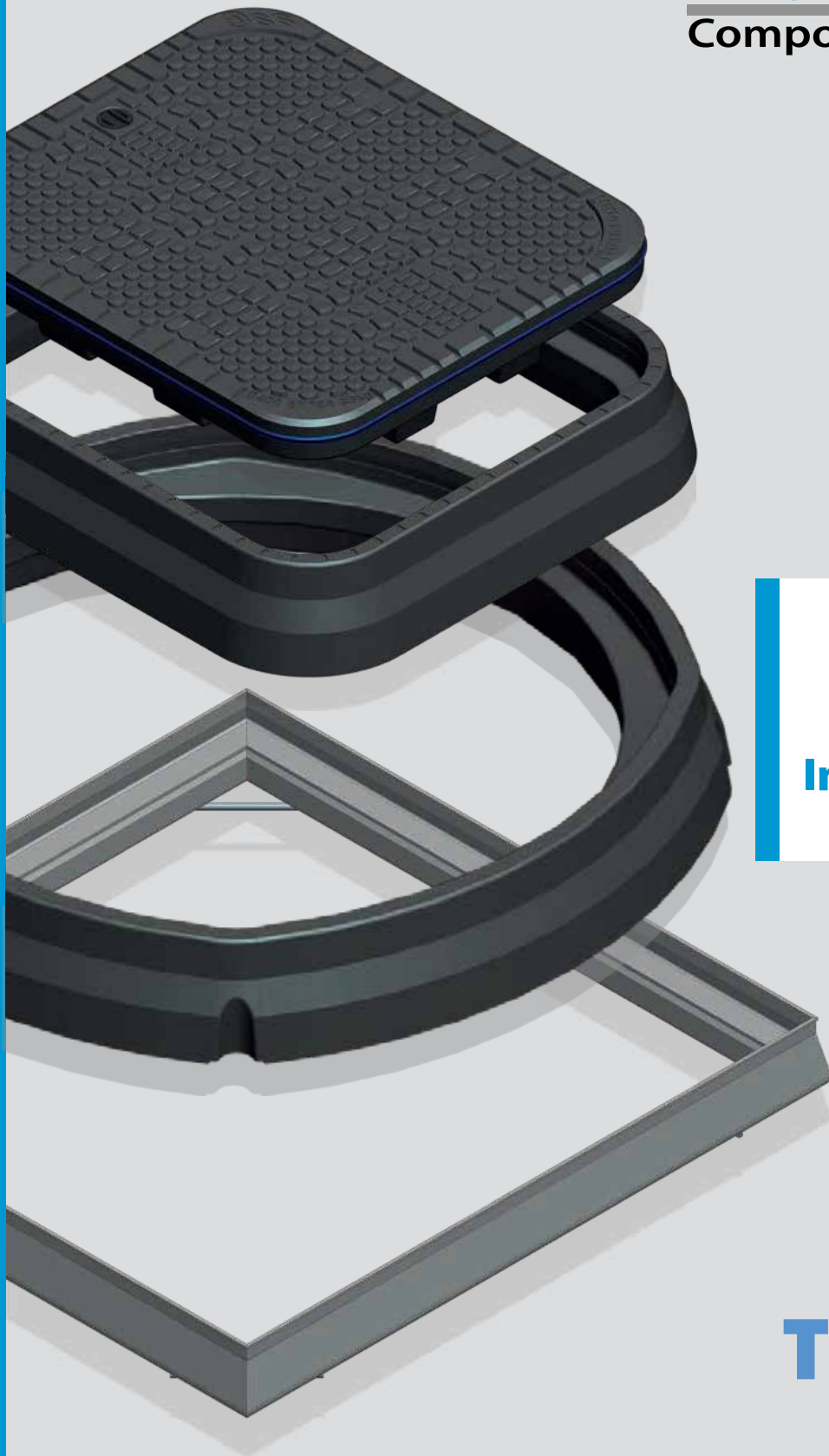


Fibergrate

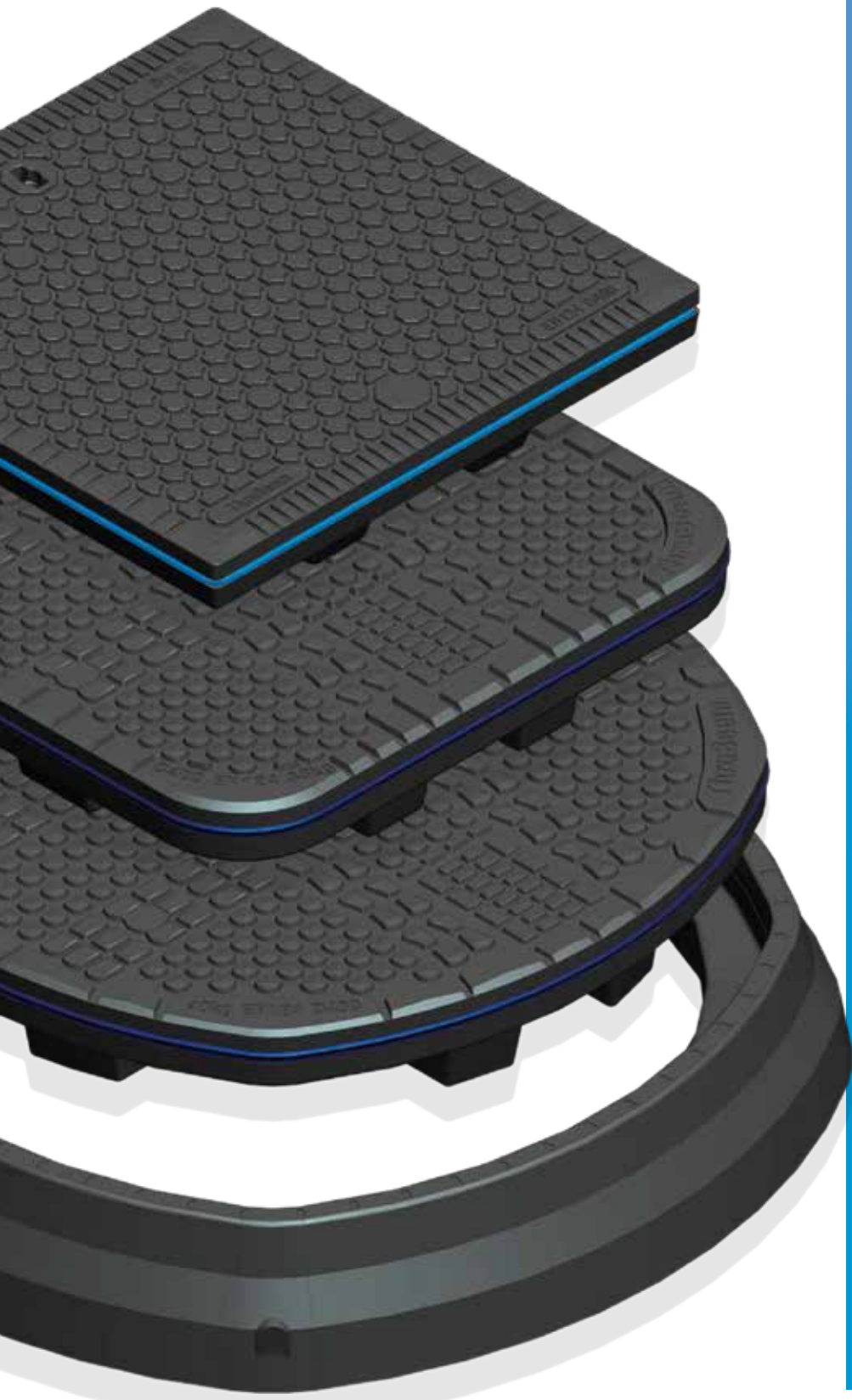
Composite Structures



Material Specification & Installation Guide

ThruBeam[®]
COVERS

MANHOLE COVERS



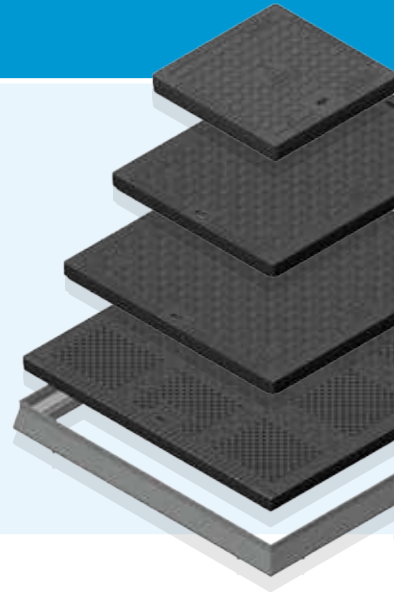
This guide provides the recommended specifications, standards, and installation guidelines for ThruBeam[®] composite covers and frames. Fibergrate recommends that all products, materials, and installation methods used in the field conform to the standards, requirements, and performance characteristics outlined in this guide to help ensure proper installation and long-term system performance.



B125

Sizes Available:

- 301 x 301mm
- 600 x 450mm
- 600 x 600mm
- 800 x 800mm



C250

Sizes Available:

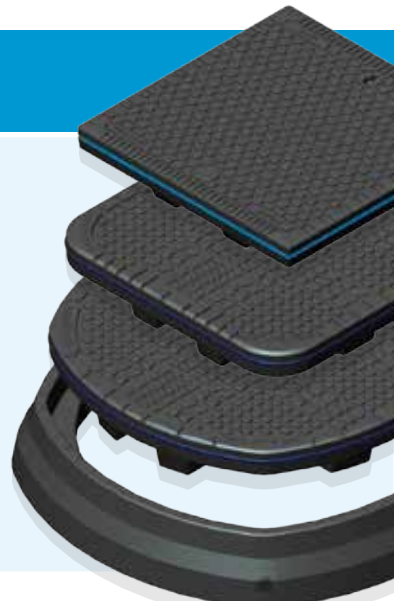
- 900mm
- 1060mm



D400

Sizes Available:

- | | |
|---------------|----------|
| • 610 x 610mm | • 760 mm |
| • 600 x 700mm | • 900 mm |
| • 600 x 900mm | • 1060mm |
| • 600 mm | |



MATERIAL SPECIFICATION & INSTALLATION GUIDE

EN124:2015 Class D400 Vehicular & C250 Petroleum Forecourt Composite Access Covers

1. BEDDING MORTAR

Industry Standards: BBA/HAPAS approved. Conforms to HA104/09 and suitable for access covers conforming to BSEN124:2015. Meets with the specifications laid out in the SROH, DRDNI and NRA. Conforms to BT specification LN550. We recommend Ultracrete Envirobed HA104* or equivalent.

Characteristics:

- Non-shrink
- 15 minute workability
- Can be used in wet/cold weather
- Compressive strength of 51N/mm² in 3 hours
- Tensile strength of 5.8N/mm² in 3 hours
- Set time of 30 minutes (temperature dependant)

Remove any old bedding or packing materials, and ensure the substrate is clean and sound. When using Envirobed HA104* the substrate should be wetted down prior to application of the mortar.

Envirobed HA104* should be mechanically mixed as follows; 1 unit of Envirobed powder with 1 unit of Envirobed liquid. The amount of liquid required may be adjusted depending on the required consistency. Envirobed HA104* should be immediately placed on the supporting structure, allowing a 5mm excess thickness and used within five minutes of mixing.

The SSC frame is lowered into position and placed on the bedding mortar ensuring that it is fully supported and checking that the frame does not overhang the mortar at any point.

Care should be taken to prevent voids in the bedding material under the frame, particularly in the vicinity of the cover seating.

The frame is tamped down into place, ensuring the correct level is obtained. This can be checked by placing a straight edge over the frame and surrounded surface. Exposed surfaces of the bedding mortar around the frame must be float finished, ensuring any voids or loose material is removed and the inside surface pointed to a smooth finish. Once the bedding mortar has achieved sufficient strength the back fill material is placed.

2. BACKFILL FLOWABLE CONCRETE

Industry Standards: BBA/HAPAS Approved. Meets with the specifications laid out in the SROH. We recommend Ultracrete's QC10 F or equivalent

Characteristics:

- Shrinkage compensated and fibre-reinforced
- Flowable
- 5 -10 minute workability
- Compressive strength 20N/mm² in 1.5 hours
- Flexural strength 6N/mm² final set, Tensile strength 3N/mm² final set
- Set time 10 - 20 minutes (depending on temperature)

QC10 F is mechanically or hand mixed by adding the bag of cement to the sand/aggregate and mixed with water until a smooth, flowable consistency is achieved. If a stiffer mix is required, reduce water accordingly until the desired consistency is achieved. *Reduced water will accelerate product set. Remove ponded water. The area to be filled should be wetted and the material placed within 5 minutes of mixing, to 60mm below the required surface fill level, and compacted ensuring no voids are present. The final surface is then rough floated to achieve a textured level surface ready to receive the wearing course.

3. SURFACE COURSE AND EDGE SEALANT

Industry Standards: BBA/HAPAS Approved. Meets with the specification laid out in the SROH 2010, SROR 2003 DRDNI and NRA.

For Class 0, 1 and 2 Roads - We recommend Hot Rolled Asphalt (HRA) should be used in accordanc with local Department of Transport requirements. Thrubeam covers are suitable for installations with HRA up to a maximum depth of 100mm.

For Class 2, 3 and Road - Hot Rolled Asphalt (HRA), Ultracrete Instant Road Repair* or equivalent. We recommend Ultracrete Instant Road Repair* or equivalent.

Characteristics:

- PSV65
- 10mm graded hard stone
- Excellent workability in all weather conditions
- Instantly trafficable
- 25kg bags or tubs for easy handling

Once the backfill concrete has reached sufficient strength, all horizontal and vertical edges, including the manhole frame should be sprayed with

Ultracrete SCJ Seal and Tack Spray ensuring all the surfaces are liberally covered. The use of Ultracrete Instant Road Repair* is recommended (45mm compacted to 30mm - 2 layers required). Hot lay materials can be used.

C250 INSTALLATION (ADDITIONAL NOTES)

Generally these are either installed into concrete or asphalt/ tarmac. One of the key considerations for C250 installations is to ensure care on backfilling around the skirt and sumps. When doing so all backfill materials must be dry and free from debris. The backfill material should be round (pea gravel) and not be sharp in any way to avoid any puncturing of the skirts/sumps.

Once backfill has been completed SSC recommends that for a concrete installation the minimum requirement would be 200mm with a maximum of 350mm depth. It also advised to incorporate some steel mesh bar around the frame embedded into the concrete for extra support. (see drawing) For an asphalt installation then we would recommend a minimum 40mm - (see drawings)

EN124:2015 Class B125 Pedestrian Area Composite Access Covers

1. BEDDING MORTAR

Industry Standards: BBA/HAPAS Approved. Conforms to HA27/04 and suitable for all access covers confirming to BS EN124:2015. We recommend Ultracrete M60 or equivalent.

Characteristics:

- Excellent workability
- Rapid strength gain
- Compressive strength 22N/mm² in 1 hour (depending on temperature)
- Exceptional bond strength without the use of a primer
- 25kg bags or tubs for easy handling)

Remove any old bedding or packing materials, and ensure the substrate is clean and sound. When using Ultracrete M60 the substrate should be wetted down with water prior to application of the mortar. Ultracrete M60 should be mechanically or hand mixed as follows: 25kg of powder is mixed with approximately 3 litres of water until a smooth trowelable mix is achieved.

Ultracrete M60 should be immediately placed on the supporting structure, allowing a 5mm excess thickness and used within five minutes of mixing. The SSC frame is lowered into position and placed on the bedding mortar ensuring that it is fully supported. Care should be taken to prevent voids in the bedding material under the frame, particularly in the vicinity of the cover seating. The frame is tamped down into place, ensuring the correct level is obtained. This can be checked by placing a straight edge over the frame and surrounded surface. Exposed surfaces of the bedding mortar around the frame must be float finished, ensuring any voids or loose material is removed and the inside surface pointed to a smooth finish.

2. SURFACE COURSE (ASPHALT)

IndustryStandards: BBA/HAPAS Approved. Meets with the specifications laid out in the SROH 2010, SROR 2003 DRDNI and NRA.

We recommend, HRA, Ultracrete Instant Road Repair* , QC6 or equivalent.

Characteristics:

- PSV65
- 6mm graded hard stone
- Excellent workability in all weather conditions
- Instantly trafficable
- 25kg bags or tubs for easy handling
- Black or Red

Once the M60 has reached sufficient strength, all vertical edges of the excavated area, substrate and the manhole frame should be sprayed with Ultracrete SCJ Seal & Tack Spray ensuring all the surfaces are covered. The use of Ultracrete Instant Road Repair* is recommended (60mm compacted to 40mm-1 layer required). Hot lay materials can be used.

2. SURFACE COURSE (CONCRETE)

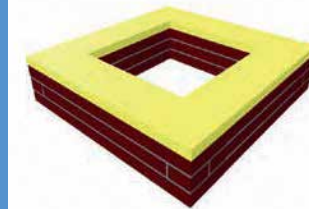
Characteristics:

- Rapid setting with high early strength gain
- 6mm graded hard stone & specially blended cement powders
- Excellent workability in all weather conditions
- Trafficable within 15 minutes
- 25kg bags or tubs for easy handling
- Shrinkage compensated

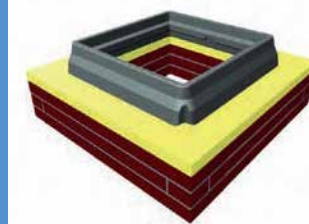
Once the M60 has reached sufficient strength, apply QC6 mixed material over a pre-soaked prepared area to a minimum of 10mm and a maximum of 100mm within 4minutes. Firm well into position with a float, or trowel to close up the surface and seal the edges. Key to create an anti-slip surface.

For further information relating to our full product range please go to www.thrubeam.co.uk and download the appropriate pdf file. Designs and specifications are subject to alteration, so that continuous improvement can be undertaken.

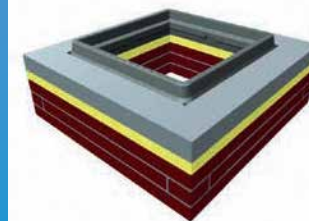
Bedding mortar applied



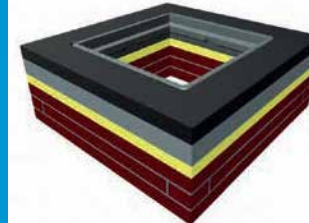
Setting of the frame on the bedding mortar



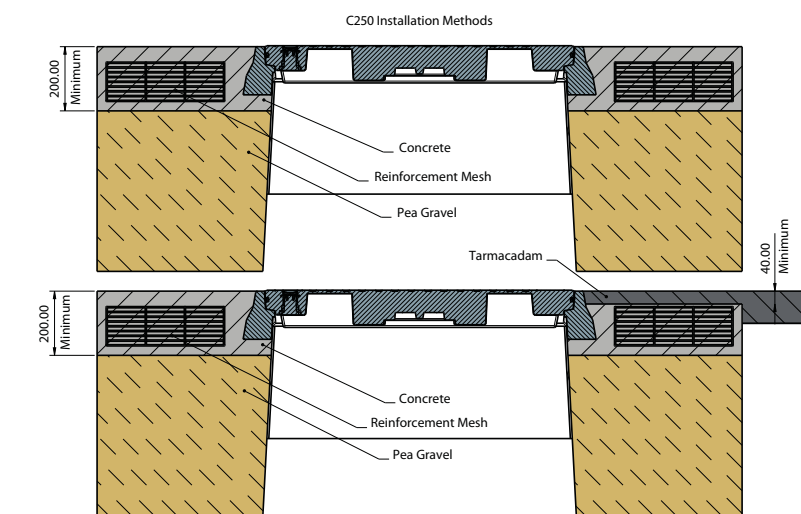
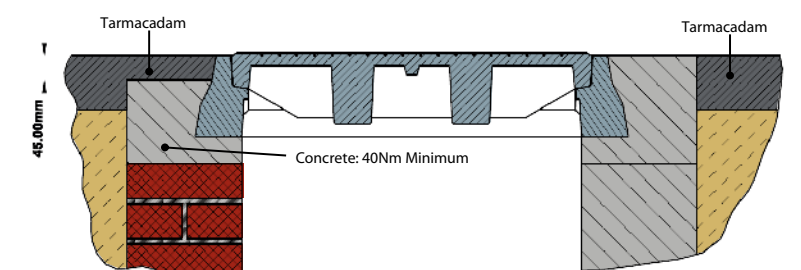
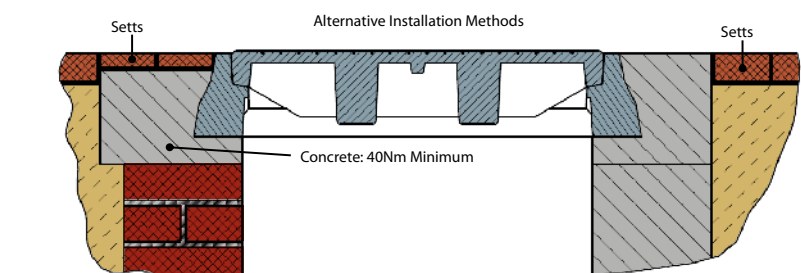
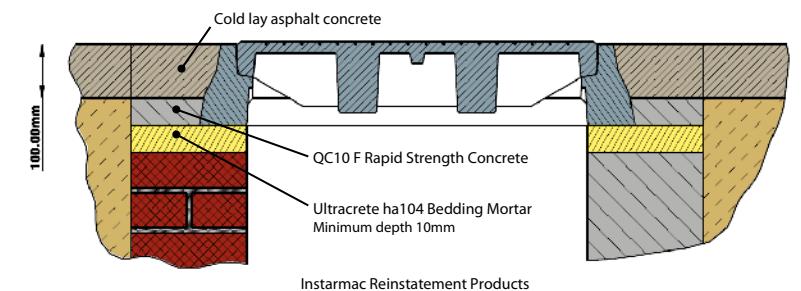
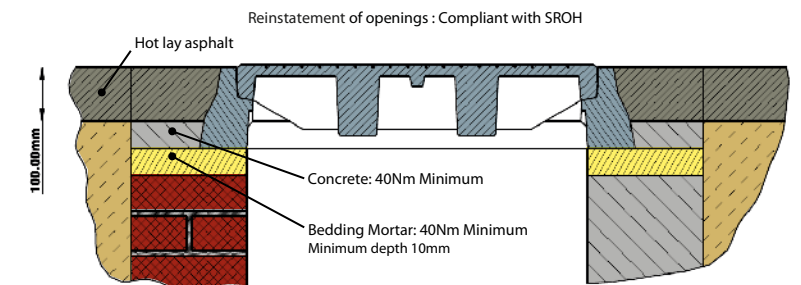
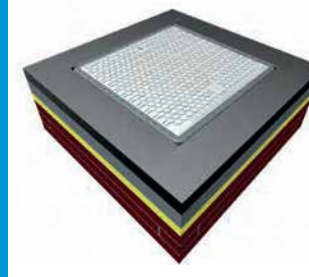
Backfill flowable concrete



Surface course



Surface course and edge sealant



The frame is to be installed to the appropriate standard/specification for that particular installation. For reference purposes only. This drawing is not a specification.

HANDLING & REMOVAL INSTRUCTIONS

HOW TO HANDLE COMPOSITE COVERS & FRAMES

Composite covers and frames must be handled differently than metal or metal-and-concrete covers.

- Do NOT throw off the back of vehicles, they are lightweight they should be LIFTED and placed on the ground.
- Do NOT roll or drop covers or frames.
- Frames should be installed using our Installation Guide.
- Care should be taken to ALWAYS clean the seating face of the frame before the cover is inserted.

ALL COVERS FOR ROAD USE ARE SUPPLIED WITH A SEAL

- Ensure that the seal is seated correctly around the cover.
- Make sure the seal is always cleaned before re-inserting the cover back into its frame.
- It is recommended that seals are checked on a regular basis (depending upon how many times the cover is lifted and re-seated).
- Seals can be replaced if required.

DIP CAP INSERTION AND REMOVAL

- The dip cap can be removed from the cover by inserting the key and then lifting out.
- The O Ring seal should be checked for any deformation after removal and before insertion and cleaned before inserting back into the cover.
- Place the dip cap in the cover hole and stand on the dip cap to ensure complete insertion.
- If there is any damage to the O ring then this can be replaced.

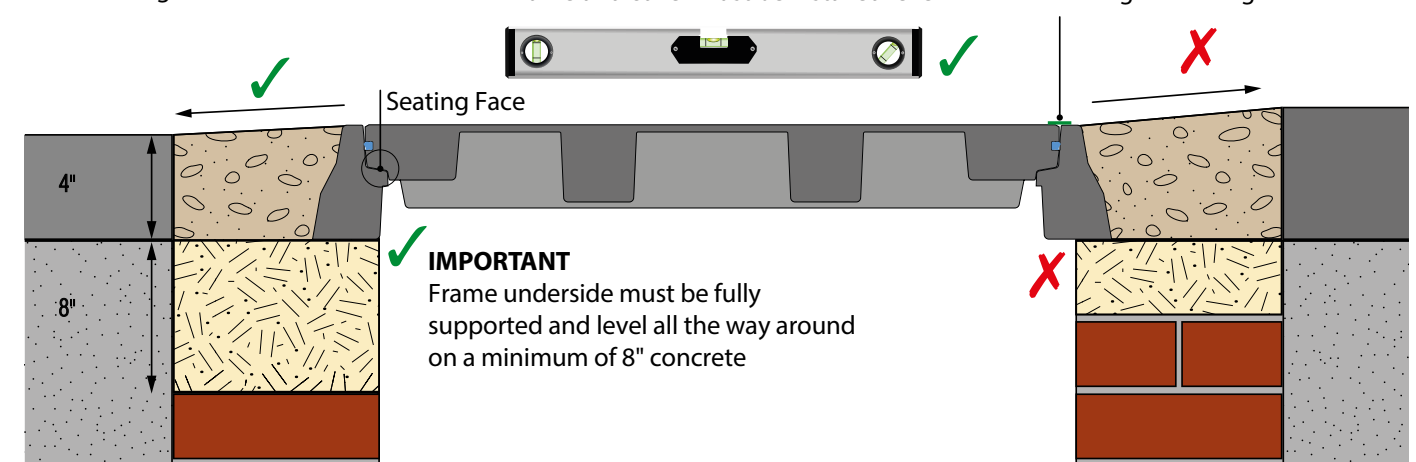


- Frame must be fully supported on a concrete base all the way around.
- Frame must be seated perfectly level.
- Frame and cover seating faces must be thoroughly cleaned before inserting the cover into the frame.

Surrounding concrete must slope downwards and away from the frame edge to allow water run off.

Frame and cover must be installed level

Apply tape to the frame/cover gap to protect seal against concrete and cement ingress during installation.



Following the correct installation guidelines will ensure a long and trouble free life for both the frame and cover



1. To ensure frames are not installed distorted or twisted we advise the cover is placed in the frame when set on mortar and concreted in place.
2. Do not allow cement or concrete to set hard on the surface of the cover and frame during installation.



1. Um sicherzustellen, dass die Rahmen nicht deformiert oder verdreht installiert werden, empfehlen wir, die Abdeckung im Rahmen zu platzieren, wenn dieser in Mörtel eingelegt und betoniert wird.
2. Zement und Beton dürfen während der Installation nicht auf der Oberfläche der Abdeckung und des Rahmens hart werden.



1. Pour vous assurer que les cadres ne sont pas déformés ou tordus, nous vous conseillons de placer le couvercle dans le cadre lorsqu'il est fixé au mortier et bétonné.
2. Ne laissez pas le ciment ou le béton durcir à la surface du couvercle et du cadre lors de l'installation.

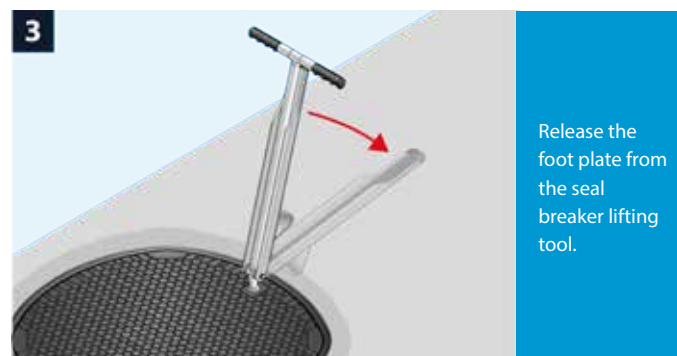
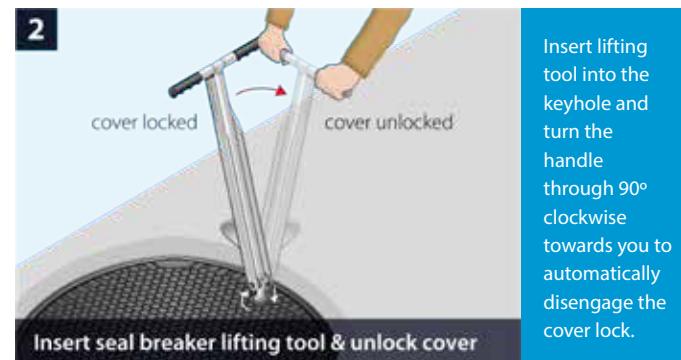


1. Para asegurarse de que los marcos no se instalen deformados o torcidos, aconsejamos que la cubierta se coloque en el marco cuando se fije en la argamasa y se emplace en el hormigón.
2. No permita que el cemento o el hormigón se endurezcan en la superficie de la cubierta y el marco durante la instalación.

COVER REMOVAL

ONLY USE THE THRUBEAM LIFTING TOOL

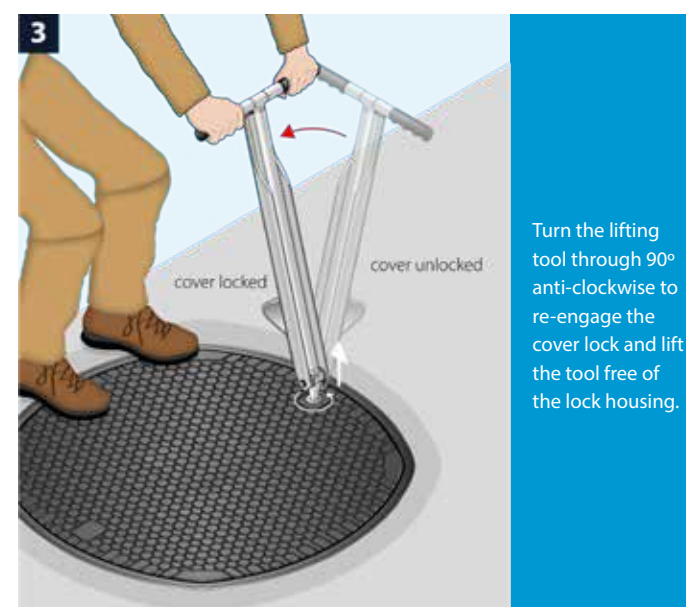
DO NOT attempt to lift covers and dip caps with any other tooling device, this will damage the cover, seal and locking mechanism. Evidence of a failure to use the ThruBeam® Seal Breaker Lifting Tool will invalidate the product warranty.



COVER REPLACEMENT



Before re-inserting the cover back in its frame, ensure the seating face of the frame and cover is clean and free of any debris or stones. Clean the frame seal with a damp cloth and wipe the inside of the frame thoroughly.



REMOVAL & REPLACEMENT INSTRUCTIONS

Only remove and replace the cover using our special ergonomic lifting tool with seal breaker. See below for procedure. Do not use any other form of levering device.



Insert the lifting tool into the lock aperture as shown above and turn the handle through 90° clockwise towards you.



With the handles now facing towards you the cover lock is now disengaged and ready to be removed from its frame.



Release the seal breaker from the lifting tool and press down on the foot pedal to release the cover from its frame.

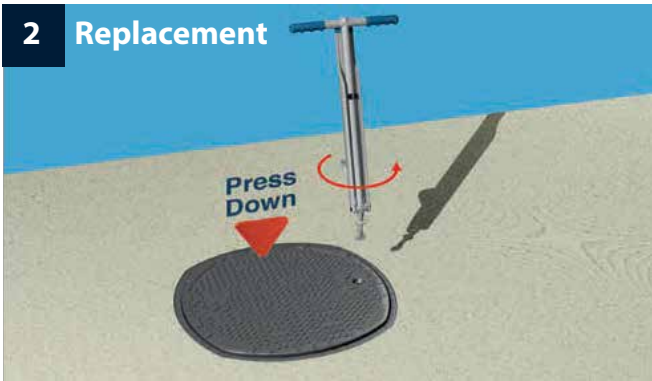


Fold back the seal breaker into the lifting tool. Lift the edge of the cover until free of frame. Pull the cover out of the frame.

Before re-inserting the cover back in its frame, ensure the seating face of the frame is clean and free of any debris or stones. Always clean the frame seal with a damp cloth and wipe the inside of the frame thoroughly.



Push back the cover into the frame with the aid of the lifting tool and your foot if necessary. Step down on the cover to re engage the seal.



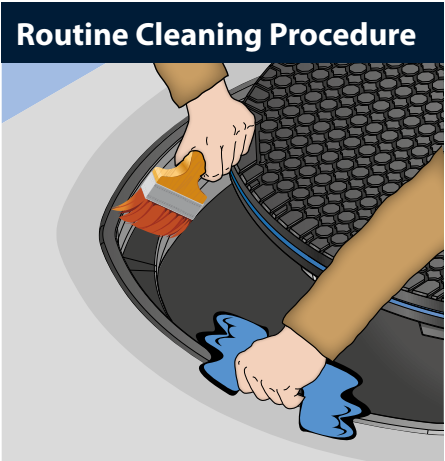
Turn the lifting tool back through 90° anti-clockwise to engage lock and remove lifting tool.

CARE & MAINTENANCE GUIDELINES

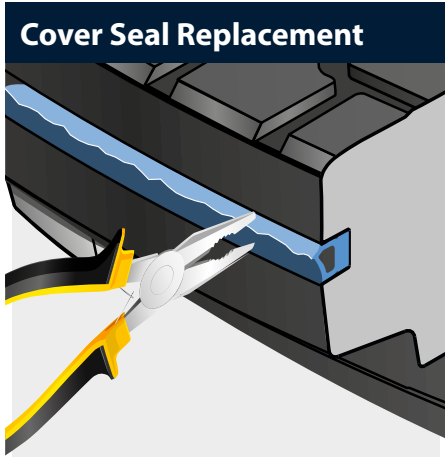
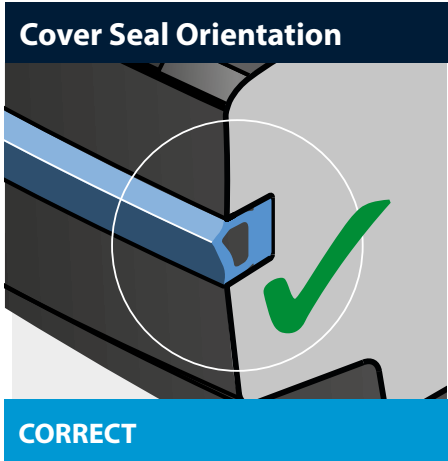
ThruBeam covers and frames can only perform to the highest standards if they are routinely checked and maintained in accordance with our guidelines. Thorough cleaning of seals, frame seating face and cover edges at each lift is essential. Damaged or missing seals and missing key housing security plugs should be immediately replaced. We advise all cover service teams carry a full ThruBeam maintenance kit which contains all the necessary replacement components.



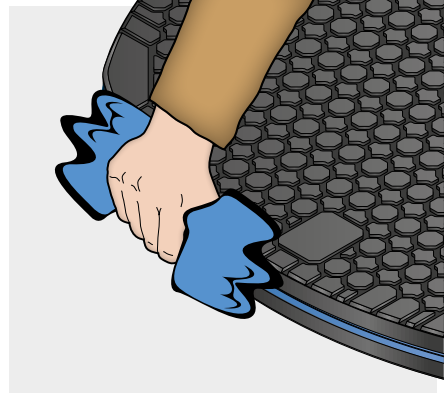
- D400 Kit Contains:**
- x1 Soft Brush
 - x1 Scraper
 - x1 Micro Fibre Cleaning Cloth
 - x1 Multi Purpose Cleaner
 - x6 Key Housing Plugs with seals
 - x1 Cover seal for D400
- Individual maintenance components can be ordered separately.



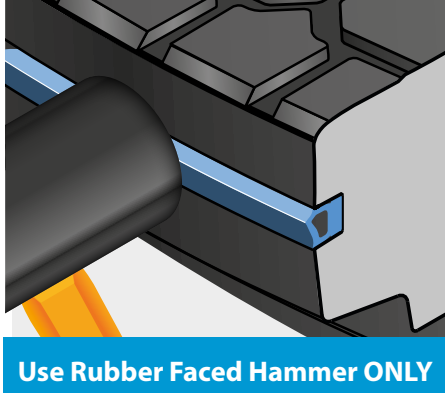
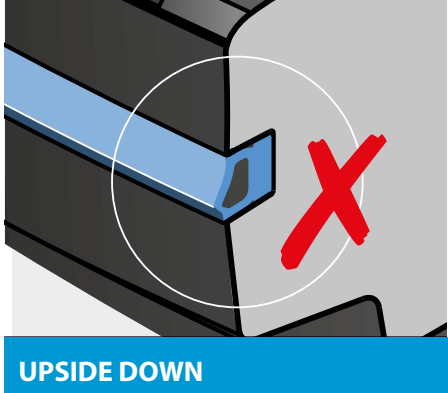
The frame seating face should be brushed and cleaned every time the cover is lifted.



Remove damaged seal. Inspect & clean the seal channel with a damp microfibre cloth.



Cover seals and seating faces should be cleaned with a damp microfibre cloth.



Ensuring correct orientation. Taking care, 'gently' tap new seal into position.



Fibergrate® Moulded Grating

Fibergrate® moulded gratings are designed to provide the ultimate in reliable performance, even in the most demanding conditions. Fibergrate offers the widest selection in the market with multiple resins and more than twenty grating configurations available in many panel sizes and surfaces.



Safe-T-Span® Pultruded Industrial & Pedestrian Gratings

Combining corrosion resistance, long-life and low maintenance, Safe-T-Span® provides unidirectional strength for industrial and pedestrian pultruded grating applications.



ThruBeam Manhole Covers

ThruBeam® FRP manhole covers and frames provide a lightweight yet high-strength alternative to traditional materials, engineered to improve safety, performance, and long-term reliability.



Dynarail® & DynaRound® Guardrail, Handrail & Ladder

Easily assembled from durable components or engineered and prefabricated to your specifications, Dynarail square tube and DynaRound round tube railing systems and Dynarail safety ladder systems meet or exceed OSHA and strict building code requirements for safety and design.



Custom Composite Solutions

Combining Fibergrate's design, manufacturing and fabrication services allows Fibergrate to offer custom composite solutions to meet our client's specific requirements. Either through unique pultruded profiles or custom open moulding, Fibergrate can help bring your vision to reality.



Design & Fabrication Services

Combining engineering expertise with an understanding of fibreglass applications, Fibergrate provides turnkey design and fabrication of fibreglass structures, including platforms, catwalks, stairways, railings and equipment support structures.



Worldwide Sales & Distribution Network

Whether a customer requires a platform in a mine in South Africa to grating on an oil rig in the North Sea, or walkways in a Wisconsin cheese plant to railings at a water treatment facility in Brazil; Fibergrate has sales and service locations throughout the world to meet the needs and exceed the expectations of any customer.