



## BM26A-8000 Technical Datasheet

Magnetic level indicator and level transmitter for liquid applications that require redundancy

- Ideal for high-pressure and high-temperature applications
- Two measurement technologies that provide redundancy and increased safety
- For level and interface indication in tanks that are up to 5.5 m / 18 ft high



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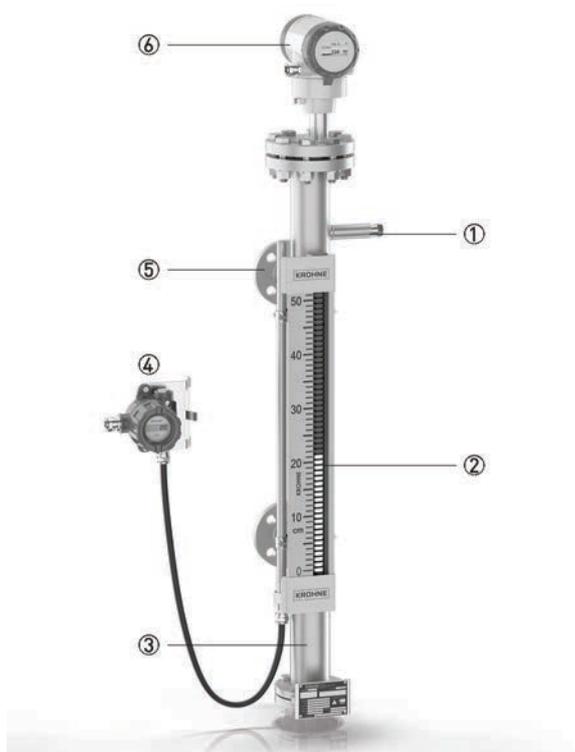
## 1.1 Magnetic level indicator for redundant measurement of liquid

The BM26A-8000 is the best solution for industries that require durable, reliable devices with a redundant measurement solution to monitor the level or interface of liquids in the most severe process conditions.

Level transmitters attached to a primary measuring chamber (BI version) or a secondary measuring chamber (TWIN version) provide a measurement solution to complement the magnetic level indicator.

### 1.1.1 BI version

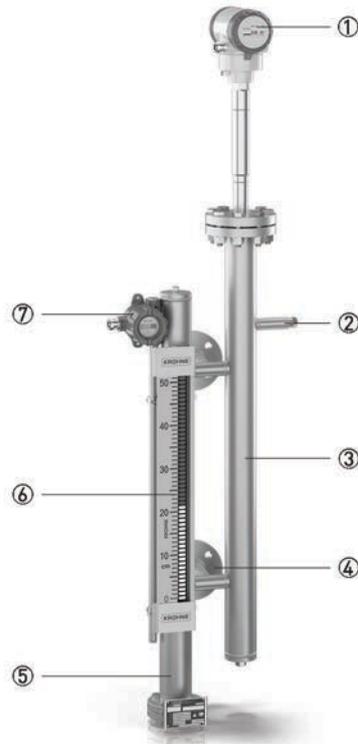
The **BI** version of this device has a single chamber that is divided into two connected compartments. One compartment contains the float of the magnetic level indicator. The other compartment contains the probe of the transmitter attached to the device (OPTIFLEX 7200). It is suitable for liquids that have a density of 620...1200 kg/m<sup>3</sup> / 38.70...74.91 lb/ft<sup>3</sup>, for a temperature range of -70...+400°C / -94...+752°F at a pressure of -1...40 barg / -14.5...580 psig.



- ① Option: vent
- ② 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
- ③ Measuring chamber made of 316/316L (1.4401/1.4404) stainless steel, 304L (1.4307) stainless steel, HASTELLOY® C-276 alloy (2.4819), or INCONEL® nickel-chromium alloy 625 (2.4856)
- ④ Optional reed-chain level transmitter (LT40 C/F)
  - C (compact version): the signal converter is attached to the reed chain, or
  - F (remote version): there is a cable (max. length 25 m / 82 ft) between the signal converter and the reed chain
- ⑤ Process connections - flanged (EN / ASME / JIS)
- ⑥ Redundant level transmitter (OPTIFLEX 7200 guided radar (TDR))

### 1.1.2 TWIN version

The **TWIN** version of this device has two measuring chambers, one chamber that indicates the liquid level with a float and column of magnetic rotating flaps, and second chamber that is used for level or interface measurement with a redundant transmitter (OPTIFLEX 7200, OPTIFLEX 8200, OPTIWAVE 7400 or BW25). It is suitable for liquids that have a density of 370...1200 kg/m<sup>3</sup> / 23.09...74.91 lb/ft<sup>3</sup>, for a temperature range of -196...+400°C / -320.8...+752°F at a pressure of -1...400 barg / -14.5...5801 psig.



- ① Redundant level transmitter (OPTIFLEX 7200 guided radar (TDR), OPTIFLEX 8200 guided radar (TDR), OPTIWAVE 7400 FMCW radar or BW25 displacer-type)
- ② Option: vent
- ③ Secondary measuring chamber for the redundant level transmitter
- ④ Process connections - flanged (EN / ASME / JIS)
- ⑤ Measuring chamber made of 316/316L (1.4401/1.4404) stainless steel, 304L (1.4307) stainless steel, HASTELLOY® C-276 alloy (2.4819), or INCONEL® nickel-chromium alloy 625 (2.4856)
- ⑥ 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
- ⑦ Optional reed-chain level transmitter (LT40 C/F)
  - C (compact version): the signal converter is attached to the reed chain, or
  - F (remote version): there is a cable (max. length 25 m / 82 ft) between the signal converter and the reed chain

### 1.1.3 Highlights

- Combined technology for redundancy
- Rugged, metal components – no maintenance
- Large selection of materials e.g. 316L, 304L, Hastelloy® C276, Inconel® 625
- Highly visible flaps housed in hermetically sealed glass tube (IP68)
- Accuracy: ±2 mm | ±0.08" with a OPTIFLEX or OPTIWAVE level transmitter
- Level or interface indication up to 5.5 m / 18 ft (other dimensions on request)

- Process conditions up to +400°C / +752°F; 400 barg / 5801 psig
- When equipped with LT40 reed-chain level transmitter:
  - 4...20 mA (HART® 7), FOUNDATION™ fieldbus or PROFIBUS PA output
  - Resolution: ±10 mm / ±0.4". Optional: ±5 mm / ±0.2"

### 1.1.4 Industries

- Chemical and Petrochemical
- Oil and Gas
- Power

### 1.1.5 Applications

- Oil
- Water
- Oil and water, and most other liquid-to-liquid interfaces
- Low-pressure and high-pressure separators
- Acids: hydrofluoric, hydrochloric, nitric, sulphuric etc.
- Solvents: acetone, toluene, xylene, naphtha, gas condensate etc.
- Steam condensate boiler
- Feedwater heater
- Boiler drum
- Refined petrochemical liquids - gasoline,
- Ethylene, toluene, xylene and naphtha
- Gas condensate
- Heat transfer fluids: DOWTHERM™
- Therminol and glycol etc.
- Alcohols

## 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:

### BI version - measuring chamber with two compartments

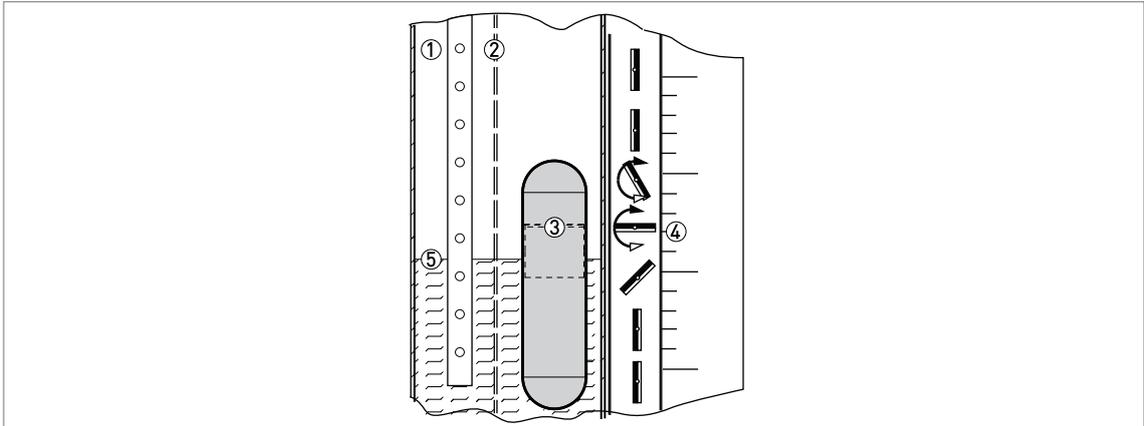


Figure 1-1: Measuring principle - BI version - chamber with two compartments

- ① Probe of the redundant level transmitter (OPTIFLEX 7200 shown in this illustration)
- ② Baffle plate between the two compartments in the measuring chamber
- ③ 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.
- 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
- ⑤ Level of the liquid

### TWIN version - two connected measuring chambers

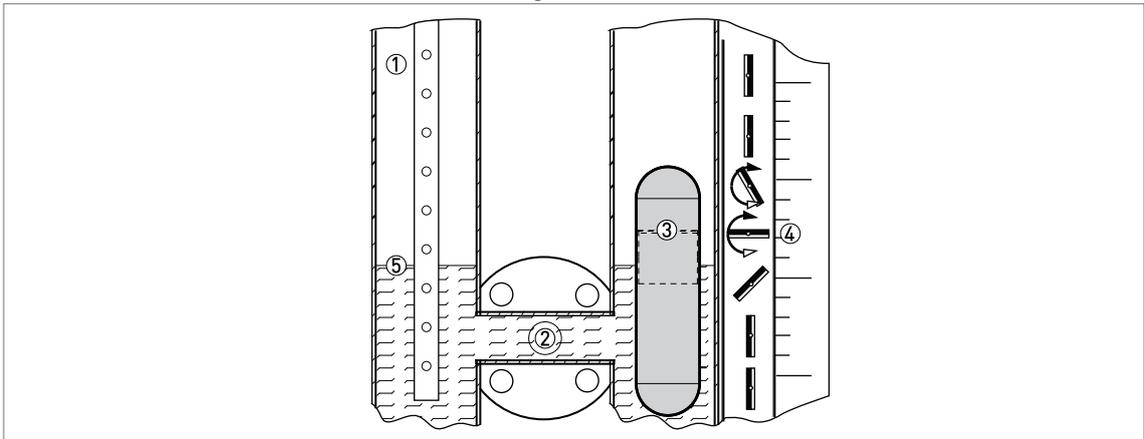


Figure 1-2: Measuring principle - TWIN version - two connected measuring chambers

- ① Probe of the redundant level transmitter (OPTIFLEX 7200 or OPTIFLEX 8200 shown in this illustration)
- ② Connecting tube between the two measuring chambers with process connection
- ③ 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.
- 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
- ⑤ Level of the liquid

*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-8000 magnetic level indicator

BI and TWIN versions: PN40 / Class 300

Version	BI	TWIN
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#### Measuring system

Measuring principle	Magnetic level indicator - one 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. A level transmitter supplies a redundant measurement.	Magnetic level indicator - two bypass chambers (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. A level transmitter supplies a redundant measurement.
Application range	Level indication of liquids in oil & gas and boiler applications	
<b>Measured value</b>		
Primary measured value	Level of the float magnets in the measuring chamber. Redundant measurement of level with a level transmitter.	
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 on one chamber with two connected compartments	Side / side process connections between two chambers
Options	Level measurement	
	Interface level measurement (if there is more than one liquid in the measuring chamber)	
	Zero-line level measurement (level measurement without vertical offset of float magnets in relation to the liquid level)	
	OPTIFLEX 7200 guided-radar (TDR) level transmitter	OPTIFLEX 7200 guided-radar (TDR) level transmitter
		OPTIFLEX 8200 guided-radar (TDR) level transmitter
		OPTIWAVE 7400 FMCW radar level transmitter
		BW25 displacer-type level transmitter
	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	Thermal insulation supplied on request
	Electric heat tracing system	
	Bistable limit switches ②	

Version	BI	TWIN
Measuring range (ML)	0.3...5.5 m / 1...18 ft (longer on request)	
<b>Display and user interface</b>		
Display	Indicator column with magnetically coupled rotating flaps that have two colors: yellow/black; red/white	
	-	Indicator column with magnetically coupled low-temperature index ③
Float failure indication (at the bottom of the indicator column)	Rotating flaps: orange flaps	
	-	Low-temperature index: none
Scale marking options	No scale; m + cm; ft + inches; customized volume units, % (simplified) ④	

### 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	-70...+250°C / -94...+482°F Ex: see supplementary instructions or approval certificates	-196...+400°C / -320.8...+752°F Ex: see supplementary instructions or approval certificates ⑤
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 ⑥	
Chemical properties		
Density	620...1200 kg/m <sup>3</sup> / 38.71...74.91 lb/ft <sup>3</sup> ⑦	370...1200 kg/m <sup>3</sup> / 23.10...74.91 lb/ft <sup>3</sup> ⑦
Minimum difference in density for interface measurement	≥ 200 kg/m <sup>3</sup> / ≥ 12.49 lb/ft <sup>3</sup> 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 (options)	Stainless steel (1.4404 / 316L or 1.4307 / 304L); HASTELLOY® C-276 alloy; INCONEL® nickel-chromium alloy 625
Float (options)	Stainless steel (1.4404 / 316L or 1.4307 / 304L); titanium; HASTELLOY® C-276 alloy (2.4819); INCONEL® nickel-chromium alloy 625 (2.4856)
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 (options)	Stainless steel (1.4404 / 316L or 1.4307 / 304L); HASTELLOY® C-276 alloy (2.4819); INCONEL® nickel-chromium alloy 625 (2.4856)

Version	BI	TWIN
Gasket (options)	Aramid (T ≤ +250°C / +482°F); graphite; 316L/graphite (spiral-wound); PTFE (T ≤ +250°C / +482°F)	
Braid insulation	Ceramic fiber (thermal insulation between the indicator column and the measuring chamber when the process temperature is +200...+400°C / +392...+752°F)	
Anti-icing cover	PLEXIGLAS® (option for glass indicator column tube) - when the liquid temperature is -70...+0°C / -94...+32°F	

### Process connections

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 ⑧
Pressure rating	Class 150 / 300 (welding neck)
Facing type options	RF; FF; LG; SG; LF; SF; LT; ST; LM; SM
Flange, JIS	
Size	25...50
Pressure rating	20K (Type A)
Facing type	RF

### Transmitter connection

Flange, EN	DN80 in PN40 - Type B1	DN50, DN80 in PN40 - Type B1
Flange, ASME	NPS 3 in Class 300 RF ⑧	NPS 2, NPS 3 in Class 300 RF ⑧

### 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, EN	All process connection options
Flange, ASME	All process connection options
Vent options	
Thread	Without; G 1/2...3/4 (female) with plug; 1/2...3/4 NPT (female) with plug
Flange, EN	DN25
Flange, ASME	NPS 1 ⑧

### 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

Version	BI	TWIN
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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].
<b>Explosion protection</b>	
ATEX	II 1/2 G Ex h IIC T6...T* Ga/Gb or II 2 G Ex h IIC T6...T* Gb ⑨
IECEx	Ex h IIC T6...T* Ga/Gb or Ex h IIC T6...T* Gb ⑨
UKEX - pending	II 1/2 G Ex h IIC T6...T* Ga/Gb or II 2 G Ex h IIC T6...T* Gb ⑨
<b>Other standards and approvals</b>	
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
	Option: NACE MR0175 / MR0103 / ISO 15156; ASME B31.3

Table 2-1: PN40 / Class 300 design for BI and TWIN versions: 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 For process temperatures less than +100°C / +212°F
- ④ 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
- ⑤ If the device has a vent or drain with a threaded connection, then the maximum process temperature is +250°C / +482°F
- ⑥ The maximum pressure is related to the type of process connection, pressure rating and the process temperature. For more data about 316-316L and 304L stainless-steel measuring chambers, refer to the "Maximum process pressure: measuring chamber" section in this chapter.
- ⑦ Higher density on request
- ⑧ NPS = Nominal Pipe Size. For more data about the dimensions of flanges, refer to the ASME B16.5 standard.
- ⑨ If the device has a PTFE or Aramid gasket, then T\*= T2. For all other versions, T\*= T1.

## BI and TWIN versions: PN100 / Class 600

	BI	TWIN
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## Measuring system

Measuring principle	Magnetic level indicator - one bypass chamber (principle of communicating tubes). A float in the measuring chamber (Ø88.9 mm / NPS 3 pipe) is magnetically coupled to a mechanical level indicator. A level transmitter supplies a redundant measurement.	Magnetic level indicator - two bypass chambers (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. A level transmitter supplies a redundant measurement.
Application range	Level indication of liquids in oil & gas and boiler applications	
<b>Measured value</b>		
Primary measured value	Level of the float magnets in the measuring chamber. Redundant measurement of level with a level transmitter.	
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 on one chamber with two connected compartments	Side / side process connections between two chambers
Options	Level measurement	
	Interface level measurement (if there is more than one liquid in the measuring chamber)	
	Zero-line level measurement (level measurement without vertical offset of float magnets in relation to the liquid level)	
	OPTIFLEX 7200 guided-radar (TDR) level transmitter	OPTIFLEX 7200 guided-radar (TDR) level transmitter
		OPTIFLEX 8200 guided-radar (TDR) level transmitter
		OPTIWAVE 7400 FMCW radar level transmitter
		BW25 displacer-type level transmitter
	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	
	Electric heat tracing system	
	Bistable limit switches ②	
Measuring range (ML)	0.3...5.5 m / 1...18 ft (longer on request)	
<b>Display and user interface</b>		
Display	Indicator column with magnetically coupled rotating flaps that have two colors: yellow/black; red/white	
	-	Indicator column with magnetically coupled low-temperature index ③
Float failure indication (at the bottom of the indicator column)	Rotating flaps: orange flaps	
	-	Low-temperature index: none
Scale marking options	No scale; m + cm; ft + inches; customized volume units, % (simplified) ④	

	BI	TWIN
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### 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	-70...+250°C / -94...+482°F ⑤	-196...+400°C / -320.8...+752°F ⑤
	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...100 barg / -14.5...1450 psig ⑥	
Chemical properties		
Density	740...1200 kg/m <sup>3</sup> / 46.20...74.91 lb/ft <sup>3</sup> ⑦	500...1200 kg/m <sup>3</sup> / 31.21...74.91 lb/ft <sup>3</sup> ⑦
Minimum difference in density for interface measurement	≥ 200 kg/m <sup>3</sup> / ≥ 12.49 lb/ft <sup>3</sup> 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 (options)	Stainless steel (1.4404 / 316L or 1.4307 / 304L); HASTELLOY® C-276 alloy; INCONEL® nickel-chromium alloy 625	
Float (options)	Titanium	Stainless steel (1.4404 / 316L or 1.4307 / 304L); titanium; HASTELLOY® C-276 alloy (2.4819); INCONEL® nickel-chromium alloy 625 (2.4856)
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 (options)	Stainless steel (1.4404 / 316L or 1.4307 / 304L); HASTELLOY® C-276 alloy (2.4819); INCONEL® nickel-chromium alloy 625 (2.4856)	
Gasket (options)	Aramid (T ≤ +250°C / +482°F); graphite; 316L/graphite (spiral-wound); ring joint ⑧	
Braid insulation	Ceramic fiber (thermal insulation between the indicator column and the measuring chamber when the process temperature is +200...+400°C / +392...+752°F)	
Anti-icing cover	PLEXIGLAS® (option for glass indicator column tube) - when the liquid temperature is -70...+0°C / -94...+32°F	

	BI	TWIN
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### Process connections

Flange, EN	
Size	DN15...50
Pressure rating	PN100 (welding neck)
Facing type options	B2; C; D; E; F
Flange, ASME	
Size	NPS 1/2...2 ⑨
Pressure rating	Class 600 (welding neck)
Facing type options	RF; RJ; LG; SG; LF; SF; LT; ST; LM; SM

### Transmitter connection

Flange, EN	DN80 in PN100 - Type B2	DN50, DN80 in PN100 - Type B2
Flange, ASME	NPS 3 in Class 600 RF ⑨	NPS 2, NPS 3 in Class 600 RF ⑨

### Drain and vent connections

Drain options		
Thread	Without; 3/8...3/4 NPT (female) with plug	
Flange, EN	DN15...50	DN25
Flange, ASME	NPS 1/2...2 ⑨	NPS 1 ⑨
Vent options		
Thread	Without; 3/8...3/4 NPT (female) with plug	
Flange, EN	DN25	
Flange, ASME	NPS 1 ⑨	

### 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).

	BI	TWIN
<b>Explosion protection</b>		
ATEX	II 1/2 G Ex h IIC T6...T* Ga/Gb or II 2 G Ex h IIC T6...T* Gb ①⑩	
IECEX	Ex h IIC T6...T* Ga/Gb or Ex h IIC T6...T* Gb ①⑩	
UKEX - pending	II 1/2 G Ex h IIC T6...T* Ga/Gb or II 2 G Ex h IIC T6...T* Gb ①⑩	
<b>Other standards and approvals</b>		
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	
	Option: NACE MR0175 / MR0103 / ISO 15156; ASME B31.3	

Table 2-2: PN100/ Class 600 design for BI and TWIN versions: 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 For process temperatures less than +100°C / +212°F
- ④ 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
- ⑤ If the device has a vent or drain with a threaded connection, then the maximum process temperature is +250°C / +482°F
- ⑥ The maximum pressure is related to the type of process connection, pressure rating and the process temperature. For more data about 316-316L and 304L stainless-steel measuring chambers, refer to the "Maximum process pressure: measuring chamber" section in this chapter.
- ⑦ Higher density on request
- ⑧ The ring joint is made of the same material as the measuring chamber
- ⑨ NPS = Nominal Pipe Size. For more data about the dimensions of flanges, refer to the ASME B16.5 standard.
- ①⑩ If the device has a PTFE or Aramid gasket, then T\*= T2. For all other versions, T\*= T1.

### TWIN version: PN250 / Class 1500 and PN400 / Class 2500

	PN250 / Class 1500	PN400 / Class 2500

### Measuring system

Measuring principle	Magnetic level indicator - two bypass chambers (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. A level transmitter supplies a redundant measurement.
Application range	Level indication of liquids in oil & gas and boiler applications
<b>Measured value</b>	
Primary measured value	Level of the float magnets in the measuring chamber. Redundant measurement of level with a level transmitter.
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 between two chambers
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	PN250 / Class 1500	PN400 / Class 2500
Options	Level measurement	
	Interface level measurement (if there is more than one liquid in the measuring chamber)	
	Zero-line level measurement (level measurement without vertical offset of float magnets in relation to the liquid level)	
	OPTIFLEX 7200 guided-radar (TDR) level transmitter	
	OPTIFLEX 8200 guided-radar (TDR) level transmitter	
	OPTIWAVE 7400 FMCW radar level transmitter	
	BW25 displacer-type level transmitter	
	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	
	Electric heat tracing system	
Bistable limit switches ②		
Measuring range (ML)	0.3...5.5 m / 1...18 ft (longer on request)	
<b>Display and user interface</b>		
Display	Indicator column with magnetically coupled rotating flaps that have two colors: yellow/black; red/white	
	Indicator column with magnetically coupled low-temperature index ③	
Float failure indication (at the bottom of the indicator column)	Rotating flaps: orange flaps	
	Low-temperature index: none	
Scale marking options	No scale; m + cm; ft + inches; customized volume units, % (simplified) ④	

### 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...+400°C / -320.8...+752°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...250 barg / 14.5...3625 psig ⑤	-1...400 barg / -14.5...5802 psig ⑥
Chemical properties		
Density	660...1200 kg/m <sup>3</sup> / 41.20...74.91 lb/ft <sup>3</sup> ⑦	740...1200 kg/m <sup>3</sup> / 46.20...74.91 lb/ft <sup>3</sup> ⑦
Viscosity	≤ 500 mPa·s / ≤ 500 cP	

	PN250 / Class 1500	PN400 / Class 2500
<b>Other conditions</b>		
Ingress protection (IEC 60529)	Indicator column: IP66 / IP68 (0.15 barg)	

### Materials

Measuring chamber (options)	Stainless steel (1.4404 / 316L); HASTELLOY® C-276 alloy (2.4819); INCONEL® nickel-chromium alloy 625 (2.4856)
Float (options)	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 (options)	Stainless steel (1.4404 / 316L); HASTELLOY® C-276 alloy (2.4819); INCONEL® nickel-chromium alloy 625 (2.4856)
Gasket (options)	Ring joint ⑧
Braid insulation	Ceramic fiber (thermal insulation between the indicator column and the measuring chamber when the process temperature is +200...+400°C / -392...+752°F)
Anti-icing cover	PLEXIGLAS® (option for glass indicator column tube) - when the liquid temperature is -70...+0°C / -94...+32°F

### Process connections

<b>Flange, EN</b>		
Size	DN15...50	
Pressure rating	PN160 or 250 (welding neck)	PN400 (welding neck)
Facing type options	B2; C; D; E; F	C
<b>Flange, ASME</b>		
Size	NPS 1/2...2 ⑨	
Pressure rating	Class 1500 (welding neck)	Class 2500 (welding neck)
Facing type options	RJ; LG; SG; LF; SF; LT; ST; LM; SM	RJ

### Transmitter connection

<b>Flange, ASME</b>		
Size	NPS 2 or NPS 3 ⑨	NPS 2 or NPS 3 ⑨
Pressure rating	Class 1500 (welding neck)	Class 2500 (welding neck)
Facing type options	LG; SG; LF; SF; LT; ST; LM; SM	RJ

### Drain and vent connections

<b>Drain options</b>		
Thread	Without; 3/8...3/4 NPT (female) with plug	
Flange, EN	DN25	
Flange, ASME	NPS 1 ⑨	NPS 3/4...1 ⑨
<b>Vent options</b>		
Thread	Without; 3/8...3/4 NPT (female) with plug	
Flange, EN	DN25	
Flange, ASME	NPS 3/4...1 ⑨	

	PN250 / Class 1500	PN400 / Class 2500
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### 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].
<b>Explosion protection</b>	
ATEX	II 1/2 G Ex h IIC T6...T1 Ga/Gb or II 2 G Ex h IIC T6...T1 Gb
IECEX	Ex h IIC T6...T1 Ga/Gb or Ex h IIC T6...T1 Gb
UKEX - pending	II 1/2 G Ex h IIC T6...T1 Ga/Gb or II 2 G Ex h IIC T6...T1 Gb
<b>Other standards and approvals</b>	
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
	Option: NACE MR0175 / MR0103 / ISO 15156; ASME B31.3

Table 2-3: PN250 / Class 1500 and PN400 / Class 2500 designs for TWIN version: 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 For process temperatures less than +100°C / +212°F
- ④ 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
- ⑤ The maximum pressure is related to the type of process connection, pressure rating and the process temperature. For more data about 316-316L and 304L stainless-steel measuring chambers, refer to the "Maximum process pressure: measuring chamber" section in this chapter.
- ⑥ 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.
- ⑦ Higher density on request
- ⑧ The ring joint is made of the same material as the measuring chamber
- ⑨ NPS = Nominal Pipe Size. For more data about the dimensions of flanges, refer to the ASME B16.5 standard.

## 2.1.2 Redundant level transmitter (OPTIFLEX 7200, OPTIFLEX 8200, OPTIWAVE 7400 or BW25)

For technical data about redundant level transmitters, refer to the technical data sheet for the related level transmitter option.

### 2.1.3 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)
<b>Display and user interface</b>	
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: $\pm 10$ mm / 0.4" (when density is constant)
	Option: $\pm 5$ mm / 0.2" (when density is constant)

##### Operating conditions

<b>Temperature</b>	
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
<b>Pressure</b>	
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 2-4: 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  $\pm 10$  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: $\pm 10 \text{ mm} / 0.4''$ (when density is constant)
	Option: $\pm 5 \text{ mm} / 0.2''$ (when density is constant)

### Operating conditions

Temperature	
Ambient temperature	$-40\dots+80^\circ\text{C} / -40\dots+176^\circ\text{F}$ 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	$-40\dots+80^\circ\text{C} / -40\dots+176^\circ\text{F}$
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).	
<b>Explosion protection</b>		
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	
<b>Other standards and approvals</b>		
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 2-5: 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.

### 2.1.4 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

<b>Temperature</b>	
Ambient temperature	-40...+80°C / -40...+176°F ①

	MS15 series	MS40 series
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	
<b>Pressure</b>		
Operating pressure	Atmospheric pressure Max. height above mean sea level: 2000 m / 6560 ft	
<b>Other conditions</b>		
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)	
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 <sub>max</sub> = 13 V DC	
EN 60947-5-1 electrical data (MS15 and MS40 only)	Overvoltage category II	
	Rated insulation voltage, U <sub>i</sub> : 250 V AC or 250 V DC	
	Rated impulse withstand voltage, U <sub>imp</sub> : 2.5 kV	
	Rated conventional thermal current, I <sub>th</sub> : 1 A	
Utilization category (EN 60947-5-1) with current and voltage ratings	Pollution degree: 4	
	AC13: I <sub>e</sub> = 0.5 A; U <sub>max</sub> = 60 V AC	
	AC13: I <sub>e</sub> = 0.25 A; U <sub>max</sub> = 250 V AC	
	DC12: I <sub>e</sub> = 1 A; U <sub>max</sub> = 60 V DC DC13: I <sub>e</sub> = 0.5 A; U <sub>max</sub> = 60 V DC	
Short-circuit protection device	0.25 A fuse, type 1500 A interrupting rating (IEC 60127-2/1) 1 A fuse, application category gG (IEC 60269) or type 1500 A interrupting rating (IEC 60127-2/1)	
Intrinsically safe circuit data	Refer to supplementary instructions or approval certificates	
Cable entry	M20 × 1.5; 1/2 NPT	M16 × 1.5

	MS15 series	MS40 series
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).	
<b>Explosion protection</b>		
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
<b>Other standards and approvals</b>		
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 2-6: 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 PN40 - Class 300

#### BI version / side - side process connections

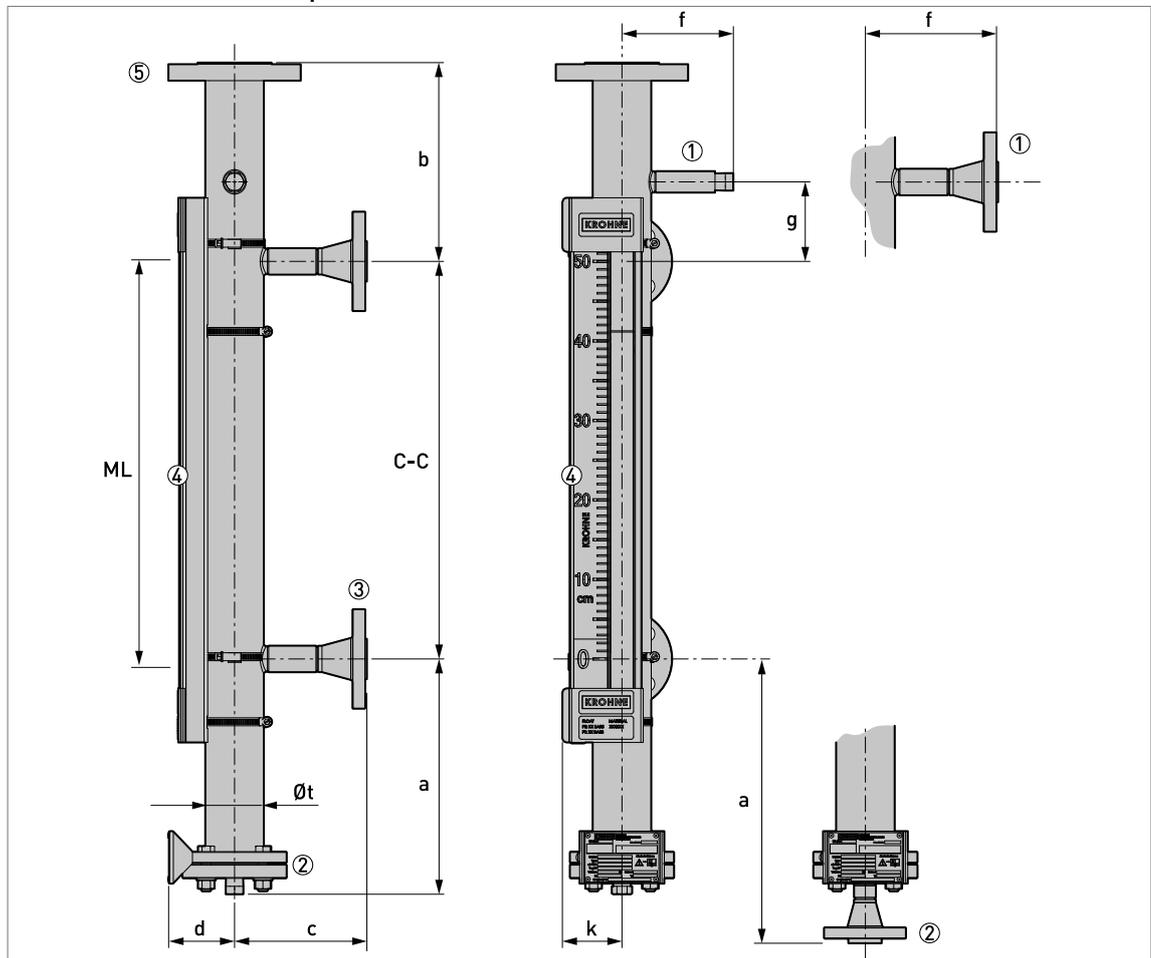


Figure 2-1: PN40 / Class 300 / BI version / side - side process connections

- ① Optional vent with 1/2...3/4 NPT or G 1/2...3/4 threaded connection (with plug), or DN25 / NPS 1 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 connection)
- ④ Level indicator column with optional scale (mm, inch, % or volume)
- ⑤ Top flange (DN80 PN40 or NPS 3 Class 300) for level transmitter option

- $a$  = 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 "FF" or "RF",  $c + 0 \text{ mm} / 0''$ . 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 <sup>3</sup> ]	Dimensions [mm]								
	a	b	C-C (ML)	c	d	f	g	k	Øt
620...800	520 ①	250	300... 5500 ②	165	82 ③	139 ④	100 ⑤	74	73.03
800...950	335 ⑥								
950...1200	335 ⑥								

Table 2-7: PN40 / Class 300 - BI version (side - side process connections): general dimensions in mm

- ① Drain options are available. NPT or G connection (female) + plug: 520 mm. Flange, DN15...25 or NPS 1/2...1: 574 mm. Flange, DN40...50 or NPS 1 1/2...2: 649 mm.
- ② This value agrees with "ML" and the "C-C" dimension given in the customer order
- ③ If the indicator column has the PLEXIGLAS® anti-icing cover option, then d = 98 mm (anti-icing cover). If indicator column has a low-temperature index and T < +100°C, then d = 120 mm (PLEXIGLAS® cover).
- ④ If an NPT or G connection. Flange, DN25 or NPS 1: 165 mm.
- ⑤ Vent options are available. NPT or G connection (female) + plug: 100 mm. Flange, DN25 or NPS 1: 165 mm.
- ⑥ Drain options are available. NPT or G connection (female) + plug: 335 mm. Flange, DN15...25 or NPS 1/2...1: 389 mm. Flange, DN40...50 or NPS 1 1/2...2: 464 mm.

Liquid density [lb/ft <sup>3</sup> ]	Dimensions [inches]								
	a	b	C-C (ML)	c	d	f	g	k	Øt
38.70...349.94	20.47 ①	9.84	11.8... 216.5 ②	6.50	3.2 ③	5.47 ④	3.94 ⑤	2.9	2.9
49.94...59.30	13.19 ⑥								
59.30...74.91	13.19 ⑥								

Table 2-8: PN40 / Class 300 - BI version (side - side process connections): general dimensions in inches

- ① Drain options are available. NPT or G connection (female) + plug: 20.47". Flange, DN15...25 or NPS 1/2...1: 22.60". Flange, DN40...50 or NPS 1 1/2...2: 25.55".
- ② This value agrees with "ML" and the "C-C" dimension given in the customer order
- ③ If the indicator column has the PLEXIGLAS® anti-icing cover option, then d = 3.9" (anti-icing cover). If indicator column has a low-temperature index and T < +212°F, then d = 4.7" (PLEXIGLAS® cover).
- ④ If an NPT or G connection. Flange, DN25 or NPS 1: 6.54".
- ⑤ Vent options are available. NPT or G connection (female) + plug: 3.94". Flange, DN25 or NPS 1: 6.49".
- ⑥ Drain options are available. NPT or G connection (female) + plug: 13.19". Flange, DN15...25 or NPS 1/2...1: 15.31". Flange, DN40...50 or NPS 1 1/2...2: 18.27".

TWIN version / side - side process connections

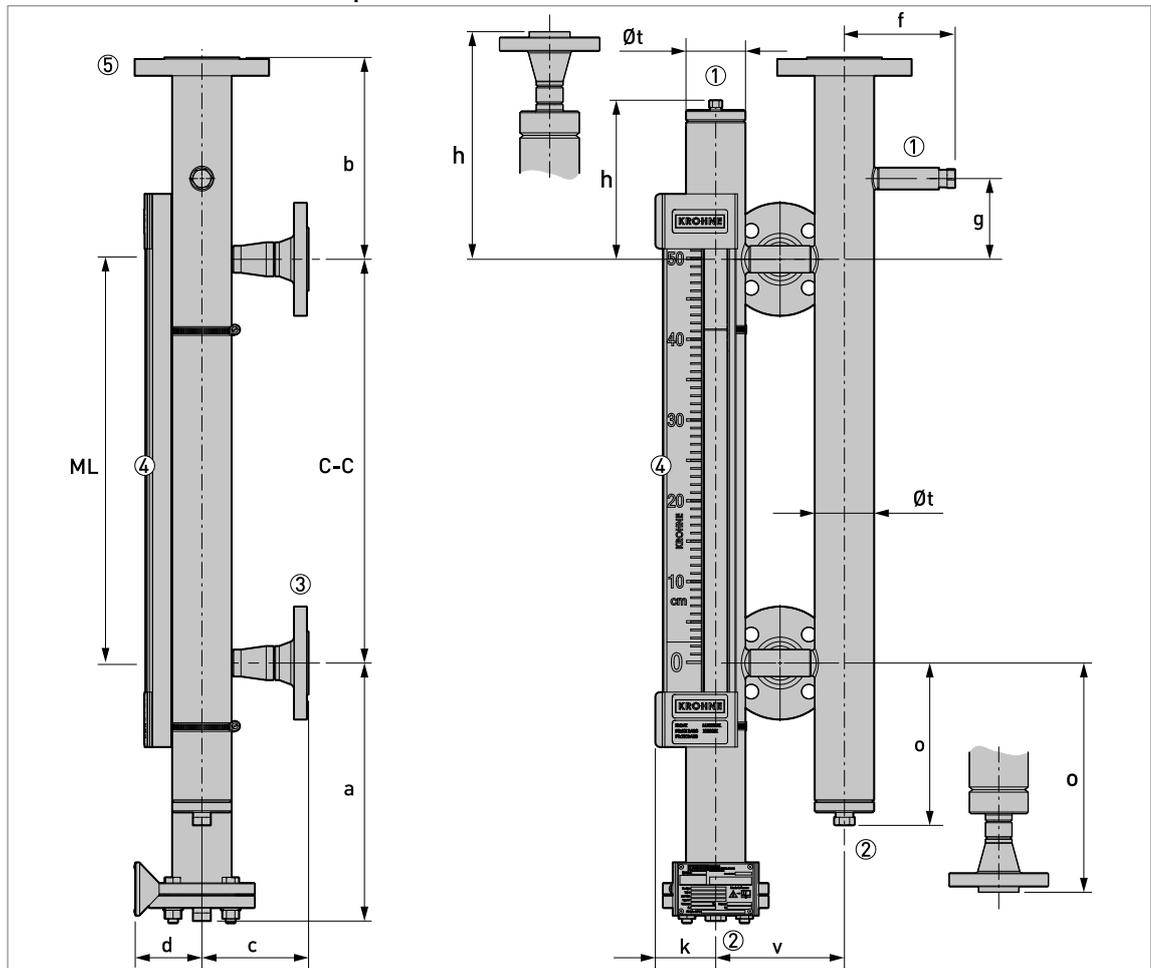


Figure 2-2: PN40 / Class 300 / TWIN version / side - side process connections

- ① Optional vent with 1/2...3/4 NPT or G 1/2...3/4 threaded connection (with plug), or DN25 / NPS 1 flange
- ② Optional drain with 3/8...3/4 NPT or G 3/8...3/4 threaded connection (with plug), or DN25 / NPS 1 flange
- ③ Process connection (flange connection)
- ④ Level indicator column with optional scale (mm, inch, % or volume)
- ⑤ Top flange (DN50 / DN80 PN40 or NPS 2 / NPS 3 Class 300) for level transmitter option

- *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 "FF" or "RF",  $c + 0 \text{ mm} / 0''$ . 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 <sup>3</sup> ]	Dimensions [mm]											
	a	b	C-C (ML)	c	d	f	g	h	k	o	Øt	v
370...500	520 ①	340	300... 5500 ②	③	82 ④	136 ⑤	100	185 ⑥	74	185 ⑥	73.03	158
500...600	335 ⑦											
600...800	335 ⑦											
800...1200	335 ⑦											

Table 2-9: PN40 / Class 300 - TWIN version (side - side process connections): general dimensions in mm

- ① Drain options are available. NPT or G connection (female) + plug: 520 mm. Flange, DN25 or NPS 1: 575 mm.  
 ② This value agrees with "ML" and the "C-C" dimension given in the customer order  
 ③ The length, c, is related to flange size. DN15: 127 mm, DN20: 129 mm, DN25: 165 mm, DN40: 147 mm, DN50: 162 mm, NPS 1/2 Class 150: 137 mm, NPS 3/4 Class 150: 142 mm, NPS 1 Class 150: 165 mm, NPS 1 1/2 Class 150: 164 mm, NPS 2 Class 150: 178 mm, NPS 1/2 Class 300: 142 mm, NPS 3/4 Class 300: 147 mm, NPS 1 Class 300: 165 mm, NPS 1 1/2 Class 300: 171 mm, NPS 2 Class 300: 184 mm.  
 ④ If the indicator column has the PLEXIGLAS® anti-icing cover option, then d = 98 mm (anti-icing cover). If indicator column has a low-temperature index and T < +100°C, then d = 120 mm (PLEXIGLAS® cover).  
 ⑤ Vent options are available. NPT or G connection (female) + plug: 136 mm. Flange, DN25 or NPS 1: 165 mm.  
 ⑥ Drain options are available. G connection (female) + plug: 193 mm. NPT connection (female) + plug: 195 mm. Flange, DN25 or NPS 1: 271 mm.  
 ⑦ Drain options are available. NPT or G connection (female) + plug: 335 mm. Flange, DN25 or NPS 1: 390 mm.

Liquid density [lb/ft <sup>3</sup> ]	Dimensions [inches]											
	a	b	C-C (ML)	c	d	f	g	h	k	o	Øt	v
23.09...31.21	20.47 ①	13.39	11.8... 216.5 ②	③	3.2 ④	5.35 ⑤	3.94	7.28 ⑥	2.91	7.28 ⑥	2.9	6.22
31.21...37.45	13.19 ⑦											
37.45...49.94	13.19 ⑦											
49.94...74.91	13.19 ⑦											

Table 2-10: PN40 / Class 300 - TWIN version (side - side process connections): general dimensions in inches

- ① Drain options are available. NPT or G connection (female) + plug: 20.47". Flange, DN25 or NPS 1: 22.64".  
 ② This value agrees with "ML" and the "C-C" dimension given in the customer order  
 ③ The length, c, is related to flange size. DN15: 5.00", DN20: 5.08", DN25: 6.50", DN40: 5.79", DN50: 6.38", NPS 1/2 Class 150: 5.39", NPS 3/4 Class 150: 5.59", NPS 1 Class 150: 6.50", NPS 1 1/2 Class 150: 6.44", NPS 2 Class 150: 7.01", NPS 1/2 Class 300: 5.59", NPS 3/4 Class 300: 5.79", NPS 1 Class 300: 6.50", NPS 1 1/2 Class 300: 6.73", NPS 2 Class 300: 7.24".  
 ④ If the indicator column has the PLEXIGLAS® anti-icing cover option, then d = 3.9" (anti-icing cover). If indicator column has a low-temperature index and T < +212°F, then d = 4.7" (PLEXIGLAS® cover).  
 ⑤ Vent options are available. NPT or G connection (female) + plug: 5.35". Flange, DN25 or NPS 1: 6.50".  
 ⑥ Drain options are available. G connection (female) + plug: 7.60". NPT connection (female) + plug: 7.68". Flange, DN25 or NPS 1: 10.67".  
 ⑦ Drain options are available. NPT or G connection (female) + plug: 13.19". Flange, DN25 or NPS 1: 15.35".

## 2.2.2 PN100 - Class 600

## BI version / side - side process connections

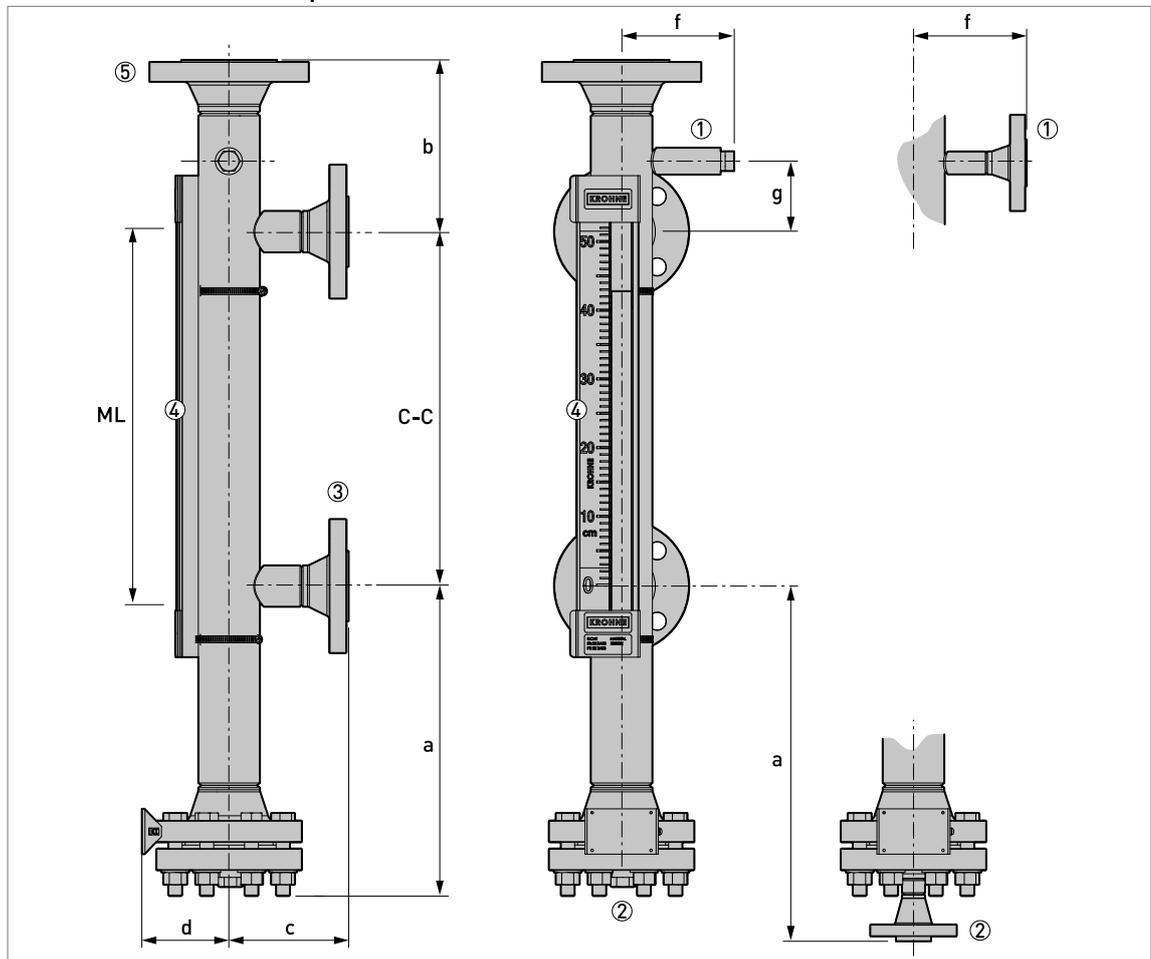


Figure 2-3: PN100 / Class 600 / BI version / side - side process connections

- ① Optional vent with 1/2...3/4 NPT or G 1/2...3/4 threaded connection (with plug), or DN25 / NPS 1 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 connection)
- ④ Level indicator column with optional scale (mm, inch, % or volume)
- ⑤ Top flange (DN80 PN100 or NPS 3 Class 600) for level transmitter option

- *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

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

Other dimensions are available on request.

Dimensions [mm]							
a	b	C-C (ML)	c	d	f	g	Øt
450 ①	250	300... 5500 ②	③	128	135 ④	100 ⑤	88.9

Table 2-11: PN100 / Class 600 - BI version (side - side process connections): general dimensions in mm

- ① Drain options are available. Flange, DN15...25 or NPS 1/2...1: 520 mm. Flange, DN40...50 or NPS 1 1/2...2: 585 mm.  
 ② This value agrees with "ML" and the "C-C" dimension given in the customer order  
 ③ The length, c, is related to flange size. DN15: 149 mm, DN20: 152 mm, DN25: 162 mm, DN40: 166 mm, DN50: 172 mm, NPS 1/2: 163 mm, NPS 3/4: 168 mm, NPS 1: 173 mm, NPS 1 1/2: 181 mm, NPS 2: 184 mm.  
 ④ If an NPT connection without a plug (with a plug: 150 mm). Flange DN20: 152 mm, DN25: 162 mm, NPS 3/4: 168 mm, NPS 1: 173 mm.  
 ⑤ Vent options are available. NPT connection (female) + plug: 100 mm.

Dimensions [inches]							
a	b	C-C (ML)	c	d	f	g	Øt
17.71 ①	9.84	11.8... 216.5 ②	③	5.0	5.31 ④	3.94 ⑤	3.5

Table 2-12: PN100 / Class 600 - BI version (side - side process connections): general dimensions in inches

- ① Drain options are available. Flange, DN15...25 or NPS 1/2...1: 20.47". Flange, DN40...50 or NPS 1 1/2...2: 23.03".  
 ② This value agrees with "ML" and the "C-C" dimension given in the customer order  
 ③ The length, c, is related to flange size. DN15: 5.87", DN20: 5.98", DN25: 6.37", DN40: 6.54", DN50: 6.77", NPS 1/2: 6.42", NPS 3/4: 6.61", NPS 1: 6.81", NPS 1 1/2: 7.13", NPS 2: 7.24".  
 ④ If an NPT connection without a plug (with a plug: 5.91"). Flange DN20: 5.98", DN25: 6.38", NPS 3/4: 6.61", NPS 1: 6.81".  
 ⑤ Vent options are available. NPT connection (female) + plug: 3.94".

## TWIN version / side - side process connections

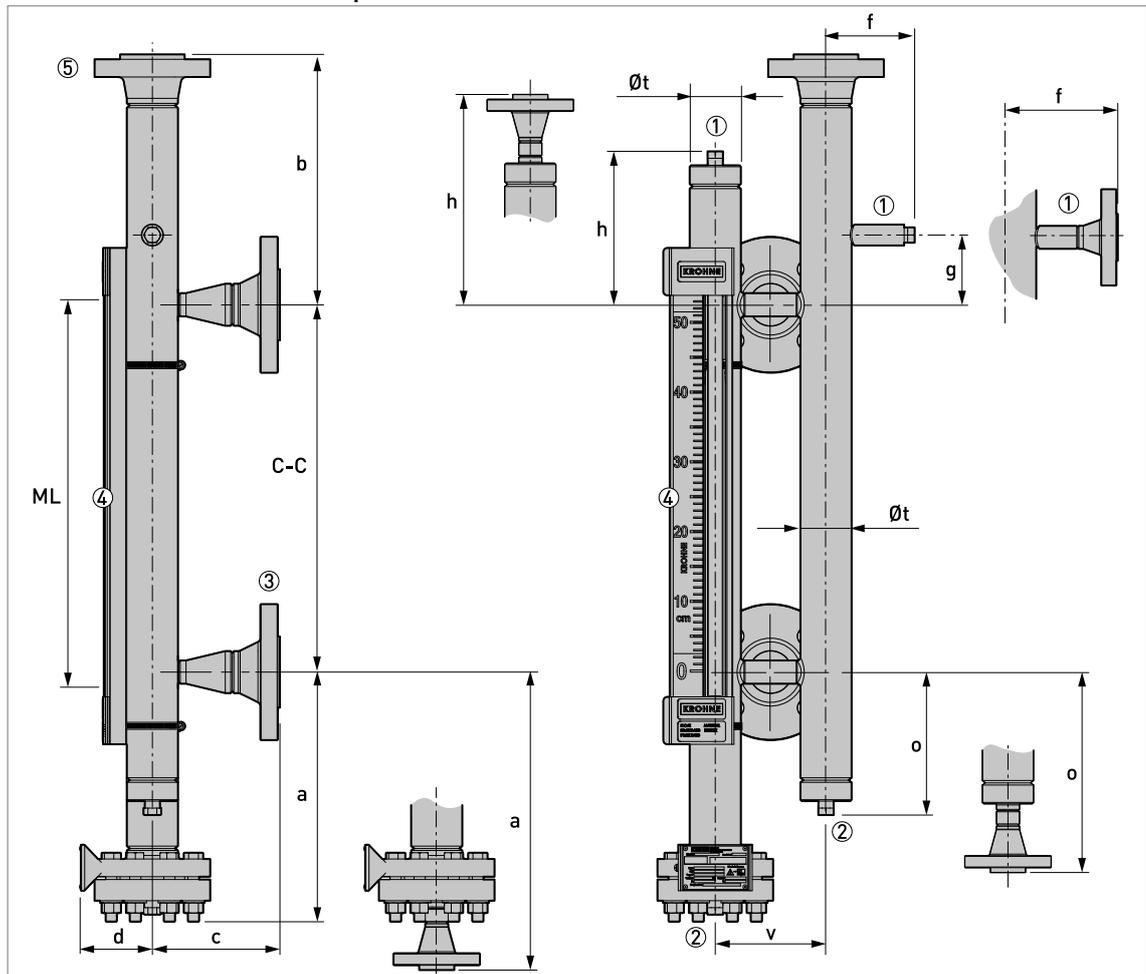


Figure 2-4: PN100 / Class 600 / TWIN version / side - side process connections

- ① Optional vent with 1/2...3/4 NPT threaded connection (with plug), or DN25 / NPS 1 flange
- ② Optional drain with 3/8...3/4 NPT threaded connection (with plug), or DN25 / NPS 1 flange
- ③ Process connection (flange connection)
- ④ Level indicator column with optional scale (mm, inch, % or volume)
- ⑤ Top flange (DN50 / DN80 PN100 or NPS 2 / NPS 3 Class 600) for level transmitter option

- $a$  = 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

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

Other dimensions are available on request.

Liquid density [kg/m <sup>3</sup> ]	Dimensions [mm]										
	a	b	C-C (ML)	c	d	f	g	h	o	Øt	v
500...580	470 ①	340	300... 5500 ②	③	103 ④	⑤	100	⑥	185 ⑦	73.03	247
580...850	400 ⑧										
850...1200	400 ⑧										

Table 2-13: PN100 / Class 600 - TWIN (side - side process connections): general dimensions in mm

- ① Drain options are available. Flange, DN25 or NPS 1: 510 mm.  
 ② This value agrees with "ML" and the "C-C" dimension given in the customer order  
 ③ The length, c, is related to flange size. DN15: 134 mm, DN20: 137 mm, DN25: 162 mm, DN40: 164 mm, DN50: 182 mm, NPS 1/2: 148 mm, NPS 3/4: 153 mm, NPS 1: 162 mm, NPS 1 1/2: 179 mm, NPS 2: 194 mm.  
 ④ If indicator column has a low-temperature index and T < +100°C, then d = 120 mm (PLEXIGLAS® cover).  
 ⑤ Vent options are available. NPT connection (female) + plug: 126 mm. Flange, DN20, DN25, NPS 3/4 or NPS 1: 165 mm.  
 ⑥ Vent options are available. NPT connection (female) + plug: 200 mm. Flange, DN25 or NPS 1: 300 mm.  
 ⑦ Drain options are available. NPT connection (female) + plug: 193 mm. Flange, DN25 and NPS 1: 285 mm.  
 ⑧ Drain options are available. Flange, DN25 or NPS 1: 440 mm.

Liquid density [lb/ft <sup>3</sup> ]	Dimensions [inches]										
	a	b	C-C (ML)	c	d	f	g	h	o	Øt	v
31.21...36.20	18.50 ①	13.39	11.8... 216.5 ②	③	4.1 ④	⑤	3.94	⑥	7.28 ⑦	2.9	9.72
36.20...53.06	15.75 ⑧										
53.06...74.91	15.75 ⑧										

Table 2-14: PN100 / Class 600 - TWIN (side - side process connections): general dimensions in inches

- ① Drain options are available. Flange, DN25 or NPS 1: 20.08".  
 ② This value agrees with "ML" and the "C-C" dimension given in the customer order  
 ③ The length, c, is related to flange size. DN15: 5.28", DN20: 5.39", DN25: 6.38", DN40: 6.46", DN50: 7.17", NPS 1/2: 5.83", NPS 3/4: 6.02", NPS 1: 6.38", NPS 1 1/2: 7.05", NPS 2: 7.64".  
 ④ If indicator column has a low-temperature index and T < +100°C, then d = 4.7" (PLEXIGLAS® cover).  
 ⑤ Vent options are available. NPT connection (female) + plug: 4.96". Flange, DN20, DN25, NPS 3/4 or NPS 1: 6.50".  
 ⑥ Vent options are available. NPT connection (female) + plug: 7.87". Flange, DN25 or NPS 1: 11.81".  
 ⑦ Drain options are available. NPT connection (female) + plug: 7.60". Flange, DN25 or NPS 1: 11.22".  
 ⑧ Drain options are available. Flange, DN25 or NPS 1: 17.32".

2.2.3 PN250 - Class 1500

TWIN version / side - side process connections

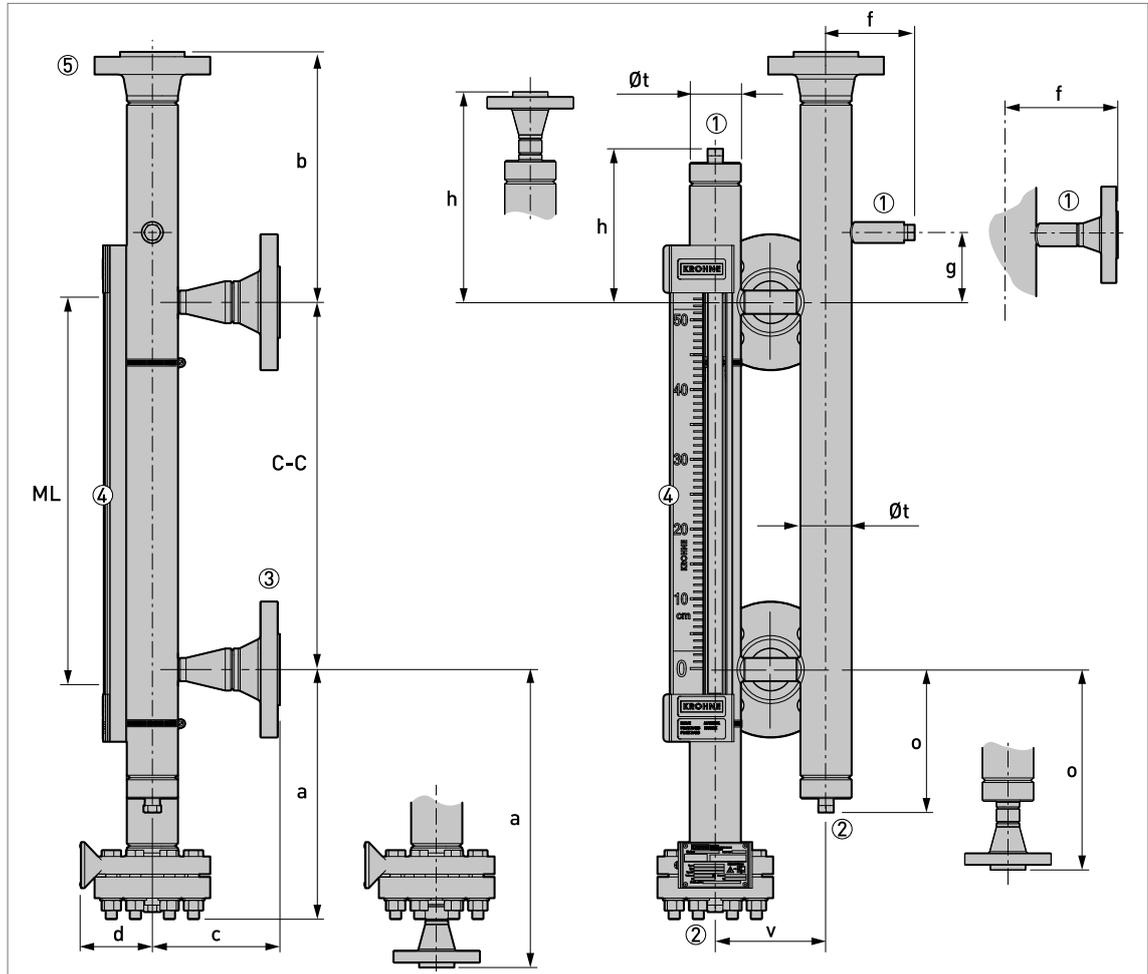


Figure 2-5: PN250 / Class 1500 / TWIN version / side - side process connections

- ① Optional vent with 3/8...3/4 NPT threaded connection (with plug), or DN25 / NPS 1 flange
- ② Optional drain with 3/8...3/4 NPT threaded connection (with plug), or DN25 / NPS 1 flange
- ③ Process connection (flange connection)
- ④ Level indicator column with optional scale (mm, inch, % or volume)
- ⑤ Top flange (NPS 2 / NPS 3 Class 1500) for level transmitter option

- *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

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 <sup>3</sup> ]	Dimensions [mm]										
	a	b	C-C (ML)	c	d	f	g	h	o	Øt	v
660...720	730 ①	340	300... 5500 ②	③	145	④	100	⑤	185 ⑥	73.03	247
720...850	560 ⑦										
850...1200	405 ⑧										

Table 2-15: PN250 / Class 1500 - TWIN (side - side process connections): general dimensions in mm

① Drain options are available. Flange, DN25 or NPS 1: 817 mm.

② This value agrees with "ML" and the "C-C" dimension given in the customer order

③ The length, c, is related to flange size and pressure rating. DN15 PN160: 133 mm, DN15 PN250: 149 mm, DN25 PN160: 165 mm, DN25 PN250: 165 mm, DN40 PN250: 182 mm, DN50 PN160: 189 mm, DN50 PN250: 199 mm, NPS 1/2: 155 mm, NPS 3/4: 165 mm, NPS 1: 167 mm, NPS 1 1/2: 191 mm, NPS 2: 224 mm.

④ Vent options are available. NPT connection (female) + plug: 126 mm. Flange, DN25 or NPS 1: 165 mm.

⑤ Vent options are available. NPT connection (female) + plug: 216 mm. Flange, DN25 or NPS 1: 318 mm.

⑥ Drain options are available. NPT connection (female) + plug: 201 mm. Flange, DN25 or NPS 1: 303 mm.

⑦ Drain options are available. Flange, DN25 or NPS 1: 647 mm.

⑧ Drain options are available. Flange, DN25 or NPS 1: 492 mm.

Liquid density [lb/ft <sup>3</sup> ]	Dimensions [inches]										
	a	b	C-C (ML)	c	d	f	g	h	o	Øt	v
41.20...44.95	28.74 ①	13.39	11.8... 216.5 ②	③	5.71	④	3.94	⑤	7.28 ⑥	2.9	9.72
44.95...53.06	22.05 ⑦										
53.06...74.91	15.94 ⑧										

Table 2-16: PN250 / Class 1500 - TWIN (side - side process connections): general dimensions in inches

① Drain options are available. Flange, DN25 or NPS 1: 32.17".

② This value agrees with "ML" and the "C-C" dimension given in the customer order

③ The length, c, is related to flange size and pressure rating. DN15 PN160: 5.24", DN15 PN250: 5.87", DN25 PN160: 6.50", DN25 PN250: 6.50", DN40 PN250: 7.17", DN50 PN160: 7.44", DN50 PN250: 7.83", NPS 1/2: 6.10", NPS 3/4: 6.50", NPS 1: 6.57", NPS 1 1/2: 7.52", NPS 2: 8.82".

④ Vent options are available. NPT connection (female) + plug: 4.96". Flange, DN25 or NPS 1: 6.50".

⑤ Vent options are available. NPT connection (female) + plug: 8.50". Flange, DN25 or NPS 1: 12.52".

⑥ Drain options are available. NPT connection (female) + plug: 7.91". Flange, DN25 or NPS 1: 11.93".

⑦ Drain options are available. Flange, DN25 or NPS 1: 25.47".

⑧ Drain options are available. Flange, DN25 or NPS 1: 19.37".

2.2.4 PN400 - Class 2500

TWIN version / side - side process connections

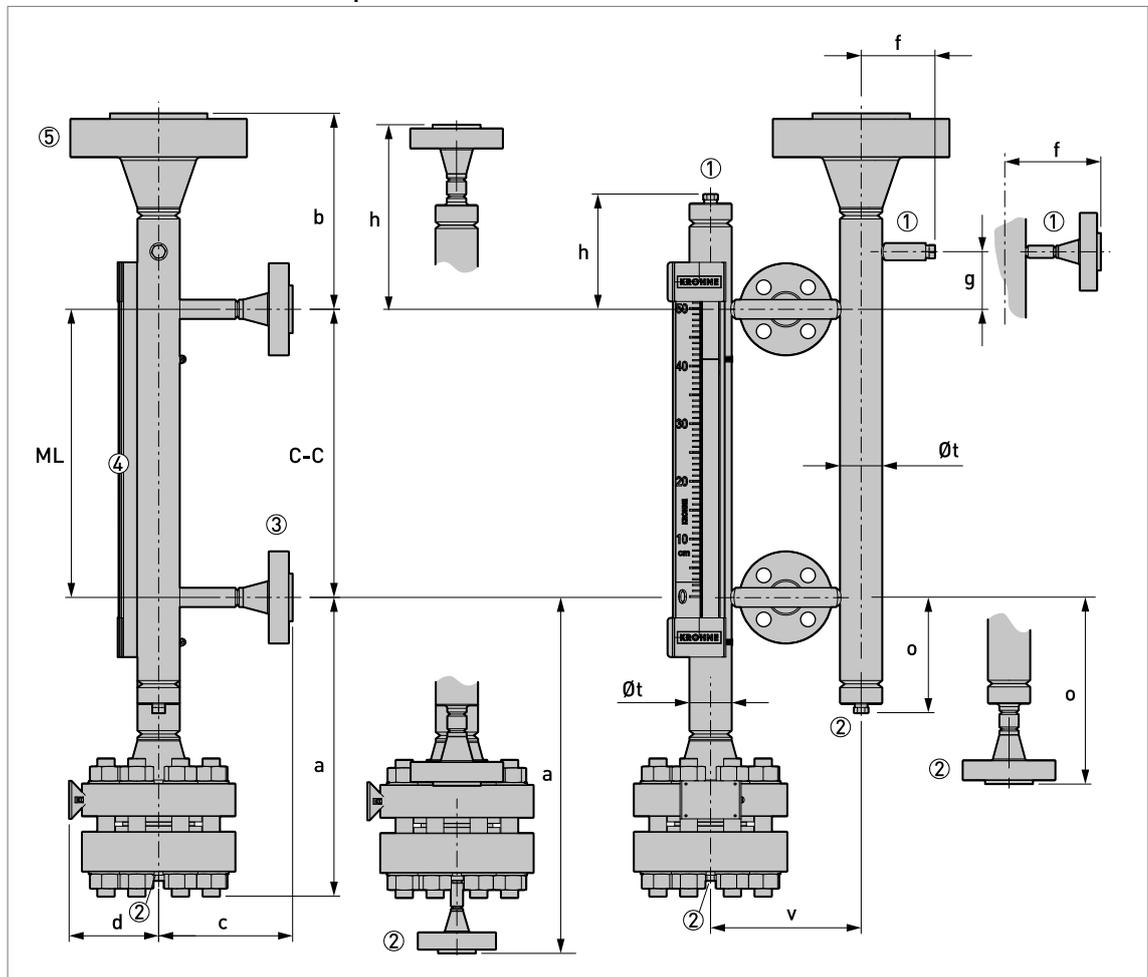


Figure 2-6: PN400 / Class 2500 / TWIN version / side - side process connections

- ① Optional vent with 3/8...3/4 NPT threaded connection (with plug)
- ② Optional drain with 3/8...3/4 NPT threaded connection (with plug)
- ③ Process connection (flange)
- ④ Level indicator column with optional scale (mm, inch, % or volume)
- ⑤ Top flange (NPS 2 / NPS 3 Class 2500) for level transmitter option

- *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

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 <sup>3</sup> ]	Dimensions [mm]										
	a	b	C-C (ML)	c	d	f	g	h	o	Øt	v
740...800	680 ①	340	300... 5500 ②	231	155	③	100	④	⑤	73.03	260
800...1200	510 ⑥										

Table 2-17: PN400 / Class 2500 - TWIN (side - side process connections): general dimensions in mm

- ① Drain options are available. NPT connection (female) + plug: 688 mm. Flange, DN15...25 and NPS 1/2 or 1: 785 mm.  
 ② This value agrees with "ML" and the "C-C" dimension given in the customer order  
 ③ Vent options are available. NPT connection (female) + plug: 128 mm. Flange, DN25 or NPS 1: 166 mm.  
 ④ Vent options are available. NPT connection (female) + plug: 200 mm. Flange, DN25 or NPS 1: 323 mm.  
 ⑤ Drain options are available. NPT connection (female) + plug: 200 mm. Flange, DN15...25 and NPS 1/2 or 1: 324 mm.  
 ⑥ Drain options are available. NPT connection (female) + plug: 518 mm. Flange, DN15...25 and NPS 1/2 or 1: 615 mm.

Liquid density [lb/ft <sup>3</sup> ]	Dimensions [inches]										
	a	b	C-C (ML)	c	d	f	g	h	o	Øt	v
46.20...49.94	26.77 ①	13.39	11.8... 216.5 ②	9.09	6.10	③	3.94	④	⑤	2.9	10.24
49.94...74.91	20.08 ⑥										

Table 2-18: PN400 / Class 2500 - TWIN (side - side process connections): general dimensions in inches

- ① Drain options are available. NPT connection (female) + plug: 27.09". Flange, DN15...25 and NPS 1/2 or 1: 30.91".  
 ② This value agrees with "ML" and the "C-C" dimension given in the customer order  
 ③ Vent options are available. NPT connection (female) + plug: 5.04". Flange, DN25 or NPS 1: 6.54".  
 ④ Vent options are available. NPT connection (female) + plug: 7.87". Flange, DN25 or NPS 1: 12.72".  
 ⑤ Drain options are available. NPT connection (female) + plug: 7.87". Flange, DN15...25 and NPS 1/2 or 1: 12.76".  
 ⑥ Drain options are available. NPT connection (female) + plug: 20.39". Flange, DN15...25 and NPS 1/2 or 1: 24.21".

2.2.5 Options

LT40 C reed-chain level transmitter - compact version

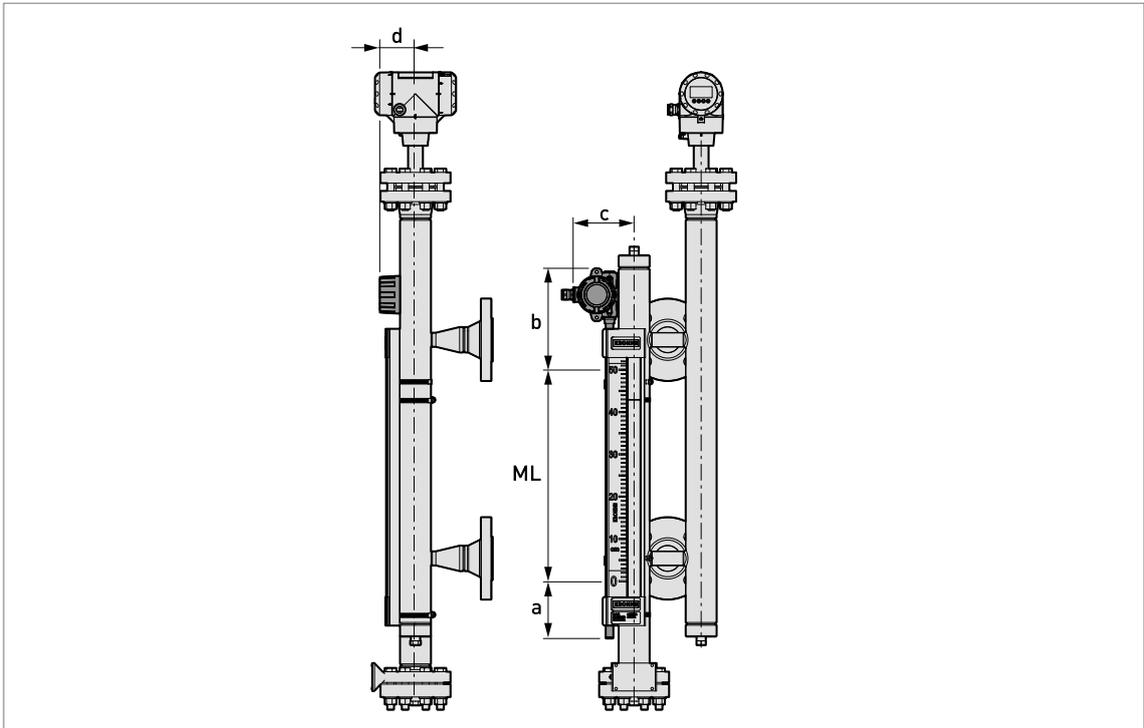


Figure 2-7: BM26A-8000 TWIN: LT40 C reed-chain level transmitter - compact version

Dimensions [mm]				
a	b	c	ML	d
66.5	272	170.5	300...5500	84

Table 2-19: LT40 C reed-chain level transmitter: dimensions in mm

Dimensions [inches]				
a	b	c	ML	d
2.6	10.7	6.71	11.8...216.5	3.3

Table 2-20: LT40 C reed-chain level transmitter: dimensions in inches

LT40 F reed-chain level transmitter - remote version

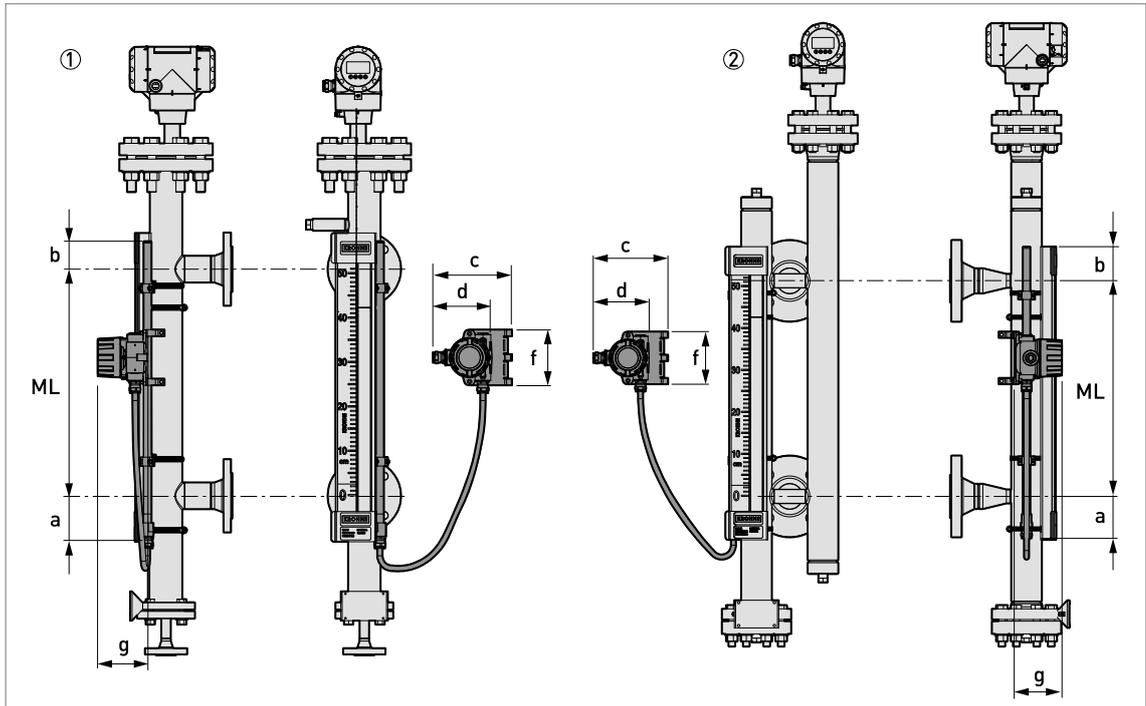


Figure 2-8: LT40 F reed-chain level transmitter - remote version

- ① BI version
- ② TWIN version

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

Table 2-21: 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 2-22: LT40 F reed-chain level transmitter: dimensions in inches

Support for the LT40 F reed-chain level transmitter

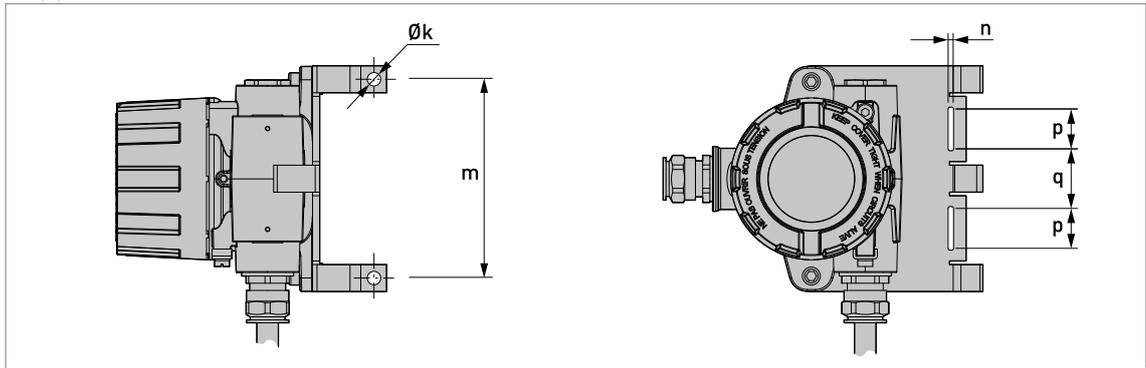


Figure 2-9: Support for the LT40 F reed-chain level transmitter

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

Table 2-23: 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 2-24: Support for the LT40 F reed-chain level transmitter: dimensions in inches

MS15 -series and MS40-series limit switches

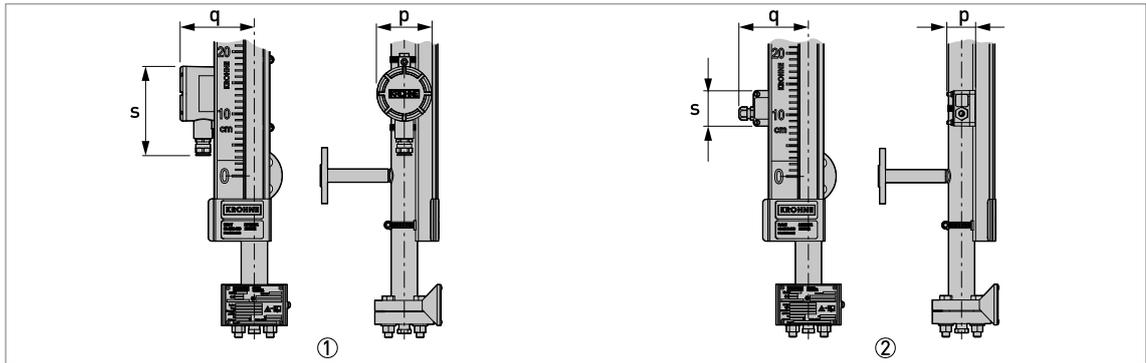


Figure 2-10: MS15-series and MS40-series limit switches

- 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 2-25: 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 2-26: MS15-series and MS40-series limit switches: dimensions in inches

2.2.6 Accessories

Support bracket

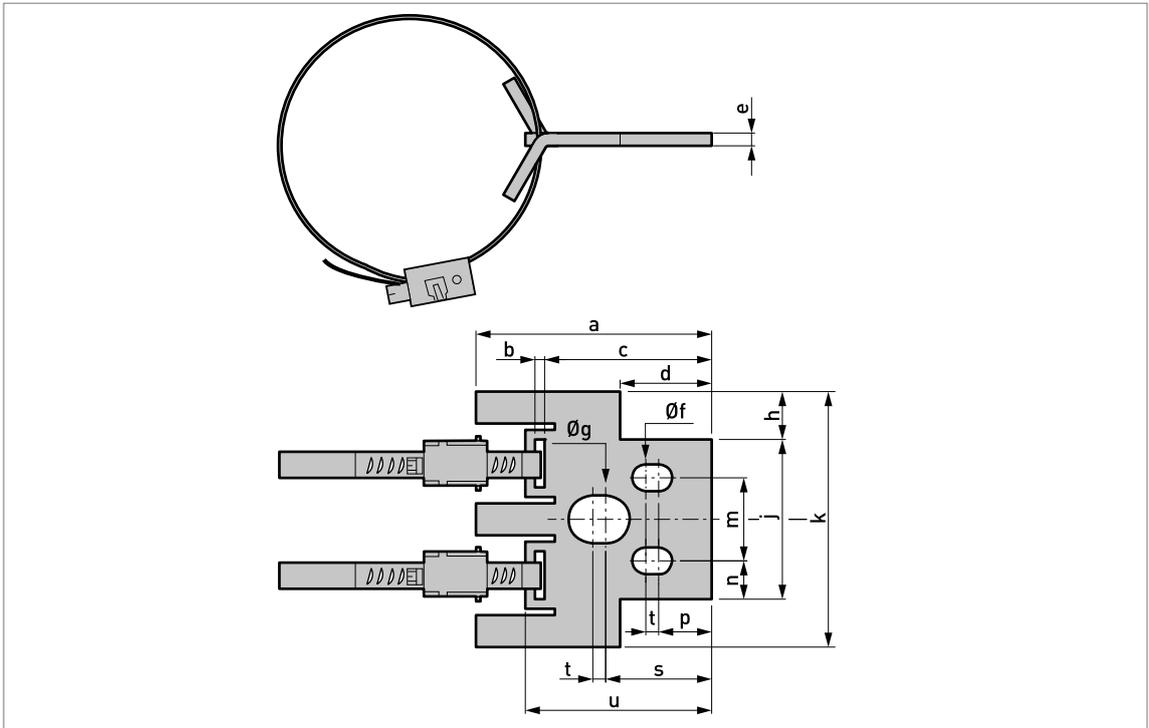


Figure 2-11: Support bracket

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 2-27: 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 2-28: 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.*

*The process temperature must agree with the temperature limits of the gasket material.*

### 2.3.1 Magnetic level indicator with a 316 / 316 L measuring chamber

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

EU PED, EN 13445 and UK PE(S)R								
Standard	Pressure rating	Maximum process temperature [°C]						
		-196	-70	-20	+20	+38	+50	+100
		Maximum process pressure [barg]						
EN 1092-1	PN40	40	40	40	40	40	40	40
	PN100	100	100	100	100	100	100	100
	PN160	160	160	160	160	160	160	160
	PN250	250	250	250	250	250	250	250
	PN400	400	400	400	400	400	392.3	358.1
ASME B16.5	Class 150	19	19	19	19	19	18.4	16
	Class 300	40	40	40	40	40	40	40
	Class 600	99.3	99.3	99.3	99.3	99.3	96.3	84.5
	Class 1500	248.2	248.2	248.2	248.2	248.2	240.6	210.9
	Class 2500	400	400	400	400	400	392.3	358.1
JIS B 2220	20K	34	34	34	34	34	34	34
ISO 228-1	G	40	40	40	40	40	40	40
ASME B1.20.1	NPT	100	100	100	100	100	100	100

Table 2-29: EU PED, EN 13445 and UK PE(S)R: maximum process pressure [barg] for a given maximum process temperature [°C]

EU PED, EN 13445 and UK PE(S)R								
Standard	Pressure rating	Maximum process temperature [°C]						
		+150	+200	+250	+300	+350	+400	
		Maximum process pressure [barg]						
EN 1092-1	PN40	36.3	33.7	31.8	29.7	28.5	27.4	
	PN100	90.9	84.2	79.5	74.2	71.4	68.5	
	PN160	145.5	134.8	127.2	118.8	114.2	109.7	
	PN250	227.3	210.7	198.8	185.7	178.5	171.4	
	PN400	324	298.4	281.4	264.3	255.8	247.2	
ASME B16.5	Class 150	14.8	13.6	12	10.2	8.4	6.5	
	Class 300	36.3	33.7	31.8	29.7	28.5	27.4	
	Class 600	77.1	71.2	66.7	63.1	61	58.9	
	Class 1500	192.4	178.4	167	158.1	152.2	147.1	
	Class 2500	324	298.4	281.4	264.3	255.8	247.2	
JIS B 2220	20K	31	31	31	29	26	23	
ISO 228-1	G	36.3	33.7	31.8	—	—	—	
ASME B1.20.1	NPT	90.9	84.2	79.5	—	—	—	

Table 2-30: EU PED, EN 13445 and UK PE(S)R: maximum process pressure [barg] 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]						Maximum process pressure [psig]	
		-320.8	-94	-4	+68	+100.4	+122		+212
		EN 1092-1	PN40	580.2	580.2	580.2	580.2		580.2
	PN100	1450.4	1450.4	1450.4	1450.4	1450.4	1450.4	1450.4	
	PN160	2320.6	2320.6	2320.6	2320.6	2320.6	2320.6	2320.6	
	PN250	3625.9	3625.9	3625.9	3625.9	3625.9	3625.9	3625.9	
	PN400	5801.5	5801.5	5801.5	5801.5	5801.5	5689.1	5193.8	
ASME B16.5	Class 150	275.6	275.6	275.6	275.6	275.6	266.9	232.1	
	Class 300	580.2	580.2	580.2	580.2	580.2	580.2	580.2	
	Class 600	1440	1440	1440	1440	1440	1396.7	1225.6	
	Class 1500	3599.8	3599.8	3599.8	3599.8	3599.8	3489.6	3058.8	
	Class 2500	5801.5	5801.5	5801.5	5801.5	5801.5	5689.1	5193.8	
JIS B 2220	20K	493.1	493.1	493.1	493.1	493.1	493.1	493.1	
ISO 228-1	G	580.2	580.2	580.2	580.2	580.2	580.2	580.2	
ASME B1.20.1	NPT	1450.4	1450.4	1450.4	1450.4	1450.4	1450.4	1450.4	

Table 2-31: EU PED, EN 13445 and UK PE(S)R: 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]						Maximum process pressure [psig]
		+302	+392	+482	+572	+662	+752	
		EN 1092-1	PN40	526.5	488.8	461.2	430.8	
	PN100	1318.4	1221.2	1153.1	1076.2	1035.6	993.5	
	PN160	2110.3	1955.1	1844.9	1723	1656.3	1591.1	
	PN250	3296.7	3055.9	2883.4	2963.4	2588.9	2485.9	
	PN400	4699.2	4327.9	4081.4	3833.3	3710.1	3585.3	
ASME B16.5	Class 150	214.7	197.3	174	147.9	121.8	94.3	
	Class 300	526.5	488.8	461.2	430.8	413.4	397.4	
	Class 600	1118.2	1032.7	967.4	915.2	884.7	854.3	
	Class 1500	2790.5	2587.5	2422.1	2293	2207.5	2133.5	
	Class 2500	4699.2	4327.9	4081.4	3833.3	3710.1	3585.3	
JIS B 2220	20K	449.6	449.6	449.6	420.6	377.1	333.6	
ISO 228-1	G	526.5	488.8	461.2	—	—	—	
ASME B1.20.1	NPT	1318.4	1221.2	1153.1	—	—	—	

Table 2-32: EU PED, EN 13445 and UK PE(S)R: maximum process pressure [psig] for a given maximum process temperature [°F]

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

ASME B31.3										
Standard	Pressure rating	Maximum process temperature [°C]								
		-196	-70	-20	+20	+38	+50	+100		
		Maximum allowable working pressure [barg]								
ASME B16.5	Class 150	19	19	19	19	19	18.4	16		
	Class 300	40	40	40	40	40	40	40		
	Class 600	84.5	84.5	84.5	84.5	84.5	84.5	84.5		
	Class 1500	216	216	216	216	216	216	216	207	
	Class 2500	282	282	282	282	282	282	282	275	

Table 2-33: ASME B31.3: maximum allowable working pressure [barg] for a given maximum process temperature [°C]

ASME B31.3									
Standard	Pressure rating	Maximum process temperature [°C]							
		+150	+200	+250	+300	+350	+400		
		Maximum allowable working pressure [barg]							
ASME B16.5	Class 150	14.8	13.6	12	10.2	8.4	6.5		
	Class 300	36.3	33.7	31.8	29.7	28.5	27.4		
	Class 600	77.1	71.2	66.7	63.1	61	58.9		
	Class 1500	207	202	191	181	175	172		
	Class 2500	275	275	275	275	275	275	274	

Table 2-34: 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]						
		-320.8	-94	-4	+68	+100.4	+122	+212
		Maximum allowable working pressure [psig]						
ASME B16.5	Class 150	275.6	275.6	275.6	275.6	275.6	266.9	232.1
	Class 300	580.2	580.2	580.2	580.2	580.2	580.2	580.2
	Class 600	1225.6	1225.6	1225.6	1225.6	1225.6	1225.6	1225.6
	Class 1500	3132.8	3132.8	3132.8	3132.8	3132.8	3132.8	3002.3
	Class 2500	4090.1	4090.1	4090.1	4090.1	4090.1	4090.1	3988.5

Table 2-35: ASME B31.3: maximum allowable working pressure [psig] for a given maximum process temperature [°F]

ASME B31.3								
Standard	Pressure rating	Maximum process temperature [°F]						
		+302	+392	+482	+572	+662	+752	
		Maximum allowable working pressure [psig]						
ASME B16.5	Class 150	214.7	197.3	174	147.9	121.8	94.3	
	Class 300	526.5	488.8	461.2	430.8	413.4	397.4	
	Class 600	1118.2	1032.7	967.4	915.2	884.7	854.3	
	Class 1500	3002.3	2929.8	2770.2	2625.2	2538.2	2494.7	
	Class 2500	3988.5	3988.5	3988.5	3988.5	3988.5	3585.3	

Table 2-36: ASME B31.3: maximum allowable working pressure [psig] for a given maximum process temperature [°F]

### 2.3.2 Magnetic level indicator with a 304 L measuring chamber

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

EU PED, EN 13445 and UK PE(S)R								
Standard	Pressure rating	Maximum process temperature [°C]						
		-196	-70	-20	+20	+38	+50	+100
		Maximum process pressure [barg]						
EN 1092-1	PN40	40	40	40	40	40	40	34.4
	PN100	100	100	100	100	100	100	86.1
ASME B16.5	Class 150	15.9	15.9	15.9	15.9	15.9	15.3	13.3
	Class 300	40	40	40	40	40	40	34.4
	Class 600	82.7	82.7	82.7	82.7	82.7	79.9	69.1
JIS B 2220	20K	34	34	34	34	34	34	34
ISO 228-1	G	40	40	40	40	40	40	34.4
ASME B1.20.1	NPT	100	100	100	100	100	100	86.1

Table 2-37: EU PED, EN 13445 and UK PE(S)R: maximum process pressure [barg] for a given maximum process temperature [°C]

EU PED, EN 13445 and UK PE(S)R								
Standard	Pressure rating	Maximum process temperature [°C]						
		+150	+200	+250	+300	+350	+400	
		Maximum process pressure [barg]						
EN 1092-1	PN40	30.8	28	26	24.1	23	22	
	PN100	77.1	70	65.2	60.4	57.6	55.2	
ASME B16.5	Class 150	12	11.1	10.2	9.7	8.4	6.5	
	Class 300	30.8	28	26	24.1	23	22	
	Class 600	62.6	57.4	53.5	50.5	48	46.1	
JIS B 2220	20K	31	31	31	29	26	23	
ISO 228-1	G	30.8	28	26	—	—	—	
ASME B1.20.1	NPT	77.1	70	65.2	—	—	—	

Table 2-38: EU PED, EN 13445 and UK PE(S)R: maximum process pressure [barg] 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]						Maximum process pressure [psig]	
		-302.8	-94	-4	+68	+100.4	+122		+212
		EN 1092-1	PN40	580.2	580.2	580.2	580.2		580.2
	PN100	1450.4	1450.4	1450.4	1450.4	1450.4	1450.4	1248.8	
ASME B16.5	Class 150	230.6	230.6	230.6	230.6	230.6	221.9	192.9	
	Class 300	580.2	580.2	580.2	580.2	580.2	580.2	498.9	
	Class 600	1199.5	1199.5	1199.5	1199.5	1199.5	1158.9	1002.2	
JIS B 2220	20K	493.1	493.1	493.1	493.1	493.1	493.1	493.1	
ISO 228-1	G	580.2	580.2	580.2	580.2	580.2	580.2	498.9	
ASME B1.20.1	NPT	1450.4	1450.4	1450.4	1450.4	1450.4	1450.4	1248.8	

Table 2-39: EU PED, EN 13445 and UK PE(S)R: 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]						Maximum process pressure [psig]
		+302	+392	+482	+572	+662	+752	
		EN 1092-1	PN40	446.7	406	377.1	349.5	
	PN100	1118.2	1015.3	945.6	876	835.4	880.6	
ASME B16.5	Class 150	174	161	147.9	140.7	121.8	94.3	
	Class 300	446.7	406	377.1	349.5	333.6	319.1	
	Class 600	907.9	832.5	776	732.4	696.2	668.6	
JIS B 2220	20K	449.6	449.6	449.6	420.6	377.1	333.6	
ISO 228-1	G	446.7	406	377.1	—	—	—	
ASME B1.20.1	NPT	1118.2	1015.3	945.6	—	—	—	

Table 2-40: EU PED, EN 13445 and UK PE(S)R: maximum process 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

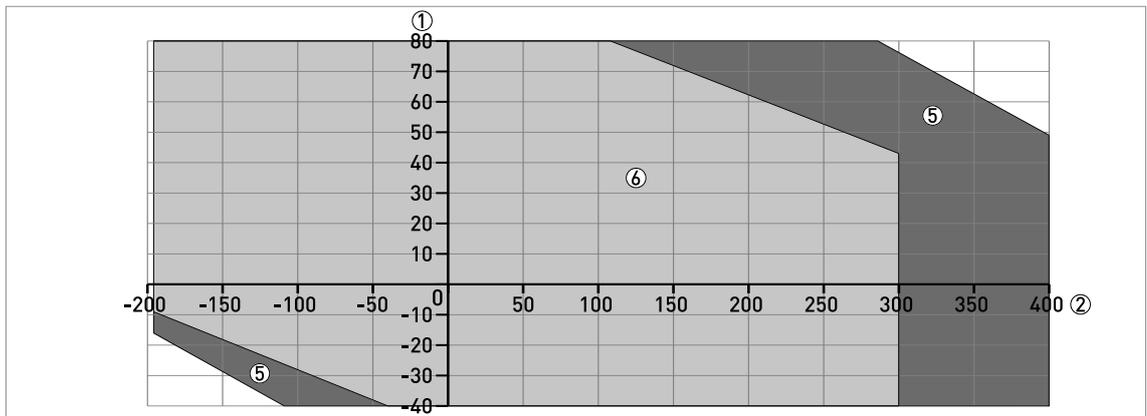


Figure 2-12: Ambient temperature / process temperature, in °C - without a thermal insulation option and without the LCD indicator module

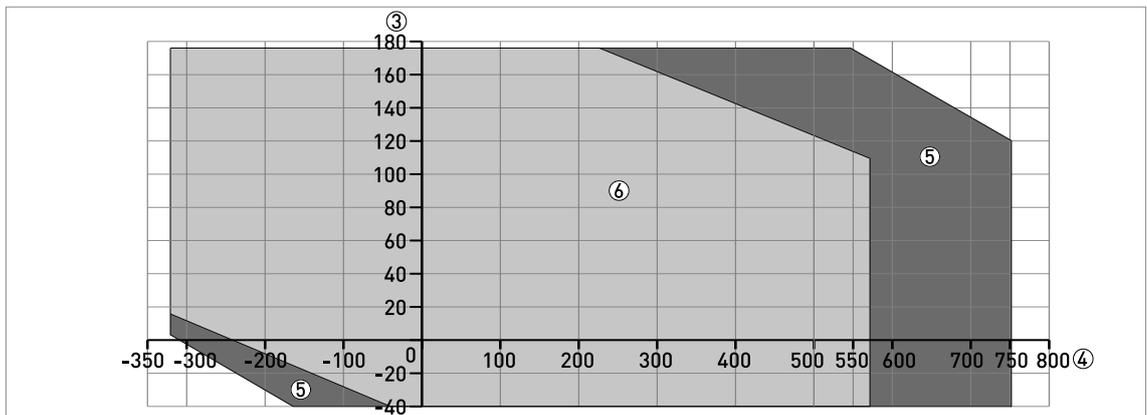


Figure 2-13: Ambient temperature / process temperature, in °F - without a thermal insulation option and without the LCD indicator module

- 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

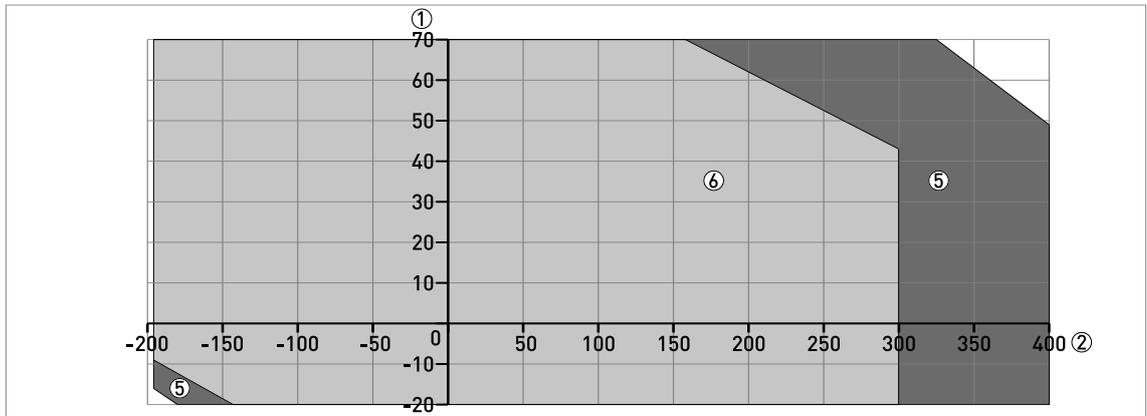


Figure 2-14: Ambient temperature / process temperature, in °C - without a thermal insulation option and with the LCD indicator module

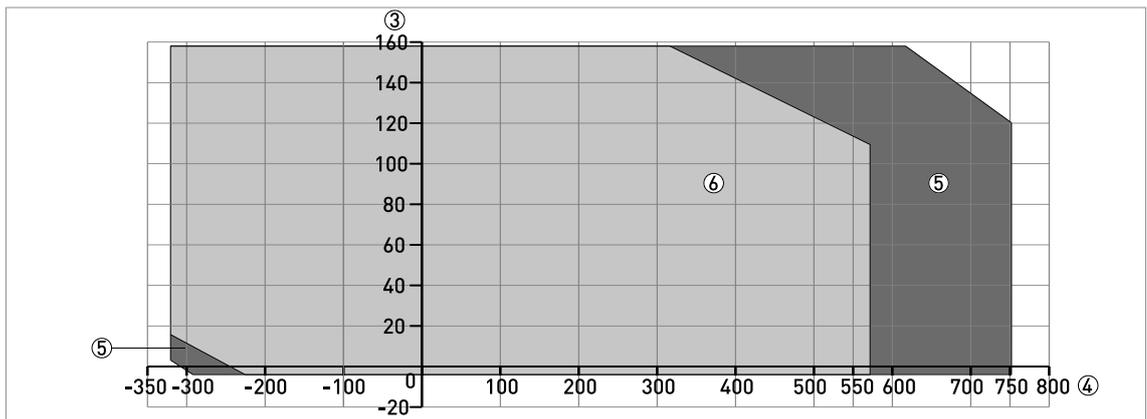


Figure 2-15: Ambient temperature / process temperature, in °F - without a thermal insulation option and with the LCD indicator module

- 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

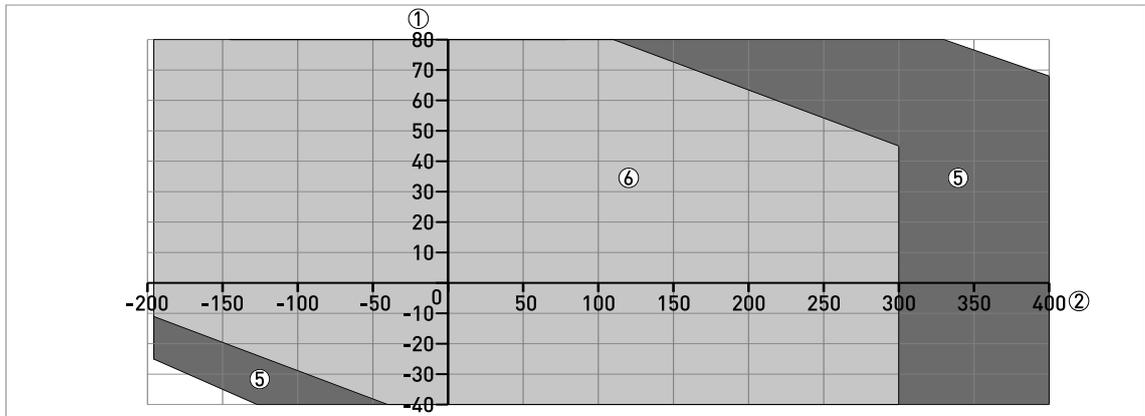


Figure 2-16: Ambient temperature / process temperature, in °C - with a thermal insulation option and without the LCD indicator module

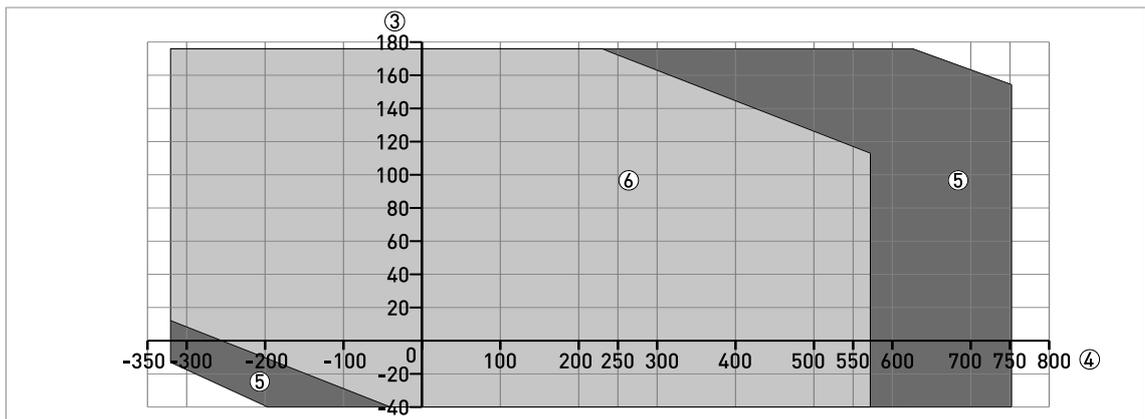


Figure 2-17: Ambient temperature / process temperature, in °F - with a thermal insulation option and without the LCD indicator module

- 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

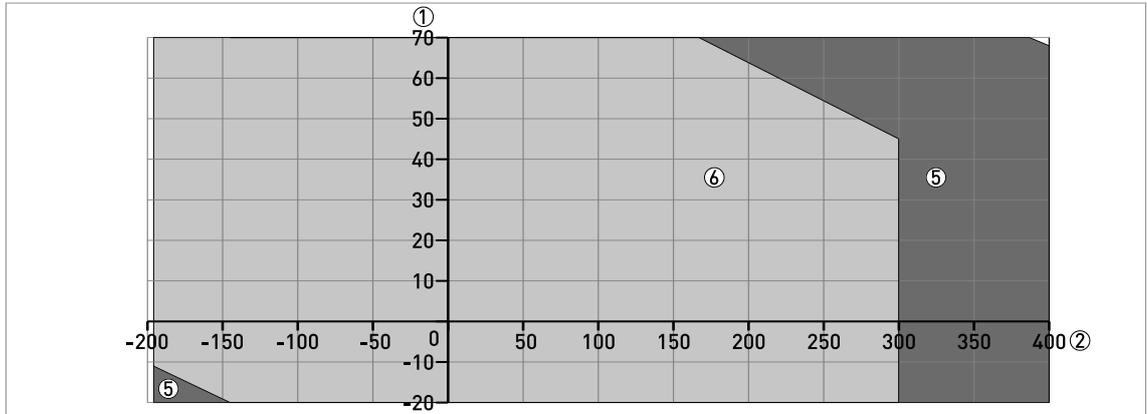


Figure 2-18: Ambient temperature / process temperature, in °C - with a thermal insulation option and with the LCD indicator module

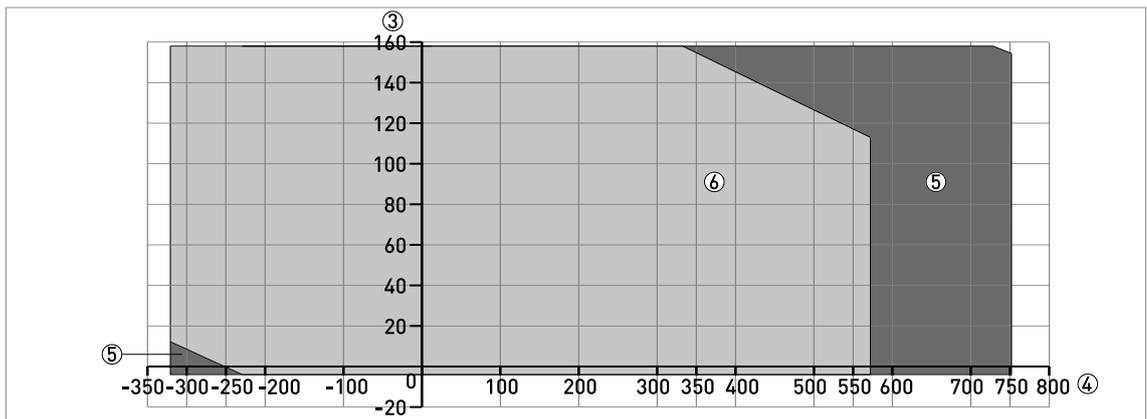


Figure 2-19: Ambient temperature / process temperature, in °F - with a thermal insulation option and with the LCD indicator module

- 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

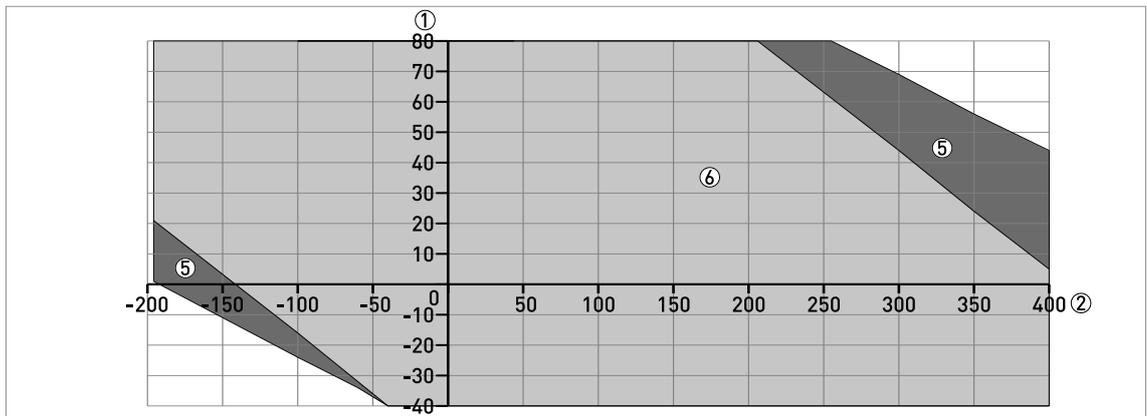


Figure 2-20: Ambient temperature / process temperature, in °C - MS15-series limit switch with the aluminium housing option

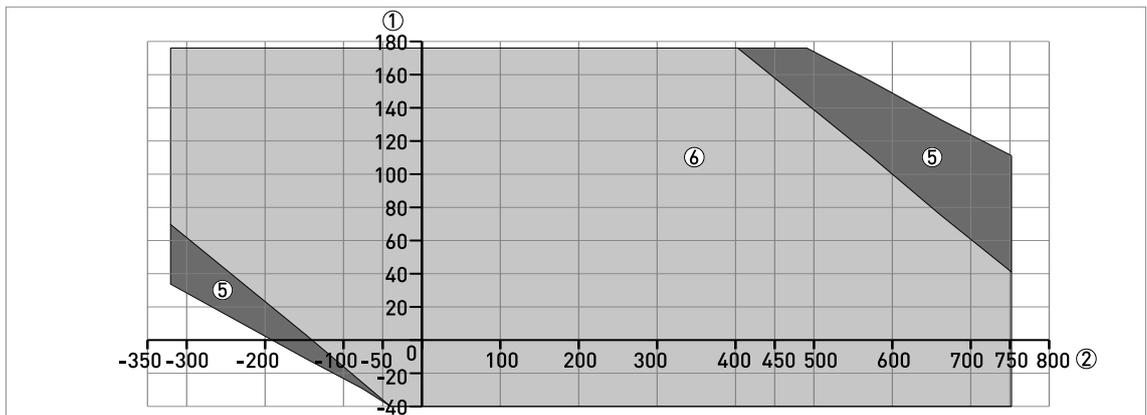


Figure 2-21: Ambient temperature / process temperature, in °F - MS15-series limit switch with the aluminium housing option

- 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

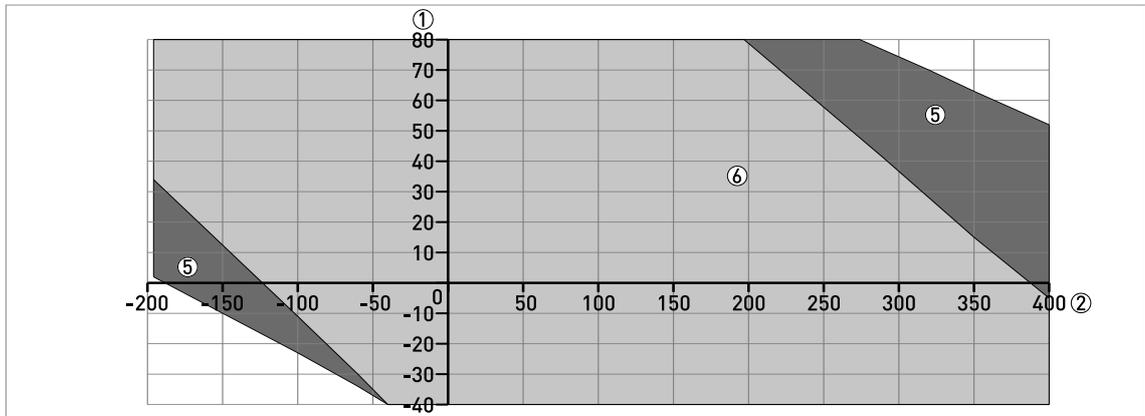


Figure 2-22: Ambient temperature / process temperature, in °C - MS15-series limit switch with the stainless-steel housing option

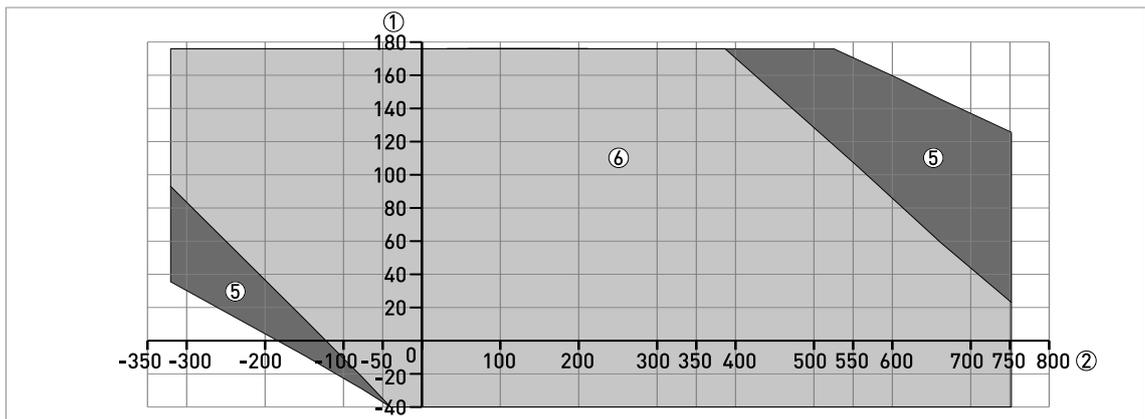


Figure 2-23: Ambient temperature / process temperature, in °F - MS15-series limit switch with the stainless-steel housing option

- 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.*

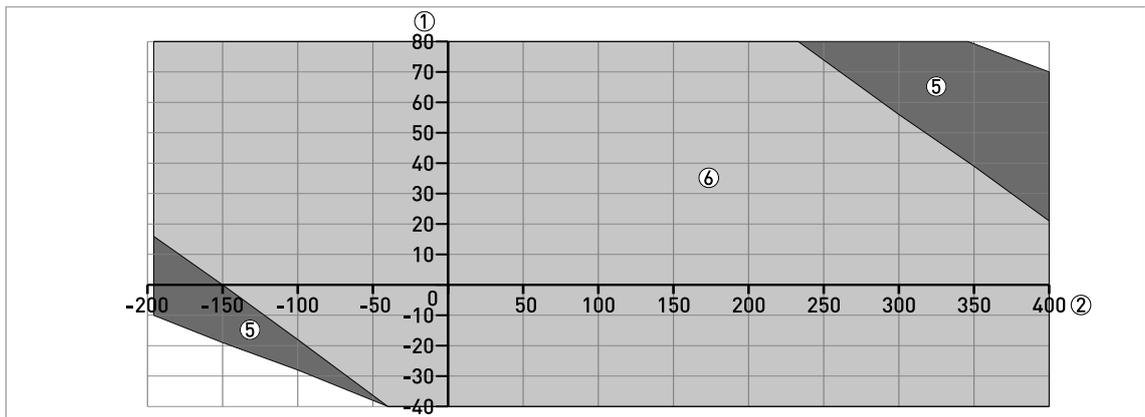


Figure 2-24: Ambient temperature / process temperature, in °C - MS40-series limit switch

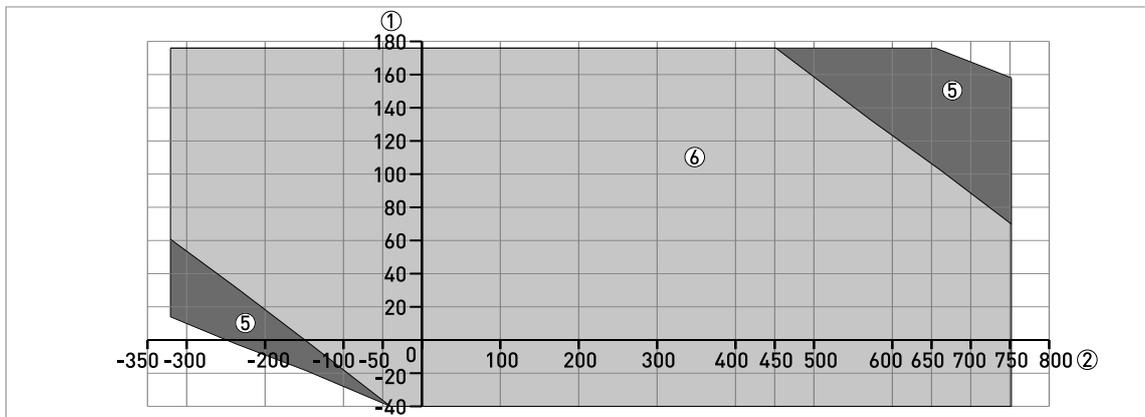


Figure 2-25: Ambient temperature / process temperature, in °F - MS40-series limit switch

- 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-8000 is a magnetic level indicator that measures the level, interface or volume of liquids with an alternative, redundant level measurement device.

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.*

This document does not have data about OPTIFLEX 7200, OPTIFLEX 8200, OPTIWAVE 7400 and BW25 level transmitters:

- If this magnetic level indicator has the OPTIFLEX 7200 option, then refer also to the OPTIFLEX 7200 C/F/S/D technical data sheet.
- If this magnetic level indicator has the OPTIFLEX 8200 option, then refer also to the OPTIFLEX 8200 C/F/S technical data sheet.
- If this magnetic level indicator has the OPTIWAVE 7400 option, then refer also to the OPTIWAVE 7400 C technical data sheet.
- If this magnetic level indicator has the BW25 option, then refer also to the BW25 technical data sheet.

## 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 8.

Make sure that the installation conditions obey the design constraints related to PED. For more data, refer to *Pressure equipment regulations* on page 57.

#### 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. The LT40 C can be attached to the TWIN version of the device.

*Do not install the LT40 C on the BI version of the device.*

#### 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.*

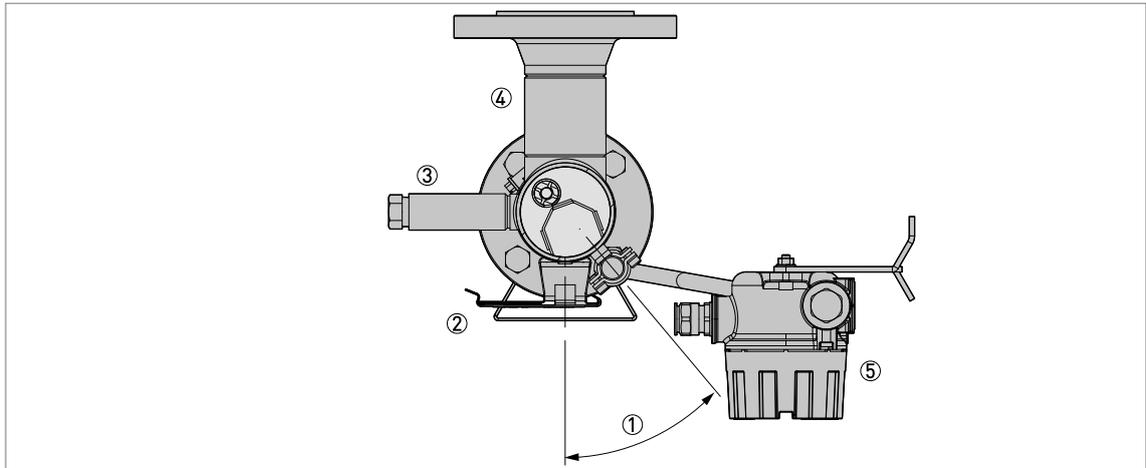


Figure 3-1: LT40 F: Installation of the reed-chain tube on the measuring chamber (top view)

- ① Angle between the indicator column and the reed-chain tube for the optional LT40 F: 40°
- ② Indicator column
- ③ Optional vent
- ④ Process connection
- ⑤ LT40 remote converter

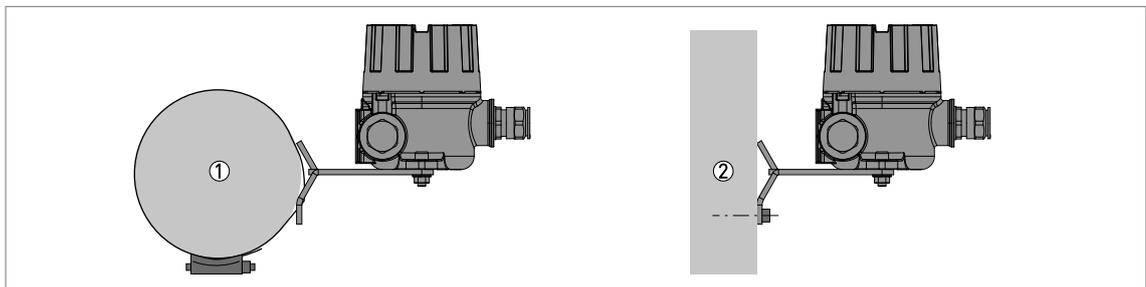


Figure 3-2: LT40 F: Installation of the remote converter - examples of locations (top view)

- 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.

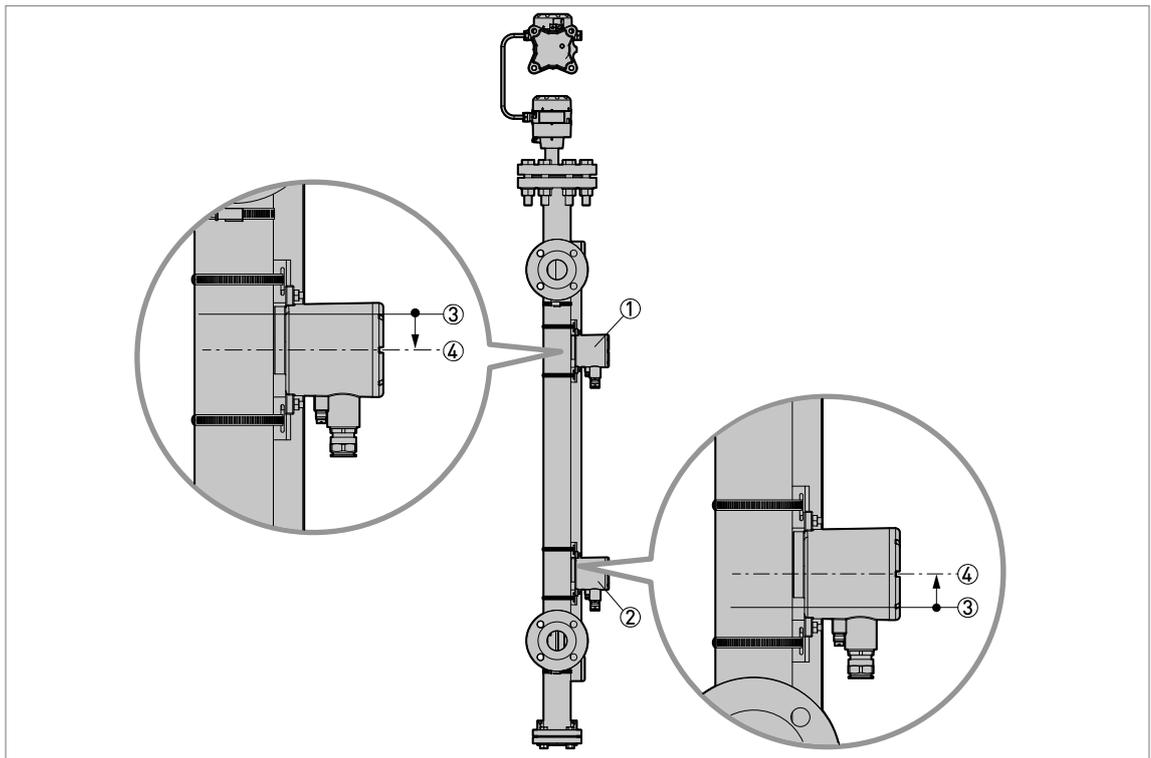


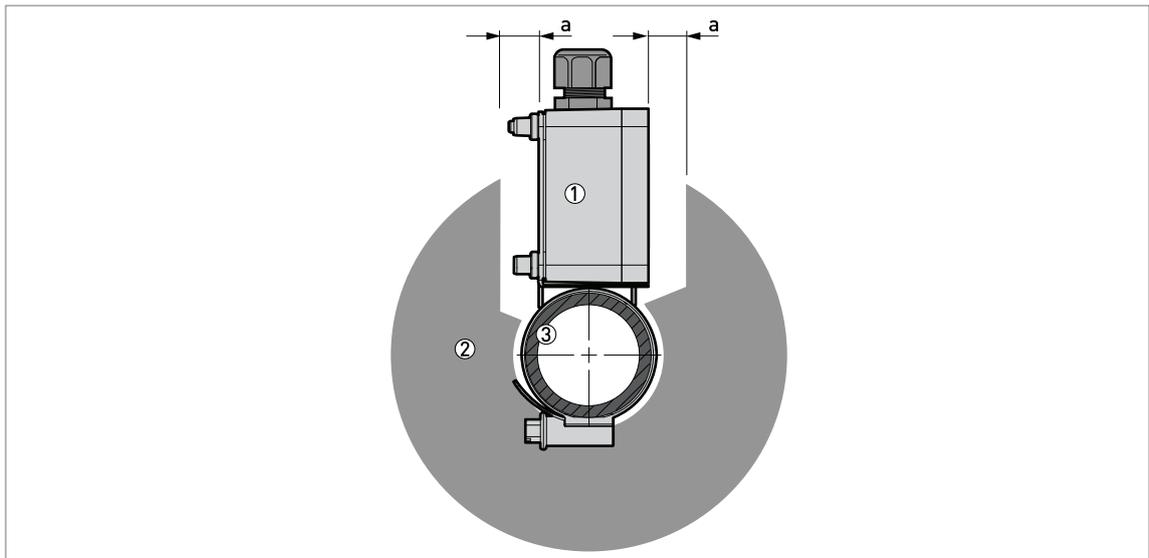
Figure 3-3: Definitions

- 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 3-4: 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 OPTIFLEX 7200 guided radar level transmitter**

This device is supplied as an option with the bypass chamber. For the electrical schematic, refer to the OPTIFLEX 7200 C/F/S/D technical data sheet.

### **4.2 OPTIFLEX 8200 guided radar level transmitter**

This device is supplied as an option with the bypass chamber. For the electrical schematic, refer to the OPTIFLEX 8200 /C/F/S technical data sheet.

### **4.3 OPTIWAVE 7400 24 GHz FMCW radar level transmitter**

This device is supplied as an option with the bypass chamber. For the electrical schematic, refer to the OPTIFLEX 7400 C technical data sheet.

### **4.4 BW25 displacer-type level transmitter**

This device is supplied as an option with the bypass chamber. For the electrical schematic, refer to the BW25 technical data sheet.

## 4.5 Reed-chain level transmitter

### 4.5.1 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 19.

*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.*

### 4.5.2 Electrical schematics and procedure

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

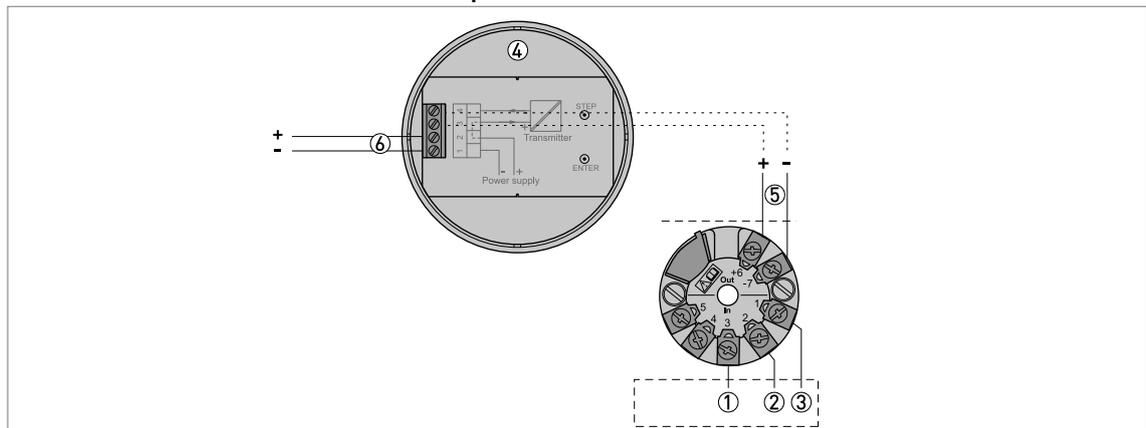


Figure 4-1: Electrical schematic for the 4...20 mA and 4...20 mA + HART output module

- 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

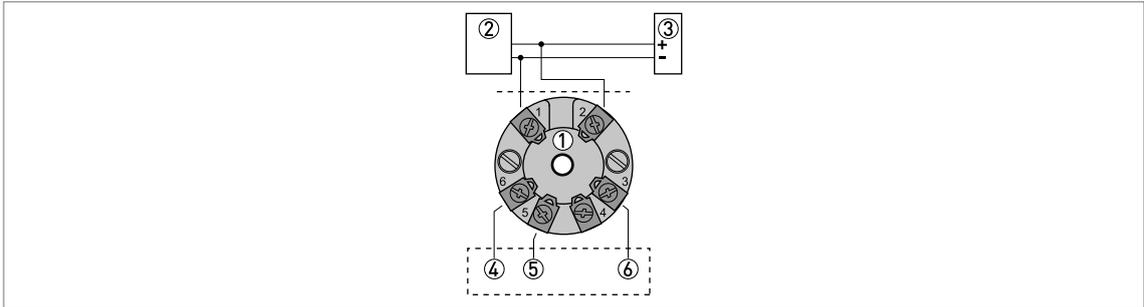


Figure 4-2: Electrical schematic for the FOUNDATION™ fieldbus / PROFIBUS PA module

- 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

## 4.6 Limit switches

### 4.6.1 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 23.

### 4.6.2 Electrical schematics and procedure

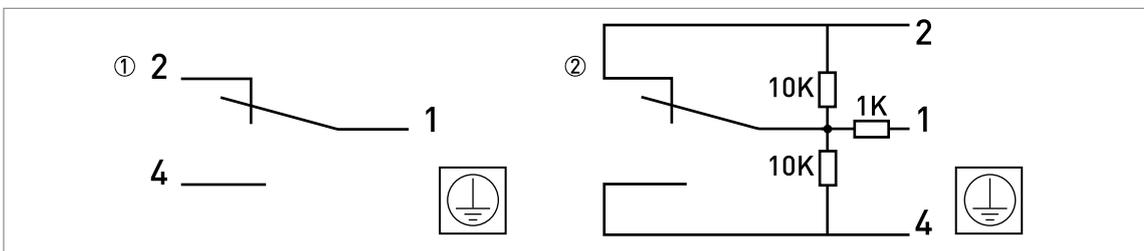
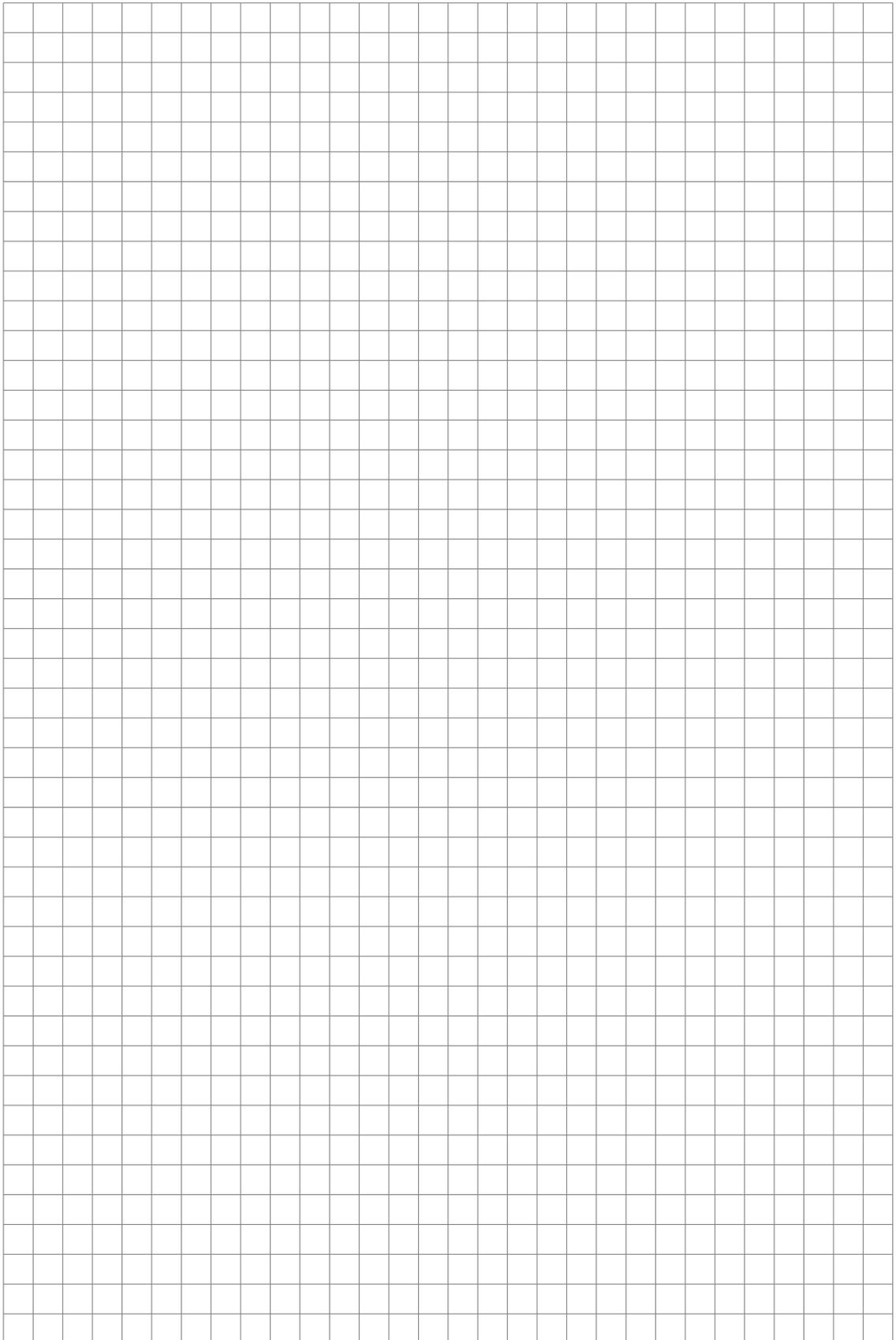
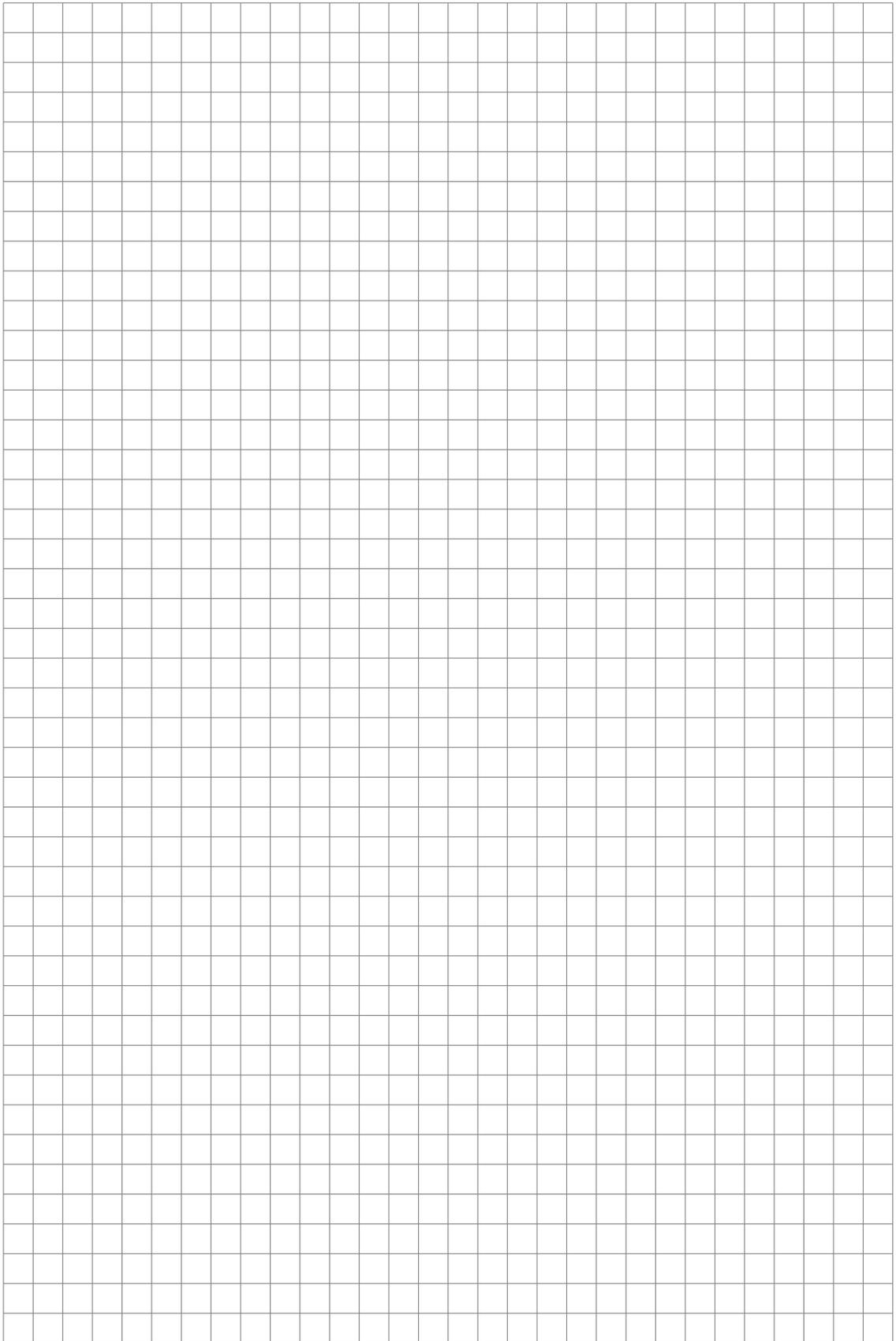


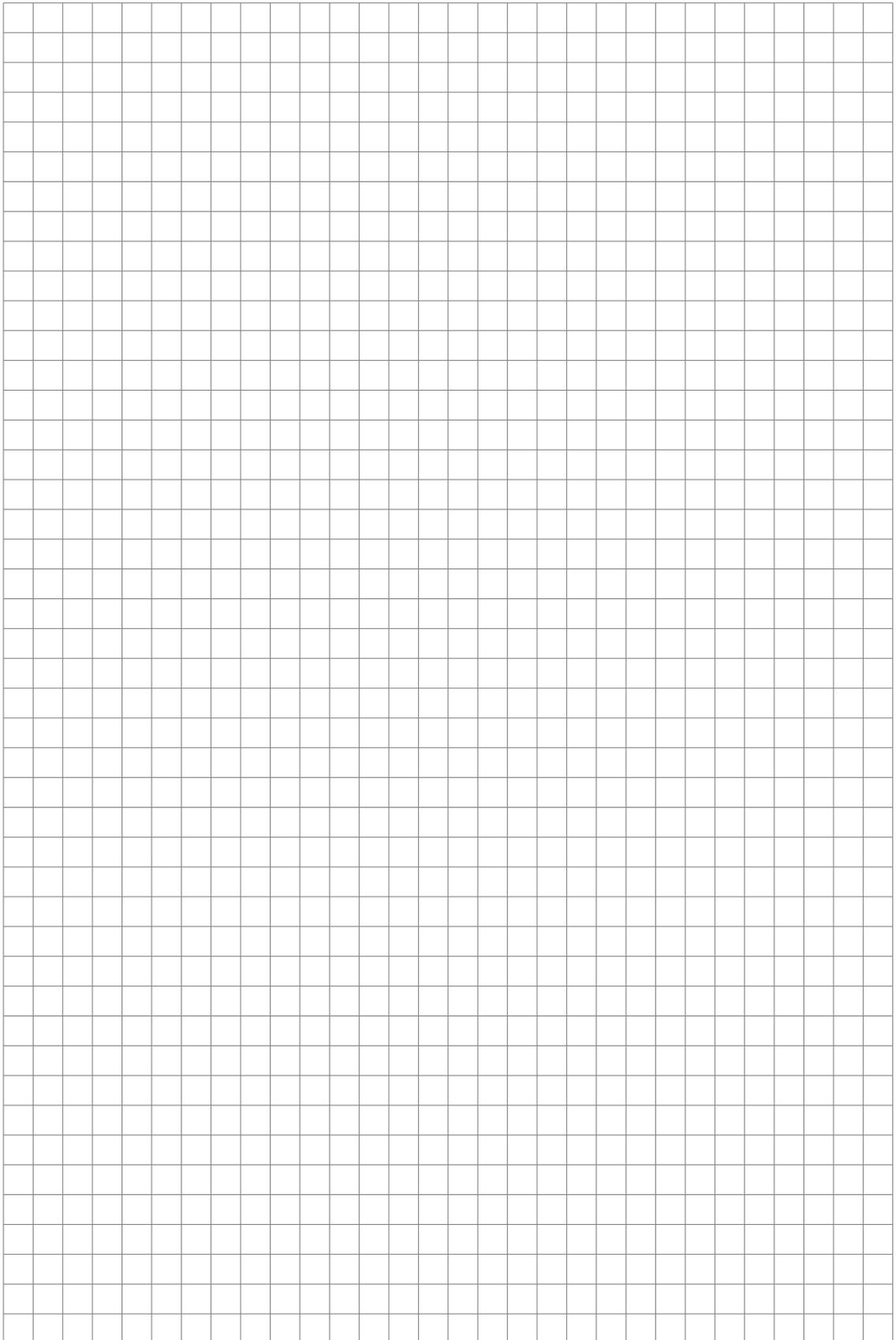
Figure 4-3: Electrical schematics for the MS15-series and MS40-series limit switches

- 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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