

PARTS BOOK

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APEX underground
Engineering - Innovation - Performance

Access Chambers & Covers



HV/LV Power

Valve Enclosures

Cable Pits

Power Distribution

Communications

Lighting

Rail Infrastructure





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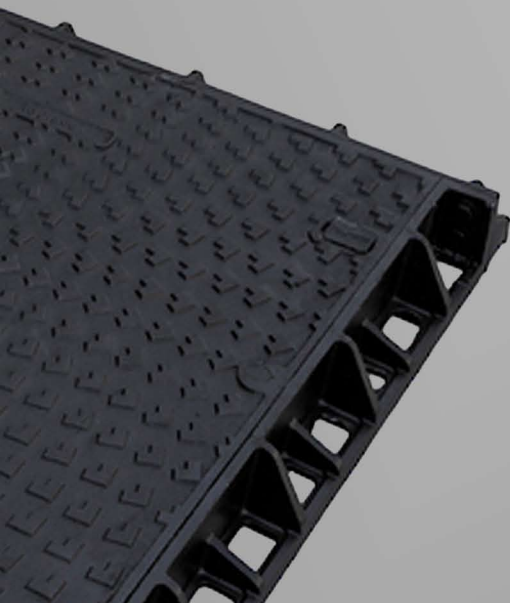
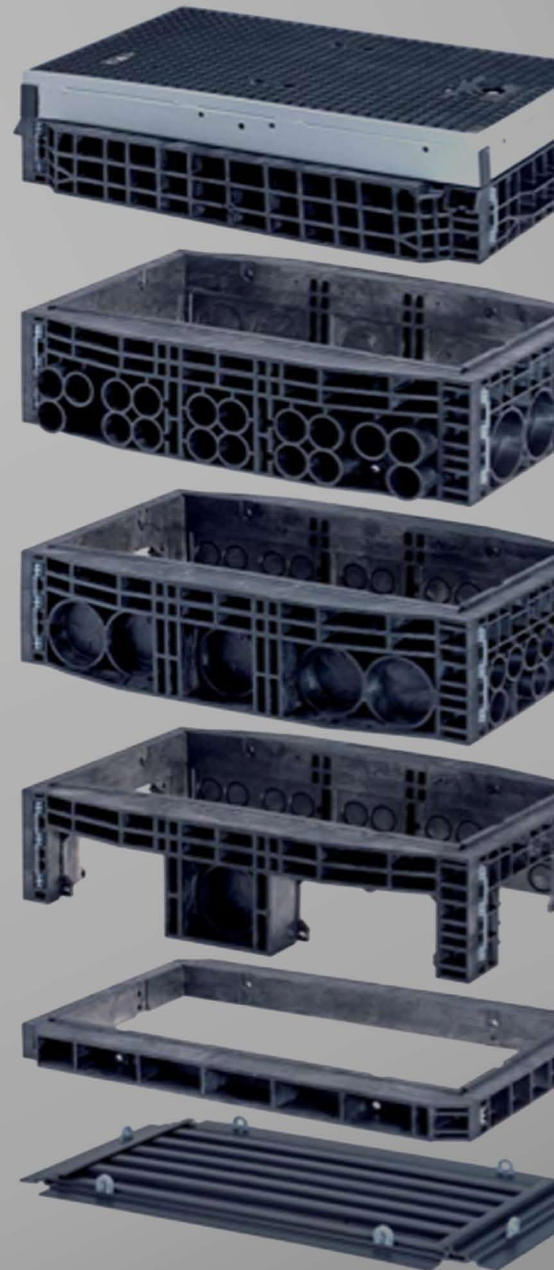
Overview

APEX Underground is a trademark range by Parts Book, offering a diverse selection of power, water, communications and rail products to the underground assets industry. Through the combination of modernized engineering advancements and products focused on key fundamentals such as simplified installation + handling, cost efficiency and superior longevity, Parts Book have successfully composed a market leading range of premium industry products and services.

Our Access Chamber system (AUC's) are constructed from a unique compounding method, which incorporates granulated polycarbonate and structural foam. Following this, injection molding is commenced resulting in the robust, lightweight and highly resistant chamber modules that complete the AUC system.

Advantages such as the ability to easily control pit depths and connection positions by selected module combinations, wall mounted cable fixtures, easy positioning over or around existing services, per-determined conduit knockouts and flat-pack transport makes our chamber system a market leader in quality, safety and cost effectively. Our chambers are put through a series of individual load tests corresponding to relevant standards to ensure we are only supplying safe and relevant solutions to our clients.

APEX Underground offers a comprehensive selection of **certified manhole covers (lids)**, grates and frames. The range boasts an all-inclusive selection of size and load classification options, backed with a market leading combination of high performance, functionality and aesthetic appeal. Along with use on APEX Access Chambers, our highly versatile range of 'Gatic' type covers are compatible with alternative and existing applications.



Modular

- Chamber sizes, made specific to customer requirements by module combinations.
- Infinite height variation and angle compensation.
- Innovative layer options (open frame, prefab duct sizes etc).
- Easy to handle components.
- In the event of layer damage, Single modules can be replaced as opposed to replacing entire pit systems, a common scenario seen in traditional manholes.
- Assembly of chambers on-site resulting in minimized production lead-times and flat pack transportation.
- Open frames can be placed around existing services, making maintenance and additions to existing services fast and simple.

Low weight

- Significant cost savings associated with transport, due to the light weight components.
- Many components weigh less than 20kgs, making manual handling safe & simple.
- On site lifting machinery rarely required.
- OHS standards are greatly improved when contrasted with traditional systems.

Stability

- High degrees of stability with low inherent weight, the result of high-quality plastic and structural agents.
- Optimum embedding in surrounding soil due to "gridded" exterior.
- Structural steel beams surround the upper chamber layers, assisting in stability and integral strength.
- Specially designed and easy to use Peg Joints lock module layers together with optimum strength.
- Chambers and Covers are structurally tested and rated to relevant standards.

Features

- Adaption Plates for fast and simple sealing around pipe in open frame modules.
- Step Connectors seal the inside of prefabricated break points and accommodate precise fitting of undetermined or odd size conduits.
- Reduction Adapters for the oversized services
- Wall mount cable hooks for simple and tidy cable management
- Prefabricated knockout sections arrive to site sealed and can be knocked out with a single hammer hit, saving time and costs drilling service entry's.
- Structurally tested for independent load capability.
- Modules available in a variety of height options, reducing layer joints and increasing accuracy on specific height requirements.

Material - Modified polycarbonate (PC)

- High degree of independent structural stability.
- Structural foam injection helps eliminate the spread of fractures.
- Fireproof (self-extinguishing).
- Extremely resistant to corrosion & chemicals.
- Recyclable several times over.

Why A-U Chambers

APEX Undergrounds' range of structurally tested Chambers and Covers offer advantages on safety, cost and longevity. Uniquely designed options and features bring a new breed of innovation to the underground services market.

Accessories

Adapter Plates

Features

- 2-4 entry points per plate
- Material Options
- Indented set break points
- Direct pipe adaption
- Devisable cable adapters



Open Frames

Features

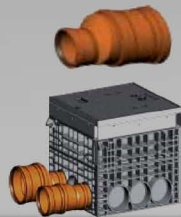
- OD & combination options
- Modifiable options for existing services overbuilds
- Closing sections for unused open frames



Reduction Coupling

Features

- Adaption of varied pipe diameter. e.g - 125-110mm dia
- Conduit reduction to suit set break points
- Various size and combination options available



Step connection

Features

- Simple adaption to inside of knock out break points
- 110mm entry dia, step to pipe OD: 90, 75, 63, 50 & 40mm
- 160mm entry dia, step to pipe OD: 140, 125, 110 & 50mm



Cover Accessories

Features

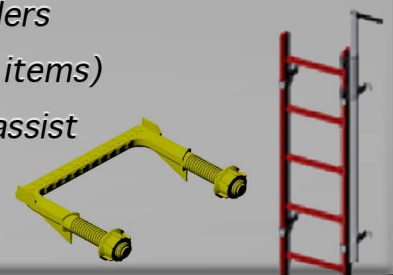
- Keyhole Plugs
- Short Handled Lifters
- Long Handled Lifters
- Crane lift assist
- Manhole Grease



Ladders

Features

- GRP manhole ladders
- Wall clamps (two items)
- Lowerable entry assist



Protective pipe seal

Features

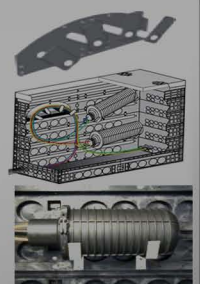
- To introduce cables or narrow pipes
- Optimal seal against soil through special inset rubber
- Seals also compatible with existing cable and manholes



Cable Wall Mounts

Features

- Cable management systems
- Self-tapping screw joints
- Options to suit various bend radius requirements
- Sleeve Supports (couplings etc)



System Examples

New HV/LV run

APEX Underground Chambers are utilized on a major industrial project as part of a new HV/LV run. Our system emerged as the clear underground power solution for the project, which was allocated a strict construction timeline and budget.

Key Factors

Delivery/ Site Handling

- Flat Pack delivery of frames and components increase transport savings.
- Light weight module frames are manually handled by just 2 people.

Chamber Install

- Modules are stacked layer by layer and do not require expensive lifting equipment.
- Clip-Locks fasten modules together and require no extra sealing materials.
- Installation is achieved quickly and safely.

Services Install

- Predetermined “knockout points”, assist in rapid conduit feed in.
- Conduit entry knockouts require no drilling/cutting of module frames.

Completion

- APEX Chambers are structurally tested, meaning substantial savings on extra material costs usually associated with traditional pit installations
- Backfill material consists of a compacted road base and refill of surrounding terrain.

Maintenance

Apex Access Chambers are selected for use in a situation where a concrete manhole containing live electrical services is broken by a passing vehicle. APEX Underground are able to offer a solution where the pit is restored quickly and effectively.

Key Factors

Demolition/ Ground compaction.

- The ground is compacted following removal of damaged pit.
- Existing services do not require modification due to our versatile open frame system.

Placement of APEX Chamber

- Open frames are simply placed over the existing services.
- No cutting, strapping or drilling for conduit entry is required.
- Module layers are then stacked until the required height is reached.

Completion

- Sealing of existing conduit is simple and fast with the combination of open frames and exact fit adapter plates, A backfill of existing terrain surrounds the chamber and an APEX “GATIC” style cover is placed over the chamber, secured by our special Cover-Chamber mounting system
- APEX’s structurally tested chamber and cover ensures the pit now meets the appropriate load classification, creating a safe and long term solution.

APEX Access Covers

APEX Undergrounds' range of certified manhole lids, grates and frames offer an all-inclusive selection of size and load classification options, backed up with a market leading combination of high performance, functionality and aesthetic appeal.

High levels of professional development and quality assurance has been invested into our covers, creating a safe and reliable investment for consumers. Technical development of the range has encompassed meeting stringent compliance standards, performance efficiency, visual appeal, and relevant OHS factors. The result is a unique and cutting edge range, manufactured to meet the specific requirements of the Australian market.

Our manhole covers are available in both single and multi-part configurations, with various intermediate beam supports. Recessed and Solid Top series also allow for further fine-tuning to site and project prerequisites.

Interchangeable

Our highly versatile range of 'Gatic' style covers can also be used with existing and/or new alternative manhole requirements. The covers are available across the complete AS/3996:2006 load classification range and host a string of size and adaptability criteria's.

Chamber mounting system

"GATIC" Ductile Iron covers are the preferred access substructure for our Chamber's. Standing the test of time and giving many years of limited maintenance works has resulted in an extended life cycle, making the system a valuable asset. A special mounting system between APEX Underground Chambers & Covers has been developed for the purpose of easy installation and cost effectivity.

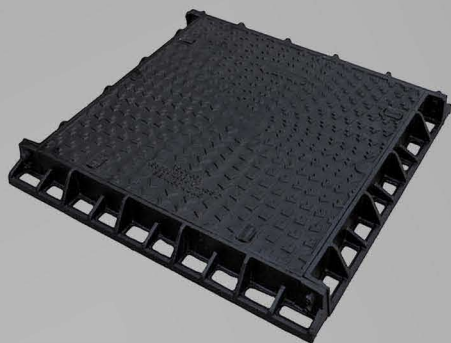
Standard Features

- Machined mating surfaces between cover & frame, ensuring no "rocking" and a water tight seal
- Covers have compliant lifting keyholes points for ease & safe cover removable.
- Engineering Support
- Various options and variations for fine tuning

**Manufactured to
AS3996;2006: B80-G900 and EN124;1994: B125-F900**

APEX Access Covers

Solid-top Covers



APEX Undergrounds range of Single Part Solid-top Access Covers are manufactured from highly durable ductile iron, complete with fully machined mating surfaces between cover & frame. Utilizing the antislip chevron pattern, the covers are safe, aesthetically pleasing and robust. Solid-top access covers are lighter in weight than traditional concrete infill and therefore are ideal where regular access is required.

- Manufactured to AS3996.
- Available in Class B, C, D, E, F, G

Recessed Cover



APEX Undergrounds range of Single Part Recessed Access Covers are manufactured from highly durable ductile iron, complete with fully machined mating surfaces between cover & frame. Designed with a unique polyethylene gasket within the frame assembly, our covers have eliminated the requirement for lead contaminated frame joints, while maintaining a gas and watertight seal.

- Manufactured to AS3996:2006 and BSEN124 standards.
- Available in Class B, C, D, E, F, G

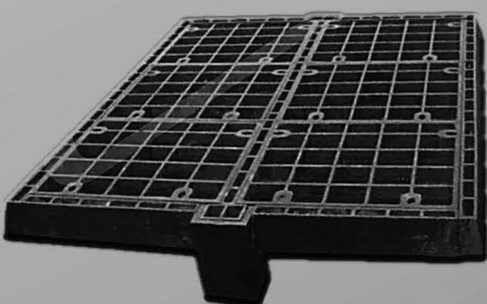
Circular Cover



APEX Undergrounds range of Circular Access Covers feature both a solid-top and a recessed series. The covers feature security lock fasteners, Frames suitable for both institute and precast applications and an anti slip chevron pattern. Suitable for sewer and storm-water applications, these covers have been manufactured to AS3996:2006 and are available in a variety of sizes and class loadings

- Manufactured to AS3996.
- Available in Class B, C, D, E, F, G

MultiPart Cover



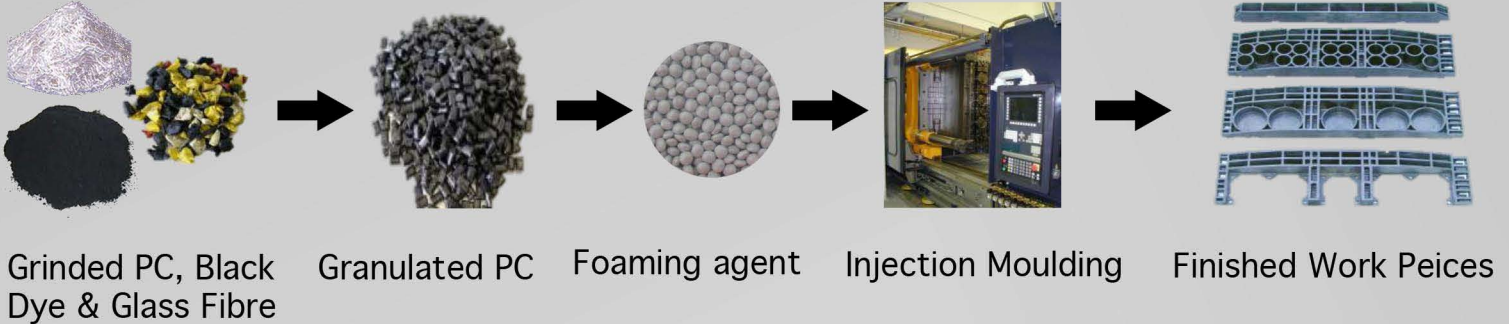
APEX Undergrounds range of Multi-part Access Covers are designed for use where manhole clear openings exceed 1200mm dimension. Multi-part covers incorporate removable support beams enabling large openings to be covered. Covers are sent flat pack for simple and cost effective transport.

Full shop drawing & design service is available upon request.

- Manufactured to BS EN124
- Available in Class loads 80kN- 900kN

Standards/ Design

Manufacture Process



Apex Undergrounds' Access Chambers are constructed from a unique compounding method which combines Grinded Polycarbonate with Structural Foam. Following this, injection moulding is instigated resulting in the robust, lightweight and highly resilient chamber modules which construct the AU-C system. High temperature resistance, High stability and Chemical resilience are just a handful of factors that make our specially designed material and manufacturing cycle a frontrunner.








AS3996

Our covers offer a tried and tested solution for consumers. Technical development of the range has encompassed meeting stringent compliance standards, enhancing performance efficiency, ensuring visual appeal, and following relevant OHS factors.

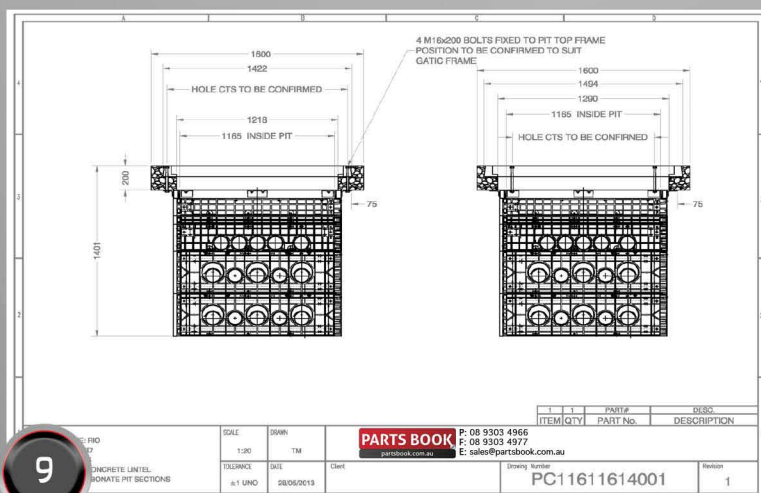
Our cover ranges conform to the criteria set by both

- AS3996:2006 (AUS)
- and
- BSEN124:1994 (EUR-INT.rec)

Select covers also hold Individual municipal and Water Corporation approvals

| Table of load classification – AS3996 | | | | | | |
|---|--|---|---|---|---|---|
|  |  |  |  |  |  |  |
| 10kn | 80kn | 150kn | 210kn | 400kn | 600kn | 900kn |
| Load Class | Load Class | Load Class | Load Class | Load Class | Load Class | Load Class |
| A | B | C | D | E | F | G |
| Extra Light Duty | Light Duty | Medium Duty | Heavy Duty | Extra Heavy Duty | Extra Heavy Duty | Extra Heavy Duty |
| Typical Conditions | | | | | | |
| Footways and areas only accessible to pedestrians and pedal cyclists and closed to other traffic. | | Footways that could potentially be mounted by vehicles or livestock. | | Areas open to slow moving traffic. | | Carriageways of roads and areas open to commercial vehicles. |
| General docks and aircraft pavements. | | Docks and aircraft pavements subject to high wheel loads. | | Docks and aircraft pavements open to high wheel loads. | | Docks and aircraft pavements open to high wheel loads. |
| PARTS BOOK partsbook.com.au | | | | P: 08 9303 4966 F: 08 9303 4977 E: info@partsbook.com.au partsbook.com.au | | |
| [Single Part Access Covers Service Trench Covers [Slump Grates Multi-part Access Covers [Accessories] | | | | | | |

Design



To further enhance the safety, efficiency and general satisfaction of our clients, **Parts Book** offer in house engineering services.

This facility proves highly valuable in ensuring technical requirements essential to our clients are met.

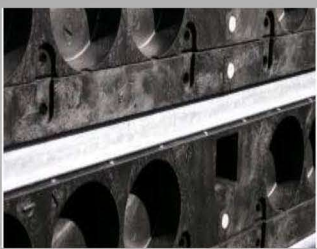
The service is also useful across projects calling for product proposal criteria.
(i.e. specification, TQ approval etc).

Parts Book's engineering facilities are equipped with CAD (Solid Works) design software

Technical Structural Features

Structural Beams

Frame modules with lengths of 1000mm+ are supplied as standard with internal steel reinforcement beams, further increasing the chambers load tolerance.



Structural Foaming

Our structural foaming agent acts as a major factor in lowering inner tensions, restricting crack growth and lightening chamber modules.



Structural Testing

Load Test 1

Test Conditions

Realistic simulation of static traffic load @ 240kN in accordance with relevant load classification standards.

Results:

- No damage or fractures on chamber
- No visible or measurable impacts



Test Factors

- No load bearing material surrounded the chamber (i.e concrete)
- Identification of grain size distribution of sand, compression characteristics during installation and definition of soil parameters
- Tests conducted on 3 (three) Chambers with inner dimensions of 1400x800
- 220.000 load cycles

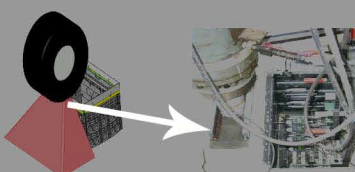
Load Test 2

Test Conditions

Realistic simulation of static traffic load until break point.

Results:

800mm wall: No break below 560kN
1400mm wall: No failure below 460kN



Summary of test report at technical university Munich

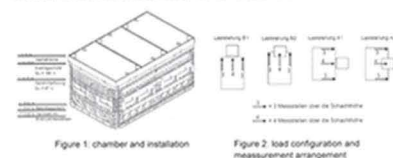
1. Procedure

Test report: 11203-2/4
Title: rectangular access chambers made from foamed polycarbonate
Sub title: Large scale load test on built in chambers
Institute: Audit Office for foundation engineering, soil mechanics, rock mechanics and tunnel construction of the technical university of Munich.

2. Chamber installation and configuration

Tests were done on three chambers with inner dimensions of 800x1400mm. The chamber configuration see figure 1.

Tests done in accordance to figure 2: load configuration B1, B2, A1, A2.



3. Soil material

Identification of grain size distribution of the sand, compression characteristics during installation and definition of soil parameters

4. Load tests

Following the DIN Technical Report 101 and the listed load case 2, two test setups on each chamber were conducted.

Test setup 1: static traffic load, max 240 kN in accordance to load configuration A1, A2, B1, B2
Test setup 2: static traffic load, until break in accordance to load configuration A1, B1

To simulate the truck wheel load a hydraulic press with a assembled steel plate of 0.4 x 0.4m stressed the chambers. The load increases by 20 kN steps.

5. Test results

Test setup 1: no damage and no cracks on chamber

Test setup 2: short side (800mm) of chamber = no failure below 560 kN

long side (1400mm) of chamber = no failure of steel profile below 460 kN

approved

nm

Geotechnik

Lehrstuhl und Institut für Geotechnik, Bodenmechanik, Felsmechanik und Tunnelbau

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PARTS BOOK

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Safety Equipment
Storage Tanks
Full purchase/ Supply services
Engineered product development

General On-site Consumables
Tools
Safety equipment
Storage Solutions
Maintenance Products
Soak Wells
Portable pump stations
Storm water systems
Sewer control systems
Oil water separators
Conveyor systems & parts
Power transmission products
Crushing and screening
Spill safety systems

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