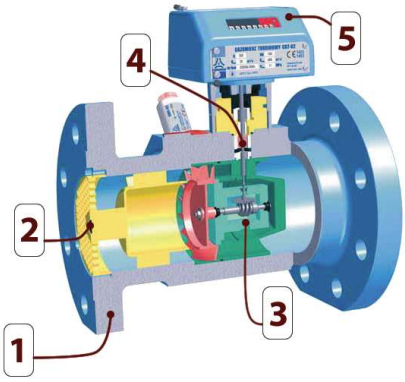
CGT-02

Turbine Gas Meter for custody transfer

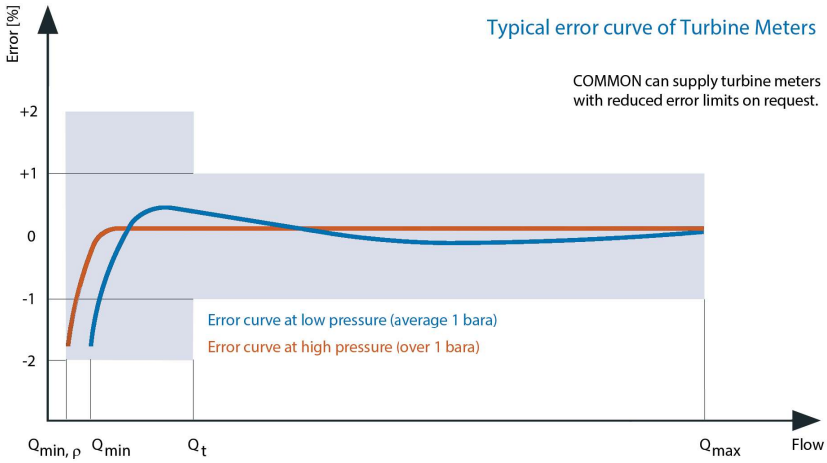
The turbine gas meter measures the quantity of gas basing on the flow principle. The gas flows through an integrated flow conditioner, which distributes the flow proportionally in the annular slot and guides it to the turbine wheel. The wheel is driven by the gas flow, and the angular velocity of the rotation is proportional to the gas flow rate. The rotary motion of the turbine wheel is transferred mechanically by gear wheels, and the incorporated gas tight and hermetic magnetic coupling, to the index unit, mounted on the top of the body, and shows the volume on the totalizer. The basic components of the COMMON CGT series turbine gas meter are as follows:



- pressure resistant meter body (1)
- inlet flow conditioner (2)
- measuring cartridge with the turbine wheel (3)
- magnetic coupling as the transferring element between the measuring cartridge and the index head (4)
- index head, IP67 protection class (5)
- lubricating system (some meters may be provided with self lubricating bearings)

Metrology

The meters are manufactured in accordance with EC regulations and OIML recommendations. The maximum permissible error is ±2% in the range $Q_{min} \div Q_t$ and ±1% in the range $Q_t \div Q_{max}$. Meters with improved accuracy may be delivered on request. Typical rangeability is 1:20. Some meters may be delivered with extended rangeability 1:30. When meters operate at high pressure the rangeability can be extended (depends on operating pressure).



- ✓ pressure rating:
  PN10 ÷ PN110 & ANSI150 ÷ ANSI600
- ✓ nominal diameter:
  DN50 up to DN400
- ✓ meter bodies:
  ductile cast iron or steel
- ✓ flow:
  5 to 10 000 m^3/h
- ✓ rangeability:
  1:20 min at atmospheric pressure
  (increased rangeability on request)
- ✓ upstream pipe:
  minimum 2 x DN
- ✓ temperature range:
  gas temperature -25°C to +70°C
  ambient temperature -25°C to +70°C
- ✓ operating position:
  horizontal or vertical
- ✓ measurement accuracy according to EN12261 standard:
  0.2Qmax ÷ Qmax < ±1%
  Qmin ÷ 0.2Qmax < ±2%
  improved accuracy on request
- ✓ approvals:
  - MID
  - PED
  - ATEX
- ✓ traceabilty to PTB standards

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Basic metrological parameters

DN Nominal Diameter	G Gas Meter Size	Q_{max} Maximum Flow	Q_{min} Minimum Flow at Rangeability *		LF Transmitter Constant	HF1, HF2 Transmitter Constant (approximate)	HF3 - HF6 Transmitter Constant (approximate)	Δp ** Pressure loss at Q_{max}
			1:20	1:30				
[mm]	—	[m^3/ h]	[m^3/h]		[pulse/m^3]			[Pa]
50	65	100	5	—	10	2610	94829	760
80	100	160	8	—	1	742	26974	260
	160	250	13	8	1	742	26974	620
	250	400	20	13	1	470	17059	1500
100	160	250	13	8	1	692	16782	260
	250	400	20	13	1	692	16782	670
	400	650	32	20	1	401	9719	1580
150	400	650	32	20	1	227	6873	280
	650	1000	50	32	1	227	6873	720
	1000	1600	80	50	0.1	129	3910	1600
200	650	1000	50	32	1	114	3113	260
	1000	1600	80	50	0.1	116	3167	760
	1600	2500	130	80	0.1	67	2025	1700
250	1000	1600	80	50	0.1	58	2111	310
	1600	2500	130	80	0.1	58	2111	760
	2500	4000	200	130	0.1	34	1223	1550
300	1600	2500	130	80	0.1	32	1181	260
	2500	4000	200	130	0.1	32	1181	650
	4000	6500	320	200	0.1	19	680	1600
400	2500	4000	200	130	0.1	13	444	170
	4000	6500	320	200	0.1	13	444	440
	6500	10000	500	320	0.1	7.0	285	900

* Measuring range of the meter will increase with the high pressure calibration. Please contact with the manufacturer for details

** Pressure drop for individual meters may vary by ± 5% comparing to standard values.

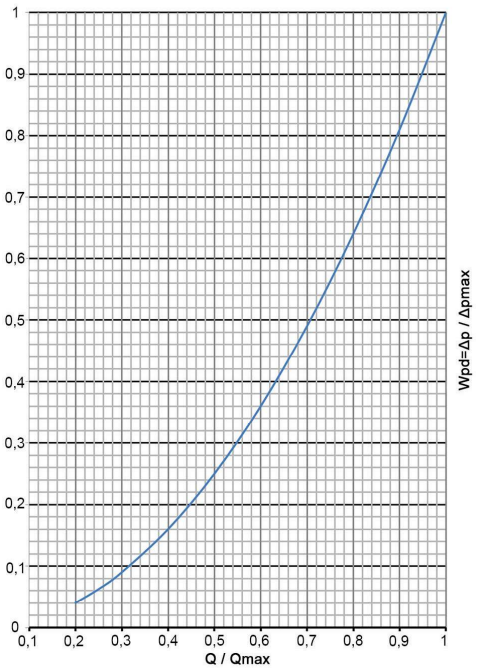
Pressure loss

Pressure drop during the gas flow through the meter according to EN12261 is determined for air at atmospheric conditions.
To calculate pressure drop at higher pressures, the following formula may be used:

$$\Delta p_{rz} = \rho_w \times \left(\frac{p_a + p}{p_a}\right) \times Wpd \times \Delta p$$

Definitions:

- Δprz — pressure loss at pressure p [Pa]
- ρw — specific density of gas related to air
- pa — base pressure (1,01325 bar)
- p — gauge pressure upstream the meter
- Wpd — coefficient from the diagram below
- Δp — pressure loss [Pa] at Qmax from the Table with CGT-02 basic parameters



Outputs

- Up to 10 transmitters for DN100-400
- Up to 8 transmitters for DN50-80
- 2 off low frequency pulse sensors (LFK reed contact or LFW Wiegand)
- LFI – low frequency inductive pulse sensors (NAMUR)
- HF1, HF2 – inductive pulse sensor s in the index head (NAMUR)
- HF3, HF4 – inductive pulse sensors over the turbine wheel (NAMUR)
- HF5, HF6 – inductive pulse sensor over the reference wheel (NAMUR)
- AFK – anti-fraud reed contact
- Electrical outputs – Amphenol TUCHEL
- Index housing made of aluminium what perfectly protects index head against accidental damages
- Index housing may be provided with two separate sockets
- 2 pressure measurement taps as standard
- 2 temperature measurement taps (option)

Index head with encoder (option)

Index head with mechanical output (option)

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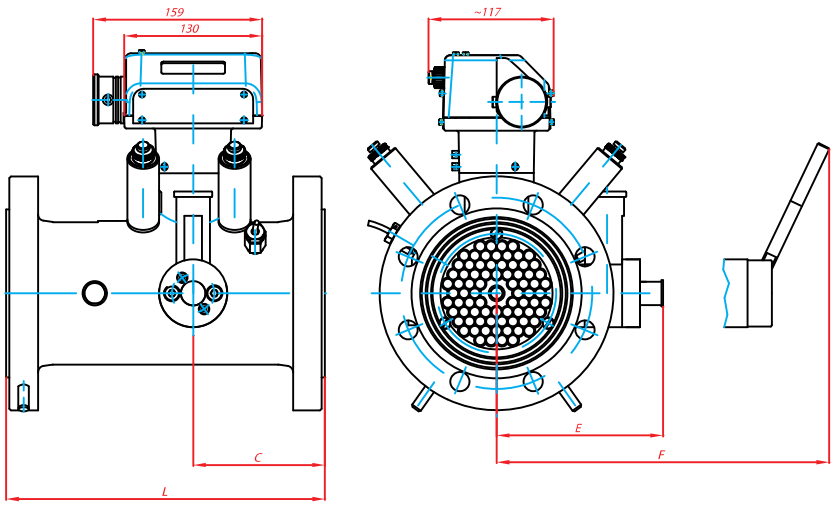
Dimensions and weight

Overall dimensions and weights of CGT turbine gas meters



DN	L	C	E	F	Pressure/flanges		Weight	
					ANSI	PN	Ductile iron	Steel
[mm]							[kg]	
50	150	58	150	—	—	16	11	12
					150	20	11	11
			—	216	300	50	—	12
					600	110	—	13
80	240	95	146	—	—	16	19	24
					150	20	18	24
			—	212	300	50	—	27
					600	110	—	30
100	300	124	157	—	—	16	24	32
					150	20	25	34
			—	223	300	50	-	42
					600	110	-	52
150	450	180	185	—	—	16	47	64
					150	20	46	64
			—	251	300	50	—	80
				260	600	110	—	105
200	600	240	317	—	—	16	70	70
					150	20	70	71
					300	50	—	100
			—	388	600	110	—	140
250	750	330	343	—	—	16	—	130
					150	20	—	130
					300	50	—	175
			—	414	600	110	—	250
300	900	350	369	—	—	16	—	190
					150	20	—	200
					300	50	—	260
			—	440	600	110	—	340
400	1200	400	432	—	—	16	—	350
					150	20	—	390
					300	50	—	480
			—	503	600	110	—	580

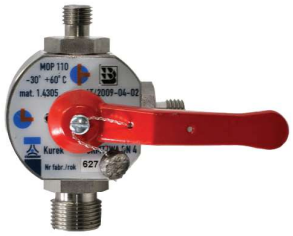
Contact your local representative or the manufacturer to get more information about the products.

Accessories

- ✓ Thermowells

- ✓ Oil pumps

- ✓ 3-way valve



- ✓ Sprenkle flow straightener

- ✓ HF pulse transmitters

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