

I. GENERAL REQUIREMENTS FOR A WATER METER INSTALLATION

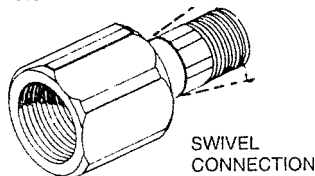
A. Important considerations to obtain a professional meter installation.

1. A service line, valves, connections and meter must be watertight.
2. Provide an upstream shut-off valve of high quality and with low pressure drop.
3. The meter must be installed horizontally in the line with the registration upright, to obtain optimum performance.
4. The meter is easily accessible for service and inspection.
5. The meter is easily read at the installation.
6. The meter and service should be protected against frost, flooding, damage and tampering.
7. The service and meter installation shall not be an obstacle or hazard to the customer or interfere with public safety.

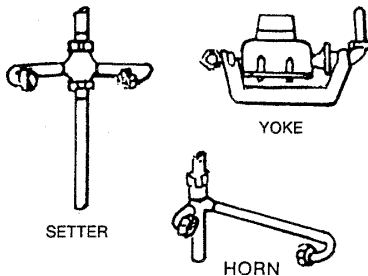
B. The meter should be transported, installed, and protected with care.

C. Special fittings and accessories are available to provide easier meter installation.

1. Plastic swivel connections for a meter are available from Badger to compensate for minor service pipe and setting misalignment for a 5/8", 3/4", and 1" meter.



2. Metal meter setters, resetters, horns and meter yokes are available for holding the service pipe in proper alignment to the meter and laying length spacing. The metal setters and meter yokes can provide an electric continuity to protect meters and consumers from dangerous electrical shock.



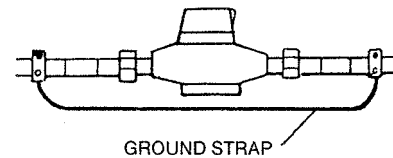
3. Cast iron or bronze companion flanges are available for a 1 1/2" and 2" meter.

D. A meter may be installed indoors or outdoors. Where meters are installed outdoors, they are usually located in a meter box. When installed, the meter box should have a two to three inch clearance around the meter to avoid damage or strain to the service piping, meter, or the meter box should the box settle after installation.

The service pipe entering and exiting the meter box should be properly bedded to insure that it is not axially misaligned and lays evenly on the bottom of the pipe trench. The placement of the backfill material to cover the service pipe should be done carefully to insure that pipe alignment is maintained and the service pipe will not be damaged by eventual ground shifts.

E. Indoor meter settings may be located in basements, crawl spaces, utility rooms, or in a garage.

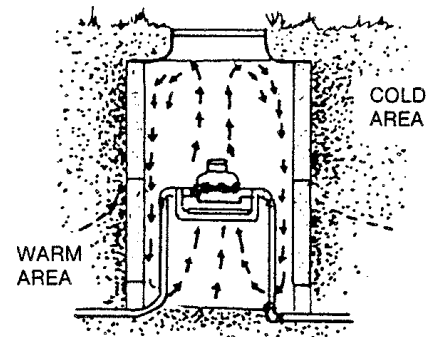
Indoor settings must be checked for electrical continuity through the service pipe (provided the pipe is metallic) before a meter is removed for service or replaced as a precautionary measure. The AWWA policy states service pipes are not to be used as an electrical ground. Check your local codes and practices for your community. A permanent ground strap or metal setter which provides electrical continuity must be used if electrical grounding to water services is used in your community.



Water dripping on the floor is undesirable. The meter installation should include a valve just downstream from the meter to prevent damage to the floor during meter servicing or removal from the line.

F. Services, especially a water meter, should be protected from freezing. The amount of earth covering a service line must be adequate to protect against frost penetration. Because of the relatively small volume of water in a service line, the pipes will freeze more rapidly than the main distribution line.

Generally, where an outside meter setting is used, the meter box pit should be excavated below the frost line. Even though the meter itself is not installed below the frost line, the heat rising from the warmer earth excavation below the frost line will reduce the possibility of freezing.



With proper precautionary measures, the number of frozen services and meters can be held to a minimum.

For those locations in which a remote possibility of freezing exists, Badger's thermoplastic or bronze Recordall meters with cast iron bottoms are recommended.

Recordall® is a registered trademark of Badger Meter, Inc.

II. INSTRUCTIONS FOR SETTING A BADGER RECORDALL DISC METER IN A NEW INSTALLATION

A. When cutting into a new section of service pipe, the service pipe must be flushed to remove all chips, pipe dope, or any other residue resulting from the plumbing at the line and meter setting.

B. Before the existing service line is cut, a suitable electrical grounding line must be attached to the service line, spanning the section of the service which is to be removed for the installation of the meter. When the line is cut, the grounding wire will provide an alternate path for any electrical potential that may exist across the opening in the line. NOTE: The curb (shut-off) valve must be closed during the cutting operation relieving water pressure in the service line.

C. Install correctly sized inlet and outlet meter valves, meter couplings, meter setters in conformance with local plumbing codes and recommended practices.

The meter must be set in a horizontal position, protected from freezing, damage and tampering. **NOTE:** Make sure the line opening in which the meter is to be set matches the laying length of the meter allowing slight additional space for coupling gaskets. Make sure that the inlet and outlet sides of the meter setting are axially aligned to the pipe.

CAUTION: Do not attempt to use any meter as a lever or crowbar to straighten a misaligned meter setting...this will damage the meter.

DO NOT attempt to set a meter into a meter opening which is too long and attempt to force the piping into place with the coupling nuts on the meter setting. This will cause serious damage to the threaded ends of the meter and housing.

To avoid additional problems, correct any irregularities in pipe spacing and misalignment before placing the meter into its setting.

D. Install the new meter by placing new connection gaskets inside the connection coupling nuts. Set the meter between the coupling nuts with the direction of flow through the system.

Engage the coupling nuts to the threaded meter ends. Check to insure that the nuts are properly aligned to avoid cross threading (stripping) damage to the threaded meter ends.

An effective method for properly starting meter coupling nuts is to position the nuts squarely against the meter spud end. Turn the nut counterclockwise (in reverse) while holding the nut against the meter spud end. When the first threads on both the coupling nut and the meter spud end coincide, a slight click will be heard and the movement of the nut into the starting position will be felt. At this point, turn the nut clockwise to complete the connection. In a good installation, this can be accomplished by turning the nut by hand until it is tight. When hand-tight, apply a partial turn using an open-end wrench. **DO NOT** overtighten. For plastic swivel connects, only 1/4 turn beyond hand-tight should be applied. Pipe dope or sealants are not required.

E. Provide protection for leakage in case water may leak or spill as the service pressure is carefully turned on.

F. Shut off valves on the inlet and outlet side of the meter.

G. Open the curb (shut-off) valve slowly to pressurize the service line to the meter setting. Next, slowly open the inlet side valve which will fill the meter with water. Check for leaks around the meter and connections. Open the meter outlet side valve slowly to pressurize the consumer side of the system. Open a consumer faucet to allow entrapped air to escape. Turn off the faucet when normal water flow occurs.

III. INSTRUCTIONS FOR REPLACING AN EXISTING METER WITH A BADGER RECORDALL DISC METER

A. Before proceeding, check the piping around the existing meter setting for suitable condition. Repair the piping system if pipes are corroded or damaged.

B. Carefully check that a suitable electrical grounding wire is properly attached to the upstream and downstream pipe connections of the meter. DO NOT remove the meter without an alternate ground path permanently in place.

C. Close the inlet side valve to the meter and then depressurize the system by opening a faucet to relieve water pressure until water flows stops. Do not remove the meter if flow continues. Check valves and make necessary repairs to the curb (shut-off) valve or inlet side valve as required. When water flow stops, isolate the meter by closing the outlet side valve of meter setting. Provide necessary protection for the floor below the meter setting for water spills or leaks during removal of the existing meter, installation of a new meter, and opening line pressure upon completion of the setting. Protect the coupling area from external debris, so that the new meter will not be damaged or contaminated.

D. Loosen meter couplings, remove the meter and the old gaskets in the coupling nuts. Clean coupling nuts, remove any pipe dope or dirt from the threads.

E. Check existing setting for alignment and spacing. Correct any misalignment and spacing in the setting.

F. Place new connection gaskets inside the coupling nuts. Place the meter between the coupling nuts in the proper direction of flow with the inlet and outlet of the meter corresponding to the direction of flow in the service line.

Engage the coupling nuts with the threaded meter ends.

Check to insure that the coupling nuts are properly aligned to prevent cross-threading (stripping) damage to the threaded meter ends.

An effective method for properly starting the meter coupling nuts to the meter ends is covered in Section II, item D, under instructions for a new meter installation.

Turn the coupling nuts until they are hand-tight. Next, apply a partial turn using an open-end wrench. **DO NOT** overtighten. Pipe dope or sealants are not required or recommended.

IMPORTANT: Badger Meter recommends you replace the entire connection set at the time of meter replacement or if conditions require earlier replacement.

G. Open the inlet shut-off valve slowly to fill and pressurize the meter. Check for leaks around the meter and connections.

Open the meter outlet valve slowly to pressurize the consumer side of the system.

Open a faucet to allow any trapped air to escape. Turn off the faucet when normal water flow occurs.

IV. SPECIAL INSTRUCTIONS FOR DISASSEMBLY OF METER

WARNING: REMOVAL OF TEST PLUG AND/OR DISASSEMBLY OF METER WHILE UNDER LINE PRESSURE CAN RESULT IN PERSONAL INJURY. THE LINE MUST BE DEPRESSURIZED BEFORE DISASSEMBLY OCCURS. FAILURE TO DEPRESSURIZE THE METER MAY RESULT IN COMPONENTS BECOMING PROJECTILES CAPABLE OF CAUSING INJURY TO METER MAINTENANCE PERSONNEL OR BYSTANDERS.

Due to continuous research, product improvements and enhancements, Badger Meter reserves the right to change product or system specifications without notice, except to the extent an outstanding bid obligation exists.



BadgerMeter, Inc.

P.O. Box 245036, Milwaukee, WI 53224-9536

(800) 876-3837 / Fax: (888) 371-5982

www.badgermeter.com

©



Please see our website at
www.badgermeter.com
for specific contacts.