

- **FUEL SYSTEM—FUEL PUMP
“WHINING”/“BUZZING” NOISE COMES THROUGH
ENTERTAINMENT OR TWO-WAY RADIO SPEAKER**
- **RADIO—ENTERTAINMENT OR TWO-WAY
COMMUNICATION—“WHINING”/“BUZZING” NOISE
IN SPEAKERS CAUSED BY FUEL PUMP**
- **NOISE—“WHINING”/“BUZZING”—COMES THROUGH
SPEAKERS OF ENTERTAINMENT OR TWO-WAY
RADIO**

**Article No.
02-16-4**

FORD: 1990-1994 TEMPO
1990-1997 ESCORT, PROBE, THUNDERBIRD
1990-1998 MUSTANG
1990-1999 TAURUS
1990-2002 CROWN VICTORIA
1997-1999 CONTOUR
2001 TAURUS
1990 BRONCO II
1990-1996 BRONCO
1990-1997 AEROSTAR, F SUPER DUTY, F-250 HD, F-350
1990-1999 F-250 LD
1990-2002 ECONOLINE, F-150, RANGER
1991-2002 EXPLORER
1995-2002 WINDSTAR
1997-2003 EXPEDITION
1999-2002 SUPER DUTY F SERIES
2000-2002 EXCURSION, EXPLORER SPORT TRAC, EXPLORER SPORT
2001-2002 ESCAPE

LINCOLN: 1990-1992 MARK VII
1990-1994 CONTINENTAL
1990-2002 TOWN CAR
1998-2003 NAVIGATOR
2002 BLACKWOOD

MERCURY: 1990-1994 TOPAZ
1990-1997 COUGAR
1990-1999 SABLE
1990-2002 GRAND MARQUIS
1991-1997 TRACER
1997-1999 MYSTIQUE
2001 SABLE
1993-2002 VILLAGER
1997-2002 MOUNTAINEER

Article No. 02-16-4 Cont'd.

TSB 01-7-3 is being republished in its entirety to update the model year coverage and vehicle line coverage.

ISSUE

A “whining”/“buzzing” noise in the speakers of the entertainment radio or two-way radio on vehicles with an in-tank electric fuel pump may be caused by electrical noise from the fuel pump.

ACTION

Install an electronic noise Radio Frequency Interference (RFI) Filter (F1PZ-18B925-A) on the fuel pump inside the fuel tank. Refer to the following Test Procedure to confirm that the concern exists, then refer to the Service Procedure for repair details.

NOTE

IF THE VEHICLE HAS AN ELECTRONIC RETURNLESS FUEL SYSTEM, DO NOT INSTALL A RFI FILTER INLINE TO THE FUEL PUMP. ONLY VEHICLES WITH MECHANICAL RETURNLESS FUEL SYSTEMS (PRESSURE REGULATOR IN THE TANK), OR SYSTEMS WITH THE PRESSURE REGULATOR ON THE FUEL RAIL SHOULD BE APPROVED FOR THE RFI FILTER INSTALLATION.

NOTE

SOME LIGHT TRUCKS REQUIRE ONE (1) RFI FILTER FOR EACH IN-TANK ELECTRIC FUEL PUMP ON MULTI-TANK VEHICLES.

NOTE

THIS TSB DOES NOT INCLUDE TAURUS FLEXIBLE FUEL VEHICLES (FFVs) OR 1999 RANGER 3.0L FFVs.

TEST PROCEDURE

Fuel pump radio noise is relatively constant and changes only slightly with vehicle speed. If the frequency of the noise varies or the noise comes and goes with the vehicle speed, then it is not the fuel pump and this fix will not be effective. The following procedure will help determine if the fuel pump is the cause of the radio noise:

1. Turn on the radio before the key is turned on (assuming the radio will operate without the ignition key - you may need to put the ignition key in the Accessory position).
2. Turn the ignition key to the Run position (do not start the engine).

3. The fuel pump should run for about 1 second with the key in the Run position with the engine not running. Listen for noise in the radio. If noise is present while the pump is running and stops when the pump stops, then the noise is being generated by the pump and this procedure should help.

SERVICE PROCEDURE

1. Remove the fuel pump sender assembly from the fuel tank. Refer to the appropriate model year Workshop Manual for removal procedure.
2. On vehicles without a fuel delivery module, remove the negative and positive connectors from the fuel pump, Figure 1.
 - a. Cut the wires to the fuel pump 76mm (3”) from the flange of the fuel pump and discard the wires.
 - b. Connect the RFI filter connectors to the spade terminal on the fuel pump.
 - c. Cut and solder both the red and black wires of the RFI filter to the red and black wires of the flange. Use Heat Shrink Tubing (F5AZ-14A099-AA) over the solder connections.

NOTE

HEAT SHRINK TUBING MUST BE USED OVER ALL SOLDERED CONNECTIONS MADE PER THIS TSB. USE SUFFICIENT TUBING (ABOUT 50mm (2 ”)) OF THE SPECIFIED TYPE TO ENTIRELY COVER EACH SOLDERED CONNECTION AND SHRINK APPROPRIATELY TO PREVENT EXPOSURE OF THE CONNECTIONS.

NOTE

FOR SOME VEHICLES WITH EXTREMELY LONG FUEL PUMP GROUND WIRE CIRCUITS, IT MAY BE NECESSARY TO SHORTEN THE GROUND WIRE TO A POINT CLOSE TO THE FUEL TANK. IF THE GROUND IS MOVED, BE SURE IT IS SECURE AND PROTECTED FROM CORROSION SINCE IT IS THE OPERATING GROUND FOR THE PUMP. CHECK SERVICE LITERATURE (EVTM, ETC.) FOR GROUND LOCATIONS.

WARNING

ALL SOLDERING AND HEAT SHRINKING MUST BE COMPLETED AWAY FROM THE FUEL TANK AREA. USE A SOLDERING IRON ONLY FOR SOLDERING AND HEAT GUN ONLY FOR APPLYING SHRINK TUBING.

3. On light trucks and compact trucks with a fuel delivery module, cut the fuel pump wires to the fuel delivery module 50mm (2") from the flange and discard the wires, Figure 2.
 - a. Cut the connectors from the RFI filter and solder wires to the fuel delivery module (red to red and black to black). Use heat shrink tubing over solder connections.
 - b. Solder wires from the RFI filter to the flange wires (red to red and black to black). Use heat shrink tubing over soldered connections.

NOTE

HEAT SHRINK TUBING MUST BE USED OVER ALL SOLDERED CONNECTIONS MADE PER THIS TSB. USE SUFFICIENT TUBING (ABOUT 50mm (2 ") OF THE SPECIFIED TYPE TO ENTIRELY COVER EACH SOLDERED CONNECTION AND SHRINK APPROPRIATELY TO PREVENT EXPOSURE OF THE CONNECTIONS.

NOTE

FOR SOME VEHICLES WITH EXTREMELY LONG FUEL PUMP GROUND WIRE CIRCUITS, IT MAY BE NECESSARY TO SHORTEN THE GROUND WIRE TO A POINT CLOSE TO THE FUEL TANK. IF THE GROUND IS MOVED, BE SURE IT IS SECURE AND PROTECTED FROM CORROSION SINCE IT IS THE OPERATING GROUND FOR THE PUMP. CHECK SERVICE LITERATURE (EVTM, ETC.) FOR GROUND LOCATIONS.

WARNING

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4. Secure the RFI filter to the fuel pump and sender assembly with a Bundling Strap (95873-S101) to prevent rattling in the tank, Figures 1 and 2.
5. Reinstall the fuel pump sender assembly into the fuel tank.

CAUTION

INSTALL NEW GASKETS WHEN REINSTALLING SENDER TO PREVENT LEAKS. REFER TO THE PARTS CATALOG FOR PROPER APPLICATIONS.

6. Check the appropriate Electrical and Vacuum Troubleshooting Manual (EVTM) (or other service literature) for the location of the fuel pump ground. If ground is more than 0.9m (3 ') from the tank, cut wire and ground fuel pump end within 0.9m (3 ') of the tank to prevent ground wire from acting as an antenna. Be sure ground is secure and protected from corrosion since it is the operating ground for the fuel pump.
7. Install the fuel tank in the vehicle as outlined in the appropriate Service or Workshop Manual.

PART NUMBER	PART NAME
F1PZ-18B925-A	Radio Frequency Interference (RFI) Filter
95873-S101	Bundling Strap
F5AZ-14A099-AA	Heat Shrink Tubing

OTHER APPLICABLE ARTICLES: NONE

SUPERSEDES: 01-7-3

WARRANTY STATUS: Eligible Under The Provisions Of Bumper To Bumper Warranty Coverage

OPERATION	DESCRIPTION	TIME
021604AA	Diagnose And Install RFI Filter 1990-1997 Thunderbird/Cougar	2.1 Hrs.
021604BA	Diagnose And Install RFI Filter 1990-1999 And 2001 Taurus/Sable	1.4 Hrs.
021604CA	Diagnose And Install RFI Filter 1992-1997 Crown Victoria/Grand Marquis/Town Car	1.2 Hrs.
021604CB	Diagnose And Install RFI Filter 1990-1991 Crown Victoria/Grand Marquis/Town Car	1.6 Hrs.
021604CC	Diagnose And Install RFI Filter 1998-2002 Crown Victoria/Grand Marquis	2.2 Hrs.
021604DA	Diagnose And Install RFI Filter 1998-2002 Town Car	1.9 Hrs.
021604EA	Diagnose And Install RFI Filter 1990-1998 Mustang	1.7 Hrs.
021604FA	Diagnose And Install RFI Filter 1990-1998 Mustang	1.6 Hrs.
021604GA	Diagnose And Install RFI Filter 1990-1994 Continental	1.5 Hrs.
021604HA	Diagnose And Install RFI Filter 1990 Escort	1.6 Hrs.

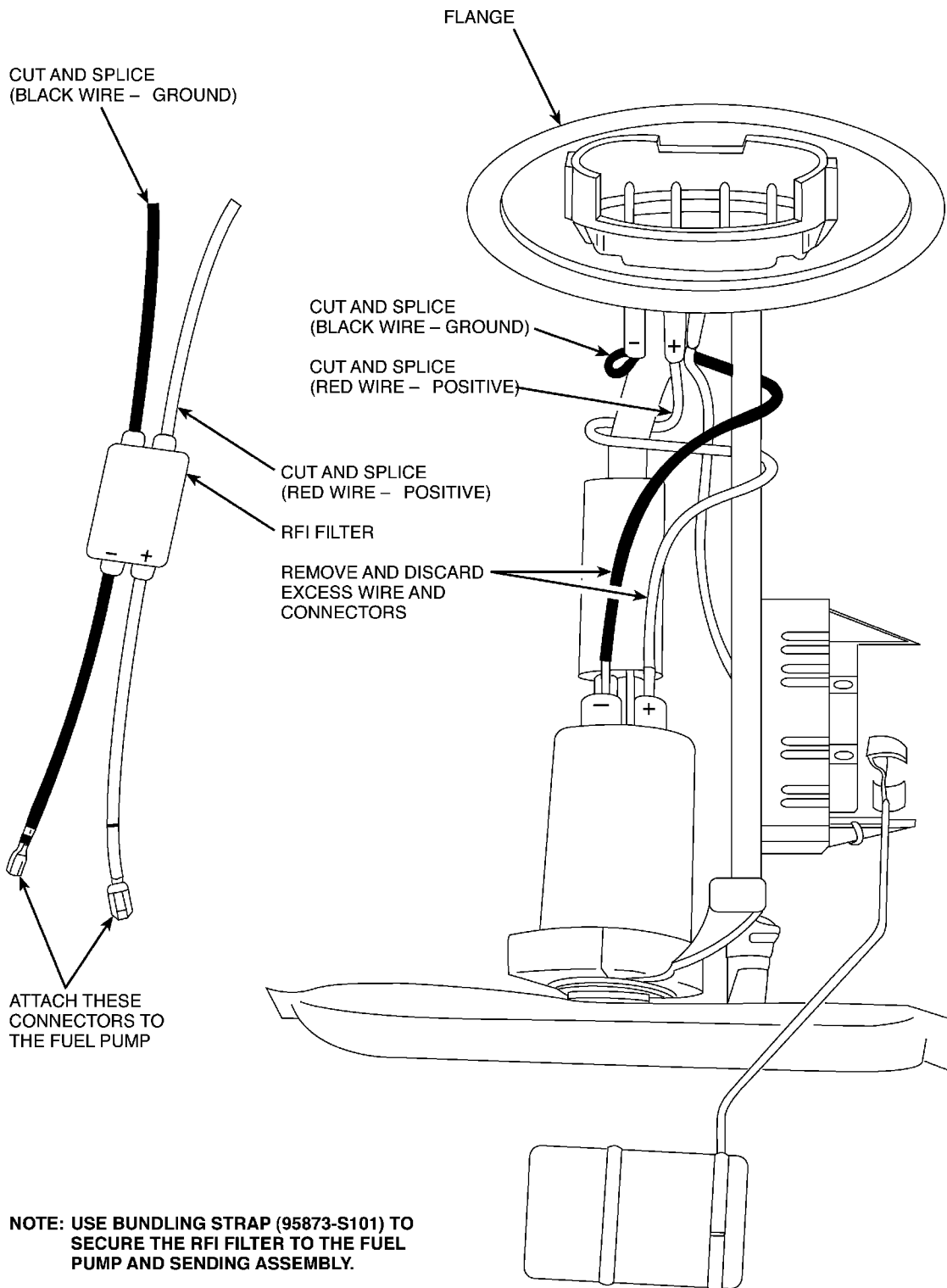
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021604IA	Diagnose And Install RFI Filter 1991-1996 Escort Tracer	0.8 Hr.	021604TD	Diagnose And Install RFI Filter 1998-2002 Ranger 4X2	1.6 Hrs.
021604IB	Diagnose And Install RFI Filter 1997 Escort/Tracer	1.6 Hrs.	021604UA	Diagnose And Install RFI Filter 1990-1997 Aerostar	1.5 Hrs.
021604JA	Diagnose And Install RFI Filter 1997 Contour/Mystique	0.8 Hr.	021604VA	Diagnose And Install RFI Filter 1990 Bronco II	1.9 Hrs.
021604JB	Diagnose And Install RFI Filter 1998-1999 Contour/Mystique	1.8 Hrs.	021604WA	Diagnose And Install RFI Filter 1990-1996 F-150/250/350/Super Duty And 1997 F-350/Superduty Rear	1.4 Hrs.
021604KA	Diagnose And Install RFI Filter 1990-1992 Mark VII	2.0 Hrs.	021604WB	Diagnose And Install RFI Filter 1990-1996 F-150/250/350/Super Duty And 1997 F-350/Superduty Front	1.4 Hrs.
021604LA	Diagnose And Install RFI Filter 1990-1992 Probe	0.8 Hr.	021604WC	Diagnose And Install RFI Filter 1990-1996 F-150/250/350/Super Duty And 1997 F-350/Superduty Both Tanks	2.1 Hrs.
021604LB	Diagnose And Install RFI Filter 1993-1997 Probe	1.8 Hrs.	021604WD	Diagnose And Install RFI Filter 1998-2002 F-150	1.6 Hrs.
021604MA	Diagnose And Install RFI Filter 1990-2002 Econoline Single Fuel Tank	1.6 Hrs.	021604XA	Diagnose And Install RFI Filter 2000-2002 Excursion	1.6 Hrs.
021604MB	Diagnose And Install RFI Filter 1990-1991 Econoline Both Fuel Tanks	2.6 Hrs.	021604XB	Diagnose And Install RFI Filter 1999-2002 Super Duty F-Series: Front Tank	1.6 Hrs.
021604NA	Diagnose And Install RFI Filter 1990-1996 Bronco	2.0 Hrs.	021604XC	Diagnose And Install RFI Filter 1999-2002 Super Duty F-Series: Rear Tank	1.5 Hrs.
021604OA	Diagnose And Install RFI Filter 1991-1994 Explorer	1.8 Hrs.	021604XD	Diagnose And Install RFI Filter 1999-2002 Super Duty F-Series: Both Tanks	2.7 Hrs.
021604OB	Diagnose And Install RFI Filter 1995-2002 Explorer	1.5 Hrs.	021604YA	Diagnose And Install RFI Filter 2001-2002 Escape	0.8 Hr.
021604PA	Diagnose And Install RFI Filter 1997-2002 Mountaineer	1.5 Hrs.	021604ZA	Diagnose And Install RFI Filter 2002 Blackwood	1.9 Hrs.
021604QA	Diagnose And Install RFI Filter 1995-2002 Windstar	1.4 Hrs.			
021604RA	Diagnose And Install RFI Filter 1993-2002 Villager	1.9 Hrs.			
021604SA	Diagnose And Install RFI Filter 1997-2003 Expedition/Navigator	1.7 Hrs.			
021604TA	Diagnose And Install RFI Filter 1990-1997 Ranger Standard Cab	1.3 Hrs.			
021604TB	Diagnose And Install RFI Filter 1990-1997 Ranger Super Cab	1.8 Hrs.			
021604TC	Diagnose And Install RFI Filter 1998-2002 Ranger 4X4	1.8 Hrs.			

DEALER CODING

BASIC PART NO.	CONDITION CODE
18B925	42
OASIS CODES: 205000, 207000, 404000, 702000, 702300	

TYPICAL FUEL PUMP AND SENDER ASSEMBLY



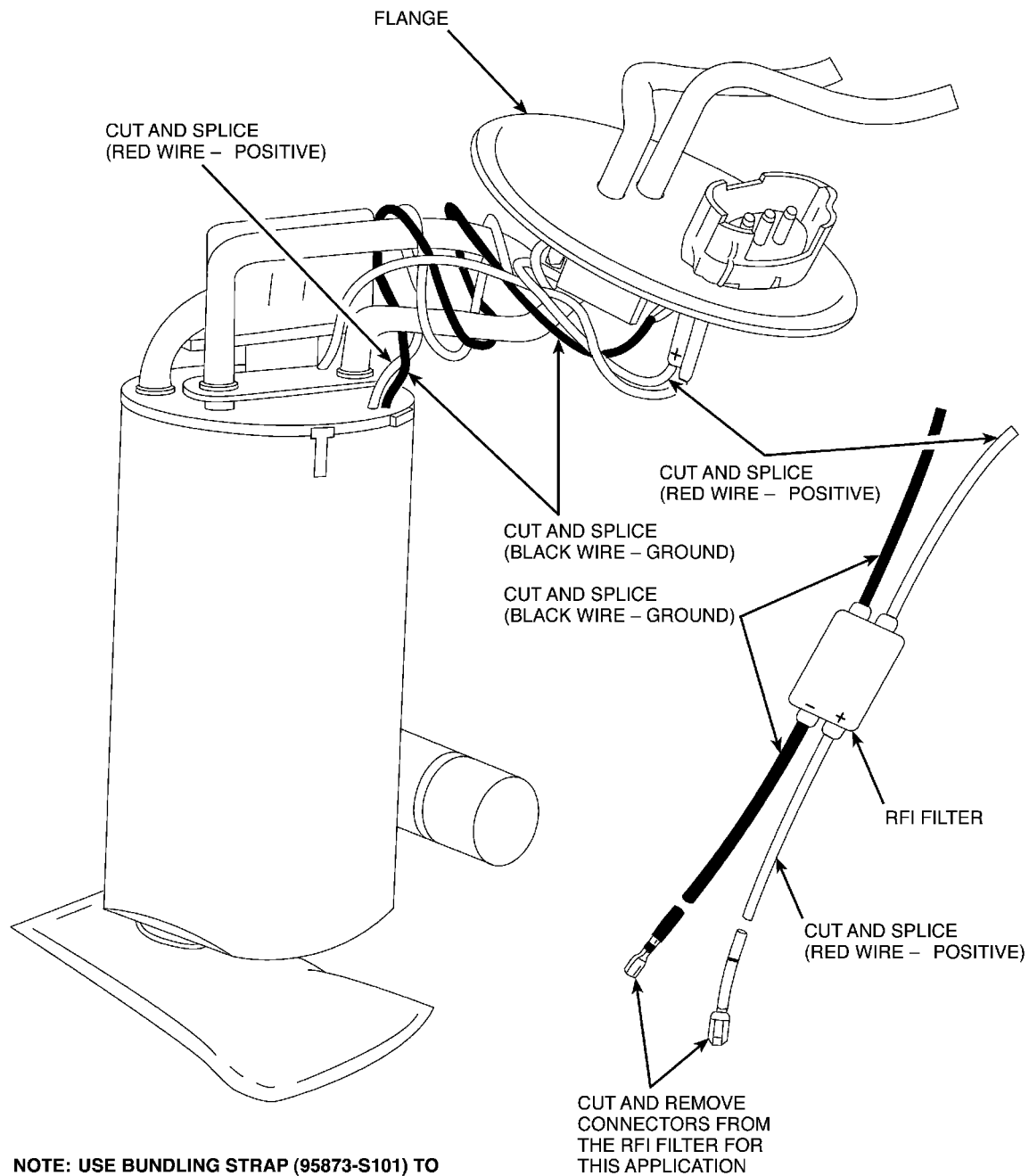
NOTE: USE BUNDLING STRAP (95873-S101) TO SECURE THE RFI FILTER TO THE FUEL PUMP AND SENDING ASSEMBLY.

NOTE: USE HEAT SHRINK TUBING OVER ALL SPLICED CONNECTIONS.

TB-2388-D

Figure 1 - Article 02-16-4

**TYPICAL FUEL PUMP AND SENDER ASSEMBLY
WITH FUEL DELIVERY MODULE**



NOTE: USE BUNDLING STRAP (95873-S101) TO SECURE THE RFI FILTER TO THE FUEL PUMP AND SENDING ASSEMBLY.

NOTE: USE HEAT SHRINK TUBING OVER ALL SPLICED CONNECTIONS.

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Figure 2 - Article 02-16-4