

Water Supply and Sewerage Approved Products Manual - February 2006

Pressure Sewerage Products – Surface and Subsurface Accessories

Section SPO 02

SPECIFICATIONS		A
	SPO 02-S1 SURFACE BOXES FOR UNDERGROUND STOP VALVES	A
	SPO 02-S2 KEY FOR UNDERGROUND STOP VALVES	B
	SPO 02-S3 MARKER POSTS FOR PRESSURE SEWERS AND STOP VALVES	C
	SPO 02-S4 MARKING TAPE FOR UNDERGROUND MAINS	D
VALVE ACCESSORIES		1
	SURFACE BOXES FOR STOP VALVES	1
	KEY FOR STOP VALVES	1
MARKERS		2
	MARKER POSTS FOR PRESSURE SEWERS AND STOP VALVES	2
	MARKING TAPE FOR UNDERGROUND MAINS	2

SPO 02-S1 SURFACE BOXES FOR UNDERGROUND STOP VALVES

STANDARD None

DRAWING Power and Water: W1-2-03B

DESIGN Rectangular cast iron surface boxes comprise a frame and an adjoined hinged cover and are to be supplied as a complete unit. Surface boxes are to be suitable for their intended application as follows:

- Vehicular – Areas expected to be accessible to fast moving heavy motor vehicles including carriageways of roads and driveways. Capable of carrying an ultimate load of 300 kN
- Non-vehicular:- Areas not generally accessible to fast moving heavy motor vehicles including footpaths and verges. Capable of carrying an ultimate load of 125 kN.

Cast units are to be cleanly cast and free from air holes, sand holes, cold shuts and chill. Cast units are to be neatly dressed and carefully fettled. Surface of cover for non-vehicular applications is to be finished with a non-skid pattern raised 5 mm. Top of cover is to be flush with the top of the frame. The cover is to include a prising bar recess for raising the cover.

MATERIALS

Cover & frame: Ductile cast iron grade AS 1831/700-2, 600-3, 500-7, 450-10, 400-15, 400-18 or 350-22
 Grey cast iron grade AS 1830/150, 200, or 250

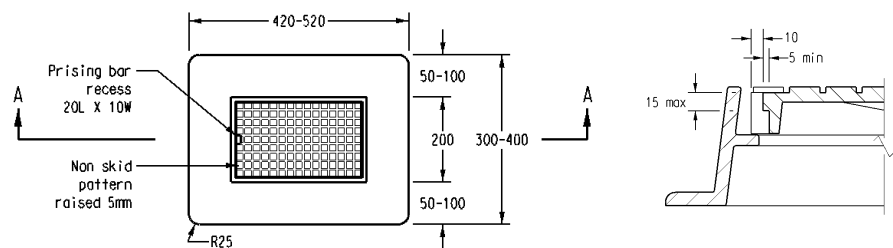
Hinge spindle: Carbon steel grade AS 1111/4.6

Coating: Bitumen to AS/NZS 3750.4

TYPE TESTING Test apparatus generally in accordance with Clause C3 of AS 3996-2006
 Test to ultimate load of 300 kN or 125 kN as applicable. No load reduction factor applicable.
 Test surface box using a 240 mm x 240 mm test block placed centrally on top of frame.
 For surface boxes with dimensions as per non-vehicular surface boxes, also test using a 150 mm x 240 mm test block placed centrally on top of lid, such that load applied directly to lid
 Type test report generally in accordance with Clause C5.2 of AS 3996-2006

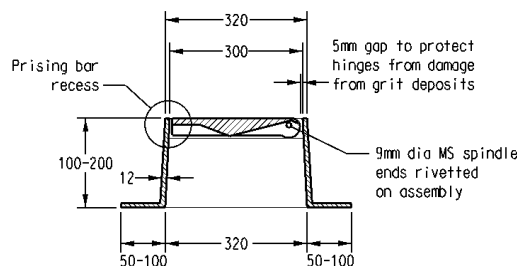
DIMENSIONS

Non-vehicular: Functionally large enough to allow insertion of valve key and replacement of valve (i.e. to AS 2638) stem sealing 'O' rings.

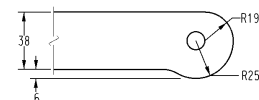


Plan

Prising bar recess detail



Section A-A



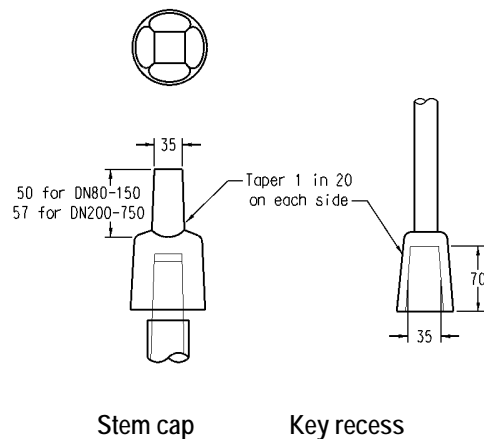
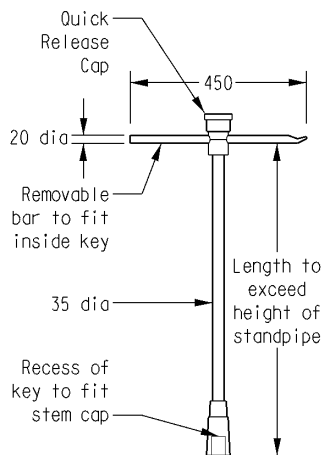
Cover hinge detail

Vehicular: Functionally large enough to allow insertion of valve key. Preferably, dimensions same as non-vehicular above

MARKING "SV" in capital letters cast-in centre of cover with preferred lettering height of 75 mm (optional).

SPO 02-S2 KEY FOR UNDERGROUND STOP VALVES

STANDARD	BS 336:1989 Fire hose couplings and ancillary equipment
DESIGN	Keys are required to operate stop (sluice) valves. The key comprises a shaft with an attached flared key end incorporating a recess of shape to mate with the valve stem cap. Near the top of the shaft is a hole to fit a removable bar. The bar is used as a handhold to rotate the key. The key is to resist damage or permanent deformation.
MATERIALS	<p>Shaft tube: Aluminium alloy grade BS 1474/6082T6 or BS 1471/6082TF or BS1490/LM16TF or BS1490/LM25TF or equivalents Stainless steel grade BS970:Part 4/321 S22 or BS970/321 S20 or equivalents Steel grade BS 6323: Part 1/CD S2 or equivalent</p> <p>Key end: Aluminium alloy grade BS 1474/6082T6 or BS 1471/6082TF or BS1490/LM16TF or BS1490/LM25TF or equivalents Stainless steel grade BS970:Part 4/18/8 Cr, casting or equivalent Malleable iron casting to BS 6681 or equivalent</p> <p>Handhold bar: Aluminium alloy grade BS 1474/6082T6 or BS 1471/6082TF or BS1490/LM16TF or BS1490/LM25TF or equivalents Stainless steel grade BS970:Part 4/431 S29 or equivalent Steel grade BS970:Part 4/605 M36 condition T or equivalent</p>
DIMENSIONS	<p>Key length: Sufficient to allow the handhold to clear the adjacent standpipe or other obstructions.</p> <p>Shaft tube: 35 mm internal diameter</p> <p>Key end: In accordance with AS 2638.1 figure 3.2 – the recess x-section is 35 mm square at 50 mm along its depth.</p> <p>Handhold bar: 20 mm minimum external diameter and 450 mm minimum long</p>



MARKING	<p>Manufacturer's name or trademark</p> <p>Year of manufacture</p> <p>BS 336 : 1989 (alternatively show conformance to BS 336 on certificate, packaging or literature)</p>
MARKING METHOD	Legible and permanent marking

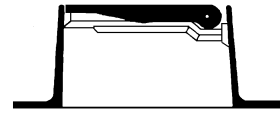
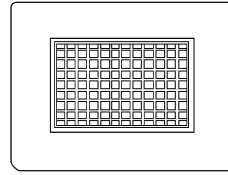
SPO 02-S3 MARKER POSTS FOR PRESSURE SEWERS AND STOP VALVES

STANDARD	None	
DESIGN	Post with cap and marker plate attached near the top of the post displaying lettering to suit service to be identified. Letters are to be screen printed onto a self adhesive retroreflective label. Post profile to be as approved to satisfy strength, label visibility and label adherence requirements.	
MATERIALS	<p>Post and cap: 75 x 75 x 4.0 square hollow section (grade 350 or higher) to AS 1163, hot dip galvanised after fabrication (minimum 300g/m² on each surface). Galvanised steel cap to suit post. After fitting of cap to post, coat with polymeric powder coating (60 microns minimum) to AS/NZS 4506 Other materials as approved</p> <p>Marker plate: Aluminium plate AS/NZS 1734 e.g. 5005-H34 Other materials as approved</p> <p>Marker plate label: Self adhesive retroreflective sheeting class 1 to AS 1906.1 (e.g. 3M Scotchlite High Intensity Reflective Sheeting Series 3870)</p> <p>Letters: Ink compatible with retroreflective sheet (Scotchlite Series 880 Process Colours)</p>	
COLOURS	<p>Mains post/cap: Golden Yellow, code Y14 to AS 2700</p> <p>Stop valve post/cap: Signal Red, code R13 to AS 2700 or near equivalent</p> <p>Marker plate label: White, code N14 to AS 2700 or near equivalent (e.g. 3M White 3870)</p> <p>Letters: Reflectorised Signal Red, code R13 to AS 2700 or near equivalent (e.g. 3M Traffic Signal Red 882)</p>	
DIMENSIONS	<p>Post length: 1320 mm long (750 mm above finished surface level when installed)</p> <p>Marker plate: 250 mm high x 75 mm wide x 2 mm thick with <u>rounded corners</u></p> <p>Letters: 80 mm high x 35 mm wide with 10 mm thick strokes</p> <p>Marker plate label:</p>	
MARKER PLATE LETTERS	<p>Sewer rising main: SR (one on top of the other)</p> <p>Sewer vacuum main: VM (one on top of the other)</p> <p>Stop valve (isolating valve): SV (one on top of the other)</p>	
MARKER PLATE FIXING	Top of plate, 150 mm below the underside of post caps. Plate attached at points clear of lettering using rivets or screws of around 5 mm diameter, with no less than 2 mm protrusion.	
USE LIMITS	<p>Mains Install along the pipe centreline at 100 m maximum intervals and at all changes of direction where specified in project documentation. Do not use in Aboriginal communities. Not normally used in developed areas.</p> <p>Stop valves: Use only where there is no kerb for marking or where directed when the valve is not easily located from the kerb marking. Do not use in Aboriginal communities. Not normally used in developed areas.</p>	

SPO 02-S4 MARKING TAPE FOR UNDERGROUND MAINS

STANDARD	AS/NZS 2648.1:1995	Underground marking tape Part 1: Non detectable tape (AS/NZS 2648.1 is generally applicable to detectable tape)
DESIGN	Underground marking tape is to have sufficient toughness and elongation ability to allow mechanical diggers to pull the tape to the surface before breakage. Tape and tracer wire are to substantially resist breakage from probing equipment. On exposure to naturally occurring ground chemistry, tape is to sufficiently retain elongation ability and is to sufficiently resist discolouration and disadhesion of warning messages. Detectable tape (incorporates a metallic strip or wire) is to be detectable at 0.3 m to 1.5 m below ground surface without connecting a signal transmitter to the wire. Means of joining tracer strip or wire in successive lengths of tape is to be provided. Tracer wire is to be affixed to the tape by placing between tape layers or other approved means. Means to increase the elongation ability of tracer wire beyond its strain capabilities is preferred, e.g. snaking of the wire along the tape.	
MATERIALS	Tape:	Thermoplastic
	Tracer strip/wire:	Stainless steel grade ASTM A276/316 or equivalent
	Wire/strip joiners:	Stainless steel grade ASTM A276/316 or equivalent
COLOUR	Cream (Straw Y24 to AS 2700) for sewerage identification Purple (Lilac P23 to AS 2700) for recycled water main identification	
DIMENSIONS	Width:	75 mm minimum, 100 mm and 150 mm preferred, $\pm 5\%$ tolerance
	Length:	100 m minimum
	Tracer wire:	0.7 mm minimum diameter
TAPE ELONGATION	No chemical exposure:	300% min longitudinal, 350% min transverse (to AS/NZS 4275.1)
	After chemical exposure:	240% min longitudinal, 280% min transverse (to AS/NZS 4275.1)
TAPE STRENGTH	Tear resistance:	3.0 N minimum longitudinal, 3.5 N minimum transverse (AS/NZS 4275.2)
	Impact resistance:	Withstand penetration by a dart of mass 160g (+5, -0) (AS/NZS 4275.3)
DISCOLOURATION	Colour contrast to original tape to be not greater than grade 3 of grey scale (AS/NZS 4275.5) after chemical exposure (AS/NZS 4275.4).	
PRINT ADHESION	Not more than 10% print removal (AS/NZS 4275.6) after chemical exposure (AS/NZS 4275.4)	
WARNING MESSAGE	"CAUTION-SEWER MAIN BURIED BELOW" or "DANGER-BURIED SEWER MAIN BELOW"	
MESSAGE MARKING METHOD	Vertical block full stroke black lettering of 25 mm minimum height. Message to be repeated at 1 m intervals. Message to be centrally placed relative to the width.	
ROLL FORMER	Adequate strength to allow handling and unrolling. Each roll to have a continuous length of tape (tape splices at 500 mm minimum apart are allowed). Roll internal diameter of 50 to 105 mm.	
ROLL FORMER MARKINGS	Manufacturer's name or trademark Tape identification, e.g. for sewer mains Tape length and width Traceability code to include place of manufacture and batch number or date of manufacture	
ROLL FORMER MARKING METHOD	Legible and indelible lettering of 5 mm minimum height in a visible location.	
USE LIMITS	Use detectable tape only above non-metallic pipelines. Join tracer wire for successive lengths of detectable tape. Bring detectable tape to the surface at all valves to allow connection of a signal transmitter. Overlap successive lengths of non-detectable tape by at least 1 m.	

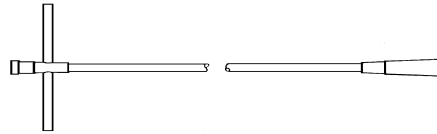
SURFACE BOXES FOR STOP VALVES



Model	Galvin	Durham
Standard	I	✓
Road pavement		✓

NOTES I = Interim Approval

KEY FOR STOP VALVES

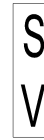


Material	NIBF
Steel	✓
Stainless steel	
Aluminium alloy	

**MARKER POSTS FOR PRESSURE SEWERS
AND STOP VALVES**



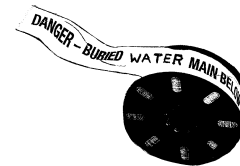
Post



Post marker plates

Use	Crevet
Sluice valve	✓
Sewer rising main	✓
Sewer vacuum main	✓

**MARKING TAPE FOR UNDERGROUND
MAINS**



Tape	Boddingtons
Detectable	✓ 1
Non-detectable	I 2

I = Interim approval
NOTES

1. Wavelay
2. Printguard