

Milan Building Products
Bifold Door Installation Guide

PREPARATION OF THE ROUGH OPENING

For necessary clearance and adjustment space, rough opening is suggested to be 3/4" wider and 3/8" - 1" higher than the outside frame size of the unit ordered (check to comply with applicable codes for maximum shim space allowed, especially in high windload areas). It is important that the opening be the correct size. Note that the outside frame height of the unit ordered is measured from the bottom of the sill and not from the finished floor. Allowance must be made in height for the portion of the sill that is below the measured opening.

PLEASE NOTE – Because of the large opening sizes and the weight and movement of the panels, any application should take into consideration the following:

1. The structural integrity of the header is critical for proper operation. Vertical deflection of the header under full live and dead loads should be the lesser of L/720th of the span and 1/4". Structural support for lateral loads (both windload and when the panels are stacked open) must also be provided.
2. A qualified engineer or architect should be used to determine the proper construction details and header to be used in your particular application.
3. THE ROUGH OPENING SHOULD BE LEVEL, PLUMB AND SQUARE AT ALL POINTS. THERE SHOULD BE NO UNEVENNESS OR BOWING. MAKE SURE THAT THE HEADER IS NOT TILTED OR TWISTED. THERE SHOULD BE NO BUMPS ON THE FLOOR. THE SIDES SHOULD BE IN THE SAME VERTICAL PLANE AND NOT OFFSET OF EACH OTHER. A TRANSIT AND OTHER SIMILAR PRECISE MEASURING EQUIPMENT SHOULD BE USED.
4. With a recessed sill, if concrete is to be poured after the installation of the unit, the sill has to be securely attached to the construction. If the sill is to be cast in concrete, then an expansion gap with appropriate material has to be created next to the sill.
5. With a low profile saddle sill some resistance to water infiltration may be achieved by installing drain connections to the outside. If any anchorage or drain connection holes are made through these drain channels, make sure that they are properly sealed to prevent any water leakage. The open ends of these drain channels at each end of the sill should also be properly sealed. Alternative anchoring systems for the sill (without using screws through the drain channels) are using L brackets attached to both sides of the sill.
6. For better performance and protection, any exterior folding system should be installed under an overhang or with other similar protection.
7. For better performance it is recommended that all dead loads such as upper levels, roof, etc. be constructed before a unit is installed. Properly flash and waterproof around the perimeter of the opening, especially at the sill. Make sure you seek proper professional advice for the appropriate

construction needed for your particular application. Do not install unit in structures that do not allow for proper management/drainage of moisture.

To avoid future problems, do not install your unit until the rough opening has been correctly prepared.

FRAME ASSEMBLY AND INSTALLATION

Step 1

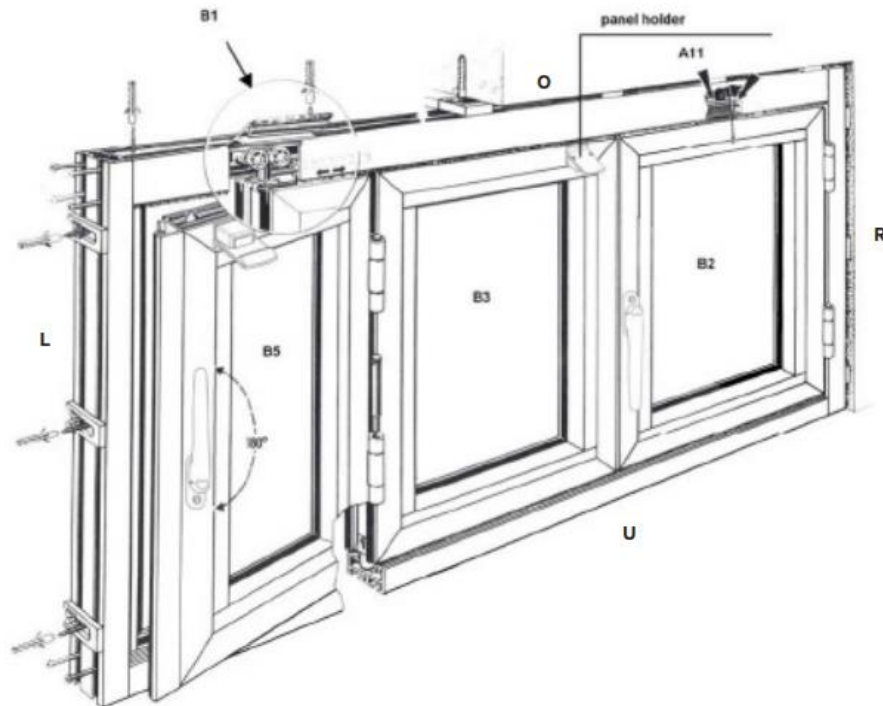
Lay the four frame components flat on the floor and align the ends to be connected. If the head jamb and sill regarding their length provided in segments, then connect them first. If a unit has angle changes in the floor plan, then separate information will be supplied. Make sure that the frame components are in the correct positions. The frame should be labeled U for sill, O for head jamb, and looking from inside, R for right side jamb and L for left side jamb. Note: If there are no weep holes in the sill, please check whether such holes are required and drill them if necessary. Please be careful to avoid scratching or damaging the components.

Step 2

Apply exterior grade sealant to all connection points between the frame components. The ends of the sill should be completely filled with sealant to prevent water leakage from the ends of the water channels on the sill. All drilled holes and fastener screws have to be sealed too.

Step 3

If a unit is ordered with a standard or a flush sill, assemble all frame parts as shown.



Step 4

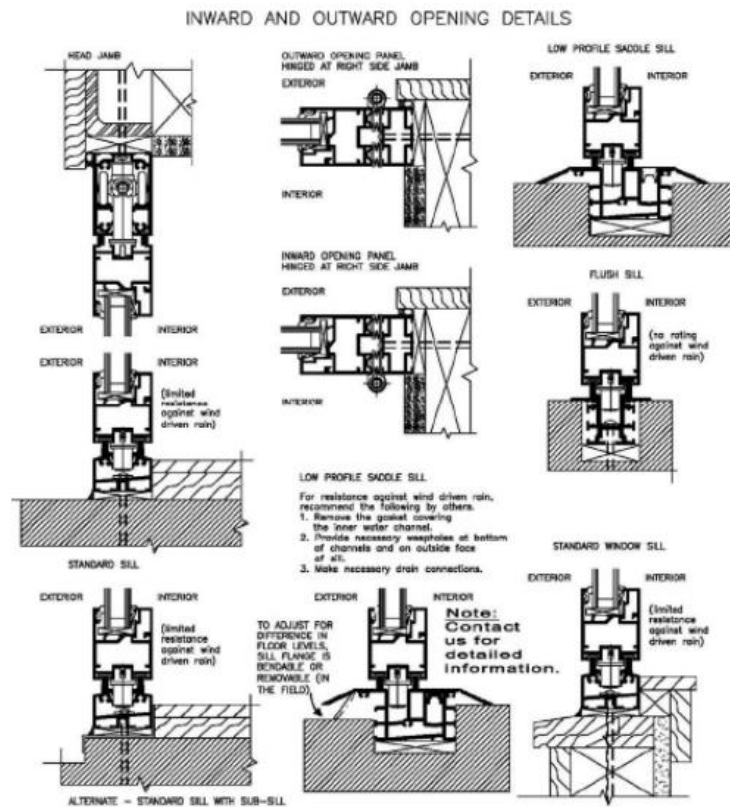
If the unit is ordered with a low profile saddle sill, then the side jamb rest on top of the sill. On the end of the sill are end dams with two flanges, which slide into the slots on the outside of the vertical side jambs. Screw them together with the provided screws.

Step 5

Be sure that appropriate flashing around the perimeter of the opening is installed. Set the assembled frame into the rough opening at the proper position relative to the header. Make sure the direction is correct with respect to inward or outward opening.

Step 6

Temporarily secure the frame to the rough opening with clamps.



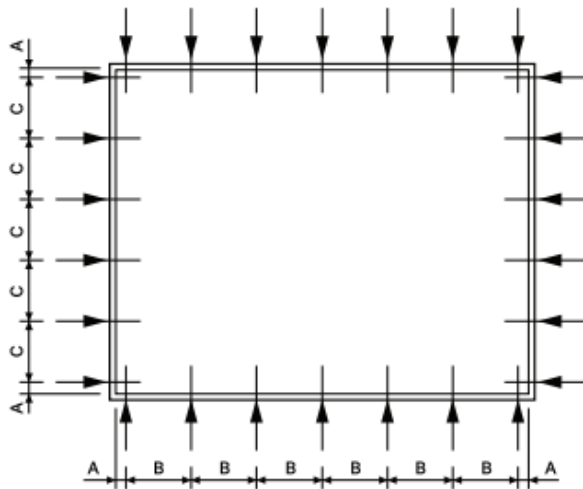
Step 7

Looking on a standard installation, which is limited to areas with a basic wind speed of not more than 90mph, in a low rise building (max. 60' roof height), Exposures B or C and a non critical status. Fasteners locations should start about 4" from the interior edge, drill holes for the anchorage devices to connect the frame to the opening at a spacing of not more than every 16" along the head jamb and the sill. On the head jamb and sill an additional fastener should be placed at the meeting point of panels in the closed position and anchorage points every 4" in the stacking area on either side. The spacing of the side

jamb should be about 14" starting at the bottom, using an extra screw at the top. For installation that are beyond the above limitations, a structural engineer should be consulted for specific fastening requirements.

Use appropriate screws or other equivalent anchorage devices depending on the adjacent substrate material and construction. Make sure they are corrosion resistant. Anchorage devices should penetrate or hold sufficiently to the opening to withstand necessary structural loading. Generally, for wood frame use #14 (1/4" diameter) wood screws with 2- 1/2" minimum embedment, for concrete with a minimum compressive strength of 3,200 psi use 3/16" diameter ITW Tapcons (concrete screws) with 1-1/4" min. embedment. For masonry use 1/4" diameter ITW Tapcons (masonry screws) with 1-1/4" embedment. Standard installation into light gage steel substrates with a minimum of 18 gage (0.0451" thick) should have 1/4" diameter type 410 stainless steel self drilling screws. Into structural steel substrates thicker than 1/4" should be predrilled and 1/4" diameter SAE Grade 2 bolts can be used. Another option is to use type 410 stainless steel self drilling screws. For this option first drill small pilot holes. Make sure that the screw head with washer (if any) is small enough to fit inside the slot in the middle of the head jamb and sill; otherwise, it will interfere with the rolling of the running carriages.

Make sure that the frame is level, plumb and square at all points. There should be no unevenness or bowing. If, for any reason, the floor is not level, shim with plastic horseshoe shims to the highest point of the floor, provided there is still enough clearance at the top. Place plastic, horseshoe type shims tightly at every fixing point between the frame profile and rough opening. Use hard plastic horseshoe shims only.



Step 8

Anchor the sill to the sub floor in correct relation to the finish floor. Make sure that the sill is not tilted or twisted. Make sure that all holes drilled through the sill are properly sealed with silicone underneath and around the screws. All weep holes in the sill are not to be obstructed. Make any necessary adjustments to level, plumb, and square before proceeding on.

Step 9

Anchor the side jambs to studs or walls in the same manner. Make sure that the jambs are.

Step 10

Anchor the head jamb through the pre-drilled holes and shims. Make sure that the head jamb is level.

IMPORTANT: Make sure no shims are forced to ensure that frame sections are not bowed. Check frame constantly to be certain that it is level, plumb and square. A transit and other similar precise measuring equipment should be used to make these determinations.

Step 11

IMPORTANT: Make sure that all the surfaces of the upper and lower tracks are clean and free of any debris, especially, cuttings from drilled holes. Use the brush provided.

PANELS AND FOLDING HARDWARE INSTALLATION

Look for glass stops to determine the interior side of a panel.

Step 1

Looking at the elevation drawing, note where the installation slot in the head jamb is located. Slide the rod and open the plate.

Step 2

Start with the panel furthest away from the slot. If it is to be hinged off the side jamb, align the hinges and insert the proper hinge pins. Do not force any hinge pins. The security set screws on the hinges have to be loosen with an Allen key before inserting the hinge pins, tighten them till they touch the pin and then back off a full turn. If it is part of unhinged paired panels not hinged to the side jamb, set lower guide that is pre-attached to the bottom of the panel, in the lower track. Insert the upper running carriage roller that is pre-attached on top of the panel, through the slot in the head jamb.

Step 3

Again, looking at the elevation drawing, attach the next panel needed to create a folding Pair. Set the guide in the lower track and insert the roller through the slot in the head track. Slide the panel and align the hinges with the first panel. Insert the proper hinge pins to create a folding pair. If necessary, place temporary blocks under the panels to assist in keeping the panels in a steady position. After installation of each panel, check to make sure that the panel is vertically straight.

Step 4

If there are additional panels to be attached to the folding pair, close the pair by turning the handle 180°. Step B5 Attach additional panels in the same manner.

FINAL STEPS

Step 1

Attach handles and other hardware that have not been pre-attached. Attach the profile cylinder (if any) to the locking gear by inserting it into the lock hole and attaching the set screw through the screw hole on the gear located at the edge of the panel. Cut the set screw, if needed, so it is not longer than 1-1/2" to 2" depending on locking type.

Step 2

IMPORTANT: For swing panels not attached to a side jamb, attach the panel holder to the top of the upper rail of the adjacent panel. Follow the specific instructions that are on the sheet in the panel catch kit. The purpose of this is that the swing panel should always be opened and engaged into the panel holder before the folding panels are to be opened.

Step 3

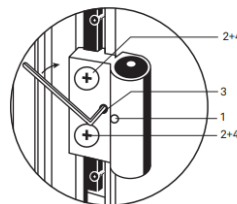
Close and lock all panels into position.

Step 4

Check all horizontal joints: Make sure the head jamb and sill are still level. Then along the entire width of the opening, check the spacing between the sill and each panel and the spacing between the head jamb and each panel. Both spaces should be about 1/4" along the entire length of the unit. Check especially to see if the upper corner of a panel where the running carriage is located is not higher than the other corner of the panel. If it is slightly lower (not more than 1/16"), it is okay. Proper spacing is critical for proper operation of the unit.

Step 5

Check all vertical joints: Make sure that the side jambs are still vertically straight. All vertical spacing between side jamb and panel, panel and panel should be 5/16". If necessary, the hinges can be adjusted. Adjust across the length of the unit and at all hinges at a pivot point, not just in one place.



1. Security set screw
- Hinge Adjustment**
2. Loosen Phillips screw.
 3. Adjust Allen screw with an Allen key as necessary.
 4. Re-tighten Phillips screw.

Step 6

If the horizontal spacings are still not correct, try by adjusting the glass setting blocks that are bracing the glass in the panel. Remove the gasket and glass vertical stops from the panel. The panel can be raised by increasing the thickness of the upper vertical setting block and lowered by decreasing this thickness. The lower vertical setting block will have to be adjusted accordingly. Glass suction cups may be needed to raise the glass up for easier placement of the setting block. The panel frame will rack up or down at the appropriate corners with adjustments of the setting blocks. Adjust as needed to obtain the correct spacing and re-install the glass stops and gasket.

Step 7

Check that the system operates and functions properly. The panels should be able to be moved easily by one person without much effort (for not more than 6 panels to one side) when opening or closing and all shoot bolts should engage smoothly. If the panels do not move easily or a lot of effort is needed, the indication is that the unit is not properly installed. Correct any problems before finish trimming.

Step 8

Apply a thick bead of exterior grade sealant with a backer rod if needed on the joint between the sill and sub floor on both sides along the length of the sill. Do similar for the gaps between the head jamb and side jambs with the opening.

Step 9

Finish any waterproofing, flashing, trim and sealant needed around the perimeter of the opening.

IMPORTANT: Make sure any weep holes in the sill are not blocked.

Step 10

To prevent uncontrolled movement of the panels when in open position, place appropriate door holder by others as needed.

PROTECTION OF UNIT DURING CONSTRUCTION PHASE

It is important that during the construction phase the unit be kept closed, covered and protected from damage. During this phase, a unit is often subject to the most extreme conditions from all types of construction operations that can permanently damage and destroy it. A unit can be damaged by cement splatter, tar, paint, weld splatter, falling objects, construction dust, sand blasting, etc. All temptations to use the large opening of an installed system for easy ingress and egress by tradesmen should be resisted.