

THE TOWPLANE PROBLEM

by PETER M. BOWERS

The major towplane problem faced by many glider clubs is not, as one might imagine, that of obtaining a suitable airplane. It is the problem of getting approval from the CAA to use the airplane for towing.

Previous articles in SOARING, have described various airplanes and hitches used for towing, but have dealt mainly with the characteristics of the airplanes themselves. Each article has resulted in a flurry of let-

ters to the Editor and to the author asking for further details of the hook installation on a specific model, for a copy of the paperwork involved in obtaining approval, etc. The Civil Air Regulations governing airplane towing of anything, whether gliders or banners, are relatively simple. (See CAR 43-46). First, the airplane must be equipped for towing and the installation must be approved by the CAA. This can be a relatively simple task or an extremely complex one, depending upon the structural characteristics of the particular airplane and whether or not one of that same model has previously been approved for towing. Contrary to general belief, equipping an airplane for towing is not in itself a major modification requiring the filling out of CAA Form 337. It becomes so only when significant structural changes are made in order to provide a proper mount for the hook, improve the flow of cooling air to the engine, etc. A good example of the former is the well-known Stinson L-5, a surplus

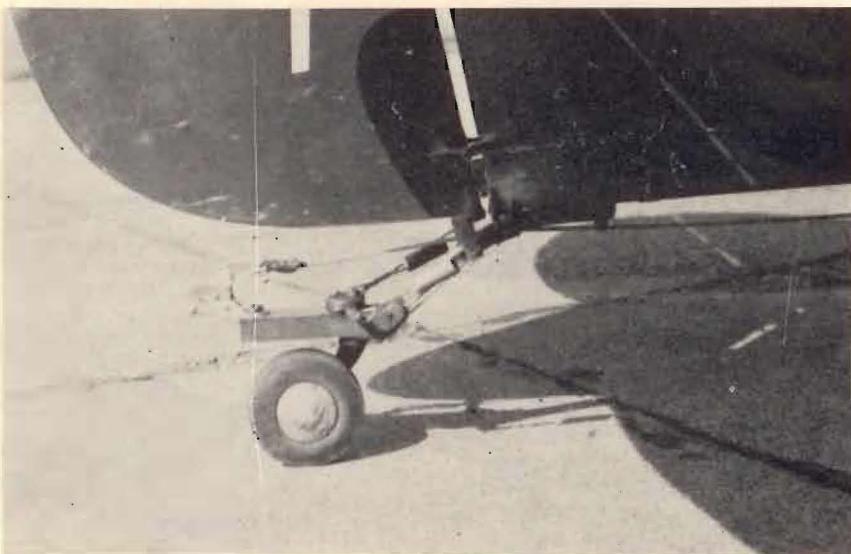


Photo: Peter M. Bowers

Eight-inch channel iron extension welded on a Scott full-swivel tailwheel unit to place hook in extreme aft position and assure adequate clearance of tow rope when displaced vertically. Airplane is Piper PA-12 Super Cruiser.

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WW-II Liaison plane of 185 HP that is quite popular for towing. The configuration of the plane is such that the hook must be located at the extreme tail end of the fuselage to allow the rope to clear other structure when displaced at various towing angles. Since the tail cone is merely a fairing that cannot support towing loads, a suitable tie to the basic fuselage structure must be made, installed, and approved; all of which requires the use of Form 337.

An example of simple hook installation not requiring Form 337 is that used on the Piper J-3-PA-11-PA-18 "Cub" series, where the tail wheel

is in an extreme aft location. It is possible here to remove the nut from the bolt holding the swivel portion of the tailwheel casting to the fixed portion, substitute the flange of the tow hook base for the washer, and replace the nut. Some tail wheel castings, however, do not have this nut so conveniently located. In such cases, an extension tab can be welded to the casting and the hook can be bolted to the tab. In spite of the welding, this is not a "major" alteration to the airplane or, in this case, to the tail wheel unit, which is classed as an accessory.

The hook itself is not much of a problem. In principle, it is just like the hook in the nose of the glider. It is easy enough to make one specifically for one installation. The simplest thing to do, however, is to buy the approved hook made by Schweizer Aircraft Corp., of Elmira, N. Y., which sells for \$6.95. This is an easy-to-attach item that can be used on any airplane or on the tow car.

Running the hook release line to the cockpit is not in itself a job requiring Form 337 approval, either. In cases where the hook is a permanent installation, it is desirable to have the release line run forward inside the fuselage to a convenient release knob inside the cockpit. When the tow hook installation is only temporary, the release line can be run to the cockpit along the outside of the fuselage. If it is rope, it will not damage the fuselage fabric. On some installations used for high wing strut-braced monoplanes, this rope has been held away from contact with the fuselage by connecting it to a short line tied to one wing strut. The forward end of the release rope itself goes into the cabin through an open window and ties to some suitable piece of structure.

The possible combinations of airplane configuration and external release line installation are too numerous to detail here. It is sufficient to say that adequate provision should be made to keep the release line clear of controls and tail surface bracing, and to keep it from getting snagged by a full-swivel tail wheel. An easily-made fairlead attached to the stabilizer brace wire will usually take care of these problems. If rope is used for the release line, it should incorporate a spool or thimble where it attaches to the bolt on the release lever, and should be spliced in place rather than tied with a knot. Little items such as these are just the things