



BM26A-6000 Technical Datasheet

Magnetic Level Indicator for liquefied gas

- Stable measurement of boiling and evaporating liquids
- Heating, cooling and thermal insulation options for process temperatures down to -196°C / -320.8°F
- For level indication in tanks up to 5.5 m / 18 ft



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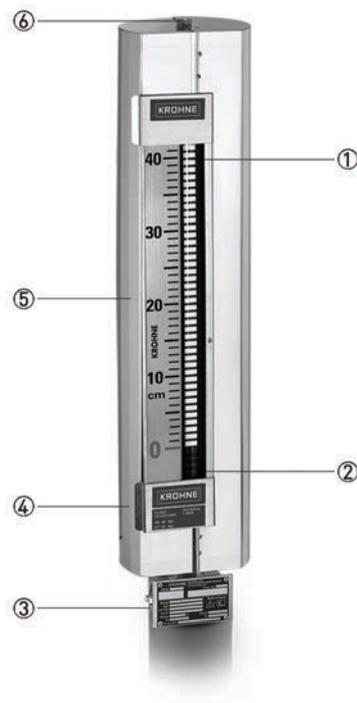
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1.1 Magnetic level indicator for liquefied gas and cryogenic applications

The BM26A-6000 is designed for monitoring the storage and transport of liquefied gases.

A magnetic level indicator (MLI) indicates level with a float magnetically coupled to a column of rotating flaps. An optional reed-chain transmitter (LT40) can also transmit level as an analog or digital signal. Optional bistable switches (MS15 series and MS40 series) can be attached to the measuring chamber to detect level.

This device is suitable for measuring liquefied gases that have density of 500...1200 kg/m³ / 31.21...74.91 lb/ft³, for a temperature range of -196...200°C / -320.8...+392°F at a pressure of -1...40 barg / -14.5...580 psig.



- ① Level indicator - column of rotating flaps in a hermetically sealed tube made of borosilicate glass with options that include a scale, scale units and flap colors
- ② Red flaps for float failure indication
- ③ Option: drain
- ④ Side or axial process connections - flanged (EN / ASME / JIS), threaded (ISO / ASME), or for welding
- ⑤ A selection of options for heating, cooling and insulating the measuring chamber
- ⑥ Option: vent

Highlights

- Rugged design - metal construction - no maintenance
- High-visibility level indicator column operates without electrical power
- Optional LT40 reed-chain level transmitter
 - Output options: 4...20 mA (HART 7), FOUNDATION™ fieldbus or PROFIBUS PA
 - Accuracy options: ± 10 mm ($\pm 0.4''$) or ± 5 mm ($\pm 0.2''$)
- Flaps in the level indicator column are housed in a hermetically sealed, durable glass tube (IP68)

Industries

- Refrigeration
- Chemical and petrochemical
- Oil and gas
- Power

Applications

- Propane vessels
- Carbon dioxide (CO₂)
- Ammonia (NH₃)

1.2 Measuring principle

The device operates on the principle of communicating tubes. The measuring chamber is connected adjacent to the tank. The process conditions in the measuring chamber are the same as those of the tank.

A float is in the measuring chamber. The float contains magnets that rotate the flaps in the indicator column and operate the optional limit switches and analog transmitter on the side of the measuring chamber. The position of the magnets does not correspond to the level of liquid, so the scale is adjusted at the factory to take into account this difference. The offset of the magnets depends on the liquid density. Refer to the illustration that follows:

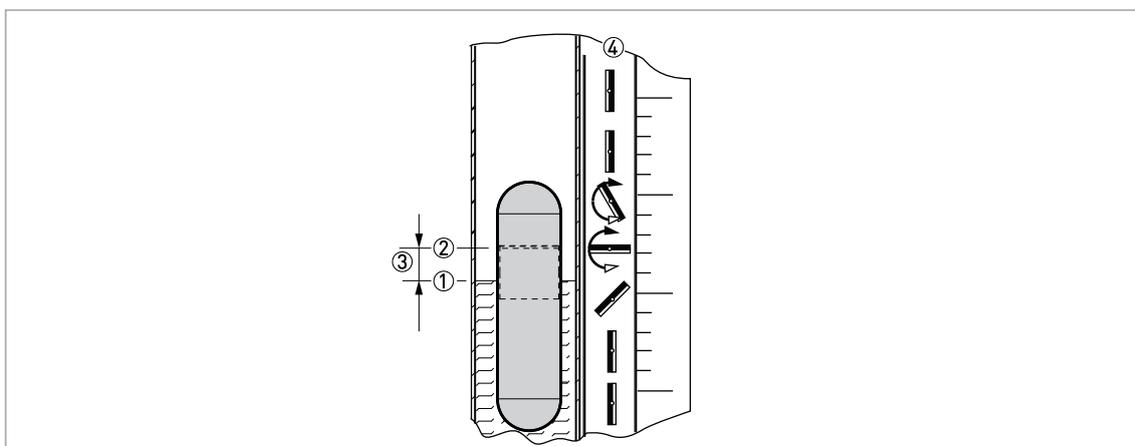


Figure 1-1: Offset between liquid level and the float magnet (liquid level offset)

- ① Level of the liquid
- ② Top of the float magnet. The magnet field around the top of the magnet turns the flaps in the indicator column that shows the level in the tank.
- ③ Liquid level offset. This offset is the difference between the level of the liquid and the top of the float magnet. The value is related to the type of float in the measuring chamber and the density of the liquid.
- ④ Indicator column of yellow/black or red/white rotating flaps with the optional scale in m/cm, mm, ft/inch, % (simplified) or customized volume units

If you sent an order for device that has a float with the "zero line" option, then the value of the liquid level offset is 0 mm / 0".

2.1 Technical data

- The following data is provided for general applications. If you require data that is more relevant to your specific application, please contact us or your local sales office.
- Additional information (certificates, special tools, software,...) and complete product documentation can be downloaded free of charge from the website (Downloadcenter).

2.1.1 BM26A-6000 magnetic level indicator

Measuring system

Measuring principle	Magnetic level indicator - bypass chamber (principle of communicating tubes). A float in the measuring chamber (Ø73.03 mm / NPS 2 1/2 pipe) is magnetically coupled to a mechanical level indicator.
Application range	Level indication of liquids in applications from vacuum up to 40 barg / 580 psig
Measured value	
Primary measured value	Level of the float magnets in the measuring chamber
Secondary measured value	Level or volume of a liquid in the tank. Level of the interface, if there is more than one liquid in the tank.

Design

Measuring chamber variants	Side / side process connections
	Axial / axial process connections
	Bottom axial / top side process connections
	Bottom side / top axial process connections
Options	Zero-line level measurement (level measurement without vertical offset of float magnets in relation to the liquid level)
	LT40 reed-chain level transmitter without LCD indicator module with a compact or a remote housing ①
	LT40 reed-chain level transmitter with LCD indicator module with a compact or a remote housing ①
	Anti-icing cover for glass indicator tube
	Thermal insulation (ROCKWOOL® or FOAMGLAS®) in a metal enclosure
	Bistable limit switches ②
Measuring range (ML)	0.3...5.5 m / 1...18 ft (longer on request)
Display and user interface	
Display	Indicator column with magnetically coupled rotating flaps that have two colors: yellow/black; red/white
Float failure indication (at the bottom of the indicator column)	Orange flaps
Scale marking options	No scale; m + cm; mm; ft + inches; customized volume units; % (simplified) ③

Measuring accuracy

Accuracy	±10 mm / 0.4"
Repeatability	±10 mm / 0.4" (when density is constant)
Maximum rate of change	20 mm/s / 0.787"/s

Operating conditions

Temperature	
Process temperature	-196...+200°C / -320.8...+392°F (Ex: see supplementary instructions or approval certificates)
Ambient temperature	-70...+80°C / -94...+176°F (Ex: see supplementary instructions or approval certificates)
Storage temperature	-70...+80°C / -94...+176°F
Pressure	
Process pressure	-1...40 barg / -14.5...580 psig ④
Chemical properties	
Density	500...1200 kg/m ³ / 31.21...74.91 lb/ft ³ . Higher density on request.
Minimum difference in density for interface measurement	≥ 100 kg/m ³ / ≥ 6.24 lb/ft ³ between the top liquid and the bottom liquid
Viscosity	≤ 500 mPa·s / ≤ 500 cP
Other conditions	
Ingress protection (IEC 60529)	Indicator column: IP66 / IP68 (0.15 barg)

Materials

Measuring chamber	Stainless steel (1.4404 / 316L)
Float	Stainless steel (1.4404 / 316L); titanium
Indicator column rail	Stainless steel (1.4401 / 316)
Indicator column tube	Borosilicate glass 3.3 (agrees with ISO 3585) - hermetically sealed tube
Scale (option)	Stainless steel (1.4401 / 316)
Process connection	Stainless steel (1.4404 / 316L)
Gasket options	Aramid; graphite; 316L/graphite (spiral-wound); PTFE
Braid insulation	Ceramic fiber (thermal insulation between the indicator column and the measuring chamber when the process temperature is +100...+200°C / +210...+392°F)
Anti-icing cover	PLEXIGLAS® (option for glass indicator column tube) - when the liquid temperature is -70...+0°C / -94...+32°F

Process connections

Threaded pipes	1/2...1 NPT (male or female); G 1/2...1 (male or female)
Smooth pipes, ASME	NPS 1/2...1 in Sch10S ⑤
Flange, EN	
Size	DN15...50
Pressure rating	PN40 (welding neck or lap joint)
Facing type options	A; B1; C; D; E; F
Flange, ASME	
Size	NPS 1/2...2 ⑤
Pressure rating	Class 150 / 300 (welding neck)
Facing type options	RF; FF; LG; SG; LF; SF; LT; ST; LM; SM
Flange, JIS	25A...50A JIS 20K RF

Drain and vent connections

Drain options	
Thread	Without; G 3/8...3/4 (female) with plug; 3/8...3/4 NPT (female) with plug
Flange	All process connection options
Vent options	
Thread	Without; G 3/8...1/2 (female) with plug; 3/8...1/2 NPT (female) with plug
Flange	All process connection options

Power supply

Limit switches	Refer to the technical data for the MS15 series and MS40 series
Reed-chain level transmitter	Refer to the technical data for the LT40

Input and output

Parameter	Level detection or indication
Output signal	Refer to the technical data for the LT40 reed-chain level transmitter and the MS15-series and MS40-series limit switches

Approvals and certification

CE / UKCA	The device meets the essential requirements of the EU Directives and UK Regulations. The manufacturer certifies successful testing of the product by applying the CE or UKCA marking. For more data about the European Standards and UK Designated Standards related to this device, refer to the EU and the UKCA Declarations of Conformity. You can download this document free of charge from the website (Download Center).
Explosion protection	
ATEX	II 1/2 G Ex h IIC T6...T3 Ga/Gb or II 2 G Ex h IIC T6...T3 Gb
IECEx	Ex h IIC T6...T3 Ga/Gb or Ex h IIC T6...T3 Gb
UKEX - pending	II 1/2 G Ex h IIC T6...T3 Ga/Gb or II 2 G Ex h IIC T6...T3 Gb
Other standards and approvals	
Pressure	EU Pressure Equipment Directive
	UK Pressure Equipment (Safety) Regulations
	ASME B31.3 Code for Process Piping
Vibration resistance	EN 60721-3-4 - vibration class 4M4 (1...200 Hz:1g, 15g shock ½ sinus: 6 ms)
Construction code	Standard: EN 13445
	Options: NACE MR0175 / MR0103 / ISO 15156; ASME B31.3

Table 2-1: BM26A-6000: technical data

- ① For more data, refer to technical data for the LT40 reed-chain level transmitter in this section
- ② For more data, refer to technical data for the MS15-series and MS40-series limit switches in this section
- ③ If the scale adjacent to the indicator column has % [simplified] units, then it has a range of 0...100% with an increment of 10% between each marking
- ④ The maximum pressure is related to the type of process connection, pressure rating and the process temperature. For more data about 316-316L stainless-steel measuring chambers, refer to the "Maximum process pressure: measuring chamber" section in this chapter.
- ⑤ NPS = Nominal Pipe Size. For more data about the dimensions of flanges, refer to the ASME B16.5 standard. For more data about the dimensions of smooth pipes, refer to the ASME B36.19M standard.

2.1.2 LT40 reed-chain level transmitter

4...20 mA and 4...20 mA + HART® communication modules

Measuring system

Measuring principle	A reed resistor chain that is magnetically operated by a magnetic float in an adjacent measuring chamber
Primary measured value	Resistance
Secondary measured value	Level or volume of the liquid in the tank

Design

Description of device	Resistance reed chain with 2-wire loop-powered transmitter module attached adjacent to the measuring chamber of the magnetic level indicator. A transmitter module converts changes in resistance to an output signal. If the LT40 is used in multidrop mode, a maximum of 63 transmitters can be connected to a network that agrees with the HART® communication protocol.
Options	Transmitter module position: LT40 C - compact housing at the top of the reed resistor chain
	Transmitter module position: LT40 C - compact housing at the bottom of the reed resistor chain
	Transmitter module position: LT40 F - remote housing connected to the bottom of the reed resistor chain. Max. cable length: 25 m / 82 ft.
	LCD indicator module (non-Ex and Ex d-approved devices only)
Accessories	C 95 Basic universal power supply (Panel mount, 2 relays, 4-digit local indicator and non-Ex)
	C 95 Basic universal power supply (Panel mount, 2 relays, 4...20 mA output, 4-digit local indicator and non-Ex)
Display and user interface	
Display	Optional 2-wire loop-powered LCD indicator module (backlit)
	4-digit LCD with minus sign, 2-button keypad. Selectable number of decimals, 0 to 3.
Available units	mm; inches; %
Range	-1999...9999

Measuring accuracy

Resolution	Standard: ± 10 mm / 0.4" (when density is constant)
	Option: ± 5 mm / 0.2" (when density is constant)

Operating conditions

Temperature	
Ambient temperature, transmitter	-40...+80°C / -40...+176°F ①
Ambient temperature, LCD indicator	-20...+70°C / -4...+158°F ①
Process temperature	The ambient temperature limit is related to the process temperature. Do not put thermal insulation around the transmitter housing. Refer to the "Temperature limits: LT40 C/F reed-chain level transmitter" section in this chapter.
Storage temperature	-40...+80°C / -40...+176°F
Pressure	
Operating pressure	Atmospheric pressure

Other conditions	
Warm-up time	30 s
Response time	1...60 s ②
Ingress protection (IEC 60529)	IP66/IP68 (at a depth of 1.5 m for 2 weeks)
Relative air humidity (RH)	0...99%

Installation conditions

Notes	The LT40 is calibrated at the factory and attached to the measuring chamber before delivery
Dimensions	Refer to the "Dimensions" section

Materials

Housing	Polyester-coated aluminium
Reed-chain tube	Stainless steel (1.4401 / 316)
Clamp	Stainless steel (1.4401 / 316)
Cable gland	Plastic (for M20 × 1.5 only), nickel-plated brass or stainless steel

Power supply

Voltage, without LCD indicator	non-Ex or Ex db: 10...35 V DC
	Ex ia: 10...30 V DC
Voltage, with LCD indicator	non-Ex or Ex db: 17...35 V DC
EN 60947-1 electrical data	Overvoltage category I
Cable entry	M20 × 1.5; 1/2 NPT
Cable gland	None; M20 × 1.5; 1/2 NPT
Intrinsically safe circuit data for Ex ia-approved devices	Refer to supplementary instructions or approval certificates

Input and output

Current output	
Output range	4...20 mA
Error signal	High: 21 mA; Low: 3.6 mA - agrees with NAMUR NE 43
HART®	
Description	Digital signal transmitted with the current output signal (HART® protocol)
Version	7
Primary value (PV)	Indicator column with m + cm or mm scale markings: mm Indicator column with ft + inches scale markings: inches Indicator column with %, volume or other markings: %
Multidrop operation	Yes, current output = 4 mA. Polling address 1...15.

Approvals and certifications

CE / UKCA	The device meets the essential requirements of the EU Directives and UK Regulations. The manufacturer certifies successful testing of the product by applying the CE or UKCA marking.
	For more data about the European Standards and UK Designated Standards related to this device, refer to the EU and the UKCA Declarations of Conformity. You can download this document free of charge from the website (Download Center).

Explosion protection	
ATEX (EU Type Approval)	II 1 G Ex ia IIC T6...T1 Ga or II 2 G Ex ia IIC T6...T1 Gb ③
	II 2 G Ex db IIC T6...T1 Gb
IECEX	Ex ia IIC T6...T1 Ga or Ex ia IIC T6...T1 Gb ③
	Ex db IIC T6...T1 Gb
UKEX - pending	II 1 G Ex ia IIC T6...T1 Ga or II 2 G Ex ia IIC T6...T1 Gb ③
	II 2 G Ex db IIC T6...T1 Gb
Other standards and approvals	
EMC	EU Electromagnetic Compatibility Directive
	UK Electromagnetic Compatibility Regulations
	NAMUR NE 21 ④
Vibration resistance	EN 60721-3-4 - vibration class 4M4 (1...200 Hz:1g, 10g shock ½ sinus: 11 ms)
NAMUR	NAMUR NE 43

Table 2-2: LT40 (4...20 mA and 4...20 mA + HART® communication modules): technical data

- ① The ambient temperature limit is related to the process temperature. Do not put thermal insulation around the transmitter housing. Refer to the "Temperature limits: LT40 C/F reed-chain level transmitter" section in this chapter.
- ② This value is programmable
- ③ This Ex approval does not include the optional LCD indicator module
- ④ LT40 F: Applicable only for a resolution of ± 10 mm / 0.4"

Fieldbus communication module

	FOUNDATION™ fieldbus	PROFIBUS PA

Measuring system

Measuring principle	A reed resistor chain that is magnetically operated by a magnetic float in an adjacent measuring chamber
Primary measured value	Resistance
Secondary measured value	Level and volume of the liquid in the measuring chamber

Design

Description of device	Resistance reed chain with 2-wire loop-powered transmitter module attached adjacent to the measuring chamber of the magnetic level indicator. A transmitter module converts changes in resistance to an output signal.	
Description of transmitter module	Changes in resistance are converted to signals that agree with the FOUNDATION™ fieldbus communication protocol.	Changes in resistance are converted to signals that agree with the PROFIBUS PA communication protocol.
Options	Transmitter module position: LT40 C - compact housing at the top of the reed resistor chain	
	Transmitter module position: LT40 C - compact housing at the bottom of the reed resistor chain	
	Transmitter module position: LT40 F - remote housing connected to the bottom of the reed resistor chain. Max. cable length: 25 m / 82 ft.	
Display and user interface		
Display	None	

	FOUNDATION™ fieldbus	PROFIBUS PA
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Measuring accuracy

Resolution	Standard: ± 10 mm / 0.4" (when density is constant)
	Option: ± 5 mm / 0.2" (when density is constant)

Operating conditions

Temperature	
Ambient temperature	-40...+80°C / -40...+176°F ①
Process temperature	The ambient temperature limit is related to the process temperature. Do not put thermal insulation around the transmitter housing. Refer to the "Temperature limits: LT40 C/F reed-chain level transmitter" section in this chapter.
Storage temperature	-40...+80°C / -40...+176°F
Pressure	
Operating pressure	Atmospheric pressure
Other conditions	
Ingress protection (IEC 60529)	IP66/IP68 (at a depth of 1.5 m for 2 weeks)
Relative air humidity (RH)	0...99%

Installation conditions

Notes	The LT40 is calibrated at the factory and attached to the measuring chamber before delivery
Dimensions	Refer to the "Dimensions" section

Materials

Housing	Polyester-coated aluminium
Reed-chain tube	Stainless steel (1.4401 / 316)
Clamp	Stainless steel (1.4401 / 316)
Cable gland	Plastic (for M20 × 1.5 only), nickel-plated brass or stainless steel

Power supply

Voltage	non-Ex or Ex db: 9...32 V DC	
	Ex ia: 9...30 V DC	
EN 60947-1 electrical data	Overvoltage category I	
Cable entry	M20 × 1.5; 1/2 NPT	
Cable gland	None; M20 × 1.5; 1/2 NPT	
Intrinsically safe circuit data for Ex ia-approved devices	Refer to supplementary instructions or approval certificates	
FOUNDATION™ fieldbus		
Description	FOUNDATION™ fieldbus protocol	N/A
PROFIBUS PA		
Description	N/A	PROFIBUS PA protocol Profile A&B, ver.3.0 (EN 50170 vol.2)

	FOUNDATION™ fieldbus	PROFIBUS PA
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Approvals and certification

CE / UKCA	The device meets the essential requirements of the EU Directives and UK Regulations. The manufacturer certifies successful testing of the product by applying the CE or UKCA marking.
	For more data about the European Standards and UK Designated Standards related to this device, refer to the EU and the UKCA Declarations of Conformity. You can download this document free of charge from the website (Download Center).
Explosion protection	
ATEX (EU Type Approval)	II 1 G Ex ia IIC T6...T1 Ga or II 2 G Ex ia IIC T6...T1 Gb
	II 2 G Ex db IIC T6...T1 Gb
IECEX	Ex ia IIC T6...T1 Ga or Ex ia IIC T6...T1 Gb
	Ex db IIC T6...T1 Gb
UKEX - pending	II 1 G Ex ia IIC T6...T1 Ga or II 2 G Ex ia IIC T6...T1 Gb
	II 2 G Ex db IIC T6...T1 Gb
Other standards and approvals	
EMC	EU Electromagnetic Compatibility Directive
	UK Electromagnetic Compatibility Regulations
Vibration resistance	EN 60721-3-4 - vibration class 4M4 (1...200 Hz:1g, 10g shock ½ sinus: 11 ms)

Table 2-3: LT40 (fieldbus communication module): technical data

- ① The ambient temperature limit is related to the process temperature. Do not put thermal insulation around the transmitter housing. Refer to the "Temperature limits: LT40 C/F reed-chain level transmitter" section in this chapter.

2.1.3 MS15-series and MS40-series limit switches

	MS15 series	MS40 series
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Measuring system

Measuring principle	Bistable reed switch (SPDT) that is magnetically operated by a magnetic float in an adjacent measuring chamber
Application range	Level detection

Design

Description of device	Limit switch attached adjacent to the measuring chamber of the magnetic level indicator
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Measuring accuracy

Hysteresis	The hysteresis value agrees with the model of the magnetic level indicator. For more data, refer to the handbook.
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Operating conditions

Temperature		
Ambient temperature	-40...+80°C / -40...+176°F ①	
Process temperature	The ambient temperature limit is related to the process temperature. Do not put thermal insulation around the limit switch housing. Refer to the "Temperature limits: MS15-series limit switch" and "Temperature limits: MS40-series limit switch" sections in this chapter.	
Operating temperature	-40...+115°C / -40...+239°F ②	-40...+120°C / -40...+248°F ②
Storage temperature	-40...+80°C / -40...+176°F	
Pressure		
Operating pressure	Atmospheric pressure Max. height above mean sea level: 2000 m / 6560 ft	
Other conditions		
Ingress protection (IEC 60529)	MS15 series: IP66 / IP68 (at a depth of 1.5 m for 2 weeks) MS40 series: IP66	
Relative air humidity (RH)	0...99%	

Installation conditions

Notes	Adjust the switch position in relation to the hysteresis data (switching point offset) and the density of the liquid
Dimensions	Refer to the "Dimensions" section

Materials

Housing	Aluminium with epoxy powder paint or stainless steel (1.4404 / 316L)	Aluminium with epoxy powder paint
Clamp	Stainless steel (1.4401 / 316)	

	MS15 series	MS40 series
Cable gland	Plastic (for M20 × 1.5 only), nickel-plated brass or stainless steel	Plastic

Electrical connections

Switching capacity	MS15 / MS40: Absolute ratings: 250 V AC/DC; 1 A; 60 VA/W	
	MS15 NAMUR / MS40 NAMUR: Agrees with DIN 19234 (NAMUR); U _{max} = 13 V DC	
EN 60947-5-1 electrical data (MS15 and MS40 only)	Overvoltage category II	
	Rated insulation voltage, U _i : 250 V AC or 250 V DC	
	Rated impulse withstand voltage, U _{imp} : 2.5 kV	
	Rated conventional thermal current, I _{th} : 1 A	
Utilization category (EN 60947-5-1) with current and voltage ratings	Pollution degree: 4	
	AC13: I _e = 0.5 A; U _{max} = 60 V AC	
	AC13: I _e = 0.25 A; U _{max} = 250 V AC	
	DC12: I _e = 1 A; U _{max} = 60 V DC	
Short-circuit protection device	DC13: I _e = 0.5 A; U _{max} = 60 V DC	
	0.25 A fuse, type 1500 A interrupting rating (IEC 60127-2/1)	
Intrinsically safe circuit data	1 A fuse, application category gG (IEC 60269) or type 1500 A interrupting rating (IEC 60127-2/1)	
	Refer to supplementary instructions or approval certificates	
Cable entry	M20 × 1.5; 1/2 NPT	M16 × 1.5
Cable gland	None; M20 × 1.5; 1/2 NPT	M16 × 1.5

Approvals and certification

CE / UKCA	The device meets the essential requirements of the EU Directives and UK Regulations. The manufacturer certifies successful testing of the product by applying the CE or UKCA marking.	
	For more data about the European Standards and UK Designated Standards related to this device, refer to the EU and the UKCA Declarations of Conformity. You can download this document free of charge from the website (Download Center).	
Explosion protection		
ATEX (EU Type Approval)	II 1 G Ex ia IIC T6...T1 or II 2 G Ex ia IIC T6...T1 Gb	
	II 2 G Ex db IIC T6...T1 Gb	N/A
IECEX	Ex ia IIC T6...T1 Ga or Ex ia IIC T6...T1 Gb	
	Ex db IIC T6...T1 Gb	N/A
UKEX - pending	II 1 G Ex ia IIC T6...T1 or II 2 G Ex ia IIC T6...T1 Gb	
	II 2 G Ex db IIC T6...T1 Gb	N/A

	MS15 series	MS40 series
Other standards and approvals		
LVD	MS15 / MS40: EU Low-Voltage Directive (LVD); UK Electrical Equipment (Safety) Regulations	
	MS15 NAMUR / MS40 NAMUR: N/A	
Vibration resistance (EN 60721-3-4)	Aluminium housing: vibration class 4M7 (1...200 Hz:3g, 25g shock ½ sinus: 11 ms)	
	Stainless steel housing: vibration class 4M4 (1...200 Hz:1g, 10g shock ½ sinus: 11 ms)	N/A

Table 2-4: MS15-series and MS40-series limit switches: technical data

- ① The ambient temperature limit is related to the process temperature. Do not put thermal insulation around the limit switch housing. Refer to the "Temperature limits: MS15-series limit switch" and "Temperature limits: MS40-series limit switch" sections in this chapter.
- ② The operating temperature is the temperature of the electronic parts

2.2 Dimensions

2.2.1 Magnetic level indicator (measuring chamber) - overall dimensions

Side - side process connections

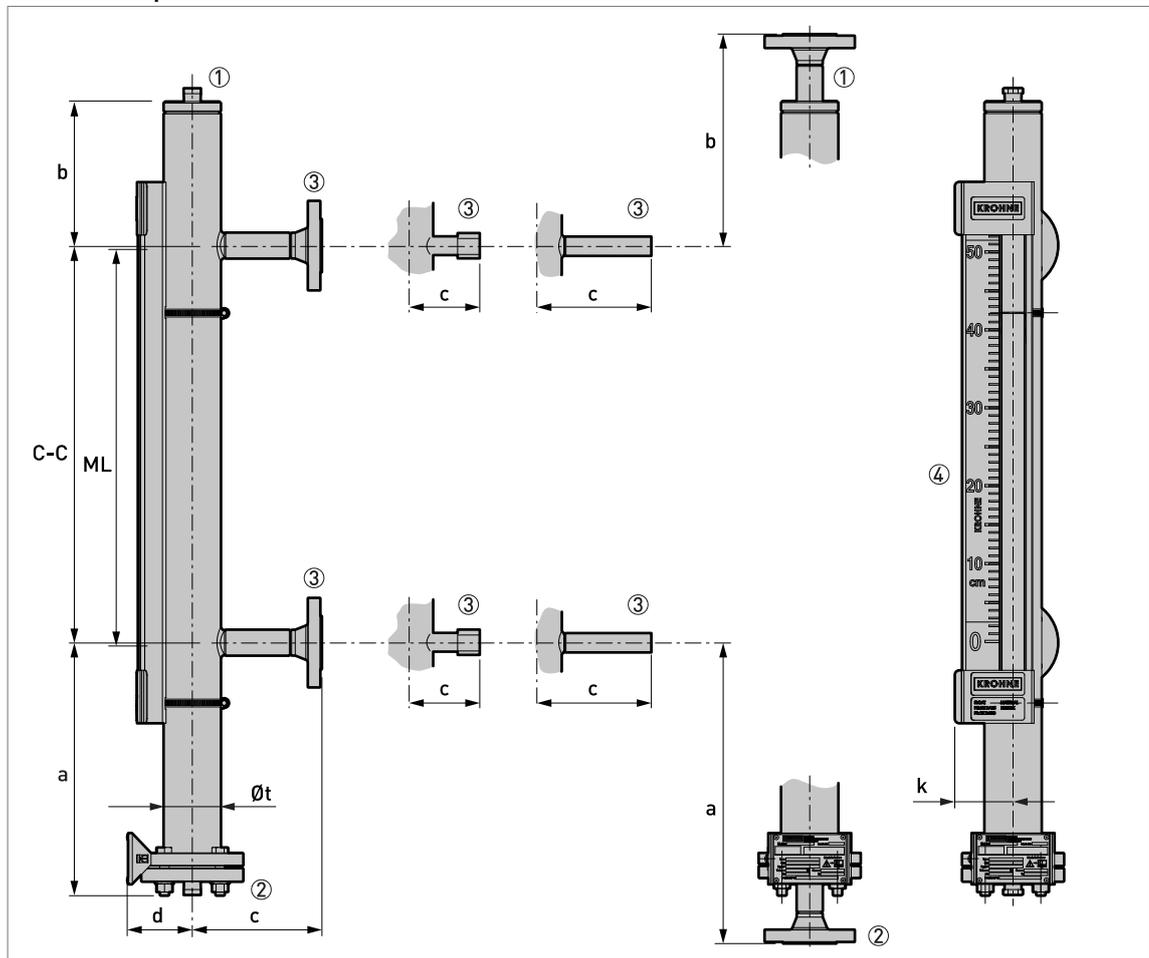


Figure 2-1: BM26A-6000: side - side process connections

- ① Optional vent with 3/8...3/4 NPT or G 3/8...3/4 threaded connection (with plug), or DN15...50 / NPS 1/2...2 flange
- ② Optional drain with 3/8...3/4 NPT or G 3/8...3/4 threaded connection (with plug), or DN15...50 / NPS 1/2...2 flange
- ③ Process connection (flange, welded pipe, or pipe with male or female threaded connection)
- ④ Level indicator column with optional scale (mm, inch, % or volume)

- a = distance from the center axis of the bottom connection to the bottom of the device
- b = distance from the center axis of the top connection to the top of the device
- $C-C$ = distance between the center axes of the top and bottom process connections
- ML = measuring length

If the device has ASME flanges, then the flange facing type can change the dimension "c". If the flange facing type is "RF", $c + 0 \text{ mm} / 0''$. If the flange facing type is "FF", $c - 2 \text{ mm} / 0.08''$. If the flange facing type is "LG", "LF", "SG" or "SF", $c + 3 \text{ mm} / 0.1''$. If the flange facing type is "LT", "LM", "ST" or "SM", $c + 5 \text{ mm} / 0.2''$. This is applicable to Class 300 flanges.

Flanged vent and drain options have the same pressure rating as the flanges for the process connections.

Other dimensions are available on request.

Liquid density [kg/m ³]	Dimensions [mm]							
	a	b	C-C	ML	c	d	k	Øt
500...580	520 ①	185 ②	300...5500 ③	③	④	82 ⑤	74.1	73.03
580...850	335 ⑥							
850...1200	335 ⑥							

Table 2-5: BM26A-6000 (side - side process connections): general dimensions in mm

- ① Drain options are available. NPT or G connection (female) + plug: 520 mm. Flange DN15...25 and NPS 1/2...1: 574 mm. Flange DN40...50 and NPS 1 1/2...2: 649 mm.
- ② Vent options are available. NPT or G connection (female) + plug: 185 mm. Flange DN15...25 and NPS 1/2...1: 270 mm. Flange DN40...50 and NPS 1 1/2...2: 345 mm.
- ③ This value agrees with the "C-C" dimension given in the customer order
- ④ If G 1/2...3/4 (female) or 1/2...3/4 NPT (female), then c = 71 mm. If G 1 (female) or 1 NPT (female), then c = 76 mm. If G or NPT (male) or welded pipe, then c = 162 mm. If flange, then c = 165 mm.
- ⑤ If the indicator column has the PLEXIGLAS® anti-icing cover option, then d = 98 mm
- ⑥ Drain options are available. NPT or G connection (female) + plug: 335 mm. Flange DN15...25 and NPS 1/2...1: 389 mm. Flange DN40...50 and NPS 1 1/2...2: 464 mm.

Liquid density [lb/ft ³]	Dimensions [inches]							
	a	b	C-C	ML	c	d	k	Øt
31.21...36.21	20.47 ①	7.28 ②	11.8...216.5 ③	③	④	3.2 ⑤	2.9	2.9
36.21...53.06	13.19 ⑥							
53.06...74.91	13.19 ⑥							

Table 2-6: BM26A-6000 (side - side process connections): general dimensions in inches

- ① Drain options are available. NPT or G connection (female) + plug: 20.47". Flange DN15...25 and NPS 1/2...1: 22.60". Flange DN40...50 and NPS 1 1/2...2: 25.55".
- ② Vent options are available. NPT or G connection (female) + plug: 7.28". Flange DN15...25 and NPS 1/2...1: 10.63". Flange DN40...50 and NPS 1 1/2...2: 13.58".
- ③ This value agrees with the "C-C" dimension given in the customer order
- ④ If G 1/2...3/4 (female) or 1/2...3/4 NPT (female), then c = 2.8". If G 1 (female) or 1 NPT (female), then c = 2.99". If G or NPT (male) or welded pipe, then c = 6.38". If flange, then c = 6.50".
- ⑤ If the indicator column has the PLEXIGLAS® anti-icing cover option, then d = 3.9"
- ⑥ Drain options are available. NPT or G connection (female) + plug: 13.19". Flange DN15...25 and NPS 1/2...1: 15.31". Flange DN40...50 and NPS 1 1/2...2: 18.27".

Axial - axial process connections

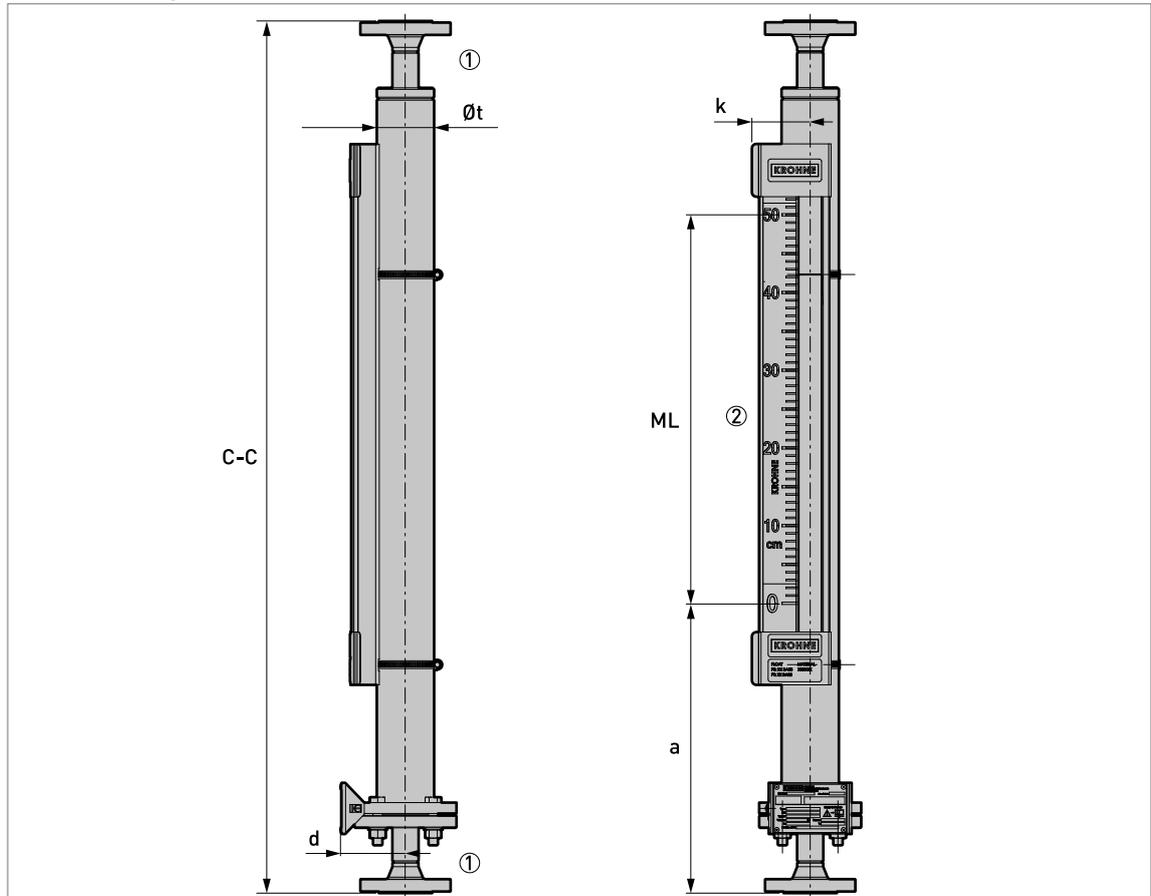


Figure 2-2: BM26A-6000: axial - axial process connections

- ① Process connection (flange)
- ② Level indicator column with optional scale (mm, inch, % or volume)

- a = bottom dead zone
- b = top dead zone
- $C-C$ = distance between the flange facings of the top and bottom process connections
- ML = measuring length

If the device has ASME flanges, then the flange facing type can change the dimension "c". If the flange facing type is "RF", $c + 0 \text{ mm} / 0''$. If the flange facing type is "FF", $c - 2 \text{ mm} / 0.08''$. If the flange facing type is "LG", "LF", "SG" or "SF", $c + 3 \text{ mm} / 0.1''$. If the flange facing type is "LT", "LM", "ST" or "SM", $c + 5 \text{ mm} / 0.2''$. This is applicable to Class 300 flanges.

Other dimensions are available on request.

Liquid density [kg/m ³]	Dimensions [mm]					
	a	C-C	ML	d	k	Øt
500...580	①	300...5500 ②	③	82 ④	74.1	73.03
580...1200	⑤		⑥			

Table 2-7: BM26A-6000 (axial - axial process connections): general dimensions in mm

- ① Flange DN15...25 and NPS 1/2...1: 430 mm. Flange DN40...50 and NPS 1 1/2...2: 505 mm.
 ② This value agrees with the "C-C" dimension given in the customer order
 ③ Flange DN15...25 and NPS 1/2...1: C-C - 795 mm. Flange DN40...50 and NPS 1 1/2...2: C-C - 950 mm.
 ④ If the indicator column has the PLEXIGLAS® anti-icing cover option, then d = 98 mm
 ⑤ Flange DN15...25 and NPS 1/2...1: 331 mm. Flange DN40...50 and NPS 1 1/2...2: 406 mm.
 ⑥ Flange DN15...25 and NPS 1/2...1: C-C - 610 mm. Flange DN40...50 and NPS 1 1/2...2: C-C - 765 mm.

Liquid density [lb/ft ³]	Dimensions [inches]					
	a	C-C	ML	d	k	Øt
31.21...36.21	①	11.8...216.5 ②	③	3.2 ④	2.9	2.9
36.21...74.91	⑤		⑥			

Table 2-8: BM26A-6000 (axial - axial process connections): general dimensions in inches

- ① Flange DN15...25 and NPS 1/2...1: 16.93". Flange DN40...50 and NPS 1 1/2...2: 19.88".
 ② This value agrees with the "C-C" dimension given in the customer order
 ③ Flange DN15...25 and NPS 1/2...1: C-C - 31.30". Flange DN40...50 and NPS 1 1/2...2: C-C - 37.40".
 ④ If the indicator column has the PLEXIGLAS® anti-icing cover option, then d = 3.9"
 ⑤ Flange DN15...25 and NPS 1/2...1: 13.03". Flange DN40...50 and NPS 1 1/2...2: 15.98".
 ⑥ Flange DN15...25 and NPS 1/2...1: C-C - 24.02". Flange DN40...50 and NPS 1 1/2...2: C-C - 30.12".

Top side - bottom axial process connections

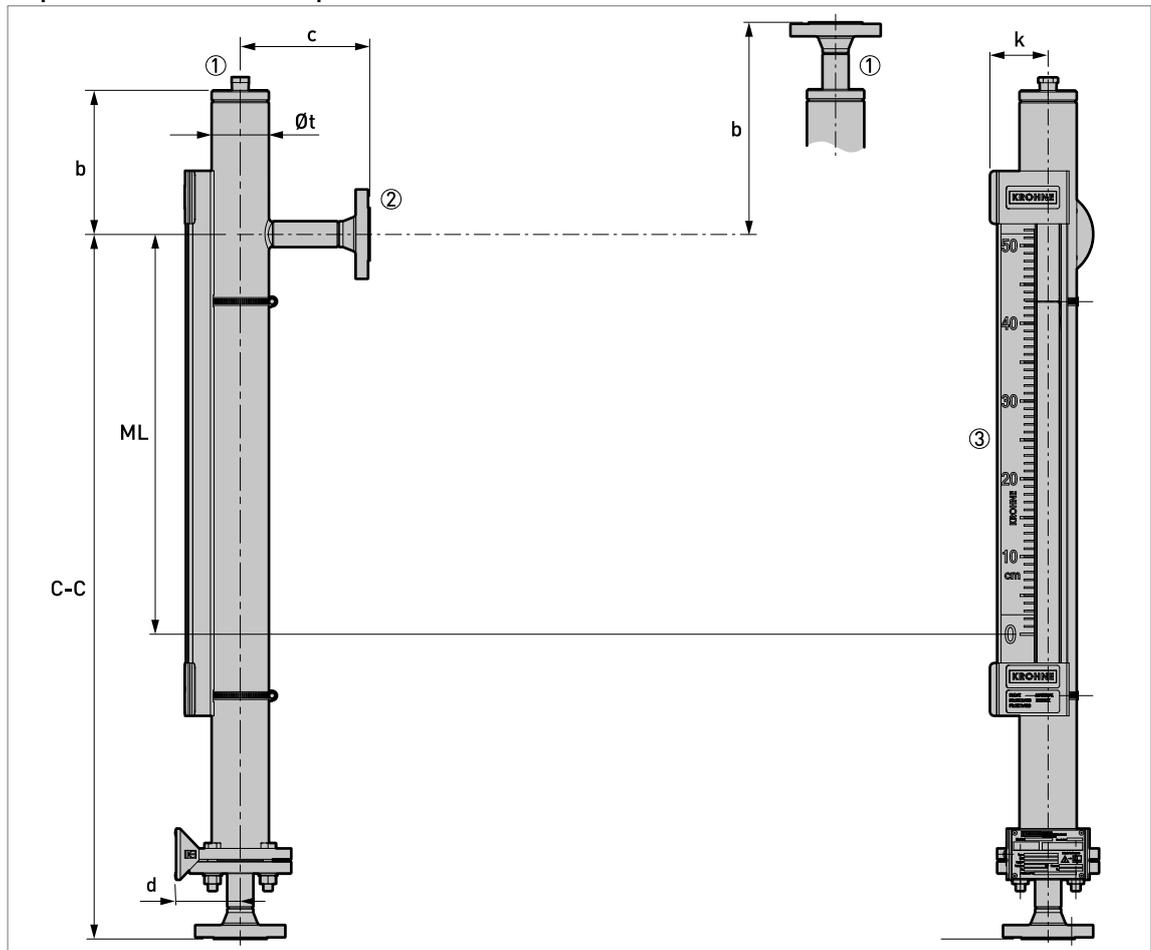


Figure 2-3: BM26A-6000: top side - bottom axial process connections

- ① Optional vent with 3/8...3/4 NPT threaded connection (with plug), G 3/8...3/4 threaded connection on a plate flange (with plug), or DN15...50 / NPS 1/2...2 flange
- ② Process connection (flange)
- ③ Level indicator column with optional scale (mm, inch, % or volume)

- a = bottom dead zone
- b = distance from the center axis of the top process connection to the top of the device
- $C-C$ = distance between the center axis of the top process connection and the flange facing of the bottom process connection
- ML = measuring length

If the device has ASME flanges, then the flange facing type can change the dimension "c". If the flange facing type is "RF", $c + 0 \text{ mm} / 0''$. If the flange facing type is "FF", $c - 2 \text{ mm} / 0.08''$. If the flange facing type is "LG", "LF", "SG" or "SF", $c + 3 \text{ mm} / 0.1''$. If the flange facing type is "LT", "LM", "ST" or "SM", $c + 5 \text{ mm} / 0.2''$. This is applicable to Class 300 flanges.

If the magnetic level indicator has the flanged vent option, then this flange has the same pressure rating as the flanges for the process connections.

Other dimensions are available on request.

Liquid density [kg/m ³]	Dimensions [mm]						
	b	C-C	ML	c	d	k	Øt
500...580	185 ①	300...5500 ②	③	165	82 ④	74.1	73.03
580...850			⑤				
850...1200			⑤				

Table 2-9: BM26A-6000 (top side - bottom axial process connections): general dimensions in mm

- ① Vent options are available. NPT or G (female) connection + plug: 185 mm. Flange DN15...25 and NPS 1/2...1: 270 mm. Flange DN40...50 and NPS 1 1/2...2: 345 mm.
- ② This value agrees with the "C-C" dimension given in the customer order
- ③ Flange DN15...25 and NPS 1/2...1: C-C - 575 mm. Flange DN40...50 and NPS 1 1/2...2: C-C - 650 mm.
- ④ If the indicator column has the PLEXIGLAS® anti-icing cover option, then d = 98 mm
- ⑤ Flange DN15...25 and NPS 1/2...1: C-C - 390 mm. Flange DN40...50 and NPS 1 1/2...2: C-C - 465 mm.

Liquid density [lb/ft ³]	Dimensions [inches]						
	b	C-C	ML	c	d	k	Øt
31.21...36.21	7.28 ①	11.8...216.5 ②	③	6.5	3.2 ④	2.9	2.9
36.21...53.06			⑤				
53.06...74.91			⑤				

Table 2-10: BM26A-6000 (top side - bottom axial process connections): general dimensions in inches

- ① Vent options are available. NPT or G (female) connection + plug: 7.28". Flange DN15...25 and NPS 1/2...1: 10.63". Flange DN40...50 and NPS 1 1/2...2: 13.58".
- ② This value agrees with the "C-C" dimension given in the customer order
- ③ Flange DN15...25 and NPS 1/2...1: C-C - 22.64". Flange DN40...50 and NPS 1 1/2...2: C-C - 25.59".
- ④ If the indicator column has the PLEXIGLAS® anti-icing cover option, then d = 3.9"
- ⑤ Flange DN15...25 and NPS 1/2...1: C-C - 15.35". Flange DN40...50 and NPS 1 1/2...2: C-C - 18.31".

Top axial - bottom side process connections

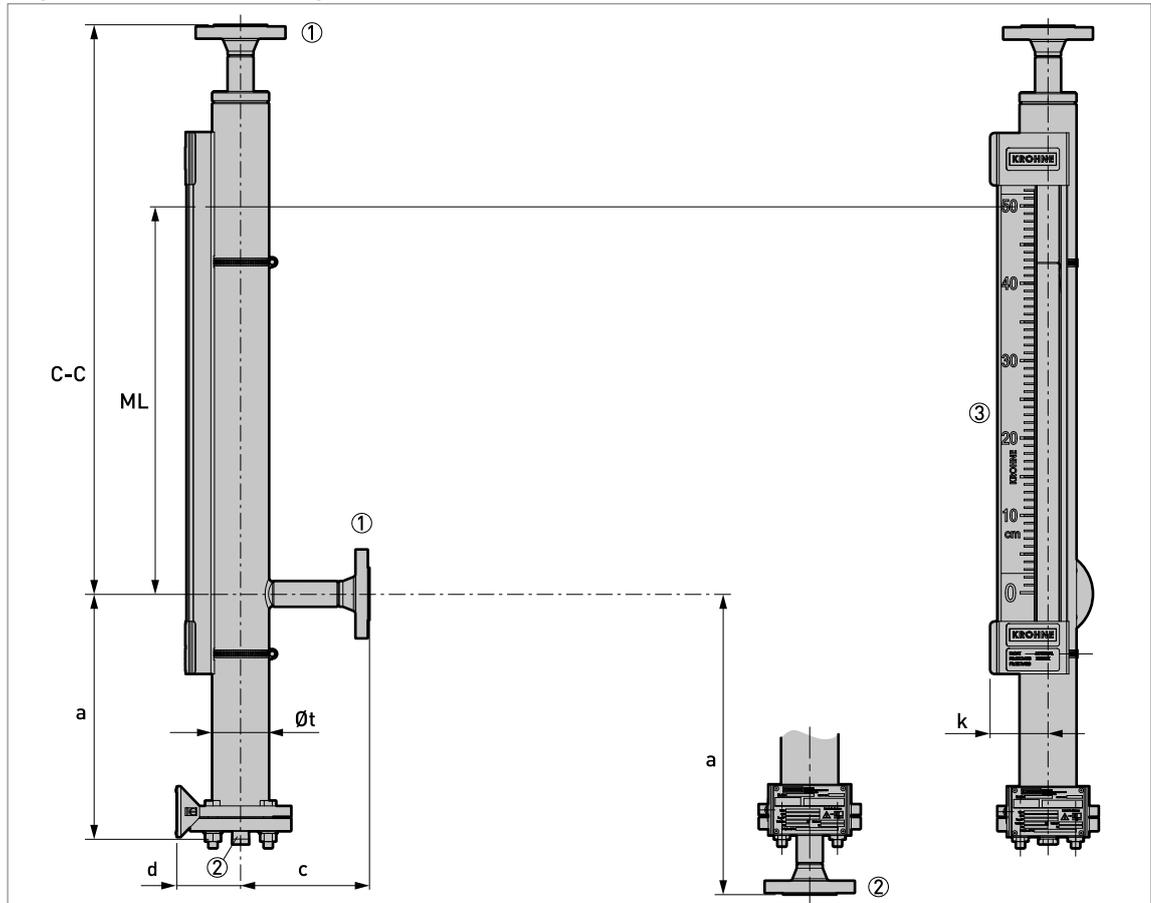


Figure 2-4: BM26A-6000: top axial - bottom side process connections

- ① Process connection (flange)
- ② Optional drain with 3/8...3/4 NPT threaded connection (with plug), G 3/8...3/4 threaded connection on a plate flange (with plug), or DN15...50 / NPS 1/2...2 flange
- ③ Level indicator column with optional scale (mm, inch, % or volume)

- a = distance from the center axis of the bottom process connection to the bottom of the device
- b = top dead zone
- $C-C$ = distance between the flange facing of the top process connection and the center axis of the bottom process connection
- ML = measuring length

If the device has ASME flanges, then the flange facing type can change the dimension "c". If the flange facing type is "RF", $c + 0 \text{ mm} / 0''$. If the flange facing type is "FF", $c - 2 \text{ mm} / 0.08''$. If the flange facing type is "LG", "LF", "SG" or "SF", $c + 3 \text{ mm} / 0.1''$. If the flange facing type is "LT", "LM", "ST" or "SM", $c + 5 \text{ mm} / 0.2''$. This is applicable to Class 300 flanges.

If the magnetic level indicator has the flanged drain option, then his flange has the same pressure rating as the flanges for the process connections.

Other dimensions are available on request.

Liquid density [kg/m ³]	Dimensions [mm]						
	a	C-C	ML	c	d	k	Øt
500...580	520 ①	300...5500 ②	③	165	82 ④	74.1	73.03
580...850	335 ⑤						
850...1200	335 ⑤						

Table 2-11: BM26A-6000 (top axial - bottom side process connections): general dimensions in mm

- ① Drain options are available. NPT or G (female) connection + plug: 520 mm. Flange DN15...25 and NPS 1/2...1: 574 mm. Flange DN40...50 and NPS 1 1/2...2: 649 mm.
- ② This value agrees with the "C-C" dimension given in the customer order
- ③ Flange DN15...25 and NPS 1/2...1: C-C - 220 mm. Flange DN40...50 and NPS 1 1/2...2: C-C - 300 mm.
- ④ If the indicator column has the PLEXIGLAS® anti-icing cover option, then d = 98 mm
- ⑤ Drain options are available. NPT or G (female) connection + plug: 335 mm. Flange DN15...25 and NPS 1/2...1: 389 mm. Flange DN40...50 and NPS 1 1/2...2: 464 mm.

Liquid density [lb/ft ³]	Dimensions [inches]						
	a	C-C	ML	c	d	k	Øt
31.21...36.21	20.47 ①	11.8...216.5 ②	③	6.5	3.2 ④	2.9	2.9
36.21...53.06	13.19 ⑤						
53.06...74.91	13.19 ⑤						

Table 2-12: BM26A-6000 (top axial - bottom side process connections): general dimensions in inches

- ① Drain options are available. NPT or G (female) connection + plug: 20.47". Flange DN15...25 and NPS 1/2...1: 22.60". Flange DN40...50 and NPS 1 1/2...2: 25.55".
- ② This value agrees with the "C-C" dimension given in the customer order
- ③ Flange DN15...25 and NPS 1/2...1: C-C - 8.66" Flange DN40...50 and NPS 1 1/2...2: C-C - 11.81".
- ④ If the indicator column has the PLEXIGLAS® anti-icing cover option, then d = 3.9"
- ⑤ Drain options are available. NPT or G (female) connection + plug: 13.19". Flange DN15...25 and NPS 1/2...1: 15.31". Flange DN40...50 and NPS 1 1/2...2: 18.27".

2.2.2 Options

LT40 C reed-chain level transmitter - compact version

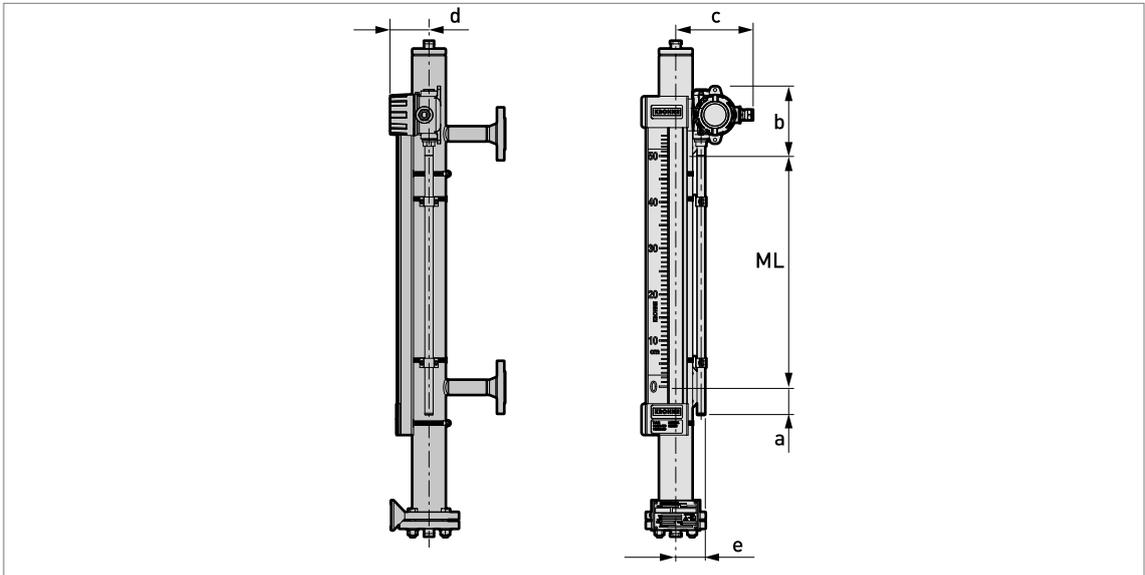


Figure 2-5: LT40 C reed-chain level transmitter - compact version

Dimensions [mm]					
a	b	c	ML	d	e
66.5	157	167.4	300...5500	84	50

Table 2-13: LT40 C reed-chain level transmitter: dimensions in mm

Dimensions [inches]					
a	b	c	ML	d	e
2.6	6.2	6.6	11.8...216.5	3.3	2.0

Table 2-14: LT40 C reed-chain level transmitter: dimensions in inches

LT40 F reed-chain level transmitter - remote version

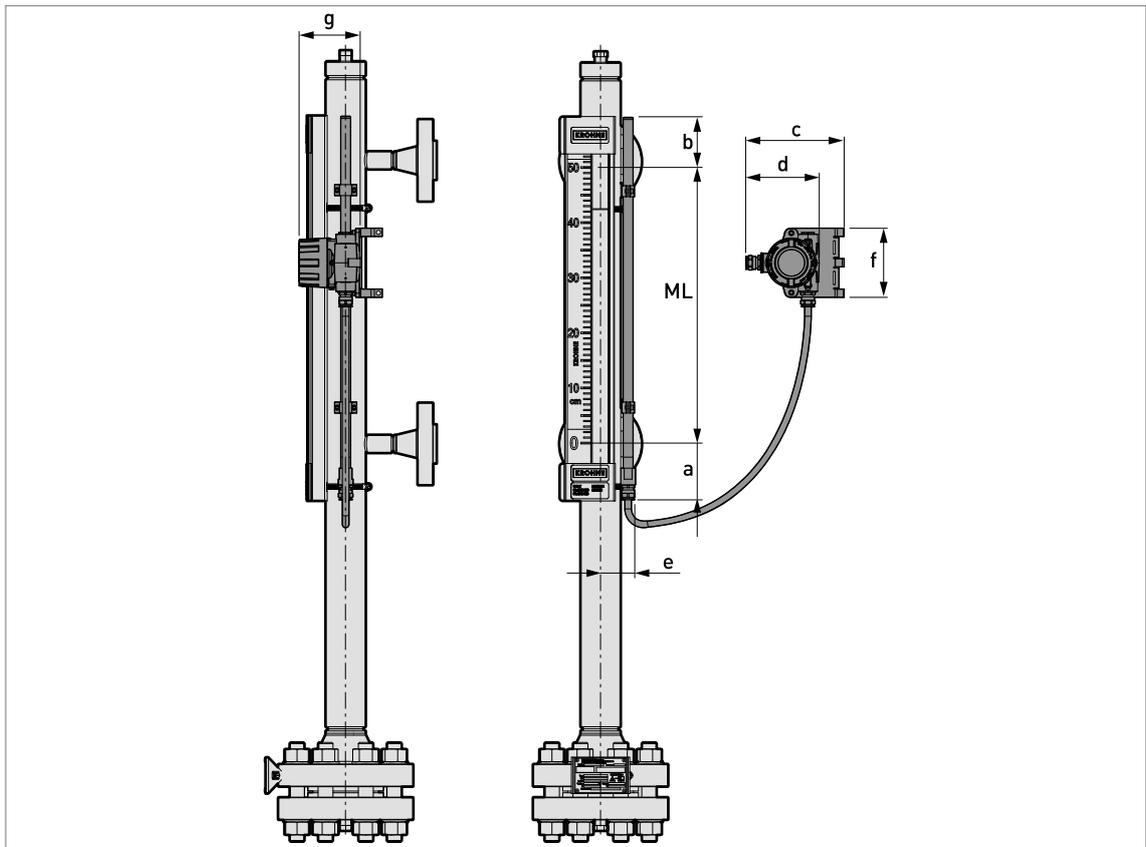


Figure 2-6: LT40 F reed-chain level transmitter - remote version

Dimensions [mm]							
a	b	c	d	ML	e	f	g
81.5	66.5	176	133	300...5500	50	125.5	62

Table 2-15: LT40 F reed-chain level transmitter: dimensions in mm

Dimensions [inches]							
a	b	c	d	ML	e	f	g
3.21	2.62	6.93	5.24	11.8...216.5	1.97	4.94	2.44

Table 2-16: LT40 F reed-chain level transmitter: dimensions in inches

Support for the LT40 F reed-chain level transmitter

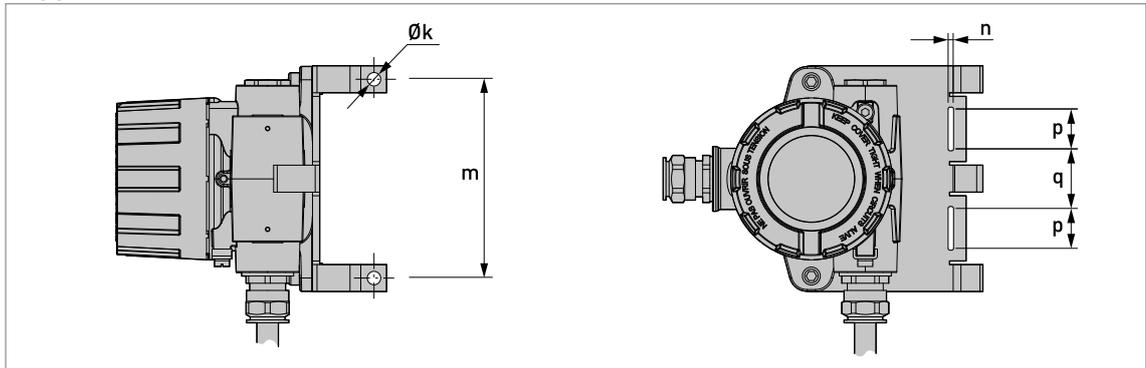


Figure 2-7: Support for the LT40 F reed-chain level transmitter

Dimensions [mm]				
Øk	m	n	p	q
7.5	107.75	3	24.25	31

Table 2-17: Support for the LT40 F reed-chain level transmitter: dimensions in mm

Dimensions [inches]				
Øk	m	n	p	q
0.30	4.24	0.12	0.95	1.22

Table 2-18: Support for the LT40 F reed-chain level transmitter: dimensions in inches

MS15 -series and MS40-series limit switches

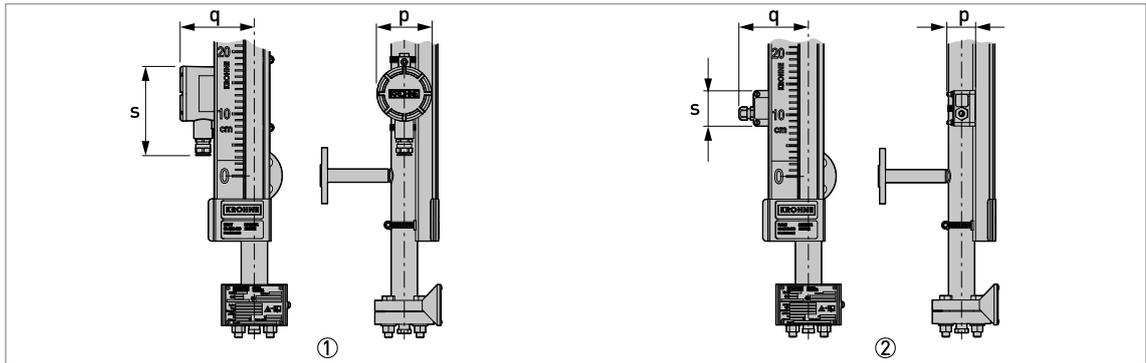


Figure 2-8: MS15-series and MS40-series limit switches

- ① Magnetic level indicator with an MS15-series limit switch
- ② Magnetic level indicator with an MS40-series limit switch

Limit switch version	Dimensions [mm]		
	p	q	s
MS15 series	88	138.9	143.5
MS40 series	46	129.6	56

Table 2-19: MS15-series and MS40-series limit switches: dimensions in mm

Limit switch version	Dimensions [inches]		
	p	q	s
MS15 series	3.46	5.47	5.65
MS40 series	1.81	5.10	2.20

Table 2-20: MS15-series and MS40-series limit switches: dimensions in inches

2.2.3 Accessories

Support bracket

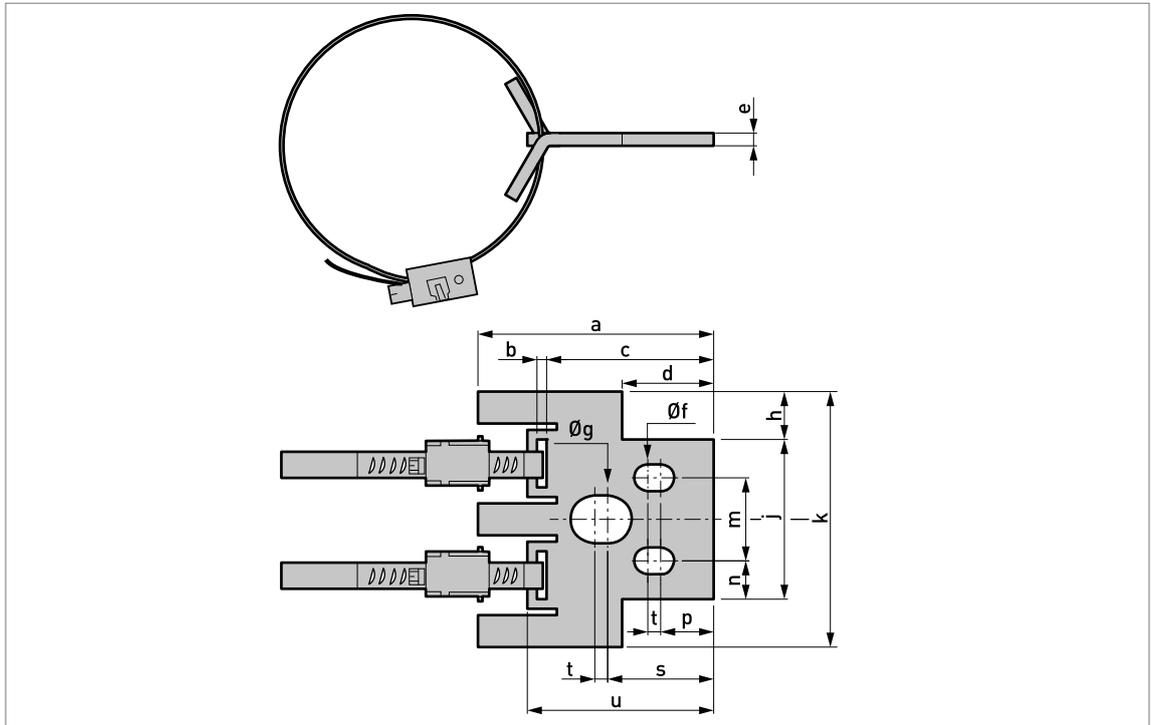


Figure 2-9: Support bracket

The support bracket is an accessory. If necessary, send an order to your supplier.

	Dimensions [mm]															
	a	b	c	d	e	Øf	Øg	h	j	k	m	n	p	s	t	u
Support bracket	73	3	52	28.5	4	8.4	15	15	50	80	26	12	16.5	33	4	58

Table 2-21: Support bracket: dimensions in mm

	Dimensions [inches]															
	a	b	c	d	e	Øf	Øg	h	j	k	m	n	p	s	t	u
Support bracket	2.87	0.12	2.05	1.12	0.16	0.33	0.59	0.59	1.97	3.15	1.02	0.47	0.65	1.30	0.16	2.28

Table 2-22: Support bracket: dimensions in inches

2.3 Maximum process pressure: measuring chamber

Do not use the device at a process pressure more than the maximum limit for a given process temperature.

Maximum process pressure [bar] for a given maximum process temperature [°C]

EU PED, EN 13445 and UK PE(S)R									
Standard	Pressure rating	Maximum process temperature [°C]							
		-70	-20	+20	+38	+50	+100	+150	+200
		Maximum process pressure [bar]							
EN 1092-1	PN40	40	40	40	40	40	40	36.3	33.7
ASME B16.5	Class 150	19	19	19	19	18.4	16	14.8	13.6
	Class 300	40	40	40	40	40	40	36.3	33.7
ISO 228-1	G	40	40	40	40	40	40	36.3	33.7
ASME B1.20.1	NPT	40	40	40	40	40	40	36.3	33.7
ASME B36.19M	10S	40	40	40	40	40	40	36.3	33.7

Table 2-23: EU PED, EN 13445 and UK PE(S)R: maximum process pressure [bar] for a given maximum process temperature [°C]

Maximum process pressure [psig] for a given maximum process temperature [°F]

EU PED, EN 13445 and UK PE(S)R									
Standard	Pressure rating	Maximum process temperature [°F]							
		-94	-4	+68	+100.4	+122	+212	+302	+392
		Maximum process pressure [psig]							
EN 1092-1	PN40	580.2	580.2	580.2	580.2	580.2	580.2	526.5	488.8
ASME B16.5	Class 150	275.6	275.6	275.6	275.6	266.9	232.1	214.7	197.3
	Class 300	580.2	580.2	580.2	580.2	580.2	580.2	526.5	488.8
ISO 228-1	G	580.2	580.2	580.2	580.2	580.2	580.2	526.5	488.8
ASME B1.20.1	NPT	580.2	580.2	580.2	580.2	580.2	580.2	526.5	488.8
ASME B36.19M	10S	580.2	580.2	580.2	580.2	580.2	580.2	526.5	488.8

Table 2-24: EU PED, EN 13445 and UK PE(S)R: maximum process pressure [psig] for a given maximum process temperature [°F]

Maximum allowable working pressure [bar] for a given maximum process temperature [°C]

ASME B31.3									
Standard	Pressure rating	Maximum process temperature [°C]							
		-70	-20	+20	+38	+50	+100	+150	+200
		Maximum allowable working pressure [bar]							
ASME B16.5	Class 150	19	19	19	19	18.4	16	14.8	13.6
	Class 300	40	40	40	40	40	40	36.3	33.7
ASME B1.20.1	NPT	40	40	40	40	40	40	36.3	33.7
ASME B36.19M	10S	40	40	40	40	40	40	36.3	33.7

Table 2-25: ASME B31.3: maximum allowable working pressure [barg] for a given maximum process temperature [°C]

Maximum allowable working pressure [psig] for a given maximum process temperature [°F]

ASME B31.3									
Standard	Pressure rating	Maximum process temperature [°F]							
		-94	-4	+68	+100.4	+122	+212	+302	+392
		Maximum allowable working pressure [psig]							
ASME B16.5	Class 150	275.6	275.6	275.6	275.6	266.9	232.1	214.7	197.3
	Class 300	580.2	580.2	580.2	580.2	580.2	580.2	526.5	488.8
ASME B1.20.1	NPT	580.2	580.2	580.2	580.2	580.2	580.2	526.5	488.8
ASME B36.19M	10S	580.2	580.2	580.2	580.2	580.2	580.2	526.5	488.8

Table 2-26: ASME B31.3: maximum allowable working pressure [psig] for a given maximum process temperature [°F]

2.4 Temperature limits: LT40 C/F reed-chain level transmitter

Do not use the device at an ambient temperature more than the maximum limit for a given process temperature. Do not use the device at an ambient temperature less than the minimum limit for a given process temperature.

The temperature limit calculations for these graphs include plots for devices that have thermal insulation options (ROCKWOOL® and FOAMGLAS®) supplied by the manufacturer.

2.4.1 Without a thermal insulation option and without the LCD indicator module

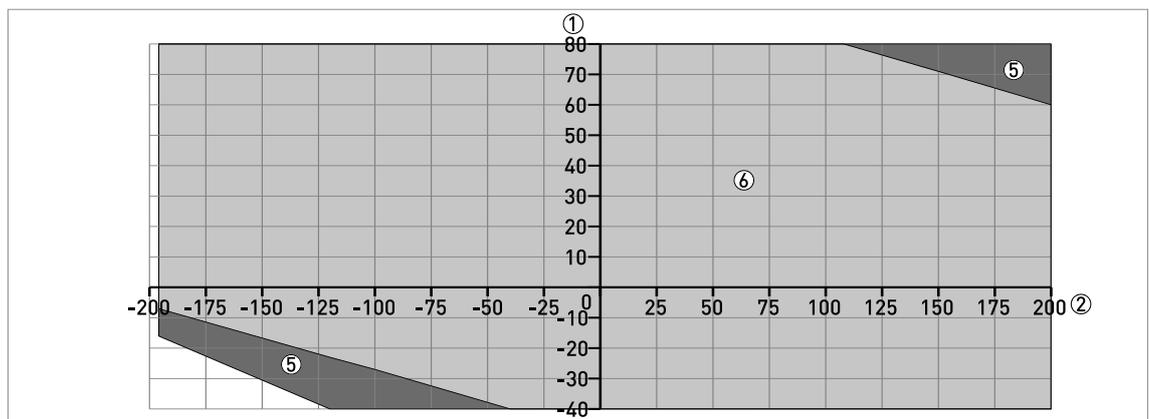


Figure 2-10: Ambient temperature / process temperature, in °C - without a thermal insulation option and without the LCD indicator module

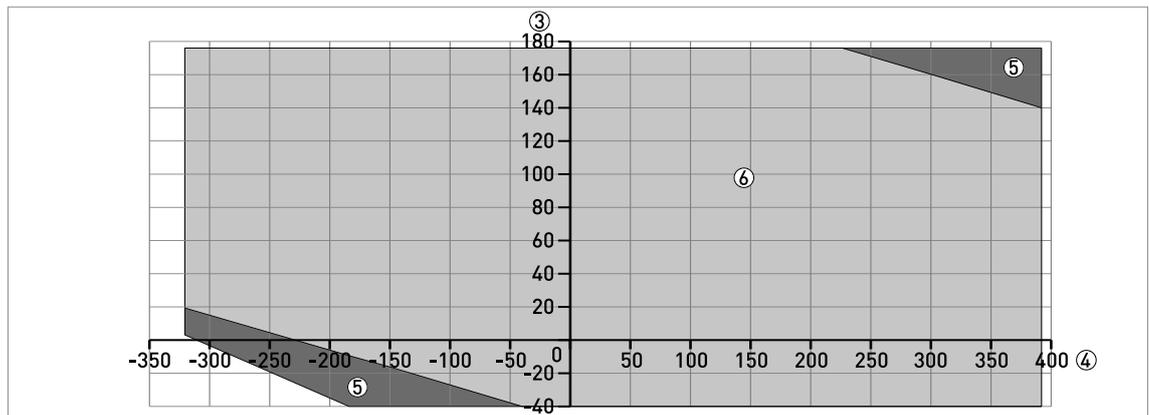


Figure 2-11: Ambient temperature / process temperature, in °F - without a thermal insulation option and without the LCD indicator module

- ① Ambient temperature, °C
- ② Process temperature, °C
- ③ Ambient temperature, °F
- ④ Process temperature, °F
- ⑤ LT40 F
- ⑥ LT40 C and LT40 F

2.4.2 Without a thermal insulation option and with the LCD indicator module

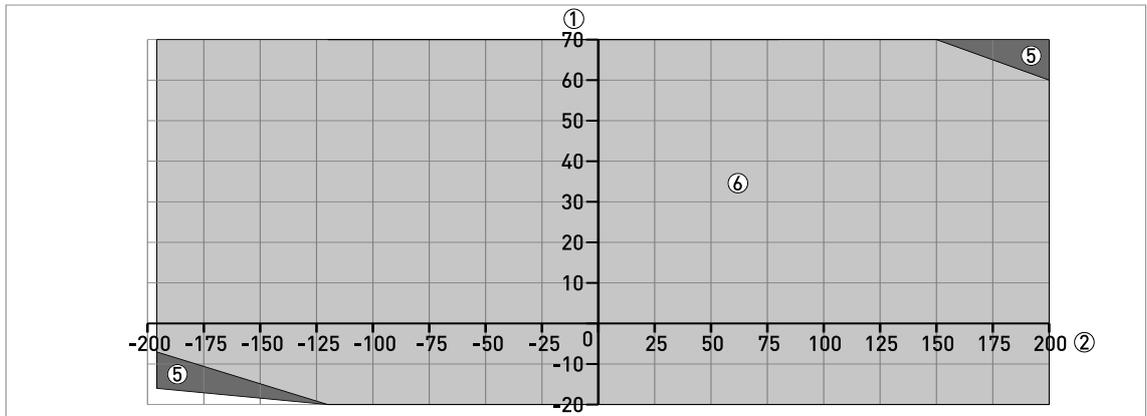


Figure 2-12: Ambient temperature / process temperature, in °C - without a thermal insulation option and with the LCD indicator module

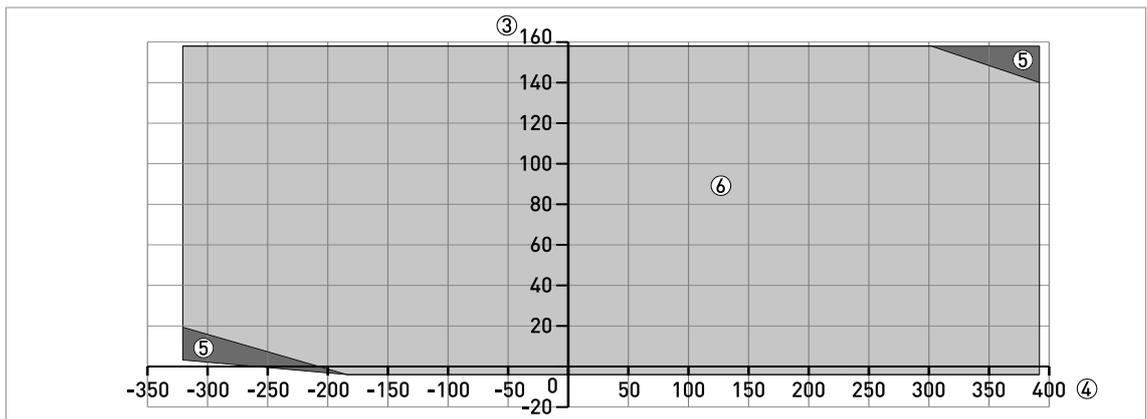


Figure 2-13: Ambient temperature / process temperature, in °F - without a thermal insulation option and with the LCD indicator module

- ① Ambient temperature, °C
- ② Process temperature, °C
- ③ Ambient temperature, °F
- ④ Process temperature, °F
- ⑤ LT40 F
- ⑥ LT40 C and LT40 F

2.4.3 With a thermal insulation option and without the LCD indicator module

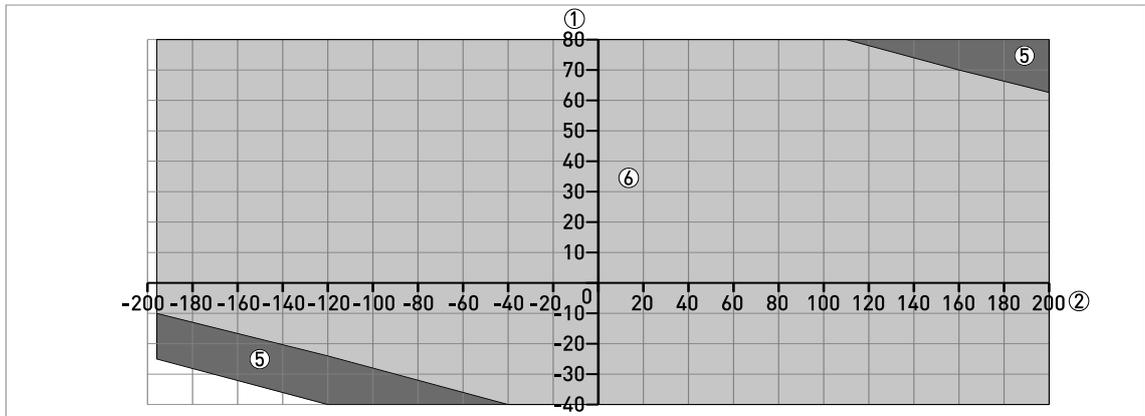


Figure 2-14: Ambient temperature / process temperature, in °C - with a thermal insulation option and without the LCD indicator module

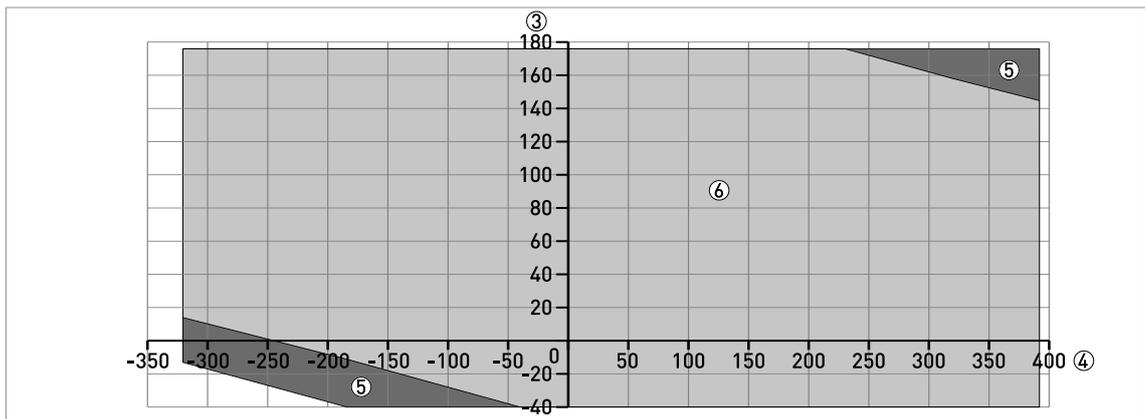


Figure 2-15: Ambient temperature / process temperature, in °F - with a thermal insulation option and without the LCD indicator module

- ① Ambient temperature, °C
- ② Process temperature, °C
- ③ Ambient temperature, °F
- ④ Process temperature, °F
- ⑤ LT40 F
- ⑥ LT40 C and LT40 F

2.4.4 With a thermal insulation option and with the LCD indicator module

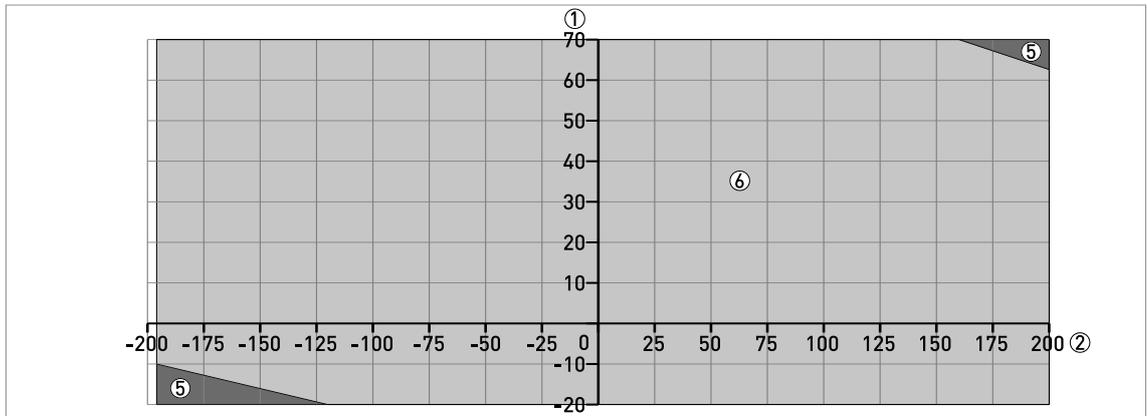


Figure 2-16: Ambient temperature / process temperature, in °C - with a thermal insulation option and with the LCD indicator module

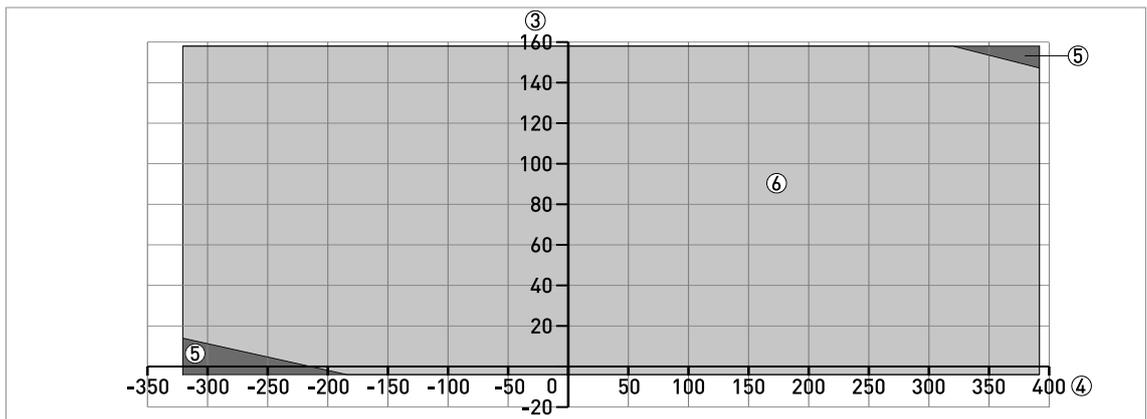


Figure 2-17: Ambient temperature / process temperature, in °F - with a thermal insulation option and with the LCD indicator module

- ① Ambient temperature, °C
- ② Process temperature, °C
- ③ Ambient temperature, °F
- ④ Process temperature, °F
- ⑤ LT40 F
- ⑥ LT40 C and LT40 F

2.5 Temperature limits: MS15-series limit switch

Do not use the device at an ambient temperature more than the maximum limit for a given process temperature. Do not use the device at an ambient temperature less than the minimum limit for a given process temperature.

The temperature limit calculations for these graphs include plots for devices that have thermal insulation options (ROCKWOOL® and FOAMGLAS®) supplied by the manufacturer.

2.5.1 Aluminium housing

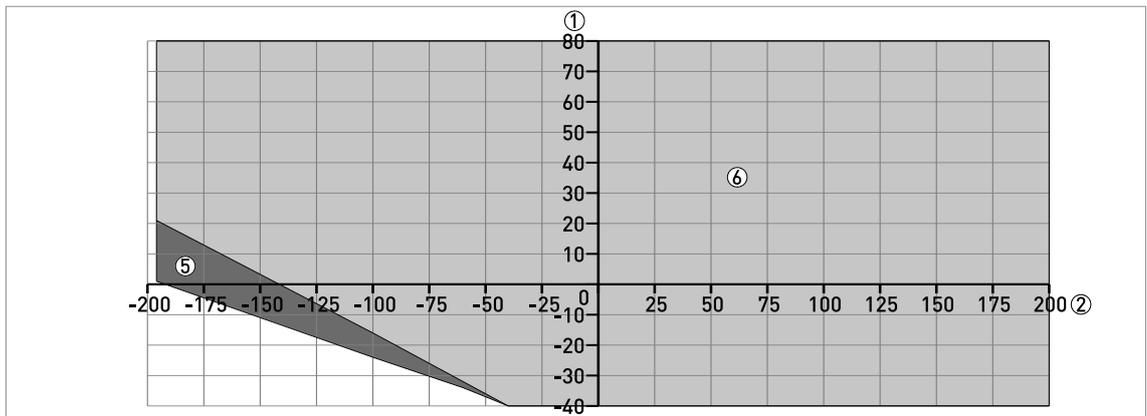


Figure 2-18: Ambient temperature / process temperature, in °C - MS15-series limit switch with the aluminium housing option

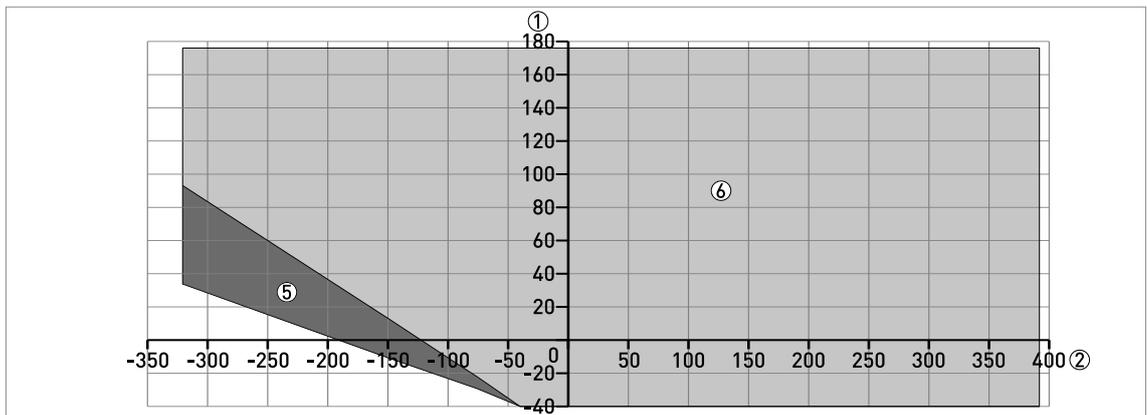


Figure 2-19: Ambient temperature / process temperature, in °F - MS15-series limit switch with the aluminium housing option

- ① Ambient temperature, °C
- ② Process temperature, °C
- ③ Ambient temperature, °F
- ④ Process temperature, °F
- ⑤ MS15-series limit switch without a thermal insulation option
- ⑥ MS15-series limit switch with or without a thermal insulation option

2.5.2 Stainless-steel housing

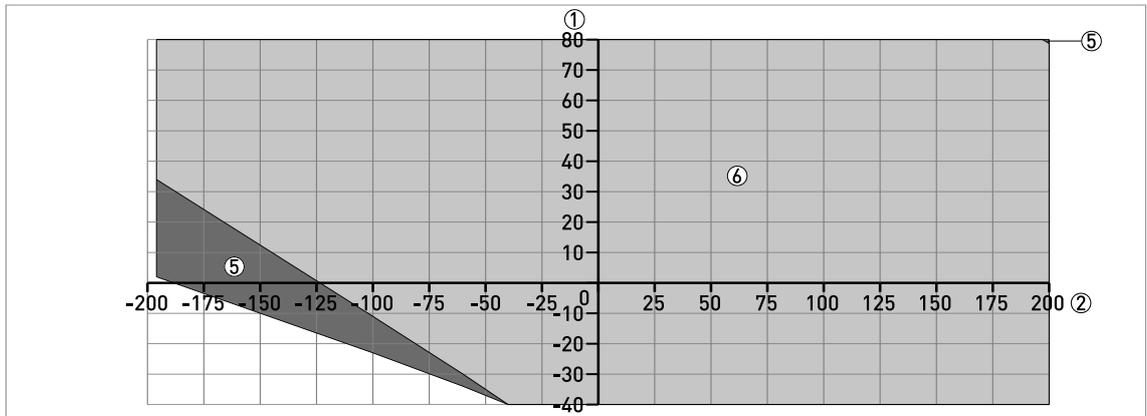


Figure 2-20: Ambient temperature / process temperature, in °C - MS15-series limit switch with the stainless-steel housing option

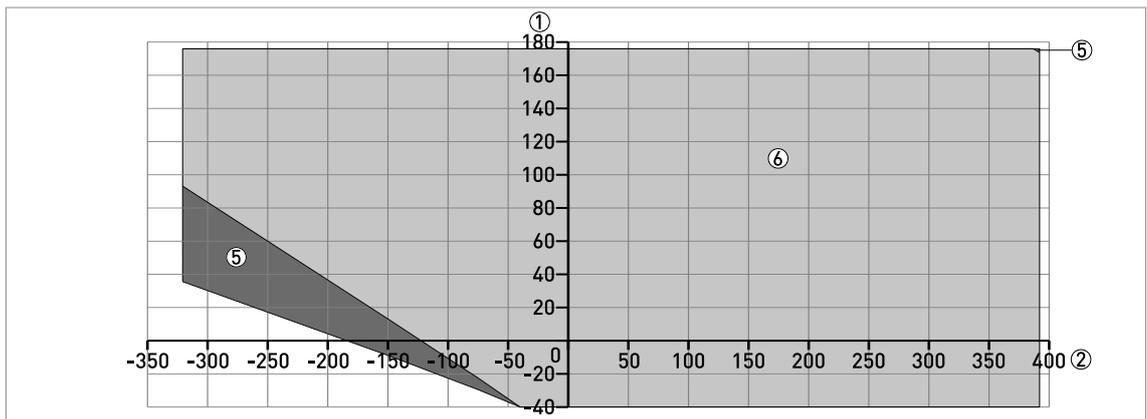


Figure 2-21: Ambient temperature / process temperature, in °F - MS15-series limit switch with the stainless-steel housing option

- ① Ambient temperature, °C
- ② Process temperature, °C
- ③ Ambient temperature, °F
- ④ Process temperature, °F
- ⑤ MS15-series limit switch without a thermal insulation option
- ⑥ MS15-series limit switch with or without a thermal insulation option

2.6 Temperature limits: MS40-series limit switch

Do not use the device at an ambient temperature more than the maximum limit for a given process temperature. Do not use the device at an ambient temperature less than the minimum limit for a given process temperature.

The temperature limit calculations for these graphs include plots for devices that have thermal insulation options (ROCKWOOL® and FOAMGLAS®) supplied by the manufacturer.

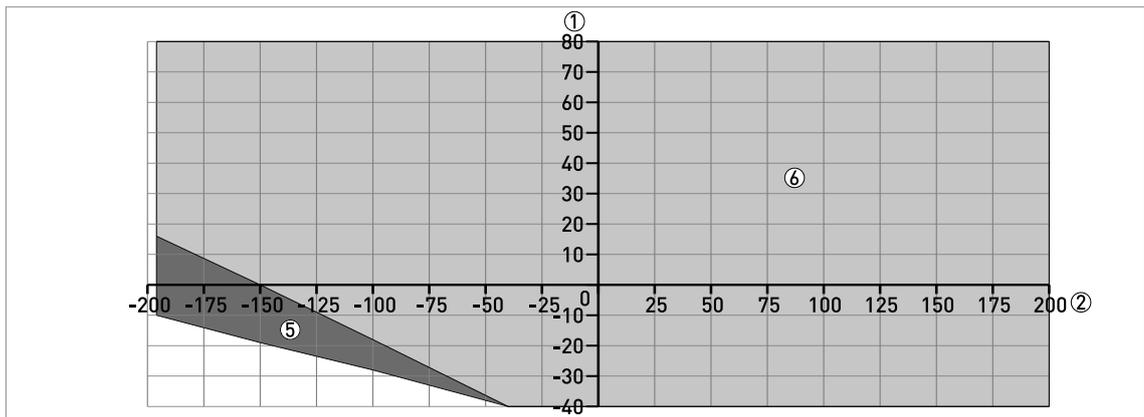


Figure 2-22: Ambient temperature / process temperature, in °C - MS40-series limit switch

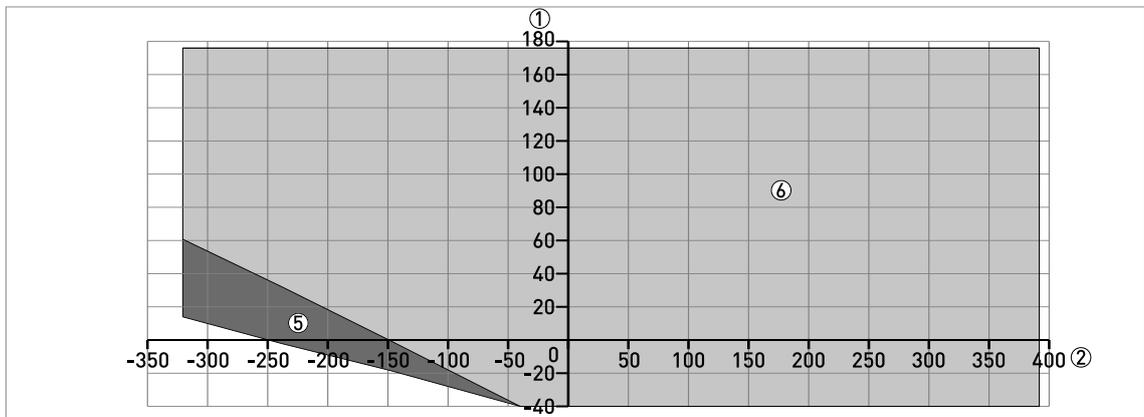


Figure 2-23: Ambient temperature / process temperature, in °F - MS40-series limit switch

- ① Ambient temperature, °C
- ② Process temperature, °C
- ③ Ambient temperature, °F
- ④ Process temperature, °F
- ⑤ MS40-series limit switch - without a thermal insulation option
- ⑥ MS40-series limit switch - with or without a thermal insulation option

3.1 Intended use

The BM26A-6000 is a magnetic level indicator that measures the level or volume of liquefied gases.

These devices are installed next to open or pressurized tanks. With the applicable options, they are resistant to difficult service conditions and liquids that are poisonous or flammable.

Responsibility for the use of the measuring devices with regard to suitability, intended use and corrosion resistance of the used materials against the measured fluid lies solely with the operator.

The manufacturer is not liable for any damage resulting from improper use or use for other than the intended purpose.

3.2 Pre-installation requirements

3.2.1 General notes

Obey the installation conditions that follow. For technical data about the device, refer to *Technical data* on page 7.

Make sure that the installation conditions obey the design constraints related to PED. For more data, refer to *Pressure equipment regulations* on page 41.

Other installation conditions

- Install the magnetic level indicator vertically on the tank.
- Select bolts and gaskets (not supplied) that agree with the pressure rating of the process connection and the process pressure.
- We recommend that you use braces to prevent damage to the process connections.
- If you install ROCKWOOL® or FOAMGLAS® insulation after you receive the device, write to the manufacturer for the installation procedure.

Make sure that the outer surface temperature of the device is less than +60°C / +140°F. If the surface temperature is more than +60°C / +140°F, use the device with precautions that agree with health and safety rules and regulations.

Customer order data is used to adjust the device. If liquid density changes, the device will not measure correctly. For example, if liquid density decreases, then the float does not follow the surface of the liquid and goes down to the bottom of the measuring chamber.

3.2.2 Isolation valves

We recommend that you install isolation valves between the device and the tank. The device can then be easily removed from the tank for the cleaning procedure. Drain the device only when it is isolated from the tank.

3.3 Pressure equipment regulations

PED

These devices are designed, assembled and tested to agree with the PED. The PED conformity assessment is approved by a Notified Body.

PE(S)R

These devices are designed, assembled and tested to agree with the PE(S)R. The PE(S)R conformity assessment is approved by an Approved Body.

ASME B31.3

If the device has the "ASME B31.3" option, it is designed, assembled and tested to agree with the ASME B31.3 Code for Process Piping.

If the device has an Ex approval, then you must obey other temperature limits. For more data, refer to the Ex supplementary instructions.

The manufacturer did a risk analysis on the device that agrees with the EU Pressure Equipment Directive and the UK Pressure Equipment (Safety) Regulations. All personnel must know the design and operating conditions that follow to prevent the risk of damage and injury:

- This device is designed to function at almost constant pressure and temperature conditions. A maximum of 500 cycles is permitted along the full pressure range. A maximum of 2000 cycles is permitted along the full temperature range.
- This device is not designed for operating conditions where vibration or fatigue stress is present.
- Events that are not taken into account in the calculations include exceptional risks such as: earthquakes, bad weather, fire etc..
- The standard design calculation does not take into account the theoretical coefficient of corrosion. The product circulating in the device must not have properties that cause surface erosion.
- Our conformity declaration is limited to the parts of the device that are pressurized. It does not include parts that can be dismantled (valves etc.).
- The process connections must be attached correctly to prevent mechanical stress. The axis of the process connection must be parallel to and centred with the axis of the tank's process connections. Tighten the process connections in agreement with the design code.
- The user must take necessary steps to protect the installed device from shock waves (water hammer). A pressure-limiting valve must protect the installation.
- The effective pressure of the installation (the maximum pressure permitted by the pressure-limiting valve) must never be more than the maximum permitted pressure. The maximum permitted pressure is marked on the device nameplate.
- Make sure that the parts in contact with the fluid are compatible with the fluid and conform to the ageing characteristics of the measurement environment and the fluid used. These have either been recommended in the instructions or form the subject of a particular specification in the contract.
- The device is designed to measure a liquid with a gas phase. It is not designed to measure liquids that change to a solid phase because of changes in pressure (solidification) and temperature (freezing), e.g. water and ice.
- Make sure that there are no magnetic particles in the liquid. These particles can have an effect on the performance of the device.

- Make sure that the size of the particles in the liquid are less than 0.05 mm / 0.002" in diameter.
- Make sure that the device is correctly sealed. Do a leakage check between the device and the tank.
- The external pressure, P_{ext} , must be equal to atmospheric pressure, P_{atmos} ($P_{ext} = P_{atmos}$).

3.4 Reed-chain level transmitter (LT40)

3.4.1 General notes

Customer order data is used to adjust the device. If liquid density changes, the device will not measure correctly. For example, if liquid density decreases, then the float does not follow the surface of the liquid and goes down to the bottom of the measuring chamber.

LT40 C

The compact converter of the LT40 C is attached to the reed-chain tube.

LT40 F

The remote converter of the LT40 F is connected to the reed-chain tube by an electrical cable. The electrical cable has a maximum length of 25 m / 82 ft. The remote converter can be attached to a pipe with two hose clamps or attached to a wall with two bolts. Refer to the illustration that follows:

Do not attach the remote converter of the LT40 F reed-chain level transmitter to the BM26A series bypass level indicator, or a hot or cold pipe.

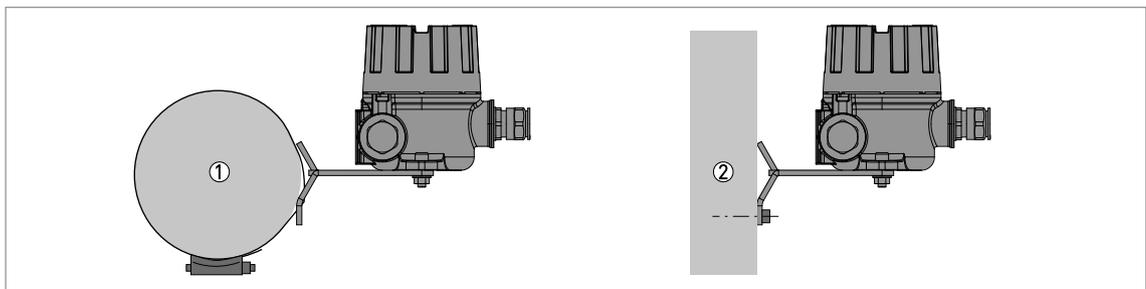


Figure 3-1: LT40 F: Installation of the remote converter - examples of locations (top view)

- ① The remote converter is attached to a tube with two hose clamps
- ② The remote converter is attached to a wall with two bolts

3.4.2 Thermal insulation

If you put thermal insulation around the magnetic level indicator, do not cover the housing of the reed-chain level transmitter. Make sure that there is approximately 15 mm / 0.6" of empty space between the housing and the thermal insulation.

3.5 Limit switches (MS15 series and MS40 series)

3.5.1 General notes

Limit switch condition - LOW limit:

The limit switch is open when the float moves **below** the switching point.

Limit switch condition - HIGH limit:

The limit switch is open when the float moves **above** the switching point.

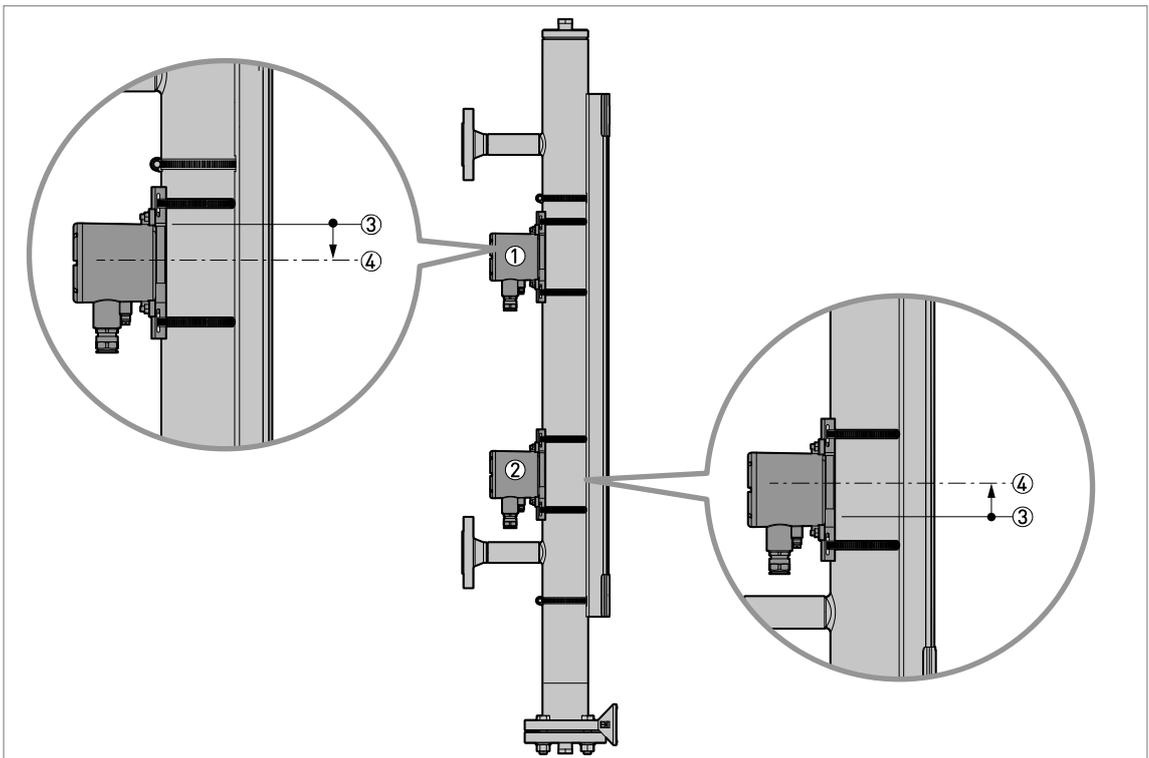


Figure 3-2: Definitions

- ① Limit switch in "HIGH limit" position
- ② Limit switch in "LOW limit" position
- ③ Switching point (the level at which the limit switch changes its condition from "closed" to "open")
- ④ Correct position of the limit switch in relation to the switching point. If it is a "HIGH limit" switch, put it below the switching point (at a distance equal to the switching point offset value). If it is a "LOW limit" switch, put it above the switching point (at a distance equal to the switching point offset value).

3.5.2 Thermal insulation

If you put thermal insulation around the magnetic level indicator, do not cover the housing of the limit switch. Make sure that there is approximately 15 mm / 0.6" of empty space between the housing and the thermal insulation.

Too much heat can cause damage to the limit switch.

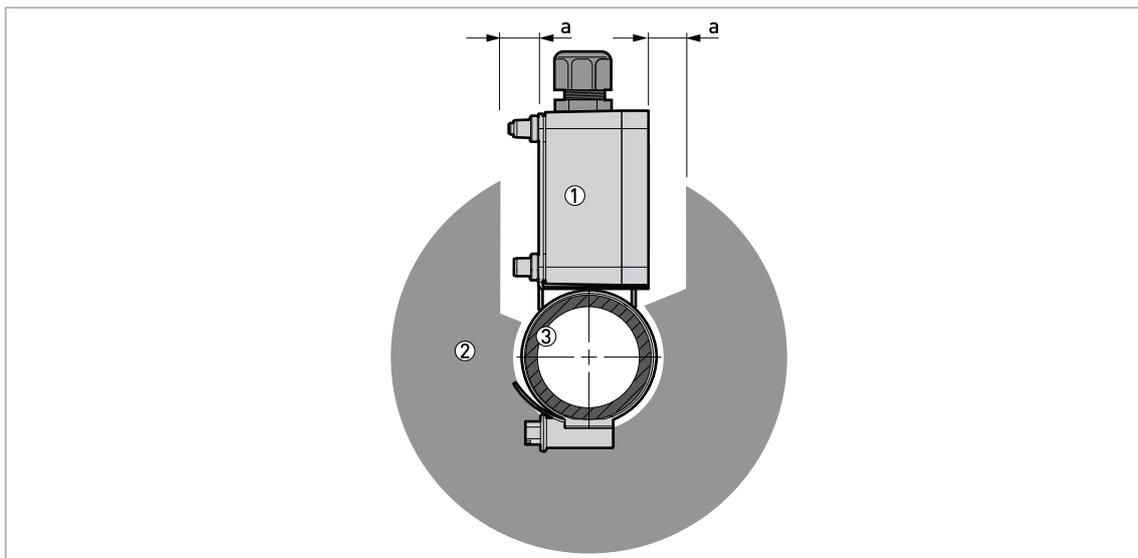


Figure 3-3: Limit switches and thermal insulation for the measuring chamber

- ① Limit switch housing
- ② Thermal insulation around the measuring chamber (cross-section)
- ③ Measuring chamber (cross-section)

Empty space between the limit switch and the thermal insulation for the measuring chamber, $a \geq 15 \text{ mm} / 0.6''$.

4.1 Reed-chain level transmitter

4.1.1 General notes

The reed-chain level transmitter has 4 output options:

- 4...20 mA
- 4...20 mA + HART®
- PROFIBUS PA
- FOUNDATION™ fieldbus

Obey the wiring instructions that follow.

For more data about the reed-chain level transmitter, refer to *LT40 reed-chain level transmitter* on page 10.

Make sure that the current is not more than 5 A or that there is 5 A-rated fuse in the electrical circuit that energizes the device.

4.1.2 Electrical schematics and procedure

4...20 mA and 4...20 mA + HART output modules

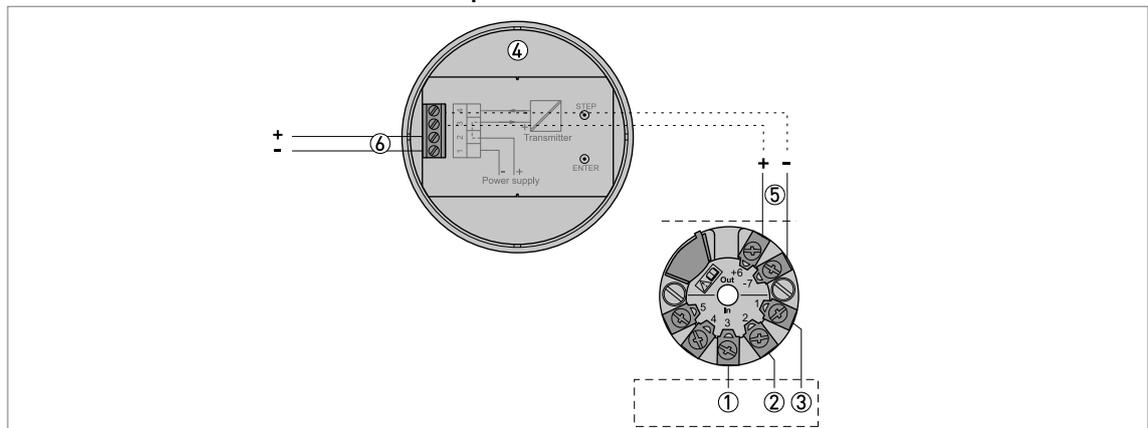


Figure 4-1: Electrical schematic for the 4...20 mA and 4...20 mA + HART output module

- ① Internal wiring - brown wire
- ② Internal wiring - red wire
- ③ Internal wiring - orange wire
- ④ Optional LCD indicator
- ⑤ Power supply terminals +/-, without LCD indicator (DC voltage range: 10...35 V (non-Ex or Ex db) or 10...30 V (Ex ia))
- ⑥ LCD indicator power supply terminals +/- (DC voltage range: 17...35 V)

If the reed-chain level transmitter has the LCD indicator option, then there is a red wire between the positive (+) terminals and a black wire between the negative (-) terminals of the output module and the LCD indicator. Use the +/- terminals on the back the LCD indicator to connect the reed-chain level transmitter to the power supply.

FOUNDATION™ fieldbus / PROFIBUS PA module

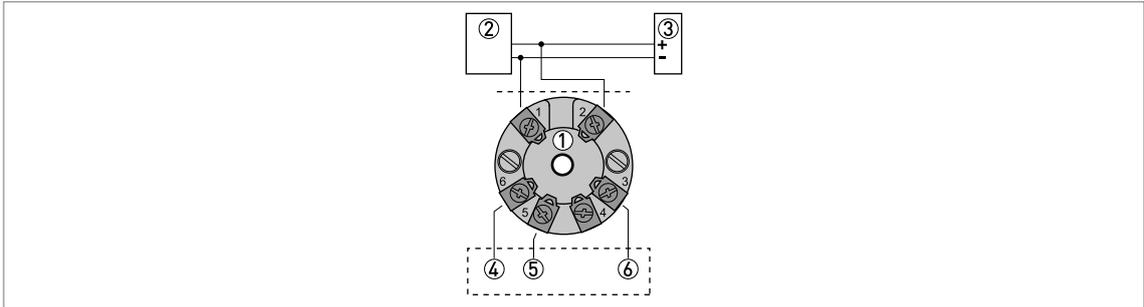


Figure 4-2: Electrical schematic for the FOUNDATION™ fieldbus / PROFIBUS PA module

- ① Bus connection terminals
- ② Segment coupler
- ③ Bus termination
- ④ Internal wiring - orange wire
- ⑤ Internal wiring - red wire
- ⑥ Internal wiring - brown wire

4.2 Limit switches

4.2.1 General notes

There are four limit switch models:

- MS15
- MS15 NAMUR
- MS40
- MS40 NAMUR

Obey the wiring instructions that follow.

For more data, refer to *MS15-series and MS40-series limit switches* on page 15.

4.2.2 Electrical schematics and procedure

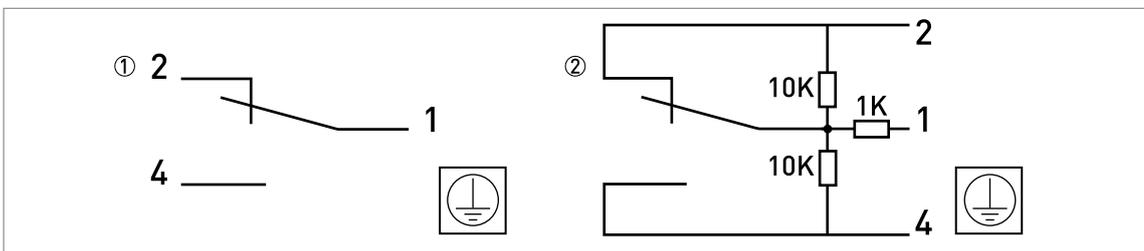
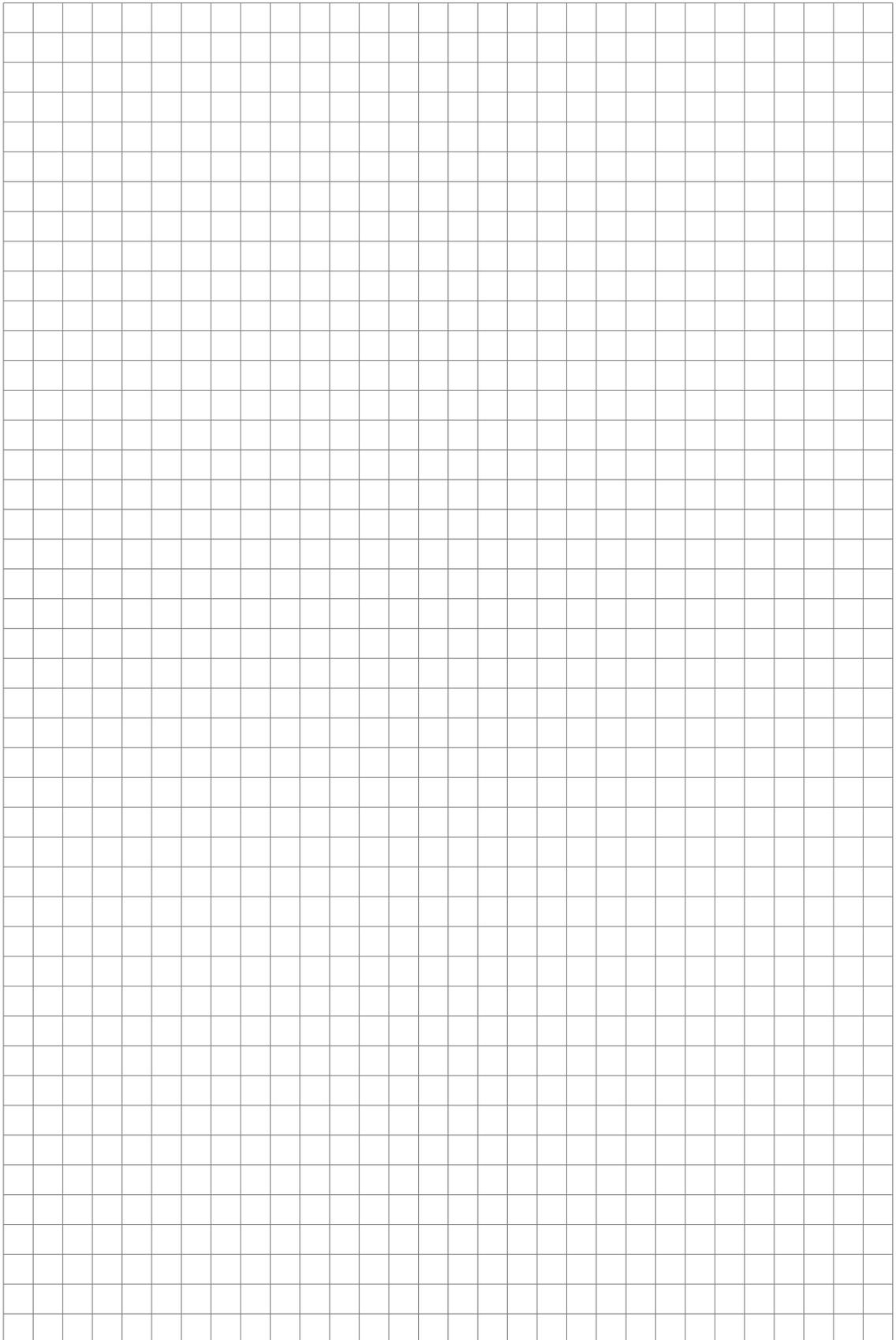


Figure 4-3: Electrical schematics for the MS15-series and MS40-series limit switches

- ① MS15 or MS40 limit switch
- ② MS15 or MS40 limit switch with a NAMUR output

If the limit switch is set to "LOW limit", make sure that it is open when the float is below the switch position. If the limit switch is set to the "HIGH limit", make sure that it is open when the float is above the switching point.



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