



JFEA410SFW  
Vol. 410ml

### INFORMATION

Vinylester Resin is a two part gray resin (10:1) suitable for use in temperatures down to -10°C or as a fast cure resin in warmer temperatures. It can be used for installing threaded studs, rebar or internal threaded sockets for structural applications such as:

- Columns
- Guard rails
- Façades
- Staircases
- Silo installation
- Machines
- Cantilever beams

### BASE MATERIAL

- Concrete C20/25 To C50/60
- Cracked/Non-Cracked Concrete
- Dry/Wet/Flooded Holes
- Solid Brickwork
- Concrete Block
- Natural Stone

### APPROVALS

European Technical Assessment  
Option 1 Cracked Concrete



ETA15/0704

### FEATURES

- Fast Cure Resin
- Winter Grade
- Expansion Free
- High Performance
- Close Spacing And Edge Distance

### RELATED PRODUCTS



JTOOL380

Injection Resin Gun



Hole Cleaning Brushes and Pump



Mixer Nozzle

Injection Accessories

### WORKING/LOADING TIME

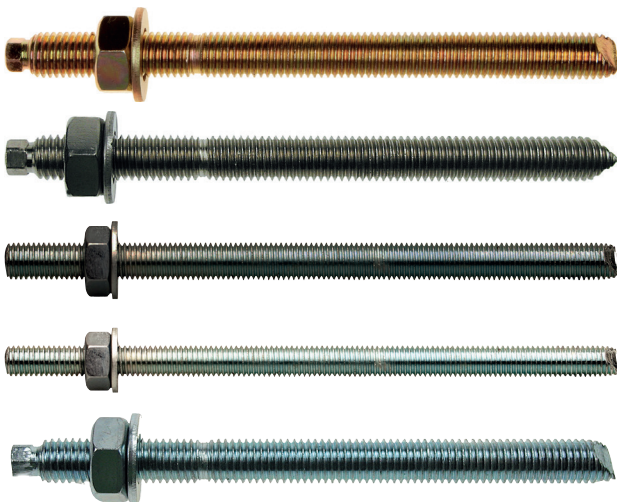
Note:

$T_{work}$  = The highest temperature in the range

$T_{load}$  = The lowest temperature in the range

Temperature °C	Usable Time $T_{work}$ (mins)	Load Time $T_{load}$ (mins)
-10°C to -5°C	50	720 (12 hour)
-5°C to 0°C	15	100
0°C to +5°C	10	75
+5°C to +20°C	5	50
+20°C	100 (Sec)	20
Ensure Cartridge Temperature is > 0°C		

### EMBEDDED THREADED ROD



- High Tensile Grade 8.8 Chisel End Studs
- Zinc plated & yellow passivated min. 5µm
- Setting Tool Included
- Stainless Steel Grade A4/316
- Chisel End Studs
- Setting Tool Included
- Stainless Steel Grade A4/316
- Chisel End Studs
- Plain Ended
- Zinc Plated and Clear Passivated (Min 5µm)
- Chisel End Studs
- Plain Ended
- Zinc Plated and Clear Passivated (Min 5µm)
- Chisel End Studs
- Setting Tool Included



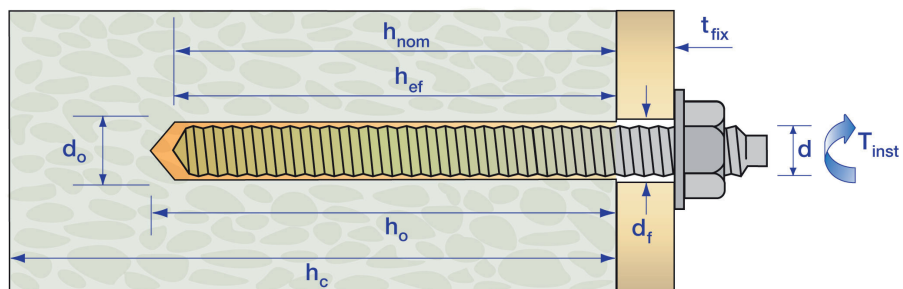


### RANGE AND LOAD DATA

RANGE DATA											
Part Number	Thread Diam (d) mm	Stud Length (L) mm	Drill Hole Diam. (d <sub>o</sub> ) mm	Fixture Clearance Hole (d <sub>f</sub> ) mm	Standard Embedment		Shallow Embedment		Deep Embedment		Tightening Torque (T <sub>inst</sub> ) Nm
					Max. Fix. Thickness (t <sub>fix</sub> ) mm	Min. Hole Depth (h <sub>o</sub> ) mm**	Max. Fix. Thickness (t <sub>fix</sub> ) mm	Min. Hole Depth (h <sub>o</sub> ) mm	Max. Fix. Thickness (t <sub>fix</sub> ) mm	Min. Hole Depth (h <sub>o</sub> ) mm	
High Tensile Grade 8.8 Zinc Plated Yellow Passivated Chisel End Studs											
JSTUD08110HT	M8	110	10	10	18	80	38	64	*	130	10
JSTUD10130HT	M10	130	12	12	25	90	40	80	*	180	20
JSTUD12160HT	M12	160	14	14	34	110	51	96	*	225	40
JSTUD16190HT	M16	190	18	18	42	128	44	128	*	320	80
JSTUD20260HT	M20	260	22	22	55	170	79	160	*	400	150
JSTUD24300HT	M24	300	26	26	55	210	82	192	*	480	200
JSTUD30380HT	M30	380	35	32	55	280	110	240	*	600	275
Stainless Steel Grade A4/316 Chisel End Studs											
JSTUD08110SSA4	M8	110	10	10	18	80	38	64	12	90	10
JSTUD10130SSA4	M10	130	12	12	25	90	40	80	*	125	20
JSTUD12160SSA4	M12	160	14	14	34	110	51	96	*	160	40
JSTUD16190SSA4	M16	190	18	18	42	128	44	128	*	235	80
JSTUD20260SSA4	M20	260	22	22	55	170	79	160	*	310	150
JSTUD24300SSA4	M24	300	26	26	55	210	82	192	*	390	200
Stainless Steel Grade A4/316 Plain Ended and Chisel End Studs											
JSTUD08150PESS	M8	150	10	10	62	80	78	64	52	90	10
JSTUD10105PESS	M10	105	12	12	5	90	15	80	*	125	20
JSTUD10150PESS		150			50		60		15		
JSTUD10200PESS		200			100		110		65		
JSTUD12110PESS	M12	110	14	14	*	110	1	96	*	160	40
JSTUD12150PESS		150			27		41		27		
JSTUD12200PESS		200			77		91		27		
JSTUD16110PESS	M16	110	18	18	*	128	*	128	*	235	80
JSTUD16250PESS		250			104		104		*		
JSTUD16350PESS		350			204		204		97		
JSTUD20200PESS	M20	200	22	22	9	170	19	160	*	310	150
JSTUD20400PESS		400			209		219		69		

\* Deep Embedment Depth can be achieved by using suitable threaded rod cut to length:  $L = h_o + (t_{fix} + t_{Nut+Washer})$

\*\* For the Vinylester Resin:  $h_o = h_{ef}$



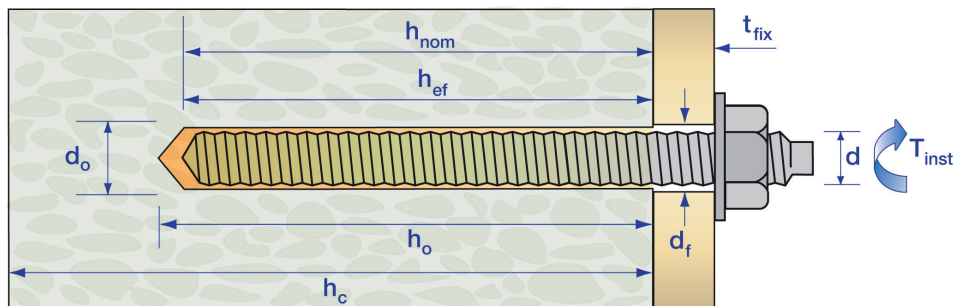


### RANGE DATA

Part Number	Thread Diam (d) mm	Stud Length (L) mm	Drill Hole Diam. (d <sub>o</sub> ) mm	Fixture Clearance Hole (d <sub>f</sub> ) mm	Standard Embedment		Shallow Embedment		Deep Embedment		Tightening Torque (T <sub>inst</sub> ) Nm
					Max. Fix. Thickness (t <sub>fix</sub> ) mm	Min. Hole Depth (h <sub>o</sub> ) mm**	Max. Fix. Thickness (t <sub>fix</sub> ) mm	Min. Hole Depth (h <sub>o</sub> ) mm	Max. Fix. Thickness (t <sub>fix</sub> ) mm	Min. Hole Depth (h <sub>o</sub> ) mm	
<b>Zinc Plated Steel Grade 5.8 - Clear Passivated Plain Ended and Chisel End Studs</b>											
JSTUD08150PE	M8	150	10	10	62	80	78	64	62	80	10
JSTUD10105PE	M10	105	12	12	5	90	15	80	*	115	20
JSTUD10150PE		150			50		60		25		
JSTUD10200PE		200			100		110		75		
JSTUD12110PE	M12	110	14	14	*	110	1	96	*	145	40
JSTUD12150PE		150			27		41		*		
JSTUD12200PE		200			77		91		42		
JSTUD16110PE	M16	110	18	18	*	128	*	128	*	210	80
JSTUD16250PE		250			104		104		22		
JSTUD16350PE		350			204		204		122		
JSTUD20200PE	M20	200	22	22	9	170	19	160	*	280	150
JSTUD20400PE		400			209		219		99		
<b>Zinc Plated Steel Grade 5.8 - Clear Passivated and Chisel End Studs</b>											
JSTUD08110	M8	110	10	10	18	80	38	64	22	80	10
JSTUD10130	M10	130	12	12	25	90	40	80	5	115	20
JSTUD12160	M12	160	14	14	34	110	51	96	2	145	40
JSTUD16190	M16	190	18	18	42	128	44	128	*	210	80
JSTUD20260	M20	260	22	22	55	170	79	160	*	280	150
JSTUD24300	M24	300	26	26	55	210	82	192	*	355	200
JSTUD30380	M30	380	35	32	55	280	110	240	*	600	275

\* Deep Embedment Depth can be achieved by using suitable threaded rod cut to length:  $L = h_o + (t_{fix} + t_{Nut+Washer})$

\*\* For the Vinylester Resin:  $h_o = h_{ef}$





### GRADE 8.8 ZINC PLATED STUDS - NON-CRACKED CONCRETE

#### SHALLOW EMBEDMENT

Grade 8.8 Zinc Plated Studs Performance Data (C20/25 non-cracked concrete)												
Thread Diam (d) mm	Minimum Hole Depth (h <sub>o</sub> ) mm	Minimum Concrete Thickness (h <sub>min</sub> ) mm	Characteristic Resistance kN		Design Resistance kN		Approved Resistance kN		Design Spacing (S) mm		Design Edge Distance (C) mm	
			Tensile (N <sub>Rk</sub> )	Shear (V <sub>Rk</sub> )	Tensile (N <sub>Rd</sub> )	Shear (V <sub>Rd</sub> )	Tensile (N <sub>Ap</sub> )	Shear (V <sub>Ap</sub> )	Tensile	Shear	Tensile	Shear
8	64	100	17.6	15.0	9.8	12.0	7.0	8.6	200	40	100	130
10	80	110	25.1	23.0	14.0	18.4	10.0	13.1	240	40	120	180
12	96	130	34.4	34.0	19.1	27.2	13.6	19.4	270	50	140	250
16	128	170	57.9	63.0	32.2	50.4	23.0	36.0	350	70	180	390
20	160	205	85.5	98.0	47.5	78.4	33.9	56.0	430	140	220	550
24	192	245	115.8	141.0	64.3	112.8	46.0	80.6	500	210	250	720
30	240	310	124.4	248.8	59.2	165.9	42.3	118.5	520	520	260	920

#### STANDARD EMBEDMENT

Grade 8.8 Zinc Plated Studs Performance Data (C20/25 non-cracked concrete)												
Thread Diam (d) mm	Minimum Hole Depth (h <sub>o</sub> ) mm	Minimum Concrete Thickness (h <sub>min</sub> ) mm	Characteristic Resistance kN		Design Resistance kN		Approved Resistance kN		Design Spacing (S) mm		Design Edge Distance (C) mm	
			Tensile (N <sub>Rk</sub> )	Shear (V <sub>Rk</sub> )	Tensile (N <sub>Rd</sub> )	Shear (V <sub>Rd</sub> )	Tensile (N <sub>Ap</sub> )	Shear (V <sub>Ap</sub> )	Tensile	Shear	Tensile	Shear
8	80	110	22.1	15.0	12.3	12.0	8.8	8.6	200	40	100	120
10	90	120	28.3	23.0	15.7	18.4	11.2	13.1	240	50	120	170
12	110	140	39.4	34.0	21.9	27.2	15.6	19.4	270	60	140	230
16	128	170	57.9	63.0	32.2	50.4	23.0	36.0	350	70	180	390
20	170	215	90.8	98.0	50.4	78.4	36.0	56.0	430	100	220	530
24	210	270	126.7	141.0	70.4	112.8	50.3	80.6	500	140	250	670
30	280	350	145.1	224.0	69.1	179.2	49.4	128.0	520	420	260	920

#### DEEP EMBEDMENT

Grade 8.8 Zinc Plated Studs Performance Data (C20/25 non-cracked concrete)												
Thread Diam (d) mm	Minimum Hole Depth (h <sub>o</sub> ) mm	Minimum Concrete Thickness (h <sub>min</sub> ) mm	Characteristic Resistance kN		Design Resistance kN		Approved Resistance kN		Design Spacing (S) mm		Design Edge Distance (C) mm	
			Tensile (N <sub>Rk</sub> )	Shear (V <sub>Rk</sub> )	Tensile (N <sub>Rd</sub> )	Shear (V <sub>Rd</sub> )	Tensile (N <sub>Ap</sub> )	Shear (V <sub>Ap</sub> )	Tensile	Shear	Tensile	Shear
8	130	160	29.0	15.0	19.3	12.0	13.8	8.6	180	70	100	100
10	180	210	46.0	23.0	30.7	18.4	21.9	13.1	220	90	120	120
12	225	255	67.0	34.0	44.7	27.2	31.9	19.4	270	120	140	150
16	320	355	144.8	63.0	80.4	50.4	57.4	36.0	350	160	180	220
20	400	445	213.6	98.0	118.7	78.4	84.8	56.0	430	200	220	290
24	480	540	289.5	141.0	160.8	112.8	114.9	80.6	500	240	260	360
30	600	670	311.0	224.0	148.1	179.2	105.8	128.0	520	300	300	510





### GRADE 8.8 ZINC PLATED STUDS - CRACKED CONCRETE

#### SHALLOW EMBEDMENT

Grade 8.8 Zinc Plated Studs Performance Data (C20/25 cracked concrete)												
Thread Diam (d) mm	Minimum Hole Depth (h <sub>0</sub> ) mm	Minimum Concrete Thickness (h <sub>min</sub> ) mm	Characteristic Resistance kN		Design Resistance kN		Approved Resistance kN		Design Spacing (S) mm		Design Edge Distance (C) mm	
			Tensile (N <sub>Rk</sub> )	Shear (V <sub>Rk</sub> )	Tensile (N <sub>Rd</sub> )	Shear (V <sub>Rd</sub> )	Tensile (N <sub>Ap</sub> )	Shear (V <sub>Ap</sub> )	Tensile	Shear	Tensile	Shear
8	Not included in the ETA											
10	80	110	12.6	25.1	7.0	16.8	5.0	12.0	230	240	120	240
12	96	130	18.1	36.2	10.1	24.1	7.2	17.2	270	280	140	320
16	128	170	32.2	64.3	17.9	42.9	12.8	30.6	360	360	180	490
20	160	205	45.2	90.5	25.1	60.3	18.0	43.1	430	430	220	610
24	192	245	65.1	130.3	36.2	86.9	25.9	62.0	500	500	250	790
30	Not included in the ETA											

#### STANDARD EMBEDMENT

Grade 8.8 Zinc Plated Studs Performance Data (C20/25 cracked concrete)												
Thread Diam (d) mm	Minimum Hole Depth (h <sub>0</sub> ) mm	Minimum Concrete Thickness (h <sub>min</sub> ) mm	Characteristic Resistance kN		Design Resistance kN		Approved Resistance kN		Design Spacing (S) mm		Design Edge Distance (C) mm	
			Tensile (N <sub>Rk</sub> )	Shear (V <sub>Rk</sub> )	Tensile (N <sub>Rd</sub> )	Shear (V <sub>Rd</sub> )	Tensile (N <sub>Ap</sub> )	Shear (V <sub>Ap</sub> )	Tensile	Shear	Tensile	Shear
8	Not included in the ETA											
10	90	120	14.1	23.0	7.9	18.4	5.6	13.1	230	220	120	250
12	110	140	20.7	34.0	11.5	27.2	8.2	19.4	270	260	140	340
16	128	170	32.2	64.3	17.9	42.9	12.8	30.6	360	360	180	490
20	170	215	48.1	96.1	26.7	64.1	19.1	45.8	430	430	220	630
24	210	270	71.3	142.5	39.6	95.0	28.3	67.9	500	500	250	820
30	Not included in the ETA											

#### DEEP EMBEDMENT

Grade 8.8 Zinc Plated Studs Performance Data (C20/25 cracked concrete)												
Thread Diam (d) mm	Minimum Hole Depth (h <sub>0</sub> ) mm	Minimum Concrete Thickness (h <sub>min</sub> ) mm	Characteristic Resistance kN		Design Resistance kN		Approved Resistance kN		Design Spacing (S) mm		Design Edge Distance (C) mm	
			Tensile (N <sub>Rk</sub> )	Shear (V <sub>Rk</sub> )	Tensile (N <sub>Rd</sub> )	Shear (V <sub>Rd</sub> )	Tensile (N <sub>Ap</sub> )	Shear (V <sub>Ap</sub> )	Tensile	Shear	Tensile	Shear
8	Not included in the ETA											
10	180	210	28.3	23.0	15.7	18.4	11.2	13.1	230	90	120	160
12	225	255	42.4	34.0	23.6	27.2	16.8	19.4	270	120	140	210
16	320	355	80.4	63.0	44.7	50.4	31.9	36.0	360	160	180	320
20	400	445	113.1	98.0	62.8	78.4	44.9	56.0	430	200	220	440
24	480	540	162.9	141.0	90.5	112.8	64.6	80.6	500	240	250	570
30	Not included in the ETA											







### GRADE A4-70 STAINLESS STEEL STUDS - NON-CRACKED CONCRETE

#### SHALLOW EMBEDMENT

Grade A4-70 Stainless Steel Studs Performance Data (C20/25 non-cracked concrete)													
Thread Diam (d) mm	Minimum Hole Depth (h <sub>o</sub> ) mm	Minimum Concrete Thickness (h <sub>min</sub> ) mm	Characteristic Resistance kN		Design Resistance kN		Approved Resistance kN		Design Spacing (S) mm		Design Edge Distance (C) mm		
			Tensile (N <sub>Rk</sub> )	Shear (V <sub>Rk</sub> )	Tensile (N <sub>Rd</sub> )	Shear (V <sub>Rd</sub> )	Tensile (N <sub>Ap</sub> )	Shear (V <sub>Ap</sub> )	Tensile	Shear	Tensile	Shear	
8	64	100	17.7	13.0	9.8	8.3	7.0	6.0	200	40	100	90	
10	80	110	25.1	20.0	14.0	12.8	10.0	9.2	240	40	120	120	
12	96	130	34.4	30.0	19.1	19.2	13.6	13.7	270	50	140	170	
16	128	170	57.9	55.0	32.2	35.3	23.0	25.2	350	70	180	260	
20	160	205	85.5	86.0	47.5	55.1	33.9	39.4	430	80	220	370	
24	192	245	115.8	124.0	64.3	79.5	46.0	56.8	500	100	250	480	
30	240	310	124.4	196.0	59.2	125.6	42.3	89.7	520	220	260	670	

#### STANDARD EMBEDMENT

Grade A4-70 Stainless Steel Studs Performance Data (C20/25 non-cracked concrete)													
Thread Diam (d) mm	Minimum Hole Depth (h <sub>o</sub> ) mm	Minimum Concrete Thickness (h <sub>min</sub> ) mm	Characteristic Resistance kN		Design Resistance kN		Approved Resistance kN		Design Spacing (S) mm		Design Edge Distance (C) mm		
			Tensile (N <sub>Rk</sub> )	Shear (V <sub>Rk</sub> )	Tensile (N <sub>Rd</sub> )	Shear (V <sub>Rd</sub> )	Tensile (N <sub>Ap</sub> )	Shear (V <sub>Ap</sub> )	Tensile	Shear	Tensile	Shear	
8	80	110	22.1	13.0	12.3	8.3	8.8	6.0	200	40	100	80	
10	90	120	28.3	20.0	15.7	12.8	11.2	9.2	240	50	120	120	
12	110	140	39.4	30.0	21.9	19.2	15.6	13.7	270	60	140	160	
16	128	170	57.9	55.0	32.2	35.3	23.0	25.2	350	70	180	260	
20	170	215	90.8	86.0	50.4	55.1	36.0	39.4	430	90	220	350	
24	210	270	126.7	124.0	70.4	79.5	50.3	56.8	500	110	250	450	
30	280	350	145.1	196.0	69.1	125.6	49.4	89.7	520	140	260	600	

#### DEEP EMBEDMENT

Grade A4-70 Stainless Steel Studs Performance Data (C20/25 non-cracked concrete)													
Thread Diam (d) mm	Minimum Hole Depth (h <sub>o</sub> ) mm	Minimum Concrete Thickness (h <sub>min</sub> ) mm	Characteristic Resistance kN		Design Resistance kN		Approved Resistance kN		Design Spacing (S) mm		Design Edge Distance (C) mm		
			Tensile (N <sub>Rk</sub> )	Shear (V <sub>Rk</sub> )	Tensile (N <sub>Rd</sub> )	Shear (V <sub>Rd</sub> )	Tensile (N <sub>Ap</sub> )	Shear (V <sub>Ap</sub> )	Tensile	Shear	Tensile	Shear	
8	90	120	26.0	13.0	13.7	8.3	9.8	6.0	190	50	100	80	
10	125	155	41.0	20.0	21.6	12.8	15.4	9.2	230	70	120	100	
12	160	190	59.0	30.0	31.1	19.2	22.2	13.7	260	80	140	120	
16	235	270	110.0	55.0	57.9	35.3	41.4	25.2	340	120	180	180	
20	310	355	172.0	86.0	90.5	55.1	64.7	39.4	410	160	210	230	
24	390	450	247.0	124.0	130.0	79.5	92.9	56.8	490	200	260	290	
30	600	670	311.0	196.0	148.1	125.6	105.8	89.7	520	300	300	370	





### GRADE A4-70 STAINLESS STEEL STUDS - CRACKED CONCRETE

#### SHALLOW EMBEDMENT

Grade A4-70 Stainless Steel Studs Performance Data (C20/25 cracked concrete)												
Thread Diam (d) mm	Minimum Hole Depth (h <sub>0</sub> ) mm	Minimum Concrete Thickness (h <sub>min</sub> ) mm	Characteristic Resistance kN		Design Resistance kN		Approved Resistance kN		Design Spacing (S) mm		Design Edge Distance (C) mm	
			Tensile (N <sub>Rk</sub> )	Shear (V <sub>Rk</sub> )	Tensile (N <sub>Rd</sub> )	Shear (V <sub>Rd</sub> )	Tensile (N <sub>Ap</sub> )	Shear (V <sub>Ap</sub> )	Tensile	Shear	Tensile	Shear
8	Not included in the ETA											
10	80	110	12.6	20.0	7.0	12.8	5.0	9.2	240	90	120	180
12	96	130	18.1	30.0	8.6	19.2	6.2	13.7	270	130	140	250
16	128	170	32.2	55.0	17.9	35.3	12.8	25.2	360	200	180	390
20	160	205	45.2	86.0	25.1	55.1	18.0	39.4	430	340	220	550
24	192	245	65.1	124.0	36.2	79.5	25.9	56.8	500	400	250	720
30	Not included in the ETA											

#### STANDARD EMBEDMENT

Grade A4-70 Stainless Steel Studs Performance Data (C20/25 cracked concrete)												
Thread Diam (d) mm	Minimum Hole Depth (h <sub>0</sub> ) mm	Minimum Concrete Thickness (h <sub>min</sub> ) mm	Characteristic Resistance kN		Design Resistance kN		Approved Resistance kN		Design Spacing (S) mm		Design Edge Distance (C) mm	
			Tensile (N <sub>Rk</sub> )	Shear (V <sub>Rk</sub> )	Tensile (N <sub>Rd</sub> )	Shear (V <sub>Rd</sub> )	Tensile (N <sub>Ap</sub> )	Shear (V <sub>Ap</sub> )	Tensile	Shear	Tensile	Shear
8	Not included in the ETA											
10	90	120	14.1	20.0	7.9	12.8	5.6	9.2	240	50	120	170
12	110	140	20.7	30.0	9.9	19.2	7.1	13.7	270	60	140	230
16	128	170	32.2	55.0	17.9	35.3	12.8	25.2	360	200	180	390
20	170	215	48.1	86.0	26.7	55.1	19.1	39.4	430	280	220	530
24	210	270	71.3	124.0	39.6	79.5	28.3	56.8	500	300	250	670
30	Not included in the ETA											

#### DEEP EMBEDMENT

Grade A4-70 Stainless Steel Studs Performance Data (C20/25 cracked concrete)												
Thread Diam (d) mm	Minimum Hole Depth (h <sub>0</sub> ) mm	Minimum Concrete Thickness (h <sub>min</sub> ) mm	Characteristic Resistance kN		Design Resistance kN		Approved Resistance kN		Design Spacing (S) mm		Design Edge Distance (C) mm	
			Tensile (N <sub>Rk</sub> )	Shear (V <sub>Rk</sub> )	Tensile (N <sub>Rd</sub> )	Shear (V <sub>Rd</sub> )	Tensile (N <sub>Ap</sub> )	Shear (V <sub>Ap</sub> )	Tensile	Shear	Tensile	Shear
8	Not included in the ETA											
10	175	205	27.5	20.0	15.3	12.8	10.9	9.2	240	90	120	120
12	240	270	45.2	30.0	21.5	19.2	15.4	13.7	270	120	140	150
16	320	355	80.4	55.0	44.7	35.3	31.9	25.2	360	160	180	220
20	400	445	113.1	86.0	62.8	55.1	44.9	39.4	430	200	220	290
24	480	540	162.9	124.0	90.5	79.5	64.6	56.8	500	240	250	360
30	Not included in the ETA											





### GRADE 5.8 ZINC PLATED STUDS - NON-CRACKED CONCRETE

#### SHALLOW EMBEDMENT

Grade 5.8 Zinc Plated Studs Performance Data (C20/25 non-cracked concrete)												
Thread Diam (d) mm	Minimum Hole Depth (h <sub>o</sub> ) mm	Minimum Concrete Thickness (h <sub>min</sub> ) mm	Characteristic Resistance kN		Design Resistance kN		Approved Resistance kN		Design Spacing (S) mm		Design Edge Distance (C) mm	
			Tensile (N <sub>Rk</sub> )	Shear (V <sub>Rk</sub> )	Tensile (N <sub>Rd</sub> )	Shear (V <sub>Rd</sub> )	Tensile (N <sub>Ap</sub> )	Shear (V <sub>Ap</sub> )	Tensile	Shear	Tensile	Shear
8	64	100	17.7	9.0	9.8	7.2	7.0	5.1	200	40	100	70
10	80	110	25.1	15.0	14.0	12.0	10.0	8.6	240	40	120	110
12	96	130	34.4	21.0	19.1	16.8	13.6	12.0	270	50	140	140
16	128	170	57.9	39.0	32.2	31.2	23.0	22.3	350	70	180	230
20	160	205	85.5	61.0	47.5	48.8	33.9	34.9	430	80	220	320
24	192	245	115.8	88.0	64.3	70.4	46.0	50.3	500	100	250	420
30	240	310	124.4	140.0	59.2	112.0	42.3	80.0	520	120	260	580

#### STANDARD EMBEDMENT

Grade 5.8 Zinc Plated Studs Performance Data (C20/25 non-cracked concrete)												
Thread Diam (d) mm	Minimum Hole Depth (h <sub>o</sub> ) mm	Minimum Concrete Thickness (h <sub>min</sub> ) mm	Characteristic Resistance kN		Design Resistance kN		Approved Resistance kN		Design Spacing (S) mm		Design Edge Distance (C) mm	
			Tensile (N <sub>Rk</sub> )	Shear (V <sub>Rk</sub> )	Tensile (N <sub>Rd</sub> )	Shear (V <sub>Rd</sub> )	Tensile (N <sub>Ap</sub> )	Shear (V <sub>Ap</sub> )	Tensile	Shear	Tensile	Shear
8	80	110	18.0	9.0	12.0	7.2	8.6	5.1	190	40	100	70
10	90	120	28.3	15.0	15.7	12.0	11.2	8.6	240	50	120	110
12	110	140	39.4	21.0	21.9	16.8	15.6	12.0	270	60	140	130
16	128	170	57.9	39.0	32.2	31.2	23.0	22.3	350	70	180	230
20	170	215	90.8	61.0	50.4	48.8	36.0	34.9	430	90	220	310
24	210	270	126.7	88.0	70.4	70.4	50.3	50.3	500	110	250	390
30	280	350	145.1	140.0	69.1	112.0	49.4	80.0	520	140	260	520

#### DEEP EMBEDMENT

Grade 5.8 Zinc Plated Studs Performance Data (C20/25 non-cracked concrete)												
Thread Diam (d) mm	Minimum Hole Depth (h <sub>o</sub> ) mm	Minimum Concrete Thickness (h <sub>min</sub> ) mm	Characteristic Resistance kN		Design Resistance kN		Approved Resistance kN		Design Spacing (S) mm		Design Edge Distance (C) mm	
			Tensile (N <sub>Rk</sub> )	Shear (V <sub>Rk</sub> )	Tensile (N <sub>Rd</sub> )	Shear (V <sub>Rd</sub> )	Tensile (N <sub>Ap</sub> )	Shear (V <sub>Ap</sub> )	Tensile	Shear	Tensile	Shear
8	*	*	*	*	*	*	*	*	*	*	*	*
10	115	145	29.0	15.0	19.3	12.0	13.8	8.6	210	60	120	90
12	145	175	42.0	21.0	28.0	16.8	20.0	12.0	250	80	130	110
16	210	245	79.0	39.0	52.7	31.2	37.6	22.3	350	110	180	170
20	280	325	123.0	61.0	82.0	48.8	58.6	34.9	420	140	210	210
24	355	410	177.0	88.0	118.0	70.4	84.3	50.3	490	180	260	270
30	600	670	311.0	140.0	148.1	112.0	105.8	80.0	520	300	300	330

\* Increased embedment depth limited by steel strength.







### GRADE 5.8 ZINC PLATED STUDS - CRACKED CONCRETE

#### SHALLOW EMBEDMENT

Grade 5.8 Zinc Plated Studs Performance Data (C20/25 cracked concrete)												
Thread Diam (d) mm	Minimum Hole Depth (h <sub>0</sub> ) mm	Minimum Concrete Thickness (h <sub>min</sub> ) mm	Characteristic Resistance kN		Design Resistance kN		Approved Resistance kN		Design Spacing (S) mm		Design Edge Distance (C) mm	
			Tensile (N <sub>Rk</sub> )	Shear (V <sub>Rk</sub> )	Tensile (N <sub>Rd</sub> )	Shear (V <sub>Rd</sub> )	Tensile (N <sub>Ap</sub> )	Shear (V <sub>Ap</sub> )	Tensile	Shear	Tensile	Shear
8	Not included in the ETA											
10	80	110	12.6	15.0	7.0	12.0	5.0	8.6	240	70	120	170
12	96	130	18.1	21.0	10.1	16.8	7.2	12.0	270	70	140	210
16	128	170	32.2	39.0	17.9	31.2	12.8	22.3	350	120	180	340
20	160	205	45.2	61.0	25.1	48.8	18.0	34.9	430	230	220	480
24	192	245	65.1	88.0	36.2	70.4	25.9	50.3	500	280	250	620
30	Not included in the ETA											

#### STANDARD EMBEDMENT

Grade 5.8 Zinc Plated Studs Performance Data (C20/25 cracked concrete)												
Thread Diam (d) mm	Minimum Hole Depth (h <sub>0</sub> ) mm	Minimum Concrete Thickness (h <sub>min</sub> ) mm	Characteristic Resistance kN		Design Resistance kN		Approved Resistance kN		Design Spacing (S) mm		Design Edge Distance (C) mm	
			Tensile (N <sub>Rk</sub> )	Shear (V <sub>Rk</sub> )	Tensile (N <sub>Rd</sub> )	Shear (V <sub>Rd</sub> )	Tensile (N <sub>Ap</sub> )	Shear (V <sub>Ap</sub> )	Tensile	Shear	Tensile	Shear
8	Not included in the ETA											
10	90	120	14.1	15.0	7.9	12.0	5.6	8.6	240	70	120	160
12	110	140	20.7	21.0	11.5	16.8	8.2	12.0	270	70	140	200
16	128	170	32.2	39.0	17.9	31.2	12.8	22.3	350	120	180	340
20	170	215	48.1	61.0	26.7	48.8	19.1	34.9	430	180	220	460
24	210	270	71.3	88.0	39.6	70.4	28.3	50.3	500	190	250	580
30	Not included in the ETA											

#### DEEP EMBEDMENT

Grade 5.8 Zinc Plated Studs Performance Data (C20/25 cracked concrete)												
Thread Diam (d) mm	Minimum Hole Depth (h <sub>0</sub> ) mm	Minimum Concrete Thickness (h <sub>min</sub> ) mm	Characteristic Resistance kN		Design Resistance kN		Approved Resistance kN		Design Spacing (S) mm		Design Edge Distance (C) mm	
			Tensile (N <sub>Rk</sub> )	Shear (V <sub>Rk</sub> )	Tensile (N <sub>Rd</sub> )	Shear (V <sub>Rd</sub> )	Tensile (N <sub>Ap</sub> )	Shear (V <sub>Ap</sub> )	Tensile	Shear	Tensile	Shear
8	Not included in the ETA											
10	200	230	31.4	15.0	17.5	12.0	12.5	8.6	240	100	120	110
12	240	270	45.2	21.0	25.1	16.8	18.0	12.0	270	130	140	140
16	255	290	64.1	39.0	35.6	31.2	25.4	22.3	350	130	180	210
20	320	365	90.5	61.0	50.3	48.8	35.9	34.9	430	160	220	290
24	400	460	135.7	88.0	75.4	70.4	53.9	50.3	500	200	250	360
30	Not included in the ETA											





### SUPPLEMENTARY DATA

INFLUENCE OF CONCRETE STRENGTH					
Concrete strength		C20/25	C30/37	C40/50	C50/60
Cylinder	N/mm <sup>2</sup>	20	30	40	50
Cube	N/mm <sup>2</sup>	25	37	50	60
Factor	Cracked	1.0	1.12	1.23	1.30

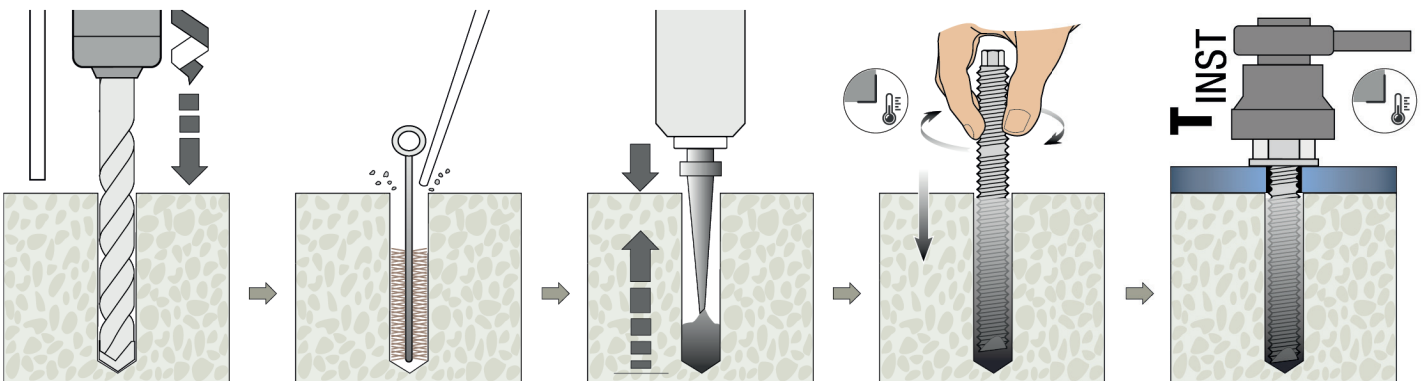
Important Note:

When using concrete factors ensure that loads do not exceed Steel Design Resistance.

STEEL DESIGN RESISTANCE FOR SINGLE ANCHOR								
Load Type	Steel Grade	Threaded Rod Size						
		M8	M10	M12	M16	M20	M24	M30
Tensile (kN)	High Tensile Grade 8.8	19.3	30.7	44.7	84.0	130.7	188.0	299.3
	Stainless Steel Grade A4-70	13.7	21.6	31.1	57.9	90.5	130.0	206.8
	Grade 5.8	12.0	19.3	28.0	52.7	82.0	118.0	187.3
Shear (kN)	High Tensile Grade 8.8	12.0	18.4	27.2	50.4	78.4	112.8	179.2
	Stainless Steel Grade A4-70	8.3	12.8	19.2	35.3	55.1	79.5	125.6
	Grade 5.8	7.2	12.0	16.8	31.2	48.8	70.4	112.0

For variations in structure thickness, reduced spacing and edge calculations download the free **Anchor Calculation Program** from [www.jcpfixings.co.uk](http://www.jcpfixings.co.uk)

### INSTALLATION INSTRUCTIONS



-Drill correct diameter hole to corresponding depth

-Clean hole by brushing, blowing to remove drilling debris and dust:  
2xBlowing  
2xBrushing  
2xBlowing  
2xBrushing  
2xBlowing

-Attach nozzle to cartridge  
-Extrude first part to waste until an even colour is achieved  
-Fill hole 1/3 to 1/2 full starting from the bottom of the hole

-Insert stud into base material by hand using a twisting motion

-Allow resin to cure  
-Attach fixture  
-Tighten with torque wrench to recommended torque

