SUPERIOR QUALITY PIPES & FITTINGS

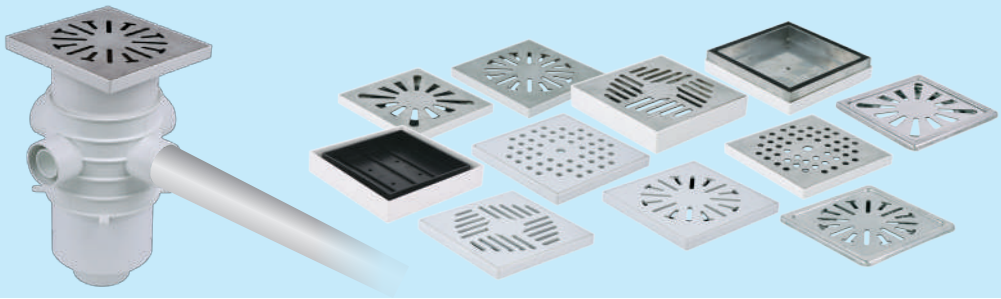
CHEZY

PN 16 (SDR11) AND PN 12.5 (SDR 13.6) POLYETHYLENE PIPES (HDPE)

OTHER CHEZY QUALITY PRODUCTS

VALVES

TOP ACCESS FLOOR TRAP



INSPECTION CHAMBERS

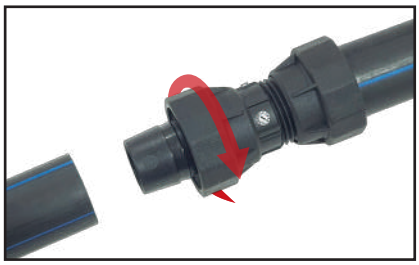
RAINWATER SUMP

ALL ACCESS FLOOR TRAP

CONVENTIONAL FLOOR TRAP

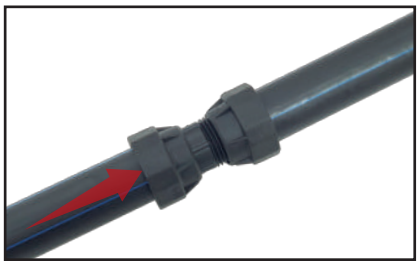
SIDE FLOW FLOOR TRAP

No Fuss, No Hassle Installation



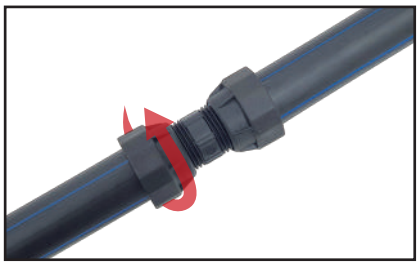
Step 1

Turn nut clockwise towards body till it stops, cut the pipe ends square with cutter or saw.



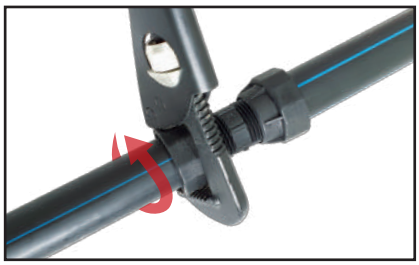
Step 2

Push pipe over barbs onto the fitting until it stops.



Step 3

Hold the pipe by hand and turn the **nut by hand** anti-clockwise until it grips (bites) the outside of the pipe.

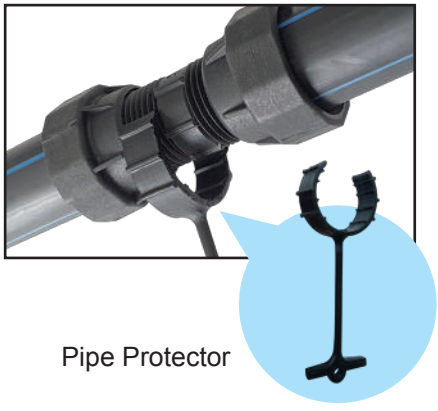


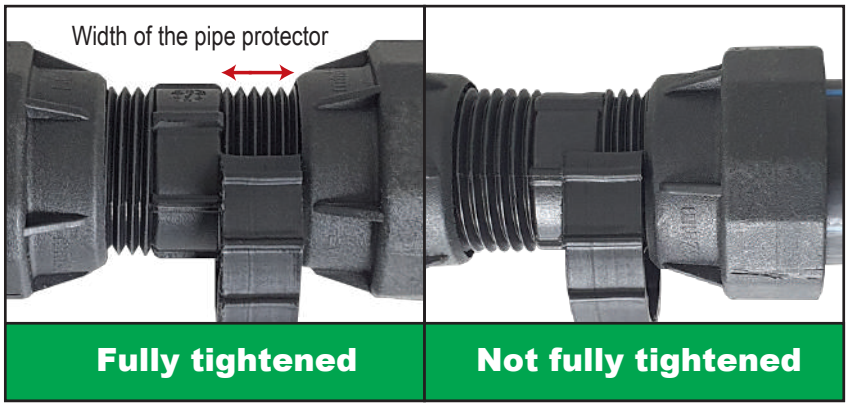
Step 4

Hold the pipe by hand and lock the nut tight onto the pipe using a pipe wrench or spanner, to complete the jointing.

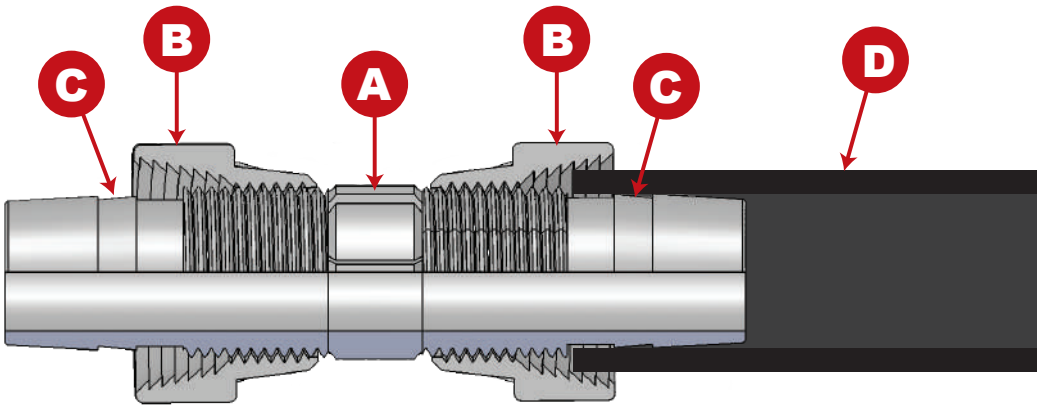
Step 5

Place the width of the pipe protector at the back of the nut after tightening to ensure that the nut is fully tightened, after completion of the joint. This will show that the nut has moved forward sufficiently to ensure a water tight joint.





HOW IT WORKS:



- Fitting body **A** and nut **B** are manufactured from tough and impact resistant fibre reinforced nylon or polypropylene for long life.

- Push barbs **C** inside of the pipe **D** until the fitting stops. Barbs C give support to the pipe wall and prevents disengagement after installation.

- Nut **B** bites into the pipe and compresses the pipe onto barb **C** after tightening with pipe wrench resulting in a very water tight seal.

THE CHEZY FITTINGS SYSTEM

- The **Chezy mechanical jointing system** requires no special site equipment, no electricity required or skilled labour. Low installation costs combined with the long life of the fitting **make it the cost- effective choice**.
- **Flexibility** - it can be used for PN 12.5 and PN 16 pipes. Please ensure that you are using the correct pressure rated fittings.
- Wide range of fittings for all Plumbing systems.
- No compression rings, no circlip, no 'O' rings, no crimping, no solvent cement, no fusion, no PTFE tape – fast, leak proof and simple installation.
- Excellent Hydraulic flow characteristics.
- Light weight.
- No scale built up on inside wall.
- Corrosion resistance, suitable for all weather conditions.
- Cost efficient joint with easy installation, takes less energy to perform the joints for better productivity.

The **Chezy** mechanical fittings system affords a very cost effective and high-speed installation system. The fitting has third party certification and are government approved for water portable systems.

CHEZY HDPE PIPES (MS 1058-2: 2005)

TECHNICAL SECTION

Polyethylene (PE) pressure pipes explained

Polyethylene (PE) has a large number of significant advantages over material like PVC, steel or ductile iron, namely light weight, ability to coil long lengths, high corrosion resistance, ease of jointing, etc.

Before the adoption of international standards, polyethylene was commonly named by their density - **LDPE** (low density polyethylene), **MDPE** (medium density polyethylene) and **HDPE** (High Density polyethylene). The higher the density, the higher the strength of the polyethylene as a pipe material.

International standards were developed and HDPE pipes were than classified by the grade of material used- **PE 40**, **PE 63**, **PE 80**, **PE 100** (according to their MRS Values in bar).

The number after **PE** represents the maximum allowable hoop stress (in bar) for the pipe.

PE 40	– Low pressure piping systems
PE 63	– Medium piping system irrigation system
PE 80	– Natural gas distribution network with pressure up to 4 bar. – Drinking water pipes with pressure up to 16 bar construction, sewages, industrial pipes.
PE 100	– High demand piping applications

Benefits of **CHEZY HDPE pipes**

- **Fatigue resistance**
  HDPE pipe is flexible and ductile, not rigid. It has outstanding resistance to fatigue.
- **Corrosion resistance**
  It is resistance to biological growth. This means an extended service life and long- term cost savings.
- Fewer fittings required due to pipe flexibility. Allowable bending radius of 20 to 25 times outside diameter of pipe.
- Available in a wide range of thicknesses and pressure ratings to create an entire plumbing system.
- The superior chemical resistance and “non-stick” surface combine to eliminate scaling and pitting and preserve the hydraulic characteristics throughout the pipe service life.

PRODUCT SPECIFICATION AND DATA

Chezy nylon GF mechanical fittings for PN16 and PN 12.5 pressure piping systems (SDR11 and SDR13.6)

Reference standards	SIRIM 11, BS ISO 17885
Working pressure	PN16 (16 bar) and PN 12.5 (12.5 bar)
Pipe standards for chezy mechanical fitting	MS 1058, BS EN 12201-2, ISO 4427, BS 6572, BS 6730, ISO 161-1, DIN 8074
Material	Body – Nylon GF Nut – PP GF

Independent testing by approved third party was carried out to prove that the **Chezy fittings system** can be used for a wide variety of polyethylene pressure piping systems, some of the tests carried out on our fittings include: -

1. Effect on water quality.
2. Pressure resistance of fittings body.
3. Leak tightness under internal pressure on assembled joints.
4. Leak tightness under internal pressure when subjected to bending.
5. Resistance to pull out at 23°C.
6. Long term pressure resistance of the fitting body (1000 hours).
7. Leak tightness under negative pressure.

Relationship between MRS and SDR for HDPE pipes for water use

Maximum allowable operating pressure (MAOP)

The maximum allowable operating pressure in bar for water pipes is given by:

$$MAOP = \frac{2MRS}{C\,(SDR-1)}$$

MAOP = maximum allowable pressure in bar
MRS = Minimum required stress of the PE material in bar
C = Design factor (C = 1.25 for pressure pipes)
SDR = standard dimension ratio

For example,
Using the above relationship, a PE100 pipe of SDR 11 will have a MAOP of 16 bar at 20°C for a design life of 50 years.

PE PIPE PRESSURE RATING

PRESSURE CLASS PN	MAOP bar	METERS HEAD
12.5	12.5	125
16	16	160

PE 80 VS PE 100

PE 80 stands for polyethylene with a MRS of 80 (hoop stress of 80 bar) and PE 100 with a MRS of 100 (hoop stress of 100 bar) at 20°C and 50 years service according to ISO 4427.

The higher MRS values of PE 100 over PE 80 translates to higher strength and higher toughness for PE 100. These higher values (hoop stress) allow for pipes using PE100 to have a **thinner wall thickness** than PE80 at a similar pressure. This will result in larger inner bore diameters for PE100 pipes over PE 80 pipes, resulting in higher flow rates.

SUMMARY OF SIRIM 11 TEST

Requirements	Pressure (bar)	Duration (hour)	Test temperature (°C)	Test method
Leak tightness under internal pressure (assembly)	24	1	20±5	ISO 3458
Leak tightness under internal pressure (body)	64	1	20	ISO 1167-2
	25.6	1000	60	
Long-term for leak tightness under internal pressure (plastic material)	64	1	20	ISO 3458 ISO 1167-1 ISO 1167-4
	25.6	1000	60	
Long-term for leak tightness under internal pressure (assembly)	19.2	1000	20	ISO 3458
Resistance to pull out at 23°C*	-	1	23	ISO 3501
Leak tightness under internal pressure when subjected to bending	24	1	20±5	ISO 3503
Leak tightness under negative pressure	0.1	1	20±5	ISO 3459
	0.8	1		

*When fitting assembly is tested in accordance with ISO 3501, the test force Ft, in newton, shall be calculated as follows:

$$F_T = 1.5 \times \sigma_T \times \pi \times e_m \times (d_n - e_m)$$

Where
σT is the applicable test stress in (MPa)
e_m is the mean wall thickness of the pipe (mm)
d_n is the nominal outside diameter of the pipe (mm)

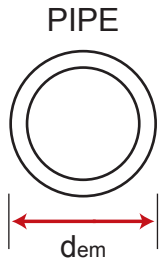
The test period shall be 1 hour.

POLYETHYLENE PRESSURE PIPE DIMENSIONS

Mean outside diameter

Dimensions in millimetre

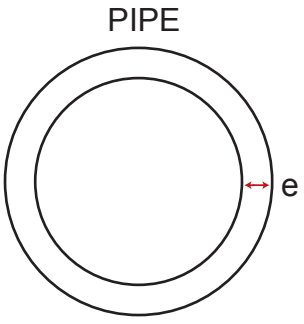
Nominal Size DN/OD	Nominal Outside Diameter (dn)	Mean outside diameter	
		dem, min	dem, max
16	16	16.0	16.3
20	20	20.0	20.3
25	25	25.0	25.3
32	32	32.0	32.3
40	40	40.0	40.4
50	50	50.0	50.4
63	63	63.0	63.4



Wall thickness

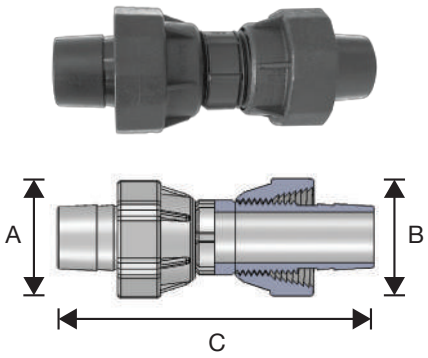
Dimensions in millimetre

	Pipe series			
	SDR11		SDR 13.6	
	Nominal Pressure, PN in bar			
PE 80	PN 12.5		PN 10	
PE 100	PN 16		PN 12.5	
Nominal Size DN/OD	emin	emax	emin	emax
20	2.0	2.3	-	-
25	2.3	2.7	2.0	2.3
32	3.0	3.4	2.4	2.8
40	3.7	4.2	3.0	3.5
50	4.6	5.2	3.7	4.2
63	5.8	6.5	4.7	5.3



Standard dimension ratio (SDR) = outside diameter / wall thickness.
PN values are based on C = 1.25 (Design Coefficient)
Nominal pressure, PN in bar is the maximum allowable operating pressure of the pipe at 20°C.
Table extracted from MS 1058 and BS EN12201-2.

FITTINGS FOR POLYETHYLENE PIPES

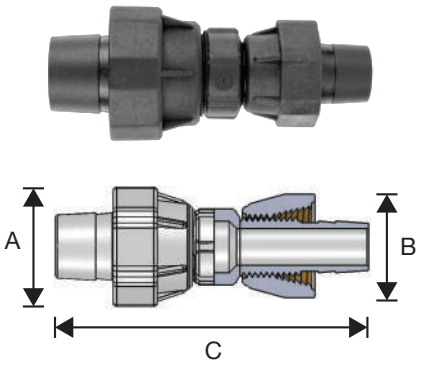


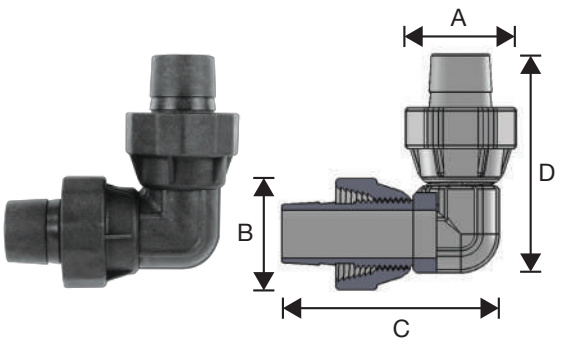
EQUAL COUPLING

Product code	Size (MM)	A	B	C
EC-20	20	31	31	89
EC-25	25	35	35	96
EC-32	32	45	45	105
EC-40	40	54	54	136

REDUCING COUPLING

Product code	Size (MM)	A	B	C
RC-25.20	25 x 20	35	31	94
RC-32.20	32 x 20	45	31	101
RC-32.25	32 x 25	45	35	105
RC-40.32	40 x 32	54	45	125
RC-40.25	40 x 25	54	35	116



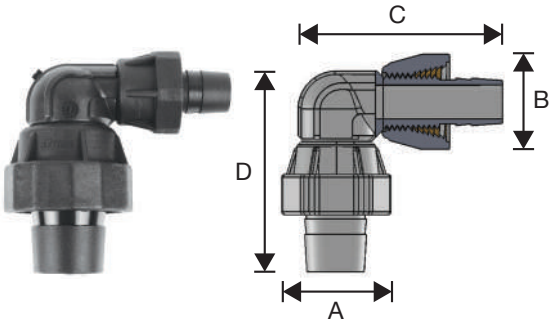


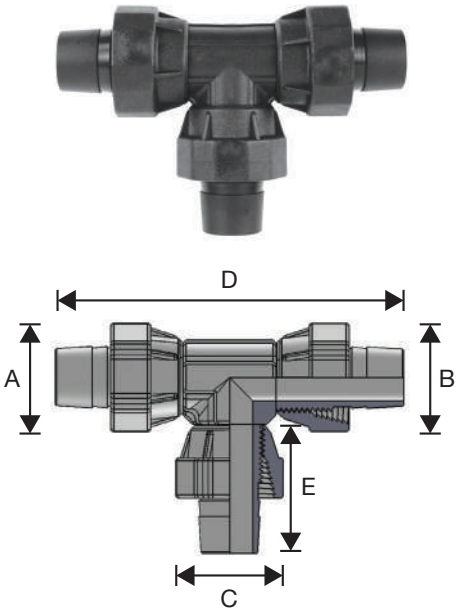
EQUAL ELBOW 90°

Product code	Size (MM)	A	B	C	D
EE-20	20	31	31	62	62
EE-25	25	35	35	69	69
EE-32	32	45	45	84	84
EE-40	40	54	54	103	103

REDUCING ELBOW 90°

Product code	Size (MM)	A	B	C	D
RE-25.20	25 x 20	35	31	66	66
RE-32.25	32 x 25	45	35	76	74
RE-32.20	32 x 20	45	31	72	74
RE-40.32	40 x 32	54	45	94	95
RE-40.25	40 x 25	54	35	85	95



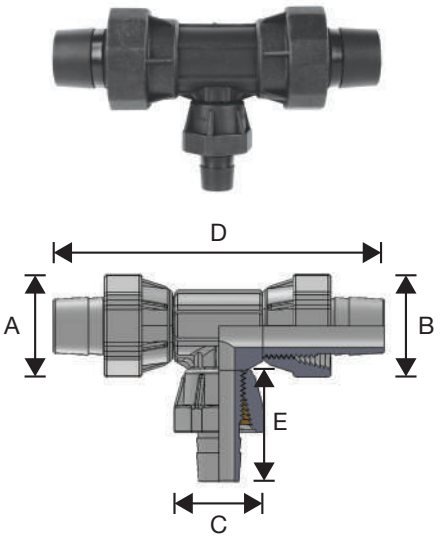


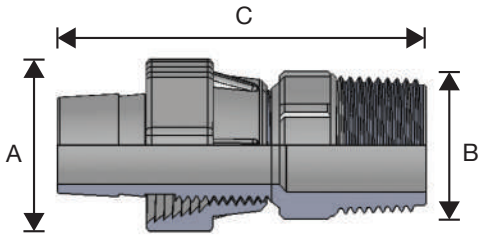
EQUAL TEE

Product code	Size (MM)	A	B	C	D	E
ET-20	20	31	31	31	104	62
ET-25	25	35	35	35	115	70
ET-32	32	45	45	45	138	84
ET-40	40	54	54	54	170	103

REDUCING TEE

Product code	Size (MM)	A	B	C	D	E
RT-25.20	25 x 20	35	35	31	115	66
RT-32.25	32 x 25	45	45	35	138	75
RT-32.20	32 x 20	45	45	31	138	72
RT-40.32	40 x 32	54	54	45	170	92
RT-40.25	40 x 25	54	54	35	170	83



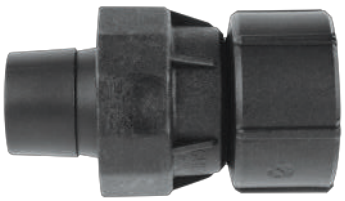


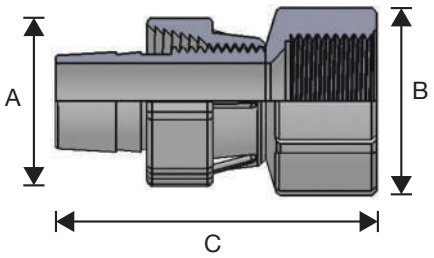
MALE THREAD ADAPTOR (BSPT MALE)

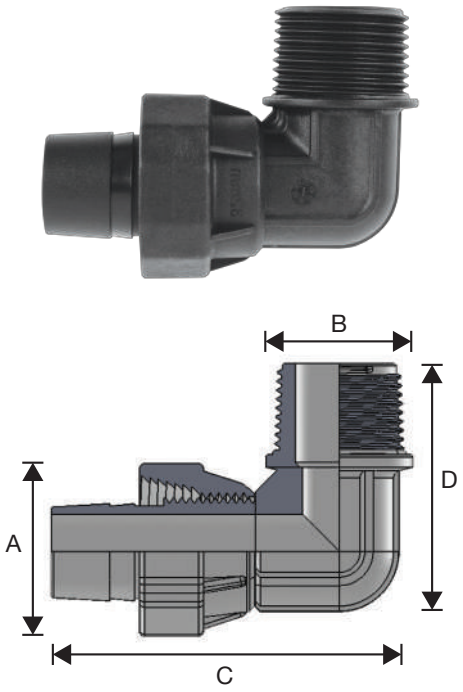
Product code	Size (MM)	A	B	C
MTA-20.1/2	20 x ½”	31	25	67
MTA-20.3/4	20 x ¾”	31	27	68
MTA-25.1/2	25 x ½”	35	25	68
MTA-25.3/4	25 x ¾”	35	27	71
MTA-25.1	25 x 1”	35	33	75
MTA-32.3/4	32 x ¾”	45	27	80
MTA-32.1	32 x 1”	45	33	84
MTA-40.1	40 x 1”	54	33	95
MTA-40.1 1/4	40 x 1 ¼”	54	42	105
MTA-40.1 1/2	40 x 1 ½”	54	48	105

FEMALE THREAD ADAPTOR (BSPP FEMALE)

Product code	Size (MM)	A	B	C
FTA-20.1/2	20 x ½”	31	30	60
FTA-20.3/4	20 x ¾”	31	37	61
FTA-25.1/2	25 x ½”	35	30	63
FTA-25.3/4	25 x ¾”	35	38	64
FTA-25.1	25 x 1”	35	44	67
FTA-32.3/4	32 x ¾”	45	37	72
FTA-32.1	32 x 1”	45	44	76





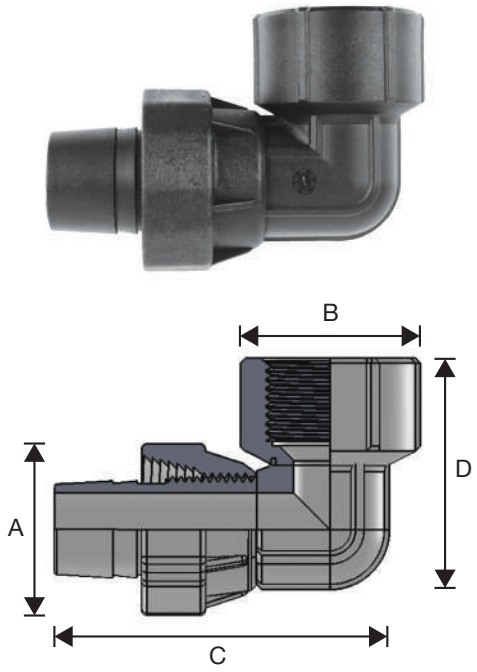


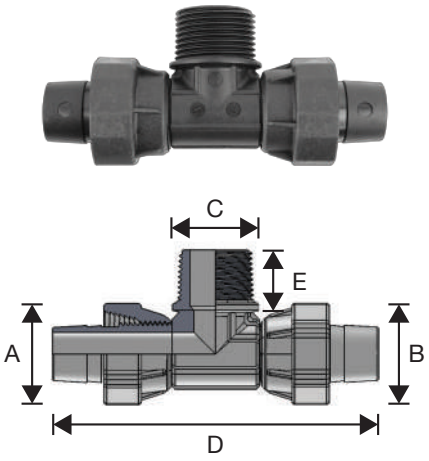
MALE THREAD ELBOW (BSPT MALE)

Product code	Size (MM)	A	B	C	D
MTE-20.1/2	20 x ½"	31	25	64	44
MTE-20.3/4	20 x ¾"	31	30	64	46
MTE-25.1/2	25 x ½"	35	20	72	49
MTE-25.3/4	25 x ¾"	35	30	72	50
MTE-25.1	25 x 1"	35	38	72	53
MTE-32.3/4	32 x ¾"	45	30	86	56
MTE-32.1	32 x 1"	45	38	86	58

FEMALE THREAD ELBOW (BSPP FEMALE)

Product code	Size (MM)	A	B	C	D
FTE-20.1/2	20 x ½"	31	30	65	40
FTE-20.3/4	20 x ¾"	31	38	65	42
FTE-25.1/2	25 x ½"	35	30	70	44
FTE-25.3/4	25 x ¾"	35	37	70	47
FTE-25.1	25 x 1"	35	42	70	50
FTE-32.3/4	32 x ¾"	45	38	87	52
FTE-32.1	32 x 1"	45	42	85	56



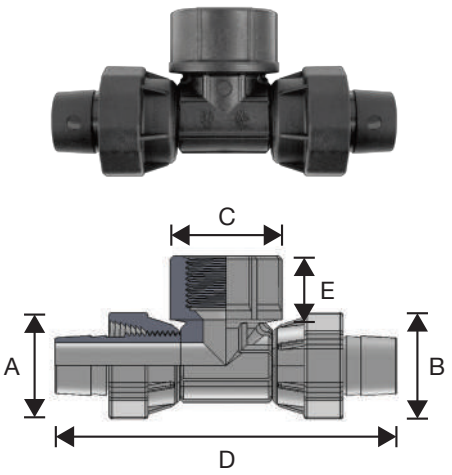


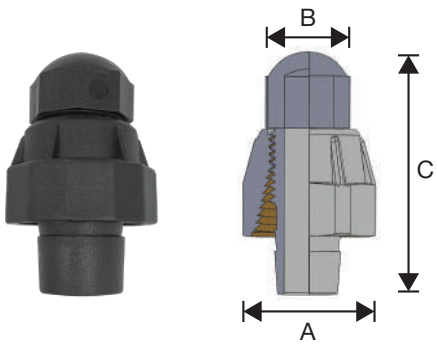
MALE THREAD TEE (BSPT MALE)

Product code	Size (MM)	A	B	C	D	E
MTT-20.1/2	20 x ½"	31	31	25	104	43
MTT-20.3/4	20 x ¾"	31	31	30	104	44
MTT-25.1/2	25 x ½"	35	35	25	115	47
MTT-25.3/4	25 x ¾"	35	35	30	115	49
MTT-25.1	25 x 1"	35	35	38	115	51
MTT-32.3/4	32 x ¾"	45	45	30	138	54
MTT-32.1	32 x 1"	45	45	38	138	57

FEMALE THREAD TEE (BSPP FEMALE)

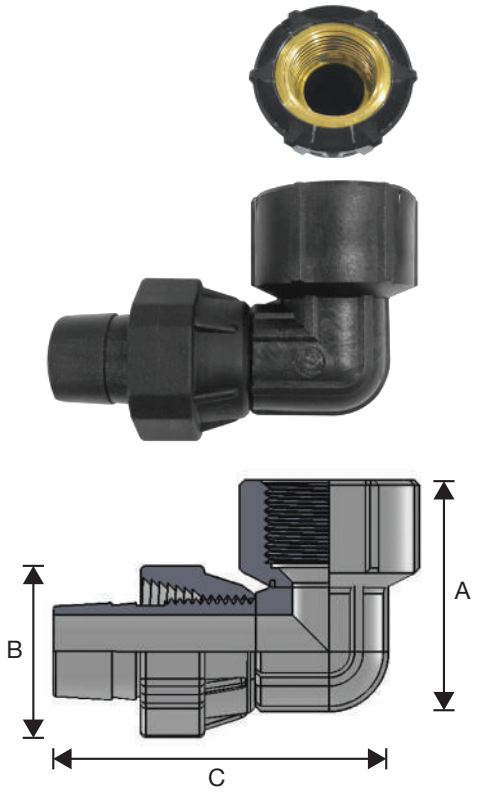
Product code	Size (MM)	A	B	C	D	E
FTT-20.1/2	20 x ½"	31	31	31	104	43
FTT-20.3/4	20 x ¾"	31	31	37	104	44
FTT-25.1/2	25 x ½"	35	35	31	115	47
FTT-25.3/4	25 x ¾"	35	35	37	115	48
FTT-25.1	25 x 1"	35	35	45	115	52
FTT-32.3/4	32 x ¾"	45	45	37	138	54
FTT-32.1	32 x 1"	45	45	45	138	56





END CAP

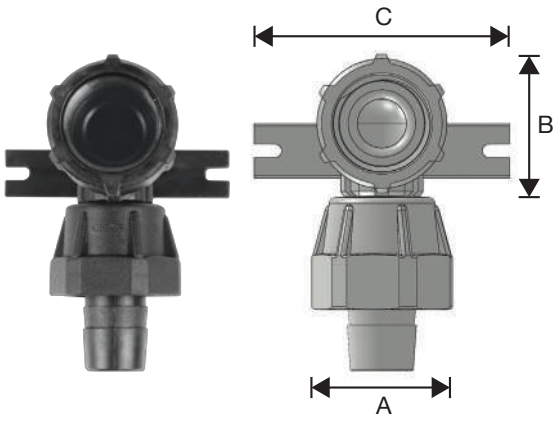
Product code	Size (MM)	A	B	C
ES20	20	31	18	57
ES25	25	35	23	61
ES32	32	45	30	72
ES40	40	54	37	85



FEMALE THREAD ELBOW – BRASS (BSPP FEMALE)

Product code	Size (MM)	A	B	C
FTE (B)-20.1/2	20 x ½”	46	30	74
FTE (B)-25.1/2	25 x ½”	53	35	79

ACCESSORIES

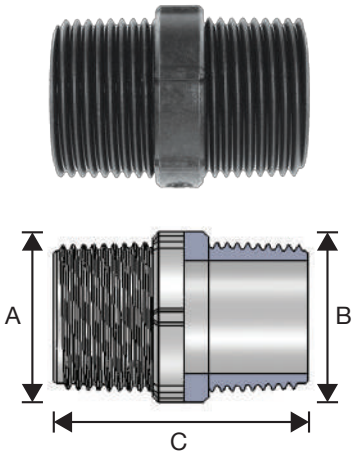


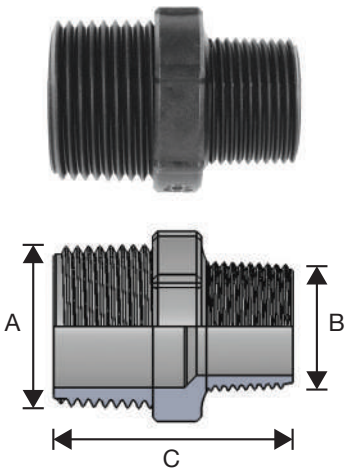
BRACKET ELBOW 90° (BSPP FEMALE)

Product code	Size (MM)	A	B	C	D
BE-20.1/2	20 x ½"	31	31	70	52
BE-25.1/2	25 x ½"	35	31	70	55

EQUAL NIPPLE (BSPT MALE)

Product code	Size (INCH)	A	B	C
N-1/2"	½" x ½"	20	20	43
N-3/4"	¾" x ¾"	25	25	46
N-1"	1" x 1"	32	32	52



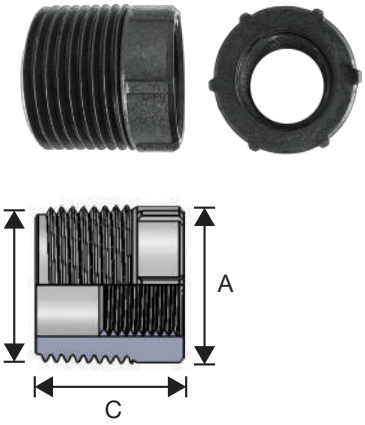


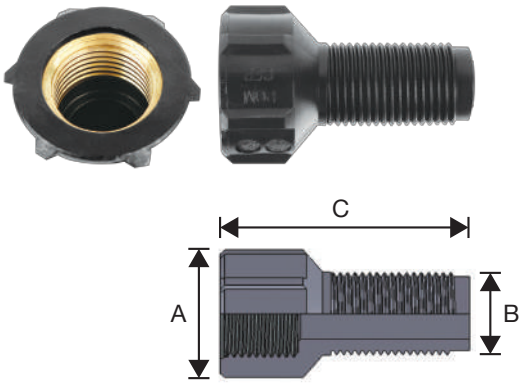
REDUCING NIPPLE (BSPT MALE)

Product code	Size (INCH)	A	B	C
N-3/4.1/2	¾" x ½"	25	20	46
N-1.3/4	1" x ¾"	32	25	50
N-1.1/2	1" x ½"	32	20	49

BUSH (BSPT MALE & BSPP FEMALE)

Product code	Size (INCH)	A	B	C
B-3/4.1/2	¾" x ½"	30	25	28
B-1.3/4	1" x ¾"	30	25	32
B-1.1/2	1" x ½"	35	32	32



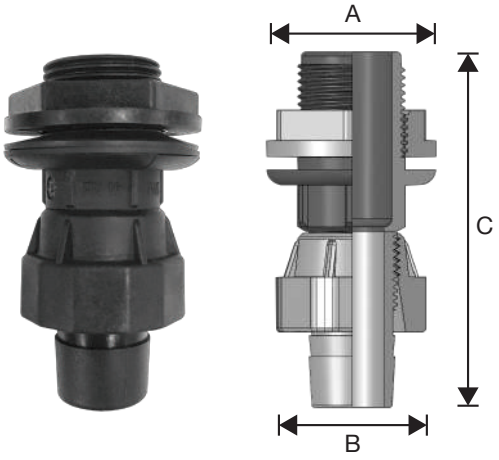


EXTENSION PIECE (BSPP)

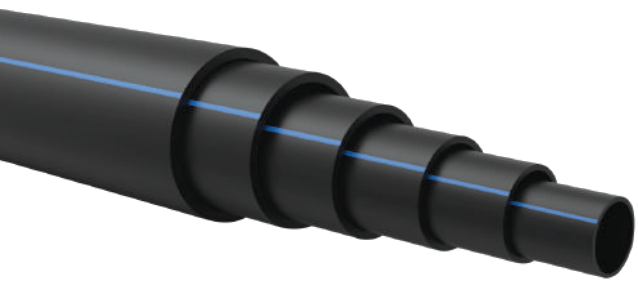
Product code	Size (INCH)	A	B	C
EP – 1/2	½" x ½"	31	25	61
EPB – 1/2	½" x ½"	39	25	61

TANK CONNECTOR

Product code	Size (MM)	A	B	C
TC-25.3/4	25 x ¾"	40	34	82
TC-32.1	32 x 1"	54	44	90



CHEZY HDPE PE100 PIPES



PN 12.5 (5.8m/ Length)	
Size (MM)	Code (MM)
25	PN1225-L
32	PN1232-L
40	PN1240-L
PN 16 (5.8m/ Length)	
Size (MM)	Code (MM)
20	PN1620-L
25	PN1625-L
32	PN1632-L
40	PN1640-L

PN 12.5 (100m/ Roll)	
Size (MM)	Code (MM)
25	PN1225-R
32	PN1232-R
40	PN1240-R
PN 16 (100m/ Roll)	
Size (MM)	Code (MM)
20	PN1620-R
25	PN1625-R
32	PN1632-R
40	PN1640-R

TERMS AND CONDITIONS

The terms and conditions on sales and services for products supplied by Chezy Industries Sdn Bhd.

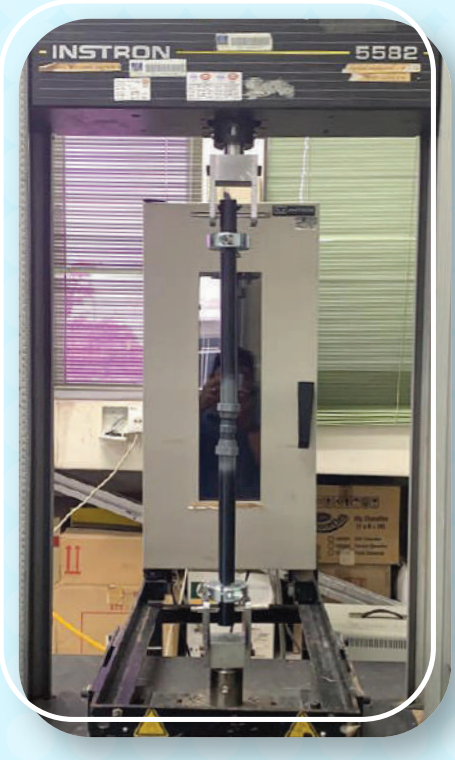
Guarantee:
Chezy products fittings for polyethylene pressure piping systems are guaranteed for damages due to defect in design manufacturing and material, this guarantee expires:

1. Two years after delivery of goods

2. Installation and usage of products as per our recommended methods and working conditions

3. When products are not used for their intended purpose on function

4. **Our guarantee covers the replacement of defective products only**



Pull-out Test

COMPREHENSIVE LABORATORY FOR ALL TESTING OF OUR FITTINGS FOR HDPE PIPES

QUALITY CONTROL

Lab

CHEZY INDUSTRIES SDN BHD (563851-U)
No 22, Jalan Uranus AK U5/AK, Taman Subang Impian, Seksyen U5,
40150 Shah Alam, Selangor Darul Ehsan, Malaysia.
Tel : +603-7859 9499 Fax : +603-7832 1655
Email : enquiry@chezy.com.my