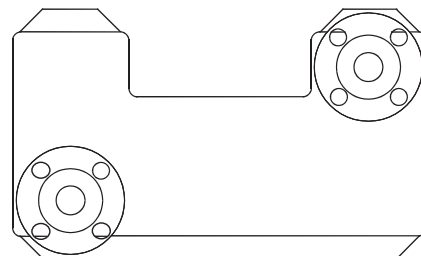
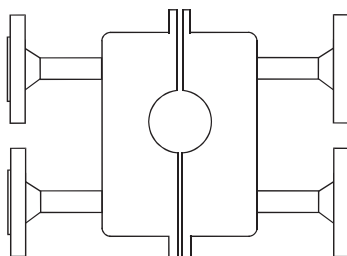


promass Heating jacket for Promass F, M, A, I sensors

Operating Instructions



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1 Safety instructions

1.1 Designated use

- The heating jacket serves to transfer heat to maintain fluids liquified in the Promass sensors of the F, M, A and I design.
- The manufacturer accepts no liability for damages resulting from incorrect or other than designated use.

1.2 Installation, commissioning and operation

Installation, commissioning and maintenance of the instrument must be carried out exclusively by trained specialists authorised by the facility's owner-operator. The specialist must have read and understood these Operating Instructions and must adhere to them.

1.3 Operational safety

- When using heating jackets, it is recommended to use the remote version of the sensor and transmitter.
- When using the remote version, and particularly with the Promass F, at very high fluid and heating temperatures, we recommend the use of the "long-necked version" (= remote version for heating), so that the ambient temperature of the connection housing and the connecting cable is not exceeded.
- With the compact version, make sure you take appropriate measures (orientation, etc.) so that the maximum ambient temperature for the transmitter is not exceeded, otherwise electronic components will be driven outside their specifications. You should particularly avoid this for components which are used for explosion protection.
- The permitted pressure of the heating medium is specified on the nameplate (see page 5).
- Permitted heating media include water, steam, oil and other non-corrosive fluids. Due to the Pressure Equipment Directive 97/23/EG, it may be the case with Group 1 heating media (explosive, inflammable, toxic, oxidant) that this limits the application.
- The heating jacket has a hot surface when it is functioning properly. The feed pipes conveying the heating medium are also hot and must be insulated to avoid contact. The customer is responsible for mounting this insulation.



Warning!

Danger of injury/burning from hot surfaces!

During operation, the surfaces of the heating jacket and those of the conveyance lines for the heating medium may become very hot and will lead to burns if touched. If the heating jacket and the conveyance lines are insulated, you must wait a long enough period of time for the jacket to cool after the insulation is removed.

1.4 Technical progress

The manufacturer reserves the right to modify technical data without prior notice. You can obtain information on updated versions and any additions to these Operating Instructions from your Endress + Hauser Sales Centre.

1.5 Notes on safety conventions and icons

The devices are designed to meet state-of-the-art safety requirements, have been tested, and left the factory in a condition in which they are safe to operate. They can, however, if used improperly or for other than the designated use, be a source of danger. Consequently, always pay particular attention to the safety instructions indicated in these Operating Instructions by the following icons:



Warning!

“Warning” indicates an action or procedure which, if not performed correctly, can result in injury or a safety hazard. Comply strictly with the instructions and proceed with care.



Caution!

“Caution” indicates an action or procedure which, if not performed correctly, can result in incorrect operation or destruction of the device. Comply strictly with the instructions.



Note!

“Note” indicates an action or procedure which, if not performed correctly, can have an indirect effect on operation or trigger an unexpected response on the part of the device.

2 Identification

2.1 Device designation

- Promass F, M and I: The heating jackets consist of two half-shells.
- Promass A: The heating system consists of a heating plate.

2.2 Nameplate

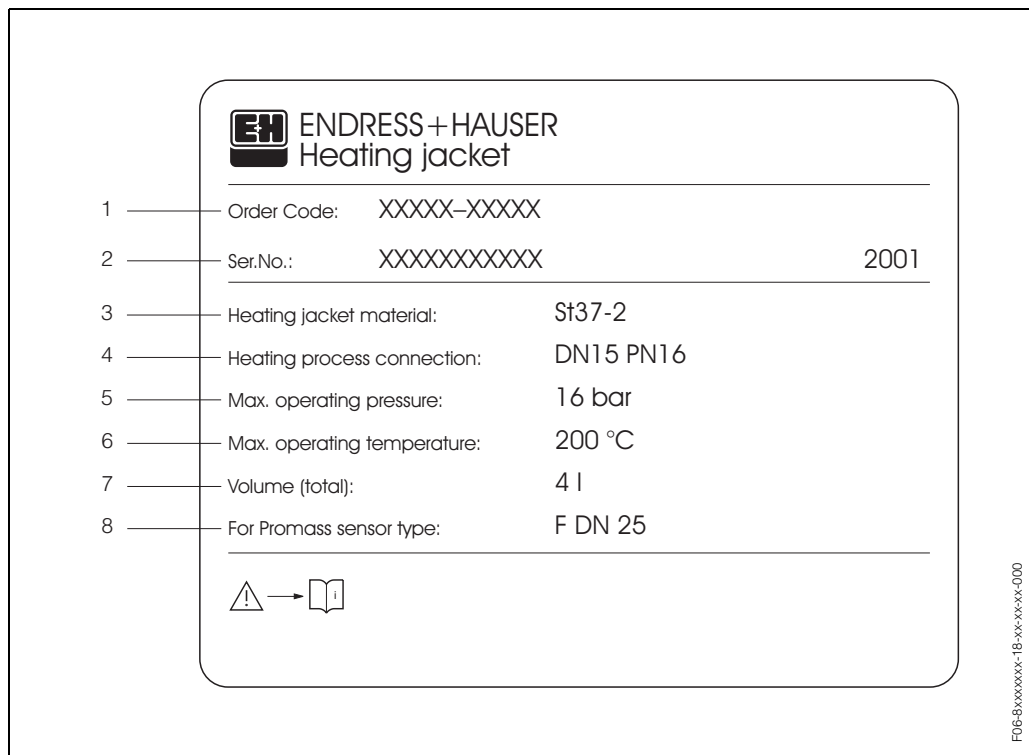


Fig. 1: Nameplate specifications for heating jackets (example)

- 1 Ordering code: See the specifications on the order confirmation for the meanings of the individual letters and digits.
- 2 Serial number / year of manufacture
- 3 Heating jacket material (St37-2 or 1.4301)
- 4 Process connection of the heating jacket (see page 10)
- 5 Maximum permitted pressure (heating medium)
- 6 Maximum permitted temperature (heating medium)
- 7 Total volume of both heating jacket shells: 4 litres (2 litres per half-shell)
- 8 Corresponding sensor: type (Promass F), nominal diameter (DN 25)

3 Mounting and installation



Warning!

Always comply with the instructions contained in this chapter to ensure safe and reliable operation.

3.1 Installation conditions

3.1.1 Dimensions

Dimensions and fitting lengths → Page 11 ff.

3.1.2 Temperature ranges

Heating medium – Operating temperature

Depending on the type of sensor (Promass F, M, A or I), the temperature of the heating medium may not exceed certain maximum values:

Max. operating temperature of the heating medium			
Promass F	Promass M	Promass A	Promass I
+200 °C (+392 °F)	+150 °C (+302 °F)	+200 °C (+392 °F)	+150 °C (+302 °F)

Measuring electronics – Ambient temperature



Caution!

- Always select the orientation of the sensor and the heating jacket so that the maximum ambient temperatures for the measuring electronics are not exceeded → Section 3.1.4.
- With additional heating jacket insulation, always keep to the minimum safety distances to the device → Page 11 ff.
- Keep to the following ambient temperatures depending on the design of the measuring system:

Device version	Max. ambient temperatures
Compact version	Transmitter: maximum +60 °C
Remote version (standard version)	<ul style="list-style-type: none"> • Connection housing: maximum +60 °C • Operating temperature of connecting cable: maximum +105 °C
Remote version for heating (long-necked version)	<p>Always use the long-necked version when the max. ambient temperature of +60 °C for using the standard remote version cannot be kept to. The long-necked version has a housing support for the thermal separation of sensor and transmitter.</p> <p>This version is used, for example, for applications in which very high fluid and heating medium temperatures are encountered.</p>

Heating jacket – Material load curves (pressure/temperature)

The material load curves (pressure-temperature diagrams) for the heating jacket are to be found on Page 9.

3.1.3 Thermal insulation

With some fluids, make sure that there are no additional heat losses around the sensor and the heating jacket. There are a number of materials which are suitable as insulators for the heating jackets.



Caution!

Risk of electronics overheating!

- With the compact version of the instrument, do not insulate or heat the connecting piece between the sensor and the transmitter. On the remote version, keep the terminal housing free from insulation.
- When installing insulation, always keep to the minimum safety distances to the device → Page 11 ff.
- Keep to the maximum permitted ambient temperatures for the transmitter housing and the connection housing (see Section 3.1.2).

3.1.4 Orientation

In order to ensure that the maximum permissible ambient temperature for the transmitter or the connection housing (remote version) is not exceeded, the following orientations must be observed (Fig. 2).

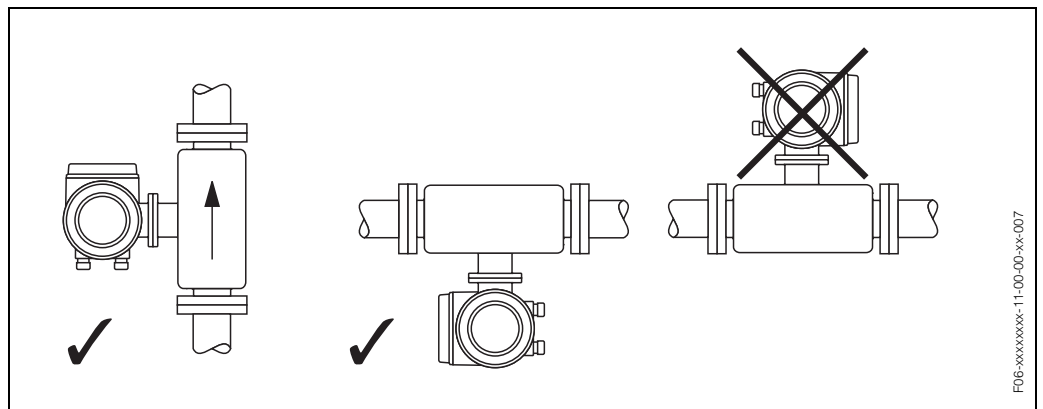


Fig. 2: Correct orientation (vertical, horizontal) with the example of the compact version

3.2 Installing the heating jacket

Note the following points:

- Screws, nuts, etc. are not included in the scope of supply.
- Dimensions and required space → Page 11 ff.

Promass F, M, I:

Join the two half-shells of the heating jacket by screws and nuts:

- for DN ≤ 80 → 5 screws (diameter ~ 10 mm)
- for DN 100 → 8 screws (diameter ~ 11 mm)



Warning!

With large nominal diameters, a support may be required due to the heavy weight of the sensor and the heating jacket. Never use the feed and return pipes of the heating system to support the heating jacket!

The weight data for the sensors are listed in the “Technical data” of the corresponding Operating Instructions.

Promass A:

Use 4 screws (M6x15) to fix the sensor to the heating plate which can be installed as a complete entity (incl. transmitter) onto a base.

4 Technical data

4.1 Technical data at a glance

4.1.1 Application

The heating jacket serves to transfer heat to maintain fluids liquified in the Promass sensors of the F, M, A and I design, e.g.:

- Chocolate, condensed milk, liquid sugar
- Oils, fats
- Paints, lacquers, varnishes
- Pharmaca, catalysts, inhibitors
- Suspensions

4.1.2 Function and system design

Promass F, M and I sensors

The heating jacket consists of two half-shells.

Promass A sensor

The heating system consists of a heating plate.

4.1.3 Operating conditions

Installation

Installation instructions

Any orientation (horizontal, vertical)
Restrictions and other notes → Page 6 ff.

Environment

Ambient temperature
Transmitter or connection
housing

- Compact version: max. +60°C
- Remote version (standard): max. +60 °C
- Remote version for heating (long-necked version): max. +60 °C

Process

Heating medium
temperature range

- Heating jacket / Promass F: max. +200 °C (+392 °F)
- Heating jacket / Promass M: max. +150 °C (+302 °F)
- Heating jacket / Promass A: max. +200 °C (+392 °F)
- Heating jacket / Promass I: max. +150 °C (+302 °F)

Pressure rating of heating
system

- Heating jacket for Promass F (DN 100): 8 bar
- Heating jacket for Promass I (DN 40, DN 40 "FB", DN 50): 10 bar
- Heating jackets for all other sensors: 16 bar

Due to the Pressure Equipment Directive 97/23/EG, it may be the case with Group 1 heating media (explosive, inflammable, toxic, oxidant) that restrictions occur.

4.1.4 Mechanical construction

Design / dimensions	see page 11 ff.
Weight	see page 11 ff.
Materials	Heating jacket: 1.4301 or St37-2 (S 235 IRG2 - 1.022)
Material load diagrams	Heating jacket Material: 1.4301 or St37-2 (S 235 IRG2 - 1.022)

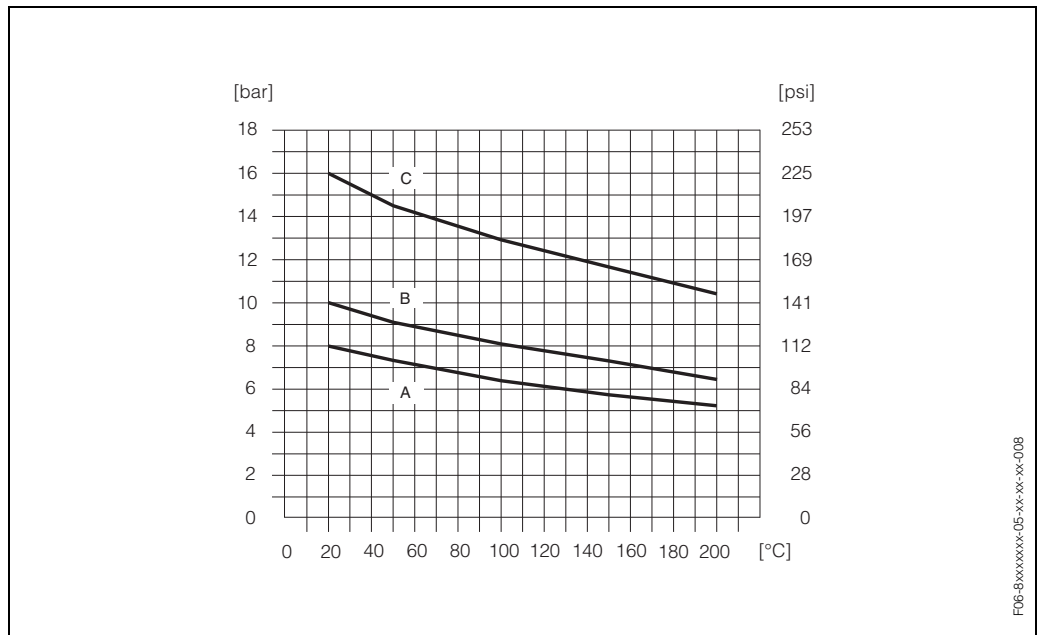


Fig. 3: Material load through the heating medium (pressure-temperature diagram)

A = Material load curve for 8 bar pressure → Heating jacket for Promass F (DN 100)

B = Material load curve for 10 bar pressure → Heating jacket für Promass I (DN 40, DN 40 "FB", DN 50)

C = Material load curve for 16 bar pressure → Heating jackets for all other sensors

4.1.5 Ordering information

Product structure

		Nominal diameters							
		<i>Promass F</i>		<i>Promass M</i>		<i>Promass A</i>		<i>Promass I</i>	
01						DN1	1/24"		
02						DN 2	1/12"		
04						DN 4	1/8"		
08		DN 8	3/8"	DN 8	3/8"			DN 8	3/8"
15		DN 15	1/2"	DN 15	1/2"			DN 15	1/2"
16								DN 15 FB ¹⁾	1/2" FB
25		DN 25	1"	DN 25	1"			DN 25	1"
26								DN 25 FB ²⁾	1" FB
40		DN 40	1 1/2"	DN 40	1 1/2"			DN 40	1 1/2"
41								DN 40 FB ³⁾	1 1/2" FB
50		DN 50	2"	DN 50	2"			DN 50	2"
80		DN 80	3"	DN 80	3"				
1H		DN 100	4"						
Sensor type									
	A	Promass A							
	F	Promass F							
	I	Promass I							
	M	Promass M							
Material of the heating jacket									
	CS	Carbon steel St37-2 (S 235 IRG2 - 1.022, A281)							
	SS	Stainless steel 1.4301 (304)							
Heating process connection									
	A	DN15, PN16, DIN2501 flange							
	B	DN25, PN16, DIN2501 flange							
	C	1/2", CI 150, ANSI B16.5 flange							
	D	1", CI 150, ANSI B16.5 flange							
	E	DN15, 20K, JIS B2238 flange							
	F	DN25, 20K, JIS B2238 flange							
	G	1" G outer thread							
	H	3/4" G outer thread							
	J	1/2" G outer thread							
	K	Cajon 8-VCO-4 coupling							
	9	other (on request)							
Certificates									
	0	Standard without certificates							
	1	3.1B material certificate for wetted parts							
	2	Pressure tested (2.3 certificate)							
	3	Pressure test (2.3 certificate) + 3.1B material certificate							
	9	other (on request)							
DKV-									Product name
FB = Full bore versions ¹⁾ Design identical to heating jacket for Promass I DN 25 ²⁾ Design identical to heating jacket for Promass I DN 40 ³⁾ Design identical to heating jacket for Promass I DN 50									

4.2 Dimensions of heating jacket / Promass F

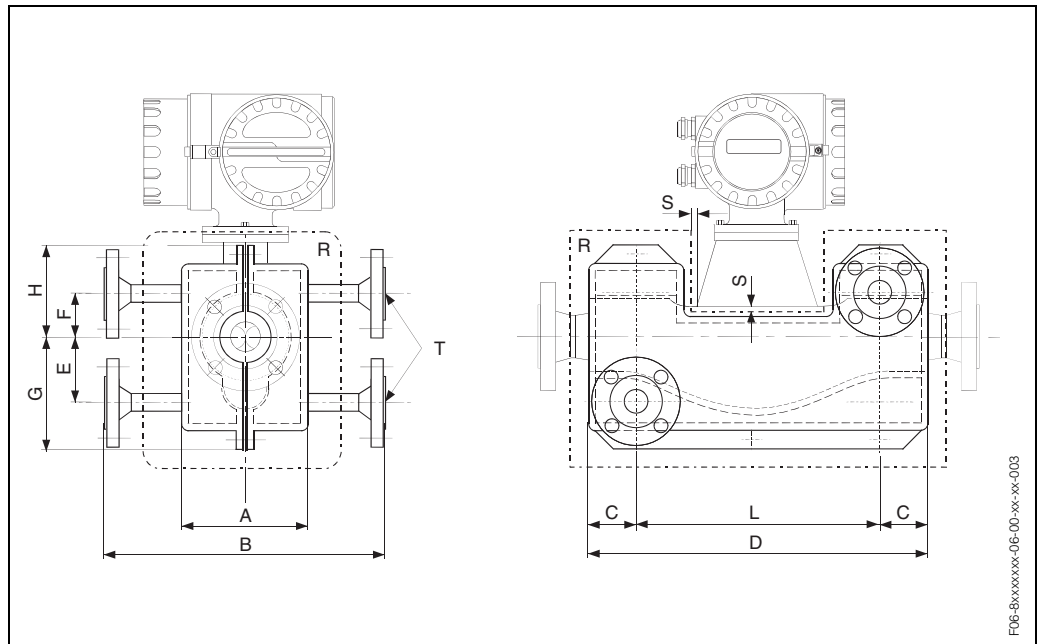


Fig. 4: Dimensions of heating jacket / Promass F

R Insulation, customer supply (e.g. mineral wool)

S Safety distance: min. 20 mm

T Process connection of the heating jacket (acc. to Table on Page 10)

DN		A ¹⁾	B	C	D	E	F	G	H	L	Weight ²⁾	Vol. ³⁾
8	3/8"	114	314	20	282	67	40	132	103	242	15	3
15	1/2"	114	314	30	312	67	40	132	103	252	16	3
25	1"	114	314	40	338	57	28	132	103	258	19	4
40	1 1/2"	124	324	40	444	87	33	162	108	364	28	7
50	2"	144	344	40	582	123	43	198	118	502	44	13
80	3"	180	380	60	710	164	40	259	135	590	66	22
100	4"	228	428	80	840	189	45	304	160	680	90	46

¹⁾ Dimensions A...L in millimeters

²⁾ Total weight for both heating shells in kilograms

³⁾ Total volume for both heating shells in litres

4.3 Dimensions of heating jacket / Promass M

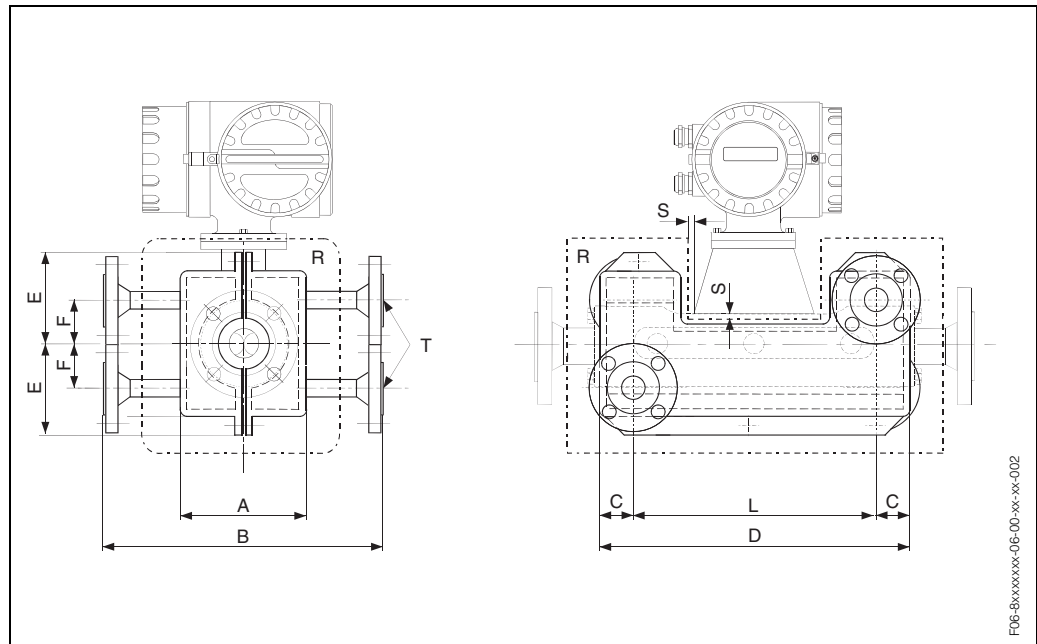


Fig. 5: Dimensions of heating jacket / Promass M

R Insulation, customer supply (e.g. mineral wool)

S Safety distance: min. 20 mm

T Process connection of the heating jacket (acc. to Table on Page 10)

DN	A ¹⁾	B	C	D	E	F	L	Weight ²⁾	Vol. ³⁾	
8	3/8"	114	314	20	276	103	38	236	15	3
15	1/2"	114	314	30	316	103	38	256	16	3
25	1"	114	314	40	330	103	28	250	18	4
40	1 1/2"	140	340	40	430	116	41	350	24	6
50	2"	160	360	40	565	125	50	485	40	12
80	3"	200	400	40	620	142	67	540	60	20

¹⁾ Dimensions A...L in millimeters

²⁾ Total weight for both heating shells in kilograms

³⁾ Total volume for both heating shells in litres

4.4 Dimensions of heating jacket / Promass A

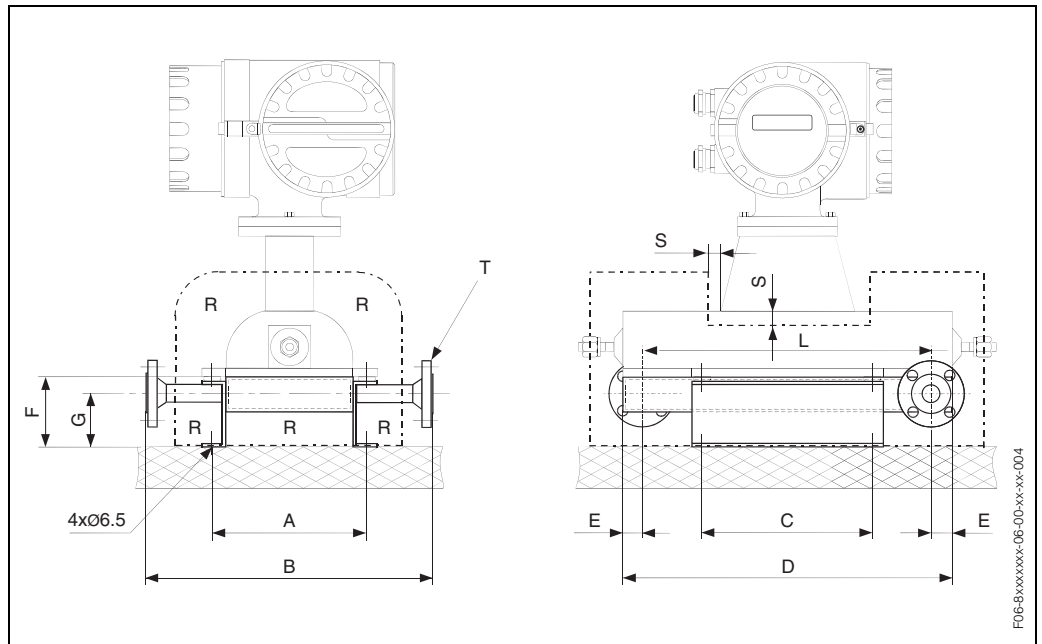


Fig. 6: Dimensions of heating jacket / Promass A

R Insulation, customer supply (e.g. mineral wool)

S Safety distance: min. 20 mm

T Process connection of the heating jacket (acc. to Table on Page 10)

DN	A ¹⁾	B	C	D	E	F	G	L	Weight ²⁾	Vol. ³⁾	
1	1/24"	145	320	160	228	25	75	55	178	4.8	0.8
2	1/12"	145	320	160	310	25	75	55	260	5.7	1.0
4	1/8"	175	350	220	435	25	75	50	385	8.2	2.5

1) Dimensions A...L in millimeters
 2) Weight in kilograms
 3) Volume in litres

4.5 Dimensions of heating jacket / Promass I

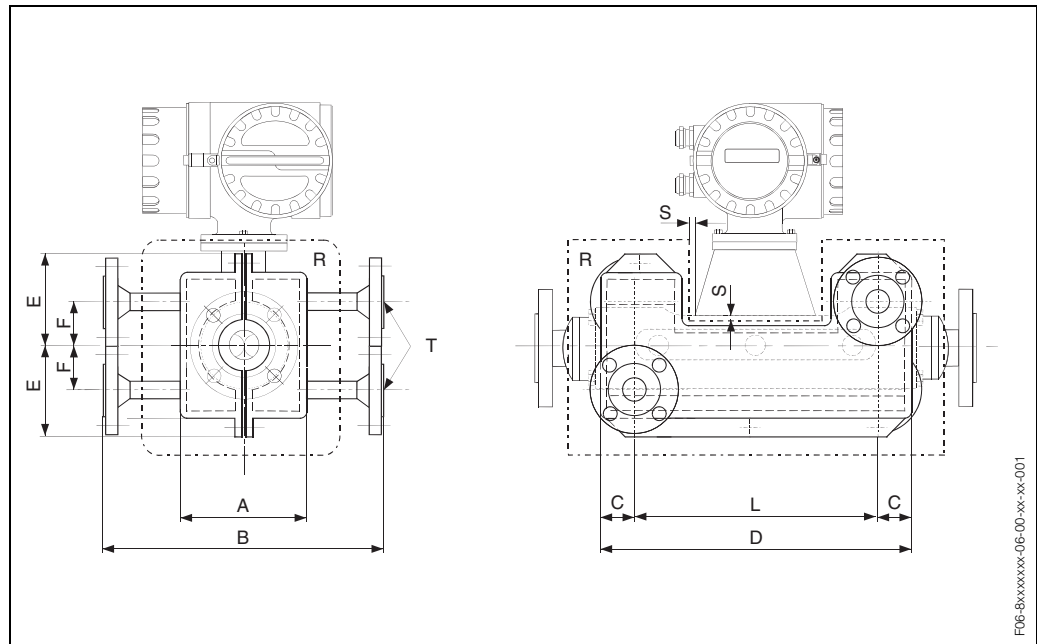


Fig. 7: Dimensions of heating jacket / Promass I

R Insulation, customer supply (e.g. mineral wool)

S Safety distance: min. 20 mm

T Process connection of the heating jacket (acc. to Table on Page 10)

DN		A ¹⁾	B	C	D	E	F	L	Weight ²⁾	Vol. ³⁾
8	3/8"	208	408	30	254	136	58	194	15	4
15	1/2"	208	408	30	290	136	58	230	16	5
15 FB	1/2" FB	208	408	30	428	136	58	368	19	7
25	1"	208	408	30	428	136	58	368	19	7
25 FB	1" FB	234	434	40	530	149	71	450	28	11
40	1 1/2"	234	434	40	530	149	71	450	28	11
40 FB	1 1/2" FB	262	462	40	644	163	85	564	44	16
50	2"	262	462	40	644	163	85	564	44	16

¹⁾ Dimensions A...L in millimeters

²⁾ Total weight for both heating shells in kilograms

³⁾ Total volume for both heating shells in litres

FB = Full bore version

4.6 Dimensions Remote version for heating

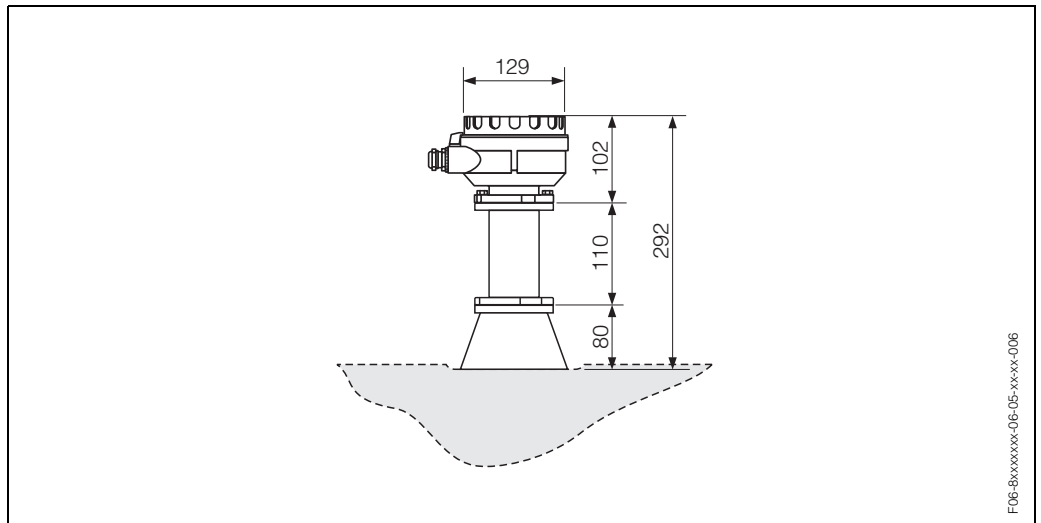


Fig. 8: Dimensions of remote version for heating ("long-necked version")

Connection housing: made of aluminium
Housing support: made of stainless steel

Europe

Austria

□ Endress+Hauser Ges.m.b.H.
Wien
Tel. (01) 88056-0, Fax (01) 88056-35

Belarus

□ Belorgsintez
Minsk
Tel. (0172) 508473, Fax (0172) 508583

Belgium / Luxembourg

□ Endress+Hauser N.V.
Brussels
Tel. (02) 2480600, Fax (02) 2480553

Bulgaria

INTERTECH-AUTOMATION
Sofia
Tel. (02) 664869, Fax (02) 9631389

Croatia

□ Endress+Hauser GmbH+Co.
Zagreb
Tel. (01) 6637785, Fax (01) 6637823

Cyprus

I+G Electrical Services Co. Ltd.
Nicosia
Tel. (02) 484788, Fax (02) 484690

Czech Republic

□ Endress+Hauser GmbH+Co.
Praha
Tel. (026) 6784200, Fax (026) 6784179

Denmark

□ Endress+Hauser A/S
Søborg
Tel. (70) 131132, Fax (70) 132133

Estonia

ELVI-Aqua
Tartu
Tel. (7) 441638, Fax (7) 441582

Finland

□ Endress+Hauser Oy
Helsinki
Tel. (0204) 83160, Fax (0204) 83161

France

□ Endress+Hauser S.A.
Huningue
Tel. (389) 696768, Fax (389) 694802

Germany

□ Endress+Hauser Messtechnik GmbH+Co.
Weil am Rhein
Tel. (07621) 975-01, Fax (07621) 975-555

Great Britain

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Manchester
Tel. (0161) 2865000, Fax (0161) 9981841

Greece

I & G Building Services Automation S.A.
Athens
Tel. (01) 9241500, Fax (01) 9221714

Hungary

Mile Ipari-Elektro
Budapest
Tel. (01) 4319800, Fax (01) 4319817

Iceland

BIL ehf
Reykjavik
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Ireland

Flomeaco Company Ltd.
Kildare
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Italy

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Cernusco s/N Milano
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Latvia

Rino TK
Riga
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Lithuania

UAB "Agava"
Kaunas
Tel. (07) 202410, Fax (07) 207414

Netherlands

□ Endress+Hauser B.V.
Naarden
Tel. (035) 6958611, Fax (035) 6958825

Norway

□ Endress+Hauser A/S
Tranby
Tel. (032) 859850, Fax (032) 859851

Poland

□ Endress+Hauser Polska Sp. z o.o.
Warszawa
Tel. (022) 7201090, Fax (022) 7201085

Portugal

Tecnisis, Lda
Cacém
Tel. (21) 4267290, Fax (21) 4267299

Romania

Romconseng S.R.L.
Bucharest
Tel. (01) 4101634, Fax (01) 4112501

Russia

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Moscow
Tel. (095) 1587564, Fax (095) 1589871

Slovakia

Transcom Technik s.r.o.
Bratislava
Tel. (7) 44888684, Fax (7) 44887112

Slovenia

□ Endress+Hauser D.O.O.
Ljubljana
Tel. (061) 5192217, Fax (061) 5192298

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Sant Just Desvern
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Sollentuna
Tel. (08) 55511600, Fax (08) 55511655

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□ Endress+Hauser Metso AG
Reinach/BL 1
Tel. (061) 7157575, Fax (061) 7111650

Turkey

Intek Endüstriyel Ölçü ve Kontrol Sistemleri
Istanbul
Tel. (0212) 2751355, Fax (0212) 2662775

Ukraine

Photonika GmbH
Kiev
Tel. (44) 26881, Fax (44) 26908

Yugoslavia Rep.

Meris d.o.o.
Beograd
Tel. (11) 4441966, Fax (11) 4441966

Africa

Egypt

Anasia
Heliopolis/Cairo
Tel. (02) 4179007, Fax (02) 4179008

Morocco

Oussama S.A.
Casablanca
Tel. (02) 241338, Fax (02) 402657

South Africa

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Sandton
Tel. (011) 4441386, Fax (011) 4441977

Tunisia

Controle, Maintenance et Regulation
Tunis
Tel. (01) 793077, Fax (01) 788595

America

Argentina

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Buenos Aires
Tel. (01) 145227970, Fax (01) 145227909

Bolivia

Tritec S.R.L.
Cochabamba
Tel. (042) 56993, Fax (042) 50981

Brazil

□ Samson Endress+Hauser Ltda.
Sao Paulo
Tel. (011) 50313455, Fax (011) 50313067

Canada

□ Endress+Hauser Ltd.
Burlington, Ontario
Tel. (905) 6819292, Fax (905) 6819444

Chile

□ Endress+Hauser Chile Ltd.
Santiago
Tel. (02) 3213009, Fax (02) 3213025

Colombia

Colsein Ltda.
Bogota D.C.
Tel. (01) 2367659, Fax (01) 6104186

Costa Rica

EURO-TEC S.A.
San Jose
Tel. (02) 961542, Fax (02) 961542

Ecuador

Insetec Cia. Ltda.
Quito
Tel. (02) 269148, Fax (02) 461833

Guatemala

ACISA Automatizacion Y Control
Industrial S.A.
Ciudad de Guatemala, C.A.
Tel. (03) 345985, Fax (03) 327431

Mexico

□ Endress+Hauser S.A. de C.V.
Mexico City
Tel. (5) 5682405, Fax (5) 5687459

Paraguay

Incoel S.R.L.
Asuncion
Tel. (021) 213989, Fax (021) 226583

Uruguay

Circular S.A.
Montevideo
Tel. (02) 925785, Fax (02) 929151

USA

□ Endress+Hauser Inc.
Greenwood, Indiana
Tel. (317) 535-7138, Fax (317) 535-8498

Venezuela

Controval C.A.
Caracas
Tel. (02) 9440966, Fax (02) 9444554

Asia

China

□ Endress+Hauser Shanghai
Instrumentation Co. Ltd.
Shanghai
Tel. (021) 54902300, Fax (021) 54902303

□ Endress+Hauser Beijing Office

Beijing
Tel. (010) 68344058, Fax (010) 68344068

Hong Kong

□ Endress+Hauser HK Ltd.
Hong Kong
Tel. 25283120, Fax 28654171

India

□ Endress+Hauser (India) Pvt Ltd.
Mumbai
Tel. (022) 8521458, Fax (022) 8521927

Indonesia

PT Grama Bazita
Jakarta
Tel. (21) 7975083, Fax (21) 7975089

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□ Sakura Endress Co. Ltd.
Tokyo
Tel. (0422) 540613, Fax (0422) 550275

Malaysia

□ Endress+Hauser (M) Sdn. Bhd.
Petaling Jaya, Selangor Darul Ehsan
Tel. (03) 7334848, Fax (03) 7338800

Pakistan

Speedy Automation
Karachi
Tel. (021) 7722953, Fax (021) 7736884

Papua-Neuguinea

SBS Electrical Pty Limited
Port Moresby
Tel. 3251188, Fax 3259556

Philippines

□ Endress+Hauser Philippines Inc.
Metro Manila
Tel. (2) 3723601-05, Fax (2) 4121944

Singapore

□ Endress+Hauser (S.E.A.) Pte., Ltd.
Singapore
Tel. 5668222, Fax 5666848

South Korea

□ Endress+Hauser (Korea) Co., Ltd.
Seoul
Tel. (02) 6587200, Fax (02) 6592838

Taiwan

Kingjari Corporation
Taipei R.O.C.
Tel. (02) 27183938, Fax (02) 27134190

Thailand

□ Endress+Hauser Ltd.
Bangkok
Tel. (2) 9967811-20, Fax (2) 9967810

Vietnam

Tan Viet Bao Co. Ltd.
Ho Chi Minh City
Tel. (08) 8335225, Fax (08) 8335227

Iran

PATSA Co.
Tehran
Tel. (021) 8754748, Fax (021) 8747761

Israel

Instrumetrics Industrial Control Ltd.
Netanya
Tel. (09) 8357090, Fax (09) 8350619

Jordan

A.P. Parpas Engineering S.A.
Amman
Tel. (06) 4643246, Fax (06) 4645707

Kingdom of Saudi Arabia

Anasia Ind. Agencies
Jeddah
Tel. (02) 6710014, Fax (02) 6725929

Lebanon

Network Engineering
Jbeil
Tel. (3) 944080, Fax (9) 548038

Sultanate of Oman

Mustafa Sultan Science & Industry Co. LLC.
Ruwi
Tel. 602009, Fax 607066

United Arab Emirates

Descon Trading EST.
Dubai
Tel. (04) 2653651, Fax (04) 2653264

Yemen

Yemen Company for Ghee and Soap Industry
Taiz
Tel. (04) 230664, Fax (04) 212338

Australia + New Zealand

Australia

ALSTOM Australia Limited
Milperra
Tel. (02) 97747444, Fax (02) 97744667

New Zealand

EMC Industrial Group Limited
Auckland
Tel. (09) 4155110, Fax (09) 4155115

All other countries

□ Endress+Hauser GmbH+Co.
Instruments International
D-Weil am Rhein
Germany
Tel. (07621) 975-02, Fax (07621) 975345

<http://www.endress.com>

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