

1015-MINI

BYPASS LEVEL INDICATOR-MINI

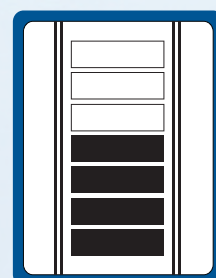
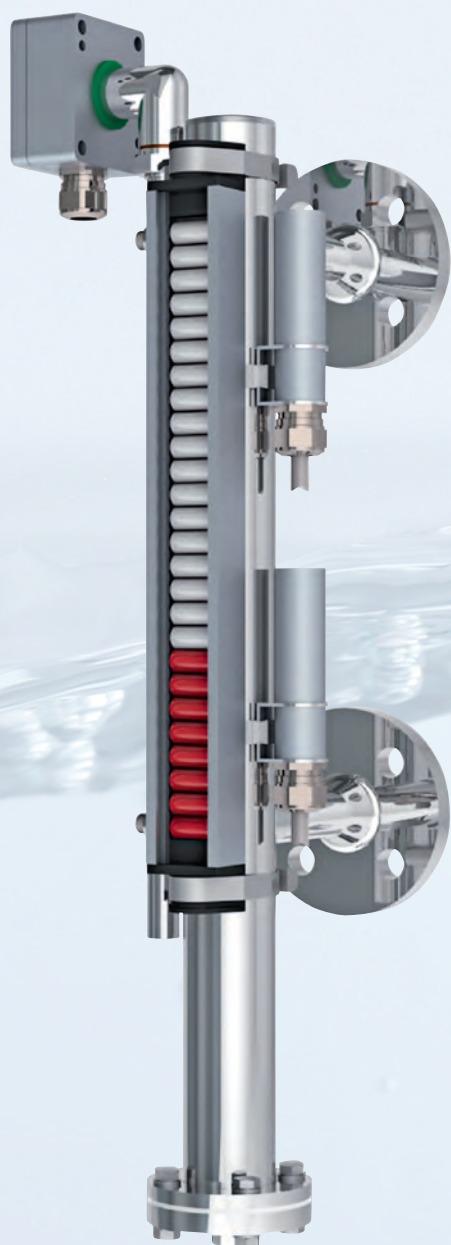


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KÜBLER

SWISS

Functional description



Bypass level indicators form an integral part of the pressure vessel. Via two process connections a standpipe (bypass) is mounted to the side of a tank or vessel. Due to the direct connection the filling level in the bypass will always correspond exactly to the filling level in the vessel (communicating display).



In the bypassing pipe a cylindrical float with a built-in magnetic system is contained. The concentrated magnetic field of the permanent magnet corresponds exactly to the filling level of the liquid in the bypass. In a contactless way the magnetic field transmits itself through the wall of the standpipe onto externally mounted displaying, recording and switching elements.

Design limits

Specific gravity:	$\geq 560 \text{ kg/m}^3$
Design pressure:	-1 bar ... 6 bar
Design temperature:	-40°C ... 150°C

Bypass Level Indicator-Mini / Type key

Code 1

Key 1

... -

Version

BNA ¹	Bypass level indicator
BMG ¹	Bypass level indicator with level transmitter

Code 2

Key 1 (for process connection flange)

... -

Flange connection

FE ¹	Flange according to EN
FA ¹	Flange according to ANSI
F ¹	Flange according to ...
FS ¹	Flange according to drawing

Key 1 (for process connection other)

... -

Other process connection

GM ¹	Female thread G
NPTM ¹	Female thread NPT
GN ¹	Male thread G
NPTN ¹	Male thread NPT
SE ¹	Welding stub end
OS ¹	Without process side connections (Code 3 not applicable)

Code 3

Key 1.1 (only for flange)

... / ... / ... -

Flange connection

... Flange nominal bore

Key 1.2 (only for flange)

... / ... / ... -

Flange connection

... Flange pressure rating

Key 1.3 (only for flange)

... / ... / ... -

Flange connection

... Flange facing

Code 3

Key 1 (for process connection other)

... -

Size

...	Threaded connection size
...	Welding stub end size

Example

Code	1	2	3	4	5	6	7
Key	1	- 1	- 1.1 / 1.2 / 1.3	- 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8	- 1	- 1	- 1 / 2 / 3
Example	BMG	- FE	- 25 / 16 / B1	- ALE / TP43B / V / K15 /	EXIAG	- DU	- M... - V / 40 / 2 -

Black = not possible according to Atex / Blue = possible according to Atex Exia / Blue¹ = possible according to Atex Exia and Exd / Black¹ = possible according to Atex Exd

Code 4

Key 1 ... / ... / ... / ... / ... / ... / ... - Electrical connection level transmitter		Key 2 ... / ... / ... / ... / ... / ... / ... - Control unit		Key 3 ... / ... / ... / ... / ... / ... / ... - Level transmitter tube material quality	
ALE	Aluminium terminal box 64 x 58 x 34 mm (only without control unit)	TP43A ¹	TP5343A	V ¹	Stainless steel
ALF	Aluminium terminal box 80 x 75 x 57 mm	TP43B ¹	TP5343B Ex		
ALDA ¹	Aluminium terminal box Ø 95 x 84 mm	TD35A ¹	TD5335A		
AVA	Stainless steel terminal box Ø 82 x 110 mm	TD35B ¹	TD5335D Ex		
AVDA ¹	Stainless steel terminal box Ø 82 x 110 mm	TP50AP ¹	TP5350AP / PROFIBUS® PA		
AVM	Stainless steel terminal box Ø 50 x 117 mm	TP50BP ¹	TP5350BP Ex / PROFIBUS® PA		
AVDM ¹	Stainless steel terminal box Ø 169 x 117 mm	TP50AF ¹	TP5350AF / FOUNDATION™ Fieldbus		
DAAVDM ¹	Stainless steel terminal box with LED display Ø 169 x 117 mm	TP50BF ¹	TP5350BF Ex / FOUNDATION™ Fieldbus		
APA	Polyester terminal box 80 x 75 x 55 mm	TMT181A ¹	TMT181		
APB	Polyester terminal box 80 x 75 x 55 mm / Exm	TMT181B ¹	TMT181 Ex		
ABA	ABS terminal box 80 x 82 x 55 mm	ZMU ¹	XT42SI Ex		
K	Connection cable	TAMX ¹	Other control unit		
K68	Connection cable IP 68 (≥ G 3/8")	MST ¹	Magnetostrictive / 4 ... 20 mA		
DAALA	Aluminium terminal box with LED display Ø 82 x 100 mm	MSTB ¹	Magnetostrictive / 4 ... 20 mA / Ex		
DAAVDA ¹	Stainless steel terminal box with LED display Ø 82 x 100 mm	MSTH ¹	Magnetostrictive / HART®-Protocol		
		MSTHB ¹	Magnetostrictive / HART®-Protocol / Ex		

Code 4

Key 4 ... / ... / ... / ... / ... / ... / ... - Accuracy		Key 5 (only for connection cable) ... / ... / ... / ... / ... / ... / ... - Length of cable		Key 6 (only for connection cable) ... / ... / ... / ... / ... / ... / ... - Connection cable	
K5 ¹	Accuracy 5 mm / -30 ... 130°C	...	Length of cable in meter	PVC ¹	PVC connection cable
K5HTF ¹	Accuracy 5 mm / -30 ... 200°C			PVCB ¹	PVC connection cable with blue coating
K5HT ¹	Accuracy 5 mm / -40 ... 250°C			SIL ¹	Silicone connection cable
K10 ¹	Accuracy 10 mm / -30 ... 130°C			PUR ¹	PUR connection cable
K10HTF ¹	Accuracy 10 mm / -30 ... 200°C			RAD ¹	Radox connection cable
K10HT ¹	Accuracy 10 mm / -40 ... 250°C				
K15 ¹	Accuracy 15 mm / -30 ... 130°C				
K15HTF ¹	Accuracy 15 mm / -30 ... 200°C				
K15HT ¹	Accuracy 15 mm / -40 ... 250°C				
K1 ¹	Accuracy 0.2 mm / -40 ... 125°C				
K1HT ¹	Accuracy 0.2 mm / -40 ... 250°C				

Code 4

Key 7 (only for connection cable) ... / ... / ... / ... / ... / ... / ... - Connection cable option		Key 8 ... / ... / ... / ... / ... / ... / ... - Approvals level transmitter	
KA ¹	Shielded	EXIAG	Acc. to Exia, atmosphere gas
KB ¹	Shielded / oil-resistant	EXIAGD	Acc. to Exia, atmosphere gas and dust
KC ¹	Shielded / oil-resistant / halogen-free	EXDG ¹	Acc. to Exd, atmosphere gas
KD ¹	Oil-resistant	EXDGD ¹	Acc. to Exd, atmosphere gas and dust
KE ¹	Oil-resistant / halogen-free	EXIADG ¹	Acc. to Exia and Exd, atmosphere gas
KF ¹	Halogen-free	EXIADGD ¹	Acc. to Exia and Exd, atmosphere gas and dust

Example

8	9	10	11	12	Code
1 / 2 / 3 -	1 / 2 / 3 / 4 / 5 / 6 / 7 -	1 / 2 -	1 / 2 -	1 / 2 / 3	Key
MNB / SA1	- 3 / RU40 / N / 1 / PVCB / KA / EXIAG	- ZVS / 200 -	-	EX / PED	Example

Black = not possible according to Atex / Blue = possible according to Atex Exia / Blue¹ = possible according to Atex Exia and Exd / Black¹ = possible according to Atex Exd

Bypass Level Indicator-Mini / Type key

Code 5

Key 1
... -
Electrical connection position of the level transmitter

DO¹ Electrical connection top mounted
DU¹ Electrical connection bottom mounted

Code 6

Key 1
... -
Centre distance / Length of instrument

M...¹ Centre distance in mm
L...¹ Length of instrument in mm (only for Instrument without process side connections)

Code 7

Key 1 ... / ... / ... -	Key 2 ... / ... / ... -	Key 3 ... / ... / ... -
Bypass chamber material quality	Bypass chamber outside diameter	Bypass chamber wall thickness

V ¹ Stainless steel (V4A)	40 ¹ Ø 40.00 mm	2.00 ¹ Bypass chamber wall thickness in mm
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Code 8

Key 1 ... / ... / ... -	Key 2 ... / ... / ... -	Key 3 ... / ... / ... -
Magnetic roller indicator	Scale	Mag. roller indicator sight extension

MNA Magnetic roller indicator MNA	SAK Scale in Aluminium with adhesive foil	PV ¹ Acryl glass extension
MNB ¹ Magnetic roller indicator MNB (Ex)	SA0 ¹ Scale in Aluminium without engraving	
MNAN Mag. roller indicator MNAN over-roll-protected	SA1 ¹ Scale in Aluminium with engraving in %	
MNBN ¹ Mag. roller indicator MNBN over-roll-prot. (Ex)	SA2 ¹ Scale in Aluminium with engraving in cm	
MNAV Magnetic roller indicator MNAV	SA3 ¹ Scale in Aluminium with engraving in inch.	
MNBV ¹ Magnetic roller indicator MNBV (Ex)	SA4 ¹ Scale in Aluminium with engraving acc. to customized table	
MNAVN Magnetic roller indicator MNAVN over-roll-prot.	SV0 ¹ Scale in Stainless steel without engraving	
MNBVN ¹ Mag. roller indicator MNBVN over-roll-prot. (Ex)	SV1 ¹ Scale in Stainless steel with engraving in %	
	SV2 ¹ Scale in Stainless steel with engraving in cm	
	SV3 ¹ Scale in Stainless steel with engraving in inch.	
	SV4 ¹ Scale in Stainless steel with engraving acc. to customized table	

Code 9

Key 1 ... / ... / ... / ... / ... -	Key 2 ... / ... / ... / ... / ... -	Key 3 ... / ... / ... / ... / ... -
Number of magnetic switches	Magnetic switch	Magnetic switch option

... Number of magnetic switches	RU40 Magnetic switch RU40	R22 ¹ Switch protective circuit with 22 ohm / 0.21 W resistor
	RUD40 Magnetic switch RUD40	N ¹ Switch protective circuit according to NAMUR EN 60947
	RUV40 Magnetic switch RUV40	
	RUVD40 Magnetic switch RUVD40	
	ALERU40 Magnetic switch ALERU40	
	ALFRU40 Magnetic switch ALFRU40	

Example

Code	1	2	3	4	5	6	7
Key	1	- 1	- 1.1 / 1.2 / 1.3	- 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8	- 1	- 1	- 1 / 2 / 3
Example	BMG	- FE	- 25 / 16 / B1	- ALE / TP43B / V / K15 /	EXIAG	- DU	- M... - V / 40 / 2

Black = not possible according to Atex / Blue = possible according to Atex Exia / Blue¹ = possible according to Atex Exia and Exd / Black¹ = possible according to Atex Exd

Code 9

Key 4 ... / ... / ... / ... / ... / ... - Length of cable	Key 5 ... / ... / ... / ... / ... / ... - Connection cable	Key 6 ... / ... / ... / ... / ... / ... - Connection cable option
... Length of cable in meter	PVC ¹ PVC connection cable PVCB ¹ PVC connection cable with blue coating SIL ¹ Silicone connection cable PUR ¹ PUR connection cable RAD ¹ Radox connection cable	KA ¹ Shielded KB ¹ Shielded / oil-resistant KC ¹ Shielded / oil-resistant / halogen-free KD ¹ Oil-resistant KE ¹ Oil-resistant / halogen-free KF ¹ Halogen-free

Code 9

Key 7 ... / ... / ... / ... / ... / ... - Approvals magnetic switch
EXIAG Acc. to Exia, atmosphere gas EXIAGD Acc. to Exia, atmosphere gas and dust EXDG ¹ Acc. to Exd, atmosphere gas EXDGD ¹ Acc. to Exd, atmosphere gas and dust EXIADG ¹ Acc. to Exia and Exd, atmosphere gas EXIADGD ¹ Acc. to Exia and Exd, atmosphere gas and dust

Code 10

Key 1 ... / ... - Float	Key 2 ... / ... - Float length
ZVS ¹ Float in Stainless steel ZBS ¹ Float in Buna	... Acc. to float table on page 308

Code 11

Key 1 ... / ... - Instrument isolation	Key 2 ... / ... - Electrical heat tracing
AIT Armaflex isolation AIT AHT Armaflex isolation AHT SW Rock-wool isolation	H75A Electrical heat tracing 75°C H75B Electrical heat tracing 75°C acc. to EExe H150A Electrical heat tracing 150°C H150B Electrical heat tracing 150°C acc. to EExe

Code 12

Key 1 ... / ... / ... - Approvals / 1	Key 2 ... / ... / ... - Approvals / 2	Key 3 ... / ... / ... - Approvals / 3
EX Acc. to Ex	PEDII ¹ Acc. to PED97/23/EC category II PEDIV ¹ Acc. to PED97/23/EC category IV	GL ¹ Approval 3A Sanitary Standard BV ¹ Approval Germanischer Lloyd DNV ¹ Approval Bureau Veritas ABS ¹ Approval American Bureau of Shipping GOST ¹ Approval GOST

Example

8	9	10	11	12	Code
1 / 2 / 3 -	1 / 2 / 3 / 4 / 5 / 6 / 7 -	1 / 2 -	1 / 2 -	1 / 2 / 3	Key
MNB / SA1	- 3 / RU40 / N / 1 / PVCB / KA	/ EXIAG - ZVS / 200 -	-	EX / PED	Example

Black = not possible according to Atex / Blue = possible according to Atex Exia / Blue¹ = possible according to Atex Exia and Exd / Black¹ = possible according to Atex Exd

Bypass Level Indicator-Mini / Stainless steel PN 6

Type BNA-.../...-M..-V/40/2-MN..-Z..S/..

Material quality: 1.4404 / 1.4435 / 1.4571 (316L / 316Ti)
 Centre distance M / Length of instrument L: 150 ... 5000 mm
 Specific gravity: $\geq 560 \text{ kg/m}^3$
 Design pressure: -1 bar ... 6 bar
 Design temperature: -40°C ... 150°C

Design

Chamber: $\varnothing 40.00 \times 2.00 \text{ mm}$
 Process connection: Type key page 302
 Chamber end top: Page 324 - 325
 Chamber end bottom: Page 326 - 327
 Float: Page 308

Option magnetic roller indicator / Page 310

Aluminium or Stainless steel / Pocaan -40°C ... 200°C

Option scale / Page 311

Aluminium / Stainless steel With adhesive foil / Engraving / Blank

Option magnetic switch / Page 318 - 321

Aluminium / Stainless steel -40°C ... 150°C

Option level transmitter / Page 312 - 316

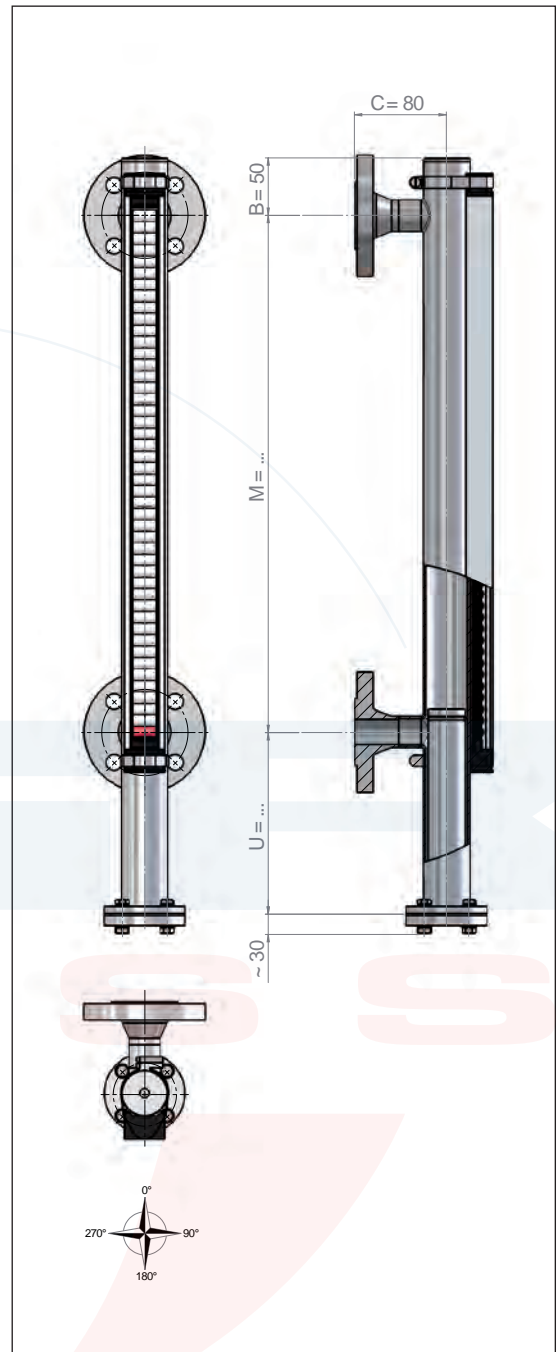
Accuracy / Reed contacts: 5 / 10 / 15 mm
 Accuracy / Magnetostrictive: 0.2 mm
 Control unit:
 - Programmable
 - Hart-programmable / SIL2
 - Profibus PA
 - Foundation Fieldbus

Option electrical heat tracing / Page 322

Holding temperature: $\sim 10^\circ\text{C}$ / Frost protection

Option instrument isolation / Page 322 - 323

Isolation: Armaflex isolation / Rock-wool isolation



Approvals / Certificates



ATEX*

II 1G2D/2GD c

II 2GD c

Liquid temperature Ex max. 150°C

The bypass level indicator-mini are based on a modular design and can be arranged individually.

Type key page 302 - 305

* = The approval is dependent on the equipment combination

Type **BNA-OS-L...-V40/2-MN...-Z.S..**

Material quality: 1.4404 / 1.4435 / 1.4571 (316L / 316Ti)
 Centre distance M / Length of instrument L: 150 ... 5000 mm
 Specific gravity: $\geq 560 \text{ kg/m}^3$
 Design pressure: -1 bar ... 6 bar
 Design temperature: -40°C ... 150°C

Design

Chamber: $\varnothing 40.00 \times 2.00 \text{ mm}$

Process connection: Type key page 302
 Chamber end top: Page 324 - 325
 Chamber end bottom: Page 326 - 327
 Float: Page 308

Option magnetic roller indicator / Page 310

Aluminium or Stainless steel / Pocom -40°C ... 200°C

Option scale / Page 311

Aluminium / Stainless steel With adhesive foil / Engraving / Blank

Option magnetic switch / Page 318 - 321

Aluminium / Stainless steel -40°C ... 150°C

Option level transmitter / Page 312 - 316

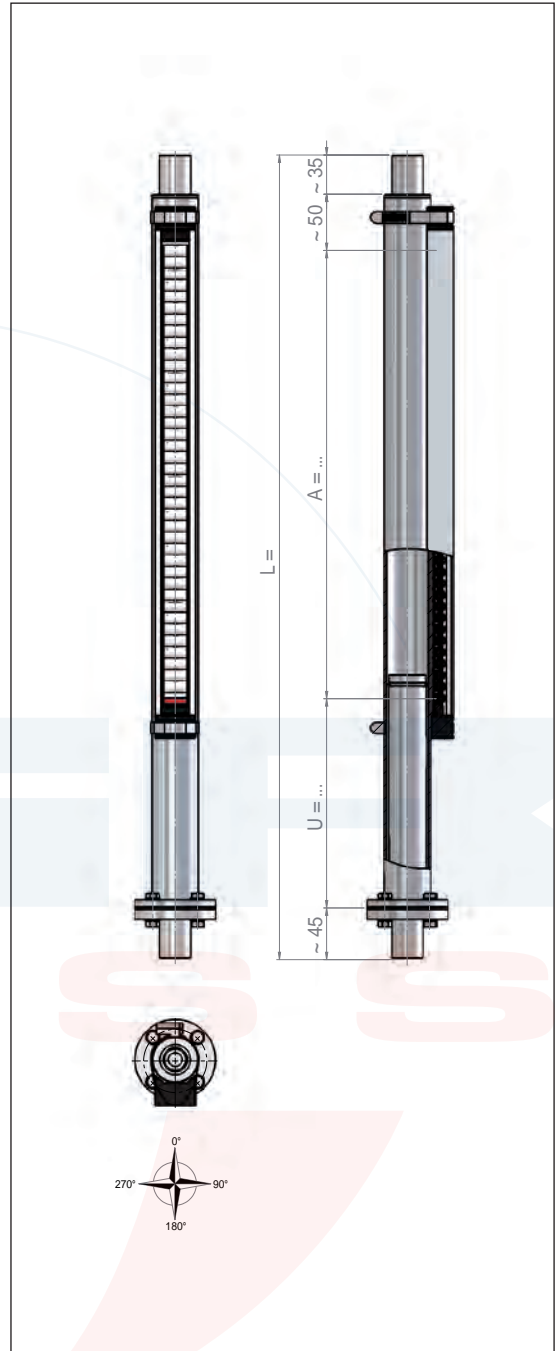
Accuracy / Reed contacts: 5 / 10 / 15 mm
 Accuracy / Magnetostrictive: 0.2 mm
 Control unit:
 - Programmable
 - Hart-programmable / SIL2
 - Profibus PA
 - Foundation Fieldbus

Option electrical heat tracing / Page 322

Holding temperature: $\sim 10^\circ\text{C}$ / Frost protection

Option instrument isolation / Page 322 - 323

Isolation: Armaflex isolation / Rock-wool isolation



Approvals / Certificates



ATEX*

II 1G2D/2GD c

II 2GD c

Liquid temperature Ex max. 150°C

The bypass level indicator-mini are based on a modular design and can be arranged individually.

Type key page 302 - 305

* = The approval is dependent on the equipment combination

Bypass Level Indicator-Mini / Cylindrical float PN 6

Cylindrical float PN 6

Stainless steel 1.4571

Float:	ZVS34/..6/B64
Diameter [mm]:	34
Design temperature [°C]:	-40 ... 150
Design pressure [bar]:	-1 ... 6

Distance U (see bypass level indicator figure)

Distance U with float stop:	Float length - 20 mm
Distance U with Dämpfungsfeder:	Float length - 10 mm

Float ZVS34/..6/B64												
Length [mm]	180	200	230	250	280	300	340	420	480	580		
Weight [g]	127	135	148	156	168	177	194	227	252	294		
Float height above liquid [mm]	Specific gravity of the liquid [kg/m³]											
0	0	-	-	-	-	-	-	-	-	-	-	-
10	10	940	900	850	820	790	770	740	690	670	650	
20	20	1000	950	900	850	820	800	760	710	690	660	
30	30	1070	1000	940	890	850	830	790	730	710	670	
40	40	1140	1070	990	940	890	860	820	750	720	680	
50	50	1230	1140	1040	990	920	900	840	770	740	700	
60	60	1340	1220	1100	1030	960	930	870	790	760	710	
70	70	1460	1320	1170	1090	1010	970	900	820	770	720	
80	80	1600	1430	1250	1150	1060	1010	940	840	790	740	
90	90	1780	1550	1340	1230	1110	1060	980	860	810	750	
100	100	2000	1710	1440	1310	1180	1110	1020	890	830	770	

Cylindrical float PN 6

Buna

Float:	ZBS35/..6/M1
Diameter [mm]:	35
Design temperature [°C]:	-20 ... 80
Design pressure [bar]:	-1 ... 6

Distance U (see bypass level indicator figure)

Distance U with float stop:	Float length - 20 mm
Distance U with Dämpfungsfeder:	Float length - 10 mm

Float ZBS35/..6/M1												
Length [mm]	90	100	105	115	120	135	150	170	195	225		
Weight [g]	73	76	77	80	81	85	89	96	103	110		
Float height above liquid [mm]	Specific gravity of the liquid [kg/m³]											
0	0	-	-	-	-	-	-	-	-	-	-	-
5	5	-	-	-	-	-	-	-	-	-	-	-
10	10	950	850	840	790	770	710	660	620	580	530	
15	15	1000	950	900	850	800	750	700	650	600	550	
20	20	1080	990	940	870	840	770	710	670	610	560	
25	25	1170	1050	1000	920	890	800	740	690	630	570	
30	30	1260	1130	1070	980	940	840	770	710	650	590	
35	35	1380	1220	1140	1040	990	880	800	740	670	600	
40	40	1520	1320	1230	1160	1050	930	840	770	690	620	
45	45	1690	1440	1330	1190	1120	980	880	800	710	640	
50	50	1900	1580	1460	1280	1200	1040	930	830	740	650	

The bypass level indicator-mini are based on a modular design and can be arranged individually.

Type key page 302 - 305

20 ~ Position of the magnetic system

Notes



The bypass level indicator-mini are based on a modular design and can be arranged individually.

Type key page 302 - 305

50 - = Position of the magnetic system

Bypass Level Indicator-Mini / Magnetic roller indicator

Type

**MNA / MNB
MNAN / MNBN**

Housing:
Ingress protection class:

Aluminium anodized
IP 67

MNA / MNB / MNAN / MNBN

Indication

- Material quality: Pocan
- Colour: White / Red

End part: Ryton, black

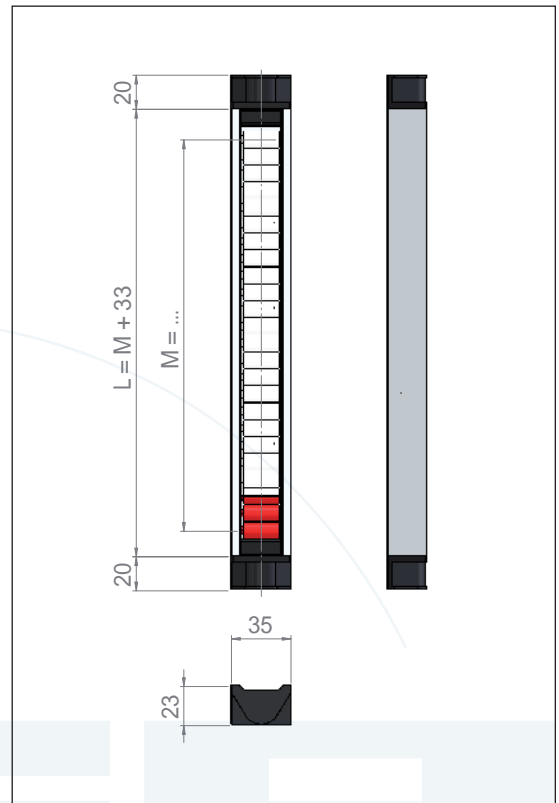
Sight cover - MNA / MNAN: Macrolon
- MNB / MNBN: Glass

Ambient temperature: -40°C ... 200°C

MNAN / MNBN (over-roll-protected): Roller rotation max. 180°

Approvals / Certificates

ATEX / GOST / GL / BV / DNV / ABS



Type

**MNAV / MNBV
MNAVN / MNBVN**

Housing:
Ingress protection class:

Aluminium with Stainless steel covered
IP 67

MNAV / MNBV / MNAVN / MNBVN

Indication

- Material quality: Pocan
- Colour: White / Red

End part: Ryton, black

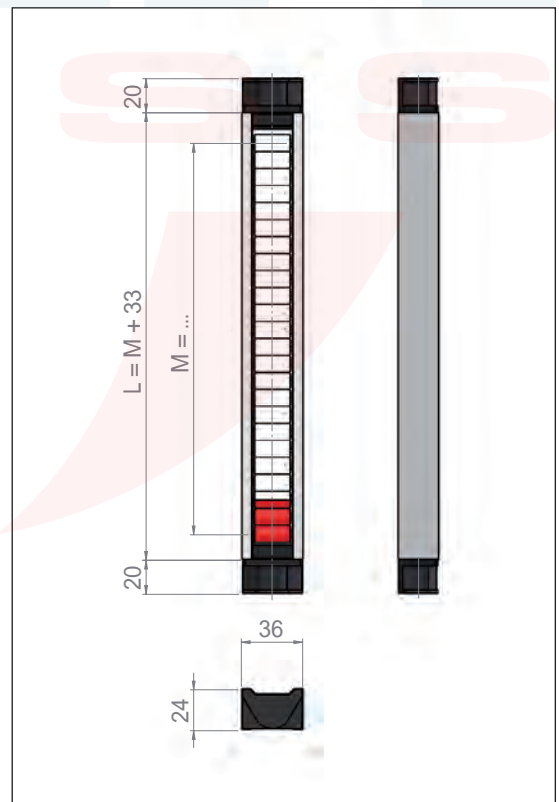
Sight cover - MNAV / MNAVN: Macrolon
- MNBV / MNBVN: Glass

Ambient temperature: -40°C ... 200°C

MNAVN / MNBVN (over-roll-protected): Roller rotation max. 180°

Approvals / Certificates

ATEX / GOST / GL / BV / DNV / ABS



The bypass level indicator-mini are based on a modular design and can be arranged individually.

Type key page 302 - 305

Type **SAK / SA.. / SV..**

SAK

Scale: Adhesive foil (black)
 Angle profile: Aluminium
 Scaling: in cm (0 cm .. 10 cm .. 20 cm .. 30 cm ..)
 Width: 40 mm
 Ambient temperature: -40°C ... 200°C

SA0 / SA1 / SA2 / SA3 / SA4

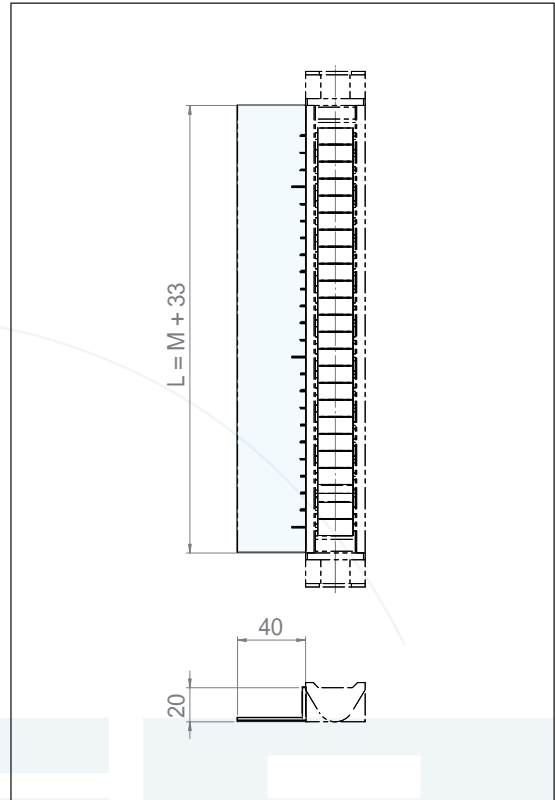
Scale: Engraved
 Angle profile: Aluminium
 Scaling: Blank / % / cm / inch. / ..
 Width: 40 mm
 Ambient temperature: -40°C ... 200°C

SV0 / SV1 / SV2 / SV3 / SV4

Scale: Engraved
 Angle profile: Stainless steel
 Scaling: Blank / % / cm / inch. / ..
 Width: 40 mm
 Ambient temperature: -40°C ... 400°C

Approvals / Certificates

ATEX / GOST / GL / BV / DNV / ABS

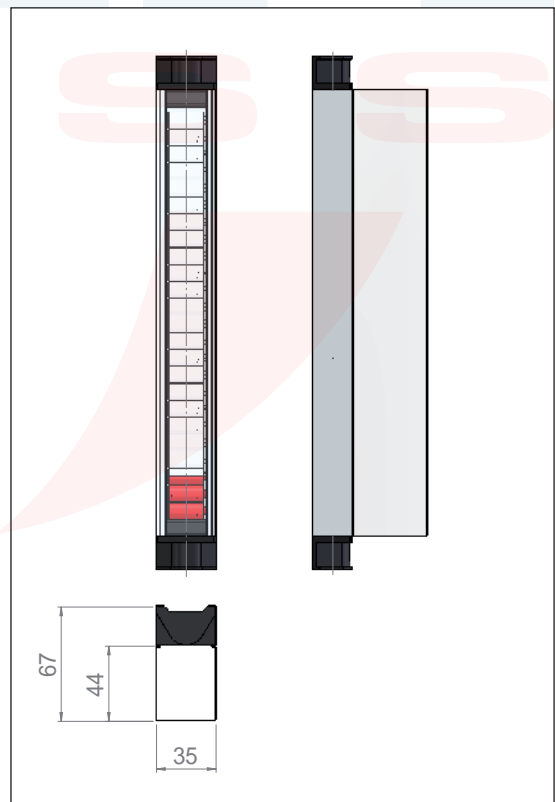


Type **Magnetic roller indicator sight extension PV**

Material quality: Acryl glass
 Width: 35 mm
 Depth: 67 mm
 Ambient temperature: -40°C ... 100°C
 Mounting: on magnetic roller indicator

Approvals / Certificates

ATEX / GOST / GL / BV / DNV / ABS

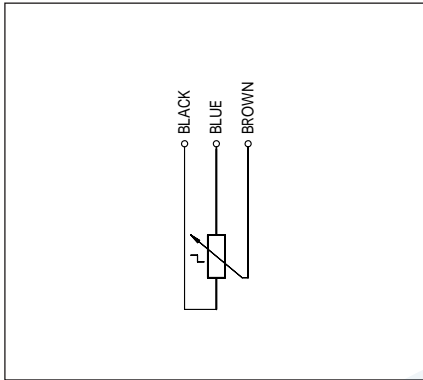


The bypass level indicator-mini are based on a modular design and can be arranged individually.

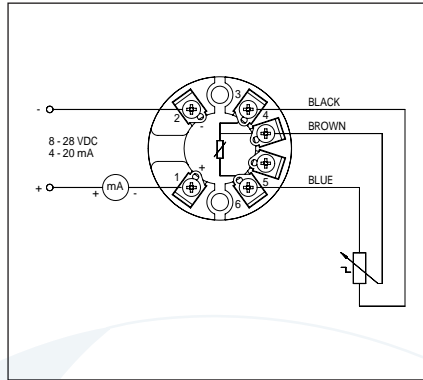
Type key page 302 - 305

Bypass Level Indicator-Mini / Level transmitter

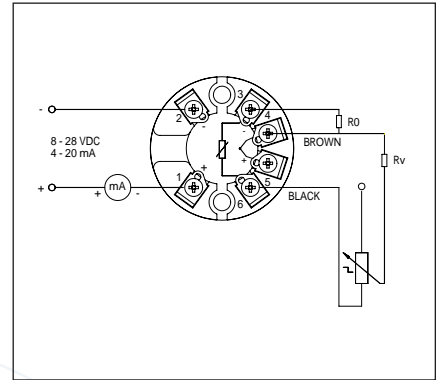
Connection diagram



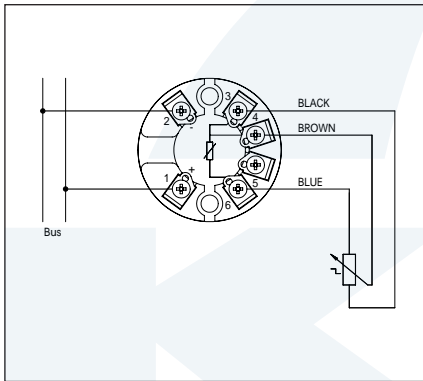
without Control unit



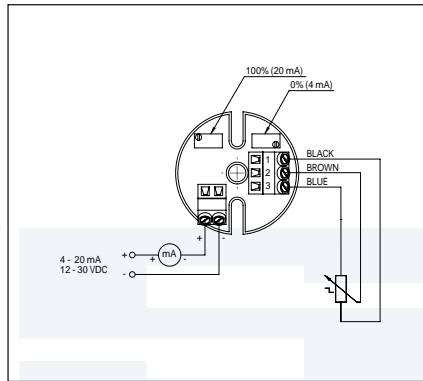
Control unit TP5343..



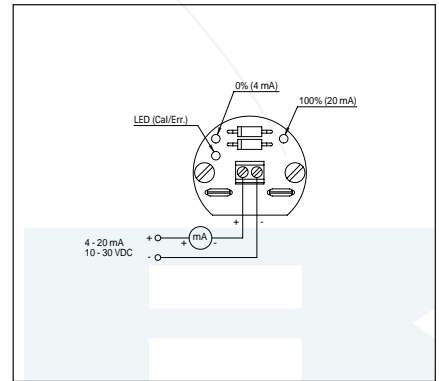
Control unit TD5335..



Control unit TP5350..



Control unit XT42SI Ex



Control unit Magnetostrictive

Some further data according to chapter Control Units 1011

Approvals / Certificates



ATEX-Approval for accuracy K5.. / K10.. / K15..*

II 1/2G Ex ia c IIC T6 - T4	II 1/2G Ex ia c IIC T6 - T3 bzw. Ex d ia c IIC T6 - T4	II 2G Ex d c IIC T6 - T4
II 1/2G Ex d ia c IIC T6 - T4	II 2D Ex td A21 c IP6* T80°C - T190°C bzw. T125	
Liquid temperature Exia max. 180°C / Exd max. 120°C		
Type of protection intrinsic safety Ex ia IIC switch bzw. temperature switch	$I_i \leq 100 \text{ mA}$	
Type of protection intrinsic safety Ex ia IIC temperature probe	$U_i \leq 28 \text{ V}$	$I_i \leq 100 \text{ mA}$ $P_i \leq 700 \text{ mW}$
Type of protection intrinsic safety Ex ia IIC with option /N (NAMUR EN 60947)	$U_i \leq 15 \text{ VDC}$	$I_i \leq 60 \text{ mA}$
Type of protection „moulding“	$U_N \leq 250 \text{ VDC/AC}$	$P_{SN} \leq 50 \text{ W/VA}$ $P_{FN} \leq 700 \text{ mW}$
Type of protection „moulding“ with option /N (NAMUR EN 60947)	$U_N \leq 15 \text{ VDC}$	$I_N \leq 60 \text{ mA}$
Type of protection „moulding“ with option /R22 (resistor)	$U_N \leq 250 \text{ VDC/AC}$	$I_N \leq 100 \text{ mA}$

ATEX-Approval for accuracy K1..*

II 1/2G Ex ia c IIC T6 - T2	II 1G Ex ia IIC T4 - T2	
II 1/2G Ex ia IIC T6 - T2	II 2G Ex d IIC T4	
Type of protection intrinsic safety Ex ia IIC	$U_i \leq 30 \text{ V}$	$I_i \leq 200 \text{ mA}$ $P_i \leq 1000 \text{ mW}$
Temperature class	T6	T5 T4 - T2
Ambient temperature(T_a)	-20°C ... 40°C	-20°C ... 55°C -20°C ... 85°C
Liquid temperature(T_l)	-20°C ... 60°C	-20°C ... 60°C

The bypass level indicator-mini are based on a modular design and can be arranged individually.

Type key page 302 - 305

* = The approval is dependent on the equipment combination

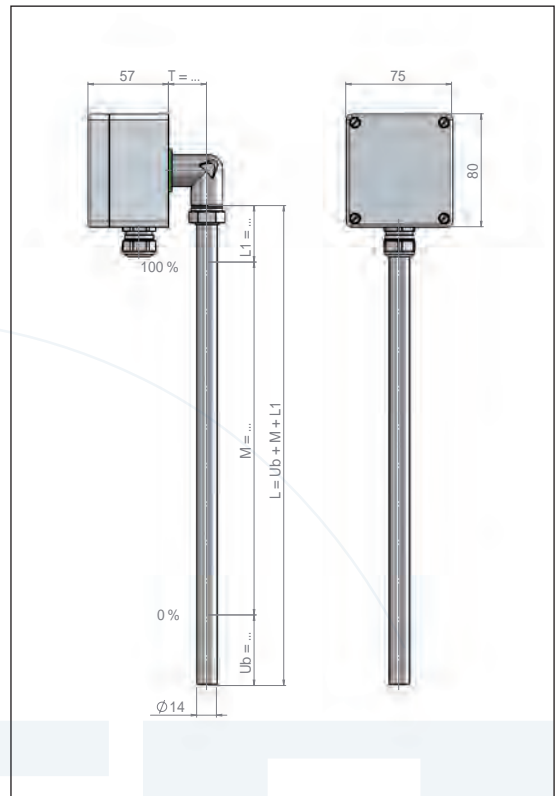
Type **ALF../V../..-M..**

Housing: Aluminium anodized
 Cable entry: M20 x 1.5
 Ingress protection class: IP 65
 Ambient temperature: -40°C ... 100°C
 Level transmitter tube material quality: Stainless steel
 Mounting: Tension strap
 Minimum measures: T: 27 mm / L1: 40 mm / Ub: 50 mm

Accuracy
 Accuracy: 5 / 10 / 15 mm
 Ambient temperature
 - K5 / K10 / K15: -30°C ... 130°C
 - K5HTF / K10HTF / K15HTF: -30°C ... 200°C
 - K5HT / K10HT / K15HT: -40°C ... 250°C

Option control unit / Page 312
 Control unit:
 - Programmable
 - Hart-programmable / SIL2
 - Profibus PA
 - Foundation Fieldbus

Approvals / Certificates
 ATEX / GOST / GL / BV / DNV / ABS



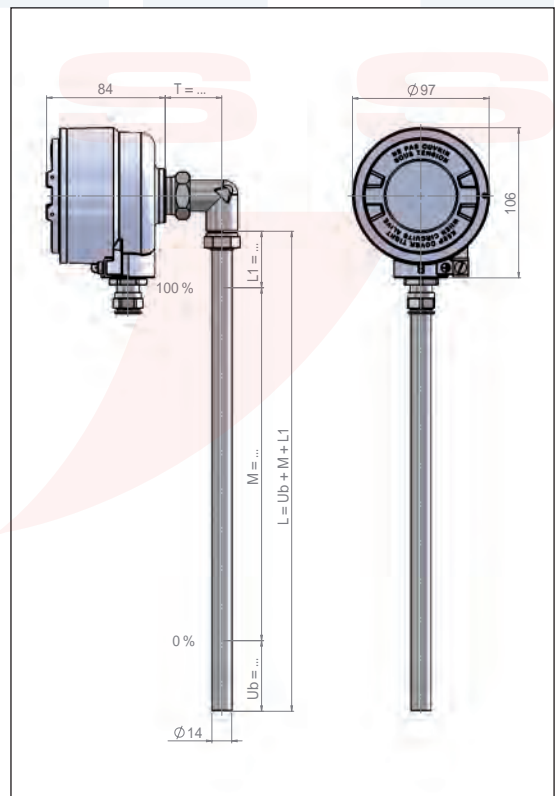
Type **ALDA../V../..EXDG-M..**

Housing: Aluminium coated RAL 9006
 Cable entry: M20 x 1.5
 Ingress protection class: IP 68
 Ambient temperature: -40°C ... 100°C
 Level transmitter tube material quality: Stainless steel
 Mounting: Tension strap
 Minimum measures: T: 50 mm / L1: 40 mm / Ub: 50 mm

Accuracy
 Accuracy: 5 / 10 / 15 mm
 Ambient temperature
 - K5 / K10 / K15: -30°C ... 120°C
 - K5HTF / K10HTF / K15HTF: -30°C ... 120°C
 - K5HT / K10HT / K15HT: -40°C ... 120°C

Option control unit / Page 312
 Control unit:
 - Programmable
 - Hart-programmable / SIL2
 - Profibus PA
 - Foundation Fieldbus

Approvals / Certificates
 ATEX / GOST / GL / BV / DNV / ABS



The bypass level indicator-mini are based on a modular design and can be arranged individually.
Type key page 302 - 305

Bypass Level Indicator-Mini / Level transmitter

Type

DAALA../V/...M..

Electrical connection:	Aluminium anodized
Cable entry:	M20 x 1.5
Ingress protection class:	IP 65
Ambient temperature:	-40°C ... 60°C
Display:	4-digit LED display in red / Free scaling
Current input:	4 ... 20 mA
Level transmitter tube material quality:	Stainless steel
Mounting:	Tension strap
Minimum measures:	T: 50 mm / L1: 40 mm / Ub: 50 mm

Accuracy: 5 / 10 / 15 mm

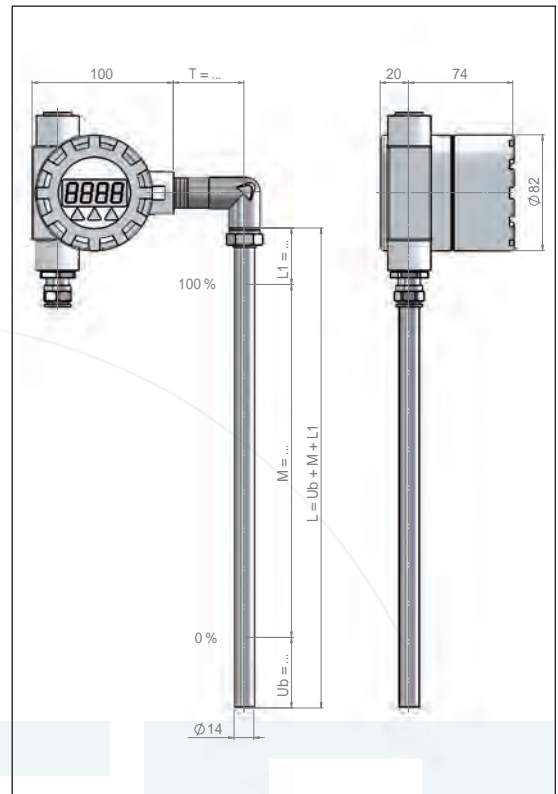
Ambient temperature	
- K5 / K10 / K15:	-30°C ... 130°C
- K5HTF / K10HTF / K15HTF:	-30°C ... 200°C
- K5HT / K10HT / K15HT:	-40°C ... 250°C

Option control unit / Page 312

Control unit:	- Programmable - Hart-programmable / SIL2 - Profibus PA - Foundation Fieldbus
---------------	--

Approvals / Certificates

ATEX / GOST



Type

DAAVDA../V/...EXIADG-M..

Electrical connection:	Stainless steel electropolished
Cable entry:	M20 x 1.5
Ingress protection class:	IP 68
Ambient temperature:	-40°C ... 60°C
Display:	4-digit LED display in red / Free scaling
Current input:	4 ... 20 mA
Level transmitter tube material quality:	Stainless steel
Mounting:	Tension strap
Minimum measures:	T: 50 mm / L1: 40 mm / Ub: 50 mm

Accuracy: 5 / 10 / 15 mm

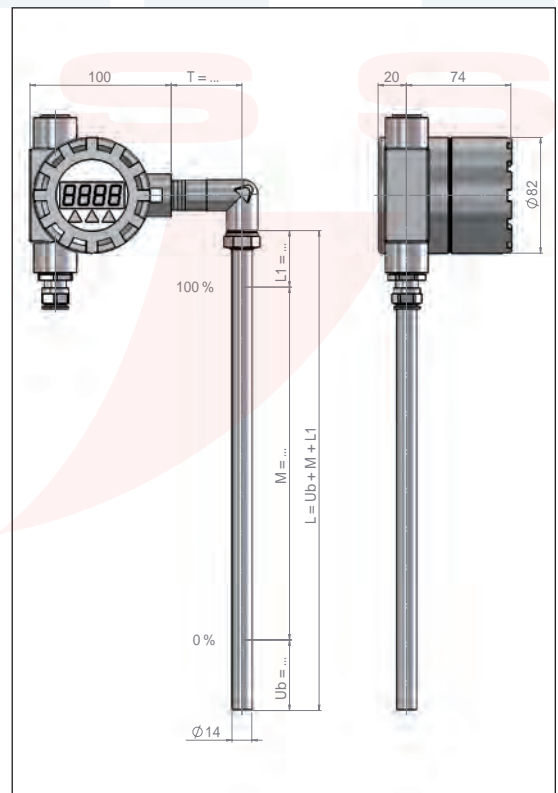
Ambient temperature	
- K5 / K10 / K15:	-30°C ... 130°C (Exd 120°C)
- K5HTF / K10HTF / K15HTF:	-30°C ... 180°C (Exd 120°C)
- K5HT / K10HT / K15HT:	-40°C ... 180°C (Exd 120°C)

Option control unit / Page 312

Control unit:	- Programmable - Hart-programmable / SIL2 - Profibus PA - Foundation Fieldbus
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Approvals / Certificates

ATEX / GOST



The bypass level indicator-mini are based on a modular design and can be arranged individually.

Type key page 302 - 305

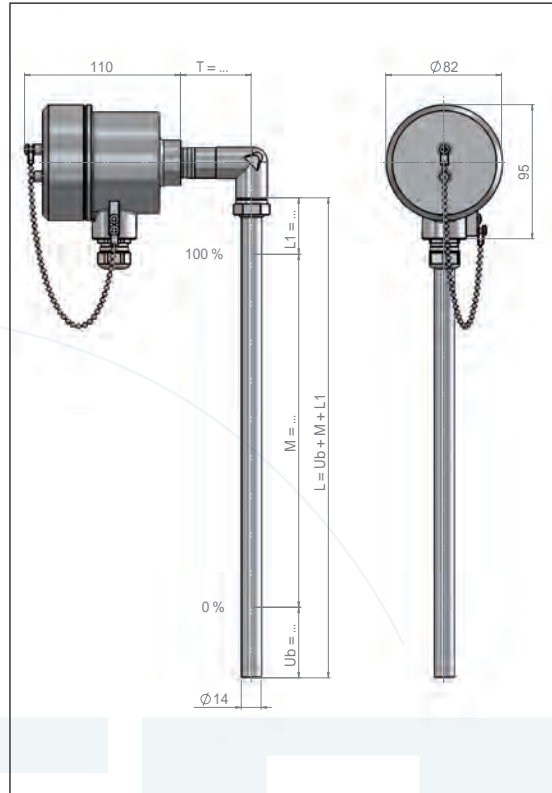
Type AVA/..V/..-M..

Electrical connection: Stainless steel A4 (SS316)
 Cable entry: M20 x 1.5
 Ingress protection class: IP 67
 Ambient temperature: -40°C ... 85°C
 Level transmitter tube material quality: Stainless steel
 Mounting: Tension strap
 Minimum measures: T: 50 mm / L1: 40 mm / Ub: 50 mm

Accuracy
 Accuracy: 5 / 10 / 15 mm
 Ambient temperature
 - K5 / K10 / K15: -30°C ... 130°C
 - K5HTF / K10HTF / K15HTF: -30°C ... 200°C
 - K5HT / K10HT / K15HT: -40°C ... 250°C

Option control unit / Page 312
 Control unit:
 - Programmable
 - Hart-programmable / SIL2
 - Profibus PA
 - Foundation Fieldbus

Approvals / Certificates
 ATEX / GOST / GL / BV / DNV / ABS



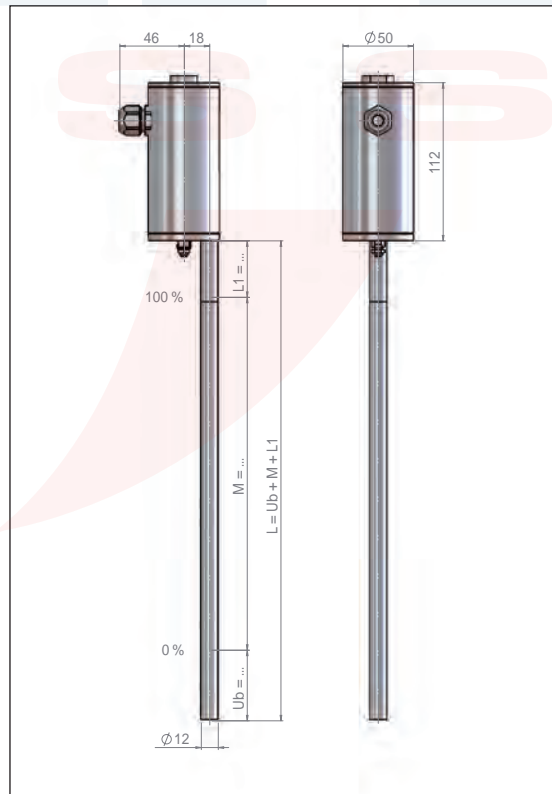
Type AVM/..V/...-M..

Electrical connection: Stainless steel A4 (SS316)
 Cable entry: M16 x 1.5
 Ingress protection class: IP 68
 Ambient temperature: -40°C ... 85°C
 Level transmitter tube material quality: Stainless steel
 Mounting: Tension strap
 Minimum measures: L1: 40 mm / Ub: 50 mm

Accuracy
 Accuracy: 0.2 mm
 Ambient temperature
 - K1: -40°C ... 125°C
 - K1HT: -40°C ... 250°C

Control unit
 - MST / MSTB: - Programmable
 4 ... 20 mA, 10 ... 30 VDC
 - MSTH / MSTHB: - Hart-programmable
 4 ... 20 mA, 10 ... 30 VDC

Approvals / Certificates
 ATEX / GOST / IECEx / SIL2



The bypass level indicator-mini are based on a modular design and can be arranged individually.
Type key page 302 - 305

Bypass Level Indicator-Mini / Level transmitter

Type

AVDM/..V/../EXIADG-M..

Electrical connection:	Stainless steel A4 (SS316)
Cable entry:	M20 x 1.5
Ingress protection class:	IP 68
Ambient temperature:	-40°C ... 85°C
Level transmitter tube material quality:	Stainless steel
Mounting:	Tension strap
Minimum measures:	L1: 40 mm / Ub: 50 mm

Accuracy

Accuracy: 0.2 mm

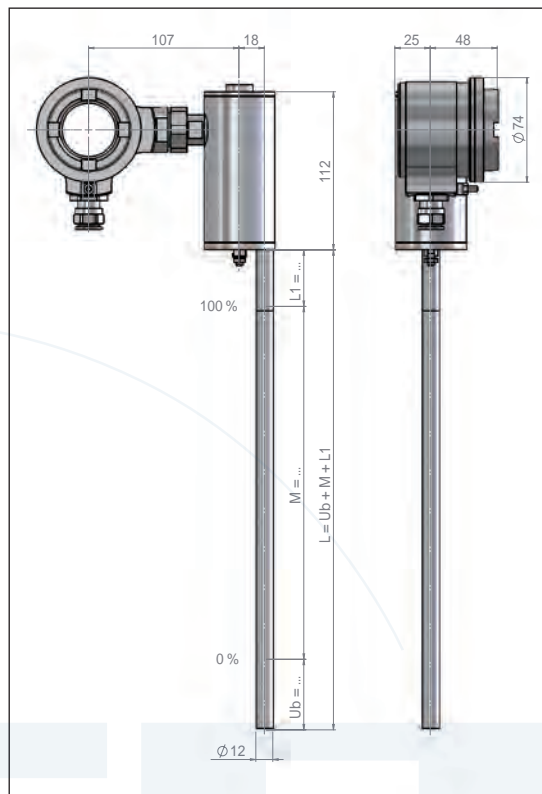
Ambient temperature
- K1: ATEX temperature page 312

Control unit

- MSTB: - Programmable
4 ... 20 mA, 10 ... 30 VDC
- MSTHB: - Hart-programmable
4 ... 20 mA, 10 ... 30 VDC

Approvals / Certificates

ATEX / GOST / IECEx / SIL2



Type

DAAVDM/..V/../EXIADG-M..

Electrical connection:	Stainless steel A4 (SS316)
Cable entry:	M20 x 1.5
Ingress protection class:	IP 68
Ambient temperature:	-40°C ... 85°C
Level transmitter tube material quality:	Stainless steel
Mounting:	Tension strap
Minimum measures:	L1: 40 mm / Ub: 50 mm

Accuracy

Accuracy: 0.2 mm

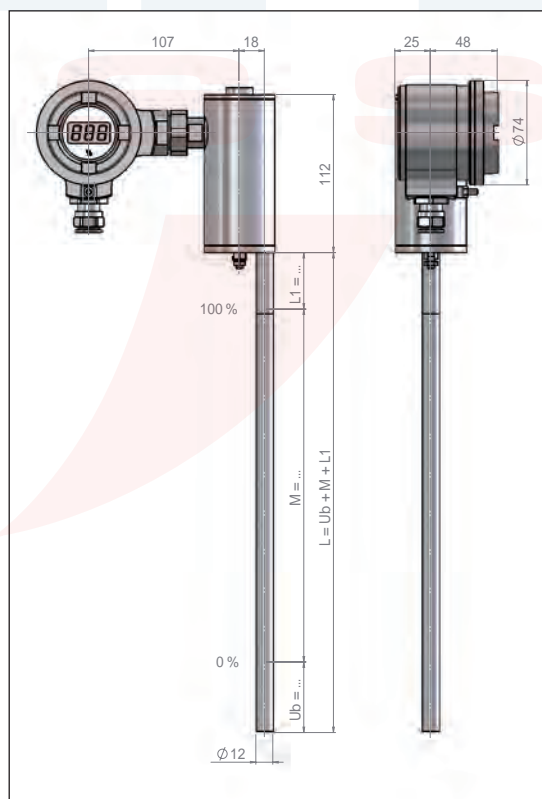
Ambient temperature
- K1: ATEX temperature page 312

Control unit

- MSTB: - Programmable
4 ... 20 mA, 10 ... 30 VDC
- MSTHB: - Hart-programmable
4 ... 20 mA, 10 ... 30 VDC

Approvals / Certificates

ATEX / GOST / IECEx / SIL2



The bypass level indicator-mini are based on a modular design and can be arranged individually.

Type key page 302 - 305

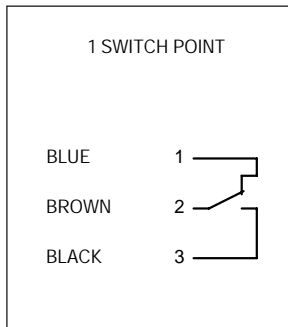


The bypass level indicator-mini are based on a modular design and can be arranged individually.

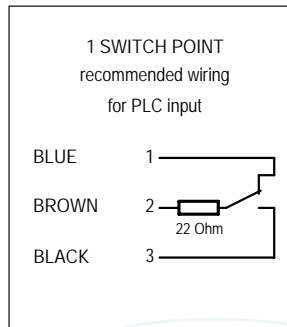
Type key page 302 - 305

Bypass Level Indicator-Mini / Magnetic switch

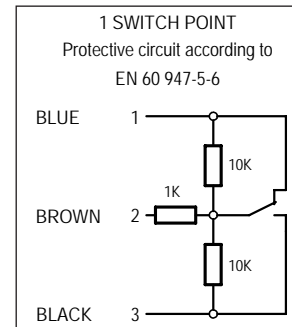
Connection diagram



Change over



Change over
with resistor



Change over
with NAMUR EN 60947

KUBLER

SWISS

Approvals / Certificates



ATEX*

II 2G Ex ia IIC T6 - T1

II 2D Ex tD A21 IP6* T80°C - T300°C

Liquid temperature Exia max. 180°C / Exd max. 120°C

Type of protection intrinsic safety Ex ia IIC switch bzw. temperature switch $I_i \leq 100 \text{ mA}$

Type of protection intrinsic safety Ex ia IIC temperature probe $U_i \leq 28 \text{ V}$

Type of protection intrinsic safety Ex ia IIC with option /N (NAMUR EN 60947) $U_i \leq 15 \text{ VDC}$

Type of protection „moulding“ $U_N \leq 250 \text{ VDC/AC}$

Type of protection „moulding“ with option /N (NAMUR EN 60947) $U_N \leq 15 \text{ VDC}$

Type of protection „moulding“ with option /R22 (resistor) $U_N \leq 250 \text{ VDC/AC}$

II 2G Ex d IIC T6 - T4

II 2D Ex tD A21 IP6* T80°C - T120°C

$I_i \leq 100 \text{ mA}$ $P_i \leq 700 \text{ mW}$

$I_i \leq 60 \text{ mA}$

$P_{SN} \leq 50 \text{ W/VA}$ $P_{FN} \leq 700 \text{ mW}$

$I_N \leq 60 \text{ mA}$

$I_N \leq 100 \text{ mA}$

The bypass level indicator-mini are based on a modular design and can be arranged individually.

Type key page 302 - 305

* = The approval is dependent on the equipment combination

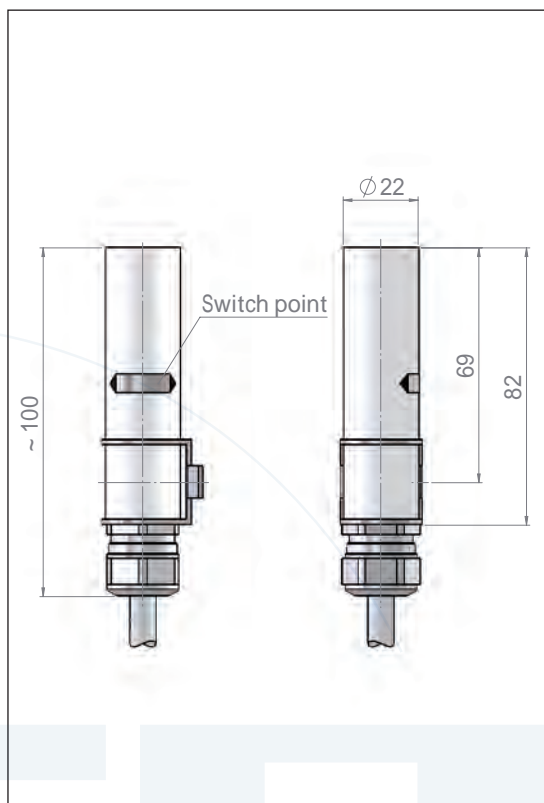
Type **RU40/./././././.**
RU40/././././././EXIAG

Housing:	Aluminium anodized
Ingress protection class:	IP 65
Mounting:	Free positionable on the chamber
Ambient temperature	
- with PVC connection cable:	-20°C ... 80°C
- with Silikon connection cable:	-40°C ... 150°C
- with PUR connection cable:	-40°C ... 80°C
- with Radox connection cable:	-35°C ... 120°C

Switch function	
Function:	Change over
Switch behaviour:	Bistable
Switching capacity:	230 V / 0.5 A / 40 VA
Switching capacity / ATEX Exia:	Exia 100 mA / Exia NAMUR 60 mA
Switching hysteresis:	5 mm ... 7 mm

Options	
- Switch option .. /R22:	Resistor 22 Ohm / 0.21 W
- Switch option .. /N:	NAMUR EN 60947

Approvals / Certificates	
ATEX / GOST / GL / BV / DNV / ABS / SIL1	



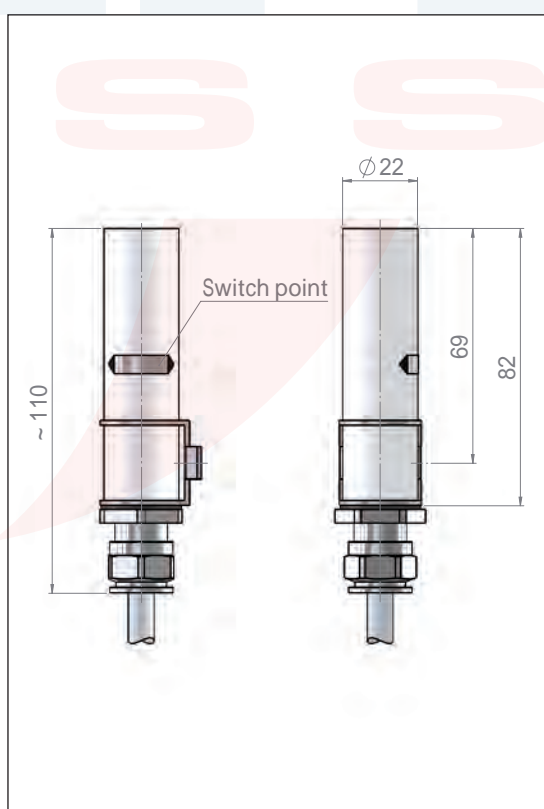
Type **RUD40/./././././EXDG**

Housing:	Aluminium anodized
Ingress protection class:	IP 65
Mounting:	Free positionable on the chamber
Ambient temperature:	
- with PVC connection cable:	-20°C ... 80°C
- with Silikon connection cable:	-40°C ... 120°C
- with PUR connection cable:	-40°C ... 80°C
- with Radox connection cable:	-35°C ... 120°C

Switch function	
Function:	Change over
Switch behaviour:	Bistable
Switching capacity:	U_N 250 V / P_{SN} 50 W/VA / P_{FN} 700 mW
- NAMUR EN 60947:	U_N 15 VDC / I_N 60 mA
- with resistor:	U_N 250 V / I_N 100 mA
Switching hysteresis:	5 mm ... 7 mm

Options	
- Switch option .. /R22:	Resistor 22 Ohm / 0.21 W
- Switch option .. /N:	NAMUR EN 60947

Approvals / Certificates	
ATEX / GOST / GL / BV / DNV / ABS / SIL1	



The bypass level indicator-mini are based on a modular design and can be arranged individually.
Type key page 302 - 305

Bypass Level Indicator-Mini / Magnetic switch

Type **RUV40/.../.../...**
RUV40/.../.../.../EXIAG

Housing: Stainless steel
Ingress protection class: IP 68
Mounting: Free positionable on the chamber

Ambient temperature
- with PVC connection cable: -20°C ... 80°C
- with Silikon connection cable: -40°C ... 150°C
- with PUR connection cable: -40°C ... 80°C
- with Radox connection cable: -35°C ... 120°C

Switch function

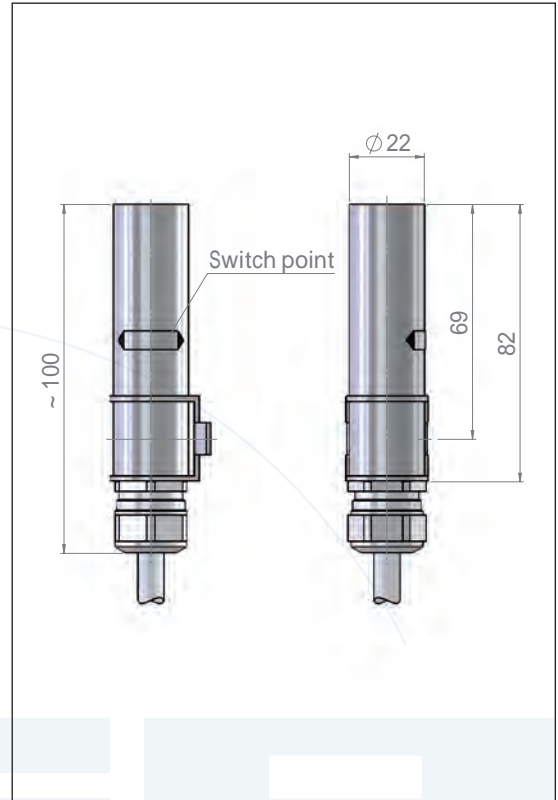
Function: Change over
Switch behaviour: Bistable
Switching capacity: 230 V / 0.5 A / 40 VA
Switching capacity / ATEX Exia: Exia 100 mA / Exia NAMUR 60 mA
Switching hysteresis: 5 mm ... 7 mm

Options

- Switch option .. /R22: Resistor 22 Ohm / 0.21 W
- Switch option .. /N: NAMUR EN 60947

Approvals / Certificates

ATEX / GOST / GL / BV / DNV / ABS / SIL1



Type **RUVD40/.../.../.../EXDG**

Housing: Aluminium anodized
Ingress protection class: IP 65
Mounting: Right or left at the magnetic roller indicator

Ambient temperature
- with PVC connection cable: -20°C ... 80°C
- with Silikon connection cable: -40°C ... 120°C
- with PUR connection cable: -40°C ... 80°C
- with Radox connection cable: -35°C ... 120°C

Switch function

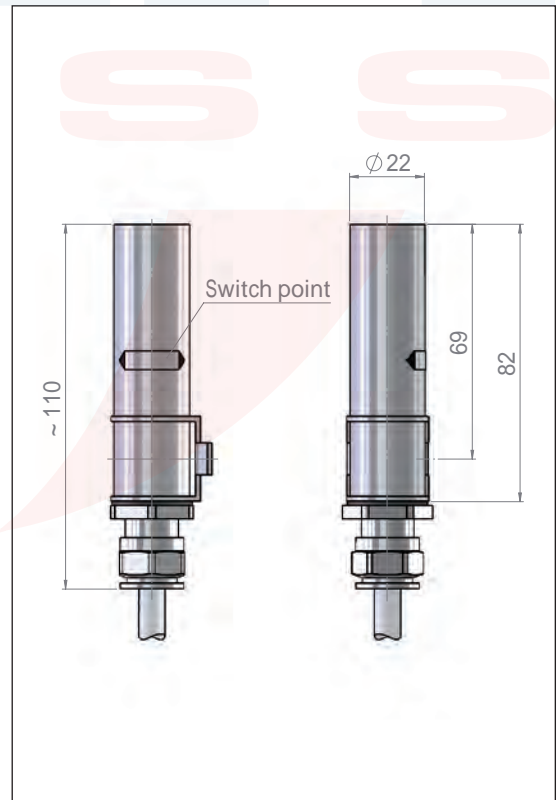
Function: Change over
Switch behaviour: Bistable
Switching capacity: U_N 250 V / P_{SN} 50 W/VA / P_{FN} 700 mW
- NAMUR EN 60947: U_N 15 VDC / I_N 60 mA
- with resistor: U_N 250 V / I_N 100 mA
Switching hysteresis: 5 mm ... 7 mm

Options

- Switch option .. /R22: Resistor 22 Ohm / 0.21 W
- Switch option .. /N: NAMUR EN 60947

Approvals / Certificates

ATEX / GOST / GL / BV / DNV / ABS / SIL1



The bypass level indicator-mini are based on a modular design and can be arranged individually.

Type key page 302 - 305

Type **ALERU40/..**
ALERU40/..EXIAG

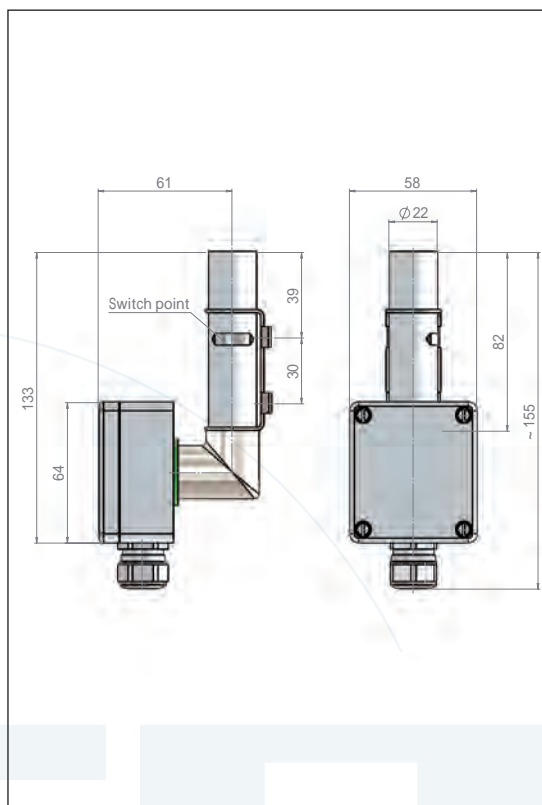
Housing: Aluminium anodized
 Cable entry: M20 x 1.5
 Ingress protection class: IP 65
 Mounting: Free positionable on the chamber
 Ambient temperature: -40°C ... 130°C

Switch function
 Function: Change over
 Switch behaviour: Bistable
 Switching capacity: 230 V / 0.5 A / 40 VA
 Switching capacity / ATEX Exia: Exia 100 mA / Exia NAMUR 60 mA
 Switching hysteresis: 5 mm ... 7 mm

Options
 - Switch option .. /R22: Resistor 22 Ohm / 0.21 W
 - Switch option .. /N: NAMUR EN 60947

Approvals / Certificates

ATEX / GOST / GL / BV / DNV / ABS / SIL1



Type **ALFRU40/..**
ALFRU40/..EXIAG

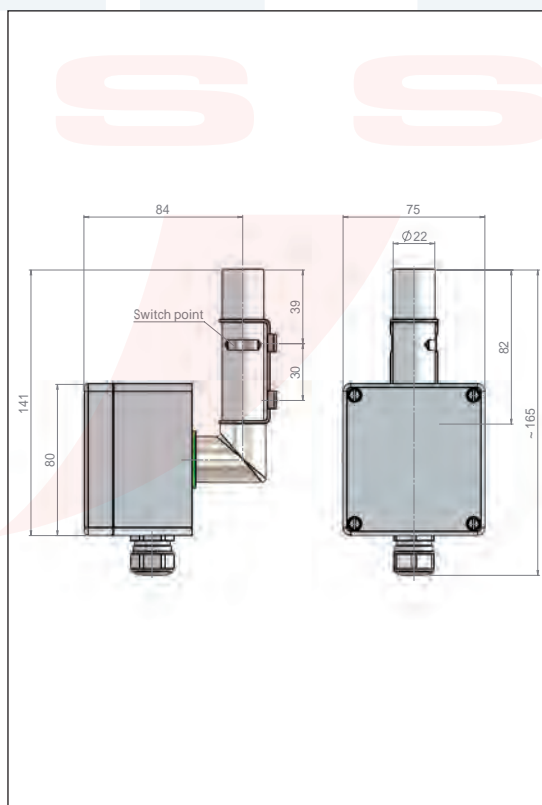
Housing: Aluminium anodized
 Cable entry: M20 x 1.5
 Ingress protection class: IP 65
 Mounting: Free positionable on the chamber
 Ambient temperature: -40°C ... 130°C

Switch function
 Function: Change over
 Switch behaviour: Bistable
 Switching capacity: 230 V / 0.5 A / 40 VA
 Switching capacity / ATEX Exia: Exia 100 mA / Exia NAMUR 60 mA
 Switching hysteresis: 5 mm ... 7 mm

Options
 - Switch option .. /R22: Resistor 22 Ohm / 0.21 W
 - Switch option .. /N: NAMUR EN 60947

Approvals / Certificates

ATEX / GOST / GL / BV / DNV / ABS / SIL1



The bypass level indicator-mini are based on a modular design and can be arranged individually.

Type key page 302 - 305

Bypass Level Indicator-Mini / Isolation / Heat tracing

Type AIT AHT

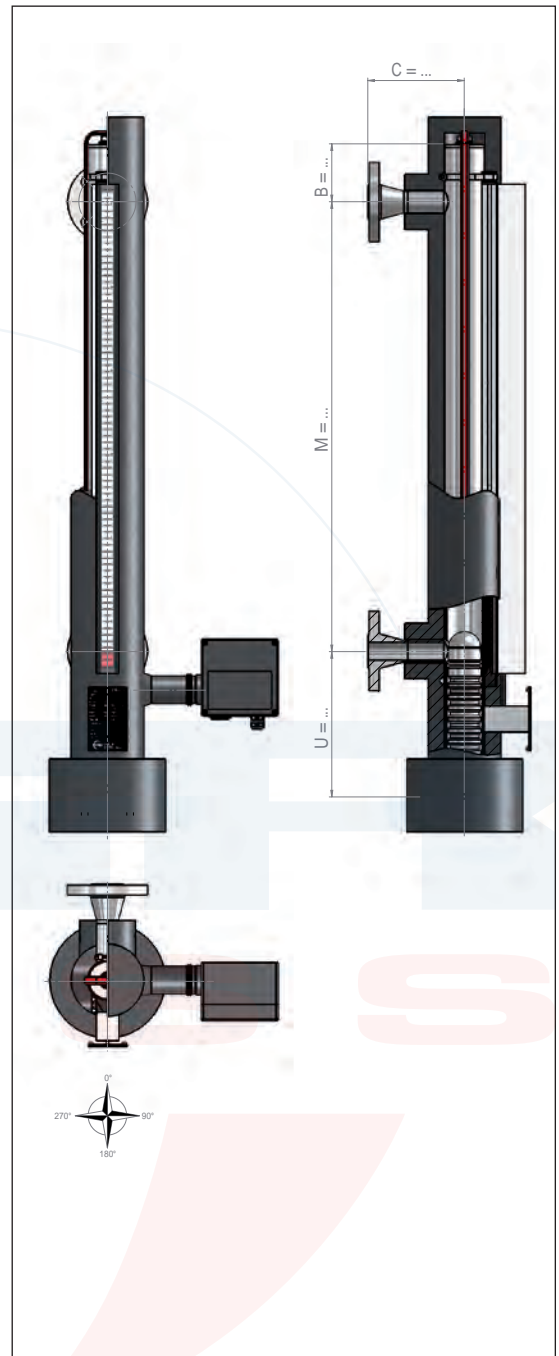
Armaflex isolation AIT	
Material quality:	Cellular plastic based on synthetic rubber
Fire behaviour:	Self-extinguishing, not drippy, not flammable
Nominal thickness:	32 mm
Ambient temperature:	-50°C ... 105°C
UV-resistance:	No

Armaflex isolation AHT	
Material quality:	Cellular plastic based on synthetic rubber
Fire behaviour:	Self-extinguishing, not drippy, not flammable
Nominal thickness:	25 mm
Ambient temperature:	-50°C ... 150°C
UV-resistance:	Yes

Type H..A H..B

Self-regulating antifreeze heat tracing	
Type:	H75A H75B acc. to EExe / T4
Terminal box:	GFK black with cable entry M25
Protective shell:	Fluoropolymer
Power supply:	230V AC
Power output:	76 W/m at 10°C
Holding temperature:	~10°C / Frost protection (32 mm Isolation necessary)
Steam-flushing:	No
Ambient temperature:	-40°C ... 75°C
Approvals / Certificates:	ATEX / DNV

Self-regulating antifreeze heat tracing	
Type:	H150A H150B acc. to EExe / T2
Terminal box:	GFK black with cable entry M25
Protective shell:	Fluoropolymer
Power supply:	230V AC
Power output:	50 W/m at 10°C
Holding temperature:	~10°C / Frost protection (32 mm Isolation necessary)
Steam-flushing:	Yes
Minimale Ambient temperature:	-40°C ... 150°C
Approvals / Certificates:	ATEX / DNV



Approvals / Certificates



The bypass level indicator-mini are based on a modular design and can be arranged individually.

Type key page 302 - 305

Type

SW

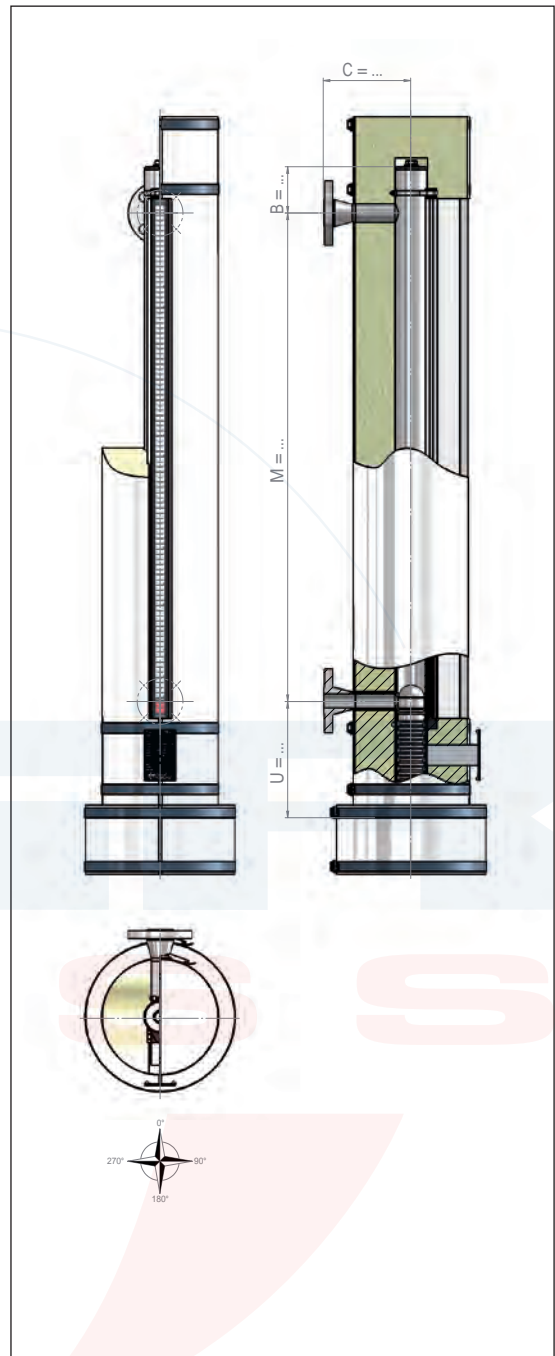
Rock-wool isolation SW

Material quality: Rock-wool with chrome-nickel cover (Removable)

Nominal thickness: ~50 mm

Ambient temperature: -50°C ... 750°C

UV-resistance: Yes

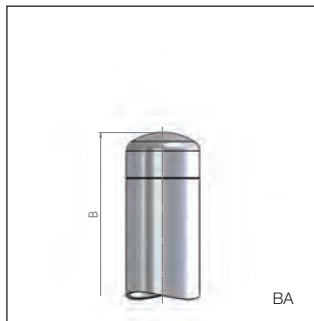


The bypass level indicator-mini are based on a modular design and can be arranged individually.

Type key page 302 - 305

Bypass Level Indicator-Mini / Chamber end top

Chamber end top



BA

Tube cap



BB

Tube plate



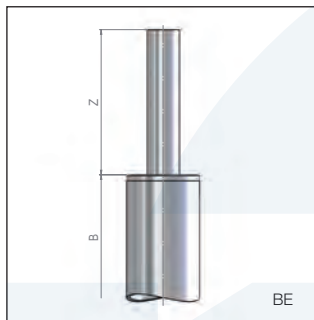
BC

Tube plate with vent plug G..



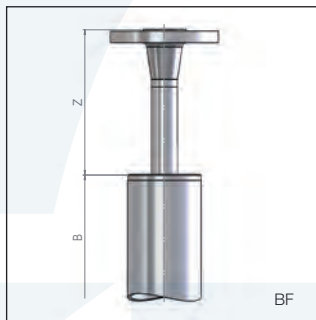
BD

Tube plate with vent plug NPT..



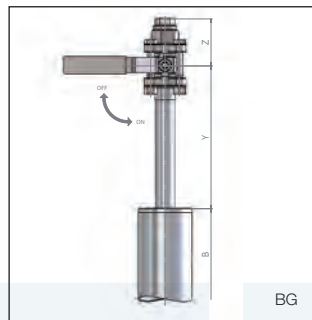
BE

Tube plate with vent welding stub end



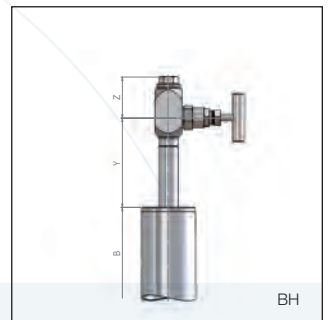
BF

Tube plate with vent flange



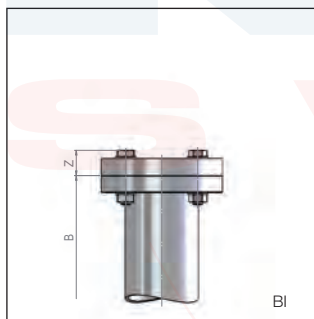
BG

Tube plate with vent ball valve



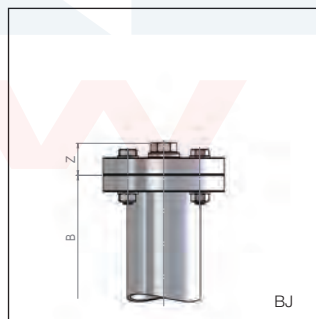
BH

Tube plate with vent needle valve



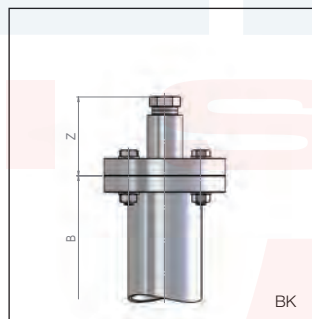
BI

Flanged connection



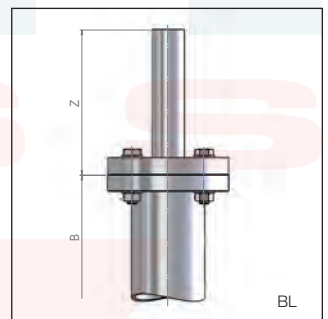
BJ

Flanged connection with vent plug G..



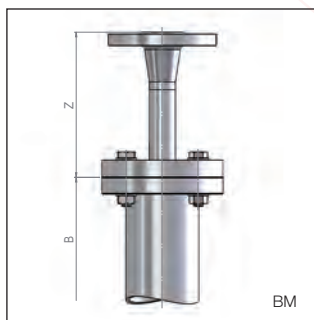
BK

Flanged connection with vent plug NPT..



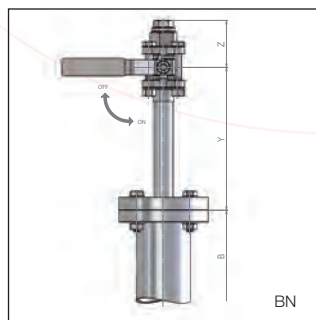
BL

Flanged connection with vent welding stub end



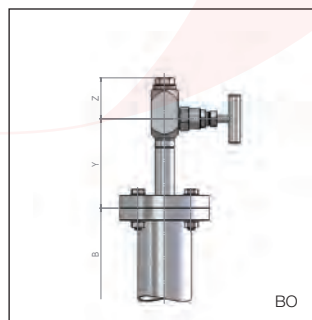
BM

Flanged connection with vent flange



BN

Flanged connection with vent ball valve



BO

Flanged connection with vent needle valve

The bypass level indicator-mini are based on a modular design and can be arranged individually.

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Chamber end top

Pressure rating	6 / 150#		
	B	Y	Z
	Measure in ~ mm		
Tube cap	-	-	-
Tube plate	50	-	-
Tube plate with vent plug G1/2	50	-	20
Tube plate with vent plug NPT1/2	50	-	30
Tube plate with vent welding stub end	50	-	100
Tube plate with vent flange	50	-	100
Tube plate with vent ball valve G	50	120	55
Tube plate with vent needle valve G	50	120	50
Flanged connection	50	-	30
Flanged connection with vent plug G1/2	50	-	35
Flanged connection with vent plug NPT1/2	50	-	65
Flanged connection with vent welding stub end	50	-	100
Flanged connection with vent flange	50	-	100
Flanged connection with vent ball valve G	50	120	55
Flanged connection with vent needle valve G	50	120	50

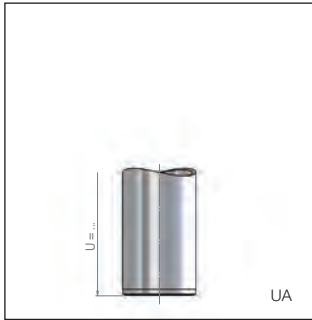
KESFA
SWISS

The bypass level indicator-mini are based on a modular design and can be arranged individually.

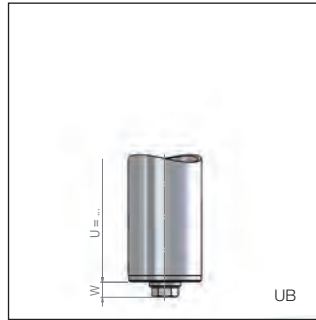
Type key page 302 - 305

Bypass Level Indicator-Mini / Chamber end bottom

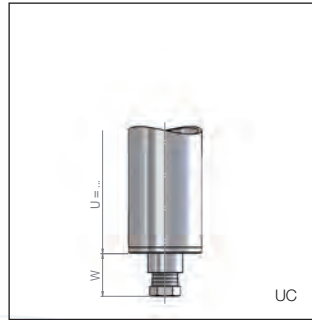
Chamber end bottom



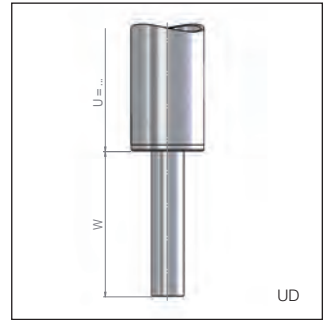
Tube plate



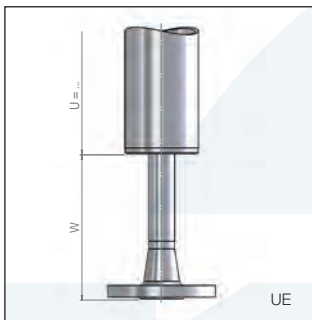
Tube plate with drain plug G..



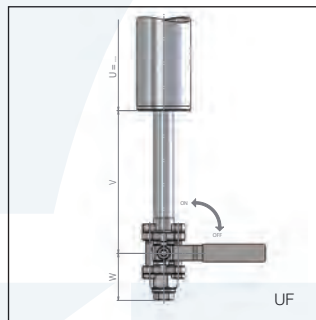
Tube plate with drain plug NPT..



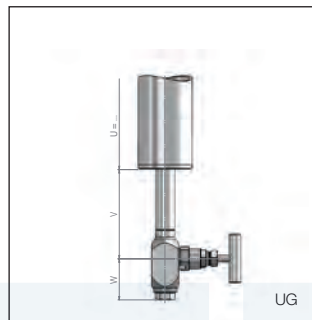
Tube plate with drain welding stub end



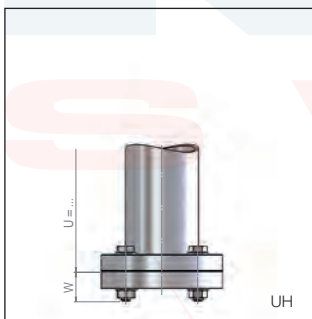
Tube plate with drain flange



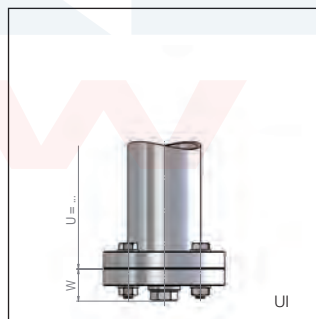
Tube plate with drain ball valve



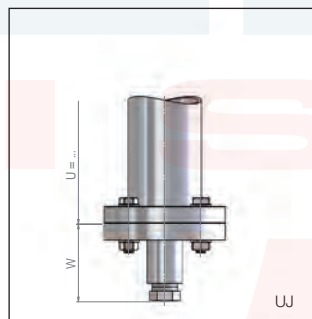
Tube plate with drain needle valve



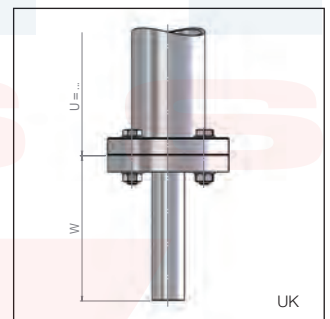
Flanged connection



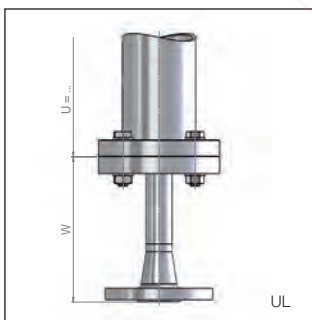
Flanged connection with drain plug G..



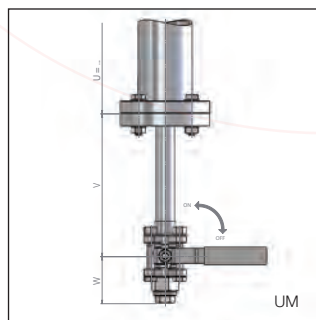
Flanged connection with drain plug NPT..



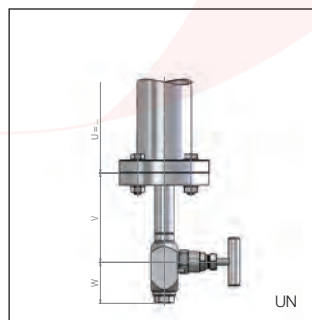
Flanged connection with drain welding stub end



Flanged connection with drain flange



Flanged connection with drain ball valve



Flanged connection with drain needle valve

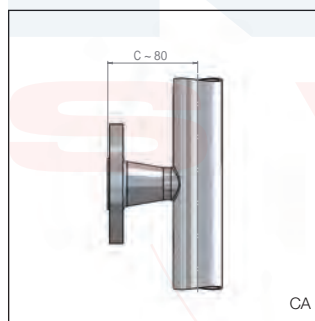
The bypass level indicator-mini are based on a modular design and can be arranged individually.

Type key page 302 - 305

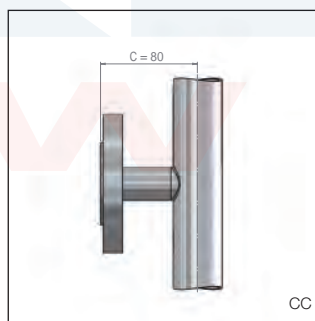
Chamber end bottom

Pressure rating	6 / 150#		
	U	V	W
	Measure in ~ mm		
Tube plate	... ^s	-	-
Tube plate with drain plug G1/2	... ^s	-	20
Tube plate with drain plug NPT1/2	... ^s	-	30
Tube plate with drain welding stub end	... ^s	-	100
Tube plate with drain flange	... ^s	-	100
Tube plate with drain ball valve G	... ^s	120	55
Tube plate with drain needle valve G	... ^s	120	50
Flanged connection	... ^s	-	30
Flanged connection with drain plug G1/2	... ^s	-	35
Flanged connection with drain plug NPT1/2	... ^s	-	65
Flanged connection with drain welding stub end	... ^s	-	100
Flanged connection with drain flange	... ^s	-	100
Flanged connection with drain ball valve G	... ^s	120	55
Flanged connection with drain needle valve G	... ^s	120	50

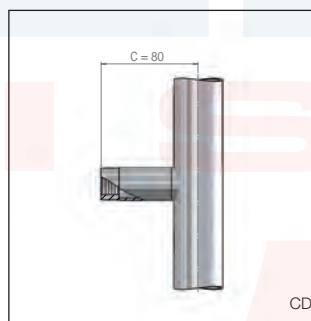
Process connection / Support bracket



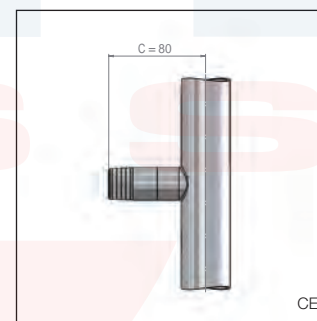
Welding neck flange (Standard)



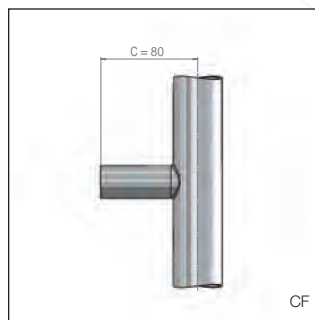
Blind flange



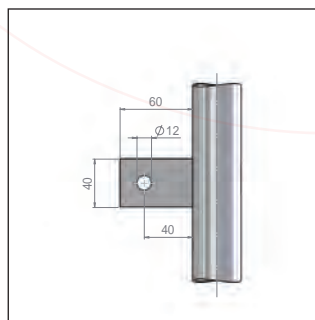
Female thread



Male thread



Welding stub end



Support bracket HE-4840
(recommended for M ≥ 2000 mm)

The bypass level indicator-mini are based on a modular design and can be arranged individually.

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...^s = Depending on the Float length