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Viewed:	4069		

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Title: **Dual Power Steering Gear Bleeding**

Applies To: **All vehicle built with dual gears**

CHANGE LOG

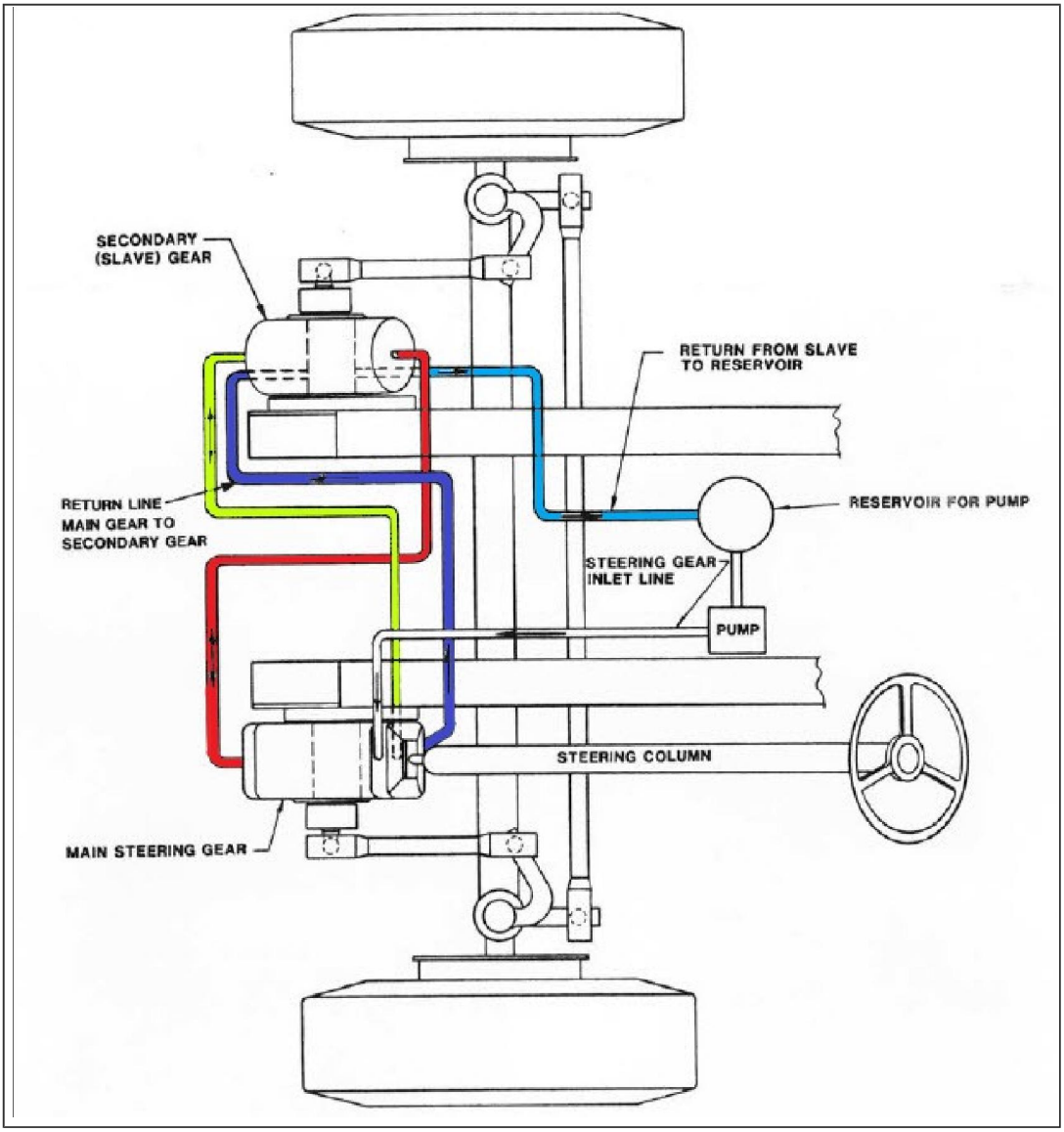
Please refer to the change log text box below for recent changes to this article:

07/25/2019 - Update procedure, formating and added links to Sheppard
04/04/2018 - Author updated for feedback purposes
02/16/2014 - Author updated for feedback purposes.

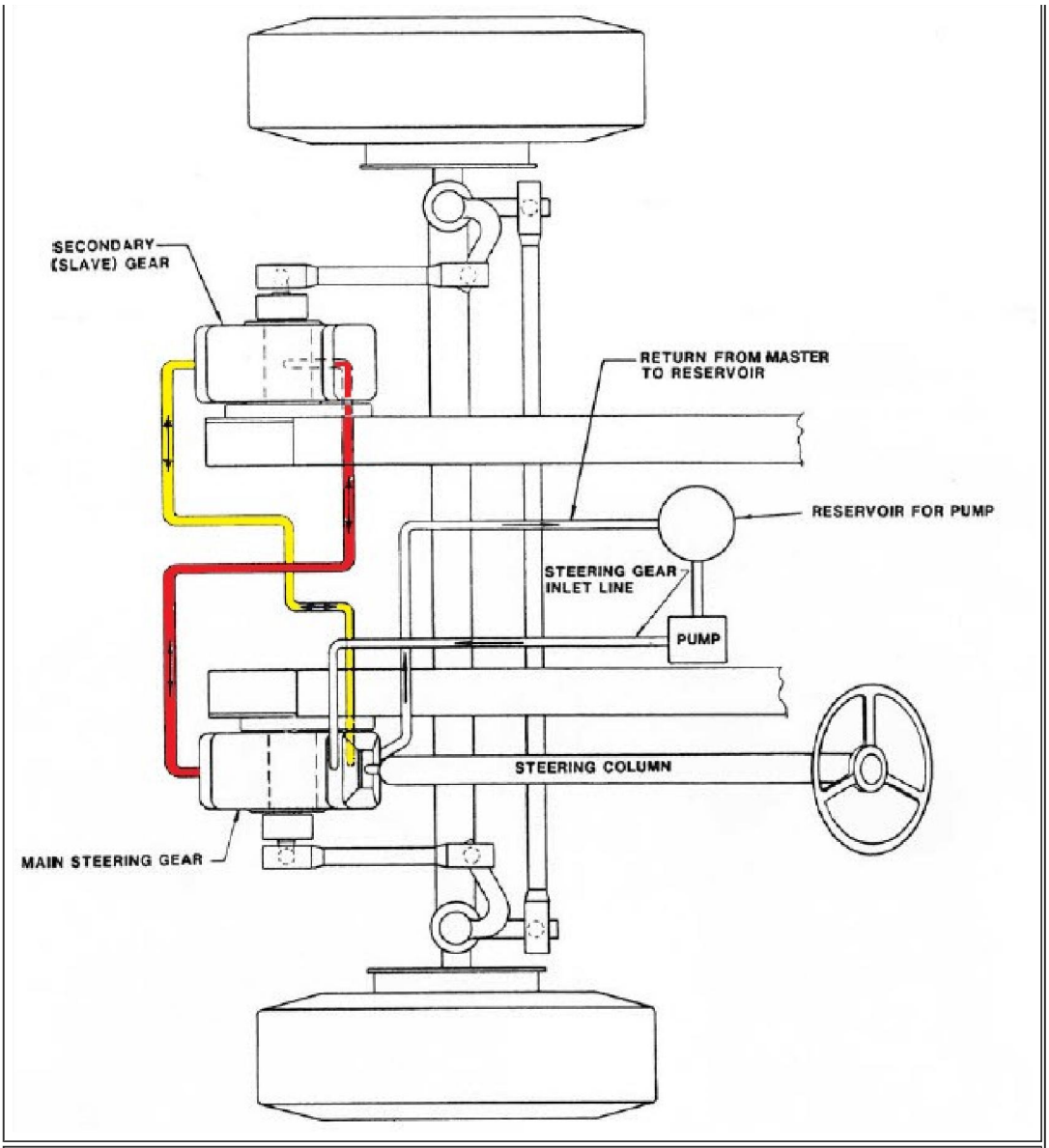
DESCRIPTION

Note: For more instructional videos visit: Sheppard Service and Instructional Videos

DUAL GEAR PLUMBING:



Dual Steering Gear Plumbing With Cooled Slave Gear



Dual Steering Gear Plumbing with Non-Cooled Slave Gear

DUAL GEARS BLEED PROCEDURE:

Bleeding the dual steering gear system is necessary whenever the system has been repaired or steering fluid has been replaced. Different gear sizes may be used together but the bleeding procedure is the same.

NOTE:
Before starting the procedure ensure the system is full of fluid, there are no leaks and the gear relief poppet are set correctly.

1. Park the vehicle on a clean, dry, solid surface, preferably concrete. Set the parking brake and block the wheels. Place the transmission in neutral. Make sure the engine is OFF.
2. Jack the vehicle up until the front wheels have cleared the surface. Set the front axle on floor stands.

WARNING:

A jack must never be used alone to support vehicle while under-chassis service is being performed. The jack may lower, and serious personal injury could result. Always support vehicle with floor stands.

3. Tilt the hood or cab.
4. Make sure the fluid level in the reservoir is at the full mark on the dipstick.
5. Remove the drag link from the pitman arm of the slave gear only. Refer to GROUP 05 - STEERING in the CTS-5000 Master Service Manual for the correct procedure to remove the drag link for the vehicle being serviced.
6. Start the vehicle and allow engine to idle.
7. With the wheels off the ground, turn the steering wheel to a full left turn (contacting axle stops) and hold pressure on the steering wheel until the slave gear moves its full travel. Continue to hold pressure on the steering wheel for ≤ 15 seconds after the slave gear stops moving. Then turn the steering wheel to a full right turn and hold until the slave moves its full travel and hold pressure on the steering wheel for ≤ 15s.
8. Repeat step 7 a minimum of three times, then check for signs of air in the system. If air is still present continue repeating the procedure. Tighten the attaching nut to specifications in Table 2 following.

   IMPORTANT: Do not move the pitman arm by hand during this operation. Air may get in the system.
9. Connect the drag link to the slave gear by turning the steering wheel until the pitman lines up with drag link. Install a new cotter pin through the ball stud nut, then lock in place.

Dual Steering Gear Drag Link Nut Torque Chart

Stud Size	Ft-Lbs	Nm
3/4	85 to 105	116 to 143
7/8	120 to 160	163 to 218

CAUTION:

Do not back off the nut when locating the cotter pin hole.

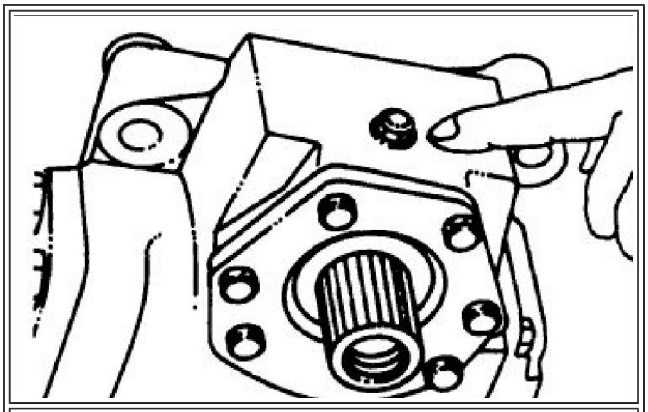
WARNING:

Failure to install a new cotter pin in the ball stud after proper torque could result in an accident, personal injury or death.

10. Steer the vehicle full left to full right several more times. Inspect for any binding or hesitation.
11. If binding or hesitation is noticed. Locate the bleeder screw in the gear.

    IMPORTANT: Do not completely remove the bleeder screw, there is a check ball and spring located behind the screw.
12. Use an Allen wrench to open the bleeder screw no more than 4 turns. The steering wheel should only be turned to move the piston toward the bleeder when it is open, when non-aerated fluid flows from the bleed

screw close the bleeder. Never have the bleeder open when moving the piston away from the bleed, air will enter the system. Note: Not all gear models will have a bleeder screw.



Example of a bleed screw location

NOTE:
Do not turn the steering wheel to move the piston away from the bleeder with the bleeder screw open.

13. Repeat the procedure on the slave gear if an M-Series slave is used with a bleeder.
14. Check the fluid level in the power steering reservoir and fill if necessary.
15. Shut the vehicle off.
16. Lower the hood or cab.
17. Raise the vehicle and remove the floor stands. Lower the vehicle until the tires contact the surface.
18. Once the weight of the vehicle is on the ground turn the steering wheel to a full left and right turn, ensuring the gear is relieving pressure about 1/4inch from the axle stops. If it is not, follow the gear manufactures instructions for resetting the gear relief poppets.

WARRANTY INFORMATION

Warranty Claim Coding:

Refer to the Warranty Coding Manual for Group and Noun Codes.

Standard Repair Time(s):

Refer to the SRT Manual for Repair Times

OTHER RESOURCES

Master Service Information Site

RH Sheppard Service Information

Sheppard Bleed Procedure for Dual Gear Steering Systems

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