BSP Threaded Fittings

Philmac

The connection you can trust.

Technical Manual

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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.

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.

Philmac BSP Fittings

EASY RELIABLE CONNECTIONS, EVERYTIME.

Introduction

Philmac's robust threaded fittings provide precision BSP tapered threads that have been engineered to maximize sealing performance. The versatile range is made from high performance, UV resistant polypropylene that does not absorb moisture. Installation is quick, simple and reliable every time. The fittings are also Watermark and potable water (AS/NZ 4020) approved. This section highlights engineering considerations when designing a PE pipe system with Philmac threaded fittings.

Benefits

Hexagonal design for fast and easy installation

The smart hexagonal design provides a surface for easy tool engagement with the fitting making tightening and therefore installation a simple process.

Reliable high quality threads

Philmac's threaded fittings are manufactured in accordance with ISO 9001 standards, ensuring quality and consistency in the thread every time. All female fittings above 2" have precision machined threads, to minimise chance of cross threading and maximise sealing capability

Tapered design

The threads incorporate a tapered design. This ensures ease of use as the thread joint can be commenced easily but importantly this does not compromise sealing ability. The end-user can be assured of making an effective joint in as easy a manner as possible.

Highest quality materials

Manufactured from high quality polypropylene. The material has excellent chemical, corrosion, and UV protection. In addition, the material resists moisture absorption to ensure consistent dimensions over the lifetime of the fitting

Reinforcing ring on female threads

All female threads above 2" are fitted with 316 Stainless Steel reinforcing rings to maximise the strength of the female thread, resist expansion of the thread over time, and ensure the long-term performance.

Pressure rating

Philmac threaded fittings are suitable for working pressures up to PN16 (1600 kPa, 235 psi) for sizes up to 2", PN12 (1200 kPa, 175 psi) for 2-1/2" and PN10 (1000 kPa, 145 psi) for 3" and 4" sized fittings. Threaded fittings have a 50-year lifetime when used at a temperature of 23 degrees centigrade. The end-user can have complete confidence in the long term performance of the fitting.

Complete Coverage

The Philmac threaded fitting range is comprehensive: plugs, bushes, nipples, sockets, tees, elbows, and caps ranging from 1/2" to 4"".

Standards

Philmac range of Threaded Fittings hold certificates for the following standards:

AS/NZS 4020 Products for use in contact with water intended for human consumption with regards to their effect on the quality of water.

AS/NZS 4129 Requirements for fittings to be used with polyethylene pipe for the conveyance of water.

Philmac Thread Fittings comply with the requirements of the following standards:

AS 1722.1-1975: Pipe threads of Whitworth form - Sealing pipe threads (superceded by ISO7.1)

BS21: Specification for pipe threads for tubes and fittings where pressure-tight joints are made on the threads.

ISO 7.1 Pipe threads where pressure joints are made on the threads. Part 1 Dimensions, tolerances and designations.

Product Body Material Accreditation

Philmac Threaded fittings are manufactured from the same materials as used in Philmac's high performance compression fittings. These materials exceed the requirements of the following international standards:

ISO 17885: Performance verification shall be according to the material test parameters outlined in ISO14236 – Verification of long term behaviour.

ISO 15853: Thermoplastics materials - Preparation of tubular test pieces for the determination of the hydrostatic strength of materials used for injection moulding

ISO 1167 Series: Fittings, valves and other piping system components, Resistance to internal pressure - Test method.

ISO 12162: Thermoplastics materials for pipes and fittings for pressure applications - Classification and designation - Overall service (design) coefficient

Philmac range of Threaded Fittings from ½ to 2" are Watermark™ certified

WaterMark™ Certification Scheme is managed by the Australian Building Codes Board (ABCB) for all plumbing and drainage products.

WaterMark™ is a mandatory certification scheme for plumbing and drainage products installed in Australia. Each type of product is required to meet its own specific Australian Standard.

Products that carry the WaterMark™ certification trademark undergo a five-year certification life cycle, with annual product surveillance. WaterMark™ certification must be displayed on the product.

Testing of products for WaterMark™ certification must be undertaken by a laboratory with ISO/IEC 17025 accreditation.

System Design Considerations

Projected life of compression fittings
Philmac threaded fittings conform to specifications designed to have a minimum life expectancy of 20 years.

Resistance to Impact
The thermoplastic materials used in the Philmac threaded fittings have excellent impact properties

Abrasion resistance
Philmac threaded fittings are 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 threaded fittings in systems above ground is therefore permissible without additional protection.

Electrolytic Corrosion
Philmac threaded fittings is non magnetising and does not cause electrolytic deterioration.

Materials
Threaded fittings are manufactured from high quality Polypropylene that prevents moisture adsorbtion.

Thread Tape
Philmac recommends the use of PTFE tape or a sealant approved for plastic materials on all threaded connections.

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

Light Transmission
The all black Philmac threaded fittings do not transmit light, thus protecting the water quality in potable water pipelines from growth of micro organisms.

Effect on Water
Philmac do not impart to water any odour, taste, colour, or any constituents in concentrations that could be injurious to health.

Pressure Ratings
- 2" and smaller PN16 (1600 kPa, 235 psi)
- 2-1/2" PN12 (1200kPa, 175 psi)
- 3" and 4" PN10 (1000 kPa, 145 psi)

Conversions
1/2" BSP = 15mm
3/4" BSP = 20mm
1" BSP = 25mm
1 1/4" BSP = 32mm
1 1/2" BSP = 40mm
2" BSP = 50mm
2 1/2" BSP = 65mm
3" BSP = 80mm
4" BSP = 100mm

Chemical Resistance

Philmac's BSP Threaded fitting range has been designed to convey water. However there may be occasions where the water contains chemicals and/or alternative fluids need to be controlled. The following table is provided as a **guide only** for the compatibility of various chemicals to Philmac's BSP Threaded fittings. The mixing together of chemicals may affect the compatibility.

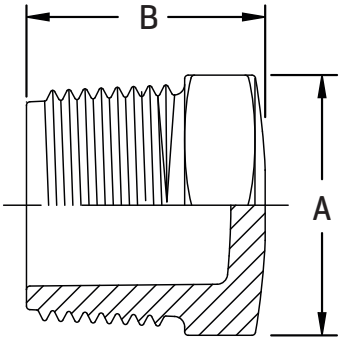
Chemical	Compatibility
Acetic acid (10%)	R
Acetic acid (50%)	R
Alcohol (ethanol)	R
Ammonium nitrate	R
Antifreeze	N
Brine	R
Calcium carbonate	R
Calcium chloride	R
Calcium nitrate	R
Calcium sulphate	R
Chlorine water	N
Citric Acid	R
Copper Sulphate >5%	R
Diesel (fuel)	
Ethyl alcohol (ethanol)	R
Hydrochloric acid (10%)	R
Hydrochloric acid (30%)	R
Kerosene	N
Lubricating oils (not synthetic)	R
Magnesium nitrate	R
Magnesium sulphate	R
Mineral oils	R
Nitric acid (10%)	N
Nitric acid (40%)	N
Olive oil	R
Orange juice	
Petrol	R
Phosphoric acid (85%) N	R
Drinking water	R
Potassium chloride	R
Potassium nitrate	R
Potassium sulphate	R
Sodium bicarbonate	R
Sodium hypochlorite (<10%)	
Sulphuric acid (10%)	R
Sulphuric acid (30%)	R
Urea	R
Zinc nitrate	R
Zinc sulphate	R

N=Not Recommended R=Resistant Empty Cell=No data available

Range Dimensions & Weights

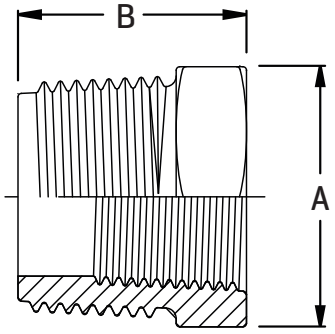
PLUGS (Male BSP)

Size	Part No.		Dimensions mm. A	B	Grams. Wt
1/2"	90 4011 00		24	29.8	6.6
3/4"	90 4022 00		30	32.1	9.8
1"	90 4033 00		37	34	13.9
1-1/4"	90 4044 00		46	37.8	24.9
1-1/2"	90 4055 00		52	40.1	34.1
2"	90 4066 00		63	46.5	60.5
2-1/2"	90 4077 00		81	47.2	106.8
3"	90 4088 00		93	50.3	135.8
4"	90 4000 00		118	57.3	220.8



BUSHES (Male BSP X Female BSP)

Size	Part No.		Dimensions mm. A	B	Grams. Wt
3/4" x 1/2"	90 4121 00		30	31	8.7
1" x 1/2"	90 4131 00		37	32.5	19.1
1 x 3/4"	90 4132 00		37	32.5	13.1
1-1/4" x 1/2"	90 4141 00		46	35.5	25.1
1-1/4" x 3/4"	90 4142 00		46	35.5	24.8
1-1/4" x 1"	90 4143 00		46	35.5	26.2
1-1/2" x 1/2"	90 4151 00		52	37.5	36.1
1-1/2" x 3/4"	90 4152 00		52	37.5	35.2
1-1/2" x 1"	90 4153 00		52	37.5	31.3
1-1/2" x 1-1/4"	90 4154 00		52	37.5	20.8
2" x 1/2"	90 4161 00		63	42.6	60.0
2" x 3/4"	90 4162 00		63	42.6	60.5
2" x 1"	90 4163 00		63	42.6	58.3
2" x 1-1/4"	90 4164 00		63	42.6	52.9
2" x 1-1/2"	90 4165 00		63	42.6	45.4
2-1/2" x 1-1/4"	90 4174 00		81	45.2	103.2
2-1/2" x 1-1/2"	90 4175 00		81	45.2	97.1
2-1/2" x 2"	90 4176 00		81	45.2	90.8
3" x 1-1/2"	90 4185 00		93	48.3	144.5
3" x 2"	90 4186 00		63	42.6	52.9
3" x 2-1/2"	90 4187 00		63	42.6	45.4
4" x 2"	90 4106 00		63	42.6	52.9
4" x 2-1/2"	90 4107 00		118	54.7	221.5
4" x 3"	90 4108 00		63	42.6	52.9



Hexagon Dimensions

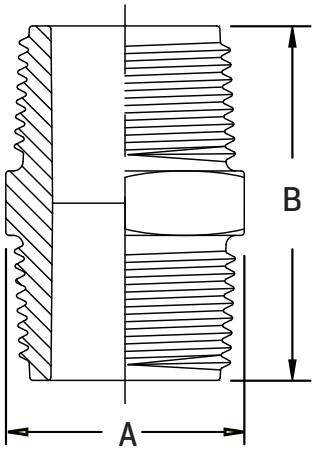
Dimension A is measured 'Across the Flats' (spanner sizing), to calculate the 'Across the Corner' dimension (overall diameter) multiple dimension A by 1.154

*For further advice on chemical resistance properties please contact Philmac customer service 1800 755 899

Range Dimensions & Weights

NIPPLES (Male BSP X Male BSP)

Size	Part No.	Dimensions mm. A	B	Grams. Wt
1/2"	90 4211 00	24	48	10.7
3/4" x 1/2"	90 4221 00	30	50	12.3
3/4"	90 4222 00	30	52	13.1
1" x 1/2"	90 4231 00	37	51.5	17.1
1" x 3/4"	90 4232 00	37	53.5	18.7
1"	90 4233 00	37	55	21.7
1-1/4" x 1/2"	90 4241 00	46	54.5	25.8
1-1/4" x 3/4"	90 4242 00	46	56.5	26.1
1-1/4" x 1"	90 4243 00	46	56.5	29.2
1-1/4"	90 4244 00	46	61	32.9
1-1/2" x 1/2"	90 4251 00	52	56.5	36.7
1-1/2" x 3/4"	90 4252 00	52	58.5	36.9
1-1/2" x 1"	90 4253 00	52	60	38.2
1-1/2" x 1-1/4"	90 4254 00	52	63	42.4
1-1/2"	90 4255 00	52	63	46.3
2" x 1/2"	90 4261 00	63	61.6	60.9
2" x 3/4"	90 4262 00	63	63.6	60.3
2" x 1"	90 4263 00	63	65.1	62.3
2" x 1-1/4"	90 4264 00	63	68.1	64.6
2" x 1-1/2"	90 4265 00	63	68.1	68.3
2"	90 4266 00	63	71.6	82.7
2-1/2" x 1-1/4"	90 4274 00	81	70.7	112.5
2-1/2" x 1-1/2"	90 4275 00	81	70.7	115.3
2-1/2" x 2"	90 4276 00	81	74.2	124.7
2-1/2"	90 4277 00	81	75.4	131
3" x 1-1/2"	90 4285 00	93	73.8	147.6
3" x 2"	90 4286 00	93	75.2	151
3" x 2-1/2"	90 4287 00	93	78.5	170
3""	90 4288 00	93	81.6	131
4" x 2"	90 4206 00	118	83.3	239.6
4" x 2-1/2"	90 4207 00	118	84.5	248.6
4" x 3"	90 4208 00	118	87.6	242
4"	90 4200 00	118	93.6	260



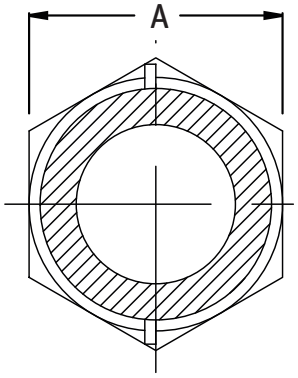
Hexagon Dimensions

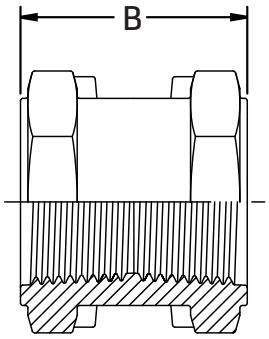
Dimension A is measured 'Across the Flats' (spanner sizing), to calculate the 'Across the Corner' dimension (overall diameter) multiple dimension A by 1.154

Range Dimensions & Weights

SOCKETS (Female BSP X Female BSP)

Size	Part No.	Dimensions mm. A	Dimensions mm. B	Grams. Wt
1/2"	90 4311 00	32	38.5	14.8
3/4" x 1/2"	90 4321 00	38	43	19.7
3/4"	90 4322 00	38	43	21.6
1" x 1/2"	90 4331 00	46	48.1	27.0
1" x 3/4"	90 4332 00	46	47.7	29.0
1"	90 4333 00	46	46	33.1
1-1/4" x 3/4"	90 4342 00	57	54.9	40.7
1-1/4" x 1"	90 4343 00	57	53.2	43.0
1-1/4"	90 4344 00	57	52	49.0
1-1/2" x 3/4"	90 4352 00	64	60	50.8
1-1/2" x 1"	90 4353 00	64	58.1	55.0
1-1/2" x 1-1/4"	90 4354 00	64	56.9	60.0
1-1/2"	90 4355 00	64	56	91.7
2" x 1/2"	90 4361 00	78	68	75.1
2" x 3/4"	90 4362 00	78	68	76.5
2" x 1"	90 4363 00	78	67	79.4
2" x 1-1/4"	90 4364 00	78	64.1	84.0
2" x 1-1/2"	90 4365 00	78	63.2	88.6
2"	90 4366 00	78	58.5	105
2-1/2" x 1-1/2"	90 4375 00	96	71.9	185.8
2-1/2" x 2"	90 4376 00	96	71.9	207.7
2-1/2"	90 4377 00	96	76	253.4
3" x 2"	90 4386 00	112	82.1	296.3
3" x 2-1/2"	90 4387 00	112	79	314.5
3"	90 4388 00	112	82.7	377.3
4" x 2-1/2"	90 4307 00	139	106	522.5
4" x 3"	90 4308 00	139	96.1	522.7
4"	90 4300 00	139	96.1	561.7





Hexagon Dimensions

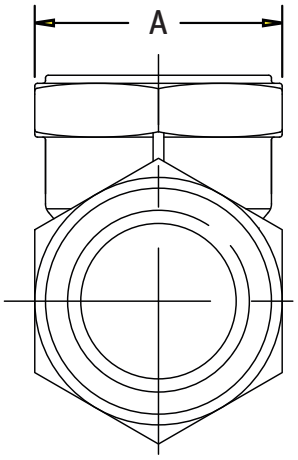
Dimension A is measured 'Across the Flats' (spanner sizing), to calculate the 'Across the Corner' dimension (overall diameter) multiple dimension A by 1.154

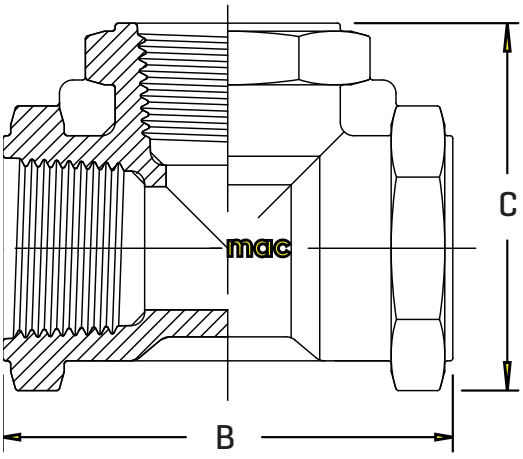
*For further advice on chemical resistance properties please contact Philmac customer service 1800 755 899

Range Dimensions & Weights

TEES [Female BSP X Female BSP X Female BSP]

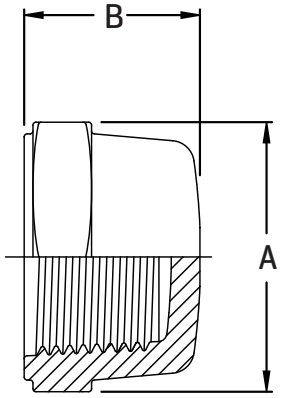
Size	Part No.	Dimensions mm. A	B	C	Grams. Wt
1/2"	90 4511 00	32	63	50	27.6
3/4"	90 4522 00	38	73	58.4	42.7
1"	90 4533 00	46	84	68.6	65.3
1-1/4"	90 4544 00	57	100	78.5	101
1-1/2"	90 4555 00	64	108	86	138
2"	90 4566 00	78	125	101.5	239
2-1/2"	90 4577 00	96	176	136	672
3"	90 4588 00	112	191.1	151	989
4"	90 4500 00	139	221.1	180	1464





CAPS [Female BSP]

Size	Part No.	Dimensions mm.	A	B	Grams. Wt
1/2"	90 4901 00		32	25	13.1
3/4"	90 4902 00		38	28	13.5
1"	90 4903 00		46	30	20.3
1-1/4"	90 4904 00		57	35	32.4
1-1/2"	90 4905 00		64	38	45.1
2"	90 4906 00		78	41.2	74.9
2-1/2"	90 4907 00		96	52	183
3"	90 4908 00		112	69.4	315.6
4"	90 4900 00		139	67.1	430.3



Hexagon Dimensions

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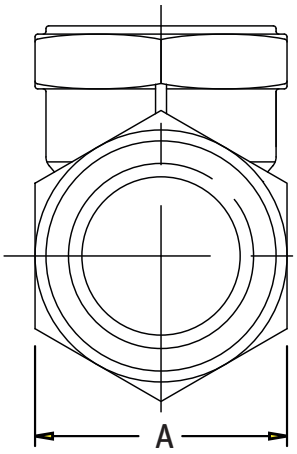
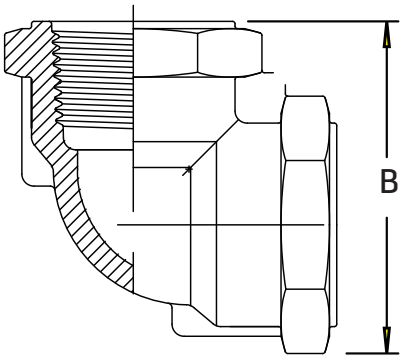
Range Dimensions & Weights

ELBOWS (Female BSP X Female BSP)

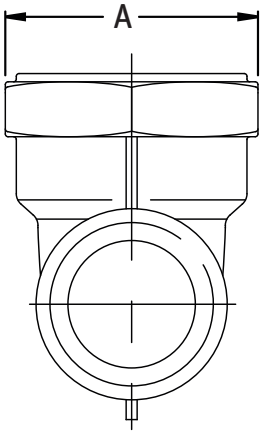
Size	Part No.	Dimensions mm.		Grams.
		A	B	Wt
1/2"	90 4611 00	32	50	18.7
3/4"	90 4622 00	38	57.6	29.7
1"	90 4633 00	46	68.6	46.3
1-1/4"	90 4644 00	57	78.5	75.6
1-1/2"	90 4655 00	64	86	99.6
2"	90 4666 00	78	102	172
2-1/2"	90 4677 00	96	136	488
3"	90 4688 00	112	151	734
4"	90 4600 00	139	180	1102

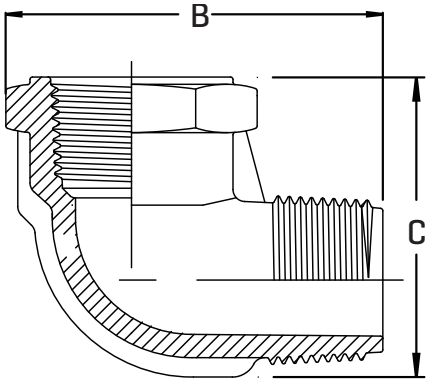




ELBOWS (Male BSP X Female BSP)

Size	Part No.	Dimensions mm.			Grams.
		A	B	C	Wt
1/2"	90 4691 00	32	57.5	43.2	15.0
3/4"	90 4692 00	38	66.94	51.42	22.5
1"	90 4693 00	46	78.6	63	38.7
1-1/4"	90 4694 00	57	86	78.1	66.5
1-1/2"	90 4695 00	64	94	81	87.1
2"	90 4696 00	78	114	96	151





Hexagon Dimensions

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Philmac

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