



Heavy-duty 3-way 90° corner connector- Tent Pole



By_ISIK

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Summary

for tent poles and outdoor frames, reinforced against high wind and bending load.

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3-Way Heavy-Duty Tent Corner Connector

A reinforced 3-way 90-degree corner connector engineered for tent poles, tarps, and custom outdoor shelter frames. Designed specifically for high-stress applications such as camp kitchens and pyramid structures, it features integrated load-distribution gussets, conical root transitions, and a spherical core to prevent cracking under wind and leverage loads.

Slicer Scaling Percentage Chart

The baseline model is designed at **1:1 scale (100%)** for **7.6 mm outer diameter (OD)** poles.

Target Pole OD	Slicer Scale Factor (%)	Socket Depth	Connector Outer Diameter
6.0 mm	79.0%	23.7 mm	10.6 mm
7.0 mm	92.1%	27.6 mm	12.4 mm
7.6 mm (Base Model)	100.0%	30.0 mm	13.5 mm
8.5 mm	111.8%	33.5 mm	15.0 mm
9.5 mm	125.0%	37.5 mm	16.8 mm
11.0 mm	144.7%	43.4 mm	19.5 mm
16.0 mm	210.5%	63.1 mm	28.3 mm

$$\text{Scale Factor (\%)} = \left(\frac{\text{Target Pole OD}}{7.6} \right) \times 100$$

$$\text{Scale Factor (\%)} = (7.6 \text{ Target Pole OD}) \times 100$$

3D Printing Settings Guide

- **Material:** Use **PETG, ASA,** or **ABS** for outdoor weather and UV resistance.
- **Wall Loops:** Set **6 to 8 walls** to make the socket arms 100% solid.
- **Infill: 45% - 50% Gyroid** infill for multi-directional strength.
- **Print Temperature:** Print at the upper limit of your filament range to maximize layer bonding.
- **Orientation:** Place the central core at a 45° angle on the build plate to prevent layer lines from aligning with bending stress.

3D Modeling Design Rules

- **Hole Clearance:** Add **+0.25 mm to +0.35 mm** to the nominal pole diameter for press-fit and epoxy clearance.
- **Socket Depth:** Keep the socket insertion depth at **at least 4× the pole diameter.**
- **Corner Fillets:** Add minimum **R2.0 mm to R3.0 mm fillets** on all connecting roots to eliminate stress concentrations.

- **Lead-in Chamfers:** Include a **1.5 mm to 2.0 mm 45° chamfer** at each socket entrance for smooth pole insertion.

Model files

3d-pole-tent-76mm.stl



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