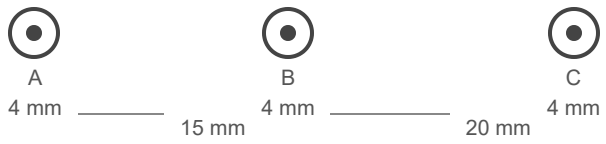
Fencing body cord and weapon tester	Block 2 - Sockets
Printed pocket build, 18650, 84 x 40 x 26 mm	Doc 02 Rev F 2026-08-30

Pin geometry

Both sockets are three individual panel banana jacks **sized to the cord's pins**. On a fencing three prong connector the B pin sits in the middle, A is 15 mm to one side and C is 20 mm to the other. That asymmetry is what stops a cord going in backwards, so it is the one dimension in this build you cannot fudge.



Pin diameters (Rev E, per FIE Material Rules): the 3-prong plug has "three pins of 4 mm diameter arranged in a straight line", polarised only by the 15/20 mm spacing - so all six jacks are 4 mm, exactly like commercial test boxes. Prefer standard spring-leaf banana jacks (sheathed safety jacks will not grip a bare pin). Note: the 2-prong foil/sabre WEAPON plug is different - its small (B) pin is undersized by design for polarity; a good leaf-spring 4 mm jack still grips it, which is how commercial testers handle foil plugs too.

Line assignment

Line	Role	In foil and sabre	In epee
A	Lame line	To the lame via the alligator clip	Up the blade to the tip
B	Weapon line	Up the blade to the tip	Up the blade to the tip
C	Ground	Bonded to guard and blade	Bonded to guard and blade

A two pin foil or sabre plug engages the B and C jacks only. Its A line terminates in the alligator clip, which is why J3 exists and why it must land on the same common node as J2 line A. On a sabre the two weapon-end contacts are commoned at the guard (FIE m.24.4), so a healthy sabre shows the B-C loop closed the moment it is plugged in - red lamp on is the expected resting state for a sabre weapon test.

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Jack positions

Jack	Face	Position on that face	Connects to
J1 A	Top edge	x 26, y 13	D1 cathode
J1 B	Top edge	x 41, y 13	GND
J1 C	Top edge	x 61, y 13	D2 cathode
J2 A	Front	x 34, z 30	Common node
J2 B	Front	x 49, z 30	Common node (Rev F: direct, no switch)
J2 C	Front	x 69, z 30	Common node
J3	Right	y 13, z 24	Common node

Build and verify

- [ ] All six jacks are 4 mm spring-leaf types (FIE: all three plug pins are 4 mm).
- [ ] **The Rev C shell and coupon STLs assume the old 2 mm-jack bushings.** Enlarge all six jack holes to your 4 mm jacks' bushing diameter (~8 mm typical) before printing, and print the Rev E spacing coupon with the real jacks fitted. The shell's slide-switch opening is unused in Rev F - fill it in the model or blank it with a printed plug.
- [ ] Both sockets take the same orientation, A on the same side. Mirroring one is the easiest mistake to make and the hardest to find later.
- [ ] Insulated or washer-isolated jacks. Printed walls are non conductive so bare bodies are survivable, but the tails sit close together and shoulder washers cost nothing.
- [ ] The two sockets are offset in x by 7 to 8 mm on purpose. Their solder tails would otherwise run into each other inside the case. Do not align them for looks.
- [ ] Offer up a real cord before soldering and confirm all three pins seat without strain.
- [ ] Meter every jack to its destination with the cell disconnected.