

## CORNER MODULE ENHANCEMENTS PART II

### PART II:

#### STEPS I FOLLOWED TO BUILD THE SPLIT- CORNER FRAME

See Part I for drawings.

MAKE ALL FOUR END-FACES ALIKE AND AT THE SAME TIME - Starting with 1"x4" #2 Pine lumber, purchased at HOME DEPOT because the price is right, cut four equal pieces, four feet long (see Fig. A). As the drawing shows all pieces should be identical in size and lie flat with each other. These are End-faces AK, CJ and both Split-end faces DI. *(Bill makes the point that it is not necessary to have fancy tools or expensive wood to build these modules. In my experience however, local lumber yards sell a better*

*grade of wood, less prone to warping, for only slightly higher cost [sometimes at LOWER COST], and the better wood makes it much easier to achieve accurate dimensions and assembly. Also, many lumber yards will cut plywood and dimensional lumber to your dimensions at nominal prices. In either case, make sure that the CRITICAL dimensions are correct. TL)*

**WORK ON SPLIT-END FACES -** Temporarily set End-faces AK and CJ aside. Align both DI pieces together, placing a piece of wax paper between each and clamp with C-clamps. After studying Fig. B for location of holes, drill three 3/8" holes (at random angles) at the seam line of the two boards with the wax paper. Also, drill your three holes through from one side to the other of the 4" boards as shown in Fig. B. Don't use a spade type, but rather a 3/8" long shank drill. Reason? You don't want too much slop in your keying method!

Cut three pieces of 3/8" dowels - about 3-1/4" long, and take apart your two DI pieces. Remove the wax paper. Now remove any burrs in the holes and the ends of the dowels.

Place the three dowels in the three holes

### CONNECTICUT S GAUGERS 90 DEGREE SPLIT-CORNER CONSTRUCTUION GUIDELINES

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with the two DI pieces held together. If the surfaces come together and fit as well as they did prior to drilling, you are on your way to a successful operation. If OK, glue (I use Carpenter's glue) the dowels to the slots on ONE of the DI faces. If you are careful to glue only one half of each dowel pin, you can clamp both DI faces together and allow dowels to dry for 24 hours. Oh yes, be sure the dowel pins do not extend beyond either the top or the bottom DI surfaces.

**CUTTING OUT TWO PIECES OF PLYWOOD TO FORM MODULE TOPS -** In line with Fig. C, I joined two 4'x4' pieces of 3/8" plywood (temporarily together) with 2x4s and screws. Be sure end surfaces of both sections butt together properly and that the top edges form a straight edge for Module edge surface EDF. This plywood surface, with the three braces screwed into it, will eventually become the top module surface. Therefore, use the best side up for this operation.

Now, I choose to trace the module outline on the two pieces of joined plywood. Because of the three braces, it is best we turn the whole assembly over and use the flat underside to trace the outline. I didn't want to damage the future top module surface in the process, and therefore acquired a second pair of hands. I'm sure some who are reading this are asking: "Why not put the braces on the underside surface and avoid all of this?" All I can say here is: "Wait until we try to attach the End-faces and hope you will better understand why we do it this way." Now trace the module outline to the two module plywood underside surfaces. Finally, make sure your traced points of K and J are 49-1/2" apart. Make the same check for points A and C, being 83-7/16", from each other.

Saw the module outlines using a straight edge. Here is where a radial or table saw would come in handy. Me, I used a Saber saw with a straight edge as a

guide. Suggestion: "Don't push your saw too fast to hog out big chunks of wood. I find that accurate cuts can be made with this type of saw by making slow cuts AND using a proper saw blade (for the job) that is also sharp. When you are finished, check the two critical dimensions. If you are off, make the corrections now! By now, you should also be aware that the third brace is no longer needed. Remove this brace and all of the excess plywood lumber. The remaining joined module surfaces, with two braces, should be a bit easier to handle.

**ATTACHING END-FACES TO THE PLYWOOD SURFACES JUST CUT OUT -** This is your last critical task!

Here are the steps I followed:

1. Tape the full sized paper template to the erecting surface. For me, it was the 4x8' table top.
2. Place End-faces AK and CJ on the template at their designated locations. Also, place End-faces DI, with dowel pins glued in place, at their respective location on the template. For point of clarity, this should be where the two sections of plywood are joined together.
3. As shown in Fig. C, turn your joined top sections over (with braces facing "up") and place on top of the positioned End-faces. The task ahead is to accurately attach these end-faces to the underside of the module top sections with Carpenter's glue and screws. First, I chose to fasten the joined DI End-faces to the two top plywood surfaces, as shown. In doing this operation, I spread Carpenter's glue to the top DI surfaces before positioning them and before driving some screws into both DI and plywood sections. If this is not too clear, please go back to Fig. C, around the DI area, and reread the previous sentence. For screws, I used 1-1/2", #8 wood screws, because I had a gross of these. Naturally, I pre-drilled and countersunk each hole before driving each screw by hand. Again, many of you could make light work of this operation with power tools. A final point about fastening the

DI End-faces: the location of the two DI sections is not nearly as critical as the AK and CJ End-faces. The location is important to the extent that the two top surface sections are joined together to form a perfect 90 Degree corner outline.

If you have followed my steps this far, you will note that you can't drive all of the screws through the top surfaces into the DI End-face sections because there are two braces (holding the two plywood surfaces together) in the way. You can come back here later on and finish the job when you remove the braces.

**ATTACHING END-FACES AK AND CJ** - This, without a doubt, is your most critical task. As stated before, your task is to have both end-faces perpendicular to the module's plywood surfaces AND exactly 83-7/16" apart, at the top as well as the bottom. Your paper template should prove to be a big help in this respect. Also, I made a simple holding fixture for both end-faces, to help hold them perpendicular to the underside of the plywood surfaces. Lastly, I applied Carpenter's glue to all surfaces that are being joined, **BEFORE FINAL POSITIONING. PLEASE NOTE THAT I DIDN'T APPLY ANY SCREWS AT THIS POINT. WHEN I WAS FINALLY SATISFIED THAT THESE END-FACES WERE PROPERLY POSITIONED, I ALLOWED THE WHOLE ASSEMBLY TO DRY FOR 24 HOURS.**

Now, after the 24 hour drying period, check again that everything is still OK. If not, break your bonding, and repeat the operation until you get it right. If satisfied, pre-drill and countersink each hole before driving in screws to secure the end-faces to the module plywood surface.

**FINISH THE REST OF MODULE FRAMING** - A piece of cake from this point on. Also, remove the two temporary braces shown in Fig. 3, and install the rest of the screws. From this point on, you will be working on each half of your split-corner separately.

Looking at Drawing No. 2B, Drawing No. 3 and Fig. D, you can determine what is still needed to complete each half of the module framing. I followed the framing of half AEDIGK, in this order: I installed Sections KGP, ALE, LG, IG and ED, in that order. Please note that some sections being joined require a 45

degree cut. My Saber saw could make this adjustment. If yours can't, make your own Miter-box to accomplish this. Also, I guess that I don't have to remind you that each section is joined together, mostly to the top section of plywood, with screws and glue for structural integrity. About the only area you might challenge as a "weak zone" is where AE and ED join. Some would suggest another cross-brace. I object, mostly because I need this area underside for wiring, terminals, etc. I chose to place a leg brace (see "making legs", below), with a 45 degree surface on one side, to stabilize the area as shown in Figures D and F. (See Fig. D. Cross-brace LG (item 3) is offset about 1 inch towards the end face to enable installing screws for LG (item 3) and GI (item 4) through frame member KGP (item 1). TL)

**REPEAT THE SAME SET OF OPERATIONS FOR THE OTHER HALF SECTION OF THE MODULE FRAME, DFCJHI.**

**MAKING LEGS FOR COMPLETE CORNER** - I used four 2"x2", wood legs in which 2 were applied to each half section. I located mine in the areas of E, F, H and G (see figures C and D). From actual practice, we have learned that only one carriage bolt is required per leg if some extra bracing is introduced. I used 1"x2" blocks of wood, shown in Fig. F. The bolts were 2-3/4" length, 1/4" carriage bolts with washers and wing-nuts.

**HOW TO FIGURE THE LENGTH OF YOUR LEGS** - Remember that NASG Standards state the tops of your module rails should be 42" above the floor level (Fig. E). For example, here is how I determined my leg lengths: 42" minus 3/4" (top of the rail to top of the module surface), minus 3/8" for the plywood table top, minus 5/8" for an adjustable glider attached to the bottom of the leg. This glider measurement was taken with the glider being extended less than half of its full extension. That comes to a measurement of 40-1/2"! Yours may be a bit different, depending how you build up your track.

One final point about giving your final module that professional look: Finish all cracks and screw holes with some kind of wood putty. Also, sand all top, frame surfaces and sharp edges.

**PAINTING THE MODULE** - I gave both assemblies a full coat of White primer paint. I personally think that this is essential, particularly when I used rather green (cheap) lumber to keep it from twisting. Later on, I gave all module sides and legs a finish coat of black-satin enamel. However, I do not paint any end-face with enamel. We find this type of coating causes sticking when joined with other modules. (*The Rochester Area S-Gaugers use polyurethane on all surfaces instead of paint and have had no sticking problems. TL*)

**NOTE: The S-MOD ordering block in the Directory is incorrect.**

## **ORDERING THE S-MOD STANDARDS**

**The NASG's S-MOD standards have been accepted by the NMRA Engineering Committee as the basis for their proposed new NMRA S standard gauge module standards. If you do not have a copy of the S-MOD materials, for \$5.00 you get the following information: Direct any module questions to NASG Module Chairman Ted Larson.**

### **Package includes:**

- NASG S-MOD Module Standards**
- S-MOD Concept Article**
- Handheld Throttle Construction Article**
- Checking Your Module Wiring Article**

**Orders to Ted Larson, 5 Kenicott Circle, Fairport, NY 14450. Make checks out to Ted Larson. e-mail: mhrreast@juno.com**