technical manual

UNIPEX

UNIPEX

The UNIPEX™ system is available Australia wide by

Plumbing Plus

Edition 4, September 2023

Contents

Overview

The UNIPEX™ system has been developed in response to the increasing demand for lead free plumbing systems in Australia.

The UNIPEX™ system utilizes one common fitting for both water and gas applications, eliminating the need to carry separate water and gas fittings.

The UNIPEX™ system combines lead free, silicon brass fittings with a premium quality PEX100 PN20 SDR 9 pipe for water applications and a composite, PE-AL-PEX pipe for gas applications.

This combination provides a flexible, lightweight and corrosion resistant plumbing system.

All installations are to be carried out by a licensed tradesperson and in full accordance with the UNIPEX™ installation guidelines, relevant Australian standards and any additional local authority requirements. When installed subject to the above conditions the UNIPEX™ system will provide years of trouble-free service.

Application

The UNIPEX™ system uses a newly developed crimping tool to produce a secure joint in a minimal amount of time. The crimping method produces a consistent level of compression around the full circumference of the crimp ring, guaranteeing a perfect seal every time, and eliminates the need for repairing partially and poorly welded joints etc.

UNIPEX™ fittings are to be installed in accordance with AS/NZS 3500 for water and AS/NZS 5601 for gas applications, these include:-

- Hot and Cold Potable Water
- Rainwater
- Recycled Water (non-potable)
- Natural Gas
- LPG

For optimum installation results, please take time to familiarise yourself with the installation considerations outlined on Pages 11-16 in this booklet.

UNIPEX™ Pipe

UNIPEX™ pipe is a high-quality cross-linked polyethylene PN20, SDR9 pipe, consisting of an inner core of PEX-B material encased in an outer layer of tough High-density polyethylene.

UNIPEX™ water pipe is used for potable (hot and cold), recycled and rain water systems as well as glycol systems. Contact your local UNIPEX™ supplier for more information and applications for use with other fluids.

UNIPEX™ also offers a multilayer composite (PE-AL-PEX) gas pipe specifically for natural gas and LPG applications. The pipe construction in made up of an internal PEXb inner layer encased in a layer of aluminium, which acts as a barrier layer, stopping gas migration, and an exterior layer of durable polyethylene to protect the aluminium layer.

UNIPEX™ pipe is available in DN16, DN20, DN25 and DN32 sizes, in either coils or straight lengths.

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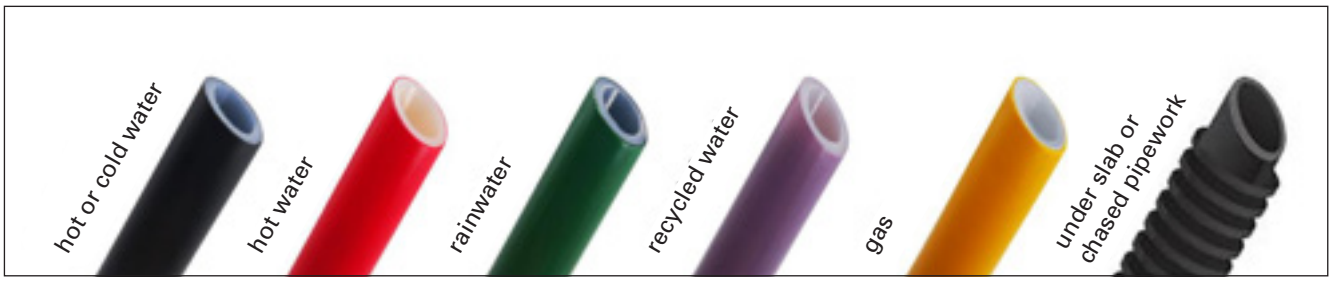
UNIPEX™ Pipe continued

UNIPEX™ Pipe - Standard Supply Units

Nom pipe size	Straight lengths (all)	Coil length (black)	Coil length (red)	Coil length (green)	Coil length (lilac)	Coil length (yellow)
16mm	5m	50m 100m	50m 100m	50m 100m	50m	50m
16mm (In Conduit)		50m	50m			
20mm	5m	50m 100m	50m 100m	50m 100m	50m	50m
20mm (In Conduit)		50m			50m	50m
25mm	5m	50m	50m	50m		50m
32mm	5m	25m				25m

The UNIPEX™ pipe is colour coded to assist the installer in avoiding cross connections.



BLACK	Hot & cold potable water
RED	Hot water
GREEN	Rainwater
LILAC	Recycled water (non-potable)
YELLOW	Gas
CONDUIT	In/under slab hot & cold water

UNIPEX™ pipe dimensions

Nom Size	Min OD (mm)	Min Wall Thickness (mm)
16mm	16.0	2.0
20mm	20.0	2.3
25mm	25.0	2.8
32mm	32.0	3.6

Performance

The use of UNIPEX™ pipe provides users with many advantages over traditional piping materials. It has excellent flexibility, offers a high degree of resistance to damage caused by freezing, as well as excellent pressure and temperature resistance. The PEX-B pipe is composed of lightweight material and has high insulation of noise and heat. Also, very low level of friction loss means UNIPEX™ pipe can often save users the need to upsize piping when installing long runs. As jointing methods are mechanical, it does not require the use of solvent adhesives, soldering, welding or brazing.

UNIPEX™ pipe temperature & pressure performance

AS/NZS 2492

Indicative working pressure relative to fluid temperature				
Temp (ºC)	20	40	60	70
Pressure (Kpa)	2000	1800	1500	1330

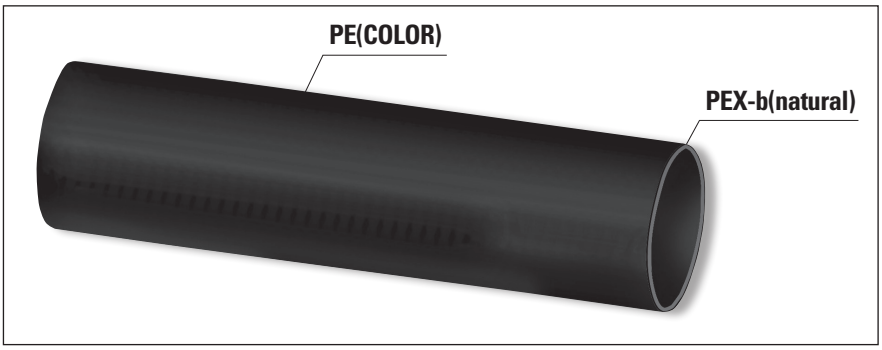
Temperatures above 70 degrees celsius for any period will affect the lifespan of the pipe. Please refer to the installation considerations of this manual

Pipe Construction

UNIPEX™ Water Pipe

(Black, Red, Green, Lilac)

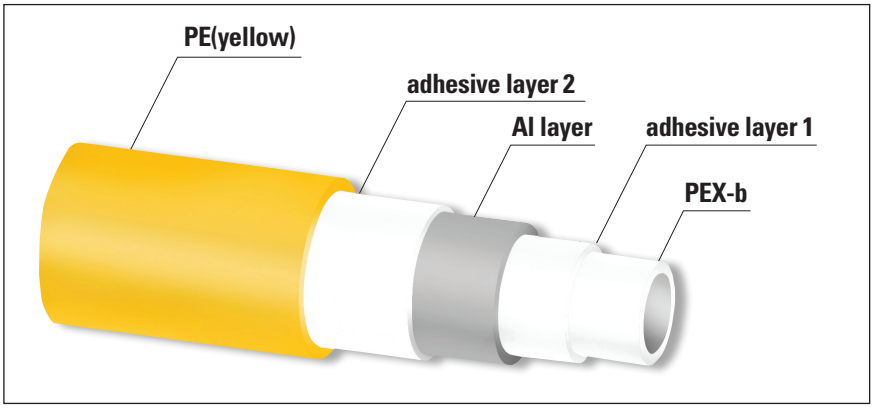
The UNIPEX™ water pipe consists of an inner core of cross-linked polyethylene (PEX-B), with a coloured outer layer of high-density polyethylene (coloured for application identification)



UNIPEX™ Gas Pipe

(Yellow)

UNIPEX™ gas pipe is a high-quality composite pipe. It has three separate layers bonded to form a lightweight, flexible and extremely resilient pipe. The inside layer is a cross linked polyethylene (PEX-B). This is surrounded by a layer of aluminium (Al) which in turn is encased with an outer layer of yellow coloured polyethylene (PE).



UNIPEX™ Fittings

The body of UNIPEX™ fittings are made from a high-performance, lead free, DZR silicon brass. The crimp ring is made of high quality stainless steel which when used with the UNIPEX™ crimping tool ensures a consistent reliable joint with both the UNIPEX™ water and gas pipes.

UNIPEX™ fitting dimensions

Nominal Size	Minimum Bore (mm)
16mm	8.6
20mm	11.6
25mm	14.9
32mm	19.0

Features and Benefits

Crimp Jointing Method	• Fast • Secure • Simple to use • No O-ring • Less time on the job • Less capital outlay on tooling • Internal sealing method reduces leaks due to scratched pipe • Without crimping, the fitting will leak at 100(kpa) onwards
Stock Consolidation	• Same fittings for water and gas pipe
Flame-free Assembly	• Increased safety • No need for gas cylinders or Hot Works permits • Reduced costs on welding consumables
Size Range DN15 – DN32	• Fittings available for most tasks
Acoustics	• Low noise transmissions in PEX-B pipe • Quieter, reduced water hammer

Installation Considerations

The UNIPEX™ System should always be installed in compliance with AS/NZS3500 for water applications and AS/NZS5601 gas applications.

Proximity to Flame and External Heat Sources

The UNIPEX™ system should not be installed in positions where it is likely to be exposed to a naked flame. If it is, there's a danger the pipe could ignite and continue to burn even after the source of the flame is extinguished.

In accordance with AS/NZS3500 all plastic pipes for water supply must be protected from excessive ambient heat.

As the UNIPEX™ gas pipe has a PE outer layer, its use is limited to applications with an ambient temperature of 60°C and below.

Installers should also ensure that all welding operations are completed and allowed to cool prior to assembling the UNIPEX™ joints.

Thermal Expansion

UNIPEX™ pipe has a thermal expansion rate of approximately 1.5mm per metre for every 10°C change in temperature. This expansion or contraction should be taken into consideration for any installation and the appropriate allowances made in the pipe layout or fixing positions. Care should be taken not to pull the pipe tightly between fixed points during installation as the pipe may later contract causing excessive tensile force to any joints.

Temperature & Pressure Performance

As with all plastic piping systems, the ability of the pipe to withstand pressure decreases as the pipe temperature increases.

Protection From Physical Damage

Due care should be taken to protect pipe and fittings from any physical damage both prior to, during and after installation. Possible causes of physical damage may include (but are not limited to) sharp edges or implements, machinery, rodents, excessive heat, long term UV exposure, radiation, mechanical forces, corrosive agents and high levels of chlorine and other chemicals that may have a detrimental effect on the piping

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Installation considerations continued

system. UNIPEX™ brass fittings should not come in contact with treated pine.

Both during and after installation, the product should not be damaged by grouting or stress caused by concrete stress cracks or any other external force.

Framework Penetrations

Where UNIPEX™ pipe penetrates timber or metal framework, appropriate precautions should be taken to protect it from damage. Holes should be sized to allow for longitudinal movement, expansion and contraction of pipe whilst still securing the pipe adequately.

Suitable grommets or sleeves should be used in metal frames to protect the pipe from abrasion. The use of silicone sealant or other chemical adhesives is not recommended for these purposes.

Water Pipe Bending

Do not apply bending forces to joints which have already been completed. Finish all bending operations prior to installing the fitting.

UNIPEX™ water pipe can be bent easily by hand. The radius of the bend should be not less than 8 times the diameter of the pipe. Due care should be taken during bending to ensure that the pipe is not damaged or kinked. If you do encounter a kinked or damaged section of pipe, it should be cut out and replaced as a precaution. The use of bend supports is recommended.

Minimum Bending Radius UNIPEX™ Water Pipe

Nom Size	Min Bending Radius (mm)
16mm	128
20mm	160
25mm	200
32mm	256

Gas Pipe Bending

UNIPEX™ gas pipe has limits as to the minimum radius that it may be bent. For smaller sizes (16 & 20mm) it can be easily bent by hand, in which case the radius of the bend should be not less than 5 times the diameter of the pipe.

It is also possible to use many of the mechanical bending devices currently available. In this case the minimum radius is as indicated on the following table:

Minimum Mechanical Bending Radius UNIPEX™ Gas Pipe

Nom Size	Min Bending Radius (mm)
16mm	160
20mm	200
25mm	250
32mm	320

UNIPEX™ Pipe Clipping

In accordance with AS/NZS3500 and AS/NZS5601, fixing spacing should be observed for both horizontal and vertical pipe runs as outlined in the table below.

Clipping should be by way of a recognised fixing which complies with the requirements of AS/NZS3500 and AS/NZS5601. This excludes things such as bent-over nails, tie wire, pierced metal strapping, etc.

It is recommended that UNIPEX™ pipe is installed using a suitably sized PEX clip to ensure secure fastening of pipe in a manner that will not exert stress on the fittings caused by thermal expansion and contraction of pipe.

For UNIPEX™ gas pipe work that is suspended on rod hangers, the minimum diameter of the rod hanger should be 9.5mm for all pipe sizes.

UNIPEX™ Pipe Clip Spacing Requirements

Nom Size	Vertical or Horizontal Run Spacing (m)
16mm	1m
20mm	1.25m
25mm	1.5m
32mm	2.0m

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Installation considerations continued

Underground Applications
UNIPEX™ Pipe should be buried with a minimum cover of 450mm. Marker tape should be installed approximately 150mm above the pipe. Additional precautions, such as wrapping of the pipe, should be taken in areas where aggressive soil conditions are known to exist or where it may be a requirement of the local certifying authority. The use of "Blue Metal" or "Crusher Dust" as a backfill material is to be avoided. Ground needs to be inspected to ensure it is not contaminated prior to burial of the pipe, and care should be taken to ensure that post-installation contamination does not occur.

When being buried beneath a building, the pipe should be free of joints.

Chases, Cast In-Slab and Underfloor Applications
Where UNIPEX™ pipe is installed in chases or cast in slabs the installation must be in accordance with both AS/NZS3500 for water applications and AS/NZS5601 for gas applications and any other relevant building regulations or standards.

A convenient and cost effective solution for these applications is the use of UNIPEX™ pipe, pre-sleeved in a durable and flexible polyethylene corrugated conduit – available as part of the UNIPEX™ piping range.

UV Exposure and Storage
All UNIPEX™ pipe should be protected from long-term exposure to UV by way of either lagging or enclosing in a conduit.

All UNIPEX™ gas exposed pipework is to be sleeved, wrapped or protected by some other means to ensure that the installation satisfies the relevant authorities and/ or the local authorities' interpretation of the Australian Gas Installation standard. Refer to AS/NZS5601 (protection against UV degradation).

Note: Additional thermal lagging may also be required to protect any of the pipes from temperature extremes.

Prior to installation, UNIPEX™ pipe should stored in a manner that provides protection from UV exposure.

If there is a possibility that the end of the pipe has been exposed to long term UV exposure in storage, it is suggested that the first 50mm of the exposed pipe is removed prior to installation.

Other Materials
Some commonly used materials are known to accelerate th decomposition of other connected materials within the installation. Due consideration should be given to this issue and the operating conditions

that all materials forming part of the installation may be exposed to.

Hot Water Ring Mains
In larger homes and commercial buildings hot ring mains are commonly used to decrease the time it takes for hot water to be delivered to the various outlets, especially those that are a significant distance from the hot water heater. Given the continuous high temperature and circulation of water within the pipework these are demanding applications for all piping systems, including PEX. To ensure the service life of PEX used in the flow and return pipework in a recirculating ring main the following installation practices and operating parameters must be met.

- Maximum water temperature of 60°C (actual measured, not set point)
- Maximum water pressure of 500kPa (as per AS/NZ3500)
- Maximum water velocity to be controlled as per the requirements of AS/NZS3500 for non-metallic piping
- Circulation time is to be limited to 12 hours per 24-hour period by means of timer operated pump
- The pipe work must be lagged
- It is also recommended to use a thermostat-controlled recirculation pump
- Ring main installations should include all required pressure/flow control, relief devices etc as required in order to ensure correct performance of the system

Further guidance on the installation of hot water ring mains is included in the relevant installation standards and should be applied at all times

Gas Appliance Connection
UNIPEX™ gas pipe is not to be used as an appliance connection in accordance with AS/NZS5601 (restriction on appliance connections).

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Installation considerations continued

Future Extension of Gas Pipework

It is a requirement of AS/NZS 5601 to allow for future extension of the consumer's pipe work. This may be done by way of:

An equal tee with a short piece of pipe fitted to the branch and terminated with a #3 male adaptor and brass screwed cap.

Connection to Other Materials

UNIPEX™ (using gas pipe only) is suitable for connection to most existing gas pipe work systems by the use of our range of threaded adaptors. When connecting to other materials, you should ensure that you use an approved gas sealant for all threaded fittings. It is also recommended to remove any remaining flux or other jointing compounds which could possibly compromise the integrity of the joint.

Caravans or Marine Craft

The use of UNIPEX™ gas pipe is not suitable for installation in caravans or marine craft. Its use in these situations may not comply with the relevant Australian standards.

Testing of UNIPEX™ Water Systems

In all installations at the completion of the water system rough-in, pressure testing must be carried out in accordance with AS/NZS 3500 for water installations and in addition to any other local regulations or requirements.

During testing, all joints should be checked for leaks, prior to burying or concealing the UNIPEX™ system. Without crimping, the fitting will leak at 100(kpa) onwards.

Testing of UNIPEX™ Gas Systems

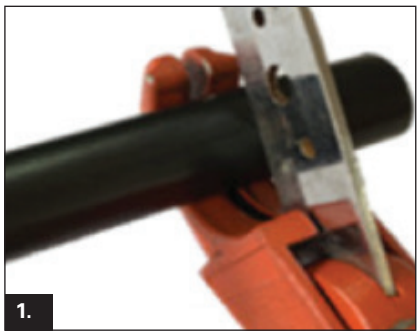
All testing should be undertaken in accordance with AS/NZS5601 – Appendix E (pressure testing for gas installations) and in addition to any other local regulations or requirements.

During testing, all joints should be checked for leaks, that they are assembled correctly and that the crimp operation has been completed properly.

Jointing Instructions for UNIPEX™ Water Systems

1. Cut pipe

Cut the pipe to required length using PEX cutters. The cut must be square and free of swarf or burrs.
Note: Do not use a hacksaw to cut pipe.


1.

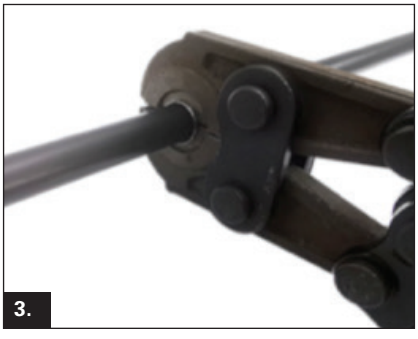
2. Insert pipe

Slide the pipe onto fitting until it reaches the pipe stop. The pipe must be visible through the witness holes on the crimp ring.


2.

3. Crimp tool positioning

Position the crimping tool centrally over the stainless steel crimp ring. Ensure the crimp tool is placed at 90° to the pipework. Close the jaws of the crimping tool (fully) to compress the stainless steel crimp ring.


3.

4.Check crimp ring

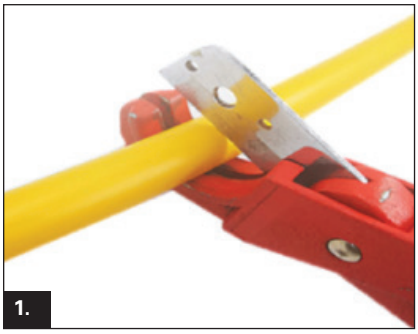
Use the crimping gauge to check that the crimp ring is fully compressed by placing the crimp gauge over the centre of the stainless steel crimp ring. A correctly crimped fitting will allow the crimp gauge to pass freely over the crimp ring.


4.

Jointing Instructions for UNIPEX™ Gas Systems

1. Cut pipe

Cut the pipe to required length using PEX cutters. The cut must be square and free of swarf or burrs.
Note: Do not use a hacksaw to cut pipe.


1.

2. Re-round pipe

This ensures the pipe will easily insert into the fitting


2.

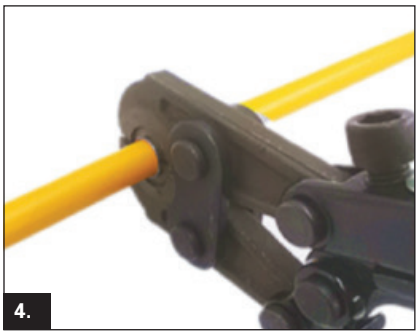
3. Insert pipe

Slide the pipe onto fitting until it reaches the pipe stop. The pipe must be visible through the witness holes on the crimp ring.


3.

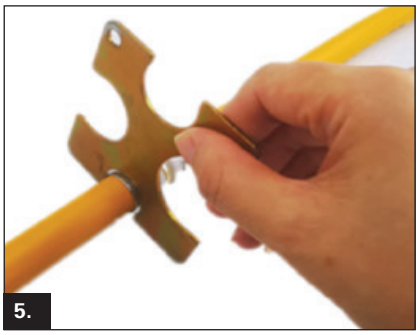
4. Crimp tool positioning

Position the crimping tool centrally over the stainless steel crimp ring. Ensure the crimp tool is placed at 90° to the pipework. Close the jaws of the crimping tool (fully) to compress the stainless steel crimp ring.


4.

5.Check crimp ring

Use the crimping gauge to check that the crimp ring is fully compressed by placing the crimp gauge over the centre of the stainless steel crimp ring. A correctly crimped fitting will allow the crimp gauge to pass freely over the crimp ring.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Gas Pipe Sizing Calculations & Tables

The pipe sizing process is extremely important in ensuring that the installed system performs to the expectation of the end user. In the past, some installations have adopted a "near enough is good enough" approach to pipe sizing. This has in many cases resulted in sub-standard installations where appliances have been "starved" of gas and therefore have not functioned properly. Failure to correctly size systems could ultimately lead to voiding of the manufacturer's warranty.

Information required to complete the pipe sizing exercise:

a)	Gas type – Natural or LPG
b)	Gas consumption for each appliance in MJ/h
c)	Pressure available at the start of the consumer piping (meter pressure).
d)	Allowable pressure drop (the difference between meter pressure and minimum inlet pressure required by the appliance).
e)	Proposed layout for the pipe work in question.

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Gas Pipe Sizing Calculations and Tables continued

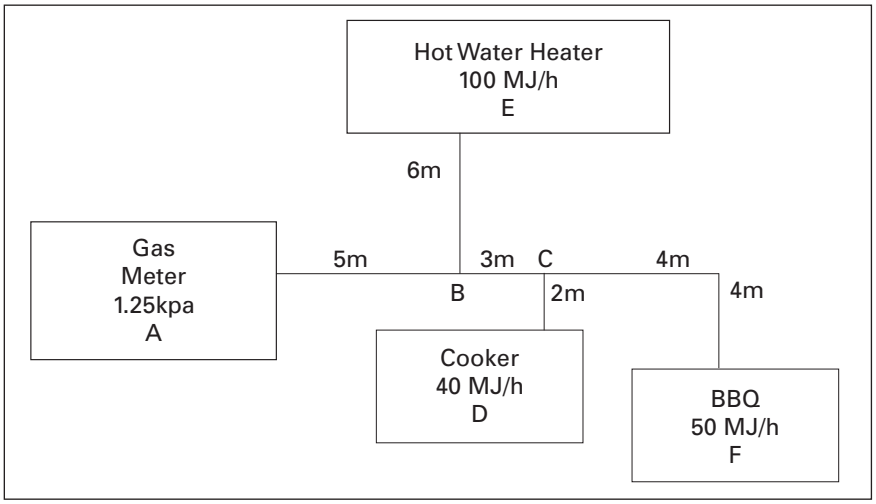
Method

1. Sketch the proposed piping layout including positions of all appliances.

a) Record all pipe lengths on the sketch, and the gas consumption of each appliance.

b) Allocate a letter to each branch on the diagram commencing at the meter with letter "A".

c) Allocate a letter to each appliance position on the diagram.



Reference the above diagram for subsequent steps.

2. Determine the main run.
This is the length of piping from the meter to the furthest appliance. This critical measurement will be used throughout the sizing process.

Example:
Main run for this diagram = 5m + 3m + 4m + 4m = 16m

3. Add an allowance for the number of fittings used on the main line.
For each tee, elbow, connector, coupling on the main line add the equivalent of 2m pipe length to your Main Run Length.

Example:
16m + 5 fittings @ 2m = 26m total

4. Select the pipe sizing table that corresponds with the gas type, supply pressure and allowable pressure drop required.

Example:
Use the table which is for natural gas 1.25kPa meter pressure with 0.12kPa pressure drop – this will allow available pressure of 1.13kPa at the appliance)

5. Prepare a simple chart to assist in calculating the pipe sizing for each section of piping.
For Gas Flow column, you record all flows that need to run through that section of pipe. Nom Pipe Size column is then filled by working from the table.

Pipe Section	Calculated Length (Main Run Length) + (Fitting Qty x 2)	Gas Flow (MJ/h)	Nom Pipe Size
A - B	26	50 + 100 + 40 = 190	32mm
B - C	26	50 + 40 = 90	25mm
C - D	26	40	20mm
B - E	26	100	25mm
C - F	26	50	20mm

6. Nom Pipe Size column is then filled by working from the pipe sizing table.

a) Select the Main Run Length from the figures shown under the "Pipe Run length" column.

(Always round up where applicable. In our example round up to 30)

b) Section A – B has a total flow rate of 190 MJ/h. Follow the 30m column down until you reach the 190 figure (or the next larger if your exact figure is not shown).

c) Read across the table to the indicated "Nominal Size".

(**Example:** 30m @ 210MJ/h = 32mm Pipe Size – next size down (25mm) will only handle 121MJ/h)

d) Insert this pipe size into your chart against the section for pipe section A – B.

e) Calculate the pipe size of remaining sections by using the MJ/h required to that point and the Main Run Length - not the pipe length for individual sections.

(**Example:** Run B - C you would use figures of 90MJ/h @ 26m which returns a result of 25mm Pipe Size)

The above methods make generous allowances for pipe sizing.

This has been done intentionally to allow for the possibility of appliance upgrades in the future.

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Gas Pipe Sizing Calculations and Tables continued

Notes

Table A1 Natural Gas Pressure drop of 0.075 kPa suitable for supply pressure of 1.1 kPa

	Length of straight pipe in metres									
DN	2	4	6	8	10	12	14	16	18	20
16	82	55	44	37	33	30	27	25	23	22
20	168	113	90	76	67	60	55	51	48	45
25	312	210	167	141	124	112	103	95	89	84
32	611	411	326	277	244	220	201	186	174	164
40	1252	842	668	567	499	450	412	382	357	336
50	2457	1653	1312	1113	980	883	808	749	700	659

	Length of straight pipe in metres									
DN	25	30	35	40	45	50	55	60	65	70
16	19	18	16	15	14	13	12	12	11	11
20	40	36	33	30	28	27	25	24	23	22
25	74	66	61	56	53	50	47	45	43	41
32	144	130	119	110	103	97	92	88	84	80
40	296	266	244	226	211	199	188	179	171	164
50	580	523	479	444	415	391	370	352	336	322

	Length of straight pipe in metres									
DN	75	80	85	90	95	100	120	140	160	180
16	10	10	10	9	9	9	8	7	7	6
20	21	20	20	19	18	18	16	15	14	13
25	39	38	37	35	34	33	30	28	26	24
32	77	74	72	69	67	65	59	54	50	47
40	158	152	147	142	138	134	121	110	102	96
50	310	299	288	279	271	263	237	217	201	188

	Length of straight pipe in metres									
DN	200	250	300							
16	6	5	5							
20	12	11	10							
25	22	20	18							
32	44	39	35							
40	90	79	71							
50	177	156	140							

Table A2 Natural Gas Pressure drop of 0.12 kPa suitable for supply pressure of 1.25 kPa

	Length of straight pipe in metres									
DN	2	4	6	8	10	12	14	16	18	20
16	108	73	58	49	43	39	35	33	31	29
20	220	148	117	100	88	79	72	67	63	59
25	409	275	218	185	163	147	134	125	116	110
32	801	539	428	363	319	288	263	244	228	215
40	1640	1103	875	742	654	589	539	500	467	440
50	3219	2166	1718	1458	1283	1156	1059	981	917	864

	Length of straight pipe in metres									
DN	25	30	35	40	45	50	55	60	65	70
16	25	23	21	19	18	17	16	15	15	14
20	52	47	43	40	37	35	33	32	30	29
25	97	87	80	74	69	65	62	59	56	54
32	189	170	156	145	135	127	121	115	110	105
40	387	349	319	296	277	261	247	235	224	215
50	760	685	627	581	543	512	484	461	440	422

	Length of straight pipe in metres									
DN	75	80	85	90	95	100	120	140	160	180
16	14	13	13	12	12	12	10	10	9	8
20	28	27	26	25	24	24	21	19	18	17
25	52	50	48	46	45	44	39	36	33	31
32	101	97	94	91	88	86	77	71	66	61
40	207	199	192	186	181	175	158	145	134	125
50	406	391	378	366	354	344	310	284	263	246

	Length of straight pipe in metres									
DN	200	250	300							
16	8	7	6							
20	16	14	13							
25	29	26	23							
32	58	51	46							
40	118	104	94							
50	232	204	184							

Notes

Gas Pipe Sizing Calculations and Tables continued

Notes

Table A3 Natural Gas Pressure drop of 0.25 kPa suitable for supply pressure of 2.75 kPa

	Length of straight pipe in metres									
DN	2	4	6	8	10	12	14	16	18	20
16	166	112	89	75	66	60	55	51	47	45
20	340	228	181	154	135	122	112	103	97	91
25	631	424	337	286	251	227	207	192	180	169
32	1236	832	660	560	493	444	407	377	352	332
40	2530	1703	1351	1146	1009	909	832	771	721	679
50	4967	3343	2652	2250	1980	1784	1634	1514	1415	1333

	Length of straight pipe in metres									
DN	25	30	35	40	45	50	55	60	65	70
16	39	35	32	30	28	26	25	24	23	22
20	80	72	66	61	57	54	51	49	46	45
25	149	134	123	114	106	100	95	90	86	83
32	292	263	241	223	209	196	186	177	169	162
40	598	538	493	457	427	402	381	362	346	332
50	1173	1057	968	897	839	790	748	711	680	651

	Length of straight pipe in metres									
DN	75	80	85	90	95	100	120	140	160	180
16	21	20	20	19	18	18	16	15	14	13
20	43	41	40	39	37	36	33	30	28	26
25	79	77	74	72	69	67	61	56	52	48
32	156	150	145	140	136	132	119	109	101	95
40	319	307	297	287	279	271	244	223	207	193
50	626	604	583	564	547	531	479	439	406	380

	Length of straight pipe in metres									
DN	200	250	300							
16	12	11	9							
20	24	22	19							
25	45	40	36							
32	89	78	71							
40	182	160	145							
50	358	315	284							

Table A4 Natural Gas Pressure drop of 0.75 kPa suitable for supply pressure of 2.75 kPa

	Length of straight pipe in metres									
DN	2	4	6	8	10	12	14	16	18	20
16	311	210	166	141	124	112	102	95	89	84
20	636	428	340	288	254	228	209	194	181	171
25	1181	795	631	535	471	424	389	360	337	317
32	2316	1558	1236	1049	923	832	762	706	660	621
40	4740	3190	2530	2147	1890	1703	1559	1445	1351	1272
50	9306	6263	4968	4214	3710	3343	3061	2836	2652	2497

	Length of straight pipe in metres									
DN	25	30	35	40	45	50	55	60	65	70
16	74	66	61	56	53	50	47	45	43	41
20	150	135	124	115	107	101	96	91	87	83
25	279	251	230	213	199	188	178	169	162	155
32	547	493	451	418	391	368	349	332	317	304
40	1120	1009	924	856	800	753	714	679	649	622
50	2198	1980	1813	1680	1571	1479	1401	1333	1273	1220

	Length of straight pipe in metres									
DN	75	80	85	90	95	100	120	140	160	180
16	39	38	37	35	34	33	30	27	25	24
20	80	77	75	72	70	68	61	56	52	49
25	149	144	139	134	130	126	114	104	97	90
32	292	281	272	263	255	248	223	204	189	177
40	598	576	556	538	522	507	457	418	388	362
50	1173	1131	1092	1057	1025	995	897	821	761	711

	Length of straight pipe in metres									
DN	250	300	200							
16	22	20	18							
20	46	40	36							
25	85	75	67							
32	167	147	132							
40	341	300	271							
50	670	590	531							

Notes

Gas Pipe Sizing Calculations and Tables continued

Notes

Table A5 Natural Gas Pressure drop of 1.5 kPa suitable for supply pressure of 2.75 kPa

	Length of straight pipe in metres									
DN	2	4	6	8	10	12	14	16	18	20
16	463	312	247	210	185	166	152	141	132	124
20	945	636	505	428	377	340	311	288	269	254
25	1756	1181	937	795	700	631	577	535	500	471
32	3441	2316	1837	1558	1372	1236	1132	1049	980	923
40	7044	4740	3760	3190	2808	2530	2317	2147	2007	1890
50	13829	9306	7382	6263	5513	4967	4549	4214	3940	3710

	Length of straight pipe in metres									
DN	25	30	35	40	45	50	55	60	65	70
16	109	98	90	84	78	74	70	66	63	61
20	223	201	184	171	160	150	142	135	129	124
25	415	374	342	317	296	279	264	251	240	230
32	813	732	671	621	581	547	518	493	471	451
40	1664	1499	1373	1272	1189	1119	1060	1009	964	924
50	3266	2943	2695	2497	2334	2198	2081	1980	1892	1813

	Length of straight pipe in metres									
DN	75	80	85	90	95	100	120	140	160	180
16	58	56	54	53	51	50	45	41	38	35
20	119	115	111	107	104	101	91	83	77	72
25	221	213	206	199	193	188	169	155	144	134
32	434	418	404	391	379	368	332	304	281	263
40	888	856	827	800	776	753	679	622	576	539
50	1743	1680	1623	1571	1523	1479	1333	1220	1131	1057

	Length of straight pipe in metres									
DN	200	250	300							
16	33	29	26							
20	68	60	54							
25	126	111	100							
32	248	218	196							
40	507	446	402							
50	995	876	789							

Table A6 Natural Gas Pressure drop of 1.5 kPa suitable for supply pressure of 4 kPa

	Length of straight pipe in metres									
DN	2	4	6	8	10	12	14	16	18	20
16	468	315	250	212	187	168	154	143	133	126
20	957	644	511	433	381	344	315	292	273	257
25	1777	1196	948	805	708	638	584	541	506	477
32	3483	2344	1859	1577	1388	1251	1145	1061	992	934
40	7129	4797	3805	3228	2842	2561	2345	2173	2031	1912
50	13995	9418	7470	6338	5579	5027	4603	4265	3987	3754

	Length of straight pipe in metres									
DN	25	30	35	40	45	50	55	60	65	70
16	111	100	91	85	79	74	71	67	64	61
20	226	204	186	173	161	152	144	137	131	125
25	420	378	346	321	300	282	267	254	243	233
32	822	741	679	629	588	553	524	499	476	457
40	1683	1517	1389	1287	1203	1133	1073	1021	975	935
50	3305	2978	2727	2527	2362	2224	2106	2004	1915	1835

	Length of straight pipe in metres									
DN	75	80	85	90	95	100	120	140	160	180
16	59	57	55	53	52	50	45	41	38	36
20	121	116	112	109	105	102	92	84	78	73
25	224	216	209	202	196	190	171	157	145	136
32	439	423	409	396	384	372	336	307	285	266
40	899	866	837	810	785	762	687	629	583	545
50	1764	1700	1642	1590	1541	1497	1349	1235	1144	1070

	Length of straight pipe in metres									
DN	200	250	300							
16	34	30	27							
20	69	61	55							
25	128	113	101							
32	251	221	199							
40	513	452	407							
50	1007	887	799							

Notes

Gas Pipe Sizing Calculations and Tables continued

Notes

Table A7 LPG (Propane) Pressure drop of 0.25 kPa suitable for supply pressure of 2.75 kPa

	Length of straight pipe in metres									
DN	2	4	6	8	10	12	14	16	18	20
16	284	191	151	128	113	102	93	86	81	76
20	579	390	309	262	231	208	191	177	165	155
25	1076	724	574	487	429	386	354	328	307	289
32	2109	1419	1126	955	841	757	694	643	601	566
40	4316	2905	2304	1955	1721	1550	1420	1315	1230	1158
50	8474	5702	4523	3837	3378	3044	2787	2582	2414	2274

	Length of straight pipe in metres									
DN	25	30	35	40	45	50	55	60	65	70
16	67	60	55	51	48	45	43	41	39	37
20	137	123	113	105	98	92	87	83	79	76
25	254	229	210	194	182	171	162	154	147	141
32	498	449	411	381	356	335	317	302	288	277
40	1019	918	841	779	729	686	650	618	591	566
50	2001	1803	1651	1530	1431	1347	1275	1214	1159	1111

	Length of straight pipe in metres									
DN	75	80	85	90	95	100	120	140	160	180
16	36	34	33	32	31	30	27	25	23	22
20	73	70	68	66	64	62	56	51	47	44
25	136	131	126	122	118	115	104	95	88	82
32	266	256	247	240	232	226	203	186	172	161
40	544	524	507	490	475	462	416	381	353	330
50	1068	1030	994	963	933	906	817	748	693	648

	Length of straight pipe in metres									
DN	200	250	300							
16	20	18	16							
20	42	37	33							
25	77	68	61							
32	152	134	120							
40	311	273	247							
50	610	537	484							

Table A8 LPG(Propane) Pressure drop of 10 kPa suitable for supply pressure of 70 kPa

	Length of straight pipe in metres									
DN	2	4	6	8	10	12	14	16	18	20
16	3843	2586	2051	1740	1532	1381	1264	1171	1095	1031
20	7848	5281	4189	3554	3128	2819	2581	2392	2236	2105
25	14577	9809	7781	6601	5811	5236	4795	4442	4153	3910
32	28571	19227	15251	12939	11390	10263	9398	8707	8140	7665
40	58486	39358	31219	26486	23315	21009	19237	17824	16664	15690
50	114819	77268	61288	51997	45772	41244	37766	34992	32714	30802

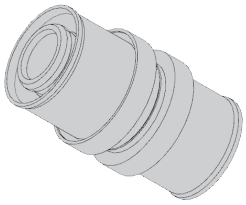
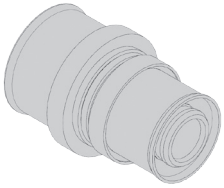
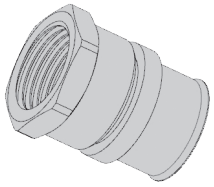
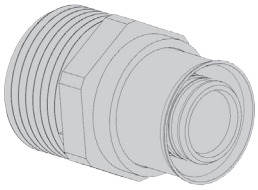
	Length of straight pipe in metres									
DN	25	30	35	40	45	50	55	60	65	70
16	908	818	749	694	649	611	578	550	526	504
20	1853	1670	1529	1417	1325	1247	1181	1124	1074	1029
25	3442	3102	2840	2632	2460	2317	2194	2087	1994	1911
32	6747	6080	5567	5158	4822	4541	4300	4091	3908	3746
40	13812	12445	11396	10559	9871	9295	8802	8375	8001	7669
50	27115	24432	22372	20729	19379	18247	17280	16442	15707	15055

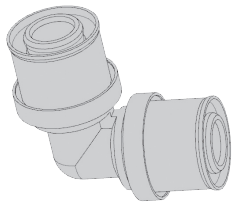
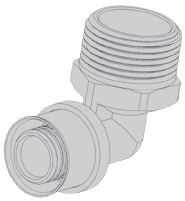
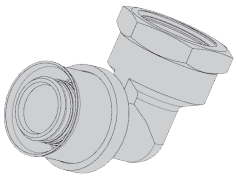
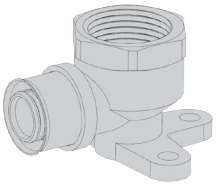
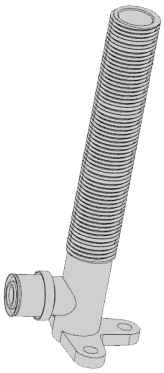
	Length of straight pipe in metres									
DN	75	80	85	90	95	100	120	140	160	180
16	484	467	451	437	423	411	370	339	314	294
20	989	953	921	891	864	839	756	692	642	600
25	1838	1771	1711	1656	1605	1559	1405	1286	1192	1114
32	3602	3471	3353	3245	3147	3056	2753	2521	2336	2184
40	7373	7106	6864	6643	6441	6255	5636	5161	4782	4470
50	14473	13950	13475	13042	12645	12280	11064	10131	9387	8776

	Length of straight pipe in metres									
DN	200	250	300							
16	277	243	219							
20	565	497	448							
25	1049	924	832							
32	2056	1810	1631							
40	4209	3706	3339							
50	8263	7275	6554							

Notes

UNIPEX™ Fittings

PRODUCT DESCRIPTION	SIZE	PART #
#1 STRAIGHT COUPLING	DN16	535096
	DN20	535097
	DN25	535098
	DN32	535099
#1R REDUCING COUPLING	DN20 x DN16	535102
	DN25 x DN20	535104
	DN32 x DN25	535105
#2 FEMALE CONNECTOR	DN16 x 15BSPF	535149
	DN16 x 20BSPF	535144
	DN20 x 15BSPF	535150
	DN20 x 20BSPF	535151
	DN25 x 25BSPF	535305
	DN32 x 25BSPF	535306
	DN32 x 32BSPF	535307
#3 MALE CONNECTOR	DN16 x 15BSPM	535154
	DN16 x 20BSPM	535152
	DN20 x 15BSPM	535155
	DN20 x 20BSPM	535156
	DN25 x 25BSPM	535159
	DN32 x 25BSPM	535161
	DN32 x 32BSPM	535162

PRODUCT DESCRIPTION	SIZE	PART #
#12 ELBOW 	DN16	535108
	DN20	535109
	DN25	535110
	DN32	535111
#13 MALE ELBOW 	DN16 x 15BSPM	535163
	DN20 x 15BSPM	535164
	DN20 x 20BSPM	535165
	DN25 x 20BSPM	535167
#14 FEMALE ELBOW 	DN16 x 15BSPF	535169
	DN20 x 15BSPF	535170
	DN20 x 20BSPF	535171
#15BP ELBOW 	DN16 x 15BSPF	535178
	DN20 x 15BSPF	5351770
	DN20 x 20BSPF	535177
#19BP ELBOW 	DN16 x 15BSPM x 65mm Long - Low Inlet	535179L
	DN16 x 15BSPM x 90mm Long - Low Inlet	535176L
	DN16 x 15BSPM x 150mm Long	535175
	DN16 x 15BSPM x 200mm Long	535174
	DN20 x 15BSPM x 95mm Long	535173
	DN20 x 15 BPSM x 150mm Long	535183
	DN20 x 15 BPSM x 200mm Long	535180
	DN20 x 20BSPM x 200mm Long	535181

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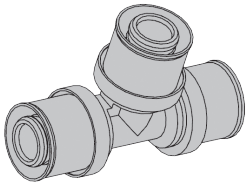
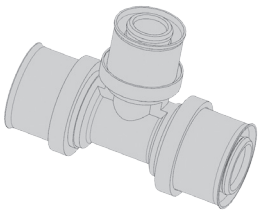
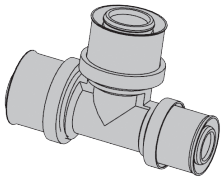
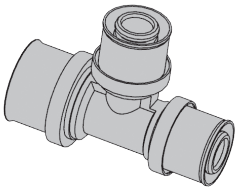
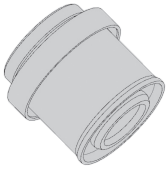
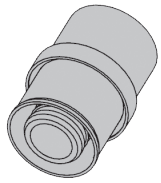
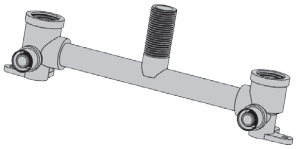
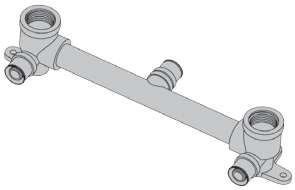
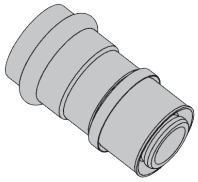
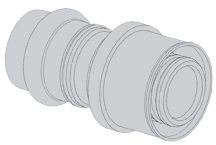
UNIPEX™ Fittings continued

PRODUCT DESCRIPTION	SIZE	PART #
#24 TEE EQUAL	DN16	535114
	DN20	535115
	DN25	535116
	DN32	535117
#25 TEE RED. BRANCH	DN20 x DN20 x DN16	535120
	DN25 x DN25 x DN20	535122
	DN32 x DN32 x DN20	535125
	DN32 x DN32 x DN25	535123
#26 TEE RED. END	DN20 x DN16 x DN20	535126
	DN25 x DN20 x DN25	535128
#27 TEE RED. END & BRANCH	DN20 x DN16 x DN16	535132
	DN25 x DN20 x DN20	535136
#61 STOPPER	DN16	535204
	DN20	535205
	DN25	535206
	DN32	535207

PRODUCT DESCRIPTION	SIZE	PART #
CONNECTING BARB x CU SOCKET 	DN16 x 15CU	535215
	DN20 x 20CU	535216
	DN25 x 25CU	535217
BATH/LAUNDRY ASSEMBLY RIGHT ANGLE 	DN16 - 200mm Centres	535194
	DN16 - 300mm Centres	535193
	DN20 - 200mm Centres	535201
	DN20 - 300mm Centres	535202
SHOWER ASSEMBLY BOTTOM ENTRY 	DN16 - 200mm Centres	535199
	DN20 - 200mm Centres	535200
Copper Adaptor For Water (UNIPEX™ to Copper Press) 	DN16 x 1/2	W535301
	DN20 x 3/4	W535302
	DN25 x 1	W535303
	DN32 x 25	W535310
	DN32 x 32	W535311
Copper Adaptor For Gas (UNIPEX™ to Copper Press) 	DN16 x 1/2	G535301
	DN20 x 3/4	G535302
	DN25 x 3/4	G535304
	DN25 x 1	G535303
	DN32 x 25	G535310
	DN32 x 32	G535311

UNIPEX™ Water Pipe

PRODUCT DESCRIPTION	SIZE	PART #
UNIPEX™ PEX-B Pipe Water Black 	DN16 x 5m Straight Length	535502
	DN16 x 50m	535501
	DN16 x 100m	535500
	DN20 x 5m Straight Length	535522
	DN20 x 50m	535521
	DN20 x 50m (In Conduit)	535523
	DN20 x 100m	535520
	DN25 x 5m Straight Length	535541
	DN25 x 50m	535540
	DN32 x 5m Straight Length	535801
	DN32 x 25m	535802
UNIPEX™ PEX-B Pipe Water Red 	DN16 x 5m Straight Length	535507
	DN16 x 50m	535506
	DN16 x 100m	535505
	DN20 x 5m Straight Length	535527
	DN20 x 50m	535526
	DN20 x 50m (In Conduit)	535528
	DN20 x 100m	535525
	DN25 x 5m Straight Length	535546
	DN25 x 50m	535545
UNIPEX™ PEX-B Pipe Water Green 	DN16 x 5m Straight Length	535512
	DN16 x 50m	535511
	DN16 x 100m	535510
	DN20 x 5m Straight Length	535532
	DN20 x 50m	535531
	DN20 x 100m	535530
	DN25 x 5m Straight Length	535551
	DN25 x 50m	535550

PRODUCT DESCRIPTION	SIZE	PART #
UNIPEX™ PEX-B Pipe Water Lilac 	DN16 x 5m Straight Length	535517
	DN16 x 50m	535516
	DN16 x 100m	535515
	DN20 x 5m Straight Length	535537
	DN20 x 50m	535536
	DN20 x 100m	535535
	DN25 x 5m Straight Length	535556
	DN25 x 50m	535555

UNIPEX™ Gas Pipe

PRODUCT DESCRIPTION	SIZE	PART #
UNIPEX™ Gas Pipe Yellow 	DN16 x 5m Straight Length	535561
	DN16 x 50m	535560
	DN20 x 5m Straight Length	535566
	DN20 x 50m	535565
	DN20 x 50m (In Conduit)	535567
	DN25 x 5m Straight Length	535571
	DN25 x 50m	535570
	DN32 x 5m Straight Length	535810
	DN32 x 25m	535811

UNIPEX™ Crimp Tool

PRODUCT DESCRIPTION	SIZE	PART #
UNIPEX™ Hand Tool	DN16	535600
	DN20	535601
	DN25	535602

Rems Mini Press

For UNIPEX™ Crimp sizes DN16 to DN32

Super light, super small, and super handy. With automatic circuit control. Secure crimping in seconds. Automatic locking of pressing tongs. Assortment of REMS pressing tongs available for the UNIPEX™ system.

25 Year Warranty

This product is supplied with a 25-year warranty against any manufacturing defects. The period of the Warranty commences on the date of sale and ends on the anniversary of the date of sale. Any defective product will be repaired or replaced free of charge.

Warranty Conditions

- This warranty is only applicable to UNIPEX™ Pipe & Fittings used as a system and voided if used with other branded pipes, fittings or materials.
- Installation must have been carried out by a licensed plumber and gasfitter.
- Failure is due to a fault in the manufacture of the product.
- Installation of the product has been in accordance with the installation instructions as per the current (at time of installation) UNIPEX™ Technical Manual.
- Installation must be in full accordance with the relevant local and National Plumbing codes and appropriate Australian Standards (AS/NZS 3500).
- The system in which the product is installed must not be operated at temperatures and or pressures that exceed the printed rating on the appropriate specification sheet.
- This warranty does not extend to failure or defect caused by normal wear and tear, mechanical overload, paint, adhesives, abrasion, corrosion or over pressurization.
- No liability will be accepted for loss of profits, loss of revenue, loss of use, loss of contracts, loss of production or any other consequential loss or damage.

Claim Procedure

- This Warranty is offered by the manufacturers of the UNIPEX™ pipe and fittings and the Plumbing Plus Merchant (Merchant) from whom you purchased the product. The Merchant involved should be notified of any potential claim immediately. Proof of purchase is required to validate the warranty period and if this is not available, the warranty period shall default to the date of manufacture for each product. The product needs to be inspected by an authorized representative of the manufacturer within 30 days of the alleged product failure.
- To be entitled to claim under this Warranty, you must send a Warranty Claim Form to the Merchant.
- Should product be returned, a sufficient length of pipe must be supplied so that all the pipe markings are visible. Should a fitting be returned, it must be supplied with the pipe still attached with sufficient length of pipe to show the markings.
- If the Merchant needs to return the goods to the manufacturer for assessment or repair, the Merchant will arrange delivery and bear the associated costs.
- The manufacturer and the Merchant also reserve the right to engage a nominated outside agent to assess any faulty product before honouring any warranty claim.
- Once a reasonable pre-approved amount is confirmed in writing by the manufacturer, repairs can begin.
- Any repairs or replacement undertaken without the manufacturer's or the Merchant's approval will not be covered by this Warranty.

Exclusions

Plumbing Plus BKL Pty. Ltd. is not a party to this Warranty Agreement.

Australian Consumer Law

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law (ACL). For instance, you may be entitled to a replacement or refund or entitled to have the goods repaired or replaced if they are defective.

WaterMark™

Notes

Notes

UNIPEX

Edition 4, September 2023