begin{gathered} 1 \\ 5 \\ 10 \\ 25 \\ 50 \end{gathered}$ | $\begin{aligned} & 18.8 \\ & 17.5 \\ & 17.0 \\ & 16.4 \\ & 16.0 \end{aligned}$ | $\begin{aligned} & 23.6 \\ & 22.1 \\ & 21.4 \\ & 20.6 \\ & 20.0 \end{aligned}$ | $\begin{aligned} & 29.7 \\ & 27.8 \\ & 27.0 \\ & 26.0 \\ & 24.5 \end{aligned}$ |
| 30 | $\begin{gathered} 1 \\ 5 \\ 10 \\ 25 \\ 50 \end{gathered}$ | $\begin{aligned} & 16.3 \\ & 15.2 \\ & 14.7 \\ & 14.1 \\ & 13.6 \end{aligned}$ | $\begin{aligned} & 20.5 \\ & 19.1 \\ & 18.5 \\ & 17.7 \\ & 17.1 \end{aligned}$ | $\begin{aligned} & 25.9 \\ & 24.0 \\ & 23.2 \\ & 22.3 \\ & 21.6 \end{aligned}$ |
| 40 | $\begin{gathered} 1 \\ 5 \\ 10 \\ 25 \\ 50 \end{gathered}$ | $\begin{aligned} & 13.9 \\ & 12.9 \\ & 12.3 \\ & 11.7 \\ & 11.3 \end{aligned}$ | $\begin{aligned} & 17.5 \\ & 16.1 \\ & 15.5 \\ & 14.8 \\ & 14.2 \end{aligned}$ | $\begin{aligned} & 22.0 \\ & 20.2 \\ & 19.5 \\ & 18.6 \\ & 17.9 \end{aligned}$ |
| 50 | $\begin{gathered} 1 \\ 5 \\ 10 \\ 25 \\ 50 \end{gathered}$ | $\begin{aligned} & 11.5 \\ & 10.4 \\ & 10.0 \\ & 9.5 \\ & 9.1 \end{aligned}$ | $\begin{aligned} & 14.4 \\ & 13.1 \\ & 12.6 \\ & 11.9 \\ & 11.5 \end{aligned}$ | $\begin{aligned} & 18.1 \\ & 16.5 \\ & 15.9 \\ & 15.0 \\ & 14.4 \end{aligned}$ |
| 60 | $\begin{gathered} 1 \\ 5 \\ 10 \\ 25 \\ 50 \end{gathered}$ | $\begin{aligned} & 9.1 \\ & 8.2 \\ & 7.8 \\ & 7.3 \\ & 7.0 \end{aligned}$ | $\begin{gathered} 11.4 \\ 10.3 \\ 9.8 \\ 7.3 \\ 7.0 \end{gathered}$ | $\begin{aligned} & 14.4 \\ & 12.9 \\ & 12.4 \\ & 11.6 \\ & 11.4 \end{aligned}$ |
| 70 | $\begin{gathered} 1 \\ 5 \\ 10 \\ 20 \end{gathered}$ | $\begin{aligned} & 6.8 \\ & 6.1 \\ & 5.7 \\ & 5.4 \end{aligned}$ | $\begin{aligned} & 8.6 \\ & 7.6 \\ & 7.2 \\ & 6.8 \end{aligned}$ | $\begin{aligned} & 10.8 \\ & 9.6 \\ & 9.1 \\ & 8.5 \end{aligned}$ |
| 80 | $\begin{aligned} & 1 \\ & 5 \end{aligned}$ | $\begin{aligned} & 4.8 \\ & 4.2 \end{aligned}$ | $\begin{aligned} & 6.0 \\ & 5.2 \end{aligned}$ | $\begin{aligned} & 7.6 \\ & 6.6 \end{aligned}$ |
| 95 | 1 | 2.3 | 2.9 | 3.6 |

## CPVC - BENEFITS AND APPLICATION

The boom in the building and construction industry, especially in the housing and commercial building sector has fueled high demand for cost effective, reliable, quality piping and plumbing systems. The hoice of piping systems for water utilities is based on overall long term value. They must deliver on colts, reliability, versatility, environmental effect, drinking water mit位s are the ideal choice, because they are corrosion resis resistant to bacterial growth and environment friendly, besides a host of other user friend features.

## Aesthetic, extremely easy, cost effective to handle and install

CPVC pipes are lightweight, which means low shipping costs along with faster, safer and easier handling, cutting and installation, reducing overall labor costs. Installation is easy by fast cold welding, which is cost effective as no electric/heat source is required. Simple cutter, chamfering tool and CPVC solvent are the only requirements for $100 \%$ leak proof jointing.

## Excellent resistance to chemicals, corrosion and abrasion

Does not breakdown ever under harshest water conditions and aggressive service conditions like low pH water, coastal salt air exposure and corrosive soils. It can even be buried directly under concrete slabs with no chemical interaction with concrete

## Most suitable for carrying drinking water

Retards bacterial growth, which keep the water quality healthy and very good. They are suitable even for aggressive water pH levels of less than 6.5 .

## Smooth Internal Surface

Absence of scaling, pitting and leaching leads to smooth and full bore flow and low water noise. It maintains full water carrying capacity because of no scale buildup, avoiding water pressure loss.

## Energy efficient, lower thermal conductivity and insulation cost

It is self insulating with lower thermal conductivity, which greatly reduces heat and therefore requires low insulation levels and cost.

## Excellent performance in tough conditions

These piping systems are tough, rigid and strong with higher pressure bearing capacity. It requires less hangers and supports with minimum offsets/looping

## High flexibility virtually eliminates water hammers

No water hammer arrestors required under normal conditions as intensity of water hammer is approximately one third that of copper or steel pipe.

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## Extremely fire resistant

It has integral flame retarding property with very high Limiting Oxygen Index (LOI) of 60.Thus in air these pipes cannot be the ignition source of fire or support or sustain combustion. It does not increase fire load, has low smoke generation and low flame spread without flaming drips.

## Completely leak proof

The cold welding using CPVC solvent is fast and simple, ensuring leak free installation for the entire life span of the piping system.

## Cost - effective, durable with excellent long term reliability

CPVC pipes have high impact strength and durability. It has low initial cost and lower maintenance costs as against competitive materials

## Ideal for home plumbing systems

The CPVC system is four times quieter than copper plumbing systems, reducing not only the sound of running water, but also the pounding noise of the water hammer. Its thermoplastic properties provide excellent insulation to virtually eliminate sweating and condensation. It keeps hot water hotter and cold water colder than copper plumbing. There is minimal energy loss through pipe walls, saving money on heating and cooling

- Less subject to job site thefts as compared to copper or metal pipes.
- Relative price stability over a long time.
- Eco friendly as its production is very energy efficient.


## Wide Range of Applications

The excellent qualities of CPVC Pipes make them ideal for

- Hot and cold water distribution in residential, industrial and public projects
- Carrying drinking water and food liquids
- Water and waste water treatment systems
- Transportation of chemical and hot corrosive fluids, which includes a wide variety of inorganic acids, bases used in chemical processing
- Use in industries like metal finishing, plating and treatment, pulp and paper, air pollution control, mining, aerospace, textile, food and beverage processing, fine sprinkler piping and municipal projects
- Use as high tension cable protection pipe for electric net improvement (Large dia. CPVC Pipes)
- Solar heating, central heating and radiant floor heating application


## nstallation and Maintenance of CPVC Pipes

CPVC pipes should be designed with a water flow rate between 5 and 12 feet/sec and while laying them it must be remembered that CPVC Pipes expand and contract more than metallic pipes. Compensatio must be provided for expansion and contraction, where they are installed in long, straight lengths, by using offset piping arrangements like loops or bends. Adequate horizontal supports and vertical hangers at appropriate distances must be provided.

For cutting CPVC Pipes fine tooth saws/simple hack-saws/rachet saws or a circular tubing cutter modified with a plastic cutting blade can be used. Care should be taken to avoid cracking of the pipe wal while cutting. For larger diameter pipes power tools are also used at major sites for cutting.
CPVC is affected by prolonged exposure to sunlight/ultraviolet radiation. Pigments are added to CPVC to make pipe and fitting resistant to degradation. CPVC pipes can be protected from sunlight /UV radiation by painting them by exterior grade latex paint.

If a section of the piping systems freezes in the cold, it can be thawed by wrapping it with a cloth saturated with hot water and keeping the cloth hot by re-dipping in hot water till required. Alternatively a low wattage heater/blower can used to blow heated air on the frozen area to thaw the pipe

## CPVC Pipes - Increasing Demand

CPVC pipes \& fittings have been successfully used worldwide for over forty years. It has a proven track record of being used in water distribution applications in houses, apartments, hotels, condominiums and commercial establishments with increasingly developing demand

Meet the challenge with the right connections

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## CPVC PRESSURE PIPES AND FITTINGS

CPVC Pipes are manufactured in accordance with DIN 8079 / 8080 ; ISO 15877-2.

| Size | Mean Outside Diameter |  | Wall Thickness |  | Wall Thickness |  | Wall Thickness |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | PN 25 (SDR 9) |  | PN 20 (SDR 11) |  | PN 16 ( SDR 13.6) |  |
|  | Min | Max | Min | Max | Min | Max | Min | Max |
| 20 mm | 20.0 | 20.2 | 2.3 | 2.8 | 1.9 | 2.3 | 1.5 | 1.9 |
| 25 mm | 25.0 | 25.2 | 2.8 | 3.3 | 2.3 | 2.8 | 1.9 | 2.3 |
| 32 mm | 32.0 | 32.2 | 3.6 | 4.2 | 2.9 | 3.4 | 2.4 | 2.9 |
| 40 mm | 40.0 | 40.2 | 4.5 | 5.2 | 3.7 | 4.3 | 3.0 | 3.5 |
| 50 mm | 50.0 | 50.2 | 5.6 | 6.4 | 4.6 | 5.3 | 3.7 | 4.3 |
| 63 mm | 63.0 | 63.2 | 7.1 | 8.1 | 5.8 | 6.4 | 4.7 | 5.4 |
| 75 mm | 75.0 | 75.3 | 8.4 | 9.5 | 6.8 | 7.7 | 5.6 | 6.4 |
| 90 mm | 90.0 | 90.3 | 10.1 | 11.4 | 8.2 | 9.3 | 6.7 | 7.6 |
| 110 mm | 110.0 | 110.3 | 12.3 | 13.8 | 10.0 | 11.2 | 8.1 | 9.2 |
| 160 mm | 160.0 | 160.4 | 17.9 | 19.9 | 14.6 | 16.3 | 11.8 | 13.2 |



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CPVC PRESSURE PIPES AND FITTINGS


| 1) Elbow $90^{\circ}$ Plain |  |  |
| :---: | :---: | :---: |
| Size | D | L |
| 20 mm | 20.1 | 16.0 |
| 25 mm | 25.1 | 19.0 |
| 32 mm | 32.1 | 22.0 |
| 40 mm | 40.1 | 26.0 |
| 50 mm | 50.1 | 31.0 |
| 63 mm | 63.1 | 38.0 |
| 75 mm | 75.1 | 44.0 |
| 90 mm | 90.1 | 51.0 |
| 110 mm | 110.1 | 61.0 |
| 160 mm | 160.2 | 86.0 |



| 3) Elbow $45^{\circ}$ Plain |  |  |
| :---: | :---: | :---: |
| Size | D | L |
| 20 mm | 20.1 | 16.0 |
| 25 mm | 25.1 | 19.0 |
| 32 mm | 32.1 | 22.0 |
| 40 mm | 40.1 | 26.0 |
| 50 mm | 50.1 | 31.0 |
| 63 mm | 63.1 | 38.0 |
| 75 mm | 75.1 | 44.0 |
| 90 mm | 90.1 | 51.0 |
| 110 mm | 110.1 | 61.0 |
| 160 mm | 160.2 | 86.0 |

## MP ATM.


5) Female Tee : Two end plain / Center end BSP female thread

| 4) Tee $90^{\circ}$ Plain |  |  |
| :---: | :---: | :---: |
| Size | D | L |
| 20 mm | 20.1 | 16.0 |
| 25 mm | 25.1 | 19.0 |
| 32 mm | 32.1 | 22.0 |
| 40 mm | 40.1 | 26.0 |
| 50 mm | 50.1 | 31.0 |
| 63 mm | 63.1 | 38.0 |
| 75 mm | 75.1 | 44.0 |
| 90 mm | 90.1 | 51.0 |
| 110 mm | 110.1 | 61.0 |
| 160 mm | 160.2 | 86.0 |


| 5) Female Tee : Two end plain / Center end BSP female thread |  |  |
| :---: | :---: | :---: |
| Size | D | L |
| 20 mm | 20.1 | 16.0 |
| 25 mm | 25.1 | 19.0 |
| 32 mm | 32.1 | 22.0 |
| 40 mm | 40.1 | 26.0 |
| 50 mm | 50.1 | 31.0 |
| 63 mm | 63.1 | 38.0 |
| 75 mm | 75.1 | 44.0 |
| 90 mm | 90.1 | 51.0 |
| 110 mm | 110.1 | 61.0 |
| 160 mm | 160.2 | 86.0 |
|  |  |  |


| 6) Reducing Tee |  |  |  |
| :---: | :---: | :---: | :---: |
| Size | D | L |  |
| $25 \times 20 \mathrm{~mm}$ | 25.1 | 19.0 |  |
| $32 \times 20 \mathrm{~mm}$ | 32.1 | 22.0 |  |
| $32 \times 25 \mathrm{~mm}$ | 32.1 | 22.0 |  |
| $50 \times 20 \mathrm{~mm}$ | 50.1 | 31.0 |  |
| $50 \times 25 \mathrm{~mm}$ | 50.1 | 31.0 |  |
| $50 \times 32 \mathrm{~mm}$ | 50.1 | 31.0 |  |
| $63 \times 20 \mathrm{~mm}$ | 63.1 | 38.0 |  |
| $63 \times 25 \mathrm{~mm}$ | 63.1 | 38.0 |  |
| $63 \times 32 \mathrm{~mm}$ | 63.1 | 38.0 |  |
| $63 \times 50 \mathrm{~mm}$ | 63.1 | 38.0 |  |
| $90 \times 63 \mathrm{~mm}$ | 90.1 | 51.0 |  |
| $110 \times 90 \mathrm{~mm}$ | 110.1 | 61.0 |  |
| $160 \times 90 \mathrm{~mm}$ | 160.2 | 86.0 |  |
| $160 \times 110 \mathrm{~mm}$ | 160.2 | 86.0 |  |
|  |  |  |  |

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7) Reducing Female Tee : Two end plain / Center end BSP female thread

| Size | D | L |
| :---: | :---: | :---: |
| $20 \times 1 / 2^{\prime \prime}$ | 20.1 | 16.0 |
| $25 \times 1 / 2^{\prime \prime}$ | 25.1 | 19.0 |
| $32 \times 1 / 2^{\prime \prime}$ | 32.1 | 22.0 |
| $32 \times 3 / 4^{\prime \prime}$ | 32.1 | 22.0 |
| $50 \times 1 / 2^{\prime \prime}$ | 50.1 | 31.0 |
| $50 \times 3 / 4^{\prime \prime}$ | 50.1 | 31.0 |
| $63 \times 1 / 2^{\prime \prime}$ | 63.1 | 38.0 |
| $63 \times 3 / 4^{\prime \prime}$ | 63.1 | 38.0 |
| $75 \times 21 / 2^{\prime \prime}$ | 75.1 | 44.0 |
| $90 \times 3^{\prime \prime}$ | 90.1 | 51.0 |


8) End Cap Plain

| 8) End Cap Plain |  |  |
| :---: | :---: | :---: |
| Size | D | L |
| 20 mm | 20.1 | 16.0 |
| 25 mm | 25.1 | 19.0 |
| 32 mm | 32.1 | 22.0 |
| 40 mm | 40.1 | 26.0 |
| 50 mm | 50.1 | 31.0 |
| 63 mm | 63.1 | 38.0 |
| 75 mm | 75.1 | 44.0 |
| 90 mm | 90.1 | 51.0 |
| 110 mm | 110.1 | 61.0 |
| 160 mm | 160.2 | 86.0 |

9) Male Thread Adaptor / Nipple Socket ; BSP male thread / plain socket


| Size | D | L |
| :---: | :---: | :---: |
| $20 \times 1 / 2^{\prime \prime}$ | 20.1 | 16.0 |
| $25 \times 3 / 4^{\prime \prime}$ | 25.1 | 19.0 |
| $32 \times 1^{\prime \prime}$ | 32.1 | 22.0 |
| $40 \times 11 / 4^{\prime \prime}$ | 40.1 | 26.0 |
| $50 \times 11 / 2^{\prime \prime}$ | 50.1 | 31.0 |
| $63 \times 2^{\prime \prime}$ | 63.1 | 38.0 |
| $75 \times 21 / 2^{\prime \prime}$ | 75.1 | 44.0 |
| $90 \times 3^{\prime \prime}$ | 90.1 | 51.0 |

## MP ATM.


10) Female Socket Adaptor ; BSP female thread / plain socket

| Size | D | L |
| :---: | :---: | :---: |
| $20 \times 1 / 2^{\prime \prime}$ | 20.1 | 16.0 |
| $25 \times 3 / 4^{\prime \prime}$ | 25.1 | 19.0 |
| $32 \times 1^{\prime \prime}$ | 32.1 | 22.0 |
| $40 \times 11 / 4^{\prime \prime}$ | 40.1 | 26.0 |
| $50 \times 11 / 2^{\prime \prime}$ | 50.1 | 31.0 |
| $63 \times 2^{\prime \prime}$ | 63.1 | 38.0 |
| $75 \times 21 / 2^{\prime \prime}$ | 75.1 | 44.0 |
| $90 \times 3^{\prime \prime}$ | 90.1 | 51.0 |


| 11) Female Slip Adaptor ; BSP female thread / male plain socket |  |  |
| :---: | :---: | :---: |
| Size | $\mathbf{D}$ | $\mathbf{L}$ |
| $20 \times 1 / 2^{\prime \prime}$ | 20.1 | 16.0 |
| $25 \times 3 / 4^{\prime \prime}$ | 25.1 | 19.0 |
| $32 \times 1^{\prime \prime}$ | 32.1 | 22.0 |
| $40 \times 11 / 4^{\prime \prime}$ | 40.1 | 26.0 |
| $50 \times 11 / 2^{\prime \prime}$ | 50.1 | 31.0 |
| $63 \times 2^{\prime \prime}$ | 63.1 | 38.0 |
|  |  |  |


12) Socket

| 12) Socket |  |  |
| :---: | :---: | :---: |
| Size | D | L |
| 20 mm | 20.1 | 16.0 |
| 25 mm | 25.1 | 19.0 |
| 32 mm | 32.1 | 22.0 |
| 40 mm | 40.1 | 26.0 |
| 50 mm | 50.1 | 31.0 |
| 63 mm | 63.1 | 38.0 |
| 75 mm | 75.1 | 44.0 |
| 90 mm | 90.1 | 51.0 |
| 110 mm | 110.1 | 61.0 |
| 160 mm | 160.2 | 86.0 |

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| 13) Reducer Bush |  |  |
| :---: | :---: | :---: |
| Size | D | L |
| $25 \times 20 \mathrm{~mm}$ | 25.1 | 19.0 |
| $32 \times 20 \mathrm{~mm}$ | 32.1 | 22.0 |
| $32 \times 25 \mathrm{~mm}$ | 32.1 | 22.0 |
| $40 \times 20 \mathrm{~mm}$ | 40.1 | 26.0 |
| $40 \times 25 \mathrm{~mm}$ | 40.1 | 26.0 |
| $40 \times 32 \mathrm{~mm}$ | 40.1 | 26.0 |
| $50 \times 20 \mathrm{~mm}$ | 50.1 | 31.0 |
| $50 \times 25 \mathrm{~mm}$ | 50.1 | 31.0 |
| $50 \times 32 \mathrm{~mm}$ | 50.1 | 31.0 |
| $63 \times 20 \mathrm{~mm}$ | 63.1 | 38.0 |
| $63 \times 25 \mathrm{~mm}$ | 63.1 | 38.0 |
| $63 \times 32 \mathrm{~mm}$ | 63.1 | 38.0 |
| $63 \times 50 \mathrm{~mm}$ | 63.1 | 38.0 |
| $75 \times 50 \mathrm{~mm}$ | 75.1 | 4.0 |
| $75 \times 63 \mathrm{~mm}$ | 75.1 | 44.0 |
| $90 \times 50 \mathrm{~mm}$ | 90.1 | 51.0 |
| $90 \times 63 \mathrm{~mm}$ | 90.1 | 51.0 |
| $90 \times 75 \mathrm{~mm}$ | 90.1 | 51.0 |
| $110 \times 90 \mathrm{~mm}$ | 110.1 | 61.0 |
| $110 \times 63 \mathrm{~mm}$ | 110.1 | 61.0 |
| $160 \times 90 \mathrm{~mm}$ | 160.2 | 86.0 |
| $160 \times 110 \mathrm{~mm}$ | 160.2 |  |
|  |  |  |
|  |  |  |


| 14) Wye $\mathbf{4 5 ^ { \circ }}$ |  |  |
| :---: | :---: | :---: |
| Size | D | L |
| 20 mm | 20.1 | 16.0 |
| 25 mm | 25.1 | 19.0 |
| 32 mm | 32.1 | 22.0 |
| 40 mm | 40.1 | 26.0 |
| 50 mm | 50.1 | 31.0 |
| 63 mm | 63.1 | 38.0 |


15) Male Thread Adaptor / Nipple Socket; BSP Male threaded with Brass insert / plain socket

| Size | D | L |
| :---: | :---: | :---: |
| $20 \times 1 / 2^{\prime \prime}$ | 20.1 | 16.0 |
| $25 \times 3 / 4^{\prime \prime}$ | 25.1 | 19.0 |
| $32 \times 1^{\prime \prime}$ | 32.1 | 22.0 |
| $40 \times 11 / 4^{\prime \prime}$ | 40.1 | 26.0 |
| $50 \times 112^{\prime \prime}$ | 50.1 | 31.0 |
| $63 \times 2^{\prime \prime}$ | 63.1 | 38.0 |
|  |  |  |


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| 16) Female Socket Adaptor; BSP Female thread with Brass insert / plain socket |  |  |
| :---: | :---: | :---: |
| Size | D | L |
| $20 \times 1 / 2^{\prime \prime}$ | 20.1 | 16.0 |
| $25 \times 3 / 4^{\prime \prime}$ | 25.1 | 19.0 |
| $32 \times 1^{\prime \prime}$ | 32.1 | 22.0 |
| $40 \times 11 / 4^{\prime \prime}$ | 40.1 | 26.0 |
| $50 \times 11 /^{\prime \prime}$ | 50.1 | 31.0 |
| $63 \times 2^{\prime \prime}$ | 63.1 | 38.0 |
|  |  |  |



| 17) Female Elbow 900; BSP Female thread with Brass insert / plain socket |  |  |
| :---: | :---: | :---: |
| Size | D | L |
| $20 \times 1 / 2^{\prime \prime}$ | 20.1 | 16.0 |
| $25 \times 3 / 4^{\prime \prime}$ | 25.1 | 19.0 |
| $32 \times 1^{\prime \prime}$ | 32.1 | 22.0 |
| $40 \times 11 / 4^{\prime \prime}$ | 40.1 | 26.0 |
| $50 \times 11 / 2^{\prime \prime}$ | 50.1 | 31.0 |
| $63 \times 2^{\prime \prime}$ | 63.1 | 38.0 |

18) Female Tee $90^{\circ}$; BSP Female thread with Brass insert / plain socket



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