



ULTRA UPDATE AND ATTACHMENT INSTRUCTIONS

Forespar[®] has shipped thousands of Ultra end fittings to customers worldwide since their inception. In this time, with the help of sailors input from offshore and around the buoys, we have made subtle changes to the trigger tension, hinge position, piston spring force and added S/S rub bars to the inside of the jaws (3" & 3-1/2" UTR style only).

In the most recent design changes, we have added an adjustable trigger tension screw in 2004 (Photo 1) so the individual sailor can "customize" the amount of load required to trip the piston and an anti-rotational pin to keep the piston from twisting up the trip lines. Some of these changes were minor; others required tooling modifications and new inner components.

In our continuing efforts to produce the best, most reliable light-weight trigger style end fitting in a material that is complementary to both carbon and aluminum spinnaker poles and whisker poles, we have modified them once more.



1.



2.

The photo (2) above shows the newest design change that will allow the bow man to activate the end AT THE END FITTING should a trip line fail or if used on poles without full length trips (whisker poles). The S/S "ball" shows the anti-rotational pin that now protrudes to allow activation of the trigger at the end. This also shows the slot to allow the piston pin travel.

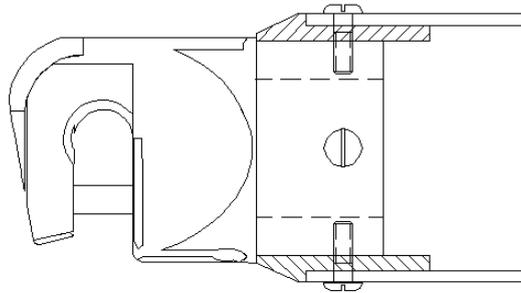
The piston spring is now longer so it has more closing force. This change does not allow the core to be removed, however, so they are a "sealed" unit. In seven years and many ends, the request for replacement cores and components has been zero, so we do not see this as a service problem.

ULTRA UPDATE AND ATTACHMENT INSTRUCTIONS CONT.

Proper attachment of Ultra style end fittings to carbon & aluminum tubes

Forespar® Ultra Series composite ends requires careful attention to fasteners style and placement. The Ultra material is extremely strong and durable at half the weight of their aluminum counterparts but require the use of pan head machine screws-not rivets or glue-for proper attachment to carbon or aluminum tubing. Drill and tap the holes.

Placement of the fasteners is also critical to the strength of the attachment to the pole, especially when an adapting collar (i.e., 2" ends on 2-1/2" tube) is used.



The S/S PHMS (pan-head machine screws) must be placed so they engage the adapting collar and the core of the end fitting to the tube. The fasteners for aluminum tubes should be placed $\frac{1}{2}$ " back from the end of the tube onto the (flange) collar on 2-1/2" and 3-1/2" sizes and the basic ends without collars on 2" & 3" sizes. Use a minimum of 4) 10-24 PHMS on ends 2", 2-1/2" and 3" and 5) on 3-1/2" to 4". Six or more $\frac{1}{4}$ -20 PHMS may be needed on larger diameter tubes. On carbon tubes, place the fasteners $\frac{3}{4}$ " back from the end of the tube.

Be careful not to drill into the spring/piston housing on either style end (UTR & UXP) and not to hit the "set screws" on the sides (left and right side on the core) of the UTR style ends. Be sure to offset your holes pattern to clear these components and double check before you drill and tap! On carbon tubes, be sure not to over tighten and stress or crack the fiber laminate. If the carbon tube does not fit to the end fittings tight, wrap 2" masking tape around the core (bury of the end) until you achieve a snug fit.

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