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Introduction

Ford Motor Company has assembled this Police Interceptor Modifier Guide to assist vehicle modifiers in producing safe and quality products. Ford believes that safety and quality come first. To achieve customer satisfaction, we want to assist modifiers in achieving the highest standards of safety and quality in their products.

This book is divided into topics pertinent to modifiers of police vehicles. Reference is made to the current Ford Crown Victoria Workshop Manual for appropriate service procedures, torque specifications, component separation clearances and other standard information which is common with the unmodified vehicle. Specifications which are unique to the guide are designated.

This modifier guide is not a ‘‘how-to’’ book; it should be used as a checklist to help make sure that certain important steps in the modification process are considered. While Ford is providing this information to assist modifiers, it does not warrant the products, methods, materials or the workmanship of the modifier. Nor does it warrant against failures that result from the modification of a vehicle.

Following the guidelines contained in this guide does not assure individual modifiers that the products they modify comply with U.S. Federal or Canadian Motor Vehicle Safety Standards in effect at the time of the modification. The guidelines set forth are based on engineering analyses of typical police vehicles. If followed, the modifier’s efforts in certifying vehicles to applicable standards should be aided. Compliance testing that may be required for certification of specific vehicle configurations or construction is, however, the sole responsibility of the individual modifier.

The only Crown Victoria model suitable for use in police service is the pursuit-related Police Interceptor (body code P71).

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SECTION 1

General Information

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Section 1: General Information

Important Safety Notice

Note: The descriptions and specifications contained in this guide were in effect at the time this manual was approved for printing. Ford Motor Company reserves the right to discontinue models at any time, or change specifications or design without notice and without incurring obligation.

Appropriate repair methods and procedures are essential for the safe, reliable operation of all motor vehicles as well as the personal safety of the individual doing the work. This manual provides general directions and guidelines for performing modifications to the Police Interceptor. Following them will help assure reliability.

There are numerous variations in procedures, techniques, tools and parts for modifying vehicles, as well as in the skill of the individual doing the work. This manual cannot possibly anticipate all such variations and provide advice or cautions as to each. Accordingly, anyone who departs from the instructions provided in this manual must first establish that he compromises neither his personal safety nor the vehicle integrity by his choice of methods, tools or parts.

Section 1: General Information

Notes, Notices and Warnings

As you read through this guide, you will come across NOTES, NOTICES and WARNINGS. Each one is there for a specific purpose. NOTES give you added information that will help you to complete a particular procedure. NOTICES are given to prevent you from making an error that could damage the vehicle. WARNINGS remind you to be especially careful in those areas where carelessness can cause you personal injury. The following list contains some general warnings that you should follow when you work on a vehicle.

⚠ WARNING:

- **If the vehicle is equipped with the Ford Fire Suppression System, refer to Section 3 for important safety warnings.**
- **Always wear safety glasses for eye protection.**
- **Use safety stands whenever a procedure requires you to be under the vehicle.**
- **Make sure that the ignition switch is always in the OFF position, unless otherwise required by the procedure.**
- **Set the parking brake when working on the vehicle. The gear selector should be set in PARK unless instructed otherwise for a specific operation. Place wood blocks (4 inch x 4 inch or larger) against the front and rear surfaces of the tires to help prevent the vehicle from moving.**
- **Operate the engine only in a well-ventilated area to avoid the danger of carbon monoxide poisoning.**
- **Keep yourself and your clothing away from moving parts when the engine is running, especially the drive belts.**
- **To reduce the risk of serious burns, avoid contact with hot metal parts such as the radiator, exhaust manifold, tailpipe, catalytic converter and muffler.**
- **Do not smoke while working on a vehicle.**
- **To reduce the risk of injury, always remove rings, watches, loose hanging jewelry and loose clothing before beginning to work on a vehicle.**
- **When it is necessary to work under the hood, keep hands and other objects clear of the radiator fan blades.**
- **Failure to follow these instructions may result in personal injury.**

Making Safety Devices and Elements Inoperative

The vehicle contains many safety features required by Federal or Canadian Motor Vehicle Safety Standards. These features, which include the key-in-ignition chime and brake lights, should never be disabled or modified.

Section 1: General Information

CFR 49 Section 30122 states that ‘‘A manufacturer, distributor, dealer or motor vehicle repair business may not knowingly make inoperative any part of a device or element of design installed on or in a motor vehicle or motor vehicle equipment in compliance with an applicable motor vehicle safety standard prescribed under this chapter unless the manufacturer, distributor, dealer or repair business reasonably believes the vehicle or equipment will not be used (except for testing or a similar purpose during maintenance or repair) when the device or element is inoperative.’’

Police Vehicle Definition

To make sure that the Police Interceptor meets the rigors of police usage, the Police Interceptor runs through twice as many cycles of Ford’s standard vehicle durability tests. This vehicle testing is in addition to substantial component durability testing. This extra testing for the Police Interceptor certifies to Ford that the entire vehicle is ‘‘heavy duty’’ and suitable for police usage.

Standard Equipment — Exterior

Item	Description
Bumpers	Concealed with one-piece full wrap cover, body color
Decklid	Low lift-over design
Glass	Solar tinted, full with ceramic shade band behind rear view mirror
Grille	Black with Ford oval in the center
Hub Caps	Snap on over lug nuts
Lights	Low profile dual aero halogen headlamps with crystalline krypton long life bulbs in the side/turning markers
Mirrors	Black fold-away dual remote control power
Mouldings	Black rocker panel Black windshield and backlight Bright surround on side windows Color-keyed bodyside (except special order [VSO] colors which have narrow black mouldings)
Paint	Clear coat Anti-chip paint primer Body color B-pillars
Urethane Protection	Lower bodyside

Standard Equipment — Interior

Item	Description
Cigarette Lighter	In the instrument panel center stack
Cup Holders	Dual ashtray mounted
Defroster Grille	With integral vertical ribs
Door Trim Panels	Front with armrests; ashtrays deleted from rear door trim panels
Flooring	Heavy duty rubber
Fuse Panel	Easy access, labeled
Gauge Cluster	Two analog gauges (water temperature and fuel)
Glove Compartment	Illuminated, large bin, lockable with dampened glove compartment door, zippered owner’s pouch with embossed car-line logo

(Continued)

Section 1: General Information

Standard Equipment — Interior

Item	Description
Headliner	Removable with high intensity dome lamp (includes 5-inch round map light mounted behind rear view mirror)
Head Restraints	Two way
Instrument Panel	With side window de-misters
Lamps	Dome and luggage compartment
Luggage Compartment Trim	Full carpet
Map Pockets	Integral front door
Mirror	Day/night inside rear view
Radio Speakers	Front door mounted (located above armrests and in the package tray)
Personal Safety System With Dual Stage Air Bags	Driver and right front passenger (includes safety belt pretensioners, dual stage air bags, seat position and weight sensors)
Safety Belts	Three-point active for front and rear outboard occupants (safety belt pretensioners on front seat shoulder belts)
Scuff Plates	Color-keyed front and rear doors
Seats	Cloth bucket/vinyl rear seats with power lumbar driver seat and manual recline; storage pockets on driver/passenger seats; rear seat excludes center armrest
Steering Wheel	Color keyed with center horn activation
Sun Visors	Cloth covered with retention clips
Tilt Steering Wheel	Mounted stalk controls for washer/wipers, hi/low headlamp beam, turn signal and flash-to-pass
Trip Odometer	—
Trunk	Deep well, carpeted

Standard Equipment — Functional

Item	Description
Air Conditioning	Manual with positive shutoff registers Wide-open throttle (WOT) shut off
Generator	200A maximum output, 131A at idle
Antenna, Radio	Integral to the rear window glass
Battery	Maintenance free 78-AH, 750 CCA
Battery Saver	Turns off lights after 30 minutes
Body-On-Frame Construction	Hydroformed steel frame
Brake Shift Interlock Protection	Brake pedal must be pressed to engage transmission
Child Safety Latches on Rear Doors	—
Coolant Recovery System	—
Decklid Release	A switch located on the center instrument panel, with an additional optional switch on the door panel. The switch located on the instrument panel can be configured to work at all times or only with the ignition key in the ON position, depending on the customer preference.
Defroster, Rear Window	—

(Continued)

Section 1: General Information

Standard Equipment — Functional

Item	Description
Disc Brakes	Power 4-wheel ABS
Drive Shaft	Aluminum
Engine	4.6L overhead cam, SEFI V8
Engine Idle Meter	The engine idle meter records how long the vehicle engine runs while in PARK or NEUTRAL. This information can be combined with the vehicle mileage to determine when an engine oil change is required. 1 hour of engine idle time = 33 miles driving distance
Engine Oil Cooler	—
Exhaust System	Stainless steel, dual
Fail Safe Cooling	—
Fan	Multi-speed electrodrive, PCM controlled
Full Size Spare Tire and Wheel	—
Front Stabilizer Bar	—
Front Suspension	Short/long arm
Fuel Filler Cap	Tethered
Fuel Tank	19 gallon
Glass	Solar tinted, full
Headlamps	Halogen with “on” reminder chime
Heat Ducts	Front and rear floor mounted
Frame, Steering Gear/Rack And Pinion, Body Mounts And Suspension	Heavy duty
Hood Assists	Gas cylinder, monotube
Horn	Dual note
Ignition System	Electronic distributorless
Jack	Scissor
Light Bar Connector	50A battery circuit at right hand side of the front kick panel, underneath trim (N/A with 65A, 68P, 65N, 65V or 65W)
Parking Brake	Single stroke, manual release
Parking Brake Release	Manual
Passenger Capacity	Five
Plastic Head Ignition Key	Primary only
Power Distribution Connector	Two (50A) battery fused circuits Two (20A) battery fused circuits One (15A) battery fused circuits Two (20A) RUN/ACC fused circuit Vehicle signals: • Hazard in • Hazard out Battery saver Vehicle speed sensor Vehicle start
Power Steering	Three turn lock-to-lock with variable assist

(Continued)

Section 1: General Information

Standard Equipment — Functional

Item	Description
Power Steering Oil Cooler	Integral with transmission oil cooler
Rear Stabilizer Bar	—
Rear Suspension	Watt's linkage
Shock Absorbers	Nitrogen pressurized, monotube
Speedometer	140 mph certified calibration in 2 mph increments
Tachometer	—
Tires	P235/55R17 98W — All-season BSW Goodyear Eagle RSA
Transmission	Electronically controlled automatic overdrive (with OD lockout) with final drive ratio of either 3.27:1 or 3.55:1
Transmission Oil Cooler	Shared with power steering cooler
Upper Ball Joints	Low friction, non-greaseable
Voltage Regulator	Electronic, integral to generator
Wheel Rims	Heavy duty steel (17 in x 7.5 in)
Windows	Power with express-down driver window
Windshield Washers	Dual jet
Windshield Wipers	Interval

Miscellaneous Options (See sales brochure for complete list of available options)

Item	Description
Comfort And Convenience Group (41A)	Power driver seat Speed control AM/FM stereo with single CD
Driver Side Spot (51A) Assembly and Dual Spot Assembly (51Y)	Includes functioning driver side spot lamp or driver and passenger side spot lamps
Lamp Pre-wire Group (476)	Pre-wire for package tray warning lamps and inner decklid lamps
Radio Suppression Package (53M)	Hood-to-body Engine-to-dash panel Engine-to-frame Tail pipe-to-frame (LH/RH) Decklid-to-body Body-to-frame rear (LH/RH)
Spot Lamp Wiring Prep (51B/51Z)	Contains wiring, brackets and body preparation for installation of spot lamp kit purchased from manufacturer Access hole in A-pillar Mounting bracket in place A-pillar mouldings trimmed Wiring and fuse located in standard fuse panel Door edge reworked and trimmed (Not available with 51A/51Y Spot Lamp)
Street Appearance Package (60B)	Color keyed retail bodyside mouldings Rear applique with color keyed panels "Crown Victoria" badge Chrome grille Chrome door handle bezel Chrome taillamp applique Wheel covers, full

Section 1: General Information

Police Prep Package Options

Description	65A	68P	65W	65P	65U
100 watt siren speaker	—	—	—	—	X
50A battery circuit and ground available at console base or trunk (available in trunk from pigtail harness) 30A ignition circuit accessible at trunk (available in trunk from pigtail harness)	X	X	X	X	X
Alternating headlight flasher	X	X	X	X	X
Center wiring conduit	—	X	X	—	—
Console mounting platform	—	X	X	—	X
Dual trunk storage boxes	—	X	X	—	X
Hidden manual door lock plunger located in door frame	—	X	X	—	X
Lighting and siren controller 4 position slide switch, 13 illuminated buttons and 5 siren tones	—	—	—	—	X
Lighting relay center for use with visibility switch panel — controls up to 8 light bar functions	—	—	X	—	X
Permanent rubber tie-down strap	—	X	X	—	X
Rear trunk communications service tray	—	X	X	—	X
Remote siren amplifier, mounted to trunk service tray	—	—	—	—	X
RJ11 serial cable from console to trunk for siren amplifier connections	—	—	—	—	X
Strobe power supply	—	—	X	X	X
Trunk air circulation fan	—	X	X	—	X
Two flashing rear deck high intensity LED lights with matching interior color housings	—	—	X	X	X
Two front strobe bulbs and 2 rear strobe bulbs	X	X	X	X	X
Two grill strobe lights	—	—	—	—	X
Visibility switch panel including 4 position slide switch and 4 rocker switches	—	—	X	—	—

(Continued)

Section 1: General Information

Police Prep Package Options

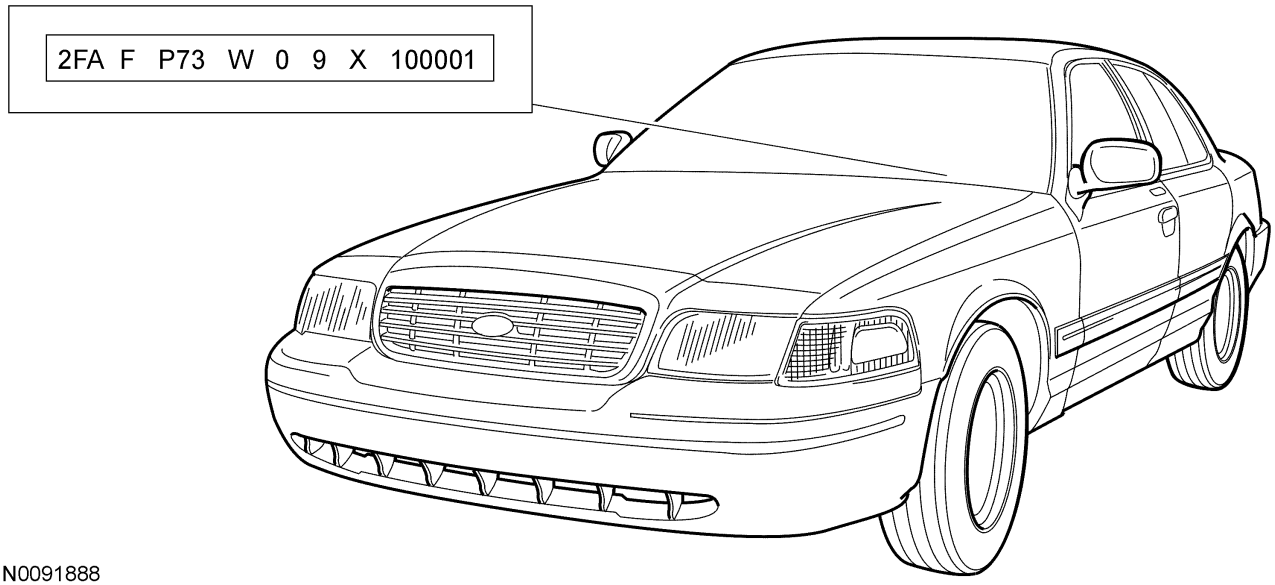
Description	65A	68P	65W	65P	65U
Wiring harness including the following items: • Six strobe cables, shielded and grounded. • Glove compartment power distribution center 50A, fused in the engine compartment. Five power and ground wires, 5 fuses — 2 battery and 3 ignition powered. • Trunk power distribution center 50A, fused in the engine compartment. Five power and ground wires, 5 fuses — 2 battery and 3 ignition powered. • 50A battery circuit and ground available at console base. • 50A battery circuit and ground available at console or trunk, for radio communication. • Siren/speaker wiring connectors (two 1-pin connectors) that are activated by the horn button. • Two extra circuits pre-run to front of vehicle, accessible at console or trunk. • Horn/siren relay circuit available at console or trunk. • Four extra circuits pre-run from the engine compartment to the console base. • Four extra circuits pre-run from the console base to the trunk.	X	X	X	X	X

65A — Police Prep Package Base, 68P — Police Prep Package Complete, 65W — Visibility Package, 65P — Base Lighting Package, 65U — Ready For The Road Package

Section 1: General Information

Identification Codes

Vehicle Identification Number (VIN) Location



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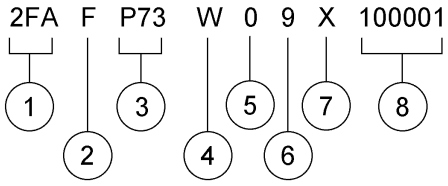
Vehicle Identification Number (VIN) Positions

The VIN is a 17-digit combination of letters and numbers. The VIN is stamped on a metal tab riveted to the instrument panel, top upper left of the dash. The VIN is also found on the vehicle certification (VC) label.



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Position	Description
1	World manufacturer identifier (WMI)
2	Restraint-type code

(Continued)

Section 1: General Information

Position	Description
3	Vehicle line and series code
4	Engine code
5	VIN check digit
6	Model year code
7	Assembly plant code
8	Production sequence code

1. World Manufacturer Identifier (WMI)

The first 3 VIN positions are the WMI code.

- 2FA — Ford, Canada, passenger car

2. Restraint-Type Code

The fourth VIN position is the vehicle restraint system type code.

- H — Active safety belts — all positions, driver and front passenger air bags and driver and front passenger side impact air bags

3. Vehicle Line and Series Code

Positions 5 through 7 indicate vehicle line, series and body type.

- P71 — Crown Victoria (Police)

4. Engine Code

The eighth VIN position is the engine displacement and number of cylinders code.

- V — 4.6L EFI (SOHC), 8 cylinder, flex fuel

5. VIN Check Digit

The ninth VIN position is the check digit code (0-9).

6. Model Year Code

The tenth VIN position is the model year code.

- 9 — 2009

7. Assembly Plant Code

The eleventh VIN position is the assembly plant code.

- X — St. Thomas assembly plant, Talbotville, Ontario (Canada)

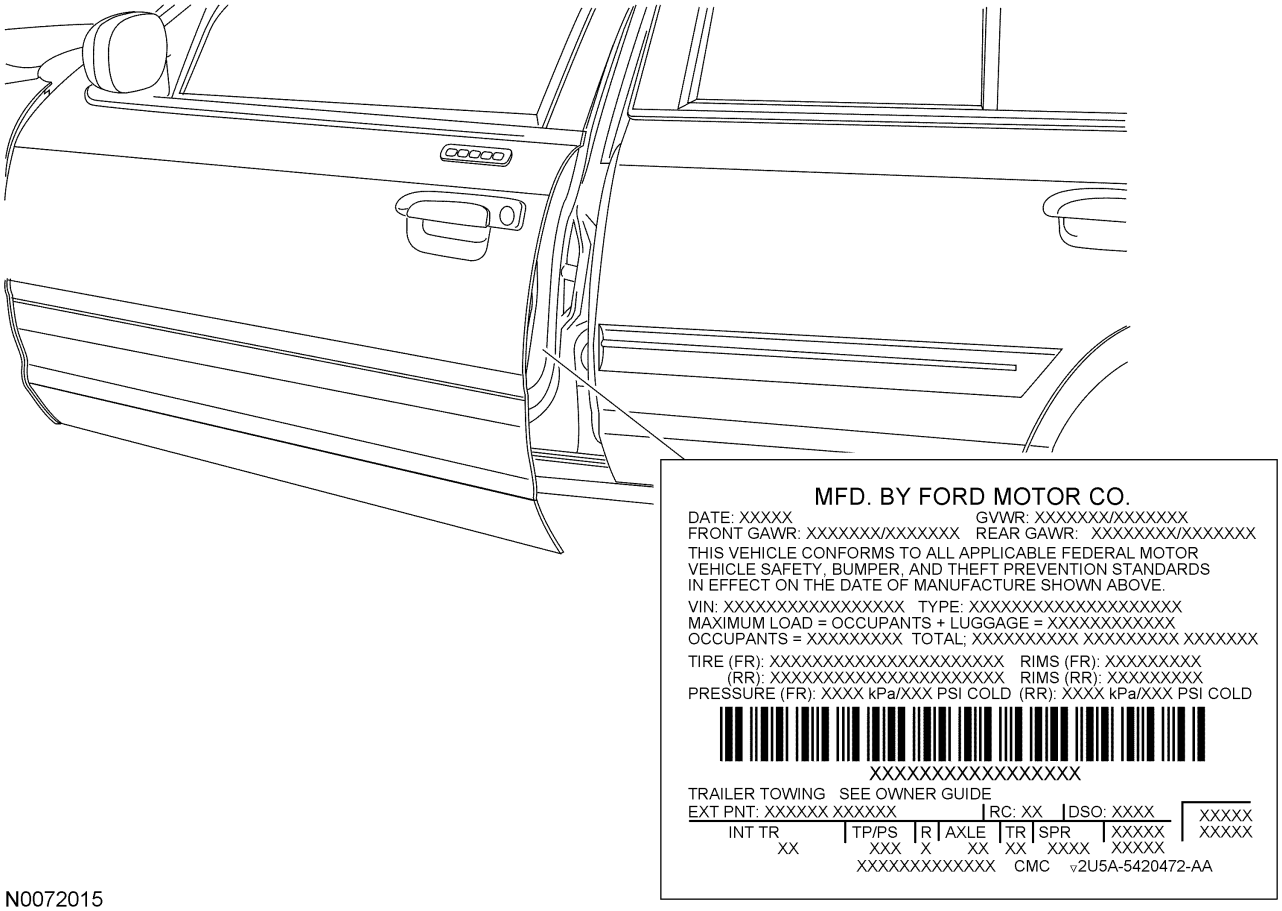
Section 1: General Information

8. Production Sequence Code

The last 6 VIN positions are the production sequence code. These 6 digits are also used as the vehicle serial and warranty number.

- Ford — starts at 100001

Vehicle Certification (VC) Label



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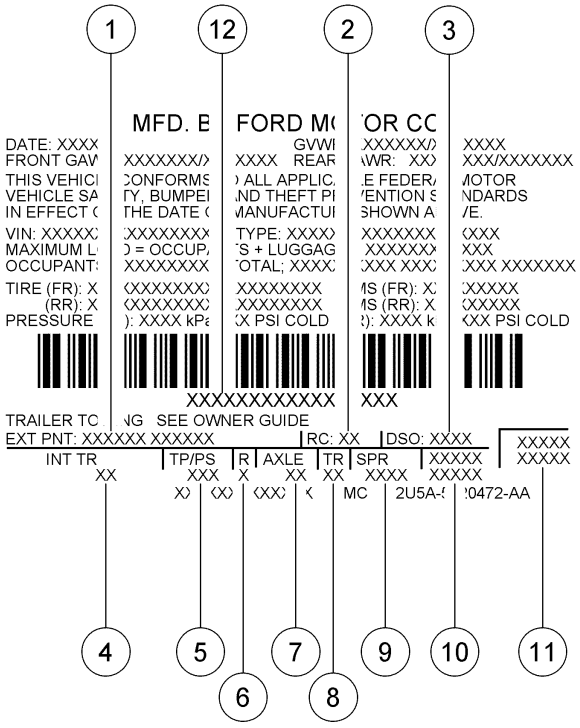
The upper portion of the VC label contains the manufacturer name, the month and year of manufacture, the certification statement and the VIN. It also includes the gross vehicle weight rating (GVWR) and the gross axle weight rating (GAWR), as well as tire size and pressure ratings. The VC label is located on the left-hand front door edge.

Section 1: General Information

Vehicle Certification (VC) Label Code Positions



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Position	Description
1	Exterior paint color code
2	Region code
3	Domestic special order
4	Interior trim code
5	Tape/paint stripe code
6	Radio type code
7	Axle ratio code
8	Transmission code
9	Spring code
10	Engine calibration information
11	Powertrain calibration information
12	Vehicle identification number (VIN)

Section 1: General Information

1. Exterior Paint Color Code

The first set of numbers/letters listed indicate the vehicle primary body color code. The second set of letters/numbers listed (if applicable) indicate a 2-tone or accent body color code.

- JP — Silver Birch Metallic
- UA — Ebony
- WT — Performance White
- JL — Dark Toreador Red (clear coat metallic)
- AQ — Arizona Beige
- LS — Light Ice Blue Metallic
- KR — Norcea Blue Pearl
- HG — Smokestone
- LK — Dark Blue (police/fleet)
- LM — Royal Blue (police/fleet)
- MM — Ultra Blue (police/fleet) (clear coat metallic)
- LN — Light Blue Metallic (police/fleet)
- TN — Silver Gray Metallic (police/fleet)
- YG — Medium Titanium (police/fleet) (clear coat metallic)
- BU — Medium Brown Metallic (police/fleet)
- TM — Light Gray (police/fleet)
- BY — School Bus Yellow

4. Interior Trim Code

The interior trim codes are listed below. The first letter/number is for the interior fabric. The second letter is for the interior color.

- P — Cloth split bench, front and rear
- C — G-Grain Vinyl (split bench), Crown Victoria (fleet/police), front and rear
- H — Cloth front bucket seats, cloth rear
- I — Cloth front bucket seats, vinyl rear

Section 1: General Information

The interior trim colors are:

- L — Medium Light Stone
- J — Light Camel
- N — Charcoal Black

5. Tape/Paint Stripe Code

Tape and paint stripe codes are not available with the P71 police package.

6. Radio Type Code

The radio type codes are:

- F — AM/FM electronic stereo
- Z — AM/FM electronic stereo with CD
- Y — Radio delete

7. Axle Ratio Code

The axle ratios are:

- Z5 — 3.27 conventional
- X5 — 3.27 limited slip
- C6 — 3.55 limited slip

8. Transmission Code

The transmission codes are:

- Q — 4-speed automatic overdrive (4R75E)

9. Spring Code

The front spring base part number is:

- 5310

The rear spring base part number is:

- 5560

Section 1: General Information

10. Engine Calibration Information

Engine calibration information is located on the VC label lower right corner between the spring code field and the powertrain calibration information. Engine calibration information is limited to a maximum of 5 characters per line (2 lines maximum). Calibration information more than 5 characters long will wrap to the second line of this field.

11. Powertrain Calibration Information

Powertrain calibration information is printed in the lower right corner of the VC label. Only the base calibration information is printed. Revision levels will not appear. Powertrain calibration information is limited to a maximum of 5 characters per line on the VC label. Calibration identification consisting of more than 5 characters will wrap to the second line on the VC label.

12. Vehicle Identification Number (VIN)

The VIN is located just below the bar code.

Good Practices

Process And Quality Assurance Systems

A formalized Process and Quality Assurance system may be helpful in consistently producing high quality products. An overview of some of the key items for such a system are outlined in this section.

Quality Assurance

Completed Unit Sign-Off: All control items should be inspected with a written sign-off. All labels should be inspected and signed off, including verification that the information on the labels is correct. All appropriate systems should be checked for leaks. A road test should be performed to verify that all systems are operating correctly. All systems and functions that were provided by Ford should be checked to make sure that they function correctly after the build process.

The modifier's Process and Quality Assurance Systems should also assure that appropriate training is provided to the employees.

Minimum And Maximum Screw Sizes

When installing aftermarket equipment, avoid using fasteners that are too long for the application or are in an area which might damage vehicle components, including wiring, brake lines, fuel tank and lines, powertrain components, exhaust system and suspension. Details for mounting of equipment in the trunk, as well as appropriate fasteners, can be found in Section 4, Trunk Mounting Considerations.

Section 1: General Information

New Vehicle Storage

New Vehicle Storage — General

- Vehicle should be stored in a dry, ventilated place, and protected from sunlight, if possible.
- If vehicle is stored outside, maintenance against rust and damage, as described below, is recommended.

NOTICE: **Keep all rubber parts free from oil and solvents.**

New Vehicle Storage — Body

- Wash vehicle thoroughly to remove dirt, grease, oil, tar or mud from exterior surfaces and underside of front fender.
- Periodically wash if vehicle is stored in exposed locations.
- Touch up exposed raw or primed metal to provide rust protection.
- Cover chrome and stainless steel parts with a thick coat of auto wax to prevent discoloration. Rewax as necessary when the vehicle is washed.
- Lubricate all hood, door hinges and latches with a light grade oil.
- Cover the interior soft trim to prevent fading.

New Vehicle Storage — Engine

- Start the engine every 15 days. Run it at fast idle until it reaches normal operating temperature.
- With foot on brake pedal (and brake applied), shift the transmission into all gears while the engine is running.

New Vehicle Storage — Fuel System

- Regularly move vehicle short distances to mix fuel anti-oxidation agents.

Note: During extended periods of vehicle storage (60 days or more), gasoline may deteriorate due to oxidation. This can damage rubber and other polymers in the fuel system and may clog small orifices. A commercially available gasoline fuel stabilizer (Sta-Bil or equivalent) should be added to gasoline-powered vehicles whenever actual or expected storage periods exceed 60 days. The manufacturer's instructions packaged with the product should be followed. The vehicle should then be operated at an idle speed to circulate the additive throughout the fuel system.

New Vehicle Storage — Tires

Most high performance tires are made with nylon overlay.

Section 1: General Information

As such, the following steps should be taken to avoid flat spotting when the vehicle is not used for a period of time.

- Store the vehicle with 303 kPa (44 psi) the tires. If the vehicle is to be driven, the air pressure should be reduced to recommended operating pressure and then increased back up to 303 kPa (44 psi) when returned to storage.
- If the vehicle is stored for periods longer than 30 days, it should be moved several feet at least once during each 30-day period, so that a different portion of the tread contacts the ground.

Fire Suppression System Depowering and Repowering

⚠ WARNING: The fire suppression system backup power supply must be depleted before lifting the vehicle or when repairing or replacing any of the following:

- **Fire suppression system components**
- **Components located near the fire suppression manual switch**
- **Fuel tank and components located near the fuel tank**
- **Rear axle and components located near the rear axle**

To deplete the backup power supply, disconnect the battery and wait at least 1 minute. Be sure to disconnect the auxiliary batteries and power supplies (if equipped). Failure to follow these instructions may result in personal injury.

⚠ WARNING: Always wear safety glasses when repairing a fire suppression system vehicle and when handling a fire suppressor. This will reduce the risk of injury in the event of an accidental deployment. Failure to follow these instructions may result in personal injury.

⚠ WARNING: To reduce the risk of accidental deployment, never probe the connectors on the fire suppressors. Failure to follow this instruction may result in personal injury.

⚠ WARNING: To reduce the risk of accidental deployment, do not use any memory saver devices. Failure to follow this instruction may result in personal injury.

⚠ WARNING: If the vehicle is equipped with a fire suppression system, be sure that no one is under the vehicle or near the rear axle area when the battery is connected due to the possibility of an accidental fire suppression system deployment. Failure to follow these instructions may result in personal injury.

Section 1: General Information

Note: If a vehicle equipped with a fire suppression system is positioned on a hoist, **the fire suppression system must be depowered**.

Note: The fire suppression system indicator illuminates when the fire suppression module fuse is removed and the ignition switch is ON. This is normal operation and does not indicate a fire suppression system fault.

Note: The fire suppression system must be fully operational and free of faults before releasing the vehicle to the customer.

Depowering Procedure

1. Turn all vehicle accessories OFF.
2. Turn the ignition lock cylinder to the OFF position.
3. Remove central junction box (CJB) fuse 33 (10A). For additional information, refer to Wiring Diagrams Cell 96, Police Option for schematic and connector information.
4. Turn the ignition lock cylinder to the ON position and visually monitor the fire suppression system indicator for at least 30 seconds. The fire suppression system indicator will remain lit continuously (no flashing) if the correct fire suppression module fuse has been removed. If the fire suppression system indicator does not remain lit continuously, remove the correct fire suppression module fuse before proceeding to the next step.
5. Turn the ignition lock cylinder to the OFF position.
6. Note: If battery voltage is required for diagnostics procedures, the battery must be connected **without** installing the fire suppression module fuse.

   Disconnect the battery and wait at least one minute.

Repowering Procedure

7. Install CJB fuse 33 (10A) to the CJB and close the cover.
8. Note: This step is not required if the battery was connected after the depowering procedure was carried out.

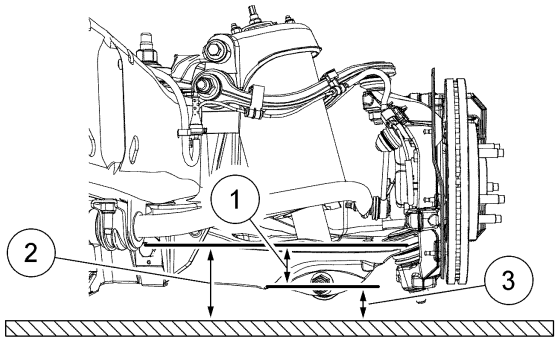
   Connect the battery.

Section 1: General Information

9. Prove out the fire suppression system as follows:
   - Turn the ignition lock cylinder from the OFF to the ON position and visually monitor the fire suppression system indicator. The fire suppression system indicator will light continuously for approximately 6 seconds and then turn off. If a fire suppression system fault is present, the fire suppression system indicator will:
     — fail to light.
     — remain lit continuously.
     — flash.
   - The flashing might not occur until approximately 30 seconds after the ignition lock cylinder has been turned from the OFF to the ON position. This is the time required for the fire suppression module to complete the testing of the fire suppression system. If this occurs, the fire suppression system fault discovered must be diagnosed and repaired.
   - Clear all continuous DTCs from the fire suppression module using a scan tool.

Front Ride Height Measurement

Item	Specification
Front Ride Height	
Front (base)	66 mm (2.59 in) ± 10.0 mm (0.39 in)



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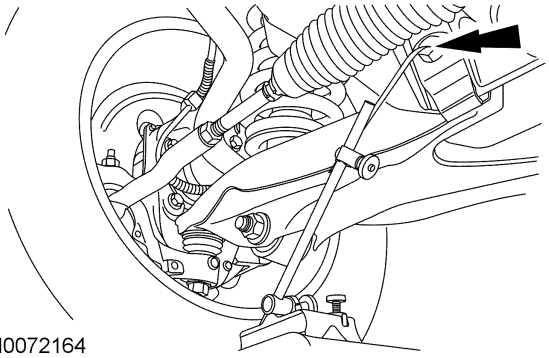
Item	Description
1	Ride height = A - B
2	Measurement A
3	Measurement B

⚠ WARNING: Before servicing a vehicle equipped with a fire suppression system, depower the system by following the procedure. Failure to follow the instructions may result in serious personal injury.

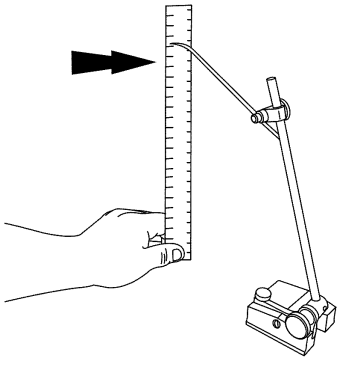
Section 1: General Information

Note: Make sure that the vehicle is positioned on a flat, level surface and the tires are inflated to the correct pressure. Vehicle should have a full tank of fuel.

1. Position a suitable surface gauge (such as Starrett 57D Surface Gauge) on a flat, level surface and adjust the gauge's arm until the scriber point is located in the center of the lower arm forward mounting bolt.
   - Lock the surface gauge in this position.

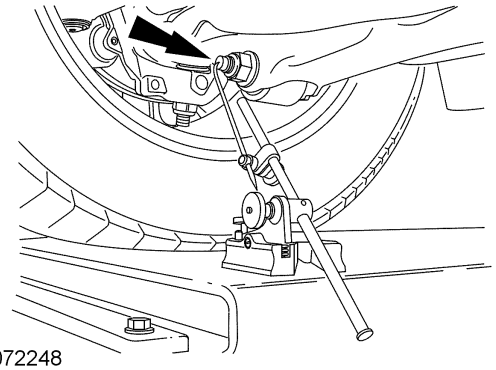

N0072164

2. With the surface gauge positioned on a flat, level surface, record the measurement of the surface gauge position (measurement A).


N0072247

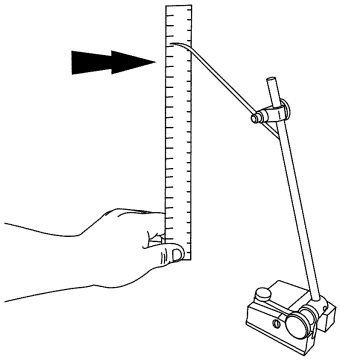
Section 1: General Information

3. Position the surface gauge on the same flat, level surface as used in Step 1 and adjust the gauge's arm until the scriber point is located in the center of the shock absorber mounting bolt.



N0072248

4. With the surface gauge positioned on a flat, level surface, record the measurement of the surface gauge position (measurement B).



N0072247

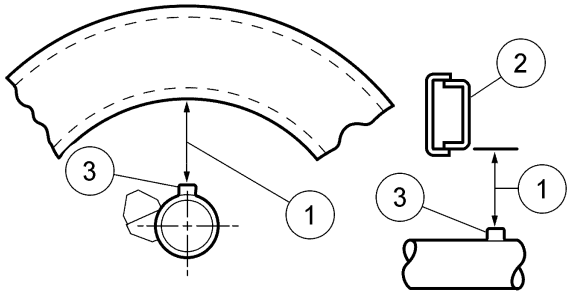
5. Subtract measurement A from measurement B to obtain the front ride height.
   - Refer to Specifications in this section.

6. **WARNING: If the vehicle is equipped with a fire suppression system, repower the system. Failure to follow these instructions may result in serious personal injury.**
   If equipped with a fire suppression system, repower the system.

Rear Ride Height Measurement

Item	Specification
Rear Ride Height	
Police (coil)	145.0 mm (5.7 in) ± 10.0 mm (0.39 in)

Section 1: General Information



N0072249

Item	Specification
1	Ride height
2	Inner frame reinforcement
3	Rear axle jounce stop

⚠ WARNING: Before servicing a vehicle equipped with a fire suppression system, depower the system by following the procedure. Failure to follow the instructions may result in serious personal injury.

Note: Make sure that the vehicle is positioned on a flat, level surface and the tires are inflated to the correct pressure. Vehicle should have a full tank of fuel.

1. Measure the distance between the inner frame reinforcement (Item 2) and the rear axle jounce stop (Item 3) to obtain the rear ride height (Item 1).

2. **⚠ WARNING: If the vehicle is equipped with a fire suppression system, repower the system. Failure to follow these instructions may result in serious personal injury.**
   If equipped with fire suppression system, repower the system.

Tire Pressure Monitoring System (TPMS) Principles of Operation

The tire pressure monitoring system (TPMS) monitors the air pressure of all 4 regular road tires. The tire pressure sensors, attached to each rim by a metal band located in the drop well, transmit via 315 MHz radio frequency signal to the external antenna of the driver door module (DDM). These transmissions are sent approximately every 60 seconds when the vehicle speed exceeds 32 km/h (20 mph). The DDM compares the tire pressure data against a low-pressure limit. If the module determines that the tire pressure has fallen below this limit, the module communicates this on the vehicle network to the instrument cluster (IC) and illuminates the TPMS indicator solid. If there is a system malfunction, the TPMS indicator flashes for 70 seconds and then goes solid.

Section 1: General Information

This vehicle, as delivered by Ford Motor Company, conforms to Standard FMVSS138, Tire Pressure Monitoring Systems.

This system may not function if any of the following components are removed, relocated or modified in any way:

- Original Equipment Manufacturer (OEM) wheels and tires
- Tire pressure sensors, cradles and bands
- Driver door module (DDM)
- DDM software and calibrations
- DDM external antenna
- IC
- IC software and calibrations
- Instrument panel wiring
- Lighting control module (LCM)
- LCM software and calibrations
- Wheel bases greater than originally released

Certain modifications could cause reduced system performance, including the complete loss of TPMS functionality. This may include:

- Non-OEM wheels or tires
- The addition of steel carcass or run-flat tires
- Removal of tire pressure sensors, cradles or bands
- Modification of the vehicle's recommended tire pressure
- Modifications to the mounting location of the DDM external antenna module
- Modifications or re-location of the harness supplying the DDM, the DDM external antenna, IC and LCM modules
- Lengthening of the wheelbase may affect signal strength of the sensors to a point where the rear sensors can no longer be heard by the DDM external antenna (vehicles certified at released wheelbases only)
- Addition of metallic structures, such as prisoner partitions, may affect the signal strength of the sensors and could interfere or prevent the DDM external antenna from hearing the sensors
- Addition of intended or unintended transmitters to the vehicle may affect the signal strength of the sensors or interfere with the external antenna

Section 1: General Information

The DDM external antenna is located in the passenger C-pillar. The location and orientation of this antenna is critical for the correct operation of TPMS. For this reason, equipment should not be mounted in this area.

The TPMS, as delivered from the Ford Motor Company, complies with part 15 of the FCC rules and with RS-210 of Industry Canada. Operation is subject to the following 2 conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

Ambient Temperature Change and Tire Pressure

NOTICE: **Do not inflate tire higher than maximum pressure stamped on tire sidewall. Premature tire wear or damage to the tire may result.**

Tire pressures fluctuate with temperature changes. For this reason, tire pressure must be set to specification when tires are at outdoor ambient temperatures. If the vehicle is allowed to warm up to shop temperatures, and the outside temperature is less than shop temperature, the tire inflation pressure must be adjusted accordingly.

If the tires are inflated to specification at shop temperatures, and the vehicle is moved outdoors when the outdoor ambient temperature is significantly lower, the tire pressure may drop enough to be detected by the TPMS and activate the TPMS warning lamp.

Section 1: General Information

As the ambient temperature decreases by 6°C (10°F), tire pressure decreases 7 kPa (1 psi). Adjust the tire pressure by 7 kPa (1 psi) for each 6°C (10°F) ambient temperature drop as necessary to keep the tire at the specified vehicle certification label pressure. Refer to the following tables to adjust the tire pressure indoors for colder outside temperatures.

Table 1. Use Table to Adjust Tire Pressure Inside Garage for Colder Outside Temperature[1]

**** Do Not Inflate Tire Higher than Maximum Pressure Stamped on Tire Sidewall. ****

Table is based on a Garage Temperature of 70°F. Max Pressure Adjustment is 7 psi.																		
	← Tire Placard Pressure (PSI) →																	
Outside Temperature (°F) ↓	30	32	34	35	38	40	41	42	45	50	55	60	65	70	75	80	85	90
70	30	32	34	35	38	40	41	42	45	50	55	60	65	70	75	80	85	90
60	31	33	35	36	39	41	42	43	46	51	56	61	67	72	77	82	87	92
50	32	34	36	37	40	42	43	44	47	53	58	63	68	73	79	84	89	94
40	33	35	37	38	41	43	44	45	49	54	59	64	70	75	80	86	91	96
30	34	36	38	39	42	44	46	47	50	55	61	66	72	77	82	87	92	97
20	35	37	39	40	43	46	47	48	51	57	62	67	72	77	82	87	92	97
10	36	38	40	41	45	47	48	49	52	57	62	67	72	77	82	87	92	97
0	37	39	41	42	45	47	48	49	52	57	62	67	72	77	82	87	92	97
-10	37	39	41	42	45	47	48	49	52	57	62	67	72	77	82	87	92	97
-20	37	39	41	42	45	47	48	49	52	57	62	67	72	77	82	87	92	97
-30	37	39	41	42	45	47	48	49	52	57	62	67	72	77	82	87	92	97
-40	37	39	41	42	45	47	48	49	52	57	62	67	72	77	82	87	92	97

Table 2. Use Table to Adjust Tire Pressure Inside Garage for Colder Outside Temperature (Metric Units)[1]

**** Do Not Inflate Tire Higher than Maximum Pressure Stamped on Tire Sidewall. ****

Table is based on a Garage Temperature of 21°C. Max Pressure Adjustment is 50 kPa.																		
	← Tire Placard Pressure (kPa) →																	
Outside Temperature (°C) ↓	205	220	235	240	260	275	285	290	310	345	380	415	450	485	515	550	585	620
21	205	220	235	240	260	275	285	290	310	345	380	415	450	485	515	550	585	620
16	215	230	240	250	270	285	290	295	315	350	385	420	460	495	530	565	600	635
10	220	235	250	255	275	290	295	305	325	365	400	435	470	505	545	580	615	650
4	230	240	255	260	285	295	305	310	340	370	405	440	485	515	550	595	625	660
-1	235	250	260	270	290	305	315	325	345	380	420	455	495	530	565	600	635	670
-7	240	255	270	275	295	315	325	330	350	395	425	460	495	530	565	600	635	670
-12	250	260	275	285	310	325	330	340	360	395	425	460	495	530	565	600	635	670
-18	255	270	285	290	310	325	330	340	360	395	425	460	495	530	565	600	635	670
-23	255	270	285	290	310	325	330	340	360	395	425	460	495	530	565	600	635	670
-29	255	270	285	290	310	325	330	340	360	395	425	460	495	530	565	600	635	670
-34	255	270	285	290	310	325	330	340	360	395	425	460	495	530	565	600	635	670
-40	255	270	285	290	310	325	330	340	360	395	425	460	495	530	565	600	635	670

[1]When Outside (Ambient) Temperature is greater than 21°C (70°F), Inflate tires to placard pressure.
[1]Use the table to adjust tire pressure for P-metric and LT tires only.

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SECTION 2

Electrical

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Section 2: Electrical

Electrical Basics

Inside a vehicle, electricity is supplied through ‘‘hot’’ wires, comparable to the pressurized supply pipes of a plumbing system. At various points along the wires are outlets in the form of lights, switches and receptacles. Turning on a light switch is somewhat like opening a faucet to let water run — an electric current flows through the hot wire to make the light glow. Once the electricity has done its work, its potential drops to zero, just as water loses pressure after flowing through a sink or laundry tub. The electrical system has ‘‘drains’’ — which are the ground wires that return the current to its source just as a plumbing system has drain pipes through which water runs into the sewer mains or the ground.

The light or equipment powered by the current, technically called the load, can be compared to a water wheel that remains motionless until a stream of water causes it to turn. A load may be one of 2 kinds. The first consists of a resistance — a material that permits the passage of electric current, but only with difficulty, and thereby creates heat. The tungsten filament of an incandescent bulb is resistance; so is the heating element of an electric heater of a coffee pot. A load may also be an inductance — typically a motor with windings of copper wire, in which the magnetic fields generated by the current create motion. At any moment, the demand on an electrical system depends on the number of loads in operation and their consumption of energy, just as demand on a water system depends on how many faucets are opened and how wide they are opened.

The mechanics and physical fittings of the system are simple. Current moves throughout the vehicle in wires of different sizes, according to the current a circuit may have to carry. Power is supplied directly to equipment through connectors.

Electrical Terms

VOLT is the unit of electrical potential, equal to the difference of electrical potential between 2 points on a circuit.

AMPERE is the unit used to measure the amount of current - that is, the number of electrically charged particles called electrons - that flows past a given point on a circuit each second. It is similar to measuring the amount of water flowing through a pipe at any given point. The larger the pipe is, the more water that can flow past the point per second. Similarly, the bigger the wire is, the more current that can flow through it at any given point. Current that has lost its voltage still has amperage as it completes the circuit and returns to the battery.

WATT is the unit of power. It indicates that rate at which a device converts electric current to another form of energy, either heat or motion, or to put it another way, the rate at which a device consumes energy.

The relationship of volts, amperes and watts to one another is expressed in a simple equation that enables you to make any calculations you may need for proper and safe electrical modifications to the vehicle. Volts x amperes = watts. If the current is at 12 volts and a device requires 4 amperes of current, the equation will read 12 volts x 4 amperes = 48 watts.

To figure the current needed for a device rated in watts, turn the equation around: watts/volts = amperes. For example, if you have a piece of equipment, such as a communications radio, that uses 120 watts: 120 watts/12 volts = 10 amperes.

Section 2: Electrical

Electrical Systems Management

Care must be given in deciding what equipment should be installed into a police vehicle given the power demands of the equipment and the power available from the vehicle. A power load strategy should be developed to minimize the risk of running out of power. Examine the proposed equipment for vehicle installation. Add up the current requirements. If the current requirements exceed what the vehicle can reasonably be expected to be able to provide, the battery will begin discharging to provide the power to the equipment that the generator is unable to provide. After some period of time, the vehicle will shut off as the battery voltage decreases to a level that cannot sustain vehicle operation.

There are alternatives that can be considered to minimize system electrical overload. Consider the current requirements of equipment before it is purchased and installed. Modern light bars and radios use a fraction of the current than units made as recently as 1996. As the light bar is the most power intensive unit installed on most police vehicles, considerable attention should be given to its current requirements. Changes in officer habits while in the field can make a difference as well. When a vehicle is sitting at an accident scene and no one is in the car, the air conditioner can be turned off until the officer is ready to get back into the vehicle. The air conditioner is among the largest current users of non-police equipment. As such, it can impact available power for other uses as well.

Generator Output

On all 2009 Police Interceptors, the generator is controlled by the PCM.

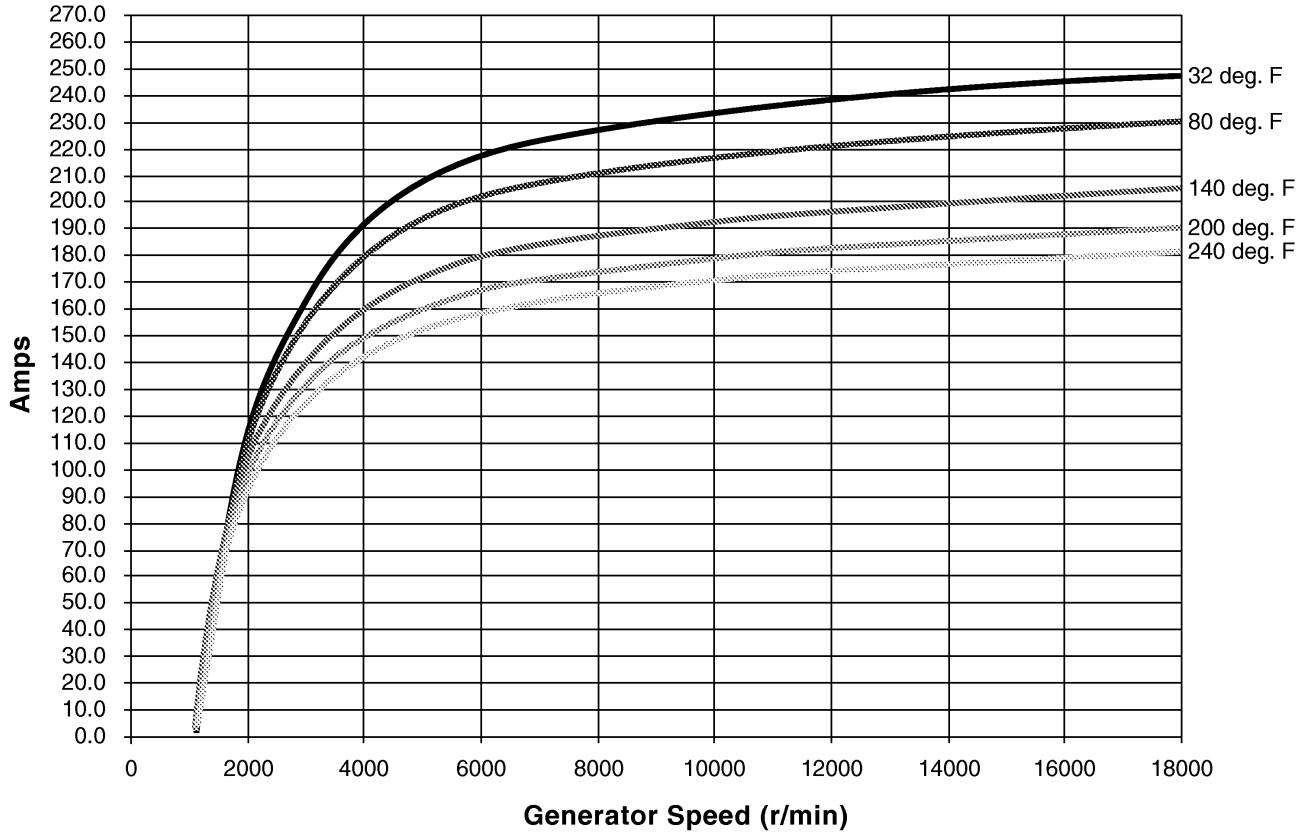
The Police Interceptor generator is different from that used on the standard Crown Victoria. The Police Interceptor has a 200-amp generator. This results in significantly greater current output, especially at idle, where police vehicles need it most.

- Generator amp output:
  - — Maximum output for the base Crown Victoria is 135 amps
  - — Maximum output for the Police Interceptor is 200 amps
- Generator drive ratio, determined by generator pulley size:
  - — Base Crown Victoria 2.72:1
  - — Police Interceptor 2.95:1
- Faster idle speed:
  - — Base Crown Victoria 640 rpm in PARK, 544 rpm in DRIVE
  - — Police Interceptor 800 rpm in PARK, 600 rpm in DRIVE

Note: In order to calculate engine rpm from the graph below, divide the generator speed by 2.95 (or 3 as an approximate). Generator speed/3.0 = engine rpm.

Section 2: Electrical

Generator Output



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Charging Margins

Generator output varies with engine speed and ambient temperature as it is illustrated in the Generator Output Section. The worst case scenario for police vehicles is when the vehicle is idling for long periods of time on a very hot day. Lower engine speeds while idling, coupled with high underhood temperatures that may approach 93°C (200°F), combine to minimize power output from the generator. At the same time, electrical demand on the vehicle is often at its highest because the air conditioner loads are added to the usual electrical loads experienced in emergency situations.

Vehicle Component Electrical Loads

Vehicle component electrical loads are shown in the table below. Not all features are powered all the time, so actual vehicle loads on the power supply system will vary.

Section 2: Electrical

Component	Amps
Base	
Miscellaneous Base Loads	12.0
Cooling	
Cooling Fan (variable speed)	33.0
Climate Control	
A/C Clutch	3.7
A/C Fan-to-Face — High Speed (recirculating air)	15.1
A/C Fan-to-Face — Medium/High Speed (recirculating air)	8.5
Heater Fan-to-Foot — Medium/High Speed (fresh air)	8.9
Lighting	
Exterior and Instrument Panel Lamps (non-dimmable)	5.6
Headlamps — Low Beam	8.6
Headlamps — High Beam (incremental)	1.2
Brake Lights (with High Mount Stop Lamp)	9.7
Heated Features	
Heated Rear Window (includes heated mirrors)	24.5
Other	
Radio	4.0
Wiper Speed 1 (low)	1.2
Wiper Speed 2 (high)	2.5
Typical Vehicle Load = 60-70 Amps	

Typical Police Equipment

Loads for equipment commonly found on police vehicles are shown in the table below. Not all equipment will be operating at the same time, so actual loads on the power supply system will vary.

Component	Amps
Communications Radio	4.0 (8.0 w/mic active)
Mobile Data Transmitter	3.0
Light Bar	28-43
Light Bar with All Internal Accessory Lights Activated	36-63
Spot Lights (each)	7.8

(Continued)

Section 2: Electrical

Component	Amps
Alley Lights (each)	1.0
Radar	0.8
Camcorder	0.5

PCM — Red Area

NOTICE: **DO NOT make electrical connections to vehicle electrical systems not specifically designed for police equipment installations.**

Do not install any components into the PCM or PCM harness. Connecting into this system may affect engine and transmission operation. As an example: connection of aftermarket electrical equipment into the brake light circuit or any other circuit which is connected to the PCM, anti-lock brake computer, air bag system or any other vehicle system will cause vehicle malfunction.

Headlight and Tail Light Modifications

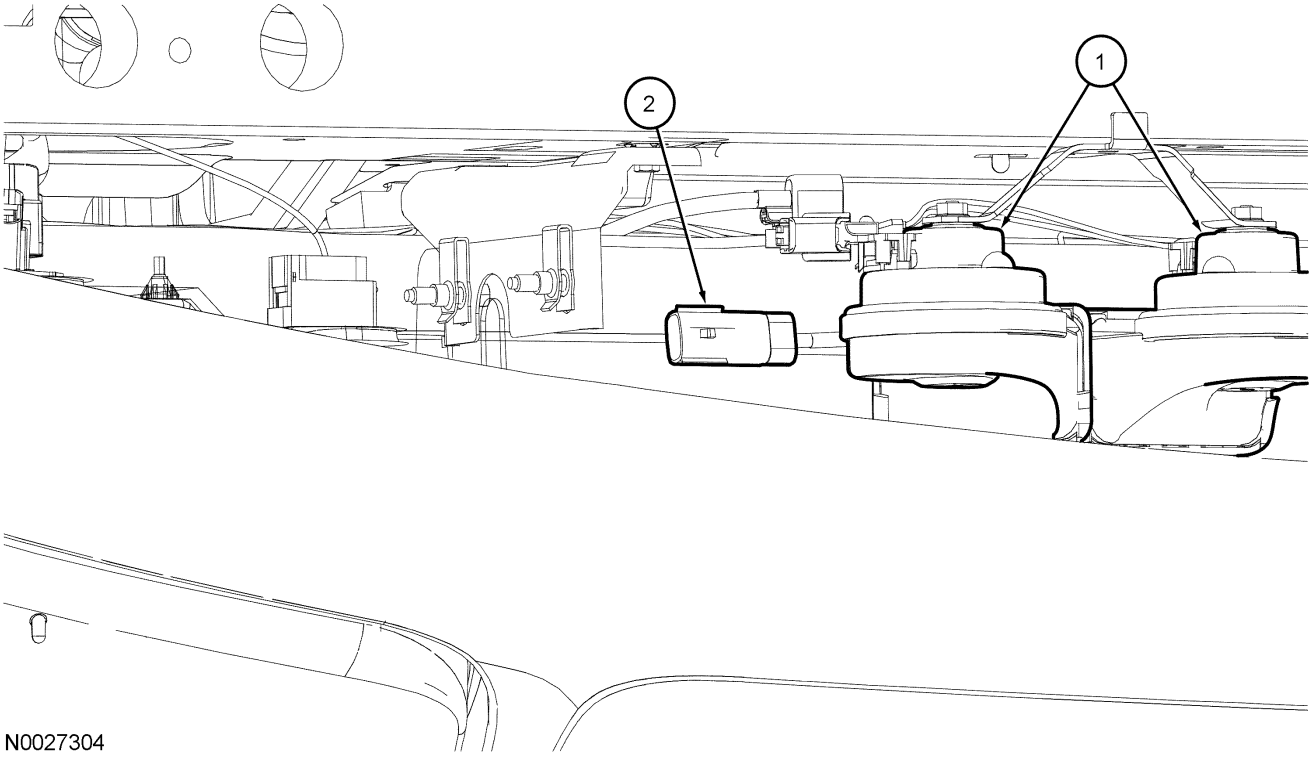
NOTICE: **To prevent current spike damage to the lighting control module (LCM), any auxiliary warning lights controlled by the LCM need diode protection.**

Headlight Flashers (Wig-wags)

Note: If the high beam lights are selected and the wig-wag module is turned on, the high beam lights will turn OFF and the low beam lights are turned ON.

Section 2: Electrical

Standard Feature — An interfacing connector is provided on the headlight circuit for use of the headlights as alternating flashers (wig-wags). The connector is located at the front side of the radiator. There is a connector cap attached that prevents contaminants from entering the connector when a wig-wag module is not installed. When installing a headlight flasher (wig-wag) module, remove the connector cap and tape it to the wig-wag module harness. This will make sure that the connector cap is available to be reattached if the wig-wag module is removed. Refer to the Crown Victoria Wiring Diagram Manual.



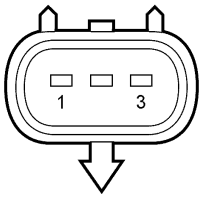
N0027304

Item	Description
1	Horns
2	Headlight flasher (wig-wag) module connector

Section 2: Electrical

Headlight flasher (wig-wag) module connector

There is a cap attached to the connector that prevents contaminants from entering when a wig-wag module is not installed. The cap contains no pins or wiring. When installing a headlight flasher (wig-wag) module, the cap should be removed and taped to the harness. This will ensure that the cap is available to be attached if the wig-wag module is removed.



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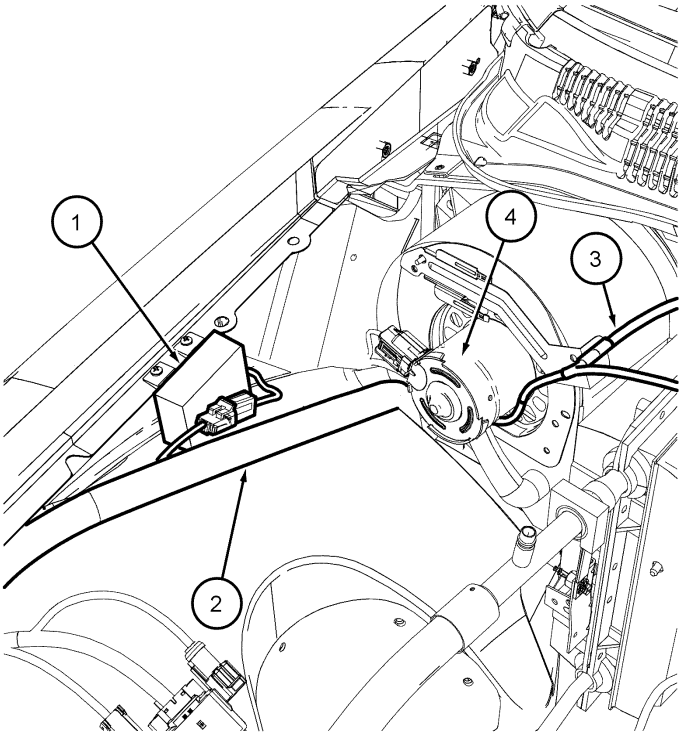
Note: If no ground signal is provided on circuit 165 (TN/WH), the high beams and daytime running lamps (DRL) will operate normally.

Pin	Circuit	Description
1	1335 (YE/WH)	RH headlamp high beam
2	1337 (VT/YE)	LH headlamp high beam
3	165 (TN/WH)	When wig-wag activated, the high beams are overridden and disables the DRL (if equipped)

Section 2: Electrical

Police Prep Option — This option provides all the necessary components that will alternate the headlight high beams. The control switch is not a power source. It is a switching device that controls relays. The switch also provides feedback to the driver door module (DDM) via a hard wire input and the LCM via a network message to deactivate the high beam lights when the wig-wag module is turned on. For additional information, refer to the Ford Police Interceptor Preparation Packages Owner's Manual.



N0027305

Item	Description
1	Headlight flasher (wig-wag) module (Police Prep Packages)
2	Emergency flashing lights harness — 15A599 (Police Prep Packages)
3	Engine compartment harness — 14290
4	Blower motor

Tail Light/Brake Light Flashers (Wig-wag)

Adding tail light flashers (wig-wags) to the brake light circuit requires that the splice location is inside the trunk area. Splicing into the brake light circuit at any other location will cause critical systems on the vehicle to malfunction. Circuit protection devices have been added to the vehicle to accommodate tail light flashers. These protection devices will only be effective if the tail light flasher (wig-wag) module is spliced into the section of the brake light circuit that is in the trunk area.

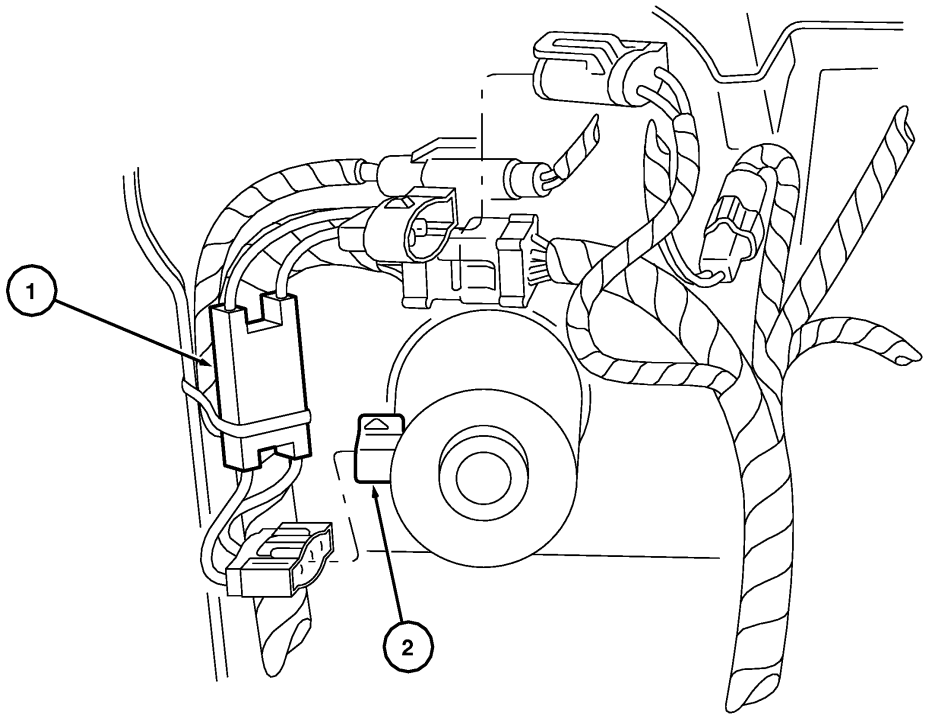
Section 2: Electrical

Disabling Brake Lights

Do not disable the brake light circuits for any reason. For additional information, refer to Section 1: General Information in this guide.

Vehicle Special Order (VSO) Options

• **Noise Suppression Filter** — The noise suppression filter option will help limit the amount of background noise that is sometimes heard in radios that is caused by the blower motor. This noise suppression filter connects in-line at the blower motor connector which is located on the side of the blower motor. There is a connector on either end of the filter. One of the connectors has an orange wire and a black wire, which connects to the blower motor. The other connector has a blue wire and a black wire that connects the blower motor harness.



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Item	Description
1	Noise suppression filter
2	Blower motor connection

Section 2: Electrical

Regular Production Options (RPO)

Grille Lamps, Siren/Speaker

Individual Option — A wiring pre-run for the grille lamps and the siren/speaker is routed from the front of the vehicle to the console area. This wiring pre-run includes circuits to connect a switch panel and a siren/speaker. For wiring color code information, refer to the Crown Victoria Wiring Diagram Manual.

Police Prep Option — On vehicles that have a Police Prep Package (65A, 68P or 65W), a wiring pre-run for the grille lamps and the siren/speaker is routed from the front of the vehicle to the console area. This wiring pre-run includes a flasher, flasher lamps, circuits to connect a switch panel and circuits to connect a siren/speaker. Depending on how the vehicle was ordered, the grille lamps, siren/speaker wiring pre-run may be routed from the front of the vehicle to the trunk. For wiring color code information, refer to the Ford Police Interceptor Preparation Packages Owner's Manual.

2-Way Radio Pre-wire

The 2-way radio pre-wire option provides blunt cut circuits that can be connected to a communications radio which will be audible through the front speakers. For additional AM/FM radio information, refer to Section 5: Reference Information.

Package Tray-Under Decklid Lights

Individual Option — This pre-wire option, separate from and not combined with the Police Prep Package 65W, 65N or 65U, provides only the wiring for package tray lights and under decklid lights. For additional information, refer to the Crown Victoria Wiring Diagram Manual.

Police Prep Option — On vehicles that have the Police Prep Package 65W, 65N or 65U, there are 2 high intensity LED lights located on the package tray. These LEDs are controlled by the switch panel located in the console area. For additional information, refer to the Ford Police Interceptor Preparation Packages Owner's Manual.

Strobe Lights

NOTICE: **Refer to the Ford Police Interceptor Preparation Packages Owner's Manual prior to installing strobe cables. Instructions define strobe module wiring variations and re-pinning may be required.**

Follow the Crown Victoria Workshop Manual diagnosis for the strobe system. Strobe bulbs do not have filaments, therefore continuity checks are not conclusive.

Section 2: Electrical

General Guidelines

- Provide circuit protection (fuses) for all wiring. The fuse rating should not exceed either the rated wiring current capacity or the total current requirements for all the add-on components on the circuit. Install fuses as close to the point of tapped power as possible.
- Document all revisions to the electrical system and place with the vehicle Owner's Literature. Color code and/or label all revisions or additions to wiring.
- Provide protective covering in all areas that could be damaged during normal equipment installations.
- Disconnect the negative battery cable of vehicles stored on site to reduce the possibility of draining the battery by lights or other equipment.
- Do not allow control panels attached to the instrument panel to protrude into the driver and passenger air bag deployment zones. For additional information, refer to Section 5: Reference Information in this guide.
- Do not install switches and gauges in the driver or passenger knee impact areas.
- Inspect all Ford gauges, lights and switches for correct operation after instrument panel work is performed.
- Properly secure all wiring relocated or removed while working behind the instrument panel to prevent chafing, squeaks and rattles.
- Provide adequate retention for wiring harnesses so that they are clear of bolts, corners or edges which could abrade the wires during normal vehicle operation.
- Anticipate misrouted wiring situations and protect all wiring from penetration by screws and raw edges.
- Weather-seal all electrical connectors exposed to the elements.
- Do not use quick splice connectors or wire nuts.
- Install the fuse panel so fuses are readily accessible.
- Make sure that connections are easily accessible for assembly and service.
- Make sure submersible connectors do not lose their seals under extreme assembly conditions such as bending wires 90 degrees immediately after the connector.
- Whenever using connectors, use a socket (female) connector on the electrical source side and a plug (male) connector on the electrical load side to reduce the possibility of a short circuit when disconnected.
- Air bag restraint systems must remain intact as received from Ford Motor Company. Before modifications are done to the vehicle, the system must be disarmed by following the instructions provided in the current Crown Victoria Workshop Manual.
- Adherence to the above guidelines is not to be construed as approval by Ford Motor Company of any specific revisions or additions to the vehicle's original electrical system.

Section 2: Electrical

Keep-Alive Memory Power

The electronic engine and transmission control modules require battery power to be supplied at all times to maintain the keep-alive memory. Keep this in mind when installing load disconnect switches or solenoids.

Equipment Grounding Guidelines

- Do not ground the body to the transmission or transmission crossmember. Ground accessories to the chassis or the vehicle battery.
- Splicing into circuitry relating to the electronic engine and/or transmission control systems is not acceptable because of the adverse effect on the electronic system operation.
- Adequately protect electrical connections exposed to the elements.

Wire Insulation

- Polyvinyl Chloride (PVC), rated at 90°C (194°F), is the standard wire insulation that is acceptable for inside body use but is not acceptable for underhood/underbody wiring.
- Hypalon insulation should be used on links only (Ford Specification ESB-M1L54-A).
- Cross-linked Polyethylene (XPLPE or SXL), rated at 135°C (275°F), is the required insulation for underhood/underbody applications (Ford Specification ESB-M1L123-A).
- GXL can be used as an alternate wire (Ford Specification ESB-M7L85B) as long as the concentricity specifications are met. To provide a water-resistant seal in conjunction with crimp connectors, a Duraseal crimp connector is recommended since it is designed to account for outside wire diameter that is smaller than the present SXL wire.

Terminals and Connectors

Connector Types

- Submersible (Sealed) — A connector that is capable of being immersed in water.
- Weather-resistant — A connector that will retain its sealing and connection qualities while being exposed to adverse weather conditions.
- Duraseal crimp — A supplier trade name for a sealed wiring repair or splice.

Section 2: Electrical

When a connection is not defined (typical situation — harness-to-harness connectors), the following suggestions should be implemented:

- Determine the connector type. If it will be located in a hostile environment, use a submersible (sealed) connector; if not, use an open connector. A hostile environment is defined as being exposed to water and/or salt accumulation and/or high temperatures (i.e., underhood, exterior panels and footwells). Use in-line connectors with secondary locks to prevent the terminal from being pushed out.
  - — Do not use single wires smaller than 14-gauge in a 2-way or larger weather-resistant connector (the very large style), since the wire may break during disengagement.
  - — Use Hypalon, XLPE or Elexar insulation in submersible connectors to maintain sealing integrity. PVC is not acceptable because it cold flows and allows setting in a deformed pattern, therefore compromising the integrity of the seal.
- Determine the terminal type. Base your decision on wire gauge, current carrying capacity, connector type and insulation type.
  - — Use non-detent low insertion force terminals whenever possible.
  - — Do not use low insertion force female terminals in weather-resistant connectors.
  - — Analyze circuit requirements (signal levels, current, voltage) to determine the proper plating material (such as gold). Use of non-plated terminals is not recommended.
  - — Do not use plugs to seal holes in micropin connector grommets. It is very easy to forget to insert them during manufacturing and ruin the seal. Use a grommet with only the necessary number of holes or use dummy wires at least 600 mm (24 in) long.
  - — Fully align connectors prior to terminal connection — terminal cavities should have minimum tolerance to prevent terminals from floating, bending or pin push-out during mating/engagement.
  - — Make sure connectors of similar type and color are identifiable to the operator to eliminate crossed connections and minimize assembly time. Avoid using similar types and colors of connectors close together.
  - — Be sure that connectors have positive locking devices that allow easy installation with a low insertion force and easy removal. The connector snap should be easily felt and heard.
  - — Eliminate the use of edgeboard, tang-type and molded-over connectors. The use of blade-type weather-resistant connectors is restricted to high current applications which cannot be handled by submersible connectors.

Circuit Protection and Electrical Load

- Modification to existing vehicle wiring should be done only with caution and careful consideration of effects on the completed vehicle's electrical system. Anticipated circuitry should be studied to determine the required circuit protection and to avoid feedback loops.
- Added circuitry must be protected either by a base vehicle fuse or circuit breaker, or by a similar device supplied by the modifier.

Section 2: Electrical

- When adding loads to a base vehicle-protected circuit, make sure that the total electrical load through the base vehicle fuse or circuit breaker is less than the device's load rating.
- Use 80% of the fuse rating to determine maximum steady state load to reduce nuisance fuse failures.
- Use 135% of the fuse rating when sizing wiring to protect the circuit in the event of an overload. Fuses will last for 1 hour at 135% of their rating.
  - — Total current draw is the sum of the base vehicle's circuit current requirement (measured with an ammeter) and the anticipated add-on component current requirements.
  - — Never increase the rating of a factory installed fuse or circuit breaker.
  - — If the total electrical load including additional electrical components, on any circuit, is less than the fuse protection rating or the capacity of some limiting component (switch, relay), the items to be added can be connected directly to that circuit. The headlamp switch circuits should never have additional lighting or electrical components directly connected.
  - — Added devices that exceed the current capabilities of the factory-installed system are best controlled through the use of a relay or separate switch. The coil of the relay can be fed from the circuit in the factory harness (now acting as a signal circuit) with added wiring providing feeds to the added electrical device. The relay selection is important and depends on current requirements, number of cycles expected in the relay lifetime, whether the relay is to be operated intermittently or for long periods of time and whether the relay is exposed to weather conditions or is installed in a protected area. When the current requirements of a circuit exceed the capacity of an available relay, the load should be reduced or divided through the use of additional relays.

Wire Protection Requirements

General Notes:

- Anticipate problems and design accordingly. Try to anticipate what could go wrong and modify your designs to address any adverse impact.
- Review all connector applications and electrical systems to determine the need for solder, grease, weather-resistant or sealed connectors. Make sure components and wire insulation are compatible with greased connectors (important for long-term durability).
- Make sure that drip loops or other means are provided to prevent water leakage into the vehicle through wiring assemblies that pass through the dash panel.
- Use greased or sealed connectors in floor pan troughs which are subject to moisture coming through the carpeting.
- Use XLPE insulation for uncovered runs that exceed 305 mm (12 in).

Section 2: Electrical

Electrical Protection

- Correctly route wires away from noise-generating wires or components. However, if routing near noisy wires or plugging into noisy components is unavoidable, additional protection must be designed into the harness.
- Shielding — Electro Magnetic Interference (EMI) — Consider shielding if you must route close to high-current or noisy circuits. Use shielded wire and ground one side. Seal all splices in wire assemblies that use bare coaxial shielding (braid or tape) for EMI suppression, and insulate or tape over all shielding ends that terminate near any open connectors. This prevents splice and terminal shorts to the shielding. Minimize the length of conductors which extend beyond the shield. Failure to do this reduces the effectiveness of the shield.
- Spike suppression, in general, is accomplished by connecting a diode or resistor-diode combination across the terminals of the noisy component. The diode should be sufficiently close to the component (both electrically and physically) so that inductive spikes are clamped off. Make sure the diode is connected with the proper polarity.

Proper routing and retention will reduce the likelihood of chafing or pinching. When this ideal routing is unattainable, the following additional protection is needed:

Mechanical/Environmental Protection

- Tape — Tape is the most basic means of protection. It contains the wires in a loose bundle and provides limited environmental protection. It does not protect against chafing and pinching.
  - — Kendall Polyken Fiberglass Base Tape (Ford Specification ESB-M3G38-A) is used for engine compartment applications. This durable tape provides against cut-through and abrasion commonly found in underhood applications.
  - — Polyken 267 is a substitute tape that may be used in lower temperature areas of the engine compartment (apron area).
- Convolute — Use convolute for all underhood/underbody applications or when increased temperature, abrasion or pinch resistance is required. Convoluted tubing comes in different diameters and materials to accommodate different temperature ranges and harness sizes.
  - — Use polyethylene convolute when abrasion is the only consideration; this convolute is adequate up to 96°C (205°F) maximum. Use nylon convolute when underhood/underbody or abrasion and temperature are considerations; nylon convolute is adequate up to 177°C (350°F) maximum.
  - — On all engine-mounted wiring or bend points. Use vinyl tape on the outside of the convolute to prevent wiring from looping out. This tape must be able to withstand temperatures 135°C (275°F) or higher.
  - — Tape convolute junctions with abrasion-resistant tape (Polyken 267, fiberglass).
- Scroll — Similar to convolute, but without the ridges. Scroll is used where harness rigidity is required, especially for maintaining critical locator dimensions. Use scroll for short lengths only, as it is quite inflexible.

Section 2: Electrical

Note: This is not meant to be an all-inclusive list of methods for physically protecting the wires. There are other means of protection available that are not listed.

Grommets and Sealing Requirements

Any additional wiring routed through sheet metal must pass through a grommet that both seals the opening and locates the wire(s). Two-piece grommets (rubber with plastic inserts) are recommended to facilitate installation and retention.

- Locate grommets so they are accessible for proper seating (achieved by pulling) in sheet metal holes.
- Ramp grommets at the insertion end to facilitate installation and sealing.
- Be sure that the direction of the hole punch is in the direction of grommet seating and the hole is burr-free.
- Make sure the grommet moulding compound will adhere to the harness to prevent slippage.
- Make sure the grommet will withstand the environment (temperature, splash).
- Be sure that holes are large enough to allow the installation of the harness without causing circuit damage.
- Use adhesive tape on main trunks or branches with at least a 50% overlap to prevent wicking through grommets. Be certain to diaper-wrap the takeouts.

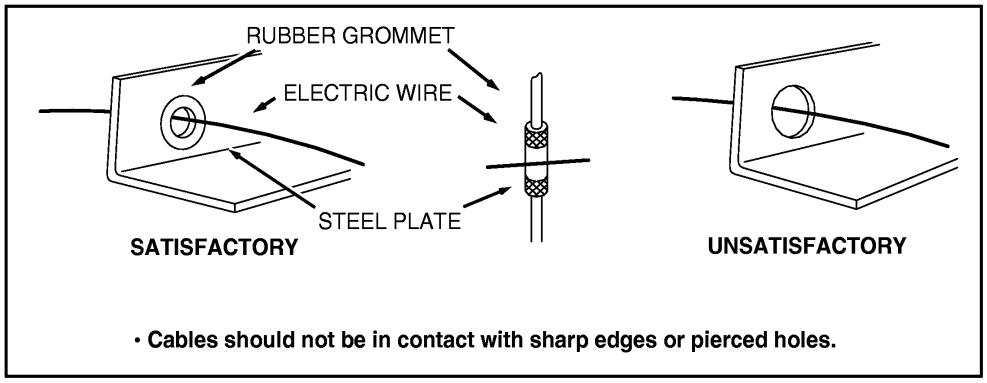
Wire Routing

⚠ **WARNING: Do not place electrical component attachments or ground screws adjacent to vehicle fuel tanks, fuel filler pipes, fuel lines, fuel vapor lines or carbon canisters. Failure to follow these instructions may result in personal injury in the event of a collision.**

Wire harness routing should conform to the following:

- Protect wires routed through holes in sheet metal or castings with a grommet whether or not conduit is used (see figure below).

Section 2: Electrical



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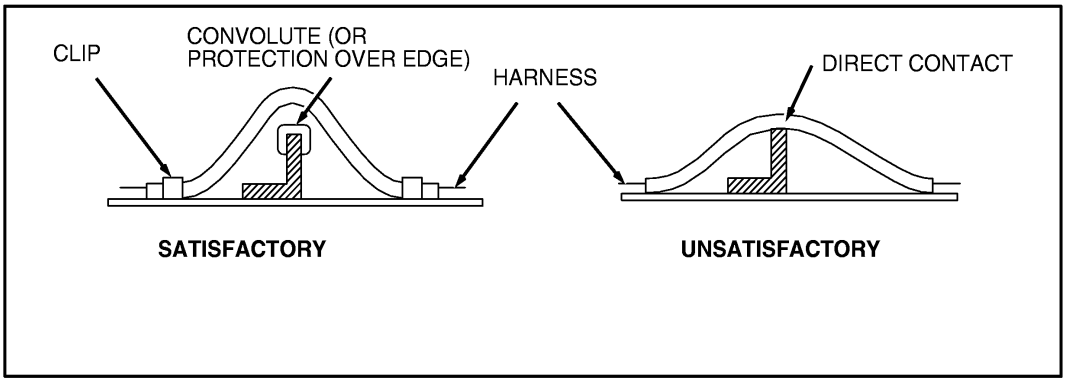
- Route wires to avoid metal edges, screws, trim fasteners and abrasive surfaces. When such routing is not possible, use protective devices (shields, caps) to protect the wires. Cover metal edges with a protective shield and fasten the wiring within 76 mm (3 in) on each side of the edge (see figure below).



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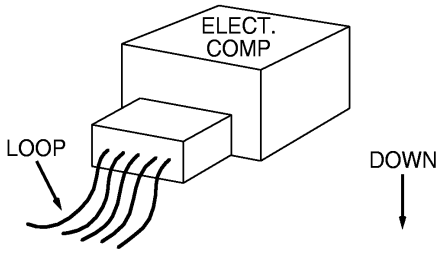
- Route wires to provide at least 76 mm (3 in) of clearance to moving parts in their extreme movement location, unless positively fastened and protected by a conduit.
- Avoid wire routing without conduit in areas where temperatures exceed 82°C (180°F). Minimum clearance of 152 mm (6 in) should be maintained from exhaust system components. Heat insulation and heat shields must be used on the wires routed in high-temperature areas.
- Make certain that all underhood or underbody wiring is cross-linked polyethylene high temperature insulation wire 135°C (275°F) (minimum rating) consistent with SAE specification J1128 Type SXL wire. Normal PVC wire must not be used in underhood or underbody applications.
- Make sure all ground locations are readily accessible for installation, service and verification.
- Do not place ground attachments in high-splash areas.
- Do not route underbody wiring over the exhaust system.
- Underhood/underbody wiring must be routed in conduit for protection. Minimum conduit rating is 177°C (350°F).

Section 2: Electrical

Wire Retention and Routing

Use the following criteria to determine the location of retainers:

- Size and weight of wire bundle.
- Holes with poor accessibility that prevent installation of locators.
- Movement of wires that can result in abrasion, squeaks and rattles.
- When wiring is routed between 2 members where relative motion can occur, the wiring should be secured to each member with enough wire slack to allow flexing without damaging the wire.
- Wiring exposed to weather must provide a drip loop to prevent moisture from being conducted into the device through the wire connection (see figure below).



• Drip loops should be provided at connectors and grommets to direct water away from terminals or inside the vehicle.

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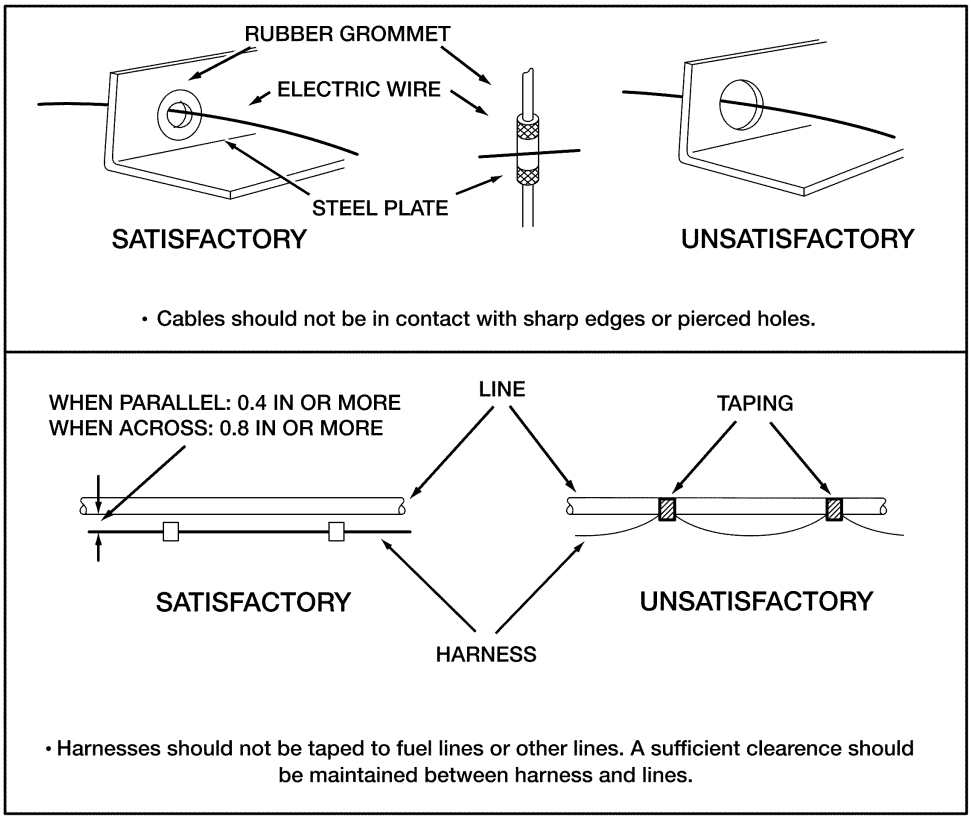
- Avoid routing wires into areas exposed to wheel splash. When such routing cannot be avoided, adequate clipping and/or protective shields are required to protect the wires from stone and ice damage. Allow adequate slack in wiring between the engine and stationary components to compensate for engine roll.
- Avoid routing wires under the frame side members or at points lower than the bottom frame flange.
- Use plastic ‘‘zip’’ straps for ‘‘bundling’’ only (securing to other wires).
- The wire retainers and grommets installed by the assembly plant are usually designed to accommodate only the Ford-installed wires. Additional wiring or tubing should be retained by additional clips. When added wires or tubes are routed through sheet metal panels, new holes with proper wire protection and sealing must be used.

Section 2: Electrical



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For retainer screws, the following guidelines apply:

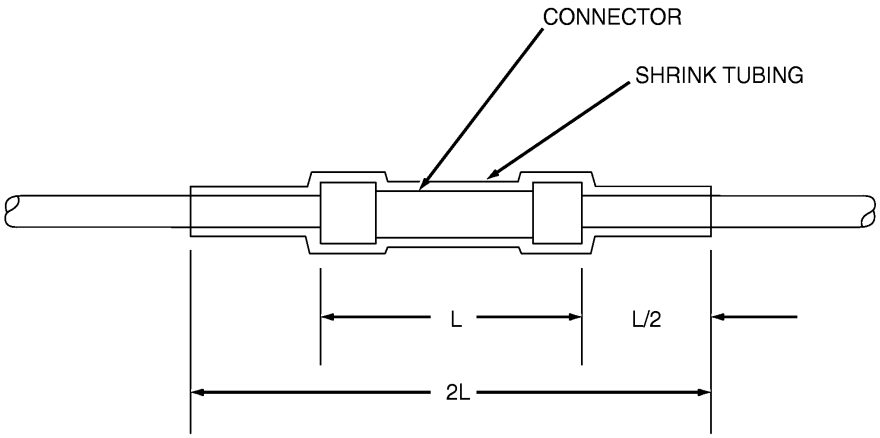
- Avoid using fasteners that are too long for the application or are in an area which might damage vehicle components, including wiring, brake lines, fuel tank and lines, powertrain components, exhaust system and suspension.
- Do not use pointed screws for attachments. Also check that screws used in the vicinity of the wiring are blunt-ended.
- To minimize the potential for wiring shorts, do not use drill point screws. Trim components (including wiring shields) should use pin-type attachments instead of screws.
- Always check areas that screws protrude into for verification that an interference condition to other components does not exist.
- Make sure that retainers used are capable of withstanding the environment over the vehicle's life expectancy.

Section 2: Electrical

Splices and Repairs

For quality splicing and to reduce potential problems, the following guidelines are recommended:

- Stagger the splices within a harness to reduce increased harness diameter. Splice only on straight areas as installed, not on bends.
- Strip wire ends making sure that individual conductor strands are not damaged.
- When soldering, make sure an adequate mechanical joint exists before applying solder. Use only resin-core solder. Acid-core solder should not be used since it may result in corrosion.
- For crimp joints, use butt-type metal barrel fasteners and the proper tool at the appropriate setting for the wire size (such as Motorcraft crimp tool S-9796) specifically designed for this type of work.
- Make sure splice joints are adequately sealed and insulated. In an outside environment, use Duraseal butt connectors or equivalent. A durable substitute splice joint can be achieved by using a bare metal barrel, crimping, flow-soldering and covering with shrink tubing. Quality electrical tape can be used inside the vehicle but is not recommended for an outside environment.
- Be sure that the new wire is not a lesser gauge than its original mating wire.



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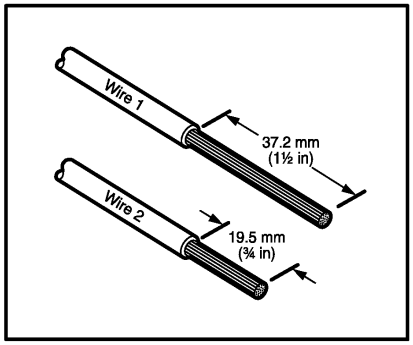
Recommended Splicing Method — Solder (For 16 AWG and Smaller Diameter Wire Only)

1. Disconnect the battery ground cable.

Section 2: Electrical

2. Strip wires to appropriate length.



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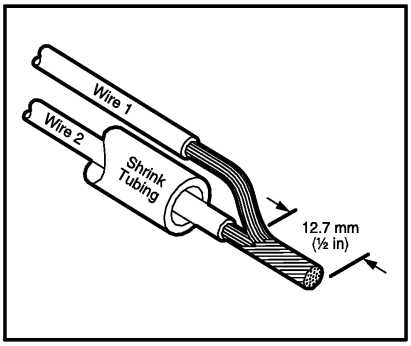
3. Install heat shrink tubing.
4. Twist the wires together.
5. Note: Use resin-core mildly-activated (RMA) solder. Do not use acid-core solder.
   Solder wires together.



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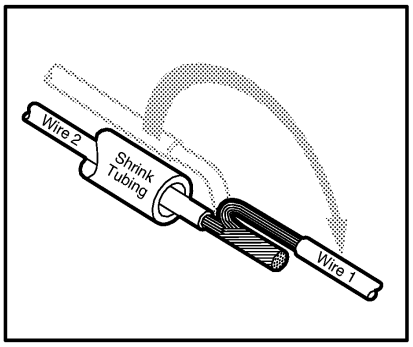
6. Note: Wait for solder to cool before moving wires.
   Bend wire 1 back in a straight line.

Section 2: Electrical



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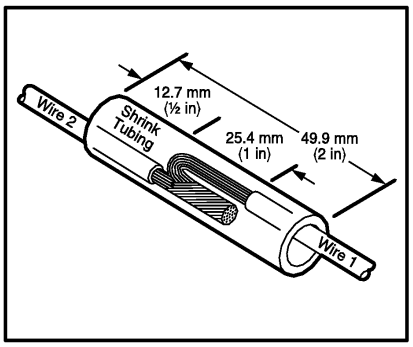
7. Note: Overlap tubing on both wires.
   Evenly position heat shrink tubing over wire repair.



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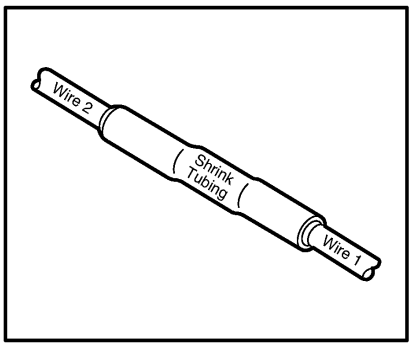
8. Use a shielded heat gun to heat the repaired area until adhesive flows out of both ends of the heat shrink tubing.



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Section 2: Electrical

9. Reconnect the battery ground cable.

Sealed Connectors

Ford Part Number	Part Name	Class
E6FZ-14488-A	Butt Connector Gauge: 18-22, Color: Red	C
E6FZ-14488-B	Butt Connector Gauge: 14-16, Color: Blue	C
E6FZ-14488-C	Butt Connector Gauge: 10-12, Color: Yellow	C

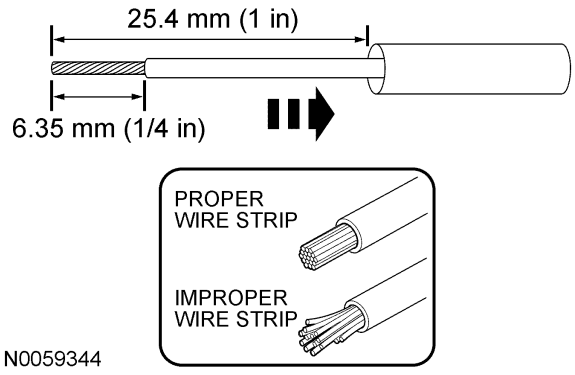
Heat Shrinkable Tubing (Heat Shrink) (Ford Specification ESB-M99D56-A2)

Heat shrinkable tubing is available in various diameters for different splice sizes and configurations. When shrunk, it forms a small, flexible hermetic seal.

Other methods (tape, PVC mold) do not provide a hermetic seal and are not recommended. Splice balancing is critical with heat shrink insulation. If the splice is extremely unbalanced (more circuits on one side than the other), heat shrink insulation will not provide a proper seal. Evaluate the use of double terminals instead of splices where practical in these situations.

Recommended Splicing Method — Crimp (For 1022 AWG Diameter Wire to Like Wire Diameter)

1. Disconnect the battery ground cable.
2. Strip wires to appropriate length.
3. Install heat shrink tubing.



Section 2: Electrical

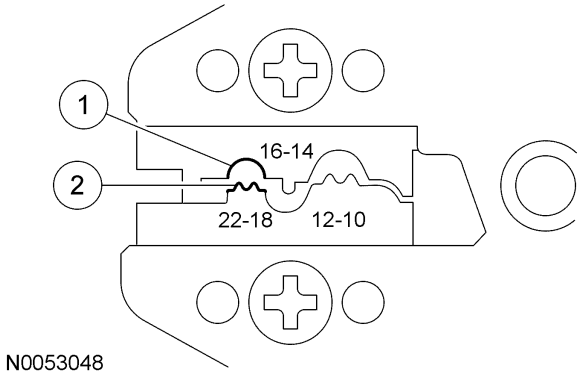
4. Select the appropriate wire slice for the wires to be spliced from Rotunda Wire Splice Kit 164-R5903.

5. Note: Rotunda 164-R5901 Pro-Crimper supplied with the wire splice kit is the only tool that can be used with these splices.

   Identify the appropriate chamber on the Rotunda Pro-Crimper by matching the wire size on the dies with the wire size stamped on the butt splice.

   (1) Cavity

   (2) Indenter



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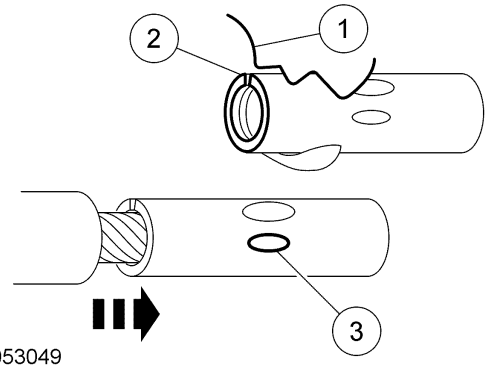
6. Crimp the connector.

   (1) Center one end of the wire splice in the appropriate crimping chamber.

   (2) Insert stripped wire into the barrel.

   (3) Holding the wire in place, squeeze the tool handles until ratchet releases.



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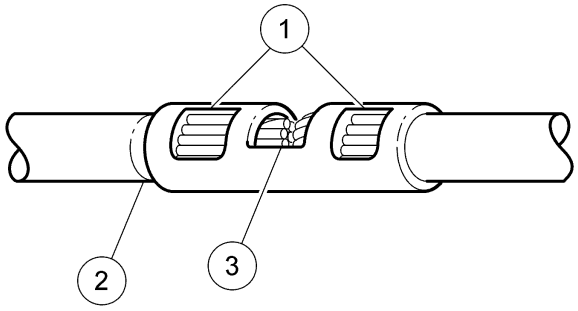
7. Repeating Step 6, crimp the other half of the splice.

Section 2: Electrical

8. Check for acceptable crimp.
   (1) Crimp should be centered on each end of the butt splice.
   (2) Wire insulation does not enter butt splice.
   (3) Wire is visible through inspection hole of splices.



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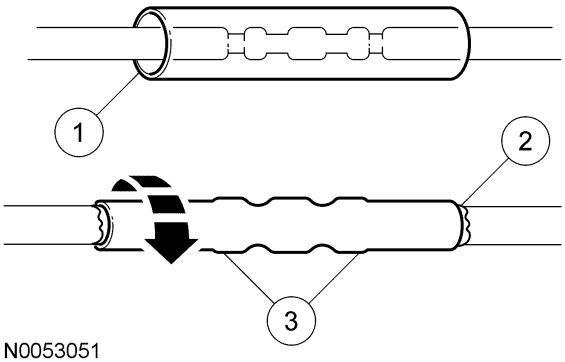
9. Evenly position supplied heat shrink tubing over wire repair.

10. Use a shielded heat gun to heat the repaired area until adhesive flows out of both ends of the heat shrink tubing.



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11. Reconnect the battery ground cable.

Heat Shrinkable Tubing (Heat Shrink) (Ford Specification ESB-M99D56-A2)

Heat shrinkable tubing is available in various diameters for different splice sizes and configurations. When shrunk, it forms a small, flexible hermetic seal.

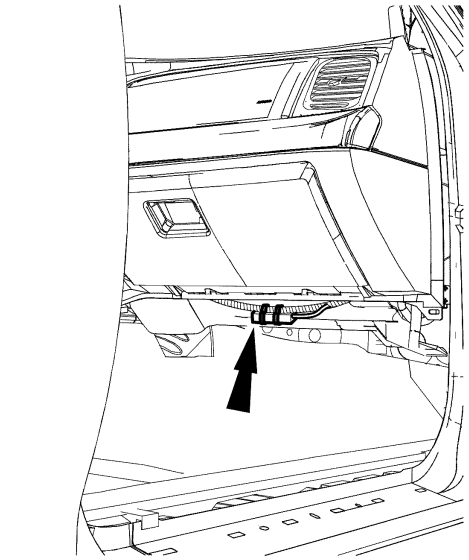
Other methods (tape, PVC mold) do not provide a hermetic seal and are not recommended. Splice balancing is critical with heat shrink insulation. If the splice is extremely unbalanced (more circuits on one side than the other), heat shrink insulation will not provide a proper seal. Evaluate the use of double terminals instead of splices where practical in these situations.

Section 2: Electrical

Available Power Sources

Front Power Distribution Connector (C275)

The front power distribution connector (C275) is located below the glove compartment. This connector contains various power feeds and inputs available for the addition of police accessories. See the following illustrations and table for connector and circuit details. A mating connector with blunt cut wire leads (part #14C194) is available as part of kit #14A411.



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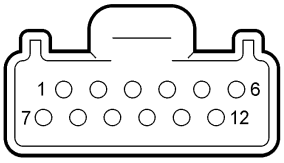

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Cavity #	Circuit #/Color	Gauge	Function
1	1000 (RD/BK)	18	Start feed from central junction box (CJB) fuse 9 (7.5A)
2	679 (GY/BK)	18	Vehicle speed signal
3	876 (DG/LG)	18	Battery saver feed from CJB fuse 30 (2A)
4	726 (LG)	14	Battery feed from battery junction box (BJB) fuse 108 (20A)
5	1669 (OG/LG)	18	Battery feed from BJB fuse 15 (15A)
6	792 (TN/YE)	10	Battery feed from BJB fuse 111 (50A)

(Continued)

Section 2: Electrical

Cavity #	Circuit #/Color	Gauge	Function
7	3985 (PK)	14	Run/Accessory feed from BJB fuse 23 (20A), via the Run/Accessory Relay
8	1048 (LB/WH)	14	Battery feed from BJB fuse 16 (20A)
9	3010 (TN)	14	Run/Accessory feed from BJB fuse 22 (20 A), via the Run/Accessory Relay
10	175 (BK/YE)	18	Hazard out
11	1504 (RD/WH)	10	Battery feed from BJB fuse 114 (50A)
12	854 (GY/WH)	18	Hazard in

Power Distribution Connector

Component	Ford P/N	Supplier	Supplier P/N
Mating connector	F58B-14489-JA	EPC	F58B-14489-JA
Connector spacer	F58B-14A468-GA	EPC	F58B-14A468-GA
Pin, 10-12 gauge	F58B-14487-AA	Molex	
Pin, 14-16 gauge	F58B-14487-BA	Molex	
Pin, 18-20 gauge	F58B-14487-CA	Molex	

Electrical Component Resource

Mating connectors, terminals and subcomponent availability is managed for Ford Fleet and Pool Accounts through Ford Component Sales. Ford Component Sales, LLC (FCS) uses Globe Component Products in Commerce Township, Michigan to process and coordinate all Fleet and Pool Purchase Orders. By using Globe, FCS is able to offer the Fleet and Pool community reasonable minimum order quantities while still having the benefit of Ford Production pricing benefits.

Globe Component Products Contact Information

- Sales and Delivery: Tiah Reaume
- Phone: 248-669-9911
- Fax: 248-669-9123
- Email: treaume@globecomponentproducts.com

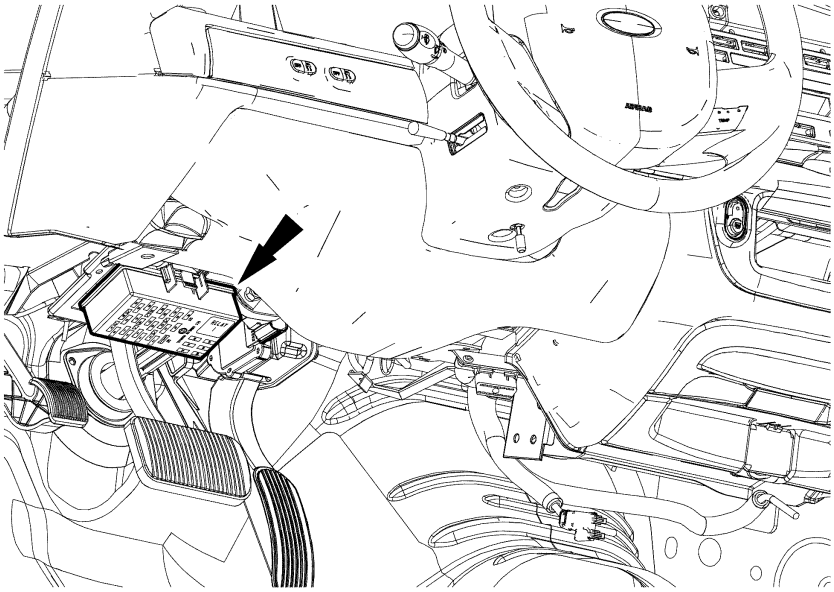
Ford Component Sales Contact information

- Inside Sales Rep: Joanne Davis
- Phone: 313-390-0634
- Email: jdavi148@ford.com
- Account Manager: Donna Hoffman
- Phone: 313-390-0694
- Email: dhoffm10@ford.com

Section 2: Electrical

Power Distribution Boxes

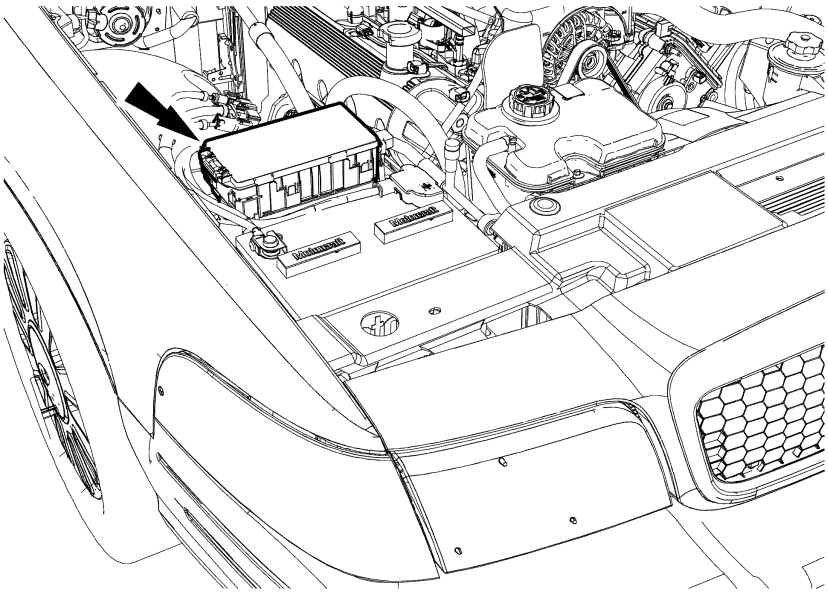
Central Junction Box (CJB)



N0059197

Figure 1.

Battery Junction Box (BJB)



N0059198

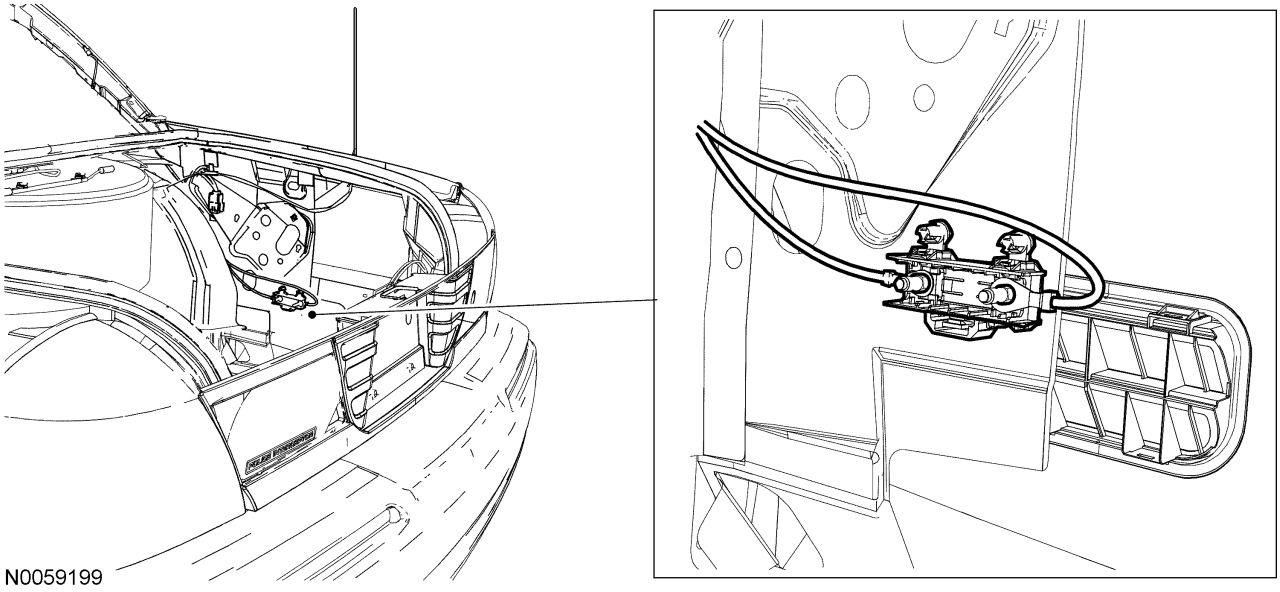
Figure 2.

Section 2: Electrical

Rear Power Access Point

The rear power access point is a battery access port for police auxiliary equipment mounted in the trunk. It is capable of supplying 80 amps of battery voltage. Voltage to the positive terminal of the rear power access point is supplied through two 50A fused circuits crimped together, connected to the battery through battery junction box (BJB) fuses 115 and 118. Battery access is provided by 2 studs contained in an enclosure, mounted in the trunk behind the carpet, on the right side fender support. The terminal with the red wire is the battery positive, and the terminal with the black wire is the ground. Remove both fuses in the BJB before removing the cover to the rear power point. Make sure load devices can be turned off and are switched off when reinserting the fuses.

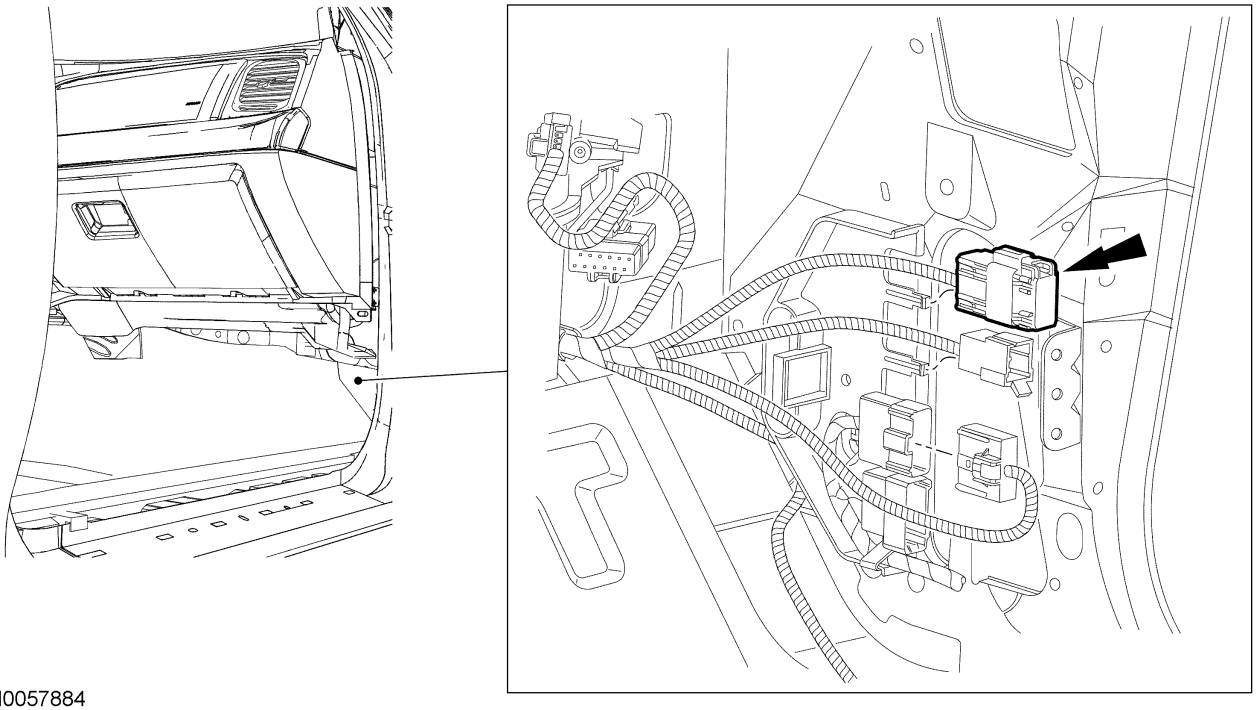
⚠ **WARNING: Under no circumstance should the rear power access point cover be removed without first removing the battery junction box (BJB) fuses 115 and 118. Removing the cover without removing the fuses could result in an electrical hazard. Turn off load devices before inserting the fuses. Failure to follow these instructions may result in personal injury.**



Section 2: Electrical

Light Bar Connector

The light bar connector (right hand side of the front kick panel, underneath trim) is an 8-pin connector and has 3 power circuits and 2 ground circuits available. See the following chart for connector information:



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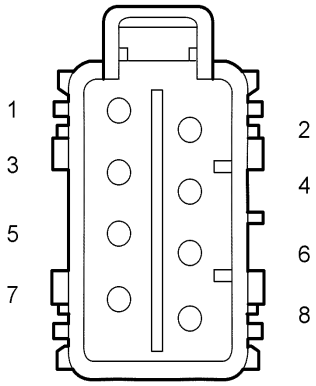

N0012104

Cavity #	Circuit #	Gauge	Color	Function
1	57	10	BK	Ground
2	2301	10	RD/WH	Battery feed from BJB fuse 118 (50A)

(Continued)

Section 2: Electrical

Cavity #	Circuit #	Gauge	Color	Function
3	57	10	BK	Ground
6	2300	10	RD	Battery feed from BJB fuse #115 (50A)
7	3258	10	RD/YE	Battery feed from BJB fuse #113 (50A)
8	—	—	—	Empty

Light Bar Connector

Component	Ford P/N	Supplier	Supplier P/N
Mating connector	F58B-14489-JA	EPC	F58B-14489-JA
Connector spacer	F58B-14A468-GA	EPC	F58B-14A468-GA
Pin, 10-12 gauge	F6DB-14487-AA	Molex	
Pin, 14-16 gauge	F6DB-14487-BA	Molex	
Pin, 18-20 gauge	F6DB-14487-CA	Molex	

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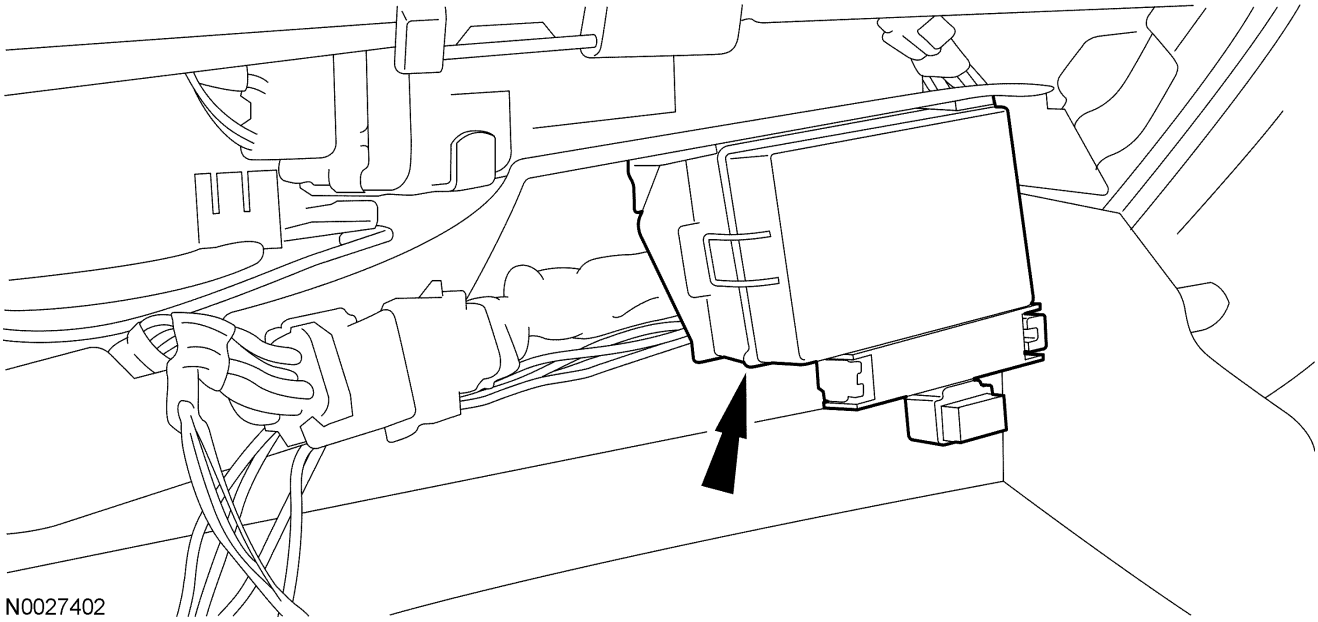
- Email: jdavi148@ford.com
- Account Manager: Donna Hoffman
- Phone: 313-390-0694
- Email: dhoffm10@ford.com

Section 2: Electrical

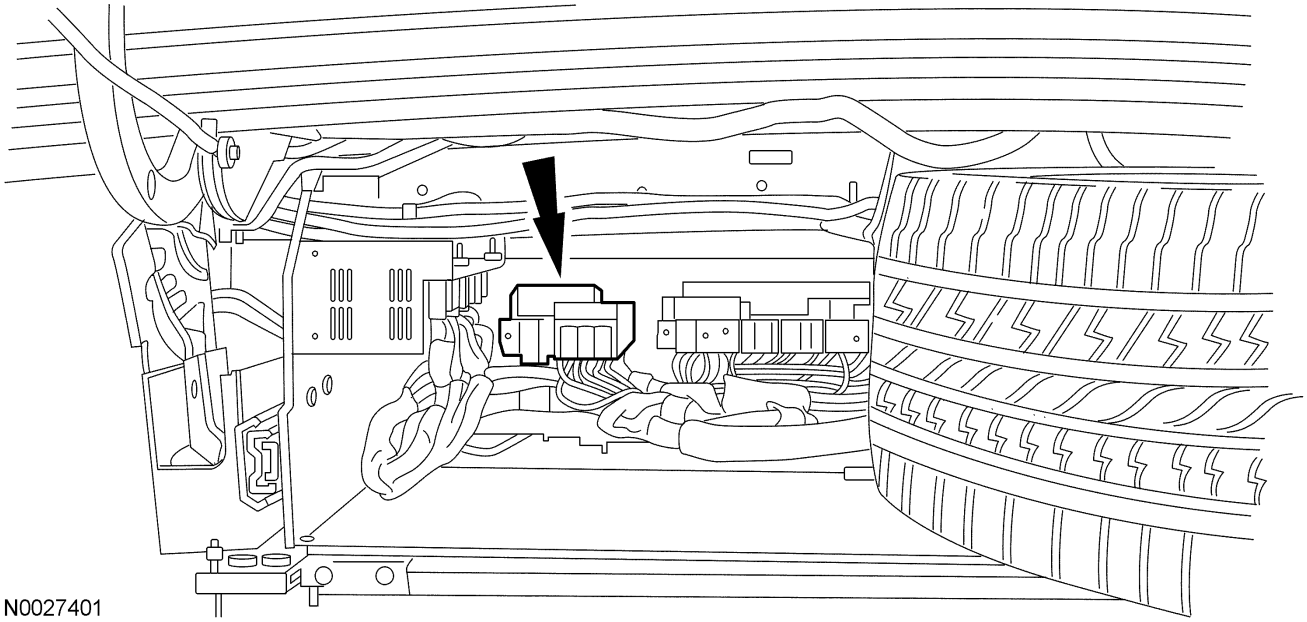
Police Prep Packages (Optional)

Vehicles equipped with one of the optional Police Prep or Visibility Packages (options 65A, 68P, 65W, 65P and 65U) include a different auxiliary power distribution box (PDB) that is located in the glove compartment or trunk. By checking the area of the glove compartment or trunk, it can be easily determined if a vehicle is equipped with a Police Prep and Visibility Package. The standard front auxiliary PDB normally mounted below the glove compartment is deleted and the Police Prep and Visibility Package PDB is installed inside the glove compartment or trunk. For additional information, refer to the Ford Police Interceptor Preparation Packages Owner's Manual that is included with the vehicle.



N0027402

Section 2: Electrical

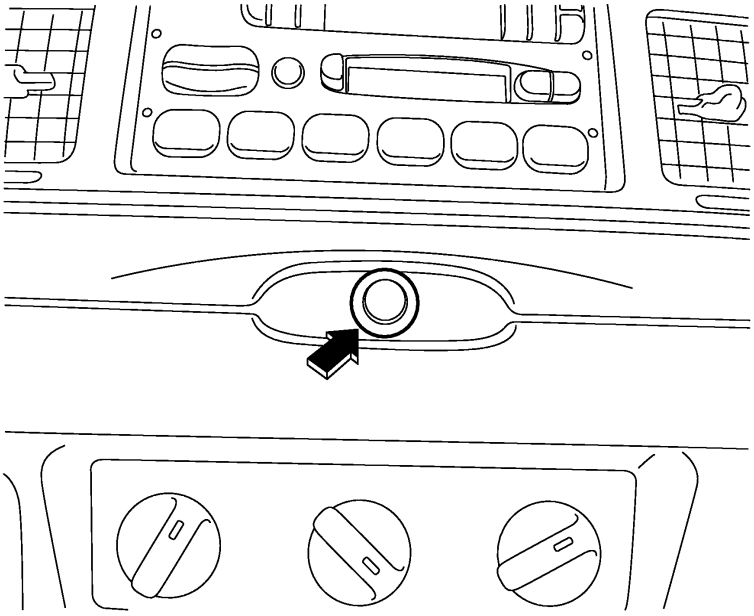


N0027401

How To Change Option Content

Luggage Compartment Lid Release Switch

The luggage compartment lid release system may be configured to operate either when the ignition key is in the RUN/ACC position or at all times (without requiring a key). Configuration of the luggage compartment lid release switch is accomplished by connecting one of the 2 available connectors located behind the dash trim panel. One is wired for power at all times and the other is wired for power only when the ignition key is in the RUN/ACC position.

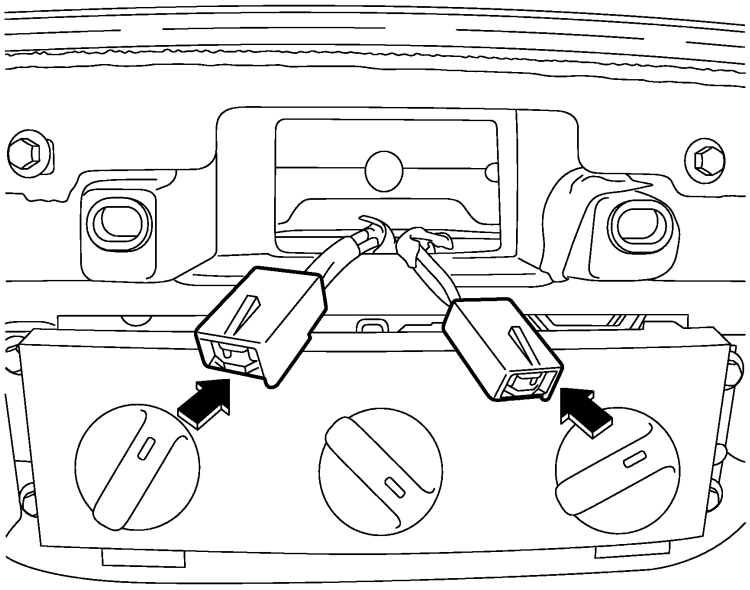


A0074045

Section 2: Electrical

Use the following steps to change this option:

- Remove the dash trim panel by gently pulling to release the 9 pushpin-type retainers.
- Disconnect luggage compartment lid release switch electrical connector.
- Locate and connect the alternate luggage compartment lid release switch electrical connector.



A0074046

Note: The connectors can be identified by the wire colors. The connector with the (VT/YE) and (BK/WH) wires has power at all times. The connector with the (VT/YE) and (YE/GN) wires has power in the RUN position.

- Reinstall the dash trim panel.

Courtesy Lamp Disable (Dark Mode)

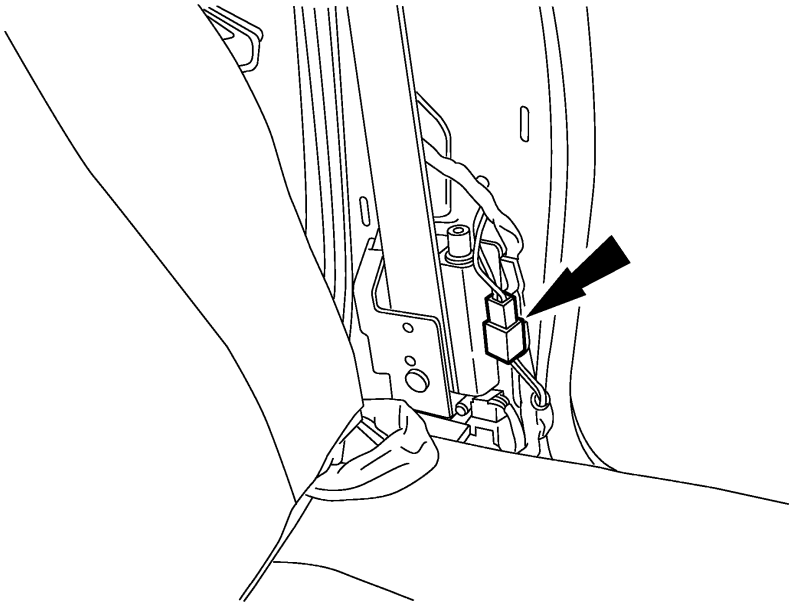
This option offers deletion of the illuminated entry function. Upon vehicle power-up, the lighting control module (LCM) will not provide interior lighting during entry or exit of the vehicle. The interior lighting will, however, still operate on demand whenever the dome lamp switch is active. If the dark car feature is necessary, the assembly plant enables this feature through the LCM. The vehicle can be reconfigured by entering diagnostics, enabling/disabling the courtesy lamps and then exiting diagnostics.

Use the following steps to enable or disable the courtesy lamps:

1. Connect the Vehicle Communication Module (VCM) and Integrated Diagnostic System (IDS) software with appropriate hardware, or equivalent scan tool to the Data Link Connector (DLC).
2. Select the LCM PID COURTESY LAMPS.
3. Select ENABLE or DISABLE.

Section 2: Electrical

Rear Power Window Disable



A0092209

The rear window control switches of the Crown Victoria Police Interceptor can be disabled by disconnecting the rear window power supply connector (C340). This connector is located behind the LH B-pillar trim panel, adjacent to the seat belt retractor. Disconnect the connector to disable the rear window control switches. While they are disabled, the master window control switch can still control the rear windows. Refer to Crown Victoria Wiring Diagram manual for additional power window wiring information.

Wiring Reference Information

Crown Victoria/Grand Marquis Wiring Diagram Excerpts

The following pages are from sections of the Crown Victoria/Grand Marquis Wiring Diagrams.

Ordering Information

To obtain information about ordering complete copies of Ford or Lincoln/Mercury publications, call 1-800-782-4356.

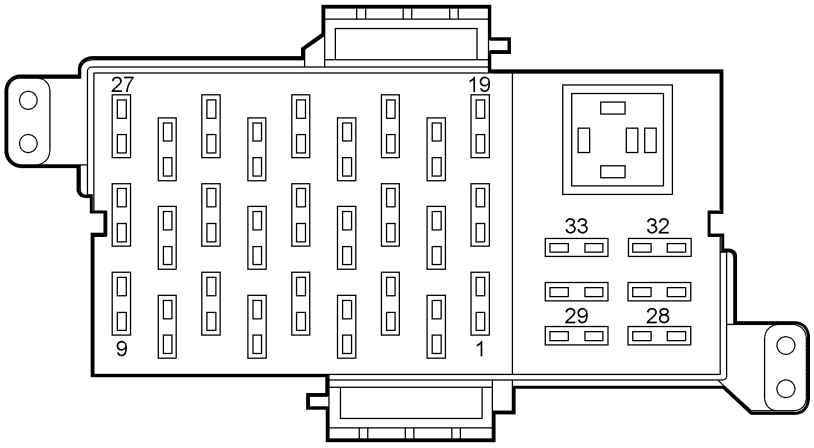
Available publications include Workshop Manuals, Wiring Diagrams, PC/ED Manuals and Owner Guides.

In addition, a publications order form can be obtained by writing to: Ford Publications, c/o Helm Inc., P.O. Box 07150, Detroit, MI 48207.

Section 2: Electrical

Fuse Information

CJB



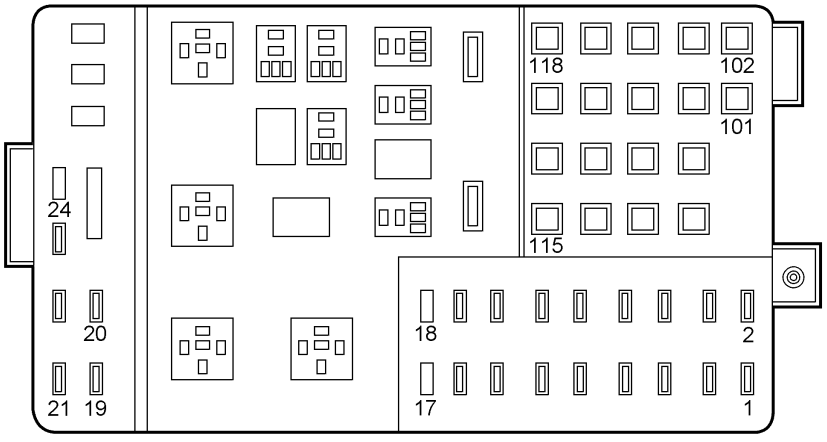
N0057889

Figure 3.

CJB

Fuse	Description
3 (5A)	Start: Audio/Police
9 (7.5A)	Police R/A Relay
29 (2A)	Police Hazard In
30 (2A)	Police Battery Saver
32 (2A)	Police Hazard Out
33 (10A)	Police Fire Suppression

BJB



N0057890

Figure 4.

Section 2: Electrical

BJB

Fuse	Description
108 (20A)	Police Accy Batt Feed
111 (50A)	Police Accy Batt Feed
112 (30A/40A)	Police Accy R/A
113 (50A)	Police Light Bar
114 (50A)	Police Accy Batt Feed
115 (50A)	Police Rear Powerpoint 1 or Crown
116 (50A)	Police Accy Batt Feed
117 (50A)	Police Accy Batt Feed
118 (50A)	Police Rear Powerpoint 2 or Crown
2 (20A)	Moonroof or Spotlights
12 (20A/25A)	Police Tray Lamps
15 (15A)	Police Accy Batt Feed
16 (20A)	Police Accy Batt Feed
22 (20A)	Police R/A
23 (20A)	Police R/A

Police Light Component Relay/Fuse Center

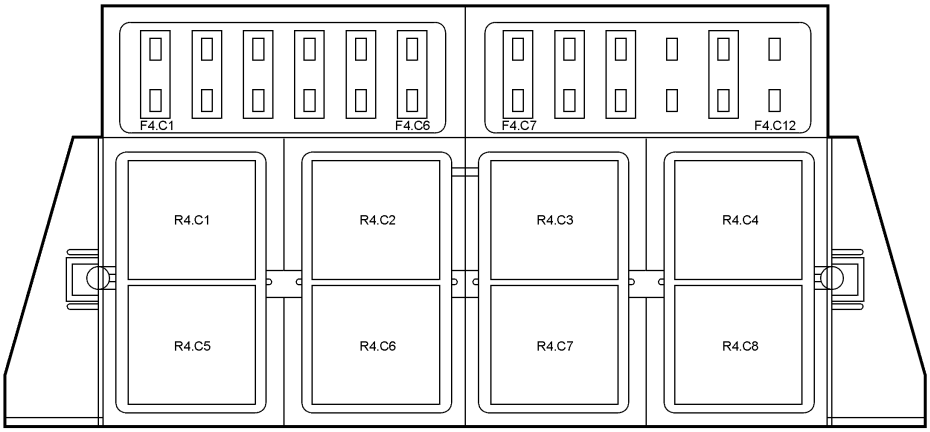


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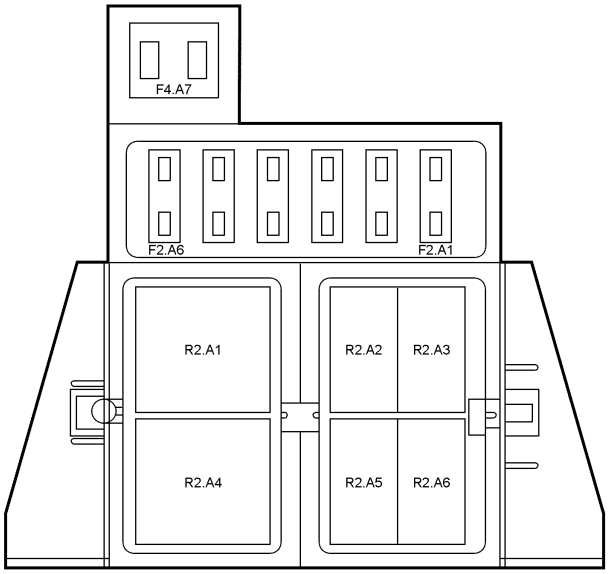
Figure 5.

Section 2: Electrical

Police Glove Compartment Relay/Fuse Center

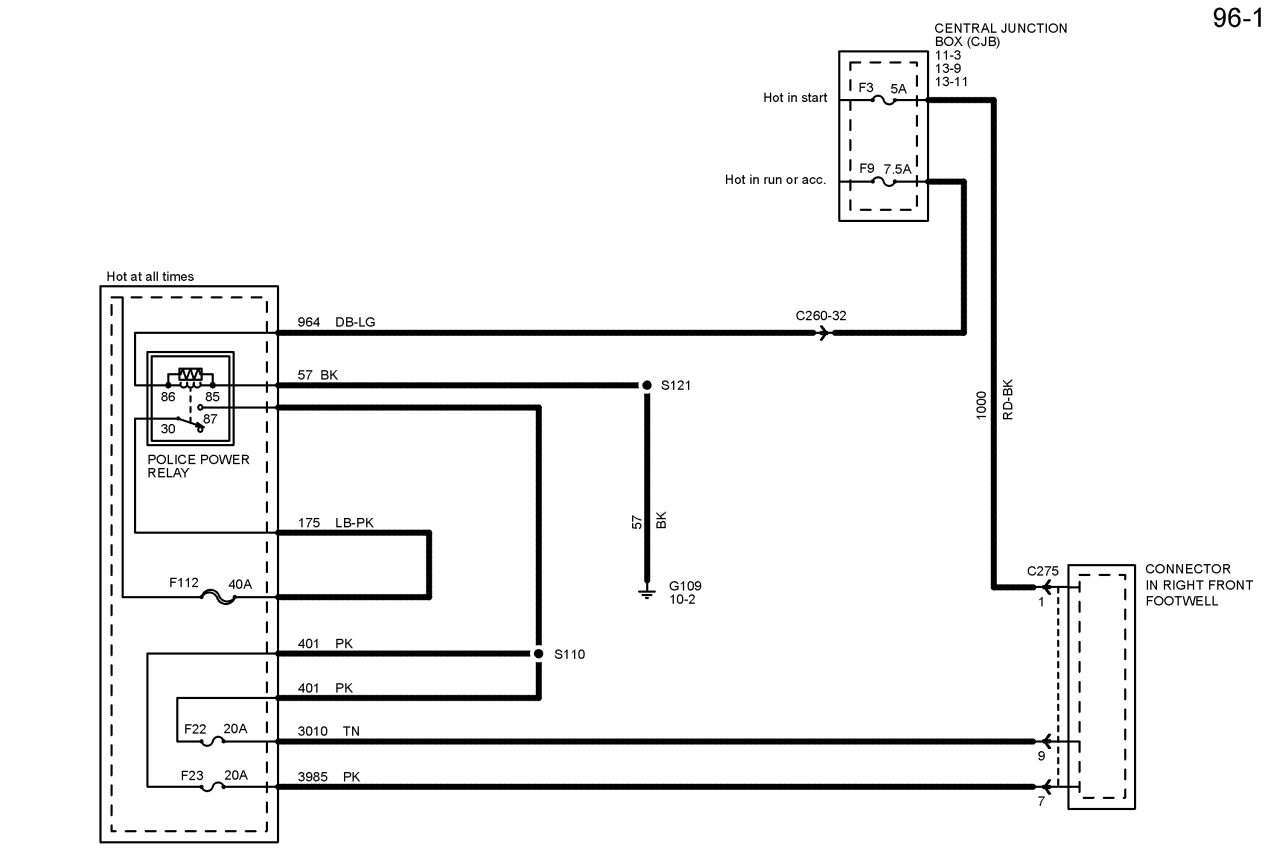


N0057892

Figure 6.

Section 2: Electrical

Wiring Diagrams



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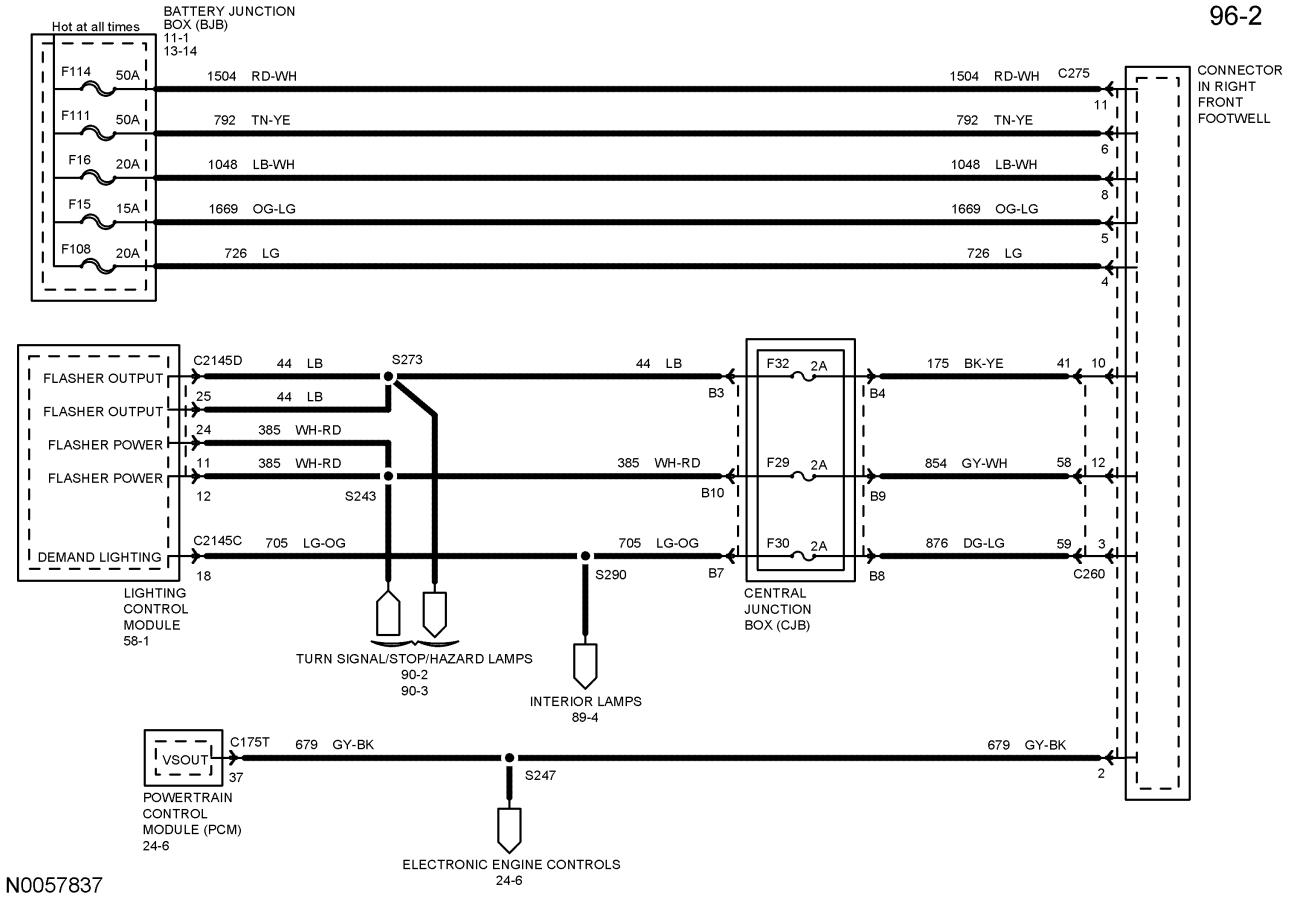
Section 2: Electrical



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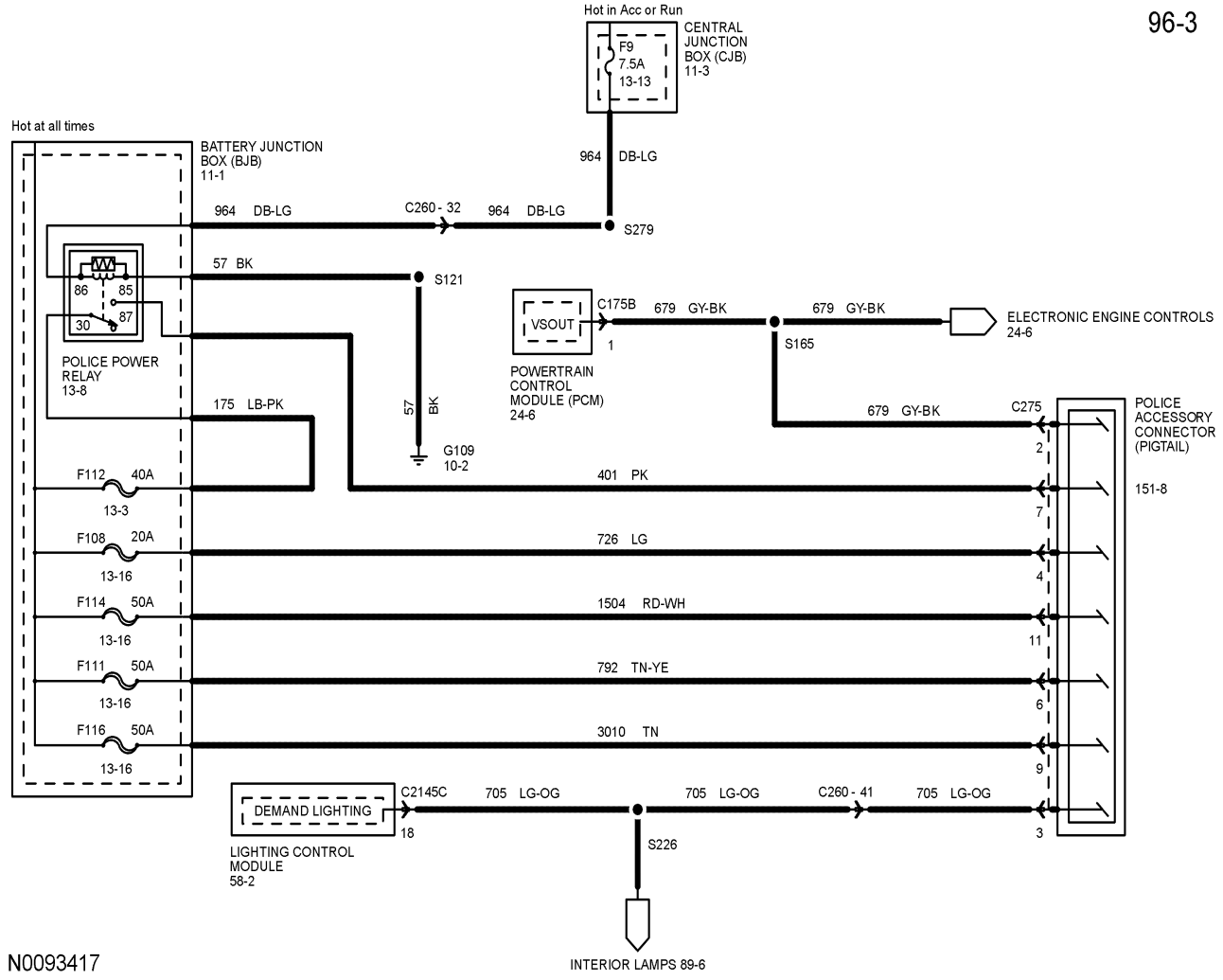

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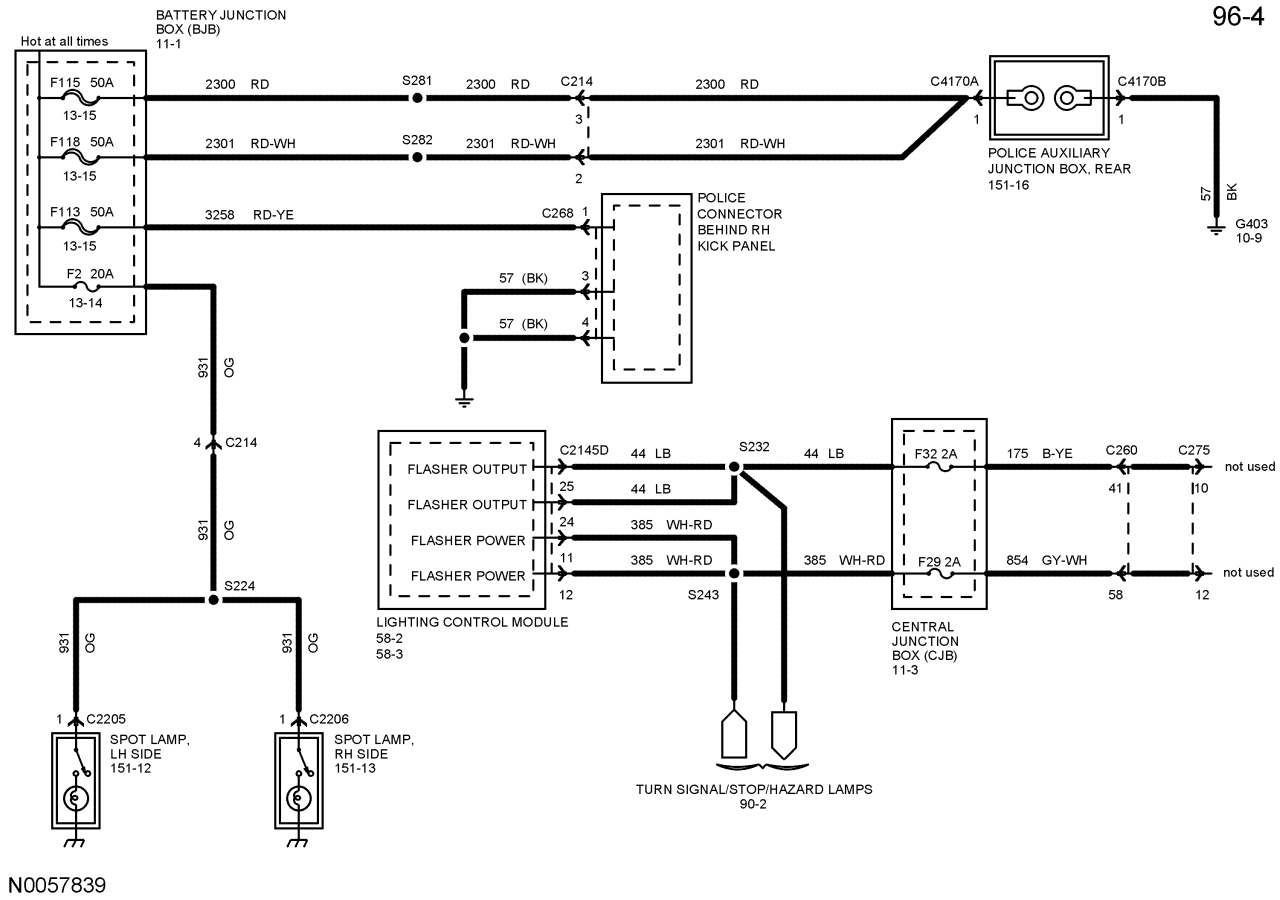

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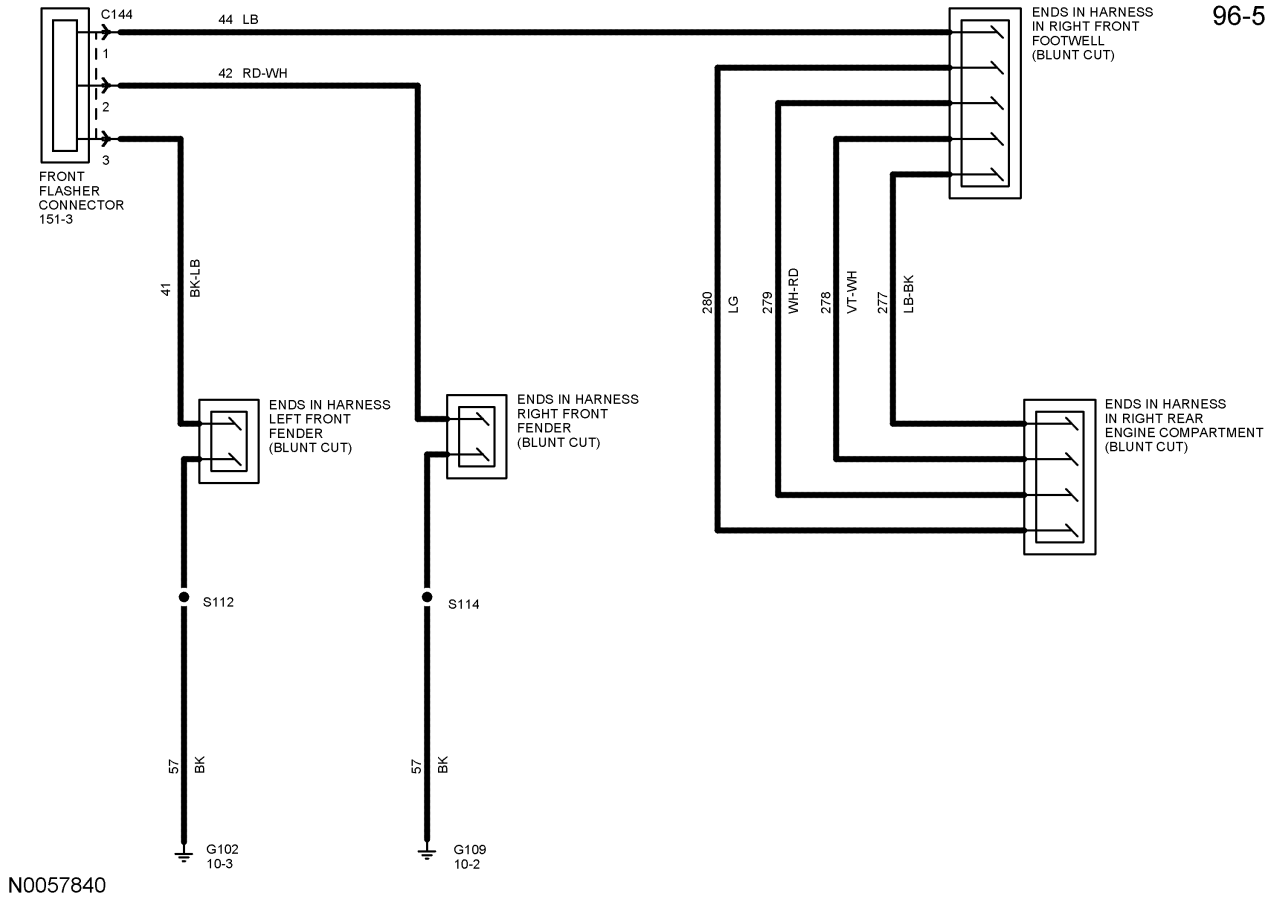

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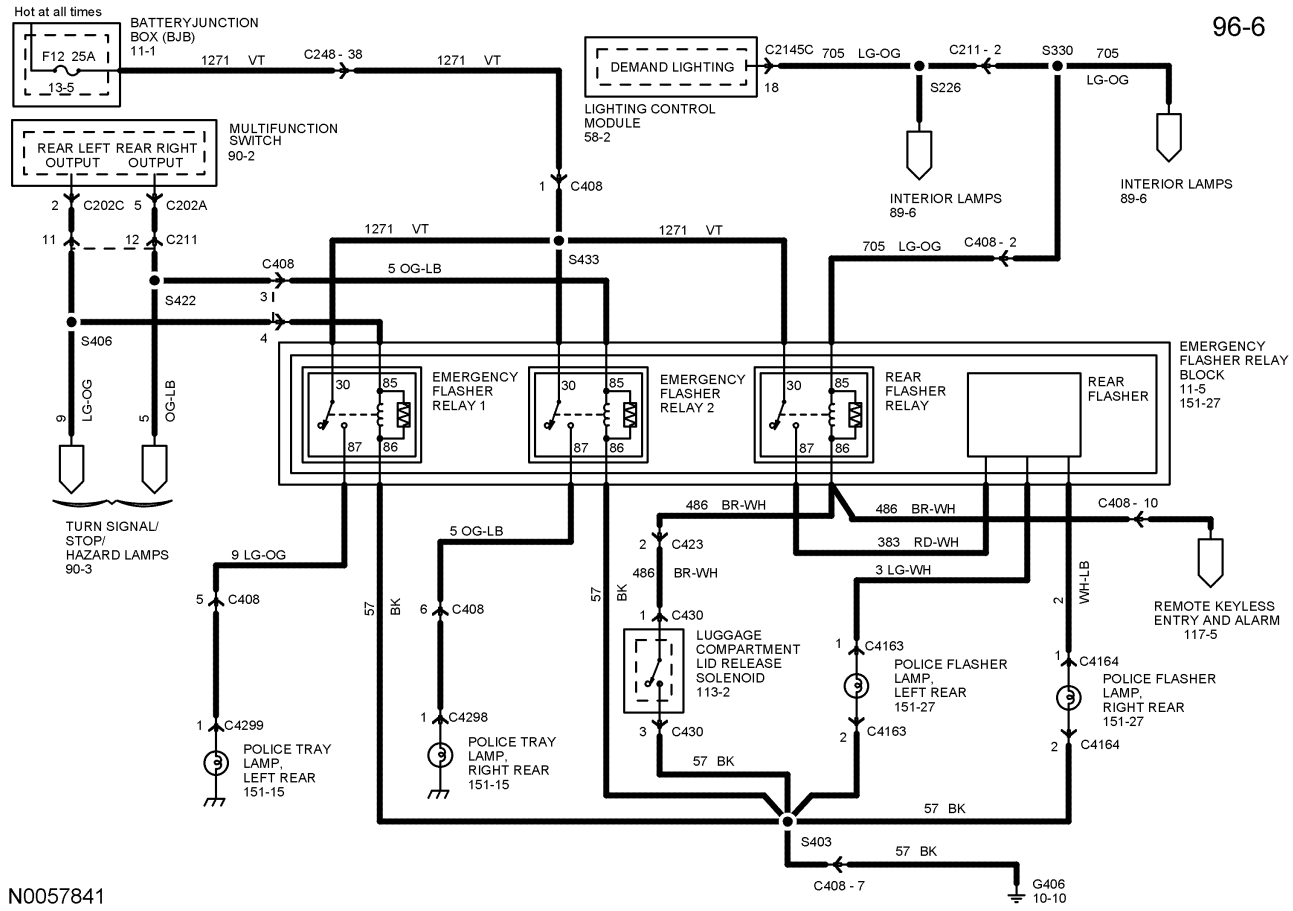

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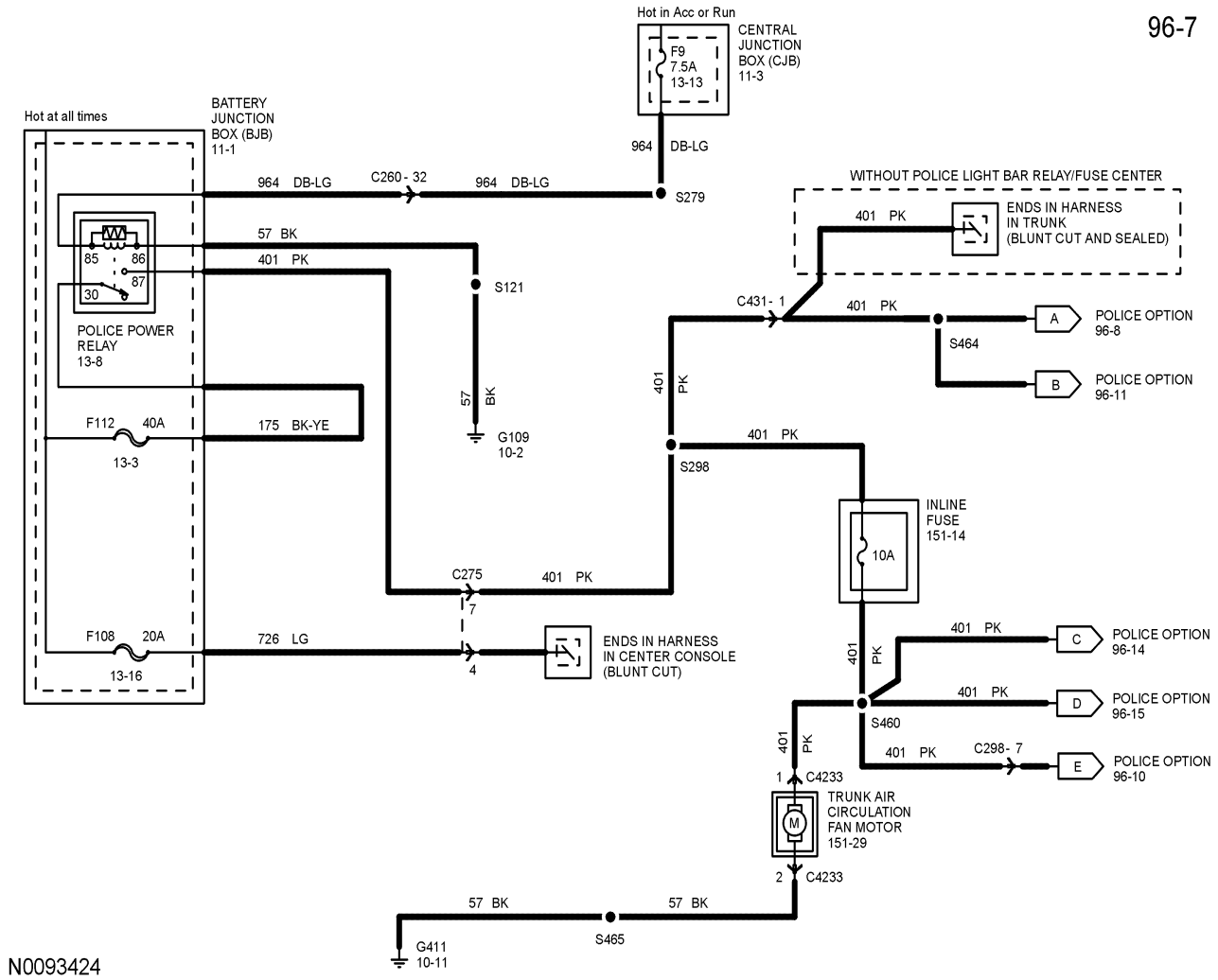

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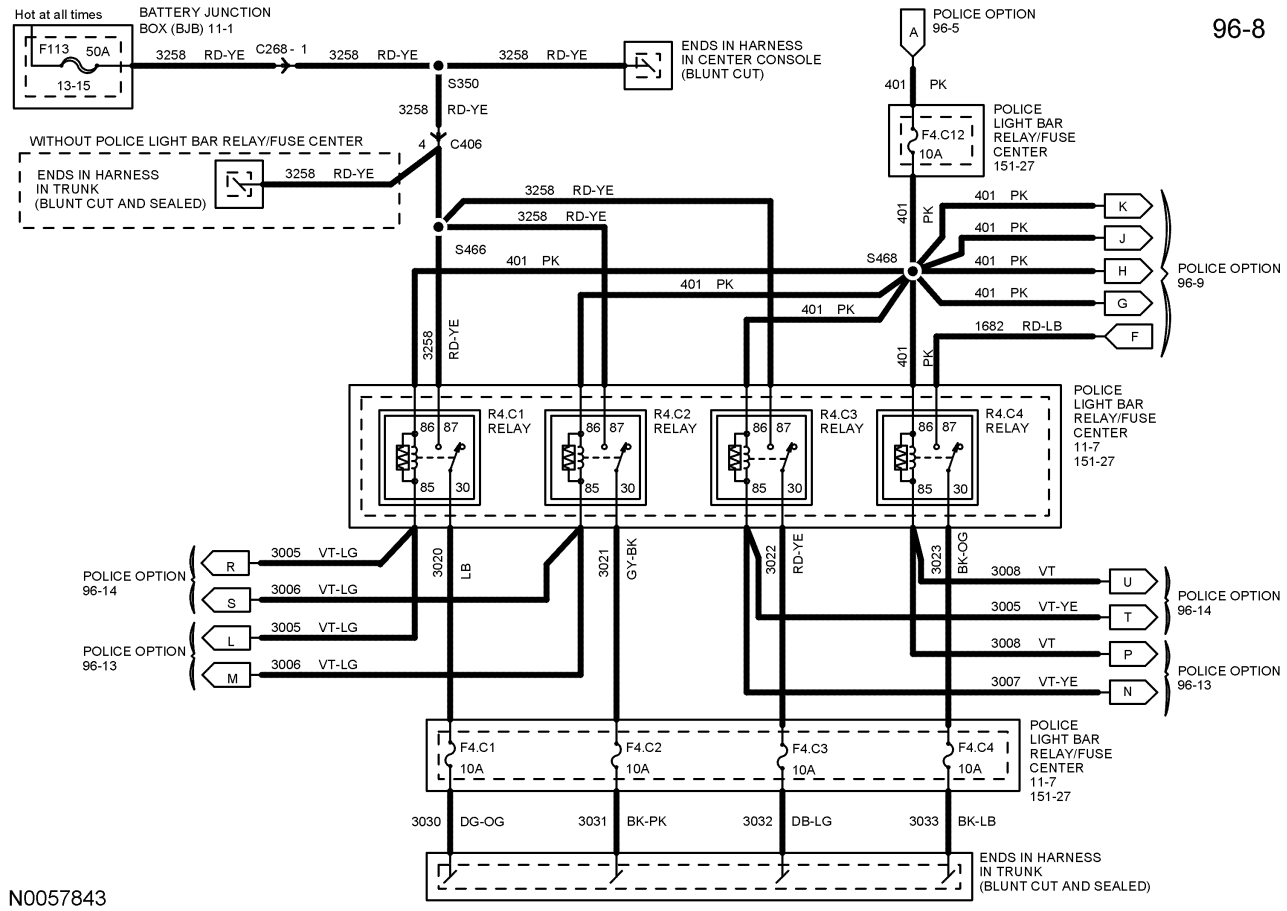

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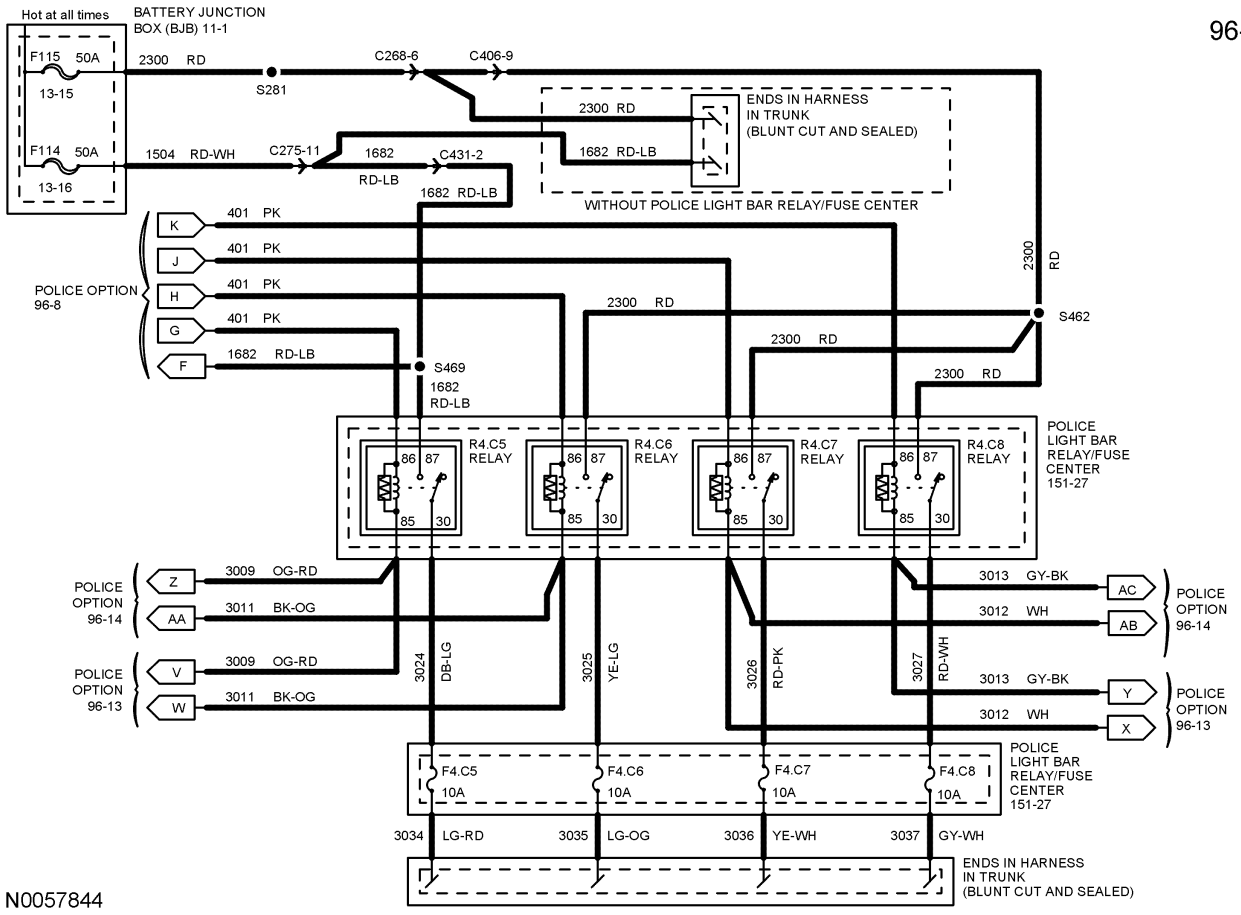

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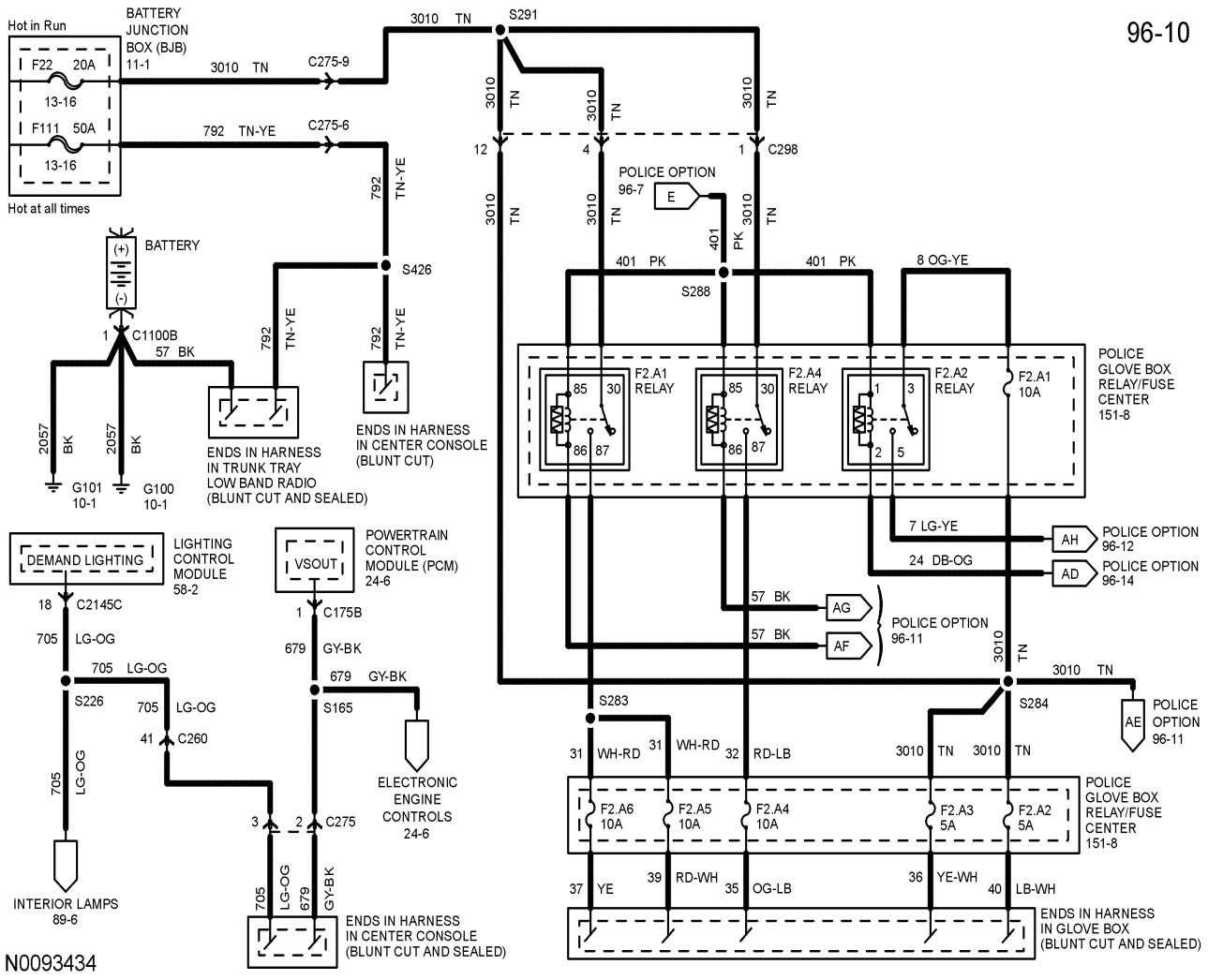

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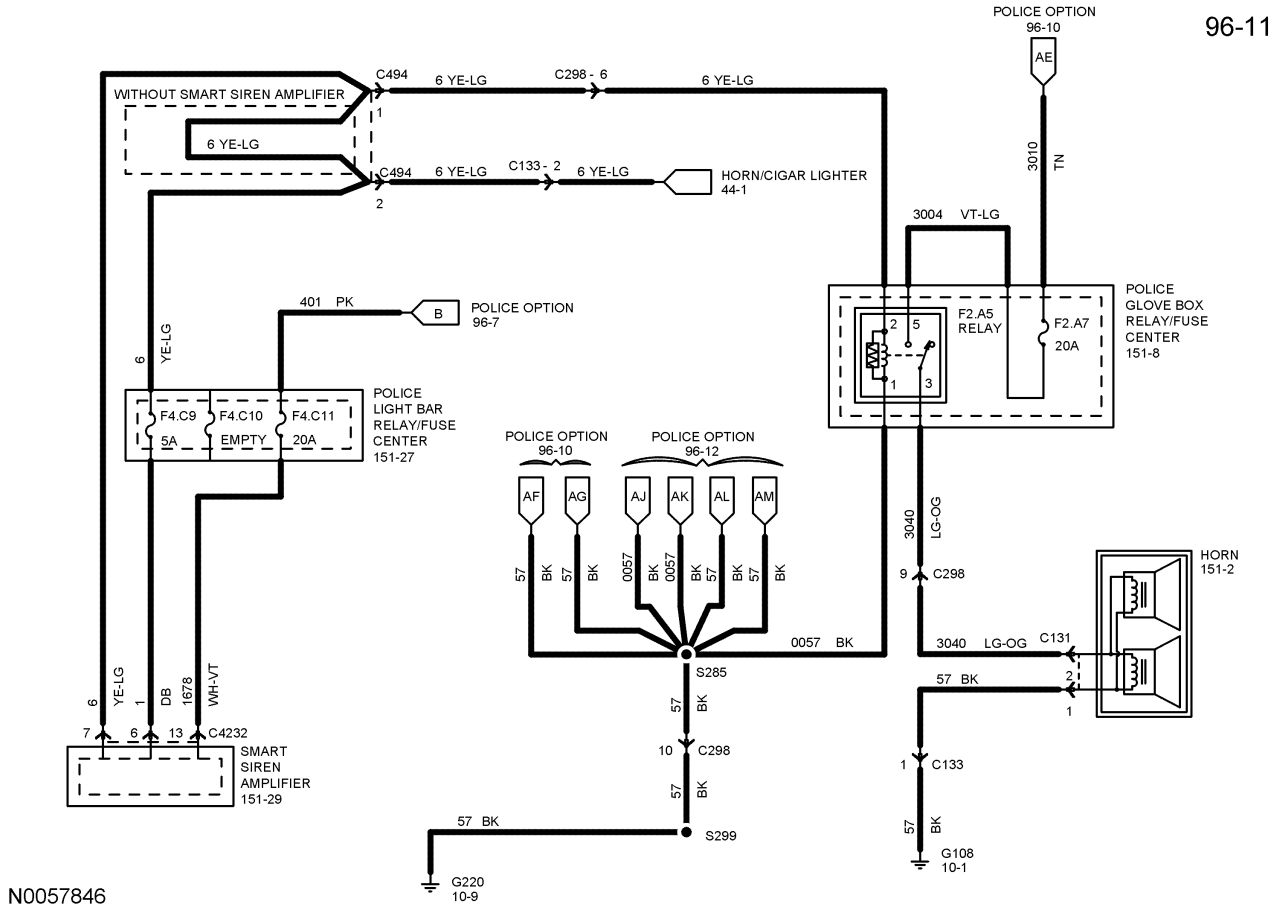

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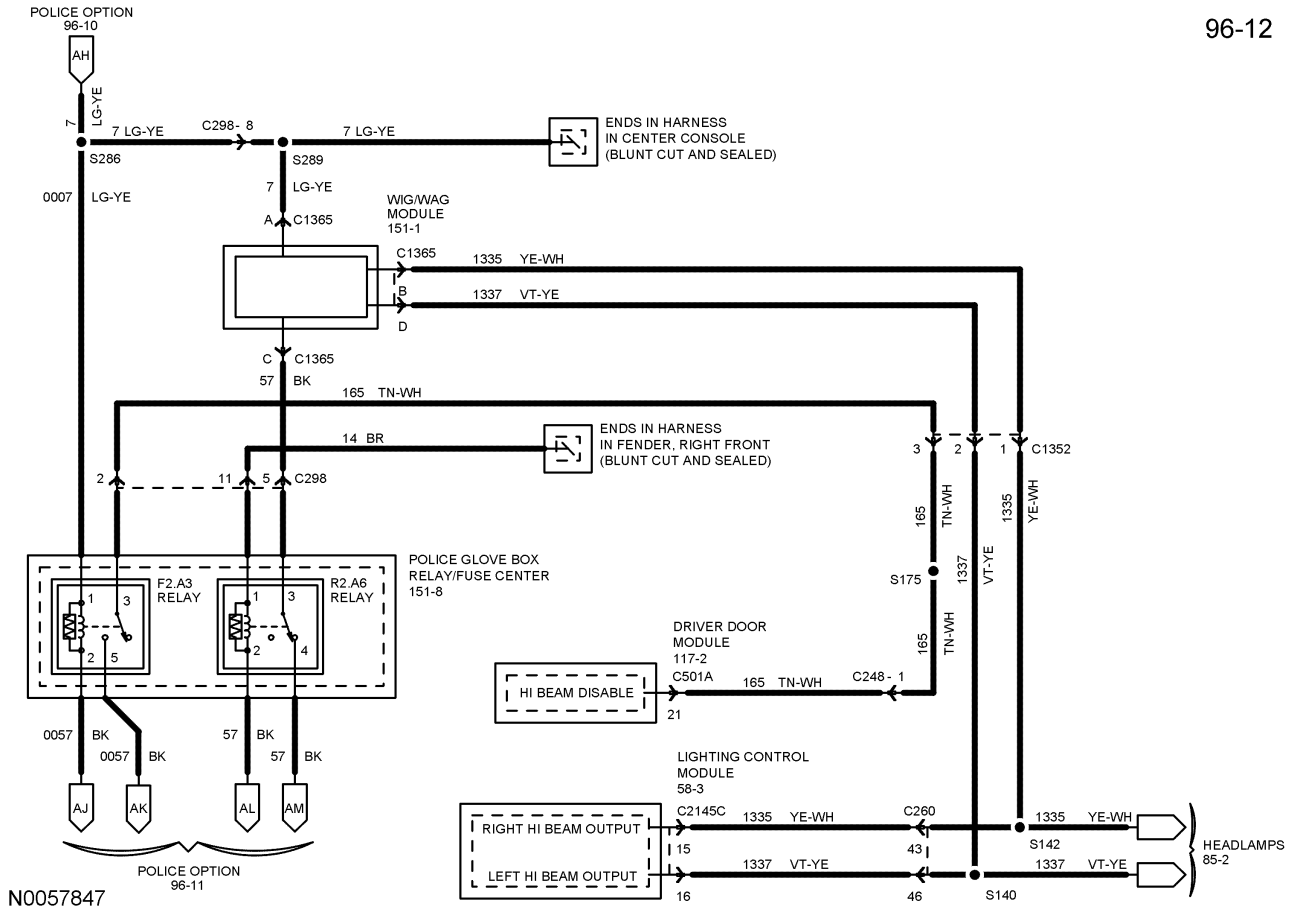

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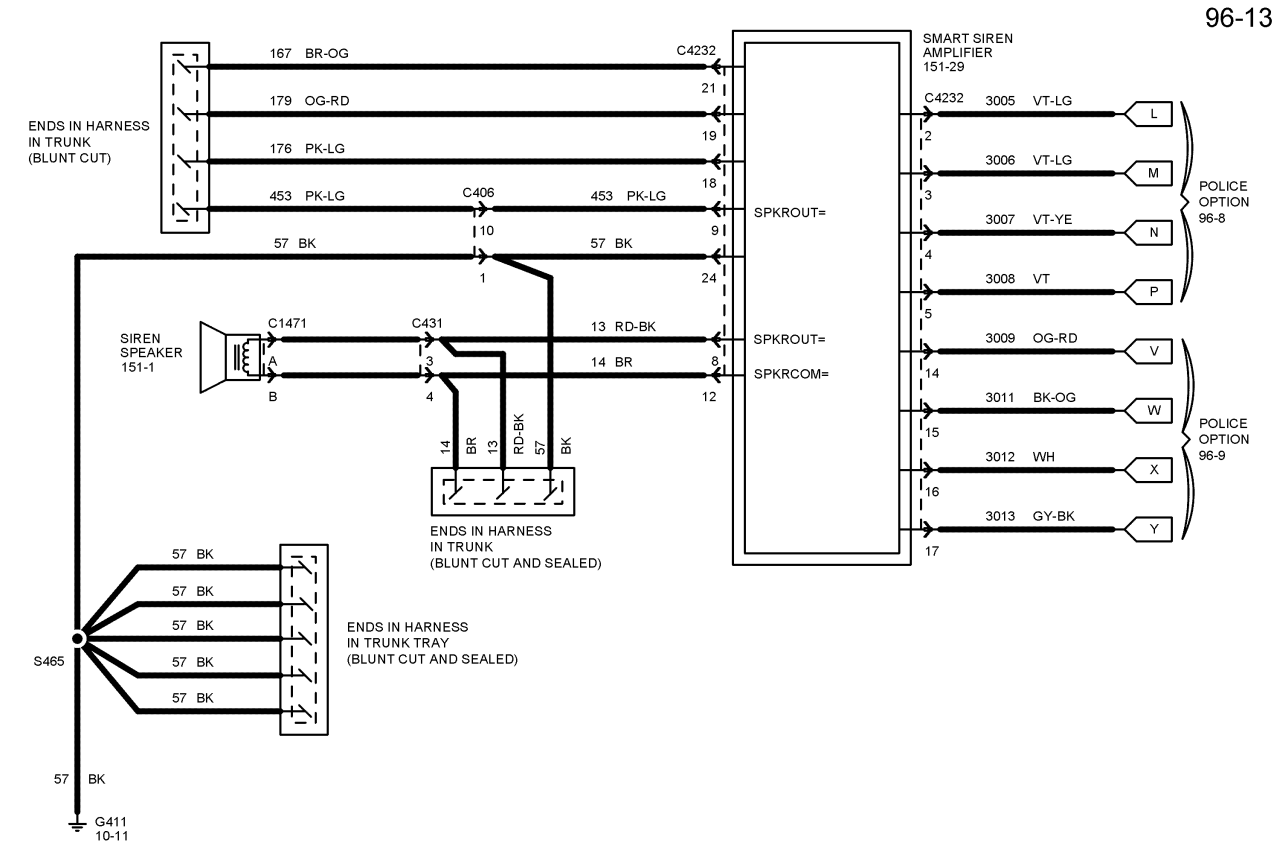

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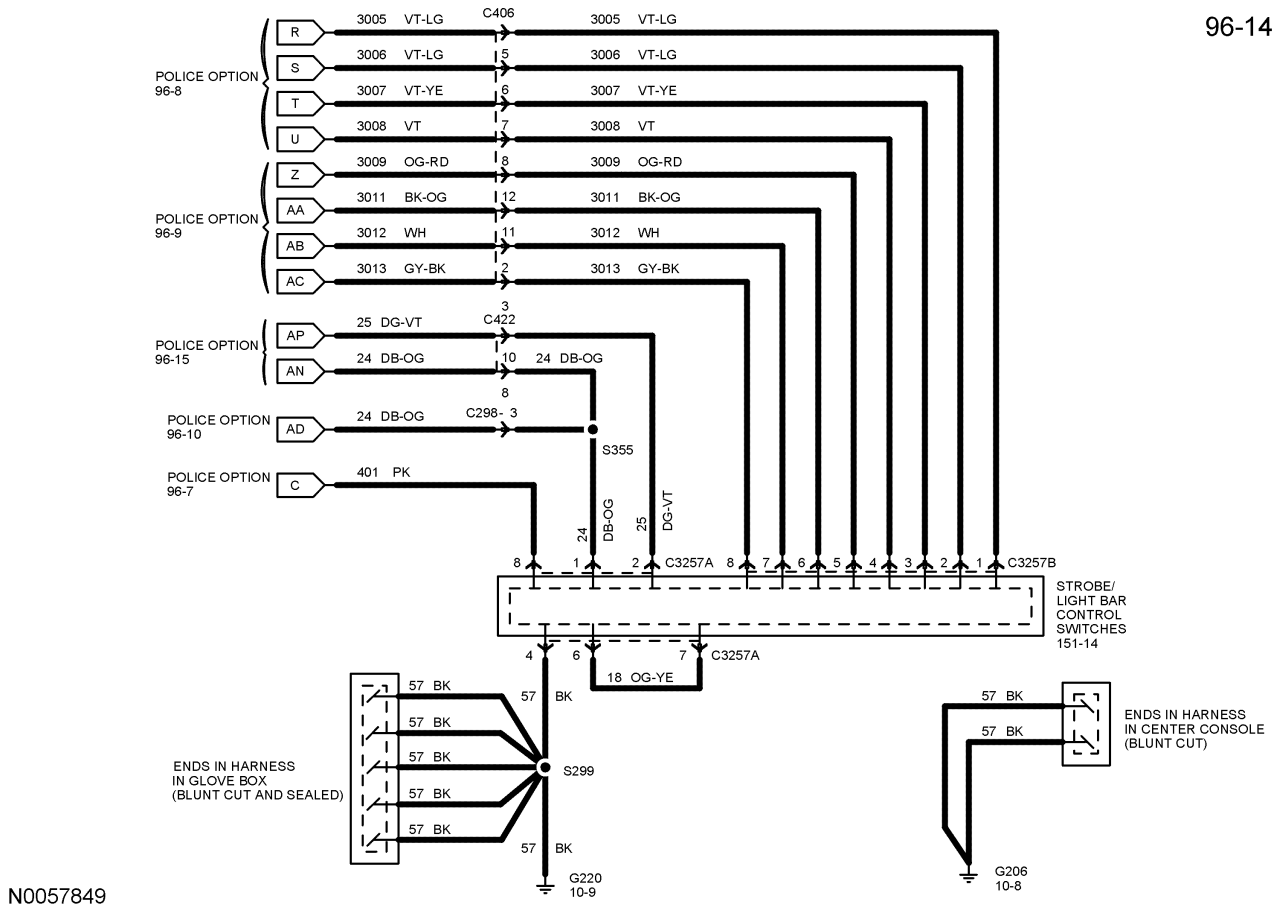

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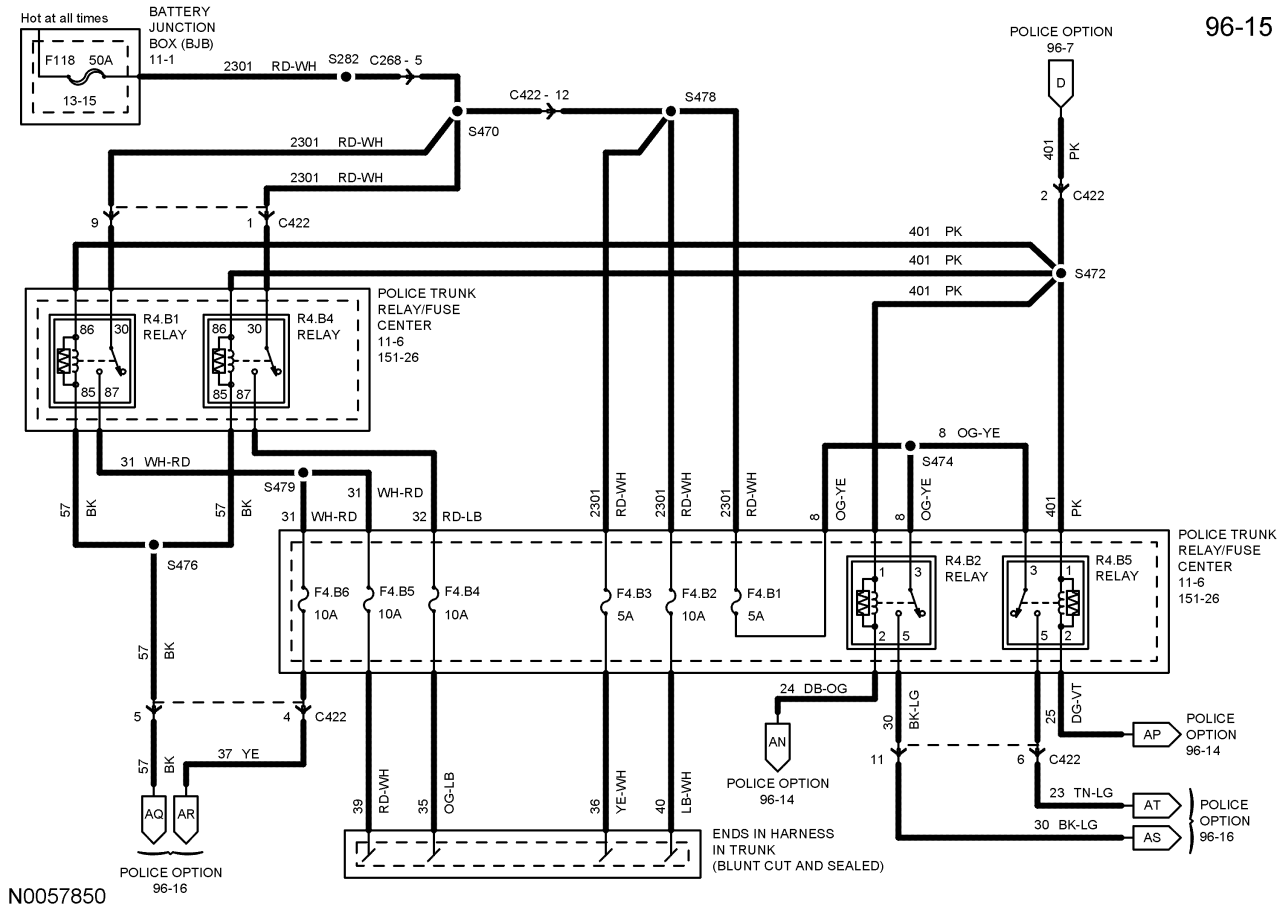

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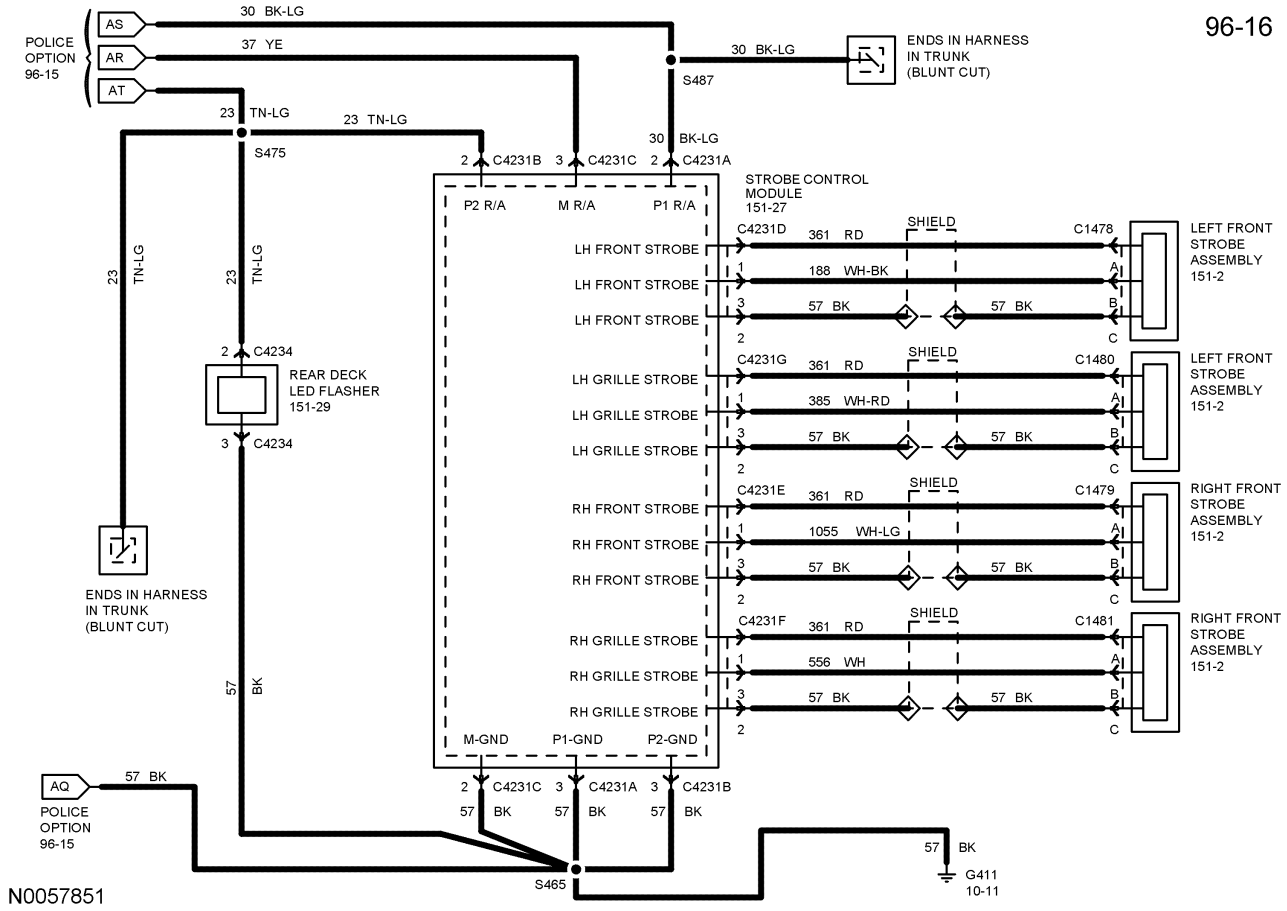
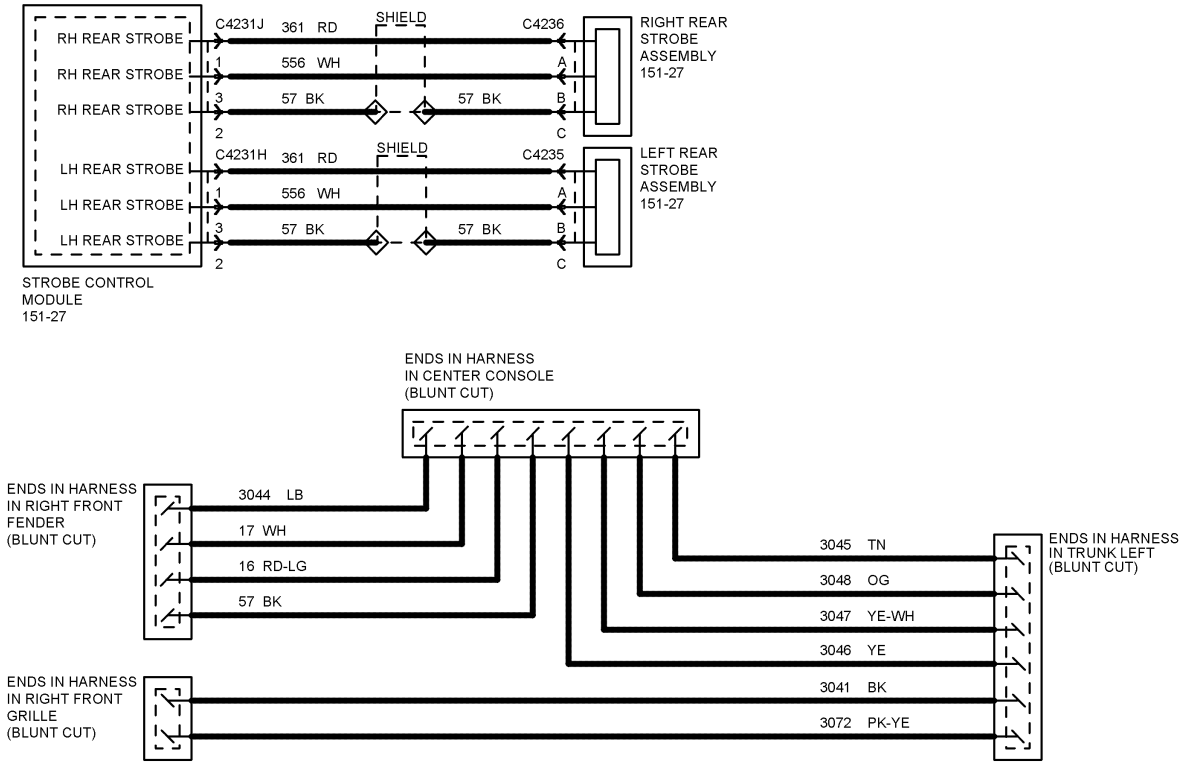


Section 2: Electrical

96-17



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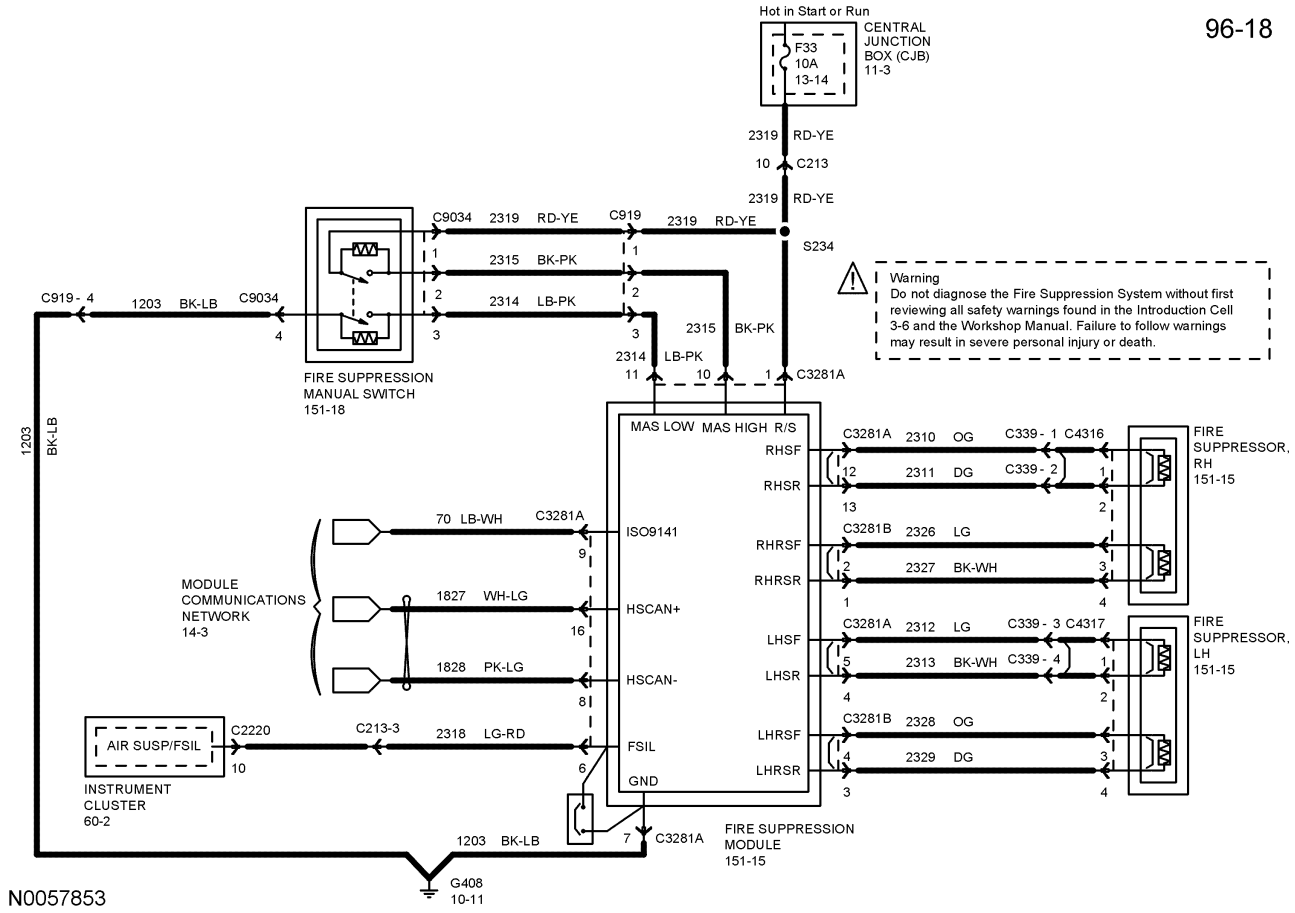
Section 2: Electrical



SECTION 3

Installation Considerations

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SECTION 3

Installation Considerations

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Section 3: Installation Considerations

Safety Considerations For Fire Suppression System Equipped Vehicles

If the vehicle is equipped with fire suppression system, follow the depowering procedure listed below before starting to work on the vehicle. Make sure to repower the fire suppression system after the work on the vehicle is complete.

Fire Suppression System Depowering

⚠ WARNING: The fire suppression system backup power supply must be depleted before lifting the vehicle or when installing components located near the fire suppression manual switch.

To deplete the power backup supply, disconnect the battery and wait at least 1 minute. Be sure to disconnect the auxiliary batteries and power supplies (if equipped). Failure to follow these instructions may result in personal injury.

⚠ WARNING: To reduce the risk of accidental deployment, do not use any memory saver devices. Failure to follow this instruction may result in personal injury.

⚠ WARNING: If the vehicle is equipped with fire suppression system, be sure that nobody is under the vehicle or near the rear axle area when the battery is connected due to possibility of an accidental fire suppression system deployment. Failure to follow these instructions may result in personal injury.

Note: The fire suppression system indicator lamp illuminates when the fire suppression module (FSM) fuse is removed and the ignition switch is ON. This is normal operation and does not indicate a fire suppression system fault.

Note: The fire suppression system must be fully operational and free of faults before releasing the vehicle to the customer.

1. Turn all vehicle accessories off.
2. Turn the ignition key to the OFF position.
3. Remove central junction box (CJB) fuse 33 (10A). For additional information, refer to the Owner's Literature.
4. Turn the ignition key to the ON position and visually monitor the fire suppression system indicator for at least 30 seconds. The fire suppression system indicator remains lit continuously (no flashing) if the correct FSM fuse has been removed. If the fire suppression system indicator does not remain lit continuously, remove the correct FSM fuse before proceeding to the next step.

Section 3: Installation Considerations

5. Turn the ignition key to the OFF position.
6. Note: If battery voltage is required, the battery must be connected **without** installing the FSM fuse.

   Disconnect the battery and wait at least one minute.

Fire Suppression System Repowering

1. Install CJB fuse 33 (10A) to the CJB and close the cover.
2. Note: This step is not required if the battery was connected after depowering procedure.

   Connect the battery.
3. Prove out the fire suppression system as follows:

   Turn the ignition key from the OFF to the ON position and visually monitor the fire suppression system indicator. The fire suppression system indicator will illuminate for approximately 6 seconds and then turn off. If a fire suppression system fault is present, the fire suppression system will fail to illuminate for the first 6 seconds, will remain lit continuously or will flash. The flashing might not occur until approximately 30 seconds after the ignition key has been turned from the OFF to the ON position. This is the time required for the fire suppression module to complete the testing of the fire suppression system. If this occurs, the fire suppression system must be diagnosed and repaired.

Section 3: Installation Considerations

Push Bumpers

Effect On Air Bag Deployment

Different push bumper designs may each have different deformation characteristics in a crash situation that may or may not affect the deployment of air bags. Without the benefit of crash tests on vehicles equipped with push bumpers (there are a number of different styles available), it is the opinion of Ford Motor Company that installation of some push bumpers could affect the timing of the air bag deployment. Use of a push bumper that mounts solely to the vehicle's bumper should not have a significant effect on air bag deployment.

Effect On Weight Distribution

The balance and weight distribution of a vehicle is carefully planned to achieve optimal stability and handling. Push bumpers can change this weight distribution by adding excessive weight to the front of the vehicle. There are many different styles of push bumpers available. Depending on the mounting and weight of the push bumper to be installed, it could have an adverse effect on the handling of a vehicle. Always verify the vehicle ride height after the addition of a push bumper. For additional information, refer to Section 1: General Information, Bumper Height Verification in this guide. Adjust the ride height if the measurements are not within specifications.

Airflow

The engine cooling system on a vehicle relies on proper airflow through the radiator to keep the engine at its proper operating temperature. When adding a push bumper to a vehicle, make sure this airflow is not obstructed, especially when lights and sirens are mounted on the push bumper. Reduced airflow could put additional strain on the cooling system and shorten the operational life of related components. During the installation process, keep the placement of components away from the grille area of the vehicle.

Skid Plates

There are a few different skid plate designs and mounting locations available. When skid plates are mounted under the front of the vehicle covering the underside of the engine compartment, proper airflow that is necessary for the cooling system of the engine could be affected. As with push bumpers that obstruct the airflow entering the engine compartment, skid plates can obstruct airflow exiting the engine compartment. This obstruction may put a strain on the cooling system of the engine and shorten the operational life of related components.

Siren and Grille Lights

The engine cooling system relies on proper airflow through the radiator to keep the engine at its proper operating temperature. When adding sirens and grille lights to a vehicle, make sure this airflow is not obstructed. Reduced airflow could put additional strain on the cooling system and shorten the operational life of related components. During the installation process, keep the placement of components away from the grille area of the vehicle.

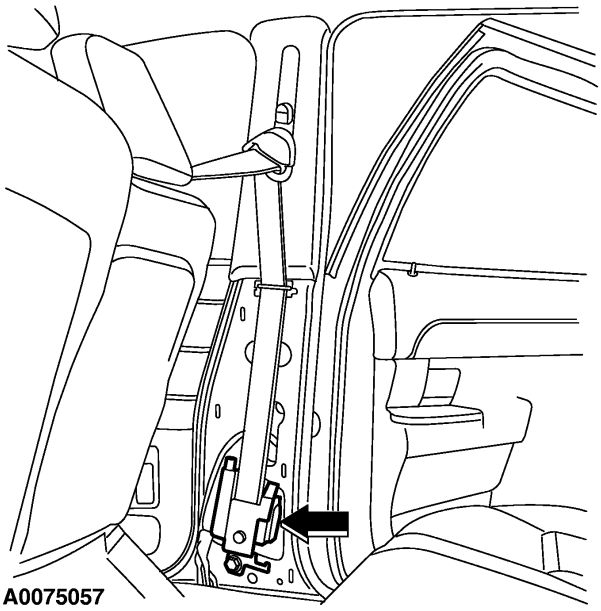
Section 3: Installation Considerations

Partition Installation Guidelines

⚠ WARNING: The partition and the installation hardware of the partition must not interfere with the proper operation of the safety belt, safety belt retractor, side impact sensor and the safety belt height adjusters. Failure to follow these instructions may result in personal injury.

⚠ WARNING: Installation of prisoner partitions may increase the risk of injury to front seat occupants if the vehicle is impacted from a high speed rear end collision. This risk should be balanced by the law enforcement agency against the risk of injury to the officer associated with prisoner transportation. Failure to follow these instructions may result in personal injury.

Safety Belt Retractor



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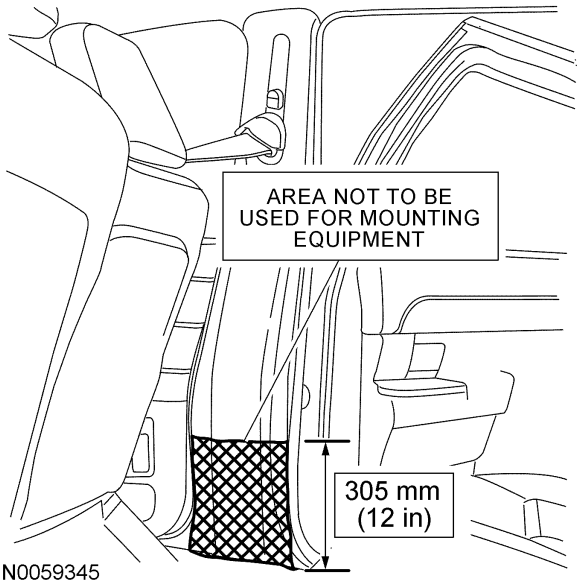
Section 3: Installation Considerations

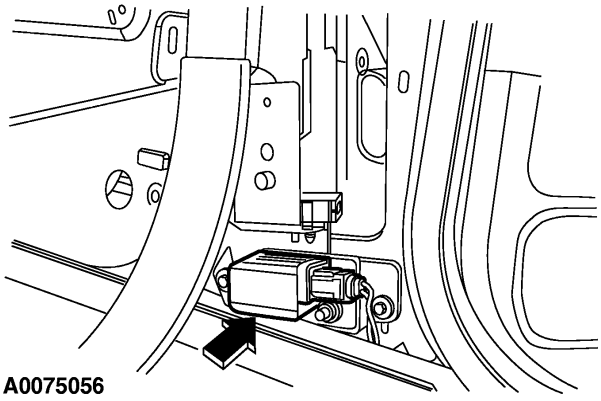
The safety belt retractors are located in the base of the B-pillars. The pretensioner located in the retractor is referred to as the ‘‘safety belt retractor pretensioner’’. In the event of an air bag deployment, pretensioners provide improved occupant protection by rapidly removing slack from the safety belt. Removing slack from the safety belt helps to properly position the occupant and allows for maximum effectiveness of the safety belts and the air bags.

- Do not use the safety belt retractor bolts for mounting the partition.
- Do not mount any partition hardware on the inboard side of the B-pillar within the bottom 305 mm (12 in).
- Do not mount any partition hardware that will interfere with the proper sealing of the door.

Refer to the following illustration for locations that must not be used for partition mounting:



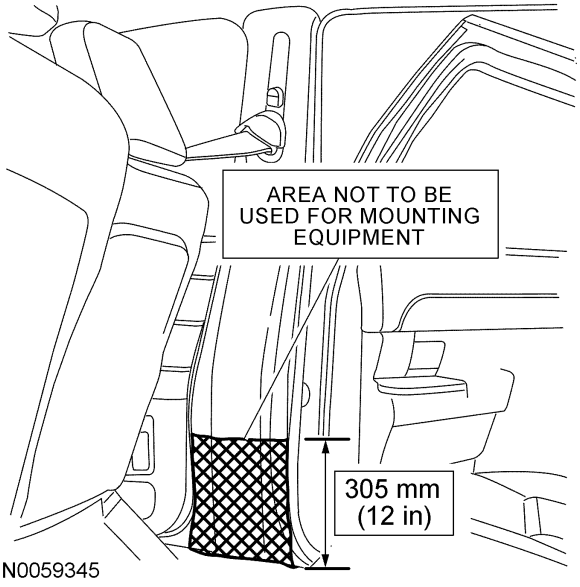
Side Impact Sensor



Section 3: Installation Considerations

The side impact sensors are located in the base of the B-pillars. They are positioned below the safety belt retractors. The location and orientation are critical for the correct operation of all the impact sensors. Do not use the attachment bolts of the impact sensors to mount any police equipment.

Refer to the following illustration for locations that must not be used for partition mounting:



Console Design and Installation

Restraint Control Module (RCM)

The restraint control module (RCM) is mounted on the center tunnel under the instrument panel. The RCM orientation is critical for proper operation of the restraint systems. Do not relocate the RCM. Do not use the RCM mounting bolts for attachment purposes of any equipment.

Air Bag Deployment Interference

⚠ WARNING: Do not place objects or mount equipment in front of the air bag module cover or in front seat areas that may come in contact with a deploying air bag. Dash, tunnel or console-mounted equipment should be placed within the specified zone. Dash, tunnel or console-mounted equipment should not be placed outside of the specified zone. Failure to follow these instructions may result in personal injury.

Section 3: Installation Considerations

⚠ **WARNING: Do not mount equipment between the side of the front seat and the door trim that would block deployment of the side air bag. Failure to follow these instructions may result in personal injury.**

Driver/passenger air bags affect the way police equipment can be mounted in police vehicles. Any surfaces that could come into contact with an air bag during deployment must not damage the air bag or alter its deployment path. Sharp edges, corners or protrusions could damage the nylon air bag material and reduce the effectiveness of the air bag. Do not mount or place any objects in the deployment path of an air bag. Air bags must be allowed to fully deploy without restriction. The deployment of air bags is not compatible with any configuration of police equipment mounting that places objects in the air bag deployment path. Equipment mounted or placed in the deployment area of an air bag will reduce the effectiveness of the air bag, damage the air bag and potentially damage or dislodge the equipment.

Air bag deployment drawings are provided in Section 5. Consult the drawings before equipment is installed inside the passenger compartment to make sure that the mounted equipment does not interfere with air bag deployment.

Fire Suppression System

The fire suppression system works on similar principles as the restraints system. When installing additional equipment, caution must be taken not to interfere with the fire suppression system components.

The fire suppression system components are:

- Fire suppression system module
- Fire suppression manual activation switch
- Fire suppressors
- Fire suppression system harness

The fire suppression module is mounted on the center of the rear floor panel under the back seat cushion. The fire suppression module orientation is critical for proper operation of the fire suppression system. Do not use the fire suppression module mounting bolts for attachment purposes of any equipment.

The fire suppression manual activation switch is located on the front side of the headliner between the sun visors. Do not mount any equipment that may obstruct the easy access to the switch by the occupants of the front seats.

The fire suppressors are located under the body in front of the fuel tank and above the rear axle. Do not install or place any object or equipment near the fire suppressors. Installation of equipment in the fire suppressors deployment area will reduce the effectiveness of the fire suppressors, damage the fire suppressors and potentially damage or dislodge the equipment.

Section 3: Installation Considerations

Seat Bolts

The vehicle safety belts and seat assemblies are factory installed in their correct locations. Seat attaching bolts are not to be used as attachment points for any equipment. Any added material between the seat bolt and the seat frame could have unpredictable effects on the seat bolt torque. If the safety belts are removed for any reason, all of the appropriate attaching hardware must be hand started and then tightened to the correct torque specifications as per the workshop manual. Proper operation must be verified before returning the vehicle to service.

Driveshaft Clearance

When installing police equipment such as a console or other equipment in the console area, it is important to consider the available clearance between the underbody and the driveshaft. Never use self-tapping screws and never use screws that are longer than necessary in the console area.

Electrical

PARK/NEUTRAL Signal

NOTICE: **Do not splice in this circuit with 12 volts or a ground signal as damage to the vehicle starting system will occur.**

Note: The PARK/NEUTRAL position signal can only be monitored with a 5-volt reference signal. When the vehicle is in PARK or NEUTRAL, the reference voltage is grounded through the starter relay control side (reference voltage drops to low). When the vehicle is not in PARK or NEUTRAL, the circuit is open and the reference voltage remains high.

In the event that the police equipment to be installed requires a PARK/NEUTRAL signal, there is a specific circuit that should be used. As illustrated in the Crown Victoria Wiring Diagram manual, circuit 262 (BN/PK) is routed from the CJB fuse 1, to the digital transmission range sensor C167 Pin 12. Refer to Splices and Repairs under General Guidelines in Section 2 of this Guide.

Vehicle Speed Signal

NOTICE: **Do not make electrical connections to vehicle electrical systems not specifically designed for police equipment installations.**

When adding police equipment that requires a vehicle speed signal input, such as VASCAR, use the available vehicle speed signal connection from the power distribution connector (pin 2, circuit 679 [GY/BK]). This is the only recommended access to the vehicle speed signal. For additional information on the vehicle speed signal, refer to the Crown Victoria Wiring Diagrams manual.

Section 3: Installation Considerations

Speed Signal Characteristics

Note: Changes in tire sizes from that supplied with the vehicle can vary the pulse count and result in inaccurate speed calculations.

The vehicle speed signal is a DC-coupled square wave that varies in frequency in proportion to vehicle speed. The characteristics of the square wave are detailed below.

- Maximum High Signal (VBAT): Battery Voltage
- Minimum High Signal (VBAT): 3.67 Volts
- Maximum Low Signal: 1.1 Volts
- Minimum Low Signal: -1.0 Volt
- Maximum Ground Offset: ±1.0 Volt
- Rise Time (t_r): 10 μ sec less than or equal to t_r less than or equal to 250 μ sec
- Fall Time (t_f): 10 μ sec less than or equal to t_f less than or equal to 250 μ sec
- Duty Cycle: 50% ± 10%
- Pulse Rate: 1.3808 Hz/kph (2.22 Hz/mph)

Transmission Sensors

The 4R75E automatic transmission is used in all Crown Victoria applications. All Crown Victoria vehicles are equipped with the same heavy-duty transmission oil cooler. The Police Interceptor transmission is unique in the following areas:

- Torque converter
- PCM programming to produce unique transmission shift characteristics
- Longer tailshaft and extension housing to mate with the aluminum driveshaft

Mobile communication systems may harm the operation of the vehicle, particularly if they are not properly designed for automotive use or are not properly installed. For example, when operated, such systems may cause the engine to stumble or stall and may affect 4R75E transmission operation. Citizen band (CB) transceivers, garage door openers and other transmitters whose power output is 5 watts or less will not ordinarily affect the operation of the vehicle.

Battery Saver

All Crown Victoria vehicles are equipped with a battery saver feature, which is a function of the lighting control module (LCM). The battery saver will disrupt power to the interior lamps after 10 minutes, the demand lamps after 30 minutes and the headlamps after 10 minutes. Interior lamps include the dome lamps and the instrument cluster lamps. Demand lamps include the front map lamp, glove compartment lamp, luggage compartment lamp and engine compartment lamp. Turning the ignition switch to the RUN or ACC position will terminate the battery saver feature by disabling the interrupt timers and reinstate power to the lamps.

Section 3: Installation Considerations

A reset event will set the interior lamps interrupt timer to 0. The reset events for the interior lamps interrupt timer are: turning on the interior lamps by using the dome lamp switch or opening any door (as detected by the door ajar switches).

A reset event will set the demand lamps interrupt timer to 0. The reset events for the demand lamps interrupt timer are: opening the luggage compartment door or opening any door (as detected by the door ajar switches).

SECTION 4

Trunk Mounting Considerations

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Section 4: Trunk Mounting Considerations

Trunk Equipment Mounting Guide

The following trunk equipment mounting templates illustrate where fasteners are not allowed, where blunt head fasteners must be used and where standard fasteners are allowed. Be aware of the following component locations when mounting equipment in the trunk:

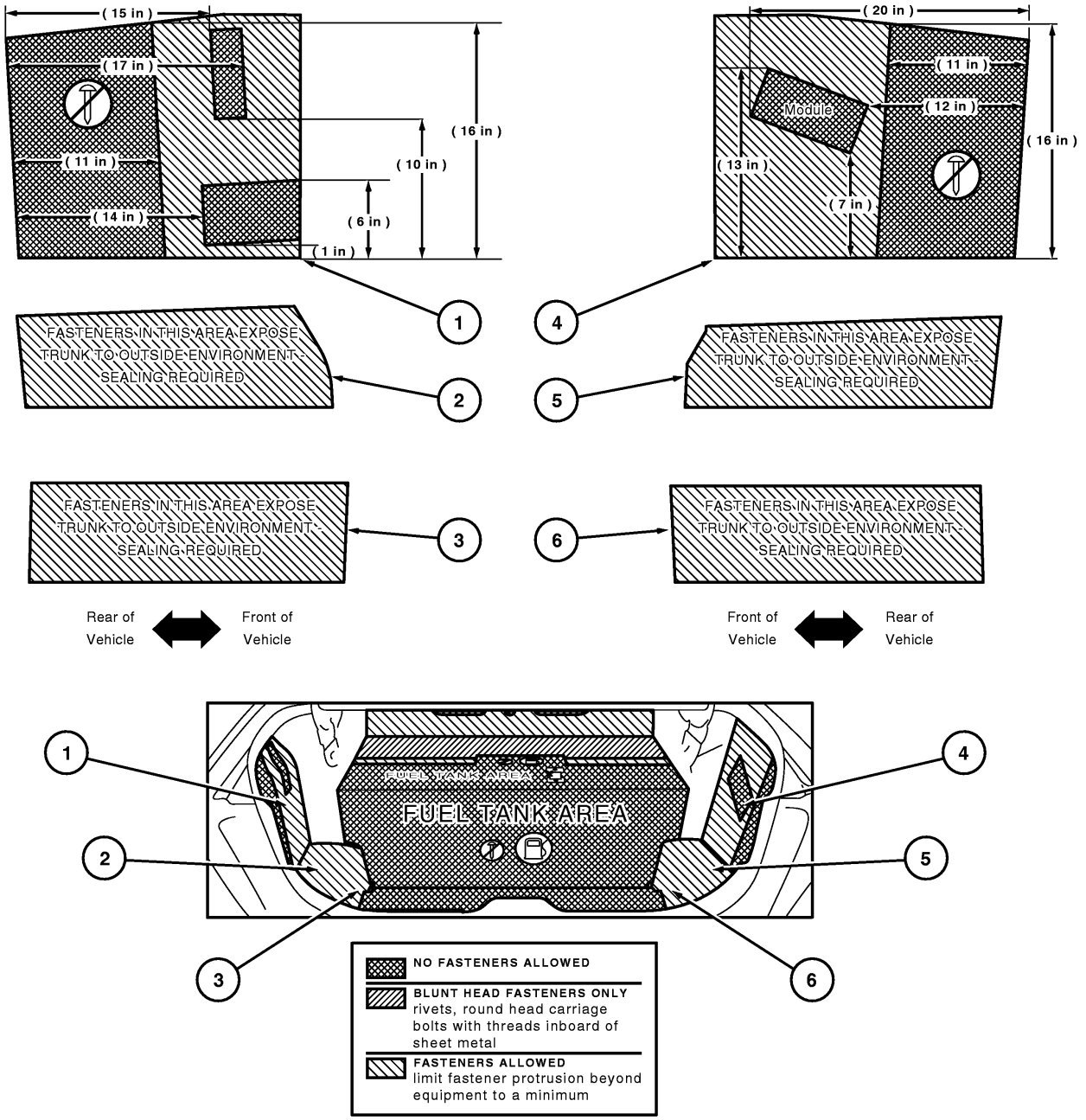
- Fuel tank
- Fuel lines
- Brake lines
- Evaporative emissions canister
- Electronic modules
- Wiring harnesses

Note: Refer to Section 5: Reference Information in this guide for additional illustrations showing the location of the fuel tank, fuel lines, brake lines, wiring harnesses, evaporative canister and the fuel pump shut-off switch.

Note: Trunk equipment mounting templates are for reference only. Inspection behind trunk side trim and under carriage advised for accurate component locations.

Section 4: Trunk Mounting Considerations

Trunk Sides



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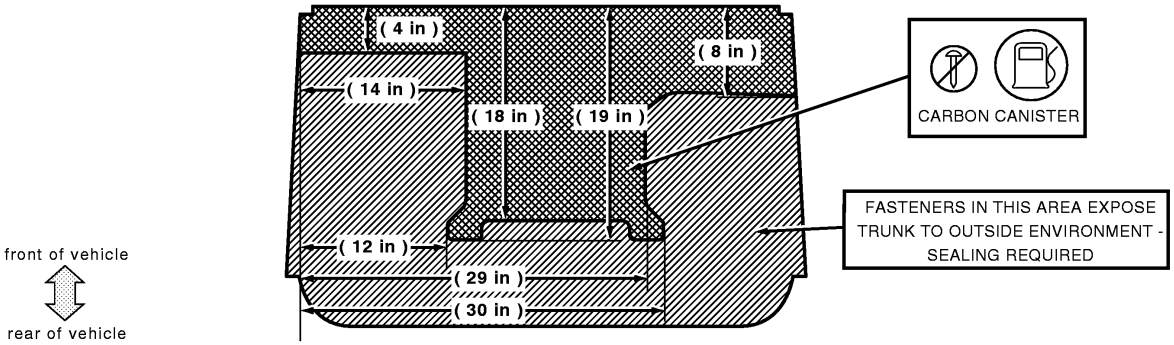
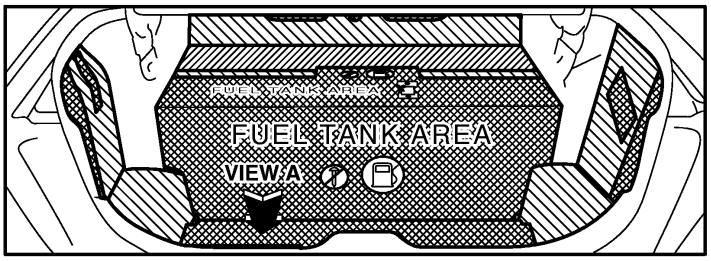
Section 4: Trunk Mounting Considerations

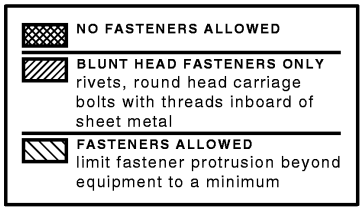
Note: For the location of the fuel pump shut-off switch, refer to Section 5: Reference Information in this guide.

Trunk Bottom



VIEW A





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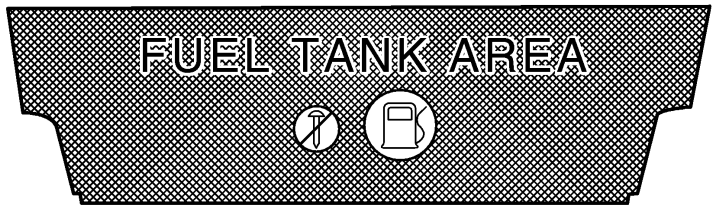
Section 4: Trunk Mounting Considerations

Front of Deep Well



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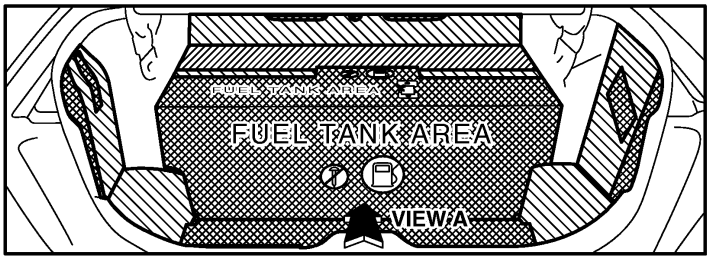

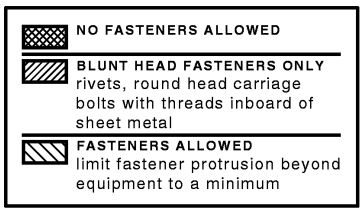

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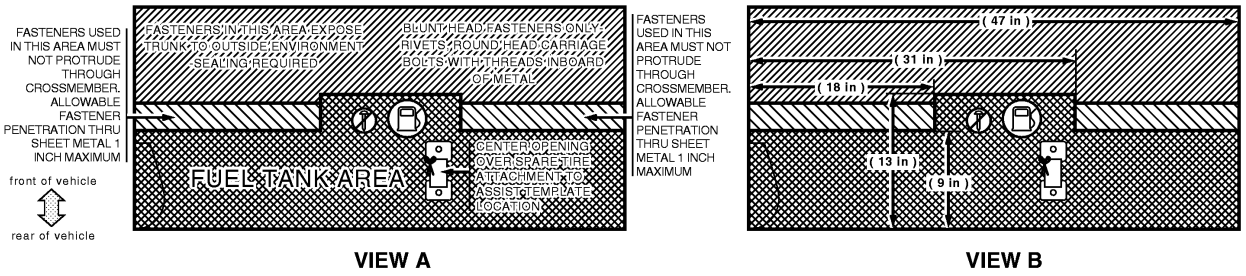
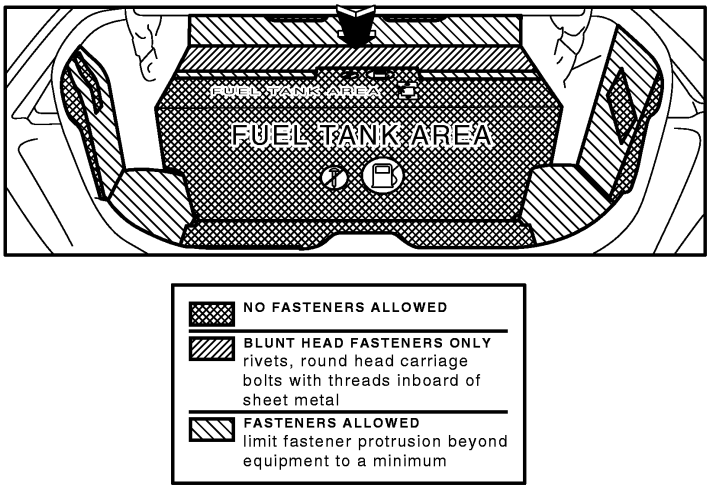
Section 4: Trunk Mounting Considerations

Rear Axle Shelf



VIEW A VIEW B

VIEW A and B



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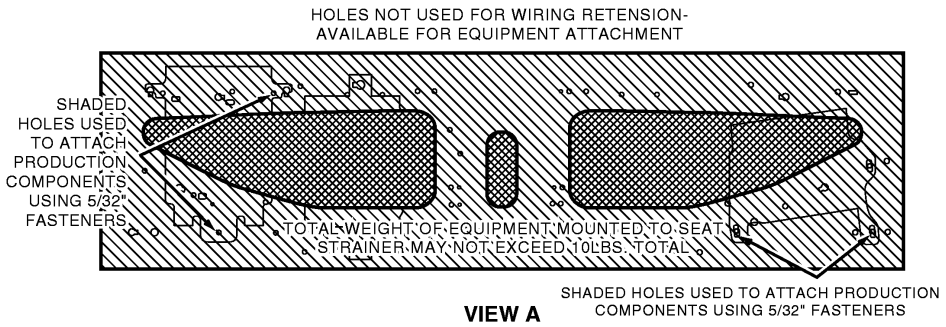
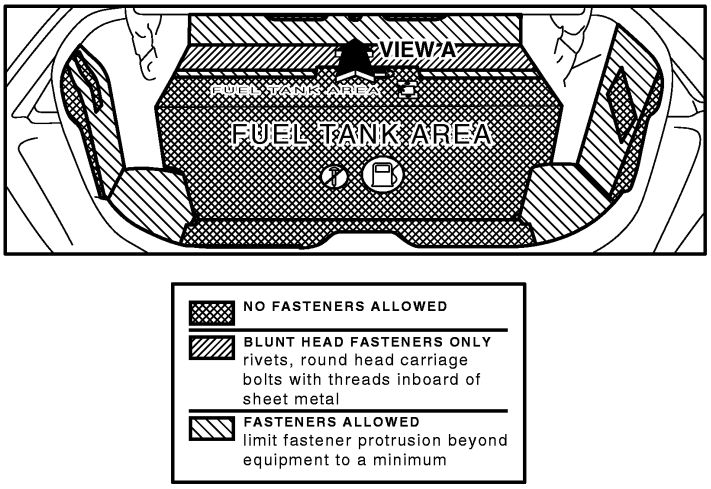
Section 4: Trunk Mounting Considerations

Seat Strainer





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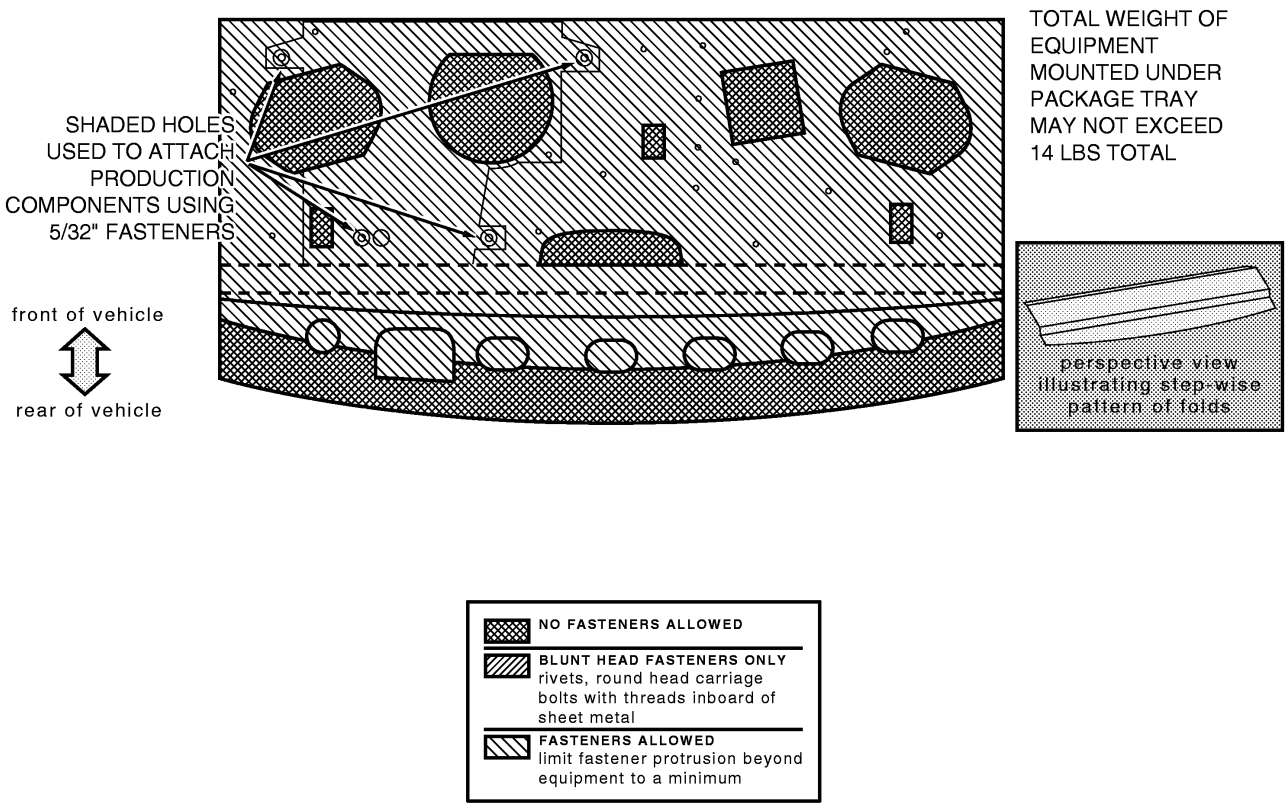
Section 4: Trunk Mounting Considerations

Package Tray



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Rear Axle Shelf Mounting Plate

When mounting equipment on the rear axle shelf area of the trunk, use an intermediate plate or tray between the component to be installed and the rear axle shelf. This will provide component mounting flexibility by increasing the amount of attachment points available. For additional information, refer to the Trunk Equipment Mounting Guide that can be found on previous pages in this section and on the Internet at www.cvpi.com.

Section 4: Trunk Mounting Considerations

Trunk Pack™ and Trunk Loading

⚠ **WARNING: Ford recommends that police equipment be both secured and laterally aligned. Hard, stiff or sharp objects, especially when not secured or properly located, pose a risk to the fuel tank and back seat occupants. Aftermarket organizers that do not adequately deform in rear-impacts can themselves become injury-producing objects. When locating, securing and mounting police equipment, please review the Trunk Equipment Mounting Guide, available on the www.cvpi.com website, which provides recommended fastener mounting types and locations.**

Following the trunk packing recommendations (also on the www.cvpi.com website) is the most meaningful method of reducing risk. If your department practice is inconsistent with the trunk packing recommendations, then Ford suggests that you consider purchasing an optional drop-in Trunk Pack™ to further reduce the risk of injury resulting from police equipment pushing forward into the back seat and/or fuel tank in the event of a high-speed rear impact. The Trunk Pack™ provides more flexibility to officers transporting police equipment than the truck packing recommendations.

To improve trunk packing by police agencies, Ford has made the following items available:

- Trunk Pack™ — a drop-in box with a tough plastic shell made of High Density Polyethylene (HPDE). It both aligns police equipment laterally in the trunk and utilizes a DuPont™ KEVLAR® lining on the fore side of the box to reduce the risk of police equipment penetrating into the fuel tank and/or the back seat in high-speed rear impacts.
- Trunk Equipment Mounting Guide — an outline pattern with recommended fastener mounting locations in the trunk. The guide can be found on previous pages in this section and on the Internet at www.cvpi.com.
- Trunk Packing Considerations — the following guidelines are offered to reduce the risk of unique police equipment items pushing through the fuel tank and/or back seat. (See www.cvpi.com for more details.)

A slogan has been developed to increase police agency awareness of the importance of trunk packing.

Improve police officer safety by implementing a trunk-packing process called ‘‘LOAD SAFE’’.

LOAD	SAFE
Lateral	**S**oft
Orientation	**A**nd
And	**F**ixed
Direction	**E**quipment

Section 4: Trunk Mounting Considerations

Equipment Categories and Placement

⚠ **WARNING: Gasoline should not be stored in the trunk at any time, regardless of container. Failure to follow this instruction may result in personal injury.**

It is recognized that a wide variety of equipment is carried in the trunks of police vehicles as noted above. This section addresses the inherent risks of various types of equipment in the event of a high-speed rear impact.

Section 4: Trunk Mounting Considerations

This information is divided into 3 categories:

- **Carrying Not Recommended** —The following items have been observed in police vehicles and should not be transported in the vehicle trunk: containers with gasoline, loose ammunition, loose flares, loose fire extinguisher(s), loose 4-point lug wrenches, loose crowbars, loose axes and other loose equipment with potential puncture capability in high-speed rear-end collisions.
- **Carry With Caution** —These items will require special packing or mounting consideration and possible use of the Trunk Pack™ as an additional level of safety. Examples include (with proposed orientation): fire extinguisher (fixed), lug wrench 4-point (fixed, vertical), rolotape measuring wheel (fixed, vertical), safety flares (lateral orientation, in a container), Stop Stick (lateral, mount on deck lid inner panel), shovel (lateral, place at rear of trunk), shotgun and rifle (lateral, store in case), baton (lateral, place at rear of trunk), electronic equipment (use Trunk Equipment Mounting Guide to determine equipment mounting locations) and ammunition (container). Flares should be placed in a protective storage container (preferably soft-sided plastic). Flares with spikes attached should be laterally oriented in the trunk area.
  - **Spare Tire Special Considerations:** The safest location for the spare tire, jack and lug wrench is the production location on the forward package shelf above the rear axle. If unable to mount there, the next safest location for the spare tire is mounted vertically inside the Trunk Pack™ using the J-bolt attachment device provided with the Trunk Pack™. However, if the manufacturer's location for the spare tire is changed and the area above the axle is used to mount a sliding tray, use the Trunk Equipment Mounting Guide and suitable fasteners of appropriate length to reduce the risk of fuel tank puncture. The jack and lug wrench should be stored in the rearward compartment of the Trunk Pack™.
  - **Electronic Equipment:** The safest location for the electronic equipment is on the trunk forward package shelf. Some equipment can be mounted in the side shelf areas, but it must not intrude into the fuel tank area in a crash (noted in Trunk Equipment Mounting Guide). The optional Complete Police Prep Package, described in Section 1, is available to facilitate packaging of electronic components with a sliding tray for the forward package shelf and side compartments in the right and left shelf area. All equipment should be located and mounted using the ''Trunk Equipment Mounting Guide'' for proper positioning of fasteners. This guide can be accessed on www.cvpi.com. The sliding tray can also be used, depending on size, to properly store parts with rigid and sharp edges.
  - **Ammunition:** The safest place for ammunition is the forward package shelf and on the side shelves. It is recommended that a plastic storage container (see Police Prep Package (68P) - Trunk storage boxes, LH or RH box can be purchased separately from any authorized Ford dealer) be used and mounted using the ''Trunk Mounting Equipment Guide'' for proper fastener locations. It is also recommended that ammunition remain in the purchased container and be placed in a safe storage container.
- **Low Risk Items** — These items are soft in feel and pose a low risk of trunk wall, rear seat area or fuel tank puncture. Examples are: a soft camera case, biohazard kit in plastic boxes, gloves, safety rope, tow strap, traffic cones and sleeves, rain gear, riot gear (soft), emergency blankets, bullet-resistant vests, tie straps, cloth tape, garment bags, first responder kit, Res-Q-Flo masks (placed in garment bag), fuses (plastic container), briefcases, notebooks, spray bottles, helmets and jumper cables. It is not essential but recommended that the Trunk Pack™ be considered for organization of low risk items, especially if mixed with ''Carry With Caution'' items.

Section 4: Trunk Mounting Considerations

Trunk Weight

The vehicle's high-speed handling and curb height will become increasingly affected as weight is added to the trunk. The more weight that is placed in the trunk, the more it will change the ride and handling characteristics of the vehicle. Consider these factors when installing equipment and placing items in the trunk of the vehicle. For additional information, refer to Trunk Pack™ and Trunk Loading in this section.

The vehicle certification (VC) label on the driver door lists a maximum load of 499 kg (1,100 lb) (occupants + luggage). This maximum load is a combination of 5 or 6 occupants with 91 kg (200 lb) of luggage.

SECTION 5

Reference Information

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Section 5: Reference Information

Engineering Drawings

Air Bag Deployment Interference

⚠ WARNING: Do not place objects or mount equipment in front of the air bag module cover or in front seat areas that may come in contact with a deploying air bag. Dash, tunnel or console-mounted equipment should be placed within the specified zone. Failure to follow these instructions may result in personal injury.

⚠ WARNING: Dash, tunnel or console-mounted equipment should not be placed outside of the specified zone. Failure to follow these instructions may result in personal injury.

⚠ WARNING: Do not mount equipment between the side of the front seat to the door trim that would block deployment of the side air bag. Failure to follow these instructions may result in personal injury.

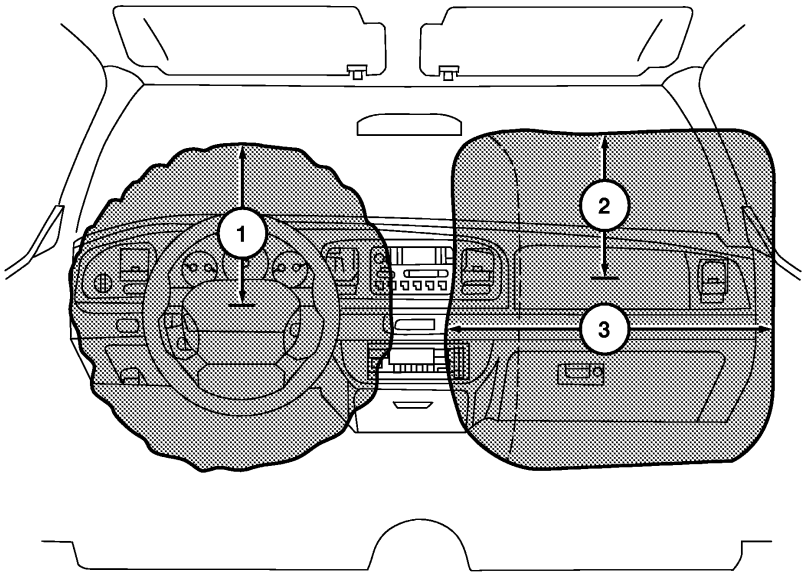
Driver/passenger air bags affect the way police equipment can be mounted in police vehicles. Any surfaces that could come into contact with an air bag during deployment must not damage the air bag or alter its deployment path. Sharp edges, corners or protrusions could damage the nylon air bag material and reduce the effectiveness of the air bag. Do not mount or place any objects in the deployment path of an air bag. Air bags must be allowed to fully deploy without restriction. The deployment of air bags is not compatible with any configuration of police equipment mounting that places objects in the air bag deployment path. Equipment mounted or placed in the deployment area of an air bag will reduce the effectiveness of the air bag, damage the air bag and potentially damage or dislodge the equipment.

Some approximate dimensions for air bags, at full inflation, are provided in Figures 1 through 5. These dimensions are somewhat flexible and represent free-form deployments without the loading of occupants. The shaded areas in Figures 6 through 8 represent available police equipment mounting zones. These zones are shown for police vehicles equipped with standard bucket seats. While bench seats are optional and still appropriate for vehicles with certain limited police equipment requirements, the standard bucket seats are recommended for vehicles that require maximum available space for police equipment mounting. The zone dimensions provided in Figures 6 through 8 are approximate and will vary with the loading of occupants in the seats.

All air bag and equipment mounting zone dimensions are approximate due to different air bag deployment characteristics.

Mount no equipment between the side of the front seat and the door trim that would block deployment of the side air bag.

Section 5: Reference Information



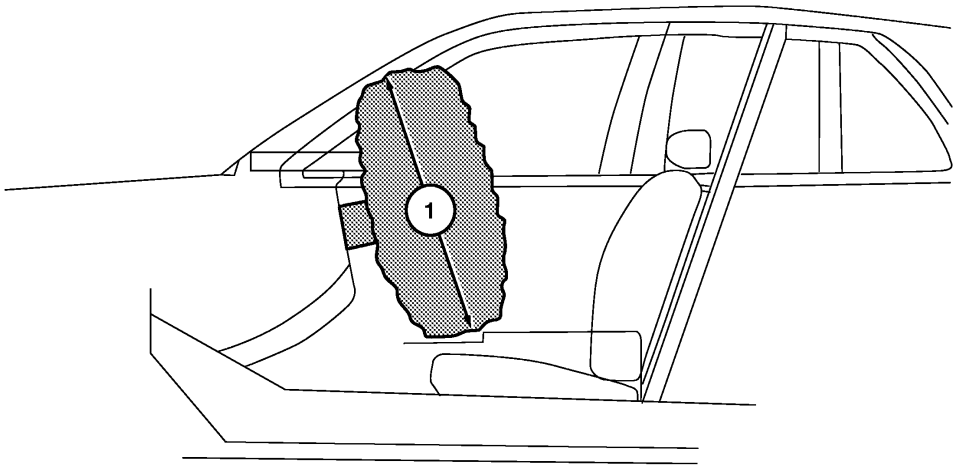
A0074658

Figure 1.

(1) 240 mm (9.5 in) from center of air bag door

(2) 400 mm (15.7 in) from center of air bag door

(3) 775 mm (30.5 in)

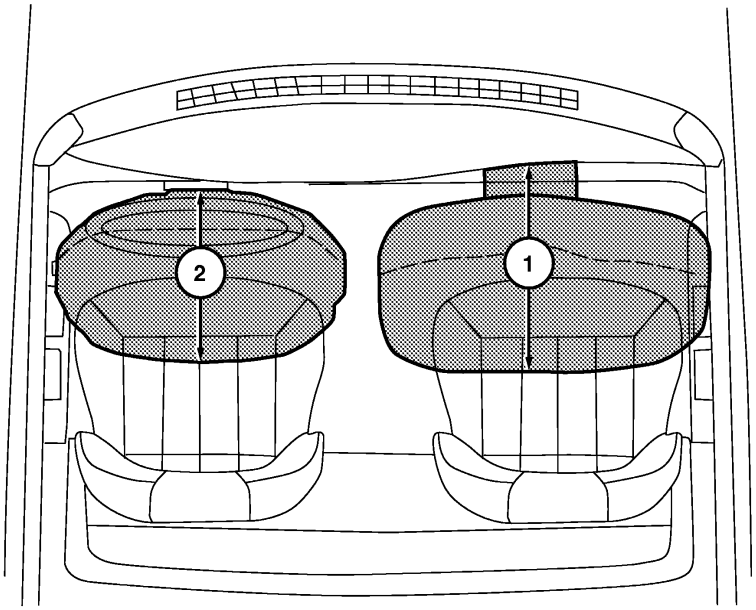


A0080796

Figure 2.

(1) 660 mm (26 in) (passenger side shown)

Section 5: Reference Information



A0074660

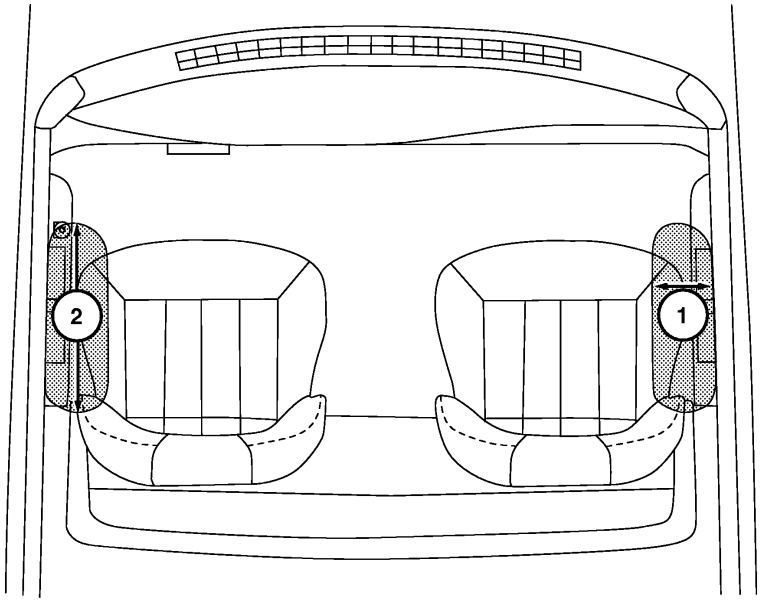
Figure 3.

No objects should be placed between the air bags due to air bag variability.

(1) 600 mm (23.6 in) front passenger

(2) 430 mm (17 in) front driver

Section 5: Reference Information

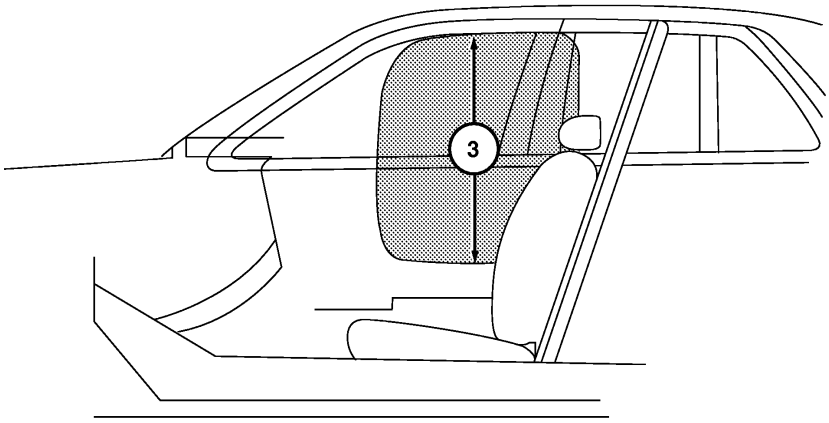


A0078523

Figure 4.

(1) 200 mm (8 in) from outboard side of seat

(2) 380 mm (15 in) forward of seat back

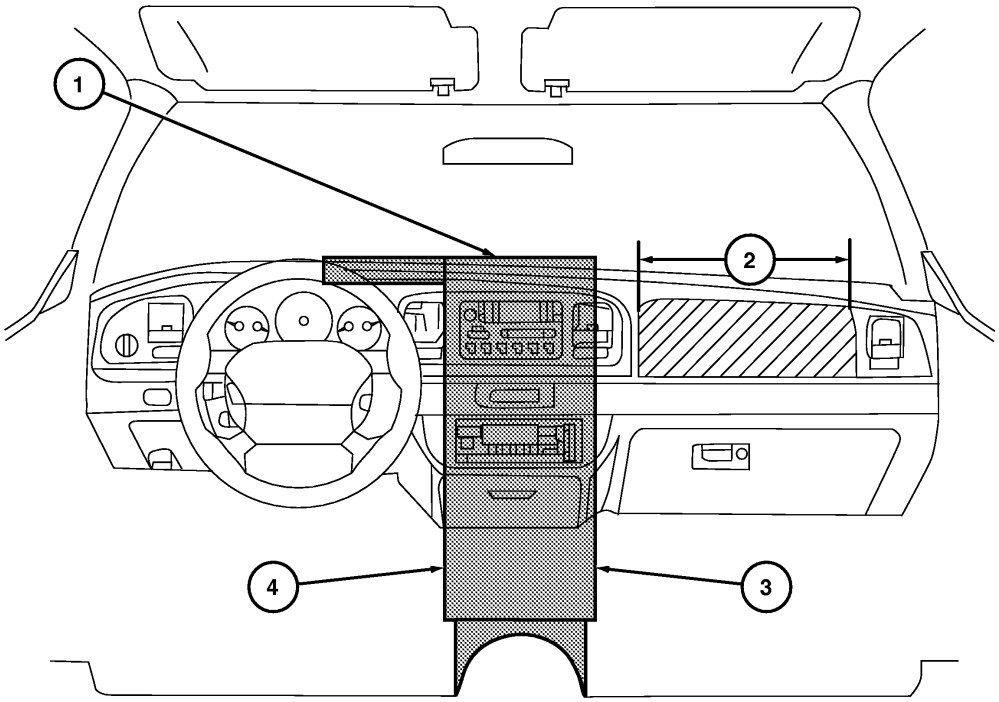


A0078524

Figure 5.

(3) 700 mm (27.5 in) up from side air bag module

Section 5: Reference Information



A0074662

Figure 6.

Note: Figures 6 through 8 represent available police equipment mounting zones.

(1) Area on top of instrument panel. **Equipment must not interfere with driver visibility.**

(2) The air bag door must be kept clear for deployment of air bag.

(3) Area in front of center console from bottom of ashtray to top of instrument panel.

(4) 279 mm (11 in) width horizontally centered on ashtray door.

Section 5: Reference Information

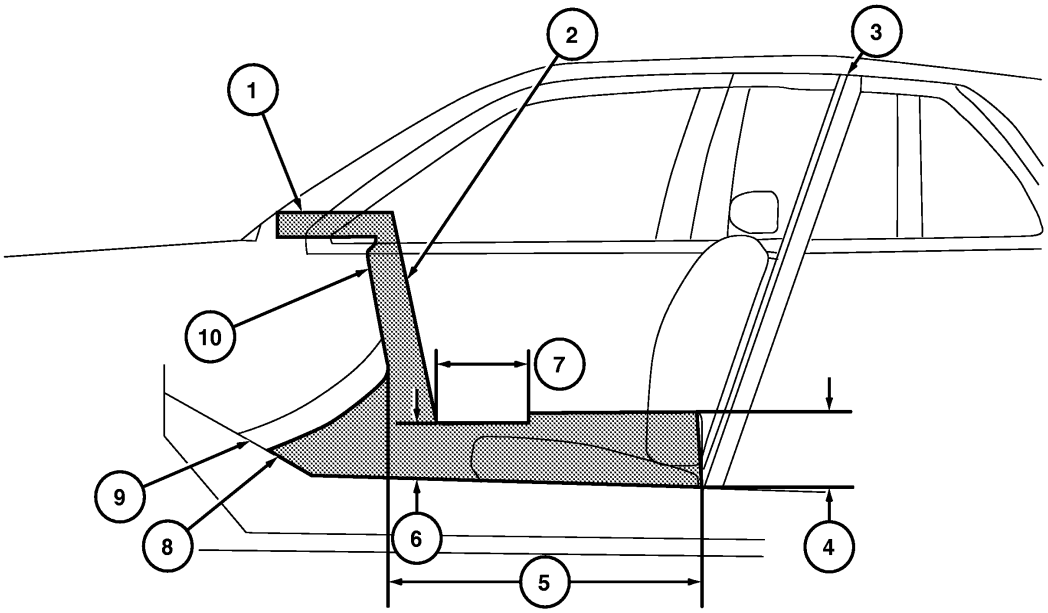


Figure 7.

(1) Area on top of instrument panel

(2) Area in front of center console from tunnel up to instrument panel

(3) Prisoner screen (reference only)

(4) 254 mm (10 in)

(5) Area on tunnel between seats

(6) Height: 216 mm (8.5 in)

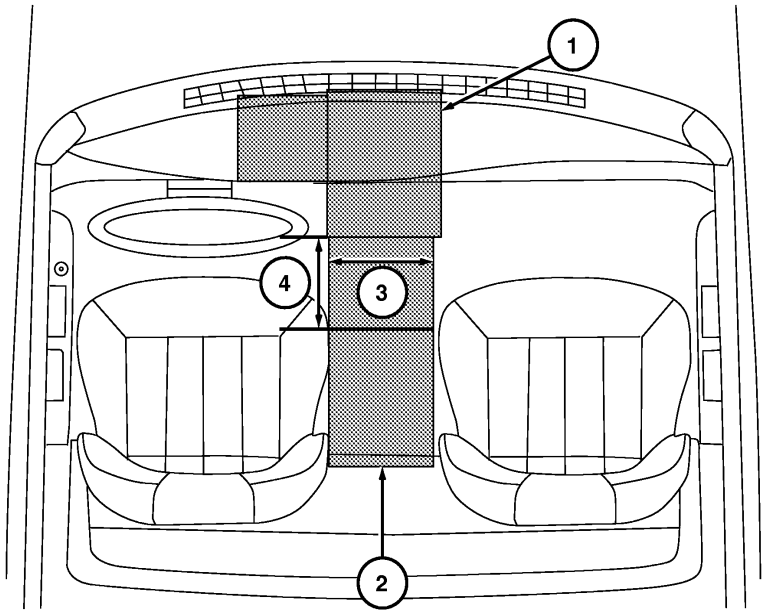
(7) 305 mm (12 in)

(8) Area on tunnel beneath center console

(9) Tunnel

(10) Depth: 38 mm (1.5 in)

Section 5: Reference Information



A0074664

Figure 8.

(1) Area on top of instrument panel. **Equipment must not interfere with driver visibility.**

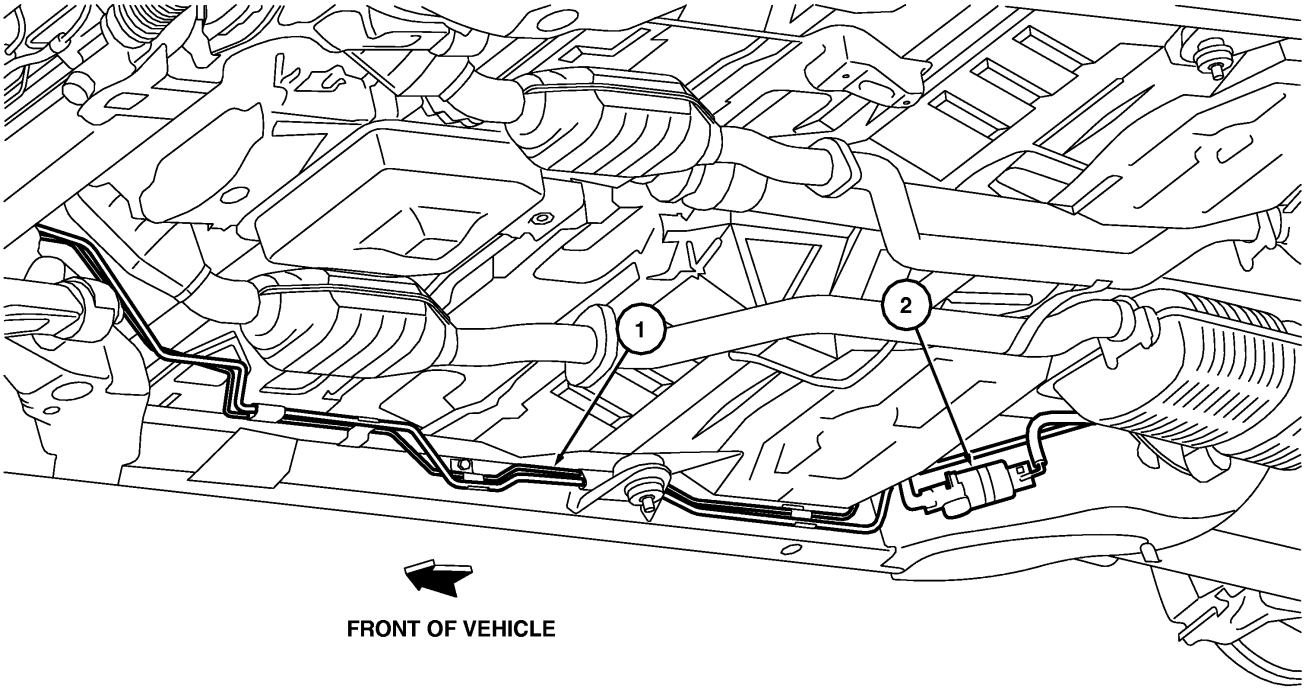
(2) Area on tunnel between seats

(3) 229 mm (9 in)

(4) 305 mm (12 in)

Section 5: Reference Information

Fuel Lines

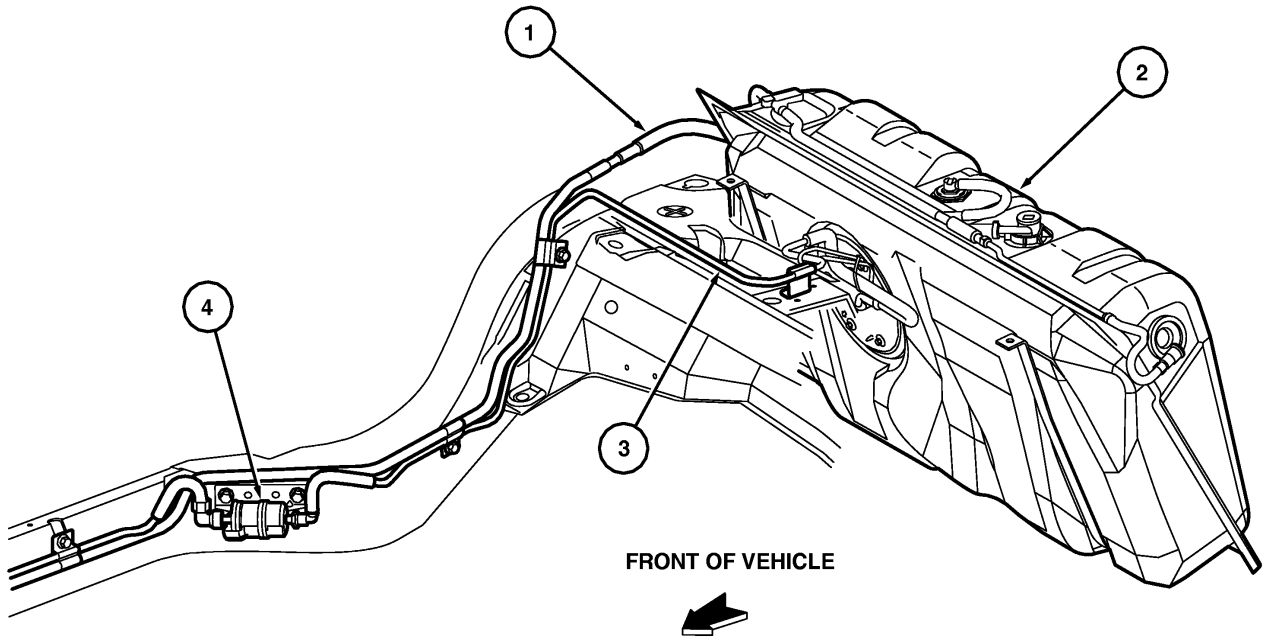


A0075894

Item	Description
1	Fuel line
2	Fuel filter

Section 5: Reference Information

Fuel Tank — Cut View

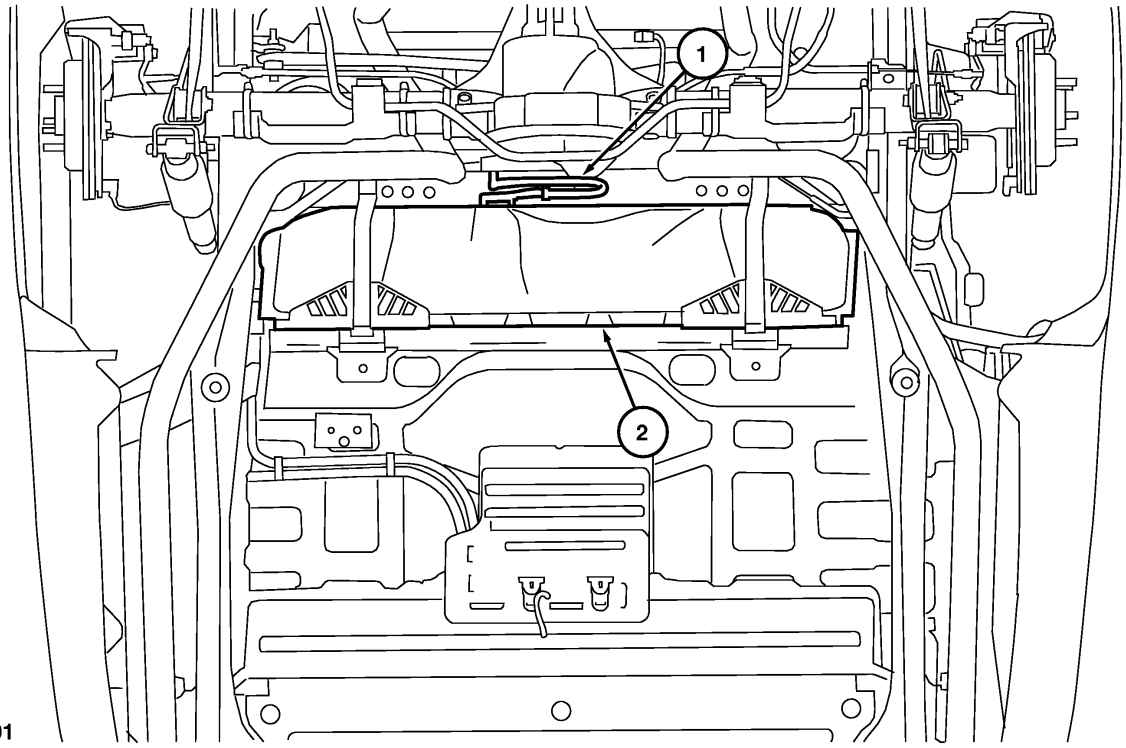


A0075895

Item	Description
1	Evaporative emissions hose
2	Fuel tank
3	Fuel line
4	Fuel filter

Section 5: Reference Information

Fuel Tank — Bottom View

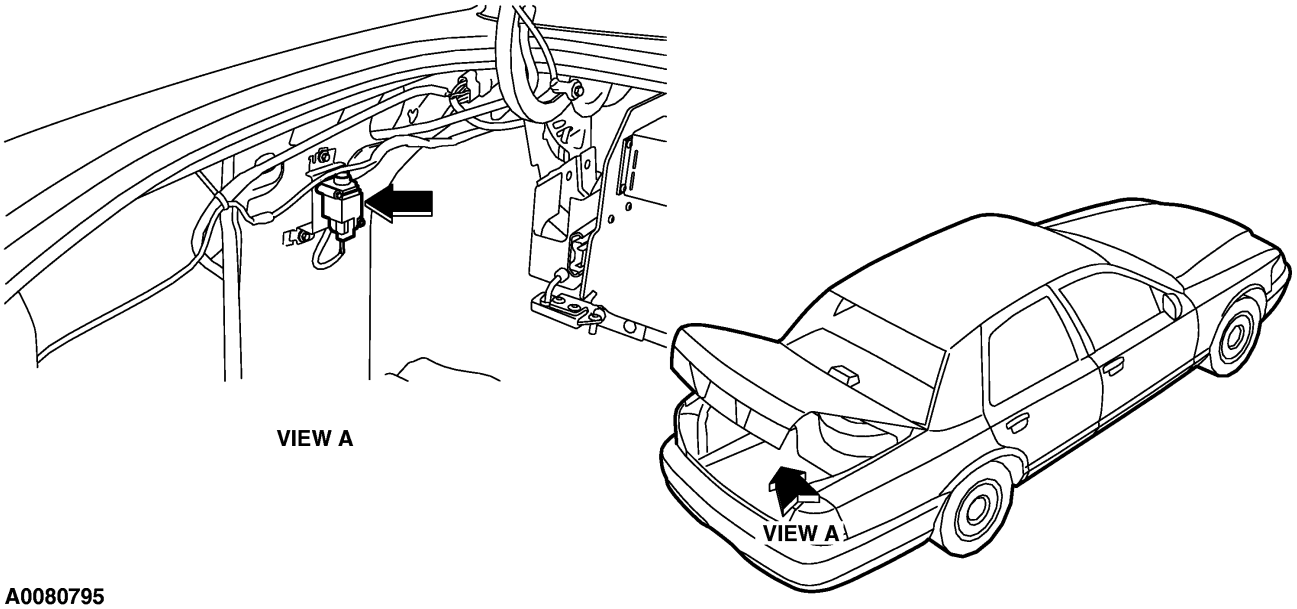


A0076591

Item	Description
1	Fuel line
2	Fuel tank

Section 5: Reference Information

Fuel Pump Shut-off Switch



A0080795

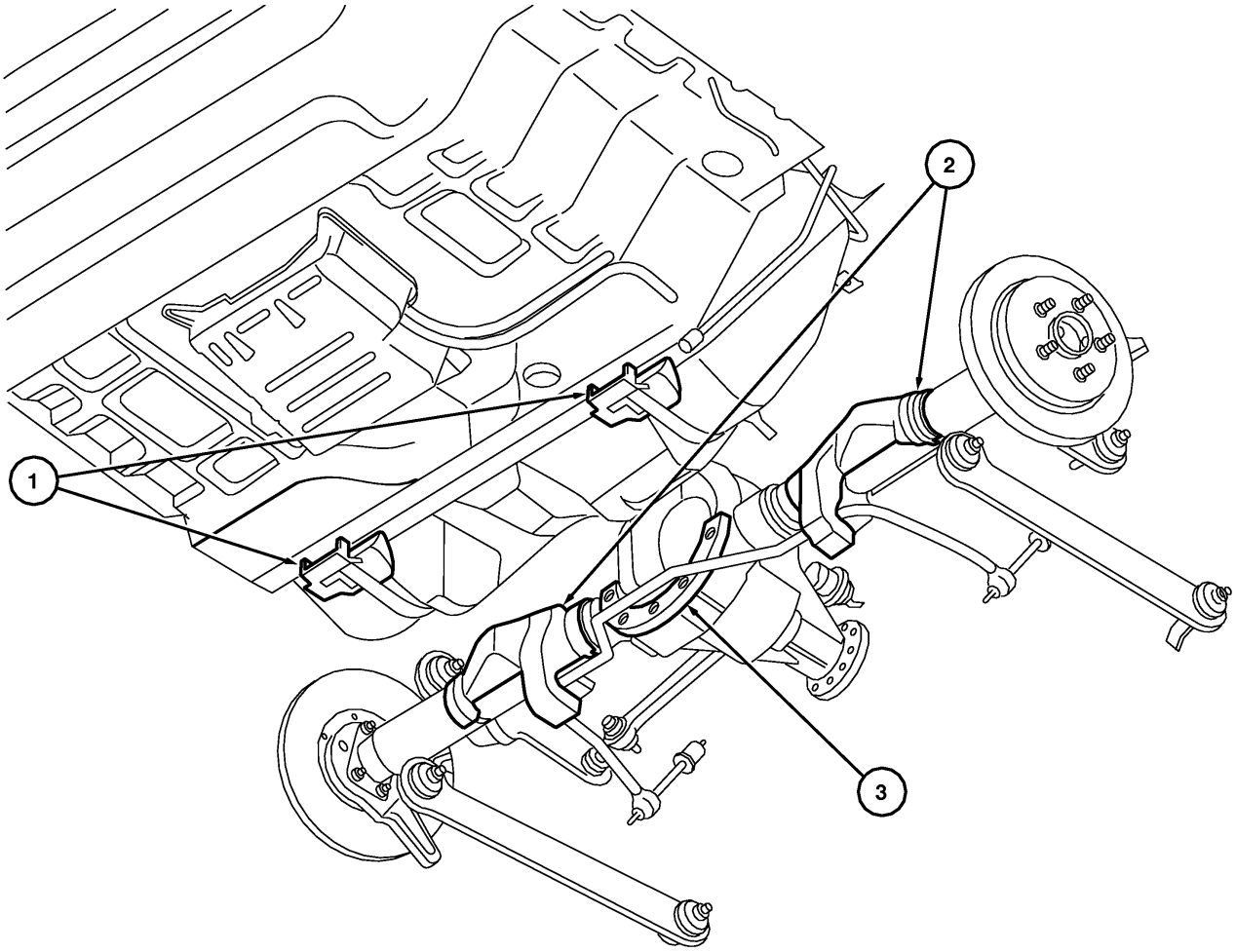
Shields

⚠ WARNING: The underbody shields that are located on the rear axle and fuel tank straps must not be removed or altered in any way. These shields help protect the fuel tank. Failure to follow these instructions may result in personal injury.

Shields are installed to help protect the fuel tank from being punctured by chassis components in the event of a high speed rear end collision. These shields consist of:

- two rear axle shields.
- one differential cover shield.
- two fuel tank strap shields.
- two foam pads onto the evaporative emissions canister.
- replacement evaporative emissions canister retainer bolts and J-clips (located along the front edge of the canister) with 3 rivets.

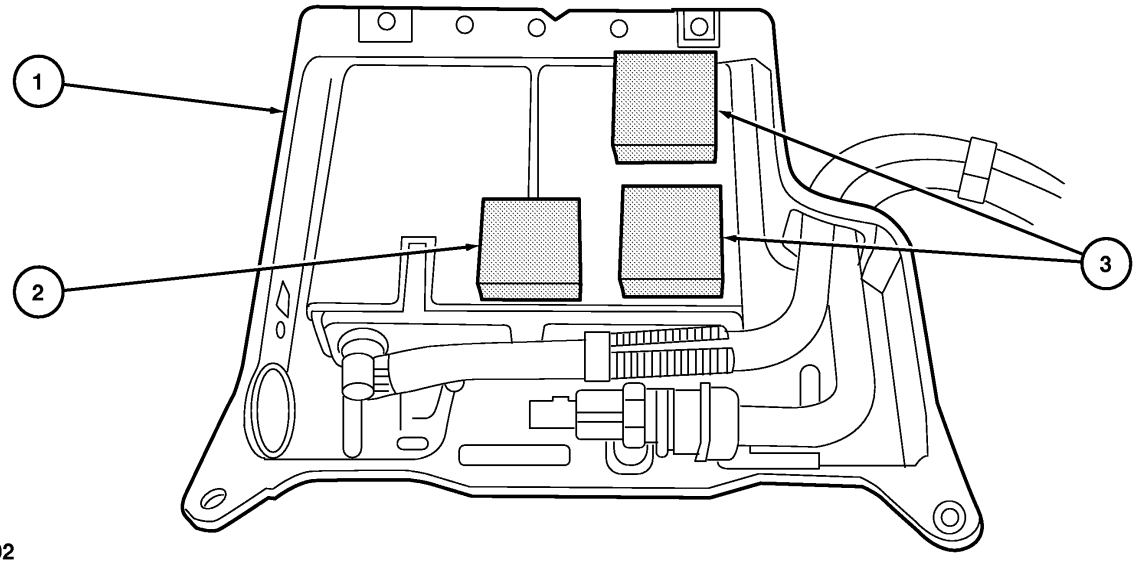
Section 5: Reference Information



A0075891

Item	Description
1	Fuel tank strap shields
2	Rear axle shields
3	Differential cover shield

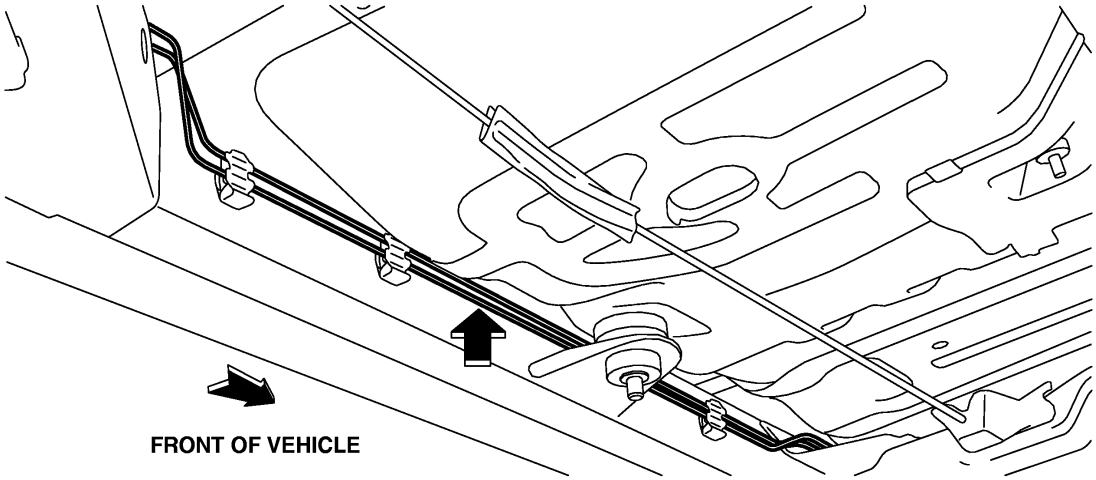
Section 5: Reference Information



A0075892

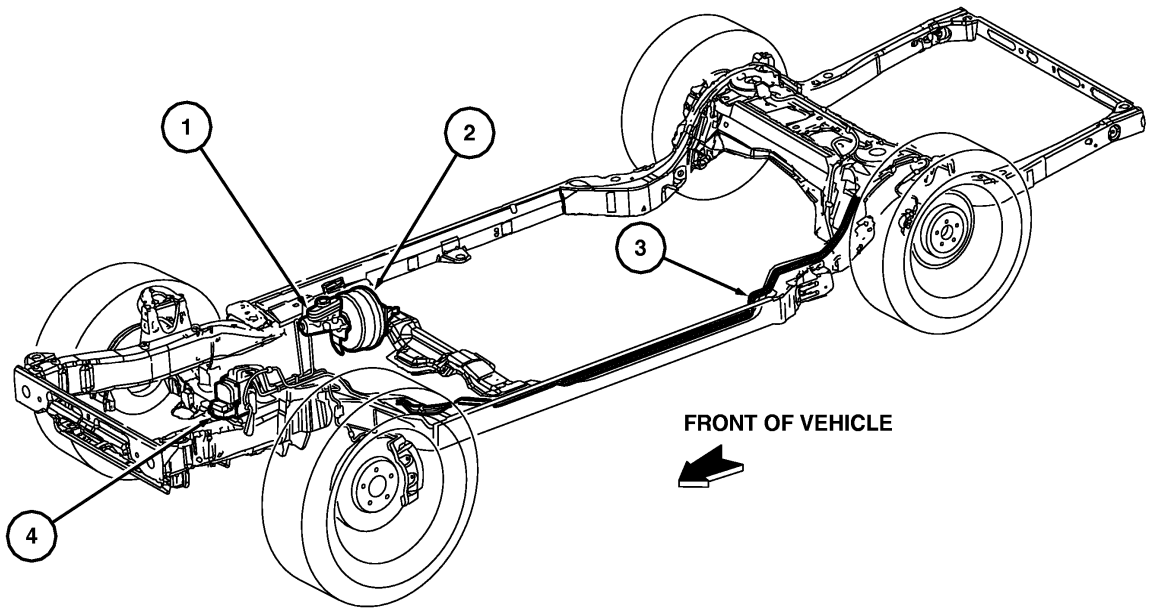
Item	Description
1	Evaporative emissions canister
2	Existing foam pad
3	Two additional foam pads (included in Optional Upgrade Kit)

Brake Lines



A0080652

Section 5: Reference Information



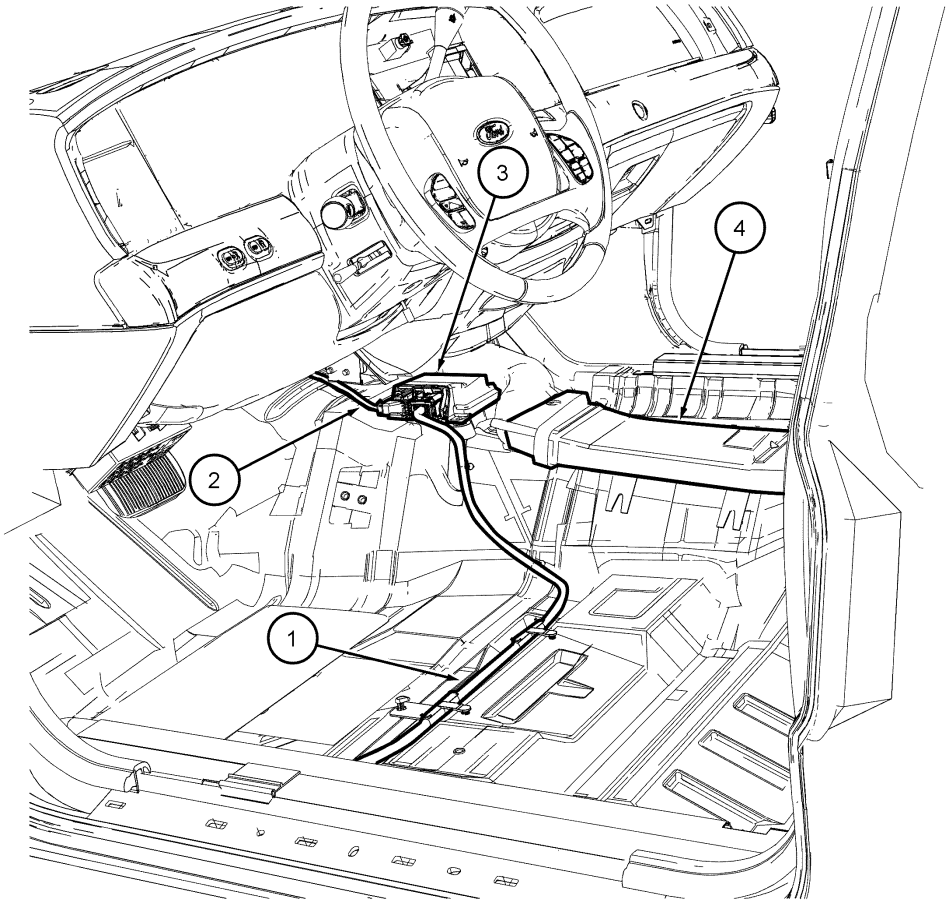
A0075896

Item	Description
1	Master cylinder
2	Brake booster
3	Brake line
4	Brake control module

Section 5: Reference Information

Wiring Harnesses

Restraint control module (RCM) and RCM harness located on the driver side floor.

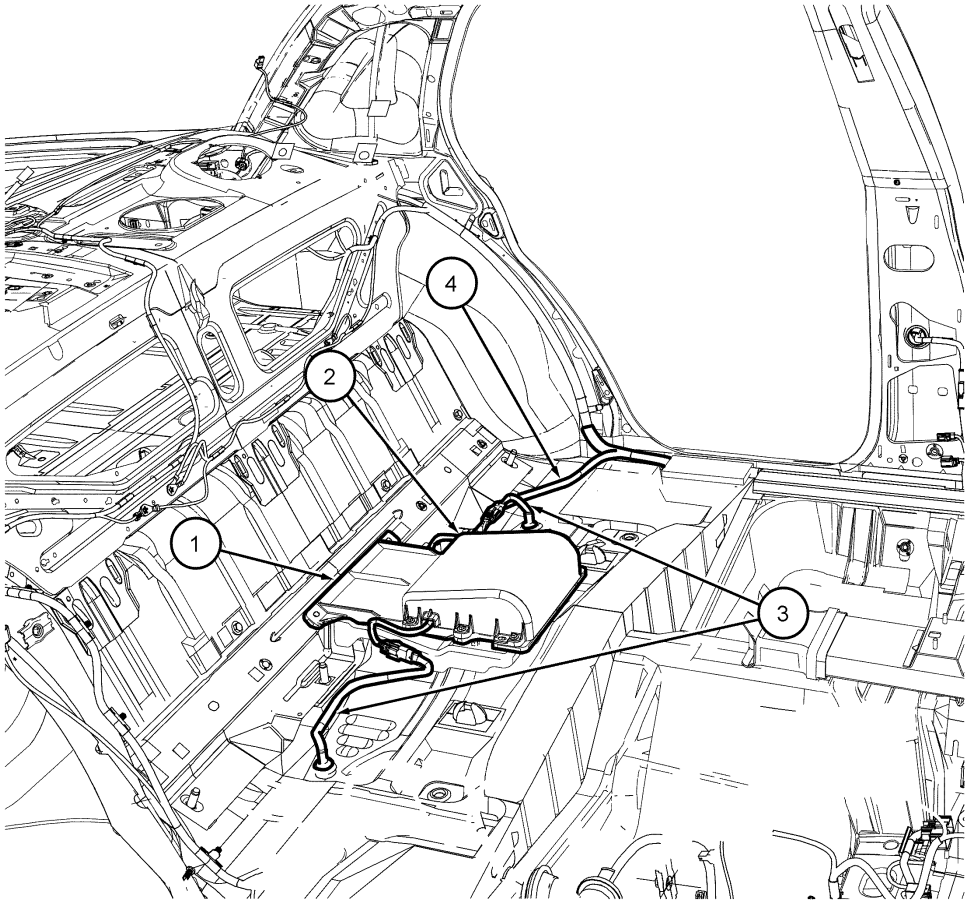


N0012066

Item	Description
1	RCM wire harness (part of 14A005)
2	RCM wire harness (part of 14401)
3	RCM
4	Heating duct

Section 5: Reference Information

Fire suppression system harness located on the center of the rear floor.

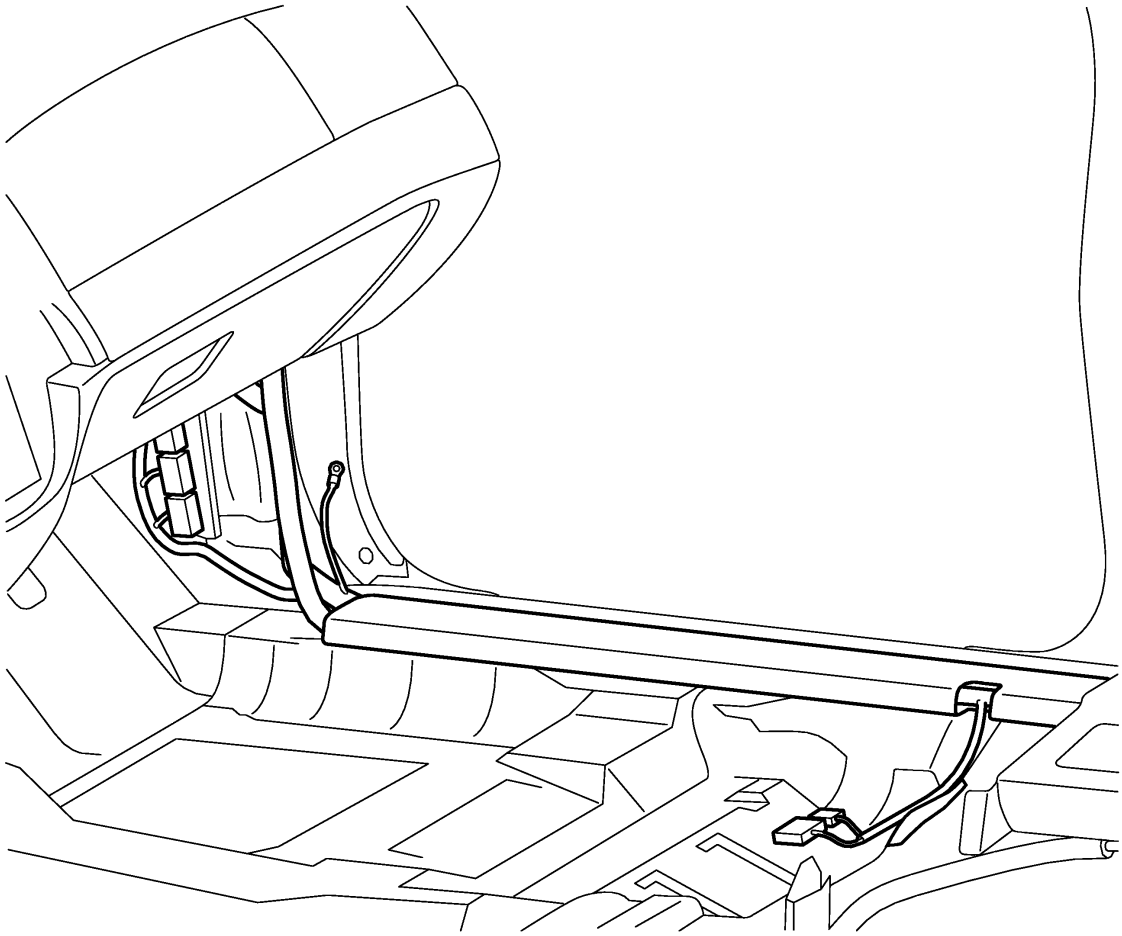


N0012069

Item	Description
1	Fire suppression module bracket
2	Fire suppression module
3	Fire suppression wiring harness (part of 14C369)
4	Fire suppression wiring harness (part of 14A005)

Section 5: Reference Information

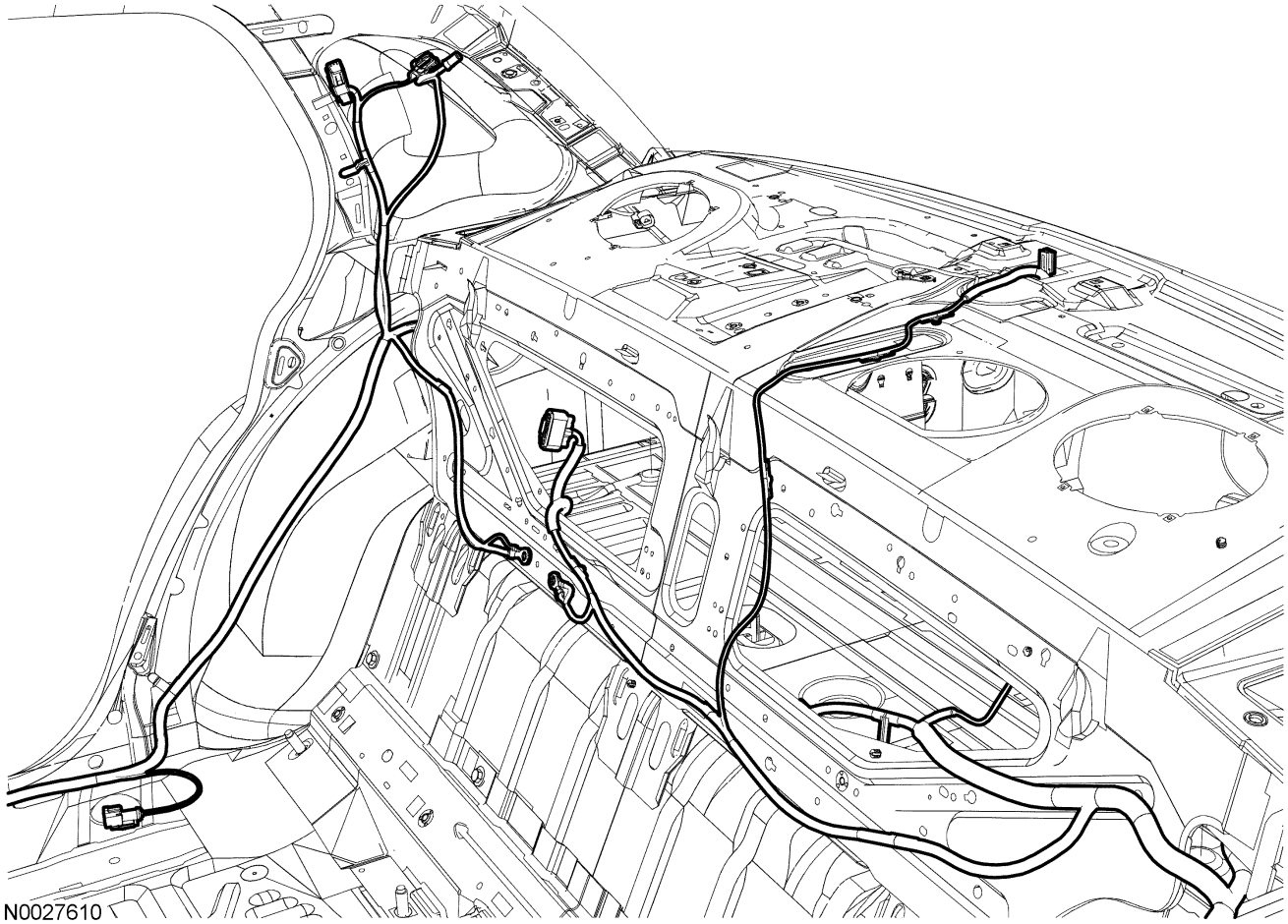
Segment of body harness located on passenger side A-pillar lower trim panel and floor.



A0077007

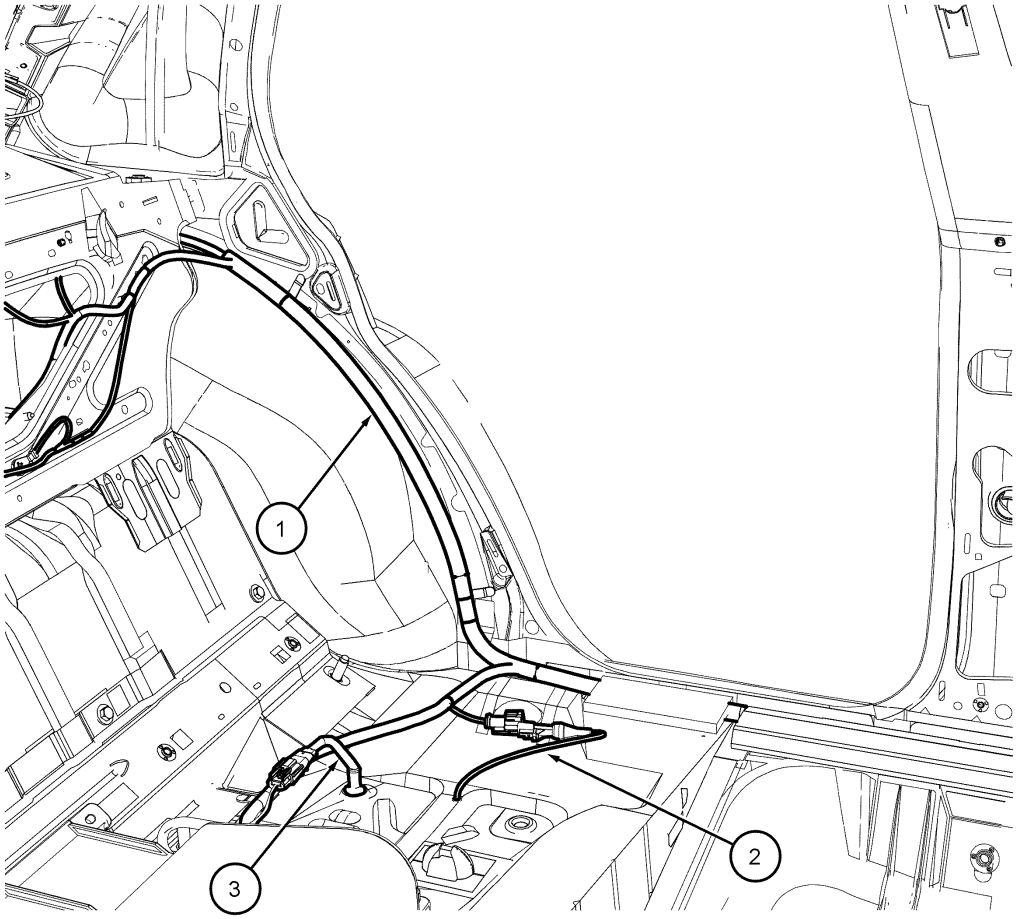
Section 5: Reference Information

Segment of body harness located on rear seat strainer, package tray and passenger side C-pillar.



Section 5: Reference Information

Segment of body harness located near driver side rear door weatherstrip seal.

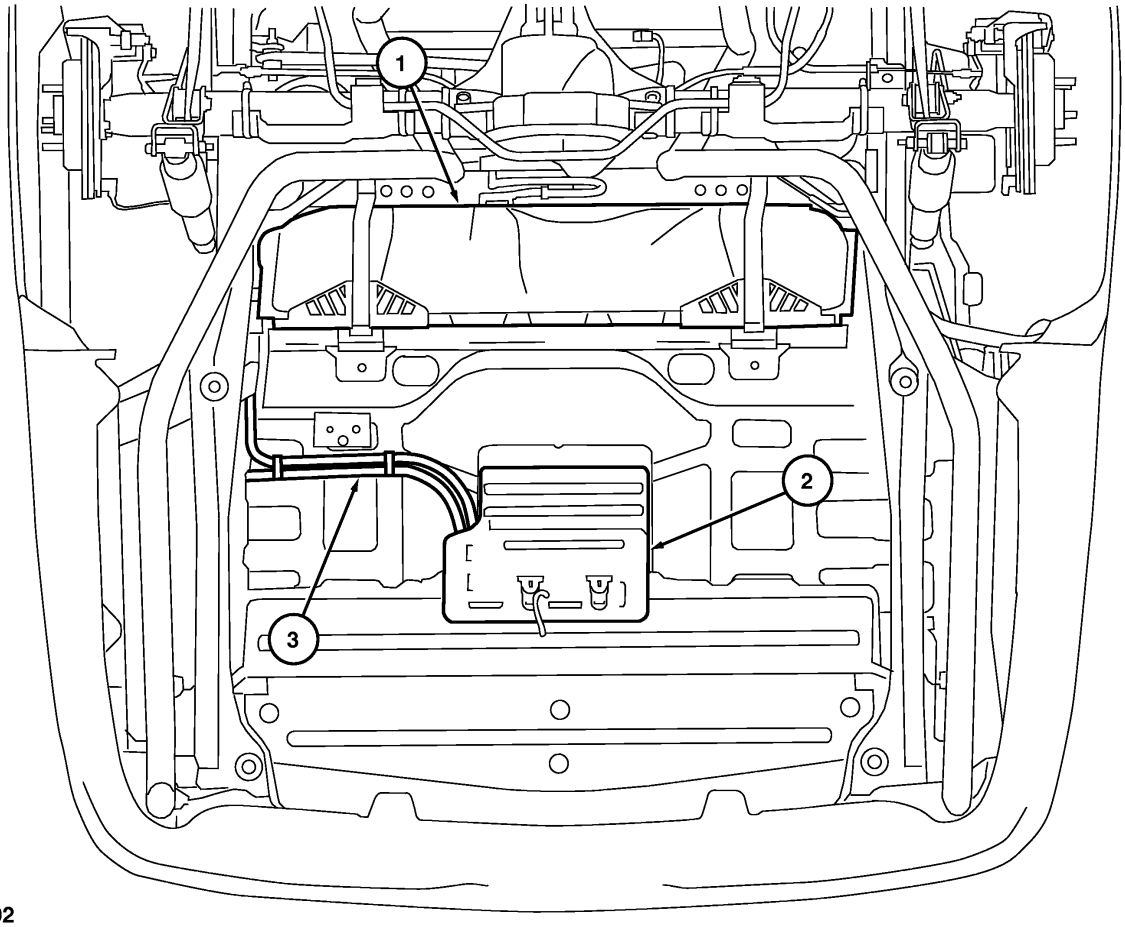


N0012105

Item	Description
1	Body harness (part of 14A005)
2	Wheel speed sensor harness
3	Fire suppression system wiring harness (part of 14C369)

Section 5: Reference Information

Evaporative Emissions



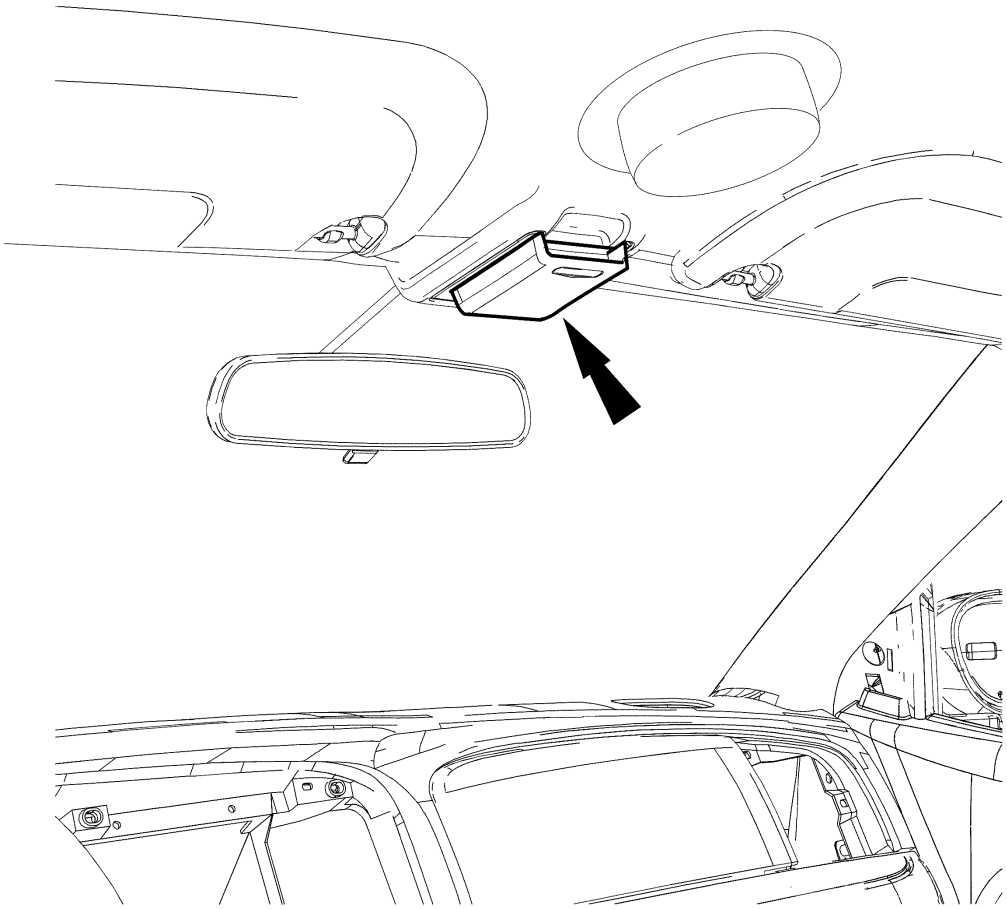
A0076592

Item	Description
1	Fuel tank
2	Evaporative emissions canister
3	Evaporative emissions hose

Section 5: Reference Information

Fire Suppression System Components

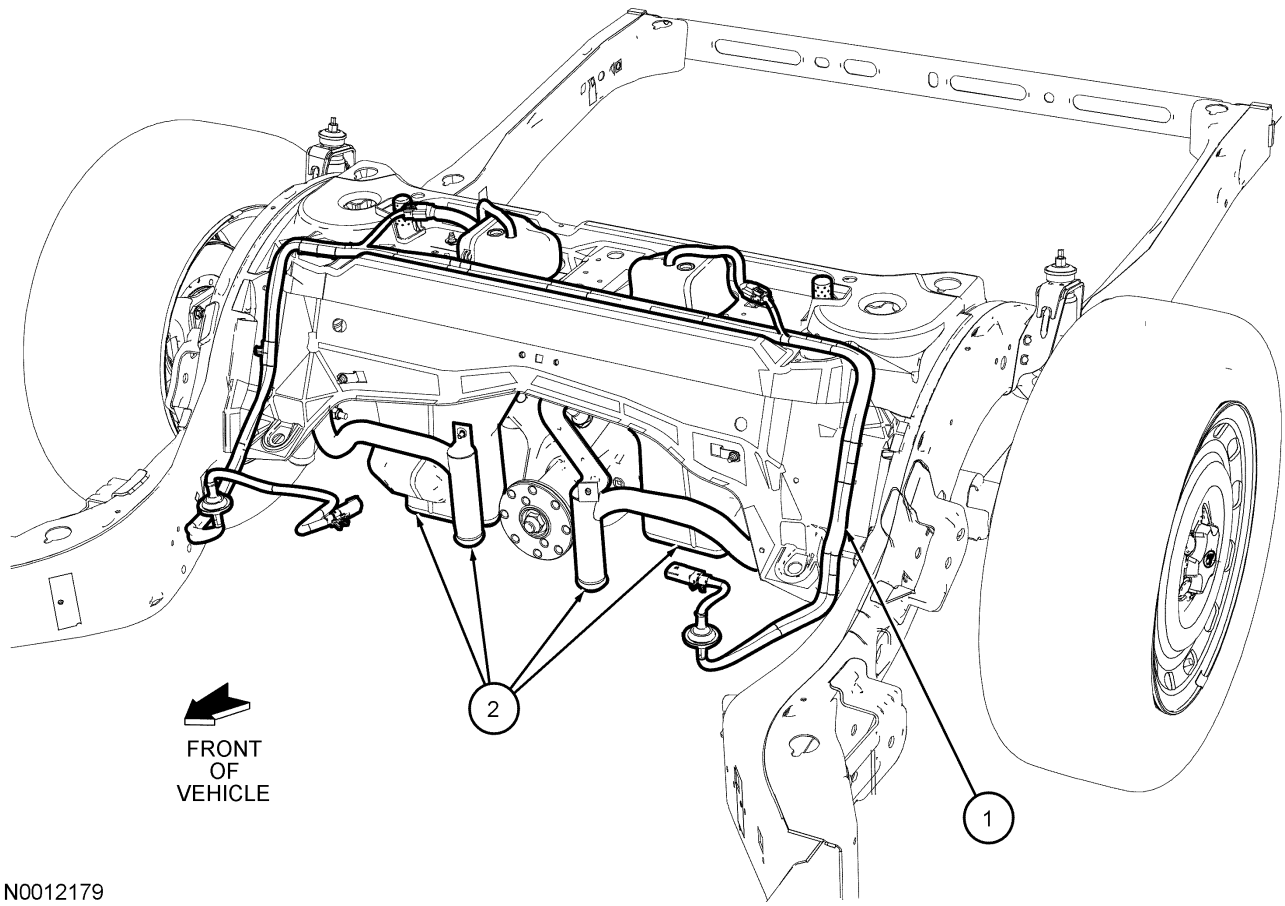
Fire suppression manual activation switch located on headliner above the interior rear view mirror.



N0012137

Section 5: Reference Information

Fire suppressors located under the No. 4 crossmember in front of the fuel tank.



Item	Description
1	Fire suppression system wiring harness (part of 14C369)
2	Fire suppressors and manifolds assembly

Section 5: Reference Information

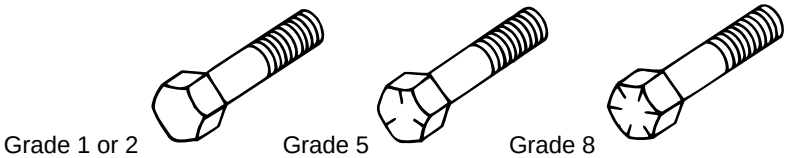
Technical Specifications

Item	Specification	Specification
Make: Ford	Model: Police Interceptor	Sales Code: P71
Engine Displacement	Cubic Inches: 281	Liters: 4.6
Fuel System	Sequential Port Fuel Injection	
Exhaust	Dual	
Horsepower (SAENET)	250 @ 5,000 rpm	
Generator	200 amp	
Torque	297 lb-ft @ 4,000 rpm	
Battery	750 cca	
Compression Ratio	9.4:1	
Transmission	Model: 4R70W	Type: 4-speed electronic automatic with lockup torque converter and overdrive.
Axle Ratio	3.27:1 or 3.55:1	
Steering	Power Rack and Pinion, variable ratio	
Turning Circle (curb to curb)	12.3 m (40.3 ft)	
Tire Size, Load and Speed Rating	P235/55R17 98W Goodyear Eagle RS-A	
Suspension Type (Front)	Independent SLA with ball joint and coil spring	
Suspension Type (Rear)	4 bar link with Watts Linkage	
Ground Clearance, Minimum	142 mm (5.6 in)	Location: Exhaust joint
Brake System	Power, dual front piston, single rear piston, 4 circuit and ABS	
Brakes, Front	Type: Vented disc	Swept Area: 176,129 sq mm (273 sq in)
Brakes, Rear	Type: Vented disc	Swept Area: 113,548 sq mm (176 sq in)
Fuel Capacity	Gallons: 19.0	Liters: 71.9
General Measurements	Wheelbase: 2,911 mm (114.6 in)	Length: 5,385 mm (212.0 in)
General Measurements	Test Weight: 1,885 kg (4,155 lb)	Height: 1,481 mm (58.3 in)
General Measurements	Width: 1,989 mm (78.3 in)	—
General Measurements	Track Width, Front: 1,595 mm (62.8 in)	Track Width, Rear: 1,666 mm (65.6 in)
Head Room	Front: 1,003 mm (39.5 in)	Rear: 960 mm (37.8 in)
Leg Room	Front: 1,057 mm (41.6 in)	Rear: 965 mm (38.0 in)
Shoulder Room	Front: 1,539 mm (60.6 in)	Rear: 1,524 mm (60.0 in)
Hip Room	Front: 1,450 mm (57.1 in)	Rear: 1,499 mm (59.0 in)
Interior Volume	Front: 1.63 cu m (57.6 cu ft) Rear: 1.37 cu m (48.4 cu ft)	Combined: 3.0 cu m (106.4 cu ft)
Interior Volume	Trunk: 0.58 cu m (20.6 cu ft)	
EPA Mileage Est. (mpg)	City: 16/Highway: 22	Combined: 18
Mileage Est. (km/L)	City: 6.8/Highway: 9.3	Combined: 7.7

METRICS

BOLT STRENGTH IDENTIFICATION

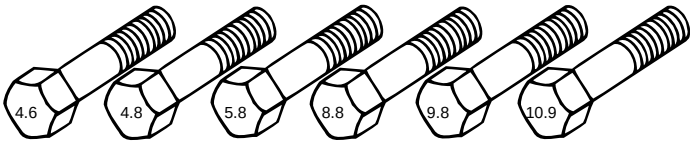
ENGLISH SYSTEM



Grade 1 or 2 Grade 5 Grade 8

English bolts: Identification marks on the bolt head represent Rockwell hardness. Generally, the bolt's grade is equal to the number of marks plus two. The higher the grade, the stronger the bolt.

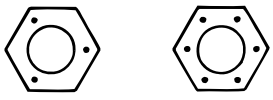
METRIC SYSTEM



Metric bolts: Identification class numbers on bolt heads represent tensile strength. Higher numbers indicate stronger bolts. Common metric fastener bolt strength properties are 9.8 and 10.9.

HEX NUT STRENGTH IDENTIFICATION

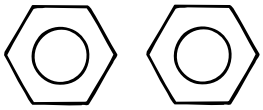
ENGLISH SYSTEM



Grade 5 Grade 8

Identification dots represent Rockwell hardness. The nut's grade is equal to the number of dots plus two. The higher the grade, the stronger the nut.

METRIC SYSTEM

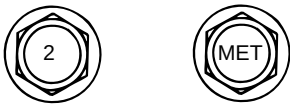


Identification class numbers on nuts represent tensile strength. Higher numbers indicate stronger nuts. Nuts may also have blue finish or paint daub on hex flat.

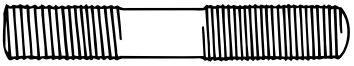
OTHER TYPES OF PARTS

Metric identification schemes vary by type of part, most often a variation of that used for bolts and nuts. Note that many types of English and Metric fasteners carry no special identification if they are otherwise unique.

–Stamped U-Nuts



–Tapping, thread forming and certain other case hardened screws.



CLASS 10.9 CLASS 9.8 CLASS 8.8

–Studs, Large studs may carry the property class number. Smaller studs use a geometric code on the end.

Revision 1, 8/10/2000

METRICS

ENGLISH/METRIC CONVERSION

DESCRIPTION	MULTIPLY	BY	FOR METRIC EQUIVALENT
Acceleration	ft/s^2	0.3048	m/s^2
	in/s^2	0.0254	m/s^2
Torque	lb-in	0.11298	N·m
	lb-ft	1.3558	N·m
Power	horsepower	0.746	kW
Pressure or Stress	inches of water	0.2491	kPa
	psi	6.895	kPa
	psi	0.069	bar
Energy or Work	BTU	1055.0	Joules(J)
	lb-ft	1.3558	Joules(J)
	kiloWatt-hour	3,600,000 or 3.6×10^6	Joules(J)
Light	foot candle	10.764	lumens/square meter (lm/m^2)
Fuel Performance	miles/gal	0.4251	kilometers/liter (km/L)
	gal/mile	2.3527	liters/kilometer (L/km)
Velocity	mph	1.6093	kilometers/hour (km/h)
Length	inch	25.4	mm
	foot	0.3048	m
	yard	0.9144	m
	mile	1.609	km
Area	square inch (in^2)	645.2	mm^2
		6.45	cm^2
	square ft (ft^2)	0.0929	m^2
	square yard	0.8361	m^2
Volume	cubic inch (in^3)	16387.0	mm^3
		16.387	cm^3
		0.0164	liters (L)
	quart	0.9464	liters (L)
	gallon	3.7854	liters(L)
	cubic yard	0.7646	m^3
Mass	pound	0.4536	kg
	ton	907.18	kg
	ton	0.9078	tonne (t)
Force	kilogram	9.807	N
	ounce	0.2780	N
	pound	4.448	N
Temperature	degree Farenheit (˚F)	(˚F-32) 0.556	degree Celsius (˚C)

Revision 1, 8/10/2000

Customer Information Worksheet

Repair Order No. _____

CUSTOMER NAME _____ DATE _____

PLEASE HELP US by checking all the spaces that describe the drive problem.

When did problem start to occur? ___ Suddenly ___ Gradually: approximate miles _____

Engine Starting Problems	Engine Quits Running Problems	Engine Idle Problems with the Vehicle Not Moving	Engine/Transmission Problems while the Vehicle is Moving
__ Will not start – will not even crank __ Cranks, but will not start __ Tries to start, but won't __ Starts, but takes a long time	Engine Quits: __ Right after starting __ While idling __ When put into gear __ On acceleration __ During steady speed driving __ On deceleration __ Right after the vehicle is brought to a stop __ When parking	__ Engine speed is too slow all the time __ Engine speed is too slow when the A/C is on __ Engine speed is too fast __ Engine speed is rough or uneven	__ Runs rough __ Bucks and jerks __ Hesitates/stumbles on acceleration __ Misfires – cuts out __ Engine knocks or rattles __ Lack of power __ Backfires __ Poor fuel economy __ Transmission shifting concerns

About how often does the problem happen? ___ All the time ___ Most of the time ___ Occasionally

When does the problem usually occur? ___ Morning ___ Later in the day ___ Anytime

How long after starting the engine does the problem happen?
__ Within 2 minutes of starting the engine.
__ Between 2 and 10 minutes after the engine starts.
__ At least 10 minutes or longer after starting the engine.
__ It could happen any time after starting the engine.

How long does the engine have to be off before the problem will happen again?
__ 4 hours or more.
__ More than 30 minutes, but less than 4 hours.
__ Less than 30 minutes after being turned off.
__ It does not matter how long the engine was off.

Do weather conditions affect the problem? __ No __ Yes
If yes, which ones? __ Hot __ Cold __ Rain __ Fog __ Snow __ Humid __ Dry
Does outside temperature affect the problem? __ No __ Yes
If yes, what temperature? ____ ˚F/˚C

Please Check any of these driving conditions that cause the problem. __ Accelerating __ Decelerating __ Turning Right/Left __ Steady Speed (approximate vehicle speed _____ MPH / Km/h)

Type of fuel used? __ Regular unleaded __ Midgrade unleaded __ Premium unleaded __ Gasohol __ Other

Was the Check Engine light on? __ Yes __ No __ Flashing
Were other warning lights on? __ Yes __ No __ Flashing Which Ones? _____

Additional Comments:

_____

_____

_____

Additional Customer Information Worksheet in the back of the manual.

Revised 8/10/2000