

The Challenger turbine meters are an ideal choice for the most challenging metering applications. The Challenger meters utilize an innovative bearing design based on the proven Woltman turbine concept. The Challenger is a compact, top-loading meter which can be adapted for almost any location, including vertical installations. The Challenger meters meet or exceed all requirements within AWWA Standard C701-II. All meters are compatible with the innov8 register and all of Metron's AMR and AMI systems.

Challenger features include:

- Light & compact with short length
- Wide accuracy range
- Horizontal or vertical installation
- Calibratable measuring chamber
- Field replaceable measuring chamber
- Outstanding long-term accuracy through hydraulic bearing relief
- Register head can be rotated 365° for easier reading
- Compatible with all Innov8 electronic registers
- AMI/AMR and SCADA outputs available

#### **Physical Specifications**

Model – Challenger

Sizes - 2" through 6"

Type – Turbine

Body – Epoxy-coated cast iron

Register – Innov8

Dimensions – See Figure 1

Weight – See Figure 1

## **Challenger Turbine Meters**



#### **Functional Specifications**

Fluids Measured – Potable Cold or Reclaimed Water

Flow Range – See Table 1

Accuracy –  $\pm 1.5\%$  See Table 1

Pressure Loss – See Table 1

Nominal Pressure – 232 PSI (16 bar)

Ambient Operating Temperature –  
131° F (50°C)

Registration – See Figure 2

#### **Standards**

AWWA C701 Class II

NSF-61/NSF-372

**Table 1--Flow Specifications & Curves**

<b>Flow Specifications</b>														
<i>Challenger Turbine Meters</i>														
Model	Size	Starting Flowrate <sup>1</sup>		Minimum Flowrate 2 (95%-101.5%)		Normal Operating Range (98.5%-101.5%)			Maximum Continuous Duty <sup>3</sup>		Max Intermittent Flow <sup>3</sup>		Head Loss @ Max Continuous Flow	
Challenger 2	2"	0.4	<i>gpm</i>	1.5	<i>gpm</i>	2.0	396	<i>gpm</i>	176	<i>gpm</i>	396	<i>gpm</i>	3.6	<i>psi</i>
		90	<i>l/h</i>	0.35	<i>m3/h</i>	0.45	90	<i>m3/h</i>	40	<i>m3/h</i>	90	<i>m3/h</i>	0.25	<i>bar</i>
Challenger 3	3"	0.7	<i>gpm</i>	2.0	<i>gpm</i>	3.0	880	<i>gpm</i>	440	<i>gpm</i>	880	<i>gpm</i>	3.6	<i>psi</i>
		160	<i>l/h</i>	0.5	<i>m3/h</i>	0.68	200	<i>m3/h</i>	100	<i>m3/h</i>	200	<i>m3/h</i>	0.25	<i>bar</i>
Challenger 4	4"	0.84	<i>gpm</i>	2.0	<i>gpm</i>	4.0	1,320	<i>gpm</i>	700	<i>gpm</i>	1,320	<i>gpm</i>	5.8	<i>psi</i>
		190	<i>l/h</i>	0.6	<i>m3/h</i>	0.9	300	<i>m3/h</i>	160	<i>m3/h</i>	300	<i>m3/h</i>	0.40	<i>bar</i>
Challenger 6 LF	6"	0.84	<i>gpm</i>	2.5	<i>gpm</i>	5.0	1,540	<i>gpm</i>	700	<i>gpm</i>	1,540	<i>gpm</i>	5.8	<i>psi</i>
		190	<i>l/h</i>	0.6	<i>m3/h</i>	1.1	350	<i>m3/h</i>	160	<i>m3/h</i>	350	<i>m3/h</i>	0.40	<i>bar</i>
Challenger 6 HF	6"	6.6	<i>gpm</i>	8.0	<i>gpm</i>	16.0	1,540	<i>gpm</i>	1,000	<i>gpm</i>	1,540	<i>gpm</i>	5.8	<i>psi</i>
		1,500	<i>l/h</i>	1.8	<i>m3/h</i>	3.6	350	<i>m3/h</i>	250	<i>m3/h</i>	350	<i>m3/h</i>	0.40	<i>bar</i>

All flow specifications assume typical, consistent system pressure conditions. Adverse pressure conditions will effect the performance of the meters.

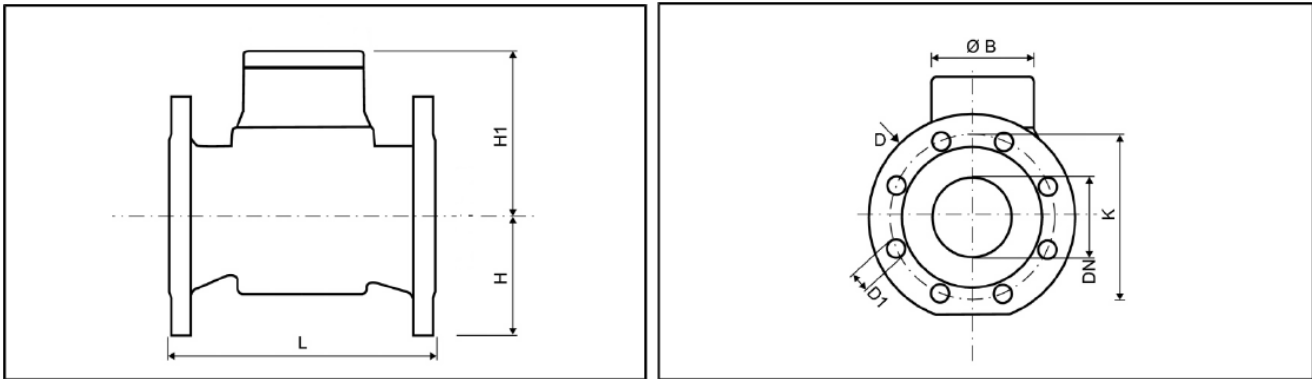
1 Starting Flowrate: This flowrate indicates when the meter begins to register the majority of the flow

2 Minimum Flowrate: This flow is applicable for both horizontal and vertical alignment

3 Max Continuous Duty: This is defined as the flow rate which can be maintained 24 hrs/day for 7 days/week

4 Max Intermittent Flow: This is defined as the flow rate which can be sustained for approximately 1 hr per day average.

Figure 1--Meter Dimensions



Model	Meter Type	Pipe Size	Overall	Flange	Bolt-hole	# of Bolt	Bolt-hole	Centerline	Centerline	Total	Meter	Weight
			Length	Diameter	Pattern		Holes	Diameter	Above			
			L	D	K		D1	H1	H			
Challenger 2	in	2"	7.87	6.5	4.9	4	0.71	4.85	2.95	7.8	6.1	22.5
	mm	50	200	165	125		18	123	75	198	155	10.2
Challenger 3	in	3"	8.9	7.87	6.3	4	0.71	6.1	3.5	9.6	7.9	28.7
	mm	80	225	200	160		18	154	89	243	200	13
Challenger 4	in	4"	9.8	8.66	7.1	8	0.71	6.1	4.1	10.2	8.7	35.3
	mm	100	250	220	180		18	154	105	259	220	16
Challenger 6 LF	in	6"	9.8	9.8	9.5	8	0.87	6.1	4.5	10.6	9.85	47.4
	mm	125	250	250	240		22	154	115	269	250	21.5
Challenger 6 HF	in	6"	11.8	11.2	9.5	8	0.87	9.65	5.3	15	11.2	86
	mm	150	300	285	240		22	245	135	380	285	39

Stainless steel pool pieces are available for additional lay-lengths.

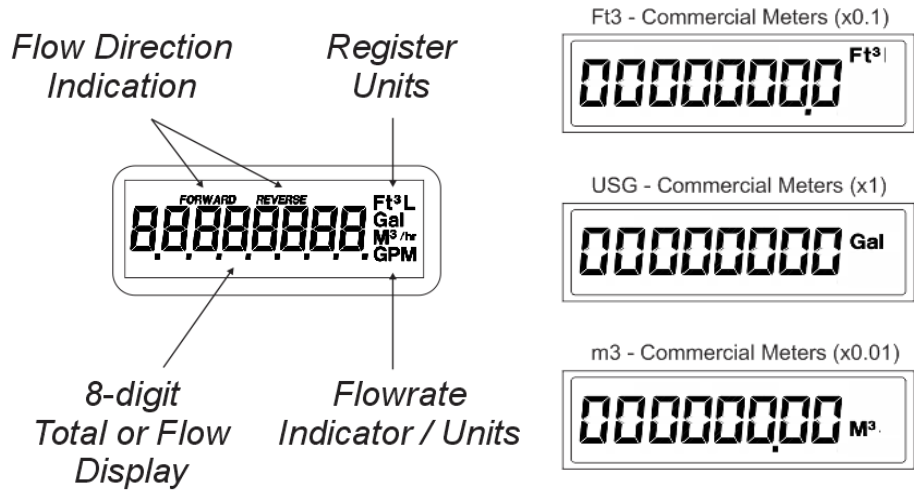
Strainers are available if required.

Figure 2--Register Information



Consult the innov8 Datasheet for additional information.

Innov8 Register Details



Available Register Outputs

- 900 MHz Mobile Radio with 2-way Datalogging
- VN Cellular Modem
- 3-Wire Standard AMR Output
- Configurable Switch Closure
- 4-20mA SCADA Output