

TURBINE FLOWMETERS BY HOFFER

The Turbine Flowmeter Company

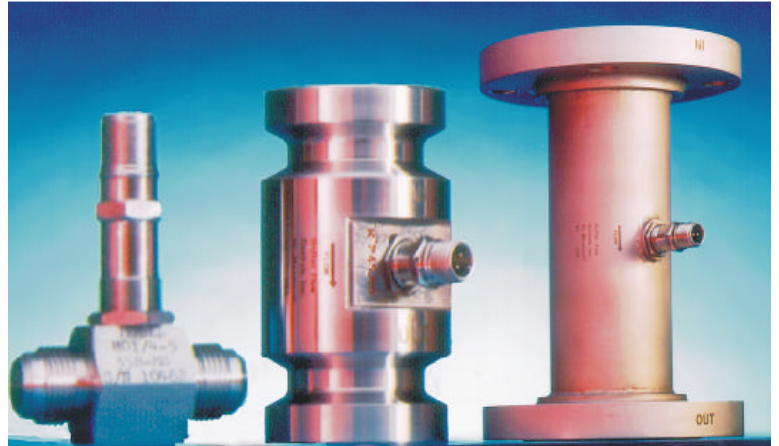


HO SERIES
Turbine Flowmeters
for Liquid Service
Product Bulletin HO-L-110G

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 | | | |
|----------------|-----------------------|--------------------|---------------------------|------------------------|--|--------------------|---------------------------|------------------------|
| | 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 |
| 2-1/2 | 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.

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 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

- (CB) 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 (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
- (2ISM) Two Intrinsically Safe Mag Coils
- _(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. Explosion-Proof Coil Enclosure (Rated Class I, Groups C & D)

- (X) 1" MNPT riser, welded to body. Required for all types of enclosures.
- (X3/0) 1" riser with enclosure and without signal conditioner.
- (X3H/0) 1" riser with enclosure and dome cover for Style 1 signal conditioner.
- (X3B/0) Same as (X3/0) with BASEEFA, FM and CENELEC-EExd approvals.
- (X4H/0) 1" riser with dome cover for ACC22 and ACC96.
- (3B/0) 1" riser with dome cover for Style 1 signal conditioners to meet Group B.
- (4/0) 1" riser with flat cover for Style 2 signal conditioners to meet Groups C & D.
- (4B/0) 1" riser with dome cover for Style 2 signal conditioners to meet Group B.
- (X8S) Add 8S after X riser for a 8" long S/S riser for hot and cold media applications.
Note: To be used when temperatures are below -40° F and above +140° F.
- (3B/0-ATEX) 3/4" MNPT riser with ATEX approved EExd II C enclosure.

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 without 3A approval in sizes 1/4" thru 3". See Sanitary Series for meters with 3A approval.

NOTE: For high pressure applications, please refer to the **HHP Series** Data Sheet.

***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 SS flanges are standard, add -304 at end of Model# if 304 flanges are required.</p> |
|--|--|

J. Special Features

- (CE) CE Mark - Required for Europe
- (PED-CE) PED Mark- Required for Europe
- (SP) Any special features that are not covered in the model number, use -SP and a written description.

Flow Measuring Systems For:

- Water**
- Gasoline**
- Energy Management**
- Petrochemicals**
- Chemicals**
- Oil & Gas Processing**
- Natural Gas**
- Cryogenics**
- Industrial Gases**
- Crude Oil**

Request HO-G-110 Technical Data Sheet for complete specifications for HO Series 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 specification 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.

