

INSTALLATION OF A BAY WINDOW



SAWDAC
SIDING AND WINDOW DEALERS
ASSOCIATION OF CANADA

Installation of a Bay Window

These instructions relate to the replacement of an existing bay window or replacement of a straight window with a new bay window, in an opening no more than 12 feet wide and 6.5 feet high. For larger windows, manufacturer's or engineer's specifications are required. These instructions refer to bay windows but principles and methods are the same for bow windows. To support a bay window from above the window must be located under a roof overhang. Any doubts about the structural capability of the roof overhang will require engineering evaluation. An alternative to roof support is installation of support brackets under the window seat.

Bay Window Components: (Exhibit #1 and Exhibit #2)

A bay window consists of a centre window unit, two side window units, a seat, a head and jambs with a projection that extends the window units beyond the rough stud opening (RSO). Bay windows can be assembled by the manufacturer or assembled by the contractor. Material used for head, seat and jambs is exterior grade plywood, minimum $\frac{3}{4}$ inch thickness. We recommend the use of an insulated head and seat. (Exhibit #3)

Prepare Opening:

Clean and prepare the RSO to allow for $\frac{1}{2}$ inch to 1 inch shim space. In the case of a replacement, remove the old window including the head, seat and jambs. If necessary replace any rotted wood and remove the soffit in the area above the window. Cut away the interior drywall or plaster flush with the RSO.

Level Sub-Sill:

If sub-sill is level, fasten block shims (minimum $\frac{3}{8}$ inch thick) of plywood or lumber no more than 16 inches apart across the sub-sill. Where sub-sill isn't level (bowed or twisted) level a straight edge on two corner shims. Then set shims of varying thickness and/or tapered shims at 16 inch centres along the sub-sill such that these shims make contact with the straight edge. Shims must be a minimum 2 inches x 4 inches in size (to support weight of window).

Set Bay Window in Opening:

This is at least a three-man operation. Set window in opening. One installer centres the window in the opening from the inside.

Shim and Fasten Jambs:

Place shims at each top corner between jamb and RSO. Use a straight edge (carpenters square) to insure jamb and head are flush with interior wall surface. Note that the jambs must be plumb and therefore some adjustment away from the interior wall surface may be necessary. If jambs are not plumb operating casements will not function properly. Install fastening screws (#8 x 3.5 inch min.) through shims. Then shim and fasten each bottom corner in the same way. Make sure the window jambs are plumb and as flush as possible to interior wall surface.

Note: From this point on only one installer is needed. Helpers may leave.



Shim and fasten jambs at two equally spaced locations between top and bottom fasteners. Check that the interior of the window is plumb, level and square.

Supporting a Bay Window:

Since much of the weight of a bay window extends beyond the wall the bay window assembly may sag or deflect downward over time. Support is required. This support may come from above the window or below the window.

Supporting a Bay Window from a Roof Overhang:

In this method of support the load must be carried in a vertical line above the point of attachment. The point of attachment on the bay window is the window seat at the corner mullion (where centre light and side light meet). The point of attachment on the roof is a roof rafter.

Roof Connection: (Exhibit #4)

If a roof rafter is located directly above a corner mullion, fasten a ring bolt to one side of the rafter as close to the roof sheathing as possible and in a plumb vertical line above the corner mullion.

When the corner mullion is located between rafters, a 1" steel conduit (EMT) is cut to fit between the rafters. This conduit is supported by two custom made plywood blocks (see Exhibit 12 parts list for plywood block details), fastened to the facing sides of two adjacent rafters.

Install the conduit assembly as follows: Fasten a wood block to one rafter using #8 x 2 1/2" wood screws so that the 1 1/4" hole in the block is in the same vertical plane as the corner mullion. Then place a 2 1/2" x 1/4" steel ring and a wood block onto the conduit. Place one end of the conduit into the hole in the wood block already fastened into place. Position the other end of the conduit (with wood block) in line with the first wood block and fasten block to rafter. (Exhibit #5)

Seat Connection:

A: Ordering the Seat Attachment from the Window Manufacturer:

Window manufacturer installs a threaded rod through each corner mullion from head to seat and attaches rod to window seat. The rod terminates above the head of the window in the form of an eye. Manufacturer insulates the corner mullion with foam then seals and installs coupler.

Connect eye in window head to roof support: (Exhibit #6 & Exhibit #7)

A turnbuckle, plus one or more S-hooks, as needed, complete the connection between the window and the roof. Tighten the turnbuckle as required to level the bay window.

B: Cable to Seat Attachment: (Exhibit #8)

In this case attachment to the window seat is done on site.

Drill 5/16" holes in the seat and the head at the two corner mullions. Run a 6" x 5/16" eye bolt down through each of the two holes in the seat. Thread a nut with washer onto the end of each eye bolt under the seat.



One end of a 1/8 inch steel cable is fed down through a hole in the head, looped through the eye bolt and back up through the hole in the head. The two cable ends are looped through or over the rafter connection, pulled tight and clamped together using wire rope clips.

Level Window:

Tighten the nut(s) under the seat as required to level bay window.

Install Corner Couplers:

Insulate the coupler space with low expanding polyurethane foam. Be sure to keep foam away from cable so adjustments, if necessary, can be made. Run a bead of silicone sealant into each coupler attachment groove, all the way from top to bottom. Install coupler using a rubber mallet.

Note: Do not pass steel cable through holes drilled in roof rafters or roof truss components. This may compromise the strength of the rafter.

Finish Interior:

To prevent possible deflection of the head, install shims every 24 inches between the head and the rough opening. Fasten with finishing nails at shim locations. Insulate space around window with low expanding polyurethane foam. Cut all shims off slightly less than flush and caulk the ends of shims. Install casing trim.

Installation Issues Related to Bay Windows:

Bracket Support: (Exhibit #9)

Installing a bay window where there is no roof overhang above. Example: on the first floor of a two-story building. In this case brackets are secured under the seat to prevent deflection of the window.

Weatherproofing Window Head Under Soffit: (Exhibit #10 & Exhibit 11)

With the soffit removed, fasten a flashing to the outside edge of the window head. This flashing must extend at least 2 inches above the plane of the soffit. Fasten soffit j-channel to flashing at the plane of the soffit. Cut soffit panels to fit new shape and install.

Weatherproofing Window Against Ice-Damming:

During winter, weather conditions may cause an ice build-up along the bottom few feet of a roof (usually the overhang part of the roof). Water may back-up, leaking through the roof shingles, through the roof sheathing and onto the head of a bay window. Installing a flashing to the bottom side of the roof rafters will direct this water to the back of the fascia, where, it can drain without causing any damage to the bay window. Applying a self adhesive water-proof membrane over the head of the window and 6 inches up the wall provides additional protection against water from above.

Replacing a Straight-wall Window with a Bay Window:

Where there is no roof overhang above a bay window a roof must be constructed to drain rain water. This roof must project beyond the sill of the window to allow dripping water to clear the sill of the window. Where this roof meets the wall it must be flashed in behind the siding and/or brick to drain water running down the drainage membrane situated behind the siding and/or brick.



Exhibit Pictures:

Bay Window Components

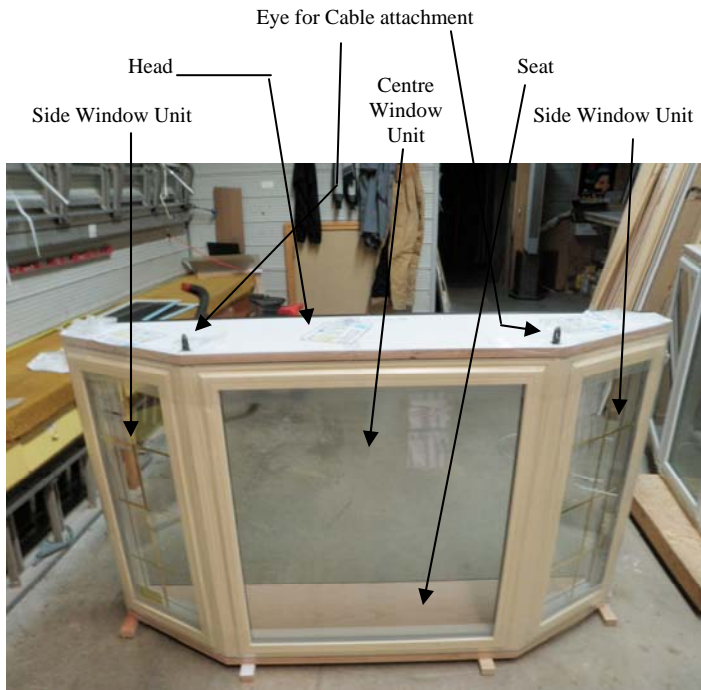


Exhibit #1

Bay Window Components

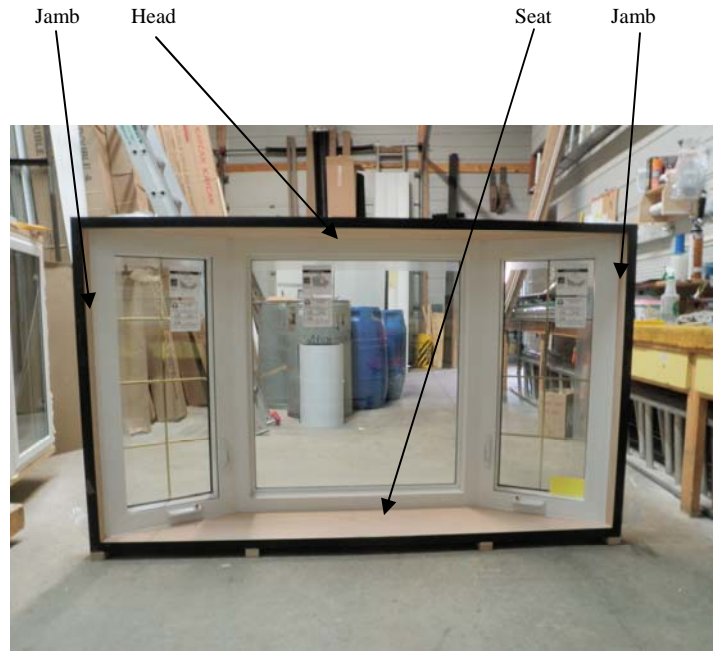


Exhibit #2



Exhibit #3



Exhibit #4



Exhibit Pictures Continued:



Exhibit #5



Exhibit #6



Exhibit #7



Exhibit #8



Exhibit Pictures Continued:



Exhibit #9



Exhibit #10

Head Flashing



Exhibit #11

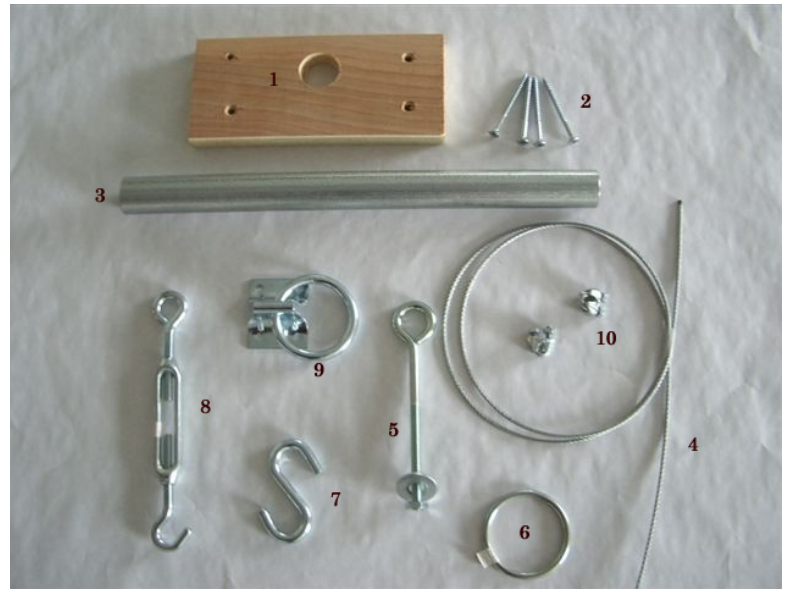


Exhibit #12

Bay Window Roof Support Parts List

Parts list:

- 1) Support Blocks
¾ inch spruce plywood select grade
3 1/2 inches x 8 inches
- 2) Wood Screws
#8 x 2 1/2" rust protected steel, flat head, wood screws
- 3) Steel Conduit
Minimum 1 inch EMT (electrical metallic tubing)
- 4) Steel Cable
Galvanized aircraft cable minimum diameter 1/8 inch
- 5) Eye Bolt + washer and nut
Minimum 5/16 inch x 6 inch zinc plated eye bolt
- 6) Ring
Minimum 2 1/2 inch x 1/4 inch zinc plated steel ring
- 7) S-Hook
3 inch x .5/16 inch zinc plated steel s-hook
- 8) Turnbuckle
Minimum 5/16 inch x 9 3/8 inch zinc plated steel turnbuckle
- 9) Bolt ring
Minimum 2 1/2 inch x 1/4 inch zinc plated steel bolt ring
- 10) Wire Rope Clip:
Minimum 3/32 inch zinc plated wire rope clip



Specs for the Support Blocks:

