

TURBINE FLOWMETERS BY HOFFER

Perfecting Measurement™

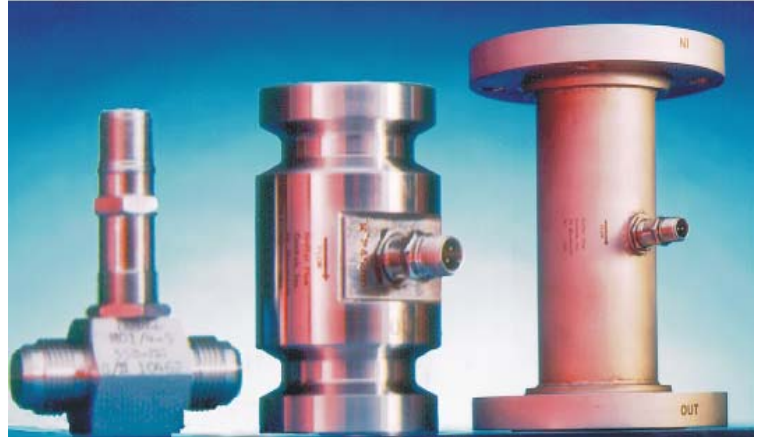


HO SERIES
Turbine Flowmeters
for Liquid Service
Product Bulletin HO-L-110L

TECHNICAL DATA SHEET

OUTSTANDING FEATURES

- Low cost.
- Outstanding accuracy.
- Provides wide flow ranges (10:1 to 100:1 turndown ranges available).
- Wide variety of process connections available.
- Wide selection of construction materials.
- Operate over a wide range of temperatures and pressures.



LIQUID SIZE SELECTOR CHART FOR STANDARD HO SERIES TURBINE FLOWMETERS

Flowmeter Size	MAGNETIC PICKUP COIL				MODULATED PICKUP COIL			
Diameter (inches)	Linear Range (US GPM)	Linear Range (LPM)	Repeatable Range (US GPM)	Repeatable Range (LPM)	Linear Range (US GPM)	Linear Range (LPM)	Repeatable Range (US GPM)	Repeatable Range (LPM)
1/4*	.35-3.5	1.3-13.2	.25-4.5	.95-17	.35-3.5	1.3-13.2	.0625-4.5	.24-17
3/8*	.75-7.5	2.8-28.4	.3-9	1.1-34	.75-7.5	2.8-28.4	.075-9	.28-34
1/2*	1.25-9.5	4.7-36	.6-12	2.3-45	1.25-9.5	4.7-36	.12-12	.45-45
5/8*	1.75-16	6.6-60.6	.9-20	3.4-75.7	1.75-16	6.6-60.6	.2-20	.75-75.7
3/4	2.5-29	9.5-110	1.5-35	5.7-132.5	2.5-29	9.5-110	.35-35	1.3-132.5
1	4-60	15-227	2-75	7.6-284	4-60	15-227	.75-75	2.8-284
1-1/4	6-93	23-352	3-115	11.4-435	6-93	23-352	1.15-115	4.35-435
1-1/2	8-130	30.3-492	5-175	19-662	8-130	30.3-492	1.75-175	6.6-662
2	15-225	56.8-852	11-275	42-1041	15-225	56.8-852	2.75-275	10.4-1041
2 Hi Flow**	42-420	159.0-1590	25	420	Not available for high flow range			
2-1/2	25-400	95-1514	15-500	56.8-1893	25-400	95-1514	5-500	19-1893
3	40-650	151-2460	20-800	76-3028	40-650	151-2460	8-800	30.3-3028
4	75-1250	284-4731	50-1500	189-5678	MCP not recommended in 4" and larger sizes			
5	140-2000	530-7570	100-2500	379-9463				
6	200-2900	757-10977	125-3600	473-13626				
8	330-5200	1249-19682	270-6400	1022-24224				
10	650-8000	2460-30280	540-9800	2044-37093				
12	1400-12000	5299-45420	800-15000	3028-56775				

NOTE: Performance enhancement techniques are routinely applied to produce larger linear and usable flow ranges. Consult with the applications group at Hoffer with your requirements.

* The linear flow ranges on 1/4" through 5/8" may be derated depending on bearing selection. Consult applications group for additional information.

** Note: High flow range only available with CB or T bearing options. For high flow range no other minimum or maximum flow range is available.

SPECIFICATIONS

Overrange: 150% of maximum flow (intermittently).

Linearity: ±0.5% of reading (±0.25% typical) over tabulated linear flow range.

Repeatability: ±0.1% (±0.05% typical) over tabulated repeatable range.

Available Turn Down Range: 10:1 to 100:1.

Available Temperature Range: -450°F to +450°F Standard. High temperature option to +850°F. Refer to various flowmeter configurations for pressure ratings, outline dimensions and available sizes.

Pressure Drop Characteristics: 4 to 5 PSI at maximum linear flow rate at one CSTK.

End Fittings: Available in NPT, MS flared and flanged styles. Other types available on request.

Bearing Styles: Ceramic hybrid ball bearings and sleeve bearings in tungsten carbide and hard carbon composite are available.

Materials: 316/316L dual rated stainless steel standard. Consult with applications group for corrosive applications. Broad material list available.

LIQUID TURBINE FLOWMETER MODEL NUMBERING SYSTEM

MODEL HO (A) X (B) - (C) - (D) - (E) - (F/G/H) - (I) - (J)

A. End Fitting Size

B. Flowmeter Size

C. Minimum Operating Flow

D. Maximum Operating Flow

E. Bearing Type

- (BP) Self-Lubricating, Ceramic Hybrid Ball Bearing 1/4" thru 1"
- (CB) Self-Lubricating, Ceramic Hybrid Ball Bearing 1-1/4" thru 12"
- (T) Tungsten Carbide Sleeve Bearing
- (C) Hard Carbon Composite Sleeve Bearing

F. Pickup Coils

- (1M) One Magnetic Coil
- (2M) Two Magnetic Coils
- (1MC3PA) One RF Coil (Not recommended in 4" and larger)
- (2MC3PA) Two RF Coils
- (1MC2PAHT) One High Temp 6" Pigtail RF coil
- (2MC2PAHT) Two High Temp 6" Pigtail RF coils
- (1HTM) High Temperature Magnetic Coil
- (2HTM) Two High Temperature Magnetic Coils
- (1ISM) Intrinsically Safe Mag Coil, North America
- (2ISM) Two Intrinsically Safe Mag Coils, North America
- (1ISM-ATEX) One ISM ATEX coil
- (2ISM-ATEX) Two ISM ATEX coils
- (RP) Redi-Pulse Coil (See Redi-Pulse Technical Data Sheet RP-XXX)
- (IRP) Intrinsically Safe Redi-Pulse Coil (See I.S. Redi-Pulse Technical Data Sheet IRP-XXX)
- (P) Pigtail or Flying Leads, Add-P and the Length of leads after any coil except the high temperature coils.
- (-ATEX) Add after coil part no. when using ATEX enclosure mounted on meter.

G. Coil Spacing, Mechanical Degrees Apart

- () Factory Assigned. Spacing required when meter has two pickup coils.

H. Riser and Explosion-Proof Coils

- (X) 1" MNPT riser, welded to body. Required for all types of enclosures.
- (X-ATEX) 3/4" MNPT riser, welded to the body.
- (XE2) 1" MNPT riser with E2 enclosure. (See Chart)*
- (X-ATEX)E2 3/4" MNPT riser with E2 enclosure. (See Chart)*
- (X8S) 8" Long S/S 1" MNPT riser. (For fluid temperatures below -40°F (-40°C) or above +140°F +60°C)
- (X8S-ATEX) 8" Long S/S 3/4" MNPT riser. (For fluid temperatures below -40°F (-40°C) or above +140°F +60°C)

***E2 EXPLOSION-PROOF/FLAME-PROOF ENCLOSURE WITH 3/4" FNPT MOUNT AND 3/4" CABLE ENTRY RATINGS:**

FM: CLASS I, DIV. 1, GR. ABCD, CLASS II/III, DIV. 1, GR. EFG, TYPE 4X
 CSA: CLASS I, DIV. 1, GR. ABCD, CLASS II, DIV. 1, GR. EFG, CLASS III, TYPE 4X EX D IIC, CLASS I, ZONE 1, IP 66
 ATEX: EX II 2GD Ex d tD IIC, IP66/68
 IEC: EX D IIC IP68

I. End Fitting Types

- (MS) 37 Deg. Male Flare Per MS33656
- (NPT) Male National Pipe Thread
- (F) Raised Face Flange per ANSI (See Chart)**
- (DN/PN_-SS/CS) DN=Metric size, PN=Flange pressure rating (in DIN std.) & select material
- (W_) Wafer Style Body (Use 1, 3, 6, 9, or 15 after "W" to indicate flange weight wafer meter will be used with)
- (_TRI) Tri-Clamp process end fittings with standard HO Series finish in sizes 1/4" thru 3" only. Enter size of the tri-clamp end fitting.

NOTES: 1. For high pressure applications, please refer to the HHP Series Data Sheet.
 2. See Sanitary Series Data Sheet for meters with Sanitary requirements.

****Pressure Rating/Flange Material**
 Include "F", number indicating pressure rating, and flange material. (i.e., -F1SS-)

<p>Select one:</p> <ul style="list-style-type: none"> (1) 150# Flanges (3) 300# Flanges (6) 600# Flanges (9) 900# Flanges (15) 1500# Flanges 	<p>Select one:</p> <ul style="list-style-type: none"> (SS) Stainless Steel (CS) Carbon Steel <p>Note: 316/316L SS flanges are standard, add -304 at end of Model# if 304 flanges are required.</p>
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J. Special Features

- (CE) CE Mark - Required for Europe
- (PED-CE) PED Mark- Required for Europe
- (SEP-CE) Sound Engineering Practice
- (S) Slurry Service Internals (Requires "T" Bearing Option)
- (SP) Any special features that are not covered in the model number, use -SP and a written description.
- (EXP) CSA Explosion-Proof Certification (See Chart)*

Flow Measuring Systems For:

<ul style="list-style-type: none"> • Water • Petrochemicals • Natural Gas 	<ul style="list-style-type: none"> • Gasoline • Chemicals • Cryogenics 	<ul style="list-style-type: none"> • Energy Management • Oil & Gas Processing 	<ul style="list-style-type: none"> • Industrial Gases • Crude Oil 	Request HO-G-110 Technical Data Sheet for complete specifications for Gas.
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The specifications contained herein are subject to change without notice and any user of said specifications should verify from the manufacturer that the specifications are currently in effect. Otherwise, the manufacturer assumes no responsibility for the use of specifications which may have been changed and are no longer in effect.

The quality system covering the design, manufacture and testing of our products is certified to International Standard ISO 9001.