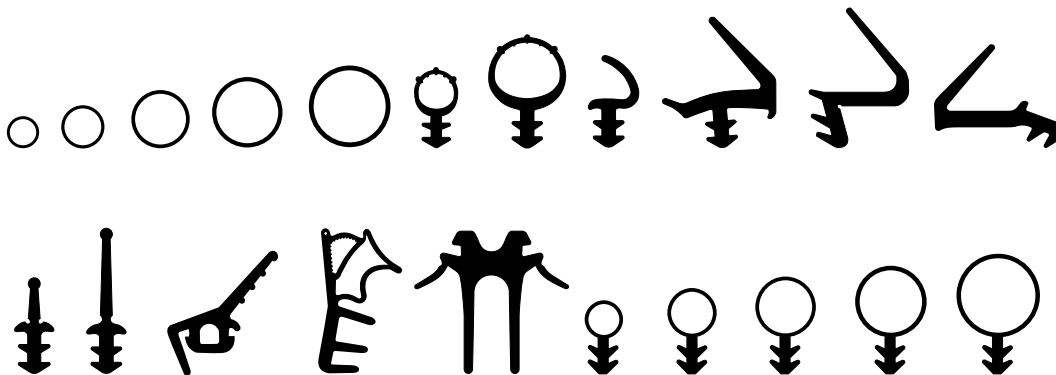
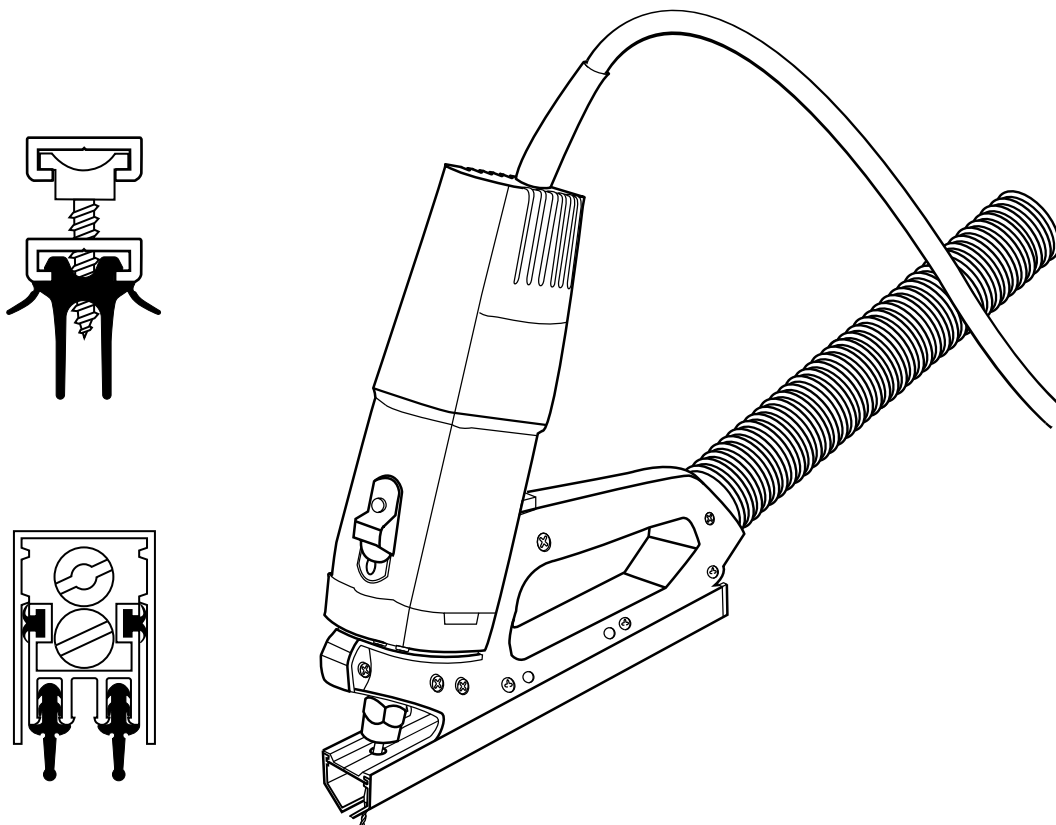


WEATHERSEAL HANDBOOK



GENERAL INFORMATION

ABOUT OUR COMPANY: Conservation Technology has supplied state-of-the-art technology for rainwater harvesting, green roofs, landscape water features, rubber membrane waterproofing, and energy-efficient building since 1984. We design, manufacture, and distribute an extraordinary range of products, many of which are not available elsewhere. For more information about our product lines, please visit our corporate website: www.conservationtechnology.com.

WEATHERSEALS: We offer a unique selection of the world's finest weatherseals, including the most complete stocking program of silicone rubber seals in North America. Our silicone seals meet the exacting requirements of the most demanding European and North American custom window and doormakers: they stay flexible at low temperatures, survive long-term sunlight exposure, and withstand repeated flexing. We offer custom tooling to simplify installation, including our Corner-Grooving Machine for on-site retrofits of door or hinged-window jambs. We also offer a range of plastic leafseals and brushseals for sliding seals where silicone is not appropriate.

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PRICING, DISCOUNTS, PAYMENT: Our minimum order is \$25.00 merchandise, not including shipping. Prices listed are trade prices and are subject to change at any time without notice. Note that rolls of flexible seals cost substantially less per foot than cut lengths, and bulk packages of rigid seals cost substantially less per foot than individual lengths. Additional discounts are automatically offered to active customers based on yearly volume. Dealer discounts are available to hardware stores, building supply companies, and home centers purchasing substantial volumes. We accept Mastercard, VISA, Discover, American Express, checks, bank drafts, money orders, or wire transfers. Credit terms are available for dealers and distributors only.

HOURS OF OPERATION: We are open Monday through Friday from 8:30 AM until 5:30 PM US Eastern time. Local customers are welcome to visit our Baltimore warehouse at 2233 Huntingdon Avenue to pick up merchandise, but we do not have a walk-in sales counter and orders must be placed in advance.

SHIPPING: Since we try to stock everything we sell, we usually ship very quickly by UPS. We can ship by UPS air services on request, but air shipping does not guarantee priority over customers with ground orders. Please note that 7' and 8' lengths of rigid weatherseals (WS39,62,64,66,84,85,86,87,88) and aluminum channels (WS40,42,50,56) are often considerably more expensive to ship than shorter lengths due to oversize charges assessed by UPS plus our added cost of special packaging.

COLORS: Silicone weatherseals are available in black, bronze (dark brown), brown (medium brown), gray (medium gray), and white. Urethane foam flipperseals are available in black, bronze (dark brown), tan, gray (medium gray), and white. Leafseals are available in tan, gray (light gray), and white. Polyester brushes are gray (medium gray) and nylon brushes are black. Aluminum channel is available in brass (antique brass), pewter (dull gray), white (off-white), and mill (shiny unfinished aluminum). All aluminum finishes are either anodized finishes or polyester powder coatings for long-term durability: we don't use cheaper baked enamels. However, since these are surface finishes, cut ends will expose bare metal. For approximate representations of our colors, please see our website, but note that colors vary significantly with different display screens!

CUSTOM CUTS: Flexible weatherseals such as rubber inserts and pile brushes are available cut to any length (no fractional feet). We reserve the right to supply long cut lengths in two pieces, in which case we will add a few extra feet at no charge. Rigid weatherseals such as plastic leafseals, nylon brushes, and aluminum mounting channels are sold only in standard lengths, but we can rough-cut any of these for a small additional charge.

RETURNS: Cut lengths are not returnable. Clean, unused stock sizes in their original packaging may be returned within 60 days of the date of purchase for a refund, less re-stocking charges. However, you must first call for a return authorization, and you must prepay return shipping charges including insurance.

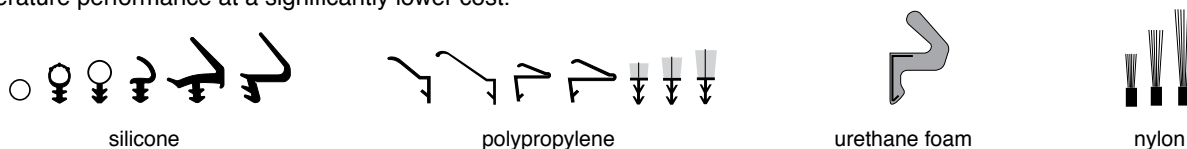
HOME PROJECTS: We regret that we are unable to provide advice or support for home projects, but skilled homeowners who can determine which products they need are welcome to purchase from us.

CONSERVATION TECHNOLOGY

tel: (800) 477-7724 fax: (410) 366-1202 email: sales@conservationtechnology.com

HOW TO SELECT A WEATHERSEAL

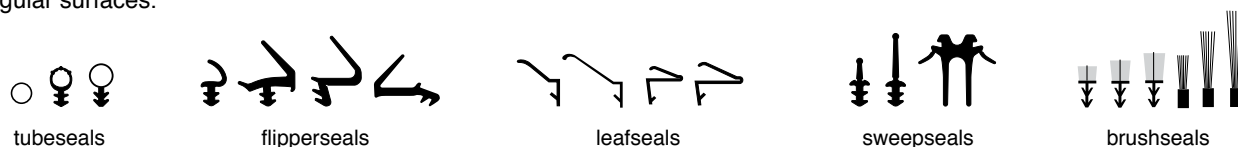
MATERIAL: For compression seals, such as jamb seals on hinged windows and doors, silicone rubber is the best choice. Although more expensive than other rubber and plastic elastomers, silicone is unbeatable for compression-set resistance, low temperature elasticity, longevity, and color quality. Note that not all silicone formulations are equivalent: we use a very high grade with significantly better properties than cheaper formulations that are often loaded with fillers. Where silicone is unaffordable, we can also provide compression seals made of a plastic-skinned urethane foam which offers good compression-set and low temperature performance at a significantly lower cost.



For sliding seals, such as the jamb seals in double-hung windows, silicone has too much friction and will grab and tear, so slippery plastics made of polypropylene (and similar polymers) or nylon are a better choice. These plastics can be supplied as bristle brushes or thin solid shapes, depending on the application. As with silicones, not all formulations of these plastics are equivalent: we use special grades that have optimal durability and compression-set resistance.

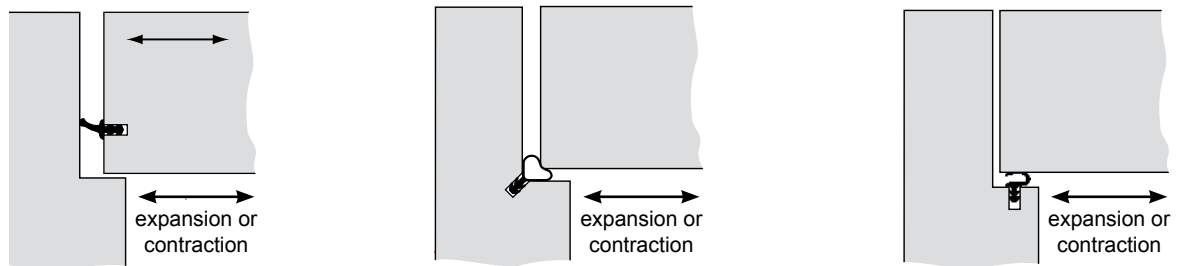
For sweeping seals, such as the bottom of doors, both silicone and plastics may work. If the threshold is smooth and flat, silicone sweeps will be durable and will seal both rain and water effectively. Rough or uneven thresholds made of stone, brick, tile, concrete, or worn wood can be sealed more effectively with nylon brushes.

SHAPE: We offer five basic shapes in weatherseals: tubeseals, flipperseals, sweepseals, leafseals, and brushseals. Tubeseals are round in cross-section and must be partially flattened to make an effective seal. They can produce excellent results if the compressed size can be kept within a very narrow range (typically 65% to 85% of the uncompressed height); additional compression can be very difficult and may cause rolling and binding on the hinge side of windows and doors. Flipperseals are open in cross-section and have a flap or flipper that makes the seal. They are ideal general-purpose seals because they are effective over a wider range of gaps (typically 50% to 85% of the uncompressed height) and require much less closing pressure than comparably sized tubeseals. Leafseals are plastic flipperseals thin enough to flex and seal over an even wider range of gaps (typically 25% to 85% of the uncompressed height). Sweepseals are straight fins designed to bend with lateral motion, such as that occurring when a door bottom closes over a threshold. For optimal performance, they should just barely make contact with the opposing surface, since excessive bending can lead to binding and tearing when the direction of motion is reversed. Brushseals are sweepseals made of a mass of bristles instead of one or two fins, and are optimal for sealing irregular surfaces.



SIZE: For a given shape, the largest seal offers the widest range of effective sealing. For example, if a flipperseal is effective for 50% to 85% compression, then a 1/4" high seal is effective from 1/8" to 7/32" (a range of 3/32") and a 1/2" high flipperseal is effective from 1/4" to 7/16" (a range of 3/16", or twice the range of the smaller seal). On the other hand, larger shapes are more visible and more expensive, so choose the largest seal feasible within the aesthetic and economic limits of the application.

LOCATION: Whenever possible, position weatherseals so that they seal to the face of the window or door. As windows or doors expand and contract with temperature and humidity, edge seals may become loose enough to leak air or tight enough to cause binding. Corner seals are an improvement, but face seals are almost totally unaffected by seasonal movement.



Edge seals are the least effective because gaps change as wood expands and contracts.

Corner seals are better, but should be limited to retrofit work.

Face seals are ideal because gaps remain constant as wood moves

SPECIFICATIONS AND PRICES

All weatherseals are shown approximately full-size. Flexible seals are available either in rolls or custom cut to any length. Rigid seals and mounting channels are available either in bulk packages or by the piece in standard lengths. Since shipping charges are not included and prices are subject to change without notice, please call before sending payment.








ILLUSTRATION	DESCRIPTION	COLORS	PRICES
 WS02	WS02 is a 5/32" (4mm) diameter silicone tubeseal designed to be glued into the corner of a wood or metal jamb with silicone caulk. Use it on stops, rabbeted jambs, and astragals where gaps measure 0 – 1/8" (0 – 3mm). Clean the jambs with solvent, apply a small bead of silicone caulk, press the seal into the wet caulk, and roll it with WS96.	bronze white	cut lengths: \$0.36/ft 100 ft rolls: \$20.00
 WS03	WS03 is a 7/32" (5.5mm) diameter silicone tubeseal designed to be glued into the corner of a wood or metal jamb with silicone caulk. Use it on stops, rabbeted jambs, and astragals where gaps measure 1/16" – 3/16" (2mm – 5mm). Clean the jambs with solvent, apply a small bead of silicone caulk, press the seal into the wet caulk, and roll it with WS96.	bronze white	cut lengths: \$0.48/ft 100 ft rolls: \$28.00
 WS04	WS04 is a 9/32" (7.5mm) diameter silicone tubeseal designed to be glued into the corner of a wood or metal jamb with silicone caulk. Use it on stops, rabbeted jambs, and astragals where gaps measure 1/8" – 1/4" (3mm – 6mm). Clean the jambs with solvent, apply a small bead of silicone caulk, press the seal into the wet caulk, and roll it with WS96.	bronze white	cut lengths: \$0.60/ft 100 ft rolls: \$36.00
 WS05	WS05 is a 11/32" (9mm) diameter silicone tubeseal designed to be glued into the corner of a wood or metal jamb with silicone caulk. Use it on stops, rabbeted jambs, and astragals where gaps measure 3/16" – 5/16" (5mm – 8mm). Clean the jambs with solvent, apply a small bead of silicone caulk, press the seal into the wet caulk, and roll it with WS96.	bronze white	cut lengths: \$0.72/ft 100 ft rolls: \$44.00
 WS06	WS06 is a 13/32" (10.5mm) diameter silicone tubeseal designed to be glued into the corner of a wood or metal jamb with silicone caulk. Use it on stops, rabbeted jambs, and astragals where gaps measure 1/4" – 3/8" (6mm – 10mm). Clean the jambs with solvent, apply a small bead of silicone caulk, press the seal into the wet caulk, and roll it with WS96.	bronze white	cut lengths: \$0.96/ft 100 ft rolls: \$60.00
 WS10	WS10 is a 1/4" (6mm) diameter silicone tubeseal designed to be compressed to 5/32" (4mm). It fits a 1/8" x 1/4" (3mm x 6mm) groove cut in wood with WS90, or it can be held by WS40 or WS42. Use it for compression sealing, such as in applied stops of hinged windows and doors, or in the top and bottom edges of double-hung windows.	black brown gray white	cut lengths: \$0.88/ft 164 ft rolls: \$96.00
 WS11	WS11 is a 3/8" (10mm) diameter silicone tubeseal designed to be compressed to 1/4" (6mm). It fits a 1/8" x 1/4" (3mm x 6mm) groove cut in wood with WS90, or it can be held by WS40. Use it for compression sealing, such as in applied stops or rabbeted jambs of hinged windows or doors, or in the top and bottom edges of double-hung windows.	black brown gray white	cut lengths: \$1.48/ft 164 ft rolls: \$160.00









ILLUSTRATION	DESCRIPTION	COLORS	PRICES
 WS12	WS12 is a 1/4" (6mm) silicone flipperseal designed to be compressed to 5/32" (4mm). It fits a 1/8" x 1/4" (3mm x 6mm) groove cut in wood with WS90, or it can be held by WS40 or WS42. This is an ideal seal for use in applied stops of hinged windows or doors (WS14 or WS15 are preferable for rabbeted jambs because they seal a wider range of gaps).	black brown gray white	cut lengths: \$0.96/ft 164 ft rolls: \$104.00
 WS14	WS14 is a 1/2" (13mm) heavy-duty silicone flipperseal designed to be compressed to 1/4" (6mm). It fits a 1/8" x 1/4" (3mm x 6mm) groove cut in wood with WS90, or it can be held by WS40. Use it for doors with rabbeted jambs or 1/2" (13mm) applied stops. The left lip seals air flow between a stop and jamb; the right lip protects the edge of the wood from damage.	black brown gray white	cut lengths: \$1.88/ft 164 ft rolls: \$204.00
 WS15	WS15 is a 1/2" (13mm) silicone offset-flipperseal designed to be compressed to 1/4" (6mm). It fits a 1/8" x 1/4" (3mm x 6mm) groove cut in the corner of a rabbeted door or window jamb. It can also fit into a shallow rabbet cut into the back of an applied stop, in which case it will effectively seal air flow between the stop and the jamb.	black brown gray white	cut lengths: \$1.44/ft 100 ft rolls: \$96.00
 WS16	WS16 is a 1/2" (13mm) silicone inline-flipperseal designed to be compressed to 1/4" (6mm). It fits a 1/8" x 1/4" (3mm x 6mm) groove cut in the corner of a door or window jamb parallel to the door or window face (the jamb stock should be at least 1-1/4" thick to prevent splitting). It is also useful for sealing the meeting edge of pairs of doors or windows.	black brown gray white	cut lengths: \$1.88/ft 164 ft rolls: \$204.00
 WS17	WS17 is a 1/4" (6mm) long silicone sweepseal designed to seal gaps 3/16" – 1/4" (5mm – 6mm). It fits a 1/8" x 1/4" (3mm x 6mm) groove cut in wood with WS90, or it can be held by WS40 or WS42. Use it for door-bottom sealing with smooth thresholds, or for other edge seals where there is sweeping motion. Do not allow the seal to bend excessively.	black	cut lengths: \$1.20/ft 164 ft rolls: \$128.00
 WS18	WS18 is a 1/2" (13mm) long silicone sweepseal designed to seal gaps 7/16" – 1/2" (11mm – 13mm). It fits a 1/8" x 1/4" (3mm x 6mm) groove cut in wood with WS90, or it can be held by WS40 or WS42. Use it for door-bottom sealing with smooth thresholds, or for other edge seals where there is sweeping motion. Do not allow the seal to bend excessively.	black	cut lengths: \$1.28/ft 164 ft rolls: \$140.00
 WS19	WS19 is a 3/4" (21mm) long silicone sweepseal designed to seal gaps 11/16" – 3/4" (17mm – 19mm). It fits a 1/8" x 1/4" (3mm x 6mm) groove cut in wood with WS90, or it can be held by WS40 or WS42. Use it for door-bottom sealing with smooth thresholds, or for other edge seals where there is sweeping motion. Do not allow the seal to bend excessively.	black	cut lengths: \$1.36/ft 100 ft rolls: \$92.00
 WS20	WS20 is a heavy-duty silicone surface flipperseal designed to seal gaps 0 – 1/4" (0 – 6mm). It presses into WS50 channel which is attached to door or window jambs. It can also be applied to a wood strip to serve as an astragal for double doors. Its wide operating range and sturdy construction make it effective for sealing all heavy-use openings.	black brown white	cut lengths: \$2.00/ft 164 ft rolls: \$220.00


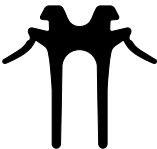





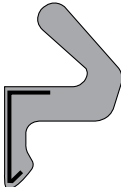
ILLUSTRATION	DESCRIPTION	COLORS	PRICES
 WS24	WS24 is a silicone hybrid tubeseal/flipperseal designed specifically for German-style tilt/turn windows and doors. It is designed to be compressed to 3/16" (5mm) and fits a 3/16" x 5/16" (5mm x 8mm) groove cut in the corner of a door or window jamb parallel to the door or window face. A special notching tool creates airtight and watertight 90° corners without through-cutting.	black bronze white	cut lengths: \$1.60/ft 164 ft rolls: \$164.00
 WS25	WS25 is a silicone double sweepseal designed to seal door-bottom gaps from 0 – 3/8" (0 – 10mm). It can be pressed into a single WS56 channel for an inexpensive fixed seal, or can be used with two WS56 plus WS93 glides and end-caps to make a door bottom system that can be precisely adjusted in minutes while the door is in place.	black	cut lengths: \$3.60/ft 82 ft rolls: \$196.00
 WS32	WS32 is a 3/16" (5mm) diameter silicone cornerseal that fits a 1/8" x 3/16" (3mm x 5mm) groove cut at a 45° angle with a WS98 Corner-Grooving Machine using a WS99 spiral router bit. Use it on rabbeted jambs and astragals where both the face and edge clearances measure 0 – 1/8" (0 – 3mm). Roll with WS96 to assure proper insertion.	black bronze white	cut lengths: \$0.56/ft 100 ft rolls: \$36.00
 WS33	WS33 is a 1/4" (6mm) diameter silicone cornerseal that fits a 1/8" x 3/16" (3mm x 5mm) groove cut at a 45° angle with a WS98 Corner-Grooving Machine using a WS99 spiral router bit. Use it on rabbeted jambs and astragals where both the face and edge clearances measure 1/16" – 3/16" (2mm – 5mm). Roll with WS96 to assure proper insertion.	black bronze white	cut lengths: \$0.60/ft 100 ft rolls: \$40.00
 WS34	WS34 is a 5/16" (8mm) diameter silicone cornerseal that fits a 1/8" x 3/16" (3mm x 5mm) groove cut at a 45° angle with a WS98 Corner-Grooving Machine using a WS99 spiral router bit. Use it on rabbeted jambs and astragals where both the face and edge clearances measure 1/8" – 1/4" (3mm – 6mm). Roll with WS96 to assure proper insertion.	black bronze white	cut lengths: \$0.68/ft 100 ft rolls: \$44.00
 WS35	WS35 is a 3/8" (9mm) diameter silicone cornerseal that fits a 1/8" x 3/16" (3mm x 5mm) groove cut at a 45° angle with a WS98 Corner-Grooving Machine using a WS99 spiral router bit. Use it on rabbeted jambs and astragals where both the face and edge clearances measure 3/16" – 5/16" (5mm – 8mm). Roll with WS96 to assure proper insertion.	black bronze white	cut lengths: \$0.80/ft 100 ft rolls: \$52.00
 WS36	WS36 is a 7/16" (11mm) diameter silicone cornerseal that fits a 1/8" x 3/16" (3mm x 5mm) groove cut at a 45° angle with a WS98 Corner-Grooving Machine using a WS99 spiral router bit. Use it on rabbeted jambs and astragals where both the face and edge clearances measure 1/4" – 3/8" (6mm – 10mm). Roll with WS96 to assure proper insertion.	black bronze white	cut lengths: \$0.92/ft 100 ft rolls: \$60.00
 WS39	WS39 Offset Foam Flipperseal fits a 1/8" x 3/8" (3mm x 10mm) groove cut in the corner of a rabbeted door jamb and is designed to be compressed to 3/8" (9mm). It consists of a high-quality urethane foam encased in a tough UV-resistant plastic skin and offers a low-cost alternative to WS14 or WS15 for production door shops.	black bronze white	7 ft: \$3.15 8 ft: \$3.60 20 - 7 ft: \$51.00 20 - 8 ft: \$58.00




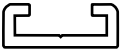
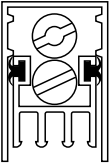

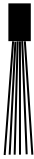

ILLUSTRATION	DESCRIPTION	COLORS	PRICES
 WS40	WS40 aluminum channel fits a 3/16" x 5/16" (5mm x 8mm) groove. It is most often used to mount WS62, WS64, and WS66 nylon brushes or WS17 and WS18 silicone sweeps in door bottoms. However, it can also be used to increase the pullout resistance of WS10, WS11, WS12, or WS14 and strengthen the wood in abusive environments.	mill	3 ft: \$2.88 4 ft: \$3.84 7 ft: \$6.72 8 ft: \$7.68 25 - 7 ft: \$136.00 25 - 8 ft: \$156.00
 WS42	WS42 is an attractive, low-profile, surface-mounted aluminum channel that snaps onto invisible delrin clips. Sufficient clips and wood screws are included; screws for mounting on metal jambs or doors are available on request. It can be used with WS10 or WS12 for door jambs, as well as with WS17, WS18, WS62, WS64, or WS66 for door bottoms	brass pewter white	3 ft: \$8.55 4 ft: \$11.40 7 ft: \$19.95
 WS50	WS50 aluminum channel holds WS20 in order to make a surface-mounted jamb or astragal seal on a wood door or window. The channel is supplied pre-drilled for special screws designed to be driven in with a hammer using our WS94 insertion tool and a nail set. The screws are included, but the insertion tool must be ordered separately.	mill	3 ft: \$3.12 4 ft: \$4.14 7 ft: \$7.28
 WS56	WS56 aluminum channel is used to hold WS25 double sweepseal. For fixed mounting, screw a mill finish WS56 channel into a 5/8" groove and insert the WS25. For adjustable mounting, screw a pewter finish WS56 channel into a deeper groove, insert the WS25 into a second WS56 channel, and suspend the second channel from the first with WS93 glides.	mill pewter	(mill) (pewter) 3 ft: \$3.84 \$5.16 4 ft: \$5.12 \$6.88 7 ft: \$8.96 \$12.04 25 - 7 ft: \$180 \$242
 WS58	WS58 is an automatic door bottom system that lowers as a door closes and raises as it opens. The outer channel is screwed into a 3/4" x 1-1/8" groove and the inner mechanism slides into place. WS58 is normally used with two WS17 or WS64 for gaps to 5/8", two WS18 or WS64 for gaps to 7/8", or two WS19 or WS66 for gaps to 1-1/8". Each length can be cut up to 4".	mill	24": \$54.00 28": \$55.00 32": \$56.00 36": \$57.00 40": \$58.00 44": \$59.00 48": \$60.00
 WS62	WS62 is a superior-quality nylon brushseal designed for sealing rough thresholds and for heavy-duty sliding applications. It must be mounted in WS40 or WS42. If WS40 is glued flush with the wood surface, then WS62 seals gaps 3/16" – 1/4" (5mm – 6mm). If WS40 is made adjustable with WS92 screws, WS62 seals gaps 0 – 1/4" (0 – 6mm).	black	3 ft: \$6.24 4 ft: \$8.32 7 ft: \$14.56 8 ft: \$16.64 25 - 7 ft: \$292.00 25 - 8 ft: \$332.00
 WS64	WS64 is a superior-quality nylon brushseal designed for sealing rough thresholds and for heavy-duty sliding applications. It must be mounted in WS40 or WS42. If WS40 is glued flush with the wood surface, then WS64 seals gaps 7/16" – 1/2" (11mm – 13mm). If WS40 is made adjustable with WS92 screws, WS64 seals gaps 1/4" – 1/2" (6mm – 13mm).	black	3 ft: \$6.24 4 ft: \$8.32 7 ft: \$14.56 8 ft: \$16.64 25 - 7 ft: \$292.00 25 - 8 ft: \$332.00
 WS66	WS66 is a superior-quality nylon brushseal designed for sealing rough thresholds and for heavy-duty sliding applications. It must be mounted in WS40 or WS42. If WS40 is glued flush with the wood surface, then WS66 seals gaps 11/16" – 3/4" (17mm – 19mm). If WS40 is made adjustable with WS92 screws, WS66 seals gaps 1/2" – 3/4" (13mm – 19mm).	black	3 ft: \$6.24 4 ft: \$8.32 7 ft: \$14.56 8 ft: \$16.64 25 - 7 ft: \$292.00 25 - 8 ft: \$332.00












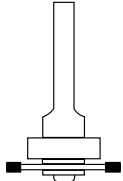
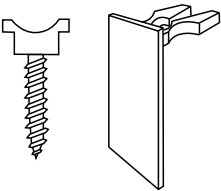
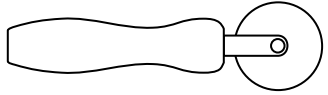
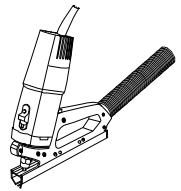
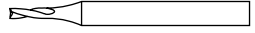
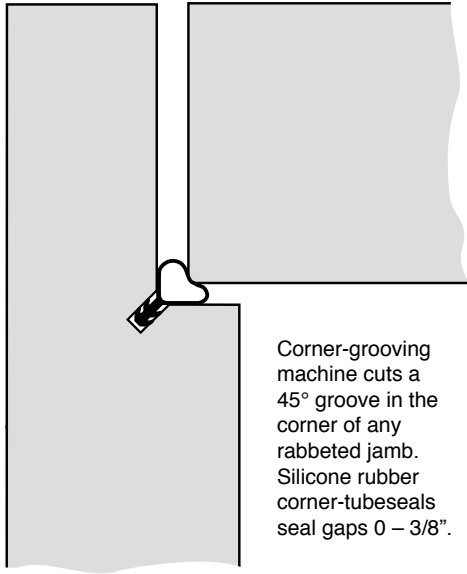
ILLUSTRATION	DESCRIPTION	COLORS	PRICES
 WS70	WS70 is an adhesive-backed polypropylene pile brushseal 1-1/4" wide by 1/4" thick (32mm x 6mm). It is primarily used to make a transition between door bottom seals and jamb seals, blocking air flow at the bottom corners. To use it, simply cut two small pieces and adhere them to the jambs just inside the stops at the bottom left and right corners of the door.	bronze white	cut lengths: \$1.00/ft
 WS74	WS74 consists of a polypropylene pile brushseal with a flexible center fin, bonded to a two-component plastic base. It fits a 1/8" x 1/4" (3mm x 6mm) groove that can be cut with WS90. WS74 seals 1/8" (3mm) gaps and is ideal for sliding seals in new sliding and double-hung windows where the gap between the window face and the stop is constant.	black gray white	cut lengths: \$0.32/ft 1250 ft rolls: \$216.00
 WS75	WS75 consists of a polypropylene pile brushseal with a flexible center fin, bonded to a two-component plastic base. It fits a 1/8" x 1/4" (3mm x 6mm) groove that can be cut with WS90. WS75 seals 5/32" (4mm) gaps and is ideal for sliding seals in new sliding and double-hung windows where the gap between the window face and the stop is constant.	black gray white	cut lengths: \$0.36/ft 1250 ft rolls: \$224.00
 WS76	WS76 consists of a polypropylene pile brushseal with flexible center fin, bonded to a two-component plastic base. It fits a 1/8" x 1/4" (3mm x 6mm) groove that can be cut with WS90. WS76 seals 3/16" (5mm) gaps and is ideal for sliding seals in new sliding and double-hung windows where the gap between the window face and the stop is constant.	black gray white	cut lengths: \$0.40/ft 1250 ft rolls: \$232.00
 WS77	WS77 consists of a polypropylene pile brushseal with a flexible center fin, bonded to a two-component plastic base. It fits a 1/8" x 1/4" (3mm x 6mm) groove that can be cut with WS90. WS76 seals 7/32" (5.5mm) gaps and is ideal for sliding seals in new sliding and double-hung windows where the gap between the window face and the stop is constant.	black gray white	cut lengths: \$0.44/ft 1250 ft rolls: \$240.00
 WS78	WS78 consists of a polypropylene pile brushseal with a flexible center fin, bonded to a two-component plastic base. It fits a 1/8" x 1/4" (3mm x 6mm) groove that can be cut with WS90. WS78 seals 1/4" (6mm) gaps and is most often used for door edge seals and for sliding seals in new sliding doors where the gap between the window face and the stop is constant.	black gray white	cut lengths: \$0.48/ft 1250 ft rolls: \$248.00
 WS83	WS83 is a general-purpose, straight plastic leafseal that fits a 5/64" x 5/16" (2mm x 8mm) groove cut with WS90 and seals gaps 1/16" – 1/4" (2mm – 6mm). It is usually used for edge seals in sliding windows and doors, particularly for old work where gaps may vary considerably and where surfaces may be rough from many layers of paint.	black tan gray white	4 ft: \$0.72 8 ft: \$1.44 50 - 8 ft: \$54.00
 WS84	WS84 is a general-purpose straight plastic leafseal that fits a 5/64" x 5/16" (2mm x 8mm) groove cut with WS90 and seals gaps 1/16" – 3/16" (2mm – 5mm). It is usually used for center and edge seals in sliding windows and doors, particularly for old work where gaps may vary considerably and where surfaces may be rough from many layers of paint.	black tan gray white	4 ft: \$0.54 8 ft: \$1.08 50 - 8 ft: \$40.00

ILLUSTRATION	DESCRIPTION	COLORS	PRICES
 WS85	WS85 is an offset plastic leafseal that fits a 5/64" x 5/16" (2mm x 8mm) groove cut with WS90 and seals gaps 1/16" – 1/8" (2mm – 3mm). It is usually used for center and edge seals in sliding windows and doors, particularly for old work where gaps may vary considerably and where surfaces may be rough from many layers of paint.	black tan gray white	4 ft: \$0.72 8 ft: \$1.44 50 - 8 ft: \$54.00
 WS86	WS86 is an offset plastic leafseal that fits a 5/64" x 5/16" (2mm x 8mm) groove cut with WS90 and seals gaps 1/16" – 3/16" (2mm – 5mm). It is usually used for center and edge seals in sliding windows and doors, particularly for old work where gaps may vary considerably and where surfaces may be rough from many layers of paint.	black tan gray white	4 ft: \$0.72 8 ft: \$1.44 50 - 8 ft: \$54.00
 WS87	WS87 is an offset plastic leafseal that fits a 5/64" x 5/16" (2mm x 8mm) groove cut with WS90 and seals gaps 1/16" – 1/4" (2mm – 6mm). It is usually used for center and edge seals in sliding windows and doors, particularly for old work where gaps may vary considerably and where surfaces may be rough from many layers of paint.	black tan gray white	4 ft: \$0.90 8 ft: \$1.80 40 - 8 ft: \$54.00
 WS90	WS90 custom-made, ball-bearing-guided, four-wing, slot-cutting router bits cut the exact grooves required for many of our weatherseals without the need for a guide fence to limit the depth of cut. A top-mounted bearing makes it possible to groove rabbeted jambs. Order 2mm x 8mm for WS83,84,85,86, 87 or 3mm x 6mm for WS10,11,12,14,17,18,74,75,76,77,78.		2 x 8mm: \$39.80 3 x 6mm: \$39.80
 WS93	WS93 glides and end-caps are used to make an adjustable door bottom system using WS25 silicone sweepseal and two WS56 aluminum channels. The glide is threaded into the WS56 channel that holds the WS25, and the end caps slip into the fixed channel to conceal the groove. Order at least one glide per foot of door width, more if the threshold is uneven.		guides: \$3.60 end caps: \$0.400
 WS96	WS96 is a nylon-wheel roller tool recommended for pushing WS02,03,04,05,06 into wet silicone caulk and for inserting WS32,33,34,35,36 into a groove cut with WS98 Corner-Grooving machines. It also speeds installation of WS16 (roll against the small "shoulder" in the rubber) and WS25 (roll in one "ear" of WS25 after the other ear has been inserted).		\$12.00
 WS98	WS98 Corner-Grooving Machine cuts a groove at a 45° angle in the corner of a door or window jamb into which WS32, WS33, WS34, WS35, or WS36 tubeseals are inserted. We offer a kit that include a motor, tool body, vacuum hose with 1-1/4" and 2-1/4" hose fittings, and a carrying case. The cost of the machine is discounted 10% with the purchase of two rolls of weatherseals.		kit: \$360 with 2 rolls: \$324
 WS99	WS99 spiral router bits are used with WS98 to cut the 1/8" wide grooves required to install WS32,33,34,35,36 corner tubeseals in the corner of a jamb. High-speed steel can be used where many nails are likely to be found, but carbide is best for normal use. For safe use, do not substitute other carbide bits: standard carbide spiral router bits are too short!		steel: \$8.60 carbide: \$16.80

CORNER-GROOVING MACHINE

The WS98 Corner-Grooving Machine quickly grooves both new and existing wood door or window jambs to hold silicone rubber corner tubeseals. It consists of a quality high-speed motor mounted within an injection-molded plastic tool body that has a replaceable aluminum base. The base is "V"-shaped to fit into rabbeted jambs, and the motor is mounted at a backward angle that permits grooving all the way into the corners where jambs meet headers or sills. A crush-resistant vacuum hose threads into the hollow tool body to suck debris from the groove and keep the site clean.



Five different sizes of superior-quality, thin-wall silicone rubber corner tubeseals assure perfect sealing of any gap from 0 to 3/8" with virtually no noticeable increase in closing pressure. These seals feature our time-tested, friction-grip foot designed to fit an 1/8" wide straight groove that is cut with affordable spiral router bits. Since the depth and angle of the cut are not very critical, it's almost impossible to ruin the jamb, even if the bit is not set precisely, the operator is momentarily distracted, or the machine runs over an area with a thick accumulation of paint. Our friction-grip seals won't easily shrink away from corners and ends, and will effectively keep water away from the unfinished wood inside the groove.



WS32
3/16" OD
gaps to 1/8"



WS33
1/4" OD
gaps to 3/16"



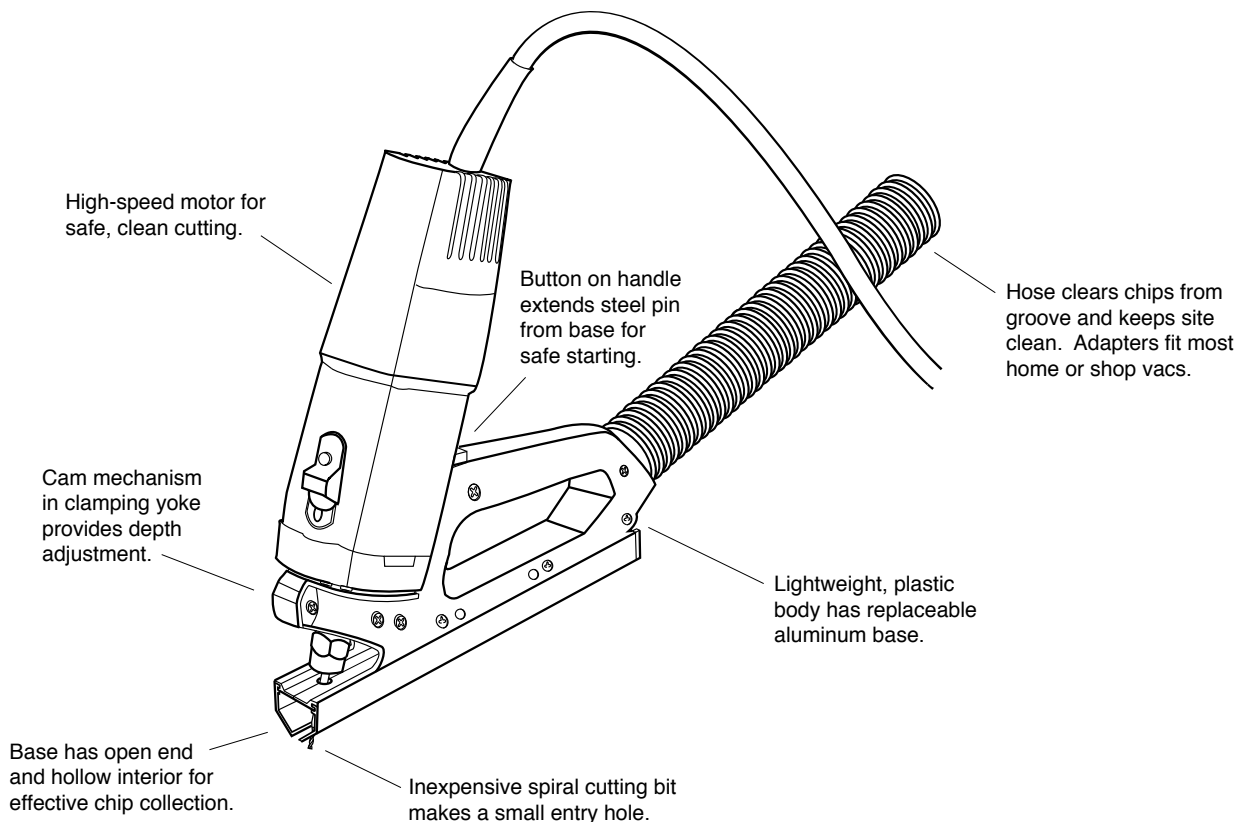
WS34
5/16" OD
gaps to 1/4"

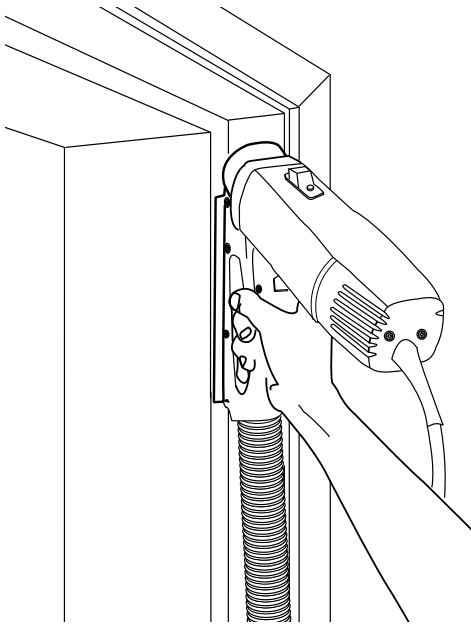


WS35
3/8" OD
gaps to 5/16"

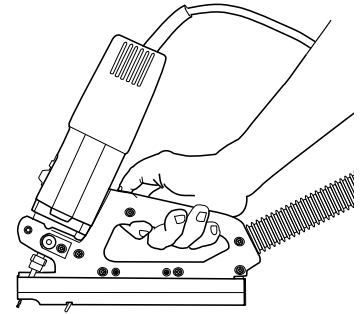


WS36
7/16" OD
gaps to 3/8"





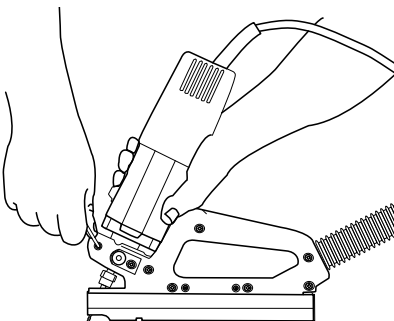
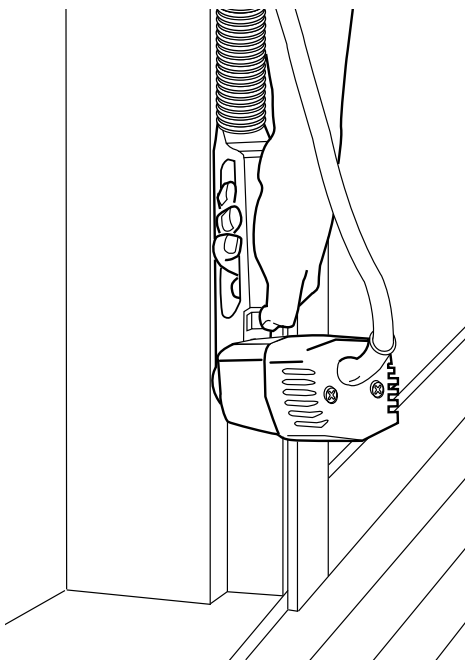
USING THE TOOL: Start the vacuum, or use a vacuum that will automatically start with the tool. Beginning at the midpoint of one side, place the tool base in the corner of the jamb, making certain the hose and cord are free to move. Depress the button on the handle to extend the stabilizing pin from the base and lift the bit away from the wood. Turn on the motor and then slowly release the button to plunge the bit into the wood. Advancing at a slow but constant speed, cut a groove to the top corner. Turn off the motor, depress the handle button to withdraw the bit from the groove, reverse the direction of the machine, and insert the bit into the beginning of the groove just cut. Then turn the motor on and cut to the bottom corner. Repeat the procedure on the other side and top. When grooving a hinged window, also cut the sill side.



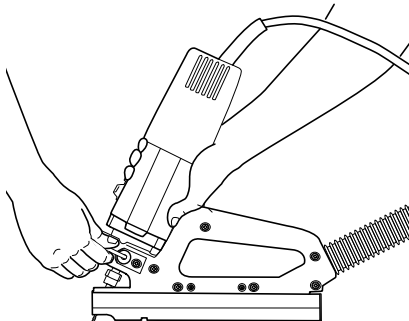
ADJUSTING THE BIT: The cutting bit is installed and adjusted without removing the motor from the tool body. Begin by loosening the clamping screw with the allen key and rotating the adjusting cam with the allen key to raise the motor. Insert the bit, holding the shaft with one wrench, and tighten the collet nut with the second wrench. Then rotate the adjusting cam until the bit protrudes 3/16" to 1/4" from the bottom of the base. Always use our custom-made bits, since standard 1/8" carbide spiral bits are too short.

RECOMMENDATIONS:

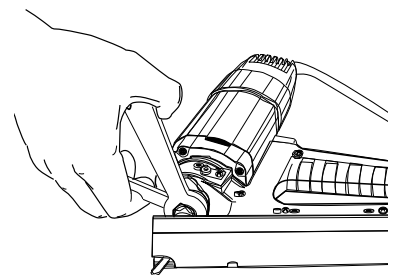
- For best control and safety, always push the tool when cutting instead of pulling backwards.
- Start the motor before plunging the bit into the wood, and turn it off before withdrawing the bit from the wood.
- When reversing the direction of the machine, don't overlap the cut more than 1/2" since the kerf may become too wide when it's cut twice.
- The vacuum system helps remove the chips from the groove, which is otherwise very time consuming, so use it even if you don't care whether you make a mess. It's a good idea to unscrew the hose occasionally to blow out any large debris trapped in the tool body or hose.
- Never stretch tubeseals: before rolling them into the groove, first "tack" them in place every 6" by pressing with your finger.
- Since gaps are rarely identical on all sides of a door or window, don't try to seal all the sides with one size of tubeseal. If necessary, you can even use two sizes of tubeseals on the same side: just cut off some of the foot from the smaller seal so its tube can be inserted inside the tube of the larger seal. Always butt joint cornerseals at turns, since butt joints seal better than miters and they make size changes less visible.



loosening clamping screw



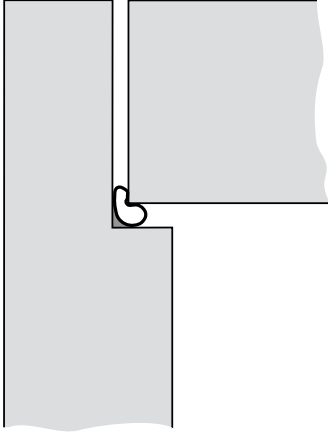
adjusting motor height with internal cam



changing bits with two wrenches

CAULK-IN CORNERSEALS

Our caulk-in cornerseals offer similar performance to the groove-in cornerseals used with our Corner-Grooving System, without the expense of specialized equipment. Since they mount on the surface, they can be used on metal jambs, on wood jambs with applied stops, on thin wood astragals, and in other situations where grooving is not possible. Installation is simple: the jambs are cleaned with a solvent (we recommend only MEK, xylene, or toluene), a small bead of high-quality silicone caulk is applied in the corner of the rabbet or stop, the appropriate seals are pressed into the wet caulk, and the seals are lightly rolled with a roller tool (WS96 or a screen roller). The sash can be closed in as little as an hour, but overnight curing is preferable. With proper preparation, the completed installation will last as long as the paint.



We offer five different sizes of superior-quality, thin-wall silicone rubber corner tubeseals to assure perfect sealing of any gap from 0 to 3/8" with virtually no noticeable increase in closing pressure. Since gaps are rarely identical on different sides of a door or window, don't try to seal all the sides with a single-size tubeseal. If necessary, you can even use two or three sizes of tubeseals on the same side: just insert the smaller seals one-half inch inside the larger seals to hide the transition. Always butt cornerseals at corners since butt joints seal better than miters and make size changes less noticeable.



WS02
5/32" OD
gaps to 1/8"



WS03
7/32" OD
gaps to 3/16"



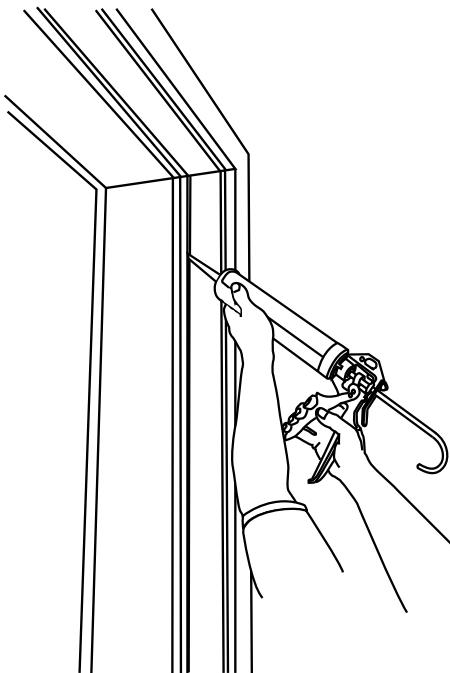
WS04
9/32" OD
gaps to 1/4"



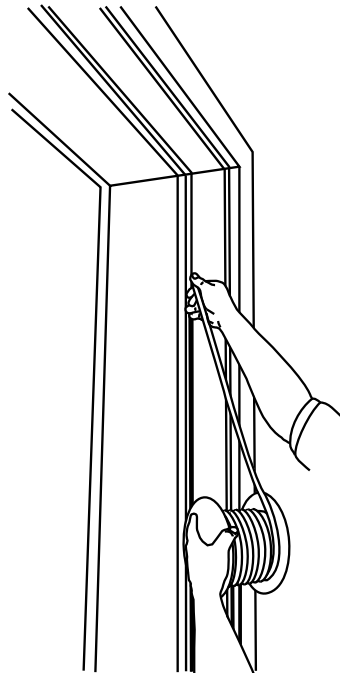
WS05
11/32" OD
gaps to 5/16"



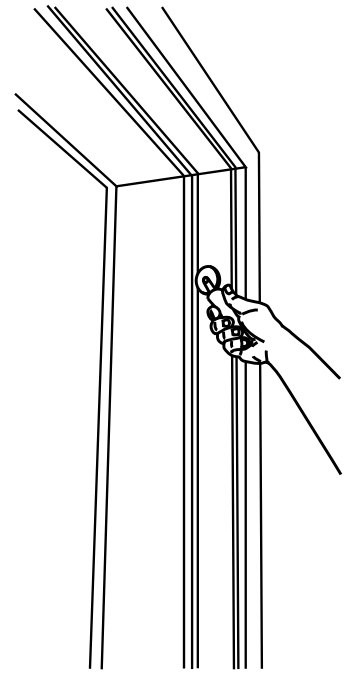
WS06
13/32" OD
gaps to 3/8"



After cleaning the jamb with MEK, xylene, or toluene (solvent cleaning is essential), apply a small bead of pure silicone caulk. A commercial-grade neutral-cure silicone caulk will yield better results than consumer-grade silicones.



Select the best size of corner tubeseal and tack it into place with your fingers. Keep the tubeseal very clean: don't let it touch the floor. Store the unused tubeseal in a plastic bag.



Using our WS96 roller tool or a screen roller, roll the tubeseal into the corner. Only very light pressure is recommended: no caulk should squeeze out. The sash can be closed in one hour.

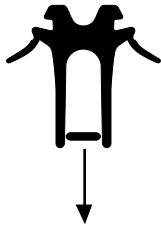
ADJUSTABLE DOOR-BOTTOM SYSTEM

Door bottom weatherseals can be located in one of three places: in the threshold, in the bottom of the door, or on the surface of the door. Grooving a seal into the bottom of the door is the most attractive of the three options and offers maximum protection from mechanical damage. The challenge is to find a system that can be easily adjusted to make a perfect seal but that is durable enough to last indefinitely without maintenance.

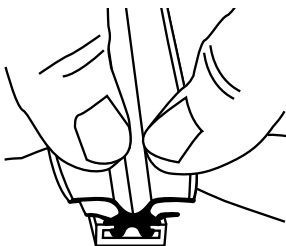
We offer a unique concealed door-bottom system based on our WS25 silicone double sweepseal and two of our WS56 aluminum channels that meets the most demanding requirements for a concealed door-bottom system. One WS56 channel is permanently screwed into a 5/8" x 1-1/8" (16mm x 28mm) groove cut in the door bottom. A WS25 silicone sweepseal is pressed into the second WS56 channel and WS93 glides are screwed into pre-drilled holes in this channel. The glides are slid into the first channel through the end of the door, so that the channel with the rubber hangs freely within the door groove. WS93 end caps snap into the channel to close the groove (remember to cut the channels 1/8" short to allow sufficient room for the end caps to fit flush).

The system is adjusted without removing the door. First, grab the rubber sweep and slide the sealing assembly out the edge of the door, popping off the end cap in the process. Then, turn the glide screws clockwise to raise the sweep or counterclockwise to lower it. Since each glide is independent, the seal can be adjusted to make a curve to follow dips in worn thresholds. Finally, slide the sealing assembly back into the door and replace the end cap. The entire process only takes a few minutes and results in a perfect fit. Unlike other adjustable door bottom systems, there are no moving parts, so there's nothing to jam from corrosion or dirt. Since the sweepseal can be easily adjusted for wear, replacement is rarely needed.

Use at least one WS93 glide per each foot of door width, and order extra for uneven thresholds. Be certain to use pewter-finish WS56 for the channel that screws into the door bottom. Mill-finish WS56 channel is unfinished aluminum and will oxidize with time, making it difficult to remove the seal assembly for adjustment. The pewter-finish channel is clear-anodized aluminum that resists oxidation and assures the glides will slide freely for many years. Although mill-finish channel can be used for the second channel that holds the WS25, to avoid confusion we suggest using the pewter finish for both.

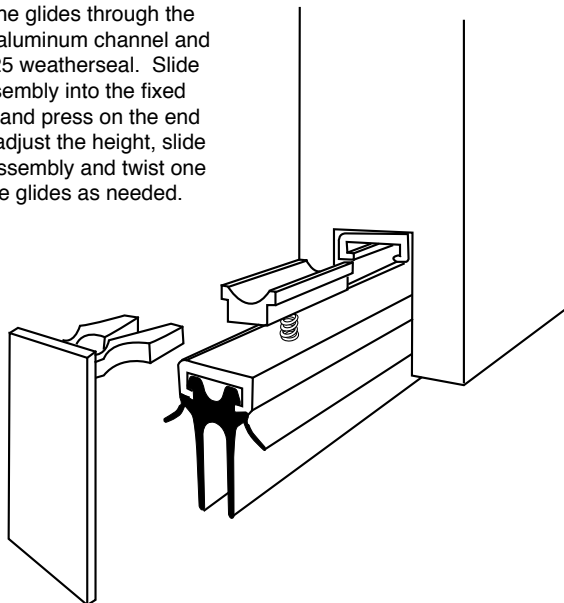


WS25 is manufactured with a "bridge" that helps it keep its shape. Tear this out carefully before installation.



Insert WS25 silicone into WS56 channel by spreading the flaps with your thumbs while pressing firmly. It helps to insert only one lip at a time. A WS96 roller tool can be used to speed insertion. Do not use lubricants!

Screw the glides through the movable aluminum channel and the WS25 weatherseal. Slide the assembly into the fixed channel and press on the end cap. To adjust the height, slide out the assembly and twist one or more glides as needed.

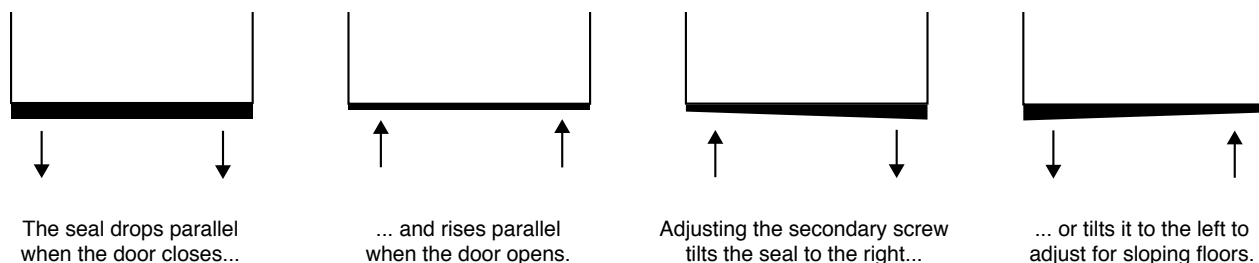


AUTOMATIC DOOR-BOTTOM SYSTEM

Where there is no threshold, or where the interior surface is as high as the threshold, even the best constant-height door bottom seals, such as our Adjustable Door Bottom System, will rub and can jam as the door opens. This situation is common in commercial buildings where thresholds would present a trip hazard, in tropical regions where it is popular to design tile or wood floors that extend seamlessly to the exterior, in vestibules with thick interior floor mats or rugs, and in any building where the floor slopes upward significantly towards the interior so that the clearance under the door decreases as the door opens.

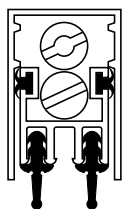
A simple solution is to use an automatic door bottom, a device that drops from the door bottom each time the door closes and retracts each time the door opens. Unfortunately, most automatic door bottoms drop first on the hinge side of the door and then pivot down to seal the rest of the door bottom. Since this motion does not occur instantly, but rather over the last few inches of door travel, it creates drag and resistance as the door closes and then again when the door is opened. Automatic door bottoms of this type easily jam and can only be cleaned and repaired by removing the door.

We offer a unique automatic door-bottom system that uses a scissors mechanism to cause the door bottom to raise and lower in a parallel motion that creates rapid contact when the door closes and instant breakaway when the door opens. Both the height and the tilt angle can be adjusted without removing the door, and the entire mechanism slides out of the door edge for cleaning and repair. Three grooves at the bottom of the operable part of the mechanism can hold from one to three of our standard door bottom seals, including flexible silicone sweeps and durable nylon brushes. Silicone rubber side wipers prevent air from short-circuiting around the operable mechanism.



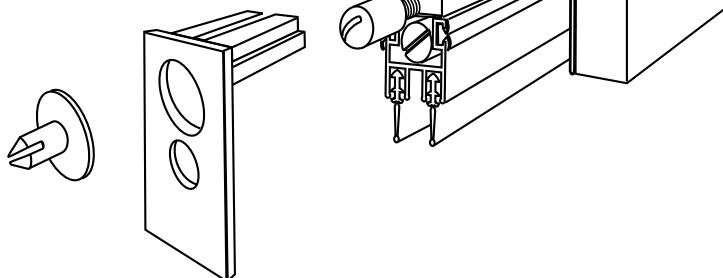
INSTALLATION: The system consists of two main parts: an outer U-shaped mounting channel that is screwed into 3/4" (19mm) wide and 1-1/8" (28mm) deep groove cut into the door bottom, and an inner operating mechanism that slides into the mounting channel. The assembly is cut 1/4" shorter than the door width by sliding the operating mechanism as far as possible into the mounting channel before cutting the latch-side end with a miter saw (maximum cut 4"). After cutting, slide out the operating mechanism, attach the end caps to the mounting channel, position the channel so that the caps are flush at both ends, and screw the channel in place. Note that the channel must drop freely into the door-bottom groove: a snug fit will create problems!

Remove the end cap on the hinge side of the door. Close and open the door several times so that the large push button makes small imprint on the jamb. Drill a 1/4" diameter hole at the mark and press in the round plastic bearing plate. Slide out the operating mechanism and insert the silicone-rubber sweepseals (WS17, WS18, WS19) or nylon-brush sweepseals (WS62, WS64, or WS66) so that they are flush with the ends of the movable channel. Then slide the mechanism back into place and insert the end cap. Turn the adjusting screws so that the seals just barely touch the threshold or floor when the door is closed.



Turn the top screw to adjust the length of travel and the bottom screw to adjust the tilt angle. Insert 1-3 WS17, WS18, WS19, WS62, WS64, or WS66 to seal gaps up to 1-1/8". Note the replaceable side wipers that prevent air-flow around the operable mechanism.

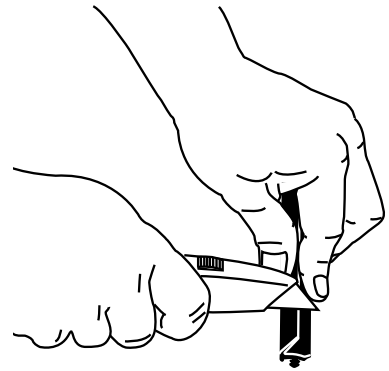
Screw the mounting channel inside a 3/4" x 1-1/8" groove (must be loose fit). Slide the operating mechanism into the fixed channel as shown and press on the end caps. Mount the plastic bearing plate on the jamb opposite the upper screw.



INSTALLATION TECHNIQUES

WORKING WITH SILICONE RUBBER: Most of our silicone seals have a mineral talc coating which keeps them clean and makes them easier to install and use. Cornerseals WS02, WS03, WS04, WS05, and WS06 are made without talc since it would interfere with adhesion: as a result, they act like magnets for dirt, so keep them sealed until the moment they are to be installed. If these cornerseals do get dirty, clean them by pulling through a clean cloth wet with toluene, xylene, or MEK solvent available from a paint store. Always wear protective gloves when using solvent.

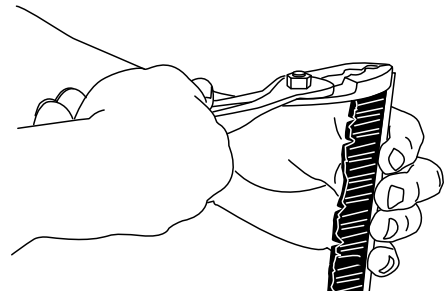
Small seals can be cut with a scissors, but large seals should be cut with a sharp knife against a block of wood, preferably pre-grooved to hold the seal. Tubeseals should be cut square and butted at corners since miter cutting or bending around the corner without cutting will create more air leakage. Flipperseals can also be butted, but they look and seal better if carefully mitered while the seal is compressed to the recommended gap-spacing. We do not recommend trying to caulk corners with silicone caulk since it doesn't work very well and corner leakage is rarely significant with careful cutting.



Avoid stretching jamb seals during installation since silicone has an excellent memory and will try to pull back to its original shape, possibly creating a gap at the corners. First cut the seals to the full length required and "tack" in the two ends by pressing with your finger. Then tack in the middle, then the middle of each half, then the middle of each quarter, and so on until the seal has been tacked in slightly every six to eight inches. Then seat the seal fully by rubbing with a finger or rolling with WS96.

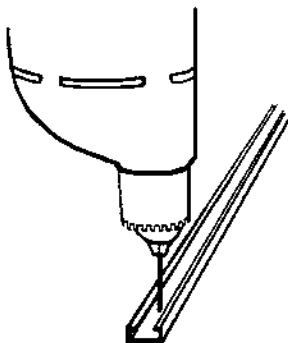
If grooves are cut to specifications, our silicone seals will never loosen and fall out. We recommend our custom router bits for the best fit, but grooves can be cut on any table saw or shaper equipped with an effective hold-down system to avoid widening the ends of a cut. If the grooves are cut too wide, apply some silicone caulk for the first few inches.

WORKING WITH NYLON BRUSHES: Cut the steel backing of WS62, WS64, or WS66 nylon brushes with a tin snips, pliers, or a hacksaw. To keep the bristles from falling out, use a pliers to pinch the ends of the metal closed as shown in the illustrations. The brushes should slide freely into WS40 or WS42 channel so they can be easily replaced in the future if they wear. Since cutting the brush often deforms the backing or leaves burrs that make it too large for the aluminum channels, it may be necessary to lightly file the ends of the steel backing until the brush enters easily. On the other hand, if the brush is too loose, bend the backing very slightly in a few places so that it will spring tightly against the sides of the aluminum channel.

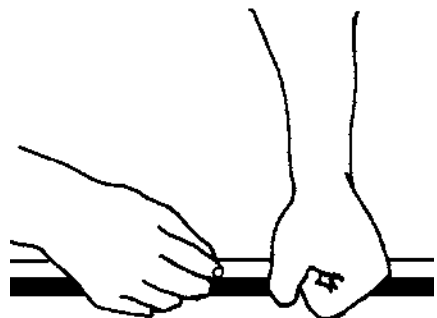


WORKING WITH ALUMINUM CHANNEL: Aluminum channel can be cut with a hacksaw and miter box, or with an electric miter saw. When using a miter saw, use a blade designed for non-ferrous metals, apply lubricating wax to the blade, and clamp thin metal channels tightly between a block of wood and the fence. When cutting several channels to the same length, nest them together tightly, tape the bundle, and then cut them all at the same time.

WS50 and WS56 channels are supplied pre-drilled, but it may be necessary to drill additional holes near the ends: this can be done with an ordinary twist bit. WS50 channel is attached with special screws (included) that can be driven in like nails yet hold like screws and can be removed with a screwdriver. These fasteners are very small and difficult to handle, so we offer a special setting tool WS94 to get them started. A screw is inserted into the hollow center of the tool so that the tip protrudes from the end, and the tool is struck with a hammer. The screw is then set the remainder of the way with a nail set.




WS42 aluminum channels are fastened with concealed plastic clips that are screwed into a window, door, or jamb. Locate the center of the clips using the measurements in the installation drawings, fasten them with the screws provided, and then align the clips using the edge of the channel as a straight-edge. Position the large groove on the back of the channel over the clips and strike the channel firmly with your fist or a rubber mallet. The channel will snap onto the clips and will grip tightly. To remove WS42 from a door bottom, simply slide it sideways; to remove WS42 from a door jamb, pry it off one clip at a time.



JAMB SEALS FOR HINGED WINDOWS AND DOORS

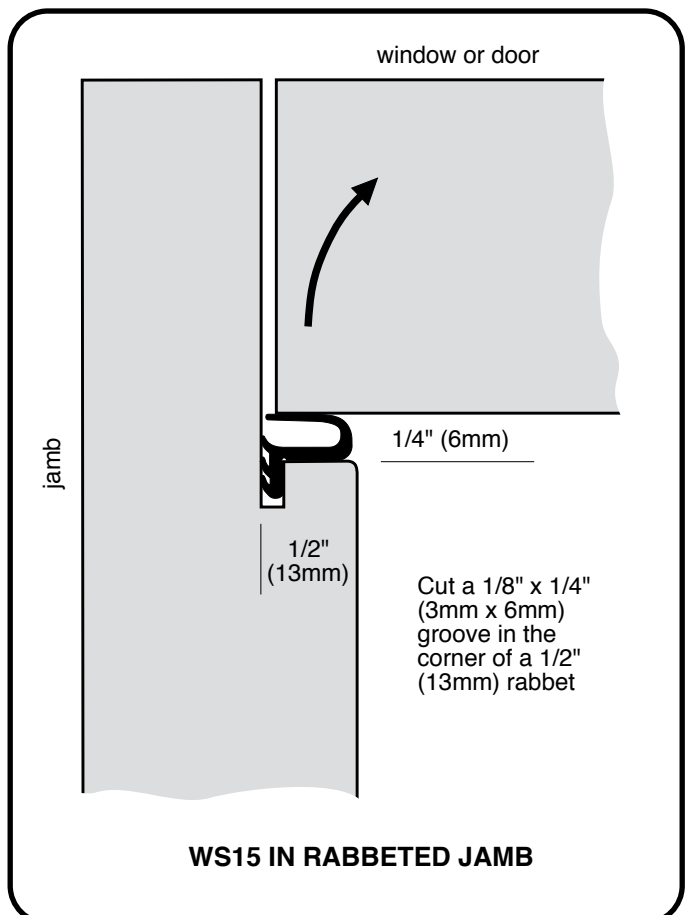
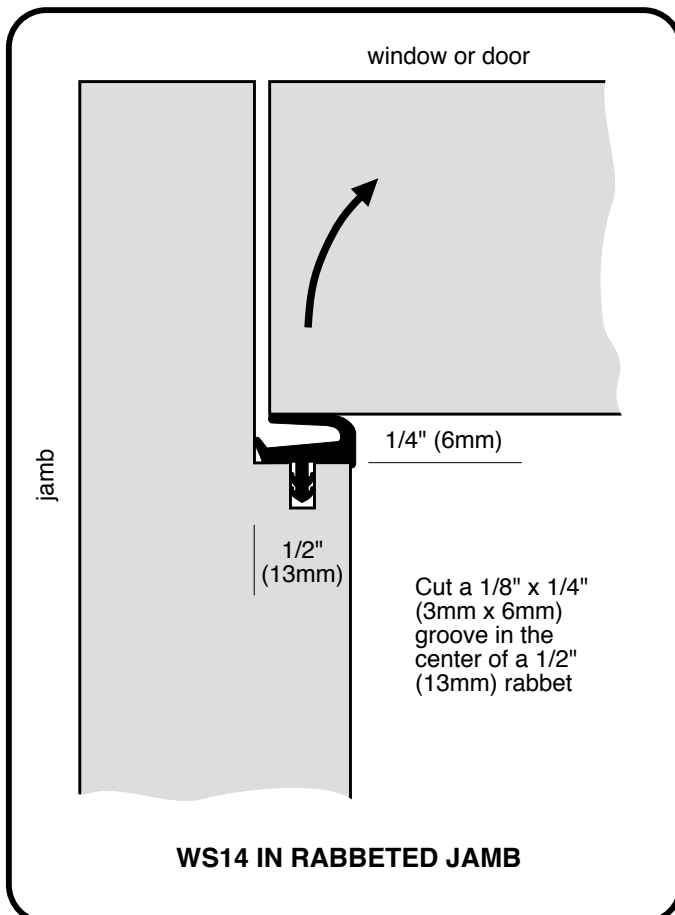
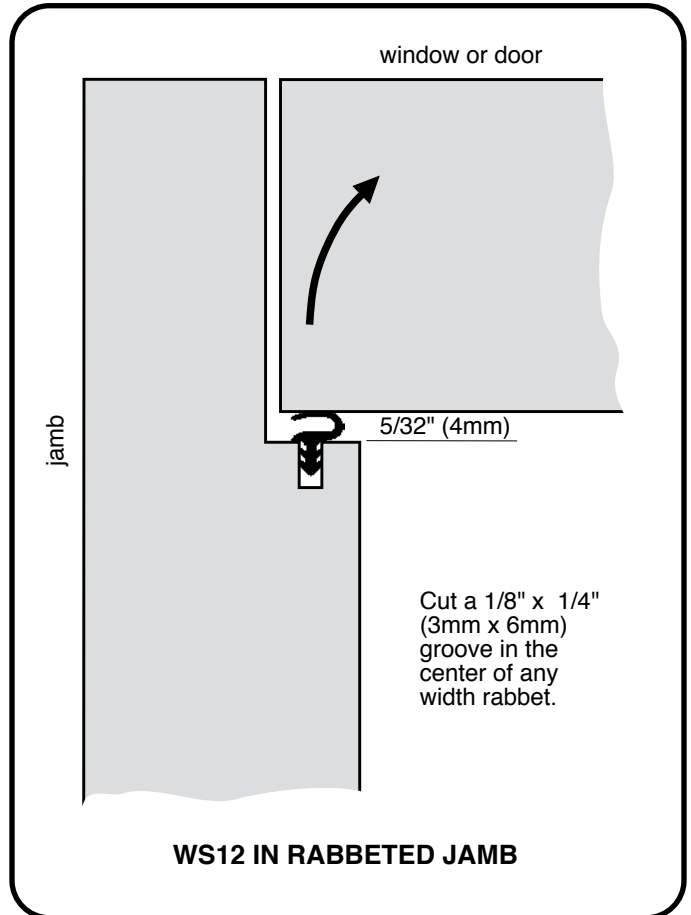
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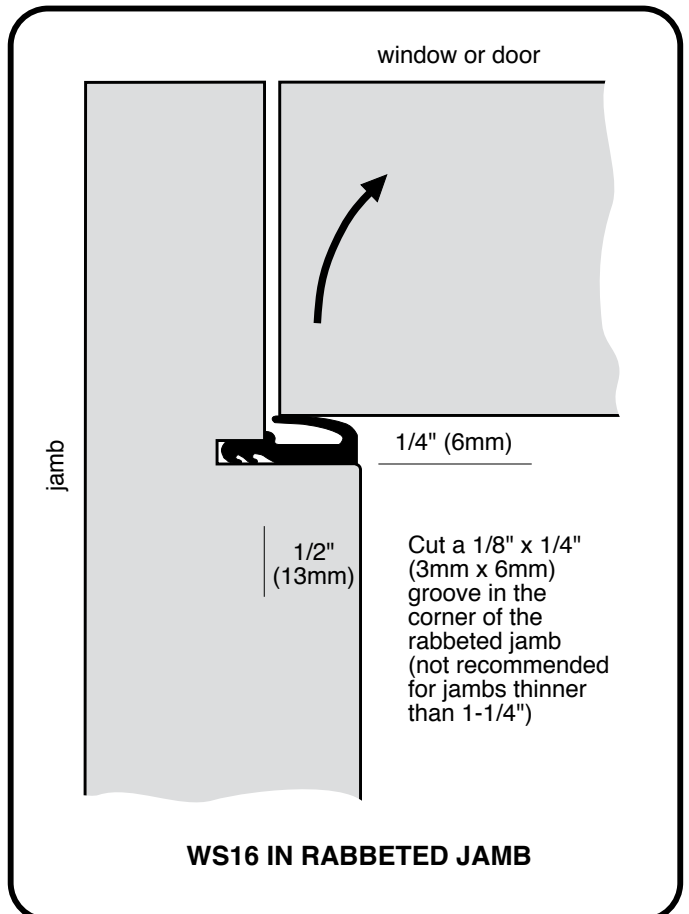
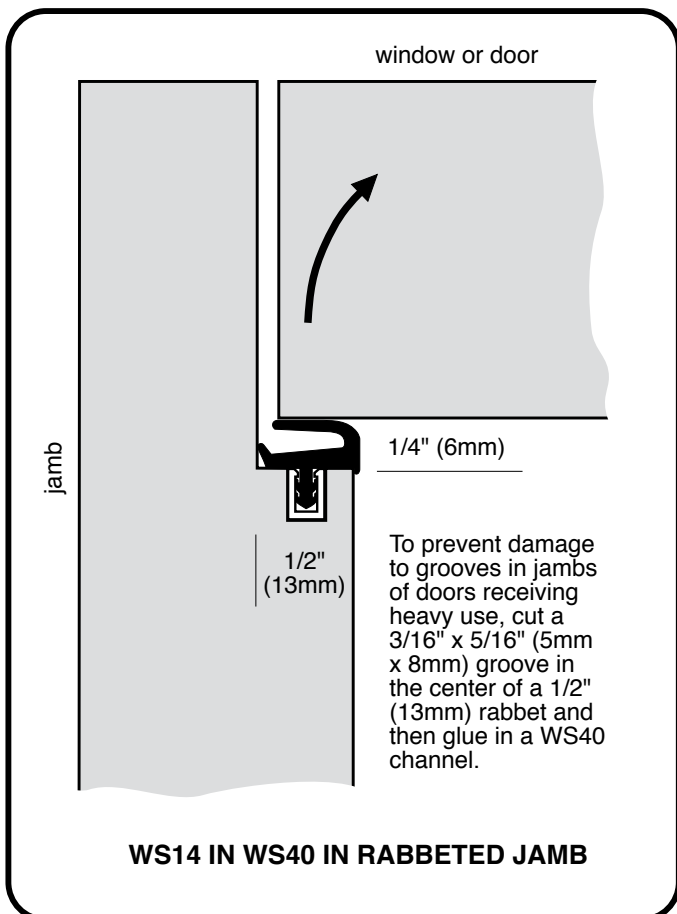
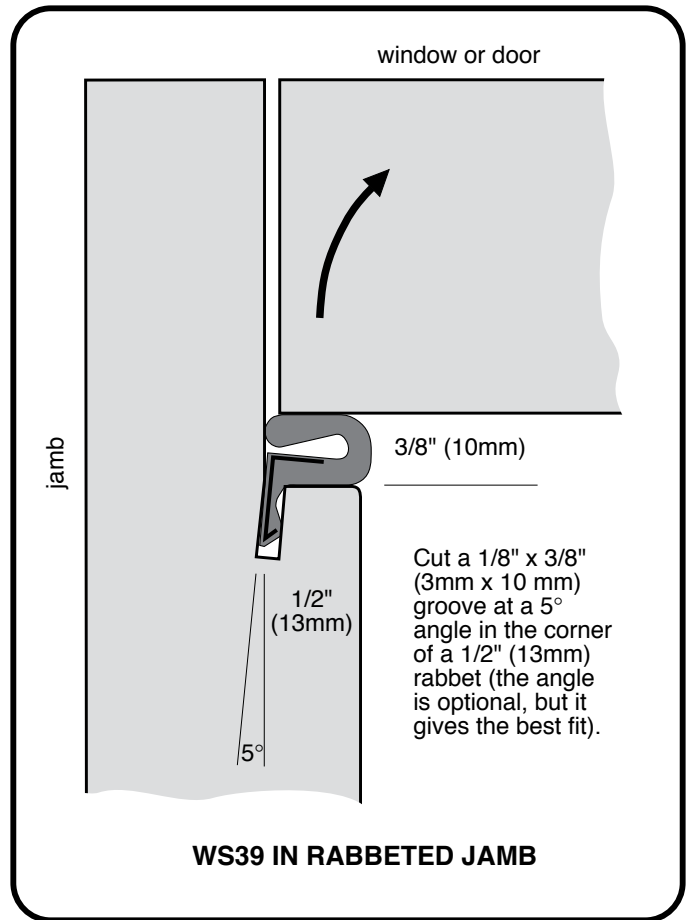
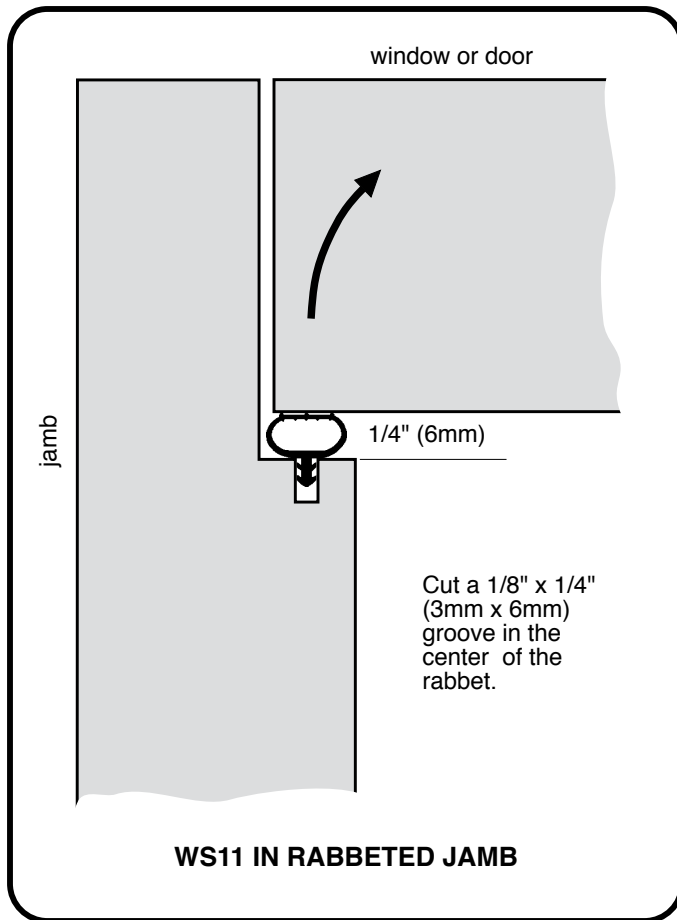
The curved arrow  shows the direction of motion of the window or door as it swings open.

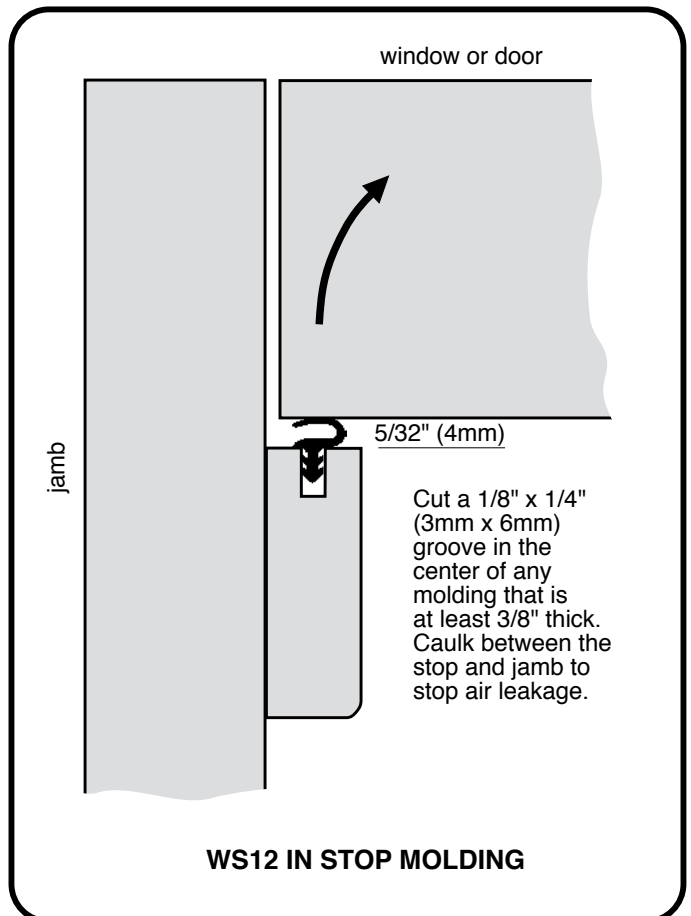
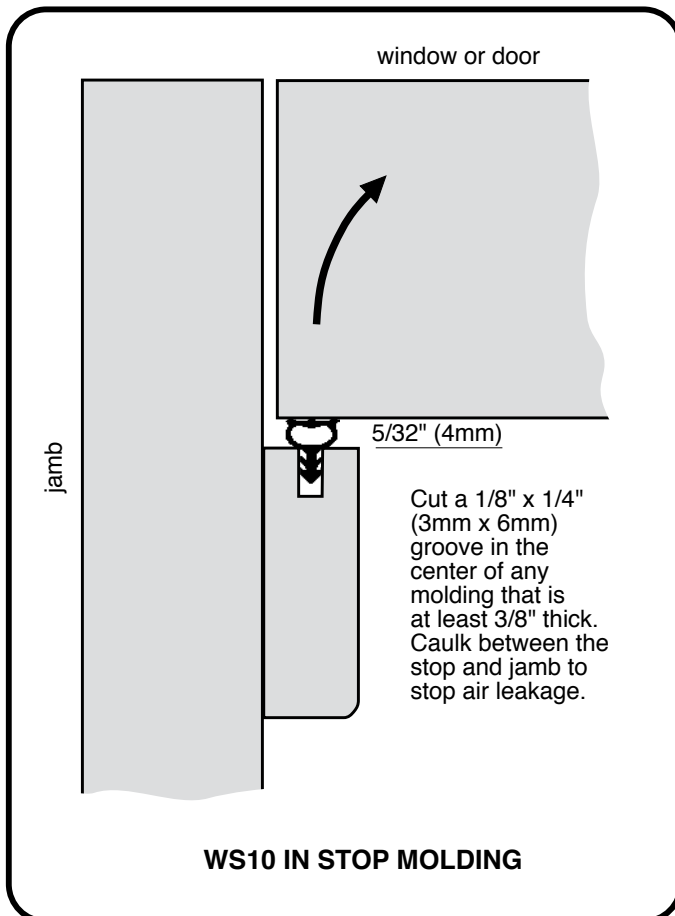
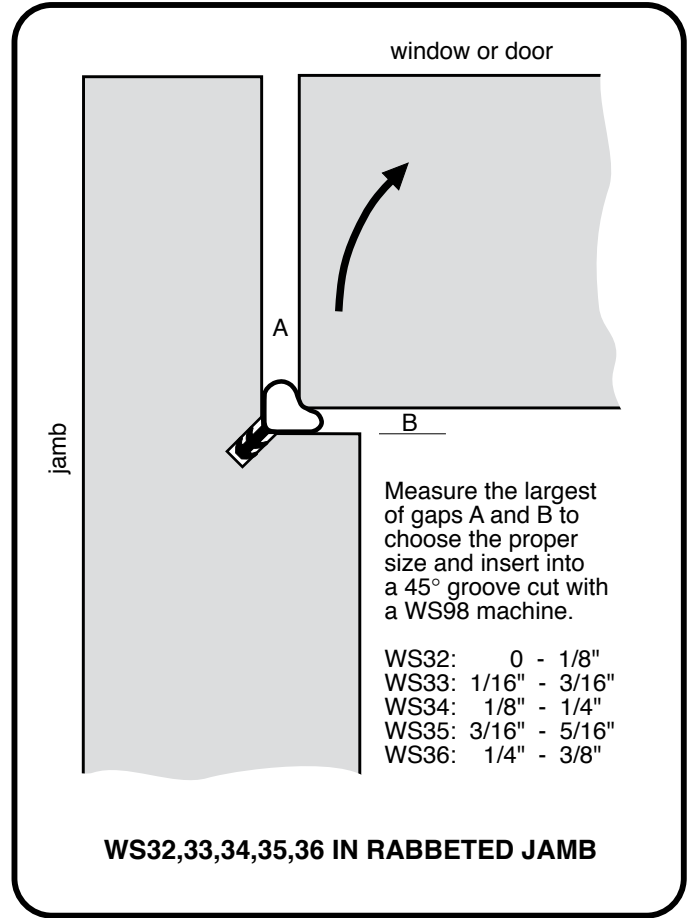
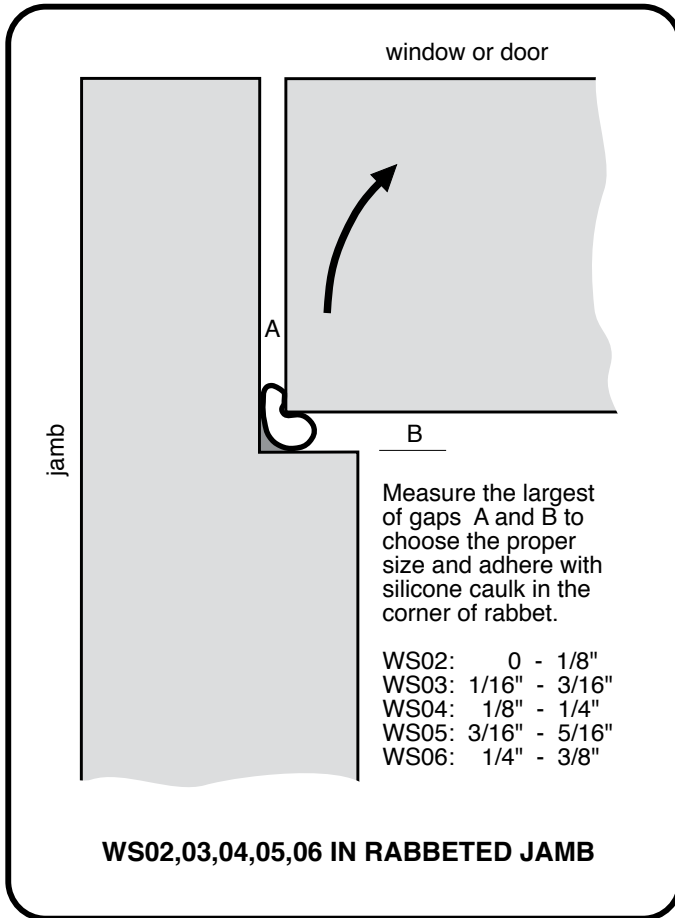
For new work, choose a shape designed to seal to the exterior face of the window or door. Allow the clearances shown and pre-groove the jambs or stops before assembly. A WS90 router bit (3mm x 6mm) will speed installation.

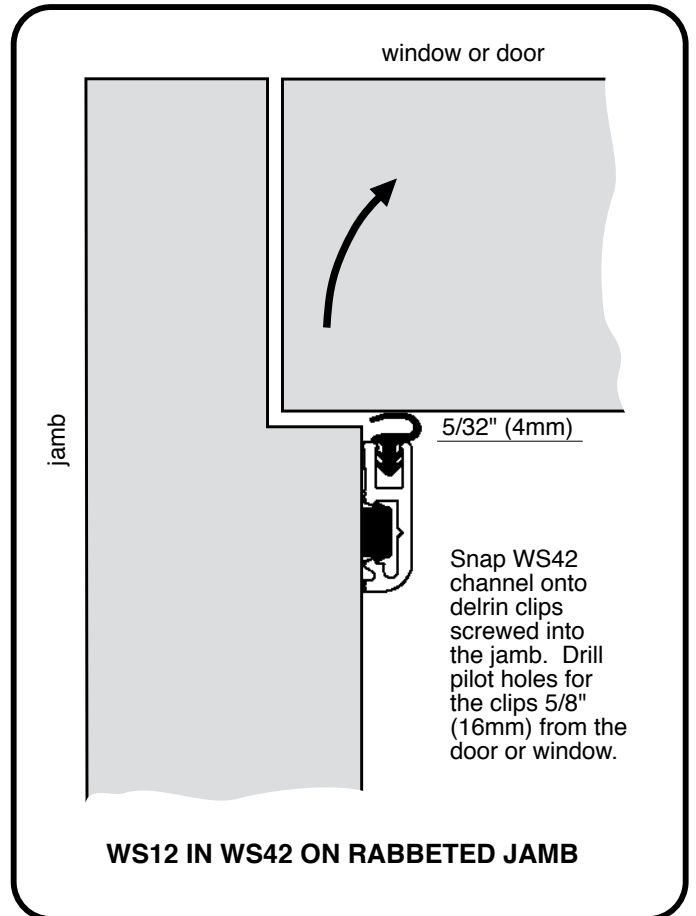
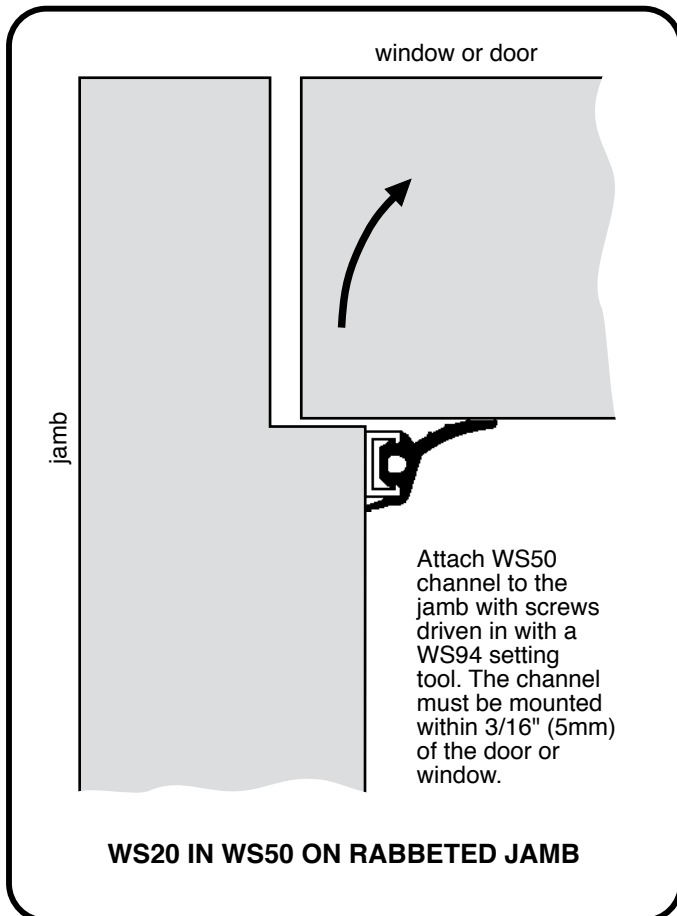
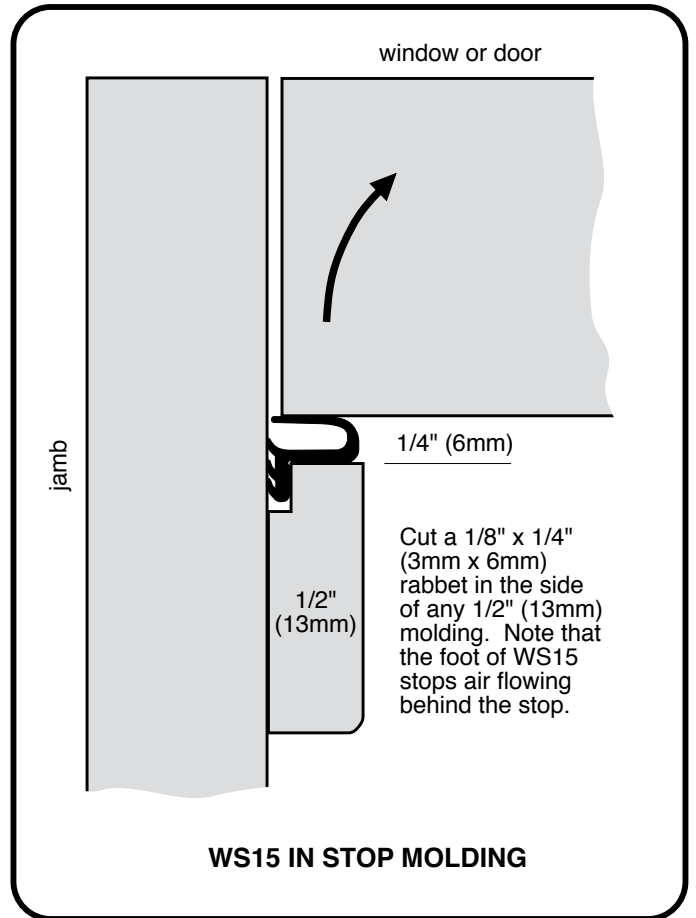
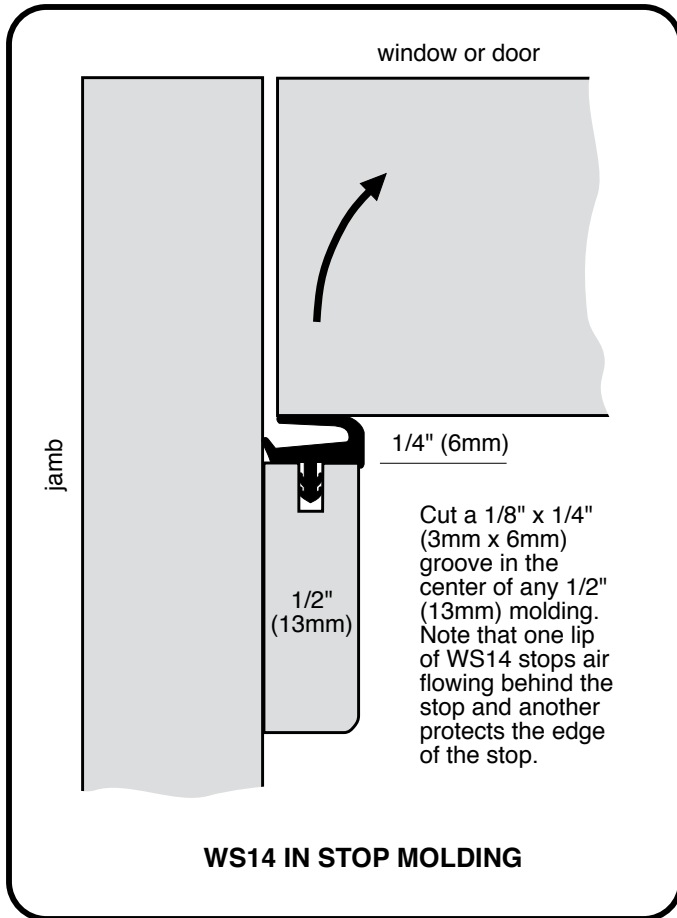
For retrofit work use a stop applied to the jamb, use WS02 – WS06 which are caulked in place, or use WS32 – WS36 which are installed in a corner groove cut with a WS98 machine.

Flipperseals such as WS12, WS14, or WS15 are recommended for doors. Tubeseals such as WS10 or WS11 can give excellent seals but require close tolerances and should not be used with warp-prone woods or sloppy hardware.









BOTTOM SEALS FOR WINDOWS AND DOORS

NOTES:

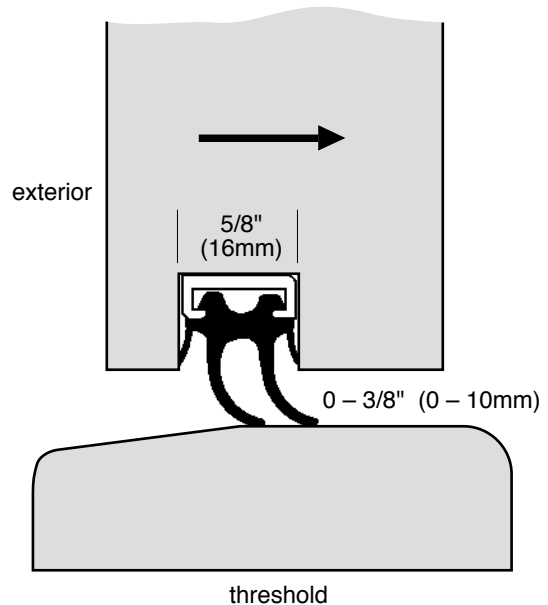
The following drawings show door bottoms, but many of the same techniques can be used for the bottoms of inward-swinging windows.

The arrow symbol \longrightarrow indicates the direction of motion of a door or window as it opens. This can be horizontal with hinged doors or windows, or vertical with overhead doors or double-hung windows.

All bottom seals are designed to be used with thresholds so that the seal only makes contact when the door or window closes.

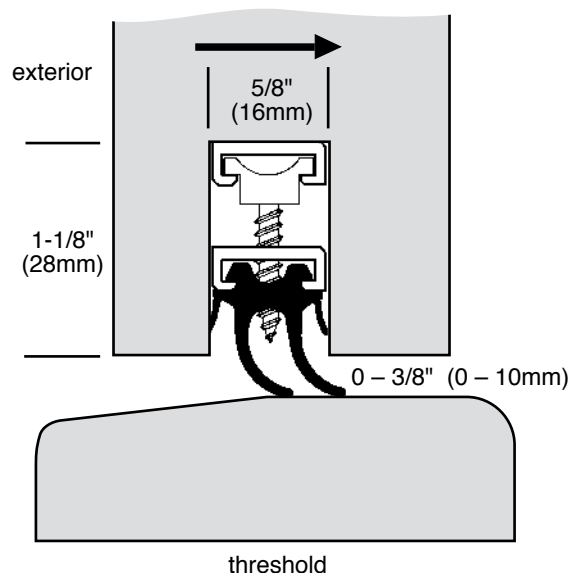
Use silicone sweepseals with smooth thresholds such as wood, metal, or marble; use nylon brushseals with rough thresholds such as brick or concrete. Excessive bending will shorten the life of either and may cause binding.

Cut a 5/8" (16mm) wide groove so that the groove depth plus the largest gap at the bottom totals 13/16" (20mm). Screw in the channel, shimming as necessary to compensate for uneven thresholds.



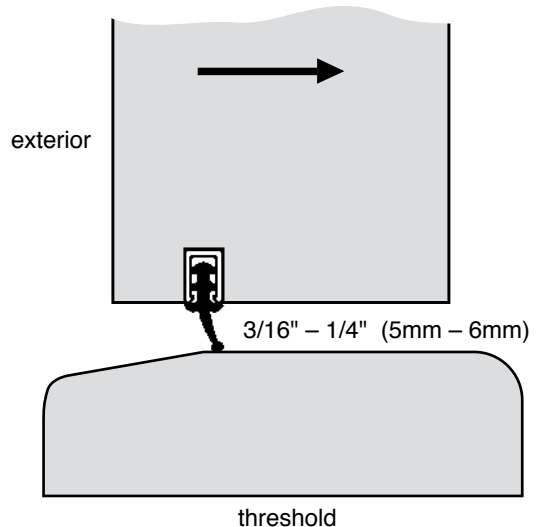
WS25 IN WS56 IN BOTTOM

Screw one *pewter* finish WS56 channel into the groove. Insert WS25 sweep into a second WS56 channel and screw three or four WS93 glides into the second channel and through the rubber. Twist the glides in or out to adjust the height and slide the sweep assembly into the fixed channel.



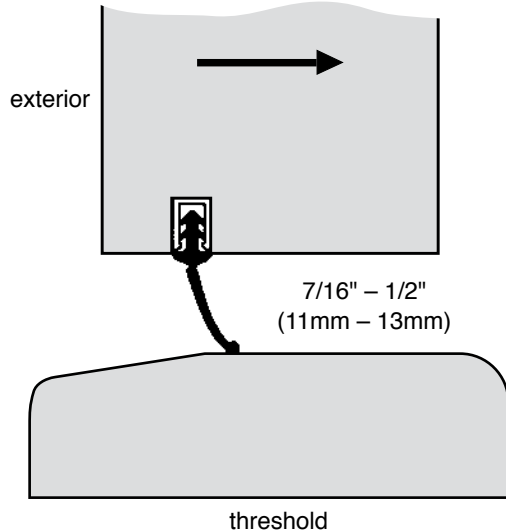
ADJUSTABLE VERSION OF WS25 IN WS56

Install a WS40 channel into a 3/16" x 5/16" (5mm x 8mm) groove and insert a WS17 sweepseal. If the bottom gap is less than 3/16", recess the WS40 into the wood. WS40 will stay in place with friction alone, but using glue will seal the wood better in very wet locations. While WS17 could also be inserted directly into wood, WS40 significantly improves the pullout resistance.



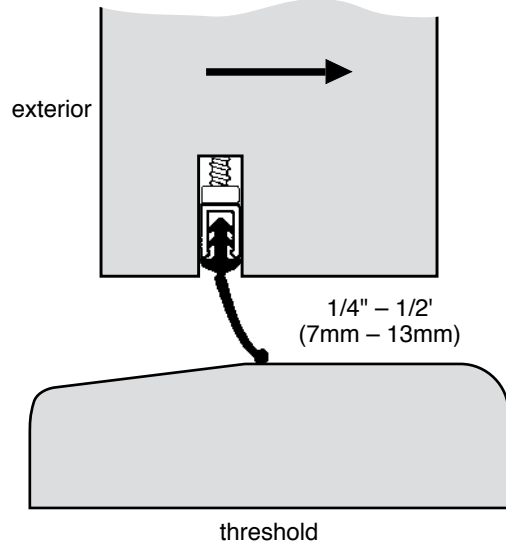
WS17 IN WS40 IN BOTTOM

Install a WS40 channel into a $\frac{3}{16}$ " x $\frac{5}{16}$ " (5mm x 8mm) groove and insert a WS18 sweepseal. If the bottom gap is less than $\frac{7}{16}$ ", recess the WS40 into the wood. WS40 will stay in place with friction alone, but using glue will seal the wood better in very wet locations. While WS18 could also be inserted directly into wood, WS40 significantly improves the pullout resistance.



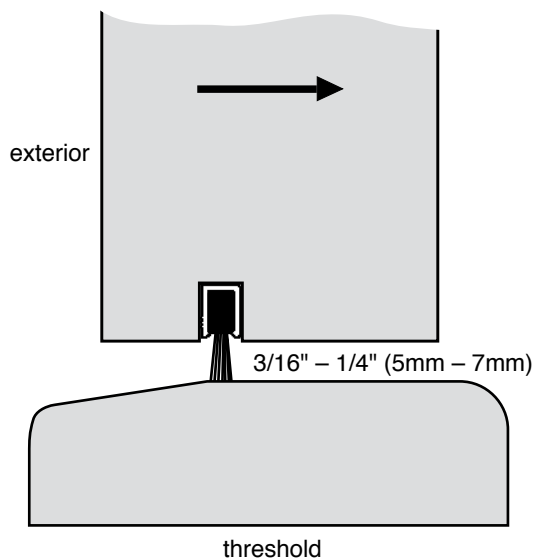
WS18 IN WS40 IN BOTTOM

To make a WS18 sweepseal adjustable, cut a $\frac{3}{16}$ " x $\frac{5}{8}$ " (5mm x 16mm) groove and insert #4 x $\frac{3}{4}$ " screws at the base of the groove to limit the depth of penetration of the WS40. Although doors must be removed to adjust the screws, no re-grooving or shimming is required. Substitute WS17 for gaps less than $\frac{1}{4}$ " (6mm).



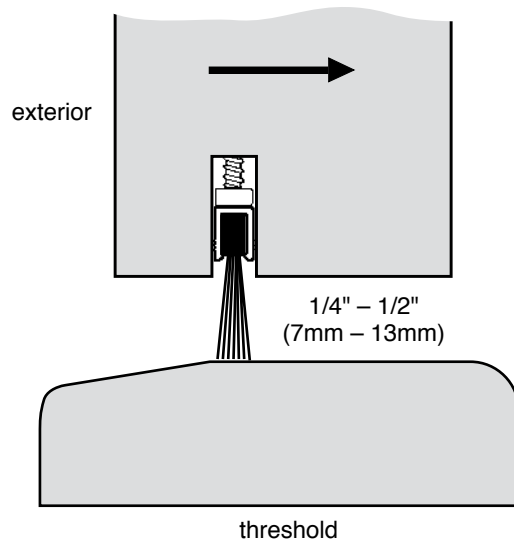
ADJUSTABLE VERSION OF WS18 IN WS40

Install a WS40 channel into a $\frac{3}{16}$ " x $\frac{5}{16}$ " (5mm x 8mm) groove and insert a WS62 brushseal. If the bottom gap is less than $\frac{3}{16}$ ", recess the WS40 into the wood. WS40 will stay in place with friction alone, but using glue will seal the wood better in very wet locations. If the bottom gap is larger than $\frac{1}{4}$ ", use WS64 or WS66.



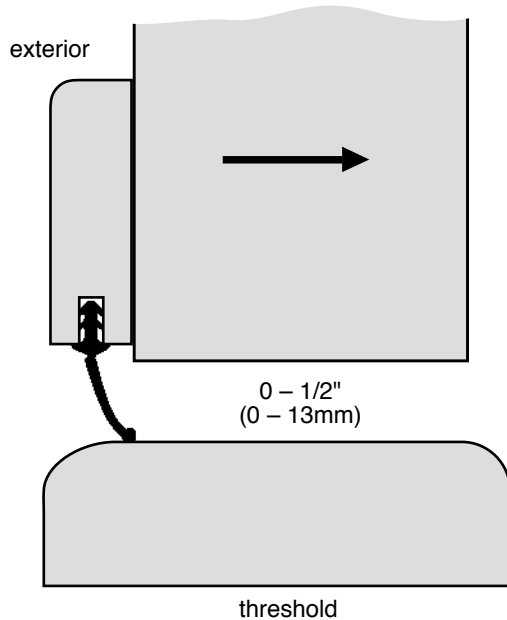
WS62 IN WS40 IN BOTTOM

To make a WS64 brushseal adjustable, cut a $\frac{3}{16}$ " x $\frac{5}{8}$ " (5mm x 16mm) groove and insert #4 x $\frac{3}{4}$ " screws at the base of the groove to limit the depth of penetration of the WS40. Although doors must be removed to adjust the screws, no re-grooving or shimming is required. Substitute WS62 for smaller gaps and WS66 for larger gaps.



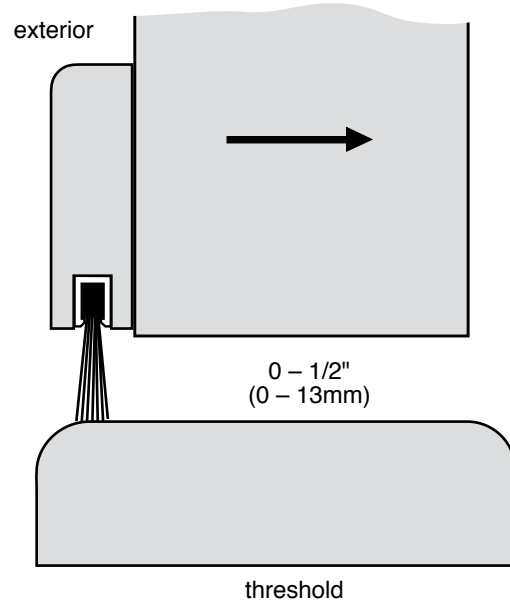
ADJUSTABLE VERSION OF WS64 IN WS40

Cut a 1/8" x 1/4" (3mm x 6mm) groove in any molding and screw the molding to the exterior surface so that the sweep just begins to bend. WS17 can be used for gaps 0 – 1/4" (0 – 6mm).



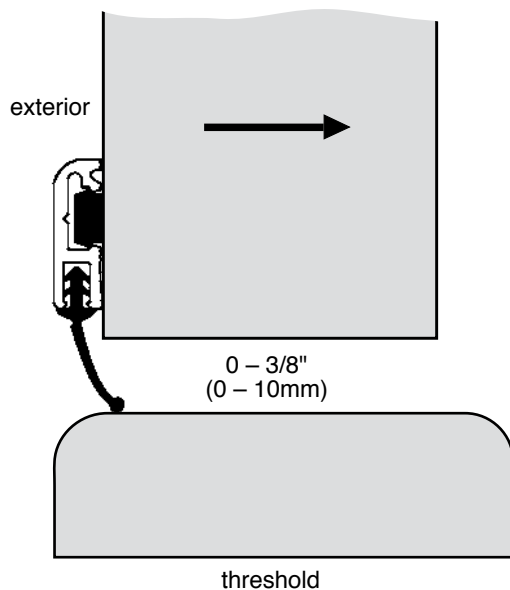
WS18 IN SURFACE MOLDING

Cut a 3/16" x 5/16" (5mm x 8mm) groove in any moulding, glue in WS40 channel, and screw the molding to the exterior surface so that the brush just begins to bend. WS62 can be used for gaps 0 – 1/4" (0 – 6mm); WS66 for gaps 0" – 3/4" (0 – 19mm).



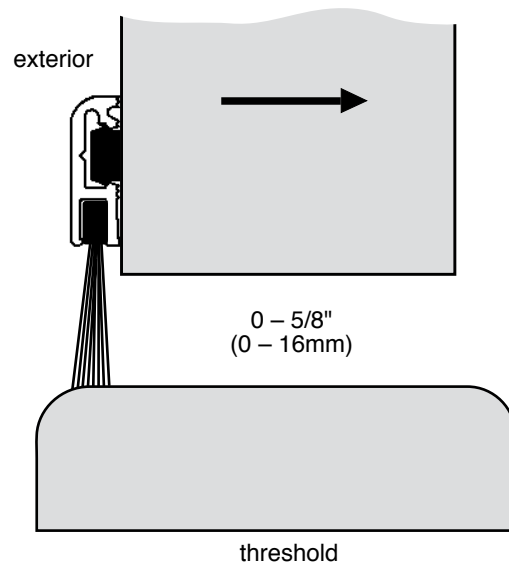
WS64 IN WS40 IN SURFACE MOLDING

WS42 channel snaps onto delrin clips (included). Drill screw pilot holes for the clips 5/16" (8mm) below a pencil line drawn at the top of the channel when the sweep is just slightly bent. The bottom of the channel should be above the bottom of the door or window.



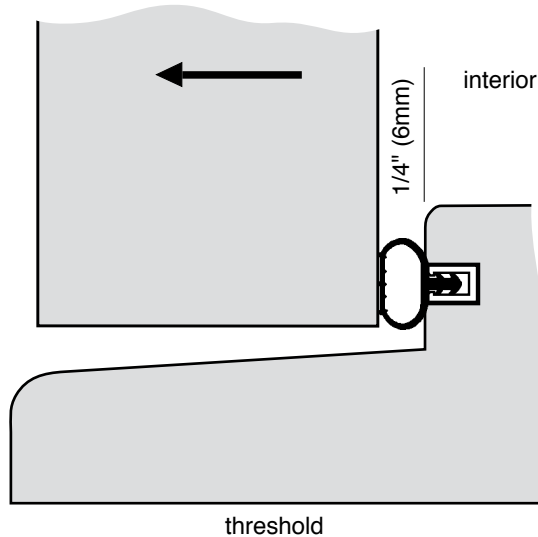
WS18 IN WS42 ON SURFACE

WS42 channel snaps onto delrin clips (included). Drill screw pilot holes for the clips 5/16" (8mm) below a pencil line drawn at the top of the channel when the brush is just slightly bent. The bottom of the channel should be above the bottom of the door or window. WS64 can be used for gaps 0 – 3/8" (0 - 10mm).



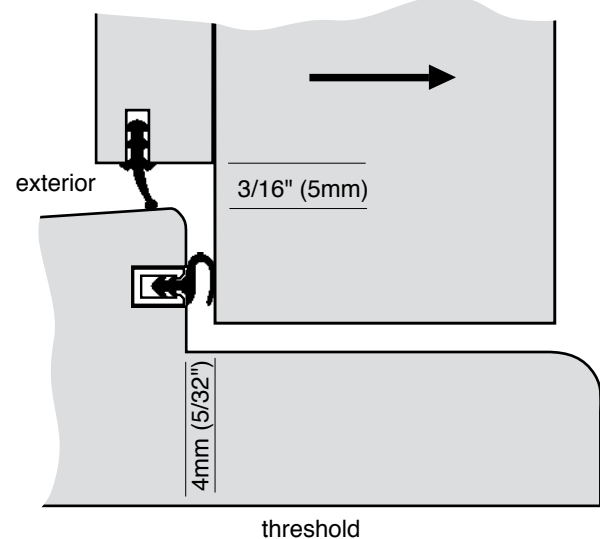
WS66 IN WS42 ON SURFACE

The bottoms of outward-swinging doors can be sealed with silicone tubeseals or flipperseals grooved into the edge of a rabbeted threshold. This method gives excellent results because the seals on all four sides of the door are continuous. WS11 is shown, but WS10, WS12, WS14, or WS15 could be used. WS40 should always be glued into the threshold to seal the groove.



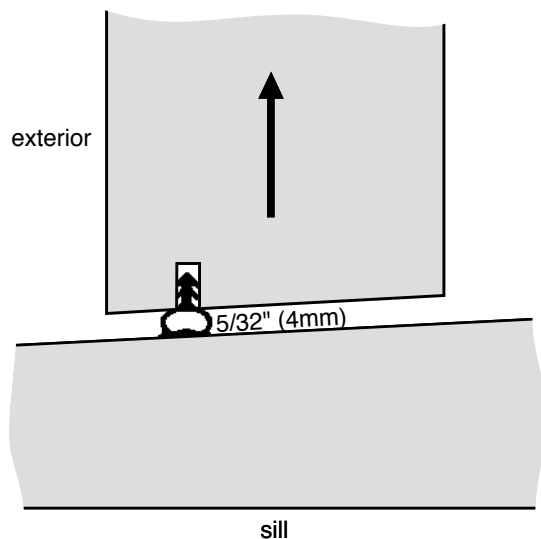
WS11 IN WS40 IN RABBET

Rabbeted threshold seals are feasible for inward-swinging doors, provided an exterior rain diverter stops water from running over the threshold. The threshold edge seal becomes the air seal only. Here WS17 is shown grooved into a wood molding applied to the exterior surface and WS12 in WS40 is grooved into the threshold, but other variations are possible.



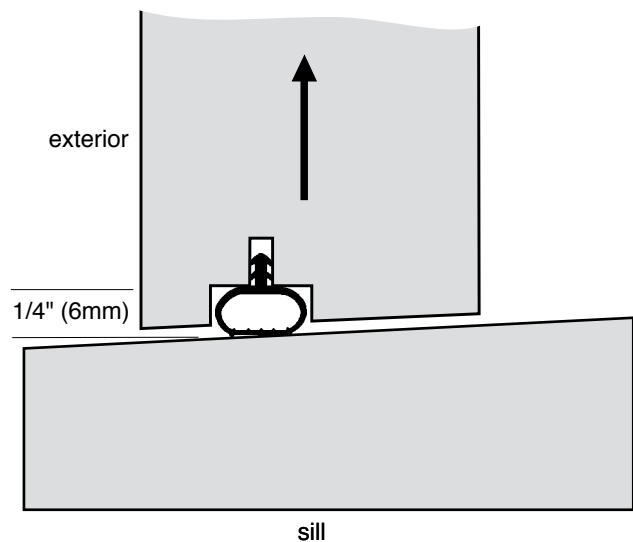
WS17 IN MOLDING + WS12 IN WS40 IN RABBET

This detail shows the bottom of the inner sash of a double-hung window, but without the tapered sill it could also be the outer double-hung sash or the sides of a sliding window or door. Cut a 1/8" x 1/4" (3mm x 6mm) groove in the bottom of the sash and insert a WS10. If a 1/4" gap would be more appropriate, use WS11.



WS10 IN BOTTOM

When clearances are smaller than the 1/4" (6mm) required for standard mounting of WS11, cut a wide shallow groove to hold the tubular head of the seal, and cut a 1/8" x 1/4" (3mm x 6mm) groove for the tail of the seal. This technique allows close clearances without overcompressing the seal and is useful when the gap is not uniform. The same technique can be used with WS10.



WS11 IN BOTTOM

CENTER SEALS FOR HINGED WINDOWS AND DOORS

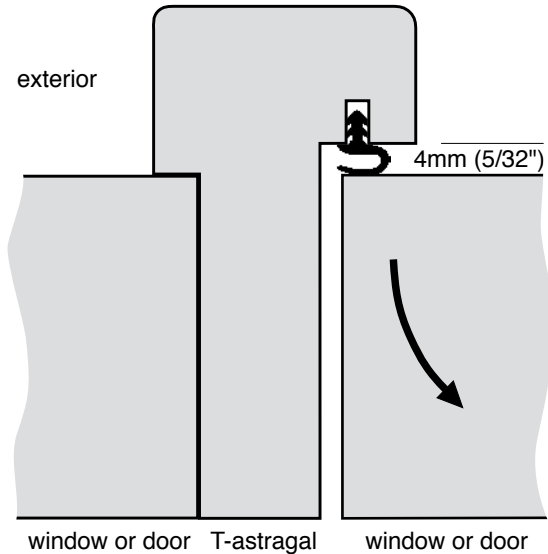
NOTES:

The following drawings show seals at the meeting point of two windows or doors: the center of a pair of french doors or windows, the center of a single-hung or double-hung window set, or the center of a set of a pair of horizontally sliding doors or windows.

The symbols show the direction of the door or window as it opens. The curved arrow indicates swinging motion on hinges. The straight arrow indicates sliding motion which could be in either a vertical or horizontal direction.

For best results, choose a design where the center seal is continuous with the jamb seals, rather than offset by a significant distance. End seals may be required when the center seal must join jamb seals in two different planes.

Cut a 1/8" x 1/4" (3mm x 6mm) groove into a T-astragal. The astragal must be thick enough to resist splitting under the impact of closing and must be rabbeted to allow the proper gap. WS10, WS11, WS14, or WS15 could be used in a similar manner with appropriate gaps.



WS12 IN T-ASTRAGAL

Cut a 45° groove cut with a WS98 grooving machine. Measure the largest of gaps A and B to choose the proper size seal:

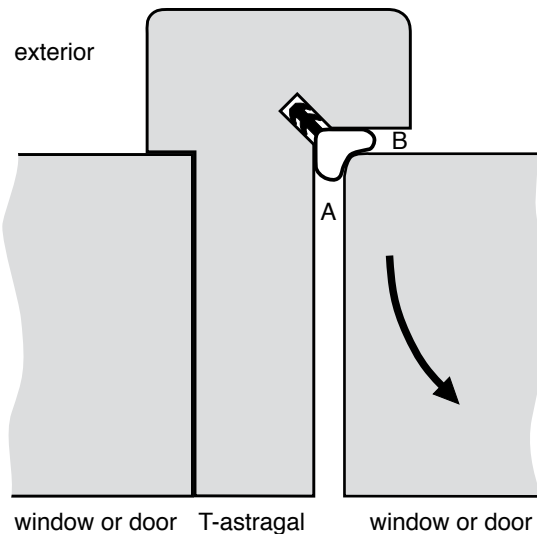
WS32: 0 – 1/8"

WS33: 1/16" – 3/16"

WS34: 1/8" – 1/4"

WS35: 3/16" – 5/16"

WS36: 1/4" – 3/8"



WS32,33,34,35,36 IN T-ASTRAGAL

Adhere the tubeseal in the corner of the astragal with a fillet of silicone caulk. Measure the largest of gaps A and B to choose the proper size seal:

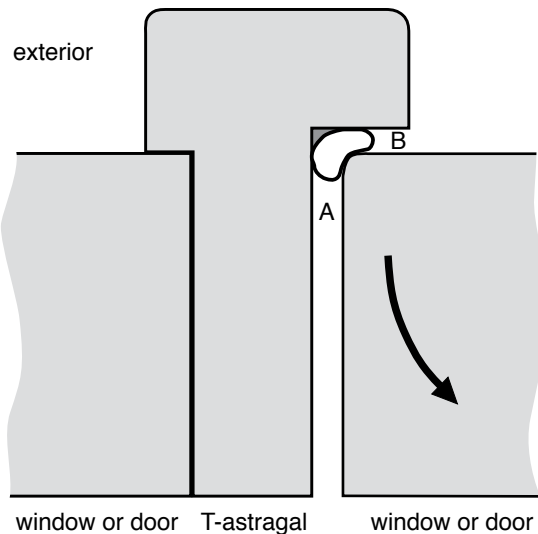
WS02: 0 – 1/8"

WS03: 1/16" – 3/16"

WS04: 1/8" – 1/4"

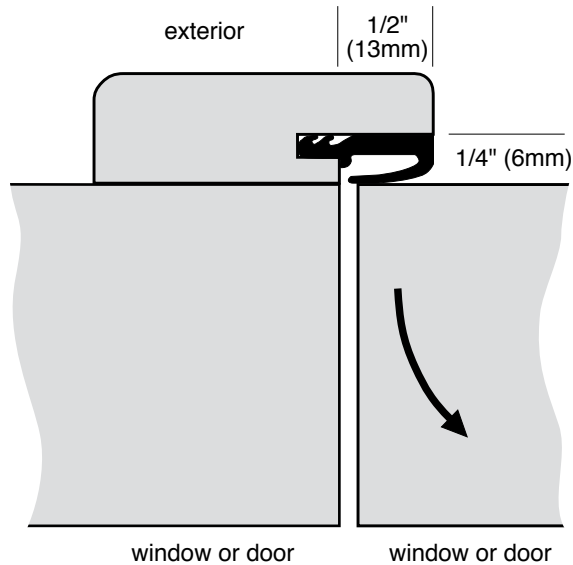
WS05: 3/16" – 5/16"

WS06: 1/4" – 3/8"



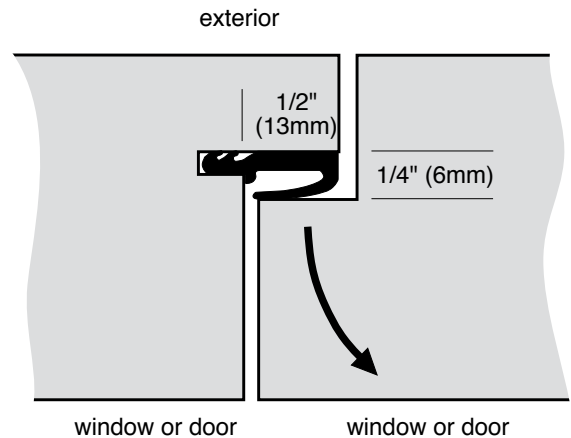
WS02,03,04,05,06 ON T-ASTRAGAL

Cut a 1/8" x 1/4" (3mm x 6mm) groove into the corner of a rabbeted molding and mount it to the surface of one of the windows or doors.



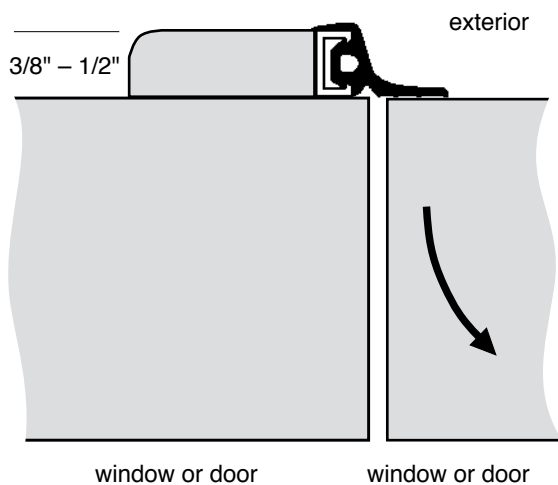
WS16 IN SURFACE ASTRAGAL

Cut a 1/8" x 1/4" (3mm x 6mm) groove into the corner of the rabbet on one of the windows or doors. This approach will not work with most standard door hardware systems because the locking mechanism must be installed into a square edge.



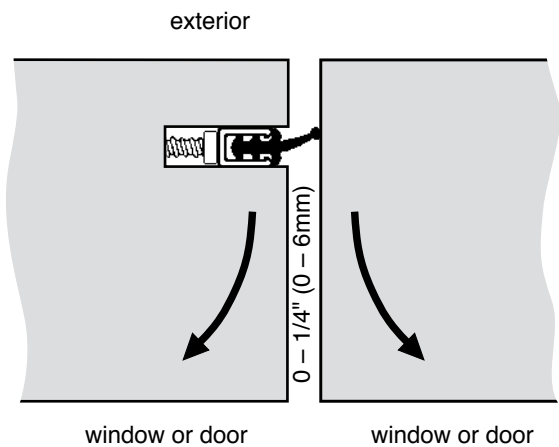
WS16 IN RABBETED OVERLAP

Attach a WS50 channel to any 3/8" – 1/2" (10mm – 13mm) thick wood molding using screw-nails (included) and a WS94 setting tool (order separately). Screw the molding to one of the windows or doors and insert the WS20.



WS20 IN WS50 ON MOLDING


Cut a 3/16" x 5/8" (5mm x 16mm) groove in the edge of one door or window. WS92 screws in the base of the groove are used to adjust the seal by limiting the depth of penetration of the channel. WS62 or WS78 brushes can be used instead of WS17. This technique can be used for two-way swinging doors without jambs: use the same seal on all four sides of each door.



ADJUSTABLE VERSION OF WS17 IN WS40

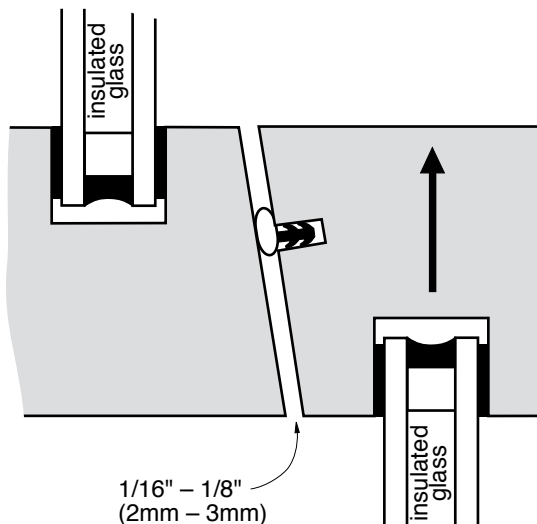
CENTER SEALS FOR SLIDING WINDOWS AND DOORS

NOTES:

The following drawings show seals used at the point where two sliding windows or doors meet: for example, between a pair of double-hung windows or between two horizontally sliding doors. The arrow  shows the direction the primary unit slides as it opens. The meeting surfaces are often cut at an angle (shown in the first drawing) so that the gap narrows as they come closer together. Glazing stops have been omitted from all drawings for clarity.

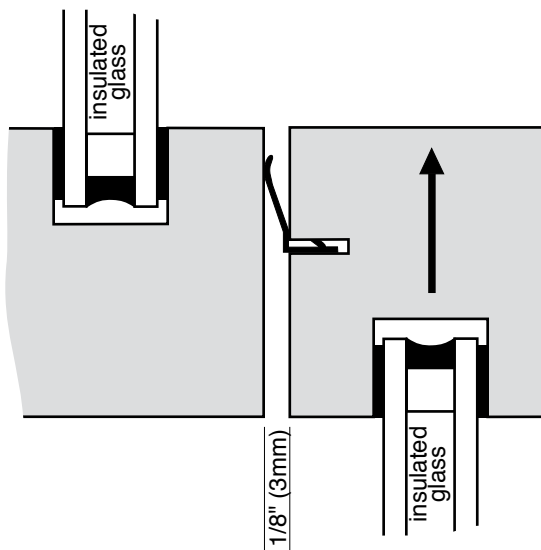
For best results, choose a design where the center seal is located as close as possible to the plane of the jamb and bottom seals, rather than offset by a significant distance. This will minimize air leakage at the corners.

Cut a 1/8" x 1/4" (3mm x 6mm) groove in one face. WS32 can fit gaps as small as 1/16" (2mm). If gaps are larger, substitute WS33, WS34, WS35, or WS36. Note the angled meeting surfaces which are important to avoid excessive rubbing and pinching of the silicone weatherseals.



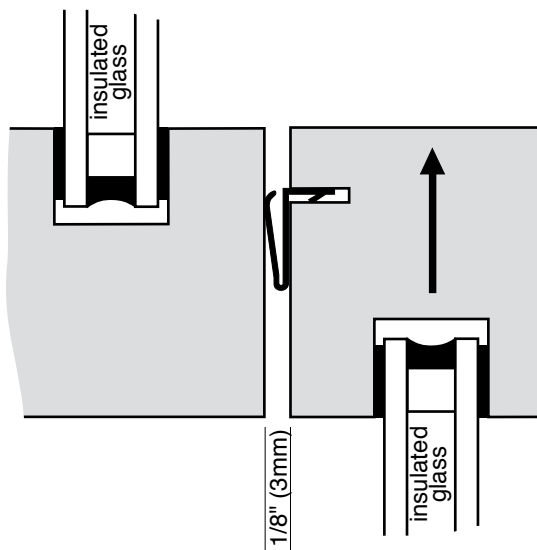
WS32 IN FACE

Cut a 5/64" x 5/16" (2mm x 8mm) groove in one face and insert WS84. The gap between the two windows or doors can be 1/16" to 3/16" (2mm – 5mm) but design new work for 1/8" to 5/32" (3mm – 4mm). Substitute WS83 when gaps are larger (up to 1/4" or 6mm).



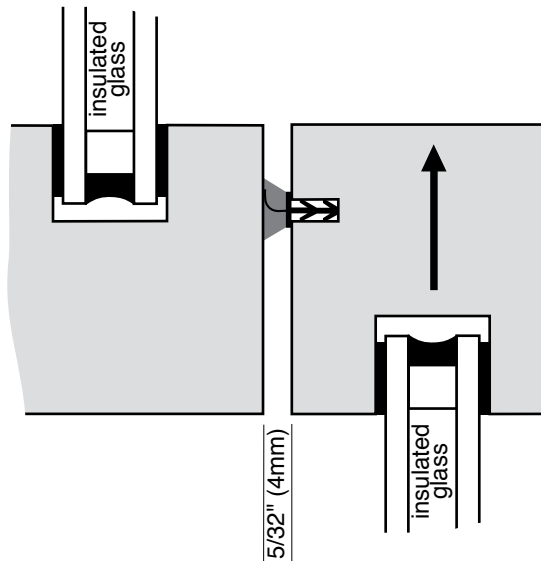
WS84 IN FACE

Cut a 5/64" x 5/16" (2mm x 8mm) groove in one face and insert WS86. The gap between the two windows or doors can be 1/16" to 3/16" (2mm – 5mm) but design new work for 1/8" to 5/32" (3mm – 4mm). Substitute WS87 when gaps are larger (up to 1/4" or 6mm).



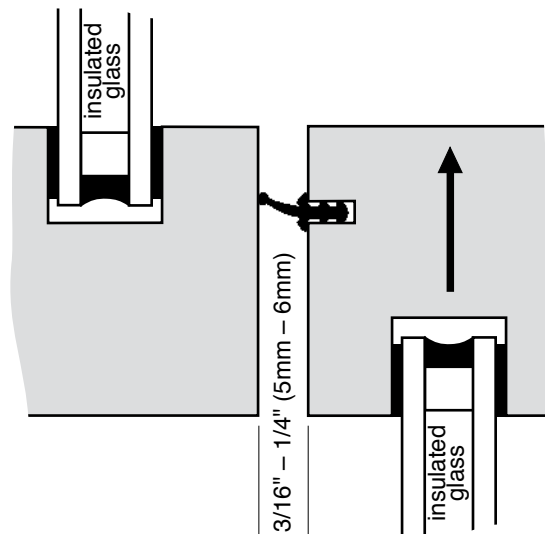
WS86 IN FACE

Cut a 1/8" x 1/4" (3mm x 6mm) groove in one face. Design for a gap of 5/32" (4mm) to fit WS75: if the fit is too tight, substitute WS74 (1/8" or 3mm gaps); if it is too loose, substitute WS76 (3/16" or 5mm gaps).



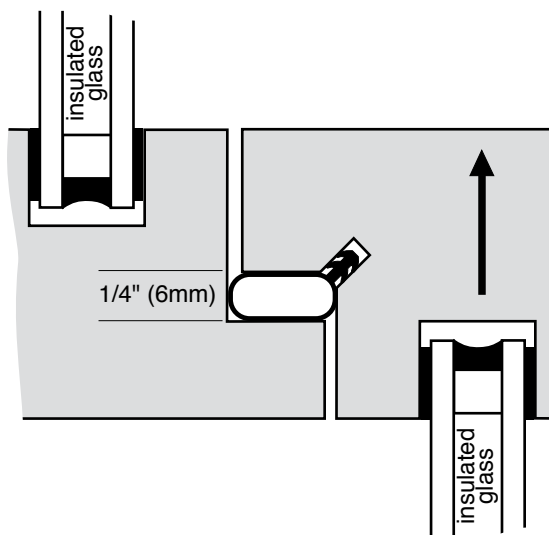
WS75 IN FACE

Cut a 1/8" x 1/4" (3mm x 6mm) groove in one face and insert WS17. Brushseals WS78 or WS62 in WS40 can seal the same range, but these are not as forgiving with uneven gaps.



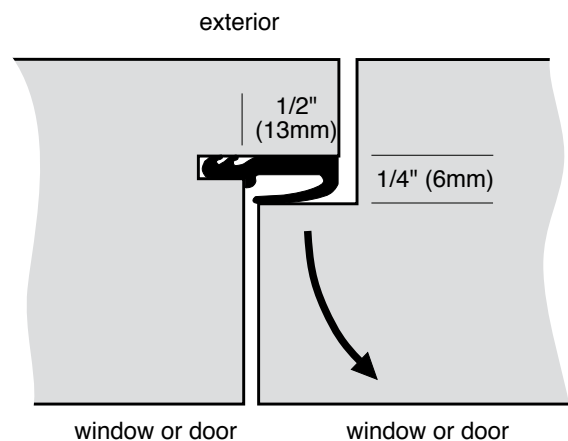
WS17 IN FACE

Cut a 1/8" x 1/4" (3mm x 6mm) groove at a 45° angle in the corner of one of the rabbeted edges and insert WS36. This groove can be easily cut with a WS98 Corner Grooving Machine. Where grooving is not possible, substitute WS06 and caulk it in place.



WS36 IN RABBETED OVERLAP

Cut a 1/8" x 1/4" (3mm x 6mm) groove into the corner of the rabbet on one of the windows or doors. This approach will not work with most standard door hardware systems because the locking mechanism must be installed into a square edge.



WS16 IN RABBETED OVERLAP

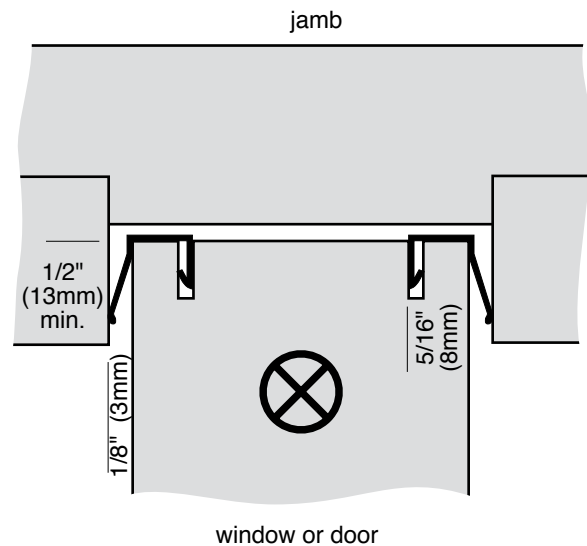
JAMB SEALS FOR SLIDING WINDOWS AND DOORS

NOTES:

In the following drawings "jamb" could be the side jamb of a vertically sliding window or door, or the header jamb of a horizontally sliding window or door. "Stop" could be a surface applied stop, a stop grooved into the jamb, a parting bead, or the edge of a rabbeted jamb.

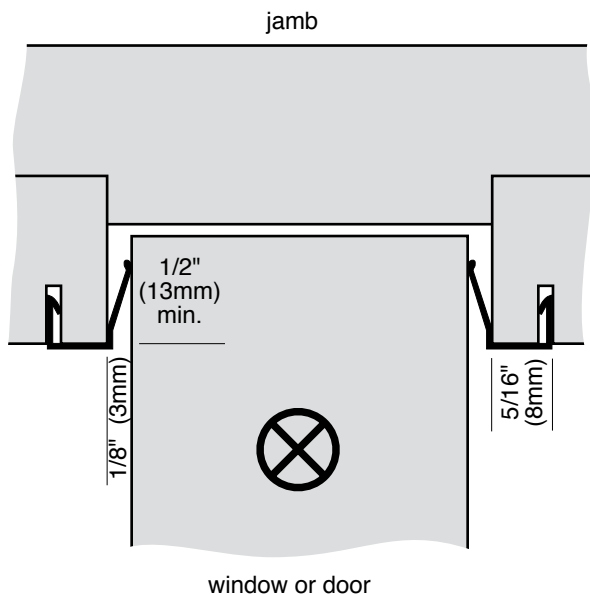
Symbols show the direction of motion of the door or window as it slides open. The cross within a circle \otimes indicates sliding motion between the stops, or toward the viewer. The arrow \longrightarrow indicates motion away from the stops. Many designs work for both motions.

Designs that seal between the exterior face of the window or door and the exterior stop are best. Brushseals are recommended where surfaces are smooth and gaps are uniform. Leafseals work well with rougher surfaces and non-uniform gaps.



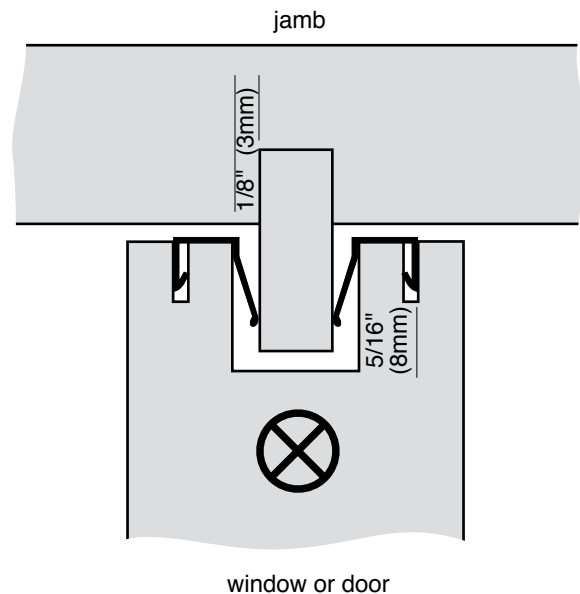
Cut 5/64" x 5/16" (2mm x 8mm) grooves in the edge. Stops are shown dadoed into jamb, but could be surface mounted. The gap between the window or door and the stops can be 1/16" – 3/16" (2mm – 5mm) but design new work for 1/8" – 5/32" (3mm – 4mm). Stops must be 5/8" to 3/4" thick to keep WS88 concealed.

WS88 IN EDGE



Cut 5/64" x 5/16" (2mm x 8mm) grooves in the stops. The gap between the window or door and the jamb can be 1/16" – 3/16" (2mm – 5mm), but design new work for 1/8" – 5/32" (3mm – 4mm). Stops should be at least 5/8" thick to avoid splitting.

WS88 IN STOPS



Cut 5/64" x 5/16" (2mm x 8mm) grooves in the edge. The guide groove in the edge of the door or window should be 1/4" wider than the guide stop in the jamb in order to allow an average 1/8" (3mm) gap on each side of the stop.

WS88 WITH INTERNAL GUIDE STOP

