EPC80

HIGH PERFORMANCE HYBRID EPOXY INJECTION SYSTEM

FEATURES

- Especially suitable for high load application.
- Highly recommended for large size rebar fixings.
- Recommended for threaded stud up to M39 in diameter.
- Close anchor spacing and edge distance applications.
- Excellent resistance to dynamic and cyclic loadings.
- High chemical and temperature resistances.
- Can be used in dry and wet concrete.
- Suitable for diamond core hole.

APPLICATIONS

- Starter bar installation for structural extension and rectification works.
- Chemical anchoring for curtain walling/cladding.
- All types of machines installation where dynamic loading is high.
- Concrete structure or cantilever slab extension works.
- Hold down bolts for steel structure fixing.
- Shear connector for reinforced concrete structures.

SHELF LIFE

- Shelf life is 24 months with the cartridges stored in their original packing, the correct way up and in cool dry conditions (+5°C to +25°C) out of direct sunlight.

RANGE OF CONCRETE QUALITY

C20/25 ~ C50/60

RANGE OF LOADING

5.1 kN ~ 128.0 kN (SWL)

KG. Heavy loads

HOLE ORIENTATION

BASE MATERIALS

 Concrete

 Concrete block solid stone

VA RODS AVAILABILITY

Z ZINC | G | A2 INOX | A4 INOX

APPROVAL GOVERNING BODIES

CE ETA 17/0410 | FIRE RESISTANCE | A+ | WRAS APPROVED MATERIAL | SEISMIC C1

ORDERING DETAILS

PRODUCT DESCRIPTION	PACKING CONTENT (PCs.)	PRODUCT PART NO.	
EPC80 - 650ml (Dual Cartridge System)	12	EPC80	
Applicator Handgun - 650ml (For 600~650ml Cartridges)	1	GZ65	
Applicator Battery Handgun - 650ml (For 600~650ml Cartridges)	1	GZ65B	
Mixing Nozzle - 255mm Mixing Nozzle Long - 370mm	Bulk Bulk	NZ65 NZ65L	
Hole Blower	1	HCP	
Hole Cleaning Brush Cleaning Brush - 10mm Cleaning Brush - 12mm Cleaning Brush - 18mm Cleaning Brush - 28mm	 1 1 1 1	 CB10 CB12 CB18 CB28	

VA CHEMICAL STUD RODS - STEEL CLASS 5.8 ZINC GALVANISED

PRODUCT DESCRIPTION	FIXTURE HOLE DIAMETER (mm)	MAX. FIXTURE THICKNESS (mm)	PACKING CONTENT (PCs.)	PRODUCT PART NO.
M8 x 110mm	9	15	10	VA8110
M10 x 130mm	12	20	10	VA10130
M12 x 160mm	14	30	10	VA12160
M16 x 190mm	18	40	10	VA16190
M20 x 260mm	22	50	6	VA20260
M24 x 300mm	28	55	6	VA24300

Z ZINC

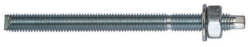
VA CHEMICAL STUD RODS - STEEL CLASS 5.8 HOT-DIPPED GALVANISED

PRODUCT DESCRIPTION	FIXTURE HOLE DIAMETER (mm)	MAX. FIXTURE THICKNESS (mm)	PACKING CONTENT (PCs.)	PRODUCT PART NO.
M8 x 110mm	9	15	10	VA8110GH
M10 x 130mm	12	20	10	VA10130GH
M12 x 160mm	14	30	10	VA12160GH
M16 x 190mm	18	40	10	VA16190GH
M20 x 260mm	22	50	6	VA20260GH
M24 x 300mm	28	55	6	VA24300GH

G

VAH CHEMICAL STUD RODS - STEEL CLASS 8.8 ZINC GALVANISED

PRODUCT DESCRIPTION	FIXTURE HOLE DIAMETER (mm)	MAX. FIXTURE THICKNESS (mm)	PACKING CONTENT (PCs.)	PRODUCT PART NO.
M8 x 110mm	9	15	10	VAH8110
M10 x 130mm	12	20	10	VAH10130
M12 x 160mm	14	30	10	VAH12160
M16 x 190mm	18	40	10	VAH16190
M20 x 260mm	22	50	6	VAH20260
M24 x 300mm	28	55	6	VAH24300



Z ZINC

VAH CHEMICAL STUD RODS - STEEL CLASS 8.8 HOT-DIPPED GALVANISED

PRODUCT DESCRIPTION	FIXTURE HOLE DIAMETER (mm)	MAX. FIXTURE THICKNESS (mm)	PACKING CONTENT (PCs.)	PRODUCT PART NO.
M8 x 110mm	9	15	10	VAH8110GH
M10 x 130mm	12	20	10	VAH10130GH
M12 x 160mm	14	30	10	VAH12160GH
M16 x 190mm	18	40	10	VAH16190GH
M20 x 260mm	22	50	6	VAH20260GH
M24 x 300mm	28	55	6	VAH24300GH

G

VAR CHEMICAL STUD RODS - STAINLESS STEEL CLASS 304 (A2)

PRODUCT DESCRIPTION	FIXTURE HOLE DIAMETER (mm)	MAX. FIXTURE THICKNESS (mm)	PACKING CONTENT (PCs.)	PRODUCT PART NO.
M8 x 110mm	9	15	10	VAR8110
M10 x 130mm	12	20	10	VAR10130
M12 x 160mm	14	30	10	VAR12160
M16 x 190mm	18	40	10	VAR16190
M20 x 260mm	22	50	6	VAR20260
M24 x 300mm	28	55	6	VAR24300

A2 INOX

VAS CHEMICAL STUD RODS - STAINLESS STEEL CLASS 316 (A4)

PRODUCT DESCRIPTION	FIXTURE HOLE DIAMETER (mm)	MAX. FIXTURE THICKNESS (mm)	PACKING CONTENT (PCs.)	PRODUCT PART NO.
M8 x 110mm	9	15	10	VAS8110
M10 x 130mm	12	20	10	VAS10130
M12 x 160mm	14	30	10	VAS12160
M16 x 190mm	18	40	10	VAS16190
M20 x 260mm	22	50	6	VAS20260
M24 x 300mm	28	55	6	VAS24300

A4 INOX

** Stud rod diameter larger than M27 and above are made-to-order or on indent basis.*

INSTALLATION PERIMETER & LOADING DATA

EPC80 WITH VA (STEEL CLASS 5.8) RODS - ZINC GALVANISED & HOT DIPPED GALVANISED

ANCHOR SIZE	HOLE DIAMETER (mm)	ANCHORAGE DEPTH (mm)	MINIMUM CONCRETE THICKNESS (mm)	TIGHTENING TORQUE (Nm)	RECOMMENDED SPACING & EDGE DISTANCE TO FULL LOAD (mm)		ABSOLUTE MINIMUM SPACING & EDGE DISTANCE (mm)		RECOMMENDED LOAD[1] (kN)	
					TENSION	SHEAR	TENSION	SHEAR	TENSION	SHEAR
M8	10	80	110	10	160	80	40	40	8.6	5.1
M10	12	90	120	20	180	90	45	45	12.3	8.6
M12	14	110	140	40	220	110	55	55	15.5	12.0
M16	18	125	155	80	250	125	65	65	23.5	22.3
M20	24	170	220	135	340	170	85	85	40.0	34.9
M24	28	210	270	200	420	210	105	105	64.6	50.3
M27	30	250	310	240	500	250	125	125	72.1	65.7
M30	35	270	340	270	540	270	135	135	86.6	80.0

[1] Loading based on non-cracked concrete, $f_{ck,cube}$ = 25 N/mm² (C20/25).

EPC80 WITH VAH (STEEL CLASS 8.8) RODS - ZINC GALVANISED & HOT DIPPED GALVANISED

ANCHOR SIZE	HOLE DIAMETER (mm)	ANCHORAGE DEPTH (mm)	MINIMUM CONCRETE THICKNESS (mm)	TIGHTENING TORQUE (Nm)	RECOMMENDED SPACING & EDGE DISTANCE TO FULL LOAD (mm)		ABSOLUTE MINIMUM SPACING & EDGE DISTANCE (mm)		RECOMMENDED LOAD[1] (kN)	
					TENSION	SHEAR	TENSION	SHEAR	TENSION	SHEAR
M8	10	80	110	10	160	80	40	40	8.8	8.6
M10	12	90	120	20	180	90	45	45	12.3	13.1
M12	14	110	140	40	220	110	55	55	15.5	19.4
M16	18	125	155	80	250	125	65	65	23.5	36.0
M20	24	170	220	135	340	170	85	85	40.0	56.0
M24	28	210	270	200	420	210	105	105	64.6	80.6
M27	30	250	310	240	500	250	125	125	72.1	105.1
M30	35	270	340	270	540	270	135	135	86.6	128.0

[1] Loading based on non-cracked concrete, $f_{ck,cube}$ = 25 N/mm² (C20/25).

EPC80 WITH VAR & VAS (STAINLESS STEEL) RODS - CLASS 304 (A2) & CLASS 316 (A4)

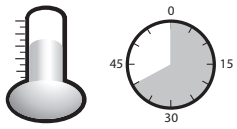
ANCHOR SIZE	HOLE DIAMETER (mm)	ANCHORAGE DEPTH (mm)	MINIMUM CONCRETE THICKNESS (mm)	TIGHTENING TORQUE (Nm)	RECOMMENDED SPACING & EDGE DISTANCE TO FULL LOAD (mm)		ABSOLUTE MINIMUM SPACING & EDGE DISTANCE (mm)		RECOMMENDED LOAD[1] (kN)	
					TENSION	SHEAR	TENSION	SHEAR	TENSION	SHEAR
M8	10	80	110	10	160	80	40	40	8.8	6.0
M10	12	90	120	20	180	90	45	45	12.3	9.2
M12	14	110	140	40	220	110	55	55	15.5	13.7
M16	18	125	155	80	250	125	65	65	23.5	25.2
M20	24	170	220	135	340	170	85	85	40.0	39.4
M24	28	210	270	200	420	210	105	105	64.6	56.8
M27	30	250	310	240	500	250	125	125	72.1	73.7
M30	35	270	340	270	540	270	135	135	86.6	89.7

[1] Loading based on non-cracked concrete, $f_{ck,cube}$ = 25 N/mm² (C20/25).

GEL AND CURING TIME[1,2]

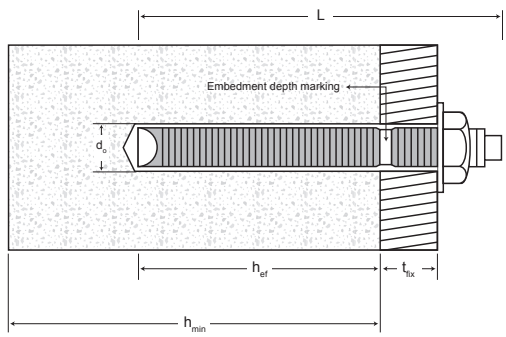
BASE MATERIAL TEMPERATURE $T_{base\ material}$ (°C)	GEL TIME (WORKING TIME) t_{gel} (mins)	CURING TIME t_{cure} (hrs)
$+5 \leq T_{base\ material} < +10$	20	24
$+10 \leq T_{base\ material} < +15$	20	12
$+15 \leq T_{base\ material} < +20$	15	8
$+20 \leq T_{base\ material} < +25$	11	7
$+25 \leq T_{base\ material} < +30$	8	6
$+30 \leq T_{base\ material} < +35$	6	5
$+35 \leq T_{base\ material} < +40$	4	4
+40 & Above	3	3

Note: If during the installation of the rod the temperature drop below -6°c or rises above 60°c, please contact our Engineers for the proper procedures.

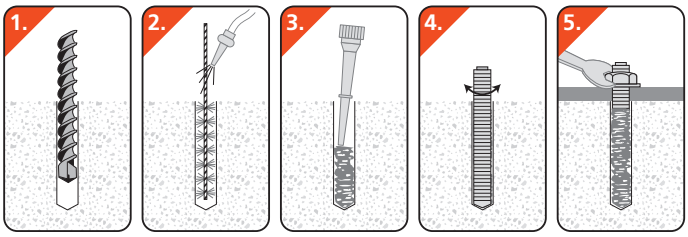


[1] Cartridge should be ≥ +10°C.
[2] The curing time are for dry base material only. In wet base material, the curing time must be doubled.

SETTING DIAGRAM



INSTALLATION PROCEDURE



EPC80 HIGH PERFORMANCE HYBRID EPOXY FOR POST-INSTALLED REBAR APPLICATIONS (Design Load Approach with BS8110 Bond Strength Method)

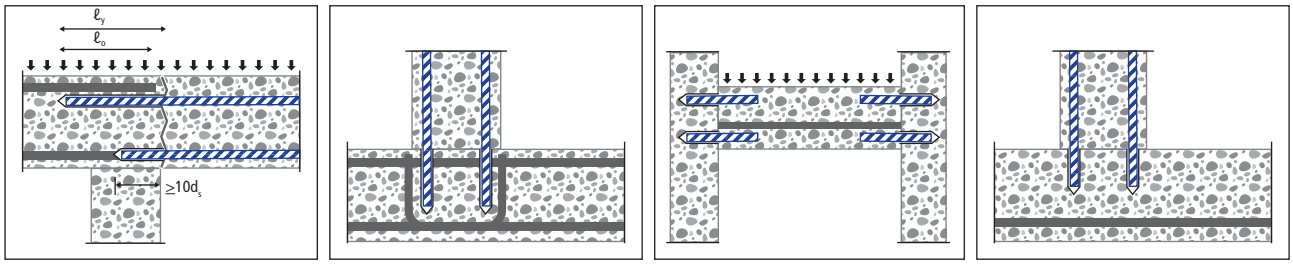
Concrete Compressive Strength: $f_{ck,cube}$ = 30 N/mm²

Rebar Size, d_s		ϕ10	ϕ12	ϕ16	ϕ20	ϕ25	ϕ32	ϕ40
Design Steel Resistance, $N_{Rd,s}$	[kN]	31.4	45.2	80.4	125.7	196.4	321.7	502.7
Design Bond Stress, τ_{Rd}	[N/mm²]	6.3	5.4	5.9	5.9	5.9	5.9	5.4
Drilled Hole Diameter, d_o	[mm]	13 ~ 14	15 ~ 16	20 ~ 22	25 ~ 28	30 ~ 32	40 ~ 42	50 ~ 52
Bar Spacing, s	[mm]	50	65	80	100	125	160	200
Edge Distance, c	[mm]	40	40	40	50	65	80	100
$L_{b,rqd}$ / Rebar ϕ		16	19	17	17	17	17	19
Anchorage Length, L_b [mm]		Design Tensile Bonding Capacity, N_{Rd} [kN]						
100		19.8						
120		23.7	24.4					
160		**31.4**	32.5	47.3				
200			40.7	59.2	74.0			
225			**45.2**	66.6	83.2			
250				74.0	92.5	115.6		
275				**80.4**	101.7	127.1		
320					118.4	147.9	189.4	
340					**125.7**	157.2	201.2	
400						184.9	236.7	271.2
425						**196.4**	251.5	288.2
475							281.1	322.1
545							**321.7**	369.6
600								406.8
740								**502.7**
Length to Develop Steel Yield, $L_{b,rqd}$ [mm]		159	222	272	340	425	544	741

"Minimum depth to develop full steel shear"

1) Safety factor for design tensile steel resistance: $\gamma_{Ms,N}$ = 1.15 (based on steel yield strength of 460 N/mm²).
2) Safety factor for design tensile pull-out resistance: $\gamma_{Mc,N}$ = 1.8 for ϕ10 and 2.1 for ϕ12 and above.
3) Loading applicable to non-cracked concrete with design comply in accordance to BS8110.
4) Loading data conformed to ETA-17/0410 ETAG 001 Part 1 & Part 5 Option 1.
5) Safety factor for design tensile concrete cone resistance: $\gamma_{Mc,N}$ = 1.5
6) Minimum spacing shall be $4d_s$ bar to bar or $5d_s$ centre-to-centre.
7) Minimum edge distance shall be $2d_s$ bar to bar or $2.5d_s$ centre-to-centre.

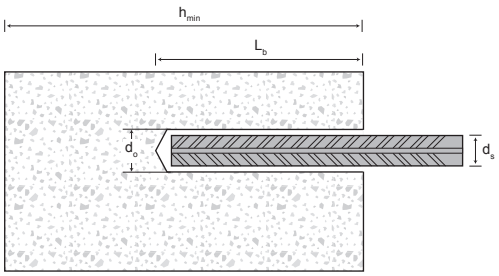
SUGGESTED APPLICATIONS



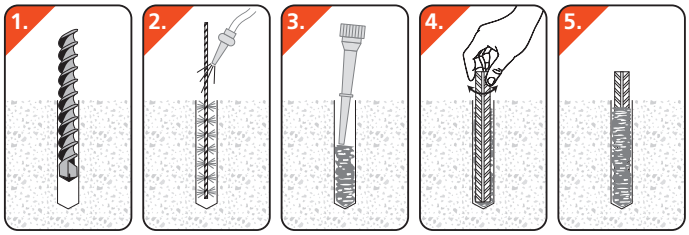
Overlap joints for slabs and beams or foundation column or wall; rebar connection for simply supported slabs or beams; shear connector or compression component joints.

Important note: Architect or design engineer must conduct final checked with the actual site condition for any variations against tabulated data.

SETTING DIAGRAM



INSTALLATION PROCEDURE



EPC80 HIGH PERFORMANCE HYBRID EPOXY FOR POST-INSTALLED REBAR APPLICATIONS (Design Load Approach with BS8110 Bond Strength Method)

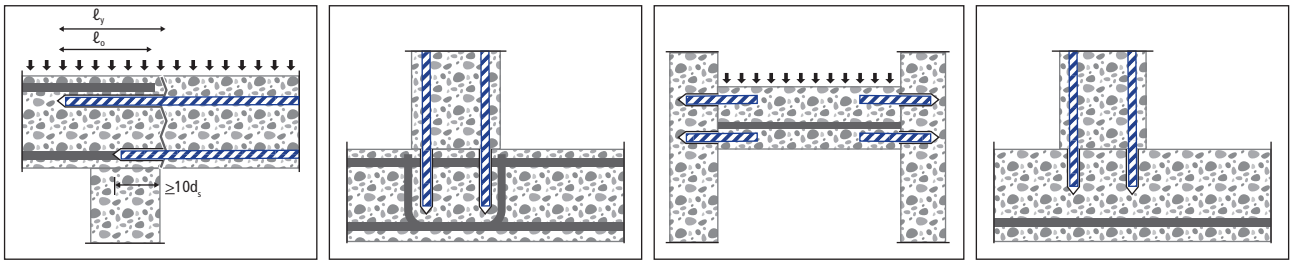
Concrete Compressive Strength: $f_{ck,cube}$ = 35 N/mm²

Rebar Size, d_s		ϕ10	ϕ12	ϕ16	ϕ20	ϕ25	ϕ32	ϕ40
Design Steel Resistance, $N_{Rd,s}$	[kN]	31.4	45.2	80.4	125.7	196.4	321.7	502.7
Design Bond Stress, τ_{Rd}	[N/mm²]	6.4	5.5	6.0	6.0	6.0	6.0	5.5
Drilled Hole Diameter, d_o	[mm]	13 ~ 14	15 ~ 16	20 ~ 22	25 ~ 28	30 ~ 32	40 ~ 42	50 ~ 52
Bar Spacing, s	[mm]	50	65	80	100	125	160	200
Edge Distance, c	[mm]	40	40	40	50	65	80	100
$L_{b,rqd}$ / Rebar ϕ		16	18	17	17	17	17	18
Anchorage Length, L_b [mm]		Design Tensile Bonding Capacity, N_{Rd} [kN]						
100		20.2						
120		24.2	24.9					
160		**31.4**	33.2	48.3				
200			41.5	60.3	75.4			
220			**45.2**	66.4	82.9			
250				75.4	94.3	117.8		
265				**80.4**	99.9	124.9		
300					113.1	141.4		
320					**125.7**	150.8	193.0	
375						176.7	226.2	
400						**196.4**	241.3	276.5
450							271.5	311.1
535							**321.7**	369.8
600								414.7
725								**502.7**
Length to Develop Steel Yield, $L_{b,rqd}$ [mm]		156	218	267	333	417	533	727

"Minimum depth to develop full steel shear"

1) Safety factor for design tensile steel resistance: $\gamma_{Ms,N}$ = 1.15 (based on steel yield strength of 460 N/mm²).
2) Safety factor for design tensile pull-out resistance: $\gamma_{Mc,N}$ = 1.8 for ϕ10 and 2.1 for ϕ12 and above.
3) Loading applicable to non-cracked concrete with design comply in accordance to BS8110.
4) Loading data conformed to ETA-17/0410 ETAG 001 Part 1 & Part 5 Option 1.
5) Safety factor for design tensile concrete cone resistance: $\gamma_{Mc,N}$ = 1.5
6) Minimum spacing shall be $4d_s$ bar to bar or $5d_s$ centre-to-centre.
7) Minimum edge distance shall be $2d_s$ bar to bar or $2.5d_s$ centre-to-centre.

SUGGESTED APPLICATIONS



Overlap joints for slabs and beams or foundation column or wall; rebar connection for simply supported slabs or beams; shear connector or compression component joints.

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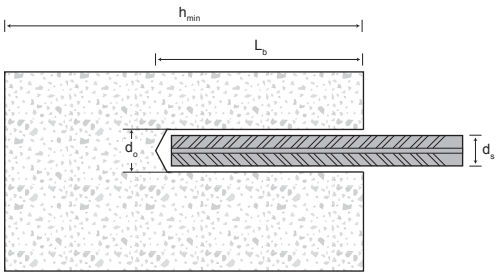

INSTALLATION PROCEDURE