

CAUTION: Observe proper safety and repair procedures for installation of all chassis parts. Some chassis parts require specialized tools and experience and therefore **MUST** be installed by a qualified technician otherwise an unsafe vehicle and/or personal injury could result. Wear safety glasses and other protection.

WARNING: Before beginning, check for any damaged or loose suspension connections. Loose connections here indicate worn or broken parts which **MUST BE REPLACED.** Failure to replace a damaged or worn spindle and/or link may cause the wheel to separate from the vehicle, possibly resulting in serious personal injury.

NOTE: These parts are intended for use in vehicles with abnormal alignment and are designed to replace the non-adjustable factory equipment. These parts are not designed for installation on vehicles with suspension and/or steering systems modified for racing, competition or any other non-standard purpose.

Note for adjustable ball joints: Installer **MUST** check height & length clearance of O.E. control arm at inner fender **AND** upper strut mount inner cap. Adjustable ball joints **WILL** increase height & length of O.E. control arm. Modification(s) may be required. Please proceed **ONLY** if the vehicle owner is completely aware of these potential suspension modifications.

Before starting alignment, complete inspection checklist and determine the amount of change needed.

Removal Instructions

1. **IMPORTANT!** Check alignment and document the readings. Determine the amount of camber change needed before proceeding. These adjustable ball joints will provide $-1 \frac{1}{4}^{\circ}$ to $+1 \frac{1}{4}^{\circ}$ (**even ending part #'s**) or $+1 \frac{1}{4}^{\circ}$ to $+3^{\circ}$ (**odd ending part #'s**) of camber change.
2. Raise front of vehicle in a safe manner and support vehicle on jack stands under body and remove the tire/rim assembly.
3. Remove the cotter pin and nut from the upper ball joint. Break the taper free between the upper ball joint and spindle and remove the ball joint stud from the spindle.
4. Inspect the ball joint stud and spindle for any abnormal wear. If the spindle is worn, it must be replaced or damage will occur to the new ball joint.
5. Remove the bolts holding the upper control arm to the body and remove the upper control arm.
6. Inspect the top side of the ball joint where it is pressed into the control arm. There should be an orientation mark on the ball joint and on the control arm. Clean the area so the orientation mark is easily seen (if the marks are missing, move the ball joint stud as far as it will go in the direction of the control arm mounting bolts and scribe a line on the control arm in this direction).
7. Remove the snap ring (if present) holding the ball joint in place. In a suitable fixture or using appropriate sized tubes or sockets, press out the OE ball joint from the control arm being careful to not damage the control arm.

Assembly Instructions

1. Place the slotted flanged Insert on top of the control arm with the dimple in the Insert aligned with the orientation mark on the control arm. In a suitable fixture or using appropriate sized tubes or sockets, press the Insert into the control arm being careful to not damage the control arm.
2. Install the rectangular Guide on the underside of the control arm with the ring portion of the Guide facing the control arm and seated around the Insert. Align the slot in the Guide with the slot in the Insert and the long end of the rectangular Guide facing out of the control arm (towards the wheel).
3. Orient the ball joint Slide so that the threaded stud is towards the control arm mounting bolts and the two flats on top of the Slide are aligned with the edges of the rectangular Guide. Install the Slide stud through the Guide and Insert slots making sure that the Slide and Guide are fully seated against the control arm. Install the flange lock-nut onto the Slide stud and tighten until the lock-nut almost touches the Insert and the assembly is seated but still able to slide.

Installation

1. Reinstall the control arm to the body using the OE bolts. Do not torque at this time.
2. Install the new ball joint to the spindle. Torque the nut to 29-35 ft lbs (39-48 N-m) and install the cotter pin (if the cotter pin does not line up with the hole, tighten the nut so the next slot is aligned with the cotter pin hole).
3. Reinstall the tire/rim assembly. Remove the vehicle from the jack stands and, with the weight of the vehicle on the tires, torque the control arm body mounting bolts to 40 ft-lbs (54 N-m).
4. Install alignment equipment and set the camber to the manufacturers specifications by sliding the adjustable ball joint stud in the slot. Tighten the flange lock-nut to 100 ft-lbs (108-122 N-m).
5. Check and set toe to specifications, road test vehicle and make further adjustments as needed.

ALWAYS CHECK FOR SUSPENSION CLEARANCE

Modifying any suspension component may change other part clearances and cause binding or interferences. After installing any Ingalls' product, the suspension must be checked for binds or interference between all components, other arms and the chassis. Be sure that all control arms, struts and steering ends move freely through the full movement of the suspension (springs may need to be removed to fully check component travel). Installing any Ingalls' product on a modified vehicle (lowered or raised) from the original factory design requires a detailed check of all suspension components and their movements. Ingalls recommends that a trained technician install all products.

Limited Warranty

Subject to Disclaimer. All Ingalls products are warranted against defects in materials and workmanship for ninety (90) days from date of purchase. During the warranty period, Ingalls will repair, or at its option replace at no charge, components that prove to be defective. The product must be returned, shipping prepaid, to Ingalls facility. This limited warranty does not apply if the product is damaged by accident or misuse. The foregoing warranty is in lieu of all other warranties expressed or implied including but not limited to any implied warranty of merchantability, fitness, or adequacy for any particular purpose or use. Ingalls shall not be liable for any special, incidental or consequential damages whether in contract, tort, or otherwise resulting from the use or the inability to use the product.

Warranty Disclaimer

Use of this product in competition, or use on vehicles altered from original manufacturer's specifications or settings, EXPRESSLY VOIDS WARRANTY. The user is urged to inspect for suspension binding or interference when the product is used in these manners. However, due to the varying conditions and manner of use which the product will be subjected to in such uses, Ingalls Engineering Co., Inc. makes no warranties, either express or implied, including any warranty of merchantability or fitness for a particular purpose for use in competition or with specifications or settings other than those specified by the original manufacturer's specifications.

