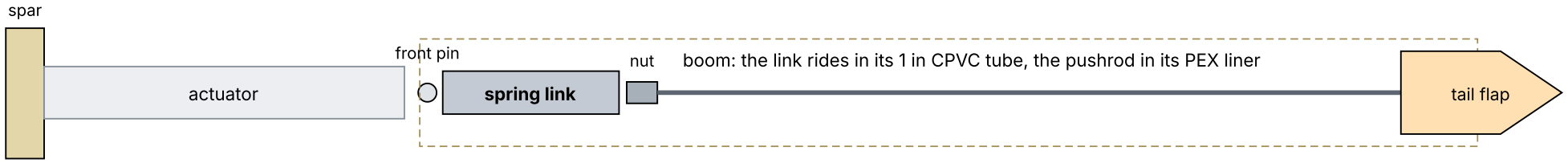
THE WING TAB SPRING LINK: WHAT IT IS

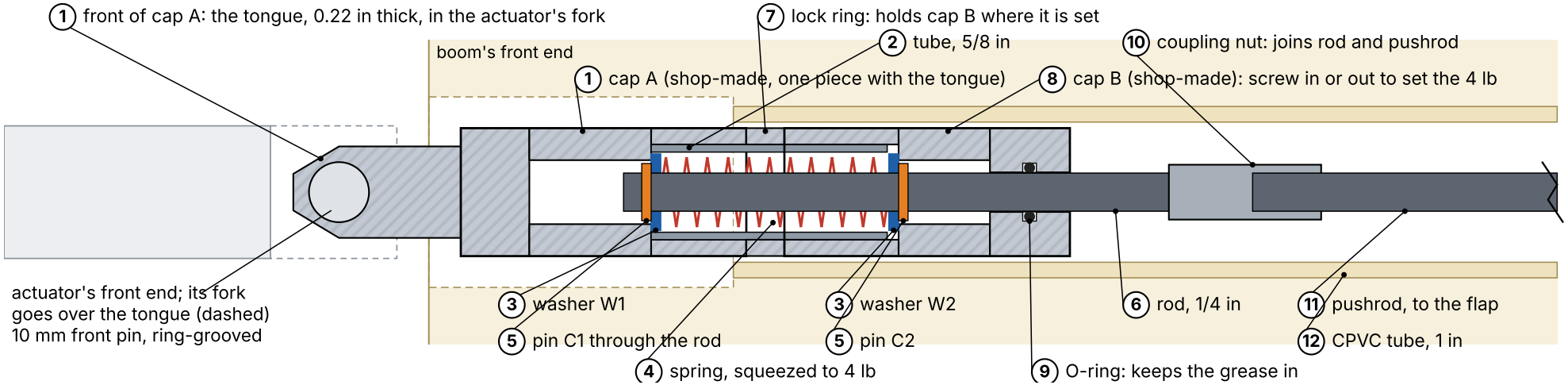
inches

What it does: it sits between the actuator and the pushrod. Up to 4 lb it is a solid stick, so the actuator steers the tail flap. Past 4 lb the spring gives and lets the flap swing toward straight, so a stuck actuator can never hold the wing pulling hard in a gale (Trim Guide sec 6).

WHERE IT SITS (NOT TO SCALE)

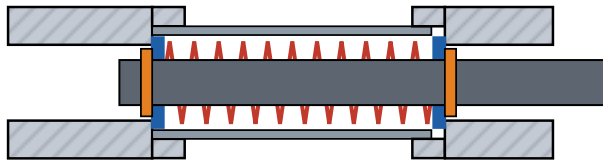


THE LINK CUT IN HALF, FULL SIZE (PRINT AT 100 PERCENT), ACTUATOR FULLY IN



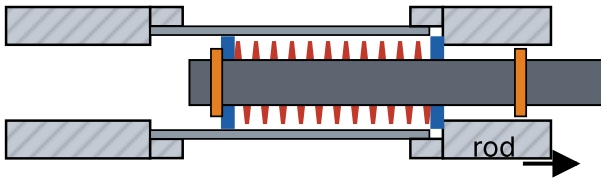
HOW IT GIVES

1. At rest: rigid



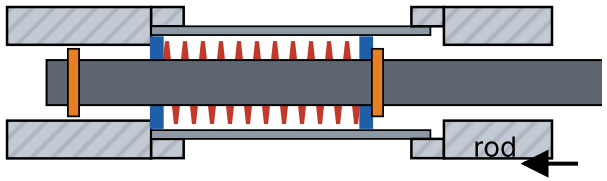
Normal sailing. Each washer rests on its cap's face, with a pin through the rod right against it. The spring already pushes 4 lb on both washers, so less than 4 lb on the rod moves nothing: the link is a solid stick.

2. Pulled back hard



The flap pulls harder than 4 lb. Pin C1 drags washer W1 back and squeezes the spring. Cap B holds W2. The rod slides back, the flap swings toward straight, the wing turns edge-on. Pin C2 moves into cap B's pocket.

3. Pushed forward hard



Or pushes harder than 4 lb. The mirror image: pin C2 drags W2 forward, cap A holds W1, and pin C1 and the rod's end move into cap A's pocket. When the wind eases, the spring pushes everything back. Nothing to reset.

Numbers match page 1. Three parts are made by a machine shop, all three from one short piece of 7/8 in 316 round bar: cap A with its tongue, cap B, and the lock ring. Everything else is bought. Nothing on the list is bought yet except the rod.

	PART	SIZE AND WHAT IT DOES	HOW MANY	WHERE TO BUY
1	**Cap A, with its tongue**	Made by a machine shop (sizes below). 316, 0.84 in round.	1	From 7/8 in 316 round bar, about 6 in does all three shop parts: Speedy Metals 7/8 in 316 bar, cut to length, price not checked. Or the shop's own.
2	**Tube**	5/8 in across, 0.049 in wall, 316. Cut to suit the spring (about 1-1/2 in) and threaded 5/8-18 outside at both ends.	1	Amazon, VALVENTO 12 in, 2 pack, price not checked.
3	**Washers W1 and W2**	0.265 in hole, 0.50 in across (no wider: they slide inside the tube), 1/16 in thick. Size AN960C416. 18-8 stainless: no 316 found this size.	2	Aircraft Spruce, $0.21 each, or McMaster 98017A660, 100 for $15.92.
4	**Spring**	About 1/2 in across, 0.041 in wire, about 4 lb per inch, 2 to 2-1/2 in long free.	1	Closest found: Penn Tool 03308525: 0.48 in across, 2 in long, 4.2 lb/in, fully squeezed 0.47 in; stainless, probably 302, not the 17-7 PH the Trim Guide asks for; pack of 10, $13.65. No 17-7 PH spring this size found in stock.
5	**Pins C1 and C2**	1/16 in by 3/8 in 316 dowel pin, pressed into a 1/16 in hole drilled across the rod.	2	Olander 1/16 × 3/8 in 316 dowel pin, price not checked. (A bought shaft collar is 1/2 in across: too wide.)
6	**Rod**	1/4 in 316, about 4 in, threaded 1/4-28 at the back.	1	On hand: cut from one of the two 24 in MECCANIXITY rods (Amazon B0DRJ1JWDM).
7	**Lock ring**	A 5/8-18 316 jam nut, turned round to 0.84 in by the shop.	1	Amazon, Aspen 15 pack or McMaster 94805A231, 5 pack, prices not checked.
8	**Cap B**	Made by the machine shop (sizes below).	1	Same bar as cap A.
9	**O-ring**	Size 010: 1/4 in inside, 3/8 in outside, 1/16 in thick, Viton.	1	Amazon, 10 pack, price not checked.
10	**Coupling nut**	1/4-28, 316, round, 0.36 in across, 1 in long. Joins the link's rod to the pushrod.	1	McMaster 93282A160, price not checked. Amazon has it only in 18-8.
11	**Pushrod**	1/4 in 316, about 47 in, threaded 1/4-28 at both ends.	1	Needs one 48 in piece; the rod on hand is two 24 in pieces. No 48 in 316 rod found on Amazon yet.
12	**CPVC tube in the boom**	1 in CPVC hot-water pipe, copper tube size: 1.125 in outside, about 0.92 in inside. 9-1/2 in used.	1	Home Depot, Charlotte Pipe 1 in x 10 ft, $19.51. Not on Amazon.
	Grease	Marine grease, fills the tube round the spring.		On hand. If not: Amazon, Sta-Lube 3184.
	Actuator pins	10 mm stainless, ring grooves. The front one must be under about 1.2 in long overall to fit the boom's 1-1/4 in bore.	2	Rear: McMaster 93890A742, 18-8, rings included. Front: none found short enough yet. I don't know if Thomson includes pins.
	Clevis at the flap	1/4-28, 316, with its 1/4 in pin and cotter pin.	1	McMaster 6071K47, price not checked. Its pin is 1/4 in, so the flap's arm gets a 1/4 in hole.
	Thread dies	Only if you thread the tube and rods yourself; the shop can do it.		5/8-18: Amazon, uxcell tap and die set (China-based seller). 1/4-28: Amazon, tap and die set. Prices not checked.

THE THREE SHOP PARTS (316 STAINLESS, 0.84 IN ROUND)

- **Cap A with tongue (1):** 1.875 in long. Back end tapped 5/8-18, 5/8 in deep, for the tube. Then a pocket 0.42 in across and 0.80 in deep for pin C1 and the rod end. Front: a flat tongue 0.22 in thick, 0.60 in wide, with a 10 mm hole 0.80 in ahead of the round part.
- **Cap B (8):** 1.875 in long. Front end tapped 5/8-18, 3/4 in deep. Then a pocket 0.42 in across and 0.60 in deep for pin C2. Back: a 0.26 in hole for the rod, with a groove for the O-ring.
- **Lock ring (7):** 1/4 in thick, tapped 5/8-18. Or a 316 jam nut turned round to 0.84 in. A plain jam nut is 1.08 in across its corners, too wide for the tube in the boom.

WHY THESE SIZES

- The caps are 0.84 in round so they slide in the CPVC tube (about 0.90 to 0.92 in inside) with room to spare. Bought hex nuts are 1.08 in across the corners and will not go in.
- Pins, not collars, stop the washers: a bought 1/4 in shaft collar is 1/2 in across, as wide as the washer, so it could not pass into the cap's pocket. A 1/16 × 3/8 in pin can.
- The spring is about 4 lb per inch, so squeezing it about 1 in gives the 4 lb. The washers move up to 1/2 in each way; then it pushes about 6 lb, 1-1/2 times the setting, as the Trim Guide asks. With the 2 in spring found, about 0.08 in is left before it is fully squeezed (worked out from its listed sizes). The tube is cut to suit whichever spring is used.