READ ALL INSTRUCTIONS COMPLETELY AND THOROUGHLY UNDERSTAND THEM BEFORE DOING ANYTHING.
CALL TOTAL CONTROL PRODUCTS TECH SUPPORT (916) 388-0288 IF YOU NEED ASSISTANCE.

INSTALLATION GUIDE

TCP TIER-15

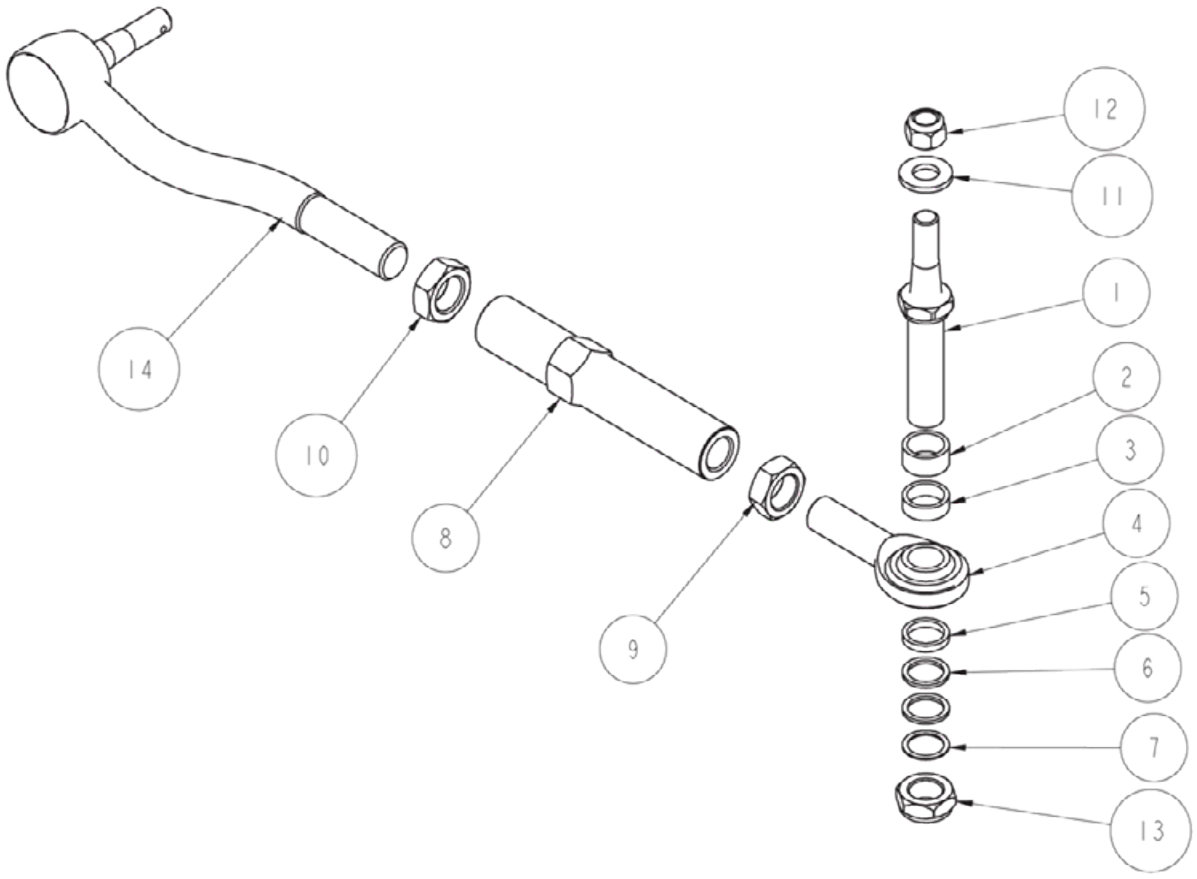
Bump Steer Conversion Kit - Mid Year Mustang to Late Spindle

Description: Billet Adjusting Sleeve, Inner Tie-Rod, Tapered Stud, and Rod End; creates height-adjustable outer pivot point.

Applications: Comet '67-69, Cougar '67-69 (excludes Eliminator), Cyclone '67-69, Fairlane '67-69, Falcon '67-70, Mustang '67-69 (excludes Boss), Ranchero '67-69, Montego '68-69, Torino '68-69
Note: For use with TCP spindle or '70-73 disc- or drum-brake, Mustang spindle.

Total Control Products
A Chris Alston's Chassisworks, Inc. Brand
8661 Younger Creek Drive
Sacramento, CA 95828
Phone: 916-388-0288
Technical Support: tcptech@cachassisworks.com

ITEM	QTY	PART NO.	DESCRIPTION
1	2	7900-227-C	TIE ROD STUD C, Ø .512 MINOR, 1/2-20 THREAD,
2	2	7900-226-.375	SPACER, Ø.813 OD x Ø.646 ID x .375 LONG
3	2	7900-226-.250	SPACER, Ø.813 OD x Ø.646 ID x .250 LONG
4	2	3136-063X063-RT	ROD END 5/8 RIGHT x 5/8 BORE CMX10T-FI
5	2	7900-226-.125	SPACER, Ø.813 OD x Ø.646 ID x .125 LONG
6	4	7900-226-.063	SPACER, Ø.815 OD x Ø.630 ID x .063
7	2	7900-226-.031	SPACER, Ø.815 OD x Ø.630 ID x .031
8	2	7900-225	TIE ROD SLEEVE 5.50 x 5/8-18 RIGHT & 11/16-18 LEFT
9	2	3102-063-18RC	5/8-18 HEX JAM NUT RIGHT HAND, PLATED
10	2	3102-069-18LY	JAM NUT, 11/16-18 LEFT, YELLOW ZINC
11	2	3120-050S-Y	FLAT WASHER, 1/2 SAE, HARDENED
12	2	3131-050-20Y	LOCKNUT 1/2-20, GRADE 8, NYLON INSERT, YELLOW ZINC
13	2	3117-063-18C	LOCKNUT 5/8-18, GRADE 5, HALF HEIGHT, NYLON INSERT, CLEAR ZINC
14	2	7900-206	TIE ROD, INNER, 11/16-18 LEFT, FORD, 10.46 OAL, 7/16-20 STUD



DESCRIPTION

BUMP STEER TIE ROD SET, FORD 67-69 TO 70-73

Chris Alston's CHASSISWORKS INC.
8661 YOUNGER CREEK DRIVE
SACRAMENTO, CA 95828
(916) 388-0288 FAX 388-0295

PART NO.
TCP TIER-15

7/13/06 | DWG: 7903-TIER-15

PARTS LIST

Qty	Part Number	Description
2	7900-206	Tie Rod Inner 11/16-18 LH , 10.46 OAL, 7/16-20 Stud

7918-049 - Hardware Bag TCP TIER-15 (1 of 2)

Qty	Part Number	Description
2	3117-063-18C	Half Locknut, 5/8-18 Nylon Insert
2	3120-050S-Y	Washer, 1/2 Hardened Flat SAE
2	3131-050-20Y	Locknut, 1/2-20 Nylon Insert
2	7900-226-.031	Spacer, .031 Thick x .815 OD x .630 ID
4	7900-226-.063	Spacer, .063 Thick x .815 OD x .630 ID
2	7900-226-.125	Spacer, .125 Thick x .815 OD x .630 ID
2	7900-226-.250	Spacer, .250 Thick x .815 OD x .630 ID
2	7900-226-.375	Spacer, .375 Thick x .815 OD x .630 ID
2	7900-227-C	Tie Rod Stud C .512 Minor

7918-050 - Hardware Bag TCP TIER-15 (2 of 2)

Qty	Part Number	Description
4	3102-063-18RC	Jam Nut, 5/8-18 Right, Clear Zinc
2	3102-069-18LY	Jam Nut, 11/16-18 Left, Yellow Zinc
2	3136-063X063-RT	Rod End 5/8-18 x 5/8 Bore
2	7900-225	Billet Tie Rod Sleeve 5-1/2”

What is Bump Steer?

Bump Steer is the change in “toe”, or left to right angle, as the suspension moves through its range of motion. Bump steer is most evident on rough road surfaces, during hard cornering or under heavy braking. With proper installation and settings, the TCP bump steer kit can minimize and in some cases virtually eliminate the bump steer affect, making handling more consistent and predictable. Toe is the measured difference in track width of the leading edge and trailing edge of a set of tires.
Toe-Out = Front wider than rear / Toe-In = Rear wider than front / Zero-Toe = Front equal to rear

Installation/Setup

NOTE: A 1965 Mustang was used for the following images and may show slight differences from the later Mustang and Cougar platforms. The installation procedure is identical.

Installation of this kit requires the suspension to be moved through its range of travel and the toe measured at the extremes of the range and at ride height. This can be accomplished at home using a bump steer gauge but we recommend taking your vehicle to a qualified alignment shop for installation and setup. Continue with instructions if you plan on performing the installation and setup yourself.

1. Measure from the top of the fender well to the center of the wheel on each side of the vehicle to establish a ride-height dimension from which to work. Record results.
2. Raise the front end of car and secure with jack stands. Wheels must not be in contact with ground.
3. Remove wheels, making note of which side of vehicle they were removed from.
4. Measure the length of each tie-rod assembly (pivot-to-pivot) for adjustment starting point. Record results.
5. Unbolt stabilizer bar from lower control arms.
6. Remove coil springs from vehicle.

Stock-style suspension requires removal of shock absorber and use of spring compressor.

Coil-Over suspension requires removal of shock. Spring must be removed from shock.

7. Reinstall shocks to limit suspension travel during the bump-steer measurement process.
8. Remove the cotter pins and castle nuts from the outer and inner tie rods, then separate them from the steering arm and drag/center link. A balljoint fork or similar tool may be required to separate the joints.
9. Apply anti-sieze or similar thread lubricant to internal threads at each end of the adjusting sleeve (7900-225)
10. Thread a right hand jam nut (3102-063-18RC, clear zinc) onto each rod end until 1” of threads are past the nut.

11. Screw the rod ends (3136-063X063-R) into the billet adjusting sleeves until the jam nut contacts the sleeve. The hex on the billet sleeve is closest to the left-hand threads.

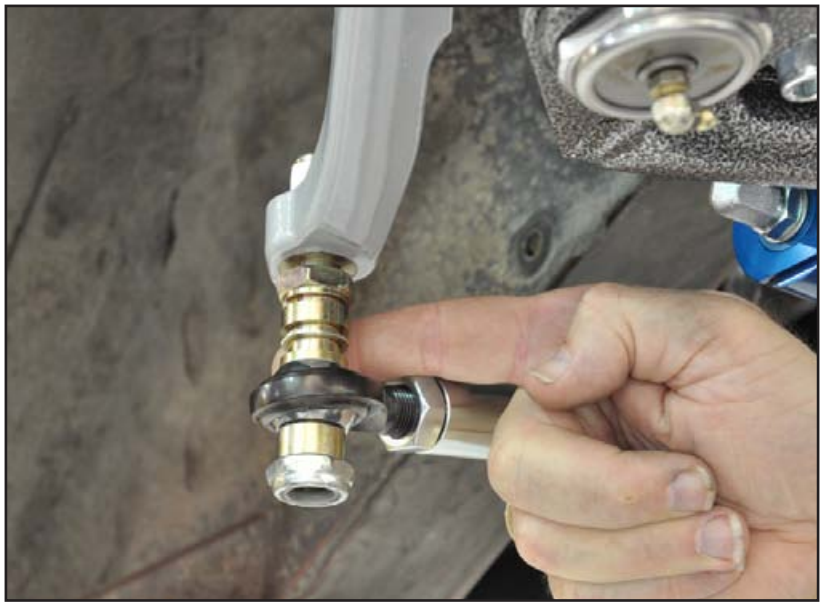
12. Thread the left hand jam nut (3102-069-18LY) (yellow zinc) onto the inner tie rod to end of the threads.
13. Screw the inner tie rod into the left-hand end (hex end) of the adjusting sleeve until its length (pivot-to-pivot) matches the factory assembly. Use measurements taken earlier.
14. Tighten the adjuster-sleeve jam nuts.
15. Verify tapered stud fits correctly before proceeding. Stud taper should match existing outer tie rod.

16. Install tapered stud (7900-227-C) (7/8” hex) into steering arm and secure with 1/2” washer (3120-050S-Y) and 1/2-20 locknut (3131-050-20Y) (3/4” hex).
17. Torque to 50 lb. ft.

18. To begin setting up the shim stack, place the largest adjustment shim (3/8”) onto the stud.

    The correct shim stack will be specific to your vehicle and may even be different on the driver-side and passenger-side suspensions.

19. Place rod end onto the stud, below the 3/8” shim followed by the remaining shims.

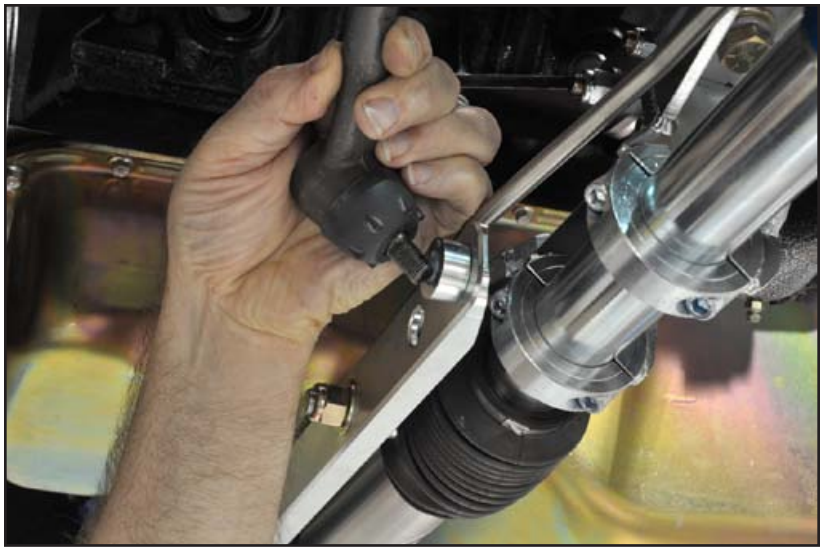


20. Thread the 5/8-18 jam nut onto the stud to temporarily secure shim stack and rod end during the measurement procedure. The jam nut should be snug to prevent any free play of the shims during bump steer setup. The jam nut will be replaced by a locknut after final adjustment. If the vehicle will be moved before final adjustment install locknuts in place of the jam nuts for safety purposes.

The following photos are specific to installation with the TCP Rack and Pinion. Installation of the inner tie rod with a factory drag link does not require the tapered adapter shown.

21. Insert the tapered adapter into the end hole of the rack’s center link

22. Insert the inner tie rod into the adapter.



23. Place a 7/16” hardened flat washer over the tie rod stud, followed by a 7/16” locknut.

24. Tighten the locknut with a 5/8” wrench. You will have to push the tie rod into the tapered adapter while tightening the locknut.

25. Grease the tie rod end with a common grease gun until the boot starts to bulge.

Springs must be removed from suspension system before proceeding.

26. Toe measurement and shim adjustment can now be done to make any bump steer corrections. A dual dial indicator bump steer gauge is highly recommended for this procedure. Gauges can be purchased through many high performance racing parts distributors.

Bump Steer Gauge

Adjustment Notes:
- At least one 1/16” shim must remain below rod end to prevent binding.
- A minimum of 3/4” thread engagement is required at the rod end and inner tie rod.
- The inner tie rod will typically have more thread engagement than the rod end.
- To maintain minimum thread engagement at rod end, unscrew inner tie rod can be unscrewed from adjusting sleeve up to the point of minimum thread engagement.

General Adjustment Rules:
- If compression travel toes-out and extension travel toes-in, then the outer tie rod is too high.
- If compression travel toes-in and extension travel toes-out, then the outer tie rod is too low.
- If compression travel toes-out and extension travel toes-out, then the tie rod assembly is too short.
- If compression travel toes-in and extension travel toes-in, then the tie rod assembly is too long.

27. Once final adjustments have been made verify that minimum thread engagement has been maintained.
28. Tighten all jam nuts and install 5/8-18 locknuts onto stud. Torque to 60 lb. ft.
29. Reinstall springs, stabilizer bar and wheels.
30. Verify all mounting hardware is correctly torqued.

ALIGNMENT

The vehicle must be professionally inspected and aligned prior to regular use.
If a trailer is not available, your alignment will need to be somewhat close to final specs in order to safely drive your vehicle to the alignment shop. Visually determine if the front wheels look straight. They should not appear to “toe” (left to right) -in or -out. The outside of the wheels should be very close to vertical. A few degrees of negative camber (leaning in) is acceptable.

	Street Performance		Road Course		Drag Strip	
	Manual	**Power**	**Manual**	**Power**	**Manual**	**Power**
Caster	2-1/2° to 3° pos.	3-1/2° to 4° pos.	2-1/2° to 3° pos	3-1/2° to 4° pos	4° to 6° pos	4° to 6° pos
Camber	0° to 1/2° neg	0° to 1/2° neg	1-1/2° to 2° neg	1-1/2° to 2° neg	0°	0°
Toe (total)	1/16” to 1/8” in	1/16” to 1/8” in	1/16” out to 1/16” in	1/16” out to 1/16” in	1/16” to 1/8” in	1/16” to 1/8” in

Our recommended alignment specs serve as a starting point for your particular application. Installed components, driver preference, and specific application will have a great affect on the correct settings for your vehicle.