

Splines and irregular shapes... the strongest method

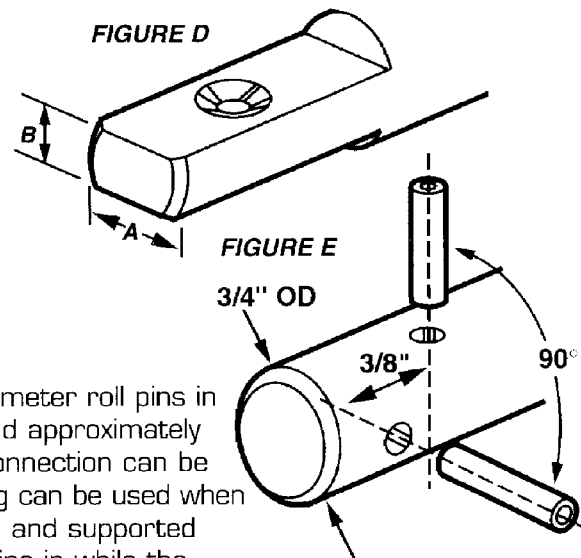
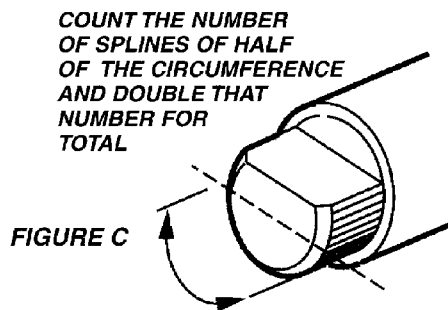
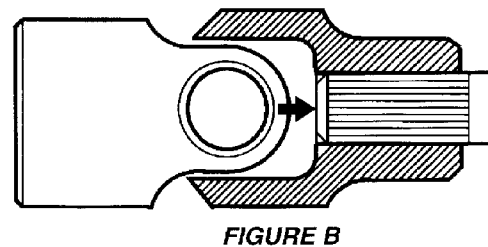
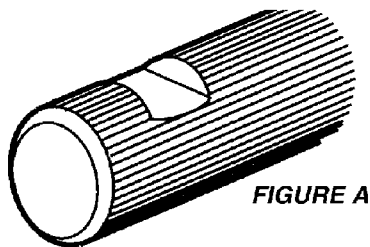
Detroit uses irregularly shaped shafts such as splined or a "Double D" configuration and inserts them into an similarly shaped hole with practically no play and then secures them by staking or clamping. Since steering failures are practically unheard of in modern production cars, one should strongly consider this method as having significant merit.

BORGESON offers splined shafts and joints which give the option of easy disassembly when repairs on the vehicle become necessary. Another advantage is the ability to rotate the shaft in relation to the u-joint in small increments. This makes it easier to position the u-joints in the correct relationship to each other.

A flat must be filed on the splined shaft where the set screw will clamp (figure A). This will prevent damage to the spline and allow for easier disassembly. Always lock the set screw with a lock nut, Loc-Tite or similar product. The shaft must be flush with the inside of the yoke (figure B), not so short that it sacrifices strength or so long that it interferes with the center workings of the joint.

To determine the spline size of a component, measure the outside diameter and count the number of splines. If there is a flat spot on the shaft and some of the splines are missing, (figure C) count halfway around where there are splines and double that number. We need to know how many teeth are in a theoretical full circle. If you have something unusual or you're unsure about measuring the spline, make an impression of it in clay and send it to us.

A "Double D" (figure D) shaft has two large flat spots machined on the shaft that correspond to two flats in the female end of the u-joint. The disadvantage to this style is the lack of adjustability because the shaft can only be rotated 180°. The Double D shaft should have a "dimple" machined on the shaft for the set screw to clamp to (figure D).



Pinning

Common practice is to use two 3/16" diameter roll pins in each yoke at right angles to each other and approximately 3/8" apart (figure E). An even stronger connection can be made by using hardened shear pins. Pinning can be used when the shaft can be removed from the vehicle and supported properly when inserting the pins. Driving pins in while the assembly is in the car could cause damage. The major drawback to pinning is that a 3/4" diameter shaft is weakened by 30%; smaller shafts are weakened to an even greater extent.