

# TURBINE FLOWMETERS HOFFER

Perfecting Measurement™



## HO SERIES AUTOCLAVE® Turbine Flowmeters for Liquid Service

Product Bulletin HA-L-100I

### TECHNICAL DATA SHEET

#### OUTSTANDING FEATURES

- Maximum working pressure of 10,000, 15,000 and 20,000 psi dependent upon line size.
- Outstanding accuracy.
- Provides wide flow ranges (10:1 to 100:1 turndown ranges available).
- Autoclave® end connections.



#### LIQUID SIZE SELECTOR CHART FOR HO AUTOCLAVE® SERIES TURBINE FLOWMETERS

Flowmeter Size	MAGNETIC PICKUP COIL				MODULATED PICKUP COIL			
	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

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" and 3/8" may be derated depending on bearing selection. Consult applications group for additional information.

#### 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:** 3/4" & 1" Autoclave® male thread.

**Bearing Styles:** 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.

#### PRESSURE RATINGS

Turbine Size	Autoclave® Fitting Size	Pressure Ratings PSIG/BARG*
1/4	3/4	15,000/1034
3/8	3/4	15,000/1034
1/2	3/4	15,000/1034
1/4	1	20,000/1380
3/8	1	20,000/1380
1/2	1	20,000/1380
5/8	1	20,000/1380
3/4	1	10,000/689

\*Pressure ratings based on max/min working temperature of 400°F.

# AUTOCLAVE® 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
- (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
- (2MC3PA) Two RF Coils
- (1MC2PAHT) One High Temperature 6" pigtail RF Coil w/ 1/2" MNPT threads (+450° to +850°F)
- (2MC2PAHT) Two High Temperature 6" pigtail RF coils
- (1HTM) One ISM ATEX magnetic coil w/ 1" riser
- (2HTM) Two ISM ATEX magnetic coil w/ 1" risers
- (1ISM-ATEX) One ISM ATEX coil
- (2ISM-ATEX) Two ISM ATEX coils
- (1ISM) Intrinsically Safe Mag Coil (FM/UL)
- (2ISM) Two Intrinsically Safe Mag Coils (FM/UL)
- \_(RP\_\_\_) Redi-Pulse Coil (See Redi-Pulse Technical Data Sheet RP-XXX)
- \_(\_\_\_\_) 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 Coil Enclosures**

- (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. Process Connection/End Fitting Size**

- (AC/3/4") 3/4" Autoclave® Male Threaded End
- (AC/1") 1" Autoclave® Male Threaded End

**J. Special Features**

- (CE) CE Mark - Required for Europe
- (PED-CE) PED Mark- Required for Europe
- (SEP-CE) Sound engineering practice
- (PT) 1/4" Pressure Tap (AGA Compliant)
- (SP) Any special features that are not covered in the model number, use -SP and a written description.
- (X) No Special Features



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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.

