

Auspex Gas Manual



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The Auspex Gas pipe and fitting system is a revolutionary alternative for the professional plumber and gasfitter that makes any job quicker and easier.





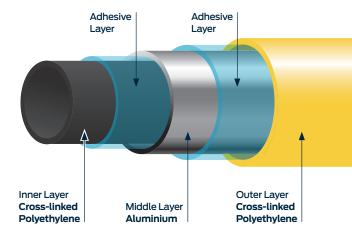
For the full range of Auspex Fittings, tooling and installation instructions, pick up a copy of the Auspex Water Manual in your closest Reece store or download a digital copy from www.auspex.com.au

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Auspex Gas Pipe

The Auspex Gas System is a multi-layer pipe made from Cross Linked Polyethylene (PEX) on both layers and aluminium in between. Having PEX on both layers ensures that the highest performing polymer is on both sides of the aluminium core. Auspex Gas has a defining black inner layer and can easily be identifed.



The pipe is manufactured using the latest butt-welding technique. This technique ensures there are no compromises to polymer thickness to cater for an overlap weld.

The wall thickness of the multi-layer pipes have been specifically engineered to match the SDR 9 Auspex single layer water pipes. This allows most Auspex water fittings to be compatible with the Auspex Gas pipes. Auspex water fittings have copper crimp rings in sizes 16mm, 20mm and 25mm. Stainless steel crimp rings are used on 32mm fittings.

The assembled system has been tested and proven to comply with the Rothenberger tool using Auspex water jaws and a traditional Auspex manual tool. 32mm crimping can be achieved using the DuoPEX Gas crimping jaws compatible with the Rothenberger tool. A gauge is provided to verify the correct crimp compression.

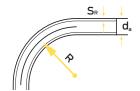
All installations should be carried out in accordance with AS/NZS 5601 and instructions provided in this Manual. The installer must be a licenced gasfitter and proof of training by an approved Auspex Gas representative should be always carried. The installer should also be aware of local authority codes and by laws which take precedence. If clarification is required, contact your local Auspex representative or the Customer Service number shown in this manual.

Bending of Auspex Gas Pipe

Auspex Gas pipe is supported by the aluminium layer and will remain stable after bending. Bending can be done manually, however, bending tools are available if required. Care must be taken during this process to ensure that the pipe does not kink or deform, as these may affect the performance of the system.

Nominal Diameter	Bending Radius (R) Without Aid	Bending Radius (R) with Bending Spring	Bending Radius (R) with Bending Tool
16	$5 \times d_a$	$2.0 \times d_a$	
20	5 x da	3.0 x d _a	
25			3.6 x d _a
32			3.6 x d _a

Note: All measurements in mm unless otherwise stated.



The bending process on Auspex Gas pipe must not result in either indentations or deformations on the inside of the pipe bend. Damage to the PEX layer of the Auspex Gas pipe may effect the integrity of the system.



Do not use pipes that have kinks, cuts, deep scratches, squashed ends, imperfections or have been in contact with contaminating substances. Such pipe should be cut out and replaced, as these conditions may affect the integrity of the system.

Data Sheet

Dimension (mm)	16	20	25	32
Coefficient of Linear Thermal Expansion in mm/m x K	0.026	0.026	0.026	0.026
Thermal Conductivity in W/M x K	0.45	0.45	0.45	0.45
Gas Volumes Litre/m	0.1112	0.1814	0.2955	0.4752
Pipe Roughness K mm	0.007	0.007	0.007	0.007
Coil Length	50	50	50	25
Metres Per Length	5	5	5	5
Pipe Weight (G/M)	109	159	229	389

Spacing of Supporting Devices

Pipe Dimension	Maximum Pipe Clip Clearance
16	1000
20	1250
25	1500
32	2000

Note: All measurements in mm unless otherwise stated. See also AS/NZS 5601. Synthetic clips must be used.

Thermal Changes in Length

Heating and cooling cause pipe length changes.

The coefficient of expansion of Auspex Gas composite pipes is 0.026 mm/m x k.

For further information on Linear Expansion Tables and other expansion bend examples contact your Auspex representative or customer service.

Example Temperature	
Differential ΔT	50 k
Pipe length L	5 m
Coefficient of expansion a	0.026 mm/m.K
Linear expansion ΔL	6.5 mm
ΔL	= a x L x Δ T = 0.026mm/m.K x 5 m x 50 K = 6.5 mm

Thermal conductivity = 0.45 W/M x K

UV Resistance

Auspex Gas pipes must be protected against direct sunlight or UV radiation. Consequently, Auspex Gas pipes must be covered during transport or storage if they have been removed from their original packaging. When Auspex Gas pipes are used in a UV stabilised sleeve, adequate UV protection is assured during the installation phase. Furthermore, jackets made from insulating material can undertake the function of UV protection with Auspex Gas pipes (check with the supplier of the insulating material).



It is best practice to ensure that piping is installed out of direct sunlight.

Fire and Excessive Heat

- Keep Auspex Gas pipe a minimum of 500mm from sources of high heat, such as heating appliances and flues from heating appliances. If any hot joints are made in the line such as welding, the joints involved must be disconnected from the pipe and cooled completely before rejoining to the pipe
- Keep Auspex Gas pipe 1500mm from slow combustion type stoves and flues used to heat hot water or cooking (wet back type)
- Leave 300mm minimum space between Auspex Gas pipe and light fittings or other electrical fixtures
- Auspex Gas pipe 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 MLP construction

Chemical Resistance

Auspex Gas has been tested and certified to AS 4176.8. This standard covers multi-layer pipe and fittings in domestic gas installations for natural gas and LPG.

Gas pipes must be protected from exposure to

- Bitumen or bitumen strips
- Greases, solvents, and oils
- Contaminated areas as defined by AS/NZS 5601 and AS/NZS 3500

If the Auspex Gas system is used in areas where, for example, aggressive gases, below ground, permanently acting moistures or building materials containing chlorine are to be encountered, the fittings must be protected using RWC silicon wrap.

It is also best practice to protect pipe and fittings with suitable jacketing when similarly exposed or in contact with screed, concrete, mortar, plaster or similar.

Auspex Silicone Burial Wrap

Make an Auspex connection ensuring pipe is inserted to proper depth. 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 6-12mm between/across the fitting.



Silicone Burial Wrap

Wrap the fitting by pulling the tape tight and removing the protective film. Completely cover the fitting. The tape will bond to itself within minutes and will cement to itself within a few hours forming an air and water tight seal.



Auspex Gas Fittings

The Auspex Gas system has been specifically designed to be compatible with the one universal fitting for both water and gas. The Auspex Gas range of fittings are manufactured from dezincification resistance (DR) brass. The 16, 20, 25mm fittings have a copper ring and use the Auspex Crimp tool. The 32mm fittings are stainless steel crimp with a plastic ring and use the DuoPEX crimp tool.

Reliable joint performance is maintained with witness holes. Witness holes are provided on the copper and stainless steel crimp rings to visually verify full insertion of the pipe into the fitting. Auspex hand crimping tools can be used up to 25mm, with the Rothenberger battery tool capable of all sizes.





The system is designed to use the same battery tools and jaws that are used on the Auspex water system 16mm to 32mm. The Auspex hand tools can be used on sizes 16mm to 25mm with a checking gauge to ensure correct tool adjust, DuoPEX jaws are required in the Auspex 32mm white ring fittings.

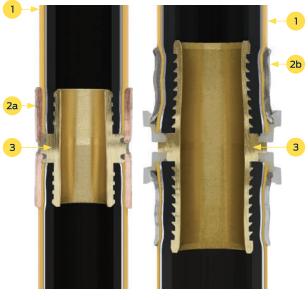
The system has been tested and certified using the Auspex and DuoPEX tools available exclusively from Reece. Tools other than these will not be warranted.

Auspex water fittings are available for Auspex Gas pipe in sizes 16mm to 32mm.

Auspex Gas crimp fittings are classified as a permanent joint in accordance with AS/NZS 5601. As such, the fittings should not be able to move inside the pipe after crimping has been done.

Pipe and fittings are joined and sealed by the deformation caused by correct crimping of the copper crimp ring in sizes 16mm to 25mm and similarly with the stainless steel crimp ring in 32mm.

- 1. Multi-Layer Pipe
- 2a. Copper Crimp Ring OR
- 2b. Stainless Steel Crimp Ring
- DR Brass Fitting



16-25mm Internal – Pipe and Fittings

32mm Internal – Pipe and Fittings

Making A Joint

16mm to 25mm Fittings

It is extremely important that the tool instructions supplied with the tool are read in their entirety, and the user becomes familiar with the maintenance, precautions and the proper use of this tool.

The following describes, in general terms, the jointing procedures but should not be regarded as a substitute for reading and applying the detailed instructions supplied with the tool.

- Select the correct tool and jaw size to suit the fitting to be crimped. The jaws must be examined in terms of possible damage or dirt in the compression area.
- If utilising a battery operated tool, ensure that the battery is fully charged and attach it to the tool.





3. Insert the jaw and line up the holes in the tool with the hole in the jaw. Push the pin through the hole in the jaw and turn pin to lock. Ensure pin is locked into position prior to commencing crimp. To change the jaw push the pin in and turn pin to unlock.



 Cut the pipe to the required length with the recommended multi-layer pipe cutters.



5. Insert the approved (16-32mm) yellow handle calibrating/deburring tool into the pipe, and then alternately turn in a clockwise and in a counterclockwise direction. Ensure that a consistent, smooth chamfer is formed on the end of the pipe.



6. Push the pipe 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 the crimp ring witness hole.



 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 the battery tool, press the switch until the crimp is completed.

8. When using Auspex hand crimpers, 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 done satisfactorily.

If the gauge experiences any interference, the joint is under crimped. The tool should then be adjusted.

Making A Joint

32mm Fittings

It is extremely important that the tool instructions supplied with the tool are read in their entirety, and the user becomes familiar with the maintenance, precautions and the proper use of this tool.

The following describes, in general terms, the jointing procedures but should not be regarded as a substitute for reading and applying the detailed instructions supplied with the tool.

- Ensure that the battery is fully charged and attach it to the tool.
- Select the 32mm DuoPEX Gas jaw. The jaws must be examined in terms of possible damage or dirt in the compression area.



- 3. To change the jaw push the pin in and turn pin to unlock.
- Insert the jaws and line up the holes in the tool with the hole in the jaw.
- 5. Push the pin through the hole in the jaw and turn pin to lock.



6. Cut the pipe to the required length with the recommended multi-layer pipe cutters.



7. Insert the approved (16-32mm) yellow handle calibrating/deburring tool into the pipe, and then alternately turn in a clockwise and in a counter-clockwise direction. Ensure that a consistent, smooth chamfer is formed on the end of the pipe.



Auspex Water fitting

8. Insert the pipe over the fitting and under the stainless steel ring and push the pipe until it is visible in the slots of the plastic sight ring (witness hole). This ensures you have pushed the pipe home.



9. By squeezing the back of the jaw, the jaws will open. If you look at the machined profile on the inside of the jaws you will note a slot on each side of the profile.



10. With the jaws open 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 holding ring is still located in the slots in the jaw.



 Press the switch mechanism until the joint is completed and the piston has retracted back into the body of the tool.



12. Press the back end of the jaws and remove the completed joint.

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.
- Conduct a crimp and gauge check. Readjust tool if crimp not satisfactory.

Ratcheting

Move Ratchet Lever up or down to suit movement.

Nominal Adjustment

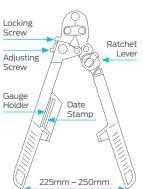
225mm – 250mm.

Gauge

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













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

Trouble Shooting

The Auspex Gas 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 square on the crimp ring

Pipe badly cut and not square to fitting

Fitting has been under crimped

If an ineffective joint is detected:

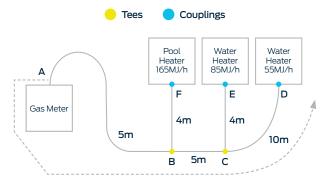
Cut out the defective joint and replace with new fitting

Non-compliant fittings that are removed cannot be re-used.

Pipe Sizing

The following example is for natural gas using:

- Supply Pressure 2.75kPa
- Pressure Drop 0.75kPa



Main Run A \rightarrow D = 20 metres (from the meter to the furthest appliance)

Pipe Section	A→D	A→B	в→с	C→D	C→E	B→F*
Pipe Length	20	5	5	10	4	4
Gas Flow MJ/h	305	165 + 85 + 55 = 305	85 + 55 = 140	55	85	165
Fitting Correction	0.8 + 1.7 + 1.7 = 4m					
Corrected Main Run	24m	24m	24m	24m	24m	24m
Nominal Pipe Size Corrected		32mm	25mm	16mm	20mm	25mm
Nominal Pipe Size Uncorrected		25mm	25mm	16mm	20mm	25mm

^{*} In keeping with gasfitting best practice, if any value is close to the limit, upsize.

Natural Gas

Main Run (m)		Nominal 9	Size (mm)	
	16	20	25	32
2	81	130	309	593
4	55	86	207	405
6	44	69	165	323
8	36	59	141	271
10	33	52	123	235
12	29	47	110	214
14	26	42	101	195
16	25	39	94	181
18	23	37	88	170
20	_	35	83	159
25	_	31	74	142
30	_	27	66	126
35	_	25	60	115
40	_	23	55	107
45	_	21	52	99
50	_	20	49	95
55	_	19	46	90
60	_	18	44	85
65	_	-	42	81
70	_	-	40	77
75	_	-	38	75
80	_	-	37	72
85	_	-	36	69
90	_	-	35	67
95	_	-	34	65
100	_	-	33	63
120	_	-	-	61
140	_	-	-	53
160	_	-	-	48
180	_	-	-	45
200	_	-	-	43
250	_	-	-	38
300	_	-	-	34
Correction +mt for fitting	1.2	1.1	0.6	0.5

Main Run (m)	Nominal Size (mm)			
	16	20	25	32
2	313	495	1176	2284
4	208	340	789	1547
6	166	264	622	1180
8	143	221	532	1048
10	122	197	467	893
12	109	177	421	828
14	102	161	386	737
16	93	153	358	685
18	89	140	334	657
20	83	133	313	610
25	74	117	281	537
30	65	105	248	479
35	60	95	224	440
40	56	89	215	408
45	52	84	197	384
50	49	77	186	360
55	46	75	175	337
60	45	70	169	326
65	43	67	161	308
70	40	65	154	296
75	38	61	147	284
80	36	59	142	272
85	35	57	136	263
90	_	55	133	255
95	_	55	128	246
100	_	53	125	243
120	_	47	112	217
140	_	43	104	198
160	_	40	95	184
180	_	37	89	172
200	_	35	84	162
250	_	31	74	142
300	_	27	67	128
Correction	1.7	1.5	0.8	0.7

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Natural Gas

Pressure Drop 1.5 (Meter Pressure 5 – 10kPa)				
Main Run (m)		Nominal S	Size (mm)	
	16	20	25	32
2	476	757	1801	3485
4	322	517	1218	2333
6	255	406	976	1852
8	215	346	815	1577
10	192	302	719	1391
12	171	272	647	1252
14	157	250	594	1149
16	145	232	551	1072
18	136	219	514	996
20	127	204	486	934
25	113	179	429	824
30	101	161	390	741
35	93	150	351	681
40	86	136	325	631
45	80	129	306	585
50	76	123	287	556
55	71	114	273	522
60	68	108	258	501
Correction +mt for fitting	1.7	1.5	0.8	0.7

LPG

Pressure Drop 0).25kPa (Pres	ssure Supply 2	.75kPa) (Mj/	h)
Main Run (m)	Nominal Size (mm)			
	16	20	25	32
2	258	408	979	1882
4	173	280	655	1273
6	137	219	520	1005
8	118	185	448	855
10	103	163	389	747
12	93	148	350	673
14	84	135	322	617
16	78	125	303	573
18	74	117	278	539
20	69	110	263	505
25	61	97	229	445
30	55	87	209	402
35	50	80	190	365
40	46	74	179	338
45	44	69	164	317
50	41	65	155	298
55	38	61	146	283
60	37	58	141	269
70	_	54	128	246
80	_	48	119	226
90	_	46	111	212
100	_	44	105	201
120	_	40	95	181
140	_	36	85	166
160	_	34	80	145
Correction +mt for fitting	1.7	1.5	0.8	0.7

LPG

Pressure Drop 10 (Pressure Supply 70kPa) (Mj/h)				
Main Run (m)		Nominal S	Size (mm)	
	16	20	25	32
2	2255	3617	8538	16495
4	1525	2421	5774	11042
6	1211	1932	4584	8766
8	1021	1637	3923	7578
10	909	1444	3409	6586
12	810	1294	3099	5927
14	752	1182	2817	5443
16	683	1096	2626	5048
18	646	1037	2436	4705
20	609	966	2305	4409
25	542	848	2013	3889
30	483	764	1830	3500
35	444	700	1661	3246
40	411	659	1541	3019
45	381	605	1465	2801
50	357	573	1359	2664
55	343	539	1286	2495
60	325	515	1223	2397
70	300	511	1135	2197
80	275	441	1042	1998
90	259	409	981	1872
100	241	383	919	1773
120	216	346	828	1596
140	201	318	752	1451
160	184	298	698	1345
Correction +mt for fitting	-	-	-	-

Pipe Straight	
16mm x 5m	APG401605
20mm x 5m	APG412005
25mm x 5m	APG422505
32mm x 5m	APG433205



Pipe Coils	
16mm x 50m	APG401650
20mm x 50m	APG412050
25mm x 50m	APG422550
32mm x 25m	APG433225



16mm – 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
20mm x 20mm	AP012020
25mm x 25mm	AP012525
32mm x 32mm	AP013232
20mm x 16mm	AP022016
25mm x 20mm	AP022520
25mm x 16mm	AP022516
32mm x 20mm	AP023220
32mm x 25mm	AP023225



Barrel Union Couplings		
20mm	AP202020	
25mm	AP202525	
32mm	AP203232	





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Tees	
16mm x 16mm x 16mm	AP03161616
20mm x 20mm x 20mm	AP03202020
25mm x 25mm x 25mm	AP03252525
32mm x 32mm x 32mm	AP03323232
20mm x 20mm x 16mm	AP04202016
20mm x 16mm x 16mm	AP04201616
20mm x 20mm x 25mm	AP04202025
20mm x 16mm x 20mm	AP04201620
25mm x 16mm x 16mm	AP04251616
25mm x 16mm x 20mm	AP04251620
25mm x 16mm x 25mm	AP04251625
25mm x 20mm x 16mm	AP04252016
25mm x 20mm x 20mm	AP04252020
25mm x 20mm x 25mm	AP04252025
25mm x 25mm x 16mm	AP04252516
25mm x 25mm x 20mm	AP04252520
16mm x 16mm x 20mm	AP04161620
32mm x 32mm x 25mm	AP04323225
32mm x 32mm x 20mm	AP04323220
32mm x 25mm x 25mm	AP04322525
32mm x 20mm x 20mm	AP04322020
20mm x 20mm x ½"	AP04202015F



Elbows	
16mm x 16mm	AP051616
20mm x 20mm	AP052020
25mm x 25mm	AP052525
32mm x 32mm	AP053232
25mm x 20mm	AP052520
20mm x 16mm	AP052016
16mm x 1/2" Male	AP051615
16mm x ½" Female	AP051615F
20mm x 1/2" Male	AP052015
20mm x ¾" Female	AP052020F
25mm x 1" Male	AP052525M
32mm x 1" Male	AP053225M









Lugged Elbow (Male)	
16mm x ½" (73mm)	AP061615S
16mm x ½" (88mm)	AP061615L
16mm x ½" (100mm)	AP061615100
16mm x ½" (200mm)	AP061615200
16mm x ½" (230mm)	AP061615230
16mm x ½" (88mm) Flange and Locking Nut	AP06161588
20mm x ½"(65mm)	AP062015
20mm x ½" (200mm)	AP062015200
20mm x ¾" (200mm)	AP062020200
25mm x ¾" (75mm)	AP06252075M
20mm x ½" (95m)	AP06201595





Compression Adaptors	
16mm x 15mm Copper	AP131615
20mm x 20mm Copper	AP132020
25mm x 25mm Copper	AP132525



B-Press Gas Adaptors	
16mm x 15mm Gas Copper	APG281615
20mm x 20mm Gas Copper	APG282020
25mm x 25mm Gas Copper	APG282525
20mm x 15mm Gas Copper	APG282015
25mm x 20mm Gas Copper	APG282520
32mm x 25mm Gas Copper	APG283225





Threaded BSP Adaptors (Male)	
16mm x ½"	AP091615
20mm x 3/4"	AP092020
25mm x 1"	AP092525
32mm x 1 ¼"	AP093232
20mm x ½"	AP092015
25mm x 3/4"	AP092520
20mm x 1"	AP092025
32mm x 1"	AP093225



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Fittings

Threaded BSP Adaptors (Female)

16mm x ½"	AP101615
20mm x ¾"	AP102020
25mm x 1"	AP102525
32mm x 1 ¼"	AP103232
20mm x ½"	AP102015
25mm x 3/4"	AP102520
32mm x 1"	AP103225
16mm x ½" Wing Back Connector	AP101615WB
20mm x ¾" Wing Back Connector	AP102020WB





Loose Nut and Tail (Female)

16mm x ½"	AP191615
20mm x ½"	AP191620
20mm x 3/4"	AP192020
25mm x 1"	AP192525



The o-ring must be white (PTFE) for gas.

End Caps

16mm	AP1416
20mm	AP1420
25mm	AP1425
32mm	AP1432



Tees for Brazing Copper Pipe

16mm x 16mm x ½"	AP04161608F
20mm x 20mm x 3/4"	AP04202008F



Brazing Tails

16mm Male	AP0816M
20mm Male	AP0820M
25mm Male	AP0825M
32mm Male	AP0832M
25mm x 20mm Male	AP082520M
16mm Female	AP0816F
20mm Female	AP0820F
25mm Female	AP0825F
32mm Female Brazing Tail	AP0832F
20mm x 15mm Female	AP082015F





Threaded Tees (Female)

20mm x 20mm x Rp1/2"	APF04202015F
25mm x 25mm x Rp½"	APF04252515F
32mm x 32mm x Rp1/2"	APF04323215F





Threaded Elbows (Female)

20mm x Rp½"	APF072015F
25mm x Rp1/2"	APF072515F
32mm x Rp½"	APF073215F





Crimping Tools

16mm	AP2116RN
20mm	AP2120RN
25mm	AP2125RN



Crimp Ring Repair Tool

20mm x 25mm x 16mm AP22252016



Gauges

20mm x 16mm	AP172016
25mm	AP1725



Calibrator

16mm - 32mm AP21X1632





Customer Service

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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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