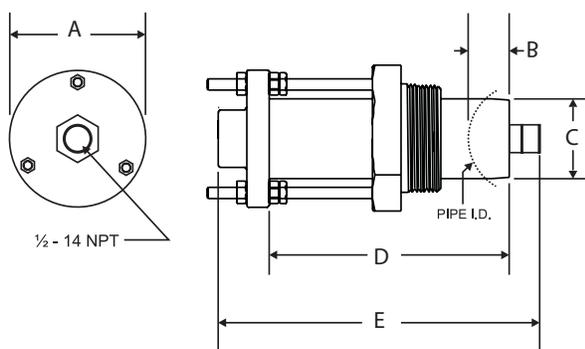


**DESCRIPTION**

The Data Industrial® Series 200 flow sensors from Badger Meter® 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 waterborne 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 feet between the flow sensor and the display unit without the need for amplification. All sensors except irrigation versions are supplied with 20 feet of Belden type 9320 two-conductor shielded cable.

**MODEL 220BR (BRASS) AND 220SS (STAINLESS STEEL) SENSORS**

The 220BR and 220SS sensors are used in most general flow measuring applications in metallic or non-metallic pipes. The sensor mounts in a 2-inch NPT pipe saddle or Threadolet® for installation in pipe sizes from 3 inches to more than 40 inches. Positioning nuts on the three threaded retaining rods allow the sensor to be accurately positioned to a standard insertion depth of 1-1/2 inches into the pipe. When this insertion depth is maintained, and there is at least 10 upstream and 5 downstream diameters of straight uninterrupted flow, an accuracy of +/-1 percent of full scale can be obtained from flow velocities of 0.5...30 feet/second ( $\pm 4.0$  percent of reading within calibration range).

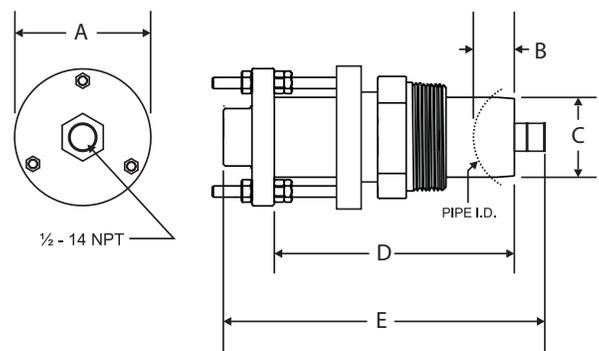


A	B	C	D	E
3 in.	1-1/2 in.	1-3/4 in.	5-1/4 in.	7-1/8 in.
76 mm	38 mm	44 mm	133 mm	181 mm

Figure 1: Dimensions for models 220BR and 220SS


**MODEL 220PVS SENSOR**

The 220PVS flow sensor is an insertion style flow sensor with all wetted parts constructed of non-metallic materials. These sensors are designed for service in corrosive liquids. The metallic trim, in non-wetted areas, is 316 stainless steel. The sensor mounts in a 2-inch NPT thread and may be attached to the pipe with a saddle or other types of mounting hardware.



A	B	C	D	E
3-1/4 in.	1-1/2 in.	1-9/10 in.	8 in.	9-11/16 in.
83 mm	38 mm	48 mm	203 mm	249 mm

Figure 2: Dimensions for model 220PVS

## SPECIFICATIONS

<b>Wetted Materials for all Sensors</b>	See Ordering Matrix.																		
<b>Sensor Sleeve and Hex Adapter for 220BR, 225BR and 226BR</b>	Sleeve: admiralty brass, UNS C44300 Hex adapter: valve bronze, UNS C83600																		
<b>Sensor Sleeve and Hex Adapter for 220SS and 226SS</b>	Series 300 stainless steel																		
<b>Temperature Ratings</b>	Standard version: 221° F (105° C) continuous service High temperature version: 285° F (140.6° C) continuous service; 305° F (150° C) peak temperature (limited duration)																		
<b>Pressure Ratings</b>	<table border="1"> <thead> <tr> <th></th> <th>At 100° F</th> <th>At 300° F</th> </tr> </thead> <tbody> <tr> <td>220SS</td> <td>400 psi</td> <td>325 psi</td> </tr> <tr> <td>220B</td> <td>400 psi</td> <td>325 psi</td> </tr> <tr> <td>225B</td> <td>300 psi</td> <td>210 psi</td> </tr> <tr> <td>226B</td> <td>400 psi</td> <td>250 psi</td> </tr> <tr> <td>226SS</td> <td>400 psi</td> <td>300 psi</td> </tr> </tbody> </table>		At 100° F	At 300° F	220SS	400 psi	325 psi	220B	400 psi	325 psi	225B	300 psi	210 psi	226B	400 psi	250 psi	226SS	400 psi	300 psi
	At 100° F	At 300° F																	
220SS	400 psi	325 psi																	
220B	400 psi	325 psi																	
225B	300 psi	210 psi																	
226B	400 psi	250 psi																	
226SS	400 psi	300 psi																	
<b>Recommended Design Flow Range</b>	0.5...30 ft/sec (0.5...9 mm/sec) Initial detection below 0.3 ft/sec (0.9 m/sec)																		
<b>Accuracy</b>	± 1.0% of full scale over recommended design flow range																		
<b>Repeatability</b>	± 0.3% of full scale over recommended design flow range																		
<b>Linearity</b>	± 0.2% of full scale over recommended design flow range																		
<b>Transducer Excitation</b>	Quiescent current 600 uA @ 8...35V DC max. Quiescent voltage ( $V_{High}$ ) Supply voltage (600 uA supply impedance) ON State ( $V_{Low}$ ) max. 1.2V DC @ 40 mA current limit (15 $\Omega$ + 0.7V DC)																		
<b>Output Frequency</b>	3.2...200 Hz																		
<b>Output Pulse Width</b>	5 msec ±25%																		
<b>Electrical Cable for Standard Sensor Electronics</b>	20 ft (6 m) of 2-conductor 20 AWG shielded UL type PTLT wire provided for connection to display or analog transmitter unit. Rated to 221° F (105° C). May be extended to a maximum of 2000 ft (610 m) with similar cable and insulation appropriate for application.																		
<b>Electrical Cable for IR Sensor Electronics</b>	48 in. (1219 mm) of UL style 116666 copper solid AWG 18 wire with direct burial insulation. Rated to 221° F (105° C).																		

## ORDERING MATRIX

Example: 2	20	BR	00	0	5	-	1	2	1	1
<b>STYLE</b>	Standard Flow	20								
<b>MATERIAL</b>	Brass	BR								
	Stainless Steel	SS								
	PVC Sleeve w/Stainless Steel Trim	PVS								
<b>SIZE</b>	Insert Style for pipe sizes 3" and up	00								
<b>ELECTRONICS HOUSING</b>	PPS	0								
<b>ELECTRONICS</b>	CSA Approved	4								
	Standard Flow (STANDARD)	5								
	IR-Irrigation	6								
<b>O-RING</b>	Viton	0								
	EPDM (STANDARD)	1								
	Buna N	8								
<b>SHAFT</b>	Zirconia Ceramic	0								
	Tungsten Carbide (STANDARD)	2								
	316 Stainless Steel	6								
<b>IMPELLER</b>	Nylon (STANDARD)	1								
	Tefzel	2								
<b>BEARING</b>	UHMWPE (STANDARD)	1								
	Tefzel	2								
	Teflon	3								

## Control. Manage. Optimize.

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