

Q & A: The Right Mortise / Tenon Fit

By: AW Editors | January 13, 2015

8+1



Q:

What's the right fit between a mortise and a tenon? I'm going crazy trying to measure them with a dial caliper!

A:

You're not alone. This question has bugged just about every woodworker, but the answer doesn't lie with precision instruments.

A crusty woodworker of the old school once said, "If you need your shoe to pound a tenon into a mortise, it's too tight. If it just drops in by itself, it's too loose. If you can tap it in with your hat, it's just right." Well, nobody wears a hat in the shop any more, but you get the idea.

If the fit is too tight, your glue-up will be a nightmare and the joint may actually fail. Water-based glues slightly swell wood, so a joint that's tight when dry becomes even tighter when wet. Way too much pressure is necessary to force out the air trapped in a tight mortise. To make matters worse, you may "starve" the joint of adequate glue if it's scraped off the mating surfaces as the tenon enters the mortise.

If the fit is too loose, the glue won't bond the tenon and the wall of the mortise. White and yellow glues shrink as they dry and at most they can tolerate a gap about the thickness of a sheet of paper. That's more or less the amount of clearance in a joint that slips together easily by hand (or hat!).