

Hoffer TM Oval Gear



Positive Displacement Flowmeters

Design Features:

- ◆ Patented Toothless Oval Gear Construction. U.S. Patent 5,992,230
- ◆ High Accuracy.
- ◆ Compact Design.
- ◆ High Resolution Electronic Output.
- ◆ Stainless Steel Ball Bearing, Self Lubricating.
- ◆ 316 Stainless Steel with Brass Thrust Plate Construction (Standard).
- ◆ No Special Gears Needed for High Viscosity.
- ◆ Linearity Unaffected by Viscosity Changes.
- ◆ 1" MNPT End Fitting (Standard). Variety of End Connections Available.

Specifications:

- Linearity:** $\pm .25\%$ of reading or better above 100 CSTKS from 5 to 20 GPM. $\pm .5\%$ over the extended range.
- Repeatability:** $\pm 0.05\%$.
- Flow Range:** .02 to 25 GPM.
- Operating Temperature:** -20° to $+375^{\circ}\text{F}$ based on O-ring material (Viton). See pickup coil section of ordering information for temperature ratings.
- Operating Pressure:** Up to 3000 psig standard.

Principles of Operation:

The oval shaped smooth gears are used to displace a precise volume of fluid, which is passed through the measurement chamber during each revolution. The toothless design along with the fluid being measured, provides a complete viscous seal within the measuring chamber. This sealing effect provides for a greater flow measurement accuracy.

The displacement of the fluid is then translated via a magnetic or Hall effect pick up into a pulse output proportional to flow. Through the use of a Hoffer accessory the frequency output can be converted to 0 – 5 VDC, 4 – 20 mA analog signals or taken to a Hoffer flow computer for display, batching, or data logging.



The fluid is displaced from the inlet to the outlet via the area between the smooth oval gear and the inner diameter of the meter housing.

Conventional oval gears have teeth that mesh. One of the advantages of the smooth oval gears is that the viscous flow does not get trapped or squeezed between the gears. Typically, oval gears need to have cuts made in the teeth allowing high viscosity fluids to pass. These cuts result in a decrease in accuracy.

The Hoffer Oval Gear meter is manufactured in-house under a certified ISO-9001 quality system. The "H.O.G." meter offers users an accurate and reliable means for the measurement of high viscosity fluids.

The Hoffer Advantage:

The unique design of Hoffer's Oval Gear meter incorporates two **SMOOTH** (toothless) oval gears 90 degrees out of phase. The measurement gears are held together by two timing gears. The timing gears have a pitch diameter equal to the outside diameter of the measurement gears.

The flow through the meter measurement chamber follows the path of least resistance. Therefore no liquid passes through the center cavity between the measurement gears.

Toothless Gears

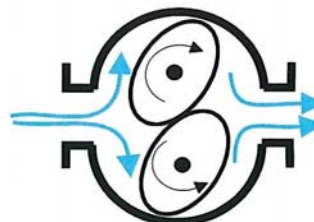
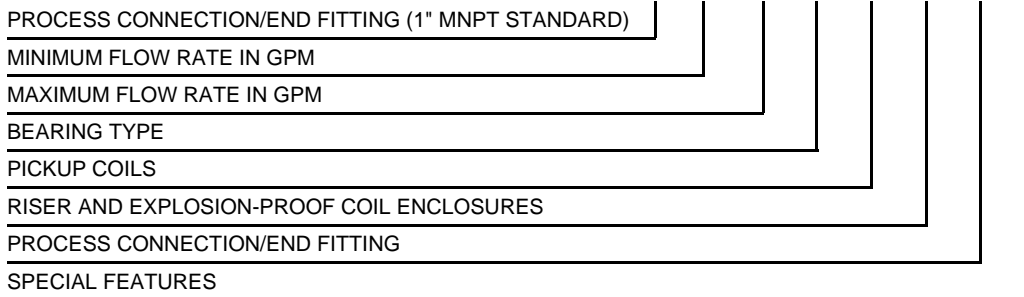


Fig. 1

As shown in Fig. 1, the oval shaped toothless gears are used to sweep out a precisely known volume of fluid passing through the measurement chamber during each rotation.

Ordering Information

MODEL HOG(1)-(A)-(B)-(C)-(D)-(E)-(F)-(G)



MINIMUM FLOW AND MAXIMUM FLOW RATE IN GPM OPTIONS (A) & (B)

MODEL HOG(1)-(A)-(B)-(C)-(D)-(E)-(F)-(G)

*Note 1: To meet the minimum rated flow range of 0.02 GPM a hall effect coil must be used. When a magnetic coil is used, the minimum flow range is 2.00 GPM.

** Note 2: Recommended only for intermittent use above 20 GPM.

	<u>MINIMUM FLOW</u>	TO	<u>MAXIMUM FLOW</u>	
Standard Range:	2.00 GPM		20.0 GPM	(±.25% of reading or better above 100 CSTKS)
Extended Range:	5.00 GPM		25.0 GPM	(±.25% of reading or better above 100 CSTKS from 5 to 20 GPM; ±.5% from 20 to 25 GPM) **
Extended Range:	0.02 GPM*		25.0 GPM	(±.50% of reading or better above 100 CSTKS) **

BEARING TYPE

MODEL HOG(1)-(A)-(B)-(C)-(D)-(E)-(F)-(G) OPTION (C)

(B) STAINLESS STEEL BALL BEARING, SELF LUBRICATING.

PICKUP COILS

MODEL HOG(1)-(A)-(B)-(C)-(D)-(E)-(F)-(G) OPTION (D)

(1HE)	HALL EFFECT COIL.
(1M)	MAGNETIC COIL.
(1ISM)	INTRINSICALLY SAFE MAG COIL .
(1ISM-ATEX)	ONE ISM ATEX COIL
(1DM__)	ONE REDI-PULSE INTRINSICALLY SAFE MAGNETIC COIL. (See I.S. Redi-Pulse Technical Data Sheet IRP-XXX)
(1RPM__)	ONE REDI-PULSE MAGNETIC COIL. (See Redi-Pulse Technical Data Sheet RP-XXX)
(-ATEX)	ADD AFTER COIL PART NUMBER WHEN USING ATEX ENCLOSURE MOUNTED ON METER.

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

PROCESS CONNECTION/END FITTING TYPE

MODEL HOG(1)-(A)-(B)-(C)-(D)-(E)-(F)-(G) OPTION (F)

(MNPT)	1" MALE NATIONAL PIPE THREAD STANDARD.
(F1CS)	1" THREADED FLANGES, RF 150# CARBON STEEL.
(F1SS)	1" THREADED FLANGES, RF 150# 316 S/S.
(F3CS)	1" THREADED FLANGES, RF 300# CARBON STEEL.
(F3SS)	1" THREADED FLANGES, RF 300# 316 S/S.
(F6CS)	1" THREADED FLANGES, RF 600# CARBON STEEL.
(F6SS)	1" THREADED FLANGES, RF 600# 316 S/S.
(F9CS)	1" THREADED FLANGES, RF 900# CARBON STEEL.
(F9SS)	1" THREADED FLANGES, RF 900# 316 S/S.

SPECIAL FEATURES

MODEL HOG(1)-(A)-(B)-(C)-(D)-(E)-(F)-(G) OPTION (G)

(CE)	CE MARK REQUIRED FOR EUROPE.
(PED-CE)	PED MARK REQUIRED FOR EUROPE.
(SEP-CE)	SOUND ENGINEERING PRACTICE.
(SP)	ANY SPECIAL FEATURES THAT ARE NOT COVERED IN THE MODEL NUMBER, USE A WRITTEN DESCRIPTION OF THE -SP.
(X)	NO SPECIAL FEATURES.

- NOTES: 1. INCLUDES A 12 POINT CALIBRATION AT APPROXIMATELY 100 CENTISTOKES.
 2. VISCOSITY CALIBRATIONS AT THE USERS OPERATING VISCOSITY IS AVAILABLE. CONTACT FACTORY FOR MORE INFORMATION.
 3. THE MINIMUM VISCOSITY FOR ACCURATE DATA IS 100 CENTISTOKES.



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



HOG-M-1120

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.