TRW Automotive
Commercial Steering Systems

Service Bulletin SRV-103

Steering Gear Installation

June 2017

Steering Gear Installation

1. Verify that axle stops are set to manufacturer's wheelcut or clearance specifications.
2. Bolt gear to frame, torque to vehicle manufacturer's recommendation.
3. Connect reservoir return line to steering gear return port.
4. Connect hydraulic line from pump to steering gear pressure port.
5. Connect steering column to input shaft, torque pinch bolt to vehicle manufacturer's recommendation.
6. Install pitman arm on output shaft and align timing marks as per vehicle manufacturer's recommendation. Torque bolt to vehicle manufacturer's recommendation.

> NOTE Check the sector shaft to ensure there is no looseness. If loose follow the on vehicle sector shaft adjustment procedure found at trucksteering.com Diagnostic and Maintenance **Steering System Maintenance Guidelines**

7. Connect drag link to pitman arm.
8. Perform **Air Bleeding the Steering System** procedure.

Instructional video available for **Flushing and Air Bleeding** on our TRW YouTube channel at www.youtube.com/user/trwcss or follow QR code link **Flushing and Air Bleeding** video QR code:

This TRW Commercial Steering Systems' service procedure has been written to help you repair commercial vehicles more efficiently. This procedure should not replace your manuals; you should use them together. These materials are intended for use by properly trained, professional mechanics, NOT "Do-it-yourselfers". You should not try to diagnose or repair steering problems unless you have been trained, and have the right equipment, tools and know-how to perform the work correctly and safely.

Initial Poppet Setting Procedure

To set the poppets on a new or remanufactured steering gear, follow these steps.

1. Make sure the axle stop bolts are set to vehicle manufacturer's wheelcut or clearance specifications.
2. Raise the front end so the steer axle tires are off the ground.
3. Start the engine and let it idle.
4. Steer the vehicle in one direction, until you contact the axle stop. Pull hard on the steering wheel.
5. Now, steer the vehicle in the opposite direction until you contact the axle stop. Again, pull hard on the steering wheel.
6. Turn the vehicle off.

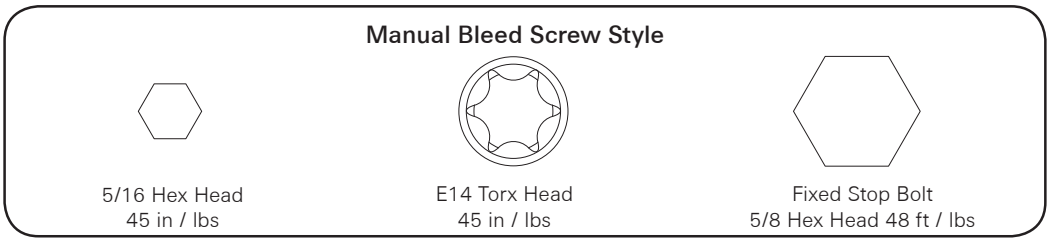
Poppets are now set. Lower the vehicle and remove the jack.

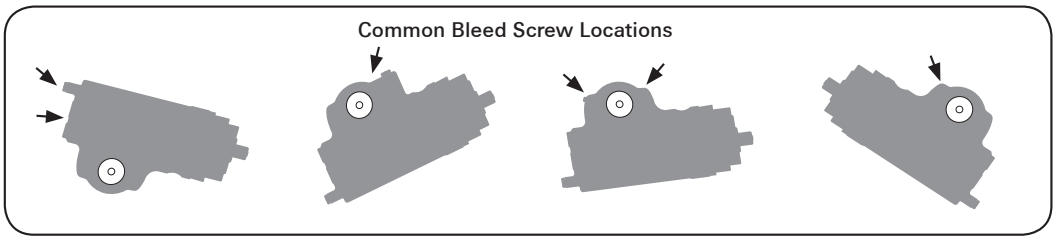
Instructional video available for **Poppet Setting** on our TRW YouTube channel at www.youtube.com/user/trwcss or follow QR code link **Poppet Setting** video QR code:

Air Bleeding the Steering System

Description and Visual Identification

Air bleeding a steering system allows air trapped in the cavities of the steering gear to escape.
Generally, manual bleed gears are mounted inverted or with input shaft orientation lower than poppet stop bolt. See **Common Bleed Screw Locations** figure below. Use applicable bleed procedure. If your gear does not have a manual bleed screw use the **Automatic Bleed Gears** procedure.





Automatic Bleed Gears

1. Fill the reservoir.
2. Start the engine, let it run for 10 seconds, without steering, then shut it off.
3. Check the reservoir, and refill if the fluid level has dropped.
4. Repeat at least three times, checking and refilling the reservoir each time if necessary.

> NOTE Do not allow the fluid level to drop significantly or run out of the reservoir. This may induce air into the system.

> NOTE If at any time during this procedure the steering fluid becomes aerated (small air bubbles mix with the steering fluid) such that the top of the filter is not visible through the fluid, shut off system and allow fluid to become clear of air again (approximately 5-10 minutes) and start the process over from step 1.

5. Start the engine and let it idle for 2 minutes, without steering. Shut off the engine and check the fluid level in the reservoir. Refill if required.
6. Start the engine again. Slowly steer the vehicle from full left to full right several times. If at any time air bubbles are visible in the reservoir, stop steering, maintain steering wheel position, allow air to dissipate and fluid to clear, then continue steering. Automatic bleed systems should now be free from trapped air.
7. Check the fluid level in the reservoir. Refill if necessary before returning the vehicle to service.

Manual Bleed Gears

1. Fill the reservoir.
2. Start the engine, let it run for 10 seconds, without steering, then shut it off.
3. Check the reservoir, and refill if the fluid level has dropped.
4. Repeat this process at least three times, checking and refilling the reservoir each time if necessary.

> NOTE Do not allow the fluid level to drop significantly or run out of the reservoir. This may induce air into the system.

> NOTE If at any time during this procedure the steering fluid becomes aerated (small air bubbles mix with the steering fluid) such that the top of the filter is not visible through the fluid, shut off system and allow fluid to become clear of air again (approximately 5-10 minutes) and start the process over from step 1.

5. Start the engine and let it idle for 2 minutes, without steering. Shut off the engine and check the fluid level in the reservoir. Refill if required.
6. Start the engine again. Steer the vehicle from full left to full right several times.
7. Again, check the fluid level in the reservoir.
8. With the engine idling, steer from full left turn to full right turn several times. Stop steering with the wheels pointed straight ahead and loosen the manual bleed screw 2-3 turns.

> ⚠CAUTION **Do not turn steering wheel with bleed screw loosened.**

9. Allow air and aerated fluid to “bleed out” until fluid appears without bubbles.
10. Close the bleed screw, refill the reservoir if required.
11. Repeat this process three or four times until all the air is discharged. Torque manual bleed screw to 45 in•lb.

TRW Commercial Steering Systems
www.trucksteering.trw.com
800 Heath St.
Lafayette, IN 47904
Ph: 800.879.0899
Fx:765.429.1775
css.trucksteering@trw.com