

Certified according to DIN EN ISO 9001

## Technical Datasheet



## HM...TRI

Turbine Flow Meters (Tri-Clamp)  
for pharmaceutical Applications

## Application

Turbine flow meters serve to accurate measurement of continuous and discontinuous flow rate values. This turbine flow meter is most suited for liquids with low and middle viscosity, such as for example water, emulsions, mixtures containing glycol and light oils.

The large range of different pipe connections and structural sizes allows using these flow meters in various applications and in various industrial sectors.

### Applications

- Tap and demineralised water
- Fuels
- Liquefied gases
- Pharmaceutical liquids
- Fuel oil
- Solvents

## Principle and Design

The turbine flow meters KEM are indirect volume counters built on the principle of using the counter with the Woltmann turbine impeller. The energy coming from the flow of the liquid sets in motion a centrally and rotatably mounted rotor. The number of the rotor revolutions is directly proportional to the volumetric liquid flow.

The speed of rotation of the turbine rotor is contactlessly sensed through the wall of the flowmeter body. The impulses generated by each turbine blade correspond to a certain accurate volumetric flow of the measured medium. The number of pulses for a certain period of time corresponds to the value of the medium flow rate expressed, for example, in litres per one minute. The lightweight turbine wheel allows quick response to changes in the value of the medium flow rate (< 50 m/s)

### Features

- Short response time (> 50 ms)
- Dynamic measuring system
- Different internal nominal diameters
- Non-threaded pipe connections
- Pressure: as per DIN 32 676
- Design without dead space
- Slide bearing of PTFE with possibility of flushing

## Technical Data

Type	Measuring range, l/min		K-Factor, pulses/l <sup>1)</sup>	max. Pressure, bar	Frequency, in Hz <sup>1)</sup>	Weight, kg
HM 003 TRI*	0,3	to 1.5	32,500	16	1,000	0.4
HM 004 TRI*	0.5	to 4	24,000	16	1.250	0.4
HM 005 TRI*	0.8	to 6	17,800	16	1,740	0.4
HM 006 TRI*	1.2	to 10	11,000	16	1,750	0.4
HM 007 TRI*	2.0	to 20	3,200	16	1,800	0.4
HM 009 TRI*	3.3	to 33	1,900	16	2,400	0.4
HM 011 TRI*	6.0	to 30	1,300	16	2,800	0.5
HM 013 TRI*	8.5	to 85	900	16	3,000	0.5
HM 017 TRI*	12	to 120	380	16	1,600	0.5
HM 019 TRI*	15	to 150	310	16	1,600	0.5
HM 022 TRI*	20	to 200	217	10	1,600	0.5
HM 024 TRI*	25	to 250	170	10	2,000	0.5
HM 028 TRI*	30	to 360	155	10	2,000	0.5
HM 030 TRI*	35	to 400	130	10	1,850	0.5

1) The data on K-factors and maximum frequencies are average values at 1mm<sup>2</sup>/s. The numbers of pulses and frequencies at higher viscosities may vary. Exact values can be found in individual calibration records.

\* Detailed type code on request

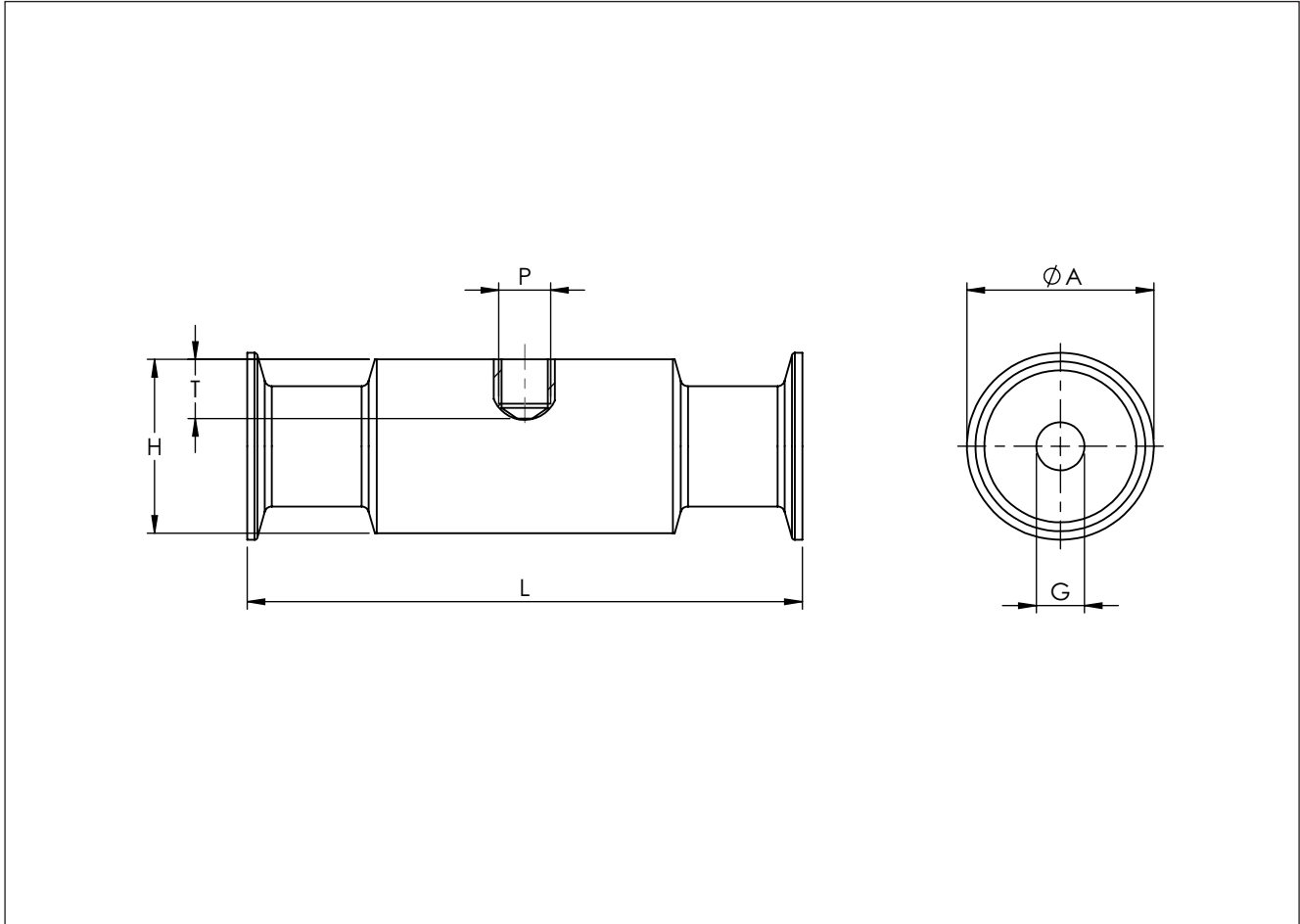
General	
Linearity	± 1.0 % of actual flow (1 mm <sup>2</sup> /s)
Repeatability	± 0.1 %
Viscosity range	0.8 to 100 mm <sup>2</sup> /s
Materials	Housing:: as per DIN 1.4571 (SS 316 Ti) Wheels: as per DIN 1.4460 (SS 329) Bearing: PTFE Sealing: FKM
Medium temperature	-20 °C to +150 °C (higher temperatures on request)
Dimensions	See drawing (page 4 to 5)

## Pickup Selection

Criteria	Type	VTE *	WT */ WI*	VIE *	IF */ VIEG	VTC *	VTB *	TD *	VHE	FOP *
Drilling type <sup>1)</sup>		E	E	E	E	E	E	D	E	E/F
Medium temperature	≤ +70°C									
	≤ +120°C					✓	✓		✓	✓
	≤ +150°C	✓	✓	✓						
	≤ +350°C				✓					
EX-Approval		✓	✓	✓	✓	✓	✓			✓
Frequency output		✓	✓	✓	✓	✓			✓	✓
Dual frequency output										
Analogue output 4 - 20 mA			✓			✓				
Forward / backward recognition										
Local display						✓	✓			
Linearization			✓			✓				
Supply 12 - 24 V		✓	✓	✓	✓	✓			✓	
Supply battery							✓			✓
Interface			✓			✓				

1) Thread types: E: single pickup / D: dual pickup / F: FOP-pickup  
\* Ordering code (please see separate datasheet)

## Dimensional Drawings (mm) - HM...TRI



HM Type	Ø A	G	H	L	P <sup>1)</sup>	T <sup>2)</sup>	DN
HM 003 TRI*	50.5	4	40	68	E	17	25
HM 004 TRI*	50.5	4	40	68	E	17	25
HM 005 TRI*	50.5	5	40	68	E	16.5	25
HM 006 TRI*	50.5	5	40	68	E	16.5	25
HM 007 TRI*	50.5	7	40	68	E	15.5	25
HM 009 TRI*	50.5	9	40	68	E	14.5	25
HM 011 TRI*	50.5	11	40	68	E	13.5	25
HM 013 TRI*	50.5	13	52	150	E	18.5	40
HM 017 TRI*	50.5	17	52	150	E	16.5	40
HM 019 TRI*	50.5	19	52	150	E	15.5	40
HM 022 TRI*	64	22	64	197	E	20	50
HM 024 TRI*	64	24	64	197	E	19	50
HM 028 TRI*	64	28	64	197	E	17	50
HM 030 TRI*	64	30	64	197	E	16	50

1) See "Pickup Selection" table (page 3)

2) Please notice: total height is calculated by adding up the height (H) and the height of the pickup (separate data sheet) and subtract the bore hole depth (T)

\* Detailed type code on request

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