

INSTALLATION GUIDE



Rear Pushrod Suspension System

P/N: TCP RPSS-FD



INCLUDES: rear clip frame, frame mounting brackets, lower trailing arms, watts link assembly, coil-over shocks, springs, rockers, rear end housing, subframe connector assembly optionally available

APPLICATIONS: Cougar 1967-1970, Mustang 1964-1970

NOTES: Installation requires use of torque arm (TCP TA2F9-XX) and subframe connector support crossmember (TCP SUBCS-02, TCP SUBCS-03, or custom fabricated crossmember).

PARTS LISTS

Prior to beginning installation use the following parts lists to verify that you have received all components required for installation. Components and hardware are separated into task specific groups to simplify part selection during installation.

REAR CLIP BRACKET SET 01 - #7910-026

6-3/8" Brackets, 1964-1970 Mustang ONLY

Item	Part Number	Description	Qty
1	7910-017	Frame Upright Mounting Plate	2
2	7910-021	Upper Frame Mount Weldment	2
3	7910-025	Front Mounting Bracket 6-3/8"	2
-	7918-038	Hardware Bag for 7910-026	1
4	3100-050C2.75Y	Bolt 1/2-13 x 2-3/4" Hex Head Cap Screw	4
5	3100-050C7.00Y	Bolt 1/2-13 x 7" Hex Head Cap Screw	2
6	3100-050F1.25Y	Bolt 1/2-20 x 1-1/4" Hex Head Cap Screw	4
7	3101-050-13C	Locknut 1/2-13 Nylon Insert	6
8	3108-050L-C	Lock Washer 1/2" Regular	4
9	3120-050S-Y	Washer 1/2" Hardened Flat SAE	16
10	D14.156-001.825	Tube 7/8 x .156 DOM x 1.825	2

REAR CLIP BRACKET SET 02 - #7910-027

9-3/8" Brackets, 1967-1970 Cougar ONLY

Item	Part Number	Description	Qty
1	7910-017	Frame Upright Mounting Plate	2
2	7910-021	Upper Frame Mount Weldment	2
3	7910-028	Front Mounting Bracket 9-3/8"	2
-	7918-038	Hardware Bag for 7910-027	1
4	3100-050C2.75Y	Bolt 1/2-13 x 2-3/4" Hex Head Cap Screw	4
5	3100-050C7.00Y	Bolt 1/2-13 x 7" Hex Head Cap Screw	2
6	3100-050F1.25Y	Bolt 1/2-20 x 1-1/4" Hex Head Cap Screw	4
7	3101-050-13C	Locknut 1/2-13 Nylon Insert	6
8	3108-050L-C	Lock Washer 1/2" Regular	4
9	3120-050S-Y	Washer 1/2" Hardened Flat SAE	16
10	D14.156-001.825	Tube 7/8 x .156 DOM x 1.825	2

PUSHROD 3-1/2" ROCKER SET & HARDWARE - #7911-005

Item	Part Number	Description	Qty
1	7911-003	Rocker Assembly 3.5" Radius Progressive	2
-	7918-040.12	Hardware Bag for 7911-005 (1 of 2)	1
2	1000	Misalignment Bushing 1/2" Bore x .250 Long	2
3	3100-050C3.00Y	Bolt 1/2-13 x 3" Hex Head Cap Screw	8
4	3101-050-13C	Locknut 1/2-13 Nylon Insert	8
5	3108-050L-C	Lock Washer 1/2" Regular	2
6	3117	Bolt 1/2-20 x 3-1/2" Hex Head Cap Screw	2
7	3120-050S-Y	Washer 1/2" Hardened Flat SAE	18
8	3206	Jam Nut 1/2-20 Right Grade 6 Clear Zinc	2
9	7911-004	Pushrod Mount Spacer 1" x 1.375"	2
10	899-044.51-1.36	Steel Washer .510 ID x 1.360 OD	4
-	7918-040.22	Hardware Bag for 7911-005 (2 of 2)	1
11	3126-050X050-RT	Rod End Male 4130 Right 1/2-20 x 1/2" Bore	2
12	3133-050X050-RT	Rod End Female 4130 Right 1/2-20 x 1/2" Bore	2
13	7911-002	Rocker Washer 1.85" OD x .435" Thick	4

WATTS LINK 32-3/4" AND HARDWARE - #7912-004

Item	Part Number	Description	Qty
1	7912-003	Pivot Assembly 4.25" Length	1
2	7914-008	Watts Link 13-1/4" x 1" Tube x 5/8-18 Right & Left Threads	2
-	7918-041.12	Hardware Bag for 7912-004 (1 of 2)	1
3	3100-063F1.75Y	Bolt 5/8-18 x 1-3/4" Hex Head Cap Screw	2
4	3100-075F1.50Y	Bolt 3/4-16 x 1-1/2" Hex Head Cap Screw	1
5	3102	Bolt 1/2-20 x 2" Hex Head Cap Screw	2
6	3108-063L-C	Lock Washer 5/8" Regular	2
7	3108-075L-C	Lock Washer 3/4" Regular	1
8	3109-050-S-2-Y	Aircraft Washer, 1/2" Small OD	4
9	3120-063S-Y	Washer 5/8" Hardened Flat SAE	2
10	3120-075S-Y	Washer 3/4" Hardened Flat SAE	1
11	3200	Locknut 1/2-20 Nylon Insert	2
12	7912-002	Watts Pivot Washer	1
-	7918-041.22	Hardware Bag for 7912-004 (2 of 2)	1
13	3102-063-18LY	Jam Nut 5/8-18 Left Grade 5 Yellow Zinc	2
14	3102-063-18RC	Jam Nut 5/8-18 Right Grade 5 Clear Zinc	2
15	3112-063X050-L	Rod End Male Left 5/8-18 x 1/2" Bore	2
16	3112-063X063-R	Rod End Male Right 5/8-18 x 5/8" Bore	2

TRAILING ARM SET 01 - #7914-003

22" Center-to-Center Length, 1964-1970 Mustang ONLY

Item	Part Number	Description	Qty
1	7914-005	Trailing Arm 18-3/8" x 1-1/4" Link Tube	2
-	7918-042	Hardware Bag for 7914-003	1
2	3102	Bolt 1/2-20 x 2" Hex Head Cap Screw	2
3	3135-1628-72	Reducer Spacer 1/2" Bore x 1.118" Long for 3/4" Bore	4
4	3200	Locknut 1/2-20 Nylon Insert	2
5	3202	Jam Nut 3/4-16 Right Grade 5 Clear Zinc	2
6	3203	Jam Nut 3/4-16 Left Grade 5 Yellow Zinc	2
7	3329	Rod End 4130 Male Left 3/4-16 x 3/4" Bore	2
8	3340	Rod End Male Right 3/4-16 x 1/2" Bore	2

TRAILING ARM SET 02 - #7914-004

25" Center-to-Center Length, 1967-1970 Cougar ONLY

Item	Part Number	Description	Qty
1	7914-007	Trailing Arm 21-3/8" x 1-1/4" Link Tube	2
-	7918-029	Hardware Bag for 7914-004	1
2	3102	Bolt 1/2-20 x 2" Hex Head Cap Screw	2
3	3135-1628-72	Reducer Spacer 1/2" Bore x 1.118" Long for 3/4" Bore	4
4	3200	Locknut 1/2-20 Nylon Insert	2
5	3202	Jam Nut 3/4-16 Right Grade 5 Clear Zinc	2
6	3203	Jam Nut 3/4-16 Left Grade 5 Yellow Zinc	2
7	3329	Rod End 4130 Male Left 3/4-16 x 3/4" Bore	2
8	3340	Rod End Male Right 3/4-16 x 1/2" Bore	2

INSTRUCTIONS

Prior to Installation

The TCP Rear Coil-Over kit replaces the majority of components in your existing rear suspension. It is necessary to remove all of the existing components to prepare for installation.

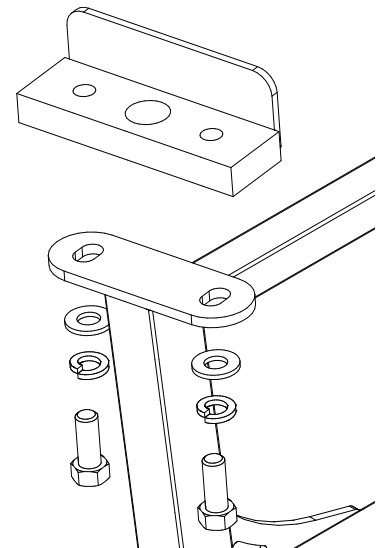
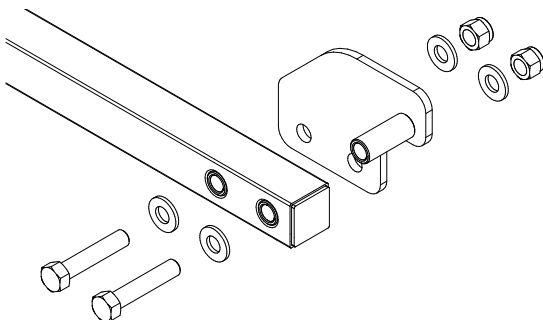
1. Remove driveshaft
2. Remove all rear suspension components
3. Remove any portions of the exhaust system that may interfere with installation.
 - a. Mufflers in the stock location can remain in place. If possible unbolt or cut any exhaust tubing that is routed over the rear end housing.
4. Brake and fuel lines can remain on the vehicle but will need to be secured along the body to prevent damage during installation.

Chassis Inspection

With the leaf springs out of the way, this is a good time to inspect the sheet metal for signs of fatigue. Clean the area to remove any grease or dirt so the metal and welds are clearly visible. Look for cracks along the welds or tearing of the mounts in any way. If there is any damage present, repairs will have to be made before proceeding.

Positioning the Frame Clip

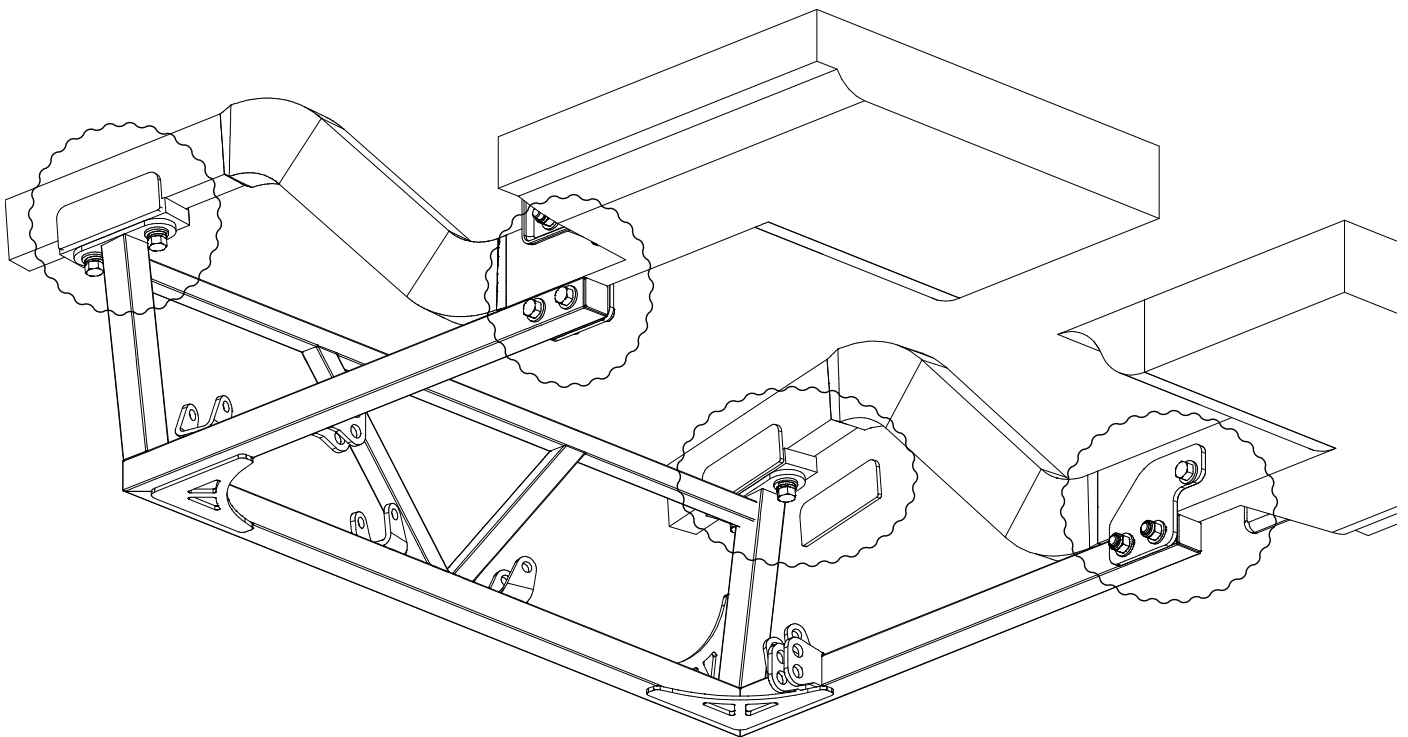
1. Bolt upper frame bracket weldments onto frame.
 - a. Use 1/2-20 x 1-1/4 hex head cap screw with flat washer and lock washer. (Hardware Bag 7910-026)
 - b. Leave hardware loose to allow bracket to shift for final alignment.
2. Bolt forward frame brackets onto frame.
 - a. Use 1/2-13 x 2-3/4 hex head cap screw with flat washers and lock nut. (Hardware Bag 7910-026)
 - b. Do not torque at this time.
 - c. **1967-1970 Vehicles:** Bolt sleeve (P/N D14.156-001.825) must be tack welded to the back side of mounting bracket (7910-025). Use a 1/2" diameter bolt to line up the spacer as it is tacked into place. The spacer may need to be ground to fit depending upon condition of the frame rail.



3. Position frame clip assembly against the factory frame rails as shown in illustration.
 - a. Use 1/2-13 x 7" hex head cap screws at factory front leaf spring mount to position frame clip assembly.
 - b. Support the frame so that pressure is applied to hold frame clip tight against vehicle.
 - c. Once in position measure diagonally to the chassis to be sure the frame is square.
 - d. Snug up forward bolts to prevent the brackets and frame from shifting.
4. Clamp frame upright mounting plate (7910-017) onto outside of frame rail to complete upper frame bracket assembly.
 - a. Plate can be tack welded to mount bracket weldment at this time.

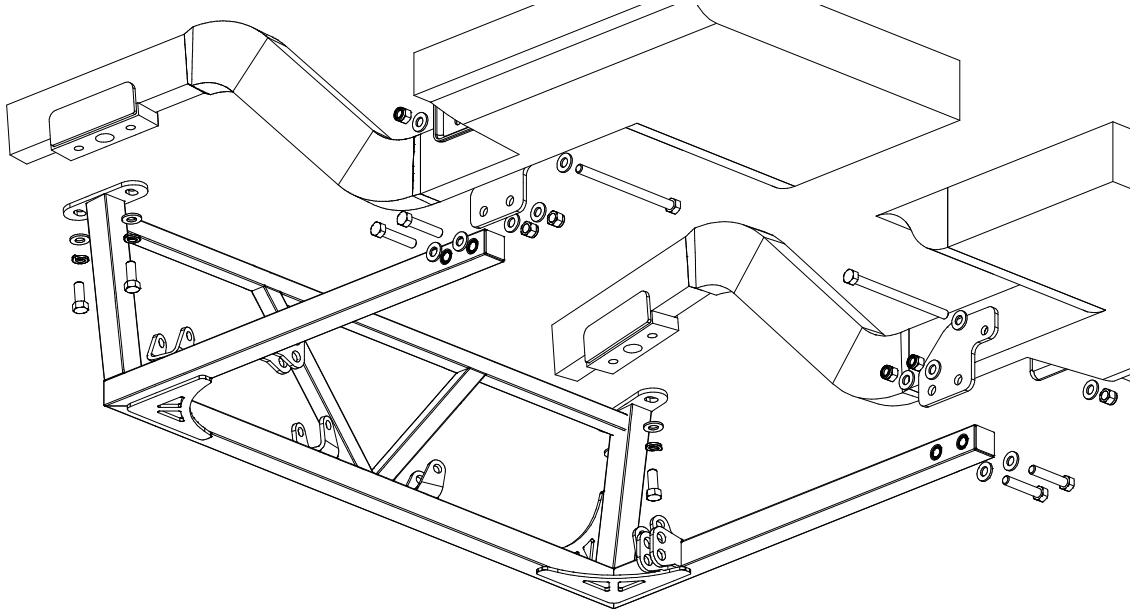
Frame Clip Welding

1. Scribe an outline of each bracket onto the frame rail to identify the weld area.
2. Remove the frame with brackets attached.
3. Clean the weld areas of the frame rail using a wire wheel attachment.
4. Position frame clip assembly against the factory frame rails as shown in illustration.
 - a. Use front mounting bolts to position frame clip assembly.
 - b. Support the frame so that pressure is applied to hold frame clip tight against vehicle.
Do not use excessive pressure that could possibly flex the frame. The frame must be in a relaxed position before proceeding.
 - c. Once in position measure diagonally to the chassis to be sure the frame is square.
 - d. Snug up forward bolts to prevent the brackets and frame from shifting.
5. Tack weld each of the brackets to the vehicle.
6. Unbolt the frame from the brackets.
7. Weld completely around each of the brackets.
8. Allow the welds to cool, then paint to protect the metal from rust.



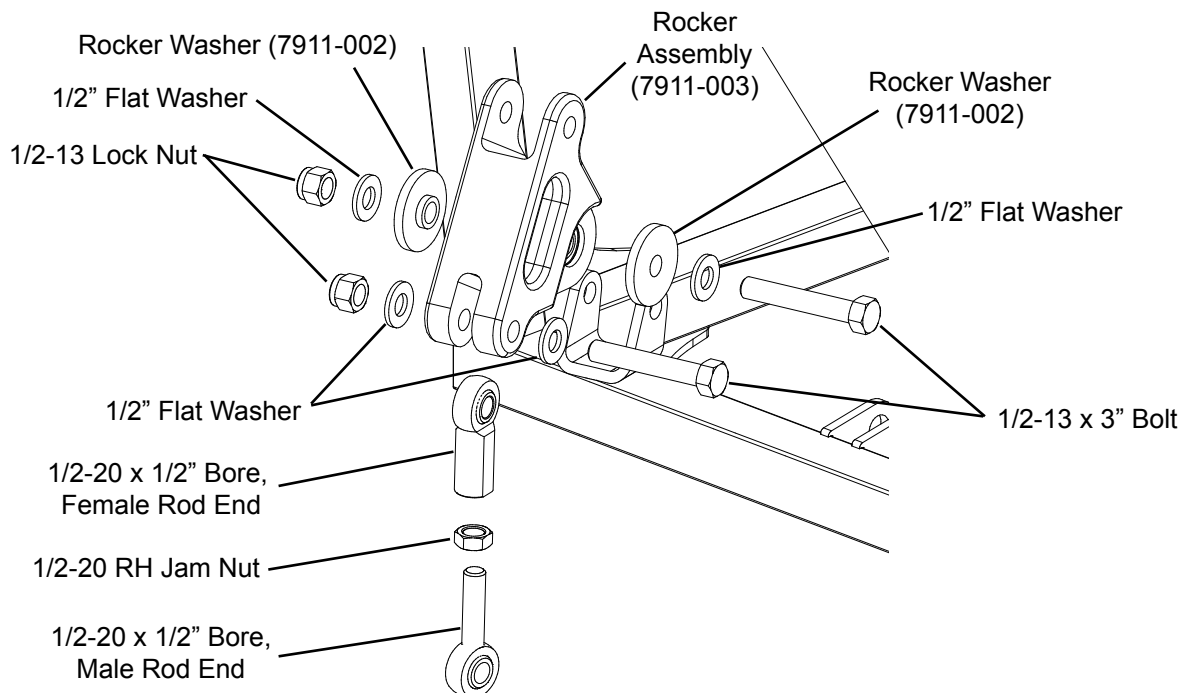
Frame Clip Installation

1. The frame can now be bolted into position for final assembly.
 - a. Do not install 7" bolts at front bracket at this time.
 - b. Torque remaining fasteners to 65 lb. ft.



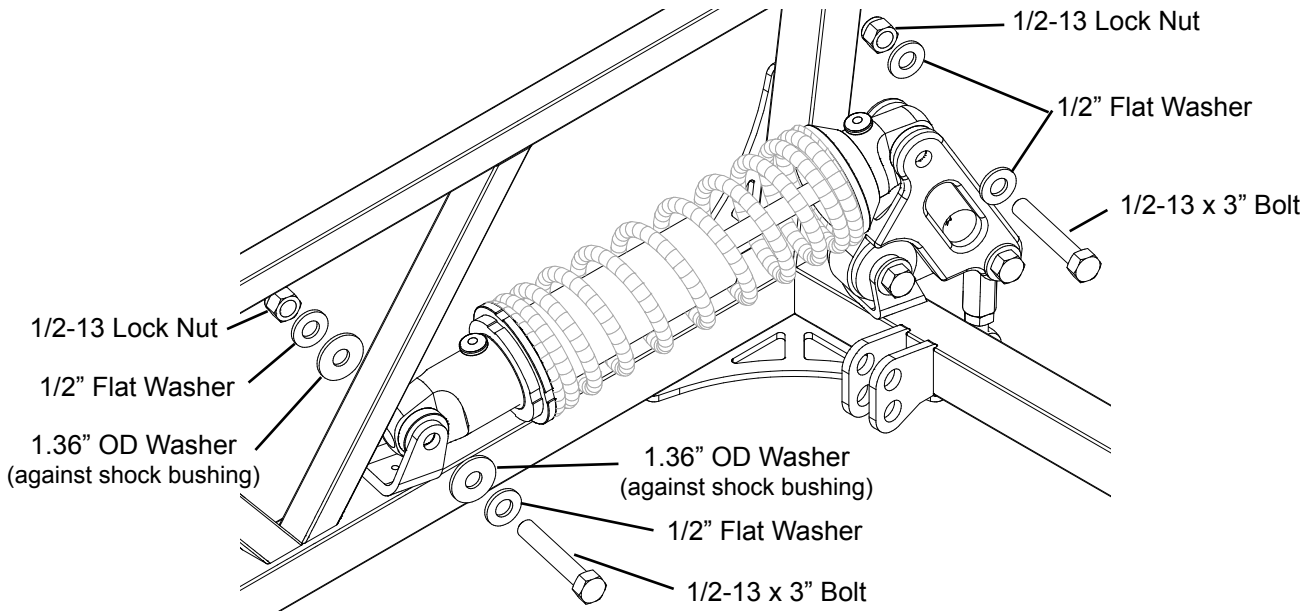
Rocker Installation

1. Assemble pushrod and adjust to a length of 3-3/8", center-to-center.
 - a. Jam nuts can be left loose at this time.
2. Install rocker and hardware as shown in illustration.
 - a. Use hardware bag 7911-005.
 - b. Washers (7911-002) are placed directly against rocker bearings.
 - c. Tighten all fasteners to 50 lb. ft.



Coil-Over Shock Installation

1. Install coil-over shock and hardware as shown in illustration.
 - a. Use hardware bag 7911-005.
 - b. Main body of shock is mounted at frame. Shock piston is mounted at rocker.
 - c. Tighten all fasteners to 50 lb. ft.

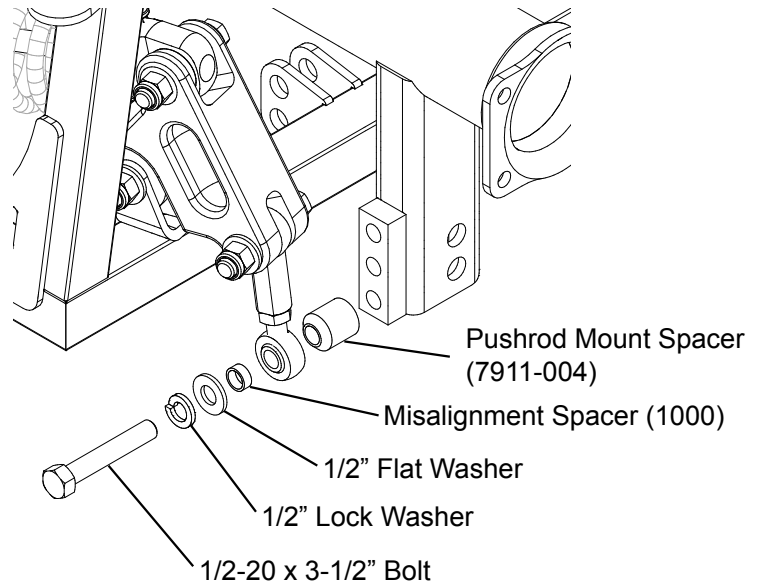


Torque Arm Installation

Torque arm can be bolted to the housing at this time if third member is already installed. Refer to Installation Guide TCP TA2F9-33 for torque arm installation.

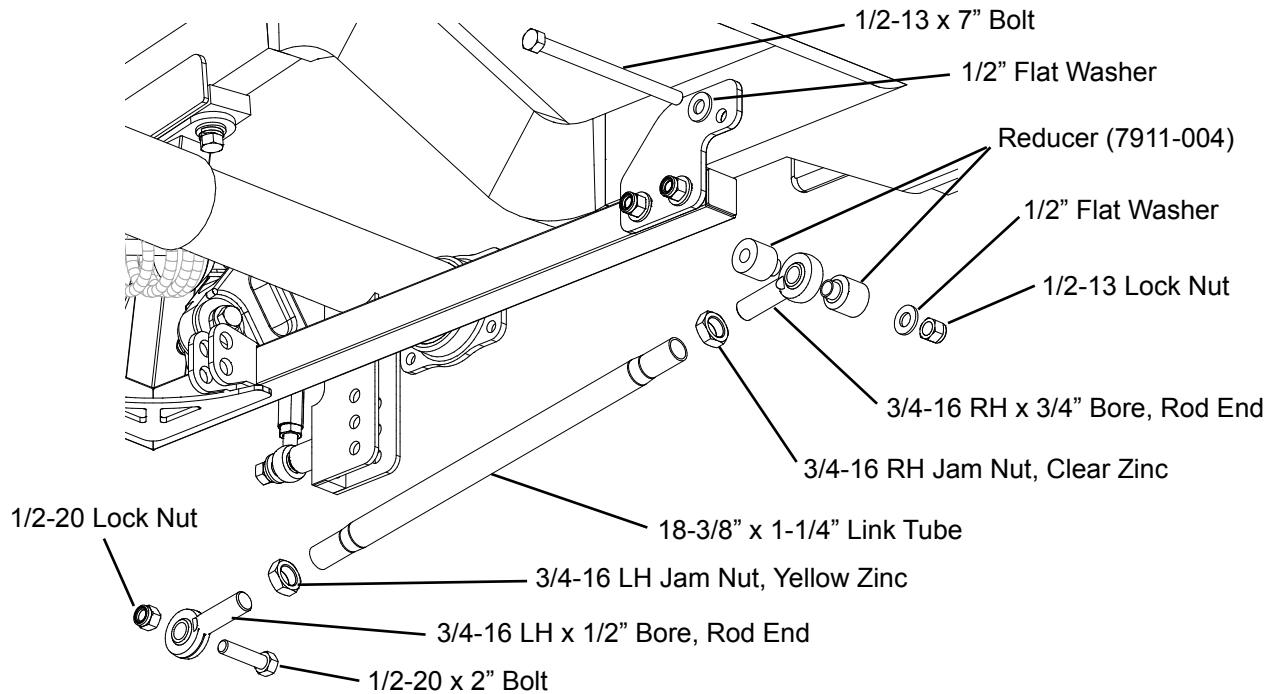
Rear End Housing Installation

1. Raise rear end housing into position by inserting one end from underneath and shifting over enough to insert the opposite end.
2. Place blocks or rags between frame clip and axle tubes.
3. Secure the pushrod to the axle housing mount using hardware shown in illustration.
 - a. Tapered end of spacer (7911-004) must be closest to rod end.
 - b. The center mounting position is the recommended starting position.
 - c. The bottom mounting position lowers ride height by one inch. Top position raises ride height by one inch.
 - d. Tighten all fasteners to 55 lb. ft.

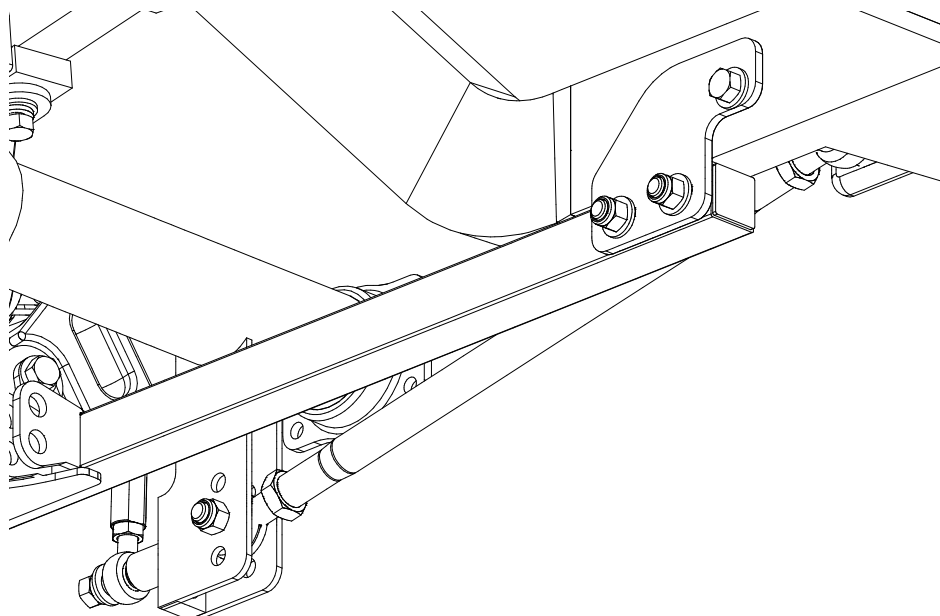


Trailing Arm Installation

1. Assemble the trailing arms as shown in illustration.
 - a. Adjust to length of 22" (Mustang) or 25" (Cougar) for initial installation, center-to-center.
 - b. Final adjustment will be made later.
2. Install 3/4" bore rod end into factory leaf spring mounting location using reducer spacer (rod end adapter) as shown in illustration.
 - a. Use hardware bag 7914-003 and remaining hardware from bag 7910-026.
 - b. Torque to 65 lb. ft.

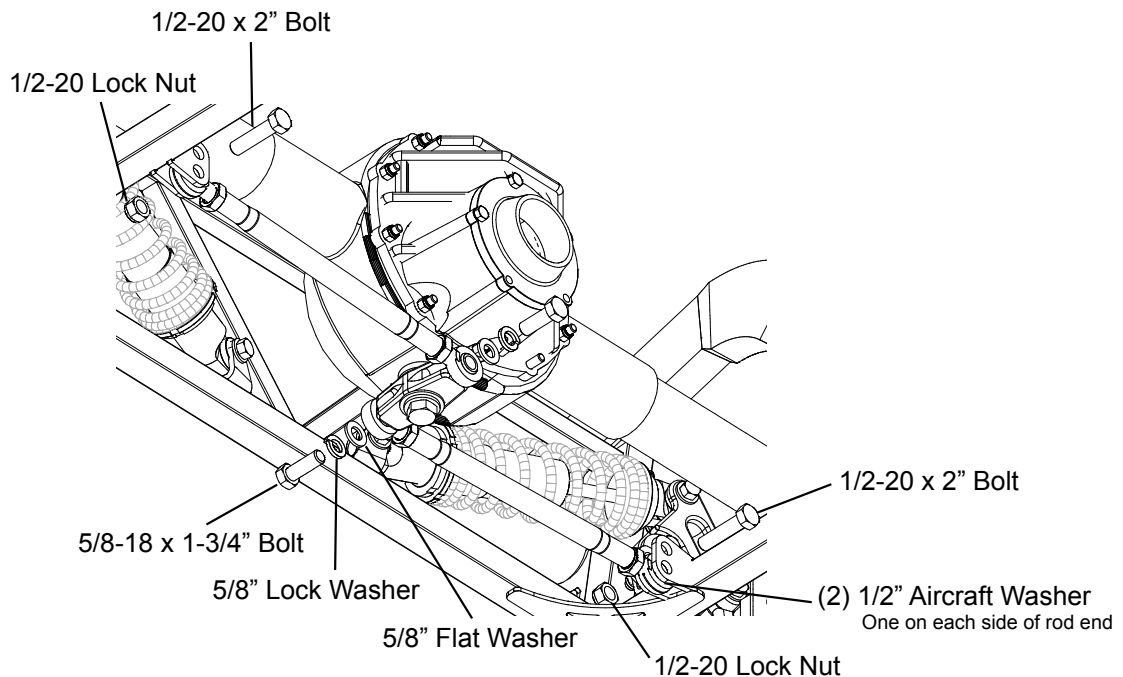
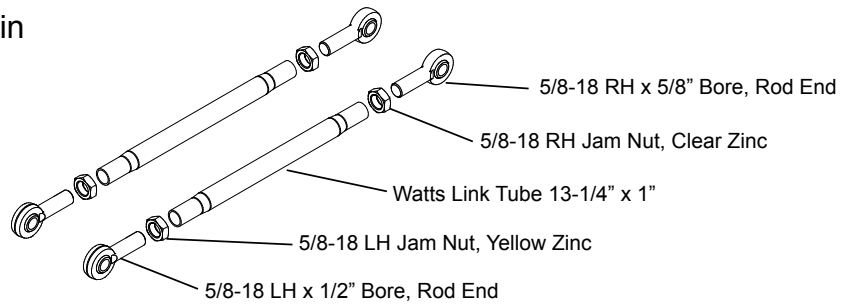
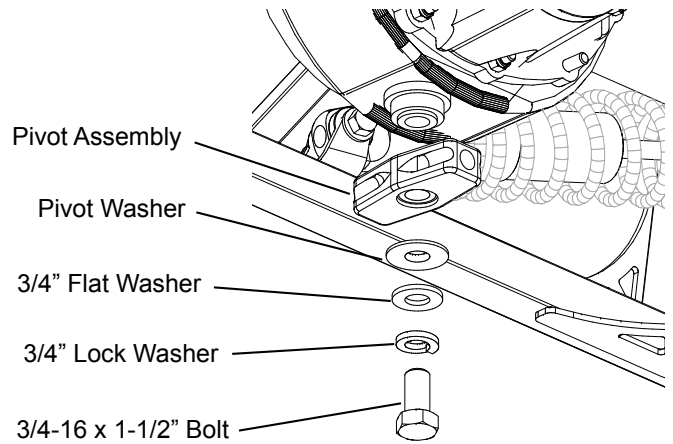


3. Install 1/2" bore rod end into rear housing mount.
 - a. Use hardware bag 7914-003.
 - b. Torque to 65 lb. ft.



Watts Link Installation

1. Install pivot body, pivot washer and hardware as shown in illustration.
 - a. Flat side of pivot washer (7912-002) faces downward.
 - b. Apply Loctite® or similar thread locker to threads of 3/4" bolt.
 - c. Tighten fastener to 75 lb. ft.
2. Assemble the lateral links as shown in illustration.
 - a. Adjust to a length of 16-3/8", center-to-center, for initial installation.
 - b. Final adjustment will be made when vehicle is resting at ride height.
3. Install the lateral links as shown in illustration.
 - a. Apply Loctite® or similar thread locker to threads of 5/8" bolts at pivot body.
 - b. Tighten fasteners at frame to 65 lb. ft.
 - c. Tighten fasteners at pivot to 60 lb. ft.



Torque Arm Installation

Third member must be installed prior to torque arm installation. Refer to Installation Guide TCP TA2F9-33 for torque arm installation.

Mounting Options and Final Adjustments

Ride Height and Corner Weighting

Pushrod Mount Position: There are three positions available. Ride height can be changed in 7/8" increments. Top hole provides highest ride height. Bottom hole provides lowest ride height. Mounting position must be the same for each side of vehicle.

Pushrod Length: Adjustable within a 7/16" range of 3-3/8" to 4-13/16", measured from center to center of rod end bearing. Increasing the length of the pushrod increase ride height but without affecting available shock travel. This is useful for initially corner weighting the vehicle with the use of scales.

Spring Preload: Adjust the lower spring collar to a center to center shock length of 13.7" (eye to eye). This is center of travel for the shock absorber and provides equal amounts of compression and rebound travel. Increasing spring preload increases ride height and available suspension travel for compression while decreasing available travel for droop. Conversely, reducing spring preload will lower ride height but sacrifices compression travel. We recommend staying within a shock length range of 13.2" to 14.2". Thread lubricant must be applied prior to adjusting. A VariShock spanner wrench (P/N 899-012-201) and spring seat thrust bearing (P/N 899-020-217) are recommended to simplify adjustment.

Rear Housing Alignment

Watts Link Tubes: Prior to making any adjustments verify the link tubes are close to level with the suspension at ride height. The mounting position can be changed at the rear frame clip if necessary. Upon initial installation the rear end will be centered in relation to the rear clip and the watts link pivot square (90 degrees) to the link tubes with the suspension in ride height position. The rear end housing can be adjusted left to right by lengthing a tube and shortening the opposite tube to keep the pivot square.

Trailing Arm Tubes: Due to chassis variances it may be necessary to further adjust the trailing arm lengths to position the rear end housing square to the chassis.

Trailing Arm Axle Mount

Three mounting positions are available. Each position changes balance of available traction and roll steer. The roll steer characteristic of the rear suspension assists in turning the vehicle and can be increased to minimize understeer or front end push.

Top: Most level trailing arm angle to minimize any steering caused by body roll (roll steer) but provides the least amount of forward bite.

Center: Increases roll steer slightly but provides improved traction.

Bottom: Further increases roll steer but provides maximum traction.

Pinion Angle - Refer to installation guide 7903-TA2F9-33.

Shock Damping - Refer to installation guide 899-031-220.

Check for Clearance/Binding

Once ride height, housing alignment, and pinion angle are set you must verify that there is no binding at any of the suspension link ends. Springs will need to be removed from shocks, and shocks reinstalled prior to testing. Record lower spring collar position by counting threads and/or marking shock body and collar with grease pen so adjusted preload can be easily restored.

Ride Height (both shocks at 13-3/4" eye-to-eye):

All rod ends should be centered within their mounting clevis or in relation to their nearest contact surface (ie. Watts Pivot). You will need to loosen only one jam nut to reclock both rod ends of a suspension link. Verify that Watts link tubes are mounted as close to level with ground. The end mounted at the frame clip may have to be repositioned. Verify that Watts link pivot sits square to link tube.

Full Droop (both shocks "topped-out"):

Check rod ends at pushrod assembly and Watts pivot to ensure they are within their misalignment range and that rod end bodies are not making contact with the mounting clevis or pivot surface. Reclock rod ends as necessary.

Full Compression (both shocks "bottomed-out"):

Check rod ends at pushrod assembly and Watts pivot to ensure they are within their misalignment range and that rod end bodies are not making contact with the mounting clevis or pivot surface. Reclock rod ends as necessary. Check for a minimum of 1/4" clearance between the torque arm mounting tabs and underbody of vehicle. Create clearance or increase ride height as necessary.

Full Right Roll (driver shock "topped-out", passenger shock "bottomed-out"):

Check rod ends at trailing arms and push rod assemblies to ensure they are within their misalignment range and that rod end bodies are not making contact with the mounting clevis. Reclock rod ends as necessary.

Full Left Roll (driver shock "bottomed-out", passenger shock "topped-out"):

Check rod ends at trailing arms and push rod assemblies to ensure they are within their misalignment range and that rod end bodies are not making contact with the mounting clevis. Reclock rod ends as necessary.

The movement procedures listed above will need to be repeated during exhaust installation to verify adequate clearance.

WARRANTY NOTICE:

There are **NO WARRANTIES**, either expressed or implied. Neither the seller nor manufacturer will be liable for any loss, damage or injury, direct or indirect, arising from the use or inability to determine the appropriate use of any product. Before any attempt at installation, all drawings and/or instruction sheets should be completely reviewed to determine the suitability of the product for its intended use. In this connection, the user assumes all responsibility and risk. We reserve the right to change specification without notice. Further, Chris Alston's Chassisworks, Inc., makes **NO GUARANTEE** in reference to any specific class legality of any component. **ALL PRODUCTS ARE INTENDED FOR RACING AND OFF-ROAD USE AND MAY NOT BE LEGALLY USED ON THE HIGHWAY.** The products offered for sale are true racecar components and, in all cases, require some fabrication skill. **NO PRODUCT OR SERVICE IS DESIGNED OR INTENDED TO PREVENT INJURY OR DEATH.**

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