



# SPECIFICATIONS

## Cold Water Meter Specifications for Main Line Propeller Meters

Irrigation, Clamp-On Saddle Type  
Sizes 4" (DN 100mm) Through 24" (DN 600mm)

### Scope

The meters must conform to American Water Works Standard C-704 as most recently revised, except as modified herein.

### Type Description

The meter shall be propeller type, magnetic drive, and clamp-on saddle design. The basic design shall include the meter head assembly, clamp-on saddle, and associated gaskets and hardware.

The meter head assembly shall be connected to the existing pipe by means of a clamp-on saddle installed on existing pipe. The meter head shall be connected to the clamp-on saddle by means of a flanged connection designed for easy removal from the setting for inspection, repair, or replacement. A gasket-type seal shall be used to seal the meter head to the saddle body. Stainless steel fasteners shall secure the meter head assembly.

The meter head assembly shall include a permanently, hermetically sealed register, bronze gear box, '316' grade one-piece separator spindle with ceramic sleeve bearings, and an axially-mounted propeller which shall rotate and accurately measure the water passing through the meter.

### Performance and Operation

The size of the meter shall be determined by the nominal size of the existing pipe on which the meter shall be installed. The meters shall comply with the following flow and accuracy requirements by nominal size:

Size		Normal Operating Range in G.P.M. (M3/H)	Intermittent Max. Rating	Min. Low Flow @ 95%
4"	(100mm)	125 (28) - 500 (114)	625 (142)	82 (18.6)
6"	(150mm)	220 (50) - 1200 (273)	1500 (341)	160 (36.3)
8"	(200mm)	250 (57) - 1650 (375)	2060 (468)	190 (43.2)
10"	(250mm)	330 (75) - 2500 (568)	3125 (710)	260 (59.0)
12"	(300mm)	350 (80) - 3500 (795)	4375 (994)	275 (62.4)
14"	(350mm)	450 (102) - 4500 (1022)	5625 (1277)	350 (79.5)
16"	(400mm)	550 (125) - 5500 (1249)	6875 (1561)	450 (102.2)
18"	(450mm)	725 (165) - 7250 (1647)	9060 (2058)	550 (124.9)
20"	(500mm)	850 (193) - 9000 (2044)	11250 (2555)	700 (159.0)
24"	(600mm)	1300 (295) - 13000 (2952)	16250 (3690)	1000 (227.1)

The meter shall accurately record 100% (+) or (-) 2% of actual throughput within the normal operating range listed. The meter shall perform properly when extended intermittent flows exceed the normal operating range upper flow limit by as much as 25% as listed in this section.

The entire meter assembly shall be rated to operate properly, without any performance deterioration, at a maximum operating pressure rating of 100 psig (7 bar).

### Registers

The meter shall be equipped with a sealed, direct reading (DR) register with a visible low flow indicator and sweep hand indicator. In lieu of or in addition to the standard, sealed (DR) register, check one or more of the following register / transmitter options:

Electronic Communications Register Assembly (ECR)

High Speed Pick Up Transmitter (HSPU)

Impulse Contactor Register (IC)

Hall Effect Transmitter Module (HET)

Electronic Rate of Flow Indicator Register (E-ROFI)

Access to the register assembly for purpose of inspection, replacement, or testing shall not require any disruption of service.

### Calibration

Accuracy level adjustments shall be completed by use of change gears located directly below the register assembly. Access to the change gears shall be external to the meter line pressure. Modification to the propeller shall not be acceptable for calibration purposes.

### Magnetic Drive

Permanent ceramic magnets, mounted concentrically, shall be utilized to couple the axial rotation of the propeller to the axial drive shaft assembly.

## Right Angle Gearing & Bronze Gear Box

A right angle bevel gear connection shall be used to convert from a horizontal drive to a splined, stainless steel vertical shaft, connecting the propeller drive magnet rotation up through the sealed register magnetic coupling. All gearing shall be housed in a stationary, one-piece bronze gearbox. The gearbox shall be oil filled and factory sealed to provide sustained lubrication. The bronze bevel gears shall be completely separated from the measured water.

## Bearing Materials

The radial bearing surfaces shall be made of ceramic material and shall be designed to provide extended performance life and prolonged accuracy. A one-piece ceramic bearing cartridge shall be positioned on the center hub of the propeller and retained in position by a 'C' clip fastener. A ceramic sleeved separator spindle of '316' grade stainless steel shall provide the mating ceramic surface and proper positioning of the propeller in the water way.

The thrust bearings shall be constructed of hardened tungsten carbide. The thrust bearings shall include a thrust pin located at the end of the separator spindle and a thrust disc located in the inlet portion of the propeller. Access for inspection or replacement of the thrust disc shall be provided through a threaded connection located on the propeller inlet. Reverse flow protection shall be provided by means of a retainer nut and washer affixed to the separator spindle.

## Propeller

The propeller shall be conical shaped, three-bladed, and molded of polypropylene or other superior thermoplastic material. The propeller shall be considered resistant to normal water flow conditions and corrosion factors. The propeller assembly shall be easily removed for inspection or replacement.

## Guarantee and Maintenance

Meters shall be guaranteed against defects in materials and workmanship for a period of one (1) year from date of shipment.

The meter supplier shall also submit a current price schedule of its factory maintenance program offering. The maintenance price schedule shall be printed on a brochure that is nationally advertised and shall include offerings for both complete factory calibrated meter head assemblies and repair parts.

## Intent

These specifications are intended as guidelines for selecting a critical metering device. Ease of installation, operational features, readability, and maintenance are of prime concern. A design that best reflects longevity of operation of all elements and a high degree of sustained accuracy through the entire range of the meter is to be considered mandatory.

## Recommendation

Sensus Metering Systems

Mainline Propeller Meter, Model 305 / 306

### AUTHORIZED SENSUS DISTRIBUTOR



P.O. Box 487 • 450 North Gallatin Avenue  
Uniontown, PA 15401  
1-800-METER-IT • 1-800-638-3748

Fax: Direct to Factory  
Local: 724-439-7729 • Toll Free: 1-800-888-2403  
www.sensus.com (select "North America Water")  
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