

## FF1-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

- The FF1 blue plug is collared for fixing of hard materials such as steel
- Specially-formulated nylon allows best performance installation for use in all base material categories according to ETAG 020 (A, B, C, D)
- The zinc plated flanged hex head screw (also with T40) can be installed using a hex socket
- Internal plug geometry designed to fit the screw head
- Embedment depth markings facilitate precise installation

#### Applications

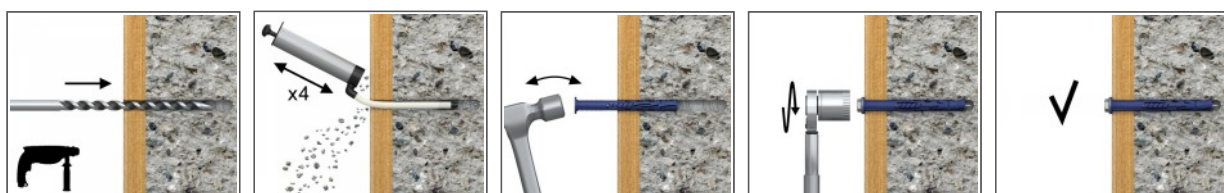
- Door and window frames
- Garage doors
- Gates
- Industrial doors
- Facade (substructures made of wood and metal)
- Wall cabinets
- Satellite dishes
- Shelves
- Handrails
- Cable trays

#### Base materials

##### Approved for use in:

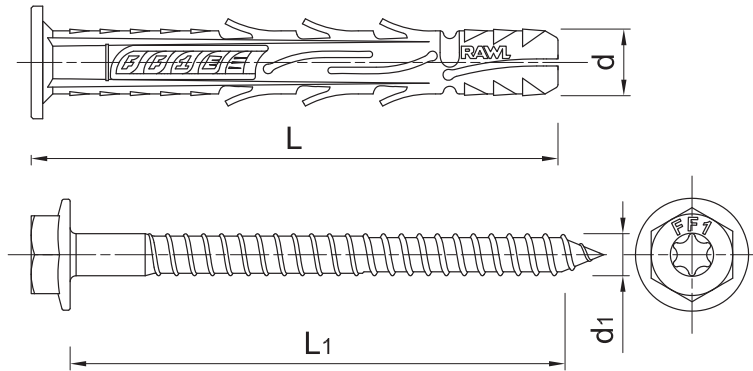
- Concrete  $\geq$  C12/15 (Use category A)
- Concrete C12/15-C50/60 (Use category A)
- Solid Brick (Use category B)
- Solid Sand-lime Brick (Use category B)
- Hollow Sand-lime Brick (Use category C)
- Hollow Brick (Use category C)
- Hollow Lightweight Concrete Block (Use category D)
- Aerated Concrete Block (Use category D)

### 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**

Size			Ø10	Ø10	Ø14
Effective embedment depth	h <sub>ef</sub>	[mm]	50	70	70
Fixing diameter	d	[mm]	9.8	9.8	10.8
Hole diameter in substrate	d <sub>0</sub>	[mm]	10	10	14
Min. hole depth in substrate	h <sub>0</sub>	[mm]	60	80	80
Installation depth	h <sub>nom</sub>	[mm]	50	70	70
Min. substrate thickness	h <sub>min</sub>	[mm]	100	100	100
Min. spacing	s <sub>min</sub>	[mm]	90	95	120
Min. edge distance	c <sub>min</sub>	[mm]	80	80	120
Head size	[English]:	[mm]	13	13	17
Screw drive	-	[-]	T40	T40	T50

**Basic performance data**

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

Substrate		CHARACTERISTIC LOAD F <sub>Rk</sub>														
		Concrete C12/15	Concrete min. C16/20	Solid brick min. 50MPa	Sand-lime brick min. 30MPa	Perforated ceramic blocks min 15MPa	Perforated ceramic blocks min 15MPa	Sand-lime hollow block min. 20MPa	Lightweight concrete hollow block min	Hollow brick min. 12MPa	Hollow brick min. 15MPa	Hollow clay block min. 7.5MPa	Autoclaved aerated concrete AAC 2	Autoclaved aerated concrete AAC 6	Solid clay brick min 20MPa (eg)	Solid silicate brick min 20MPa (eg KS)
Ø10, Effective embedment depth 50 mm	[kN]	1.20	2.00	-	1.50	-	-	-	-	-	-	-	-	-	-	-
Ø10, Effective embedment depth 70 mm	[kN]	2.50	4.00	5.00	-	1.50	1.50	3.50	0.90	0.90	0.75	0.75	0.40	0.90	-	-
Ø14, Effective embedment depth 70 mm	[kN]	4.00	5.50	-	-	1.20	1.20	1.20	1.20	0.90	1.50	-	0.60	1.50	4.50	3.50

## Basic performance data

Substrate	DESIGN LOAD $F_{Rd}$															
	Concrete C12/15	Concrete min. C16/20	Solid brick min. 50MPa	Sand-lime brick min. 30MPa	Perforated ceramic blocks min 15MPa	Perforated ceramic blocks min 15MPa	Sand-lime hollow block min. 20MPa	Lightweight concrete hollow block min	Hollow brick min. 12MPa	Hollow brick min. 15MPa	Hollow clay block min. 7.5MPa	Autoclaved aerated concrete AAC 2	Autoclaved aerated concrete AAC 6	Solid clay brick min 20MPa (eg	Solid silicate brick min 20MPa (eg KS	
Ø10, Effective embedment depth 50 mm	[kN]	0.67	1.11	-	0.60	-	-	-	-	-	-	-	-	-	-	
Ø10, Effective embedment depth 70 mm	[kN]	1.39	2.22	2.00	-	0.60	0.60	1.40	0.36	0.36	0.30	0.30	0.20	0.45	-	
Ø14, Effective embedment depth 70 mm	[kN]	2.22	3.06	-	-	0.48	0.48	0.48	0.48	0.36	0.60	-	0.30	0.75	1.80	
RECOMMENDED LOAD $F_{rec}$																
Ø10, Effective embedment depth 50 mm	[kN]	0.48	0.79	-	0.43	-	-	-	-	-	-	-	-	-	-	
Ø10, Effective embedment depth 70 mm	[kN]	0.99	1.59	1.43	-	0.43	0.43	1.00	0.26	0.26	0.21	0.21	0.14	0.32	-	
Ø14, Effective embedment depth 70 mm	[kN]	1.59	2.18	-	-	0.34	0.34	0.34	0.34	0.26	0.43	-	0.21	0.54	1.29	

## 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	622.6	5906675395272
R-FF1-N-14K160 <sup>1)</sup>	13.8	10.8	171	20	20	3840	2.9	2.9	593.7	5906675395289
R-FF1-N-14K200 <sup>1)</sup>	13.8	10.8	211	20	20	3840	3.5	3.5	708.9	5906675395296
R-FF1-N-14K240 <sup>1)</sup>	13.8	10.8	251	20	20	3840	4.2	4.2	831.8	5906675395302
R-FF1-N-10K080 <sup>1)</sup>	9.8	7	89	50	400	9600	1.76	14.1	368.5	5906675266985
R-FF1-N-10K100 <sup>1)</sup>	9.8	7	109	25	400	9600	1.06	16.9	436.3	5906675266992
R-FF1-N-10K120 <sup>1)</sup>	9.8	7	129	25	300	7200	1.24	14.9	388.2	5906675267005
R-FF1-N-10K140 <sup>1)</sup>	9.8	7	149	25	300	7200	1.41	16.9	435.6	5906675267012
R-FF1-N-10K160 <sup>1)</sup>	9.8	7	169	25	300	7200	1.58	19.0	486.0	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