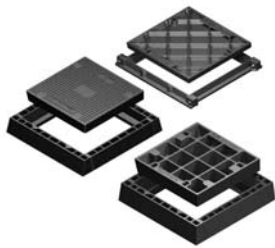


## RHINOCAST – DUCTILE IRON ACCESS COVERS

### – INSTALLATION GUIDE

ACO ACCESS 

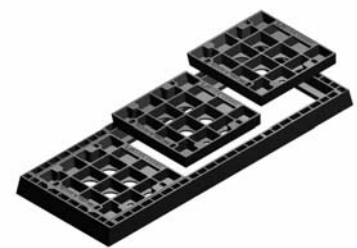
### Installation of Single, 2 and 3 Part Cover Systems



Single Part Covers



2 Part Cover



3 Part Cover

#### Identification and Preparation

1. Form the access pit and rebate to the size required. See Figures 5, 6 & 7 for the recommended rebate dimensions for the required load class.
2. Remove all the dust caps and locking bolts from the covers and remove the covers from the frame using the appropriate Rhinocast lifting key. See Figures 8, 9 & 10 for the different Rhinocast lifting key options.
3. For 2 part or 3 part covers, mark the frame & covers at the lifting end to ensure that covers are reinstalled in the same position. The marks on the frame should line up with the lifting key holes.
4. Position the frame in the rebate and ensure that the lifting end of the frame is not obstructed by a wall, bollard etc.; otherwise cover removal will be restricted after installation. The frame must not protrude into the pit opening.
5. Pack under the corner of the frame joints to raise the level of the frame to the finished floor level. Ensure the packing does not protrude into the pit opening. For 2 and 3 part cover systems, pack under the additional frame joints to prevent the frame from sagging.
6. Set up the internal formwork to ensure that the frame will be fully supported after the concrete pour. For Class D and Class G covers block out the holes in the cover with metal sheeting.
7. Thoroughly clean the seat areas of the covers and frame. It is important that these surfaces are dirt and dust free.
8. Using the marks on the frame and covers (Step 3), place the covers back into the frame ensuring that the top edges of the frame and cover are level with each other. Check the covers for any diagonal rocking movement and adjust the packing under the frame where required. It is critical that the covers are properly seated in the frame and are not obstructed by any internal formwork.
9. Check that the top level edges of the covers and frame are level over the entire perimeter of the access cover. If the covers are not level, the covers and frame seats may not be dirt and dust free (Step 7) and/or the frame is damaged.
10. Replace all the dust caps in the covers.

Note: For Class D to Class G installations reinforcing may be required in the rebate under the frame. The reinforcement should be installed to the engineer's details.

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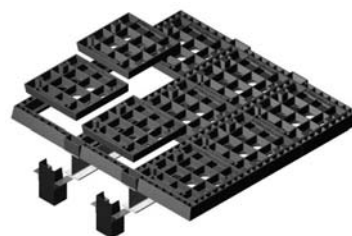
### Concrete Pour

11. Simultaneously fill the rebate gap, cellular frames and recessed covers with concrete as specified in Table 1.
12. Tap the covers and frame to ensure that the concrete is well compacted and the frame is fully supported. Ensure all cavities and pockets are completely filled with concrete.
13. Screed off the excess concrete and finish the surface as required. The edges of the cover and frame should be visible.
14. Concrete must be allowed to cure for at least 24 hours before removing the covers from the frame. Early removal of the covers may cause twisting of the frame and damage to the supporting concrete. This may prevent covers from fitting back into the frame.
15. After the concrete has cured, remove the covers and strip the internal formwork.
16. Clean the seat area of the covers and frame. It is important that these surfaces are dirt and dust free.
17. Liberally apply sealing grease to the seat area of the covers and frame. This should be done periodically to assist in the maintenance procedure.
18. Using the marks on the frame and covers, place the covers back into the frame.
19. Tap down on the keyholes with a rubber mallet until the top of the covers are level with the top of the frame.
20. Replace all the locking bolts and dust caps in the covers.

## Installation of Multi-part Cover Systems

### Identification and Preparation

1. Using ACO's Multipart Cover Rebate Detail provided (example shown in Figure 1), form the access pit and rebate. Ensure that the pit clear opening, beam pockets and pit wall rebates are consistent with the detail. The numbering system on the drawing represents the position and order of installation of the covers. The frames and beams are numbered to help locate the covers, see Figures 2 & 3.



Multi-part Cover

2. The frame is delivered in sections. Ensure the end frame (containing the beam locating boxes) components mate with the side frame components.
3. Set the end frames so that the beam locating boxes are positioned with the corresponding beam pocket/s in the slab. Ensure all the undercut frames are installed at one end and the drawcut frames are installed at the opposite end, see Figure 11. Pack under the corner of the frame joints to raise the level of the frame to the finished floor level. Leave a clearance of 50mm between the concrete beam pocket/s and the beam locating boxes.

4. Place the side frames into position and bolt (finger tight) to the end frames. Ensure that the frames are level and square. Check carefully along the frames and across the diagonals. Surveying equipment is recommended. Ensure the frames and packing pieces do not protrude into the clear opening of the pit.

5. Lower the beams into the corresponding boxes.
6. Set up the internal formwork to ensure that the frame will be fully supported after the concrete pour. For Class D and Class G covers block out the holes in the cover with metal sheeting.

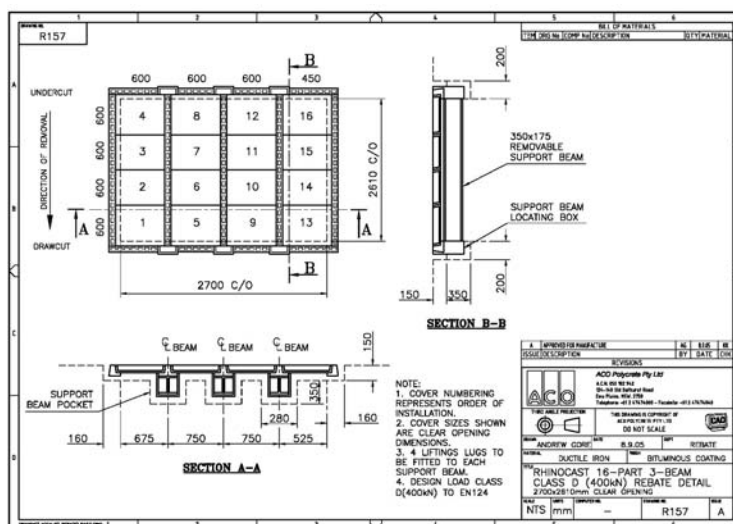


Figure 1 – Multi-part Cover Rebate Detail

7. Place the covers into the frame according to the numbering system (Step 1), ensuring that the top edges of the frame and covers are level with each other. Check the covers for any diagonal rocking movement and adjust the packing under the frame where required. It is critical that the covers are properly seated in the frame and are not obstructed by any internal formwork.
8. Check that the top edges of the covers and frame are level over the entire perimeter of the multi-part system.
9. Remove covers to access the (finger tight) bolts and tighten with a wrench. Repeat steps 7–9.
10. Replace all the dust caps in the covers.

**Concrete Pour**

Follow concrete pour procedure for single, 2 and 3 part cover systems.



Figure 2 – Frame Sections & Beams are Numbered



Figure 3 – Multi-part System Setup

**Key Installation Requirements**

**Clear Opening**

The clear opening is the unobstructed opening inside the frame, see Figure 4. The clear opening of the frame must be equal to or larger than the clear opening of the pit.

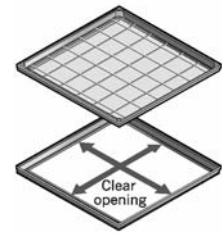


Figure 4 – Clear Opening

**Dimensions**

Dimensions are given as width (W) by length (L). Refer to ACO Access brochure for the complete dimensions of all the Rhinocast covers available.

**Rebate Dimensions**

To support the anticipated loads, the rebate must be cast according to Figures 5, 6 & 7. For covers with decorative edging add the height of the edging to the recommended rebate depths. The dimensions shown are the recommended minimum amount of concrete required to fully support the frame. Reinforcing may be required in the rebate under the frame. The reinforcement should be installed to the engineer's details.

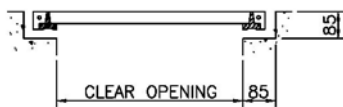


Figure 5 – Class B Rebate

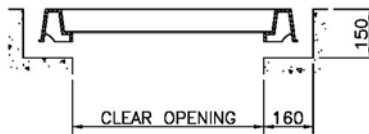


Figure 6 – Class D Rebate

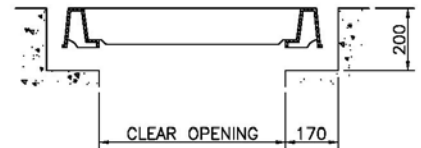


Figure 7 – Class G Rebate

<b>Concrete Specification</b>	
•	Minimum compressive strength of 32 MPa at 28 days
•	Minimum cement content of 400 kg/m <sup>3</sup>
•	Aggregate size: 10-13mm

Table 1 – Concrete Specification

### Load Class

Select the correct Rhinocast ductile iron access cover to suit the required load class and application, refer to pages 6-9 in the ACO Access brochure for further details.

### Covers & Frames

Covers and frames are a matching pair and should never be mixed with other covers and frames as the seal may be compromised.

### Rhinocast Lifting Keys

It is important that the appropriate Rhinocast lifting key is used, see Figure 8, 9 & 10. To remove a Rhinocast cover, insert the key and rotate clockwise a quarter turn and lock into position. Position the jacking screw over the frame and screw down using a shifting spanner to break the seal.



Figure 8 – Short Handle Lifter  
Part No. 84653

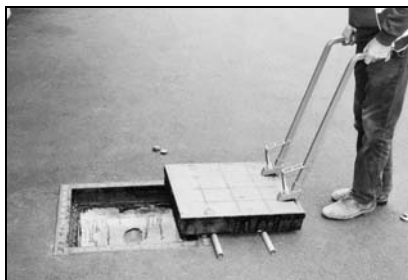


Figure 9 – Long Handle Lifter  
Part No. 84851



Figure 10 – Mechanical Lifter  
Part No. 84972 / 84965

### For Road Traffic

The lifting end/drawcut edge of the cover, see Figure 11, should face the orientation of traffic flow to prevent the cover lifting, see Figure 12.

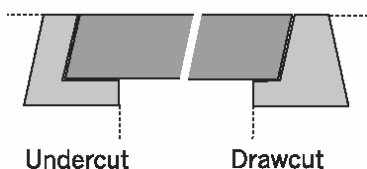


Figure 11 – Undercut & Drawcut Edge

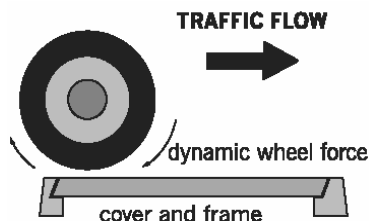


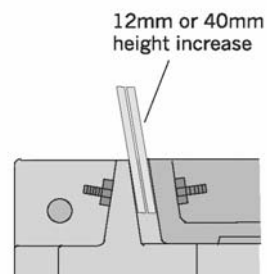
Figure 12 – Road Cover Orientation

### Decorative Edging

A strip of stainless steel or brass can be fixed to the edge of the cover and frame to deepen the cover's rebate to accommodate tiles or pavers, see Figure 13.

For these applications, keyhole bosses will also have extensions to match the height and material finish of the decorative edge. The top of the decorative edge corresponds with the finished floor level of the cover. Ensure that the rebate has been formed with an allowance for the relevant height extensions (refer to Figures 5, 6 & 7 for standard rebate dimensions).

Tiles or pavers should be fully restrained and bonded to the concrete bed. An epoxy mortar is recommended.



Lifting boss also has brass or stainless height extension

Figure 13 – Decorative Edging

### Site Support

Dependent on the location of the installation, ACO can provide supervisory support if requested.