

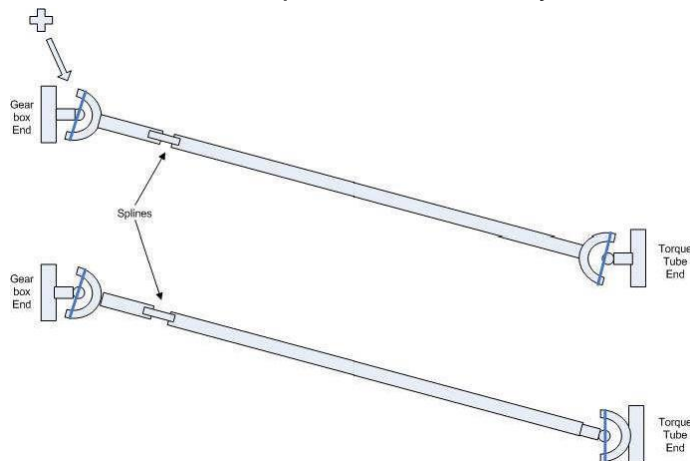
Halfshafts and Hardy Spicer couplings.

Some years ago the Cornwall Austin Seven Club explained the importance of having the yokes on the propshaft carefully aligned.

The diagrams below show the two possible extremes for assembling the prop-shaft.

When driving along the road at a constant speed, the gearbox end flange is trying to rotate at constant speed, due to the flywheel, and the torque tube end flange is trying to rotate at constant speed due to the momentum of the car.

However, the prop-shaft itself will be speeding up and slowing down during the rotation.



Upper Diagram: When the UJ yokes are aligned as shown below, the same oscillation appears at both ends. The prop-shaft is said to be "in phase". Whilst its speed is varying, both ends are trying to do

the same thing, both speeding up or both slowing down, so that there is no twisting vibrational torque along the shaft itself.

Lower Diagram: When the UJ yokes are aligned as shown above, the gearbox end is trying to go faster AT THE SAME INSTANT AS the torque tube end is trying to slow down, and vice versa. The shaft is said to be "out of phase". Now there is a strong vibrational torque along the shaft, irrespective of the net torque to the axle. This vibrational torque will set up a loud howl at the resonant frequency of the prop tube, and will put a cyclic stress on the splines along the shaft. At 3000 rpm, this means that the prop-shaft is being twisted and untwisted 100 times every second!

Eddie Loader sent this image to clearly explain what the article intended to show!