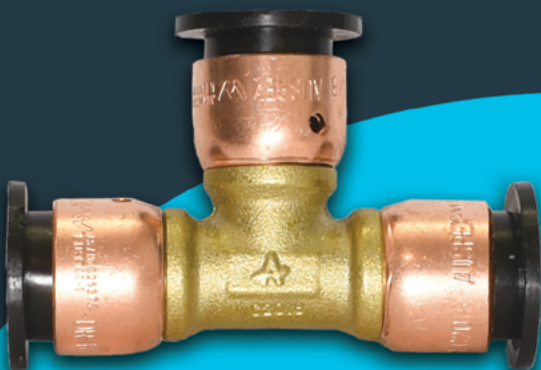


Auspex Water New Zealand Manual



About Auspex

In 2010, Auspex launched into the New Zealand market with its merchant partner Reece. Due to the different plumbing practices in New Zealand, as well as the specialised copper sizing, the need for extra fittings was clear. These were provided and new innovations are also coming to provide New Zealand installers with exactly what they need to continue their work in the way they are familiar.

Auspex pipe and fittings are deemed to comply with both AS/NZS 3500 Plumbing and Drainage, and the New Zealand Building Code. The Auspex System has been independently verified to demonstrate a minimum design life of 50 years.

Reece are continuing to expand their network of stores in New Zealand having opened additional branches in Rolleston, Lower Hutt & Whangarei. An up to date list can be found at www.reece.co.nz/storefinder.

In 2007, RWC (RMC) acquired Auspex from the Bines family and continued Auspex's strong commitment to plumbers. This has led to new product innovations and set new standards in the plumbing industry.

With Auspex pipe manufacturing operations based in Australia, Auspex understands the needs of its customers, and responds rapidly to develop new fittings, create special short runs to satisfy unusual situations and changing market environments.

Auspex is committed to remaining at the forefront of PE-X pipe technology. New products and tooling are continually being developed to enhance the system and the brand is expanding into associated areas. It's this forward focus that will see Auspex continue to grow into the future.

New Zealand copper and International copper have different dimensions. The adaptors in this manual for copper must be carefully selected to ensure compatibility with the correct copper classification.

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The Auspex Crimp System, made for both cold and hot water applications, has passed the test of time in Australia since 1996, thanks to its 'cut, fit, crimp, done' process.

The crimp system comprises PE-X pipe, DR Brass and 316 Grade Stainless Steel fittings, copper crimp rings and a specially engineered jointing tool, ensuring that all your jobs are quick, hassle free, cost effective and of the highest quality. The fittings are manufactured and tested to comply with the performance requirements formatting of AS/NZS 2537.

Auspex are constantly working to improve the crimp system to make it as plumber-friendly as possible.

Advantages of Auspex Crimp System

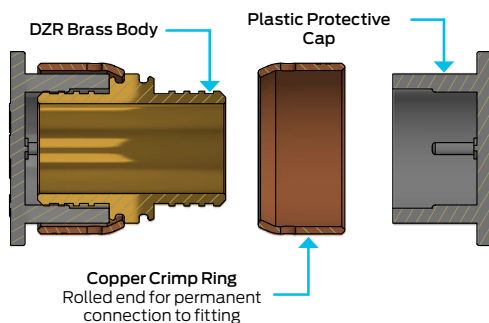
1. Fast and simple installation
2. Reliable, secure connection
3. Neat, compact, robust DZR brass fitting for increased strength and corrosion resistance
4. Rolled crimp ring permanently part of fitting
5. Pipe insertion depth confirmed with viewing window
6. Approved for behind the wall and underground application
7. Quality engineered in Australia
8. Extensive range of transition fittings to Cu (NZ and International copper sizes), PB, PE-X SDR7.4 and SDR9 pipes
9. Installed in Australian buildings since 1997 and NZ buildings since 2010
10. Specialised fittings for NZ. See page 44

Auspex Design

Auspex fittings incorporate a number of unique features.

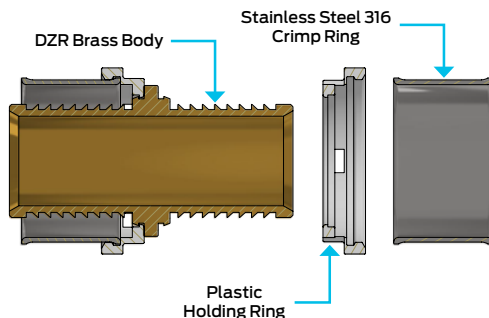
Auspex Brass Design

16mm, 20mm and 25mm



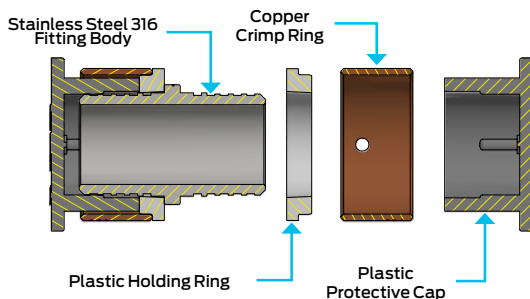
Auspex Brass Design

32mm



Auspex Stainless Steel Design

16mm, 20mm and 25mm



Approved Applications

The Auspex system has WaterMark certification to AS/NZS 2537 and AS 2492 product standard for use in potable water. Auspex plumbing systems are approved for hot and cold potable water installations above and below ground. Please consult with local codes for final approval. Failure to comply with the above types of pipe applications could result in connection failures.

References

- A.** AS/NZS 4020 – Testing of products for use in contact with drinking water
- B.** AS 2492 – Cross-linked polyethylene (PE-X) pipes for pressure applications
- C.** AS/NZS 2537 – Mechanical jointing fittings for use with crosslinked polyethylene (PE-X) for pressure applications
- D.** AS 3688 – Water supply and gas systems - Metallic fittings and end connectors
- E.** AS 1432 – Copper tubes for plumbing, gasfitting and drainage applications
- F.** AS 2345 – Dezincification resistance of copper alloys
- G.** AS/NZS 3500 – Plumbing and drainage

Potable Water Approved AS/NZS 4020

AS/NZS 4020 prescribes tests for analysing the suitability of products for use in contact with drinking water, with regard to their effect on the quality of the water. It is a requirement of Watermark Certification.

Environment

We recognise that environmental impacts are increasingly important to our stakeholders and to society more broadly. RWC actively manages its consumption of energy, water and raw materials for manufacturing and packaging to mitigate our impact on the environment.

RWC supports local and global efforts to combat climate change and strives for a sustainable low carbon future. Our efforts are aligned with the Paris Climate agreement which is focused on reducing emissions to limit global warming to 1.5°C.

Auspex pipe is intended for use by licensed plumbing tradesmen, who are experienced in working to accepted plumbing practices.



Auspex pipe is a cross-linked polyethylene (PE-X) pipe manufactured to comply with AS 2492.

Auspex Pipes

Advantages of the Auspex Pipe

1. Auspex pipe was first approved and certified in 1996 and has maintained compliance every year since then
2. The light weight pipe does not have to be expanded or reverted to make the joint
3. Tighter manual bending
4. Corrosion resistant – no corrosion or scale build up
5. Dampens water hammer noise
6. Auspex pipe is an SDR9 with a performance of an SDR7.4, without a compromise to flow rates
7. Quiet water flow (see acoustic tables in this manual)

Installations should be carried out in accordance with accepted plumbing practices and instructions provided in this manual. However, the installer should also be aware of local authority codes and by-laws relevant to plumbing, which take precedence over these guidelines in any area where they vary.

Installation is subject to the requirements of the applicable regulatory authority and the New Zealand Building Code and associated referenced standards applicable at the time. EG AS/NZS 3500.

General Installation Requirements

The pipe is manufactured in 16mm and 20mm sizes and supplied in 100m or 50m coils and 5m straight lengths. 25mm pipe is available in 25m coils and 5m straight lengths, and 32mm pipe is available in 5m straight lengths. The pipe is manufactured in accordance with AS 2492, which is far more exacting than other approved plastics materials. Because the pipe is flexible and available in coils you can often use less fittings on a job.

Cross-Linked Polyethylene

Auspex cross-linked polyethylene is extruded as a PE-Xb pipe and manufactured using the silane or 'moisture cure' method and is made in a two-stage simple process.

1. Silane grafted polyethylene is combined with a catalyst and extruded into PE-Xb pipe
2. The cross-linking process is then performed by exposing the pipe to steam

The moisture cure process of cross-linked PE-Xb pipe enhances pipe performance properties including strength, temperature and chemical resistance, crack, creep and abrasion resistance, pipe flexibility, pressure rating, expansion and contraction.

Additionally, Auspex cross-linked polyethylene is made using a PE-X100 raw material, which combined with an SDR9 wall, provides improved flow rates and a pressure rating equivalent to an SDR 7.4 pipe.

Operating Parameters

Pressure and Temperature

Auspex pipe is manufactured and certified to comply with the performance requirements of AS 2492. Designed to operate with a working pressure of 2000kPa at 20°C and can be operated at 70°C with a maximum working pressure of 1000kPa.

Temperatures above 70°C for any period will affect the life of the pipe.

Designated Auspex connections can only be used on Auspex SDR9 Pipe.

The table below represents the working pressures of cross-linked polyethylene PN20 pipe at various pipe material temperatures (PMT) as per AS 2492.

Temperature	20°C	60°C	70°C
kPa	2000	1190	1000

Water Quality and Chlorine

Potable water is sourced using a variety of methods. The New Zealand Drinking Water Guidelines provides a framework to govern potable water. To achieve this, chlorine and other agents are sometimes used as constituents of the water. Chlorine levels within the levels of the New Zealand Drinking Water Guidelines are in most cases suitable in standard discontinuous flow applications. For continuous flow applications such as circulating hot water lines a maximum chlorine level of 1.2ppm must be maintained.

Water pH levels must be greater than 7.5. Should the installer have concerns relating to water chemistry including chlorine levels for a particular site or application they should contact RWC for further information.

Disinfection of Plumbing System

The Auspex plumbing system is compliant and certified to AS/NZS 2537 and AS 2492 and as such all components of the system have been certified to AS/NZS 4020. RWC can confirm, based on the AS/NZS 4020 certification that the Auspex system does not cause any multiplication of micro-organisms, microbial contamination.

RWC recommend that an independently accredited provider is engaged to undertake any thermal disinfection or chemical flush of the system and that this work is carried out in line with the relevant Standards.

Chemical flushes must be limited to a maximum of 5 occurrences over the system lifetime and records must be maintained showing when disinfection took place, what process was followed and who undertook the disinfection works.

Chemical flushing is to be done in line with the New Zealand Drinking Water Guidelines. The guidelines prohibit flushing potable plumbing systems with a solution greater than 5ppm of chlorine and within the normal operating temperatures and pressures (as specified in the Auspex Technical Literature).

If chemical flushing with a high concentration solution of chlorine is conducted incorrectly it will have a detrimental effect on any piping system. Dosing must be done in such a way as not to exceed the 5ppm chlorine level in any part of the plumbing system.

Thermal disinfection processes must be conducted within the normal operating conditions of the Auspex plumbing system.

Fire and Excessive Heat

- Keep PE-X a minimum of 500mm from sources of high heat such as heating appliances, flues from heating appliances etc
- Keep PE-X 1500mm from slow combustion type stoves and flues used to heat hot water or cooking (wet back type)
- Leave 300mm minimum space between PE-X pipe and light fittings or other electrical fixtures
- PE-X should not be positioned within 150mm of gas or central heating vents or flues
- Where fire collars or the like are required, installers should contact the manufacturer of those products to ensure they have certification for PE-X pipes within the applied application

Uncontrolled Heat Sources

In the case of uncontrolled heat sources (e.g. slow combustion stoves, water heating coils, wet back boilers, solar, or similar) PE-X pipe should not be used. The primary flow and returns on these types of heaters should not be installed in PE-X pipe. Secondary flow and returns must be controlled so that the temperature / pressure requirements are not exceeded.

In the interest of safe temperature and to protect the user, tempering valves should be installed in accordance with AS/NZS 3500.

When using solar systems, installers should consult with manufacturers to ensure that water leaving the storage facilities does not exceed the performance capabilities of the pipe. Primary flow and returns should not be installed in Auspex pipe and secondary flow and returns must be controlled.

Direct Sunlight Exposure

Auspex black pipes manufactured after March 2010 meet the requirements of AS 2492 for carbon black content. As far as the standard is concerned relating to UV stability, the black pipe meets all of the requirements. Confirmation of UV resistance for solid black pipes can be found in AS/NZS 3500. This **DOES NOT** apply to pipes that have a black co-extruded outer layer.

All other Auspex coloured pipes are not to be exposed to direct or reflected UV light and must be protected.

As a conservative company, we still believe that good plumbing practice would see exposed external pipes protected.

Use Under Concrete Slabs

Water pipes located beneath slabs on ground must be laid on a compacted bed of sand or fine-grained soil with a minimum distance of 75mm between the top of the underside of the slab. Pipe work that penetrates the slab must be at right angles to the slab surface and lagged the full length of the slab penetration with an impermeable flexible material not less than 6mm in thickness.

Alternatively, an impermeable plastic sleeves or conduit providing equivalent protection.

Any joints located beneath a concrete slab including under any permanent driveway, path, or parking area, should be avoided, however if fittings are required the number used should be kept to a minimum.

Refer to Auspex Burial (page 13)

Avoiding Potential Physical Damage

Before, during, and after installation, pipe and fittings should be protected from any potential physical damage included but not limited to; rodents; radiation; sharp objects; machinery; excessive forces; corrosive agents; and chemicals that may have a detrimental effect on the piping system.

Auspex Burial

Auspex fittings are suitable for burial in most applications, however, care is required when using fittings in such applications as environmental factors may have a detrimental effect on the life expectancy of the fittings and pipe.

The installation of Auspex fittings that require burial or chasing into concrete or brickwork, must comply with all local plumbing code requirements. Auspex fittings are not suitable for use in areas where the soil is or may become contaminated* including the soil used for back filling.

The soil used for back filling must be free of rocks, debris or any sharp objects that may cause damage to the fitting or pipe through impact or abrasion.

Where Auspex fittings are buried in conditions that may be corrosive to brass/copper or otherwise potentially detrimental to the fittings, the fittings must have an impervious barrier between the fitting and the surrounding soil. RWC recommend the use of RWC Silicone Burial Wrap for this purpose.

**Examples of contamination include, but are not limited to: petrochemicals (reclaimed service station sites), high levels of nitrogen compounds (this could be caused by animal waste or fertilizer that may be found in some agricultural applications), low pH levels (below pH 6), high pH levels (above pH 8), run off from land fill, formaldehyde compounds, and solvents. It should be noted that such contaminants have been known to migrate through plastic piping systems and contaminate the potable water supplied through these pipes.*

RWC Silicone Burial Wrap

When using RWC Silicone Burial Wrap, make an Auspex connection as per AS/NZS 3500 (see Installation Instructions in this manual for details). While leaving the protective film in place, measure the amount of tape needed to completely wrap the fitting. To ensure a proper seal, overlap tape by 25mm past the end of the fitting on every end and 5mm – 10mm between/across the fitting.

Completely cover the fitting by wrapping (overlapping each edge of the tape) the fitting, pulling the tape tight and removing the protective film. The tape will bond to itself within minutes and form an impervious barrier within a few hours.

See Product List section for item.



RWC Silicone Burial Wrap

Pipes in Chases, Ducts or Conduits

- Pipes in chases must be continuously wrapped with an impermeable flexible material
- Auspex supply pre-covered 5m lengths suitable for this purpose
- Ducts must be fitted with removable covers
- Conduits embedded in walls or floors should comply with the requirements of the New Zealand Building Codes as applicable

Although water service pipes are not permitted to be embedded or cast directly into a concrete structure it is permissible for a water service pipe to be within a conduit and then embedded within a wall or floor of masonry or concrete construction.

Refer to AS/NZS 3500.1

Expansion and Contraction

The pipe can handle thermal expansion because of its flexibility. Allowance should be made for thermal expansion and contraction within the pipe work installation, synthetic clips are recommended.

Care should be taken in regards to contraction. Where pipes are installed between fixed points, allow 10mm slack per metre for contraction to overcome undue pressure on the joints if contraction occurs.

The Formula For Calculating Expansion Rates

ΔL	=	$a \times L \times \Delta T$
ΔL	=	linear expansion in mm
a	=	coefficient of linear expansion is 0.15 mm/mK
L	=	length of pipe in metres
ΔT	=	temperature difference

The approximate expansion rate of PE-X is 7.5mm per metre in a change of temperature of 50°C.

Thermal Expansion

The tables on page 15 represent expansion and contraction of PE-X pipe in millimetres, resulting from a given change in temperature.

The tables are calculated using the following equation:

Change in pipe length = 0.1422 x Pipe length x Change in temperature

CHANGE IN TEMPERATURE (°C)									
LENGTH OF PIPE IN METRES	10	12	14	16	18	20	22	24	
	1	1.4	1.7	2.0	2.3	2.6	2.8	3.1	3.4
	2	2.8	3.4	4.0	4.6	5.1	5.7	6.3	6.8
	4	5.7	6.8	8.0	9.1	10.2	11.4	12.5	13.7
	6	8.5	10.2	11.9	13.7	15.4	17.1	18.8	20.5
	8	11.4	13.7	15.9	18.2	20.5	22.8	25.0	27.3
	10	14.2	17.1	19.9	22.8	25.6	28.4	31.3	34.1
	12	17.1	20.5	23.9	27.3	30.7	34.1	37.5	41.0
	14	19.9	23.9	27.9	31.9	35.8	39.8	43.8	47.8
	16	22.8	27.3	31.9	36.4	41.0	45.5	50.1	54.6
	18	25.6	30.7	35.8	41.0	46.1	51.2	56.3	61.4
	20	28.4	34.1	39.8	45.5	51.2	56.9	62.6	68.3
	22	31.3	37.5	43.8	50.1	56.3	62.6	68.8	75.1
	24	34.1	41.0	47.8	54.6	61.4	68.3	75.1	81.9
	26	37.0	44.4	51.8	59.2	66.5	73.9	81.3	88.7
	28	39.8	47.8	55.7	63.7	71.7	79.6	87.6	95.6
	30	42.7	51.2	59.7	68.3	76.8	85.3	93.9	102.4
	32	45.5	54.6	63.7	72.8	81.9	91.0	100.1	109.2
	34	48.3	58.0	67.7	77.4	87.0	96.7	106.4	116.0
	36	51.2	61.4	71.7	81.9	92.1	102.4	112.6	122.9
LENGTH OF PIPE IN METRES	38	54.0	64.8	75.7	86.5	97.3	108.1	118.9	129.7
	40	56.9	68.3	79.6	91.0	102.4	113.8	125.1	136.5
		26	28	30	32	34	36	38	40
	1	3.7	4.0	4.3	4.6	4.8	5.1	5.4	5.7
	2	7.4	8.0	8.5	9.1	9.7	10.2	10.8	11.4
	4	14.8	15.9	17.1	18.2	19.3	20.5	21.6	22.8
	6	22.2	23.9	25.6	27.3	29.0	30.7	32.4	34.1
	8	29.6	31.9	34.1	36.4	38.7	41.0	43.2	45.5
	10	37.0	39.8	42.7	45.5	48.3	51.2	54.0	56.9
	12	44.4	47.8	51.2	54.6	58.0	61.4	64.8	68.3
	14	51.8	55.7	59.7	63.7	67.7	71.7	75.7	79.6
	16	59.2	63.7	68.3	72.8	77.4	81.9	86.5	91.0
	18	66.5	71.7	76.8	81.9	87.0	92.1	97.3	102.4
	20	73.9	79.6	85.3	91.0	96.7	102.4	108.1	113.8
	22	81.3	87.6	93.9	100.1	106.4	112.6	118.9	125.1
	24	88.7	95.6	102.4	109.2	116.0	122.9	129.7	136.5
	26	96.1	103.5	110.9	118.3	125.7	133.1	140.5	147.9
	28	103.5	111.5	119.4	127.4	135.4	143.3	151.3	159.3
	30	110.9	119.4	128.0	136.5	145.0	153.6	162.1	170.6
	32	118.3	127.4	136.5	145.6	154.7	163.8	172.9	182.0
	34	125.7	135.4	145.0	154.7	164.4	174.1	183.7	193.4
	36	133.1	143.3	153.6	163.8	174.1	184.3	194.5	204.8
	38	140.5	151.3	162.1	172.9	183.7	194.5	205.3	216.1
	40	147.9	159.3	170.6	182.0	193.4	204.8	216.1	227.5

Clipping

AS/NZS 3500 recommend the following spacings:

Diameter	Horizontal	Vertical
16mm	600mm	1200mm
20mm	700mm	1400mm
25mm	750mm	1500mm
32mm	850mm	1700mm

The above is a guide only. Good plumbing practice requires that clipping be installed so that stress is not imposed on the joint. When bending close to a joint, clips should be placed near the fitting in a manner not to stress the joint.

Timber & Steel Frames

Drill holes through studs, plates etc. large enough so that the Auspex pipe can move freely to allow for expansion and contraction and pressure surges.

Holes drilled or formed in metal studs or plates must be accurately sized to enable suitable grommets. Insulation or a short sleeve of oversize pipe should also be firmly secured in the framework to be inserted around the pipe. This helps to ensure that there is no direct contact between the pipe and framework and allows for movement of the pipe through the grommet, lagging or sleeve.

To avoid noises where pipes pass through studs, plates etc. that have large holes, consideration should be given to the use of a non-aggressive compound, grommet or sleeve in the annular space in the stud or plat.

AS/NZS 3500.1 allows neutral cure silicone to be used around PE-X pipes to fill the annual space drilled through a stud or plate.

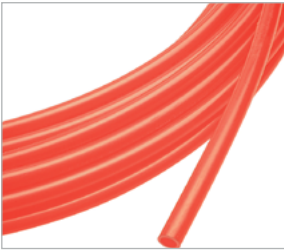
Auspex Pipe Colours

Auspex pipe is made in a range of various colours to identify the particular purpose of use and are all manufactured to comply with AS 2492.



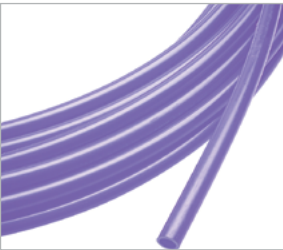
Black Pipe

Black Pipe is typically used for Potable Water but can also be used for hot water installations.



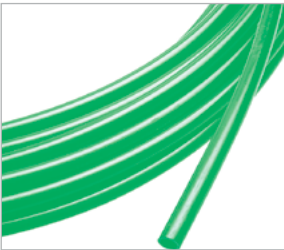
Red Pipe

Red Pipe is for hot water applications only.



Purple Pipe

Purple Pipe is coloured and branded specifically for Recycled Water applications.



Green Pipe

GreenPipe is available for rainwater applications.

Precautions

Chemicals

Always check with RWC before using Auspex pipe for applications other than for potable water. Additionally, check with RWC if pipework is to be installed in a known contaminated area, in contaminated soils or where chemical spills may have occurred.

Electrical

It is of the utmost importance that if a metallic pipe is being installed or replaced, by a plastic pipe or other non-metallic fittings or couplings, the requirements of AS/NZS 3500 must be followed.

Additionally, copper tube connected to a Auspex fitting does not guarantee electrical continuity.

No work should be carried out until the earth requirements have been checked by an electrical contractor and modified if necessary.

PE-X Dimensions

The table below references the dimensional requirements for SDR9 PEX pipe manufactured to AS 2492. Auspex pipe is manufactured to tighter tolerances than required under the standard in order to optimise the Auspex systems performance.

Nominal Size	Tube OD (mm)	Tube Wall (mm)	Tube ID (mm)
DN16	16.0-16.3	2.0-2.3	11.4-12.3
DN20	20.0-20.3	2.3-2.7	14.6-15.7
DN25	25.0-25.3	2.8-3.2	18.6-19.7
DN32	32.0-32.3	3.6-4.1	23.8-25.1

Thermal Conductivity

R-Values of Common Plumbing Piping and Insulation. In certain areas, AS/NZS 3500 requires a minimum insulation of R=0.3. No current piping material will meet this requirement without suitable thermal insulation.

"R-value = Thickness / Conductivity. See AS/NZS 3500.4"

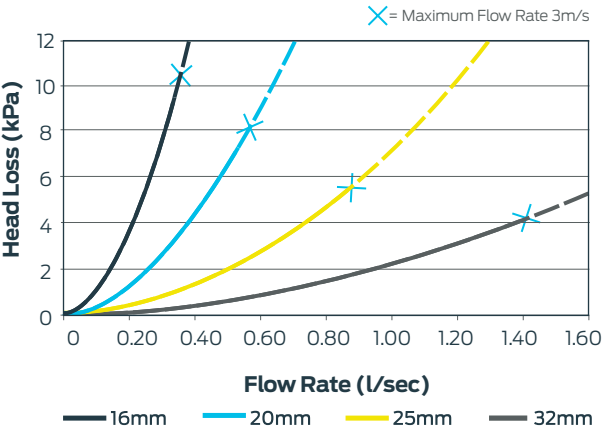
Note - Certain areas of NZ require R1.0

	Conductivity (K)W/M/K	OD (mm)	Wall Thickness (mm)	Nominal ID (mm)	R-Value K.M ² / W
Air	0.02	-	6	-	0.300
Copper DN15	401	12.7	.91	10.88	-0.0000023
Lagged Copper (Approx.)	Cu + Air + Plastic	-	-2	-	0.034
Auspex Pipe 16mm	0.35	16	2.2	11.6	0.006
Auspex Pipe 20mm	0.35	20	2.45	15.1	0.007
Auspex Pipe 25mm	0.35	25	3.2	18.6	0.009
Auspex Pipe 32mm	0.35	32	3.9	24.2	0.011
E-Therm™	0.034	-	8	-	0.235
Requirement of AS/NZS 3500.1 5.19 DN15	0.03	-	9	-	0.300
Requirement of AS/NZS 3500.4 2003 Amendment 1 2005 (Table 8.1 & 8.2)	0.0433	-	13	-	0.300

Pressure or Head Loss Through PE-X Pipe

This graph shows pressure loss through Auspex Pipe at various flow rates in 16mm and 20mm.

In order to calculate the pressure loss through the pipe, the given flow rate for a particular portion of tube must be established (this may be done using the table provided in AS/NZS 3500), along with the required pipe length and diameter. The pressure loss can then be read off the vertical axis.



Information provided here is theoretical and based on new clean pipe. No allowance has been made for age or any abnormal conditions of the interior surface of the pipe.

Maximum Flow Rates

Size	16mm	20mm	25mm	32mm
Mean ID (mm)	11.9	15.2	19.2	24.5
Max Flow (L/min)*	20.0	32.0	52.7	84.9
Max Flow (L/sec)*	0.33	0.53	0.88	1.41

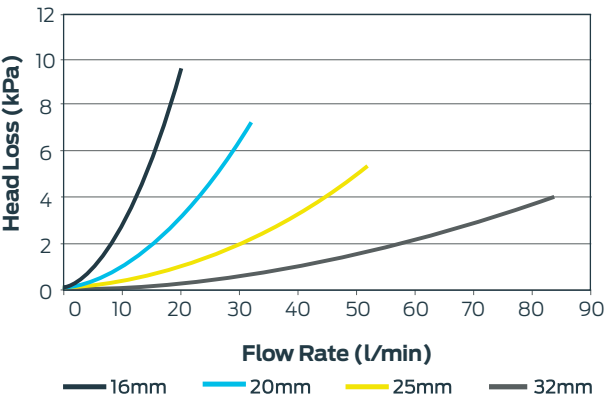
*Based on AS/NZS 3500 maximum allowable velocity in pipe of 3m/s.

Based on its minimum ID of 15.05mm, 20mm Auspex SDR 9 pipe may be used where AS/NZS 3500 requires a nominal pipe size of DN20. This is a feature of Auspex pipe, and not generally applicable to PE-X pipe.

Pipe Flow Characteristics

Flow Rate (l/min) vs Head Loss (kPa)

	Pipe Size	Flow Rate (l/min)				
		4	20	40	60	80
Head Loss per metre of pipe (kPa)	16mm	0.49	9.54	-	-	-
	20mm	0.15	3.04	-	-	-
	25mm	0.05	0.91	3.27	-	-
	32mm	0.01	0.40	1.02	2.17	3.69



Information provided here is theoretical and based on new clean pipe. No allowance has been made for age or any abnormal conditions of the interior surface of the pipe.

Flow Velocity (m/sec)	Flow Rate (l/min)			
	16mm	20mm	25mm	32mm
1.0m/s	6.7	10.7	17.6	28.3
2.0m/s	13.3	21.3	35.1	56.6
3.0m/s	20.0	32.0	52.7	84.9

Acoustic Tests

Results Summary

- The noise emitted by the pipes through the wall was mainly evident in the mid to high frequencies of the A-weighted spectrum
- Noise emitted at frequencies below 250Hz was affected by the level of background noise in the room
- The change in radiated noise level was greater with the change in water flow compared with the change in water pressure
- In all cases the overall noise level emitted by the Auspex pipe was less than for the copper pipe. For the same flow conditions the differences in overall noise level between the pipes was between 14 and 17dB(A)

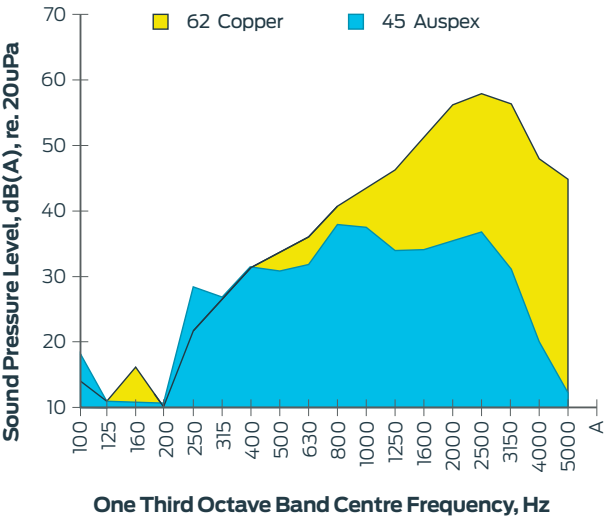
Conclusion

Measurements of noise were taken from pipe attached to the other side of a concrete block wall, with water flowing through and a noise source in the pipe.

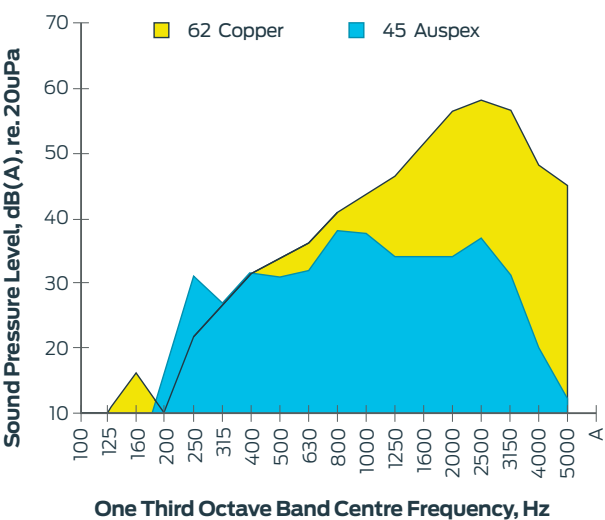
The measured noise emitted from nominal 15mm bore pipes showed that the Auspex cross-linked polyethylene pipe was between 14 and 17dB(A) quieter than the standard copper pipe.

Waterflow l/min	Water Pressure kPa	Measured Noise Level dB(A)		Difference dB(A)
		Auspex	Copper	Copper – Auspex
15	300	38	55	17
15	600	40	54	14
20	600	45	62	17
20	700	45	62	17

Measured noise level of water flow through nominal 15mm bore Auspex and copper pipe, 20L/min, 600kPa with DIN 52218 noise source.



Measured noise level of water flow through nominal 15mm bore Auspex and copper pipe, 20L/min, 700kPa with DIN 52218 noise source.



Auspex Stainless Steel Range

Austenitic Stainless Steel

Austenitic stainless steel has been identified as a suitable, cost-effective material for problem environments, primarily in applications where more aggressive water sources are present.

This series is known for its excellent corrosion resistance to a wide variety of chemicals and water sources. Its microstructural characteristics also provide a unique combination of strength and toughness for the material's service life.

Alloy Designation

British Standard EN10088-1 (2005): [X5CrNiMo17-12-2]
– Refer Table 4, alloy code 1.4401

Alloy Equivalents in ASTM cast series and AISI/UNS wrought series:

- ASTM – [CF-8M]
- AISI – [Type 316]
- UNS – [C31600]

Chemical Composition (Cast Analysis)

C	Si	Mn	P max	S	N
0.07	1.00	2.00	2.00	0.015	0.11
Cr	Cu	Mo	Nb	Ni	Fe
16.50 to 18.50	–	2.00 to 2.50	–	10.00 to 13.00	REM

The British standard alloy designation 1.4401 [X5CrNiMo17-12-2] is used to describe the specific chemical composition chosen for this series of Auspex fittings.

This type of alloy is classified as a corrosion resistant cast steel that has a good resistance to both uniform and local attack which is provided by the Chromium (Cr) content in the alloy. The Cr spontaneously forms a protective oxide film which acts as a barrier to corrosion and is the base protective mechanism of stainless steel.

In addition to this, Molybdenum (Mo) is also included in the composition for increased resistance to crevice corrosion and pitting in chloride-containing environments (as found in many aggressive water sources).

These fittings will consist of ~5-20% Ferrite distributed in discontinuous pools throughout an Austenite matrix which provides a unique combination of properties appropriate for use in various potable water applications.

The Austenite phase (FCC crystal structure) possesses excellent ductility, formability and has a high fracture toughness. The presence of Ferrite (BCC crystal structure) in the alloy is beneficial for resistance to stress corrosion cracking (SCC) and intergranular attack.

In the case of SCC, the Ferrite blocks crack propagation through the Austenite matrix. It also promotes resistance to intergranular cracking by preferentially precipitating carbides along its grain boundaries, rather than along the Austenite grain boundaries, where they would increase susceptibility to intergranular attack.

The presence of Ferrite is also beneficial to the tensile and yield strength of the alloy without any significant reduction in toughness. As the ~5-20% Ferrite is magnetic (Austenite is not), there will be a low magnetic response from this alloy.

Reverse Osmosis (RO Water)

Reverse osmosis (RO) is a water purification process that removes all the contaminants including minerals from the drinking water supply.

The Auspex Stainless Steel range of fittings is suitable for RO water applications however the DZR brass range of fittings must not be used for such applications.

All relevant system guidelines as presented in the Auspex Technical Manual apply to the use of Stainless Steel fittings for RO applications.



Installation Instructions

Auspex fittings from 16-25mm use a copper crimp ring connection and can be crimped with an Auspex manual tool or a Rothenburger battery tool.

It is most important that the tool manual supplied with the tool is read in its entirety and the user becomes familiar with the maintenance, calibration and proper use of the tool.

Step 1.

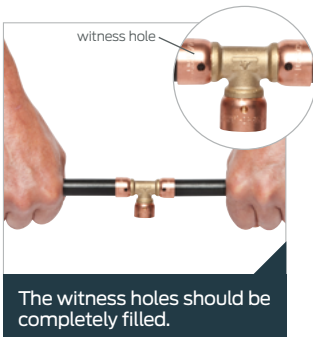
Measure the pipe to the correct length and using a secateur-type pipe cutter, cut the pipe squarely and remove any burrs. The end of the pipe may need to be freshly cut to ensure smooth passage for the fitting.



Do not use a hacksaw.

Step 2.

The pipe is pushed over the barbed fitting and at the same time under the crimp ring. The fit should be firm. If the joint feels sloppy or hard to insert, check pipe and fittings. Do not use lubricants. Ensure the pipe is visible in both crimp ring witness holes.



Step 3.

Make sure the tool jaws are centralised over the crimp ring at 90° to the joint.

When using the manual tool, close the tool completely to compress the crimp ring. The tool will click at final compression.



When using a battery tool, ensure the tool has fully closed and released indicating a completed joint.

Step 4.

For manual tool use, regularly check with the gauge supplied by sliding the opening of the gauge over the compressed ring. If the gauge passes over all parts of the ring without interference, then the joint has been crimped satisfactorily.

Correctly serviced battery tools do not require a gauge check if the joint has been completed as per instructions.



If the gauge experiences any interference, the joint is under crimped. The tool should then be adjusted. (See adjustment instructions in this manual). **Do not double crimp.**

Step 5.

Pressure test the system in accordance with AS/NZS 3500 and with local requirements.

Design the installation in such a way as to not stress the system joints, bend supports may be required.

32mm Joints

When crimping Auspex 32mm, use the battery tool with a 32mm DuoPEX Jaw. Place the fitting inside the jaws so that the raised section of the plastic sight ring fits into the slot in the jaws. Release the jaws so they fit perfectly over the fitting, ensuring that the raised section of the plastic sight ring is still located in the slots in the jaw.

Press the switch mechanism until the joint is completed. Press the back end of the jaws and remove the completed joint.



General Installation Tips

The Gauge

The gauge is one of the quality controls of the system. It verifies firstly that the ring has been crimped and secondly, that it has been compressed enough.

Gauging of the compressed ring should be done regularly throughout each job.

When using the gauge, slide the opening over the compressed ring. If the gauge passes over all parts of the ring without interference then the joint has been done satisfactorily. Do not place the gauge over the pipe and then move it back along the pipe and over the ring. This may not give a true reading.

If the gauge experiences any interference the joint is under crimped. The tool should then be adjusted. **DO NOT DOUBLE CRIMP.**

If the gauge is lost, it should be replaced immediately.

Plastic Holding Ring

While most fittings with the Auspex range utilise the captive copper crimp ring technology, there are some applications where a removeable crimp ring is advantageous. For these products a plastic retainer ring is used to hold the crimp ring to the fitting. It plays no part in the integrity of the joint. It may behave differently after crimping, however as a general rule, the back of this ring should be flush against the body of the fitting and the crimp ring should be attached to it. This starting position will also help to ensure full penetration of the fitting inside the pipe.

For Mark II fittings where the crimp ring is held in place without the plastic ring, the tool jaws must be aligned to the end of the crimp ring where the pipe enters the fitting. Care must be taken not to crimp the pipe.

The Pipe

Pipe coming out of the crimped ring at an angle may indicate that the pipe is not covering all of the barbs on one side. This situation may occur if a tight bend is made close to a joint or if the pipe has moved in some way prior to crimping. Where possible, crimp the fitting before making the tight bend and install a clip close to the joint between the bend and the joint. Use a bend stabiliser to avoid stress on the joint.

Coloured Plastic Rings

The Auspex crimp system has a range of adaptors, which are identified by a different coloured plastic ring. Do not join Auspex pipe by using a fitting with a coloured ring. To identify the uses for these adaptors, consult your supplier or Auspex directly.

The 32mm Auspex water fitting has a Stainless Steel crimp ring and can only be crimped with the battery tool using a DuoPEX jaw. The DuoPEX jaws are universal across all systems shown below.



DuoPEX Gas fittings are defined by the yellow plastic holding ring and are for use only with the multi-layer DuoPEX Gas pipe.



DuoPEX Water fittings are defined by the blue plastic holding ring and are for use only with the multi-layer DuoPEX Water pipe.



Auspex Water 32mm fittings are defined by the clear plastic holding ring and are for use only with the single layer Auspex water pipe and multi-layer Auspex Gas pipe.

Pinched Ring

When crimping fittings which are flush to frames etc, check to ensure that the crimp ring has not pinched on the back side. Rings which are pinched in this manner should be replaced.

Clips

The clips should be installed so that the pipe can move freely through the clip. Plastic clips are recommended.

Tooling

Only Auspex approved tooling can be used with the Auspex system. Manual hand crimpers are available for 16mm, 20mm, and 25mm. Auspex and Rothenberger battery tools with approved jaw sets are also available, 16-32mm.

Crimping Tool

Adjustment of Tool

1. With the tool open, apply light pressure inwards.
2. The handle should be positioned somewhere between 225-250mm apart.
3. If adjustment is required, back off locking screw 3-4 full turns.
4. Turn adjusting screw in ¼ turn increments, adjusting screw slot should finish in a vertical or horizontal position.
5. Recheck opening of handle measurement.
6. When set, tighten down locking screw.
7. Conduct a crimp and gauge check. Re-adjust tool if crimp not satisfactory.

Ratcheting

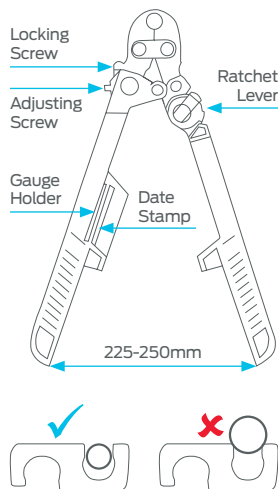
Move Ratchet Lever up or down to suit movement.

Nominal Adjustment

225-250mm.

Gauge

Ensure crimped connection passes through gauge opening on all sides of the joint.



Joining To Other Materials

Threaded fittings are available to make the transition between PE-X pipe and other materials. Specialised and tested adaptor fittings are also available. Please see catalogue or contact Auspex.

When Joining To Copper

- a. Flared copper compression to Auspex crimp adaptors are available.
- b. Brazing adaptors are available, designed so that one end can:
 - Fit over 15mm, 20mm, 25mm and 32mm copper pipe
 - Fit into expanded 15mm, 20mm or 25mm copper pipe
 - Fit into standard copper or brass brazed fittings
 - When brazing these adaptors they MUST be cold before inserting into the PE-X pipe
- c. Push fit copper adaptors are available:
 1. Square cut the copper pipe
 2. Remove any burrs or loose material
 3. Ensure the outside of the pipe is free of scratches, marks etc.
 4. Push the copper fully into the fitting using a twisting motion
 5. Make sure the copper is not oval or out of round
 6. Do not use on annealed copper or coated copper e.g. chrome coating
- d. B-Press (crimp) copper to Auspex:
 1. See catalogue for available conversion fittings
 2. Follow the B-Press installation instruction for the copper crimp end
 3. Follow the Auspex installation instruction for crimping the PE-X end of the fitting



IMPORTANT

- A tool that is out of adjustment can cause a faulty joint
- A tool that is set with excessive pressure can damage both tool and fitting
- A worn or damaged tool should be replaced

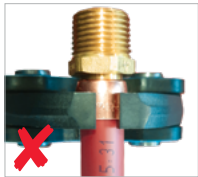
Troubleshooting

The Auspex crimp system is simple and effective when executed in accordance with the jointing procedures in this manual. However, if sufficient care is not taken, this can result in an ineffective joint.

Ineffective joints may occur if:

- The crimping tool has not been completely closed
- The crimping tool is out of adjustment. Re-adjust tool in accordance with the instructions supplied with the tool, and in this manual
- The copper ring has moved away from the fitting body
- The crimping tool has not been centred over the copper ring and the jaw has overhung the end of the fitting
- The crimping tool has not been at 90° to the joint being made
- The pipe has been cut badly out of square
- The witness hole is not completely filled (the fitting is not fully inserted in the pipe)
- The fitting has been double crimped

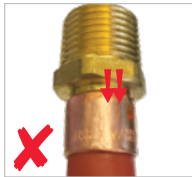
Examples of ineffective joints:



Jaw not centered on the crimp ring



Witness hole not completely filled



Fitting has been double crimped



Jaw not square on the crimp ring



Pipe badly cut and not square to fitting



Fitting has been under crimped

If an ineffective joint is detected:

- Cut out the defective joint and replace with new fitting
- Non-compliant fittings that are removed cannot be re-used.

Product List Pipes & Fittings



Product List

Pipe

Black Pipe

16mm x 5m Straight	XAP401605	1534025
16mm x 50m Coil	XAP401650	1534026
16mm x 100m Coil	XAP4016100	1534053
20mm x 5m Straight	XAP412005	1534024
20mm x 50m Coil	XAP412050	1534027
20mm x 100m Coil	XAP4120100	1534054
25mm x 5m Straight	XAP422505	1544165
25mm x 25m Coil	XAP422525	1534028
32mm x 5m Straight	XAP433205	1544121



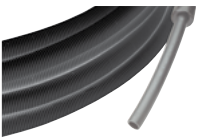
Black Pipe – Pre-Lagged

16mm x 5m	XAP401605LAG	1534050
20mm x 5m	XAP412005LAG	1534052



Corrugated Sleevng

16mm x 25m Coil	XAP401625COR	1534055
23mm Corr – Black		
20mm x 25m Coil	XAP412025COR	1534056
23mm Corr– Black		



Purple Pipe*

16mm x 5m Straight	XAP401605LIL	1534019
16mm x 50m Coil	XAP401650LIL	1534020
20mm x 5m Straight	XAP412005LIL	1534021
20mm x 50m Coil	XAP412050LIL	1534022
25mm x 5m Straight	XAP422505LIL	1534023

*Purple Pipe for recycled water. Marked in accordance with Australian Standards.



Product List

Pipe

Green Pipe

16mm x 5m Straight	XAP401605G	1534067
16mm x 50m Coil	XAP401650G	1534049
20mm x 5m Straight	XAP412005G	1534068
20mm x 50m Coil	XAP412050G	1534051
25mm x 5m Straight	XAP422505G	1537778



Red Pipe

16mm x 5m Straight	XAP401605R	1534080
16mm x 50m Coil	XAP401650R	1534079
20mm x 5m Straight	XAP412005R	1534082
20mm x 50m Coil	XAP412050R	1534081
25mm x 5m Straight	XAP422505R	1534086
25mm x 25m Coil	XAP422525R	1534087



Red Pipe – Pre-Insulated

16mm x 25m Coil	XAP401625RR8	1534899
R.8 – 13mm Wall		
20mm x 25m Coil	XAP412025RR3	1534900
R.3 – 9mm Wall		



Product List

Fittings

16 – 25mm with copper rings and 32mm with stainless steel rings. 32mm fittings must be crimped with the battery tool using the 32mm DuoPEX jaw.

Couplings

16mm x 16mm	AP011616	1534006
20mm x 20mm	AP012020	1534007
25mm x 25mm	AP012525	1544000
32mm x 32mm	AP013232	1544101
20mm x 16mm	AP022016	1534008
25mm x 20mm	AP022520	1544005
25mm x 16mm	AP022516	1544010
32mm x 20mm	AP023220	1544103
32mm x 25mm	AP023225	1544102



Tees

16mm x 16mm x 16mm	AP03161616	1534002
20mm x 20mm x 20mm	AP03202020	1534003
25mm x 25mm x 25mm	AP03252525	1544015
32mm x 32mm x 32mm	AP03323232	1544109
20mm x 20mm x 16mm	AP04202016	1534004
20mm x 16mm x 16mm	AP04201616	1533999
20mm x 16mm x 20mm	AP04201620	1534005
25mm x 16mm x 20mm	AP04251620	1544025
25mm x 16mm x 25mm	AP04251625	1544030
25mm x 20mm x 16mm	AP04252016	1544035
25mm x 20mm x 20mm	AP04252020	1544040
25mm x 25mm x 16mm	AP04252516	1544050
25mm x 25mm x 20mm	AP04252520	1544055
16mm x 16mm x 20mm	AP04161620	1534059
32mm x 32mm x 25mm	AP04323225	1544111
32mm x 32mm x 20mm	AP04323220	1544112
32mm x 25mm x 25mm	AP04322525	1544113
32mm x 20mm x 20mm	AP04322020	1544114

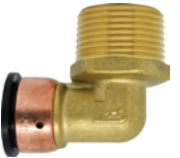


Product List

Fittings

Elbows

16mm x 16mm	AP051616	1534000
20mm x 20mm	AP052020	1534001
25mm x 25mm	AP052525	1544070
32mm x 32mm	AP053232	1544116
25mm x 20mm	AP052520	1544060
20mm x 16mm	AP052016	1544065
16mm x 1/2" Male	AP051615	1544142
25mm x 1" Male	AP052525M	1539748
32mm x 1" Male	AP053225M	1539749



Lugged Elbow (Male)

16mm x 1/2" (73mm)	AP061615S	1534009
16mm x 1/2" (88mm)	AP061615L	1534017
16mm x 1/2" (100mm)	AP061615100	1544135
16mm x 1/2" (200mm)	AP061615200	1534037
20mm x 1/2" (65mm)	AP062015	1544140
20mm x 3/4" (200mm)	AP062020200	1534083
25mm x 3/4" (75mm)	AP06252075M	1544075



Lugged Elbow (Female)

16mm x 1/2" BSP	AP071615F	1534010
20mm x 3/4" BSP	AP072020F	1534036



Product List

Fittings

B-Press Adaptors for international copper		
16mm x 15mm Copper	AP281615	1544580
20mm x 20mm Copper	AP282020	1544581
25mm x 25mm Copper	AP282525	1544582



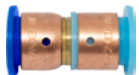
System Adaptors		
16mm Auspex x 16mm SDR 7.4 PE-X Adaptor	API516120	1534038
20mm Auspex x 20mm SDR 7.4 PE-X Adaptor	API52020	1534039
16mm SDR 7.4 PE-X x 16mm SDR 7.4 PE-X x 16mm Auspex Tee	API51616PN20	1544539
20mm SDR 7.4 PE-X x 20mm SDR 7.4 PE-X x 20mm Auspex Tee	API52020PN20	1544536
16mm Auspex x 16mm SDR9 PE-X Adaptor	API51616PN16	1544578
20mm Auspex x 20mm SDR9 PE-X Adaptor	API52020PN16	1544579
16mm Auspex x 18mm PB Adaptor	API51618PB	1534040
18mm PB x 18mm PB x 16mm Auspex Tee	API5181816PB	1544535
22mm PB x 20mm Auspex Adaptor	API52022PFPB	1544537
22mm PB x 22mm PB x 20mm Auspex Tee	API522220PFPB	1544538



API516120



API51616PN20



API51616PN16



API51618PB



API5181816PB



API52022PFPB



API522220PFPB

Product List

Fittings

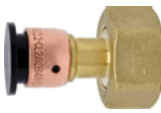
Threaded BSP Adaptors (Male)		
25mm x 1"	AP092525	1544100
32mm x 1 1/4"	AP093232	1544108
25mm x 3/4"	AP092520	1544095
20mm x 1"	AP092025	1544090
32mm x 1"	AP093225	1544106



Threaded BSP Adaptors (Female)		
16mm x 1/2"	API01615	1534015
20mm x 3/4"	API02020	1534016
25mm x 1"	API02525	1544110
32mm x 1 1/4"	API03232	1544107
20mm x 1/2"	API02015	1544130
25mm x 3/4"	API02520	1544105
32mm x 1"	API03225	1544104
16mm x 1/2" Hose Plate Connector	API01615WB	1534047
20mm x 3/4" Hose Plate Connector	API02020WB	1435254



Loose Nut and Tail (Female)		
16mm x 1/2" Coupling	AP191615	1534018
16mm x 1/2" Elbow	AP051615F	1544142
20mm x 1/2" Coupling	AP191620	1544455
20mm x 3/4" Coupling	AP192020	1534044
20mm x 3/4" Elbow	AP052020F	1544141
25mm x 1" Coupling	AP192525	1534048



End Caps		
16mm	API416	1534033
20mm	API420	1534034
25mm	API425	1544115
32mm	API432	1544119



Spare Copper Rings (With Plastic Inserts)		
16mm	AP2216	1534102
20mm	AP2220	1534103
25mm	AP2225	1544160



Product List

Fittings

Sink Sets		
200mm Right Angle Sink Set	AP11200RA	102386



Shower Sets		
150mm Bottom Entry Shower Set Centres, Short Copper Riser and Auspex Barb	AP12BEC	102372



Manifolds		
3 x 16mm Port – Open End 20mm Connection	AP042020163	1601749
3 x 16mm Port – Closed End 20mm Connection	AP0420X163	1601750
4 x 16mm Port – Open End 20mm Connection	AP042020164	1601751
4 x 16mm Port – Closed End 20mm Connection	AP0420X164	1601752



Ball Valves		
16mm x 16mm	AP601616	1534070
20mm x 20mm	AP602020	1534071
25mm x 25mm	AP602525	1534072
16mm x 15mm Female BSP	AP611615FI	1534073
20mm x 20mm Female BSP	AP612020FI	1534074
25mm x 25mm Female BSP	AP612525FI	1534075



Product List

Fittings

Crimping Tools		
16mm	AP2116RN	1534107
20mm	AP2120RN	1534109
25mm	AP2125RN	1534111



Crimp Ring Repair Tool		
20mm x 25mm x 16mm	AP22252016	1544077



Gauges		
20mm x 16mm	AP172016	1544120
25mm	AP1725	1544125



Bend Stabilisers		
16mm	AP1816	1544152
20mm	AP1820	1544155



RWC Silicone Burial Wrap		
50mm x 3m (Self-adhesive)	VC870	1539194



All stainless steel fittings made from grade 316 stainless steel.

Coupling		
16mm x 16mm	APSS011616	1118050
20mm x 20mm	APSS012020	1118051
25mm x 25mm	APSS012525	1118074
20mm x 16mm	APSS022016	1118052
25mm x 20mm	APSS022520	1118077



Tee		
16mm x 16mm x 16mm	APSS03161616	1118053
20mm x 20mm x 20mm	APSS03202020	1118054
25mm x 25mm x 25mm	APSS03252525	1118076
20mm x 16mm x 16mm	APSS04201616	1118055
20mm x 20mm x 16mm	APSS04202016	1118057
20mm x 16mm x 20mm	APSS04201620	1118056
25mm x 25mm x 20mm	APSS04252520	1118088



Elbow		
16mm x 16mm	APSS051616	1118058
20mm x 20mm	APSS052020	1118060
20mm x 16mm	APSS052016	1118059
25mm x 25mm	APSS052525	1118075



Lugged Elbow (Male)		
16mm x ½" (73mm)	APSS061615S	1118061
16mm x ½" (100mm)	APSS061615100	1118080



Lugged Elbow (Female)		
16mm x ½" Female BSP	APSS071615F	1118062



Threaded BSP Adaptors (Male)		
16mm x ½" Male BSP	APSS091615	1118065
20mm x ¾" Male BSP	APSS092020	1118066
25mm x 1" Male BSP	APSS092525	1118078



Threaded BSP Adaptors (Female)		
16mm x ½" Female BSP	APSS101615	1118067
20mm x ¾" Female BSP	APSS102020	1118068
25mm x 1" Female BSP	APSS102525	1118079



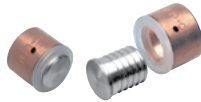
Sink Sets		
300mm Right Angle Centre	APSS111RA	1118069



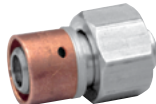
Shower Sets		
150mm Bottom Entry Centre	APSS12BEC	1118070



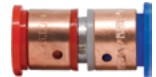
End Cap		
16mm	APSS1416	1118071
20mm	APSS1420	1118072



Loose Nut and Tail		
16mm x ½"	APSS191615	1118073



System Adaptors		
18mm PB x 16mm AP Adaptor Coupling	APSS151618PB	1118081
22mm PB x 20mm AP Adaptor Coupling	APSS152022PB	1118089
16mm AP x 16mm SDR 74 PE-X Coupling	APSS151620	1118083
20mm AP x 20mm SDR 74 PE-X Coupling	APSS152020	1118084



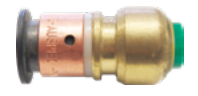
Tees		
½" x ½" x 16mm NZ Cu	APNZ04141416CX	1544500
¾" x ¾" x 20mm NZ Cu	APNZ04212120CX	1544503



Double Lugged Elbows		
16mm x 1/2" Female	AP071615NZ	1544453



Push Fit Copper Adaptors		
16mm x 15mm Push Fit	AP271615NZ	1534076



Threaded BSP Adaptors (Male)		
16mm x ½" Copper MI	AP091615NZ	1534084
20mm x ¾" Copper MI	AP092020NZ	1534085
16mm x ¾" MI	AP091620NZ	1544454



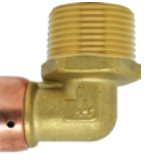
B-Press Adaptors for NZ copper		
16mm x 16mm	AP281615NZ	1435284
20mm x 20mm	AP282020NZ	1435285
25mm x 25mm	AP282525NZ	1435286



Brazing Tails for NZ Copper	
16mm Auspex x ½" NZ Copper	5804074
20mm Auspex x ¾" NZ Copper	5804075
25mm Auspex x 1" NZ Copper	5804073



Threaded Elbows	
16mm Auspex x 1/2" male threaded elbow	1544451
20mm Auspex x 3/4" male threaded elbow	1544452







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For operating parameters outside those stated in the manual,
please contact Customer Service.

Contents of this brochure are subject to change, please visit our website for the
most up-to-date product information.

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