ACO ACCESS

Product Catalogue and Technical Handbook

Access Covers, Grate and Frame systems for all applications conforming to EN124

The ACO Group

Established in 1946, the ACO Group has manufactured products for over 60 years for the construction industry. The group operates on a global basis through its subsidiaries and manufacturing facilities in over 40 countries. ACO is an acknowledged innovator in products manufactured from ductile iron, and other corrosion resistant materials. ACO employs more than 3,800 people and has sales in excess of $1 billion.

ACO Polycrete Pty Ltd, Sydney

Innovators

ACO believes in excellence of design and quality of its extensive product portfolio.

This attention to detail and continuous product innovation differentiates ACO products from its imitators and gives customers confidence in selecting a quality product.

All products are designed and tested to meet the latest industry standards and ACO uses the latest design software, such as FEA (Finite Element Analysis) to ensure superior product performance and economical design.

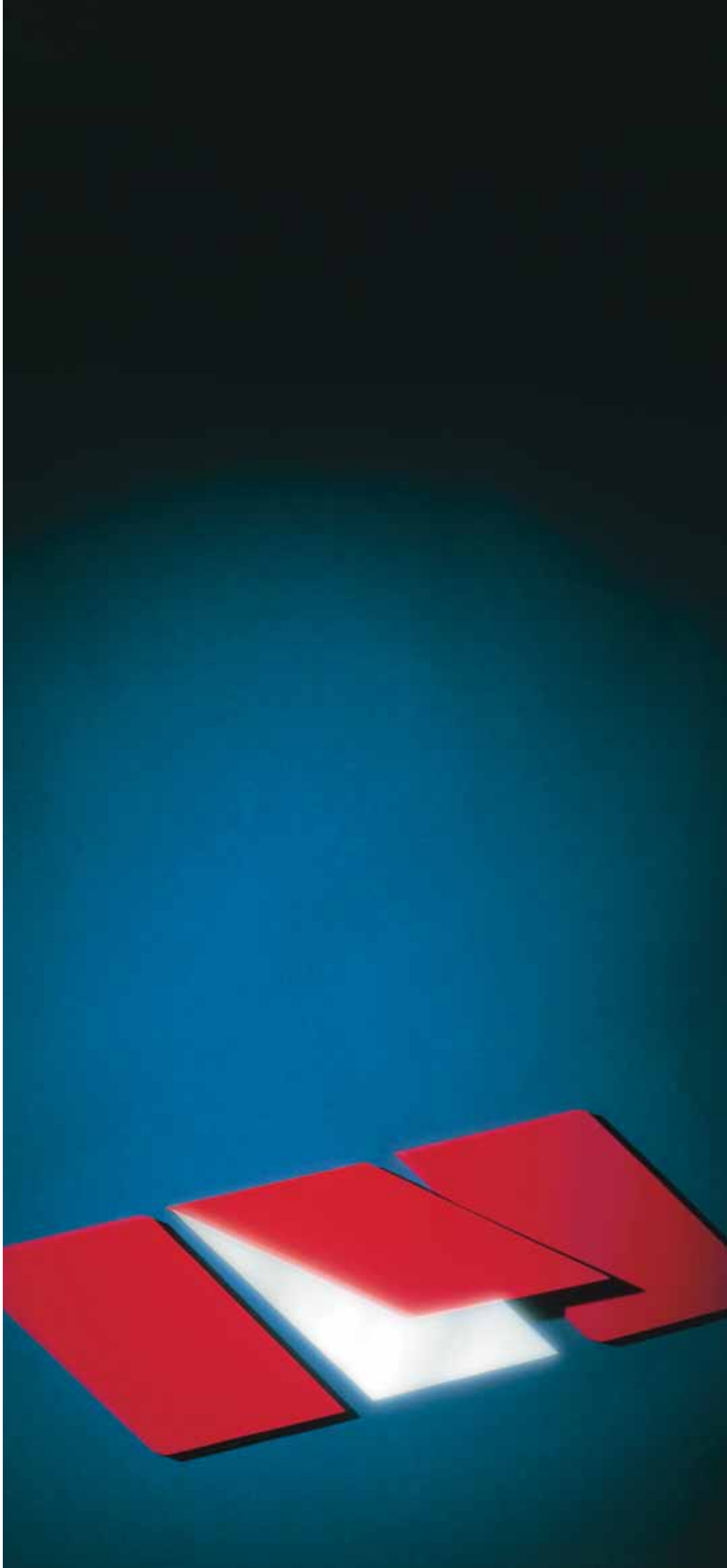
ACO Access

Access covers, also known as cover and frame systems, comprise a cover (or grate) seated into a frame installed integrally into pavement/slab above an enclosure or trench.

ACO's range includes:

The Benefits

- ACO globally manufactures and distributes a comprehensive range of access covers.
- Rhinocast covers & grates are made from durable ductile iron in a choice of
  - load classes (see page 4 & 5)
  - sizes, including trench and multipart configurations
  - recessed and solid top covers
  - tee & cellular frames
- ACO has certified testing equipment operated by fully trained and certified technicians and offers a free technical support service (see page 18).
- Foundry Certified to ISO 9001



Load Class

'This standard applies to gully tops and manhole tops with a clear opening up to and including 1000mm, for installation within areas subjected to pedestrian and/or vehicular traffic'. (Clause 1-Scope, EN124)

To give designers, installers and users assistance in selecting the correct access cover. The table below is based on loadings outlined in EN124.

In practice however, there are a number of key factors affecting a cover's resistance to load:

Type of traffic - pedestrians, cars, trucks, forklifts etc. crossing the cover. For trolleys and forklifts particularly, consider the weight of loads being carried.

Frequency of traffic - more frequent traffic may justify a heavier load class classification.

Speed of traffic - fast moving traffic can intensify the load effect on the cover.

Position of cover - if the cover is positioned where traffic will be turning, braking or if the cover is installed at the bottom of a ramp, it will be subjected to extreme forces. Selecting the right cover and frame is essential.

Wheel type - solid tyres exert loads through smaller contact areas than pneumatic tyres. A heavier duty cover may be required

EN124 table of load classification

					
Typical Uses[1]					
Areas which can be used by pedestrians and pedal cyclists	*Footways, pedestrian areas and comparable areas, car parks or parking decks.*	*For gully tops installed in the area of kerbside channels of roads which when measured from the kerb edge, extend a maximum of 0.5m into the carriageway and a maximum of 0.2m into the footway.*	*Carriageways of roads (including pedestrian streets), hard shoulders and parking areas, for all types of road vehicles.*	*Areas imposing high wheel loads, eg. Docks, aircraft pavements*	*Areas imposing particularly high wheel loads, eg. aircraft pavements*
Load Class **A** *15kN*	*Load Class* **B** *125kN*	*Load Class* **C** *250kN*	*Load Class* **D** *400kN*	*Load Class* **E** *600kN*	*Load Class* **F** *900kN*

[1] Load class classifications from Clause 5, EN124

Rhinocast - Ductile Iron Cover & Frame Systems

Square/rectangular, trench run and multipart covers - pp 6 -13

Rhinocast - Ductile Iron Grate & Frame Systems

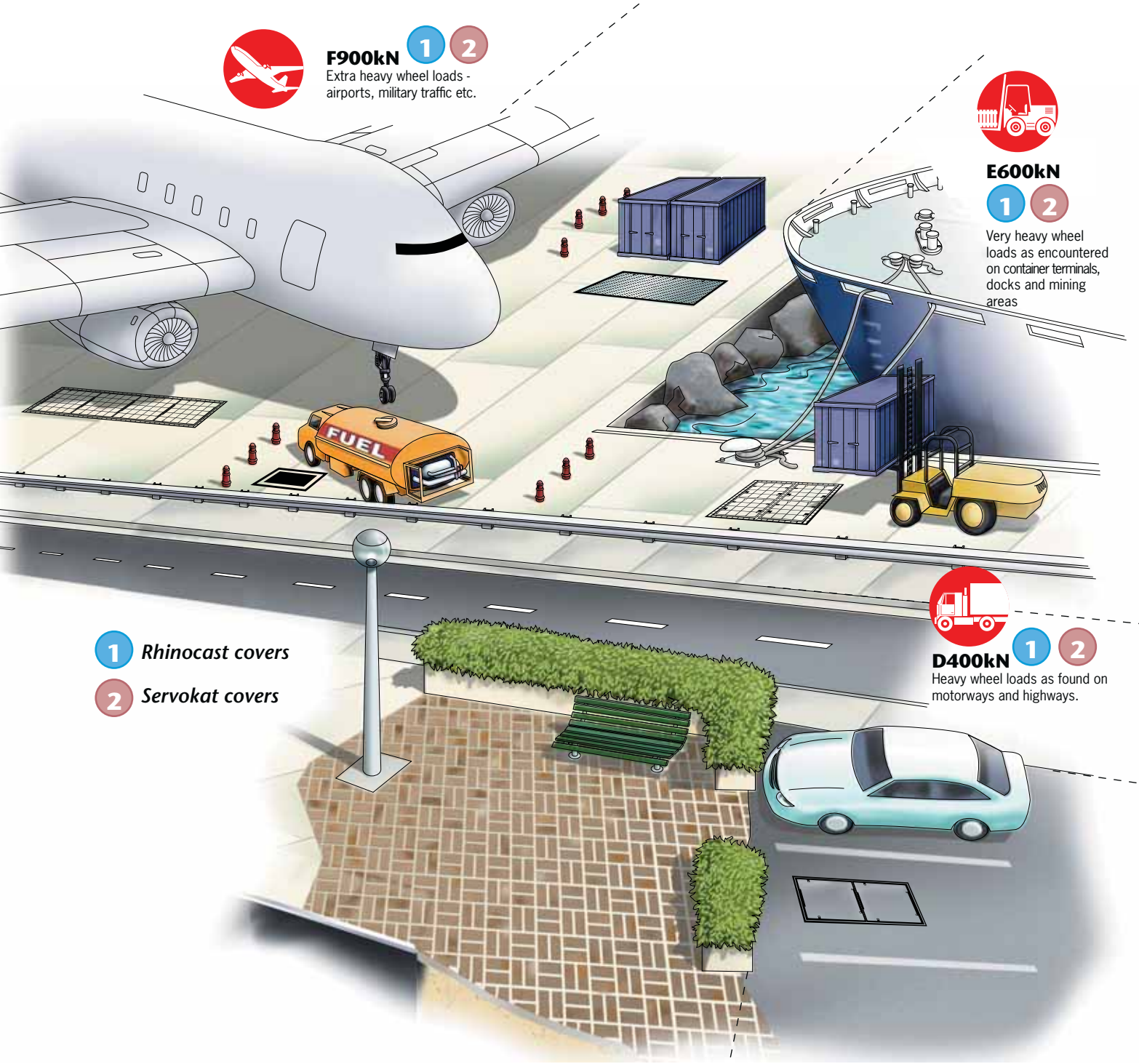
Square/rectangular - pp 15-17

Servokat Cover - Systems

Square/rectangular - p 14

ACO Access Product Selector

This diagram is provided as a guide to aid selection of the right access cover. It illustrates the various applications where access covers are used.



F900kN 1 2
Extra heavy wheel loads - airports, military traffic etc.

E600kN 1 2
Very heavy wheel loads as encountered on container terminals, docks and mining areas

D400kN 1 2
Heavy wheel loads as found on motorways and highways.

C250kN 2
Light vehicular traffic. Minor roads such as cul-de-sacs and parking areas

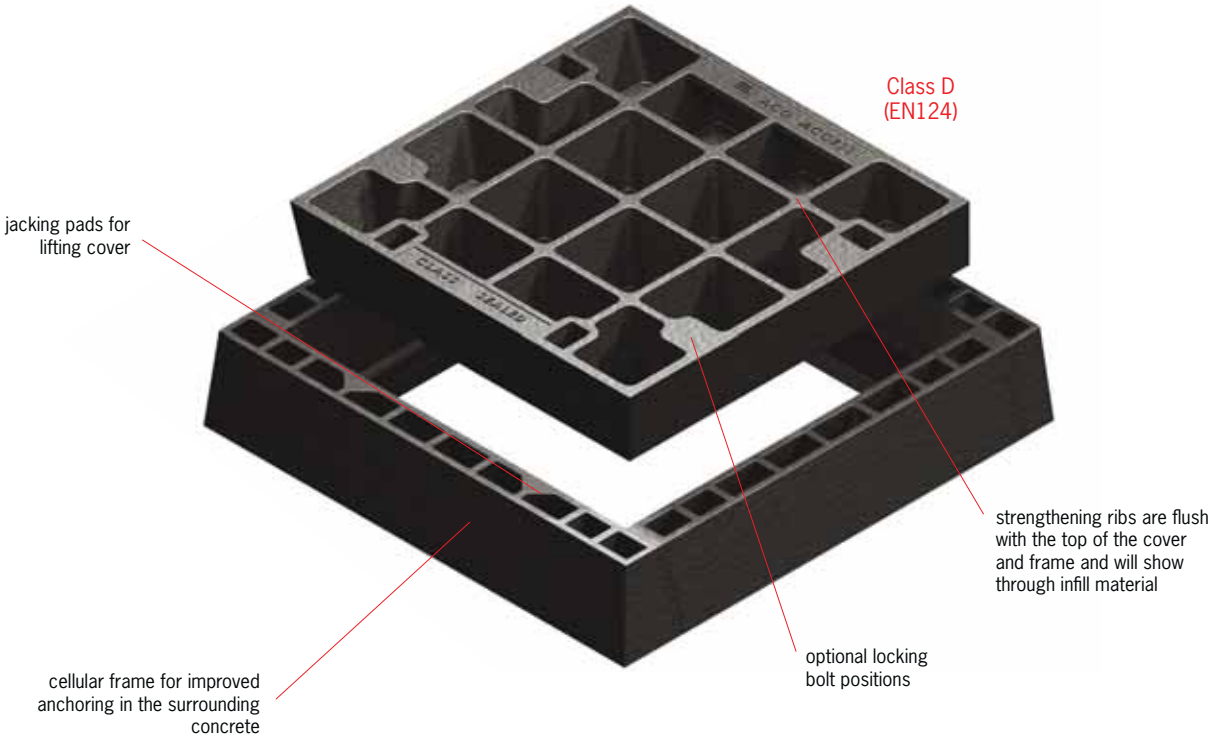
1 *Rhinocast covers*

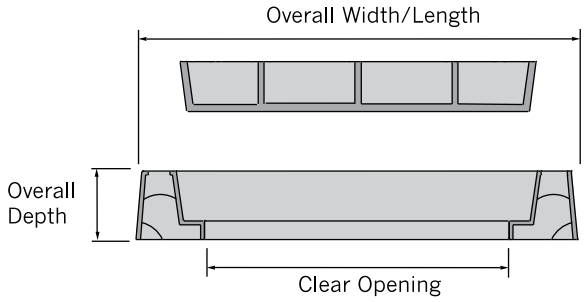
2 *Servokat covers*

NOTE: *The load classes shown above are indicative only. It is the customer's responsibility to determine/verify the anticipated design loads for each application. Engineering advice may be necessary.*

Rhinocast - Single Part, Ductile Iron Infill Cover & Frame -Class D400kN

Single part square units can be used to provide access to underground stormwater/sewer systems, electricity and communication enclosures, valves and junction boxes.

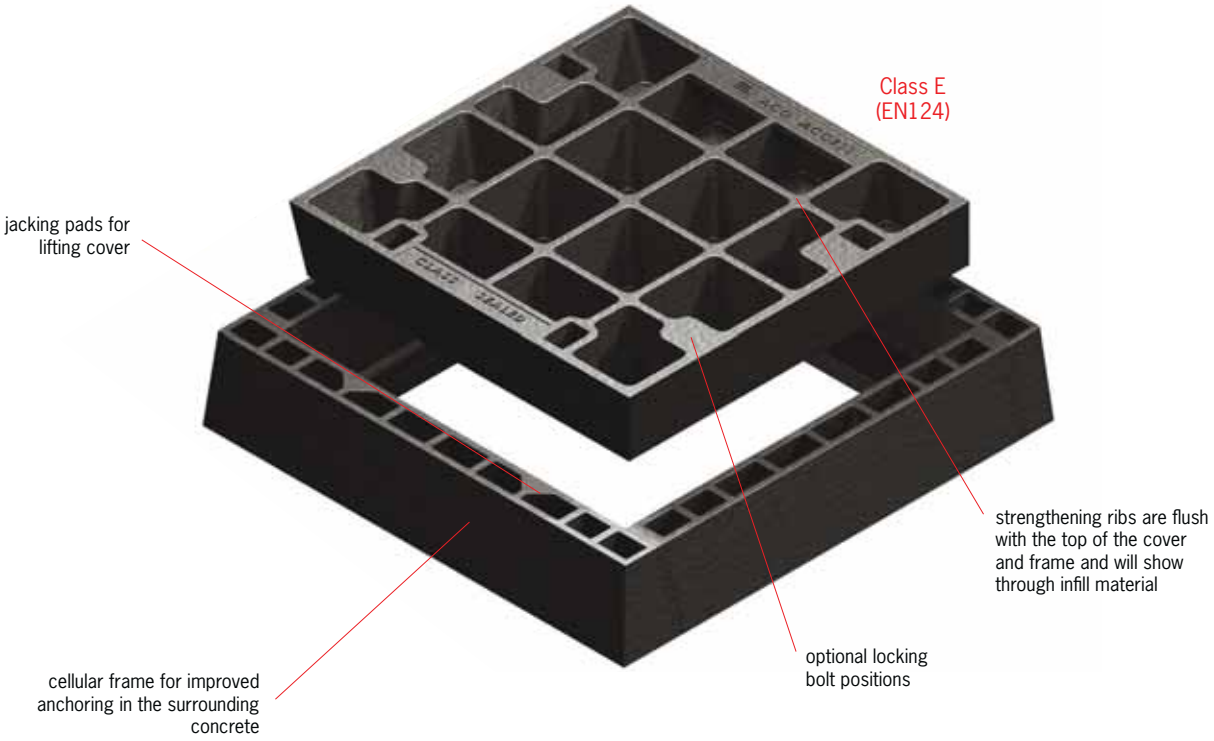


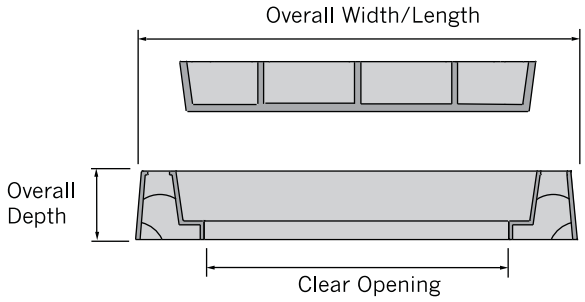


Product Descriptor	Product Code	Clear opening W X L (mm)	Overall W X L (mm)	Load Class (EN124)	Frame Depth (mm)	Frame Type	Overall Weight (kg)
44IDC	141606	450 x 450	662 x 662	D	100	Cellular	93
46IDC	141607	450 x 600	662 x 812	D	100	Cellular	110
47IDC	141608	450 x 750	662 x 962	D	100	Cellular	127
64IDC	141609	600 x 450	812 x 662	D	100	Cellular	110
66IDC	141610	600 x 600	812 x 812	D	100	Cellular	130
67IDC	141611	600 x 750	812 x 962	D	100	Cellular	152
69IDC	141612	600 x 900	812 x 1112	D	100	Cellular	174
74IDC	141613	750 x 450	962 x 662	D	100	Cellular	127
76IDC	141614	750 x 600	962 x 812	D	100	Cellular	149
77IDC	141615	750 x 750	962 x 962	D	100	Cellular	171
94IDC	141616	900 x 450	1112 x 662	D	100	Cellular	150
96IDC	141617	900 x 600	1112 x 812	D	100	Cellular	171
97IDC	141618	900 x 750	1112 x 962	D	100	Cellular	218
99IDC	141619	900 x 900	1112 x 1112	D	100	Cellular	226
104IDC	141620	1000 x 450	1212 x 662	D	100	Cellular	127
124IDC	141621	1200 x 450	1412 x 662	D	100	Cellular	230

Rhinocast - Single Part, Ductile Iron Infill Cover & Frame -Class E600kN

Single part square units can be used to provide access to underground stormwater/sewer systems, electricity and communication enclosures, valves and junction boxes.

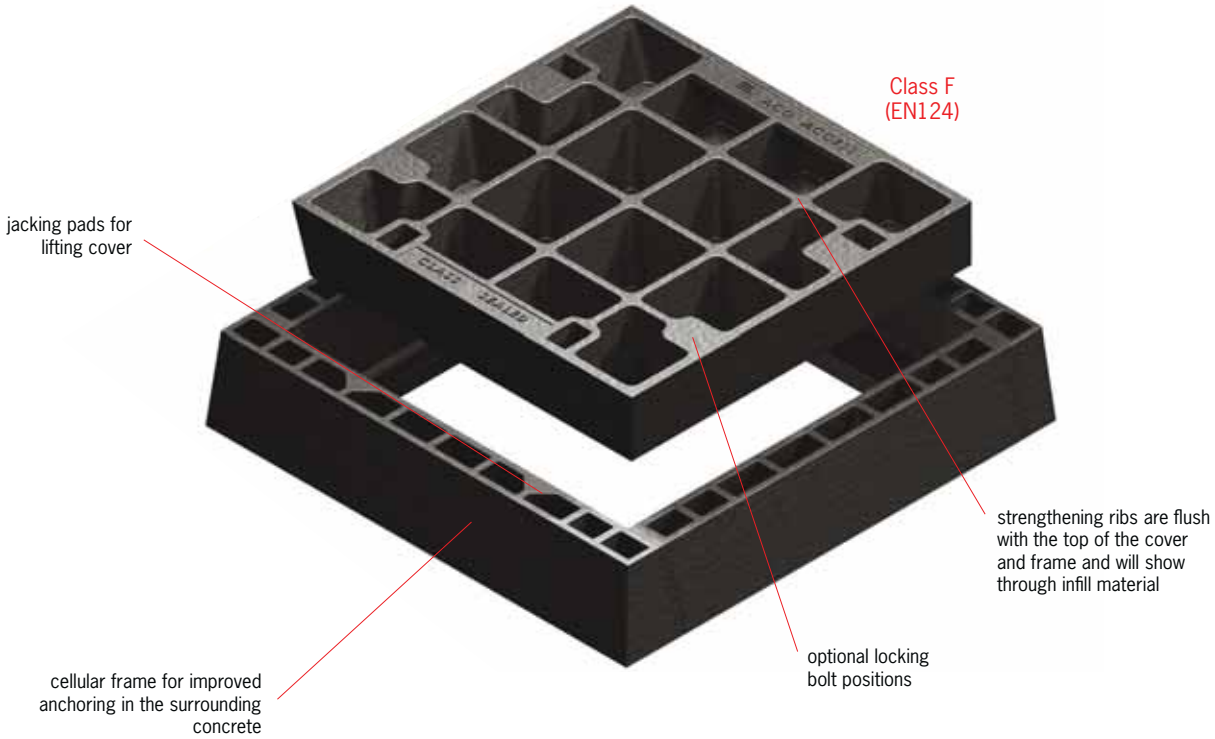


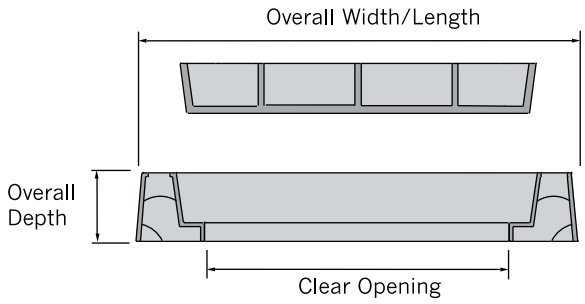


Product Descriptor	Product Code	Clear opening W X L (mm)	Overall W X L (mm)	Load Class (EN124)	Frame Depth (mm)	Frame Type	Overall Weight (kg)
44IEC	141622	450 x 450	685 x 685	E	125	Cellular	146
46IEC	141623	450 x 600	685 x 835	E	125	Cellular	163
64IEC	141624	600 x 450	835 x 685	E	125	Cellular	163
66IEC	141625	600 x 600	835 x 835	E	125	Cellular	212
67IEC	141626	600 x 750	835 x 985	E	125	Cellular	253
76IEC	141627	750 x 600	985 x 835	E	125	Cellular	253
77IEC	141628	750 x 750	985 x 985	E	125	Cellular	293
94IEC	141629	900 x 450	1135 x 685	E	125	Cellular	227
96IEC	141630	900 x 600	1135 x 835	E	125	Cellular	264

Rhinocast - Single Part, Ductile Iron Infill Cover & Frame -Class F900kN

Single part square units can be used to provide access to underground stormwater/sewer systems, electricity and communication enclosures, valves and junction boxes.

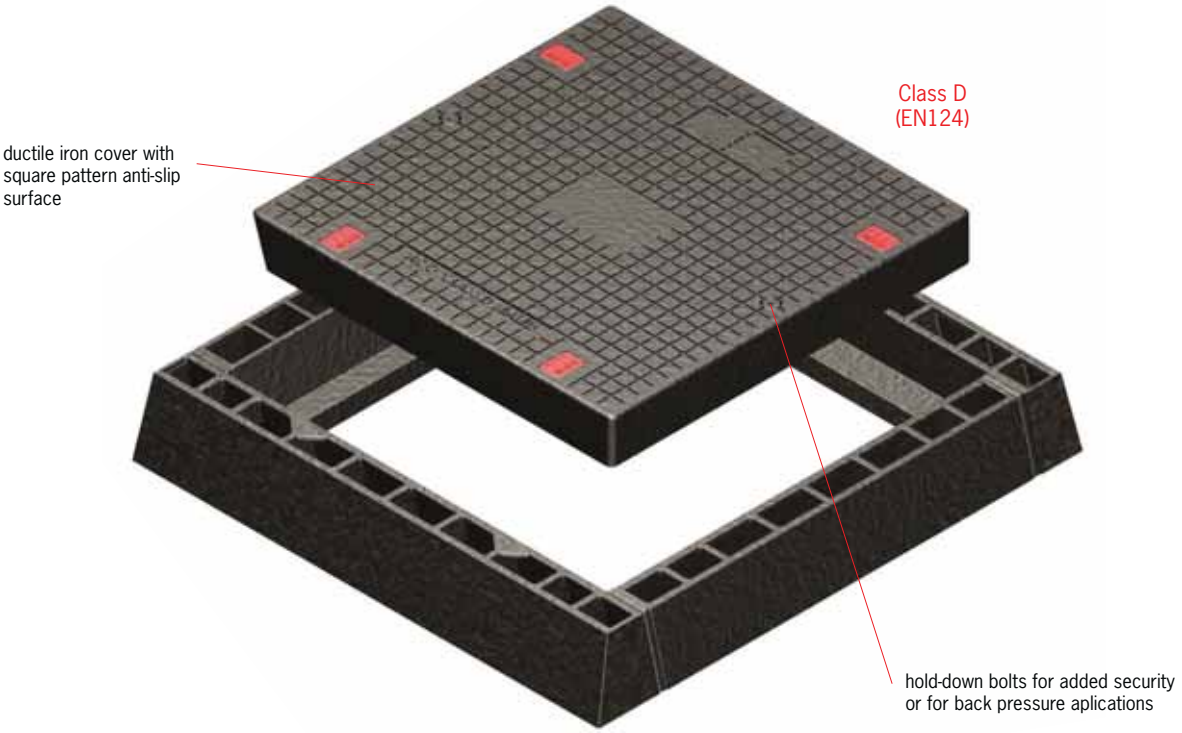


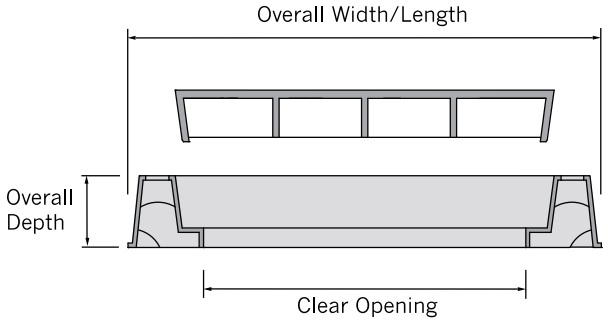


Product Descriptor	Product Code	Clear opening W X L (mm)	Overall W X L (mm)	Load Class (EN124)	Frame Depth (mm)	Frame Type	Overall Weight (kg)
44IFC	141631	450 x 450	685 x 685	F	125	Cellular	146
46IFC	141632	450 x 600	685 x 835	F	125	Cellular	163
64IFC	141633	600 x 450	835 x 685	F	125	Cellular	163
66IFC	141634	600 x 600	835 x 835	F	125	Cellular	212
67IFC	141635	600 x 750	835 x 985	F	125	Cellular	253
76IFC	141636	750 x 600	985 x 835	F	125	Cellular	253
77IFC	141637	750 x 750	985 x 985	F	125	Cellular	293
94IFC	141638	900 x 450	1135 x 685	F	125	Cellular	227
96IFC	141639	900 x 600	1135 x 835	F	125	Cellular	264

Rhinocast - Single Part, Ductile Iron Solid Top Cover & Frame -Class D400kN

Single part square units can be used to provide access to underground stormwater/sewer systems, electricity and communication enclosures, valves and junction boxes.

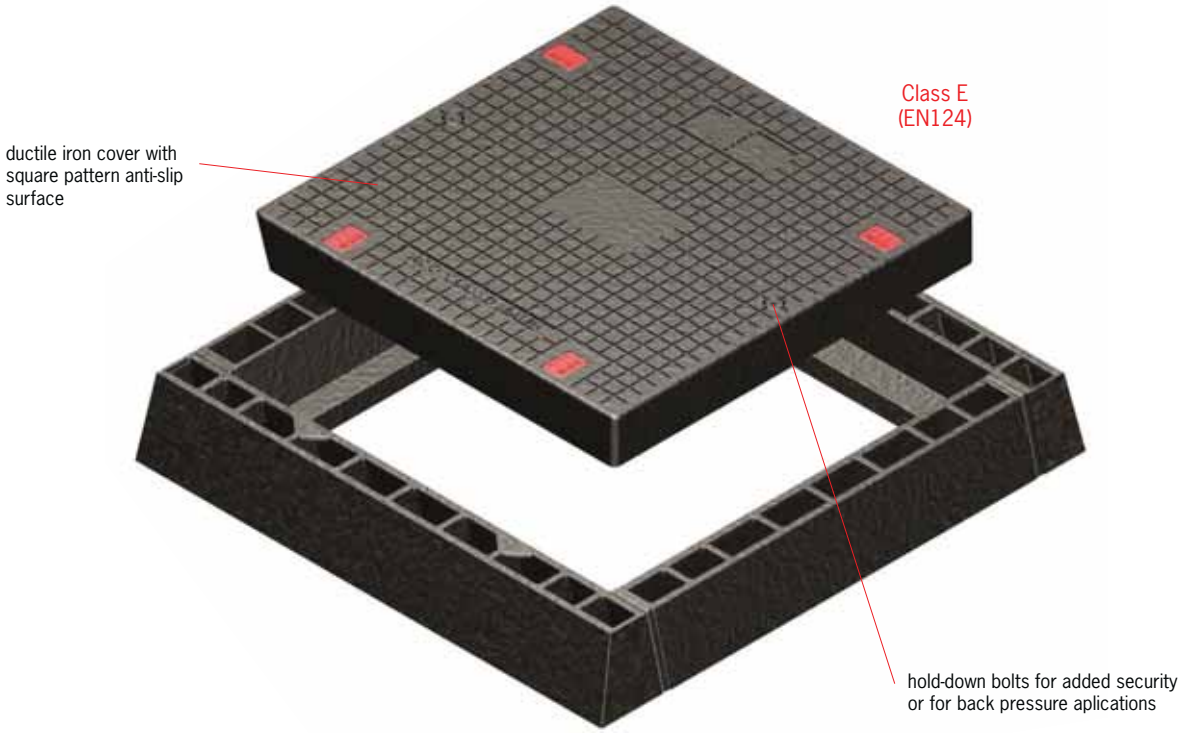


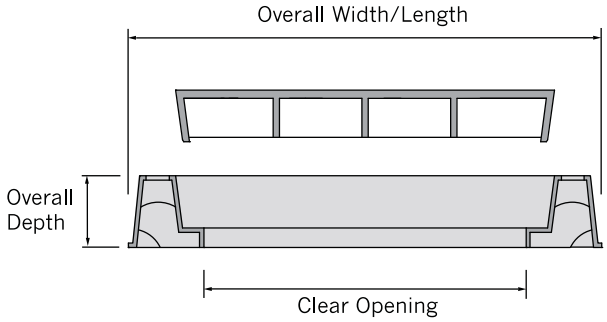


Product Descriptor	Product Code	Clear opening W X L (mm)	Overall W X L (mm)	Load Class (EN124)	Frame Depth (mm)	Frame Type	Overall Weight (kg)
74SDC	141640	750 x 450	962 x 662	D	100	Cellular	130
76SDC	141641	750 x 600	962 x 812	D	100	Cellular	179
77SDC	141642	750 x 750	962 x 962	D	100	Cellular	205
96SDC	141643	900 x 600	1112 x 812	D	100	Cellular	197
97SDC	141644	900 x 750	1112 x 962	D	100	Cellular	227

Rhinocast - Single Part, Ductile Iron Solid Top Cover & Frame -Class E600kN

Single part square units can be used to provide access to underground stormwater/sewer systems, electricity and communication enclosures, valves and junction boxes.

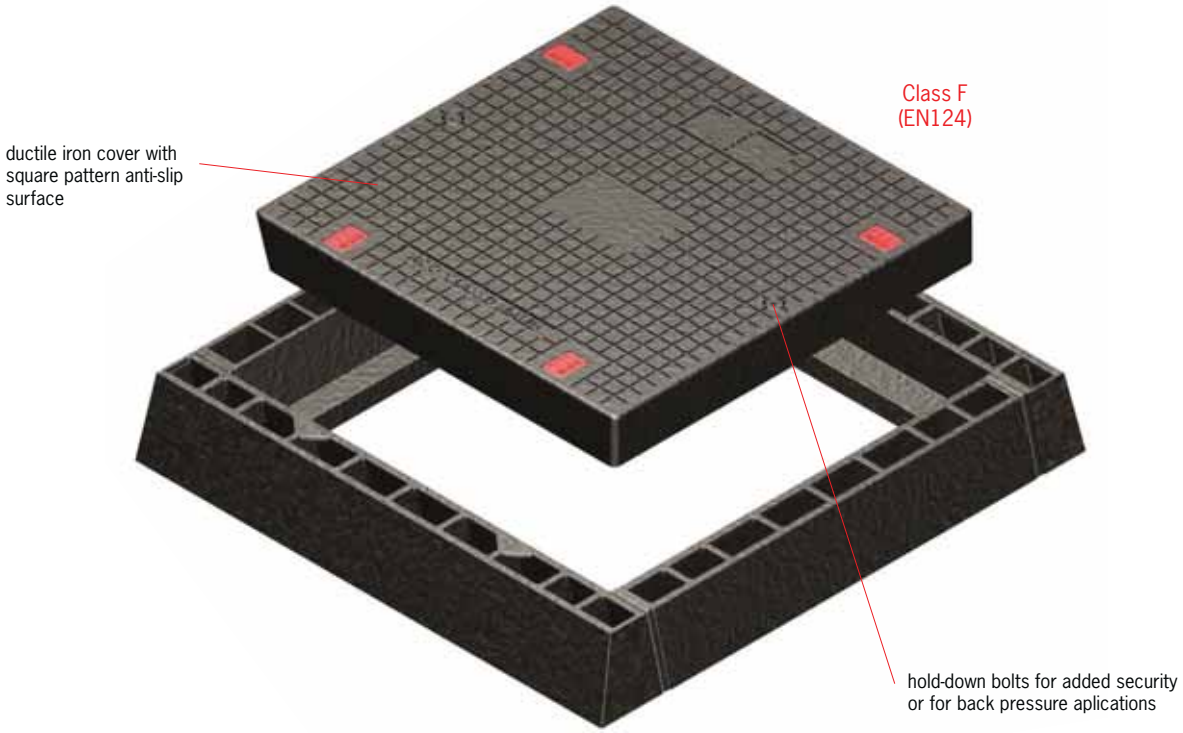


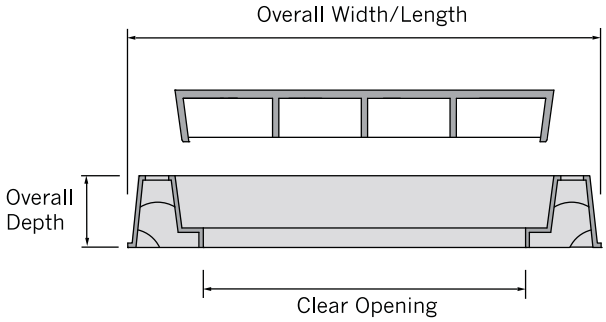


Product Descriptor	Product Code	Clear opening W X L (mm)	Overall W X L (mm)	Load Class (EN124)	Frame Depth (mm)	Frame Type	Overall Weight (kg)
44SEC	141645	450 x 450	685 x 685	E	125	Cellular	143
46SEC	141646	450 x 600	685 x 835	E	125	Cellular	181
66SEC	141647	600 x 600	835 x 835	E	125	Cellular	218
67SEC	141648	600 x 750	835 x 985	E	125	Cellular	230
70SEC	141649	700 x 700	935 x 935	E	125	Cellular	265
76SEC	141650	750 x 600	985 x 835	E	125	Cellular	244
77SEC	141651	750 x 750	985 x 985	E	125	Cellular	281
94SEC	141652	900 x 450	1135 x 685	E	125	Cellular	228
96SEC	141653	900 x 600	1135 x 835	E	125	Cellular	262
97SEC	141654	900 x 750	1135 x 985	E	125	Cellular	300

Rhinocast - Single Part, Ductile Iron Solid Top Cover & Frame -Class F900kN

Single part square units can be used to provide access to underground stormwater/sewer systems, electricity and communication enclosures, valves and junction boxes.



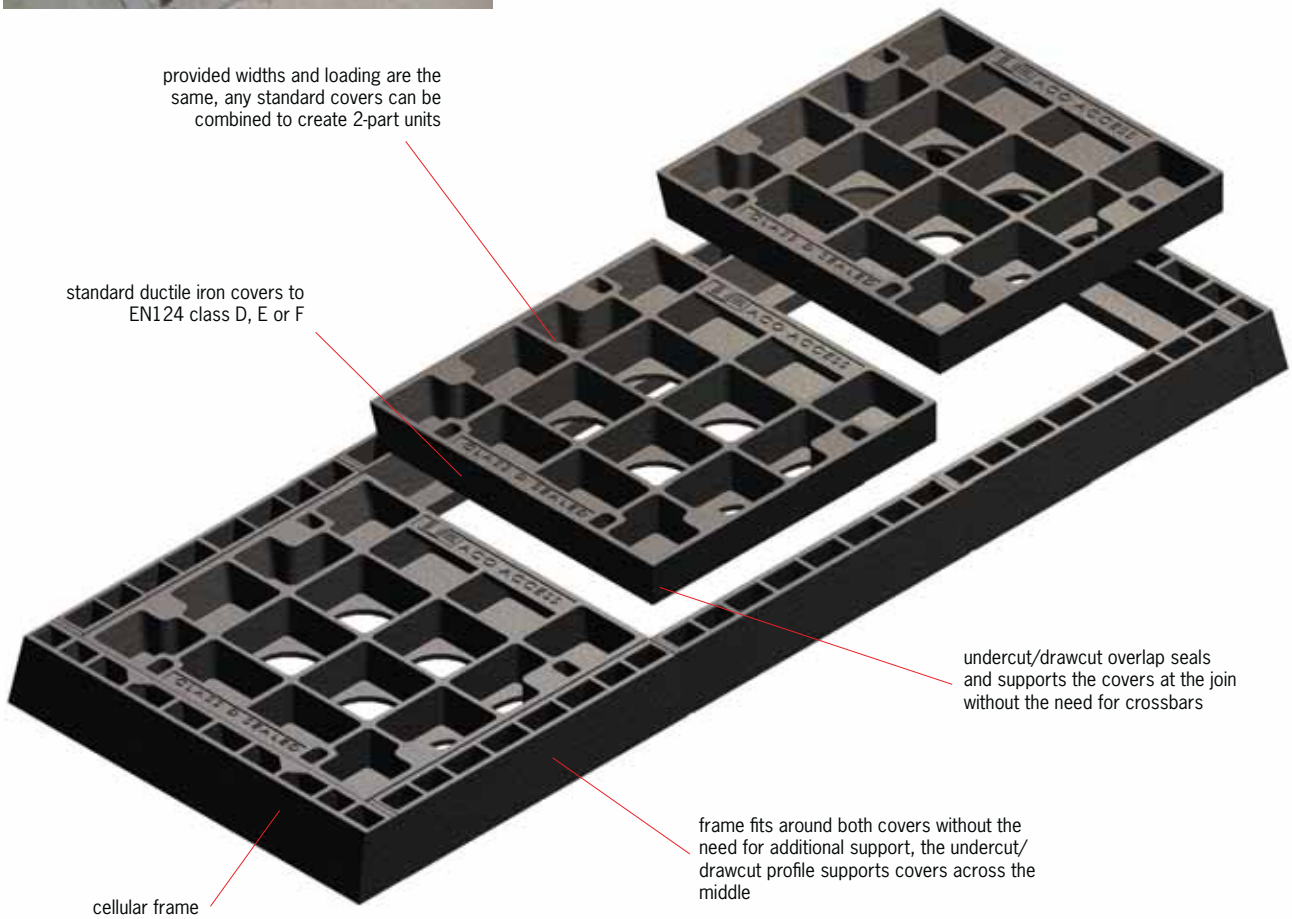


Product Descriptor	Product Code	Clear opening W X L (mm)	Overall W X L (mm)	Load Class (EN124)	Frame Depth (mm)	Frame Type	Overall Weight (kg)
44SFC	141655	450 x 450	685 x 685	F	125	Cellular	143
46SFC	141656	450 x 600	685 x 835	F	125	Cellular	181
66SFC	141657	600 x 600	835 x 835	F	125	Cellular	218
67SFC	141658	600 x 750	835 x 985	F	125	Cellular	230
70SFC	141659	700 x 700	935 x 935	F	125	Cellular	265
76SFC	141660	750 x 600	985 x 835	F	125	Cellular	244
77SFC	141661	750 x 750	985 x 985	F	125	Cellular	281
94SFC	141662	900 x 450	1135 x 685	F	125	Cellular	228
96SFC	141663	900 x 600	1135 x 835	F	125	Cellular	262
97SFC	141664	900 x 750	1135 x 985	F	125	Cellular	300

Rhinocast - Single Row, Ductile Iron Infill Cover & Frame Trench Runs

Trench runs are normally used where the required length of an access opening is greater than the length of the longest single part cover available or where smaller size covers are required for ease of lifting.

Designed to meet load requirements of EN124, trench runs can be used to provide access to underground stormwater/sewer systems, electricity and communications enclosures, grease traps, and valves and junction boxes. All covers in the system can be removed to give unrestricted access. Alternatively, any single cover can be removed to provide localised access.



Rhinocast - Multi-Part Access Covers and Frame

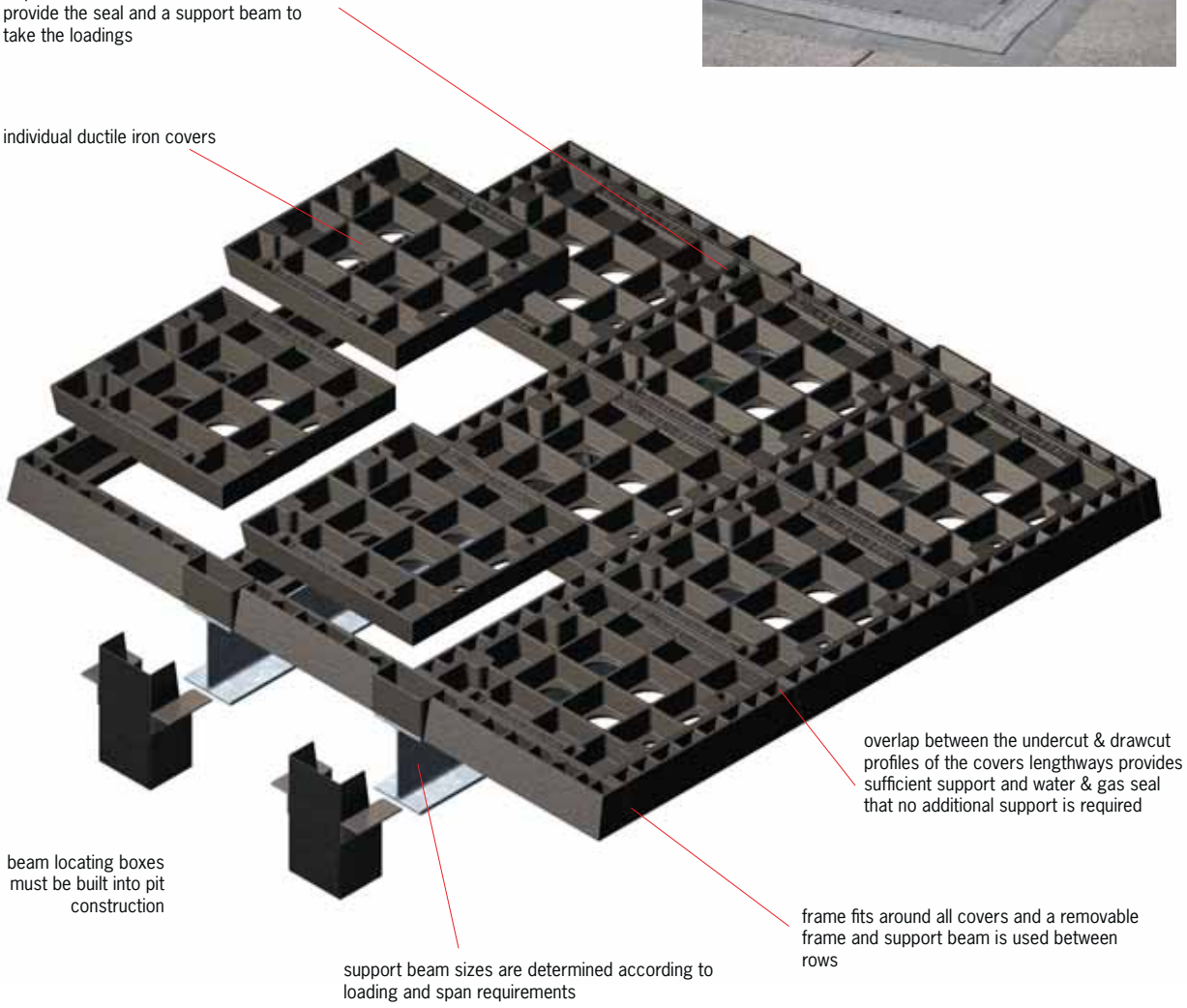
Multipart units combine standard size covers in multiple rows and lengths. They are used where a single part cover does not offer a large enough clear opening span or if smaller individual covers are required for ease of lifiting.

Covers do not have to be the same length, provided each row has covers of the same width and load class.

All covers and beams can be removed to allow full uninterrupted access, or single covers can be removed to provide access to specific areas.

Common applications include access openings for below ground machinery or equipment installations such as lift motor rooms, sewerage pumping stations, valve pits, large electrical pits, container ports and transformers.

Due to the endless range of sizes available, ACO will design the multipart closest to your requirements, free of charge and obligation. See page 18.



Servokat – Assisted Lift Access Covers

Assisted lift covers are the ideal solution for applications where frequent access to the utilities or machinery beneath is required. The cover is hinged to the frame and a gas strut allows for easy opening.

Typical applications

- Industrial infrastructure - energy, sewer & water supply utilities
- Commercial infrastructure – airports, docks

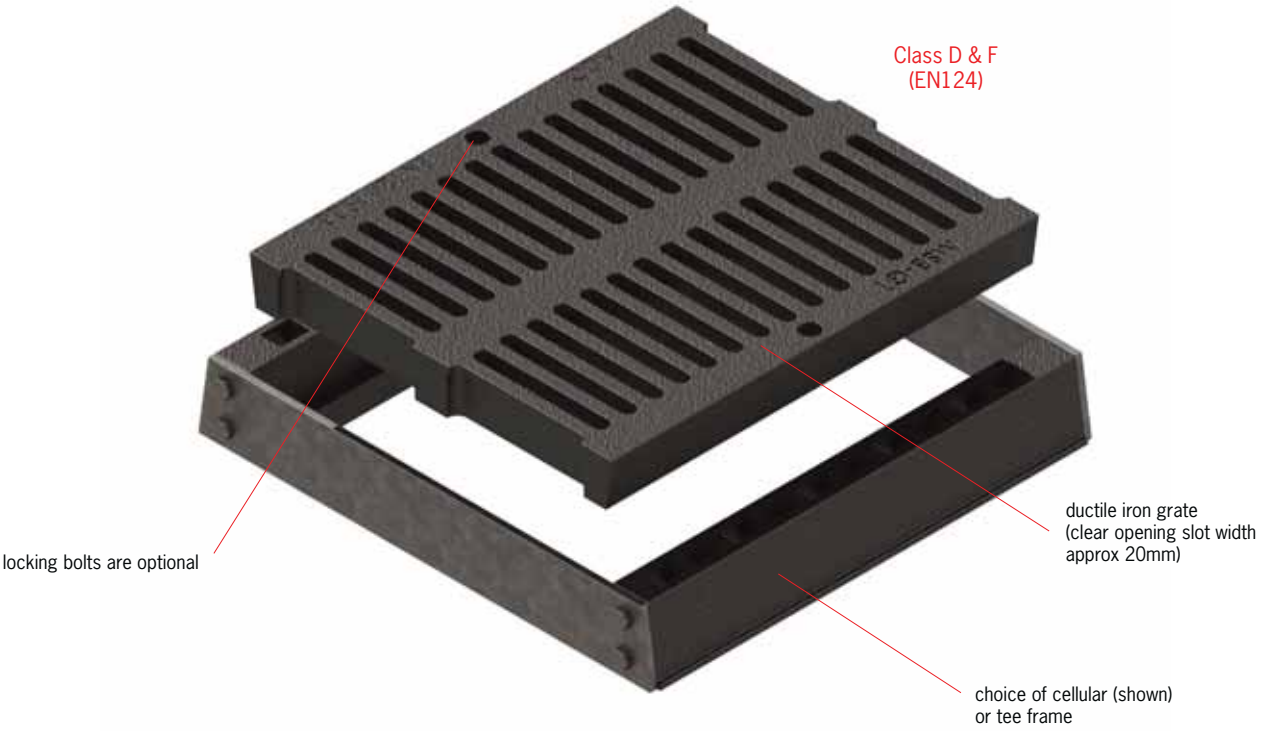
The Servokat range comprises a variety of systems in a choice of:

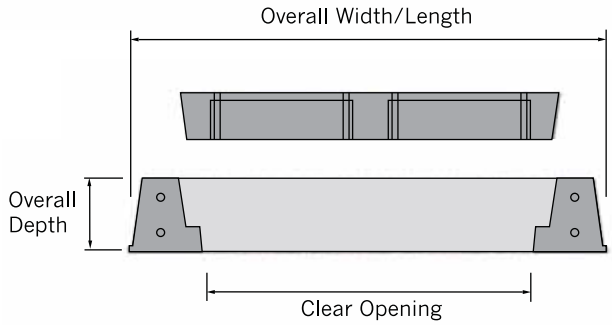
- Load classes
- Sizes – single, 2-part etc…
- Styles – recessed/solid top
- Materials – Steel, cast iron

Contact ACO for further information

Rhinocast - Single Part, Ductile Iron Grate & Frame -Class D400kN & F900kN

Single part square units can be used to provide stormwater drainage where an appropriate 4 way fall exists in the slab/pavement.

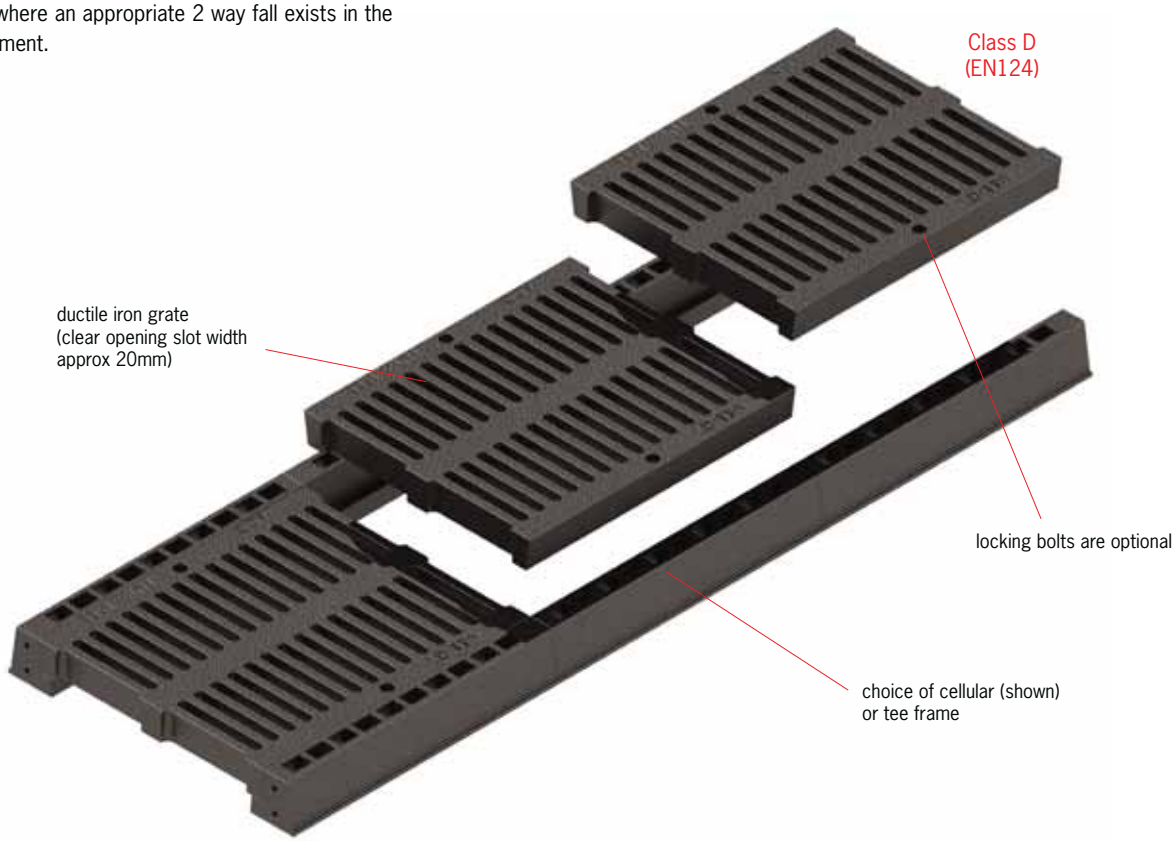


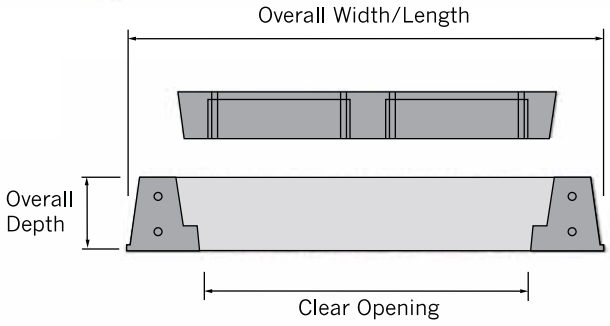


Product Descriptor	Product Code	Clear opening W X L (mm)	Overall W X L (mm)	Load Class (EN124)	Frame Depth (mm)	Frame Type	Overall Weight (kg)
46SDC	141665	450 x 610	650 x 630	D	100	Cellular	90
46SDT	141666	450 x 610	630 x 630	D	100	Tee	90
66SDC	141667	600 x 610	800 x 630	D	100	Cellular	148
66SDT	141668	600 x 610	780 x 630	D	100	Tee	148
76SDC	141669	750 x 610	950 x 630	D	100	Cellular	168
76SDT	141670	750 x 610	930 x 630	D	100	Tee	168
46SFC	141671	450 x 610	650 x 630	F	125	Cellular	90
46SFT	141672	450 x 610	630 x 630	F	125	Tee	90
66SFC	141673	600 x 610	800 x 630	F	125	Cellular	148
66SFT	141674	600 x 610	780 x 630	F	125	Tee	148
76SFC	141675	750 x 610	950 x 630	F	125	Cellular	168
76SFT	141676	750 x 610	930 x 630	F	125	Tee	168

Rhinocast - Trench Grate, Ductile Iron Grate & Frame -Class D400kN

Trench grates are normally used where the required length of an access opening is greater than the length of the longest single part grate available. These can be used to provide stormwater drainage where an appropriate 2 way fall exists in the slab/pavement.

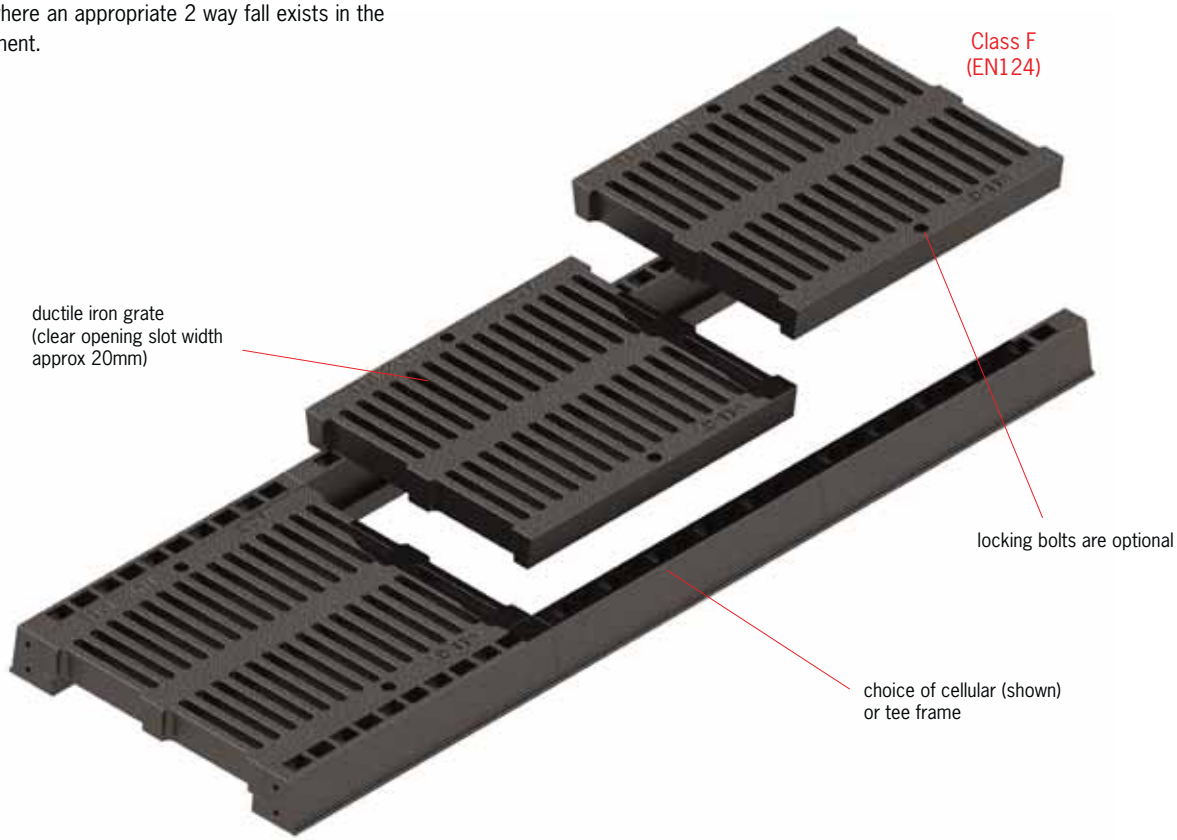


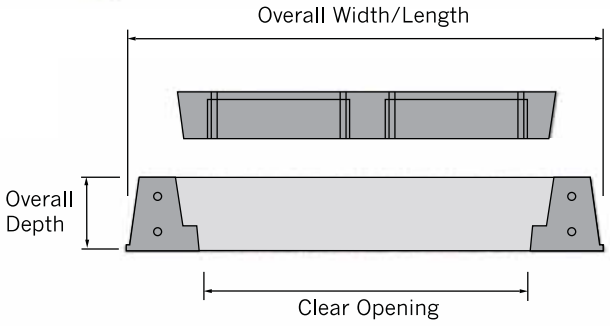


Product Descriptor	Product Code	Clear opening W X L (mm)	Overall W X L (mm)	Load Class (EN124)	Frame Depth (mm)	Frame Type	Overall Weight (kg)
22TDC	141677	225 x 610	425 x 610	D	125	Cellular	57
22TDT	141678	225 x 610	355 x 610	D	70	Tee	50
30TDC	141679	300 x 610	500 x 610	D	125	Cellular	67
30TDT	141680	300 x 610	430 x 610	D	76	Tee	60
45TDC	141681	450 x 610	650 x 610	D	125	Cellular	80
45TDT	141682	450 x 610	630 x 610	D	100	Tee	75
60TDC	141683	600 x 610	800 x 610	D	125	Cellular	148
60TDT	141684	600 x 610	780 x 610	D	100	Tee	140
75TDC	141685	750 x 610	950 x 610	D	125	Cellular	178
75TDT	141686	750 x 610	930 x 610	D	100	Tee	168

Rhinocast - Trench Grate, Ductile Iron Grate & Frame -Class F900kN

Trench grates runs are normally used where the required length of an access opening is greater than the length of the longest single part grate available. These can be used to provide stormwater drainage where an appropriate 2 way fall exists in the slab/pavement.





Product Descriptor	Product Code	Clear opening W X L (mm)	Overall W X L (mm)	Load Class (EN124)	Frame Depth (mm)	Frame Type	Overall Weight (kg)
22TFC	141687	225 x 610	425 x 610	F	125	Cellular	57
22TFT	141688	225 x 610	355 x 610	F	70	Tee	50
30TFC	141689	300 x 610	500 x 610	F	125	Cellular	67
30TFT	141690	300 x 610	430 x 610	F	76	Tee	60
45TFC	141691	450 x 610	650 x 610	F	125	Cellular	80
45TFT	141692	450 x 610	630 x 610	F	100	Tee	75
60TFC	141693	600 x 610	800 x 610	F	125	Cellular	148
60TFT	141694	600 x 610	780 x 610	F	100	Tee	140
75TFC	141695	750 x 610	950 x 610	F	125	Cellular	178
75TFT	141696	750 x 610	930 x 610	F	100	Tee	168

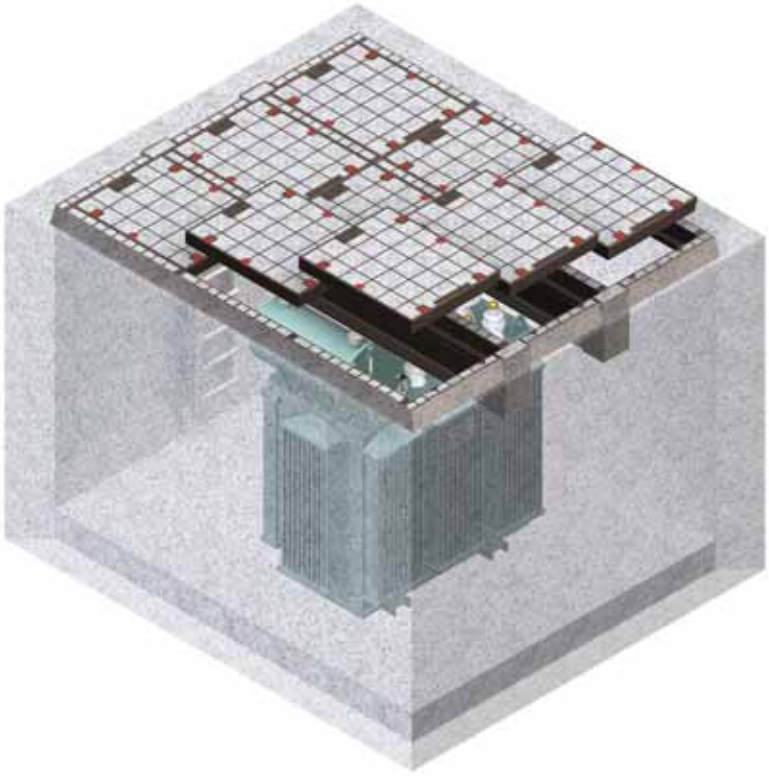
Technical Support

ACO has an established technical services department with many years experience advising on access covers generally and for individual projects. This free service is offered with no obligation and is supported with extensive, high quality information and technical documentation.

For large customised spaces, ACO will configure a bespoke access cover arrangement (multipart) to meet the physical and structural requirements of the enclosure. ACO can issue customers technical drawings showing the necessary requirements for the construction of the rebate prior to the installation of the multipart.

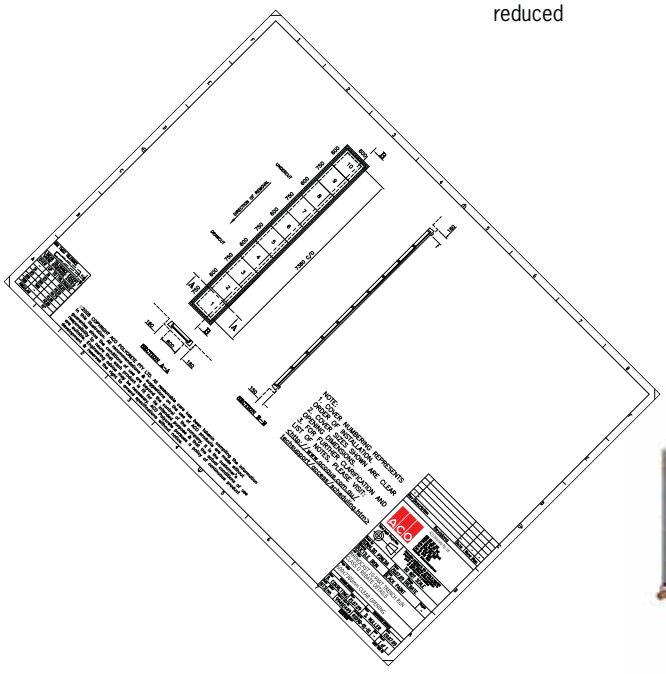
Technical support is also offered online.

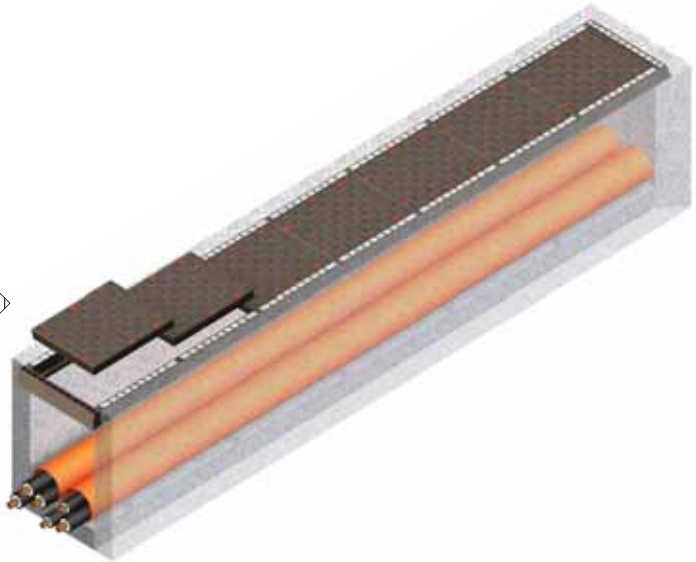
- For general installation instructions visit www.acoaus.com.au/access
- For ease of specification and pricing, the ACCTRIX programme has been developed to enable engineers and contractors to design their own multipart or trench run system. The user will be given an option of 5 systems based on the enclosure's size and load class requirements. These may vary in configuration and individual cover lifting weights, criteria driven by minimum lifting weight considerations. Finally, once a preference is made, a drawing is generated for specification purposes and for submission to ACO for quotation.



Key Installation Considerations

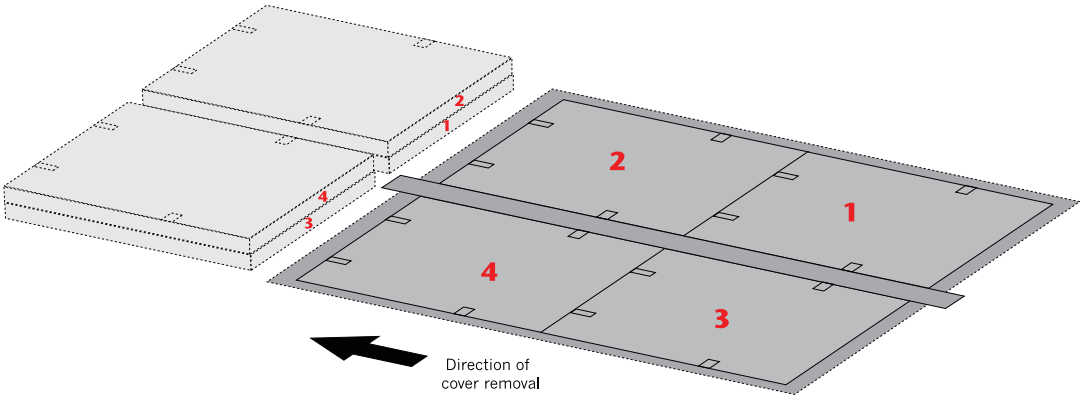
- Load Class - select correct cover and rebate to suit load class. The frame is designed to be fully supported by a bed of concrete – (visit www.acoaus.com.au/access)
- Install with cover positioned in the frame
- Cover and frame are a matching pair and should not be switched as fit and seal may be compromised
- Ensure that there is no rock between cover and frame otherwise seal will be compromised and service life will be reduced
- Concrete of a minimum strength of 32MPa and minimum aggregate of 12mm is recommended
- Position so that removal of cover is not obstructed by a wall, kerb etc.
- Applications where back pressure is expected may require additional reinforcing to hold the frame and cover in position. Engineering advice should be sought
- A multifast installation tutorial is available at www.acoaus.com.au/access/installation_rhinocast.htm





Rhinocast - Maintenance

To ensure long service and easy removal of covers, the following steps should be followed whenever lifting the cover or once annually, whichever is sooner.



Tools Required:

- Lifting keys
- Shifting spanner
- 2 lengths of water pipe approx. 25mm dia. (150mm longer than the width of the cover)
- Screwdriver
- Paint scraper
- Wire brush
- Tin of grease

Note: square covers will fit diagonally through the frame so care should be taken not to drop the cover through the clear opening.

Rhinocast Cover Removal

1. Remove dust caps and ensure recesses are free from debris.
2. Insert key and rotate clockwise a quarter turn, lock in position. Position jacking screw over frame and screw down using shifting spanner to break the seal.

   If there are difficulties breaking seal, apply penetrating oil and allow a minimum of 24 hours, tap joint with hammer and try jacking screw again.
3. Once seal is broken, using standard, long handled or mobile lifting keys, lift the cover by leaning forward on the handles. Insert two sections of pipe to enable the cover to be rolled clear of the opening.
4. For multiple cover units remove covers in order and stack at the end of the row as shown above.

Rhinocast Cover Replacement

1. Use a wire brush or scraper to remove any dirt, debris or rust from the cover and frame.
2. Liberally apply sealing grease to seat area of cover and frame.
3. Using long handled lifting keys and pipe sections to roll cover back into position and gently lower onto frame seat.
4. Lift and lower cover again to evenly distribute sealing grease.
5. For multiple covers replace in reverse order to ensure each cover is returned to its correct position.
6. Replace dust caps.

Rhinocast - Accessories

Product Code	Description
141697	Short handled lifting key - with seal breaker
141698	Long handled lifting key
141699	Sealing compound 4kg tin
141700	Sealing compound 20kg tin

Other ACO product lines

ACO DRAIN
A range of grated trench drainage systems and pits made from polymer concrete. Grates are available in various materials and finishes for all loadings

ACO INFRASTRUCTURE
A range of linear drainage solutions for transport infrastructure projects - roads, motorways, container ports, airport tarmacs and other heavy duty applications

ACO CABLEMATE
A range of electrical and communication cable jointing pits and surface ducting systems

ACO SPORT
A range of surface drainage systems and ancillary products for sport fields, running tracks and stadiums

ACO HOME
A range of economical domestic drainage products, ideal for homes, gardens and landscaped areas

ACO STAINLESS
A range of high performance stainless steel drainage channels, grates and floor drains for hygiene and aesthetic applications

ACO PIPE
Grade 316 stainless steel socketed pipe systems. Chemically pickle passivated for optimum durability and corrosion resistance

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