



Photo: Harold Drew

The details of the cocked guillotine and three-pulley tensiometer on the Vultures' new winch.

Immediately behind the guillotine comes the tensiometer. This is of the traditional three pulley design. The central movable pulley actuates the piston of an automotive hydraulic master cylinder through the usual bellcrank linkage. The tensiometer pressure gauge is located on the instrument panel. It can be readily calibrated by adjusting the length of the master cylinder piston rod. This varies the angle through which the wire is deflected downward by the movable pulley, and hence varies the upward vertical force applied to the movable pulley by the tension in the wire.

We believe that a tensiometer is the winch driver's best pal. He knows the pull which best suits the various ships. (We handle four very different types quite regularly). The required pull is the same day in and day out, no matter what the wind is doing. The required speed depends on the wind velocity.

The cable runs from the tensiometer to the under side of the drum. We could have fed the cable over the top of the drum by inverting the axle, and so reversing the drum rotation. However, we prefer the underfeed because, if mistakes are made, the surplus wire is close to the ground and less liable to romp around.

The instruments and controls are carried on a panel mounted on a stiff tubular mast. The shift lever has two positions only, neutral and

drive. (The transmission control valve has been emasculated so that the transmission will not shift into low range.) Other instruments and controls are tensiometer, ammeter, oil pressure indicator, ignition warning, ignition switch, starter switch and throttle. The switches and instruments are furnished with a lockable, hinged cover. The driver has a comfortable aircraft bucket seat, adjustable fore and aft.

The winding drum brake is operated through the emergency brake linkage by means of a foot pedal. (No hydraulics.) The brake cable is connected to the pedal through a preloaded cage spring. This serves two purposes. Firstly, it limits the severity of panic brake application. Secondly, it makes the brake much less sensitive, and therefore facilitates the adjustment of the drag torque for paying out. The drag torque is applied automatically when the driver releases the brake after stopping the drum. This is accomplished by means of a detent which prevents the complete release of the brake until a foot operated detent latch is actuated.

The winch is set up for operation by lowering the two legs at the lead-in end, and then operating the built-in jack which is at the hitch end. The weight of the winch is thus shared between the legs, the wheels and the jack.

All the drafting and design and the vast majority of the work of con-

struction was carried out by the members. (Including nearly all the welding.) Excellent shop facilities were provided by the Barton Brass Works, owned by the grandfather of two of our members.

One wintery day in January, we proudly hauled our new outfit from Detroit to Big Beaver airport, from which we normally operate. We soon confirmed that the absence of a suspension system imposes strict limits on speed over any but perfect road surfaces.

We set up operations under reasonably good conditions. We made a series of dry runs, hauling out the wire and reeling it in at high speed. (Under these conditions, the chute will take off and come in several feet above the ground). Apart from one minor episode, due to incorrect routing of the wire through the tensiometer, all seemed in order.

We accorded the honor of the first launch to our senior member and ex-president, Chuck Hauke, who ensconced himself in the club-owned 2-22 with admirable sang-froid. The winch driver, with a well simulated air of confidence, proceeded to do his stuff and we were all elated to see the redoubtable Chuck rise on a perfect 1,000-foot maiden launch.

We have since operated the winch every flyable week-end. It is proving to be an effective and reliable tool; in its gleaming canary yellow enamel, it makes a brave show at the end of the strip.

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