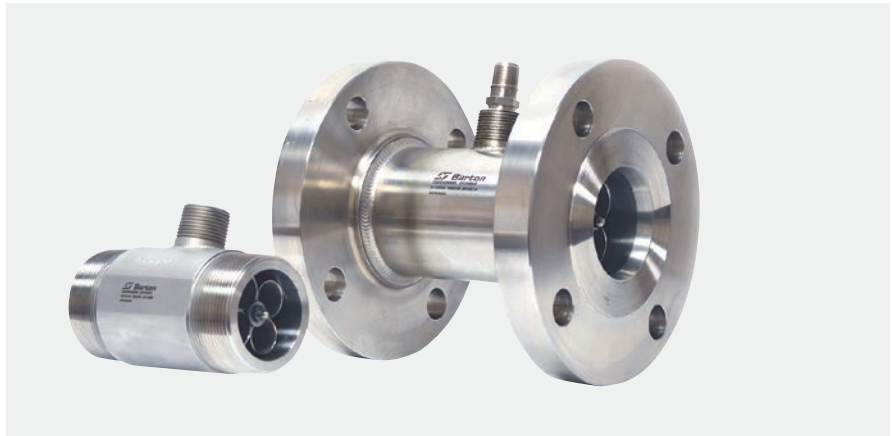


+ BARTON Series 7000

Liquid Turbine Meters

FEATURES

- + Linearity (BARTON Models 7100 and 7200)
 - ± 1% of reading over flow range for meters smaller than 1 in
 - ± 0.25% of reading over flow range for meters 1 in and larger
 - ± 0.15% of reading over limited ranges (1-in and larger meters contact factory for details)
- + Linearity (BARTON Model 7300)
 - ± 0.25% of reading over flow range
 - ± 0.15% of reading over limited ranges (contact factory for details)
- + Repeatability
 - ± 0.02% of reading
- + Symmetrical bi-directional design
 - Ideal for reverse flow applications, where flow capacities are the same in either direction. Electronic options provide instantaneous flow direction sensing.
- + High quality bearings
 - Model 7100 /7300 meters come standard with wear-resistant tungsten carbide sleeve bearings, and model 7200 meters are designed with self-lubricating, precision stainless steel bearings with dry lubricant impregnated ball separators.



Sensia's BARTON Series 7000 turbine flowmeters are designed for a broad range of precise liquid measurement applications. Based on more than 40 years of turbine manufacturing experience, this built-to-order series features a range of sizes, materials, bearing systems, and options.

Performance

The average K-factor for each turbine is determined by using water as the test media. Standard testing is performed with eight flow rates evenly distributed across the flow range and two repeatability points.

Meter linearity indicates that no data point will exceed the average of all the data points within the linear meter capacity.

To ensure accurate operation, the turbine meter should be installed in a straight length of pipe of the same diameter as the turbine meter, extending at least 10 diameters upstream and five diameters downstream.

Accessories

Sensia offers a broad range of accessories and companion electronics for use with the BARTON Series 7000 turbine flowmeter, including:

- + Meter runs
- + Pre-amplifiers
- + Totalizers
- + Flow computers
- + Connectors and cables

Companion electronics can be supplied to meet explosion-proof or intrinsic safety requirements.

Contact your local Sensia sales representative for more information.

MODEL SELECTION CRITERIA

Use the following table to determine the correct model for a liquid application. For assistance with meter sizing for your application, contact your Sensia sales representative.

Meter fluid requirements	Model 7100	Model 7200	Model 7300 (high-res output)
Hydrocarbon measurement	●		●
Liquids with specific gravity < 0.5		●	
Liquids with viscosity < 0.5 cP		●	
Other liquids	●		
Process piping and fluids (free of solids)		●	
Solids likely in process fluids	●		●
Meter sizes, in	3/8–8	3/8–3	4–12
Bearing type	Tungsten carbide sleeve bearings	440C stainless ball bearings	Tungsten carbide sleeve bearings

7100 Model Selection

Model	Meter size Nominal in [mm]	Flow range linear range (water)				Meter output		
		Minimum		Maximum		Nominal	Nominal	Maximum
		galUS/min	m ³ /h	galUS/min	m ³ /h	pulses/galUS	pulses × 1,000/m ³	frequency, Hz
7183	3/8 [10]	.45	0.10	4	0.9	19,000	5,020	1,270
7184	1/2 [15]	0.88	0.20	8.2	1.8	13,400	3,540	1,790
7185	5/8 [18]	1.6	0.36	16	3.63	7,700	2,034	2,050
7186	3/4 [20]	2.3	0.52	23	5.2	3,380	893	1,300
7101	1 [25]	5.0	1.14	50	11.4	1,340	354	1,117
7145	1 1/4 [32]	10	2.28	80	18.2	630	166	840
7146	1 1/2 [40]	13	3.0	130	29.5	405	107	878
7102	2 [50]	24	5.5	240	54.5	240	63.4	960
7125	2 1/2 [65]	44	10	440	100	115	30.4	845
7103	3 [80]	70	15.9	700	159	76	20.1	890
7104	4 [100]	105	24	1,250	284	32	8.5	670
7106	6 [150]	250	57	2,500	567.8	8.8	2.3	370
7108	8 [200]	540	122.4	5,400	1,226	3.6	0.95	324

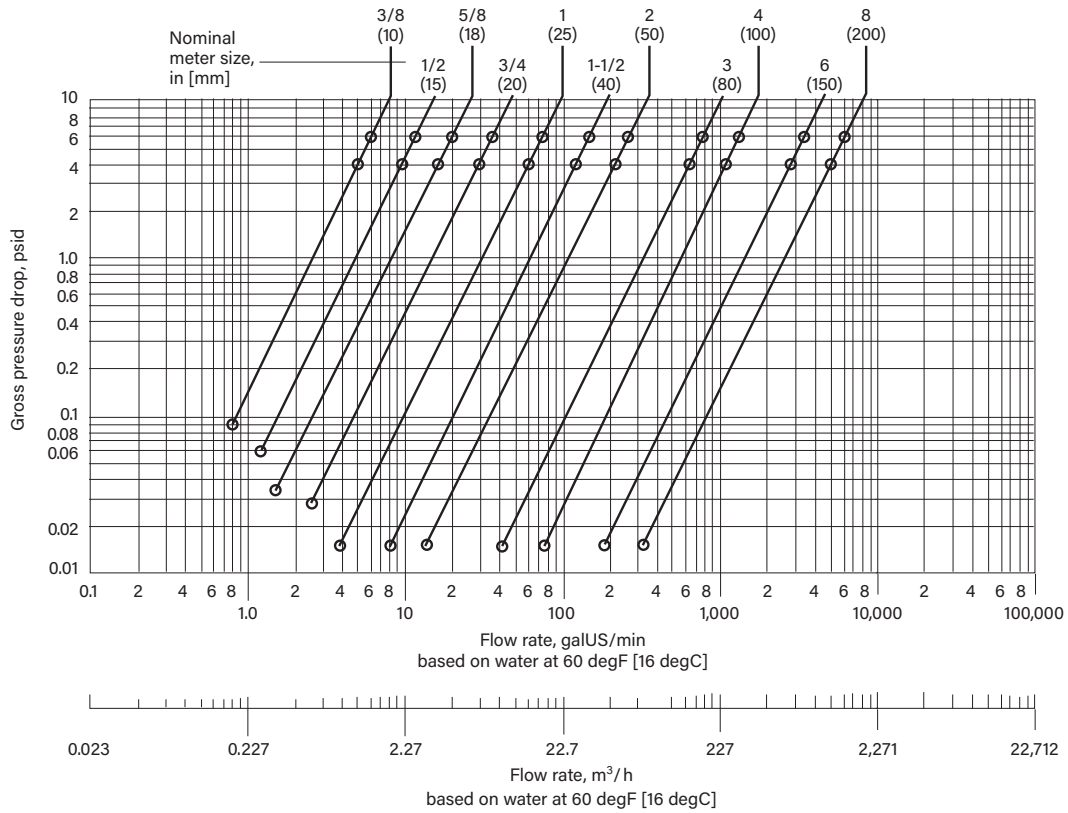
7200 Model Selection

7283	3/8 [10]	0.5	0.11	5	1.14	15,500	4,095	1,291
7284	1/2 [15]	1.0	0.23	10	2.27	10,500	2,774	1,750
7285	5/8 [18]	1.6	0.36	16	3.65	6,400	1,691	1,706
7286	3/4 [20]	2.3	0.52	23	5.2	2,700	713	1,035
7201	1 [25]	5.0	1.14	50	11.4	1,100	291	920
7245	1 1/4 [32]	6.0	1.4	90	20.4	510	135	765
7246	1 1/2 [40]	13	3.0	130	29.5	320	84.5	693
7202	2 [50]	24	5.5	240	54.5	190	50.2	760
7203	3 [80]	58	13	580	132	59	15.6	570

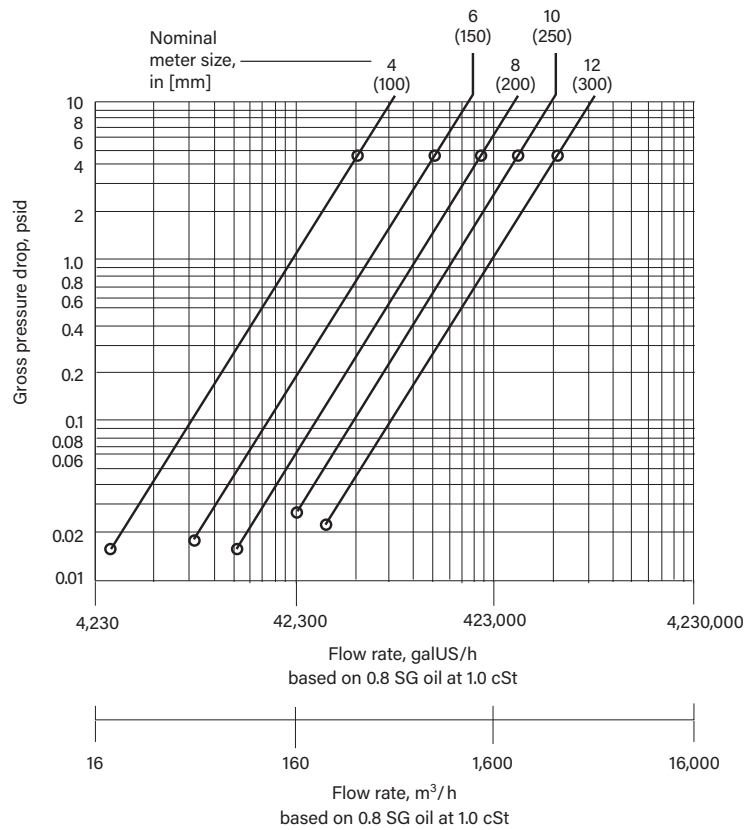
7300 Model Selection

7304	4 [100]	115	26	1,150	260	66	17.4	1,265
7306	6 [150]	250	57	2,250	511	26	6.9	975
7308	8 [200]	540	123	5,400	1,226	15	4	1,350
7310	10 [250]	800	182	8,000	1,817	7.8	2.1	1,040
7312	12 [300]	1,250	284	12,500	2,838	5.7	1.5	1,190

7100/7200 pressure drop



7300 pressure drop



Specifications

Compliances	CSA certified for hazardous areas, Class I, Division I, Group B, C, D; Class II, E, F, G; Class III, NEMA 4 waterproof to NEC (USA) and CEC (Canadian) standards ATEX certified, EEx d IIC Compliant with ANSI 12.27.01-2003 single seal requirements and manufactured to ASME B31.3 pressure requirements Available with CE mark for Pressure Equipment Directive (PED, 97/23/CE) compliant			
Pressure rating	Threaded meters			
	Connection size, in	psi	bar	mPa
	< 1	5,000	345	34.5
	1	4,400	303	30.3
	1 1/4	4,000	276	27.6
	1 1/2	3,200	220	22.1
	2	2,650	183	18.3
End connections	Flanged meters			
	Flanged meter pressure ratings are based on ASME B16.5, DIN, or BS10 as applicable.			
	Flanged	ASME B16.5 (BS EN 1759), DIN (BS EN 1092), BS10		
Conduit connections (magnetic pickup)	Threaded	Standard: NPT; Others available on request		
	3/4-in MNPT (coil boss)	1 standard	Additional coil boss available for meters 1 in and above	
Materials	Rotor Blades†	Model 7100/7200	430 stainless steel	
		Model 7300	Shrouded 316 stainless steel with nickel bars	
	Bearings	Model 7100/7300	Tungsten carbide (sleeve type)	
		Model 7200	440C stainless steel, self-lubricating (ball type)	
	Body Flanges‡	316 stainless steel		
Internals‡	316 stainless steel			
Temperature range‡, degF [degC]	Model 7100/7300	-20 to 300 [-29 to 148], standard -20 to 450 [-29 to 232], optional		
	Model 7200	-20 to 450 [-29 to 232], standard		
Pressure drop	Model 7100/7200	See pressure drop curve on page 3		
	Model 7300	See pressure drop curve on page 3		
Linearity	Model 7100/7200	± 1% of reading over flow range of fractional size meters ± 0.25% of reading over flow range of meters 1-in size and above ± 0.15% of reading over limited ranges (contact factory)		
	Model 7300	± 0.25% of reading over flow range of meters 4-in size and above ± 0.15% of reading over limited ranges (contact factory)		
Repeatability	All Models	± 0.02 of reading		
Output	Type	Sine wave		
	Voltage	Varies with meter size and flow rate (typically 20 mV to 5 V, peak-to-peak)		
	Frequency	Proportional to flow		

† Other materials are available on request.

‡ Observe the temperature rating of companion electronics where applicable. Use remote mount electronics with extensions to avoid temperature extremes.
For information regarding higher or lower temperature ratings, contact your Sensia sales representative.

DIMENSIONS

Flanged Meter Face-to-Face Dimensions (Dim. A)

Models	Up to	900 and	2500 ASME
	600 ASME	1500 ASME	
	in [mm]	in [mm]	in [mm]
7183, 7283	5 [127]	7 [178]	7 [178]
7184, 7284	5 [127]	7 [178]	7 [178]
7185, 7285	5.5 [140]	7 [178]	7 [178]
7186, 7286	5.5 [140]	7 [178]	7 [178]
7101, 7201	5.5 [140]	8 [203]	8 [203]
7145, 7245	6 [152]	8 [203]	8 [203]
7146, 7246	6 [152]	9 [229]	9 [229]
7102, 7202	6.5 [165]	9 [229]	9 [229]
7125, 7225	7 [178]	10 [254]	10 [254]
7103, 7203	10 [254]	10 [254]	11 [279]
7104, 7304	12 [305]	12 [305]	12 [305]
7106, 7306	14 [356]	14 [356]	—
7108, 7308	16 [406]	—	—
7310	20 [508]	—	—
7312	24 [610]	—	—

Threaded Meter Dimensions

Models	Thread (NPT)	End to end	Diameter
		(Dim. A)	(Dim. B)
		in [mm]	in [mm]
7183, 7283	1/2	2.75 [70]	1.125 [28.6]
7184, 7284	1/2	2.75 [70]	1.125 [28.6]
7185, 7285	3/4	2.75 [70]	1.25 [32]
7186, 7286	3/4	3.25 [83]	1.44 [36.6]
7101, 7201	1	3.5 [89]	1.69 [42.9]
7145, 7245	1 1/4	3.88 [99]	2.38 [60.5]
7146, 7246	1 1/2	4.38 [111]	2.50 [63.5]
7102, 7202	2	4.75 [121]	3.00 [76.2]

