

**Thank you for choosing NIVELCO instrument**  
**We are convinced that you will be satisfied with our product!**

## 1. APPLICATION

The NIVOFLIP bypass level indicators are suitable for level indication of pressurized vessels. Operation of NIVOFLIP is based on the communicating vessels principle. The welded bypass chamber that is the body of the indicator and the tank form one pressurized system. Mounted on suitable connection flanges located on the side of the tank the liquid level in the bypass tube and the tank is equal. A float in the bypass tube incorporating a polarized magnet tracks the level of the liquid and flips the bi-colored magnetic flaps as the float passes.

## 2. TECHNICAL DATA

### 2.1 GENERAL DATA



Type <sup>(1)</sup>	Standard ML□-□□□-□ Ex	High-temperature MH□-□□□-□ Ex
Optical display	Bi-colored magnetic flaps	
Display	Scale Centimeter, (inch scale is available on request)	
	Accuracy ±10 mm (±0.4 inch)	
	Resolution 5 mm (0.2 inch)	
	Error indication lower 100 mm (4 inch), inverse polarized flaps	
Tube diameter	Ø60.3 mm (Ø2.35 inch)	
Flange distance	500...5500 mm (as per order codes)	
Process connection	DIN, ANSI flanges (as per order codes)	
Aerating connection	M20x1.5	
Drain connection	DN50 / M20x1.5	
Process pressure	See 2.7 table	
Test pressure	1.5x Process pressure	
Material of wetted parts	housing: 1.4571 stainless steel, float: 1.4301 stainless steel or TiGr2 titanium	
Ambient temperature	-60°C...+60°C (-76°F...+140°F)	
Medium temperature	-60°C...+130°C (-76°F...+266°F)      -60°C...+250°C (-76°F...+482°F)	
Medium density <sup>(2)</sup>	with stainless steel float (M□□-□□□-0): 40 bar (580 psig): 0.8 kg/dm <sup>3</sup> ; 63 bar (930 psig): 0.83 kg/dm <sup>3</sup>	
	with titanium float (M□□-□□□-0): 40 bar (580 psig): 0.55 kg/dm <sup>3</sup> ; 63 / 100 bar (930 / 1450 psig): 0.7 kg/dm <sup>3</sup>	
PED (2014/68/EU) approval	Category III., Module B + C2	
Level switch	optional, externally mounted, freely adjustable MAK-100 level switch	
Level transmitter	optional, externally mounted, NIVOTRACK M□L-500/600/700 magnetostrictive level transmitter <sup>(3)</sup>	

<sup>(1)</sup> In the case of bypass chamber version the device does not come with a magnetic float and magnetic flaps indicator and cannot be combined with a magnetic level switch / transmitter.

<sup>(2)</sup> In case of using MAK-100 level switch the minimal medium density should be 0.1 kg/dm<sup>3</sup> (more than the above specified)

<sup>(3)</sup> In case of using NIVOTRACK level transmitter the maximum process temperature is +170 °C (+338 °F)

### 2.2 CERTIFICATES

APPROVALS		Reference document number
	ExNB ATEX, Certificate No.: ExNB20ATEX0035X	mld1050m0600h_10
	ÉMI TÜV SÜD, PED Certificate, Category III., Module B + C2	—

## 2.3 EXPLOSION PROTECTION, EX MARKINGS, EX LIMIT DATA

### 2.3.1 ATEX APPROVAL

Type	ML□-□□□-□ Ex MH□-□□□-□ Ex
Ex marking	 II 1/2 G Ex h IIC T6...T2 Ga/Gb

### TEMPERATURE DATA FOR EX CERTIFIED MODELS

Temperature data	Hazardous gas atmospheres			
		Standard version ML□-□□□-□ Ex		High-temperature MH□-□□□-□ Ex
Highest permissible medium temperature	+80 °C (+176 °F)	+95 °C (+203 °F)	+130 °C (+266 °F)	+250 °C (+482 °F)
Highest permissible ambient temperature	+60°C (+140 °F)			
Highest resulting surface temperature	+80 °C (+176 °F)	+95 °C (+203 °F)	+130 °C (+266 °F)	+250 °C (+482 °F)
Temperature class	<b>T6</b>	<b>T5</b>	<b>T4</b>	<b>T2</b>

Lowest permissible ambient and medium temperature: -60 °C (-76 °F)

### 2.4 Accessories

- User's manual
- EU-Declaration of Conformity
- Product Assessment Report
- Warranty Card
- Material Document of all applied parts,

# NIVOFLIP

BYPASS LEVEL INDICATOR

USER'S MANUAL



Manufacturer:

**NIVELCO Process Control Co.**

H-1043 Budapest, Dugonics u. 11.

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e-mail: sales@nivelco.com www.nivelco.com



NIVELCO

## 2.5 ORDER CODES

NIVOFLIP M   -    -  Ex

VERSION	CODE	PROCESS CONNECTION	CODE						NOMINAL PRESSURE			FLANGE DISTANCE*			FLOAT	
Standard	L	SIZE	TYPE	B	C	D	RF	TH	PN40	Class 400	1	0	0 m	0 dm	0	0
High-temperature	H	DN15		A	L	S			PN63	Class 600	3	1	1 m	1 dm	1	1
		DN20		B	M	T			PN100	Class 900	4	2	2 m	2 dm	2	2
		DN25		C	N	U			PN16	Class 150	5	3	3 m	3 dm	3	3
		DN40		D	P	V						4	4 m	4 dm	4	4
		DN50		E	R	W						5	5 m	5 dm	5	5
		ANSI 1/2"					F						6 dm	6		
		ANSI 3/4"					G						7 dm	7		
		ANSI 1"					H						8 dm	8		
		ANSI 1 1/2"					J						9 dm	9		
		ANSI 2"					K									
		3/4" BSPT**					X									
		3/4" NPT**					Y									
		1" BSPT**					1									
		1" NPT**					2									

FLANGE DISTANCE*	CODE
0 m	0
1 m	1
2 m	2
3 m	3
4 m	4
5 m	5
6 dm	6
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CODE	FLANGE DISTANCE*	CODE
0	0 m	0
1	1 m	1

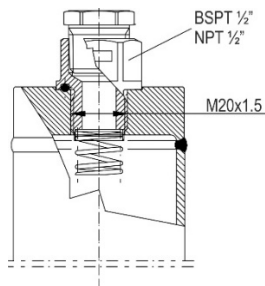


Figure 3.: Aerating screw

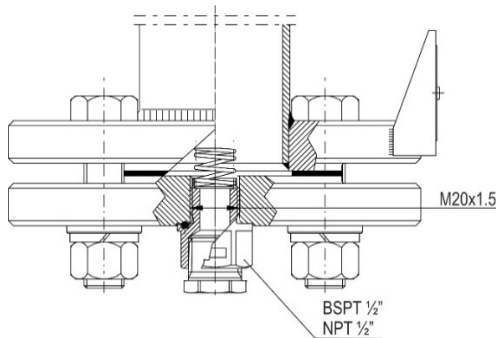


Figure 4.: Drain screw

### Aerating screw / Aerating end section selection

Material: 1.4571 (316Ti), PED 3.1

Name	Dimension	Code
plug	M20x1.5 plug	standard
threaded nipples + plug	M20x1.5 BSPT 1/2" inner	MLC-105-0M-611
threaded nipples + plug	M20x1.5 NPT 1/2" inner	MLD-105-0M-621
threaded nipples + plug	M20x1.5 BSPT 3/4" inner	MLD-105-0M-631
threaded nipples + plug	M20x1.5 NPT 3/4" inner	MLD-105-0M-641

### Aerating end section / Drain end section selection

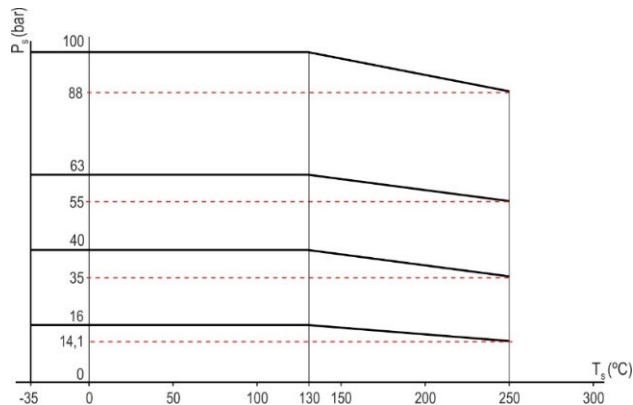
Material: 1.4571 (316Ti), PED 3.1

Name	Dimension	Overhang from standard (mm)	Code
Ball valve	BSP 1/2" KB.	60	MLD-105-0M-711
Ball valve	NPT 1/2" KB.	60	MLD-105-0M-721

## 2.7 MAXIMAL PROCESS PRESSURE

Process connection		MSZ EN 1092 flanges	ASME B16.5 flanges and process connections
Standard	ML□-1□□-□	40 bar	580 psi
	ML□-3□□-□	63 bar	930 psi
	ML□-4□□-□	100 bar	1440 psi
	ML□-5□□-□	16 bar	232 psi
High temperature	MH□-1□□-□	35 bar	500 psi
	MH□-3□□-□	55 bar	800 psi
	MH□-4□□-□	88 bar	1275 psi
	MH□-5□□-□	14.1 bar	204 psi

When high-temperature version is used in a lower temperature range, the maximal process pressure can be increased in accordance to the following diagram:



## 3. MOUNTING

Before the installation of the unit make sure that the process connection has proper dimension and the size and the position of the screws are suitable for the proper mounting.

The unit is to be mounted on suitable connection flanges located on the side of the pressurized vessel, the distance between the flanges centre to centre is the nominal range of the unit. The two flanges are at the low and high levels needed to be indicated or measured. Sealing of the welded chamber and the closing flanges have to be pressure resistant and the material of the sealing has to be chemically resistant to the measured medium. Always use the delivered sealings, if the application does not require any other special sealings. Using two layers to increase the thickness of the sealing is not permitted. Avoid the over-tightening of the sealing. Usage of re-installed sealing is not permitted. Unit with damaged sealing surface cannot be sealed properly.

The plastic protecting plug and the locking element should be removed from the process connection to provide free movement of the float and the medium. In case of further transportation of the unit fixing of the float is required under the bottom process connection in accordance to protect the float against mechanical impacts.

## 4. PUTTING INTO OPERATION

Before putting the system under process pressure, proper sealing of the connection flanges should be checked. Units are adjusted at the manufacturer to material with 1.0 kg/dm<sup>3</sup> medium density. When the measured medium has different density, then magnetic flaps display can be adjusted by loosening the fixing clamps. The stickered scale helps to find the right position. After finding the right position, fixing clamps should be fastened.

## 5. SPECIAL CONDITIONS OF SAFE USE

- Before turning on the device, make sure the installation is complete, with no defects visible.
- The device may only be used within the limitations specified in the technical specifications.
- **Attention!** The devices may partially contain static charging capable plastic components. The presence of electrostatic charges may cause a risk of spark generation and ignition and therefore electrostatic charges must be completely prevented!
  - Avoid friction on plastic surfaces!
  - Do not clean the device dry!
  - For example, use a wet duster!

## 6. MAINTENANCE, REPAIR

The unit does not require routine maintenance; however, the tube may need occasional cleaning to remove surface deposits. Cleaning can be performed through the drain connection. Repairs will be performed at Manufacturer's premises. Units returned for repair should be cleaned or disinfected by the customer.

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February 2021

NIVELCO reserves the right to change technical data without notice!