

Operating Instructions
for
Turbine Wheel Flow Meter
Model: TUR



1. Instructions

Please read this Service Manual carefully before unpacking and commissioning the unit. The unit may only be used, maintained and installed by qualified personnel familiar with the Operating Instructions and the applicable familiar with the Health and Safety requirements.

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Manufactured and Marketed by:

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3. Usage

The TUR series units are used for the flow measurement of liquids. These units are furnished with the following outputs.

Pulse Output

Rotary motion generates a signal with a specific frequency.

Analogue Output

In order to transduce the measured flow data, an analogue output is available, (DIN IEC 381) with 0-20 mA, 4-20 mA or 0-10 V (see Type-tag).

Only the low-viscosity flow may be measured, for which the sensor housing materials are chemically resistant.

With high-viscous media, partly, there may appear considerable measurement errors.

Long fibre-pieces may jam the rotor.

4. Unit Operation

The flow meter consists of a thick-wall plastic tube whose ends are fitted with movable plastic flanges. At run-in and run-out, there exist bearing-bushes which make the liquid twist-free. A turbine-wheel with its ends made of moulded soft iron rotates as the liquid flows through. The metallic parts do not come in contact with the medium, and thus, are protected against corrosion. The bearings are made of sapphire and are appropriately adjustable. The bearing-bushes are made of chemically-resistant Wolfram Carbide and is moulded in the turbine wheel. The rotation is sensed through the built-in pulse transmitter which requires no sealing and does not backlash mechanically. This rotation is further translated into pulses by the associated electronics.

The version with integrated transducer converts the frequency into a normal analogue signal. An optionally available external electronic unit processes the pulse-signal to drive a display, allows limit contacts, produces analogue output or gives out the measure of flowing volume.

5. Check-up.

The instruments are inspected before dispatch and sent out in perfect condition. Should damage to the instrument be visible, we recommend close inspection of the delivery package. In case of damage, please immediately inform the forwarder as he is liable for any damage in transit.

Scope of delivery:

Standard scope of delivery applies to

- Turbine with cable-connection and included electronics

6. Mechanical Connection

Before Installation:

- Please ensure that the actual flow-rate corresponds to the measured volume within measuring range of the unit. Measuring range is printed on the type-tag.

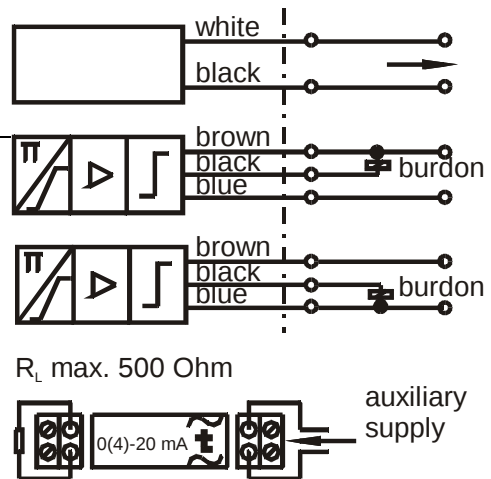
Attention! Exceeding the measuring range (more than 20 %) may result in damage to bearings and considerable measurement-errors.

- Make sure that the permitted max. pressure and temperature are not exceeded during unit operation.
- Please ensure that the power supply of the unit corresponds with the power requirements (operational data) printed on the Type-tag.
- Ensure that no packing material remains inside the unit.
- Mounting of these units is position-independent; the flow must always follow the direction of arrow.
- During installation, please ensure that the pipe inlet straight is 4 times of nominal diameter (of the unit) and outlet straight is 2 times of nominal diameter.
- The installation is potential-free, and should be carried out with the help of soft sealings (not in the scope of delivery).
- If possible, just after mechanical installation, it should be checked if the flange-connections are properly sealed.

7. Electrical Connection

Warning! Please ensure that the supply voltage to your instrument conforms with the value given on the equipment label.

- Ensure that the power lines are not active.
- With units without transducer, connect the cable-ends with your power supply and load, as is shown in fig. 1.
- Units with transducer require cable connections through PG connector. Make the connections according to Fig. 2.
- Power supply cable: area of cross-section should be (min.). 0.75 mm².



Warning! Incorrect wiring in the coupling plug can lead to damage to the electronics.

8. Electrical Commissioning

The instrument is delivered ready to operate.

On Instruments with transducers the electronic is matched and calibrated with the transducer. Calibration screws are not intended for customer's use.

An attempt to calibrate the unit on customer's end would call for a new calibration (rendered by the firm, on payment).

9. Mechanical Commissioning

- To avoid pressure shocks, the flow medium should run slowly into the unit.

Warning! Pressure shocks from solenoid valves, ball valves or similar way lead to breakage of the instrument (water hammer). In the operating condition it must be checked that the instrument housing is continuously filled with the flow medium.

Attention! Large air bubbles in the measuring chamber may lead to measurement errors as well as destruction of the bearings.

10. Technical Data

Connection:	Flange NW 25, 50, 80 or 100
Version:	PVC or PVDF
max. Pressure:	PN 10
max. Temperature:	60°C (PVC version) 70°C (PVDF version)
Output:	Transducer: PNP or NPN; 3-wire Analogue output: 0(4)-20 mA; 0-10V
Power Supply	24 VDC 24 VAC, 230 VAC (only analogue output)
max. Current (Transducer):	400 mA
max. Load (analogue):	500 Ω
Viscosity range:	for thin Media
Measuring accuracy:	$\pm 1\%$ of F.S.
Protection:	IP 65

Measuring-pipe characteristics

Nominal Pipe size DN	Measuring Range m ³ /h Water	Frequency Range Hz	Frequency pulses/Litre
25	0.2-5.0	5.5-136.5	98.25
50	1.2-20.0	4.8-79.4	14.30
80	2.0-80.0	2.7-106.4	4.79
100	2.5-100.0	2.1-82.2	2.0

11. Materials

	PVC version	PVDF version
Main body/Bearing supports/Turbine- wheel	PVC	PVDF
Bearing bushes/Bearing axel	Saphire	Saphire
Screws	Polyamide	PVDF
Flange	PVC	PVC

12. Maintenance

In case, the medium (to be measured) is not polluted, turbine of TUR is maintenance-free.

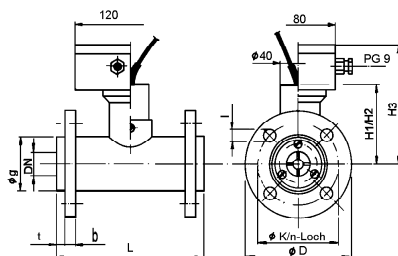
Should the cleaning of unit becomes necessary, it is easier to do by turning the three plastic screws on one side loose, the turbine, then, may be taken out and cleaned.

During fixing the turbine wheel and bearing support, please observe that the Sapphire bearing is pushed into the axel. The bearing support slides into the measuring pipe without applying any force and is secured in position with the help of screws.

Warning! Damage rendered to sapphire bearings caused by careless handling and assembling expires the Guarantee.

Restoration work on electronic part may only be conducted by the supplier in order to ascertain the validity of guarantee.

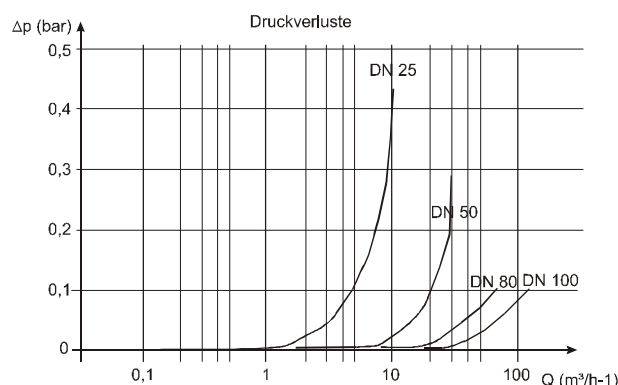
13. Dimensions



DN	b	D	g	H1/2*	H3	K	L	n	l	t
25	15	115	58	87	127	85	160	4x	14	9
50	20	165	88	100	140	125	200	4x	18	11
80	22	200	123	115	155	160	225	8x	18	11
100	22	220	145	125	165	180	250	8x	18	11

*with PNP or NPN Sensor

14. Pressure-loss Diagram



15. Declaration of Compliance

We, M/s KOBOLD-Messring GmbH, Hofheim-Ts. Germany, declare under our sole responsibility, that this Product:

Turbinenrad Durchflussmesser (mit Impulsaufnehmer)

TUR...N oder TUR...P

which relates to this certificate, conforms to the standards listed below:

DIN VDE 0660-208

(entspricht IEC 947-5-2 vom August 1992, soweit anwendbar)

Applied harmonised standard:
89/336/EWG

(Signed)

K. Kobold

Date: 19.07.00

We, M/s KOBOLD-Messring GmbH, Hofheim-Ts. Germany, declare under our sole responsibility, that this Product:

Turbinenrad Durchflußmesser (mit Meßumformer)

TUR...A oder TUR...V

which relates to this certificate, conforms to the standards listed below:

EN 50081-1

Elektromagnetische Verträglichkeit-Fachgrundnorm Störaussendung

EN 50082-2

Elektromagnetische Verträglichkeit-Fachgrundnorm Störfestigkeit

EN 61010

Sicherheitsanforderungen an elektrische Mess-, Steuer-, Regel- und Laborgeräte

Applied harmonised standards:

89/336/EWG

Unterschrift

Datum:

WG

K.f.
(Geschäftsführer)

10.11.99