

PIPE SUPPORT SPACING

AUSTRALIAN STANDARDS

Piping that is not buried must be provided with supports primarily to control deflection and stress. In many cases the requirement for pipe supports are set out in Australian Standards but these are not consistent, resulting in different standards having different requirements for pipes of the same material with the same contents. For example, drinking water in a building in a DN 100 copper pipe must be supported at a maximum of 3 m intervals to AS/NZS 3500.1, but once it passes through a sprinkler control valve assembly AS 2118.9 permits the spacing of supports for the same pipe carrying the same water to increase by 33% to 4 m intervals.

The table below illustrates these differences in Australian Standards. If the standard provides different spacing for vertical and horizontal pipes, the table shows only those for horizontal and near horizontal (e.g. graded) pipes. It is important to note that these are maximum spacings and that additional supports may be required for example at bends and tees, to control expansion, vibration or water hammer, and where there are additional loads such as valves and equipment.

NATSPEC PROVISIONS

If an applicable standard is available, NATSPEC references it in the respective worksection.

Most mechanical services piping not governed by other standards will come within the scope of AS 4041.

AS 4041 is also referenced by other standards such as AS 1940. For situations where none of the standards in the table apply, the following are conservative for commonly encountered conditions:

Pipes containing water and other liquids: AS/NZS 3500.1 Table 5.7.4.

Pipes containing air or gases: AS/NZS 5601.1 Table 5.5.

ADDITIONAL INFORMATION

Additional information on pipe supports including design criteria can be found in:

ASME B31.9. Support spacing to ASME B31.9 is greater than in most Australia Standards other than AS 2118.9.

ASTM F708-92. ASTM F708-92 contains extensive design details for pipe supports. Support spacing is not differentiated by material or pipe contents.

Maximum spacing of supports for horizontal and near horizontal (e.g. graded) pipes (metres)

Colour key: Copper Plastic Steel

Standard	Reference	Pipe material	Contents	Nominal pipe size, DN (mm)															
				10	15	18	20	25	32	40	50	65	80	90	100	125	150	200	500
AS/NZS 2032	Table 6.3	PVC-U PVC-M PVC-O PVC-C	Any cold fluid non-pressure						0.9	1.0	1.0	1.2	1.2	1.2	1.2	1.2	1.2	1.5	1.5
AS/NZS 2032	Table 6.2	PVC-U PVC-M PVC-O PVC-C	Water > 20°C under pressure	0.5	0.6		0.7	0.75	0.85	0.9	1.05	1.2	1.35		1.5	1.7	2.0	2.3	3.0
AS/NZS 2033	Table 7.2	Polyolefin including PE and PP	Any, cold, pressure		0.50		0.60	0.70	0.75	0.85	0.90	1.05	1.20	1.35		1.70		2.30	3.00
AS/NZS 2033	Table 7.3	Polyolefin including PE and PP	Any, cold, non-pressure						0.9	1.0	1.0	1.2	1.2	1.2	1.2	1.2	1.2	1.5	1.5
AS 2118.9	Table 2.6.1	Copper, light wall steel	Water				1.5	2.0	2.5	2.5	3.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
AS 2118.9	Table 2.6.1	Plastic	Water				0.7	0.75	0.85	0.9	1.05	1.2	1.4	1.4	1.5	1.7	2.0		
AS 2118.9	Table 2.6.1	Galvanized steel	Water				4.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
AS 2419.1	Table 10.6	Copper	Water										4.0	4.0	4.0	4.0	4.0	4.0	4.0
AS 2419.1	Clause 10.6	Steel PE PVC	Water										4.0	4.0	4.0	4.0	4.0	5.0	5.0
AS 2896	Table 4.1	Copper	Medical gas		1.5		1.5	2.0	2.5	2.5	2.5	3.0	3.0	3.0	3.0				
AS/NZS 3500.1	Table 5.7.4	Copper, Copper alloy Stainless steel	Water	1.5	1.5	1.5	1.5	2.0	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
AS/NZS 3500.1	Table 5.7.4	PVC-U PVC-C PVC-M PVC-O PE PE-X PP PB	Water	0.5	0.6	0.6	0.7	0.75	0.85	0.9	1.05	1.2	1.35	1.40	1.5	1.7	2.0	2.0	

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				10	15	18	20	25	32	40	50	65	80	90	100	125	150	200	500
AS/NZS 3500.1	Table 5.7.4	Galvanized steel ductile iron	Water		2.0		2.0	2.0	2.5	2.5	3.0	3.0	4.0		4.0	4.0	4.0		
AS/NZS 3500.2	Table 10.2.1	Copper, copper alloy, ductile iron, cast iron, stainless steel	Waste							3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
AS/NZS 3500.2	Table 10.2.1	PVC-U	Waste							1.0	1.0	1.2	1.2	1.2	1.2	1.2	1.2	1.5	1.5
AS/NZS 3500.	Table 10.2.1	PP PE	Waste							1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
AS/NZS 3690	Table 6.2	ABS	Water		0.8		0.9	1.0	1.2	1.3	1.5	1.8	2.0		2.3	2.6	3.0	3.5	
c	Table 3.28.2	Steel	Steam, gas or air				3.0	3.3	3.7	4.0	4.5	5.0	5.1		5.2		6.5	7.5	13.0
AS 4041	Table 3.28.2	Steel	Water				2.0	2.4	2.7	3.0	3.4	3.7	3.9		4.3		5.2	6.0	10.0
AS 4041	Clause 3.28.2	Copper Copper alloy PVC-U PVC-M PVC-O PVC-C PE PE-X PP PB	Water	To AS/NZS 3500.1															
AS 4214	Clause 6.3.4	Any	Gas	1.0	1.5		1.8	2.1	2.4	2.7	3.4	3.5	3.7		4.3	4.8	5.2	5.8	
AS 4809	Table 6.2	Copper	Water	1.5	1.5	1.5	1.5	2.0	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
AS/NZS 5149.2	Table 5	Copper	Refrigerant gas or liquid		2.0	2.0	2.0	2.5	3.0	3.0	3.0	4.0							
AS/NZS 5149.2	Table 6	Steel	Refrigerant gas or liquid		2.0	2.0	2.0	2.0	3.0	3.0	3.0	4.5	4.5		5.0	5.0	5.0	6.0	
AS/NZS 5601.1	Table 5.8.2	Copper Stainless steel	Fuel gas	1.5	1.5	1.5	1.5	2.0	2.5	2.5	3.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	
AS/NZS 5601.1	Table 5.8.2	Semi-rigid stainless steel	Fuel gas		0.5		0.5	0.5	0.5										
AS/NZS 5601.1	Table 5.8.2	Multilayer pipe	Fuel gas		1.0		1.25	1.5	2.0	2.0	2.0								
AS/NZS 5601.1	Table 5.8.2	Steel	Fuel gas	2.0	2.0		2.5	2.5	3.0	3.0	3.0	3.0	4.0		4.0	4.0	4.0	4.0	
AS/NZS 6183 (Clause 6.3.4	Any	Gas	1.0	1.5		1.8	2.1	2.4	2.7	3.4	3.5	3.7		4.3	4.8	5.2	5.8	

Relevant standards

AS/NZS 2032 Installation of PVC pipe systems
AS/NZS 2033 Design and installation of polyolefin pipe systems
AS 2118.9 Automatic fire sprinkler systems – Piping support and installation
AS 2896 Medical gas systems - Installation and testing of non-flammable medical gas pipeline systems
AS/NZS 3500 Plumbing and drainage
Part 1 Water services
Part 2 Sanitary plumbing and drainage
AS/NZS 3690 Installation of ABS pipe systems
AS 4041 Pressure piping
AS 4809 Copper pipe and fittings – Installation and commissioning

AS/NZS 5149 Refrigerating systems and heat pumps - Safety and environmental requirements
Part 2 Design, construction, testing, marking and documentation
AS/NZS 5601.1 Gas installations
Part 1 General installations
ASME B31.9 Building services piping
ASTM F708-92 Standard practice for design and installation of rigid pipe hangers

Relevant worksections

0171 General requirements
0721 Packaged air conditioning
0722 Room air conditioners
0751 Mechanical piping
0754 Liquid fuels
0755 Medical gas systems
0761 Refrigeration
0821 Stormwater – buildings
0822 Wastewater
0823 Cold and heated water
0824 Fuel gas
1030 Combined wet fire suppression systems
1031 Hydrants
1033 Sprinklers
1041 Gaseous fire suppression systems