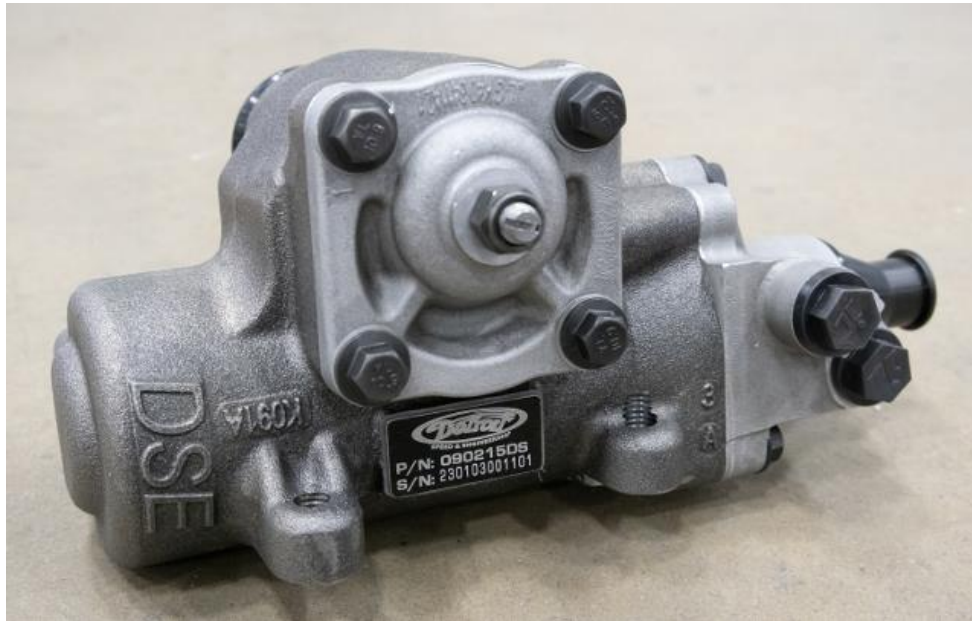


Detroit Speed
12.7:1 Ratio Steering Gear
1967-1992 Camaro/Firebird, 1964-1981 Chevelle,
1968-1979 Nova, 1982-2003 S10 Pickup & 1978-88 G-Body
P/N: 090215DS

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 1964 to 1992.



The DSE Steering Gear includes the following features:

- All new steering gear unit, not rebuilt.
- Fits 1982-92 Camaro/Firebird with no modification to the steering box or the frame.
- Improved steering feel due to low friction gear design.
- Precision rack and pinion valve technology.
- Late model performance car 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.

NOTE: For 1978-81 Camaro/Firebird, you will need a stock replacement 2-3/4" OD rag joint.

NOTE: For the 1978-88 G-Body and the 1982-92 Camaro/Firebird application, a steering shaft kit will be needed. Detroit Speed does offer a steering shaft kit (P/N: 092519DS).

To install the DSE Steering Gear, follow the following steps.

1. Support the vehicle on jack stands. Remove the driver's side front wheel and tire from the vehicle (Figure 1).



Figure 1 - Remove Driver's Side Wheel

2. Depending on application, it may be necessary to remove the exhaust manifold or header from the driver side to gain better access to the steering gear.
3. 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 2). If the car has original power steering, inspect the arm for wear and save for later reinstallation. If the car has manual steering, you will need a replacement power steering pitman arm (available from Detroit Speed, P/N: 092301DS for 1967-69 Camaro & 1968-72 Nova).



Figure 2 - Remove Pitman Arm

4. To disconnect the steering column from the gear, remove the hardware connecting the rag joint to the steering column or steering shaft.

5. Disconnect the power steering hoses from the steering gear if the car is originally power steering equipped. Cap the open ports in the steering gear to prevent it from leaking (Fig. 3).



Figure 3 - Disconnect Power Steering Hoses

6. With the original steering gear properly supported, remove the three bolts that attach the gear to the frame rail. These bolts will be reused for installation of the DSE steering gear. Pry the rag joint away from the steering column and remove the steering gear from the vehicle (Figure 4).

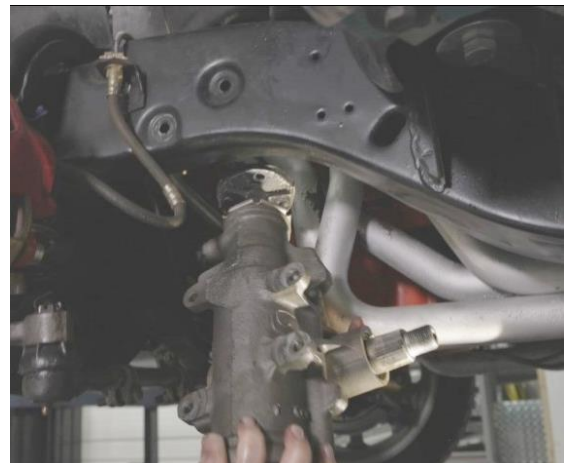
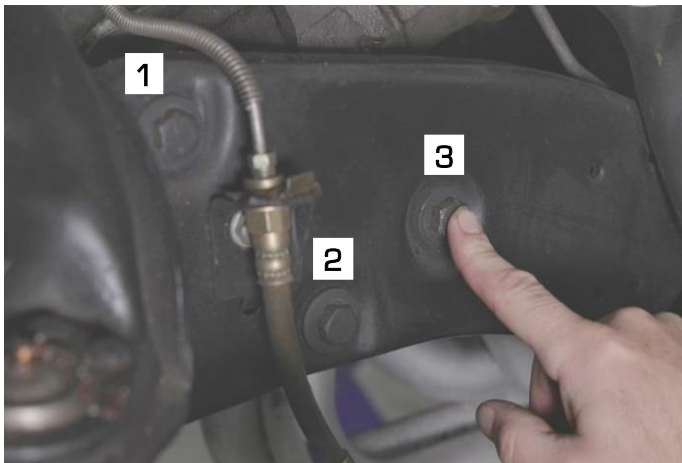


Figure 4 - Remove Steering Gear

7. Remove the pressure and return hoses from the back of the power steering pump (Fig. 5).



Figure 5 - Remove Pressure & Return Hoses from Pump

8. Remove the power steering hoses from the vehicle. 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 6).



Figure 6 - Install P/S Pump Fitting

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 7).



Figure 7 - 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 8).



Figure 8 - Install Fittings

11. Install the DSE rag joint (PN: 090205DS) onto the steering column using the provided hardware and tighten. Make sure the steering wheel is straight (Figure 9).

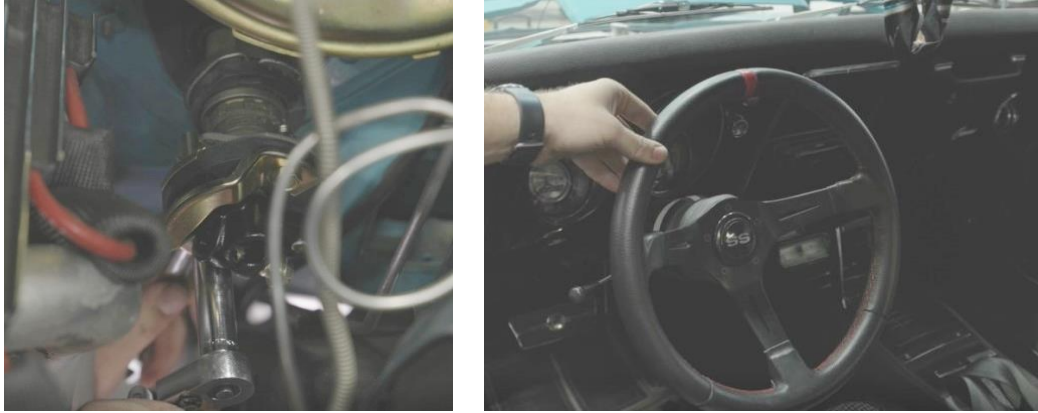


Figure 9 - Install Rag Joint

12. Place the DSE steering gear against the inside of the frame. Install the input shaft of the steering gear into the rag joint. Attach the DSE steering gear to the steering column. If using a different method to attach the steering column to the steering gear, the input shaft is 3/4"-30 splined shaft. (Figure 10).

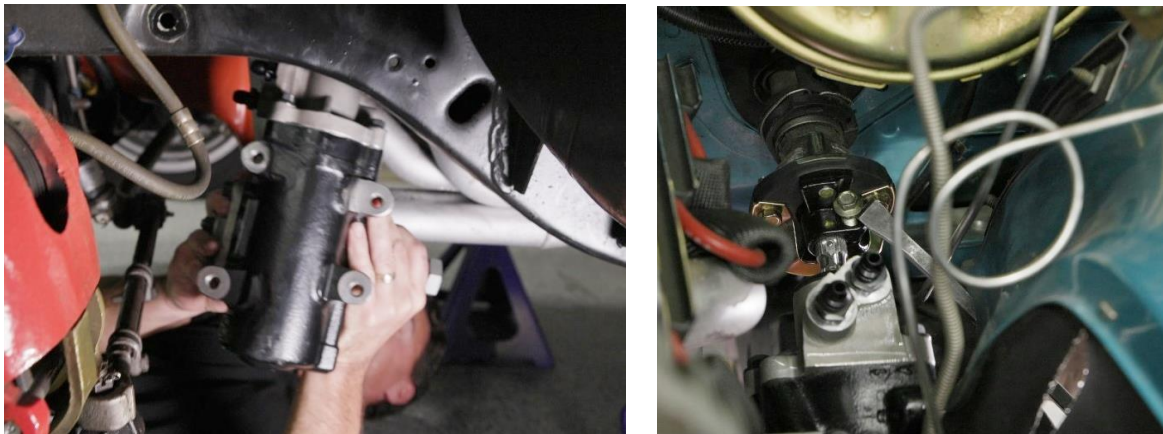


Figure 10 - Locate Steering Gear

13. Thread the three bolts into the new steering gear. Use anti-seize on the threads of the bolts and tighten (Figure 11). **NOTE:** If the OE bolts bottom out into the bottom side of the steering gear housing you can either use a shorter 7/16"-14 bolt or add a 7/16" washer to the head of the bolt.

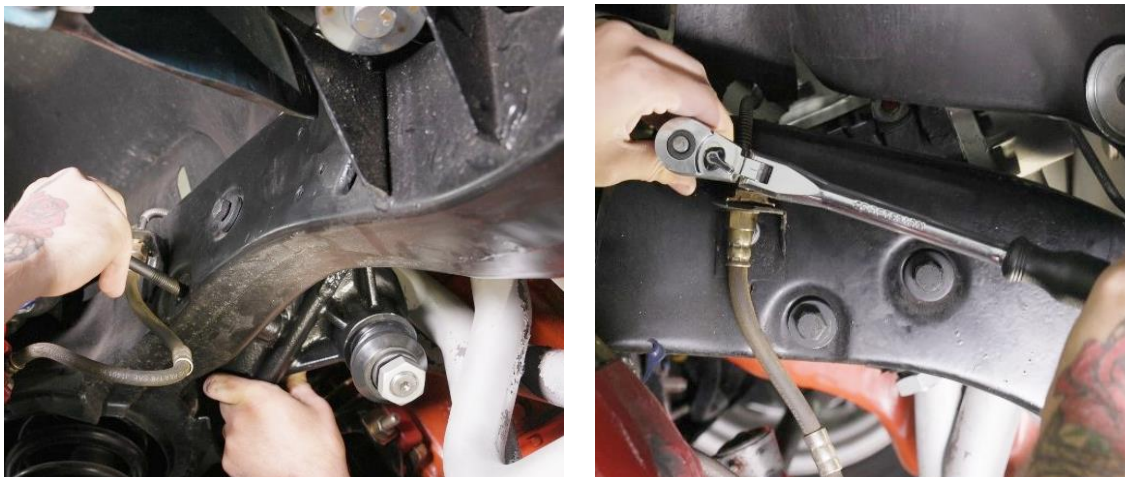


Figure 11 - Install Steering Gear

14. Be sure to use the correct mounting points on the steering gear as the fourth mounting boss is not used. Torque the mounting bolts to 70 ft/lbs. **NOTE:** If the fourth mounting point does need to be used you will need to add a 1/2" thick spacer between the steering gear and the frame. You will also need to use a 1/2" long bolt.
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.

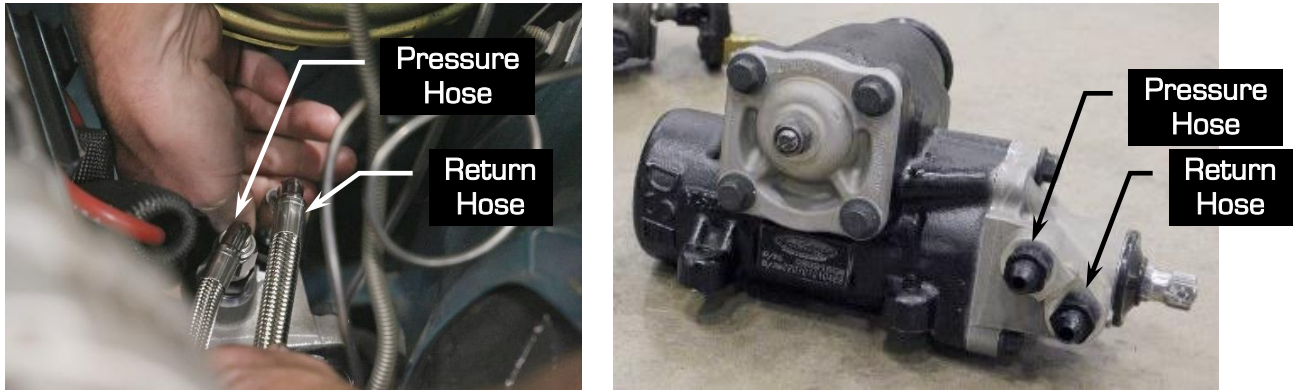


Figure 12 - Attach Hoses to Steering Gear

16. Attached the pressure and return hoses to the power steering pump (Figure 13).

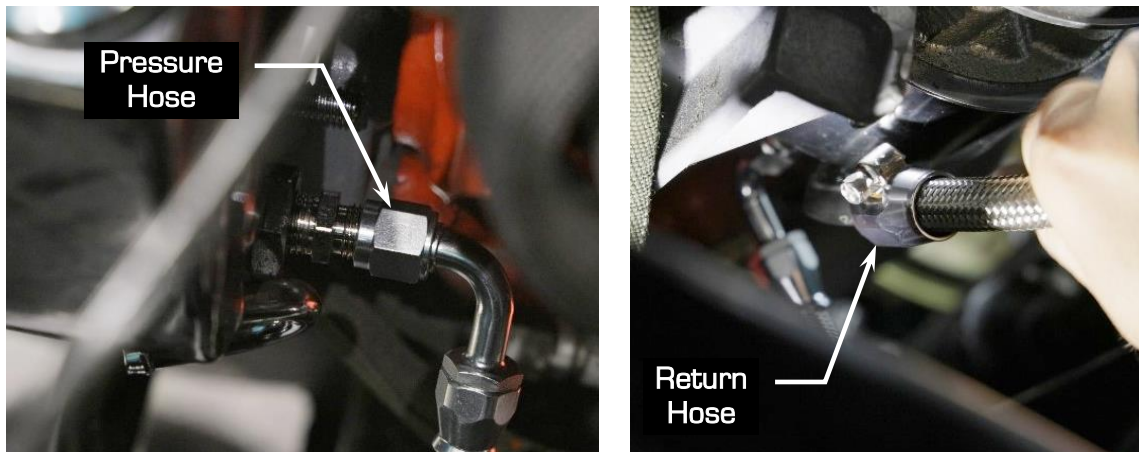


Figure 13 - Attach Hoses to Pump

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

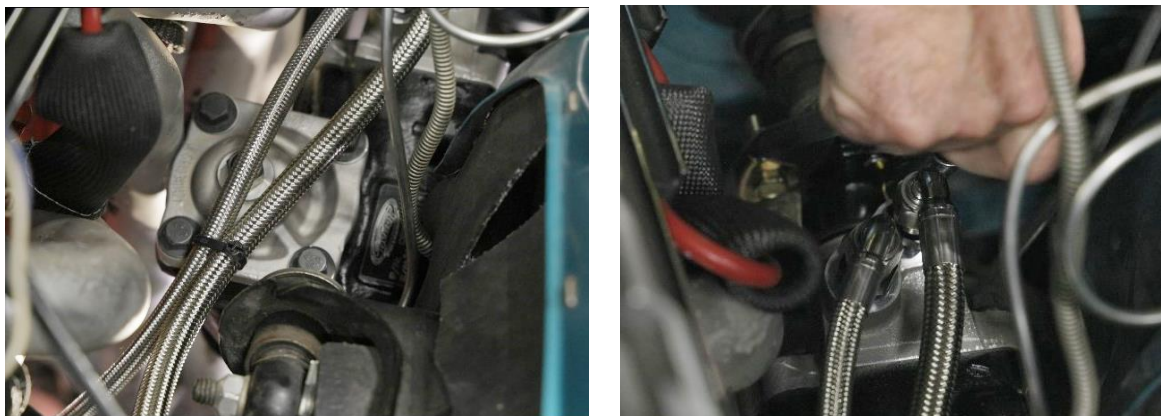


Figure 14 - Tie Hoses & Tighten Rag Joint

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 (Figure 15).



Figure 15 - Install Pitman Arm

19. Add power steering fluid to the system (Figure 16). Detroit Speed does offer Valvoline power steering fluid for your power steering system (P/N: 140112). All air must be bled from the system.

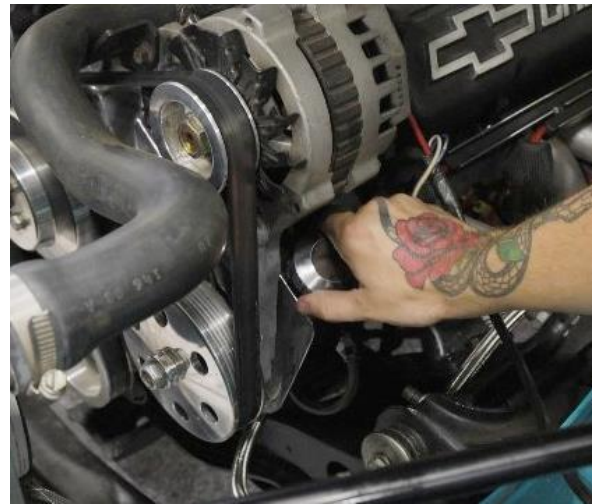


Figure 15 - Add Power Steering Fluid

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 vehicle 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@detroitsspeed.com or 704.662.3272

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