



*1962 - 1967 Nova  
Power & Manual  
Rack and Pinion Cradle  
System*



## INDEX

**NOTE:** Before beginning you must first measure the width of your front end from LEFT outer tie rod end zirc to the RIGHT outer tie rod end zirc to determine the overall width of your front end. Write dimension here for further reference\_\_\_\_\_

**NOTE:** Part number **ES381RL** 68-69 Camaro Outer Tie Rod Ends must be used with this rack and pinion kit.

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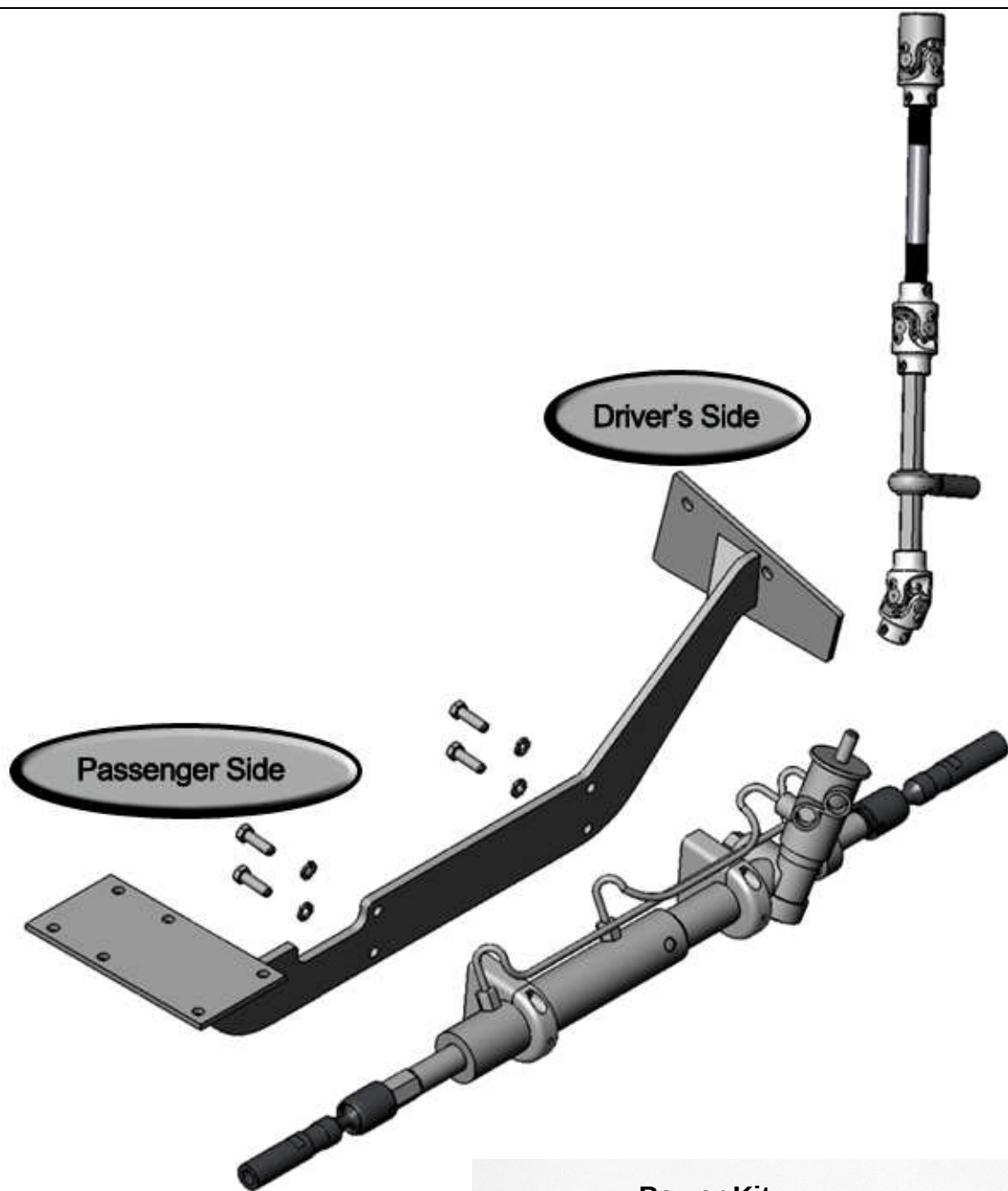
**Note:** For safety disconnect battery cables and ensure that vehicle is properly supported by jack stands.

**We recommend** a professional alignment to set the proper alignment settings after system installation.

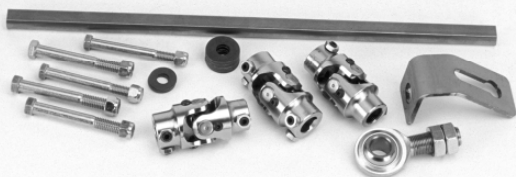
**We recommend** that you always install new outer tie rod ends when installing this kit.

### **Warranty Disclaimer**

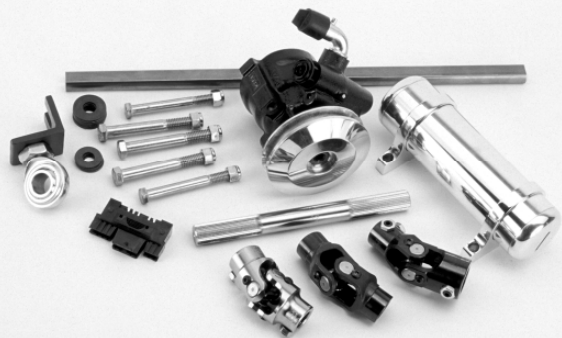
Because of their intended usage, the manufacturer makes no warranties whatsoever express or implied, oral or written, to purchasers of their products regarding performance, safety, fit merchantability, or length of service. Purchasers are responsible for selection of proper goods and must rely on there own skill or judgment that such goods are suitable for purchasers application.



### Manual System



### Power Kit

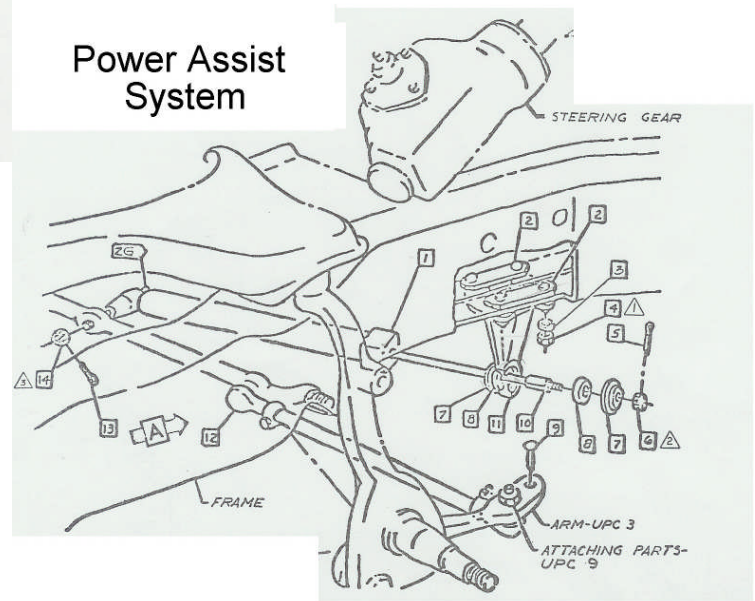
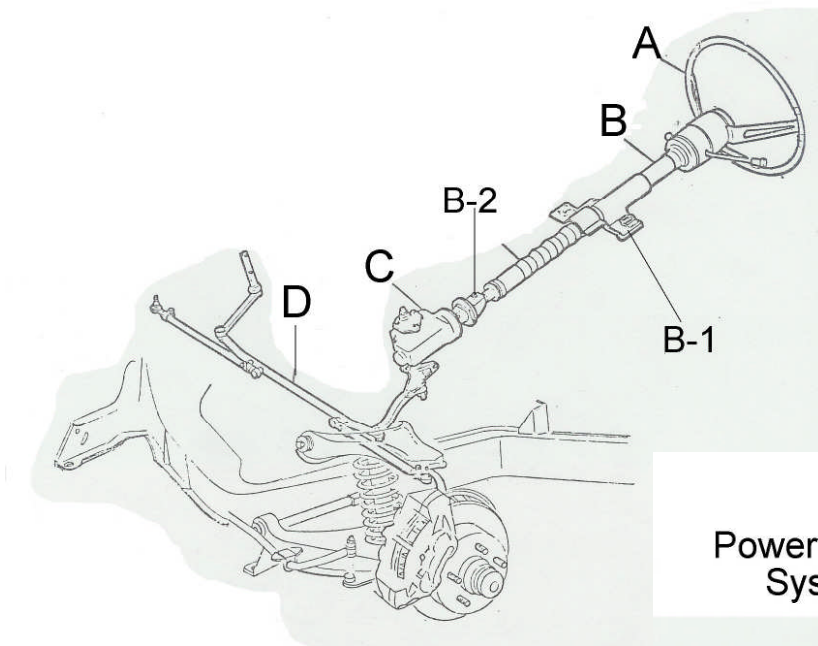


Parts Inventory

| <b><u>Qty</u></b> | <b><u>Part Number</u></b> | <b><u>Description</u></b>                             | <b><u>Notes</u></b>            |
|-------------------|---------------------------|-------------------------------------------------------|--------------------------------|
| <b>1</b>          | <b>BK10200</b>            | <b>Support Bearing<br/>Bracket Bent</b>               |                                |
| <b>1</b>          | <b>FR1810</b>             | <b>Support Bearing</b>                                |                                |
| <b>3</b>          | <b>Bolt-3/8-16x3.5</b>    | <b>3/8" -16 Grade 8 Bolt<br/>3.5" Long</b>            |                                |
| <b>3</b>          | <b>Nut-3/8-16</b>         | <b>Nylock Lock Nut 3/8-16</b>                         |                                |
| <b>6</b>          | <b>Wash-3/8"</b>          | <b>3/8" Flat Washer</b>                               |                                |
| <b>6</b>          | <b>5/16-18 x1.25</b>      | <b>5/16-18 Bolt x 1 1/4"<br/>Long</b>                 |                                |
| <b>6</b>          | <b>Nut-5/16-18</b>        | <b>Nylock Lock Nut 5/16-<br/>18</b>                   |                                |
| <b>6</b>          | <b>Wash-5/16"</b>         | <b>5/16" Flat Washers</b>                             |                                |
| <b>1</b>          | <b>FR1614</b>             | <b>Power Steering<br/>Reservoir</b>                   | <b>Only with Power<br/>Kit</b> |
| <b>1</b>          | <b>FR1850</b>             | <b>18" DD Shaft</b>                                   |                                |
| <b>1</b>          | <b>FR1920</b>             | <b>3/4DD x 3/4DD U-Joint</b>                          |                                |
| <b>1</b>          | <b>FR1934</b>             | <b>1 DD x 3/4DD U-Joint</b>                           |                                |
| <b>1</b>          | <b>FR1932</b>             | <b>3/4DD x 17MMDD U-<br/>Joint</b>                    | <b>Power Kit Only</b>          |
| <b>1</b>          | <b>FR1924</b>             | <b>9/16-26 x 3/4DD U-Joint</b>                        | <b>Manual Kit Only</b>         |
| <b>1</b>          | <b>FR20005</b>            | <b>30" x 2" Floor Shift<br/>Paintable Tilt Column</b> | <b>Paintable Kit Only</b>      |
| <b>1</b>          | <b>FR20005SS</b>          | <b>30" x 2" Floor Shift<br/>Polished Tilt Column</b>  | <b>Polished Kit Only</b>       |
| <b>1</b>          | <b>FR20114</b>            | <b>Dash Mount</b>                                     |                                |
| <b>1</b>          | <b>FR20118-1</b>          | <b>Hazard Wiring Kit</b>                              |                                |
| <b>1</b>          | <b>FRPMPSB-V</b>          | <b>Power Steering Pump<br/>w/ V-Belt</b>              | <b>Power Kit Only</b>          |
| <b>1</b>          | <b>FR305AYPW</b>          | <b>Nova Power Rack<br/>Assembly</b>                   | <b>Power Kit Only</b>          |
| <b>1</b>          | <b>FR305-AY</b>           | <b>Nova Manual Rack<br/>Assembly</b>                  | <b>Manual Kit Only</b>         |

## Original Steering System Removal

- 1) Remove the pitman nut and remove the pitman arm from the steering box.
- 2) Remove the nuts that retain the outer tie rod ends and remove the tie rods from the spindle arm.
- 3) If you have the power assist system you must also disconnect the slave cylinder from the chassis and remove the mounting bracket.
- 4) Remove the bolts that retain the idler arm and remove the steering linkage from the car. **(D)**
- 5) Remove the two lower steering gear **(C)** mounting bolts and only loosen the third.
- 6) Disconnect all wiring connectors from column. (See page 5 for further information).
- 7) Remove the screws that hold the floor seal in place.
- 8) Using a steering wheel puller remove the steering wheel. **(A)**
- 9) Remove the two nuts that retain column mounting bracket under the dash. **(B-1)**
- 10) Move the front driver's seat to the rear most position and lower the column as far as possible.
- 11) While sitting in the seat, pull the column housing **(B)** towards you until it is completely off the long pinion shaft.
- 12) Remove the final steering gear mounting bolt and remove the steering box. **(C)**



### Installation of Flaming River Column

- 1) Slide the floor mount that is included in the kit over the column tube and then slide the original floor seal and floor plate over the column tube.
- 2) Slide the column through the firewall so that the end of the column tube is about a ¼" past the firewall.



- 3) Using the original under dash mount, mount the column to the dash. Only snug the mounting bolts.
- 4) Set the turn signal arm at the 9 o'clock position; tighten down the mounting bolts to secure the column.
- 5) Fasten the original floor seal to the firewall using the bolts removed earlier.
- 6) Next slide the column mounting bracket so that the mounting flange is flush against the floor seal plate, and then snug the column mounting bracket to the column tube.
- 7) Fasten the column bracket to the floor seal using the hardware provided. NOTE: The new floor mount assembly can be removed and painted.



## Connecting Electrical System

**Caution:** Before disconnecting your original steering column wiring harness please verify each wire color and function on the worksheet below. Some wire colors may vary from year to year.

### COLUMN WIRING

P-WHITE-BRAKELIGHT SWITCH

N-DK GREEN-RR TURN SIGNAL

M-YELLOW-LR TURN SIGNAL

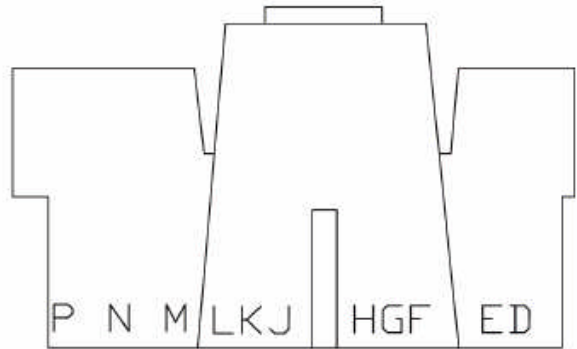
L-PURPLE-TURN SIGNAL POWER

K-BROWN-HAZARD POWER

J-DK BLUE-RF TURN SIGNAL

H-LT BLUE-LF TURN SIGNAL

G-BLACK-HORN

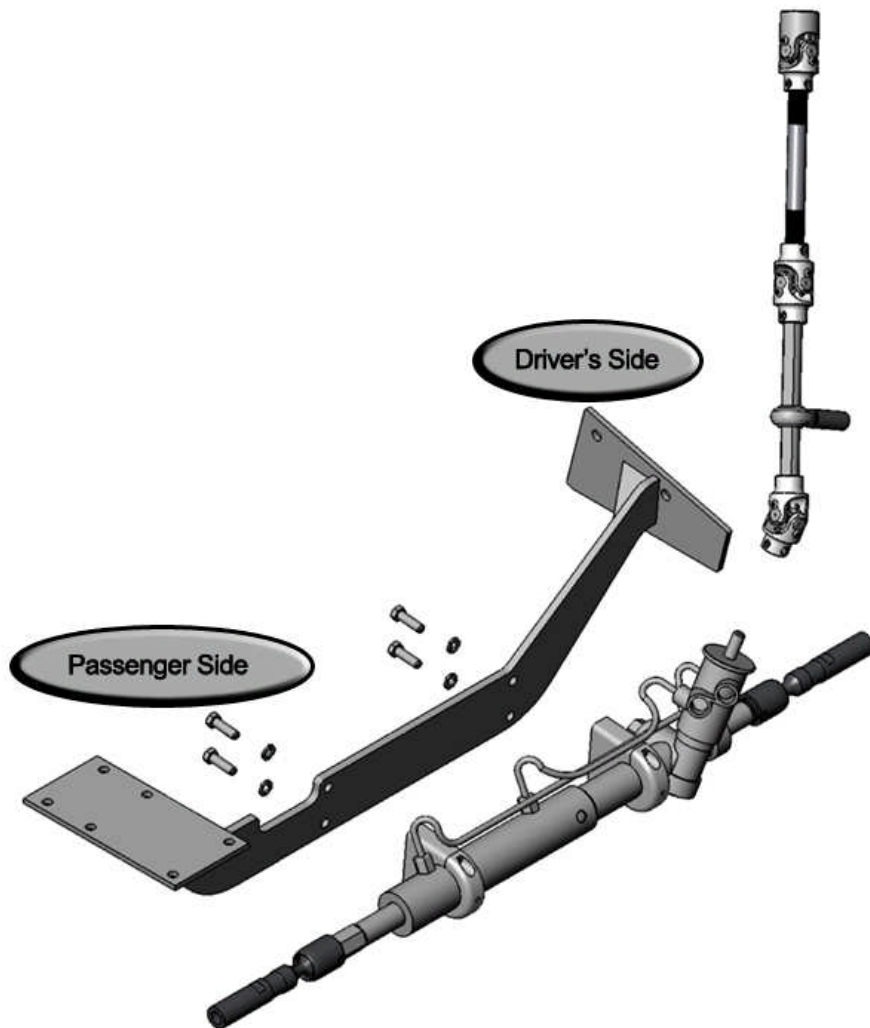


### Color Verification to be completed before disassembly

- Brake Light Switch : \_\_\_\_\_
- RR Turn Signal : \_\_\_\_\_
- LR Turn Signal : \_\_\_\_\_
- Turn Signal Power : \_\_\_\_\_
- Hazard Power : \_\_\_\_\_
- LF Turn Signal : \_\_\_\_\_
- Horn : \_\_\_\_\_

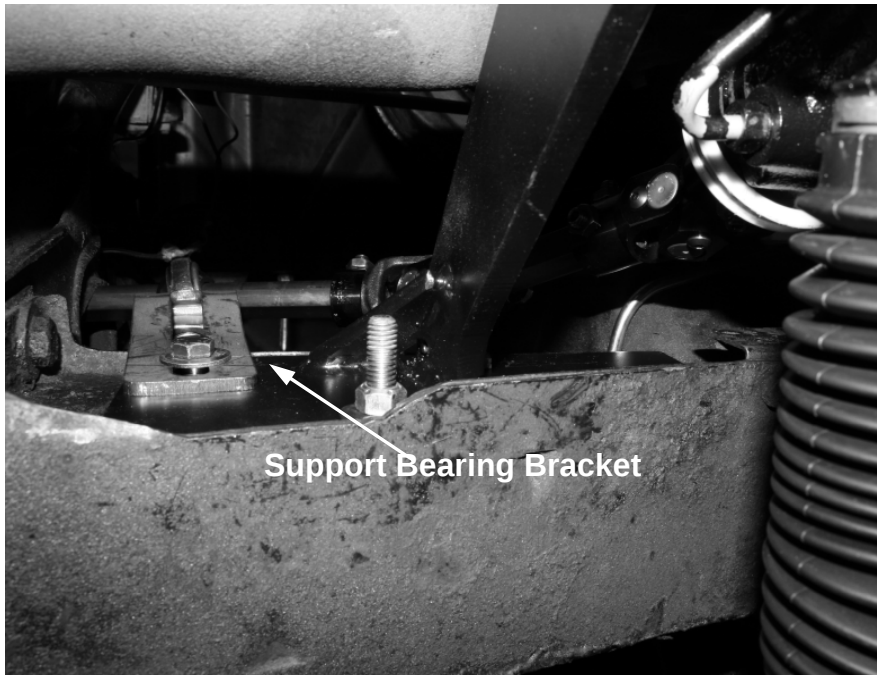
## Installation of the Flaming River Power or Manual Rack and Cradle

- 1) Center the rack by turning it all the way to the left. Next turn the rack all the way to the right, counting the number of turns. Then go back half way.
- 2) **Driver's side**: Hold up the rack mounting cradle where the steering gear box was originally and snug the mounting hardware.
- 3) **Passenger side**: Mount the passenger side of the cradle using the original holes from the idler arm and tighten the four 5/16" mounting bolts.
- 4) **Driver's side**: Using a torque wrench tighten the mounting bolts to 50-65 ft lbs.
- 5) **Passenger side**: Using a 3/8" drill bit, drill through the remaining 2 holes on the cradle and through the frame rail and install the final two 5/16" bolts. Tighten all the bolts to 30-40 ft lbs

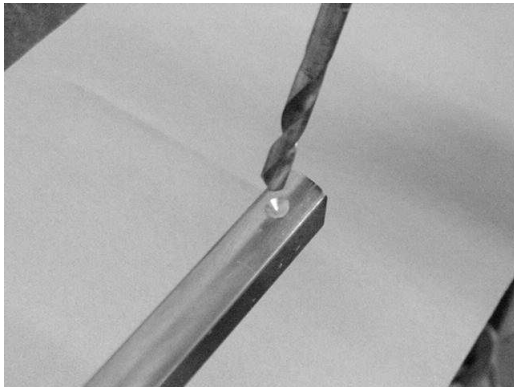


### Header Universal Joint System.

- 1) Install support-bearing mount onto the rear cradle bolt. (Diagram below). Note: The angle of this mount is set for most applications. Some adjustment may be necessary for the correct angle and u-joint alignment.



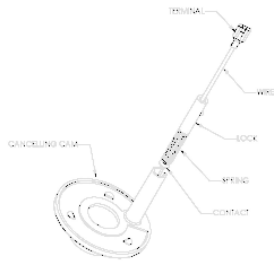
- 2) We recommend the use of  $\frac{3}{4}$ " dowel rod to mock up the steering shaft to obtain the correct length of the shafts.
- 3) Install your shaft kit and snug each set screw so that it will leave a mark in the shafts.
- 4) Remove shaft and dimple each setscrew mark using a  $\frac{1}{4}$ " drill bit. (As shown below.)



- 5) Re-install the shafts using **red loc-tite thread locker** on the set screw threads. Tighten each setscrew to 25 ft. lbs. Tighten all lock nuts securely. We recommend that you inspect setscrews periodically for tightness.

## Steering Wheel Installation

- 1) Install horn contact kit into canceling cam tube and turn to lock.



- 2) Align steering wheel adapter so that the canceling cam hole is at approx the 11 O'clock position and that one of the steering wheel mounting holes is at the 12 O'clock position.

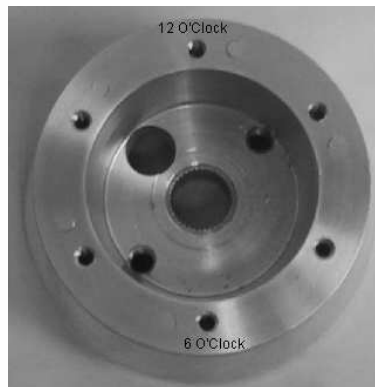
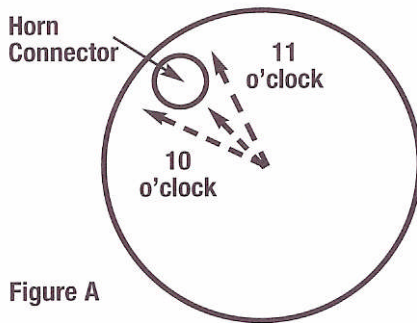
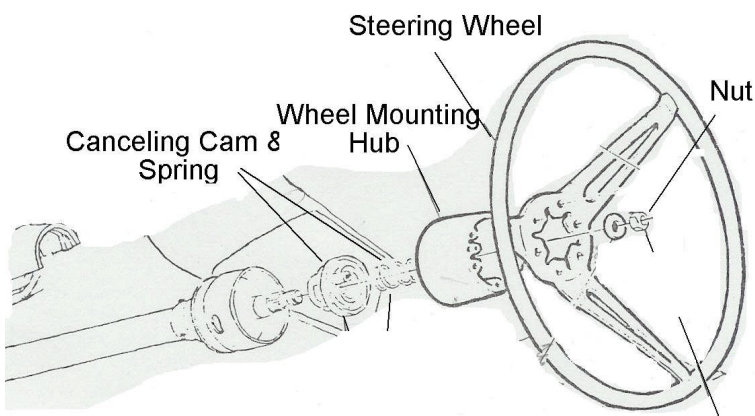


Figure A

- 3) To install the wheel adapter run the horn contact wire through the hole for the canceling cam and place the adapter on to the splined column shaft.
- 4) Tighten the adapter-retaining nut until the adapter is approximately 1/16" away from the column shroud.

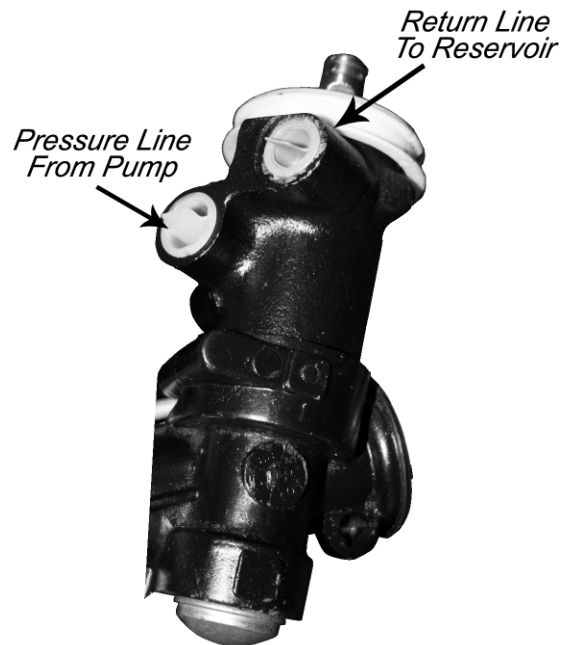
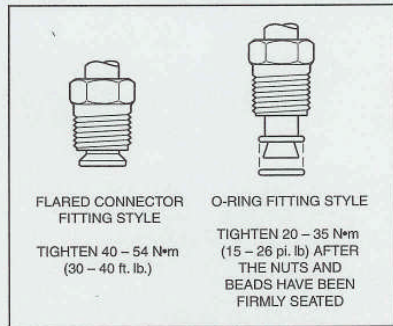


## Power Steering Bleeding Procedure

- 1) Fill the reservoir with high-quality power steering fluid and allow to sit for 2 minutes
- 2) Raise the front end of the vehicle so the wheels are just off the ground. Rotate wheels back and forth at least 20 times. Have an assistant check and maintain fluid level while performing this operation.
- 3) Start the engine and recheck fluid level. Add fluid if necessary.
- 4) With the engine running, rotate the steering wheel back and forth from lock-to-lock. Repeat several times. Check fluid level and add fluid if necessary.
- 5) Lower the vehicle on the ground and with the engine running, repeat step 5. Check fluid level and add if necessary

| Thread Size        | English          | Metric        |
|--------------------|------------------|---------------|
| 7/16 – 14 UNC Thd. | 59 – 74 ft. lb.  | 80 – 100 N•m  |
| 1/2 – 13 UNC Thd.  | 89 – 110 ft. lb. | 120 – 150 N•m |
| 9/16 – 12 UNC Thd. | 89 – 110 ft. lb. | 120 – 150 N•m |
| 14mm x 2 – 6H Thd. | 89 – 110 ft. lb. | 120 – 150 N•m |

Figure 2 Table of Torques for Attaching Gears to Frame



## Torque Specs

|                                |              |
|--------------------------------|--------------|
| Cradle to Frame Mounting Bolts |              |
| 3/8" Mounting Bolts            | 40-45 ft lbs |
| 5/16" Mounting Bolts           | 30-40 ft lbs |
| Outer Tie Rod Ends to Spindle  | 30-40 ft lbs |
| Universal Joint Set Screws     | 25 ft-lbs    |
| Billet Rack Mounting Clamps    | 45-50 ft-lbs |