
Installation Instructions Version 2.0



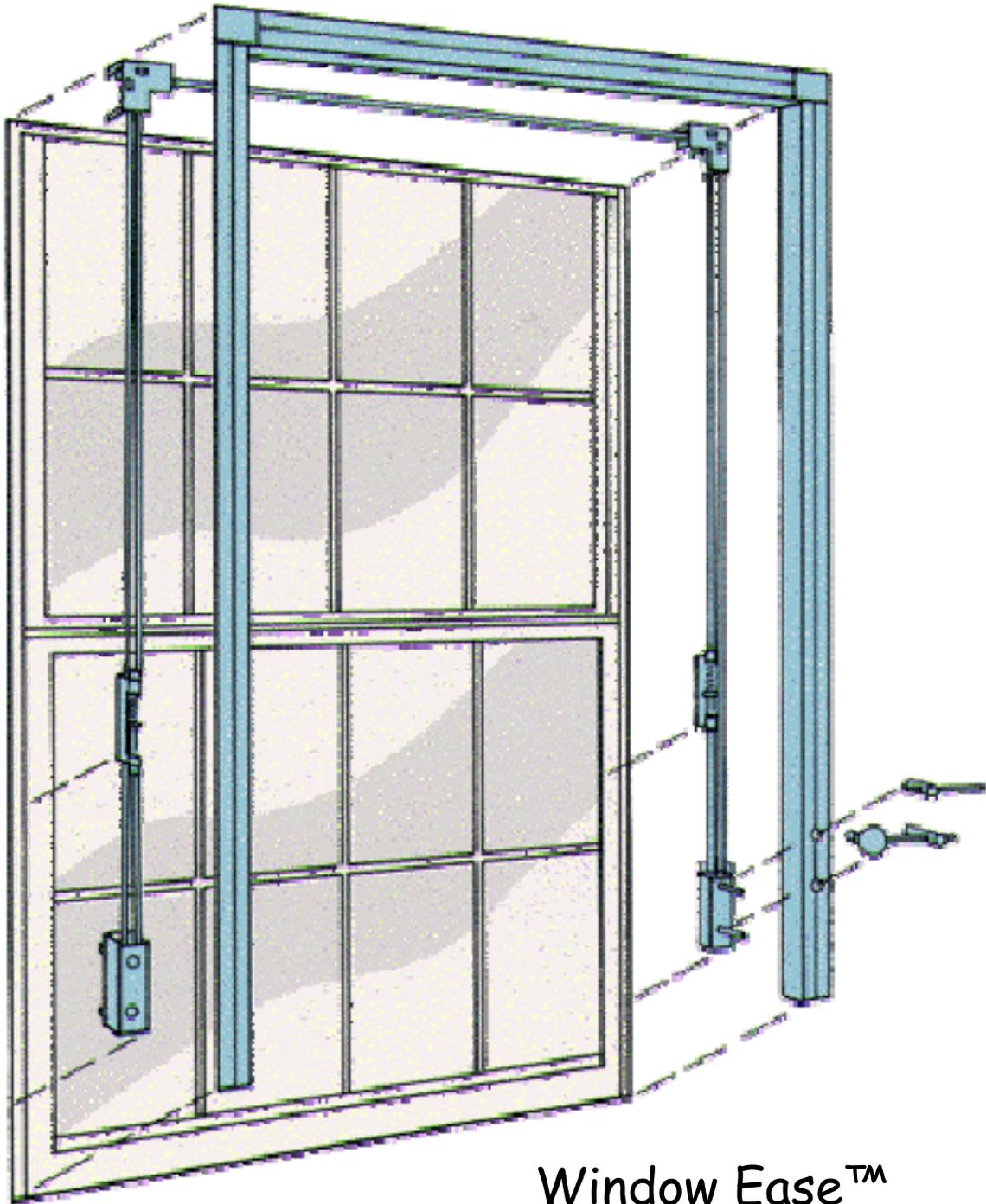
Since 1992

Southwest Home Products, LLC.

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Window Ease™

We make windows easier
for anyone to use!

Pre-Installation

Overview

These instructions are written in the context of a vertical hung window installation. Horizontal slider installations are identical except installation is rotated 90°.

- ✓ **Inspect window(s) carefully.**
- ✓ **Know what your attaching to.**

The Window Ease™ window actuator attaches to previously installed vertical or horizontal sliding windows. Window Ease™ has been designed to make windows easier for anyone to use. By use of our crank driven system, a 10:1 mechanical advantage is gained. Additionally, Window Ease™ places all window controls, including latching, in one location. The latch works in any window position from fully opened to fully closed providing added security while using the window for ventilation.

Window Ease™ may be installed in about 1.5 hours with common tools. All parts and components have been engineered to facilitate easy installation. Window Ease™ may be adapted to virtually any manufactured window and jamb type. Based on approved submittals, mounting struts, adhesive, or other optional parts will have been included along with your Window Ease™ basic kit in order to accommodate your specific installation. Before beginning, please review your submittals against shipping confirmation. It is strongly suggested that you install one unit completely and test before continuing a multiple unit installation. When installed correctly, Window Ease™ is virtually maintenance and trouble free. If you encounter problems not addressed in this manual or need assistance, please phone us at (505)256-0115 or FAX (505)256-3756, M-F, 8:00-4:30MST to reach our Technical Support.

Inspect Window ease Kit



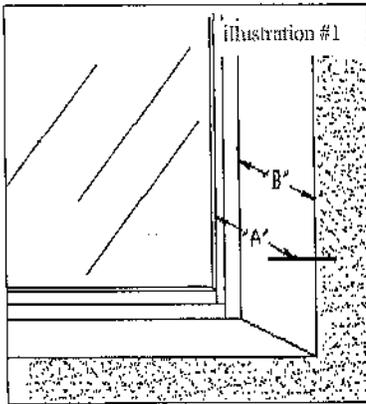
Inspect Window Operation

Windows to be modified must operate smoothly and within voluntary standards.

Window Ease™ has not been designed to repair poorly functioning windows. Before beginning actuator installation, check that window is operating correctly. Window must operate smoothly without sticking or binding and be balanced equally on both sides of window. Operating force must be less than 35 pounds force (lbf) at any point of window travel. AAMA voluntary standards require a maximum operating force for new windows of 35lbf. If your windows are new and exceed the allowed maximums, ask the **manufacturer or contractor to correct window operation before proceeding.** Repair, replace, or lubricate (with dry lubricant only) window as necessary prior to installation of Window Ease™. If window is double hung, upper sash must be made immobile (fixed).

Critical Dimensions

Know your installation.



When you are satisfied window operates as it should, verify the following:

1. Jamb, head, and sill are level, plumb, and square to the window.
2. There is a *minimum* of 2 3/8" clear jamb/head/sill area to fully recess actuator into window opening. See dimension "B" of illustration #1.. Note: Dimension "B" maximum is 10 1/2" without optional crank/latch extension. Extension can be any length up to 6'-0". See Installation Appendix — Control Extension page 24.

3. **If you don't have the 2 3/8"**, you will need to install an optional mounting strut. See Installation Appendix — Mounting / Mull Strut page 19. Otherwise, provide a trim piece of wood or other material 2 1/2" deep at the existing jamb to create an adequate attachment depth.

Note for mullied windows: See the Installation Appendix — Mounting / Mull Strut Installation that provides for mounting Window Ease™ between mullied (ganged) windows where there is no jamb.

4. There must be a *maximum* of 1 3/4" between the perpendicular leg of the Sash

Bracket and the surface upon which you will attach Chassis and Carrier brackets. See illustrations #4. This is generally established by where you attach the Sash Rails to the moveable sash. See Sash Assembly page 3.

Note: To verify the 1 3/4" maximum, create a mock-up of your Sash Assembly installation. See photo #1. Cut an 8" piece of Sash Rail and attach to it either the drive or chassis side Sash Bracket and then locate to determine location to maintain the 1 3/4" maximum. See photo #1 & 2. and illustrations #2 through #4.

If you are having trouble configuring to provide the 1 3/4" maximum, you may use either the optional Sash Extension Plate, see illustration #2 [Note: Using Sash Extension Plate will make Sash Bracket more visible], or otherwise, consider alternate mounting— see note e) below.

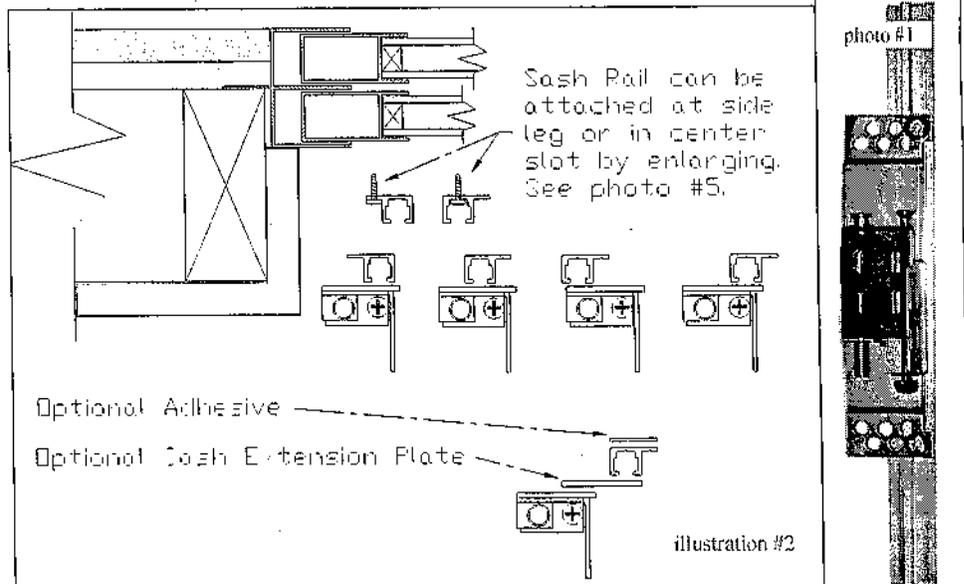
5. Sash Rails attach to the moveable sash with screws or optionally with adhesive (extra). **Do you know the construction of the window you're attaching to?** A minimum clear attachment area on moveable sash is required to receive attachment screws. Screwing into glass is expensive and a mistake that can be avoided. The corners of moveable sash usually provide the greatest clearance from glass and ends of rail may be notched or cut to accommodate corner attachment.

6. See illustration #2 through #4. Clear attachment must be a *minimum* of 7/16" between glazing edge (usually pocketed in stile or rail of moveable sash) and window channel/track. **Don't panic. If you do not meet these criteria, you can**

use the optional Rail Adhesive which can glue Sash Rails to the glass or frame of the movable sash. See Installation Appendix— Sash Rail Adhesive.

7. Chassis and Transfer brackets are fastened to window surround with supplied fasteners designed for wood or light gauge metal beneath a *maximum* of 3/4" of finish material (e.g. sheetrock), and other fastener types

(Continued on page 3)

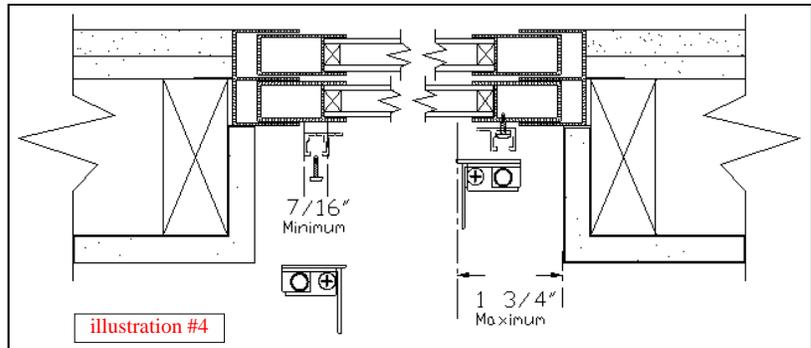
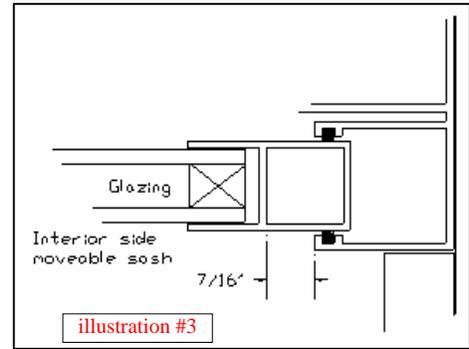


Critical Dimensions (continued)

(Continued from page 2)

(not included) may be required.

8. Chassis and Carrier Brackets will attach to head, jambs, or sill.
 - **Know what you are attaching to** —
- 9) Alternate mounting because you cannot determine a mounting configuration in step c) above that will ensure the *maximum* of 1 3/4" and you do not wish to use Sash Extension Plates.
 - a) Consider, furring out attachment surfaces; or,
 - b) Use optional Mounting Struts. Mounting Struts may be furred out as appropriate, however note that before furring, Mounting Struts will add 1/2" to surface.
 - c) See illustration #6 on page 5.
 - d) See Installation Appendix — Mounting / Mull Strut page 19.

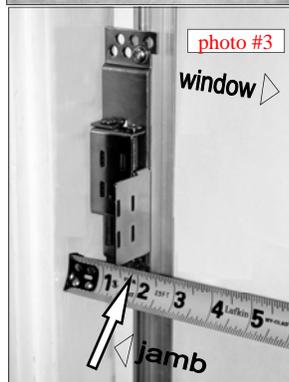
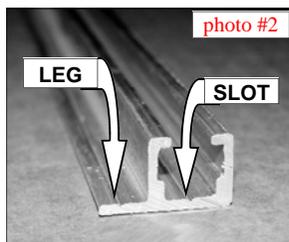


Installation

Sash Assemblies

(Belt Plates, Belt Clips and fasteners found in bag "B")

Sash Assemblies (2 ea., one on either side of movable sash of window)



The Sash Rail (see photo #2) is mill finish aluminum and is shipped in 6'0" sections and will be cut to size for each side of the window. Then two Sash Brackets, that are mirror opposites of each other, will be attached to the Sash Rails to form the Sash Assembly. Determine the best configuration of Sash Assembly and attachment points for the Sash Rail **BEFORE ATTACHING** to the moveable sash. Sash rail may be attached three ways—through the leg, through the slot, or with adhesive. See illustration #2.

STEPS

- 1) **DO NOT ATTACH RAIL OR ASSEMBLY TO MOVEABLE SASH UNTIL STEP #6 BELOW!**
- 2) Determine best location to attach Sash Rail to moveable sash. To prevent rubbing between rail and window channel, allow sufficient clearance (approx. 1/8") between the edge of Sash Rail and edge of the moveable sash channel/track. The Sash Rail must be a minimum of 10" in length to allow adequate adjustment range, though it may be as long as moveable sash. The sash rail can usually be attached with provided #8-18x1/2" Phillips head Tek self-drillers and must be fastened with a

(Continued on page 4)

(Continued from page 3)



photo #4

Locate center of leg 8" from meeting rails.



photo #5



photo #6

3 UniBit™ to open rail for screw heads.

minimum of two screws that have good purchase. The rail may be attached only at the corners of the moveable sash, or anywhere along its length. Rail may be shaped by cutting to accommodate installation. The rail may be fastened through the leg or through the slot. See photo #2. **NOTE:** To fasten in rail slot, slot must be enlarged slightly at each fastener location for screw head clearance. See photos #5 & 6.

NOTE: When attaching Sash Rail to glass or window frame with optional adhesive, the Sash Rail needs to be the full length of the moveable sash. See Installation Appendix—Sash Rail Adhesive.

- 3) Each Sash Bracket will attach to each Sash Rail with two (2) 1/4-20 Phillips head machine bolts and 1/4-20 nuts. The nuts will slide inside of the Sash Rail. The Sash Brackets will be installed **BEFORE** attaching the Sash Rail to the moveable sash.
- 4) If you know your configuration will work, see Critical Dimensions, loosely attach the Sash Bracket to the unattached Sash Rails with the machine bolts. Remove any small burrs with a file if nuts are difficult to slide into the Rails. Position center of perpendicular protruding leg of the Sash Bracket so that it will be 8" from the top rail of moveable sash (meeting rail) when attached. See photo #1 Snug machine bolts so bracket will not slip. Later in the installation you will loosen bolts for final adjustment and then tighten firmly in place.
- 5) Ensure the **maximum of 1 3/4"** between the perpendicular leg of the Sash Bracket and the surface upon which you will attach Chassis and Carrier brackets. See photo #3 and illustration #4
- 6) When you are certain your configuration will meet Critical Dimensions, attach the Sash Assembly to the moveable sash.
- 7) Pre-drill an 1/8" pilot hole in Sash Rail and movable sash for each fastener. **Be certain you know where glazing edge is before you drill!!** Attach each rail with a minimum of two well purchased #8 x 1/2" pan head self-drilling Tek screws.

Attach Brackets (Carrier, and Chassis fasteners in bag "A")

Transfer Brackets (2 ea.)

Metal tabs of bracket should contact window frame.

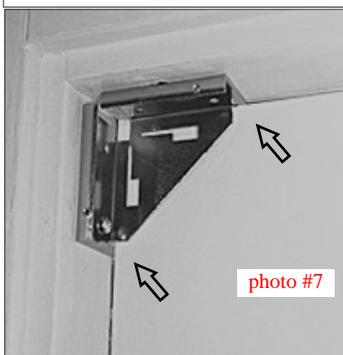


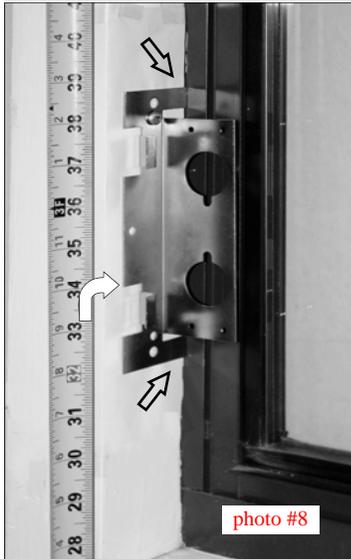
photo #7

Furr out from jamb if required. See illustration #5.

- 1) Locate Transfer Brackets into upper corners of vertical sliding windows [for horizontal sliders mount into corners opposite moveable sash]. Metal spacing tabs, at rear of brackets, should contact window frame for correct alignment. See photo #7.
- 2) Fasten each bracket with a minimum of two #10 x 2" screws, one in the top on the room side of the bracket and one on the jamb side in a hole closest to the window (staggering the screw attachment adds rigidity). Installer may require different fasteners than those provided to achieve good installation. Transfer brackets should not move under load. If after installation of Transfer Assembly (procedure on page 8) excessive movement is detected, install additional screws (this normally is not required).

Chassis Brackets (2 ea.)

Determine best height for controls (34" is common). Controls' height and location to meet ANSI A117.1.



- 1) Determine the height you will want the center or rotation point of the Crank. ANSI A117.1 specifies reach heights and depths which can be applied to your particular installation. The Crank's radius is 6 1/2" which, added to the Cranks center point, determines the maximum reach height. We have found 34" to center point above finish floor to be a comfortable height for most people. This puts the maximum reach for operation of the Crank at 40 1/2" above the finish floor.

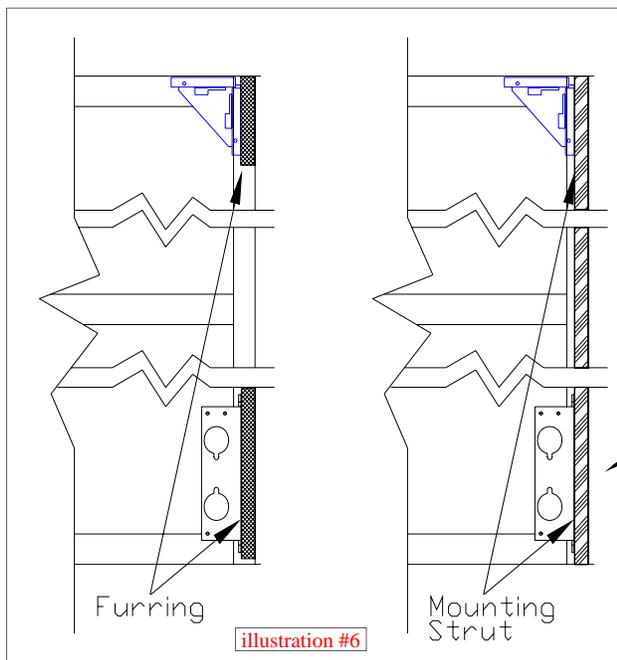
[For horizontal slider - height is not adjustable and the center point of Crank will be 1" above the sill height.]

Note: Codes restrict sill heights in sleeping spaces to 44" maximum. A sill at the maximum 44" would place the Crank's reach above 48".

- 2) Make a mark on both jambs at the height you prefer for the center of Crank. This mark must be a minimum of 18" below the top rail of moveable sash (meeting rails) with sash fully closed. [For horizontal slider, or center bracket of mull window pair, skip to note 3 below].
- 3) Fully open the window for additional working clearance to fasten Chassis Brackets into place. Position each Chassis Bracket so that the top of the lower notch lines up with your mark on each side. **See photo #8.** [For sliders - (typically) mount Chassis Bracket all the way against either jamb.] [For mull window, attach Chassis Bracket to sill as indicated by instructions in the Installation Appendix—Mull Installation].

- 4) For correct alignment, ensure metal spacing tabs at rear of Chassis Brackets are in contact with window frame (as with Transfer Brackets). **See photo #8.**

Furr out brackets from jamb if required to ensure Critical Dimensions. **See illustration #6.**



- 5) Fasten brackets to jambs [if horizontal slider, fasten to sill and header] with at least two #10 x 2" screws. If after installation, bracket rotates or wobbles when operating the crank, install additional screws — this normally is not required.

See also Appendix Installation Instructions—Mounting / Mull Strut Installation page 19.

Drive and Idler Chassis

(Fasteners found in bag "A")

Drive and Idler Chassis (1 ea.)

Drive and Idler Chassis fasten to previously installed Chassis Brackets on either side of window.

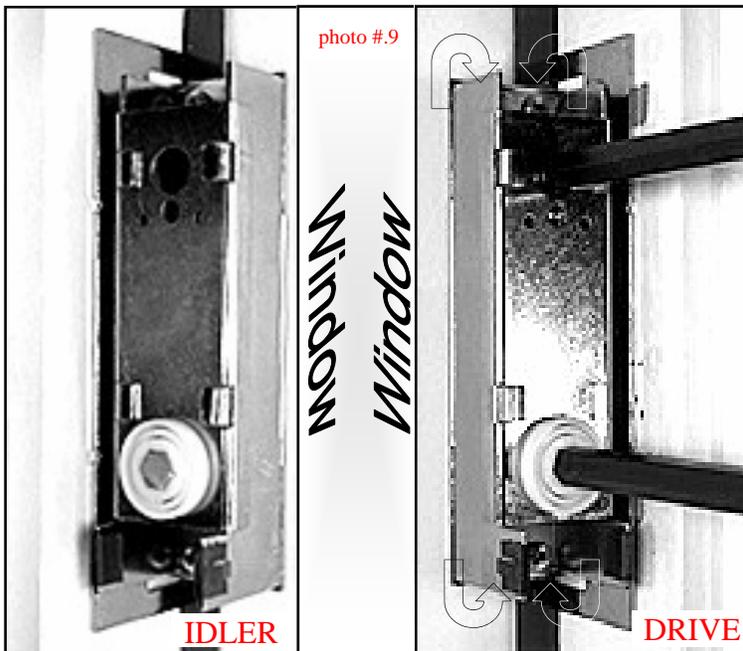
- 1) Locate each chassis on the appropriate side of window [for sliders and for mulled windows - see below]. The Drive Chassis has two hex shafts.
- 2) Orient each chassis so that pulley is on the bottom or away from meeting rail of moveable sash.

Horizontal slider installations: Drive Chassis will be mounted on the sill of window opening and, typically, against the moveable sash jamb. Alternately, on horizontal slider, the Drive Chassis may be mounted against the fixed sash jamb of the window.

Mulled window installations: [See Installation Appendix.](#)

- 3) To each of the previously installed Chassis Brackets, fasten Drive and Idler Chassis using four #8 x 5/16" pan head thread rolling screws. [See photo #9.](#) If you find these screws too difficult to install, try wetting them with water or silicon spray prior to their use.

Horizontal slider or mulled window installations — Do not attach either Chassis to brackets at this time. Due to limited clearance between pulley and jamb (slider) or sill (mulled), it is easier to thread belt through each Chassis before they are attached to brackets. Horizontal slider and Mulled window installations will attach Chassis later on when installing belt on page 8.



Transfer Assembly

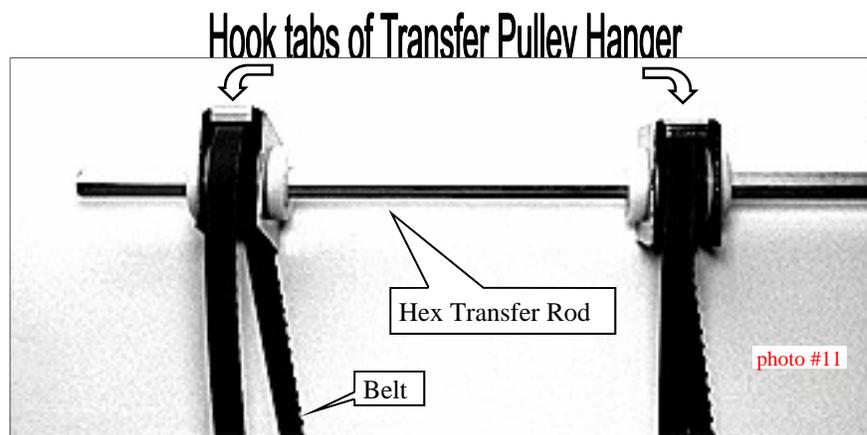
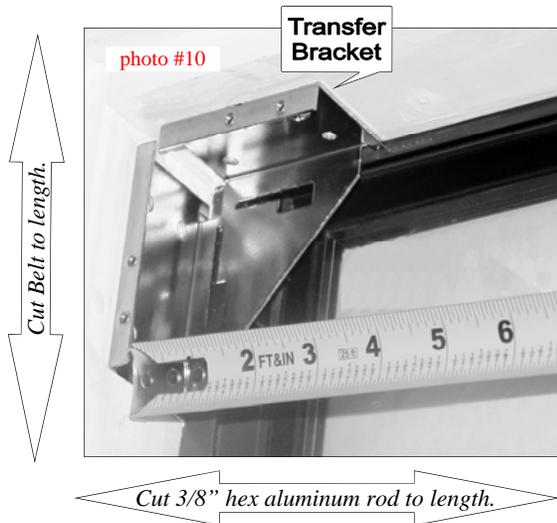
(Fasteners and parts found in bag "B")

Transfer Rod (1 ea.) & Drive Belts (2 ea.)

Cut 3/8" aluminum Transfer Rod and drive Belt to length. Install belt and Transfer Pulleys on Transfer Rod.

- 1) Cut Transfer Rod (1 ea.) to length. **See photos #10 & 11.** Measure distance between Transfer Brackets. **See photo #10.** With a fine tooth metal saw, cut hex Transfer Rod 1/4" shorter than measured distance. If required, de-burr ends of rod with a file.
- 2) Cut belts (2 ea.) to length. The lengths are calculated by doubling (*measurement x 2*) the distance from the bottom of each Chassis Bracket to the top of the Transfer Bracket (window head).

Note - belts are not always the same length. In some installations, such as mullied windows, the belts may be different lengths.
- 3) Thread each belt about 1/2 way over the Transfer Pulleys in their "U" shaped hangers then slide both onto the hex Transfer Rod. Teeth of belts must face slots of pulleys. **See photo #11.**

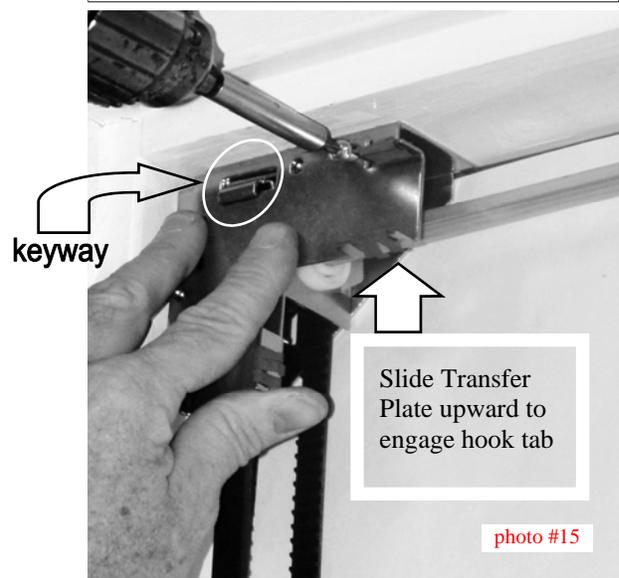
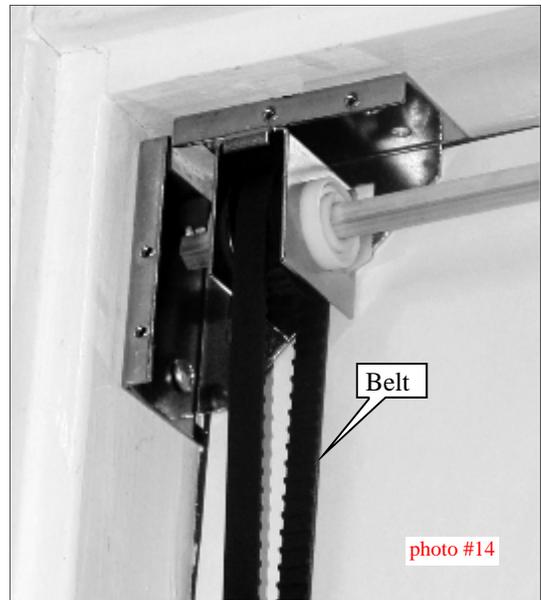
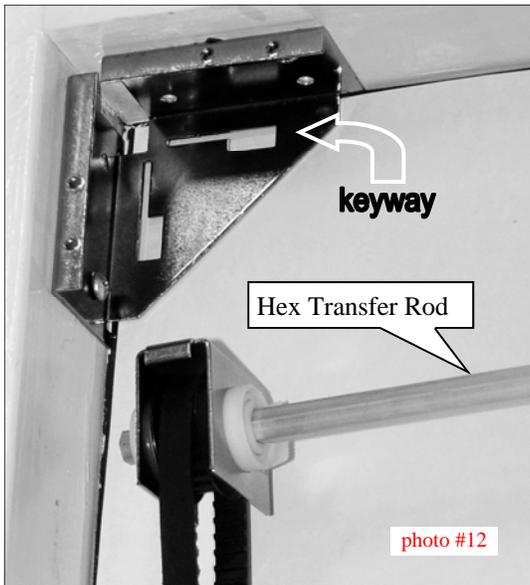


Transfer Assembly

Hang Transfer Rod with Transfer Pulleys and belts onto Transfer Brackets. Install Transfer Cover Plate to complete Transfer Assembly. Check Rotation.

- 1) Hang Transfer Rod with Transfer Pulleys and belt onto the previously installed Transfer Brackets. Insert the hook tabs of Transfer Pulley hangers into keyway of each Transfer Bracket. Slide the Transfer Pulleys outward to “lock” into the keyways. See photos #12, 13 & 14.
- 2) Install Transfer Cover Plate. Slide Transfer Plate over the Transfer Bracket and then upward [outward if horizontal slider] until the hook tabs of Transfer Pulley hangers “lock” into the keyways of Transfer Plate. Fasten each into place with two #8 x 5/16” pan head thread rolling screws. There is a slight adjustment — set equal distance on all sides. See photo #15.

Check that Transfer Rod rotates freely by rotating with fingers.

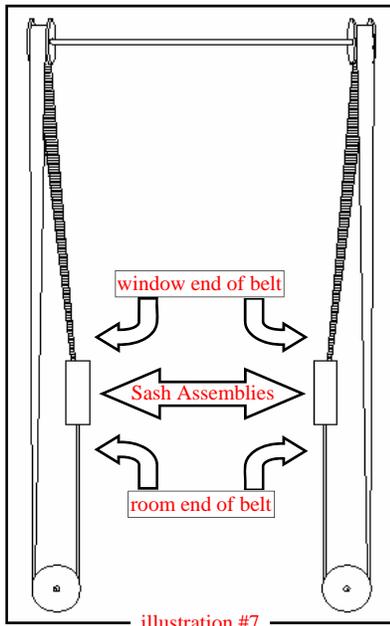


Belt Installation

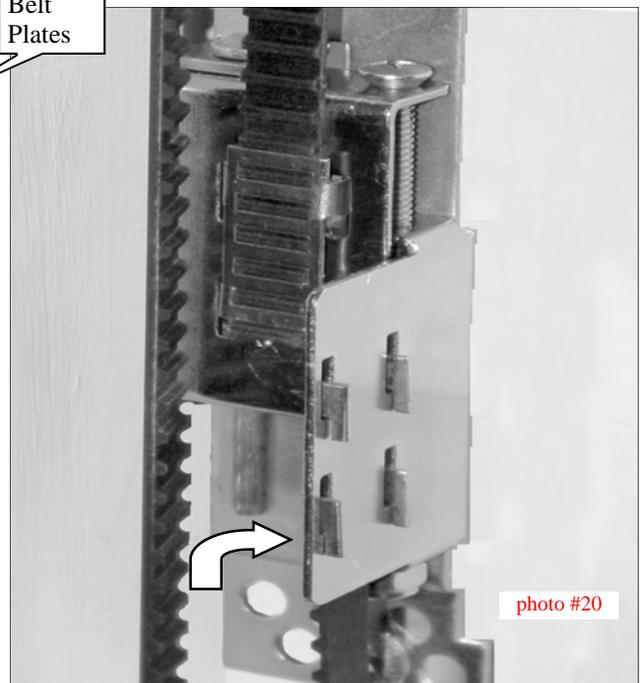
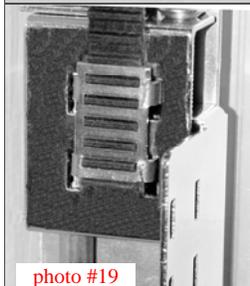
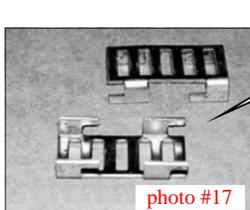
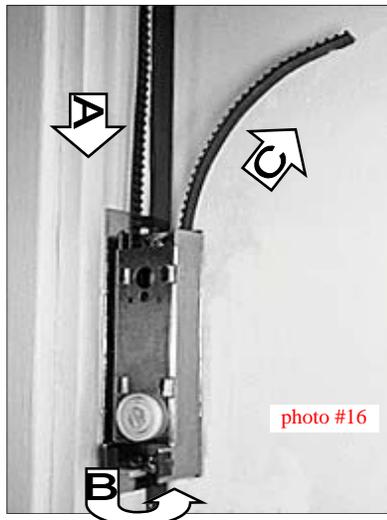
(Parts and fasteners found in bags "B")

Install Belt (2 ea.)

Beginning on Drive side, thread belt through each Chassis and attach ends to Sash Assemblies. Ensure belts appear same as illustration #7 below..



- 1) Fully close and latch window.
- 2) The belts over the Transfer Assembly Pulleys each have two ends. An end coming into room (*room end*) and, an end out the rear of Transfer Assembly towards the window (*window end*). Take the *window end* of each belt and bring it to its nearest Sash Attachment Bracket. **See illustration #7. Be careful not to pull the belts off the pulleys.**
- 3) Ends of the belts will be attached to the Sash Assemblies with Belt Plates. **See photo #17.** At each belt end a Belt Plate will engage five teeth of the belt with legs of plate pointing away from the end of the belt. **See photo #18.** The belt is finally attached to the Sash Assembly by inserting the four dog legs of a Belt Plate into corresponding slots in a Sash Assembly and then pulling belt to "set" the Belt Plate. **See photos #19 & 20.**
- 4) Make sure *window end* of belts are not twisted. Then take the *window end* of each belt and attach to the upper (or center) plate of the Sash Assemblies. **See photo #19.**
- 4) Remove any belt slack from between Sash Assemblies and pulleys. Pull *room end* of each belt while pushing or "feeding" *window end* of belts over pulleys until all slack is removed.
- 5) Thread untwisted *room end* of each belt, with teeth facing towards window; A) through top of each Chassis, B) around pulley and then, C) back up through each chassis. **See photo #16 (*Idler side*) and illustration #7.**
- 6) Pull unconnected *room end* of belt to the inside of the perpendicular leg of each Sash Assembly. Ensure belt is without twists and attach. **See photo #20**

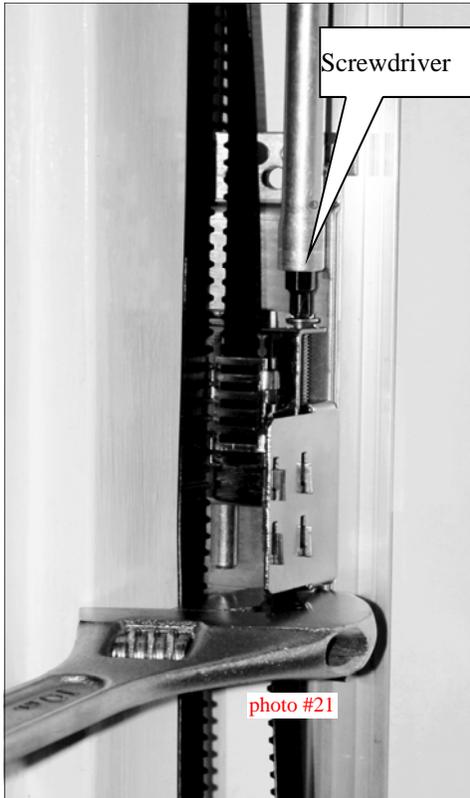


Belt Installation (continued)

Tension Belts

(Extension Springs found in bag "B")

It is essential that belts are tensioned correctly. "Pre-stretch belt" by giving it a couple of hard tugs. Tension belts by turning Phillips screw of Sash Assemblies.

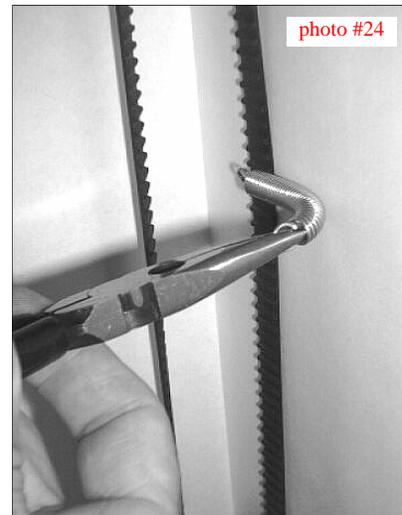
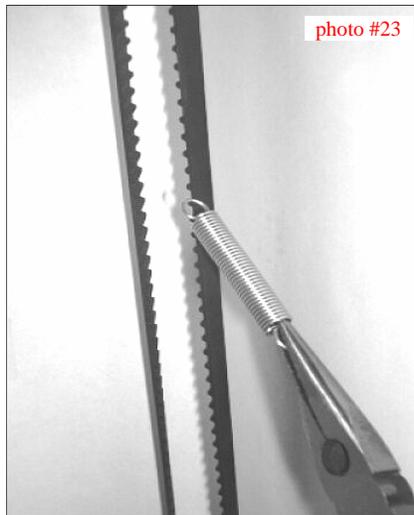
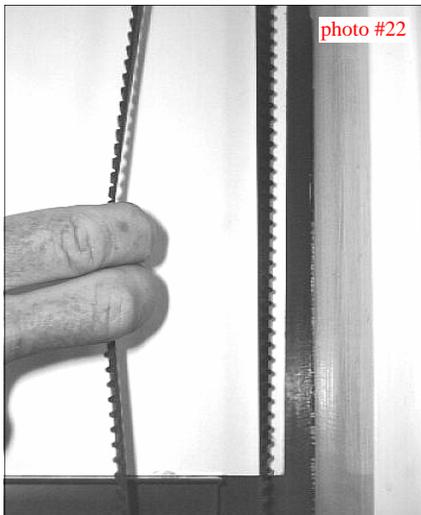


- 1) Disable or preferably remove all factory latches. This must be done to eliminate the possibility of multiple latches causing confusion in a panic situation. Also, to be in compliance with the NFPA - Life Safety Code 101. The Window Ease system latches both sides of window from one location and meets or exceeds NFPA requirements.
- 2) Belt Tension is adjusted by turning the Phillips head machine screw on top of the Sash Assembly. **See photo #21.**
- 3) Initially tighten belt to take up slack and then firmly grasp each belt mid-way on long section and pull vigorously with several quick jerks to "pre-stretch" belt. **See photo #22.**
- 4) Tighten again. Belt is correctly tensioned when you can with one finger (medium pressure to smash a grape) just or barely push the mid-point of long section of each belt against jamb. When tension is close, 1 turn of machine screw either way will make a difference. **Initial correct belt tension is critical.**

Tensioning Tip:

Take one of the $\frac{2}{3}$ " extension springs in your kit, and hold it with needle nose pliers by inserting end of pliers into end of spring leaving one end of spring free. Belt tension can be measured by pushing the mid-point of the long section of each belt towards jamb [if slider - towards sill or head] with the free end of the spring. Correct tension is when the belt, in the middle of the long section, deflects $\frac{3}{4}$ ", with an effort which bends the spring to 90°. **See photos #23 & 24.**

If you can not push belt as above, it is too tight - loosen. If you can push belt as above when spring is bent to only 45°, it is too loose - tighten.



Belt Installation (continued)

Belt Springs (4 ea.)

(Belt Clips and Extension Springs found in bag "B")

Set Belt Clips 4 1/4" apart from each other to receive belt tension springs. Do not over stretch and damage springs. Pull springs into tension only from "eyes".

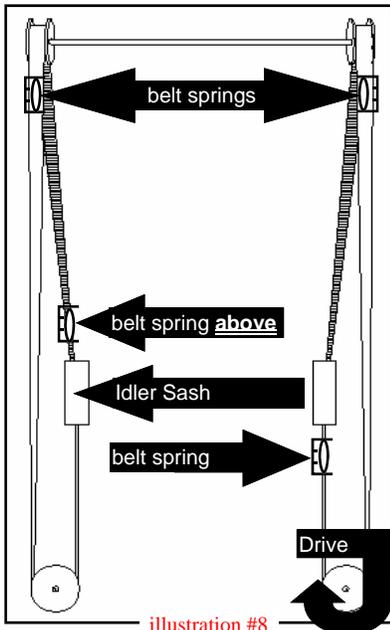


illustration #8

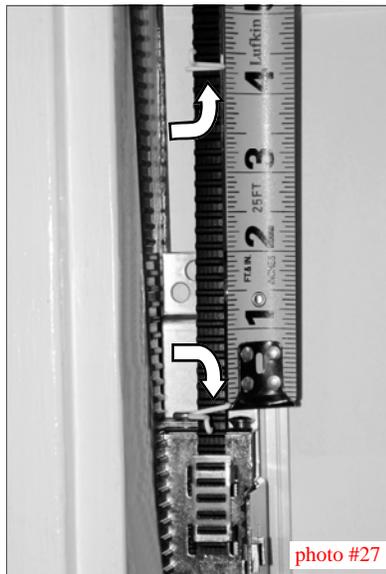


photo #27

- 1) Fully close window. Do not worry about latching.
- 2) Slip a Belt Clip onto *room side* of each belt about 1" below each Transfer Cover Plate. Install both clips so that hooks are facing up and in towards room. See [illustration #8](#) and [photos #25 & 26](#).
- 3) Slip a third Belt Clip about 3/4" ABOVE the top Belt Plate of Idler/Adjustment Sash Assembly. Install so that hook is facing down and into room. See [illustration #4](#) and [photo #21](#).
- 4) Slip a fourth Belt Clip about 3/4" BELOW the perpendicular belt plate of Drive/Balance Sash Assembly. See [illustration #8](#). Install so that hook is facing up and into room.
- 5) Slip an opposing Belt Clip 4 1/4" opposite each of the four(4) previously installed Belt Clips. See [photo #27](#). Hooks of clip pairs should open away from each other.
- 6) Between each of the four Belt Clip pairs, install a 2 3/16" extension spring. **CAUTION** do not over stretch and damage extension springs. Stretch springs minimally and stretch ONLY from the spring ends ("eyes"). See [photos #28 & 29](#). Verify correct spring locations. See [illustration #8](#).

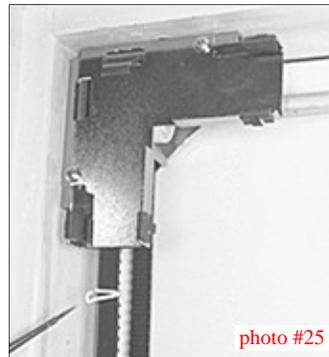


photo #25

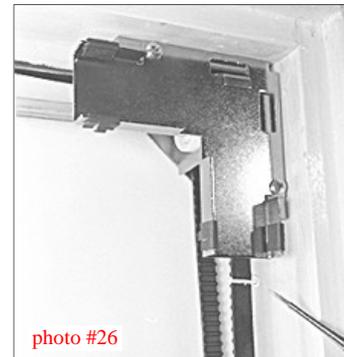


photo #26

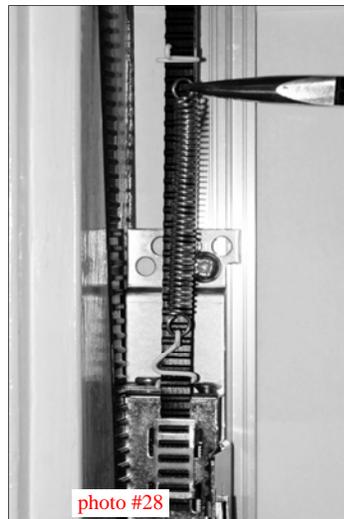


photo #28

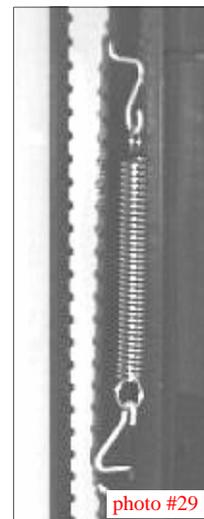


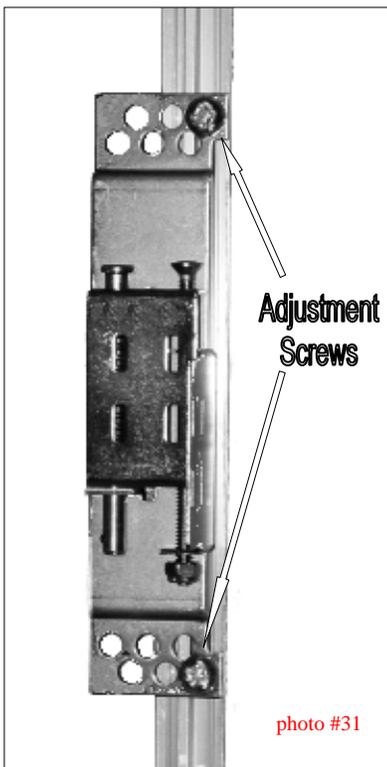
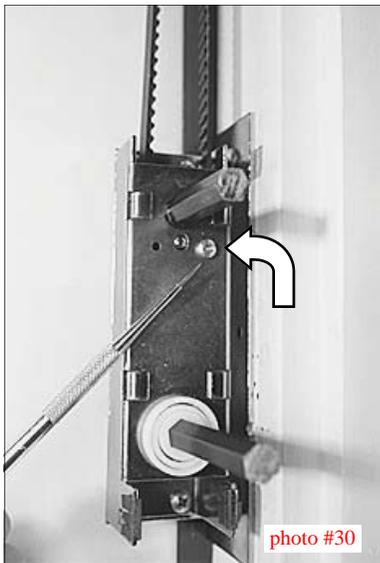
photo #29

Adjustment

(8-32 x 1/2" "lock-out" screw found in bag "C")

Adjust Sash and Install Latch Lock-Out

Install latch "lock-out" screw.
Make fine adjustment to insure
proper weather seal.



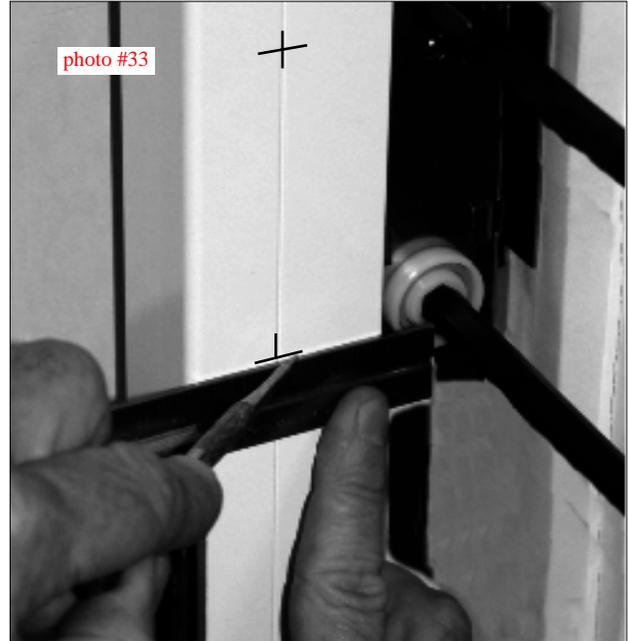
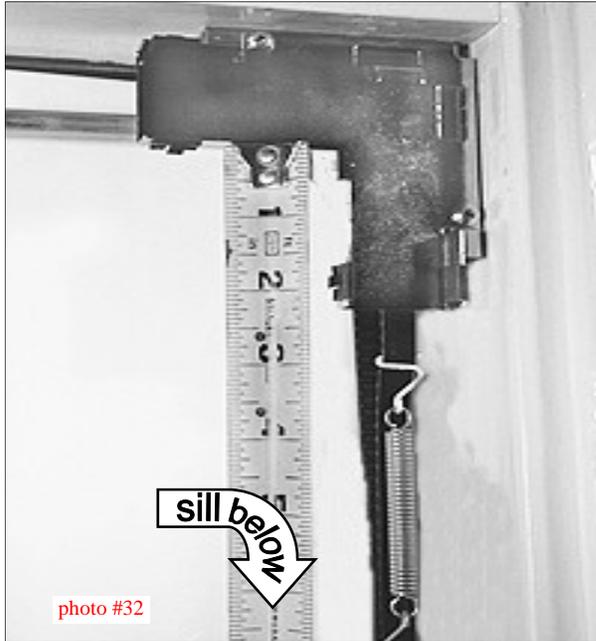
- 1) Go to Drive Chassis. On face of Drive Chassis, locate two small holes just above and to either side of upper (Latch) shaft. Into the hole closest to the jamb [sill if slider], install one 8-32 x 1/2" pan-head thread rolling screw. See photo #30. This limits Latch rotation to only one direction.
- 2) Grasp moveable sash and fully open and close window twice (Window Ease™ should "free wheel" with little resistance). Leave in fully closed position. Moveable sash should be in contact with its weather gasket. Do not latch.
- 3) Go to idler side Sash Assembly. Loosen adjustment screws that attach Sash Bracket to Sash Rail (1/4-20 Phillips machine bolts). See photo #31. Square window to window frame and then tighten adjustment screws. Check that moveable sash is evenly in contact with its weather gasket.
- 4) Grasp moveable sash and open window about 1/2 way. Slip the Latch Handle onto its shaft (upper hex shaft on Drive Chassis) and rotate handle to latch window. Check latch operation by attempting to pull window further open. Unlatch window by rotating Latch Handle in opposite direction, and then remove Latch Handle.
- 5) Slip Crank Handle onto Crank Shaft (lower hex shaft on Drive Chassis) and crank window fully opened and closed twice. Leave in fully closed position. Check that moveable sash of window is getting good gasket closure. If not, adjust sash alignment described in step 3) above.
- 6) **Inspect operation of the unit before installing covers.**
- 7) Crank the window fully open and listen for any scraping of window in its opening. Adjust or remove any scraping parts and replace if appropriate.
- 8) **Correct all sash operational problems before proceeding.**

Covers

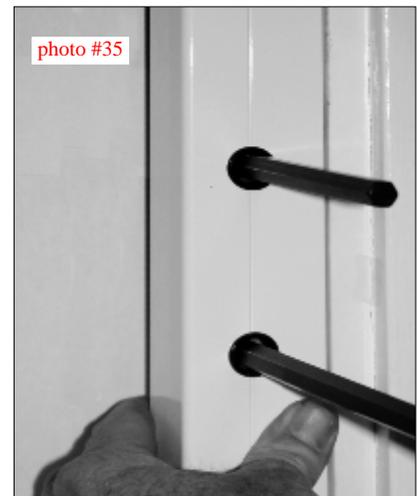
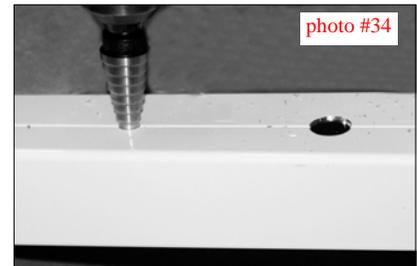
(Hardware found in bag “C”)

Drive, Idler, and Transfer Covers

(Cover Grommets & Corner Cover Adhesives found in bag “C”)



- 1) Covers are supplied in 6'-0" lengths and must be cut to fit. If you need a cover longer than 6'0", then you will use the optional Joiner Plate. See [Installation Appendix—Joiner Plates](#). Cut covers with a fine tooth hacksaw or alternately (if careful) a chop saw equipped with a non-ferrous metal cutting blade. Always use eye protection.
- 2) Measure distance from sill [jamb if slider] to inside corner of both Transfer Plates. See [photo #32](#). Cut Drive and Idler covers the measured lengths less 1/8".
- 3) With firm pressure, snap Idler Cover into place. A firm push on cover will result in a distinct “snap” as Cover locks into position.
- 4) Make holes for Control shafts in Drive side Cover. Hold Drive Cover alongside Drive Chassis with bottom of cover contacting sill [jamb if slider]. Mark center of Drive and Latch shafts onto cover with Tri-square and sharp point. See [photo #33](#). Where your marks (2 ea.) intersect groove in the face of Cover, drill 5/8" holes using a #3 Unibit® Step-Drill. Snap supplied grommets into holes. See [photos #34 & 35](#)
- 5) Slide Drive side Cover into place over hex control shafts and snap firmly into position.

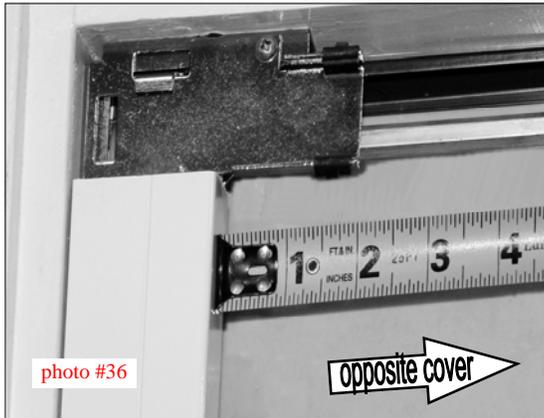


(Continued on page 14)

Covers (continued)

Drive, Idler, and Transfer Covers

(Cover Grommets & Corner Cover Adhesives found in bag “C”)



(Continued from page 13)

- 6) At Transfer Plates, measure the distance between Idler and Drive side covers. See photo #36. Cut Transfer Cover the measured length less 1/8".
- 7) Snap Transfer Cover into place.
- 8) Cover Corners attach with 3M-VHB Double Face Adhesive Strips. Where adhesive strips will adhere, ensure covers and corner covers are de-glossed with ScotchBrite™ pad (provided) , then do final wipe with alcohol wipe (provided) and let dry. Place 2 ea. pieces of adhesive strips on the back of each Corner Cover — one strip on small leg ,and one strip opposite on large leg. Position Corner Cover so that small leg points towards window and large leg covers the exposed Transfer Assembly. See photos #37 & 38. Firmly push Corner Covers into place.

Control Hardware—Latch & Crank

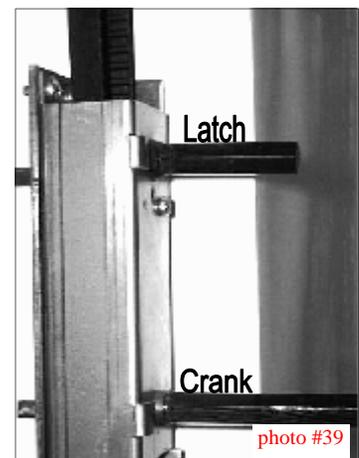
(Hardware found in bag “C”)

Latch Control Shaft

Cut Latch Control Shaft a minimum of 3/4" out from surfaces that Latch Handle is to clear.

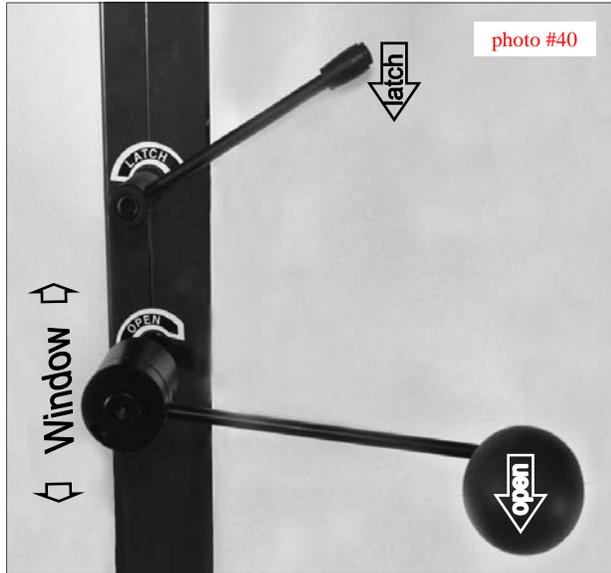
1. Hold Latch Handle alongside Latch Shaft (the top hex shaft of Drive Chassis). Determine length to cut Latch Shaft. Ensure compliance with reach ranges provided by ANSI A117.1 Standards before cutting. Typical vertical or “hung” sliding window installations cut Latch Shaft 3/4" out from face of adjoining wall. See photo #39—cover has been removed to better illustrate latch and crank shafts.

(Continued on page 15)



Control Hardware (continued)

Latch Control Shaft



(Continued from page 14)

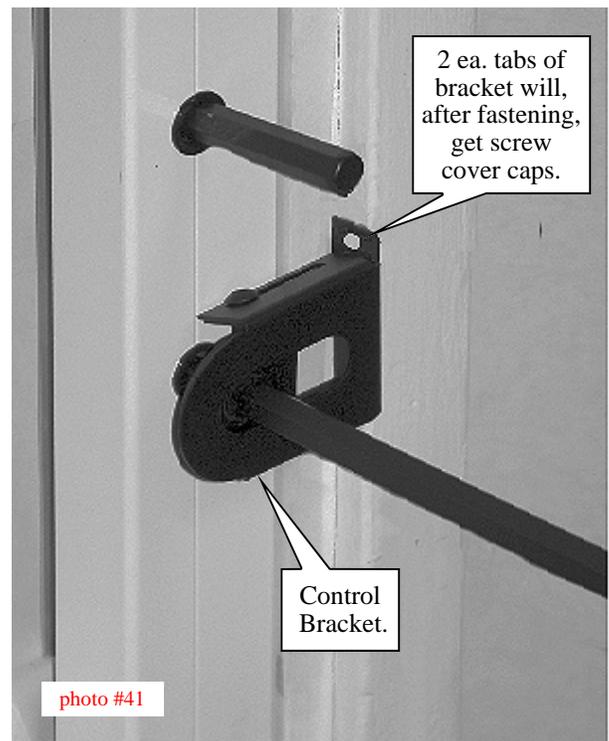
Most installations prefer the Latch Handle to point away from window (overhanging the adjoining wall). See photo #40. This allows for an “intuitive” operation of latch. When Latch Handle is in the up position, window is operable. When Latch Handle is in the down position, window is latched. In the latched position, Window Ease™ allows moveable sash to further close, but will not allow movement in the opening direction. This feature accommodates single hand operation of Window Ease™ controls.

[Slider installation - Some horizontal slider installations, for ease of use, prefer latch handle to point up and into window opening. Check that latch handle up does not reduce any minimum Code opening requirements. For latch handle up, cut latch shaft 1 3/4" from face of Drive Chassis — Latch Handle is mounted with about 3/16" clearance between itself and the cover.]

Crank Shaft

Cut Crank Shaft a minimum of 3/4" longer than Latch Shaft.

- 1) The Crank Shaft is the lower of the two hex shafts coming out of the face of the Drive Chassis. Cut Crank Shaft to length which is appropriate to your installation. At a minimum, Crank Shaft needs to be 3/4" longer than Latch Shaft to clear Latch during operation. See photo #40 above.
- 2) Crank Shaft will be additionally supported by the Control Bracket. See photo #41. Loosen 1/8" Allen screws on bracket, slip over Crank Shaft. Normally, bracket will be fastened to the jamb with the #10 x 2" screws found in Bag “A”. Before you fasten, find black screw cover caps and their bases from Bag “C”. Install screw cover base onto screws and fasten support at each tab to jamb. Snap on black screw cover caps, do final adjustment for good alignment, and tighten Allen screws.



Control Hardware and Covers (continued)

Control Handles and Labels

(Labels found in bag “C”)



1. Install Latch Handle with adequate clearance for movement and tighten 1/8” set screw.
2. Install Crank Handle and tighten set screw. Fully close window and latch. Turn crank handle direction to open window, it will clutch. Continue turning crank handle to a position you think best for appearance when window is in fully closed position.
3. Install a Window Ease™ label along the inside edge of a cover.
4. Install “Latch” and “Open” labels on face of Cover and along side Latch and Crank shafts. Ensure operation arrows are correct. See [photo #42](#) this page and [photo #40](#) on page 15.

Testing

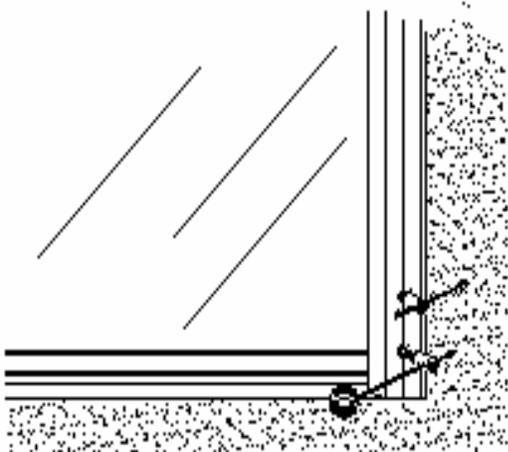
Testing

Congratulations! You have installed your first Window Ease™ window actuator. If you have a tip that will improve this manual or our product, let us know. If we use your tip, we will send you \$25. Call or fax your ideas to:

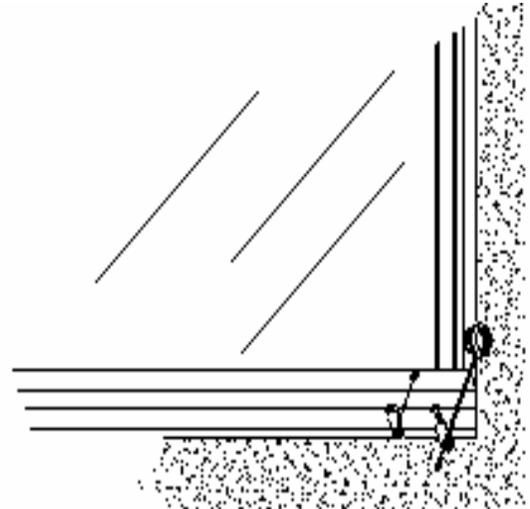
*A-Solution, Inc.
1332 Lobo Pl. NE
Albuquerque, NM 87106
phone (505)256-0115
fax (505)256-3756
or
www.windowease.com*

1. Ensure latches that came on the window are either disabled or removed.
2. Disengage Window Ease™ latch and crank window up and down ten times to ensure everything is working correctly.
3. Open window half-way. Engage latch and then fully close window. Check that window gasket closure is complete.
4. Disengage latch. Lift window to see that Crank Handle will “free wheel”.
5. CONGRATULATIONS! YOU HAVE SUCCESSFULLY INSTALLED A WINDOW EASE™ WINDOW ACTUATOR. LATCH WINDOW BEFORE LEAVING IT.
6. If you have problems - see the **Trouble Shooting** section of this Installation Manual on page 18.

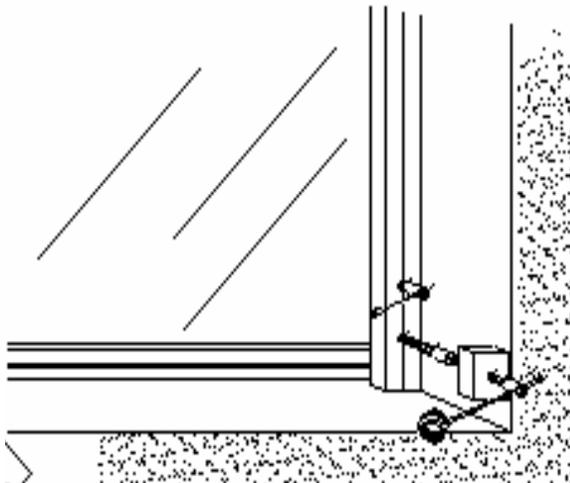
Typical Installations



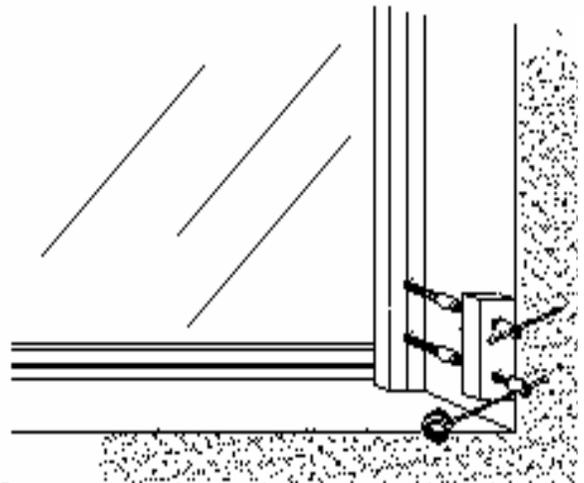
Standard installation on "hung" window.



Standard installation on "slider" window.



Deep jamb with optional Crank extension.



Deep jamb with optional Crank and Latch extension.

Trouble Shooting

Problem

- ◆ There is not 7/16" of frame on the moveable sash to attach the Sash Assemblies. The glass goes right into window channel.
- ◆ Window was square in opening and operating OK, but now is "cock-eyed" in the frame. A "popping" may have been heard just before noticing the window was crooked.
- ◆ Crank Handle "clutches" and won't move the window at some point of it's travel.
- ◆ Window Ease™, and not the window, is squeaking.
- ◆ Corner Covers fell off.
- ◆ Install mini-blinds in between the Window Ease™ covers.

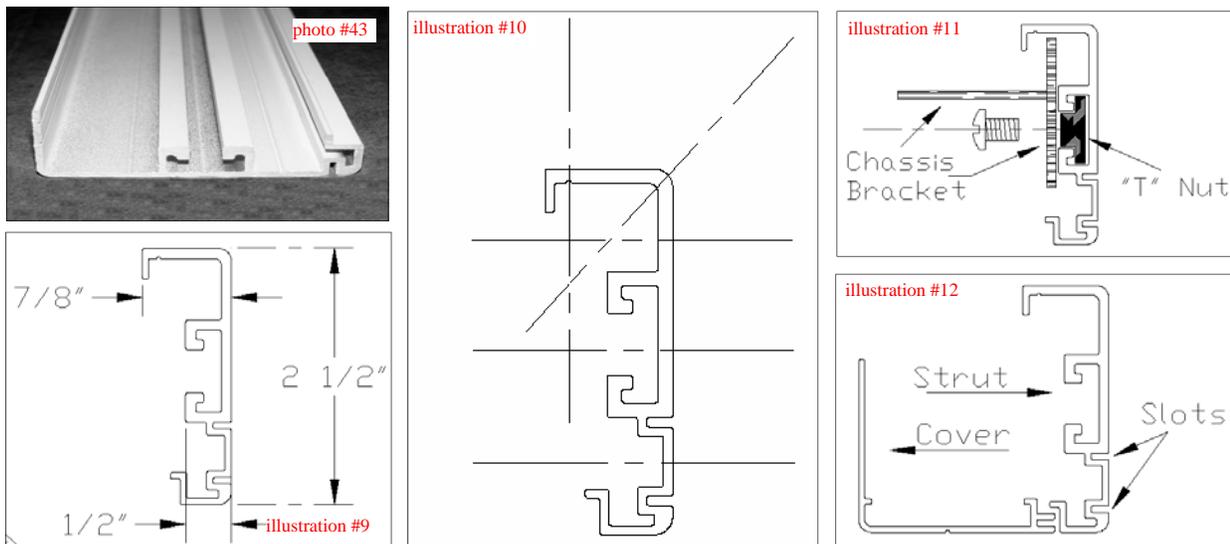
Solution

- ✓ Order optional Sash Rail Adhesive. Glue rail directly to glass. [See Appendix Installation Instructions — Rail Adhesive.](#)
- ✓ Check spring placement. Refer to page 11 illustration #8. Improper spring placement can allow belt to "jump" a cog in a pulley. Note that drive and idler side do not have the same spring locations. Fix springs then re-adjust following procedures on page 12 .
- ✓ If spring locations are correct, and window is square to frame, remove springs and re-tension belts following all steps on page 10. Re-adjust following procedures on page 12 .
- ✓ Window is requiring a greater force to operate than it should. Remove Window Ease™ and measure operating force of window. Fix window to operate correctly. If operating force of window is within 35lbf limit, re-install Window Ease™. See note 6 page 5.
- ✓ Belts are far too tight. Loosen them and follow procedures on page 10 .
- ✓ Belts are far too tight. Loosen them and follow procedures on page 10 of this manual.
- ✓ Transfer Assembly is in a "bind". Remove belt and test for effortless rotation with
- ✓ Warm up room to 70° F. Use a ScotchBrite™ pad to de-gloss attachment surfaces and then clean with provided alcohol wipe where tape is to stick. [See page 14 .](#)
- ✓ You may attach directly to the side covers (not the transfer - top cover) of Window Ease™ provided that screws do not interfere with the belt or other moving part.

Appendix Installation Instructions

Mounting / Mull Strut (optional)

Optional Mounting / Mull Struts are universal mounting adapters and may be used to supplement standard installations such as shallow jambs or mullied windows without architectural modification. Struts are used in conjunction with the standard mounting brackets. If you encounter problems not addressed in this manual or need assistance please phone us at (505)256-0115 or FAX (505)256-3756, M-F, 8:00-4:30MST to reach our Technical Support.



Critical Dimensions

The critical dimensions for Mounting / Mull Struts are the same as standard installations. See illustration #4 on page 3. Mounting Struts are used to resolve chassis and transfer bracket mounting issues and also provide cover closure in shallow jamb and mullied window installations.

Mounting / Mull Strut

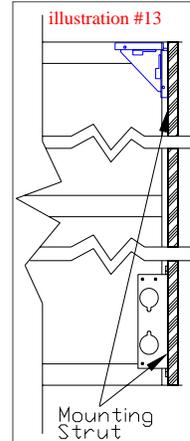
Mounting Struts and Mull Struts are identical except that Mounting Struts are mill finish and Mull Struts have been finished to match the cover color of your order. Struts may be installed in new or existing construction and are useful in facilitating many installations, such as the following:

- Jamb [head/sill if horizontal slider] is less than 2 3/8" deep .
- There is no jamb or head - window is flush with interior wall.
- Jamb [head/sill if horizontal slider] is of a material which cannot accept or hold a fastener.
- Strut may be used instead of furring to achieve critical 1 3/4" maximum (see Critical Dimensions, pages 2 & 3).
- Mullied window installations use Mull Window Kit, one for each Window Ease™ to be installed, and include finished strut and other required parts.
 - ✓ Back-to-back when it is desired to operate two or more side-by-side windows.
 - ✓ Single when only one window out of a mullied set is desired to be actuated by a Window Ease™.

Mounting Strut - continued



- ◆ Determine Sash Assembly installation. See Sash Assembly page 3.
- ◆ If you ordered **Mounting Strut**, it was provided with 6 each 1/4 - 20 x 1/2" carriage bolts & nuts.
- ◆ If you ordered **Mull Kit**, it was provided with strut powder coated to match your covers, an "L" shaped bracket for attaching foot of strut to window sill, and 6 each 1/4 - 20 x 1/2" carriage bolts & nuts.



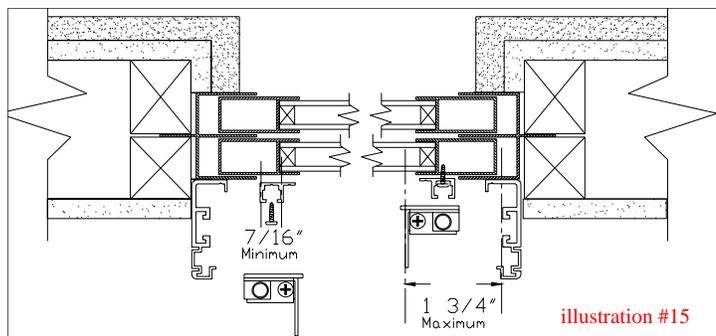
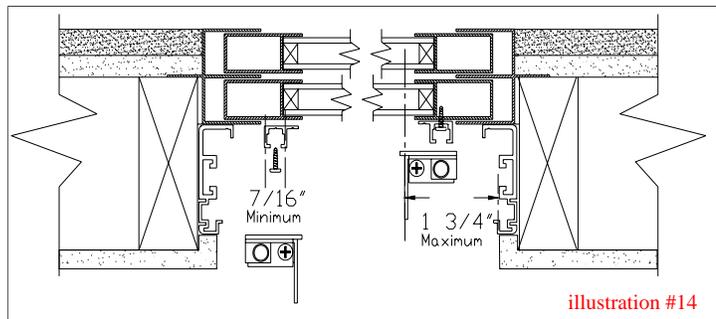
STEPS

1. Cut Strut
 - ◆ "Full Length". If vertical hung - head to sill (if horizontal slider - jamb to jamb).
 - ◆ Overlap window opening enough for a rigid attachment if full surface mount.
2. If required, furr out Mounting Strut to maintain the 1 3/4" maximum between the face of bolt nut channel to perpendicular leg of the Sash Bracket. See illustration #4 on page 3, and #14 & 15 this page.
 - ◆ Mull Strut—Position to accommodate 1 3/4" critical dimension.
3. **IMPORTANT**—Loosely attach the Chassis and Transfer Brackets with two each 1/4-20x1/2 bolts and nuts onto the unattached strut **before** attaching strut to window. If you don't do this, you will not be able to get 1/4-20 nuts into the Strut's track without drilling an access hole, and it is much easier to align the 1/4-20 nuts in the track to the bolt holes of brackets with the strut horizontal (it's an issue with gravity). See illustration #11
4. Attach Mounting Strut securely so as to resist twisting when force is applied to the actuator Crank. Illustration #10 indicates some of the possible points of attachment.
 - ◆ Mull Strut—If possible, attach the leg of the strut directly to the window frame. See page 20 "Typical Strut Installation Details". If you cannot, follow steps below:

1st. - You have already loosely attached the Chassis and Transfer Brackets to the strut in step 3 above.

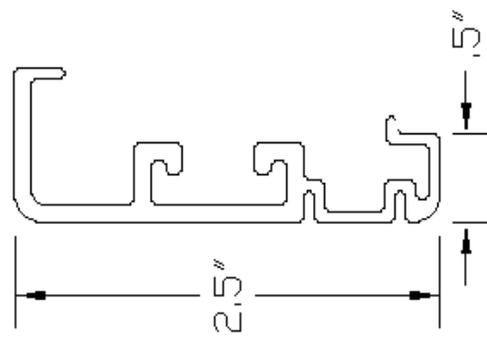
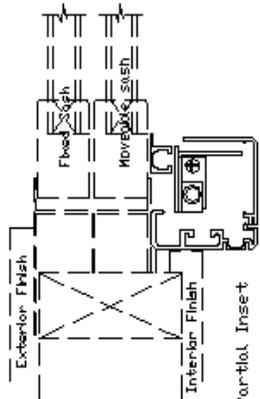
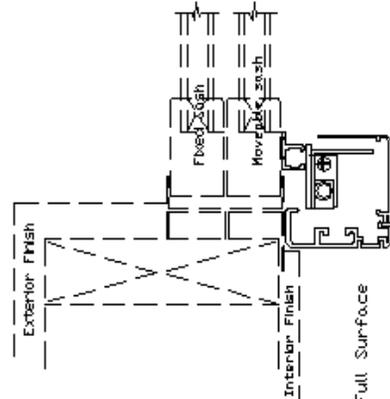
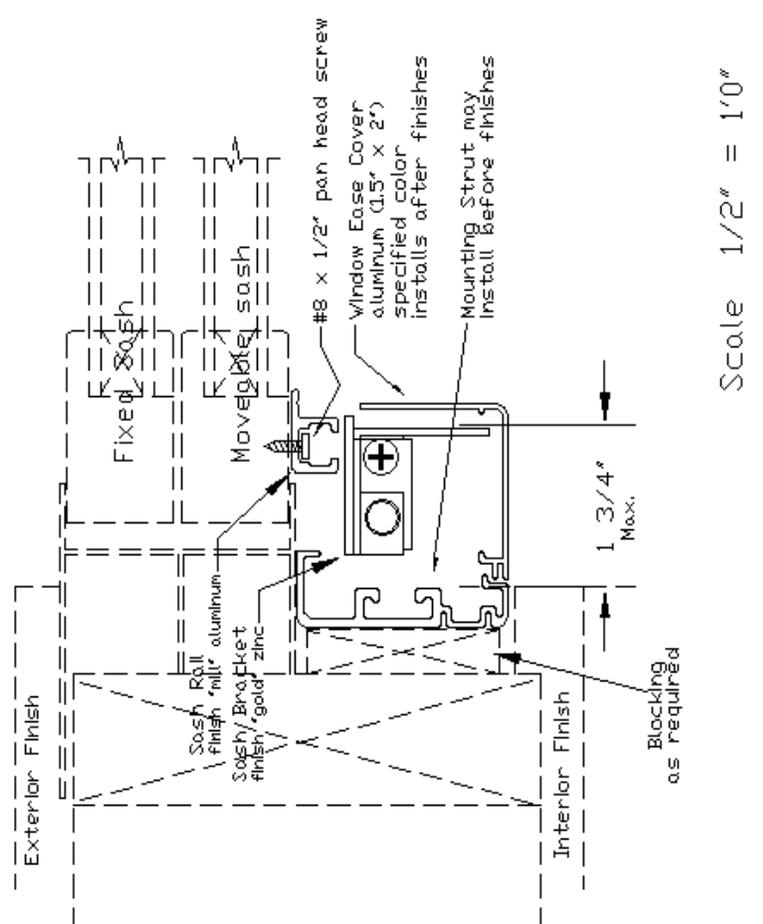
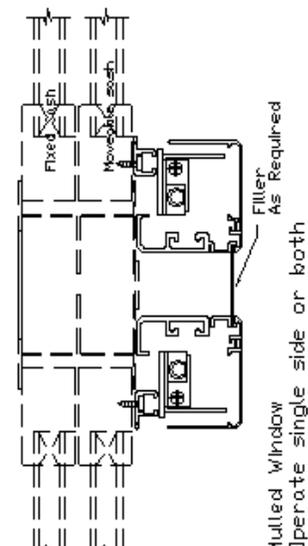
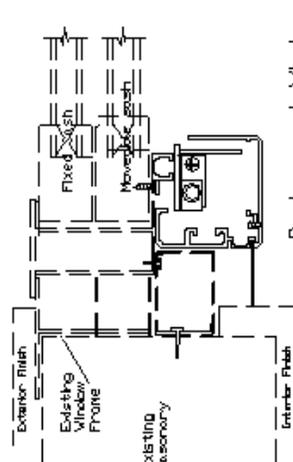
2nd. - Attach the "L" shaped angle bracket provided with the Mull Kit to the foot of the strut with two each 1/4-20x1/2 bolts and nuts.

3rd. - Attach the head of the strut by fastening the previously attached Transfer Bracket to the head of the window jamb and fasten the foot of the strut by fastening the "L" shaped bracket to the sill with an appropriate fastener for the sill material. You may have to loosen slightly the chassis brackets and move them out of the way to get access to attach the foot—careful not to loosen too much that your 1/4-20 nuts slide away in the track.



4. After struts are installed, continue with Window Ease™ installation. Illustration #12 shows the installed Cover and strut relationship.
5. If Mounting Struts have been installed prior to finishes, advise builder to install plaster or drywall stop if needed.

Typical Strut Installation Details

<p>Optional Mounting Strut ACAD .dwg files available</p>	<p>Typical Installations -New Building -Replacement Windows -Mullied Windows</p>	<p>Mounting Strut Linear Extrusion</p>  <p style="text-align: center;">Full Scale</p>															
 <p style="text-align: center;">Partial Inset</p>		 <p style="text-align: center;">Full Surface</p>															
 <p style="text-align: center;">Scale 1/2" = 1'0"</p>		 <p style="text-align: center;">Scale 1/4" = 1'0"</p>															
 <p style="text-align: center;">Replacement Window</p>		<p>Window EaseSM From: A-Solution, Inc. Albuquerque, NM (505) 256-0115</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="font-size: small;">DRAWN</td> <td style="font-size: small;">RAG</td> <td style="font-size: small;">DATE</td> <td style="font-size: small;">SCALE</td> <td style="font-size: small;">AS MARKED</td> </tr> <tr> <td style="font-size: x-small;">REV</td> <td style="font-size: x-small;">10/04</td> <td style="font-size: x-small;">1/04</td> <td style="font-size: x-small;">1/04</td> <td style="font-size: x-small;">1 of 1</td> </tr> <tr> <td colspan="5" style="font-size: x-small;">DWG NO. 3155A</td> </tr> </table>	DRAWN	RAG	DATE	SCALE	AS MARKED	REV	10/04	1/04	1/04	1 of 1	DWG NO. 3155A				
DRAWN	RAG	DATE	SCALE	AS MARKED													
REV	10/04	1/04	1/04	1 of 1													
DWG NO. 3155A																	

Trouble Shooting - Mounting Strut

Problem

Solution

- ◆ Forgot to put 1/4-20 nuts into Mounting Strut channel before installing.

- ✓ Nuts may be added by opening an insertion opening about mid-length on the Strut. Clip both sides of the “nut” channel about an inch apart with side cutters. Bend open enough to form a rectangular opening large enough to slip the nuts into channel. Careful not to damage channel within 1’0” of the ends where you need to attach Chassis and Transfer Brackets. Nuts may be held in position with tape when installing brackets..

- ◆ Mounting Strut is conflicting with Covers or Covers don’t snap on correctly.

Strut was twisted or bent in installation or it has finish material (paint, drywall, plaster, etc.) on area(s) where Strut mates to Cover.

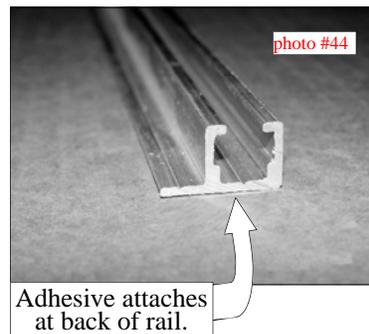
- ✓ Clean area of Strut where finish material is “holding off” Cover from snapping into place.
- ✓ With wide jaw sheet metal Vise Grips™, bend Strut as required to alleviate conflict.

- ◆ Covers or Corner Covers don’t fully cover Mounting Strut.

- ✓ Mounting Strut was cut too short. Strut should be cut “full length” - head to sill [jamb to jamb if horizontal slider].
- ✓ Relocate Transfer Bracket to be flush with the end of the Mounting Strut.

Sash Rail Adhesive (optional)

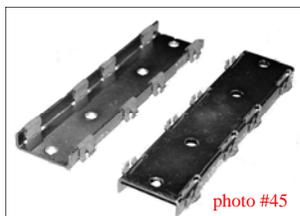
The Sash Rail (see photo #44) is shipped in 6'0" sections and will be cut to size for each side of window. See Sash Assemblies beginning on page 3. In some instances, the rail cannot be attached to the moveable sash as preferred with mechanical fasteners. The rail can alternatively be glued directly to the surface of the glass or to the frame of the moveable sash with optionally provided Sash Rail Adhesive.



1. Determine the best location for rail that will maximize contact surface between the rail and the moveable sash. The rail should be as long as possible. Cut rail to length.
2. With abrasive pad provided, break the back (flat) surface of the rail. Wipe surface clean with provided alcohol wipe and let dry. Sash Rail Adhesive comes in a 6'-0" roll and will be cut to length. Cut adhesive to the same length as rail and adhere to the prepared back surface of the rail.
3. Again with abrasive pad provided, break glaze (except glass) by abrading the surface that will receive the rail and wipe surface clean with provided alcohol wipe. Be careful not to abrade surface finish outside of where rail will cover.
Glass— Glass does not need to be abraded, but does need to be very clean. Clean with provided alcohol wipe and let dry.
4. Loosely attach Sash Bracket to rail with provided 1/4-20x1/2" bolts and nuts. See Sash Assembly starting on page 3. Press rail to moveable sash ensuring good adhesion. **Adhesive should "cure" 72 hours at 70°F before applying a load to the sash rail** (e.g. cranking and latching window).

Joiner Plate (optional)

Covers and Mounting / Mull Struts are provided in 6'-0" sections. If longer sections are required they are joined with joiner plates. Joiner plates are "U" shaped. See photo #45.

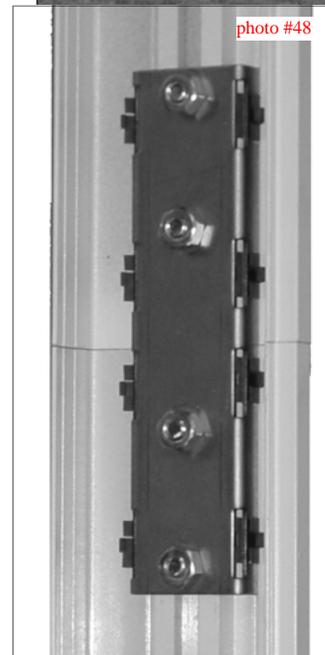
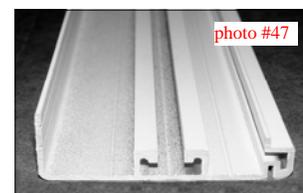
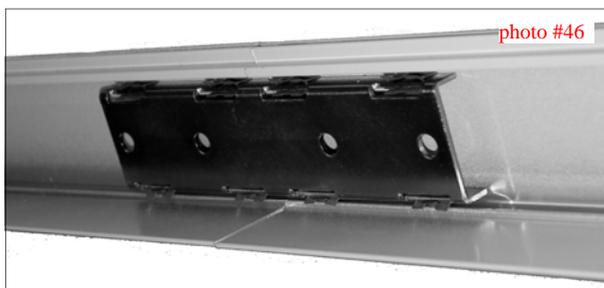


Joining Covers

Butt factory-cut or squarely-cut ends of covers tightly and snap plate into place. See photo #46.

Joining Struts

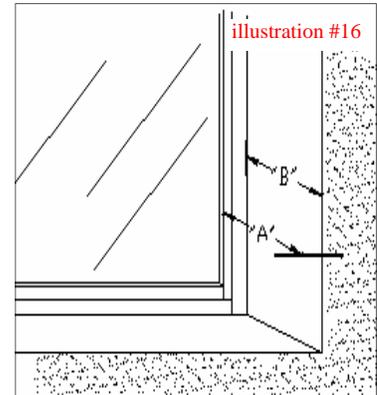
Slide 2 each provided 1/4-20 carriage bolts into each end of factory-cut or squarely-cut ends of struts. Butt together tightly, slip plate over nuts, and tighten. See photo #48. Careful! Over-tightening will deform plate and weaken it.



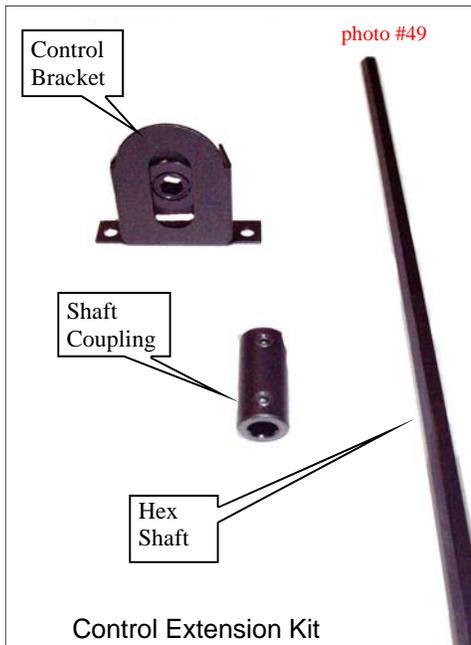
Control Extensions (optional)

The standard Window Ease™ kit will accommodate a jamb up to 10 1/2” deep. See dimension “B” of illustration #16. The crank and the latch control handles may each be extended to accommodate a “jamb” of up to 6’0” deep with an optional Control Extension Kit.

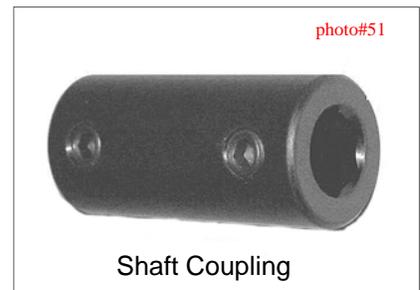
Each optional Control Extension Kit includes one Control Bracket, one black hex shaft (up to 6’0” long), and one Shaft Coupling. See photo #49. One each Control Extension Kit will be required to extend either the Crank Handle or the Latch Handle. They can both be extended with two kits. If extending both the controls, the Control Brackets will be mounted one above the other.



1. The basic Window Ease™ kit included one Control Bracket. Extending controls over 10 1/2” will usually require two brackets for the Crank Handle. This bracket supplied in the basic Window Ease™ kit should be mounted within 8 inches of drive side cover while leaving space for the Shaft Coupling. See photo #41 on page 15.
2. The Extension Kit Control Bracket, either for the Crank or Latch, should be located as close to the handle as possible. Determine the best location for the Control Bracket(s).
3. Loosen 1/8” Allen Screws on Shaft Coupling and slip onto the Crank or Latch shaft that you are extending. Attach appropriate length of extension shaft to the existing shafts by tightening Allen screws.



4. Loosen 1/8” Allen screws on Control Bracket, slip over the new extended shaft. Normally, bracket will be fastened with the #10 x 2” screws found in Bag “A”. Before you fasten, find black screw cover caps and their bases included in Control Extension Kit. Install screw cover base onto screws and fasten bracket at each tab to jamb. Snap on black screw cover caps, do final adjustment for good alignment, and tighten Allen screws.



Parts List

Boxed Kit

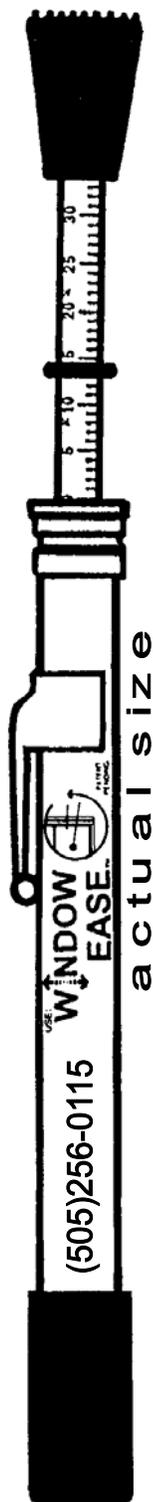
Quantity	Description	Manual Page
2 ea.	Sash Assemblies	page 2
2 ea.	Transfer Brackets	4
2 ea.	Chassis Brackets	5
1 ea.	Drive Chassis	6
1 ea.	Idler Chassis	6
1 ea.	3x8" hex Transfer Rod	7
2 sets	Pulleys and hangers	7
1 lot	Belt	8
2 ea.	Transfer Cover Plates	8
1 lot	Covers	13
1 left	Corner Cover	14
1 right	Corner Cover	14
1 ea.	Latch Handle	15
1 ea.	Crank Handle	15
Bag "A" - Fasteners		
11 ea.	#10 x 2", Phillips head screws for attaching Chassis and Transfer Brackets directly to Jamb and/or Head or Sill (3-4 ea.) <i>[Not used with Mounting Strut]</i>	pages 4 & 5
17ea.	#8-32 x 5/16" Phillips head Taptite™ thread rolling screws to attach both Chassis to brackets (4 ea.), and both Transfer Plates to brackets (4ea.).	pages 6 & 8
Bag "B" - Hardware		
7 ea.	#8-18 x 1/2" Phillips head Tek self-drillers to attach Sash Attachment Rail to moveable sash.	pages 3 & 4
4 ea.	1/4-20 x 3/8" Phillips head machine bolt to attach Sash Bracket to Sash Attachment Rail.	pages 3 & 4
4 ea.	1/4"-20 standard nuts .	page 9
4 ea.	Belt Plates to attach belt to Sash Bracket	9
9 ea	Belt Clips to attach Extension Springs to Belt	11
4 ea.	2 3/16" Extension Springs	9
Bag "C" - Belt Tension & Covers		
1 ea.	IMPORTANT! 8-32 x 1/2" Phillips Taptite™ thread rolling screws for latch "lock-out".	page 12
2 ea.	Grommets to trim 5/8" control holes in cover.	13
1 ea.	Abrasive for adhesive strip areas—and for optional.	14
1 ea.	Alcohol Wipe to final clean all adhesive strip areas.	14
5 ea.	Corner Cover adhesive strips .	14
2 ea.	Black snap cap screw covers and bases for Crank Support Bracket.	15
1 ea.	Window Ease™ product label .	16
1 ea.	Open & Latch labels .	16

Tool List

Power Drill/Driver	1/8" drill bits, #3 UniBit®, #2 phillips bits w/3"+ extension
Reciprocating Saw (Makita's battery bayonet saw is ideal.)	Non-ferrous metal blade 20-24T
Power Miter Saw (Speeds things up if doing production job)	Non-ferrous metal blade to smooth cut .062" aluminum
Diagonal Cutter	4 to 6"
Allen Wrench	1/8"
Screw Drivers	#2 Slot, and #2 & #3 Phillips
Hack Saw	Fine tooth blade
Wrench	Adjustable <u>or</u> 3/8" open end
Needle nose pliers	Standard size
Metal File	8" flat bastard
Safety Glasses	Standard
Pencil	
Tape measure	
Scratch Awl	
Tri-Square	
Step stool or short ladder	
Glass cleaner, rubbing alcohol and paper towels	Included in Bag "C"
ScotchBrite™ Pad	Included in Bag "C"

WINDOW AND DOOR FORCE GAUGE

Designed specifically to measure force of operation.
0-35 pound force (lbf) range.



- ◆ Pocket size gauge is a handy way to measure required window and door operating forces.
- ◆ Available for \$29 by ordering with Visa or MasterCard through our secure web site found at www.windowease.com.

OPERATION INSTRUCTIONS

- Set the small “O” ring located on the plunger rod to zero - down against the instrument’s flange.
- Holding the instrument firmly, apply force gradually until window or door moves it’s required travel. On a window, force should be applied at a mid-point which would prevent window from “racking”. On a door force should be applied at the handle or 30 inches in from hinges, whichever distance is greater.
- The required force to operate (lbf) may be read from the bottom of the “O” ring.
- After installing Window Ease™, required operating force may be measured at the Crank and Latch as actuator now operates window.

WARRANTY

Southwest Home Products, LLC. warrants **Window Ease™** window actuator against defects in material or workmanship for one year which shall begin at Substantial Completion or four months from date of invoice, whichever is earlier.

All claims against the warranty of the product must be made in writing to the attention of the Product Manager, and are limited to the replacement of the product or its credit at the net value originally invoiced.

This warranty covers repairs or replacement of defective materials only. **A-Solution, Inc.** shall in no event be liable for any incidental or consequential damages for breach of any warranty.

Southwest Home Products, LLC. is not responsible for product malfunction or appearance related to improper installation, or misapplication of the intended use of the product unless installation was made by A-Solution, Inc. or its assigns. **A-Solution, Inc.** is not responsible for damage in shipment, extraordinary abuse, failure of window which actuator is attached to, maintenance of window or actuator, or improper use of cleaning solvents.

Southwest Home Products, LLC. makes no other warranty or representation of any kind whatsoever, expressed or implied, except that title, and all implied warranties of merchantability and fitness for a particular purpose, are hereby disclaimed.

Correction by **Southwest Home Products, LLC.** of non-conformities, whether patent or latent, in the manner and for the period of time provided above, shall constitute fulfillment of all liabilities of **Southwest Home Products, LLC.** for such non-conformities, whether based on contract, warranty, negligence, indemnity, strict liability or otherwise with respect to or arising out of such product.

Steve Lucero
President

Southwest Home Products, LLC. ♦ P.O.. Box 91925 ♦ Albuquerque, NM 87199-1925

