

INDUSTRIAL GAS TURBINE FLOWMETER

Introduction

The Nixon range of turbine flowmeters offers high accuracy and high reliability. Over 50 years, thousands of units have been sold to all classes of industry, and the meters have an excellent reputation for durability.

Many leading flowmeter companies in the U.K. and abroad have the confidence to put their name on our range of turbine flowmeters, a sign of the high regard in which the product is held.

The range has been modified and extended over the last few years to provide a reasonably priced general purpose flow transmitter. We now produce the units entirely in-house to control quality and availability. The range is available on short deliveries, and popular sizes are held ex-stock.

Available in a wide variety of body sizes and styles, all NTG flowmeters possess an electrical pulse output directly proportional to flowrate, based upon the operating principle described in this publication. Remote flowrate indication, alarms and totalising functions are available, utilising our wide range of secondary electronic instruments.

The flowmeters are suitable for use on dry Gasses (inert and flammable) line pressures down to 0.01 bar.

Contact parts are produced from 316 stainless steel, except rotors which must possess good magnetic qualities, and here ANC1A Stainless is used.

Standard end connections are screwed BSP parallel thread or NPT but other connections are available on request.

Flanged meters are normally to ANSI 150 or BS4504 (DIN) standards. Other types can also be fitted. A unique feature of the design is the use of helically milled rotors cut from solid, in sizes up to 100mm.

Bearing are Ball Race type in 440C or similar. With the Rotor in ANC1A.

The electrical signal is a sinusoidal pulse of minimum height 50mV peak at lowest flowrate, rising to 800mV peak at max flowrate. For normal transmission distances pre-amplifiers are not essential since pulse shaping and conditioning are carried out in the appropriate electronic readout unit. In cases where heavy electrical noise is present or where transmission distances are over 500 metres, pre-amplifiers of standard or intrinsically safe design are available as head mounted weatherproof units and loop powered.

Performance and other details are listed on Technical Data tables on page 2.

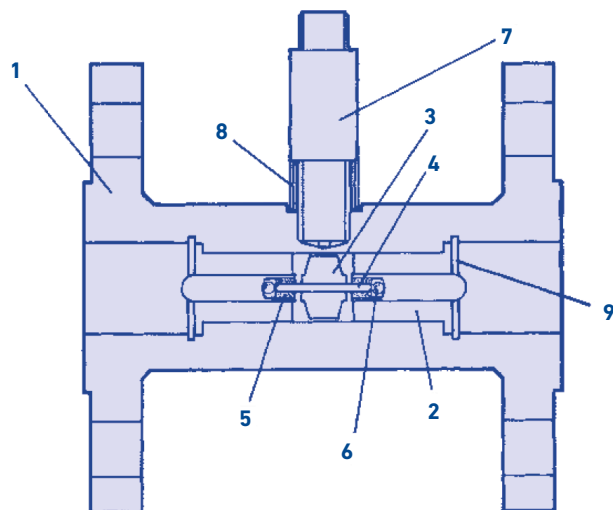


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Technical Data

Linear Accuracy	±2% with linearisation
Repeatability	±0.2% of reading
Response Time	50 milliseconds for 50% step change in flowrate
Output Signal	Sinusoidal pulses 50mV - 800mV peak varying with flowrate
Operating Pressure	Operating pressure limited to design of end couplings
Pressure Drop	0.01 bar (0.2 psi) at maximum flowrate
Flow Range	8:1 as standard Wider ranges possible
Temperature	-50°C min 160°C max (standard coil) 400°C special design 120°C intrinsically safe
Transmission Distance	500 metres max without pre-amplifiers for low noise environment
Mounting Attitude	Horizontal or vertical (flow upwards) or inclined

Parts & Materials



1	Housing	316 Stainless Steel
2	Bearing Hanger	316 Stainless Steel
3	Rotor	ANC1A Stainless Steel
4	Spindle	Tungsten Carbide
5	Bearing Brushes	Ball Race/Hybrid Ceramic
6	Thrust Ball	N/A
7	Pick Off Coil	Stainless Steel Body
8	Collar	316 Stainless Steel
9	Circlip	302 Stainless Steel

Sizing Table

Type Number	Flow Range		Standard End Fittings		
	m3/hr (Actual)	L/min (Actual)	Threaded	ANSI or BS10 E Flange	DIN Flange
NTG7	2-10	33-167	1/2"	3/4"	ND20
NTG11	3-16	50-267	3/4"	3/4"	ND20
NTG13	4-35	67-583	3/4"	3/4"	ND20
NTG24	8-60	133-1000	1"	1"	ND25
NTG38	15-115	250-1917	1 1/2"	1 1/2"	ND40
NTG48	30-210	500-3500	2"	2"	ND50
NTG80	45-340	750-5667		3"	ND80
NTG100	85-690	1417-11500		4"	ND100

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Operating Principle

A ferritic stainless steel rotor revolves within a nonmagnetic housing on the outside of which is located a pick off coil containing a permanent magnet. As the rotor blades pass the tip of the permanent magnet, the reluctance of the magnetic circuit is changed, and a small a.c. voltage is generated in the coil. The frequency of the a.c. voltage is proportional to flowrate, and the total number of pulses produced represents total flow passed through the meter.

The flowmeter may be located some considerable distance from the associated secondary instrument, and remote flowrate indication and total flow are thus possible.



Installation & Use

For best results the flowmeter should be installed well away from heavy current carrying cables and with control valves etc. located downstream of the meter.

A length of straight pipe of bore equal to the meter inlet should be provided, preferably 10 diameters in length, and if possible containing flow straightening vanes at the inlet end. Turbine meters are sensitive to turbulence present upstream and may cause errors in reading.

Meters may be installed in any orientation, but the flow direction and mounting orientation should be advised at the order stage, if other than horizontal.

Varying densities have no appreciable effect on the accuracy of axial flow turbine meters so far as volumetric flow is concerned. If readout is required in

mass flow terms, we can supply density or temperature compensation equipment to automatically correct for density variation. All turbine meters are to some extent sensitive to viscosity changes and any likely viscosity variation should be advised at the order stage.

Servicing may be carried out by our service engineers in the field, but meters should be returned to our factory wherever possible for repair. Bearing replacement can be carried out on site by a skilled fitter, and instructions will be provided on request.

When requesting service visits or spares the full serial number should be stated, which immediately gives us access to the original order files for the installation.

Nixon Flowmeters Ltd

Badminton Close, Naunton Lane, Leckhampton, Cheltenham, Gloucestershire GL53 7BX. UK

T: +44 (0)1242 243006 **F:** +44 (0)1242 222487 **E:** info@nixonflowmeters.co.uk **www.nixonflowmeters.co.uk**