Technical Information
TI 048D/06/en
50096457

Electromagnetic Flow Measuring System *PROline promag 50/53 H*

Flow measurement in hygiene, food and beverage or process applications

Features and benefits
- Nominal diameters DN 2...100
- PFA lining for cleaning temperatures up to +150 °C (+180 °C in prep.)
- Guaranteed product quality, suitable for CIP/SIP cleaning and piggable
- Stainless-steel housing for high sanitary safety
- 3A authorization and EHEDG-tested
- Robust field housing, IP 67
- IP 67 wall-mount housing for straightforward installation of the remote version
- High accuracy:
  – Promag 50: ± 0.5% (option: ± 0.2%)
  – Promag 53: ± 0.2%
- Promag 53 with Touch Control: Operation without opening the housing
- Additional software packs:
  – for batching applications
  – for advanced diagnosis and enhanced operational dependability
- Quick Setup menus for straightforward commissioning in the field
- Interfaces for integration into all major process-control systems:
  – HART interface as standard
  – Promag 50: PROFIBUS-PA
  – Promag 53: PROFIBUS-PA/-DP, FOUNDATION Fieldbus

Application
All fluids with a minimum conductivity of ≥ 5 µS/cm can be measured:
- beverages, e.g. fruit juice, beer, wine
- milk products, fruit mixtures
- salt solutions
- acids and causic solutions, etc.

A minimum conductivity of ≥ 20 µS/cm is required for measuring demineralized water.

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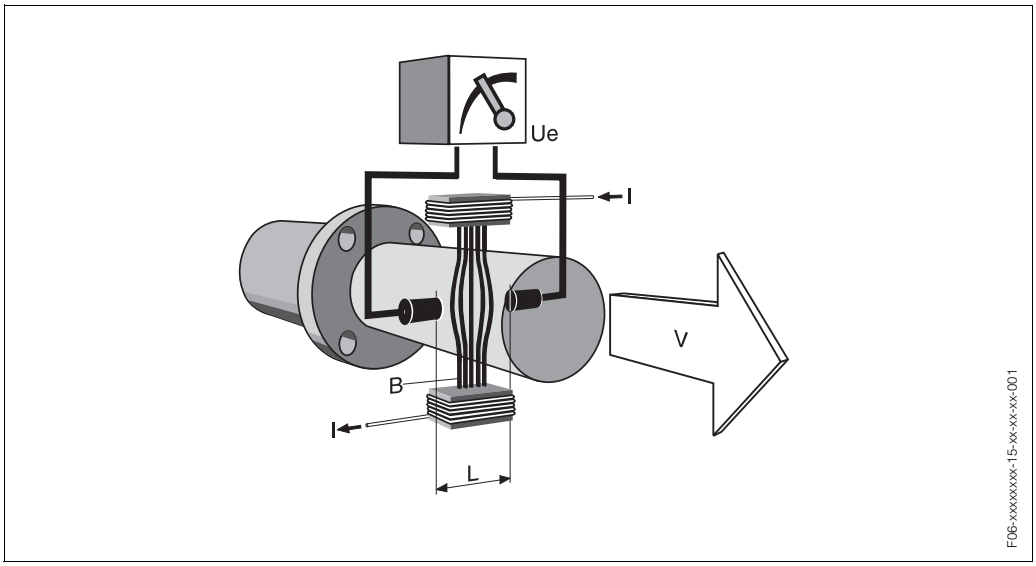
Function and system design

Measuring principle

Faraday's law of induction states that a voltage is induced in a conductor moving in a magnetic field.
In electromagnetic measuring, the flowing medium corresponds to the moving conductor. The induced voltage is proportional to the flow velocity and is detected by two measuring electrodes and transmitted to the amplifier. Flow volume is computed on the basis of the pipe's diameter. The constant magnetic field is generated by a switched direct current of alternating polarity.



Ue = B · L · v
Q = A · v

Ue = induced voltage
B = magnetic induction (magnetic field)
L = electrode gap
v = flow velocity
Q = volume flow
A = pipe cross-section
I = current strength

Measuring system

The measuring system consists of a transmitter and a sensor.
Two versions are available:
- Compact version: transmitter and sensor form a single mechanical unit.
- Remote version: transmitter and sensor are installed separately.

Transmitter:
- Promag 50 (user interface with push buttons for operation, two-line display)
- Promag 53 ("Touch Control" without opening the housing, four-line display).

Sensor:
- Promag H (DN 2…100)

Input

Measured variable

Flow rate (proportional to induced voltage)

Measuring range

Typically v = 0.01...10 m/s with the specified measuring accuracy

Operable flow range

Over 1000 : 1

Input signal

Status input (auxiliary input):
U = 3…30 V DC, R_i = 5 kΩ, galvanically isolated.
Configurable for: totalizer(s) reset, measured-value suppression, error message reset, start/pause batching.

Output

Output signal

Promag 50

Current output:
active/passive selectable, galvanically isolated, time constant selectable (0.01...100 s), full scale value selectable, temperature coefficient: typ. 0.005% o.r./°C; resolution: 0.5 µA
- active: 0/4…20 mA, R_L < 700 Ω (HART: R_L ≥ 250 Ω)
- passive: 4…20 mA, max. 30 V DC, R_i ≤ 150 Ω

Pulse/frequency output:
passive, open collector, 30 V DC, 250 mA, galvanically isolated.
- Frequency output: full scale frequency 2...1000 Hz (f_{max} = 1250 Hz), on/off ratio 1:1, pulse width max. 10 s.
- Pulse output: pulse value and pulse polarity selectable, max. pulse width configurable (0.5...2000 ms)

Promag 53

Current output:
active/passive selectable, galvanically isolated, time constant selectable (0.01...100 s), full scale value selectable, temperature coefficient: typically 0.005% o.r./°C; resolution: 0.5 µA
- active: 0/4…20 mA, R_L < 700 Ω (HART: R_L ≥ 250 Ω)
- passive: 4…20 mA, max. 30 V DC, R_i ≤ 150 Ω

Pulse/frequency output:
active/passive selectable, galvanically isolated (Ex i version: only passive)
- active: 24 V DC, 25 mA (max. 250 mA during 20 ms), R_L > 100 Ω
- passive: open collector, 30 V DC, 250 mA

- Frequency output: full scale frequency 2...10000 Hz (f_{max} = 12500 Hz), on/off ratio 1:1, pulse width max. 10 s.
- Pulse output: pulse value and pulse polarity adjustable, pulse width configurable (0.05...2000 ms)

Signal on alarm

- Current output → failure response selectable
- Pulse/frequency output → failure response selectable
- Status output (Promag 50) → non-conductive by fault or power supply failure
- Relay output (Promag 53) → de-energized by fault or power supply failure

Load

See “Output signal”

Switching output

Status output (Promag 50):
Open collector, max. 30 V DC / 250 mA, galvanically isolated.
Configurable for: error messages, Empty Pipe Detection (EPD), flow direction, limit values.

Relay output (Promag 53):
Normally closed (NC or break) or normally open (NO or make) contacts available
(default: relay 1 = NO, relay 2 = NC),
max. 30 V / 0.5 A AC; 60 V / 0.1 A DC, galvanically isolated.
Configurable for: error messages, Empty Pipe Detection (EPD), flow direction, limit values, batching contacts.

Low flow cutoff

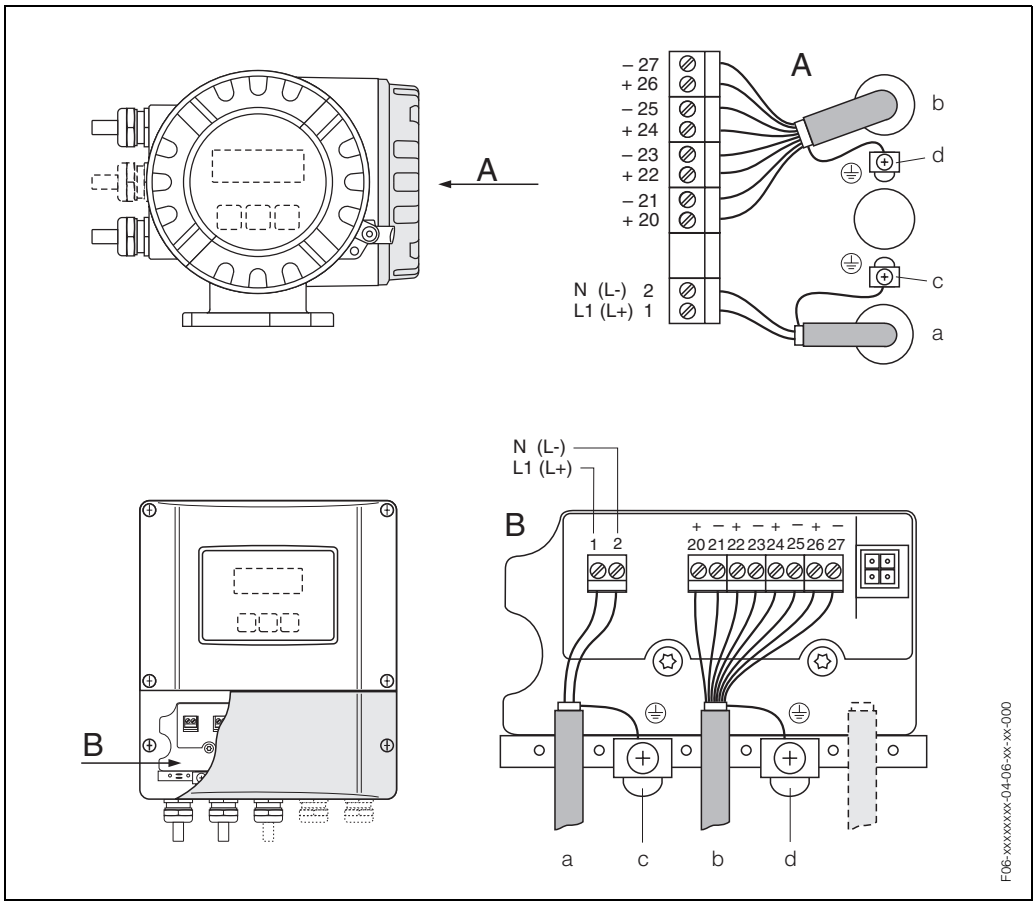
Switch points for low flow cutoff are selectable

Galvanic isolation

All circuits for inputs, outputs, and power supply are galvanically isolated from each other.

Power supply

Electrical connection measuring unit



A = View A (field housing), B = View B (wall-mounted housing)

a Cable for power supply: 85…260 V AC, 20…55 V AC, 16…62 V DC; power consumption: 15 VA / 15 W
*Terminal **No. 1**: L1 for AC, L+ for DC*
*Terminal **No. 2**: N for AC, L– for DC*
*b Signal cable: terminals **No. 20–27** → Page 5*
c Ground terminal for protective conductor
d Ground terminal for signal cable shield

Terminal assignment, Promag 50

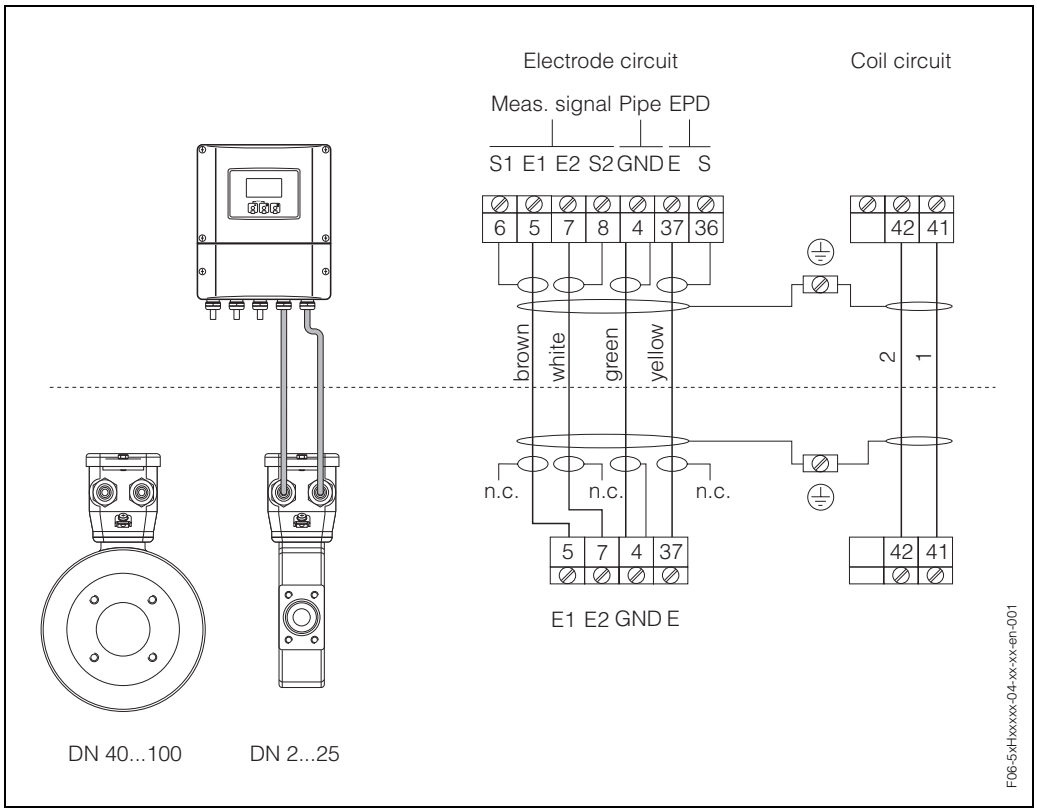
Order variant	Terminal No. (inputs / outputs)			
	20 (+) / 21 (–)	22 (+) / 23 (–)	24 (+) / 25 (–)	26 (+) / 27 (–)
50***-**********W	–	–	–	Current output HART
50***-**********A	–	–	Frequency output	Current output HART
50***-**********D	Status input	Status output	Frequency output	Current output HART
Ground connection, power supply → Page 4				

Terminal assignment, Promag 53

The inputs and outputs on the communication board can be either permanently assigned or variable, depending on the version ordered (see table). Replacements for modules which are defective or which have to be replaced can be ordered as accessories.

Order variant	Terminal No. (inputs / outputs)			
	20 (+) / 21 (–)	22 (+) / 23 (–)	24 (+) / 25 (–)	26 (+) / 27 (–)
Fixed communication boards (fixed assignment)				
53***-**********A	–	–	Frequency output	Current output HART
53***-**********B	Relay output	Relay output	Frequency output	Current output HART
53***-**********S	–	–	Frequency output Ex i	Current output Ex i active, HART
53***-**********T	–	–	Frequency output Ex i	Current output Ex i passive, HART
Flexible communication boards				
53***-**********C	Relay output	Relay output	Frequency output	Current output HART
53***-**********D	Status input	Relay output	Frequency output	Current output HART
53***-**********L	Status input	Relay output	Relay output	Current output HART
53***-**********M	Status input	Frequency output	Frequency output	Current output HART
53***-**********2	Relay output	Current output	Frequency output	Current output HART
Ground connection, power supply → Page 4				

Electrical connection remote version



n.c. = isolated cable shields, not connected

Cable entry

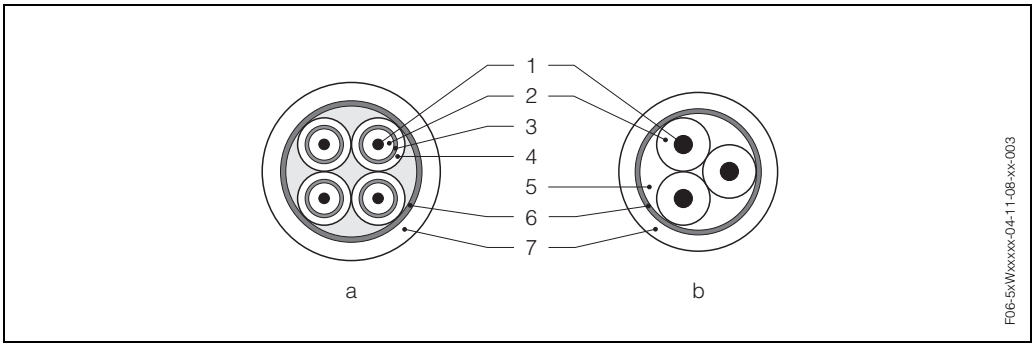
Power supply and signal cables (inputs/outputs):
- Cable entry M20 x 1.5 (8...12 mm)
- Threads for cable entries, PG 13.5 (5...15 mm), 1/2" NPT, 1/2"

Connecting cable for remote version:
- Cable entry M20 x 1.5 (8...12 mm)
- Threads for cable entries, PG 13.5 (5...15 mm), 1/2" NPT, 1/2"

Cable specifications remote version

Coil cable:
- 2 x 0.75 mm^2 PVC cable with common, braided copper shield (Ø approx. 7 mm)
- Conductor resistance: ≤ 37 Ω/km
- Capacitance core/core, shield grounded: ≤ 120 pF/m
- Permanent operating temperature: –20…+80 °C

Signal cable:
- 3 x 0.38 mm^2 PVC cable with common, braided copper shield (Ø approx. 7 mm) and individually shielded cores.
- With Empty Pipe Detection (EPD): 4 x 0.38 mm^2 PVC cable with common, braided copper shield (Ø approx. 7 mm) and individually shielded cores.
- Conductor resistance: ≤ 50 Ω/km
- Capacitance core/shield: ≤ 420 pF/m
- Permanent operating temperature: –20…+80 °C



a = signal cable, b = coil current cable (cross-section: max. 2.5 mm^2)

1 = core, 2 = core insulation, 3 = core shield, 4 = core jacket, 5 = core strengthening, 6 = cable shield, 7 = outer jacket

Optionally, E+H also supplies reinforced connecting cables with an additional, metal strenghtening braid. We recommend such cables for the following cases:
- Cables laid underground
- Danger of rodent attack
- Device used with ingress protection IP 68

Operation in zones of severe electrical interference:
The measuring device complies with the general safety requirements in accordance with EN 61010, the EMC requirements of EN 61326, and NAMUR recommendation NE 21.

Caution:
Grounding is by means of the ground terminals provided for the purpose inside the connection housing. Keep the stripped and twisted lengths of cable shield to the terminals as short as possible.

Supply voltage

85…260 V AC, 45…65 Hz
20…55 V AC, 45…65 Hz
16…62 V DC

Power consumption

AC: <15 VA (including sensor)
DC: <15 W (including sensor)

Switch-on current:
- max. 13.5 A (< 50 ms) at 24 V DC
- max. 3 A (< 5 ms) at 260 V AC

Power supply failure

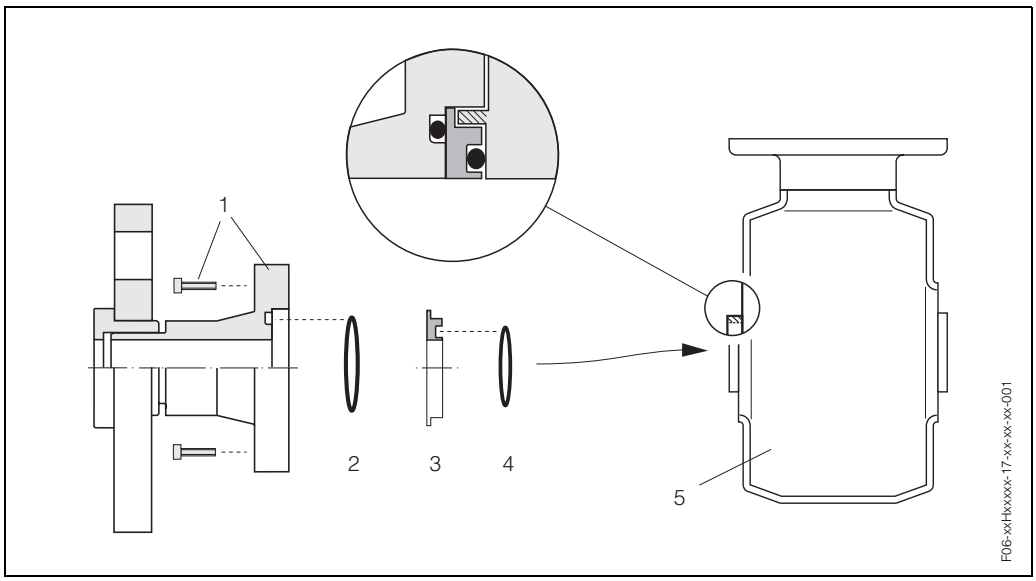
Lasting min. 1 power cycle:
- EEPROM or T-DAT™ (Promag 53 only) retain the measuring system data in the event of a power supply failure
- S-DAT™ = exchangeable data storage chip which stores the data of the sensor (nominal diameter, serial number, calibration factor, zero point, etc.)

Potential equalisation

Perfect measurement is only ensured when the medium and the sensor have the same electrical potential.

Metal process connections
Potential matching usually takes place over the metallic process connection in contact with medium process connections which are directly mounted on the measuring transmitter. This usually means that additional potential matching measures are unnecessary.

Plastic process connections
For plastic process connections, potential matching must be ensured between sensor and medium using additional ground rings. If these ground rings are missing, this can influence accuracy or destroy the measuring transmitter through the electrochemical decomposition of electrodes.



1 = allen screw (process connection), 2 = O-ring seal (process connection),
3 = plastic washer (spacer) or ground ring, 4 = O-ring seal (ground ring),
5 = sensor

When using ground rings, note the following points:
- Depending on the option ordered, plastic washers may be installed at the process connections instead of ground rings. These plastic washers serve only as spacers and have no potential equalization function. In addition, they provide a sealing function at the interface between the sensor and process connection. For this reason, with process connections without ground rings, these plastic washers/seals must not be removed, or must always be installed.
- Ground rings can be ordered separately from E+H as an accessory.
  Also make sure that the ground rings are compatible with the electrode material. Otherwise the danger exists that the electrodes could be destroyed by electrochemical corrosion. You can find material data on Page 35.
- Ground rings, incl. seals, are mounted inside the process connection.
  This has no influence on the installation length. You can find the dimensions of ground rings on Page 30.

Performance characteristics

Reference operating conditions

To DIN 19200 and VDI/VDE 2641:
- Medium temperature: +28 °C ± 2 K
- Ambient temperature: +22 °C ± 2 K
- Warm-up period: 30 minutes

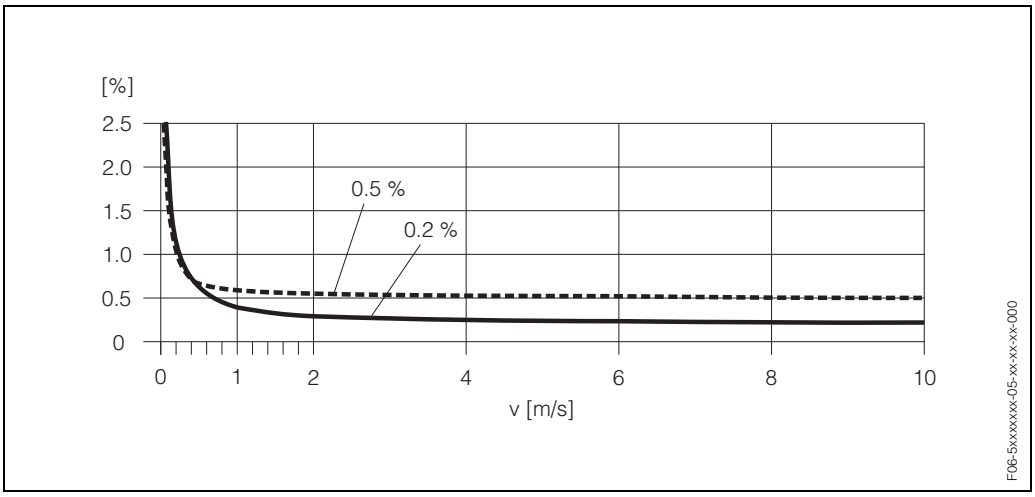
Installation:
- Inlet run >10 x DN
- Outlet run > 5 x DN
- Sensor and transmitter grounded.
- Sensor centered relative to the pipe.

Maximum measured error

Promag 50:
Pulse output: ± 0.5% o.r. ± 1 mm/s (o.r. = of reading)
Current output: plus typically ± 5 µA

Promag 53:
Pulse output: ± 0.2% o.r. ± 2 mm/s (o.r. = of reading)
Current output: plus typically ± 5 µA

Supply voltage fluctuations have no effect within the specified range.



Max. measured error in % of reading

Repeatability

max. ± 0.1% o.r. ± 0.5 mm/s (o.r. = of reading)

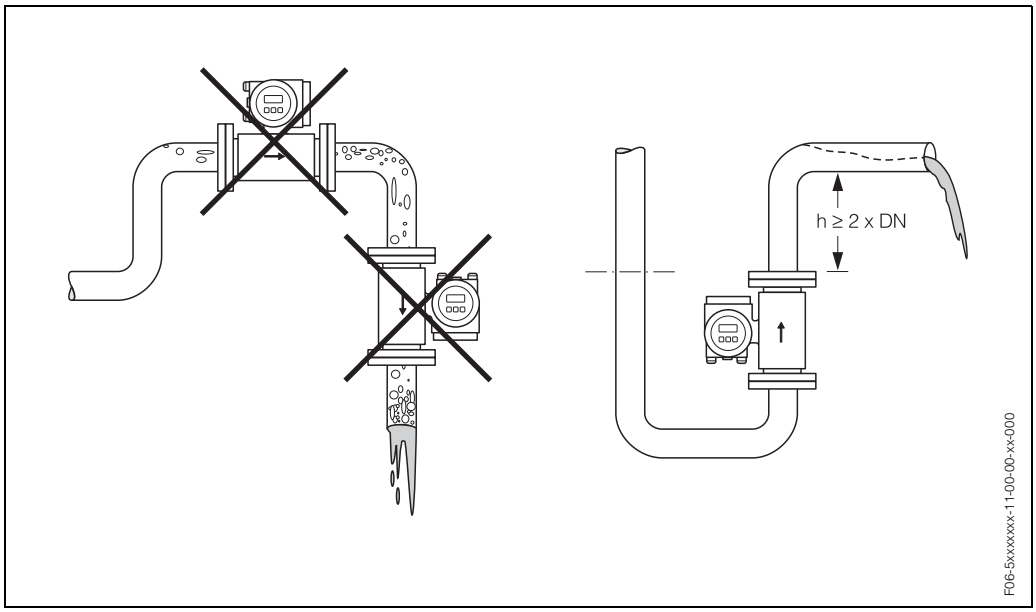
Operating conditions

Installation conditions

Installation instructions

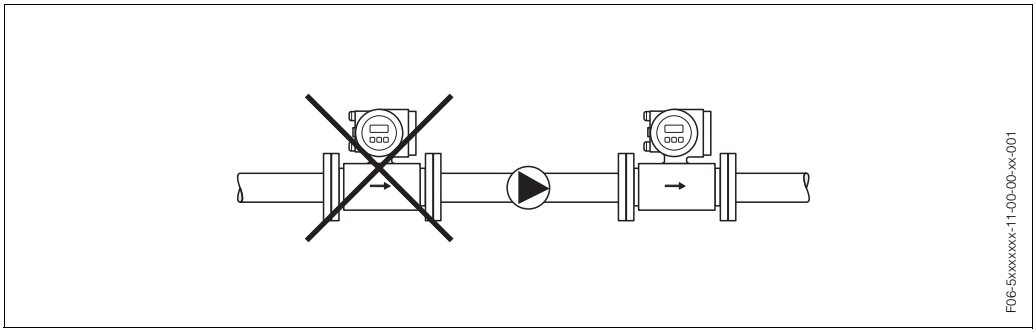
Mounting location

Correct measuring is possible only if the pipe is full. Avoid the following locations:
- Highest point of a pipeline. Risk of air accumulating.
- Directly upstream of a free pipe outlet in a vertical pipe.



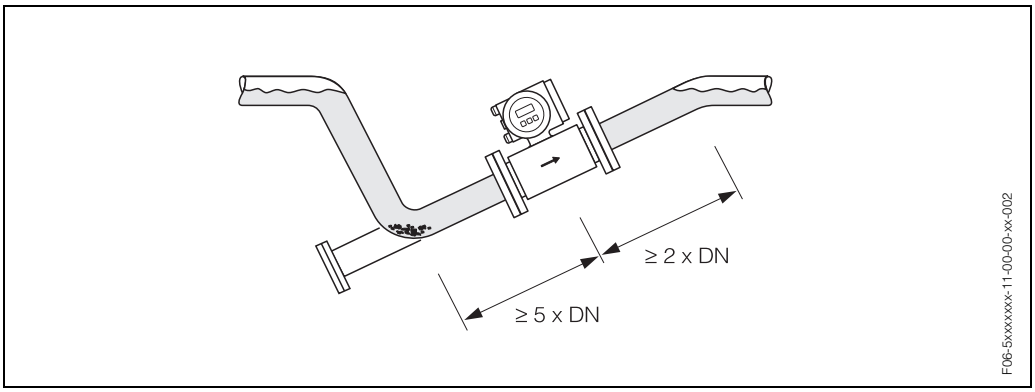
Installation of pumps

Do not install the sensor on the intake side of a pump. This precaution is to avoid low pressure and the consequent risk of damage to the lining of the measuring tube.
It might be necessary to install pulse dampers in systems incorporating reciprocating, diaphragm or peristaltic pumps. Information on the measuring system's resistance to vibration and shock can be found on Page 15.

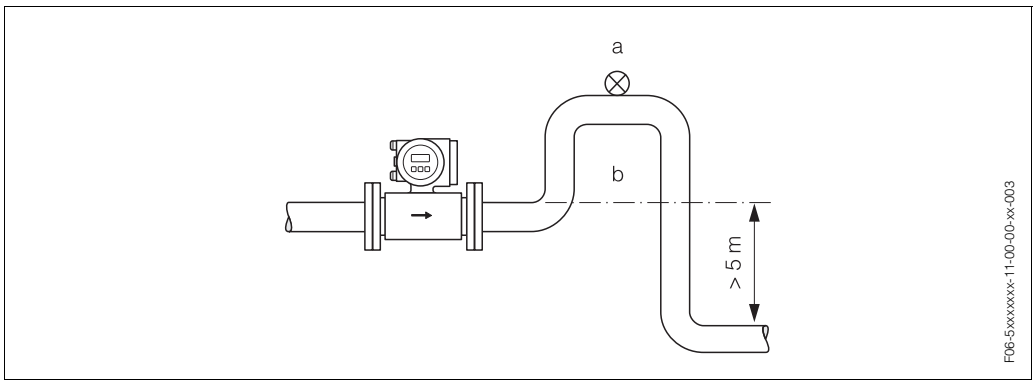


Partially filled pipes
Partially filled pipes with gradients necessitate a drain-type configuration. The Empty Pipe Detection (EPD) function offers additional protection by detecting empty or partially filled pipes.

Caution:
Risk of solids accumulating. Do not install the sensor at the lowest point in the drain. It is advisable to install a cleaning valve.



Vertical pipes
Install a siphon (b) or a vent valve (a) downstream of the sensor in vertical pipes longer than 5 meters. This precaution is to avoid low pressure and the consequent risk of damage to the lining of the measuring tube. These measures also prevent the system losing prime, which could cause air inclusions.



a = vent valve, b = siphon

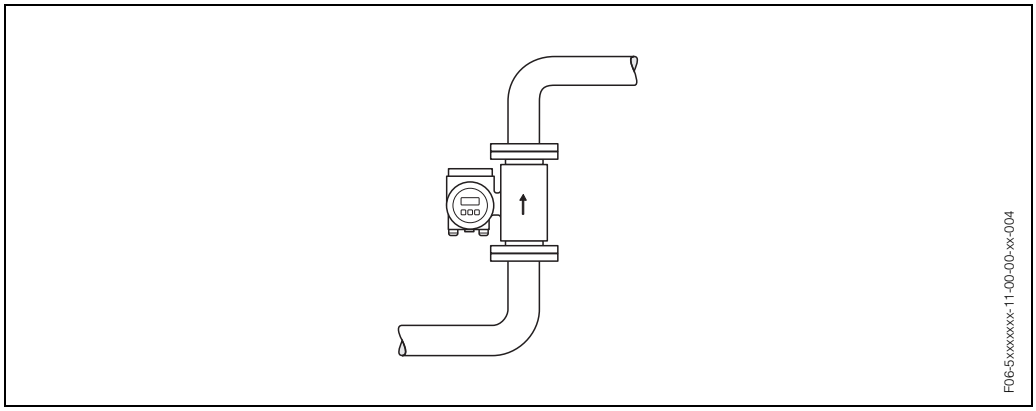
Orientation

An optimum orientation helps avoid gas and air accumulations and deposits in the measuring tube. Promag, nevertheless, supplies a range of options and accessories for correct measuring of problematic mediums:

- Electrode Cleaning Circuitry (ECC) to remove electrically conductive deposits in the measuring tube, e.g. in accretive mediums.
- Empty Pipe Detection (EPD) for recognition of partially filled measuring tubes, or for degassing mediums or for applications with fluctuating process pressure (only for DN 15...100).

Vertical orientation:

This orientation is ideal for self-emptying piping systems and for use in conjunction with Empty Pipe Detection.

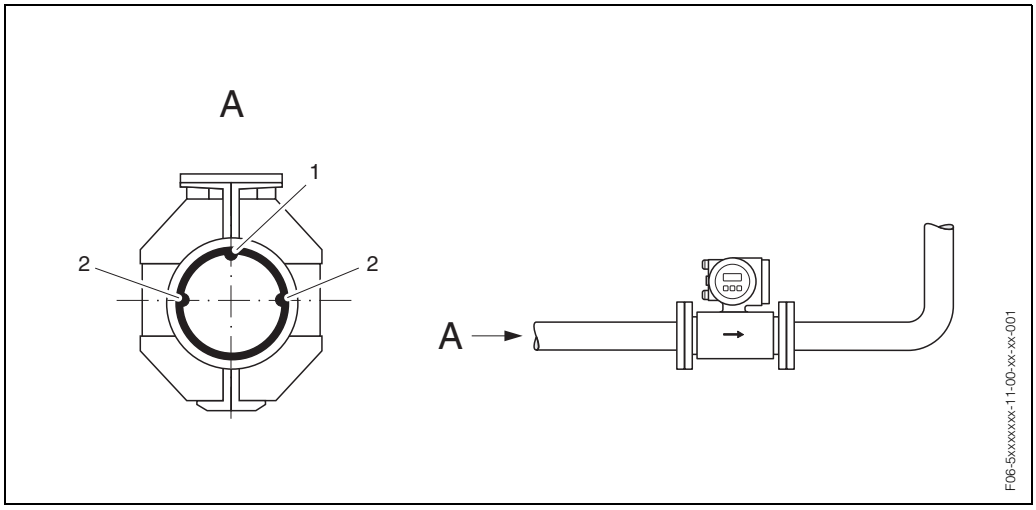


Horizontal orientation:

The measuring electrode-plane should be horizontal. This prevents brief insulation of the two electrodes by entrained air bubbles.

Caution:

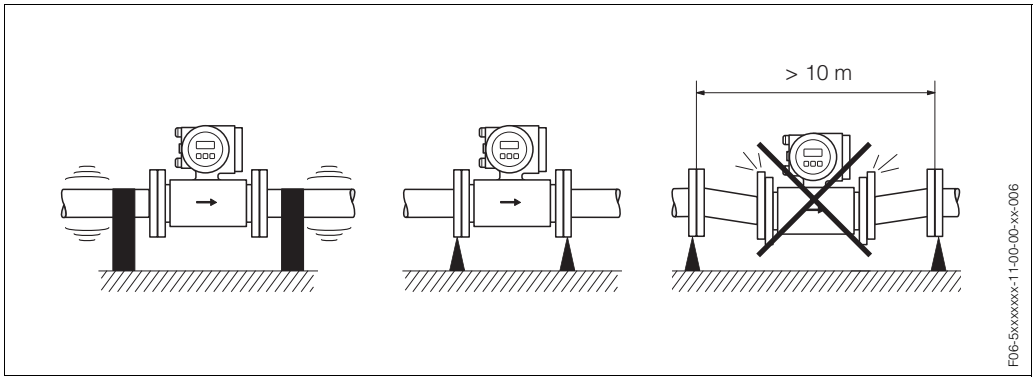
Empty Pipe Detection functions correctly only when the measuring device is installed horizontally and the transmitter housing is facing upward. Otherwise there is no guarantee that Empty Pipe Detection will respond if the measuring tube is only partially filled or empty.



1 = EPD electrode (Empty Pipe Detection) except for Promag H / DN 2...8
2 = Measuring electrodes (signal detection)

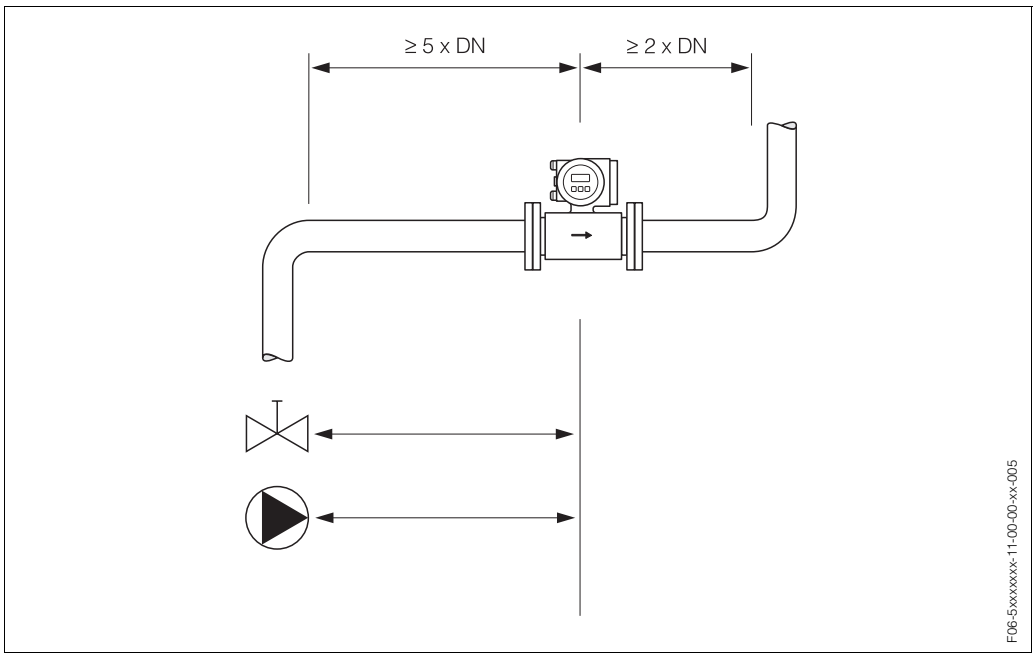
Vibrations
Secure the piping and the sensor if vibration is severe.

Caution:
It is advisable to install sensor and transmitter separately if vibration is excessively severe.
Information on resistance to vibration and shock can be found on Page 15.



Inlet and outlet runs

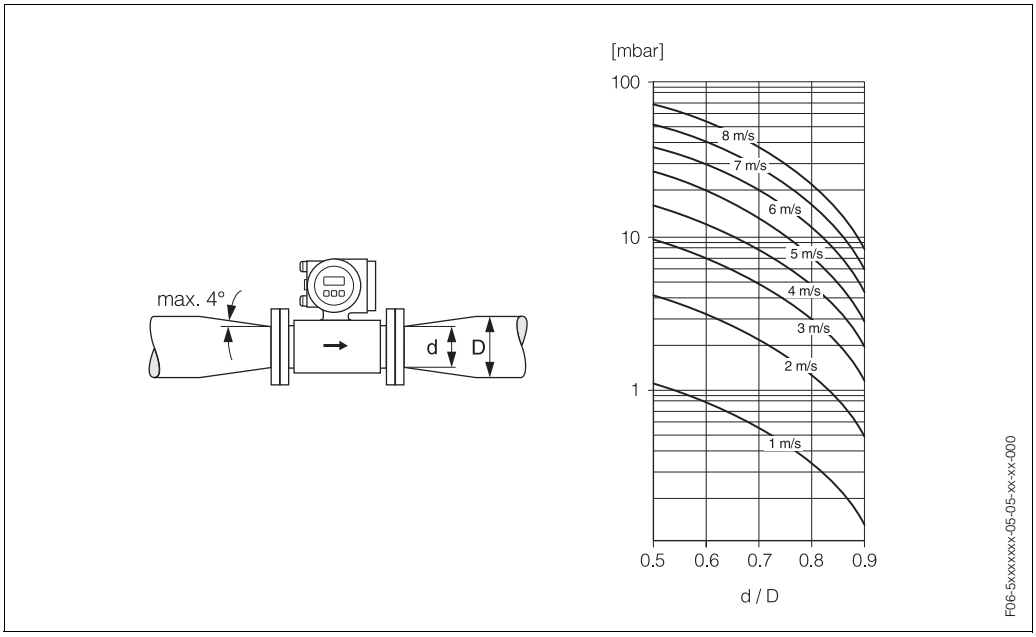
If possible, install the sensor well clear of fittings such as valves, T-pieces, elbows, etc. Compliance with the following requirements for the inlet and outlet runs is necessary in order to ensure measuring accuracy:
- Inlet run ≥ 5 x DN
- Outlet run ≥ 2 x DN



Adapters

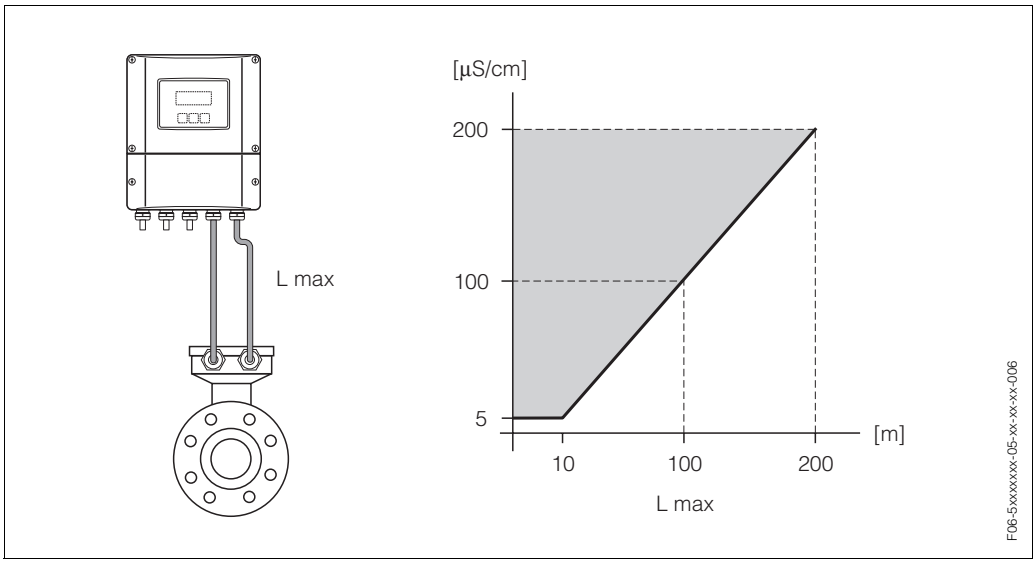
Suitable adapters to (E) DIN EN 545 (double flange junction sections) can be used to install the sensor in larger-diameter pipes. The resultant increase in the rate of flow improves measuring accuracy with very slow-moving fluids.
The nomogram shown here can be used to calculate the pressure loss caused by reducers and expanders. The nomogram applies only to fluids of viscosity similar to water.

1. Calculate the ratio of the diameters d/D.
2. From the nomogram read off the pressure loss as a function of flow velocity (downstream from the reduction) and the d/D ratio.



Length of connecting cable

Permissible cable length Lmax depends on the conductivity of the medium. A minimum conductivity of 20 µS/cm is required for measuring demineralized water.



Gray shaded area = permissible range for medium conductivity
Lmax = length of connecting cable in [m]
Medium conductivity in [µS/cm]

In order to ensure measuring accuracy, moreover, comply with the following instructions when installing the remote version:
- Secure the cable run or route the cable in a conduit. Movement of the cable can falsify the measuring signal, particularly if the conductivity of the medium is low.
- Route the cable well clear of electrical machines and switching elements.
- Ensure potential equalisation between sensor and transmitter, if necessary.

Environment

Ambient temperature

–20…+60 °C (sensor, transmitter)
Install the device at a shady location. Avoid direct sunlight, particularly in warm climatic regions.

Storage temperature

–10...+50 °C (preferably +20 °C)

Degree of protection

IP 67 (NEMA 4X) for transmitter and sensor

Shock and vibration resistance

Acceleration up to 2 g by analogy with IEC 68-2-6

CIP cleaning

Possible

SIP cleaning

Possible

Electromagnetic compatibility (EMC)

To EN 61326 and NAMUR recommendation NE 21

Process conditions

Medium temperature range

The permissible medium temperature depends on the sensor and the sealing material:

Sensor:
- –20...+150 °C (+180 °C in prep.) for DN 2…25
- –20…+150 °C for DN 40…100

Seal:
- EPDM: –20…+130 °C
- Silicon: –20…+150 °C
- Viton: –20…+150 °C
- Kalrez: –20…+150 °C

Conductivity

Minimum conductivity:
≥ 5 µS/cm → for fluids generally
≥ 20 µS/cm → for demineralised water

Note that in the case of the remote version, the minimum conductivity is also influenced by the length of the connecting cable → see “Length of connecting cable”

Medium pressure range (nominal pressure)

The permissible nominal pressure depends on the process connection and seal:
- 40 bar: flange, weld nipple (with O-ring seal)
- 16 bar: all other process connections

Pressure tightness (liner)

Nominal diameter		Measuring tube lining	Resistance to partial vacuum of measuring tube lining Limit values for abs. pressure [mbar] at various fluid temperatures					
[mm]	[inch]		25 °C	80 °C	100 °C	130 °C	150 °C	180 °C
2…100	1/12…4"	PFA	0	0	0	0	0	0

Limiting flow

The diameter of the pipe and the flow rate determine the nominal diameter of the sensor. The optimum velocity of flow is 2...3 m/s. The velocity of flow (v), moreover, has to be matched to the physical properties of the medium:
- v > 2 m/s: for media forming coatings, e.g. in full-fat milk, etc.

Flow characteristics of Promag H (SI units)

Nominal diameter		Recommended flow rate	Factory settings		
[mm]	[inch]	Min./max. full scale value (v ~ 0.3 or 10 m/s)	Full scale value (v ~ 2.5 m/s)	Pulse weighting (~ 2 pulse/s)	Creepage (v ~ 0.04 m/s)
2	1/12"	0.06…1.8 dm^3/min	0.5 dm^3/min	0.005 dm^3	0.01 dm^3/min
4	5/32"	0.25…7 dm^3/min	2 dm^3/min	0.025 dm^3	0.05 dm^3/min
8	5/16"	1…30 dm^3/min	8 dm^3/min	0.10 dm^3	0.1 dm^3/min
15	1/2"	4…100 dm^3/min	25 dm^3/min	0.20 dm^3	0.5 dm^3/min
25	1"	9…300 dm^3/min	75 dm^3/min	0.50 dm^3	1 dm^3/min
40	1 1/2"	25…700 dm^3/min	200 dm^3/min	1.50 dm^3	3 dm^3/min
50	2"	35…1100 dm^3/min	300 dm^3/min	2.50 dm^3	5 dm^3/min
65	2 1/2"	60…2000 dm^3/min	500 dm^3/min	5.00 dm^3	8 dm^3/min
80	3"	90…3000 dm^3/min	750 dm^3/min	5.00 dm^3	12 dm^3/min
100	4"	145…4700 dm^3/min	1200 dm^3/min	10.00 dm^3	20 dm^3/min

Flow characteristics of Promag H (US units)

Nominal diameter		Recommended flow rate	Factory settings		
[inch]	[mm]	Min./max. full scale value (v ~ 0.3 or 10 m/s)	Full scale value (v ~ 2.5 m/s)	Pulse weighting (~ 2 pulse/s)	Creepage (v ~ 0.04 m/s)
1/12"	2	0.015…0.5 gal/min	0.1 gal/min	0.001 gal	0.002 gal/min
5/32"	4	0.07…2 gal/min	0.5 gal/min	0.005 gal	0.008 gal/min
5/16"	8	0.25…8 gal/min	2 gal/min	0.02 gal	0.025 gal/min
1/2"	15	1.0…27 gal/min	6 gal/min	0.05 gal	0.10 gal/min
1"	25	2.5…80 gal/min	18 gal/min	0.20 gal	0.25 gal/min
1 1/2"	40	7…190 gal/min	50 gal/min	0.50 gal	0.75 gal/min
2"	50	10…300 gal/min	75 gal/min	0.50 gal	1.25 gal/min
2 1/2"	65	16…500 gal/min	130 gal/min	1 gal	2.0 gal/min
3"	80	24…800 gal/min	200 gal/min	2 gal	2.5 gal/min
4"	100	40…1250 gal/min	300 gal/min	2 gal	4.0 gal/min

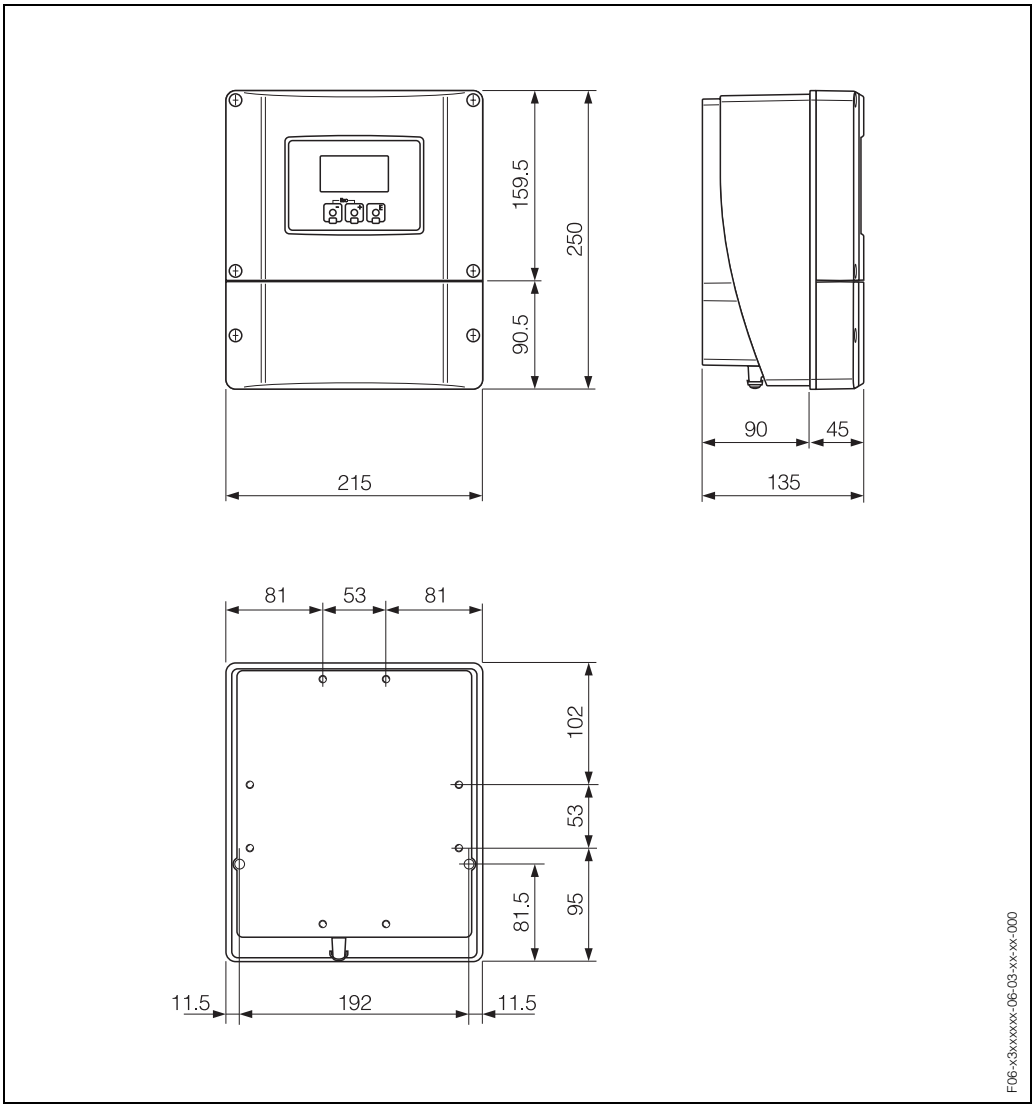
Pressure loss

- With DN 8...100 no pressure loss if the sensor is installed in a pipe of the same nominal diameter.
- Pressure losses for configurations incorporating adapters to (E) DIN EN 545 → Page 14.

Mechanical construction

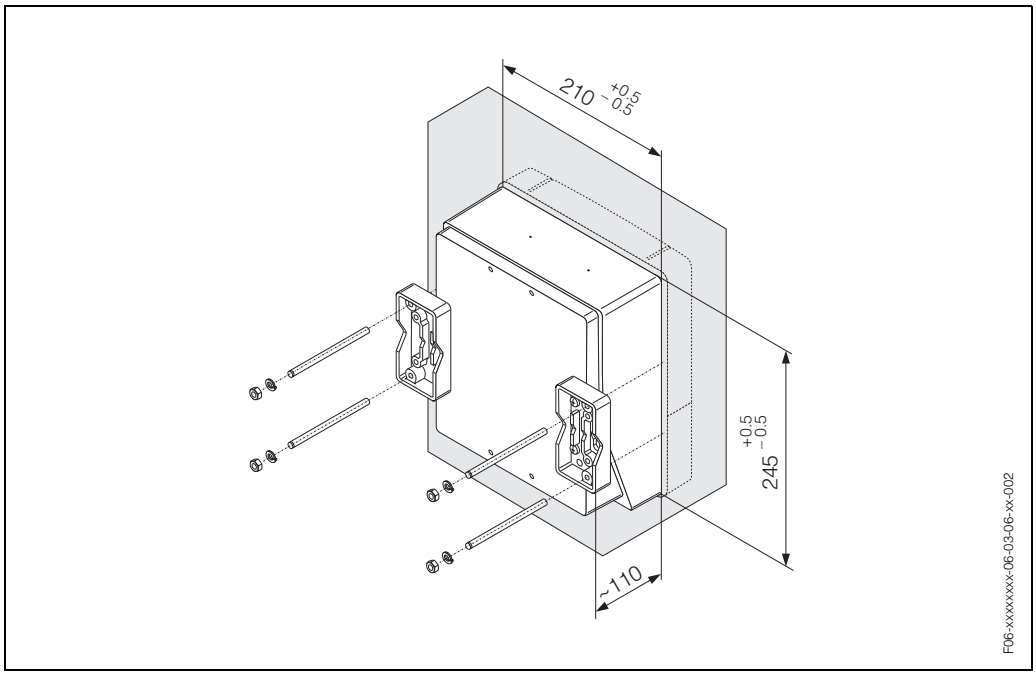
Design / dimensions

Dimensions, wall-mounted housing

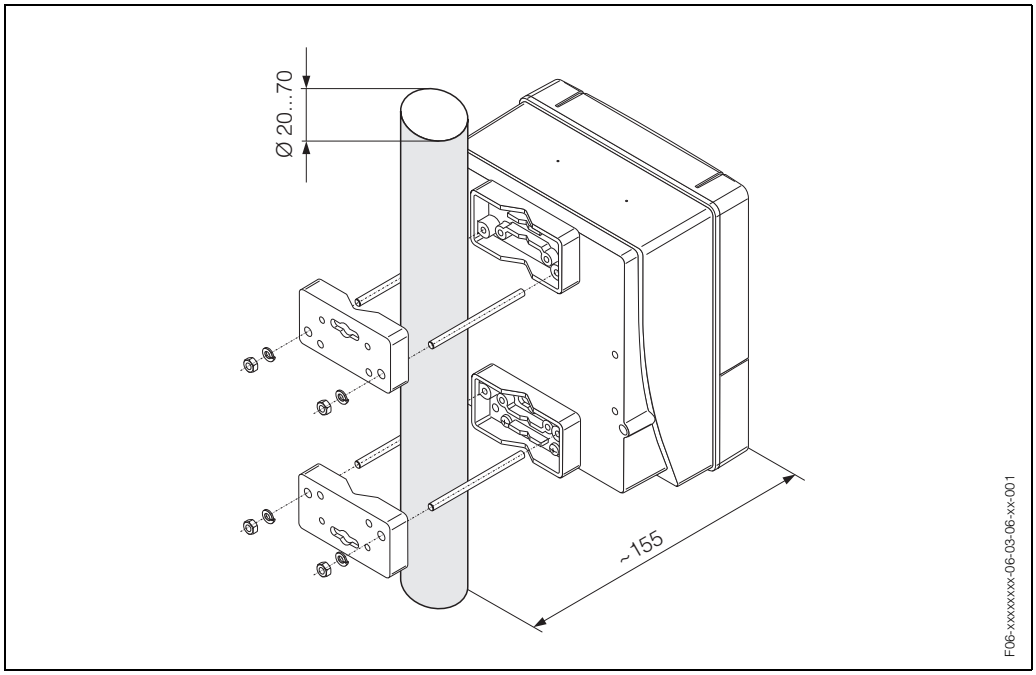


There is a separate mounting kit for the wall-mounted housing. It can be ordered from E+H as an accessory. The following installation variants are possible:
- Panel-mounted installation
- Pipe mounting

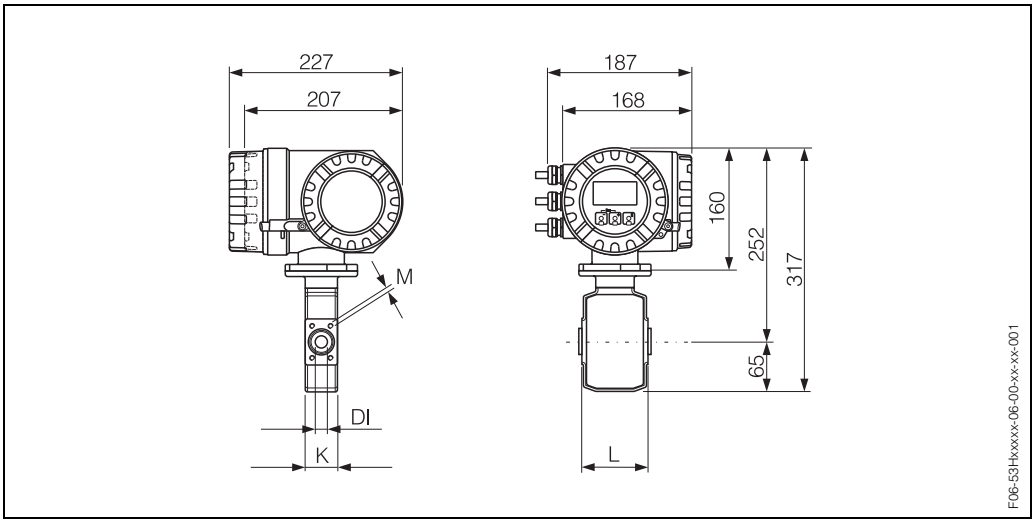
Panel-mounted installation



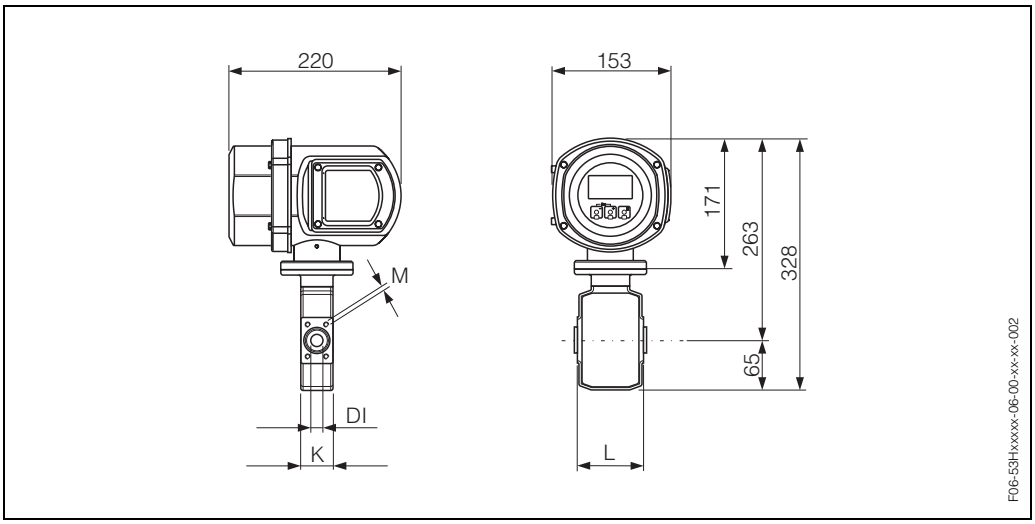
Pipe mounting



Promag H / DN 2…25 (compact version, aluminum field housing)



Promag H / DN 2...25 (compact version, stainless-steel field housing)

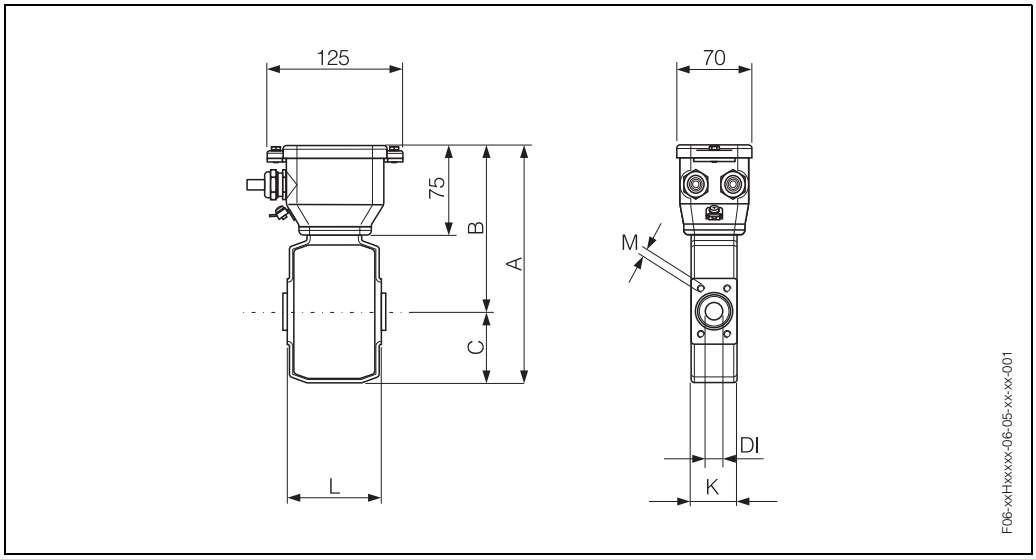


DN		PN **	DI	L	K	M
DIN [mm]	ANSI [inch]	DIN [bar]	[mm]	[mm]	[mm]	[mm]
2	–	16/40	2.25	86	43	M 6x4
4	–	16/40	4.5	86	43	M 6x4
8	–	16/40	9.0	86	43	M 6x4
15	–	16/40	16.0	86	43	M 6x4
–	1"	16/40	22.6	86	53	M 6x4
25	–	16/40	26.0	86	53	M 6x4

Fitting length depends on process connections → Page 24 ff.

** The permissible nominal pressure depends on the process connection and seal:
– 40 bar: flange, weld nipple (with O-ring seal)
– 16 bar: all other process connections

Promag H / DN 2...25 (remote version)

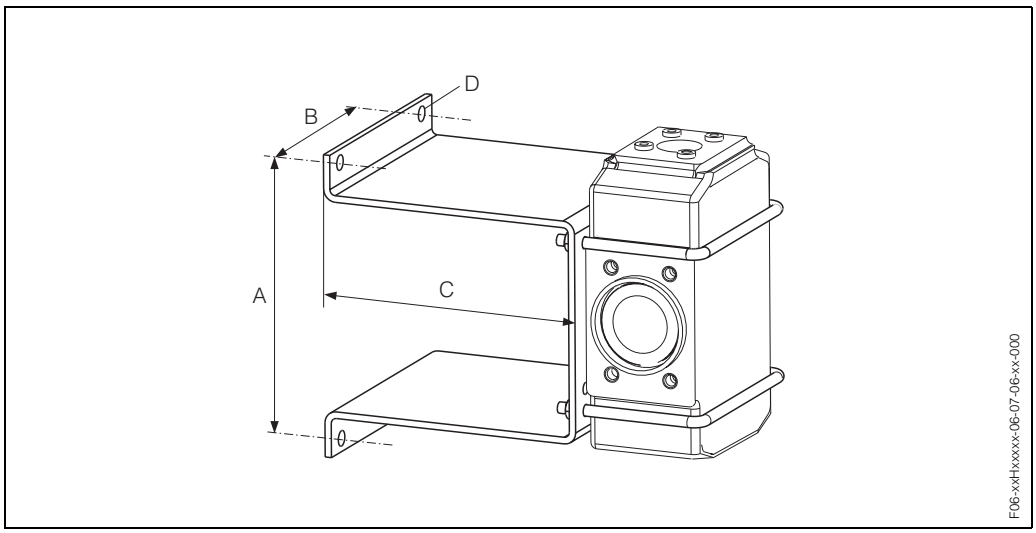


DN		PN *	di	L	A	B	C	K	M
DIN [mm]	ANSI [inch]	DIN [bar]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
2	–	16/40	2.25	86	213	148	65	43	M 6x4
4	–	16/40	4.5	86	213	148	65	43	M 6x4
8	–	16/40	9.0	86	213	148	65	43	M 6x4
15	–	16/40	16.0	86	213	148	65	43	M 6x4
–	1"	16/40	22.6	86	213	148	65	53	M 6x4
25	–	16/40	26.0	86	213	148	65	53	M 6x4

Fitting length depends on process connections → Page 24 ff.
Dimensions wall-mounted housing → Page 17

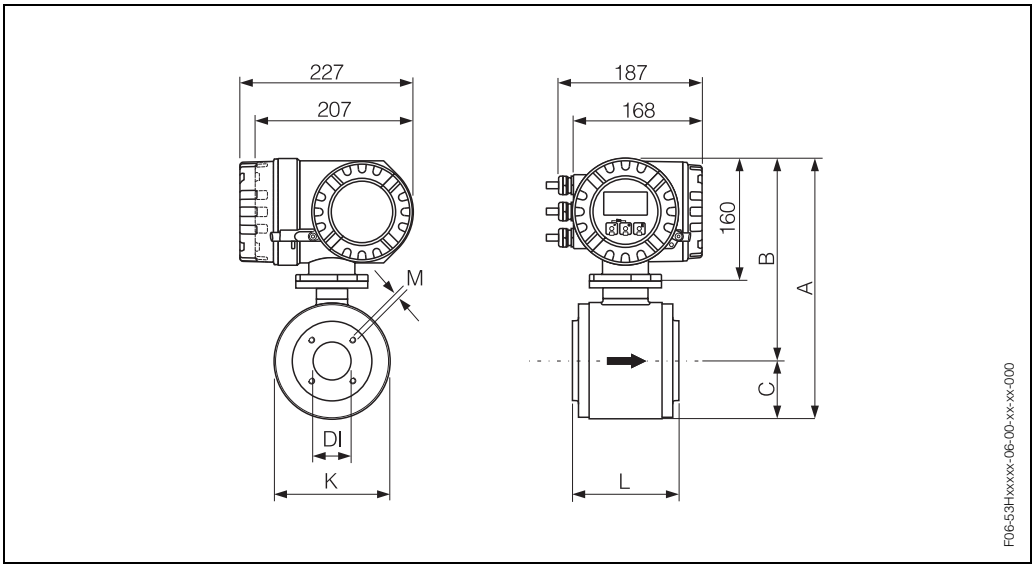
* The permissible nominal pressure depends on the process connection and seal:
– 40 bar: flange, weld nipple (with O-ring seal)
– 16 bar: all other process connections

Wall-mounting kit

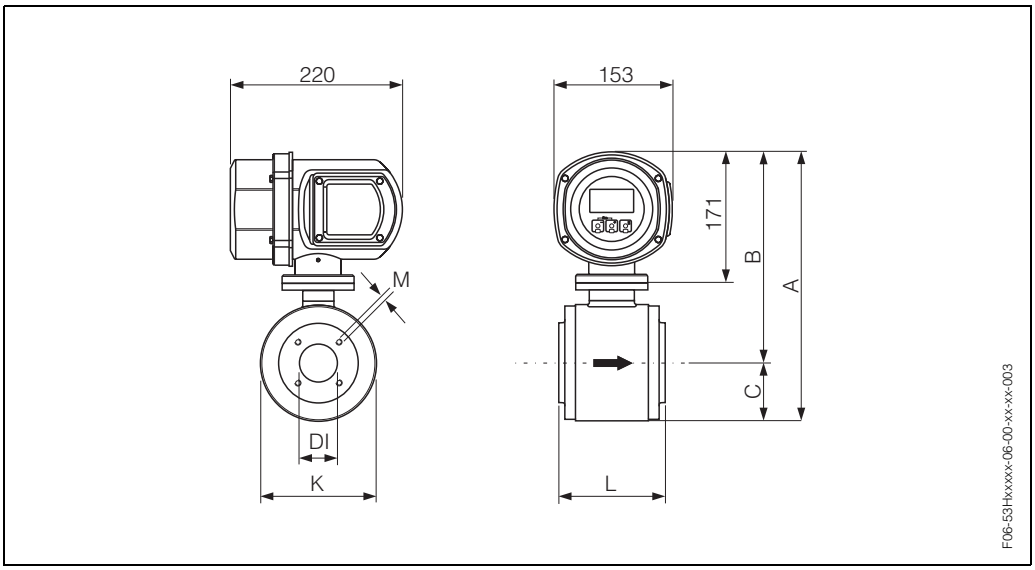


A = 125 mm, B = 88 mm, C = 120 mm, D = Ø 7 mm

Promag H / DN 40...100 (compact version, aluminum field housing)



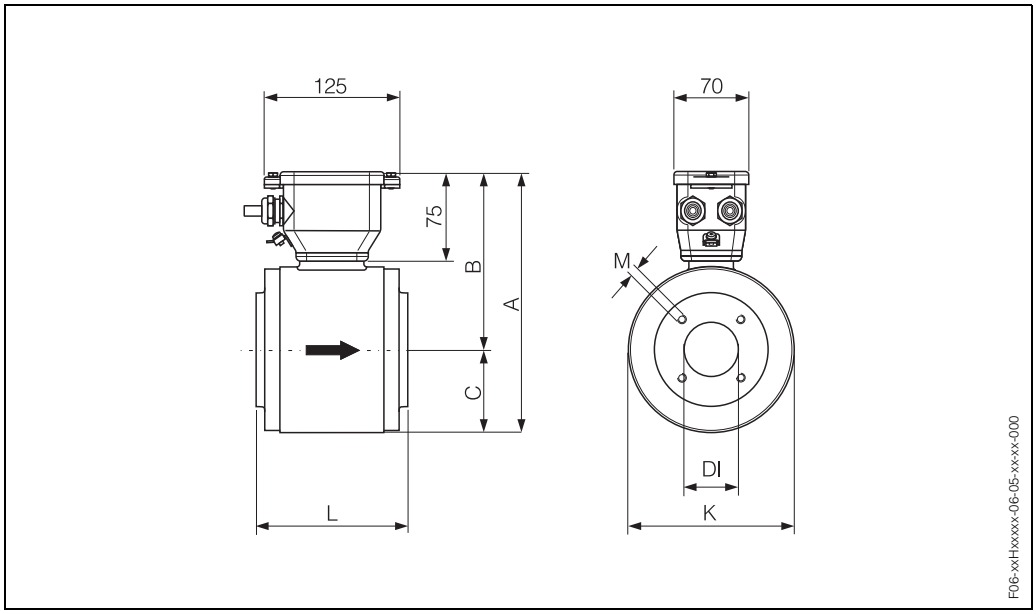
Promag H / DN 40...100 (compact version, stainless-steel field housing)



DN		PN	di	L	A *	B *	C	K	M
DIN [mm]	ANSI [inch]	DIN [bar]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
40	1 1/2"	16	35.3	140	319 (330)	255 (266)	64	128	M 6x4
50	2"	16	48.1	140	344 (355)	267 (278)	77	153	M 8x4
65	2 1/2"	16	59.9	140	344 (355)	267 (278)	77	153	M 8x4
80	3"	16	72.6	200	394 (405)	292 (303)	102	203	M 12x4
100	4"	16	97.5	200	394 (405)	292 (303)	102	203	M 12x4

Fitting length depends on process connections → Page 24 ff.
* () = Dimensions stainless-steel field housing

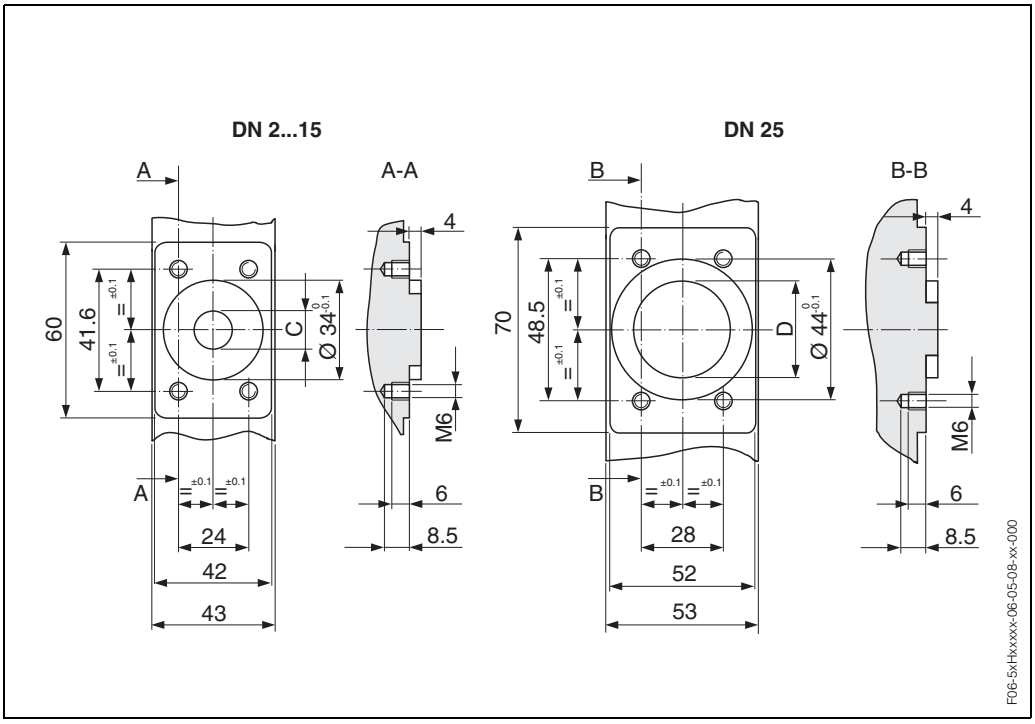
Promag H / DN 40...100 (remote version)



DN		PN	di	L	A	B	C	K	M
DIN [mm]	ANSI [inch]	DIN [bar]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
40	1 1/2"	16	35.3	140	216	151.5	64.5	129	M 6x4
50	2"	16	48.1	140	241	164.0	77.0	154	M 8x4
65	2 1/2"	16	59.9	140	241	164.0	77.0	154	M 8x4
80	3"	16	72.6	200	290	188.5	101.5	203	M 12x4
100	4"	16	97.5	200	290	188.5	101.5	203	M 12x4

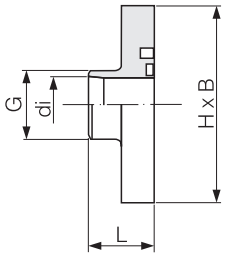
Fitting length depends on process connections → Page 24 ff.
Dimensions wall-mounted housing → Page 17

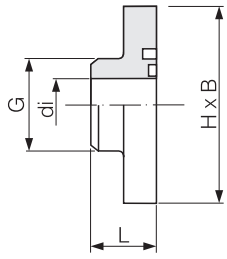
Front view of Promag H / DN 2...25 (without process connection)

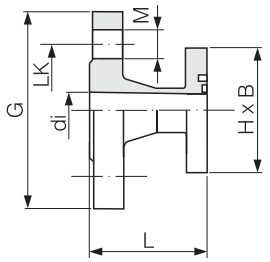


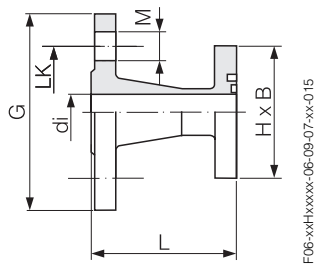
DN	C [mm]	D (DIN) [mm]	D (ANSI) [mm]
2…8	9	–	–
15	16	–	–
25	–	26	22.6

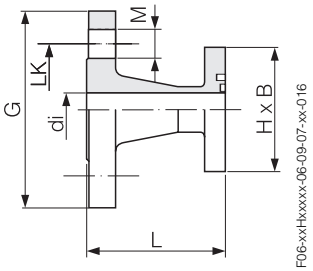
Process connections with O-ring seals (DN 2…25)

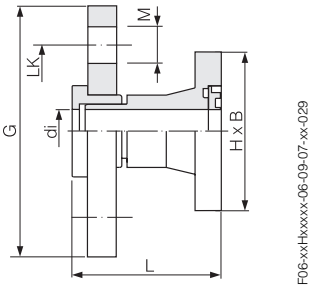
Weld nipple for pipe ISO 2463 1.4404 / 316L 5*H**-B**********	**Sensor** DN [mm]	**Piping** Pipe	**di** [mm]	**G** [mm]	**L** [mm]	**H x W** [mm]
	2…8	13.5 x 1.6	10.3	13.5	20.3	60 x 42
	15	21.3 x 1.6	18.1	21.3	20.3	60 x 42
	25 (DIN)	33.7 x 2	29.7	33.7	20.3	70 x 52
	Fitting length = (2 x L) + 86 mm					

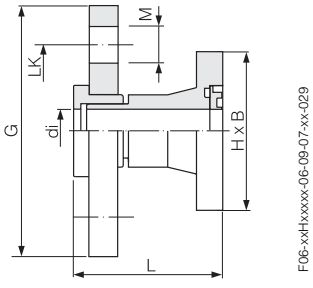
Weld nipple for pipe IPS 1.4404 / 316L 5*H**-C**********	**Sensor** DN [mm]	**Piping** Pipe (ODT / SMS)	**di** [mm]	**G** [mm]	**L** [mm]	**H x W** [mm]
	2…8	13.5 x 2.3	9.0	13.5	20.3	60 x 42
	15	21.3 x 2.65	16.0	21.3	20.3	60 x 42
	1" (25 ANSI)	33.7 x 3.25	27.2	33.7	22.3	70 x 52
	Fitting length = (2 x L) + 86 mm					

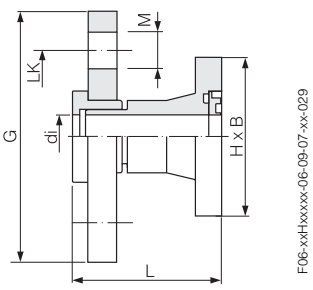
Flange PN 40 / DIN 2635 1.4404 / 316L 5*H**-D**********	**Sensor** DN [mm]	**Piping** Flange	**di** [mm]	**G** [mm]	**L** [mm]	**LK** [mm]	**M** [mm]	**H x W** [mm]
	2…8	DN 15	17.3	95	56.2	65	14	60 x 42
	15	DN 15	17.3	95	56.2	65	14	60 x 42
	25 (DIN)	DN 25	28.5	115	56.2	85	14	70 x 52
	Fitting length = (2 x L) + 86 mm Fitting length to DVGW (200 mm)							

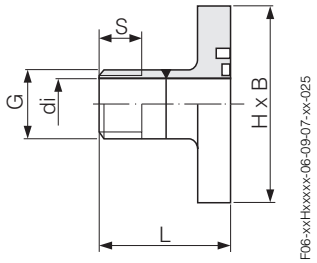
Flange Cl 150 / ANSI 16.5 1.4404 / 316L 5*H**-E**********	**Sensor** DN [mm]	**Piping** Flange [inch]	**di** [mm]	**G** [mm]	**L** [mm]	**LK** [mm]	**M** [mm]	**H x W** [mm]
	2…8	1/2"	15.7	89	66.0	60.5	15.7	60 x 42
	15	1/2"	16.0	89	66.0	60.5	15.7	60 x 42
	1" (25 ANSI)	1"	26.7	108	71.8	79.2	15.7	70 x 52
	Fitting length = (2 x L) + 86 mm							

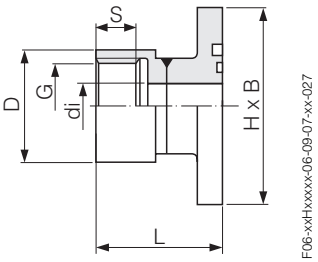
Flange 20K / JIS B2238 1.4404 / 316L 5*H**-F**********	**Sensor** DN [mm]	**Piping** Flange	**di** [mm]	**G** [mm]	**L** [mm]	**LK** [mm]	**M** [mm]	**H x W** [mm]
	2…8	ND 10	10	90	67	65	15	60 x 42
	15	ND 15	16	95	67	70	15	60 x 42
	25 (DIN)	ND 25	26	125	67	95	19	70 x 52
	Fitting length = (2 x L) + 86 mm							

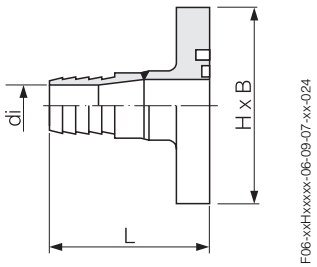
Flange PN 16 / DIN 2501 PVDF 5*H**-G**********	**Sensor** DN [mm]	**Piping** Flange	**di** [mm]	**G** [mm]	**L** [mm]	**M** [mm]	**LK** [mm]	**H x W** [mm]
	2…8	DN 15	15.7	95	57	14	65	60 x 42
	15	DN 15	15.7	95	57	14	65	60 x 42
	25 (DIN)	DN 25	27.3	115	57	14	85	70 x 52
	– Fitting length = (2 x L) + 86 mm – Fitting length to DVGW (200 mm) – The requisite ground rings can be ordered as accessories (Order code: DK5HR-****)							

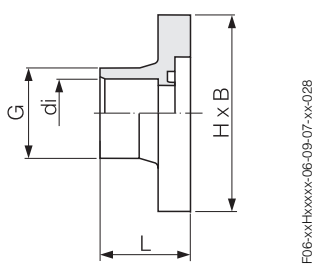
Flange Cl 150 / ANSI 16.5 PVDF 5*H**-H**********	**Sensor** DN [mm]	**Piping** Flange [inch]	**di** [mm]	**G** [mm]	**L** [mm]	**M** [mm]	**LK** [mm]	**H x W** [mm]
	2…8	1/2"	15.7	95	57	16	60	60 x 42
	15	1/2"	15.7	95	57	16	60	60 x 42
	1" (25 ANSI)	1"	27.3	115	57	16	79	70 x 52
	– Fitting length = (2 x L) + 86 mm – The requisite ground rings can be ordered as accessories (Order code: DK5HR-****)							

Flange 10K / JIS B2238 PVDF 5*H**-J**********	**Sensor** DN [mm]	**Piping** Flange	**di** [mm]	**G** [mm]	**L** [mm]	**M** [mm]	**LK** [mm]	**H x W** [mm]
	2…8	ND 15	15.7	95	57	15	70	60 x 42
	15	ND 15	15.7	95	57	15	70	60 x 42
	25 (DIN)	ND 25	27.3	125	57	19	90	70 x 52
	– Fitting length = (2 x L) + 86 mm – The requisite ground rings can be ordered as accessories (Order code: DK5HR-****)							

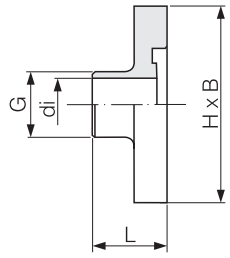
External pipe thread ISO 228 / DIN 2999, 1.4404 / 316L 5*H**-K**********	**Sensor** DN [mm]	**Piping** Internal thread [inch]	**di** [mm]	**G** [inch]	**L** [mm]	**S** [mm]	**H x W** [mm]
	2…8	R 3/8"	10	3/8"	40	10.1	60 x 42
	15	R 1/2"	16	1/2"	40	13.2	60 x 42
	1" (25 ANSI)	R 1"	25	1"	40	16.5	70 x 52
	Fitting length = (2 x L) + 86 mm						

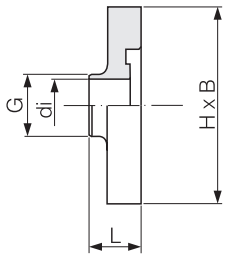
Internal pipe thread ISO 228 / DIN 2999, 1.4404 / 316L 5*H**-L**********	**Sensor** DN [mm]	**Piping** External thread [inch]	**di** [mm]	**G** [inch]	**D** [mm]	**L** [mm]	**S** [mm]	**H x W** [mm]
	2…8	Rp 3/8"	8.9	3/8"	22	45	13	60 x 42
	15	Rp 1/2"	16.0	1/2"	27	45	14	60 x 42
	1" (25 ANSI)	Rp 1"	27.2	1"	40	49	17	70 x 52
	Fitting length = (2 x L) + 86 mm							

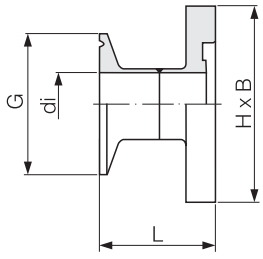
Hose connection 1.4404 / 316L 5*H**-M/N/P**********	**Sensor** DN [mm]	**Hose (LW)** Inside diameter [mm]	**di** [mm]	**LW** [mm]	**L** [mm]	**H x W** [mm]
	2…8	13	10.0	13	49	60 x 42
	15	16	12.6	16	49	60 x 42
	15	19	16.0	19	49	70 x 52
	– Fitting length = (2 x L) + 86 mm					

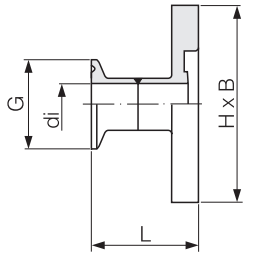
Adhesive fitting PVC 5*H**-R/S**********	**Sensor** DN [mm]	**Piping** Adhesive connection [inch]	**di** [mm]	**G** [mm]	**L** [mm]	**H x W** [mm]
	2…8	1/2"	21.5	27.3	28.0	60 x 42
	15	20 x 2	20.2	27.0	38.5	60 x 42
	– Fitting length = (2 x L) + 86 mm – The requisite ground rings can be ordered as accessories (Order code: DK5HR-****)					

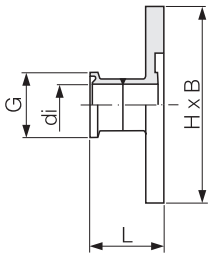
Process connections with aseptic gasket seals (DN 2...25)

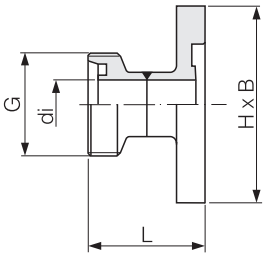
Weld nipple for pipe DIN 11850 1.4404 / 316L 5*H**-U**********	**Sensor** DN [mm]	**Piping** Pipe	**di** [mm]	**G** [mm]	**L** [mm]	**H x W** [mm]
	2…8	14 x 2	10	14	23.3	60 x 42
	15	20 x 2	16	20	23.3	60 x 42
	25 (DIN)	30 x 2	26	30	23.3	70 x 52
	– Fitting length = (2 x L) + 86 mm – If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube (Page 19) and process connection (di) into account.					

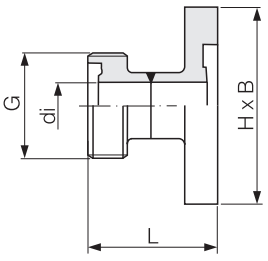
Weld nipple for ODT/SMS 1.4404 / 316L 5*H**-V**********	**Sensor** DN [mm]	**Piping** Pipe	**di** [mm]	**G** [mm]	**L** [mm]	**H x W** [mm]
	2…8	12.7 x 1.65	9.4	12.7	16.1	60 x 42
	15	19.1 x 1.65	15.8	19.1	16.1	60 x 42
	1" (25 ANSI)	24.5 x 1.65	22.1	25.4	16.1	70 x 52
	– Fitting length = (2 x L) + 86 mm – If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube (Page 19) and process connection (di) into account.					

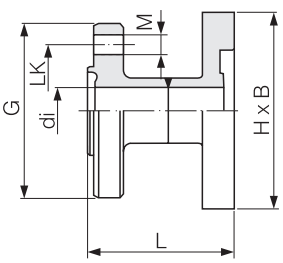
Clamp ISO 2852 1.4404 / 316L 5*H**-W**********	**Sensor** DN [inch]	**Piping** Clamp	**di** [mm]	**G** [mm]	**L** [mm]	**H x W** [mm]
	1" (25 ANSI)	Pipe 25.4 x 1.65 (ISO; 1")	22.6	50.5	44.5	70 x 52
	– Fitting length = (2 x L) + 86 mm – If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube (Page 19) and process connection (di) into account.					

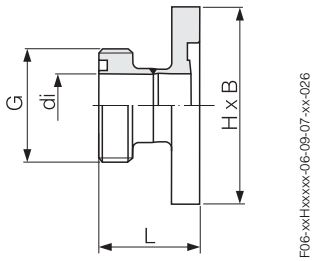
Clamp DIN 32676 1.4404 / 316L 5*H**-0**********	**Sensor** DN [mm]	**Piping** Clamp	**di** [mm]	**G** [mm]	**L** [mm]	**H x W** [mm]
	2…8	Pipe 14 x 2 (DIN 11850; DN 10)	10	34.0	41.0	60 x 42
	15	Pipe 20 x 2 (DIN 11850; DN 15)	16	34.0	41.0	60 x 42
	25 (DIN)	Pipe 30 x 2 (DIN 11850; DN 25)	26	50.5	44.5	70 x 52
	– Fitting length = (2 x L) + 86 mm – If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube (Page 19) and process connection (di) into account.					

Tri-Clamp **1.4404 / 316L** 5*H**-1**********	**Sensor** DN [mm]	**Piping** Tri-Clamp	**di** [mm]	**G** [mm]	**L** [mm]	**H x W** [mm]
	2…8	Pipe 12.7 x 1.65 (ODT 1/2")	9.4	25.0	28.5	60 x 42
	15	Pipe 19.1 x 1.65 (ODT 3/4")	15.8	25.0	28.5	60 x 42
	1" (25 ANSI)	Pipe 24.5 x 1.65 (ODT 1")	22.1	50.4	28.5	70 x 52
	– Fitting length = (2 x L) + 86 mm – If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube (Page 19) and process connection (di) into account.					

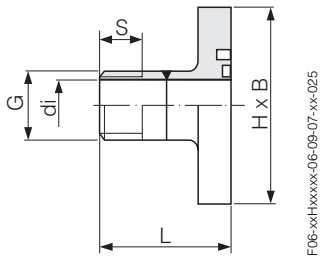
Coupling DIN 11851 **1.4404 / 316L** 5*H**-2**********	**Sensor** DN [mm]	**Piping** Screw union	**di** [mm]	**G** [mm]	**L** [mm]	**H x W** [mm]
	2…8	Pipe 12 x 1 (DN 10)	10	Rd 28 x 1/8"	44	60 x 42
	15	Pipe 18 x 1 or 1.5 (DN 15)	16	Rd 34 x 1/8"	44	60 x 42
	25 (DIN)	Pipe 28 x 1 or 1.5 (DN 25)	26	Rd 52 x 1/6"	52	70 x 52
	– Fitting length = (2 x L) + 86 mm – If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube (Page 19) and process connection (di) into account.					

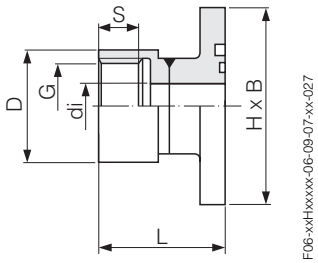
Coupling DIN 11864-1 **1.4404 / 316L** 5*H**-3**********	**Sensor** DN [mm]	**Piping** Screw union	**di** [mm]	**G** [mm]	**L** [mm]	**H x W** [mm]
	2…8	Pipe 13 x 1.5 (DIN 11850; DN 10)	10	Rd 28 x 1/8"	42	60 x 42
	15	Pipe 19 x 1.5 (DIN 11850; DN 15)	16	Rd 34 x 1/8"	42	60 x 42
	25 (DIN)	Pipe 29 x 1.5 (DIN 11850; DN 25)	26	Rd 52 x 1/6"	49	70 x 52
	– Fitting length = (2 x L) + 86 mm – If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube (Page 19) and process connection (di) into account.					

Flange DIN 11864-2 Form A **1.4404 / 316L** 5*H**-4**********	**Sensor** DN [mm]	**Piping** Flange	**di** [mm]	**G** [mm]	**L** [mm]	**LK** [mm]	**M** [mm]	**H x W** [mm]
	2…8	Pipe 13 x 1.5 (DIN 11850; DN 10)	10	54	48.5	37	9	60 x 42
	15	Pipe 19 x 1.5 (DIN 11850; DN 15)	16	59	48.5	42	9	60 x 42
	25 (DIN)	Pipe 29 x 1.5 (DIN 11850; DN 25)	26	70	48.5	53	9	70 x 52
	– Fitting length = (2 x L) + 86 mm – If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube (Page 19) and process connection (di) into account.							

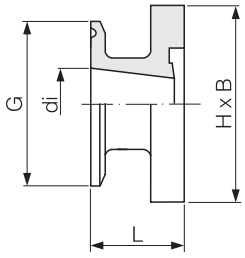
Coupling SMS 1145 **1.4404 / 316L** 5*H**-5**********	**Sensor** DN [mm]	**Piping** Screw union [inch]	**di** [mm]	**G** [mm]	**L** [mm]	**H x W** [mm]
	1" (25 ANSI)	1"	22.1	Rd 40 x 1/6"	30.8	70 x 52
	– Fitting length = (2 x L) + 86 mm – If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube (Page 19) and process connection (di) into account.					

Process connections orderable only as accessories (with O-ring seal, DN 2...25)

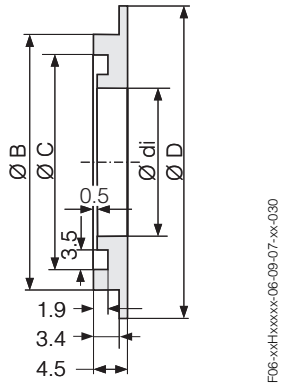
External pipe thread NPT **1.4404 / 316L** DKH**-GD**	**Sensor** DN [mm]	**Piping** Internal thread [inch]	**di** [mm]	**G** [inch]	**L** [mm]	**S** [mm]	**H x W** [mm]
	2…8	NPT 3/8"	10	3/8"	50	15.5	60 x 42
	15	NPT 1/2"	16	1/2"	50	20.0	60 x 42
	1" (25 ANSI)	NPT 1"	25	1"	55	25.0	70 x 52
	Fitting length = (2 x L) + 86 mm						

Internal pipe thread NPT **1.4404 / 316L** DKH**-GC**	**Sensor** DN [mm]	**Piping** External thread [inch]	**di** [mm]	**G** [inch]	**D** [mm]	**L** [mm]	**S** [mm]	**H x W** [mm]
	2…8	NPT 3/8"	8.9	3/8"	22	45	13	60 x 42
	15	NPT 1/2"	16.0	1/2"	27	45	14	60 x 42
	1" (25 ANSI)	NPT 1"	27.2	1"	40	49	17	70 x 52
	Fitting length = (2 x L) + 86 mm							

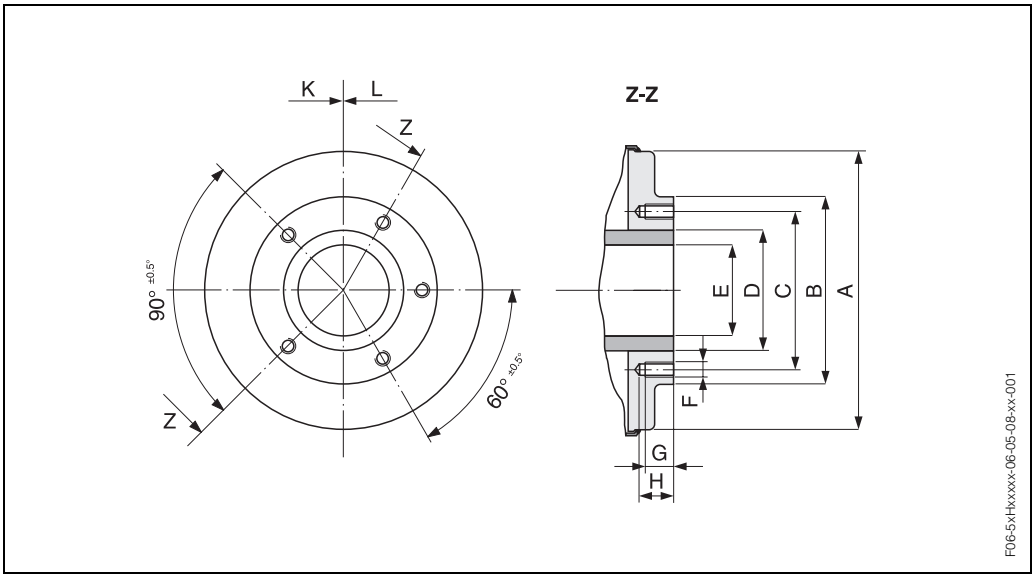
Process connections orderable only as accessories (with asceptic gasket seal)

Tri-Clamp **1.4404 / 316L** DKH**-HF***	**Sensor** DN [mm]	**Piping** Tri-Clamp	**di** [mm]	**G** [mm]	**L** [mm]	**H x W** [mm]
	15	Pipe 25.4 x 1.65 (ODT; 1")	22.1	50.4	28.5	60 x 42
	– Fitting length = (2 x L) + 86 mm – If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube (Page 19) and process connection (di) into account.					

Ground rings available as accessories (PVDF flange / PVC adhesive coupling)

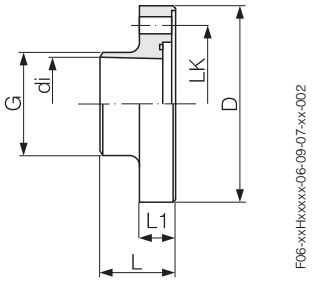
Ground ring **1.4435 / 316L, Alloy C-22** **Titanium (Pt/Rh-coated)** DK5HR-****	**Sensor** DN [mm]	**di** [mm]	**B** [mm]	**C** [mm]	**D** [mm]
	2…8	9.0	22.0	17.6	33.9
	15	16.0	29.0	24.6	33.9
	25 (DIN)	22.6	36.5	31.2	43.9
	1" (25 ANSI)	26.0	39.0	34.6	43.9

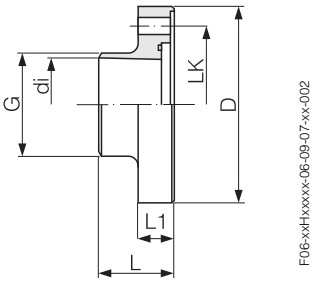
Front view of Promag H / DN 40...100 (without process connection)

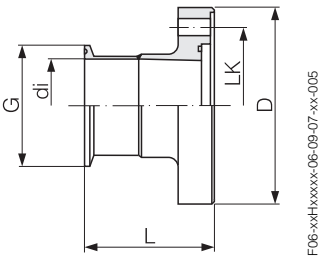


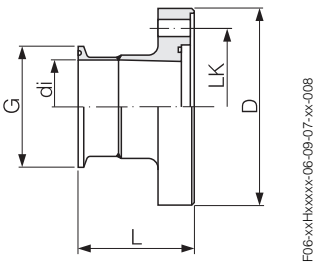
DN	A	B	C	D	E	F	G	H	L	K
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Thread holes	
40	122.0	86	71.0	51.0	35.3	M 8	15	18	–	4
50	147.0	99	83.5	63.5	48.1	M 8	15	18	–	4
65	147.0	115	100.0	76.1	59.9	M 8	15	18	6	–
80	197.0	141	121.0	88.9	72.6	M 12	15	20	–	4
100	197.0	162	141.5	114.3	97.5	M 12	15	20	6	–

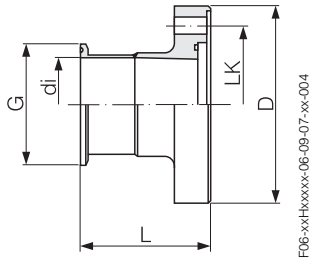
Process connections with aseptic gasket seals (DN 40...100)

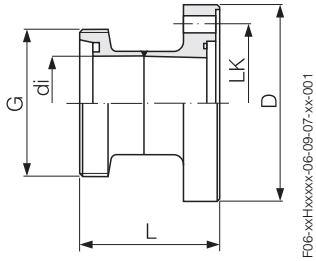
Weld nipple for pipe DIN 11850 **1.4404 / 316L** 5*H**-U**********	**DN** [mm]	**di** [mm]	**G** [mm]	**D** [mm]	**L** [mm]	**L1** [mm]	**LK** [mm]
	40	38.0	43	92	42	19	71.0
	50	50.0	55	105	42	19	83.5
	65	66.0	72	121	42	21	100.0
	80	81.0	87	147	42	24	121.0
	100	100.0	106	168	42	24	141.5
	– Fitting length = (2 x L) + 140 mm (DN 40...65) / + 200 mm (DN 80...100) – If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube (Page 19) and process connection (di) into account.						

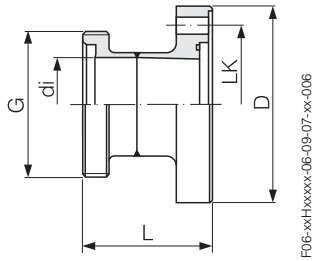
Weld nipple for pipe ODT **1.4404 / 316L** 5*H**-V**********	**DN** [mm]	**di** [mm]	**G** [mm]	**D** [mm]	**L** [mm]	**L1** [mm]	**LK** [mm]
	40	35.3	40	92	42	19	71.0
	50	48.1	55	105	42	19	83.5
	65	59.9	66	121	42	21	100.0
	80	72.6	79	147	42	24	121.0
	100	97.5	104	168	42	24	141.5
	– Fitting length = (2 x L) + 140 mm (DN 40...65) / + 200 mm (DN 80...100) – If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube (Page 19) and process connection (di) into account.						

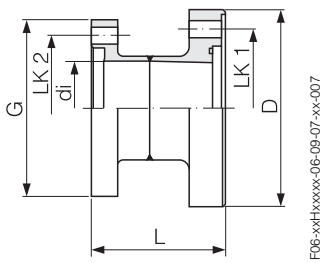
Clamp ISO 2852 **1.4404 / 316L** 5*H**-W**********	**DN** [mm]	**di** [mm]	**G** [mm]	**D** [mm]	**L** [mm]	**LK** [mm]
	40	35.6	50.5	92	68.5	71.0
	50	48.6	64.0	105	68.5	83.5
	65	60.3	77.5	121	68.5	100.0
	80	72.9	91.0	147	68.5	121.0
	100	97.6	119.0	168	68.5	141.5
	– Fitting length = (2 x L) + 140 mm (DN 40...65) / + 200 mm (DN 80...100) – If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube (Page 19) and process connection (di) into account.					

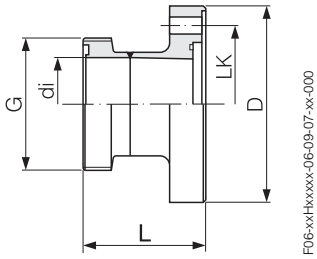
Clamp DIN 32676 **1.4404 / 316L** 5*H**-0**********	**DN** [mm]	**di** [mm]	**G** [mm]	**D** [mm]	**L** [mm]	**LK** [mm]
	40	38	50.5	92	61.5	71.0
	50	50	64.0	105	61.5	83.5
	65	66	91.0	121	68.0	100.0
	80	81	106.0	147	68.0	121.0
	100	100	119.0	168	68.0	141.5
	– Fitting length = (2 x L) + 140 mm (DN 40...65) / + 200 mm (DN 80...100) – If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube (Page 19) and process connection (di) into account.					

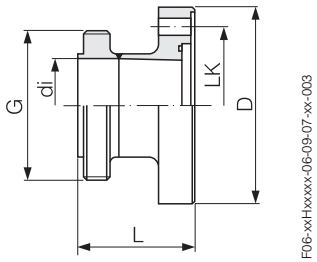
Tri-Clamp **1.4404 / 316L** 5*H**-1**********	**DN**		**di**	**G**	**D**	**L**	**LK**
	[mm]	[inch]	[mm]	[mm]	[mm]	[mm]	[mm]
	40	1 1/2"	34.8	50.4	92	68.6	71.0
	50	2"	47.5	63.9	105	68.6	83.5
	65	–	60.2	77.4	121	68.6	100.0
	80	3"	72.9	90.9	147	68.6	121.0
	100	4"	97.4	118.9	168	68.6	141.5
	– Fitting length = (2 x L) + 140 mm (DN 40...65) / + 200 mm (DN 80...100) – If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube (Page 19) and process connection (di) into account.						

Coupling DIN 11851 **1.4404 / 316L** 5*H**-2**********	**DN** [mm]	**di** [mm]	**G** [mm]	**D** [mm]	**L** [mm]	**LK** [mm]
	40	38	Rd 65 x 1/6"	92	72	71.0
	50	50	Rd 78 x 1/6"	105	74	83.5
	65	66	Rd 95 x 1/6"	121	78	100.0
	80	81	Rd 110 x 1/4"	147	83	121.0
	100	100	Rd 130 x 1/4"	168	92	141.5
	– Fitting length = (2 x L) + 140 mm (DN 40...65) / + 200 mm (DN 80...100) – If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube (Page 19) and process connection (di) into account.					

Coupling DIN 11864-1 Form A **1.4404 / 316L** 5*H**-3**********	**DN** [mm]	**di** [mm]	**G** [mm]	**D** [mm]	**L** [mm]	**LK** [mm]
	40	38	Rd 65 x 1/6"	92	71	71.0
	50	50	Rd 78 x 1/6"	105	71	83.5
	65	66	Rd 95 x 1/6"	121	76	100.0
	80	81	Rd 110 x 1/4"	147	82	121.0
	100	100	Rd 130 x 1/4"	168	90	141.5
	– Fitting length = (2 x L) + 140 mm (DN 40...65) / + 200 mm (DN 80...100) – If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube (Page 19) and process connection (di) into account.					

Flange DIN 11864-2 Form A **1.4404 / 316L** 5*H**-4**********	**DN** [mm]	**di** [mm]	**G** [mm]	**D** [mm]	**L** [mm]	**LK1** [mm]	**LK2** [mm]
	40	38	82	92	64	71.0	65
	50	50	94	105	64	83.5	77
	65	66	113	121	64	100.0	95
	80	81	133	147	98	121.0	112
	100	100	159	168	98	141.5	137
	– Fitting length = (2 x L) + 140 mm (DN 40...65) / + 200 mm (DN 80...100) – If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube (Page 19) and process connection (di) into account.						

Coupling SMS 1145 **1.4404 / 316L** 5*H**-5**********	**DN** [mm]	**di** [mm]	**G** [mm]	**D** [mm]	**L** [mm]	**LK** [mm]
	40	35.5	Rd 60 x 1/6"	92	63	71.0
	50	48.5	Rd 70 x 1/6"	105	65	83.5
	65	60.5	Rd 85 x 1/6"	121	70	100.0
	80	72.0	Rd 98 x 1/6"	147	75	121.0
	100	97.6	Rd 132 x 1/6"	168	70	141.5
	– Fitting length = (2 x L) + 140 mm (DN 40...65) / + 200 mm (DN 80...100) – If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube (Page 19) and process connection (di) into account.					

Coupling ISO 2853 **1.4404 / 316L** 5*H**-6**********	**DN** [mm]	**di** [mm]	**G** [mm]	**D** [mm]	**L** [mm]	**LK** [mm]
	40	35.6	50.6	92	61.5	71.0
	50	48.6	64.1	105	61.5	83.5
	65	60.3	77.6	121	61.5	100.0
	80	72.9	91.1	147	61.5	121.0
	100	97.6	118.1	168	61.5	141.5
	– Fitting length = (2 x L) + 140 mm (DN 40...65) / + 200 mm (DN 80...100) – If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube (Page 19) and process connection (di) into account.					

Weight

Weight data of Promag H in [kg]

Nominal diameter		Compact version	Remote version (without cable)	
[mm]	[inch]	DIN	Sensor	Wall housing
2	1/12"	5.2	2.5	6.0
4	5/32"	5.2	2.5	6.0
8	5/16"	5.3	2.5	6.0
15	1/2"	5.4	2.6	6.0
25	1"	5.5	2.8	6.0
40	1 1/2"	6.5	4.5	6.0
50	2"	9.0	7.0	6.0
65	2 1/2"	9.5	7.5	6.0
80	3"	19.0	17.0	6.0
100	4"	18.5	16.5	6.0

Materials

Transmitter housing:
- Compact housing: powder coated die-cast aluminium or stainless-steel field housing 1.4301/316L
- Wall-mounted housing: powder coated die-cast aluminium

Sensor housing: 1.4301
Wall mounting (holder panel): 1.4301

Measuring tube: stainless steel 1.4301 or 1.4306/304L

Flange:
- All connections 1.4404/316L
- Flanges (DIN, ANSI, JIS) made of PVDF
- Adhesive fitting made of PVC

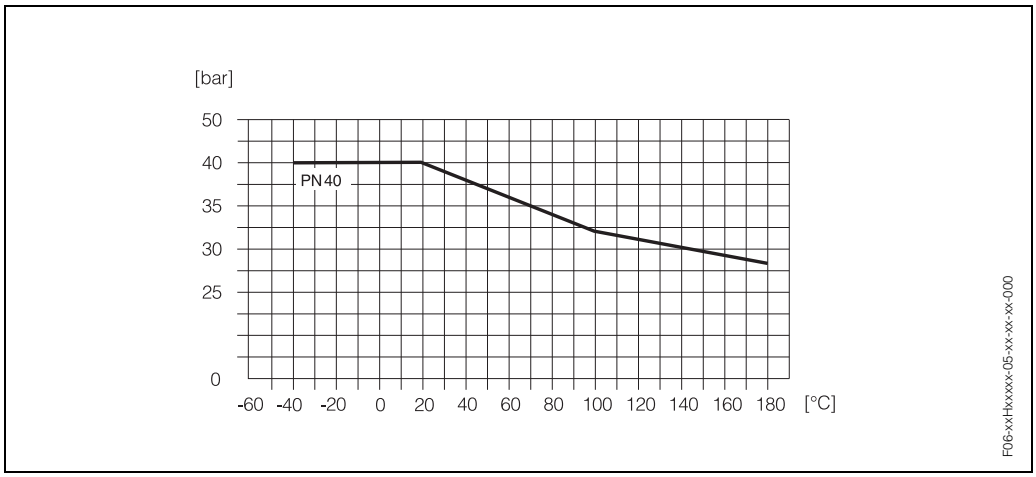
Ground disks:
Standard: 1.4435/316L; Option: Tantalum, platinum (Basic material: Titanium Grade 2, Platinum coating at least 12 µm), Alloy C-22

Electrodes:
Standard: 1.4435; Option: Alloy C-22, tantalum, platinum/rhodium 80/20 (up to DN 25 only)

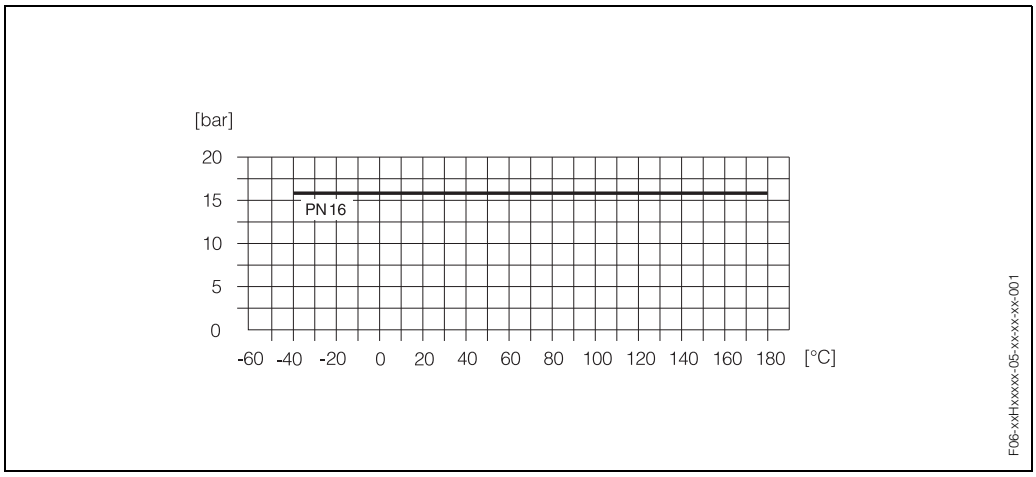
Seals:
- DN 2...25: O-ring (EPDM, Viton, Kalrez) or gasket seal (EPDM, silicone, Viton)
- DN 40...100: gasket seal (EPDM, silicone)

Material load diagrams

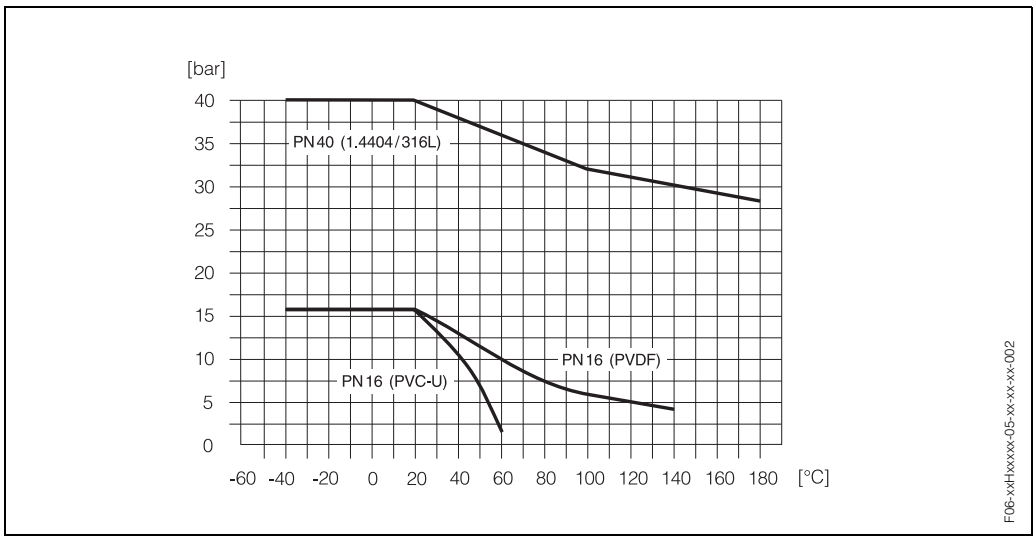
Weld nipple in 1.4404 / 316L (with O-ring)
to ISO 2463, IPS, ISO 228 / DIN 2999



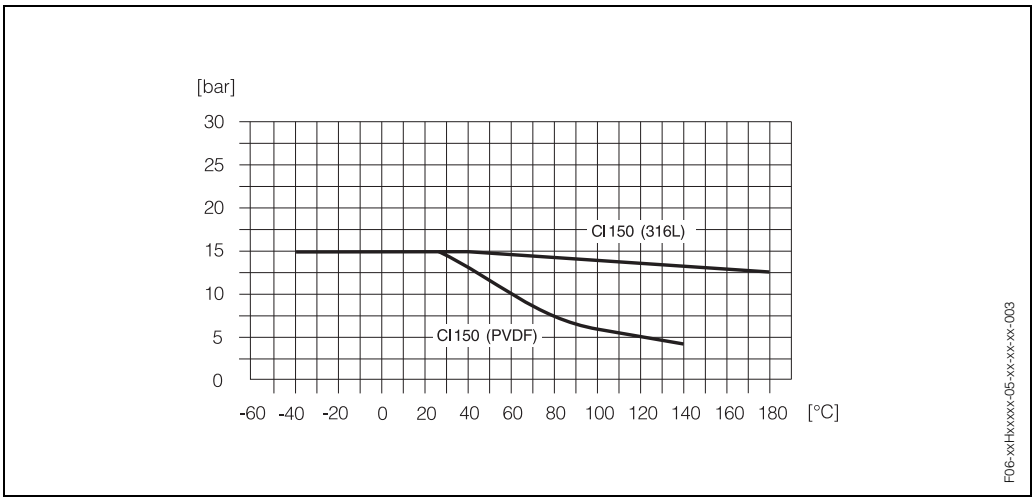
Weld nipple in 1.4404 / 316L (with gasket seal)
to DIN 11850, ODT, Clamp (ODT, ISO 2852, DIN 32676), coupling (DIN 11851, DIN 11864-1, ISO 2853, SMS 1145), flange DIN 11864-2



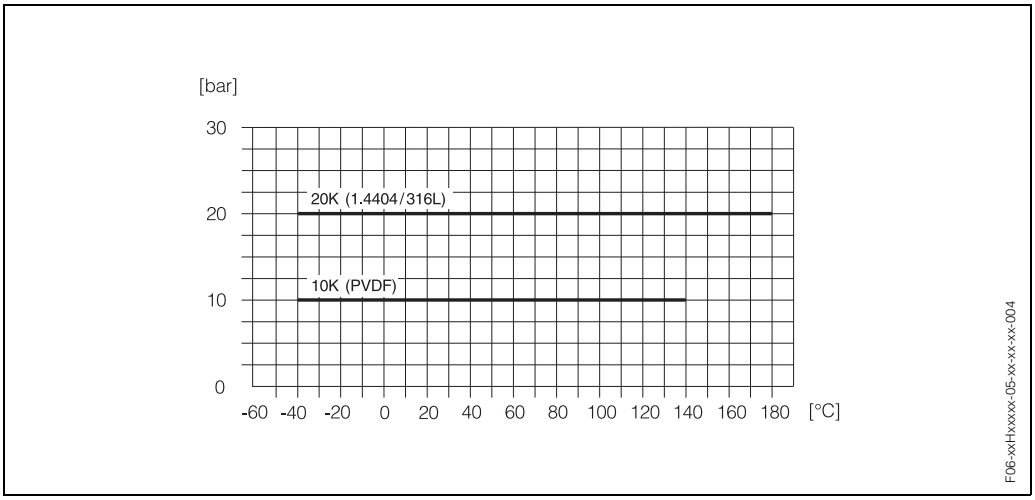
Flange material: 1.4404 / 316L, PVDF; Adhesive fitting: PVC-U
to DIN 2635 and 2501



Flange material: 316L, PVDF
to ANSI B16.5



Flange material: 1.4404 / 316L, PVDF
to JIS B2238



Fitted electrodes

Measuring electrodes and EPD electrodes
- Standard with: 1.4435, Alloy C-22, tantalum, platinum/rhodium
- DN 2...8: without EPD electrode

Process connection

- With O-ring: welding nipples (ISO 2463, IPS), flanges (DIN, ANSI, JIS), PVDF flanges (DIN, ANSI, JIS), external pipe thread, internal pipe thread, hose connection, PVC adhesive fittings
- With gasket seal: weld nipples (DIN 11850, ODT), clamps (ODT, ISO 2852, DIN 32676), threaded fasteners (DIN 11851, DIN 11864-1, ISO 2853, SMS 1145), flanges (DIN 11864-2)

Surface roughness

- PFA liner: ≤ 0.3 µm
- Electrodes:
  – 1.4435, Alloy C-22: ≤ 0.4 µm
  – Tantalum, platinum/rhodium: ≤ 0.8 µm
- Process connection Promag H: ≤ 0.8 µm

(all data relate to parts in contact with medium)

Human interface

Display elements

- Liquid-crystal display: backlit, two lines (Promag 50) or four lines (Promag 53) with 16 characters per line
- Custom configurations for presenting different measured-value and status variables
- Totalizer:
  Promag 50: 1 totalizer
  Promag 53: 3 totalizers

Operating elements

Unified control concept for both types of transmitter:

Promag 50:
- Local operation with three push buttons (–, +, E)
- Quick Setup menus for straightforward commissioning

Promag 53:
- Local operation with Touch Control (–, +, E)
- Application-specific Quick Setup menus for straightforward commissioning

Remote operation

Promag 50:
Remote control via HART, PROFIBUS-PA

Promag 53:
Remote control via HART, PROFIBUS-PA/-DP, FOUNDATION Fieldbus

Certificates and approvals

Ex approvals

Information on the currently available Ex-rated versions (ATEX, FM, CSA, etc.) is available on request from your E+H sales outlet. All information relevant to explosion protection is available in separate Ex documents that you can order as necessary.

Sanitary compatibility

3A authorization and EHEDG-tested
Seals in conformity with FDA (except Kalrez seals)

CE mark

The measuring system is in conformity with the statutory requirements of the EC Directives. Endress+Hauser confirms successful testing of the device by affixing to it the CE mark.

Other standards and guidelines

EN 60529:
Degrees of protection by housing (IP code)

EN 61010:
Protection Measures for Electrical Equipment for Measurement, Control, Regulation and Laboratory Procedures.

EN 61326 (IEC 1326):
Electromagnetic compatibility (EMC requirements)

NAMUR NE 21:
Association for Standards for Control and Regulation in the Chemical Industry

Ordering information

The E+H service organisation can provide detailed ordering information and information on the order codes on request.

Accessories

Various accessories, which can be ordered separately from Endress+Hauser, are available for the transmitter and the sensor. The E+H service organisation can provide detailed information on request.

Supplementary documentation

- ❑ System Information Promag (SI 028D/06/en)
- ❑ Technical Information Promag 50/53 W (TI 046D/06/en)
- ❑ Technical Information Promag 50/53 P (TI 047D/06/en)
- ❑ Operating Instructions Promag 50 (BA 046D/06/en and BA 049D/06/en)
- ❑ Operating Instructions Promag 53 (BA 047D/06/en and BA 048D/06/en)
- ❑ Supplementary documentation on Ex-ratings: ATEX, FM, CSA, etc.

Subject to modification

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