Detroit Speed
12.7:1 Ratio Steering Gear
1968-86 Chevrolet/GMC C Series Trucks/Suburban
1987-91 Chevrolet/GMC R Series Trucks/Suburban
P/N: 090216DS & 090216PDS

Thank you for your purchase of the Detroit Speed 12.7:1 power steering gear. You can now achieve rack and pinion steering performance with a bolt-in steering gear. This steering gear is used to replace the common GM 800 series power steering gear used from 1968 to 1991.

P/N: 090216DS Shown

The DSE Steering Gear includes the following features:

- All new steering gear unit, not rebuilt.
- Improved steering feel due to low friction gear design.
- Precision rack and pinion valve technology.
- Late model performance feel.
- Quick ratio 12.7:1.
- Lighter than stock steering box.
- Original power pitman arm may be used.
- A new 3/4 x 30 spline rag joint (3-1/4" OD) is available through Detroit Speed.
- New O-ring power steering hoses are needed.
- DSE Steering Gear Outlet Fittings not included.

Scan the QR code to guide you through the step-by-step installation video of the 1968-91 C & R Series C10 truck steering gear installation.

NOTE: To install this steering box on a 1967 C Series truck, frame modifications in the steering box area are required.

NOTE: Detroit Speed offers the following steering shaft kits:
PN: 092541DS – 1979-87 GM C10 Truck
PN: 092542DS – 1973-78 GM C10 Truck
PN: 092543DS – 1968-72 GM C10 Truck

NOTE: Detroit speed offers a power steering hose kit (PN: 091202DS) as well as a 5/8"-18 to -6AN fitting for a female pressure port on a GM Type 1 power steering pump (PN: 090203DS).

Installation:

1. Support the truck on jack stands. Remove the driver's side front wheel and tire from the truck.

2. Remove the pitman arm from both the drag link and the steering gear. A pitman arm removal tool should be used to remove the pitman arm from the steering gear (Figure 1). If the car has original power steering, inspect the arm for wear and save later for reinstallation. If the car has manual steering, you will need a replacement power steering pitman arm.

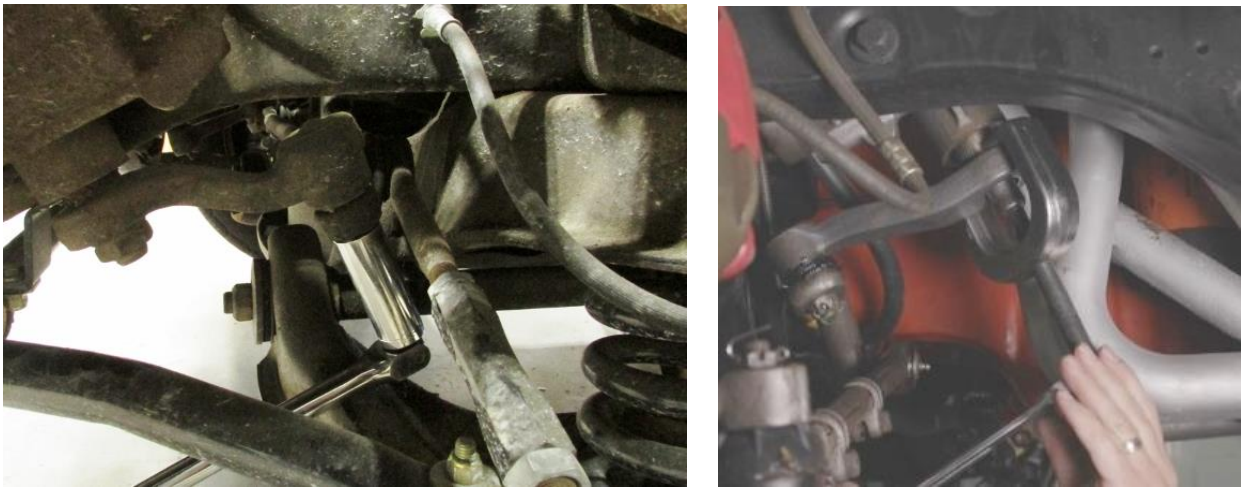

Figure 1 – Remove Pitman Arm

3. Remove the pinch bolt connecting the rag joint to the steering gear. Remove the hardware connecting the rag joint to the steering shaft (Figure 2).

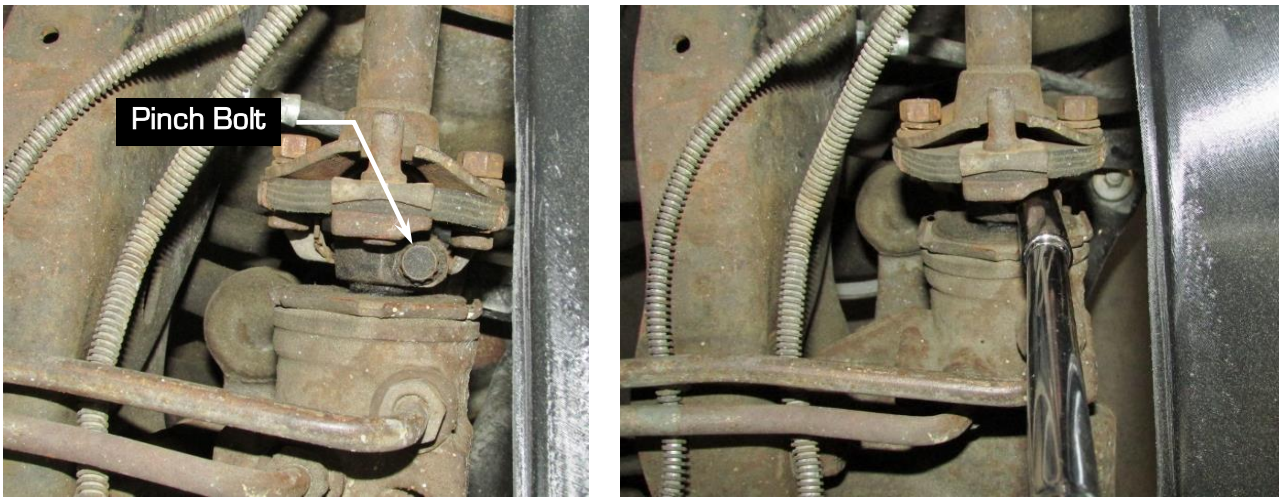

Figure 2 – Remove Pinch Bolt

4. Pry the rag joint away from the steering gear and remove the steering shaft from the truck. If you are using the DSE steering shaft kit, remove the factory steering coupler from the steering column by removing the hardware (Figure 3).

Figure 3 – Remove the Rag Joint/Steering Shaft

5. Disconnect the power steering hoses from the steering gear if the truck is originally power steering equipped. Cap the open ports in the steering gear to prevent it from leaking (Fig. 4).

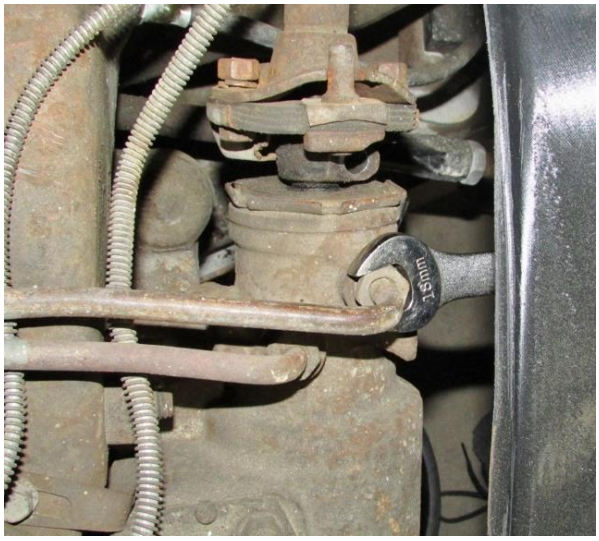

Figure 4 – Disconnect Power Steering Lines

6. With the original steering gear properly supported, remove the four bolts that attach the gear to the frame rail. These bolts will be reused for installation of the DSE steering gear (Figure 5).

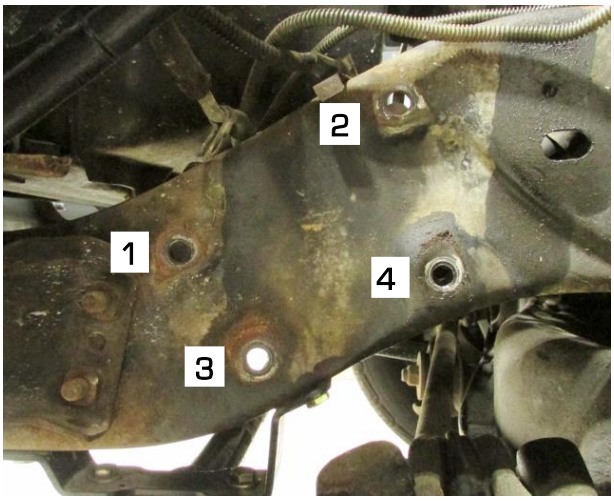

Figure 5 – Remove Steering Gear

7. Remove the pressure hose from the back of the power steering pump. Loosen the hose clamp from the back of the power steering pump and pull the return hose off the pump (Figure 6).

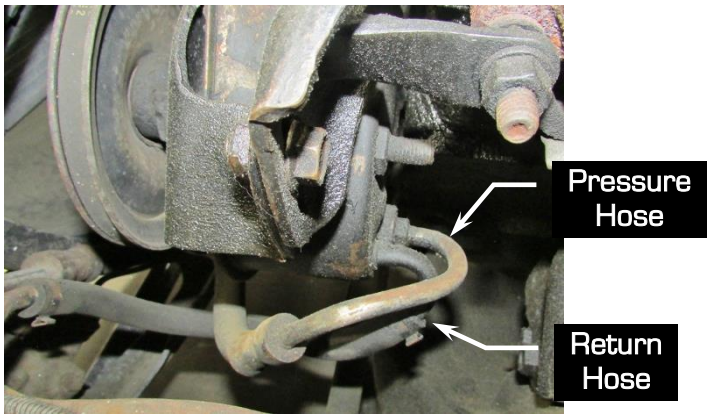

Figure 6 – Remove Pressure & Return Hoses from Pump

8. Remove the power steering hoses from the truck. **NOTE:** If you have a GM Type 1 power steering pump, install the DSE power steering pump fitting (PN: 090203DS) into the back of the pump where the pressure hose was removed. Do not overtighten (Figure 7).

Figure 7 – Install P/S Pump Fitting

NOTE: DSE recommends mocking up your DSE steering gear in your truck to check fitment. Once fitment has been verified, if you have purchased PN: 090216DS, DSE recommends painting the steering gear before final installation.

9. Before installing the DSE steering gear, center the gear on the bench. Turn the input shaft all the way to one side. Turn the gear all the way in the other direction and count the turns. Turn the gear back in the opposite direction, 1/2 the number of turns (Figure 8).

Figure 8 – Center Steering Gear

10. Install the steering gear fittings from the DSE hose kit (PN: 091202DS) into the appropriate ports of the DSE steering gear. The return port fitting size is the smaller M16-1.5mm port and the pressure port fitting is the larger M18-1.5 port. Do not overtighten (Figure 9).

Figure 9 – Install Fittings

11. Install the DSE rag joint (PN: 090205DS) onto the steering shaft using the provided hardware and tighten. Make sure the steering wheel is straight (Figure 10).

Figure 10 – Install Rag Joint

12. Place the DSE steering gear against the outside of the frame rail. Check to make sure the steering box sits flat against the frame. **NOTE:** If not, you will need to grind the corners of the machined mounting surface of the steering gear until it sits flat against the frame rail.

13. Install the input shaft of the steering gear into the rag joint. If using a different method to attach the steering column to the steering gear, the input shaft is 3/4"–30 splined shaft. (Figure 11).

Figure 11 – Locate Steering Gear

14. Thread the four bolts into the new steering gear. Use anti-seize on the threads of the bolts and tighten (Figure 12). Torque the mounting bolts to 70 ft/lbs.

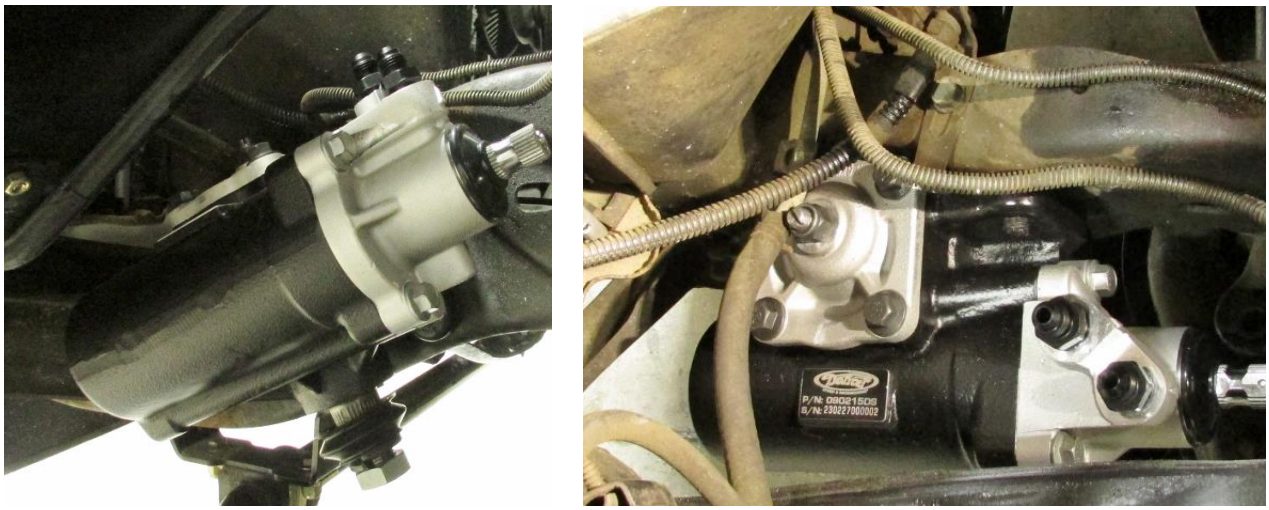

Figure 12 – Install Steering Gear

15. Attach the power steering hoses to the steering gear. Make sure the pressure and return hoses are installed into the correct ports. Both ports are O-ring type. The pressure port fitting size is M18 x 1.5mm and the return port fitting size is M16 x 1.5mm (Figure 12). Detroit Speed has a full line of hoses and fittings to complete your power steering system.

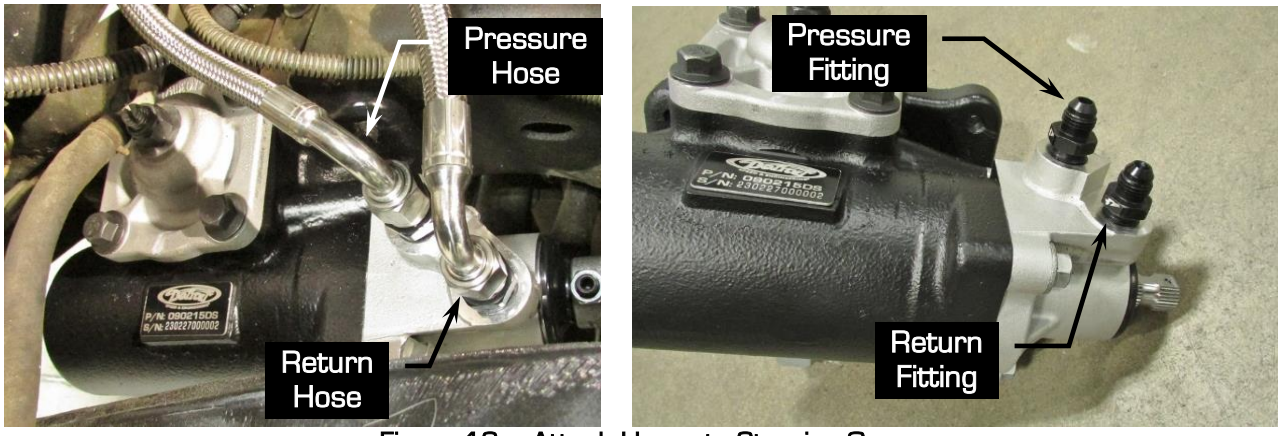

Figure 12 – Attach Hoses to Steering Gear

16. Attach the pressure and return hoses to the back of the power steering pump (Figure 13).

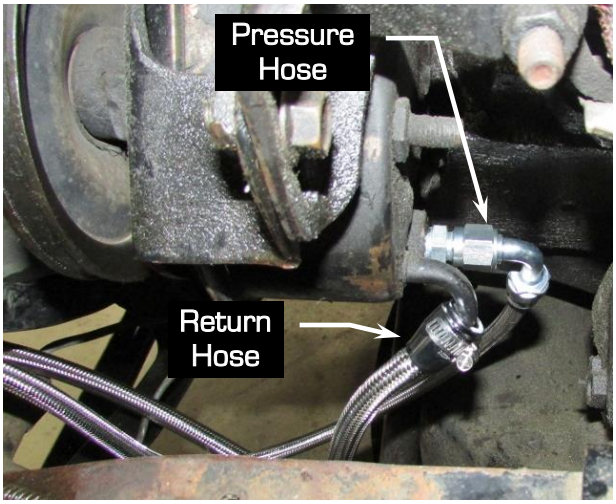

Figure 13 – Attach Hoses to Pump

17. Use tie-wraps to keep the power steering hoses away from the exhaust. Tighten the pinch bolt in the rag joint (Figure 14).

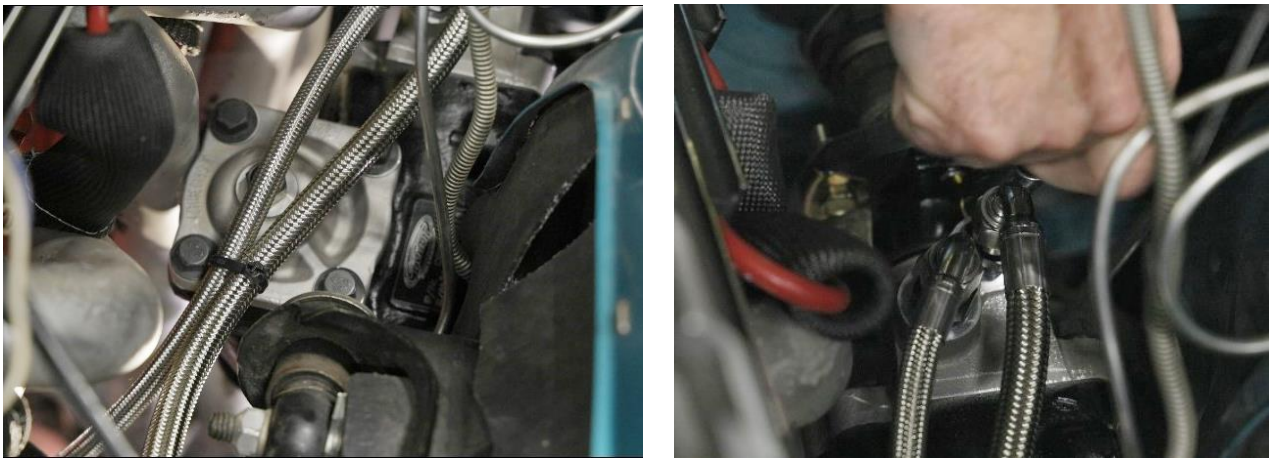

Figure 14 – Tie Hoses & Tighten Rag Joint

18. Attach the pitman arm to the DSE steering gear, make sure the dust shield is on the steering gear before the pitman arm is installed. Install the pitman arm nut and washer onto the steering gear and tighten. Torque the pitman arm nut to 120 ft/lbs. Do not forget to install a new cotter pin.

19. Add power steering fluid to the system. All air must be bled from the system.

20. Follow the steps below to bleed air from the system.

    a) After filling the system with power steering fluid, verify that the engine is turned off.

    b) Slowly turn the steering wheel from full left lock to full right lock. **NOTE:** Avoid hard steering input into full lock positions.

    c) Check the fluid level and maintain it at the "full" mark or 1/2" to 3/4" above the reservoir inlet fitting.

    d) Repeat the previous steps three to four times.

    e) Start the engine and repeat steps 19b to 19d to finish bleeding the steering system.

    f) Turn the engine off and recheck the fluid levels.

21. Re-install the driver's side front wheel and tire and put the truck back on the ground. Torque the front wheel to the manufacturer's specifications. The installation of the DSE Steering Gear is now complete.

22. Because the pitman arm has been removed and reinstalled, an alignment by a professional alignment shop is recommended.

If you have any questions before or during the installation of this product, please contact Detroit Speed at tech@detroitspeed.com or 704.662.3272.

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