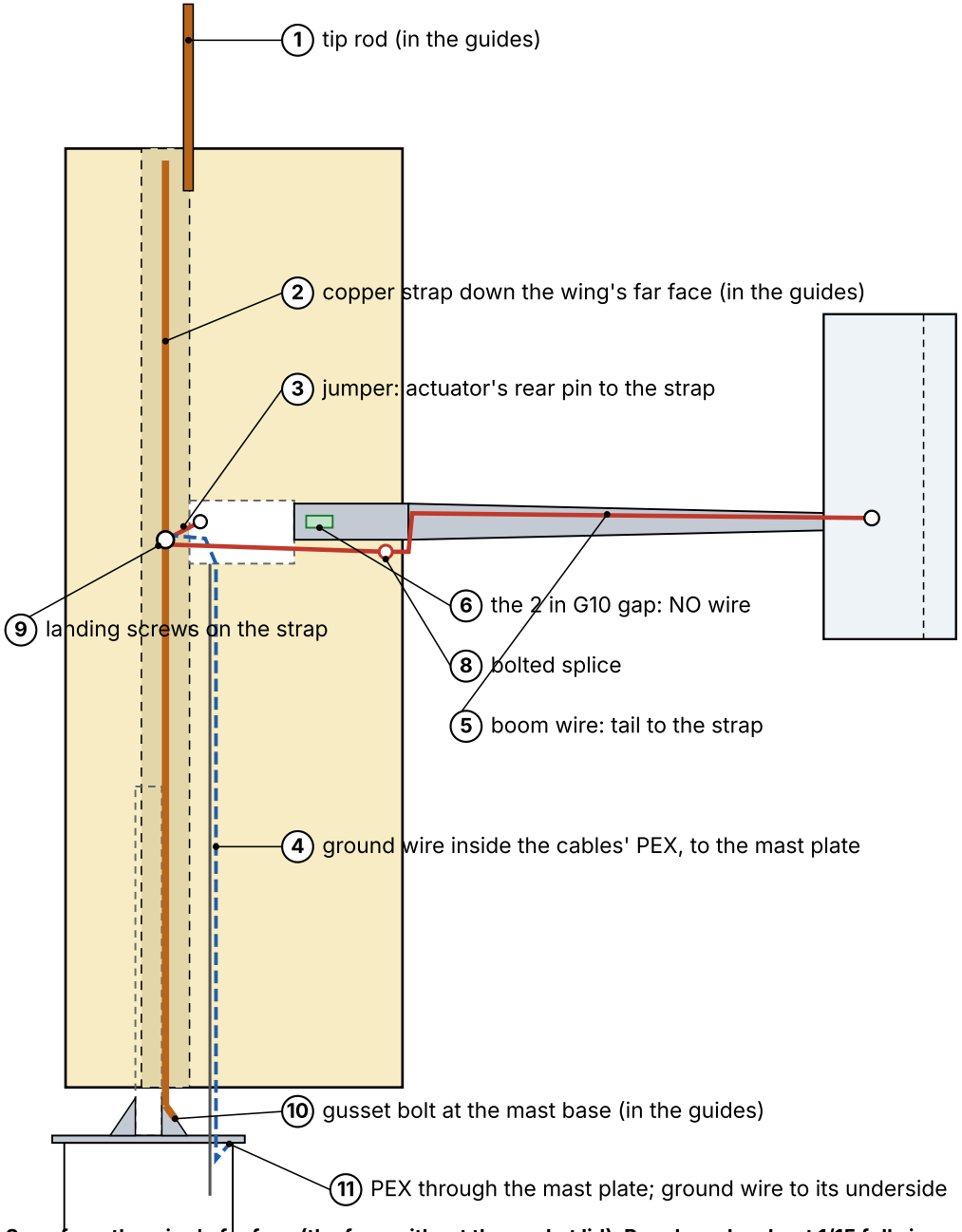
LIGHTNING ON THE WING: EVERY WIRE, AND NOTHING ELSE

inches

Nov 2, 2026



Seen ~~from the wing's far~~ face (the face without the pocket lid). Rough scale: about 1/15 full size.

Outside: tip rod, wing strap, boom wire. Inside: only the jumper and the ground wire. All outside copper goes on the wing's **far face**, so the pocket lid still comes off.

	WHAT, MADE OF	FROM, TO	HOW
1	**Tip rod** 1/4 × 3/4 in 304 bar (bought)	wing tip **to** the strap	As the guides (Lightning Guide 5.1 step 2).
2	**Wing strap** 1 × 1/16 in copper bar (bought)	rod base **to** gusset bolt at the mast base	As the guides, on the **far face**. Two landing screws set under it (detail B).
3	**Jumper** 6 AWG tinned wire, about 6 in (on hand)	actuator's rear pin **to** landing screw 2	Out a 5/16 in hole in the far skin (details B, C).
4	**Ground wire** bare solid 8 AWG (Home Depot)	landing screw 2 **to** mast plate's underside	In a 1/4 in hole, then inside the root PEX with the cables, all the way down (details B, E).
5	**Boom wire** 6 AWG tinned wire, about 5 ft (on hand)	tail's rear clamp bolt **to** landing screw 1	Along the boom's far side, splice at the root, then the far face at 44-1/2 in up (details A, D).
6	**The gap** 2 in of bare G10	pushrod's front clevis **to** actuator's front fork	No wire, ever.

Not used: braid sleeve, braid jumper, hose clamp, any wire across the gap, a taller tip rod, a wire on the pushrod.

BUILD IT, IN ORDER

1. **PEX** (pocket step 3): pull the 8 AWG ground wire into the 1/2 in root PEX with both cables, before gluing. 2 ft spare at the root end, 1 ft in the pocket.
2. **Holes** (after the doublers): 5/16 in and 1/4 in through the far skin, about 11 in back, 46 in up, 1/2 in apart, small one aft. Jumper out the big one, ground wire out the small one. Glue-lined heat shrink where each passes; 5200 in both holes.
3. **Strap** (Lightning Guide 5.1 step 3), far face. First set two #10 silicon bronze screws through it from behind at 45 and 46 in up, heads glued so they can't spin: the landing screws.
4. **Jumper:** 6 AWG lug on the rear pin's far end, ring clip over it. Out the hole; #10 lug on landing screw 2.
5. **Ground wire, top:** 8 AWG #10 ring lug on landing screw 2, over the jumper. The surge clamps' tail lands here too.
6. **Ground wire, bottom:** the root PEX runs down through its 3/4 in mast plate hole and ends open in the can. The wire comes out its end, up to an 8 AWG #10 ring lug on a #10-24 316 bolt through the plate. Bare metal.
7. **Boom wire** (Stage 12, boom on): 1/4 in lug under the tail's **rear** clamp bolt head, far side. Forward along the boom's upper half, above the pushrod tube, in glue-lined heat shrink, glass strips every 4 in, faired. Off the boom just behind the wing's back edge, down to the splice.
8. **Face run:** 6 AWG from the splice forward on the far face at 44-1/2 in up, 1/2 in clear of the drain holes, to a #10 lug on landing screw 1.
9. **Splice:** lugs tongue to tongue, 1/4-20 316 bolt and nyloc, self-amalgamating tape.
10. **Every joint:** No-Ox-Id between faces; 5200 over outside joints. Then the guide's continuity checks (sec 8).

RULES

- Nothing across the G10 tab's 2 in gap.
- No lug under the 4 boom root bolts.
- Undo the splice before the boom comes off.

WHY EACH ONE

- **Strap:** takes a tip strike down the outside.
- **Jumper:** ties the actuator's case to the strap.
- **Ground wire:** in a strike the case jumps thousands of volts. The ground wire makes the actuator's wires jump with it, so no spark goes through its control board.
- **Boom wire:** a tail strike takes the copper, not the pushrod.
- **Gap:** a strike would have to jump 2 in to reach the actuator.

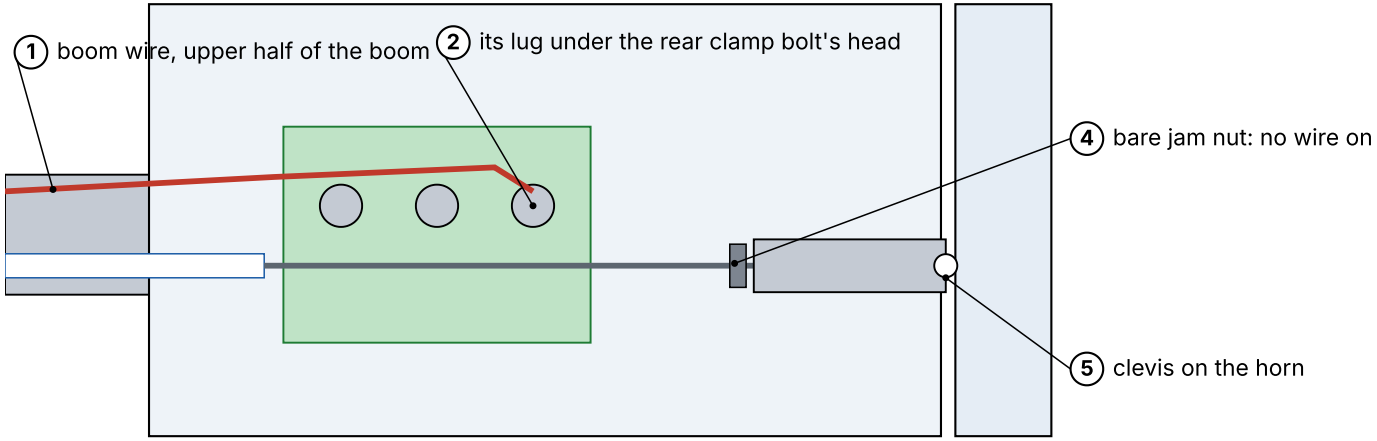
PARTS

- 6 AWG tinned wire, about 7 ft (on hand).
- **To buy:** bare solid 8 AWG copper, 8 ft (Home Depot); two 8 AWG ring lugs for #10 studs.
- 6 AWG lugs on hand: 1/4 in (3 used), #10 (2), 3/8 in (1).
- Two #10 silicon bronze screws and nuts.
- 1/4-20 316 bolt and nyloc (splice); #10-24 316 bolt, nut, washers (mast plate).
- No-Ox-Id, 5200, glue-lined heat shrink, self-amalgamating tape.

LIGHTNING ON THE WING: DETAILS A AND B not to scale

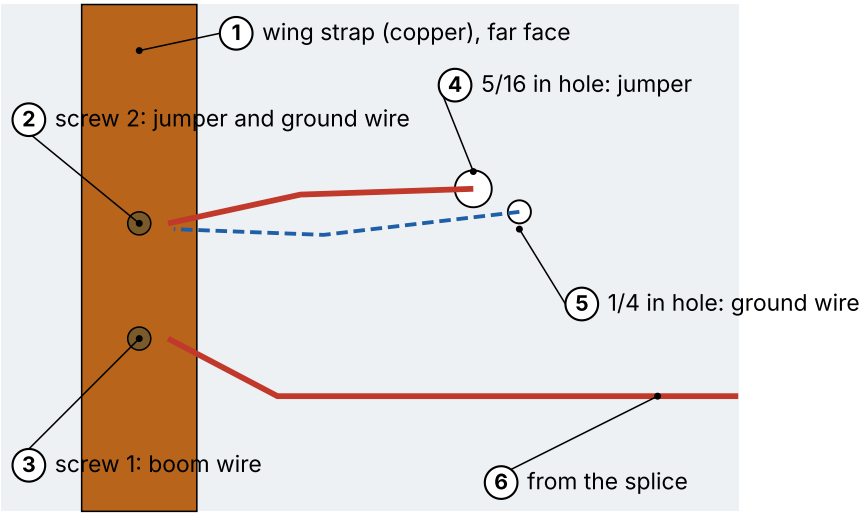
Nov 2, 2026

A. THE TAIL END, SEEN FROM THE FAR SIDE



The boom wire ends under the tail's rear clamp bolt (the boom's end, dashed, is inside the tail's slot behind the clamp plate). No wire on the pushrod.

B. THE LANDING ON THE WING STRAP, FAR FACE



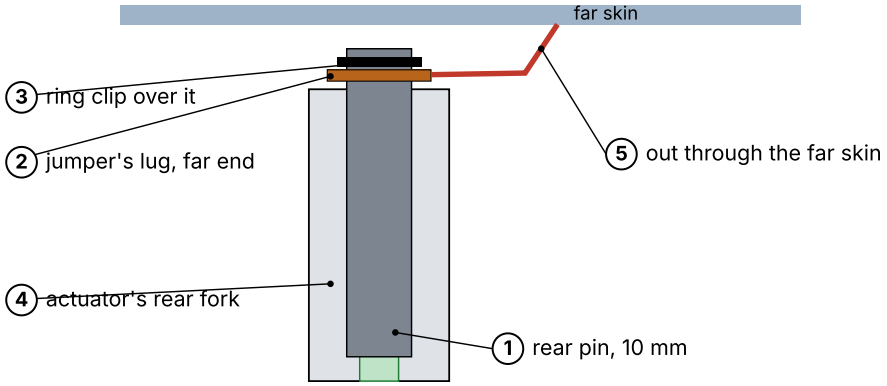
ABOUT B

- The two landing screws are set under the strap when it is glued: #10 silicon bronze, low heads behind the strap, at 45 and 46 in up.
- The two holes (5/16 and 1/4 in) are about 3 in behind the strap, through the pocket's far wall, 1/2 in apart, each filled with 5200.
- Screw 2 takes the jumper's lug, then the ground wire's 8 AWG ring. Screw 1 takes the boom wire's face run.
- No-Ox-Id between every face; a nut on each; 5200 over the lot.

LIGHTNING ON THE WING: DETAILS C, D AND E not to scale

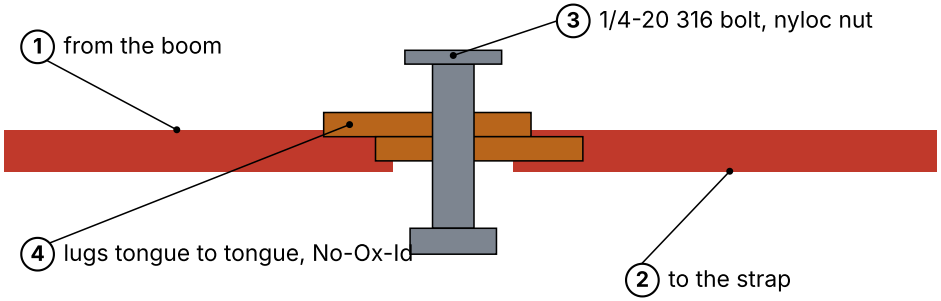
Nov 2, 2026

C. THE ACTUATOR'S REAR PIN, FROM ABOVE



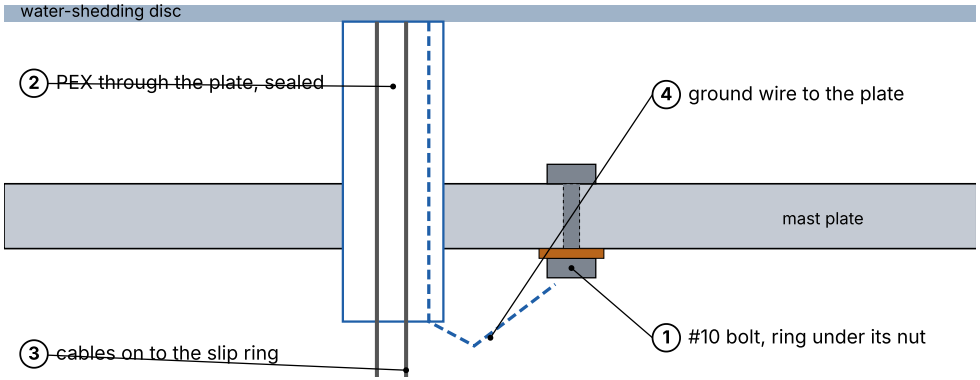
The rear pin must be long enough for the fork plus the lug: 26 mm or more between its ring grooves (McMaster 93890A742).

D. THE SPLICE AT THE BOOM ROOT



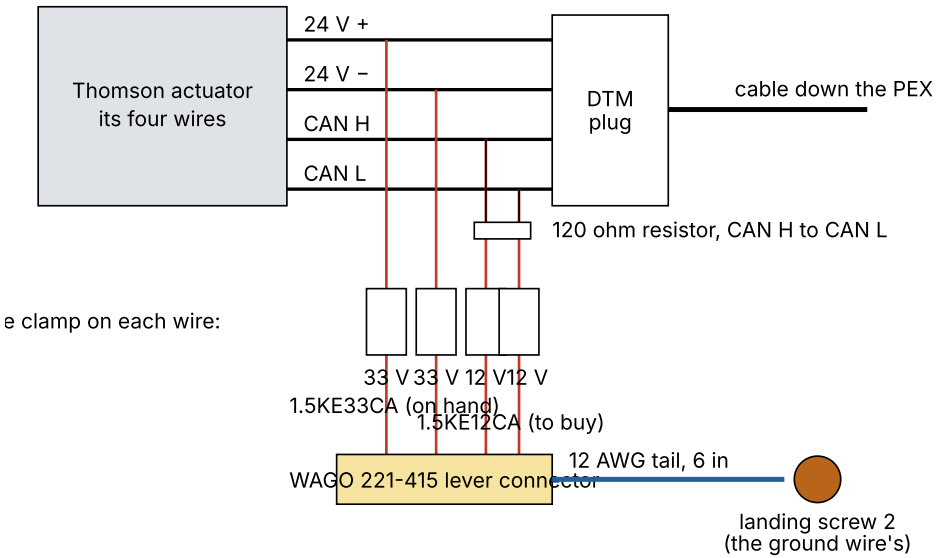
On the wing's far face just ahead of its back edge, below the boom, at 44-1/2 in up. Undo it before sliding the boom out.

E. THE PEX THROUGH THE MAST PLATE



The PEX goes straight down through its own 3/4 in hole, about 5.1 in behind the mast's center. The plate turns with the wing, so nothing twists.

Surge clamps at the actuator, inside the pocket Nov 2, 2026 · not to scale



Red: the four pigtails, 4 in each, spliced in beside the plug. Each clamp and the resistor in heat shrink; th

WHAT IT DOES

A surge clamp does nothing until the voltage across it passes its number, then dumps the surge to ground and goes back to doing nothing. One on each of the actuator's four wires: **33 V on the two power wires, 12 V on the two data (CAN) wires.** "CA" means either leg can go either way.

BUILD

1. Strip each of the 4 wires about 3 in from the plug. Butt-splice on a 4 in pigtail.
2. Crimp a clamp leg on each pigtail: 33 V on power, 12 V on CAN. Heat shrink.
3. The 4 other legs and the 12 AWG tail go into one WAGO 221-415.
4. 120 ohm resistor across CAN H and CAN L, heat shrink. (Skip it if Thomson's manual says the MD has one inside.)
5. Tail: yellow #10 ring on landing screw 2, with the ground wire.

PARTS

- 2 × 1.5KE33CA: on hand. 2 × 1.5KE12CA: Amazon B00LQQ47BK (Littelfuse 5-pack). 1 × 120 ohm 1/4 W resistor. 1 x WAGO 221-415. Butt splices and heat shrink on hand.