

Wing Rigger™ Model 6 Setup and Maintenance Note

This note pertains to initial adjustment on the Wing Rigger model 6 sailplane solo assembly system as well as some maintenance considerations.

Trailing Edge Keeper Adjustment



The trailing edge keeper serves to clamp the aft portion of the wing solidly against the Wing Rigger saddle as the keeper is pushed into place. The keeper is adjustable to accommodate differing wing chord and aft wing thickness for different gliders.

The keeper adjustment needs to be made at the appropriate span-wise location of the Wing Rigger. Position the wing in the Wing Rigger saddle so that when the wing rests vertically (leading edge down), it is at the desired span-wise balance point. Typically, the desired position is near half way between the root rib and wing tip. With the Wing Rigger positioned accordingly, there should be around 10 pounds of downward weight at the spar. The actual amount of spar weight is not critical as long as the weight is definitely downwards at the spar end of the wing. For future reference, you'll want to note the preferred position with respect to the dive brake box or some other wing feature.

Note the adjusting slot on the grey push plate. Loosen the two bolts on the adjustable arm of the keeper using two ½ inch wrenches. The slot allows for a wide adjustment range. With the glider wing positioned vertically in the Wing Rigger saddle, insert the keeper into the saddle until the black rubber pad is within 2 or 3 inches of the trailing edge -- then tighten the holding knob at that position. Hold the keeper pad flat against the wing surface and modestly tighten the two bolts with the wrenches. Remove the keeper and fully tighten the bolts.

Test the fit by reinstalling the keeper -- pushing it into position with a significant downward force. Then tighten the holding knob. This is the normal manner of usage. When pushed into place, there should remain at least 1 inch or so of clearance between the black rubber pad and the wing trailing edge. Iterate the adjustment if clearance is not adequate. The black rubber pad is not intended to contact the wing trailing edge – it's there just for protection during adjustment.

Depending upon the sailplane type and wing chord, different lengths of the long aluminum bar may be used for the trailing edge keeper. For some applications, the long bar on the keeper may need to be shortened. If the long bar bottoms-out when pushed into place, the keeper will not be able to apply sufficient clamping pressure on the aft portion of the wing. In most cases we try to supply a bar which is an appropriate length for your sailplane type perhaps with a bias towards making them too long rather than too short. You can shorten the aluminum bar with a hacksaw or bandsaw if necessary.

Saddle Rotation Angle Limit Adjustment

Model 6 incorporates an adjustable saddle pivot stop mechanism comprising an eccentric cam. As the wing saddle pivots from a vertical position to a horizontal position, the adjustable stop limits the rotation in the horizontal.

To change the saddle stop angle, loosen the bolt running through the eccentric cam. Insert the short end of the 5/32 allen wrench into the cross hole of the cam. The allen wrench can be used as a position indicator and control lever while setting the stop angle. You will need to unload the mechanism in order to rotate the cam. Once the desired setting is established, lock the cam by tightening the bolt.

In most applications, the objective of the rotation angle adjustment is to make the wing lift pin sockets align to the fuselage lift pins. Note that it can be preferable to error on the side of a slight excess rotation allowance; this reduces the possibility of undesired limiting if the ground terrain under the Wing Rigger happens to be uneven. During assembly, the normal practice is to slightly raise the wing's trailing edge, if need be, to line up the glider's pins as the wing is pushed home.



Warning:

→ Please keep fingers clear of the cam mechanism when saddle is rotated ←

Wheel and Axle Assembly

Model 6 incorporates a sliding axle to facilitate lateral adjustment of the wing during assembly. There are a couple options for breaking down the unit for storage. If desired, the wheels can be easily removed. The axle shaft may also be removed or it may be left in place.

Because the axle shaft is hardened, it is resistant to scratching. The axle slides in precision reamed Delrin bushings. The bushings are designed to pivot slightly in order to allow for the bending moment of the axle under heavy load.

The hidden inside face of the bushing block is chamfered to allow easy insertion of the axle shaft. Use gentle forces when installing the axle; give the axle a jiggle while entering the chamfered hole of the far bushing.



The wheels are retained on both sides by steel shaft collars. These collars have tremendous holding power when properly tightened. Use the supplied 5/32" allen wrench to secure the collars. You will find that the collar cap screw can be loosened and tightened with just a

quarter turn of the wrench. If only the wheels are removed, then the inner collars may remain fixed to the axle shaft. The allen wrench is stored by two magnets installed at the base of the main column.



The current design accommodates the use of a variety of wheels having a 5/8" axle bore. For various reasons the user may desire to change the wheels to another type. If more height is desired, 13" diameter wheels can be exchanged for the standard 10" wheels; or 8" wheels if less height is preferred.

Third Wheel Drag Feature

The function of the third wheel is primarily that of a prop to keep the Wing Rigger unit from falling over when your wing is not in the saddle. Because of its vertical offset, the third wheel is generally off the ground when the unit is transporting a wing. The sidewall of the wheel is intended to contact the grey steel prop bar to provide a small amount of drag that prevents the unit from rolling when parked on mildly sloping ground. The actual amount of drag is not a critical matter but it may be adjusted to some degree if desired. The wheel is suspended on an axle bolt by an inner locknut and an outer locknut. Turn the locknuts inward a bit to increase tension against the prop bar or turn the locknuts out to reduce or eliminate the drag tension.



Wing Rigger Maintenance Considerations

Typical experience is that pneumatic tires can gradually lose pressure over a period of months in the same manner as a bicycle tire or a wheel barrow tire. If your unit is equipped with the standard pneumatic wheels, check air pressure after a period of storage. The pneumatic tires are rated for a maximum of 30 PSI -- operation is satisfactory at 30 PSI or at much lower pressure if desired.

Wing Rigger should always be stored in a manner that is protected from the weather and protected from moisture and high humidity. Storing the unit inside an enclosed trailer is generally satisfactory. Ideally, the unit should be wrapped in a blanket such as the supplied shipping blanket while in storage. If the unit gets wet, wipe dry before storage. Keep any wet rags away from Wing Rigger components in storage.

The sliding chrome plated axle may be operated dry or a light spray lubricant can be applied. Over time, accumulated grit or dirt on the axle or bushing surface could impede the sliding action. On occasion, wipe down the axle shaft and the bushing bearing surface to remove any grit accumulation.

Aside from the axle, no other lubrication is suggested. Particularly avoid use of grease or oil at the main column locking knobs and the associated aluminum clamp block as lubricant there would diminish the effectiveness of the column clamp mechanism.

Occasionally wipe all of the exposed black oxide surfaces with a rag or paper towel lightly dampened with light machine oil to best protect the blackened steel components and fasteners. The rust protective capability of black oxide is most effective when dampened with oil – it takes only a very fine coat to improve the sheen and protect against rusting.