Simply The Best

IT'S EVERY PLUMBER'S DREAM

No Compression Rings
No 'O' - Ring
No Crimping
No Solvent Cement

HANSEN™

FITTINGS & PIPES

PATENT NO: MY-127837-A
SIRIM CERTIFIED TO BS 5114:1975 (1981) (AMD.2-1987),
MS 1058 and MS ISO 10508
License No: PS 068803, PS 068804, PS 068805, PS 068806
SPAN CERTIFIED

NYLON 6

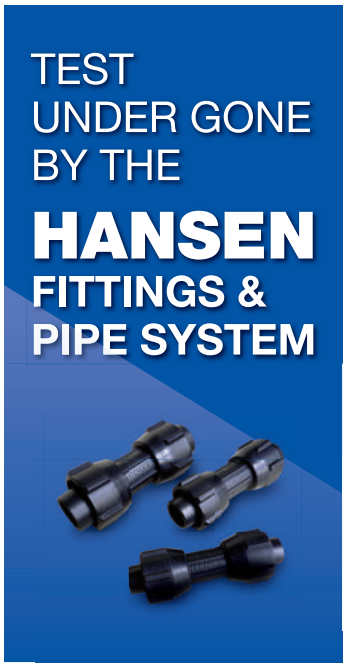
A HIGH PERFORMANCE MATERIAL

Approved by the Water Supply (Water Quality) Regulations 1989 & Water Regulations Advisory Committee (WRAS) of UK for its use in potable water, this material is superior to existing materials being used in terms of strength and ability to withstand heat. The fittings are designed and comply to British Standard BS 5114: 1975 (1981) (AMD.2 – 1987) and ISO 22391-3.

MECHANICAL PROPERTIES

Hansen fittings, together with high density polyethylene (HDPE) pipes or polyethylene – raised temperature (PE-RT) pipes, provide an unsurpassable potable water system. These sleek fittings are slim enough to be buried in walls and are able to withstand very high pressures.

Mechanical Properties	Test Conditions	Units	Standards	Nylon 6
Tensile Modulus	1 mm/min	MPa	ISO 527	3600
Tensile Stress at break	5 mm/min	MPa	ISO 527	75
Tensile Strain at break	5 mm/min	%	ISO 527	12
Flexural Modulus	2 mm/min	MPa	ISO 178	3100
Flexural Strenght	5 mm/min	MPa	ISO 178	120
Temperature of Deflection under load method Af	MPa	°C	ISO 75	190
Coefficient of Linear Thermal Expansion	23 to 55°C	10^{-4} / K	ASTM E 831	0.3
Water Absorbtion	Saturation Value in water at 23°C	%	ISO 62	8.5
Density		gm / cm^3	ISO 1183	1.23



The only plastic fittings system for potable water in Malaysia to have under gone the cyclic pressure shock test
tested at 23°C ± 2°C for 10,000 cycles of alternate internal positive pressure of 1 bar ± 0.5 bar and 15 bar ± 0.5 bar at frequency of at least 30 pressure cycles per minute.

Resistance to pull out of assembled joint
The jointed assembly is applied a constant tension for 1 hour on the basis that it is subjected to a maximum internal test pressure of 37.5 bar.

Hydrostatic pressure test
The assembly shall withstand without leakage for 1 hour an internal positive pressure of 3 times its maximum sustained working pressure which is 37.5 bar.

Hydrostatic requirement when subjected to bending stress
When the assembly is bent to a radius of 20 times the diameter of the pipe, the jointed assembly shall withstand for 1 hour without leakage an internal positive pressure of 37.5 bar.

External pressure requirement
The jointed assembly shall withstand for 1 hour without leakage, a pressure of 0.80 bar above atmospheric pressure.

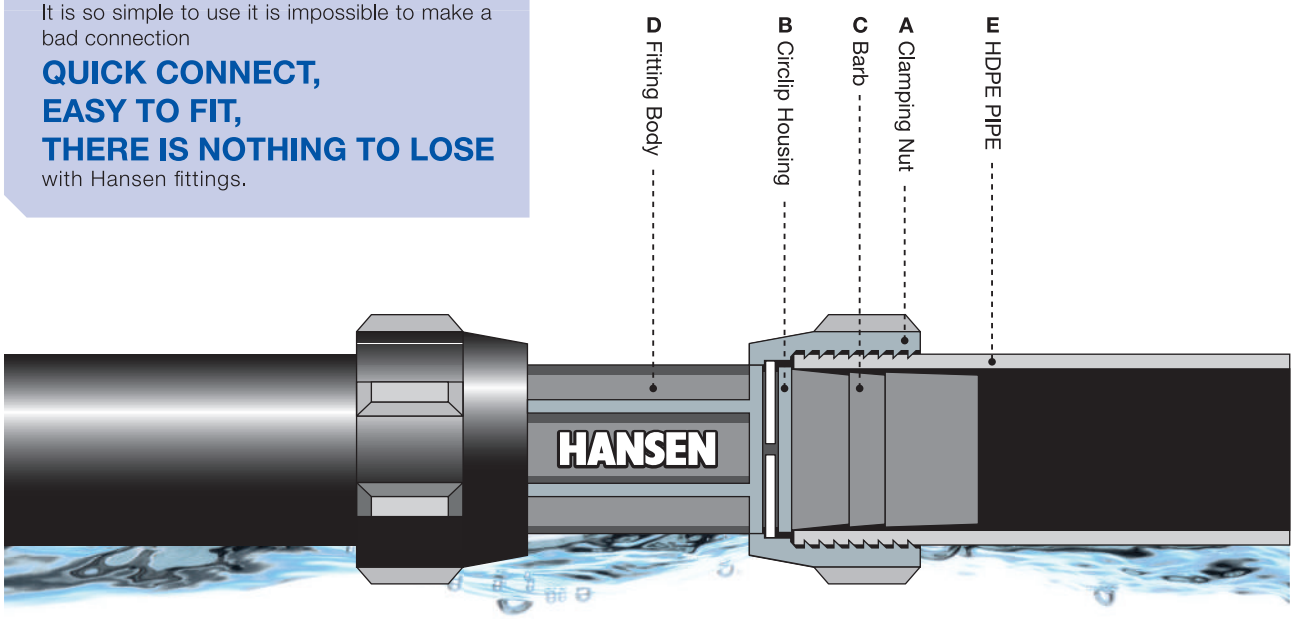
Effect on water
complies to BS 6920: Part 1 and Part 2.

Opacity
the wall of the fittings shall not transmit more than 0.2% of the visible light falling on it.

HOW IT WORKS

It is so simple to use it is impossible to make a bad connection

QUICK CONNECT,
EASY TO FIT,
THERE IS NOTHING TO LOSE
with Hansen fittings.



Push the Hansen fitting **D** into the pipe **E**
(High Density Polyethylene Pipe / Polyethylene - Raised Temperature Pipe) up to the circlip housing **B**.

Wind the nut onto the pipe a few turns by hand and tighten with a spanner until fully engaged against circlip housing **B**. Barb **C** on the Hansen fitting has 2 functions.

It seals and holds the polypipe in place from the inside. The clamping nut **A** also has 2 functions. It clamps the pipe down onto the barb **C** creating a high pressure seal and also gives a permanent vice like hold on the outside of the polypipe **E**.

HOW TO FIT THE **HANSEN** POLYPIPE FITTING

1

Cut the polypipe square with pipe cutters, knife or saw to the required length.

2

Push fittings into the pipe as far as possible.

3

Wind the nut onto pipe a few turns. Tighten with spanner or stillson.

4

Simply the best. No heat, crimping, or solvent cement required. Leak proof. Nothing to lose.

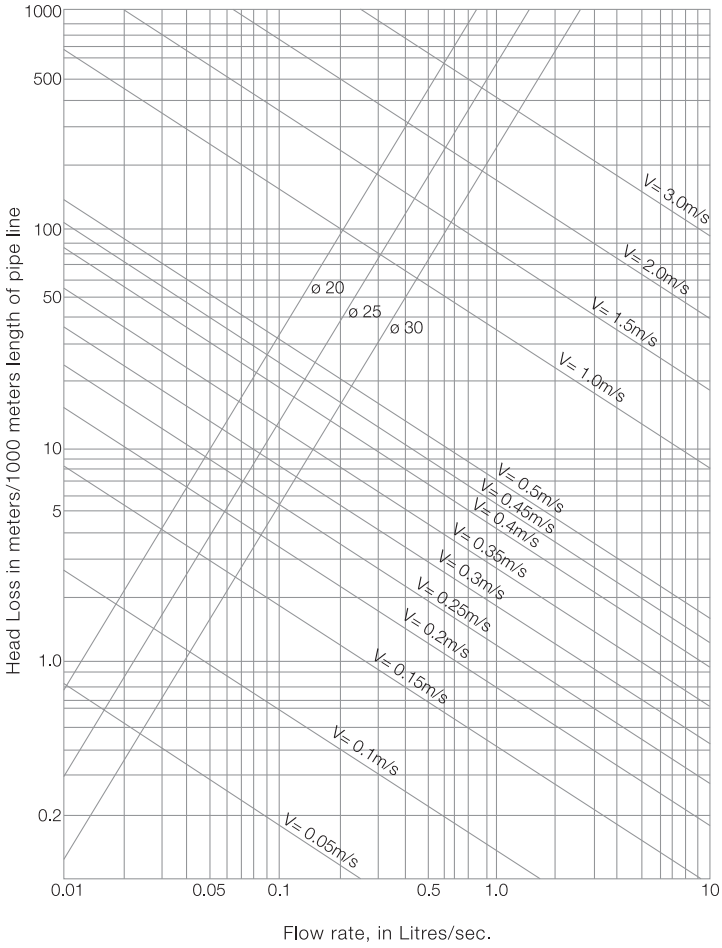
BBB / HANSEN

HIGH DENSITY POLYETHYLENE PIPES FOR COLD WATER SYSYEM

Our pipes are SIRIM approved and manufactured using approved raw materials, high density polyethylene and comply to ***MS 1058***. The main advantages of polyethylene pipes for the transport of pressure fluids can be summarised as follows:

- ease, reliability and cost efficiency of jointing and laying operations.
- non toxic, low abrasion and flexibility.
- excellent resistance to water hammer phenomena.
- absence of scale on inside walls results in consistancy of pipeline hydraulic performance.
- immune to corrosion phenomena and has very good resistance to a wide range of chemicals.

FLOW DIAGRAM
for high density polyethylene (hdpe) pipes



V = Velocity in m/sec
ø = Nominal pipe size in mm

HYDRAULIC PROPERTIES

The velocity of flow in hdpe does not normally exceed 1-2 meters per second in distribution mains. The hydraulically smooth bore of a hdpe pipe gives excellent flow characteristics through its operational life and the hydraulic friction co-efficient normally used in the design of hdpe pipes working under pressure are:

- ***Colebook-White*** k = 0.003 mm (max 0.01 mm to allow for some deposition with age)
- ***Hazen Williams*** c = 150

The Colebook-White based formula is recognised by engineers through out the world as the most accurate basis for hydraulic design.

$$Q = \frac{\pi D^2}{4} \cdot \sqrt{2gD\tfrac{H}{L}} \cdot \log_{10}\left[\frac{D}{\frac{k}{3.7} + \frac{2.51\vartheta}{\sqrt{2gD\tfrac{H}{L}}}}\right]^2$$

Q = discharge (m^3/s)
D = pipe internal diameter (m)
g = 9.8 m/s^2
$\frac{H}{L}$ = hydraulic gradient (m/m)
k = Colebrook-White roughness co-efficient (m)
ϑ = Kinematic viscosity of water (m^2/s)

VINILON / HANSEN

POLYETHYLENE RAISED TEMPERATURE (PERT) PIPE FOR HOT WATER SYSTEM

The HANSEN PERT pipe (Hot Water pipe), together with their Nylon 6 fittings provide a ***cost effective*** solution towards your hot water system requirements.

PERT (Polyethylene Raised Temperature) pipes are very widely used in Europe for hot and cold water networks (plumbing), heat exchangers, solar panels, floor heating, radiator connections etc.

The Hansen Hot Water System has been tested and passed the ISO 22391 Standard. It has a Class 2 rating, ie, a working temperature of 70˚C at a working pressure of 4 bar.

Thermal & Mechanical Properties

Properties	PERT
Max. operating temperature for water as medium	95˚C
Long-term operation 50 years, ISO 10508 class 2 Hot water supply (in case of malfunction 100 hours @ 95˚C)	4 bar @ 70˚C
Thermal conductivity	0.4 W/mk
Coefficient of elongation	0.2 mm/mK
Surface roughness k (according to Prandti-Colebrook)	0.007 mm
Oxygen diffusion DIN 4726, 40˚C (heating pipe)	<0.1 mg/l d

It is recommended that copper pipe be used for the first meter from the heat source.
Fittings must be supported before and after the joint.
PERT pipe must not be exposed to direct sunlight.

HANSEN FITTINGS	WORKING PRESSURE (70˚C)		
	PSI	BAR	kpa
	58	4	400

Hydrostatic Pressure Resistance
- Internal hydraulic pressure of 6 bar for a period of at least 1 hour at 20°C ± 2°C.
- Internal hydraulic pressure for a period of 100 hours at 95°C ± 2°C (for accelerated aging) of a value determined by dividing the 100 hours expected stress level for the pipe material by (d-e)/2e.

Thermal Cycling
5,000 cycles each of duration 30 min ± 2 min at a constant internal pressure of 4 bar. Each cycle will comprise 15 min of cold water (at a temperature 20˚C ± 2˚C) and 15 min of hot water at 90˚C.

Cyclic Pressure Shock
Tested at 23˚C ± 2˚C for 10,000 cycle of alternate internal positive pressure of 1 bar ± 0.5 bar and 15 bar ± 0.5 bar at a frequency of at least 30 pressure cycles per minute.

Resistance to pull-out of assembled joint
- A constant tension, calculated from a pressure of 15 bar, applied to the total cross sectional area of the pipe for 1 hour at 23˚C ± 2˚C.
- A constant tension, calculated at 4 bar applied to the total cross sectional area of the pipe for 1 hour at 90˚C.

Resistance to bending of assembled joint
When assembly is bent to a radius of 20 times the diameter of the pipe at 23˚C, the jointed assembly shall withstand for 1 hour, an internal hydraulic pressure without leakage of 15 bar.

PIPE SIZES

BBB / HANSEN PE PIPE

			Outer Diameter		Wall Thickness	
OD (mm)	Nominal Size (inch)	Working Pressure (bar)	Max(mm)	Min(mm)	Max(mm)	Min(mm)
20.0	½”	16.0	20.3	20.0	2.8	2.3
25.0	¾”	12.5	25.3	25.0	2.8	2.3
32.0	1”	12.5	32.3	32.0	3.4	2.9
40.0	1¼”	12.5	40.4	40.0	4.3	3.7
50.0	1½”	12.5	50.5	50.0	5.3	4.6

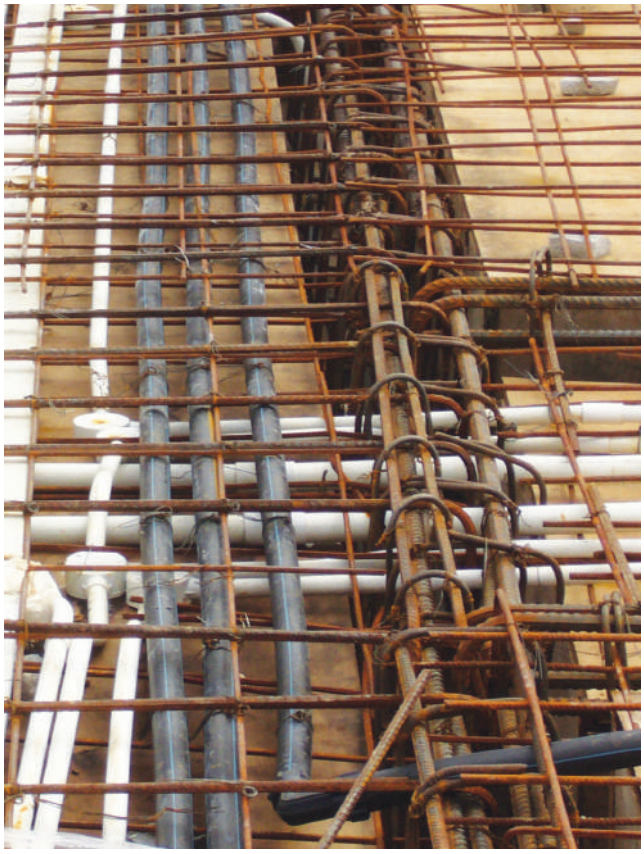
VINILON / HANSEN PERT PIPE

		Outer Diameter		Wall Thickness	
OD (mm)	Nominal Size (inch)	Max(mm)	Min(mm)	Max(mm)	Min(mm)
20.0	½”	20.3	20.0	2.8	2.3
25.0	¾”	25.3	25.0	2.8	2.3
32.0	1”	32.3	32.0	3.4	2.9

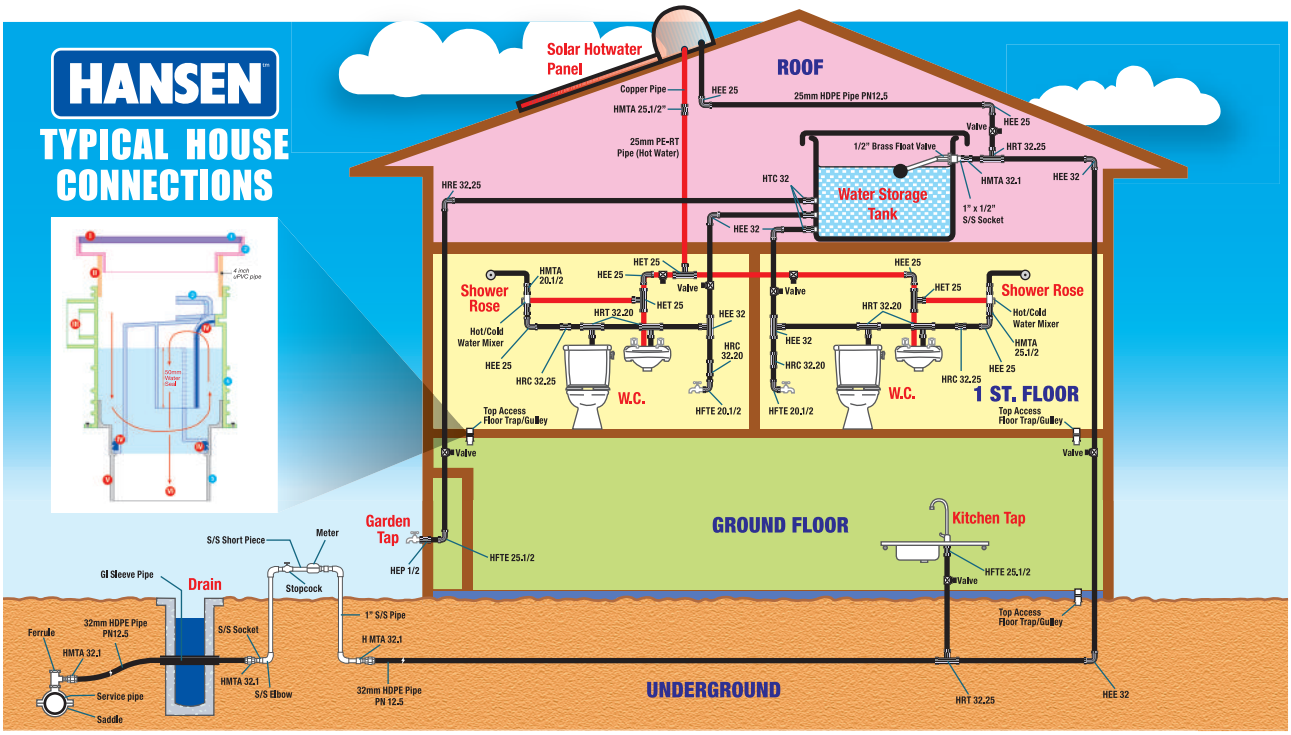
BENEFITS OF POLYETHYLENE (HDPE) PIPES

- A comprehensive range of high density polyethylene pipes and fittings provides a complete system for potable water.
- UV Stabilized
- Proven joint systems (used in Europe, USA, Canada, New Zealand, Australia, Indonesia and Thailand) offer long term, leak-free performance. Sleek joint system for use in confined areas or locations susceptible to ground movement and small enough to conceal in the wall.
- ***No Compression Rings, No 'O'-rings, No Crimping, No Solvent Cement*** - fast, leak proof and simple installation, requires no special site equipment or skilled labour. ***Low installation costs*** combined with the long life of Hansen pipe and fittings make it the ***cost-effective choice***.
- Excellent hydraulic flow characteristics.
- Materials used are not permeated or degraded by organic or inorganic contaminants in the soil. They do not rust, or corrode.
- The high strength of Nylon and high density Polyethylene makes it suitable for high stress applications where fatigue or pressure surge may be experienced and gives security against unforeseen circumstances like ground subsidence.
- ***Patented System*** - no "backyard" manufacturers or imitations. You are assured of high quality leak proof products.
- Test results from reputed testing bodies (SIRIM, etc) are available on request.
  -support bracket min 1m / bracket recommended.

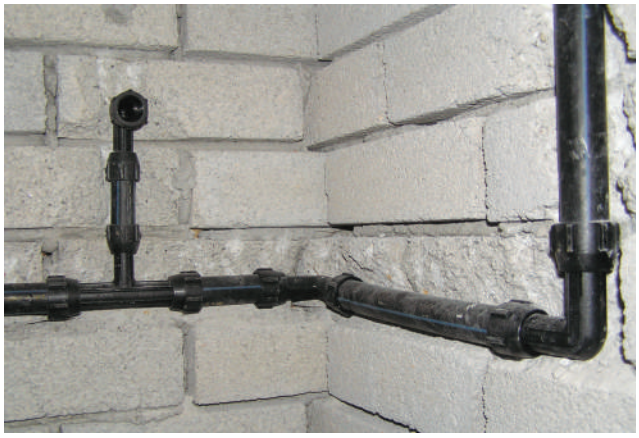
Compatible with high density polyethylene (HDPE) pipe manufactured to	MS 1058
	BS 6572
	BS 6730
	ISO 161-1
	DIN 8074



FULL HOUSE PLAN



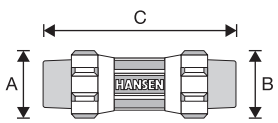
SITE PICTURES



FITTINGS SPECIFICATIONS

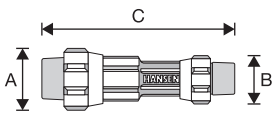
Hansen Fittings are compatible with high density polyethylene (HDPE) pipes manufactured to MS1058: Part 2: 2002 - 20mm fittings (PN 16), 25mm, 32mm, 40mm & 50mm (PN 12.5). And also compatible to polyethylene - raised temperature (PE-RT) pipe manufactured to MS ISO 10508: 2004 - 20mm, 25mm, and 32mm.

Equal Coupling



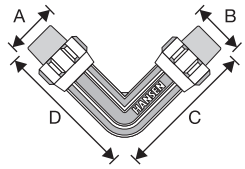
Code	Size (mm)	A	B	C
HEC 20	20 x 20	30	30	85
HEC 25	25 x 25	36	36	94
HEC 32	32 x 32	44	44	105
HEC 40	40 x 40	48	48	116
HEC 50	50 x 50	61	61	126

Reducing Coupling



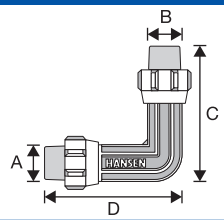
Code	Size (mm)	A	B	C
HRC 25.20	25 x 20	36	30	109
HRC 32.20	32 x 20	44	30	118
HRC 32.25	32 x 25	44	36	122
HRC 40.32	40 x 32	48	44	119
HRC 50.32	50 x 32	61	44	124
HRC 50.40	50 x 40	61	48	132

Equal Elbow



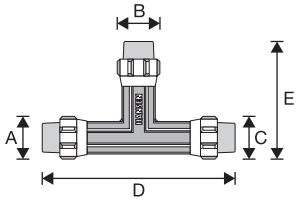
Code	Size (mm)	A	B	C	D
HEE 20	20 x 20	30	30	72	72
HEE 25	25 x 25	36	36	83	83
HEE 32	32 x 32	44	44	97	97
HEE 40	40 x 40	48	48	115	115
HEE 50	50 x 50	61	61	125	125

Reducing Elbow



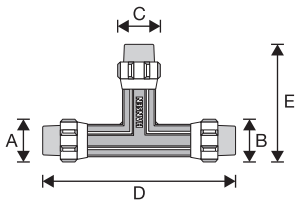
Code	Size (mm)	A	B	C	D
HRE 25.20	25 x 20	36	30	77	77
HRE 32.25	32 x 25	44	36	89	91
HRE 40.32	40 x 32	48	44	112	113
HRE 50.40	50 x 40	61	48	119	122

Equal Tee



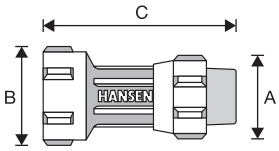
Code	Size (mm)	A	B	C	D	E
HET 20	20 x 20 x 20	30	30	30	128	73
HET 25	25 x 25 x 25	36	36	36	144	83
HET 32	32 x 32 x 32	44	44	44	166	97
HET 40	40 x 40 x 40	48	48	48	199	115
HET 50	50 x 50 x 50	61	61	61	209	124

Reducing Tee



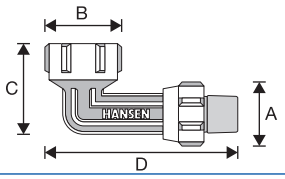
Code	Size (mm)	A	B	C	D	E
HRT 25.20	25 x 25 x 20	36	36	30	144	78
HRT 32.20	32 x 32 x 20	44	44	30	160	84
HRT 32.25	32 x 32 x 25	44	44	36	160	89
HRT 40.32	40 x 40 x 32	48	48	44	199	113
HRT 50.32	50 x 50 x 32	61	61	44	209	116
HRT 50.40	50 x 50 x 40	61	61	48	209	127

Female Thread Adaptor



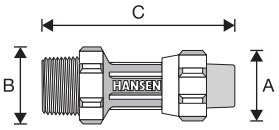
Code	Size (mm)	A	B	C
HFTA 20.½	20 x ½”	30	½”	72
HFTA 25.¾	25 x ¾”	36	¾”	80
HFTA 32.1	32 x 1”	44	1”	90

Female Thread Elbow



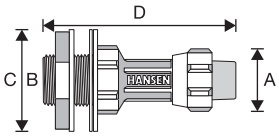
Code	Size (mm)	A	B	C	D
HFTE 20.½	20 x ½”	30	½”	44	79
HFTE 25.½	25 x ½”	36	½”	50	91
HFTE 25.¾	25 x ¾”	36	¾”	50	91
HFTE 32.1	32 x 1”	44	1”	61	107

Male Thread Adaptor

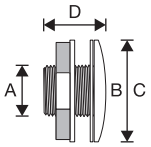


Code	Size (mm)	A	B	C
HMTA 20.½	20 x ½”	30	½”	83
HMTA 25.½	25 x ½”	36	½”	87
HMTA 25.¾	25 x ¾”	36	¾”	90
HMTA 32.1	32 x 1”	44	1”	100
HMTA 40.1¼	40 x 1¼”	48	1¼”	113
HMTA 50.1½	50 x 1½”	61	1½”	124

Tank Connector

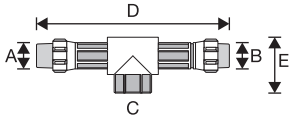


Code	Size (mm)	A	B	C	D
HTC 25.¾	25 x ¾”	36	¾”	70	105
HTC 32.1	32 x 1”	44	1”	54	117



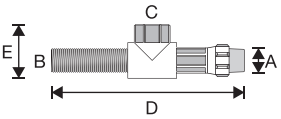
Code	Size (mm)	A	B	C	D
HTC 40.1¼	40 x 1¼”	42	1¼”	86	50
HTC 50.1½	50 x 1½”	45	1½”	90	59

Tee with Female Thread Branch



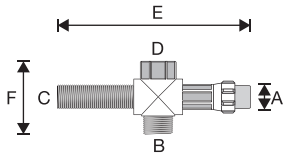
Code	Size (mm)	A	B	C	D	E
HTFTB 25.25.½	25 x 25 x ½”	36	36	½”	159	47
HTFTB 32.25.½	32 x 25 x ½”	44	36	½”	168	47
HTFTB 32.32.½	32 x 32 x ½”	44	44	½”	174	47

Male Tee with Female Branch



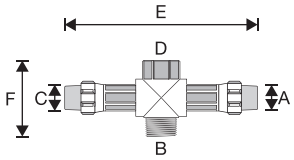
Code	Size (mm)	A	B	C	D	E
HMTFB 25.½.½	25 x ½" x ½"	20	½"	½"	164	47
HMTFB 25.¾.½	25 x ¾" x ½"	26	¾"	½"	166	47
HMTFB 32.½.½	32 x ½" x ½"	20	½"	½"	171	47
HMTFB 32.¾.½	32 x ¾" x ½"	26	¾"	½"	173	47

Male Cross Tee



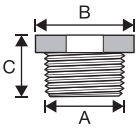
Code	Size (mm)	A	B	C	D	E	E
HMCT 25.½.¾.½	25 x ½" x ¾" x ½"	36	½"	¾"	½"	166	63
HMCT 25.½.½.½	25 x ½" x ½" x ½"	36	½"	½"	½"	164	63
HMCT 32.½.¾.½	32 x ½" x ¾" x ½"	44	½"	¾"	½"	173	63
HMCT 32.½.½.½	32 x ½" x ½" x ½"	44	½"	½"	½"	171	63

Cross Tee



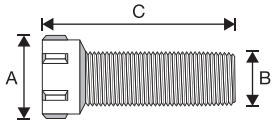
Code	Size (mm)	A	B	C	D	E	E
HCT 25.½.25.½	25 x ½" x 25 x ½"	36	½"	36	½"	159	63
HCT 25.½.32.½	25 x ½" x 32 x ½"	36	½"	44	½"	166	63
HCT 32.½.32.½	32 x ½" x 32 x ½"	44	½"	44	½"	174	63

Bush



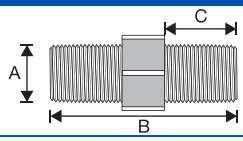
Code	Size (mm)	A	B	C
HB 1.¾	1" x ¾"	1"	¾"	29
HB ¾.½	¾" x ½"	¾"	½	26

Extension Piece



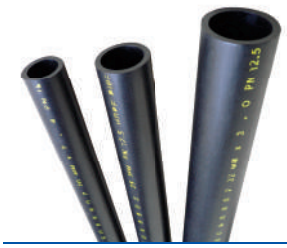
Code	Size (mm)	A	B	C
HEP	1½"L x ½"	½"	½"	58
		(½" BSP Female x ½" BSP Male thread)		

Equal Nipple



Code	Size (mm)	A	B	C
HEN ½.½	½" x ½"	½"	42	16

HDPE Pipes



Size	Rating
20mm (½")	PN 16
25mm (¾")	PN 12.5
32mm (1")	PN 12.5
40mm (1¼")	PN 12.5
50mm (1½")	PN 12.5

PE-RT Pipes

Size	Rating
20mm (½")	4 bar@70°C
25mm (¾")	4 bar@70°C
32mm (1")	4 bar@70°C

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