



## PRESS PIPING SYSTEM



## MECHANICAL CRIMP JOINTS

for Water Supply, Plumbing and Pressure Applications

*Press to be Impressed*



## FYPRESS HDPE Pipes

Product Standard : MS 1058-2 : 2005

HDPE or PE is a versatile and commonly used thermoplastic material in cold water piping applications. Today's modern PE resins are highly engineered for more rigorous applications such as pressure-rated water and gas pipes, landfill membranes, automotive fuel tanks and other demanding applications.

### TYPE OF PE MATERIALS

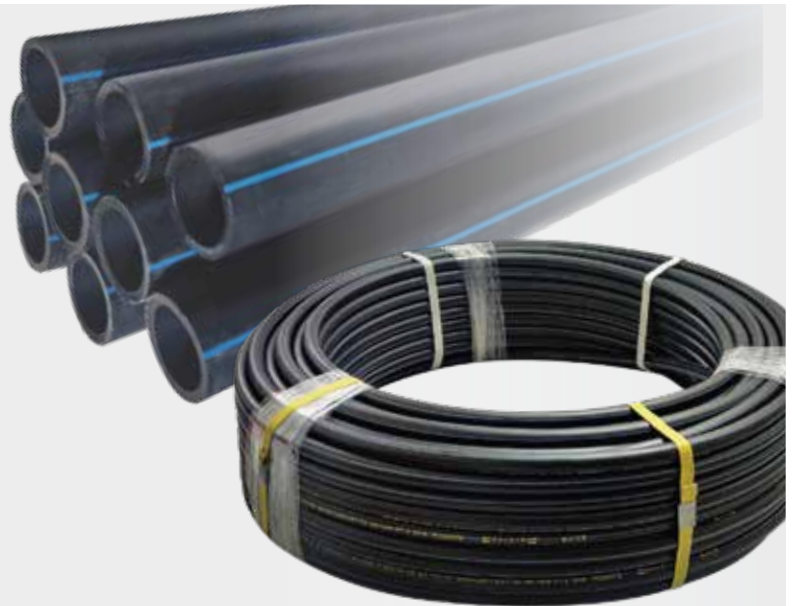
The physical properties of PE materials are specific to each grade or type, and can be modified by both variations in density, and molecular weight distribution. Many grades of PE materials are used in pipe and fitting systems and the specific properties are tailored for the application.

High Density PE (HDPE) types of PE material has been used in our applications. HDPE base resins are manufactured in a low-pressure process, resulting in a chain structure with small side branches and a material density range of 0.9300960 g/cm<sup>3</sup>. HDPE materials qualify as PE80 and PE100 in accordance with their relative product standard.

### STRAIGHT AND ROLLED FORMS

HDPE pipes are supplied in both straight and rolled form (for sizes DN20 – DN40). It is highly recommended to use straight pipes for jointing with fittings as the ovality of the pipe diameter is being maintained well compared to rolled pipes.

Rolled pipes cannot restore the pipe diameter ovality completely after uncoiling due to the pipe's flexural modulus properties. However, rolled pipes can provide connection continuity with less fittings used and less joints being made.



### UV & WEATHER RESISTANCE

HDPE has the BEST UV and weather resistance amongst other plastics. All plastic pipes are subjected to the process of surface degradation, or oxidation due to the combined effects of UV radiation, increased temperature, and moisture when pipes are stored in exposed locations.

Our Black PE pipes contain 22.5% finely divided carbon black and can be safely stored outside in most climates for many years without damage from UV exposure. Carbon black is the most effective single additive to enhance the weathering characteristics of plastic materials. Others types of pipes that do not utilize carbon black do not possess the same stability and thus develops a faster rate of oxidation.

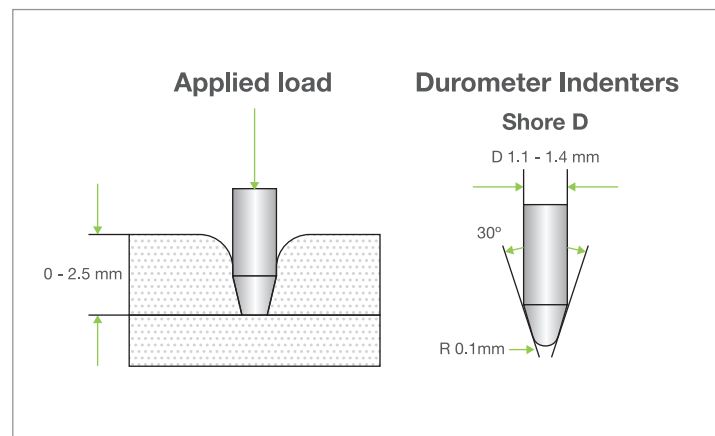
## PIPE HARDNESS : PE100 VS PE80 VS PE63

PE100 has higher density than PE80 and PE63, hence offers a higher operating pressure rating and long-term creep resistance at similar wall thickness. PE100 also has a higher surface hardness and deformation resistance. Hardness is the ability of a material to resist deformation, which can be determined by a standard test where the surface resistance to indentation is measured.

	PE100	PE80	PE63
<b>MRS in MPa</b>	10.0	8.0	6.3
<b>Density at 27°C g/m³</b>	0.949 – 0.950	0.947 – 0.948	0.945 – 0.946
<b>Grade</b>	HDPE		MDPE
<b>Typical Applications</b>	Pipe : Water & Gas (hi-performance)	Pipe : Water, Gas & Irrigation	Pipe : Irrigation
<b>Hardness Shore D ***</b>	<b>64</b>	59	52

\*\*\* The Shore D Hardness test (also called Durometer Hardness Test) is a standardized test used industry-wide, the hardness is determined by the penetration of the Durometer indenter foot into the sample. Shore Hardness measures are dimensionless. It goes between 0 and 100. The higher number represents the harder material.

As far as plastic mechanical compression fittings joined with PE100 pipe is concerned, it requires technical know-how and expertise to produce a more reliable mechanical joint.



### Performance Specifications

Item	Units	Characteristic	Parameter	
			PE-80	PE-100
Hydrostatic Strength	MPa	20° (100h) : No break & leakage	9.0	<b>12.4</b>
		80° (165h) : No break & leakage	4.6	<b>5.5</b>
		80° (1,000h) : No break & leakage	4.0	<b>5.0</b>
Elongation at Break	%	≥ 350		
Thermal Stability (Oxidation Induction Time)	min	> 20	200°C	
Melt Flow Rate (MFR)	g/10min	Changes of MFR by processing <25%	190°C, 5kgs	
Longitudinal Reversion	%	≤ 3	110°C	

## PE100 PIPE DIMENSION & TOLERANCES (MS 1058-2 : 2005)

Our FYPress HDPE Pipes offers PE100 pipes with a size range of DN20 to DN40 for PN12.5, PN16 and PN20 (size DN20 only) ratings. Both straight and coiled form of pipes are available too.

Nominal (mm)	Outer Diameter (mm)		Wall Thickness (mm) PN 12.5 (SDR 13.6)		Wall Thickness (mm) PN 16 (SDR 11)		Wall Thickness (mm) PN 20 (SDR 9)	
	Min	Max	Min	Max	Min	Max	Min	Max
20	20.0	20.3	-	-	2.0	2.3	2.3	2.7
25	25.0	25.3	2.0	2.3	2.3	2.7	-	-
32	32.0	32.3	2.4	2.8	3.0	3.4	-	-
40	40.0	40.4	3.0	3.5	3.7	4.2	-	-

PE pipe in nature has a characteristic of wide dimensional tolerances. The wide tolerances of pipe Outer Diameter (OD) and Thickness may result in a wide variation of pipe Internal Diameter (ID). The minimum and maximum pipe ID that can be derived over four pipe sizes and two PN ratings are as follows:

DN20 PN16 max ID	→	$20.3(\text{max}) - 2.0(\text{min}) - 2.0(\text{min}) = 16.3\text{mm}$		Diff 0.9mm	<b>Overlapped</b>
DN20 PN16 min ID	→	$20.0(\text{min}) - 2.3(\text{max}) - 2.3(\text{max}) = 15.4\text{mm}$			
DN20 PN20 max ID	→	$20.3(\text{max}) - 2.3(\text{min}) - 2.3(\text{min}) = 15.7\text{mm}$	Diff 0.9mm		
DN20 PN20 min ID	→	$20.0(\text{min}) - 2.7(\text{max}) - 2.7(\text{max}) = 14.6\text{mm}$			

DN25 PN12.5 max ID	→	$25.3(\text{max}) - 2.0(\text{min}) - 2.0(\text{min}) = 21.3\text{mm}$		Diff 0.9mm	<b>Overlapped</b>
DN25 PN12.5 min ID	→	$25.0(\text{min}) - 2.3(\text{max}) - 2.3(\text{max}) = 20.4\text{mm}$			
DN25 PN16 max ID	→	$25.3(\text{max}) - 2.3(\text{min}) - 2.3(\text{min}) = 20.7\text{mm}$	Diff 1.1mm		
DN25 PN16 min ID	→	$25.0(\text{min}) - 2.7(\text{max}) - 2.7(\text{max}) = 19.6\text{mm}$			

DN32 PN12.5 max ID	→	$32.3(\text{max}) - 2.4(\text{min}) - 2.4(\text{min}) = 27.5\text{mm}$		Diff 1.1mm	<b>Close</b>
DN32 PN12.5 min ID	→	$32.0(\text{min}) - 2.8(\text{max}) - 2.8(\text{max}) = 26.4\text{mm}$			
DN32 PN16 max ID	→	$32.3(\text{max}) - 3.0(\text{min}) - 3.0(\text{min}) = 26.3\text{mm}$	Diff 1.1mm		
DN32 PN16 min ID	→	$32.0(\text{min}) - 3.4(\text{max}) - 3.4(\text{max}) = 25.2\text{mm}$			

DN40 PN12.5 max ID	→	$40.4(\text{max}) - 3.0(\text{min}) - 3.0(\text{min}) = 34.4\text{mm}$		Diff 1.4mm	<b>Similar</b>
DN40 PN12.5 min ID	→	$40.0(\text{min}) - 3.5(\text{max}) - 3.5(\text{max}) = 33.0\text{mm}$			
DN40 PN16 max ID	→	$40.4(\text{max}) - 3.7(\text{min}) - 3.7(\text{min}) = 33.0\text{mm}$	Diff 1.4mm		
DN40 PN16 min ID	→	$40.0(\text{min}) - 4.2(\text{max}) - 4.2(\text{max}) = 31.6\text{mm}$			

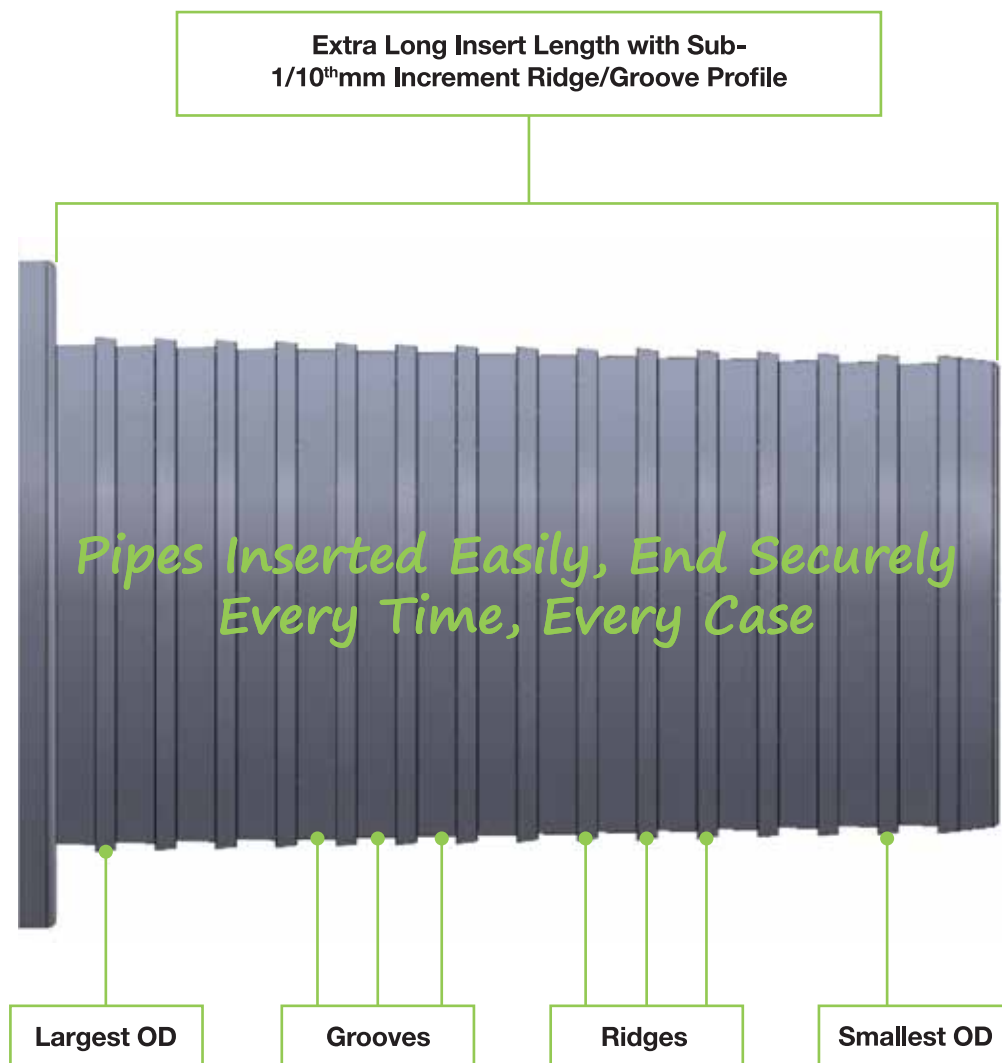
For one particular pipe size (DN) of similar PN rating, the difference of minimum and maximum pipe ID is as large as 0.9mm – 1.4mm. However, the minimum ID of lower PN can overlap or be very close to the maximum ID of higher PN.

Inspired by the challenges faced in HDPE pipes with naturally wide variation of dimensional tolerances as well as the increased hardness of PE100 material, the design of our mechanical fittings, ease of installation and reliability of our entire system are based on intensive research, studies and considerations.

**FY PRESS** utilizes “Crimp” style fittings which are a common and proven type of poly fittings joined by pressing on a metal compression/clinching ring using a pressing tool. The joints formed by this method is very simple and reliable.

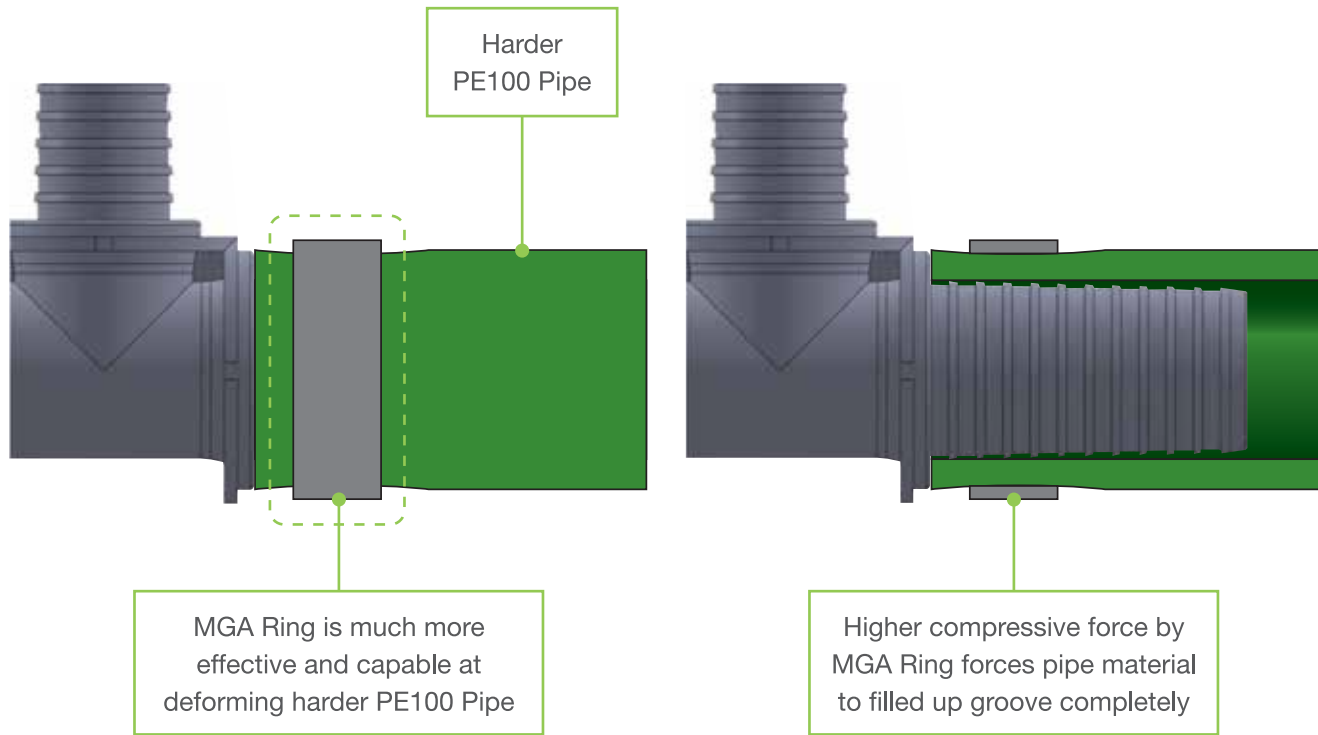
## SOLUTION FOR PIPES WITH WIDE DIMENSIONAL TOLERANCES

Our proprietary crimp profile employs sub-1/10<sup>th</sup>mm incremental ridges/grooves along an extended fitting insert body length that fits and supports the minimum ID of one higher PN rating of pipe to maximum ID of another lower PN rating of pipes. Pipe insertion for both pressure ratings of pipes will always be easy and the end stop point of pipe insertion will always create firm and secure joints.



## SOLUTION FOR CRIMPING HARDER PE PIPES

PE100 pipe has a higher density and hardness compared to PE80 and PE63 pipes. It requires more effort to crimp, which in turn produces a more effective seal than softer pipes. Therefore we utilized metal compression/clinching rings which has double the material density than engineering plastics to provide a higher compressive force that forms more effective seals.



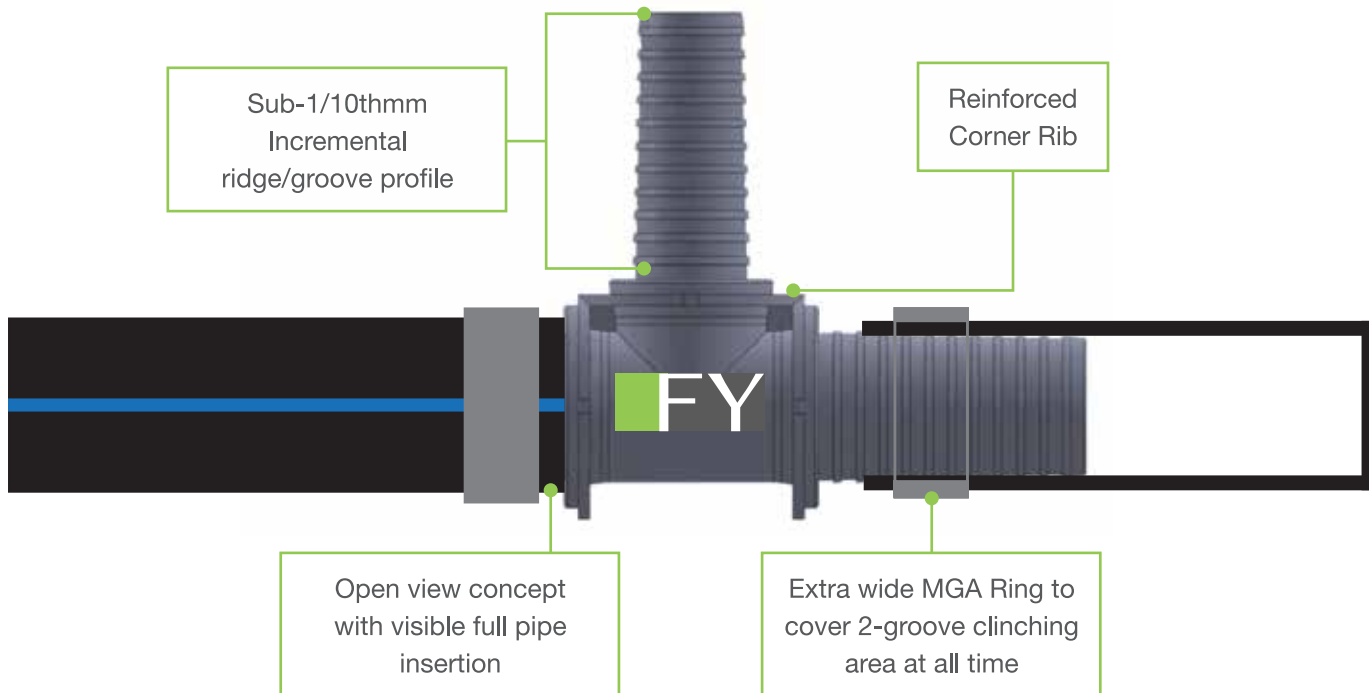
### MGA RING

Our MGA Rings have excellent finishing characteristics, high hardness, corrosion resistance, and tensile properties that is prominently used for structural purposes and marine applications. The rings are specifically produced using CNC machining process to achieve the highest accuracy of +/-0.1mm.

**FEATURES AND ADVANTAGES OF**

**FY**PRESS

Our new lineup of fittings are designed for flexibility to handle pipes with natural wide dimensional tolerance, PE100 with increased hardness, easy and less error-prone installation, permanent but replaceable joints, and achieving higher cost effectiveness.



**HIGH-PERFORMANCE POLYMER**

Our thermoplastic fittings are made of high-performance polymer which offers a strong and sturdy fitting body, which includes precise male and female threads. Both types of threads are designed with a cut-in notch in order to offer smooth and precise thread engagements.

**REWORKABLE JOINT**

Crimped joints are reworkable by removing the ring with a cutter and replacing with a new ring.



## TOTAL UPGRADE, TOTAL PROTECTION BY **FY SHIELD**

Our **FY SHIELD** comes in 4 sizes of DN20, DN25, DN32 and DN40. It is designed to offer complete upgrade and protection for the entire system. This proprietary design's ideas and innovations features 5 key benefits which are as follows :



1. Pipe OD Checker – when the **FY SHIELD** slips through the pipe, it functions as a gauge checker that can verify pipe ovality and outer diameter consistency.
2. Ring Crimp/No Crimp Checker – if the MGA ring has not been crimped, **FY SHIELD** will not be slotted over the MGA ring. Only when the ring is crimped can **FY SHIELD** be slotted into place.
3. Crimping Zone Checker – in the situation whereby the pipe is not inserted sufficiently or encountered out-of-spec pipes whereby the crimping falls outside of the crimping zone, the **FY SHIELD** will not be able to reach the Sleeve Retainer, thus notifying that joint is not proper.
4. Joint Protector – when the **FY SHIELD** 'Clips Onto' the Shield Retainer properly, it can completely cover up the joint area. This is proven to be the most effective way to protect against severe environments.
5. Aesthetic Enhancer – Every joint completed with **FY SHIELD** enhances its aesthetics and provides a more consistent outlook.

The application of **FY SHIELD** is very simple and convenient. It only requires sliding on the pipes beforehand and pulled back to be clipped onto the Shield Retainers once jointing is finished.

**FY SHIELD** is specifically made of translucent materials, hence it can be inspected with a torchlight on their internal condition without having to remove the **FY SHIELD** in position.





# STRENGTH IN YOUR HANDS WITH **FY TOOL**

Our **FY TOOL** come with light-weight design, 3-point pivot hinge structure, dual dials for up to double-up tension adjustment and offer a crimping force of 1 tonne-force (tf) or 9,800 Newton (N). This translates to applying 25 kg-force by hand on tool will create a 1,000 kgforce on the crimped object. This tool has a conversion ratio of 1:40 or 40 times of the force gained.

**FY TOOL** comes in 4 individual sizes of DN20, DN25, DN32 and DN 40. Each tool weighs less than 2.5 kg.

3-point Pivot Hinge Structure to produce high crimping force of 1 Tonne

Dual adjustment dials up to double-up tension adjustment that prolongs the lifespan of tool

Fully Open Position.  
Wide opening jaws over the respecting Ring OD

- 1 Tonne of Crimping Force
- Longer tool life-span
- Lightweight and handy to use
- Complimentary tool package (terms & conditions applied)

## INSTALLATION GUIDE OF **FY-PRESS** WITH **FY-SLEEVE**

Installation Procedures		
<b>1</b>		<b>CUT</b> the pipe squarely with a proper pipe cutter or by using saw with proper side-guiding in order to achieve a perpendicular cut.
<b>2</b>		<b>SLIDE</b> the FY Shield onto pipe. Push it further down to make room for MGA Ring.
<b>3</b>		<b>SLOT</b> the MGA Ring onto pipe. Ensure that the MGA Ring is positioned as near as possible to pipe end.
<b>4</b>		<b>INSERT</b> the FYPress Fitting into pipe end. Fitting must be pushed until it is firm and tightly fitted onto pipe.
<b>5</b>		<b>CRIMP</b> the MGA Ring on both ends of the fitting with FY Tool. Hold the crimp tool for at least 3 seconds before removing tool.
<b>6</b>		<b>PUSH</b> the FY Shield into their respective Shield Retainer on FYPress Fitting.

## Product List FYPress Fittings and Accessories

### EQUAL SOCKET



Code	Size
FYPS020	20
FYPS025	25
FYPS032	32
FYPS040	40

### REDUCING SOCKET



Code	Size
FYPRS025020	25 x 20
FYPRS032020	32 x 20
FYPRS032025	32 x 25
FYPRS040020	40 x 20
FYPRS040025	40 x 25
FYPRS040032	40 x 32

### EQUAL ELBOW



Code	Size
FYPL020	20
FYPL025	25
FYPL032	32
FYPL040	40

### REDUCING ELBOW



Code	Size
FYPRL025020	25 x 20
FYPRL032020	32 x 20
FYPRL032025	32 x 25
FYPRL040032	40 x 32

### EQUAL TEE



Code	Size
FYPT020	20
FYPT025	25
FYPT032	32
FYPT040	40

### REDUCING TEE



Code	Size
FYPRT025020	25 x 25 x 20
FYPRT032020	32 x 32 x 20
FYPRT032025	32 x 32 x 25
FYPRT040025	40 x 40 x 25
FYPRT040032	40 x 40 x 32

### MALE THREADED SOCKET



Code	Size
FYPMTC020015	20 x 1/2"
FYPMTC025020	25 x 3/4"
FYPMTC032025	32 x 1"

### EQUAL 45 DEG ELBOW



Code	Size
FYP45L025	25
FYP45L032	32
FYP45L040	40

### MALE THREADED ELBOW



Code	Size
FYPMTL020015	20 x 1/2"
FYPMTL025015	25 x 1/2"
FYPMTL025020	25 x 3/4"

### FEMALE THREADED ELBOW



Code	Size
FYPFTL020015	20 x 1/2"
FYPFTL025015	25 x 1/2"
FYPFTL025020	25 x 3/4"

# Product List

## FYPress Fittings and Accessories

### END CAP



Code	Size
FYPEC20	20
FYPEC25	25
FYPEC32	32
FYPEC40	40

### WALL-PLATED FEMALE THREADED ELBOW



Code	Size
FYPFL020015W	20 x 1/2"

### PRESS TOOL



Code	Size
FYCT020	20
FYCT025	25
FYCT032	32
FYCT040	40

### MGA RING



Code	Size
FYPR20	20
FYPR25	25
FYPR32	32
FYPR40	40

### FY SHIELD



Code	Size
FYPSH020	20
FYPSH025	25
FYPSH032	32
FYPSH040	40

1. All prices listed - ex-work factory.
2. Price subject to change without prior notice.

## Product List

# BRASS THREADED FITTINGS & STOP VALVES

### MALE SOCKET (BRASS)



Code	Size
FYPMTC020015B	20x1/2"
FYPMTC025015B	25x1/2"
FYPMTC025020B	25x3/4"
FYPMTC032020B	32x3/4"
FYPMTC032025B	32x1"
FYPMTC040025B	40 X 1"
FYPMTC040032B	40 X 1 1/4"

### FEMALE SOCKET (BRASS)



Code	Size
FYPFMT020015B	20x1/2"
FYPFMT025015B	25x1/2"
FYPFMT025020B	25x3/4"
FYPFMT032020B	32x3/4"
FYPFMT032025B	32x1"

### MALE THREADED ELBOW (BRASS)



Code	Size
FYPMTL020015B	20x1/2"
FYPMTL025015B	25x1/2"
FYPMTL025020B	25x3/4"
FYPMTL032020B	32x3/4"
FYPMTL032025B	32x1"

### FEMALE THREADED ELBOW (BRASS)



Code	Size
FYPFTL020015B	20x1/2"
FYPFTL025015B	25x1/2"
FYPFTL025020B	25x3/4"
FYPFTL032020B	32x3/4"
FYPFTL032025B	32x1"
FYPFTL040025B	40 X 1"

### MALE THREADED TEE (BRASS)



Code	Size
FYPMTT020015B	20x1/2"
FYPMTT025015B	25x1/2"
FYPMTT025020B	25x3/4"
FYPMTT032020B	32x3/4"
FYPMTT032025B	32x1"
FYPMTT040025B	40 X 1"
FYPMTT040032B	40 X 1 1/4"

### FEMALE THREADED TEE (BRASS)



Code	Size
FYPFTT020015B	20x1/2"
FYPFTT025015B	25x1/2"
FYPFTT025020B	25x3/4"
FYPFTT032020B	32x3/4"
FYPFTT032025B	32x1"
FYPFTT040025B	40 X 1"
FYPFTT040032B	40 X 1 1/4"

### STOP VALVE (IN RED WHEEL HANDLE)



Code	Size
FYPSV020	20
FYPSV025	25
FYPSV032	32
FYPSV040	40

### STOP VALVE (IN CHROMED "X" HANDLE)



Code	Size
FYPSVC020	20
FYPSVC025	25
FYPSVC032	32
FYPSVC040	40

1. All prices listed - ex-work factory.
2. Price subject to change without prior notice.



**FENGYE PIPING (M) SDN. BHD.** (1290947-T / 201801028921)

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