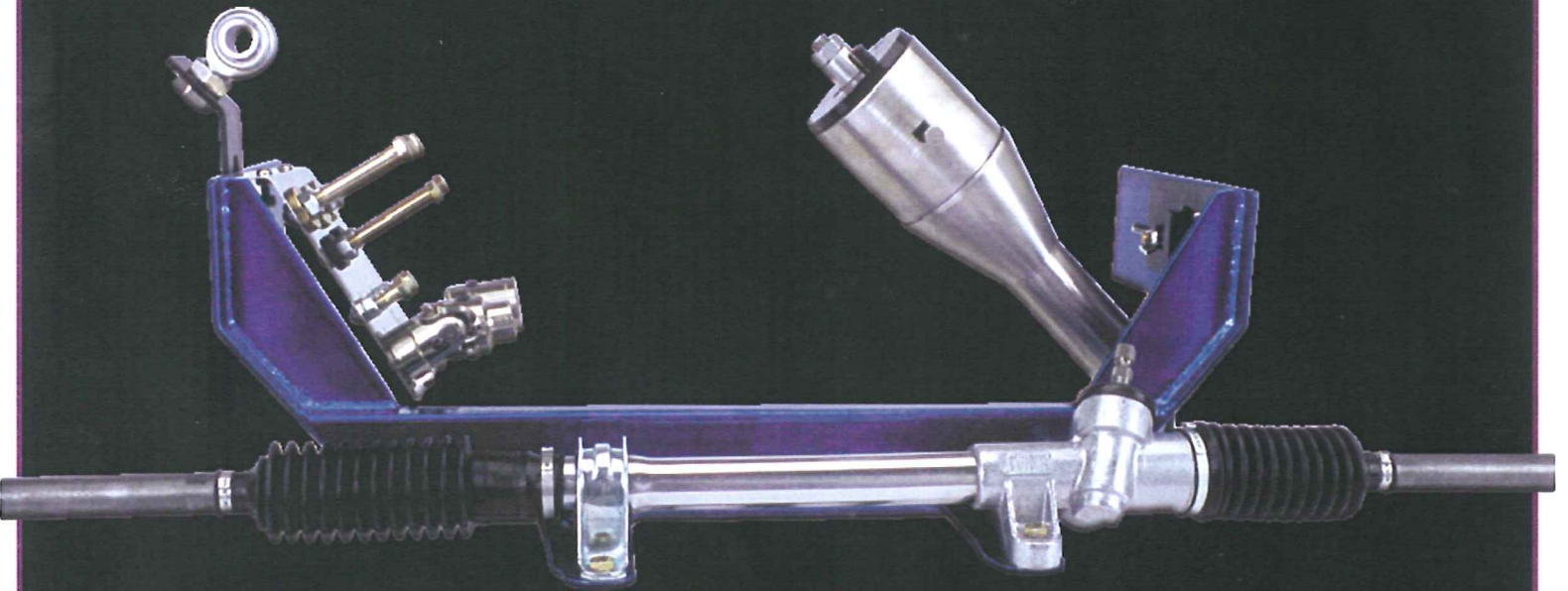




800 Poertner Dr. Berea, OH 44017 800 - 648 - 8022

*1965 - 1970 Mustang  
Rack & Pinion Cradle System*



<u>Qty</u>	<u>Part No.</u>	<u>Description</u>	<u>Notes</u>
2	BOLT-3/8-16X3.5	3/8-16 Grade 8 Bolt 3.5" long	
2	NUT-3/8-16	Nylock Lock Nut 3/8-16	
4	WASH-3/8	3/8" Flat Washer	
3	BOLT-7/16-14X3.5	7/16-14 Grade 8 Bolt 3.5" Long	
3	NUT-7/16-14	Nylock Lock Nut 7/16-14	
6	WASH-7/16	7/16" Flat Washer	(6) 7/16 Flat Washers for Mounting of Cradles
2	WASH-7/16	7/16" Flat Washer	<b>Power Kit Only</b> (2) 7/16 Flat Washer to Mount Power Rack to Power Cradle
1	BOLT-7/16-14x1	7/16-14 Grade 8 Bolt 1" Long	<b>Power Kit Only</b> Passenger Side Rack Mount
1	BOLT-7/16x3	7/16-14 Grade 8 Bolt 3" Long	<b>Power Kit Only</b> Driver's Side Power Rack
2	BOLT-3/8-16X1	3/8-16 Grade 8 Bolt 1" long	<b>Manual Kit Only</b> Passenger Side Rack Mount
2	BOLT-3/8-16X1.5	3/8-16 Grade 8 Bolt 1.5" Long	<b>Manual Kit Only</b> Driver's Side Rack Mount
4	NUT-3/8-16	Nylock Lock Nut 3/8-16	<b>Manual Kit Only</b> Mounts Manual Rack to Cradle
1	FR1507C	Manual Rack Mounting Clamp	<b>Manual Kit Only</b>
1	FR1850	18" DD Shaft	
1	FR20099-2	67-70 Floor Mount	
1	FR65MUMT	65-66 Floor Mount	
1	FRBSH-1	Mustang Column Mount Bushing	
2	Screw-10	#10 x 3/8" Hex Head Metal Screw	
2	NUT-11/16-18	11/16-18 Jam Nut	
1	FRM16X6AN	M16-1.5 X 6 AN Fitting	<b>Power Only</b>
1	FRM18X6AN	M18 -1.5 X 6 AN Fitting	<b>Power Only</b>
1	BK10200	Support Bearing Bracket Bent	
1	FR1810-2	3/4 Zinc Support Bearing	
1	FR20118	Female Wiring Adapter	
1	FRHRN2	Horn Relay	
1	FR300MUCOL	29" Column For Original Wheel (Ford Spline)	Only in Kits for Original OEM Steering Wheel
1	FR300COL	29" Column for Aftermarket Wheel (GM Spline)	Only In Kits for AfterMarket Steering Wheels
1	FR1507-7QPW	Power Rack and Pinion	<b>Power Only</b>
1	FR1614	Power Steering Reservoir	<b>Power Only</b>
1	FR1920	3/4 DD x 3/4DD Chromemoly U-Joint	<b>Power Only</b>
1	FR1932	3/4 DD x 17MMDD Chromemoly U-Joint	<b>Power Only</b>
1	FR1934	3/4 DD x 1" DD Chromemoly U-Joint	<b>Power Only</b>
1	FRMBPW1	P/S Steering Pump Bracket	<b>Power Only</b>
1	FRMPW1	Mustang Power Cradle	<b>Power Only</b>
1	FRPMPVB-V	Pump w/ V-Belt Pulley	<b>Power Only</b>
1	FR1507-3Q-3	Manual Rack and Pinion	<b>Manual Only</b>
1	FR1709DD	9/16-26 x 3/4DD U-Joint	<b>Manual Only</b>
1	FR1716DD	3/4 DD x 3/4DD U-Joint	<b>Manual Only</b>
1	FR1717DD	1 DD x 3/4 DD U-Joint	<b>Manual Only</b>
1	FRM5-MU65H	Manual Cradle	<b>Manual Only</b>

## Original Column Removal

### 64 ½ - 67 Long Shaft Steering Box Column Removal

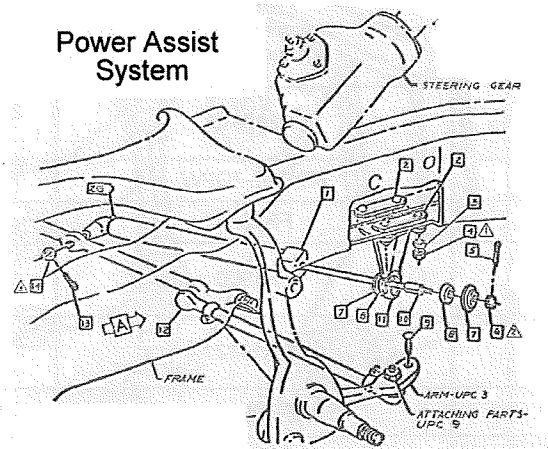
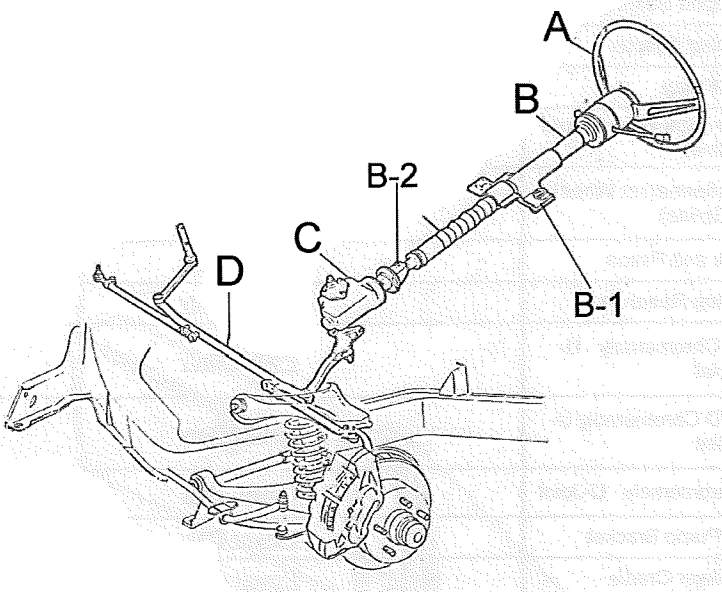
- 1) Remove horn button by pushing down on horn hub and turning counter clockwise.
- 2) Remove steering wheel retaining nut and remove steering wheel (A) by using a steering wheel puller.
- 3) Disconnect the electrical plug towards the base of the column (B).
- 4) Remove the column support bracket under the dash. There are two nuts one on each side of the column. (B-1)
- 5) Remove the upper bushing located at the center of the turn signal switch.
- 6) Remove the column tube by sliding it up off the steering box shaft.

### 67-70 Short Shaft Steering Box Column Removal

- 1) Remove horn button by pushing down and turning counter clockwise.
- 2) Remove steering wheel retaining nut and remove steering wheel (A) by using a steering wheel puller.
- 3) Disconnect the electrical plug towards the base of the column (B).
- 4) Remove the column support bracket under the dash. There are two nuts one on each side of the column. (B-1)
- 5) Remove the four screws holding the floor mount to the firewall.
- 6) Remove the rag joint (B-2) pinch bolt in order to separate the steering box from the column.

## Steering Box and Linkage Removal

- 1) Remove the pitman arm from the steering box (C) using a pitman arm puller.
- 2) If you have power steering, remove pump, lines, and valve and assist cylinder. (See diagram below) A shorter belt may need to be installed.
- 3) Remove the two bolts that retain the idler arm to the frame.
- 4) Remove the cotter pins, castle nuts, separate the tie rod ends from the spindles and remove the steering linkage (D) from the car.
- 5) Remove the three retaining bolts that secure the gearbox (C) and remove the gearbox.



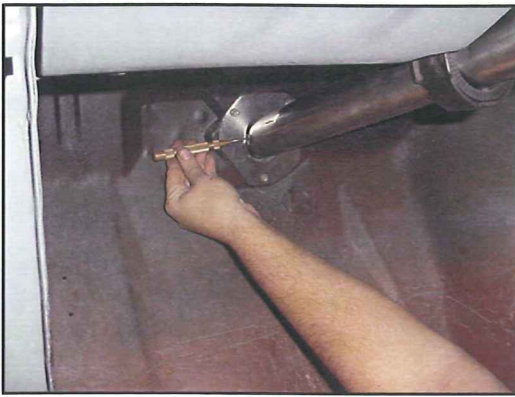
## Installation of New Flaming River Tilt Column

- 1) Bend tabs inward on new floor bracket and slide over column tube.
- 2) Using your original dash support (**note: you must first place a shim that is included between the support and the column to ensure a tight fit this is included in your installation kit**), hold the column under the dash and tighten the two support nuts.

- 3) Make sure that the column is straight before securing column.



- 4) Mark the location of the tabs on the column using a center punch or scribe, then remove the column from the car and drill a small pilot hole for each screw.



- 5) Fasten the new floor mount to the column by using the screws provided with the hardware kit then reinstall the steering column into the car.

### Installation of Original Wheel

**Note: Some modification to your original wheel is necessary for the horn to work correctly.**

- 1) Install steering wheel spacer ensuring that canceling cam hole is at the 10 o'clock position. For 65-66 cars, align the spring clip on the backside of the wheel so that the prongs are at the 3 o'clock and 5 o'clock positions.
- 2) Install horn contact into canceling cam and run wire through slot in steering wheel
- 3) Install steering wheel and tighten the steering wheel retaining nut.
- 4) The horn plates on the bottom of your horn button must be permanently attached to each other. Drilling a small hole and inserting a small sheet metal screw accomplish this. (1/4") (See picture below)
- 5) Connect the horn contact wire to the horn contact on top of the horn button.
- 6) Install the horn button by pushing down and turning clockwise, this will lock the button in position.



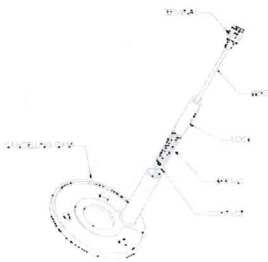
### For wheels without a slot for the wire or Wooden wheels:

- 1) Turn wheel over to show the horn contact plates on the back of the wheel. (If it is an early wheel the turn signal tabs are at the 9 o'clock and the 6 o'clock position).
- 2) Place wheel spacer plate onto the wheel with the canceling cam hole approximately the 1-1:30 positions. This is where you will need to drill a 3/8-diameter hole for the canceling cam stem and horn contact wire to go through. (See picture below)

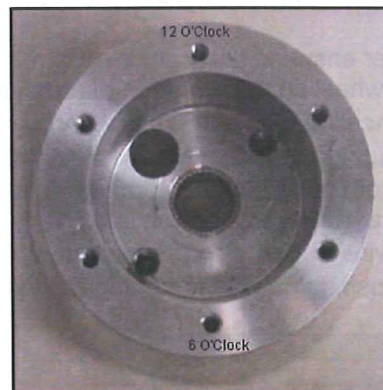
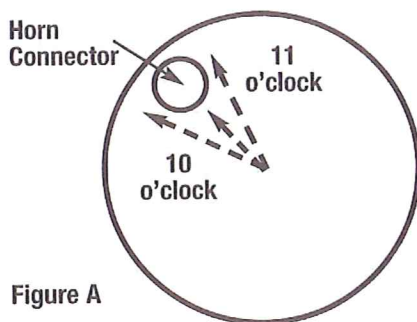


### Aftermarket Wheel Installation

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

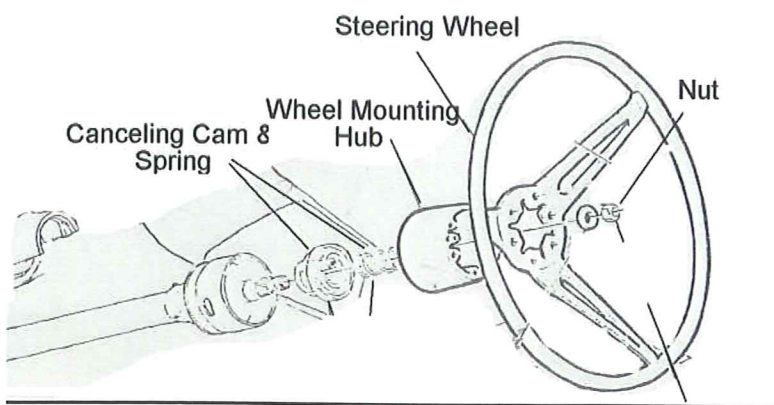


- 2) Align steering wheel adapter so that the canceling cam hole is at approx the 11 O'clock position and that one of the steering wheel mounting holes is at the 12 O'clock position.



- 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.



**Note:** The following Flaming River part numbers for wheel adapters for aftermarket wheels.

FR20119FD 5-6 Bolt Wheel Adapter  
FR20113FD 9 Bolt Wheel Adapter

### 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 – BRAKE LIGHT SWITCH
- N - DK GREEN - RR TURN SIGNAL
- M – YELLOW – L TURN SIGNAL
- L – PURPLE – TUR SIGNAL POWER
- K – BROWN - HAZARD POWER

- J- DK BLUE - RF TURN SIGNAL
- H- LT BLUE - LF TURN SIGNAL
- G-BLACK HORN

**VEHICLE WIRING SHOULD BE**

- GREEN OR GREEN w/RED STRIPE
- ORANGE w/BLUE STRIPE
- GREEN w/ORANGE STRIPE
- BLUE
- WHITE w/RED STRIPE (SEE NOTE BELOW 64 ½ -66), (69-70 BLACK w/RED STRIPE)
- WHITE w/BLUE STRIPE
- GREEN w/WHITE STRIPE
- CONNECT TO HORN RELAY GROUND

### Installing Horn Relay

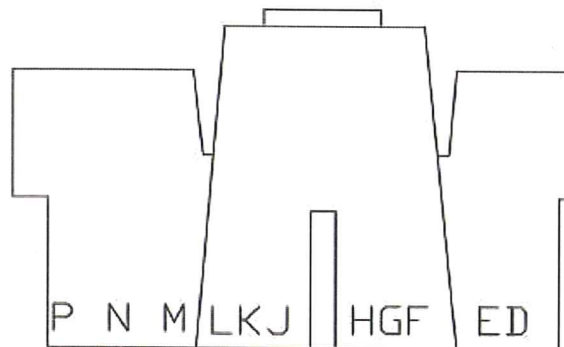
The yellow wire from the vehicle connects to TERMINAL 30 (yellow wire) on the horn relay; the blue wire with the yellow stripe connects to TERMINAL 87 (Red Wire) on the horn relay. The black wire from the column connects to TERMINAL 85 (brown wire) on the horn relay. Run a jumper wire from TERMINAL 86 (blue wire) to TERMINAL 30 on the horn relay.

**NOTE:** FOR 1964-½ MUSTANGS, HORN RELAY IS NOT REQUIRED FOR THIS APPLICATION; VEHICLE HAS A RELAY FROM THE FACTORY. BLACK WIRE FROM COLUMN WILL BE CONNECTED TO BLUE w/YELLOW STRIPE TO COMPLETE THE GROUND CIRCUIT.

**HAZARD NOTE:** FROM 1964 ½ TO 1966 VEHICLES DID NOT HAVE HAZARDS, SO NO HAZARD POWER WIRE IS PRESENT BUT CANBE ADDED BY PURCHASING **PART # FR20118-1**

**Color Verification to be completed before disassembly**

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



## Installation of the Flaming River Power or Manual Cradle

- 1) Install the rack and pinion cross member by sliding it into place, installing the new hardware using three 7/16" bolts where the gear box was mounted and two 3/8" bolts where the idler arm was located. Tighten all nuts and bolts to 50-65 ft lbs.

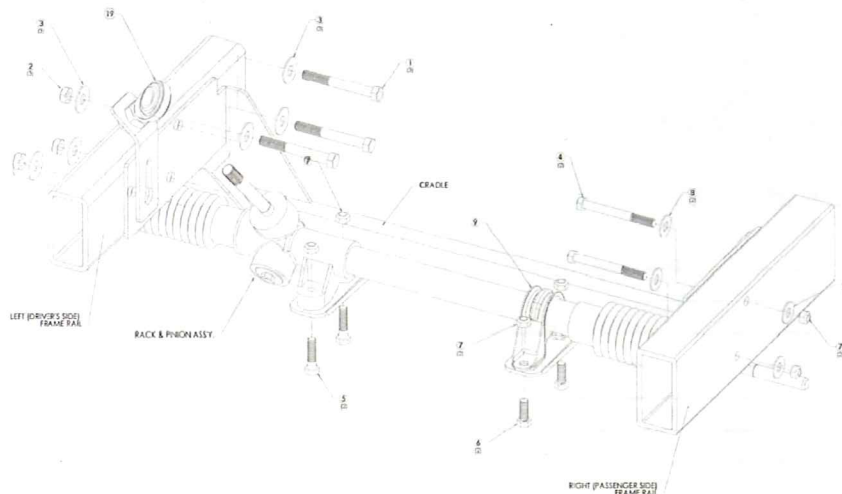


## Installation of the Manual Rack & Pinion

- 2) Place the passenger rack-mounting clamp onto the right side of the rack tube and place the rack onto the cradle.

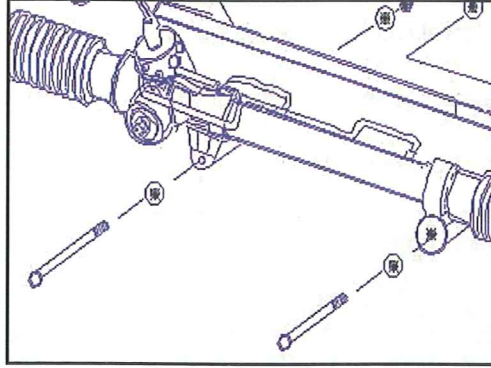


- 3) Install the rack mounting bolts through from the bottom of the cradle through the rack mounts and tighten all four nuts and bolts securely.
- 4) Install tie rod ends onto the rack and pinion assembly.
- 5) To install the outer tie rod ends you must load the front suspension. (Securely placing jack stands under the lower control arms and lowering the car onto the jack stands accomplishes this.) Install the outer tie rod ends into the spindle and tighten the castle nuts to 30-40 ft lbs. Make sure to install cotter pins into the castle nut and tie rod end and bend the tabs over for security.

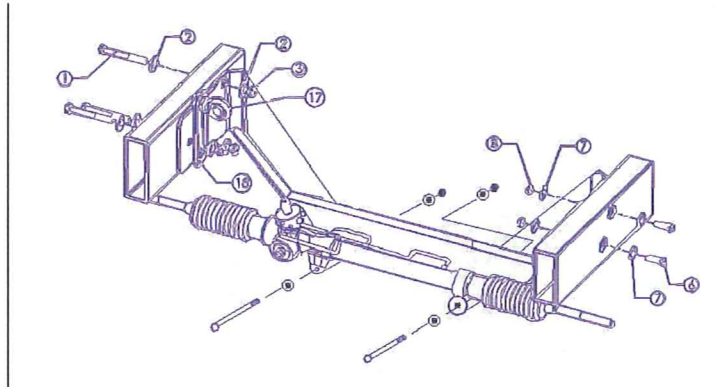


## Installation the Flaming River Power Rack

- 1) Using (1) 7/16-14 x 3 on the passenger side and (1) 7/16-14 X 1 on the driver's side, mount the rack to the cradle.



- 2) Install tie rod ends onto the rack and pinion assembly.
- 3) To install the outer tie rod ends in the spindle arms you must load the front suspension. (Securely placing jack stands under the lower control arms and lowering the car onto the jack stands accomplishes this.) Install the outer tie rod ends into the spindle and tighten the castle nuts to 30-40 ft lbs. Make sure to install cotter pins into the castle nut and tie rod end and bend the tabs over for security.



## Power Steering Pump Installation

**Note:** The pump included in this kit must be used with the rack. Use of any other pump will void warranty.

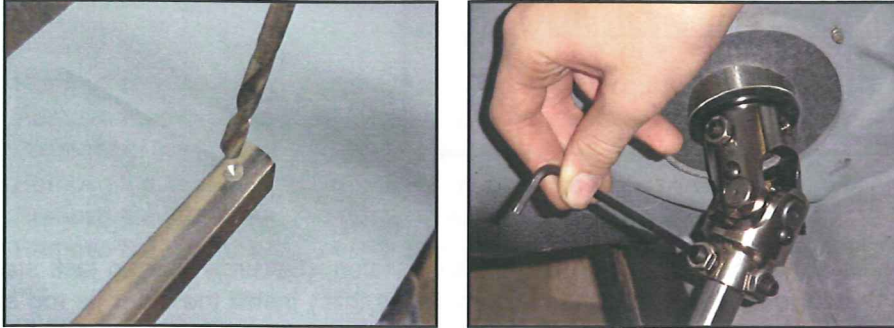
- 1) Install the pump mounting bracket onto the water pump as shown in the picture; next install the pump to the bracket by installing two bolts through the back of the bracket into the pump as shown in the picture. Only snug the bolts, it will have to be adjusted once the belt is adjusted.



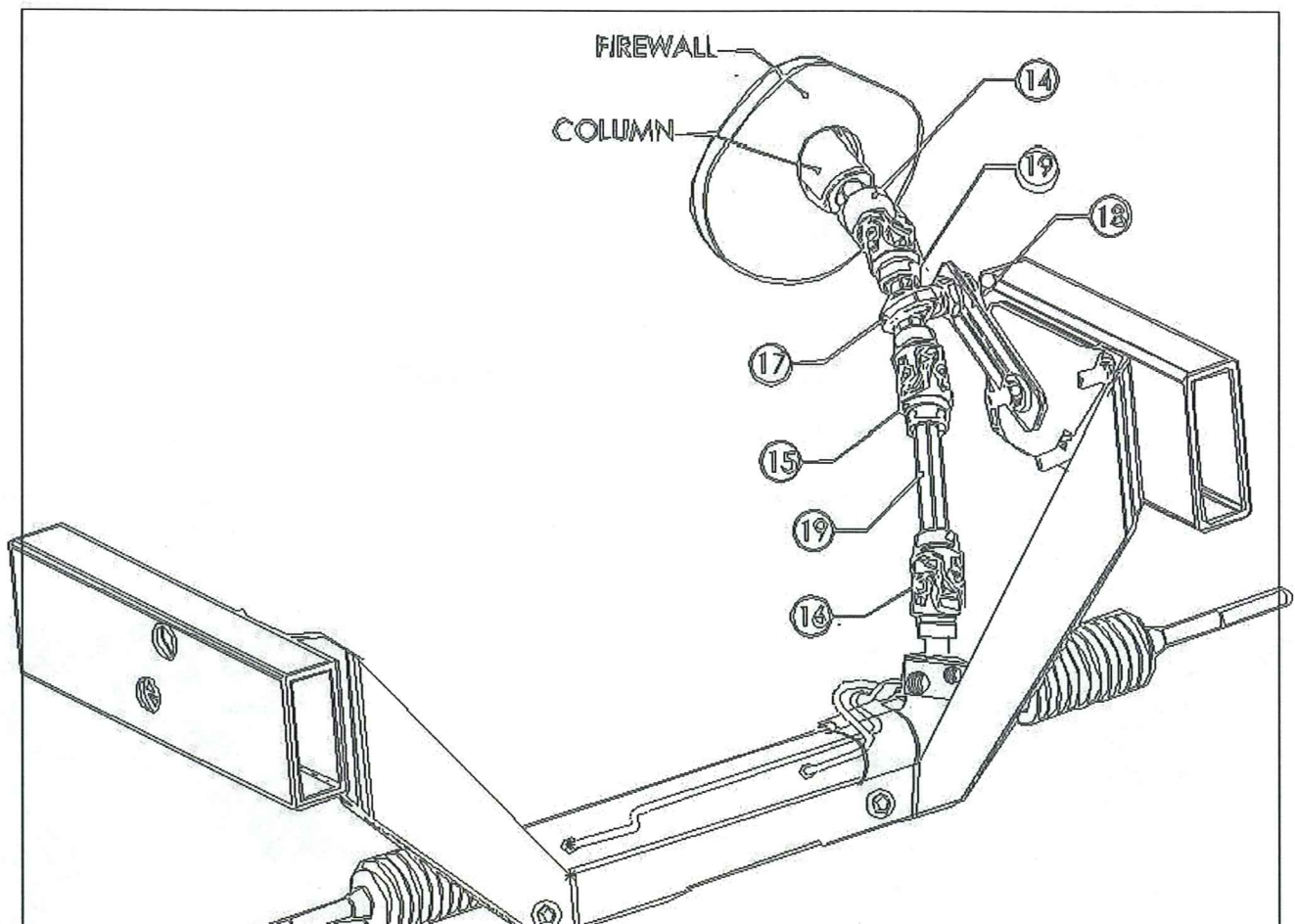


## Universal Joint System

- 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 high strength 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

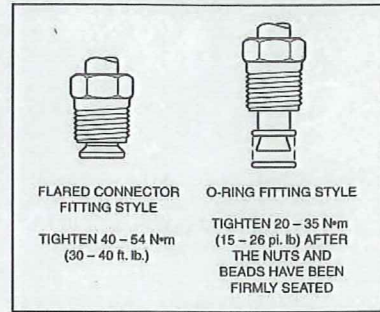


## Bleeding the System

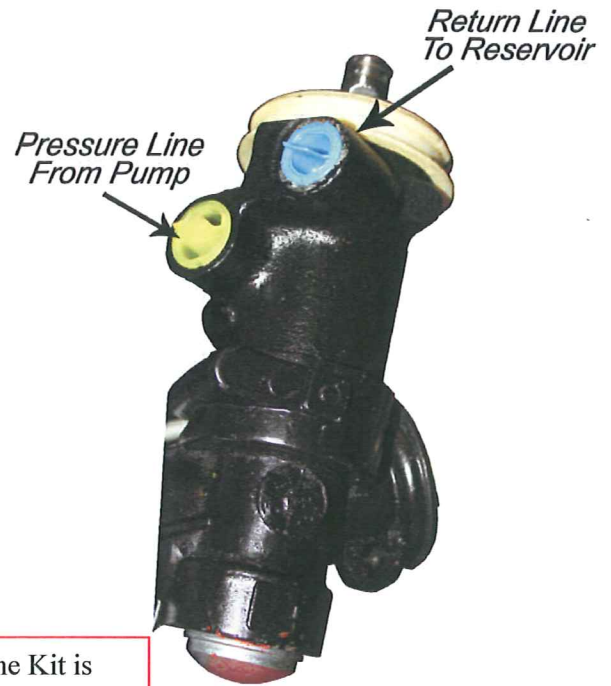
- 1) Raise the front wheels off the ground and support vehicle on jack stands.
- 2) Turn the wheel to the left lock and fill the reservoir with high-quality power steering fluid and allow vehicle to sit for 2 minutes.
- 3) With the engine off and someone checking the fluid level rotate the steering wheel lock to lock 20 times filling with fluid as 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 4. 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



Install your power steering lines attaching your pressure and return fittings to the correct ports shown to the right.



If using a stainless line kit follow the instructions that are included in your kit.

FR1625 Power Steering Line Kit is Available Separately

**Always consult your factory manual for proper torque settings for your vehicle.**

**NOTE:** If the fluid is extremely foamy, let the vehicle sit for a few minutes and repeat steps 1-5.

**NOTE:** Trapped air in the system will cause a milky appearance in the fluid. Trapped air will also cause the fluid level to rise in the reservoir when the engine is not running.

### Torque Specs

Cradle to Frame Mounting Bolts	50-65 ft lbs
Outer Tie Rod Ends to Spindle	30-40 ft lbs
Universal Joint Set Screws	25 ft-lbs