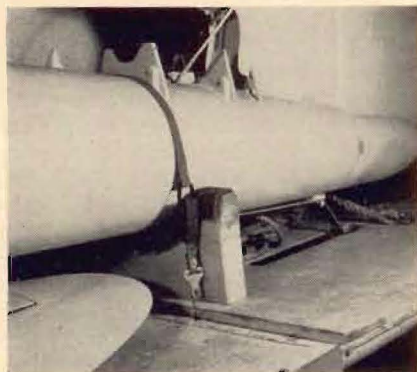


what your trailer has, remove about half the leaves—or enough to suit the load. Be sure the spring is working sufficiently while traveling the highway. This saves vibration, wear and tear, on the glider. Springs that are too long encourage swaying.

Attaching your glider easily to your trailer aids in quick removal and installation. Eliminate all nuts from bolts. This can be done with little alteration and the use of pins and safeties.

On main wing fitting attachments do not use steel against steel fittings. Use a softer metal pin than the fitting proper. This will insure safety of the vital parts. If the main wing fitting is used and is a secure fit, it is not necessary to secure the drag fitting. The outer end of the wing can be supported in a canvas self-forming cradle padded on the sides and not less than 24 inches long. A wing tip tie-down to the trailer may be used to help hold the wing down in the cradle.



The fuselage tail section can be supported by the tail skid (if it is substantial) or a padded fuselage cradle and strap. Most ships today are equipped with a landing wheel. It is best for it to set in a shallow well. This is employed for forward and aft as well as side loads. Adjustable (in length) steel tubes or bars to hold the fuselage down at the main fuselage wing truss will support the fuselage. Many owners use everything imaginable to secure the rudder. This can be done easily by mounting a 2 x 4 pivoted at the base to the trailer chassis. By slotting the 2 x 4 and padding it, a very quick rudder chock can be made.

The horizontal tail surface can usually be supported in the horizontal position beneath the fuselage. Quick adjustable straps secured to the trailer can usually be used in a simple manner.

Pad every support in rubber or the usual rug padding. Care should be used in protecting the glider parts from wet padding after a return

(Continued on Page 16)

TOW-LINE DRAG 'CHUTE SOLUTION

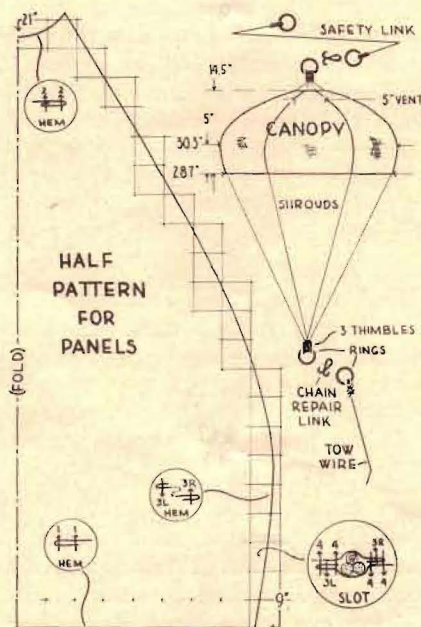
by TOM PAGE

Winch and auto towing glider operators may be fighting the same awkward and makeshift drag parachutes that plagued the University of Illinois Glider Club for several years. The results of systematic experiment with this simple device for safe wire drop after glider release are passed on here for others to improve upon and report back through the technical columns of SOARING.

We find that drag parachutes in which the shroud lines bear the towing load and thus keep the canopy closed during tow are to be preferred to open chutes, opening devices, or to a release tube in the glider nose. The canopy need not support the wire for a slow descent but merely make it possible to lay the wire on the ground without either vertical dropping or coiling by continuing the towing action at reduced speeds.

Lay out the pattern shown in the drawing on heavy paper and cut six panels from strong, yellow, abrasion-resistant cotton fabric like denim, osonaberg, or poplin. Then follow these steps in construction:

1. Hem $\frac{1}{2}$ inch of bottoms of panels under with two rows of stitching. This should be the selvage edge of the material or be reinforced with tape. Nylon thread is preferred for construction.



2. Hem $\frac{1}{2}$ inch of top of panel under into small arc of 5 inch diameter, two rows of stitching.

3. Hem $\frac{1}{4}$ inch of sides of panels with single row of stitching; hem left side up, right side down.

4. Sew panels together into canopy leaving $\frac{1}{2}$ -inch vertical slots for shroud lines 15 inches on centers around circumference of bottom, double row of stitching on each side of slot, and tack ends of each row with extra stitching. Sew 2 inches of a 10-inch length of rib reinforcing tape over one vertical seam at the bottom of each slot for attaching bottom of canopy to the shroud lines in step 8.

5. Insert three $\frac{1}{4}$ -inch rope thimbles in each of two 2-inch harness rings. Hook rings on pegs about 7 feet 3 inches apart. (Full thimbles, like U-tubes, are very much to be preferred but who knows where to buy them?)

6. Insert 45 feet of $\frac{1}{4}$ -inch nylon (or manila) rope through slots in parachute canopy as shroud lines. Work around canopy, going up one side of a panel and down the other side and through thimbles on rings. Splice the ends together in a shroud line below the canopy.

7. Draw even tension on the shrouds—very important! Whip each pair of shrouds together with cord at the thimble through which they pass. Tape each thimble and pair to protect from abrasion; then tape the three thimbles and pairs of shrouds together. Shellac tapes, if fabric.

8. Lace and tie inner side of bottom of canopy securely to shrouds at same distance from bottom ring with strong tapes attached in step 4. Leave about 6 inches between the top of canopy and the taped pairs of shrouds and thimbles at the top ring.

9. The 5-foot safety link of lower strength than the parachute or wire, preferably $\frac{1}{4}$ -inch manila rope, with taped thimble and ring at each end, should always be attached to the glider from the top of the canopy. The bottom ring of the parachute may be attached directly to the tow line or wire. Quick field connectors are 2-inch oval chain repair links; they may be closed under foot and pried open with a screwdriver.

About $13\frac{1}{4}$ yards of material 36 inches wide are required.

Dora J. Dougherty and M. Boris Rotman participated in the design and development of this device. The instructions given here represent the fourth modification based on use tests.