

TURBINE FLOWMETERS BY HOFFER

Perfecting Measurement™



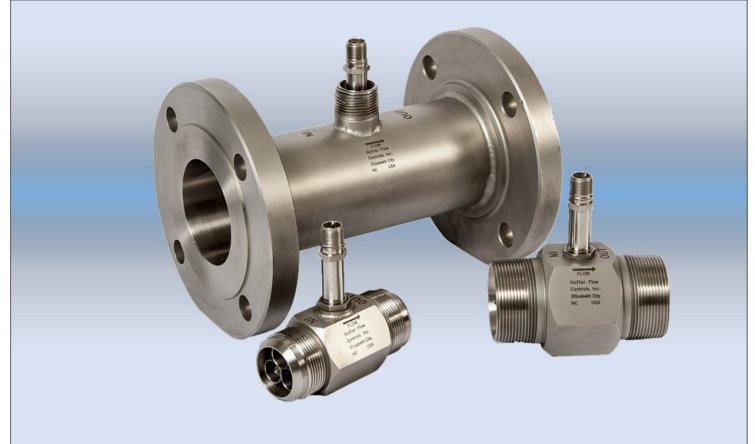
HO SERIES Turbine Flowmeters for Gas Service

Product Bulletin HO-G-110Q

TECHNICAL DATA SHEET

OUTSTANDING FEATURES

- Low cost.
- Outstanding accuracy.
- Provides wide flow ranges.
- Wide variety of process connections available.
- Operate over a wide range of temperatures and pressures.
- Exclusive use of hybrid ceramic ball bearings provide superior life.



GAS SIZE SELECTOR CHART FOR STANDARD HO SERIES TURBINE FLOWMETERS

Flowmeter Size Diameter (inches)	Repeatability Range** Based on a Gas Density of 1# / Ft ³		Repeatability Range** Based on a Gas Density of .25# / Ft ³	
	Magnetic Coil (ACF/M)	MCP Coil (ACF/M)	Magnetic Coil (ACF/M)	MCP Coil (ACF/M)
1/2 x 1/4	N/A	.15 – 3.5	N/A	.3 – 3.5
1/2 x 3/8	N/A	.3 – 5	N/A	.6 – 5
5/8	N/A	.5 – 10	N/A	1 – 10
3/4	N/A	.6 – 20	N/A	1.2 – 20
1	2.5 – 43	.8 – 43	5 – 43	1.6 – 43
1 1/4	3.5 – 100	1.25 – 100	7 – 100	2.5 – 100
1 1/2	5.0 – 120	1.75 – 120	10 – 120	3.5 – 120
2	10 – 200	3.5 – 200	20 – 200	7 – 200
2 1/2	15 – 500	5 – 500	30 – 500	10 – 500
3	20 – 600	7.5 – 600	40 – 600	15 – 600
4	30 – 1100	N/A	60 – 1100	N/A
5	40 – 1800	N/A	80 – 1800	N/A
6	50 – 3000	N/A	100 – 3000	N/A
8	100 – 4800	N/A	200 – 4800	N/A
10	150 – 7500	N/A	300 – 7500	N/A
12	200 – 12000	N/A	400 – 12000	N/A

This chart is for quick reference only and not for final size. Calculate using actual service conditions.

**Lower limit of flow range is dependent on user's operating density.

SPECIFICATIONS

Overrange: 150% of maximum flow (intermittently).

Available Turn Down Range: Dependent on gas density at user's operating conditions.

Linearity: ±1% of reading typical. ***

Repeatability: ±0.25% over tabulated repeatability range.

Note: Performance enhancement techniques are routinely applied to produce wider linear and useable flow ranges. This technique is also used to improve linearity and repeatability. Consult the applications group at Hoffer with your requirements.

Available Temperature Range: -450°F to +300°F continuous (to +400°F intermittent heat). Dependent on bearing/coil selection.

End Fittings: MS flared and flanged styles are recommended. Other types available on request.

Bearing Styles: Self-lubricating, ceramic hybrid ball bearings.

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

***Linearity is density-dependent for a given meter. Consult factory for details.

GAS TURBINE FLOWMETER MODEL NUMBERING SYSTEM

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

A. End Fitting Size

B. Flowmeter Size

C. Blade Angle (See Note 1)

D. Bearing Type

(BP) Self-lubricating, **ceramic** hybrid ball bearings, sizes 1/4" thru 1".
 (CB) Self-lubricating, **ceramic** hybrid ball bearings, sizes 1-1/4" thru 12".

E. Pickup Coils

(1M) One Magnetic Coil
 (2M) Two Magnetic Coils
 (1MC3PA) One RF Coil
 (2MC3PA) Two RF Coils
 (1MC3PAHT) One High Temp RF coil
 (2MC3PAHT) Two High Temp RF coils
 (1HTM) High Temperature Magnetic Coil
 (2HTM) Two High Temperature Magnetic Coils
 (1ISM) Intrinsically Safe Mag Coil
 (2ISM) Two Intrinsically Safe Mag Coils
 (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.

F. Coil Spacing, Mechanical Degrees Apart

() Factory Assigned. Spacing required when meter has two pickup coils. If second coil not required skip option (F).

G. 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

H. 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_CS/SS) DN=Metric size, PN=Flange pressure rating (in DIN std.) and select material

Note: For Wafer style process connections, see HO Series Wafer for Gas Technical Data Sheet (HO-SWG-XXX)

****Pressure Rating/Flange Material**

Include "F", number indicating pressure rating, and flange material. (i.e., -F1SS-)

Select one:	Select One:
(1) 150# Flanges	(SS) Stainless Steel
(3) 300# Flanges	(CS) Carbon Steel
(4) 400# Flanges	
(6) 600# Flanges	Note: 316/316L SS flanges are standard, add-304 at end of model # if 304 flanges are required.
(9) 900# Flanges	
(15) 1500# Flanges	
(25) 2500# Flanges	

I. Special Features

(CE) CE Mark - Required for Europe.
 (PED-CE) PED Mark - Required for Europe.
 (SEP-CE) Sound engineering practice.
 (PT) 1/4" FNPT Pressure Tap (AGA Compliant).
 (PG-LP) Premier Gas turbine for improved accuracy of ±0.5%, requires actual or natural gas calibration. Includes locating pin holds. Please see Premier Gas data sheet HO-PG-100 for more information.
 (SP) Any special features that are not covered in the model number, use a written description of -SP.
 (EXP) CSA Certified Explosion-Proof system (See chart)***
 (C-EXP) CSA Certified Explosion-Proof system (**Canada only**) with Remote electronics***
 (EX) Certified Explosion-Proof system***
 (C-EX) Certified Explosion-Proof system (**non-Canada**) with Remote electronics***
 (X) No Special Features

*** For Certified Systems, please contact factory.***

Notes:

1. Blade Angle determined by density, assigned by factory or use of gas sizing program.
2. Turbine sizes 1/4" through 3/4" must be equipped with MC3PA coil. 1" through 3" may be recommended for MC3PA coil depending on gas density and desired turndown range.

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