

Assembly Instruction

Multi Combi Seal Systems

FLAMRO BS-MK Combi Seal EI 90 | EI 120, FLAMRO Combi Seal EN EI 90 | EI 120 FLAMRO Combi Seal S90

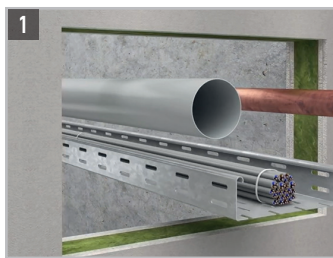
Please respect the permit specifications. All documents may be downloaded from www.flamro.com/services/downloads.

It is assumed that

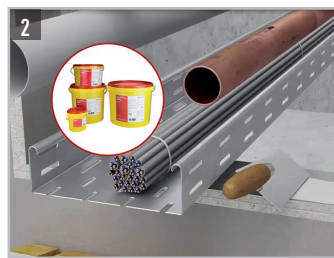
- any damage to the seal will be repaired
- the structural stability of the adjacent component is not compromised (including in the event of a fire) due to the installation of the seal
- the ledge or the ceiling for the seal does not contain any additional vertical loading
- the line fixings are attached to the adjacent component (and not on the seal)

Assembly steps

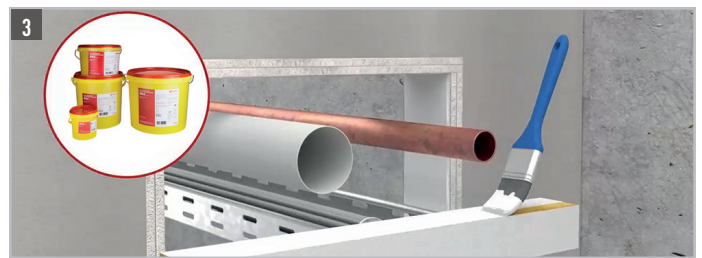
In the case of lightweight partition walls, an all-round frame must be positioned inside the rough opening; the frame width must correspond to the thickness of the wall and must be made from non-combustible construction panels (gypsum fire protection panels, gypsum fibreboard or calcium silicate panels).



The component opening soffits must first be cleaned.

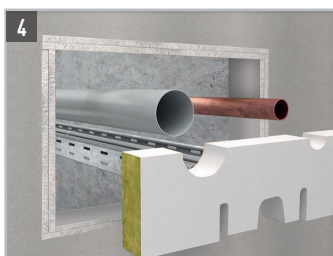


The inserted cables, lines, multicore tubes and cable supporting structures must be coated on both sides with FLAMRO BMA Ablation Coating. The dry layer thickness must be at least 2 mm.

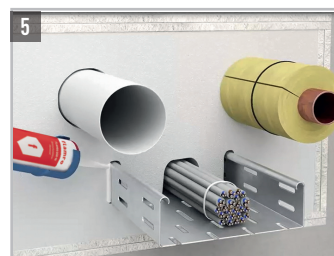


When installing the combi seals in walls, the pipe collars must be installed on both sides of the wall; when installed in ceilings they must be positioned on the underside of the ceiling. The smallest fitting pipe collar must be used for the pipe outer diameter.

The sectional insulation must be coated on both sides of the Combi Seal using 'FLAMRO BMA' Ablation Coating. The dry layer thickness must be at least 2 mm.

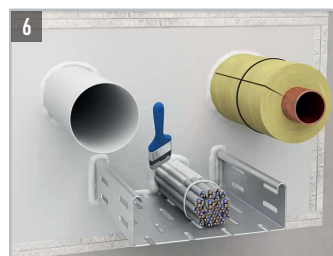


The openings between the component soffits and the inserted cables, lines, multicore tubes and cable supporting structures must be sealed using fire protection panels cut to size and placed in two layers. Before the panels are fitted into the opening, the surrounding outer edges of the panels must be coated for bonding using ablation coating 'FLAMRO BMA' Ablation Coating.



The coating thickness must be at least 1 mm. The opening between the two fire protection panels does not require coating.

Any remaining openings may be filled tightly with loose mineral wool. Cable bundles must not be filled inside with materials.



After the component opening has been sealed, all interstices and joints must be filled on the outer side using 'FLAMRO BMS' Ablation Coating or 'FLAMRO BMK', ensuring that the surface is even. A strip of approx. 30 mm width of ablation coating must then be coated on the outside around the inserted installations so that the dry layer thickness is at least 2 mm.

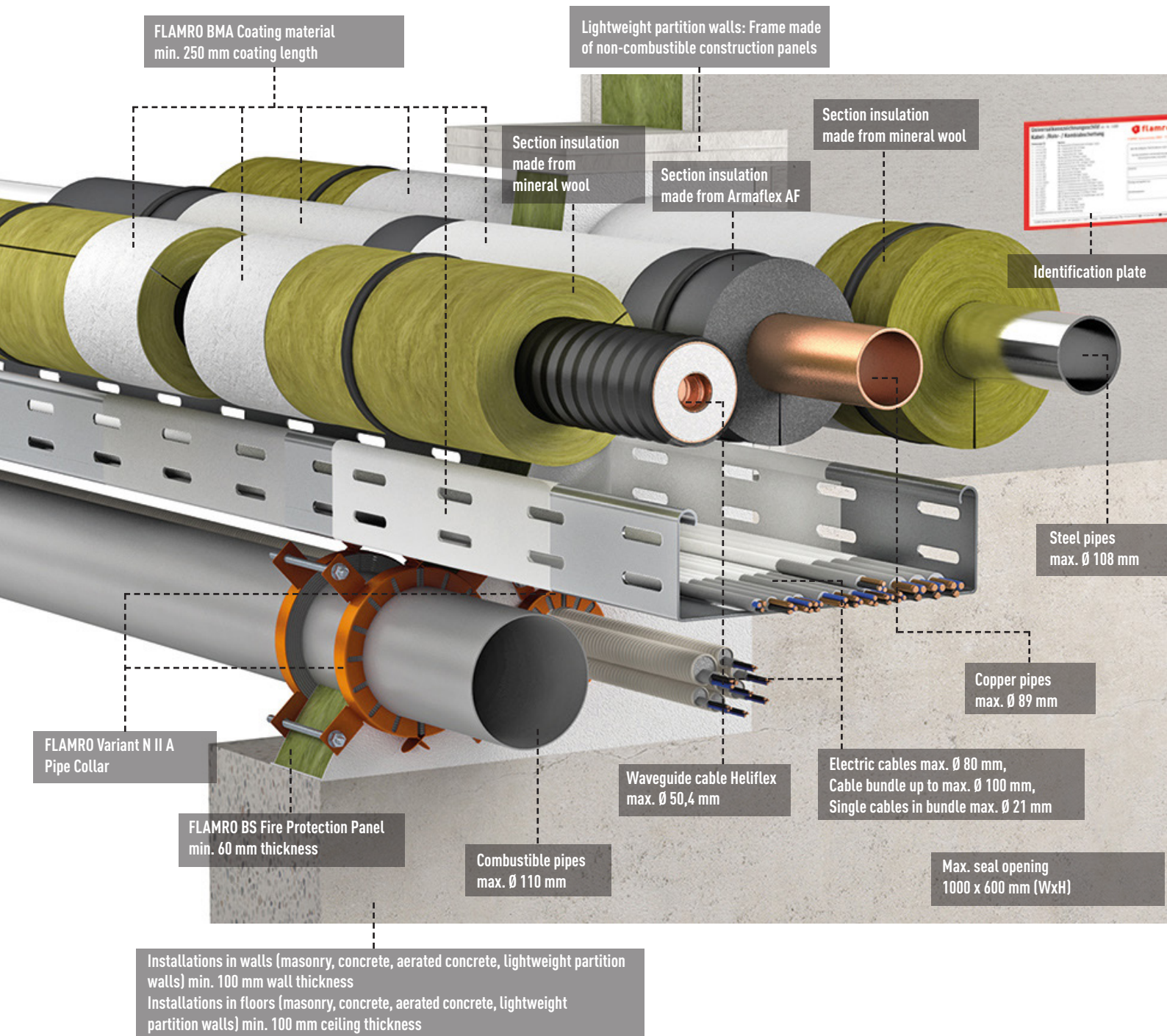


The seal must then be permanently labelled with a sign. The identification plate must be attached to the component next to the seal and may be obtained from FLAMRO.

Assembly Instruction

FLAMRO BS-MK Combi Seal EI 90/ EI 120

Approval No.: ETA - 15/0237



Assembly Instruction

FLAMRO BS-MK Combi Seal EI 90/ EI 120

Approval No.: ETA - 15/0237

Use in walls according to ETA-15/0237

Installations (wall)

Cable	Max. Ø (mm)	Fire resistance duration	Additional measures	Coating (mm)	Insulation (mm)	1. Support (mm)
Sheathed Cables	80	EI 90 / E 120	BMA	≥ 250		≤ 250
Cables	21	EI 120 / E 120	BMA	≥ 250		≤ 250
Non-sheathed cables	24	EI 90 / E 120	BMA	≥ 250		≤ 250
Cable bundles	100	EI 90 / E 120	BMA	≥ 250		≤ 250
Waveguide cables Heliflex HCA 158-50 J	50.4	EI 120 / E 120	ProRox PS 960 / BMA	≥ 500 / ≥ 250	30 (U/C)	≤ 250
Waveguide cables Heliflex HCA 158-38 J	14.3	EI 120 / E 120	ProRox PS 960 / BMA	≥ 500 / ≥ 250	20 (U/C)	≤ 250

Electric installation pipe (EIR)	Max. Ø (mm)	Fire resistance duration	Additional measures	Insulation (mm)	1. Support (mm)
EIR steel	25	EI 120 / E 120	BMA	≥ 250	≤ 250
EIR steel in bundle (up to 3 items.)	25	EI 120 / E 120	BMA	≥ 250	≤ 250
EIR plastic	16	EI 120 / E 120	BMA	≥ 250	≤ 250
EIR plastic in bundle (up to 3 items.)	16	EI 120 / E 120	BMA	≥ 250	≤ 250
EIR plastic	25	EI 120 / E 120	BMA + UBB	≥ 250	≤ 250
EIR plastic in bundle (up to 3 items.)	25	EI 120 / E 120	BMA + UBB	≥ 250	≤ 250
EIR plastic in bundle	115	EI 120 / E 120	Variant N II A from ≤ 350 mm		≤ 250

Combustible pipe	Max. Ø (mm)	Fire resistance duration	Additional measures	Wall thickness (mm)	1. Support (mm)
PE-HD	50	EI 120 / E 120	Variant N II A	1.8	≤ 300
PE-HD	50	EI 90 / E 120	Variant N II A	> 1.8 - 4.6	≤ 300
PE-HD	75	EI 90 / E 120	Variant N II A	1.9 - 10.0	≤ 300
PE-HD	90	EI 90 / E 120	Variant N II A	2.7 - < 10.0	≤ 300
PE-HD	110	EI 90 / E 120	Variant N II A	2.7 - < 10.0	≤ 300
PE-HD	110	EI 120 / E 120	Variant N II A	10.0	≤ 300
PVC-U, PVC-C	50	EI 90 / E 120	Variant N II A	1.8 - 5.6	≤ 300
PVC-U, PVC-C	75	EI 90 / E 120	Variant N II A	> 1.8 - < 8.1	≤ 300
PVC-U, PVC-C	90	EI 90 / E 120	Variant N II A	> 1.8 - < 8.1	≤ 300
PVC-U, PVC-C	110	EI 90 / E 120	Variant N II A	> 1.8 - < 8.1	≤ 300

Assembly Instruction

FLAMRO BS-MK Combi Seal EI 90/ EI 120

Approval No.: ETA - 15/0237

Non-combustible pipes	Max. Ø (mm)	Fire resistance duration	Additional measures	Coating (mm)	Insulation (mm)	1. Support (mm)
Copper, steel, stainless steel	30	EI 120 / E 120	ProRox PS 960 / BMA	≥ 1000 / 250	20 (C/U, C/C)	≤ 300
Copper, steel, stainless steel	42	EI 90 / E 120	ProRox PS 960 / BMA	≥ 1000 / 250	30 (C/U, C/C)	≤ 300
Copper, steel, stainless steel	89	EI 90 / E 120	ProRox PS 960 / BMA	≥ 1000 / 250	40 (C/U, C/C)	≤ 300
Steel, stainless steel	108	EI 120 / E 120	ProRox PS 960 / BMA	≥ 1000 / 250	40 (C/U, C/C)	≤ 300

Non-combustible pipes with AF / Armaflex	Max. Ø (mm)	Fire resistance duration	Additional measures	Coating (mm)	Insulation (mm)	1. Support (mm)
Copper, steel, stainless steel	12	EI 60 / E 90	AF / BMA	≥ 470 / 250	15 (C/U, C/C)	≤ 300
Copper, steel, stainless steel	42	EI 60 / E 60	AF / BMA	≥ 470 / 250	36.5 (C/U, C/C)	≤ 300
Copper, steel, stainless steel	89	EI 45 / E 90	AF / BMA	≥ 970 / 250	41.5 (C/U, C/C)	≤ 300
Copper, steel, stainless steel	12	EI 60 / E 120	AF / BMA / fabric	≥ 470 / 250 / 200	15 (C/U, C/C)	≤ 300
Copper, steel, stainless steel	42	EI 60 / E 120	AF / BMA / fabric	≥ 470 / 250 / 200	36.5 (C/U, C/C)	≤ 300
Copper, steel, stainless steel	89	EI 45 / E 90	AF / BMA / fabric	≥ 970 / 250 / 200	41.5 (C/U, C/C)	≤ 300
Copper, steel, stainless steel	12	EI 90 / E 120	AF / BMA / fabric / UBB	≥ 470 / 250 / 200 / 60	15 (C/U, C/C)	≤ 300
Copper, steel, stainless steel	42	EI 90 / E 120	AF / BMA / fabric / UBB	≥ 470 / 250 / 200 / 60	36.5 (C/U, C/C)	≤ 300
Copper, steel, stainless steel	89	EI 60 / E 120	AF / BMA / fabric / UBB	≥ 970 / 250 / 200 / 60	41.5 (C/U, C/C)	≤ 300

Assembly Instruction

FLAMRO BS-MK Combi Seal EI 90/ EI 120

Approval No.: ETA - 15/0237

Installation distances (wall)

Installation distances (mm)	to component reveal above	to component reveal sideway	to component reveal below	to a parallel cable layer, tray, ladder above	to a sideway cable layer, tray, ladder	to waveguide cables (outer sheath ProRox)	to outer sheath of combustible pipes (with Variant N II A)	to non-combustible pipes (outer sheath ProRox)	to non-combustible pipes (outer sheath AF/Armaflex)	to EIR made from steel (up to 3 items with BMA)	to EIR made from plastic (up to 3 items with UBB)	to EIR made from plastic (bundle with Variant N II A)
From cables	25	0	0	100	0	50	100	40	40	50	100	80
From cable layers, routes, trays, ladders	50	25/0	50/0	100/50	35/0	50	100	40	40	100	100	80
From waveguide cable Heliflex (outer sheath ProRox)	0	0	0	50	50	0	50	50	50	50	50	50
From EIR steel (up to 3 pcs. with BMA)	50	50	0	100	0	50	100	40	40	50	50	100
From EIR steel (up to 3 Stk. with UBB)	0	25	0	100	0	50	100	40	40	50	50	80
From EIR plastic (bundle with Variant N II A)	0	30	100	100	0	50	80	40	40	100	100	55
From combustible pipes ≤ 50 mm (with Variant N II A)	30	30	30	100	100	50	80	40	40	100	80	55
from combustible pipes > 50 mm (with Variant N II A)	50	50	50	100	100	50	80	40	40	100	80	80
From outer sheath ProRox Insulation non-combustible pipes	0	0	0	40	40	40	40	0	40	40	40	40
From outer sheath AF/Armaflex Insulation non-combustible pipes	0	0	0	40	40	40	40	40	0	40	40	40

Specifications (wall)

Insulation thickness	60 mm
Min. wall thickness	100 mm
Walls consisting of	masonry, concrete or aerated concrete or lightweight partition wall with steel and wooden stands
Max. seal dimensions	1000 x 600 mm
Collars	Collar installation on both sides of wall, dim. according to certificate

Assembly Instruction

FLAMRO BS-MK Combi Seal EI 90/ EI 120

Approval No.: ETA - 15/0237

Use in floors according to ETA-15/0237

Installations (floor)

Cable	Max. Ø (mm)	Fire resistance duration	Additional measures	Coating (mm)	Insulation (mm)	1. Support (mm)
Sheathed Cables	80	EI 60 / E 120	BMA	≥ 250		≤ 250
Cables	21	EI 60 / E 120	BMA	≥ 250		≤ 250
Non-sheathed cables	24	EI 60 / E 120	BMA	≥ 250		≤ 250
Cable bundles	100	EI 60 / E 120	BMA	≥ 250		≤ 250
Waveguide cable Heliflex HCA 158-50 J	50.4	EI 120 / E 120	ProRox PS 960 / BMA	≥ 500 / ≥ 250	30 (U/C)	≤ 250
Waveguide cable Heliflex HCA 158-38 J	14.3	EI 120 / E 120	ProRox PS 960 / BMA	≥ 500 / ≥ 250	20 (U/C)	≤ 250

Electric installation pipe (EIR)	Max. Ø (mm)	Fire resistance duration	Additional measures	Insulation (mm)	1. Support (mm)
EIR steel	16	EI 90 / E 120	BMA	≥ 250	≤ 250
EIR steel in bundle (up to 3 items.)	16	EI 60 / E 120	BMA	≥ 250	≤ 250
EIR plastic	25	EI 60 / E 120	BMA	≥ 250	≤ 250
EIR plastic in bundle (up to 3 items.)	16	EI 120 / E 120	BMA	≥ 250	≤ 250
EIR plastic	20	EI 120 / E 120	BMA	≥ 250	≤ 250
EIR plastic in bundle (up to 3 items.)	25	EI 90 / E 120	BMA + UBB	≥ 250	≤ 250
EIR plastic in bundle	115	EI 90 / E 120	Variant N II A from ≤ 350 mm		≤ 250

Combustible pipe	Max. Ø (mm)	Fire resistance duration	Additional measures	Wall thickness (mm)	1. Support (mm)
PE-HD	50	EI 120 / E 120	Variant N II A	1.8 - 4.6	≤ 300
PE-HD	75	EI 120 / E 120	Variant N II A	1.9 - 10.0	≤ 300
PE-HD	90	EI 120 / E 120	Variant N II A	2.7 - 10.0	≤ 300
PE-HD	110	EI 120 / E 120	Variant N II A	2.7 - 10.0	≤ 300
PVC-U, PVC-C	50	EI 120 / E 120	Variant N II A	1.8 - 5.6	≤ 300
PVC-U, PVC-C	75	EI 90 / E 120	Variant N II A	> 1.8 - < 8.1	≤ 300
PVC-U, PVC-C	90	EI 90 / E 120	Variant N II A	> 1.8 - < 8.1	≤ 300
PVC-U, PVC-C	110	EI 90 / E 120	Variant N II A	> 1.8 - < 8.1	≤ 300
PVC-U, PVC-C	110	EI 120 / E 120	Variant N II A	8.1	≤ 300

Assembly Instruction

FLAMRO BS-MK Combi Seal EI 90/ EI 120

Approval No.: ETA - 15/0237

Non-combustible pipes	Max. Ø (mm)	Fire resistance duration	Additional measures	Coating (mm)	Insulation (mm)	1. Support (mm)
Copper, steel, stainless steel	30	EI 120 / E 120	ProRox PS 960 / BMA	≥ 1000 / 250	20 (C/U, C/C)	≤ 300
Copper, steel, stainless steel	42	EI 120 / E 120	ProRox PS 960 / BMA	≥ 1000 / 250	30 (C/U, C/C)	≤ 300
Copper, steel, stainless steel	89	EI 120 / E 120	ProRox PS 960 / BMA	≥ 1000 / 250	40 (C/U, C/C)	≤ 300
Steel, stainless steel	108	EI 120 / E 120	ProRox PS 960 / BMA	≥ 1000 / 250	40 (C/U, C/C)	≤ 300

Non-combustible pipes with AF / Armaflex	Max. Ø (mm)	Fire resistance duration	Additional measures	Coating (mm)	Insulation (mm)	1. Support (mm)
Copper, steel, stainless steel	12	EI 120 / E 120	AF / BMA / fabric / 2x UBB	≥ 470 / 250 / 200 / 60	15 (C/U, C/C)	≤ 300
Copper, steel, stainless steel	42	EI 90 / E 120	AF / BMA / fabric / 2x UBB	≥ 470 / 250 / 200 / 60	36.5 (C/U, C/C)	≤ 300
Copper, steel, stainless steel	89	EI 60 / E 120	AF / BMA / fabric / 3x UBB	≥ 970 / 250 / 200 / 60	41.5 (C/U, C/C)	≤ 300

Assembly Instruction

FLAMRO BS-MK Combi Seal EI 90/ EI 120

Approval No: ETA - 15/0237

Installation distances (floor)

Installation distances (mm)	to component soffit top	to component soffit side	to a parallel cable layer, tray, ladder above	to a side cable layer, tray, ladder	to waveguide cables (outer sheath ProRox)	to outer sheath of combustible pipes (with Variant N II A)	to non-combustible pipes (outer sheath ProRox)	to non-combustible pipes (outer sheath AF/Armaflex)	to EIR made from steel (up to 3 items with BMA)	to EIR made from plastic (up to 3 items with UBB)	to EIR made from plastic (bundle with Variant N II A)
from cables	0	0	50	0	50	100	40	40	25	100	80
from cable layers, routes, trays, ladders	0	25/0	100/50	0	50	100	40	40	100	100	80
from waveguide cable Heliflex (outer sheath ProRox)	0	0	50	50	0	50	50	50	50	50	50
from EIR steel (up to 3 pcs. with BMA)	0	50	100	0	50	100	40	40	50	50	80
from EIR steel (up to 3 Stk. with UBB)	0	25	100	0	50	100	40	40	50	40	80
from EIR plastic (bundle with Variant N II A)	50	50	80	80	50	80	40	40	80	100	55
from combustible pipes ≤ 50 mm (with Variant N II A)	30	30	100	100	50	80	40	40	100	80	55
from combustible pipes > 50 mm (with Variant N II A)	50	50	100	100	50	80	40	40	100	80	80
from outer sheath ProRox Insulation non-combustible pipes	0	0	40	40	40	40	0	40	40	40	40
from outer sheath AF/Armaflex Insulation non-combustible pipes	0	0	40	40	40	40	40	0	40	40	40

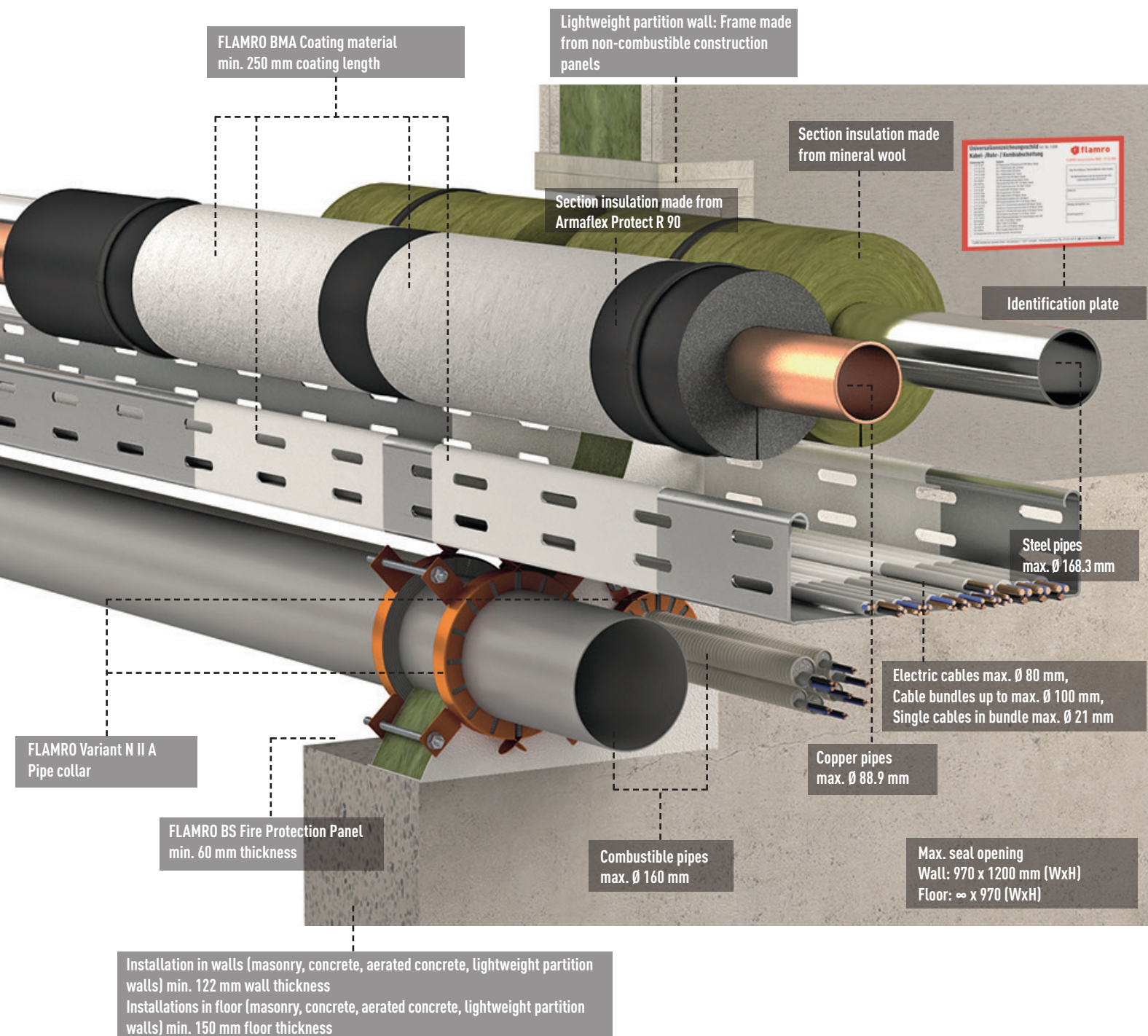
Specifications (floor)

Insulation thickness	60 mm
Min. floor thickness	100 mm
Floors consisting of	masonry, concrete or aerated concrete or lightweight partition wall with steel and wood stands
Max. seal dimensions	1000 x 600 mm
Collars	Collar installation on bottom side of ceiling, dim. according to certificate

Assembly Instruction

FLAMRO Combi Seal EN EI 90 / EI 120

Approval No: ETA - 13/0756



Assembly Instruction

FLAMRO Combi Seal EN EI 90 / EI 120

Approval No: ETA - 13/0756

Use in walls according to ETA-13/0756

Installations (wall)

Cables	Max. Ø (mm)	Fire resistance duration	Additional measures	Insulation (mm)	1. Support (mm)
Sheathed cables	80	EI 90 / E 120	BMA	≥ 250	≤ 250
Cables	21	EI 120 / E 120	BMA	≥ 250	≤ 250
Cable bundles	100	EI 120 / E 120	BMA	≥ 250	≤ 250

Electric installation pipes (EIR)	Max. Ø (mm)	Fire resistance duration	Additional measures	Insulation (mm)	1. Support (mm)
EIR steel	16	EI 120 / E 120	BMA	≥ 250	≤ 250
EIR steel in bundle (up to 3 items)	16 - 25	EI 120 / E 120	BMA	≥ 250	≤ 250
EIR plastic	16	EI 120 / E 120	BMA	≥ 250	≤ 250
EIR plastic in bundle (up to 3 items)	16 - 25	EI 120 / E 120	BMA / 2x UBB	≥ 250	≤ 250

Combustible pipes	Max. Ø (mm)	Fire resistance duration	Additional measures	Wall thickness (mm)	Insulation (mm)	1. Support (mm)
PVC-U	37	EI 120 / E 120	Variant N II A	1.9 - 7.0		≤ 300
PVC-U	42	EI 120 / E 120	Variant N II A	1.9 - 7.0		≤ 300
PVC-U	51	EI 120 / E 120	Variant N II A	1.9 - 7.0		≤ 300
PVC-U	61	EI 120 / E 120	Variant N II A	1.9 - 7.0		≤ 300
PVC-U	63	EI 120 / E 120	Variant N II A	1.9 - 7.0		≤ 300
PVC-U	81	EI 120 / E 120	Variant N II A	1.8 - 8.2		≤ 300
PVC-U	94	EI 120 / E 120	Variant N II A	1.8 - 8.2		≤ 300
PVC-U	110	EI 120 / E 120	Variant N II A	1.8 - 8.2		≤ 300
PVC-U	125	EI 120 / E 120	Variant N II A	1.8 - 7.7		≤ 300
PVC-U	135	EI 120 / E 120	Variant N II A	1.8 - 7.7		≤ 300
PVC-U	160	EI 120 / E 120	Variant N II A	1.8 - 7.7		≤ 300
PVC-U	25	EI 120 / E 120	AF / BMA	1.5 - 2.8	20 (U/C)	≤ 400
PVC-U	32 - 75	EI 120 / E 120	AF / BMA	1.8 - 5.6	25 (U/C)	≤ 400
PE-HD	37	EI 120 / E 120	Variant N II A	1.8 - 5.8		≤ 300
PE-HD	42	EI 120 / E 120	Variant N II A	1.8 - 5.8		≤ 300
PE-HD	51	EI 120 / E 120	Variant N II A	1.8 - 5.8		≤ 300
PE-HD	61	EI 120 / E 120	Variant N II A	1.8 - 5.8		≤ 300
PE-HD	63	EI 120 / E 120	Variant N II A	1.8 - 5.8		≤ 300
PE-HD	81	EI 120 / E 120	Variant N II A	2.7 - 10.0		≤ 300
PE-HD	94	EI 120 / E 120	Variant N II A	2.7 - 10.0		≤ 300
PE-HD	110	EI 120 / E 120	Variant N II A	2.7 - 10.0		≤ 300
PE-HD	125	EI 120 / E 120	Variant N II A	14.6		≤ 300
PE-HD	135	EI 120 / E 120	Variant N II A	14.6		≤ 300

Assembly Instruction

FLAMRO Combi Seal EN EI 90 / EI 120

Approval No: ETA - 13/0756

PE-HD	160	EI 120 / E 120	Variant N II A	14.6		≤ 300
PE-HD	20 - 25	EI 120 / E 120	AF / BMA	1.9 - 2.3	20 (U/C)	≤ 400
PE-HD	32 - 75	EI 120 / E 120	AF / BMA	1.9 - 6.8	25 (U/C)	≤ 400
PP	25	EI 120 / E 120	AF / BMA	2.3	20 (U/C)	≤ 400

Non-combustible pipes	Max. Ø (mm)	Fire resistance duration	Additional measures	Wall thickness (mm)	Insulation (mm)	1. Support (mm)
Copper, steel, stainless steel	25	EI 120 / E 120	ProRox PS 960 / BMA	≥ 1000 / 100	30 (C/U)	≤ 400
Copper	> 25 - 88.9	EI 120 / E 120	ProRox PS 960 / BMA	≥ 1000 / 100	40 (C/U)	≤ 400
Steel, stainless steel	> 25 - 168.3	EI 120 / E 120	ProRox PS 960 / BMA	≥ 1000 / 100	40 (C/U)	≤ 400

Non-combustible pipes with AF / Armaflex	Max. Ø (mm)	Fire resistance duration	Additional measures	Wall thickness (mm)	Insulation (mm)	1. Support (mm)
Copper, steel, stainless steel	8	EI 120 / E 120	AF / BMA	≥ 935 / 100	16 (C/U)	≤ 400
Copper, steel, stainless steel	> 8 - 15	EI 120 / E 120	AF / BMA	≥ 935 / 100	19 (C/U)	≤ 400
Copper, steel, stainless steel	> 15 - 25	EI 120 / E 120	AF / BMA	≥ 935 / 100	20 (C/U)	≤ 400
Copper, steel, stainless steel	> 25 - 88.9	EI 120 / E 120	AF / BMA	≥ 935 / 100	25 (C/U)	≤ 400
Steel, stainless steel	> 88.9 - 168.3	EI 90 / E 120	AF / BMA	≥ 935 / 100	26 (C/U)	≤ 400

Assembly Instruction

FLAMRO Combi Seal EN EI 90 / EI 120

Approval No: ETA - 13/0756

Installation distances (wall)

Installation distances (mm)	to component reveal above	to component reveal sideways	to component reveal below	to a parallel cable layer, tray, ladder above	to a sideways cable layer, tray, ladder	to outer sheath of combustible pipes (with Variant N II A)	to non combustible pipes (outer sheath ProRox)	to non-combustible pipes (outer sheath AF/Armaflex)	to EIR made from steel (up to 3 items with BMA)	to EIR made of plastic (up to 3 items with UBB)	to EIR made of steel (bundle with Variant N II A)
From cables	41	0	0	60	0	100	100	100	72	72	100
From cable layers, routes, trays, ladders	41	0	0	60	0	100	100	100			
From EIR steel (up to 3 items with BMA)	0	0	0	0	0	100	100	100	0	0	63
From EIR plastic (up to 3 pieces with UBB)	0	0	0	0	0	100	100	100	0	0	63
From EIR plastic (bundle with Variant N II A)	0	0	0	72	72	100	100	100	63	63	63
From combustible pipes (with Variant N II A)	50	50	100	100	100	75	100	100	100	100	
From combustible pipes > 63 mm (with Variant N II A)	50	50	100	100	100	50	100	100	100	100	
From combustible pipes > 50 mm (with Variant N II A)	0	0	0	100	100	100	100	100	100	100	100
From outer sheath ProRox Insulation non-combustible pipes	0	0	0	100	100	100	100	100	100	100	100

Specifications (wall)

Insulation thickness	130 mm
Min. wall thickness	122 mm
Walls consisting of	Masonry, concrete or aerated concrete or lightweight partition walls with steel or wooden pillars
Max. seal dimensions	970 x 1200 mm
Collars	Manschettmontage beidseitig der Wand, Dim. gemäß Zertifikat

Assembly Instruction

FLAMRO Combi Seal EN EI 90 / EI 120

Approval No: ETA - 13/0756

Use in floors according to ETA-13/0756

Installations (floor)

Cable	Max. Ø (mm)	Fire resistance duration	Additional measures	Insulation (mm)	1. Support (mm)
Sheathed cables	80	EI 120 / E 120	BMA	≥ 250	≤ 250
Cables	21	EI 120 / E 120	BMA	≥ 250	≤ 250
Cable bundles	100	EI 120 / E 120	BMA	≥ 250	≤ 250

Electric installation pipes (EIR)	Max. Ø (mm)	Fire resistance duration	Additional measures	Insulation (mm)	1. Support (mm)
EIR steel	16	EI 120 / E 120	BMA	≥ 250	≤ 250
EIR steel in bundle (up to 3 items)	16 - 25	EI 120 / E 120	BMA	≥ 250	≤ 250
EIR plastic	16	EI 120 / E 120	BMA	≥ 250	≤ 250
EIR plastic in bundle (up to 3 items)	16 - 25	EI 120 / E 120	BMA / 2x UBB	≥ 250	≤ 250

Combustible pipes	Max. Ø (mm)	Fire resistance duration	Additional measures	Wall thickness (mm)	Insulation (mm)	1. Support (mm)
PVC-U	32	EI 120 / E 120	Variant N II A	1.8 - 5.6		≤ 500
PVC-U	40	EI 120 / E 120	Variant N II A	1.8 - 5.6		≤ 500
PVC-U	50	EI 120 / E 120	Variant N II A	1.8 - 5.6		≤ 500
PVC-U	63	EI 120 / E 120	Variant N II A	1.8 - 8.2		≤ 500
PVC-U	75	EI 120 / E 120	Variant N II A	1.8 - 8.2		≤ 500
PVC-U	90	EI 120 / E 120	Variant N II A	1.8 - 10.0		≤ 500
PVC-U	110	EI 120 / E 120	Variant N II A	1.8 - 12.3		≤ 500
PVC-U	125	EI 120 / E 120	Variant N II A	3.2 - 11.9		≤ 500
PVC-U	140	EI 120 / E 120	Variant N II A	3.2 - 11.9		≤ 500
PVC-U	160	EI 120 / E 120	Variant N II A	3.2 - 11.9		≤ 500
PVC-U	25	EI 120 / E 120	AF / BMA	1.5 - 2.8	20 (U/C)	≤ 500
PVC-U	32 - 75	EI 120 / E 120	AF / BMA	1.8 - 5.6	25 (U/C)	≤ 500
PE-HD	32	EI 120 / E 120	Variant N II A	1.8 - 4.6		≤ 500
PE-HD	40	EI 120 / E 120	Variant N II A	1.8 - 4.6		≤ 500
PE-HD	50	EI 120 / E 120	Variant N II A	1.8 - 4.6		≤ 500
PE-HD	63	EI 120 / E 120	Variant N II A	2.7 - 6.7		≤ 500
PE-HD	75	EI 120 / E 120	Variant N II A	2.7 - 6.7		≤ 500
PE-HD	90	EI 120 / E 120	Variant N II A	2.7 - 8.1		≤ 500
PE-HD	110	EI 120 / E 120	Variant N II A	2.7 - 10.0		≤ 500
PE-HD	125	EI 120 / E 120	Variant N II A	4.0 - 14.6		≤ 500
PE-HD	140	EI 120 / E 120	Variant N II A	4.0 - 14.6		≤ 500
PE-HD	160	EI 120 / E 120	Variant N II A	4.0 - 14.6		≤ 500
PE-HD	20 - 25	EI 120 / E 120	AF / BMA	1.9 - 2.3	20 (U/C)	≤ 500

Assembly Instruction

FLAMRO Combi Seal EN EI 90 / EI 120

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PE-HD	32 - 75	EI 120 / E 120	AF / BMA	1.9 - 6.8	25 (U/C)	≤ 500
PP	25	EI 120 / E 120	AF / BMA	2.3	20 (U/C)	≤ 500

Non-combustible pipes	Max. Ø (mm)	Fire resistance duration	Additional measures	Wall thickness (mm)	Insulation (mm)	1. Support (mm)
Copper, steel, stainless steel	25	EI 120 / E 120	ProRox PS 960 / BMA	≥ 1000 / 100	30 (C/U)	≤ 500
Copper	> 25 - 88,9	EI 120 / E 120	ProRox PS 960 / BMA	≥ 1000 / 100	40 (C/U)	≤ 500
Steel, stainless steel	> 25 - 168,3	EI 120 / E 120	ProRox PS 960 / BMA	≥ 1000 / 100	40 (C/U)	≤ 500

Non-combustible pipes with AF / Armaflex	Max. Ø (mm)	Fire resistance duration	Additional measures	Wall thickness (mm)	Insulation (mm)	1. Support (mm)
Copper, steel, stainless steel	8	EI 120 / E 120	AF / BMA	≥ 925 / 100	16 (C/U)	≤ 500
Copper, steel, stainless steel	> 8 - 15	EI 120 / E 120	AF / BMA	≥ 925 / 100	19 (C/U)	≤ 500
Copper, steel, stainless steel	> 15 - 25	EI 120 / E 120	AF / BMA	≥ 925 / 100	20 (C/U)	≤ 500
Copper, steel, stainless steel	> 25 - 28	EI 120 / E 120	AF / BMA	≥ 925 / 100	25 (C/U)	≤ 500
Copper, steel, stainless steel	> 28 - 88,9	EI 90 / E 120	AF / BMA	≥ 925 / 100	25 (C/U)	≤ 500
Steel, stainless steel	> 88,9 - 168,3	EI 90 / E 120	AF / BMA	≥ 925 / 100	26 (C/U)	≤ 500

Assembly Instruction

FLAMRO Combi Seal EN EI 90 / EI 120

Approval No: ETA - 13/0756

Installation distances (floor)

Installations distances (mm)	to component reveal above	to component reveal sideways	to component reveal below	to a parallel cable layer, tray, ladder above	to a sideways cable layer, tray, ladder	to outer sheath of combustible pipes (with Variant N II A)	to non-combustible pipes (outer sheath ProRox)	to non-combustible pipes (outer sheath AF/Armaflex)	to EIR made from steel (up to 3 items with BMA)	to EIR made from plastic (up to 3 items with UBB)	to EIR made from plastic (bundle with Variant N II A)
From cables	25	0	0	0	0	100	100	100	72	72	100
From cable layers, routes, trays, ladders	25	0	0	0	0	100	100	100			
From EIR steel (up to 3 items with BMA)	0	0	0	0	0	100	100	100	0	0	63
From EIR plastic (up to 3 pieces with UBB)	0	0	0	0	0	100	100	100	0	0	63
From EIR plastic (bundle with Variant N II A)	0	0	0	72	72	100	100	100	63	63	63
From combustible pipes (with Variant N II A)	55	55	100	100	100	100	100	100	100	100	100
From outer sheath ProRox Insulation non-combustible pipes	0	0	0	100	100	100	100	100	100	100	w100
From other sheath AF/Armaflex Insulation non-combustible pipes	0	0	0	100	100	100	100	100	100	100	100

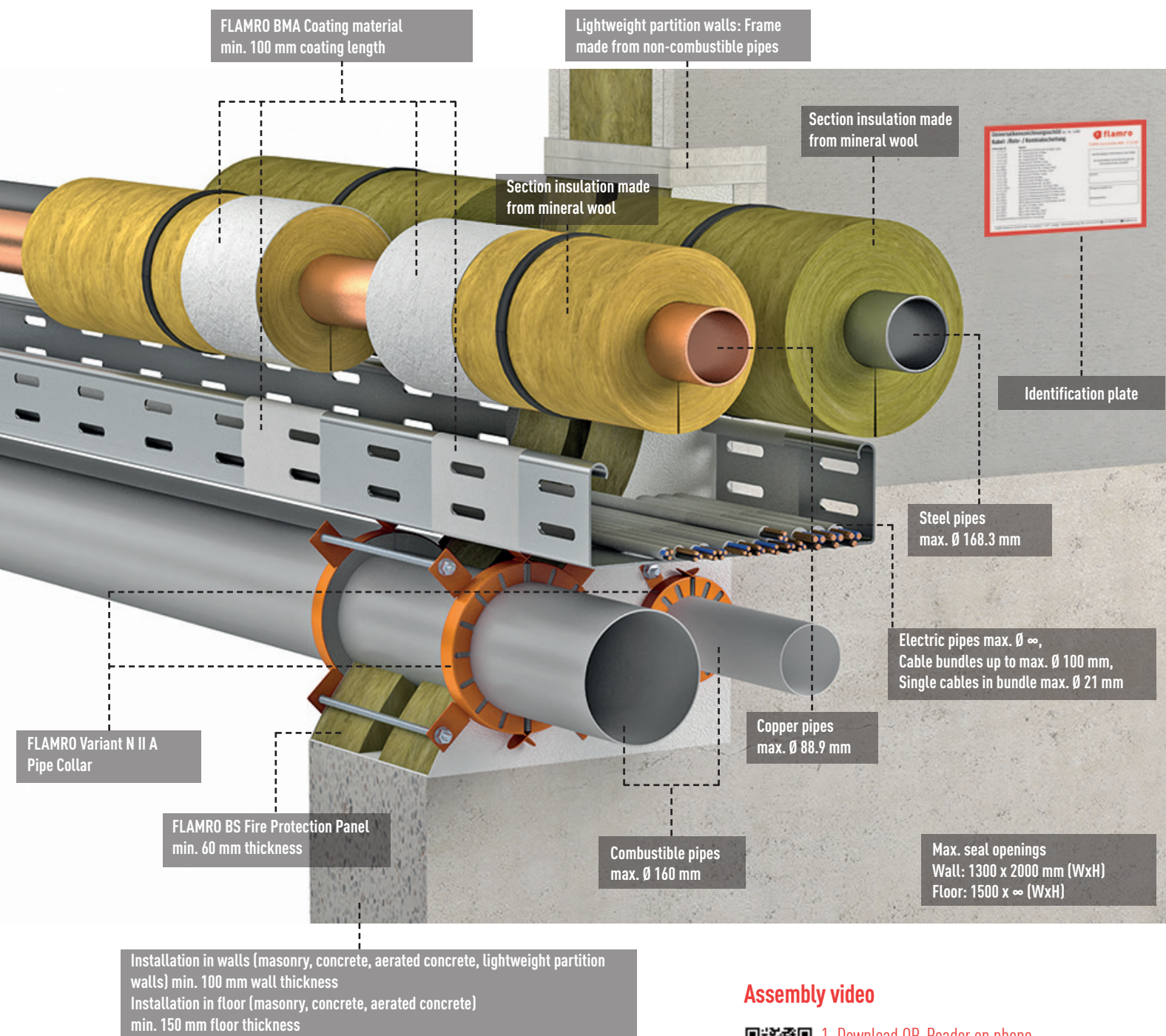
Specifications (floor)

Insulation thickness	150 mm
Min. floor thickness	150 mm
Floors consisting of	Masonry, concrete or aerated concrete or lightweight partition walls with steel or wooden pillars
Max. seal dimensions	970 Höhe (Berechnung der Breite gemäß Anhang D-2 gemäß ETA-13/0756)
Collars	Collar installation on underside of ceiling, dim. according to certificate

Assembly Instruction

FLAMRO Combi Seal S90

Approval No: Z-19.15-1279



Assembly video



1. Download QR-Reader on phone
2. Scan QR-Code
3. Watch video

Assembly Instruction

FLAMRO Combi Seal S90

Approval No: Z-19.15-1279

Use in walls according to Z-19.15-1279

Installations (wall)

Cable	Max. Ø (mm)	Additional measures	Coating (mm)	1. Support (mm)
Cables	21	BMA	≥ 100	≤ 100
Sheathed Cables	100	BMA	≥ 100	≤ 100

Electric installation pipes (EIR)	Max. Ø (mm)	Additional measures	Coating (mm)	1. Support (mm)
EIR	15	BMA	≥ 100	≤ 100
RZD bundle pipes (up to 7 items)	29	BMA	≥ 100	≤ 100
RZD bundle pipes (up to 5 items)	33	BMA	≥ 100	≤ 100

Combustible pipes	Max. Ø (mm)	Additional measures	Wall thickness (mm)	1. Support (mm)
PVC-U, PVC-HI, PVC-C, PP	32	BMA	1.8 - 11.9	≤ 100
PVC-U, PVC-HI, PVC-C, PP	50	BMA	1.8 - 11.9	≤ 100
PVC-U, PVC-HI, PVC-C, PP	110	BMA	1.8 - 11.9	≤ 100
PVC-U, PVC-HI, PVC-C, PP	160	BMA	1.8 - 11.9	≤ 100
PE-HD, LDPE, PP, ABS, ASA, PE-X, PB	32	BMA	2.7 - 14.6	≤ 100
PE-HD, LDPE, PP, ABS, ASA, PE-X, PB	50	BMA	2.7 - 14.6	≤ 100
PE-HD, LDPE, PP, ABS, ASA, PE-X, PB	110	BMA	2.7 - 14.6	≤ 100
PE-HD, LDPE, PP, ABS, ASA, PE-X, PB	160	BMA	3.9 - 14.6	≤ 100
Sewer pipes with mineral reinforced PP	50	BMA	1.8	≤ 100
Sewer pipes with mineral reinforced PP	78	BMA	1.9	≤ 100
Sewer pipes with mineral reinforced PP	110	BMA	2.7	≤ 100
Plastic composite pipes with up to 150 µm thick aluminium layer	32	BMA	5.4	≤ 100
Plastic composite pipes with up to 150 µm thick aluminium layer	40	BMA	6.7	≤ 100
Plastic composite pipes with up to 150 µm thick aluminium layer	50	BMA	8.4	≤ 100

Assembly Instruction

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Non-combustible pipes	Max. Ø (mm)	Additional measures	Coating (mm)	Insulation (mm)	1. Support (mm)
Steel, stainless steel, cast	≤ 50	Mineral wool / BMA	≥ 500 / 100	40	≤ 100
Steel, stainless steel, cast	≤ 50	Mineral wool / BMA	≥ 1000 / 100	40	≤ 100
Steel, stainless steel, cast	≥ 50 ≤ 168,3	Mineral wool / BMA	≥ 1000 / 100	40	≤ 100
Steel, stainless steel, cast	≤ 50	Mineral wool / BMA	≥ 500 / 100	30	≤ 100
Steel, stainless steel, cast	≥ 50 ≤ 168,3	Mineral wool / BMA	≥ 500 / 100	30	≤ 100
Copper	≤ 88,9	Mineral wool / BMA	≥ 1000 / 100	40	≤ 100
Copper	≤ 88,9	Mineral wool / BMA	≥ 500 / 100	30	≤ 100

Installation (wall)

Installation distances (mm)	to component reveal above	to component reveal sideways	to component reveal below	to a parallel cable layer; tray ladder above	to a sideways cable layer; tray ladder	to outer sheath of combustible pipes (with Variant N II A)	to outer sheath of combustible pipes (outer sheath mineral wool)
From cables / cable trays	50	0	0	50	0	100	100
From combustible pipes (with Variant N II A)	0	0	0	50	50	50	100
From outer sheath mineral wool Insulation non-combustible pipes	0	0	0	100	100	100	0

Specifications (wall)

Insulation thickness	120 mm
Min. wall thickness	100 mm
Walls consisting of	masonry, concrete or aerated concrete or lightweight partition wall with steel pillars
Max. seal dimensions	1300 x 2000 mm (BxH)
Collars	Collar installation on both sides of wall, dim. according to certificate

Assembly Instruction

FLAMRO Combi Seal S90

Approval No: Z-19.15-1279

Use in floors according to Z-19.15-1279

Installations (ceiling)

Cable	Max. Ø (mm)	Additional measures	Coating (mm)	1. Support (mm)
Cables	21	BMA	≥ 100	≤ 100
Cable supporting constructions	100	BMA	≥ 100	≤ 100

Electric installation pipes (EIR)	Max. Ø (mm)	Additional measures	Coating (mm)	1. Support (mm)
EIR	15	BMA	≥ 100	≤ 100
RZD bundle pipes (up to 7 items.)	29	BMA	≥ 100	≤ 100
RZD bundle pipes (up to 5 items.)	33	BMA	≥ 100	≤ 100

Combustible pipes	Max. Ø (mm)	Additional measures	Coating (mm)	1. Support (mm)
PVC-U, PVC-HI, PVC-C, PP	32	BMA	1.8 - 11.9	≤ 100
PVC-U, PVC-HI, PVC-C, PP	50	BMA	1.8 - 11.9	≤ 100
PVC-U, PVC-HI, PVC-C, PP	110	BMA	1.8 - 11.9	≤ 100
PVC-U, PVC-HI, PVC-C, PP	160	BMA	1.8 - 11.9	≤ 100
PE-HD, LDPE, PP, ABS, ASA, PE-X, PB	32	BMA	2.7 - 14.6	≤ 100
PE-HD, LDPE, PP, ABS, ASA, PE-X, PB	50	BMA	2.7 - 14.6	≤ 100
PE-HD, LDPE, PP, ABS, ASA, PE-X, PB	110	BMA	2.7 - 14.6	≤ 100
PE-HD, LDPE, PP, ABS, ASA, PE-X, PB	160	BMA	3.9 - 14.6	≤ 100
Sewer pipes with mineral reinforced PP	50	BMA	1.8	≤ 100
Sewer pipes with mineral reinforced PP	78	BMA	1.9	≤ 100
Sewer pipes with mineral reinforced PP	110	BMA	2.7	≤ 100
Plastic composite pipes with up to 150 µm thick aluminium layer	32	BMA	5.4	≤ 100
Plastic composite pipes with up to 150 µm thick aluminium layer	40	BMA	6.7	≤ 100
Plastic composite pipes with up to 150 µm thick aluminium layer	50	BMA	8.4	≤ 100

Assembly Instruction

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Non-combustible pipes	Max. Ø (mm)	Additional measures	Coating (mm)	Insulation (mm)	1. Support (mm)
Steel, stainless steel, cast	≤ 50	Mineral wool / BMA	≥ 500 / 100	40	≤ 100
Steel, stainless steel, cast	≤ 50	Mineral wool / BMA	≥ 1000 / 100	40	≤ 100
Steel, stainless steel, cast	≥ 50 ≤ 168.3	Mineral wool / BMA	≥ 1000 / 100	40	≤ 100
Steel, stainless steel, cast	≤ 50	Mineral wool / BMA	≥ 500 / 100	30	≤ 100
Steel, stainless steel, cast	≥ 50 ≤ 168.3	Mineral wool / BMA	≥ 500 / 100	30	≤ 100
Copper	≤ 88.9	Mineral wool / BMA	≥ 1000 / 100	40	≤ 100
Copper	≤ 88.9	Mineral wool / BMA	≥ 500 / 100	30	≤ 100

Installation distances (floor)

Installations distances (mm)	to component reveal above	to component reveal side	to component reveal beneath	to a parallel cable layer, tray, ladder above	to a sideways cable layer, tray, ladder	to outer sheath of combustible pipes (with Variant N II A)	to outer sheath of combustible pipes (mineral wool)
From cables / cable trays	50	0	0	50	0	100	100
From combustible pipes (with Variant N II A)	0	0	0	50	50	50	100
From outer sheath mineral wool Insulation non-combustible pipes	0	0	0	100	100	100	0

Specifications (floor)

Insulation thickness	120 mm
Min. wall thickness	150 mm
Ceilings consisting of	Masonry, concrete or aerated concrete
Max. seal dimensions	1500 x ∞ mm (WxH)
Collars	Collar installation on underside of ceiling, dim. according to certificate