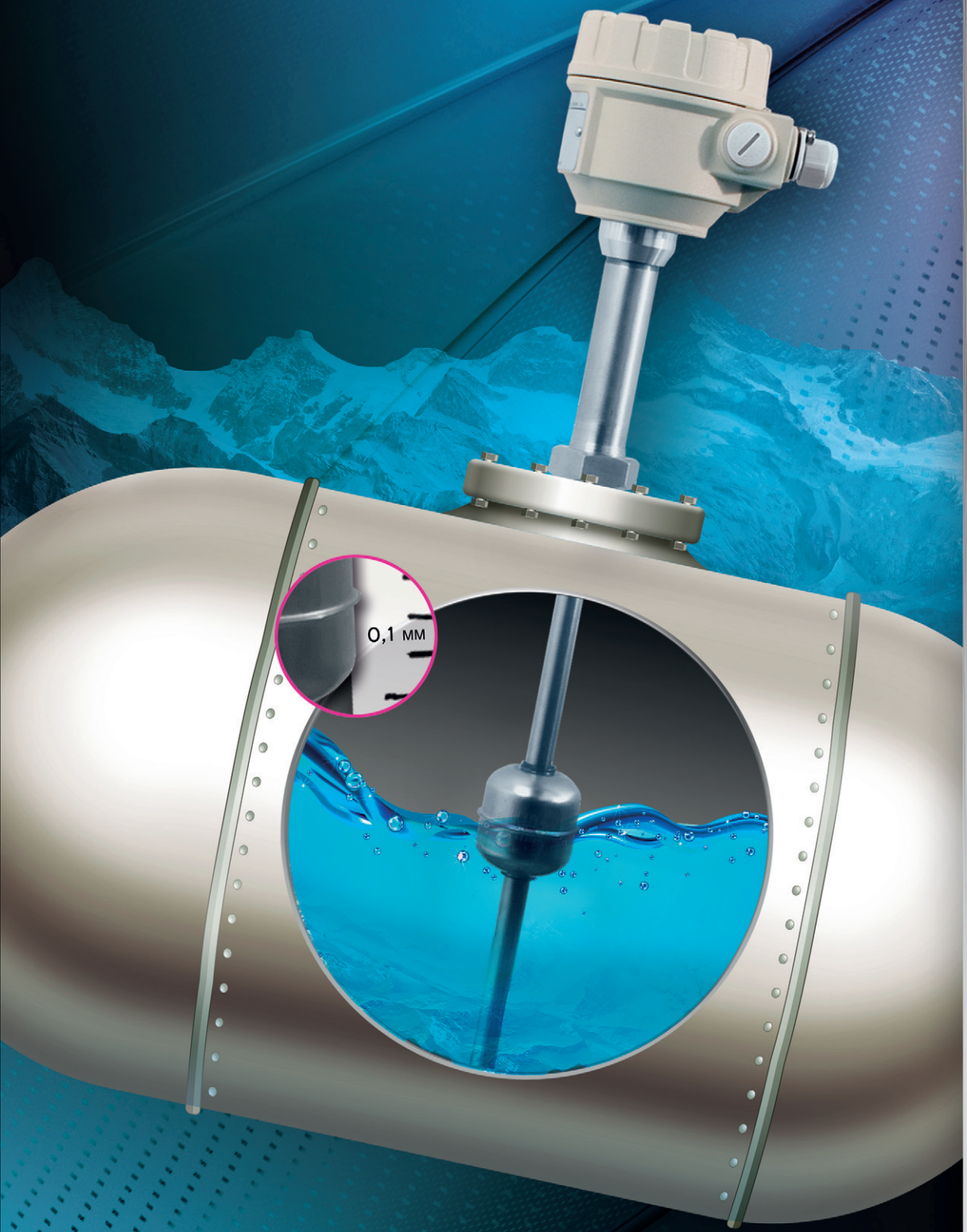
0.1 MM RESOLUTION

NIVOTRACK

MAGNETOSTRICTIVE LEVEL TRANSMITTERS



3 YEARS WARRANTY @ NIVELCO – WHERE ELSE?

NIVELCO

LEVEL TRANSMITTERS

NIVOTRACK MAGNETOSTRICTIVE LEVEL TRANSMITTERS

MAIN FEATURES

- *0.1 mm or 1 mm resolution*
- *Insertion length maximum 15 m*
- *Rigid or flexible guide tube*
- *Plastic coated version for chemicals*
- *4-20 mA and HART output*
- *Graphical display*
- *99 point linearization table*
- *Measurement optimalisation*
- *Volume measurement*
- *Robbanásbiztos kivitel*
- *Volume measurement*
- *OIML R85 certification*

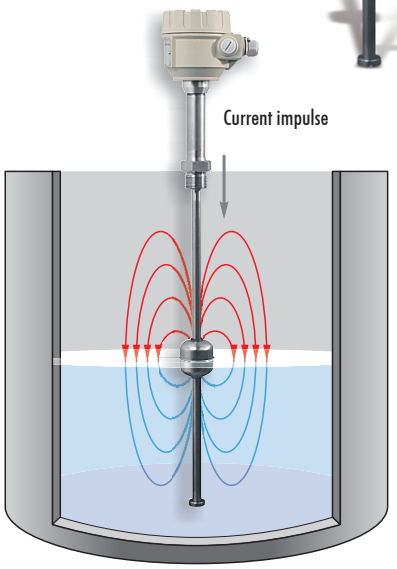
APPLICATIONS

- *Custody transfer measurement*
- *Oil and gas industry*
- *Fuels and gasoline products*
- *Pharmaceutical industry*
- *Chemical industry*
- *Food industry*
- *Alcohols and beverages*
- *Installation in bypass tubes feasible*
- *Supplementary level transmitter for NIVOFLIP magnetic flip indicator*

GENERAL DESCRIPTION

NIVOTRACK magnetostrictive transmitters are an ideal solution for high accuracy measurement of clean fluids. Its high precision renders the NIVOTRACK suitable for custody transfer measurement of liquids such as fuels, solvents, alcohol derivatives etc. Units with flexible tube do not only make this accurate measurement for higher tanks possible, but offer a more convenient way for shipment and installation. Plastic coated versions of the NIVOTRACK substantially expand the field of application by a wide range of aggressive materials.

Integrating the transmitter into a process control system is easy thanks to the intelligent signal processing and communication software as well as the wide of range of accessories offered.



OPERATING PRINCIPLE

A float containing a magnetic disc moves along a guide tube with the specific magnetostrictive wire in it. A pulse generated by the electronics travels along the magnetostrictive wire. At the point the pulse reaches the float's magnetic field, a torsion develops. Reflected from the torsion point, the pulse creates an acoustic wave that travels back along the wire. The 4-20 mA output of the transmitter is proportional to the elapsed time between the excitation and detection.

POSITION OF THE DISPLAY

Vertical and horizontal display position is offered for optimal mounting in your application.

TECHNICAL DATA

Type		Rigid probe version	Flexible probe version	Plastic coated rigid probe version	Mini version with rigid probe
Measured process value		Liquid level, distance, volume			
Nominal length (L)		0.5 m ... 4.5 m (1.5 ... 14.5 ft)	2 m ... 15 m (6.5 ... 50 ft)	0,5 m ... 3 m (1.5 ... 10 ft)	0,5 m ... 1,5 m (1.5 ... 4.5 ft)
Material of the tube		Stainless steel: DIN 1.4571 (316 Ti)		PFA coated stainless steel	Rozsdamentes acél: DIN 1.4571 (316 Ti)
Max. medium pressure(1)		2.5 MPa (25 bar g / 363 psi g)	1.6 MPa (16 bar g / 232 psi g)	0.3 MPa (3 bar g / 43.5 psi g)	1 MPa (10 bar g / 145 psi g)
Medium temperature		-40 °C ... +90 °C (-40 °F ... 194 °F), see temperature diagram			
Resolution		0.1 or 1 mm (0.004 or 0.04 inch) - as per selected type			
Linearity with dry calibration		± 0.25 or ± 1 mm (± 0.01 or ± 0.04 inch) - as per selected type			
Temperature coefficient		0.04 mm / 10 °C (0.0015 inch / 50 °F) between (-40 °C ... +70 °C) [- 40 °F ... 158 °F]			
Range span		Maximum range: see dimensions; Minimum range: 200 mm (7.85 inch)			
Zero point offset		Anywhere within the range			
Standard float diameter / material(2)		Ø 53.5 x 60 mm (2 x 2.35 inch) cylindrical / 1.4404 (316L)	Ø 95 mm (4 inch) ball / 1.4404 (316L)	Ø 76 x 87 mm (3 x 3.45 inch) cylindrical / PVDF / PP	Ø 27 x 29 mm (1 x 1.15 inch) cylindrical / 316L
Medium density		Depends on the applied float			
Material of wetted parts		Stainless steel: DIN 1.4571, 1.4404		PFA, PVDF, PP	Stainless steel: DIN 1.4571, 316L
Ambient temperature		–40 °C...+70 °C (-40 °F ... +158 °F), plastic housing: –25 °C...+70 °C (-13 °F ... +158 °F), with display: –25 °C...+70 °C (-13 °F ... +158 °F), Ex type: see temperature diagram			
Output	Analogue	4-20 mA (limit values: 3.9 ... 20.5 mA)			
	Digital	HART			
	Display	SAP-300 graphic display			
Damping time		Adjustable 0 s ... 99 s			
Error indication		22 mA or 3.8 mA or holding			
Output load		Rt = (Ut-12.5V) / 0.02 A, Ut = power supply voltage			
Power supply		12.5 V – 36 V DC			
Electrical protection		Class III.			
Ingress protection		IP 67			
Process connection		as per order code			
Electric connection		2 x M20x1.5 plastic cable glands for 6...12 mm (0.25 ... 0.5 inch) cable + 2 x NPT ½ " internal thread for cable protective pipe terminal block for 0.5...1.5 mm² (AWG 20 ... AWG 15) wire cross section Ex type: see „Special data for Ex certified models" table			
Housing		Paint coated aluminium or plastic (PBT)			
Mass		1.7 kg (3.75 lb) + m. probe: 0.6 kg/m (0.4 lb/ft)	2.9 kg (6.4 lb) + m. probe: 0.3 kg/m (0.2 lb/ft) + counter weight 3.5 kg (7.7 lb)	1.7 kg (3.75 lb) + m. probe: 0.7 kg/m (0.45 lb/ft)	1.7 kg (3.75 lb) + m. probe: 0.6 kg/m (0.4 lb/ft)

(1) Depends on selected float
(2) Requested float type should be specified when placing an order

SPECIAL DATA FOR EX CERTIFIED MODELS

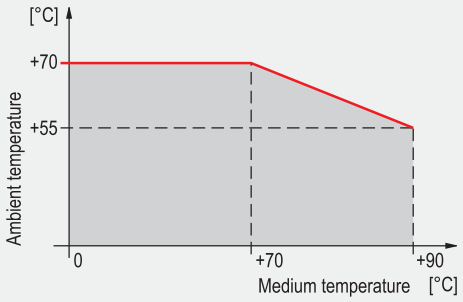
Protection type		ia	d	d ia
Ex marking	ATEX	⟨Ex⟩ II 1 G Ex ia IIB T6...T5 0.5 ... 15 m	⟨Ex⟩ II 2 G Ex d IIB T6...T5 0.5 ... 10 m	⟨Ex⟩ II 1/2 G Ex d ia IIB T6...T5 0.5 ... 10 m
	IEC Ex	Ex ia IIB T6 Ga	Ex d IIB T6 Gb	Ex d ia IIB T6 Ga
Ex power supply and limit data		Uimax = 30 V Iimax = 140 mA Pimax = 1 W Ci < 15 nF Li < 200 µH		
Cable gland		Steel M 20 x1.5 cable gland	Steel M 20 x1.5 Ex d approved cable gland	
Cable outer diameter		Ø 7 ...13 mm (0.275 ... 0.55 inch)	Ø 9 ...11 mm (0.35 ... 0.45 inch)	

TEMPERATURE PARAMETERS

Temperature limits for Ex version

Type	Temp. class	Max. ambient temp.	Max. medium temp.
Rigid probe	T6	70°C (158 °F)	80°C (176 °F)
Rigid or flexible probe with plastic coating			
Flexible probe			70°C (158 °F)
Rigid or flexible probe with plastic coating	T5	55°C (131 °F)	90°C (194 °F)

Temperature diagram

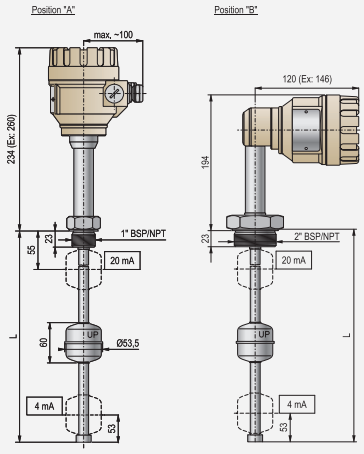


Lower temperature limit

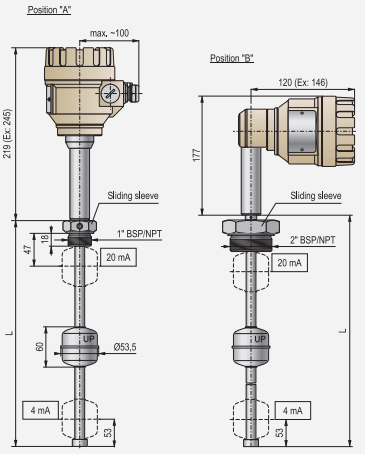
Type	Protection type		
	ia	d	d ia
Transmitter	–40°C (-40 °F)		
Transmitter with display	–25°C (-13 °F)	–20°C (-4 °F)	

DIMENSIONS

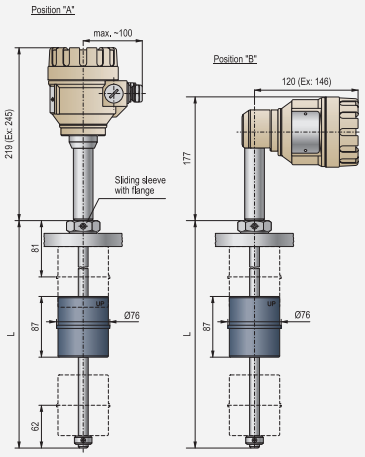
Rigid probe with threaded process connection



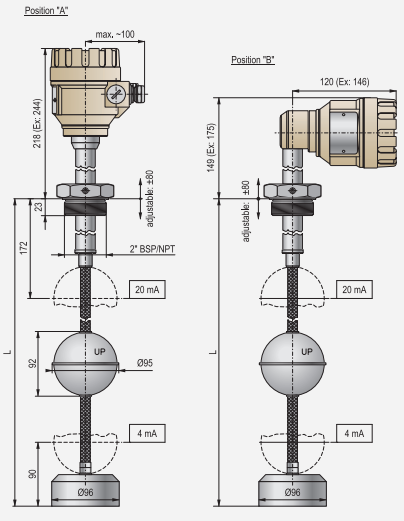
Rigid probe without process connection (1, 2)



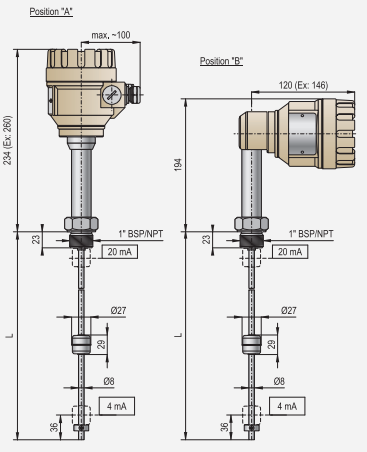
Rigid probe with plastic coating without process connection (1)



Flexible probe with sliding sleeve and counterweight



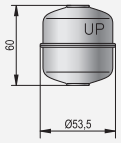
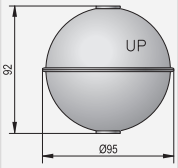
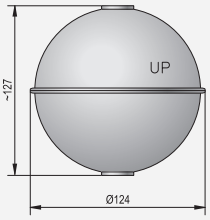
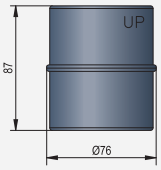
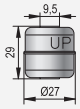
Mini type rigid probe transmitter with threaded process connection



(1) Sliding sleve and flange to be ordered separately

(2) M□L type is without float

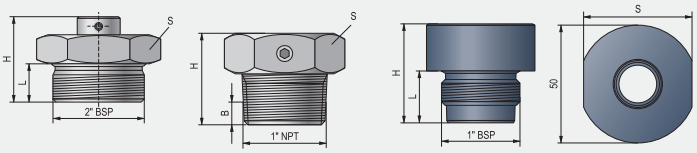
FLOATS

Type	MBA-505-2M-200-00(1)	MBK-530-2M-400-00(2)	MBA-505-2M-900-00(2)	MGU-505-2M-200-00(2)		MCA-504-3M-000-00(1)
Dimensions						
Medium density (min.)	0.8 kg/dm³; with titan float: 0.55 kg/dm³	0.55 kg/dm³ (550 oz/ft³)	0.4 kg/dm³ (400 oz/ft³)	0.7 kg/dm³ (700 oz/ft³)	0.4 kg/dm³ (400 oz/ft³)	0.7 kg/dm³ (700 oz/ft³)
Medium pressure	2.5 MPa (25 bar g / 363 psi g)	1.6 MPa (16 bar g / 232 psi g)	2.5 MPa (25 bar bar g / 363 psi g)	0.6 MPa (6 bar bar g / 87 psi g)	0.3 MPa (3 bar bar g / 43.5 psi g)	1 Mpa (10 bar bar g / 145 psi g)
Material	1.4404 (316L)			PVDF	PP	316L

(1) Designed for min. 2" process connection, only order with rigid probe *(2) Flange to be ordered separately*

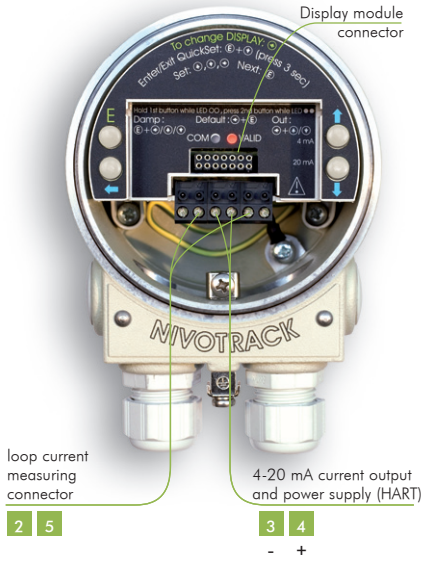
SLIDING SLEEVE

Type	Material	Proc. Conn.	Dimensions			
			S (mm)	H (mm)	L (mm)	B (mm)
MBH-105-2M-300-00	1.4571	1" BSP	41	36	20	–
MBK-105-2M-300-00	1.4571	2" BSP	70	56	25	–
MBL-105-2M-300-00	1.4571	1" NPT	41	38	–	10
MBN-105-2M-300-00	1.4571	2" NPT	70	55	–	11
MGH-105-2M-300-00	PVDF	1" BSP	46	42	22	–
MGL-105-2M-300-00	PVDF	1" NPT	46	42	22	–



1.4571 PVDF

WIRING



NIVOTRACK IN SYSTEM WITH PC

The instrument with HART output can be connected to a PC using an **UNICOMM** HART USB modem. Max. 15 normal (non Ex) instruments can be connected to a HART line. Measured values can be visualised and / or the instruments can be programmed via digital HART communication. **EView2** configuration software or **NIVISION** process visualization software.

NIVOTRACK IN A HART MULTIDROP LOOP

MultiCONT can handle a max. of 15 HART capable transmitters (4 Ex-version transmitters). The digital (HART) information is processed, displayed and if needed it can be transmitted via RS485 communication line to a PC. Remote programming of the transmitters is also possible. Visualisation on PC can be accomplished with **NIVISION** process visualisation software.

ORDER CODES (NOT ALL COMBINATION AVALIABLE)

NIVOTRACK magnetostrictive level transmitters

NIVOTRACK M□□–□□□–□ (1)

Type	Code
Transmitter	T
Transmitter + display(2)	B
Transmitter with plastic coated probe	E
Transmitter + display with plastic coated probe(2)	G
Transmitter mini(7)	M
Transmitter mini + display(7)	C

Housing	Code
Aluminium	5
Plastic(3)	6

Code	Probe length		Code
0	0 m	0 m	0
1	1 m	0.1 m	1
2	2 m	0.2 m	2
• • •	• • •	• • •	• • •
9	9 m	0.9 m	9
A	10 m		
B	11 m		
C	12 m		
D	13 m		
E	14 m		
F	15 m		

Output / Resolution / Ex	Code
4-20 mA / 0.1 mm	1
4-20 mA / 1 mm	2
4-20 mA + HART / 0.1 mm	3
4-20 mA + HART / 1 mm	4
4-20 mA / 0.1 mm / Ex ia	5
4-20 mA / 1 mm / Ex ia	6
4-20 mA + HART / 0.1 mm / Ex ia	7
4-20 mA + HART / 1 mm / Ex ia	8
4-20 mA / 0.1 mm / Ex d(6)	A
4-20 mA + HART / 0.1 mm / Ex d(6)	B
4-20 mA / 0.1 mm / Ex d+Ex ia(6)	C
4-20 mA + HART / 0.1 mm / Ex d+Ex ia(6)	D

Probe type / Process connection	Code
Rigid / 1" BSP	A
Rigid / 2" BSP	C
Rigid / 1" NPT	D
Rigid / 2" NPT	G
Rigid / w/o process conn.(4)	U
Rigid / for NIVOFLIP, w/o process conn. & float	L
Flexible / 2" BSP	K
Flexible / 2" NPT	N
Flexible / w/o process conn.(5)	Z

(1) The order code of an Ex version should end in „Ex"
(2) The position of the display (A or B) should be specified in the order
(3) Not available in Ex version
(4) Threaded sliding sleeve should be ordered separately
(5) Sliding sleeve with flange should be ordered separately
(6) Insertion length max. 10 m
(7) Insertion length max. 1.5 m

ACCESSORIES

Flanges

MFT □□□–□

Standard / Material	Code
DIN / A38	1
DIN / 1.4571	2
DIN / PP	3
DIN / A38 +, PTFE	4
ANSI / A38	5
ANSI / 1.4571	6
ANSI / PP	7
ANSI / A38 +, PTFE	8

Size		Code
DIN	ANSI	
DN50	2"	0
DN65	2 1/2"	1
DN80	3"	2
DN100	4"	3
DN125	5"	4
DN150	6"	5
DN200	8"	6

Pressure	Code
PN16 / 150 psi	1
PN25 / 300 psi	2

Instr. connection	Code
1" BSP	2
2" BSP	3
1" NPT	5
2" NPT	6
Sliding sleeve	A(8)

(8) Only for M□Z types

Threaded sliding sleeve

Type	Process connection
MBH-105-2M-300-00	1" BSP
MBK-105-2M-300-00	2" BSP
MBL-105-2M-300-00	1" NPT
MBN-105-2M-300-00	2" NPT
MGH-105-2M-300-00	1" BSP / PVDF, for plastic coated version
MGL-105-2M-300-00	1" NPT / PVDF, for plastic coated version

Floats

Type	Diameter / Material
MBA-505-2M-200-00	Ø 53.5 mm / 1.4571
MBA-505-2M-800-00	Ø 53.5 mm / Titan
MBK-530-2M-400-00	Ø 95 mm / 1.4571
MGU-505-2M-200-00	Ø 76 mm / PVDF / PP
MBA-505-2M-900-00	Ø 124 mm / 1.4571
MCA-504-3M-000-00	Ø 27 mm / 316L

Other accessories

Type	Description
SAP-300	Plug-in display module
SAT-304 / SAK-305	HART-USB / RS485 modem
SAS-303	EView2 software

NIVELCO PROCESS CONTROL CO.
H-1043 BUDAPEST, DUGONICS U. 11.
TEL.: (36-1) 889-0100 ▪ FAX: (36-1) 889-0200
E-mail: sales@nivelco.com http://www.nivelco.com