

CITY OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL PROTECTION

**List of Approved Water Meters
and Related Equipment**

Maintained under the authority of RCNY §20-05(d)(1)

**Bureau of Customer Services
Technical Services Division
59-17 Junction Blvd. - 1st Floor LR
Flushing, New York 11373-5107**

July 2012

Michael R. Bloomberg, Mayor

Carter Strickland, Commissioner

Please discard any earlier versions of this list that are in your possession.

If you have questions about this list, or wish to submit products for approval, please email or write:

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Revisions in July 2012 Edition

Deletion of list of DCV's and link to Cross Connection Handbook
Deletion of Actaris/Itron meters as Itron has exited the single-jet meter market in the United States
Addition of Neptune TRU/MAG (AC-powered only) and Small Electronic Meters
Deletion of several outdated models or models that are not NSF61 compliant
Update of the following sections: AMR, Meters to Avoid Calibration in Place, Single-Jet and Electromagnetic Meters, Remote Wire Specification

Revisions in April 2010 Edition

Addition of Sensus SR11-BA and Accustream meters and deletion of section on Remote Receptacles
Addition of Note concerning single detector check valves and removal of models

Note concerning RCNY Chapter 20

A new version of RCNY Chapter 20 ("Rules Governing and Restricting the Use and Supply of Water") was promulgated in June 2009. The changes can be downloaded from the DEP website. Forms and Permits > Water and Sewer Forms and then scroll almost to the bottom. Additional changes are being proposed for 2012. http://www.nyc.gov/html/dep/html/forms_and_permits/wsforms.shtml

Note Concerning AMR Development, Remote Receptacles and Neptune Meters

DEP is 97% complete in deploying an Aclara RF fixed network AMR system. Meters installed under permit shall continue to include the installation of a remote receptacle for the present, however, licensed plumbers are reminded that **all three wires must be properly connected at the register head** to allow simple installation of an AMR box. Neptune meters must have an E-Coder register head factory programmed for use with an Aclara standard MTU. For more information on AMR: www.nyc.gov/dep

General Note About Filing Plans for Engineers: Two Submissions Are Required

Backflow prevention devices: Cross Connection Control Unit (3rd Floor, 96-05 Horace Harding Expressway)

Domestic water meter settings: Borough Office of the Bureau of Customer Services as per RS-16 P107.3(c)(9)

Manhattan: 1250 Broadway – 8th Floor

Bronx: 1932 Arthur Avenue – 6th Floor

Brooklyn: 250 Livingston Street – 8th Floor

Queens: 96-05 Horace Harding Expressway, 1st Floor

Staten Island: 60 Bay Street – 6th Floor

Note on "No Lead" Alloys

DEP rules require that all water meter bodies now be composed on an alloy with no more than 0.25% lead. Meter manufacturers may use more than one alloy to accomplish this purpose and the mention of a specific alloy in this document does not preclude a manufacturer from using another equal or superior alternative.

DISPLACEMENT METERS

Elster (Amco) C700 EnviroBrass model (5/8" to 2") and C700 Polymer body	5/8" to 3/4"
Badger Recordall with ADE register EnviroBrass II or Bialloy version	5/8" to 2"
Hersey IIS 400 and 500 Series, EnviroBrass II version with Translator Encoded Register	5/8" to 2"
Neptune T10 E-Coder.....	5/8" to 2"
Sensus SR11-BA and Accustream (BiAlloy).....	5/8" to 2"

Application Notes: Displacement meters are not to be used as the single meter on a combined service or a domestic service with fire sprinkler heads. Single-jet or electronic meters are to be used for such applications. 2" displacement meters are to be used only on domestic services for buildings run on street pressure (no pumps).

SMALL ELECTRONIC METERS

Badger E-Series.....	5/8" to 1"
Sensus iPerl.....	5/8" to 1"

Note: These meters have been approved for private plumber installations but are not approved as qualified for DEP-DCAS meter purchases pending resolution of other qualification issues related to city purchase contracts.

TURBINE METERS - REQUIRES APPROVED OEM STRAINER

Elster (Amco) TS-4000, T-4000, T-3000 Turbine EnviroBrass version	1 1/2" to 8"
Elster (Amco) T-4000 Turbine (Epoxy-Coated Iron Body)	10"-12"
Elster evoQ4 Electronic Meter	1 1/2" to 12"
Badger Recordall II with ADE register (EnviroBrass II or Bialloy)	2" to 12"
Hersey MVR Vertical Turbine (has internal strainer) w/ Translator Encoded Register only (EnviroBrass II)	1" to 6" (Note 2)
Neptune HP Turbine E-Coder only.....	1 1/2" to 10"
Neptune HP Turbine E-Coder only.....	12", 16", 20"
Sensus Omni T2.....	1 1/2" to 6"
Sensus Series W Turbine (Iron Body)	16"

Application Notes: Turbine meters are to be used only for applications with a relatively high demand profile, generally only services which feed house tanks or other high-flow pumped distribution systems. Systems with intermittent operation booster or hydro-pneumatic pumps which operate primarily on street pressure shall use compound, single-jet or electromagnetic meters. Electronic meters are acceptable as an alternative to a turbine meter. This category of meters should be sized based on the flow rate (gpm) of the house pump(s).

COMPOUND/VARIABLE FLOW METERS - REQUIRES APPROVED OEM STRAINER

Elster (Amco) C-4000 (EnviroBrass)	2" to 4"
Elster (Amco) C-3000 (EnviroBrass)	6" and 8"
Badger Recordall with ADE register (EnviroBrass II or Bialloy).....	2" to 6"
Neptune TruFlo Compound w/ E-Coder only	2" to 6"
Neptune 6"x8" Tru/Flo Compound Assembly	8" only
Sensus Omni C2.....	1 1/2" to 6"

Compound meters are not to be used for buildings with house pumps and a roof tank and any other application where flow rate is never below 5 gpm. ***Single-jet and electronic meters are acceptable alternatives to compound meters.***

NOTE 1: Turbine meters 6" to 12" must have a registration that measures in 100 cubic foot units.

NOTE 2: The Hersey MVR vertical turbine has an internal strainer and does not require an external strainer.

SINGLE-JET AND ELECTROMAGNETIC METERS

Elster (Amco) Aquamaster Electromagnetic (AC-powered)	10" +
Elster (Amco) evoQ4 Electronic (Electromagnetic).....	1½" – 12"
Elster (Amco) S2000 Single-Jet with Invision encoder register.....	1½" – 6"
Metron-Farnier Spectrum (Hawkeye Encoded register or Innov8 Register only).....	5/8" to 6"
Neptune TRU/MAG Electromagnetic (<u>AC-powered only, turbine type applications only, E-Coder register</u>).....	4" to 10"

Application Notes: A strainer is not required for single-jet or electromagnetic meters unless it is required by the manufacturer or desired by the owner. The meter setting layout shall be the same as a compound or turbine meter, except that Metron-Farnier single-jets do not require minimum straight pipe lengths before and after the meter. Single-jet meters must be installed in a horizontal plane. Aquamaster and TRU/MAG meters **must** be provided with a source of electric power by the property owner and wired to power as part of the installation. Single-jet and Elster electromagnetic meters are both acceptable alternatives to compound meters and all electromagnetic meters are also an acceptable alternative to turbine meters. The terms “Electronic and Electromagnetic” are synonymous.

METERS TO USE TO AVOID “CALIBRATION IN PLACE”

Turbine and compound meters with a strainer generally require straight pipe equal to five pipe diameters upstream of the meter and three pipe diameters downstream. Installations up through 6” that do not meet this requirement shall make use of the following technologies which do not require the same minimum straight pipe lengths before and after the meter:

If the application is constant flow (traditionally a turbine meter):

- Hersey Vertical Turbine MVR 1” – 6” (No straight pipe required)
- Elster evoQ4 1½” – 12” (No straight pipe required)
- Sensus Omni T2 1½” – 6” (Only 2.5 pipe diameters required)

If the application is variable flow (traditionally usually uses a compound meter):

- Single-jet meter (Metron-Farnier) up to 6” (no straight pipe required)
- Elster evoQ4 2” – 10” (No straight pipe required)
- Sensus Omni C2 1½” – 6” (Only 2.5 pipe diameters required)

FIRE SERVICE METERS - REQUIRES FM/UL APPROVED STRAINER

Elster evoQ4 (Fire Service Model)	3”to 12”
Elster Aquamaster (FM Model).....	10”+
Elster F4000.....	4” to 12”
Badger FSM w/ ADE register	3” to 10”
Badger FSA w/ ADE register.....	4” to 12”
Neptune HP Fire Service Turbine with E-Coder register	3" to 10"
Neptune Trident Protectus III with E-Coder register.....	4" to 10"
Sensus Omni F2.....	4” and 6”
Sensus Fireline Assemblies	4" to 10"
Metron-Farnier Enduro (turbine-type applications)	6” and 8”

Application Notes: Fire Service Meters are to be installed only on services 3” and larger that provide both domestic and fire service. Dedicated fire services should have a detector backflow device as approved by Cross Connections Control. Turbine FSM’s are to be used only for applications with a relatively high demand profile, generally only services which feed house tanks or other pumped distribution systems. Compound versions are

to be used in applications without house pumps. The Aquamaster Fire Service Model and evoQ4 do not require a strainer. Aquamaster meters **must** be provided with a source of electric power by the property owner. The evoQ4 and Aquamaster can substitute for turbine-type and compound-type FSM's.

DETECTOR ASSEMBLIES

An approved displacement meter with an encoding register and remote receptacle is required on the bypass and shall be 3/4" in size. Lists of approved backflow equipment can be found in the "Revised New York City DEP Supplement to the New York State Department of Health (DOH) Handbook for Cross Connection Control"

http://www.nyc.gov/html/dep/html/forms_and_permits/backflow.shtml

METERS APPROVED FOR COMBINED FIRE/DOMESTIC SERVICES

Where the term "combined service" is used here it describes any water service that supplies both domestic needs and any number of fire protection sprinklers.

For 1" and 1½" combined services:

- Alternate 1: Electronic meter
- Alternate 2: Single-jet meter as long as installation is completely horizontal

For 2" combined services not flowing to house pumps or fire service pumps:

- Alternate 1: Electronic meter
- Alternate 2: Single-jet as long as the meter installation is completely horizontal
- Alternate 3: Displacement meter on domestic branch and detector check valve assembly on the fire branch.

Note: 2½" combined services shall use upsized equipment and shall adhere to the requirements for 3" combined services.

For 2" and larger combined services to pumps/house tank or fire service pumps:

- Alternate 1: Fire Service Turbine meter (3" and larger)
- Alternate 2: Electronic meter (2" or larger)

For 3" and larger combined services not flowing to house pumps:

Alternate 1: Fire service compound, FM-rated electronic or electromagnetic meter for the combined service:

Alternate 2: Double detector check valve assembly on the fire service branch and a domestic-type meter (positive displacement, electromagnetic, single-jet or compound) on the domestic branch.

METERS APPROVED FOR EVAPORATIVE COOLING TOWERS

Displacement, single-jet, electronic or turbine meters. Make-up water meters for evaporative cooling towers that are used for the calculation of a wastewater allowance are the property and responsibility of the property owner or their agent. Make-up water meters for cooling towers which are used for direct billing by DEP are the property and responsibility of DEP. In either case, the remote receptacle must be placed on an exterior building wall for placement of an AMR MTU.

METER STRAINERS

Only flat-plate strainers from the meter manufacturers are approved, except for products noted above which have internal strainers, or FM/UL strainers for fire service meters.

HOT WATER METERS

Hersey Vertical Turbine (hot water version), reading in cubic feet and equipped with Translator Encoded register and remote receptacle	3/4" to 2"
Master Meter Hot Water Multi-jet (with Dialog remote and check valve)	3/4" to 2"
Metron-Farnier Spectrum w/Hawkeye Register	3/4" to 1"

Application notes: Hot water meters shall be approved for billing purposes **only** under the following conditions:

1. Large consumers (over 200 gpd) of hot water from a central boiler plant (e.g., laundries or food establishments) which are located in residential buildings which are billed on an unmetered or flat rate schedule.
2. Large consumers of hot water from a central boiler plant (e.g., laundries or food establishments) which are located in residential buildings which are subject to metered billing but which have been approved by DEP for continued separate billing for the commercial tenant.

In most cases, commercial tenants consuming domestic hot water should be encouraged or required to install their own separate domestic hot water heater. If a hot water meter is used for DEP billing purposes, DEP has maintenance responsibility. All hot water meters not used for DEP billing purposes or used to qualify for the Multifamily Conservation Program are the property and responsibility of the owner.

METER ATTACHMENTS

The New York City Department of Environmental Protection ("DEP") has reviewed and approved for use several devices which transmit meter information to a point other than, and in addition to, our remote meter-reading receptacle. Where the installation of these products requires the meter seal to be broken, a "break seal" permit must be obtained from a DEP BCS Borough Office and a DEP inspector must be present for the installation of the attachment.

Approved Meter Attachments:

FlowSearch, Neptune

Meter Master Model 100, Model 20, Model 80 F.S. Brainard & Company (all models that do not replace the register head)

Tricon/E, Neptune

Reactel Teleprobe with switch to allow parallel operation with an AMR MTU

METERS WITH DUAL DATA OUTPUT

Engineers and plumbers have inquired about meters that can be read by DEP but also provide a pulse or 4-20 ma output to a facilities or energy monitoring system. DEP has published a Technical Note on this subject that can be found at:

http://www.nyc.gov/html/dep/html/water_and_sewer_bills/propmgmt.shtml

At the present time Sensus Omni series meters and Metron-Farnier single-jet meters are available with a dual output option.

AUTOMATIC METER READING

DEP began installing radio-based Aclara Systems transmitters on water meters in March 2009 and was substantially complete with installations by early 2012. Reactel's existing inbound telephone-based AMR system has been phased out for billing purposes but customers can continue using Reactel's equipment as a "meter attachment" as long as Reactel installs a switch that allows parallel operation of their system and DEP's. For the present, only DEP inspection staff or Contractors will install the Aclara RF Meter Transmitter Units ("MTU's"). Licensed plumbers installing or replacing meters shall install meters with all three wires connected at the register head and a remote receptacle mounted in an appropriate location. DEP will replace the remote receptacle with an MTU during inspection of the installation. The wire from the meter register to any remote unit shall be 22 gauge, three conductor wire, red-black-green.

Up-to-date information on the AMR program can be found at DEP's website, www.nyc.gov/dep.

WATER METER INSTALLATION REQUIREMENTS

The installation of water meters shall comply with RCNY Title 15, Chapter 20, "Rules and Regulations Governing and Restricting the Use and Supply of Water." Changes were implemented in June 2009 which can be downloaded from the DEP website. http://www.nyc.gov/html/dep/html/forms_and_permits/wsforms.shtml

INDOOR METER SETTERS/RESETTERS AND MECHANICAL FITTINGS

AY McDonald - all models to NYC specifications, EnviroBrass Models

Ford - all models with "NYC" model prefix, EnviroBrass Models

Meter Rite - ¾" and 1" Flexi-Setter with Ford parts

Mueller - all models to NYC specifications, B2711R-99000, 82486-99000

Viega ProPress ¾" – 4" with materials and installation procedures according to manufacturer's directions (Also applicable to outdoor pit installations) – Valves are NSF61 compliant

Elkhart Xpress ¾" – 4" with materials and installation procedures according to manufacturer's directions (Also applicable to outdoor pit installations)

Application Note: Valves on setters must have handles with at least a 3" grip.

¾" and 1" METER SETTERS FOR (OUTDOOR PIT) METER ENCLOSURES

A.Y. McDonald Model #32 Series, EnviroBrass version

Ford Model CS-95374-01 and -02, #70 Series, EnviroBrass version

Mueller Adjustable Meter Setter Model # 318H170200

All inlet and outlet valves must be complete with handles.

1½" METER SETTERS FOR (OUTDOOR PIT) METER ENCLOSURES

A.Y. McDonald 20-642RNFF 660x998x400

WATER METER ENCLOSURE (PIT) AND RING (COLLAR) FOR 3/4" - 2" METERS

Pit Enclosures and Rings Carson/Pollard as Standard				
Pit Enclosure "Barrel"	Pit Collar "Frame"	Pit Lid	Standard Products	Meter Sizes/Types
24' x 48"	C53	12½"	Straight Barrel Carson 00242005 #2EXTRING Extension Ring	¾" - 1" displacement
24" x 48"	C53	12½"	Bullet Enclosure Carson 00202004	1" displacement
36" x 48"	#36 Monitor Cover	21"	Straight Barrel Carson 00362004	1½" and 2" single- jet, displacement

Ford Meter Box, Inc. (¾" and 1" only)

General Foundries, Inc.

Ring Model # FNA-3H

Ring Model # 11220-AR For 1½", Item 5MC30

Note: GMI Composites, Inc. lids made of a non-metallic material will be available through DEP's Meter Testing Facility beginning in November 2009 in 12½", 14½" and 21" sizes individually at DEP's cost. If a project requires a lid or sidewalk door of a larger size order an H-20 highway load rated composite lid from GMI, Nicor, Carson Industries, Armorcast or approved equal with mounting screws or bracket underneath for Aclara Star MTU. Submitted lids, doors, etc. must meet loading requirements and either certified by Aclara or have been used in Aclara AMI systems. DEP can provide a sample design drawing.

Ford Plastic Pitsetters, ¾" - 2". This product can be used in front yards and on sidewalks, but not at curb sides or driveways since it is not structurally qualified for significant traffic loads. If this product is used the manufacturer's detail drawings shall be used in lieu of Figures 11-15 except that a base layer of stone is still required. A "centering" or "anti-sway" bar is not required since this product holds the meter in position. Ford Meter Box, Model A3H-T-NYC

"NO LEAD" (NSF61-COMPLIANT) SERVICE PIPES, FITTINGS AND VALVES

All service fittings by A.Y. McDonald are NSF61-compliant.
NIBCO brass ball and gate valves (almost all, see <http://www.nibco.com/cms.do?id=2&pId=114> for specifics)
Viega valves are NSF61 compliant.

METER MANUFACTURER WEBSITES AND OTHER USEFUL ONLINE RESOURCES

Most of the water meter manufacturers have websites that offer downloadable specifications, parts lists and installation instructions.

Meter Manufacturers

Elster-Amco

<http://www.elsteramcowater.com/en/>

Badger

<http://www.badgermeter.com/>

Hersey Meters

<http://www.herseymeters.com/>

Metron-Farnier

<http://www.metronfarnier.com/>

Neptune Technology Group

<http://www.neptunetg.com/>

Sensus Metering Systems

<http://www.sensus.com/index.xml>

Related Businesses

Ames Fire and Water (Backflow Devices)

<http://www.amesfirewater.com/>

A.Y. McDonald (Setters and Valves)

<http://www.aymcdonald.com/>

Armorcast (Composite Plastic Pit Lids and Covers)

http://www.armorcastprod.com/products_amrcovers.htm

Carson Industries (Composite Plastic Pit Lids and Covers)

<http://www.carsonind.com/utilwater.asp>

CLA-VAL (Backflow Prevention Devices)

<http://www.cla-val.com/>

Febco (Backflow Prevention Devices)

<http://www.febcoonline.com/>

Ford Meter Box

<http://www.fordmeterbox.com/>

F.S. Brainard Company (Data Collection)

<http://www.meter-master.com/>

GMI (Composite Plastic Pit Lids and Covers)

<http://www.gmi-covers.com/?page=home>

Nicor, Inc. (Composite Pit Lids and Covers)

<http://www.nicorinc.net/>

Watts Regulator

<http://www.watts.com/>

Wilkins (Backflow Prevention Devices)

<http://www.zurn.com/operations/wilkins/pages/home.asp>

DEP Resources

List of Approved Meters

Water Meter Permit Application Form

(scroll to bottom of page)

Guide to Water Submeters – Technical Note

Guide to Water Meter reading with Building Computer Systems – Technical Note

http://www.nyc.gov/html/dep/html/water_and_sewer_bills/propmgmt.shtml

RCNY Chapter 20: Water Use Rules

RCNY Chapter 23: Private Sewer Rules

Sewer Design Standards

Backflow prevention manuals

Other water connection and sewer documents

http://www.nyc.gov/html/dep/html/forms_and_permits/wsforms.shtml

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