



Holman Industries

PRODUCT APPRAISAL REPORT 2307

Elysee PP Compression Fittings for PE Pipe

AS/NZS 4129:2020 Fittings for polyethylene (PE) pipes for pressure applications

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Name/Title	Organisation	Date
Product Appraisal Technical Advisory Group	WSAA	26 September 2023
WSAA Expert Panel	WSAA	26 September 2023
Peter Pittard, WSAA Consultant	WSAA	12 September 2023
Carl Radford, Product Appraisal Manager	WSAA	26 September 2023

Overview of WSAA

The Water Services Association of Australia (WSAA) is the peak industry body representing the urban water industry. Our members provide water and sewerage services to over 20 million customers in Australia and New Zealand and many of Australia's largest industrial and commercial enterprises.

Based around our vision of 'customer driven, enriching life', WSAA facilitates collaboration, knowledge sharing, networking and cooperation within the urban water industry. We are proud of the collegiate attitude of our members which has led to industry-wide approaches to national water issues.

WSAA can demonstrate success in the standardisation of industry performance monitoring and benchmarking, as well as many research outcomes of national significance. The WSAA Executive retains strong links with policy makers and legislative bodies and their influencers, to monitor emerging issues of importance to the urban water industry.

WSAA was formed in 1995 as a non-profit organisation to foster the exchange of information between industry, government and the community, and to promote sustainable water resource management.

The urban water industry is committed to anchoring its services to customers' values, and to enrich communities where water services have broad economic, environmental and social values. In line with this our main activities focus on four areas:

1. influencing national and state policies on the provision of urban water services and sustainable water resource management
2. promoting debate on environmentally sustainable development and management of water resources and the community health requirements of public water supplies
3. improving industry performance and establishing benchmarks and industry leading practices for water service processes; and
4. fostering the exchange of information on education, training, research, water and wastewater management and treatment and other matters of common interest.

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1 EXECUTIVE SUMMARY

Holman Industries is a family business, based in Perth WA, that was originally established in 1966. The company is focused on providing products for irrigation, watering, plumbing, civil, garden lifestyle and garden lighting.

Elysee Irrigation Ltd is a Cyprus based manufacturer of plastics pipeline components and supplies Holman Industries with a range of compression fittings for polyethylene pipes.

This appraisal is for a range of PN16 Elysee polypropylene (PP) compression fittings for PE pipes, manufactured in conformance with AS/NZS 4129:2020 *Fittings for polyethylene (PE) pipes for pressure applications*.

The range of fittings includes couplings, tees, elbows, adaptors and end plugs in sizes from DN 16 to DN 110. See Section 4 and Appendix A for further details of the range.

The compression joint is assembled to PE pipe without removing the nut from the body. After the pipe is pushed into the fitting the nut is tensioned to affect a seal.

Both Holman and Elysee hold ISO 9001:2015 Quality Management System Licences.

The PP compression fittings have ISO Type 5 StandardsMark Product Certification to AS/NZS 4129:2020 *Fittings for polyethylene (PE) pipes for pressure applications*.

This Appraisal has determined that the Elysee range of PP fittings, as detailed in this report, meet the requirements of WSA PS 208 – *Plastics Fittings for Pressure Applications with PE Pipe – Drinking Water, Non-Drinking Water Supply and Sewerage* and are considered as 'fit-for-purpose'.

1.1 Recommendations

It is recommended that WSAA members, subject to any specific requirements of the member, accept or authorise the Elysee range of PP compression fittings as detailed in this report for use in in drinking and non-drinking water supply and pressure sewerage networks, provided they are designed and installed in accordance with applicable WSAA Codes and the manufacturer's requirements.

2 THE APPLICANT

The Applicant is Holman Industries.

2.1 The Supplier

Holman Industries is a family business, based in Perth WA that was originally established in 1966. The company is focused on providing products for irrigation, watering, plumbing, civil, garden lifestyle and garden lighting.

2.2 The Manufacturer

Elysee Irrigation Ltd is a Cyprus based manufacturer of plastics pipeline components and supplies Holman Industries with a range of compression fittings for polyethylene pipes.

The company is involved in the Water, Irrigation, Infrastructure and Energy markets. It has more than 200 employees and services more than 65 countries with an extensive product range.

3 THE PRODUCT

This appraisal is for a range of PN16 Elysee polypropylene (PP) compression fittings for PE pipes, manufactured in conformance with AS/NZS 4129:2020 *Fittings for polyethylene (PE) pipes for pressure applications*.

The range of fittings includes couplings, tees, elbows, adaptors and end plugs in sizes from DN 16 to DN 110 and are suitable for use with PE100 pipes manufactured in accordance with AS/NZS 4130, for conveyance of drinking water, non-drinking water and sewerage in

buried and above ground applications. The fittings are suitable for connecting to new PE pipe, repairing damaged PE pipe and for circumstances where fusion jointing is not possible or desirable. The fittings are rated as PN16 at 20°C.

The range of fittings includes couplings, tees, elbows, adaptors and end plugs in sizes from DN 16 to DN 110. The male and female adaptors incorporate ½" to 4" BSP threaded outlets depending on size. The female threaded outlets for sizes 1½" to 4" have a Grade 430 Stainless Steel reinforcing ring. (See Section 12 for further details).

See Appendix A for details of the fittings range.

Elysee PP compression fittings are removable and suitable for reuse. The nuts of the compression fitting are generally tightened by hand for sizes DN 16 to DN 63 whilst a special wrench supplied by Holman is recommended for tightening sizes DN 75 to DN 110.

See Figure 1 for details of the Elysee compression sealing system.



1. BODY - Polypropylene PP-B 2. O-RING - Nitrile Rubber NBR 70 3. INSERT - Polypropylene PP-B 4. SPLIT RING - Polyacetal 5. NUT - Polypropylene PP-B

FIGURE 1: ELYSEE SEALING SYSTEM

4 SCOPE OF THE APPRAISAL

The scope of this appraisal is for a range of Elysee polypropylene (PP) compression fittings for PE pipes in sizes DN 16 to DN 110 as described in Section 3, detailed in Appendix A and included in the ISO Type 5 StandardsMark Product Certification schedule referenced in Appendix B.

5 APPRAISAL CRITERIA

5.1 Quality Assurance Requirements

The WSAA Product Appraisal Technical Advisory Group accepts PP compression fittings for PE pipes manufactured in compliance with AS/NZS 4129:2020 *Fittings for polyethylene (PE) pipes for pressure applications* and duly certified by means of an ISO Type 5 product certification scheme undertaken by a JAS-ANZ accredited Conformity Assessment Body (CAB) or by an international accreditation system recognised by JAS-ANZ.

The manufacturer is generally expected to have a production management and control system that has been duly accredited in accordance with AS/NZS ISO 9001 as a prerequisite to undergoing a product certification audit.

The ISO Type 5 Product Certification Scheme shall meet the criteria described in WSA TN-08.

5.2 Performance Requirements

Elysee PP compression fittings have been appraised for compliance with AS/NZS 4129:2020 *Fittings for polyethylene (PE) pipes for pressure applications*.

Appraisal criteria are also determined by the WSAA Product Appraisal Technical Advisory Group and regularly reviewed to ensure that the criteria reflect the requirements of WSAA members.

The following Product Specification is also relevant to this application:

WSA PS 208 – *Plastics Fittings for Pressure Applications with PE Pipe – Drinking Water, Non-Drinking Water Supply and Sewerage*

A copy of the Product Specification is available at the following link:

<https://www.wsaa.asn.au/shop/product/60961>

6 COMPLIANCE WITH APPRAISAL CRITERIA

6.1 Compliance with Quality Assurance Requirements

Holman has submitted the following quality certificates:

- ISO 9001:2015 Certificate of Registration No. QS.2.98.060 issued to Elysee Irrigation Ltd by Cyprus Certification Company.
- AS/NZS 4129:2020 ISO Type 5 StandardsMark Product Certification Licence No. SMK26038 issued to Elysee Irrigation Ltd by SAI Global.

Copies of the Quality Assurance and Product Certification licences have been included in Appendix B and are also available from WSAA.

6.2 Compliance with Performance Requirements

6.2.1 Materials

The fitting body, nut and insert is moulded from UV stabilised polypropylene block copolymer (PP-B), which is included in AS/NZS 4129.

Holman has identified the compound as Borealis polypropylene BA160E-8229-01. A Data Sheet is held on file by WSAA.

The split ring is moulded from Polyacetal (POM) copolymer resin and is included in AS/NZS 4129.

The O-ring seal is manufactured by Duram Industries AC Ltd in Israel from NBR-70 elastomer which is covered by an ISO Type 5 KiwaMark Product Certification. A copy of the certification is held on file by WSAA.

6.2.2 Threads

The BSP male and female threads comply with ISO 7.1. Male threads are tapered, female threads smaller than 3" are parallel, and larger size female threads are tapered.

6.2.3 Type tests

Test reports completed by the Austrian Research Institute for Chemistry and Technology (OFI) (Accreditation Austria Accreditation No.0928) and Kiwa (Accredia Accreditation No. 001L) have been submitted to demonstrate compliance of the Elysee fittings to the performance requirements of AS/NZS 4129:2020. These tests include a body fitting test and tests on assembled joints to demonstrate compliance to leak-tightness under internal pressure for both short term and long term, leak-tightness under negative pressure, leak-tightness under internal pressure when the joint is subjected to bending and resistance to pull out.

6.2.4 Suitability for contact with water

Test report number 356842 dated 30 September 2022, undertaken by Australian Water Quality Centre (NATA Accreditation No. 1115) has been submitted to demonstrate compliance of the Elysee compression fittings to AS/NZS 4020:2018.

7 FITTING INSTRUCTIONS, TRAINING AND INSTALLATION

Assembly instructions are included in Appendix A.

8 PRODUCT MARKING

Product marking is in conformance with AS/NZS 4129:2020 as follows:

- (a) Manufacturers name: Elysee or Holman
- (b) Date or batch code: e.g., 2/23 (indicating run no 2 in 2023)
- (c) Nominal size: e.g., 50 mm
- (d) Material identification: PP-B
- (e) Classification: PN16
- (f) Number of the Standard: AS/NZS 4129

(a), (c) and (e) are moulded on the body of the fitting and complete information is provided on the packaging. See Figure 2.



FIGURE 2 EXAMPLE OF MARKING

9 PACKAGING AND TRANSPORTATION

The fittings are packed in transparent protective bags before packing into cardboard cartons. Each bag and/or carton is labelled with its contents. The cartons are then packed onto pallets and shrink wrapped for transportation.

10 PRODUCT WARRANTY

The products are covered by the normal commercial and legal requirements of the *Competition and Consumer Act 2010 (Cth)*, which covers manufacture to the relevant standard, and details of Holman's warranty is included in their terms and conditions of sale.

11 WATER AGENCY EXPERIENCE WITH THE PRODUCT OR FIELD-TESTING REPORT

Polypropylene compression fittings are a widely installed and mature product approved for use by many water agencies.

12 DISCUSSION

The Grade 430 stainless steel reinforcing ring used for the female threaded components is regarded as having 'good' corrosion resistance. WSAA nominates Grade 316 stainless steel for buried situations to provide a high level of corrosion resistance. Grade 430 stainless steel is adequate for most buried situations however agencies should be aware of the ground conditions and avoid installation in aggressive soil environments. A high resistivity sand or granular embedment is recommended to minimise the likelihood of corrosion.

Note: A high resistivity material is defined as one that has a resistivity greater than 50 ohm-meters when tested in accordance with AS 1289.4.4.1:1997 *Methods of testing soils for engineering purposes Soil chemical tests - Determination of the electrical resistivity of a soil - Method for sands and granular materials*.

Further information may be sourced from WSAA Materials Fact Sheet No. 02 *Selection of Stainless Steels for Use in the Water Industry* available at:

www.wsaa.asn.au/shop/product/6581

The purpose of the stainless-steel reinforcement ring used in female threaded outlets is to increase hydraulic and mechanical strength of the thread, especially in the presence of high pressure and mechanical stress of the outlet, e.g., continuous vibration to the threaded connection or an oversized male thread connection. For thread sizes 1½" - 4" a reinforcement ring is important as the plastic thickness is proportionally smaller while the integral pressure stress applied to the thread is greater than the smaller sizes. Such rings are not required for compression fittings with female threads of sizes ½" - 1¼" as the plastic thickness of the outlet has the hydraulic and mechanical strength to resist the pressure and mechanical stress.

The majority of female threaded compression fittings installed by Australian Water Agencies are small sizes (½" - 1¼") which do not require a stainless-steel reinforcement ring to cope with hydraulic and mechanical strength needed for the various applications such as smaller reticulation water mains, property service connections, pressure sewerage networks and treatment plants.

PP compression fittings rely on interface pressure being maintained between the elastomeric seal and the PE pipe surface to maintain a sealed joint. Mechanical fittings, including compression fittings, are normally used on PE pipe ≤ DN 110. Mechanical fittings are also normally used for repairs or changes to the pipeline as the pipe surface preparation requirements are less stringent than fusion welding methods (i.e., electrofusion or butt).

13 OUTCOMES OF EXPERT PANEL PRODUCT REVIEW

No issues were raised.

14 FUTURE WORKS

No future works have been identified.

15 DISCLAIMER

This Product Appraisal Report (Report) is issued by the Water Services Association of Australia Limited on the understanding that:

This Report applies to the product(s) as submitted. Any changes to the product(s) either minor or major shall void this Report.

To maintain the recommendations of this Report any such changes shall be detailed and notified to the Product Appraisal Manager for consideration and review of the Report and appropriate action. Appraisals and their recommendations will be the subject of continuous review dependent upon the satisfactory performance of products.

WSAA reserves the right to undertake random audits of product manufacture and installation. Where products fail to maintain appraised performance requirements the appraisal and its recommendations may be modified and reissued. Appraisal reports will be reviewed and reissued at regular intervals not exceeding five (5) years.

The following information explains a number of very important limits on your ability to rely on the information in this Report. Please read it carefully and take it into account when considering the contents of this Report.

Any enquiries regarding this report should be directed to the Program Manager, Carl Radford, Phone: 03 8605 7601 email carl.radford@wsaa.asn.au.

15.1 Issue of Report

This Report has been published and/or prepared by the Water Services Association of Australia Limited and nominated Project Manager and peer group of technical specialists (the Publishers).

The Report has been prepared for use within Australia only by technical specialists that have expertise in the function of products such as those appraised in the Report (the Recipients).

By accepting this Report, the Recipient acknowledges and represents to the Publisher(s) and each person involved in the preparation of the Report that the Recipient has understood and accepted the terms of this Disclaimer.

15.2 Limits on Reliance on Information and Recommendations

15.2.1 Disclaimer of liability

Neither the Publisher(s) nor any person involved in the preparation of the Report accept(s) any liability for any loss or damage suffered by any person however caused (including negligence or the omission by any person to do anything) relating in any way to the Report or the product appraisal criteria underlying it. This includes (without limitation) any liability for any recommendation or information in the Report or any errors or omissions.

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15.2.3 Need for independent assessment

The information and any recommendation contained (expressly or by implication) in this Report are provided in good faith (and subject to the limitations noted in this Report). However, you should treat the information as indicative only. You should not rely on that

information or any such recommendation except to the extent that you reach an agreement to the contrary with the Publisher(s).

This Report does not contain all information that a person might require for the purposes of assessing any product discussed or appraised within it (Product). The product appraisal criteria used in preparing this Report may not address all relevant aspects of the Product.

Recipients should seek independent evidence of any matter which is material to their decisions in connection with an assessment of the Product and consult their own advisers for any technical information required. Any decision to use the Product should take into account the reliability of that independent evidence obtained by the Recipient regarding the Product.

Recipients should also independently verify and assess the appropriateness of any recommendation in the Report, especially given that any recommendation will not take into account a Recipient's particular needs or circumstances.

WSAA has not evaluated the extent of the product liability and professional indemnity insurance that the provider of the product maintains. Recipients should ensure that they evaluate the allocation of liability for product defects and any professional advice obtained in relation to the product or its specification including the requirements for product liability and professional indemnity insurance.

15.3 No Updating

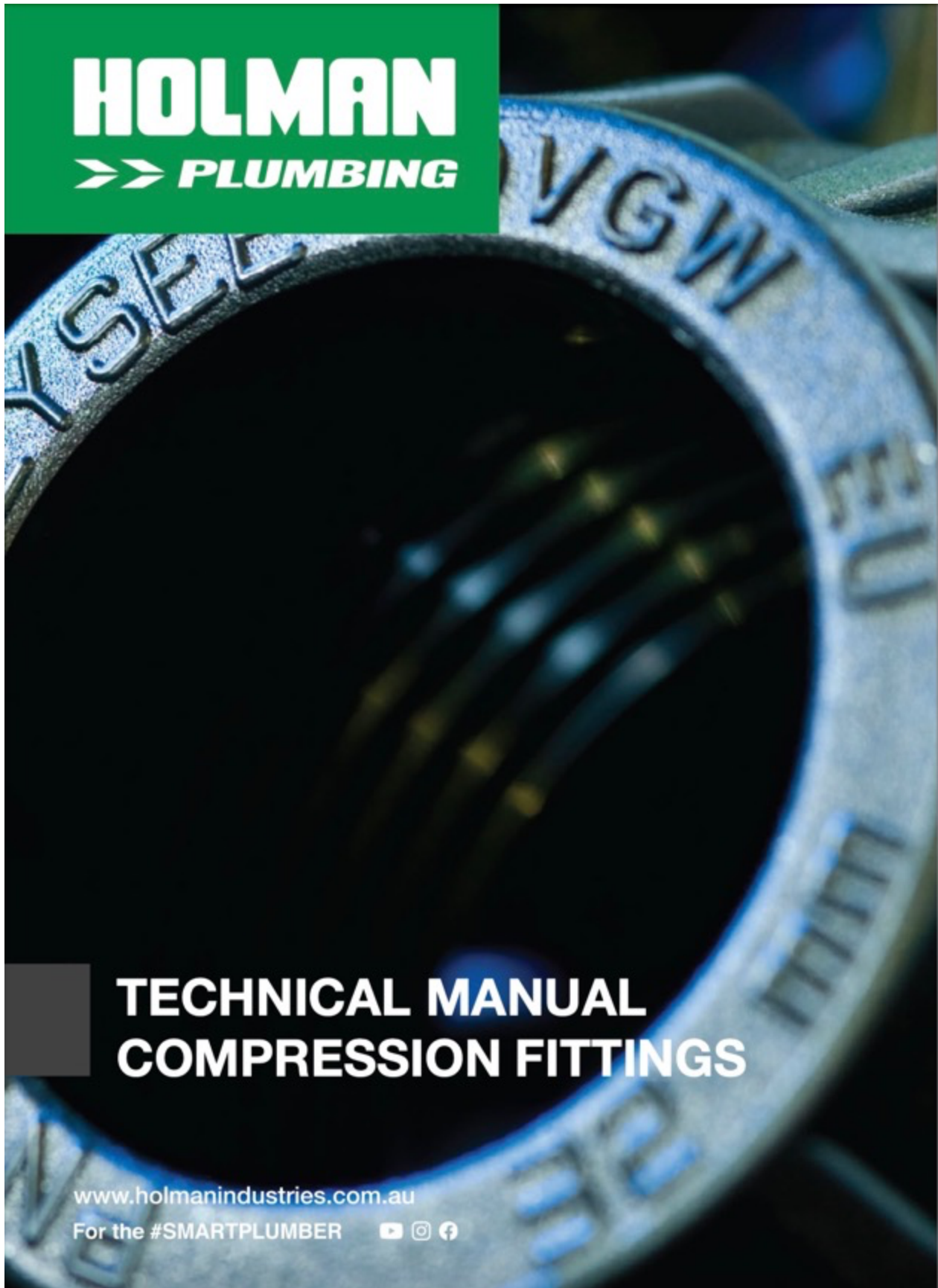
Neither the Publisher(s) nor any person involved in the preparation of this Report [has] [have] any obligation to notify you of any change in the information contained in this Report or of any new information concerning the Publisher(s) or the Product or any other matter.

15.4 No Warranty

The Publisher(s) do[es] not, in any way, warrant that steps have been taken to verify or audit the accuracy or completeness of the information in this Report, or the accuracy, completeness or reasonableness of any recommendation in this Report.

APPENDIX A – PRODUCT LITERATURE

A complete catalogue is available from Holman or WSAA or at the following link:
<https://www.holmanindustries.com.au/plumbing/>



Technical Manual / Compression Fittings

ASSEMBLY INSTRUCTIONS

Sizes 16mm up to 63mm



- Undo the nut up to the last thread. Do not remove the nut from the body.
- Cut the pipe straight, remove burrs & chamfer the end of the pipe with a chamfering tool.
- Mark the length on the PE pipe, to which the pipe must be pushed in the fitting.
*Lubricate the end pipes.

Sizes 75mm up to 110mm



- Cut the pipe straight, remove burrs & chamfer the end of the pipe with a chamfering tool.
- Apply the nut & split ring onto the end of the pipe to a distance of about twice the pipe diameter.
- Keep the 1-ring and insert fixed on the body.
- Assembly is made easier by lubricating pipe, O-ring & inside of fitting with silicone lubricant.



- Push the PE pipe into the fitting, through the nut, split the ring and O-ring, as far as it will go until it meets the 1st resistance. (The mark on the pipe is now just in front of the nut).



- Insert pipe into the fitting until it stops at the step.



- Firmly hand tighten the nut. For sizes 40mm and above, use a wrench for a further half turn for final tightening.



- Push nut & split ring forward until they reach the fitting.

Notes:

- *Lubrication of the pipe end is optional and will ease insertion of the pipe (use silicone lubricant).*
- *The fitting can safely be used again after disassembling.*
- *The full hydraulic seal is achieved when the pipe passes through the O-ring.*



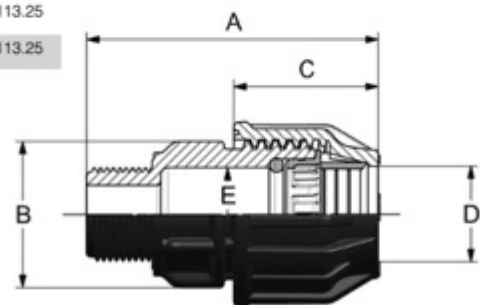
- Tighten the nut by means of two special Holman wrenches.
- Nut should be closed firmly but does not need to actually meet the body.

NOMINAL DIMENSIONS

Male Adaptor

Fittings between \varnothing 16 up to \varnothing 110mm - Operating Pressure = PN16 (16 bar at 20° C) applications.

Codes	Sizes (mm x in)	Nominal Dimensions (mm)				
		A	B	C	D	E
PMMA1615	16 X ½	70.13	34.00	35.00	17.50	17.50
PMMA1620	16 X ¾	71.88	34.00	35.00	17.50	17.50
PMMA2015	20 X ½	88.35	41.50	39.50	22.20	21.50
PMMA2020	20 X ¾	88.35	41.00	39.50	22.20	21.50
PMMA2025	20 X 1	91.05	42.50	39.50	22.20	21.50
PMMA2515	25 X ½	92.38	46.00	41.25	26.75	26.50
PMMA2520	25 X ¾	82.63	46.00	41.25	26.75	26.50
PMMA2525	25 X 1	84.13	46.00	41.25	26.75	26.50
PMMA3215	32 X ½	100.25	56.25	51.75	34.00	33.50
PMMA3220	32 X ¾	95.25	55.50	51.75	34.00	33.50
PMMA3225	32 X 1	96.25	55.50	51.75	34.00	33.50
PMMA3232	32 X 1¼	98.75	55.50	51.75	34.00	33.50
PMMA3240	32 X 1½	99.25	55.50	51.75	34.00	33.50
PMMA4025	40 X 1	110.13	69.50	60.75	41.50	42.00
PMMA4032	40 X 1¼	108.88	68.50	60.75	41.50	42.00
PMMA4040	40 X 1½	109.38	69.75	60.75	41.50	42.00
PMMA4050	40 X 2	112.63	69.00	60.75	41.50	42.00
PMMA5025	50 X 1	129.58	81.25	60.75	41.50	53.00
PMMA5032	50 X 1¼	132.33	80.50	60.75	41.50	53.00
PMMA5040	50 X 1½	124.08	79.50	60.75	41.50	53.00
PMMA5050	50 X 2	127.08	79.50	60.75	41.50	53.00
PMMA6340	63 X 1½	166.00	98.50	82.75	64.50	65.00
PMMA6350	63 X 2	164.75	97.50	82.75	64.50	65.00
PMMA6365	63 X 2½	164.25	99.00	82.75	64.50	65.00
PMMA7550	75 X 2	171.95	117.50	107.50	76.00	77.50
PMMA9050	90 X 2	199.83	136.50	131.25	94.00	92.75
PMMA9080	90 X 3	207.33	138.00	131.25	94.00	92.75
PMMA11080	110 X 3	250.55	164.25	166.50	112.50	113.25
PMMA110100	110 X 4	257.05	164.25	166.50	112.50	113.25



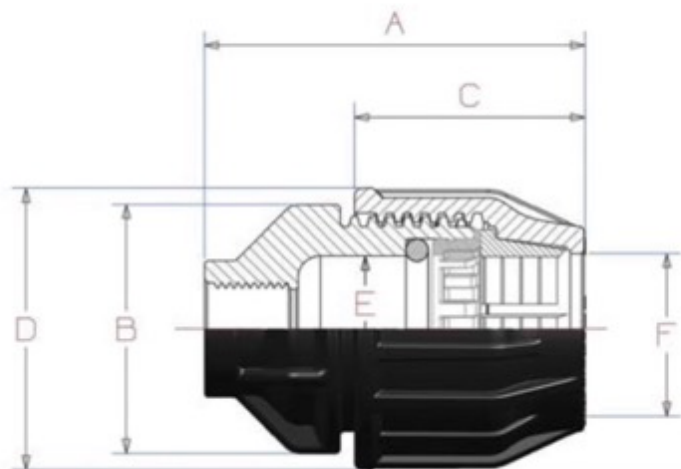
Technical Manual / Compression Fittings

NOMINAL DIMENSIONS

Female Adaptor

Fittings between Ø 16 up to Ø 110mm - Operating Pressure = PN16 (16 bar at 20° C) applications.

Codes	Sizes (mm x in)	Nominal Dimensions (mm)					
		A	B	C	D	E	F
PMFA1615	16 x ½	58.5	-	41	39	17.50	17.50
PMFA1620	16 X ¾	72.88	34.25	35.00	39.25	17.50	17.50
PMFA2015	20 X ½	70.10	40.50	39.50	46.00	22.00	22.20
PMFA2020	20 X ¾	70.35	41.00	39.50	46.00	22.00	22.20
PMFA2015	25 X ½	73.13	46.50	41.25	52.50	26.50	26.75
PMFA2520	25 X ¾	73.13	46.50	41.25	52.50	26.50	26.75
PMFA2525	25 X 1	77.88	54.00	41.25	52.50	26.50	26.75
PMFA3220	32 X ¾	86.25	56.00	51.75	63.75	33.50	34.00
PMFA3225	32 X 1	87.75	56.00	51.75	63.75	33.50	34.00
PMFA3232	32 X 1¼	101.75	68.75	51.75	63.75	33.50	34.00
PMFA4025	40 X 1	115.13	70.00	60.75	78.25	41.50	41.50
PMFA4032	40 X 1¼	106.38	68.25	60.75	78.25	41.50	41.50
PMFA4040	40 X 1½	106.63	69.00	60.75	78.25	41.50	41.50
PMFA5032	50 X 1¼	120.58	82.50	68.50	92.50	51.50	51.50
PMFA5040	50 X 1½	122.33	82.75	68.50	92.50	51.50	51.50
PMFA5050	50 X 2	132.58	74.25	68.50	92.50	51.50	51.50
PMFA6340	63 X 1½	141.75	99.00	82.75	109.00	64.50	64.50
PMFA6350	63 X 2	151.50	99.00	82.75	109.00	64.50	64.50
PMFA7550	63 X 2½	153.00	99.00	82.75	109.00	64.50	64.50
PMFA9080	90 X 3	221.08	137.50	131.25	151.50	91.50	94.00
PMFA110100	110 X 4	292.55	157.00	166.50	175.50	112.50	112.50

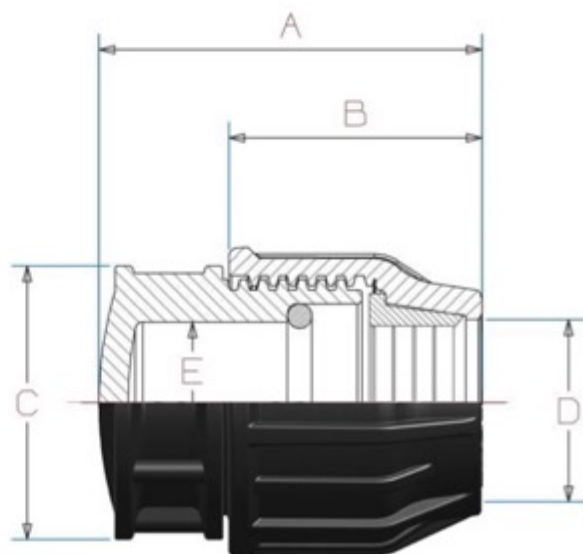


NOMINAL DIMENSIONS

End Plug

Fittings between Ø 16 up to Ø 110mm - Operating Pressure = PN16 (16 bar at 20° C) applications.

Codes	Sizes (mm x in)	Nominal Dimensions (mm)				
		A	B	C	D	E
PMEP16	16	54.88	35.00	34.50	17.50	17.50
PMEP20	20	63.85	39.50	41.25	22.20	22.00
PMEP25	25	66.63	41.25	46.25	26.75	26.50
PMEP32	32	78.00	51.75	55.75	34.00	33.50
PMEP40	40	89.63	60.75	69.00	41.50	41.50
PMEP50	50	104.58	68.50	80.00	51.50	51.50
PMEP63	63	125.75	82.75	98.00	64.50	64.50
PMEP90	90	175.33	131.25	137.00	94.00	92.00
PMEP110	110	224.80	166.50	164.00	112.50	113.25



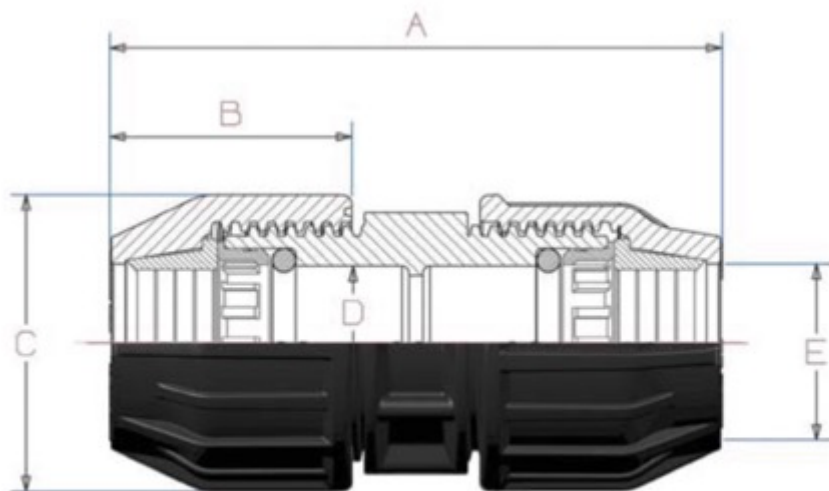
Technical Manual / Compression Fittings

NOMINAL DIMENSIONS

Coupling

Fittings between Ø 16 up to Ø 110mm - Operating Pressure = PN16 (16 bar at 20° C) applications.

Codes	Sizes (mm x in)	Nominal Dimensions (mm)				
		A	B	C	D	E
PMCO1616	16 x 16	89.00	35.00	39.25	17.50	17.50
PMCO2020	20 x 20	104.00	39.50	46.00	22.00	22.20
PMCO2525	25 x 25	109.00	41.25	52.50	26.50	26.75
PMCO3232	32 x 32	132.00	51.75	63.75	33.50	34.00
PMCO4040	40 x 40	146.00	60.75	78.25	41.50	41.50
PMCO6060	60 x 60	174.40	68.50	92.50	51.50	51.50
PMCO6363	63 x 63	208.00	82.75	109.00	64.50	64.50
PMCO9090	90 x 90	293.40	131.25	151.50	91.50	94.00
PMCO110110	110 x 110	382.60	166.50	175.50	112.50	112.50

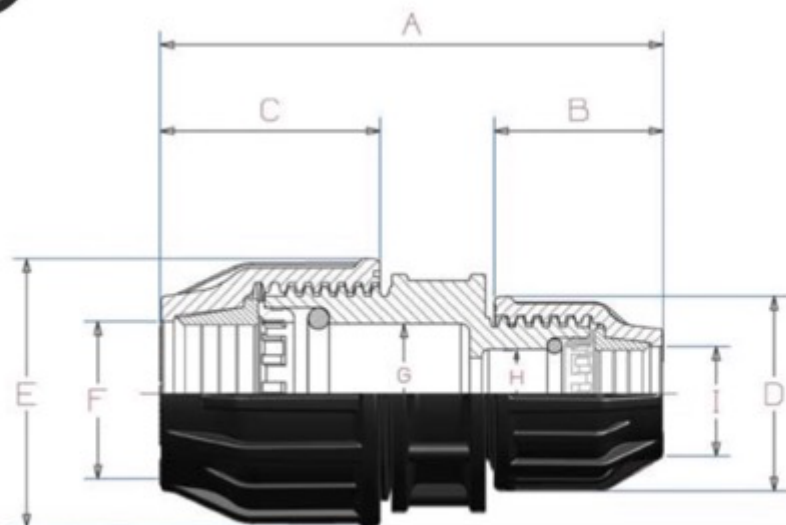


NOMINAL DIMENSIONS

Reducing Coupling

Fittings between Ø 16 up to Ø 110mm - Operating Pressure = PN16 (16 bar at 20° C) applications.

Codes	Sizes (mm x in)	Nominal Dimensions (mm)								
		A	B	C	D	E	F	G	H	I
PMCO2016	20 X 16	99.98	35.00	39.25	39.50	46.00	22.20	22.00	17.50	17.00
PMCO2516	25 X 16	101.50	35.00	39.25	41.25	52.50	26.75	26.50	17.50	17.00
PMCO2520	25 X 20	106.48	39.50	46.00	41.25	52.50	26.75	26.50	22.20	21.50
PMCO3220	32 X 20	120.10	39.50	46.00	51.75	63.75	34.00	33.50	22.20	21.50
PMCO3225	32 X 25	125.38	41.25	52.50	51.75	63.75	34.00	33.50	26.75	26.50
PMCO4025	40 X 25	129.75	41.25	52.50	60.75	78.25	41.50	41.60	26.75	26.50
PMCO4032	40 X 32	140.38	51.75	63.75	60.75	78.25	41.50	41.50	34.00	33.50
PMCO5032	50 X 32	162.08	51.75	63.75	60.75	78.25	41.50	53.00	34.00	33.50
PMCO5040	50 X 40	162.70	60.75	78.25	60.75	78.25	41.50	53.00	41.50	42.00
PMCO6332	63 X 32	169.00	51.75	63.75	82.75	109.00	64.50	64.50	34.00	33.00
PMCO6350	63 X 50	193.33	60.75	78.25	82.75	109.00	64.50	64.50	41.50	52.00
PMCO7563	75 X 63	231.95	82.75	109.00	107.50	132.50	76.00	77.25	64.50	65.50
PMCO9063	90 X 63	253.08	82.75	109.00	131.25	151.50	94.00	93.25	64.50	65.25
PMCO11090	110 X 90	352.88	131.25	151.50	166.50	175.50	112.50	113.50	94.00	92.50



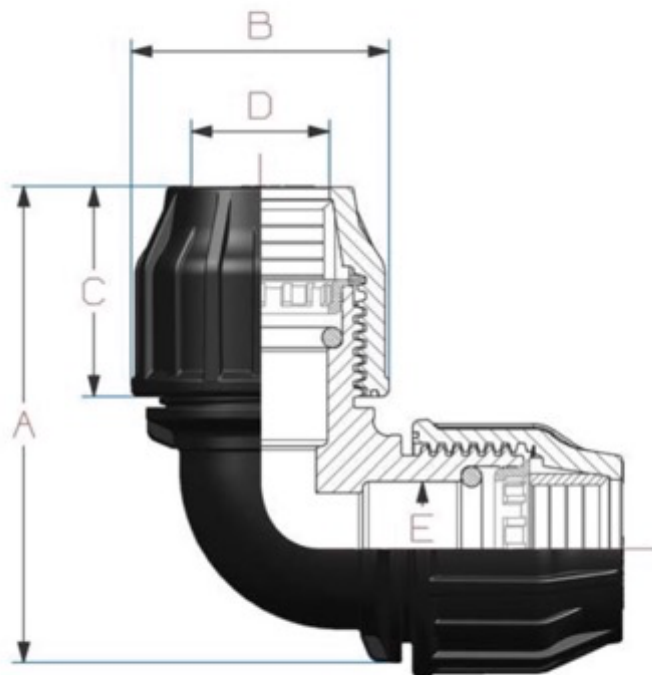
Technical Manual / Compression Fittings

NOMINAL DIMENSIONS

90° Elbow

Fittings between Ø 16 up to Ø 110mm - Operating Pressure = PN16 (16 bar at 20° C) applications.

Codes	Sizes (mm x in)	Nominal Dimensions (mm)				
		A	B	C	D	E
PME16	16 x 16	75.13	39.25	35.00	17.50	17.50
PME20	20 x 20	87.85	46.00	39.50	22.20	22.00
PME25	25 x 25	97.88	52.50	41.25	26.75	26.50
PME32	32 x 32	118.25	63.75	51.75	34.00	33.50
PME40	40 x 40	140.43	78.25	60.75	41.50	41.50
PME50	50 x 50	158.18	92.50	68.50	51.50	51.50
PME63	63 x 63	197.00	109.00	82.75	64.50	64.50
PME90	90 x 90	267.83	151.50	131.25	94.00	91.50
PME110	110 x 110	369.05	175.50	166.50	112.50	112.50

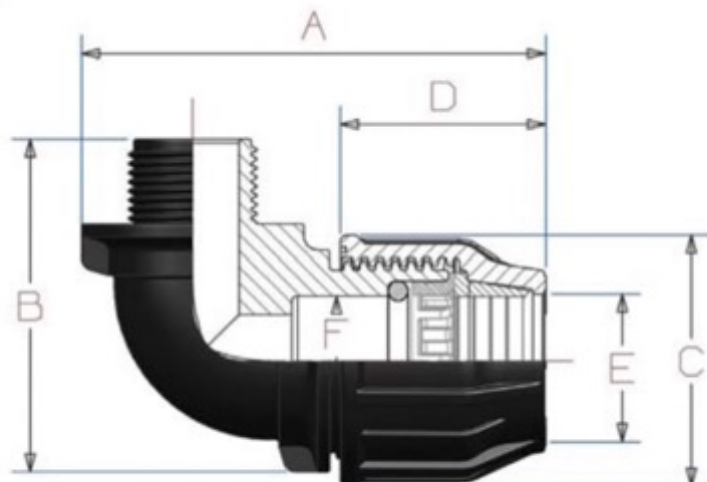


NOMINAL DIMENSIONS

Male Elbow

Fittings between Ø 16 up to Ø 110mm - Operating Pressure = PN16 (16 bar at 20° C) applications.

Codes	Sizes (mm x in)	Nominal Dimensions (mm)					
		A	B	C	D	E	F
PMME2015	20 x ½	85.10	61.25	46.00	39.50	22.20	22.00
PMME2020	20 x ¾	88.60	32.75	46.00	39.50	22.20	22.00
PMME2515	25 x ½	89.63	68.75	52.50	41.25	26.75	26.50
PMME2520	25 x ¾	90.88	69.25	52.50	41.25	26.75	26.50
PMME2525	25 x 1	92.93	78.25	52.50	41.25	26.75	26.50
PMME3220	32 x ¾	120.75	84.50	63.75	51.75	34.00	13.50
PMME3225	32 x 1	112.25	83.75	63.75	51.75	34.00	33.50
PMME4032	40 x 1¼	136.38	92.00	78.25	60.75	41.50	41.50
PMME4040	40 x 1½	137.13	92.25	78.25	60.75	41.50	41.50
PMME5040	50 x 1½	152.83	110.75	78.25	60.75	41.50	52.50
PMME5050	50 x 2	153.33	115.00	78.25	60.75	41.50	52.50
PMME6350	63 x 2	191.25	133.00	109.00	82.75	64.50	65.00
PMME9080	90 x 3	265.08	171.50	151.50	131.25	94.00	92.25
PMME110100	110 x 4	335.80	221.00	175.50	166.50	112.50	113.50



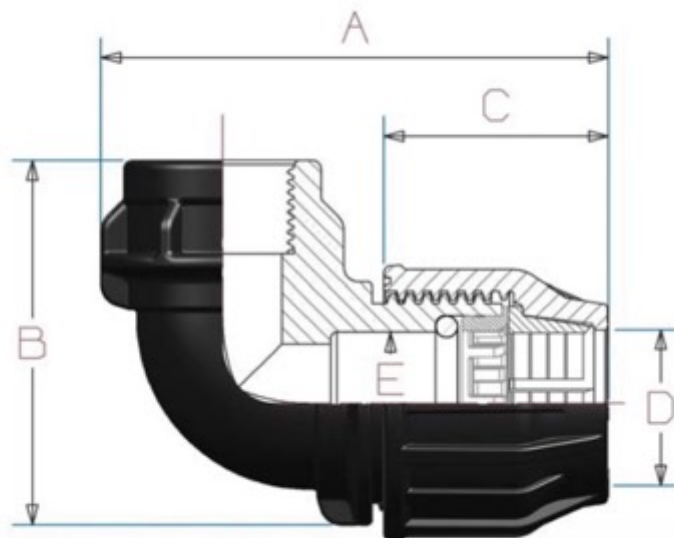
Technical Manual / Compression Fittings

NOMINAL DIMENSIONS

Female Elbow

Fittings between Ø 16 up to Ø 110mm - Operating Pressure = PN16 (16 bar at 20° C) applications.

Codes	Sizes (mm x in)	Nominal Dimensions (mm)				
		A	B	C	D	E
PMFE2015	20 X ½	91.35	68.25	39.50	22.20	22.00
PMFE2020	20 X ¾	91.35	67.50	39.50	22.20	22.00
PMFE2515	25 X ½	104.13	73.75	41.25	26.75	26.50
PMFE2520	25 X ¾	103.88	74.25	41.25	26.75	26.50
PMFE2525	25 X 1	92.38	74.75	41.25	26.75	26.50
PMFE3220	32 X ¾	121.25	80.00	51.75	34.00	33.50
PMFE3225	32 X 1	121.00	74.50	51.75	34.00	33.50
PMFE4032	40 X 1¼	136.63	97.70	60.75	41.50	41.50
PMFE4040	40 X 1½	137.28	96.95	60.75	41.50	41.50
PMFE5040	50 X 1½	153.98	111.50	68.50	51.50	51.50
PMFE5050	50 X 2	156.38	112.60	68.50	51.50	51.50
PMFE6350	63 X 2	190.65	134.25	82.75	64.50	64.50
PMFE7565	75 x 2½	212	16.4.5	119.5	77	77
PMFE9080	90 X 3	264.83	170.50	131.25	94.00	91.50
PMFE110100	110 X 4	326.5	222	178.5	111.5	111.5



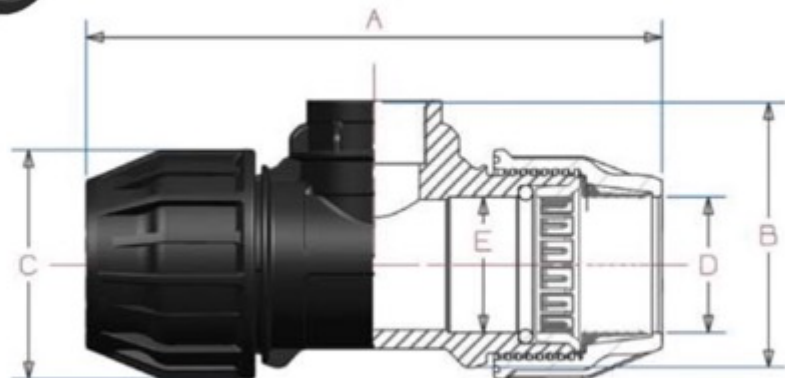
Technical Manual / Compression Fittings

NOMINAL DIMENSIONS

Female Tee

Fittings between Ø 16 up to Ø 110mm - Operating Pressure = PN16 (16 bar at 20° C) applications.

Codes	Sizes (mm x in)	Nominal Dimensions (mm)				
		A	B	C	D	E
PMFT1615	16 x 1/2 x 16	110.25	47.00	39.25	17.50	17.00
PMFT1620	16 x 3/4 x 16	112.00	47.00	39.25	17.50	17.00
PMFT2015	20 x 1/2 x 20	132.20	54.50	46.00	22.20	21.50
PMFT2020	20 x 3/4 x 20	132.20	54.25	46.00	22.20	21.50
PMFT2515	25 x 1/2 x 25	139.25	57.75	52.50	26.75	25.75
PMFT2520	25 x 3/4 x 25	139.25	57.75	52.50	26.75	25.75
PMFT2525	25 x 1 x 25	141.75	60.75	52.50	26.75	26.25
PMFT3220	32 x 3/4 x 32	169.50	66.75	63.75	34.00	33.50
PMFT3225	32 x 1 x 32	169.50	66.75	63.75	34.00	33.50
PMFT4032	40 x 1 1/4 x 40	209.25	98.50	78.25	41.50	42.25
PMFT4040	40 x 1 1/2 x 40	209.25	100.25	78.25	41.50	42.75
PMFT5040	50 x 1 1/2 x 50	234.65	113.25	92.50	51.50	52.50
PMFT5050	50 x 2 x 50	234.65	113.25	92.50	51.50	52.75
PMFT6350	63 x 2 x 63	281.50	122.00	109.00	64.50	66.50
PMFT9080	90 x 3 x 90	402.15	200.50	151.50	94.00	92.50
PMFT110100	110 x 4	540.50	221	176	111.5	111.5

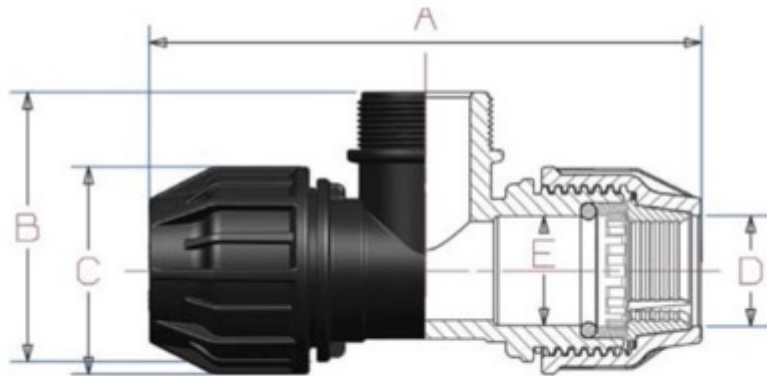


NOMINAL DIMENSIONS

Male Tee

Fittings between Ø 16 up to Ø 110mm - Operating Pressure = PN16 (16 bar at 20° C) applications.

Codes	Sizes (mm x in)	Nominal Dimensions (mm)				
		A	B	C	D	E
PMMT2015	20 x ½ x 20	117.10	63.75	46.00	22.20	22.00
PMMT2020	20 x ¾ x 20	117.10	65.75	46.00	22.20	22.00
PMMT2515	25 x ½ x 25	130.38	72.25	52.50	26.75	26.50
PMMT2520	25 x ¾ x 25	130.38	72.50	52.50	26.75	26.50
PMMT2525	25 x 1 x 25	130.38	74.00	52.50	26.75	26.50
PMMT3220	32 x ¾ x 32	152.50	79.00	63.75	34.00	33.50
PMMT3225	32 x 1 x 32	152.50	83.00	63.75	34.00	33.50
PMMT4025	40 x 1 x 40	178.13	96.00	78.25	41.50	42.00
PMMT4032	40 x 1¼ x 40	178.13	101.00	78.25	41.50	42.00
PMMT4040	40 x 1½ x 40	179.13	110.75	78.25	41.50	42.00
PMMT5040	50 x 1½ x 50	198.58	110.75	78.25	41.50	52.75
PMMT5050	50 x 2 x 50	198.58	115.00	78.25	41.50	52.75
PMMT6350	63 x 2 x 63	248.50	138.25	109.00	64.50	65.00



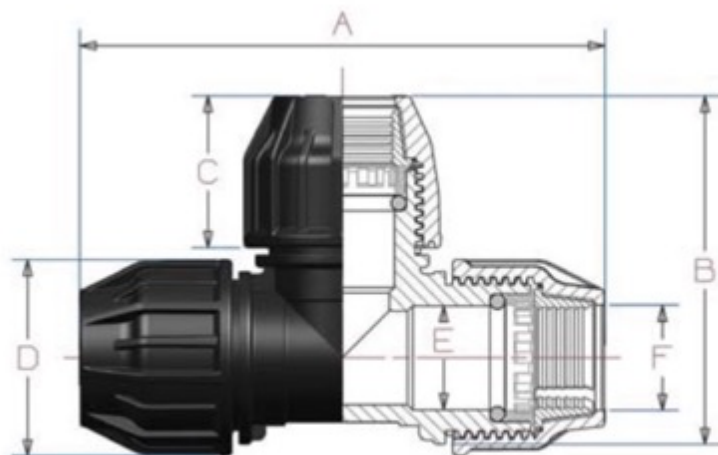
Technical Manual / Compression Fittings

NOMINAL DIMENSIONS

90° Tee

Fittings between Ø 16 up to Ø 110mm - Operating Pressure = PN16 (16 bar at 20° C) applications.

Codes	Sizes (mm x in)	Nominal Dimensions (mm)					
		A	B	C	D	E	F
PMT16	16 x 16 x 16	115.25	74.63	35.00	39.25	17.50	17.50
PMT20	20 x 20 x 20	135.20	87.85	39.50	46.00	22.00	22.20
PMT25	25 x 25 x 25	148.25	97.38	41.25	52.50	26.50	26.75
PMT32	32 x 32 x 32	178.75	118.00	51.75	63.75	33.50	34.00
PMT40	40 x 40 x 40	209.25	203.13	60.75	78.25	41.50	41.50
PMT50	50 x 50 x 50	239.40	160.33	68.50	92.50	51.50	51.50
PMT63	63 x 63 x 63	296.00	197.25	82.75	109.00	64.50	64.50
PMT75	75 x 75 x 75	319.90	216.70	107.50	132.50	77.25	76.00
PMT90	90 x 90 x 90	401.65	265.83	131.25	151.50	91.50	94.00
PMT110	110 x 110 x 110	564.60	364.55	166.50	175.50	112.50	112.50

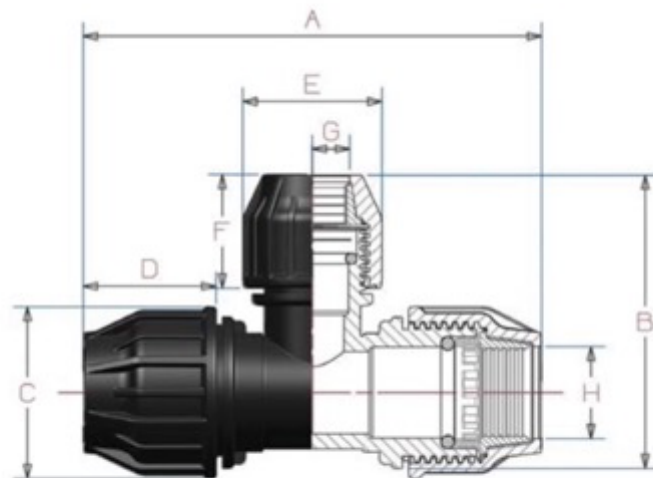


NOMINAL DIMENSIONS

Reducing Tee

Fittings between Ø 16 up to Ø 110mm - Operating Pressure = PN16 (16 bar at 20° C) applications.

Codes	Sizes (mm x in)	Nominal Dimensions (mm)							
		A	B	C	D	E	F	G	H
PMRT2016	20 x 16 x 20	135.20	81.88	46.00	39.50	39.25	35.00	17.50	22.20
PMRT2520	25 x 20 x 25	148.75	98.10	52.50	41.25	46.00	39.50	22.20	26.75
PMRT3225	32 x 25 x 32	178.00	104.38	63.75	51.75	52.50	41.25	26.75	34.00
PMRT4032	40 x 32 x 40	208.25	135.75	78.25	60.75	63.75	51.75	34.00	41.50
PMRT5040	50 x 40 x 50	238.65	150.13	78.25	60.75	78.25	60.75	41.50	41.50
PMRT6332	63 x 32 x 63	267	174	108.5	100.5	62.5	65.5	32.5	65
PMRT6350	63 x 50 x 63	295.50	182.08	109.00	82.75	78.25	60.75	41.50	64.50
PMRT7563	75 x 63 x 75	318.40	207.55	132.50	107.50	109.00	82.75	64.50	76.00
PMRT11090	110 x 90 x 110	561.85	301.83	175.50	166.50	151.50	131.25	94.00	112.50



Technical Manual / Compression Fittings**DIMENSIONS****Poly Repair Coupling**

Fittings between Ø 16 up to Ø 110mm - Operating Pressure = PN16 (16 bar at 20° C) applications.

Codes	Sizes (mm x in)
PMRC25	25mm
PMRC32	32mm
PMRC40	40mm
PMRC50	50mm
PMRC63	63mm



APPENDIX B - QUALITY CERTIFICATIONS

Copies of the following Quality Certificates are available from WSAA.

**TABLE B1
ELYSEE IRRIGATION LTD – MANAGEMENT SYSTEMS**

5 Pentadaktylou Street Ergates Nicosia Cyprus	
Quality Systems Standard	ISO 9001:2015
Certification Licence No.	QS.2.98.060
Certifying Agency	Cyprus Certification Company
First Date of Certification	31 December 1998
Current Date of Certification	12 January 2022
Expiry Date of Certification	17 January 2025

**TABLE B2
ELYSEE IRRIGATION LTD – PRODUCT CERTIFICATION**

5 Pentadaktylou Street Ergates Nicosia Cyprus	
Product Standard/Spec.	AS/NZS 4129:2020
Certificate No.	SMK26038
Issuing Certification Body	SAI Global
First Date of Certification	10 July 2023
Current Date of Certification	10 July 2023
Expiry Date of Certification	9 July 2028



ΚΥΠΡΙΑΚΗ ΕΤΑΙΡΕΙΑ ΠΙΣΤΟΠΟΙΗΣΗΣ CYPRUS CERTIFICATION COMPANY

QUALITY SYSTEM CERTIFICATE OF CONFORMITY

No. QS.2.98.060

The Cyprus Certification Company certifies that the Quality System of the Enterprise:

ELYSEE IRRIGATION LTD

concerning the following activities:

Design, production and sales of plastic pipes and related fittings for irrigation, water supply, construction and telecommunication networks.

carried out at the following locations:

Head Office and Production Unit:

5, Pentadaktylou Street, Ergates Industrial Area, 2643, Nicosia, Cyprus.

Nicosia Branch: 20, Hytron Street, 1075 Nicosia, Cyprus.

Strovolos Branch: 6, Vouliagmenis Street, Strovolos Industrial Area, 2033 Nicosia, Cyprus.

Larnaca Branch: 19B, K. Palaiologou Street, 6036 Larnaca, Cyprus.

Ammochostos Branch: 9, Kavalou Street, Frenaros Industrial Area, 5350 Ammochostos, Cyprus.

Limassol Branch: 14, Iapetou Street, Ayios Athanasios Industrial Area, 4101 Limassol, Cyprus.

Paphos Branch: Konia Industrial Area, 8200 Geroskipou, Paphos, Cyprus.

has been assessed and found to be in conformity with the requirements of the Standard:

CYS EN ISO 9001:2015

The present certificate is granted in accordance to the CCC General Rules and Procedures for the Assessment and Certification of Quality Systems, is ruled by the terms of the relevant contract between CCC and the enterprise and is valid until : **17/01/2025**

Nicosia, **12/01/2022**

Vassos Vassiliou
Director of Certification

Initial Issue: **31/12/1998**



Πιστοποίηση Σ.Δ.
Αρ. Πιστ. 282



The product schedule has not included in this Appendix. A copy may be obtained from Holman, WSAA or at the following link:

<https://register.saiglobal.com/Client/PrintSchedule/schedules/Temp/Certificate%20SMK26038%2020230712.pdf>



 **STANDARDSMARK
LICENCE**

SAI Global hereby grants:

Elysee Irrigation Ltd

5 Pentadaktylou Street, Ergates, Nicosia, Cyprus

StandardsMark Licence

Manufactured to:

AS/NZS 4129:2020 - Fittings for polyethylene (PE) pipes for pressure applications

"the StandardsMark Licensee" the right to use the STANDARDSMARK as shown below only in respect of the goods described and detailed in the Schedule which are produced by the Licensee or on behalf of the Licensee* and which comply with the appropriate Standard referred to above as from time to time amended. The Licence is granted subject to the rules governing the use of the STANDARDSMARK and the Terms and Conditions for certification and licence. The Licensee covenants to comply with all the Rules and Terms and Conditions.

Licence No: SMK26038

Issued : 12 July 2023
Expires : 9 July 2028

Originally Certified : 10 July 2023
Current Certification : 10 July 2023



Calin Moldovean
President, Business Assurance
SAI Global Assurance

 **Australian Standard**

 **JAS-ANZ**
WWW.JAS-ANZ.ORG/REGISTER

* For details of manufacture, refer to the licensee

The STANDARDSMARK is a registered certification trademark of SAI Global Pty Limited (A.C.N. 050 644 642) and is issued under licence by SAI Global Certification Services Pty Limited (ACN 108 716 669) ("SAI Global") 650 Lorimer Street, Port Melbourne VIC 3207, GPO Box 5420 Sydney NSW 2001. This certificate remains the property of SAI Global and must be returned to SAI Global upon its request. Refer to www.saiglobal.com, for the list of product models.

 **SAI GLOBAL**
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APPENDIX C - SUPPLIER CONTACTS

Holman Industries

Ph: 1300 716 188

Email: sales@holmanindustries.com.au

Head Office (and Moulding Factory)

11 Walters Drive
Osborne Park WA 6017
Ph: 08 9416 9999

Manufacturing Site Queensland

298A Stapylton Jacobs Well Road
Stapylton QLD 4207
Ph: 07 3807 1922

New South Wales

2/98 Kurrajong Avenue
Mount Druitt NSW 2770
Ph: 02 9832 3298

Victoria

145 Northcorp Boulevard
Broadmeadows VIC 3047
Ph: 03 8335 4444

Queensland

Unit 1 & 2, 68 Lisgar Street
Virginia QLD 4014
Ph: 07 3834 2100



Melbourne Office

Level 8, Suite 8.02
401 Docklands Drive
Docklands VIC 3008

Sydney Office

Level 9 420 George Street
Sydney NSW 2000
GPO Box 915
Sydney NSW 2001

P +61 (0) 3 8605 7666
email: info@wsaa.asn.au

www.wsaa.asn.au