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The Meske "Tip-Up / Slider" modification kit

Thank you for purchasing the "Meske" Tip-Up / Slider Kit. This modification kit can be utilized on all of the following Vans Aircraft models that have the slider canopy: (RV-6, RV-7 and RV-9). It may be retrofitted to already flying RVs as well as new RV kits.

The parts supplied in this kit are mostly made up of raw material. After you assemble this modification, you will probably want to apply a coat of paint to make the mod match you aircraft interior.

There will be a fair amount of builder cutting and shaping of some of the parts in this kit. This is because the kit was designed to work easily with any RV. There is a lot of variability between builder to builder and canopy dimensions vary quite a bit. This being the case, there will be a fair amount of builder cutting and shaping of the weldments supplied in this kit.

TOOLS:
#1/4-28 TAP
#4-40 TAP
#10-32 TAP (optional)
#E DRILL, 1/4" dia.
#2 DRILL, 0.221" dia.
#3 DRILL, 0.213" dia
100° Countersink
Abrasive wheel cutter or metal saw

SUMMARY of steps:
1.) Install canopy stop
2.) Replace Van's canopy roller assys. with the supplied assys.
3.) Cut the canopy pivot slots in the side rails
3.) Modify the aft end of the slider rail
4.) Modify the lower forward portion of the canopy skirts
5.) Add the canopy support strut

PREPERATION

Refer to Drawing #1.

The first step is to prepare some of the rough-cut aluminum pieces, for installation. Cut or file all corners of the pieces as shown. The exact radiuses of the corners are not so important and left up to the builder to improve their appearance.

CANOPY STOP

Refer to drawing #2.

(NOTE: Do not drill the hole for the pivot screw until you review all steps.)

Before you start the next steps, you should already have the canopy slider rail, and the two rear UHMW canopy blocks in place.

1.) Position part "J" up against the Vans UHMW canopy blocks as shown. (*NOTE: UHMW material not shown in dwg.)* Allow enough room (about 1/8") for the pivot screw head that will protrude below part "J". Once in position, clamp part "J" to the canopy block. Using your canopy block holes as a guide, drill two #10-32 holes thru part "J". Since the addition of part "J" makes the two Vans supplied screws short, use the two screws supplied in the kit and secure part "J" to the canopy block using the original nuts. Later, you will want to trim part "J" to match your UHMW block.

2.) The next step is to position part "M" in order to drill the vertical hole for the pivot screw. Position part "M" as shown. Allow a space or gap of 1/8" in between the vertical areas of Part "J" and part "M". Also press the vertical of part "M" flush against the rail. If you are sure of the position, you are now ready to drill the hole for the screw into part "J". *(NOTE: This hole is best drilled (0.159" dia.) and tapped for a #10-32 screw, however a clearance hole (0.219" dia.) can be utilized as well.)* Using part "M" as a guide, drill the hole in part "J".

3.) Note the size of the knob attaching screw. Some knobs may be supplied with either a #6-32 or #8-32 countersink screw. If the hole in part "M" is not large enough for the knob screw supplied, drill it to fit the knob screw. Countersink the opposite side of the knob so the screw fits flush to the surface of part "M". Complete the canopy stop mechanism by finishing the assembly as shown.

4.) Attach the spring to the holes shown using two #4-40 screws. You may have to cut these screws to ¼" length so they will not protrude thru the part.

CANOPY STRUT LATCH MECHANISM

Refer to drawing #3.

Before you do this section, you should have fitted the canopy to your aircraft and added the canopy side skirt supports.

1.) Make sure that part "I" hinges on part "K" freely after you have rounded the edges.

2.) OK, this is where it gets a little tricky. If you have a newer canopy that utilizes square tubing for the horizontal side support, you will first, have to cut a slot in the canopy skirt flange as pictured in drawing #3. The precise location of this hole will be determined by locating the exact pivot point (where the strut attaches) of this latch. On the RV6, this point should be located approximately 2.5" forward of the tip of the rear canopy, passenger side guide pin. The exact location of this pivot point is not so important. The length of the strut can be adjusted wherever you choose its location. It is more important to locate the latch in the approximate position and guarantee it will not hit anything during the closing of the canopy. When the latch assembly is positioned correctly, the head of the latch screw should nearly be resting on the canopy inner side skin.

3.) After you determine the exact location, drill the two attaching bolt holes. Clamp the latch to the horizontal canopy bar and use the latch holes for a guide. The holes should be 0.189" dia.

4.) Assemble the latch as shown in drawing #3. Attach a spring from the smallest hole in part "N", to smallest hole in part "I". You will probably have to eliminate a turn or so from the spring end and make your own hook or loop by re-bending it.

CANOPY ROLLER ASSYS.

In this section, you will replace the roller mounts that are supplied in your Vans Aircraft kit with the ones supplied in this kit. Some canopy modification will be necessary.

1.) (SKIP THIS STEP - if you are building your canopy for the first time). If you are modifying an already finished canopy, you need to take a measurement from the bottom of the canopy horizontal bar (as close to the front of the canopy near the rollers as possible) to the bottom of the roller rail shelf. See measurement "A" in drawing #4. This measurement will be utilized later in order to accurately position you new roller assemblies on your canopy. Doing this will guarantee that your canopy will remain the same height. It will also guarantee that your canopy will still seal as well as it did prior to your modification. Measure both sides. They may be different!

2.) Cut off the bottoms of the forward canopy bow. Cut them flush with the bottom of the horizontal canopy side bars. See drawing #5. Use a round file and clean out this hole. Your new roller weldments will fit up inside this hole. Utilize them to see how they will fit. These weldments should be shoved up into this hole all the way to the flat part of the roller weldment. If you have been successful, you should not be able to see any of the upper round shaft on the roller weldment.

3.) Refer to drawing #4. At this point, you will need to use a cut-off wheel and trim the lower portion of the weldment verticals. Make sure you have the pilot and passenger weldments in the proper sides of your canopy, and shoved up into the tube as far as it will go. The weldment gusset will be facing toward the tail of your aircraft as shown in the drawing. If you are building from new, make sure that you have positioned the canopy where you want it. If you are modifying an existing canopy, make sure you have positioned the canopy properly to mimic your measurement "A". Now, cut off the bottoms allowing about 1/8" between the weldment and the surface of the roller rail.

4.) Again, refer to Drawing #4. (See NOTE B first) In this step, you will be drilling the weldment attaching bolt holes. Mark a position just above the horizontal canopy side bars as shown. Allow enough distance above the horizontal bar for an AN3 type (#10-32) bolt and nut to clear this bar. (use the existing Vans Aircraft Hardware that you used to attach the original roller weldments) Before drilling, make sure the weldment is shoved all the way up into the canopy roll bar . . . and the vertical is parallel to the rail. Also, see note "B" below.

NOTE "B"
If you are modifying an already existing canopy, you may want to do the following. Using this method will aid you in obtaining the same canopy height as it was before you performed this modification. It will also guarantee you can adjust your canopy to seal well. This method is simple. Before you drill the roller axle hole;

a.) Shove the weldment into the tube so the top of the weldment deck is flush, then pull it out about 1/16", no more.

b.) Drill a smaller hole (approximately 1/8" dia.) where the AN3 screw will be located in the same manner as described above.

c.) Put a drill bit or temporary pin in this hole to locate the weldment until you drill the roller hole in the weldment.

d.) After step 6 (drilling the roller axle hole) you will need to slide your canopy forward to check the fit and seal. If it is OK, simply drill the 1/8" hole out larger for the AN3 bolt. If you need to move the canopy up or down to achieve a good seal, remove the temporary pin, adjust the canopy height, lock it down so it will not move, then drill out the AN3 bolt hole.

5.) Now, you will need to drill a 0.25" diameter hole in the weldment for your canopy roller. Keep in mind, you will be using the existing Vans Aircraft hardware here except for the (axle) screw. A longer 1/4-28 washer head screw is supplied in you kit because of the thicker weldment supplied. Double check measurement "A" if you are modifying an existing canopy. Use your existing Vans Aircraft roller hardware to locate the proper height for the roller axle screw and drill the hole in the middle of the weldment vertical. Assemble the roller hardware as shown in Van's plans. Shove the roller into the rail. Find the center of the axle. Make sure that your canopy height is correct before you drill this hole. Drill the 0.25" dia. roller axle hole.

6.) Round the bottom of each weldment so that the canopy will rotate. See drawing #4

7.) Assemble the existing Vans Aircraft roller hardware on the weldments. Double check to make sure the height of the canopy is correct.

CANOPY "T" RAIL MODIFICATION

1.) Refer to drawing #6. At this point, you are ready to modify the canopy "T" rail so you can rotate the canopy. Move the canopy rearward until the canopy rests on the canopy stop. Open the canopy stop allowing the canopy then to move rearward one more inch. At this point, the canopy roller mechanisms will be resting on the forward side of the UHMW side blocks. (canopy all the way rearward position) Mark a line on the "T" rail just 1/16" forward of the UHMW block as shown. This is the point where the "T" rail will be cut off. Modify the "T" rail as shown in the drawing.

CANOPY ROTATION

1.) Refer to drawing #7. CAREFUL NOW . . . **read all of this step first**. Now that the canopy "T" rail and the roller mechanisms are in place, you are ready to rotate the canopy. You will need to rotate your canopy in order to determine the exact position to cut your pivot slots. Drawing #7 has the approximate position for the RV6. Other RV models pivot point will be close to this position. You may want to use the help of a friend in order to rotate your canopy for the first time. **REMEMBER** . . Your canopy pivot slots will not be present. It will be easy for you to loose your grip and allow your nice canopy to fall or scrape the front roll bar! **BE CAREFUL**! ALSO, before rotating your canopy, you will probably have to round off the leading lower edges of the canopy skirts a small amount. If you don't, they may hit the roller rail ledges. After you rotate your canopy, the canopy top should be about 2 to 4 inches away from your front roll bar. On a tricycle gear, the canopy will almost balance itself in its vertical position. Once you have determined the position of the canopy in the vertical position, mark the positions of the canopy rollers on the side rails. Make sure they are both the same distance from the windshield roll bar.

2.) Refer to drawing #8. Part "D" is what locks the canopy into its side rail pivot slots while the canopy is rotated. This guarantees that your nice canopy won't come crashing into your windshield. After you determine your canopy rotation point and have marked it, you will need to complete the roller assembly by

adding Part “D”. Locate the part as shown in the drawing. Rivet it to the weldment as shown. Now drill the 0.25” dia. hole into part “D” using the existing weldment hole as a guide.

3.) Reassemble the roller assemblies. Determine the exact position for your pivot slot. Use part “D” on the roller weldments to determine where to mark the pivot slot distance from the rails. Mark the position and cut the slots into the roller rail deck as shown.

CANOPY STRUT & CLIP

NOTE: Before starting this section, you should have already rotated your canopy, and you should have already mounted the canopy latch mechanism.

Refer to drawing #5

1.) The length of this strut should be determined prior to its assembly. Rotate the canopy and determine the best position for the full up position. Measure the distance from the latch attaching screw to the point on the seat back rest (as close to the passenger side as possible) as shown in drawing #5. This will be referred to as the strut center to center distance.

2.) You will be attaching the bottom of this strut to the horizontal seat back rest. It will be attached using the rod end bearing, and the #1/4-28 bolt hardware supplied. Be sure to include the washer in between the back rest and the bearing. The location of this point will vary between builders. In general, it should be located as shown in drawing #5 and as far towards the passenger side as possible. Keep in mind that there may be a small triangular piece that you will have to avoid getting too close. Make sure that the strut can be rotated from the horizontal position to the position needed to support the canopy before you drill this hole. The hole should be 0.25” diameter.

3.) Prepare the support rod by first cutting it to the length. Once the center to center length of the finished strut has been determined, you will need to shorten the rod by approximately 2.25” to make up for the extra added length of the rod end and rod end bearing. Before you shorten this rod, make sure that you don’t cut too much off. The rod ends supplied may vary in length from kit to kit.

4.) After you shorten the rod, you need to drill out each end of this rod using a #3 drill, 0.213” dia. The depth should be about 1” to 1.5” or so. Now, tap each end using a #1/4-28 tap. Assemble the rod end and the rod end bearing, and two jam nuts to the strut as shown. Bolt the lower portion of the strut to you seat back rest.

5.) Find a good place to attach the strut clip. This should be on the center vertical structure holding up the seat back rest on most RVs. If this support is not used in your aircraft, you can attach it to the seat back rest. Use the #4-40 hardware. The strut should simply clip into this clip when the strut is not used to support the canopy.

Hope you enjoy this modification as much as I do!

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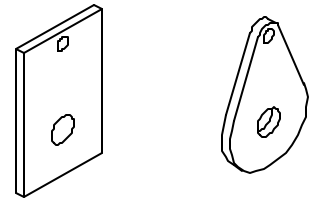
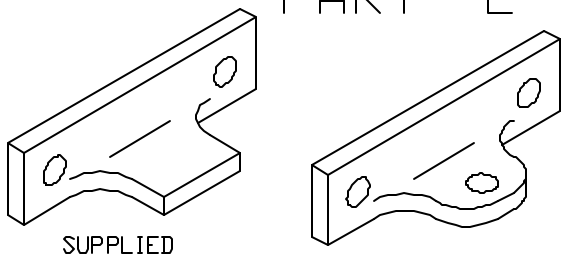
PART "N"



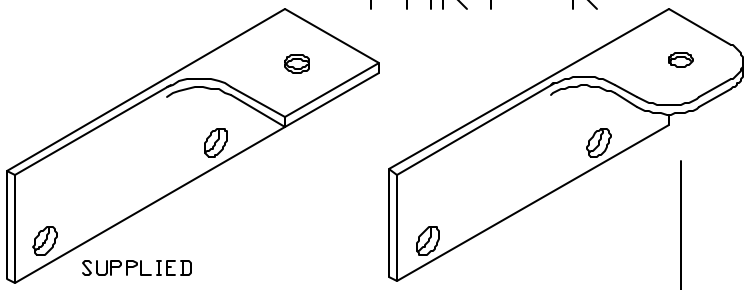
SUPPLIED

PART "L"



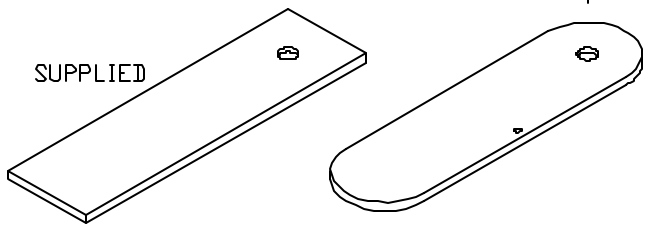
SUPPLIED

PART "K"



SUPPLIED

PART "I" IS TO BE ROUNDED SO THAT IT HINGES ON PART "K". A #4 WASHER THICKNESS WILL SEPERATE THE TWO PIECES.

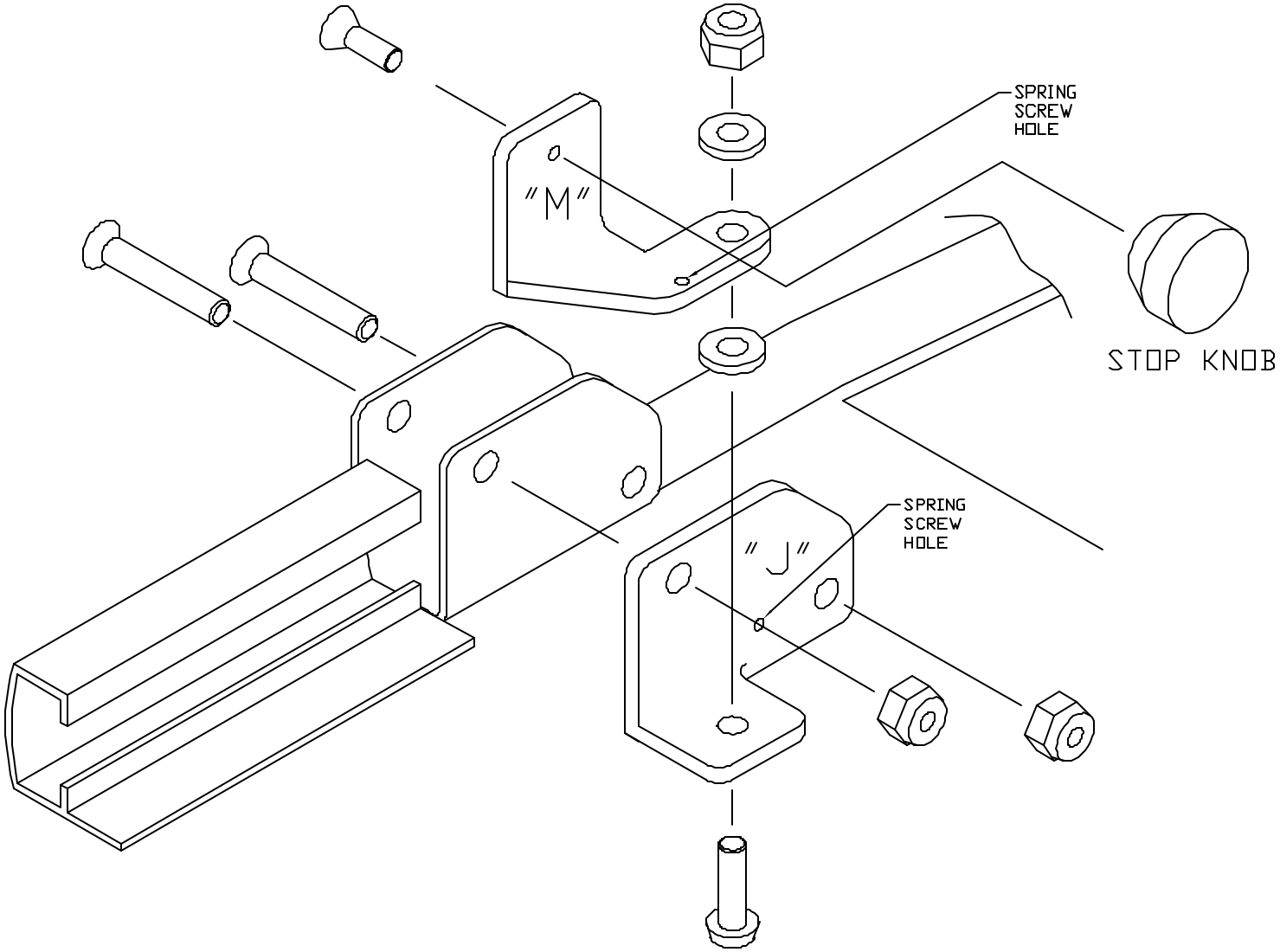


SUPPLIED

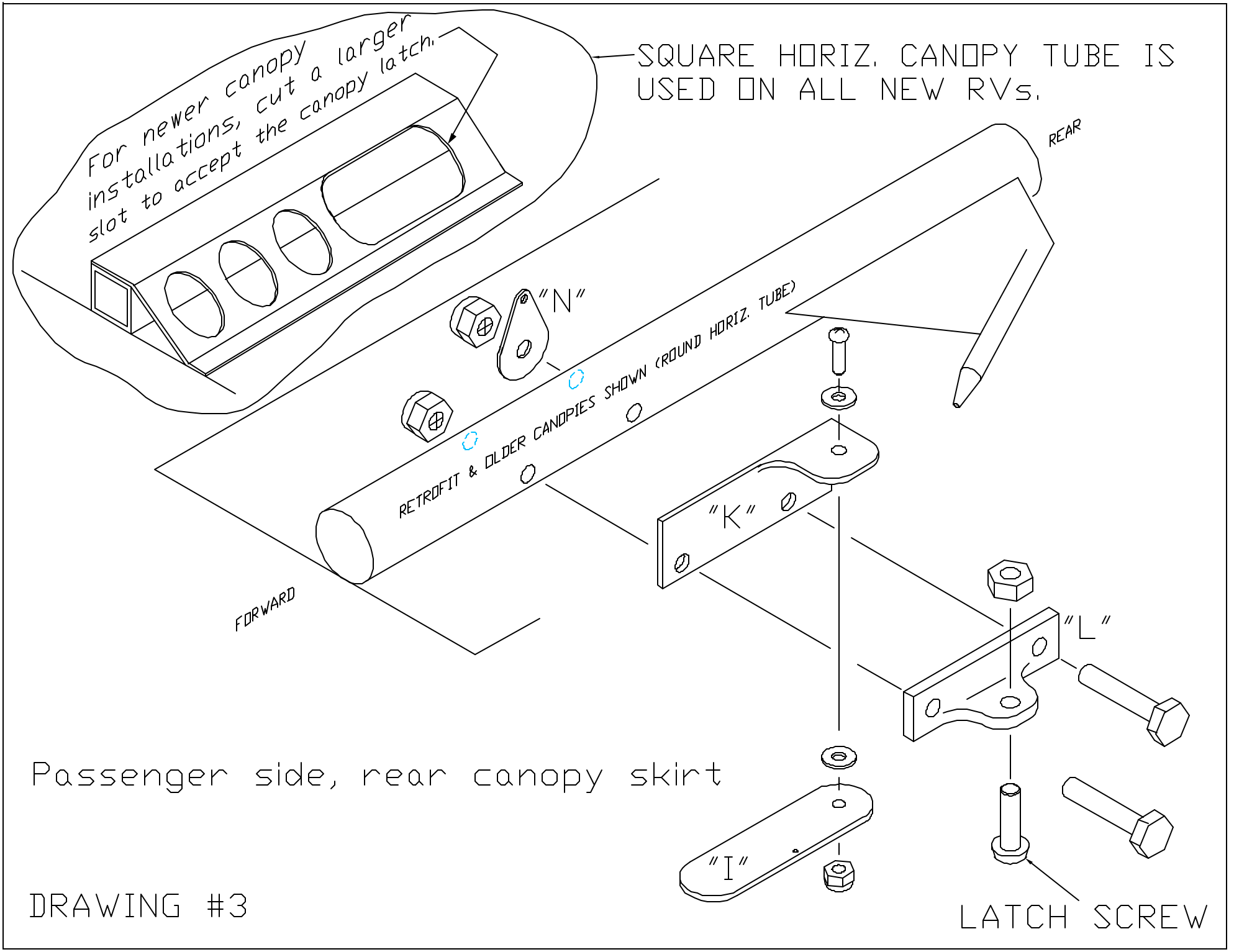
PART "I"

DRAWING #1

PASSENGER SIDE SHOWN

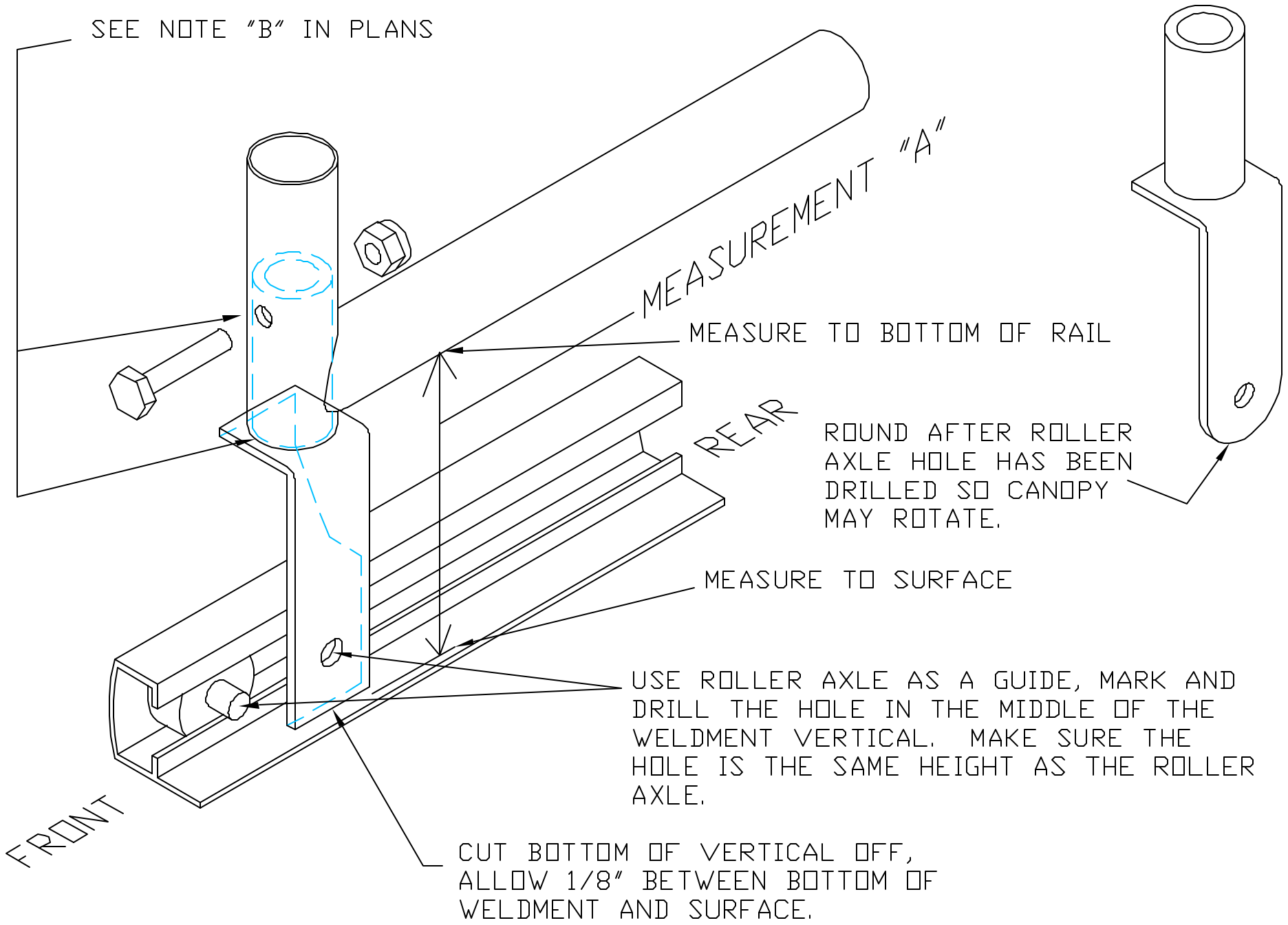


DRAWING #2



Passenger side, rear canopy skirt

DRAWING #3

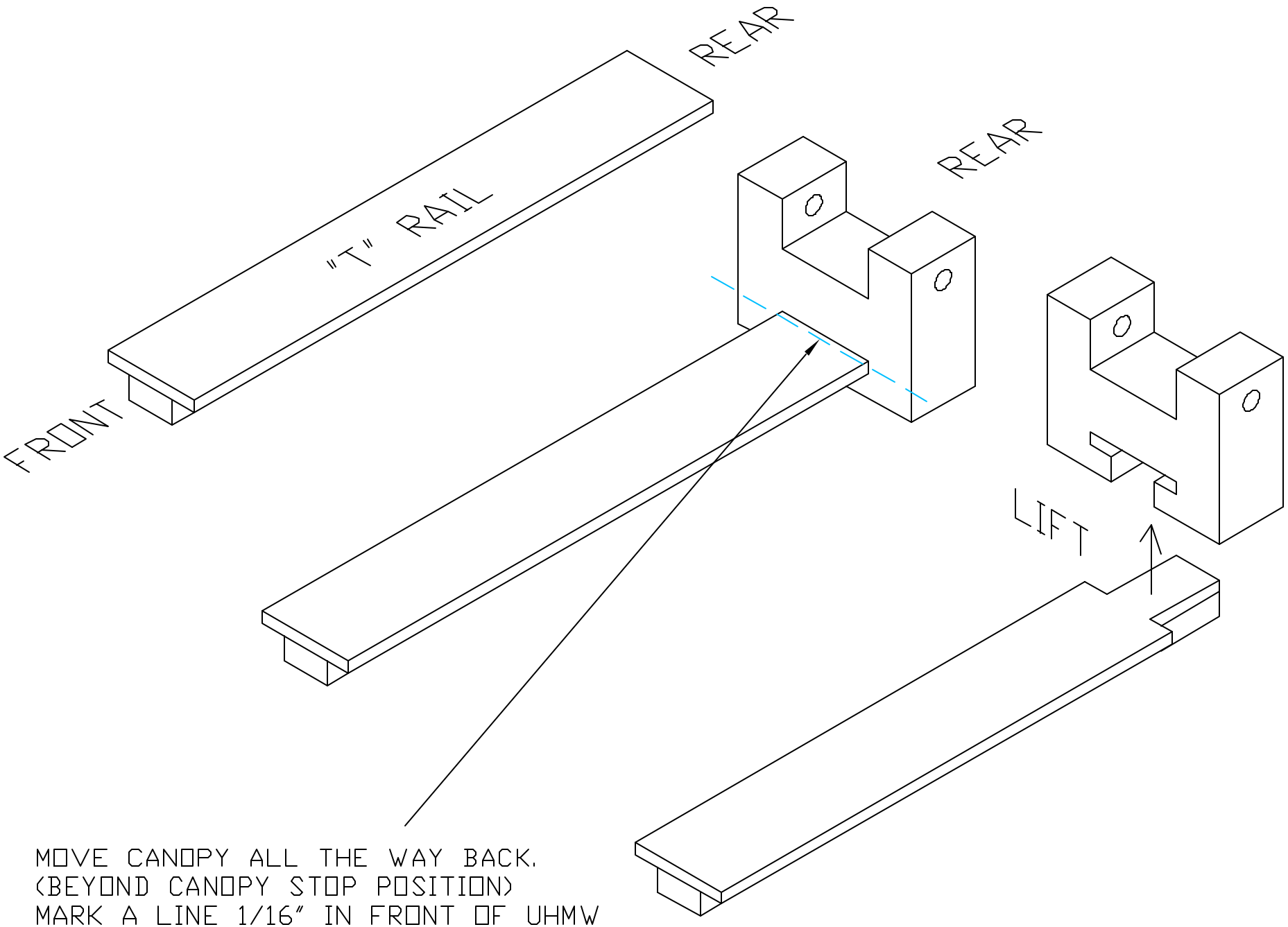


Passenger side of canopy

DRAWING #4

DRAWING #5

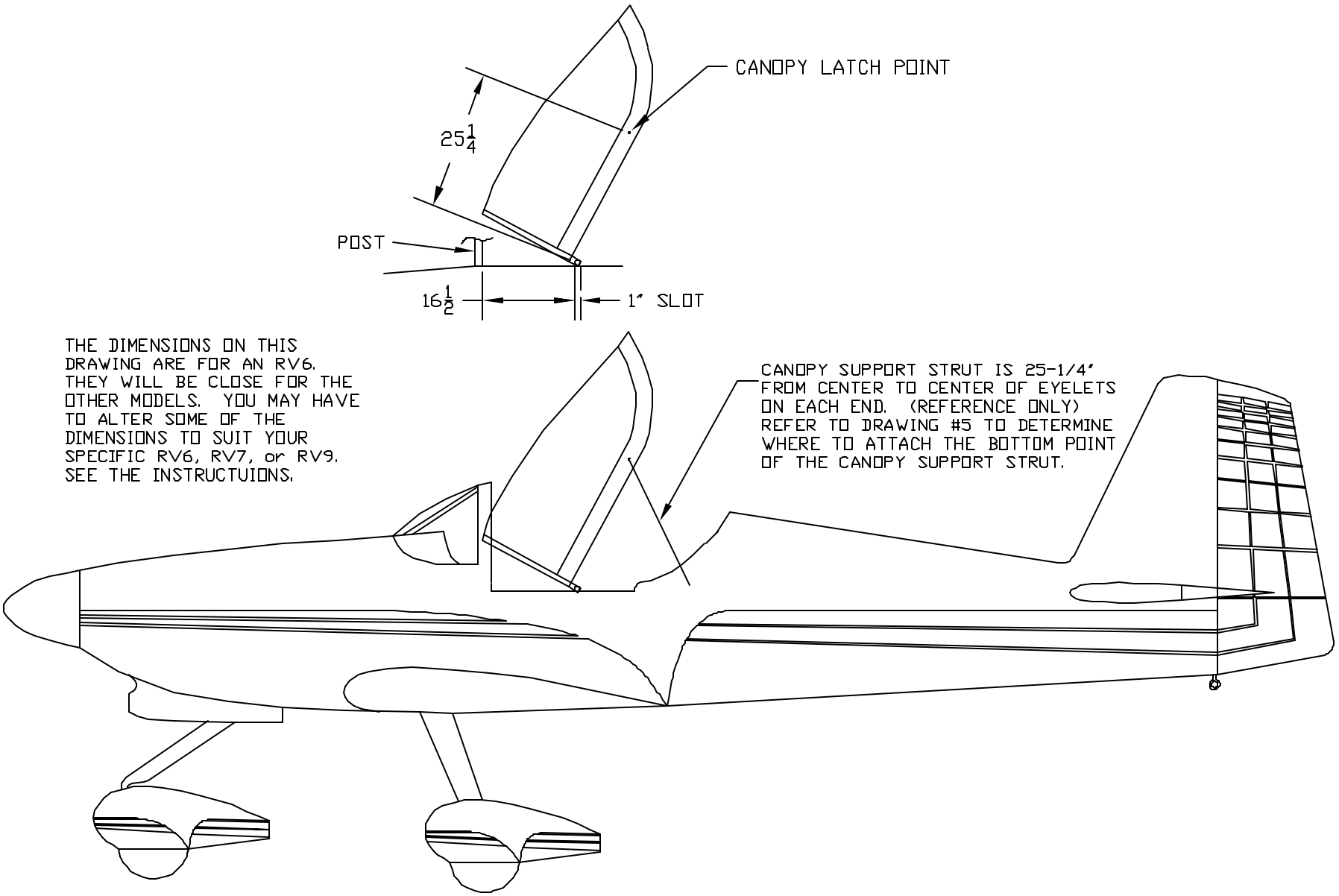
CUT OFF BOTTOM
OF CANOPY ROLL
BAR FLUSH WITH
HORIZONTAL BARS.
(BOTH SIDES)
SUPPORT FOR
SEAT BACKS
SEE DOCUMENTATION
TO DETERMINE CENTER
TO CENTER DISTANCE



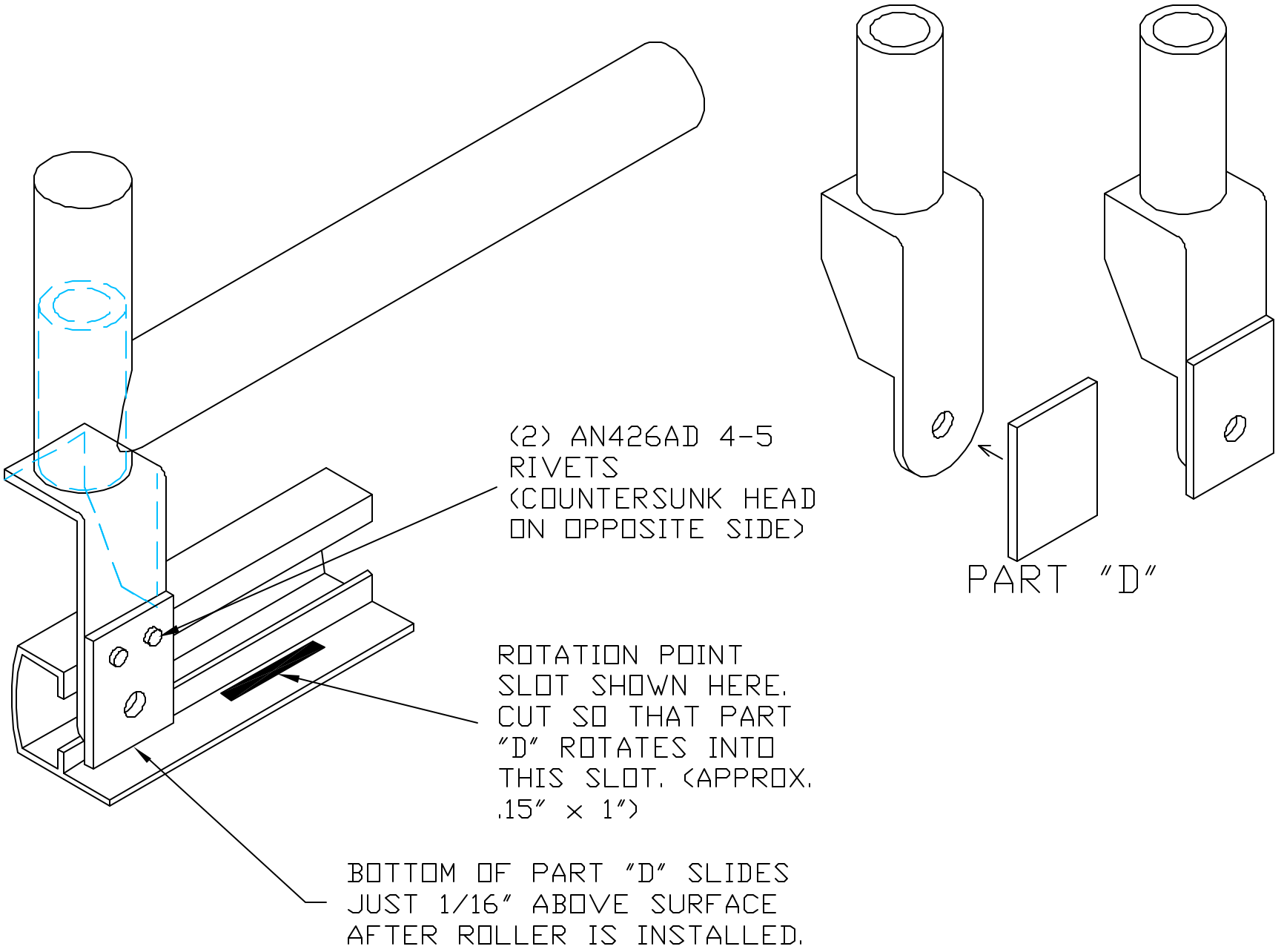
MOVE CANOPY ALL THE WAY BACK.
(BEYOND CANOPY STOP POSITION)
MARK A LINE 1/16" IN FRONT OF UHMW
BLOCK. CUT "T RAIL AS SHOWN.

DRAWING #6

RV-6A SHOWN



DRAWING #7



PASSENGER SIDE SHOWN

DRAWING #8