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**SIMPLIFIED TECHNICAL ASSESSMENT OF
CLASSIFICATION FOR “MG-U” COLLARS FOR
PLASTICS PIPES SUPPLIED BY
RF-TECHNOLOGIES**

Report Number: 20/20289-363-S

Prepared for:

Rf-Technologies, S.A.
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Belgium

Date:

26th March 2020

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1 Objective

Technical assessment for fire resistance test report of penetration seals, supplied by RF Technologies for pipe tubes made of PP, PVC and PE with a range of dimensions.

This technical assessment report concerns test results obtained in accordance with Test Method EN 1366-3:2009 *“Fire resistance tests for service installations. Part 3: Penetrations seals”*.

The extended application process is carried out based with the extended application standard EN 15882-3:2009 *“Extended applications of results from fire resistance tests for service installations. Part 3: Penetration seals”*.

The classifications showed in this report are based on the EN 13501-2:2009 *“Fire classification of construction product and building elements. Part 2: Classification using data from fire resistance tests, excluding ventilation services.”*

2 Details of the product concerned

- General characteristics:
 - Collars:
 - Reference of collars: “MG- U”.
 - Raw materials: collars are composed of:
 - A metal shell made out of 0.6 mm thick steel, DC01-A-m (1.0330), 96 mm width and with metal fingers.
 - Flexible intumescent strip reference “EX 147” supplied by Rf-Technologies. Each collar contains several layers retained by the metal fingers. The amount of layer depends on the type of the sample.
 - Flexible intumescent strip reference “EX 147” supplied by Rf-Technologies, dimensions of 40 x 2 mm. Strip centered on the outer surface of the collar of each system.
 - Metal fingers contain a hole to used them as fixation lugs and fixed to the wall by means of screws 5 x 100 mm (3 screws for pipe diameters of 160 and 110 mm, and 2 screws for pipe diameters of 75 and 40 mm).
 - Gap between collars and supporting construction is filled with foam.

- Installation method

The installation method assessed for the system is the following:

Method	Diameter pipe	Dimension hole Wall	Dimension hole Floor
Mounting with screws required	32-75	Min Dn+27 Max Dn+50	Dn+50
	80-110	Min Dn+36 Max Dn+50	
	125-160	Min Dn+40 Max Dn+50	
Mounting without screws	32-160	Dn+50	Dn+50

Dn = Diameter nominal, Diameter of the plastic pipe

- Collar diameters and pipe wall thickness

Pipe Material	Pipe (mm)	Pipe Wall (mm)	Pipe Material	Pipe (mm)	Pipe Wall (mm)	Pipe Material	Pipe (mm)	Pipe Wall (mm)
PVC	32 - 75	1,8-3,6	PE	32-75	2,3-4,5	PP	32-40	1,8
	80	1,8-5,3		80	1,8-6,6		50	2,1
	90	1,9-5,3		90	1,9-6,6		56	2,2
	100	2,0-5,3		100	2,0-6,6		63	2,5
	110	2,2-5,3		110	2,2-6,6		75	3,0
	125	2,4-7,7		125	3,4-9,5		80	3,1
	140	2,7-7,7		140	2,4-9,5		90	3,2
	160	3,2-7,7		160	2,5-9,5		100	3,3
							110	3,4
							125	3,9
				140	4,3			
				160	4,9			

3 Test reports in support of this technical assessment report

Test reports

Name of laboratory	Name of sponsor	Test report ref. N°	Date of test
Applus LGAI Technological Center	RF Technologies	19/19791-1066	28/05/2019
Applus LGAI Technological Center	RF Technologies	19/19792-1215	19/06/2019
Applus LGAI Technological Center	RF Technologies	19/19960-1216	20/06/2019
Applus LGAI Technological Center	RF Technologies	19/20289-1502	05/09/2019
Applus LGAI Technological Center	RF Technologies	19/20289-1503	06/09/2019

Detailed description of the tested samples are included in the corresponding test reports.

4 Fire performance parameters

Permissible classifications

The following classes are allowed:

E*	15		30	45	60	90	120
EI*	15	20	30	45	60	90	120

*See annex 1 for classification per product.

4.1 Direct field of application

The results of fire test and obtained classifications are directly applicable to similar constructions to the tested models when one or more changes according to section 13 of the EN 1366-3:2009 and clause E.2.7 of the EN 1366-3:2009 are carried out.

4.1.1 Orientation

Test results are applicable to penetration seals assembled in a horizontal division (floor) and vertical division (wall).

4.1.1.1 Supporting construction

Rigid floor construction:

- Results are applicable on seals with a support frame made of aerated concrete with density and thickness equal or higher than the ones used in the test (tested supporting construction: density 650 ± 200 kg/m³ and thickness of 150mm).

Rigid wall construction:

- Results cover also concrete or masonry elements of an overall density equal to or greater than that of the element used in the tests. Test results obtained with rigid standard supporting constructions

may be applied to concrete or masonry separating elements with a thickness ranging from 100 to 200mm, provided that the tested elements are installed centrally into the rigid wall.

Flexible wall construction:

- Results cover all flexible wall constructions of the same or better fire resistance classification (tested supporting construction: flexible wall made out of two gypsum boards type DF of 12.5mm in thickness and 820 kg/m³ + 40mm of rockwool and density 45 kg/m³ + two gypsum boards type DF of 12.5mm in thickness and 820 kg/m³).

4.1.1.2 Service support construction

Metal trays with a melting point higher than the furnace temperature at the classification time (e.g. stainless steel, galvanized steel) are covered.

4.1.2 Fields of direct application for “plastic pipes” (according E.2.7 of EN 1366-3:2009)

4.1.2.1 General

Results from a multiple penetration seal may be extended to a single penetration seal of the same type but not vice versa.

4.1.2.2 Seal size

Three design groups are defined according to the thickness of the active compound on the inside. The inside of shell is filled with intumescent material, reference Rf-expand 147 (producer Rf-technologies). The graphite has a width of 94 mm, the thickness varies between 6 and 10 mm.

Design group	Diameter	Thickness active compound (mm)
1	32-75	6
2	80-110	8
3	120-160	10

4.1.2.3 Pipe end configuration

Test results obtained from tests with “plastic pipes” having both ends uncapped (test condition “U/U”) are valid for all other test conditions: U/U, C/U, U/C and C/C.

- Tested configuration: U/U
- Covered configurations: U/U, C/U, U/C and C/C

4.1.2.4 Pipe material

Results are valid for:

- Pipes made from PVC-U according to EN 1329-1, EN 1453-1 and EN 1452-1 as well as pipes made from PVC-C according to EN 1566-1.
- Pipes made from PE according to EN 12201-2, EN 1519-1 and EN 12666-1, for pipes made from ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1.
- Pipes made from PP according to EN 1451-1.

4.1.2.5 Sealing material

Results are valid for all sealing materials with a density of approximately 25 kg /m³ and with a fire class (EN 13501-1) class F or higher.

4.1.2.6 L125 and L150

Results are valid for pipe closure devices (MG-U L125 and MG-U L150) with an increased seal length that are used in a supporting construction or equal higher thickness. (EN 1366-3: 13.2.1)

Additional statement

This extended application is issued on the basis of test data and the content of EN 15245-4 at the time of issue.

The extended application results relate to the behavior of a product/product family under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product/product family in use.

Manu Burzón Padullés
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Annex 1

Installation method:

Method	Diameter pipe	Dimension hole Wall	Dimension hole Floor
Mounting with screws required (Method A)	32-75	Min Dn+27 Max Dn+50	Dn+50
	80-110	Min Dn+36 Max Dn+50	
	125-160	Min Dn+40 Max Dn+50	
Mounting without screws (Method B)	32-160	Dn+50	Dn+50

Dn = Diameter nominal, Diameter of the plastic pipe

Essential Characteristics					Performance		
Wall type	Wall	Sealing	Material	Installation method	Diameter pipe (mm)	Pipe wall thickness	Classification
Rigid wall	Aerated concrete 100mm	PUR	PVC	A & B	32 - 75	1,8-3,6	EI 120 UU
					80	1,8-5,3	
					90	1,9-5,3	
					100	2,0-5,3	
					110	2,2-5,3	
					125	2,4-7,7	
					140	2,7-7,7	
					160	3,2-7,7	
			PE, ABS	A & B	32-75	2,3-4,5	EI 120 UU
					80	2,4-6,6	
90	2,5-6,6						

					100	2,6-6,6				
					110	2,7-6,6				
					125	3,4-9,5				
					140	4,1-9,5				
					160	5,0-9,5				
			PP	A				32-40	1,8	EI 90 UU
								50	2,1	
								56	2,2	
								63	2,5	
								75	3,0	EI 90/120 ² UU
								80	3,1	EI 90 UU
								90	3,2	
								100	3,3	
								110	3,4	
								125	3,9	
140	4,3	EI 90/120 ² UU								
160	4,9									
Rigid wall	Aerated concrete >100mm - 200mm	PUR	PVC	B	32 - 75	1,8-3,6	EI 120 UU			
					80	1,8-5,3				
					90	1,9-5,3				
					100	2,0-5,3				
					110	2,2-5,3				
					125	2,4-7,7				
					140	2,7-7,7				
					160	3,2-7,7				

			PE, ABS		32-75	2,3-4,5	EI 120 UU
			80		2,4-6,6		
			90		2,5-6,6		
			100		2,6-6,6		
			110		2,7-6,6		
			125		3,4-9,5		
			140		4,1-9,5		
			160		5,0-9,5		
			PP		32-40	1,8	EI 90 UU
			50		2,1		
			56		2,2		
			63		2,5		
			75		3,0		
			80		3,1		
			90		3,2		
			100		3,3		
			110		3,4		
			125		3,9		
			140		4,3		
160	4,9						
Flexible wall	Metal stud gypsum plasterboard Type F (EN 520) - 100mm ¹	PUR	PVC	A	32 - 75	1,8-3,6	EI 120 UU
					80	1,8-5,3	
					90	1,9-5,3	
					100	2,0-5,3	
					110	2,2-5,3	

					125	2,4-7,7	EI 120 UU	
					140	2,7-7,7		
					160	3,2-7,7		
				B	32 - 75	1,8-3,6		
					80	1,8-5,3		
					90	1,9-5,3		
					100	2,0-5,3		
				PE, ABS	A	110		2,2-5,3
						32-75		2,3-4,5
						80		2,4-6,6
			90			2,5-6,6		
			100			2,6-6,6		
			110			2,7-6,6		
			125			3,4-9,5		
			PE, ABS	B	140	4,1-9,5		
					160	5,0-9,5		
					32-75	2,3-4,5		
					80	2,4-6,6		
					90	2,5-6,6		
			PP	A	100	2,6-6,6		
110	2,7-6,6							
32-40	1,8							
50	2,1							
56	2,2							
				63	2,5	EI 90 UU		

					75	3,0	EI 90/120 ² UU
					80	3,1	EI 90 UU
					90	3,2	
					100	3,3	
					110	3,4	
					125	3,9	
					140	4,3	
					160	4,9	EI 90/120 ² UU
Rigid floor	Aerated concrete $\geq 150\text{mm}$	PUR	PVC	A & B	32 - 75	1,8-3,6	EI 120 UU
					80	1,8-5,3	
					90	1,9-5,3	
					100	2,0-5,3	
					110	2,2-5,3	
					125	2,4-7,7	
					140	2,7-7,7	
					160	3,2-7,7	
			PE, ABS	A & B	32 - 75	2,3-4,5	EI 120 UU
		80			2,4-6,6		
		90			2,5-6,6		
		100			2,6-6,6		
		110			2,7-6,6		
		125			3,4-9,5		
		140			4,1-9,5		
	PP	A & B	32-40	1,8	EI 120 UU		

					50	2,1	
					56	2,2	
					63	2,5	
					75	3	
					80	3,1	
					90	3,2	
					100	3,3	
					110	3,4	

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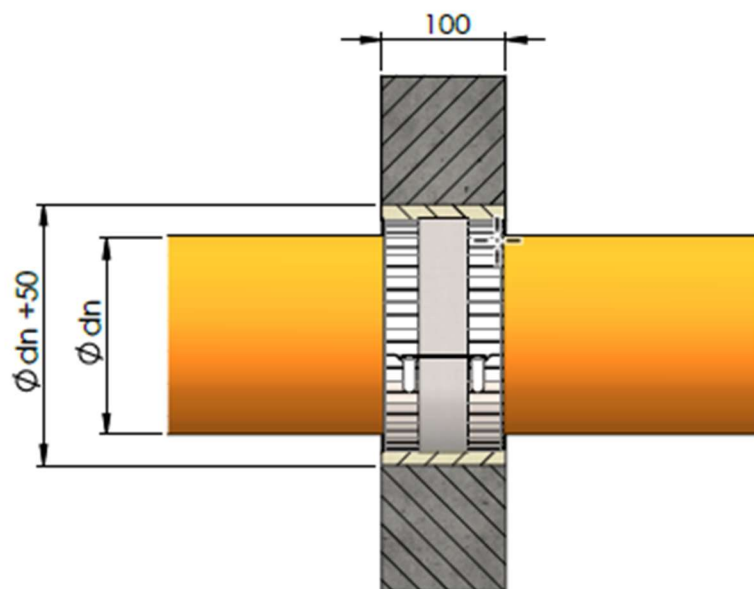
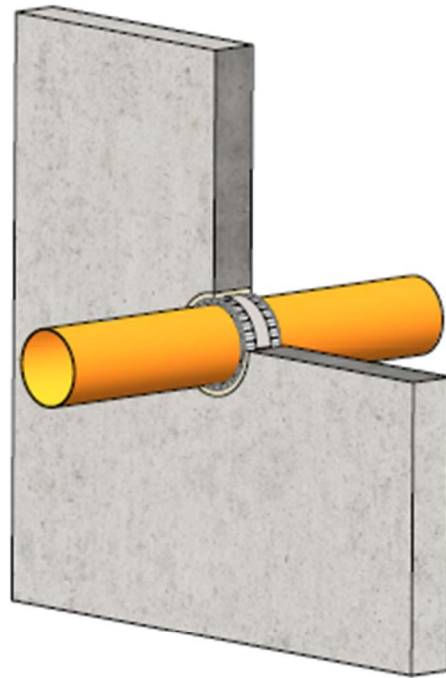
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Annex 2

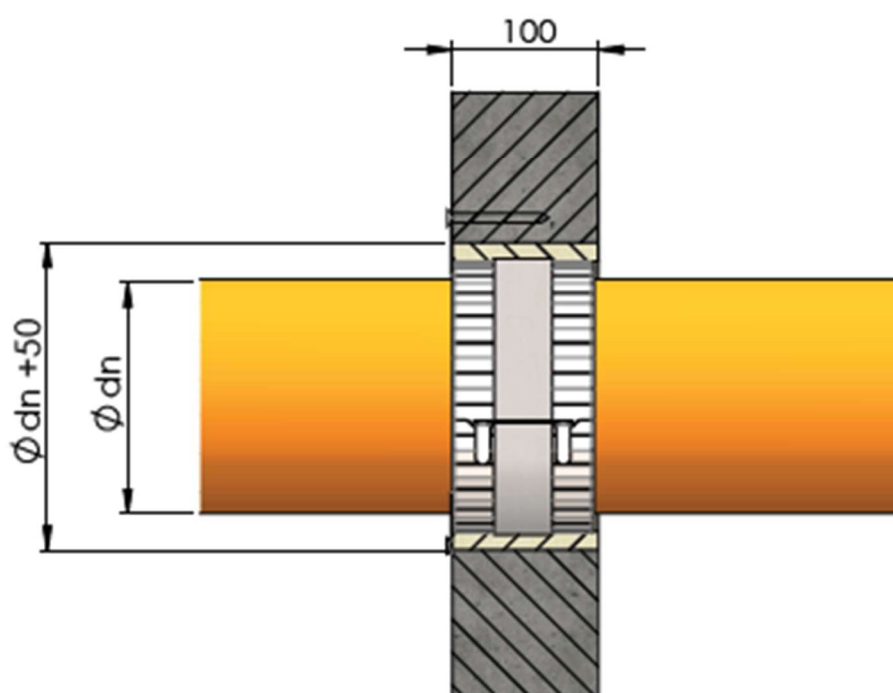
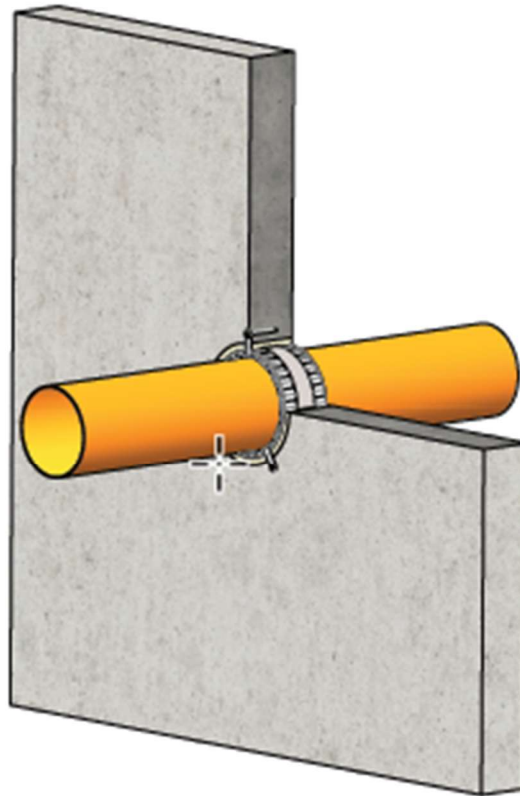
Rigid wall

Fixation without screw



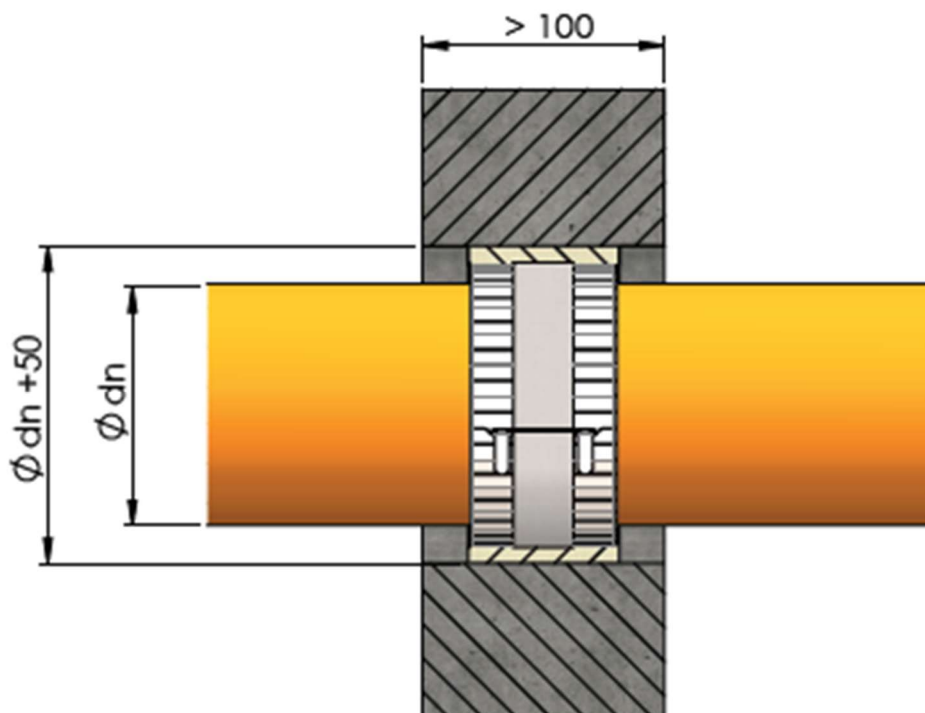
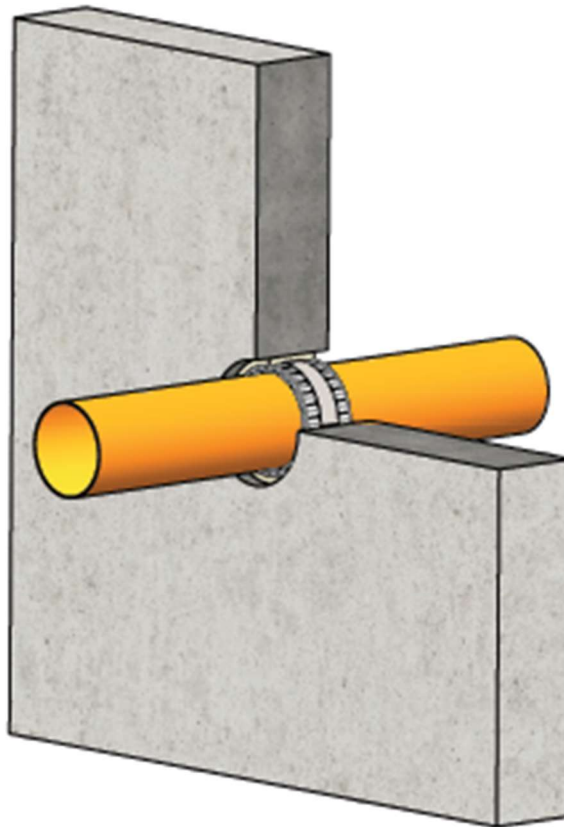
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Fixation with screw

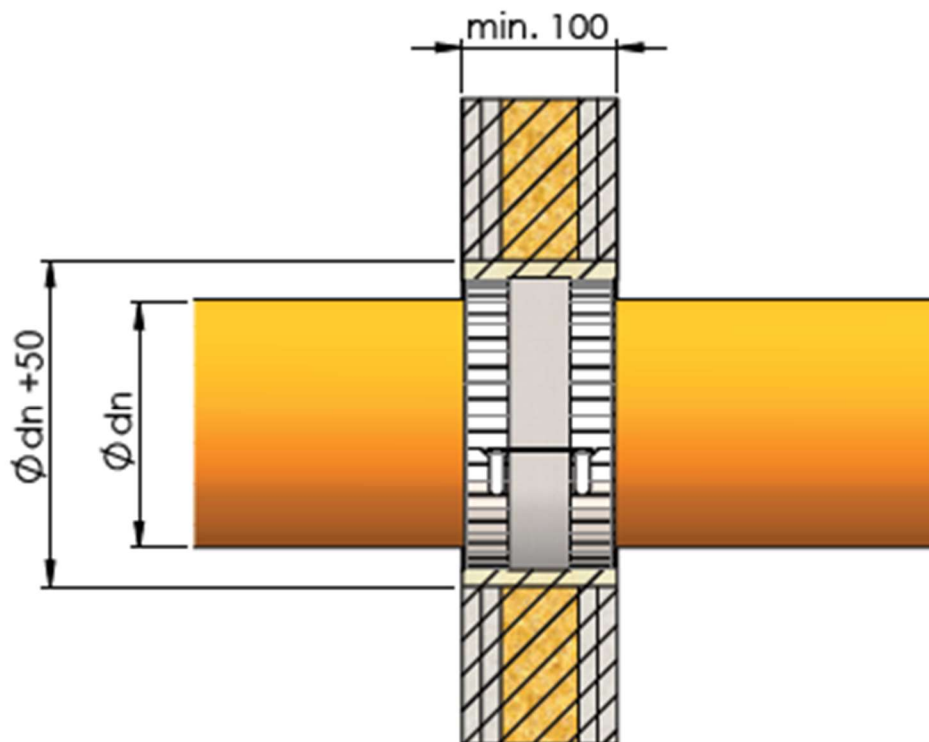
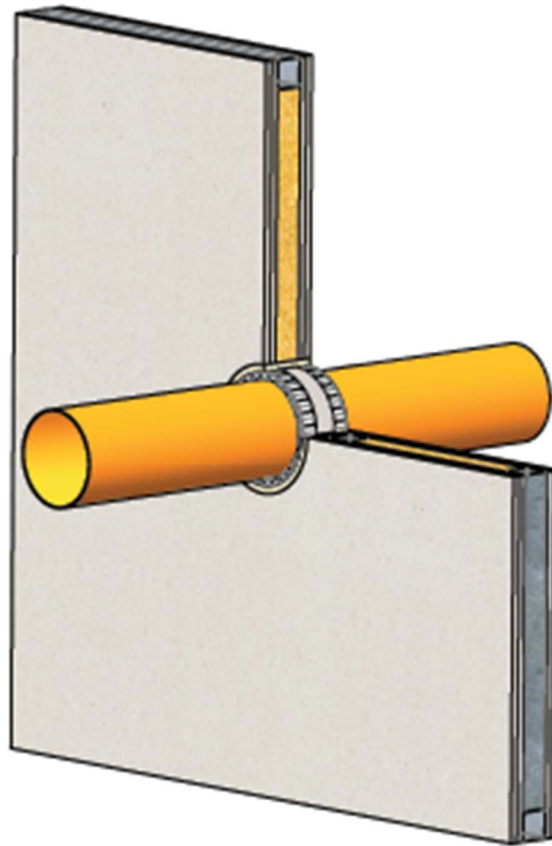


Rigid wall

Fixation without screw

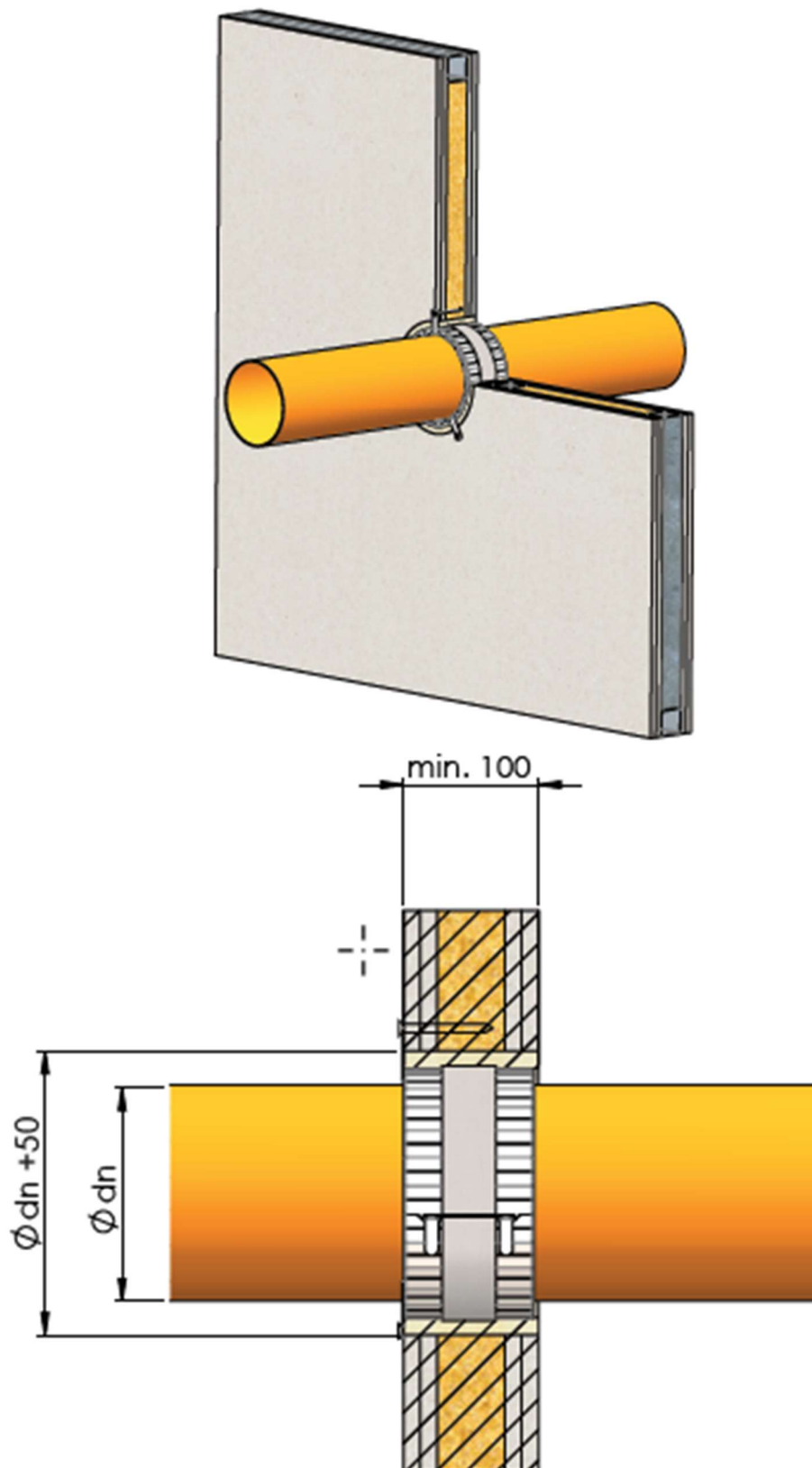


Flexible wall - Metal stud gypsum plasterboard wall
Fixation without screw



Flexible wall - Metal stud gypsum plasterboard wall

Fixation with screw



Rigid floor

Fixation without screw

