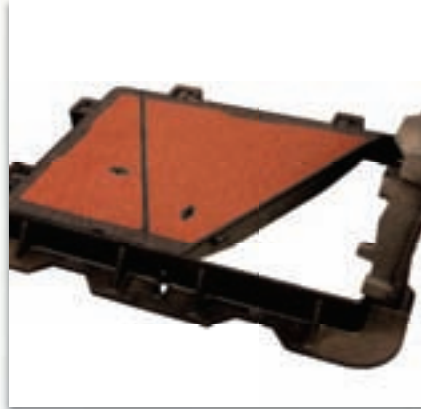


State of the art...



Opt-Emax



GripTop



AquaVantage



Aqua-Max

...the performance collection by *Pam*

Innovative Ductile Iron Access Cover and Grating Solutions



Saint-Gobain



As the world leader in designing, manufacturing and distributing construction materials, Saint-Gobain is committed to helping build a more sustainable future. Together our companies can supply innovative, high performance solutions for both new and existing buildings; creating more energy-efficient and comfortable living and working environments. Saint-Gobain solutions span from glass solutions, smart sound and thermal insulation systems, building materials distribution and construction products. In the UK and Ireland, some of the best known and respected companies in the construction sector are part of the Group, including British Gypsum, Isover, Glassolutions, Weber, Saint-Gobain Glass, Saint-Gobain PAM, Jewson and Ecophon.

Saint-Gobain PAM UK is the primary supplier of ductile iron and cast iron products to the UK's key utilities, telecoms, highways, civil engineering, construction and housing sectors. They are the market leader in the supply of:

- Cast iron soil and drain and rainwater systems
- Ductile Iron water and sewer pipes, fittings, valves and couplings & adaptors
- Ductile iron access covers and gratings

Together with its international parent company Saint-Gobain PAM, Saint-Gobain PAM UK have ensured over 80 capitals and more than 1000 major cities across the world are supplied with water through its ductile iron water pipes.

With access to worldwide technical excellence and a large portfolio of products, Saint-Gobain PAM UK are able to combine the benefits of a global presence with the ability to tailor to local specification. With Saint-Gobain PAM UK and the PAM brand of products you are assured of Quality, Innovation and Technical Expertise at all times.

Manufactured in the UK



Saint-Gobain PAM UK at its Holwell foundry near Melton Mowbray remains at the forefront of manufacturing access covers and gratings in the UK. With a focus on continuous improvement we combine our technical expertise, process control, performance systems and innovative designs to offer products of the highest quality that suit the needs of all stakeholders.

In the manufacture of our products, Saint-Gobain PAM UK is a major recycler of ferrous scrap and whenever possible we source other raw materials that are themselves the by-product of other industrial processes. By doing this we minimise our impact on the environment and usage of the world's finite resources.

Environmental Compliance

Audited and kitemarked in accordance with the stringent requirements of ISO 14001 Environmental Management Systems, Saint-Gobain PAM UK has also been awarded certification to the world class, ISO accredited CEMARS standard by the Achilles carbon Reduction programme. Certification to CEMARS demonstrates the company's commitment to measuring, managing and reducing greenhouse gas emissions in a robust and credible way. CEMARS certification confirms that the company has measured its greenhouse gas emissions in compliance with ISO 14064 -1:2006 and has committed to managing and reducing its emissions in respect of the operational activities of its organisation.

Saint-Gobain PAM UK has achieved CEMARS for its operational carbon footprint for the year 2011–2014.

Key targets set by Saint-Gobain PAM UK to reduce greenhouse gas emissions over the coming years include energy efficiency improvement projects at all sites to reduce overall greenhouse gas emissions by more than 7% over the period.



Features & Benefits



fig 1



fig 2



fig 3



fig 4



fig 5



fig 6

With an aim in contributing to the reduction of whole life costs associated with the installation, operation and maintenance of municipal castings, Saint-Gobain PAM UK introduce the Performance Collection, a range of products that are designed and engineered to include standard features which help to improve operator safety, asset security, efficiency and durability.

Developed through a deep understanding of the various markets we serve, the Performance Collection focuses on delivering tangible benefits to meet the combined needs of the client, specifier, installer and operator.

Safety

The use of an hinged access cover [fig 1] or grating helps avoid the risk of back injury by promoting correct posture during opening and closing. Studies have demonstrated that by using hinged solutions, the lifting effort required is reduced by up to 50% when compared to traditional coupled double triangular products.

Security

Flexible security solutions to act as a deterrent against theft, unauthorised access or vandalism. Locking solutions can be tailored to meet a range of requirements.

The locking options [figs 2, 3 & 4] available can either be as a standard feature such as a spring bar, or captive hinge arrangement or by providing the facility to enable a locking kit to be fitted retrospectively

Durability

Research lead by Nottingham University into how ironwork interacts with the road determined that critical features such as the seating contact areas, the thickness of the frame and flanges, controlled/minimal manufacturing tolerances when designed, engineered and manufactured correctly combine to ensure and enhance durability.

Saint-Gobain PAM UK have used the results of this research to develop the Load Transfer System LTS [figs 5 & 6]. This system has become a standard feature on our core ranges for over 12 years, giving peace of mind that products are stronger, more resilient and durable. When installed using high performance bedding mortars, LTS has been proven to reduce the dynamic loads subjected to the casting and the underlying structure and bedding by 50%, increasing the life of the installation helping reduce the need for reinstatement.

Features & Benefits



fig 7



fig 8



fig 9



fig 10



fig 11

Road User Safety

Products that safeguard road user safety and feature high friction anti-skid properties [figs 7 & 8] and have been independently tested and verified that they demonstrate industry leading results and compliance to the recommendations of the Highway Agency Guidance note HA/104 09 in relation to PSRV and ultimately skid resistance.

Simple, Safe & Efficient Access

The use of products that include a hinged cover or grating section [figs 9, 10 & 11] allows quick and efficient access to surface water and sewerage networks and below ground assets during inspection or maintenance activities. The addition of blocking features to the hinge design prevents accidental closure creating a safe working environment.

More than a match for changing times

Aqua-Max

Increased traffic intensity, changing climatic conditions and budgetary constraints are placing greater emphasis on the need to install solutions that offer greater durability, security and ease of use. To help contribute to achieving these requirements Aqua-Max has been developed to deliver maximum performance in:

- Water absorption
- Security
- Ergonomics
- Durability
- Stability

Designed to deliver every benefit



AQUA-MAX

1 High absorption capacity

A special asymmetrical design in the area adjacent to the kerb disrupts the normal flow to increase the volume of water entering the chamber, making Aqua-Max the most effective in its class.

2 Health and Safety benefits

To help reduce work-related injuries, the ergonomic hinged design of the Aqua-Max makes handling simpler, easier and safer. For child care, spring bar locks grate and provide optimum safety level.

3 Enhanced durability

In recognition of whole life costs, the Aqua-Max design incorporates the benefits of the Load Transfer System (LTS) to radically improve installation and product lifespan and lower the frequency of maintenance and replacement operations.

4 Anti-theft, anti-vandal deterrents

Unlike traditional lift-out gratings, Aqua-Max is the market's first truly captive hinged grating and features an automatic spring bar locking system that can only be disengaged by a conventional tool.

5 Increased stability

Large wedge seatings achieve a perfect non-rock performance and spring bar locking secures the grate within the frame.

More than a match for changing times

AquaVantage

Sharing many of the features and benefits of its sister product the Aqua-Max and designed with specifiers, installers and operatives in mind, AquaVantage offers optimum performance in the key areas of water clearing capacity, operator safety and fast and efficient access during planned maintenance. Ideally suited for carriageway drainage channels with a 1:5 profile, AquaVantage is the durable high performance solution for even the most challenging conditions.

- Water absorption
- Security
- Durability
- Ergonomics
- Stability

Designed to deliver every benefit



AQUAVANTAGE

1 Health & Safety benefits

Grating section is hinged to reduce required lifting effort making opening and closing easier and safer, tests show that when opened to 45° the effort required is < 25kg.

2 Absorption Efficiency

The grating incorporates a disruption field which is orientated at 90° to the flow to create turbulence slowing the flow of water enabling greater volume to pass through the grating.

3 Stability

Multi directional wedge seatings achieve superior non-rock performance and grating stability within the frame

4 Security

Adding to the security benefits of a captive hinge the provision of an automatic spring bar gives multi level anti-theft and anti-vandal deterrents. For the ultimate level of security. AquaVantage has the ability to have a turnbuckle locking device fitted retrospectively.

5 Ease of Use

Provision of offset lifting key hole to promote correct posture during opening. Frame lifting and shackle points are provided to ensure safe handling during loading, offloading and installation.

Making danger zones safe

GripTop

GripTop is a permanent high friction anti-skid solution that has been designed specifically for areas where utility or telecoms chambers are located such as breaking areas, crossings or bends that are considered as medium or high risk and pose a skid or slip risk to pedestrians, motorcyclists or cyclists.

GripTop features a patented factory applied top surface which combines high performance bauxite aggregate and bonding agents applied to a recessed ductile iron cover section.

- Available as options from our Inter-Ax, Opt-Emax or Ult-Emax ranges
- Proven in service durability*
- High durability of aggregates and bonding agents
- Industry leading Polished Stone Resistance Value (PSRV)
- Now available in D400 and E600 load classifications

An innovative solution to overcoming issues of skid resistance in locations such as breaking areas, pedestrian crossings and outside schools



GripTop's gripping power put to the test in the city.

In partnership with Bristol City Council, Saint-Gobain PAM UK carried out large-scale testing of GripTop in the city centre. Around 70 new access covers were installed, monitored and tested over a three-year period in Broadmead redevelopment programme.

Located around the inner ring road which is subject to continuous heavy traffic a selection of the installations were independently tested again after 5 years to determine any degradation in the skid resistance, the tests showed little or no loss of performance.

GripTop has a PSRV of >75 on average.

The HA Design Manual for Roads and Bridges Guidance Note HA104/ 09 recommends a minimum PSRV of 60 for high risk locations.

Certified compliant to BS EN124 by BSI Kitemark

*A copy of the results from the independent testing are available on request

The reference for doubletriangular access covers

Inter-Ax

Inter-Ax 2

The most recent addition to the acclaimed Inter-Ax range of access covers.

Inter-Ax was initially developed following an extensive three-year research programme conducted by Nottingham University in partnership with the Highways Agency. Incorporating the latest benefits of our LTS (Load Transfer System) feature, Inter-Ax2 has been given significant design enhancements in order to further improve its already outstanding properties in relation to:

- Frame rigidity
- Durability
- Stability
- Performance
- Safety on the stockyard



INTER-AX2

1 More durable installation

Enhanced rib design improves bonding to the bedding material by offering greater resistance to lateral shift so in order to avoid early separation and bedding material cracking, which can cause premature failure.

2 Improved performance under heavy traffic

Increased footprint and redesigned flange shape further enhance proven LTS features.

3 Increased stability

New extra large seating areas complete the three-point suspension design.

5 Durability

The innovative shape and design of the cover interact with the notched frame to prevent lateral movement and improve cover stability and integrity

Access has never been easier, quicker or safer

Opt-Emax

Opt-Emax is designed to give faster, simpler and more reliable access for maintenance of underground networks. Its advanced hinged design reduces the risk of back injuries whilst unique durability and long-term performance thanks to LTS features help lower maintenance costs without compromising performance.

- Easy access and installation
- Highest standards of safety and performance
- Maximum durability in arduous conditions
- Anti-theft, anti-vandal design with optional locking kits
- NEW 150mm deep unit range

Making light work of frequent maintenance operations



OPT-EMAX

1 Ergonomic efficiency

Robust hinge design reduces the required lifting effort to allow one-man operation.

2 Easy access and cover removal

Each cover section is independently hinged promoting fast safe access and block at 90° to prevent accidental closure.

3 Easy and durable embedment

Frame lifting points allow contractors precise positioning on chamber and Load Transfer System (LTS) benefits radically improve installation and product lifespan.

4 Easy and safe cover handling

Unique Tilt & Push design disengages locking in easy two-step operation and guides cover during closing.

5 Double security features

Penta or SCS optional locking kits, thanks to their specific keys, offer two levels of security. A single lock secures both master/slave covers.

The one-man inspection solution

Pamrex

Widely used across Europe, and produced in France, the Pamrex offers many benefits to the UK road and water networks. Safe and easy to use due to its hinged circular cover design, Pamrex is designed to include safety, security and operational features as standard.

Pamrex is ideally suited for locations subject to sewer surcharge due to its circular shape and cover hinge feature. It acts like a clam shell opening slightly to allow the internal pressure to subside and as it is held by the hinge, the cover section self centres and closes in the correct position.

- Ergonomic Hinge Design
- Anti-theft design with optional locking kits available
- Ideally suited locations subject to sewer surcharge
- Limits surface water ingress into the chamber
- Over 7 million sold worldwide

Saving time, money and effort on scheduled inspections



PAMREX

1 Ergonomic Design

Hinge arrangement reduces the effort required to operate the cover by 50%

2 Safe operation

The hinge is designed to “block” beyond 90 degrees preventing accidental closure creating a safe working environment.

3 Flexible Security Solutions

Two levels of security can be provided and fitted retrospectively once the unit is installed. Standard and the higher security version, SCS each have their own specific locking keys.

4 Handling and Installation

The frame features lifting points to ensure safe handling during loading, offloading and installation.

5 Hinge plugs and secondary gasket

Once fitted will reduce the ingress of surface water into the chamber

The one-man inspection solution

Ult-Emax

Ult-Emax has been specifically designed to combine ease of use, durability with additional security and value for money. It features a semi-ergonomic hinging system on the master cover section making it ideally suited for one person inspection and maintenance activities with the added benefit of helping maintain and safeguard the health, safety and well being of operatives. Developed jointly with a major UK Water Company, Ult-Emax has now been adopted as the preferred solution across their entire waste water network and since its launch there have been no reported thefts.

- Fast, efficient, safe access and inspection capabilities
- Ergonomic cover operation and handling
- Includes cost-effective security feature as standard
- Compliant to CESWI 7 & SFA 7

Saving time, money and effort on pro-active and reactive maintenance and inspections



ULT-EMAX

1 Easy inspection

Unlocking/opening smaller cover gives sufficient access for jetting, camera investigation and many other inspection operations.

2 Health and Safety emphasis

Ergonomically designed, lightweight 20kg cover easily rotates towards hinges for safer operation and reduction in work-related injuries. Slave cover is only 25kg.

3 Anti-theft deterrents

Specific master keyhole hidden in the nose of the cover and unique spring bar locking system locks covers in place once closed.

4 Enhanced durability

Load Transfer System (LTS) significantly improves installation and product lifespan.

Both covers are easily and separately removable to allow eventual man-entry.

Commitment



Commitment to Quality

Saint-Gobain PAM UK is committed to offering products of the highest quality and performance. As a basis for this objective the company is committed to operating strict quality systems in accordance with BS EN ISO 9001. It also recognises the responsibility of the companies employees in meeting the quality objectives and is conscious of their training and development needs.

Products featured in this brochure are manufactured under the BS EN ISO 9001 2008 Quality Assurance Scheme Registration Number FM12908 and are certified under the *British Standard Kitemark scheme for compliance to the requirements of BS EN 124 (1994) European Standard for gully tops and access tops for vehicular and pedestrian users Registration Number KM30794

World Class Manufacturing is a comprehensive management system intended to improve company performance by eliminating losses. The structured operating excellence method has proven effective in the key areas of safety, quality and productivity.



Saint-Gobain PAM UK Ltd is also UVDB Verified (Category A) registered, from the review undertaken by the Achilles approved assessor, they advised that our scores were "very high" compared to the industry average.

Our scores are shown below;

Health and Safety	96.0%
Environment	98.4%
Quality	100%

Commitment to Safety

Our ambition is to have zero occupational health incidents and by deploying effective resources and standards we have significantly reduced the frequency of work-related accidents. Key to maintaining and improving our performance is engaging with all employees and through education and communication focus and develop a culture to identify, reduce and avoid risks in the workplace.



*Products manufactured in France are audited in accordance with the AFNOR NF accreditation and mark.

Performance Range

AquaVantage

Product Code	BS EN124 Class	Clear Opening (mm)	Overbase (mm)	Frame Depth (mm)	Waterway Area (cm ²)	HA 102 Ref	Total Mass (kg)
234850	D400	600x600	738x742	150	2250	P	81.5
tbc	D400	1200x685	1355x830	150	4950	P	200

GripTop

Product Code	BS EN124 Class	Design	Clear Opening (mm)	Overbase (mm)	Frame Depth (mm)	Total Mass (kg)
234110	E600	Briton	610x610	815x815	150	126
234964	E600	Briton	1220x690	1425x890	150	264
212937	D400	Inter-Ax 2	600x600	800x800	100	74
212939	D400	Inter-Ax 2	600x600	800x800	150	83
212938	D400	Inter-Ax 2	675x675	880x830	100	94
212940	D400	Inter-Ax 2	675x675	880x830	150	104
212933	D400	Ult-Emax	600x600	806x806	100	96
212935	D400	Ult-Emax	600x600	806x806	150	119
212034	D400	Ult-Emax	675x675	880x830	100	109
212936	D400	Ult-Emax	675x675	880x830	150	130
212925	D400	Opt-Emax	600x600	800x800	100	95
212929	D400	Opt-Emax	600x600	800x800	150	106
212926	D400	Opt-Emax	675x675	875x875	100	120
212930	D400	Opt-Emax	675x575	875x875	150	142
212927	D400	Opt-Emax	900x600	1100x800	100	135
212931	D400	Opt-Emax	900x600	1100x800	150	144
212928	D400	Opt-Emax	1220x685	1380x885	100	214
212932	D400	Opt-Emax	1220x685	1380x885	150	249
222259	D400	Opt-Emax	1830x685	2000x885	150	354

Aqua - Max

Product Code	BS EN124 Class	Clear Opening (mm)	Overbase (mm)	Frame Depth (mm)	Waterway Area (cm ²)	HA 102 Ref	Total Mass (kg)
205864	D400	450x450	660x550	100	1240	T	47
205865	D400	450x450	660x550	150	1240	T	52

Opt - Emax

Product Code	BS EN124 Class	Clear Opening (mm)	Overbase (mm)	Frame Depth (mm)	Total Mass (kg)
185719	D400	600x450	806x650	100	84
172472	D400	600x600	800x800	100	96
211029	D400	600x600	800x800	150	106
CDOP67MK	D400	675x675	875x875	100	122
211563	D400	675x675	875x875	150	143
186787	D400	750x600	940x745	100	118
186785	D400	750x750	905x940	100	131
185735	D400	900x600	1100x800	100	137
211032	D400	900x600	1100x800	150	148
228735	D400	900x910	1163x1155	125	214
186789	D400	1060x700	1210x850	100	172
185744	D400	1220x685	1380x885	100	217
211562	D400	1220x685	1380x885	150	252
205457	D400	1200x750	1350x945	100	218
230384	D400	1340x900	1500x1060	100	272
CDOP19GK	D400	1500x750	1660x940	100	242
186795	D400	1800x750	1955x940	100	317
215590	D400	1830x685	2000x885	150	367
230385	D400	2010x900	2170x1060	100	397
230108	D400	2250x750	2420x940	100	355

& Accessories



Inter-Ax 2

Product Code	BS EN124 Class	Clear Opening (mm)	Overbase (mm)	Frame Depth (mm)	Total Mass (kg)
185892	D400	600x600	800x800	100	74
185904	D400	600x600	800x800	150	84
211603	D400	675x675	878x878	100	91
211604	D400	675x675	878x878	150	102

Ult-Emax

Product Code	BS EN124 Class	Clear Opening (mm)	Overbase (mm)	Frame Depth (mm)	Total Mass (kg)
205763	D400	600x600	806x806	100	84
205765	D400	600x600	806x806	150	94
211605	D400	675x675	880x830	100	97
211606	D400	675x675	880x830	150	107

Pamrex

Product Code	BS EN124 Class	Clear Opening (mm)	Overbase (mm)	Frame Depth (mm)	Total Mass (kg)
CDPA60MFX26	D400	600 Dia	840x840	100	97
CDPA70MFX26	D400	700 Dia	940x940	100	118
CDPA80KFX26	D400	800 Dia	1000x1000	125	122

Accessories

Product Code	Description
230011	Opt-Emax Opening Handle
190664	AquaMax/Opt-Emax Locking/Lifting Key 175mm Long
205435	Opt-Emax Locking/Lifting Key 600mm Long
C18	AquaMax/ Opt-Emax SCS High Security Locking Key
187097	Opt-Emax Retrofit Locking Kit c/w Key for 100mm deep frames
187096	Opt-Emax Retrofit Locking Kit without Key for 100mm deep frames
215624	Opt-Emax Retrofit Locking Kit c/w Key for 150mm deep frames
215625	Opt-Emax Retrofit Locking Kit without Key for 150mm deep frames
215610	Opt-Emax SCS High Security Retrofit Locking Kit c/w Key for 100mm deep frames
215622	Opt-Emax SCS High Security Retrofit Locking Kit Without Key for 100mm deep frames
215627	Opt-Emax SCS High Security Retrofit Locking Kit c/w Key for 150mm deep frames
215628	Opt-Emax SCS High Security Retrofit Locking Kit Without Key for 150mm deep frames
218402	AquaMax Locking Kit c/w Key
218926	AquaMax Locking Kit Without Key
218297	AquaMax SCS High Security Locking Kit c/w Key
218298	AquaMax SCS High Security Locking Kit Without Key

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Ult-Emax



Pamrex



Inter-Ax 2

Please visit our website to download electronic versions or to request hard copies of all our brochures and product information.

The information given in this literature is, to the best of our knowledge, correct at the time of going to print. However, Saint-Gobain PAM UK is constantly looking at ways of improving their products and services and therefore reserves the right to change, without prior notice, any of the data contained in this

publication. Any orders placed will be subject to our Standard Conditions of Sale, available on request

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