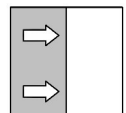


## Data sheet

### MA15F ... 0

Diaphragm manometer  
Standard version



# 1 Product and functional description

## 1.1 Performance characteristics

### Important features

- Highly durable
- Corrosion-resistant casing made of CrNi steel
- Thread or flange connection
- Measuring range from 0...16 mbar
- PTFE or PFA-coated measuring system available
- Large selection of special models

### Typical applications

- Measuring points with higher overload
- Gaseous, fluid and highly viscous media
- Aggressive or soiled media, also media containing solids
- Use in aggressive environments

### Areas of application

- Chemical and petrochemical industry
- Mining
- Power plants
- On-/Offshore
- Environment technology
- Mechanical and plant engineering

## 1.2 Product summary

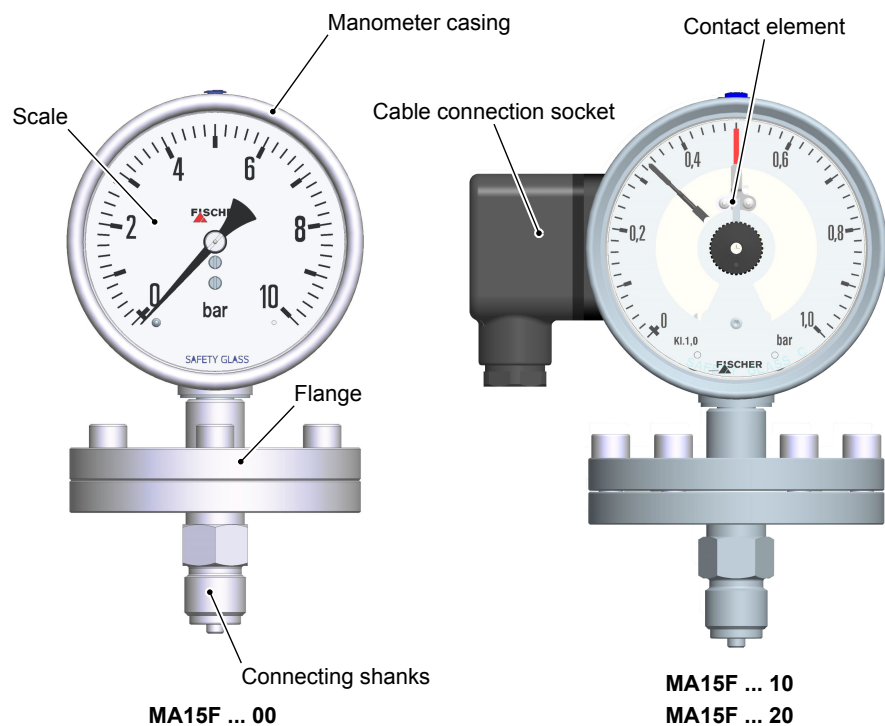


Fig. 1: Product summary

## Manometer casing

The following options are available for the manometer casing:

- Bayonet ring housing NG100 or NG160
- Safety casing NG100 or NG160 with unbreakable rear wall and blow-out opening acc. to DIN EN 837

## Process connection

Please see the order code for precise details about the process connection options (flange and connection pin).

### 1.3 Intended use

The units may only be used for the purpose stipulated by the manufacturer.

The units serve to measure over-pressure and under-pressure in industrial applications.

The optional installed switch elements are low-action contacts, mechanical magnetic spring contacts, inductive proximity switches in a slotted design or capacitive rotation angle encoder.<sup>(1)</sup> If the set limit values are exceeded, the output power circuits are opened or closed.

The corresponding setup regulations are to be considered for each application case.

### 1.4 Function diagram

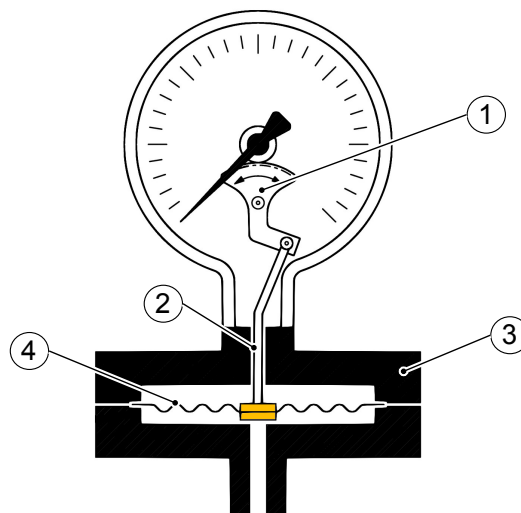


Fig. 2: Function diagram

1 Motion train	2 Connecting rod
3 Flange	4 Diaphragm

### 1.5 Design and mode of operation

The measuring element, the concentric corrugated diaphragm, is clamped between two flanges and the medium is applied on one side.

The diaphragm bulges elastically from its normal position as a result of the applied pressure. The linear movement is proportional to the applied pressure. A rod assembly on the side of the diaphragm that faces away from the medium captures the expansion movement and transfers it to the indicator.

The measurement display is shown on a 270 W° scale.

<sup>(1)</sup> Please see the information in the order code.

## 2 Technical Data

### 2.1 Standard version

The measuring variable is pressure and/or under-pressure in gaseous, liquid, aggressive, highly viscous or soiled media.

The diaphragm manometer fulfils the requirements of the standard EN 837-3.

#### Measuring range

0 ... 16 mbar to 0 ... 250mbar	Flange diameter 160 mm
0 ... 400 mbar bar to 0 ... 25 bar	Flange diameter 100 mm
-1 ... 0 to -1 ... 24 bar	

#### Pressure load

Admissible overload	5x Scale upper value (max. 40 bar)	
Idle load	Scale upper value	
Alternating load	0.9 x Scale upper value	
Max. pressure (flange screw connection)	160 mm	10 bar
	100 mm	40 bar

#### Process connection

Connecting shanks	G $\frac{1}{2}$ B, G $\frac{1}{4}$ B, G $\frac{3}{8}$ B	
	$\frac{1}{4}$ -18 NPT, $\frac{1}{2}$ -14 NPT	
	M20 x 1.5	
Connection flange DIN EN	DN20, DN25, DN50	PN40
Connection flange ANSI	1", 2", 3"	150 lbs, 300 lbs
open connection flange with loose collar flange <sup>*)</sup>	DN 50	PN40

<sup>\*)</sup> only for measuring ranges  $\geq$  400 mbar

#### Accuracy class

1.6	
2.5	Units with coated / cladded measuring system

#### Permissible temperature

Increase ambient temperature	-20 °C ... +60 °C
Media temperature	$\leq$ 85 °C
Storage temperature	-40 °C ... +70 °C

#### Temperature influence

If there is a reference temperature difference of +20 °C on the measuring system:

$\leq \pm 0.8 \% / 10 \text{ K}$	of the respective scale upper value
----------------------------------	-------------------------------------

#### Housing

Bayonet ring housing	$\varnothing$ 100 or 160 mm
Safety housing	

## Protection

IP66 acc. to EN 60529 / IEC 60529

## Materials

Housing	CrNi Steel 1.4404
Motion train	CrNi steel 1.4301
Dial face and needle	Aluminium (painted)
Inspection disk	Safety laminated glass
Connecting port (contact with medium)	CrNi-steel 1.4404 (AISI 316L)
Connection flange (contact with medium)	CrNi-steel 1.4404 (AISI 316L)
Diaphragm (contact with medium)	
- Measuring range $\leq 250$ mbar	CrNi steel 1.4571 (AISI 316T)
- Measuring ranges $\geq 400$ mbar	NiCrCo alloy (DURATHERM®)
Seals (contact with medium)	VITON®

## 2.2 Options

- Additional electrical attachments
  - Limit switch type KE
  - Capacitive rotation angle transducer type KE09
- Fluid charging
- Needle
  - Marker needle
  - Trailing needle
- Measuring system
  - O<sub>2</sub> applications
  - PTFE cladding / PFA coating of the measuring system
  - Model in Hastelloy C
- Zero-point adjustment
  - Setting screw
  - Micro adjustment indicator

## 2.3 Dimensional drawings

All dimensions in mm unless otherwise stated

### 2.3.1 Model without contacts

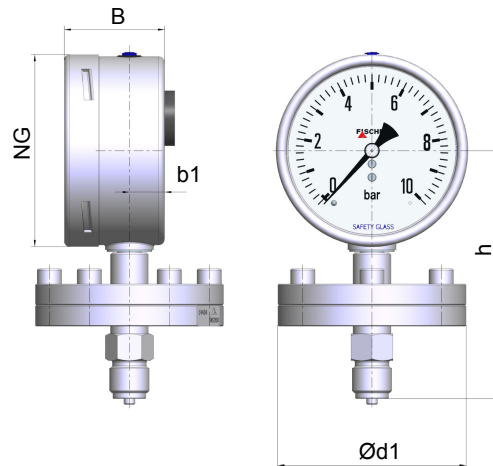


Fig. 3: Dimension drawing MA15F without contacts

Housing	NG	B	h	b1	Ød1
Bayonet ring housing	100	53	130	19	100
	160	53	160	19	157
Safety housing	100	63	130	26	100
	160	65	160	26	157

### 2.3.2 Model with contacts

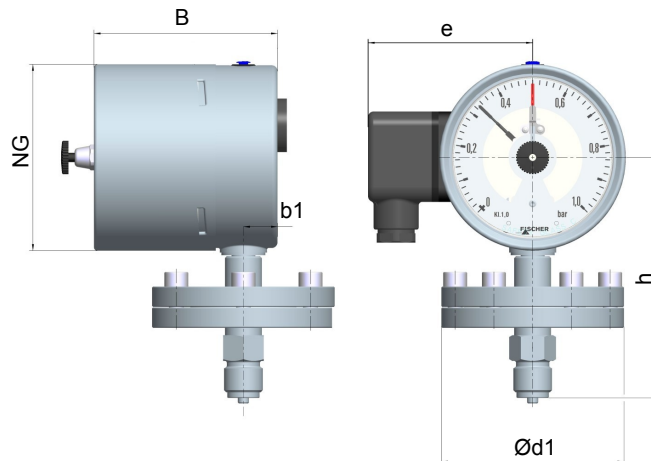


Fig. 4: Dimension drawing MA15F with contacts

Housing	NG	B	h	b1	Ød1	e
Bayonet ring housing	100	100	130	19	100	90
	160	100	160	19	157	120
Safety housing	100	109	130	26	100	90
	160	109	160	26	157	120

**Electrical connection**

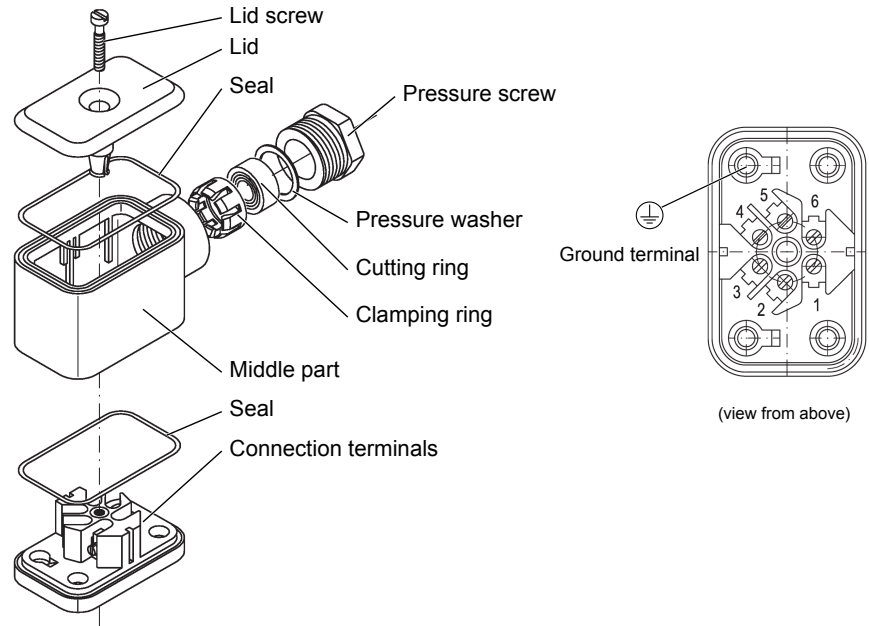


Fig. 5: Cable socket

Please see the type plate for the connection assignment.

**2.3.3 Process connection**

**2.3.3.1 Version with collar flange**

The dimensions stated apply for all housing models NG100 and NG160.

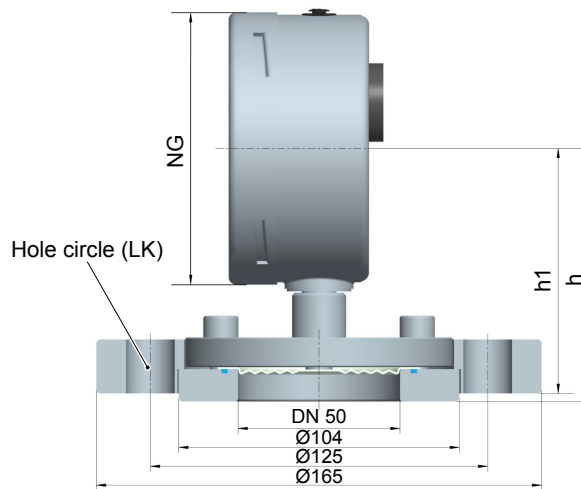


Fig. 6: Collar flange

**Measuring range  $\geq 400$  mbar**

DN	PN	NG	h	h1	LK	
					No.	Borehole
50	40	100	94	91	4	18
		160	124	121	4	18

### 2.3.3.2 Version with DIN connection flange

The dimensions stated apply for all housing models NG100 and NG160.

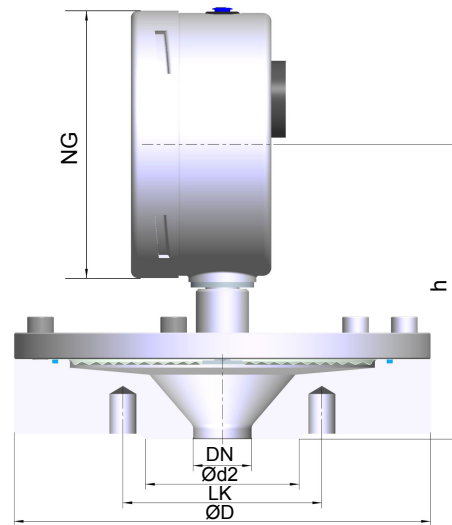


Fig. 7: Connection flange

Measuring range  $\leq 400$  mbar

DN	PN	$\varnothing D$	$\varnothing d2$	h	LK	No.	Thread
20	40	157	58	111	75	4	M12
25	40	157	68	110	85	4	M12
50	40	165	102	108	125	4	M16

Measuring range  $\geq 0.6$  bar

20	40	105	58	106	75	4	M12
25	40	115	68	103	85	4	M12
50	40	165	102	108	125	4	M16

### 2.3.3.3 Version with ANSI connection flange

Dimension drawing, see Version with DIN connection flange [► 8]. The dimensions stated apply for all housing models NG100 and NG160.

Measuring range  $\leq 400$  mbar

		$\varnothing D$	$\varnothing d2$	h	LK	No.	Thread
1"	150 lbs	157	50.8	118	79.2	4	1/2-13 UNC
1"	300 lbs	157	50.8	120	88.9	4	5/8-11 UNC
2"	150 lbs	157	91.9	123	120.7	4	5/8-11 UNC
3"	150 lbs	165	92.1	114	127	8	5/8-11 UNC

Measuring range  $\geq 0.6$  bar

1"	150 lbs	108	50.8	118	79.2	4	1/2-13 UNC
1"	300 lbs	123	50.8	124	88.9	4	5/8-11 UNC
2"	150 lbs	152	91.9	107	120.7	4	5/8-11 UNC
3"	150 lbs	190.5	127	119	152.4	4	$\varnothing 19.1$



### 2.3.3.4 Connecting shanks

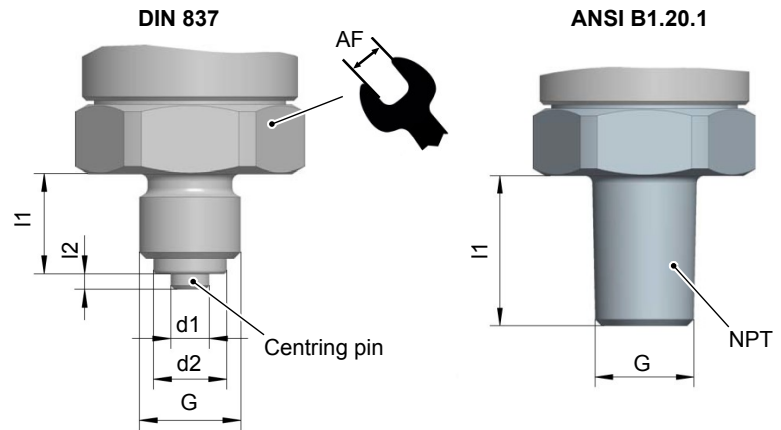
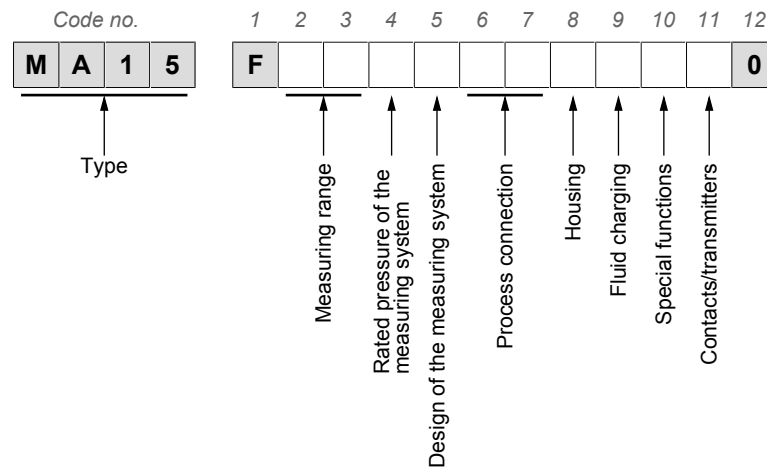


Fig. 8: Connecting shanks

G (Thread)	d1	d2	l1	l2	SW
G $\frac{1}{4}$ B	5	9.5	13	2	19
G $\frac{3}{8}$ B	5.5	13	16	3	22
G $\frac{1}{2}$ B	6	17.5	20	3	22
M20 x 1.5	6	17.5	20	3	22
$\frac{1}{4}$ -18 NPT			15		19
$\frac{1}{2}$ -14 NPT			19		22

### 3 Order Codes



#### [2.3] Measuring range

55	0 ... 16 mbar
56	0 ... 25 mbar
57	0 ... 40 mbar
58	0 ... 60 mbar
59	0 ... 100 mbar
60	0 ... 160 mbar
82	0 ... 250 mbar
83	0 ... 400 mbar
01	0 ... 0.6 bar
02	0 ... 1 bar
03	0 ... 1.6 bar
04	0 ... 2.5 bar
05	0 ... 4 bar
06	0 ... 6 bar
07	0 ... 10 bar
08	0 ... 16 bar
09	0 ... 25 bar
31	-1 ... 0 bar
32	-1 ... 0.6 bar
33	-1 ... 1.5 bar
34	-1 ... 3 bar
35	-1 ... 5 bar
36	-1 ... 9 bar
37	-1 ... 15 bar
28	-1 ... 24 bar

#### [4] Rated pressure of the measuring system

E	10 bar (Measuring ranges ≤ 250 mbar)
H	40 bar (Measuring ranges ≥ 400 mbar)

<b>[5] Design of the measuring system</b>	
<b>V</b>	CrNi Steel 1.4404
<b>S</b>	CrNi steel 1.4404 with diaphragm in Hastelloy C
<b>T</b>	CrNi steel 1.4404 with PFA coating
<b>P</b>	CrNi steel 1.4404 with PTFE coating

<b>[6.7] Process connection</b>	
<b>85</b>	Connection shanks with external thread G $\frac{1}{4}$ B acc. to DIN EN 837
<b>86</b>	Connection shanks with external thread G $\frac{3}{8}$ B acc. to DIN EN 837
<b>87</b>	Connection shanks with external thread G $\frac{1}{2}$ B acc. to DIN EN 837
<b>88</b>	Connecting port G $\frac{1}{2}$ with outer thread $\frac{1}{4}$ -18 NPT
<b>89</b>	Connecting port G $\frac{1}{2}$ with outer thread $\frac{1}{2}$ -14 NPT
<b>S2</b>	Connection shanks with external thread M20 x 1.5 acc. to DIN EN 3852
<b>FL</b>	open flange with collar attachment flange DN50 PN40 <sup>*)</sup>
<b>F1</b>	Connection flange DN20, PN40
<b>F2</b>	Connection flange DN25, PN40
<b>F5</b>	Connection flange DN50, PN40
<b>D3</b>	ANSI flange 1" 150 lbs
<b>D8</b>	ANSI flange 1" 300 lbs
<b>D6</b>	ANSI flange 2" 150 lbs
<b>D5</b>	ANSI flange 3" 150 lbs

<sup>\*)</sup> only for measuring ranges from 400 mbar

<b>[8] Housing</b>	
<b>L</b>	Bayonet ring housing NG100
<b>M</b>	Bayonet ring housing NG160
<b>0</b>	Safety housing NG100
<b>P</b>	Safety housing NG160

<b>[9] Fluid charging</b>	
<b>0</b>	Without fluid filling
<b>1</b>	Glycerine            Unit without contacts
<b>4</b>	Paraffin             Unit with inductive contacts
<b>5</b>	Silicone oil

Please note that units can only be filled with fluid from a measuring range of 100 mbar. Units with an installed rotation angle transducer cannot be filled.

<b>[10] Special functions</b>		
1	Zero-point correction with setting screw	
2	Zero-point correction micro adjustment indicator	
3	Zero-point correction with setting screw	Adjustable marker needle
4	Zero-point correction with setting screw	Resettable drag needle <sup>*)</sup>
5	Zero-point correction micro adjustment indicator	Adjustable marker needle
6	Zero-point correction micro adjustment indicator	Resettable drag needle <sup>*)</sup>

<sup>\*)</sup> only for measuring ranges from 60 mbar

<b>[11] Contacts/transmitters <sup>*)</sup></b>	
0	No contacts/transmitters
1	Contacts as per data sheet KE
2	Rotation angle transducer acc. to data sheet KE09

<sup>\*)</sup> only for measuring ranges from 100 mbar

### 3.1 Information about EU Declaration of Conformity

According to the Directive 2014/68/EU Article 4, Par. 3, this unit lies below the limit values (200 bar, 0.1 l). The unit has been designed and produced in line with the latest good engineering practice. This ensures that the unit operates safely. The unit does not have a safety function. Adequate operating instructions are enclosed with the pressurised units.

This is why pressurized units without contact fixtures (MA15 ... 00) do not bear the CE label.

### 3.2 Information about the document

This document contains all technical data about the device. Great care was taken when compiling the texts and illustrations; Nevertheless, errors cannot be ruled out.

Subject to technical amendments.



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