

Torc Ground Anchor – Series II

Fitting Instructions for Injection Resin

Copyright © 2011-2016 Pragmasis Limited
(08-Nov-16)

Important Requirements

Caution: Be careful that you do not drop the anchor on your foot or allow the shackle to fall on a finger!

Any security installation is only as strong as its weakest link:

The Torc Ground Anchor must be used in conjunction with an appropriately fitted Sold Secure-approved lock and chain.

The integrity of the anchor is dependent upon the quality of the surface to which it is fitted. Concrete is generally stronger than brick, and brick is generally stronger than block. The minimum recommended concrete thickness is 120mm; preferably 150mm. Do not fit the anchor to Tarmac or other soft surfaces, even if there is concrete below. Separate fitting kits are available for installation on brickwork and other situations.

If you are unsure, please contact your supplier for advice.

What Tools Will I Need?

The fitting kit includes all parts that are required. The only tools you will require for fitting are:

- An electric hammer drill with at least a 12mm chuck capacity (variable speed recommended)
- For the FIS VS 150 C cartridge kit, a standard sealant (*skeleton*) gun
- A medium sized hammer (a 4lb/2kg club hammer is ideal)
- Eye protection – goggles or a visor should be worn
- Ideally a screwdriver or knitting needle or piece of stiff wire at least 200mm long
- A pencil or felt pen or similar for marking holes to drill
- Optionally, disposable thin gloves can help to avoid touching any excess resin

How Long Should I Allow to Fit a Torc Anchor?

30-60 minutes as a guideline. Be careful and don't rush. The ground anchor will be ready for use the following day.

What Parts Should be in the Fitting Kit?

The Torc anchor injection resin kit uses top quality chemical resin for maximum security in variable condition concrete floors and other difficult substrates:

- M10 x 98mm long high tensile (10.9-rated) hex socket countersunk bolts, fully threaded, specially manufactured with a chamfered end (qty. 4)
- Fischer FIS VS 100 P Vinylester resin cartridge with a mixer nozzle and screw plunger, or FIS VS 150 C bare cartridge with a mixer nozzle (or equivalent)
- Hardened steel ball bearings to suit bolts (qty. 4)
- 6mm AF x ¼" Hex Driver bit to suit bolts
- M8 x 50mm hex head bolt (to be used as a punch)
- Length of flexible PVC hose and test tube brush
- Masonry hammer drill bit 12mm straight shank
- These instructions

Health and Safety information for the resin cartridge is on its box.

How to Fit a Torc Ground Anchor with Injection Resin

The Torc ground anchor is designed to be fitted by any competent DIY enthusiast.

You should read through these instructions in their entirety *before starting to fit an anchor*. If you are not confident of your ability, you should ask an experienced person or professional builder to help.

If you are installing in unusually high or low temperatures (below 5 or above 30 Celsius), please contact your supplier before proceeding. Do not use the resin below 5 Celsius.

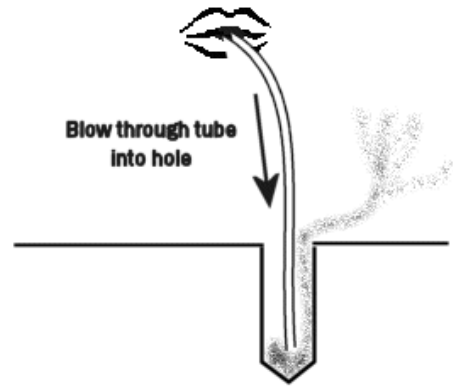
In the following instructions, the term *bike* is used to mean any valuable item that you wish to secure with your ground anchor.

- 1. Check the contents of the Fitting Kit:** Ensure the fitting kit is complete (the items are listed above). Contact your supplier if there are any parts missing or damaged.
- 2. Choose a good location:** Be careful to choose an appropriate location for fitting your anchor, clear of any pipes, cables etc (the use of a metal detector or other pipe/cable detector is recommended if you are unsure). The anchor is designed for permanent installation so take time to ensure the chosen position will allow you to secure your bike with the chain etc that you have chosen. Putting the anchor near a corner or other location such that the bike restricts access to the anchor can make it a lot harder for a criminal to attack, as can keeping chains and locks off the floor. We recommend that you place the anchor loosely on the floor and check that you can get the bike into position and then ensure you can actually fit the chain & lock. Time spent now checking the intended location is much better than realising later that you can't get the bike within the range of your chain!

Remember that any anchor is only as good as the substrate it is fitted to.

- 3.** The fixing holes are at the corners of a rectangle measuring 100mm x 60mm. Mark the position of the first hole, move the anchor out of the way and using eye protection, good ventilation and a hammer drill, carefully **drill the first hole** to 95mm depth. The drill bit supplied is marked with tape at 95mm – the tape should just touch the surface of the floor as you finish drilling each hole – **don't drill too deep!** Preferably, clean dust from the hole that you have drilled (see the next step) and then put the anchor, without the shackle, back in position. Insert one of the bolts, **without any resin at this stage**, through the anchor and into the hole you have drilled. The bolt will feel loose but we suggest that you keep the anchor in position and progressively use a bolt in each hole that you have drilled to help guide the drill for the remaining holes. It is easy for the drill to drift sideways, particularly in some types of concrete, and using 1, 2, and then 3 bolts to hold the anchor in position while you drill the remaining holes will help to keep the holes accurate. If you are drilling extremely tough concrete or if the drill is difficult to keep in position, you may find it helps to drill a pilot hole of e.g. 8mm diameter first, if you have a suitable drill bit available (only a 12mm drill bit is included in the kit). Keep the drill vertical and drill the remaining 3 holes to approximately half depth, preferably cleaning dust from each hole and inserting a bolt in each hole as you go. You may find that it helps if you put one foot on the edge of the anchor, but be careful to keep the drill clear of your foot and any clothing and not to trip or fall over! Once you have drilled the remaining 3 holes part way, lift the anchor (and bolts) completely out of the way to finish drilling the holes. Take care not to breathe the dust and try to prevent the dust from falling into the other holes. Using a vacuum cleaner and crevice tool near the drill may help to suck up the dust during the drilling process – take care however you do it!

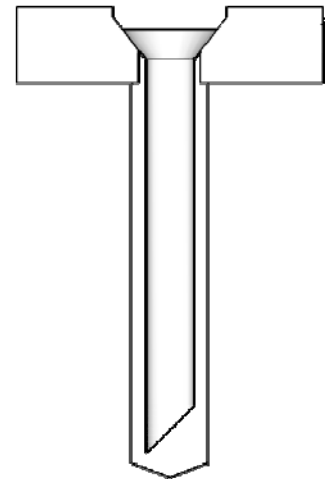
4. **Clean dust from inside the holes:** It is very important that the holes are as clean as possible if the resin is to achieve a good bond. The drill will often leave a surprising amount of dust at the bottom of the hole so it is a good idea to spin the drill up and down to *screw* dust out of each hole. Take care that you don't sweep dust from one hole into another hole!



Then, still wearing eye protection and taking care to avoid breathing the dust, use the plastic tube provided to blow any remaining dust out of each hole. Place one end of the tube in your mouth and, whilst blowing, move the other end of the tube up and down in each hole. Then use the test tube brush to clean further dust from the holes, pushing the tip of the brush to the bottom of the hole and pulling it back out again. Having the wire handle of the brush bent into an 'L' shape helps to give a better grip as the brush is a snug fit in the holes. Use the plastic tube again to clear any more dust. Keep doing this brushing and blowing sequence until the holes are clean and no more dust blows out. This stage is easier if you have a source of compressed air or a vacuum cleaner to suck the dust up (a crevice tool and the plastic tube can work well), but take care to protect your eyes and avoid breathing the dust, however you clean the holes.

5. **Check that the holes are clean and deep enough:**

Place the ground anchor base plate, again without the D-shackle and without any resin, back in position and drop a bolt into each of the holes to check that all of the bolts are sitting properly at the bottom of their countersunk recesses in the base plate. Compacted dust can remain at the bottom of the holes and this may cause bolts to sit too high. If the holes are not clear or simply not deep enough, repeat the relevant steps above to achieve the correct depth and holes clear of dust. Ideally, use a screwdriver or knitting needle or piece of stiff wire to assess the bottom of each hole. The injection resin is good in situations of compacted sand or mud or limited air gaps/voids. Small errors can be corrected by re-drilling; greater errors need you to start again or seek advice from your supplier. Lift the anchor away to remove the bolts. Clean any dust from the bolts by blowing or wiping with a dry cloth.



6. **Place the D-shaped shackle flat on the floor and put the anchor in position on top of it so that the shackle is held in position by the cut-out in the anchor base plate,** and taking care to line it up with the drilled holes.

**** DO NOT FORGET TO PUT THE SHACKLE ON THE FLOOR FIRST!!! ****

7. **Prepare the Resin Cartridge:** Remove the drill bit from the drill as you will use that as a pushing tool, shortly. Then, remove the cap and screw the nozzle with its internal spiral mixer onto the resin cartridge. Ensure the mixer spiral is present. For the 100ml cartridge, screw the twist plunger into the base of the cartridge until you start to feel resistance; for the 150ml cartridge, fit it into a standard sealant (*skeleton*) gun. Eject some resin onto an unimportant surface until it emerges as a consistent grey colour. The Fischer resin is normally mixing well within 30-100mm of ejected resin. Resin that is not evenly grey in colour will

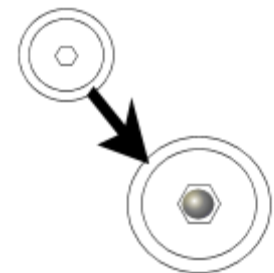
not cure and must be disposed of.

8. **Inject Resin into the first hole:** Push the tip of the mixer nozzle right into the bottom of the first drilled hole through the ground anchor base plate – ensure the *D-shackle* is in position! – and approximately 2/3 fill the hole with resin, gradually withdrawing the nozzle as the hole is filled. With the FIS VS 100 P cartridge, a perfect hole will take approximately 1.5-2.0 turns of the screw plunger; an over-size hole or one with an air space below will require more resin. Try to judge the amount of resin required, bearing in mind the bolt will displace resin upwards in the hole. Don't waste the resin as you've got 4 holes to do!
9. **Insert the first bolt into its resin-filled hole:** Ensure the ground anchor is positioned with all 4 holes aligned with the drilled holes and slowly push the first bolt into its hole, twisting the bolt gently, by hand, as you push it home. Use the drill bit to push the bolt home firmly so that you don't get resin on your fingers. Ideally, there should be a very small amount of resin pushed up around the bolt head as the bolt goes fully home in the base plate. If no resin appears at all, use more resin in the next holes and you may wish to remove the first bolt and add resin before re-inserting it. The small hex driver bit will help if you need to remove the bolt (the slightly smaller end of the driver bit (6mm) fits into the bolt head). Try to avoid getting resin on your fingers. You may wish to use disposable gloves (not supplied).
10. **Inject resin and fit bolts into the remaining 3 holes:** Repeat this sequence promptly for all four bolts; doing bolts on a diagonal first will help with alignment. Use your experience of resin volume from the first hole to judge the amount of resin required for the other holes. The total volume of resin in the FIS VS 100 P cartridge is ejected with approximately 12-14 turns of the screw plunger, so be wary of using more than 3 turns of the plunger on any one hole as you may run out of resin. Further resin cartridges are available at extra cost, as are cartridges with larger capacity, and also mesh sleeves (see below, under Queries).

The resin will generally start to cure 10 minutes after ejection (or quicker in temperatures above 20 Celsius) so you should aim to get all bolts in their final positions and their ball bearings in place (see below) within this amount of time. Moving a bolt after this period may compromise the bonding process. Don't be too worried about the time limit as it is normally easy to do it in the time.

11. **Check all four bolts are fully home:** Once you have all four bolts in their holes, check that they are all fully home and in contact with the base plate of the ground anchor. Do not expect the ground anchor to be held very tightly against the floor – that is not important to the security of the fitting. Slight alignment errors do not have a significant effect on strength. If any bolts have pulled out slightly, you can push them home with the drill bit.

12. **Insert the ball bearings: Before the resin sets,** hammer one of the ball bearings supplied into the hexagonal head of each bolt. You may find the extra M8 x 50mm bolt is useful as a *punch* to reach the bolt heads – the end of the bolt has a slight dimple that will locate on the ball bearing. The ball bearings are a very tight fit so it will take a few good hammer blows to drive them into the bolt heads. You do not need to drive the balls absolutely all the way into position; providing they won't come out then that is sufficient. Once you have fitted the last ball bearing, check one more time that all four bolts are close against the ground anchor, in case the hammering has loosened any slightly. Use the hammer and punch to tap any into their correct position, if required. Be careful not to hit your fingers! ☺



13. Leave the anchor undisturbed while the resin sets: We recommend that you leave the anchor for 1-2 hours or preferably overnight to ensure the resin is fully hardened before using it. Try to avoid disturbing the anchor during this period.

14. The installation is complete once the resin has set. Well done ☺ The resin cures faster in warmer temperature environments. For example, it will begin to cure in 20 minutes at 10 Celsius; within 10 minutes at 20 Celsius, or within 6 minutes at 30 Celsius. We recommend that you give the anchor a jolly good tug the following day to make certain it is firmly fixed. Contact your supplier if you have any doubts or problems.

Using a Torc Ground Anchor

A properly installed anchor should give you many years of trouble-free service.

Remember that you must use an appropriately fitted Sold Secure-approved lock and chain to be confident in your security provisions.

No maintenance is normally required. Do not use any abrasives for cleaning.

Resin Fixing Queries

What About the Damp Course in my Floor?

The chemical resin re-seals the damp course as the resin hardens.

What if you have Poor Quality Concrete?

Any anchor is only as good as the substrate that it is fixed to. The Torc anchor uses chemical resin because it copes better with poor quality substrates. The Torc anchor uses 4 fixings to increase resilience further and these are positioned near the outside of the anchor to maximise strength.

However, more resin is required in substrates containing significant voids, such as if the hole widens below the surface.

If you are concerned about the quality of substrate then please contact your supplier for advice. Since this is a DIY-installed product and we have no control over the quality of the substrate, we are unable to provide any warranty on the solidity of the mounting. You should be confident that your substrate is adequate for your needs and you should check that the installation is sound after the resin has hardened.

What if there is a *big* void below the concrete, or with hollow blocks?

Injection resin copes well with holes that have reached mud, sand or limited air spaces. If you encounter a large air space below the concrete or within a building block, then it may be advisable to find an alternative location or switch to an alternative fitting kit (e.g. brick wall). The Sold Secure approvals and any product warranties do not apply to any non-standard fittings and you are strongly recommended to find a location with a good substrate. However, if you really have no choice about the location and it is not practical to re-concrete the area, you *may* be able to fill a moderate-sized hollow with a larger quantity of resin. Fischer are manufacturers of high quality vinylester resin cartridges. Suppliers include Screwfix (www.screwfix.com), RS Components (www.rswww.com, part numbers 449-3298 or 436-4005), or Jewson builders' merchants. Fischer also offer mesh sleeves for use with their resin products where large voids are unavoidable. These sleeves help to constrain the resin even when there is a large void beneath/within the substrate, but they usually require a 16mm diameter hole to be drilled and the purchase of the sleeves themselves. The stockists mentioned are usually also able to supply sleeves. We are also sometimes able to supply injection resin cartridges and accessories,

but our shipping costs may be higher. Beware that the 300ml resin cartridges typically need a special gun to dispense them, hence the part numbers above being for smaller 100ml or 150ml cartridges. Some other/generic cartridges are available at lower prices but these are generally not as good, reducing the strength of the bond. Polyester resin is not recommended. Follow the instructions supplied by the manufacturer. Again, you should be confident that this is adequate for your needs.

Does the Resin Have a Shelf Life?

We recommend that you install the product within one year of purchase. The resin cartridge should be kept out of direct sunlight and between 5-25 degrees Celsius.