

A Pre-Check To FRONT END ALIGNMENT

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The Model A has approximately 30 major parts and about 70 minor parts in their front steering and suspension system that can effect front end alignment. I have worked on a lot of Model A's where their owners state they have a slight front end shimmy and want an alignment. I have found from experience that the following 15 items should be checked before proceeding with the front end alignment.

Check the following:

1. **Tire pressure, including the spare tire.** Correct pressure should be printed on the tire sidewall. Usually 35 psi.
2. **Steering column support clamp bolts.** (A-3519) These do not effect alignment, but this is a good time to check for tightness.



3. **Steering sector housing mounting bolts to frame** for tightness. (A-3547) **Fig. 1**



4. **It is a good idea to check** the two tooth steering column clamp and bolt for tightness. (A-3508 & A-3507) **Fig. 2** A loose clamp will affect the spark, but not the alignment.



5. **Steering pitman arm bolt for tightness.** (A-3590) These should be torqued to 50 foot pounds. If the cotter key does not fit either tighten or loosen until it fits. There should be a cotter key inserted in the castle nut. **Fig. 3** After torquing if there is still movement it is most likely worn steering shaft bearings in the steering box. They should be replaced.



6. **Drag link arm and ends.** The following test will quickly determine problems with the drag link and tie rod areas. Jack up the front of the Model A and place on two jack stands. There needs to be four inches of clearance between the tire and the ground. Place one hand at the 9 o'clock position and the other hand at the 3 o'clock position. **Fig. 4** Pull or twist the wheel and tire back and forth. If you feel movement that is not smooth or tight, or if movement is over a quarter of an inch, check for worn steering balls, bent drag link or tie rod, or loose ends on the drag link and tie rod. Be sure to lubricate the items with chassis grease. Drag links should be torqued to 25 foot pounds. This is the same as tightening to 25% if using original parts or USA made reproduction parts. The import springs are not the same length.

7. **Tie rod ends.** Use the same test as #6. Be sure to check for a straight tie rod and that all cotter keys are in the link ends. Lubricate these parts with a top quality grease. Tie rod ends are also torqued to 25 foot pounds. This is the same as tightening to 25% if using original parts or USA made reproduction parts. The import springs are not the same length.



Fig. 5

8. King pins. To test the king pin bushings place one hand at the 6 o'clock position and the other hand at the 12 o'clock position. **Fig. 5** Push and pull on the wheel and tire moving it inward and outward at the top and bottom. There should be no noticeable movement. If movement is present the king pin bushings should be replaced.

9. Wheel bearings. To test the wheel bearings place your hands at the 9 o'clock and 3 o'clock position. Try to move the wheel and tire straight in and out using both of your hands at the same time. There should be no movement. Also spin the wheel and tire checking for smooth turning. If not smooth repack the inner and outer wheel bearings with wheel bearing grease and tighten correctly. Make sure there is a cotter pin in the spindle nut and torque the lug nuts to 64 foot pounds. The Model A can now be taken off of the jack stands.

10. Broken front spring or leaves. Look at the front spring, it should sit level and the spring shackles should be the same height from the axle. Look for gaps in the spring leaves or rust lines as these are two indicators of broken spring leaf. Repair as needed. Also check to see that the spring clips are tight and the U-bolts are tight.



Fig. 6a

11. Worn spring shackle bushings. The first check is to measure the distance from the top of the axle to the bottom of the spring shackle. **Fig. 6a** This measurement is made with the full weight of the Model A on the front suspension. The Model A needs to be setting on the ground. I use a tapered wedge that is a homemade piece of wood for the measurement. **Fig. 6b** I place blue painter's tape on the wedge, so that when making a line mark it does not permanently mark the wedge. The clearance should be a minimum of 5/16 of an inch up to 1/2 inch. Less than that means you have a weak spring that needs to be replaced, or worn out spring shackle bushings. A worst case scenario would be a bent axle or bent frame. Repair as needed.

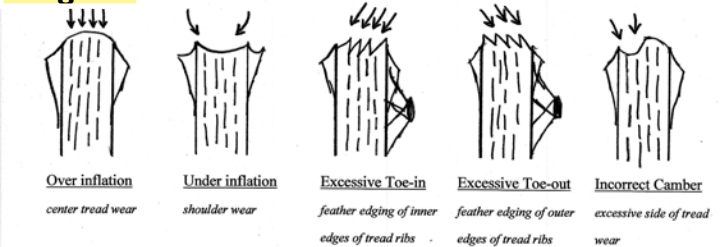


Fig. 6b

12. Shock absorbers. Check the linkage to see that it is tight and lubricated, if they are installed on your Model A.

13. Bent rims. Take a visual look for dents on the inner and outer rim. Bent spokes are another visual test. To accurately test the rims they would need to be demounted. Testing for bent rims is another article all to itself.

Fig. 7



14. Front tires. Check the front tire surface for wear and condition. This is both a visual test and a hand test. Place your hand on top of the tire and slowly run your hand across the tread. What you see and feel should be flat level surface. If not look at the **Fig 7** for more information and the cause of the problem.

15. Radius Rod Ball Cap Assembly. This should be the stamped steel original style assembly so that the correct caster angle of 5 degrees is maintained. A quick measurement from level ground to the front lower corner of the axle (five inches inward from the spring perch) should measure:

- 1928-29 with 21 inch rims should measure 12 inches, plus or minus 3/8 inch.
- 1930-31 with 19 inch rims should measure 11 inches, plus or minus 3/8 inch.

If these measurements do not match what you measure do a total calculation of the degree of caster. The factory setting for caster is 5 degrees. Caster angle can be effected by: incorrect radius ball assembly, bent wish bone (radius rod), or use of a non-Model A transmission

One final note: If the drag link and tie rod are rubbing against each other, and none of the above 15 items corrected the problem, check the single arm steering spindle A-3130 and the double arm steering spindle A-3131. On very rare occasions these can be bent causing the problem of clearance.

After the 15 items have been checked and passed inspection the Model A is now ready for its front end alignment. Too often Model A's are test driven for a diagnosis of front end problems which could be very unsafe. I believe by checking the 15 items it will eliminate guessing and solve most problems correctly. Remember that those 100 front end parts all act and react to each other to provide easy safe steering along with a smooth ride.