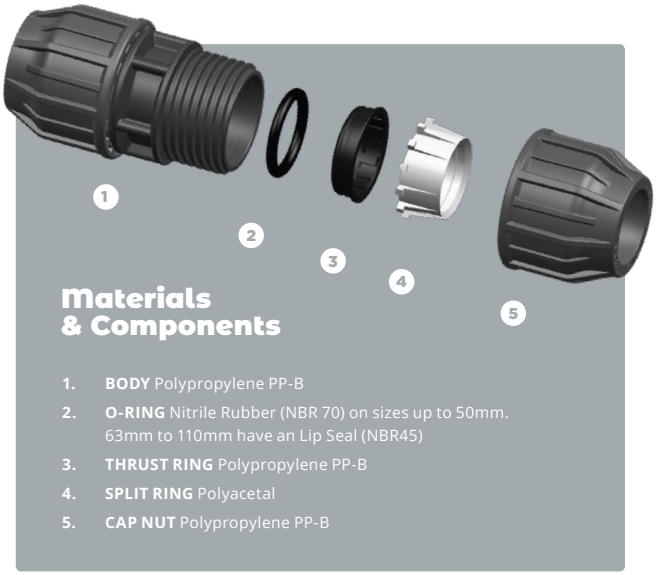
Technical

Metric OD Compression Fittings

WATER WORKS

Smarter pipeline solutions

Metric OD Compression Fittings Technical Information



Materials & Components

1. **BODY** Polypropylene PP-B
2. **O-RING** Nitrile Rubber (NBR 70) on sizes up to 50mm. 63mm to 110mm have an Lip Seal (NBR45)
3. **THRUST RING** Polypropylene PP-B
4. **SPLIT RING** Polyacetal
5. **CAP NUT** Polypropylene PP-B

Waterworks offers a complete range of mechanical compression fittings designed for conveyance of fluids, gaseous fuels, compressed air, chemical solutions and slurries under high pressure. They are also ideal for the conveyance of potable water and fluids for human consumption, since they are produced in accordance with national and international standards and regulations for health and safety.

Elysee compression fittings are manufactured by an ISO 9001:2008 accredited manufacturer. The complete range of fittings have been tested and approved by world leading certification agencies including:

WaterMark AS/NZS 4129 WMK 26038

DVGW CERT GMBH DW-8616BS0468

WRAS Water Regulations Advisory Scheme

kiwa Partner for progress

ÖVGW Österreichische Vereinigung für das Gas- und Wasserfach

Australian Water Quality Centre

Elysee compression fittings are certified to Australian Watermark, AS/NZS 4129 and AS/NZS 4020.

Operating Pressure
16 Bar at 20°C for sizes 20mm to 63mm
12.5 Bar at 20°C for sizes 75mm to 110mm

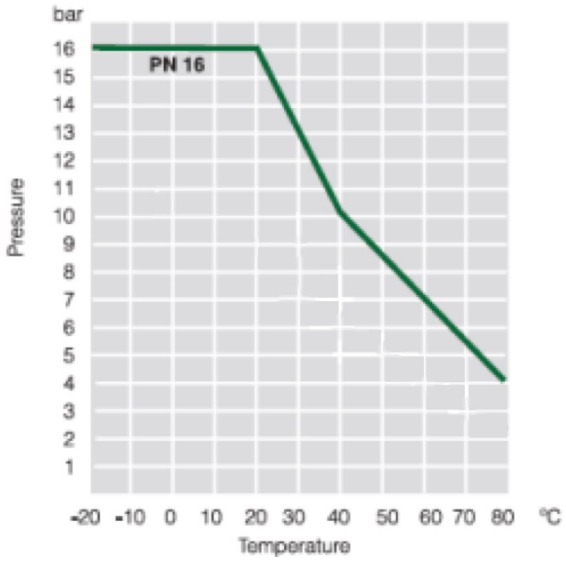
Benefits of Elysee compression fittings include:

- Manufactured in Europe
- Only certified raw materials used to suit NZ's harsh environment
- 50 year service life
- Suitable for potable water
- Withstand sub-zero temperatures
- Easy installation
- Integrated seal
- 40 years proven quality throughout the globe
- Extended cap thread for positive seal
- High UV resistance

Dimensions and Characteristics
Elysee fittings comply with the dimensional requirements and characteristics of the following relevant standards:

- EN 712 / 713 / 715 / 911
- ISO 3458 / 3459 / 3501 / 3503 ISO 14236
- DIN 8076 (Performance Series)

Operating Temperature
The fittings are not to be used in hot water although they withstand the same temperature as the PE pipe itself. The fittings withstand sub-zero temperatures. The pressure rating must be adjusted as shown in the graph below, if the fittings to be used in higher temperatures.



Resistance to Impact
The thermoplastic materials used for manufacturing the fittings have excellent impact properties.

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Abrasion Resistance
The 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.

Electrolytic Corrosion
Plastic fittings are non-magnetizing and do not cause electrolytic deterioration.

Weathering
Elysee fittings offer excellent weathering properties which protects against degradation due to ultra-violet radiation. Therefore, their use is permissible on exposed systems without additional protection.

Projected Life Expectancy
Based on the information available and the successful performance under the nominated test regime, the life expectancy is rated at 50 years before replacement or major repair. This rating is only a general guide to life expectancy and may increase or decrease depending on the quality of the installation, system operation and environment conditions as well as other geographical and site-specific factors.

Threading
Threads (BSP) are manufactured according to ISO 7, DIN 2999 and BS21.
It is recommended that PTFE tape is used when making threaded joints/connections. Any other sealing compound must be confirmed as suitable. Assembly should be carried out by hand and final tightening by a strap wrench, if necessary. Extra care must be taken not to over tighten and otherwise damage the thread.

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

Light Transmission
The all black fitting does not transmit light, thus protecting the water quality in potable water pipelines against growth of micro-organisms.

Pressure Drop (Head Losses)
To determine the total pressure drop in the system, the total straight pipe length calculated for the fittings is added to the total straight pipe length to obtain the total drop. The pressure drop in fittings can be calculated with the following formula:

L = ID x K

L = Head loss based on equivalent pipe length (m)
ID = Pipe inner diameter (m)
K = Fitting constant as shown on table

Fitting Type	K
Elbow 90°	30
Tee 90° (Straight through)	12
Tee 90° (Side branch)	60
Bends 90°	12
Reducing Bush (per size reduction)	15

E.g. You have a 100m section of 50mm SDR17 MDOD PE pipe with 5x 90° Elbows and 2x 90° Tee's with a straight through flow.

To calculate the pipe ID, we need to calculate the wall thickness. We then divide the pipe outside diameter, which in this case we know is 50mm, by the SDR rating, which we know is SDR17.

Wall thickness = OD/SDRx2
Wall thickness = 50/17x2
Wall thickness = 5.88mm
ID = OD - Wall thickness
ID = 50-5.88
ID = 44.12mm

The pressure drop in a 90° Elbow equivalent to the above pipe can be calculated by:

L (equivalent straight pipe) = ID (in metres) x K
L = 0.04 x 30
L = 1.2m
Therefore, each elbow is the equivalent of 1.2m of the above pipe.

The pressure drop in a 90° Tee with straight through flow can be calculated by:

L (equivalent straight pipe) = ID (in metres) x K
L = 0.04 x 12
L = 0.48m
Therefore, each tee is the equivalent of 0.48m of the above pipe.

The total pressure drop can then be calculated by calculating the total equivalent length of pipe and multiplying this by the expected pressure drop factor found in your pressure drop tables.

In this example, 5x 90° Elbows would be the equivalent of 6 metres of straight pipe and 2x 90° Tee's with a straight through flow would be the equivalent of 0.96 metres of straight pipe.

1.2m x 5 (number of elbows) = 6m
0.48 x 2 (number of tee's) = 0.96m

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Therefore, the total equivalent length of straight pipe we calculate the pressure drop for is:

Total Length = Length of pipe + Equivalent length of pipe in fittings
Total Length = 100 + 6.96
Total Length = 106.96m

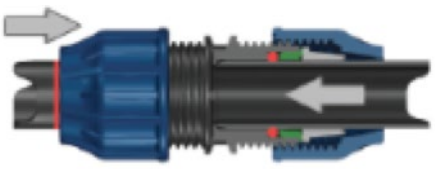
We then calculate the pressure drop for 106.96m of pipe using the appropriate pressure drop factor found in your MDOD PE pressure drop tables.

E.g. If the appropriate pressure drop factor was 5m head loss per 100m:

Pressure Drop = 106.96/100 x 5
Pressure Drop = 5.35m pressure drop in 106.96m of pipe.

Assembly Instructions
Sizes 20mm 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.

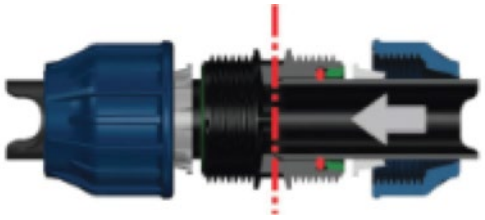


- Push the PE pipe into the fitting, through the nut, split the ring and O-ring, as far as it will go until it meets the first resistance. (The mark on the pipe is now just in front of the nut).

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

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 about twice the pipe diameter.
- Keep the lip-seal and insert the fixed body.
- Assembly is made easier by lubricating the pipe, lip-seal & inside of the fitting with silicone lubricant.



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

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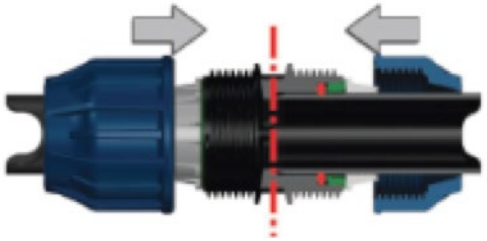
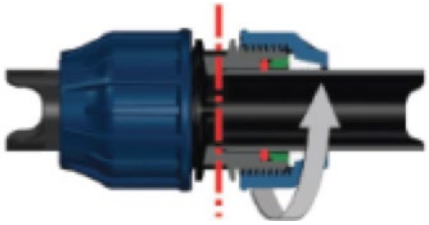


- Push nut & split ring forward until they reach the fitting.



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

Notes:

- Lubrication of the 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 or Lip-seal.