

## Model Turbo/Valve Assembly

## Turbine Meter/Butterfly Valve

# Technical Brief

### GENERAL

Badger's TURBO/BUTTERFLY VALVE water batching system is designed to control and measure the water batching process in concrete batch plants, block plants, prestress concrete batch plants or wherever there is a need for water batching. Our reliable Industrial Turbine Meter, with either an unscaled pulse transmitter or an electronic scalable transmitter, combined with a solenoid-controlled air operated butterfly valve creates a water batching system that provides accurate and dependable service in all types of batch plant environments. The batching system can be specified with either a scaled pulse transmitter for use with Badger's CB-20 Batch Control for semi-automatic batching or an electronic scalable transmitter for use in fully automated plants.

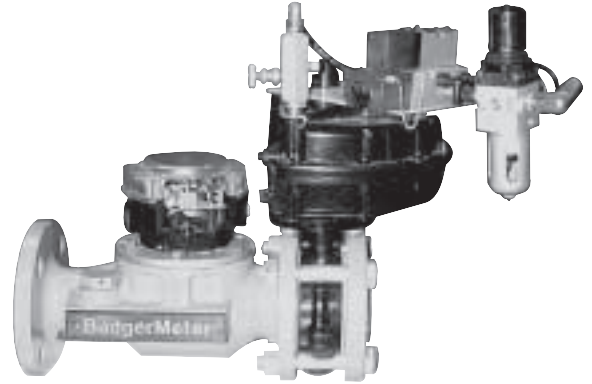
The Badger Turbo is compact in size and is easy to service without removing the meter from the lines. Available in four line sizes 2", 3", 4" and 6", for up to 2,000 GPM, the system provides a high level of accuracy over a wide flow range with a minimum of pressure loss. Its unique straight-through flow profile and ceramic bearing design optimize performance and accuracy.

The solenoid controlled air operated butterfly valve permits higher flows at lower pressure loss. This valve requires a 60 psi air supply (minimum) to operate. Included with the valve is a speed control to adjust the closing speed of the valve which assists in the reduction of water hammer.

### OPERATION

The Badger Meter Industrial Turbine is a volumetric liquid flow meter which works on the time proven principle of a rotor turning at an angular velocity proportional to the fluid velocity through the turbine. The meter has straightening vanes and a nose cone in the inlet side which minimize upstream turbulence and direct the flow to the rotor effectively. The motion of the rotor is relayed to the meter's magneto resistive pulse transmitter or electronically scalable transmitter. The scalable transmitter can then be adjusted to produce the desired pulse rate.

The solenoid-controlled air operated butterfly valve is controlled by the water batch controller that receives the pulse output signal from the transmitter. When the batch command

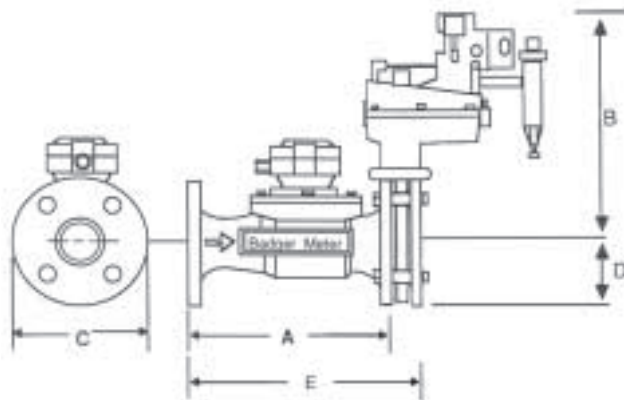


is received, the solenoid will energize and allow the butterfly valve to be opened by air pressure. When the amount of water for the initial batch has been dispensed, the controller will de-energize the solenoid and allow air pressure to close the butterfly valve. Using the speed control, the butterfly valve can be adjusted so that it closes slowly enough to reduce water hammer.

### FEATURES

- Long lasting ceramic bearings
- Simple in-line serviceability
- Low pressure loss
- Positive ON and OFF control fail-safe with power loss
- Helps reduce water hammer
- Easy (ON JOB) calibration without gears or special tools
- Complete tested assembly ready to install in line
- Manual override on 4 way solenoid valve





### Installation Dimensions

	2"	3"	4"	6"
A	10.00	12.00	14.00	*
B	13.67	13.67	15.34	*
C	6.00	7.50	9.00	*
D	2.75	3.50	4.25	*
E	12.75	15.00	17.12	*
Estimated Weight per Unit in Lbs.	30 - 40	40 - 50	60 - 75	100-125

\* Please consult factory for 6".

SYSTEM SPECIFICATIONS	2"	3"	4"	6"
Accuracy $\pm 0.5\%$ @ indicated Flow Range - GPM	20 - 160	60 - 350	100 - 1000	250 - 2000
Accuracy $\pm 1.5\%$ @ indicated Flow Range - GPM	8 - 200	10 - 450	25 - 1250	40 - 2500
Repeatability*	0.25%	0.25%	0.25%	0.25%
Temperature Range ( $^{\circ}$ F)*:	32 to 200	32 to 200	32 to 200	32 to 200
Minimum Operating Pressure (PSI):	7	7	7	7
Maximum Operating Pressure (PSI):	125	125	125	125

\* Reading over full range tested with potable water at  $60^{\circ}$  F.

Flange Face Configurations: (ANSI Standards)  
Flat Faced Flanges: 125 lb. Cast Iron

#### ● METER

##### MATERIAL SPECIFICATIONS:

Housing Material: Cast Iron

"O" Ring and Tetraseal: Buna N

Rotor and Nose Cone: Ryton

Bearings: Ceramic

Straightening Vanes: 316 Stainless Steel

Head Gasket: Nitrile Binder

#### ● VALVE

##### MATERIAL SPECIFICATIONS:

Body: Ductile Iron

Disc: Nickel Plated

Stem (upper and lower): 410 Stainless Steel

Seat and "O" Ring: EPDM

Other Materials Available Upon Request

#### ● SOLENOID SPECIFICATIONS

Voltage: 115 VAC/60 Hz (Other voltages available upon request)

Power Consumption: .29 Amp Inrush  
.18 Amp Holding  
60-120 PSI

Displacement of Actuator: 41 cu in./190 $^{\circ}$  stroke

### METER SPECIFICATIONS

Accuracy:	$\pm 1.5\%$	
Repeatability*:	$\pm 0.25\%$	
Temperature Range ( $^{\circ}$ F):	32 to 250	
Flow Range - GPM:	2"	8 - 160
	3"	10 - 350
	4"	25 - 1000
	6"	40 - 2000
Minimum Operating Pressure (PSI):	7	
Maximum Operating Pressure (PSI):	125	

\* Reading over full range tested with potable water @  $60^{\circ}$  F

\*\* Temp. rating is for meters with PFT 3-E transmitters.  
Other ratings available.

#### ● TRANSMITTER OPTIONS

Magneto Resistive Pulse Transmitter or Electronic Scalable Transmitter

#### ● CB-20 BATCH CONTROLLER

Remote and Meter Mounted, Refer to CTB-01



Please see our website at  
[www.badgermeter.com](http://www.badgermeter.com)  
for specific contacts.



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