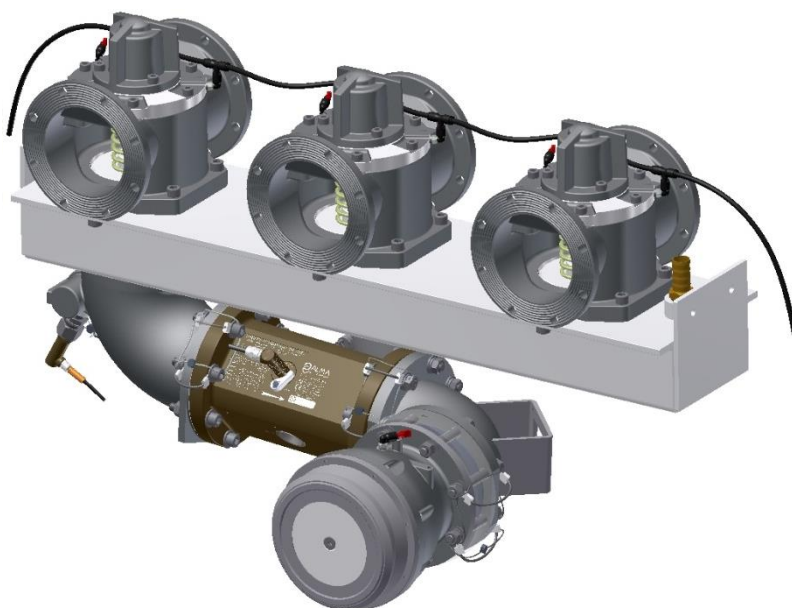


INSTALLATION GUIDE

DI 004 EN D

GRAVICOMPT MANIFOLD

Described in EC-type examination certificate N°: LNE-20517



D	2015/05/12	Updating of drawings, wiring diagram, installation recommendations	DSM	XS
C	2013/10/10	Creation	EG	AH
Issue	Date	Nature of modifications	Written by	Approved by

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1. GENERAL RECOMMENDATIONS

IN ORDER TO AVOID ALL THE PROBLEMS CONCERNING THE INSTALLATION, THE OPERATION AND THE MAINTENANCE OF THE EQUIPMENTS, BEING ABLE TO CREATE INOPPORTUNE FAILURE, PLEASE RESPECT THE FOLLOWING RECOMMENDATIONS.

BEFORE ANY WORK, MAKE SURE THAT THE EQUIPMENTS ARE NOT POWERED.

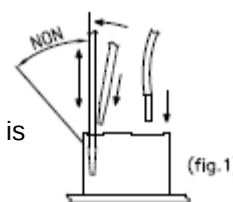
MECHANICAL RECOMMENDATIONS

- Respect the recommendations of the instruction manual specifying the installation, operation and maintenance conditions of the ATEX equipments (instruction manual supplied with the equipments).
- Take care to place the equipments in order to facilitate their installation, operation and maintenance by the technicians (working ergonomics).
- Take care to position properly the equipment; the display must be readable without any difficulty.
- Apply a tightening torque suitable with size and material of the fixation element except particular specifications mentioned on the presentation drawing or in the installation guides.
- Mechanically protect the cables with the corrugated conduit if the cables are not ADR (corrugated conduit adapted to vehicles used for "carriage of dangerous goods of road" - hydrocarbons, LPG ... - and meet the requirements of French standard NF R13-903).
- Ensure there are a good mechanical strength and a good sealing between cable glands and cables, and between cable glands and corrugated conduit.
- Respect cables and corrugated conduit radii of curvature.
- Leave enough flexibility to wires in order to avoid any risk of stripping.
- Allow the drainage of the water in the lower loop (siphon) of the corrugated conduit (not water retention inside the corrugated conduit).

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ELECTRICAL RECOMMENDATIONS

- Respect the recommendations of the instruction manual specifying the installation, operation and maintenance conditions of the ATEX equipments (instruction manual supplied with the equipments).
- Connect the supply of the equipments downstream cut-out, on the power supply reserved to the measured distribution.
- Put a delayed protection of 5A upstream the 24VDC supply to protect equipments in case of reverse polarity or overcurrent.
- Use ADR specific cable, if it is not the case, use at minimum a cable resisting to hydrocarbons. Mechanically protect this cable with a corrugated conduit (corrugated conduit adapted to vehicles used for "carriage of dangerous goods by road" - hydrocarbons, LPG ... - and meet the requirements of French standard NF R13-903).
- Take care not to damage the terminals of the different electronic boards while wiring.
 - Screw terminals: do not damage the screw heads of the terminals.
 - Use insulated lugs and insulated wire ferrules adapted to the section of wires.
 - Spring terminals: do not block the springs (if a spring is blocked, the electronic board must be replaced).
 - Use flat screwdriver 0.4x2.5 (see fig.1).
 - Insert the screwdriver slightly tilted, then push it perpendicularly to the terminal.
 - Do not exceed the upright position when the screwdriver is down in order not to block the spring.
 - Insert or remove the wire and remove the screwdriver.
- Pass the power supply cores (24Vdc truck) through the ferrites by carrying out a loop (ALMA supply).
- Do not use wires of section higher than 1.5mm².
- Do not insert more than two wires in a terminal, if necessary use an insulated twin wire ferrule (unless otherwise indicated).
- Strictly respect the polarities of the input/output when wiring, in accordance with serigraphy on the cards and/or with the installation guide indications.
- Whenever possible, perform a wired test, after wiring and before powering.
- Whenever possible, respect the locations of the cables specified in the installation guide.
- Equipments must be connected to the frame ground (external ground connection).
- Whenever possible, use shielded cables with a 360° connection through the metal cable glands (see the documentation delivered with the equipments). Otherwise, connect the shields to devices inside the equipment (ground terminal, earth bar, earth boss...).
- Whenever possible, label the cables and cores according to the installation guide to facilitate the later maintenance operations.
- Respect a homogeneous wire colour code.



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- Printer TMU295: before positioning the printer on its support, check that configuration switches of the data link protocol, located under the printer, are well positioned: No 3 on "ON" and the 7 others on "OFF".
- Current of the MICROCOMPT+ and printer:

ALMA equipment	Supply voltage	Current mini.	Current maxi.
MICROCOMPT+	24VDC +/-10%	0.7 A	1.5 A
IMPRIMANTE	24VDC +/-10%	0.1 A	5.5 A (switch-on)

- Colour code according to DIN 47100.
- Code for designation of colours according to IEC 60757 (except FR codes):

FR				EN	IT	ES	DE
Couleurs	Codes		Standard codes CEI 60757	Colours	Colori	Colores	Farbe
Blanc	Bc		WH	White	Bianco	Blanco	Weiß
Marron	Mr		BN	Brown	Marrone	Marrón	Braun
Vert	Vt		GN	Green	Verde	Verde	Grün
Jaune	Jn		YE	Yellow	Giallo	Amarillo	Gelb
Gris	Gr		GY	Grey	Grigio	Gris	Grau
Rose	Rs		PK	Pink	Rosa	Rosa	Lila
Bleu	Bl		BU	Blue	Blu	Azul	Blau
Rouge	Rg		RD	Red	Rosso	Rojo	Rot
Noir	Nr		BK	Black	Nero	Negro	Schwarz
Violet	Vi		VL	Violet	Viola	Violeta	Violett
Orange	Or		OG	Orange	Arancio	Naranja	Orange
Vert/Jaune	V/J		GNYE	Green/Yellow	Verde/Giallo	Verde/Amarillo	Grün/Gelb

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PNEUMATIC RECOMMENDATIONS

- Air must be filtered – from 40 to 20µm. Specific recommendations may be added in the installation guides or on the presentation drawings.
- The air lubrication must be permanent and correct to avoid any damage on the pneumatic components.
- The air supply pressure to the inlet of the equipments must be at least 6 bar and max 8 bar. Specific recommendations may be added in the installation guides or on the presentation drawings.
- The pneumatic supply pipes (6/4) must be cut straight (no slanting cut) and should not be crushed after cutting to prevent leakage on fittings.
- Respect the radii of curvature of the pneumatic pipes indicated by the manufacturer.
- Use colored pneumatic pipes to ease maintenance operation.
- In no case the exhaust holes of the pneumatic organs should be plugged, obstructed, unless if that is clearly specified in the installation guides or on presentation drawings.
- The use of muffler is not allowed under any circumstances (fouling, frost...). Put a pneumatic pipe of sufficient length, pointed downwards, so that its end is placed in a protected area (L = 100 mm min.).
- Pressure unit conversion:

PRESSURE UNIT CONVERSION				
Unités	Bar	PSI	Pascal	kg/cm ²
1 Bar =	1	14,5	100 000 (1x10 ⁵)	1,0197
1 PSI =	0.069	1	6894,5	0,07031
1 Pascal =	1x10 ⁻⁵	14,5x10 ⁻⁵	1	1,0197x10 ⁻⁵
1 kg/cm ² =	0,98	14,22	98066,5	1

PSI = Pound per Square Inch (livre par pouce carré)

1 bar = 100 kPa = 0.1 MPa (1 MPa = 10 bar)

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2. GENERAL PRESENTATION

Measuring system installed according to MID certificate

The GRAVICOMPT MANIFOLD measuring system is covered by the EC type examination certificate N° LNE-20517. Refer to this certificate for any precision about its installation.

For the sealing plan, see Annex to EC type examination certificate N° LNE-20517.

Special conditions for installation in any cases

The piping linking each compartment and the transfer valve must have a minimum slope of 3%. The vehicle on which the measuring system is installed must be fitted with a device to ensure it is horizontal.

When the turbine is placed just upstream of the unloading valve, a flow-sight ring or a flange of at least 40 mm thick must be inserted.

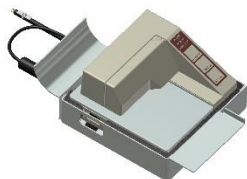
3. PART LIST

EQUIPMENTS INCLUDED IN THE MEASURING SYSTEM DELIVERED BY ALMA				
Item	Equipment	Designation	Qty	Option*
1		CALCULATOR INDICATOR MICROCOMPT+ GRAVICOMPT MANIFOLD (Provided with a magnetic supervisor key)	See table below	
2		CONTROL BOX GRAVICOMPT COLLECTEUR (One control box supplied regardless of the number of measuring systems installed on the tank)		
3		DIFFERENTIAL PRESSURE TRANSMITTER – CP3000 (Supplied if not installed on the manifold)		
4		END OF METERING PROBE – DG3001/75 (Supplied if not installed on the manifold)		

Non-contractual pictures

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EQUIPMENTS INCLUDED IN THE MEASURING SYSTEM DELIVERED BY ALMA

Item	Equipment	Designation	Qty	Option*
5		GRAVICOMPT MANIFOLD EQUIPED	See table below	
		PNEUMATIC CONTROL VENT VALVE KIT		
		GRAVITY COUPLER (4" API / 3" 1/2 symmetrical coupling)		
		KIT FOR MEASURING SYSTEM IDENTIFICATION PLATE (Plate and sealing device)		
6		PRINTER TMU-295 (Printer – power supply cable – serial link cable 10m)		•
7		CONVERTER 24VDC/24VDC 2.1A 50W (Printer power supply 24VDC)		•
8		PT100 TEMPERATURE SENSOR – CT1001 (Supplied with thermowell)		•
Option*: equipment sold as an option by ALMA. Must be installed on the measuring system if required by the certificate.				

Non-contractual pictures

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Item	Quantity according to configuration: Manifold nb/MICROCOMPT+ nb			Designation	Option
	1/1	2/1	2/2		
1	1	1	2	MICROCOMPT+ INDICATOR	
2	1	1	1	CONTROL BOX GRAVICOMPT	
3	1	2	2	DIFFERENTIAL PRESSURE TRANSMITTER	
4	1	2	2	END-OF-METERING PROBE – DG3001/75	
5	1	2	2	MANIFOLD EQUIPED	
	1	2	2	PNEUMATIC CONTROL VENT VALVE KIT	
	1	2	2	GRAVITY COUPLER	
	1	2	2	IDENTIFICATION PLATE	●
6	1	1	1	PRINTER	●
7	1	1	1	CONVERTER	●
8	1	2	2	PT100 TEMPERATURE SENSOR – CT1001	●

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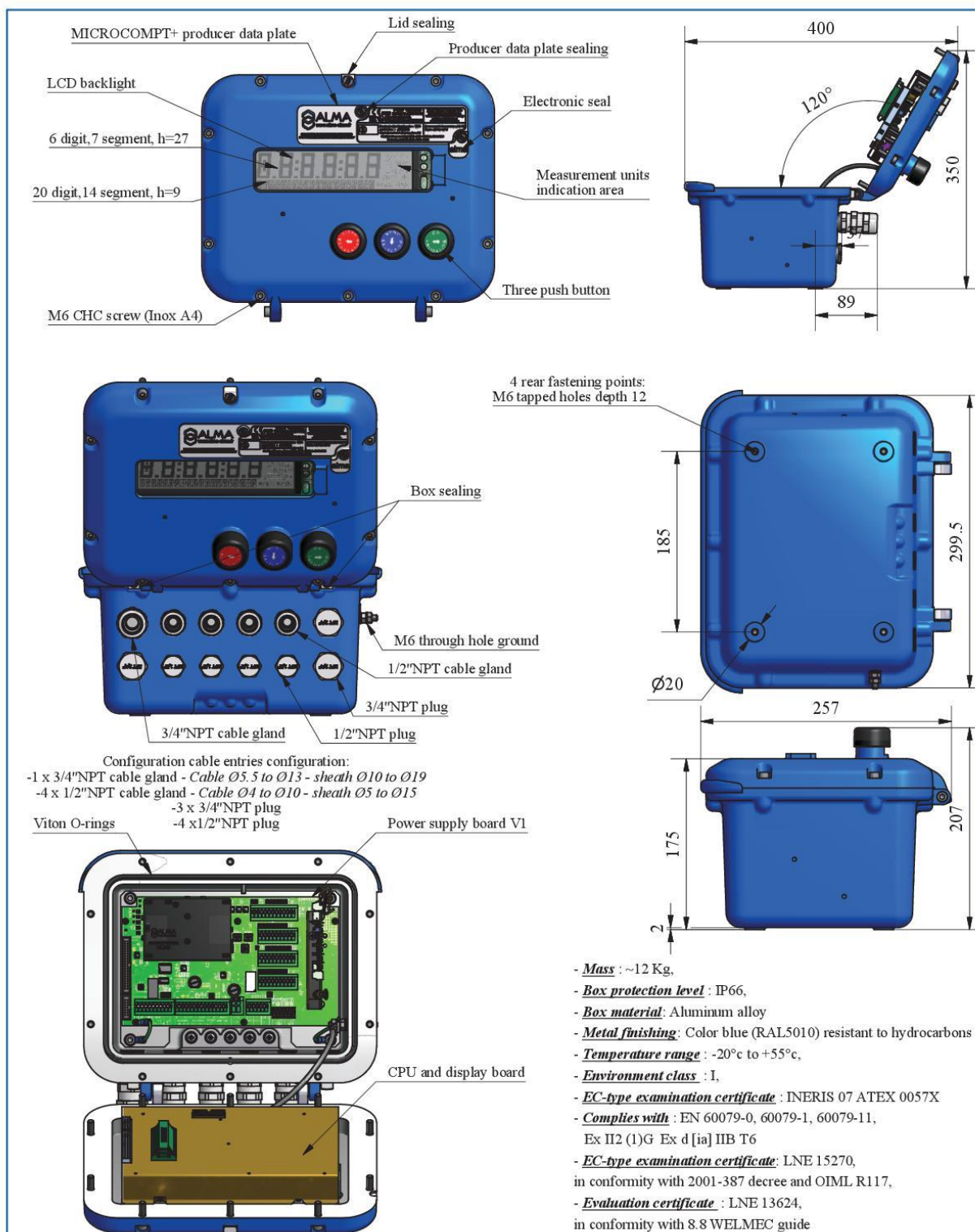
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4. MICROCOMPT+ GRAVICOMPT MANIFOLD



For a safe use of the MICROCOMPT+ electronic device, make sure to comply with the requirements of the instruction manual supplied with the equipment

 Service Development 13127 Vitrolles	PRESENTATION DRAWING DFV094		Description of the amendment N°396 Passage to interface power supply board V1 rev 11 New logo			
	Microcompt+ Gravity metering					
DEV N° : 973	Code : 3695	973	PPV094	I	7 / 9	Modified on : 17/03/2015
Drawing N° associated with the related CET file		Dev N°	Drawing N°	Rev	Folio	Created on : 06/12/2010
Metro : LNE-15270 / LNE13624	INERIS 07 ATEX 00057X					by CC verified by SR
ATEX :						CC SR

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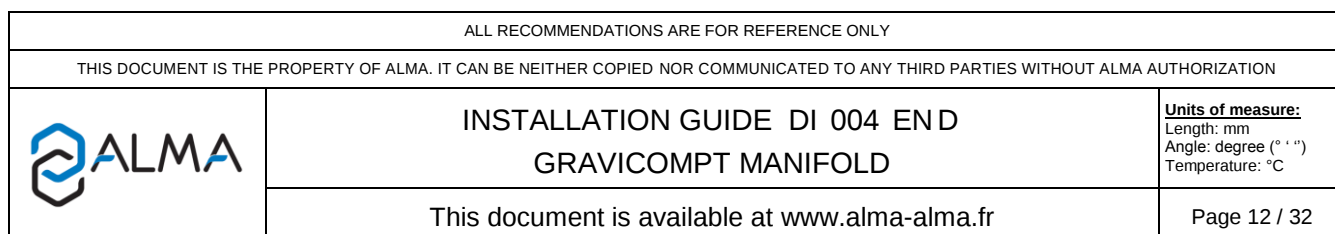


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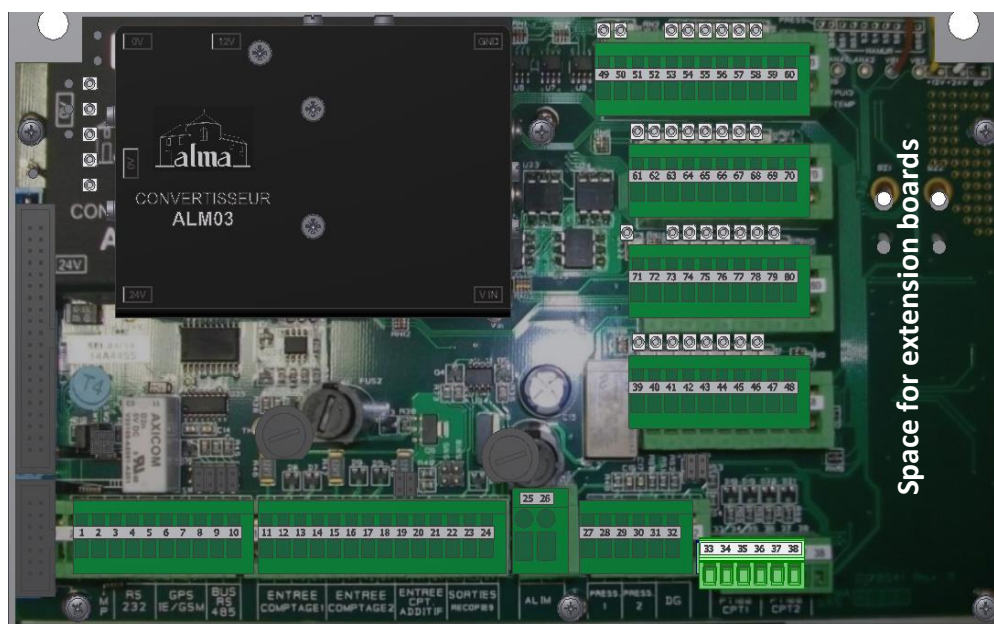
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Any mass braids and shielding must be connected to the MICROCOMPT+ ground bar

TERMINAL ASSIGNMENT OF MICROCOMPT+ BOARDS

INTERFACE POWER SUPPLY BOARD



EQUIPMENTS CONNECTED TO THE MICROCOMPT+								INTERFACE POWER SUPPLY BOARD				
Option	Equipments	Cable (for information)				Function	Colour or No.	Terminal			Function	Observation
		No.	CG*	Alma	Type							
	GRAVICOMPT CONTROL BOX	C2	1/2"NPT		4x1 sh.	24VDC	1	25	24VDC	SUPPLY	Power supply 24VDC MICROCMPT+	
						0V	2	26	0V			
						Rx Printer	3	1	Tx	RS232 PRINTER		Serial link RS232
						Tx Printer	4	2	Rx			
	TURBINE TRANSMITTER	C4	1/2"NPT	●	ADR 4x0.34 sh.	12V	Jn	11	12V	METERING INPUT 1	Connect the shielding	
						V1	Mr	12	V1			
						V2	Vt	13	V2			
						0V	Bc	14	0V			
●	PT100 TEMPERATURE PROBE	C7	1/2"NPT	●	ADR 3x0.6 sh.	+	Jn	33	+	PT100	Connect the shielding	
						-	Bc	34	-			
						-	Vt	35	-			
	GRAVICOMPT CONTROL BOX	C3	3/4"NPT (left)		5x1(min) 13x1(max)	HF	1	74	API	High flow of an API adaptater		
						LF	2	75		Low flow of an API adaptater		
						Vent	3	76	VENT	Manifold vent		
						Flap 1	4	61	Manifold flaps solenoid valves 1 to 10	Opening- control flap 1		
						Flap 2	5	62		Opening- control flap 2		
						Flap 3	6	63		Opening- control flap 3		
						Flap 4	7	64		Opening- control flap 4		
						Flap 5	8	65		Opening- control flap 5		
						Flap 6	9	66		Opening- control flap 6		
						Flap 7	10	67		Opening- control flap 7		
						Flap 8	11	68		Opening- control flap 8		
						Flap 9	12	77		Opening- control flap 9		
						Flap 10	13	78		Opening- control flap 10		
							Footvalve		73	Footvalves	Footvalves	
SOME EXTENSION BOARDS MAY BE SET ON TO THE INTERFACE POWER SUPPLY BOARD												

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7. CONTROL BOX GRAVICOMPT MANIFOLD

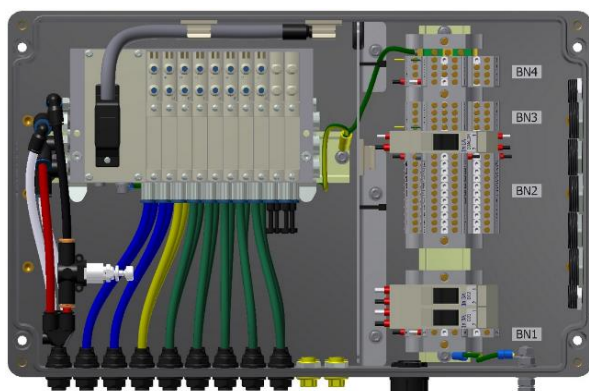


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8. ELECTRICAL WIRING CONTROL BOX

TERMINAL ASSIGNMENT OF THE CONTROL BOX



EQUIPMENTS CONNECTED TO THE CONTROL BOX								TERMINAL BLOCKS OF THE CONTROL BOX								
Option	Equipments	Cable (for information)				Function	Colour or No.	Block	Terminal	Function		Observation				
		No.	CG*	Alma	Type											
	SUPPLY	A1			2x1	24VDC	1	BN1	1	24VDC	Supply	24VDC truck battery (after battery switch and protected by a fuse)				
						0V	2		2	0V						
	MICROCOMPT+ 1 (Supply and RS232)	C2			4x1 bl.	24VDC	1	DJ1	1	24VDC	Supply Microcompt	MICROCOMPT 1- Supply DJ1circuit breaker 3A				
										0V			2	2	0V	
										Rx	3	BN3	1	Rx	RS232 Printer	Printer
										Tx	4		2	Tx		
	MICROCOMPT+ 2 (Supply and RS232)	C2			4x1 bl.	24VDC	1	DJ2	1	24VDC	Supply Microcompt	MICROCOMPT 2 - Supply DJ2 circuit breaker 3A				
										0V			2	2	0V	
										Tx	3	BN3	3	Rx	RS232 Printer	Printer
										Rx	4		4	Tx		
	MICROCOMPT+ 1 LF/HF	C3			5x1 (min) 13x1(max)	24VDC	M1 - 2	BN2	1	LF 1	API	MICROCOMPT 1- LF/HF manifold 1				
						24VDC	M1 - 1		2	HF 1						
	MICROCOMPT+ 2 LF/HF					24VDC	M2 - 2		3	LF 2	API	MICROCOMPT 2 - LF/HF manifold 2				
						24VDC	M2 - 1		4	HF 2						
	MICROCOMPT+ 1					24VDC	M1 - 3		5	Vent 1	Vent	Vent manifold 1				
	MICROCOMPT+ 2					24VDC	M2 - 3		6	Vent 2		Vent manifold 2				
	MICROCOMPT+ 1 and MICROCOMPT+ 2 (depending on the tank configuration)					24VDC	4		7	Flap 1	Opening of the manifold flaps	Opening- control flap 1				
						24VDC	5		8	Flap 2		Opening- control flap 2				
						24VDC	6		9	Flap 3		Opening- control flap 3				
						24VDC	7		10	Flap 4		Opening- control flap 4				
						24VDC	8		11	Flap 5		Opening- control flap 5				
						24VDC	9		12	Flap 6		Opening- control flap 6				
						24VDC	10		13	Flap 7		Opening- control flap 7				
						24VDC	11		14	Flap 8		Opening- control flapt 8				
						24VDC	12		15	Flap 9		Opening- control flap 9				
						24VDC	13		16	Flap 10		Opening- control flap 10				
								BN2	17	free						
									18	free						
									19	free						
									20	free						
									21	0V		Valve terminal				

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EQUIPMENTS CONNECTED TO THE CONTROL BOX								TERMINAL BLOCKS OF THE CONTROL BOX				
Option	Equipments	Cable (for information)				Function	Colour or No.	Block	Terminal	Function		Observation
		No.	CG*	Alma	Type							
●	CONVERTER 24VDC 5W (Printer supply)	A2			4x1	24VDC (in)	1	BN4	1	24VDC	Printer supply	Converter INPUT
						0V (in)	2		2	0V		Converter OUTPUT
						24VDC (out)	3		3	24VDC		
						0V (out)	4		4	0V		
●	PRINTER CABLE (Supply and RS232)	C1		●	4x0.75 bl.	24VCC	Bc	BN4	5	24VDC	RS232 Printer	
						0V	Mr		6	0V		
						Rx	Vt		7	Rx		
						Tx	Jn		8	Tx		
						Shielding	Braid		T	Sh.		
	GROUND (tank frame)				1x2.5		V/J					Connect to the through- hole- ground of the control box

*Refer to the Cable Glands installation instructions

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9. PNEUMATIC WIRING CONTROL BOX

PNEUMATIC INPUT/OUTPUT ASSIGNMENT OF THE CONTROL BOX				
Label	Input	Output	Function	Observation
AIR	X		Air supply of the box	Air if: all footvalves opened and valve bar locked
ECHAP.		X	Exhaust	Put a tube L=100mm min. (no muffler)
GRAND DEBIT – Col.1		X	Opening of the API adapter for high flow	Connection to the API adapter manifold 1 (HF – LF)
PETIT DEBIT – Col.1		X	High to low flow position API adapter	
GRAND DEBIT – Col.2		X	Opening of the API adapter for high flow	Connection to the API adapter manifold 2 (HF – LF)
PETIT DEBIT – Col.2		X	High to low flow position API adapter	
Ev Col.1 – Event		X	Vent valve opening	Connection to the vent valve manifold 1
Ev Col.2 – Event		X	Vent valve opening	Connection to the vent valve manifold 2
Cpt 1		X	Opening of the manifold flap compartment 1	Connection to the manifold flaps
Cpt 2		X	Opening of the manifold flap compartment 2	
Cpt 3		X	Opening of the manifold flap compartment 3	
Cpt 4		X	Opening of the manifold flap compartment 4	
Cpt 5		X	Opening of the manifold flap compartment 5	
Cpt 6		X	Opening of the manifold flap compartment 6	
Cpt 7		X	Opening of the manifold flap compartment 7	
Cpt 8		X	Opening of the manifold flap compartment 8	
Cpt 9		X	Opening of the manifold flap compartment 9	
Cpt 10		X	Opening of the manifold flap compartment 10	

Unused ports must be plugged.



CONDITIONS FOR AIR SUPPLY OF THE CONTROL BOX:

- The pneumatic "&" cells of all footvalves are open.
- The bar is in its locked position (compartment API adapters are locked).

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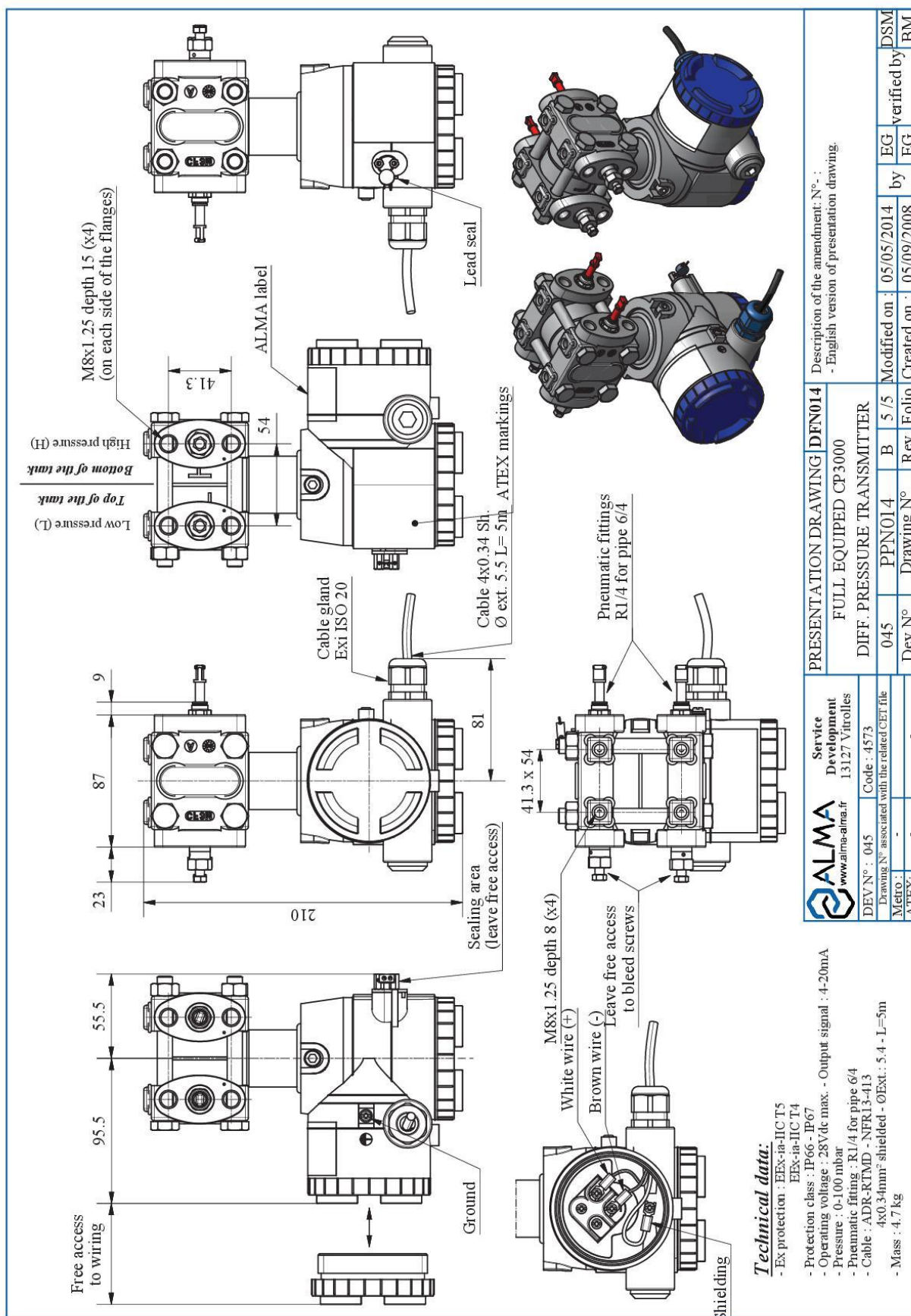
INSTALLATION GUIDE DI 004 END GRAVICOMPT MANIFOLD

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Units of measure:
Length: mm
Angle: degree (° ' ")
Temperature: °C

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10. DIFFERENTIAL PRESSURE TRANSMITTER – CP3000



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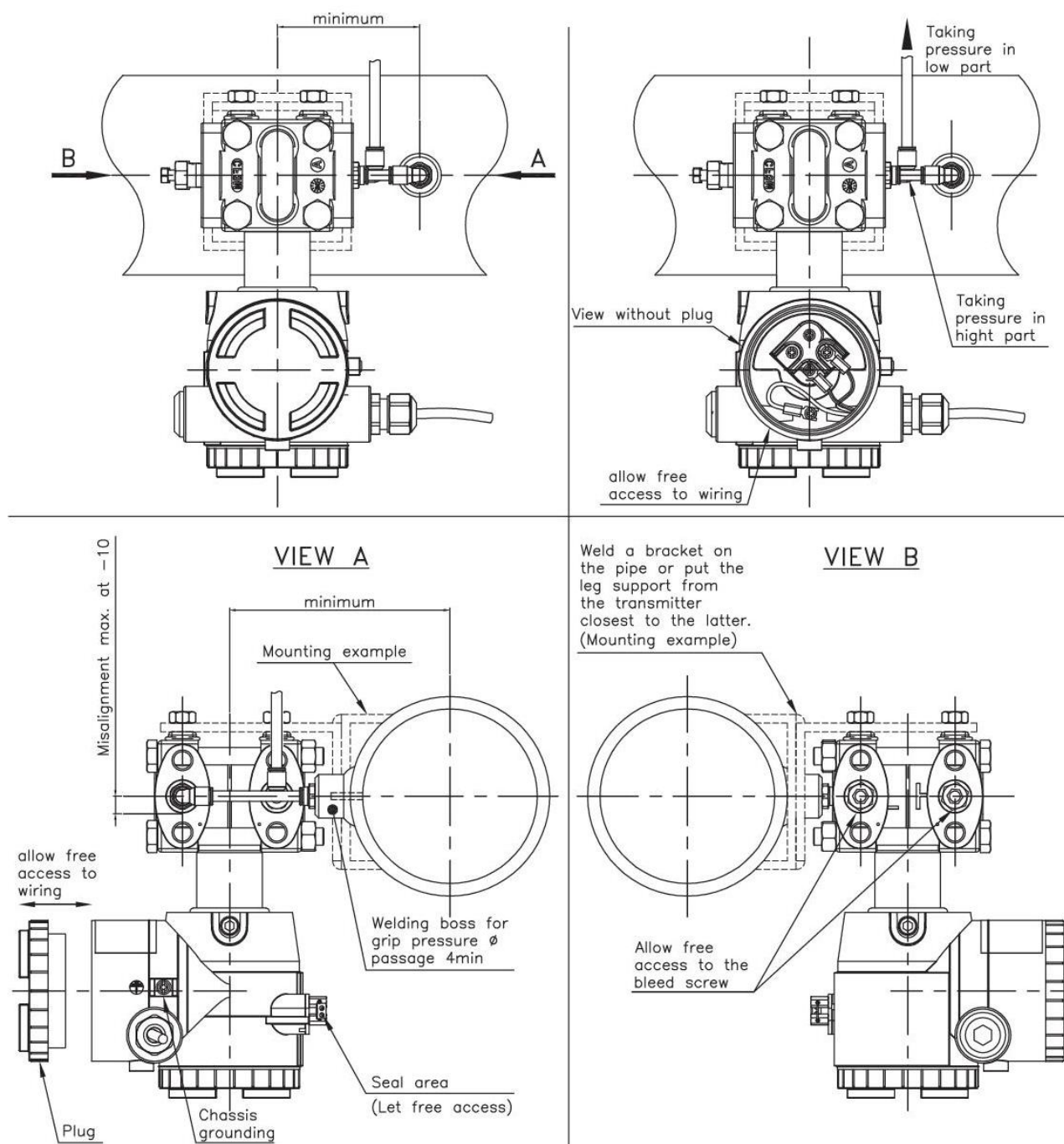
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Length: mm
Angle: degree (° '' ''')
Temperature: °C

11. INSTALLATION RECOMMENDATIONS CP3000 (ATEX)

THE PRESSURE TRANSMITTER MUST BE INSTALLED IN UPRIGHT POSITION



REFER TO INSTRUCTION MANUAL

(DELIVERED WITH THE EQUIPMENT AND AVAILABLE ON ALMA WEBSITE)

12. END-OF-METERING PROBE – DG3001/75-Co

Codification of marking :

DG3001/LL-Co material

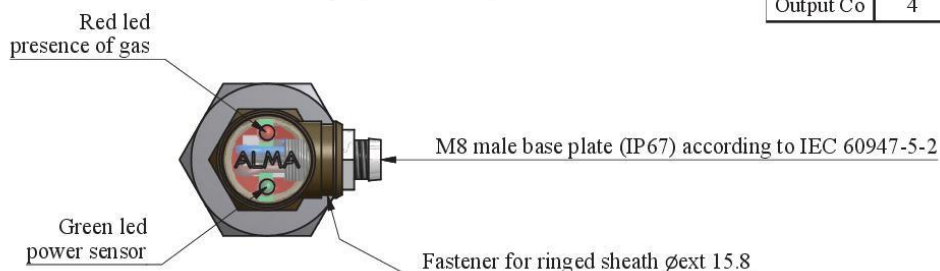
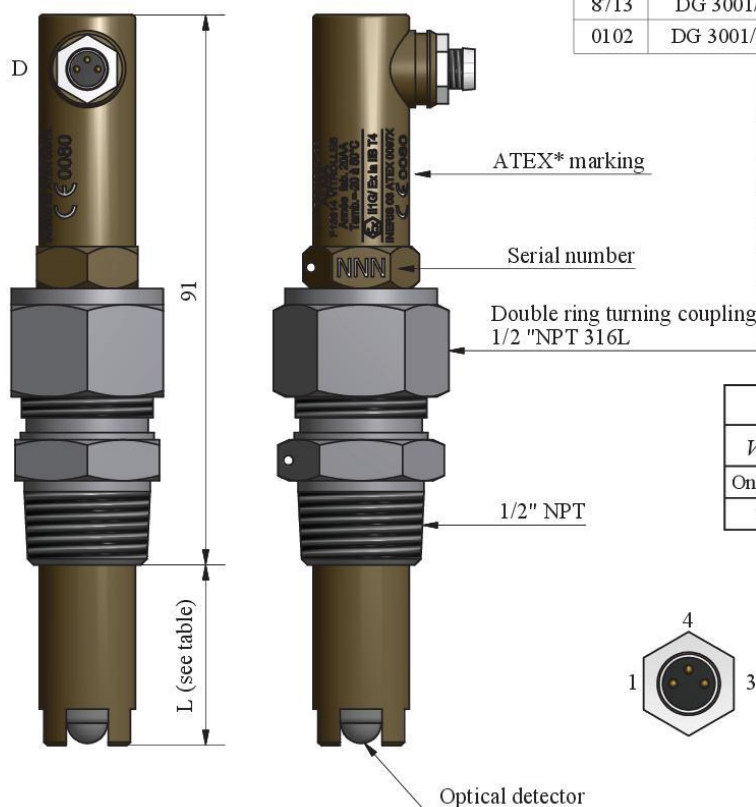
LLL = Maximum Length under connection
Co = Connector
Material : - 316L means: Inox
 - no indication means: Aluminium

<i>Dimensions</i>				
<i>Codes</i>	<i>Types</i>	<i>Lengths under connector (mm)</i>		<i>Materials</i>
		<i>L min</i>	<i>L max</i>	
0513	DG 3001/30-Co	0	26	Aluminium
8133	DG 3001/75-Co	30	71	Aluminium
8134	DG 3001/205-Co	75	201	Aluminium
8713	DG 3001/75-Co Inox	30	71	Inox 316 L
0102	DG 3001/205-Co Inox	75	201	Inox 316 L

<i>Operation</i>		
<i>Conditions</i>	<i>Gas</i>	<i>Liquid</i>
Output (mA)	35±2	15±1
Open collector output	Saturated	Blocked
Imax on output Co (mA)	30	
Vce (V) for Is=10mA	< 0.4	
State of the red led	On	Off
State of the green led	On	On

<i>Supply</i>			
<i>Voltage VDC</i>	<i>NSI</i>	<i>SI II B</i>	<i>SI II C</i>
On power supply +	7 to 27	7 to 18*	7 to 15*
On output Co	< 27	< 13.2*	

<i>Connection of the connector</i>		
<i>Function</i>	<i>Pin</i>	<i>Wire Color</i>
Power supply +	1	Brown
Power supply -	3	Blue
Output Co	4	Black



NOTE:

- The detector body is made of anodized aluminum alloy of bronze color, or Inox 316L.
- The optical sensor in contact with the liquid or gas is of polysulfone.
- The O-ring between the body and the detector is made of Viton.
- The sensor is supplied with any cable, 3 lengths are available: 5m cables (8138), 10m (8139) and 25m (8140).

*Refer to § 2 ATEX descriptive notice

 ALMA www.alma-alma.fr Service Development 13127 Vitrolles	PRESENTATION DRAWING				DFV014	Description of amendment MDV333 Adding tolerance on the inside diameter of the body				
	Gas detector output connector DG3001, DG3001/75, DG3001/205									
	DEVN° : 981		Code : Voir plan de présentation							
Drawing N° associated with the related CET file										
Metro :		981	PPV014	T	5 / 6	Modified on :	14/01/2014	by	CC	SR
ATEX :		INERIS 03 ATEX 0097X	Dev N°	Drawing N°	Rev	Folio	Created on :	01/04/1999	BM	verified by BM

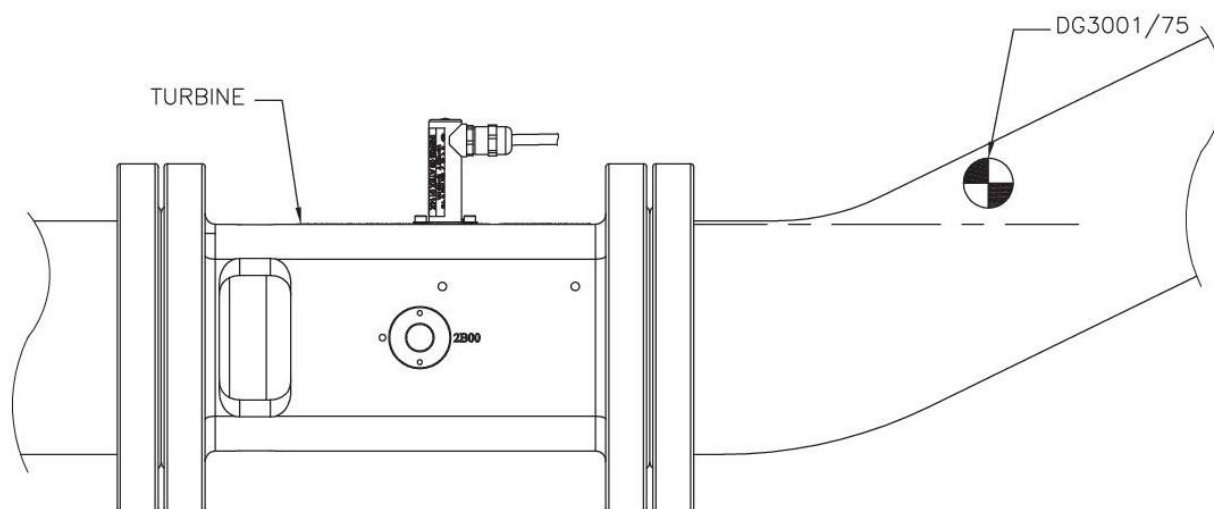
Document available on website alma-alma.fr

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	INSTALLATION GUIDE DI 004 END GRAVICOMPT MANIFOLD	<u>Units of measure:</u> Length: mm Angle: degree (° / °") Temperature: °C
	This document is available at www.alma-alma.fr	Page 21 / 32

13. INSTALLATION RECOMMENDATIONS DG3001/75

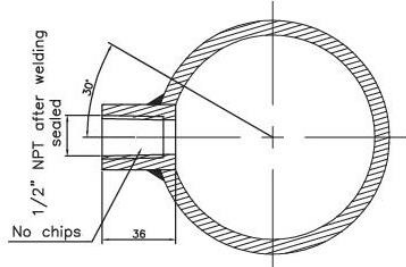
POSITION OF THE END-OF-METERING PROBE:

The DG3001/75 should be positioned above the top of the turbine, as close as possible to the turbine

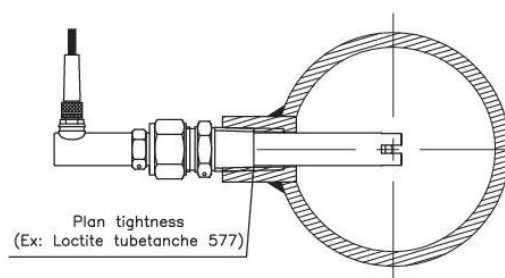


Position of the welding boss for DG3001

– horizontal position or
until 30°



Mounting DG3001



REFER TO INSTRUCTION MANUAL

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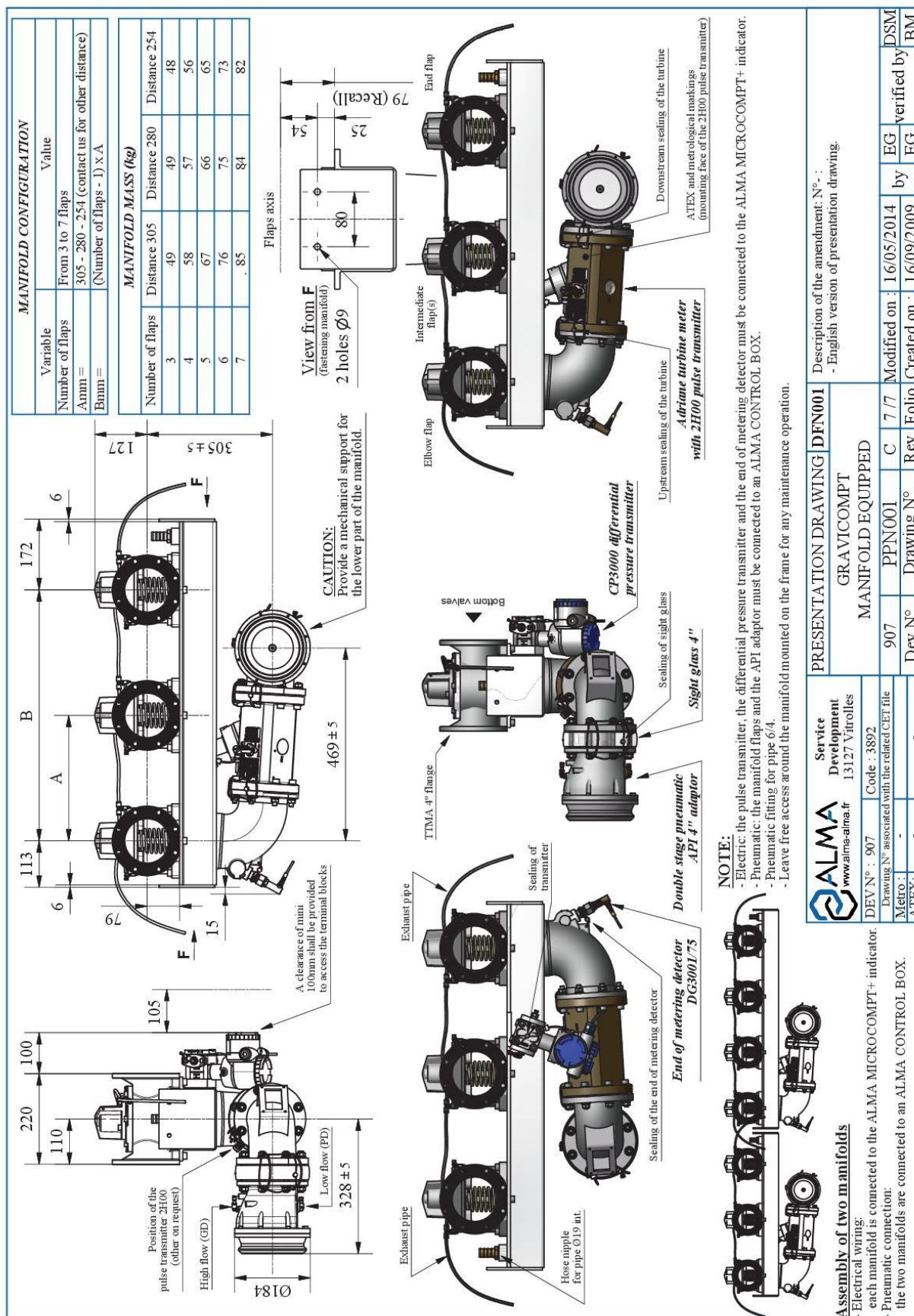
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14. GRAVICOMPT MANIFOLD EQUIPED



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Units of measure:
Length: mm
Angle: degree (° '' ''')
Temperature: °C

15. PNEUMATIC CONTROL VENT VALVE KIT

about 176

about 118

INLET

OUTLET

Tag marking way

36 / flat size

27 / flat size

80

Do not plug the orifice.

2 R3/4" male adaptor hose nipples for tube Ø19 int.

Do not plug the orifice.

G1/8" tap.

G3/4" tap.

PNEUMATIC CONTROL VENT
(delivered without I-O fittings)
Code: 6922

Technical features:
Body: brass
Male adaptor hose nipple: brass
Pressure: 10 bar max.
Mass (kit): 1.3Kg
Mass (valve): 1.1Kg

PRESENTATION DRAWING		DFN004	
Pneumatic control		Vent valve kit	
907	PPN004	B	5 / 6
Dev N°	Drawing N°	Rev	Folio

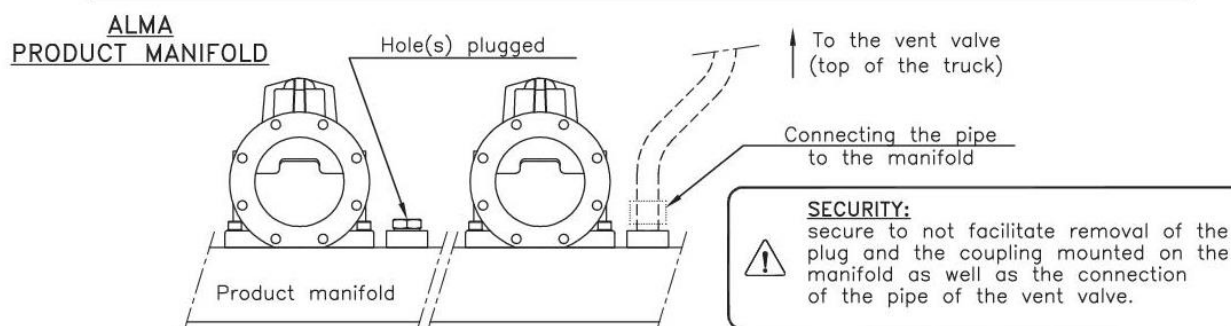
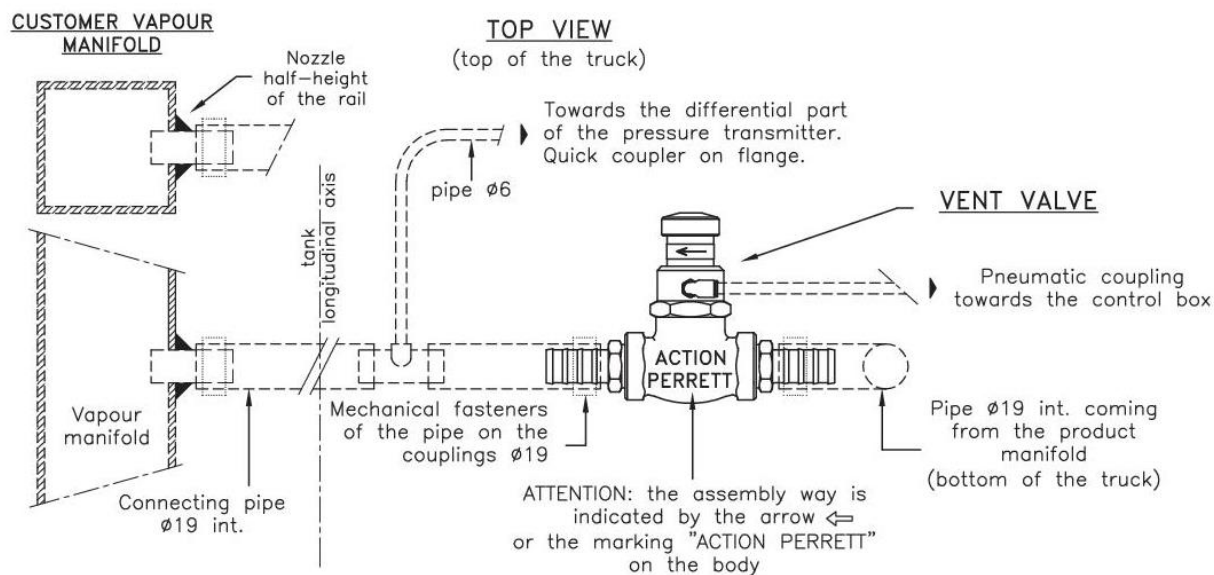
Service Development 13127 Vitrolles www.alma-alma.fr		Code : 4470	
DEV N° : 907	Drawing N° associated with the related CET file		
Metro : -	ATEX : -		

Description of the amendment N° 036 :
Markings added on the body valve for a better comprehension of flow direction.

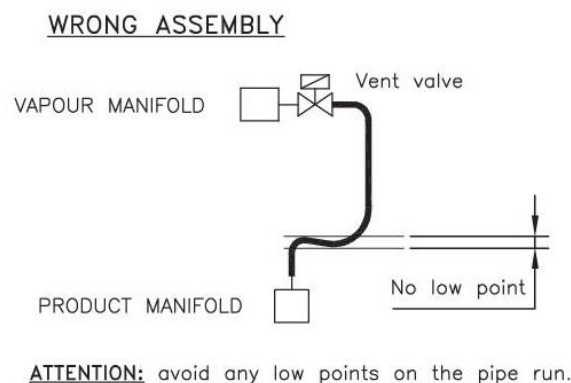
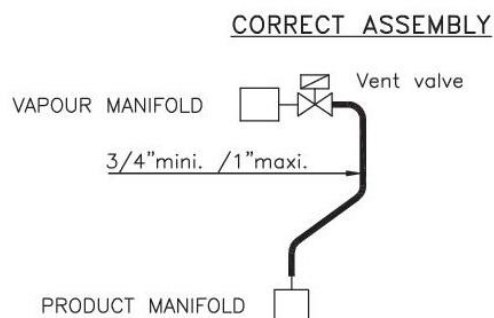
Modified on : 10/12/2012	by EG	verified by XS
Created on : 11/02/2008	by EG	EG

Document available on website [alma-alma.fr](http://www.alma-alma.fr)

16. INSTALLATION RECOMMENDATIONS PNEUMATIC CONTROL VALVE



ASSEMBLY OF THE VENT PIPE (not supplied by Alma)



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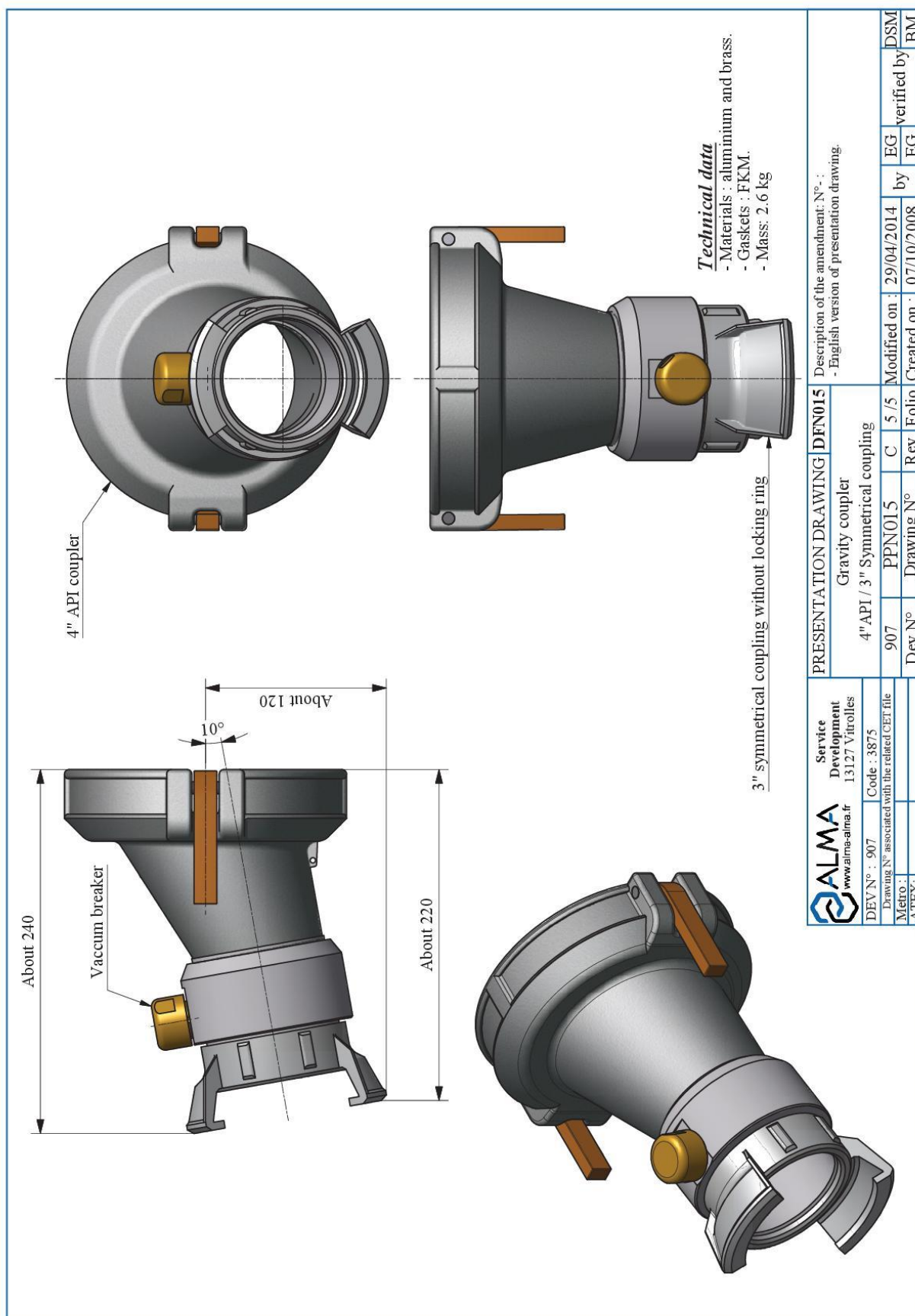
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17. GRAVITY COUPLER 4" API / 3" ½ SYMMETRICAL COUPLING



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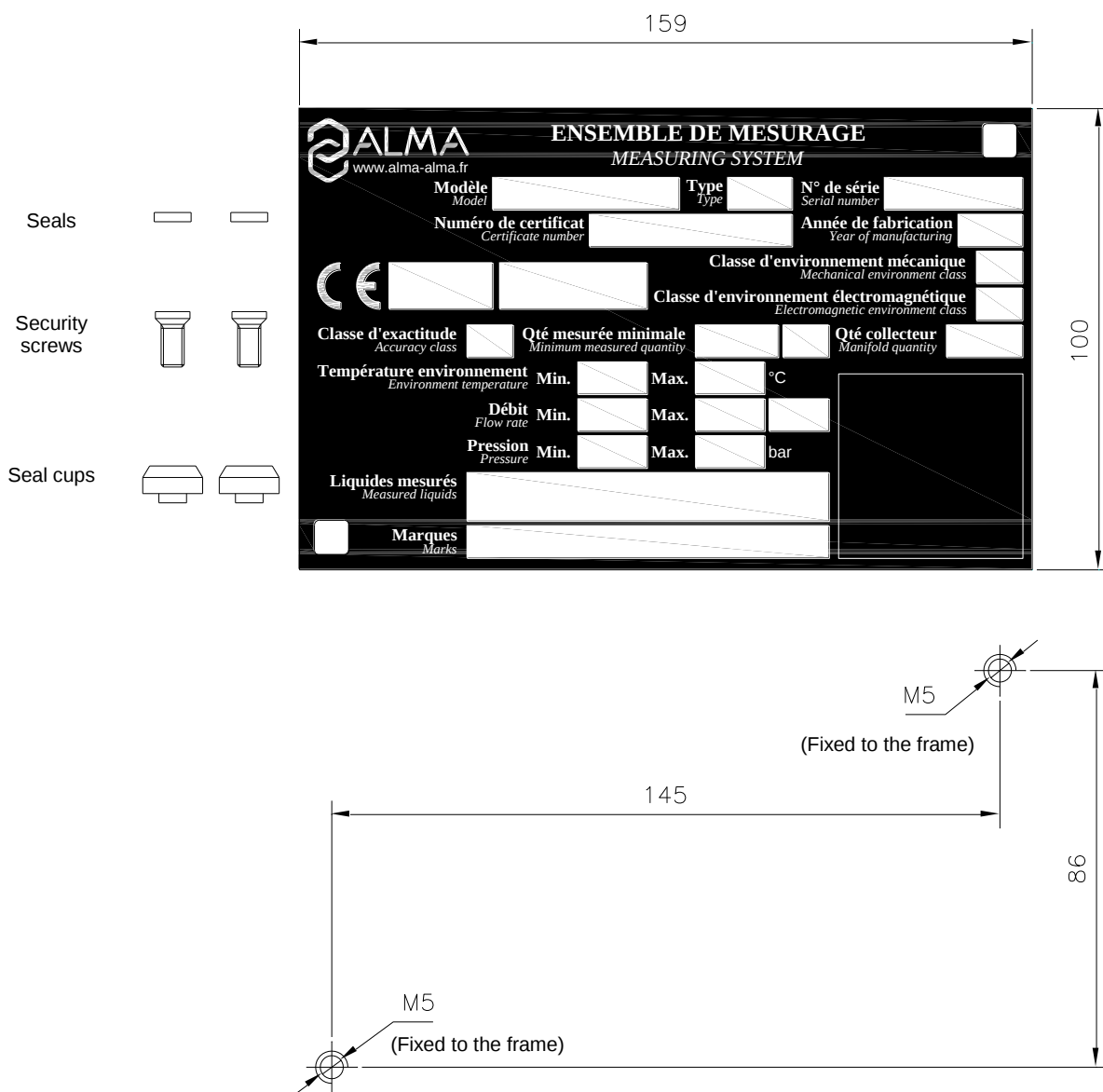
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Units of measure:
Length: mm
Angle: degree ($^{\circ}$ ' ")
Temperature: $^{\circ}\text{C}$

18. KIT FOR MEASURING SYSTEM IDENTIFICATION PLATE

The identification plate shall be clearly installed, near the associated indicator device, and of easy access in order to be able to read features and to stamp the regulatory marks.



The security screws of the cups (provided by ALMA) must be screwed in the tap of the frame (do not use removable nuts).

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19. PRINTER

Printer kit
with **TM-U295 printer**
Code: 0284 (with 5 meters cable)
Code: 0765 (with 10 meters cable)
(Printer presentation drawing PPN901)

Printer kit
with **SP298MD printer**
Code: 0766 (with 5 meters cable)
Code: 0767 (with 10 meters cable)
(Printer presentation drawing PPN900)

* ADR-RTMD - NFRI3-413 cable

Description of the amendment: N° :
- English version of presentation drawing.

PRINTER LINK CABLE		COLOUR WIRE	FUNCTION
TYPE	CABLE	White (WH) Brown (BN) Yellow (YE) Green (GN) Shielding	24Vdc 0v Tx printer Rx printer Shielding
	Shielded cable * 4x0.75mm² Ø ext. 8 L=5m / Code 4339 L=10m / Code 4578		

PRINTER KIT:
- 1 Printer.
- 1 Printer link cable (Length= 5 or 10m).
- 1 Printer holder (SS 304L thickness 2mm - Mass 1.5 kg).

Service Development
13127 Vitrolles
www.alma-alma.fr

DEV N° : 907 Code :-
Drawing N° associated with the related CET file
Metro :
Attesté :

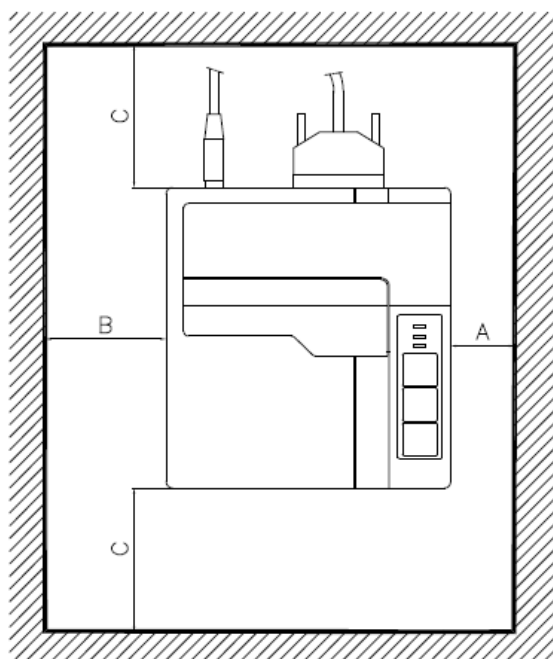
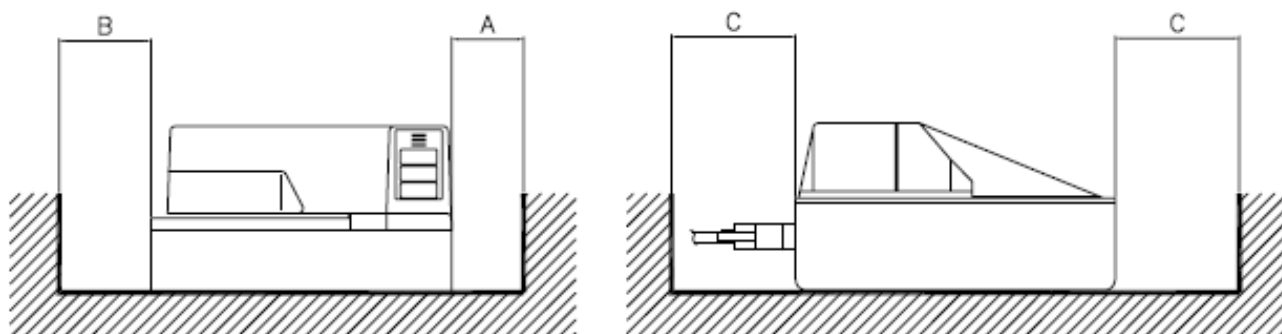
DO NOT EXPOSE THE PRINTER TO ANY HEAT-SOURCE, AND PROTECT IT FROM VIBRATIONS AND FROM WATER PROJECTIONS.

IF IT'S NOT IN THE TRUCK CABIN, THE PRINTER MUST BE INSTALLED IN A TIGHT BOX IN ORDER TO FACILITATE INTRODUCTION AND EXTRACTION OF PAPER.

PRESENTATION DRAWING PPN902			
PRINTER KIT			
907	PPN902	B 2/2	Modified on : 06/05/2014
Dev N°	Drawing N°	Rev	Created on : 25/03/2010
			EG
			EG
			by
			verified by
			DSM
			XS

20. INSTALLATION RECOMMENDATIONS PRINTER

- Do not store anything above the printer.
- Leave an open space all around the printer to ease maintenance.
- Dimensions: $A \geq 50\text{mm}$ and $B \geq 100\text{mm}$.



BOTTOM VIEW

The printer must be installed in a tight box and be laid out so as not to obstruct the introduction and the extraction of paper.



DO NOT EXPOSE THE PRINTER TO ANY HEAT-SOURCE.
PROTECT IT FROM VIBRATIONS AND WATER PROJECTIONS.

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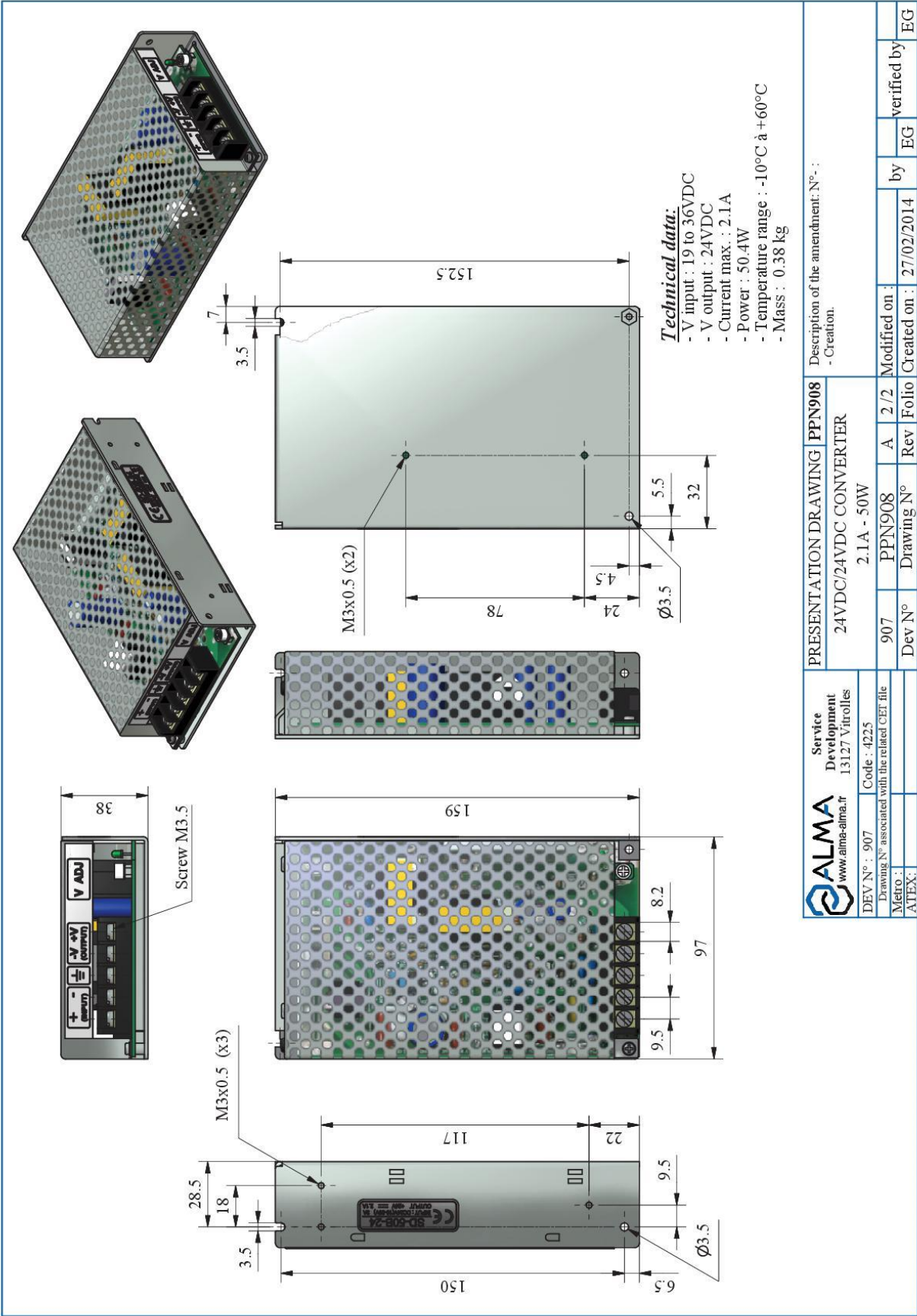
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Units of measure:
Length: mm
Angle: degree (° ' ")
Temperature: °C

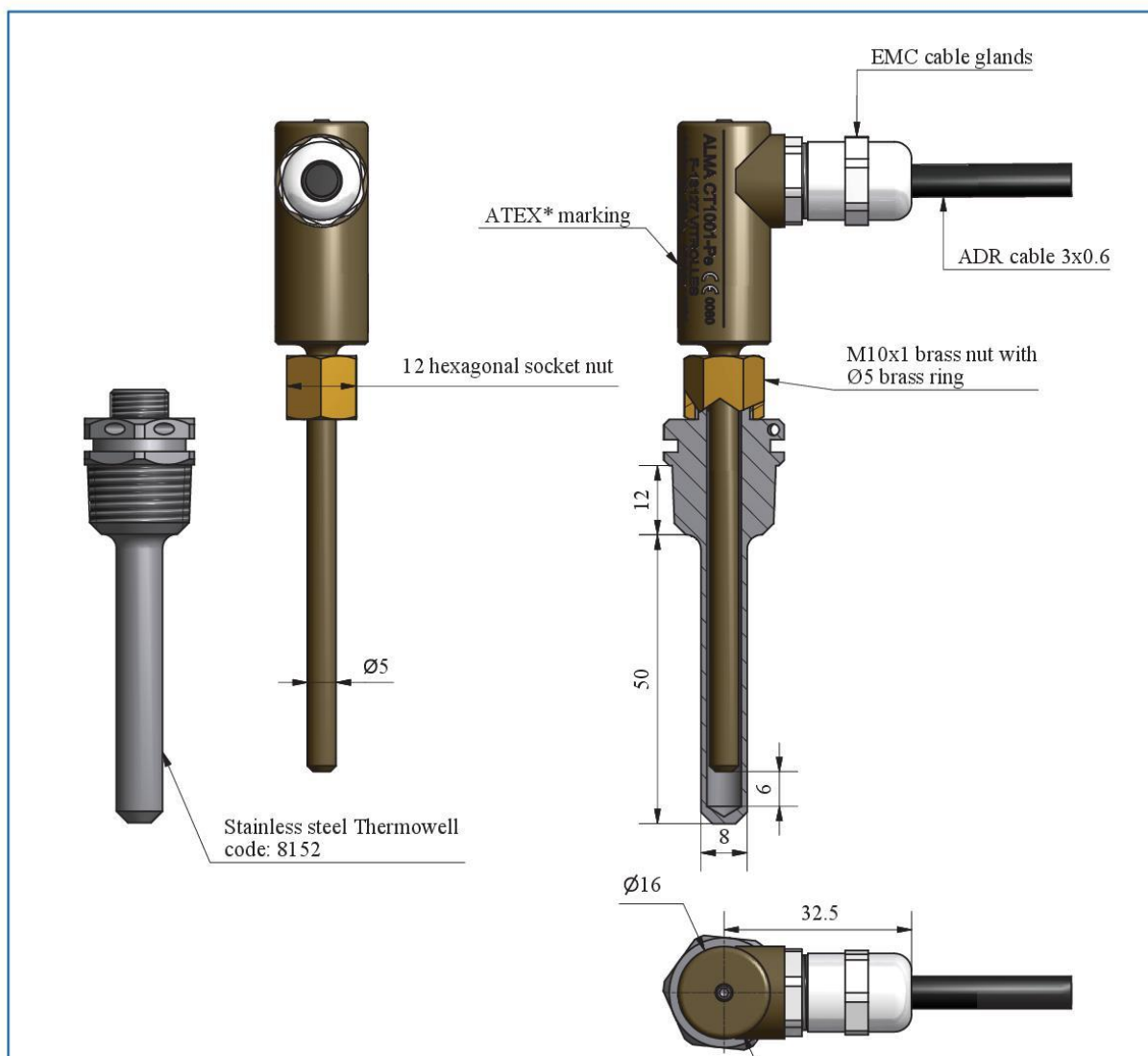
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21. CONVERTER 24VDC/24VDC 2.1A 50W



Document available on website [alma-alma.fr](http://www.alma-alma.fr)

22. PT100 TEMPERATURE PROBE – CT1001



The sensor body is made of bronze color anodized aluminum alloy;
The ring and the nut are made of brass.
The probe can be mounted either on a ALMA thermowell or on a
thimble connection 1/4 \"BSP (M10x1 n5).
Before installation, lubricate the parts in contact with the thermowell or
the boss, to prevent corrosion

PT100 features:

- 3 wires
- 1/3 DIN

*ATEX "ia" and "ma" certification.

For installation and use in hazardous areas see Instruction manual

Also available with output connector according to IEC 60947-5-2

Connecting the cable		
Function	Marking on the wire	Color wire
PT100/1	1	Yellow
PT100/2	2	White
PT100/3	3	Green

 ALMA www.alma-aima.fr	Service Development 13127 Vitrolles		PRESENTATION DRAWING DFV042				Description of the amendment N°312: Adding a strengthening part										
			Temperature probe CT1001-Pe														
	DEV N° : 949c		Code : 8151														
	Drawing N° associated with the related CET file		949c		PPV042		I		5 / 7		Modified on : 13/06/2013		by CC		SR		
	Metro : ATEX :		INERIS 04 ATEX 0026		Dev N°		Drawing N°		Rev		Folio		Created on : 13/09/2003		BM		verified by BM

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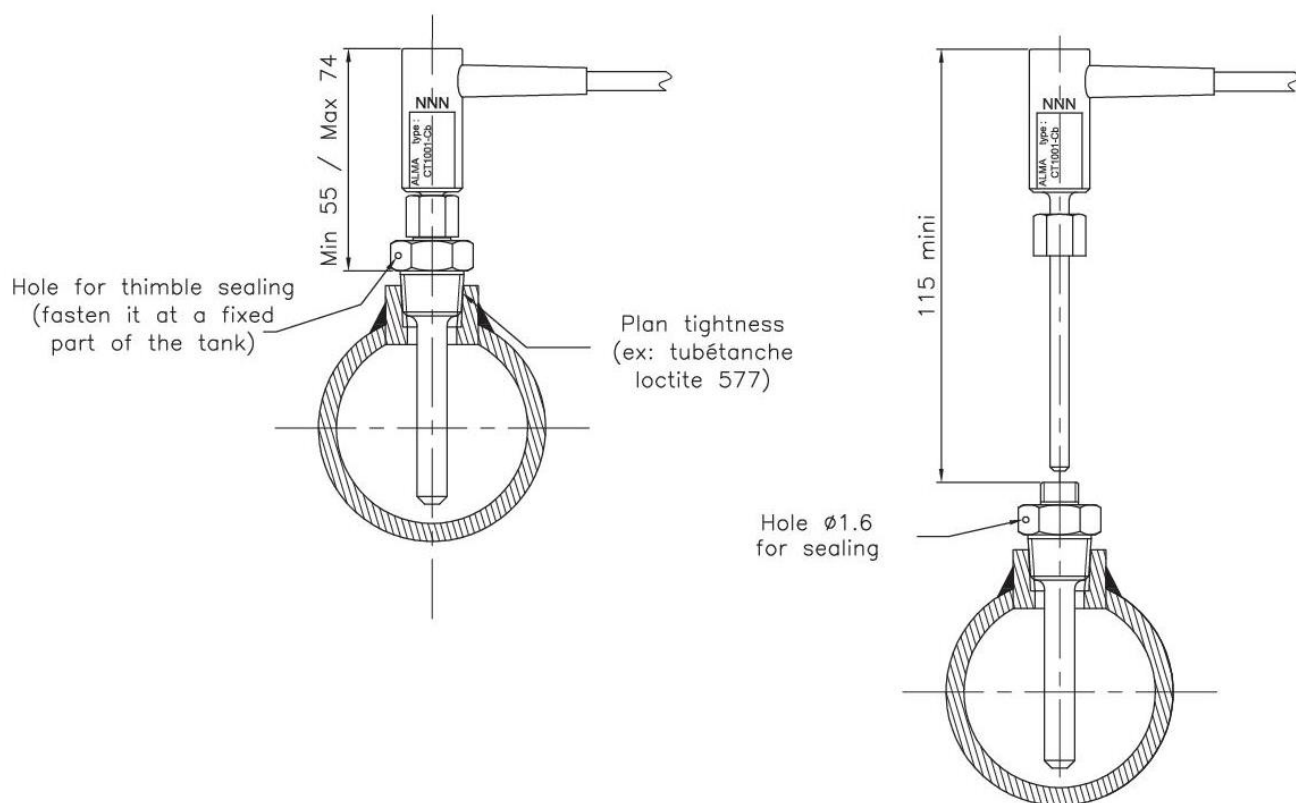
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23. INSTALLATION RECOMMENDATIONS TEMPERATURE SENSOR



REFER TO INSTRUCTION MANUAL

(DELIVERED WITH THE EQUIPMENT AND AVAILABLE ON ALMA WEBSITE)

INSTALLATION OF THE TEMPERATURE SENSOR ON THE ALMA TURBINE METER:



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