OEM'S TOPSLIDE INTERNAL GLASS BLIND SYSTEM

July 28, 2009

OEM's Topslide Internal Glass Blind System

Description

A unique patented magnetically coupled helix driven tilt mini-blind for installation in sealed insulated glass or replaceable glass packages. A top mounted external magnet assembly controls the blind with a movable finger controlled slide device. The slide device moves the external magnet laterally left or right, which drives an internal magnet with which it is coupled. Moving the slide device left or right on the outer magnet assembly will tilt the blind.

OEM between the glass (BTG) mini-blinds when installed in an insulated glass (IG) package can be used in door window, regular window and office partition applications. The blinds offer convenient light level and privacy by tilting the slats to your preference. Gone is the need to periodically dust the blinds. The outer glass surface can be easily wiped and sanitized without affecting the blind. Since they are internally mounted, damage to the blinds from everyday use is avoided.

Definition of Blind

The tilt only IG blind requires a 0.750" internal glass airspace. The slat is aluminum alloy 6010-T8, size 15mm (.600") x .006" painted with low emissivity paint with a polyester Ultra Violet high resistant finish. Head rail is a two-piece system made up of a 6063-T5 aluminum alloy extrusion for outer glass surface integration and a high temperature plastic extrusion for inner glass surface integration. This not only simplifies the assembly process but also reduces thermal conductivity. The helix assembly is a multiple piece system made up of the helix, internal magnet, coupler, tilt rod, set screws, tilt drums and cradles. The coupling of the internal magnet-helix assembly with external magnet slide assembly through the glass creates the ability to rotate the assembly thus tilting the slats. The bottom rail assembly is a three-piece system consisting of an oval shaped 6063-T5 aluminum alloy extrusion, aluminum rivets and steel pins. The bottom rail pins fit into a receptor in the bottom corners of the spacer bar to properly tension and secure the blind for operation. Also, high temperature plastics are provided. The ladder tape and plisse cord are thermally fixed polyester and UV resistant. The sintered neodymium, iron-boron magnets have a produced energy of Bh max – 33 to 35 Mega Oesteds and a max working temperature of 248°F.

- **Accessories include:** the external slide operator, which mounts on the glass. The external operator is positioned opposite the internal helix/magnet assembly.

- **Options Include:**
  Magnet operator location – typically in the center. Can be located to the right or left of center if sizing requires center ladder tape. (Operator available in white only).
  Color – 4 colors (white, alabaster, tan, gold)

- **Glass Package (IG) Supplier Scope:**
  Maintain ¾" air gap for blind operation, ensure width and height rectangular internal glass dimensions, install blind into IG package consisting of glass, box spacer, corner keys and sealant (provided by IG supplier). When installing the blind, the spacer bars must be clean and free of desiccant dust. The top spacer bar requires a lip on the lower front and back to mate with the head rail assembly. OEM will identify a source of supply for this spacer bar. Identify materials and fabrication process to OEM to ensure compatibility with blind.

  Ensure IG or replaceable glass package maintains the internal geometry necessary to allow slat rotation during environmental temperature and pressure excursions. Glass deflection (internal bending) must be limited to 0mm maximum to allow proper blind operation. Possible methods to relieve acceptable air gap include pressurization and/or the installation of capillary tubes.

  The blind must be installed in the vertical position for proper slat tilt. The sidetrack bottom pins must engage the holes in the ends of the bottom rail.

Blind Characteristics

Moving the outer slide operator to the left tilts the blind slats closed with the crown facing inside. Moving the slide operator to the right tilts the blind closed with the slat crown facing outside. Positioning the operator in the middle fully opens the blinds. Control is very light to the touch and allows positioning of the blind slats in any position between fully closed and open.

Production Charts

The capability grid attached serves as the available/producible operating range (width and height, outside glass dimensions) of blind for glass thickness from .125" (1/8"). Considering a ¾" air space, the minimum overall glass package thickness is 1 inch using 1/8" thick glass pieces. Contact OEM for special thicker glass applications.

Tolerances

- Size of blind is typically glass size less 7/8 inch for both width and height. This cutback is derived as follows and applies to both width and height. Spacer bar width 5/16 inch (quantity of 2) and sealant of 1/8 inch (both sides) for total of 14/16 = 7/8 inch. The spacer bar must have a thickness of ¾ inch to maintain air gap. For other spacer bar dimensions, contact OEM to ensure proper blind sizing.
- A space of approximately 1/8" is left each side between slats and spacer for a free movement of the system and to allow thermal transmission of the aluminum slats.
- The typical production tolerance is +0/-1/16 inch for the width of the blind. The tolerance for the height of the blind is +1/8 inch with the overall length shorter than the inside side spacer height, consequently the bottom rail pins will engage the holes in the side spacer with some tension and be slightly above the lower spacer bar.

Ordering Information

It is important to be precise when ordering. The following information must be provided.

- Color – 4 colors (white, alabaster, tan gold)
- Outside glass size (width and height)
- Operator location (normally in the center, offset to the right if the ladder tape in the center of the blind)
- Sightline deduction or cutback
- Quantity of blinds ordered

Confirmation and Tests

The blinds have completed ASTM E 774-97 testing in IG units for durability classification by the Insulating Glass Certification Council.

Assembly Instructions

- General information – work place clean and free from dust, handle blinds with care and cleanliness, do not contact the slats with sealant
- Receipt checking – check the blind package for no damage, ensure all components are available, verify correct size

Fill the side spacer bars with desiccant material and install corner keys. Drill a 5/32" hole 5/16" from the bottom end of each side spacer bar. Drill ¼" deep, going only through the inside layer or the spacer bar and into the plastic corner key. Assemble the top (hooked) and side spacer bars plus one corner of the bottom spacer.

Layer the spacer bar assembly on a flat table. Remove the blind from its packaging material. Remove paper wrapper and unravel plisse cord. Place the blind between spacer bar assembly and lower bottom rail (ensure plastic head rail – magnet appears through a slot – is facing upwards) until blind is fully stretched to its length. Remove the plastic part of split head rail assembly. The next step is to fully engage the aluminum part of the split head rail assembly into the back lower portion of the top hooked spacer bar.

Carefully rotate the aluminum head rail upward with its hooked portion engaging the hook on the bottom back of the top spacer bar. Obtain alignment between the hooked portions. Then rotate the aluminum head rail back towards the table. The hooks will then engage. Ensure a smooth, flat transition between the top spacer backside and the back of the aluminum head rail. Carefully reinstall the plastic head rail assembly. The bottom flat portion must slide directly below the aluminum bottom flat portion and above the bottom lip of the cradle gooseneck assembly. Push the upper hooked portion of the plastic head rail assembly into the mating hook at the bottom of the front of the hooked top spacer bar. Ensure a smooth, flat transition between the top spacer front side and the front of the plastic head rail. Verify no damage to the ladder tape and slat clip. This completes the assembly of the blind head rail into the top hooked spacer bar.

The next step is to complete the installation of the blind assembly into the spacer bar assembly. Ensure the blind is stretched to full length. Insert the bottom rail pin into the side spacer bar hole where the bottom and side spacer bar are connected. Then, simultaneously place the pin on the other side of the bottom rail into the hole on the bottom of the side spacer while connecting the side and bottom spacer. The blind and spacer bar are mated and now ready for the addition of glass on both sides of the spacer bar.

To test for proper blind operation, place the spacer frame and blind assembly in the vertical position with the magnet at the top. Using the thumb, move the magnet left and right. Verify smooth operation with the blind slats closing properly in both the crown in and crown out positions.

Position the spacer bar/blind assembly on one side of the glass. Seal in an appropriate manner, avoiding potential contact between butyl and blind when installed. Ensure glass is not bent or bowing inward. While positioning the spacer bars on the glass be sure of their perfect parallelism. For low-e glasses avoid rubbing the blind on the glass or damage while handling. **SOFT LOW-E GLASS IS NOT RECOMMENDED WITH BLINDS.** Install the second pane of glass over the blind and spacer bar. Ensure glass is flat and does not bend inward to impede blind operation.

Ensure a ¾ inch air gap and proper width and height of the package. Some techniques to be considered to maintain air gap are capillary tubes (pressure equalization) and a slight internal pressurization. IG producer to establish proper technique.

Seal the second pane of glass to the spacer bar.

- Checks
  Position the double-glazing in a vertical position and check for parallelism of the glasses. Check for visual defects. Test the blind for operation using the external magnet slide assembly. Rotate the blind slats prior to moving the double-glazing unit.
- Transport
  Use special trolleys to position the unit vertically and with the blind on the lower side or side part if IG unit.

<u>Final Installation</u>

Check the shape of the glass ensuring the ¾ inch air gap. If the internals are pressurized slightly, close off the supply and seal the unit after verifying free movement of the internal blind. Ensure the unit is positioned vertically for this check.

If the external magnetic slide assembly is to be installed at this time follow the steps below;

Provide necessary space around the internal magnet to interface with the external magnet.

Position the external magnet after carefully cleaning the glass area where it will be placed. For proper operation the external magnet must be perfectly aligned with the internal one. Therefore, before removing adhesive protecting film, position the external magnet on the glass next to the internal one. Verify smooth slat rotation of the blind. Then remove the film and position the external magnet on the glass following the magnetic attraction.

Moving the outer slide operator to the left tilts the blinds crown inward and moving to the right tilts the crown outward.

Operation

The IG blind regulates the amount of internal light and allows darkening in the case of strong luminosity. Darkness will not be total since the ladder tape separates the slats and the slats contain holes to allow for passage of the plisse cords. A side space must also be provided to allow free tilting movement of the system and thermal dissipation of the aluminum slats. This space also allows for assembly tolerances inside the double-glazing.

IG blind manuals do not give corner closure values of the slats. They indicate, in the case of a closed blind, that an external observer outside the house watching in parallel inside through the closed venetian blind must not see any object inside.

Warranty

- Blind repair or replacement only:
  10 years when not exposed to greater than 220°F

- Outside operators (0219L) – 1 year