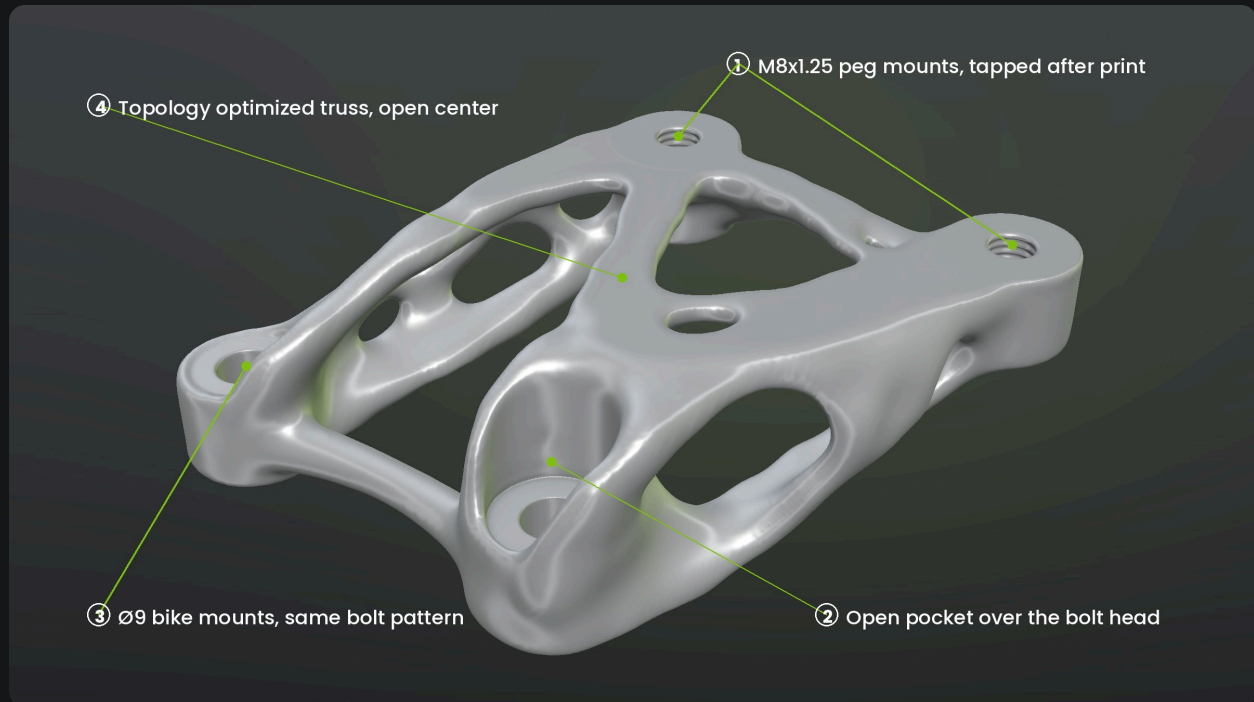


MT-10 peg extension bracket // v5

Yamaha MT-10 passenger peg extension, left and right hand. Redesign'd from a pocket'd 6061-T6 billet part for metal powder bed printing.



// FIXED BY THE BIKE

INTERFACE	REQUIREMENT
Bike mounts	2x Ø.35 in (8.9 mm) thru at the original pattern, flat face at z = 0
Peg bracket mounts	2x M8x1.25-6H at the original pattern, flat face at z = 35
Envelope	Same footprint as the billet part
Mirror pair	Left and right hand parts from one design
Design load	5 kN track and abuse load, 40 mm outboard of the peg face

// RESULTS AT 5 kN, 40 mm OUTBOARD

	ORIGINAL BILLET (6061)	PRINTED DESIGN (ALSi10MG)
Mass	about 190g	about 134g
Deflection at the peg mount	23 mm	0.7 to 0.9 mm
Peak stress	about 500 MPa	about 230 MPa
Working load at 1.5 safety factor	about 1.3 kN	about 2.9 kN

① Printed part

- AlSi10Mg, metal powder bed
- Self-supporting truss, stands on the bike-mount end
- Every opening is through, no trapped powder
- Files: IPT, STEP (LH and RH)

② After the print

- Mating faces carry about 0.25 mm stock, faced flat and to height
- Bike mounts drilled Ø9
- Peg mounts drilled Ø6.8, tapped M8x1.25-6H, 15 mm deep

③ How it was found

- Topology optimization on 3 load cases
- FEA every iteration
- Sculpted, rebuilt as a T-spline and NURBS solid, finished in Inventor

Static loads only. Design-loop numbers are from a voxel FEA used to compare designs. Inventor numbers are from the sculpted v4 shape. The full 5 kN with margin calls for T1-6A1-4V from the same file, or a proof load test before release. Status: design'd FEA checked and quote'd not yet printed.