

Installation Instructions



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i. Safety:

Use safety glasses, hand protection, and saw guards when cutting aluminum. We recommend using a 120-tooth or higher metal blade for cutting aluminum.

ii. Parts List

Louvers	PB screws	<u>Optional items:</u>
Beams	PB spacer	Leaf guards
Posts	Beam brackets	Flat end caps
Pivot bar (PB)	Motor	Post mount
Louver spring pins	Motor brackets	
Louver bearings	Bumper seal gasket	
PB bearings	Tek screws	

STEP-BY-STEP INSTRUCTIONS

1. How to calculate the number of louvers needed

This chart shows the number of louvers that will fit in a certain range.

Overall size of bay	Number of louvers
38-40"	4
46-48	5
54-56	6
62-64	7
70-72	8
78-80	9
86-88	10
94-96	11
102-104	12
110-112	13
118-120	14
126-128	15
134-136	16
142-144	17
150-152	18
158-160	19

166-168	20
174-176	21
182-184	22
190-192	23
198-200	24
206-208	25
214-216	26
222-224	27
230-232	28
238-240	29
246-248	30
254-256	31
262-264	32
270-272	33
278-280	34
286-288	35
294-296	36

The number of louvers is calculated per bay. The formula used to create the chart above is as follows:

1. Convert the inner dimension (beam-to-beam) to inches and divide by 8
2. Round down to nearest whole number (this is the number of louvers for the bay)
3. Multiply that number by 8 and subtract that from the total inner diameter dimension
4. The remainder/2 is the gap you will see between the edge of the louver and the beam.
The gap needs to be greater than .5" and less than 2". More than 2" will show too much sunlight from underneath.

Example: Id = 161.5"

1) $161.5/8 = 20.1875$ or 20 louvers

2) $161.5 - (20*8) = 1.5"$

3) $1.5/2 = .75"$

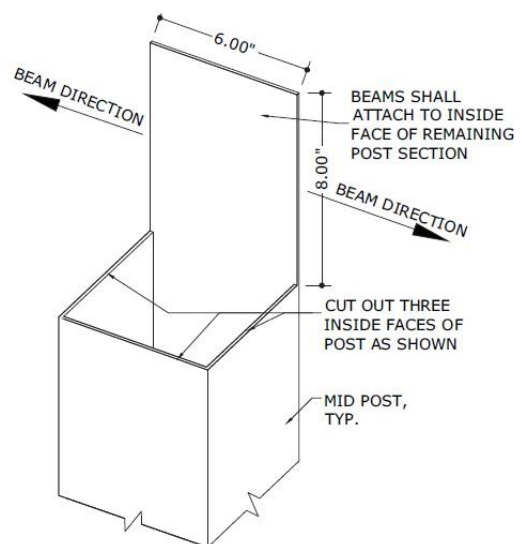
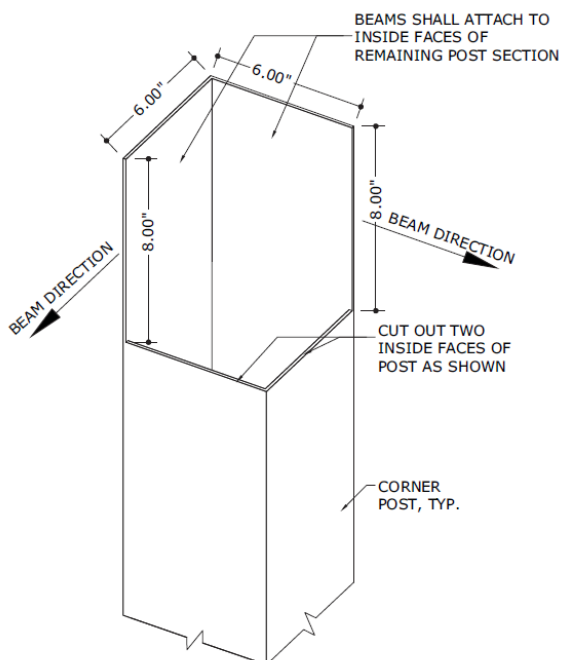
2. Cutting

Cut the beams, posts, gutters, and louvers using a miter saw with a 12-inch blade with at least 120 teeth, no set and carbide tips. You can find specific blades for cutting aluminum. Note that

extrusions are shipped 2 inches longer than requested. They also come with a powder coating hole at one of the ends. Make sure you cut from that end first to remove the hole.

Posts

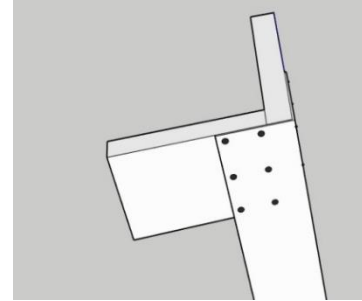
For corner posts, measure 8 inches from the end of the post and mark a line on two adjacent sides of the post. Mark another line $1/8$ " from the edge of the two corners. We recommend using a battery powered skill saw. Notch the post by cutting lengthwise from the end of the beam 8 inches maintaining exactly $1/8$ " from the edge. Do the same on the opposite side. Then cut across to remove the notch. Make sure to not overcut using the skill saw and instead finish the cuts with a square blade. For mid-beam posts cut three sides in the same manner described above.



We recommend cutting the posts to height on-sight. Cut the bottoms if you want to add slope. We recommend $\frac{1}{2}$ " slope per 12' for gutter drainage.

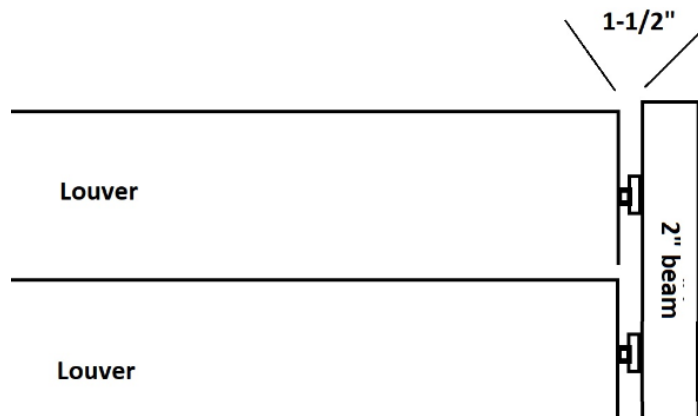
Beams

Typically beams are attached inside the corner post in a stepped fashion. Take this into consideration when measuring the length of the beam. One of the beams will be 2 inches shorter than the outside dimension for this reason.



Louvers

Measure the louver inside beam to inside beam minus 3" so there is a 1.5" gap between the end of the louver and the beam. If you are cutting an angle use the drip edge side for the long angle.



3. Louver Bearing Installation

MAKE SURE TO USE THE LOUVER BEARING TEMPLATE TO INSTALL THE BEARINGS – NOT DOING THIS WILL CAUSE THE LOUVERS TO STEP AND THE CEILING WILL NOT LOOK FLAT.

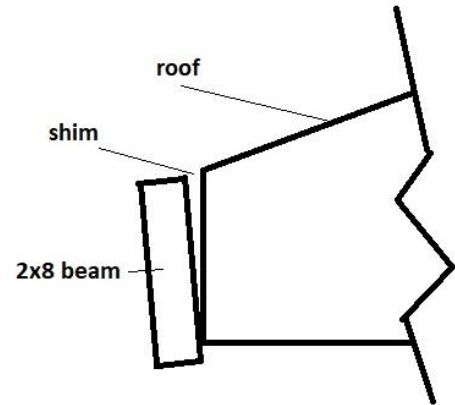
Measure from the end of the beam to the center of the first bearing using the math calculated above ($4'' +$ the calculated gap) and place the template on the beam. Make sure the tension pins on the louver bearing template are flush to the top of the beam and clamp the template to the beam so it does not slip. The tension pins on one side of the template are offset by $\frac{3}{8}''$ so you can slightly slope the louvers. Double check to make sure you are using the correct side of the template.



Use the self-tapping color matched Tek screws to mount the bearings. Make sure to not over-tighten otherwise you can strip the screws. With the template properly attached, place the bearing in the slot and attach with two screws. Once all bearings in that section are mounted, remove the template, and replace using the last bearing for alignment. Again, ensure the tension pins are flush with the top of the beam and the template is clamped tight to the beam.

4. Ledger Installation

A 2in x 8in beam is used as the ledger to attach to another structure. Before attaching the ledger calculate the slope of the total projection ($1/2''$ per 10' is recommended). Shim the top of the ledger (and later the top of the gutter the amount needed to match the gutter miters). To attach ledger drill $5/8''$ holes $2\frac{1}{2}''$ from the bottom of the beam to insert lag hex driver. Then attach the ledger to the studs or rafters through those holes. Caulk ledger. The reason you do it $2\frac{1}{2}''$ from the bottom is so the gutter will cover them.

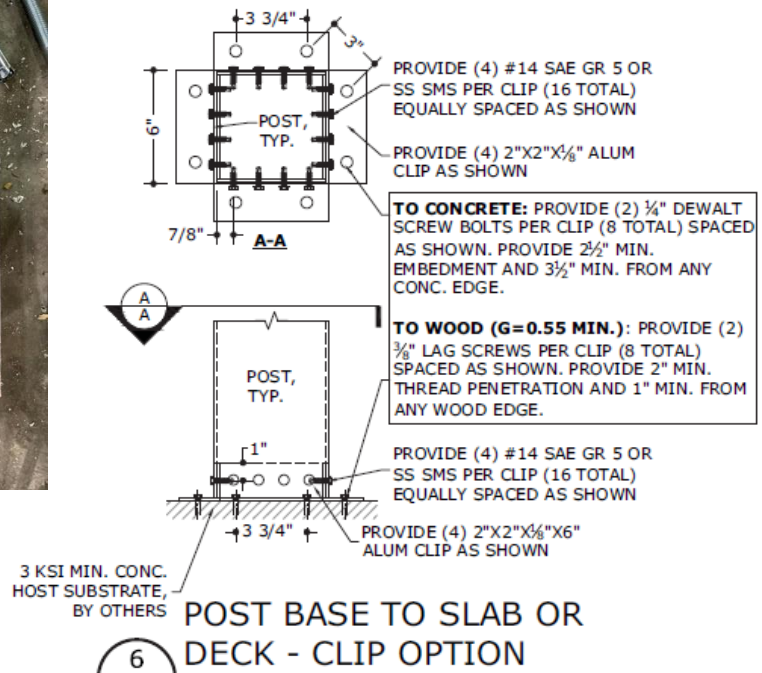


5. Post Installation

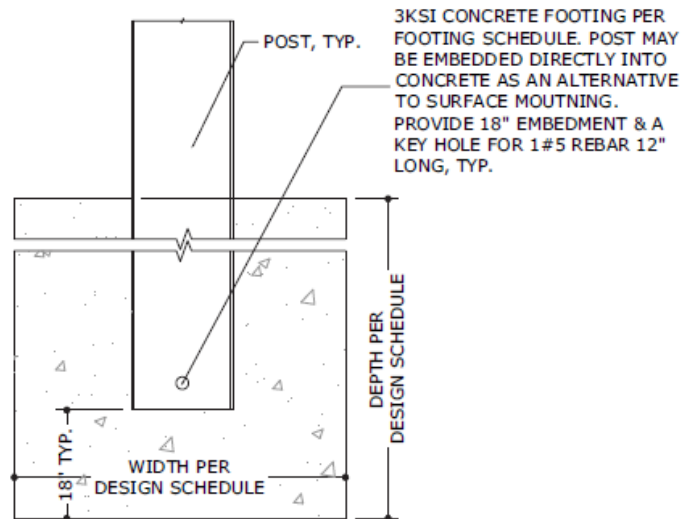
Attach posts to the deck or slab using post brackets or according to local codes and requirements. Install posts for free standing covers into concrete footing for best support or use bottom post bracket. For installation of a post to a deck make sure the post is anchored effectively using bolts or another alternative.



Example of a bottom post bracket made using post scraps cut into four L brackets.



When footings are required consult the engineering for dimensions of the footing. Cut a keyhole for rebar to be placed in the concrete or alternative material. In some instances a rebar cage is required. If footings are required, this needs to be done first and at least a day before the rest of the roof is installed.

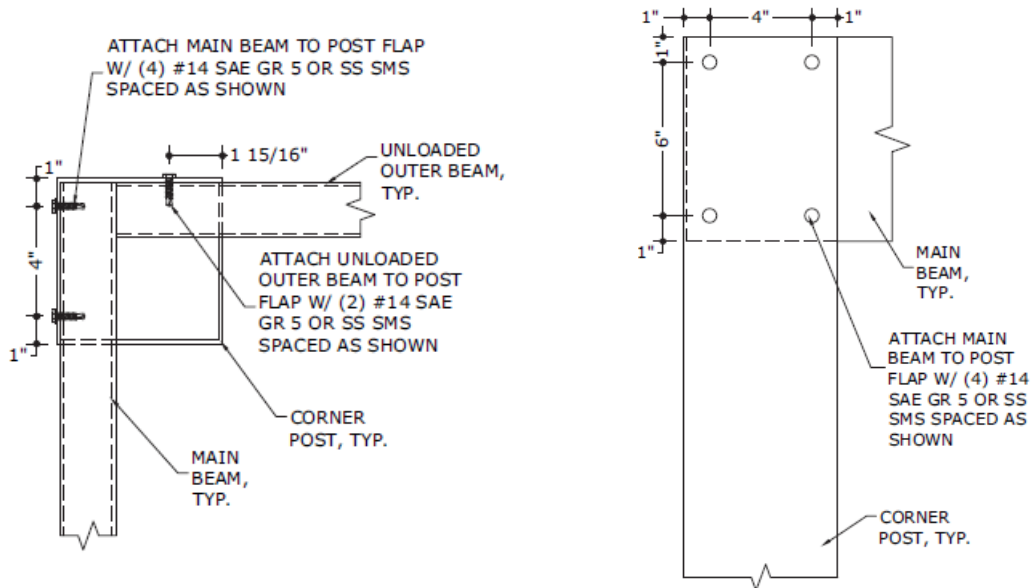


6. Beam Installation

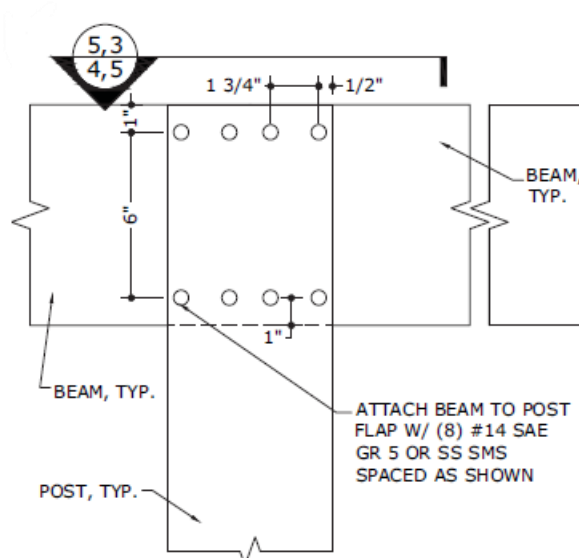
Install beams to ledger and to other beams using beam brackets. We recommend U channel brackets, but there are other options depending on the design you are going for. For example, some like the mitered corner look, which uses a special bracket to attach. Brackets need three Tek screws or other attachments to connect them to a structure or ledger, and the beams need two Tek screws to attach to the brackets.



Inside the post the beams install stepwise as mentioned above. Fit the beams into the cut notch of the post with the first beam snug in the corner. Attach the beam to the post using at least four Tek screws in a rectangular pattern. Then fit the end of the second beam snug against the first beam. Ensure the first beam is the main beam that carries the load of the louvers and the second is the side beam. Also remember the side beam will need to be cut 2" shorter than the outside-to-outside dimensions.



Beams should be spliced behind a three-way notched post when needed using eight Tek screws, four on the end of each beam.



7. Double beams

Two beams should be connected by drilling pairs of holes—one on the top and one on the bottom—through one side of the beam every two feet. The holes should be large enough to fit a drill bit. Tek screws fasten the adjoining faces of the two beams together. The bottom set of drilled holes will be hidden by the gutter and the top can be either hidden with bearings or plastic caps.

When installing double beams in a corner post, step the beams and use a U channel bracket to attach the second beam of the double beam to the opposite beam. For this configuration five Tek screws are needed to attach the double beam to the post flange.

8. Gutter Installation

Make sure to cut the gutters onsite and make sure the measurement from inside beam to inside beam is exact. Cut the end of the gutter using a 45-degree miter cut. One tip to help get the gutters in place is to square up the miter saw and cut about a 1/8th of an inch off the end of the gutter so the mitered corners fit together better. You can use a test piece as shown below to ensure a good fit.

The bottom of the gutter should be flush with the bottom of the beam. Screw the gutter to the beam using Tek screws every two feet. Seal the top of the gutter along the face of the beam with caulk as well as the 45-degree miter cut to prevent leaking. If you are using the post as a downspout, make sure you drill a hole in the corner first.

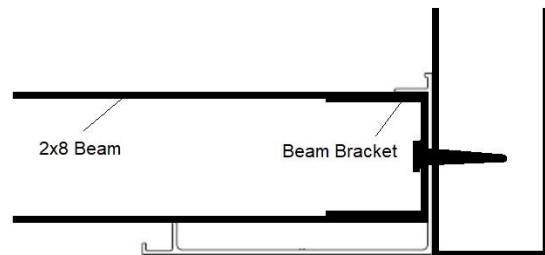
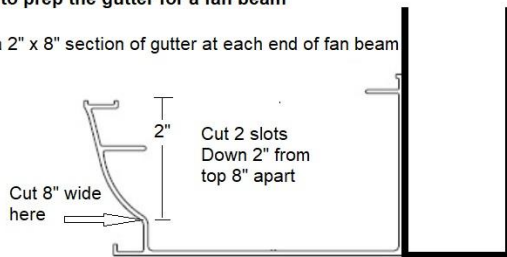


Optional Fan Beam

If desired, you can install a ceiling fan beam by cutting a section out of the front of the gutter and installing a 2"x 8" beam horizontal. The beam attaches to the main beam and the ledger using U channel beam brackets. Note that the addition of a fan beam does not leave much room for drainage. In areas with heavy rain, you may consider cutting a hole in the side of the beam to allow for more water to pass through.

How to prep the gutter for a fan beam

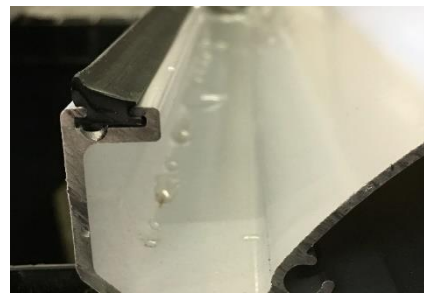
Cut a 2" x 8" section of gutter at each end of fan beam



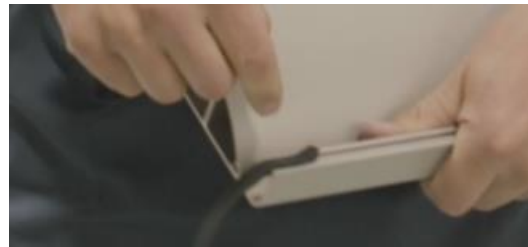
9. Louver Installation

Bumper Seal Gasket

Insert the bumper seal gasket with the slope towards the louver. Also make sure to insert from a raw cut end of a louver. Paint can build up on the ends of the louvers making it difficult to insert the gasket.



Start by inserting as much of the gasket into the channel as you can. It will only go in an inch or two. Then lift up on the end of the gasket that's inside the channel just enough to get a good grip and pull the rest of the gasket through.

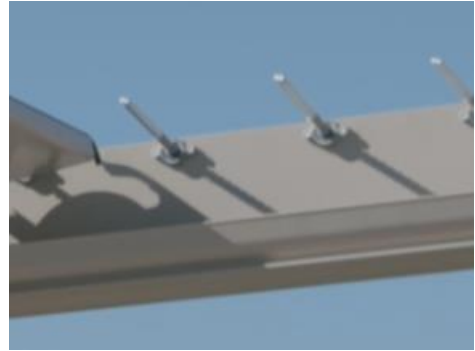


It will be easier to slide the gasket if you spray water in the track. Leave at least a couple of inches overhang on each end for contraction. The longer the louver the more overhang you need to leave. Cut the excess off after the gasket has fully contracted back to nominal size.



Spring Pins

Preload one complete side of the roof with spring pins. First loosen the set screws and then load the side with groove into the bearing. Tighten the set screws. If one accidentally falls out do not worry about it. Only one is needed to hold the spring pin in place. Once spring pins are preloaded along the length of one side of the roof, slide the louvers onto the pin into the middle square hole in the end of the louver. Once one end is fully inserted, slide the non-spring side of a second pin into the square hole in the other end of the louver, compress the pin toward the louver and pop it into the second bearing. If it does not go right in, gently pound on the top of the bearing and it should pop into place. If it still does not go in, make sure the set screws are fully loose. Once in place tighten the set screws of the second bearing.

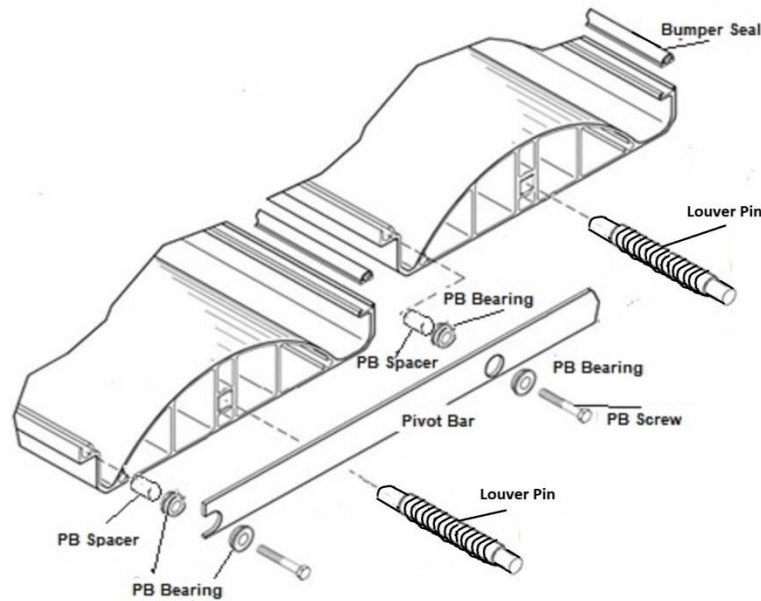


10. Pivot Bar Installation

Cut enough pivot bar so the number of holes match the number of louvers. If more than one pivot bar is needed, overlap by only one hole so you will need one extra hole compared to the number of louvers. Cut the bar to leave only $\frac{1}{2}$ " outside of hole on each end to keep it from hitting the beam when opening and closing.

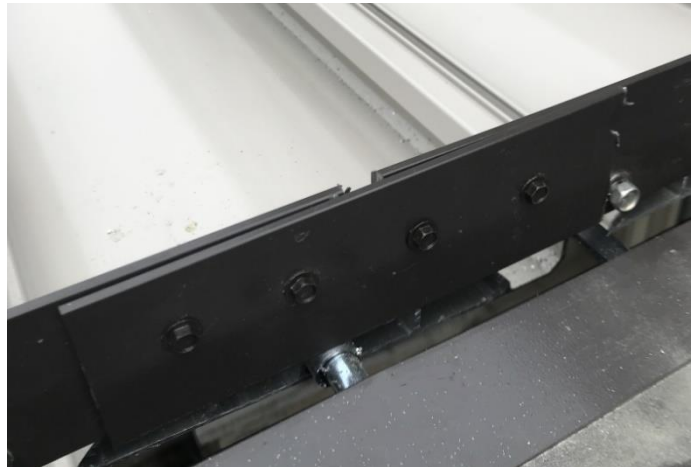
The holes in the pivot bar are the exact same size as the bearings and so the powder coating on the inside of those holes will make it difficult to load the bearings. Use a drill bit to clean out the paint first before loading the bearings then seat the pivot bar bearings in the holes. The flange of the bearing should face away from the louvers.

Connect the pivot bar to each louver using the stainless-steel screws, a spacer and two pivot bar bearings (flanges opposite of each other) according to the diagram.



Check Louvers for stepping

After installing the pivot bar check to see if the louvers are lying flat under the roof when closed. If the louvers do not sit flat or step you can make an adjustment by cutting the pivot bar between holes in each place where the louvers step. Then splice the pivot bars using a scrap piece of the pivot bar and 4 screws. If the cut pivot bars are hitting, cut one a little shorter before splicing to allow louvers to sit flat.



11. Installing Flat End Caps (Optional)

When installing flat end caps use caulking as an adhesive as in the photo below:



12. Motor Installation

VERY IMPORTANT: THE MOTOR SHOULD ALWAYS PUSH THE LOUVERS OPEN AND PULL THEM CLOSED SO ORIENT THE MOTOR CORRECTLY ON THE BEAM.

Try to install the motor where it is not visible to the customer. Screw the motor piston in all the way and then back it out two full turns to allow adjustment if needed later. The motor kit comes with two brackets: the pivot bar bracket and the back bracket also known as the beam bracket. The pivot bar bracket has an angled bottom and will install on the pivot bar. The back bracket has a flat bottom and will install on top of the beam. Attach the pivot bar bracket to the pivot bar with two Tek screws. Connect the piston to the bracket and secure with the c-clip. Then attach the back bracket to the motor and lay it down on the beam. Make sure the motor is fully retracted and use a marker to mark where the back bracket lies. Remove the back bracket from the beam and move it about 1/16th of an inch back. This allows the motor to pull the louvers closed just a little more tightly. Then screw the back bracket to the beam with two Tek screws, reattach the motor to the bracket using the bracket pin and secure with the cotter pin. Before reattaching the motor, it will need to be adjusted to compensate for moving the bracket 1/16th of an inch.

Wiring the motor

The motor is low voltage. From the motor drill a hole in the top of the beam to be sealed after wires are run. You can also run the wires along the inside of the beam or inside the gutter. Use a 16g wire to connect the motor wires to the power source. Connect the motor wires to the control box and test to make sure they are not crossed. Switch the wires if you find that the remote control is reversed.