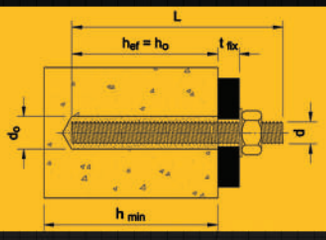
P Fix™

Polyester -Styrene Free Chemical Anchoring System



FOR HEAVY LOADS

CONCRETE

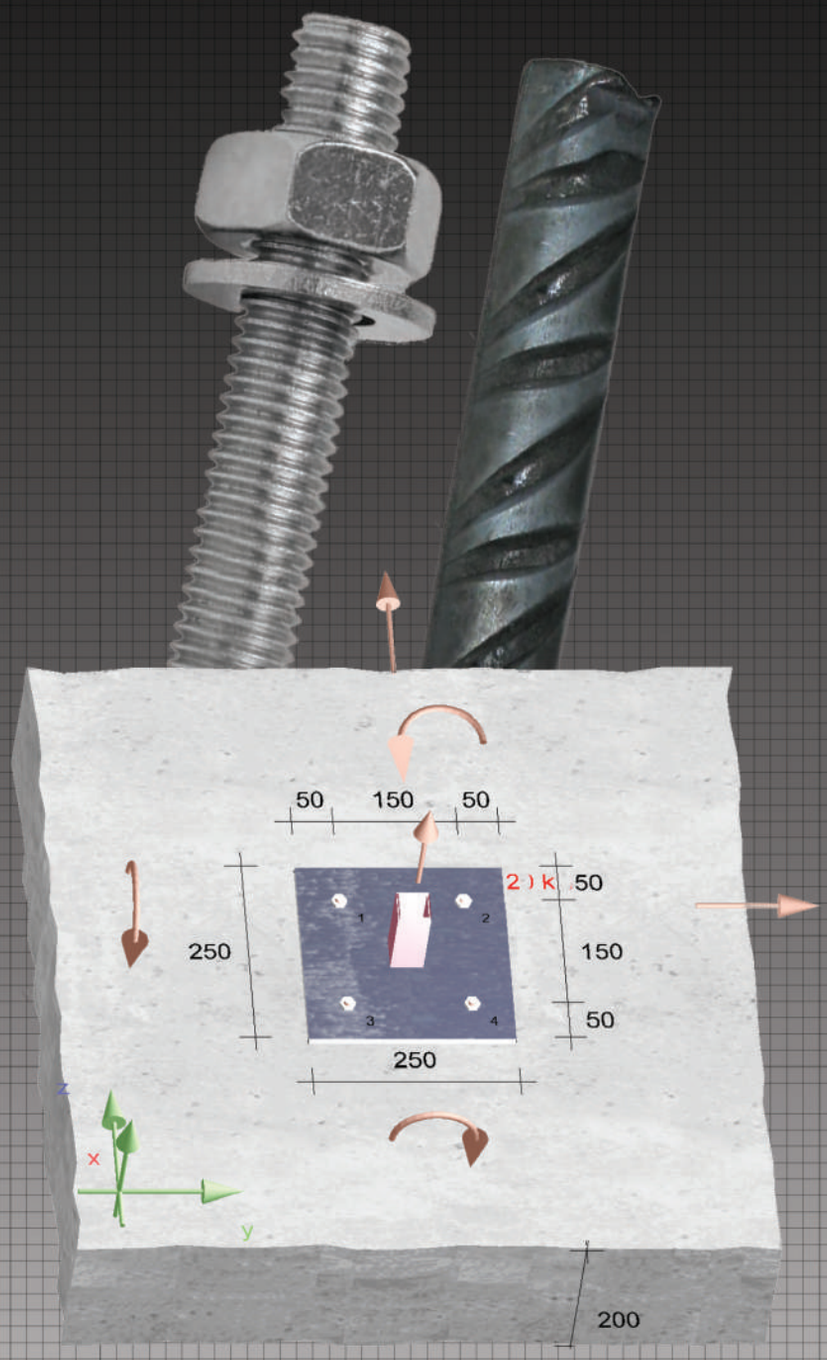
MASONRY

THREADED BARS & REBARS

SLOW GEL FAST CURE

DRY WET & FLOODED HOLES

OVERHEAD Applications



Quality Solutions For Rebar & Anchoring Applications

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Ripple P Fix™

Polyester Styrene-Free Chemical Anchoring System

Versions in P Fix

- Ripple P Fix-Tropical Grade
- Ripple P Fix- EC Extreme Cold
- Ripple P Fix- FS Fast Setting

OPTION 7 for Un-Cracked Concrete

LEED TESTED

European Technical Assesment
ETA 14/0295

CE CERTIFIED OPTION 7
used in Un-Cracked Concrete

HARD PLASTIC BODY
Protects from transportation damages & material handling

AIR TIGHT CAP
Stop-n-go Applications for repeated usage

Applications

- Canopies
- Ventilation systems
- Railings
- Hand rails
- Masonry supports
- Signs
- Safety barriers
- Balcony fences
- Racking
- Machinery
- Post Installed Rebar

Available in
Co-axial Cartridge ***410ml***

Ripple P Fix is Polyester Styrene-Free chemical anchor is specifically formulated to provide fast curing and loading times for most demanding structural and non-structural applications in concrete and masonry.

Ripple P Fix available in three Variants

1) Ripple P Fix EC is designed to use in extreme cold conditions where base material temparatures as low as -10°C
2) Ripple P Fix FS is designed with fast setting formations which allows 2 minutes working time @30°C
3) Ripple P Fix Most suitable for tropical climatic conditions such as Indian / ME continents - Available in India

Ripple P Fix being Polyester based resin mortar is used in hammer drilled holes and are suitable for extreme loads. The system is based on adhesion principle. The resulting bond is stronger than the base material, no additional load stress imparted to the base material in comparision with expansion type anchors and are therefore ideal for close to edge fixing, reduced center, group anchoring.

Installation temperature of **Ripple P Fix** from +10°C and a service temperature up to 80°C. P Fix has high chemical resistance and is suitable for applications in extreme ambiences e.g. closeness to the sea (salt). The product is supported with several international approvals which prove it's capability in nearly every application.

Handling and Storage:

- Storage: Store in cold and dark place
- Storage Temperature: from +5°C up to+25°C
- **Shelf life:**15 months from the date of manufacturing, when stored under 25°C
- Avoid direct sunlight

Approvals

- ETA 14/0295 according to ETAG - 029 for masonry installations
- ETA 14/0295 according to ETAG 001 - Parts 1 & 5 Option 7 (Anchoring in concrete) installations

Physical Properties - Ripple P Fix

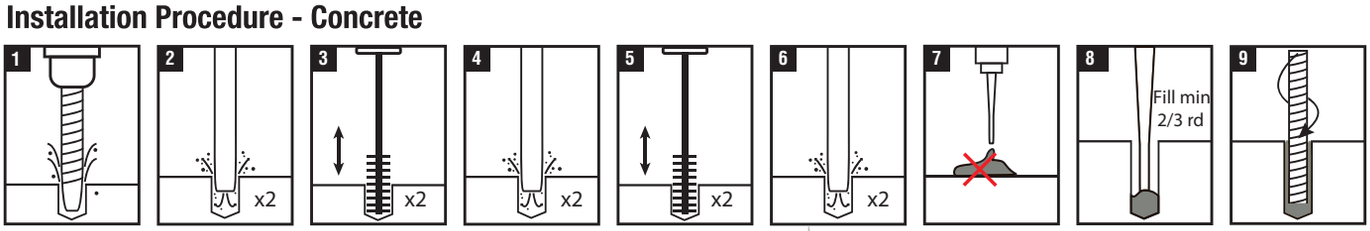
Property		Unit	Value	Test Standard
Density		g/cm³	1.7	ASTM D 1875 @+20°C
Compressive Strength	4 hours	N/mm²	60	BS6319
	24 hours		60	ASTM D 695 @ +20°C
	7 days		70	
Tensile Strength	24 hours	N/mm²	11.5	ASTM D 638 @ +20°C
	7 days		12.2	
Tensile Strength Elongation at Break	24 hours	%	0.1	ASTM D 638 @ +20°C
	7 days		0.1	
Tensile Modulus	24 hours	GN/m²	3.4	ASTM D 638 @ +20°C
	7 days		4.5	
Flexural Strength	7 days	N/mm²	28.3	ASTM D 790 @ +20°C
HDT	7 days	°C	80.90	ASTM D 648 @ +20°C

Working & Loading Times - Ripple P Fix

Resin cartridge Temperature	T Work minutes	Base Material Temperature	T Load minutes
min +10°C	30	min +10°C	300
+10°C to +20°C	15	+10°C to +20°C	300
+20°C to +25°C	10	+20°C to +25°C	145
+25°C to +30°C	7.5	+25°C to +30°C	85
+30°C to +35°C	5	+30°C to +35°C	50
+35°C to +40°C	3.5	+35°C to +40°C	40
+40°C to +45°C	2.5	+40°C to +45°C	35
+45°C	2.5	+45°C	12

Note: T Work is the typical time to gel at the highest temperature in the range.

Installation Procedure - Concrete



Note: For installations in hollow block use seive sleeve in the drilled hole

** While using chemical anchoring system, generally there will be a small percentage of wastage depending on the site conditions, the applicator technique, surface / application temperatures etc. Wastage factor (%) including initial quantities dispensed till achieving uniform mix, the unused portion of adhesive in the cartridge and nozzle after use and any adhesive displaced at the top of the drilled hole when the anchor element is inserted.

1) Press the dispenser trigger firmly till achieve a uniform beed of the mixed mortar.
2) Fill the drilled hole with the mixed mortar only 2/3rd of the hole depth.
3) Fix the Anchor / Rebar into the hole by rotating clockwise direction to avoid air entrapment.
4) While driving the anchor / rebar into the hole, the mixed mortar will be coming out of the surface.
5) Smoothen the edges to remove excess mixed mortar and allow the installed mortar to cure

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Ripple P Fix™

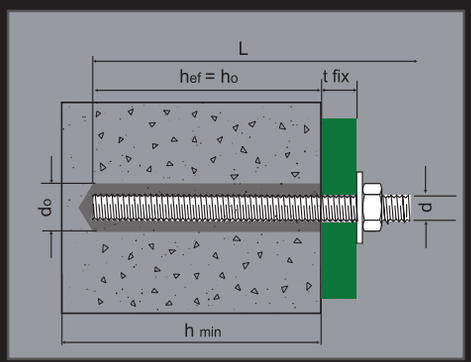
Polyester Styrene-Free Chemical Anchoring System

FEATURES

- Fixings close to free edges
- Suitable for dry, wet & flooded holes
- Extended gel time
- Polyester based Chemical
- Styrene free
- Cost Effective

ADVANTAGES

- High loads & safe Chemical anchoring
- Reliable fixing in Un-Cracked concrete
- Installation comfort at elevated temperatures
- Excellent bonding & low shrinkage
- Low odour, High chemical resistance
- Economical, Good for Vasthu Corrections



Base Materials

- Concrete
- Rock
- Solid Brick
- Light Weight Honeycomb Brick
- Hollow Dense Aggregate Brick
- Hollow Light Aggregate Brick
- Stone
- Aerated concrete

d	=	threaded bar diameter	h_{ef}	=	effective embedment depth	t_{fix}	=	fastenable thickness	h_o	=	minimum hole depth
d_o	=	hole diameter	L	=	threaded bar length	T_{inst}	=	torque	h_{min}	=	minimum support thickness

ETA performance data for Threaded Bars (RTR)

The performance of an anchor depends on the properties of the resin, the steel quality of the threaded bar,the concrete strength, the embedment depths and the drilling and cleaning quality. In the following pages, the loads are indicated for embedment depths ranging from 8x to 12x the bar diameter.

Performance Data embedment depth 8d in (C20/25) Concrete f_{ck}, cube = 25 N/mm²							
Size		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**
h_{ef} = 8d	mm	64	80	96	128	160	192
Dry, wet & flooded $N^0_{Rk,p}$	kN	13.67	20.11	32.57	57.91	80.42	108.57
Dry, wet & flooded partial safety factor	γ_{Mc}	1.80					
Edge distance C_{cr}	mm	$2h_{ef}$			$1.5h_{ef}$		
Spacing S_{cr}	mm	$4h_{ef}$			$3h_{ef}$		
Min. member thickness		h_{ef} + 30mm ≥ 100mm				h_{ef} + $2d_o$	

Performance Data embedment depth 10d in (C20/25) Concrete f_{ck}, cube = 25 N/mm²							
Size		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**
h_{ef} = 10d	mm	80	100	120	160	200	240
Dry, wet & flooded $N^0_{Rk,p}$	kN	17.09	25.13	40.72	72.38	100.53	135.72
Dry, wet & flooded partial safety factor	γ_{Mc}	1.80					
Edge distance C_{cr}	mm	$2h_{ef}$			$1.5h_{ef}$		
Spacing S_{cr}	mm	$4h_{ef}$			$3h_{ef}$		
Min. member thickness		h_{ef} + 30mm ≥ 100mm				h_{ef} + $2d_o$	

Performance Data standard embedment depth in (C20/25) Concrete f_{ck}, cube = 25 N/mm²							
Size		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**
h_{ef} = Standard Embedment depth.	mm	80	90	110	128	170	210
Dry, wet & flooded $N^0_{Rk,p}$	kN	17.09	22.62	37.32	57.91	85.45	118.75
Dry, wet & flooded partial safety factor	γ_{Mc}	1.80					
Edge distance C_{cr}	mm	$2h_{ef}$			$1.5h_{ef}$		
Spacing S_{cr}	mm	$4h_{ef}$			$3h_{ef}$		
Min. member thickness		h_{ef} + 30mm ≥ 100mm				h_{ef} + $2d_o$	

Performance Data embedment depth 12d in (C20/25) Concrete f_{ck}, cube = 25 N/mm²							
Size		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**
h_{ef} = 12d	mm	96	120	144	192	240	288
Dry, wet & flooded $N^0_{Rk,p}$	kN	20.51	30.16	48.86	86.86	120.64	162.86
Dry, wet & flooded partial safety factor	γ_{Mc}	1.80					
Edge distance C_{cr}	mm	$2h_{ef}$			$1.5h_{ef}$		
Spacing S_{cr}	mm	$4h_{ef}$			$3h_{ef}$		
Min. member thickness		h_{ef} + 30mm ≥ 100mm				h_{ef} + $2d_o$	

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Reinforcement bars (Rebars)		Performance Data of Rebars Fe 500 Steel - N_{rec}			
Rebar Diameter	Hole Diameter	Area of Steel	**Embedment depth**	**Tension Load**	**Shear Load**
mm	mm	mm^2	mm	KN	KN
8	12	50.3	80	25.2	13.6
10	14	78.5	100	39.3	21.2
12	16	113	120	56.5	30.5
16	20	201	160	100.5	54.3
20	25	314	200	157.0	84.8

Reinforcement bars (Rebars)			Setting Details - Rebars in M25 Concrete (C20/25) f_{ck}, cube = 25 N/mm^2					
Rebar size	**mm**		**Ø 8**	**Ø 10**	**Ø 12**	**Ø 16**	**Ø 20**	**Ø 25**
Nominal drill hole diameter	d_0	mm =	12	14	16	20	24	32
Minimum anchorage depth (8 x Ø)	$l_{b,\,min}$	mm =	64	80	96	128	160	200
Development Length	l_{bd}	mm =	164	205	246	328	410	513
Ø of steel brush for cleaning hole	d_b	mm ≥	14	16	18	22	26	34
Minimum spacing	s_{min}	mm	48	60	72	96	120	150
Concrete cover	c_d	mm	24	30	36	48	60	75

** Consumption Chart for Rebar Installation with Ripple P Fix (Cartridge Volume = 410 ml)						
Rebar Diameter	**Ø 8**	**Ø 10**	**Ø 12**	**Ø 16**	**Ø 20**	**Ø 25**
Drilling Ø	12 mm	14 mm	16 mm	20 mm	24 mm	32 mm
Installation Depth hef	* Number of holes per Cartridge					
8 x Ø	88 holes	59 holes	42 holes	24 holes	16 holes	5 holes
10 x Ø	70 holes	47 holes	33 holes	19 holes	12 holes	4 holes
Standard Depth	70 holes	52 holes	36 holes	25 holes	15 holes	5 holes
12 x Ø	59 holes	39 holes	28 holes	16 holes	10 holes	3 holes

** Consumption Chart for Anchor Rod Installations with Ripple P Fix (Cartridge Volume = 410 ml)						
Anchor Diameter	**M8**	**M10**	**M12**	**M16**	**M20**	**M24**
Drilling Ø	10 mm	12 mm	14 mm	18 mm	22 mm	26 mm
Installation Depth hef	* Number of holes per Cartridge					
8 x Ø	196 holes	128 holes	90 holes	52 holes	33 holes	23 holes
10 x Ø	157 holes	103 holes	72 holes	41 holes	27 holes	18 holes
Standard Depth	157 holes	114 holes	79 holes	53 holes	31 holes	21 holes
12 x Ø	131 holes	86 holes	60 holes	34 holes	22 holes	15 holes

* The above consumption data is calculated theoretically and for estimation purpose only.
* Actual Consumption may vary upto 10-15% depending on site conditions and type of application.
** Please refer to page no. 2 of this brochure under installation procedure

Accessories

Dispenser Gun for P Fix (Suitable for V Fix / P Fix 410 ml Coaxial 10:1 ratio cartridge)	30205	
Blow out Pump - Manual (Medium)	16007	
Cleaning Wire Brush (Various Diameters available)	-	
Threaded bars (RTR) available in various diameters & lengths in 5.8, 8.8 grades & also in A2 (304) & A4 (316)	-	

New Delhi | Mumbai | Pune | Kolkata | Bangalore | Chennai
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Ripple Construction Products Pvt Ltd
Corp Office: 303 & 403, Royal Arcadia, S.R. Nagar, Hyderabad - 500 038, India
Tel: +91 40 4004 0707 Fax: +91 40 4004 0686
Email: marketing@rippleindia.in | www.rippleindia.in