Riley Model B - Series 18 - Flying Wires & Dihedral Setting

July 1, 2024

About the Flying Wires

The Flying Wires are made from 3/64” 1x7 strand, 304 stainless steel wire rope which are swaged into custom machined 4-40 stainless steel threaded couplers.

The threaded clevises are Dubro #302. You will need 24 clevises (12 pair).

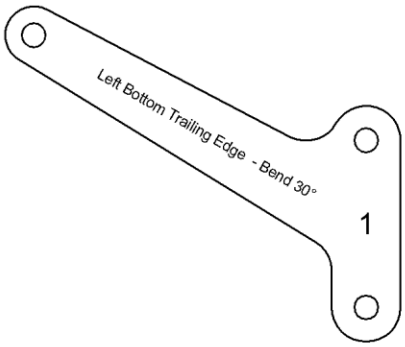
The dihedral is automatically set at 3° by the wing tube.

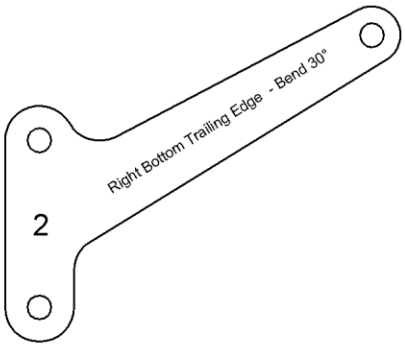
Flying Wire Dimensions (0018 wing section)

	Pin-to-Pin	Coupler-to-Coupler *
Wing Top Leading Edge	31-3/4”	30-3/4”
Wing Top Trailing Edge	32-1/8”	31-1/8”
Wing Bottom Leading Edge	16-1/4”	15-1/4”
Wing Bottom Trailing Edge	16-7/8”	15-7/8”
Stub Wing Wires	31-7/8”	30-7/8”

*Coupler-to-Coupler refers to the total finished length of the wire end-to-end (couplers swaged in place) but without clevises.

Note: The finished coupler-to-coupler dimension is 1” less than the Pin-to-Pin distance.


Left Bottom Trailing Edge - Bend 30°
1


Right Bottom Trailing Edge - Bend 30°
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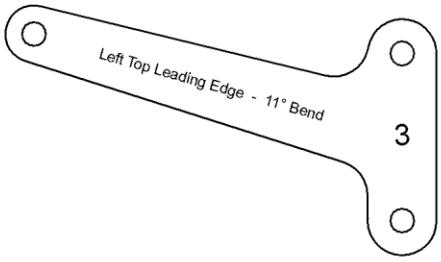
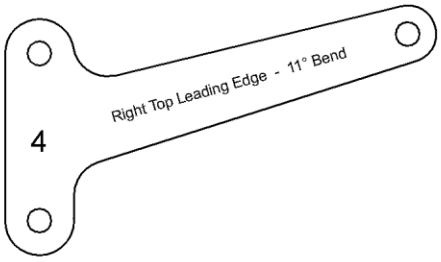

Left Top Leading Edge - 11° Bend
3


Right Top Leading Edge - 11° Bend
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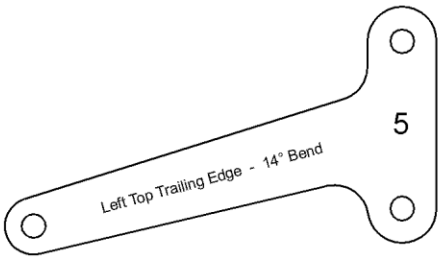
Left Top Trailing Edge - 14° Bend
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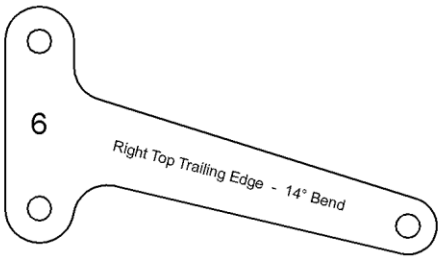
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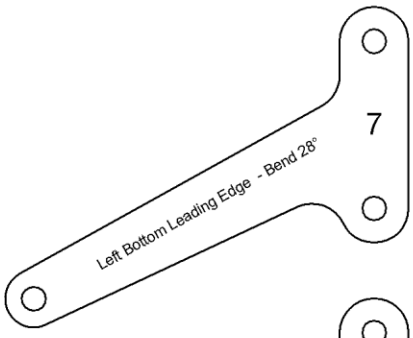
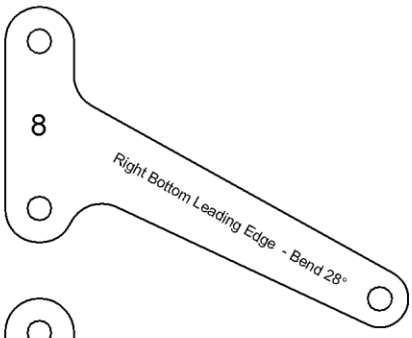
Right Top Trailing Edge - 14° Bend


Left Bottom Leading Edge - Bend 28°
7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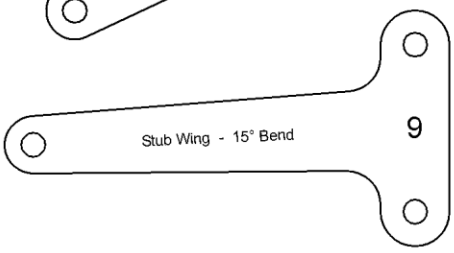
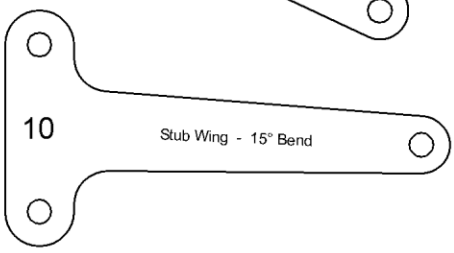
Right Bottom Leading Edge - Bend 28°


Stub Wing - 15° Bend
9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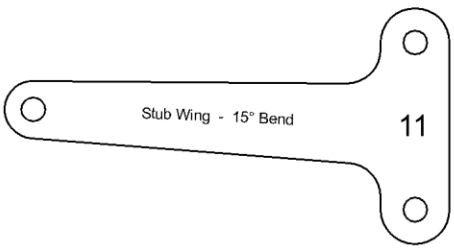
Stub Wing - 15° Bend


Stub Wing - 15° Bend
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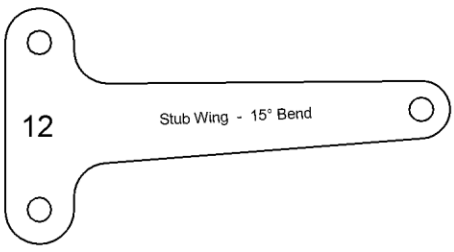
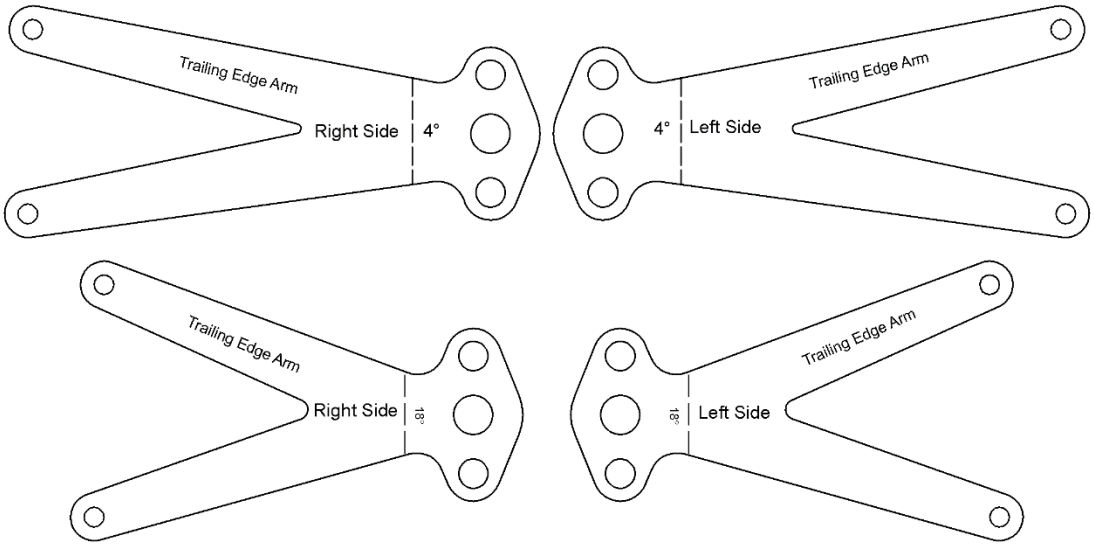

12
Stub Wing - 15° Bend



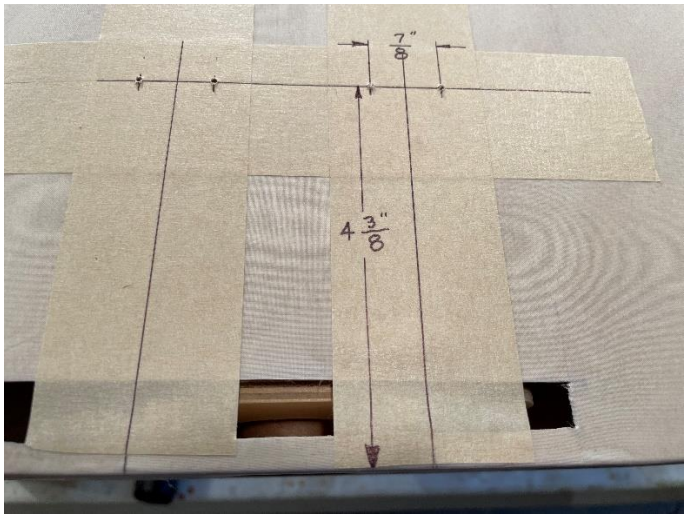
Mounting the Flying Wires

The flying wires used on the Riley Model B are not fake and they are not there just for looks. They hold the wings and the landing gear in place. They work together with the wing tube to create a well-engineered airframe so you can fly with confidence.

The Stub Wing wires are mounted and adjusted first.

Rotate the fuselage inverted on your building table.

Locate and drill 5/64” holes for stub wing flying wire brackets. Measure inward 4-3/8” from SW3 on-center to the F3 and F4 spars. Space the holes 7/8” apart on-center.

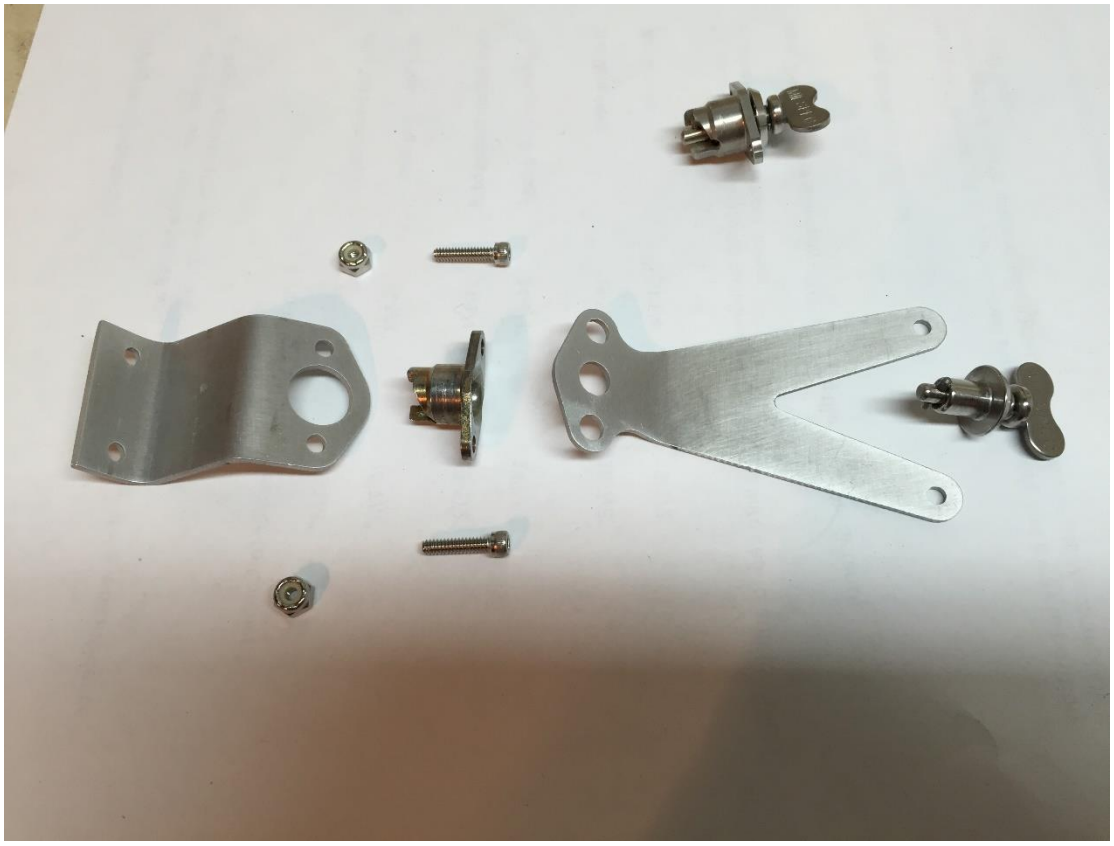


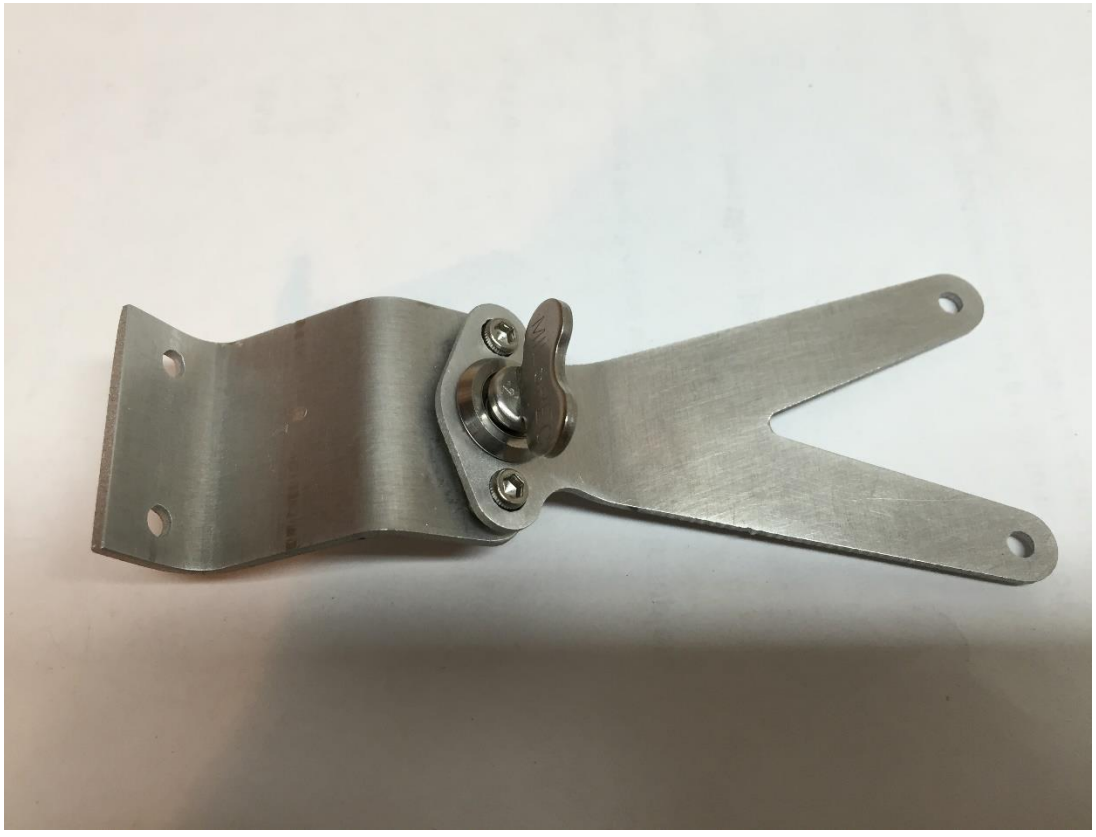
Install the four belly wire brackets on the stub wings with #4 x 3/4 stainless steel oval head wood screws. Basswood is relatively soft. Do not over tighten. Snug is just right.

Install landing gear with 1/4-20 x 1/2” nylon socket head screws.

Install the Camloc 2600 receptacle using 4-40 x 3/8” SS socket head screws and nylon insert lock nuts in to bracket as shown below. Compress the spring in the Camloc 2600-2W wing stud with pliers so that it can be inserted through the 1/4” hole in the bracket that secures the wing’s flying wires.

Mount all brackets that attach to the landing gear with #6 x 5/8" socket head screws and nylon insert lock nuts.





Install the four stub wing wires to the brackets.

Adjust each of the four wires so that the landing gear mounts are vertical under tension. To do this, use a “stretcher” to put the wires under tension, then check with an 87°angle gage placed against the surface of the stub wing and the landing gear mount. Make the “stretcher” 3/8" x 3/4" x 39-3/16.” Or use a suitable dowel at the same length.

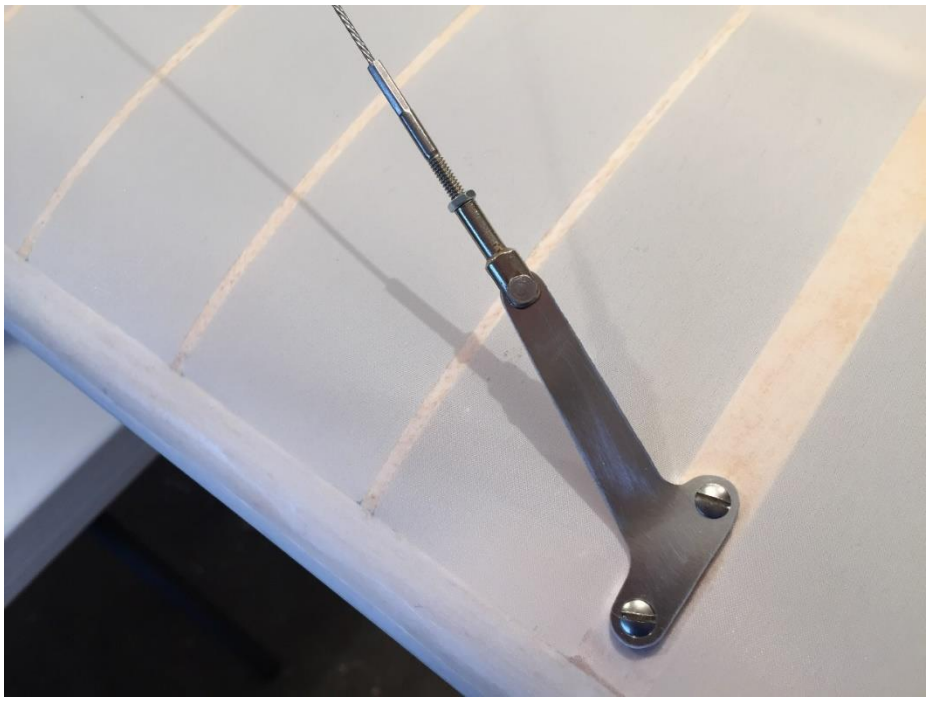
The tension is right when the stretcher is somewhat difficult to remove by hand. This is to simulate the same tension that would be present under flying conditions. All four wires should have the same tension, or as close as you can make it.

The good news is that you only need to do this once. When the stub wing wires are properly adjusted, there is no need to remove them from the brackets when it comes time to paint or cover. Just remove the wood screws on the stub wings and release the Camloc mount.

Leave the stretcher in place and under tension while adjusting the wires that attach to the wing panels.

Mount all wing flying wire brackets to the wings with #4 x 3/4" stainless steel wood screws.

Mount Camloc receptacles on the fuselage with #4 x 3/4” socket head wood screws. Note: The receptacle mounting holes may need to be drilled out to 1/8.”



Note: The top wires are properly called “landing wires.” The wires under the wing are called “flying wires.” Note that the brackets are not symmetrical.
See the drawing on page 3. The rear leg angles slightly toward the trailing edge.

Insert a 1/4-20 x1/2” nylon cap screw into the threaded hole at the rear of SW3. Install the wing tube and each wing panel. It is a good idea to use some masking tape to temporarily “connect” the wing and the stub wing to make sure the wing does not slip off while adjusting the wires.

Adjust the bottom wing (flying wires) so there is moderate tension but not as much as with the stub wing wires. If it is difficult to unlatch the Camloc bracket, then you have too much tension.

Remove the wings and wing tube and return the fuselage to right side up. Keep the stub wing stretcher in place.

Reinsert the wing tube and attach each wing panel.

Tension the upper wires (landing wires) just like you did with the bottom wires.

The tension is right when there is equal effort to attach the top and bottom wires. If they are hard to attach, then you have too much tension. If sloppy, more tension is needed. Good engineering requires that the wire tension is such that there is no pressure either way, up or down, on the wing tube when the model is on the ground. Since it is impossible to know that, just do the best you can. After a few flights, one or two wires may need to be adjusted.

Remove the stretcher and see if the wings attach with proper tension. For the lower wires you will probably need to push the landing gear mount toward the wing to snap the Camloc in place. For the upper wires, just lifting the wing tip should allow the bracket to slip over the screw heads. If adjustment is needed, do not adjust the stub wing wires (assuming they were adjusted correctly in the beginning). Adjust the wing wires where needed. *All of this takes time and patience*, but once all wires are tensioned properly, they will seldom need further adjustment.

If you ever discover that any wire is loose, ground your model immediately, and find out why. *Never* fly with even one loose wire.