



World's First Toilet Theme Park

Looking for somewhere to take the family on your next vacation?

Why not go to Suwon, South Korea and visit the Restroom Cultural Park, the world's first and only toilet-themed amusement park?

Sim Jae-duck (aka "Mr. Toilet"), was the park creator, the founder of the World Toilet Association and the former Mayor of Suwon. He dedicated his life to promoting public sanitation and hygienic toilets. His home was built in the shape of a giant toilet, and now acts as the main building for the park. He passed away in 2009 at age 70.

Park attractions include a toilet-themed sculpture garden and art gallery, exhibits on toilets throughout history, poo-related facts and WC signs from around the world. You may wish to visit during the annual Golden Poop Art Festival. Admission is free.

Choosing the Right Water Meter

By Don Lackey, Technical Support Rep

There are many different types of water meters, so how do you know which one is the right one for your application? Read on!

Positive Displacement (PD) Meters

There are two common types of PD meters: oscillating piston meters and nutating disk meters. Both rely on water to move the measuring element in direct relation to the amount of water that passes through the meter. The piston or disk then moves a magnet that drives the register.

How do you know which water meter is the right one for your application?

PD meters are generally very accurate at low to moderate flow rates in small ($5/8$ to 2") meter sizes. They are designed for residential and small commercial use. Because PD meters rely on water flowing through the meter to "push" the measuring element, they are generally not good for large commercial applications requiring high flow rates or low pressure loss.

PD meters normally have a built-in strainer to protect the measuring element from rocks or other debris that could stop or break the measuring element. These meters should not be used with dirty water, or water that has particulates in it.



PD Meter

Velocity Water Meters

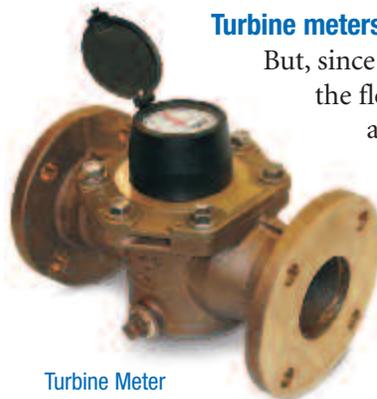
Velocity water meters measure how much flow is going through a meter of a specific size. The flow speed is then converted into flow volume. There are several types of meters that measure water flow velocity. They include jet meters, turbine meters, compound meters and mag meters.

Jet meters use ports surrounding an internal chamber to create jets of water against an impeller. The impeller rotation speed is correlated to the velocity of water flow. They are very accurate in small ($5/8$ to 2") sizes, and are commonly used in residential and small commercial applications. They don't come in larger sizes since they don't have the straight-through flow path needed for high flow rates.

Multi-jet meters use multiple ports for high accuracy at low flow rates. Jet meters generally have an internal strainer element that protects the jet ports from clogging. They are good for use with semi-dirty water with small particulates, but no stringy material.



Jet Meter



Turbine Meter

Turbine meters are less accurate than PD and jet meters at low flow rates.

But, since the measuring element does not restrict the entire flow path, the flow direction is generally straight through the meter. This allows for higher flow rates and less pressure loss than PD and jet meters can handle.

Turbine meters are ideal for large commercial users, fire protection and as "master meters" for the water distribution system. They usually require a strainer installed in front of the meter to protect the measuring element from gravel or other debris. Turbine meters are available for 1 $\frac{1}{2}$ to 12" or higher pipe sizes.

Continued on page 2

Continued from page 1

Compound meters are like two flow meters in one: they have two measuring elements and a check valve to regulate flow between them. They are used to measure both high and low flow rates in areas where water consumption is high during peak hours and low during off-peak hours.



Compound Meter

During high flow rates, water is diverted to the turbine part of the meter. When flow rates drop to where the turbine meter can no longer measure accurately, a check valve closes to divert water to a smaller meter that measures lower flow rates. The low flow meter is typically a multi-jet or PD meter. By adding the registration of the high and low meter registers, the utility has the total consumption rate through the meter.

Electromagnetic (Mag) Meters

These meters are technically also a velocity-type water meter. But instead of using mechanical parts like the jet and turbine meters, they use electromagnetic properties to determine water flow velocity. Mag meters use the physics principle of Faraday's law of induction for measurement, and require AC or DC electricity (either line or battery) to operate the electromagnets. Mag meters use electronics for measuring and totalizing flow.



Mag Meter

Mag meters have no mechanical measuring element, so they typically can measure flow in either direction. Since they can't get clogged or damaged by debris, mag meters are useful for measuring untreated water, raw (untreated/unfiltered) water and wastewater. For this reason, they also don't require strainers.

Stray electrical energy flowing through the flow tube can cause inaccurate readings; therefore most mag meters are installed with either grounding rings or grounding electrodes to divert electricity away from the electrodes inside the flow tube. Since mag meters need conductivity to operate, they may not work in clean water applications.

If you still have questions on choosing the right water meter, just give us a call at 800-548-1234. We'd be happy to help you.



USABlueBook Technical Training Manager



Alkalinity: The Mixed Liquor Stabilizer

Many do not understand the importance of alkalinity in the activated sludge process. At certain times of the year, it is one of the most important parameters, and should be tested daily. The main misconception is that alkalinity is considered to be a "part" of pH. When one rises, the other also rises. However, this is not quite true.

As bacteria respire, they release carbon dioxide, which in turn creates acids. Alkalinity's role is to absorb acids in the system and prevent a rapid pH drop. The available alkalinity absorbs these acids before they can have a significant impact on the aeration basin's pH. Therefore, alkalinity acts as a stabilizer for pH.

Avoiding pH drop through increasing alkalinity levels

The most common time for pH drop to occur is in the spring when nitrifying bacteria start to multiply. Nitrifying bacteria break down ammonia to form nitrites and nitrates. This bacterial process requires about seven parts alkalinity to one part ammonia. As the alkalinity in the system is depleted, it leaves the system vulnerable to a rapid pH drop. This can result in pH levels dropping into the fours, which violates all NPDES permits, and creates a toxic environment for your bacteria.

Many systems have to add an external source of alkalinity to prevent this common pH drop. A good minimum level of alkalinity should be around 9 to 10 times more than the level of ammonia. The actual amount needed will vary according to the influent quality, bacterial population and system design.

For more information or instruction, please feel free to contact me, Don Van Veldhuizen at 503-544-0456 or dvanveldhuizen@usabluebook.com, or LoAnn Mayer at 847-377-5162.



Replacing a Motor? We Can Help!

By Jan Craig, Technical Support Rep

When it comes time to replace a motor, USABluebook is here to help. There are a few things you can do to make getting the correct replacement motor easy.

First, get all the information you can off the motor plate. This is usually located on the back side of the motor, and can be a laminated sticker or an engraved metal plate. Your motor plate will list a lot of information. See below for what some of these terms mean.

Horsepower: 1 hp is the energy consumed to produce the equivalent work done by a horse lifting 33,000 lbs for 1 foot in 1 minute. 746 watts = 1 horsepower.

Voltage: Electromotive force that causes electrons to move along a conductor.

Frame size: Determines the shaft size the motor requires.

RPM: Rotations per minute.

ODP: Open drip proof. ODP motors are good for clean and dry environments, and can handle some dripping water. These motors usually have ventilating openings that face down.

TEFC: Totally enclosed fan cooled. TEFC motors are suited for dirty, dusty and outdoor applications, and feature weep holes at their lowest points to prevent condensation from puddling inside the motor.

Alternatively, you can also look for the catalog number or the spec number on the motor. We can use this information to identify your specific motor.

My replacement motor looks different!

The motor you receive may not look exactly like the one you are replacing. But never fear! The Federal Government has instituted new energy saving standards that all motor manufacturers must comply with. This helps you save money and energy! So if the motor is a different color, is smaller in profile or just simply doesn't look the same, the important thing is that the shaft size matches and that the information on the motor tag is the same.



Open market vs. proprietary motors

Once in a while, we find that the motor you need to replace is a "proprietary" motor. This means the particular motor you have is made for a specific company, and is not available on the open market for resale to anyone but that company. Most of the time this occurs when the motor is a component of another item (such as a blower package or a mixer).

It's rare that an open market motor matches up to a piece of equipment that requires a proprietary motor. If your motor is proprietary, you need to contact the manufacturer of that piece of equipment for a replacement motor. Remember, if you have any questions, you can always call!

How Well Do You Know your Poop?

Spend much time in the woods? You may have encountered some of these little presents from the animals that live there. Can you recognize who made them?

A. Deer

B. Rat

C. Rabbit

D. Goose

E. Raccoon

F. Fox

G. Chipmunk

H. Coyote



1. _____



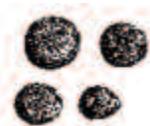
2. _____



3. _____



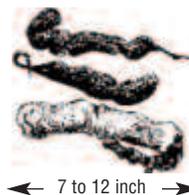
4. _____



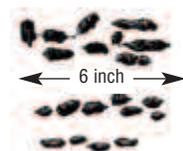
5. _____



6. _____



7. _____



8. _____

Answers on page 4

BlueBits

News from **USABlueBook**

**Coming
this
March!**
Reserve yours
today



Look inside for:

- Choosing the Right Water Meter
- Replacing a Motor
- All About Alkalinity

\$50!!!!

For an easy \$50, just send your interesting work stories (or photos) to stories@usabluebook.com. If we print it, you'll receive a \$50 gift card from giftcertificates.com or a \$50 USABlueBook credit!

USABlueBook Catalog 124!

Coming soon! Updated with hundreds of new products and lots of helpful technical information, the NEW USABlueBook Master Catalog 124 has the latest water and wastewater supplies you need to get the job done. Look for your copy in March.

USABlueBook: coming soon to a tradeshow near you!

CAPPO	Palm Springs, CA	Jan 16	NJWEA Tech Transfer	Eatontown, NJ	Mar 4-7
MW Water Analysts Assc	Kenosha, WI	Jan 25	Arizona RWA	Chandler, AZ	Mar 5-7
NEWEA	Boston, MA	Jan 27-30	Alliance of Indiana	Bloomington, IN	Mar 13-14
Intl Production & Processing Expo (IPPE)	Atlanta, GA	Jan 29-31	Michigan RWA	Traverse City, MI	Mar 14-15
NY Water Env. Assc	New York City, NY	Feb 4-6	Nebraska RWA Spring Conf	Grand Island, NE	Mar 18-20
Evergreen Rural Water	Yakima, WA	Feb 5-7	WRWA	Green Bay, WI	Mar 19-22
MW Water Industry Expo	Wisconsin Dells, WI	Feb 7-8	Texas RWA	Austin, TX	Mar 20-22
Colorado RWA	Colorado Springs, CO	Feb 11-14	AWWA CA	N. Sacramento, CA	Mar 25-28
North Dakota RWA	Bismark, ND	Feb 12-14	Kansas RWA	Wichita, KS	Mar 26-28
Iowa Rural Water	Waterloo, IA	Feb 18-20	ORWEF Water Env. School	Clackamas, OR	Mar 26-28
Illinois Rural Water Assc	Effingham, IL	Feb 19-21	NEWWA	Worcester, MA	Apr 3-4
Montana RWA Conf	Great Falls, MT	Feb 20-22	PRWA	State College, PA	Apr 9-12
Rural Water Assc of Utah	St George, UT	Feb 25-Mar 1	Texas AWWA	San Antonio, TX	Apr 9-12
Pumper Cleaner	Indianapolis, IN	Feb 25-28	Oklahoma RWA	Oklahoma City, OK	Apr 9-11
Delaware RWA	Harrington, DE	Feb 28-Mar 1			

Tradeshow winners!

USABlueBook offers great giveaways and prizes at our tradeshow booths. Here are a few of our big winners from this past fall. Congratulations to you!

Winners of the Beer of the Month Club at NRWA/WaterPro: Author Sluder, Eastern Band of Cherokee Indians, Cherokee, NC and Matt Lamp, WVRWA, St Mary's, WV.

Winner of the iPad at WEFTEC: Louis J Brady, St Charles Parish WW, Destrehan, LA.



Answers from page 3:
1. E, 2. B, 3. F, 4. A,
5. C, 6. D, 7. H, 8. G