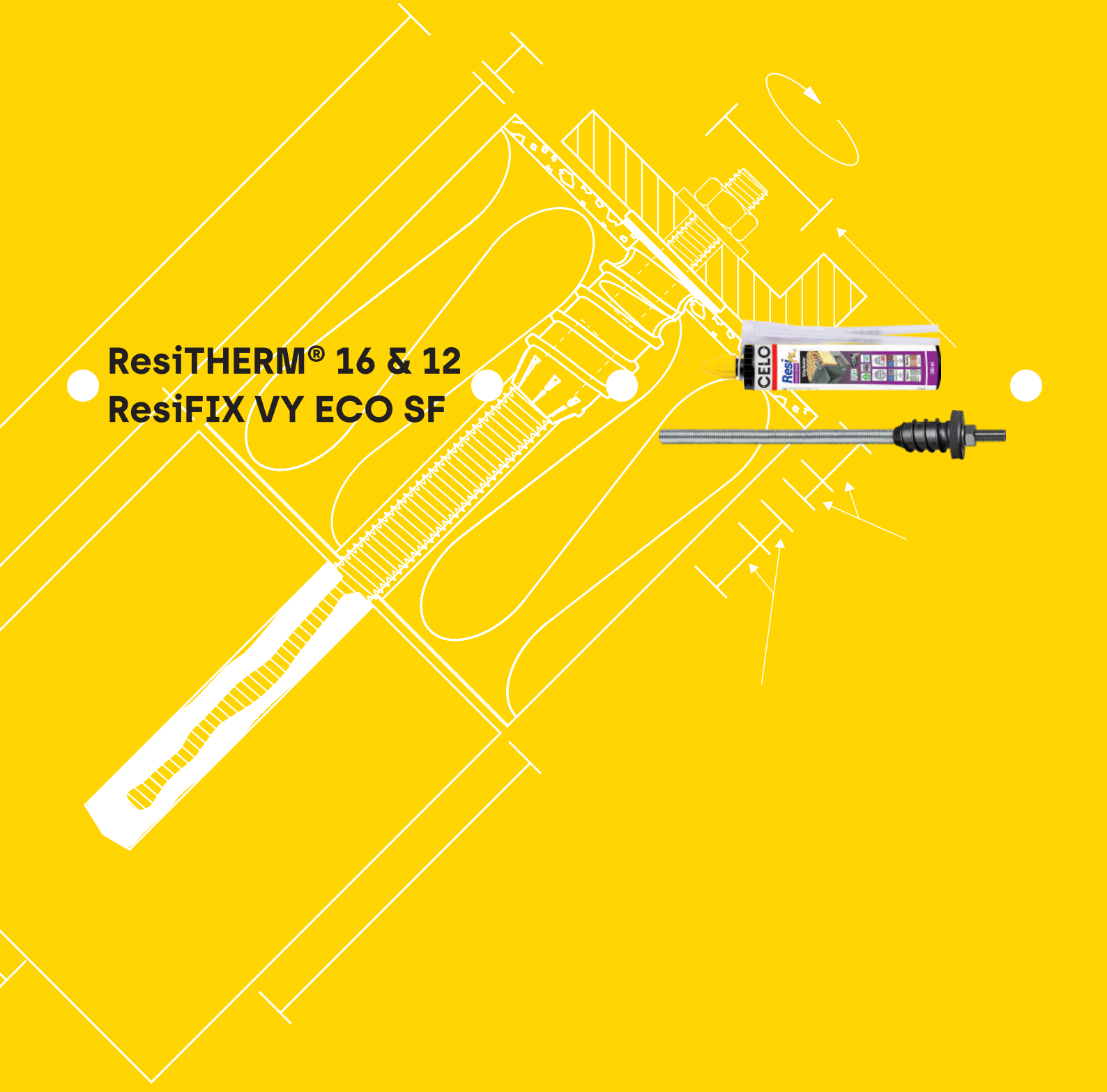
CELO

ResiTHERM® 16 & 12
ResiFIX VY ECO SF



Distance mounting system ResiTHERM® 16 & 12

Advantages

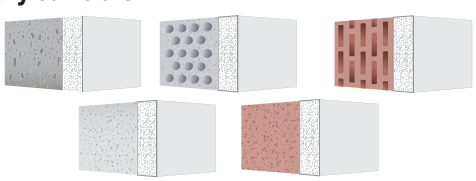
ResiTHERM® 12

ResiTHERM® 16

- The perfect solution for mounting heavy loads on insulated facades without thermal bridges
- Suitable for concrete, aerated concrete and masonry made of perforated and solid bricks
- Wide range of applications, such as awnings, canopies, french. balconies, satellite dishes, air conditioners, etc.
- High application flexibility: One set for all insulation types and thicknesses from 60-300 mm in concrete and 60-250 mm in perforated bricks (ResiTHERM® 16), from 60-220 mm in concrete and 60-160 mm in perforated bricks (ResiTHERM® 12)
- Time and cost savings due to simple and quick installation
- Reliable, durable, ETA-tested fixing
- Thermal separation module eliminates heat bridges efficiently and protects against mould and heat loss
- Pre-assembled, weather resistant EPDM sealing ensures safe sealing against driving rain up to wind force 11 (violent storm) and up to 3 mm displacement, watertightness based on DIN EN 1027
- No risk of corrosion due to high-quality materials such as stainless steel A4 and glass-fibre reinforced nylon

Suitable building materials

Very suitable



- Concrete
- Solid brick
- Solid sand-lime brick
- Lightweight solid concrete blocks
- Aerated concrete
- Hollow brick
- Hollow sand-lime brick
- Lightweight hollow concrete blocks
- Natural stone (risk of discolouration)

Approvals and certificates

ETA

European Technical Assessment Distance mounting system RTH 16 & 12 for concrete and masonry

BEST NYLON QUALITY

MADE IN GERMANY

A4 STAINLESS STEEL

HALOGEN FREE

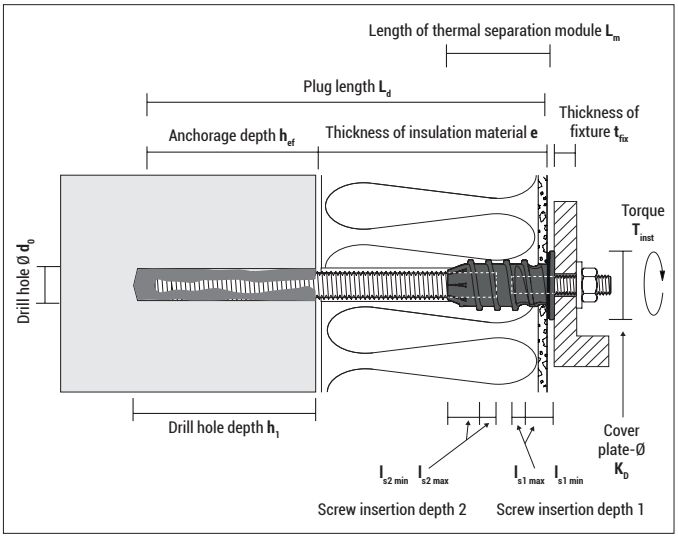
PfB

Tested for driving rain tightness by the Prüfzentrum für Bauelemente (Germany)

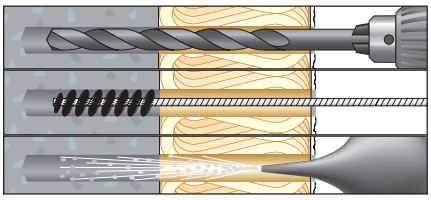
GERMAN DESIGN AWARD SPECIAL 2023

ResiTHERM® 16

Mounting

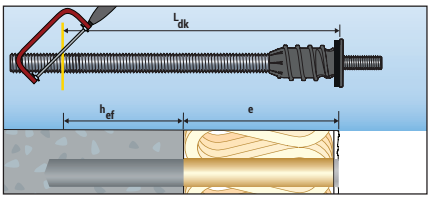


Monting in concrete

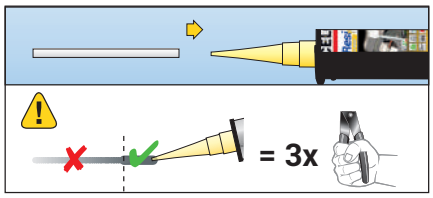


1. Drill a hole: Drill hole depth + insulation thickness

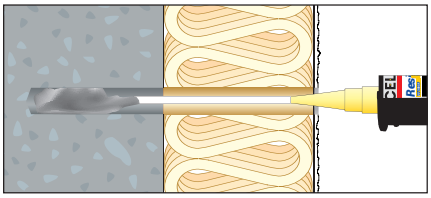
2. Clean the drill hole properly according to ETA:
   4x blow - 4x brush - 4x blow



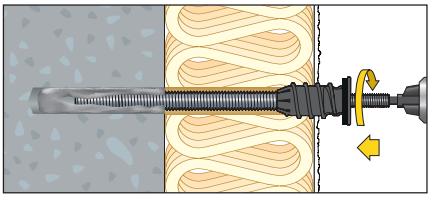
3. Cut the ResiTHERM® 16 or 12 to length:
   After determining the correct length, cut the threaded rod to length with a metal saw or similar.



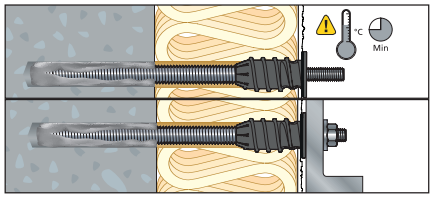
4. Attach the mixing nozzle extension MDV to the mixing nozzle MD.
   Squeeze out the injection mortar until the mortar has a uniform grey mixing colour - discard the pre-run of the first at least 3 strokes.



5. Fill at least 2/3 of the drill hole with composite mortar (start from the beginning). For number of strockes see mounting instructions at **www.celofixings.com**.
   Important: Follow the installation instructions and processing time of the ResiFIX injection mortar used in accordance with the approval/assessment.

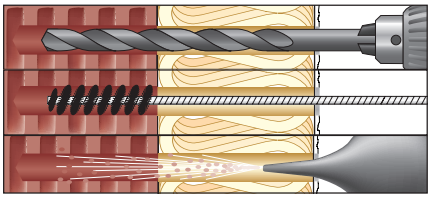


6. Screw in the ResiTHERM® 16 or 12 with the hexagon bit (included) and a cordless screwdriver until the seal is pressed against the plaster.
   Note: The thermal separation module drills itself through the insulation (additional sealing is not necessary, unless the plaster is very rough)

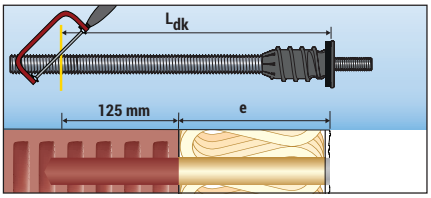


7. Observe curing time of the injection system, see cartridge label of the ResiFIX injection mortar.
8. Afterwards, the attachment can be mounted, max. torque T_{inst} = 25 Nm (ResiTHERM® 16) or 19 Nm (ResiTHERM® 12)

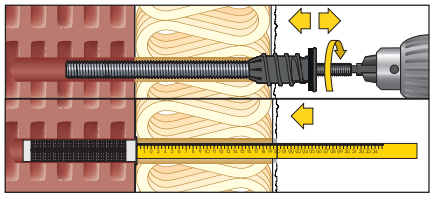
Mounting in masonry (hollow brick)



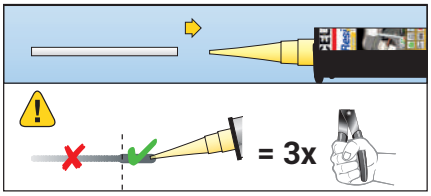
1. Drill a hole: Drill hole diameter = 20 mm.
   Drill hole depth ≥ 140 mm + insulation thickness (incl. plaster). Observe the drilling procedure of the approval/ assessment of ResiFIX injection mortar.
   Perforated bricks and aerated concrete: Rotary drilling - without impact
2. Clean the drill hole properly according to ETA:
   2x blow - 2x brush - 2x blow



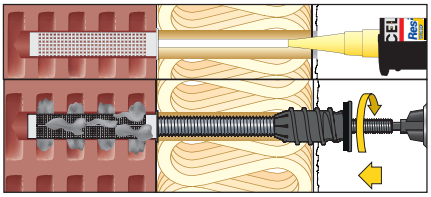
3. Cut the ResiTHERM® 16 or 12 to length:
   Correct length L_{dk}: Anchorage depth in plastic sleeve (125 mm) + insulation thickness e (incl. plaster)
   After determining the correct length, cut the threaded rod to length with a metal saw or similar.



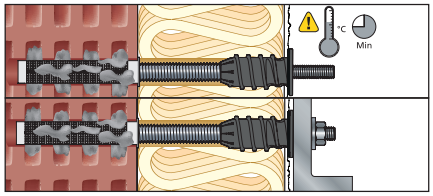
4. Enlarge the opening in the plaster for the collar of the plastic sleeve to 26 mm. To do this, briefly screw the thermal separation module in and out through the plaster for only approx. 2 thread turns or ream the plaster with a drill or drill with a bigger 26 mm drill.
5. Push the plastic sleeve into the drill hole with the help of a folding ruler or similar.



6. Attach the mixing nozzle extension MDV to the mixing nozzle MD.
   Squeeze out the injection mortar until the mortar has a uniform grey mixing colour - discard the pre-run of the first at least 3 strokes.



7. Fill the plastic sleeve completely with composite mortar (start from the beginning). For number of strockes see mounting instructions at **www.celofixings.com**
   Important: Follow the installation instructions and processing time of the ResiFIX injection mortar used in accordance with the approval/assessment.
8. Screw in the ResiTHERM® 16 or 12 with the hexagon bit (included) and a cordless screwdriver until the seal is pressed against the plaster.
   Note: The thermal separation module drills itself through the insulation (additional sealing is not necessary, unless the plaster is very rough)

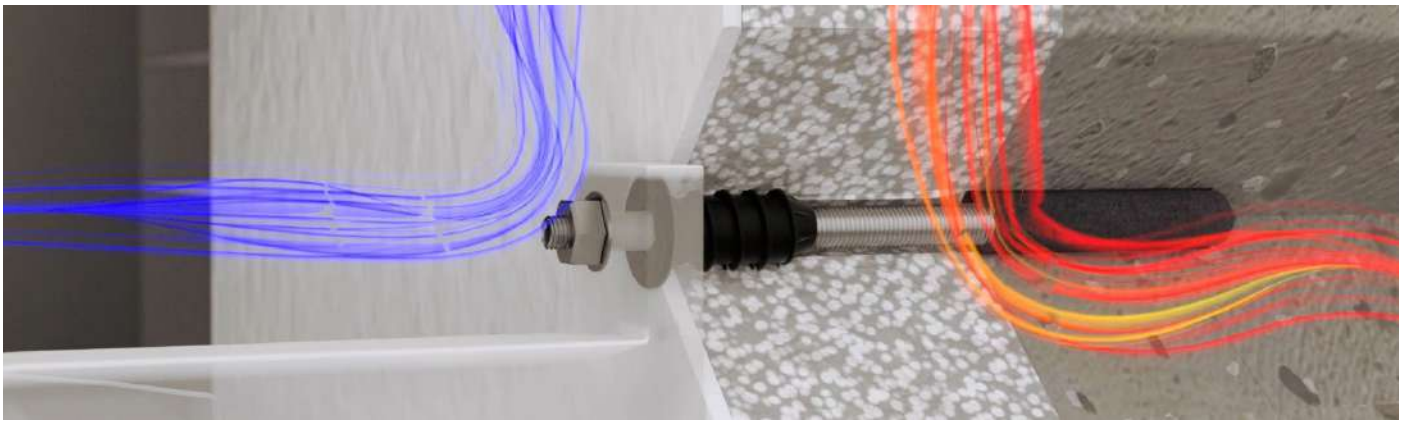


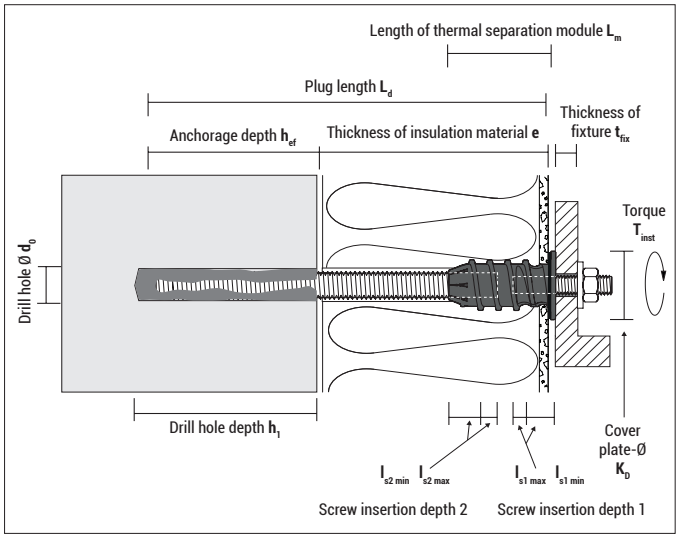
9. Observe curing time of the injection system, see cartridge label of the ResiFIX injection mortar.
10. Afterwards, the attachment can be mounted, max. torque T_{inst} = 25 Nm (ResiTHERM® 16) or 19 Nm (ResiTHERM® 12)
    (Observe possible deviating max. installation torque in the ETA of the injection system used)

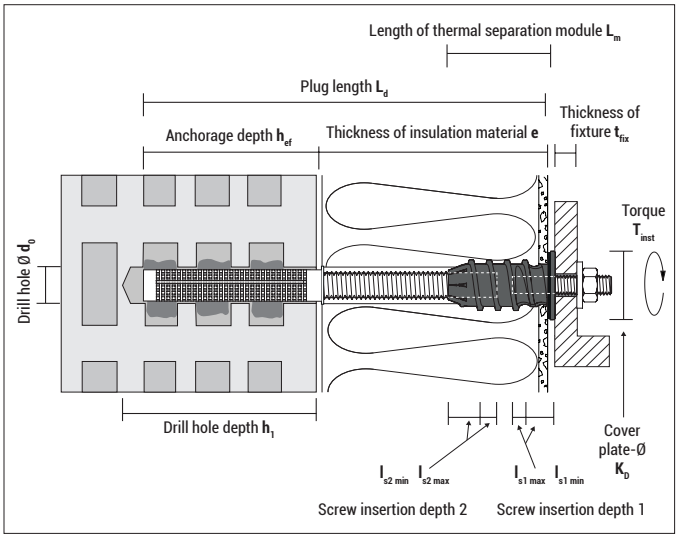
ResiTHERM® 16 & 12 technical data

Vinylester VY ECO SF (styrene free)

Type	Art-No	Content [ml]	Mixing nozzles included [pcs]	Shelf life [months]	ETA	[pcs]
VY ECO 300 SF	300VYECOSF	300	2	18	●	12



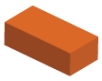




Installation parameters			Installation in concrete		Installation in aerated concrete/solid brick		Installation in perforated brick	
			ResiTHERM® 16	ResiTHERM® 12	ResiTHERM® 16	ResiTHERM® 12	ResiTHERM® 16	ResiTHERM® 12
Plug length	L_d	[mm]	385 [1]	295 [1]	385 [1]	295 [1]	385 [1]	295 [1]
Thickness of insulation material (incl. plaster)	e	[mm]	**60 - max. 300**	**60 - max. 220**	**60 - max. 280**	**60- max. 190**	**60 - max. 250**	**60 - max. 160**
Length of thermal separation module (to lower edge of cover plate)	L_m	[mm]	60	60	60	60	60	60
Diameter cover plate	K_D	[mm]	42	42	42	42	42	42
Threaded rod		[mm]	M16 x 350 [1]	M12 x 260 [1]	M16 x 350 [1]	M12 x 260 [1]	M16 x 350[1]	M12 x 260 [1]
Insertion depth of threaded stud	$l_{s2\,min-max}$	[mm]	24-27	24-27	24-27	24-27	24-27	24-27
Drill hole diameter	d_0	[mm]	18	14	18	14	20	20
Drill hole depth	$h_1 \geq$	[mm]	90 + e	80 + e	110 + e	110 + e	140 + e	140 + e
Anchorage depth	h_{ef}	[mm]	80	70	100	100	125	125
Plastic sleeve SH			–	–	–	–	20-130	20-130
Connecting thread		[mm]	M12 [3]	M12 [3]	M12 [3]	M12 [3]	M12 [3]	M12 [3]
Insertion depth of M12 threaded stud	$l_{s1\,min-max}$	[mm]	30-34	30-34	30-34	30-34	30-34	30-34
Thickness of fixture	$t_{fix} \leq$	[mm]	24 [2]	24 [2]	24 [2]	24 [2]	24 [2]	24 [2]

[1] Threaded rod has to be cut as needed.
For further technical values, see assessment of the ResiFIX injection system used.
[2] When using the threaded stud with length L=70 mm. Otherwise, a longer threaded stud or a longer metric screw can be used.
[3] Alternative: Threaded stud adapter M12/M10, length 70 mm, stainless steel A4, Art-No X70M12M10ECT4

Permissible tension load and pressure load ResiTHERM® 16 [1] at 24°C/40°C [2]

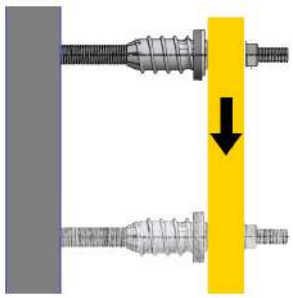
M16 anchor rod in 8.8	applied injection mortar ResiFIX VY ECO SF					
	acc. ETA-20/0066	acc. ETA-20/0065				
Base material	 Concrete C20/25 [3]	 Solid sand-lime brick KS KS28-2,0 [3]	 Solid brick MZ 20-2,0 [1]	 Hollow sand-lime brick KSL 12-1,4 [4]	 Hollow brick HLZ 12-1,25 [4]	 Aerated concrete AAC 2 [3]
Insulation thickness e	Permissible tension load N_{per}					
	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
60-300 mm	4,57	1,57	1,29	1,00	1,00	0,54
Insulation thickness e	Permissible pressure load P_{per}					
	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
60 - 300 mm	5,14	1,57	1,29	1,00	1,00	0,54
Min. anchorage depth h_{ef}	80	100	100	130	130	100

[1] Loads include the partial safety factors of the material given in the ETA as well as a partial safety factor for the actions of γF = 1.4.
[2] For other temperature ranges see ETA-assessment.
[3] In full material the tension load resistance can be used also for the pressure load resistance.
[4] In hollow materials the pressure load resistance specified in the ETA can be applied, if the setting depth is deep enough to include minimum 5 webs with the injection mortar. If the setting depth is lower and does not include 5 webs, then the pressure load resistance must be reduced.

Permissible tension load and pressure load ResiTHERM® 12 [1] at 24°C/40°C [2]

M12 anchor rod in 8.8	applied injection mortar ResiFIX VY ECO SF					
	acc. ETA-20/0066	acc. ETA-20/0065				
Base material	 Concrete C20/25 [3]	 Solid sand-lime brick KS KS28-2,0 [3]	 Solid brick MZ 20-2,0 [1]	 Hollow sand-lime brick KSL 12-1,4 [4]	 Hollow brick HLZ 12-1,25 [4]	 Aerated concrete AAC 2 [3]
Insulation thickness e	Permissible tension load N_{per}					
	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
60 - 220 mm	5,14	1,86	0,57	1,00	1,00	0,54
Insulation thickness e	Permissible pressure load P_{per}					
	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
60 - 160 mm	5,14	1,86	0,57	1,00	1,00	0,54
161 - 220 mm	2,86	1,86	0,57	1,00	1,00	0,54
Min. anchorage depth h_{ef}	70	100	100	130	130	100

[1] Loads include the partial safety factors of the material given in the ETA as well as a partial safety factor for the actions of γF = 1.4.
[2] For other temperature ranges see ETA-assessment.
[3] In full material the tension load resistance can be used also for the pressure load resistance.
[4] In hollow materials the pressure load resistance specified in the ETA can be applied, if the setting depth is deep enough to include minimum 5 webs with the injection mortar. If the setting depth is lower and does not include 5 webs, then the pressure load resistance must be reduced.



Maximum shear loads V [1] at max. 3 or 5 mm displacement per ResiTHERM® if the free outer end of the ResiTHERM® 16 & 12 is not freely rotatable (e.g. connected double fixing) at 24°C/40°C [2]

Not free rotatable anchor rod M16 in 8.8	acc. ETA-20/0066	applied injection mortar ResiFIX VY ECO SF  acc. ETA-20/0065				
Base material	Concrete C20/25 	Solid sand-lime brick KS KS28-2,0 	Solid brick MZ 20-2,0 	Hollow sand-lime brick KSL 12-1,4 	Hollow brick HLZ 12-1,25 	Aerated concrete AAC 2 

if displacement is 3 mm

Insulation thickness e [mm]	Maximum shear load V [kN]											
	ResiTHERM®		ResiTHERM®		ResiTHERM®		ResiTHERM®		ResiTHERM®		ResiTHERM®	
	16	12	16	12	16	12	16	12	16	12	16	12
60	2,14	1,43	1,71	1,43	2,14	1,43	1,43	1,43	2,14	1,43	1,25	0,89
80	2,14	1,43	1,71	1,43	2,14	1,43	1,43	1,43	2,14	1,43	1,25	0,89
100	2,14	1,43	1,71	1,43	2,14	1,43	1,43	1,43	2,14	1,43	1,25	0,89
120	1,84	1,01	1,71	1,01	1,84	1,01	1,43	1,01	1,84	1,01	1,25	0,89
140	1,49	0,85	1,49	0,85	1,49	0,85	1,43	0,85	1,49	0,85	1,25	0,85
160	1,15	0,69	1,15	0,69	1,15	0,69	1,15	0,69	1,15	0,69	1,15	0,69
180	0,80	0,54	0,80	0,54	0,80	0,54	0,80	0,54	0,80	0,54	0,80	0,54
200	0,71	0,38	0,71	0,38	0,71	0,38	0,71	0,38	0,71	0,38	0,71	0,38
220	0,61	0,22	0,61	0,22	0,61	0,22	0,61	0,22	0,61	0,22	0,61	0,22
240	0,51	–	0,51	–	0,51	–	0,51	–	0,51	–	0,51	–
250	0,47	–	0,47	–	0,47	–	0,47	–	0,47	–	0,47	–
260	0,42	–	0,42	–	0,42	–	0,42	–	0,42	–	0,42	–
280	0,32	–	0,32	–	0,32	–	0,32	–	0,32	–	0,32	–
300	0,22	–	0,22	–	0,22	–	0,22	–	0,22	–	0,22	–

if displacement is 5 mm

Insulation thickness e [mm]	Maximum shear load V [kN]											
	ResiTHERM®		ResiTHERM®		ResiTHERM®		ResiTHERM®		ResiTHERM®		ResiTHERM®	
	16	12	16	12	16	12	16	12	16	12	16	12
60	2,14	1,43	1,71	1,43	2,14	1,43	1,43	1,43	2,14	1,43	1,25	0,89
80	2,14	1,43	1,71	1,43	2,14	1,43	1,43	1,43	2,14	1,43	1,25	0,89
100	2,14	1,43	1,71	1,43	2,14	1,43	1,43	1,43	2,14	1,43	1,25	0,89
120	2,14	1,43	1,71	1,43	2,14	1,43	1,43	1,43	2,14	1,43	1,25	0,89
140	2,14	1,29	1,71	1,29	2,14	1,29	1,43	1,29	2,14	1,29	1,25	0,89
160	1,76	1,06	1,71	1,06	1,76	1,06	1,43	1,06	1,76	1,06	1,25	0,89
180	1,27	0,82	1,27	0,82	1,27	0,82	1,27	0,82	1,27	0,82	1,25	0,82
200	1,12	0,59	1,12	0,59	1,12	0,59	1,12	0,59	1,12	0,59	1,12	0,59
220	0,97	0,35	0,97	0,35	0,97	0,35	0,97	0,35	0,97	0,35	0,97	0,35
240	0,82	–	0,82	–	0,82	–	0,82	–	0,82	–	0,82	–
250	0,74	–	0,74	–	0,74	–	0,74	–	0,74	–	0,74	–
260	0,67	–	0,67	–	0,67	–	0,67	–	0,67	–	0,67	–
280	0,51	–	0,51	–	0,51	–	0,51	–	0,51	–	0,51	–
300	0,36	–	0,36	–	0,36	–	0,36	–	0,36	–	0,36	–

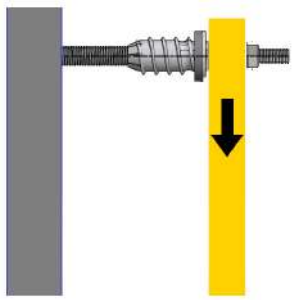
Min. thickness of structural part	h_{min} [mm]	116	100	130		130		195	175	195	175	130
Min. edge distance	c_{min} [mm]	80	60	150		150		120		120		150
Min. spacing	s_{min} [mm]	80	60	300		300		240		238		300
Torque	T_{inst} [Nm]	25[3]	19[3]	20[3]	19[3]	10[3]		8[3]		6[3]		2[3]

All values are based on ResiFIX VY ECO SF

[1] Intermediate values can be interpolated/ Values are limited due to the maximum shear load capacity.

[2] For other temperature ranges see ETA-assessment.

[3] Depending on the base material, see ETA of ResiFIX injection mortar



Maximum shear loads V [1] at max. 3 or 5 mm displacement per ResiTHERM® if the free outer end of the ResiTHERM® 16 & 12 is freely rotatable at 24°C/40°C [2]

Free rotatable anchor rod M16 in 8.8	acc. ETA-20/0066	applied injection mortar ResiFIX VY ECO SF acc. ETA-20/0065				
Base material	Concrete C20/25	Solid sand-lime brick KS KS28-2,0	Solid brick MZ 20-2,0	Hollow sand-lime brick KSL 12-1,4	Hollow brick HLZ 12-1,25	Aerated concrete AAC 2

if displacement is 3 mm

Insulation thickness e [mm]	Maximum shear load V [kN]											
	ResiTHERM®		ResiTHERM®		ResiTHERM®		ResiTHERM®		ResiTHERM®		ResiTHERM®	
	16	12	16	12	16	12	16	12	16	12	16	12
60	1,59	1,25	1,59	1,25	1,59	1,25	1,43	1,25	1,59	1,25	1,25	0,89
80	1,38	0,85	1,38	0,85	1,38	0,85	1,38	0,85	1,38	0,85	1,25	0,85
100	1,06	0,61	1,06	0,61	1,06	0,61	1,06	0,61	1,06	0,61	1,06	0,61
120	0,75	0,36	0,75	0,36	0,75	0,36	0,75	0,36	0,75	0,36	0,75	0,36
140	0,63	0,31	0,63	0,31	0,63	0,31	0,63	0,31	0,63	0,31	0,63	0,31
160	0,52	0,25	0,52	0,25	0,52	0,25	0,52	0,25	0,52	0,25	0,52	0,25
180	0,41	0,20	0,41	0,20	0,41	0,20	0,41	0,20	0,41	0,20	0,41	0,20
200	0,36	0,14	0,36	0,14	0,36	0,14	0,36	0,14	0,36	0,14	0,36	0,14
220	0,31	0,09	0,31	0,09	0,31	0,09	0,31	0,09	0,31	0,09	0,31	0,09
240	0,26	–	0,26	–	0,26	–	0,26	–	0,26	–	0,26	–
250	0,24	–	0,24	–	0,24	–	0,24	–	0,24	–	0,24	–
260	0,21	–	0,21	–	0,21	–	0,21	–	0,21	–	0,21	–
280	0,17	–	0,17	–	0,17	–	0,17	–	0,17	–	0,17	–
300	0,12	–	0,12	–	0,12	–	0,12	–	0,12	–	0,12	–

if displacement is 5 mm

Insulation thickness e [mm]	Maximum shear load V [kN]											
	ResiTHERM®		ResiTHERM®		ResiTHERM®		ResiTHERM®		ResiTHERM®		ResiTHERM®	
	16	12	16	12	16	12	16	12	16	12	16	12
60	1,86	1,43	1,71	1,43	1,86	1,43	1,43	1,29	1,86	1,43	1,25	0,89
80	1,86	1,35	1,71	1,35	1,86	1,35	1,43	1,29	1,86	1,35	1,25	0,89
100	1,66	0,96	1,66	0,96	1,66	0,96	1,43	0,96	1,66	0,96	1,25	0,89
120	1,19	0,56	1,19	0,56	1,19	0,56	1,19	0,56	1,19	0,56	1,19	0,56
140	1,00	0,48	1,00	0,48	1,00	0,48	1,00	0,48	1,00	0,48	1,00	0,48
160	0,82	0,40	0,82	0,40	0,82	0,40	0,82	0,40	0,82	0,40	0,82	0,40
180	0,64	0,31	0,64	0,31	0,64	0,31	0,64	0,31	0,64	0,31	0,64	0,31
200	0,56	0,23	0,56	0,23	0,56	0,23	0,56	0,23	0,56	0,23	0,56	0,23
220	0,49	0,15	0,49	0,15	0,49	0,15	0,49	0,15	0,49	0,15	0,49	0,15
240	0,42	–	0,42	–	0,42	–	0,42	–	0,42	–	0,42	–
250	0,38	–	0,38	–	0,38	–	0,38	–	0,38	–	0,38	–
260	0,34	–	0,34	–	0,34	–	0,34	–	0,34	–	0,34	–
280	0,27	–	0,27	–	0,27	–	0,27	–	0,27	–	0,27	–
300	0,19	–	0,19	–	0,19	–	0,19	–	0,19	–	0,19	–

Min. thickness of structural part	h_{min} [mm]	116	100	130		130		195	175	195	175	130
Min. edge distance	c_{min} [mm]	80	60	150		150		120		120		150
Min. spacing	s_{min} [mm]	80	60	300		300		240		238		300
Torque	T_{inst} [Nm]	25[3]	19[3]	20[3]	19[3]	10[3]		8[3]		6[3]		2[3]

All values are based on ResiFIX VY ECO SF

[1] Intermediate values can be interpolated/ Values are limited due to the maximum shear load capacity.

[2] For other temperature ranges see ETA-assessment.

[3] Depending on the base material, see ETA of ResiFIX injection mortar

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Small Things Matter

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