

**FORD:** 1987-1988 THUNDERBIRD  
1987-1990 CROWN VICTORIA, MUSTANG, BRONCO, E-150, E-250, F-150,  
F-250

**LINCOLN:** 1987 CONTINENTAL  
1987-1990 MARK VII, TOWN CAR

**MERCURY:** 1987-1988 COUGAR  
1987-1990 GRAND MARQUIS

### **ISSUE**

Excessive oil consumption on 5.0L EFI engines may be caused by one or more of the following:

- Oil leaks from gaskets
- Poor sealing of the lower intake manifold
- Intake and exhaust valve stem seals
- Piston rings

### **ACTION**

Perform an inspection and oil consumption test as described in the following service procedure to determine if an excessive oil consumption condition exists. If an excessive oil consumption condition is present, install new guide mounted valve stem seals for a more positive fit and new piston rings with improved oil control. Refer to the following procedure for service installation details.

### **EXTERNAL OIL LEAK INSPECTION PROCEDURE**

#### **NOTE**

#### **CHECK ALL GASKETS AND SEALS FOR OIL LEAKAGE.**

1. Place the vehicle in a stall that has a hoist. Make sure the floor under the vehicle is clean and free of oil.
2. Inspect the engine for signs of oil leakage.
3. Clean any areas where oil looks like it may be leaking.
4. Run the engine for five (5) minutes at varying engine RPM.

#### **NOTE**

**DO NOT EXCEED 2500 RPM.**

5. Turn the engine off and re-inspect the engine for signs of oil leaks.
6. If an external oil leak is found, repair as required and repeat Steps 4 and 5. If no external oil leak is found, proceed to Step 7.
7. Torque the lower intake manifold using the following two (2) step procedure before proceeding to the "CUSTOMER OIL CONSUMPTION TEST."
  - a. Torque the lower intake manifold bolts in sequence to 15-20 lb.ft. (20-27 N•m).
  - b. Once again, torque the lower intake manifold bolts in sequence to 23-25 lb.ft. (32-34 N•m).

### **CUSTOMER OIL CONSUMPTION TEST**

#### **NOTE**

#### **SEE THE WARRANTY AND POLICY MANUAL FOR APPLICABLE CHARGES.**

1. Drain the engine oil and remove the oil filter.
2. Install a new FL1-A oil filter.
3. Install five (5) quarts of Ford XO-10W30-QP engine oil in passenger cars and six (6) quarts in light truck applications. An equivalent oil can be used as long as it meets Ford specification ESE-M2C153-E and API SG.
4. Make sure the vehicle has the correct dipstick. Check the engineering part number stamped on the dip stick against the information provided in the dip stick application chart that follows.

## Article No. 90-1-9 Cont'd.

DIP STICK APPLICATION CHART			
APPLICATION	MODEL YEAR	ENGINEERING PART NUMBER	SERVICE PART NUMBER
Mustang	1987-90	E7SE-6750-BA	E8SZ-6750-A
Thunderbird, Cougar	1987-88	E7SE-6750-BA	E8SZ-6750-A
Continental	1987	E7SE-6750-BA	E8SZ-6750-A
Mark VII	1987-90	E7SE-6750-BA	E8SZ-6750-A
Crown Victoria, Grand Marquis, Town Car	1987-90	E8AE-6750-BA	E8AZ-6750-C
F-150, F-250, Bronco (Built Before 5/15/89)	1987-89	E7TE-6750-HA	E8TZ-6750-F
F-150, F-250, Bronco (Built After 5/15/89)	1989-90	E9TE-6750-CA	E9TZ-6750-E
Econoline (Built Before 5/15/89)	1987-89	E7UE-6750-CA	E7UZ-6750-D
Econoline (Built After 5/15/89)	1989-90	E9UE-6750-BA	FOUZ-6750-D

5. Run the engine for two (2) minutes then turn the engine off.
6. Let the oil drain back into the oil pan for at least three (3) minutes before going to Step 7.
7. With the engine off and the vehicle parked on level ground, remove the engine oil dip stick and wipe it clean. Fully re-install the dip stick, then remove it again.
8. See where the oil level is on the graphic, stamped on the dip stick, Figure 1. The oil level should be between the top of the cross hatch area and the "F" in "FULL".
9. Using a file, scribe a notch on the edge of the dip stick where the actual oil level is at.

### **NOTE**

**THE SCRIBE MARK ON THE DIP STICK IS THE ACTUAL OIL LEVEL FULL MARK. USE THE SCRIBE MARK AS THE INDICATOR FOR ALL FUTURE OIL READINGS THAT ARE TAKEN.**

10. Record the mileage on the vehicle.

11. When the vehicle is returned to the customer, show them where the dip stick is located and how to read it. Make sure you point out that the scribed notch on the dip stick is the "True Full Mark". Also point out the following to the customer:
  - Your vehicle is now part of an engine oil consumption test.
  - The vehicle has new engine oil and a new oil filter.
  - Your vehicles mileage has been recorded.
  - You are to check the engine oil level every time you stop for fuel.
  - If the engine oil level indicated on the dip stick is in the "ADD ONE QUART" range, contact the dealership to return for a re-inspection.

### **NOTE**

**DO NOT ADD ENGINE OIL. THIS NEEDS TO BE DONE BY THE DEALERSHIP TO ESTABLISH THE CORRECT CONSUMPTION RATE.**

12. When the customer returns for the re-inspection, make sure the engine oil level is in the "ADD ONE QUART" area on the dip stick.
13. Check and record the vehicles mileage at this time. This will be needed to calculate the oil consumption rate later.
14. Add and record the amount of oil it takes to restore the engine oil level on the dip stick to the "True Full Mark" scribed during Step 9.
15. Calculate the oil consumption rate as shown in the following example:
  - **Starting Odometer Reading** recorded in Step 10 at start of test = 22,100
  - **Ending Odometer Reading** recorded in Step 13 at end of test = 22,800
  - **Accumulated mileage** = 700 miles
  - **Oil added** 1 quart = 1 quart

Once you have the accumulated mileage and the oil added, use the following formula to calculate the actual oil consumption:

- Calculated oil consumption = Accumulated miles (divide by) oil added (in quarts)
- 700 miles per quart = 1 quart

**NOTE**

**RECORD THE OIL CONSUMPTION TEST INFORMATION ON A DEALER SERVICE REPORT. A BLANK DEALER SERVICE REPORT IS LOCATED IN THE BACK OF THIS TSB BEHIND THE SERVICE INFORMATION PAGE. AFTER YOU HAVE COMPLETED THE FORM, MAIL IT TO FORD MOTOR COMPANY. A SAMPLE DEALER SERVICE REPORT INDICATING THE REQUIRED INFORMATION IS SHOWN IN FIGURE 3.**

16. If the vehicle did not use one (1) quart or less of engine oil within 900 miles, an oil consumption concern is not present. Remind the customer at the time of vehicle return to use the recommended 10W30 API SG engine oil. No further action is required at this point.
17. If the engine oil consumption test indicates that the vehicle used one (1) quart or more of engine oil in less than 900 miles, proceed to the **“PISTON RING & VALVE SEAL REPLACEMENT PROCEDURE”**.

**PISTON RING & VALVE SEAL REPLACEMENT PROCEDURE**

**WARNING**

**THE ENGINE MUST BE REMOVED FROM THE VEHICLE TO PERFORM THE FOLLOWING PROCEDURE. IT IS IMPORATANT THAT THE ENGINE IS FREE OF EXTERNAL OIL LEAKS WHEN RE-ASSEMBLED.**

1. Remove the engine from the vehicle.
2. Place the engine on an engine stand.
3. Remove the upper and lower intake manifolds. Refer to the appropriate model year Shop Manual, Section 21-21 for service details.
4. Remove the right hand and left hand cylinder head. Refer to the appropriate model year Shop Manual, Section 21-21 for service details.
5. Remove the oil pan and oil pump. Refer to the appropriate model year Shop Manual, Section 21-21 for service details.

6. Remove any ridge and/or deposits from the upper end of the cylinder bore with Cylinder Ridge Reamer T64L-6011-EA or equivalent. Follow the instructions furnished by tool manufacture. Never cut into the ridge travel area in excess of 0.74mm (1/32”) when removing ridges.

**WARNING**

**DO NOT BREAK THE GLAZE OR HONE THE CYLINDER BORES. THIS WILL DISTURB THE PRODUCTION BORE FINISH AND COULD CAUSE A MORE SEVERE OIL CONSUMPTION CONCERN.**

7. Make sure all the connecting rods are marked so they can be re-installed in their original positions.
8. Remove the piston and rod assemblies from the engine.
9. Remove the existing piston rings and throw them away.
10. Install new piston ring sets on each piston. Make sure the ring gaps are properly spaced, Figure 2.
11. Remove the intake and exhaust valve stem seals.
12. Inspect the valve stems to make sure that they are free of nicks and burrs. Repair as required.
13. Install new guide mounted intake and exhaust valve stem seals.

**NOTE**

**ON PASSENGER CAR ENGINES, THROW AWAY THE NYLON DISC ON THE VALVE STEMS. THE NYLON DISC WAS USED AS AN AID DURING INITIAL ASSEMBLY AND HAS NO OTHER USEFUL FUNCTION.**

**NOTE**

**REFER TO THE GASKET/SEAL APPLICATION CHART THAT FOLLOWS FOR THE CORRECT PART USAGE.**

# Article No. 90-1-9 Cont'd.

1987-90 GASKET/SEAL APPLICATION CHART			
GASKET/SEAL	CAR 5.0L BASE	CAR 5.0L H.O.	LIGHT TRUCK 5.0L
Oil Pan	E9AZ-6710-A	E9AZ-6710-A	E9AZ-6710-A
Cylinder Head	E6ZZ-6051-A	E6ZZ-6051-A	E5AZ-6051-A
Intake Manifold	E6SZ-9H486-C	E6SZ-9H486-C	E5TZ-9H486-A
Seals - Intake Manifold	D9AZ-9433-B	D9AZ-9433-B	D9AZ-9433-B
Rocker Arm Cover	E7ZZ-6584-C	E7ZZ-6584-C	E7ZZ-6584-C

14. Re-install the piston and rod assemblies in the engine in their original locations.
15. Re-install the oil pan and oil pump. Refer to the appropriate model year Shop Manual, Section 21-21 for service details.
16. Re-install the right hand and left hand cylinder head. Refer to the appropriate model year Shop Manual, Section 21-21 for service details.
17. Re-install the upper and lower intake manifolds. Refer to the appropriate model year Shop Manual, Section 21-21 for service details.
18. Re-install the engine in the vehicle.

PART NUMBER	PART NAME
E8SZ-6750-A	Dip Stick
E8AZ-6750-C	Dip Stick
E8TZ-6750-F	Dip Stick
E7UZ-6750-D	Dip Stick
E9TZ-6750-E	Dip Stick
FOUZ-6750-D	Dip Stick
FOTZ-6148-A	Piston Ring Set - 8 required
E8AZ-6571-A	Intake Valve Seal - Pkg. of 4
E5ZZ-6571-A	Exhaust Valve Seal - Pkg. of 4
E9AZ-6710-A	Oil Pan Gasket
E6ZZ-6051-A	Cylinder Head Gasket
E5AZ-6051-A	Cylinder Head Gasket
E6SZ-9H486-C	Intake Manifold Gasket
E5TZ-9H486-A	Intake Manifold Gasket
D9AZ-9433-B	Seals - Intake Manifold
E7ZZ-6584-C	Rocker Arm Gasket

**OTHER APPLICABLE ARTICLES:** None  
**WARRANTY STATUS:** Eligible Under Basic Warranty Coverage,

OPERATION	DESCRIPTION	TIME
900109A	Perform External Inspection	0.7 Hr.
900109B	Perform Oil Consumption Test	0.4 Hr.
900109C	Install Valve Seals & Piston Rings - All Cars Except Thunderbird, Cougar	18.6 Hrs.
900109C	Install Valve Seals & Piston Rings - Bronco, F Series	18.9 Hrs.
900109C	Install Valve Seals & Piston Rings - Econoline	21.3 Hrs.
900109C	Install Valve Seals & Piston Rings - Thunderbird, Cougar	17.5 Hrs.

Powertrain Warranty Coverage

### DEALER CODING

BASIC PART NO.  
6148

CONDITION CODE  
40

**OASIS CODES:** 4100, 4101, 4104

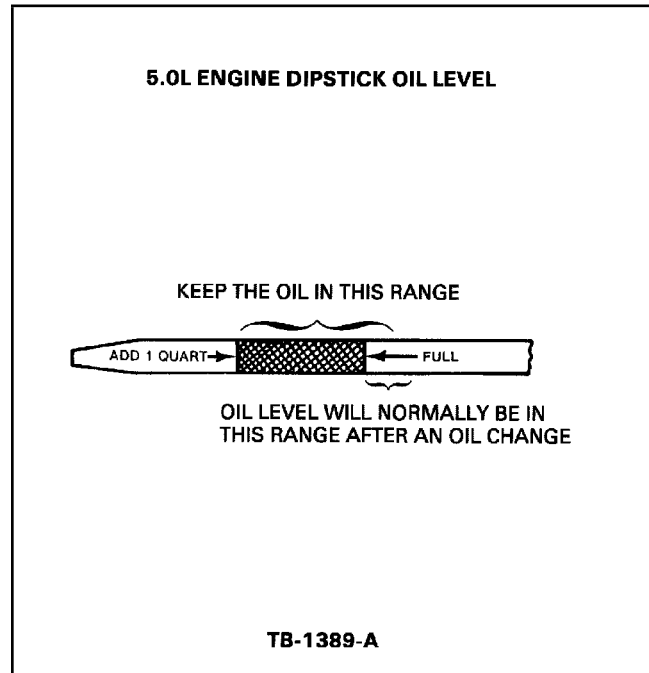


Figure 1 - Article 90-1-9

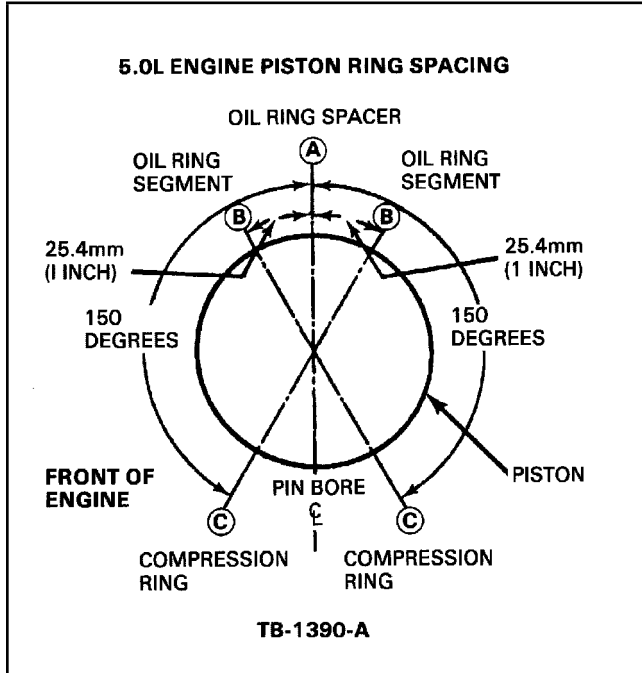


Figure 2 - Article 90-1-9



# DEALER SERVICE REPORT

DEALER NAME COURTESY MOTOR CO. PHONE (313) 278-1111

CITY/STATE PLYMOUTH, MI SERVICE MANAGER JOE JONES

P & A CODE 46521 DISTRICT DETROIT

## VEHICLE INFORMATION

VIN 1FABP45EXKF100029 D.S.O. CODE # \_\_\_\_\_ BUILD DATE 10/1/88

OWNER'S NAME STAN SMITH

MODEL YEAR 1989 VEHICLE LINE MUSTANG GT MILEAGE 22,100

DATE SERVICE PERFORMED 12/30/89 DATE REPORT WRITTEN 12/30/89

## DESCRIPTION OF CONDITION

CHECK ONE BOX (COMPONENT TAG INFO. REQUIRED IF AXLE, TRANS., ENGINE OR DRIVEABILITY RELATED)

- |   |  |
|---|--|
| <input type="checkbox"/> PAINT (CODE _____)       | <input type="checkbox"/> DRIVEABILITY (CALIBRATION _____)        |
| <input type="checkbox"/> BODY                     | <input checked="" type="checkbox"/> ENGINE (BUILD DATE _____)    |
| <input type="checkbox"/> ELECTRICAL, HEATING, A/C | <input type="checkbox"/> DIESEL (TYPE AND SERIAL NO. _____)      |
|   | <input type="checkbox"/> AXLE, TRANS., CHASSIS (TAG CODES _____) |

WHAT IS THE OWNER'S DESCRIPTION OF THE CONDITION BEING REPORTED? EXCESSIVE OIL CONSUMPTION

WHAT IS YOUR DESCRIPTION OF THE CONDITION AND CAUSE?

ODMETER READING AT START OF TEST = 22,100

ODMETER READING AT END OF TEST = 22,800

ACCUMULATED MILES = 700

OIL ADDED IN QUARTS = 0.9375 QUARTS

CALCULATED OIL CONSUMPTION = 747 MILES PER QT.\*

\*FORMULA: ACCUMULATED MILES DIVIDED BY OIL ADDED

EXAMPLE:  $700 \div 0.9375 = 747$

WHAT WAS DONE TO SERVICE THE CONDITION? INSTALLED NEW INTAKE AND EXHAUST VALVE STEM SEAL AND PISTON RINGS PER INSTRUCTION OF TSB 89-24---

WAS THE CORRECTION EFFECTIVE?  YES  NO  PARTIALLY \_\_\_\_\_ %

IF PARTIALLY EFFECTIVE, DESCRIBE RESULTS: \_\_\_\_\_

NAME OF CAUSAL PART PISTON RINGS AND VALVE STEM SEALS

SERVICE PART NUMBER \_\_\_\_\_ IS THE CAUSAL PART AVAILABLE?  YES  NO

HAS YOUR DISTRICT REP BEEN INVOLVED WITH THIS UNIT?  YES  NO  SEND MORE FORMS

PRINT NAME OF REPORT ORIGINATOR M. J. YOUNG

ORIGINATOR'S SOC. SEC. NO. ( If your dealership subscribes to the CTP Program) 210-40-2063

363-100D JAN 89

TB-1391-A

Figure 3 - Article 90-1-9