

Turbine flow meters for liquids

Series Turbotron VT...



Turbine flow sensors for liquids, serie Turbotron

DN 15...disturbance insensitive and long-lived!

VT 15 with pulse output

The turbine flow sensors of the product line Turbotron are sensors for flow rate measurement or dosing applications for liquids. Through its especially compact type, its very wide measuring range and its convincing precision of measurement, it has an almost unlimited application.



Convincing advantages

Especially suitable and proved in numerous serial applications through

- fixed pulse rate, thus practically no serial deviation
- wide measuring range e.g. 1:20, universally usable
- high precision of measurement $\pm 0,5\%$ or $\pm 1\%$, therefore reliable measured variables
- high quality sapphire bearing, low abrasion and extremely long running period
- specially designed guiding blades ensures uniform flow to the rotor from four sides, thus tremendous reduction of wear
- insensitive against pressure peaks, providing reliable measurement variables even under difficult conditions
- any position, can be versatile installed

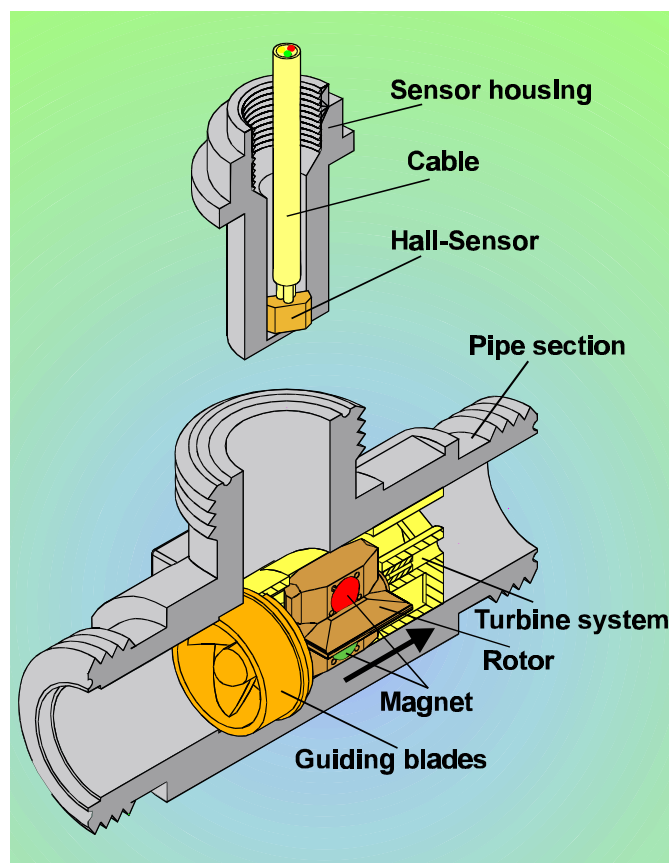
Flexibel and perfectly equipped thanks to different arrangements:

- plastic, brass and stainless steel types
- plug connector or fixed connecting cable
- with reinforced bearings for extended life expectancy
- special bearings for low flow rates available as an option

Function

The liquid flowing into the Turbotron is divided by the guiding blades in four split beams. These hit the rotor from four directions and put it in motion. The uniform loading of bearing from four sides causes the forces to cancel themselves out for the most part and wear is reduced to a minimum.

The extremely hard bearing materials, sapphire and hard metal, ensure in addition an extraordinary life expectancy.




The rotor rotation rate is now converted into an electrical pulse signal (frequency):

- VTH and VTP are equipped with rotors which are fitted with magnets. A Hall effect sensor recognizes the rotation of the rotor.
- VTI has stainless steel pins in the rotor. An inductive proximity switch detects the rotor rotation.

In both cases, a flow-proportional frequency signal (square wave signal) is available.

Technical data

	VTH economy-priced type for standard and serial applications		VTP high pressures, high temperatures, fuels		VTI magnet-free rotor, high measurement accuracy, high resolution	
Material pipe section	brass	plastic PPO	brass	stainless steel	brass	plastic PPO
Accuracy	± 1 % of range		± 1 % of range		± 0,5 % of range	
Reproducibility	± 0,2 %		± 0,2 %		± 0,1 %	
Output signal - pulse rate / K-factor - resolution - signal shape - signal current	855 pulses/liter 1,2 ml/pulse square wave signal NPN open collector max. 10 mA		855 pulses/liter 1,2 ml/pulse square wave signal NPN open collector max. 10 mA		1795 pulses/liter 0,6 ml/pulse square wave signal PNP or NPN open collector max. 10 mA	
Sensor	Hall effect sensor		Hall effect sensor		inductive proximity switch	
Max. medium temperature	85°C		150°C		85°C	
Nominal pressure	PN 10		p _{max} = 300 bar		PN 10	
Diameter	DN 15					
Measurement range:	2...40 l/min with special bearings for low flow rates with continuous flow max. 20 l/min					
Signal output	starting from 0.3 l/min					
max. particle size in the medium	0,5 mm					
General data						
Process connection	¾" BSP male thread with union nuts and flat seal			¾" BSP male thread or ¾" BSP female thread	¾" BSP male thread with union nuts and flat seal	
Electrical connection	1,5 m of PVC cable, screened, (T _{max} = 70°C) or 4- pin plug connector M12x1		1,5 m silicone cable, screened (T _{max} = 150°C)		2 m of PVC cable, screened, (T _{max} = 70°C) or 4- pin plug connector M12x1	
Power supply	4,5...24 VDC				10...30 VDC	
Type of protection	IP 54					
Options						
Screen filter	hat shape, mesh size 0,5 mm T _{max} = 60°C (continuous) = 85°C (max. 1h)		—		hat shape, mesh size 0,5 mm T _{max} = 60°C (continuous) = 85°C (max. 1h)	
Integrated temperature sensor	Pt 100 or Pt 1000, 3 wire, class B (class A on request) 1,5 m of PVC cable, screened		—		Pt 100 or Pt 1000, 3 wire, class B (class A on request) 2 m of PVC cable, screened	
Approvals						
						

Materials

Type	mediums contacting	VTH 15 K5-..	VTH 15 MS-..	VTP 15 MS-..	VTP 15 VA-..	VTI 15 K5-..	VTI 15 MS-..	
Pipe section	X	PPO Noryl GFN3	Brass CuZn36Pb2As	Brass CuZn36Pb2As	Stainless steel 1.4571	PPO Noryl GFN3	Brass CuZn36Pb2As	
Sensor housing	X	PPO Noryl GFN3		Brass	Stainless steel 1.4571	PPO Noryl GFN3		
Union nut	-	PA GF 30		Brass	none	PA GF 30		
Turbine system / rotor	X	PEI ULTEM		PEEK Victrex® 450G		PEI ULTEM		
O-ring / flat seal	X	NBR		VITON		NBR (standard) or VITON		
Bearing system / shaft	X	Shaft Arcap AP1D with hard metal pins in sapphire bearings						
Bearings support	X	Arcap AP1D						
Rotor assembly	X	Hard ferrite magnet				Stainless steel pins		
Temperature sensor (optional)	X	Brass or stainless steel 1.4571		-		Brass or stainless steel 1.4571		
Screen filter (option)	X	POM / stainless steel		-		POM / stainless steel		

Options

Please, specify in the order code:

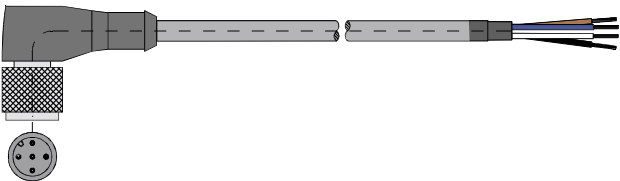
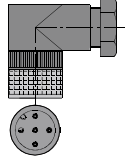
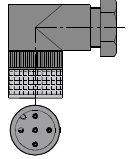
- special bearings for low rates of flow
- integrated temperature sensor, resistance thermometer Pt 100 or Pt 1000, 3 wire, class B
PTC or NTC on request
immersion tube: brass or stainless steel
- screen filter, hat shape, in the inlet
- turbine flow transmitter, analog output 4...20 mA, description on page 20
- turbine flow switch (contact), description on page 22 and 23

Order code

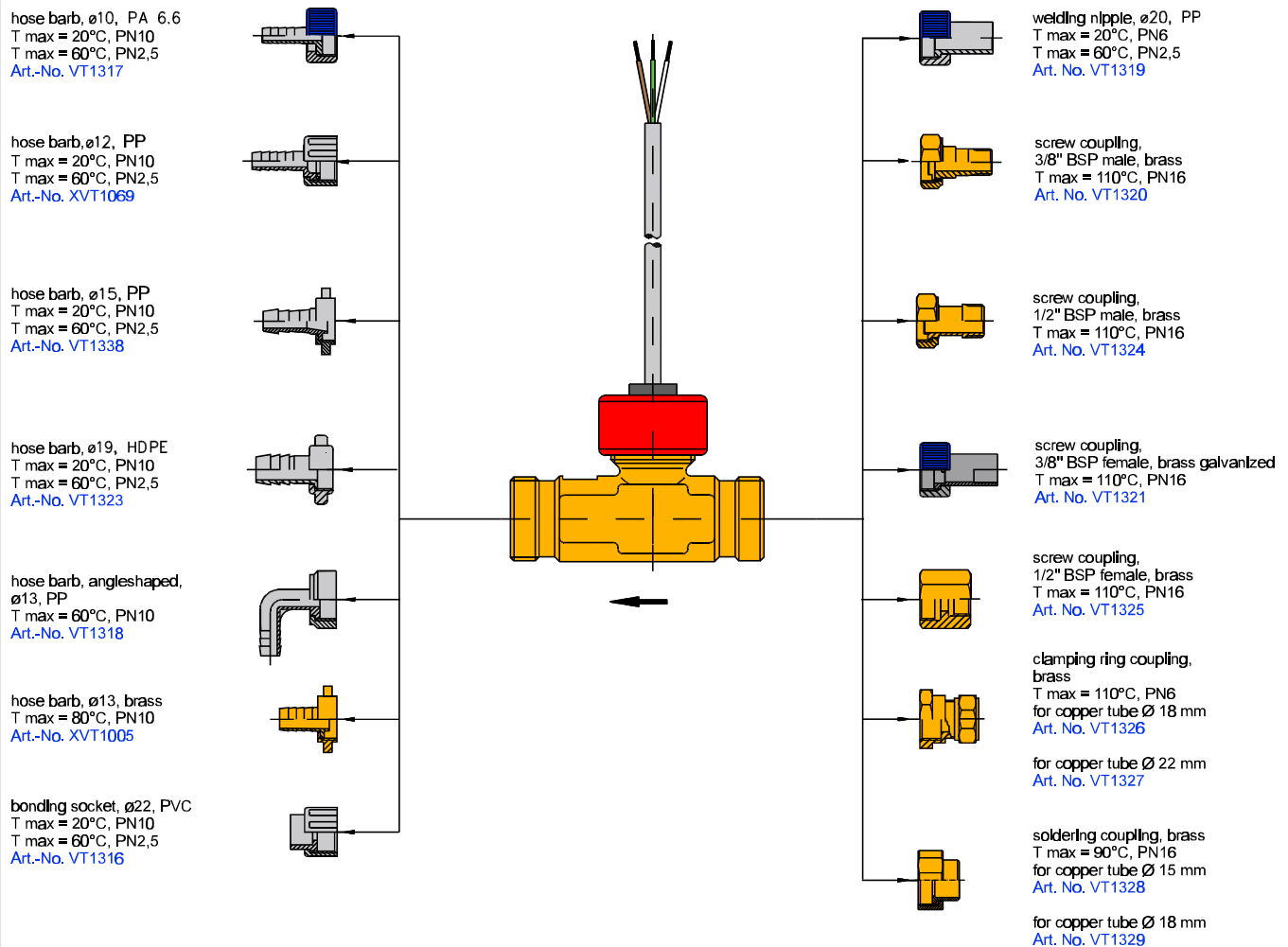
Code number		VT15	XX	XX	X	X	X	X	X	4	X*	X*
Bearings	standard	41										
	for low rates of flow	40										
Material of pipe section	PPO Noryl (only VTH or VTI)		K5									
	Brass		MS									
	Stainless steel (only VTP)		VA									
Type	VTI			I								
	VTH			H								
	VTP			D								
Output signal	PNP (possible only with VTI)				P							
	NPN				N							
Electrical connection	Cable					P						
	4 pin plug connector M12x1					S						
Supplementary temperature sensor	none						0					
	Pt 100 integrated (brass)						2					
	Pt 100 integrated (stainless steel)						9					
	Pt 1000 integrated (brass)						7					
	Pt 1000 integrated (stainless steel)						A					
Process connection	¾" BSP male							A				
	¾" BSP female (possible only with VTP in stainless steel)							I				
Options												
Filter	Screen filter										H	
	none										0	
Electronics	including transducer 4...20 mA corresponds with 0...5 l/min corresponds with 0...10 l/min corresponds with 0...20 l/min corresponds with 0...40 l/min											A B C D
	Switching output VE											6
	Switching output VE with pulse output											7
	Model for local display TD 32500 (display must be ordered separately)											4

* if you do not require one of the options, digits of the order code do not apply.

Accessory

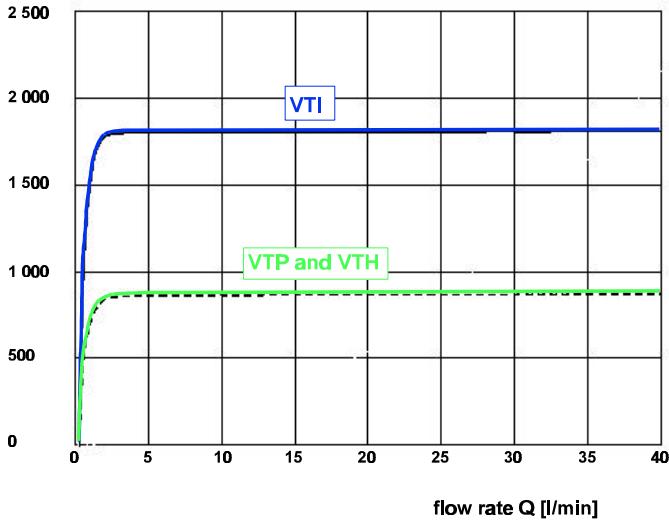
Accessory part	Order code	
Connection cable with 4-pin cable socked M12x1, angle type molded lead, sheathing material PUR, screened, length 3 m ($T_{max} = 80^{\circ}C$)	XVT 2053	
Connection cable on the top, but length 5 m Connection cable on the top, but length 10 m	XVT 2009 XVT 2070	
4-Pin cable socket M12x1 angle type unassembled	VT 1331	

Connecting adapter, delivery piecemeal see following drawing.
Using connecting adapter can have been influence of the accuracy !



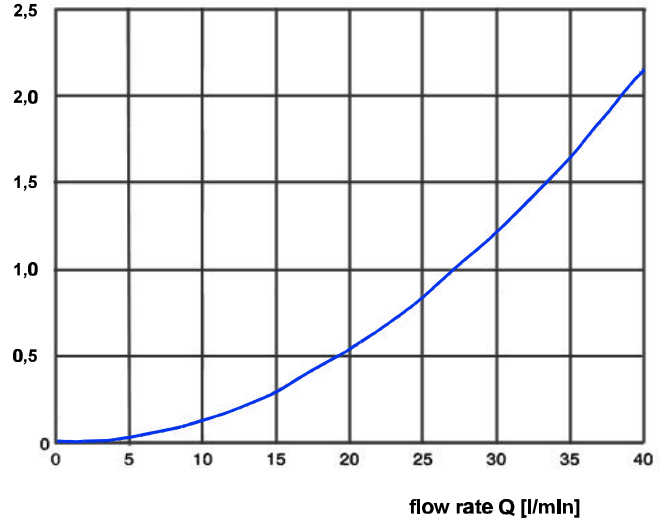
Characteristic curve

pulse rate [1/l]



Pressure drop

pressure drop Δp [bar]



Dimensions

