Installing Upper Panel Channel® and Lower Patio Door Kick-Up™

(Concrete, Stucco, Brick, and Concrete Block – See Instructions at end of this installation)

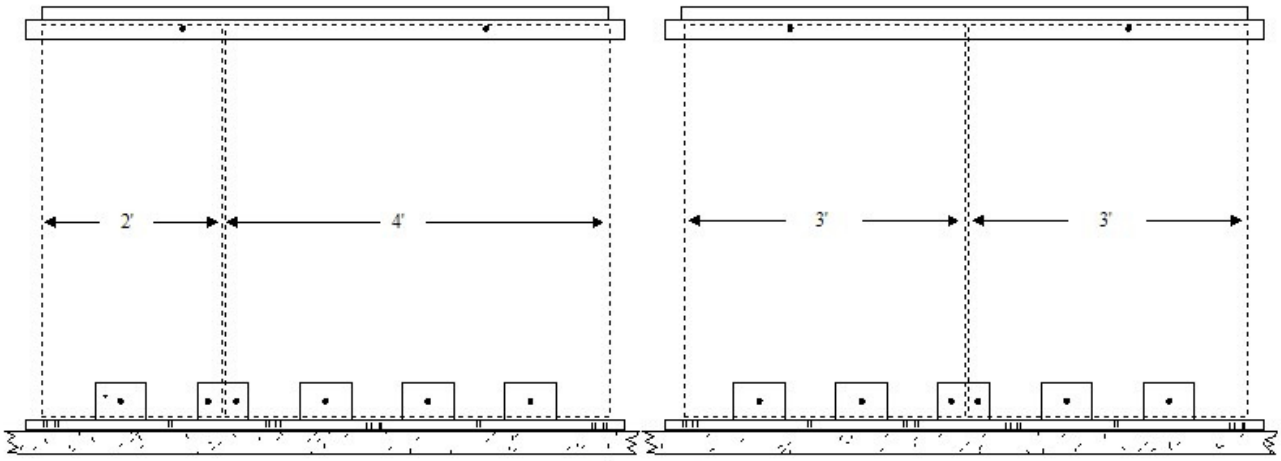

Figure 1

Prior to detailing the installation of the upper Panel Channel® and the Lower Patio Door "Kick-Up"™ the decision on the size of the storm panels to be installed should be made at this time. The drawings above illustrate the two (2) alternate and both recommended panel sizes and placements. The recommendations are based on a 6' (72") patio door width. For door openings wider or narrower, the installer must make the necessary adjustments. Illustrated is an installation of a 2' (24") panel and a 4' (48") combining to cover the opening, the alternate illustrates the installation of two (2) panels of the same size, 3' (36") each. Both combinations cover the opening.

This is the time to decide on which arrangement is to be selected. The 2' + 4' combination allows the removal of a smaller panel facilitating passage in and out of the door opening, and allowing the larger panel to be of the standard 4' width of plywood sheets. The 3' + 3' combination minimizes the weight of the panels.

The design of the Lower "Kick-Up"™ base plate allows secure attachment of the panels to the "Kick-Up" base plate with both combinations. The **"Risers"** of the base plate are positioned in such a manner as to allow a variety of panel combinations. The integrity of the installation depends upon a solid and secure fastening of the top Panel Channel® to the building structure (header), the lower Patio Door "Kick-Up"™ base plate to the deck, and the storm panels to the **"Risers"** of the "Kick-Up"™.

The following steps will cover the installation of the upper Panel Channel® followed by the installation of the Lower Patio Door "Kick-Up"™ base plate. Following these installations, determining the vertical height of the panels will be possible. If you plan to have the panels cut to size at the supplier, this vertical height determination should be determined prior to purchase, otherwise the "trimming to size, vertical height" of the panels will be required by the installer.

Step 1, assemble the tools that will be required to successfully complete the installation.

Battery or electric drill.
Socket wrench set or open end wrenches, 1/2" socket or open end for driving 5/16" lag bolts.
Tape measure.
Level – 4 foot recommended.
5/16" or 3/8 " drill bit - shank clearance drill for 5/16" lag bolt, building surface material clearance holes.
7/32" drill bit – pilot hole for 5/16" lag bolt (installation of lag bolt without pilot hole will cause splitting).
Pencil.
Step ladder – recommended 6 foot.
Powered circular saw (skill saw) – (optional, required if installer plans to cut storm panel to size).
Leather gloves.
Eye protection.

Step 2, Upper Panel Channel®, we will discuss the fasteners required, including the fasteners included in your system and the fasteners you will be required to purchase after determining the correct lengths.

Illustrated is a 5/16" steel lag bolt (stainless or galvanized) – Hex head, requires 1/2" socket / wrench. The 5/16" lag bolt will be the preferred fastener for the installation. A number of installers prefer 3/8" lag bolts, both sizes will be sufficient for the install and the apertures (holes) in the Panel Channels® will accommodate both sizes. The fasteners you will require are listed below:

Two (2) – 1 ½" lag bolts to secure upper Panel Channel® to selected storm panel materials (included in package).
Optional (Recommended) - two (2) 4" - 6" Lag bolts to secure top Panel Channel® and storm panels to building structure and structural header above the protected opening (not included).
Seven (7) - 4" to 6" mounting lag bolts to secure upper Panel Channel® to building (not included). Note: the method for determining the proper length of mounting lag bolts will be covered in **Step 3**.
Eleven (11) - 5/16" washers for mounting lag bolts and upper and lower storm panel securing (included in package).

Step 3, determine the proper length of upper Panel Channel® "mounting lag bolts", purchase the lag bolts and secure the upper Panel Channel® to the framing header above the opening to be protected.

The length of the **"mounting lag bolts"** will be a combination of three (3) measurements. The combination will include **(1)** the thickness of the Panel Channel® mounting member, approximately 1 3/8" (provision for washer), **(2)** the thickness of the outside decorative material (vinyl siding, wood siding, etc.), and **(3)** add from 1 ¼" to 1 ½" to the length of the **"mounting lag bolts"** to insure a substantial and secure attachment to the **"header"**.

The following example illustrates the combination: **(1)** Thickness of Panel Channel® = 1 3/8". To determine **(2)** the thickness of the outside decorative material, measure the distance from the outside surface until the drill encounters the **"header"**. Record the distance **(2)** from outside of the surface material before encountering the **"header"**. The final step **(3)** is adding from 1 ¼" to 1 ½" for penetration and solid attachment to the **"header"**.

For this example we will use 2" as **(2)** the thickness from the outside surface to the **"header"**. By adding **(1)** the thickness of the Panel Channel® mounting member, 1 3/8", plus **(2)** the 2" thickness from the outside to the **"header",** plus **(3)** the minimum 1 ¼" lag bolt penetration into the "header" we would determine the approximate required length of the **"mounting lag bolts"**. 1 3/8" + 2" + 1 ¼" = 4 5/8" lag bolt length. From this example, the **minimum** length of the **"mounting lag bolts"** would be 4 ½", the **recommended** length would be 5".

In summary, the **"mounting lag bolts"** must pass through **(1)** the Panel Channel attachment member, **(2)** the outside surface of the building, and **(3)** be fastened securely to the **"header"**.

Big box home improvement stores and local hardware stores will carry a supply of stainless and galvanized steel lag bolts of various sizes. Purchase a quantity of lag bolts (minimum 7) sufficient to attach the channel, using the holes provided, of the determined length of the 5/16" **"mounting lag bolts"** for the opening to be protected with the system. Substitution of 3/8" lag bolts will not affect the results of the installation, if by choice or by availability of fasteners. The correct pilot hole drill size for 5/16" lag bolts is 7/32", for 3/8" lag bolts the correct pilot hole drill size required is 9/32". Shank clearance holes will be 3/8".

Step 4, installing the upper Panel Channel®.

Using the seven (7) properly sized mounting lag bolts, level the upper panel channel after installing one (1) of the lag bolts thru the Panel Channel®, the building surface material, and into the header beam. After leveling the Panel Channel and installing a second fastener, complete the installation by installing the remaining five (5) lag bolts.

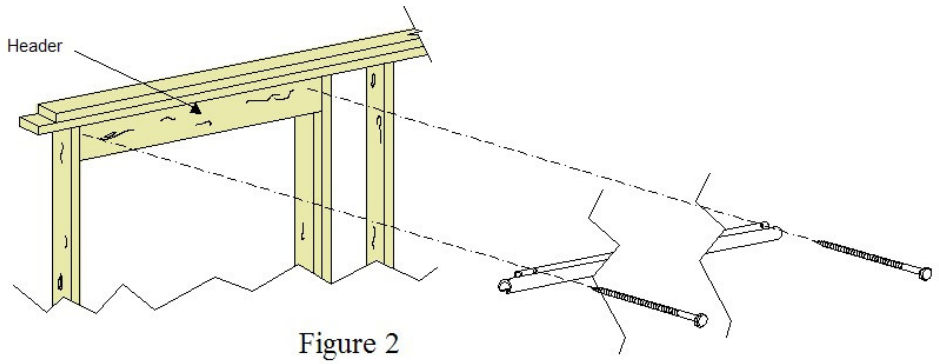

Figure 2

Figure 2, illustrates a **Typical Rough Frame Opening**.

You must ensure that the mounting fasteners securely anchor the upper Panel Channel® to the solid header beam above the opening.

Step 5, a short summary of installing the Lower Patio Door "Kick-Up"™ base plate

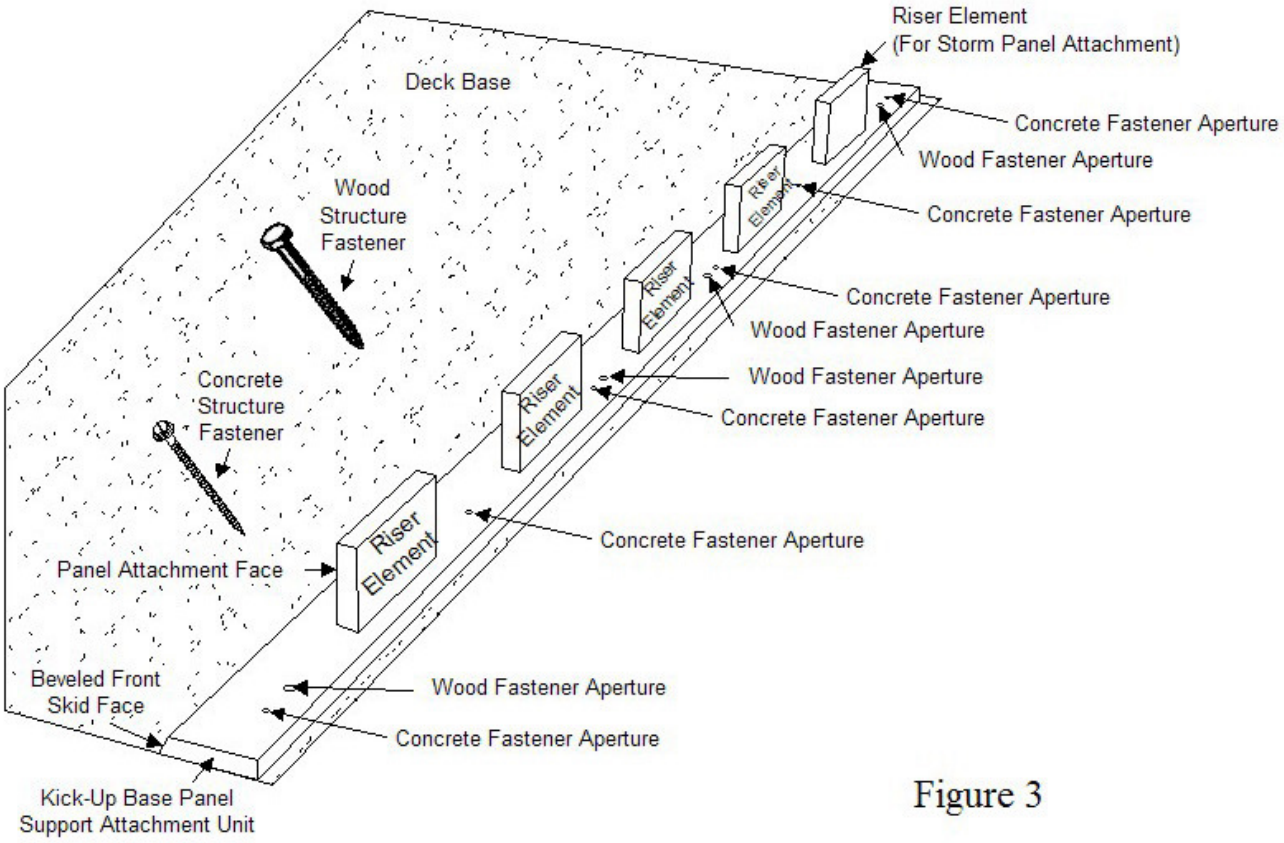

Figure 3

Begin by placing the "Kick-Up"™ on the horizontal deck or surface in front of the opening to be protected. The **"Beveled"** front edge must be placed facing away from the building structure. The "Kick-Up" must be placed directly below the upper Panel Channel® to support and secure the storm panel materials to be installed. In summary, the panel materials will be placed inside the upper channel of the installed Panel Channel®, and resting upon the lower mounted "Kick-Up"™. The beveled front edge of the "Kick-Up"™ allows installation of the panel materials without the need to lift the weight of the panel materials. Properly sized storm panel materials can be nudged, "gently lifted and kicked" up upon the "Kick-Up"™. Plywood storm panels can be awkward and unwieldy to position. The beveled edge is provided to assist in placing the storm panels in proper position.

Once the "Kick-Up"™ is properly positioned, secure attachment to the decking or horizontal surface material is required. The recommended fastener for a **"wooden deck"** surface is 5/16" X 2 1/2" stainless steel or galvanized steel lag bolts. Proper sized holes are provided for 4 of the recommended lag bolts. The provided holes will not interfere with the installation of the storm panel materials. The recommended fasteners for a **"concrete deck"** surface are Tapcon® concrete anchors. A 1 7/8" - 2 1/8" length is usually sufficient to anchor the "Kick-Up" to the concrete surface. The advice of your local hardware or big box home improvement store will be useful. Explain your installation to the store fastener person. A wide variety of concrete fasteners are available. Availability will be crucial if your are facing an oncoming storm. Proper sized holes are provided for 6 Tapcon® fasteners. Larger concrete fasteners can use the 4 larger holes provided for lag bolts. The provided holes will not interfere with the installation of the storm panel materials.

Most plywood sellers provide for cutting sheets of plywood to a requested size at no charge or a very small charge. To determine the proper **"sized"** storm panel to purchase, follow the steps below. A number of other options are available and you may determine the size of your storm panel by other means if desired.

1. Measure the distance from the inside surface of the installed Upper Panel Channel® down to the top supporting surface of the installed lower Patio Door "Kick-Up"™. It is highly recommended that this distance be measured at each end of the installed system. If there is a difference, the difference must be taken into consideration when trimming the panels to size. Allow a minimum 1/2" space for installing the panels in the upper channel and attaching to the lower "Kick-Up" **"Risers"**.

2. After purchase of the storm panels, consult with the paint department as to a method for finishing or weatherproofing the panel prior to installation. Many exterior finishes and waterproofing materials are available. Make your choice based upon the appearance you desire in the installed storm panel. **Without some form of weatherproofing, plywood storm panels will warp and will not be usable a second time after enduring harsh weather conditions.**

Step 6, Installation of the weather protected storm panels.

Figure 4 illustrates a properly installed storm panel. Please note the **"Panel Securing Aperture"** and the **"Panel Securing Fastener".**

The securing of the storm panel to the "Riser" of the "Kick-Up" is obviously critical to a successful installation! No holes are provided in the "Riser". The selected fastener, lag bolt, carriage bolt, etc. will determine the sizes of the holes in the storm panel and the riser.

If lag bolts (recommended) are selected, the hole in the riser will be the proper **pilot hole** for the size lag bolt selected and the hole in the panel will be a **clearance hole** for the lag bolt. Cap screws will require clearance holes in the riser and the storm panel. The riser is provided with more than adequate surface area for a variety of attachments. Securing the storm panels to each riser element is **"mandatory".**

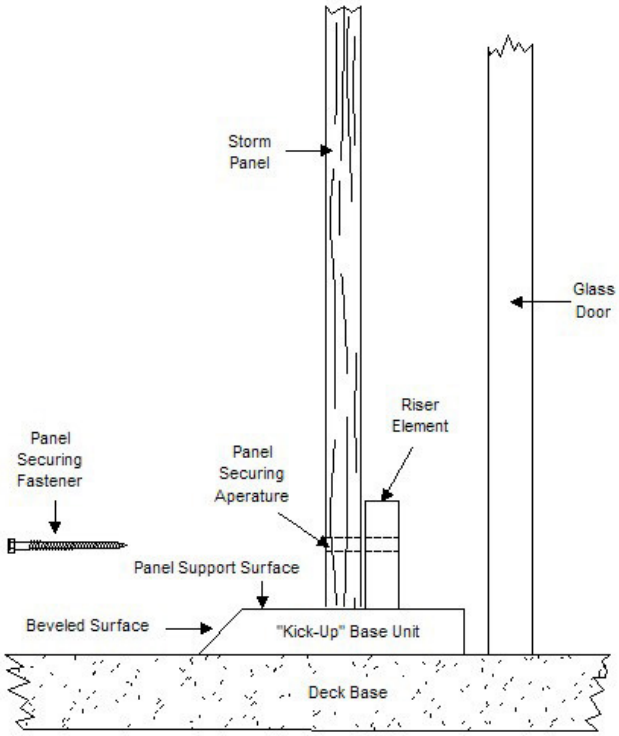

Figure F4

Concrete, Stucco, Brick, and Concrete Block Installation of Upper Panel Channel®

Step 1 "C", assemble the tools that will be required to successfully complete the installation.

Battery or electric drill, or hammer drill. **Solid** concrete drilling will usually call for a hammer drill and bits.
Masonry / concrete bits of the proper size to match the fasteners selected.
Socket wrench set or open end wrenches, 1/2" socket or open end for driving 5/16" lag bolts.
Wrenches or drivers to install the proper concrete fasteners selected.
Tape measure.
Level – Minimum 2 foot, 4 foot recommended.
7/32" drill bit – to provide lag bolt pilot hole for anchoring the hurricane shutter to the Panel Channel®.
Pencil.
Step ladder – recommended 6 foot.
Powered circular saw (skill saw) – (optional, required if installer plans to cut storm panel to size).
Compressed air duster to blow out concrete dust from drilled holes (hardware, photo and office supply outlets).
Leather gloves.
Eye protection.

Step 2 "C", determine the proper length of the seven (7) upper Panel Channel® "concrete anchors or fasteners", purchase the anchors and secure the upper Panel Channel® to the structural header above the opening to be protected.

1. For a familiarization prior to purchase, an internet search using the Google® or Yahoo® search boxes will provide a comprehensive and valuable source of the various methods and fasteners available for concrete anchors. Search on the following search terms:
    * Concrete anchors
    * Concrete fasteners
    * Lag screw shield
    * Parasleeve
    * Parawedge – **"USE ONLY ON SOLID CONCRETE – NOT BLOCK OR BRICK!"**
    * Lead anchor
    * Super sleeve

2. Availability in your area is the next concern. A visit to your local big box home improvement center or hardware store would be the next step. Lowes stocks a wide variety of acceptable concrete fasteners. Other choices would be Home Depot, True Value, Ace Hardware, or your local trusted hardware store. Be sure and discuss your installation with the store associate most knowledgeable in regards to fasteners. Explain the installation. Your store associate will assist in determining the proper length.

3. Once the fasteners are acquired, the last considerations and purchases before installation will be as follows:
    * Will a hammer drill be required to drill the necessary hole in the surface? (rental suggested)
    * Purchase the size and type concrete or masonry drill bit required for the fastener hole.
    * A compressed air duster or blow out container is a "Must" to blow dust out of the drilled holes.

The installation of the Upper Panel Channel® to a concrete, stucco, brick, concrete block, cinder block, etc. structure will involve the same basic steps detailed previously. Proceed now with the steps outlined in the Wood Frame Structure Installation.