



These instructions can be found in color and expandable at QA1.net

Technical Support Line: (952) 985-5675 Email: sales@QA1.net

### INSTALLATION INSTRUCTIONS

*Mustang Bump Steer Kit*

QA1 P/N BAX102, BAX104, BAX104M, BAX105

### TOOLS AND SUPPLIES REQUIRED

- Floor Jack
- Jack Stands
- Wrench Set
- Ratchet & Socket Set
- Measuring Tape

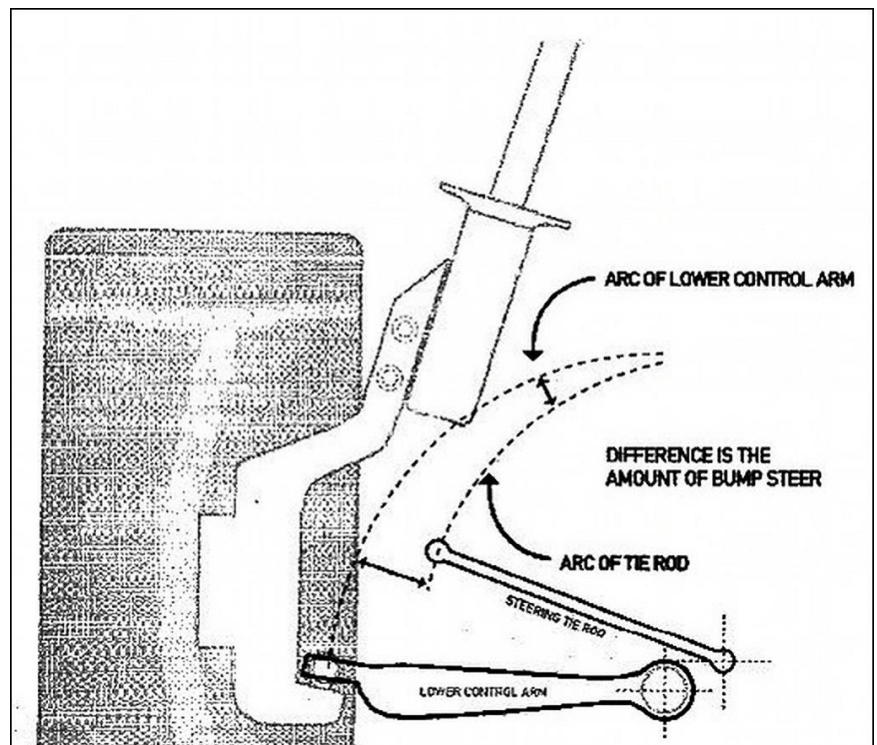
### OVERVIEW OF BUMP-STEER

**Definition of bump-steer:** Bump-steer is a change in toe angle caused by the suspension moving up or down. Bump-steer is built into the geometry of the suspension and steering system and has nothing to do with turning the steering wheel. The effect of bump-steer is for the wheel to toe-in or toe-out when the suspension moves up or down. This toe change, or "steering" occurs any time the suspension moves, whether it is from body roll, brake-dive, or hitting a bump in the road. Bump steer is undesirable because the suspension is steering the car instead of the driver.

**Cause of bump-steer:** The front wheels do not move directly straight up or down when the car hits a bump. Instead, the wheel follows an arc, or curving path, that pushes the wheel slightly inward (towards the centerline of the car) or outward (away from the car) in response to vertical wheel movement. The outer tie-rod (which connects the steering rack to the wheel) also moves in-and-out in an arc as it moves up and down. If the rate which the outer tie-rod arcs in or out does not match the rate the wheel moves in or out, the wheel will be turned by the tie-rod. This is bump-steer.

The center point of the arc traveled by the wheel (known as the instant-center) is controlled by the location and angle of the moving suspension links. This point moves as the ride height changes. In contrast, the arc of the outer tie-rod is controlled by the position of the steering rack, which is fixed. In order to eliminate bump-steer, both the length and the center point of the two arcs must be the same. However, since the instant center moves with ride height, bump-steer cannot be eliminated throughout the entire range of suspension travel. Therefore, suspension designers concentrate on minimizing bump-steer within the range of movement closest to factory ride height. Changing the ride height or other suspension components may move the suspension outside this narrow "optimized" window.

**To lessen or eliminate a bump-steer problem,** you need to alter the height of the outer tie-rod relative to the steering rack. Small changes in this relationship can be made with offset rack bushings. Making big changes requires adjustable tie-rod ends, also known as a bump-steer kit.





PART #	APPLICATION	TIE ROD THREAD SIZE	SLEEVE LENGTH
BAX102	79-93 MUSTANG	9/16"	4.791"
BAX104	94-04 MUSTANG	14MM	4"
BAX104M	94-04 MUSTANG CONVERTED TO MANUAL STEERING	9/16"	4"
BAX105	05-11 MUSTANG	14MM	2.5"

**Pre-Installation Note:**

Measure the length of your current tie rods before removing them from the vehicle. This measurement will be used to adjust the new tie rod sleeves and return the toe to its original position.

**A professional alignment is recommended after installation and before driving the vehicle.**

**Disassembly**

Loosen jam nut from existing tie rod end. Keeping the jam nut as close to its original location, unscrew the tie rod end from the tie rod. This will allow you to assemble the QA1 bump steer kit to the same length of your original tie rod end to maintain the toe setting.

**Bump Steer Kit Assembly**

1. Thread the left-hand threaded jam nuts onto the rod ends. **(Figure 1)**
2. Thread the rod end with jam nut into the left-hand threaded end of the tie rod sleeve to the same length as the original tie rod end (end of adjustment sleeve to center of stud/stud bore).
3. Snug the jam nut into the tie rod sleeve leaving 1/4" of threads exposed between rod end and jam nut. **(Figure 2)**
4. With the original jam nut still on the tie rod, screw the QA1 tie rod sleeve onto the right-hand threaded tie rod so that the tie rod length matches your original measurement.
5. Assemble spindle stud into the rod end bore using the provided hardware and spacers. **(Figure 3)** The spacer orientation above and below the rod end will be dependent on the angle needed for the tie rod.

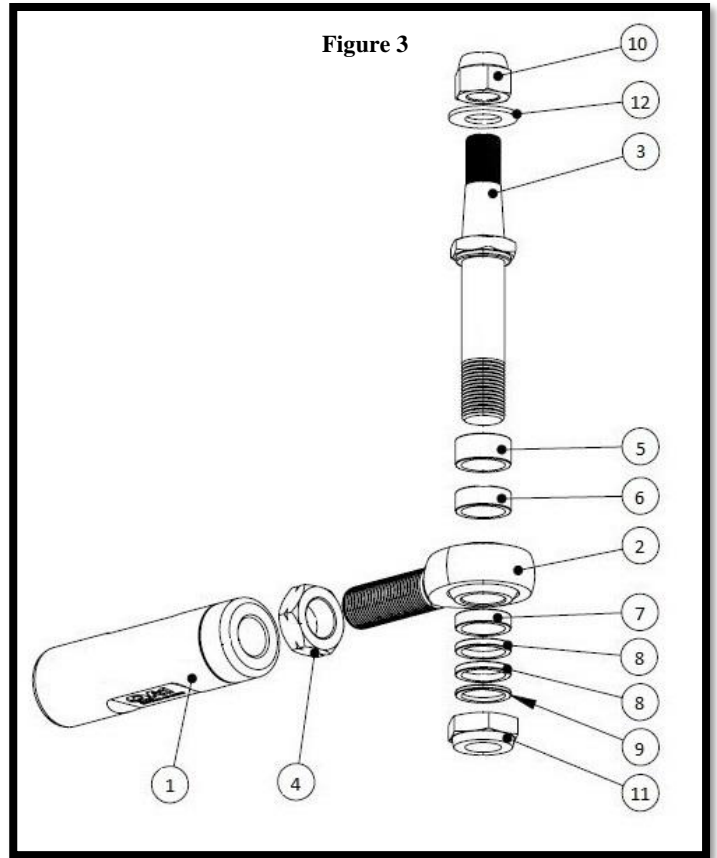


Figure 1



Figure 2

ITEM	PART NUMBER	DESCRIPTION	QTY
1	9033-224	ADJUSTMENT SLEEVE	1
2	XML10	ROD END, 5/8" L.H.	1
3	9029-126	SPINDLE STUD	1
4	JNL10S	5/8"-18 JAM NUT	1
5	9033-208	SPACER .370"	1
6	9033-209	SPACER .280"	1
7	9033-210	SPACER .190"	1
8	9033-211	SPACER .100"	2
9	9033-212	SPACER .060"	1
10	9014-107	NUT, NYLOCK 1/2"-20	1
11	9014-323	NUT, NYLOCK 5/8"-18	1
12	9005-228	1/2" SAE FLAT WASHER	1



6. Install the stud into the spindle and secure with included washer (#12) and nut (#10). Torque to 32 lb.-ft. **(Figure 4)**
7. Install the provided spacers onto the spindle stud above and below the rod end to the tie rod angle that works best for your ride height.
8. Secure the rod end and spacers using 5/8" nylock nut (#11). Torque to 54 lb.-ft.
9. Double check that your installed length matches the original tie rod length that was measured before disassembly. Make any needed small adjustments by twisting the adjustment sleeve (#1). **(Figure 5)**



10. Snug the jam nuts against the adjustment sleeve using a 15/16" wrench to complete the install.

**A PROFESSIONAL ALIGNMENT IS  
RECOMMENDED BEFORE DRIVING THE  
VEHICLE**





READ ALL INSTRUCTIONS CAREFULLY AND THOROUGHLY PRIOR TO STARTING INSTALLATION. PRODUCTS THAT HAVE BEEN INSTALLED ARE NOT ELIGIBLE FOR RETURN. USE THE PROPER JACKING LOCATIONS. DEATH OR SERIOUS INJURY CAN RESULT IF INSTRUCTIONS ARE NOT CORRECTLY FOLLOWED. A GOOD CHASSIS MANUAL, AVAILABLE AT YOUR LOCAL PARTS STORE, MAY ALSO AID IN YOUR INSTALLATION.

• **DISCLAIMER / WARRANTY** •

QA1 WARRANTS THAT THE PRODUCTS WILL BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP FOR ONE YEAR FROM DATE OF SALE TO THE ORIGINAL PURCHASER. QA1 MAKES NO OTHER WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED. QA1 SHALL HAVE NO OBLIGATION UNDER THE FOREGOING WARRANTY WHERE THE DEFECT IS THE RESULT OF IMPROPER OR ABNORMAL USE, YOUR NEGLIGENCE, VEHICLE ACCIDENT, IMPROPER OR INCORRECT INSTALLATION OR MAINTENANCE, NOR WHEN THE PRODUCT HAS BEEN REPAIRED OR ALTERED IN ANY WAY. QA1'S LIABILITY IN THE CASE OF DEFECTIVE PRODUCTS SUBJECT TO THE FOREGOING WARRANTY SHALL BE LIMITED TO THE REPAIR OR REPLACEMENT, AT QA1'S OPTION, OF THE DEFECTIVE PRODUCTS.

THE USER UNDERSTANDS AND RECOGNIZES THAT RACING PARTS, SPECIALIZED STREET ROD EQUIPMENT, AND ALL PARTS AND SERVICES SOLD BY QA1 ARE EXPOSED TO MANY AND VARIED CONDITIONS DUE TO THE MANNER IN WHICH THEY ARE INSTALLED AND USED. QA1 SHALL BEAR NO LIABILITY FOR ANY LOSS, DAMAGE OR INJURY, EITHER TO A PERSON OR TO PROPERTY, RESULTING FROM THE INSTALLATION, DIRECT OR INDIRECT USE OF ANY QA1 PRODUCTS OR INABILITY BY THE BUYER TO DETERMINE PROPER USE OR APPLICATION OF QA1 PRODUCTS. WITH THE EXCEPTION OF THE LIMITED LIABILITY WARRANTY SET FORTH ABOVE, QA1 SHALL NOT BE LIABLE FOR ANY CLAIMS, DEMANDS, INJURIES, DAMAGES, ACTIONS, OR CAUSES OF ACTION WHATSOEVER TO BUYER ARISING OUT OF OR CONNECTED WITH THE USE OF ANY QA1 PRODUCTS. MOTORSPORTS ARE DANGEROUS; AS SUCH, NO WARRANTY OR REPRESENTATION IS MADE AS TO THE PRODUCT'S ABILITY TO PROTECT THE USER FROM INJURY OR DEATH. THE USER ASSUMES THAT RISK!

## Dedicated Technical Support Team

QA1 is dedicated to providing quality support and instructions. We employ passionate racers and car enthusiasts that know our products and the industry to better serve you.

Check out our tech videos at [www.YouTube.com/QA1Tech](http://www.YouTube.com/QA1Tech) for:

- Frequently Asked Questions
- Quick Tips
- Install Information
- Tuning and Repair Guides
- Other technical information

Or call to speak with one of our experts: 1.800.721.7761

\*Our technical support and order lines are open Monday - Friday, 8 am to 5 pm CST.



[Facebook.com/QA1Motorsports](https://www.facebook.com/QA1Motorsports)



[Twitter.com/QA1Motorsports](https://twitter.com/QA1Motorsports)



[Instagram.com/QA1Motorsports](https://www.instagram.com/QA1Motorsports)



[www.QA1.net/Tech](http://www.QA1.net/Tech)