



**DTB**

Date: December 19, 2007  
Order No.: P-B-46.30/22b  
Supersedes: P-B-46.30/22a dated April 14, 2005  
Group: 46

**Revision History**

Revision	Date	Purpose
b	12/19/07	Applicable Models Updated
a	4/14/05	Damage Code Corrected
-	4/06/05	Initial issue

**SUBJECT: All Model 170, 171, 203, 208, 209, 210, 211, 215, 219, 220, 221 and 230  
Noises From The Area of Power Steering Pump**

If you receive customer reports in the above model vehicles of noise from the area of power steering pump when the engine is running; the noise may be traced to a low power steering oil level after the vehicle was exposed to low outside ambient temperatures.

***i* Note:**

1. Noises that occur only when cold indicate that the power steering oil level is too low.
2. Noises that occur only when cornering may indicate a low oil level, but may also be due to the power steering/radiator line/hose contacting the chassis or any engine components.
3. Noises that occur only when turning the steering wheel while the vehicle is stationary (parking lot) may indicate that the oil level is too low or may be due to a problem in the area of the oil reservoir/filter.

To remedy, it is absolutely essential to follow the procedure described below before replacing the power steering pump.

1. Reproduce the complaint. If the complaint cannot be reproduced, ask the customer specifically when the problem occurs such as: when engine is warm or cold, only when cornering, only when turning the steering wheel while the vehicle is stationary (parking lot), etc.
2. Check the oil level in the reservoir of the power steering pump.
  - A. If the oil level is OK, look for the noise in the adjacent components, i.e. check for clearance between lines and components. If necessary, unfasten the lines at the connections and attachment points, relieve all stress and refasten. Listen to adjacent components using suitable tools (e.g. stethoscope) and perform repairs as necessary.

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- B. If the oil level is OK and the oil exhibits visible foaming or unusual turbulence, this indicates a problem/restriction in the area of the oil reservoir/filter. Replace oil reservoir including filter.
- C. If the oil level is at or near minimum, top up the oil to near maximum level, bleed the steering system if necessary and observe any change in the noise.
- D. If the oil level is below minimum or drops again soon after topping up, the hydraulic steering system must be checked for leaks. All the components and line connections must be checked. If no external leakage can be detected, the bellows on the power steering gear must be opened in order to check for internal leakage at the steering gear. Replace the leaking component according to findings.

**i** **Note:** Use appropriate operation code(s) and time(s) as per Time Guide.

- 3. Only when all of the above points have been taken into account, checked, and adjacent components can be ruled out can the cause of the complaint be attributed to the power steering pump.

**i** **Note:** The following allowable labor operations should be used when submitting a warranty claim for this repair. This information has been generated on December 19, 2007. Please refer to Netstar → Star TekInfo → Star Time for the most current labor time allowance.

**In Case of Warranty**

- Operation:** Road test, perform (00-9151)  
 Power steering hose, check and adjust (46-0000)  
 Power steering reservoir/lower hose, R&R/replace. if required (46-5400)  
 Power steering operation, check and inspect for leak(s) (46-3005)  
 Power steering pump, replace (46-4060)

Damage Code	Operation Number	Time (hrs.)	Model Indicator (s)
46501 36			
Step 1	00 9151	0.3 hrs.	E1, E2, E3, E4, E5, E6, E7, E8, E9, F1, F2, G1, G2, G3, G4, H1, H2, H3, H4, H5, H6, J2, J3, M1, M2, M4, M5, M6, M7, M8, M9, N1, N2, N3, N4, N5, N6, P1, P2, P3, P4, P5, P6, P7, P8, P9, Q1, Q2, Q3, Q4, Q5, Q6, Q7, Q8, Q9, QA, R1, R2, R3, R4, R5, R6, R7, S1, S2, S3, S4, S5, S6, S7, S8, S9, SA, SB, SC, T1, T2, T3, T4, T5, T6, T7, T8, T9, TA, TB, TC, U1, U3, U4, U5, U6, U7, U8, X1, X2, X3, Y1, Y2, Y3, Y4, AA, AB, AC, AD, AE

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**In Case of Warranty**

<b>Damage Code</b>	<b>Operation Number</b>	<b>Time (hrs.)</b>	<b>Model Indicator (s)</b>
Step 2A	46 0000	0.5 hrs. *	E1, E2, E3, E4, E5, E6, E7, E8, E9, F1, F2, G1, G2, G3, G4, H1, H2, H3, H4, H5, H6, J2, J3, M1, M2, M4, M5, M6, M7, M8, M9, N1, N2, N3, N4, N5, N6, P1, P2, P3, P4, P5, P6, P7, P8, P9, Q1, Q2, Q3, Q4, Q5, Q6, Q7, Q8, Q9, QA, R1, R2, R3, R4, R5, R6, R7, S1, S2, S3, S4, S5, S6, S7, S8, S9, SA, SB, SC, T1, T2, T3, T4, T5, T6, T7, T8, T9, TA, TB, TC, U1, U3, U4, U5, U6, U7, U8, X1, X2, X3, Y1, Y2, Y3, Y4, AA, AB, AC, AD, AE
		*Maximum allowed time with a separate time punch	
Step 2B	46 5400	0.5 hrs.	G1, G2, G3, G4, H1, H2, H3, H4, H6, P1, P2, P3, P4, P6, P7, P8, P9, Q2, Q4
		0.7 hrs.	P5
		0.8 hrs.	E1, E2, E3, E4, E5, E6, E7, E8, E9, F1, F2, J2, X1, X3
		0.9 hrs.	AB, AC, AE, SA, SB, T1, T2, T3, T4, T5, T6, T7, T9, TA, U1, U3, U4, U5, Y1, Y2
		1.0 hrs.	AA, AD, M1, M2, M4, M5, M9, N1, N2, N3, N5, Q1, Q3, S3, S6, S7, S8, S9, SC, T8, TB, U6, U7, U8, X2, Y3, Y4
		1.1 hrs.	M6, M7, R1, R2, R5, R7, S1, S2, S4, S5
		1.2 hrs.	Q5, Q6, Q7, Q8, Q9, QA, R3, R4
		1.3 hrs.	R6
		1.9 hrs.	J3, M8, N4, N6
Step 2C and 2D	46 3005	0.4 hrs.	AA, AB, AC, AD, AE, E1, E2, E3, E4, E5, E6, E7, E8, E9, F1, F2, G1, G2, G3, G4, H1, H2, H3, H4, H5, H6, P1, P2, P3, P4, P5, P6, P7, P8, P9, Q1, Q2, Q3, Q4, Q5, Q6, Q7, Q8, Q9, QA, R1, R2, R3, R4, R5, R6, R7, S1, S2, S3, S4, S5, S6, S7, S8, S9, SA, SB, SC, T1, T2, T3, T4, T5, T6, T7, T8, T9, TA, TB, U1, U3, U4, U5, U6, U7, U8, X1, X2, X3, Y1, Y2, Y3, Y4
		0.5 hrs.	J2, J3, M1, M2, M4, M5, M6, M7, M8, M9, N1, N2, N3, N4, N5, N6

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**In Case of Warranty**

<b>Damage Code</b>	<b>Operation Number</b>	<b>Time (hrs.)</b>	<b>Model Indicator (s)</b>
Step 3	46-4060	1.1 hrs.	E1, E2, E5, F2, G1, G2
		1.4 hrs.	U3, U4
		1.5 hrs.	S4, T1, T4, U1, U4,
		1.6 hrs.	S1, S4, T2, T5, T9, TA, U3, Y1, Y3
		1.7 hrs.	E6, E7, E9, S2, S3, S5, S6, X2, X3
		1.8 hrs.	AA, AD, E4, F1, G3, G4, H1, H2, H3, H4, H5, H6, M6, M7, P1, P2, P3, P4, P5, P6, P7, P8, P9, Q1, Q3, TC, X1
		1.9 hrs.	E3, E8, J2, M1, M2, M4, M5, M9, P1, P2, P3, P4, P5, P6, P7, P8, P9, Q2, Q4, Q8, Q9, S7, S8, T3, T7, T8, U5, U6, U7, Y2
		2.0 hrs.	Q5, T6
		2.1 hrs.	Q6, Q7, Q9
		2.2 hrs.	SB, Y4
		2.3 hrs.	TB, U8
		2.5 hrs.	R5
		2.6 hrs.	AB
		3.0 hrs.	S9, SC
		3.2 hrs.	M8, N4
		3.3 hrs.	N6, R2, R7
		3.4 hrs.	J3, AC
		3.5 hrs.	R1
		4.0 hrs.	AE
		4.3 hrs.	N5
		4.4 hrs.	N1, N2, N3, R1
		4.6 hrs.	R3, R4, R6