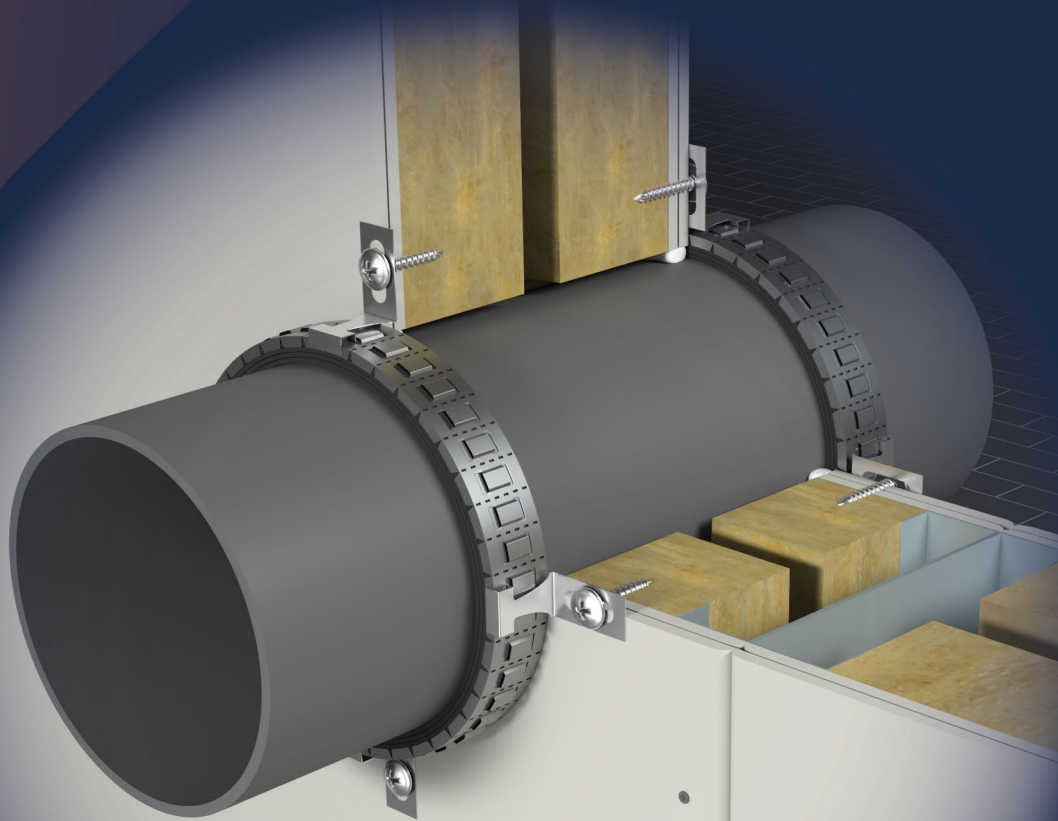


INTU FR COLLAR L SLIM

Intumescent pipe collar roll

TDS TECHNICAL DATA SHEET



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INTU FR COLLAR L SLIM

Intumescent pipe collar roll

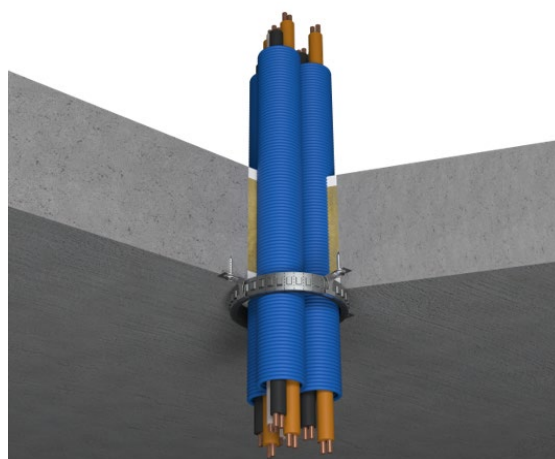
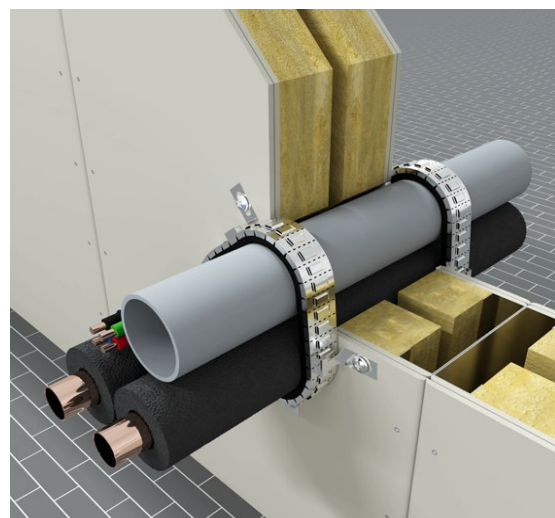
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→ PRODUCT DESCRIPTION

INTU FR COLLAR L SLIM includes two or more layers of an intumescent, graphite based liner with a nominal thickness of 2 mm and width of 30 mm, inserted into a steel housing made of stainless steel sheet with a thickness of 0,5 mm. The housing of **INTU FR COLLAR L SLIM** is equipped with fixing elements, through which the collar is fixed to the separating element. The number of elements depends on the size of the collar.

→ APPLICATION

INTU FR COLLAR L SLIM is universal collar pipe closure devices used to form penetration seals where metal and combustible pipes, cables and conduits, single or in bundles, penetrate walls and floors.



Flexible walls: The wall must have a minimum thickness 100 mm, must comprise timber or steel studs lined on both faces with minimum two layers (with overall board layer thickness on one side equal to or greater than 25 mm) of gypsum plasterboards.

Rigid walls: The wall must have a minimum thickness 100 mm, must comprise concrete or masonry separating elements, with a minimum density 450 kg/m³.

Rigid floor: The floor must have a minimum thickness 100 mm, must comprise aerated or reinforced concrete, concrete, with a minimum density 550 kg/m³.

→ AVAILABILITY

Product	Contents in one box	Packaging	Pallet	Article number
INTU FR COLLAR L SLIM	steel casing 2,52 m	1 box	375	INCOLS
	intumescent wrap 12 m			
	short fixings type S - 20 pcs.			

Product	Contents	Packaging	Pallet	Article number
CLIP S	10 pcs.	1 foil	N/A	INCOLSCS
CLIP L	10 pcs.	1 foil	N/A	INCOLSCL
FIRE SPRINGS 40MM	20 pcs.	1 foil	N/A	INTUFSR40

→ COMPLIANCE

- Test standard:
EN 1366-3 / EAD 350454-00-1104
- European Technical Assessment:
ETA 24/0497 of 26/08/2024
- Declaration of Performance:
DoP 2/2024
- Certificate of Constancy of Performance
1488-CPR-1130/W



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→ TRANSPORT AND STORAGE

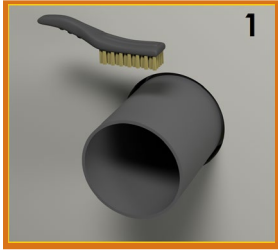
Transport and store in a cool, dry place within a temperature range of + 5°C to + 35°C.

INTU FR COLLAR L SLIM

Intumescent pipe collar roll

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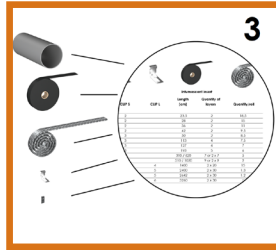
→ INSTALLATION METHOD



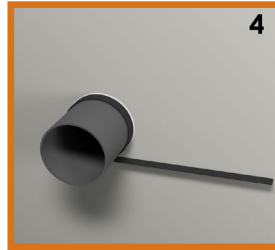
1 Clean the installations from dust, dirt and grease.



2 Fill the gaps between the installation and the partition with **INTU FR MASTIC** fireproofing mass.



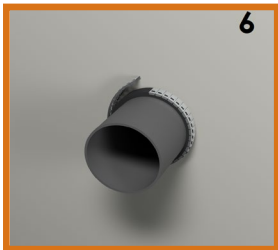
3 See the table below. Select and cut the appropriate length of the intumescent insert.



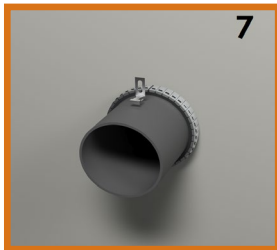
4 Wrap the intumescent insert on the pipe.



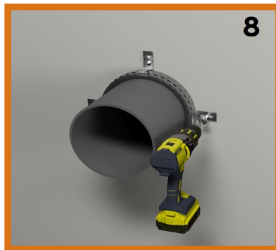
5 Select and cut the appropriate length of steel casing for the type of installation to be protected.



6 Put the casing on the intumescent insert.



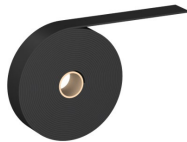
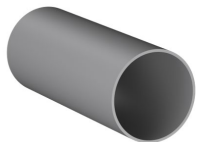
7 Choose the appropriate clips with table below.



8 Attach the collar to the partition with steel screws.



9 Complete declaration and paste it next to the penetration.



Max pipe diameter Ø [mm]	Intumescent insert		Steel casting		Mounting clips		Collar height [mm]
	Quantity of layers	Length [cm]	Quantity of segments	Length [cm]	CLIP S	CLIP L	
32	2	23,5	9	13,5	2	-	30
40	2	28	11	16,5	2	-	30
50	2	36	15	22,5	2	-	30
63	2	42	17	25,5	3	-	30
75	2	50	19	28,5	3	-	30
82	4	113	22	33,0	3	-	30
90	4	127	23	34,5	3	-	30
110	5	193	28	42,0	3	-	30
125	1 x 7	310	1 x 33	49,5	4	-	30
	2 x 7	620	2 x 33	99,0	1	4	2 x 30
160	1 x 9	510	1 x 42	63,0	4	-	30
	2 x 9	1020	2 x 42	126,0	1	4	2 x 30
200	2 x 10	1400	2 x 52	159,0	1	4	2 x 30
225	2 x 15	2400	2 x 61	183,0	1	5	2 x 30
250	2 x 15	2642	2 x 66	198,0	1	5	2 x 30
315	2 x 15	3260	2 x 80	240,0	1	6	2 x 30

INTU FR COLLAR L SLIM

Intumescent pipe collar roll

TDS TECHNICAL DATA SHEET

➔ TECHNICAL DATA

Calculation example of INTU FR COLLAR L SLIM consumption

- Pipe without insulation Ø50 (**SINGLE collar**)

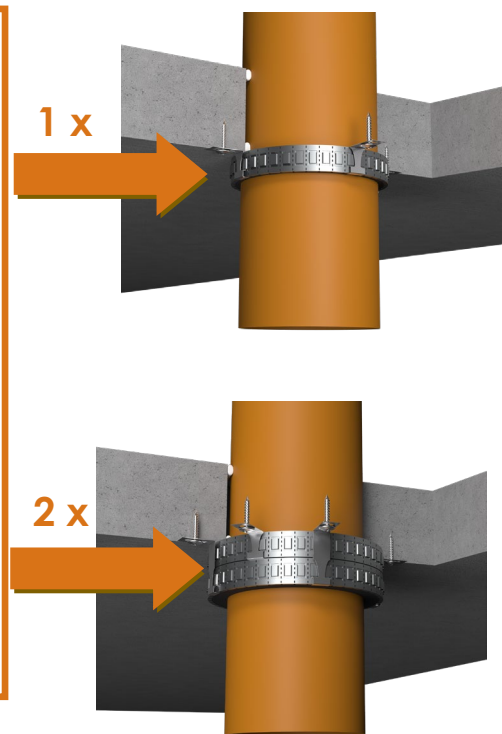
Pipe diameter Ø [mm]	Intumescent insert		Steel casting		Mounting clips
	Layers	Length [cm]	Segments	Length [cm]	CLIP S
50	2	36	15	22,5	2

- $L_{TAPE} = \pi \cdot \varnothing_{PIPE} \cdot (\text{layers}) \cdot (1,1-1,15)$
for pipe Ø50: $L_{TAPE} = \pi \cdot 50 \cdot 2 \cdot 1,15 = \sim 36 \text{ cm}$

- Pipe without insulation Ø250 (**DOUBLE collar**)

Pipe diameter Ø [mm]	Intumescent insert		Steel casting		Mounting clips	
	Layers	Length [cm]	Segments	Length [cm]	CLIP S	CLIP L
250	2 x 15	2642	2 x 66	198	1	5

- $L_{TAPE} = \pi \cdot \varnothing_{PIPE} \cdot (\text{layers}) \cdot (1,1-1,15)$
for pipe Ø250: $L_{TAPE} = \pi \cdot 250 \cdot 2 \cdot 15 \cdot 1,15 = \sim 2642 \text{ cm}$



Colour	Stainless steel (casting) + Graphite (intumescent insert)
Shelf life	Not applicable
Transportation storage temperature	-5 °C to +35 °C (store dry in the original packaging)
Usage category	Type Z2: intended for use in internal conditions with humidity lower than 85% RH, excluding temperatures below 0°C, without exposure to rain or UV.
Reaction to fire	Class E
Methods used for the assessment	EAD 350454-00-1104 "Fire Stopping and Fire Sealing Products. Penetration Seals"
Approvals	ETA-24 / 0497
Function preservation	25 years
Joint finish	Acrylic mastic INTU FR MASTIC
Large gaps	System with INTU FR UNIBOARD 1S or INTU FR UNIBOARD 2S
Mounting from one side for walls	Yes, find at ETA-24 / 0497
Mounting from above in floors	
Angle of services placement	Angle between 45° and 90°

INTU FR COLLAR L SLIM

Intumescent pipe collar roll

TDS TECHNICAL DATA SHEET

➔ FIRE RESISTANCE CLASSIFICATION

- COMBUSTIBLE PIPES without insulation

Pipe material	Pipe diameter Ø [mm]	FLEXIBLE / RIGID WALLS • collar on both sides of the partition			FLOORS • collar from the bottom of the floor			
		Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/C and C/C	Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/C and C/C	
PP	Ø ≤ 32	1,8 – 12,5	2 x 2	EI 120	1,8 – 12,5	1 x 2	EI 120	
	32 < Ø ≤ 50							
	50 < Ø ≤ 63	1,9 – 12,5			2,2 – 15,0	1,9 – 12,5		1 x 4
	63 < Ø ≤ 75							
	75 < Ø ≤ 90	2,7 – 18,3	2 x 4		2,7 – 18,3	1 x 5		
	90 < Ø ≤ 110	3,1 – 17,2	2 x 5		3,1 – 15,7	2 x 7		
	110 < Ø ≤ 125	3,1 – 17,2	4 x 7		3,9 – 9,5	2 x 9		
	135 < Ø ≤ 160	4,0 – 14,6	4 x 9		5,8 – 8,6	2 x 10		
	160 < Ø ≤ 180	5,9 – 11,2	4 x 10	EI 60				
160 < Ø ≤ 200	7,7	7,7			EI 90			
PP-R	Ø ≤ 20	≥ 2,3	2 x 2	EI 120	≥ 2,3	1 x 2	EI 120	
	20 < Ø ≤ 25	≥ 2,5			≥ 2,5			
	25 < Ø ≤ 32	3,3 – 12,5			3,3 – 12,5			
	32 < Ø ≤ 40	3,9 – 12,5			3,9 – 12,5			
	40 < Ø ≤ 50	4,8 – 12,5			4,8 – 12,5			
	50 < Ø ≤ 63	5,8 – 12,5			5,8 – 12,5			
	63 < Ø ≤ 75	6,8 – 12,5			6,8 – 12,5			
	75 < Ø ≤ 90	8,2 – 15,0			2 x 4			8,2 – 15,0
	90 < Ø ≤ 110	10,0 – 18,3	2 x 5	10,0 – 18,3	1 x 5			
PE-Xa	Ø ≤ 20	2,0	2 x 2	EI 120	2,0	1 x 2	EI 120	
	20 < Ø ≤ 25	2,3			2,3			
	25 < Ø ≤ 32	3,0			3,0			
	32 < Ø ≤ 40	3,7			3,7			
	40 < Ø ≤ 50	4,6			4,6			
	50 < Ø ≤ 63	5,8			5,8			
PP-R/AL/PP-R	Ø ≤ 20	≥ 2,8	2 x 2	EI 120	≥ 2,8	1 x 2	EI 120	
	20 < Ø ≤ 25	≥ 3,3			≥ 3,3			
	25 < Ø ≤ 32	4,0 – 12,5			4,0 – 12,5			
	32 < Ø ≤ 40	4,8 – 12,5			4,8 – 12,5			
	40 < Ø ≤ 50	5,9 – 12,5			5,9 – 12,5			
	50 < Ø ≤ 63	7,2 – 12,5			7,2 – 12,5			
	63 < Ø ≤ 75	8,4 – 12,5			8,4 – 12,5			
	75 < Ø ≤ 90	10,1 – 15,0			2 x 4			10,1 – 15,0
	90 < Ø ≤ 110	12,3 – 18,3	2 x 5	12,3 – 18,3	1 x 5			

INTU FR COLLAR L SLIM

Intumescent pipe collar roll

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Pipe material	Pipe diameter Ø [mm]	FLEXIBLE / RIGID WALLS			FLOORS			
		• collar on both sides of the partition			• collar from the bottom of the floor			
		Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/C and C/C	Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/C and C/C	
PE-X/AL/ PE-X	Ø ≤ 20	2,0	2 x 2	EI 120	2,0	1 x 2	EI 120	
	20 < Ø ≤ 25	2,5		EI 45	2,5			
	25 < Ø ≤ 32	3,0			3,0			
	32 < Ø ≤ 40	4,0			4,0			
	40 < Ø ≤ 50	4,8			4,8			
	50 < Ø ≤ 63	6,0			6,0			
PE-RT/AL/ PE-RT	Ø ≤ 20	2,0	2 x 2	EI 120	2,0	1 x 2	EI 120	
	20 < Ø ≤ 25	2,5		EI 45	2,5			
	25 < Ø ≤ 32	3,0			3,0			
	32 < Ø ≤ 40	4,0			4,0			
	40 < Ø ≤ 50	4,8			4,8			
	50 < Ø ≤ 63	6,0			6,0			
	63 < Ø ≤ 75	7,5			7,5			
PE-Xb/AL/ PE-Xb	Ø ≤ 20	2,0	2 x 2	EI 90	3,0	1 x 2	EI 120	
	20 < Ø ≤ 26	3,0						
	25 < Ø ≤ 32							3,5
	32 < Ø ≤ 40							4,5
PE-HD PE PE-X ABS SAN + PVC	Ø ≤ 32	2,0 – 6,8	2 x 2	EI 120	1,9 – 6,8	1 x 2	EI 120	
	32 < Ø ≤ 50	2,4 – 6,8			2,4 – 6,8			
	50 < Ø ≤ 63	2,7 – 6,8			2,7 – 6,8			
	63 < Ø ≤ 75	3,0 – 6,8			3,0 – 6,8			
	75 < Ø ≤ 90	3,5 – 8,2	2 x 4		3,5 – 8,2	1 x 4		
	90 < Ø ≤ 110	4,2 – 10,0	2 x 5		4,2 – 10,0	1 x 5		
	110 < Ø ≤ 125	4,4 – 9,9	4 x 7		4,4 – 9,9	2 x 7		
	135 < Ø ≤ 160	4,9 – 9,5	4 x 9		4,9 – 9,5	2 x 9		
	160 < Ø ≤ 180	8,4 – 10,7	4 x 10		EI 90	8,1 – 10,4		2 x 10
	160 < Ø ≤ 200	11,9				11,3		
PP-R/PP-R- GF/PP-R	Ø ≤ 20	≥ 2,8	2 x 2	EI 120	≥ 2,8	1 x 2	EI 120	
	20 < Ø ≤ 25	≥ 3,3			≥ 3,3			
	25 < Ø ≤ 32	4,4 – 12,5			4,4 – 12,5			
	32 < Ø ≤ 40	5,5 – 12,5			5,5 – 12,5			
	40 < Ø ≤ 50	6,9 – 12,5			6,9 – 12,5			
	50 < Ø ≤ 63	8,7 – 12,5			8,7 – 12,5			
	63 < Ø ≤ 75	10,3 – 12,5			10,3 – 12,5			
	75 < Ø ≤ 90	11,2 – 12,3	2 x 4		EI 90	12,4 – 15,0		1 x 4
		12,4 – 15,0			EI 120			
	90 < Ø ≤ 110	12,3 – 15,0	2 x 5		EI 90	15,1 – 18,3		1 x 5
15,1 – 18,3		EI 120						

INTU FR COLLAR L SLIM

Intumescent pipe collar roll

TDS TECHNICAL DATA SHEET

Pipe material	Pipe diameter Ø [mm]	FLEXIBLE / RIGID WALLS			FLOORS		
		• collar on both sides of the partition			• collar from the bottom of the floor		
		Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/C and C/C	Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/C and C/C
PVC	Ø ≤ 32	1,2 – 5,6	2 x 2	EI 120	1,2 – 5,6	1 x 2	EI 120
	32 < Ø ≤ 50				1,4 – 6,1		
	50 < Ø ≤ 63				1,5 – 6,6		
	63 < Ø ≤ 75	1,7 – 7,3	2 x 4		1,7 – 7,3	1 x 4	
	75 < Ø ≤ 90	2,0 – 8,1	2 x 5		2,0 – 8,1	1 x 5	
	90 < Ø ≤ 110	2,4 – 8,5	4 x 7		2,4 – 8,5	2 x 7	
	110 < Ø ≤ 125	3,2 – 9,5	4 x 9		3,2 – 9,5	2 x 9	
	160 < Ø ≤ 180	4,4 – 5,4	4 x 11	EI 60	3,6 – 6,7	2 x 10	EI 30
		5,5 – 8,6	4 x 10				
		8,7 – 9,3	4 x 11				
	180 < Ø ≤ 200	5,6 – 7,6	4 x 12	EI 60	3,9		EI 120
		7,7	4 x 10	EI 120			
	200 < Ø ≤ 250	7,8 – 9,1	4 x 12	EI 60	4,0 – 9,0	2 x 11	EI 30
		8,6	4 x 15		5,8 – 8,5	2 x 13	
250 < Ø ≤ 315				7,7	2 x 15	EI 60	
PE – RT Geberit Mepla	Ø ≤ 20	2,5	2 x 2	EI 120	2,5	1 x 2	EI 120
	20 < Ø ≤ 25	3,0			3,0		
	25 < Ø ≤ 32	3,0			3,0		
	32 < Ø ≤ 40	3,5		EI 90	3,5		EI 90
	40 < Ø ≤ 50	4,5			4,5		EI 45
50 < Ø ≤ 63	4,5	4,5					
PP-HT	Ø ≤ 50	1,8	2 x 2	EI 120	1,8	1 x 2	EI 120
	50 < Ø ≤ 75	1,9			1,9		
	75 < Ø ≤ 90	2,2			2,2		
	90 < Ø ≤ 110	2,7	2,7		1 x 5		
	110 < Ø ≤ 125	3,1	2 x 7	EI 60			
	125 < Ø ≤ 160	3,9	2 x 9				
PP-MF SILERE	Ø ≤ 58				4,0	1 x 2	EI 120
	58 < Ø ≤ 78				4,5	1 x 4	
	78 < Ø ≤ 90				4,9		
	90 < Ø ≤ 110				5,4	1 x 5	
	110 < Ø ≤ 135				5,6	2 x 7	
PP-ML TRIPLUS	Ø ≤ 50				1,8	1 x 2	EI 120
	50 < Ø ≤ 75				2,6		
	75 < Ø ≤ 90				3,1	1 x 4	
	90 < Ø ≤ 110				3,4	1 x 5	
	110 < Ø ≤ 125				3,9	2 x 7	
	125 < Ø ≤ 160				4,9	2 x 9	

INTU FR COLLAR L SLIM

Intumescent pipe collar roll

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	Pipe material	Pipe diameter Ø [mm]	RIGID WALLS				
			• collar on one side of the partition				
			Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/C and C/C		
			PP	Ø ≤ 50	1,8	1 x 2	EI 120
				50 < Ø ≤ 63	2,0	1 x 3	
63 < Ø ≤ 75	2,2	1 x 4					
75 < Ø ≤ 90	2,4						
90 < Ø ≤ 110	2,7	1 x 5					
	Pipe material	Pipe diameter Ø [mm]	RIGID WALLS				
			• pipe angle 45° / collar on both sides of the partition				
PVC	Ø ≤ 110	3,2	2 x 5	EI 120			
	Pipe material	Pipe diameter Ø [mm]	RIGID / FLEXIBLE WALLS				
			• pipe elbow / collar on both sides of the partition				
			Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/C and C/C		
PVC	Ø ≤ 110	3,2	2 x 5	EI 120			
PP		2,7		EI 90			
	Pipe material	Pipe diameter Ø [mm]	FLOORS				
			• collar from the top of the floor				
PP	Ø ≤ 110	8,1	1 x 5	EI 120			
	Pipe material	Pipe diameter Ø [mm]	FLOORS				
			• socket on pipe / collar from the bottom				
PP	Ø ≤ 110	3,9	1 x 5	EI 120			
	Pipe material	Pipe diameter Ø [mm]	FLOORS				
			• pipe elbow / collar from the bottom of the floor				
			PE-HD / PE / PE-X / ABS / SAN + PVC	Ø ≤ 110	6,6	1 x 5	EI 120
			PP		2,7		EI 90
PVC	3,2	EI 120					

INTU FR COLLAR L SLIM

Intumescent pipe collar roll

TDS TECHNICAL DATA SHEET

	Pipe material	Pipe diameter Ø [mm]	FLOORS		
			<ul style="list-style-type: none"> in the corner of the wall / collar from the bottom 		
	Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/C and C/C		
	PE-HD / PE / PE-X / ABS / SAN + PVC	Ø ≤ 110	4,2	1 x 5	EI 120
PP	3,9				
PVC	3,2				

• LOW NOISE PIPES

Pipe material	Pipe diameter Ø [mm]	FLEXIBLE / RIGID WALLS			FLOORS		
		<ul style="list-style-type: none"> collar on both sides of the partition 			<ul style="list-style-type: none"> collar from the bottom of the floor 		
		Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/C and C/C	Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/C and C/C
Magnaplast Ultra dB	Ø ≤ 50	2,0	2 x 2	EI 120	2,0	1 x 2	EI 120
	50 < Ø ≤ 75	2,3			2,3		
	75 < Ø ≤ 110	3,4	2 x 5	EI 90	3,4	1 x 5	
	110 < Ø ≤ 125				3,9	1 x 9	EI 30
						2 x 9	EI 120
125 < Ø ≤ 160				4,9	1 x 9	EI 30	
					2 x 9	EI 120	
Geberit Silent dB20	Ø ≤ 56	3,2	2 x 2	EI 120	7,0	1 x 9	EI 60
	56 < Ø ≤ 63						
	63 < Ø ≤ 75	3,6					
	75 < Ø ≤ 90	4,6	2 x 4				
	90 < Ø ≤ 110	6,0	2 x 5				
	110 < Ø ≤ 135	6,5	4 x 7				
135 < Ø ≤ 160	7,0	4 x 9					
Geberit Silent PP	Ø ≤ 50				1,8	1 x 2	EI 120
	50 < Ø ≤ 75				2,6		
	75 < Ø ≤ 90				3,1	1 x 4	
	90 < Ø ≤ 110				3,6	1 x 5	
	110 < Ø ≤ 125				4,2	2 x 7	
	125 < Ø ≤ 160				4,5	2 x 9	
Wavin SiTech+	Ø ≤ 50	1,8	2 x 2	EI 120			
	50 < Ø ≤ 75	2,6					
	75 < Ø ≤ 90	3,1	2 x 4				
	90 < Ø ≤ 110	3,4	2 x 5				
	110 < Ø ≤ 125	3,9	4 x 7				
	125 < Ø ≤ 160	4,9	4 x 9				
Raupiano Plus PP/PP-MF/PP	Ø ≤ 50				1,8	1 x 2	EI 120
	50 < Ø ≤ 75				1,9		
	75 < Ø ≤ 90				2,2	1 x 4	
	90 < Ø ≤ 110				2,7	1 x 5	
	110 < Ø ≤ 125				3,1	2 x 7	
	125 < Ø ≤ 160				4,0	2 x 9	

INTU FR COLLAR L SLIM

Intumescent pipe collar roll

TDS TECHNICAL DATA SHEET

• PRE-INSULATED PIPES

Pipe material	Pipe diameter Ø [mm]	FLEXIBLE / RIGID WALLS			FLOORS		
		• collar on both sides of the partition			• collar from the bottom of the floor		
		Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/C and C/C	Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/C and C/C
COOL-FIT	Ø = 75 / 125	6,8 / 3,8	4 x 7	EI 120	8,2 / 4,0	2 x 7	EI 120
	Ø = 90 / 140	8,2 / 4,0					

COOL-FIT - pipe PE-100, pre-insulated by GF-HE foam with cover flange of PE

• COMBUSTIBLE PIPES with insulation

Pipe material	Pipe diameter Ø [mm]	FEF insulation thickness [mm]	FLOORS		
			• collar from the bottom of the floor		
			Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/C and C/C
Geberit Silent dB20	Ø ≤ 110	13	6,0	2 x 7	EI 90
PE - HD	Ø ≤ 110	13	4,2	2 x 7	EI 120

Pipe material	Pipe diameter Ø [mm]	PE insulation thickness x minimum length [mm]	FLOORS		
			• collar from the bottom of the floor		
			Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/C and C/C
Geberit Silent dB20	Ø ≤ 110	9 x 100	2,7	1 x 6	EI 90

• NON-COMBUSTIBLE PIPES with insulation

Pipe material	Pipe diameter Ø [mm]	FEF insulation thickness [mm]	FLEXIBLE / RIGID WALLS			FLOORS		
			• collar on both sides of the partition			• collar from the bottom of the floor		
			Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance C/U and C/C	Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance C/U and C/C
copper	Ø ≤ 12,7	9	≥ 0,8	2 x 2	EI 60			
	12,7 < Ø ≤ 22,23		≥ 0,9					
steel	Ø ≤ 18,0	9	≥ 1,2	2 x 2	EI 120	≥ 1,2	1 x 2	EI 120
		10 - 25		2 x 3			1 x 3	
	18,0 < Ø ≤ 28,0	9	1,2 - 1,4	2 x 2	EI 45	1,5 - 1,9	1 x 2	
		10 - 32					1 x 3	
		9	1,5 - 1,9	2 x 2	EI 120	2,0 - 3,9	1 x 2	
		10 - 32		2 x 3			1 x 3	
		33 - 50				1 x 4	EI 90	
		9	≥ 2,0	2 x 2	EI 120	≥ 4,0	1 x 2	
	10 - 32	2 x 3		1 x 3				
	33 - 50	2 x 4		EI 90			1 x 4	

INTU FR COLLAR L SLIM

Intumescent pipe collar roll

TDS TECHNICAL DATA SHEET

Pipe material	Pipe diameter Ø [mm]	FEF insulation thickness [mm]	FLEXIBLE / RIGID WALLS			FLOORS		
			• collar on both sides of the partition			• collar from the bottom of the floor		
			Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance C/U and C/C	Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance C/U and C/C
steel	28,0 < Ø ≤ 42,4	9	1,2 – 1,4	2 x 2	EI 45	1,5 – 1,9	1 x 2	
		10 – 32					1 x 3	
		9	1,5 – 1,9	2 x 2	EI 90	2,0 – 3,9	1 x 2	
		10 – 31		2 x 3			1 x 3	
		32						
		33 – 50			1 x 4	EI 90		
		9	≥ 2,0	2 x 2	EI 90	≥ 4,0	1 x 2	EI 120
		10 – 31		2 x 3			1 x 3	
		32			EI 120		1 x 4	
		33 – 50		2 x 4	EI 90			
	50			EI 90				
	42,4 < Ø ≤ 66,7	9	1,2 – 1,4	2 x 2	EI 45	1,5 – 1,9	1 x 2	
		10 – 32					1 x 3	
		9	1,5 – 1,9	2 x 2	EI 90	2,0 – 3,9	1 x 2	
		10 – 31		2 x 3			1 x 3	
		32						
		33 – 50			1 x 4	EI 90		
		9	≥ 2,0	2 x 2	EI 90	≥ 4,0	1 x 2	EI 120
		10 – 31		2 x 3			EI 120	
		32					1 x 4	
		33 – 50		2 x 4				
	66,7 < Ø ≤ 108,0	32	≥ 2,0	2 x 3	EI 90	2,0 – 3,9	1 x 3	EI 90
		33 – 50		2 x 4			1 x 4	
		33 – 50			≥ 3,6			
	108,0 < Ø ≤ 114,3	32	≥ 3,6	2 x 3	EI 90	≥ 3,6	1 x 3	EI 120
		33 – 50		2 x 4			1 x 4	
	114,3 < Ø ≤ 168,3	32	≥ 4,0	2 x 3	EI 60	≥ 4,0	1 x 3	EI 120
		33 – 49		2 x 4			EI 90	
50								

• BUNDLES

COMBUSTIBLE PIPE BUNDLES

Maximum in one bundle	Pipe diameter Ø [mm]	FLEXIBLE / RIGID WALLS		
		• collar on both sides of the partition		
		Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/C and C/C
PVC	Ø ≤ 110	1,5	2 x 5	EI 120
PP-R		8,3		
PP-R		6,9		

INTU FR COLLAR L SLIM

Intumescent pipe collar roll

TDS TECHNICAL DATA SHEET

AIR-CONDITIONING BUNDLES

Pipe material	Pipe diameter Ø [mm] / cable size	FEF insulation thickness [mm]	FLEXIBLE / RIGID WALLS			FLOORS		
			• collar on both sides of the partition			• collar from the bottom of the floor		
			Pipe wall thick [mm]	No of collars x intumescent material layers	Fire resistance	Pipe wall thick [mm]	No of collars x intumescent material layers	Fire resistance
Copper pipe no.1	Ø ≤ 12,7	9	≥ 0,8	2 x 2	EI 60	≥ 0,8	1 x 2	EI 120
Copper pipe no.2	Ø ≤ 22,23	9	≥ 1,0					
PVC	Ø ≤ 25	-	1,5					
Cable	4 x 1,5 mm ²	-	-					
Copper pipe no.1	Ø ≤ 12,7	9	≥ 0,8	2 x 2	EI 60	≥ 0,8	1 x 2	EI 120
Copper pipe no.2	Ø ≤ 22,23	9	≥ 1,0					
PVC	Ø ≤ 25	-	1,5					
Cable	4 x 1,5 mm ²	-	-					

SYSTEM COMPATIBLE WITH INTU FR UNIBOARD

COMBUSTIBLE PIPES without insulation

Pipe material	Filling the partition	Pipe diameter Ø [mm]	FLEXIBLE / RIGID WALLS			FLOORS		
			• collar on both sides of the partition			• collar from the bottom of the floor		
			Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/C and C/C	Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/C and C/C
PP	2 x INTU FR UNIBOARD 1S	Ø ≤ 75	1,9 – 12,5	2 x 2	EI 120	1,9 – 12,5	1 x 2	EI 120
		75 < Ø ≤ 90	2,2 – 15,0	2 x 4		2,2 – 15,0	1 x 4	
		90 < Ø ≤ 110	2,7 – 18,3	2 x 5		2,7 – 18,3	1 x 5	
		110 < Ø ≤ 125				3,1 – 14,0	2 x 7	
		125 < Ø ≤ 160				3,9	2 x 9	

Pipe material	Filling the partition	Pipe diameter Ø [mm]	FLEXIBLE / RIGID WALLS			FLOORS		
			• collar on both sides of the partition			• collar from the bottom of the floor		
			Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/C and C/C	Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/C and C/C
PP-R	2 x INTU FR UNIBOARD 1S	Ø ≤ 25	≥ 2,3	2 x 2	EI 120	≥ 2,3	1 x 2	EI 120
		20 < Ø ≤ 25	≥ 2,7					
		25 < Ø ≤ 32	3,3 – 12,5					
		32 < Ø ≤ 40	3,9 – 12,5					
		40 < Ø ≤ 50	4,8 – 12,5					
		50 < Ø ≤ 63	5,8 – 12,5					
		63 < Ø ≤ 75	6,8 – 12,5					
		75 < Ø ≤ 90	8,2 – 15,0	2 x 4		8,2 – 15,0	1 x 4	
		90 < Ø ≤ 110	10,0 – 18,3	2 x 5		10,0 – 18,3	1 x 5	

INTU FR COLLAR L SLIM

Intumescent pipe collar roll

TDS TECHNICAL DATA SHEET

Pipe material	Filling the partition	Pipe diameter Ø [mm]	FLEXIBLE / RIGID WALLS			FLOORS		
			• collar on both sides of the partition			• collar from the bottom of the floor		
			Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/C and C/C	Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/C and C/C
PVC-U / PVC-C	2 x INTU FR UNIBOARD 1S	Ø ≤ 75	1,8 – 5,6	2 x 2	EI 120	1,8 – 5,6	1 x 2	EI 120
		75 < Ø ≤ 90	1,9 – 6,7	2 x 4		1,9 – 6,7	1 x 4	
		90 < Ø ≤ 110	2,0 – 8,1	2 x 5		2,0 – 8,1	1 x 5	
PE-HD PE PE-X ABS SAN + PVC	2 x INTU FR UNIBOARD 1S	63 < Ø ≤ 75	3,0 – 6,8	2 x 2	EI 120	3,0 – 6,8	1 x 2	EI 120
		75 < Ø ≤ 90	3,5 – 8,2	2 x 4		3,5 – 8,2	1 x 4	
		90 < Ø ≤ 110	4,2 – 10,0	2 x 5		4,2 – 10,0	1 x 5	
		110 < Ø ≤ 125				5,8 – 9,9	1 x 7	
		125 < Ø ≤ 160				9,5	1 x 9	

Pipe material	Filling the partition	Pipe diameter Ø [mm]	FLEXIBLE / RIGID WALLS			FLOORS		
			• collar on both sides of the partition			• collar from the bottom of the floor		
			Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/C and C/C	Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/C and C/C
PE-HD / PE / PE-X / ABS / SAN + PVC	1 x INTU FR UNIBOARD 2S	Ø ≤ 75	3,0 – 6,8	2 x 2	EI 60	3,0 – 6,8	1 x 2	EI 90
		75 < Ø ≤ 90	3,5 – 8,2	2 x 4		3,5 – 8,2	1 x 4	
		90 < Ø ≤ 110	4,2 – 10,0	2 x 5		4,2 – 10,0	1 x 5	

Pipe material	Filling the partition	Pipe diameter Ø [mm]	PE insulation thickness [mm]	RIGID WALLS		
				• pipes on the floor / pipes in insulation		
				Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/C and C/C
PP - R	2 x INTU FR UNIBOARD 1S	Ø ≤ 20	9	2,3	2 x 5	EI 120
			25	6,9		
			25	7,0 – 12,5		
		20 < Ø ≤ 50	25	6,9		EI 120
			25	7,0 – 12,5		EI 90
50 < Ø ≤ 75	25	12,5	EI 90			
	Wiązka: 2 x PP-R	2 x INTU FR UNIBOARD 1S	1) Ø ≤ 20	9	2 x 5	EI 120
2) Ø ≤ 50	9		6,9			

INTU FR COLLAR L SLIM | TDS EN 3.0 | 13

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INTU FR COLLAR L SLIM

Intumescent pipe collar roll

TDS TECHNICAL DATA SHEET

➔ FIRE RESISTANCE CLASSIFICATION – Test configuration: U/U

Pipe material	Pipe diameter Ø [mm]	FLEXIBLE / RIGID WALLS • collar on both sides of the partition			FLOORS • collar from the bottom of the floor		
		Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/U	Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/U
PE-HD PE PE-X ABS SAN + PVC	Ø ≤ 32	2,4 – 4,6	2 x 2	EI 120	2,0 – 4,6	1 x 2	EI 120
	32 < Ø ≤ 50				2,4 – 4,6		
	50 < Ø ≤ 63	2,8 – 4,5	2 x 3	EI 60	2,8 – 3,9	1 x 3	EI 45 / E 120
					4,0 – 4,5		EI 60
					4,6 – 5,8		
	63 < Ø ≤ 75	3,2 – 4,4	2 x 4	EI 60	3,2 – 4,4	1 x 4	EI 45 / E 120
					5,6 – 6,8		EI 60
	75 < Ø ≤ 90	3,6 – 4,3	2 x 4	EI 60	3,6 – 4,6	1 x 4	EI 45 / E 120
					7,5 – 8,2		EI 60
	90 < Ø ≤ 110	4,2	2 x 5	EI 60	4,2 – 9,9	1 x 5	EI 45 / E 120
10,0					EI 60		
PP	Ø ≤ 32	1,8 – 8,3	2 x 2	EI 120	1,8 – 8,3	1 x 2	EI 120
	32 < Ø ≤ 50						
	50 < Ø ≤ 63	2,0 – 7,1	2 x 3	EI 60	2,2 – 7,3	1 x 3	
	63 < Ø ≤ 75	2,2 – 6,0	2 x 4	EI 120	2,6 – 6,4	1 x 4	
	75 < Ø ≤ 90	2,4 – 4,6	2 x 4	EI 120	3,1 – 5,3	1 x 4	
	90 < Ø ≤ 110	2,7	2 x 5	EI 120	3,8	1 x 5	
PVC	Ø ≤ 32	1,2 – 5,6	2 x 2	EI 120	1,2 – 5,6	1 x 2	EI 30 / E 45
	32 < Ø ≤ 50						
	50 < Ø ≤ 63	1,4 – 2,6	2 x 3	EI 30	1,4 – 4,8	1 x 3	
	63 < Ø ≤ 75	1,5 – 4,0	2 x 4	EI 30	1,5 – 4,1	1 x 4	
	75 < Ø ≤ 90	1,7 – 5,7	2 x 4	EI 30	1,7 – 3,2	1 x 4	
	90 < Ø ≤ 110	2,0 – 8,0	2 x 5	EI 30	2,0	1 x 5	

Bundles with AROT pipes

Max in one bundle	Pipe diameter Ø [mm]	Installations inside AROT pipe	FLEXIBLE / RIGID WALLS • collar on both sides of the partition			FLOORS • collar from the bottom of the floor		
			Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/U	Pipe wall thickness [mm]	Number of collars x intumescent material layers	Fire resistance U/U
AROT 1	Ø ≤ 50	empty	3,0	2 x 5	EI 120	3,0	1 x 5	EI 120
AROT 2		Ø cable ≤ 21 mm						
AROT 3		Ø bounde of cable < 50 mm						
AROT 4								

INTU FR COLLAR L SLIM

Intumescent pipe collar roll

TDS TECHNICAL DATA SHEET

→ SOLUTIONS DETAILS

Fig.1-3

Penetration seals of combustible pipes in walls

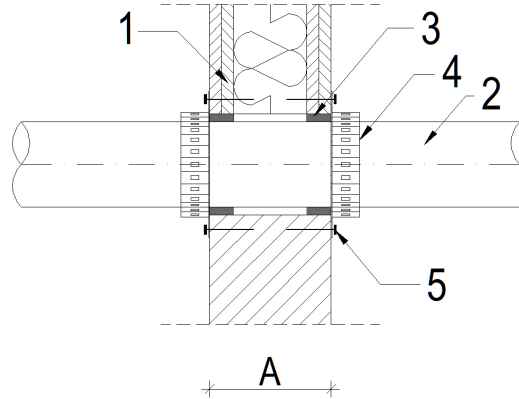
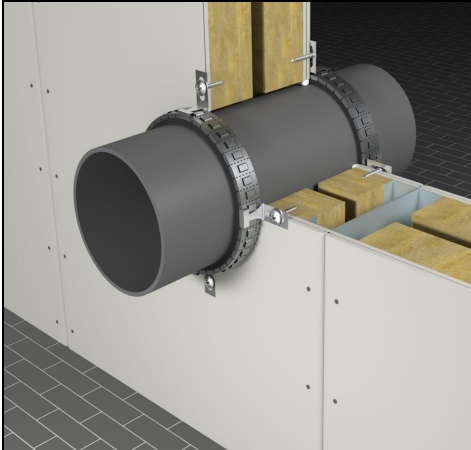


Fig. 1 Combustible pipe in wall, single collar from both sides of the wall

- 1 – flexible / rigid wall $A \geq 100$ mm
- 2 – combustible pipe $\varnothing \leq 110$ mm
- 3 – **INTU FR MASTIC** on minimum depth ≥ 25 mm from both sides of the partition
- 4 – **INTU FR COLLAR L SLIM** mounted single from both sides of the wall
- 5 – steel screws min. $\varnothing 6 \times 50$ mm

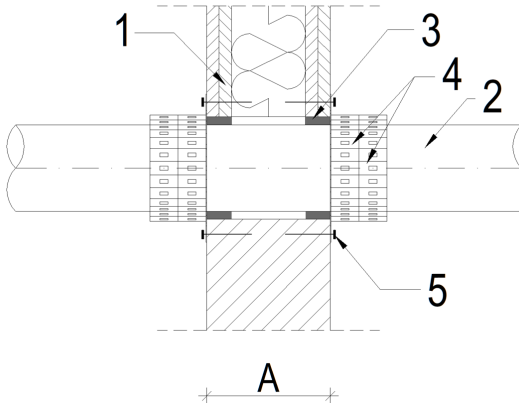
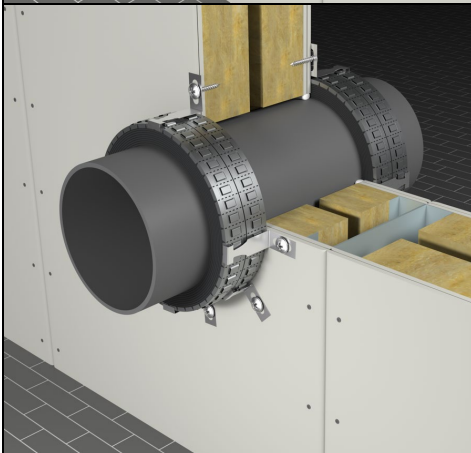


Fig. 2 Combustible pipe in wall, double collar from both sides of the wall

- 1 – flexible / rigid wall $A \geq 100$ mm
- 2 – combustible pipe $\varnothing > 110$ mm
- 3 – **INTU FR MASTIC** on minimum depth ≥ 25 mm from both sides of the partition
- 4 – **INTU FR COLLAR L SLIM** mounted double from both sides of the wall
- 5 – steel screws min. $\varnothing 6 \times 50$ mm

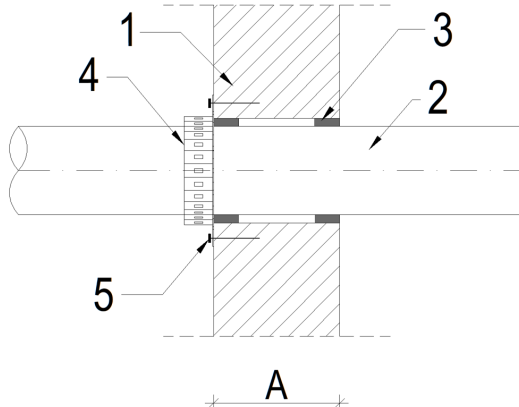
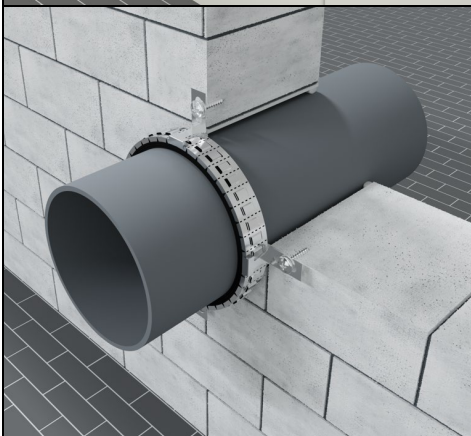


Fig. 3 Combustible pipe in wall, single collar from one side of the wall

- 1 – rigid wall $A \geq 100$ mm
- 2 – combustible pipe $\varnothing \leq 110$ mm
- 3 – **INTU FR MASTIC** on minimum depth ≥ 25 mm from both sides of the partition
- 4 – **INTU FR COLLAR L SLIM** mounted single from one side of the wall
- 5 – steel screws min. $\varnothing 6 \times 50$ mm

INTU FR COLLAR L SLIM

Intumescent pipe collar roll

TDS TECHNICAL DATA SHEET

Fig.4-6 Penetration seals of combustible pipes / bundles in walls

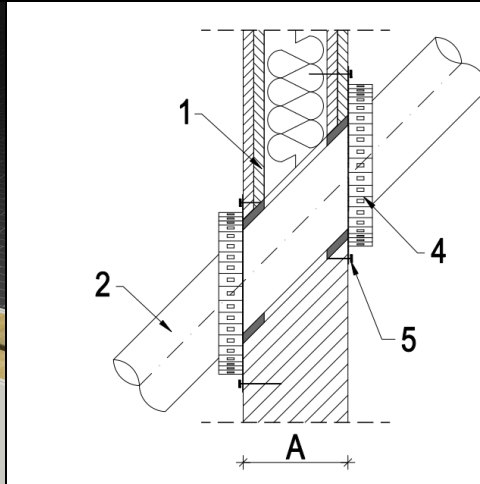
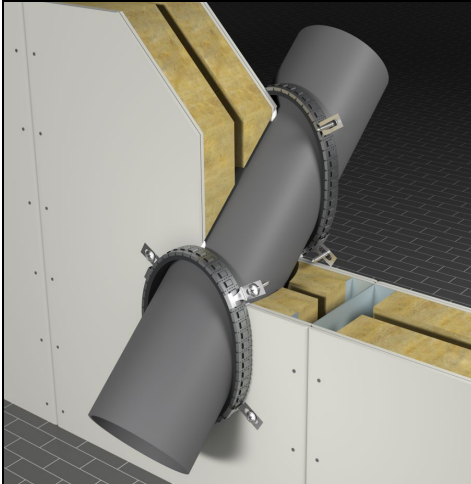


Fig. 4 Combustible pipe at an angle, in the wall

- 1 – flexible / rigid wall $A \geq 100$ mm
- 2 – combustible pipe at angle
- 3 – INTU FR MASTIC on minimum depth ≥ 25 mm from both sides of the partition
- 4 – INTU FR COLLAR L SLIM mounted single from both sides of the wall
- 5 – steel screws min. $\varnothing 6 \times 50$ mm

Note: for pipe $\varnothing 110$
 1 (number of collars) x 5 (number of wrapping layers)
 Length of steel casting for angle pipe: 28 segments

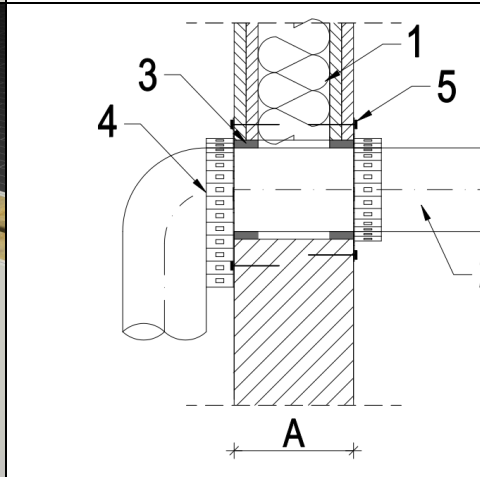
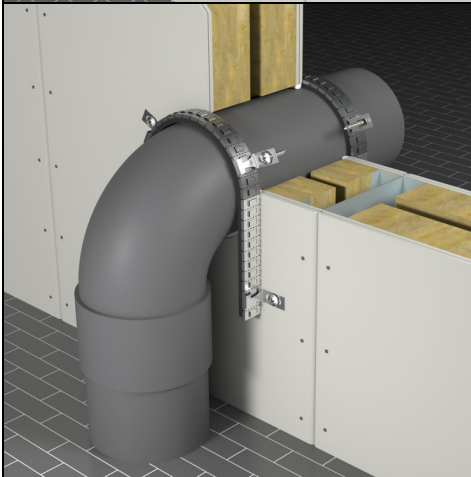


Fig. 5 Combustible pipe with elbow, in the wall

- 1 – flexible / rigid wall $A \geq 100$ mm
- 2 – combustible pipe with elbow
- 3 – INTU FR MASTIC on minimum depth ≥ 25 mm from both sides of the partition
- 4 – INTU FR COLLAR L SLIM mounted single from both sides of the wall
- 5 – steel screws min. $\varnothing 6 \times 50$ mm

Note: for pipe $\varnothing 110$
 1 (number of collars) x 5 (number of wrapping layers)
 Length of steel casting for pipe with elbow: 28 segments

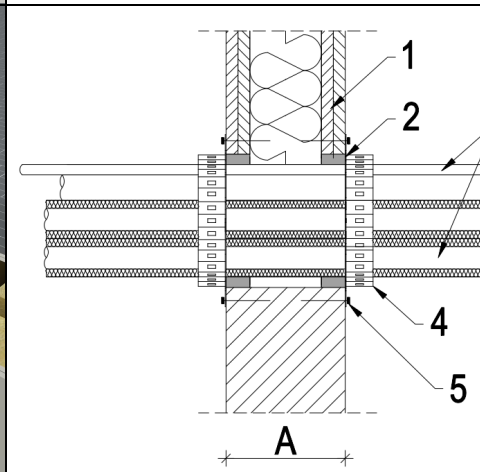
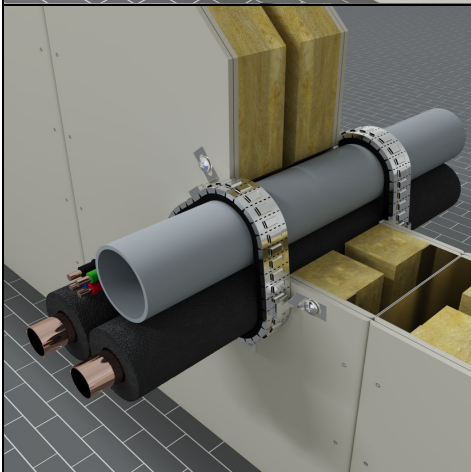


Fig. 6 Bundle of air-conditioning installations, in the wall

- 1 – flexible / rigid wall $A \geq 100$ mm
- 2 – bundle with pipes and cable
- 3 – INTU FR MASTIC on minimum depth ≥ 25 mm from both sides of the partition
- 4 – INTU FR COLLAR L SLIM mounted single from both sides of the wall
- 5 – steel screws min. $\varnothing 6 \times 50$ mm

INTU FR COLLAR L SLIM

Intumescent pipe collar roll

TDS TECHNICAL DATA SHEET

Fig.7-9

Penetration seals of combustible pipes in floors

		<p>Fig. 7 Combustible pipe in floor, single collar from the bottom of the floor</p> <ul style="list-style-type: none"> 1 – rigid floor $H \geq 150$ mm 2 – combustible pipe $\varnothing \leq 110$ mm 3 – INTU FR MASTIC on minimum depth ≥ 25 mm from both sides of the partition 4 – INTU FR COLLAR L SLIM mounted single from the bottom of the floor 5 – steel screws min. $\varnothing 6 \times 50$ mm
		<p>Fig. 8 Combustible pipe in floor, double collar from the bottom of the floor</p> <ul style="list-style-type: none"> 1 – rigid floor $H \geq 150$ mm 2 – combustible pipe $\varnothing > 110$ mm 3 – INTU FR MASTIC on minimum depth ≥ 25 mm from both sides of the partition 4 – INTU FR COLLAR L SLIM mounted double from the bottom of the floor 5 – steel screws min. $\varnothing 6 \times 50$ mm
		<p>Fig. 9 Combustible pipe with elbow, in the floor</p> <ul style="list-style-type: none"> 1 – rigid floor $H \geq 150$ mm 2 – combustible pipe with elbow 3 – INTU FR MASTIC on minimum depth ≥ 25 mm from both sides of the partition 4 – INTU FR COLLAR L SLIM mounted single from the bottom of the floor 5 – steel screws min. $\varnothing 6 \times 50$ mm <p><i>Note:</i> for pipe $\varnothing 110$ 1 (number of collars) x 5 (number of wrapping layers) Length of steel casting for pipe with elbow: 28 segments</p>

INTU FR COLLAR L SLIM

Intumescent pipe collar roll

TDS TECHNICAL DATA SHEET

Fig.10-12

Penetration seals of non-combustible pipes and AROT pipes

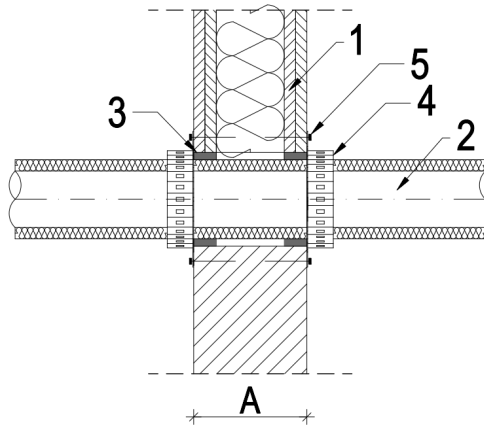
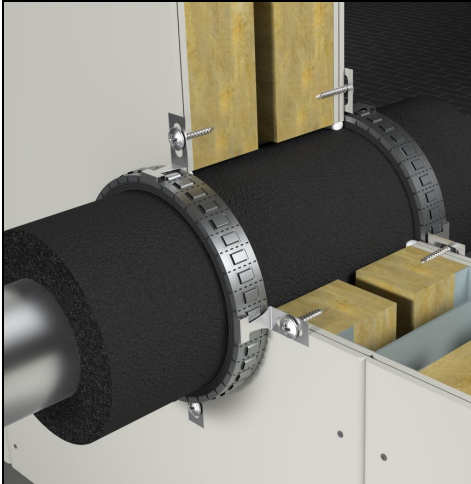


Fig. 10 Isolated metal pipe, single collar from both sides of the wall

- 1 – flexible / rigid wall $A \geq 100$ mm
- 2 – isolated metal pipe or isolated combustible pipe
- 3 – INTU FR MASTIC on minimum depth ≥ 25 mm from both sides of the partition
- 4 – INTU FR COLLAR L SLIM mounted single from both sides of the wall
- 5 – steel screws min. $\varnothing 6 \times 50$ mm

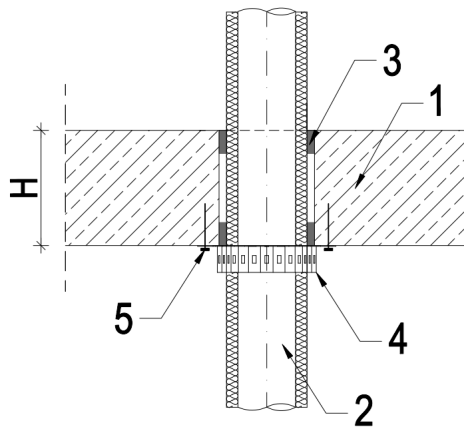
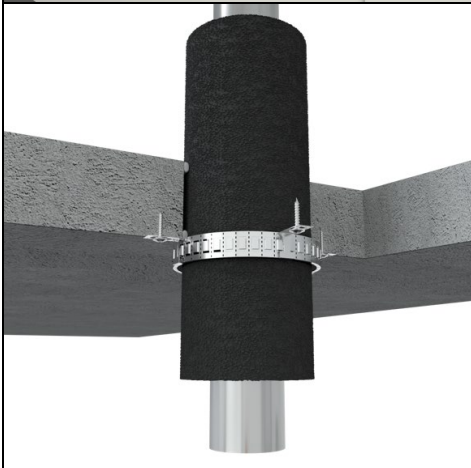


Fig. 11 Isolated metal pipe, single collar from bottom of the floor

- 1 – rigid floor $H \geq 150$ mm
- 2 – isolated metal pipe or isolated combustible pipe
- 3 – INTU FR MASTIC on minimum depth ≥ 25 mm from both sides of the partition
- 4 – INTU FR COLLAR L SLIM mounted single from bottom of the floor
- 5 – steel screws min. $\varnothing 6 \times 50$ mm

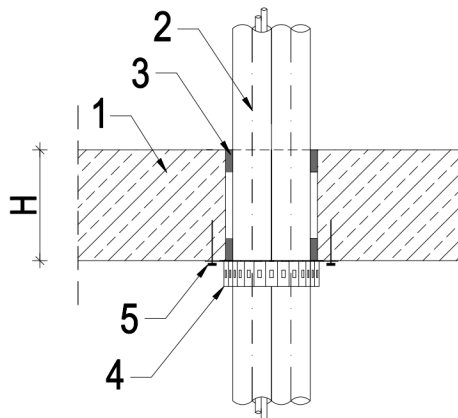
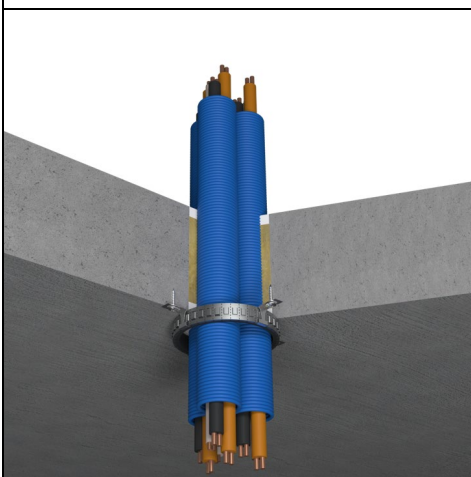


Fig. 12 AROT bundle penetration seal with collar from bottom of the floor

- 1 – rigid floor $H \geq 150$ mm
- 2 – AROT cable pipe bundle with or without cable
- 3 – INTU FR MASTIC on minimum depth ≥ 25 mm from both sides of the partition
- 4 – INTU FR COLLAR L SLIM mounted single from bottom of the floor
- 5 – steel screws min. $\varnothing 6 \times 50$ mm

INTU FR COLLAR L SLIM

Intumescent pipe collar roll

TDS TECHNICAL DATA SHEET

Fig.13-16 SYSTEM COMPATIBLE WITH INTU FR UNIBOARD

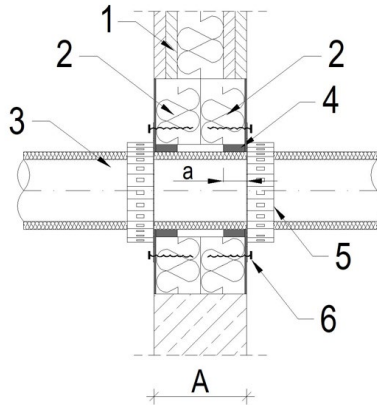
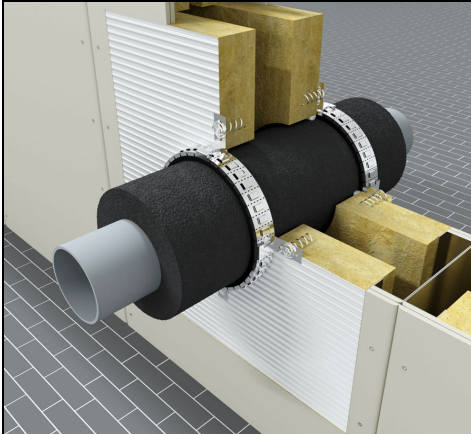


Fig. 13 Isolated combustible pipe, double mineral wool board

- 1 – flexible / rigid wall $A \geq 100$ mm
- 2 – 2 x board **INTU FR UNIBOARD 1S**
- 3 – isolated metal pipe or isolated combustible pipe
- 4 – **INTU FR MASTIC** on minimum depth ≥ 25 mm from both sides of the partition
- 5 – **INTU FR COLLAR L SLIM** mounted single from both sides of the wall
- 6 – steel screws min. $\varnothing 6 \times 50$ mm

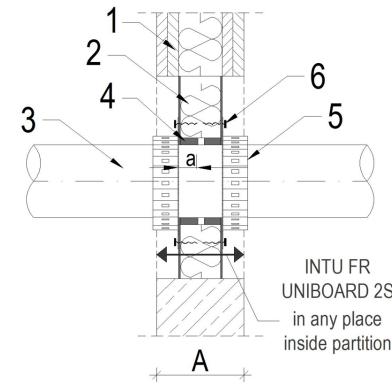
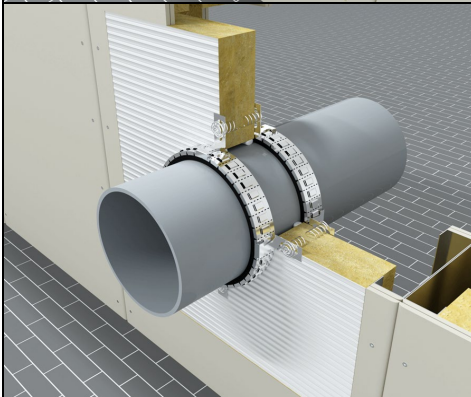


Fig. 14 Combustible pipe, single mineral wool board

- 1 – flexible / rigid wall $A \geq 100$ mm
- 2 – 1 x board **INTU FR UNIBOARD 2S**
- 3 – combustible pipe
- 4 – **INTU FR MASTIC** on minimum depth ≥ 25 mm from both sides of the partition
- 5 – **INTU FR COLLAR L SLIM** mounted single from both sides of the mineral wool board
- 6 – steel screws min. $\varnothing 6 \times 50$ mm

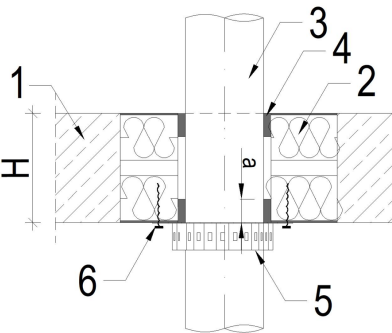
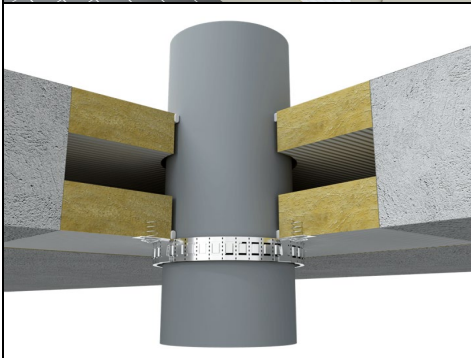


Fig. 15 Combustible pipe, double mineral wool board

- 1 – rigid floor $H \geq 150$ mm
- 2 – 2 x board **INTU FR UNIBOARD 1S**
- 3 – combustible pipe
- 4 – **INTU FR MASTIC** on minimum depth ≥ 25 mm from both sides of the partition
- 5 – **INTU FR COLLAR L SLIM** mounted single from the bottom of the floor
- 6 – steel screws min. $\varnothing 6 \times 50$ mm

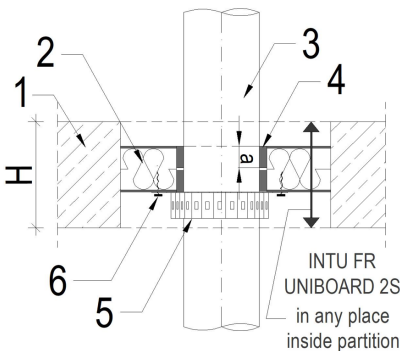
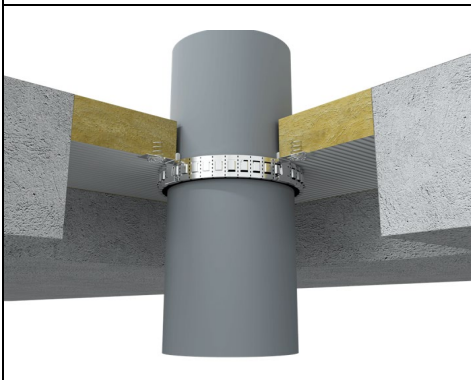


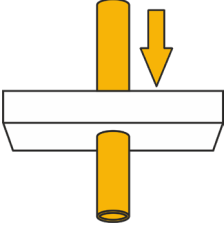
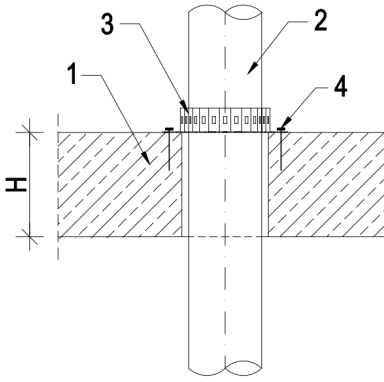
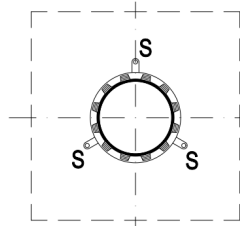
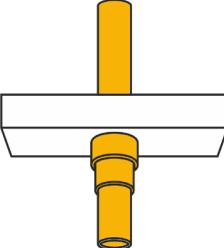
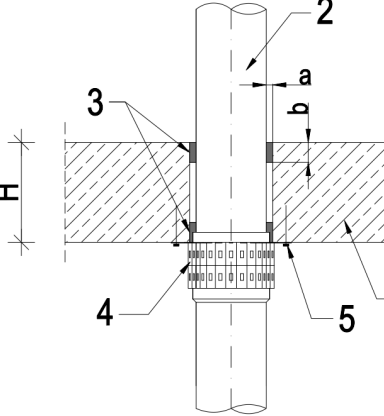
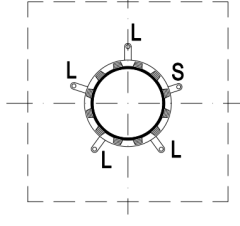
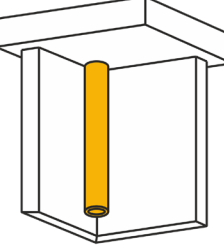
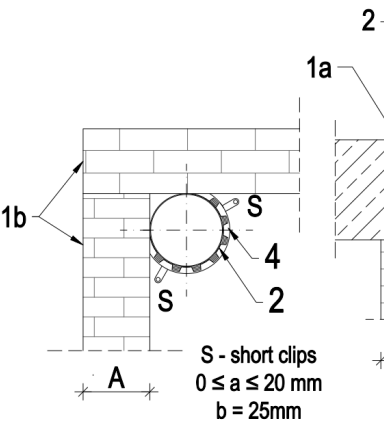
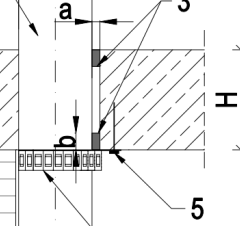
Fig. 16 Combustible pipe, single mineral wool board

- 1 – rigid floor $H \geq 150$ mm
- 2 – 1 x board **INTU FR UNIBOARD 2S**
- 3 – combustible pipe
- 4 – **INTU FR MASTIC** on minimum depth ≥ 25 mm from both sides of the partition
- 5 – **INTU FR COLLAR L SLIM** mounted single from bottom of the mineral wool board
- 6 – steel screws min. $\varnothing 6 \times 50$ mm

INTU FR COLLAR L SLIM

Intumescent pipe collar roll

TDS TECHNICAL DATA SHEET

Fig.17-19	Details of other solutions	
<ul style="list-style-type: none"> collar from the top of the floor 		<p>FRONT VIEW</p>  <p>S - short clips L - long clips $0 \leq a \leq 20 \text{ mm}$ $b = 25 \text{ mm}$</p> <ul style="list-style-type: none"> 1 - rigid floor $H \geq 150 \text{ mm}$ 2 - combustible pipe 3 - INTU FR COLLAR L SLIM mounted single from the top of the floor 4 - steel screws min. $\varnothing 6 \times 50 \text{ mm}$
<ul style="list-style-type: none"> collar on the pipe's socket 		<p>FRONT VIEW</p>  <p>S - short clips L - long clips $0 \leq a \leq 30 \text{ mm}$ $b = 25 \text{ mm}$</p> <ul style="list-style-type: none"> 1 - rigid floor $H \geq 150 \text{ mm}$ 2 - combustible pipe 3 - INTU FR MASTIC on minimum depth $\geq 25 \text{ mm}$ from both sides of the partition 4 - INTU FR COLLAR L SLIM mounted double from bottom of the floor (on pipe's socket) 5 - steel screws min. $\varnothing 6 \times 50 \text{ mm}$
<ul style="list-style-type: none"> corner collar 		<p>FRONT VIEW</p>  <p>S - short clips $0 \leq a \leq 20 \text{ mm}$ $b = 25 \text{ mm}$</p> <ul style="list-style-type: none"> 1a - rigid floor $H \geq 150 \text{ mm}$ 1b - rigid wall $A \geq 100 \text{ mm}$ 2 - combustible pipe 3 - INTU FR MASTIC on minimum depth $\geq 25 \text{ mm}$ from both sides of the partition 4 - INTU FR COLLAR L SLIM mounted single from bottom of the floor 5 - steel screws min. $\varnothing 6 \times 50 \text{ mm}$