

SECTION 13..... SUSPENSION

Note. Major changes and/or additions are in bold face font. Contributions by web members are underlined with dots and credit given when known. Minor changes, usually just wording, are not drawn attention to by any special font.

******* SUSPENSION & STEERING *******

Revised April 27, 2009

ALIGNMENT SPECIFICATIONS: Note the following specifications are not for radial tires.

(Radial tires for one of our straight axle Ford cars are usually aligned with 0 degrees camber, 6-8 degrees positive caster, and with 1/8" toe-in.)

<u>years</u>	<u>Caster degrees</u>	<u>Camber degrees</u>	<u>Toe-in</u>	<u>Inclination</u>
'33-'34	+4-1/2 to +9	+1/4	3/32"	8 degrees
'35-'36	+6-3/4	+5/8	3/32"	8 degrees
'37-'48	+6-3/4	+5/8	1/16"	8 degrees
1949	-1/4	+1/2	1/8"	5-1/4 degrees
'50-'51	-1/4	+1/2	3/16"	5-1/4 degrees
1952	-1/2	+1/2	3/32"	5-1/4 degrees

STEERING BOX LUBRICATION: Most guys I know use SAE 160 in their cars year round... and then complain about how stiff it turns in the cold. My old worn-out Hudson steering box leaks. So I use a 50/50 mix of STP and EP 90 year round in it. Doesn't leak as much and seems to reduce the turning effort a tad.

Some guys use chassis grease. I don't think it's a good idea since the steering gears squeeze the thick grease out from between the gears. Which is pumped out of the fill hole in the vented plug, around the sector adjusting screw, out the bottom of the steering box, and around the pitman arm seal. Since the gear teeth squeeze grease out from between them, it appears to me that the teeth would most likely getting adequate grease. However, later steering boxes recommend chassis grease, so I'm probably all wet...again! Confusing, isn't it?

SHIMMY ELIMINATION: From a 1936 shop bulletin... and this is a quote: "Low speed shimmy is usually caused by under inflation or looseness of wheels, wheel bearings, spindle bearings, tie rods, drag link, steering gear or spring mountings... in conjunction with too much caster or toe-in. Low speed shimmy is often caused by the same conditions that cause high-speed tramp. Either too much or too little may cause low speed shimmy, whereas only too little caster will cause high speed tramp." Notice there is no definition of what speed high or low speed is. But they define wheel tramp as "...synonymous with high speed shimmy" and discusses this in terms of "...oscillation frequencies" having to do largely with runout, balance, and toe-in. Can someone explain the difference, in layman terms between shimmy and tramp? And their definitions? I always thought they were the same! Caster is discussed as "...having a stabilizing effect" on all of this.

To increase caster temporarily (like to check to see if it cures a problem), use two rubber ball inserts on the wishbone with longer bolts. Test drive slowly to see if this makes a difference.

CORRECTION OF SHIMMY: Ford shop memos issued during the early thirties state more caster and/or increased front tire pressure are ways to eliminate shimmy. And they had hard rubber tires. It would appear radial tires can contribute to shimmy and bump-steer.

HUDSON/TERRAPLANE (GEMMER II & III) STEERING BOXES: These are superior to the Gemmer I steering boxes Ford used in their '32 thru '36 cars. Both Gemmer II and Gemmer III turn a lot easier than the Gemmer I used on our early Fords. The Gemmer II is the same as the Gemmer III except for the worm/sector shaft adjuster. The Gemmer III features an external worm/sector adjustment whereas the Gemmer II has an internal worm/sector adjustment. Hudson used Gemmer steering boxes with a side fore/aft pitman arm (like '32-'34 Fords used) from '34 thru '37.

The Gemmer I was used in '34 thru '36 Hudsons & Terraplanes.

The Gemmer II was used exclusively in '36 Hudson DeLuxe cars.

The Gemmer III was used in *** '37-'5? Hudsons & Terraplanes.

*** Beginning in 1938, Gemmer changed their steering box for all Hudson/Terraplane cars. They retained the side fore/aft pitman arm, but inverting their steering box reverses the internal gearing. To my knowledge, the gears (not the housings) are the same in all Gemmer III boxes. They changed to bell crank drag link system. If a '38 or newer steering box is used in a '32-'34 Ford with a push/pull drag link, turning the steering wheel clockwise (for a right turn) makes the car turn left! A pretty good theft deterrent but hard as hell to drive. This means only the '37 and older Hudson steering boxes work without adding a Hudson bell crank system. A friend didn't know this and put one in his MoPar hot rod. He wiped out two trash cans, some of his freshly sodded lawn, and almost took out the edge of his garage..... and all in just one trip to the corner and back!

Both the Gemmer II and Gemmer III steering boxes are easy to install in '32 through '34 Fords. Enlarge the pitman arm-housing hole through the frame rail (the Hudson pitman arm housing is about 1/8" larger than the Ford). Sharpen up your basic hot wrench, or use grinding stones, and enlarge the hole 1/8" starting at the top of the existing hole. Taper it both ways until it becomes tangent at 90 degrees from the top. Only two of the three steering box mounting holes line up. One additional hole has to be drilled through the side of the hard frame.

Pitman arms. The Hudson's are the same size and spline as the '34 Ford as well as an early sixties Mustang/Falcon/Fairlane. These pitman arms are all an inch shorter than the '34 Ford which helps reduce steering effort. The Mustang pitman arm has a tapered drag link end in place of the ball/socket end used on the '34. Great if you're interested in changing to tie rod ends on the drag link.

Steering shaft. The Hudson steering shaft is longer than the Ford. It's the same diameter. The Hudson shaft is splined whereas the Ford is keyed. Modify as needed. (I cut a section out of the middle, sleeve, pin, and weld the two together.) Cutting new threads after shortening and machining a keyway is neater, but I do sloppy work. The Ford headlight basket on the end of the steering column bolts up to the Hudson steering box by adding a couple of 1/4" flat washers as spacers.

SPINDLE FLANGES DIFFERENCES: The '37 through '41 Fords have a round backing plate mounting flange and use a short (5.5") king pin. The '42 through '48 have a square backing plate mounting flange and use a longer (6.0") king pin. Both have the same diameter of king pins (0.813").

KING PIN THRUST BEARINGS: These fit between the axle and the spindles. They are positioned on the axle so they're between the axle and the spindle. The thrust bearing has one surface, which rotates. It faces up against the spindle.

BEARING TYPE KINGPINS: These replace the stock bushings with caged needle bearings, but are pretty pricey. They greatly reduce steering effort and should last well past 100,000 miles. These are a straight bolt up installation and require NO machine work, grinding, or drilling. Basic hand tools are all that's required. Super simple to do. The hard part is removing the stock king pin and bushing. Once that's done, I have the bearing type king pins installed in about 1½ hours. These are available from:

Stainless Steel Brakes.
11470 Main Rd.
Clarence, NY 14031
Tech line: (716)-759-8669
Roger Mets: 1-800-448-7722

ARM TYPE STOCK TYPE SHOCKS: To soften the ride, turn the adjustment screw counter clockwise. An old trick we used on worn out shocks or to make one stiffer for competition use was to replace the fill plug with a grease zerk. Then pump the shock full of chassis grease and run 'em.

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