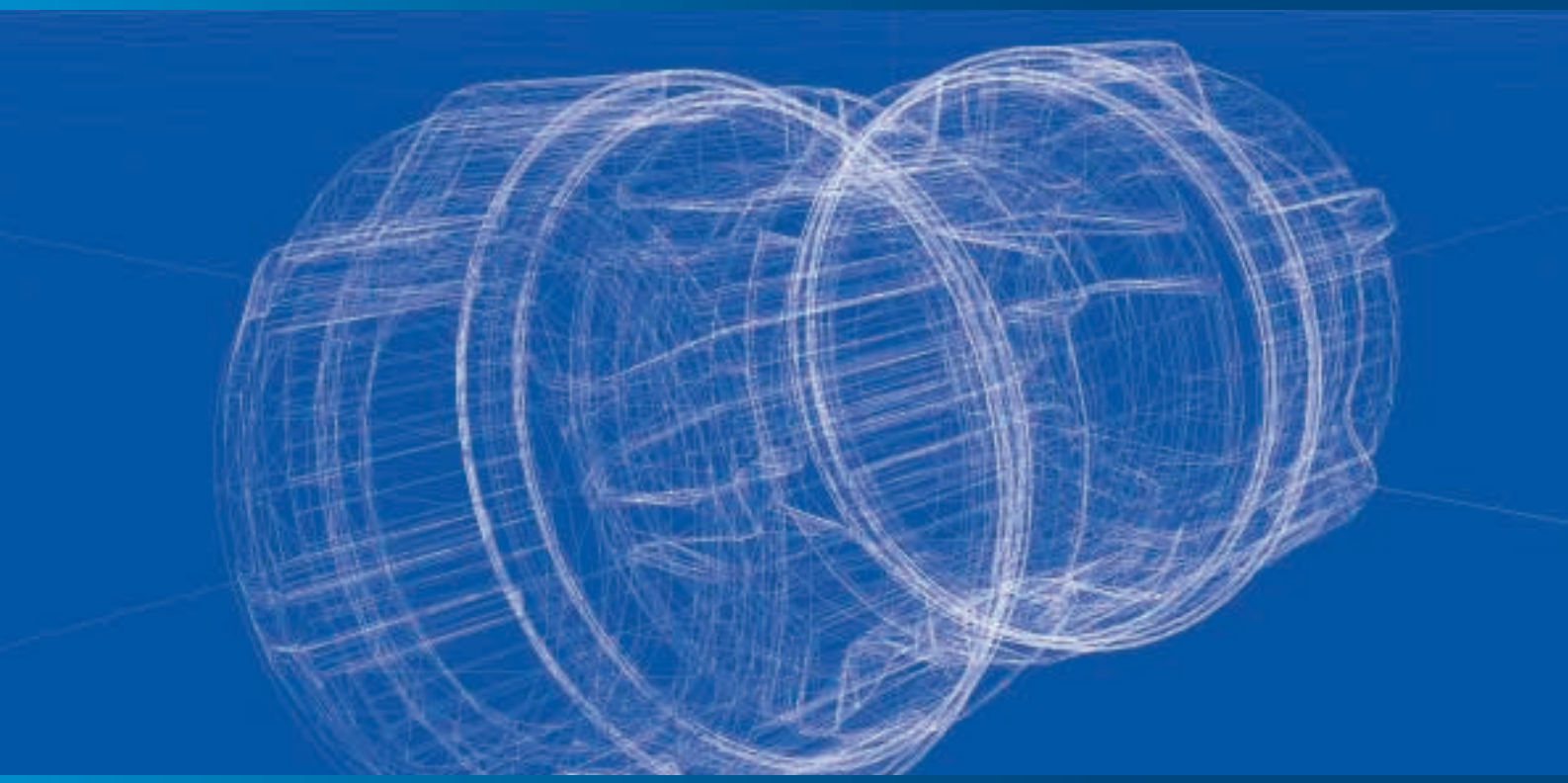
METRIC/IMPERIAL™

Technical Manual



Philmac®

The connection you can trust.

Quality System™

Quality Endorsed Company

ISO 9001-2000
License No. 2658
SAI Global

Environmental System™

Certified Environmental Management

ISO 14001 Lic CEM20307
SAI Global

NATA

NATA Accredited Laboratory Number: 14673

Philmac is well renowned for quality products and services. Philmac manufactures pipe fittings and valves under a Quality Assurance System assessed and approved to ISO 9001. Philmac has a NATA accredited laboratory and tests fittings and valves to international and national standards. Third party accreditation is carried out by SAI Global.

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Disclaimer

Please note that the information, opinions, recommendations and advice given in this manual are supplied only to provide an improved understanding of the technical aspects of fitting systems.

So far as the law allows, Philmac Pty Ltd will not accept liability in respect of any loss or damage of any kind claimed to arise as a result of reliance upon any information claimed in this manual.

Please refer to our Terms and Conditions of sale.

INTRODUCTION

Philmac, the global leader in the design and manufacture of plastic compression fittings, is proud to release the most innovative and revolutionary product of its kind.

Philmac Metric/Imperial™ is the truly universal polyethylene pipe fitting. The culmination of years of exhaustive research and development, utilisation of cutting-edge manufacturing technology and stringent testing, this new range of premium products could well be the biggest breakthrough in water transfer technology where both metric and imperial pipes are in use. Its universal application means this is the only fitting you need carry, reducing costs and streamlining inventory.

Designed to make the job at hand so much easier, the Philmac Metric/Imperial™ plastic compression fitting is the product of Philmac's unrelenting commitment to continuous improvement and a culture based on innovation and ingenuity.

BENEFITS

Flexibility

• **The Metric & Imperial connection:** The new Philmac Metric/Imperial™ compression fitting is a revolutionary step forward for PE pipe jointing. Connections can now be made to both Metric (BS6572/BS6730) and Imperial PE pipe (BS1972/3284 and IRS 135 Heavy Gauge) from the one fitting from either end. And, the innovative design means that inserts are no longer required to connect imperial pipe.

Removing the need for dedicated fittings and inserts, Metric/Imperial™ provides the ultimate in flexibility, reducing both inventory and complexity.

Fast and easy installation

- **Slide & Tighten™ technology:** Metric/Imperial™ incorporates all the benefits of Philmac's unique Slide & Tighten™ technology. No pipe preparation is needed and no force is required to push the pipe past the seal, so installation couldn't be faster or easier. Simply insert the pipe fully into the fitting and then tighten the nut. Assembly is so easy you can even do it under live conditions. No special tools are required, and there is no need to disassemble the fitting before use because the Metric/Imperial™ compression fitting is supplied pre-assembled and ready to use.
- **Compact Design:** The size of the new Philmac Metric/Imperial™ compression fitting has been kept to a minimum, making the fitting ideal to use in confined areas. In addition to making connections with minimal turns of the nut, the design and size of the fitting means that in installations taking place between pipe with two fixed points, the manipulation of the pipe into the fitting becomes easy.
- **Easy disassembly:** The fitting has been designed so the split collet is released as soon as the nut is backed off, making disassembly easy.

Complete security

- **Dynamic sealing method:** The mechanical advantage of the nut thread compresses the seal into position, eliminating resistance when inserting the pipe into the fitting so there is no risk of seal distortion or displacement.
- **No loose components:** If the nut is removed there is no danger of losing components, as the collet and seal ring are retained in the body of the fitting. Losing components in the trench becomes a thing of the past.
- **Designed to minimise pipe twist:** The fitting has been designed to minimise pipe twist as the nut is tightened. Maximum pipe twist is approximately a quarter turn compared to one and a half turns with many other fittings. Pipe twist can impact on not only the connection you have just made but also on the connection at the other end of the line.
- **Approvals:** Philmac fittings are WRAS approved for above and below ground use.

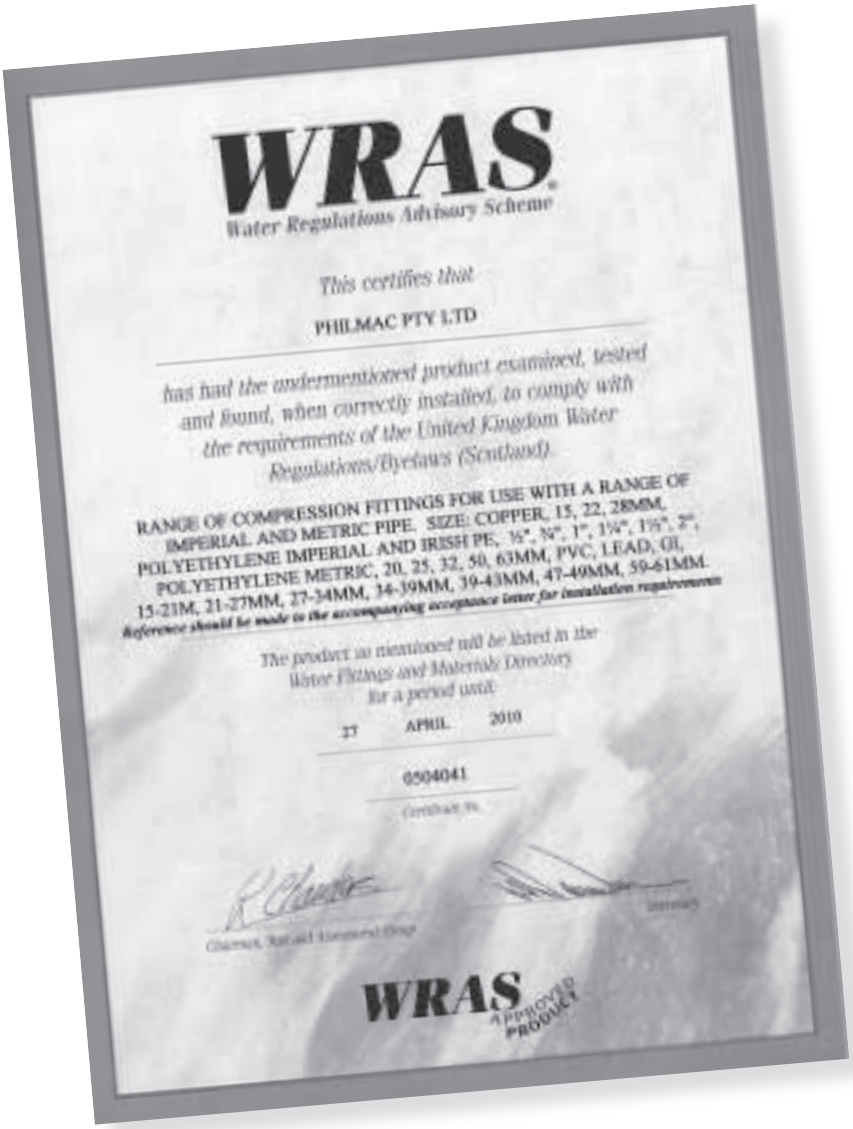
High performance

- **Made from advanced thermoplastic materials:** Metric/Imperial™ is manufactured from lightweight high performance thermoplastic materials with outstanding impact, UV, chemical and corrosion resistance. The material is non-toxic and taint-free.
- **Rated to 1600 kpa:** Metric/Imperial™ is pressure rated to 1600 kpa (PN16) to meet the needs of high pressure systems.
- **50 year+ design life:** Built to withstand the toughest conditions to ensure longevity and durability, Metric/Imperial™ has a 50 year+ design life.

Complete coverage

- **Wide range:** The new Philmac Metric/Imperial™ range is comprehensive: straight and reducing joiners, tees, elbows, end connectors and caps ranging from 20mm to 63mm. Also available are copper connection kits, normal gauge (IRS 134) connection kits, reducing kits and blanking plugs, ball valves, stopcocks, wall plate elbows and tank connectors.
- **Copper connection Kits:** Philmac's all new carborundum gripper design has been introduced into the Metric/Imperial™ copper connection kit. With no steel components in the gripping mechanism, there is absolutely no risk of electrolysis.

STANDARDS



WRAS
Water Regulations Advisory Scheme

This certifies that

PHILMAC PTY LTD

has had the undermentioned product examined, tested and found, when correctly installed, to comply with the requirements of the United Kingdom Water Regulations/Byelaws (Scotland).

RANGE OF COMPRESSION FITTINGS FOR USE WITH A RANGE OF IMPERIAL AND METRIC PIPE. SIZE: COPPER, 15, 22, 28MM, POLYETHYLENE IMPERIAL AND IRISH PE, ½", ¾", 1", 1¼", 1½", 2", POLYETHYLENE METRIC, 20, 25, 32, 50, 63MM, PVC, LEAD, GI, 15-21M, 21-27MM, 27-34MM, 34-39MM, 39-43MM, 47-49MM, 59-61MM.
Reference should be made to the accompanying acceptance issue for installation requirements

The product so mentioned will be listed in the Water Fittings and Materials Directory for a period until

27 APRIL 2010

0504041

Certificate No.

WRAS APPROVED PRODUCT

The Philmac Metric/Imperial™ range of compression fittings is approved by WRAS for above and below ground use.

METRIC/IMPERIAL™ INSTALLATION INSTRUCTIONS

1. Cut the Pipe Square
Cut the pipe square. There is no need to prepare the pipe end. Chamfering or lubrication is not required.

2. Insert Liner in MDPE pipe
With MDPE pipe a liner must be used to ensure conformance with WRAS.

3. No Liner or Insert Required for Imperial Pipe
For connections to imperial PE pipe (BS1972/3284 and IRS 135 Heavy Gauge) a liner or insert is not required.

4. Ready to Use Position
The fitting is pre-assembled and ready to use, however always ensure the nut is fully relaxed and 2 threads are showing before inserting the pipe.

5. Pipe Insertion
Insert the pipe fully into the fitting to the point where the stop is felt.

6. Nut Tightening
The nut should be tightened by hand and then firmly with a wrench.

7. Fully Installed
Fitting is now fully installed.

8. Imperial Fully Installed
For connections to Imperial PE pipe (BS1972/3284 and IRS 135 Heavy Gauge) steps 5 to 8 are the same as for MDPE connections.

9. Disassembly
To disassemble the fitting simply loosen the nut using a wrench until 2 threads are showing. Pipe will be released and can simply be pulled out of the fitting.

Note: Philmac recommends the use of PTFE tape on BSP threads to ensure a positive seal.

REDUCING & COPPER CONNECTION KIT INSTALLATION INSTRUCTIONS

1. Disassembly
Take the Metric/Imperial™ fitting and remove the nut. The split collet and seal ring must then be removed.

2. Position the Connection Kit
Take the appropriate connection kit and place it in the body of the fitting with the tapered end pointing outwards.

3. Ready to Use
Replace the nut on the fitting body. The fitting is now ready for use. Standard installation instructions now apply.

COPPER INSTALLATION INSTRUCTIONS

Repeat steps 1 to 3 above using the copper connection kit.

1. Cut the Pipe Square
Cut the pipe square. There is no need to prepare the pipe end.

2. Ready to Use Position
Prior to pipe insertion ensure the nut is fully relaxed and 2 threads are showing.

3. Witness Mark the Pipe
To ensure the correct insertion depth witness the mark by lining up the pipe against the fitting and using the flange of the body as an indicator.

4. Pipe Insertion
Insert the pipe fully into the fitting up to the witness mark.

5. Nut Tightening
The nut should be tightened by hand and then firmly with a wrench.

6. Fully Installed
The fitting is fully installed when the nut butts against the flange of the body.

Note: Should not be used on barrier pipe systems.

SYSTEM DESIGN CONSIDERATIONS

There are generally two types of PE pipe fittings; mechanical and thermofusion. Philmac Metric/Imperial™ is a range of mechanical fittings that offers three distinct advantages over thermofusion fittings;

- **More economical**
- **Quick and easy installation**
- **Quick and easy revision to installation**

This section highlights engineering considerations when designing a PE pipe system with Philmac Metric/Imperial™.

Projected life of Compression fittings

Whilst Philmac Metric/Imperial™ conforms to institutionalised specifications written to have a minimum life of 50 years, its compression fittings are intentionally developed to exceed the expectations of these specifications.

Head losses

The following table offers a guide in estimating head losses in PE pipe systems based on the conveyance of water.
Use the following formula to estimate this head loss;

$L = F \times D$

where F = fitting constant
D = pipe inner diameter (m)
L = head loss based on equivalent pipe length (m)

Fitting	Fitting Constant (F)
90° elbow	30
90° tee - straight through	12
90° tee - side branch	60

Resistance to Impact

The thermoplastic materials used in the Philmac Metric/Imperial™ fitting have excellent impact properties.

Abrasion Resistance

Philmac Metric/Imperial™ is suitable for the transportation of abrasive slurries and will withstand normal conditions found in urban, mining, industrial, rural water and waste water systems.

Weathering

The materials used contain pigments to provide excellent protection to degradation due to ultra-violet radiation. Continuous use of the Philmac Metric Imperial™ fitting in systems above ground is therefore permissible without additional protection.

Electrolytic Corrosion

Philmac Metric/Imperial™ is non magnetizing and does not cause electrolytic deterioration. This also applies to the new carborundum copper connection kit.

Thermal Insulation

Polypropylene has natural thermal insulation of 2000 times over copper and 200 times over steel.

Light Transmission

The all black Philmac Metric/Imperial™ does not transmit light, thus protecting the water quality in potable water pipelines from growth of micro organisms.

Effect on Water

Philmac Metric/Imperial™ does not impart to water any odour, taste, colour, or any constituents in concentrations that could be injurious to health.

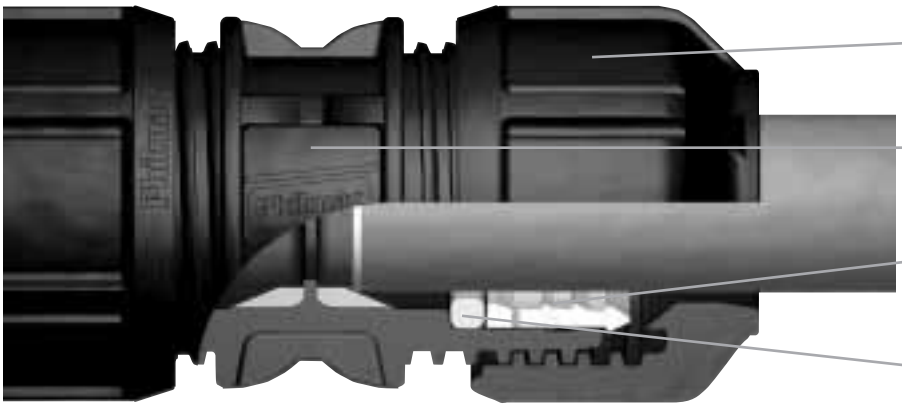
Fluids other than Water

Philmac Metric/Imperial™ may convey a wide variety of fluids. The following table is provided as a guide only for the compatibility of various chemicals to Philmac Metric/Imperial™. Contact Philmac for advice on specific applications.

CHEMICAL RESISTANCE

Chemical	Satisfactory	Not Satisfactory
Air	▲	
Ammonium Hydroxide	▲	
Alcohol	▲	
Acetone		▲
Auto Transmission Fluid	▲	
Antifreeze	▲	
Benzene		▲
Butane	▲	
Calcium Salts	▲	
Caustic Soda (40% aqueous)	▲	
Cresol		▲
Citric Acid (10% aqueous)	▲	
Copper Salts	▲	
Ethylene Alcohol	▲	
Ethyl Glycol	▲	
Diesel	▲	
Formic Acid		▲
Gasoline		▲
Hydrochloric Acid		▲
Kerosene		▲
Mineral Oils	▲	
Methane	▲	
Methylene Chloride		▲
Nitric Acid		▲
Petroleum Oils	▲	
Sewerage	▲	
Sodium Cyanide	▲	
Sulphuric Acid		▲
Toluene		▲
Turpentine		▲
Transformer Oil	▲	
Zinc Salt Solution	▲	
Note: Fluid Temperature = 20°c		

MATERIALS & COMPONENTS



NUT – Acetal

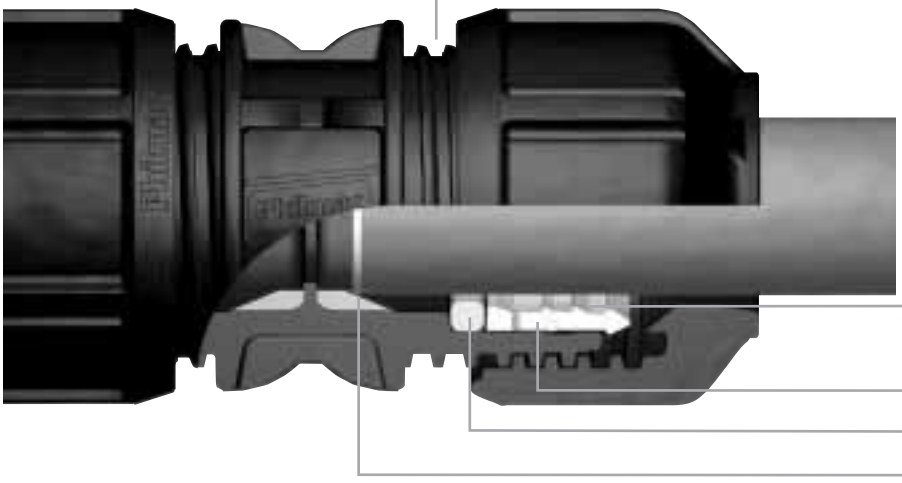
BODY – Polypropylene

SPLIT COLLET – Acetal

SEAL – Nitrile Rubber

PRINCIPALS OF OPERATION

FULLY OPEN



Fitting is pre-assembled ready to use in the open position with 2 threads showing.

Clearance between the pipe and fitting allows for easy insertion of the pipe.

Split collet, which is in relaxed position.

Seal, which is in relaxed position.

The pipe sits against the tapered wedges which minimises pipe rotation.

FULLY CLOSED

Split collet bites into the pipe providing end load resistance.

Positive internal stop when nut meets flange of the body.

Nut and then split collet has fully compressed the seal. Seal ring compression is achieved by exploiting the mechanical advantage of the nut thread.

PRODUCT SPECIFICATION – Fittings for PE to PE pipe connection

Manufacturer Accreditation

Only fittings manufactured by Manufacturers with a Quality System approved to ISO9001 or equivalent shall be accepted for use.

Product Performance Accreditation

Fittings for Polyethylene (PE) pipes shall meet the applicable performance requirements of ISO14236 with specific reference to:

a) Pressure Testing (ISO 3458)
b) External Pressure resistance testing (ISO 3459)
c) Resistance to pull out of test assemblies at 20 degrees C (ISO 3501)
d) Internal pressure resistance when subjected to bending stresses (ISO 3503)

Threaded ends of fittings shall be tapered and conform to BS21 (specification for pipe threads for tubes and fittings where pressure tight joints are made on threads).

Product Material Accreditation

Fittings for Polyethylene (PE) pipes shall be approved to ISO 9080 (Plastic piping and ducting systems – determination of the long term hydrostatic strength of thermoplastic materials in pipe form by extrapolation).

Performance verification shall be according to test parameters outlined in Clause 8.3.2.2 of ISO 14236 – Verification of long term behaviour.

Fittings shall be suitable for the conveyance of drinking water and shall conform to BS6920 (suitability of non metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of water).

Product Configuration/ Material Overview

Fittings shall be compression fitting type.

Fitting bodies shall be of Polypropylene material, nuts shall be of Acetal material. Each fitting shall be supplied complete and pre assembled with captivated collet and seal ring.

Collets shall be in Acetal material and seal rings shall be made from nitrile rubber.

Fitting colour shall be black so as to minimise potential light transmission and/ or UV degradation.

Method of Connection

The seal of a joint will be achieved by nut tightening so as to obtain watertightness by a seal ring around the external diameter of the pipe.

Any pipe preparation will be limited to cutting and cleaning of pipe (for foreign material or burrs). Fittings shall not require the pipe to be lubricated or chamfered during installation.

There shall be no loose components during assembly or disassembly (meaning that the fitting shall not be required to be dismantled during assembly or disassembly and if the nut is removed accidentally components will not fall out of the fitting unless removed deliberately).

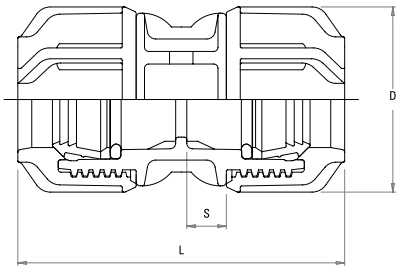
Connections to both MDPE (BS6572/ BS6730) and Imperial PE (BS1972/3284 and IRS 135 Heavy Gauge) pipe can be achieved at the same end of the fitting without change in components.

RANGE DIMENSIONS & WEIGHTS

RANGE DIMENSIONS & WEIGHTS

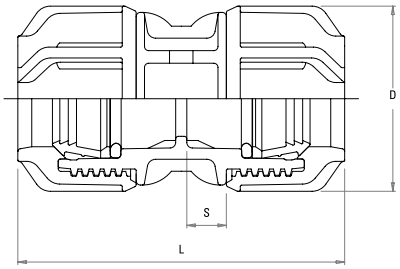
JOINERS (Metric/Imperial X Metric/Imperial)

		Dimensions mm.			kg.
Size	Part No.	**S**	**D**	**L**	**Wt**
20/1/2" x 20/1/2"	98912200	10	47	90	0.08
25/3/4" x 25/3/4"	98913300	11	55	97	0.12
32/1" x 32/1"	98914400	14	67	118	0.20
40/1-1/4" x 40/1-1/4"	98915500	18	81	136	0.33
50/1-1/2" x 50/1-1/2"	98916600	24	94	161	0.52
63/2" x 63/2"	98917700	29	110	182	0.76



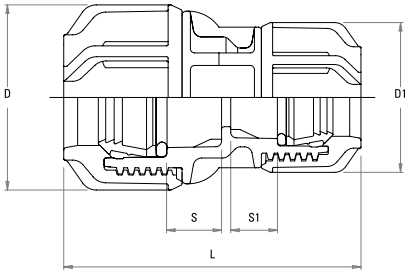
SLIP JOINERS (Metric/Imperial X Metric/Imperial)

		Dimensions mm.			kg.
Size	Part No.	**S**	**D**	**L**	**Wt**
20/1/2" x 20/1/2"	98901220	10	47	90	0.08
25/3/4" x 25/3/4"	98901330	11	55	97	0.12
32/1" x 32/1"	98901440	14	67	118	0.20
40/1-1/4" x 40/1-1/4"	98901550	18	81	136	0.33
50/1-1/2" x 50/1-1/2"	98901660	24	94	161	0.52
63/2" x 63/2"	98901770	29	110	182	0.76



REDUCING JOINERS (Metric/Imperial X Metric/Imperial)

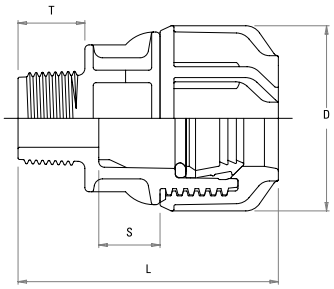
		Dimensions mm.					kg.
Size	Part No.	**S**	**S1**	**D**	**D1**	**L**	**Wt**
25/3/4" x 20/1/2"	98913200	11	10	55	47	94	0.10
32/1" x 20/1/2"	98914200	14	10	67	47	110	0.14
32/1" x 25/3/4"	98914300	14	11	67	55	108	0.16
40/1-1/4" x 25/3/4"	98915300	18	11	81	55	125	0.24
40/1-1/4" x 32/1"	98915400	18	14	81	67	128	0.28
50/1-1/2" x 25/3/4"	98916300	24	11	94	55	141	0.34
50/1-1/2" x 32/1"	98916400	24	14	94	67	150	0.38
50/1-1/2" x 40/1-1/4"	98916500	24	18	94	81	149	0.44
63/2" x 32/1"	98917400	29	14	110	67	167	0.51
63/2" x 40/1-1/4"	98917500	29	18	110	81	173	0.57
63/2" x 50/1-1/2"	98917600	29	24	110	94	174	0.66



RANGE DIMENSIONS & WEIGHTS

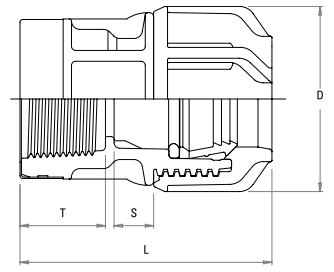
END CONNECTORS (Metric/Imperial X MI BSP)

		Dimensions mm.				kg.
Size	Part No.	**S**	**D**	**L**	**T**	**Wt**
20/1/2" x 1/2"	98922100	17	47	73	19.8	0.05
20/1/2" x 3/4"	98922200	17	47	75	21.1	0.05
20/1/2" x 1"	98922300	17	47	78	24.4	0.05
25/3/4" x 1/2"	98923100	19	55	81	19.8	0.07
25/3/4" x 3/4"	98923200	19	55	82	21.1	0.07
25/3/4" x 1"	98923300	19	55	85	24.4	0.08
32/1" x 3/4"	98924200	22	67	91	21.1	0.12
32/1" x 1"	98924300	22	67	94	24.4	0.12
32/1" x 1-1/4"	98924400	22	67	97	26.7	0.13
32/1" x 1-1/2"	98924500	22	67	97	26.7	0.13
40/1-1/4" x 1"	98925300	28	81	106	24.4	0.20
40/1-1/4" x 1-1/4"	98925400	28	81	109	26.7	0.20
40/1-1/4" x 1-1/2"	98925500	28	81	109	26.7	0.20
40/1-1/4" x 2"	98925600	28	81	112	31	0.20
50/1-1/2" x 1-1/2"	98926500	30	94	118	26.7	0.30
50/1-1/2" x 2"	98926600	30	94	119	31	0.31
63/2" x 1-1/2"	98927500	36	110	132	26.7	0.40
63/2" x 2"	98927600	36	110	127	31	0.41



END CONNECTORS (Metric/Imperial X FI BSP)

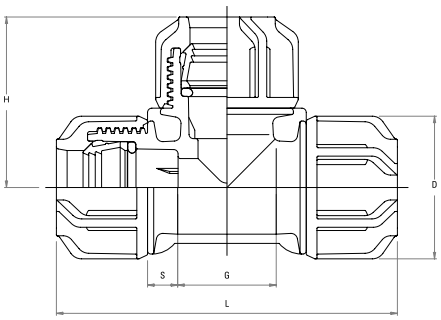
		Dimensions mm.				kg.
Size	Part No.	**S**	**D**	**L**	**T**	**Wt**
20/1/2" x 1/2"	98982100	10	47	71	22.8	0.05
20/1/2" x 3/4"	98982200	10	47	70	24.1	0.05
20/1/2" x 1"	98982300	10	47	73	27.4	0.05
25/34" x 1/2"	98983100	11	55	74	22.8	0.08
25/3/4" x 3/4"	98983200	11	55	71	24.1	0.08
25/3/4" x 1"	98983300	11	55	77	27.4	0.08
32/1" x 3/4"	98984200	14	67	89	24.1	0.12
32/1" x 1"	98984300	14	67	88	27.4	0.13
32/1" x 1-1/4"	98984400	14	67	91	30.2	0.13
40/1-1/4" x 1-1/4"	98985400	18	81	101	30.2	0.20
40/1-1/4" x 1-1/2"	98985500	18	81	101	30.2	0.21
50/1-1/2" x 1-1/2"	98986500	24	94	106	30.2	0.29
50/1-1/2" x 2"	98986600	24	94	107	34.5	0.30
63/2" x 2"	98987600	29	110	121	34.5	0.44



RANGE DIMENSIONS & WEIGHTS

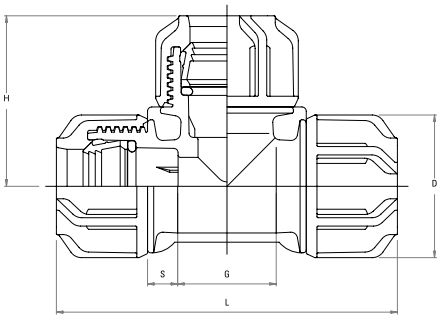
TEES (Metric/Imperial X Metric/Imperial X Metric/Imperial)

		Dimensions mm.					kg.
Size	Part No.	**S**	**D**	**H**	**G**	**L**	**Wt**
20/1/2" x 20/1/2" x 20/1/2"	98932200	10	47	59	31	117	0.12
25/3/4" x 25/3/4" x 25/3/4"	98933300	11	55	67	40	134	0.19
32/1" x 32/1" x 32/1"	98934400	14	67	80	48	160	0.33
40/1-1/4" x 40/1-1/4" x 40/1-1/4"	98935500	18	81	95	50	182	0.53
50/1-1/2" x 50/1-1/2" x 50/1-1/2"	98936600	24	94	101	60	202	0.80
63/2" x 63/2" x 63/2"	98937700	29	110	118	73	236	1.22



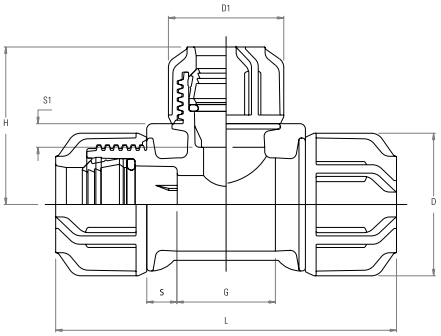
SLIP TEES (Metric/Imperial X Metric/Imperial X Metric/Imperial)

		Dimensions mm.					kg.
Size	Part No.	**S**	**D**	**H**	**G**	**L**	**Wt**
20/1/2" x 20/1/2" x 20/1/2"	98903220	10	47	59	31	117	0.12
25/3/4" x 25/3/4" x 25/3/4"	98903330	11	55	67	40	134	0.19
32/1" x 32/1" x 32/1"	98903440	14	67	80	48	160	0.33
40/1-1/4" x 40/1-1/4" x 40/1-1/4"	98903550	18	81	95	50	182	0.53
50/1-1/2" x 50/1-1/2" x 50/1-1/2"	98903660	24	94	101	60	202	0.80
63/2" x 63/2" x 63/2"	98903770	29	110	118	73	236	1.22



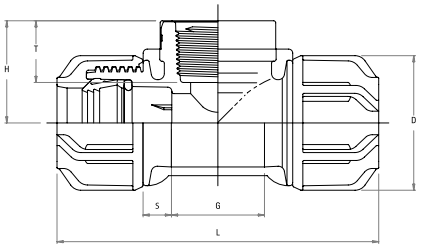
REDUCING TEES (Metric/Imperial X Metric/Imperial X Metric/Imperial)

		Dimensions mm.							kg.
Size	Part No.	**S**	**S1**	**D**	**D1**	**H**	**G**	**L**	**Wt**
25/3/4" x 25/3/4" x 20/1/2"	98933200	11	10	55	47	64	40	134	0.18
25/3/4" x 25/3/4" x 32/1"	98933400	11	14	55	64	69	40	134	0.24
32/1" x 32/1" x 25/3/4"	98934300	14	11	67	55	74	40	160	0.30
40/1-1/4" x 40/1-1/4" x 25/3/4"	98935300	18	11	81	55	74	34	166	0.40
40/1-1/4" x 40/1-1/4" x 32/1"	98935400	18	14	81	67	84	39	171	0.46
50/1-1/2" x 50/1-1/2" x 25/3/4"	98936300	20	11	94	55	81	35	182	0.63
50/1-1/2" x 50/1-1/2" x 32/1"	98936400	20	14	94	67	90	40	187	0.66
50/1-1/2" x 50/1-1/2" x 40/1-1/4"	98936500	24	21	94	81	98	60	197	0.70
63/2" x 63/2" x 25/3/4"	98937300	24	11	110	55	88	29	196	0.82
63/2" x 63/2" x 32/1-1/4"	98937400	24	14	110	67	98	34	201	0.87
63/2" x 63/2" x 50/1-1/2"	98937600	29	24	110	94	111	73	220	1.05



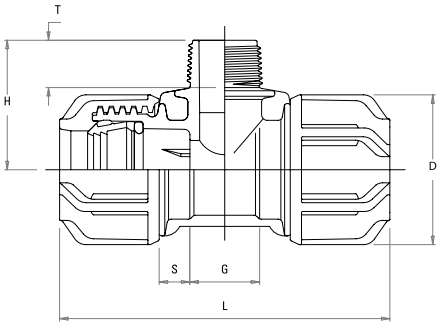
TEES (Metric/Imperial X Metric/Imperial X FI BSP)

		Dimensions mm.						kg.
Size	Part No.	**S**	**D**	**H**	**G**	**L**	**T**	**Wt**
20/1/2" x 20/1/2" x 1/2"	98942100	10	47	38	31	117	22.8	0.09
20/1/2" x 20/1/2" x 3/4"	98942200	10	47	38	31	117	24.1	0.10
25/3/4" x 25/3/4" x 1/2"	98943100	11	55	40	40	134	22.8	0.14
25/3/4" x 25/3/4" x 3/4"	98943200	11	55	41	40	134	24.1	0.15
25/3/4" x 25/3/4" x 1"	98943300	11	55	44	40	134	27.4	0.16
32/1" x 32/1" x 1/2"	98944100	14	67	42	20	135	22.8	0.21
32/1" x 32/1" x 3/4"	98944200	14	67	44	48	160	24.1	0.24
32/1" x 32/1" x 1"	98944300	14	67	44	48	160	27.4	0.25
32/1" x 32/1" x 1-1/4"	98944400	14	67	50	48	160	30.2	0.26
40/1-1/4" x 40/1-1/4" x 1/2"	98945100	18	81	48	19	151	22.8	0.33
40/1-1/4" x 40/1-1/4" x 3/4"	98945200	18	81	50	24	156	24.1	0.34
40/1-1/4" x 40/1-1/4" x 1-1/4"	98945400	18	81	53	50	182	30.2	0.40
40/1-1/4" x 40/1-1/4" x 1-1/2"	98945500	18	81	56	50	182	30.2	0.41
50/1-1/2" x 50/1-1/2" x 1/2"	98946100	24	94	54	19	175	22.8	0.51
50/1-1/2" x 50/1-1/2" x 3/4"	98946200	24	94	57	24	181	24.1	0.53
50/1-1/2" x 50/1-1/2" x 1-1/2"	98946500	24	94	67	60	197	30.2	0.58
50/1-1/2" x 50/1-1/2" x 2"	98946600	24	94	71	60	213	34.5	0.63
63/2" x 63/2" x 2"	98947600	29	110	77	73	226	34.5	0.89



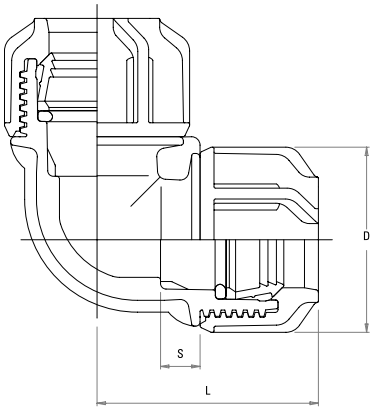
TEES (Metric/Imperial X Metric/Imperial X MI BSP)

		Dimensions mm.						kg.
Size	Part No.	**S**	**D**	**H**	**G**	**L**	**T**	**Wt**
25/3/4" x 25/3/4" x 1/2"	98993100	11	55	53	35	114	19.8	0.14
25/3/4" x 25/3/4" x 3/4"	98993200	11	55	54	35	114	21.1	0.15



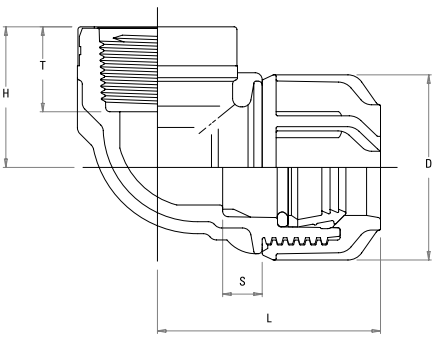
ELBOWS (Metric/Imperial X Metric/Imperial)

		Dimensions mm.			kg.
Size	Part No.	**S**	**D**	**L**	**Wt**
20/1/2" x 20/1/2"	98952200	10	47	59	0.07
25/3/4" x 20/1/2"	98953200	11	55	65	0.08
25/3/4" x 25/3/4"	98953300	11	55	67	0.13
32/1" x 32/1"	98954400	14	67	80	0.22
40/1-1/4" x 40/1-1/4"	98955500	18	81	91	0.36
50/1-1/2" x 50/1-1/2"	98956600	24	94	101	0.55
63/2" x 63/2"	98957700	29	110	118	0.85



ELBOWS (Metric/Imperial X FI BSP)

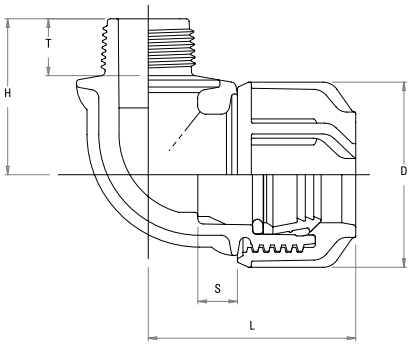
		Dimensions mm.					kg.
Size	Part No.	**S**	**D**	**H**	**L**	**T**	**Wt**
20/1/2" x 1/2"	98962100	10	47	73	59	22.8	0.05
20/1/2" x 3/4"	98962200	10	47	73	59	24.1	0.06
25/34" x 1/2"	98963100	11	55	88	67	22.8	0.08
25/3/4" x 3/4"	98963200	11	55	88	67	24.1	0.08
25/3/4" x 1"	98963300	11	55	88	67	27.4	0.09
32/1" x 1"	98964300	14	67	105	80	27.4	0.14
32/1" x 1-1/4"	98964400	14	67	105	81	30.2	0.15
40/1-1/4" x 1-1/4"	98965400	18	81	126	91	30.2	0.23
40/1-1/4" x 1-1/2"	98965500	18	81	126	91	30.2	0.24
50/1-1/2" x 1-1/2"	98966500	24	94	142	101	30.2	0.33
50/1-1/2" x 2"	98966600	24	94	142	106	34.5	0.38
63/2" x 2"	98967600	29	110	160	113	34.5	0.53



RANGE DIMENSIONS & WEIGHTS

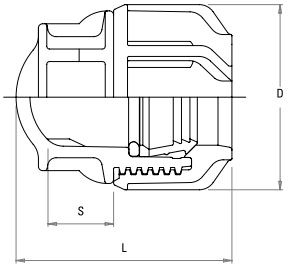
ELBOWS (Metric/Imperial X MI BSP)

		Dimensions mm.					kg.
Size	Part No.	**S**	**D**	**H**	**L**	**T**	**Wt**
20/1/2" x 1/2"	98972100	12	47	43	57	19.8	0.06
25/3/4" x 3/4"	98973200	13	55	49	65	21.1	0.07
32/1" x 1"	98974300	14	67	68	69	24.1	0.07



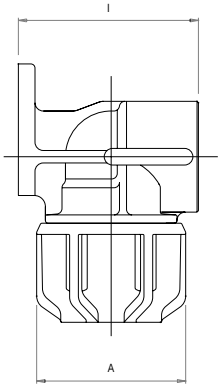
END CAPS (Metric/Imperial)

		Dimensions mm.			kg.
Size	Part No.	**S**	**D**	**L**	**Wt**
20/1/2"	98902900	19	47	58	0.04
25/3/4"	98903900	23	55	68	0.07
32/1"	98904900	24	67	78	0.11
40/1-1/4"	98905900	31	81	92	0.19
50/1-1/2"	98906900	33	94	105	0.29
63/2"	98907900	41	110	124	0.45



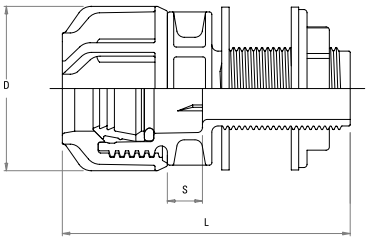
WALL PLATE ELBOWS (Metric/Imperial X FI BSP)

		Dimensions mm.	
Size	Part No.	**D**	**L**
20/1/2" x 1/2"	98922900	47	56
25/3/4" x 3/4"	98923900	55	65



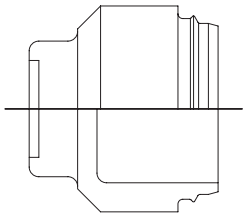
TANK CONNECTORS (Metric/Imperial X MI BSP)

		Dimensions mm.			kg.
Size	Part No.	**S**	**D**	**L**	**Wt**
25/3/4" x 3/4"	98978000	13	55	109	0.04
32/1" x 1"	98978100	14	67	117	0.07



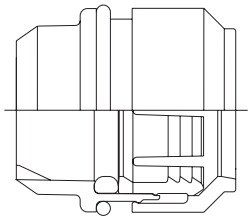
BLANKING PLUGS (Metric/Imperial)

20/1/2"	98912800
25/3/4"	98913800
32/1"	98914800
40/1-1/4"	98915800
50/1-1/2"	98916800
63/2"	98917800



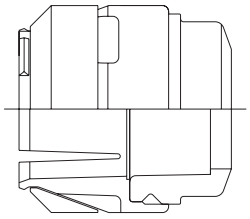
REDUCING SETS (Metric/Imperial to Metric/Imperial)

From	To	Part No.
25/3/4"	20/1/2"	99803200
32/1"	20/1/2"	99804200
32/1"	25/3/4"	99804300
50/1-1/2"	25/3/4"	99806300
50/1-1/2"	32/1"	99806400
63/2"	25/3/4"	99807300
63/2"	32/1"	99807400
63/2"	50/1-1/2"	99807600



COPPER CONNECTION KITS (Metric/Imperial to Copper EN 1057)

From	To	Part No.
20/1/2"	No. 2/15mm	99600200
25/3/4"	No. 2/15mm	99603200
25/3/4"	No. 3/22mm	99600300
32/1"	No. 4/28mm	99600400



NORMAL GAUGE CONNECTION KITS (Metric/Imperial to Normal Gauge IRS 134)

From	To	Part No.
20/1/2"	1/2"	99300200
25/3/4"	3/4"	99300300
32/1"	1"	99300400
40/1-1/4"	1-1/4"	99300500
50/1-1/2"	1-1/2"	99300600
63/2"	2"	99300700

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