UniChore: Rebar Epoxy Adhesive

UNION COMPOUND

Selection & Specification Data

The inherent flexibility of the UniChore system allows for our modular structures to be reinforced in a variety of ways. This provides engineers with the ability to choose a reinforcing option which best fits the circumstances of a particular job. These guidelines provide information on the use of reinforcing bars to provide vertical reinforcement on a masonry wall. For more information on other types of reinforcing please refer to the relevant technical guideline.

Vertical Reinforcing Using Fixing Kits

The use of reinforcing bars in mortarless block wall structures provides resistance to the over turning forces created by surcharges. The UniChore system is primarily a gravity based system, vertical reinforcing bars are one option to increase the structural integrity of a wall.

Composition of Fixing Kits:

Threaded Reinforcing Bar:

UniChore uses threaded reinforcing bar for vertical reinforcement. The thread allows the bar to be tied at the top of the wall joining the wall to the foundation and creating one homogenous structure.
The use of threaded bar allows the wall to be expanded vertically through the use of couplers. Changes in capacity over the structures life time should be taken into account when specifying reinforcing bar.
Threaded Bar Guide/Wall Height

Grade	Nom Thread Pitch (mm)	Characteristic Values					Mass (kg/m)	Nom Area Sq (mm)	Min Hole Dia. to pass bar
		Min Yield Stress (Mpa)	Min Yield Strength (kN)	Min Ultimate Strength (kN0	Max Ultimate Strength (kN)	Min Shear (.62 min ult) (kN)			
500E	16.4	500	402.0	462.3	562.9	286.6	6.31	804	38

Nuts and Washes:

Nuts are used to fasten the wall once constructed. As the centre holes of the block are 60mm in diameter the washer spreads the load of the nut, especially when using smaller size bar.
The nut and washer supplier should be the same as the supplier of the threaded bar.
Threadedbar Nut Specifications

Length (mm) Char.	Strength (kN)	Weight (kg)	Nominal Hex Size A/ Flats mm +/-	Nominal Hex Size A/ Corners +/-
82	>562.9	0.96	55	63.5

Epoxy:
It is preferable to epoxy the threaded bar in to the concrete foundation, after the foundation has cured. Provided the correct materials are used and the correct installation procedure is followed, the epoxy will be as strong as if the bar was cast into the concrete foundation.

Installation Procedure:
To ensure the structural integrity of an UniChore structure with vertical reinforcing, it is vital to follow the correct process. Deviation from this procedure may result in structural failure. It is ultimately the responsibility of the installer to ensure the process is followed correctly.

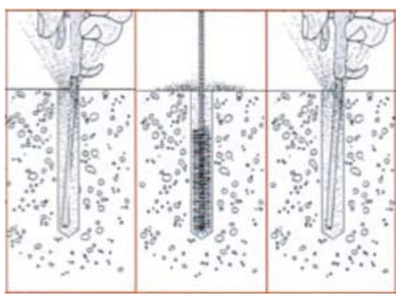
Prepping and Drilling:
Mark out the locations of the holes to be drilled using a chalk string. The holes should be a minimum of 300mm from the nearest edge of the foundation. 603mm is the minimum separation distances between holes along the wall. This is to allow for the creep in the blocks.

Spacing of Vertical Reinforcing				
	@600mm Centres	@1200mm Centres	@1800mm Centres	@2400mm Centres
Distance between Holes	603mm	1206mm	1809mm	2412mm

If the building a wall longer requiring more than 20 holes, at the 21st hole recalibrate your measuring tool to ensure accuracy.
Use a diamond tipped drill or other appropriate drill piece. Drill holes in the concrete at the marked points along the centre line, and to the correct diameter and depth for the size of rod specified to be used.

	Anchor Size (mm)				
	12	16	20	25	32
Drill Bit Diameter (mm)	16	20	25	32	40
Typical Embedded Depth (mm)	110	125	170	210	300
Base Material Thickness (mm)	145	165	220	275	380
Filling Volume (ml)	13-20	19-29	40-64	70-96	162

Core drill bits are required for holes 25mm and larger.
Clean out holes with a brush, and blow then blow out with pressurised air. Wet cored holes must be flushed with water to remove all slurry. All dust and debris MUST be removed from holes after drilling to ensure optimum adhesion.



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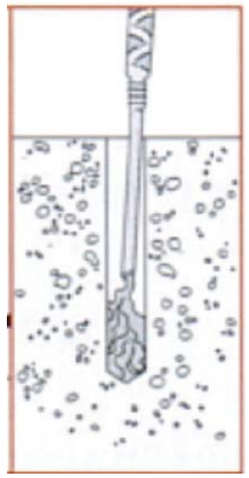
UniChore and Starter Bars:
Take specified UniChore adhesive and load into cartridge dispenser. You will require a long adapter nozzle.
Insert the nozzle into the hole and fill with the required amount of UniChore.
UniChore cartridges mix the chemical adhesive in the static mixer of nozzle. A uniform colour of the epoxy in the nozzle indicates mixing has occurred.
Insert the start rod into the hole slowly with a twisting motion. This ensures the product fills all the voids and uniformly coats the rod.
UniChore has a gel time of 30 minutes and curing time of 12 hours.
Attach a coupler to the end of the starter bar before moving to the next hole. The thread should be at least 80% engaged with the coupler maximum thread depth to ensure the full breaking strength of the couple is achieved.



	Anchor Size (mm)				
	12	16	20	25	32
Starter Bar Length (mm)	560	575	620	660	750

Starter rods a short lengths of rebar UniChore into the foundation before the construction of the wall commences. This ensures the structural integrity of the rod and allows for testing before construction of the wall.
Starter bars should protrude from the foundation a minimum of 450mm.
Safety Note: Starter bars should have high visibility safety protective caps inserted on end of the protruding starter bar

Rebar Length:

	Wall Height (mm)					
	1200	1800	2400	3000	3600	4200
Length of Rebar (excluding starter rod)	850	1450	2050	2650	3250	3850

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Assumes 100mm excess rod at top of wall.
Once the rebar has been at least 80% engaged on the coupler, fit the washer and nut at the top of the wall. Tighten nut to supplier's specification.
it is recommend using a wrench with a minimum length of 300mm to ensure the bar is fully engaged with both the couple, and the nut.
It is normal for the blocks to settle over time, as such the nut should be tightened at the four week and eight week mark post installation.

Testing:
All starter bars should be tested to ensure an adequate adhesive bond has formed.
An initial 'pull' test should be undertaken by the project supervisor. This is done by pulling on the starter bar once the epoxied has had time to fully cure. If the bar moves, more sophisticated testing should be undertaken.
If stress tests need to be under taken, please contact Union Compound technical service, to visit site and undertake appropriate testing. This should be conducted under the supervision of the design engineer.