

# 1991 - 1994 Corvette: Service Bulletin: Reduced Power Steering Assist at Low Ambient Temperatures

**Subject:** Reduced Pwr Steering at Low Ambient Temperatures (New Power Steering Fluid)

**Model and Year:** 1994 AND PRIOR PASSENGER CARS AND LIGHT DUTY TRUCKS

**Source:** Chevrolet Service Bulletin

**Bulletin Number:** 03-32-06

REVISION: 02/24/94

BULLETIN BEING REVISED TO ADD MODEL YEARS 1993-94, ADDED LIGHT TRUCKS AND REVISED "IMPORTANT" STATEMENT FOUND LISTED BELOW STEP 3. UNDER SUB-TITLE 'BLEEDING THE POWER STEERING SYSTEM'. PREVIOUS DIVISIONAL PUBLICATION NUMBERS WERE:

BUICK: 91-3-8 CADILLAC: T-91-83 CANADA: 91-3-117 CHEVROLET: 91-208-3B OLDSMOBILE: 91-3-117 PONTIAC: 91-3-12

APPLICATIONS :

APPROPRIATE FOR ALL PASSENGER VEHICLES, BUT PARTICULARLY BENEFICIAL IN 1980 AND LATER FWD MODELS EQUIPPED WITH POWER RACK AND PINION STEERING.

**CONDITION:**

COMMENTS OF REDUCED POWER STEERING ASSIST AT LOW AMBIENT TEMPERATURES (APPROXIMATELY 10 DEGREES FAHRENHEIT AND LOWER) MAY BE NOTED BY SOME VEHICLE OPERATORS WHEN TURNING THE STEERING WHEEL IN BOTH THE RIGHT AND LEFT DIRECTION DURING WARM-UP AFTER COLD START. ALL VEHICLES WITH POWER STEERING EXHIBIT THIS CONDITION TO VARYING DEGREES, BUT CONDITION MAY BE MORE NOTICEABLE WITH POWER RACK AND PINION STEERING SYSTEMS THAT TYPICALLY HAVE LONGER HOSES AND COOLER LINES.

**NOTE: THIS CONDITION, WHICH IS RELATED TO POWER STEERING FLUID VISCOSITY, SHOULD NOT, HOWEVER, BE CONFUSED WITH CONDITIONS HAVING SIMILAR SYMPTOMS SUCH AS THAT DESCRIBED DIVISIONAL SPECIAL POLICY NUMBERS LISTED BELOW:**

BUICK: 88-POL-4 CADILLAC: 88-P-1 CHEVROLET: 88-417-3B OLDSMOBILE: 88-T-139 PONTIAC: 88-SM-10

**CAUSE:**

IN COLD WEATHER, POWER STEERING FLUID THICKENS IN THE SAME MANNER AS ANY OTHER PETROLEUM-BASED OIL OR FLUID. UPON COLD STARTING, THE FLUID RESISTS MOVEMENT THROUGH THE SYSTEM AND THE DRIVER SENSES REDUCED POWER ASSIST (SOMETIMES REFERRED TO AS "STIFF STEER"). AS THE VEHICLE OPERATES AND FLUID CIRCULATES THROUGH THE POWER STEERING SYSTEM, THE FLUID WARMS AND THINS TO ITS NORMAL OPERATING VISCOSITY.

**CORRECTION:**

SAGINAW DIVISION HAS DEVELOPED A NEW LOW TEMPERATURE CLIMATE SERVICE FLUID FOR USE IN COLD CLIMATES. COMPARED WITH CONVENTIONAL POWER STEERING FLUID, THIS NEW FLUID FLOWS BETTER AT LOW TEMPERATURES AND RESISTS THE THICKENING WHICH CONTRIBUTES TO REDUCED POWER ASSIST UPON START UP.

**RACK AND PINION STEERING SYSTEMS**

REDUCED POWER ASSIST UPON COLD WEATHER STARTING MAY BE MORE NOTICEABLE IN POWER RACK AND PINION STEERING SYSTEMS THAT MAY CONTAIN SIX OR MORE FEET OF PRESSURE AND RETURN HOSE ALONG WITH LONG COOLER LINES. SUCH LONG SYSTEMS CONTAIN GREATER VOLUMES OF FLUID AND VEHICLES SO EQUIPPED TEND TO HAVE LONGER PERIODS OF REDUCED POWER ASSIST. THE NEW FLUID PERFORMS PARTICULARLY WELL WITH CURRENT DESIGNED RACK AND PINION STEERING SYSTEMS AND SPECIAL REMANUFACTURED RACK AND PINION STEERING ASSEMBLIES.

**PARTS INFORMATION:**

LOW TEMPERATURE CLIMATE SERVICE FLUID IS AVAILABLE FROM GMSPO. ORDER AS:

CONTAINER SIZE PART NUMBER

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16 OUNCE 12345866  
32 OUNCE 12345867

PARTS ARE CURRENTLY AVAILABLE FROM GMSPO.

**SERVICE PROCEDURE:**

THE POWER STEERING FLUID REPLACEMENT PROCEDURE IS A TWO-STAGE PROCESS: FIRST, FLUSHING THE OLD FLUID FROM THE SYSTEM WITH NEW FLUID; AND SECOND, BLEEDING THE SYSTEM TO REMOVE ANY TRAPPED AIR. THE FOLLOWING TWO SEQUENCES OUTLINE THE STEPS IN EACH PROCEDURE.

**FLUSHING THE POWER STEERING SYSTEM**

1. RAISE THE FRONT END OF THE VEHICLE OFF THE GROUND UNTIL THE WHEELS ARE FREE TO TURN.
2. REMOVE THE FLUID RETURN LINE AT THE PUMP RESERVOIR INLET CONNECTOR.
3. PLUG THE INLET CONNECTOR PORT ON THE PUMP RESERVOIR.
4. POSITION THE FLUID RETURN LINE TOWARD A LARGE CONTAINER IN ORDER TO CATCH THE DRAINING FLUID.
5. WHILE A SECOND PERSON FILLS THE RESERVOIR WITH NEW LOW TEMPERATURE CLIMATE SERVICE FLUID, START AND RUN THE ENGINE AT IDLE.
6. TURN THE STEERING WHEEL FROM STOP TO STOP.

**NOTICE: DO NOT HOLD THE WHEEL AGAINST STOPS WHILE FLUSHING THE SYSTEM. HOLDING STEERING WHEEL AGAINST WHEEL STOPS WILL CAUSE HIGH SYSTEM PRESSURE, OVERHEATING, AND DAMAGE TO THE PUMP AND/OR GEAR.**

7. CONTINUE DRAINING UNTIL ALL OF THE OLD FLUID IS CLEARED FROM THE POWER STEERING SYSTEM. ADDITION OF APPROXIMATELY 1 QUART OF NEW FLUID WILL BE REQUIRED TO FLUSH SYSTEM.

8. UNPLUG PUMP RESERVOIR INLET AND RECONNECT RETURN LINE.

9. TURN ENGINE OFF, AND FILL RESERVOIR TO THE "FULL COLD" MARK.

10. CONTINUE WITH FOLLOWING PROCEDURE "BLEEDING THE POWER STEERING SYSTEM".

#### **BLEEDING THE POWER STEERING SYSTEM**

AFTER REPLACING THE FLUID OR SERVICING THE POWER STEERING HYDRAULIC SYSTEM, YOU MUST BLEED AIR FROM THE SYSTEM. AIR IN THE SYSTEM PREVENTS AN ACCURATE FLUID LEVEL READING, CAUSES PUMP CAVITATION NOISE AND OVER TIME COULD DAMAGE THE PUMP. TO BLEED THE POWER STEERING SYSTEM PROCEED AS FOLLOWS:

1. BEGIN WITH THE ENGINE OFF, FRONT WHEELS OFF THE GROUND, AND WHEELS TURNED ALL THE WAY TO THE LEFT.

2. ADD LOW TEMPERATURE CLIMATE SERVICE FLUID TO THE "FULL COLD" MARK ON THE FLUID LEVEL INDICATOR.

3. BLEED THE SYSTEM BY TURNING THE WHEELS FROM SIDE TO SIDE WITHOUT HITTING STOPS.

**IMPORTANT: THIS MAY REQUIRE TURNING THE WHEELS FROM SIDE TO SIDE TWENTY TIMES. ON SYSTEMS WITH LONG RETURN LINES OR FLUID COOLERS, TURNING STEERING WHEEL LOCK-TO-LOCK FORTY TIMES MAY BE REQUIRED. KEEP THE FLUID LEVEL AT THE "FULL COLD" MARK. FLUID WITH AIR IN IT HAS A LIGHT TAN APPEARANCE. THIS AIR MUST BE ELIMINATED FROM THE FLUID BEFORE NORMAL STEERING ACTION CAN BE OBTAINED.**

4. START THE ENGINE. WITH THE ENGINE IDLING, RECHECK THE FLUID LEVEL. IF NECESSARY, ADD FLUID TO BRING THE LEVEL TO THE "FULL COLD" MARK.

5. RETURN THE WHEELS TO THE CENTER POSITION. LOWER FRONT WHEELS TO THE GROUND. CONTINUE RUNNING THE ENGINE FOR TWO OR THREE MINUTES.

6. TEST THE VEHICLE TO BE SURE THE STEERING FUNCTIONS NORMALLY AND IS FREE FROM NOISE.

**IMPORTANT: INSPECT FOR FLUID LEAKAGE AT CONNECTION POINTS ALONG THE POWER STEERING SYSTEM.**

7. RECHECK THE FLUID LEVEL AS DESCRIBED IN STEPS 3 AND 4 EXCEPT THAT THE FLUID LEVEL SHOULD NOW BE UP TO THE "FULL HOT" MARK AFTER THE SYSTEM HAS STABILIZED AT ITS NORMAL OPERATING TEMPERATURE.

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