

N-L3795

Updated 14.01.2021

APPLICATION MANUAL

Explosionproof **Ex d** Universal Two-Compartments Instrument Housing Type:
XD-D120L, XD-D120, XD-D120H,
XD-D120Lwin, XD-D120win, XD-D120Hwin
and

Explosionproof **Ex d e** Universal Two-Compartments Instrument Housing Type:
XDE-D120L, XDE-D120, XDE-D120H,
XDE-D120Lwin, XDE-D120win, XDE-D120Hwin

Contents:

1. Destination.
2. Flameproof joints.
3. Pressure test.
4. Temperature classes, ambient temperature, power dissipation.
5. Way of mounting.
6. Assembly of inside conductor bushing.
7. Earth and protection terminals.
8. Cover locking.
9. Protection degree.
10. Marking.

NOTES OF SAFETY

The XD-D120 and XDE-D120 series universal instrument housings are designed to accommodate various electronic instruments. If used incorrectly it is possible that application-related dangers may arise.

The XD-D120 and XDE-D120 series housing may be used by qualified and authorized company and people only, under strict observance of these application manual and relevant standards, legal requirements, and, where appropriate, the certificate.

Only the empty enclosure is certified. When used as part of an end product assembly, subsequent approval of the end use equipment assembly is required.

1. DESTINATION.

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- **Universal Two-Compartments Instrument Housing XD-D120 and XDE-D120 series** are designed to accommodate different electronic instruments or devices and electric power supply, working in hazardous areas.
- It is not allowed to install circuit breakers or contactors with oil filling and rotating apparatus producing turbulence inside of the enclosure.
- Marking:

ATEX 2014/34/UE		IECEX	
XD-D120	XDE-D120	XD-D120	XDE-D120
 II 2G Ex db IIC Gb	 II 2G Ex db eb IIC Gb	Ex db IIC Gb	Ex db eb IIC Gb
 II 2D Ex tb IIIC Db	 II 2D Ex tb IIIC Db	Ex tb IIIC Db	Ex tb IIIC Db

- Component must be installed to avoid a risk from propagating brush discharges for application in explosive dust atmosphere.
- Standards : ATEX 2014/34/UE
EN IEC 60079-0, EN 60079-1, EN 60079-7, EN 60079-31,
IEC 60079-0, IEC 60079-1, IEC 60079-7, IEC 60079-31
- Temperature

Instrument housing type	T _{amb}	T _{serv} O-ring VQM
XD-D120L, XD-D120, XD-D120H XDE-D120L, XDE-D120, XDE-D120H	-40 to +150 °C	-40 to +150 °C
XD-D120Lwin, XD-D120win, XD-120Hwin XDE-D120Lwin, XDE-D120win, XDE-120Hwin	-40 to +60 °C	-40 to +85 °C

- Possible zone application

Zone	Protection Code
Zone 1 , Zone 21	Ex d, Ex de
Zone 2 , Zone 22	Ex d, Ex de

2. FLAMEPROOF JOINTS.

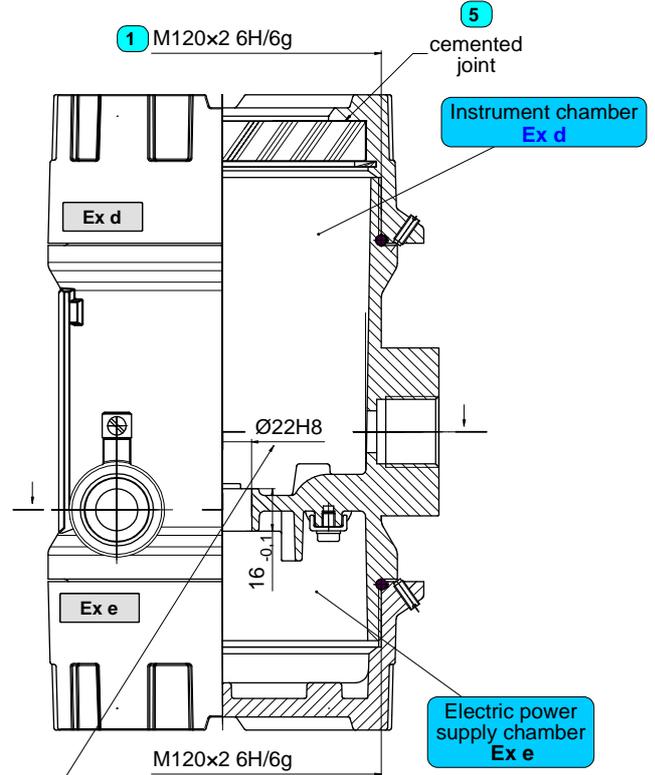
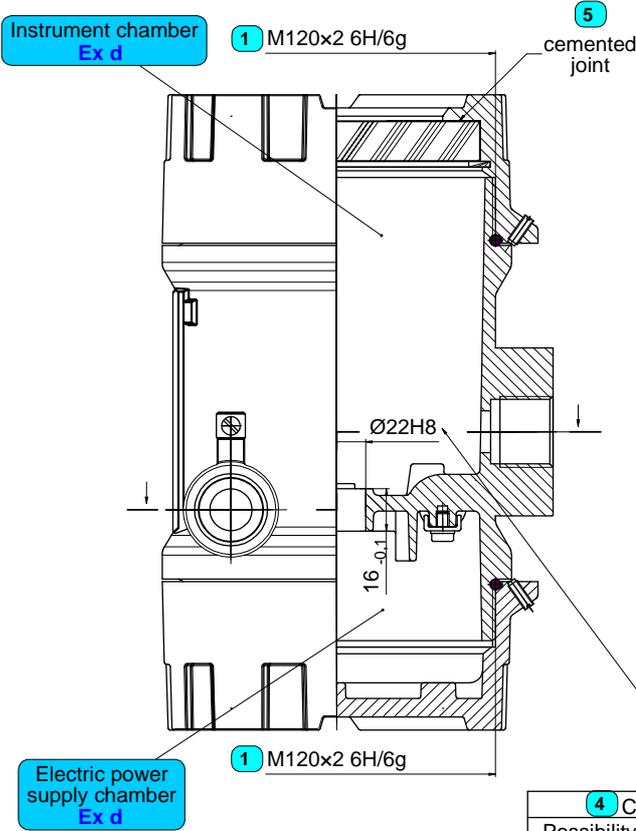
Flameproof joints are designed for volume $500 < V \leq 2000 \text{ cm}^3$ group II C enclosures.

XD-D120	XDE-D120
Process opening can be used for mounting sensor (e.g. level, flow sensor) or thermowell.	
For conduit openings appropriate certified Ex d cable glands for direct entry has to be used or fill sealing fittings, flexible couplings or thermowells.	For conduit openings appropriate certified Ex e cable glands for direct entry has to be used or fill sealing fittings, flexible couplings or thermowells. ! Ex e electric power supply chamber can not be used for mounting any electronics inside !
Each threaded hole D ₁ , D ₂ , D ₃ , D ₄ and D ₅ can be plugged.	
! Cylindrical joints Ø22H8 have to be equipped with flameproof Ex d conductor bushing, which separate instrument chamber from electric power supply chamber. However, this conduit cannot be plugged by conductor bushing, it can be plugged by Ex d certified stopping plug. If the Ex conductor bushing is used, the new-created cylindrical joint has to be tested according to EN 60079-1:2014.	

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XD-D120

XDE-D120



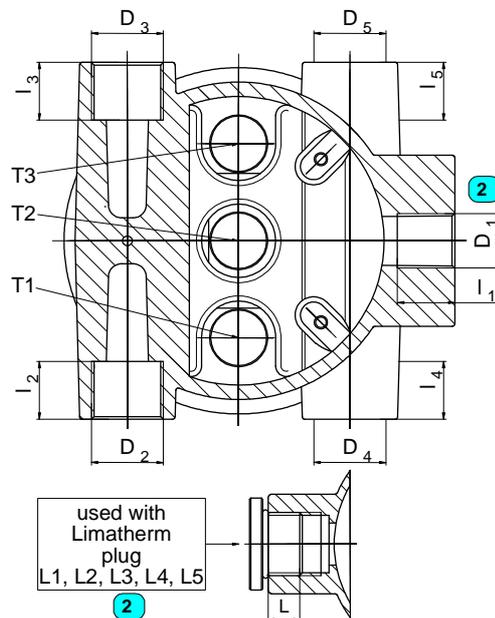
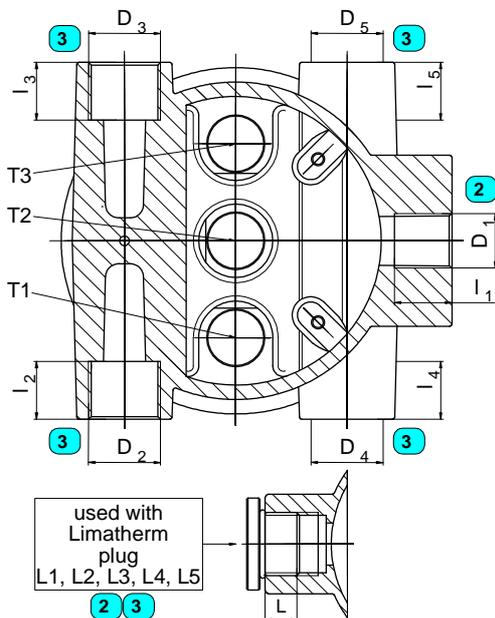
4 Cylindrical joint

Possibility of use:

with Ex d cable bushing maintaining conditions:

Length of joint [mm]	Gap [mm]	
	max	min
min. 15.9	0.133	0.03

with Ex d stopping plug maintaining above conditions.



Lp.	Connection type		Requirements of 60079-1	Achieved values					
1	M120x2 6H/6g		threads engaged ≥ 5	9					
			depth of engagement ≥ 8 mm	18mm					
2	D ₁ proces opening	M20x1.5 6H M24x1.5 6H M25x1.5 6H	fit of thread	l ₁	6g of male thread should be ensured by customer	L ₁	6H/6g		
			threads engaged ≥ 5		should be ensured by customer, possible to reach: 12,5		6,5		
			depth of engagement ≥ 8 mm		should be ensured by customer, possible to reach: 19mm		10mm		
		M27x2 6H	fit of thread	l ₁	6g of male thread should be ensured by customer	L ₁	6H/6g		
			threads engaged ≥ 5		should be ensured by customer, possible to reach: 9,5		5		
			depth of engagement ≥ 8 mm		should be ensured by customer, possible to reach: 19mm		10mm		
		½NPTmod ¾NPTmod 1NPTmod	threads provided on each part ≥ 5	l ₁	9 male part should be ensured by customer	L ₁	-		
			threads engaged		should be ensured by customer, possible to reach: 5,0 ÷ 5,5		5		
		3	D ₂ , D ₃ D ₄ , D ₅ conduit openings	M20x1.5 6H M24x1.5 6H M25x1.5 6H	fit of thread	l ₂ , l ₃	6g of male thread should be ensured by customer	L ₂ , L ₃	6H/6g
					threads engaged ≥ 5		should be ensured by customer, possible to reach: 12,5		6,5
depth of engagement ≥ 8 mm	should be ensured by customer, possible to reach: 19mm				10mm				
½NPTmod ¾NPTmod	threads provided on each part ≥ 5			l ₂ , l ₃	9 male part should be ensured by customer	L ₂ , L ₃	-		
	threads engaged				should be ensured by customer, possible to reach: 5,0 ÷ 5,5		5		
4	T ₁ , T ₂ , T ₃			Cylindrical joint Ø22H8	min. length of joint 12,5mm	min 15,9 mm			
		max gap of joint 0,15mm	should be ensured by customer, possible to reach with Limatherm cable bushing: max 0,133 mm						
5	Cemented joint		min. length of joint 10mm	13,5mm					

NPT threads are modified to reach 5÷5,5 engaged threads and can create flameproof joint with threaded male part with standard cutting tolerance.

3. PRESSURE TEST.

The overpressure static test was made with 50 bar (the routine tests is not necessary to do).

The apparatus installed inside of the enclosure can have any layout, ensuring more 40% (group IIC) of free cross-section.

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4. TEMPERATURE CLASSES, AMBIENT TEMPERATURE, MAX. POWER DISSIPATION.

Maximum power dissipation [W]						
T _{amb}	Temp. class T6, or surface temp. 85° C	Position horizontally/vertically		Temp. class T5, or surface temp. 100° C	Position horizontally/vertically	
		Enclosure with low cover with window	Enclosure with high cover with window		Enclosure with low cover with window	Enclosure with high cover with window
40°C	$\Delta 0 \leq 40$ K	45,0 / 36,0	33,0 / 24,0	$\Delta 0 \leq 55$ K	63,0 / 51,0	47,0 / 36,0
55°C	$\Delta 0 \leq 25$ K	26,0 / 18,0	19,0 / 15,0	$\Delta 0 \leq 40$ K	45,0 / 36,0	33,0 / 24,0
70°C	$\Delta 0 \leq 10$ K	8,9 / 6,3	6,9 / 4,8	$\Delta 0 \leq 25$ K	26,0 / 19,0	19,0 / 15,0
85°C	N/A	-	-	$\Delta 0 \leq 10$ K	8,9 / 6,3	6,9 / 4,8

5. WAY OF MOUNTING.

NOTES

It is important to be carefull when screw on or undo a cover. Thread surface should be free of any grains, pellets and other impurity, which cause seizing, and thread could be damaged.

! Never screw on the cover forcefully !

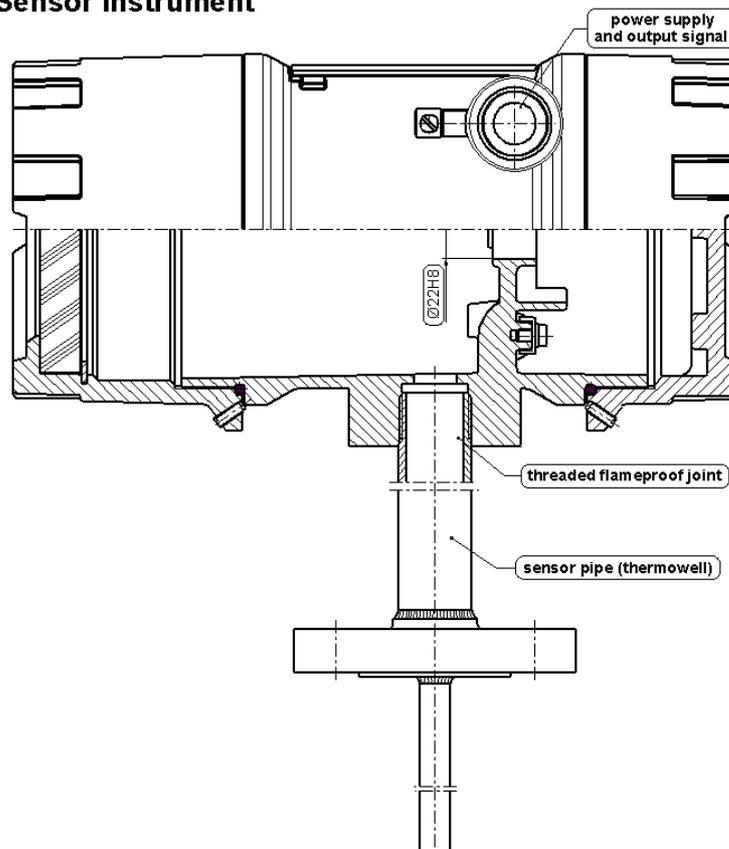
In case of necessities of opening of the connection head's cover after operation in maximum temperature it can be blocked (does not give to open with the hand).

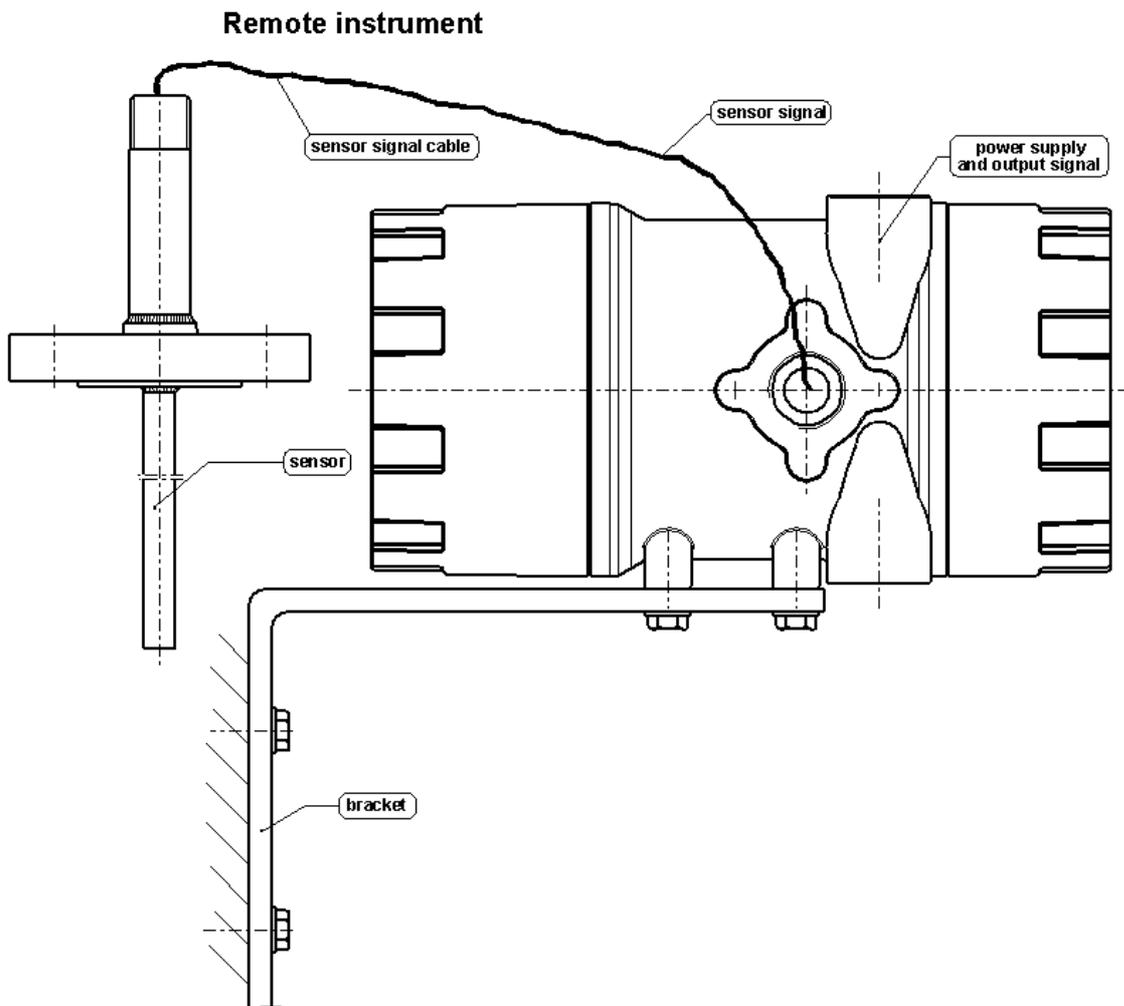
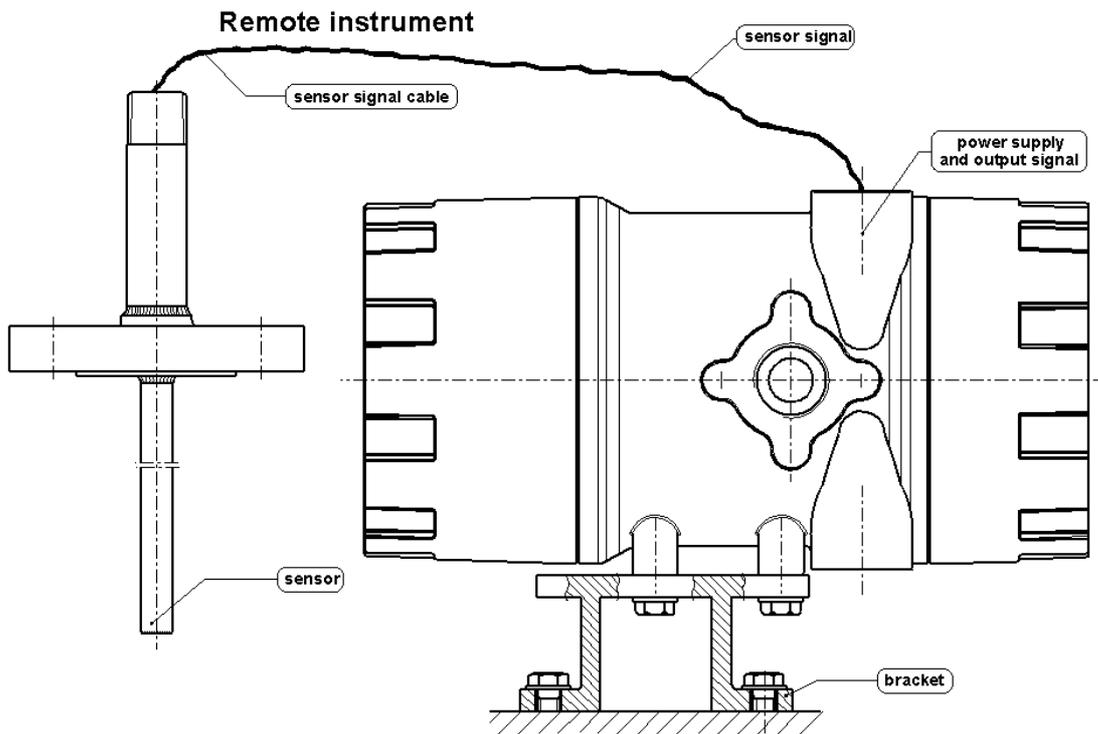
In such case keep cover tensioned with the hand to opening and hit delicate with rubber hammer into cover.

There are two ways of mounting of the housing:

- ❖ on the sensor pipe (sensor instrument),
- ❖ on the bracket (remote instrument).

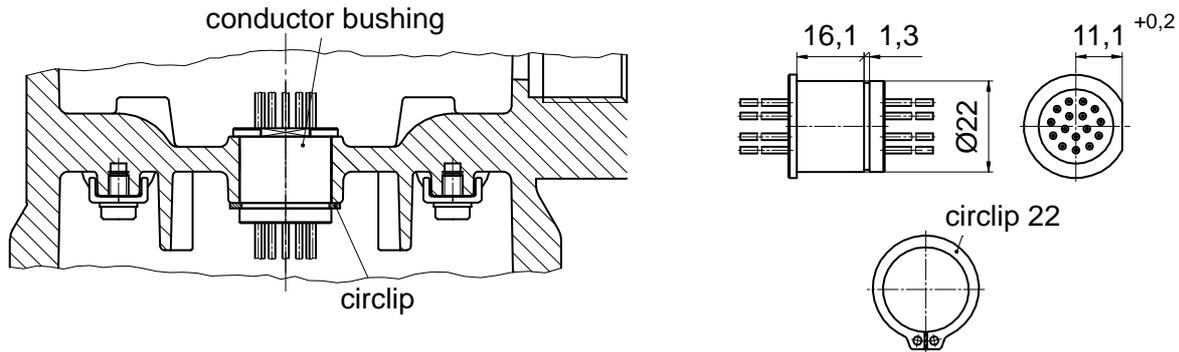
Sensor instrument





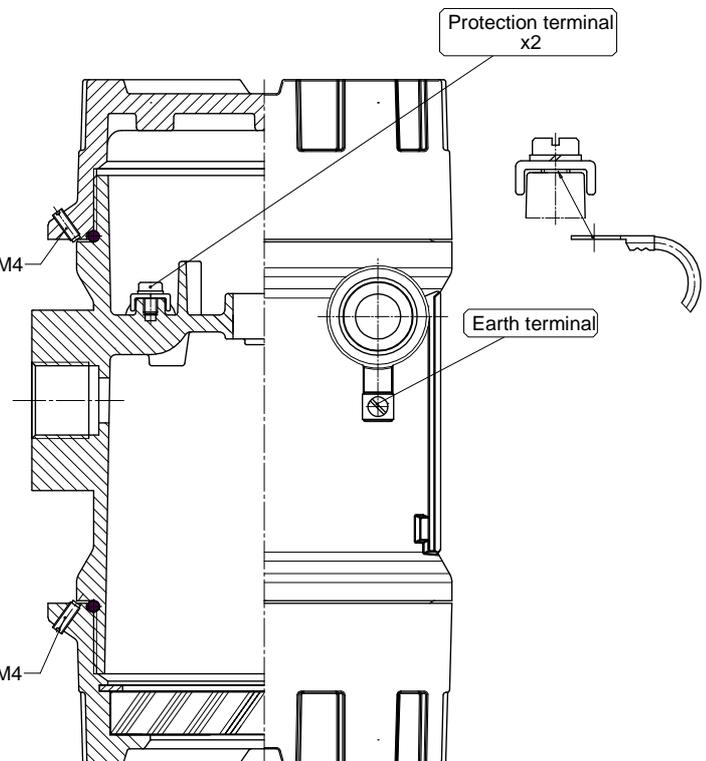
6. ASSEMBLY OF INSIDE CONDUCTOR BUSHING.

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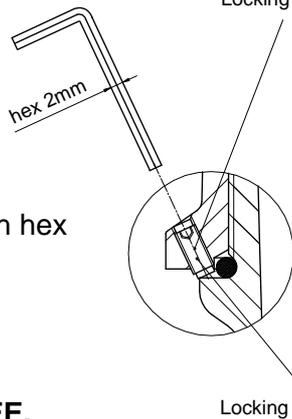
7. EARTH AND PROTECTION TERMINALS.

Place	Type	Cable cross section [mm ²]	
		Standed wire	Solid wire
Inside	Protection terminal	4.0	6.0
Outside	Earth terminal	4.0	6.0



8. COVER LOCKING.

Lock the cover by screw with hex socket using hex spanner with across flat 2mm.



9. PROTECTION DEGREE.

There are three connections of assembled device deciding about IP degree:

- 1 – cover
- 2 – process opening
- 3 – conduit openings.

Threaded connection sealing	Possible IP
Without sealing - standard accuracy class thread	54
Use of a sealant, e.g. Loctite 577	68
Thread tightened with O-ring	68

If IP for each connection			IP of assembled device
1	2	3	
68	54	68	IP 54
	66	68	IP 66
	67	68	IP 67
	68	68	IP 68

! ATTENTION !

Protection IP68 refers to depth 1,0m of submersion under water.

It is required min IP65 protection for instruments designed for dust zones.

(Besides zone 22, non-conductive dust, where min IP54 protection is required)

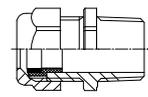
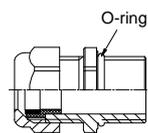
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1
max. possible to achieve IP68
tighten up the cover with normal hand force until the end

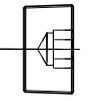
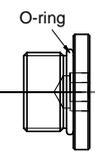
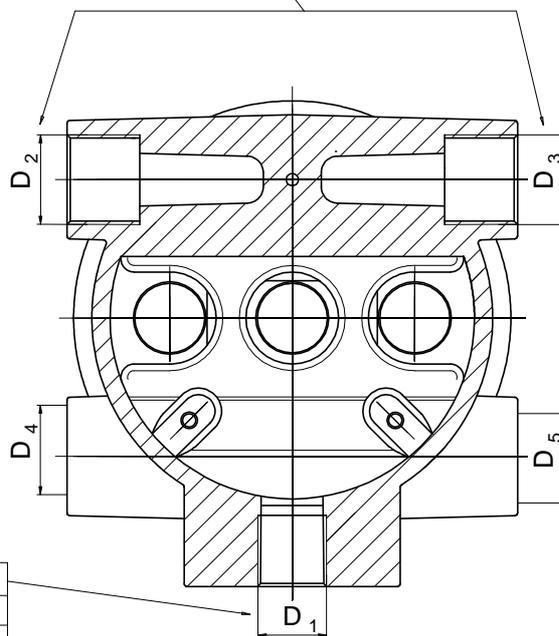
3
max. possible to achieve IP68
choose cable gland under cable diameter and proper tightness - proper IP
seal up thread connection
tighten up press cap with proper torque

cemented joint IP68

Torque of cable gland in accordance with gland producer's manual

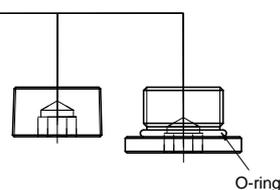
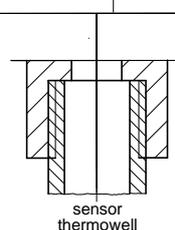
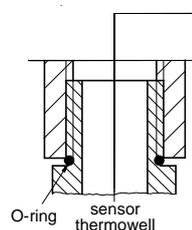


fill sealing fitting
flexible coupling



Torque of plug from 7 to 15 Nm

2
max. possible to achieve IP68
seal up thread connection



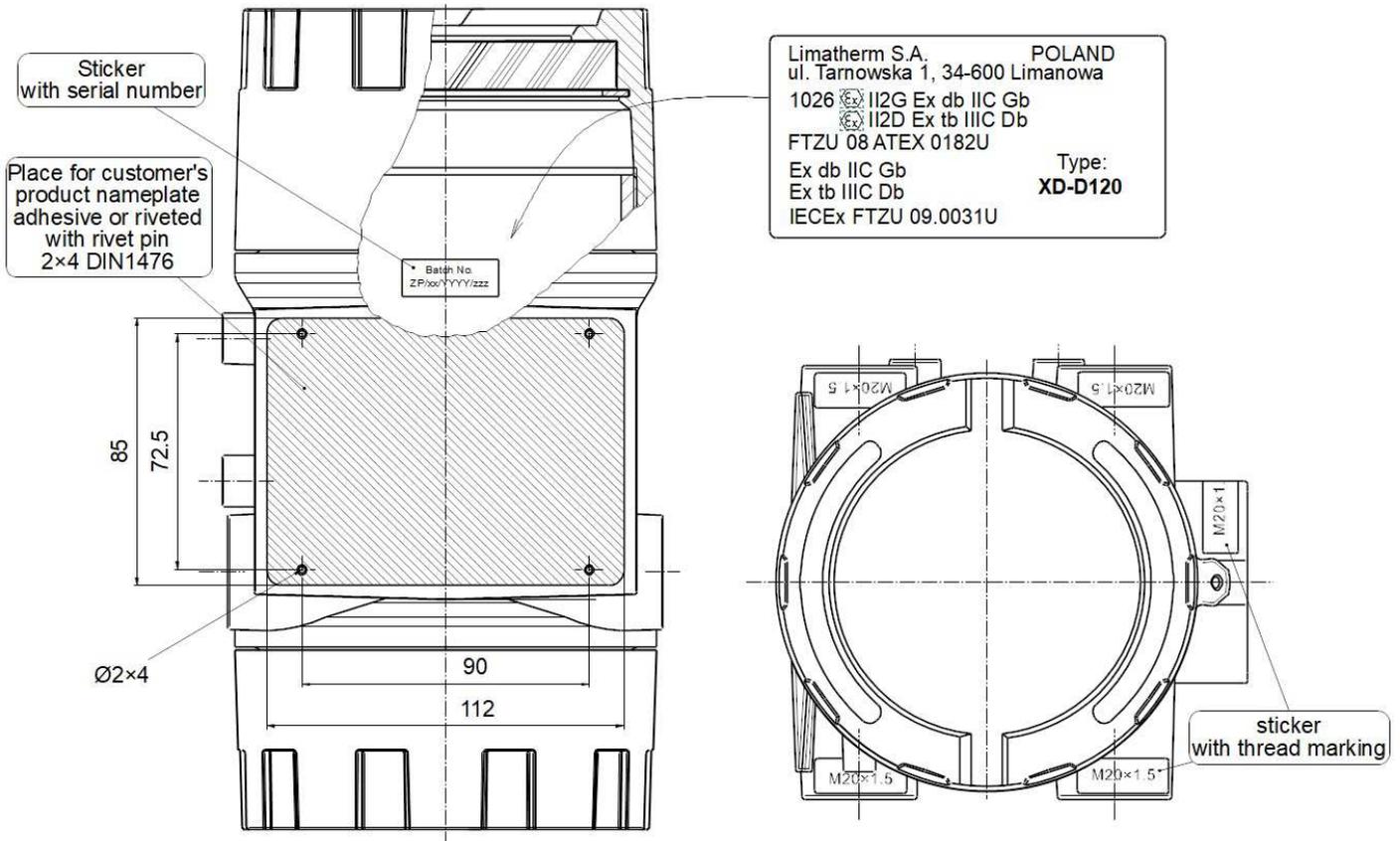
10. MARKING.

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Limatherm label with marking is put inside the housing.

The label can be glued on the inside surface, it's up to customer.

Producer of assembled instrument should apply own nameplate with the marking of complete device.



Additional marking of XDE-D120 types:

