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Form N Race Derby, Pinewood Derby, Cube Car Rally-as you call it. Derby is a lot of fun and it's a great opportunity to learn and create memories. This is a set of plans for the four-lane derby track. The track is designed for disassembly for easy storage. Take a closer look at these plans to see the different parts and the construction process. The design is quite simple, and the track can be built with home workshop tools. However, accuracy is important: Sloppy work will produce a track with noticeably faster/slower lanes, with a section of joints that derail cars, or with other defects that will reduce the derby fun of everyone. Be sure to drill the pilot holes for all screws to avoid splitting wood. Use carpentry glue on all permanent wooden joint points, in addition to any mechanical fastenings used. Review One reader said he was able to buy all the materials needed for about \$100. Lumber Part #Qty Item Description L14 @ 1/2 x 14 x 8' plywood (base sections) L216 @ 1/4 x 13/8 x 8' lattice strip (lane guides) L31 @ 1 x 4 x 72 pine (brace) L41 @ 1 x 4 x 38 pine (stabilizer) L52 @ 1 x 4 x 43 pine (long legs) L63 @ 1 x 4 x 14 pine (leg cleats) L72 @ 1 x 4 x 12 pine (short legs) L81 @ 1 x 4 x 4 pine (brace block) L92 @ 1 x 2 x 88 pine (base supports) L106 @ 1 x 2 x 16 pine (section cleats) L111 @ 1 x 2 x 20 pine (starting bar) L121 @ 1 x 2 x 14 pine (end cleat) L134 @ 1/4 dowel x 4 (staring posts) L141 @ 1/2 dowel x 6 (staring handle) L154 @ 1/2 x 13/8 x 1 3/8 pine (guide risers) You should be able to cut Parts L3 through L8 from three 8' lengths of 1 x 4 pine. You should be able to cut parts of the L9 and L10 from four 8' lengths 1 x 2 pine. You should be able to cut parts of the L11 and L12 from one 3' length 1 x 2 pine. Hardware Part #Qty Item Description H13 @ 6 x 14 x 16 sheet metal (section connectors) H224 @ 1/4 x 2 flat-head stove bolts (with washers and wing nuts) H32 @ 1/4 x 2 round-head stove bolts (with washers and wing nuts) H45 @ 21/2 x 21/2 hinges (with screws) H51 @ 21/2 x 21/2 loose-pin hinge (with screws) H62 @ 11/2 x 11/2 loose-pin hinges (with screws) H71 @ 1/8 inside-diameter screw eye H836 @ 11/4 #10 flat-head wood screws Other Supplies carpenter's glue a small box of 1/2 brads hard-surface enamel paint (red, yellow, green, and blue) for the lane guides, and white for the base) clear gloss polyurethane fine steel wool a supply of heavy rubber bands three sandbags (optional) Lay Out Base Sections Label the four plywood base pieces (Part L1) Section 1 Section 2, Section 3 and Section 4. Section 1 will be the end of the starting gate, and Section 4 will be the end of the finishing gate. Safe Lane Guide to Base Sections 1, 2 and 3 Key to Fair Track (piste without faster/slower lanes) is a proper alignment of lanes and track sections. Don't rush with it. Check, double check and check three times the alignment of the guide lanes in front of them in place. Figure 2.1 - Distance between the guide paths (view from above) Apply carpentry glue to the guide lanes (Part L2). Carefully spread the lane guides to the track base sections (Part L1) at 31/2 centers. (See Figure 2.1) Clamp the lane guides in place. Safe lanes with 1/2brads. Allow the glue to dry completely. The centers of lane guides will be 13/4, 51/4, 83/4, and 121/4 from both edges of the base track. Figure 2.2 - Friction brake (side view) Section 4 is different from other sections because the last 3 foot strip guides are raised to form friction brakes. The lower part of the cars will drag on the raised lane guides, slowing the cars down after they cross the finish line. (See Figure 2.3) Figure 2.4 - end of the cleat position (bottom view) Apply carpenter glue to the end of the cleat (Part L12). Spread the final key on the underside of Section 4 along one end. Clip the end of the cleat in place, and fasten it with 11/4 #10 flat-headed wooden screws (part H8), one at each end. (See Figure 2.4) Figure 2.5 - Friction brake design (face view) After the glue dries, create a friction brake by maintaining the loose ends of the guide lanes with directional stands (Part L15). Apply the carpenter's glue to one strut guide, then place it under the loose end of the lane guide and clamp it in place. Protect the lane guide to base with one 11/4 #10 flat-headed wooden screw (part H8), driving the screw through the strut guide. Position (see figure 2.5) Repeat the process for the other three struts. (a) Closed (b) Open Drawing 2.6 - The beginning of the gate action (side view) Section 1 is different from other sections because it has a slot in the center of each lane so that the starting poles swing downwards. (See Figure 2.6) a) Drill holes (b) to connect the holes Figure 2.7 - cutting slots for the starting poles (top view) Start by marking the center of each lane. Next, move to place each lane 8 from the starting end. Next, not to drop each lane again 3 for it. This gives you two points in the center of each lane, one 8 from the starting end and the other 11 from the starting end. Drill 1/2 of the hardening into the center of each of these dots. (See Figure 2.7(a)) Then use a keyhole saw, a jig saw or a similar saw to cut out a slot connecting the two holes in each lane. (See Figure 2.7(b)) This will create a 1/2 wide slot down the center of each lane. (See Figure 2.7 (b).) Preparing section Connectors and Cleats Figure 3.1 - Part H1 Construction (Top Drill four 1/4 holes in the cones section (Part H1), one in each corner. Find the center of each hole 13/4 with a 6-length side and 11/2 with a 14-length side. (See Figure 3.1) Figure 3.2 - Part of the L10 design (top view) Mark the middle points of the cleats section L10. Drill four 1/4 holes in each section of the cleat. Find the center of the holes 11/2 on each side of the middle point and 61/2 on each side of the middle point. (See Figure 3.2) Figure 3.3 - Basic Support Positioning (top view) Applying carpentry glue to one base support (Part L9). Carefully center the basic support on the bottom of Section 2 and clamp it in place. (See Figure 3.3) Credit basic support with five evenly marked 11/4 #10 flat-headed wooden screws (Part H8). In the same way, ensure the remaining base supports sections 3 and 4. Allow the glue to dry completely. The key to a fair track (a track without faster/slower lanes) is the proper alignment of lanes and sections of the track. Don't rush into this step. Check, double check and check the alignment of section connections three times while you work. Gently align the ends of sections 1 and 2, then clamp them face down to the work surface to protect the work surface from the drill bits. Carefully align the section connector (Part H1) over the ends of the two sections of the track. Squeeze the section connector in place. Using the holes in the section connector as a guide, drill two 1/4 holes in each section of the track. The holes should be located 61/2 from the end of the section, and centered in the outer lanes (13/4 from the edge of the base), but the exact positions are less important than the fact that the holes exactly correspond to those in the connector section. Figure 3.4 - Section Connection (top view) Carefully uns uncover two sectional stiks with average holes above the holes that have just drilled in sections of the route. Use 1/4 of the chas (part H2) to check the cleats section alignment and then clamp the cleats section in place. Using the outer holes in the cleats section as a guide, drill another two 1/4 holes in each section of the track. The holes should be located 61/2 from the end of the section, and centered in the outer lanes (13/4 from the edge of the base), but the exact positions are less important than the fact that the holes correspond to those in the appropriate section of clear accurately. Countersink holes in the alloy guides. Figure 3.5 - Link section (side view) Assemble this connector section with eight 1/4 x 2 flat-headed oven bolts, eight washers, and eight wing nuts (part H2). Section connectors should be sandwiched between the bottom of the track sections and the cleat section. Wing nuts should be on the underside of the track. The heads of the furnace bolts should be flush with the surface of the guide lanes. (See Figure 3.4 and Figure 3.5.) Mark the ends of these sections of the track, the section connector and sectional snaps with red paint. Break this section connector. Repeat the connection process between sections 2 and 3 (yellow or green paint) and the links between sections 3 and 4 (note blue paint). Safe brace figure - Section 1 with brackets View On the underside of section 1, mark line 9 from the end which joins section 2. Apply carpentry glue to one side of the bracket block (Part L3). The center brackets the block at the bottom of Section 1 with one end on the mark and clip in place. (See Figure 4.1) Protect the bracket block with free 11/4 #10 flat-headed wooden screws (part H8). In the same way, ensure the remaining base supports sections 3 and 4. Allow the glue to dry completely. The key to a fair track (a track without faster/slower lanes) is the proper alignment of lanes and sections of the track. Don't rush into this step. Check, double check and check the alignment of section connections three times while you work. Gently align the ends of sections 1 and 2, then clamp them face down to the work surface to protect the work surface from the drill bits. Carefully align the section connector (Part H1) over the ends of the two sections of the track. Squeeze the section connector in place. Using the holes in the section connector as a guide, drill two 1/4 holes in each section of the track. The holes should be located 61/2 from the end of the section, and centered in the outer lanes (13/4 from the edge of the base), but the exact positions are less important than the fact that the holes exactly correspond to those in the connector section. Figure 4.2 - Starting Gate (top view) Mark each long leg (Part L5) 12 from its bottom end, and 8 from its upper end. Position two leg cleats (Part L6) through long legs, with their top edges each leg cleat along the top edge of the legs. The legs of cleats should be perpendicular to the legs, with the outer edges of long legs even with the ends of the legs cleats. (See Figure 4.2) Figure 4.3 - Starting Gate (bottom view) Attach one end of the bracket (Part L3) with one end on the mark line 9 from the end which joins section 2. Apply carpentry glue to one side of the bracket block (Part L3). The center brackets the block at the bottom of Section 1 with one end on the mark and clip in place. (See Figure 4.3) Protect the bracket block with free 11/4 #10 flat-headed wooden screws (part H8). In the same way, ensure the remaining base supports sections 3 and 4. Allow the glue to dry completely. The key to a fair track (a track without faster/slower lanes) is the proper alignment of lanes and sections of the track. Don't rush into this step. Check, double check and check the alignment of section connections three times while you work. Gently align the ends of sections 1 and 2, then clamp them face down to the work surface to protect the work surface from the drill bits. Carefully align the section connector (Part H1) over the ends of the two sections of the track. Squeeze the section connector in place. Using the holes in the section connector as a guide, drill two 1/4 holes in each section of the track. The holes should be located 61/2 from the end of the section, and centered in the outer lanes (13/4 from the edge of the base), but the exact positions are less important than the fact that the holes exactly correspond to those in the connector section. Figure 4.4 - Starting Gate (top view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.4) Figure 4.5 - Short legs (front view) Position of the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.5) Figure 4.6 - Starting Gate (bottom view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.6) Figure 4.7 - Starting Gate (top view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.7) Figure 4.8 - Starting Gate (bottom view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.8) Figure 4.9 - Starting Gate (top view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.9) Figure 4.10 - Starting Gate (bottom view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.10) Figure 4.11 - Starting Gate (top view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.11) Figure 4.12 - Starting Gate (bottom view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.12) Figure 4.13 - Starting Gate (top view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.13) Figure 4.14 - Starting Gate (bottom view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.14) Figure 4.15 - Starting Gate (top view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.15) Figure 4.16 - Starting Gate (bottom view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.16) Figure 4.17 - Starting Gate (top view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.17) Figure 4.18 - Starting Gate (bottom view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.18) Figure 4.19 - Starting Gate (top view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.19) Figure 4.20 - Starting Gate (bottom view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.20) Figure 4.21 - Starting Gate (top view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.21) Figure 4.22 - Starting Gate (bottom view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.22) Figure 4.23 - Starting Gate (top view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.23) Figure 4.24 - Starting Gate (bottom view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.24) Figure 4.25 - Starting Gate (top view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.25) Figure 4.26 - Starting Gate (bottom view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.26) Figure 4.27 - Starting Gate (top view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.27) Figure 4.28 - Starting Gate (bottom view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.28) Figure 4.29 - Starting Gate (top view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.29) Figure 4.30 - Starting Gate (bottom view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.30) Figure 4.31 - Starting Gate (top view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.31) Figure 4.32 - Starting Gate (bottom view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.32) Figure 4.33 - Starting Gate (top view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.33) Figure 4.34 - Starting Gate (bottom view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.34) Figure 4.35 - Starting Gate (top view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.35) Figure 4.36 - Starting Gate (bottom view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.36) Figure 4.37 - Starting Gate (top view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.37) Figure 4.38 - Starting Gate (bottom view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.38) Figure 4.39 - Starting Gate (top view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.39) Figure 4.40 - Starting Gate (bottom view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.40) Figure 4.41 - Starting Gate (top view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.41) Figure 4.42 - Starting Gate (bottom view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.42) Figure 4.43 - Starting Gate (top view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.43) Figure 4.44 - Starting Gate (bottom view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.44) Figure 4.45 - Starting Gate (top view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.45) Figure 4.46 - Starting Gate (bottom view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.46) Figure 4.47 - Starting Gate (top view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.47) Figure 4.48 - Starting Gate (bottom view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.48) Figure 4.49 - Starting Gate (top view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.49) Figure 4.50 - Starting Gate (bottom view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.50) Figure 4.51 - Starting Gate (top view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.51) Figure 4.52 - Starting Gate (bottom view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.52) Figure 4.53 - Starting Gate (top view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.53) Figure 4.54 - Starting Gate (bottom view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.54) Figure 4.55 - Starting Gate (top view) Position the remaining cleat leg (Part L6) through the lower ends of short legs (Part L7) with the ends of short legs even with the lower edge of the cleat leg. The leg should be perpendicular to the short legs, with the outer edges of the short legs even with the ends of the short legs. (See Figure 4.55) Figure 4.56 - Starting Gate (bottom view) Position the remaining cleat leg (Part L6) through the lower