

# *Pressure Sewerage*

## **STEEL PIPELINE SYSTEM**

*Section SPPS 06*

<b>SPECIFICATIONS</b>		<b>A</b>	
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	SPPS 06-S2	STEEL FITTINGS	<b>C</b>
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	TYCO ARC WELDED STEEL PIPE	<b>1</b>	
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**SPPS 06-S1 STEEL PIPES**

<b>STANDARD</b>	AS 1579:2001 Arc welded steel pipes and fittings for water and waste water			
<b>DESIGN</b>	Arc-welded steel pipes with butt-welded seams, either welded longitudinally, circumferentially or spirally. The standard defines nominal pipe sizes and the true outside diameters for those pipes. Pipe sizes are not restricted to these nominal sizes, and upon request from the purchaser, can be made to any outside diameter equal to or greater than 114 mm. Pipes are protected from corrosion by suitable coating and lining.			
<b>MATERIALS</b>	<b>Pipe:</b>	Structural or analysis grade steel to AS 1594 or 3678		
	<b>Weld:</b>	Complete penetration butt welds to AS 1554.1 category SP. Double sided welds are specified		
	<b>Internal lining:</b>	Cement mortar to AS 1281 using GP or SR cement and inert aggregate Calcium aluminate cement mortar to EN14647 Polyethylene coating to AS 4321 Other linings may be applied as specified by the purchaser		
	<b>External coating:</b>	Polyethylene coating to AS 4321 Other linings may be applied as specified by the purchaser		
	<b>Socket lining:</b>	Polyethylene coating to AS 4321 Other linings may be applied as specified by the purchaser		
	<b>Joint seal:</b>	Approved elastomer to AS 1646.1 and 1646.2 or AS 1646.3		
<b>JOINTING</b>	<b>Joint types:</b>	Butt weld spigots (plain butt joint, butt joint with collar) Fillet weld spigot-socket (spherical slip-in joint, ball and socket joint) Flanged Elastomeric sealed spigot-socket Combination elastomeric sealed spigot-socket with fillet lock weld		
<b>EFFECTIVE LENGTH</b>	6, 9 or 12 metre lengths normally available. Longer lengths available on special request.			
<b>ALLOWABLE OPERATING PRESSURE</b>	Dependent on pipe diameter, wall thickness and material grade			
<b>PIPE SIZES USED BY POWER AND WATER</b>	<b>CURRENTLY USED FOR NEW CONSTRUCTION</b>		<b>NO LONGER USED FOR NEW CONSTRUCTION</b>	
	Nominal Size	Outside Diameter	Nominal Size	Outside Diameter
	DN	mm	DN	mm
	100	114	100	121
	150	168	150	178
	225	257	525	559
	300	337	825	889
	375	419	1100	1206
	450	508		
	600	660		
	750	813		
	1000	1067		
<b>MARKINGS</b>	Unique serial number Place of manufacture Outside diameter Wall thickness Australian standard number i.e. AS1579 Manufacturers name or registered trademark For hydrostatically tested pipes only, the rated pressure, in megapascals (MPa) For non-hydrostatically tested pipes, the words "Not hydrostatically tested" For pipes complying with AS/NZS 4020 'AS/NZS 4020'			
<b>MARKING METHOD</b>	Legibly and permanently marked on the external surface no closer than 300 mm from an end			

## USE LIMITS

Normal Portland cement mortar (GP) is not resistant to sulphuric acid that can form if H<sub>2</sub>S develops in any headspace in the sewer. Sections of cement mortar lined pressure mains subject to partially full flow could experience sulphuric acid attack if pressure main is not designed to avoid H<sub>2</sub>S generation (i.e. slime stripping velocity not achieved). H<sub>2</sub>S is typically released at high points on the pipeline when pressure in the line drops below 5m head. GP cement mortar should not be used if sulphate levels in the pressure sewer are likely to exceed 600 mg/litre. SR cement mortar is suitable for sulphate levels up to 6,000 mg/litre. If sulphate levels are likely to exceed 6,000 mg/litre or pH is likely to drop below 5.5, use calcium aluminate cement (CAC) mortar linings.

Welding of joints to be performed by qualified welders

Welded joints to have reinstatement of protection systems on site

Special design required for welded installations parallel to high voltage (>66kV) transmission lines

Polyethylene coating should not be used where there is extended exposure to direct sunlight.

Use approved paint schemes for aboveground piping

**SPPS 06-S2 STEEL FITTINGS**

<b>STANDARD</b>	AS 1579:2001 Arc welded steel pipes and fittings for water and waste water
<b>DESIGN</b>	Arc-welded steel fittings with butt-welded seams, either welded longitudinal, circumferential or spiral. The standard also sets out the nominal fitting sizes and the true outside diameters for those fittings. Fitting sizes are not restricted to these nominal sizes, and upon request from the purchaser, can be made to any outside diameter equal to or greater than 114 mm. Fittings are protected from corrosion by suitable coating and lining. The standard allows for the use in both water and waste water.
<b>MATERIALS</b>	<p><b>Fitting:</b> Structural or Analysis grade steel to AS 1594 or 3678</p> <p><b>Weld:</b> Complete penetration butt welds to AS 1554.1 category SP. Single sided welds are permitted if full penetration achieved.</p> <p><b>Internal lining:</b> Cement mortar to AS 1281 using GP or SR cement and inert aggregate Calcium aluminate cement mortar to EN14647 Polyethylene coating to AS 4321 Other linings may be applied as specified by the purchaser</p> <p><b>External coating:</b> Polyethylene coating to AS 4321 Other linings may be applied as specified by the purchaser</p> <p><b>Socket lining:</b> Polyethylene coating to AS 4321 Other linings may be applied as specified by the purchaser</p> <p><b>Joint seal:</b> Approved elastomer to AS 1646.1 and 1646.2 or AS 1646.3</p>
<b>JOINTING</b>	<p><b>Types permitted:</b> Butt weld spigots (plain butt joint, butt joint with collar) Fillet weld spigot-socket (spherical slip-in joint, ball and socket joint) Flanged Elastomeric sealed spigot-socket Combination elastomeric sealed spigot-socket with fillet lock weld</p>
<b>MARKINGS</b>	<p>Unique serial number Place of manufacture Outside diameter Wall thickness Australian standard number i.e. AS1579 Manufacturer's name or registered trademark For fittings compiling with AS/NZS 4020 'AS/NZS 4020'</p>
<b>MARKING METHOD</b>	Legibly and permanently marked on the external surface no closer than 300 mm to from an end
<b>USE LIMITS</b>	<p>Welding of joints to be performed by qualified welders Welded joints to have reinstatement of protection systems on site Special design required for welded installations parallel to high voltage (&gt;66kV) transmission lines Polyethylene coating should not be used where there is extended exposure to direct sunlight. Use approved paint schemes for aboveground piping</p>

**TYCO ARC WELDED STEEL PIPE**

Coating/Lining Options				Jointing Options				
UC	SK/SL <sup>1</sup>	P <sup>2</sup>	CL <sup>3</sup>	BSJ	BV	SB	SSJ	RRJ
✓	✓	✓	✓	✓	✓	✓	✓	✓ <sup>4</sup>

**NOTES**

1. Fusion bonded polyethylene cannot be used as a lining option where welded joints are to be used
2. Paint product is to be specified by purchaser and approved by Power and Water
3. Lining option only
4. Not available in sizes less than DN300
5. Tyco considers flanged pipes as fittings

**KEY**

Lining/Coating Options

- UC Uncoated
- SK/SL Sintakote / Sintaline - Fusion bonded polyethylene (FBPE)
- P Paint
- CL Cement mortar lining

Jointing Options

- BSJ Ball and socket joint
- BV Plain end with bevel
- SB Plain end with weld band
- SSJ Spherical slip in joint
- RRJ Rubber ring joint

**STEEL FITTINGS TO SUIT  
TYCO ARC WELDED PIPE**

Tyco Water



**Note:** Project specific approval can be sought from Power and Water to fabricate fittings, subject to:

- Fabrication off-site in a suitable workshop
- Agreed procedures for repair / reinstatement of cement mortar lining
- Agreed procedures for repair / reinstatement of external coatings
- Welding of joints is performed by qualified welders
- Agreed procedures for non-destructive testing of welds
- Structural certification by an independent engineer

**EXTERNAL CORROSION PROTECTION  
POLYETHYLENE SLEEVING & PETROLATUM SYSTEM**  
REFER TO SECTION SPO 04 CORROSION PROTECTION