

# PREMIER GAS SERIES TURBINE FLOWMETERS BY HOFFER

HO-PG-100A

## Think about it...

If you could buy a proven gas flowmeter that costs less, has longer life, and better performance than ANY meter on the Market, would you?

Turn the page to find out why you should.



The Turbine Flowmeter Company

[www.hofferflow.com](http://www.hofferflow.com)

**A**ccurate  
**G**as  
**A**ccounting

The Hoffer **Premier Gas Series** turbine flowmeters provide extremely accurate gas measurement and at a cost less than typical mass or ultrasonic flowmeters. Combine these benefits and high reliability and you've got something to think about.

### Benefits:

Hoffer Premier Gas Series turbine flowmeters provide the following advantages:

- Exceptionally wide flow turndown ranges.
- Multiple rotor assemblies available with varying blade angles in each meter size to optimize meter performance for the flow range.
- Multiple coil outputs for signal redundancy, direction detection and meter diagnostics.
- NIST traceable gas calibrations with uncertainties to  $\pm .25\%$  available.
- Self-lubricating, ceramic hybrid ball bearings require no external lubrication or maintenance.
- CE, CSA, Cenelec and various other approvals available on most versions of the Premier Gas meter.
- Meter design does not require seals or o-rings, no through holes in housing.
- Significantly lower pressure drop compared to conventional "turbo" flowmeters.
- Over 100,000 installations worldwide.
- Limited number of internal parts reduce friction, increasing accuracy and repeatability, while limiting replacement/wearing parts.
- Can be installed in either a horizontal (preferred) or vertical orientation.

### Measurement:

The Hoffer Premier Gas Series measures the volumetric flow of gas through a pipeline. Gas flowing through the meter turns the turbine rotor at an angular velocity which is proportional to the velocity of the gas being measured. As the turbine rotor turns, the rotor blades pass a non-intrusive pickup coil that generates an electrical signal, referred to as a pulse. Each pulse represents a specific volume of gas (i.e. ACF/AM<sup>3</sup>). The totalization of these pulses result in the total volumetric flow. The total volume can be converted to mass flow total (SCF/NM<sup>3</sup>) using reference conditions and base density, or by applying various correction techniques using a Hoffer microprocessor based flow computer.

### Calibration:

Standard calibrations for Premier Gas meters are performed at a reference density of .1 #/Ft<sup>3</sup>. A 10 point calibration certificate (traceable to NIST or other recognized national laboratory) is supplied with each meter. Calibrations at customer's actual operating densities can be performed at 3rd party laboratories such as CEESI, NMI, Flow Dynamics or other national laboratories or traceable facilities, upon user request, as an option.



## General Specifications:

Repeatability:	Typically $\pm .1\%$
Accuracy:	Typically $\pm .5\%$ (improved accuracy available as an option)
Temperature Range:	-450 to +350 degrees F
Pressure Ratings:	ANSI flanges 150# through 2500#. DIN flanges upon request.
Over range:	150% of maximum flow (intermittently).
Pressure Drop Characteristics:	See Charts 1 & 2 for select data. Consult factory for specific data.
End Fittings:	NPT and MS 37 degree flared are offered on smaller size flowmeters. Flanged fittings in ANSI and DIN standards are available on all sizes.
Construction Materials:	Body - 316 stainless steel standard. Rotor - 17.4 PH stainless steel standard. Bearings - Self-lubricated, ceramic hybrid ball bearings. Flanges - Carbon steel standard. 316 stainless steel optional. Special - Custom materials of construction available upon request.

## Applications:

Hoffer turbine flowmeters offer high accuracy measurement of gases for a wide variety of applications, including fiscal measurement, plant cost allocation, energy consumption/conservation, etc. The standard Premier Gas turbine flowmeter is suitable for all non-corrosive gases such as those listed below. Special versions of this series are available for use on corrosive gases, such as “off-gas” and feature NACE trim and self-lubricated ceramic ball bearings. There are more than 100,000 Hoffer gas turbine meters installed worldwide on applications in industries that include power generation, gas production and transmission, primary metals, fertilizer manufacturing and vehicle fueling, to name but a few.

## Typical Gases Measured:

Acetylene	Air	Ammonia	Argon
Carbon Dioxide	Carbon Monoxide	Ethane	Helium
Hydrogen	Methane	Natural Gas	Nitrogen
Nitrous Oxide	Oxygen	Propane	Sulfur Dioxide

## Installation:

Hoffer recommends installing the turbine flowmeter in compliance with guidelines defined in AGA Report No. 7. Flanged flow straightening sections are available in sizes from 2” to 12” with mating fittings in classes from 150# to 2500#. Flow installation kits with threaded end connections are available for smaller line sizes. Various lengths are available depending on the final meter installation location. The upstream portion of the flanged straightening section typically is supplied with an AGA compliant flow straightening assembly with the proper length and number of vanes relative to the line size. DIN flanges are optionally available for both flowmeters and flanged flow straightening sections.

## Selection:

A Hoffer turbine flowmeter should be chosen so that it is operated within its most accurate range. The capacity of a turbine flowmeter is based on the actual volumetric flow rate and is expressed as actual cubic feet (ACF) or actual cubic meters (AM<sup>3</sup>). The lower limit of operation is a function of the gas density and velocity. Hoffer offers computer aided selection and design assistance for sizing the proper flowmeter for each application. Contact our applications group for assistance. Additional sizing information is available in the Hoffer Engineering Guide and on our web site.

## Chart 1

\* Based on a Gas Density of 0.25 lbs/ft<sup>3</sup> (4.00 Kg/m<sup>3</sup>) and 15-degree Rotor Blade Angle

Nominal Flowmeter Size (Inches)	Nominal Range* (ACFH)	Nominal Range * (SCFH)	Nominal Range * (Nm <sup>3</sup> /Hr)	Nominal Range * (MCFD)	Nominal Range * (Nm <sup>3</sup> /Day)	Estimated Maximum Pressure Drop (PSIG/kPa)
1/4	20-210	100-1165	3-33.0	2.4-28.0	70-790	0.10/0.69
3/8	35-300	200-1680	6-48	5-40	135-1140	0.10/0.69
5/8	60-600	335-3190	9.5-90.0	8.0-77	230-2170	0.12/0.83
3/4	75-1200	400-6710	11-190	9.6-160	270-4560	0.10/0.69
1	95-2580	535-14,435	15-410	13-350	365-9815	0.20/1.38
1¼	150-6000	840-33,570	24-950	20-805	570-22,825	0.20/1.38
1½	210-7200	1170-40,285	33-1140	28-965	795-27,385	0.17/1.17
2	420-12,000	2345-67,135	66-1900	56-1610	15,940-45,625	0.31/2.14
2½	600-30,000	3350-175,225	95-4960	80-4205	840-119,090	0.50/3.45
3	900-36,000	5020-262,500	142-7150	120-6300	3410-161,625	0.50/3.45
4	3600-66,000	20,285-369,250	575-10,460	490-8860	13,800-251,040	0.37/2.55
5	4800-108,000	26,780-721,370	760-20,430	645-17,315	18,190-490,300	0.50/3.45
6	6000-180,000	33,425-1,115,000	950-31,580	802-26,760	22,730-757,920	0.45/3.11
8	12,000-288,000	66,950-1,611,250	1900-45,630	1607-38,670	45,500-1,095,120	0.42/2.90
10	18,000-450,000	100,400-2,517,570	2485-71,300	2410-60,420	59,590-1,711,200	0.37/2.55
12	24,000-720,000	133,900-4,028,100	3790-114,075	3214-96,675	90,960-2,737,800	0.37/2.55

## Chart 2

\* Based on a Gas Density of 4.0 lbs/ft<sup>3</sup> (64.08 Kg/m<sup>3</sup>) and 15-degree Rotor Blade Angle

Nominal Flowmeter Size (Inches)	Nominal Range* (ACFH)	Nominal Range * (SCFH)	Nominal Range * (Nm <sup>3</sup> /Hr)	Nominal Range * (MCFD)	Nominal Range * (Nm <sup>3</sup> /Day)	Estimated Maximum Pressure Drop (PSIG/kPa)
1/4	5-210	400-18,530	11-520	10-445	270-12,480	1.6/11.03
3/8	10-300	800-27,000	23-765	19-650	540-18,350	1.6/11.03
5/8	15-600	1335-50,730	38-1435	30-1220	905-34,440	2.0/13.79
3/4	20-1200	1600-106,800	45-3025	38-2565	1085-72,600	1.6/11.03
1	25-2580	2135-230,000	60-6510	51-5520	1450-156,240	3.2/22.06
1¼	40-6000	3335-534,000	95-15,120	80-12,815	2280-362,880	3.2/22.06
1½	55-7200	4675-641,000	135-18,150	110-15,385	3190-435,600	2.8/19.30
2	105-12,000	9345-1,068,000	265-30,245	225-25,630	6360-725,880	5.0/34.47
2½	150-30,000	13,350-2,787,000	380-78,930	320-66,890	9070-1,894,320	8.0/55.16
3	225-36,000	20,025-4,176,000	567-118,265	481-100,225	13,610-2,838,360	8.0/55.16
4	900-66,000	80,100-5,874,000	2270-166,350	1920-140,975	54,480-3,992,400	6.0/41.37
5	1200-108,000	107,000-11,475,000	3030-324,975	2570-275,400	72,720-7,799,400	8.0/55.16
6	1500-180,000	133,500-17,734,000	3780-502,225	3205-425,615	90,720-12,053,400	7.2/49.64
8	3000-288,000	267,000-25,631,000	7560-725,870	6410-615,145	181,440-17,420,880	6.8/46.88
10	4500-450,000	400,500-40,049,000	11,340-1,134,185	9615-961,175	274,320-27,220,440	6.0/41.37
12	6000-720,000	534,000-64,080,000	15,125-1,814,400	12,815-1,573,150	363,000-43,545,600	6.0/41.37

All tables are based on standard conditions: 14.73 PSIA and 60°F. Supercompressibility not included. Flow ranges have been rounded.

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

