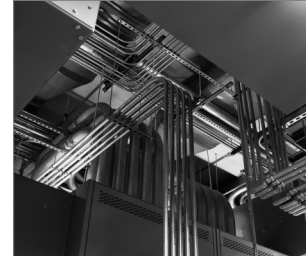


## R-FF1-N-K Nylon frame fixing with collar hex head - zinc plated

Universal frame fixing with collar and hex head screw for many applications



### Approvals and Reports

- ETA-12/0398



### Product information

#### Features and benefits

- Collared plug for fixing of hard materials (eg. steel)
- Specially-formulated nylon allows best performance installation for use in all base material categories according to ETAG 020 (A, B, C, D)
- Internal plug geometry designed to fit the screw head
- Plug design ensures multi-axis expansion

#### Applications

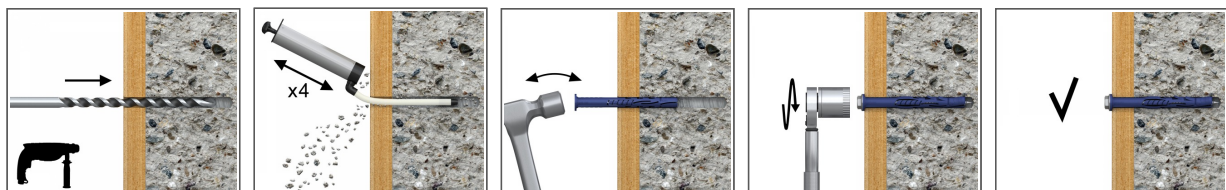
- Door and window frames
- Garage doors
- Gates
- Industrial doors
- Facade (substructures made of wood and metal)
- Wall cabinets
- Satellite dishes
- Shelves
- Handrails
- Cable trays

#### Base materials

##### Approved for use in:

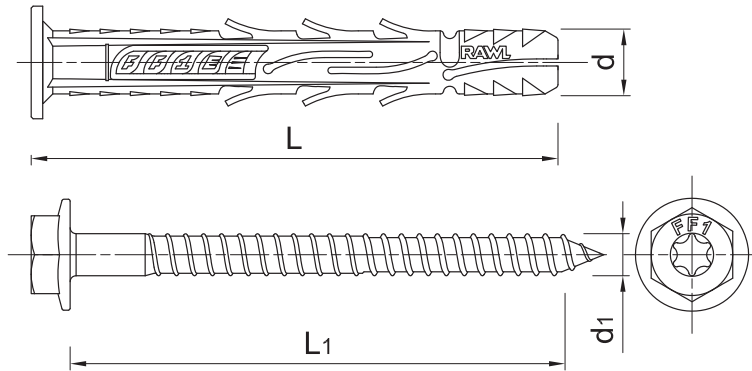
- Solid Brick (Use category B)
- Solid Sand-lime Brick (Use category B)
- Hollow Sand-lime Brick (Use category C)
- Hollow Brick (Use category C)
- Hollow Lightweight Concrete Block (Use category D)
- Aerated Concrete Block (Use category D)
- Concrete  $\geq$  C12/15 (Use category A)
- Cracked concrete  $\geq$  C12/15 (Use category A)

### Installation guide



1. Drill a hole of required diameter and depth
2. With a hammer, lightly tap the plug through the fixture into hole until fixing depth is reached
3. Tighten the FF1 screw

**Product information**



Size	Product Code	Plug		Screw		Fixture		
		Diameter	Length	Diameter	Length	Max. thickness		Hole diameter
		d	l	d <sub>1</sub>	L1	t <sub>fix</sub> 50	t <sub>fix</sub> 70	d <sub>f</sub>
[mm]								
Ø10	R-FF1-N-10K080	9.8	80	7	89	30	10	10
	R-FF1-N-10K100	9.8	100	7	109	50	30	10
	R-FF1-N-10K120	9.8	120	7	129	70	50	10
	R-FF1-N-10K140	9.8	140	7	149	90	70	10
	R-FF1-N-10K160	9.8	160	7	169	110	90	10
	R-FF1-N-10K200	9.8	200	7	209	150	130	10
	R-FF1-N-10K240	9.8	240	7	249	190	170	10
Ø14	R-FF1-N-14K120	13.8	120	10.8	131	-	50	14
	R-FF1-N-14K160	13.8	160	10.8	171	-	90	14
	R-FF1-N-14K200	13.8	200	10.8	211	-	130	14
	R-FF1-N-14K240	13.8	240	10.8	251	-	170	14

**Installation data**

Substrate			A, B, C	A, B, C	D	A, B, C	D
Hole diameter in substrate	d <sub>0</sub>	[mm]	10	10	10	14	14
Min. hole depth in substrate	h <sub>0</sub>	[mm]	60	80	80	80	80
Min. installation depth	h <sub>nom</sub>	[mm]	50	70	70	70	70
Min. substrate thickness	h <sub>min</sub>	[mm]	100	100	100	100	100
Min. spacing	s <sub>min</sub>	[mm]	90	95	70	120	200
Min. edge distance	c <sub>min</sub>	[mm]	80	80	70	120	100
Max. installation torque	T <sub>inst</sub>	[Nm]	16	16	4.3	30	6.6
Wrench size	Sw	[mm]	13	13	13	17	17
Screw drive	-	[-]	T40	T40	T40	T50	T50
Diameter	d	[mm]	10	10	10	14	14
Effective embedment depth	h <sub>ef</sub>	[mm]	50	70	70	70	70

## Basic performance data

Performance data for single fixing without influence of edge distance and spacing

Substrate		Substrate															
		Concrete min. C12/15	Concrete min. C16/20	Solid brick min. 50MPa	Solid clay brick min 20MPa (eg Mz20/2.0)	Sand-lime brick min. 30MPa	Solid silicate brick min 20MPa (eg KS NF 20/2.0)	Perforated ceramic blocks min 15MPa (eg MEGA MAX)	Perforated ceramic blocks min 15MPa (eg Wienerberger Poro-	Sand-lime hollow block min. 20MPa	Lightweight concrete hollow block min 2.0MPa	Hollow brick min. 12MPa	Hollow brick min. 15MPa	Hollow clay block min. 7.5MPa	Autoclaved aerated concrete AAC 2	Autoclaved aerated concrete AAC 6	
<b>CHARACTERISTIC LOAD</b>																	
TENSION LOAD $N_{Rk}$																	
Ø10, Effective embedment depth 50 mm	[kN]	1.20	2.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ø10, Effective embedment depth 70 mm	[kN]	6.00	8.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ø14, Effective embedment depth 70 mm	[kN]	4.00	5.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SHEAR LOAD $V_{Rk}$																	
Ø10, Effective embedment depth 50 mm	[kN]	5.40	5.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ø10, Effective embedment depth 70 mm	[kN]	5.40	5.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ø14, Effective embedment depth 70 mm	[kN]	14.30	14.30	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TENSION AND SHEAR LOAD $F_{Rk}$																	
Ø10, Effective embedment depth 70 mm	[kN]	-	-	5.00	-	-	-	1.50	1.50	3.50	0.90	0.90	0.75	0.75	0.40	0.90	-
Ø10, Effective embedment depth 50 mm	[kN]	-	-	-	-	1.50	-	-	-	-	-	-	-	-	-	-	-
Ø14, Effective embedment depth 70 mm	[kN]	-	-	-	4.50	-	3.50	1.20	1.20	1.20	1.20	0.90	1.50	-	0.60	1.50	-
<b>DESIGN LOAD</b>																	
TENSION LOAD $N_{Rd}$																	
Ø10, Effective embedment depth 50 mm	[kN]	0.67	1.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ø10, Effective embedment depth 70 mm	[kN]	4.28	4.72	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ø14, Effective embedment depth 70 mm	[kN]	2.22	3.06	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SHEAR LOAD $V_{Rd}$																	
Ø10, Effective embedment depth 50 mm	[kN]	3.35	3.35	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ø10, Effective embedment depth 70 mm	[kN]	3.35	3.35	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ø14, Effective embedment depth 70 mm	[kN]	8.88	8.88	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TENSION AND SHEAR LOAD $F_{Rd}$																	
Ø10, Effective embedment depth 70 mm	[kN]	-	-	2.00	-	-	-	0.60	0.60	1.40	0.36	0.36	0.30	0.30	0.20	0.45	-
Ø10, Effective embedment depth 50 mm	[kN]	-	-	-	-	0.60	-	-	-	-	-	-	-	-	-	-	-
Ø14, Effective embedment depth 70 mm	[kN]	-	-	-	1.80	-	1.40	0.48	0.48	0.48	0.48	0.36	0.60	-	0.30	0.75	-
<b>RECOMMENDED LOAD</b>																	
TENSION LOAD $N_{rec}$																	
Ø10, Effective embedment depth 50 mm	[kN]	0.48	0.79	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ø10, Effective embedment depth 70 mm	[kN]	3.06	3.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ø14, Effective embedment depth 70 mm	[kN]	1.59	2.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SHEAR LOAD $V_{rec}$																	
Ø10, Effective embedment depth 50 mm	[kN]	2.39	2.39	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ø10, Effective embedment depth 70 mm	[kN]	2.39	2.39	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ø14, Effective embedment depth 70 mm	[kN]	6.34	6.34	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TENSION AND SHEAR LOAD $F_{rec}$																	
Ø10, Effective embedment depth 70 mm	[kN]	-	-	1.43	-	-	-	0.43	0.43	1.00	0.26	0.26	0.21	0.21	0.14	0.32	-
Ø10, Effective embedment depth 50 mm	[kN]	-	-	-	-	0.43	-	-	-	-	-	-	-	-	-	-	-
Ø14, Effective embedment depth 70 mm	[kN]	-	-	-	1.29	-	1.00	0.34	0.34	0.34	0.34	0.26	0.43	-	0.21	0.54	-

## Product commercial data

Product Code	Plug	Screw		Quantity [pcs]			Weight [kg]			Bar Codes
	Diameter [mm]	Length [mm]	Box	Outer	Pallet	Box	Outer	Pallet		
R-FF1-N-14K120 <sup>1)</sup>	13.8	10.8	131	20	20	5120	2.3	2.3	624.4	5906675395272
R-FF1-N-14K160 <sup>1)</sup>	13.8	10.8	171	20	20	3840	2.9	2.9	589.7	5906675395289
R-FF1-N-14K200 <sup>1)</sup>	13.8	10.8	211	20	20	3840	3.5	3.5	707.4	5906675395296
R-FF1-N-14K240 <sup>1)</sup>	13.8	10.8	251	20	20	3840	4.1	4.1	817.4	5906675395302
R-FF1-N-10K080 <sup>1)</sup>	9.8	7	89	50	400	9600	1.72	13.8	360.4	5906675266985
R-FF1-N-10K100 <sup>1)</sup>	9.8	7	109	25	400	9600	1.04	16.6	427.4	5906675266992
R-FF1-N-10K120 <sup>1)</sup>	9.8	7	129	25	300	7200	1.21	14.6	379.3	5906675267005
R-FF1-N-10K140 <sup>1)</sup>	9.8	7	149	25	300	7200	1.38	16.5	426.0	5906675267012
R-FF1-N-10K160 <sup>1)</sup>	9.8	7	169	25	300	7200	1.55	18.6	477.3	5906675267029
R-FF1-N-10K200 <sup>1)</sup>	9.8	7	209	25	25	6000	1.91	1.91	488.9	5906675018249
R-FF1-N-10K240 <sup>1)</sup>	9.8	7	249	25	25	3000	2.3	2.3	299.6	5906675019307
R-FF1-N-10K300 <sup>1)</sup>	9.8	7	309	10	10	3120	1.14	1.14	385.7	5906675019321

1) ETA-12/0398