### MEDIUM/HEAVY TRUCK:
1988 and prior F, B, L-SERIES, CARGO

### ISSUE:
An air conditioning accessory drive belt that rolls over or jumps-off the A/C compressor pulley may be caused by undersized grooves in the pulley. This condition is more noticeable on trucks with larger horsepower engines.

### ACTION:
Install a new narrower accessory drive belt that is 15/32" wide. Refer to the following drive belt application chart for the correct service part.

### OTHER APPLICABLE ARTICLES: NONE

### WARRANTY STATUS: Eligible Under Basic Warranty Coverage

### LABOR ALLOWANCE

### DEALER CODING
OASIS CODES: 2610
MEDIUM/HEAVY TRUCK:
1986 CARGO
1987-89 F, B, C, L-SERIES, CARGO

ISSUE:
New and used pistons that have visible cracks in the top face or combustion bowl area should not be used in the 6.6L or 7.8L Ford diesel engine. Sometimes a new piston can be damaged during shipping and handling.

ACTION:
Before installing a new or used piston, inspect the top face and combustion bowl area for cracks. If cracks are found, do not install the piston.

OTHER APPLICABLE ARTICLES:

88-7-20

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 4700, 4800
The accuracy of speedometer/odometer readings may be influenced by several vehicle components or systems. The information in this TSB article is intended to assist technicians in speedometer/odometer concern diagnosis.

**ACTION:**
Use the following supplemental information to assist in speedometer/odometer diagnostics.

**OPERATION**
A mechanical analog speedometer displays vehicle speed and the odometer displays total distance traveled. The speedometer/odometer assembly is cable driven by either a transmission or a transaxle. All speedometer/odometer assemblies, except for police vehicles are the same with respect to the speed accuracy tolerance used during calibration. The odometer gear ratio is fixed so that all are identical and have no error in the speedometer head.

Electronic digital operation is similar. It could use a drive cable or a speed sensor to drive the speedometer/odometer. An electronic signal is sent from a speed sensor to the digital speedometer/odometer assembly. The speed sensor is driven by a transmission or a transaxle, similar to a cable.

Several areas of concern that may affect speedometer/odometer readings are tires, axle gear ratio and speedometer/odometer drive and driven gears.

**TIRES**
Improper tire rolling radius and inflation pressure, temperature and size may contribute to inaccurate system readings. System accuracy testing should be performed after the tires are set at the correct pressure as shown on the safety compliance certification label. The tire should be warmed for a short period. Best results are obtained on smooth, dry pavement while driving at a constant speed within the posted speed limit.

**AXLE/TRANSAXLE RATIO**
The gear ratio of the rear axle or the final drive ratio of the transaxle must be known to select or check if the proper speedometer/odometer drive and driven gears are present. Various gear ratios are available, but usually are not a concern when dealing with speedometer/odometer concerns unless the gear ratio has been changed.

**WARNING:**

NEVER CORRECT SPEEDOMETER READINGS BY CHANGING GEARS UNLESS THE ODOMETER IS ALSO OFF.

**DRIVE/DRIVEN GEARS**

The speedometer/odometer drive gear is located inside the transmission, transaxle or transfer case and is not easily accessed for change. The driven gear rotates the speedometer cable. Rear wheel drive vehicles have several driven gears with various numbers of teeth available to correct input to the speedometer/odometer head. Front wheel drive vehicles generally do not offer different gears for correction.

**GENERAL DESCRIPTION**

The maximum allowable odometer system accuracy error is ± 3.75% of the actual distance traveled. Ford Motor vehicles are well within those limits.

The speed indication is biased high, except on police vehicles with certified calibration speedometers/odometers. As a general rule, the indicated speed is equal to or greater than the actual speed. This is intended to protect the consumer against violating speed laws. Most customer concerns are related to speedometers reading too high at true speeds between 50 MPH and 65 MPH (80 - 105 Km/h). At that speed range, the worst case errors may indicate a speed that is 10% greater than true speed.

The speedometer head is an instrument which processes information sent to it by the rotating speedometer cable. If the system components send the wrong number of revolution per mile to the speedometer head, an inaccurate speed reading and amount of distance traveled will be displayed. Since there is no error in the fixed gear ratio of the speedometer head odometer, start by checking the accuracy of the odometer even if the customer concern indicates a speed accuracy problem. Odometer accuracy can be checked by using roads established at mile increments or a known local course. If roads with mile markers are used, a five mile stretch is recommended to allow for inaccuracies. If an error is greater than 3.75%, a change to the transmission drive/driven gear selection, tire size, or tire inflation may need attention. The odometer should be checked again to verify any corrective action. If the indicated speed error exceeds 10% between 50 MPH and 60 MPH (80 - 105 Km/h), replace the speedometer/odometer assembly. Vehicles with transfer cases that have fluctuating readings may be due to slippage of drive gears, parts not splined or loose yoke nuts.

If the vehicle has speed control, the speed accuracy can be checked using the verified odometer vs. time. The formula is as follows:

\[
3600 \div \text{TIME (seconds to cover one mile)} = \text{TRUE MPH(Km/h)}
\]

**EXAMPLES:**

- 60 MPH (96 Km/h) requires 60 seconds to cover one mile
- 55 MPH (88 Km/h) requires 65 and 3/4 seconds to cover one mile
- 50 MPH (80 Km/h) requires 72 seconds to cover one mile

**SUPERSEDES:** 84-14-6

**WARRANTY STATUS:** INFORMATION ONLY
OASIS CODES: 2300, 2310, 2400, 2500
TSB Article 89-2-8 has been superseded by Article 96-24-6.
MEDIUM/HEAVY TRUCK:
1989 and prior ALL MEDIUM/HEAVY TRUCK LINES

ISSUE:
An aftermarket paint supplier cross-reference chart has been developed to assist in resolving fleet paint concerns on all 1989 and prior Heavy Trucks. The chart is divided by color groups and then by shades within the specific color group.

ACTION:
Use the following aftermarket paint supplier cross-reference chart to assist in resolving paint concerns.

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**OTHER APPLICABLE ARTICLES:** NONE

**WARRANTY STATUS:** INFORMATION ONLY

**OASIS CODES:** 1100
MEDIUM/HEAVY TRUCK:  
1986-89 CARGO CF 7000/8000

ISSUE:  
A "squealing" and "grinding" noise from the front brake linings during light application may be caused by the wearing features of the current "Jurid L-220" air brake lining.

ACTION:  
Install a new set of air brake linings which are made from a softer material. Refer to the 1986-89 Cargo Shop Manual, Section 12-48-6 for service details.

OTHER APPLICABLE ARTICLES:  NONE

WARRANTY STATUS:  Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES:  3050, 3051, 7100, 7113
MEDIUM/HEAVY TRUCK:
1989 and prior ALL TRUCK LINES

ISSUE:
Current worldwide shortages of antifreeze may result in the use of an antifreeze that does not meet Ford Motor Coolant specification. Ford Motor specifies the use of a low silicate antifreeze in the cooling system of Ford Medium/Heavy Trucks equipped with diesel engines to achieve optimum cooling system performance.

ACTION:
Use a low silicate coolant that meets Ford Motor coolant specification ESE-M97B18-C, such as Ford Heavy Duty Diesel Engine Cooling System Fluid (E6HZ-19549-A). Ford Motor coolant specification ESE-M97B18-C is similar to specification GM-6038M. Ethylene glycol coolants that meet the GM-6038M specification are more restrictive and can be used in diesel powered Ford Medium and Heavy trucks. Refer to TSB 87-22-22 for specific cooling system guidelines.

OTHER APPLICABLE ARTICLES: 87-22-22

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 4300, 4301
MEDIUM/HEAVY TRUCK:
1988 L, LTL SERIES

ISSUE:
Exhaust system mufflers that crack above the outlet pipe welds may be caused by incorrect installation of the muffler outlet pipe. The muffler outlet pipe must be "bottomed out" against the stops inside the muffler.

ACTION:
If service is required, make sure the muffler outlet pipe is "bottomed out" against the muffler stops. Refer to the following procedure for service details.

SERVICE PROCEDURE

1. Install the muffler outlet pipe. Make sure the Ford part number and Ford logo are positioned at the muffler outlet, Figure 1.
2. Insert the muffler outlet pipe into the muffler about 3 1/2", until it "bottoms out" against the stops inside the muffler.

3. Position the exhaust clamp about in the middle of the muffler outlet slots, Figure 1.

4. Tighten the clamp bolts to a torque of 10-12 lb.ft. (14-16 N-m).

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 4600, 4800
MEDIUM/HEAVY TRUCK:
1986-89 F, B, C, L, LN, CARGO

ISSUE:
Improper re-sealing of the Eaton two speed electric shift motor cover could allow contaminants to enter the assembly and cause the internal circuit board to fail.

ACTION:
Anytime the Eaton two speed electric shift motor cover is removed, install a new cover gasket and apply Ford non-acid silicone rubber sealant, Figure 1.

NOTE:
THE EATON TWO SPEED SHIFT MOTOR COVER REPLACEMENT KIT INCLUDES THE CORRECT FORD SILICONE SEALER IN THE EVENT REPLACEMENT IS REQUIRED.
OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 5960, 5970
MEDIUM/HEAVY TRUCK:
1989 LA, LTA 9000

ISSUE:
Loose and vibrating air foil ends on the front bumper of the Aero Max truck may be caused by the six (6) bracket attachment method used to hold the air foil to the front bumper.

ACTION:
Remove the three (3) brackets from each end of the air foil and install two (2) new nuts and bolts to hold the air foil to the front bumper. Refer to the following procedure for service details.

SERVICE PROCEDURE

1. Remove the three (3) brackets from the end of the air foil, Figure 1.

2. Properly align and hold the air foil end to the bumper.

3. Center punch the air foil end at the two (2) locations shown in Figure 2.

Figure 1 - Article 89-4-12
4. Drill the two (2) center punched marks with a 17/64" drill bit.

5. Install the two (2) 1/4" carriage bolts, (58803-S100) through the air foil end and bumper.

6. Install and tighten the two (2) 1/4" nut and washer assemblies, (34659-S36).

7. Repeat Steps 1 through 6 on the opposite end of the air foil.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING
OASIS CODES: 1050, 1052, 1200
MEDIUM/HEAVY TRUCK:
1988 and prior L, LTL, CL-SERIES

This TSB article is being republished in its entirety to correct the service part number for the "Sanden" A/C compressor and clutch assembly. The original service part number published in TSB 88-15-10 was for the A/C compressor only.

ISSUE:
New air conditioning compressor mounting brackets to adapt a "Sanden" A/C compressor to a vehicle originally equipped with a FS-6 A/C compressor are available for service. The A/C compressor freon hose connections used on the FS-6 A/C compressor and the electrical connections will have to be modified for use with a "Sanden" A/C compressor.

ACTION:
If service is required, modify the A/C compressor freon hose connections using the Motorcraft A/C refrigerant line fitting kits and bulk refrigeration hose listed in the charts in this article. Also splice the A/C compressor clutch electrical connector into the vehicle wire harness. Refer to the A/C compressor mounting adaptor bracket application chart in this article for the correct service part numbers.

NOTE:
THE NEW A/C COMPRESSOR MOUNTING ADAPTOR BRACKETS FOR THE SANDEN A/C COMPRESSOR ARE SERVICE ONLY ITEMS.
OTHER APPLICABLE ARTICLES: NONE

SUPERSEDES: 88-15-10

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 2610, 2800
This article is being republished to clarify the service part application chart and the article note about the expander casting bore diameters.

**ISSUE:**
The expander cylinder used on the "Lucas Girling A2LS" brake system may be honed to service a glazed hydraulic bore. In the event an expander cylinder is worn beyond repair, new expander cylinder castings are now available for service.

**ACTION:**
Use the following procedure to service the expander cylinder. Refer to the expander cylinder service parts application chart in this article for the correct seal kit and cylinder casting parts numbers.

**SERVICE PROCEDURE**

1. Inspect the expander cylinder hydraulic housing.

**NOTE:**
The expander cylinder bore must not have a diameter larger than 1.753" for the following brake assemblies:

**NOTE:**
The expander cylinder bore must not have a diameter larger than 1.628" for the following brake assemblies:
NOTE:
IF THE EXPANDER CYLINDER BORE IS LARGER THAN SPECIFIED ABOVE, EITHER BEFORE OR AFTER HONING, OBTAIN A NEW EXPANDER CYLINDER CASTING AND SEAL KIT.

2. Hone the expander cylinder using a 220 spring loaded wheel cylinder stone that gives a smooth finish. Do not remove more than .002" of material during the honing process.

3. Clean the expander cylinder with isopropyl alcohol to remove all honing residue.

4. Install a new seal kit. Refer to the appropriate Medium/Heavy Truck Shop Manual, Section 12-01 and 12-03.

OTHER APPLICABLE ARTICLES:  NONE

SUPERSEDES:  88-20-16

WARRANTY STATUS:  INFORMATION ONLY

OASIS CODES:  3050, 3800
MEDIUM/HEAVY TRUCK:
1987-88 F-8000, L-8000/9000, CL-9000 SERIES

ISSUE:
A damaged input bearing cover or release bearing backing plate may be caused by the clutch brake. The clutch brake has a powdered metal facing that may cause the transmission input bearing cover or the release bearing backplate to wear excessively.

ACTION:
Inspect and adjust the clutch brake to determine if replacement is required. The new clutch brake has a paper facing to reduce input bearing cover and release bearing backing plate wear.

SERVICE PROCEDURE

NOTE:
THE NEW CLUTCH BRAKE CAN BE IDENTIFIED BY REFERRING TO FIGURE 1. THE OLD CLUTCH BRAKE CAN BE IDENTIFIED BY REFERRING TO FIGURE 2.
1. Inspect the clutch brake for proper adjustment. Refer to the appropriate Heavy Truck Shop Manual, Section 16-02 and note the following:
   a. The clutch brake should be activated at the last inch of pedal travel.
   b. The clutch brake adjustment is done by adjusting the external linkage.
   c. If adjustment cannot be achieved, proceed to Step 2.

2. Remove the transmission clutch housing inspection cover and look for the following:
   a. Check for an excessive amount of casting dust in the bottom of the clutch housing.
   b. Inspect the transmission input bearing cover and clutch release bearing backplate. If the surface contacted by the clutch brake is deeply scored or grooved, proceed to Step 3.

3. Remove the transmission and proceed as follows:
   a. Remove and replace the front bearing cap, gasket, and oil seal if one is used. Refer to Ford Master Parts Catalog for the correct service parts.
   b. Remove the old clutch brake.
   c. Install a new clutch brake. For 1-3/4 inch diameter shaft, use E7HZ-7E434-A (Spicer # 127740). For 2 inch diameter shaft, use D8HZ-7E434-A (Spicer # 127760)
   d. If the backplate which contacts the clutch brake is scored, replace the release bearing and sleeve assembly also. Refer to Ford Master Parts Catalog for the correct service parts.
   e. Reinstall the transmission and make the necessary adjustments. Refer to the appropriate Heavy Truck Shop Manual, Section 16-02. Check the clutch brake and clutch for proper operation.
OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 5550
MEDIUM/HEAVY TRUCK:
1986-89 CARGO SERIES
1987-89 F & B SERIES, L SERIES

ISSUE:
The amount of engine cooling system conditioner during the initial fill has been increased to improve operating qualities of the cooling system. Complete engine coolant replacement will require that the new recommended amount of conditioner be added.

ACTION:
When complete coolant replacement is necessary, use one of the following ways to make sure the correct amount of engine coolant conditioner has been added.

- Install Ford Coolant Conditioner Filter, (E7HZ-8A424-C) which has (12) DCA units of conditioner.
- Install Ford Coolant Conditioner Filter, (E7HZ-8A424-B) which has (2) DCA units of conditioner. Also add an additional 2 1/2 pints (10 DCA units) of Motorcraft FW 15 Cooling System Additive.

OTHER APPLICABLE ARTICLES:

88-5-19

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 4300, 4800
MEDIUM/HEAVY TRUCK:
1984-89 L SERIES, LTL-9000

ISSUE:
A "rattling" or "buzzing" noise in the passenger cab may be caused by a shift lever that vibrates.

ACTION:
Install an isolator on the shift lever. Refer to the following service procedure for service details.

SERVICE PROCEDURE

1. Remove the gear shift lever, Figure 1. Refer to the L-Series Shop Manual, Section 16-57 for removal instructions.

![Typical Gear Shift Lever Housing Assembly](image)

Figure 1 - Article 89-5-18

2. Scribe a location line along the gear shift lever center line at midpoint in the keyway, Figure 2.
3. Cut out a three (3) inch section of the gear shift lever from between point A and point B, Figure 2.

NOTE:
THE LOCATION OF LENGTH "Y" MAY VARY DEPENDING UPON DIMENSIONAL ACCESSIBILITY AND SPACE REQUIREMENTS. THE ISOLATOR SHOULD BE NO MORE THAN ONE (1) INCH ABOVE THE BOOT RING.

4. Scribe a location line along the isolator assembly center line and through the cross pin center, Figure 3.
5. Install the lower gear shift lever into the adaptor and line up the scribe lines made in Steps 2 and 4.

6. Apply a 1/4 inch bevel weld (weld point 2) as shown in Figure 4. Use Lincoln rod "Jetweld I E-7024" or equivalent.

![Figure 3 - Article 89-5-18](image)

NOTE:
ARC WELD ONLY. DO NOT GROUND THE ARC WELDER THROUGH THE ISOLATOR.

---

Figure 4 - Article 89-5-18

7. Position the upper gear shift lever into the adaptor one (1) inch and line up the scribed lines made in Steps 2 and 4.

8. Apply a 1/4 inch bevel weld (weld point 1) as shown in Figure 4.

CAUTION:
PLACING THE UPPER GEAR SHIFT LEVER INTO THE ADAPTOR MORE THAN ONE (1) INCH WILL CANCEL THE EFFECT OF THE ISOLATOR.

NOTE:
THE CROSS-PIN MUST BE INSTALLED IN THE SAME DIRECTION AS THE PIVOT BALL KEYWAY.

9. Disassemble the gear shift lever and isolator, E3HZ-7L288-A as follows:

a. Remove the "E" ring, Figure 5.
Figure 5 - Article 89-5-18

b. Drive out the cross-pin.

c. Remove the lower gear shift lever and adaptor from the upper gear shift lever and adaptor.

10. Install the lower gear shift lever in the gear shift lever housing, Figure 1. Refer to the L-Series Shop Manual, Section 16-57 for installation instructions.

11. Re-install the upper gear shift lever to the lower gear shift lever by reversing Step 9 a through c, Figure 5.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE
OASIS CODES: 5104, 5500, 7100, 7113, 7210
MEDIUM/HEAVY TRUCK:
1987-89 CARGO SERIES, F & B SERIES, L SERIES

ISSUE:
Engine Performance Charts recently distributed to dealers that are authorized to service 6.6L and 7.8L Ford diesel engines are incorrect. The specification in test step 8b under the heading "Guideline Data" was omitted.

ACTION:
Until a new distribution of Engine Performance Charts can be made, the correct specification to insert in test step 8b under the "Guideline Data" heading is **103-207 kPa (15-30 psi)**.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 4700, 4800
MEDIUM/HEAVY TRUCK:
1989 L SERIES

ISSUE:
The clutch pedal free play setting at the factory has been changed from 1.9 - 2.5 inches to 1.5 - 2.0 inches. The specification change was made to eliminate customer concerns of too much clutch pedal free play.

ACTION:
No corrective action is required.

GENERAL INFORMATION
The specification of 1.9 - 2.5 inches will not be revised in the Owner Guide or L-Series Shop Manual. The L-Series truck is designed for chassis/body deflection that may require clutch free play setting of 1.9 - 2.5 inches to provide enough clearance between the clutch fork and release bearing on certain off road applications. Clearances between clutch fork and release bearing below .135” setting may result in clutch slippage at severe chassis/body deflections. The specification change to 1.5- 2.0 inches will not cause a noticeable difference in the feel of clutch engagement. As the clutch pedal nears the end of its travel the clutch brake will be engaged.

OTHER APPLICABLE ARTICLES:

88-26-18

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 5550, 5800
TSB Article 89-8-17 has been superseded by Article 89-11-12.
This TSB article is being republished in its entirety to add a new adapter and a new adapter gasket to the service procedure. The intake manifold to aftercooler air tube will not fit unless a new adaptor is installed.

**ISSUE:**
Turbocharger air hoses connecting the air tubes of the air-to-air aftercooler to the engine may disconnect from the aluminum tubes. Overtightening of the hose clamps can cause the air tubes to collapse and come loose.

**ACTION:**
Install new design air tubes which have reinforced sleeves to prevent them from collapsing. Also install a new design adapter and adapter gasket on the intake manifold. Refer to the following procedure for service details.

**SERVICE PROCEDURE**

1. Remove the existing turbocharger to aftercooler air tube, Figure 1.
2. Remove the existing intake manifold to aftercooler air tube, Figure 1.
3. Remove the existing intake manifold air tube adapter.
4. Clean the gasket surface on the intake manifold.
5. Install a new adapter gasket and air tube adapter on the intake manifold.
6. Install a new turbocharger to aftercooler air tube as shown in Figure 2.

![Diagram](image.png)

**Figure 2 - Article 89-9-19**

7. Install a new intake manifold to aftercooler air tube as shown in Figure 2.
8. Tighten the spring loaded clamps on the turbocharger side of the system to a torque of 60-70 lb.in. (7-8 N-m).
9. Tighten the conventional hose clamps on the intake manifold side of the system to a torque of 35-40 lb.in. (4-5 N-m).

**NOTE:**
MAKE SURE THE HOSE CLAMPS DO NOT INTERFERE WITH THE TILT HOOD CHECK CABLES OR CONTACT OTHER NEAR BY COMPONENTS. THE HOSE CLAMPS MUST BE POSITIONED SQUARELY AROUND THE CIRCUMFERENCE OF THE AIR TUBES TO PREVENT SHIFTING AND LOOSENING OF THE CLAMPS.
NOTE:
The gasket for the adapter assembly must be ordered directly from a Caterpillar dealer. The Caterpillar part number for the gasket is 7C6188.

OTHER APPLICABLE ARTICLES: NONE

SUPERSEDES: 88-13-13

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 4400, 630400, 630401, 630402
MEDIUM/HEAVY TRUCK:
1984-89 F & B SERIES, L SERIES

ISSUE:
Front disc brake rotors may have an incorrect cast minimum replacement thickness dimension of 1.480 inches (37.59mm) marked on them. The affected vehicles and service parts are:

- Trucks with cast spoke wheels on 8000, 9000, 10,000 or 12,000 lb. front axles, built between 8/29/83 and 1/09/89.
- Service replacement rotors produced during this time period may also have the incorrect replacement dimension.

Rotors produced after 1/10/89 have the correct minimum replacement thickness dimension of 1.415 inches (35.94mm). Rotor minimum replacement thickness information is also published in the appropriate Medium/Heavy Truck Shop Manual, Section 12-27.

ACTION:
No corrective action is required.

OTHER APPLICABLE ARTICLES: NONE

SUPERSEDES: 86-6-88

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 3050
MEDIUM/HEAVY TRUCK:
1986-89 CARGO SERIES
1987-89 F & B SERIES, L SERIES

ISSUE:
Poor performance in temperatures of 0° F (-18° C) may be caused by fuel "waxing" inside the fuel/water separator. This condition limits the amount of fuel that can travel through the filter. The filter restriction causes the engine to starve for fuel which results in poor performance.

ACTION:
Install a new design fuel/water separator that does not have a filter in the system. The new design element cannot be used with the current production fuel/water separator bowl. Although the new fuel/water separator does not have a filter, maintenance is required to remove large particle from the bottom of the element. Refer to the appropriate Medium/Heavy Truck Shop Manual, Section 25-06 for service details.

NOTE:
FUEL "WAXING" COULD OCCUR IN THE ENTIRE FUEL SYSTEM IF WINTER GRADE DIESEL FUEL IS NOT USED.

NOTE:
The normal daily maintenance cycle requires the operator to drain/check both the old and the new type water/fuel separators. Replacement for the old type element is required at the first 6000 miles and then at 24,000 mile intervals. The new type element requires replacement every two (2) years or 100,000 miles.
OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 4500, 630400, 630401
MEDIUM/HEAVY TRUCK:
1970-89 L-SERIES

This article is being republished in its entirety to expand the model year coverage to include 1970 through 1989 model year L-Series Trucks.

ISSUE:
Condensation (water) leaking on the floor of the cab on the passenger's side of the truck may be caused by lint accumulating and clogging the evaporator case condensation drain. A new evaporator case filter is now available to prevent lint from entering the A/C housing and clogging the condensate drain. The new evaporator case filter is serviced from inside the cab and it can be removed to wash off trapped lint.

ACTION:
Install an air conditioning evaporator case filter to prevent lint from clogging the A/C condensate drain. Refer to the following procedure for service details.

SERVICE PROCEDURE

NOTE:
FAILURE TO PERIODICALLY CLEAN THE FILTER COULD LIMIT THE QUANTITY OF AIR ENTERING THE EVAPORATOR CASE. THIS WILL REDUCE THE OUTPUT AIR SUPPLY TO CAB.

1. Remove the existing grille from the A/C evaporator case housing. Be careful not to break off the corners when prying up the plastic studs.

2. Remove the existing clips that hold the grille to the evaporator case housing.

3. Position the grille on the evaporator case housing by inserting the grille studs into the housing locator holes.

4. Drill seven (7) 13/64" holes through the grille and evaporator case housing in the locations shown in Figure 1, View "Z".
NOTE:

BE CAREFUL NOT TO DRILL INTO THE EVAPORATOR REFRIGERANT COIL.

5. Remove the grille and enlarge the seven (7) holes that were drilled in the evaporator case housing. Use a 17/64” drill.
6. Install seven (7) "J" clips, (E9HZ-19150-A) on the evaporator case housing, Figure 1.

7. Insert seven (7) screws, (EOHZ-8N122-A) through the front of the grille.

8. Install seven (7) retainers, (EOHZ-8N108-A) on the screws from the backside of the grille, Figure 1.

9. Position the new filter, (E9HZ-19D556-A) over the screws.

10. Install the grille and filter as assembly on the evaporator case housing.

OTHER APPLICABLE ARTICLES: NONE

SUPERSEDES: 89-8-17

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 2610, 2612
MEDIUM/HEAVY TRUCK:
1987-89 L SERIES

ISSUE:
A loose radiator support bar or radiator brace may be caused by loose, missing or cross-threaded attaching bolts. This condition could allow the radiator to shift rearward and contact the engine cooling fan.

ACTION:
Secure the radiator support bar and radiator brace. Refer to the following procedures for service details.

RADIATOR BRACE

1. Inspect the bolts that hold the radiator brace to the radiator, Figure 1.

2. Determine if the bolts are loose, missing or cross-threaded in the upper aluminum extrusion of the radiator.
   a. If the bolts are missing, check the radiator and fan for damage.
   b. If the radiator or fan is damaged, replace as necessary. Refer to L-Series Heavy Truck Shop
Manual for service details.

c. If bolts are loose or cross-threaded, check to make sure they are okay. If the bolts are damaged, throw them away.

d. Clean the threads of reusable bolts with a wire brush or threadchaser (die).

e. Make sure the bolts are 1.25" long.

3. Clean and repair the threads in the aluminum extrusion with a threadchaser (tap). If the threads are badly damaged, or if more than two threads are stripped out, use a helicoil to repair the threads.

**CAUTION:**
BE CAREFUL NOT TO DAMAGE THE RADIATOR UNDER THE EXTRUSION.

4. Inspect the grommets, Figure 1.
   
a. Replace the grommets if they are damaged, cracked or worn.

b. Apply rubber lubricant on the grommets before inserting them into the radiator brace.

c. Make sure the grommets are fully seated.

5. Apply Ford Threadlocker on the bolts.

6. Install the bolts and tighten them to a torque of 20 lb.ft. (27 N-m).

**CAUTION:**
EXCESSIVE TORQUE WILL DAMAGE THE GROMMETS.

**RADIATOR SUPPORT BAR**

1. Inspect the ends of the radiator support bar, Figure 2.
2. Make sure the bar is flush on top of both frame rails, Figure 2. If the bar is not flush, proceed as following:
   
a. Check the radiator and fan for contact damage.

b. If the radiator and fan are damaged, replace them as necessary. Refer to L-Series Heavy Truck Shop Manual for service details.

c. If the bar is loose or mispositioned, or if the bolts are loose, remove the bolts, Figure 2.

d. Reposition the radiator support bar, if necessary. The dimples on the underside of the bar surrounding the weld nuts should be completely seated in the frame rail holes.

3. Clean the threads of the bolts and the weld nuts on the bar with a wire brush or with a thread-chaser (tap or die). If bolts are missing or damaged in any way, install new bolts (58674-S100)

4. Apply Ford Threadlocker to the bolts.

5. Install the bolts and tighten them to a torque of 75-105 lb.ft.(102-142 N-m).
OTHER APPLICABLE ARTICLES:

88-20-18

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 4300
Various adhesives and sealants are used to perform many service repairs. A partial list of these Ford products that are available through the Ford Parts System along with their proper use and application is shown below.

**Ford Stud And Bearing Mount (EOAZ-19554-BA) / Ford Threadlocker 262 (E2FZ-19554-B)**

These adhesives are high strength threadlockers. They are used for locking all fasteners that must withstand:

- Heavy shock and vibration.
- Extreme chemical and environmental conditions, such as solvents, oils, and water immersion.

They prevent fluid/vacuum leaks and seal out rust or corrosion. Their typical applications include securing the following items:

- Intake manifold bolts
- Power steering pump adjusting bolts
- Engine studs
- Ring gear bolts
- Seat bolts
- Cup plugs

To use these adhesives, clean the fastener threads with a wire brush and a non-petroleum based solvent. Apply one or two drops to the threads and torque to the required specifications.

**NOTE:**
THESE ARE HIGH STRENGTH THREADLOCKERS AND THEY REQUIRE SPECIAL EFFORT FOR REMOVAL.

**Ford Threadlock And Sealer (EOAZ-19554-AA)**

This product is a medium strength threadlocker and sealer which stops air, oil, and fuel leakage. It is a hand tool removable adhesive and is used on aluminum threads. It prevents fluid/vacuum leaks and seals out rust or corrosion. Its typical applications include sealing and securing the following items.

- Oil pan bolts
- Valve cover bolts
- Flywheel attaching bolts
- Door latch attaching bolts

To use this adhesive, clean the fastener threads with a wire brush and a non-petroleum based solvent. Apply one or two drops to the threads and torque to the required specifications.

**Ford Pipe Sealant With Teflon (D8AZ-19554-A)**

This product seals and locks Teflon, oil, fuel and hydraulic threaded fasteners. This light paste sealant instantly seals without fouling. It is non-shredding and operates in temperatures up to 400°F. It prevents corrosion of fitting/fastener threads and locks against vibrational loosening. Its typical applications include sealing the following items.

- Transmission oil coolant lines
- Fuel inlet fittings
- Intake manifold vacuum switches
- Engine oil galley plugs

To use this sealer, clean off residual oil, coolant and other contaminants from the threads. Apply sealer completely around the second and third threads. Install the part and torque to the required specifications.

**Ford Gasket Maker (E2AZ-19562-B) And Ford Gasket Eliminator (E1FZ-19562-A)**

These products cure in the absence of air. They are used to gasket two machined surfaced flanges. Each product will fill a gap up to .010". The sealants will not cure until the parts are assembled. Once cured, they will remain pliable and flex with movement of the parts. Their typical applications include sealing the following items.

- Oil dip stick tubes
To use these sealants, make sure all the old gasket material has been removed.

CAUTION:
AVOID USING METAL SCRAPERS BECAUSE THEY CAN ETCH THE SURFACES AND PREVENT A GOOD SEAL.

Clean both surfaces with a non-petroleum based solvent to remove all oil, grease and other contaminants. Apply a small bead of sealant continuously around one surface only and then put the pieces together.

NOTE:
REMEMBER, THESE PRODUCTS CURE IN THE ABSENCE OF AIR, SO PLENTY OF TIME IS AVAILABLE TO DO A THOROUGH JOB.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY
MEDIUM/HEAVY TRUCK:
1984-89 C SERIES, F & B SERIES, L SERIES
1986-89 CARGO SERIES

ISSUE:
Improved rear hydraulic drum brake expanders cylinders, adjuster cylinders and dust excluders for the expander cylinders are available for service. The expander cylinders and adjuster cylinders have improved sealing qualities that reduce the possibility of brake fluid leakage. The new dust excluders for the expander cylinders reduce dust entry.

ACTION:
If service is required, install new expander cylinders, adjuster cylinders and/or expander service kit to improve brake seal effectiveness. Refer to the brake component application chart below for the correct service parts. Use the appropriate Medium/Heavy Truck Shop Manual, Sections 12-01 and 12-03 for service details.
OTHER APPLICABLE ARTICLES: 85-17-17

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 3500, 3050
TSB Article 89-13-13 has been superseded by Article 89-17-18.
MEDIUM/HEAVY TRUCK:
1983-89 CL-CLT-9000 SERIES, F & B SERIES, L SERIES

ISSUE:
A damaged or cracked "Thermag" aluminum air cooler can result in:

- Loss of engine power
- Decreased turbo charger boost pressure
- Increased exhaust pyrometer temperature

ACTION:
Use the following new service procedures to repair a "Thermag" Aluminum Charge Air Cooler.

SERVICE PROCEDURE

Listed in the following charts are the components of the air cooler system and the types of damage that occur. Some damage can be repaired while others cannot. The corrective action is shown for each type of damage. In some cases, the cooler should be replaced not repaired.
<table>
<thead>
<tr>
<th>COMPONENTS</th>
<th>DAMAGE</th>
<th>COMMENTS</th>
<th>REPAIR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tubes</td>
<td>Denis/Kinks/Bends</td>
<td>Resulting in a tear.</td>
<td>Replace cooler.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Resulting in a sharp edge (radius less than 1/32&quot; or 1 mm) but no tear or crack.</td>
<td>Weld or epoxy.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Resulting in a round edge (radius greater than 1/32&quot; or 1 mm).</td>
<td>No repair required.</td>
</tr>
<tr>
<td></td>
<td>Holes</td>
<td>Less than 1/32&quot; or 1 mm in all directions on the tube surface.</td>
<td>Weld or epoxy to fill.</td>
</tr>
<tr>
<td>External Fins</td>
<td>Crushed or Bent</td>
<td>No more than 1/32&quot; or 1 mm height reduction per fin row and the side member-to-side member dimension is within specification (26 3/4&quot; or 687 mm).</td>
<td>No repair required.</td>
</tr>
<tr>
<td></td>
<td>Pushed In</td>
<td>With no tearing.</td>
<td>Straighten.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>With tearing less than 3/8&quot; or 10 mm deep from core face. Also tearing is less than 20% of a given fin row and less than 5% of the total fin rows.</td>
<td>Remove loose fin material and straighten.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>With tearing of more than 3/8&quot; or 10 mm from core face or more than 20% of a given fin row or more than 5% of the total fin row.</td>
<td>Replace cooler.</td>
</tr>
<tr>
<td>Side Members</td>
<td>Bent, Dented</td>
<td>Surface crack or broken through.</td>
<td>First straighten side member to original form. If the tubes are bent or the fins are crushed, use the appropriate repair procedure described above.</td>
</tr>
<tr>
<td></td>
<td>Cracked</td>
<td>Surface crack or broken through.</td>
<td>Repair by welding as described further on in this chart.</td>
</tr>
<tr>
<td>COMPONENTS</td>
<td>DAMAGE</td>
<td>COMMENTS</td>
<td>REPAIR</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>----------------------------------------------</td>
</tr>
<tr>
<td>Headers</td>
<td>Bent or Dented</td>
<td>Resulting in 3 or fewer tube or tube-to-header leaks and cracks are less than 1/16” or 2 mm.</td>
<td>Weld. Note: If crack is less than 1/32” or 1 mm, you can also repair with epoxy.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>With more than 3 tube or tube-to-header leaks or a crack width greater than 1/16” or 2 mm.</td>
<td>Replace cooler.</td>
</tr>
<tr>
<td></td>
<td>Cracked</td>
<td></td>
<td>Replace cooler.</td>
</tr>
<tr>
<td>Tanks</td>
<td>Dented</td>
<td>Wall not cracked or broken through and fit or function of cooler is not affected.</td>
<td>No repair required.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fit or function of cooler is affected.</td>
<td>Straighten the dent if possible otherwise replace cooler.</td>
</tr>
<tr>
<td></td>
<td>Cracked</td>
<td>Crack is no more than 1/16” or 2 mm wide and 3/4” or 20 mm long.</td>
<td>Weld.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Crack is more than 1/16” or 2 mm wide or 3/4” or 20 mm long.</td>
<td>Replace cooler.</td>
</tr>
<tr>
<td></td>
<td>Puncture</td>
<td>Hole is no more than 3/16” or 5 mm in all directions on tank surface.</td>
<td>Weld.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hole is more than 3/16” or 5 mm in any direction on the tank surface.</td>
<td>Replace cooler.</td>
</tr>
<tr>
<td>Welds - Tank to Header.</td>
<td>Cracked or Porous</td>
<td></td>
<td>Weld. CAUTION: Repair welds must not start or stop where a production weld ends.</td>
</tr>
<tr>
<td>COMPONENTS</td>
<td>DAMAGE</td>
<td>COMMENTS</td>
<td>REPAIR</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>---------------------------------------</td>
<td>--------------------------------------------------------</td>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>Tapped Holes</td>
<td>Stripped Threads</td>
<td>Crack or fractured surface does not go into the tank wall.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Crack or Broken Off</td>
<td>Crack goes into the tank wall.</td>
<td>Drill out stripped threads and tap to accept the proper helicoil insert of the same diameter and thread pitch of the original hole.</td>
</tr>
<tr>
<td></td>
<td>Cracked, Broken or Otherwise Damaged</td>
<td>Repair will not affect function, fit or durability.</td>
<td>Weld.</td>
</tr>
<tr>
<td>Boccoc and Mounting Brackets</td>
<td></td>
<td>Repair will affect function, fit or durability.</td>
<td>Replace cooler.</td>
</tr>
<tr>
<td>Mounting Pins or Other Hardware</td>
<td></td>
<td></td>
<td>Replace to original condition.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Replace cooler.</td>
</tr>
<tr>
<td>REPAIR</td>
<td>COMPONENT</td>
<td>COMMENTS</td>
<td></td>
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<tr>
<td>--------------</td>
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<td></td>
</tr>
<tr>
<td>Straightening</td>
<td>Fins</td>
<td>Use a pointed object no more than 0.5 mm in diameter at the tip that will allow access to apex of the fin. Straighten the fins, taking care not to damage the louvers or distort the louver angle.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Side Members</td>
<td>Using pliers, vice-grips or similar tool, straighten the side member from the sides only. Never pry against the tubes or header. Care must be taken not to damage the fins, tubes or headers when straightening the side member.</td>
<td></td>
</tr>
<tr>
<td>Welding</td>
<td>Tanks, Side Members or Mounting Brackets</td>
<td>MIG Weld.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tubes or Tube Header Joints</td>
<td>TIG Weld using aluminum wire designated Alcan mig electrode wire, 3/64” or 1.20 mm diameter, 4043 aluminum alloy, or equivalent.</td>
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<tr>
<td></td>
<td></td>
<td><strong>CAUTION:</strong> Care must be taken not to melt the fins or the tube to header braze joint. If welding near the core, the core should be shielded with a large steel plate. This protects it from sparks and weld spatter and will act as a heat sink.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Surface Preparation</td>
<td>All surfaces to be welded must be free of all paint, oil grease and water, and foreign matter in the area of the weld so the weld repair will adhere directly to bare aluminum and will not be contaminated.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tubes</td>
<td>TIG weld only; use 1/16” or 1.6 mm diameter or smaller 4043 wire.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Side Members</td>
<td>Prepare crack by cutting a &quot;V&quot; groove along the crack to a depth equal to the side member thickness. Fill the groove with weld and grind the excess weld material away to provide a flat side member.</td>
<td></td>
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<td></td>
<td>Tanks</td>
<td>Heat the crack to chase the ends until they stop. MIG weld to fill the crack using wire as described above. Weld to 1” or 25 mm past the ends of the crack. Wire brush and grind the weld bead to blend with the tank surface.</td>
<td></td>
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<tr>
<td>REPAIR</td>
<td>COMPONENT</td>
<td>COMMENTS</td>
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<tr>
<td>Epoxy</td>
<td></td>
<td>High temperature epoxy may be used only where specified in the previous chart.</td>
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<tr>
<td></td>
<td></td>
<td>The recommended epoxy is a resin (CIBA GEIGY ARALDITE AV 138M) and a hardener (CIBA GEIGY HY 998) or equivalent. Mix and cure instructions on the label must be followed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Surface Preparation</td>
<td>Remove all paint, oil, grease, water and other foreign matter in the area of the epoxy repair so the epoxy will adhere to the bare aluminum.</td>
<td></td>
</tr>
<tr>
<td>Painting</td>
<td></td>
<td>Clean all repaired surface areas. Wash thoroughly with water, allow to dry and paint the repaired area.</td>
<td></td>
</tr>
<tr>
<td>Cleaning</td>
<td></td>
<td>If any epoxy or weld repair is done to tubes or tanks, the repaired cooler must be flushed out to remove all debris that may have dropped inside the unit.</td>
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<tr>
<td></td>
<td></td>
<td>The recommended procedure for cleaning is to power flush the cooler with water at 5' or 1.5 m / sec. through the tubes for three minutes. To assure that the debris travels as short a distance as possible to exit the cooler, the cooler is to be oriented vertically with the tank containing the repair or closest to the repair point, at the bottom. The flushing water is to be introduced in the opposite tank at the top. When complete, invert the unit and power flush in the opposite direction.</td>
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<td>If power flushing is not possible, the unit may be flushed by hand. The unit should be laid flat with the inlet and outlet pointing up. Fill the unit to 40% of its volume with water, seal off the inlet and outlet and agitate the cooler so the water flushes all the internal surfaces at least ten times. Empty the cooler. Repeat the flushing process until no debris is found in the flushing water.</td>
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<tr>
<td></td>
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<td>After flushing, drain the cooler of all water and allow to air dry prior to installing in the vehicle.</td>
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<tr>
<td>REPAIR</td>
<td>COMPONENT</td>
<td>COMMENTS</td>
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<tr>
<td>Repair Leak Test</td>
<td>Note: To assure proper performance, the repaired unit must be leak tested and pressure checked.</td>
<td>Connect an air gauge in one port of the unit and a stop / air supply in the other port. Apply 50 psig air pressure to the unit. Reduce the air pressure to 29 psig and plug the unit. Let the unit sit for a couple of minutes and note any loss of air pressure. Loss of air pressure should not be more than 1.5 psi per minute. If it is, the cooler should be checked, repaired and tested again until it passes the test. There should be no permanent distortion of the unit. If there is, the cooler should be replaced.</td>
<td></td>
</tr>
</tbody>
</table>

**OTHER APPLICABLE ARTICLES:**

88-15-14

**WARRANTY STATUS:** INFORMATION ONLY

**OASIS CODES:** 4600, 630400, 630401, 630402
MEDIUM/HEAVY TRUCK:
1988-89 CLT-9000, LTL-9000

ISSUE:
Engine overheating on trucks with engine warning or shutdown systems that are operated in high load, low speed applications may be caused by the Schwitzer DD-34 fan clutch not engaging soon enough.

ACTION:
Install a new low engagement temperature bi-metallic disk and a new coolant temperature switch with a higher nominal temperature setting to improve engine operating temperatures. Refer to the following procedure for service details.

BI-METALLIC DISK REMOVAL PROCEDURE

1. Remove the fan drive from the truck. Refer to Section 27-09 of the appropriate Truck Shop Manual for service details.

2. Set the fan drive down on a flat stable surface with the bi-metallic disk and disk holder pointing upward, Figure 1.
3. Remove the bi-metallic disk holder from the fan clutch by pressing down on the disk holder near the rivets, Figure 2. Do this until the disk holder right arm is below the retaining tab of the disk holder bracket, Figure 3.
4. Push the disk holder parallel along the face of the fan clutch, to the right. Do this until the left side of the disk holder arm is free of the disk holder bracket, Figure 4.
NOTE:
THE SUPPLIER IDENTIFICATION STAMP SHOULD BE IN THE UP-RIGHT POSITION FOR PROPER REFERENCE OF MOVING TO THE LEFT OR RIGHT.

5. Remove the bi-metallic disk holder by lifting upward from the disk holder bracket.

6. Remove the bi-metallic disk from the disk holder by gently pushing down on the concave side or grid side of the disk. Do this while sliding the disk outward from between the disk holder and the disk wear plate, Figure 5.
Figure 5 - Article 89-16-15
7. Throw away the old metallic disk.

**BI-METALLIC DISK INSTALLATION PROCEDURE**

1. Install a new bi-metallic disk into the disk holder. Slide the new disk, concave side or grid side up, between the disk wear plate and disk holder.

2. Rotate the bi-metallic disk to assure that it turns freely and is properly seated in the pocket of the disc holder.

3. Replace the bi-metallic disk holder in its bracket.

4. Repeat removal Step 4 while moving the disk holder in the opposite parallel direction (to the left) for installing it, Figure 4.

5. Reinstall the fan drive on the vehicle. Refer to Section 27-09 of the appropriate Truck Shop Manual for service details.

**NOTE:**
A COMPLETE RECALIBRATED LOW ENGAGEMENT TEMPERATURE SCHWITZER DD-34 FAN CLUTCH ASSEMBLY (E9HZ-8A616-B) IS ALSO AVAILABLE FOR SERVICE. USE THESE ASSEMBLIES IN CASES WHERE THE ORIGINAL FAN CLUTCH IS DAMAGED OR CANNOT BE RETROFITTED WITH A BI-METALLIC DISK.

**COOLANT TEMPERATURE SWITCH**

1. Install a new coolant temperature switch. Refer to the appropriate Truck Shop Manual, Section 33-43 for service details.

**OTHER APPLICABLE ARTICLES:** NONE

**WARRANTY STATUS:** Eligible Under Basic Warranty Coverage

**LABOR ALLOWANCE**

**DEALER CODING**
OASIS CODES: 4300, 4301
**MEDIUM/HEAVY TRUCK:**
1988-89 CL-CLT-9000 SERIES

**ISSUE:**
A broken air cleaner mounting strap in the area of the stainless steel "T-bolt" clamp may be caused by the strap breaking at the weld.

**ACTION:**
Install new improved straps that have pinch bolts and nuts to clamp the air cleaner to the mounting bracket.

The new strap is a direct "bolt-in" replacement and does not require any new attaching parts. The pinch bolt and nut are included with the strap and should be torqued to 24-48 in.lb. (2.7-5.5 N-m) when clamping the air cleaner.

**NOTE:**
IT IS IMPORTANT THAT THE STRAPS BE REPLACED IN PAIRS EVEN IF ONLY ONE HAS BROKEN.

**OTHER APPLICABLE ARTICLES:** NONE

**WARRANTY STATUS:** Eligible Under Basic Warranty Coverage

**LABOR ALLOWANCE**

**DEALER CODING**

**OASIS CODES:** 4700
This TSB article is being republished in its entirety to correct the clutch cross-reference chart shown in Figure 1. Also the torque value for the clutch adjusting bolts pictured in Figure 2 has been added.
|-----------|----------------|-------------|----------------|--------------|---------------------------------------------------|---------------------------------------------------|---------------------------------------------------------------|-----------------------------|

NOTE: Decision on pilot bearing replacement should be made at clutch installation. Std. = Standard, Opt. = Optional

Two dowel pins in the flywheel used to locate a Borg-Warner clutch should be removed. A 5/16" excess (punch) hole is provided in the front flywheel face for dowel pin removal.

a/ Transmission with 1.5" dead input shaft requires rework of transmission to 1.5" live input shaft
b/ Convert Borg-Warner 13-1 to Spicer 14-1
c/ Ceramic Disc
d/ Front disc (flywheel side)
e/ Rear disc (pressure plate side)
f/ Transmission with 1.75" input shaft
g/ Refer to linkage modifications on non-synchronized transmissions
h/ Refer to linkage modifications on synchronized transmissions
ISSUE:
A Dana Spicer clutch can be used in place of a Borg-Warner clutch. A cross reference of the necessary parts is now available for clutch conversions.

ACTION:
Refer to Figure 1 which shows the equivalent Dana Spicer assembly part numbers for each vehicle (Ford Diesel and transmission combination) made at Kentucky Truck Plant during the 1987-1988 model year. Use the following service information to install the Dana Spicer clutch components.

SERVICE INFORMATION

1. Remove the two dowel pins located in the face of the flywheel before installing the Dana Spicer clutch. These were used for locating the Borg-Warner clutch. The Dana Spicer clutch does not require such locating pins and the cover assembly does not have the matching holes.

2. Make the following adjustments and minor clutch linkage changes where necessary.

Non-synchronized Transmissions

a. This is a direct conversion from the Borg-Warner to the Dana Spicer clutch. No linkage changes are required.

b. Follow the adjustment procedure as described for a Dana Spicer clutch in the appropriate Truck Shop Manual, Section 16-03.
**Synchronized Transmissions**

c. Remove the preload spring (7523) as shown in Figure 2. This spring is no longer required when a Dana Spicer clutch is used.

d. Remove the adjusting bolt in the lever assembly (7511), Figure 2 - View B.

e. Install a new adjusting bolt (383896-S2) and washer (44879-S2).

f. Follow the adjustment procedure as described for a Dana Spicer clutch in the appropriate Truck Shop Manual, Section 16-03.

To retrofit a Dana Spicer clutch into a F/B-600 with an Eaton FS-4005-A or FS-4005-B transmission, the input shaft must be made "live". The component part numbers required to change from a 1.5" dead input shaft to 1.5" live input shaft are listed below and shown in Figure 3.
Figure 3 - Article 89-17-18
OTHER APPLICABLE ARTICLES:  NONE

SUPERSEDES:  89-13-13

WARRANTY STATUS:  INFORMATION ONLY

OASIS CODES:  5550
MEDIUM/HEAVY TRUCK:
1990 L SERIES

ISSUE:
Low friction non-metallic bushings are used on 10k - 12k front axles. The "GARLOCK BX" bushings are similar to those used by Rockwell in their "EASY STEER" front axles. Care must be taken during the reaming operation to make sure of a good king pin fit.

ACTION:
Use reamer kits: PT-4375-A (shaft & threader screw) and PT-4360-10 (pilot, reamer & remover/installer), and the following reaming guidelines to make sure of a good bushing/king pin fit.

SERVICE GUIDELINES

1. Be sure that the reamer and bushings are absolutely free of all surface oil. The slightest bit of oil on the bushings or reamer will prevent the tool from cutting the bushings.

2. Use the reamer with a tee handle wrench. Rotate it using two hands and applying equal pressure with each hand. If this is not done, the reamer will not cut true.

3. Take extreme care in handling the reamer. If the tool is even slightly dull, it will smear the bushing material and not cut properly.

4. Be sure the reamer rotational speed is not too high (even when rotating by hand). If it is too high, it will smear the bushing material.

5. After reaming the bushings, remove the burrs and loose material using a drill powered brass brush and then wipe the area clean with a dry cloth.

CAUTION:
IF THE ABOVE GUIDELINES ARE NOT FOLLOWED, AN EXCESSIVELY TIGHT KING PIN FIT WILL RESULT.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 3100, 3200, 3300
MEDIUM/HEAVY TRUCK:
1989 and prior LTL-9000

ISSUE:
The hood check cable may chafe and interfere with the air-to-air system, radiator surge tank and radiator cross-over tubes. This condition may cause intake system air leaks and cooling system coolant leaks.

ACTION:
Install two new self-storing (coiled) hood cable assemblies. Refer to the following procedure for service details.

SERVICE PROCEDURE

1. Open the hood.

   NOTE:
   THE HOOD WILL REMAIN OPEN IN THE "OVER CENTER POSITION" AND DOES NOT NEED A SUPPORT.

2. Remove the existing hood check cable assemblies (including the center stowage spring), Figure 1.
a. Disconnect both left and right hood check cables at the forward (hood) end. Refer to View A in Figure 1.

b. Unhook both left and right hood check cables at the cowl end.

3. Install the new coiled self-storing hood check cables. Use the existing hood and cowl attachment parts for attaching the new cables.

4. Close the hood.

OTHER APPLICABLE ARTICLES:  NONE

WARRANTY STATUS:  Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING
OASIS CODES: 1200, 4301, 4700
MEDIUM/HEAVY TRUCK:
1986-90 CARGO SERIES
1987-90 F & B SERIES, L SERIES

ISSUE:
The O-rings for the engine block heaters on Ford 6.6L and 7.8L diesel engines are now available as separate service items. In the past, if an engine block heater leaked because of a faulty O-ring, the entire block heater had to be replaced.

ACTION:
If service is required due to a leaking O-ring, replace the O-ring. If the entire block heater assembly has to be replaced, replace it with E7HZ-6A051-B. Refer to the appropriate 1989 Truck Shop Manual, Section 28-12 for service details.

OTHER APPLICABLE ARTICLES:  NONE

WARRANTY STATUS:  INFORMATION ONLY

OASIS CODES:  4300, 4700
TSB Article 89-18-13 has been superseded by Article 89-20-16.
TSB Article 89-19-3 has been superseded by Article 90-1-5.
FORD:
1990 and prior ALL FORD LINES

LINCOLN-MERCURY:
1990 and prior ALL LINCOLN-MERCURY LINES

MERKUR:
1990 and prior ALL MERKUR LINES

LIGHT TRUCK:
1990 and prior ALL LIGHT TRUCK LINES

MEDIUM/HEAVY TRUCK:
1990 and prior ALL MEDIUM/HEAVY TRUCK LINES

This TSB article is being republished in its entirety to make dealers aware of availability of the wiring harness terminal and connector repair kit.

ISSUE:
A wire harness terminal and connector repair kit is available for repairing electrical wire harnesses. This kit allows dealers to repair broken or corroded terminals and connectors instead of replacing an entire wire harness. The kit is easy to use and allows the technician to perform a professional looking repair in a short period of time.

ACTION:
To purchase a wire harness terminal and connector repair kit, contact Altair International Incorporated. Refer to the following information for ordering details.

ALT AIR INTERNATIONAL INC.

ATTN: SALES DEPARTMENT

22800 HALL ROAD

MT. CLEMENS, MI 48043

TELEPHONE: (313) 466-1200

An order form is included in the back of the original TSB issue. To order:

- Fill out the order form.
- Enclose a check for the total amount. (This kit cannot be charged to your dealership parts code.)
- Send the completed form and check to the ALT AIR INTERNATIONAL INC.
The kit consists of:

- Two 50 drawer metal cabinets that contain 6 each of the 96 different terminals, machined crimped with a four inch "pigtail" of 12 or 16 gauge wire.
- A unique, high compression crimping tool that will make sure of a solid connection preventing moisture or contaminants from affecting the wire splice.

OTHER APPLICABLE ARTICLES: NONE

SUPERSEDES: 88-17-5

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 2770, 2700
MEDIUM/HEAVY TRUCK:
1989 and prior L SERIES

ISSUE:
A three-piece rear crossmember is now available for service on all L-Series trucks with E-4 suspension. This new crossmember is a direct replacement for the one-piece crossmember used in production. All frame hole patterns are present in the new service crossmember.

ACTION:
If service is required, install a new three-piece rear crossmember. Refer to the following procedure for service details.

SERVICE PROCEDURE

1. Remove the existing crossmember. Save the crossmember suspension attaching parts. If frame ends are ramped, remove the ramps.

   NOTE:
   THE FASTENERS ATTACHING THE ONE-PIECE REAR CROSSMEMBER TO THE SIDERAiLS CAN BE REUSED, UNLESS DAMAGED, TO ATTACH THE THREE-PIECE ASSEMBLY. THEY SHOULD BE TORQUED TO 300 LB-FT (407 N-m). IF ORIGINAL FASTENERS APPEAR TO BE DAMAGED OR CANNOT SUSTAIN THE SPECIFIED TORQUE, REPLACE THEM WITH 3/4" GRADE 8 BOLTS (389742-S2), PREVAILING TORQUE GRADE 8 NUTS (34992-S2), AND HARDENED FLATWASHERS (44882-S2) UNDER THE BOLT HEADS AND NUTS.

2. Insert crossmember (E2HZ-5035-E) into frame.

3. Align mounting holes and insert bolts.

4. Tighten fasteners attaching crossmember assembly to siderails to 300 lb-ft (407 N-m).

5. Check crossbar to gusset fasteners torque. Retighten to 105 lb-ft (142 N-m).

6. Replace the ramps if they were removed.

OTHER APPLICABLE ARTICLES: 87-20-20
WARRANTY STATUS:  Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES:  3200
MEDIUM/HEAVY TRUCK:
1987-89 CL-CLT-9000 SERIES, L SERIES

ISSUE:
A coolant leak may occur at the radiator tank-to-header joint if the lock strip is not properly installed. A new "Ad-Tech" gasket/lock strip kit with improved easy-to-install lock strips and a detailed installation procedure is now available for service.

ACTION:
Install a new gasket/lock strip kit (E9HZ-8C261-A). Follow the installation instructions provided with the kit.

OTHER APPLICABLE ARTICLES:

88-26-17

88-9-17

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 4300, 4301
MEDIUM/HEAVY TRUCK:
1988-89 F-700, F-800, FT-900, L SERIES

This TSB article is being republished in its entirety to clarify the high idle speed fan clutch application chart.

ISSUE:
Engines may overheat on trucks equipped with front mounted equipment such as snowplows because the equipment or snow blade location diverts air flow around the radiator. This blockage reduces the heat transfer capability of the radiator.

ACTION:
Install a high idle speed fan clutch in place of the regular fan clutch. Refer to the following application chart for correct part. Also refer to the appropriate Truck Shop Manual, Section 27 for service installation details.

OTHER APPLICABLE ARTICLES: NONE

SUPERSEDES: 89-18-13
WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 4300, 4301
TSB Article 89-20-17 has been superseded by Article 90-5-16.
MEDIUM/HEAVY TRUCK:
1980-88 CL-9000, L SERIES

The original service action information published in TSB 89-4-13 did not provide front air conditioner compressor bracket modification instructions for Caterpillar 3406 installations.

ISSUE:
The A/C compressor bracket must be modified when used with the Caterpillar 3406 diesel engine.

ACTION:
Trim the front compressor mounting bracket approximately one (1) inch above the belt tensioner mounting hole as shown in Figure 1. Throw away the top portion of the bracket before installing the Sanden compressor.

Figure 1 - Article 89-22-10
89-4-13

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 2610, 2800
MEDIUM/HEAVY TRUCK:
1990 L SERIES

ISSUE:
There is a mismatch in wiring color between the Programable Electronic Engine Control (PEEC) module (located on the engine) and the engine wiring harness to which it connects. Although there is no current functional concern, care must be taken to be sure that the engine mounted PEEC module wires interface with the correct vehicle wires.

ACTION:
If service is required, use the following PEEC Module Interface To Vehicle Wiring Color Chart to properly identify and match the connections.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 2700, 2770
MEDIUM/HEAVY TRUCK:
1989-90 CARGO SERIES

ISSUE:
The oil pressure gauge may read erratically or show no pressure. This occurs because of corrosion on the internal electrical contact of the oil pressure sender unit.

ACTION:
Install a new oil pressure sender. Refer to the Cargo Shop Manual, Section 33-32 for service details.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 2310, 2300, 4103
This article is being republished in its entirety to include 90 amp Motorcraft alternators.

**ISSUE:**
Original equipment Wapsa (Brazil sourced) alternators may be replaced in service with Motorcraft (U.S. sourced) alternator assemblies.

**ACTION:**
Replace in four (4) part sets only - alternator, pulley, fan and spacer. Refer to the following Alternator Application Chart for correct parts usage.

**NOTE:**
The 60 AMP ALTERNATOR COMPONENTS ARE NOT INTERCHANGEABLE WITH THE 70 OR 90 AMP COMPONENTS.
MEDIUM/HEAVY TRUCK:
1989 and prior B-600, B-700, F-600, F-700, F-800, FT-800, L-800, L-8000, LN-7000, LN-800, LN-8000
1989 LS-800, LS-8000

ISSUE:
The mainshaft 3rd/4th gear washer may fail on some Eaton five-speed transmissions. This occurs because
the retaining snap ring comes loose from the mainshaft groove. A new design mainshaft, washer and snap
ring were incorporated in transmissions built in late 1988. These parts can be installed on earlier built Eaton
five-speed transmissions.

ACTION:
Install a new design 3rd/4th gear washer, snap ring and, where appropriate, a mainshaft. Refer to the
following procedure for service details.

SERVICE PROCEDURE

1. Identify which mainshaft was installed in the transmission by examining the part number stamped on
   the output end of the mainshaft.
   ● If the mainshaft part number is 23126 or 23016, it is the "New Improved" part.
   ● If the mainshaft part number is 239785, 21657 or 239348, it is the "Old" part.
2. Proceed to repair the "New Improved" or "Old" mainshaft as directed below.

   CAUTION:
   THE OLD AND NEW PARTS ARE NOT INTERCHANGEABLE. THEY MUST BE REPLACED A
   INDICATED IN THE FOLLOWING SERVICE PROCEDURE TO AVOID MIXING NON-COMPATIBLE
   COMPONENTS.

New Improved Mainshaft

1. Inspect the mainshaft to be sure it is not damaged.
2. If the mainshaft is OK, replace only the washer and snap ring with the "New Improved" parts.
   a. Refer to the following Mainshaft Parts Application Chart for correct parts usage.
   b. Refer to the appropriate Medium /Heavy Truck Shop Manual, Sections 16-38 through 39 for
      service details.
3. If the mainshaft is damaged, install the appropriate mainshaft kit which contains the mainshaft,
   washer and snap ring. Refer to the following Mainshaft Parts Application Chart for correct parts
   usage.
Old Mainshaft

1. Install the “New Improved” kit. This kit must be installed whether or not the mainshaft is damaged because the new washer and snap ring are not compatible with the old mainshaft.
   
a. Refer to the following Mainshaft Parts Application Chart for correct part kit usage.
   
b. Refer to the appropriate Medium/Heavy Truck Shop Manual, Sections 16-38 through 39 for service details.

2. Throw away the old mainshaft, washer and snap ring. Attempting to use the original washer and snap ring is likely to result in another failure.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage, Powertrain Warranty Coverage

LABOR ALLOWANCE

DEALER CODING
OASIS CODES: 5101, 5200, 5300, 5500
MEDIUM/HEAVY TRUCK:
1985-89 L-8000, L-9000

ISSUE:
An engine that will not start due to a no crank condition may be caused by broken or failed components in the floor mounted "FELSTEAD" shift tower. Since service kits are now available for the switch, switch pin and shift handle, it is no longer necessary to replace the complete shifter.

ACTION:
Use one or more of the following service kits. Refer to the following procedures for service details.

SWITCH PIN KIT (E7HZ-7A474-A) REMOVAL

1. Loosen nut, Figure 1.

2. Remove the hair pin (between the paddles) from the actuator pin.

3. Slide the actuator pin out.

INSTALLATION
1. Start the threaded end of the actuator pin, Figure 1, through the rectangular slot in paddle #1.

2. Slip the washer between the paddles and slide the threaded end of the actuator pin through the rectangular slot in paddle #2.

3. Apply one drop of Ford Stud and Bearing Mount Sealer (EOAZ-19554-BA) to each thread surface on the actuator pin.

4. Install the nut on the actuator pin. Tighten it to 100 in-lb (11 N-m).

**HANDLE REPAIR KIT (E7HZ-7A082-A) REMOVAL**

1. Remove and throw away both existing knob inserts, Figure 2.

![Diagram](TB-1297-A)

*Figure 2 - Article 89-23-14*

2. Remove and save screw, nut and shift handle.

3. Remove and throw away existing release knobs and roll pin.

**INSTALLATION**

1. Install the new roll pin. The pin must extend equally from both sides of the handle assembly.

2. Locate new release knobs AS FOLLOWS:
   - Apply two drops of Ford Instant Adhesive (E8AZ-19554-A) into each .16" diameter hole
   - Remove any excess adhesive from the surface around the hole
NOTE:
DO NOT APPLY ADHESIVE TO THE ROLL PIN.

3. Assemble both release knobs onto the roll pin at the same time and completely seat them.

4. Reassemble shift handle onto shifter shaft as follows:
   - Install screw and square nut
   - Align the nut vertically with the handle assembly

5. Install the new inserts.

SWITCH KIT (E7HZ-7A247-B) REMOVAL

1. Disconnect the wire assembly from the switch by sliding the wire connector parallel to the switch base.

2. Remove the two mounting screws, Figure 3.

   Figure 3 - Article 89-23-14

3. Throw away the old switch, mounting bracket and attaching hardware.

INSTALLATION

1. Install the new switch mount bracket onto the new switch, Figure 1. Tighten finger tight.

2. Further tighten bracket until first flat on the switch hex aligns with the flat part of the bracket containing the tapped mounting holes, Figure 3.
3. Make sure that one of the switch electrical connectors lies between line AA and BB as shown in Figure 3. It may be necessary to tighten the bracket to align with the second hex flat surface to obtain this position.

4. Install the new switch-bracket assembly onto the shift control side flange using the two screws and lockwashers.

5. Locate the new assembly in the same position as the old assembly.

6. Reconnect the wire assemblies to the new switch.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 5104, 610100, 610200
TSB Article 89-23-15 has been superseded by Article 90-2-13.
MEDIUM/HEAVY TRUCK:
1990 and prior ALL MEDIUM/HEAVY TRUCK LINES

ISSUE:
If the engine coolant level sight glass eventually becomes stained, it may give a false "FULL" indication when read.

ACTION:
When examining the coolant level, look closely to be sure that you are observing liquid coolant and not a stained sight glass.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 4300
New vehicle predelivery checklists for 1990 model year vehicles have been developed and distributed. The number of checklists have been reduced from 9 to 5 by combining coverage of vehicles that previously had separate checklists.

No new check items have been added. The format of the checklist has been revised to allow a common description of the checks to be performed. These items are now coded and grouped according to the major heading. For example: Check A1, battery open circuit voltage, is common on all vehicles. It is worded the same for all vehicles. Additional explanation covering the details of this check and other checks are found in Section 50-02 of the Pre-delivery Shop manual.

**ACTION:**
Order additional predelivery checklists by calling (313) 455-0059 or by using the Warranty & Policy Order Form #362-114.

Use the publications order form in the back of the original TSB to purchase the Predelivery Shop Manual, Volume F. This manual has important information concerning what should be done during the functional checks, road test and appearance operations.

**EXPANDED CHECKLIST**

The following list can be removed and used as an expanded checklist during road testing. This will assist you in performing a high quality predelivery.

**ENGINE DRIVEABILITY**

During start-up, acceleration, cruise and deceleration, check for unsatisfactory engine performance such as:

- Prolonged starting (cranking)
- No start (does not crank)
• Hard starts (Quits immediately after starting)
• Fast idle and return to curb idle during warm-up
• Idles rough, stalls
• Idles unusually slow
• Stumbles, backfires, stalls, or hesitates during acceleration
• Spark knock during light to moderate acceleration
• Sluggish, poor acceleration
• Surges or lopes
• Hissing, unusual noises, or vibrations under hood
• Smokes.

**AUTOMATIC TRANSMISSION**

Make sure of the following:

• Engine starts in Park and Neutral.
• Initial band and clutch engagements are smooth.
• Upshifts and downshifts are without slippage and harshness.

**STEERING**

• Check for wander or free play.
• Check wheel return for stiffness in both directions.

**BRAKES**

• Check for good pedal height.
• Check for pull in either direction.
• Check pedal effort.
• Check parking brake operation and release.
• Adjust brakes (Heavy Trucks ONLY)

**NOISE**

• Road test on rough roads and listen for squeaks and rattles.
• Test at highway speed, listen for wind noise or vibration.
INSTRUMENTS

- Make sure that all the gauges work.

ACCESSORIES

- Check operation of heater and air conditioning controls.
- Make sure that the speed control holds at desired speed and disengages when brakes are applied or off button pressed.

OTHER APPLICABLE ARTICLES:  NONE

WARRANTY STATUS:  INFORMATION ONLY

OASIS CODES:  1800, 2800, 3800, 4800, 7800, 680000
MEDIUM/HEAVY TRUCK:
1990 and prior L SERIES

ISSUE:
A leak at the fixed steering column CV joint may be caused by a torn CV joint boot.

ACTION:
Install a new design CV joint boot that is a three convolute design instead of old two convolutes design. The new design CV joint boot helps keep the boot from tearing and leaking. Refer to the appropriate model year L-Series Shop Manual, Section 13-07 for service details.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 3100, 3520
MEDIUM/HEAVY TRUCK:
1984-90 C SERIES, F & B SERIES, L SERIES

ISSUE:
A new air conditioning system thermal protection service kit is available. The new kit is designed to monitor and evaluate A/C compressor operating temperatures and shut the A/C system off if the temperature gets too high. This new kit also has an in-cab warning lamp to alert the operator of the shut down and possible need to service the A/C system. The A/C compressor will restart when the operating temperature returns to within the normal range.

ACTION:
No corrective action is required.

NOTE:
The A/C THERMAL PROTECTION KIT WILL NOT MONITOR FOR LOW REFRIGERANT OIL LEVEL.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 2610, 2612, 2900
TSB Article 89-24-15 has been superseded by Article 91-19-13.
MEDIUM/HEAVY TRUCK:
1988-89 CL-CLT-9000 SERIES

ISSUE:
A loss of engine coolant through the overflow line of the "Short" supply tank may be caused when the pressure regulator valve of the cap assembly is opened to relieve "over pressure" of the cooling system.

ACTION:
Re-work the filler neck on the supply tank to prevent coolant loss. Refer to the following procedure for service details.

SERVICE PROCEDURE

1. Sweat off the filler neck assembly from the supply tank, Figure 1.
Figure 1 - Article 89-25-20

**CAUTION:**
DO NOT OVER HEAT THE SUPPLY TANK. THIS COULD CAUSE DAMAGE TO THE TANK’S SOLDER JOINTS.

2. Clean off any remaining solder, paint, dirt, grease, etc. from the bottom of the filler neck assembly.

3. Obtain a copper, thin-walled pipe locally that is 1.185" (30mm) outside diameter and 1.50" (38 mm) long.

4. Butt the thin-walled pipe to the bottom of the original filler neck assembly and silver solder this joint, Figure 2.
5. Drill a 1/8" (3.175 mm) hole just under the solder bead in the copper pipe. This hole will serve as a vent when adding coolant and allow the system to be as full as possible.

**NOTE:**
THIS HOLE MUST BE PLACED TOWARDS THE HIGHEST POSSIBLE POSITION.

6. Clean off any solder, paint, grease, etc. from the supply tank where the filler neck was removed.

7. Soft solder the copper pipe with the filler neck back onto the supply tank.

8. Paint the repaired areas.

**OTHER APPLICABLE ARTICLES:**  NONE

**WARRANTY STATUS:**  Eligible Under Basic Warranty Coverage

**LABOR ALLOWANCE**

**DEALER CODING**
OASIS CODES: 4300, 4301
MEDIUM/HEAVY TRUCK:
1988-90 L SERIES

ISSUE:
A "Butterfly" coolant supply tank is now available for service.

ACTION:
Engine coolant can now be added through the butterfly opening in the hood without tilting the hood. The tank can be used on all L-Series trucks with "AD-TECH" radiators and butterfly hoods. The tank has a longer fill tube so that the cap can be reached through the right butterfly opening.

NOTE:
THE "BUTTERFLY" COOLANT SUPPLY TANK WAS EFFECTIVE IN KTP PRODUCTION AS OF JOB #1, 1990 FOR L-SERIES TRUCKS. THE STANDARD TANK (E9HZ-8A080-B) WILL BE USED FOR NON-BUTTERFLY HOOD AND SPECIAL APPLICATIONS.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 4300