Westbaan 270, NL-2841 MC Moordrecht, Tel. +31 182 527190, Fax. +31 182 549008, info@hadro.nl, www.hadro.nl

POINTER® MAGNETIC LEVEL GAUGE

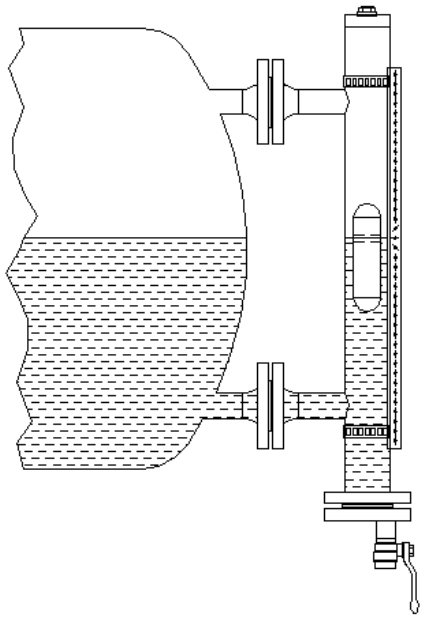
Operating principle

Magnetic level gauges work on the principle of communicating vessels, therefore the level in the measuring chamber will be the same as the level in the vessel. The measuring chamber is fitted with a float, which has a magnet inside. The float with magnet will float on the medium and the magnet in the float will turn the flaps of the indicating rail.

The float in the measuring tube is standard not pressurized and has no magnetic or mechanical guidance. This construction makes the float less dangerous than a float which is standard pressurized. When necessary Hadro can produce a pressurized float.

With the below mentioned process conditions it is possible to select a float which will float on the medium.

- Medium
- Density
- Working pressure
- Temperature



Each flap in the indicating rail is fitted with a permanent magnet which makes this level gauge unaffected by shocks, vibrations and high temperatures. Also moisture and / or an aggressive environment are no problem for this level gauge.

This magnetic level gauge is available with plastic or stainless steel flaps. The flaps can be placed in a plastic, aluminium or stainless steel housing.

Because of the construction of the flaps, one side white and on the other red / orange it is possible to see the level over a greater distance or in darker places.

With the available “Pointers” it is possible to set the visual limits on the indicating rail on every level you require.

When the magnetic level gauge is fitted with magnetic switches it is possible to get a signal. With more switches you can make a pump control (pump on / off) and / or create a high / low alarm. Beside or instead of level switches a reedchain transmitter can be mounted, this reedchain has an output signal of 4-20 mA.

Magnetic level gauge are also suitable for interface reading. The float will sink into the medium with the lower density and will float on the medium with the higher density.

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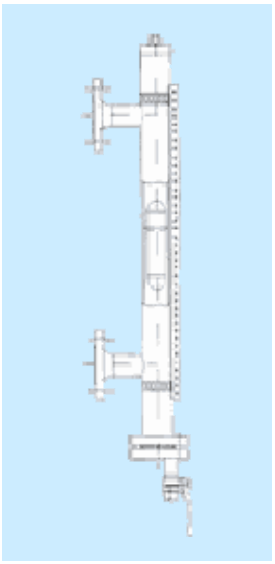
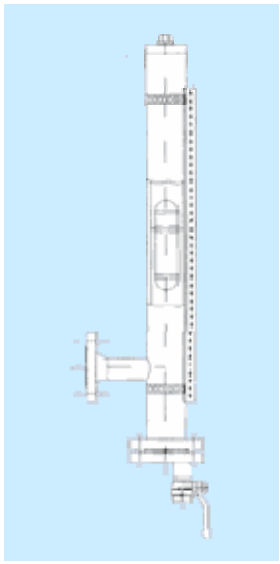
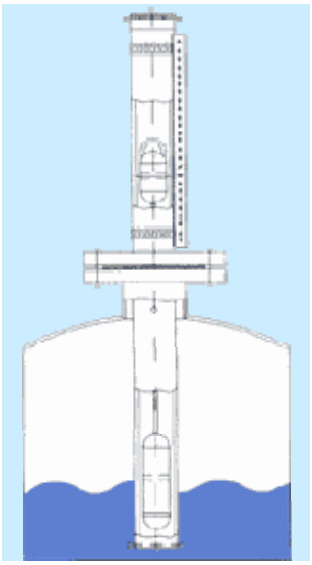
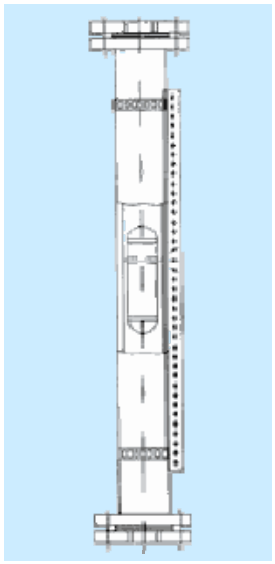
Models

In order to meet all the requirements there are several standard models available.

- Pointer D
- Pointer L
- Pointer F
- Pointer R

Pointer D	Pointer L	Pointer F	Pointer R
			

Pointer D

With two process connections for mounting on the side of a vessel. This design is suitable for many different applications, for example condensate tanks, LPG tanks etc.

Pointer L

With one process connection for mounting on the side of a vessel. This model is often used for day tanks for ships.

Pointer F

With one process connection on the bottom, this type is suitable for mounting above a tank.
This design is mostly used for storage tank below the surface.

Pointer R

With two process connections at the end of the level gauge, this type is suitable for mounting between two pipe lines.

Special models

Beside the above mentioned types we can manufacture special models. We can make models with a coating (lining), models made from plastic, Hastelloy or Monel. For further information please contact one of our technical sales engineers.

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The advantages

- Standard unpressurised floatsystem
- Float without mechanical or magnetic guide rails
- Fully corrosion resistant system
- Competitive prices
- Short delivery times
- Measurement is unaffected by pressure, vacuum, temperature, foam and viscosity
- Minimum sensitivity to density variations
- Permanent indication without external power supply
- Low temperature version is fitted with ice free indication strip
- GL, LRS and BV approval for vessels
- Unique free view indication rail in plastic, Aluminium or full SS 316
- Fully adjustable switches
- Ruller available in cm, % or litres
- Back lighting is unnecessary
- Eccentric drain cannot blocked by the float
- Safe, environmentally friendly and maintenance-free construction
- Broken float indication rail is possible
- Special designs according to client wishes are possible
- You are doing business directly with the manufacturer, reducing transfer mistakes
- For most types all our weldings are checked automatically.

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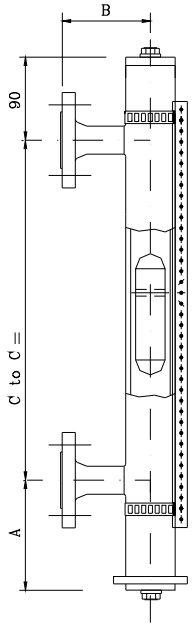
Contents

Westbaan 270, NL-2841 MC Moordrecht, Tel. +31 182 527190, Fax. +31 182 549008, info@hadro.nl, www.hadro.nl

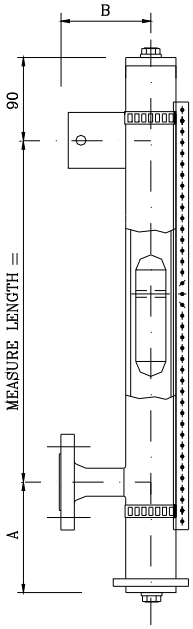
1 Pointer D / Pointer L

1.1 Max. pressure 10 bar, 70 lbs

Model	D-10 / D-70 L-10 / L-70	
Material Pipe	Stainless steel 316L (1.4404) 60.3 x 2 mm	
Pressure Temperature C. to C.	Max. 10 bar / 70 lbs Max. 160 °C Max. 5500 mm	(for longer C. to C. see pointer D-16)
Indication rail	Polycarbonate Aluminium/ Perspex Stainless steel	(max. temp. 105 °C, temporary 120 °C)
Process connection	DIN DN 15 – DN 32 / PN 16 ANSI ½" – 1¼" 150# RF Weld or thread (Male/ Female) ½" – 1" DN 40 – DN 50 and ANSI 1.1/2" – 2" on 1" pipe	B = 75 mm B = 85 mm B = 75 mm B = 130 mm
Drain	¼", ½" or ¾" plug BSP or NPT ¼" or ½" with ballvalve None	
Drain gasket	EPDM, NBR, FPM	
Vent	¼", ½" or ¾" plug BSP or NPT G 2" stop None	
Float Drain length	From density min. 380 kg/m^3 Density min. 940 kg/m^3 Density min. 830 kg/m^3 Density min. 720 kg/m^3 Density min. 660 kg/m^3	 A = 200 mm (*) A = 235 mm (*) A = 285 mm (*) A = 340 mm (*)
Extra support	C. to C. > 3 meter for offshore C. to C. > 4 meter for onshore	
Pointers	High & Low in stainless steel	
Marking	Tag plate acc. to standard lay-out in stainless steel PED marking till mod. III std.	
Certificates	Material EN 10204 3.1 + drawing Pressure test acc. HADRO standard GL, LRS or BV certificate	
Special	Electrical tracing	



Pointer D

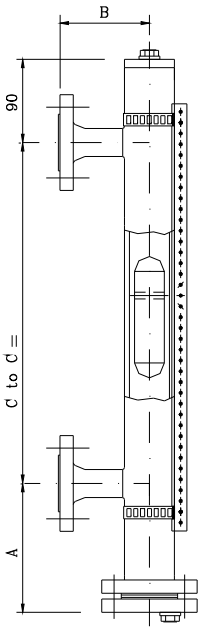


Pointer L

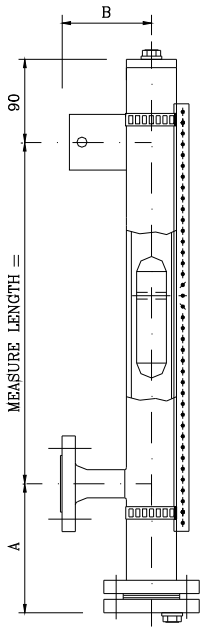
(*) special (shorter) drain length available on request.

1.2 Max. pressure 16 bar, 150 lbs

Model	D-16 / D-150 L-16 / L-150	
Material	Stainless steel 316L (1.4404), Stainless steel 304, PP, PVC, PVDF, Monel, Titanium, Hastelloy	
Pipe	60.3 x 2 mm	
Pressure	Max. 16 bar / 150 lbs	
Temperature	Max. 400 °C	
C. to C.	Till 5500 mm in 1 piece, longer out more pieces	
Indication rail	Polycarbonate (max. temp. 105 °C, temporary 120 °C) Aluminium/ Perspex Stainless steel	
Process connection	DIN DN 15 – DN 32 / PN 16 ANSI ½" – 1¼" 150# RF Weld or thread (Male/ Female) ½" – 1" DN 40 – DN 50 and ANSI 1.1/2" – 2" on 1" pipe	B = 75 mm B = 85 mm B = 75 mm B = 130 mm
Drain	¼", ½" or ¾" plug BSP or NPT ¼" or ½" with ballvalve None	
Draingasket	PTFE, Aramide, Graphite	
Vent	¼", ½" or ¾" plug BSP or NPT Flange DN 25/ PN 16 (as drain) None	
Float	From density min. 380 kg/m^3	
Drain length	Density min. 940 kg/m^3 Density min. 830 kg/m^3 Density min. 720 kg/m^3 Density min. 660 kg/m^3	A = 210 mm (*) A = 245 mm (*) A = 295 mm (*) A = 350 mm (*)
Extra support	C. to C. > 3 meter for offshore C. to C. > 4 meter for onshore	
Pointers	High & Low in stainless steel	
Marking	Tag plate acc. to standard lay-out in stainless steel PED marking till mod. III std.	
Certificates	Material EN 10204 3.1 + drawing Pressure test acc. HADRO standard GL, LRS or BV certificate NACE MR 01.75 / ISO 15156 ⟨Ex⟩ II 1/2 G c IIB T1… T4 LCIE 08 ATEX 6015 X	
Special	Insulation, steamjacket, spring, electrical tracing	



Pointer D



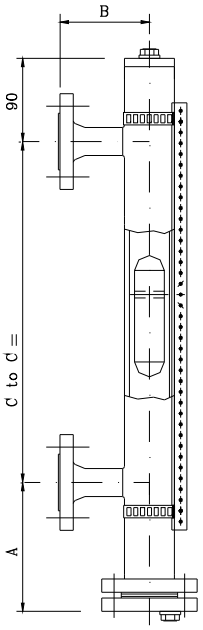
Pointer L

(*) special (shorter) drain length available on request.

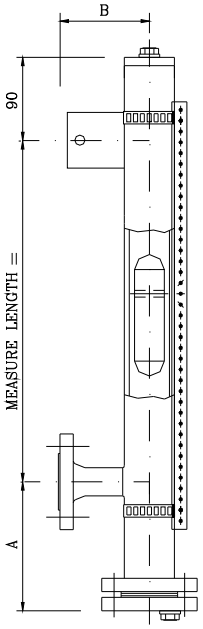
1.3 Max. pressure 40 bar, 300 lbs

Model	D-40 / D-300 L-40 / L-300	
Material	Stainless steel 316L (1.4404), Stainless steel 304, PP, PVC, PVDF, Monel, Titanium, Hastelloy	
Pipe	60.3 x 2 mm	
Pressure	40 bar / 300 lbs	
Temperature	Max. 400 °C	
C. to C.	Till 5500 mm in 1 piece, longer out more pieces	
Indication rail	Polycarbonate (max. temp. 105 °C, temporary 120 °C) Aluminium/ Perspex Stainless steel	
Process connection	DIN DN 15 – DN 32 / PN 40 ANSI ½" – 1¼" 300# RF (RTJ) Weld or thread (Male/ Female) ½" – 1" DN 40 – DN 50 and ANSI 1.1/2" – 2" on 1" pipe	B = 75 mm B = 85 mm B = 75 mm B = 130 mm
Drain	¼", ½" or ¾" plug BSP or NPT ¼" or ½" with ballvalve Extra flange acc. to DIN or ANSI None	
Draingasket	PTFE, Aramide, Graphite	
Vent	¼", ½" or ¾" plug BSP or NPT Flange DN 50 / PN 40 or ANSI 2" 300# RF Flange DN 25 / PN 40 (as drain) None	
Float	From density min. 380 kg/m^3	
Drain length	Density min. 940 kg/m^3 Density min. 830 kg/m^3 Density min. 720 kg/m^3 Density min. 660 kg/m^3	A = 210 mm (*) A = 245 mm (*) A = 295 mm (*) A = 350 mm (*)
Extra support	C. to C. > 3 meter for offshore C. to C. > 4 meter for onshore	
Pointers	High & Low in stainless steel	
Marking	Tag plate acc. to standard lay-out in stainless steel PED marking till mod. III std.	
Certificates	Material EN 10204 3.1 + drawing Pressure test acc. HADRO std or Lloyds GL, LRS or BV certificate NACE MR 01.75 / ISO 15156 WPS/PQR standard material ⟨Ex⟩ II 1/2 G c IIB T1… T4 LCIE 08 ATEX 6015 X	
Special	Insulation, steamjacket, spring, electrical tracing	

(*)special (shorter) drain length available on request.



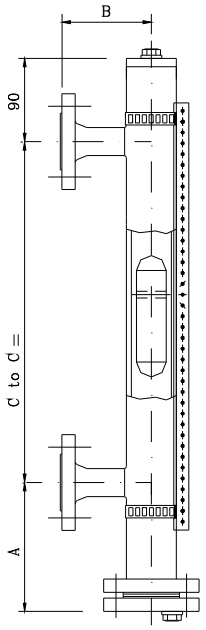
Pointer D



Pointer L

1.4 High pressure up to 250 bar, 1500 lbs

Model	D-64 / D-100 / D-160 / D-600 / D-900 / D-1500 / D-2500	
Material	Stainless steel 316L (1.4404) / 316Ti (1.4571)	
Pipe	60.3 x 2,77 mm / 60.3 x 3 mm / 60.3 x 3,2	
Pressure	Up to max. 250 bar	
Temperature	Max. 450 °C	
C. to C.	Till 5500 mm in 1 piece, longer out more pieces	
Indication rail	Polycarbonate (max. temp. 105 °C, temporary 120 °C)	
	Aluminium/ Perspex	
	Stainless steel	
Process connection	DIN DN 15 – DN 32 / PN 100 – PN 160	B = 75 mm
	ANSI ½" – 1¼" 600# – 2500# RF – RTJ	B = 85 mm
	Weld or thread (Male/ Female) ½" – 1"	B = 75 mm
	DN 40 – DN 50 and ANSI 1.1/2" – 2" on 1" pipe	B = 130 mm
Drain	¼", ½" or ¾" plug BSP or NPT	
	¼" or ½" with ballvalve	
	Extra flange acc. to DIN or ANSI	
	None	
Draingasket	PTFE, Aramide, Graphite	
Vent	¼", ½" or ¾" plug BSP or NPT	
	Flange DN 50 or ANSI 2"	
	Same as drain	
	None	
Float	From density min. 590 kg/m^3	
Drain length	A = depending on pressure and temperature	
Extra support	C. to C. > 3 meter for offshore	
	C. to C. > 4 meter for onshore	
Pointers	High & Low in stainless steel	
Marking	Tag plate acc. to standard lay-out in stainless steel	
	PED marking till mod. III std.	
Certificates	Material EN 10204 3.1 + drawing	
	Pressure test acc. HADRO standard	
	Pressure test acc. Lloyds basis	
	GL, LRS or BV certificate	
	NACE MR 01.75 / ISO 15156	
	WPS/PQR standard material	
	Ⓔx II 1/2 G c IIB T1… T4 LCIE 08 ATEX 6015 X	
Special	Insulation, spring, electrical tracing	

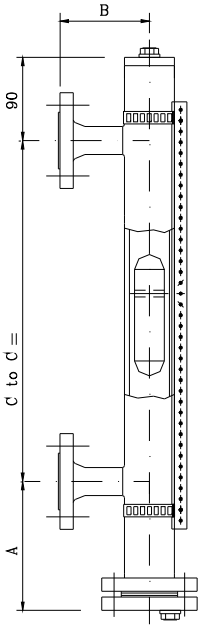


Pointer D

2 Special applications

2.1 For cold applications

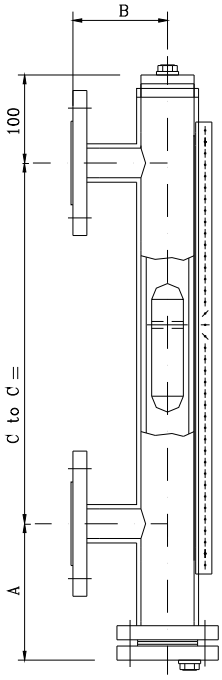
Model	D-40C / D-300C	
Material	Stainless steel 316L (1.4404)	
Pipe	63,5 x 1,5 mm	
Pressure	Up to max. 30 bar	
Temperature	Max. 100 °C	
C. to C.	Max. 5500 mm	
Indication rail	Polycarbonate (max. temp. 105 °C, temporary 120 °C)	
	Aluminium/ Perspex	
	Stainless steel	
Process connection	DIN DN 15 – DN 32 / PN 16 – PN 40 (M / V)	B = 75 mm
	ANSI ½" – 1¼" 150# – 300 # RF (RTJ)	B = 85 mm
	Weld or thread (Male/ Female) ½" – 1"	B = 75 mm
	DN 40 – DN 50 and ANSI 1.1/2" – 2" on 1" pipe	B = 130 mm
Drain	¼", ½" or ¾" plug BSP or NPT	
	¼" or ½" with ballvalve	
	Extra flange acc. to DIN or ANSI	
	None	
Drain gasket	PTFE, Aramide	
Vent	¼", ½" or ¾" plug BSP or NPT	
	Flange DN 50 / PN 40 or ANSI 2" 300# RF	
	Flange DN 25 / PN 40 (as drain)	
	None	
Float	From density min. 380 kg/m^3	
Drain length	Density min. 940 kg/m^3	A = 210 mm (*)
	Density min. 830 kg/m^3	A = 245 mm (*)
	Density min. 720 kg/m^3	A = 295 mm (*)
	Density min. 660 kg/m^3	A = 350 mm (*)
Extra support	C. to C. > 3 meter for offshore	
	C. to C. > 4 meter for onshore	
Pointers	High & Low in stainless steel	
Marking	Tag plate acc. to standard lay-out in stainless steel	
	PED marking till mod. III std.	
Certificates	Material EN 10204 3.1 + drawing	
	Pressure test acc. HADRO standard	
	Pressure test acc. Lloyds basis	
	GL, LRS or BV certificate	
	NACE MR 01.75 / ISO 15156	
	WPS/PQR standard material	
	Ⓔx II 1/2 G c IIB T4 LCIE 08 ATEX 6015 X	
Special	Armaflex insulation, PER insulation, restriction, spring	



Pointer D..C

2.2 With jacket for heating or cooling

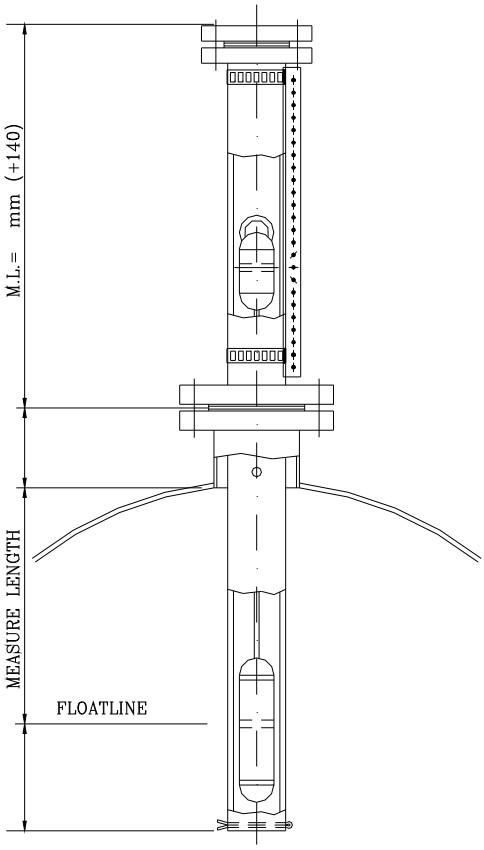
Model	D-16M / D-40M / D-150M / D-300M	
Material	Stainless steel 316L (1.4404)	
Pipe	60.3 x 2 mm and 70 x 2 mm	
Pressure	Inner pipe max. 50 bar / 300 lbs – Jacket max. 10 bar	
Temperature	Max. 200 °C	
C. to C.	Max. 5500 mm	
Indication rail	Polycarbonate (max. temp. 105 °C, temporary 120 °C)	
	Aluminium/ Perspex	
	Stainless steel	
Process connection	DIN DN 15 – DN 32 / PN 40	B = 120 mm
	ANSI ½" – 1¼" 150# – 300# RF	B = 120 mm
	Weld or thread (Male/ Female) ½" – 1"	B = 120 mm
	DN 40 – DN 50 and ANSI 1.1/2" – 2" on 1" pipe	B = 150 mm
Jacket connection	See process connection	
Drain	¼", ½" or ¾" plug BSP or NPT	
	¼" or ½" with ballvalve	
	Extra flange acc. to DIN or ANSI	
	None	
Drain gasket	PTFE, Aramide, Graphite	
Vent	¼", ½" or ¾" plug BSP or NPT	
	Flange DN 50 / PN 40 or ANSI 2" 300# RF	
	Flange DN 25 / PN 40 (as drain)	
	None	
Float	From density min. 450 kg/m^3	
Drain length	Density min. 940 kg/m^3	A = 210 mm (*)
	Density min. 830 kg/m^3	A = 245 mm (*)
	Density min. 720 kg/m^3	A = 295 mm (*)
	Density min. 660 kg/m^3	A = 350 mm (*)
Extra support	C. to C. > 3 meter for offshore	
	C. to C. > 4 meter for onshore	
Pointers	High & Low in stainless steel	
Marking	Tag plate acc. to standard lay-out in stainless steel	
	PED marking till mod. III std.	
Certificates	Material EN 10204 3.1 + drawing	
	Pressure test acc. HADRO standard	
	Pressure test acc. Lloyds basis	
	GL, LRS or BV certificate	
	NACE MR 01.75 / ISO 15156	
	WPS/PQR standard material	
	⟨Ex⟩ II 1/2 G c IIB T2 ... T4 LCIE 08 ATEX 6015 X	
Special	Insulation, spring	



Pointer D..M

3. Pointer F (mounting on top of a vessel)

Model	F-01 / F-02 / F-03 / F-04
Material	Stainless steel 316L (1.4404)
Pipe	60.3 x 2 mm / 3- rods ∅ 76 / 3 – rods ∅ 104
Pressure	Max. 40 bar
Temperature	Max. 160 °C
Measuring length	Max. 2800 mm
Indication rail	Polycarbonate (max. temp. 105 °C, temporary 120 °C) Aluminium/ Perspex Stainless steel
Process connection	DIN DN 50 – DN 100 / PN 40 ANSI 2" – 4" 150# RF ANSI 2" – 4" 300# RF
Vent	½" plug BSP or NPT
Float F-01 / F-02	From density min. 780 kg/m^3 Density depending on measuring length, by measuring length 1000 mm: Density min. 1350 kg/m^3 L = 150 mm Density min. 1120 kg/m^3 L = 185 mm Density min. 930 kg/m^3 L = 225 mm Density min. 780 kg/m^3 L = 285 mm
Float F-03 / F-04	From density min. 470 kg/m^3 Density depending on measuring length, by measuring length 1000 mm: Density min. 560 kg/m^3 L = 115 mm Density min. 470 kg/m^3 L = 115 mm
Pointers	High & Low in stainless steel
Marking	Tag plate acc. to standard lay-out in stainless steel
Certificates	Material EN 10204 3.1 + drawing Pressure test acc. HADRO standard NACE MR 01.75 / ISO 15156 WPS/PQR standard material ⟨Ex⟩ II 1/2 G c IIB T3 ... T4 LCIE 08 ATEX 6015 X

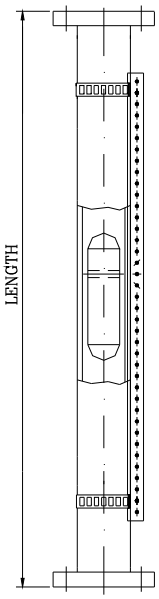


Pointer F

(*) Shorter float / lower density available on requests

4. Pointer R (mounting between two pipes)

Model	R-40 / R-150 / R-300
Material	Stainless steel 316L (1.4404)
Pipe	60.3 x 2 mm
Pressure	Max. 40 bar / 150 or 300 lbs
Temperature	Max. 400 °C
C. to C.	Till 5500 mm in 1 piece, longer out more pieces
Indication rail	Polycarbonate (max. temp. 105 °C, temporary 120 °C) Aluminium/ Perspex Stainless steel
Process connection	DIN DN 15 – DN 50 / PN 40 ANSI ½" – 2" 150 - 300# RF Thread (Male/ Female) ½" – 1" BSP/ NPT
Float	From density min. 380 kg/m^3
Extra support	C. to C. > 3 meter for offshore C. to C. > 4 meter for onshore
Pointers	High & Low in stainless steel
Marking	Tag plate acc. to standard lay-out in stainless steel PED marking till mod. III std.
Certificates	Material EN 10204 3.1 + drawing Pressure test acc. HADRO standard Pressure test acc. Lloyds basis GL, LRS or BV certificate NACE MR 01.75 / ISO 15156 WPS/PQR standard material Ex II 1/2 G c IIB T1 ... T4 LCIE 08 ATEX 6015 X
Special	Insulation, steamjacket, spring, electric tracing



Pointer R

5. Available floats

All the magnetic level gauges are fitted with a float. This float is standard in stainless steel, but the float is also available in Titanium or Hastelloy. The float must have enough buoyancy and the magnet must be fitted at the right position inside the float. So it is always important to select a float which is suitable for the process conditions.

In order to select the correct float the following process conditions are necessary.

- Medium
- Density
- Working pressure
- Operating temperature

The lowest density, for which we can supply a float is 380 kg/m^3 but this is depending on the before mentioned process conditions.
When a fluid is very aggressive we can also coat the float with a suitable lining.
When we have a choice between an open float or a pressurised float we prefer the pressurized float. Because the open float will eventually sink, condensate will build up inside the open float. For example our pressurized floats are suitable for 208 bar at 375°C with a density of 650 kg/m^3.

The float inside a magnetic level gauge can be fitted with a torriodal (360°) magnet or a magnetic bar. All our floats are fitted standard with a torriodalmagnet, because a float with a magnetic bar can loose there guidance/ indication rail by rapid movement inside the level gauge. As a result the magnetic level gauge will not work properly for a while. Torriodalmagnets are not affected by rapid movements of the float and can move freely inside the level gauge. This is also why you can place a level switch at all the sides you want.

6. Switches

When you mount a magnetic switch on the level gauge it is possible to get a signal. With more switches you can make a pump control (pump on / off) and / or obtain a high / low alarm.

We can supply general purpose switches, switches for hazardous areas, or switches suitable for marine applications.

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Type	**104450**	**LMS-Ha2**	**LMS-Ha1**
Function	SPDT	SPDT	SPDT
System	Reed switch bi-stabile	Reed switch bi-stabile	Micro switch
Max. rating	0,8A / 40W / 60VA	0,8A / 60W / 40VA	2A / 40W / 100VA
Voltage	10 – 230 V	10 – 230 V	10 – 230 V
Temp. rating	-25 … +75°C	-40… + 150°C	-50 … +380°C
Lifetime	1 x 10^9	1x 10^8	1 x 10^7
Enclosure	IP 67	IP 65	IP 67
Connection	5 meter cable	M16 cable gland	M16 cable gland
Dimensions	86 x 26 x 14 mm	100 x 75 x 40	95 x 65 x 54 mm
Material	PA6 grey	Aluminium	AlSi
Options	Temperature till 130°C		M20 cable gland
			

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Type	**610045 Eexi**	**LMS-Ha1E**
Function	SPDT	SPDT
System	Reed switch bi-stabile	Micro switch
Max. rating	0,6A / 45W / 45VA	0,5A / 20W / 30VA
Voltage	10 – 24 V	10 – 24 V
Temp. rating	-25 … +85°C	-50 … +380°C
Lifetime	1 x 10^9	1 x 10^7
Enclosure	IP 67	IP 65
Connection	5 meter cable	M20 cable gland (blue)
Dimensions	98 x 25 x 19	95 x 65 x 54
Material	Aluminium housing	AlSi
Approval	II 2G EEx ia II C T6 II 2D IP67 100°C	EEx i “simple apparatus“
Option	10 meter cable	
	Temperature till 140°C	
		

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Type	**610045 Eexm**	**LMS-HaD**
Function	SPDT	SPDT
System	Reed switch bi-stabile	Micro switch
Max. rating	0,6A / 45W / 45VA	2A / 40W / 100VA
Voltage	10 – 230 V	10 – 230 V
Temp. rating	-25 … +85°C	-40 … + 300°C
Lifetime	1 x 10^9	1 x 10^7
Enclosure	IP 67	IP 65
Connection	5 meter cable	¾” NPT max 1,5 mm^2
Dimensions	98 x 25 x 19 mm	115 x 90 x 85 mm
Material	Aluminium housing	Aluminium
Approval	II 2G EEx m IIC T6 II 2D IP67 100°C	II 2G Eex d IIC T6 EEx d I 150°C
Option	10 meter cable	M20 x 1,5 connection
		

7. Reedchain for 4 – 20 mA signal

By using a reedchain it is possible to become a 4-20 mA signal. The reedchain is standard mounted on the complete length of the magnetic level gauge.

Design	Standard	EEx i	EEx d
Transmitter	"SMART" type	"SMART" type	"SMART" type
Approval		EEx ia II C T1..T6 ATEX II 1 GD	II 2G Eex d IIC T6 EEx d I 150°C
Supply	8 – 35 VDC	8 – 30 VDC	8 – 30 VDC
Temperature	-40 … +150°C	-40 … +120°C	-40 … +120°C
Accuracy	± 5 mm	± 5 mm	± 5 mm
Material pipe	SS 316 L	SS 316 L	SS 316 L
Max. length	5,5 meter	5,5 meter	5,5 meter
Material housing	ABS	ABS	Aluminium
Enclosure	IP 67	IP 67	IP 65
Connection	M16 x 1,5	M16 x 1,5	½" NPT
Output	4 – 20 mA / 2 wire	4 – 20 mA / 2 wire	4 – 20 mA / 2 wire
Action	Reversible std. D.A.	Reversible std. D.A.	Reversible std. D.A.
Options	High temperature	High temperature	High temperature
	High accuracy	High accuracy	High accuracy
	Local display	Local display	Local display
	M20 x 1,5 mm gland	M20 x 1,5 mm gland	¾" NPT, M20x1,5
	HART	HART	HART
	PROFIBUS	PROFIBUS	PROFIBUS
	FIELDBUS	FIELDBUS	FIELDBUS

8. Certificates

We can supply the following certificates with our magnetic level gauges.

- Material EN 10204 3.1 + drawing
- Pressure test acc. HADRO standard
- GL, LRS and BV certificate
- ATEX certificate

BUREAU VERITAS
Metingen, Inspecties & Validaties

Certificaat van goedkeuring

Certificate of Conformity
CE-PED-D-1218973-08-NLD-(rev.O)

Toegekend aan Fabrikant
Manufacturer:

Hadro Techniek

Westbaan 270, 2841 MC, Moordrecht

Bureau Veritas Metingen, Inspecties & Validaties B.V. verklaart vanuit haar verantwoording als Aangewezen Aangemelde Keuringsinstelling (NoBo) met identificatie nummer: CE1117 hiermede dat het kwaliteitsmanagement systeem van de bovengenoemde onderneming is beoordeeld en in overeenstemming blijkt te zijn met de regelgeving op het gebied van drukapparatuur zoals onderstaand beschreven.
Bureau Veritas Measurements, Inspections & Validations B.V. acting within the scope of its notification (notified body number 1117), attests that the quality system operated by the manufacturer mentioned above has been examined and found to satisfy the provisions of the directive for pressure equipment as described hereunder.

Europese Richtlijn Drukapparatuur 97/23/EG
Bijlage III module D: Produktiekwaliteitsborging
Pressure equipment Directive 97/23/EC
***Annex III, module D:* production quality assurance**

Toepassingsgebied/Application:
Vervaardiging, montage, installatie, eindcontrole en keuring van:
Manufacturing, fabrication, installation, final inspection and testing of:

Magnetische peiltoestellen
Magnetic level gauges

De geldigheid van dit certificaat is mede afhankelijk van het continu voldoen aan de eisen die worden gesteld aan kwaliteitsmanagement systemen volgens de ISO 9001:2000 norm.
The validity of this certificate depends, among others, on the continuously satisfaction to the requirements for the quality system according ISO 9001:2000

Oorspronkelijke datum van goedkeuring/*Initial date of approval*: 29 april 2002

Dit certificaat heeft een geldigheidsduur tot/*The validity of this certificate is till*:

28 april 2011

Bureau Veritas
Metingen, Inspecties en Validaties
Datum afgifte/*Made at*: 29 mei 2006

R. van Wijk

Type Approval Certificate

Germanischer Lloyd

This is to certify that the undernoted product(s) has/have been tested in accordance with the relevant requirements of the GL Type Approval System.

Certificate No.	13 663 - 98 HH
Company	HADRO TECHNIEK VOF James Wattstraat 19 J NL-2809 PA Gouda
Product Description	MAGNETIC LEVEL INDICATORS
Type	POINTER D-SERIES, J-SERIES, L-SERIES, R-SERIES
Environmental Category	• None
Technical Data / Range of Application	TECHNICAL DATA Measuring tube: 1.4404* Nominal pressure: PN 10 to PN 100 Float: 1.4571* M.A.W.T.: up to 490 [°C] Flanges: 1.4404* Permissible Density: 380 - 2200 [Kg/m³] Indication roll: Macrolon, Aluminium * or equivalent materiale Optional: Approved switches of Type UMR acc. to Cert. No.: 97897-95 HH RANGE OF APPLICATION • The above mentioned devices may be used as tank level indicators on tanks arranged above the double bottom provided that the Rules of Germanischer Lloyd in their newest edition are taken into consideration. • The selection of the devices for the corresponding service and the right installation are to be in accordance with the instruction of the manufacturer. LIMITATIONS • The devices may not be used on passenger ships for tanks carrying flammable liquids. The use of the UMR switches on fuel oil tanks and in closed fuel oil overflow systems is subject to individual approval by GL Head Office.
Test Standard	• Test Requirements for Mechanical Components and Equipment, Part 6 of Germanischer Lloyd.
Documents	• Test Report No.: 12 0419 2 98 of MPA NRW, Dortmund / Germany • Quality Manual • Technical Documentation • Drawing Nos.: 1303-01 D-10, 1303-02 D-16, 1303-03 D-40
Remarks	• None
Valid until	2008-12-21
Page	1 of 1
File No.	II.B.05

Type Approval Symbol GL

Hamburg, 2003-09-05

Germanischer Lloyd — G. Hölzer — W. Lippke

Lloyd's Register

Type Approval Certificate Extension

This is to certify that Certificate No. 03/30025(E1) for the under noted products is extended and renumbered as shown.

This certificate is issued to:

PRODUCER	Hadro Techniek Westbaan 270 2841 MC MOORDRECHT The Netherlands
DESCRIPTION	Magnetic level alarm and indicating system
TYPE	D-series, J-series, L-series, R-series
APPLICATION	Environmental category ENV 1 according LR test specification 2002, for use in marine and inland waterway ships
SPECIFICATION	max pressure 10 bar - 100 bar depending on Type
STANDARDS	- PED - LR test specification 2002 - manufacturer specification
LIMITATION	Sensor is not to be used on passenger ships
OPTIONAL	Approved switches outside fluid column

"This Certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid certificate."

The Design Appraisal Document No. ROT.TA.0890345 and its supplementary Type Approval Terms and Conditions form part of this Certificate.

Certificate No.	03/30025(E1)
Issue Date	15 September 2008
Expiry Date	14 September 2013
Sheet	1 of 1

G. Vromans
Type Approval Department

Lloyd's Register EMEA
71 Fenchurch Street, London EC3M 4BS

Team ATEX

L C I E

1 ATTESTATION D'EXAMEN CE DE TYPE

2 **Appareil ou système de protection** destiné à être utilisé en atmosphères explosibles **(Directive 94/9/CE)**

3 Numéro de l'attestation d'examen CE de type
LCIE 08 ATEX 6015 X

4 Appareil ou système de protection :
Détecteur de niveau magnétique
Type : D-..., L-... ; R-... et F-...

5 Demandeur : HADRO Techniek
Adresse : 270 Westbaan
2841 MC Moordrecht
PAYS-BAS

6 Fabricant : HADRO Techniek
Adresse : 270 Westbaan
2841 MC Moordrecht
PAYS-BAS

7 Cet appareil ou système de protection et ses variantes éventuelles acceptées sont décrits dans l'annexe de la présente attestation et dans les documents descriptifs cités en référence.

8 Le LCIE, organisme notifié sous la référence 0081 conformément à l'article 9 de la directive 94/9/CE du Parlement européen et du Conseil du 23 mars 1994, certifie que cet appareil ou système de protection est conforme aux exigences essentielles de sécurité et de santé pour la conception et la construction d'appareils et de systèmes de protection destinés à être utilisés en atmosphères explosibles, données dans l'annexe II de la directive.
Les résultats des vérifications et essais figurent dans le rapport confidentiel N° 60050148-550908.

9 Le respect des exigences essentielles de sécurité et de santé est assuré par la conformité à :
- 13463-1 (2001)
- 13463-5 (2003)

10 Le signe X lorsqu'il est placé à la suite du numéro de l'attestation, indique que cet appareil ou système de protection est soumis aux conditions spéciales pour une utilisation sûre, mentionnées dans l'annexe de la présente attestation.

11 Cette attestation d'examen CE de type concerne uniquement la conception et la construction de l'appareil ou du système de protection spécifié, conformément à l'annexe III de la directive 94/9/CE.
Des exigences supplémentaires de la directive sont applicables pour la fabrication et la fourniture de l'appareil ou du système de protection. Ces dernières ne sont pas couvertes par la présente attestation.

12 Le marquage de l'appareil ou du système de protection doit comporter les informations détaillées au point 15.

Fontenay-aux-Roses, le 13 février 2006

Le responsable de certification ATEX
ATEX certification manager
Jean GILLAUX

1 EC TYPE EXAMINATION CERTIFICATE

2 **Equipment or protective system** intended for use in potentially explosive atmospheres **(Directive 94/9/EC)**

3 EC type examination certificate number
LCIE 08 ATEX 6015 X

4 Equipment or protective system :
Magnetic level gauge
Type : D-..., L-... ; R-... and F-...

5 Applicant : HADRO Techniek
Address : 270 Westbaan
2841 MC Moordrecht
THE NETHERLANDS

6 Manufacturer : HADRO Techniek
Address : 270 Westbaan
2841 MC Moordrecht
THE NETHERLANDS

7 This equipment or protective system and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

8 LCIE, notified body number 0081 in accordance with article 9 of the Directive 94/9/EC of the European Parliament and the Council of 23 March 1994, certifies that this equipment or protective system has been found to comply with the essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.
The examination and test results are recorded in confidential report N° 60050148-550908.

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with :
- 13463-1 (2001)
- 13463-5 (2003)

10 If the sign X is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC type examination certificate relates only to the design and construction of this specified equipment or protective system in accordance with annex III to the directive 94/9/EC.
Further requirements of the directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

12 The marking of the equipment or protective system shall include informations as detailed at 15.

9. Application form

For an offer, please fill out this form and fax to**: +31 182 549008**

Company	: ……		
Contact person	: ……		
Address	: ……		
Postcode	: ……...	City	: ……..……...
Country	: ……		
Telephone	: ……...	Fax	: ……..……...
E-mail	: ……		

Space for your remarks:

Type	: ❑ D ❑ L ❑ R ❑ F
Tag Nr.	: ……...
Quantity	: ……...
Measuring length	: C. to C. ……....mm

PROCESS CONDITIONS

Medium	: ……..……...
Density (kg/m^3)	: ….. min …….. max …..
Pressure	: ….. min …….. max …..
Temperature	: ….. min …….. max …..
Viscosity	: < 80 cst or ……..……cst
Explosion class	: ……..…...

DESIGN

❑ Flanged ❑ Couplings
❑ Thread ❑ Butt-weld

Material	: SS 316L or …….
Connection size	: ……..…...
Pressure rating	: ……. Sealing surface ….……...
Drain (bottom/side)	: G..……/…..…NPT / flange ……..
Vent	: Closed, G…/... NPT / flange …….....

CERTIFICATES

Approvals	: (GL) / LRS / BV *
Material	: EN 10204 3.1
Welding proc.	: WPS / PQR
X-ray	: ……
Explosion	: ATEX
Pressure test	: HADRO/……

OPTIONS

Leakage indication	: Yes / No * of the float
Switches	: …. STD / EExi / EExd *
Scale	: Cm / 0-100% / acc. tank content*
Level transmitter	: 4-20 mA / EEx i / EEx d*
Frost protection	: Yes / No* electric, steam, oil
Insulation	: Cold / Heat resistant *

* *Please choice*