

30-inch Hanriot HD-1 Construction/Covering Notes

By Derek Micko 2025; as seen in the October 2026 issue of *Model Aviation*

Preparation

- Additional details can be found in the prototype's RCGroups build thread, "Park Flyer Fun Scale Models—Hanriot Hd-1 Fighter Face-Off 3:"
rcgroups.com/forums/showthread.php?4800285-Park-Flyer-Fun-Scale-Models-Hanriot-Hd-1-Fighter-Face-Off-3

- Flight Video of the model can be seen on the Fun Scale Models YouTube channel:
youtube.com/watch?v=SK2xt0t7wKE

Plans Review

- Thoroughly review the plans and detail drawings. Note the order of construction because it is important to follow to ensure success.
- The plans can be cut along the dashed lines if needed.

Balsa, Parts, And Other Materials

- The builder can purchase a short kit from Manzano Laser Works: manzanolaser.com
- The model features stringers of 3/32-inch square balsa. These can be purchased individually or cut by using a balsa stripper.
- Several details are made from standard paper and templates that can be downloaded on *Model Aviation's* website at modelaviation.com.
- Additional building materials that are needed (some of the material needed is proved in the short kit's parts):
 - 1/16-inch plywood (firewall, landing gear parts, and details)
 - 3/32-inch balsa sheet (formers, ribs, tail feathers, stringers, trailing edges, and scrap)
 - 1/4-inch balsa sheet (leading edges and scrap)
 - 1/32-inch wire (control rods and elevator connector)
 - 1.5 mm carbon-fiber rods (struts)
 - 1/16-inch wire (landing gear axle).
 - CA hinges.
 - Micro EZ connectors and control horns

Power And Electronics

- The model is powered by a 24-gram 1,300 Kv brushless motor controlled by a 12- to 15-amp ESC.
- The battery used on the prototype was a 2S 450 mAh pack. The propeller used is a two-blade 9 x 5.
- Rabid Models (rabidmodels.com) offers a power pack that includes the motor, propeller, ESC, and additional accessories. Also available are 3D-printed rims/tires that are specifically designed for the model.

Servos And Servo Extensions

- The rudder and elevator servos are 3.7 to 4.3 grams. The ailerons are controlled individually by 2.5-gram servos.
- A Y harness/connector is needed for the aileron servos.

- A four-channel receiver is needed.

Canopy

- The canopy is made from a paper template and thin clear sheet; 3 mil was used on the prototype (the clear plastic on a report cover can also be used).
- The canopy is attached to the model using canopy glue.

Covering

- The prototype was covered in printed tissue, and the patterns can be downloaded from the Manzano Laser Works website (manzanolaser.com). The patterns can be printed on standard Free Flight tissue or, for more durability and color saturation, on exam table paper (crepe or smooth).
- The model can also be covered in lightweight iron-on film.

Construction

Horizontal and Vertical

- The horizontal and vertical plans can be cut from the main section along the dashed lines.
- Use waxed paper or clear film over the plans to protect them from glue.
- The vertical is made from four “V” parts and 3/32-inch stringers. Once the glue is dry, sand the surface flush and separate the rudder from the vertical.
- Mark the location of the hinges per the plans and cut the slot for the CA hinges. Rabid Models (rabidmodels.com) offers a hinge slot-cutting tool to assist with this process.
- It is recommended to use temporary hinges made from cardstock at this time. The control surfaces will be added/removed several times during construction and this can “fray” the CA hinges. Once the model is finished and covered, the CA hinges can replace the cardstock ones for final assembly.
- Round the edges of the vertical and rudder. Rabid Models offers a sanding tool to assist with this process.
- Construct the horizontal in the same manner as the vertical; hinge and round the edges.
- Connect the elevator halves with the U-shaped 1/32-inch wire per the plans.

Fuselage

- The fuselage is built in two main sections: the forward and rear.
- Use waxed paper or clear film over the plans to protect them from glue.
- The rear section is built first from one part (FS1) and 3/32-inch balsa stringers. The left and right sides are constructed over the plan, and the second side over the first to ensure similarities.
- The sides are pinned (top side to the board) over the Fuselage Top plans.
- The top and bottom cross stringers are added, ensuring that the structure is “square.”
- Cross-bracing can be added (top to bottom) at the location of cross sections 2 and 3 if needed.
- The side can then be glued together at the rear and the 3/32-inch scrap can be added per the plans.
- Scrap 3/32-inch is added to in-fill the bottom rear section (cut a slot for the skid); scrap is added to the top section to make the horizontal mounting plate.

- The forward section is made mostly from 3/32-inch balsa and 1/16-inch plywood parts.
- Glue F1A and F1B parts together. Note the cross-grain orientation. Do the same for F3A and F3B.
- Add the 3/32- x 1/8-inch round magnets into F2 and BT (battery tray), making sure that the polarity is correct.
- Glue F2 to F4 into the slots of one FS, making sure that they are 90° to the side of FS. Add the other FS to make the forward fuse “box.”
- Slide the two SRs into the slots in the FSs and glue in place. Add FC3 per the plans.
- Set the forward and rear fuselage sections upside down on top of blocks (so that the upper curved section of F3/F4 is not touching the building board); milling 1 x 2 x 3 blocks were used. Glue the rear section to the forward section, ensuring alignment.
- Install the motor mount to F1A, shimming the top of the mount 1/32 inch to 1/16 inch to provide the 2° to 3° downthrust.
- Assemble the cowl ring alignment jig and use it for alignment when glueing the CR parts together. Start with CR7 and glue each CR on top of the next (like a layer cake).
- Once dry, remove the cowl ring alignment jig and contour/shape per the plans using sanding blocks of various grits.
- Glue the F1 assembly along with F5 to F10 in place per the plans. Add the lower top/center stringer.
- Glue the four CR8s to the rear of the CR assembly (into the slots in CR7).
- Glue the CR8s/CR assembly into slots F1A. Add 3/32-inch stringers between CR7 and F1A (like the CR8s) at the +/-45° points (this will help support the cowl cover).
- Seal the wood of the CR assembly with thinned white glue (Elmer’s or PVA) and sand smooth. This will be painted to match the covering material later.
- Add the FS2 parts to the outside of FS per the plans.
- Mount the two 4.3-gram elevator and rudder servos.

Top Wing

- The top wing has 1-inch dihedral at each tip but can be built as one piece and then add the dihedral later.
- Cut the leading edge (LE) blanks from medium 1/4-inch balsa using the ribs to determine the blank height.
- Cut the trailing edge (TE) planks from medium 3/32- x 3/8-inch balsa along with the ALEs.
- Set the LE, TE, UWTs, OSFs, OSRs, MSFs, MSRs, and ailerons in place. Note the pin locations around the aileron.
- Add the bottom 3/32-inch stringers in place and glue the assembly together (except for the ailerons).
- Glue the UW1s to UW3s in place. Add the outer UW1A, and then DAG-F/DAG-R. These will tilt the inner UW1A’s top out towards the tip. Add the inner UW1As.
- Glue the ALEs in place, along with the top stringers. Make the wingtip parts per the plans from scrap 3/32-inch balsa. Make the aileron ribs from 3/32-inch blanks. They can be shaped once the wing is removed from the board.
- Unpin the top wing and shape the LE per the plans. It is recommended to place masking tape over the ribs just behind the LE (do the same on the bottom). This will protect the ribs while shaping the LE. Use a block plane, and then 150- to 220-grit sandpaper, to shape the LE. The laser-cut short kit includes templates to assist in obtaining the correct shape.

- Cut the ailerons free. Sand the aileron ribs to match the wing airfoil. Round the tips and TE.
- Infill in the aileron bay between the top and bottom #3 stringer with 3/32-inch scrap.
- Mark the hinge locations per the plans and cut the hinge slots. Contour the LE of the aileron, add the temporary cardstock hinges, and reinstall the aileron into the bay.
- Cut the top wing in half between the inner two UW1As. Sand the ends of the stringers flush against the sides of the UW1As.
- With the two top wing panels sitting on the board (over waxed paper), use wood glue to adhere the two halves together with the tips elevated 1 inch at the outermost rib.
- Add the servo mounting plates per the plans from 3/32-inch balsa scrap.
- Test two 2.5-gram servos thoroughly. Mount a single-sided medium/large horn so that it is 90° to the front/back of the servo. The servo will be mounted so that when the servo is on and neutral, the horn will stick out below the bottom of the wing. With the power off, gently rotate the horn so that it will not stick below the wing. Glue the servo in place per the plans and run the servo wire toward the center panel through the holes in the ribs. Once the wing has been covered, power on the servo and the horn will recenter and extend below the bottom of the wing.
- Add the TEs in the center section from scrap. Contour to match the wing shape.
- Make the CSF and CSR assemblies per the plans.

Bottom Wing

- The bottom wing is built the same as the top wing (minus the dihedral and ailerons).

Wing Incidence and Alignment Guide

- Before covering the model, test-fit the struts and wings.
- Make the wing incidence and alignment jigs from 4 mm to 5 mm (approximately 3/16 inch) foam board/Depron or comparable cardboard.
- Temporarily mount the bottom wing to the fuselage.
- Set the fuselage/lower wing on top of a 1-inch block (per the plans).
- Sit the “outer jigs” in place over the outermost rib on the bottom wing. Pin in place.
- Pin the “center jig” to the fuselage per the location on the plans.
- Cut the 1.5-mm carbon-fiber rods (using the guide on the plans) to make the center struts (forward and rear). Slide into the slots in F1B and F3B, respectively.
- Slide the CSF and CSR assemblies onto the applicable center struts.
- Set the top wing in place on the jigs. The CSF and CSR will slide into the slots in the wing center. Adjust the center struts as needed so that the top wing sits flush on top of the jigs.
- Cut the 1.5-mm carbon-fiber rods (using the guide on the plans) to make the mid struts (forward and rear). Sharpen one end. Slide the unsharpened end into the applicable location on the fuselage. The sharpened end should be below the bottom of the top wing.
- Slide the sharpened end of the mid struts into the holes in the MSF and MSR and into the ribs (the sharpened end should not be above the top of the wing). Adjust the length as needed.
- Cut the 1.5-mm carbon-fiber rods (using the guide on the plans) to make the outer struts (forward and rear). Sharpen both ends.
- Add 1/4-inch balsa block to the bottom wing under the LSMF and LSMR.
- Slide the outer struts through the OSF and OSRs on the top wing into the holes in the LSMF and LSMRs in the bottom wing. Use the sharpened end to bore into the 1/4-inch balsa.

- Slide the outer struts all the way through the 1/4-inch balsa so that the upper tip is below the bottom of the top wing.
- Add 1/4-inch balsa block to the top wing above the OSF and OSRs.
- Slide the outer struts up through the holes in the OSF and OSRs and bore through the 1/4-inch balsa.
- Adjust the length of the outer struts so that they do not stick above the top wing or below the bottom wing.
- *Do not glue the carbon-fiber rods to the fuselage/wing at this time.*

Landing Gear

- Glue a LG2 on either side of an LG1. Make two pairs.
- Make the forward landing gear struts from 1.5-mm carbon-fiber rod, using the front view plans for strut length.
- Glue the forward landing gear struts into the LG assemblies (per the plans orientation) and slide into the slot in F1B.
- Sharpen the end of a 1.5-mm carbon-fiber rod. Using the rear slot in the LG assembly as a guide, bore it through the hole in each RGM and into the 1/4-inch balsa block. Trim the length so that the flat end is inserted into the LG assembly, and the sharp end is in the 1/4-inch balsa block.
- *Do not glue the LG assemblies and carbon-fiber rods to the fuselage at this time.*

Preparation To Covering

- Finish sanding the model, removing any rough spots or glue drips. Dry-fit all of the parts to ensure that no additional adjustments are needed for the best fit. Sand/adjust as needed.
- The prototype was covered in printed tissue; the covering instructions below are for this process. The model can also be covered in nonprinted tissue or lightweight film and the process will be similar.
- Use the color guides in the templates to color match paint samples at your local home improvement center.

Tissue And Covering Instructions

Tissue details and prep work

- All templates are printed on white tissue or “exam table” paper (crepe or smooth can be used).
- Adhere tissue to 8.5- x 14-inch sheets using temporary spray adhesive.
- Print them in color without borders and allow time for the ink to dry. If using an ink-jet printer, lightly coat the sheet with Krylon Crystal Clear spray to help seal the ink (if using a laser printer or Epson Durabrite Ink, this step is not needed).
- In general, trim along the part outline while it’s still attached to the sheet, carefully remove the paper sheet before applying it to model.
- The tissue is attached using a glue stick. Those that are purple and dry clear are recommended; at least two sticks will be needed.
- Use the marks on each end of the tissue template; they are spaced 3/32-inch apart and line up with stringers. Each panel notes its location.

- As much as possible, pull out the wrinkles before the glue stick dries. A fine emery board or tweezers can help pull it taught before the glue fully dries. Rubbing alcohol on a paint brush can be used to loosen up the glue if it has set and additional adjustment is needed (test the alcohol on scrap printed tissue to ensure that it does not make the ink run).
- When covering sheet (solid) surfaces, it's best to apply the glue to the entire surface of the sheet (i.e., the entire horizontal part). If covering an open-frame structure, apply the glue to the outside framing and any internal areas that need adhesion (i.e., the wing and the servo mounting plate). For more complex shapes (compound curves), glue can be applied to both the surface and the tissue before application (i.e., front on the cowling).
- Allow the glue to fully dry (1 to 2 hours). To tighten up any wrinkles, use a very fine mister to dampen the tissue. Hold the model above your head and spray "up" with the mister. This will prevent any large water droplets from hitting the tissue and possibly making the ink run. Another option is to use an airbrush with water in the paint tank to provide a fine mist. As the tissue dries, it will shrink and tighten the tissue. A hair dryer can also be used to help with the water evaporation in difficult areas.
- Once the tissue has been shrunk, seal the tissue with several coats of Krylon Crystal Clear Spray. Dusting the first couple of coats before increasing the amount of spray, allowing each coat to dry before adding the next. The hair dryer can help keep the tissue taught during this process.
- Additional information on covering with printed tissue can be found on the Fun Scale Models YouTube channel at youtube.com/watch?v=0980sL-UjC0 and youtube.com/watch?v=0Pn3qU_6c38.

Horizontals and Rudder

- Locate and cut out the top/bottom templates for the horizontals and the left/right for the verticals.
- Add the right side of the rudder template to the rudder, and then the left. Set both vertical templates aside for now.
- Cut out the top and bottom horizontal templates.
- Add the bottom, and then the top templates, to both the horizontal and elevator halves.

Fuselage

- Review the notes on tissue templates 11 and 12. These are 14- x 8.5-inch sheet paper with the tissue permanently affixed (apply heavier coats of spray adhesive to attach). The tissue will not be removed when cutting and applying the templates.
- Cut out the rear top decking and set it in place over the fuselage (the top of F7 will slide through the slot cut in the template). Mark the edge of the fuselage on each end of the decking. Fold along this line, and then trim so that the overhang is 3/32 inch. Glue the template to the fuselage (PVA was used on the prototype).
- Attach the fuselage bottom template.
- Run the 1/32-inch pushrods through the connectors on the servo; the pushrod ends should be at the exit points at the rear of the fuselage but not beyond. Box-in the wires at the second vertical stringers back to reduce flexing.
- Add the fuselage sides. Shrink the sides and bottom before sealing with Krylon Crystal clear. Cut a guide slot and push through the elevator and rudder pushrods.

- Trim and test-fit the forward fuselage. Crease the rear along the fuselage edge. Cut out the gray sections for the struts. Bend the tabs to go under the lower edge of FS. Glue the template in place (PVA was used on the prototype); the rear should be flat against F4/Fs1.
- Paint the forward cowling (CRs), and then add the main cowling.
- Add the stringer between F5/F7. Fold the tabs under the turtledeck before rounding the template around a small dowel. Glue to the stringer and F5-F7 (PVA was used on the prototype); the tabs are used to glue to the rear top decking.
- Add the headrest details.
- Allow the glue to fully dry before shrinking/tightening the tissue (misting with water and allowing it to dry or using a hair dryer). Once the tissue has been shrunk, seal with Krylon Crystal Clear spray (1303). Spray two to three light “dusting” coats, allowing it to dry between each one. Add one to two heavier coats to completely seal the tissue (do not “over-wet” the tissue with the heavier coats).

Covering The Top Wing

- Use scrap tissue to cover the LE of the ailerons and the rear edge of the aileron bays.
- Reinstall the hinges and mount the aileron—do not glue. On the top side of the aileron, pin to the wing panel.
- The bottom of the top wing is covered in six sections.
- Starting with the left panel, cut out the wingtip (bottom) template. Dry-fit in place. Note that the tick marks align with the #1 stringer. Apply glue to the framing and wingtip (slightly beyond the halfway point). Attach the template and smooth out along the tip. Trim the template to be approximately 1/4 inch outside the edge of the tip. Cut slits in this overhang and wrap around the edge of the tip.
- The bottom inner panel is next. Dry-fit to the wing using the tick marks. Trim as needed. The rear of the template should overhang the TE by approximately 3/32 inch. Apply the glue around the frame.
- Apply the template, attaching at the tick marks on each side to start, and gently pulling the middle of the front/back to attach to the LE/TE. Gently pull taught when attaching the rest of the perimeter.
- The bottom outer panel is next. Dry-fit to the wing using the tick marks. Trim as needed. The rear of the template should overhang the TE by approximately 3/32 inch. Apply the glue around the frame, the entire bottom of the aileron, and around the servo cutout.
- Apply the template, attaching at the tick marks on each side to start, and gently pulling the middle of the front/back to attach to the LE/TE. Gently pull taught when attaching the rest of the perimeter. Burnish the area around the servo cutout and along the bottom of the aileron. Use smooth scrap or a popsicle stick to push the template slightly into the hinge line (this will create a slight divot between the bay and the aileron).
- Repeat the same process to attach the upper tissue templates. *Be sure to remove the pins holding the ailerons in place before adding the templates.*
- With the panel dry and flat on the board, shrink and seal using the same process as outlined with the fuselage.
- Cut the tissue (top and bottom) along the rear edge of the aileron bay (the rear edge of stringer #3) to remove the aileron. Glue the overhang top and bottom template to the forward edges of ALE. Hinge with the CA hinges and reinstall. Glue the hinges to the wing/aileron.
- Cut open the area for the servo horn.

Covering the Bottom Wing

- The bottom wing is covered the same as the top wing (minus the ailerons).

Final Assembly

- Glue the bottom wing to the fuselage, ensuring that it is square.
- Repeat the same steps that are above in the Wing Incidence and Alignment Guide section, gluing in the carbon-fiber struts with epoxy or slow CA. A small slot will need to be cut in the top of the forward fuselage for the aileron servo extension.
- Glue the tail feathers and ailerons in place. Make sure that all hinges are glued.
- Install the receiver per the plans and connect all of the servos, and mount the motor and ESC, ensuring proper rotation.
- Power-up the receiver (with the propeller off of the motor) to center all of the servos. Connect the elevator and rudder servos with the applicable control surface. Rabid Models has several small control horns that fit the model well. The ailerons are connected to the servo horns with 1/32-inch wire cut to length.
- Cut the paper strut details from the templates. Fold and glue into place.
- Mount the LG parts and carbon-fiber rods. Glue in place with epoxy or slow CA. Add the 1/8-inch brass tube between the LG parts. Add the paper templates over the carbon-fiber rods per the plans.
- Make the axle from 1.5 mm to 2 mm or 1/16-inch wire. Mount the wheels (Rabid Models has wheels and hubs designed specifically for the model).
- Mount the lower wing paper template in place. Add the upper wing bottom center at this time. Both can be added with canopy glue should they need to be removed later for maintenance.
- Make the canopy by cutting out the outside box line. If you are wanting to make “clear” glass, cut out the blue sections. Glue 3-mil clear sheet to one of the backsides of the template before folding and gluing the two halves. Trim along the outside edge and mount with canopy glue. Repeat the same steps for the profile pilot.
- The paper machine gun can be added and is included in the templates.
- Mount the propeller.
- Add hook-and-loop tape to one side of the battery tray. Attach the flight pack and slide up between F2 and F3- the magnets on the battery tray should connect with those in F2.
- Balance the model per the plans: approximately 1.25 inch back from the LE of the *top* wing. Add ballast as needed.
- Set the control deflections to start with ailerons and elevator at +/- 3/8 inch, and the rudder at 1/2 inch.

Flying The Model

- Range-check the model and reverify the balance point and control directions.
- Takeoffs are achieved with steady advancement of the throttle. Because of the tail skid (no tail wheel), rudder will be needed to keep the model heading straight. Liftoff will be in 10 to 15 feet.
- Trim the model as needed. Depending on the power and propeller setup, additional downthrust or right thrust might be needed. Shim behind the motor mount as needed.
- The model is quite maneuverable, but it is a steady flyer.

- Landings are standard. Because of the additional drag of the struts and the round cowling, use a gradual reduction in power on final until a steady decent is established.

Prototype Details

- **Wingspan:** 30 inches
- **Weight:** 10.1 ounce with battery
- **Power:** 24-gram 1,300 Kv brushless motor
- **ESC:** 15-amp
- **Propeller:** 9- x 5-inch two-blade
- **Battery:** 2S 450 mAh
- **Covering:** Printed tissue and paper