

TWIN TAIL

A Twin Beech's tail is designed to reduce drag by keeping the vertical stabilizer(s) as small as possible. How? By placing them in the propwash, which helps maximize their authority when operating on one engine and giving them a lever—their distance from the airframe centerline—with which to maximize the force they generate.



T TAIL

Because this design is relatively unaffected by the wing, it can be smaller, helping reduce drag. Its supporting structure must be beefier, however, and it's out of the propwash, resulting in loss of effectiveness at low-speed/power combinations. It's rumored Piper added the T-tail to the Arrow and Lance as a pure marketing move.



TWIN-BOOM TAIL

This tail design example comes courtesy of the Cessna 336/337 Skymaster and necessity: If you're building a push/pull twin, you need a tail that doesn't interfere with the rear engine. Twin booms attached to the wing solve the problem. But why does Lockheed's P-38 have a similar design, even though its engine are wing-mounted?



V-TAIL

The original Bonanza's V-tail likely also was a marketing move, but one with better aerodynamics behind it: Eliminating a third of the normal tail surfaces reduces drag by a like amount. It's also a trade-off, since rudder and elevator authority can be limited more easily in some flight conditions, like when taking off with a crosswind from the left.

