Powers®

PV45PRO

10:1 RATIO POLYESTER ADHESIVE INJECTION ANCHORING SYSTEM

ETA

A+

The Powers Plus range includes many mechanical and chemical anchoring systems the have ETA reports and can be used with confidence to meet the new NCC requirements.

Approval Listing

Anchor products holding a European Technical Approval/Assessment (ETA) are qualified according to one of the following technical guidelines (ETAG):

- ETAG 001 for metal anchors installed in concrete.
  (Option 1 for cracked concrete, Option 7 for uncracked concrete, Part 6 for multiple use for non-structural applications)
- ETAG 029 for metal injection anchors installed in masonry.
- EOTA TR 023 for post-installed reinforcement bars.

Products complying with European standards or approvals are marked with the CE Marking.

Products tested for the emission of volatile substances in indoor air, with a risk of inhalation toxicity, on a scale ranging from class A + (very low emissions) to C (high emissions) level.

POWERS is one of the founding members of AEFAC (Australian Engineered Fasteners and Anchor Council).

AEFAC is a consortium made of leading industry partners / suppliers of quality anchors to the construction industry and Swinburne University of Technology.

AEFAC is a new industry-focused initiative which aims to set the standard for the specification, selection, design, applications and installation of structural anchors and fasteners in the Australian construction industry. AEFAC aims to enhance safety and efficiency associated with the use of structural anchors and fasteners. AEFAC is based at Swinburne University of Technology with access to state-of-the-art testing and research capabilities.

The guidelines and resources being developed by AEFAC are intended to become the codes of practice in Australia. As well as being a founding member, POWERS is also on the Board and Technical Committee of AEFAC. POWERS also retains membership in several international organisations including Concrete Anchoring Manufacturers.

Quality Control Procedures

PV45-PRO Polyester Injection Adhesive is packaged individually. Each cartridge contains an expiry date which provides traceability of the components back to the original manufacturing batch. Every batch of material is subjected to extensive physical and chemical property testing during manufacture. Each combination of base resin and hardener material batches is tested as an installed anchor to ensure that the proper bond strength is developed. These procedures ensure consistent, top-quality performance to the specifier and the installer of the PV45-PRO Polyester Injection Adhesive.

OH&S

Safety Data Sheets are available on request or can be downloaded from www.powers.com.au

PV45-PRO

Polyester 10:1 Adhesive Injection System

The PV45-PRO is a two-component 10:1 ratio styrene-free polyester adhesive anchoring system designed for use in the installation of threaded rod in solid concrete and masonry materials.
This medium duty, fast curing formulation is recommended for use in concrete, solid brick & hollow brick materials.

The co-axial dispensing cartridge includes a special drive unit. A manually operated tool is used to dispense the adhesive. Unlike other systems on the market, one formulation is used for both solid and hollow base material applications (when used in combination with sleeves), reducing the chance of job site installation errors. The fast curing characteristics of this versatile anchoring system make it ideal for use in a broad range of applications.

Features

- 12-months shelf life*
- Low odour level (Low VOC)
- Styrene-Free
- Curing time: 45 minutes at 20°C
- Approved for hollow brick (M8-M16)
- Alkali-resistant: durability of more than 50 years
- Low cost fastening
- Installation down to -5°C

*from date of manufacture

Approvals

The folllowing ETA assesment reports can be used to design anchors in accordance with SA TS 101:2015 which is referenced in the National Construction Code (NCC) 2016:

- **ETA-13/0061** ETAG 001-5 Option 7 - Threaded rod (Uncracked concrete M8-M24)
- **ETA-13/0063** ETAG 029 – Masonry (Solid & hollow brick)
- LEED report

APPROVED BASE MATERIAL				LOADING CONDITIONS					HOLE CONDITIONS		
Uncracked Concrete	Cracked Concrete	Solid Brick	Hollow Brick	Static Load	Quasi-Static Load	Seismic	Moderate Wind	High Wind	Dry Hole/ Wet Concrete	Flooded Holes	Core Drillled
★		★	★	★	★		★		★		

Description	Box Qty	Carton Qty	Part No.
410ml Cartridge + 2 Mixing Nozzles	2	10	PV45PRO-PWR

Please refer to the relevant ETA / ICC-ES report for complete information before selection, design and use to check suitability of the product.

Ultimate Limit State Design

UNCRACKED CONCRETE

Concrete Temperature Range: 40°C/24°C (Maximum long term 24°C and Maximum short term 40°C).
Concrete Thickness = 1xh_{min} where h_{min} as per ETA.
Hole condition: Dry/wet, non-flooded hole.
Drilling method: HAMMER DRILLED HOLES ONLY (Information is not valid for core drilled holes).
Edge Distance: No concrete edge distance considered. (i.e. edge distance > maximum (10 X h_{eff} & 60 X d) in all directions).
Spacing between anchors: The values are for single anchors installed well away from concrete edges and other anchors. No spacing effects considered.
PV45-PRO is not recommended for safety critical long-term sustained load conditions.

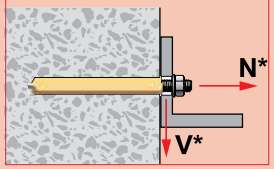
Single Anchor Load Capacities (kN) for Threaded Rod (static or quasi-static loads)

Anchor Size (mm)	Hole Size (mm)	Depth h_{eff} (mm)	Concrete Thickness (mm)	Class 5.8 Threaded Rod					Class 8.8 Threaded Rod					A4-50 Stainless Steel				
				Tension Load (Concrete)				Shear Load (Steel)	Tension Load (Concrete)				Shear Load (Steel)	Tension Load (Concrete)				Shear Load (Steel)
				20MPa	32MPa	40MPa	50MPa		20MPa	32MPa	40MPa	50MPa		20MPa	32MPa	40MPa	50MPa	
8	10	80	110	8.9	9.7	10.2	10.6	**7.3**	8.9	9.7	10.2	10.6	**11.7**	**6.4**				**3.8**
10	12	90	120	**19.3**				**11.6**	19.4	21.3	22.4	23.1	**18.6**	**10.2**				**6.1**
12	14	110	140	19.4	21.3	22.4	23.1	**16.9**	19.4	21.3	22.4	23.1	**27.0**	**14.8**				**8.9**
16	18	125	161	27.8	30.4	31.9	33.1	**31.3**	27.8	30.4	31.9	33.1	**50.1**	**27.4**				**16.5**
20	24	170	218	41.7	45.6	47.9	49.6	**49.0**	41.7	45.6	47.9	49.6	**78.3**	41.7	**42.8**			**25.7**
24	28	210	266	52.8	57.7	60.7	62.8	**70.5**	52.8	57.7	60.7	62.8	**112.8**	52.8	57.7	60.7	**61.7**	**37.0**

Capacity is limited by steel strength. **C-Pryout:** Capacity is limited by the shear concrete pry-out

Notes:
- The above tension load capacities are the minimum values from concrete cone, concrete bond/pullout and steel capacities.
- The above shear load capacities are the minimum values from concrete cone pryout, concrete pullout pryout, concrete edge and steel capacities.
- C-Pryout: Where indicated capacity is limited by the shear concrete pry-out failure mode. Please use PDA software to calculate capacities.
- Interpolation is not permitted. Please use PDA software to calculate capacities for the configurations outside the published information.
- Use of PDA software is recommended to calculate the capacities for multiple anchor configurations and single anchor installed close to edge/s of concrete and / or other anchors.
- PV45-PRO is not recommended for safety critical long-term sustained load conditions.

Combined Loading: Anchors loaded in both tension and shear must satisfy the relevant combined load equation.



Reduction Factors for Ultimate Limit State Design Capacities:				
The following strength reduction factors are derived using the information given in SA TS 101:2015 and the partial safety factors in the issued ETA (Assessment Report) for static and quasi-static loads.				
	Concrete	Steel		
	M8 - M24	Cl 5.8	Cl 8.8	A4-50
Tension (Strength Reduction Factor "ϕ")	0.56	0.67	0.67	0.35
Shear (Strength Reduction Factor "ϕ")	0.67	0.80	0.80	0.42
PARTIAL SAFETY FACTORS GIVEN FOR DESIGN CAPACITIES IN ETA-13/0061				
Tension (ETA Partial Safety Factor "γ_M")	1.80	1.50	1.50	2.86
Shear (ETA Partial Safety Factor "γ_M")	1.50	1.25	1.25	2.38

Working Stress Design

UNCRACKED CONCRETE

Concrete Temperature Range: 40°C/24°C (Maximum long term 24°C and Maximum short term 40°C).
Concrete Thickness = 1xh_{min} where h_{min} as per ETA.
Hole condition: Dry/wet, non-flooded hole.
Drilling method: HAMMER DRILLED HOLES ONLY
Edge Distance: No concrete edge distance effect considered.(i.e. edge distance > maximum (10 X h_{eff} & 60 X d) in all directions).
Spacing between anchors: The values are for single anchors installed well away from concrete edges and other anchors. No spacing effects considered.
PV45-PRO is not recommended for safety critical long-term sustained load conditions.

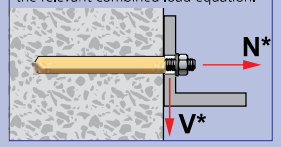
Single Anchor Load Capacities (kN) for Threaded Rod (static or quasi-static loads)

Anchor Size (mm)	Hole Size (mm)	Depth h_{eff} (mm)	Concrete Thickness (mm)	Class 5.8 Threaded Rod					Class 8.8 Threaded Rod					A4-50 Stainless Steel				
				Tension Load (Concrete)				Shear Load (Steel)	Tension Load (Concrete)				Shear Load (Steel)	Tension Load (Concrete)				Shear Load (Steel)
				20MPa	32MPa	40MPa	50MPa		20MPa	32MPa	40MPa	50MPa		20MPa	32MPa	40MPa	50MPa	
8	10	80	110	5.3	5.8	6.1	6.3	**3.7**	5.3	5.8	6.1	6.3	**5.9**	**5.2**				**2.6**
10	12	90	120	**11.6**				**5.8**	11.7	12.8	13.4	13.9	**9.3**	**8.3**				**4.1**
12	14	110	140	11.7	12.8	13.4	13.9	**8.4**	11.7	12.8	13.4	13.9	**13.5**	11.7	**12.0**			**6.0**
16	18	125	161	16.7	18.2	19.2	19.8	**15.7**	16.7	18.2	19.2	19.8	**25.1**	16.7	18.2	19.2	19.8	**11.2**
20	24	170	218	25.0	27.4	28.8	29.8	**24.5**	25.0	27.4	28.8	29.8	**39.2**	25.0	27.4	28.8	29.8	**17.5**
24	28	210	266	31.7	34.6	36.4	37.7	**35.3**	31.7	34.6	36.4	37.7	**56.4**	31.7	34.6	36.4	37.7	**25.2**

Capacity is limited by steel strength. **C-Pryout:** Capacity is limited by the shear concrete pry-out

Notes:
- The above tension load capacities are the minimum values from concrete cone, concrete bond/pullout and steel capacities.
- The above shear load capacities are the minimum values from concrete cone pryout, concrete pullout pryout, concrete edge and steel capacities.
- C-Pryout: Where indicated capacity is limited by the shear concrete pry-out failure mode. Please use PDA software to calculate capacities.
- Interpolation is not permitted. Please use PDA software to calculate capacities for the configurations outside the published information.
- Use of PDA software is recommended to calculate the capacities for multiple anchor configurations and single anchor installed close to edge/s of concrete, and / or other anchors.
- PV45-PRO is not recommended for safety critical long-term sustained load conditions.
- To determine working load capacities a further suitable safety factor (minimum 1.4 or higher) shall be applied to the limit state design capacities derived from the PDA software.

Combined Loading: Anchors loaded in both tension and shear must satisfy the relevant combined load equation.



Incorporated Safety Factors for Working Stress Design Load Capacities:

The following safety factors are used to derive values in the above table for the working stress design capacities for static load conditions

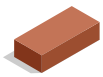
	Concrete	Steel		
		Cl 5.8	Cl 8.8	A4-50
Tension	3.00	2.50	2.50	3.50
Shear	3.00	2.50	2.50	3.50

Masonry: Guide Load Capacities

The given capacities as per ETAG 029 are valid for anchors installed in the face of a masonry wall. The strength of masonry varies widely and depends on the properties of bricks and mortar joints, hence job site tests are recommended to determine achievable load capacities. AEFAC provides information & guidance notes regarding site testing, refer to www.aefac.com.au

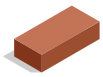
Ultimate Tension Load Capacities - Parameters for Calculation of Design Strength

According to ETAG 029 Annex C Method A.

Brick type, density and compressive strength	Characteristic resistance (Hammer Drilling unless specified)	Notation	Unit	PV45-PRO - Threaded rod				
				M8	M10		M12	M16
			Sleeve Size (SH)	12x80	16x85	16x130	20x85	20x85
Failure of metal part / Pullout failure of anchor / Brick breakout failure / Pullout of one brick								
 Solid sand-lime brick ρ ≥ 2.0 kg/dm³ f_b ≥ 20 Mpa	Without sleeve	N_{Rk} [1]	[kN]	6.0	6.0		7.0	6.0
	With sleeve of indicated sizes	N_{Rk} [1]	[kN]	5.0	5.0	5.0	-	-
 Solid clay brick ρ ≥ 1.8 kg/dm³ f_b ≥ 28 Mpa	Without sleeve	N_{Rk} [1]	[kN]	3.0	3.0	3.0	2.5	4.5
	With sleeve of indicated sizes	N_{Rk} [1]	[kN]	3.5	3.5	5.0	-	-
 Hollow sand-lime brick ρ ≥ 1.4 kg/dm³ f_b ≥ 12 Mpa	With sleeve of indicated sizes (Rotary Drilling)	N_{Rk} [1]	[kN]	3.5	3.0	4.5	3.0	3.0
 Hollow clay brick ρ ≥ 0.9 kg/dm³ f_b ≥ 12 Mpa	With sleeve of indicated sizes (Rotary Drilling)	N_{Rk} [1]	[kN]	1.5	2.0	3.0	3.5	3.5
 Hollow brick ρ ≥ 1.0 kg/dm³ f_b ≥ 4 Mpa	With sleeve of indicated sizes (Rotary Drilling)	N_{Rk} [1]	[kN]	0.4	0.4	2.0	0.9	0.75
Partial safety factor		γ_M [2]	[-]	2.5				
Reduction factor in case of unfilled or not visible vertical joints		α_j	[-]	0.75				

Ultimate Shear Load Capacities - Parameters for Calculation of Design Strength

According to ETAG 029 Annex C Method A.

Brick type, density and compressive strength	Characteristic resistance (Hammer Drilling unless specified)	Notation	Unit	PV45-PRO - Threaded rod				
				M8	M10		M12	M16
			Sleeve Size (SH)	12x80	16x85	16x130	20x85	20x85
Failure of metal part / Pullout failure of anchor / Brick breakout failure / Pullout of one brick								
 Solid sand-lime brick ρ ≥ 2.0 kg/dm³ f_b ≥ 20 Mpa	Without sleeve	V_{Rk} [3]	[kN]	4.0	3.5		5.0	5.0
	With sleeve of indicated sizes	V_{Rk} [3]	[kN]	5.0	4.0	5.0	-	-
 Solid clay brick ρ ≥ 1.8 kg/dm³ f_b ≥ 28 Mpa	Without sleeve	V_{Rk} [3]	[kN]	3.0	3.0		2.5	4.5
	With sleeve of indicated sizes	V_{Rk} [3]	[kN]	3.5	3.5	4.0	-	-
 Hollow sand-lime brick ρ ≥ 1.4 kg/dm³ f_b ≥ 12 Mpa	With sleeve of indicated sizes (Rotary Drilling)	V_{Rk} [3]	[kN]	2.5	2.5	2.5	2.5	2.5
 Hollow clay brick ρ ≥ 0.9 kg/dm³ f_b ≥ 12 Mpa	With sleeve of indicated sizes (Rotary Drilling)	V_{Rk} [3]	[kN]	1.5	2.0	2.5	2.5	2.5
 Hollow brick ρ ≥ 1.0 kg/dm³ f_b ≥ 4 Mpa	With sleeve of indicated sizes (Rotary Drilling)	V_{Rk} [3]	[kN]	0.4	0.4	2.0	0.9	0.75
Partial safety factor		γ_M [2]	[-]	2.5				

Failure of metal part, shear load with lever arm

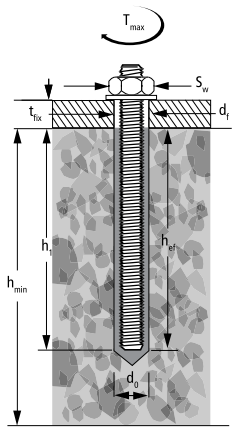
	Notation	Unit	M8	M10	M12	M16
Carbon steel, Characteristic resistance, strength class 4.8	$M^0_{Rk,s}$	[Nm]	15	30	52	133
	γ_{Ms} [2]	-	1.25			
Carbon steel, Characteristic resistance, strength class 5.8	$M^0_{Rk,s}$	[Nm]	19	37	66	166
	γ_{Ms} [2]	-	1.25			
Stainless steel, Characteristic resistance, strength class 70	$M^0_{Rk,s}$	[Nm]	26	52	92	233
	γ_{Ms} [2]	-	1.56			

Notes:

1) $N_{Rk,p} = N_{Rk,b} = N_{Rk,s} = N_{Rk}$; $N_{Rk,pb}$ according to ETAG029, Annex C
2) In absence of other national regulations
3) $V_{Rk,b} = V_{Rk,s} = V_{Rk}$
4) $V_{Rk,c}$ according to ETAG029, Annex C for solid masonry
5) $V_{Rk,c} = V_{Rk}$ according to ETAG029, Annex C for hollow masonry

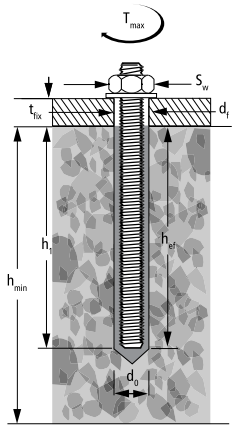
- Refer to ETA for spacing and edge distances (characteristic and minimum) requirements.
- The design capacities shall be derived by dividing the above given characteristic resistances by the above given partial safety factor.
- To determine working load capacities a further suitable safety factor (minimum 1.4 or higher) shall be applied to the limit state design loads calculated by using the above given partial safety factor of 2.5.
- The icons of bricks shown in the above table represent hollow or solid brick. These icons do not represent the actual profile / type of the bricks.
- Please refer to ETA13-0063 for type, size, strength and other description of bricks including minimum / critical spacing and edge distances.

Installation information



Installation data - threaded rod into concrete

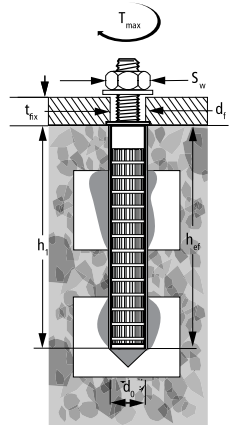
	Notation	Unit	PV45-PRO - Threaded rod					
			M8	M10	M12	M16	M20	M24
Anchor diameter	d	[mm]	8	10	12	16	20	24
Nominal drill bit diameter	d_0	[mm]	10	12	14	18	24	28
Diameter of hole clearance in fixture	$d_f \leq$	[mm]	9	12	14	18	22	26
Diameter of steel brush	$d_b \geq$	[mm]	10.5	12.5	14.5	18.5	24.5	28.5
Min embedment & drill hole depth	$h_{ef,min}$	[mm]	80	90	110	125	170	210
Minimum member thickness	h_{min}	[mm]	110	120	140	160	215	260
Minimum spacing	s_{min}	[mm]	40	50	60	80	100	120
Minimum edge distance	c_{min}	[mm]	40	50	60	80	100	120
Thickness of fixture	t_{fix}	[mm]	0 mm ≤ t_{fix} ≤ 500mm					
Maximum torque	T_{max}	[Nm]	10	20	40	60	120	150
Torque wrench socket size	S_w	[mm]	13	17	19	24	30	36



Installation data - threaded rod into solid brick without sleeve

	Notation	Unit	PV45-PRO - Threaded rod			
			M8	M10	M12	M16
Anchor diameter	d	[mm]	8	10	12	16
Nominal drill bit diameter	d_0	[mm]	10	12	14	18
Diameter of hole clearance in fixture	d_f	[mm]	≤9	≤12	≤14	≤18
Diameter of steel brush	d_b	[mm]	≥12	≥14	≥16	≥20
Embedment depth	h_{ef}	[mm]	80	90	100	100
Bore hole depth	h_1	[mm]	80	90	100	100
Minimum spacing for solid bricks*	$s_{min,II} = s_{cr,II}$ OR $s_{min,\perp} = s_{cr,\perp}$	[mm]	240	270	300	300
Minimum edge distance for solid bricks*	$c_{min} = c_{cr}$	[mm]	120	135	150	150
Maximum torque	T_{max}	[Nm]	2	2	2	2
Torque wrench socket size	S_w	[mm]	13	17	19	24
Minimum wall thickness	h_{min}	[mm]	h_{ef} + 30			

* The above spacing and edge distances are applicable for solid bricks of the description and sizes as given in ETA13-0063 and the table below.



Installation data - threaded rod into solid & hollow brick with sleeve

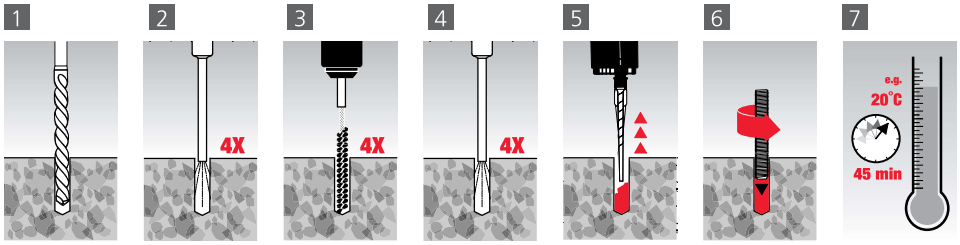
	Notation	Unit	PV45-PRO - Threaded rod				
			M8	M10		M12	M16
Sleeve size (SH)			12x80	16x85	16x130	20x85	20x85
Anchor diameter	d	[mm]	8	10	10	12	16
Nominal drill bit diameter	d_0	[mm]	12	16	16	20	20
Diameter of hole clearance in fixture	d_f	[mm]	≤9	≤12	≤12	≤14	≤18
Diameter of nylon brush	d_b	[mm]	≥14	≥18	≥18	≥22	≥22
Embedment depth	h_{ef}	[mm]	80	85	130	85	85
Embedment depth sleeve	l_s	[mm]	80	85	130	85	85
Bore hole depth	h_1	[mm]	85	90	135	90	90
Minimum spacing for solid bricks 240 x 115 x 55 mm (ρ ≥ 1.8 kg/dm³ f_b ≥ 28 MPa) 240 x 115 x 71 mm (ρ ≥ 2.0 kg/dm³ f_b ≥ 20 MPa)	$s_{min,II} = s_{cr,II}$ OR $s_{min,\perp} = s_{cr,\perp}$	[mm]	240	240	255	-	-
Minimum spacing for hollow bricks 240 x 175 x 113 mm (ρ ≥ 1.4 kg/dm³ f_b ≥ 12 MPa)	$s_{min,II} = s_{cr,II}$	[mm]	240	240	240	240	240
	$s_{min,\perp} = s_{cr,\perp}$	[mm]	113	113	113	113	113
Minimum spacing for hollow bricks 497 x 240 x 238 mm (ρ ≥ 0.9 kg/dm³ f_b ≥ 12 MPa)	$s_{min,II} = s_{cr,II}$	[mm]	497	497	497	497	497
	$s_{min,\perp} = s_{cr,\perp}$	[mm]	238	238	238	238	238
Minimum spacing for hollow bricks 500 x 200 x 200 mm (ρ ≥ 1.0 kg/dm³ f_b ≥ 4 MPa)	$s_{min,II} = s_{cr,II}$	[mm]	500	500	500	500	500
	$s_{min,\perp} = s_{cr,\perp}$	[mm]	200	200	200	200	200
Minimum edge distance for solid brick of above sizes	$c_{min} = c_{cr}$	[mm]	120	128	195	-	-
Minimum edge distance for hollow brick of above sizes	$c_{min} = c_{cr}$	[mm]	100	100	100	120	120
Maximum torque	T_{max}	[Nm]	2	2	2	2	2
Torque wrench socket size	S_w	[mm]	13	17	17	19	19
Minimum wall thickness	h_{min}	[mm]	115	115	195	115	115

Please refer to ETA13-0063 for type, size, strength and other description of bricks.

Installation Instructions

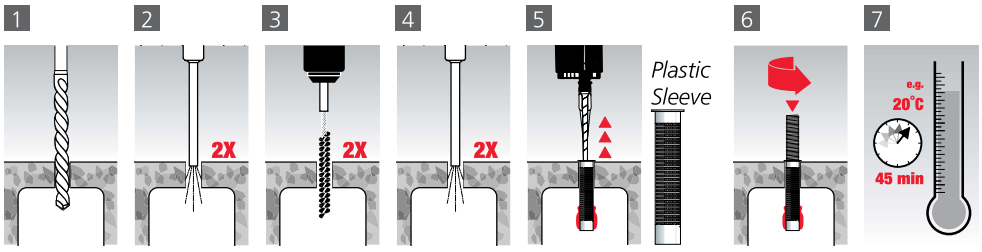
Hammer Drilled Hole in Solid Concrete

1. Using the proper drill bit size, drill a hole into the base material to the required depth.
2. Blow the hole clean using a hand pump or compressed air[2] - 4 times minimum.
3. Brush the hole with the proper wire brush - 4 times minimum.
4. Blow the hole clean using a hand pump or compressed air[2] - 4 times minimum[3].
5. Squeeze out separately and discard a minimum of 10cm until the mortar is uniformly mixed and shows consistent colour. Starting from the rear of the hole, fill the hole up to approximately 2/3 with uniformly mixed adhesive.
6. Push the threaded rod into the hole while turning slightly to ensure positive distribution of the adhesive. Be sure that the rod is seated at the bottom of the hole and that some adhesive has flowed from the top of the hole.
7. Allow the adhesive to cure for the time specified for the actual concrete temperature. Do not disturb or load the anchor until the adhesive has fully cured. Follow the longer curing time for wet concrete.



Hollow Base Materials

1. Using the proper drill bit size, drill a hole into the base material to the required sleeve size and depth.
2. Blow the hole clean using a hand pump or compressed air[2] - 2 times minimum.
3. Brush the hole with the proper wire brush - 2 times minimum.
4. Blow the hole clean using a hand pump or compressed air[2] - 2 times minimum[3].
5. Insert the sleeve required for the hollow masonry into the hole. Squeeze out separately and discard a minimum of 10cm until the mortar is uniformly mixed and shows consistent colour. Fill the sleeve up completely with uniformly mixed adhesive.
6. Push the threaded rod into the sleeve while turning slightly to ensure positive distribution of the adhesive. Be sure that the rod is seated at the bottom of the sleeve.
7. Allow the adhesive to cure for the time specified for the actual masonry temperature. Do not disturb or load the anchor until the adhesive has fully cured. Follow the longer curing time for wet masonry.



Setting Time

The setting times listed for the PV45-PRO polyester vary according to the volume of adhesive used and the base material temperature. The working time is the maximum time during which the polyester can be dispensed before it begins to set. The minimum curing time is the time required for the polyester to reach its published physical properties.

Base Material Temp (°C)	-5°C to -1°C	0°C to +4°C	+5°C to +9°C	+10°C to +14°C	+15°C to +19°C	+20°C to +29°C	+30°C to +34°C	+35°C to +39°C
Max Working Time (minutes)	90	45	25	20	15	6	4	2
Minimum Curing Time	6 h	3 h	2 h	100 min	80 min	45 min	25 min	20 min

*NOTE: Curing time is for dry concrete. Curing time must be doubled for wet concrete. Cartridge Temperature: +5°C to + 40°C

Notes:

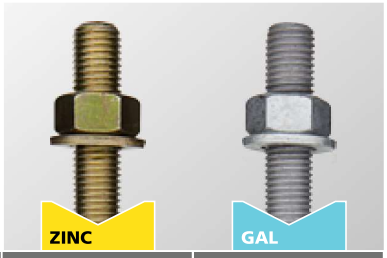
1. Always refer to the product assessment reports and approvals (e.g. ETA) for detailed information including the design criteria
2. Always use appropriate filters to prevent oil from the compressed air unit contaminating the drilled hole. The compressed air shall be free from oil.
3. Holes may be dry or damp, but should be free of standing water or frost.

Threaded Rod

POWERS supplies a range of adhesive anchor studs for use based on standard embedment depth applications. For alternate embedment depths, studs should be cut to specified size as per application requirements. Studs are available in stainless steel, galvanised steel and zinc plated carbon steel complete with nut and washer. Environmental factors and application factors should be considered carefully prior to selecting the correct stud.

Flat Cut Stud

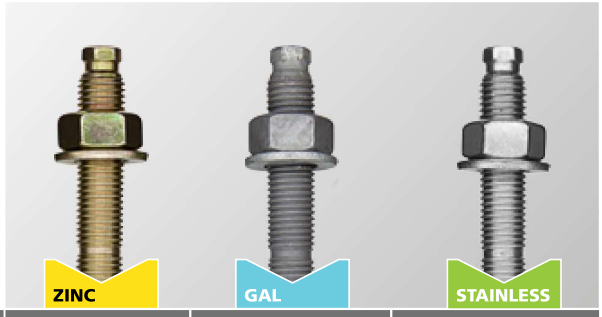
- Suitable for use with any adhesive injection system.
- Depth set mark for standard embedment depth



Size	Drill Dia	Embed Depth	Fixture Thickness	Box Qty	Carton Qty	Part No.	Part No.
8 x 110mm	10	80	17	10	200	**FCS8110-PWR**	**FCSG8110-PWR**
10 x 130mm	12	90	28	10	200	**FCS10130-PWR**	**FCSG10130-PWR**
12 x 160mm	14	110	36	10	100	**FCS12160-PWR**	**FCSG12160-PWR**
16 x 190mm	18	125	42	10	50	**FCS16190-PWR**	**FCSG16190-PWR**
20 x 260mm	24	170	72	5	25	**FCS20260-PWR**	**FCSG20260-PWR**
24 x 300mm	28	210	66	5	20	**FCS24300-PWR**	**FCSG24300-PWR**

Chisel Point Stud

- Suitable for use with Powers SC-PRO capsules or any adhesive injection system.
- Depth set mark for accurate embedment depth.
- External hex for stability when driving the stud in glass capsule



Size	Drill Dia	Embed Depth	Fixture Thickness	Box Qty	Carton Qty	Part No.	Part No.	Part No.
8 x 110mm	10	80	15	10	200	**STM8110-PWR**	**STM8110G-PWR**	**STM8110SS-PWR**
10 x 130mm	12	90	21	10	200	**STM10130-PWR**	**STM10130G-PWR**	**STM10130SS-PWR**
12 x 160mm	14	110	27	10	100	**STM12160-PWR**	**STM12160G-PWR**	**STM12160SS-PWR**
16 x 190mm	18	125	40	10	50	**STM16190-PWR**	**STM16190G-PWR**	**STM16190SS-PWR**
20 x 260mm	24	170	60	5	25	**STM20260-PWR**	**STM20260G-PWR**	**STM20260SS-PWR**
24 x 300mm	28	210	56	5	20	**STM24300-PWR**	**STM24300G-PWR**	**STM24300SS-PWR**

Dispensers

CG PRO Manual Injection Tool is ideal for those who use the entire POWERS adhesive range. The base unit is a unique design which allows dispensing of 385 & 585ml (3:1) cartridge, as well as 300, 380 & 420ml (10:1) cartridges.

CG380KF2 Manual Injection Tool is designed with a high ratio pump style drive mechanism for fast dispensing. A specially designed wear compensation mechanism ensures consistent pumping over the life of the tool. Suitable for use with 380 & 420ml (10:1) coaxial cartridges.

Description	Cartridge	Box Qty	Carton Qty	Part No.
Manual Dispensing Tool	410ml	1	10	**CG380KF2-PWR**
Manual Dispensing Tool	all POWERS Adhesives	1	10	**CGPRO-PWR**

Accessories

Sleeves / Sieves

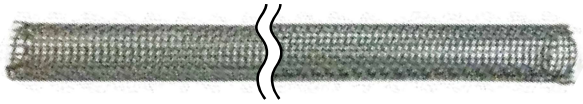
Sleeves / sieves provide easy anchoring in any type of hollow base material. They are designed to support adhesive during the curing process, preventing costly waste due to loss of adhesive in base material cavities. Mesh sleeve / sieves can be cut and crimped to suit base material configuration. Suitable for use in brick, block and hollow core concrete.

Plastic Sleeves / Sieves

COMING SOON

Size	Length	Drilled Hole Ø	Box Qty	Carton Qty	Part No.
M8	80	12	10	N/A	**AAS1280-PWR**
M10	85	16	10	N/A	**AAS1685-PWR**
M10	130	16	10	N/A	**AAS16130-PWR**
M12-M16	85	20	10	N/A	**AAS2085-PWR**
M12-M16	130	20	10	N/A	**AAS20130-PWR**
M12-M16	200	20	10	N/A	**AAS20200-PWR**

Mesh Sleeves / Sieves



Size	Drill Dia	Length	Box Qty	Carton Qty	Part No.
M8	12	1000	1	50	**MS121000-PWR**
M10-12	16	1000	1	50	**MS161000-PWR**

*ETA listing does not cover the use of mesh sleeves.

Mixing Nozzle

To ensure complete and proper mixing of the epoxy components, the PURE150-PRO system uses a static mixing nozzle. This reduces the possibility of mixing errors which are common with hand mixed pourable grout materials.

Each nozzle contains a series of static mixing elements. As the epoxy components are pumped through the nozzle, they are progressively divided and recombined by the mixing elements to ensure precise automatic mixing.

Description	Box Qty	Carton Qty	Part No.
Mixing Nozzle	1	N/A	**8482-PWR**
Mixing Nozzle Extensions (200mm)	10	N/A	**MNEXT-PWR**
Mixing Nozzle Extensions (1000mm)	10	N/A	**AEXTN-PWR**

Hole Cleaning

Blow Pump
For dust extraction (up to 20mm hole sizes)

SDS Plus Wire Brush
For machine cleaning

Description	Drilled Hole Ø	Brush Size	Thread Width	Box Qty	Carton Qty	Part No.
Standard Steel Brush	18	20	M6	1	N/A	**AWBM16-PWR**
Standard Steel Brush	20	22	M6	1	N/A	**AWBR16-PWR**
Standard Steel Brush	24	26	M6	1	N/A	**AWBM20M24-PWR**
Standard Steel Brush	32	34	M6	1	N/A	**AWBM30-PWR**
Standard Steel Brush	37	40	M6	1	N/A	**AWBM36-PWR**
Standard Steel Brush - SDS Plus Extension 300mm			M6	1	N/A	**AWBEXT-PWR**
Standard Steel Brush - SDS Plus Adaptor			M6	1	N/A	**AWBSDSPLUS-PWR**
Blow Pump - Industrial				1	N/A	**BLOWPUMP-PWR**