Propeller Shaft Alignment

AMERICAN MOTORS PROPELLER SHAFT ALIGNMENT

American Motors

DESCRIPTION

Measurement of front and rear universal joint angle is accomplished by means of an inclinometer (preferred method), or by using a bubble protractor or a protractor and plumb bob (alternate method). Check and adjust propeller shaft universal joint angles with vehicle at usual load and curb height.

CHECKING & ADJUSTING ANGLES

CHECKING

Preferred Method – 1) Raise vehicle so weight of rear end of vehicle is supported by rear springs, then measure distance between top of each axle tube and side sill, adjacent to rubber bumper on each side of vehicle. Add two measurements, then divide sum by two. This produces average distance between axle tubes and side sills. *See Rear Universal Joint Angle Chart to determine angle specifications.*

2) Remove universal joint bearing cap retainer, then use suitable inclinometer tool (J-22910) and record readings taken at drive pinion yoke cross bearing cap, front propeller shaft yoke cross bearing cap, and transmission yoke cross bearing cap. Place magnet of inclinometer on bearing cap and align frame parallel to propeller shaft centerline, rotating shaft as necessary to zero frame bubble. Rotate pendulum thumbscrew to zero pendulum bubble, then read scale at base of frame. Reading is indicated by vertical hairline mark on pendulum.

3) Difference in readings taken at drive pinion yoke and front propeller shaft yoke is rear universal joint angle, and should be as specified ± ½ °. Difference in readings taken at front propeller shaft yoke and transmission yoke is front universal joint angle and should be 1° ± ½ °.

Alternate Method – 1) Raise vehicle so that weight of rear end of vehicle is supported by rear springs, then measure distance between top of each axle tube and side sill, adjacent to rubber bumper on each side of vehicle. Add two measurements, then divide sum by two. This produces average distance between axle tubes and side sills. *See Rear Universal Joint Angle Chart to determine angle specification.*

2) Using a bubble protractor or a protractor and plumb bob, measure angle of rear axle pinion at machined boss, then measure angle of propeller shaft. Difference between two angles is rear universal joint angle, and should be as specified ± ½ °.

3) Measure engine angle by placing protractor on oil pan flange surface and noting reading. Difference between propeller shaft angle and engine angle is front universal joint angle and should be 1° ± ½ °.

ADJUSTMENT

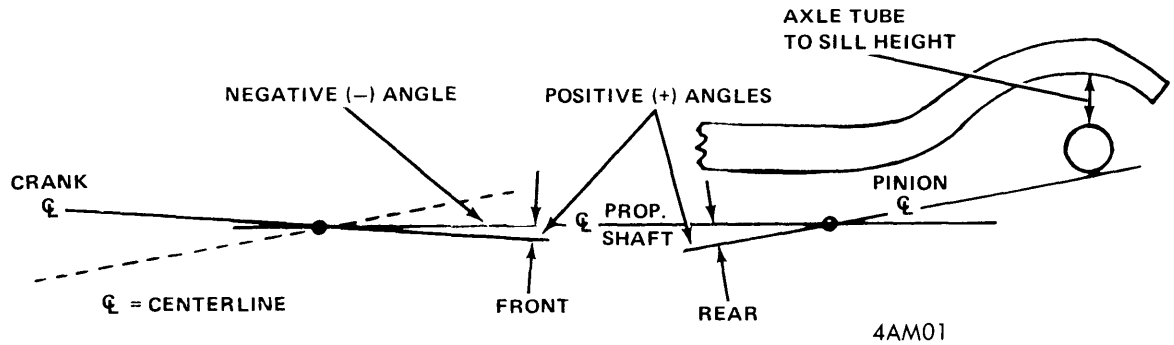
NOTE – If front universal joint angle is negative, front angle should be adjusted first, then check and adjust rear angle as required, and recheck front angle. If front angle is positive, adjust rear angle first and then check and adjust front angle as required.

1) Inspect engine support cushions, then replace or shim as necessary to obtain correct front universal joint angle.

2) Shims are installed between rear suspension upper control arm crossmember and body side sills for adjustment of rear universal joint angle. Adding shims raises rear axle pinion, reducing rear universal joint angle, while removing shims will increase rear angle.

3) If shimming is required to adjust front universal joint angle, rear suspension shims may be altered to fit between rear engine crossmember and body. Shims installed between engine rear crossmember and side sills will increase front angle, while shims installed between engine rear crossmember and engine rear support cushion will decrease front angle.

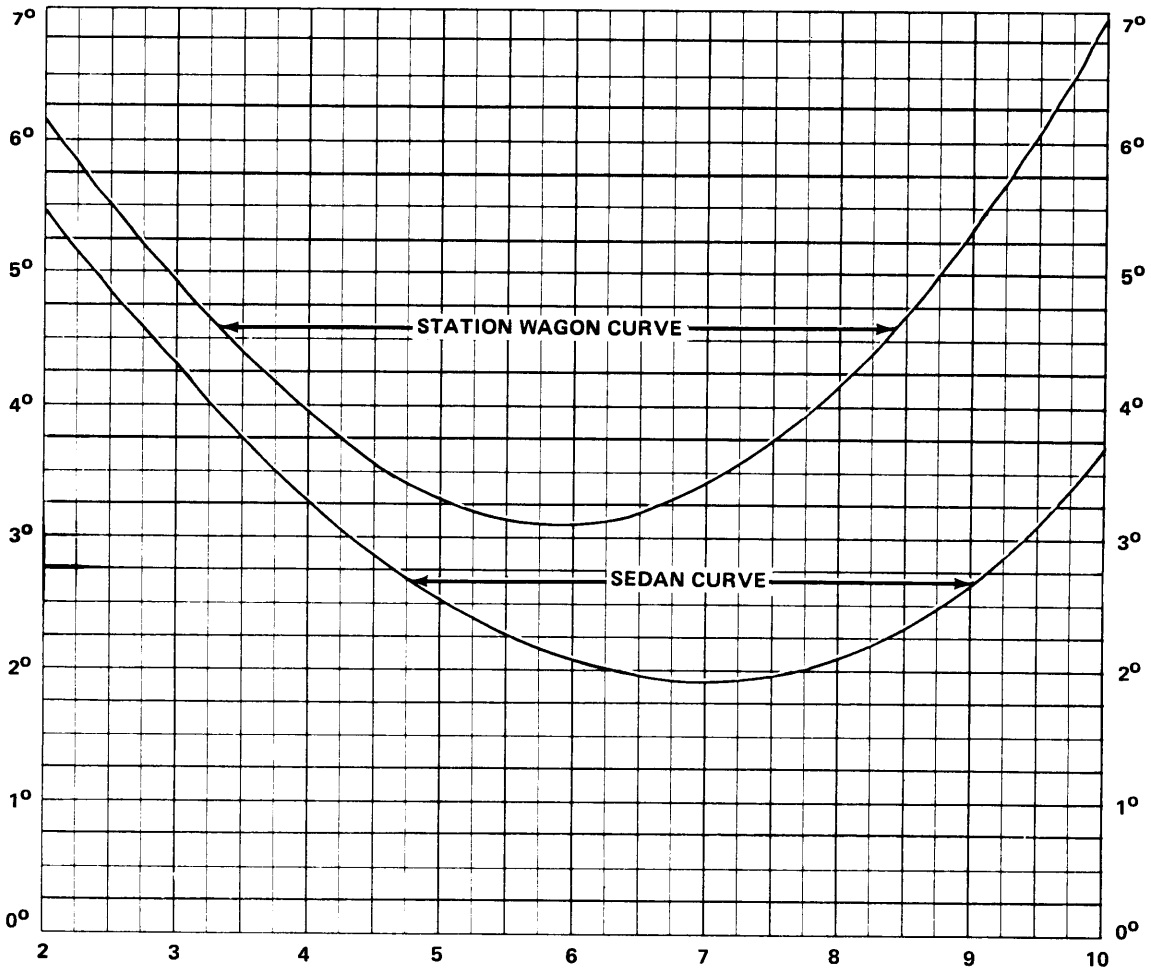
NOTE – If it is necessary to shim to correct front angle, transmission manual linkage must be adjusted after installation of shims.



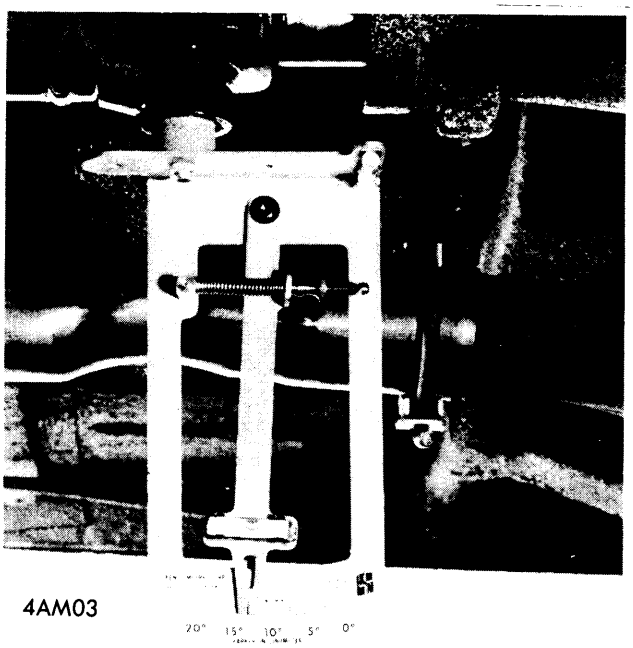
FRONT & REAR UNIVERSAL JOINT ANGLES

AMERICAN MOTORS PROPELLER SHAFT ALIGNMENT (Cont.)

REAR UNIVERSAL JOINT ANGLE CHART

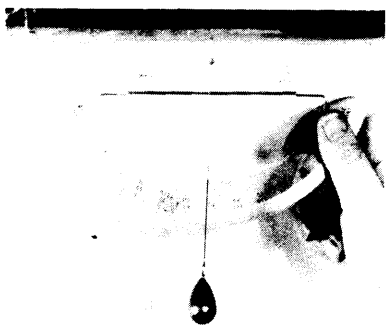


4AM02



4AM03

MEASURING UNIVERSAL JOINT ANGLE – TYPICAL (PREFERED METHOD)



4AM04

MEASURING PROPELLER SHAFT ANGLE (ALTERNATE METHOD)