

## STEERING GEAR RELIEF PLUNGERS

A relief plunger is placed in each end of all Sheppard steering gears (with the exception of slave gears) to unload steering system pressure prior to the axle stops contacting the axle. One is located in a small hole in the bearing cap cover next to the input shaft. (A plastic plug is installed to protect the plunger.) The other plunger is on the opposite end of the steering gear and may be in a hole in the cover, in a hole in the end of a boss sticking out from the cover, or in a cartridge screwed into the cover. (A plastic cap or plug protects the plunger.) The plungers prevent the power steering pump from operating at maximum relief pressure at the end of steering travel. When properly adjusted, the relief plungers reduce system temperature and excessive stress on the mechanical components of the steering system by preventing the axle stops from contacting the axle under full pump pressure.

**CAUTION: Failure to set or adjust the relief plungers could result in damage to the steering system. Plungers MUST be set or adjusted whenever a steering gear is replaced.**

## AUTO PLUNGERS

1. AUTO plunger gears are identified by the word AUTO in raised letters cast into the side of the steering gear housing.



HD94 AUTO Steering Gear

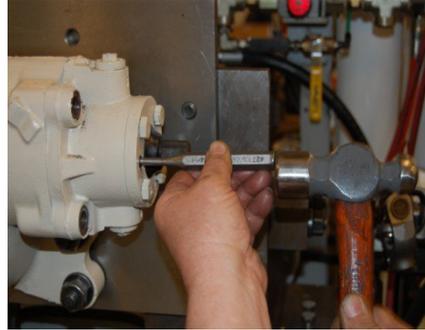
2. Raise the steer tires off the ground.
3. Start the engine and let it run at idle speed. Ensure the axle stops are set to the vehicle manufacturer's specifications.
4. Set the AUTO plungers by turning the steering wheels from side to side until the axle stops contact the axle. This allows the piston in the steering gear to contact the AUTO plunger assembly and push it back to its set position. The stops **MUST** contact the axle.
5. Set the vehicle back on the ground. Turn the steering wheel completely from stop to stop. The chassis should not flex when the steering reaches the end of travel. If it does, the AUTO plungers must be reset. Normally you will see a small gap

between the axle stop and the axle.

6. Reset AUTO plungers by tapping them in with a 1/4" punch and hammer until you feel the plunger bottom out in the bore. Be careful not to score the plunger bore. Scoring the bore will cause a leak which cannot be repaired. After the AUTO plungers are reset, correctly set them by following steps 2 through 4.



Cylinder Head Autoplunger Resetting



Bearing Cap Autoplunger Resetting

If there is no room to access the cylinder head plunger with the punch and hammer, the autoplunger cartridge can be removed and placed in a vice to reset the autoplunger.



HD94 with Autoplunger cartridge



HD94 Autoplunger cartridge in vice

Once the relief plungers are set, no further adjustment is necessary unless tire size or wheel offset is changed.

## **MANUAL PLUNGERS**

1. Your steering gear has manual plungers if you can easily back them out of the plunger hole with a small flat-bladed screwdriver.
2. Manual plungers are turned all the way in from the factory for minimum wheel cut. Adjust the plungers in to decrease wheel cut, adjust out to increase wheel cut. Use a long, flat bladed screwdriver.
3. Start the engine and let it run at idle speed. Ensure the axle stops are set to the vehicle manufacturer's specifications.
4. With the full weight of the vehicle on the ground, have a helper turn the steer tires full left. Check the gap between the axle stop and the axle on the left steer tire. If it is greater than 1/8" adjust the plunger out (counter clockwise). Adjust the plunger in the end of the gear which the piston has moved toward. If the stop is touching the axle try turning the plunger in then recheck it.

**NOTE:** The plungers are fine thread so it may take several turns to get them properly adjusted. Do not back the head of the plunger out past 1/8" deep in the hole. The plunger could be ejected from the gear.



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Adjusting Cylinder Head Manual Plunger



Adjusting Bearing Cap Manual Plunger

5. After making an adjustment, center the steering and recheck the gap at the axle stop.



6. When the steer tires have been turned back and forth about 4 times, rubber will accumulate under the tires and make setting the plungers difficult. Roll the vehicle ahead or back about 1 foot and recheck the gap at the axle stop.
7. Turn the steer tires full right and adjust the opposite plunger for the gap at the right side axle stop using the same procedure.

Once the relief plungers are set, no further adjustment is necessary unless tire size or wheel offset is changed.

**If you have questions at any time, our entire Service Manual can be found on our website at [www.rhsheppard.com](http://www.rhsheppard.com), under the SERVICE heading, or contact our Field Service Hotline at 1-800-274-7437.**