

K : STAINLESS STEEL PIPE AND WATER METER STANDS

1.0 GENERAL

This section of this specification covers necessary information on the dimensions and various material requirements for Stainless Steel Water Meter (15mm) Positions connected to public mains.

Specifications and material requirements for commonly used plumbing materials are also covered in this section.

They are made up of the following components:

- Stainless steel pipes
- All outgoing pipes are 20mm I.D.
- For one-meter position, the incoming pipe is 20mm I.D.
- For two-meter position, the incoming pipes are 25mm I.D.
- For three to five meter stands, the incoming pipes are 50mm I.D.
- Brass lockable valves;
- Brass gate valve or ball valve (full bore) for two to five meter positions (optional, depending on the respective State Water Authority),
- Brass or stainless steel fittings (e.g. nipple, coupling, elbow, jam nut, tee etc);
- Sub-main, communication pipes and associated fittings;
- Saddle anti ferrule for tapping from public main;
- For single meter position, concrete slab (600mm x 600mm x 50mm thick)

Other jointing combinations for single and multi meter stands are as shown in Drawing (Please refer to Standard Drawing).

Typical details of standpipe taps and kitchen sink tap are shown in Standard Drawing

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2.0 MATERIAL

2.1 Pipework for Stainless Steel Meter Position

Pipework for stainless steel meter stands shall be to the dimensions shown or as specified and shall be complete with all elbows, tees, couplings., sockets, plugs, reducers, brackets, supports and everything else necessary to complete the installation.

All stainless steel pipes used, shall be grade TP 304/TP316 conforming to ASTM A312 Welded Stainless Steel pipes (Schedule 40S).

All fittings shall be stainless steel pipe fittings conforming to ASTM A351 GR CF 8/CF 8M or brass threaded fittings conforming to BS 143 & 1256 respectively. Brass threaded fittings made to EN 1254-2 can also be used.

Brass gate valve (full bore) shall confirm to BS 5154. Brass ball valve (full bore) shall conform to BS 6675:1986 or BS 1552 .1995.

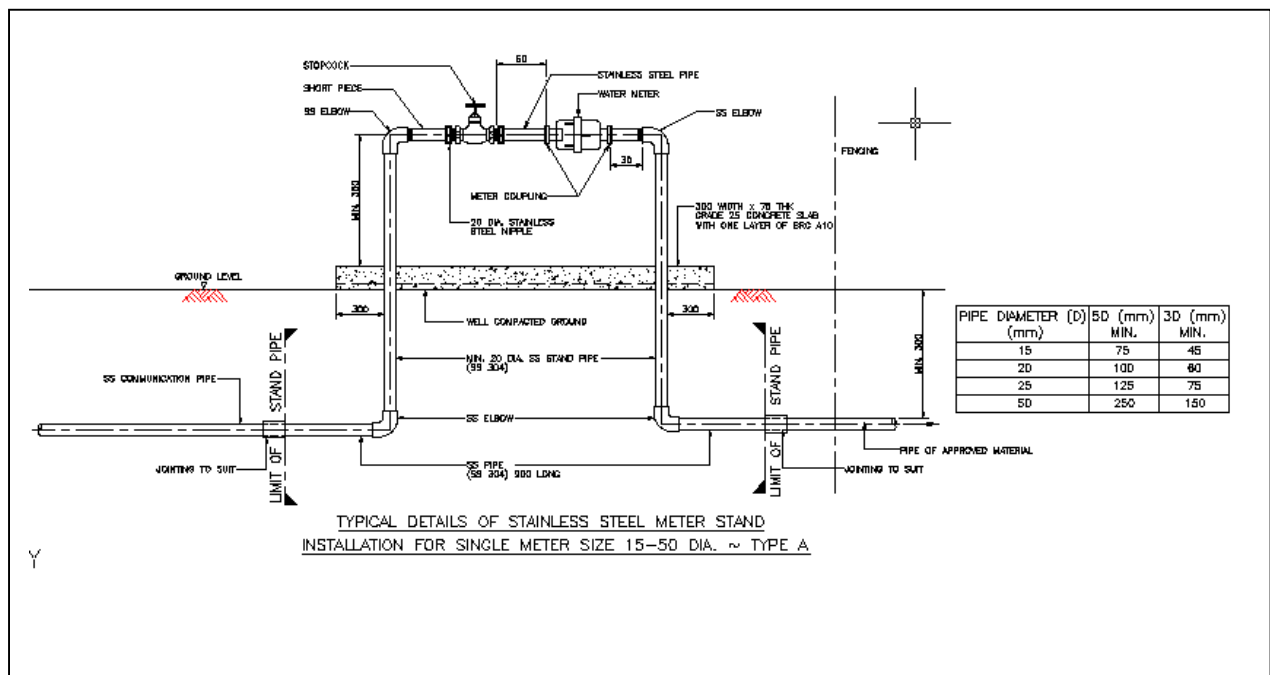


Figure 1: Standard Meter Stand for Pipe Size 15mm to 50mm

All polyethylene (PE) pipes and fittings used as communication pipes, unless otherwise stated or shown in the drawing, shall have a minimum wall thickness and pressure rating of PN 12.5 at 20°C (equivalent to 10 Bar derated working pressure at 30°C) and manufactured to MS 1058 or EN 12201. All PE pipes used shall be marked with SIRIM certification numbers. If PE pipes and fittings were to be used for drain crossing or in the exposed situation, metal sleeves made of stainless steel or galvanised iron (G.I.) pipes to protect the PE pipes shall be provided.

(Note : G.I. pipes and fittings are not allowed to be used in contact with potable water supply.)

2.2 Pipework for Plumbing

Pipework for water supply plumbing shall be to the dimensions shown or as specified and shall be complete with all bends, tees, sockets, plugs, reducers, brackets, supports and everything else necessary to complete the installation. Typical details of standpipe taps and kitchen sink tap shown in Drawing MPE shall cover ABS pipes and fittings and all other types of pipes mentioned below for internal plumbing. Only ASTM A312 Schedule 40S stainless steel pipes and ASTM A.351 stainless steel pipe fittings or BS 143 & 1256 brass threaded fittings for external pipework are allowed.

Where polyethylene PE pipe is stated or shown, the PE pipes and fittings used in cold water supply pipe work in distribution pipes above ground, below ground or concealed, unless otherwise stated or shown in the drawing, shall have a minimum wall thickness and pressure rating of PN 12.5 at 20°C (equivalent to 10 Bar de-rated working pressure at 30°C) and manufactured to MS 1058 or EN 12201). All PE pipes used shall be marked with SIRIM certification numbers. All metal fittings moulded integrally shall be de-zincified brass with BSP threads to CZ132 or BS 2872 or BS 2874 and Nickel & Chromium plated to BS 1224: 1970, service condition No. 2, classification number Cu/Ni 10b Cr r.

Where Acrylonitrile Butadiene Styrene (AF3S) pipe (for cold water applications only) is stated or shown, ABS pipes and fittings used in the water supply pipework in distribution pipes above ground, below ground or concealed, unless otherwise stated or shown in the drawing, shall have a minimum wall thickness and pressure rating of class 12 to MS 1419.

Where polybutylene (PB) pipe (for cold and hot water applications) is stated or shown, PB pipes and fittings used in the water supply pipework in distribution pipes above ground, below ground or concealed, unless otherwise stated or shown in the drawing, shall have a minimum wall thickness and pressure rating of PN 12.5 at 21°C (equivalent to 10 Bar de-rated working pressure at 30°C) and manufactured to EN 12321 or AS/NZS 2642. All metal fittings (in contact with water) moulded integrally shall be de-zincified brass with BSP threads to CZ132 or BS 2872 or BS 2874 and Nickel & Chromium plated to BS 1224 : 1970, service condition No. 2, classification number Cu/Ni 10b Cr r.

Where polypropylene Random Co-Polymer (PP-R) Type 3 Pipe and Fitting (for hot and cold water applications) is stated or shown, PP-R type 3 pipes and fittings used in the water supply pipework in distribution pipes above ground, below ground or concealed, unless otherwise stated or shown in the drawing, shall have a minimum wall thickness and pressure rating of PN 16 or SDR 7.4 at 24°C, designed for 10 bar working pressure at 60°C for a minimum operation life of 50 years and manufactured to DIN 8077, DIN

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8078 and DIN 16962 Part 5-8. All metal fittings moulded integrally shall be dezincification resistant brass with BSP threads to CZ 132 of BS 2872 or BS 2874 and Nickel & Chromium plated to BS 1224, service condition no.3 classification number Cu/Ni 10b Cr r. The minimum wall thickness and pressure rating for cold water system, unless otherwise stated or shown in the drawing is PN 10 or SDR 11 according to DIN 8077.

Where stainless steel pipe (suitable for cold and hot water) is stated or shown, all service pipes, pump delivery pipe works, plumbing works at below and above ground level shall be welded austenitic stainless steel pipes (using Schedule 40S pipes for sizes ranging f/2" to 2" Diameter and threaded, and Schedule 10S pipes for 2" to 8" Diameter pipes by way of welding) manufactured according to ASTM A.312/A312M together with stainless steel butt welding fittings manufactured according to ASTM A403/A403M or stainless steel screwed fittings manufactured according to ASTM A351/A351M.

However for pipe work in plumbing above ground level (which include service pipes, pump delivery pipe works), as an option, stainless steel tubes manufactured according to BS 4127 : 1994 specification for light gauge stainless steel tube, primarily for water application, may be used. It shall be made of stainless steel material grade 304 S15 of BS 1449 Part 2 : 1983 Compression fittings and capillary fittings to be used for joining the stainless steel tubes shall be made of copper and shall comply with BS 864.

Where copper pipe is shown, it shall be to B.S. EN 1057:1996. Fittings to be used for joining copper pipe shall be to B.S. 864 :Pt. 2.

Unless shown or stated otherwise, service pipes and distribution pipes except those buried under ground level, shall be concealed or protected with metal sleeve made of stainless steel or G.I. pipes. The contractor shall execute the work in such a manner so as to avoid cutting into finished work in walls, aprons, beams, etc. where practicable as the work proceeds. Pipework to be buried or concealed shall not be covered or plastered before they are examined, tested and approved by the State Water Authority, notwithstanding any approval given by the S.O.

Saddles used for tapping to public main shall conform to one of the following standards;

- JKR Standard Specification for Ferrous Saddles (revised edition 1999) - Spesifikasi JKR 20200-0044-99.
- JKR Standard Specification for Polyamide/polypropylene Alloy (PA/PP) Clamp Saddles to Be Used with uPVC; Ductile Iron, CIOD and AC Pipes (revised edition 1999) - Spesifikasi JKR 20200-0046-99.

Tapping ferrules used shall conform to one of the following standards:

- Malaysian Standard Specification for Brass Ferrules - MS 1396: 1991,

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- MR Standard Specification for Polypropylene (PP) Tapping Ferrules To Be Used with Polyethylene (PE) and uPVC Pipes - Spesifikasi JKR 20200-0055-99.

2.3 **Concreting**

As shown in Drawing, 1:2:4 concrete slab casted with BRC 10 of minimum dimensions 640mm x 600mm x 50mm shall be provided for single or multi meter stands if they are placed in the open ground.

3.0 **DIMENSIONS & THREADING REQUIREMENTS**

The design and pipework layouts of the single and multi meter stands shall comply with the dimensions shown in Diagrams MPA and MPB.

All stainless steel screwed ends and fittings shall be as follow:

- Wall thickness ANSI Class 150 / ANSI B 1634
- Threaded ends BS 21 (BSPT)

All stainless steel pipes and fittings (including brass) shall be threaded to BS21.

4.0 **TESTS AND INSPECTION**

Meter stands to be buried or concealed shall not be covered before they are examined, tested to the required working pressure (e.g. PN 10) and approved by the State Water Authority, notwithstanding any approval given by the S.O. The whole pipe work shall be accepted as satisfactory if there are no sign of leakages. The Contractor shall make good all leakages and replace any defective parts to the approval of the State Water Authority all at his own expense

5.0 **MARKING FOR METER POSITION**

Single and two meter positions do not require any marking. For three or more meter stands, identification markings engraved on to the bronze plates shall be provided and nailed to the floor or the wall adjacent to it.