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Technical Installation & Product Selection Manual

Lead-Free Bronze Tapping Bands

For PVC Series 1, PVC Series 2 / AC and MDPE water mains
PN16 | AS 4793:2020 Mechanical Tapping Bands for Waterworks Purposes

IMPORTANT: Correct pipe identification and actual outside-diameter measurement are mandatory before installation. Nominal DN alone is not sufficient to select a tapping band.

1. Scope

Manual provides product selection and installation guidance for PN16 lead-free bronze (gunmetal) mechanical tapping bands designed for potable-water and waterworks applications.

The tapping bands are manufactured from lead-free bronze/copper alloy and are designed and tested in accordance with AS 4793:2020 – Mechanical tapping bands for waterworks purposes. Materials in contact with drinking water comply with AS/NZS 4020 – Testing of products for use in contact with drinking water.

The range includes tapping bands suitable for PVC Series 1, PVC Series 2 and MDPE/PE pipe systems, with a maximum working pressure rating of PN16 (1,600 kPa).

This manual provides guidance for correct product selection, pipe identification and installation to achieve a safe and reliable connection.

2. Product Families

The prefix is a critical selection aid:

Model prefix	Pipe family	Certified size range in schedule	Selection rule
TBA	PVC Series 2	DN50 to DN375	Use only on the Series 2 / compatible AC OD family for which the band is marked.
TBP	PVC Series 1	DN40 to DN375	Use only on the Series 1 OD family for which the band is marked.
TBPE	MDPE	DN63, DN125, DN180	Use only on PE/MDPE pipe matching the marked outside diameter.

DO NOT INTERCHANGE: A DN150 Series 1 band and a DN150 Series 2 / AC band fit completely different pipe outside diameters. The DN marking describes nominal pipe size, not the actual outside diameter.

3. Pipe Identification - Mandatory Before Installation

Identify the pipe material and measure the actual pipe outside diameter at the intended tapping location. Check the pipe marking where visible. Where markings are missing, buried, aged or uncertain, do not rely on appearance or nominal DN alone.

3.1 Quick Pipe OD Identification Table

The table below is intended to prevent the most common field-selection error. ‘Maximum mean pipe OD’ is a dimensional screening value from the relevant pipe dimensional standard/source. If the measured pipe is above the stated maximum, or is significantly oval, corroded, coated or otherwise non-standard, STOP and obtain technical confirmation before installation.

Series 2/AC DN50 and DN80 are shown with Hynds identification ODs of approximately 70 mm and 96 mm respectively. These smaller legacy/AC applications require actual field OD verification; do not infer a modern PVC Series 2 tolerance from the band description alone. AC pipe can also vary due to age, manufacture, coating and legacy dimensions.

FIELD RULE: Measure the pipe with an OD tape or suitable circumference/diameter measuring tool. Measure at more than one orientation where ovality is suspected. If the pipe does not correspond to the band marking and OD family, do not install the band.

3.2 Key DN Examples

- **DN100:** Series 1 is approximately 114 mm OD; Series 2/AC is approximately 122 mm OD.
- **DN150:** Series 1 is approximately 160 mm OD; Series 2/AC is approximately 177 mm OD.
- **DN200:** Series 1 is approximately 225 mm OD; Series 2/AC is approximately 232 mm OD.
- **DN250:** Series 1 is approximately 280 mm OD; Series 2/AC is approximately 286 mm OD.
- **MDPE:** the nominal size is essentially the nominal outside diameter (e.g. DN125 MDPE is approximately 125 mm OD).

Nominal DN	Series 1 Min. Mean OD (mm)	Series 1 Max. Mean OD (mm)	Series 2/AC Min. Mean OD (mm)	Series 2 PVC Max. Mean OD (mm)	MDPE Min. Mean OD (mm)	MDPE Max. Mean OD (mm)
40	48.1	48.4	-	-	-	-
50	60.2	60.5	70.0	See note	-	-
63	-	-	-	-	63	63.6
65	75.2	75.5	-	-	-	-
80	88.7	89.1	96.0	See note	-	-
100	114.1	114.5	121.7	122.1	-	-
125	-	-	-	-	125	126.2
150	160.0	160.5	177.1	177.6	-	-
175	200.0	200.5	-	-	-	-
180	-	-	-	-	180.0	181.7
200	225.0	225.6	231.9	232.6	-	-
225	250.0	250.7	258.9	259.6	-	-
250	280.0	280.8	285.8	286.6	-	-
300	315.0	315.9	344.9	345.8	-	-
375	400.0	401.0	425.7	426.7	-	-

4. Pre-Installation Inspection

4.1 Confirm Correct Product

- Confirm the model prefix matches the pipe family: TBA = Series 2, TBP = Series 1, TBPE = MDPE.
- Confirm nominal DN, outlet BSP size and pressure rating are correct for the installation.
- Confirm the actual measured pipe OD is consistent with the tapping-band OD family.
- Do not use a Series 1 band on Series 2/AC pipe, or a Series 2/AC band on Series 1 pipe.
- Do not use a standard band to compensate for an oversized, undersized or heavily oval legacy pipe.

4.2 Inspect the Pipe

Select a sound section of pipe. The sealing area shall be clean, smooth and capable of supporting a pressure seal. Remove dirt, loose scale, deposits and other contamination. Do not locate the gasket over deep scoring, severe pitting, cracks, delamination, excessive corrosion, damaged coatings, pronounced ovality or other defects that can prevent uniform sealing.

AC / LEGACY PIPE: Old asbestos-cement and other legacy pipe must be treated as a measured-OD application. If the actual OD or condition is outside the normal band capability, use an approved maintenance/wide-tolerance solution rather than increasing bolt torque.

4.3 Inspect the Tapping Band

Check the bronze body, gasket, bolts, nuts and retainers for damage. Confirm the NBR sealing element is clean and correctly located. Use the supplied stainless-steel fasteners. Do not remove or alter factory anti-seize treatment, and do not substitute fasteners without manufacturer approval.

5. Installation Procedure

1. **Clean and measure the pipe** - Clean the proposed tapping location and measure actual OD. Confirm the correct pipe family and band before assembly.
2. **Position the lower half** - Place the lower body beneath the pipe with bolts/retainers correctly located. Keep the body square to the pipe.
3. **Check the gasket** - Ensure the O-ring/lip seal is fully seated, clean and correctly orientated. It must not be twisted, folded, pinched or displaced.
4. **Fit the upper half** - Place the upper body over the pipe and engage both nuts by hand only.
5. **Align the outlet** - Rotate/position the assembly so the threaded outlet is at the required tapping location and orientation.

6. **Equalise body gaps** - Finger-tighten the nuts so the upper and lower body halves sit evenly around the pipe. Maintain approximately equal gaps at both sides.
7. **Progressively tighten** - Alternately tighten each nut in small increments. Do not fully tighten one side while the opposite side remains loose.
8. **Final torque** - Tighten evenly to no more than 20 Nm using a calibrated torque wrench. Do not use an impact wrench for final torque verification.
9. **Inspect closure** - Confirm the band is square, the gasket has not extruded, and the pipe has not visibly distorted. A gap may remain between the top and bottom halves of the tapping band after tightening; this is normal and the two halves do not need to fully close together. Existing or older pipes may be slightly oval or out-of-round, resulting in uneven or visible closure gaps. Provided the fasteners are correctly tightened, the band is secure and cannot rotate or move on the pipe, a remaining closure gap is acceptable.
10. **Stability check** - The correctly selected and tightened band must not be loose, freely rotate or slide on the pipe. If it does, stop and investigate sizing/OD/gasket fit.
11. **Tap the main** - Use the correct drilling/tapping equipment and applicable water-authority procedure. Keep the cutter aligned with the outlet and do not side-load the band.
12. **Pressure/leak check** - After tapping and connection, inspect the band and outlet for leakage at the applicable operating/test pressure.

TORQUE: Max. 20 Nm is the installation torque adopted in this manual. Do not increase torque to compensate for an incorrect band, poor pipe condition or dimensional mismatch.

6. Installation Acceptance Criteria

- Correct pipe family and OD verified before installation.
- Correct band model/size and outlet selected.
- Pipe sealing surface clean and free of defects that compromise sealing.
- Gasket correctly seated and not pinched/extruded.
- Upper and lower bodies close evenly; no severe one-sided gap.
- Fasteners tightened progressively and evenly to 20 Nm.
- No visible pipe crushing, distortion or local damage.
- Band remains stable and does not freely rotate or slide.
- Outlet is correctly aligned for tapping.
- Completed assembly is leak-free under the applicable pressure test/operating condition.

7. Prohibited Installation Practices

- Selecting the band by nominal DN without checking pipe family / OD.
- Using a Series 1 band on Series 2/AC pipe or vice versa.
- Installing over deep scoring, severe pitting, cracks or heavily damaged pipe.
- Using excessive torque to stop a band from sliding or rotating.
- Fully tightening one bolt before the opposite bolt.
- Allowing the gasket to twist, roll, pinch or extrude.
- Using impact tools as the final torque-control method.
- Replacing supplied stainless fasteners or altering lubrication / anti-seize without approval.
- Direct installation on ductile/cast iron without appropriate corrosion isolation where required.
- Installing a standard band on an out-of-range legacy / AC OD without technical confirmation.

8. Troubleshooting

Observed condition	Likely cause	Required action
Band rotates/slides at 20 Nm	Wrong pipe series; pipe OD too small; band ID/gasket stack-up unsuitable; uneven tightening	Stop. Re-measure pipe OD, confirm band family and inspect gasket. Do not simply increase torque.
Band will not close evenly	Wrong pipe OD/series; pipe oversized/oval; gasket displaced; debris under band	Loosen/remove band, inspect, measure and correct product selection.
Gasket extrudes	Incorrect gasket seating/orientation; uneven tightening; excessive mismatch/torque	Remove and inspect gasket. Replace if damaged. Reinstall correctly.
Leak at band/pipe interface	Damaged/dirty pipe; gasket damage; incorrect OD; uneven compression	Depressurise safely, remove, inspect sealing surface and gasket, then correct root cause.
Pipe visibly deforms	Over-tightening; incorrect band geometry/size; thin/flexible pipe	Stop and depressurise as required. Do not continue tapping until suitability is confirmed.
Stainless nut galls/seizes	Anti-seize absent/damaged; contaminated threads; uncontrolled fastener substitution	Do not force. Replace approved fastener set and preserve specified anti-seize condition.

9. Technical Basis and Reference Guidance

- **AS 4793:2020**
Mechanical tapping bands for waterworks purposes.
- **AS/NZS 1477**
PVC pipes and fittings for pressure applications - Series 1 and Series 2 pipe dimensional limits.
- **AS/NZS 4130**
Polyethylene pipes for pressure applications - PE outside - diameter dimensional limits.

10. Installer Quick Checklist

CHECK	REQUIREMENT
☐	Pipe material/series identified
☐	Actual pipe OD measured
☐	Band prefix matches pipe family (TBA / TBP / TBPE)
☐	Band DN and outlet size correct
☐	Pipe sealing surface clean and sound
☐	Gasket clean, seated and correctly orientated
☐	Band assembled with even gaps
☐	Nuts tightened progressively and evenly
☐	Final torque verified at 20 Nm
☐	No pipe distortion / gasket extrusion
☐	Band stable - no free rotation or sliding
☐	Leak/pressure check completed

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Disclaimer: While every effort has been made to ensure that the information in this document is correct and accurate, users of Hynds product or information within this document must make their own assessment of suitability for their particular application. Product dimensions are nominal only, and should be verified if critical to a particular installation. No warranty is either expressed, implied, or statutory made by Hynds unless expressly stated in any sale and purchase agreement entered into between Hynds and the user.