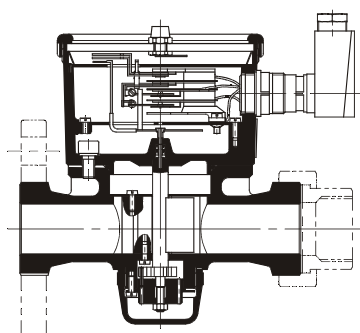


Operating Instructions

ERHARD Flow Indicator



- 1 Description of Product and Range of Application
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1 Description of Product and Range of Application

Nominal sizes: DN 10, 15, 20, 25, 32, 40, 50, 65, 80, 100, 125, 150
 Pressure rating: PN 16

Product No.	Nominal size	Body connection
86227900	DN 10 - 50	External thread
86227985	DN 10 – 50	Screwed pipe connection
86227991	DN 10 – 50	Flanges
86230191	DN 65 – 150	Flanges

ERHARD Flow Indicators (binary transmitters) monitor liquid flows of cooling circuits and lubrication systems in important pipeworks as e.g. in rolling mills, turbine plants, power stations, chemical plants, etc.

They visually indicate the flow condition and switch on and off pumps, machines, etc. depending on flow rates via limit positions and additional relays. Furthermore, ERHARD Flow Indicators give visible and audible signals via contacts in the limit positions.

ERHARD Flow Indicators are no measuring instruments!

2 Design Features – Technical Data

When the flow starts, the blade fixed to the blade shaft is moved against the force of the return spring. Depending on the flow rate, it deflects by 120° (i.e. 100%). For DN 10 to DN 150, this movement is conveyed to a pointer via a continuous trunnion shaft with grooved ring seal. The operating pin fixed to the pointer actuates the electrical contacts. When flow ceases or stops, the return spring moves blade, blade shaft and pointer back into zero position.

3 Performance and Mode of Operation

3.1 Electrical Connection

Connect Flow Indicator according to the data indicated on the nameplate and terminal diagram. For intrinsically safe circuit of enclosure (Ex)i, observe VDE 0165, 0170, 0171 and/or DIN EN 50020 and data given on the test certificate for the control device.

Connection is done by means of a plug connector to DIN 43651 with BO crimping. The connector piece for the cable is supplied as a separate item.

Product No.	8622 and 8623	8638 and 8639	8638 and 8639
Switch type	snap-action contact	inductive contact	inductive contact
Enclosure	IP 65	(Ex) II 2 G EEx ia IIC T6	IP 65
Switching voltage	AC/DC 24 V to 250 V *	DC 8V to 15 V	DC 10 V to 30 V
Switching capacity	30 VA (W) max. 1 A **	8 mA	max. 100 mA

* corresponds to VDE 0110 insulating class C

** switch with relay if exceeding

3.2 Contact Adjustment

Adjust contacts to corresponding flow characteristic or set them according to the pointer deflection from the outside by means of the setting lock at the centre of the sight glass. The adjustment is technically the same as for the contact pressure gauge.

The key for the setting lock is supplied separately. Screw cap back on the setting lock . If the pipeline is subject to heavy concussions, it is possible that contact bounce or contact interruption will occur. In order to prevent faulty switching in this case, a contact protecting relay with delay is to be connected in series or an instrument with inductive contact is to be used.

4 Installation into the Pipeline – Mounting

Remove all packing material from the Flow Indicator. Prior to installation check the pipeline for impurities and foreign matters and clean if necessary.

Install the instrument according to the cast-on arrow showing the flow direction into a pipeline section which is free of turbulences. The Flow Indicator can be installed in horizontal or vertical pipeline as the position has no effect on the operation.

For vertical downward flow the indicating dial inscribed on both sides should be turned so that the writing is not upside down:

Adjust contact pointer to 0%, screw off fastening ring (32), take off sealing ring (31), sight glass (30), tapered ring (29), and indicating dial (28). Insert indicating dial with page 2 on top and turn until pointers point to 0%.

For flow media with foreign matters install strainer with mesh size 0.2 mm upstream of the Flow Indicator. It is important that all around the flow indicator there is free access for maintenance and free sight onto the indicating dial.

If installed in the open, the customer has to protect the indicator against direct effects of the weather. Install flow indicator with indicating dial in vertical position. Lay the cable in downward direction.

Check the seals of the fastening ring (32), the lock (33) and the plug connector (36) for tight seating.

If there is the risk of condensation of water in the indicator casing, the Flow Indicator has to be provided with air release device.

In case of design with flanges, please observe the following:

During installation of the Flow Indicator, the distance between the pipe ends should exceed the face-to-face dimension of the Flow Indicator by at least 20 mm. Thus, the raised faces will not be damaged and the gaskets can be inserted. Steel-reinforced rubber seals are recommended for use as flange gaskets (consider resistance to flow medium and temperature).

The mating pipe flanges must be plane-parallel and concentric. Tighten the connecting bolts evenly (without distortion) and crosswise.

The pipeline must not by any means be pulled up to the Flow Indicator.

Face-to-face dimension adaptors, if needed, are to be screwed on using sealing compound.

5 Initial operation

Vent pipe line before commissioning. The Flow Indicator may be charged above the dial range, Q_{\max} see catalogue sheet.

The pointer is to stand still during operation. If the pointer swivels, install an orifice which produces a counter pressure of approx. 0.1 bars behind the Flow Indicator.

6 Maintenance

6.1 Maintenance

The Flow Indicator is maintenance-free. As we have no influence on the condition of the flow medium, however, we recommend to test the performance regularly. Thicker sticking deposits from the flow medium lead to failure of the unit.

If water condensates on the inside of the sight glass (30), air has to be evacuated from the indicator body (22). Water condensation is often caused by incorrect storage prior to installation or by subjecting the flow indicator to high temperature fluctuations.


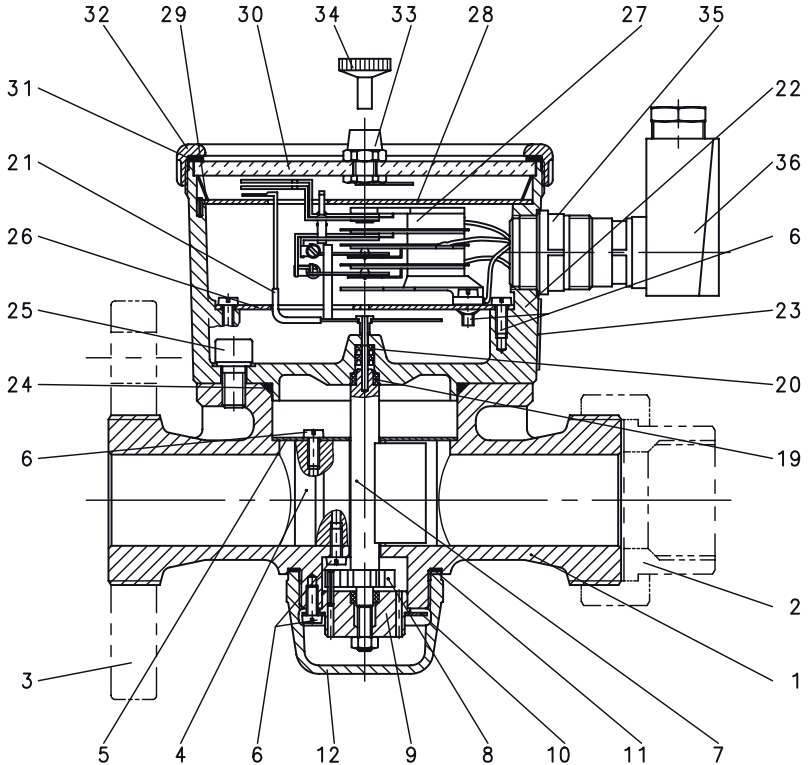
Performance test:

1. Does the black pointer return to zero position when the flow stops?
2. Does the electrical contact work? Control e.g. by increasing the switch point.

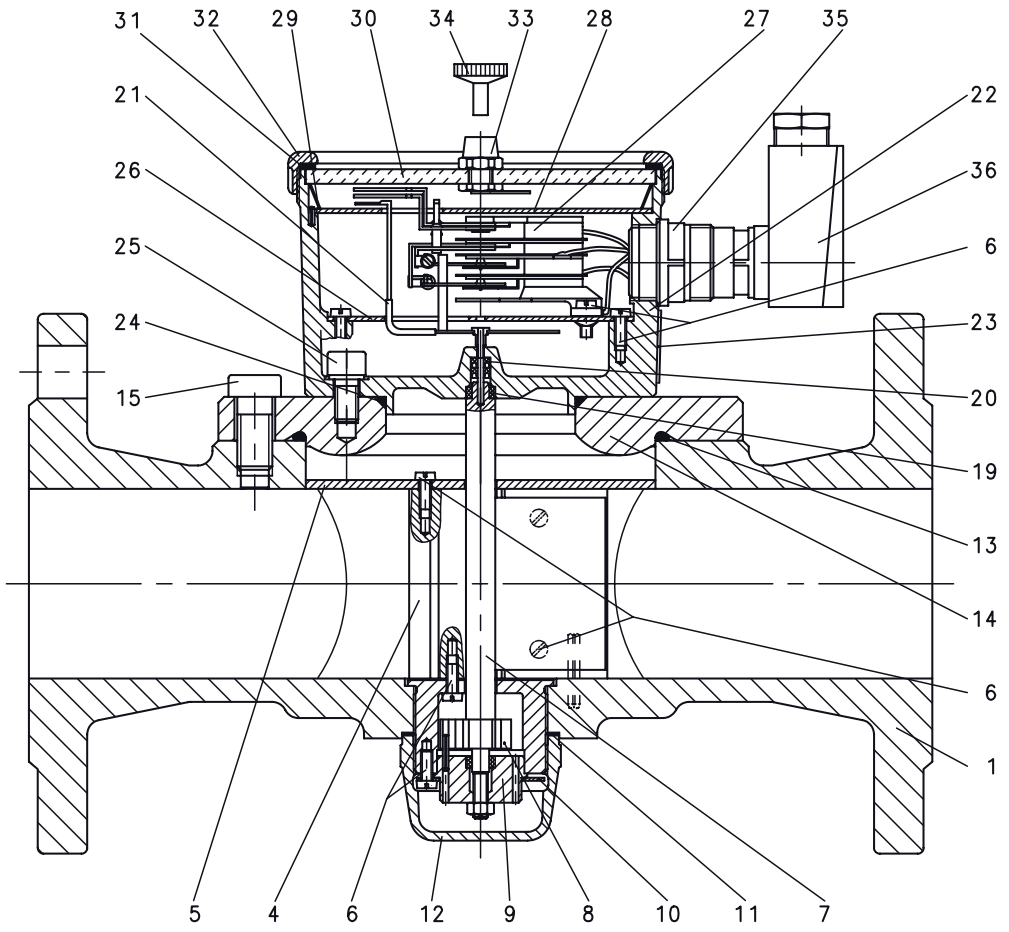
6.2 Inspection

- In case, clean strainer regularly.
- Check outside condition of valve.
Clean if necessary and repair coating.
- Clean sight glass of polycarbonate with soft fabric and if necessary with a non-aggressive cleansing agent.
- Check tightness at flanges and screwed joints resp.

7 Drawings with Parts Lists

 BETRIEBSANLEITUNG	<h3>ERHARD FLOW INDICATOR</h3> <h4>STANDARD TYPE</h4>	JUNE 1993 TEK-2 KUCK
		
DN10-50		
<ul style="list-style-type: none"> 1 BODY 2 SCREWED JOINT 3 FLANGE 4 GUIDE 5 SLOTTED DISC (DN10-50 ARE EQUAL) 6 • SOCKET-HEAD CAP SCREW 7 BLADE SHAFT, COMPLETE 8 SPIRAL SPRING 9 • HUB, COMPLETE 10 • RETAINING RING 	<ul style="list-style-type: none"> 11 • GASKET 12 • CAP NUT 19 • BUSH 20 • GROOVED RING 21 • POINTER 22 • INDICATOR CASING WITH NOTCHED PIN 23 • NAME PLATE 24 • O-RING 25 • SOCKET-HEAD CAP SCREW WITH SEALING RING 	<ul style="list-style-type: none"> 26 • BEARING RING 27E • CONTACT DEVICE 28 • INDICATING DIAL 29 • TAPERED RING 30E • SIGHT GLASS 31E • SEALING RING 32 • FASTENING RING 33 • SETTING LOCK 34E • KEY 35E • PLUG CONNECTOR AM 36E • PLUG CONNECTOR FF WITH CRIMP CONTACT
E = RECOMMENDED SPARE PARTS • = THE SAME FOR DN10-150		DATA REQUIRED WHEN ORDERING SPARE PARTS: DN, PROD NO, WORKS NO, ITEM NO.
CAD	4E129039	

BETRIEBSANLEITUNG **ERHARD FLOW INDICATOR** STANDARD TYPE JUNE 1993
TEK-2 KUCK



DN 65-150

- | | | |
|---------------------------|--|--|
| 1 BODY, COMPLETE | 14 INTERMEDIATE FLANGE | 26 • BEARING RING |
| 4 GUIDE WITH BAFFLE | 15 SOCKET-HEAD CAP SCREW | 27E • CONTACT DEVICE |
| 5 DISC | 19 • BUSH | 28 • INDICATING DIAL |
| 6 • SOCKET-HEAD CAP SCREW | 20 • GROOVED RING | 29 • TAPERED RING |
| 7 BLADE SHAFT, COMPLETE | 21 • POINTER | 30E • SIGHT GLASS |
| 8 SPIRAL SPRING | 22 • INDICATOR CASING WITH NOTCHED PIN | 31E • SEALING RING |
| 9 HUB, COMPLETE | 23 • NAME PLATE | 32 • FASTENING RING |
| 10 • RETAINING RING | 24 • O-RING | 33 • SETTING LOCK |
| 11 GASKET | 25 • SOCKET-HEAD CAP SCREW WITH SEALING RING | 34E • KEY |
| 12 CAP NUT | | 35E • PLUG CONNECTOR AM |
| 13 O-RING | | 36E • PLUG CONNECTOR FF WITH CRIMP CONTACT |

E = RECOMMENDED SPARE PARTS DATA REQUIRED WHEN ORDERING SPARE PARTS:
• = THE SAME FOR DN10-150 DN, PROD NO, WORKS NO, ITEM NO.

CAD 4E129040

8 Flow Characteristic Curves

