

Water Supply and Sewerage Approved Products Manual - February 2006

Water Supply – Property Connections

Section WO 01

SPECIFICATIONS		A	
	WO 01-S1	COPPER TUBES	A
	WO 01-S2	POLYETHYLENE PIPES	B
	WO 01-S3	COPPER AND COPPER ALLOY FITTINGS	C
	WO 01-S4	POLYETHYLENE PIPE FITTINGS	D
	WO 01-S5	TAPPING BANDS for DI & PVC PIPES	E
	WO 01-S5A	TAPPING BANDS for DI & PVC PIPES	F
	WO 01-S6	TAPPING BANDS for PE PIPES	G
	WO 01-S7	COPPER ALLOY FERRULE TAPS	H
	WO 01-S8	COPPER ALLOY METER TAPS (WITH JUMPER VALVE)	I
	WO 01-S8A	COPPER ALLOY METER TAPS (WITH BALL VALVE)	J
	WO 01-S9	COPPER ALLOY GATE VALVES	K
	WO 01-S10	COPPER ALLOY NON-RETURN VALVES	L
PIPES			1
	COPPER TUBE		1
	POLYETHYLENE PIPE		1
COPPER/COPPER ALLOY FITTINGS			2
	MI-CC ELBOW		2
	FI-CC ELBOW		2
	UN-C BEND		2
	C-C BEND		2
	C-C REDUCING TEE		3
	MI-MI REDUCING NIPPLE		3
	BREACHING PIECE		3
	MULTI-METER MANIFOLD		3
TAPPING BANDS			4
	TAPPING BANDS for DUCTILE IRON PIPES		4
	TAPPING BANDS for PVC PIPES		4
	TAPPING BANDS for POLYETHYLENE PIPES		5
TAPPING FERRULES			6
	COPPER ALLOY FERRULES for DRY TAPPING		6
	PLASTIC FERRULES FOR DRY TAPPING		6
	COPPER ALLOY FERRULES FOR LIVE TAPPING		6
	BRASS ALLOY FERRULE BENDS		6
METER TAPS / VALVES / BOXES			7
	COPPER ALLOY METER TAPS (WITH JUMPER VALVE)		7
	COPPER ALLOY METER TAPS (WITH BALL VALVE)		7
	PLASTIC METER TAPS		7
	COPPER ALLOY GATE VALVES		7
	COPPER ALLOY NON-RETURN VALVES		8
	METER BOX		8

WO 01-S1 COPPER TUBES

STANDARD	AS 1432:2004 Copper tubes for plumbing, gasfitting and drainage applications				
DESIGN	Copper temper is to be hard drawn (as opposed to bendable or annealed). The wall thickness is to be to type A.				
JOINTING	Capillary				
WALL THICKNESS		Minimum	Standard	Maximum	
	DN20	1.21 mm	1.42 mm	1.63 mm	
	DN25	1.39 mm	1.63 mm	1.88 mm	
	DN50	1.39 mm	1.63 mm	1.88 mm	
OD AND OVALITY (Straight Lengths)		Minimum OD	Maximum OD	Ovality	Approx ID
	DN20	18.97 mm	19.05 mm	0.20 mm	16.2 mm
	DN25	25.30 mm	25.40 mm	0.28 mm	22.1 mm
	DN50	50.67 mm	50.80 mm	0.64 mm	47.5 mm
LENGTH TOLERANCES	≤ 3 m: + 12, - 0 mm		>3 ≤ 6 m: + 24, - 0 mm		
TUBE HARDNESS	100 HV				
SAFE WORKING PRESSURE	DN20:	5.56 MPa			
	DN25:	4.75 MPa			
	DN50:	2.31 MPa			
COLOUR LEGEND MARKINGS	Manufacturer's name or trademark Country of origin Nominal size Thickness type A Number of standard 'AS1432' Product certification mark				
COLOUR MARKING METHOD	Continuous green (type A) mark and a legend repeated at intervals not exceeding 1 m throughout the length. Legend can be in the colour of the continuous mark or black. Minimum height of lettering to be 4.5 mm.				
INCISION LEGEND MARKINGS	Manufacturer's name or trademark Nominal size Thickness type A Number of applicable standard 'AS1432' Product certification mark on pipe barrel				
INCISION MARKING METHOD	Permanently marked at intervals not exceeding 0.5 m by incising with a legend of minimum lettering height of 3 mm for DN20 and DN25 and 4 mm for DN50.				
USE LIMITS	Do not use where conveyed water is highly aggressive, e.g. low pH.				

WO 01-S2 POLYETHYLENE PIPES

STANDARD	AS/ NZS 4130:2003 Polyethylene (PE) pipes for pressure applications						
DESIGN	Hydraulic – Nominal size defined by outside diameter. Excluding DN 20 SDR 11 PE, which has a similar internal diameter to DN 20 copper tube, it is necessary to specify the next largest nominal size in PE to obtain a similar internal diameter to copper pipe. For example, DN 50 copper tube has an internal diameter of approximately 47.5mm and DN 63 SDR 9 PE has an approximate internal diameter of 48.1mm.						
MATERIALS	Polyethylene material compound to be PE80 type B						
PIPE COLOUR	Black with blue stripes						
JOINTING	Mechanical compression joints for property connections						
STANDARD DIMENSION RATIO (SDR)	PN 12.5:	SDR 11					
	PN 16:	SDR 9					
INSIDE DIAMETER		SDR 11 (mm)			SDR 9 (mm)		
		Min	Nominal	Max	Min	Nominal	Max
	DN20	15.6	16.1	16.5	14.6	15.2	15.7
	DN25	19.6	20.2	20.7	18.6	19.2	19.7
	DN32	25.4	26.0	26.5	23.8	24.5	25.1
	DN40	31.6	32.3	33.0	29.8	30.6	31.4
	DN50	39.6	40.4	41.2	37.4	38.3	39.3
	DN63	50.0	50.9	52.0	47.0	48.1	49.4
PRESSURE CLASS	PN 12.5 minimum (PN 12.5 means nominal working pressure of 1.25 MPa at 20°C)						
LETTER MARKINGS	Manufacturer's name or trademark Nominal size in the form 'DN 25' Nominal pressure in the form 'PN 12.5' SDR number in the form 'SDR 11' PE material classification number in the form 'PE 80B' Date of manufacture in the form '990423', i.e. 23 rd April 1999 Identification of the place of manufacture, The manufacturer's code is acceptable, e.g. F1. The standard number AS/NZS 4130 Product certification mark on pipe barrel.						
LETTER MARKING METHOD	Legibly and indelibly marked with letters of minimum height of 3 mm for pipes up to and including nominal outside diameter 32 mm and 5 mm for larger sizes. Marking is to be repeated at intervals where the distance between the marking is not greater than 1 m.						
STRIPE MARKING	Solid blue colour stripe. Angular separation of stripes not greater than 130°. Width of stripes 1 mm for nominal OD 25, 2 mm for nominal OD 32, 40 and 50 and 3 mm for nominal OD 63.						
USE LIMITS	Do not use in areas contaminated or likely to be contaminated by petroleum products, such as solvents for termite/pest control treatment or paint. Do not use where there are scratches deeper than 10% of the wall thickness. Not preferred for use north of the Tropic of Capricorn, due to risk of termite damage Do use where conveyed water is highly aggressive and the use of copper is unsuitable						

WO 01-S3 COPPER AND COPPER ALLOY FITTINGS

STANDARD	AS 3688:2005	Water supply – Metallic fittings and end connectors
DESIGN	Fittings are either of copper or brass (copper alloy) and have either capillary ends for soldering, flared ends for compression seal or male/female threaded ends.	
JOINTING:	Sockets:	Each socket to have an internal shoulder or stop to register limits of tube engagement. Height as given in Table 3.1 of AS 3688 and not less than 25% of internal circumference. Stop or shoulder thickness not less than 1.5 mm.
	Spigot:	OD of spigot to be OD of hard drawn copper tube to AS 1432. Minimum spigot length 7.5mm
	Fastening threads:	Internal threads to AS 1722.2 Series G External threads to AS 1722.2 Series GB
	Sealing threads:	Internal threads to AS 1722.1 Series RP or RC External threads to AS 1722.1 Series R or RL
WORKING PRESSURE	1.4 MPa	
MARKINGS	Manufacturer's name or trademark WaterMark Licence number The standard number AS 3688 Maximum service temperature if less than 95C	
MARKING METHOD	Legibly marked. An area of sufficient size is to be provided for the certifying mark. Indented certifying mark is not to deform or damage the fitting. All components are to bear manufacturer's mark as a minimum except if component is too small to mark effectively. If too small to mark, marking requirements are to be on packaging.	
USE LIMITS	Do not use when conveyed water is highly aggressive, e.g. low pH.	

WO 01-S4 POLYETHYLENE PIPE FITTINGS

STANDARD	AS/NZS 4129:2000 Fittings for polyethylene (PE) pipes for pressure applications
DESIGN	Fittings are to be plastic body mechanical compression sealing. The fittings comprise nut ends which contain a pipe gripper or split ring. The pipe spigot is pushed hard into the socketed ends of the fittings. Either the nuts, grippers and O-rings are pushed on the pipe or the nuts are loosened on the fitting to allow insertion of the pipe into the fitting. Tightening of the nuts on the fitting body tightens the gripper on the pipe, and compresses the O-rings so they seal against the pipe outer wall and the fitting inner wall.
JOINTING	Mechanically compressed elastomeric O-ring seal
PRESSURE CLASS	PN 12.5 minimum (PN 12.5 means nominal working pressure of 1.25 MPa at 20°C)
MARKINGS	Manufacturer's name or registered trademark. Date or batch code. Nominal size (DN) of the pipe to which the fitting is suited. Identification including grade and type of material, of the plastics material used for the body of the fitting, abbreviated in accordance with ISO 1043.1 or ASTM D1600 or AS/NZS 4131. Classification, in accordance with the pipe classification for which the fitting is to be used. The standard number AS/NZS 4129 Product certification mark
MARKING METHOD	Legibly and permanently on the outside of the body of the fitting or the end caps.

WO 01-S5 TAPPING BANDS FOR DI & PVC PIPES

STANDARD

SAA MP52 : Specification number 025 – Tapping Bands

WITHDRAWN

WO 01-S5A TAPPING BANDS FOR DI & PVC PIPES

STANDARD	WSA 107 : 2005 Mechanical Tapping Bands
DESIGN	<p>The tapping band is to comprise two halves, which are fastened around the pipe using bolts and nuts. The bolts are to be captive in the lower part of the tapping band. The tapping band is to have a threaded off-take or outlet either integral with or separate to the tapping body. The tapping band is to conform to the tolerances of pipe diameter and ovality for the pipe material it is designed for. The tapping band is to prevent pipe deflection exceeding 3% of the pipe internal diameter. Mismatch between mating band halves when fully tightened is not to exceed 1.0 mm.</p> <p>Metallic tapping bands are to provide electrical discontinuity for use on metallic pipes with current flow restricted to 0.2 milliamps at 20 V d.c.</p> <p>Tapping bands for cast iron and ductile iron pipes are to have means to prevent tuberculation of the tapping point with inserts that provide a positive restraint and terminate within the cement mortar pipe lining.</p> <p>Plastic tapping bands are to have a boss band. Tapping bands on PVC pipe are to be "full circle" type.</p>
SITE TEST PRESSURE	A maximum of 2.0MPa
OFFTAKE	Parallel or tapered internal threads to AS 1722.1 Series RP or RC (tapered internal thread preferred for tapping bands manufactured from plastic material)
BODY MARKINGS	<p>a) Manufacturer's name or trademark b) Batch identification c) Nominal diameter (DN) of tapping band d) Product certification mark</p> <p>Outlet tapping size and type (eg. parallel [RP] or tapered [RC]) Pipe types and PN rating(s) for which the tapping band is suitable The standard number WSA 107</p>
MARKING METHOD	Items (a) to (d) shall clearly and permanently marked on the body of the tapping band. The other items may be printed on an adhesive label attached to the body (except adhesive labels shall not be applied to stainless steel components) or printed on the tapping band packaging

WO 01-S6 TAPPING BANDS FOR PE PIPES

STANDARD	AS/NZS 4129:2000 Fittings for polyethylene (PE) pipes for pressure applications
DESIGN	The tapping band is to comprise two halves, which are fastened around the pipe using bolts and nuts. The bolts are to be captive in the lower part of the tapping band. The tapping band is to have a threaded off-take or outlet either integral with or separate to the tapping body. The tapping band is to conform to the tolerances of pipe diameter and ovality for the pipe material it is designed for. The tapping band is to prevent pipe deflection exceeding 3% of the pipe internal diameter. Mismatch between mating band halves when fully tightened is not to exceed 1.0 mm. Plastic tapping bands are to have a boss band.
OFFTAKE	Parallel or tapered internal threads to AS 1722.1 Series RP or RC (tapered internal thread [RC] preferred for tapping bands manufactured from plastic material)
MARKINGS	Manufacturer's name or registered trademark Date or batch code Nominal size (DN) of the pipe to which the fitting is suited Identification including grade and type of material, of the plastics material used for the body of the fitting, abbreviated in accordance with ISO 1043.1 or ASTM D1600 or AS/NZS 4131. Classification, in accordance with the pipe classification for which the fitting is to be used. The standard number AS/NZS 4129 WaterMark or other product certification mark
MARKING METHOD	Legibly and permanently on the outside of the tapping band body.

WO 01-S7 COPPER ALLOY FERRULE TAPS

STANDARD	AS 3718:2005 Water Supply – Tap Ware
DESIGN	Copper alloy ferrule taps are connected to the tapping band. Copper alloy ferrule taps are to have a rising stem, be clockwise closing and have loose jumper valves. Copper alloy components in contact with water to be dezincification resistant to AS 2345
END CONNECTIONS	Inlet: Male iron (tapered - AS 1722.1 series R) Outlet: Right angled union to AS 3688 to connect with ferrule bend supplied complete with tap.
FERRULE BENDS	To comprise a union nut to AS 3688 at one end for connection to the ferrule tap and a short socket to AS 3688 at the other end for a capillary joint to copper tube using brazing alloy.
WORKING PRESSURE	1.4 MPa
MARKINGS	Manufacturer's name or mark Licence number for AS 3718 on the head and the body The mark of the certifying body The letters DR on tap body and head The standard number AS/NZS 3718 Arrow indicating direction of flow
MARKING METHOD	Legibly and visibly marked.

WO 01-S8 COPPER ALLOY METER TAPS (WITH JUMPER VALVE)

STANDARD	AS 3718:2005	Water Supply – Tap Ware
DESIGN	Copper alloy meter taps are used immediately upstream of DN 20 and DN 25 water meters. Copper alloy meter taps are to have a rising stem, be clockwise closing and have loose jumper valves. Copper alloy components in contact with water to be dezincification resistant to AS 2345.	
END CONNECTIONS	Inlet:	Flared copper compression
	Outlet:	Right angled female iron (parallel - AS 1722.1 series RP)
WORKING PRESSURE	1.4 MPa	
MARKINGS	Manufacturer's name or mark (or licence number for AS 3718) on the head and the body The mark of the certifying body (e.g. StandardsMark). The letters DR on tap body and head	
MARKING METHOD	Legibly and visibly marked.	

WO 01-S8A COPPER ALLOY METER TAPS (WITH BALL VALVE)

STANDARD	AS 3718:2005	Water Supply – Tap Ware
DESIGN	Copper alloy meter taps are used immediately upstream of DN 20 and DN 25 water meters. Ball valve type meter taps are only to be used in conjunction with meters that an integral backflow prevention device. Copper alloy components in contact with water to be dezincification resistant to AS 2345.	
END CONNECTIONS	Inlet:	Flared copper compression
	Outlet:	Right angled female iron (parallel - AS 1722.1 series RP)
WORKING PRESSURE	1.4 MPa	
MARKINGS	Manufacturer's name or mark (or licence number for AS 3718) on the head and the body The mark of the certifying body (e.g. StandardsMark). The letters DR on tap body and head	
MARKING METHOD	Legibly and visibly marked.	

WO 01-S9 COPPER ALLOY GATE VALVES

STANDARD	AS 1628:1999 Water supply-Metallic gate, globe and non-return valves
DESIGN	A copper alloy gate valve is required on the upstream side of the meter where the water service is of 40 mm or 50 mm size. This gate valve is used to stop flow, not modulate or throttle flow. Gate valves are to be clockwise closing, be inside screw non-rising stem and be controlled using hand wheels. Gates including stem in the fully raised position are to provide a clear bore through the valve. Guides are to ensure seating surface of the wedge does not touch the body seat surfaces until near the point of closure.
JOINTING	Inlet: Threaded female end to AS 1722.1 series RP Outlet: Threaded female end to AS 1722.1 series RP
CLASSES	Class 14 (1.4 MPa allowable operating pressure), class 21 (2.1 MPa allowable operating pressure)
MARKING	Manufacturer's name or mark Nominal size Maximum operating pressure Arrow (↔) permanently marked on the handwheel showing open ↔ closure operating direction The letters DR (signifying dezincification resistant) WaterMark or the mark of the certifying body
MARKING METHOD	Legible marking by casting or indenting. If not possible to have marking readily visible after installation, attach an additional sticker to the valve, where visible after installation. Provide area for certifying mark. Indented certifying mark is not to deform or damage the valve. All components to bear manufacturer's mark as a minimum except if component is too small to mark effectively.

WO 01-S10 COPPER ALLOY NON-RETURN VALVES

STANDARD	AS 1628:1999 Water supply-Metallic gate, globe and non-return valves
DESIGN	A copper alloy non-return valve is required on the downstream side of the meter where the water service is of 40 mm or 50 mm size and a backflow device is not fitted. The valve is installed by the plumber undertaking the property connection. This non-return valve prevents the reversal of flow, downstream to upstream.
JOINTING	Inlet: Threaded female end to AS 1722.1 series RP Outlet: Threaded female end to AS 1722.1 series RP
CLASSES	Class 14 (1.4 MPa allowable operating pressure), class 21 (2.1 MPa allowable operating pressure)
MARKING	Manufacturer's name or mark Nominal size Maximum operating pressure The letters DR (signifying dezincification resistant) StandardsMark where certified to AS 1628 WaterMark where certified to MP52 specification number 010
MARKING METHOD	Legibly marked by casting or indenting. Marking to be readily visible after installation. If this is not possible, an additional sticker is to be attached to the valve where it will be visible after installation. Area to be provided for certifying mark. Indented certifying mark is not to deform or damage the valve. All components to bear manufacturer's mark as a minimum except if component is too small to mark effectively.

**COPPER TUBE
(HARD DRAWN TYPE A)**



Nominal Size DN	Crane	Kembla	McKechnie
20	I	I	I
25	I	I	I
50	I	I	I

I = Interim approval

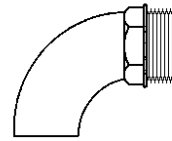
POLYETHYLENE PIPE



Nominal Size DN	Iplex	Vinidex
25	I	I
32	I	I
40	I	I
50	I	I
63	I	I

I = Interim approval

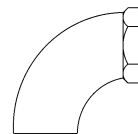
MI-CC ELBOW
(MALE IRON-FLARED COMPRESSION/CAPILLARY)



Nominal Size DN	Galvin	Rye	Yorkshire
40	I	I	I
50	I	I	I

I = Interim approval

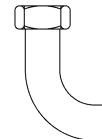
FI-CC ELBOW
(FEMALE IRON-FLARED COMPRESSION/CAPILLARY)



Nominal Size DN	Galvin	Rye	Yorkshire
20	I	I	I
25	I	I	I

I = Interim approval

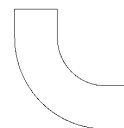
UN-C BEND
(UNION NUT-CAPILLARY)



Nominal Size DN	Galvin	Rye	Yorkshire
20	I	I	I
50	I	I	I

I = Interim approval

C-C BEND
(CAPILLARY-CAPILLARY)



Nominal Size DN	Galvin	Rye	Yorkshire
50	I	I	I

I = Interim approval

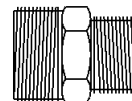
**C-C REDUCING TEE
(CAPILLARY-CAPILLARY)**



Nominal Size DN x dn x dn	Galvin	Rye	Yorkshire
25 x 20 x 20	I	I	I

I = Interim approval

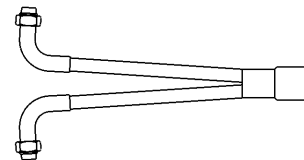
**MI-MI REDUCING NIPPLE
(MALE IRON-MALE IRON)**



Nominal Size DN X dn	Galvin	Rye	Yorkshire
50 X 40	I	I	I

I = Interim approval

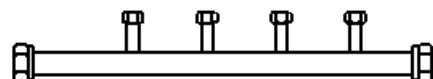
**BREACHING PIECE
(UNION NUTS BREACHED ENDS- CAPILLARY OTHER END)**



Nominal Size dn x dn x DN	Rhino
25 x25 x 50	I

I = Interim approval

**MULTI-METER MANIFOLD
(DN 50 INVERTED COMPRESSION NUT -3 TO 6 NO DN
25 UNION NUTS)**



Nominal Size DN x dn's	Autotherm
50 x 20 (3 to 6 No)	I

I = Interim approval

TAPPING BANDS FOR DUCTILE IRON PIPES



Nominal Size DN x Offtake	Milnes (Model No. 62)	NIBF (Taptite)	Stockbrands (4N)	Tyco Water (Multitap)	Wang (KT)
100 x 20	✓	✓	✓	✓	✓
100 x 25	✓	✓	✓	✓	✓
150 x 20	✓	✓	✓	✓	✓
150 x 25	✓	✓	✓	✓	✓
200 x 20		✓	✓		✓
200 x 25		✓	✓		✓
225 x 20		✓			✓
225 x 25		✓			✓
250 x 20		✓			✓
250 x 25		✓			✓
300 x 20		✓			✓
300 x 25		✓			✓
375 x 20		✓			
375 x 25		✓			

NOTES

1. The manufacturer's identifying brand name or model number is shown in brackets.
2. The above sizes cover reticulation mains; tapping of larger mains for consumers is not normally undertaken.
3. Direct tapping (i.e. without a tapping band) of DI, CI and AC pipes is not permitted.
4. The listed tapping bands are also generally suitable for asbestos cement (AC) and grey cast iron (CI) pipes, except 4N tapping bands shall not be used on AC pipes. Care should be exercised as manufacturing tolerances for some pipe materials can be significant.

TAPPING BANDS FOR PVC PIPES

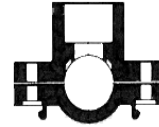


Nominal Size DN x Offtake	Milnes (Model No. 60A)	NIBF (Taptite)	Stockbrands (4N)	Tyco Water (Multitap)	Wang (KT)
100 x 20	✓	✓	✓	✓	✓
100 x 25	✓	✓	✓	✓	✓
150 x 20	✓	✓	✓	✓	✓
150 x 25	✓	✓	✓	✓	✓
200 x 20	✓	✓	✓		✓
200 x 25	✓	✓	✓		✓
225 x 20	✓	✓			✓
225 x 25	✓	✓			✓
250 x 20		✓			✓
250 x 25		✓			✓
300 x 20		✓			✓
300 x 25		✓			✓
375 x 20		✓			
375 x 25		✓			

NOTES

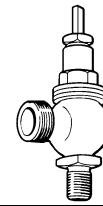
1. The manufacturer's identifying brand name or model number is shown in brackets.
2. The above sizes cover reticulation mains; tapping of larger mains for consumers is not normally undertaken.
3. Direct tapping (i.e. without a tapping band) of PVC pipes is not permitted.

TAPPING BANDS FOR POLYETHYLENE PIPES



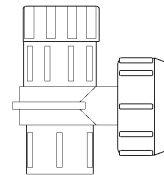
Nominal Size DN x BSP	Stockbrands (4N)
63 x 20	✓
63 x 25	✓
100 x 20	
100 x 25	
150 x 20	
150 x 25	
200 x 20	
200 x 25	
225 X 20	
225 X 25	
250 X 20	
250 X 25	
300 X 20	
300 X 25	

COPPER ALLOY FERRULES FOR DRY TAPPING



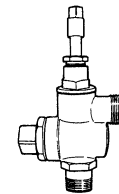
Nominal Size DN	ABB
20	✓
25	✓

PLASTIC FERRULES FOR DRY TAPPING



Nominal Size DN
20
25

COPPER ALLOY FERRULES FOR LIVE TAPPING



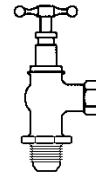
Nominal Size DN	Milnes	ABB
20	I	✓
25	I	✓

I = Interim approval

BRASS ALLOY FERRULE BENDS

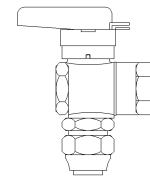
Nominal Size DN	ABB
20	✓
25	✓

COPPER ALLOY METER TAPS (WITH JUMPER VALVE)
(FLARED COMPRESSION – FEMALE IRON ENDS)



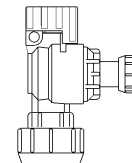
Nominal Size DN	ABB
20	✓
25	✓

COPPER ALLOY METER TAPS (WITH BALL VALVE)
(FLARED COMPRESSION – FEMALE IRON ENDS)



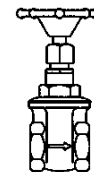
Nominal Size DN	ABB
20	✓
25	✓

PLASTIC METER TAPS



Nominal Size DN
20
25

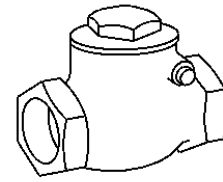
COPPER ALLOY GATE VALVES
(SCREWED FEMALE ENDS)



Nominal Size DN	Tour & Andersson (51 064)	Austral/Toyo (288D)
20	I	✓
25	I	✓
40	I	✓
50	I	✓

I = Interim approval

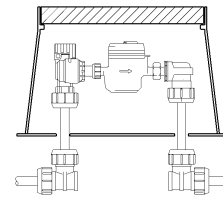
**COPPER ALLOY NON-RETURN VALVES
(SCREWED FEMALE ENDS)**



Nominal Size DN	Toyo (236D)	Austral/Ban (236A)
20	I	✓
25	I	✓
40	I	✓
50	I	✓

I = Interim approval

METER BOX



Nominal Size DN	Carson
	I

I = Interim approval