

# Cartridge Systems

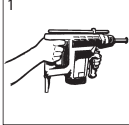
A styrene free polyester resin 380ml coaxial cartridge system with a resin to hardener ratio of 10 parts to 1. The cartridge has a coaxial nozzle outlet and is sealed with the screw cap.

<u>Base Material</u>		<u>Uses</u>	<u>Features</u>
<u>Without perforated sleeves</u> <ul style="list-style-type: none"> <li>Concrete</li> <li>Hard natural stone</li> <li>Solid rock</li> <li>Solid masonry</li> </ul>	<u>With perforated sleeves</u> <ul style="list-style-type: none"> <li>Hollow bricks</li> <li>Hollow blocks</li> <li>Voided stone or rock</li> </ul>	<ul style="list-style-type: none"> <li>Anchor sockets</li> <li>Fixing externally threaded rods</li> <li>Concrete reinforcing bars</li> <li>Securing profiled sections and bars</li> </ul>	<ul style="list-style-type: none"> <li>Styrene Free</li> <li>Not hazardous for transportation</li> <li>Anchoring without expansion pressure</li> <li>Fixing close to free edges</li> <li>Medium / High load capacities</li> </ul>

### Methods of Use

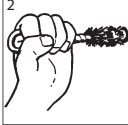
**Solid**

1



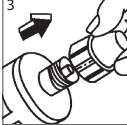
Drill the hole to the correct diameter and depth using a rotary percussive machine.

2




Clean the hole using a stiff wire or nylon brush and clean compressed air or blow pump.

3



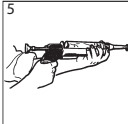
Once the hole is prepared remove the screw cap from the cartridge.

4



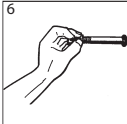
Attach mixer nozzle, place in applicator gun and dispense the first part of the cartridge to waste until an even colour is achieved.

5



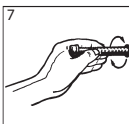
Insert the mixer nozzle to the far end of the hole and half fill hole (depending upon application). Withdraw nozzle as you fill the hole. For deep holes extension tubing can be used.

6



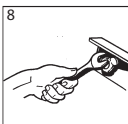
Immediately insert the fixing.

7



This should be done slowly with a slight twisting motion. Excess resin should be removed from the mouth of the hole before it sets.

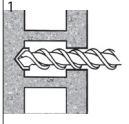
8



Leave the fixing undisturbed until loading time has elapsed, then attach the fixture and tighten the nut.

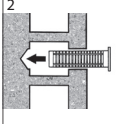
**Hollow**

1



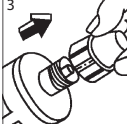
Drill the hole to the correct diameter and depth. This can be done with either a rotary percussive or rotary machine depending upon the substrate.

2



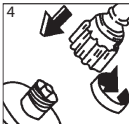
Insert the correct perforated sleeve.

3



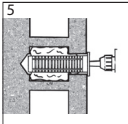
Once the hole is prepared remove the screw cap.

4



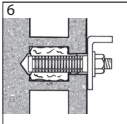
Attach mixer nozzle, place in applicator gun and dispense the first part of the cartridge to waste until an even colour is achieved.

5



Insert mixer nozzle to the far end of the perforated sleeve and completely fill the sleeve with resin. Withdraw the mixer nozzle as the sleeve fills.

6



Immediately insert the fixing. This should be done slowly with a slight twisting motion. Leave the fixing undisturbed until the loading time has elapsed, then attach the fixture and tighten the nut.

### Technical data

#### Gel and Loading Times

Application Temperature (°C)	T gel typical (minutes)	T load (minutes)
30	4	35
25	5	40
20	6	50
10	10	85
5	18	145

### Shelf Life

Cartridges should be stored in their original packaging in cool conditions (20°C - 0°C) out of direct sunlight. When stored in this way the shelf life will be 12 months from the date of manufacture.

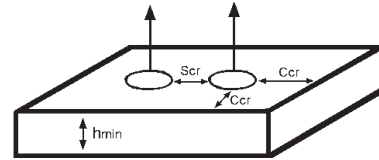
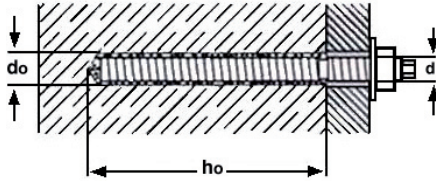
### Health and Safety

The Thor PSF Cartridge System is not classified as being hazardous to health, however, we would recommend the wearing of suitable protective clothing eye/face protection and gloves.

For further health and safety information, please refer to the relevant Safety Data Sheet.

Load capacity data for all thread studs

Stud diameter	Hole diameter	Hole depth	Required close edge distance to achieve $N_{rec}$	Required anchor spacing to achieve $N_{rec}$	Min concrete member thickness	Characteristic load in min 30N/mm <sup>2</sup> concrete	Recommended load in min 30N/mm <sup>2</sup> concrete
d (mm)	d <sub>o</sub> (mm)	h <sub>o</sub> (mm)	C <sub>cr</sub> (mm)	S <sub>cr</sub> (mm)	h <sub>min</sub> (mm)	N <sub>RK</sub> (kN)	N <sub>rec</sub> (kN)
8	10	80	120	80	110	25.6	8.5
10	12	90	135	90	120	31.5	10.5
12	14	110	165	110	140	43.3	14.4
16	18	125	190	125	165	49.7	16.6
20	22	170	255	170	220	86.6	28.9
24	26	210	315	210	270	94.0	31.3



- d stud or bar nominal diameter (mm)
- d<sub>o</sub> drilled hole diameter (mm)
- h<sub>o</sub> hole depth (allthread) (mm)
- h<sub>ef</sub> effective bond length (rebar) (mm)
- C close edge distance (mm)
- S anchor spacing (mm)
- C<sub>cr</sub> required close edge distance to achieve N<sub>RK</sub>
- S<sub>cr</sub> required anchor spacing to achieve N<sub>RK</sub>
- h<sub>min</sub> minimum concrete member thickness (mm)
- f<sub>cm</sub> concrete compressive strength (N/mm<sup>2</sup>)

- N<sub>RK</sub> anchor characteristic load, tension (kN)
- V<sub>RK</sub> anchor characteristic load, shear (kN)
- N<sub>rec</sub> anchor recommended load (kN)
- R<sub>f\_cN</sub> close edge reduction factor, tension only
- R<sub>f\_cV</sub> close edge reduction factor, shear only
- R<sub>f\_s</sub> close spacing reduction factor, tension and shear

Load capacity data for reinforcing bar anchors

Equations for tensile and shear load capacities

Tension  $N_{RK} = (h_{ef} - 50) / 2.5$

Shear  $V_{RK} = (0.5 (h_{ef} \cdot d_o \cdot f_{cm}) / 1000) (f_{cm} \leq 50)$

Recommended hole diameters (d<sub>o</sub>)

Bar dia. d	6	8	10	12	16	20	25	32
Hole Dia. d <sub>o</sub>	8	10	12	14	20	25	32	38

Concrete capacity reduction factors

Close edge, tension:  $R_{f_cN} = 0.4 + [0.4 C / h_{ef}]$   $0.5 \leq [C / h_{ef}] \leq 1.5$

Close edge, shear:  $R_{f_cV} = 0.25 + [0.5 C / h_{ef}]$   $0.5 \leq [C / h_{ef}] \leq 1.5$

Close spacing, tension or shear:  $R_{f_s} = 0.4 + [0.6 S / h_{ef}]$   $0.25 \leq [S / h_{ef}] \leq 1$

Notes on load capacity data

Quoted values for N<sub>RK</sub> are corrected to f<sub>cm</sub> = 30, according to the ET AG 'Metal Anchors for use in Concrete'. The equations for calculating the values of the (unfactored) characteristic loads N<sub>RK</sub> and V<sub>RK</sub> for reinforcing bar assume f<sub>cm</sub> ≤ 30. All load capacity equations and values assume adequate steel strength; allthread stud tests were carried out on grade 8.8 steel. Hole diameters for reinforcing bar assume UK C.A .R.E .S. approved bar, grade 460; the use of bar with a high rib pattern could call for larger diameter holes, and tests may be required to determine the characteristic loads.

**Information and Sales:**

Important Note

Whilst all reasonable care is taken in compiling technical data on the Company's products, all recommendations or suggestions regarding the use of such products are made without guarantee, since the conditions of use are beyond the control of the Company. It is the customer's responsibility to satisfy himself that each product is fit for the purpose for which he intends to use it, that the actual conditions of use are suitable and that, in the light of our continual research and development programme the information relating to each product has not been superseded.



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