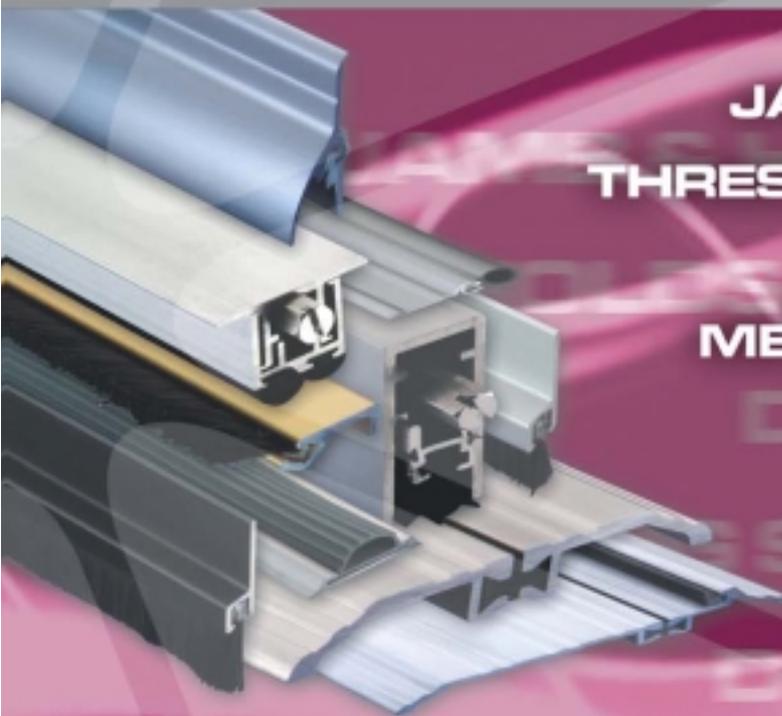


Uniclass L4189
Cl/SfB (31.59) X



- JAMB & HEAD SEALS** ●
- THRESHOLDS & SADDLES** ●
- DROP SEALS** ●
- MEETING STILE SEALS** ●
- DOOR SHOES** ●

Technical Bulletin

DRAUGHT & WEATHER SEALING



*Specifically designed and
manufactured for the United Kingdom*



Welcome to



Since 1952, when its first plant was opened in Emeryville, California, Pemko has supplied world markets with door and threshold sealing products. Today, a worldwide distribution network is serviced by 300 employees operating from five plants in the United States and Canada.

Pemko door and threshold seals have been available in the UK for the past 15 years. Their increasing popularity with a growing range of specifiers has prompted the company to actively develop its name and product range in this country.

PEMKO IN THE UK

Literature has been produced for the UK as a series of individual leaflets, each concentrating on the specific performance requirements of acoustics, energy conservation and weatherability, access and security.

UK Building Regulations, through their Approved Documents, demand performance requirements similar to the USA from doorsets, ironmongery and seals. Consequently, Pemko products, with their innovative and attractive design features, provide a range of door and threshold seals that meet or surpass the requirements and objectives of specifiers and end user customers.

WHY CHOOSE PEMKO PRODUCTS?

Subtle differences in the design of apparently similar and competitive products can make a considerable difference to performance, maintenance and durability. Take for example, the range of Pemko automatic door bottom seals; a patented design feature ensures that through the closing action of the door, the seal drops at the hinge side first, thus reducing drag along the threshold.

Additionally, our automatic door bottom seals incorporate our own uniquely designed low closing force springs; an essential plus factor when considering the issue of access, especially for the young or people with a mobility problem.



A third example of our innovative approach to product development can be seen in the range of Pemko continuous geared aluminium hinges. Unique and maintenance free gearing means minimum effort to open or close doors of up to 345 kg. These hinges are now independently tested and approved for fire resistance, in addition to security and standard doorsets.

This dedication to product innovation extends over the whole range of Pemko door and threshold seals; even perimeter door edge seals can now be fitted with adjustable seal elements.

In meeting our customers' requirements, design and development policy is influenced by the products' ease of fitting, competitive edge and longevity. They remain eminently suitable for meeting objectives of performance from specifiers and end users in the United Kingdom, whether the application is related to industrial, residential or commercial markets.

- As part of our commitment to excellence, Pemko operates under the
- quality procedures of ISO 9000, meeting or exceeding independent
- standards of conformity, with test evidence covering issues of air
- infiltration, sound, access, skid resistance, fire, smoke and general
- weatherability.

● AVAILABILITY OF PEMKO PRODUCTS

- In the UK, product distribution is provided by specialist door, hardware
- and seals companies who have been associated with Pemko from five to
- fifteen years. Our aim is to provide a choice of solutions to any problem,
- in a range of finishes at competitive prices.

ENERGY CONSERVATION :

The heating and cooling of buildings requires the use of energy that has a cost in both environmental and financial terms. There is increasing recognition of a need to conserve energy and to avoid expensive waste.

Doors, particularly external doors are opened to allow for the passage of ‘traffic’ but in the process of operation they provide for a means of escape and consequent uneconomic loss of energy.

Energy loss can be reduced by the use of ‘performance lobbies’ that prevent the direct loss of energy from the energy source to the outside environment. Performances in this regard can be further enhanced by the use of effective sealing systems that reduce the loss of energy through operating gaps around door leaves while providing for minimal interference with the operation of the door.

PEMKO’s extensive range of seals and other devices (e.g. thermal insulating thresholds) can minimise energy loss. They also accommodate other considerations that may apply to a particular opening, e.g. the nature of the ‘traffic’ using the doorway, meeting the needs of the disabled etc.

WEATHERTIGHTNESS :

Weather-tightness refers to performances in respect of air permeability, water tightness and wind resistance.

European standards relating to external doorsets are in the process of development. pr EN 4351-1 is a product standard that is in draft form at the time of publication of this document. This standard will eventually provide the basis for the CE marking of External Doorsets.

In the United Kingdom various standards apply to these considerations including DD171:1987 and PAS23-1-1999. Classifications for weather-tightness and guidance on selection and specification is also given by reference to BS 6375-1 : 2004.



- BS 6375-1:2004 makes reference to the following applicable standards:
- BS 6399-2 - Loading for Buildings.
- BS EN 1026 - Windows & Doors Air Permeability - Test Method.
- BS EN 1027 - Windows & Doors Watertightness - Test Method.
- BS EN 12207 - Windows & Doors Air Permeability - Classifications.
- BS EN 12208 - Windows & Doors Watertightness - Classifications.
- BS EN 12210 - Windows & Doors - Resistance to wind load - Classifications.
- BS EN 12211 - Windows & Doors - Resistance to wind load - Test Method.
- Other standards that might apply include:
- BS EN 1121 : 2000 - Doors - Behaviour between two different climates - Test Method.
- BS EN ISO 12567-1 - Thermal performance of windows and doors - Determination of thermal transmittance by hot box method - Part 1: Complete windows and doors.
- BS EN ISO 10077 - Thermal performance of windows, doors and shutters - Calculation of thermal transmittance - Part 1: Simplified methods OR Part 2: numerical method for frames.
- By reference to BS6375-1:2004 complete doorsets are tested in sequence to determine:
- 1/ Air permeability.
- 2/ Watertightness.
- 3/ Resistance to wind load - deflection test.
- 4/ Resistance to wind load - pulsating test to P2.
- 5/ Resistance to wind load - safety test to P3.
- Annex. A to BS6375-1 provides for calculated wind speed data related to geographical locations within the United Kingdom.
- Doorsets are classified by reference to BS6375-1 according to the schedule shown below:



BS6375-1 : 2004 Doorset Classifications

Doorset Classification	Air Permeability		Water Tightness		Resistance to Wind Load			
	Class	Max. Pressure	Class	Max. Pressure	Class	Deflection Pressure	P2 Pulsating Pressure	P3 Safety Pressure
800U	0	No test	0	No test	A2	800Pa.	400Pa	1200Pa
800X	1	150Pa.	2A	50Pa.	A2	800Pa.	400Pa	1200Pa
800	2	300Pa.	3A	100Pa.	A2	800Pa.	400Pa.	1200Pa
1200	2	300Pa.	3A	100Pa.	A3	1200Pa.	600Pa.	1800Pa

NOTE: For the Watertightness test, the retention of water within the door system is not defined as leakage.

For full details of the options offered by PEMKO visit: www.pemko.com

THERMAL INSULATION :

Regulations relating to thermal insulation in England and Wales are described by reference to Building Regulations - Approved Document L1.

For doorsets (door & frame complete with all of its ironmongery, seals etc.) the thermal insulating properties are measured by the thermal transmittance of the structure expressed as the 'U' value. This represents a measure of how much heat will pass through one square metre of a structure when the air temperatures on either side differ by one degree. U - values are expressed in units of Watts per square metre per degree of temperature difference (W/m K). NOTE: K = degrees Kelvin.

Thermal transmittance (U-values) may be determined in a number of ways:

- 1/ By reference to tables provided within the scope of Approved Document L1. (3W/m K for doors).
- 2/ Determination of thermal transmission by hot box method by reference to BS EN 12567-1 : 2000. This provides for the actual performance measurement of a specimen.
- 3/ Determination of thermal transmission by calculation. As the title suggests, the thermal transmission properties of a structure can be calculated by reference to BS EN ISO 10077-1 or BS EN ISO 10077-2.

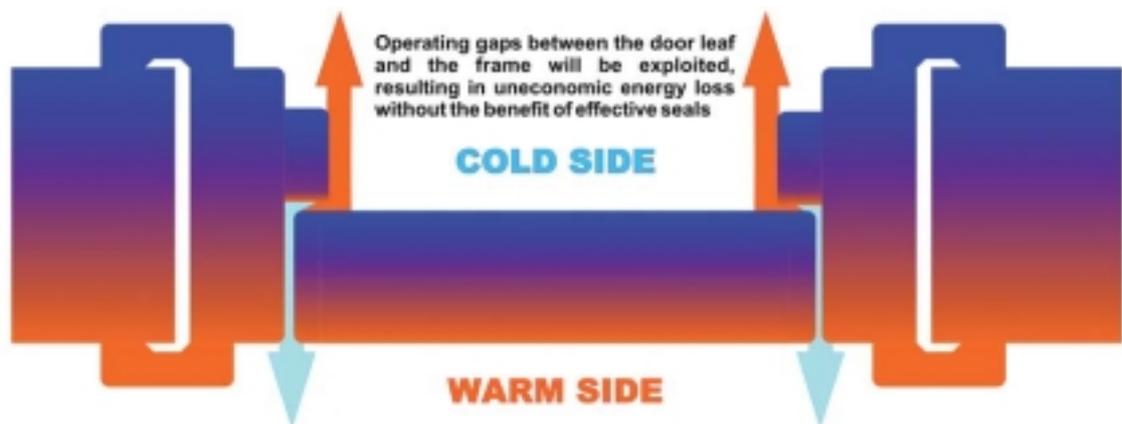
NOTE: Typical performances for a solid wood core door in a wood frame would be around 2~2.1 W/m K for a Nom. 44mm thickness door improving to 1.9~2 Wm K for a doorset with a Nom. 54mm thickness door.

Doorset Configurations:

The conflicting requirements to provide for effective sealing while maintaining low operating forces to suit user capabilities may result in some requirement for compromise.

It is generally easier to provide for high levels of sealing with minimal influence on operating forces by using compression seals in conjunction with opening out doors. Under these conditions any external pressure will force the door leaf onto the seal.

Optimum sealing is generally achieved when seals are compressed by approx. 50%. Over compression of seals can induce capillary effects that might adversely affect watertightness.



PEMKO Thresholds & Saddles

Low Level Saddles/Thresholds

PEMKO offers a wide range of low level thresholds for internal and external use that satisfy the requirements of Approved Document 'M' for wheelchair disabled users of a building.

- Thresholds are available in various finishes including: mill finished aluminium, bright-dip gold, dark bronze and gold anodised aluminium, also mill finished extruded brass. (NOTE: Unless otherwise specified thresholds are supplied mill finished aluminium)
- The PEMKO 2001 low level threshold is ideally suited for external applications and incorporates the PEMKO ThermoSeal™ seal for improved weather sealing, thermal insulation, acoustic and smoke sealing performances.
- The PEMKO 173 Threshold strip provides for a simple low level solution that can be used in conjunction with masonry or wood sills to improve ease of operation and the working life of doors that are fitted with drop seals or door shoes to meet weather sealing requirements.

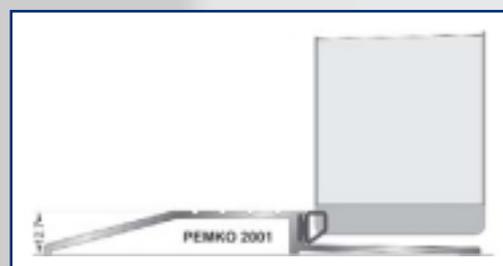


Visit www.pemko.com for further details.

Definitions:

Threshold: A Door related device relating to the treatment under the door leaf that may also be a Saddle.

Saddle: A device that may be independent of a door location used at the junction of floor finishes. May be used to treat junctions where floor levels vary.



Low Level Saddles/Thresholds

- Pemko saddle thresholds are available in an extensive range of sizes.
- Saddles are available in various finishes including: mill finished aluminium, bright-dip gold, dark bronze and gold anodised aluminium, also mill finished extruded brass. (NOTE: Unless otherwise specified saddles are supplied mill finished aluminium).
- The 252X2AFG Saddle Threshold is one of a range of low profile saddle thresholds that incorporates PEMKO's 'FG' Frost Guard™ technology while meeting the requirements of Approved Document 'M' and the needs of the wheelchair disabled.
- Saddle / Threshold designs incorporating PEMKO's 'FG' Frost Guard technology reduces the thermal bridging in this otherwise vulnerable area of a doorset thus providing for improved thermal insulation. NOTE: Lower level versions (6.4mm high) are also available.



Visit www.pemko.com for further details.



PEMKO Thresholds

PEMKO 2005 Threshold

2005 Threshold Applications

- The Pemko 2005 threshold maintains the low level feature of the 2001 threshold and is suitable for opening out doors using US style vertical rod and multi point panic exit devices.
- Ideal for use with Von Duprin 98/99/90027, 33/3527 and 2227 series vertical rod devices.

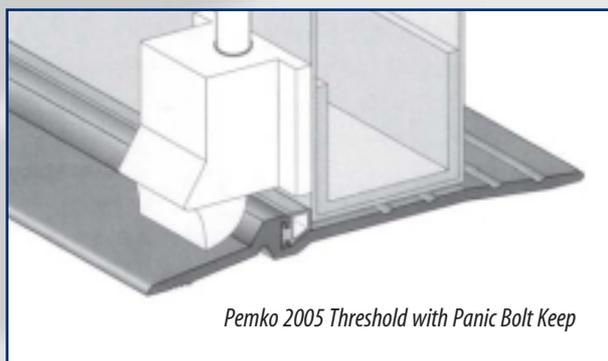
All Pemko thresholds are of a robust construction

- The 2005 threshold may be used to provide for a keep for the lower rod of vertical rod and multi point securing devices.
- The low profile design of the 2005 threshold satisfies Approved Document 'M' requirements for disabled access.
- Some threshold designs incorporate Pemko's 'FG' Frost Guard for improved thermal insulation when used in external locations.

NOTE: Unless otherwise specified thresholds are supplied mill finished aluminium.



Visit www.pemko.com for further details.



Pemko 2005 Threshold with Panic Bolt Keep

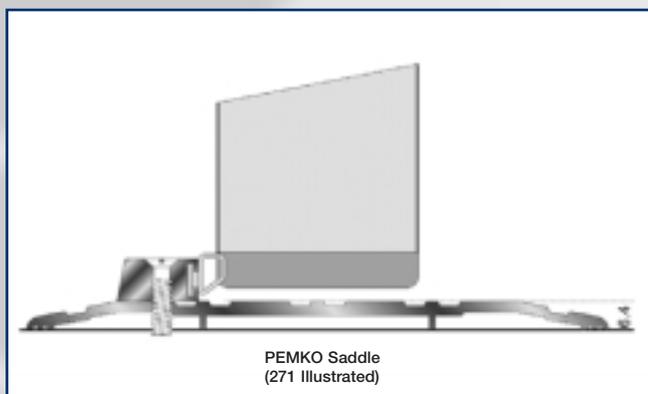
PEMKO Thresholds Sealing

Pemko Threshold/Saddle Accessories

- A range of Threshold Stop Strips incorporating weather seals are available. These can be used to upgrade existing installations or used with the extensive range of Pemko Thresholds and Saddles to provide for weather sealing.
- The 184 and 1842 strips fitted with PemkoPrene™ or ThermoSeal™ seals are illustrated with other designs and sealing options available. (NOTE: Unless otherwise specified 184 & 1842 carriers are supplied mill finished aluminium).



Visit www.pemko.com for further details.



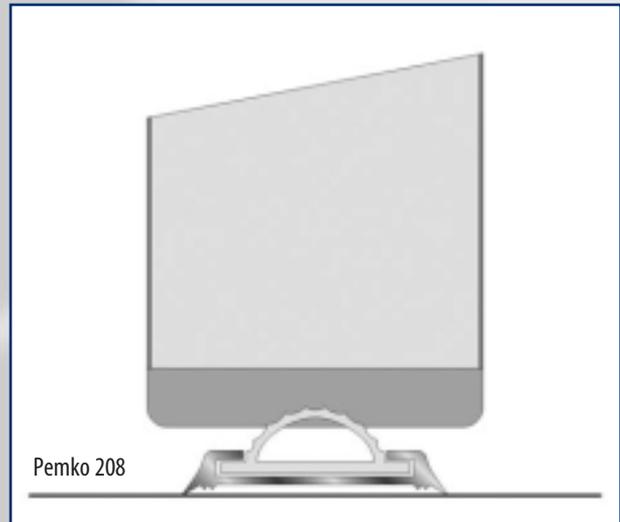
PEMKO Threshold Sealing

Vinyl Top Thresholds

- Pemko offer an impressive range of combined thresholds with vinyl seals that provide for effective weather sealing.
- The threshold units are available in a range of finishes including: mill finished aluminium, bright-dip gold, dark bronze satin nickel and gold anodised aluminium, satin nickel also mill finished extruded brass. NOTE: Unless otherwise specified thresholds are supplied mill finished aluminium.
- Some versions of vinyl top thresholds incorporate an adjustable feature to provide for optimum sealing when used with uneven doors or floors.



Visit www.pemko.com for further details.



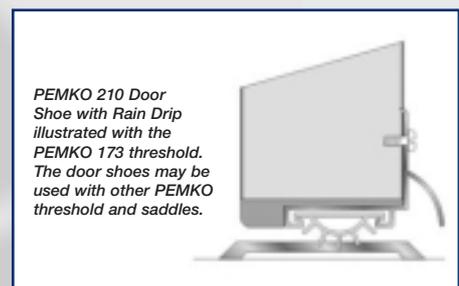
PEMKO Threshold Sealing

Pemko Door Shoes

- Pemko offers an extensive range of door shoes suitable for internal and external use.
- Door Shoes are available in a range of finishes including: mill finished aluminium, bright-dip gold, dark bronze and satin nickel anodised aluminium, also mill finished extruded brass and white painted aluminium. NOTE: Unless otherwise specified thresholds are supplied mill finished aluminium.
- Variants to the basic door shoe design include options that incorporate a rain drip bar with other options available with Pemko's 'FG' Frost Guard technology that minimises thermal bridging.
- Pemko Door shoes can be used in conjunction with a range of Pemko thresholds and saddles.
- The seal element is available in durable vinyl or, (where specified) in PemkoPrene™ with excellent cold weather performance, maintaining flexibility between -57°C~+121°C.



Visit www.pemko.com for further details.



PEMKO Threshold Sealing

Pemko Threshold/Saddle Door Bottom Sweeps

- An extensive range of carriers to house a variety of soft brush and elastomeric sealing elements. These can be used with Pemko saddles and thresholds or provide for bottom edge sealing.
- Carriers such as the Pemko 3452 are available with integral drip bars. Separate drip bars such as the Pemko 345 (not illustrated) are also available. NOTE: Except where otherwise stated by reference to the Pemko website all seal carriers are supplied mill finished aluminium - unless otherwise specified at the time of order.



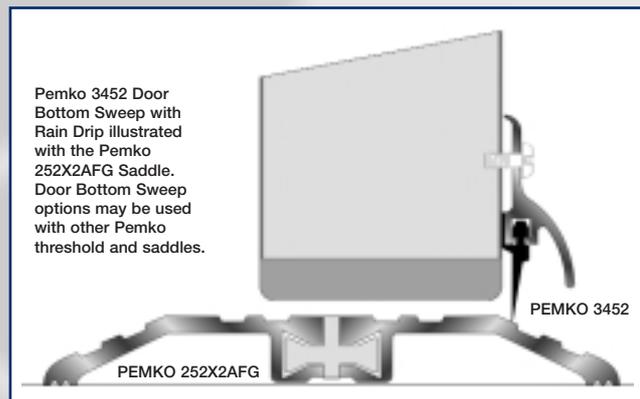
Visit www.pemko.com for further details.



PEMKO 18041



PEMKO 307



PEMKO Threshold Sealing

Pemko Automatic Door Bottoms

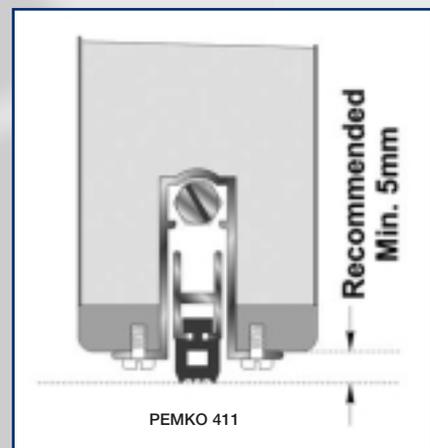
- Pemko offers an extensive range of automatic door bottoms that may be used for weather sealing purposes when used with saddles or thresholds of a suitable design.
- All Pemko automatic door bottoms incorporate Pemko's patented low friction 'Feather Touch' technology resulting in minimal operating forces.

Refer to Pemko *Access & Security* and *Acoustics* Technical bulletins for further details in respect of Pemko Automatic Door Bottoms

- Optimum performance is achieved when the seal is adjusted to grip a 50-70gsm piece of paper that can be withdrawn without tearing.
- Unless otherwise specified the seal element consists of a closed cell sponge neoprene insert to Pemko's patented 'tri-fin' design. The seal maintains pliability down to -70°C. The sealing element benefits from good 'memory' and durability characteristics.
- Other seal element options are available where specified.

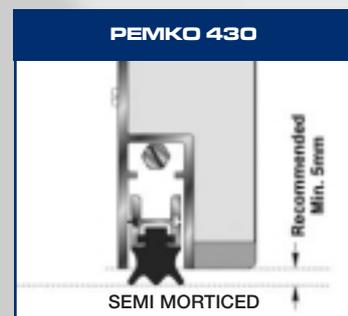
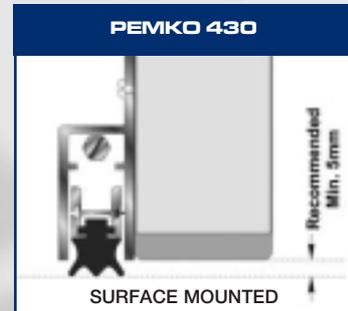
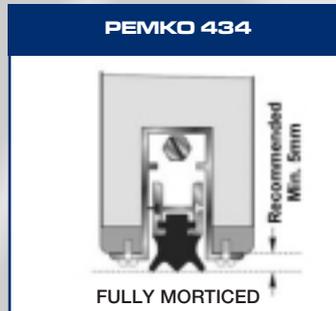


Visit www.pemko.com for further details.



PEMKO Threshold Sealing

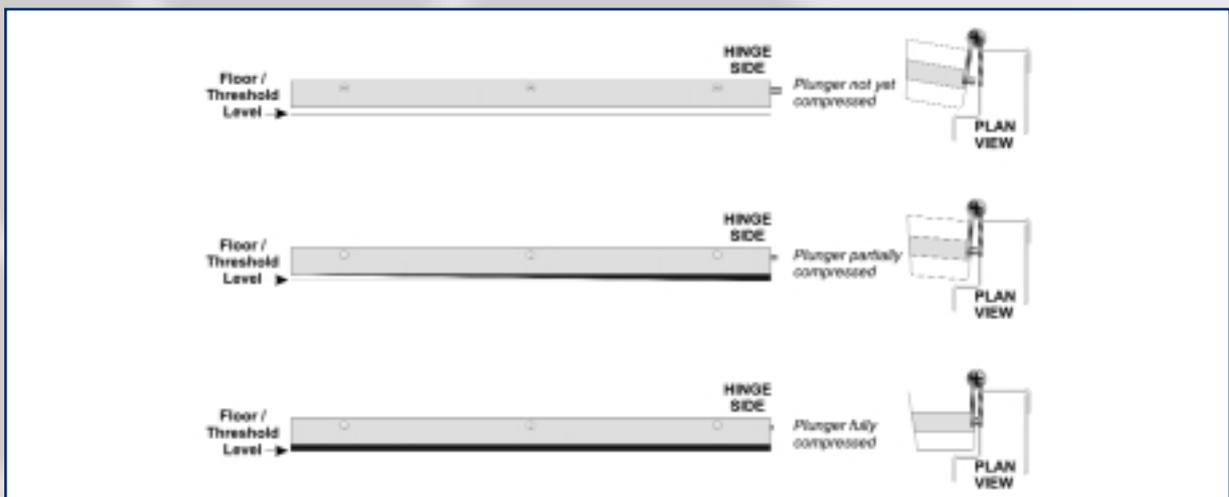
Pemko Automatic Door Bottoms - Design Variants



PEMKO Threshold Sealing

All Pemko automatic door bottoms incorporate Pemkos patented operating mechanism

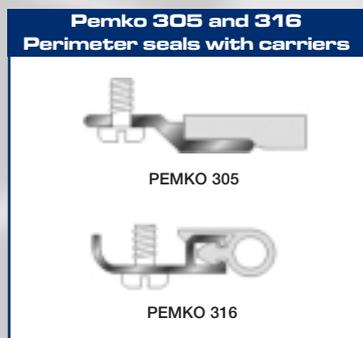
The design ensures that the seal will always actuate on the hinge side first. This operation results in a minimal force requirement for operation of the door leaf and enhanced durability due to reduced friction during operation. The progressive action of the sealing element ensures that optimum sealing is achieved.



PEMKO Perimeter Seals

PEMKO Perimeter Sealing

- Pemko offers a range of effective perimeter seals to suit almost any installation requirement.
- Seal options range from simple but effective designs such as the S44 fin seal and the PK55 and S88 'tear drop' seals with self adhesive backing to provide for fixing without the necessity for machining components. These versatile seals may be added to upgrade existing installations and may be positioned to seal across ironmongery items such as hinge blades without the need to interrupt sealing.
- The 184 and 1842 seal designs illustrated as a threshold sealing option in this document can be used as perimeter seals for use at Jamb and Head locations.
- Other options include seal carriers with optional sealing elements including sponge neoprene, sponge silicon, 'O' seals and ribbed seals in silicone, vinyl, neoprene and PemkoPrene™. Most carriers have exposed fixings for ease of fixing and subsequent adjustment.



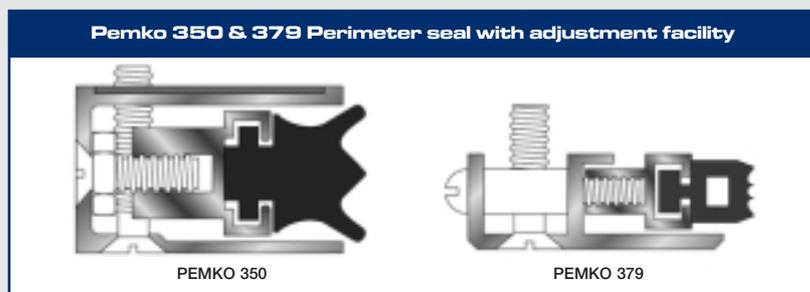
- The Pemko 29310 carrier (illustrated here with a silicon 'pyramid' seal) may be used as a perimeter seal in addition to providing for an alternative meeting stile seal to the Pemko 29324 seal illustrated elsewhere. This carrier includes a cover plate to disguise fixings to satisfy security and aesthetic considerations. Alternative seal elements include a vinyl 'D' profile seal, pile seal and a PemkoPrene™ version of the 'pyramid' seal.
- The Pemko 29346 perimeter seal provides for a soft brush contact with the door face ensuring low pressure contact while maintaining the fixing cover plate detail of the 29310.



- Pemko also offer seals with adjustment features that enables the sealing element to be adjusted to ensure optimum contact between the seal and the door leaf.
- All perimeter seals illustrated in this bulletin have been designed to provide for minimal interference with the operation of doors. See also Pemko's *Acoustic* and *Access & Security* Bulletins.
- Seal carriers are available in a range of finishes with options variable according the seal design. NOTE: Except where otherwise stated by reference to the Pemko website all seal carriers are supplied mill finished aluminum – unless otherwise specified at the time of order.



Visit www.pemko.com for further details.

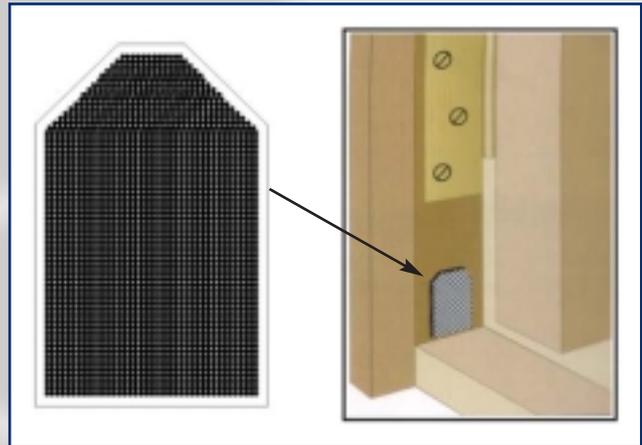


PEMKO Corner Pads

PEMKO P112PS Corner Pads

- Optimum sealing is achieved where seals around a doorset are located in a single plane. This can be achieved using perimeter seals in conjunction with a threshold that is of a similar section to the frame jambs and heads.
- For various reasons, mainly associated with 'traffic' considerations, threshold details may require different treatments, e.g. When used with automatic door bottoms or door shoes it may not be possible to achieve the precise degree of alignment necessary to ensure optimum sealing.
- The Pemko P112PS corner pads are available in black or white polypropylene pile with self adhesive backings for fixing to the frame jamb. These simple but effective pads significantly reduces air flow at this vulnerable position.

 Visit www.pemko.com for further details.

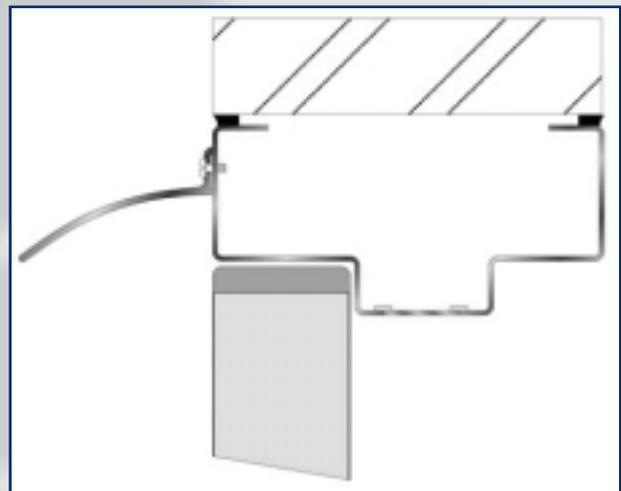
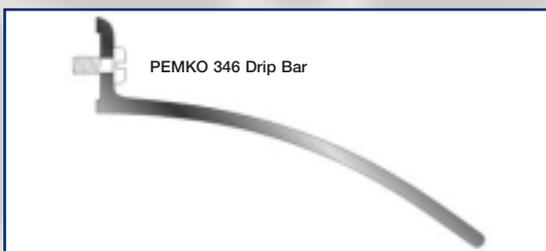


PEMKO Frame Head Drip Bars

PEMKO Overhead Drip Bar

- Reference to the Pemko website will show that there are a number of sealing products that are available with integral drip bars that are generally suitable for use on the external face at the bottom of the door leaf.
- The Pemko 346 overhead drip bar is suitable for use at the head of the door and is recommended for use with doorsets in exposed external conditions.
- This simple but effective device will generally be supplied with a clear anodised aluminium finish but is also available (where specified) in the following finishes: Dark bronze and gold anodised aluminium or, white painted aluminium.

 Visit www.pemko.com for further details.



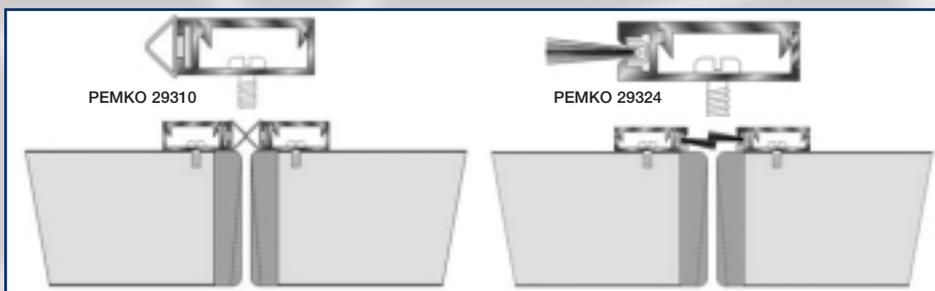
PEMKO Meeting Stile Seals

PEMKO Meeting Stile Sealing - Simultaneous Opening

- Simultaneous opening is generally preferred for heavily used entrance door locations.
- Two of the many meeting stile options that are suitable for simultaneous opening doors are illustrated. All designs are available with exposed fixings with the 29310 and 29324 seals having concealed fixings.
- Sealing elements include soft pile, nylon brush, silicone, vinyl and PemkoPrene™ seals in blade, 'Pyramid', 'D' seal and 'O' seal configurations.
- The seals are housed in attractive aluminium carriers that are generally supplied with an anodised aluminium finish. Other finishes are available where specified.



Visit www.pemko.com for further details.



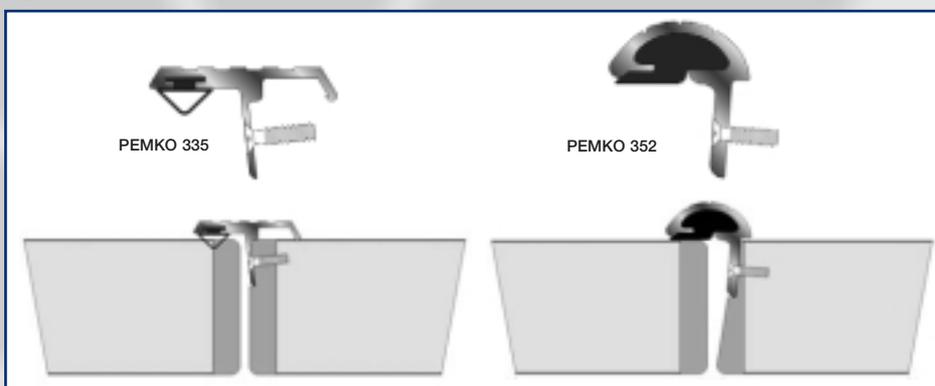
NOTE: It may be necessary to profile closing stile door edges according to the leaf width and thickness to ensure ease of operation.

PEMKO Meeting Stile Sealing - Sequential Opening

- Generally more effective sealing can be provided where doors are opened sequentially.
- This document illustrates sealing options using seals in conjunction with astragals that also provide for a security function (fixing screws are not accessible when the doors are in the closed position) in addition to effective weather sealing performances.
- The seals are housed in attractive aluminium carriers that are generally supplied with an anodised aluminium finish. Other finishes are available where specified.



Visit www.pemko.com for further details.



NOTE: It may be necessary to profile closing stile door edges according to the leaf width and thickness to ensure ease of operation.

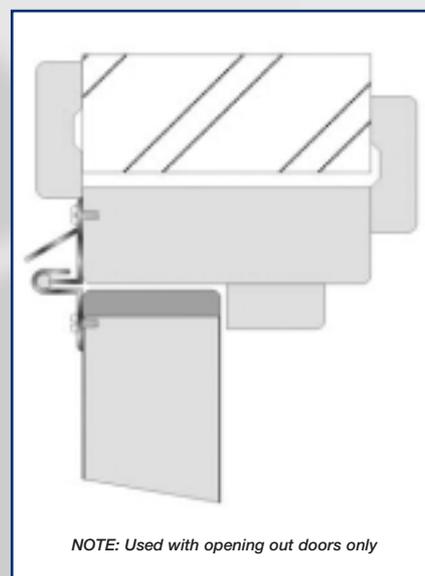
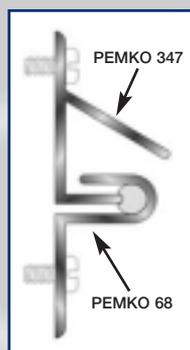
PEMKO Storm Grade Sealing

PEMKO Heavy Duty - Storm Grade Head Seal

- The junction between the top of the door and the frame head can be difficult to seal effectively for opening out doors. The Pemko 347/68 interlocking seal provides for optimum sealing in this vulnerable area.
- The 347/68 Storm Grade head seal with drip bar can be specified for 'new build' projects or used as an upgrade product for existing installations.
- Unless otherwise specified the 347/68 sealing components are supplied in a milled aluminium finish. Other finishing options, where specified, include: dark bronze and gold anodised aluminium.



Visit www.pemko.com for further details.



NOTE: Used with opening out doors only

PEMKO Heavy Duty - Storm Grade Perimeter Seal

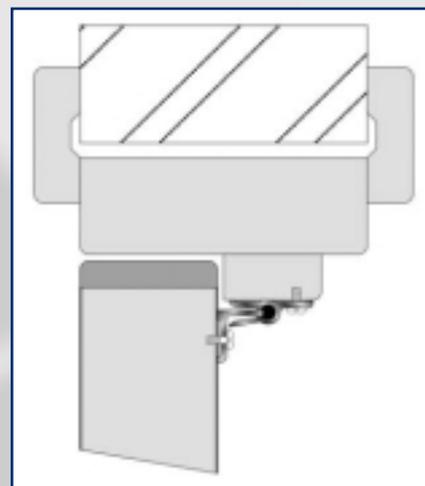
- The Pemko 335/336 interlocking sealing system provides for effective sealing for exposed external locations where weather sealing is of major importance.
- The Pemko 335/336 heavy duty interlocking sealing system can be used with either opening in or opening out doors.
- Unless otherwise specified the 335/336 sealing components are supplied in a milled aluminium finish. Other finishing options, where specified, include: dark bronze and gold anodised aluminium.

NOTE 1: Whereas the 335/336 sealing system provides for optimum sealing, the system should be used with care with use limited to door leaf widths of not less than 800mm.

NOTE 2: The 335/336 system should not be used at hanging stile positions.



Visit www.pemko.com for further details.



Environmental Sealing

SEAL SELECTION

Weather sealing will generally only apply to external doors where the degree of sealing required will be determined by the doorset location and the extent to which it is exposed to external climatic conditions. Doorsets located in protected external locations will generally require a lower level of sealing than (say) exposed external doors that are subjected to high wind pressures.

Similar considerations may apply to internal locations where there is a need to control room pressures. e.g. laboratories or hospitals. The requirement for effective sealing applies to all buildings whether they are industrial, commercial, public or residential, indeed, any type of building where it is necessary to reduce the transfer of noise, air, smoke, odours and vermin that might otherwise find a route through the operating gaps around door leaves and windows.

The purpose of the door will have an influence on the choice of seals, e.g. sealing of external doors for (say) plant rooms that are only used by able-bodied maintenance staff may be considered differently to doors in locations that are to be used by the general public and in particular disabled users.

All Pemko seals suggested by reference to this bulletin generally fall into a low operating force category but it may be necessary to use a combination of seals to meet performance requirements for some locations.

For exposed locations for use by the general public Pemko recommends that consideration should be given to the construction of performance lobbies. This permits the use of low force sealing arrangements that have little influence on the operation of the doors with the added advantage that some level of sealing is maintained where one of the lobby doors is open while the other remains shut.

This section of the bulletin suggests some seal combinations that might be considered by Designers to suit various performance requirements. The combinations suggested by this document are by no means exhaustive.



Variations to sealing provisions may be required to suit individual location requirements and a visit to the Pemko website www.pemko.com is recommended.

It is important that sealing should be durable and effective but equally important that seals should provide for minimum interference to the operation of the doors, particularly where the doors are extensively used by members of the general public.

S88 & S77 (similar to S44) self adhesive seals and 18041P and 45041P (similar to 29346) brush seals together with the 430 Automatic drop seal have been successfully tested to the requirements of BS 476 Section 31:1 for smoke sealing performances with results shown in the following schedule. These performances were achieved following a 100,000 cycles operational test.

Pemko Air Leakage Test Data

See Warrington Fire Research Report WARRES No. 120028
Test Standard: BS476 Section 31:1:1983 following 100,000 cycling test.

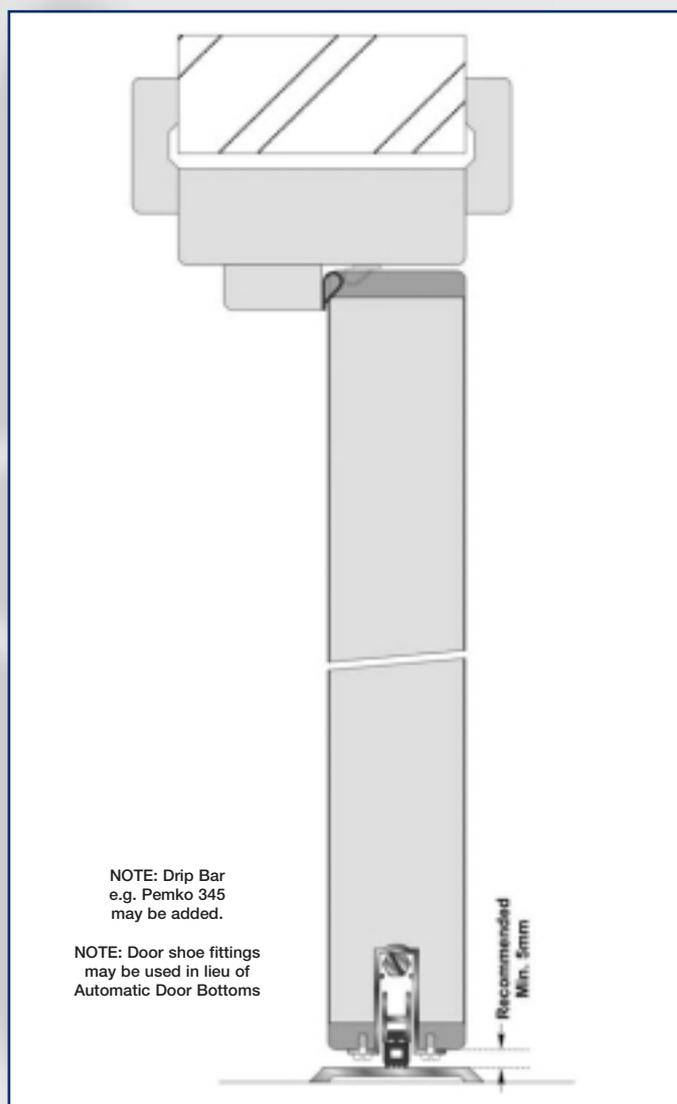
Permitted leakage to satisfy BS5588 performance criteria = 3m³/m/hr with the threshold taped.

Jamb & Head Seal	Threshold Seal	Meeting Stile Seal	Net leakage @ +25Pa m ³ /m/hr.	Net leakage @ -25Pa m ³ /m/hr.
45041P	Taped	n/a	0.45	0.18
S88	Taped	n/a	0.41	0.21
S88	430 PemkoPrene™	n/a	0.62	0.33
S88	430 Sponge Neoprene	n/a	1.83	1.78
S44	Taped	n/a	0.08	0.08
303S	Taped	n/a	0.16	0
319S	Taped	n/a	0.31	0.1
S88	Taped	S77	0.79	0.67
303S	Taped	S77	0.12	0.77
303S	Taped	389S	0.88	1.28
45041P	Taped	18041P	2.62	2.97
S88*	Taped	n/a	1.13	1.04
S88	Taped	n/a	0.51	0.09

PEMKO Perimeter Sealing

Grade 1 Sealing

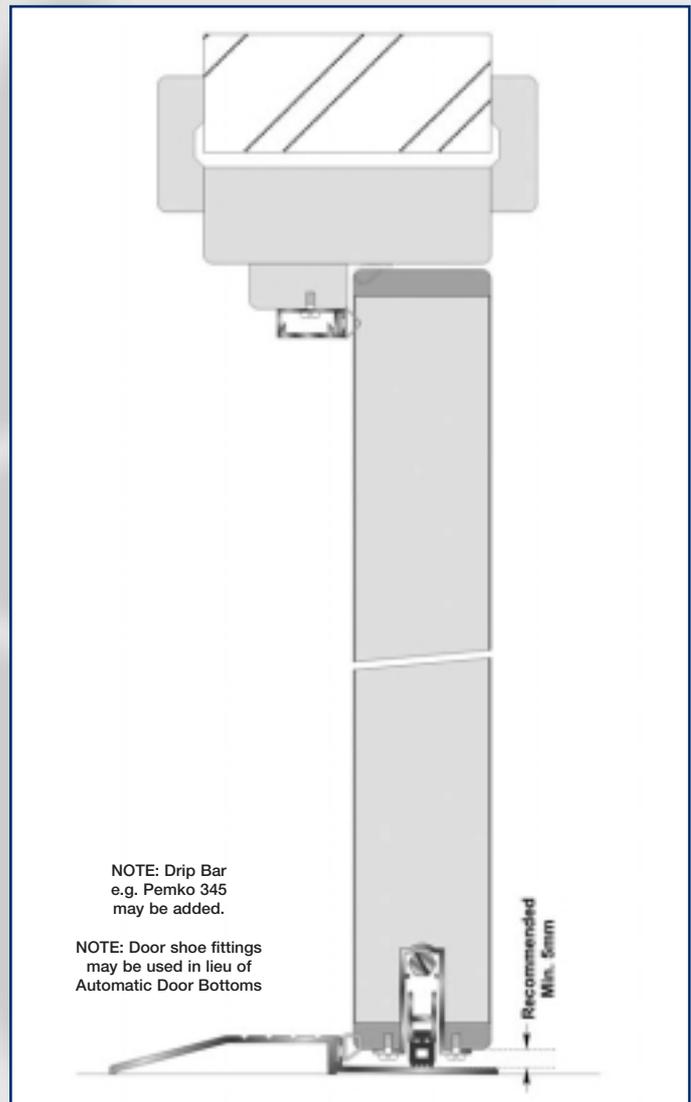
- Suitable for 'opening in' or 'opening out' low operating force locations where the doorset is protected by a substantial porch that prevents weather attack onto the door face.
- The S88, PK55, S44 or S77 seals can be applied after installation of the doorset and positioned to suit ironmongery fittings. These seals are easy to apply and can be extended over some ironmongery fittings (e.g. hinge blades) without the necessity to break the seal.
- The use of twin head and jamb seals results in the entrapment of air between the seals in a manner that improves air premeability performance. NOTE: The 2nd bank of self adhesive perimeter seals can be added to upgrade an existing installation – if required.
- The low level Pemko 173 threshold provides for a minimal obstacle to the users of the door opening. Including wheelchair disabled users while providing for an excellent seating for the Pemko 411 automatic door bottom (or alternative Pemko drop seal design - *Acoustics* and *Access & Security* Technical Bulletins). The Pemko 173 also provides for an excellent seating for all Pemko automatic door bottom designs to ensure optimum sealing and seal durability.



PEMKO Perimeter Sealing

Grade 2 Sealing

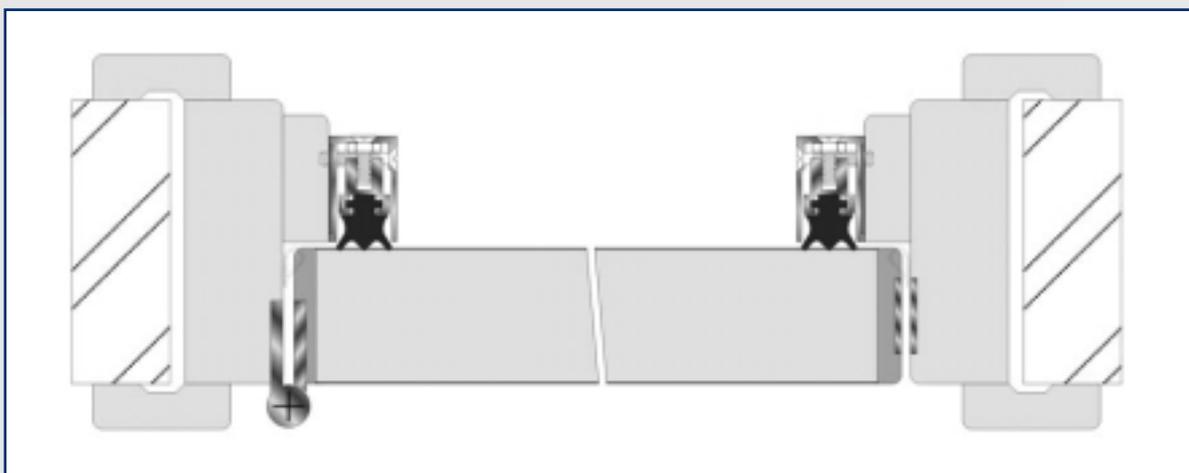
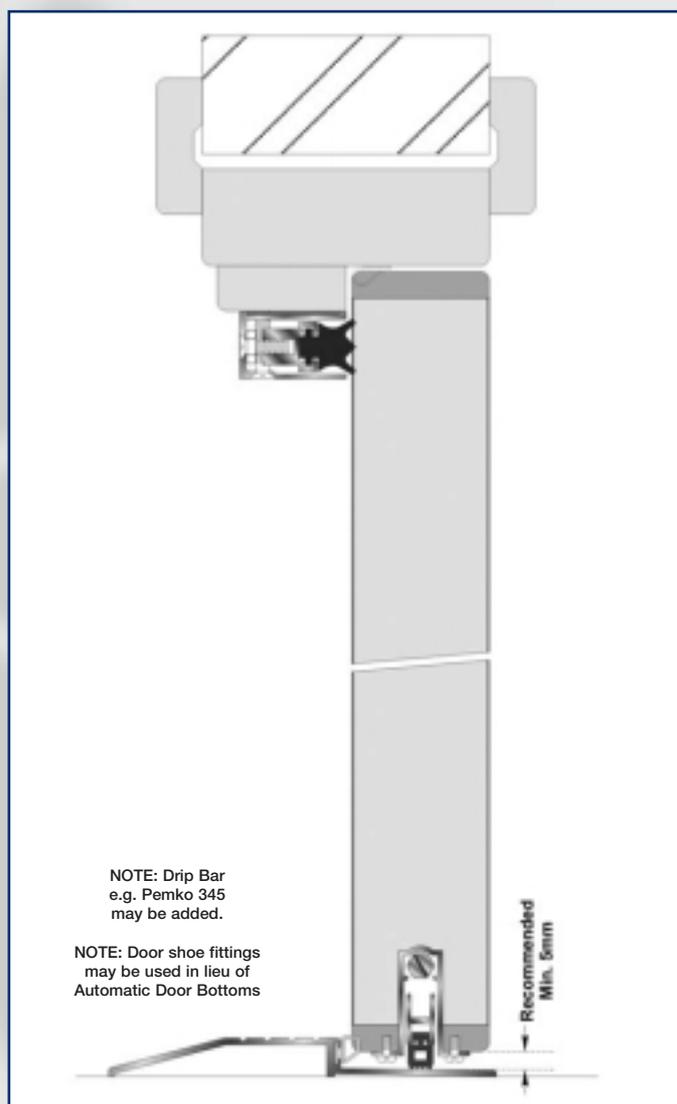
- Suitable for 'opening in' or 'opening out' low operating force locations where the doorset is protected by a substantial porch that prevents weather attack onto the door face.
- Jamb & Head sealing is achieved by one of the many Pemko perimeter seal designs (Pemko 29310 illustrated). Use of the twin sealing arrangement by the addition of an S88 or PK55 seal is recommended to improve air permeability performance.
- The S88 and PK55 seals are easy to apply and can be extended over some ironmongery fittings (e.g. hinge blades) without the necessity to break the seal. NOTE: The bank of self adhesive perimeter seals can be added to upgrade an existing installation – if required.
- Use of the Pemko 2001 threshold in conjunction with a Pemko automatic door bottom will provide for a twin seal arrangement at the threshold improving both air permeability and water tightness performance.
- The Pemko 2001 threshold meets all of the criteria described by reference to Approved Document 'M' and is suitable for door openings that are required to provide for access by wheelchair disabled persons.



PEMKO Perimeter Sealing

Grade 3 Sealing

- Suitable for 'opening in' or 'opening out' low operating force locations where the doorset is protected by a substantial porch that prevents weather attack onto the door face.
- Jamb & Head sealing is achieved by one of the many Pemko perimeter seal designs (Pemko 350 illustrated). The adjustment feature ensures that perimeter seals achieve optimum sealing with the face of the door leaf even where doors are slightly bowed or twisted.
- The use of a twin sealing arrangement by the addition of an S88 or PK55 seal is recommended to improve air permeability performance. NOTE: The bank of self adhesive perimeter seals can be added to upgrade an existing installation – if required.
- The S88 and PK55 seals are easy to apply and can be extended over some ironmongery fittings (e.g. hinge blades) without the necessity to break the seal.
- Use of the Pemko 2001 threshold in conjunction with a Pemko automatic door bottom will provide for a twin seal arrangement at the threshold improving both air permeability and water tightness performance.
- The Pemko 2001 threshold meets all of the criteria described by reference to Approved Document 'M' and is suitable for door openings that are required to provide for access by wheelchair disabled persons.

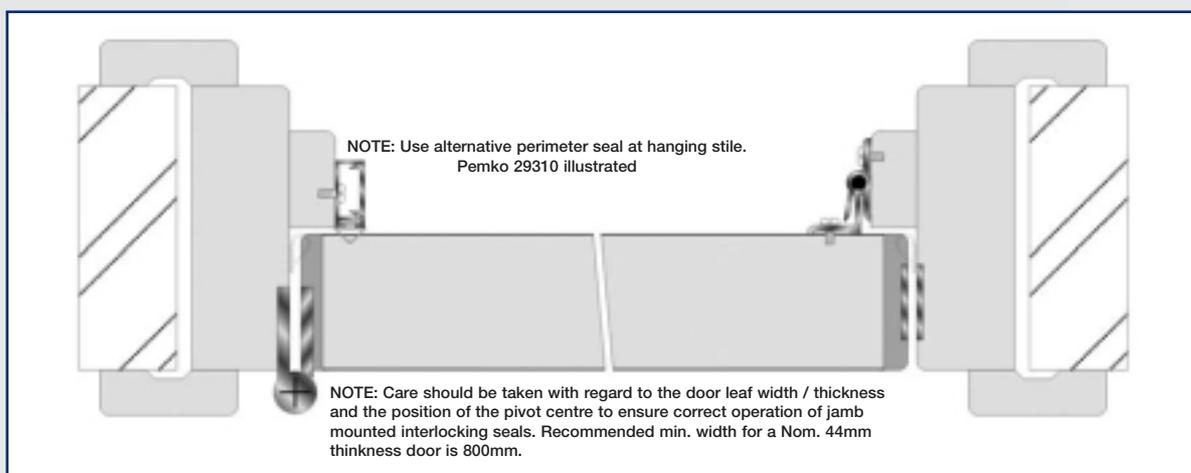
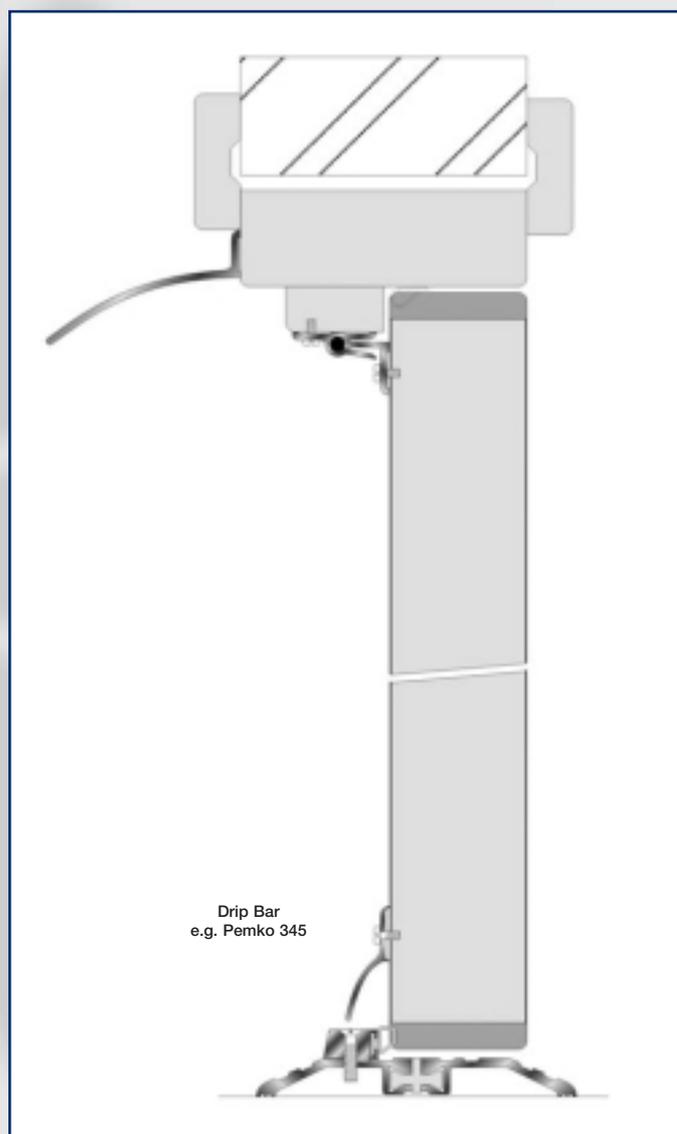


PEMKO Perimeter Sealing

Grade 4 Sealing

- Suitable for 'opening in' locations where the doorset is exposed to direct weather attack onto the door face.
- Closing Jamb & Head sealing is achieved by use of the Pemko 335/336 interlocking sealing system.
- Pemko S88 or PK55 seals may be added if required. NOTE: The bank of self adhesive perimeter seals can be added to upgrade an existing installation – if required.
- Use of a Pemko 2001 threshold or saddle incorporating Pemko's 'FG' FrostGuard™ technology will reduce heat loss due to thermal transmission through a metal threshold. (Pemko 252 Saddle illustrated).
- Saddles can be sealed by the addition of a Pemko add on Threshold seal. (Pemko 184 Threshold strip with ThermoSeal™ illustrated).
- The Pemko 346 drip bar can be added at the head of the doorset if required.

NOTE: Seals of the storm grade type provide for optimum sealing. Both element of the seal should be fixed with slotted fixings to provide for a means of adjustment. Doors and frames may move during the course of a climatic cycle due to variations in temperature and humidity. Some maintenance adjustments should be anticipated according to geographical location and the extent of the exposure of the doorset.



PEMKO Perimeter Sealing

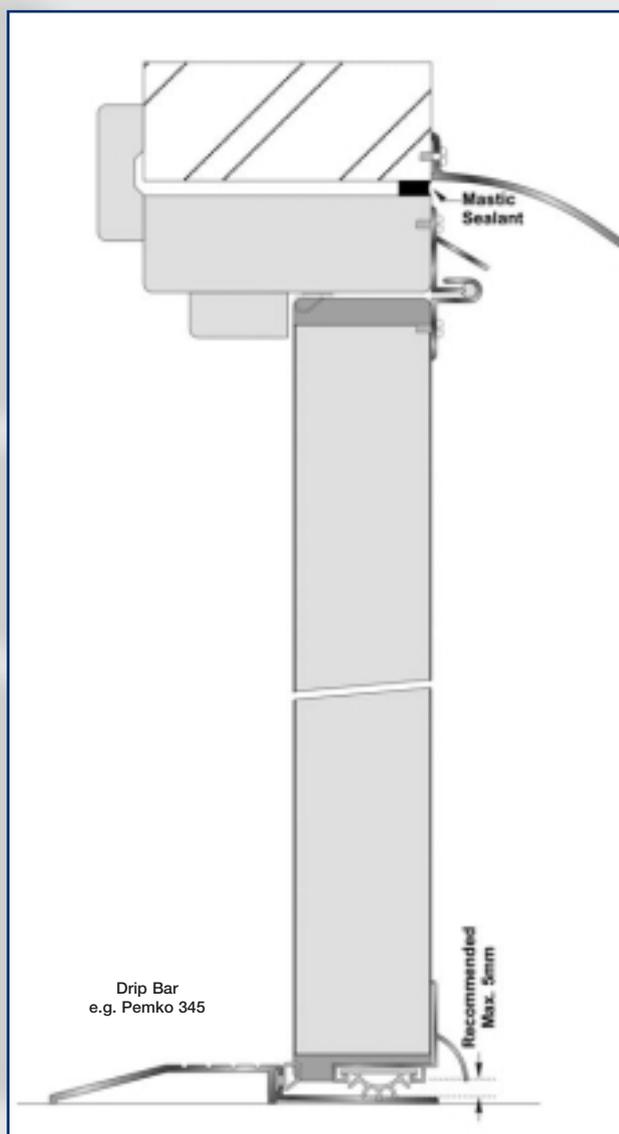
Grade 5 Sealing

- Suitable for 'opening out' low operating force locations where the doorset is in an exposed location, i.e. not protected by a porch.
- The Pemko 346 drip bar provides for weather protection between the frame head and surrounding structure.
- The Pemko 347/68 Storm Grade interlocking weather seal and drip bar prevents water ingress at the vulnerable junction between the top of the door and the frame head.

NOTE: Seals of the storm grade type provide for optimum sealing. Both element of the seal should be fixed with slotted fixings to provide for a means of adjustment. Doors and frames may move during the course of a climatic cycle due to variations in temperature and humidity. Some maintenance adjustments should be anticipated according to geographical location and the extent of the exposure of the doorset.

- The Pemko 210 combined door shoe and drip bar provides for excellent weather sealing at the threshold. In this case the 210 shoe is shown used with the Pemko 2001 combined low level threshold and seal that meets all of the criteria described by reference to Approved Document 'M' and is suitable for door openings that are required to provide for access by wheelchair disabled persons. Alternative thresholds or saddles may be selected from the extensive range saddles / thresholds offered by Pemko.
- The use of additional S88 or PK55 sealing is recommended. This arrangement provides for an air trap with improved thermal insulating properties.

NOTE: The bank of self adhesive perimeter seals can be added to upgrade an existing installation – if required.



PEMKO Perimeter Sealing

Grade 6 Sealing

- Suitable for 'opening out' low operating force locations where the doorset is in an exposed location, i.e. not protected by a porch.
- The Pemko 346 drip bar provides for weather protection between the frame head and surrounding structure.
- The Pemko 347/68 Storm Grade interlocking weather seal and drip bar prevents water ingress at the vulnerable junction between the top of the door and the frame head.

NOTE: Seals of the storm grade type provide for optimum sealing. Both element of the seal should be fixed with slotted fixings to provide for a means of adjustment. Doors and frames may move during the course of a climatic cycle due to variations in temperature and humidity. Some maintenance adjustments should be anticipated according to geographical location and the extent of the exposure of the doorset.

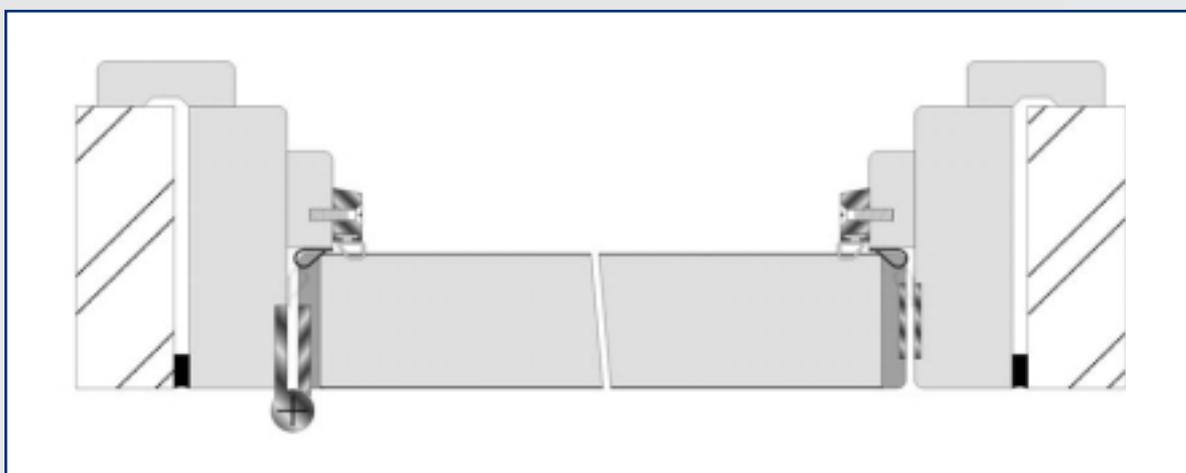
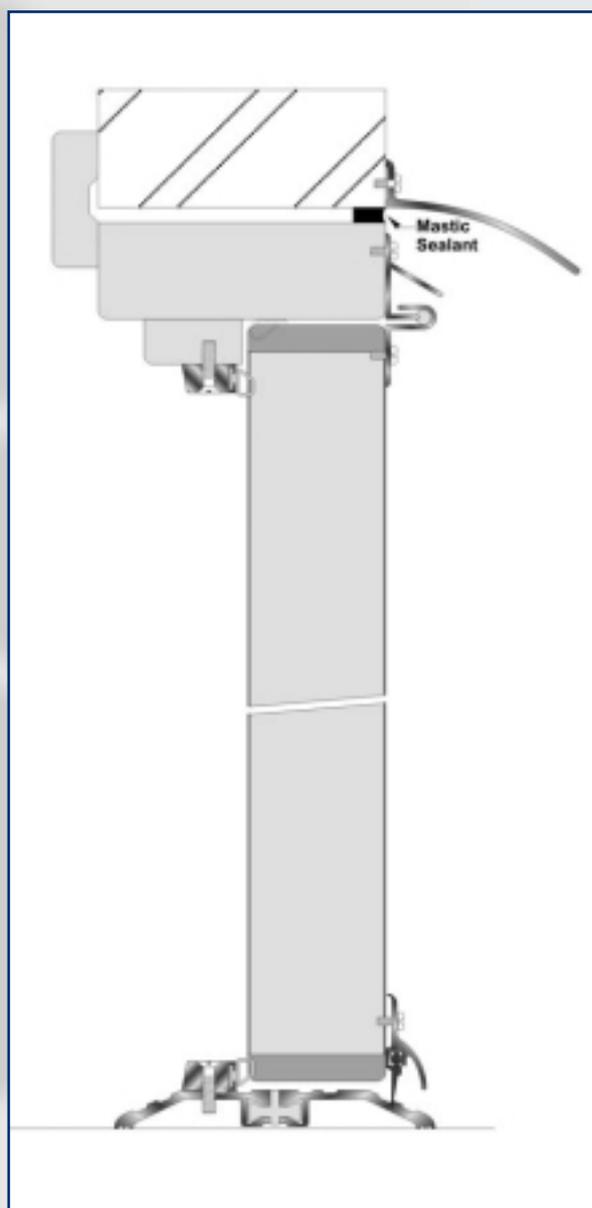
- The Pemko 184 add on threshold strip with ThermoSeal™ can be used in conjunction with the extensive range of Pemko thresholds or saddles, including saddles that incorporate Pemko's 'FG' FrostGuard™ technology that reduces thermal transmission in the region of the threshold.

NOTE: The Pemko 252 Saddle with FrostGuard™ is illustrated.

- The Pemko 184 can also be used as a perimeter seal at the head and jamb positions.
- The use of additional S88 or PK55 sealing is recommended. This arrangement provides for an air trap with improved thermal insulating properties.

NOTE: The bank of self adhesive perimeter seals can be added to upgrade an existing installation – if required.

- For opening out doors, the Pemko 3452 or other similar combined seal and drip bar can be used at the bottom of the door.



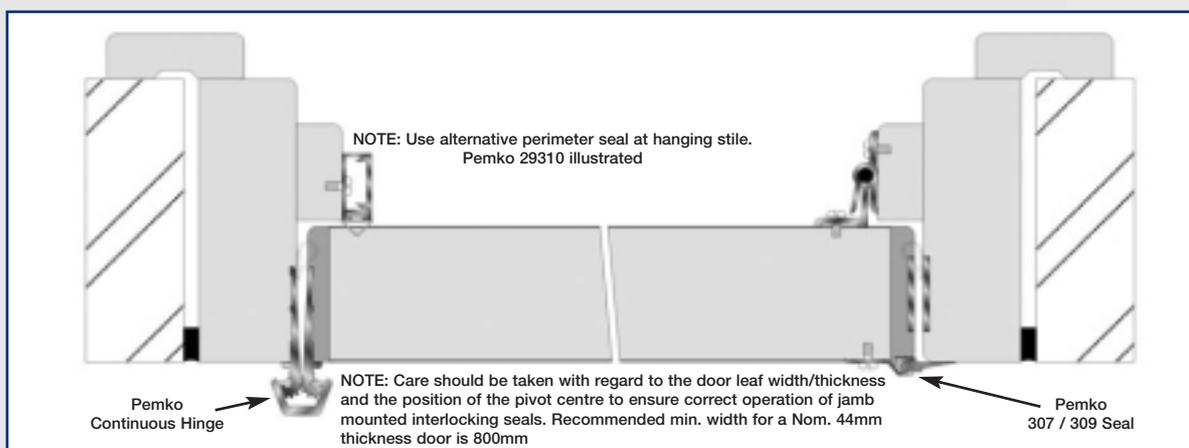
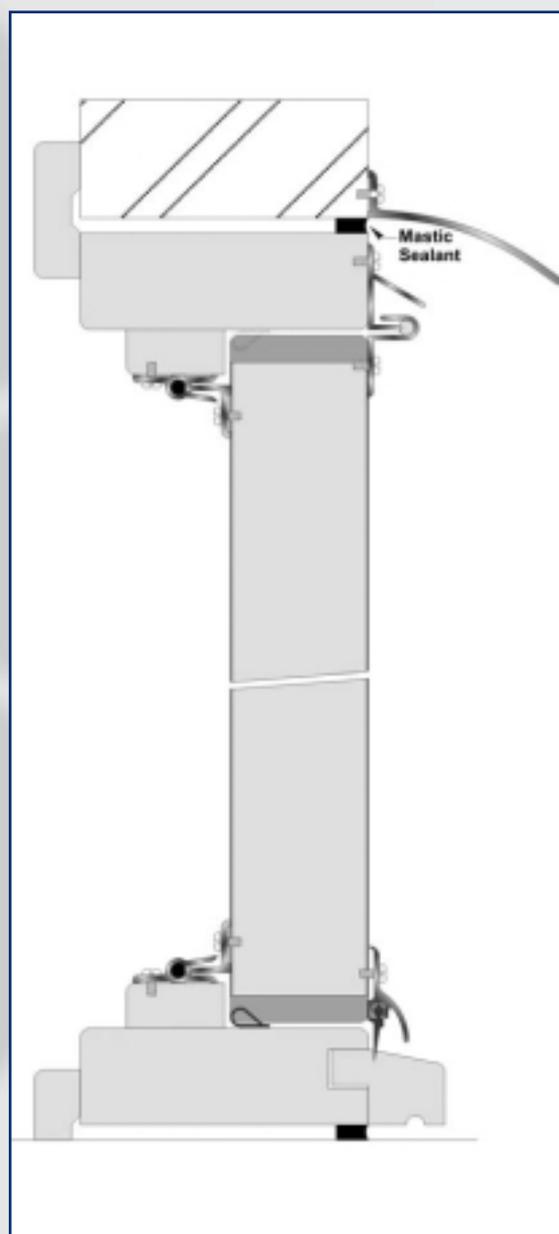
PEMKO Perimeter Sealing

Grade 7 Sealing

- Suitable for 'opening out' locations where the doorset is in an exposed location and subjected to extreme weather conditions.
- The Pemko 346 drip bar provides for weather protection between the frame head and surrounding structure.
- The Pemko 347/68 Storm Grade interlocking weather seal and drip bar prevents water ingress at the vulnerable junction between the top of the door and the frame head.
- The Pemko 335/336 Storm Grade interlocking weather seal can be applied to all faces of the door (except the hanging stile face) of the door virtually eliminating any air leakage.

NOTE: Seals of the storm grade type provide for optimum sealing. Both element of the seal should be fixed with slotted fixings to provide for a means of adjustment. Doors and frames may move during the course of a climatic cycle due to variations in temperature and humidity. Some maintenance adjustments should be anticipated according to geographical location and the extent of the exposure of the doorset.

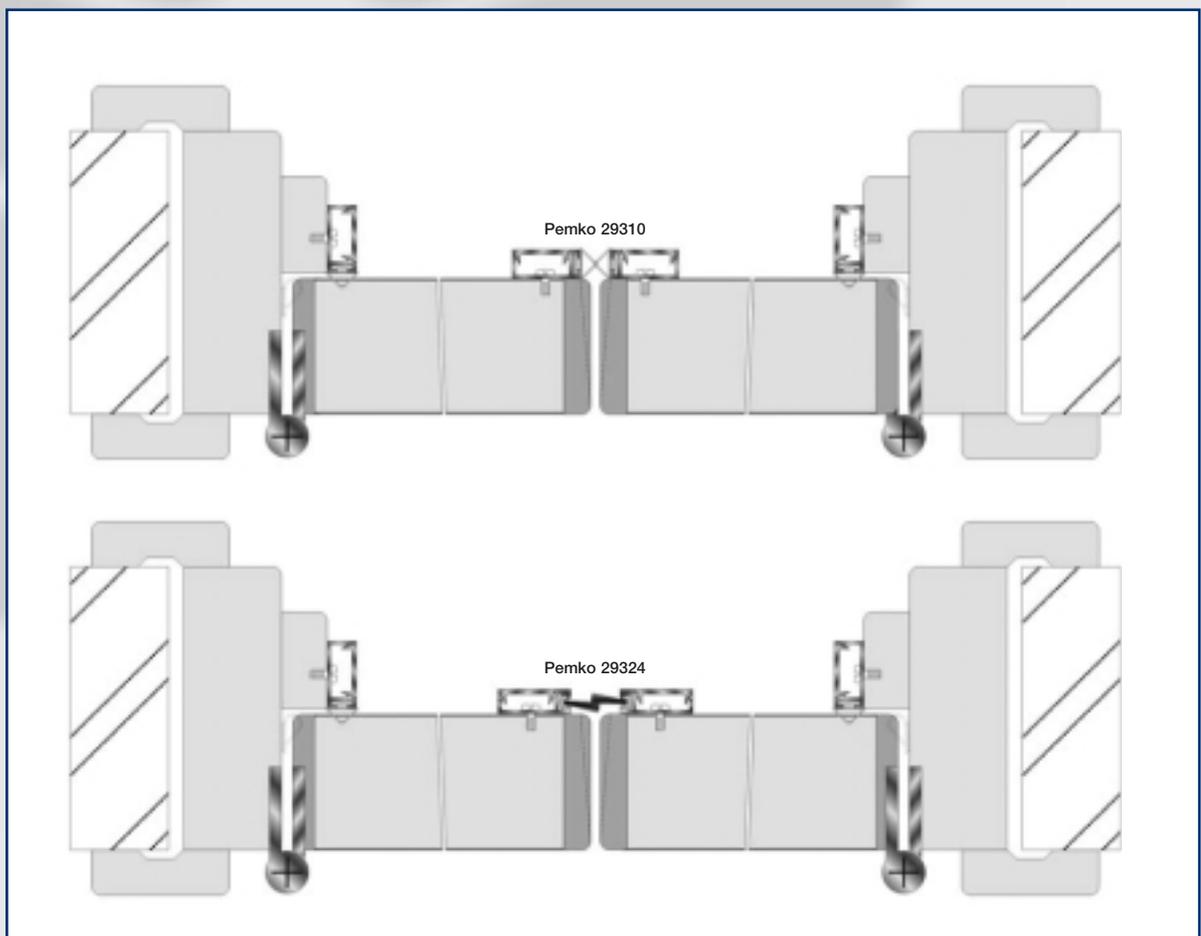
- Sealing can be supplemented by the use of a Pemko combined drip bar and threshold seal (Pemko 3452 illustrated). The closing stile can be further sealed on the outside face by use of seals such as the Pemko 315 / 307 / 309 etc.
- Pemko S88 or PK55 seals can also be added to further improve sealing performance as required.
- The sealing arrangements illustrated in this detail can be applied progressively to obtain the desired balance between sealing efficiency and operational force requirements. With the exception of the S88 and PK55 seals, the seals illustrated in this detail are primarily subjected to compression forces resulting in minimal effect on operational force requirements and providing for maximum durability.
- Performance can be further assisted by the use of the Pemko continuous hinge.



PEMKO Meeting Stile Sealing

Simultaneous Opening

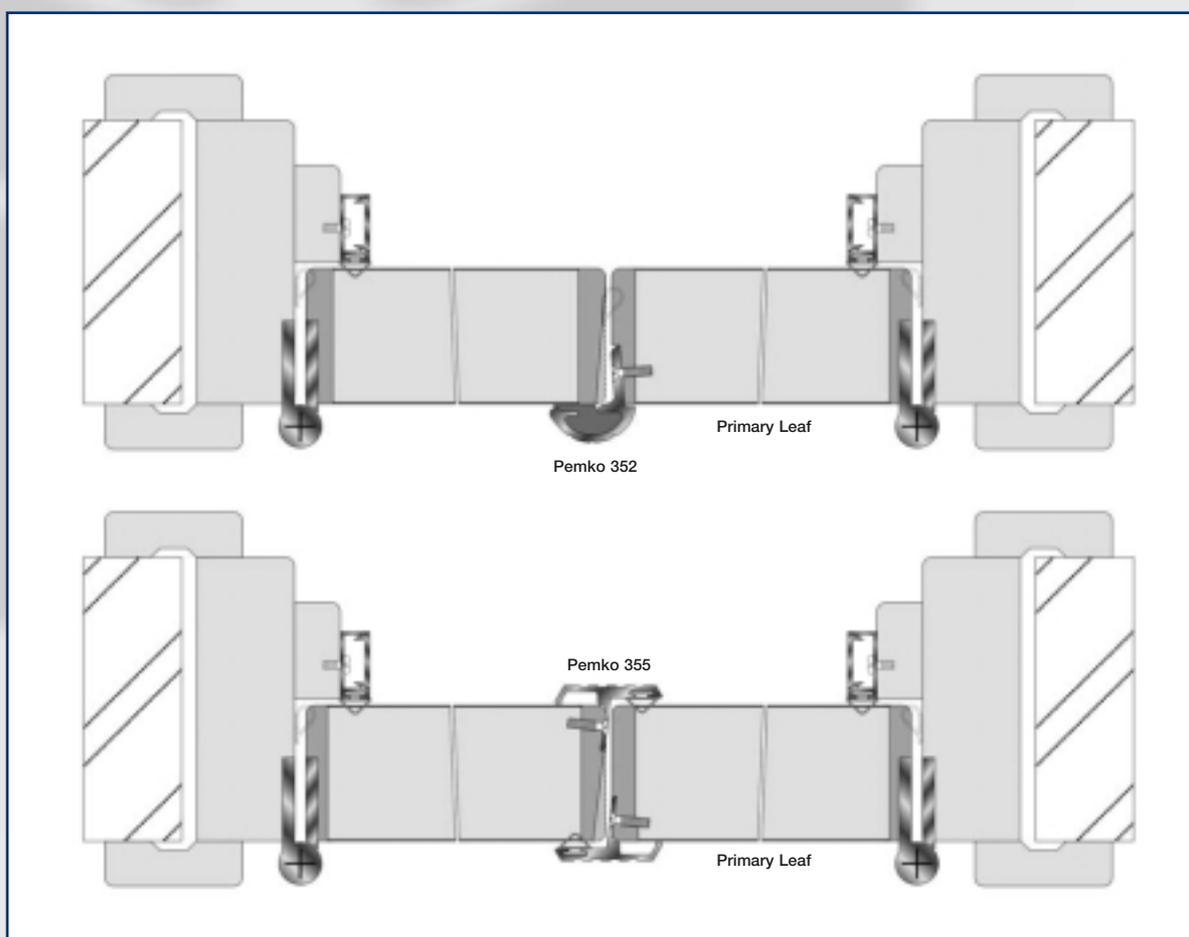
- Further reference should be made to the Pemko website for details of sealing options for meeting stiles providing for simultaneous or sequential opening. Seals for use with simultaneous opening doors (as illustrated below) will generally provide for satisfactory weather sealing for doorsets that are protected by a porch or which are not directly exposed to climatic conditions.
- The details shown below show possible uses for the Pemko 29310 and 29324 combined carrier and seal. It may be necessary to profile door edges to ensure that doors operate correctly. Seals of these designs may be used on both faces of the door leaf to provide for improved sealing with minimal interference to operating forces.
- Fixings for the Pemko 29310 and 29324 seals are not visible when the doors are in the closed position providing for improved security. NOTE: Other seal carriers are available with exposed fixings.
- The S88 and PK55 seals may be used as supplementary seals to improve thermal insulation.



PEMKO Meeting Stile Sealing

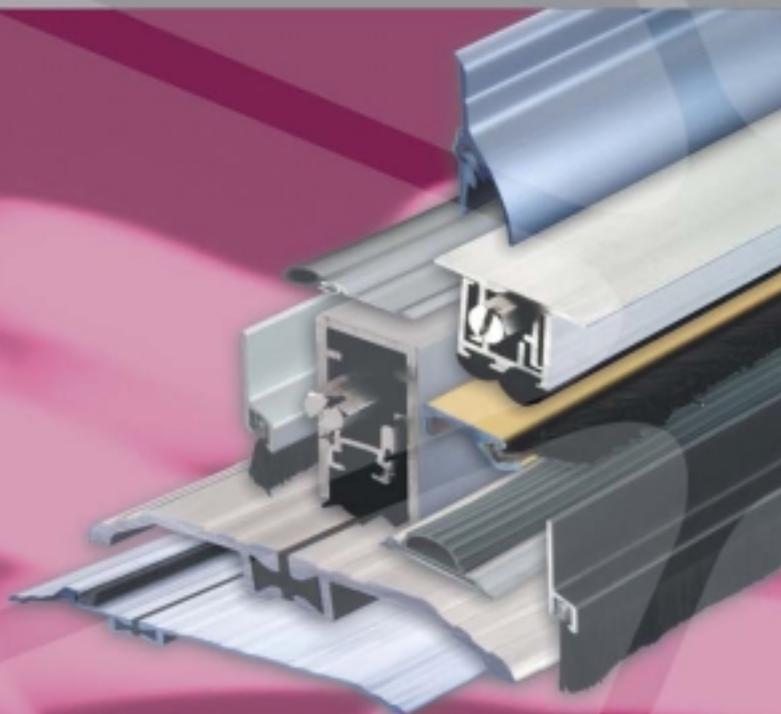
Sequential Opening

- Further reference should be made to the Pemko website for details of sealing options for meeting stiles providing for simultaneous or sequential opening. Seals for use with sequential opening doors (as illustrated below) will generally provide for improved weather sealing and are the preferred option for doorsets in exposed locations.
- The details below show possible uses for the Pemko 352 and 355 combined astragal and seal. Pairs of doors fitted with these devices provide for optimum sealing performance when doors are essentially sequential opening. It may be necessary to profile door edges to ensure that doors operate correctly. Seals of these designs may be used on both faces of the door leaf to provide for improved sealing with minimal interference to operating forces.
- Fixings for the Pemko 352 and 355 seals are not visible when the doors are in the closed position providing for improved security.
- The S88 and PK55 seals may be used as supplementary seals to improve thermal insulation.





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