Impeller
Data Industrial®

Flow Sensors

Series 225BR, 226BR, 226SS Hot Tap Flow Sensors

DESCRIPTION

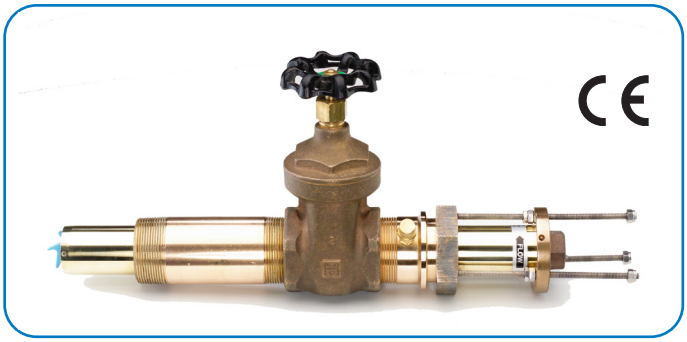
The Series 200 flow sensors feature a six-bladed impeller design with a proprietary non-magnetic sensing mechanism. The forward swept impeller shape provides higher, more consistent torque and is less prone to be fouled by water borne debris. The forward curved shape coupled with the absence of magnetic drag provides improved operation and repeatability at lower flow rates. This is especially true where the impeller is exposed to metallic or rust particles found in steel or iron pipes. As the liquid flow turns the impeller, a low impedance square wave signal is transmitted with a frequency proportional to the flow rate. The signal can travel up to 2000 ft (610 m) between the flow sensor and the display unit without the need for amplification. All sensors except irrigation versions are supplied with 20 ft (6 m) of 2-conductor 20 AWG shielded UL type PTLC 221° F (105° C) cable.

MODEL 225BR AND 226BR/226SS SENSORS

The 225BR and 226BR/226SS flow sensors are used for flow measuring applications in most metallic or non-metallic pipes where it would be difficult to shut down or drain the line for installation or service. The 225 flow sensor features a gate valve for isolation. The 226 flow sensor uses a ball valve. If the pipe is to be hot tapped, the ball valve is recommended. The sensor mounts in a 2 in. NPT pipe saddle or Threadolet® for installation in pipe sizes from 3…40 in. Positioning nuts on the three threaded retaining rods allow the sensor to be accurately positioned to a standard insertion depth of 1-1/2 in. into the pipe.

When this insertion depth is maintained and there are at least 10 upstream and 5 downstream diameters of straight uninterrupted flow, an accuracy of ±1 percent of full scale can be obtained between flow velocities of 0.5…30 feet/second. Each sensor has an isolation valve and pipe nipple to allow the sensor to be installed in a pressurized pipe. This is accomplished by first attaching a saddle or Threadolet to the pipe and screwing the nipple and isolation valve into the saddle or Threadolet fitting. A hole is then drilled through the pipe using a commercial tapping machine. When completed, the tapping apparatus is removed, the isolation valve is closed, and the sensor is installed using the Model HTT Hot Tap Tool. For installation information, see the *Hot Tap Flow Sensor, Series 225/226, Application Data Shee*t, available in the Resource Library at *www.badgermeter.com*.

NOTE: The overall length of the sensor tube is 18 in. (46 cm), however, a clearance height of 35 in. (89 cm) should be allowed for the fully extended length of the sensor tube outside the isolation valve.



SPECIFICATIONS

Wetted Materials for All Sensors	See *"Part Number Construction" on page 3*
Sensor Sleeve and Hex Adapter for 225BR and 226BR	*Sleeve:* Admiralty Brass, UNS C44300 *Hex Adapter:* Lead-free Brass C89833
Sensor Sleeve and Hex Adapter for 226SS	316 Series Stainless Steel
Temperature Ratings	*Standard Version:* 221° F (105° C) continuous service *Irrigation Electronics:* 150°F (66° C)
Pressure Ratings	**Model** / **At 100° F** / **At 300° F (High Temperature Model Only)** 225BR / 300 psi / 210 psi 226BR / 400 psi / 250 psi 226SS / 400 psi / 300 psi
Recommended Design Flow Range	0.5…30 ft/sec Initial detection below 0.3 ft/sec
Accuracy	± 1.0% of full scale over recommended design flow range ± 4.0% of reading within calibration range
Repeatability	± 0.3% of full scale over recommended design flow range
Linearity	± 0.2% of full scale over recommended design flow range
Transducer Excitation	Supply voltage = 8V DC min. 35V DC max. Quiescent current = 600 uA (typical) OFF State (V_{High}) = Supply voltage – (600 uA * Supply impedance) ON State (V_{Low}) = 1.2V DC @ 40 mA (15 Ω + 0.7V DC)
Output Frequency	3.2…200 Hz
Output Pulse Width	5 msec ±25%
Electrical Cable for Standard Sensor Electronics	20 feet (6 m) of 2-conductor 20 AWG shielded U.L. type PTLC wire provided for connection to display or analog transmitter unit. Rated to 105° C. May be extended to a maximum of 2000 feet (610 m) with similar cable and insulation appropriate for application.
Electrical Cable for IR Sensor Electronics	48 in. (122 cm) of U.L. Style 116666 copper solid AWG 18 wire with direct burial insulation. Rated to 221° F (105° C).

Badger Meter

SEN-DS-01556-EN-07 (October 2021)

Product Data Sheet

DIMENSIONS

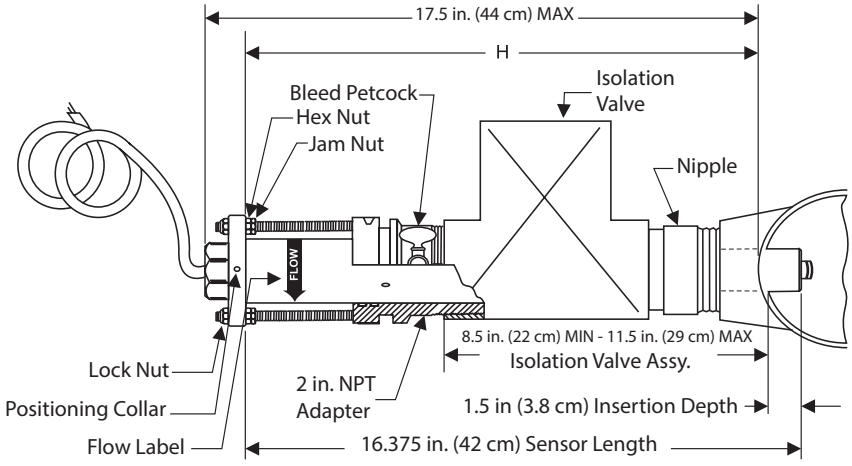


Figure 1: 225/226 Dimensions

NOTE: All dimensions are for reference only. To remove the flow sensor, there must be 25 in. (89 cm) clearance above the outside wall of the pipe. A cutting tool may require additional clearance.

PART NUMBER CONSTRUCTION

225 Standard Sensor

Example:	2	25	BR	00	0	5	-	1	2	1	1
STYLE											
Hot Tap Insert - Gate Valve		25									
MATERIAL											
Brass			BR								
SIZE											
Insert Style				00							
ELECTRONICS HOUSING											
PPS					0						
ELECTRONICS											
Standard Flow (STANDARD)						5					
IR-Irrigation						6					
O-RING											
Viton®								0			
EPDM (STANDARD)								1			
Buna N								8			
SHAFT											
Zirconia Ceramic									0		
Tungsten Carbide (STANDARD)									2		
316 Stainless Steel									6		
IMPELLER											
Nylon (STANDARD)										1	
Tefzel®										2	
BEARING											
UHMWPE (STANDARD)											1
Tefzel®											2
Teflon®											3

225 High Temperature Sensor

	Example: 2	25	BR	00	4	8	-	0	2	2	3
STYLE											
Hot Tap Insert - Gate Valve		25									
MATERIAL											
Brass			BR								
SIZE											
Insert Style				00							
ELECTRONICS HOUSING											
PEEK					4						
ELECTRONICS											
High Temperature						8					
O-RING											
Viton®								0			
SHAFT											
Tungsten Carbide (STANDARD)									2		
IMPELLER											
Tefzel®										2	
BEARING											
Teflon®											3

226 Standard Sensor

	Example: 2	26	SS	00	0	5	-	1	2	1	1
STYLE											
Hot Tap Insert - Ball Valve		26									
MATERIAL											
Brass			BR								
Stainless Steel (Model 226 Only)			SS								
SIZE											
Insert Style				00							
ELECTRONICS HOUSING											
PPS					0						
ELECTRONICS											
Standard Flow (STANDARD)						5					
IR-Irrigation						6					
O-RING											
Viton®								0			
EPDM (STANDARD)								1			
Buna N								8			
SHAFT											
Zirconia Ceramic									0		
Tungsten Carbide (STANDARD)									2		
316 Stainless Steel									6		
IMPELLER											
Nylon (STANDARD)										1	
Tefzel®										2	
BEARING											
UHMWPE (STANDARD)											1
Tefzel®											2
Teflon®											3

226 High Temperature Sensor

Example: 2	26	SS	00	4	8	-	0	2	2	3
STYLE										
Hot Tap Insert - Ball Valve	26									
MATERIAL										
Brass		BR								
Stainless Steel (Model 226 Only)		SS								
SIZE										
Insert Style			00							
ELECTRONICS HOUSING										
PEEK				4						
ELECTRONICS										
High Temperature					8					
O-RING										
Viton®							0			
SHAFT										
Tungsten Carbide (STANDARD)								2		
IMPELLER										
Tefzel®									2	
BEARING										
Teflon®										3

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