



TradePex Piping System

Technical guide for Architects and
Hydraulic Consultants

Version 2, June 2023

For more info visit tradepex.com.au

Exclusive to Tradelink

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TRADEPEX HOT & COLD WATER SYSTEMS

INFORMATION & TECHNICAL INFORMATION

VALIDITY

This document has been formed to provide technical information and Standards for specification and resource purposes.

WARRANTY

Refer to tradeplex.com.au for full warranty details.

LATEST TECHNICAL INFORMATION

We continually update technical information. Please refer to the most recent available. If you're unsure, contact your local TradePex representative or refer to our website at tradeplex.com.au

SAFETY ADVICE & OPERATING INSTRUCTIONS

Please read the safety and operating instructions carefully and completely before beginning installation. If you are unsure of any aspect of installation or safety please contact your local TradePex representative.

If the operating parameters are not followed, the pipes and joints may become stressed, leading to failure of the system and/or leaks.

Failure to observe the safety information/instructions can result in damage to property and persons.

INTENDED USE

The TradePex jointing methods are considered proprietary and should be designed, installed and operated in accordance to TradePex's technical information. Any other use that does not fall within the intended use of the system is prohibited.

All relevant building, plumbing and other applicable authority codes must be followed as per the requirement for the region.

Areas of application not contained in this guide (special applications) require consultation with your local TradePex representative.

INSTALLER QUALIFICATIONS

Installation of TradePex products should only be carried out by qualified and licenced tradespeople.

POLYMER PIPING SYSTEMS OVERVIEW

TRADEPEX PIPING SYSTEMS

TradePex offer four polymer systems:

1. PEX-A PN20 Water and PEX-AL-PEX Gas Sleeve Joint System
2. PEX-A PN20 Crimp Joint System
3. PEX-B PN20 Crimp Joint System
4. PEX-B PN16 Water and PEX-AL-PEX Gas Crimp Joint System

PEX-A PN20 WATER & PEX-AL-PEX GAS SLEEVE JOINT SYSTEM

The TradePex brass sleeve joint fitting is a unique combination gas and water fitting that is priced competitively for the water market.

The TradePex PEX-A water pipe offers the installer the strength of PN20 and the flexibility of a cross-linked polymer pipe that is extremely durable with short exposure at temperatures of up to 95°C.

The TradePex sleeve jointing system has been designed to operate with the PEX-A pipe for water, the PEX-AL-PEX pipe for gas and the EVOH OB pipe for Hydronic applications. PEX-B pipe is not permitted for sleeve joint systems.

PEX-A PN20 CRIMP JOINT SYSTEM

The crimp joint system offers the same features and benefits as the TradePex PEX-A pipe combined with the speed and efficiency of a quality crimp fitting.

PEX-B PN20 CRIMP JOINT SYSTEM

The TradePex PN20 copper ring crimp joint fitting system offers a high PN rating with the efficiency of a crimp installation.

The TradePex PEX-B pipe is extremely durable and capable of operating for short periods with temperatures of up to 95°C.

PEX-B PN16 WATER & PEX-AL-PEX GAS CRIMP JOINT SYSTEM

The TradePex PN16 system is a competitively priced option for installers and efficient to install.

FEATURES & BENEFITS OF TRADEPEX WATER SYSTEMS

WATER HAMMER

The flexibility of polymer piping enables the system to expand and contract, greatly reducing the noise associated with water hammer that would otherwise be evident in metallic systems, such as copper, as a result of fast closing taps and electronically operated valves.

WATER TRANSFER NOISE

Water transfer noise or the sound of water flowing through the pipes is greatly reduced in PEX pipes vs. noise transfer in metal pipes, including copper.

PEX-A PN20 WATER & PEX-AL-PEX GAS SLEEVE JOINT SYSTEM

The TradePex brass sleeve joint fitting is a unique combination gas and water fitting that is priced competitively for water and/or gas applications.

The TradePex PEX-A water pipe offers the installer the strength of PN20 and the flexibility of a cross-linked polymer pipe that is extremely durable and capable of enduring short exposure to temperatures of up to 95°C.

The TradePex sleeve jointing system has been designed to operate with the PEX-A pipe for water, the PEX-AL-PEX pipe for gas and the EVOH OB pipe for Hydronic applications. PEX-B pipe is not permitted for sleeve joint systems.

SLEEVE SYSTEM PIPE TYPES

TradePex offers PN20 water pipe in a variety of colours for ease of identification. Before installation, it is recommended that local regulations are researched in order for the correct pipe selection to be made.

TradePex pipe offer the following benefits:

- Corrosion resistance
- Acoustic insulation, offering minimal noise caused by water transfer
- Pipe flexibility resulting in minimal noise associated with water hammer
- PEX-A pipes have outstanding memory properties adding to installation efficiency
- No build-up of lime or scale in the bore of the pipe
- Strong material, with superior performance against abrasion and impact.

SLEEVE PN20 WATER AND SLEEVE GAS

SLEEVE GAS
PN20 WATER
PN20 HOT WATER
PN20 RAINWATER
PN20 RECYCLE WATER
HYDRONIC

SLEEVE GAS PIPE

PEX-AL-PEX is a polymer pipe with an aluminium core that can be formed or bent to accommodate installation requirements that are found in modern day construction.

The gas system must be installed according to AS/ NZS 5601.1:2013. It can be used for gas services with normal operating temperature of 80°C. It can also be operated at a pressure of up to 70 kPa at 80°C.

TradePex gas pipe features:

- Five layers with an aluminium core that is longitudinally welded
- Aluminium layer prevents oxygen diffusion
- Yellow PEX outer layer
- Suitable for NG and LPG installation
- Dimensions 16–32mm
- Rigid and resistant to deformation, the pipe will hold its shape when installed.

PN20 WATER PIPE

The black water pipe system must be installed according to AS/ NZS 3500.1:2003. It can be used for hot and cold water services with normal operating temperature of 65°C and can also withstand short exposure to temperature of up to 95°C. TradePex PN20 pipe has a nominal pressure rating of 2,000kPa at 20°C.

TradePex PN20 water pipe features:

- Suitable for potable water installation
- Black PE outer layer
- Dimensions 16–32mm
- Flexible and extremely durable, capable of withstanding temperatures up to 95C for short periods.

PN20 HOT WATER PIPE

Water pipe with an outer red colour is available for ease of identification for the installer. Red pipe has the same physical and mechanical properties as black water pipe and should be installed similarly.

TradePex PN20 hot water pipe features:

- Red PE outer layer
- Dimensions 16–25mm.

PN20 RAINWATER PIPE

Water pipe with an outer green colour is available to meet regulatory requirements for rain water installation. Green rainwater pipe has the same physical and mechanical properties as black water pipe and should be installed similarly.

TradePex PN20 green rainwater pipe features:

- Suitable for rainwater installation
- Green PE outer layer
- Dimensions 16–25mm.

PN20 RECYCLE WATER

Water pipe with an outer lilac colour is available to meet regulatory requirements for reclaimed water installation. Lilac recycle water pipe has the same physical and mechanical properties as black water pipe and should be installed similarly.

TradePex PN20 recycle water pipe features:

- Suitable for reclaimed water installation
- Lilac PE outer layer
- Dimensions 16–20mm.

HYDRONIC HEATING PIPE

EVOH OB is a polymer pipe with an outer barrier to prevent oxygen diffusion through the tubing wall in a closed circuit system.

The hydronic system must be installed according to manufacturer's instructions. It can be used for hydronic services with normal operating temperature of 65°C and can also temporarily withstand temperature of up to 95°C. TradePex PN20 hydronic heating pipe has a nominal pressure rating of 2,000kPa at 20°C.

TradePex hydronic pipe features:

- Suitable for hydronic heating installation both under-floor and panel
- Orange PERT outer layer
- EVOH layer preventing oxygen diffusion
- Dimensions 16–32mm
- Flexible and extremely durable.

PN20 SLEEVE FITTINGS

The TradePex brass sleeve joint fitting is developed for water reticulation services but is also approved for gas installations when used in conjunction with the PEX-AL-PEX gas pipe.

This system has been designed to operate with the PEX-A pipe for water, the PEX-AL-PEX pipe for gas and the EVOH OB pipe for Hydronic applications.

Note: PEX-B pipe is not permitted for sleeve joint systems.

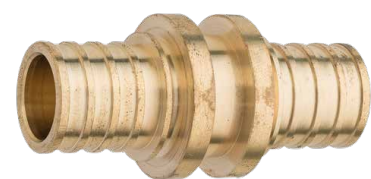
TradePex brass fittings are dezincified resistant brass as per the Plumbing Standard requirement.

For a complete review of the sleeve joint fitting range, please refer to the TradePex brochure available on the TradePex website at tradeplex.com.au



COMPRESSION SLEEVE

16mm	Gas/PN20 Water	135045
20mm	Gas/PN20 Water	135046
25mm	Gas/PN20 Water	135047
32mm	Gas/PN20 Water	135048



All sleeve fittings are for use on **BOTH** Sleeve PN20 Water and Sleeve Gas pipes.

PEX-A PN20 CRIMP JOINT SYSTEM

With all the advantages of a PEX-A PN20 pipe and the speed of installation a crimp system, the installer is presented with a cost efficient alternative to a sleeve system.

CRIMP SYSTEM PIPE TYPES

TradePex pipe offers the following benefits:

- Corrosion resistance
- Acoustic insulation, offering minimal noise caused by water transfer
- PEX pipe flexibility resulting in minimal noise associated with water hammer
- PEX-A pipes have outstanding memory properties adding to installation efficiency
- No build-up of lime or scale in the bore of the pipe
- Strong material, with superior performance against abrasion and impact.

CRIMP PN20 WATER

PN20 WATER
PN20 HOT WATER
PN20 RAINWATER
PN20 RECYCLE WATER
HYDRONIC

PN20 WATER PIPE

The black water pipe system must be installed according to AS/ NZS 3500.1:2003. It can be used for hot and cold water services with normal operating temperature of 65°C and can also withstand short exposure to temperature of up to 95°C. It can also be operated at a pressure of up to 2,000 kPa at 20°C.

TradePex PN20 water pipe features:

- Suitable for potable water installation
- Black PE outer layer
- Dimensions 16–32mm
- Flexible and extremely durable, capable of withstanding temperatures up to 95C for short periods.

PN20 HOT WATER PIPE

Water pipe with an outer red colour is available for ease of identification for the installer. Red pipe has the same physical and mechanical properties as black water pipes and should be installed similarly.

TradePex PN20 hot water pipe features:

- Red PE outer layer
- Dimensions 16–25mm.

PN20 RAINWATER PIPE

Water pipe with an outer green colour is available to meet regulatory requirements for rain water installation. Green pipe has the same physical and mechanical properties as black water pipe and should be installed similarly.

TradePex PN20 green rainwater pipe features:

- Suitable for rainwater installation
- Green PE outer layer
- Dimensions 16–25mm.

PN20 RECLAIMED WATER

Water pipe with an outer lilac colour is available to meet regulatory requirements for reclaimed water installation. Lilac pipes have the same physical and mechanical properties as black water pipe and should be installed similarly.

TradePex PN20 lilac reclaimed water pipe features:

- Suitable for reclaimed water installation
- Lilac PE outer layer
- Dimensions 16–20mm.

HYDRONIC HEATING PIPE

EVOH OB is a polymer pipe with an outer barrier to prevent oxygen diffusion through the tubing wall in a closed circuit system.

The hydronic system must be installed according to manufacturer's instructions. It can be used for hydronic services with normal operating temperature of 65°C and can also temporarily withstand temperature of up to 95°C. TradePex PN20 hydronic heating pipe has a nominal pressure rating of 2,000kPa at 20°C.

TradePex hydronic pipe features:

- Suitable for hydronic heating installation both under-floor and panel
- Orange PERT outer layer
- EVOH layer preventing oxygen diffusion
- Dimensions 16–32mm
- Flexible and extremely durable.

PN20 CRIMP FITTINGS

The TradePex brass crimp joint fitting is can be used in conjunction with both PEX-A and PEX-B PN20 pipes and the EVOH OB Hydronic Heating pipe. The PN20 water crimp fitting is not suitable for gas applications.

TradePex brass fittings are dezincified resistant brass as per the plumbing standard requirement.



All blue crimp fittings are for use on PN20 Water pipes **ONLY**.

PEX-B PN20 CRIMP JOINT SYSTEM

The TradePex PN20 copper ring crimp joint fitting system offers a high PN rating with the efficiency of a crimp installation.

The TradePex PEX-B pipe is extremely durable and capable of short exposure up to 95°C.

PN20 CRIMP SYSTEM PIPE TYPES

TradePex pipes offer the following benefits:

- Corrosion resistant
- Acoustic insulation, offering minimal noise caused by water transfer
- PEX pipe flexibility resulting in minimal noise associated with water hammer
- No build-up of lime or scale in the bore of the pipe
- Strong material, with superior performance against abrasion and impact.

CRIMP PN20 WATER

PN20 WATER
PN20 HOT WATER
PN20 RAINWATER
PN20 RECYCLE WATER
HYDRONIC

PN20 WATER PIPE

The black plumbing system must be installed according to AS/ NZS 3500.1:2003. It can be used for hot and cold water services with normal operating temperature of 65°C and can also withstand short exposure to temperature of up to 95°C. TradePex PN20 pipe has a nominal pressure rating of 2,000kPa at 20°C.

TradePex PN20 water pipe features:

- Suitable for potable water installation
- Black PE outer layer
- Dimensions 16–32mm
- Flexible and extremely durable, capable of withstanding temperatures up to 95°C.

PN20 HOT WATER PIPE

Water pipe with an outer red colour is available for ease of identification for the installer. Red pipe has the same physical and mechanical properties as black water pipes and should be installed similarly.

TradePex PN20 hot water pipe features:

- Red PE outer layer
- Dimensions 16–25mm.

PN20 RAINWATER PIPE

Water pipe with an outer green colour is available to meet regulatory requirements for rain water installation. Green pipe has the same physical and mechanical properties as black water pipe and should be installed similarly.

TradePex PN20 green rainwater pipe features:

- Suitable for rainwater installation
- Green PE outer layer
- Dimensions 16–25mm.

PN20 RECLAIMED WATER

Water pipe with an outer lilac colour is available to meet regulatory requirements for reclaimed water installation. Lilac pipes have the same physical and mechanical properties as black water pipe and should be installed similarly.

TradePex PN20 lilac reclaimed water pipe features:

- Suitable for reclaimed water installation
- Lilac PE outer layer
- Dimensions 16–20mm.

HYDRONIC HEATING PIPE

EVOH OB is a polymer pipe with an outer barrier to prevent oxygen diffusion through the tubing wall in a closed circuit system.

The hydronic system must be installed according to manufacturer's instructions. It can be used for hydronic services with normal operating temperature of 65°C and can also temporarily withstand temperature of up to 95°C. TradePex PN20 hydronic heating pipe has a nominal pressure rating of 2,000kPa at 20°C.

TradePex hydronic pipe features:

- Suitable for hydronic heating installation both under-floor and panel
- Orange PERT outer layer
- EVOH layer preventing oxygen diffusion
- Dimensions 16–32mm
- Flexible and extremely durable.

PN20 CRIMP FITTINGS

The TradePex brass crimp joint fitting is can be used in conjunction with both PEX-A and PEX-B PN20 pipes and EVOH OB Hydronic Heating pipe. The PN20 water crimp fitting is not suitable for gas applications.

TradePex brass fittings are dezincified resistant brass as per the plumbing standard requirement.



All blue crimp fittings are for use on PN20 Water pipes **ONLY**.

PEX-B PN16 WATER & PEX-AL-PEX GAS CRIMP JOINT SYSTEM

The TradePex PN16 system is a competitively priced option for installers and efficient to install. The PN16 system is designed to be cost effective in domestic and light commercial installations.

Where continuous flow or recirculating systems are required, it is recommended to specify the PEX-A PN20 system.

PN16 CRIMP SYSTEM PIPE TYPES

TradePex pipes offer the following benefits:

- Corrosion resistance
- Acoustic insulation, offering minimal noise caused by water transfer
- PEX pipe flexibility resulting in minimal noise associated with water hammer
- No build-up of lime or scale in the bore of the pipe
- Strong material, with superior performance against abrasion and impact.

CRIMP GAS PIPE

Crimp gas pipe is a polymer pipe with an aluminium core that can be formed or bent to accommodate installation requirements that are found in modern day construction. The gas system must be installed according to AS/ NZS 5601.1:2013. It can be used for gas services with normal operating temperature of 80°C. It can also be operated at a pressure of up to 70 kPa at 80°C.

TradePex crimp gas pipe features:

- Five layers with an aluminium core that is longitudinally welded
- Aluminium layer prevents oxygen diffusion
- Yellow PEX outer layer
- Suitable for NG and LPG installation
- Dimensions 16–50mm
- Rigid and resistant to deformation, the pipe will hold its shape when installed.

PN16 WATER PIPE

The black plumbing system must be installed according to AS/ NZS 3500.1:2003. TradePex PN16 pipe has a nominal pressure rating of 1,600kPa at 20°C.

TradePex PN16 water pipe features:

- Suitable for potable water installation
- Black PE outer layer
- Dimensions 16mm

PN16 RAINWATER PIPE

Water pipe with an outer green colour is available to meet regulatory requirements for rain water installation. Green pipes have the same physical and mechanical properties as black pipes and should be installed similarly.

TradePex PN16 rainwater water pipe features:

- Suitable for rainwater installation
- Green PE outer layer
- Dimensions 16mm

PN16 RECYCLE WATER

Water pipe with an outer lilac colour is available to meet regulatory requirements for recycled water installation. Lilac pipes have the same physical and mechanical properties as black pipes and should be installed similarly.

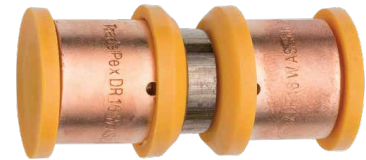
TradePex PN16 recycle water pipe features:

- Suitable for recycled water installations
- Lilac PE outer layer
- Dimensions 16mm

CRIMP PN16 FITTINGS

The TradePex brass PN16 fittings are approved for both water and gas installations. The fittings are suitable for the PN16 water pipe range, as well as the PEX-AL-PEX gas pipe.

TradePex brass fittings are dezincified resistant brass as per the plumbing standard requirement.



All yellow crimp fittings are for use on **BOTH** Crimp PN16 Water and Crimp Gas pipes.

DESIGN CONSIDERATIONS

Factors to consider when designing a water system with TradePex products:

THERMAL INSULATION

Thermal insulation requirements for water services are specified in the Building Code of Australia (BCA) and National Construction Code (NCC) and in AS/NZS 3500.

Where pipe is installed in a climate which is prone to freezing, care must be taken to protect the pipes from damage caused by being exposed to temperatures resulting in the fluid within the pipes freezing.

TradePex pipes are not able to withstand exposure to freezing conditions and it is recommended that for long periods of freezing temperatures the pipes are insulated and that warm water is recirculated periodically to prevent freezing within the pipes. Alternatively, systems exposed to freezing may be temporarily decommissioned and drained to prevent damage.

The table below may be used to aid heat loss calculation:

Heat loss per meter of PEX and copper pipes

Insulation	None	9mm	13mm	25mm
Heat Loss	W/m	W/m	W/m	W/m
16x2.2 PEX	31.3	11.2	9.5	7.1
12.7x0.91 Copper	27.2	10.0	8.5	6.5
20x2.8 PEX	36.8	12.9	10.8	8.0
19.05x1.02 Copper	38.3	13.0	10.7	8.0
25x3.5 PEX	43.3	14.9	12.5	9.0
25.4x1.22 Copper	48.9	15.9	13.0	9.4
32x4.4 PEX	51.8	17.7	14.7	10.4
31.75x1.22 Copper	59.2	18.7	15.1	10.7

The heat losses are calculated based on:

- ISO 12241 – Thermal insulation for building equipment and industrial installations – calculation rules
- Horizontal pipe installation indoors in still air
- Laminar air flow over pipe/insulation
- Internal heat transfer coefficient larger than 1000 W/m²K
- Water temperature of 65°C
- Ambient temperature of 20°C

Emissivity (the measure of an object's ability to emit infrared energy) of:

- 0.77 for copper (strongly oxidized)
- 0.93 for polymer piping
- 0.90 for insulation

Thermal conductivity of W/mK (watts per square metre of surface area for a temperature gradient of one kelvin for every metre thickness):

- 380 W/mK for copper pipes
- 0.35 W/mk for PEX pipes
- 0.04 W/mK for insulation

WATER HEATER CONNECTION

All installations must be in accordance with the AS/NZS 3500. As per the Standard, it is mandatory that a metallic pipe (copper) be installed for one metre from the outlet of a hot water unit.

It is recommended that isolation valves be installed together with non-return valves to protect the hot water service from any backflow and make installation of a replacement hot water service simpler when required.

TradePex PN20 pipes may be used for recirculating hot water systems provided the installation guidelines are adhered to. TradePex PN16 pipes may not be used for recirculating hot water systems, but may be used for non-recirculating systems.

We recommend that only appliances with temperature control devices which can, at all times, restrict the outlet water temperature to within the TradePex piping system's capabilities be installed in conjunction with TradePex piping systems.

Heat trace wire may be used to a maximum temperature of 70°C. If the piping system needs to be shut down and drained, please ensure that the power to the heat trace is turned off prior to draining the system. Failure to do so could result in damage to the system and void the TradePex warranty.

SOLAR WATER HEATERS & OTHER WATER HEATERS WITH UNCONTROLLED ENERGY SOURCES

Solar collectors and other uncontrolled heat sources generally have operating conditions which exceed the specification of the TradePex piping systems:

- Never use TradePex pipes in the flow and return piping to any solar collectors/panels.
- Do not install TradePex pipes in the flow and return of any uncontrolled heat source (e.g. wood fire heaters, etc.).

As per AS/NZS 3500 requirement, polymer pipe systems must never be used on the flow and return piping to any solar panel.

		Suitability for hot water delivery method			
		Recirculating	Non-Recirculating	Solar/Uncontrolled	Heat trace Maximum temperature 50°C
PN 20 PEX-B	16mm	✓	✓	✗	✓
PN20 PEX-B	20mm	✓	✓	✗	✓
PN20 PEX-B	25mm	✓	✓	✗	✓
PN20 PEX-B	32mm	✓	✓	✗	✓
PN20 PEX-A	16mm	✓	✓	✗	✓
PN20 PEX-A	20mm	✓	✓	✗	✓
PN20 PEX-A	25mm	✓	✓	✗	✓
PN20 PEX-A	33mm	✓	✓	✗	✓

APPROVAL & CERTIFICATIONS

The complete range of TradePex pipes and fittings comply with all relevant Australian and New Zealand Standards.

TradePex PEX pipes comply with AS/NZS 2492:2007 for cross-linked polyethylene (PEX) pipe for pressure application, and are certified under WaterMark Licence Number WM74574.

TradePex brass fittings comply with AS/NZS 2537.2:2011 and are certified under WaterMark Licence Number WM74573 for mechanical jointing fittings used with cross-linked polyethylene (PEX) for pressure applications and plastic piping systems for hot and cold water installations.

TradePex multi-layer pipes (PEX-AL-PEX) for pressure applications comply with AS4176.8:2010 and are certified to ISO Type 5 under Licence Number AMI74572: multi-layer pipe systems for consumer gas installations with a maximum operating pressure up to and including 500kPa.

REQUIREMENTS OF DRINKING WATER

Refer to Australian Drinking Water Guideline 2011.

Note that in locations with highly corrosive water composition (e.g. in installations using bore/well water, etc.) the suitability of TradePex piping systems must be checked with your local TradePex representative. In some cases, the available water quality may void the TradePex warranty unless appropriate water treatment is provided.

PIPE SIZING

Required flow rates, loading units, etc. are detailed in AS/NZS 3500. To avoid unnecessary large pipe sizes, we recommend carrying out pipe sizing based on the method described in AS/NZS 3500 and the TradePex pressure loss tables (available in Appendix A and B) rather than sizing the system in copper and applying the equivalent pipe size table. Please note: The final performance will strongly depend on the available mains pressure, the location (e.g. on top of a hill) and overall size of the building (including how many bathrooms and outlets the pipe system has to supply).

PRESSURE TESTING & PURGING OF DRINKING WATER PIPES

PRESSURE TEST & FLUSHING

Sleeve joint systems should be visually inspected to ensure that all sleeves have been compressed.

Crimp joint systems need to be checked with a gauging tool to ensure that all crimps have been completed. TradePex gauging tool should be placed over each copper crimp ring either at the time of installation or at the completion of the installation.

Flushing of the system should occur prior to and after pressure testing. Installers must comply with AS/NZS 3500 requirements.

With initial pressurisation care must be taken to avoid air pockets. This usually entails releasing air from the furthest point of the system when first pressurised. All pressure testing must be conducted in accordance with the AS/NZS 3500.

The successful execution and documentation of a pressure test that complies with AS/NZS 3500 and these guidelines is a prerequisite for any warranty claims from TradePex.

WATER PRESSURE TESTING

Water services shall not show any leakage when subjected to a hydrostatic pressure of 1500 kPa for a period of not less than 30 min.

The test shall be performed on installed piping prior to burial or concealment.

It should be noted that when a pressure test is carried out, it may be necessary to disconnect and cap the water service to isolate it from the water main, fixtures and appliances, which may be damaged by the test pressure applied.

Further, fire services are subject to individual testing by some network utility operator at a higher pressure and for varied periods of time.

Please refer to AS3500 for further details.

After completion of the test, complete the TradePex pressure test form which is available at tradepex.com.au

APPENDIX

APPENDIX A: PRESSURE LOSS TABLES FOR TRADEPEX PEX-A PIPES

COLD WATER AT 25°C

Peak flow rate Qs(l/s) (0.01 to 0.050)	PN20		PN20		PN20		PN20	
	16x2.2		20x2.8		25x3.5		32x4.4	
	I _d (mm) = 16.00 O _d (mm) = 11.60		I _d (mm) = 20.00 O _d (mm) = 14.40		I _d (mm) = 25.00 O _d (mm) = 18.00		I _d (mm) = 32.00 O _d (mm) = 23.20	
	Head loss (kPa/m)	Velocity (m/s)	Head loss (kPa/m)	Velocity (m/s)	Head loss (kPa/m)	Velocity (m/s)	Head loss (kPa/m)	Velocity (m/s)
0.01		0.095		0.061		0.039		0.024
0.02		0.189		0.123		0.079		0.047
0.03		0.284		0.184		0.118		0.071
0.04	0.2355	0.378		0.246		0.157		0.095
0.05	0.3464	0.473	0.1241	0.307		0.196		0.118
0.06	0.4755	0.568	0.1701	0.368	0.0591	0.236		0.142
0.07	0.624	0.662	0.2222	0.430	0.0771	0.275	0.0232	0.166
0.08	0.7864	0.757	0.2802	0.491	0.0970	0.314	0.0292	0.189
0.09	0.9674	0.852	0.3442	0.553	0.1190	0.354	0.0357	0.213
0.10	1.1648	0.946	0.4139	0.614	0.1429	0.393	0.0429	0.237
0.11	1.3786	1.041	0.4892	0.375	0.1687	0.432	0.0505	0.260
0.12	1.6085	1.135	0.5700	0.737	0.1964	0.472	0.0588	0.284
0.13	1.8542	1.230	0.6563	0.798	0.2259	0.511	0.0675	0.308
0.14	2.1156	1.325	0.7480	0.860	0.2572	0.551	0.0768	0.331
0.15	2.3926	1.419	0.8451	0.921	0.2903	0.589	0.0866	0.355
0.16	2.6850	1.514	0.9474	0.982	0.3252	0.629	0.0969	0.378
0.17	2.9927	1.609	1.0549	1.044	0.3618	0.668	0.1077	0.402
0.18	3.3156	1.703	1.1677	1.105	0.4002	0.707	0.1191	0.426
0.19	3.6536	1.798	1.2856	1.167	0.4402	0.747	0.1309	0.449
0.20	4.0066	1.892	1.4086	1.228	0.4820	0.786	0.1432	0.473
0.21	4.3745	1.987	1.5367	1.289	0.5254	0.825	0.1560	0.497
0.22	4.7572	2.082	1.6698	1.351	0.5705	0.865	0.1693	0.520
0.23	5.1548	2.176	1.8079	1.412	0.6173	0.904	0.1831	0.544
0.24	5.5670	2.271	1.9510	1.474	0.6658	0.943	0.1973	0.568
0.25	5.9939	2.366	2.0991	1.535	0.7158	0.982	0.2120	0.591
0.26	6.4354	2.461	2.2521	1.596	0.7675	1.022	0.2272	0.615
0.27	6.8915	2.555	2.4101	1.658	0.8209	1.061	0.2429	0.639
0.28	7.3620	2.649	2.5729	1.719	0.8758	1.100	0.2590	0.662
0.29	7.8470	2.744	2.7406	1.781	0.9324	1.140	0.2755	0.686
0.30	8.3464	2.839	2.9131	1.842	0.9905	1.179	0.2926	0.710
0.31	8.8602	2.933	3.0905	1.903	1.0503	1.218	0.3101	0.733
0.32	9.3883	3.028	3.2727	1.965	1.1116	1.258	0.3280	0.757
0.33	9.9307	3.123	3.4597	2.026	1.1745	1.297	0.3464	0.781
0.34	10.4873	3.217	3.6515	2.088	1.2390	1.336	0.3652	0.804
0.35	11.0582	3.312	3.8481	2.149	1.3050	1.375	0.3845	0.828
0.36	11.6433	3.406	4.0494	2.210	1.3726	1.415	0.4043	0.852
0.37	12.2426	3.501	4.2555	2.272	1.4418	1.454	0.4244	0.875
0.38	12.8560	3.596	4.4663	2.333	1.5125	1.493	0.4451	0.899
0.39	13.4836	3.690	4.6819	2.395	1.5848	1.533	0.4661	0.923
0.40	14.1252	3.785	4.9021	2.456	1.6586	1.572	0.4876	0.946
0.41	14.7810	3.880	5.1271	2.517	1.7339	1.611	0.5096	0.970
0.42	15.4507	3.974	5.3567	2.579	1.8108	1.650	0.5319	0.994
0.43			5.5911	2.640	1.8892	1.690	0.5547	1.017
0.44			5.8301	2.702	1.9691	1.729	0.5780	1.041
0.45			6.0737	2.763	2.0505	1.768	0.6016	1.065
0.46			6.3221	2.825	2.1335	1.808	0.6257	1.088
0.47			6.5750	2.886	2.2180	1.847	0.6502	1.112
0.48			6.8326	2.947	2.3039	1.886	0.6752	1.135
0.49			7.0949	3.009	2.3914	1.926	0.7006	1.159
0.50			7.3617	3.070	2.4804	1.965	0.7264	1.183

COLD WATER AT 25°C

Peak flow rate Qs(l/s) (0.51 to 1)	PN20		PN20		PN20	
	20x2.8		25x3.5		32x4.4	
	I _d (mm) = 20.00 O _d (mm) = 14.40		I _d (mm) = 25.00 O _d (mm) = 18.00		I _d (mm) = 32.00 O _d (mm) = 23.20	
	Head loss (kPa/m)	Velocity (m/s)	Head loss (kPa/m)	Velocity (m/s)	Head loss (kPa/m)	Velocity (m/s)
0.51	7.6332	3.132	2.5709	2.004	0.7526	1.206
0.52	7.9093	3.193	2.6628	2.043	0.7792	1.230
0.53	8.1900	3.254	2.7563	2.083	0.8063	1.254
0.54	8.4752	3.316	2.8513	2.122	0.8338	1.277
0.55	8.7651	3.377	2.9477	2.161	0.8617	1.301
0.56	9.0596	3.439	3.0457	2.201	0.8900	1.325
0.57	9.3586	3.500	3.1451	2.240	0.9188	1.348
0.58	9.6622	3.567	3.2460	2.279	0.9479	1.372
0.59	9.9704	3.623	3.3484	2.319	0.9775	1.396
0.60	10.2831	3.684	3.4522	2.358	1.0075	1.419
0.61	10.6004	3.746	3.5575	2.397	1.0379	1.443
0.62	10.9223	3.807	3.6643	2.436	1.0687	1.467
0.63	11.2487	3.868	3.7726	2.476	1.1000	1.490
0.64	11.5796	3.930	3.8823	2.515	1.1316	1.514
0.65	11.9151	3.991	3.9935	2.554	1.1637	1.538
0.66	12.2551	4.053	4.1062	2.594	1.1961	1.561
0.67			4.2203	2.633	1.2290	1.585
0.68			4.3358	2.672	1.2623	1.609
0.69			4.429	2.712	1.2960	1.632
0.70			4.5714	2.751	1.3301	1.656
0.71			4.6913	2.790	1.3646	1.680
0.72			4.8127	2.829	1.3995	1.703
0.73			4.9355	2.869	1.4348	1.727
0.74			5.0598	2.908	1.4705	1.751
0.75			5.1856	2.947	1.5067	1.774
0.76			5.3127	2.987	1.5432	1.798
0.77			5.4414	3.026	1.5801	1.821
0.78			5.5714	3.065	1.6174	1.845
0.79			5.7029	3.105	1.6552	1.869
0.80			5.8359	3.144	1.6933	1.892
0.81			5.9703	3.183	1.7319	1.916
0.82			6.1061	3.222	1.7708	1.940
0.83			6.2434	3.262	1.8101	1.963
0.84			6.3821	3.301	1.8499	1.987
0.85			6.5222	3.340	1.8900	2.011
0.86			6.6637	3.380	1.9305	2.034
0.87			6.8067	3.419	1.9715	2.058
0.88			6.69511	3.045	2.0128	2.082
0.89			7.0970	3.497	2.0545	2.105
0.90			7.2443	3.537	2.0966	2.123
0.91			7.3930	3.576	2.1392	2.153
0.92			7.5431	3.615	2.1821	2.176
0.93			7.6946	3.655	2.2254	2.200
0.94			7.8476	3.694	2.2691	2.224
0.95			8.0020	3.733	2.3132	2.247
0.96			8.1578	3.773	2.3577	2.271
0.97			8.3151	3.812	2.4026	2.295
0.98			8.4737	3.851	2.4479	2.318
0.99			8.6338	3.890	2.4935	2.342
1.00			8.7953	3.930	2.5396	2.366

COLD WATER AT 25°C

Peak flow rate Qs(l/s) (0.05 to 2.50)	PN20	
	32x4.4	
	I _d (mm) = 32.00	
	O _d (mm) = 23.20	
	Head loss (kPa/m)	Velocity (m/s)
0.05		0.118
0.10	0.0429	0.237
0.15	0.0866	0.355
0.20	0.1432	0.473
0.25	0.2120	0.591
0.30	0.2926	0.710
0.35	0.3845	0.828
0.40	0.4876	0.946
0.45	0.6016	1.065
0.50	0.7264	1.183
0.55	0.8617	1.301
0.60	1.0075	1.419
0.65	1.1637	1.538
0.70	1.3301	1.656
0.75	1.5067	1.774
0.80	1.6933	1.892
0.85	1.8900	2.011
0.90	2.0966	2.129
1.00	2.5396	2.366
1.05	2.7758	2.484
1.10	3.0218	2.602
1.15	3.2775	2.720
1.20	3.5429	2.839
1.25	3.8179	2.957
1.30	4.1025	3.075
1.35	4.3968	3.194
1.40	4.7006	3.312
1.45	5.0140	3.430
1.50	5.3369	3.548
1.55	5.6692	3.667
1.60	6.0111	3.785
1.65	6.3624	3.903
1.70	6.7231	4.021
1.75		
1.80		
1.95		
2.00		
2.05		
2.10		
2.15		
2.20		
2.25		
2.30		
2.40		
2.45		
2.50		

HOT WATER AT 60°C

Peak flow rate Qs(l/s) (0.01 to 0.050)	PN20		PN20		PN20		PN20	
	16x2.2		20x2.8		25x3.5		32x4.4	
	I _d (mm) = 16.00 O _d (mm) = 11.60		I _d (mm) = 20.00 O _d (mm) = 14.40		I _d (mm) = 25.00 O _d (mm) = 18.00		I _d (mm) = 32.00 O _d (mm) = 23.20	
	Head loss (kPa/m)	Velocity (m/s)	Head loss (kPa/m)	Velocity (m/s)	Head loss (kPa/m)	Velocity (m/s)	Head loss (kPa/m)	Velocity (m/s)
0.01		0.095		0.061		0.039		0.024
0.02	0.0590	0.189		0.123		0.079		0.047
0.03	0.1191	0.284	0.0426	0.184	0.0148	0.118		0.071
0.04	0.1968	0.378	0.0702	0.246	0.0243	0.157	0.0073	0.095
0.05	0.2913	0.473	0.1036	0.307	0.0358	0.196	0.0107	0.118
0.06	0.4020	0.568	0.1426	0.368	0.0492	0.236	0.0147	0.142
0.07	0.5286	0.662	0.1871	0.430	0.0644	0.275	0.0192	0.166
0.08	0.6705	0.757	0.2368	0.491	0.0814	0.314	0.0243	0.189
0.09	0.8277	0.852	0.2918	0.553	0.1001	0.354	0.0298	0.213
0.10	0.9999	0.946	0.3519	0.614	0.1205	0.393	0.0358	0.237
0.11	1.1869	10.41	0.4170	0.675	0.1426	0.432	0.0424	0.260
0.12	1.3885	1.135	0.4871	0.737	0.1664	0.472	0.0494	0.284
0.13	1.6047	1.230	0.5622	0.798	0.1918	0.511	0.0568	0.308
0.14	1.8353	1.325	0.6421	0.860	0.2188	0.551	0.0648	0.331
0.15	2.0802	1.419	0.7269	0.921	0.2474	0.589	0.0731	0.355
0.16	2.3394	1.514	0.8165	0.982	0.2776	0.629	0.0820	0.378
0.17	2.6127	1.609	0.9108	1.044	0.3094	0.668	0.0913	0.402
0.18	2.9001	1.703	1.0099	1.105	0.3427	0.707	0.1010	0.426
0.19	3.2016	1.798	1.1136	1.167	0.3775	0.747	0.1112	0.449
0.20	3.5171	1.892	1.2221	1.228	0.4139	0.786	0.1218	0.473
0.21	3.8464	1.987	1.3352	1.289	0.4519	0.825	0.1329	0.497
0.22	4.1897	2.082	1.4530	1.351	0.4913	0.865	0.1444	0.520
0.23	4.5468	2.176	1.5754	1.412	0.5323	0.904	0.1563	0.544
0.24	4.9178	2.271	1.7024	1.474	0.5747	0.943	0.1686	0.568
0.25	5.3025	2.366	1.8340	1.535	0.6186	0.982	0.1814	0.591
0.26	5.7009	2.461	1.9701	1.596	0.6641	1.022	0.1946	0.615
0.27	6.1131	2.555	2.1109	1.658	0.7110	1.061	0.2082	0.639
0.28	6.5390	2.649	2.2561	1.719	0.7594	1.100	0.2222	0.662
0.29	6.9785	2.744	2.4059	1.781	0.8092	1.140	0.2366	0.686
0.30	7.4317	2.839	2.5602	1.842	0.8606	1.179	0.2514	0.710
0.31	7.8985	2.933	2.7191	1.903	0.9134	1.218	0.2667	0.733
0.32	8.3789	3.028	2.8824	1.965	0.9676	1.258	0.2824	0.757
0.33	8.8729	3.123	3.0502	2.026	1.0233	1.297	0.2984	0.781
0.34	9.3805	3.217	3.2225	2.088	1.0804	1.336	0.3149	0.804
0.35	9.9016	3.312	3.3993	2.149	1.1390	1.375	0.3318	0.828
0.36	10.4362	3.406	3.5806	2.210	1.1990	1.415	0.3491	0.852
0.37	10.9844	3.501	3.7663	2.272	1.2605	1.454	0.3668	0.875
0.38	11.5461	3.596	3.9564	2.333	1.3234	1.493	0.3846	0.899
0.39	12.1213	3.690	4.1510	2.395	1.3877	1.533	0.4034	0.923
0.40	12.7100	3.785	4.3501	2.456	1.4535	1.572	0.4223	0.946
0.41	13.3121	3.880	4.5536	2.517	1.5207	1.611	0.4416	0.970
0.42	13.9277	3.974	4.7615	2.579	1.5893	1.650	0.4613	0.994
0.43	14.5568		4.9738	2.640	1.6593	1.690	0.4813	1.017
0.44			5.1906	2.702	1.7307	1.729	0.5018	1.041
0.45			5.4117	2.763	1.8036	1.768	0.5227	1.065
0.46			5.6373	2.825	1.8778	1.808	0.5440	1.088
0.47			5.8673	2.886	1.9535	1.847	0.5656	1.112
0.48			6.1017	2.947	2.0306	1.886	0.5877	1.135
0.49			6.3404	3.009	2.1091	1.926	0.6101	1.159
0.50			6.5836	3.070	2.1890	1.965	0.6329	1.183

HOT WATER AT 60°C

Peak flow rate Qs(l/s) (0.51 to 1)	PN20		PN20		PN20	
	20x2.8		25x3.5		32x4.4	
	I _d (mm) = 20.00 O _d (mm) = 14.40		I _d (mm) = 25.00 O _d (mm) = 18.00		I _d (mm) = 32.00 O _d (mm) = 23.20	
	Head loss (kPa/m)	Velocity (m/s)	Head loss (kPa/m)	Velocity (m/s)	Head loss (kPa/m)	Velocity (m/s)
0.51	6.8312	3.132	2.2703	2.004	0.6561	1.206
0.52	7.0831	3.193	2.3530	2.043	0.6797	1.230
0.53	7.3394	3.254	2.4371	2.083	0.7037	1.254
0.54	7.6001	3.316	2.5225	2.122	0.7281	1.277
0.55	7.8652	3.377	2.6094	2.161	0.7529	1.301
0.56	8.1346	3.439	2.6977	2.201	0.7780	1.325
0.57	8.4084	3.500	2.7874	2.240	0.8036	1.348
0.58	8.6866	3.567	2.8784	2.279	0.8295	1.372
0.59	8.9691	3.623	2.9709	2.319	0.8558	1.396
0.60	9.2560	3.684	3.0647	2.358	0.8825	1.419
0.61	9.5473	3.746	3.1600	2.397	0.9095	1.443
0.62	9.8429	3.807	3.2566	2.436	0.9370	1.467
0.63	10.1429	3.868	3.3546	2.476	0.9648	1.490
0.64	10.4472	3.930	3.4539	2.515	0.9930	1.514
0.65	10.7559	3.991	3.5547	2.554	1.0216	1.538
0.66	11.0689	4.053	3.6568	2.594	1.0506	1.561
0.67			3.7604	2.633	1.0800	1.585
0.68			3.8653	2.672	1.1097	1.609
0.69			3.9716	2.712	4.332	1.632
0.70			4.0792	2.751	1.1703	1.656
0.71			4.1882	2.790	1.2012	1.680
0.72			4.2987	2.829	1.2324	1.703
0.73			4.4104	2.869	1.2641	1.727
0.74			4.5236	2.908	1.2961	1.751
0.75			4.6381	2.947	1.3274	1.774
0.76			4.7540	2.987	1.3612	1.798
0.77			4.8713	3.026	1.3943	1.821
0.78			4.9899	3.065	1.4278	1.845
0.79			5.1099	3.105	1.4617	1.869
0.80			5.2313	3.144	1.4960	1.892
0.81			5.3541	3.183	1.5306	1.916
0.82			5.4782	3.222	1.5656	1.940
0.83			5.6037	3.262	1.6010	1.963
0.84			5.7305	3.301	1.6367	1.987
0.85			5.8587	3.340	1.6728	2.011
0.86			5.9883	3.380	1.7093	2.034
0.87			6.1192	3.419	1.7462	2.058
0.88			6.2515	3.045	1.7834	2.082
0.89			6.3852	3.497	1.8211	2.105
0.90			6.5202	3.537	1.8590	2.123
0.91			6.6566	1.8974	2.1392	2.153
0.92			6.7944	3.615	1.9361	2.176
0.93			6.9335	3.655	1.9752	2.200
0.94			7.0740	3.694	2.0147	2.224
0.95			7.2158	3.733	2.0545	2.247
0.96			7.3590	3.773	2.0947	2.271
0.97			7.5035	3.812	2.1353	2.295
0.98			7.6494	3.851	2.1763	2.318
0.99			7.7967	3.890	2.2176	2.342
1.00			7.9453	3.930	2.2593	2.366

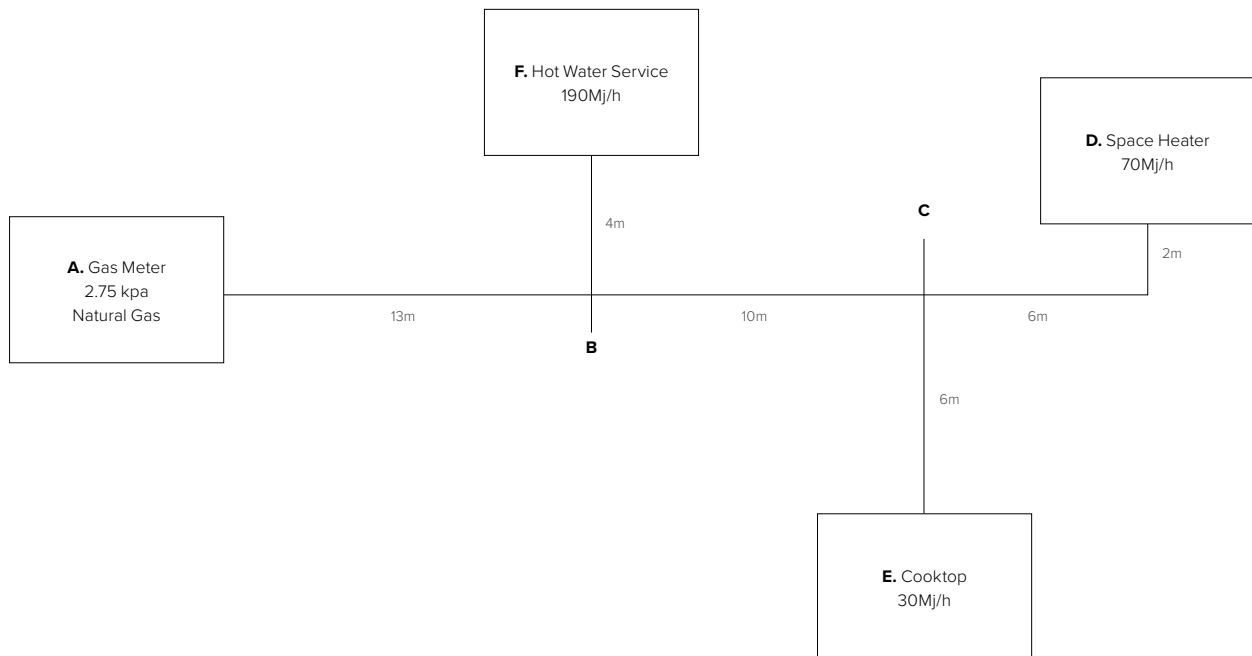
HOT WATER AT 60°C

Peak flow rate Qs(l/s) (0.05 to 2.50)	PN20	
	32x4.4	
	I _g (mm) = 32.00 O _g (mm) = 23.20	
	Head loss (kPa/m)	Velocity (m/s)
0.05	0.0107	0.118
0.10	0.0358	0.237
0.15	0.0731	0.355
0.20	0.1218	0.473
0.25	0.1814	0.591
0.30	0.2514	0.710
0.35	0.3318	0.828
0.40	0.4223	0.946
0.45	0.5227	10.65
0.50	0.6329	1.183
0.55	0.7529	1.301
0.60	0.8825	1.419
0.65	1.0216	1.538
0.70	1.1703	1.656
0.75	1.3284	1.774
0.80	1.4960	1.892
0.85	1.6728	2.011
0.90	1.8590	2.129
0.95	2.0545	2.247
1.00	2.2593	2.366
1.05	2.4733	2.484
1.10	2.6965	2.602
1.15	2.9289	2.720
1.20	3.1704	2.839
1.25	3.4211	2.957
1.30	3.6810	3.075
1.35	3.9499	3.194
1.40	4.2280	3.312
1.45	4.5151	3.430
1.50	4.8113	3.548
1.55	5.1166	3.667
1.60	5.4310	3.785
1.65	5.7543	3.903
1.70	6.0868	4.021
1.75		
1.80		
1.95		
2.00		
2.05		
2.10		
2.15		
2.20		
2.25		
2.30		
2.40		
2.45		
2.50		

APPENDIX B: TRADEPEX GAS SLEEVE PIPE SIZING EXAMPLE

PIPE SIZING EXAMPLE

The following example uses natural gas with a meter pressure of 2.75 kPa with pressure drop of 0.75 kPa.



Step 1: Add the megajoule rating of all the appliances.

Always refer to sizing tables to calculate the pipe size of the longest run:

$$\mathbf{A-B + B-C + C-D (13 + 10 + 8) = 31m}$$

Example $(190 + 30 + 70) = 290\text{Mj/h}$

1. Look up the table at the next highest length value (35m)
2. Look for megajoule rating of the appliances (290 mj/h)
3. Calculated pipe size = 32mm
4. Apply this pipe size to (A-B = 32mm)

Step 2: Calculate the length of each run.

For the hot water service the calculations are:

$$\mathbf{A-B + B-F (13 + 4) = 17m}$$

1. Multiply the number of fittings (3) x the fitting equivalence (refer pipe sizing tables)
2. Add the run length to the fitting allowance: $17\text{m} + 1.8\text{m} = 18.8\text{m}$
3. Look up the table at the next highest length value = 20m
4. Look for megajoule rating of the appliance (190mj/h)
5. Calculate pipe size = 25mm
6. Apply this pipe size to (B-F) = 25mm

Step 3: Repeat for each run.

For the run B-C, the calculations are:

$$\mathbf{A-B + B-C = (13 + 10) = 23m}$$

1. Multiply the number of fittings (3) x the fitting equivalence (refer pipe sizing tables)
2. Add the run length to the fitting allowance: $23m + 1.8 = 24.8m$
3. Look up the table at the next highest length value = 25m
4. Add the megajoule value of the remaining appliances (cooktop and space heater) = 100Mj/h
5. Calculate pipe size = 20mm
6. Apply this pipe size to (B-C) = 20mm
7. For the cooktop the calculations are: $A-B + B-C + C-E (13 + 10 + 6) = 29m$
8. Multiply the number of fittings (4) x the fitting equivalence (refer pipe sizing tables)
9. Add the run length to the fitting allowance: $29m + 2.4m = 31.4m$
10. Look up the table at the next highest length value = 35m
11. Look for megajoule rating of the appliance (30Mj/h)
12. Calculate pipe size = 16mm
13. Apply this pipe size to (C-E) = 16mm

For the space heater the calculations are:

$$\mathbf{A-B + B-C + C-D (13 + 10 + 8) = 31m}$$

1. Multiply the number of fittings (4) x the fitting equivalence (refer pipe sizing tables)
2. Add the run length to the fitting allowance: $31m + 2.4m = 33.4m$
3. Look up the table at the next highest length value = 35m
4. Look for megajoule rating of the appliance (70 Mj/h)
5. Calculate pipe size = 20mm
6. Apply this pipe size to (C-D) = 20mm

Table below indicates what pipe size should be used for each run:

Pipe section	Gas flow Mj/h	Nominal size (DN)	No. of fittings used	Length of run (m)
A-B	290	32mm	n/a	31
B-C	100	20mm	3	24.8
C-D	70	20mm	4	33.4
C-E	30	16mm	4	31.4
B-F	190	25mm	3	18.8

APPENDIX C: TRADEPEX GAS SLEEVE PIPE (NATURAL GAS) - PRESSURE DROP TABLES

Natural Gas (NG)

Flow rates based on:

- Pressure: 1023.15 mbar
- Gas temperature: 15°C
- Heating value (gross): 38.7 MJ/m³

Pressure drop of 0.075 kPa

(Supply pressure of around 1.1 kPa)

Pipe size	Pipe length in metres												
	2	4	6	8	10	12	14	16	18	20	25	30	35
16	80	55	45	38	34	30	26	22	20	18	14	12	11
20	140	96	77	66	58	53	49	45	43	40	35	29	25
25	251	172	139	119	105	95	88	81	77	73	64	58	53
32	490	336	270	232	204	186	171	159	149	141	124	114	104
Pipe size	Pipe length in metres												
	40	45	50	55	60	65	70	75	80	85	90	95	100
16	8	7	6	6	5	5	4	4	4	4	3	3	3
20	21	19	17	16	14	13	12	11	11	10	9	9	9
25	47	45	41	38	35	32	30	28	26	25	23	21	20
32	92	86	81	77	74	71	68	66	64	62	60	57	56

Pressure drop of 0.12 kPa

(Supply pressure of around 1.25 kPa)

Pipe size	Pipe length in metres												
	2	4	6	8	10	12	14	16	18	20	25	30	35
16	93	64	52	44	39	35	33	31	28	26	21	17	15
20	174	121	96	82	73	66	61	57	54	51	45	41	38
25	310	213	171	146	130	118	108	100	94	89	79	72	65
32	600	412	331	283	250	227	209	194	183	172	153	139	127
Pipe size	Pipe length in metres												
	40	45	50	55	60	65	70	75	80	85	90	95	100
16	13	12	11	9	8	8	7	7	6	6	5	5	5
20	34	30	27	25	23	21	20	18	17	16	15	14	14
25	61	57	54	51	49	47	45	44	41	39	37	35	33
32	118	111	105	100	95	91	87	84	81	79	76	74	72

Pressure drop of 0.25 kPa
(Supply pressure of around 1.5 - 2.0 kPa)

Pipe size	Pipe length in metres												
	2	4	6	8	10	12	14	16	18	20	25	30	35
16	138	95	76	65	58	53	49	45	42	40	35	32	30
20	261	178	144	123	109	98	91	84	79	75	66	60	56
25	461	317	255	218	193	175	161	149	140	133	118	106	98
32	891	613	492	421	373	338	311	289	271	257	227	206	190
Pipe size	Pipe length in metres												
	40	45	50	55	60	65	70	75	80	85	90	95	100
16	27	24	21	20	18	17	16	15	14	13	12	12	11
20	52	49	46	44	42	40	38	37	35	33	32	30	28
25	91	86	81	77	74	71	68	64	62	60	58	57	55
32	177	165	156	149	142	136	130	125	121	117	114	111	108

Pressure drop of 0.75 kPa
(Supply pressure of around 2.0 - 2.5 kPa)

Pipe size	Pipe length in metres												
	2	4	6	8	10	12	14	16	18	20	25	30	35
16	251	173	138	118	105	95	88	81	76	72	64	58	54
20	472	325	261	223	198	178	164	153	144	136	121	109	100
25	835	574	461	395	350	317	291	271	255	240	213	193	178
32	1615	1110	891	763	676	613	564	525	492	465	412	373	343
Pipe size	Pipe length in metres												
	40	45	50	55	60	65	70	75	80	85	90	95	100
16	50	46	44	42	40	38	37	35	34	33	32	31	31
20	93	87	82	78	75	72	69	66	64	62	60	59	57
25	165	154	146	139	133	127	122	118	114	109	106	103	100
32	319	300	283	269	257	245	236	227	220	212	206	200	194

Pressure drop of 1.5 kPa
(Supply pressure of around 2.75 - 5.0 kPa)

Pipe size	Pipe length in metres												
	2	4	6	8	10	12	14	16	18	20	25	30	35
16	365	251	201	173	153	138	128	118	111	105	93	84	78
20	686	472	378	325	287	261	239	223	209	198	174	158	146
25	1215	835	671	574	508	461	424	395	370	350	310	280	258
32	2350	1615	1297	1110	983	891	820	763	716	676	600	543	500
Pipe size	Pipe length in metres												
	40	45	50	55	60	65	70	75	80	85	90	95	100
16	72	67	64	61	58	56	54	52	50	49	46	45	44
20	136	128	121	115	109	104	100	96	93	90	87	85	82
25	240	225	213	203	193	185	178	171	165	160	154	150	146
32	465	436	412	391	373	357	343	331	319	309	300	291	283

APPENDIX D: TRADEPEX GAS SLEEVE PIPE (LPG) - PRESSURE DROP TABLE

Liquefied Petroleum Gas (IPG)

Flow rates based on:

- Pressure: 1023.15 mbar
- Gas temperature: 15°C
- Heating value (gross): 95.4 MJ/m³

Pressure drop of 0.25 kPa

(Supply pressure of around 3.0 kPa)

Pipe size	Pipe length in meters												
	2	4	6	8	10	12	14	16	18	20	25	30	35
16	237	163	131	112	99	90	83	77	73	69	60	55	51
20	446	307	246	211	187	169	156	145	136	129	114	103	95
25	791	543	437	373	331	300	276	257	241	227	201	183	168
32	1530	1051	844	723	641	580	534	497	466	440	390	353	325
Pipe size	Pipe length in meters												
	40	45	50	55	60	65	70	75	80	85	90	95	100
16	47	44	41	40	38	36	35	34	33	32	31	30	28
20	88	83	78	74	71	68	65	63	61	59	57	56	54
25	156	146	139	132	126	121	116	111	107	104	101	98	95
32	303	283	268	255	243	233	224	216	207	201	195	189	184

APPENDIX E: TRADEPEX GAS CRIMP PIPE (NATURAL GAS) - PRESSURE DROP TABLES

Natural Gas (NG)

Flow rates based on:

- Pressure: 1023.15 mbar
 - Gas temperature: 15°C
 - Heating value (gross): 38.7 MJ/m³
- Pressure drop of 0.075 kPa
(Supply pressure of around 1.1 kPa)

Pipe size	Pipe length in metres												
	2	4	6	8	10	12	14	16	18	20	25	30	35
16	85	58	47	40	36	32	30	28	26	24	22	20	18
20	167	115	92	79	70	63	58	54	51	48	43	39	35
25	326	224	180	154	137	124	114	106	99	94	83	75	69
32	650	447	359	307	272	247	227	211	198	187	166	150	138
40	1122	771	619	530	470	426	392	364	342	323	286	259	239
50	2151	1479	1187	1016	901	816	751	698	655	619	549	497	457

Pipe size	Pipe length in metres												
	40	45	50	55	60	65	70	75	80	85	90	95	100
16	17	16	15	14	14	13	12	12	12	11	11	11	10
20	33	31	29	28	26	25	24	23	23	22	21	21	20
25	65	61	57	54	52	50	48	46	44	43	42	40	39
32	129	121	114	108	103	99	95	92	88	86	83	81	78
40	222	208	197	187	178	171	164	158	153	148	143	139	135
50	425	399	377	358	342	327	314	303	292	283	274	266	259

Pressure drop of 0.12 kPa

(Supply pressure of around 1.25 kPa)

Pipe size	Pipe length in metres												
	2	4	6	8	10	12	14	16	18	20	25	30	35
16	110	75	61	52	46	42	38	36	33	32	28	25	23
20	215	148	119	102	90	82	75	70	66	62	55	50	46
25	421	289	232	199	176	160	147	137	128	121	107	97	89
32	838	576	463	396	351	318	293	272	255	241	214	194	178
40	1447	994	799	683	606	549	505	470	441	416	369	334	308
50	2774	1907	1531	1311	1161	1052	968	901	845	798	708	641	590

Pipe size	Pipe length in metres												
	40	45	50	55	60	65	70	75	80	85	90	95	100
16	22	20	19	18	17	17	16	15	15	14	14	14	13
20	43	40	38	36	34	33	31	30	29	28	27	27	26
25	83	78	74	70	67	64	61	59	57	55	54	52	51
32	166	156	147	140	133	128	123	118	114	110	107	104	101
40	286	268	254	241	230	220	211	204	197	190	185	179	174
50	549	515	486	462	441	422	405	390	377	365	354	344	334

**Pressure drop of 0.25 kPa
(Supply pressure of around 2.75 kPa)**

Pipe size	Pipe length in metres												
	2	4	6	8	10	12	14	16	18	20	25	30	35
16	163	112	90	77	68	62	57	53	50	47	42	38	35
20	320	220	177	151	134	121	112	104	97	92	82	74	68
25	626	430	345	296	262	237	218	203	191	180	160	145	133
32	1247	857	688	589	522	473	435	405	380	359	318	288	265
40	2152	1479	1188	1017	901	816	751	699	656	619	549	497	458
50	4127	2836	2278	1949	1728	1565	1440	1340	1257	1187	1052	954	877
Pipe size	Pipe length in metres												
	40	45	50	55	60	65	70	75	80	85	90	95	100
16	32	30	29	27	26	25	24	23	22	21	21	20	20
20	63	59	56	53	51	49	47	45	44	42	41	40	39
25	124	116	110	104	99	95	91	88	85	82	80	78	75
32	247	231	219	208	198	190	182	176	170	164	159	154	150
40	426	399	377	358	342	327	314	303	293	283	274	267	259
50	816	766	723	687	655	628	603	581	561	543	526	511	497

**Pressure drop of 1.5 kPa
(Supply pressure of around 2.75 kPa)**

Pipe size	Pipe length in metres												
	2	4	6	8	10	12	14	16	18	20	25	30	35
16	430	296	237	203	180	163	150	140	131	124	110	99	91
20	844	580	466	399	353	320	294	274	257	243	215	195	179
25	1650	1134	910	779	691	626	576	536	503	475	421	381	351
32	3288	2260	1815	1553	1377	1247	1147	1067	1002	946	838	760	699
40	5674	3900	3131	2680	2375	2152	1980	1842	1728	1633	1447	1311	1206
50	10879	7477	6004	5139	4555	4127	3797	3532	3314	3130	2774	2514	2313
Pipe size	Pipe length in metres												
	40	45	50	55	60	65	70	75	80	85	90	95	100
16	85	80	75	72	68	65	63	61	58	57	55	53	52
20	167	157	148	140	134	128	123	119	115	111	108	104	102
25	326	306	289	275	262	251	241	232	224	217	210	204	199
32	650	610	576	547	522	500	480	463	447	432	419	407	396
40	1122	1053	994	944	901	863	829	799	771	746	724	703	683
50	2151	2019	1907	1811	1728	1654	1589	1531	1479	1431	1387	1347	1311

APPENDIX F: TRADEPEX GAS CRIMP PIPE (LPG) - PRESSURE DROP TABLES

Liquefied Petroleum Gas (IPG)

Flow rates based on:

- Pressure: 1023.15 mbar

- Gas temperature: 15°C

- Heating value (gross): 95.4 MJ/m³

Pressure drop of 0.25 kPa

(Supply pressure of around 2.75 kPa)

Pipe size	Pipe length in meters												
	2	4	6	8	10	12	14	16	18	20	25	30	35
16	280	192	154	132	117	106	98	91	85	81	71	65	60
20	549	377	303	259	230	208	192	178	167	158	140	127	117
25	1074	738	593	507	449	407	375	349	327	309	274	248	228
32	2140	1471	1181	1011	896	812	747	695	652	616	546	494	455
40	3692	2538	2038	1744	1546	1401	1289	1199	1125	1062	942	853	785
50	7080	4866	3907	3344	2964	2686	2471	2298	2157	2037	1805	1636	1505
Pipe size	Pipe length in meters												
	40	45	50	55	60	65	70	75	80	85	90	95	100
16	55	52	49	47	44	43	41	39	38	37	36	35	34
20	109	102	96	91	87	84	80	77	75	72	70	68	66
25	212	199	188	179	170	163	157	151	146	141	137	133	129
32	423	397	375	356	340	325	313	301	291	281	273	265	258
40	730	685	647	615	586	562	539	520	502	486	471	457	445
50	1400	1314	1241	1179	1124	1077	1034	996	962	931	903	877	853

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