

# 2017

## Sedan and Utility



## Police Modifier Guide

**SECTION 0: Introduction**

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## Introduction

### 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 Explorer and Taurus 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 it 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 model suitable for use in police service is the pursuit-rated Police Interceptor.

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## SECTION 1: General Information

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## Section 1: General Information

### 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 or she compromises neither his or her personal safety nor the vehicle integrity by his or her choice of methods, tools or parts.

#### 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:**

- **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 and belts.**
- **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.

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

The Police Interceptor vehicle is put through twice as many cycles of Ford's standard vehicle durability tests to make sure it meets the rigors of police usage. This vehicle testing is in addition to substantial component durability testing. This extra testing for the Police Interceptor certifies to Ford the entire vehicle is "heavy-duty" and suitable for police usage.

## Section 1: General Information

### Sedan Standard Equipment — Exterior

Item	Description
Antenna	Roof mount - rear center of roof
Bumpers	Concealed with one-piece full wrap cover, body color
Decklid	Key cylinder lock and instrument panel push button
Door Handles	Painted black
Front Door Locks	Key cylinders (Front Driver/Passenger Doors)
Easy Fuel Capless Fuel-Filler	Easy Fuel Capless fuel-filler system has an integrated spring-loaded flapper door that allows customers to simply insert the fuel nozzle into the tank to fill up no screw cap is required
Headlamps	Projector halogen
Mirrors	Black Caps (Molded in Color - MIC), power electric remote, manual folding with integrated blind spot mirrors (integrated blind spot mirrors not included when equipped with BLISR®)
Nameplate Badge	Police Interceptor and Road Leaf FFV Badge
Paint	Clear coat Anti-chip paint primer Body color B-pillars
Tail Lamps	Halogen with Halogen Decklid Lamps
Tires	245/55R18 A/S BSW (includes Full Size Spare)
Wheel/Rims	Wheels – 18 inch x 8 inch (Painted E-coat with Black Top Coat) Steel and vented with Wheel Hub Cover (includes spare) - Full Size Spare Tire P245/55R18 A/S BSW 18 inch Conventional Steel Spare Wheel
Underbody	Deflector plate - Undercarriage deflector plates protect the underbody, powertrain and chassis components

### Standard Equipment — Interior

Item	Description
Climate Control	Single Zone Manual
Console Mounting Plate	Steel between front driver/passenger seats along driveline tunnel
Door Locks	Power, Rear Door Handles and Locks Operable
Pedals	Power Adjustable
Flooring	Heavy-Duty Vinyl
Fuse Panel	Easy access, labeled
Powerpoints	2 located in I/P lower close-out
Glove Compartment	Illuminated, large bin, lockable with dampened glove compartment door, zippered owner's pouch with embossed car-line logo
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 speakers are mounted in the door. Rear speakers mounted in rear deck.

## Section 1: General Information

### Standard Equipment — Interior

(Continued)

Item	Description
Personal Safety System With Dual Stage Airbags	Driver and right front passenger (includes safety belt pretensioners, dual stage airbags, seat position and weight sensors)
Safety Belts	Three-point active for front and rear outboard occupants (safety belt pretensioners on front seat shoulder belts)
Rear Passenger Doors	2nd row doors open extra wide. Door panels simplified with no cup holders or pockets for ease of cleaning
Scuff Plates	Color-keyed front and rear doors
Seats	1st Row Heavy-Duty Cloth Bucket - 6-way power driver (manual recline, manual lumbar with 2-way manual passenger (manual recline, no lumbar) - Built-in composite intrusion plates in both front seatbacks - 2nd Row Vinyl Bench - 2nd Row Door-Panels – simplified, no pockets or door speakers
Storage	Overhead console with dome/map lights and sunglass holder
Sun Visors	Non-illuminated driver/passenger
Steering Wheel	Manual/Tilt, Urethane Wrapped with Speed Controls Audio Controls
Trip Odometer	—
Trunk	Deep well, carpeted
Shifter	Column mounted
Speedometer	Digital certified
Universal Equipment Tray	Tray mounted at top center of instrument panel (mounting of radar, video, and other police equipment)
Windows	Power, 1-touch Up/Down Driver Side Window Disable Lock – 2nd Row Only - Power Rear Windows Driver Switch Only
Work Task Light	Red, White 1st Row overhead

### Standard Equipment — Functional Sedan Interceptor

Item	Description
Air Conditioning	Manual with positive shutoff registers Wide Open Throttle (WOT) shut off
Generator	220A maximum output.
Battery	Heavy-duty maintenance free 78A / 750CCA
Brakes	4-wheel heavy-duty disc with heavy-duty front and rear calipers
Antenna, Radio	Integral to the rear window glass
Battery Saver	Turns off lights after 30 minutes
Brake Shift Interlock Protection	Brake pedal must be pressed to move shift lever out of park position and engage the 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	Electric
Disc Brakes	4-wheel heavy-duty disc with heavy-duty front and rear calipers
Drive Shaft	Aluminum
Engine	3.5L V6 Ti-VCT Sedan

## Section 1: General Information

### Standard Equipment — Functional Sedan Interceptor

(Continued)

Item	Description
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 hour of engine idle time = 33 miles driving distance
Engine Oil Cooler	
Exhaust System	Dual – Quasi
Fail Safe Cooling	
Fan	Dual electric
Spare Tire	Full size spare tire and wheel
Front Stabilizer Bar	
Front Suspension	Heavy-duty
Fuel Filler Cap	No fuel cap
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
Parking Brake	Single stroke, manual release
Parking Brake Release	Manual
Passenger Capacity	Five
Simple Fleet Key	Key without microchip, reduce cost for replacement
Power and Signal Distribution Vehicle Signals	<ul style="list-style-type: none"> <li>• Vehicle Speed</li> <li>• Driver Door Ajar</li> <li>• Park Detect</li> </ul>
New Upfitter Dash Panel Pass Through	<ul style="list-style-type: none"> <li>• 4 Twisted Wire Pairs (20 AWG)</li> <li>• 2 Twisted Wire Pairs (14 AWG)</li> </ul>
14-Way Connector	<ul style="list-style-type: none"> <li>• B+ Feed 1 (20 Amps)</li> <li>• B+ Feed 2 (20 Amps)</li> <li>• B+ Feed 3 (15 Amps)</li> <li>• Run/Start Feed #1 (20 Amps)</li> <li>• Run/Start Feed #2 (20 Amps)</li> <li>• Battery Saver/Accessory Delay (15 Amps)</li> <li>• Start Feed (2.5 Amps)</li> </ul>
6-Way Connector	<ul style="list-style-type: none"> <li>• Three 40 Amp fused circuits w/grounds</li> </ul>
14-Way Connector	<ul style="list-style-type: none"> <li>• Front Wig-Wag Power</li> <li>• Front LH/RH Corner LED Lights</li> <li>• Front Flasher Module Power</li> <li>• Front LH/RH Corner LED Lights SYNC</li> <li>• Brake Output (5 Amp)</li> <li>• Grille Lamp Power</li> <li>• Front LH/RH Corner LED Lights Pattern</li> </ul>
Power Steering	Electric Power Assist (EPAS)



## Section 1: General Information

### Standard Equipment — Functional Sedan Interceptor

(Continued)

Item	Description
Power Steering Oil Cooler	Integral with transmission oil cooler
Rear Stabilizer Bar	
Rear Suspension	Independent
Shock Absorbers	Monotube
MyFord	Police Cluster - AM/FM / CD / MP3 Capable / Clock / 4 speakers 4.2 inch Color LCD Screen Center Stack "Smart Display" 5-way Steering Wheel Switches Redundant Controls
Speedometer	160 mph certified calibration in 2 MPH increments
Tachometer	
Tether Straps	Both front driver and passenger doors
Tires	P235/55R17 98W — All-season BSW Goodyear Eagle RSA
Transmission	Electronically controlled six-speed automatic overdrive with final drive ratio of: 3.39:1 for AWD
Transmission Oil Cooler	Dedicated
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	Intermittent fixed interval

### Standard Equipment - Utility Police Interceptor - Exterior

Item	Description
Antenna	Roof Mount rear center of roof
Bumpers	Concealed with one-piece full wrap cover, body color
Cladding	Lower bodyside cladding (Black)
Door Handles	Black (MIC)
Front Door Locks	Key cylinders (Front Driver/Passenger Doors)
Capless Fuel-Filler	The Easy Fuel capless fuel-filler system has an integrated spring-loaded flapper door that allows customers to simply insert the fuel nozzle into the tank to fill up no screw cap is required
Headlamps	Projector halogen
Liftgate	Manual 1 piece fixed glass with door lock cylinder
Mirrors	Black Caps (MICE), Power Electric Remote, Manual Folding with Integrated Blind Spot Mirrors (integrated blind spot mirrors not included when equipped with BLIS)
Nameplate Badge	Police Interceptor and Road Leaf FFV Badge
Spoiler	Painted black
Tail Lamps	LED
Tires	245/55R18 A/S BSW
Wheel / Rims	Wheels – 18 inch x 8 inch Painted Black Steel and vented with Wheel Hub Cover (includes spare)
Wheel Lip Molding	Black (MIC)
Climate Control	Single Zone Manual

## Section 1: General Information

### Standard Equipment - Utility Police Interceptor - Exterior

(Continued)

Item	Description
Console Mounting Plate	Steel between front driver/passenger seats along driveline tunnel
Door Locks	Power Rear Door Handles and Locks Operable
Flooring	Heavy-Duty Vinyl
Pedals	Power Adjustable
Powerpoints	2 located in I/P lower close-out; 1 in rear cargo area
Scuff Plates	Front and Rear
Seats	1st Row Heavy-Duty Cloth Bucket - 6-way power driver (manual recline, manual lumbar with 2-way manual passenger (manual recline, no lumbar) - Built-in composite intrusion plates in both front seat backs - 2nd Row Vinyl, 60/40 split bench - 2nd Row Door-Panels – simplified, no pockets
Shifter	Column mounted
Speedometer	Digital Certified
Steering Wheel	Manual/Tilt, Urethane Wrapped with Speed Controls / Audio Controls
Storage	Overhead Console with dome/map lights
Sun Visors	Non-Illuminated Driver/Passenger
Trunk	Flat Load Floor with living hinge for access below
Universal Equipment Tray	Tray mounted at top center of instrument panel (mounting of radar, video, and other police equipment)
Windows	Power, one touch Down Driver Side - Window Disable Lock – 2nd Row Only - Power Rear Windows Driver Switch Only
Work Task Light	Red/White 1st Row Overhead

### Standard Equipment - Utility Police Interceptor

Item	Description
Alternator	220 Amp
Battery	Heavy-duty maintenance free 78A / 750CCA
Brakes	4-wheel heavy-duty disc w/ heavy-duty front and rear calipers
Defroster, Rear Window	Electric
Drive Shaft (AWD)	Aluminum
Easy Fuel® Capless Fuel-Filler	The Easy Fuel® capless fuel-filler system has an integrated spring-loaded flapper door that allows customers to simply insert the fuel nozzle into the tank to fill up, no screw cap and tether is required.
Engine	3.7L V6 Ti-VCT
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, true dual
Fail Safe Cooling	
Fan	Dual electric, PCM controlled
Front Stabilizer Bar	
Front Suspension	
Fuel Tank	18.6 gallon
Glass	Solar tinted, full windshield and front doors. Privacy glass 2nd and 3rd row

## Section 1: General Information

### Standard Equipment - Utility Police Interceptor

(Continued)

Item	Description
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

### Section 1: General Information - Sedan/Utility Police Interceptor

Item	Description
MyFord	Police Cluster - AM/FM / CD / MP3 Capable / Clock / 6-speakers - 4.2 inch Color LCD Screen Center-Stack Smart Display 5-Way Steering Wheel Switches, Redundant Controls
Parking Brake	Single stroke, manual release
Passenger Capacity	Five
Plastic Head Ignition Key	Primary only
Power Distribution Center	Two (50A) battery fused circuits One (15A) battery fused circuits Two (20A) RUN/ACC fused circuits Three (40A) RUN/ACC fused circuits Vehicle signals: Hazard in and Hazard out Hazard in Hazard out Battery saver Vehicle speed sensor Vehicle start
Power Pigtail Harness	(3) 40 Amp fused at bottom of center stack and floor console interface
Power Steering	Electric Power Assist (EPAS)
Rear Stabilizer Bar	-
Rear Suspension	Independent
Recovery Hooks	Front mounted
Shock Absorbers	Nitrogen pressurized, monotube
Simple Fleet Key	Simple Fleet Key (without microchip, easy to replace)
Speedometer	160 MPH certified calibration in 2 MPH increments
Tachometer	
Tether Straps	Both front driver and passenger doors
Transmission	Electronically controlled six-speed automatic overdrive (with final drive ratio of: 3.65:1 for AWD)
Transmission Oil Cooler	Dedicated
Two-way Radio Pre-Wire	Wiring provided in floor console between front driver/passenger seats
Upper Ball Joints	Low friction, non-greaseable
Voltage Regulator	Electronic, integral to generator
Windshield Washers	Dual jet
Windshield Wipers	Front speed sensitive intermittent; rear
Electronic Stability Control	Advance Trac® with Electronic Stability Control (ESC) with Hydraulic Brake Assist
Airbags	2nd generation driver and front-passenger front airbags, steering wheel and passenger side I/P - side-impact airbag, external side of front driver/passenger seat back deployment - and safety canopy
Anti-Lock Brakes (ABS) with Traction Control	ABS brake modulation with traction control individual wheel brake application
Battery Saver Feature	Disconnect battery power 30 minutes after key off event

## Section 1: General Information

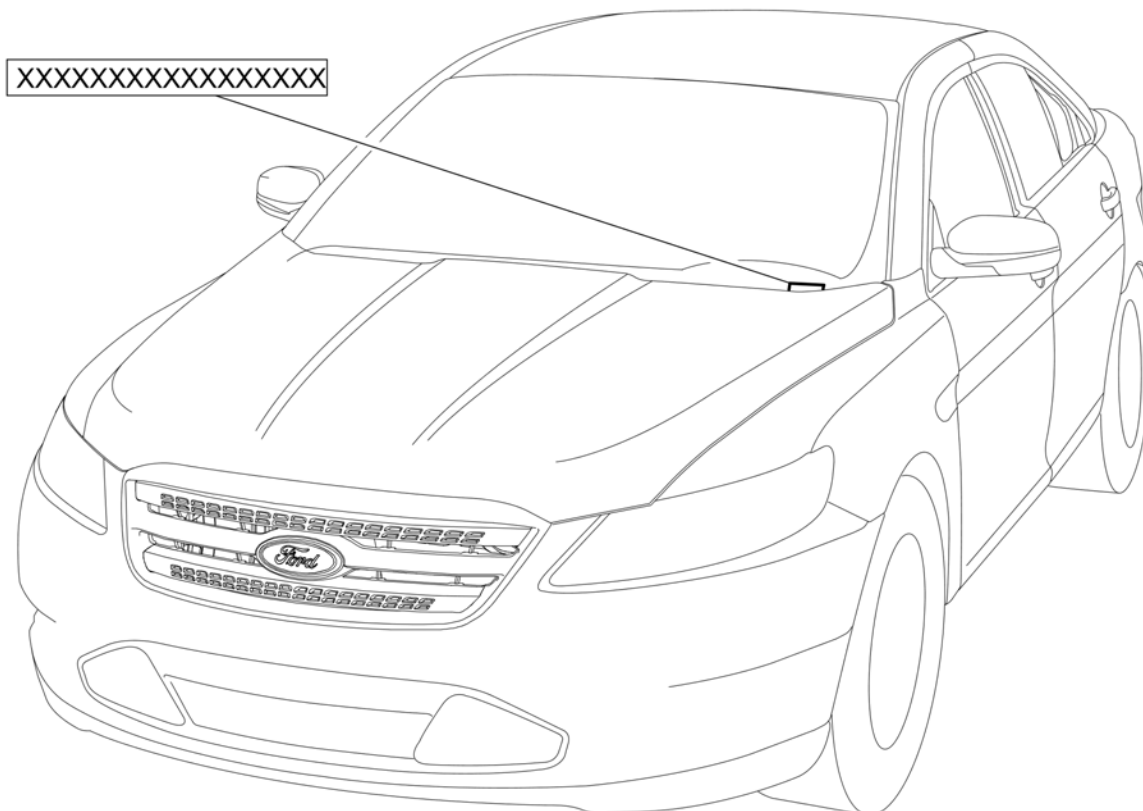
### Section 1: General Information - Sedan/Utility Police Interceptor

(Continued)

Item	Description
Belt Milder	Front driver and passenger positions
LATCH (Lower Anchors and Tethers for Children) system on rear outboard seat locations	A standard feature that Ford offers on all its vehicles is the LATCH (Lower Anchors and Tethers for Children) system, which incorporates universal anchoring points in the vehicle seat bight (where the seat back and cushion meet), providing the secure and easy installation of compatible child seats
Seat Belts	Pretensioner/Energy-Management System with Adjustable Height in 1st Row
SOS Post-Crash Alert System	Integrated technology that automatically unlocks the doors and activates the emergency flashers in the event of an airbag deployment
Tire Pressure Monitoring System (TPMS)	The TPMS is designed to alert the driver if the air pressure in one or more tires need/requires attention

### Identification Codes

#### Vehicle Identification Number (VIN) Location

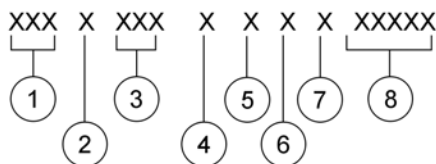


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#### Sedan/Utility Vehicle Identification Number (VIN) Positions

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.

## Section 1: General Information



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Position	Description
1	World manufacturer identifier (WMI)
2	Restraint-type code
3	Vehicle line, series, body type code
4	Engine type code
5	Computer-generated 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.

- 1FA - Ford Motor Company USA, passenger car (Sedan)
- 1FM - Ford Motor Company, USA, MPV. (Utility)

### 2. Restraint Type

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

- H - Active safety belts — all positions, driver and front passenger airbags with 1st and 2nd row side impact protection (Sedan)
- 5 - Active safety belts, all positions, driver and front passenger airbags and side impact airbags - all positions. (Utility)

### 3. Vehicle Line and Series Code

Positions 5 through 7 indicate vehicle line, and series.

- P2D - Taurus, Front Wheel Drive (FWD), SE
- P2E - Taurus, FWD, SEL
- P2F - Taurus, FWD, Limited
- P2H - Taurus, All-Wheel Drive (AWD), SEL
- P2J - Taurus, AWD, Limited
- P2K - Taurus, AWD, SHO
- P2L - Taurus, FWD, Police Interceptor
- P2M - Taurus, AWD, Police Interceptor
- K7A - Explorer, FWD, Police package
- K7B - Explorer, FWD
- K7D - Explorer, FWD, XLT

## Section 1: General Information

- K7F - Explorer, FWD, Limited
- K8A - Explorer, AWD, Police package
- K8D - Explorer, AWD, XLT
- K8F - Explorer, AWD, Limited

### 4. Engine Type

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

- T - 3.5L, DOHC, turbocharged, 4 valve, V6
- 8 - 3.5L, Twin Independent Variable Cam Timing (Ti-VCT) V6
- 9 - 2.0L Gasoline Turbocharged Direct Injection (GTDI), in-line 4 cylinder
- R - 3.7L, V6, Ti-VCT

### 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.

- F - 2015

### 7. Assembly Plant Code

The eleventh VIN position is the assembly plant code.

- G - Chicago (Chicago, Illinois)

### 8. Production Sequence Number


The last 6 VIN positions are a numeric code for the vehicle build sequence. This is also the vehicle serial and warranty number. The serial number can also be found on the engine block, transmission and frame.

- A00001-L99999

### Vehicle Certification (VC) Label

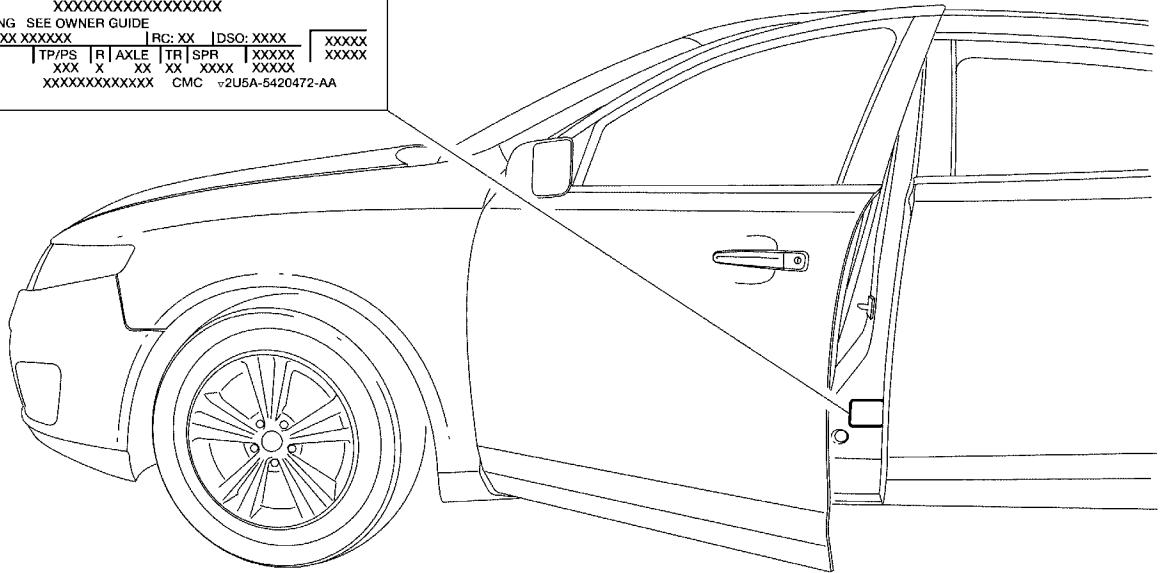
## Section 1: General Information

**MFD. BY FORD MOTOR CO.**  
 DATE: XXXXX GVWR: XXXXXXX/XXXXXXXX  
 FRONT GAWR: XXXXXXX/XXXXXXXX REAR GAWR: XXXXXXX/XXXXXXXX  
 THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY, BUMPER, AND THEFT PREVENTION STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.  
 VIN: XXXXXXXXXXXXXXXXXXXX TYPE: XXXXXXXXXXXXXXXXXXXX  
 MAXIMUM LOAD = OCCUPANTS + LUGGAGE = XXXXXXXXXXXX  
 OCCUPANTS = XXXXXXXX TOTAL: XXXXXXXXXXX XXXXXXXX  
 TIRE (FR): XXXXXXXXXXXXXXXXXXXX RIMS (FR): XXXXXXXX  
 (RR): XXXXXXXXXXXXXXXXXXXX RIMS (RR): XXXXXXXX  
 PRESSURE (FR): XXXX kPa/XXX PSI COLD (RR): XXXX kPa/XXX PSI COLD



XXXXXXXXXXXXXXXXXXXX

TRAILER TOWING SEE OWNER GUIDE  
 EXT PNT: XXXXXX XXXXXX IRC: XX DSO: XXXX XXXX  
 INT TR TP/PS R AXLE TR SPR XXXX XXXX  
 XX X XX XX XXXX XXXX  
 XXXXXXXXXXXXX CMC v2U5A-5420472-AA

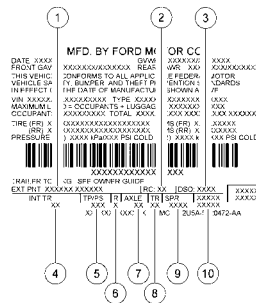


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The Vehicle Certification (VC) label contains the manufacturer name, the month and year of manufacture, the certification statement and the Vehicle Identification Number (VIN). It also includes Gross Vehicle Weight Rating (GVWR).

If a vehicle requires replacement of the VC label and is 4 years old or less, an authorized dealer must submit the VIN to their respective regional office. The regional office will submit a web form to the assembly plant for the replacement label. Once the label has been printed, a representative from the regional office will deliver the label to the dealer and witness installation on the vehicle. If a vehicle is more than 4 years old and requires a replacement label, the dealer must submit a request to the Department of Motor Vehicles.

### Vehicle Certification (VC) Label Code Positions



N0039636

## Section 1: General Information

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 code
7	Axle code
8	Transmission code
9	Spring code
10	Powertrain calibration numbering

### 1. Paint Codes

Vehicle paint codes may be listed as a 2-part code. The first set of paint code numbers/letters listed indicate the vehicle primary body color. The second set of numbers/letters listed (if applicable) indicate a 2-tone or accent body color. All colors are base coat/clear coat.

- E3 - Arizona Beige
- BU - Medium Brown Metallic
- HG - Smokestone Metallic
- J1 - Kodiak Brown Metallic
- J4 - Deep Impact Blue
- JL - Dark Toreador Red (clear coat metallic)
- KR - Norsesea Blue Pearl
- YZ - Oxford White
- 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)
- UA - Ebony
- UH - Tuxedo Black Metallic
- W6 - Green Gem #2
- UJ - Sterling Grey Metallic
- UX - Ingot Silver Metallic
- YG - Medium Titanium Metallic
- YZ - Oxford White Solid

### 4. Interior Trim Code

The interior trim codes are listed below. The first digit listed indicates the seat and fabric style. The second digit listed indicates the interior trim color.

- 7 - Greenwich cloth seating (Sedan)
- C - Cloth seating (police package) (Sedan)
- J - Milled Pebble leather seating (Sedan)
- M - Kensington cloth seating (Sedan)
- P - SOHO mini-perforated leather seating (Sedan)
- Q - Leather with perforated suede seating (Sedan)
- R - Cloth/vinyl seating (police package) (Sedan)



## Section 1: General Information

- S - SOHO mini-perforated leather seating SHO (Sedan)
- 7 - Cloth trim A (Utility)
- 8 - Cloth trim B (Utility)
- 9 - Cloth trim C with vinyl, Police package (Utility)
- B - Leather with 10-way driver/6-way passenger power seats (Utility)
- C - Leather with 10-way driver/10-way passenger power seats (Utility)
- F - Cloth trim D, Police package (Utility)

Interior trim color code

- D - Dune (Sedan)
- M - Charcoal Black/Mayan Gray (Sedan)
- W - Charcoal Black (Sedan)
- L - Medium Light Stone (Utility)
- Q - Charcoal Black/Pecan (Utility)
- M - Stone/Medium Light Stone (Utility)
- W - Charcoal Black (Utility)

### 6. Radio Type Code

The radio type codes are:

- H - High-definition AM/FM stereo with CD player and clock (Sedan)
- X - Premium electronic AM/FM stereo with CD player and clock (Sedan)
- Z - Electronic AM/FM stereo with CD player and clock (Sedan)
- A - Premium AM/FM stereo with CD player (MP3 capable) (Utility)
- M - Premium Plus AM/FM stereo with CD player (MP3 capable) (Utility)
- Z - Electronic AM/FM stereo with CD player (MP3 capable) - Sony (Utility)

### 7. Axle Ratio Code

The axle ratios are:

- 1 - 2.77 ratio (Sedan)
- 2 - 3.16 ratio (Sedan)
- 3 - 3.39 ratio (Sedan)
- 4 - 3.07 ratio (Sedan)
- 3E - 3.16 ratio (Utility)
- 3F - 3.39 ratio (Utility)
- 3G - 3.36 ratio (Utility)
- 3H - 3.51 ratio (Utility)
- 3J - 3.65 ratio (Utility)

### 8. Transmission Code

The transmission codes are:

- 6 - 6-speed automatic (6F35)
- C - 6-speed automatic (6F55), Taurus SHO
- J - 6-speed automatic (6F50)

### 9. Spring Codes

Spring codes list both front and rear spring codes. The first set of characters identify the front springs. The second set of characters identify the rear springs.

- AA - Front Wheel Drive (FWD) vehicles

## Section 1: General Information

- BB - All-Wheel Drive (AWD) vehicles
- CC - AWD, Gasoline Turbocharged Direct Injection (GTDI)
- DD - AWD, GTDI performance package
- EE - FWD vehicles
- FF - FWD vehicles
- GG - AWD vehicles
- HH - AWD, GTDI performance package

The front spring base part number is: 5310 (Utility)

The rear spring base part number is: 5560 (Utility)

- AA - AWD vehicles
- BB - FWD, GTDI performance package
- CC - FWD vehicles
- GG - FWD vehicles
- GG - AWD, GTDI performance package
- HH - AWD vehicles
- MM - AWD, GTDI performance package
- NN - AWD, GTDI performance package
- PP - AWD, GTDI performance package

### 10. Engine Calibration Information

Engine calibration information is located in the 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, however, they can be obtained through a scan tool using the most current software revision.

### 12. Vehicle Identification Number (VIN)

The VIN is located just below the bar code.

#### NOTE:

Powertrain calibration information is limited to a maximum of 5 characters per line on the VC label. Because of this, calibration identification consisting of more than 5 characters will wrap to the second line on the VC label.

Item	Description
1	Model year (year in which calibration strategy was first introduced)
2	Vehicle code
3	Transmission code
4	Unique calibrations (designates different hardware to similar vehicles), example: tires or drive ratios
5	Fleet code (describes fleet to which the vehicle belongs), example: 6 — Evaporative Emission (EVAP)
6	Certification region (lead region where multiple regions are included in one calibration), example: A — US federal
7	Revision level (will advance as revisions occur), not printed on label

### Good Practices

### Process And Quality Assurance Systems

## Section 1: General Information

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 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 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.

### 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.

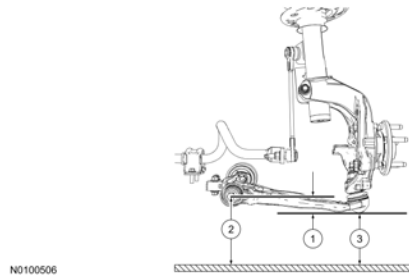
As such, the following steps should be taken to avoid flat spotting when the vehicle is not used for a period of time.

- Keep the vehicles tire pressure at the recommended operating pressure.
- If the vehicle is stored for a period longer than 15 days, it should be moved several feet during each 15-day period. The vehicle should be parked after being moved so that a different portion of the tread contacts the ground.

## Section 1: General Information

### Front Ride Height Measurement

Item	Specification
<b>Front Ride Height</b>	
Front (base)	66 mm (2.59 in) ± 10.0 mm (0.39 in)



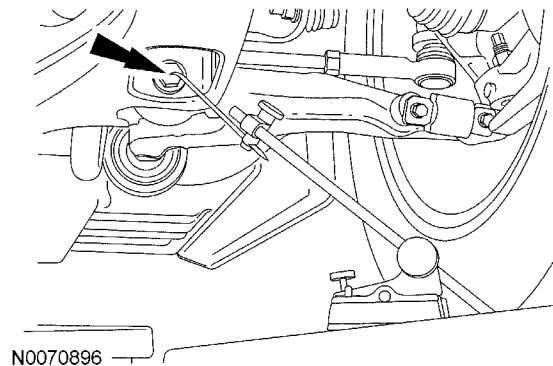
Item	Description
1	Ride height = 2 - 3
2	Measurement 2
3	Measurement 3

**NOTE:**

Make sure 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.

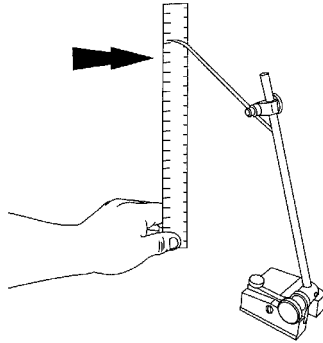
- Position a suitable surface gauge (such as Starrett 57D Surface Gauge) on a flat, level surface and adjust the gauge's arm until the scriber point is located in the center of the lower arm forward mounting bolt.

Lock the surface gauge in this position.



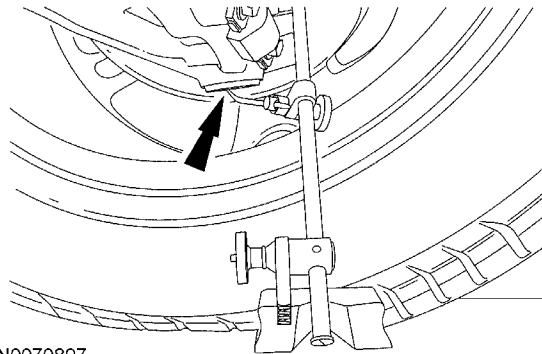
- With the surface gauge positioned on a flat, level surface, record the measurement of the surface gauge position (measurement 2).

## Section 1: General Information



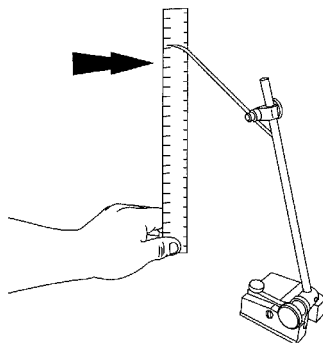
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3. Position the surface gauge on the same flat, level surface and adjust the gauge's arm until the scribe point is located on the lowest and furthest inboard point of the lower ball joint.
  - Lock the surface gauge in this position.



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4. With the surface gauge positioned on a flat, level surface, record the measurement of the surface gauge position (measurement 3).



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5. Subtract measurement 2 from measurement 1 to obtain the front ride height.

Refer to Specifications in this section.

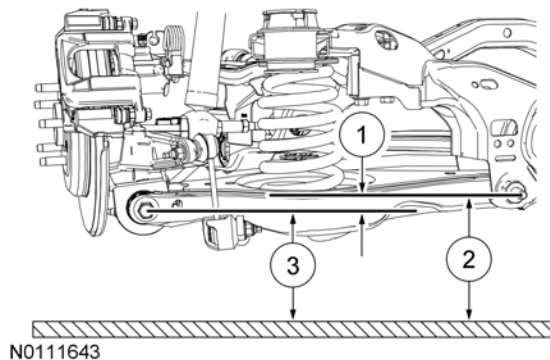
### Rear Ride Height Measurement

**NOTE:**

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

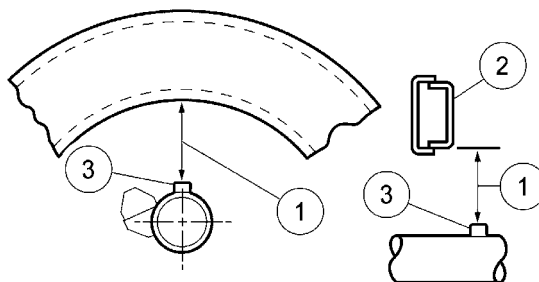
# Section 1: General Information

1. Measure the distance between the flat level surface and the center of the lower control arm-to-subframe bolt (measurement 2).
  2. Measure the distance between the same flat level surface and the center of the lower arm-to-knuckle bolt (measurement 3).
  3. Subtract measurement 3 from measurement 2 to obtain the rear ride height.
- Refer to Specifications in this section.



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

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



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

## 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.

4. 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).

### Tire Pressure Monitoring System (TPMS) Principles of Operation

The TPMS monitors the tire pressure using 4 valve stem mounted TPMS sensors to provide accurate tire pressures. Each individual sensor contains its own battery and transmits tire pressure data to the controlling module every 60 seconds when the vehicle speed exceeds 32 km/h (20 mph). The TPM module is a radio receiver that collects the tire pressure data and relays the information via the MS-CAN to the BCM. All of the TPMS functions are controlled by the BCM. The TPMS sensors are trained to the BCM, which records each TPMS sensors unique identifier. The BCM records where each TPMS sensor is located based on the training order and compares the actual tire pressure with the desired tire pressure as indicated on the Vehicle Certification label. If the tire pressure deviates from the desired tire pressure the BCM, using the HS-CAN, signals the IPC to illuminate the TPMS warning indicator and also displays a message on the message center. The programmed tire pressure cannot be changed.

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 or valve stems
- Body Control Module (BCM)
- Body Control Module (BCM) software and calibrations
- Tire Pressure Module (TPM)
- Instrument Cluster (IC) module
- Instrument Cluster (IC) software and calibrations
- Vehicle wheelbase longer than originally released

Certain modification could cause reduced system performance, up to and including the complete loss of TPMS functionality. This may include:

If concerns are present on a Utility Interceptor please reference police modifier bulletin P-018 located at [www.fleet.ford.com/truckbbas/non-html/2013/P-018.pdf](http://www.fleet.ford.com/truckbbas/non-html/2013/P-018.pdf)

- Non-OEM wheels or tires
- The addition of steel carcass or run-flat tires
- Modification of the vehicle's recommended tire pressure
- Lengthening of the vehicle's wheelbase may affect signal strength of the sensors to a point where the rear sensors can no longer be heard by the TPM module. (Vehicles certified at released wheelbases only)
- The addition of metallic structures, such as prisoner partitions, may affect the signal strength of the sensors and could interfere or prevent the TPM module from hearing the rear sensors.
- The addition of intended or unintended transmitters to the vehicle may affect the signal strength of the sensors or interfere with the TPM module's antenna

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.

## Section 1: General Information

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.

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<sup>1</sup>**  
**\*\* 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.**

Outside Temperature (°F)	Tire Placard Pressure (PSI)																	
	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)<sup>1</sup>**  
**\*\* 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.**

Outside Temperature (°C)	Tire Placard Pressure (kPa)																	
	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

<sup>1</sup>When Outside (Ambient) Temperature is greater than 21°C (70°F), Inflate tires to placard pressure.

<sup>1</sup>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

### 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 two 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 or 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 two 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.

#### NEW Front Headlamp Housing Only – 86P

A – Preformed hole for new LED front corner marker light used in police applications. Does not include LED installed lights (eliminates the need to drill/cut headlamp housing assemblies – shipped with cover with 4 screws.

## Section 2: Electrical



N0165655

### NEW Front Headlamp Lighting Solution-66A-Changes

#### A – High Beam Wig-Wag Warning

- The option is synchronized independently from other LEDs
- Stand-alone option - **wiring not included**
- Pre-wiring included with option 60A. Pre-wiring for grille lamp, siren and speaker – (option 60A)

#### B – High Intensity Front Corner Marker Lights

- Synchronized to the grille lights, forward auxiliary lights (Figure A) and mirror lights
- Stand-alone option – **wiring not included**
- Pre-wiring included with option 60A. Pre-wiring for grille lamp, siren and speaker – (option 60A)
- Flash pattern 1 – factory setting

## Section 2: Electrical



N0165656

### NEW Forward Indicator Pocket Warning Lights – 21W

A – Forward Indicator Pocket Warning Lights – 21W

- Controlled through the forward lighting harness and the instrument panel control circuit (white 14 - way connector)
- This option is synchronized independently from the other LEDs
- Stand-alone option – **wiring not included**
- Wiring kits recommended-with option
- Pre-wiring for grille lamp, siren and speaker – (option 60A) or
- Included with Ultimate wiring package – (option 67U)
- Flash pattern 1 – factory setting

## Section 2: Electrical



N0165657

### NEW Feature Change To The Ready For The Road (option 67H)

- Controlled through the forward lighting harness (14290) instrument panel and overlay harness control circuit (included with this option)
- Synchronized with the forward marker lights Option 66A side view mirror lights – (Option 63B) and forward auxiliary lights – (Option 21L)
- Flash pattern 11 – factory setting



N0165658

A. Integrated LED grille lights

## Section 2: Electrical

### NEW Forward Warning Auxiliary Light – 21L

A – Front Warning Auxiliary Light – 21L

- Stand-alone option – **control wiring not included**
- To receive factory wiring, requires option:
- Pre-wiring for grille LED lights (option 60A)
- Controlled through the forward lighting harness 14290 instrument panel control circuit (white 14-way connector)
- Flash pattern 10



### Tail Lamp Housing Prep - 86T

- Pre-formed holes with standard twist lock sealing capability
- Eliminates need to drill housing assemblies
- Pre-formed holes are plugged
- **NOTE:**  
Does not include LED installed lights



### NEW Feature Change – Tail Lamp Lighting

A – Tail Lamp Lighting Solution – 66B Rear Corner Marker Light - Feature Change

- Synchronized with rear quarter glass side marker lights (option 63L) and rear lighting solution (option 66C)

## Section 2: Electrical

- Installed adjacent to reverse light pocket
- Flash pattern 1 – factory setting



N0165673

### Side Marker LED – Side View Mirrors - 63B

Side View Mirrors - Side Marker LEDs

- Linear-high-intensity LED lights (driver side red / passenger side blue)
- Stand-alone option - **wiring not included**
- Pre-wiring for grille LED lights, siren and speaker – (Option 60A)
- Forward Lighting Harness (14290) instrument panel control circuit (14-way connector)
- Flash pattern red 1 / blue 2 – factory setting



N0165676

### Rear Quarter Glass Side Marker Lights - 63L

A - Rear Quarter Glass Side Marker Lights



## Section 2: Electrical

- Wide-angle high-intensity LED lights (driver side red / passenger side blue)
- Standalone Option – **wiring not included**
- Flash Pattern Red 1 / Blue 2 – factory setting

### Rear Lighting Solution – 66C

A - Includes 2 flashing linear high-intensity LED lights (driver side red / passenger side blue) mounted to the inside of the liftgate glass

B - Includes 2 flashing linear high-intensity LED lights (driver side red / passenger side blue) mounted to the inside lip of liftgate

- Stand-alone option – wiring not included (LED lights only).
- Flash pattern red 1/ blue 2 – factory setting

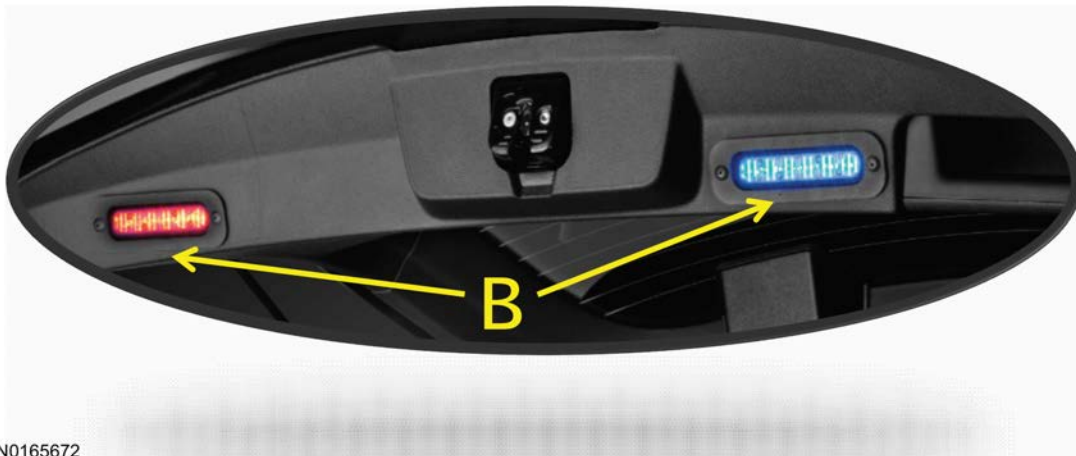
#### NOTE:

This package (66C) is included with ready for the road package (67H)



N0165671

## Section 2: Electrical



N0165672

### General Guidelines For Vehicle Modification

- 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 any relocated or removed wiring 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 incorrectly routed 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 any vehicle modifications are performed, the system must be disarmed by following the instructions provided in the current 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.

### Upfitter Sealing Pass-Through Points/Openings

Aftermarket upfit modification of Sedan Police Interceptor and Utility Police Interceptor vehicles can result in openings that allow external air and its contents to enter the vehicle that have not been sealed to original design intent.

## Section 2: Electrical

Examples of openings in some areas that were not properly sealed and allowed external air and its contents to enter the cargo area of the Utility Police Interceptor or trunk of the Sedan Police Interceptor. Proper care and due diligence must be used on all openings at any location on the vehicle from the dash panel to the rear of the vehicle.

**Any and all holes created or existing grommets affected during upfit which are exposed directly or indirectly to outside air MUST be completely sealed using Motorcraft® Seam Sealer (TA-2-B).**

### Sealing Pass-Through Points/Openings

Some Examples from a Utility Police Interceptor That are not properly sealed are shown in the following:

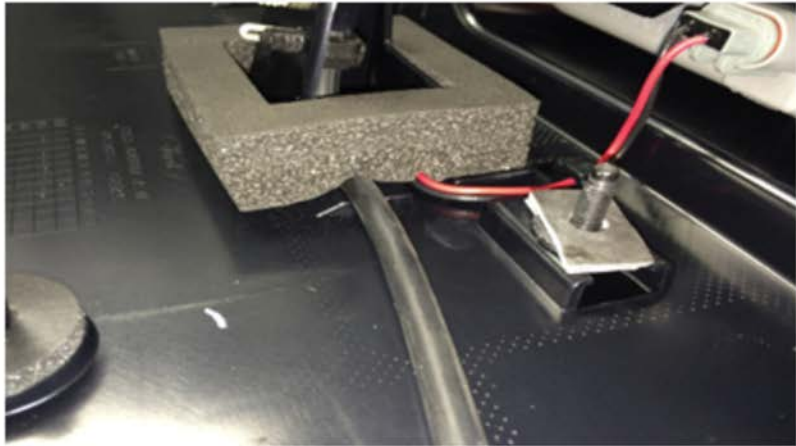
- Any holes in the rear of the vehicle must be sealed.
- Wiring passing through sheet metal and/or existing grommets behind the passenger and driver side tail lamps must be fully sealed using Motorcraft® Seam Sealer (TA-2-B)



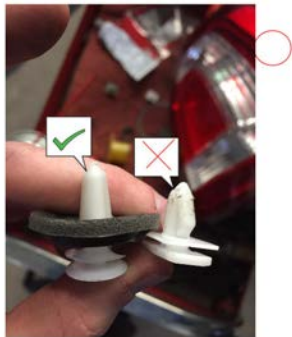
### Rear Spoiler Remove And Install

- Removal of the rear spoiler requires thorough sealing upon reinstallation.
- Inspect the foam tower seal and ensure that the wiring and washer line are properly routed and are not compromising the sealing interface. (Figure 3)
- Repair and/or re-seal as necessary using Motorcraft® Seam Sealer (TA-2-B).
- Replace any damaged plastic retainer clips with close attention to the foam gaskets. Repair any deformed sheet to ensure a good seal

# Section 2: Electrical



N0177569



N0177530

## Liftgate Openings/Holes

Any holes in the liftgate/Trunk of the Utility/Sedan Police Interceptor must be sealed with Motorcraft® Seam Sealer (TA-2-B).

## Section 2: Electrical



N0177837

### Sealing Pass-Thru Points/Openings

#### Liftgate Bulb Seal

- If the liftgate bulb seal is damaged, or is removed for any reason, it should be replaced and properly seated.
- If the trunk is damaged, or is removed for any reason, it should be replaced and properly seated.

#### Underbody

- Any holes in the body must be sealed with Motorcraft® Seam Sealer (TA-2-B).
- Any damaged parts must be replaced. Following are some examples:
  - spare tire tub
  - auxiliary A/C pass-through
  - air extractors (replace if damaged)
  - wiring grommets
  - body plugs
  - floor pan

#### Dash Panel

Any seals and/or holes in the dash panel must be replaced and/or properly sealed using Motorcraft® Seam Sealer (TA-2-b).

### Sealing Option For Body Openings/Pass-Through Points

- Pass-through or other openings of similar size should be sealed using the recommended foil-backed mastic patch.
- Foil-backed mastic patch should be used to cover and seal body openings.
- Part number for foil-backed mastic patch:
  - Following are service part numbers for two different size foil-backed mastic patches:
    - 4L3Z18203A16AA; size of patch - 1.5 x 147 x 330mm
    - DA5Z65203A16A; size of patch - 1.5 x 100 x 300mm

## Section 2: Electrical

### Keep-Alive Memory Power

The electronic engine and transmission control modules require battery power to be supplied at all times in order 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 cross-member. 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 under hood/under body wiring.
- Hypalon insulation should be used on links only (Ford Specification ESB-M1L54-A).
- Cross-linked Polyethylene (XLPE or SXL), rated at 135°C (275°F), is the required insulation for under hood/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.

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., under hood, 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 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. Only use a grommet with 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 any potential problems and design accordingly to accommodate. 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).

### 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. Convolute 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.
- **Any and all holes created or existing grommets affected during upfit which are exposed directly or indirectly to outside air MUST be completely sealed using Motorcraft® Seam Sealer (TA-2-B).**

### Wire Routing

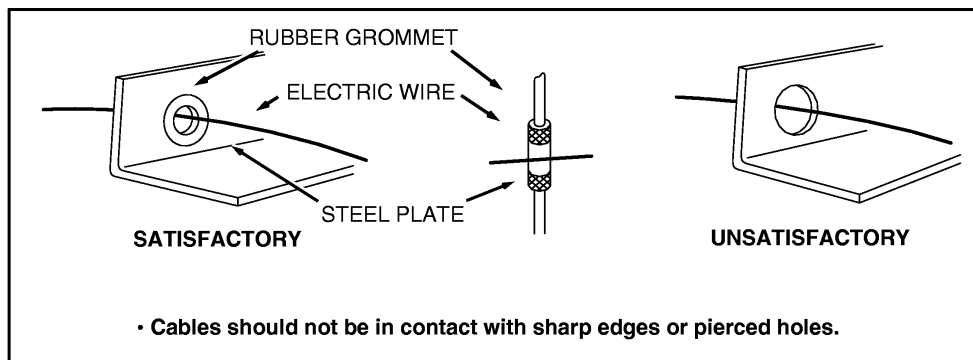


#### WARNING:

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).

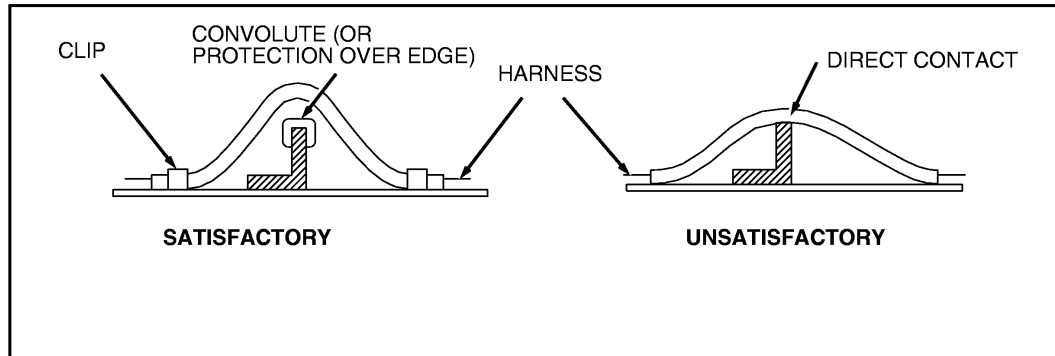


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- Route wires to avoid metal edges, screws, trim fasteners and abrasive surfaces. When such routing is not possible, use protective devices (shields, caps) to protect the wires. Cover metal edges with a protective shield and fasten the wiring within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



## Section 2: Electrical



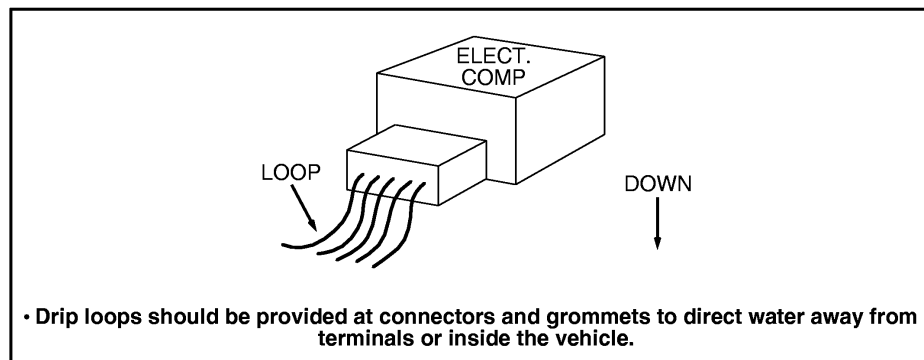
A0073514

- 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.
- Under hood/underbody wiring must be routed in conduit for protection. Minimum conduit rating is 177°C (350°F).

### 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).

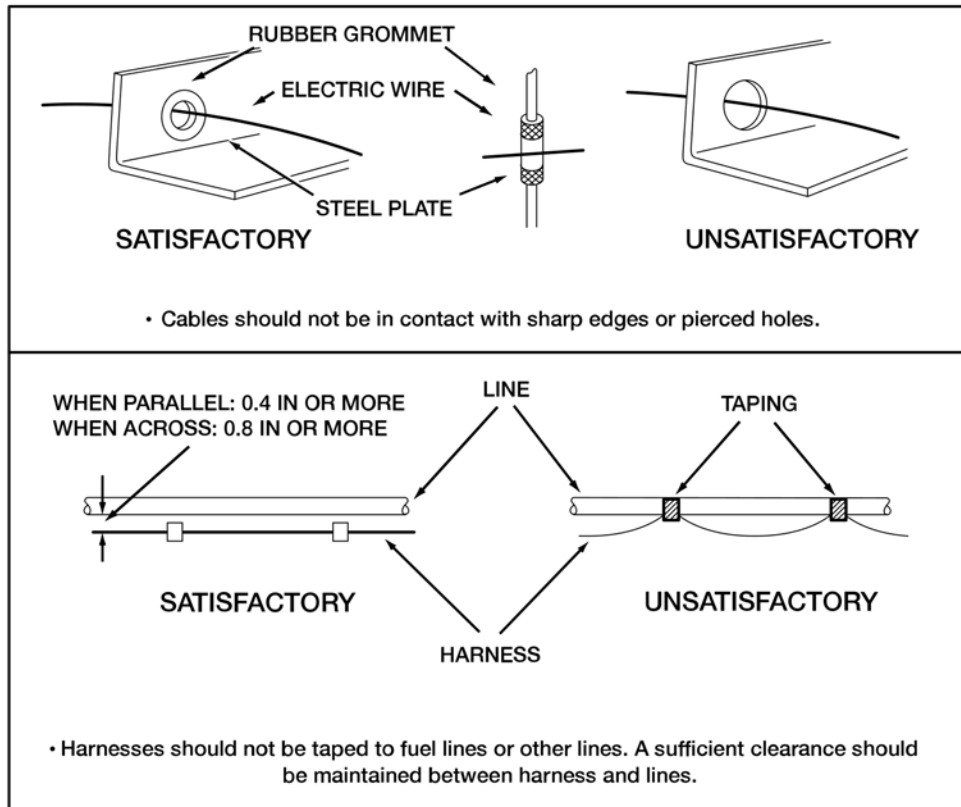


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- Avoid routing wires into areas exposed to wheel splash. When such routing cannot be avoided, adequate clipping and/or protective shields are required to protect the wires from stone and ice damage. Allow adequate slack in wiring between the engine 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.

## Section 2: Electrical

- 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.



N0072291

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.

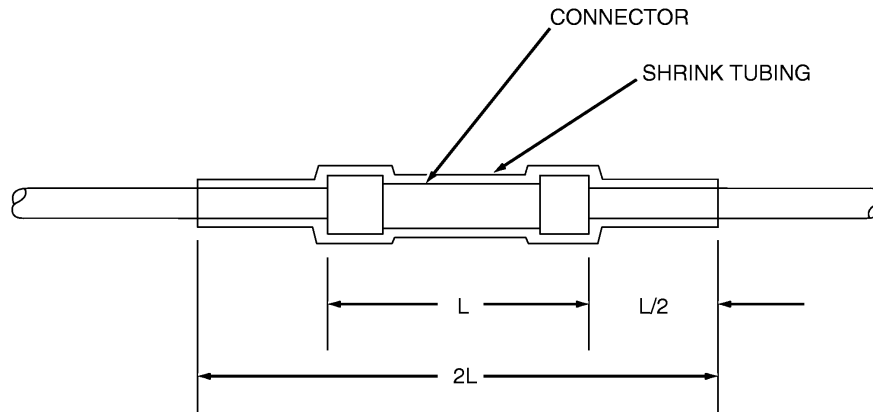
### Splices and Repairs

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.

## Section 2: Electrical

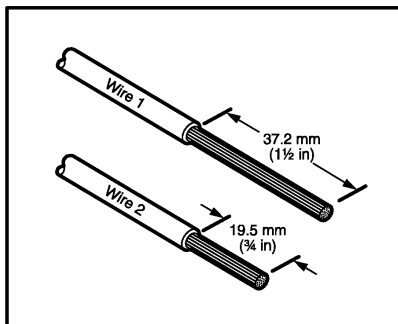
- Make sure splice joints are adequately sealed and insulated. In an outside environment, use Duraseal butt connectors or equivalent. A durable substitute splice joint can be achieved by using a bare metal barrel, crimping, flow-soldering and covering with shrink tubing. Quality electrical tape can be 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.
2. Strip wires to appropriate length.

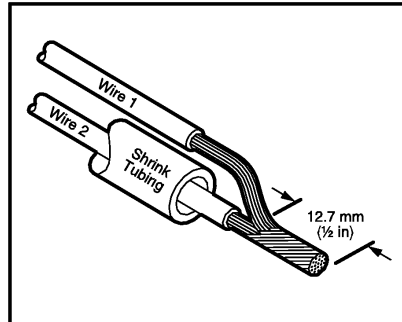


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3. Install heat shrink tubing.
4. Twist the wires together.
5. **NOTE:**  
Use resin-core mildly-activated (RMA) solder. Do not use acid-core solder.

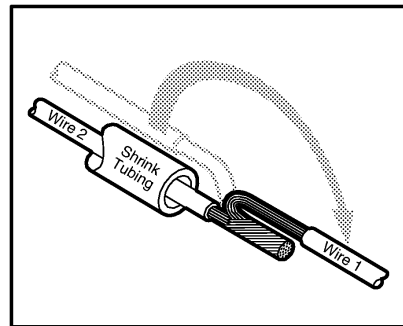
Solder wires together.

## Section 2: Electrical



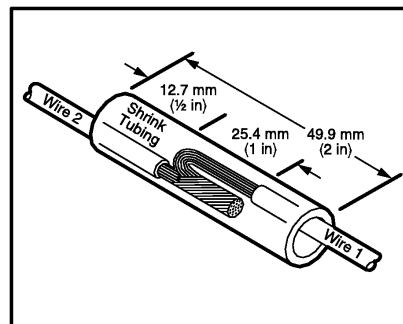
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6. **NOTE:**  
Wait for solder to cool before moving wires.  
Bend wire 1 back in a straight line.



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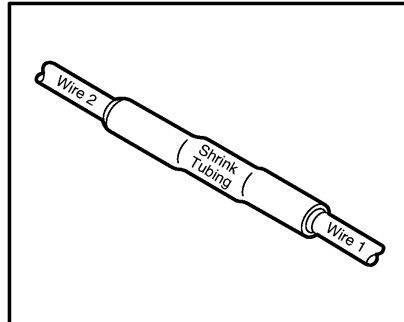
7. **NOTE:**  
Overlap tubing on both wires.  
Evenly position heat shrink tubing over wire repair.



A0075764

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

# Section 2: Electrical



A0075765

- 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

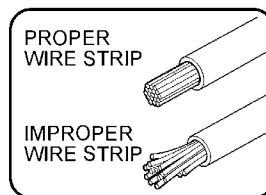
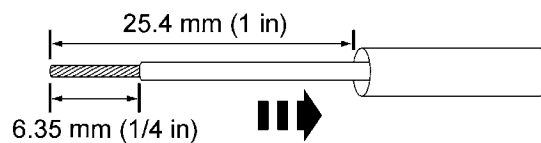
**Heat Shrinkable Tubing (Heat Shrink) (Ford Specification ESB-M99D56-A2)**

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 10–22 AWG Diameter Wire to Like Wire Diameter)**

- Disconnect the battery ground cable.
- Strip wires to appropriate length.
- Install heat shrink tubing.



N0059344

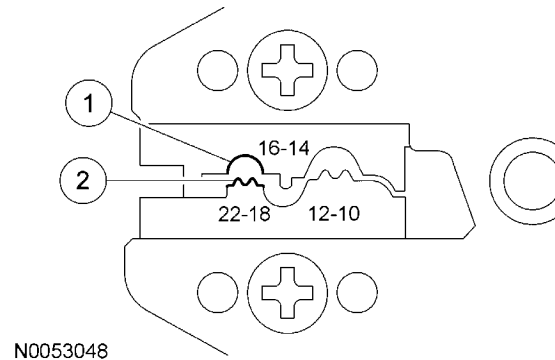
- Select the appropriate wire slice for the wires to be spliced from Rotunda Wire Splice Kit 164-R5903.
- NOTE:**

## Section 2: Electrical

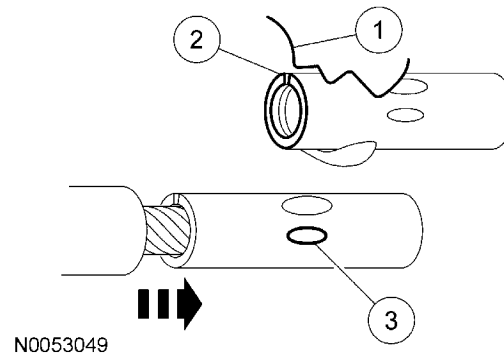
Rotunda 164-R5901 Pro-Crimper supplied with the wire splice kit is the only tool that can be used with these splices.

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

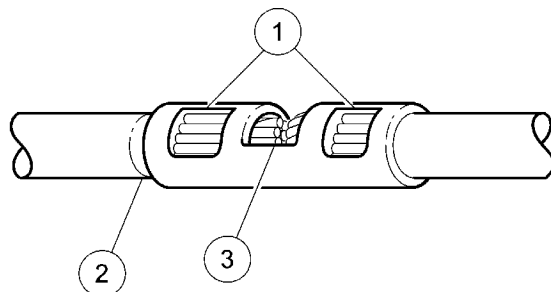


6. Crimp the connector.
  - (1) Center one end of the wire splice in the appropriate crimping chamber.
  - (2) Insert stripped wire into the barrel.
  - (3) Holding the wire in place, squeeze the tool handles until ratchet releases.



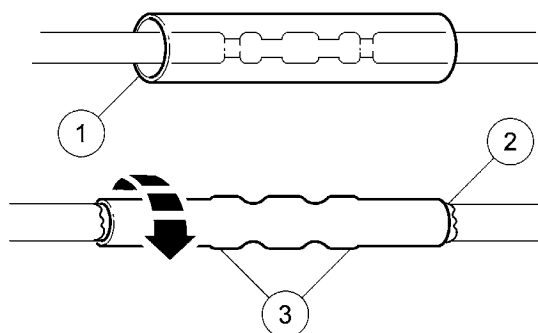
7. Repeating Step 6, crimp the other half of the splice.
8. Check for acceptable crimp.
  - (1) Crimp should be centered on each end of the butt splice.
  - (2) Wire insulation does not enter butt splice.
  - (3) Wire is visible through inspection hole of splices.

## Section 2: Electrical



N0053050

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.



N0053051

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.

### 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.

### Alternator Output

On 2013 Sedan and Utility Police Interceptors, the alternator is controlled by the PCM.

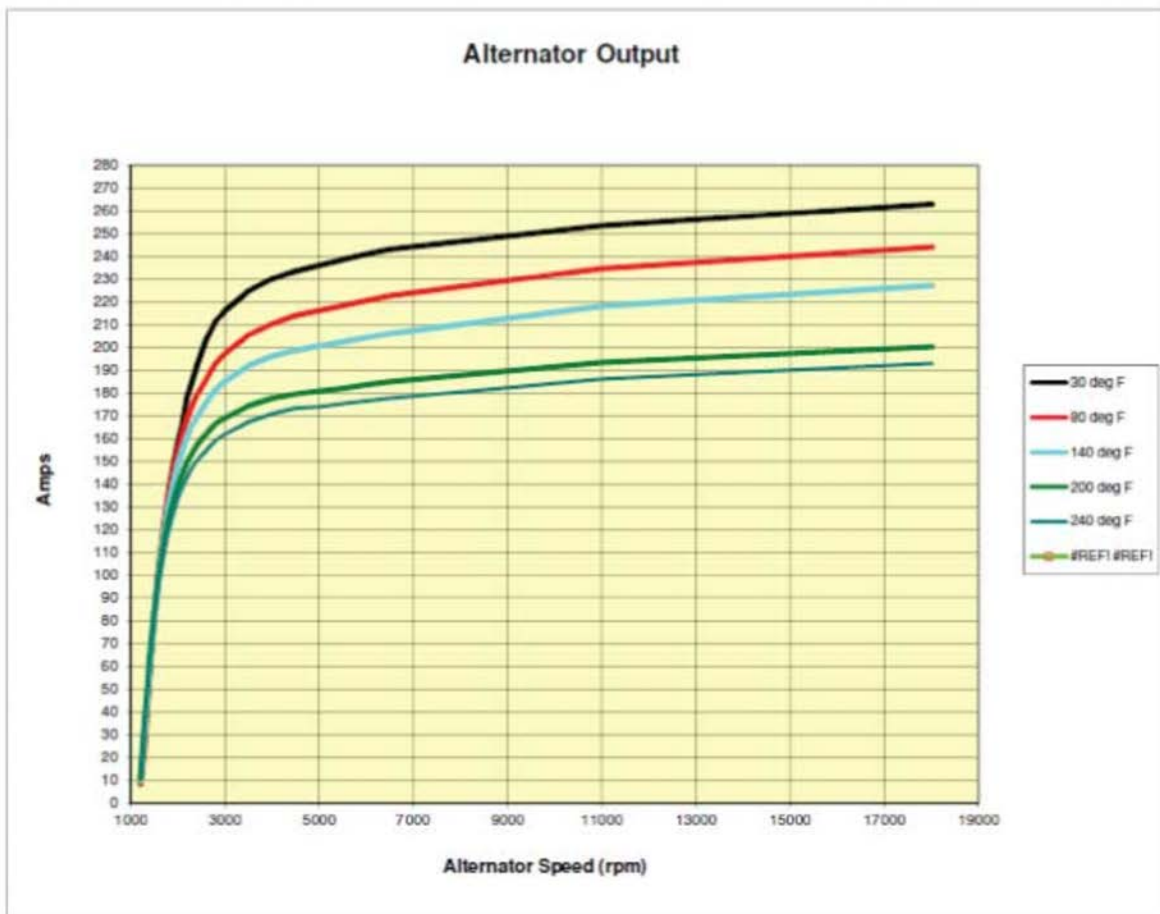
## Section 2: Electrical

The Police Interceptor alternator is different from that used on the standard retail vehicles. The Police Interceptor has a 220 amp alternator. This results in significantly greater current output, especially at idle, where police vehicles need it most.

- Alternator amp output:
  - Maximum output for the Police Interceptor is 220 amps
- Alternator drive ratio, determined by generator pulley size:
  - Sedan Police Interceptor 2.67:1
  - Utility Police Interceptor 2.67:1
- Idle speed:
  - Police Interceptor 600 rpm

### NOTE:

In order to calculate engine rpm from the graph below, divide the alternator speed by 2.67 (or 3 as an approximate). Alternator speed/3.0 = engine rpm.



N0140614

### Charging Margins

Alternator output varies with engine speed and ambient temperature as illustrated in the Alternator 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 under hood temperatures that may approach 93°C (200°F), combine to minimize power output from the generator. At the same time, electrical



## Section 2: 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.

Component	Amps
<b>Base</b>	
Miscellaneous Base Loads	19.1A
<b>Cooling</b>	
Cooling Fan (variable speed)	48A High Speed 12A Low Speed
<b>Climate Control</b>	
A/C Clutch	3.5A
A/C Fan-to-Face — High Speed (recirculating air)	18.9A
A/C Fan-to-Face — Medium/High Speed (recirculating air)	15.2A
Heater Fan-to-Foot — Medium/High Speed (fresh air)	13.9A
<b>Lighting</b>	
Exterior and Instrument Panel Lamps (non-dimmable)	3.2
Headlamps — Low Beam	Part of Police Load
Headlamps — High Beam (incremental)	Part of Police Load
Brake Lights (with High Mount Stop Lamp)	3.3A
<b>Heated Features</b>	
Heated Rear Window (includes heated mirrors)	26A
<b>Other</b>	
Radio	2.4A
Wiper Speed 1 (low)	2.3A
EPAS	70A (13% sized for CLCC)
Police Load	65A (80% sized for CLCC)
<b>Typical Vehicle Load = 60-70 Amps</b>	

**NOTE:**

Cooling and Climate Fan sizing measured from wind tunnel data (at the ambient temperatures of 110°F for AC and 30°F for Heat).

**NOTE:**

Police Load includes all lighting except for Exterior and IP lights. Police vehicles we measured had higher worse case lighting loads operated in wig/wag - strobe version than baseline. For CLCC, we assume 80% duty cycle throughout the three drive cycles. For EPAS sizing, it is assumed 100%.

**NOTE:**

EPAS peak load is 70A, for CLCC max duty cycle is 13%, for EPAS it is again 100%.

### 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.

## Section 2: Electrical

Component	Amps
Communications Radio	4.0 (9.0 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
Alley Lights (each)	1.0
Radar	0.8
Digital Video	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. Vehicle speed output available in 14-way connector at base of center stack see Chapter 2 Section 28 for Front Power Access and Signals for pinout. For 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 Body Control Module (BCM), do not splice into any lighting circuits**

#### Headlight Flashers (Wig-wag)

**NOTE:**

It is recommended that wig-wag function is accomplished through a dedicated solution. Ford offers a high-output durable LED based solution that combines wig-wag, turn signal, and park lights.

#### Tail Light/Brake Light Flashers (Wig-wag)

Adding tail light flashers (wig-wag) 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.

#### Disabling Brake Lights

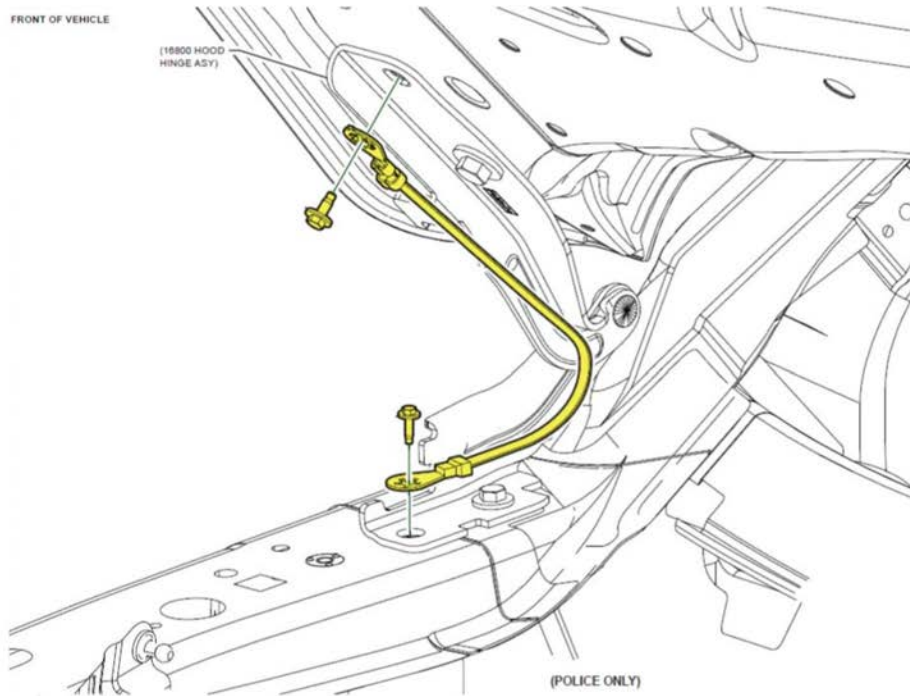
Do not disable the brake light circuits for any reason. For additional information, refer to Section 2: General Information in this guide.

#### Brake Applied Signal

For brake output circuit see 14-way connector pin 8 in BU5T-14A459-BA located at bottom of instrument panel above driveline tunnel between front seats. For access to this connector, remove valence panel per process in Chapter 2 Front Power Access and Vehicle Signals.

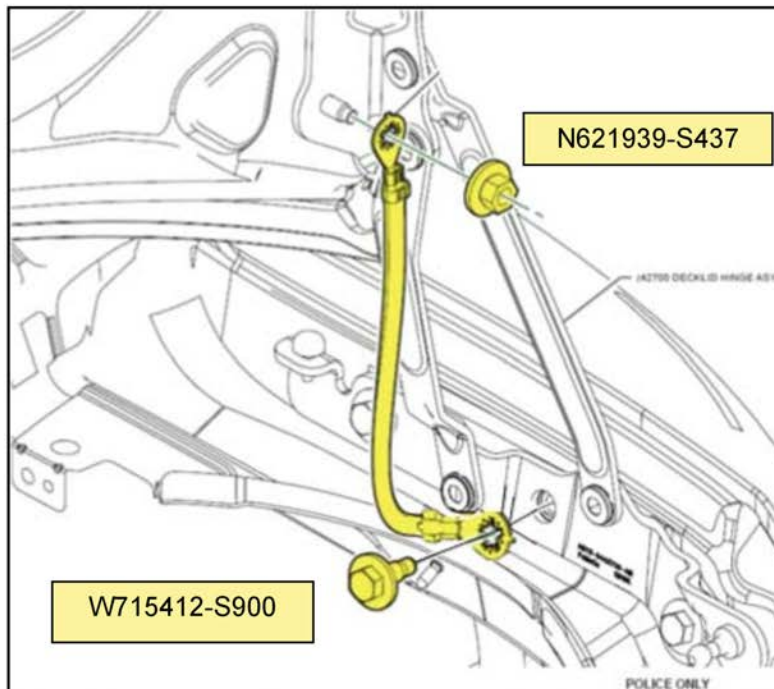
## Section 2: Electrical

### Sedan Interceptor - Front Ground Strap - Passenger Side Hood



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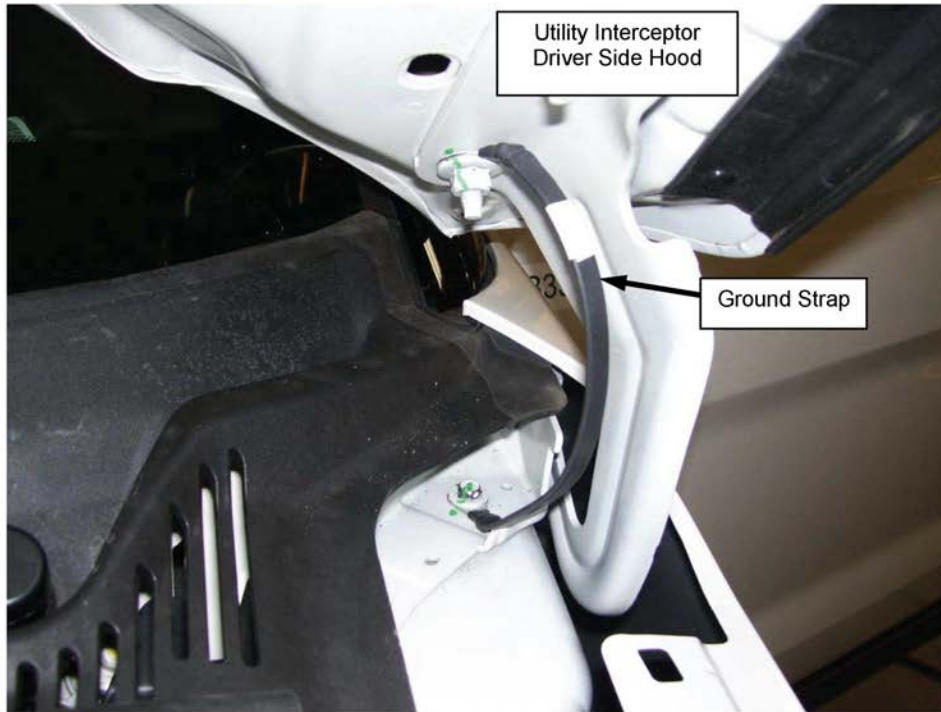
### Sedan Interceptor - Trunk Lid Strap - Passenger Side



N0140616

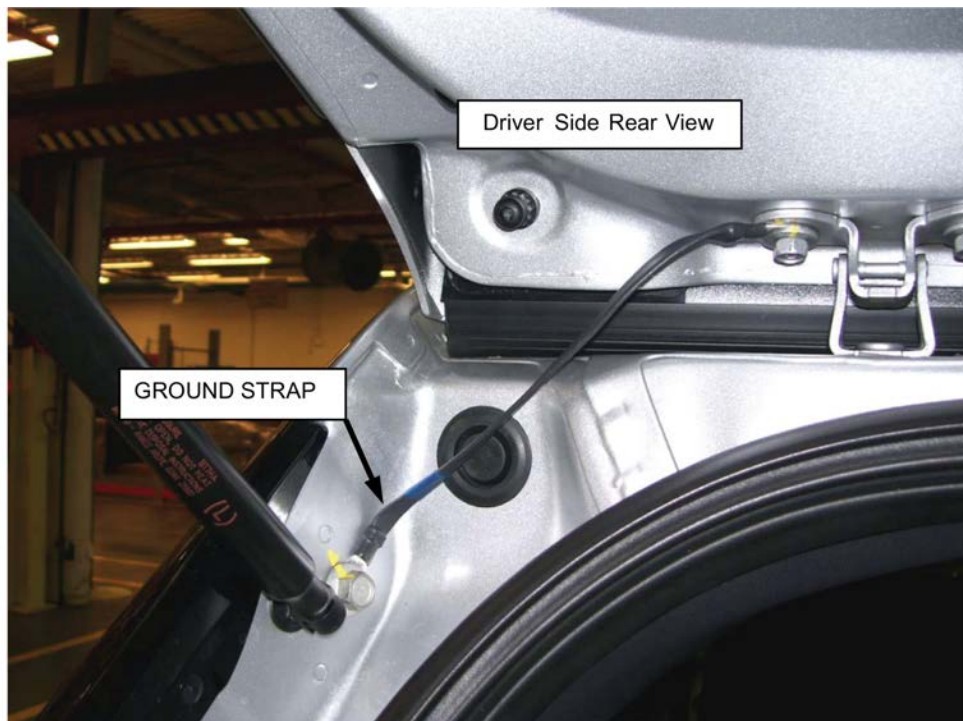
## Section 2: Electrical

### Utility Interceptor - Front Ground Strap - Passenger Side Hood



N0140617

### Utility Interceptor - Liftgate - Driver Side



N0140618

## Section 2: Electrical

### Regular Production Options (RPO)

Product Information see: [www.fordpoliceinterceptor.com](http://www.fordpoliceinterceptor.com)

### Siren/Speaker

#### **NOTICE:**

**Exposure to loud sounds can damage hearing. Hearing by those inside or outside in near proximity of the vehicle can be damaged. Hearing protection should always be used with exposure to sirens and horns. Sirens and horns should not be turned on indoors that will expose yourself or others to the sound generated. Refer to federal, state, and or local recommendations for requirements applicable to your area. Guidance is provided in OSHA Standard 1910.95 under "Permissible Noise Exposure".**

- Exposure to sounds produced by typical sirens and horns (near or greater than 120 dB) could result in permanent hearing loss.
- Certain packages for both the Sedan and Utility Police Interceptors include system designed siren amplifiers and speakers. Using a siren and/or speaker(s) from other manufacturers may reduce the output, the overall warning effectiveness of the siren system and possibly cause reduced component useful life. Your system should be tested to conform to federal, state, and local performance standards. Packages for the Sedan and Utility Police Interceptors are tested to SAE J1849, 500 feet audibility, OSHA Sound Compliance Standards and have been salt spray tested for corrosion and durability.
- Adhere to all Ford Police Interceptor Modifier Guide, Owners Manual, diagnostic manual safety and precaution procedures when servicing or relocating the vehicle or warning system.
- Loud sounds can damage your hearing as well as others in or within close proximity to your emergency vehicle. Exposure to very loud sounds in short duration or longer duration to moderately loud sounds can also damage hearing. For hearing conservation guidance, refer to federal, state, or local recommendations. OSHA Standard 1910.95 provides guidance on "Permissible Noise Exposure"
- Effective sirens and horns produce loud sounds (120 dB) that may cause permanent hearing loss. Always minimize your and others' exposure to siren sound and wear hearing protection. Do not sound the siren indoors or in enclosed areas where you and others will be exposed to the sound.
- Siren amplifiers and speakers are designed to work together as a system. Combining a siren and speaker from different manufacturers may reduce the warning effectiveness of the siren system and may damage the components. You should verify or test your combination to make sure the system works together properly and meets federal, state and local standards or guidelines. The factory installed components are tested and verified to support SAE J1849, 500 ft. Audibility, OSHA Sound Compliance Standards, and have been salt spray tested for durability.
- Frequently inspect the speaker to ensure it is clear of any obstruction, such as mud or snow, which will reduce maximum sound output and could lead to premature speaker failure.
- Follow all safety and precautions procedures in the Ford Police Interceptors Modifier Guide, Owners Manuals and diagnostic manuals when servicing or moving this equipment.

#### **NOTICE:**

**The lives of people depend on your safe operation of this system. It is important to read and follow all instructions shipped with the products. In addition, listed below are some other important safety instructions and precautions you should follow:**

### Signaling Limitations

- Be aware that the use of your visual and audible signaling device does not give you the right to force your way through traffic. Your emergency lights, siren, and actions are REQUESTING the right-of-way.
- Although your warning system is operating properly, it may not alert everyone. People may not hear, see or heed warning signal. You must recognize this fact and continue driving cautiously.
- Situations may occur which obstruct your warning signal when natural or man made objects are between your vehicle and others.

### Driving Limitations

- At the start of your shift, you should make sure that the light/sound system is securely attached to the vehicle and operating properly.
- If the unique combination of emergency vehicle equipment installed in your vehicle has resulted in the siren controls being installed in a position that does not allow you to operate them by touch only, OPERATE CONTROLS ONLY WHILE YOUR VEHICLE IS STOPPED.
- If driving conditions require your full attention, you should avoid operating the siren controls while the vehicle is in motion.
- File these instructions in a safe place and refer to them periodically. Give a copy of these instructions to new recruits and trainees.
- Failure to follow these safety precautions may result in property damage, serious injury, or death to you, to passengers, or to others.

### Configuration Instructions

The factory installed system is an extremely versatile electronic siren and light control system. Available siren tones are: wail, yelp, priority, hi-lo and an air horn sound. Horn ring control of siren tones is provided. Public address and radio rebroadcast are also available. Eight relays are available for controlling light bars, other auxiliary lights and accessories.

## Section 2: Electrical

For operations and configuration instructions, refer to the corresponding section of this manual.



### **WARNING:**

**Property damage, serious injury, or death to you or to others may result if the factory installed system is improperly programmed.**

Programming, if desired by the police agency, is to be performed at the time of installation. It is NOT intended for operators to "customize" the unit's operation for their individual preferences. It is the police agencies' responsibility to determine compatibility, suitability, and ensure proper programming of the factory installed system.

The person responsible for programming MUST be familiar with local codes and procedures for safe emergency vehicle siren and light operation.

- Since many factory installed features are programmable, operation is described for the "Standard" program. Refer to the supplied Operation and Configuration section of this manual for additional discussion of the "standard" program. It is the operator's responsibility to understand how his particular unit is configured (programmed) to operate.
- The factory installed key pad is designed to assist the operator's selection of functions. Each control head switch is recessed and aids in guiding the operator's finger to the switch's center for activation. When a switch is pressed, tactile feedback provides function selection indication as follows: a click is felt, a beep is heard, and the selected function's key illuminates brightly.

### **Individual LED Flash Pattern Programming**



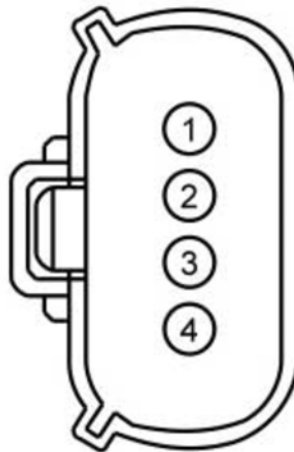
### **WARNING:**

**Police Package warning lights are a high-intensity Light-Emitting Diode (LED) type. Do not stare directly at these lights, as doing so may cause temporary blindness and/or eye damage. Failure to follow this instruction may result in personal injury.**

### **NOTE:**

When cycling through flash patterns, most flash patterns include an off/on pattern followed by an inverse on/off pattern. Setting the LED on one side to the on/off and the other to off/on creates the alternating pattern effect which should not be confused with synchronization which applies to the pattern timing between LED groups. For proper synchronization, the correct flash patterns must be selected for the individual flashing LEDs. Refer to the Explorer, Taurus Police Interceptor Modifier Guide for specific flashing LED patterns.

1. Disconnect the flashing LED to be programmed.
2. Connect ground to pin 4, component side of the flashing LED.



N0146097

## Section 2: Electrical

Connector Pin #	Circuit #	Signal Name/Function
1		Power from I/P Blunt
2		Scan Lock (CAP04 <=> LT, cap05 <=> RT)
3		Sync
4	GD	GND

N0141106

**NOTICE:**

**This step will activate the individual flashing LED. The flashing LED must be active to change the flash pattern.**

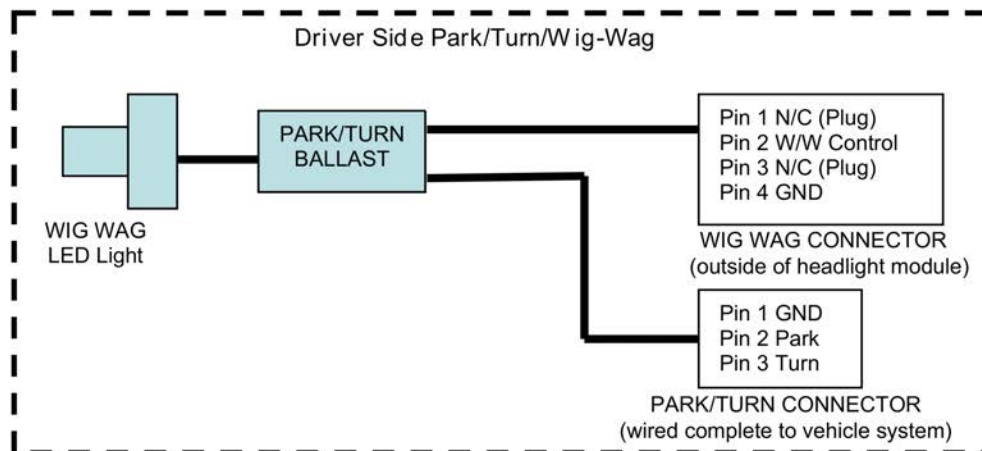
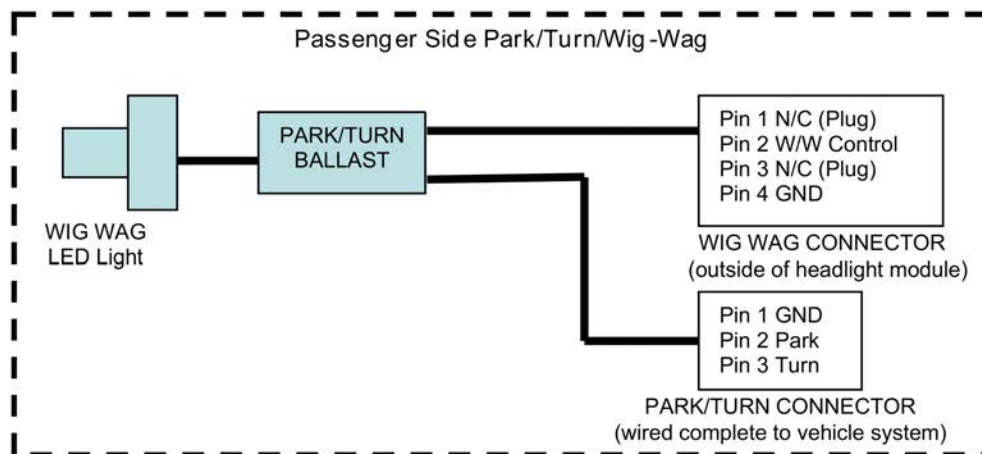
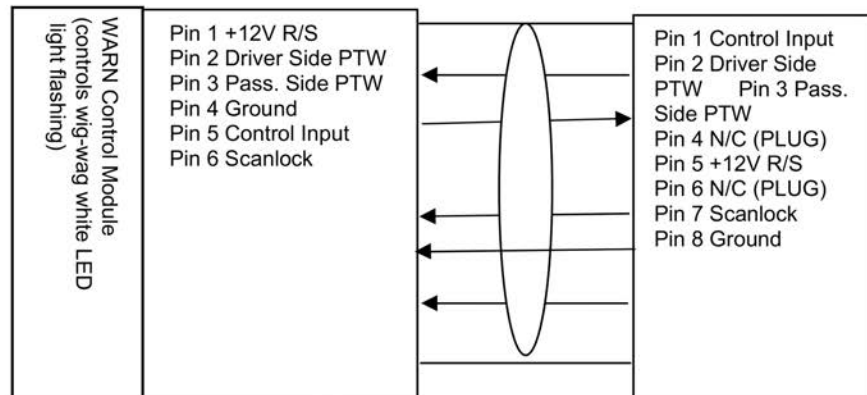
3. Connect 12 volts to pin 1, component side of the flashing LED.
4. Change the flashing LED flash pattern:
  - To cycle forward to the next pattern, connect 12 volts to pin 2, component side of the flashing LED for less than 1 second.
  - To cycle back to the previous pattern, connect 12 volts to pin 2, component side of the flashing LED for greater than 1 second.

**Sedan/Utility Interceptor Wig-Wag**

WARN Control Module controls the wig-wag (white LED lights in headlight module) alternating flash.

- With full OEM wire harness, no further wiring is required for wig-wag function. The amber turn signal/Park function is wired complete into the vehicle harness and will function without additional wiring.
- Without full OEM wire harness, upfit wiring is required to connect the control circuit, WARN control module and white LED wig-wag light pigtail for wig-wag function. The amber turn signal/Park function is wired complete into the vehicle harness and will function without additional wiring.

## Section 2: Electrical



N0146596

### Group LED Flash Pattern Programming

**NOTE:**

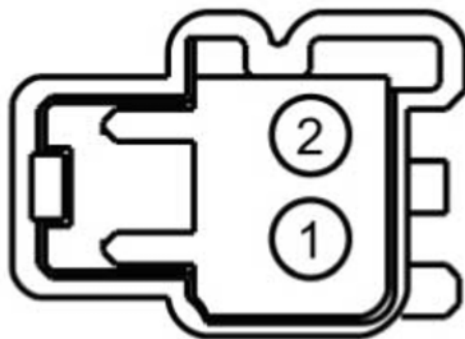
When cycling through flash patterns, most flash patterns include an off/on pattern followed by an inverse on/off pattern. Setting the LED on one side to the on/off and the other to off/on creates the alternating pattern effect which should not be confused with synchronization which



## Section 2: Electrical

applies to the pattern timing between LED groups. For proper synchronization, the correct flash patterns must be selected for the individual flashing LEDs. Refer to the Explorer, Taurus Police Interceptor Modifier Guide for specific flashing LED patterns.

1. Activate the flashing LEDs in the group to be programmed.
2. Locate the pattern programming circuits at in-line C4231. To change the flashing pattern:
  - Sedan - Connector C4231 located right side of trunk
  - Utility - Connector C4231 located in the left rear corner of the vehicle near floor.



N0146096

3. For park/turn/warn, grille, front corner and tail lamp flashing LEDs:
  - To cycle forward to the next pattern, connect 12 volts to pin 2 of in-line C4231 for less than 1 second.
  - To cycle back to the previous pattern, connect 12 volts to pin 2 of in-line C4231 for greater than 1 second.
4. For high mount and deck lid flashing LEDs:
  - To cycle forward to the next pattern, connect 12 volts to pin 1 of in-line C4231 for less than 1 second.
  - To cycle back to the previous pattern, connect 12 volts to pin 1 of in-line C4231 for greater than 1 second.

### New Utility Police Interceptor OPTIONAL Rear Door Release

This new option for the 2017 model year (MY) Utility Police Interceptor (Option 18D - Global Unlock) provides a choice to have same rear cargo release strategy available from 2013MY through 2015MY. Global Unlock (Option 18D) unlocks the rear cargo door when the 4 vehicle doors are unlocked. With the 4 doors unlocked, the rear cargo door can be opened using the pushbutton on the exterior of the rear cargo door.

### Utility - Standard Feature On Utility Police Interceptor Rear Cargo Door Release

The independent liftgate locking feature provides a means to enable and disable the liftgate to be opened/released using the external liftgate release switch on the liftgate.

Switch the ignition to the run, start or accessory position. Pull and release the liftgate control on the overhead console.

#### NOTE:

Only the liftgate unlocks. All the other passenger doors remain in the previous locking state.

A warning lamp illuminates in the instrument cluster for 45 seconds. You can then open the liftgate using the exterior release button.

Once the 45 second timer expires, the lamp turns off and you can no longer open the liftgate. Pull and release the liftgate control on the overhead console again to restart the timer.

#### NOTE:

You can also unlock the liftgate by using the key blade inserted into the liftgate lock cylinder.

The liftgate locks when any of the following occur:

- You open and close the liftgate after you pull and release the liftgate control on the overhead console.
- The 45 second timer expires.

## Section 2: Electrical

### Opening The Liftgate With The Key FOB Liftgate Button (if Equipped)

Press the button to unlock the liftgate. The liftgate unlocks for 45 seconds, during which time you can open the liftgate using the exterior liftgate release button.

**NOTE:**

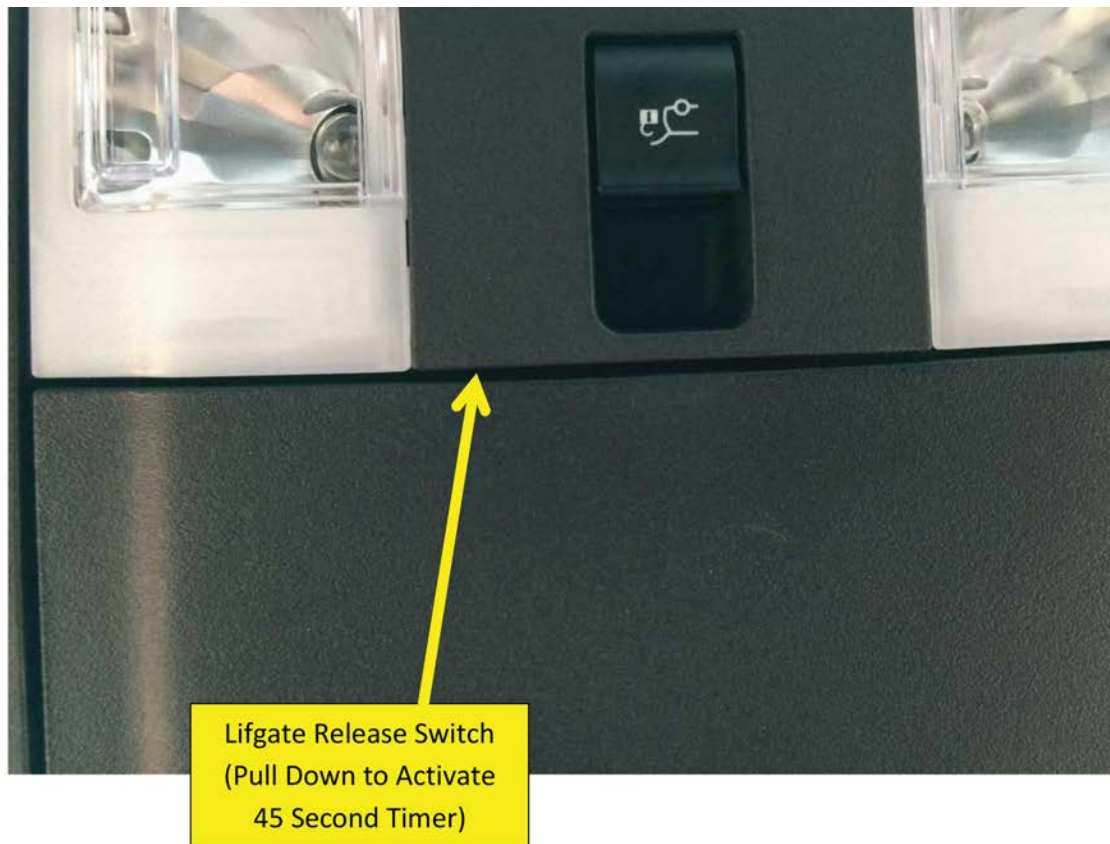
Only the liftgate unlocks. All the other passenger doors remain in the previous locking state.

**NOTE:**

If you do not open the liftgate within 45 seconds of unlocking it, the liftgate locks again. Press the button on the remote control or use the key blade inserted into the liftgate lock cylinder to unlock the liftgate again.

**NOTE:**

The liftgate does not unlock when you unlock all the doors using the remote control or power door lock control.



N0170848

## Section 2: Electrical



N0165652

### Sedan - Luggage Compartment Lid Release Switch

The new standard configuration is effective with all job 1 orders

- Sedan Interceptors are shipped from the assembly plant with trunk release activated on Run/Start power.
- Converting to activate trunk release on Battery power, hot all the time, requires Integrated Diagnostic Service (IDS) tool to enable this function.

### NEW Sedan Second Luggage Compartment Lid Release Switch

New for 2016 Model Year Sedan Police Interceptor

Standard Feature on Sedan Police Interceptor

- The addition of a second trunk release switch that is located in the overhead console between the map lights in the headliner at top of windshield. It activates the trunk release by pulling downward and away from the overhead console.
- This switch provides 2nd method for trunk release if access to the existing trunk release button on the instrument panel is covered by items such as a laptop.
- This 2nd switch function provides the same function as the existing push-button switch on the instrument panel. When activated, it releases the trunk lid.

## Section 2: Electrical



N0167443

### Sedan Upfitter Wire Bundle Dash Panel Pass-Through

Certain Police Interceptor vehicles come equipped with auxiliary dash panel pass-through wire circuits (upfitter auxiliary) depending on selected option packages.

New for 2015 MY, the **standard** upfitter auxiliary pass-through wire circuits (6 twisted pairs) can be used by the vehicle modifier.

- The vehicle interior end of the auxiliary upfitter circuits is found beneath the instrument panel near the Body Control Module (BCM).
- The underhood end of the auxiliary upfitter circuits is found taped to a harness underhood near the Battery Junction Box (BJB).

1. Twisted Pair A (20AWG)

White  
White / Blue

2. Twisted Pair B (20AWG)

Yellow  
Yellow / Black

3. Twisted Pair C (20AWG)

Green  
Green / White

4. Twisted Pair D (20AWG)

Blue  
Blue / White

## Section 2: Electrical

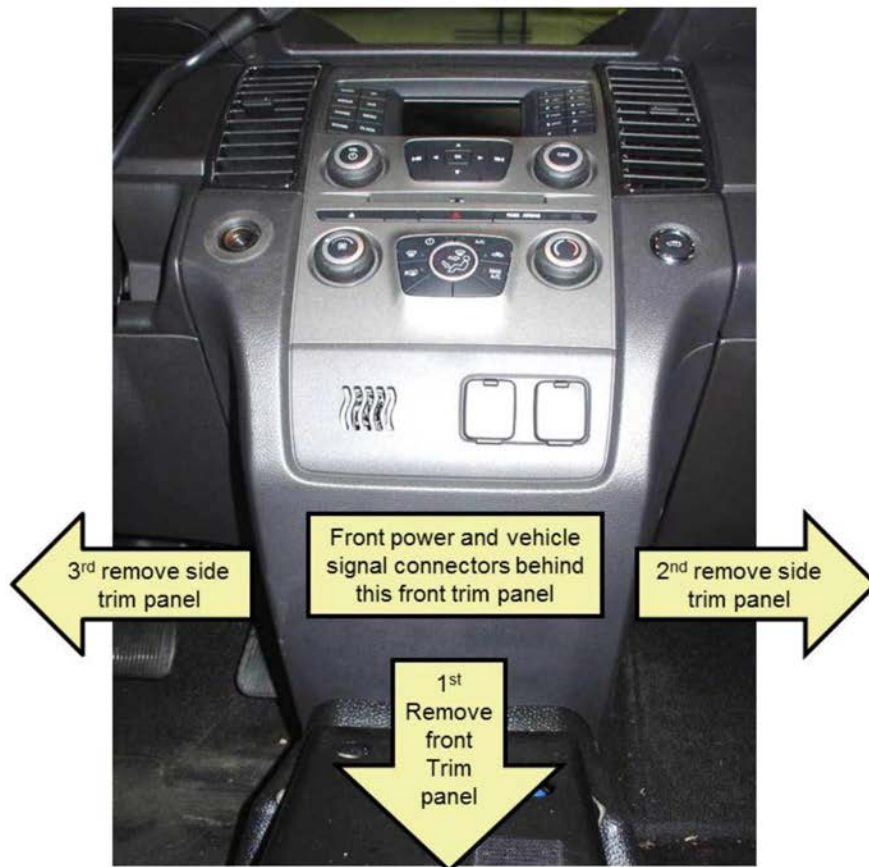
- Twisted Pair E (14AWG)

Orange  
Orange / Black

- Twisted Pair E (14AWG)

Black  
Black / White

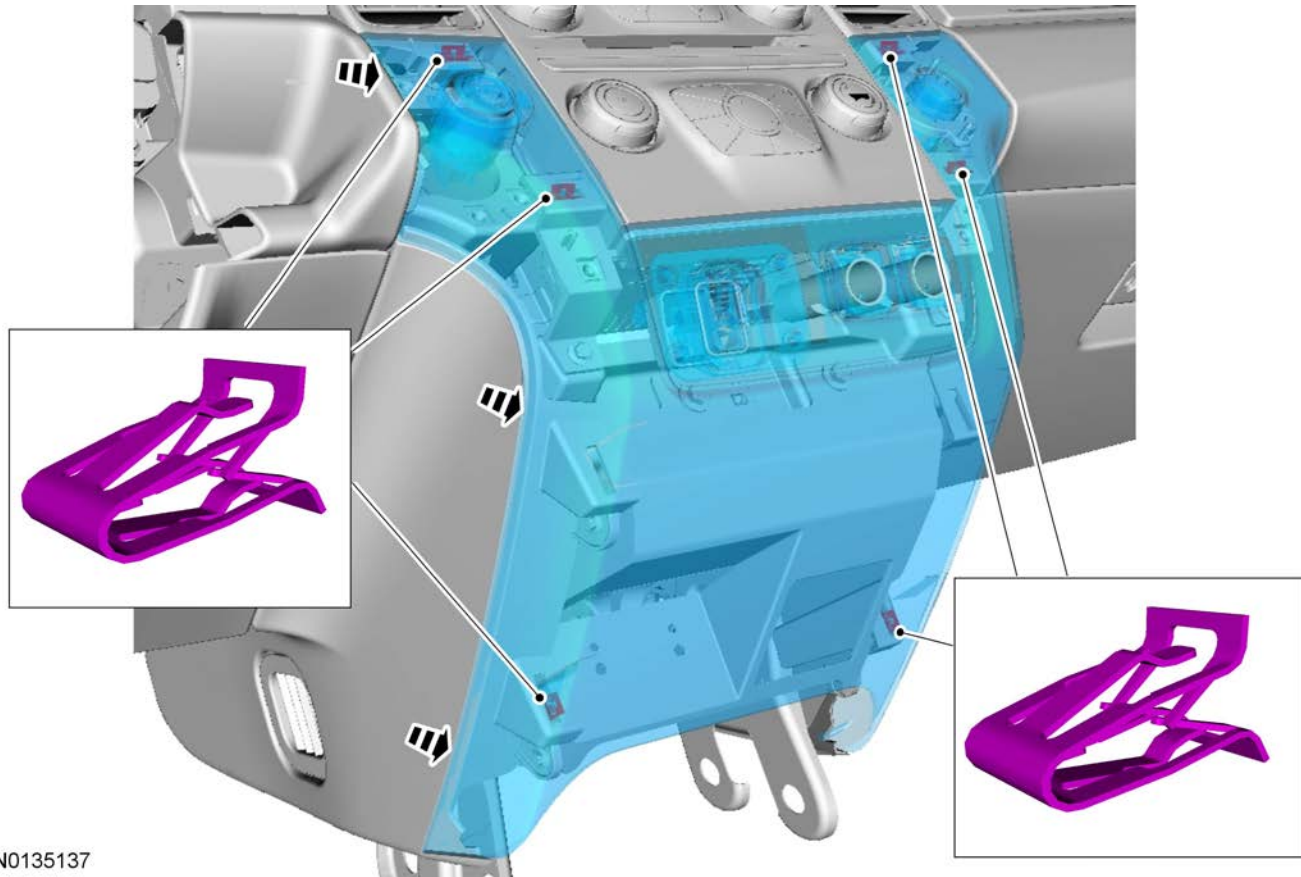
### Sedan — Lower Center Instrument Panel Removal and Installation



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- Remove the lower center instrument panel finish panel.

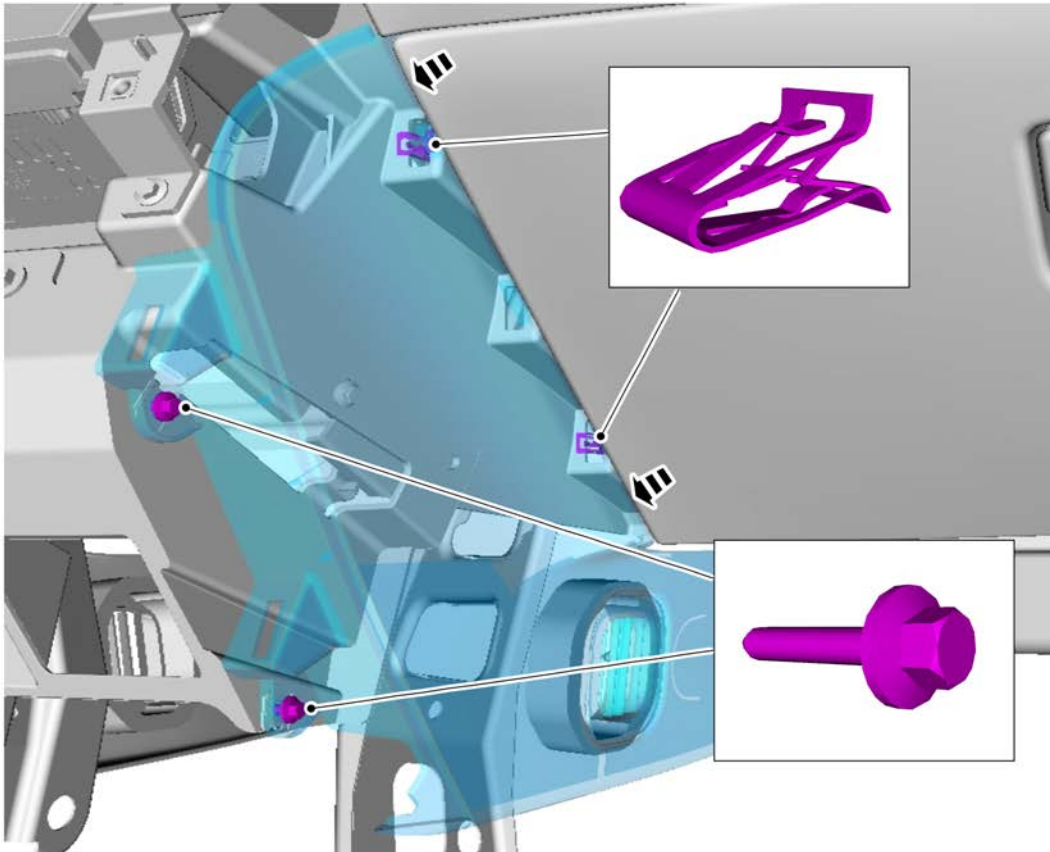
## Section 2: Electrical



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2. Remove the LH and RH lower cowl panel side trim.

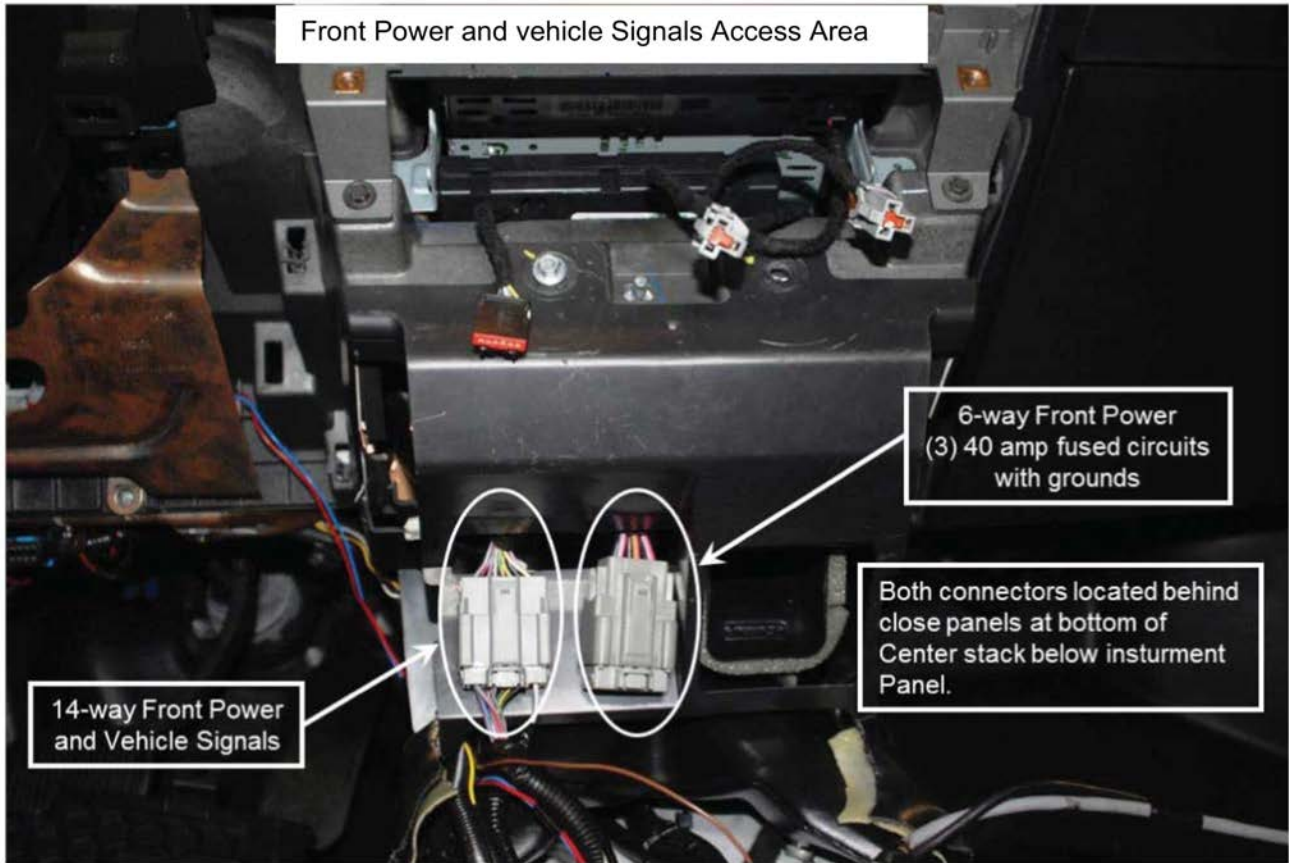
## Section 2: Electrical



### Sedan — Front Power And Vehicle Signals Access Area

- Located behind lower center instrument panel trim panels
- Siren speaker at Instrument panel center stack (4 Pin)
- Power/vehicle signals at instrument panel center stack (14 Pin)
- Police lights at instrument panel center stack (14 Pin)
- Police radio connector at instrument panel/center stack (4 Pin)
- 40A auxiliary power at instrument panel/center stack (6 Pin)

## Section 2: Electrical



N0151471



Part# 3U2Z-14S411-BJAC



Part# 3U2Z-14S411-HEA

N0151470

Connector View For Connector 3U2Z-14S411-HEA (continued on the next page).

Pin Number	Description	Fuse	Wire Color
1	B+ (40A)	BJB #40	VT-RD
2	B+ (40A)	BJB #6	BN-RD
3	B+ (40A)	BJB #16	VT-RD
4	Ground	IP Tunnel	BK-BJ



## Section 2: Electrical

(Continued)

5	Ground	IP Tunnel	BK-BJ
6	Ground	IP Tunnel	BK-BJ

**Connector View For Connector 3U2Z-14S411-BJAC.**

Pin Number	Description	Fuse	Wire Color
1	B+ Feed #1 (20A)	IP #2	GY-RD
2	Steering Wheel Switch #1 Output (1A) Grnd	GNRL Function Module	GY-BN
3	Steering Wheel Switch #2 Output (1A) Grnd	GNRL Function Module	WH-VT
4	Steering Wheel Switch #3 Output (1A) Grnd	GNRL Function Module	GN-BN
5	Steering Wheel Switch #4 Output (1A) Grnd	GNRL Function Module	YE-GY
6	Start (2A)	BJB #95	BN-BU
7	Run/Start #1 (20A)	BJB #73	WH-BN
8	B+ Feed #2 (20A)	IP #32	BU-RD
9	Vehicle Speed Output (VSS)	PCM	VT-OG
10	Delay Accessory (15A)	IP #17	GN-VT
11	B+ Feed #2 (15A)	IP #5	YE-RD
12	Park Detect Signal (Transmission)	Sifter GRND	GN
13	Driver Door Ajar Signal	IP #9 GRND	GN-VT
14	Run/Start #2 (20A)	IP #74	VT-BN

**NOTE:**

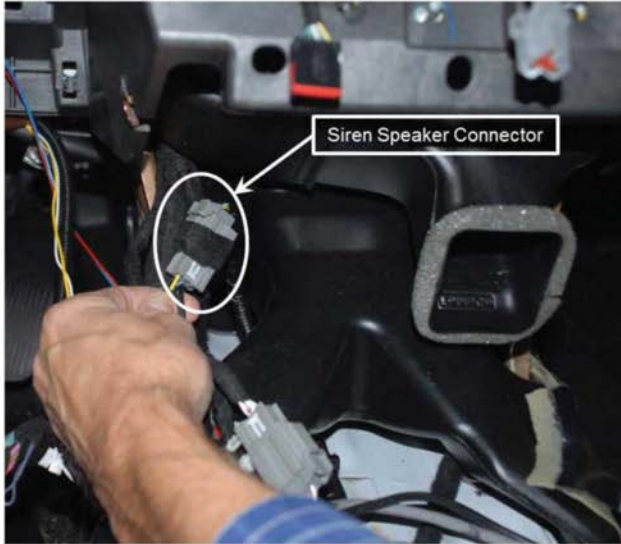
Fuse sizes are given to help locate the fuse in the Power Distribution Box (PDB). Ford recommends that current be limited to 85% of the value: 20 Amp should be limited to 17 Amp 15 Amp should be limited to 12 Amp.

**Park Detect:** Sources a ground when the vehicle is in park. This circuit is capable of grounding 1 Amp.

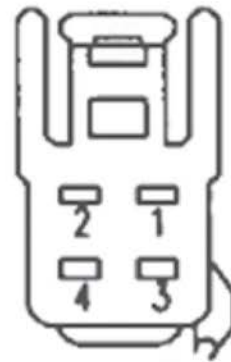
**Driver Door Ajar:** This circuit is a sense only grounded circuit when the door is closed. It is used to supply a module that has pull up resistors in its input.

# Section 2: Electrical

## Sedan — Siren Speaker Connector



Siren Speaker Connector



Part# 3U2Z-14S411-LUB



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Connector View For Connector 3U2Z-14S411-LUB.

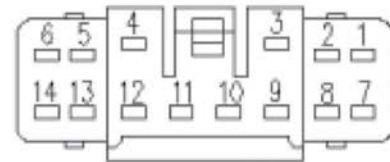
Pin Number	Description	Wire Color
1	Siren Driver Side Feed (+)	YE
2	Siren Shield Driver Side (-)	
3	Open Passenger Side Front (+)	
4	Siren Return Passenger Side Front (-)	BU-WH

# Section 2: Electrical

## Sedan — Police Options 14-Way Connector



Police Options 14-Way Connector



Part# CU2Z-14S411-APA



N0N015474

Connector View For Connector 3U2Z- 14S411-APA (continues on the next page).

Pin Number	Description	Wire Color
1	Wig Wag Control	VT
2	Front Corner LED Power Control	VT-OG
3	Front Flasher Power Control	BN-YE
4	Speaker (-) at Grille (Option)	GN-BU
5	Front Visor Lightbar Data	GY-BU

## Section 2: Electrical

(Continued)

6	Front Corner LED Light Sync	GY-OG
7	Dimmer	VT-GY
8	Brake Output Signal Ground	VT
9	Speaker (+) at Grille (Option)	BN
10	Front Visor Light Bar Ground	BK-VT
11	Battery Saver	YE-GN
12	Open	
13	Open	
14	LED Flash Pattern	GY-BN

**Front WIGWAG Power:** Supplies power to the wigwag connectors at the headlamps.

**Front Flasher Power:** Supplies power to the flasher relay.

**Dimmer:** Circuit supplied to allow backlight dimming of aftermarket equipment.

**Brake Output:** Fused Brake output.

### New 2017 Utility Police Interceptor Horn Ring Circuit

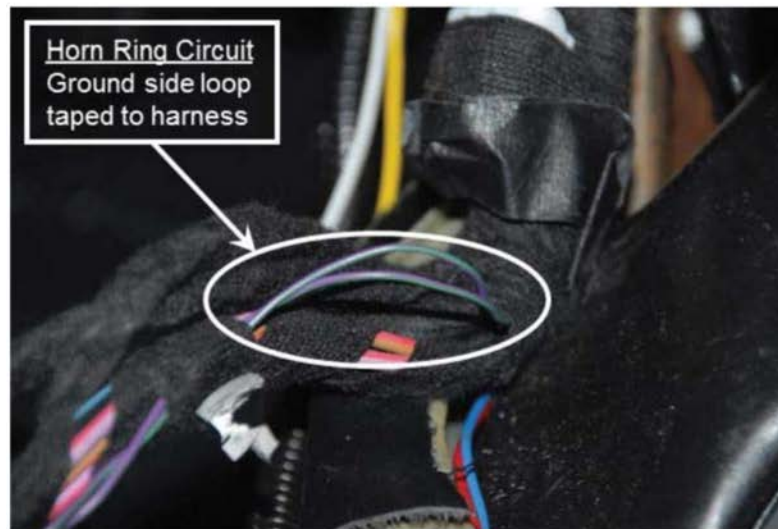
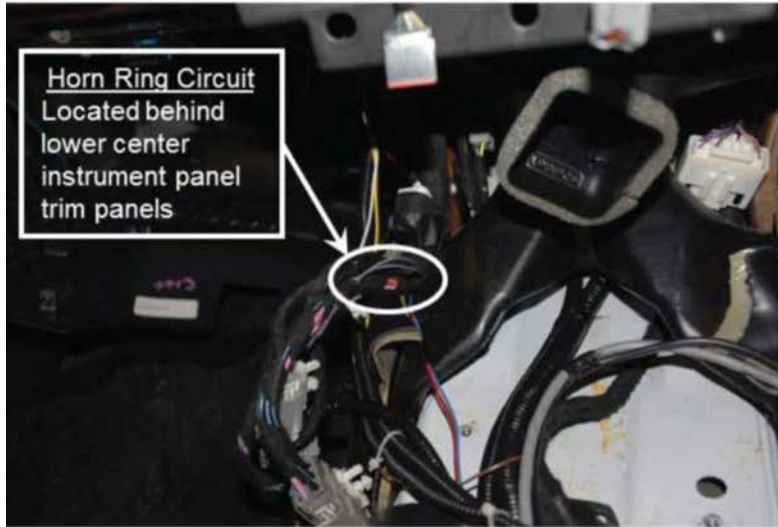
Ground side loop of horn ring circuit from the Body Control Module (BCM) (Utility Green) wire loop taped to harness from above the opening in the lower center instrument panel above the accelerator pedal. Ground side loop taped to harness.



### Sedan — Horn Ring Circuit

Ground side loop of horn ring circuit from Body Control Module (BCM) (sedan violet/Green) (utility green) wire loop taped to harness from above the opening in lower center instrument panel trim panels.

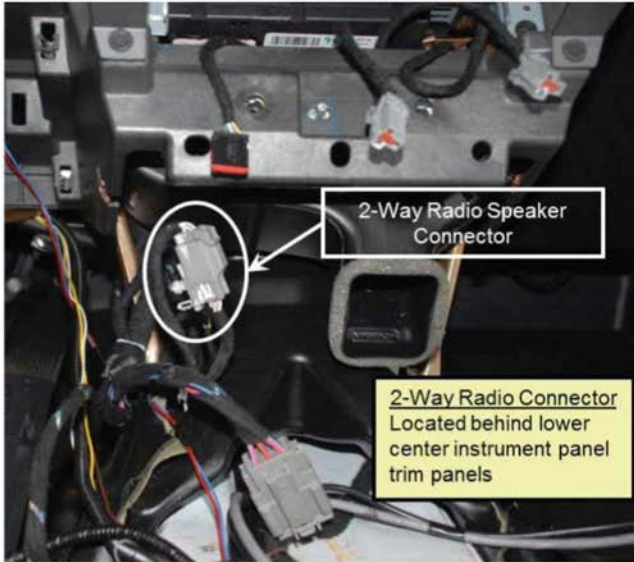
## Section 2: Electrical



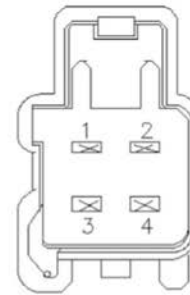
N0151475

# Section 2: Electrical

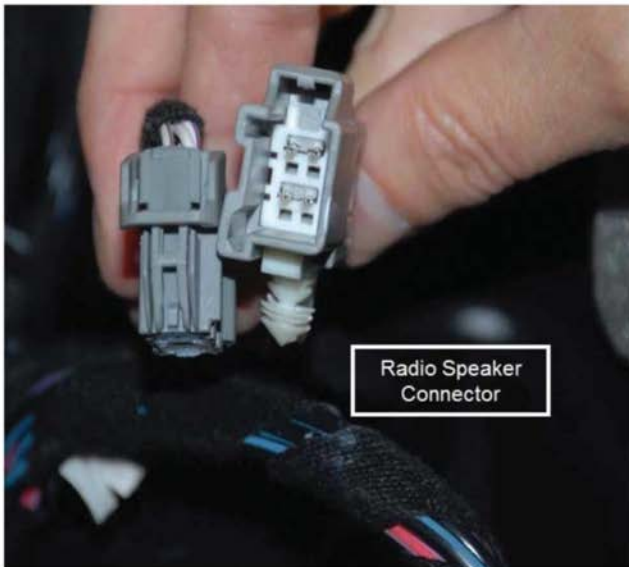
## Sedan — Radio and Speaker Connector



Radio and Speaker Connector



Part# 3U2Z-14S411-BUB



Part# 3U2Z-14S411-LUB

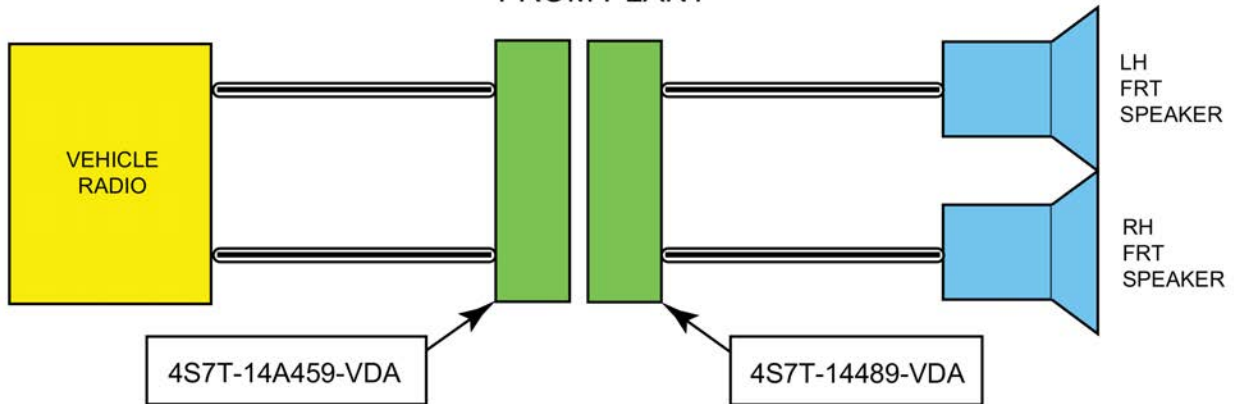
N0151472

Connector View For Connector 3U2Z- 14S411-BUB.

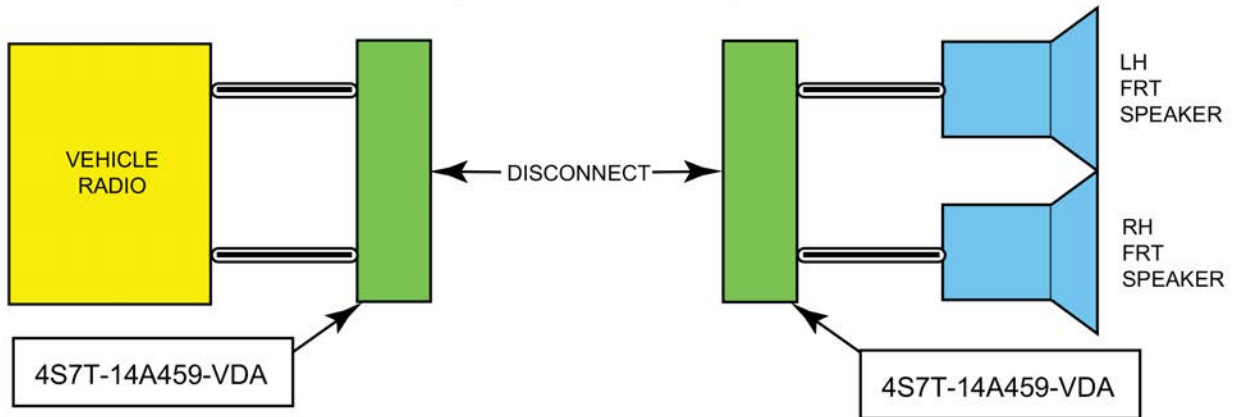
Pin Number	Description
1	Driver Side Front Speaker (+)
2	Driver Side Front Speaker (-)
3	Passenger Side Front Speaker (+)
4	Passenger Side Front Speaker (-)

# Section 2: Electrical

RADIO WIRING AS-SHIPPED FROM PLANT

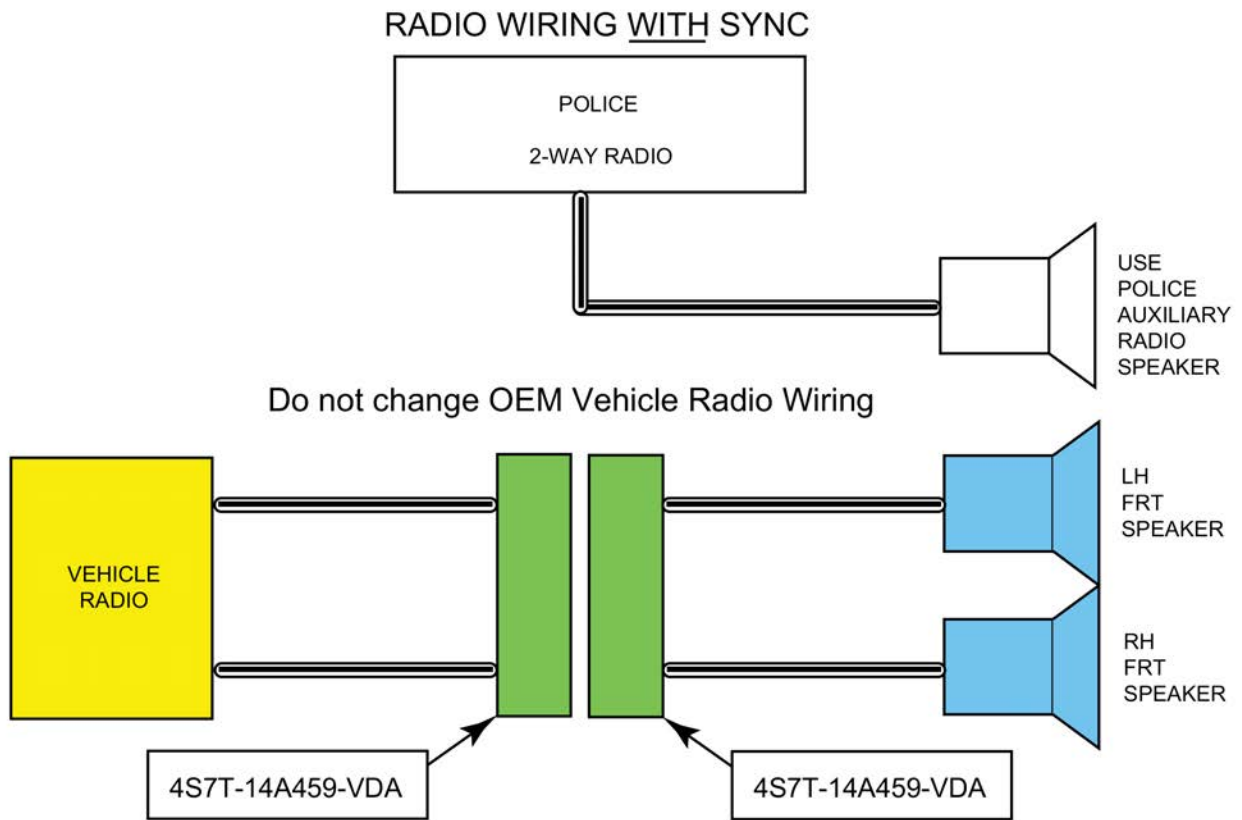


DISCONNECT RADIO CONNECTORS (NON-SYNC ONLY)



N0150582

# Section 2: Electrical

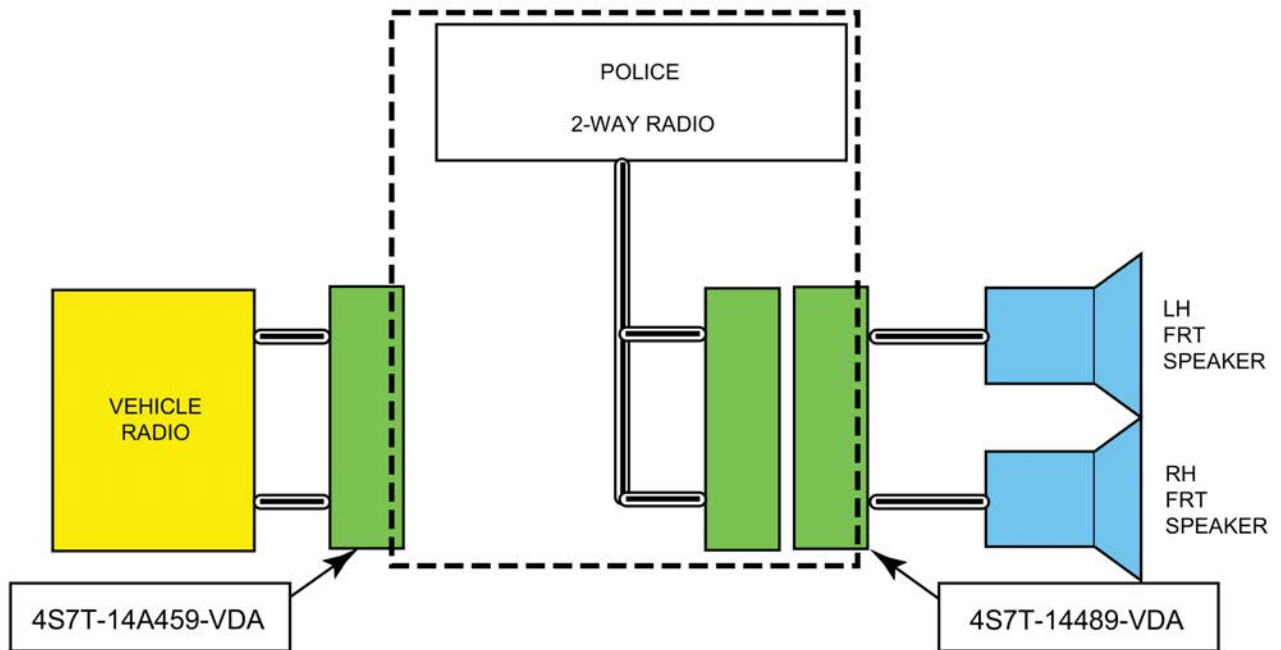


N0150583



# Section 2: Electrical

INSTALL POLICE 2-WAY RADIO AND MAKE CONNECTIONS TO OEM CONNECTORS (NON-SYNC ONLY)



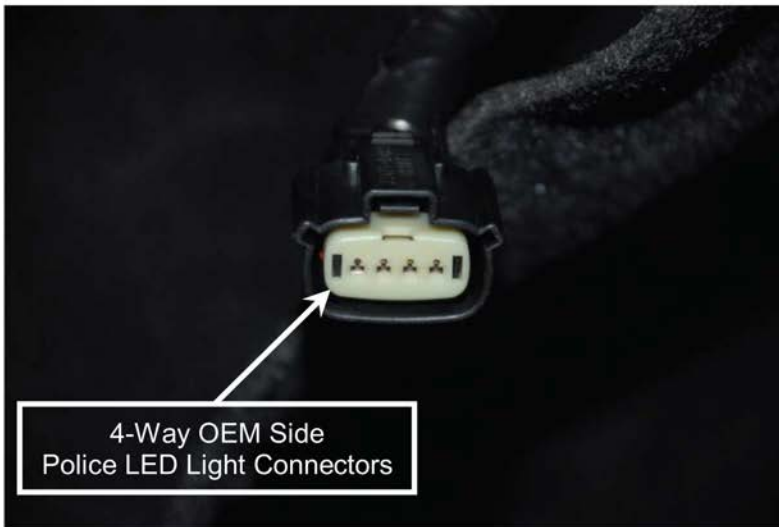
N0150581

# Section 2: Electrical

## Sedan – 4-Way Connector For All Police LED Light Heads



4-Way Connector For All Police LED Light Heads



N0151525

### Connector View For Connector 8U2Z-14S411-TA

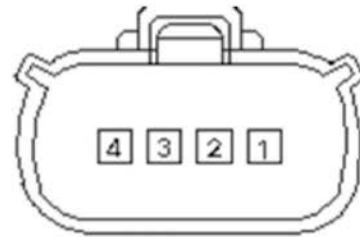
Pin Number	Description
1	Control Power
2	LED Light Pattern
3	LED Light Synch
4	Ground

## Section 2: Electrical

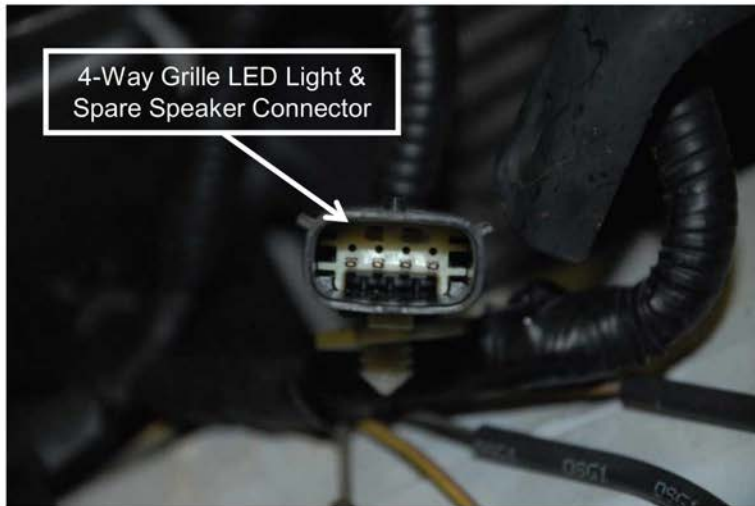
**Sedan — Grille LED Light Connector**



Grille LED Light Connector  
Attached above front bumper



Part# 8U2Z-14S411-TA



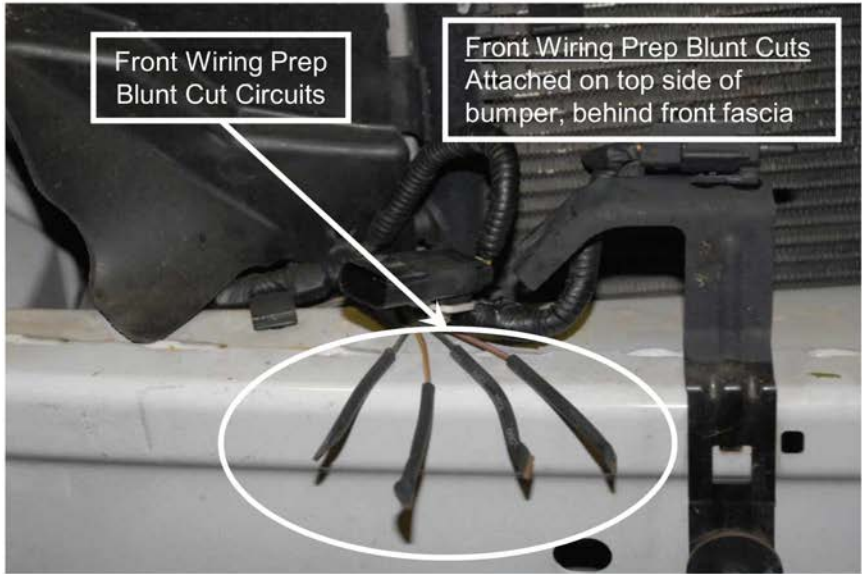
N0151479

**Connector View For Connector 8U2Z-14S411-TA.**

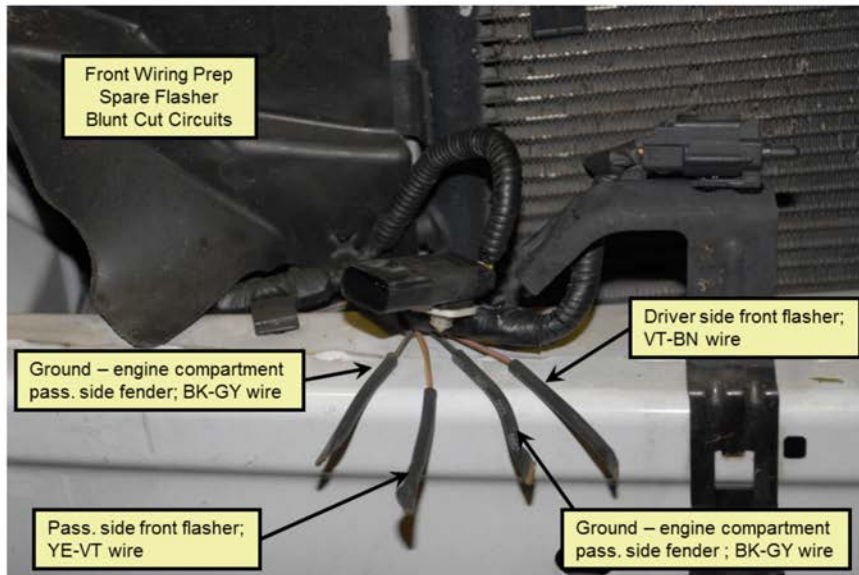
Pin Number	Description	Wire Color
1	Grille LED Light Ground	BN
2	Grille LED Light Pattern	GY-BN
3	Speaker (-)	GY-OG
4	Speaker (+) Spare	BK-GY

## Section 2: Electrical

### Sedan — Front Wiring Prep Blunt Cut Circuits



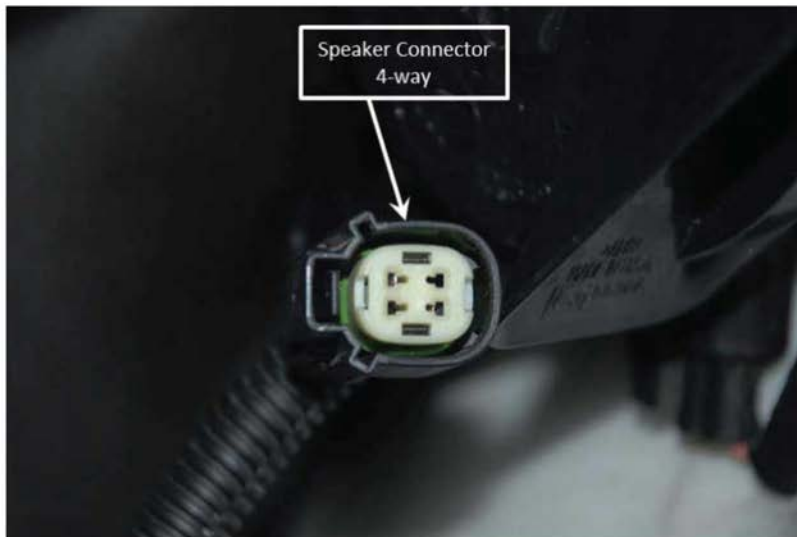
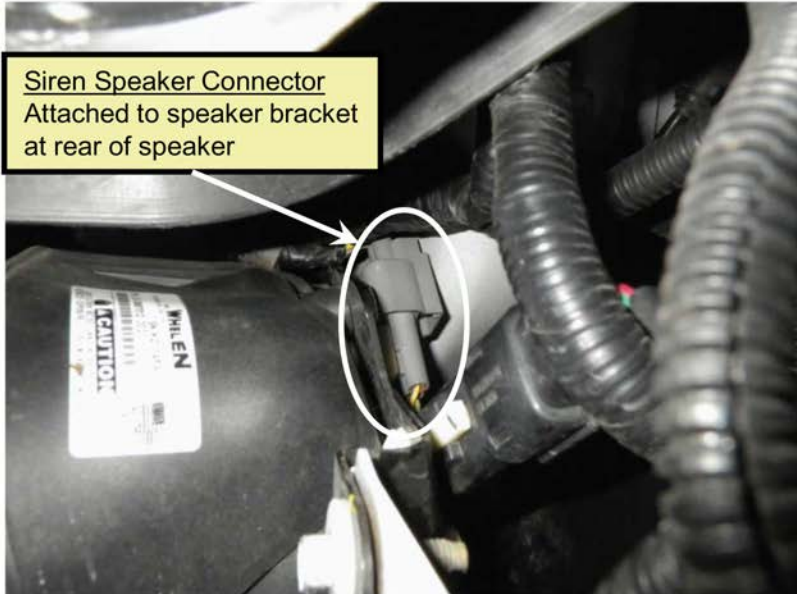
Front Wiring Prep Blunt Cut Circuits Attached to Front Bumper



N0151480

## Section 2: Electrical

### Sedan — Siren Speaker Connector



Siren Speaker Connector



Part# BU2Z-14S411-TA

N0151481

Connector View For Connector BU2Z-14S411-TA.

Pin Number	Description	Wire Color
1	Siren (+)	YE
2	Open	
3	Open	
4	Siren (-)	BU-WH

## Section 2: Electrical

### Sedan — Front Lighting Solution Wig-Wag LED And Front Corner LED Lights Connector.



Front Lighting Solution Wig-Wag LED And Front Corner LED Lights Connector



Part # CU2Z-14S411-ALA



N0151482

Connector View For Connector CU2Z-14S411-ALA (continued on the next page).

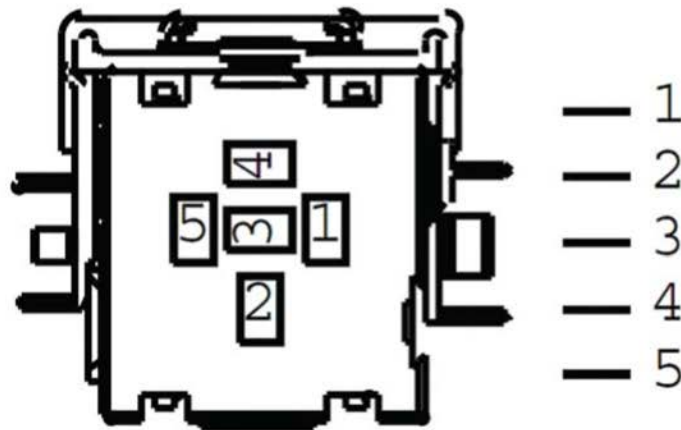
Pin Number	Description	Fuse	Wire Color
1	Wig-Wag Control		VT
2	Wig-Wag Passenger Side Pattern		GN-WH
3	Wig-Wag Driver Side Pattern		GY
4	Open		
5	Wig-Wag Run/Start (20A)	BJB #74	VT-BN

## Section 2: Electrical

(Continued)

6	Front Corner LED Lights Control/Power		
7	Front Corner LED Lights Pattern		GY-BN
8	Wig-Wag Ground		BK-GY

**Sedan — Flasher Relay**



DU5T-14D089-AA

N0141078

Connector View For Connector DU5T-14D089-AA.

Pin Number	Circuit Number	Signal Name/Function
1		Flasher Power
2		
3		
4		Right Side Flasher Blunt Cut
5		Left Side Flasher Blunt Cut

N0141079

Front flasher power is supplied through the second 14 way power connector and is available on the sedan and utility. The right and left blunt cuts are located in the front grille area.

The rear flasher relay is used to turn modifier supplied decklid flashers on in the Sedan when the trunk is open.

**NOTE:**

Fuse sizes are given to help locate the fuse in the PDB. Ford recommends that current be limited to 85% of the value (40 Amp should be limited to 34 Amp).

## Section 2: Electrical

### Sedan — Pigtail Information

2013MY SEDAN/UTILITY POLICE INTERCEPTOR PIGTAIL INFORMATION							
CONNECTOR PICTURE	HARNESS	DEVICE	CONN. TYPE	PIN	FUNCTION	Service Pigtail #	INFO
	14290	POL FLASH	8-WAY	1 2 3 4 5 6 7 8	WW INPUT WW RH PTRN/PWR WW LH PTRN/PWR WW R/S STROBES PWR PATTERN WW GND	CU2Z-14S411-ALA	Must splice cavities 1 and 6 together if function is not being used. Wire type- 3TBD-1.0mm Terminal- 7C3T-14474-DA
	14290	LH WIG WAG RH WIG WAG	4-WAY	1 2 3 4	WW INPUT WW SCN LOCK WW SYNC WW GND	8U2Z-14S411-TA	Wire type- 3TBD-1.0mm Terminal- 7C3T-14474-DA
	14290	SIREN SPEAKER	4-WAY	1 2 3 4	SIREN + (UNUSED) (UNUSED) SIREN -	BU2Z-14S411-TA	Wire type- 3TBD-1.0mm Terminal- 7C3T-14474-DA
	14290	LH SIDE CORNER MARKER RH SIDE MARKER	4-WAY	1 2 3 4	Power Pattern Sync GND	8U2Z-14S411-TA	Wire type- 3TBD-1.0mm Terminal- 7C3T-14474-DA
	14290	GRILLE & LOUD SPEAKER	4-WAY	1 2 3 4	TDM GRL GND TDM PATTERN LD SPKR - LD SPKR +	8U2Z-14S411-TA	Wire type- 3TBD-1.0mm Terminal- 7C3T-14474-DA
	14401	POLICE POWER & VEHICLE SIGNALS	14-WAY	1 2 3 4 5 6 7 8 9 10 11 12 13 14	WIGWAG LAMP CONTROL SIDE LAMP PWR CONTROL FRONT FLASHER PWR CONTROL LOUDSPEAKER NEG OPEN SIDE LAMP SYNC CONTROL DIMMER BRAKE OUTPUT LOUDSPEAKER PWR/TDM GRILL OPEN OPEN OPEN OPEN SIDE STROBE PATTERN	CU2Z-14S411-APA	0.64 CAVITIES- 2TAD-0.75mm 2.8 CAVITIES- 2TAD-1.0mm 0.64 CAVITIES- 1/2/5/6/7/8/13/14 TERMINAL 3F2T-14474-RA 2.8 CAVITIES- 3/4/9/10/11/12 TERMINAL 97BG-14474-BBA
	14401	SIREN	4-WAY	1 2 3 4	SIREN FEED/LEFT FRONT SPK + SIREN SHIELD/LEFT FRONT SPK - OPEN/RIGHT FRONT SPK + SIREN RETURN/RIGHT FRONT SPK -	3U2Z-14S411-LUB	WIRE TYPE- 2TAD-1.0mm TERMINAL 97BG-14474-ABB
	14401	2-WAY RADIO	4-WAY	1 2 3 4	LEFT FRONT SPK + LEFT FRONT SPK - RIGHT FRONT SPK + RIGHT FRONT SPK -	3U2Z-14S411-LUB	WIRE TYPE- 2TAD-1.0mm TERMINAL 97BG-14474-ABB
	14401	2-WAY RADIO	4-WAY	1 2 3 4	LEFT FRONT SPK + LEFT FRONT SPK - RIGHT FRONT SPK + RIGHT FRONT SPK -	3U2Z- 14S411-BUB	WIRE TYPE- 2TAD-1.0mm TERMINAL 97BG-14421-ABB
	14401	POLICE FEATURES & BRAKE OUTPUT	14-WAY	1 2 3 4 5 6 7 8 9 10 11 12 13 14	B+ FEED 17AMP CNTRL BUTTON 1 CNTRL BUTTON 2 CNTRL BUTTON 3 CNTRL BUTTON 4 POL START POL_R/S #1 B+ FEED #2 17AMP VSS DEL ASSY B+ FEED #3 12AMP PARK DETECT DRV DOOR AJAR POL_R/S #2	3U2Z-14S411-BJAC	1.5 CAVITIES- 0.75mm 2.8 CAVITIES- 1.5mm 0.64 CAVITIES- 2/3/4/5/6/9/10/11/12/13 TERMINAL 97BG-14474-ABB 2.8 CAVITIES- 1/7/8/14 TERMINAL 97BG-14474-BCA WIRE TYPE- 2TAD
	14401	POLICE POWER	6-WAY	1 2 3 4 5 6	POLICE B+ 34AMP POLICE B+ 34AMP POLICE B+ 34AMP GROUND GROUND GROUND	3U2Z- 14S411-HEA	WIRE TYPE- 2TAD-4.0mm TERMINAL 97BG-14474-CCA
	14A227 (D258 ONLY)	POLICE INLINE	2-WAY	1 2	CHMSL LAMP DECKLID	3U2Z- 14S411-LAB	WIRE TYPE- 2TAD-0.50mm TERMINAL 97BG-14421-AAB

N0150616

### Sedan — Rear Power Access

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,



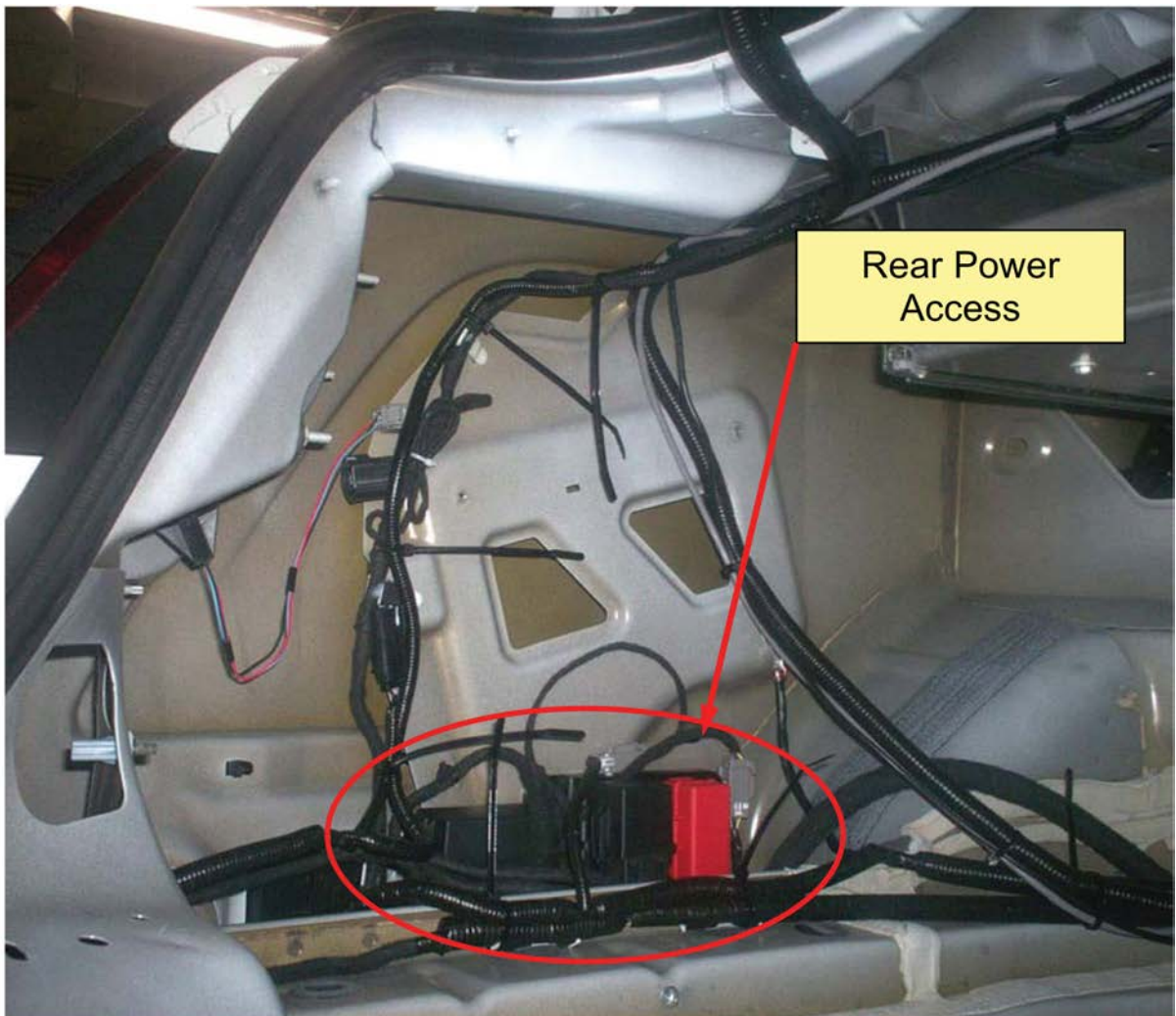
## Section 2: Electrical

connected to the battery through under hood battery junction box (BJB) fuses #1 and #2. Battery access is provided by 2 studs contained in an enclosure, mounted in the trunk behind the carpet, on the driver side fender support. The terminal with the red wire is the battery positive. 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:**

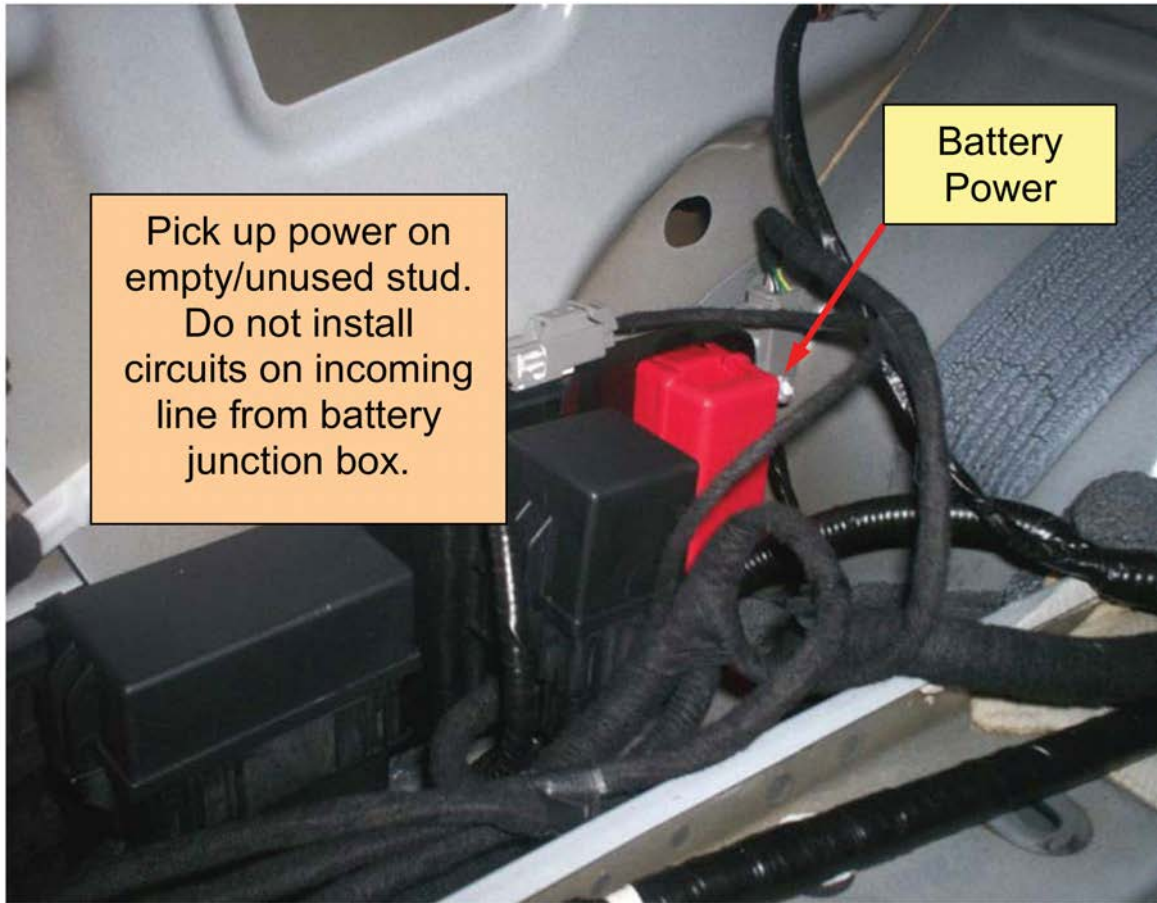
**Under no circumstance should the rear power access point cover be removed without first removing the battery junction box (BJB) fuses #1 and #2. Removing the cover without removing the fuses could result in an electrical hazard. Turn off load devices before inserting the fuses. Failure to follow these instructions may result in personal injury.**

It will be necessary to remove trunk lockable storage if equipped, to access rear power point section 4.



N0141041

## Section 2: Electrical



N0141043

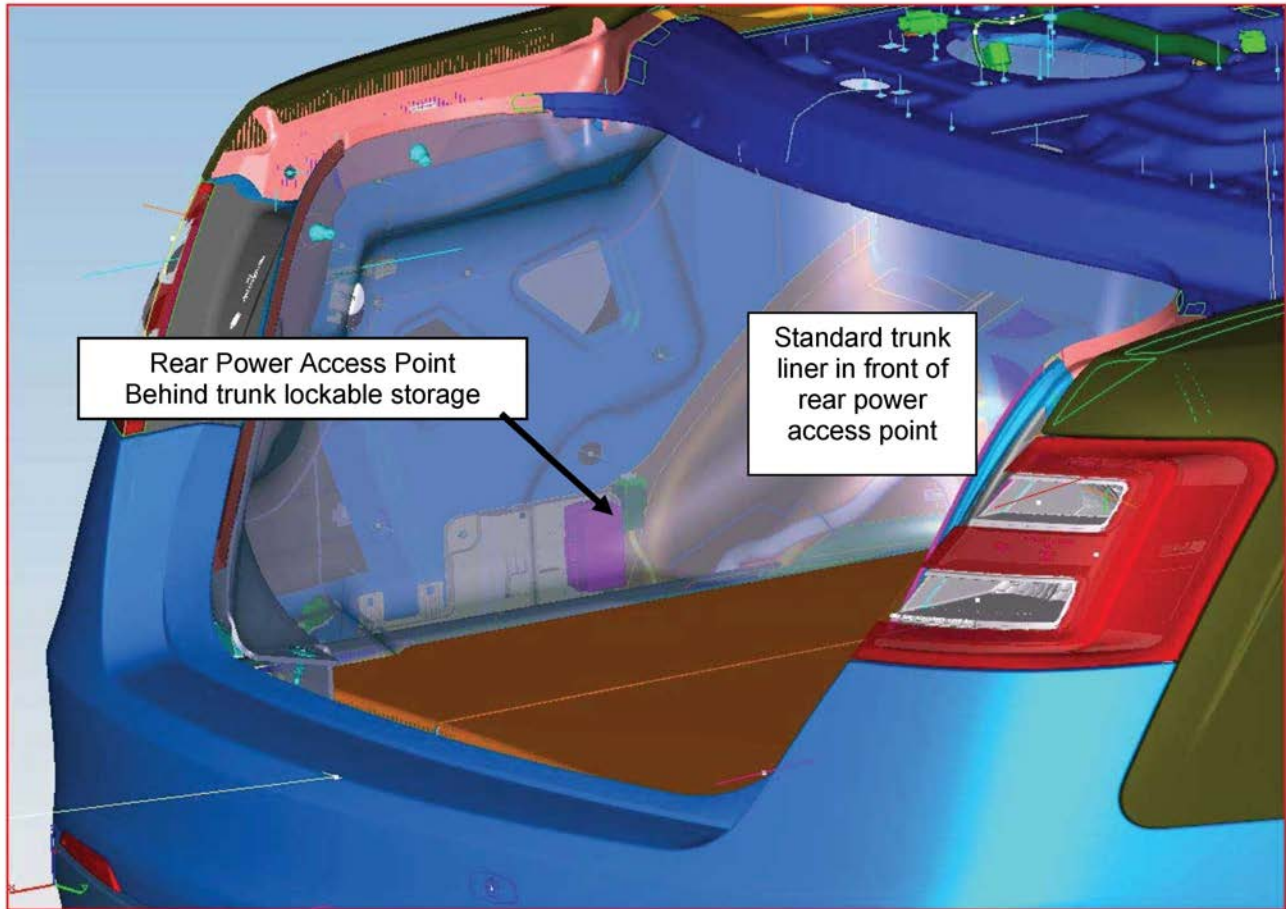
## Section 2: Electrical



N0141044

Sedan Interceptor with standard trunk liner

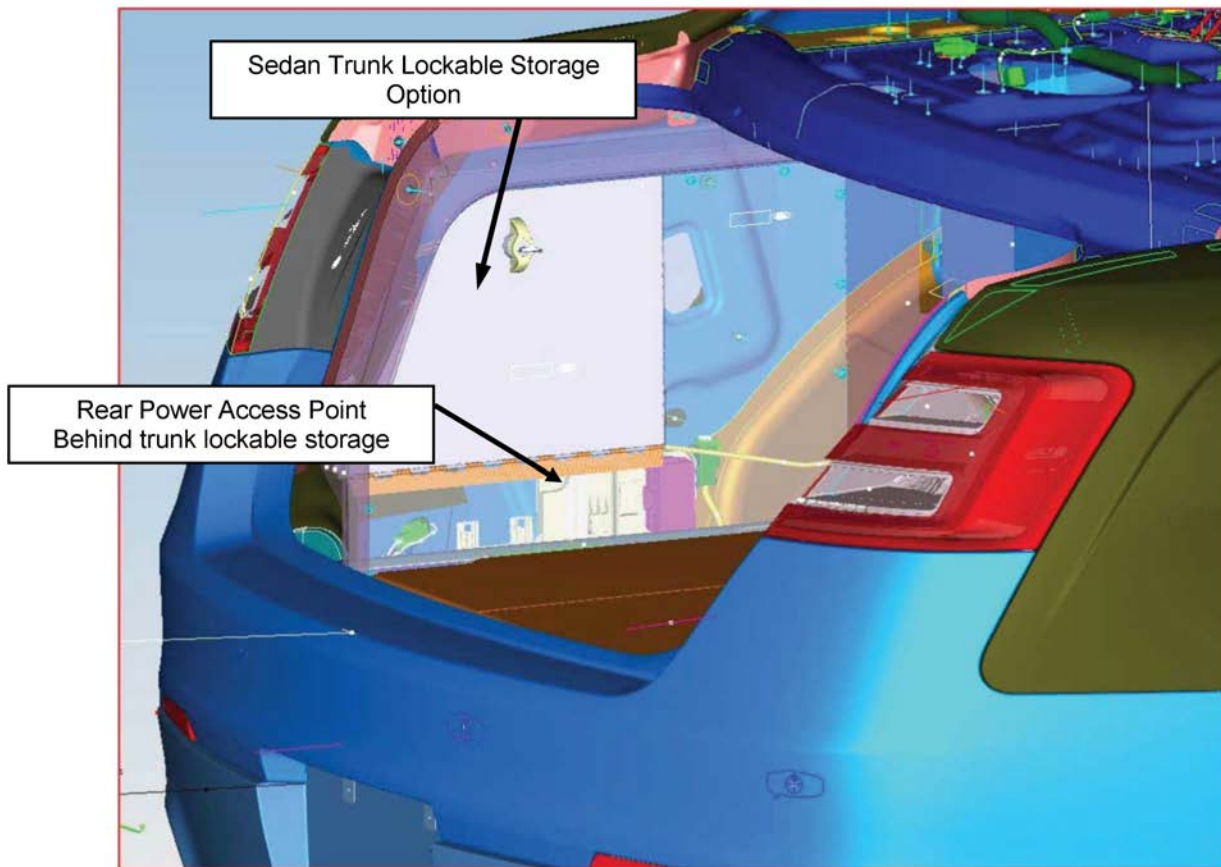
## Section 2: Electrical



N0141042

Sedan Interceptor with optional lockable trunk storage

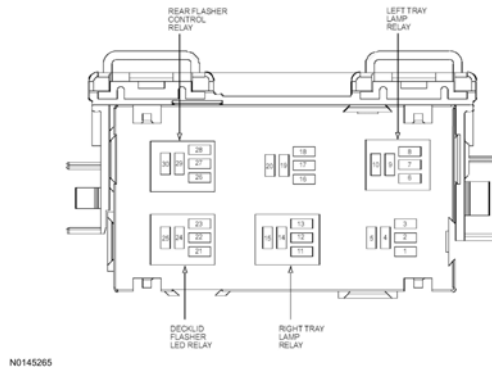
## Section 2: Electrical



N0141046

## Section 2: Electrical

### Sedan — Trunk Relay Center



### Sedan — My Fleet Management

Allows configuration of following functions using an Integrated Diagnostic System (IDS) service tool

- Ability to set vehicle maximum speed from 90 MPH to the factory maximum speed setting.
- Ability to set maximum radio volume from 0% to 100%.

### NEW Sedan/Utility Police Idle System



N0171988

Illuminates when Police Idle System is armed and active.

The system allows you to leave the engine running and prevents your vehicle from unauthorized use when you are outside of your vehicle. When you remove the key from the ignition. The engine remains idling.

#### Switching the System On

1. With your vehicle running and the transmission in park (P). Press the button on the instrument panel. A warning lamp illuminates to confirm the system is on.
2. Switch the ignition off and remove the key.

When the system is on:

- The power window switches are disabled and the windows remain in their current state.
- The power door lock controls are disabled and all doors remain in their current locking state.
- The liftgate or luggage compartment switches are disabled.

#### NOTE:

When the system is on, you can use the key blade to lock and unlock your vehicle.

#### Switching the System Off

- Turn the key to the run position.
- Press the button on the instrument panel.

#### NOTE:

## Section 2: Electrical

If you switch the system off before switching the ignition to the run position your vehicle shuts down.

**DECOMMISSIONING REQUIREMENTS**

Ford Motor Company has implemented a decommissioning process of Ford-provided police features. It is the responsibility of the owner to complete the decommissioning of the vehicle in compliance with any state regulations prior to initial sale to the public sector. Authorized personnel must use a diagnostic scan tool to decommission police idle.


- Message
- Action
- Police Idle System Not Available
- Displayed when the Police Idle System conditions are not correct for proper operation
- Police Idle System Fault
- Displayed when there is a fault detected in the Police Idle System and the system is not active
- Police Idle System Fault Restart Engine
- Displayed when there is a fault detected in the Police Idle System and the system is active
- Displayed when the Police Idle System is active

**New Sedan/Utility Silent Mode (If Equipped)**



N0171989

You can switch on Silent Mode in the information display. When you enable Silent Mode, the following features may be disabled:

- Welcome/farewell strategy
- Courtesy lighting and backlighting
- Daytime running lamps

The daytime running lamps turn on when:

1. The ignition is switched to the on position
2. The lighting control is in the off position, parking lamps position or the autolamps position, and the sensor detects daylight.
3. Your vehicle is in drive (D)

**NOTE:**

You can switch the daytime running lamps on or off by selecting Police Silent Mode through the information display.

**NOTE:**

In markets where daytime running lamps are mandated by law, Silent Mode will not disable the daytime running lamps

## Section 2: Electrical

### NOTE:

When Silent Mode or Dark Car Mode is enabled, the courtesy lamp will not turn on.

### DECOMMISSIONING REQUIREMENTS

Ford Motor Company has implemented a decommissioning process of Ford-provided police features. It is the responsibility of the owner to complete the decommissioning of the vehicle in compliance with any state regulations prior to initial sale to the public sector. Authorized personnel must use a diagnostic scan tool to decommission Silent Mode.

### Sedan — Courtesy Lamp Disable (Dark Mode)

This option offers deletion of the illuminated entry function. Upon vehicle power-up, the Smart Junction Box (SJB) 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 SJB. The vehicle can be configured 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 IDS (at the latest calibration) to the vehicle via the DLC.
2. Allow the IDS to ID the vehicle. Select the Tool Box.
3. Select Module Programming, Programmable Parameters, Interior Lighting, then the TIC.
4. A screen will come up to remind you to turn the ignition on.
5. Select Dark Enable and the TIC.
6. During configuration the lights will flash and the system changes from Disabled to Enabled.
7. Final Screen: Module configuration complete, check/clear any DTCs that may have been set.

### Sedan — Steering Wheel Switches



#### Configurable Steering Wheel Switches:

- ⌚ 2 switches with two positions (up/down) each
- ⌚ Total of 4 grounded outputs sourcing available for operating police equipment
- ⌚ 4 grounded outputs allocated at bottom of I/P center stack in 14-way connector

N0141056

#### Steering Wheel Operation

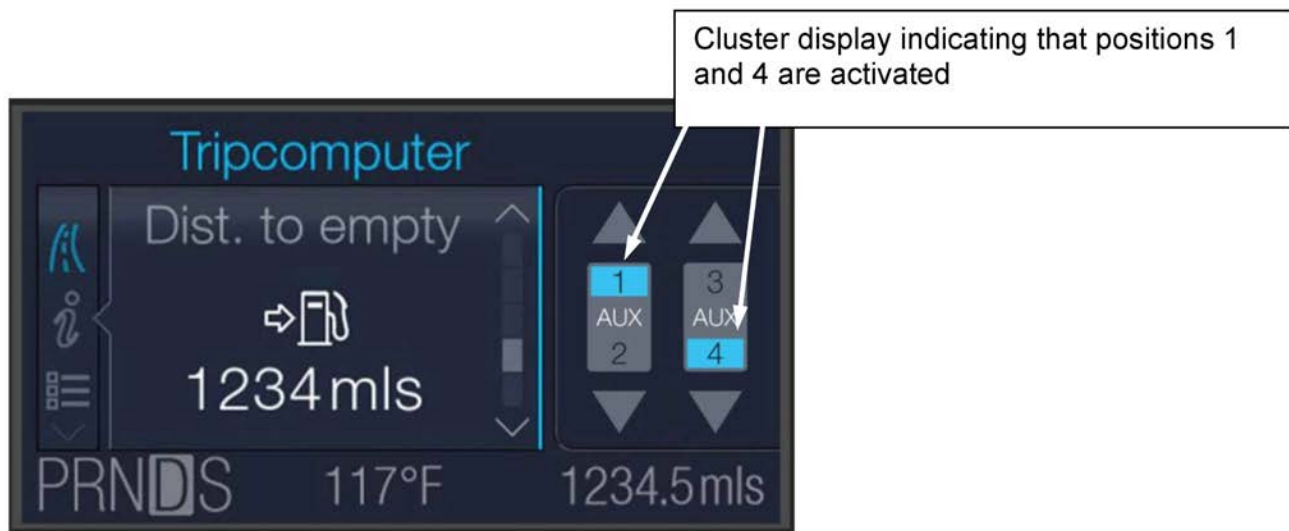
- Two switches are available for configuration as indicated above.
- Each switch has 2 positions (up/down).



## Section 2: Electrical

- Four total ground side switching outputs are available in 14-way connector located behind the close out panel at the bottom of the Electronic Finish Panel (EFP).
- Any combination or all of the four outputs can be turned on simultaneously.
- To activate a switch/output, push the desired switch in the direction of the label either above or below the switch.
- To deactivate that function, push the desired switch in the same direction as was used when activating the output.
- Cluster display will illuminate the switch/position while activated.

### Sedan — Steering Wheel Switch Cluster Display



N0141057

### Fuse Information

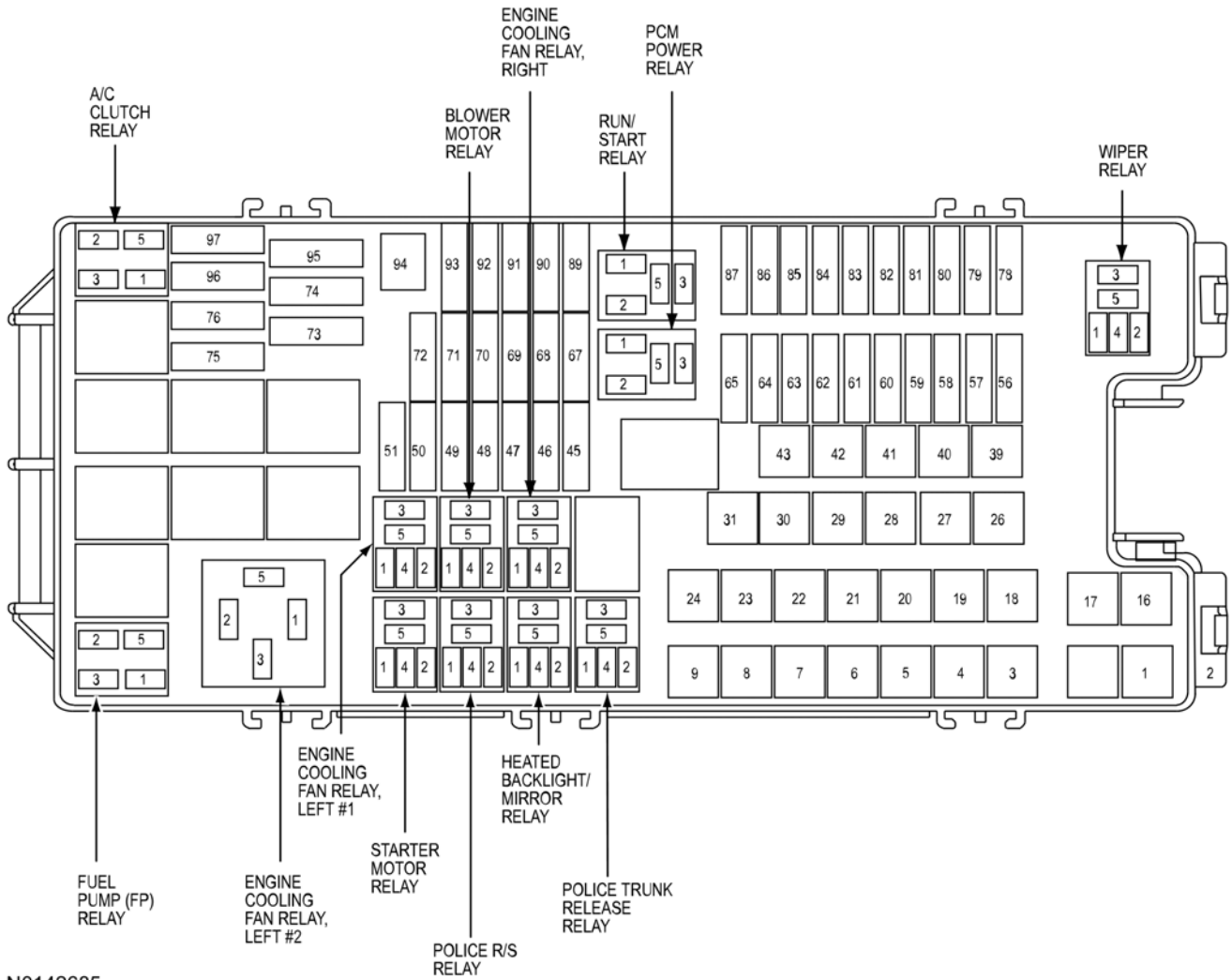
If electrical components in the vehicle are not working, a fuse may have blown. Blown fuses are identified by a broken wire within the fuse. Check the appropriate fuses before replacing any electrical components.

#### NOTE:

Always replace a fuse with one that has the specified amperage rating. Using a fuse with a higher amperage rating can cause severe wire damage and could start a fire.

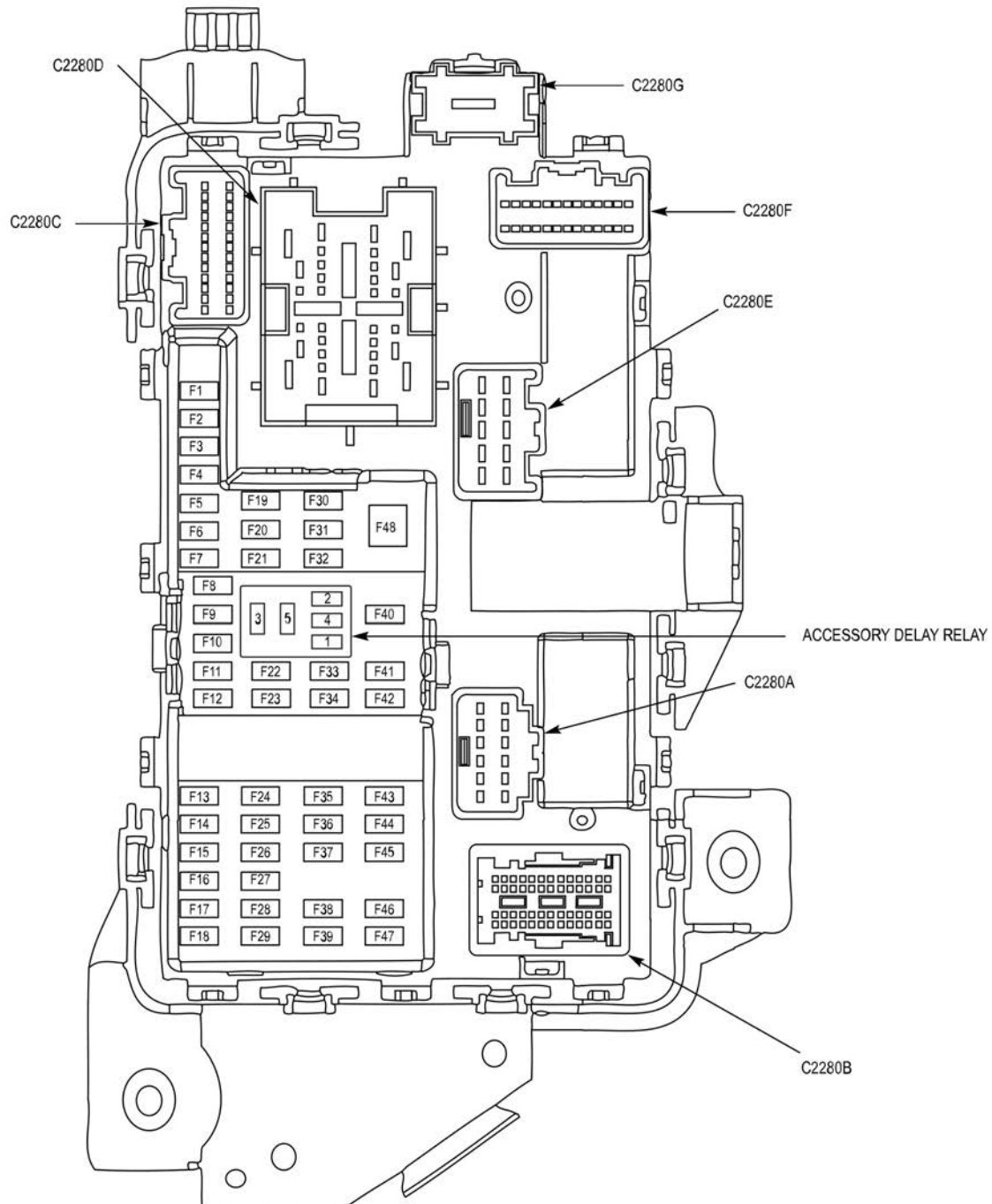
# Section 2: Electrical

## Sedan — Battery Junction Box



## Section 2: Electrical

### Sedan — Body Control Module



N0142686

**⚠ WARNING:**  
Always disconnect the battery before servicing high current fuses.

## Section 2: Electrical



### **WARNING:**

To reduce risk of electrical shock, always replace the cover to the power distribution box before reconnecting the battery of refilling fluid reservoirs. The power distribution box is located in the engine compartment. It has high current fuses that protect your vehicle's main electrical systems from overloads. If the battery has been disconnected and reconnected, refer to **Changing the Vehicle Battery** in the **Maintenance** chapter.

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

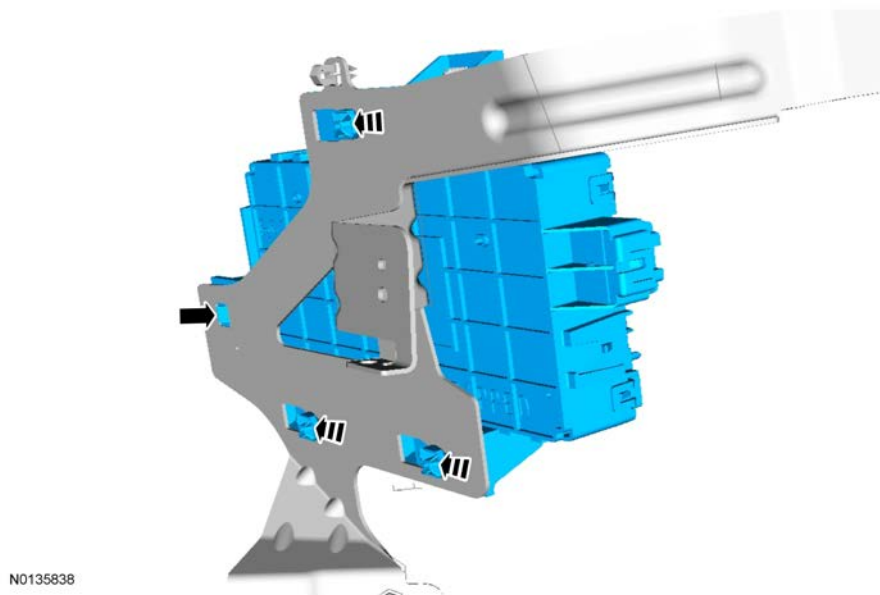
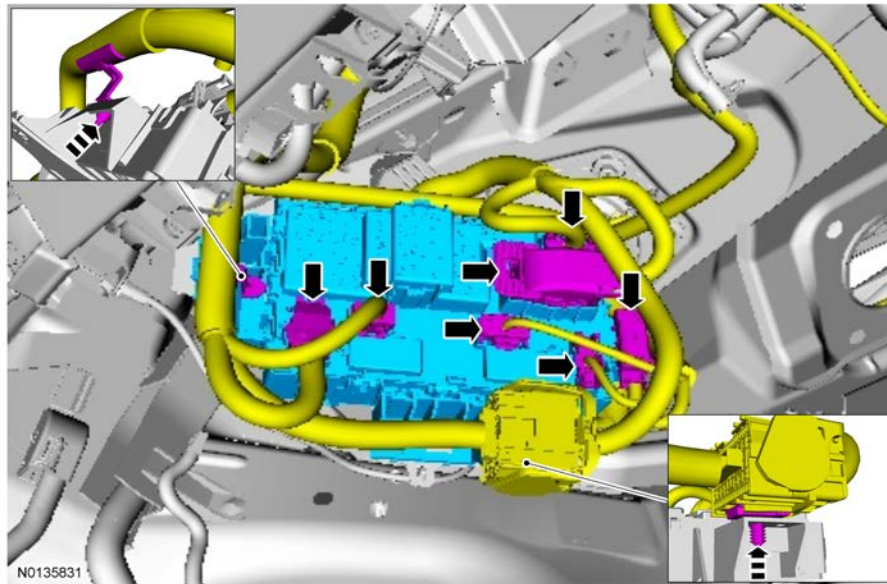
### **Electrical Component Resource**

See part numbers and supplier in the chart below to obtain terminals and connectors.



## Section 2: Electrical

as the HVAC module. This enables network communication between modules that do not communicate using the same network (HS-CAN or MS-CAN).



## Section 2: Electrical

### Sedan — Electrical Component Resource

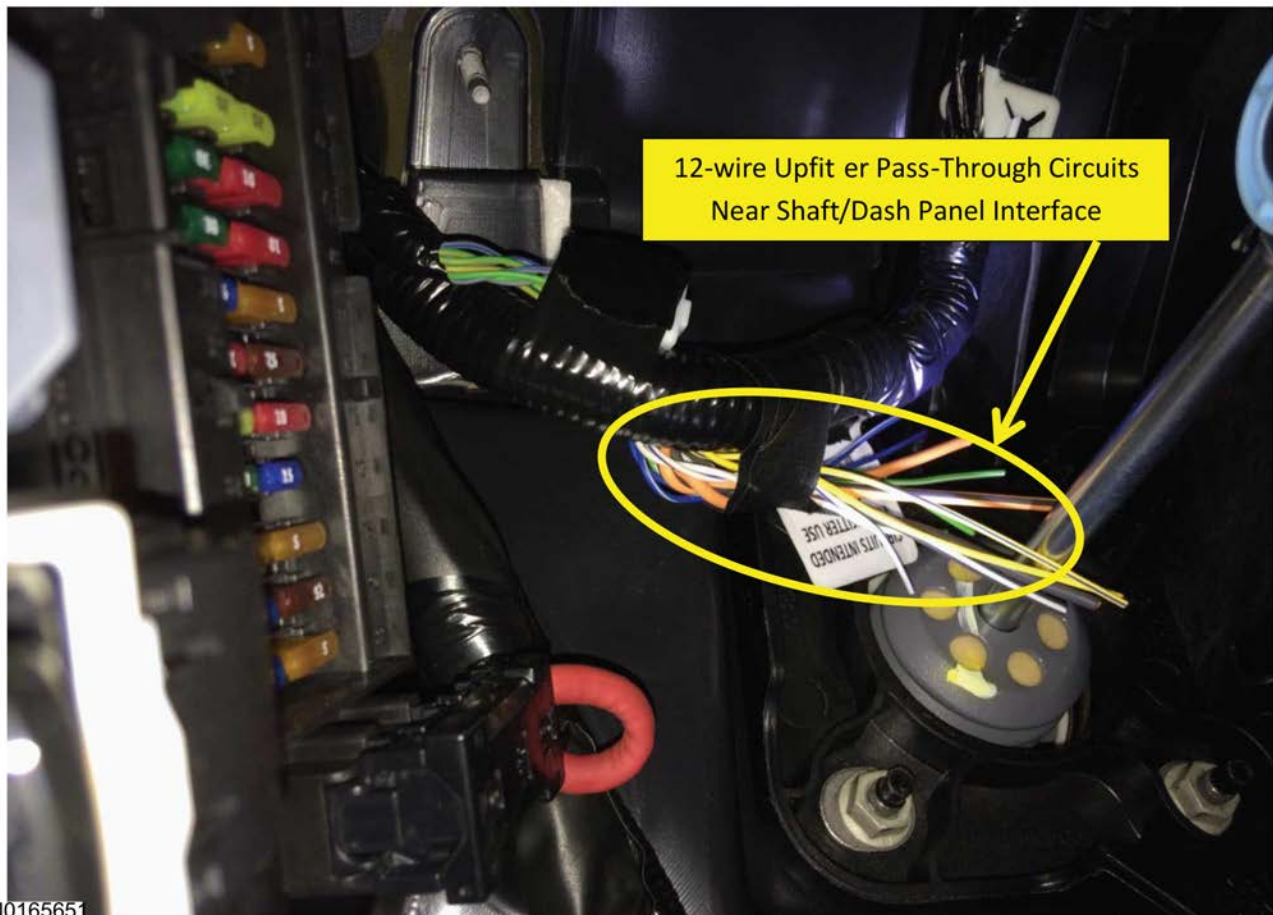
Mating connectors, terminals and subcomponent availability are managed for Ford Fleet and Pool Accounts through Ford Component Sales. Ford Component Sales, LLC (FCS) uses Globe Component Products or Dynamic Supply Solutions (DSS) to process and coordinate all Fleet and Pool Purchase Orders. By using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

### NEW Utility Upfitter Wire Bundle Dash Panel Pass-Through

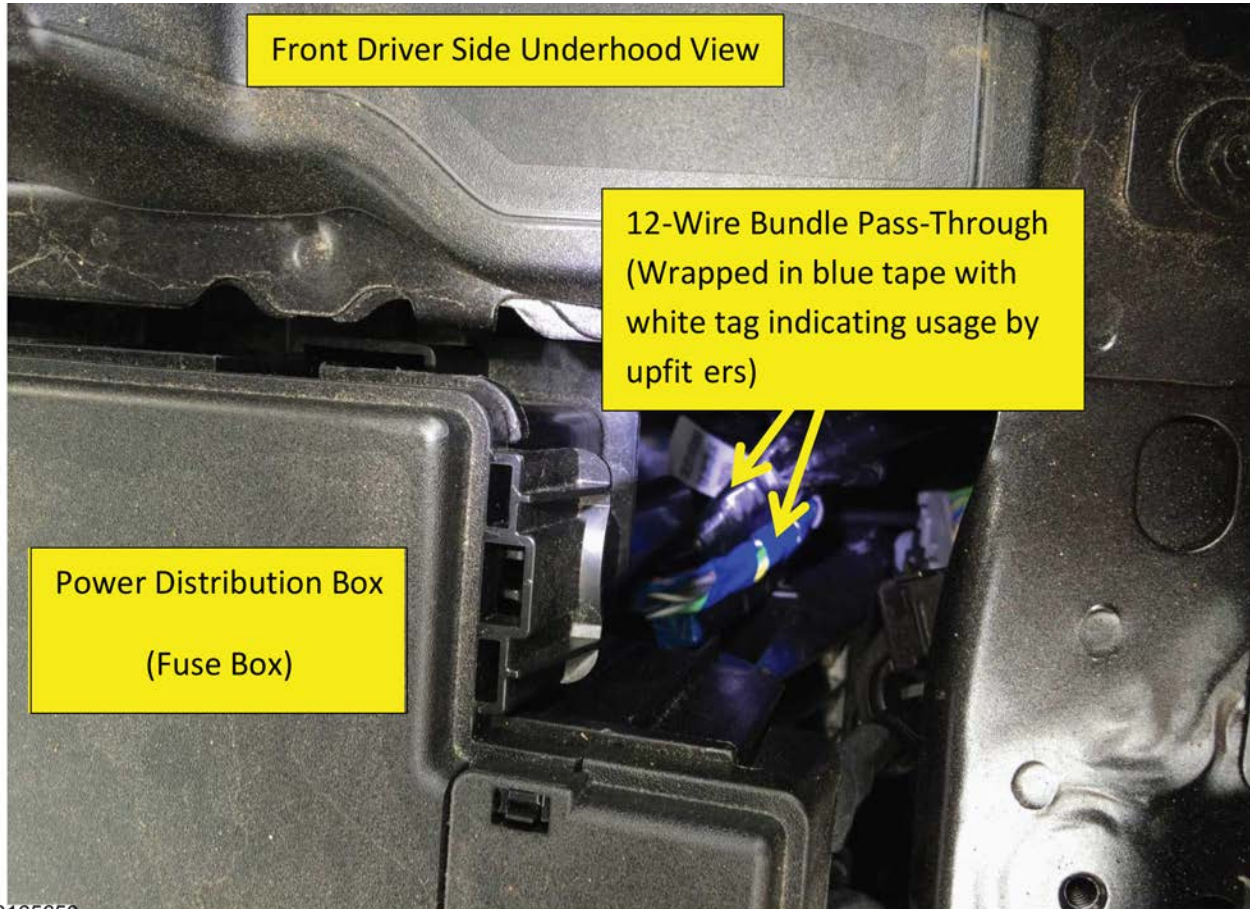
Certain Police Interceptor vehicles come equipped with auxiliary dash panel pass-through wire circuits (upfitter auxiliary) depending on selected option packages.

New for 2016 MY, the **standard** upfitter auxiliary pass-through wire circuits (6 twisted pairs) can be used by the vehicle modifier.

- The vehicle interior end of the auxiliary upfitter circuits is found beneath the instrument panel near the Body Control Module (BCM).
- The underhood end of the Aux Upfitter Circuits is found taped to a harness underhood near the Battery Junction Box (BJB).



## Section 2: Electrical



N0165650

1. Twisted Pair A (20AWG)  
White  
White / Blue
2. Twisted Pair B (20AWG)  
Yellow  
Yellow / Black
3. Twisted Pair C (20AWG)  
Green  
Green / White
4. Twisted Pair D (20AWG)  
Blue  
Blue / White
5. Twisted Pair E (14AWG)  
Orange  
Orange / Black
6. Twisted Pair E (14AWG)  
Black  
Black / White



## Section 2: Electrical

### Utility — Power and Vehicle Signal Access Areas

- Located behind lower center instrument panel trim panels
- Siren speaker at instrument panel center stack (4 Pin)
- Power/vehicle signals at instrument panel center Stack (14 Pin)
- Police lights at instrument panel center stack (14 Pin)
- Police radio connector at instrument panel/center stack (4 Pin)
- 40A auxiliary power at instrument panel/center stack (6 Pin)

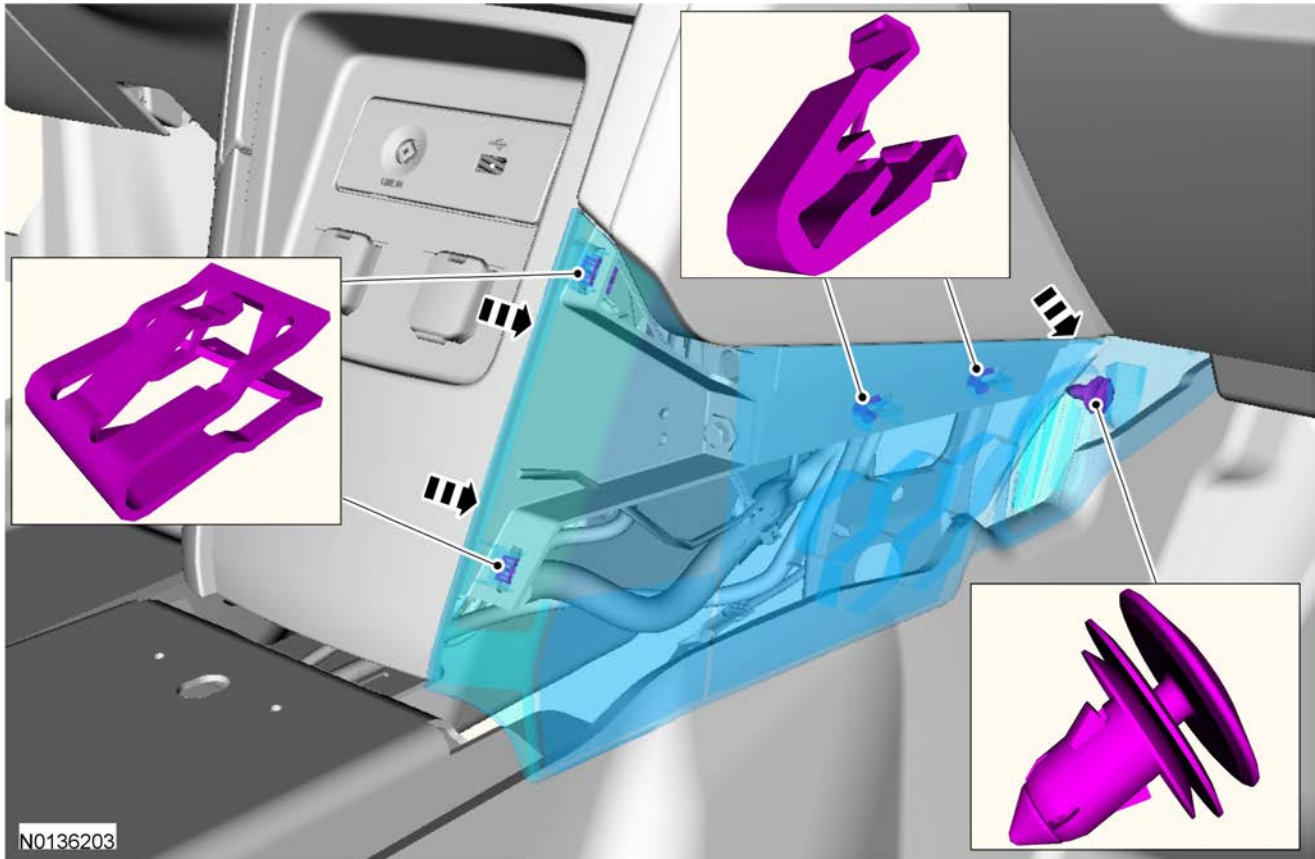


N0151524

### Utility — Lower Center Instrument Panel Removal

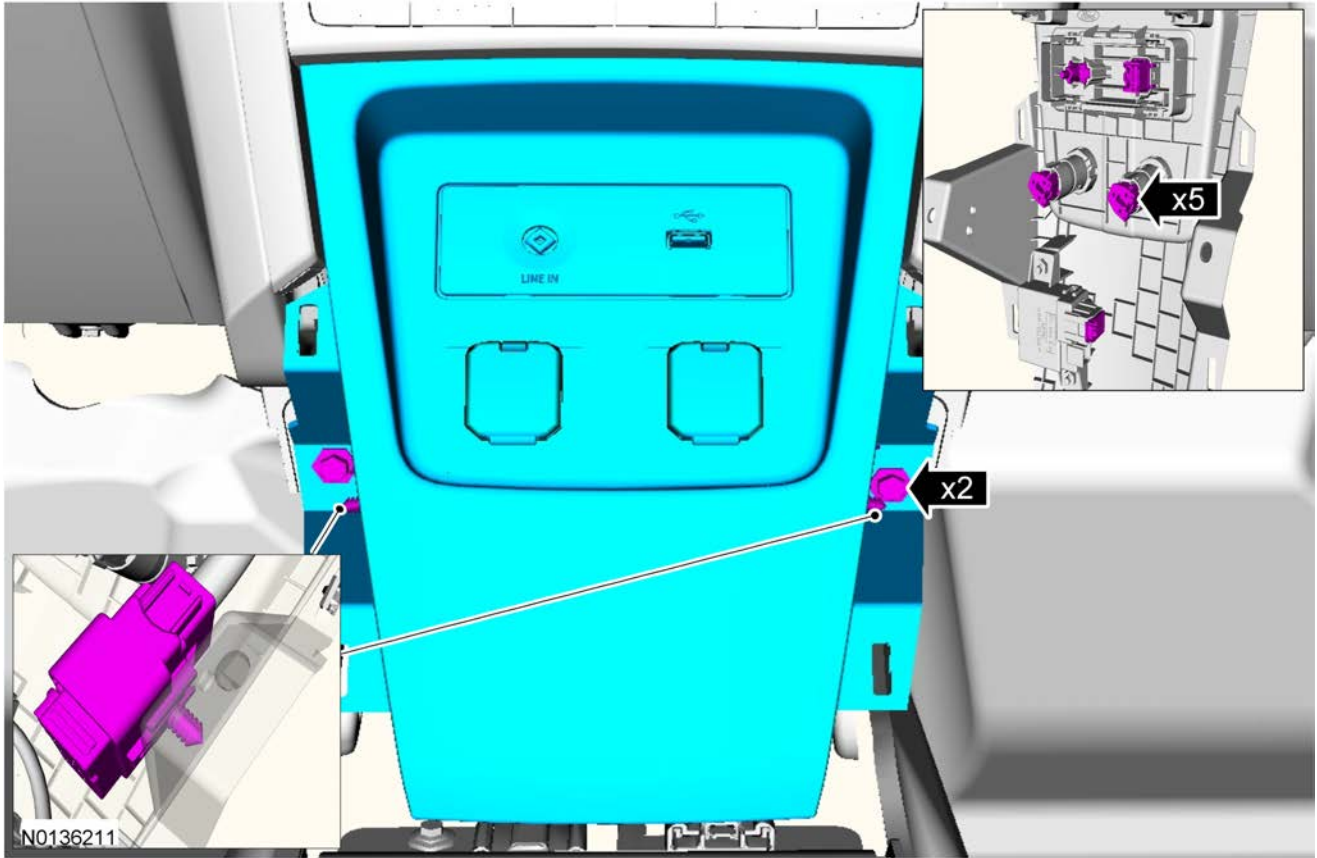
1. Remove the driver and passenger side lower center instrument panel finish panels.

## Section 2: Electrical



2. Remove the 2 fasteners then carefully remove panel.

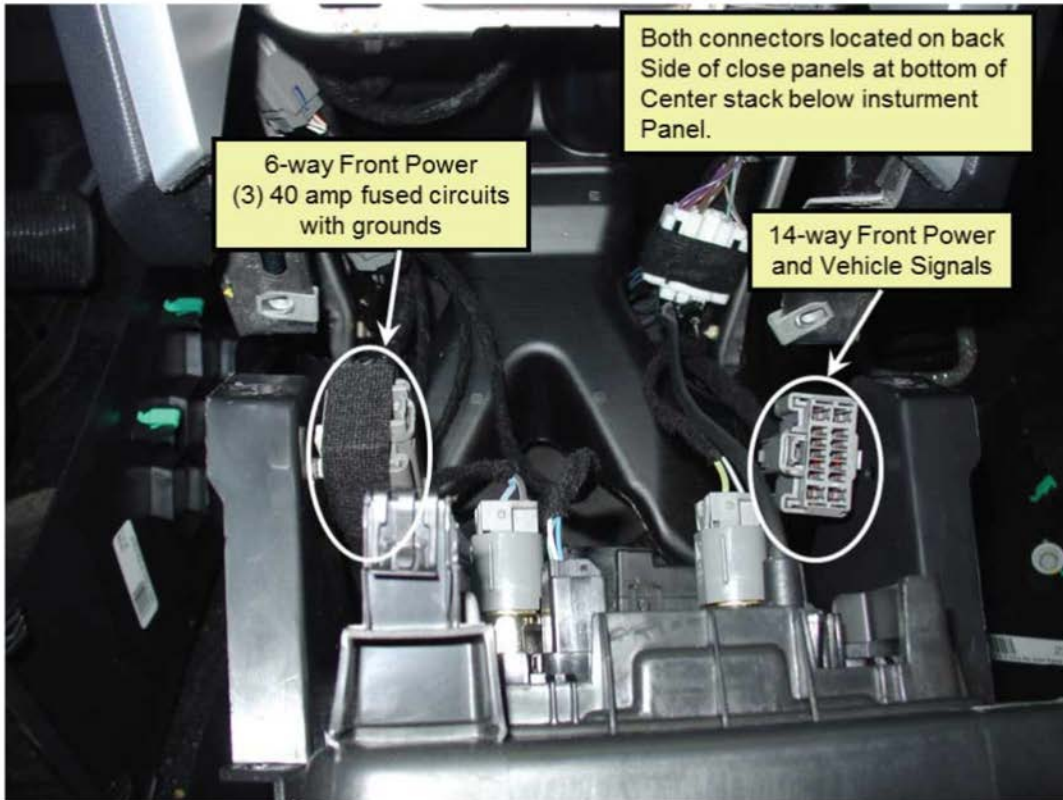
## Section 2: Electrical



## Section 2: Electrical

### Front Power And Vehicle Signals Access Area

#### Front Power and Vehicle Signals Access Area



N0151483



Part# 3U2Z-14S411-BJAC



Part# 3U2Z-14S411-HEA

N0151470

Connector View For Connector 3U2Z-14S411-HEA (continued on the next page).

Pin Number	Description	Fuse	Wire Color
1	B+ (40A)	BJB #40	VT-RD
2	B+ (40A)	BJB #6	BN-RD

## Section 2: Electrical

(Continued)

3	B+ (40A)	BJB #16	VT-RD
4	Ground	IP Tunnel	BK-BJ
5	Ground	IP Tunnel	BK-BJ
6	Ground	IP Tunnel	BK-BJ

**Connector View For Connector 3U2Z- 14S411-BJAC.**

Pin Number	Description	Fuse	Wire Color
1	B+ Feed #1 (20A)	IP #2	GY-RD
2	Steering Wheel Switch #1 Output (1A) Grnd	GNRL Function Module	GY-BN
3	Steering Wheel Switch #2 Output (1A) Grnd	GNRL Function Module	WH-VT
4	Steering Wheel Switch #3 Output (1A) Grnd	GNRL Function Module	GN-BN
5	Steering Wheel Switch #4 Output (1A) Grnd	GNRL Function Module	YE-GY
6	Start (2A)	BJB #95	BN-BU
7	Run/Start #1 (20A)	BJB #73	WH-BN
8	B+ Feed #2 (20A)	IP #32	BU-RD
9	Vehicle Speed Output (VSS)	PCM	VT-OG
10	Delay Accessory (15A)	IP #17	GN-VT
11	B+ Feed #2 (15A)	IP #5	YE-RD
12	Park Detect Signal (Transmission)	Sifter GRND	GN
13	Driver Door Ajar Signal	IP #9 GRND	GN-VT
14	Run/Start #2 (20A)	IP #74	VT-BN

**NOTE:**

Fuse sizes are given to help locate the fuse in the PDB. Ford recommends that current be limited to 85% of the value: 20 Amp should be limited to 17 Amp 15 Amp should be limited to 12 Amp.

**Park Detect:** Sources a ground when the vehicle is in park. This circuit is capable of grounding 1 Amp.

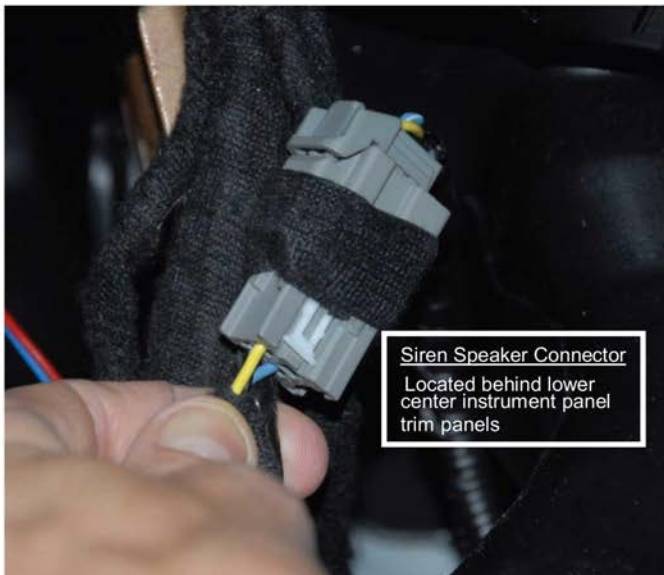
**Driver Door Ajar:** This circuit is a sense only grounded circuit when the door is closed. It is used to supply a module that has pull up resistors in its input.

## Section 2: Electrical

### Utility — Siren Speaker Connector



Siren Speaker Connector



Part # 3U2Z-14S411-LUB

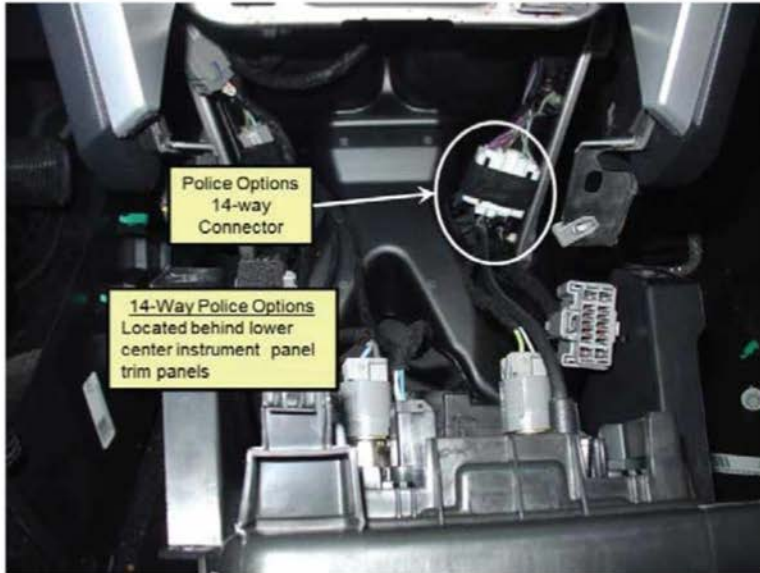
N0151517

#### Connector View For Connector 3U2Z-14S411-LUB.

Pin Number	Description	Wire Color
1	Siren Driver Side Feed (+)	YE
2	Siren Shield Driver Side (-)	
3	Open Passenger Side Front (+)	
4	Siren Return Passenger Side Front (-)	BU-WH

# Section 2: Electrical

## Utility — Police Options 14-Way Connector



Police Options 14-Way Connector



Part # CU2Z-14S411-APA



N0151518

### Connector View For Connector 3U2Z- 14S411-APA

Pin Number	Description	Wire Color
1	Wig Wag Control	VT
2	Front Corner LED Power Control	VT-OG
3	Front Flasher Power Control	BN-YE
4	Speaker (-) at Grille (Option)	GN-BU
5	Open	

## Section 2: Electrical

(Continued)

6	Front Corner LED Light Sync	GY-OG
7	Dimmer	VT-GY
8	Brake Output Signal Ground	BU-OG
9	Speaker (+) at Grille (Option)	BN
10	Open	
11	Open	
12	Open	
13	Open	
14	LED Flash Pattern	GY-BN

**Front WIGWAG Power:** Supplies power to the wigwag connectors at the headlamps.

**Front Flasher Power:** Supplies power to the flasher relay.

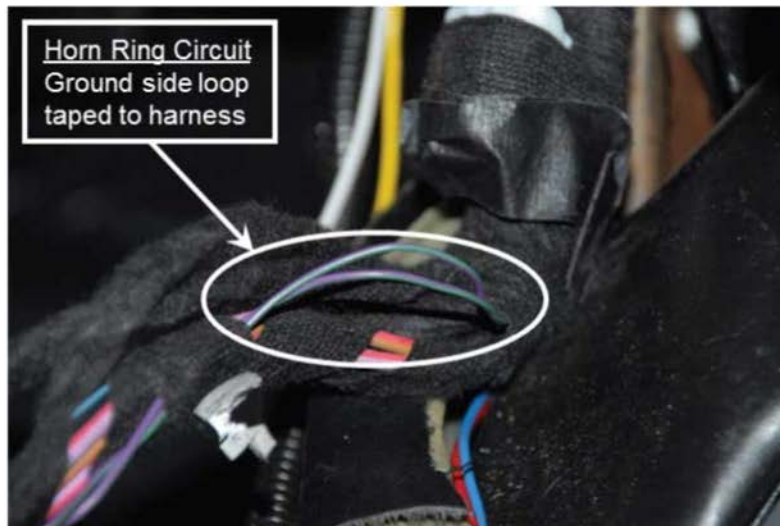
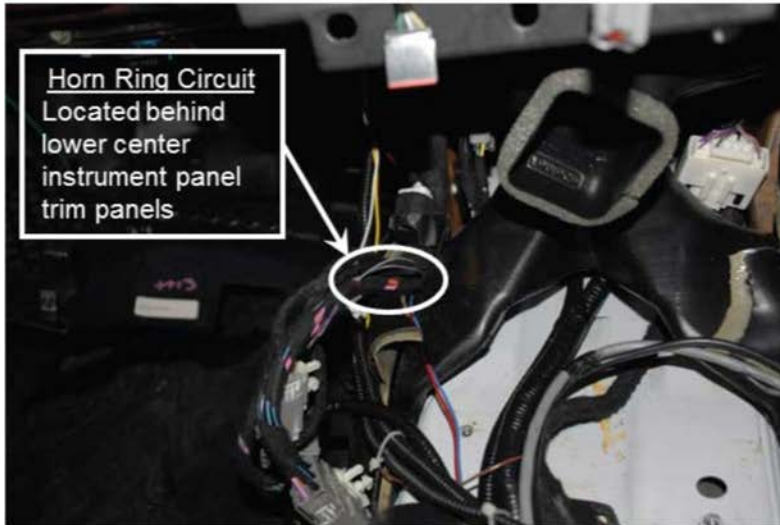
**Dimmer:** Circuit supplied to allow backlight dimming of aftermarket equipment.

**Brake Output:** Fused brake output.



## Section 2: Electrical

### Utility — Horn Ring Circuit



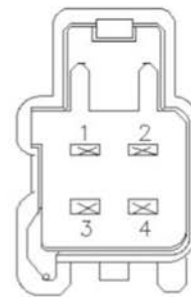
N0151519

## Section 2: Electrical

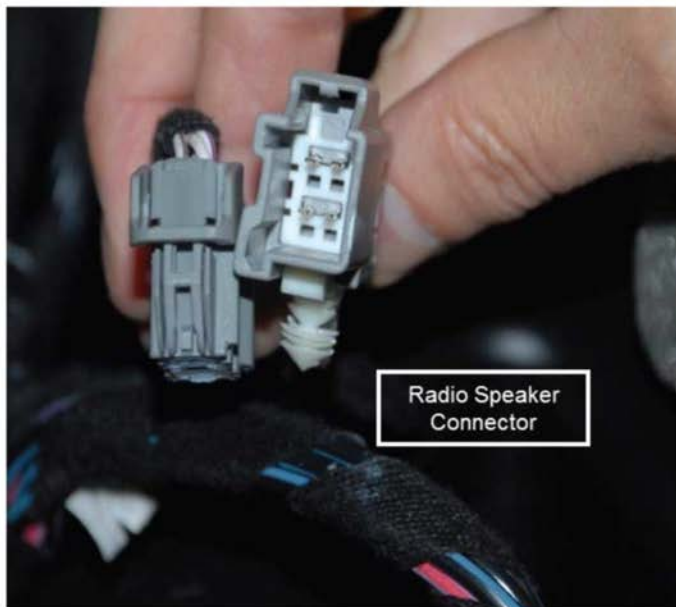
### Utility — Radio And Speaker Connector



Radio and Speaker Connector



Part # 3U2Z-14S411-BUB



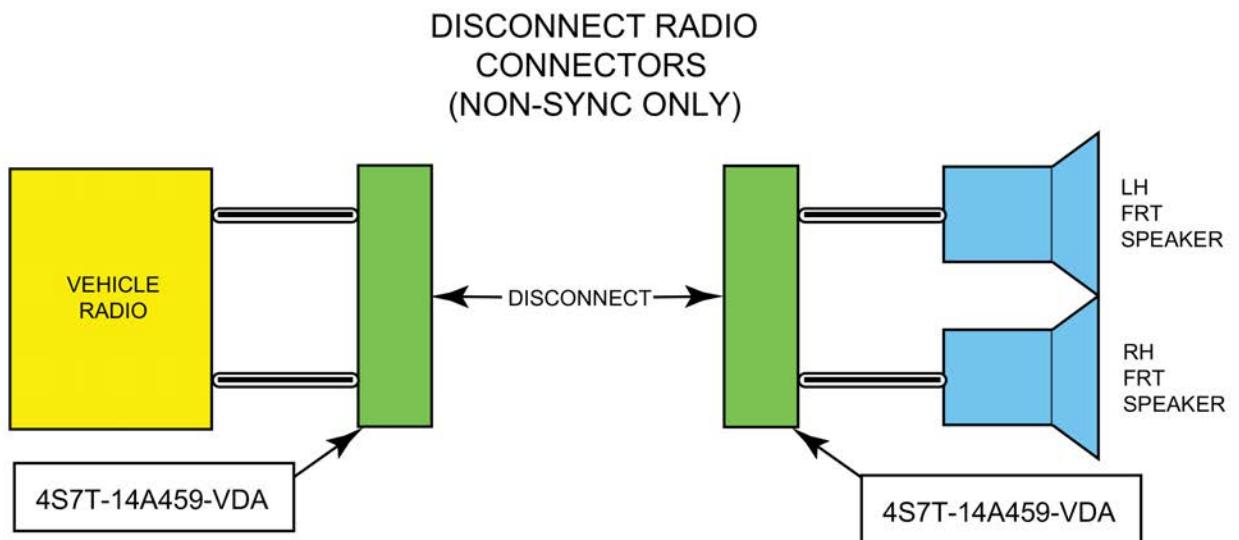
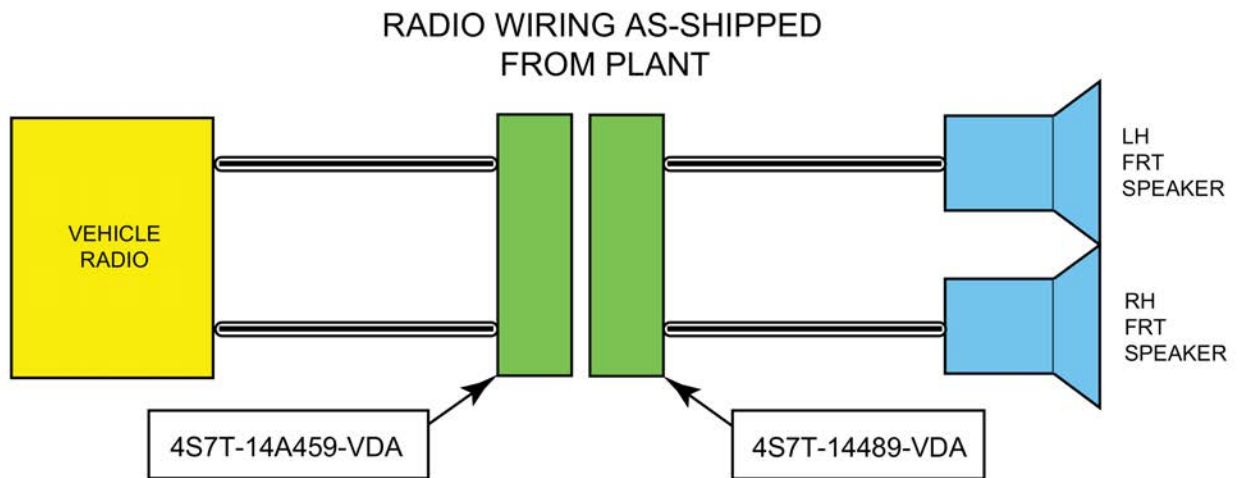
Part # 3U2Z-14S411-LUB

N0151516

**Connector View For Connector 3U2Z- 14S411-LUB**

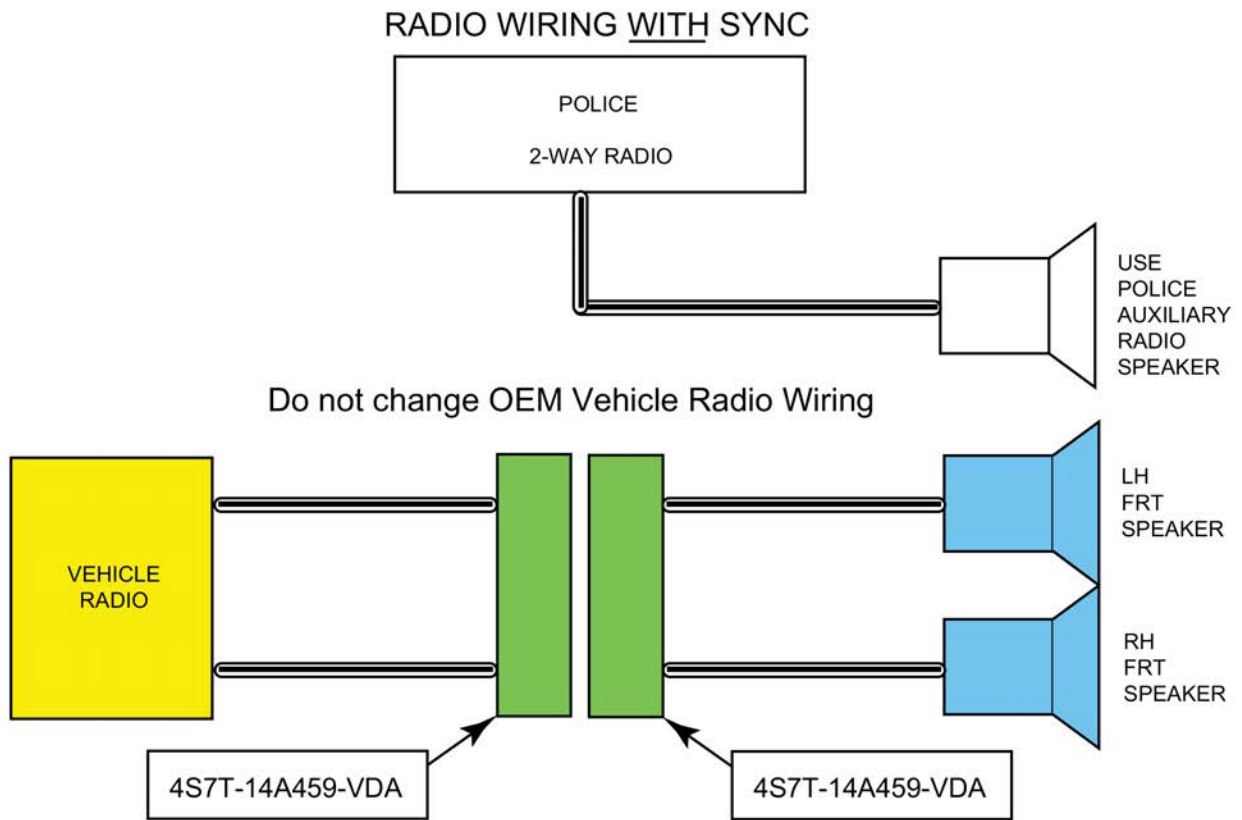
Pin Number	Description
1	Driver Side Front Speaker (+)
2	Driver Side Front Speaker (-)
3	Passenger Side Front Speaker (+)
4	Passenger Side Front Speaker (-)

## Section 2: Electrical



N0150582

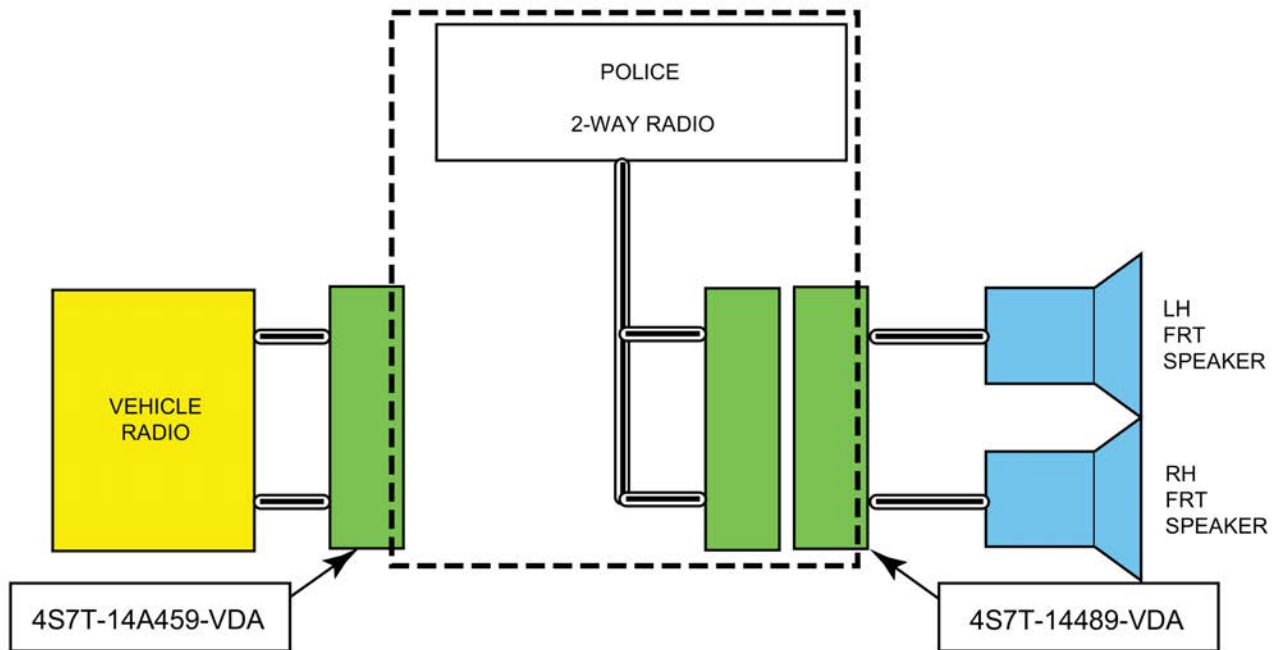
# Section 2: Electrical



N0150583

# Section 2: Electrical

INSTALL POLICE 2-WAY RADIO AND MAKE CONNECTIONS TO OEM CONNECTORS (NON-SYNC ONLY)



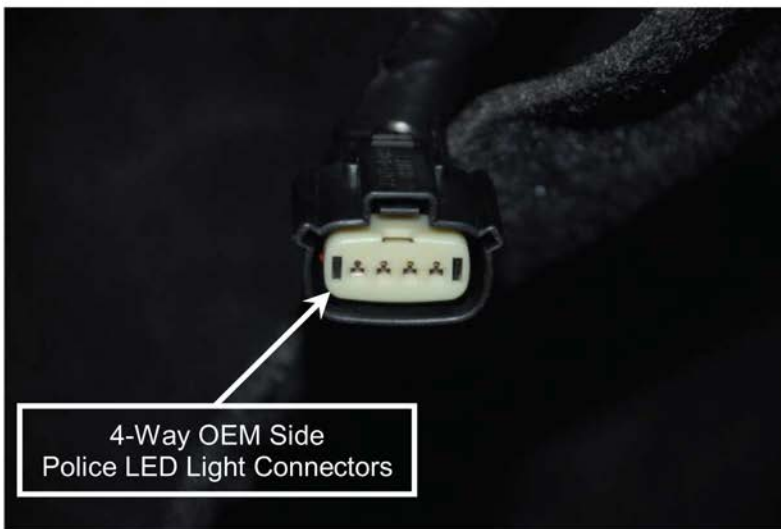
N0150581

# Section 2: Electrical

## Utility – 4-Way Connector For All Police LED Light Heads



4-Way Connector For All Police LED Light Heads



N0151525

### Connector View For Connector 8U2Z-14S411-TA

Pin Number	Description
1	Control Power
2	LED Light Pattern
3	LED Light Sync
4	Ground

## Section 2: Electrical

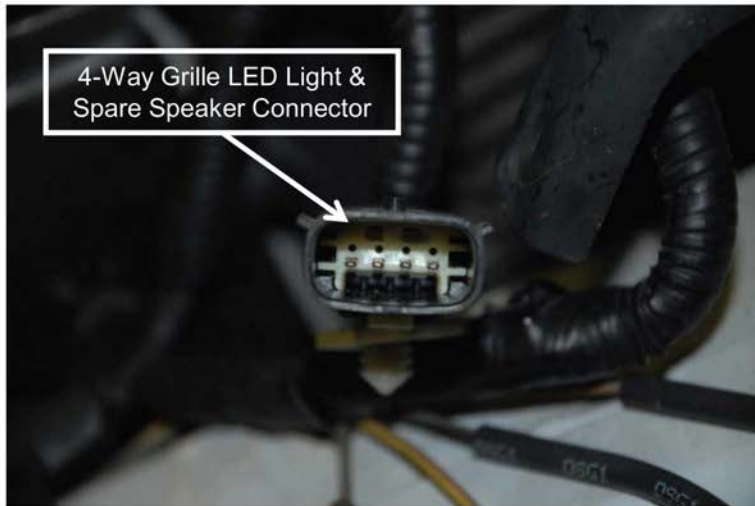
### Grille LED Light Connector



Grile LED Light Connector  
Attached above front bumper



Part# 8U2Z-14S411-TA



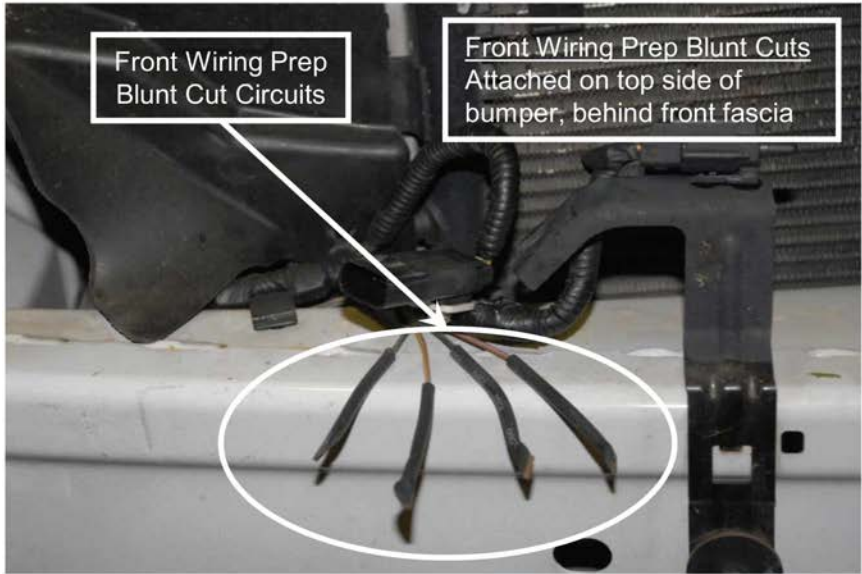
N0151479

**Connector View For Connector 8U2Z-14S411-TA.**

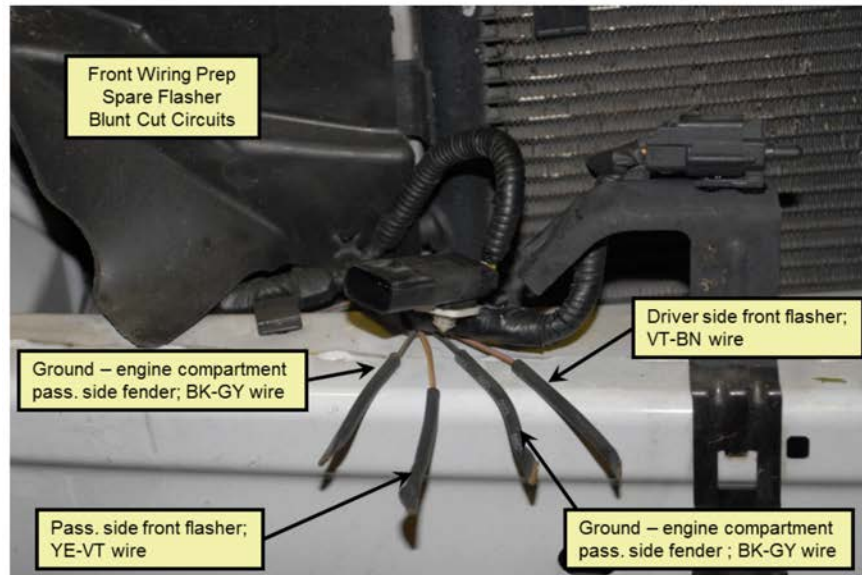
Pin Number	Description	Wire Color
1	Grille LED Light Ground	BN
2	Grille LED Light Pattern	GY-BN
3	Speaker (-)	GY-OG
4	Speaker (+) Spare	BK-GY

## Section 2: Electrical

### Utility — Front Wiring Prep Blunt Cut Circuits



Front Wiring Prep Blunt Cut Circuits Attached to Front Bumper

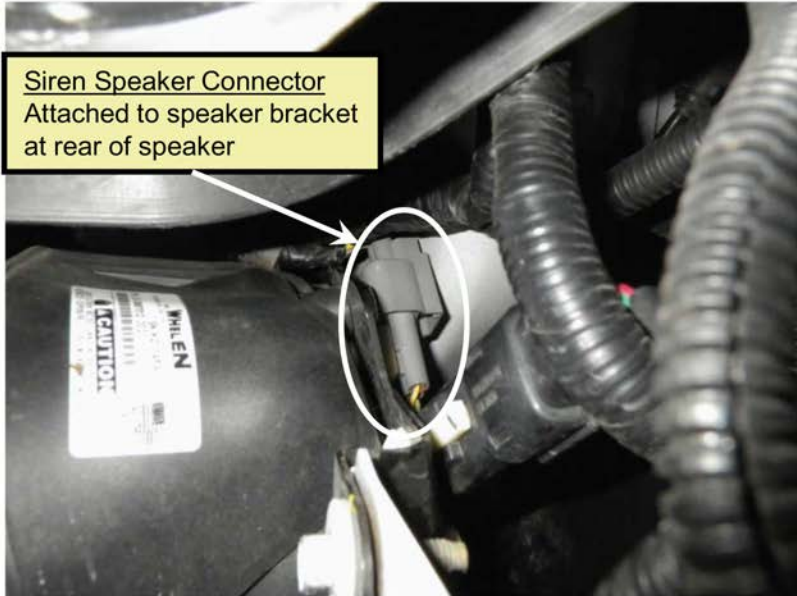


N0151480

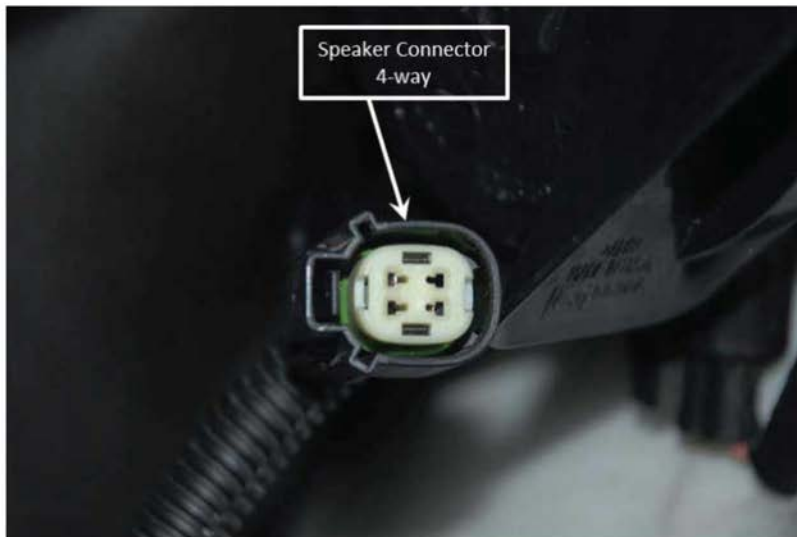


# Section 2: Electrical

## Utility — Siren Speaker



Siren Speaker Connector



Part# BU2Z-14S411-TA

N0151481

Connector View For Connector BU2Z-14S411-TA.

Pin Number	Description	Wire Color
1	Siren (+)	YE
2	Open	
3	Open	
4	Siren (-)	BU-WH

## Section 2: Electrical

### Utility — Front Lighting Solution Wig-Wag LED And Front Corner LED Lights Connector



Front Lighting Solution Wig-Wag LED And Front Corner LED Lights Connector



Part # CU2Z-14S411-ALA



N0151482

Connector View For Connector CU2Z-14S411-ALA Pin Out Continued On The Next Page.

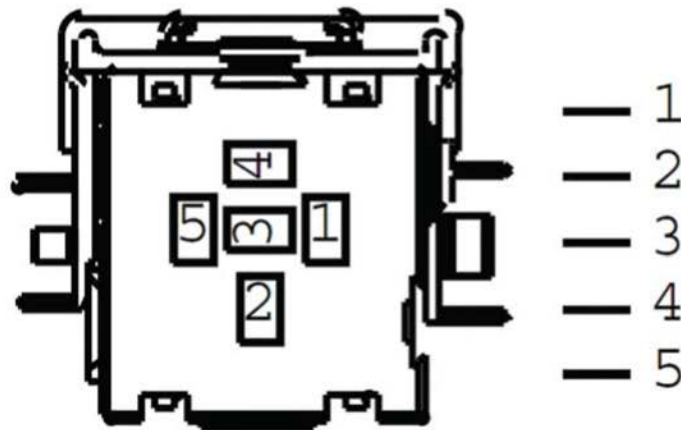
Pin Number	Description	Fuse	Wire Color
1	Wig-Wag Control		VT
2	Wig-Wag Passenger Side Pattern		GN-WH
3	Wig-Wag Driver Side Pattern		GY
4	Open		
5	Wig-Wag Run/Start (20A)	BJB #74	VT-BN

## Section 2: Electrical

(Continued)

6	Front Corner LED Lights Control/ Power		
7	Front Corner LED Lights Pattern		GY-BN
8	Wig-Wag Ground		BK-GY

**Utility — Flasher Relay**



DU5T-14D089-AA

N0141078

Connector View For Connector DU5T-14D089-AA

Pin Number	Circuit Number	Signal Name/Function
1		Flasher Power
2		
3		
4		Right Side Flasher Blunt Cut
5		Left Side Flasher Blunt Cut

N0141079

Front flasher power is supplied through the second 14 way power connector and is available on the Sedan and Utility. The right and left blunt cuts are located in the front grille area.













The rear flasher relay is used to turn modifier supplied decklid flashers on in the Sedan when the trunk is open.

**NOTE:**

Fuse sizes are given to help locate the fuse in the PDB. Ford recommends that current be limited to 85% of the value (40 Amp should be limited to 34 Amp).

## Section 2: Electrical

### Utility — Pigtail Information

2013MY SEDAN/UTILITY POLICE INTERCEPTOR PIGTAIL INFORMATION							
CONNECTOR PICTURE	HARNESS	DEVICE	CONN. TYPE	PIN	FUNCTION	Service Pigtail #	INFO
	14290	POL FLASH	8-WAY	1 2 3 4 5 6 7 8	WW INPUT WW RH PTRN/PWR WW LH PTRN/PWR WW R/S STROBES PWR PATTERN WW GND	CU2Z-14S411-ALA	Must splice cavities 1 and 6 together if function is not being used. Wire type- 3TBD-1.0mm Terminal- 7C3T-14474-DA
	14290	LH WIG WAG RH WIG WAG	4-WAY	1 2 3 4	WW INPUT WW SCN LOCK WW SYNC WW GND	8U2Z-14S411-TA	Wire type- 3TBD-1.0mm Terminal- 7C3T-14474-DA
	14290	SIREN SPEAKER	4-WAY	1 2 3 4	SIREN + (UNUSED) (UNUSED) SIREN -	BU2Z-14S411-TA	Wire type- 3TBD-1.0mm Terminal- 7C3T-14474-DA
	14290	LH SIDE CORNER MARKER RH SIDE MARKER	4-WAY	1 2 3 4	Power Pattern Sync GND	8U2Z-14S411-TA	Wire type- 3TBD-1.0mm Terminal- 7C3T-14474-DA
	14290	GRILLE & LOUD SPEAKER	4-WAY	1 2 3 4	TDM GRL GND TDM PATTERN LD SPKR - LD SPKR +	8U2Z-14S411-TA	Wire type- 3TBD-1.0mm Terminal- 7C3T-14474-DA
	14401	POLICE POWER & VEHICLE SIGNALS	14-WAY	1 2 3 4 5 6 7 8 9 10 11 12 13 14	WIGWAG LAMP CONTROL SIDE LAMP PWR CONTROL FRONT FLASHER PWR CONTROL LOUDSPEAKER NEG OPEN SIDE LAMP SYNC CONTROL DIMMER BRAKE OUTPUT LOUDSPEAKER PWR/TDM GRILL OPEN OPEN OPEN OPEN SIDE STROBE PATTERN	CU2Z-14S411-APA	0.64 CAVITIES- 2TAD-0.75mm 2.8 CAVITIES- 2TAD-1.0mm 0.64 CAVITIES- 1/2/5/6/7/8/13/14 TERMINAL 3F2T-14474-RA 2.8 CAVITIES- 3/4/9/10/11/12 TERMINAL 97BG-14474-BBA
	14401	SIREN	4-WAY	1 2 3 4	SIREN FEED/LEFT FRONT SPK + SIREN SHIELD/LEFT FRONT SPK - OPEN/RIGHT FRONT SPK + SIREN RETURN/RIGHT FRONT SPK -	3U2Z-14S411-LUB	WIRE TYPE- 2TAD-1.0mm TERMINAL 97BG-14474-ABB
	14401	2-WAY RADIO	4-WAY	1 2 3 4	LEFT FRONT SPK + LEFT FRONT SPK - RIGHT FRONT SPK + RIGHT FRONT SPK -	3U2Z-14S411-LUB	WIRE TYPE- 2TAD-1.0mm TERMINAL 97BG-14474-ABB
	14401	2-WAY RADIO	4-WAY	1 2 3 4	LEFT FRONT SPK + LEFT FRONT SPK - RIGHT FRONT SPK + RIGHT FRONT SPK -	3U2Z- 14S411-BUB	WIRE TYPE- 2TAD-1.0mm TERMINAL 97BG-14421-ABB
	14401	POLICE FEATURES & BRAKE OUTPUT	14-WAY	1 2 3 4 5 6 7 8 9 10 11 12 13 14	B+ FEED 17AMP CNTRL BUTTON 1 CNTRL BUTTON 2 CNTRL BUTTON 3 CNTRL BUTTON 4 POL START POL_R/S #1 B+ FEED #2 17AMP VSS DEL ASSY B+ FEED #3 12AMP PARK DETECT DRV DOOR AJAR POL_R/S #2	3U2Z-14S411-BJAC	1.5 CAVITIES- 0.75mm 2.8 CAVITIES- 1.5mm 0.64 CAVITIES- 2/3/4/5/6/9/10/11/12/13 TERMINAL 97BG-14474-ABB 2.8 CAVITIES- 1/7/8/14 TERMINAL 97BG-14474-BCA WIRE TYPE- 2TAD
	14401	POLICE POWER	6-WAY	1 2 3 4 5 6	POLICE B+ 34AMP POLICE B+ 34AMP POLICE B+ 34AMP GROUND GROUND GROUND	3U2Z- 14S411-HEA	WIRE TYPE- 2TAD-4.0mm TERMINAL 97BG-14474-CCA
	14A227 (D258 ONLY)	POLICE INLINE	2-WAY	1 2	CHMSL LAMP DECKLID	3U2Z- 14S411-LAB	WIRE TYPE- 2TAD-0.50mm TERMINAL 97BG-14421-ABB

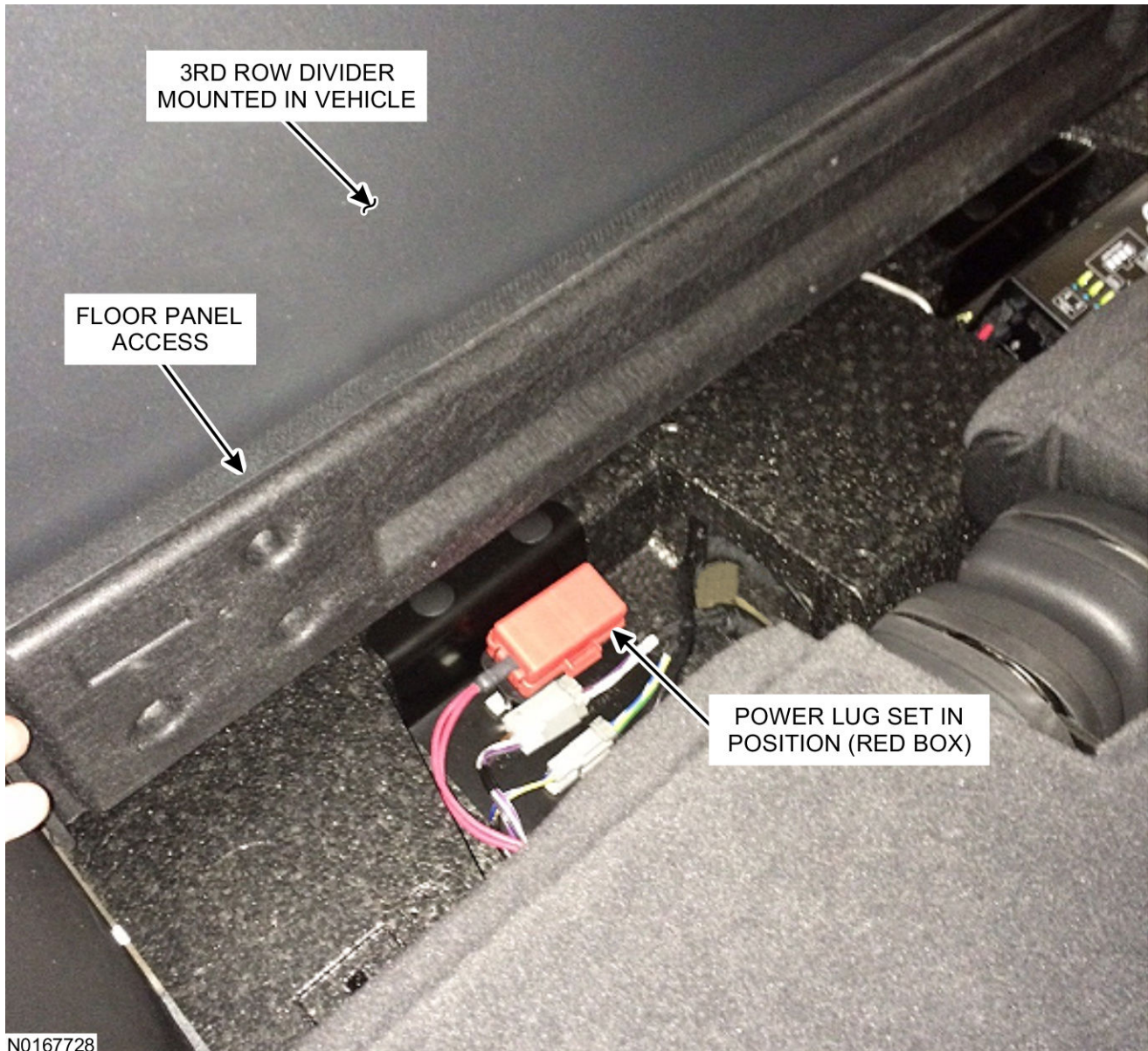
N0150616

## Section 2: Electrical

### Utility — NEW Rear Power Access Location — late model year availability

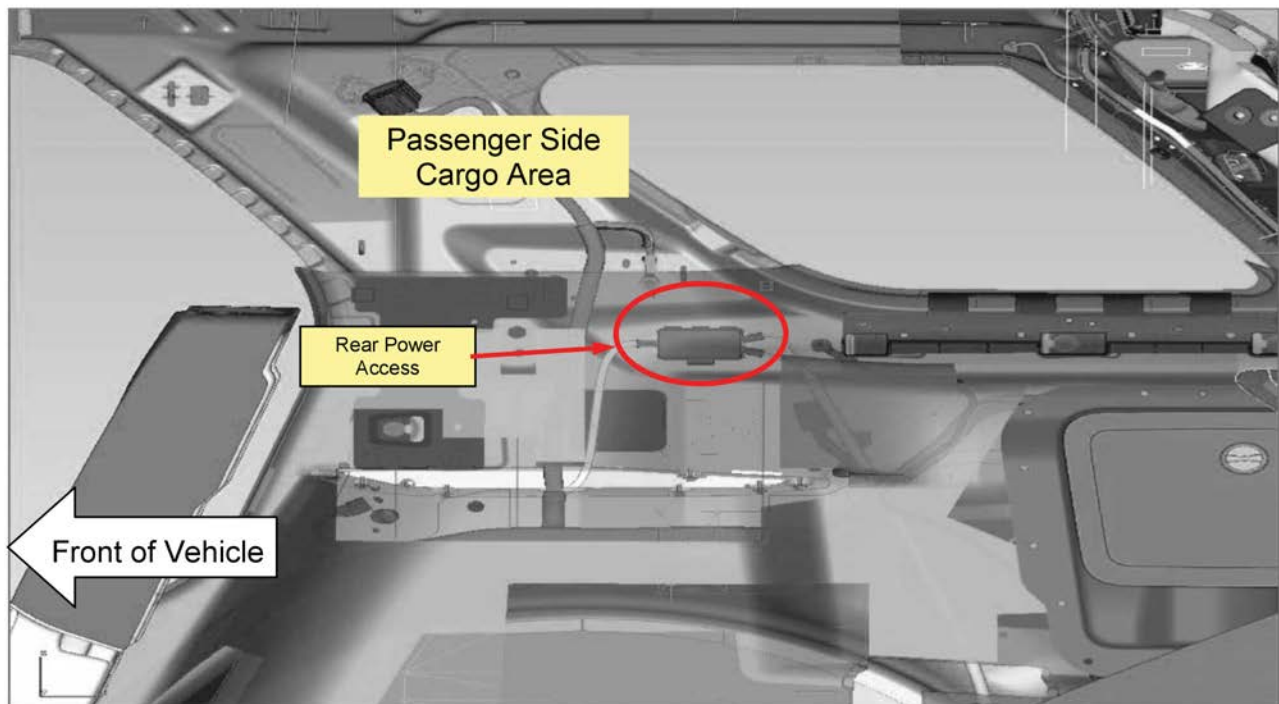
New location for the Utility rear power access for vehicles built late in the model year (late 2015)

Rear power access for these vehicles can be found beneath an access panel between the second row seat and load floor.



## Section 2: Electrical

### Utility — Rear Power Access



N0141051

#### Utility — Remove cargo area passenger side trim panel:

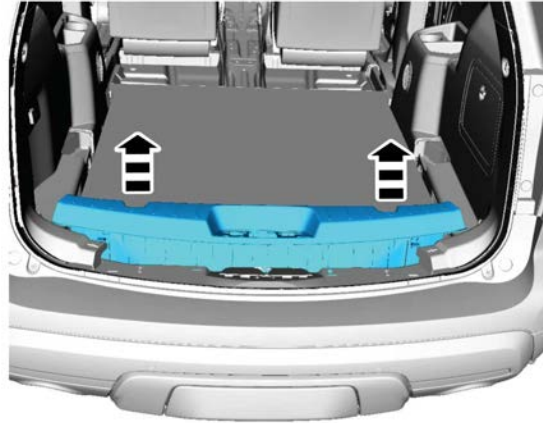
1. Position aside the liftgate weatherstrip.

**NOTICE:**

To avoid damage to the liftgate scuff plate trim panel, remove any retaining clips from the body and attach them to the liftgate scuff plate trim panel before installing.

2. Pull upward to release the retaining clips.
3. If equipped, disconnect the rear passive start antenna electrical connector and remove the liftgate scuff plate trim panel.

## Section 2: Electrical



N0145094

**NOTICE:**

To avoid damage to the scuff plate trim panel, remove any retaining clips from the body and attach them to the scuff plate trim panel before installing.

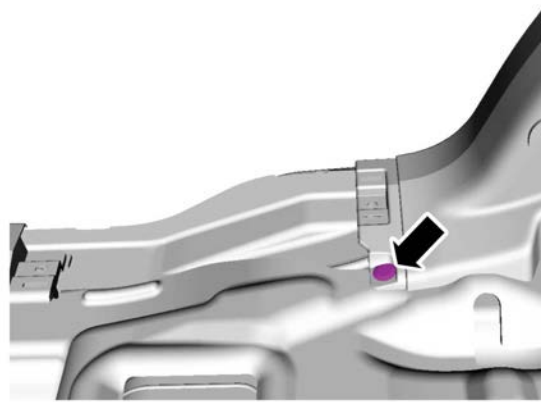
4. Remove the rear door scuff plate trim panel.
5. Remove the quarter trim panel push pin retainer.



N0145096

6. Position the second row seat in the flat position and then tilt the second row seat forward.
7. Position the third row seat in the flat position if equipped.
8. Remove the 2 quarter trim panel tie down hooks.

## Section 2: Electrical



N0145095

9. Remove the third row safety belt anchor bolt cover on the quarter trim panel.
10. Remove the third row safety belt anchor bolt.
  - To install, tighten to 40 Nm (30 lb-ft).

### **NOTICE:**

**To avoid damage to the quarter trim panel, remove any retaining clips from the body and attach them to the quarter trim panel before installing.**

11. Pull the quarter trim panel toward the inside of the vehicle to release the quarter trim panel clips and disconnect electrical connectors and remove the quarter trim panel.

### **Installation**

12. To install, reverse the removal procedure.

### **Utility — My Fleet Management**

Allows configuration of following functions using an Integrated Diagnostic System (IDS) service tool

- Ability to set vehicle maximum speed from 90 MPH to the factory maximum speed setting.
- Ability to set maximum radio volume from 0% to 100%.

### **Utility — Courtesy Lamp Disable (Dark Mode)**

This option offers deletion of the illuminated entry function. Upon vehicle power-up, the Smart Junction Box (SJB) 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 SJB. The vehicle can be configured 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 IDS (at the latest calibration) to the vehicle via the DLC.
2. Allow the IDS to ID the vehicle. Select the Tool Box.
3. Select Module Programming, Programmable Parameters, Interior Lighting, then the TIC.
4. A screen will come up to remind you to turn the ignition on.
5. Select Dark Enable and the TIC.
6. During configuration the lights will flash and the system changes from Disabled to Enabled.
7. Final Screen: Module configuration complete, check/clear any DTCs that may have been set.



## Section 2: Electrical

### Utility — Steering Wheel Switches



#### Configurable Steering Wheel Switches:

- ⌚ 2 switches with two positions (up/down) each
- ⌚ Total of 4 grounded outputs sourcing available for operating police equipment
- ⌚ 4 grounded outputs allocated at bottom of I/P center stack in 14-way connector

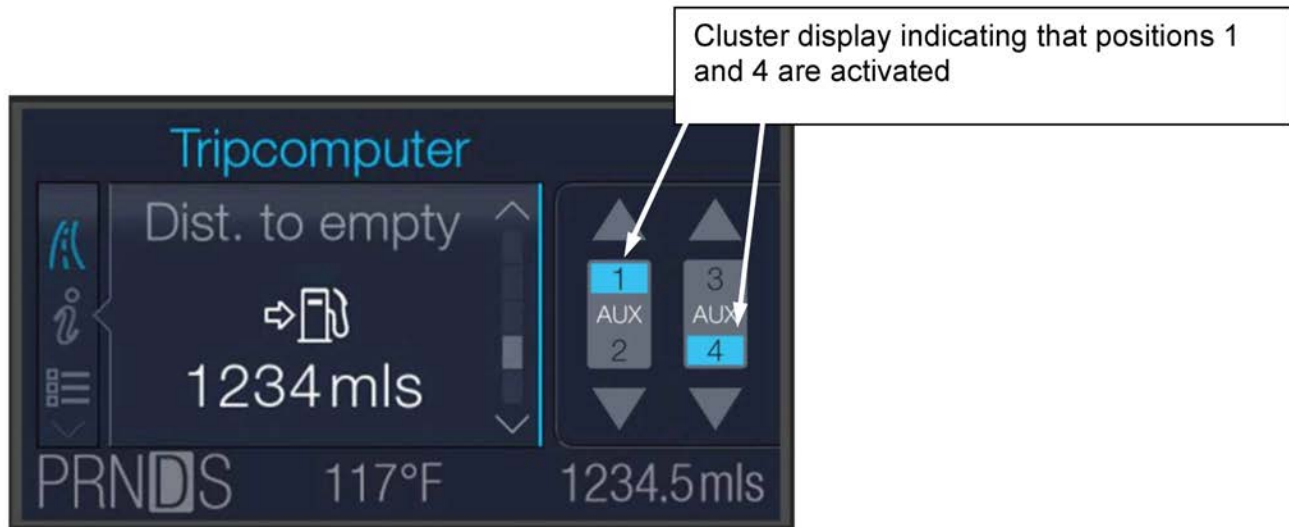
N0141056

#### Steering Wheel Operation

- Two switches are available for configuration as indicated above.
- Each switch has 2 positions (up/down).
- Four total ground side switching outputs are available in 14-way connector located behind the close out panel at the bottom of the Electronic Finish Panel (EFP).
- Any combination or all of the four outputs can be turned on simultaneously.
- To activate a switch/output, push the desired switch in the direction of the label either above or below the switch.
- To deactivate that function, push the desired switch in the same direction as was used when activating the output.
- Cluster display will illuminate the switch/position while activated.

## Section 2: Electrical

### Utility — Steering Wheel Switch Cluster Display



N0141057

### Fuse Information

If electrical components in the vehicle are not working, a fuse may have blown. Blown fuses are identified by a broken wire within the fuse. Check the appropriate fuses before replacing any electrical components.

#### NOTE:

Always replace a fuse with one that has the specified amperage rating. Using a fuse with a higher amperage rating can cause severe wire damage and could start a fire.

### Electrical Component Resource

See part numbers and supplier in the chart below to obtain terminals and connectors.

## Section 2: Electrical

POLICE INTERCEPTOR CONNECTOR FORD TO SUPPLIER PART NUMBER CROSS REFERENCE MATRIX						
COMPONENT IN VEHICLE LOCATION	FORD COMPONENT CONNECTOR PART NUMBER	SUPPLIER	SUPPLIER PART NUMBER	UPFIT HARNESS SIDE PART NUMBER	SUPPLIER PART NUMBER	
ION Grill LEDs @ Behind Grille Light Heads (4 Pin)	4F9T-14A464-HA (000)	MOLEX	33471-0401	4F9T-14A624-KA (000)	33481-0401	
ION Rear CHMSL LEDs @ Light Heads (4 Pin)	4F9T-14A464-HA (000)	MOLEX	33471-0401	4F9T-14A624-KA (000)	33481-0401	
ION Rear Decklid/Liftgate LEDs @ Light Heads (4 Pin)	4F9T-14A464-HA (000)	MOLEX	33471-0401	4F9T-14A624-KA (000)	33481-0401	
VERTEX Front Corner LEDs @ Headlight Modules (4 Pin)	4F9T-14A464-HA (000)	MOLEX	33471-0401	4F9T-14A624-KA (000)	33481-0401	
VERTEX Rear Corner LEDs @ Rear Taillights (4 Pin)	4F9T-14A464-HA (000)	MOLEX	33471-0401	4F9T-14A624-KA (000)	33481-0401	
PARKTUR/WARN LEDs @ Headlight Modules (4 Pin)	4F9T-14A464-HA (000)	MOLEX	33471-0401	4F9T-14A624-KA (000)	33481-0401	
PARKTUR/WARN LEDs @ Headlight Module (3 Pin)	7T4T-14A464-BA (000)	MOLEX	33471-0301	7T4T-14A624-AA (000)	33481-0301	
Siren Speaker @ Driver Side Behind Fascia(2x2 Pin)	5W7T-14A464-CA (004)	MOLEX	33472-4416	5W7T-14A624-BA (002)	33482-0416	
WARN CONTROL MODULE @ Underhood near Coolant Bottle (4x2 Pin)	5W7T-14A464-GA (000)	MOLEX	33472-0801	5W7T-14A624-DA (000)	33482-0801	
Relay Center & CENCOM (5x2 Pin)	4S7T-14489-VJA	YAZAKI	7283-6455-40	4S7T-14A459-VJA	7282-6455-40	
AT CENCOM (2x2 Pin)	4S7T-14489-VDA	YAZAKI	7283-6449-40	4S7T-14A459-VDA	7282-6449-40	
AT Cooling Fan (2 Pin)	4S7T-14489-VAA	YAZAKI	7283-6443-40	4S7T-14A459-VAA	7282-6443-40	
Siren Speaker @ Instrument Panel/Center Stack (2x2 Pin)	4S7T-14A459-VDA	SUMITOMO		4S7T-14489-VDA		
Power/Vehicle Signals @ Instrument Panel/Center Stack (2x7 Pin)	4S7T-14459-YRA	SUMITOMO		4S7T-14489-YRA		
Police Lights@ Instrument Panel Center Stack (2x7 Pin)	BU5T-14A459-BA	SUMITOMO		4L3T-14489-AC		
Police Radio Connector @ Instrument Panel/Center Stack (2x2 Pin)	4S7T-14489-VDA	SUMITOMO		4S7T-14A459-VDA		
40A Auxiliary Power @ Instrument Panel/Center Stack (3x3 Pin)	BU5T-14A459-AA	YAZAKI		4S7T-14489-YMA		
WIRE GAUGE or Part Number	COMPONENT TERMINAL NUMBER	SUPPLIER	SUPPLIER PART NUMBER	HARNESS TERMINAL PART NUMBER	SUPPLIER PART NUMBER	
Based on wire size						
14, 16	33012-2001	MOLEX	33012-2001	33000-0001	33000-0001	
18, 20	33012-2002	MOLEX	33012-2002	33000-0002	33000-0002	
22	33012-2003	MOLEX	33012-2003	33000-0003	33000-0003	
Based on wire size						
16, 18	7116-4101-02	YAZAKI	7116-4101-02	7114-4101-02	7114-4101-02	
20, 22	7116-4100-02	YAZAKI	7116-4100-02	7114-4100-02	7114-4100-02	
4S7T-14459-YRA / 4S7T-14489-YRA	Terminals for Pins: 1.7.8 97BG-14474-BCA 2.3.4.5.6 97BG-14474-BA	SUMITOMO				
BU5T-14A459-BA / 4L3T-14489-AC	Terminals for Pins: 1.2.7 3F2T-14474-RA 6.14 3F2T-14474-SA 9 97BG-14474-BBA	SUMITOMO				
4S7T-14489-VDA / 4S7T-14A459-VDA	2TAD-0.75 1.5MM FLAT					
For 40A Auxiliary Power Connector	97BG-14421-GCA	YAZAKI				

N0146595

### Electrical Component Resource

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

## Section 2: Electrical

### Utility — Wiring Reference Information

#### Police Interceptor Sedan and Utility Wiring Diagram Excerpts

The following pages are from sections of both the Police Interceptor Sedan and Utility Wiring Diagrams.

#### Publication Ordering Information

To obtain information about ordering complete copies of Ford or Lincoln/Mercury publications, call 1-800-782-4356 or at [www.helminc.com](http://www.helminc.com).

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

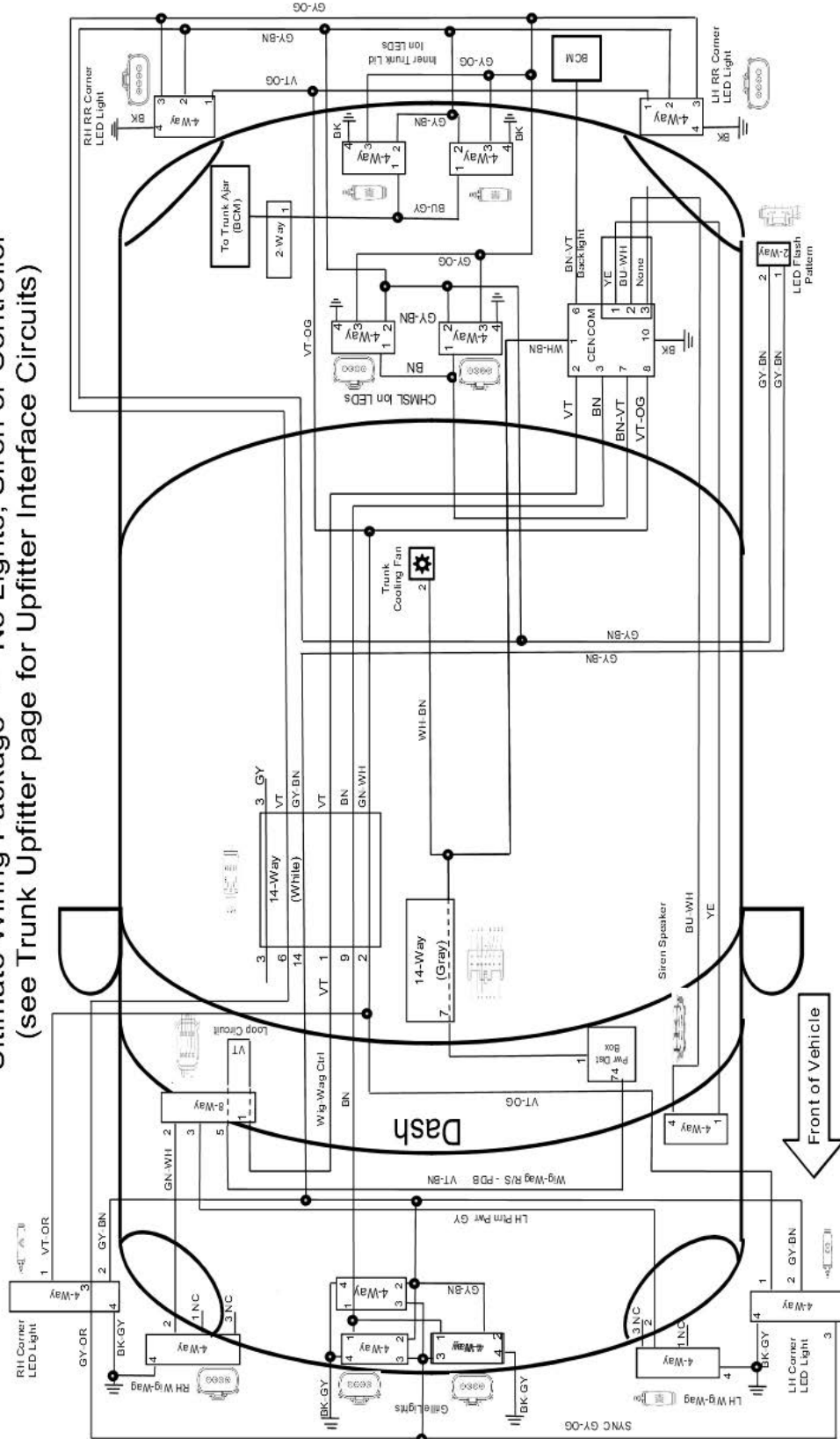
### NEW Sedan — Wiring Diagrams: Police Interceptor

Sedan Wiring Package Options

2017 Sedan Police Interceptor – Option 857 Ultimate Wiring Package - No Lights, Siren or Controller (see trunk upfitter page for upfitter interface circuits)

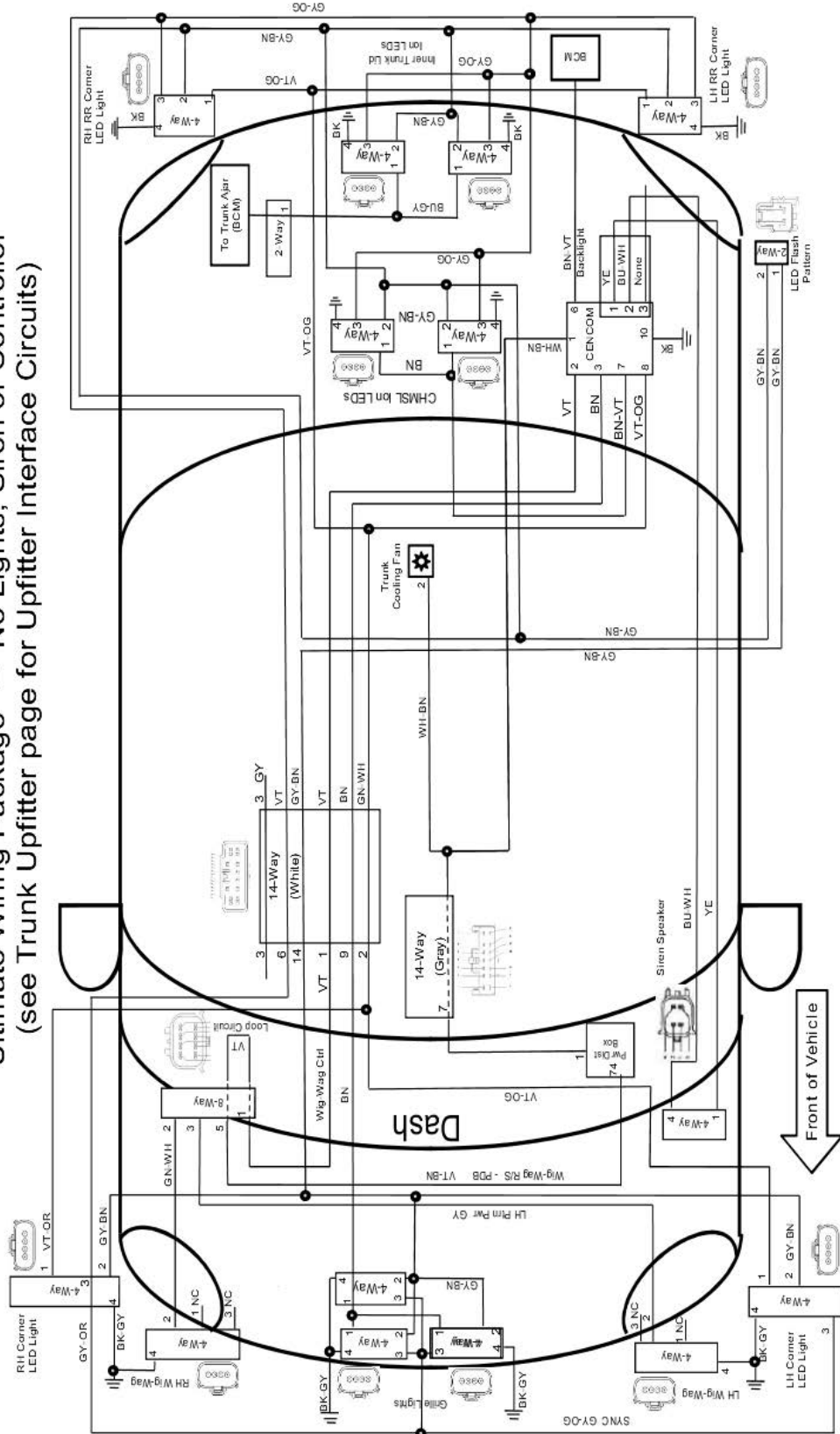
# Section 2: Electrical

2017 Sedan Police Interceptor – Option 857  
Ultimate Wiring Package – No Lights, Siren or Controller  
(see Trunk Upfitter page for Upfitter Interface Circuits)



# Section 2: Electrical

2017 Sedan Police Interceptor – Option 857  
Ultimate Wiring Package – No Lights, Siren or Controller  
(see Trunk Upfitter page for Upfitter Interface Circuits)



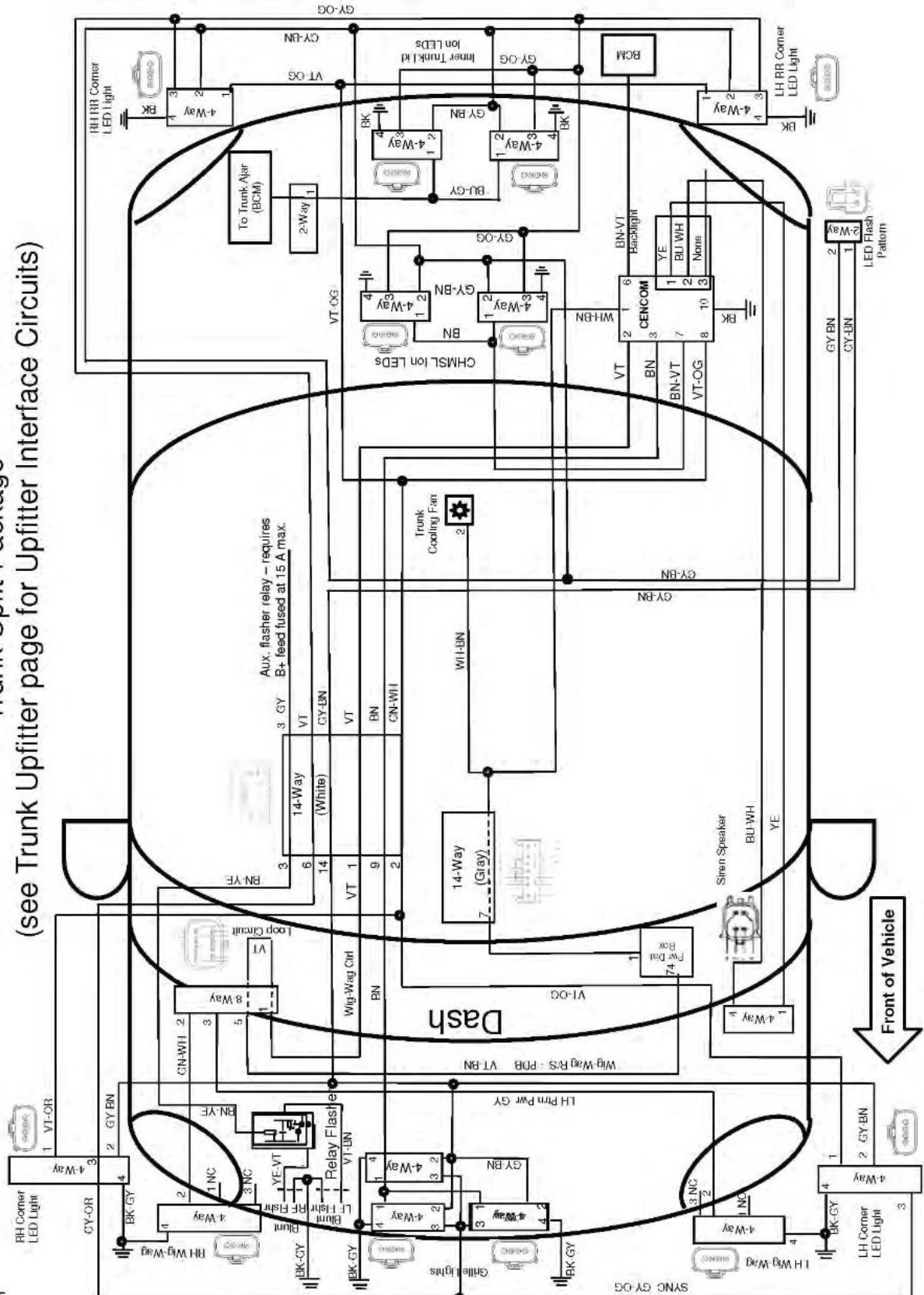






### Section 2: Electrical

2017 Sedan Police Interceptor – Option 854  
 Trunk Upfit Package  
 (see Trunk Upfitter page for Upfitter Interface Circuits)





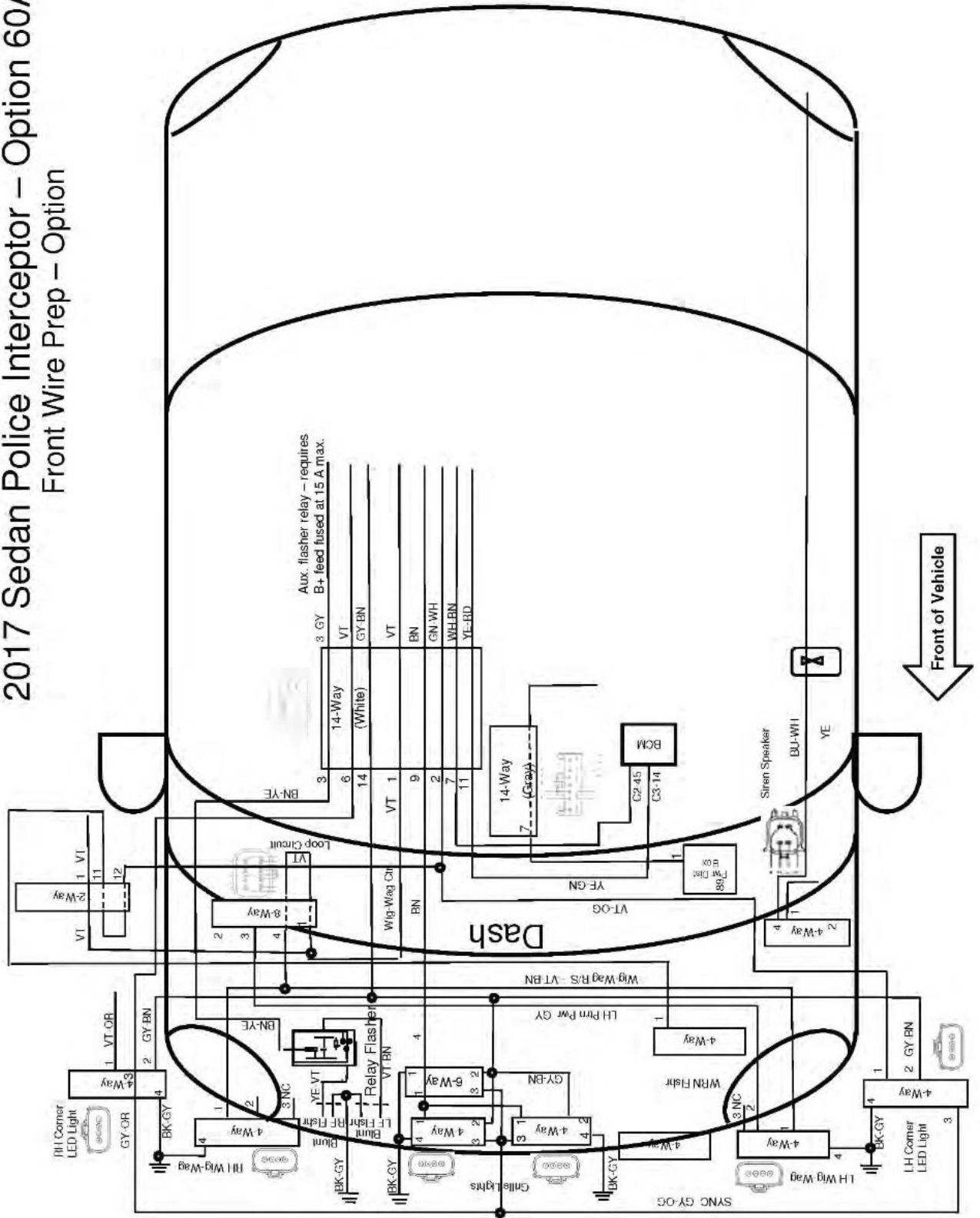


## Section 2: Electrical

2017 Sedan Police Interceptor Base Vehicles - No Wiring Options

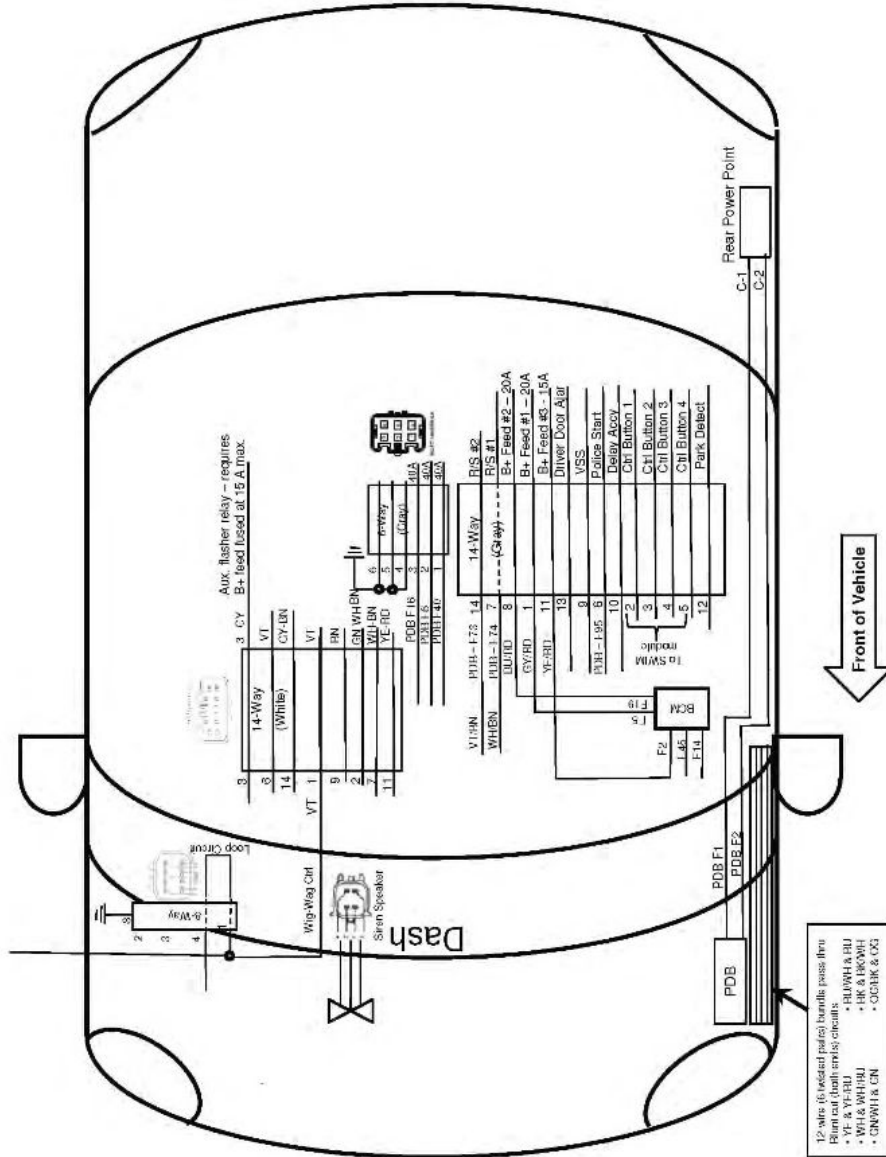
# Section 2: Electrical

## 2017 Sedan Police Interceptor – Option 60A Front Wire Prep – Option



Section 2: Electrical

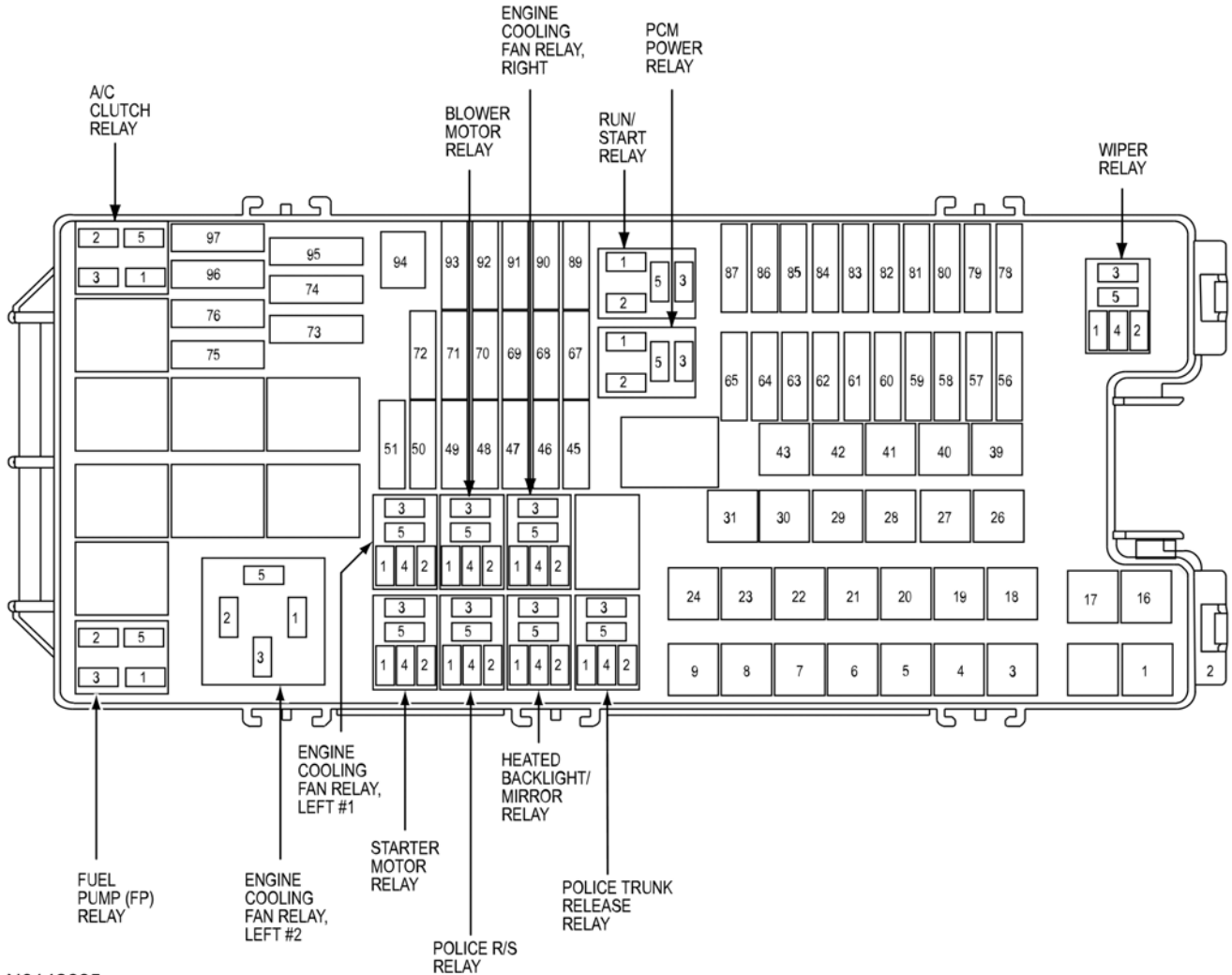
2017 Sedan Police Interceptor  
Base Vehicle – No Wiring Options



N0177559

# Section 2: Electrical

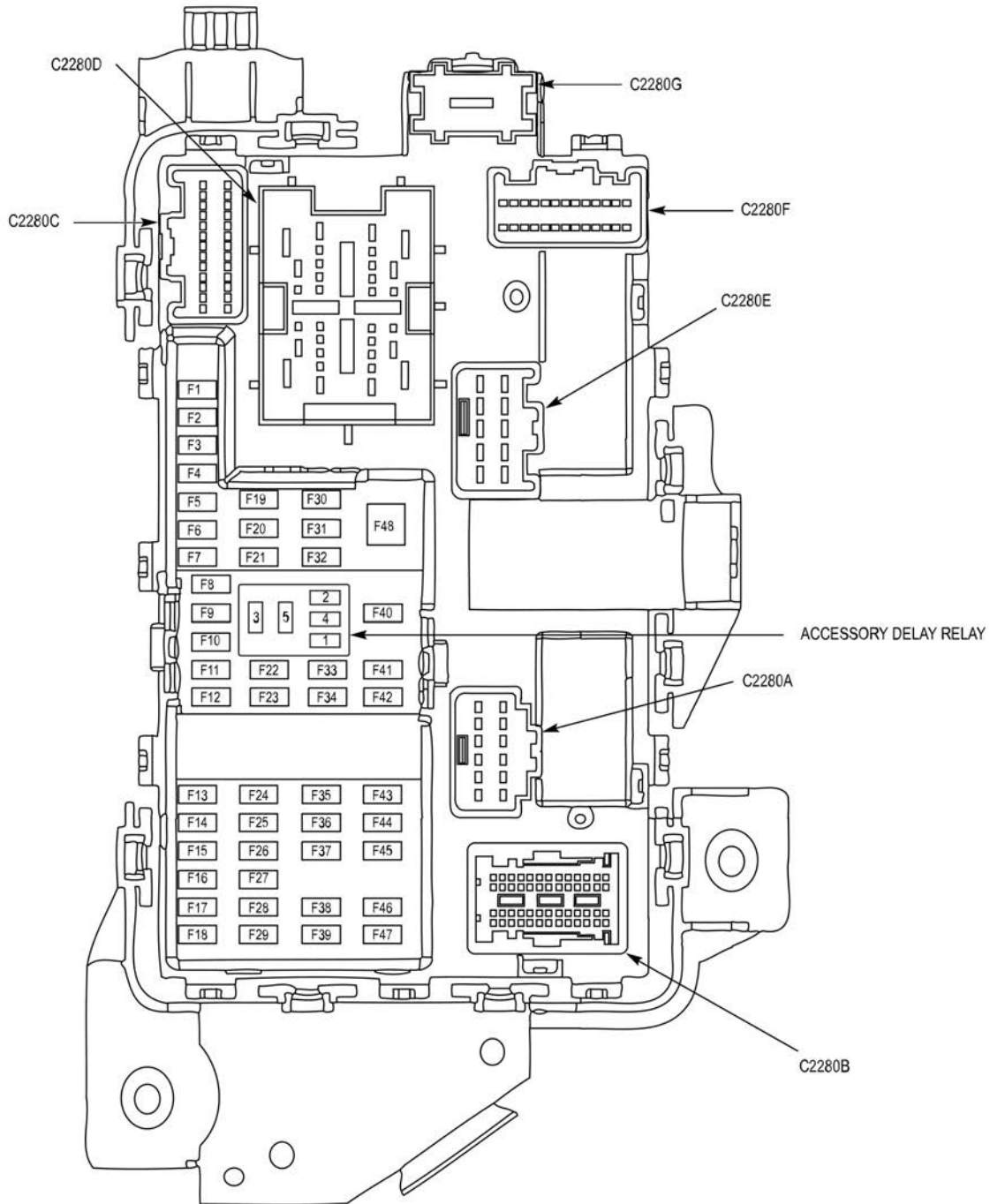
## Battery Junction Box (BJB)



N0142685

## Body Control Module (BCM)

## Section 2: Electrical

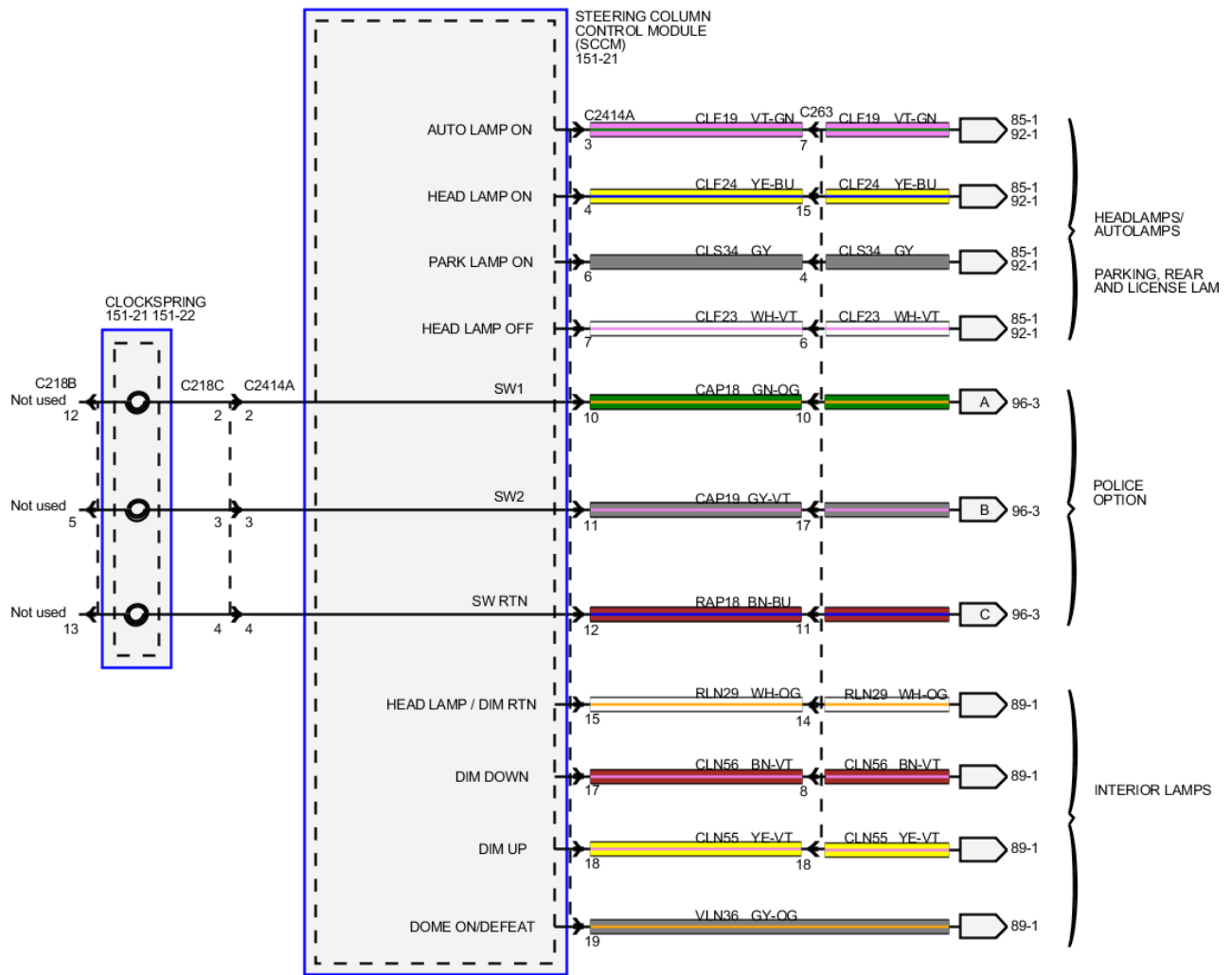


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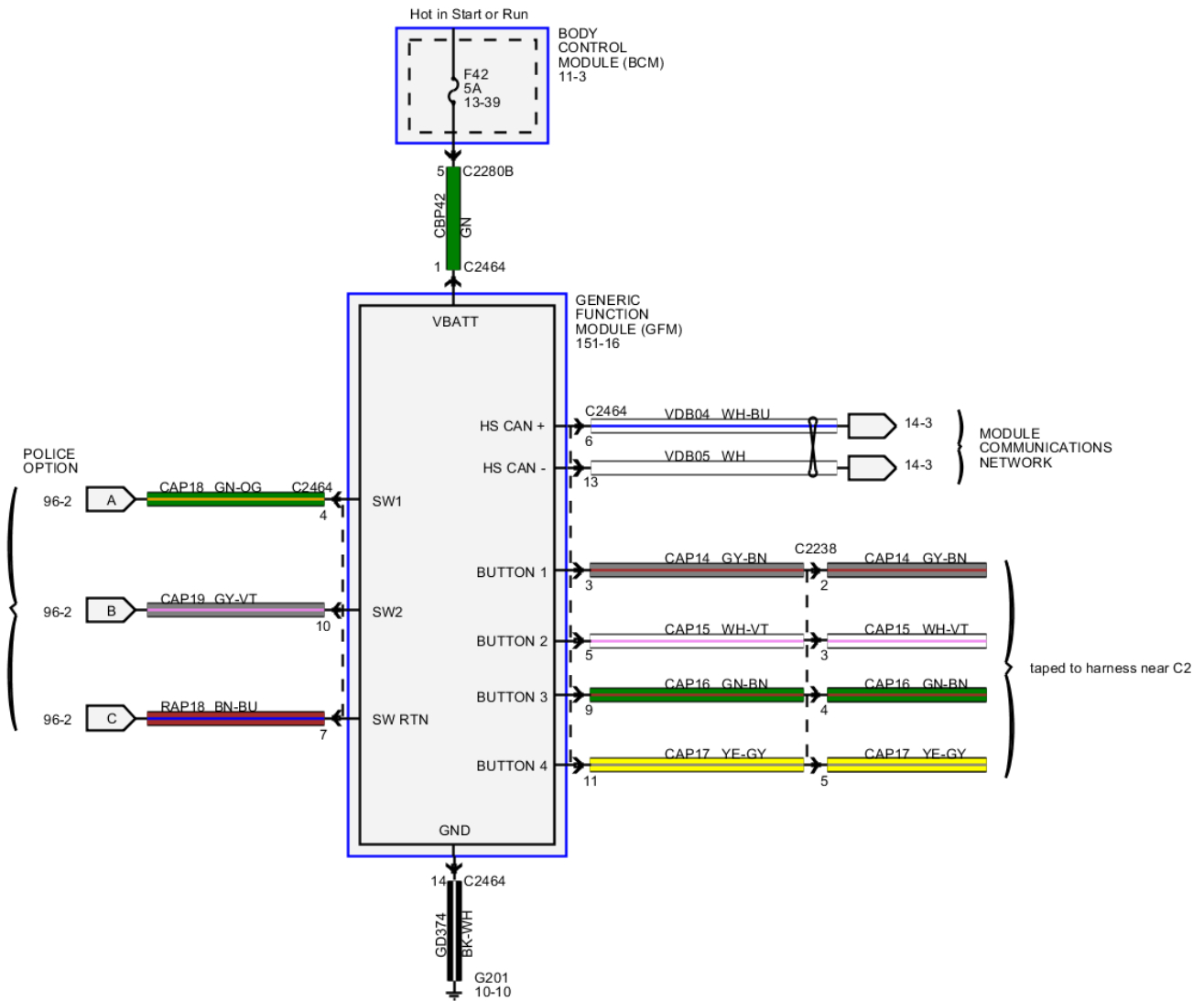


## Section 2: Electrical



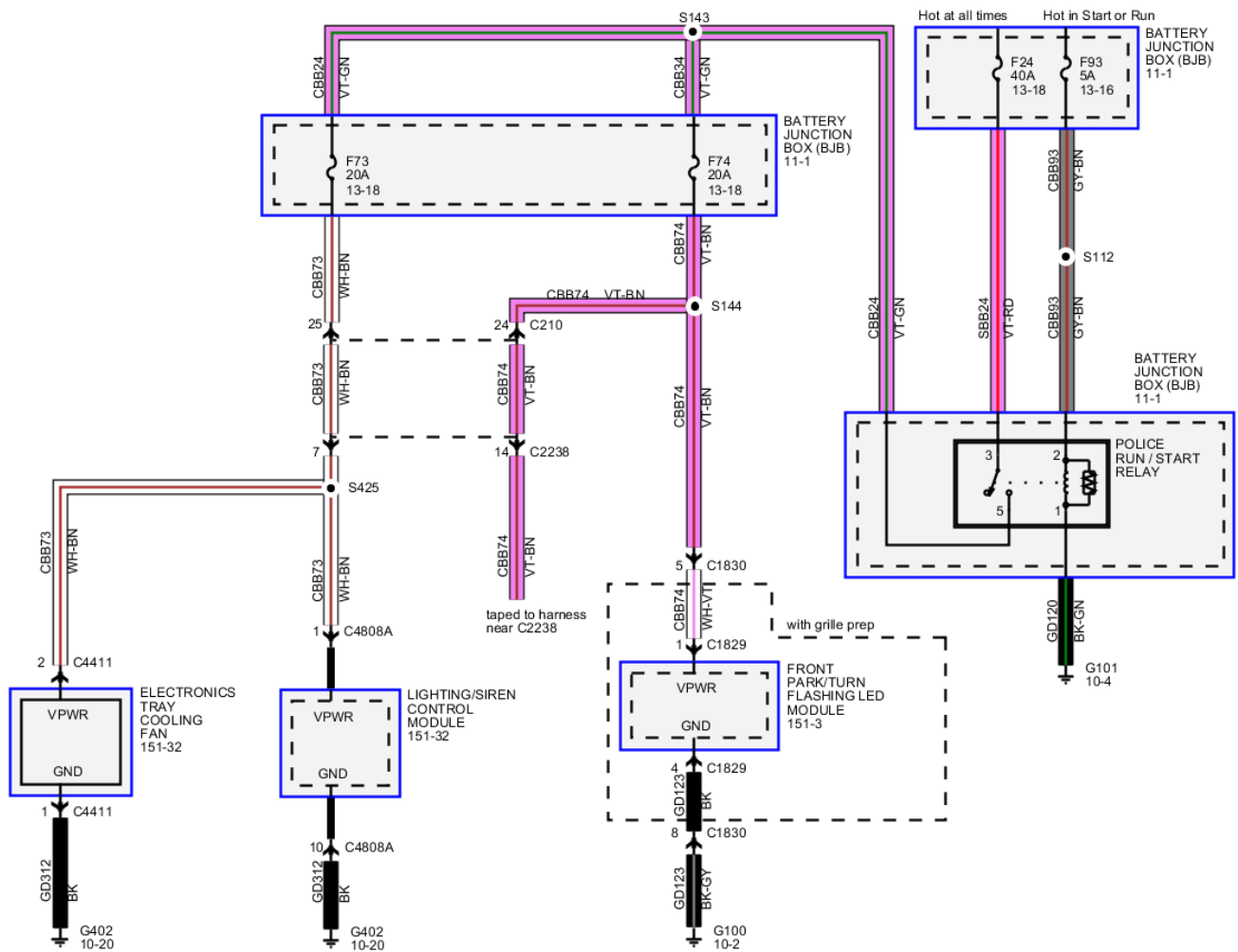
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## Section 2: Electrical



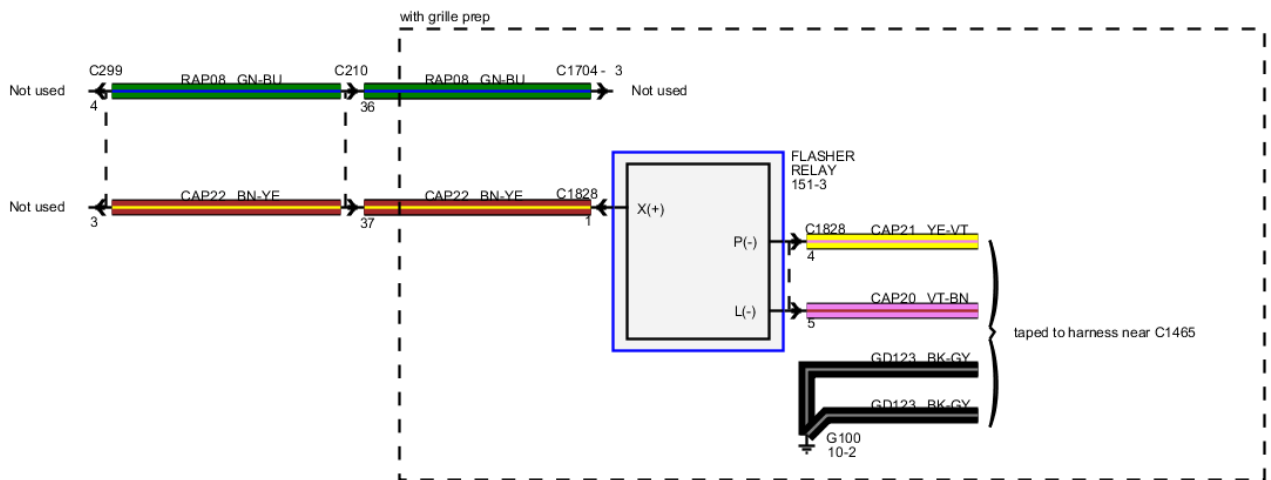
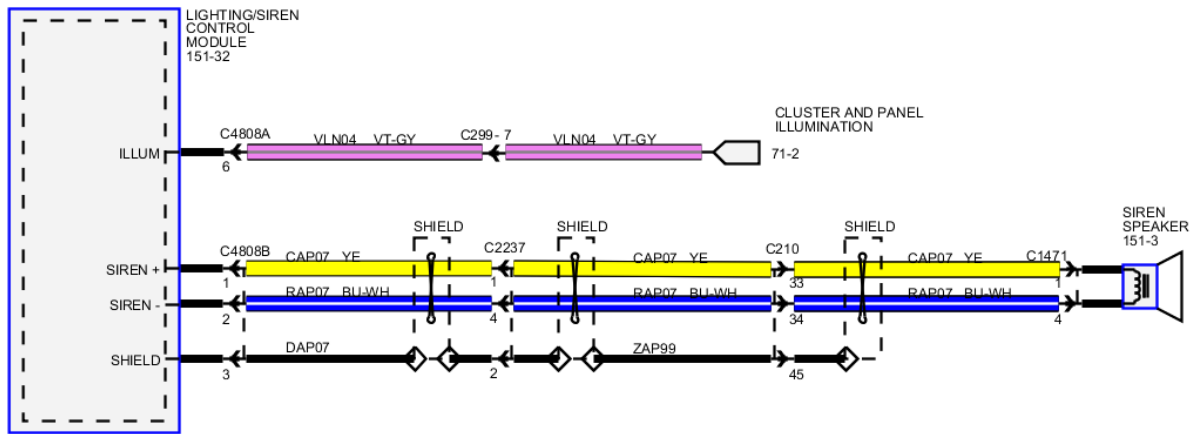
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# Section 2: Electrical



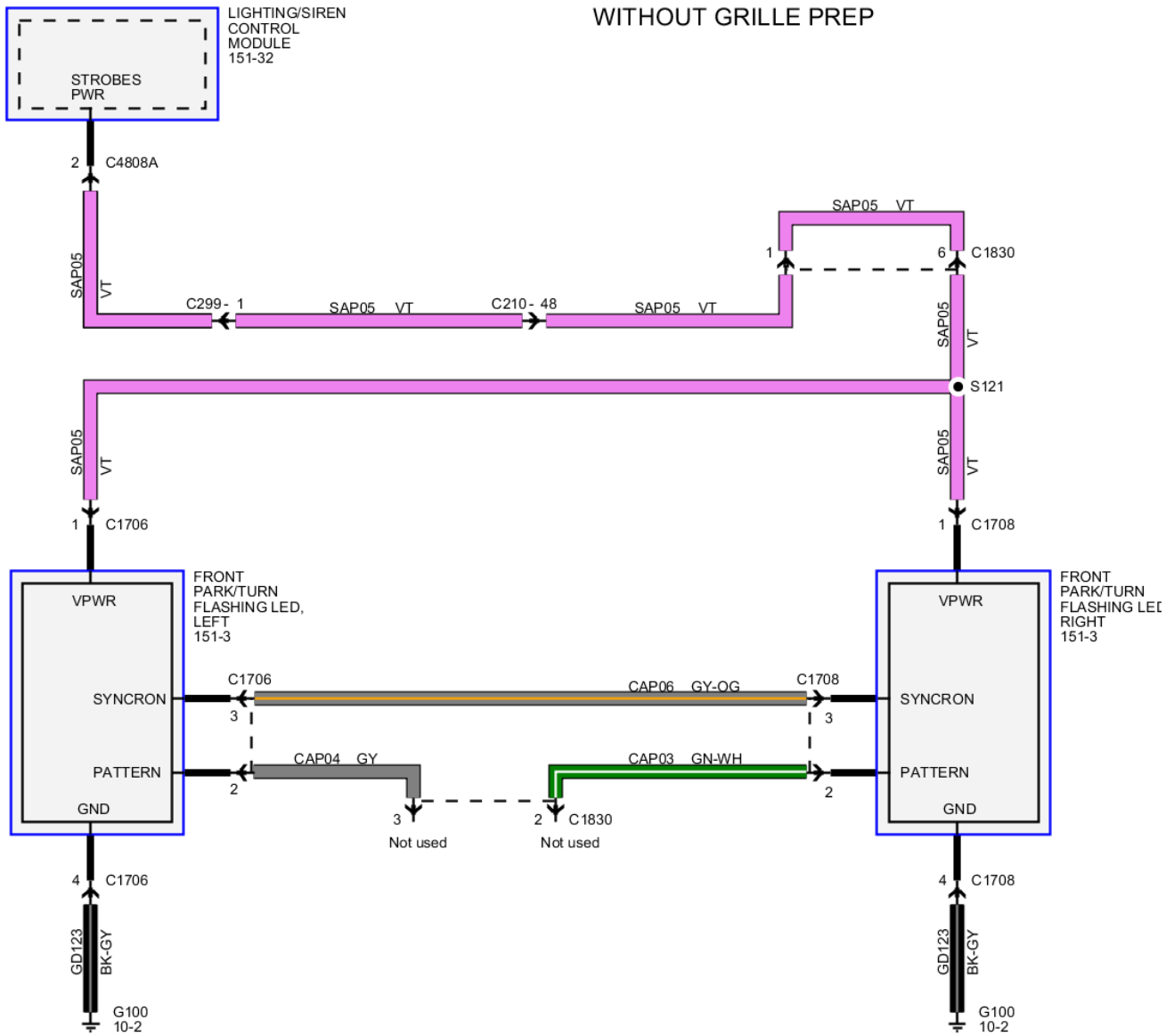
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# Section 2: Electrical



N0163445

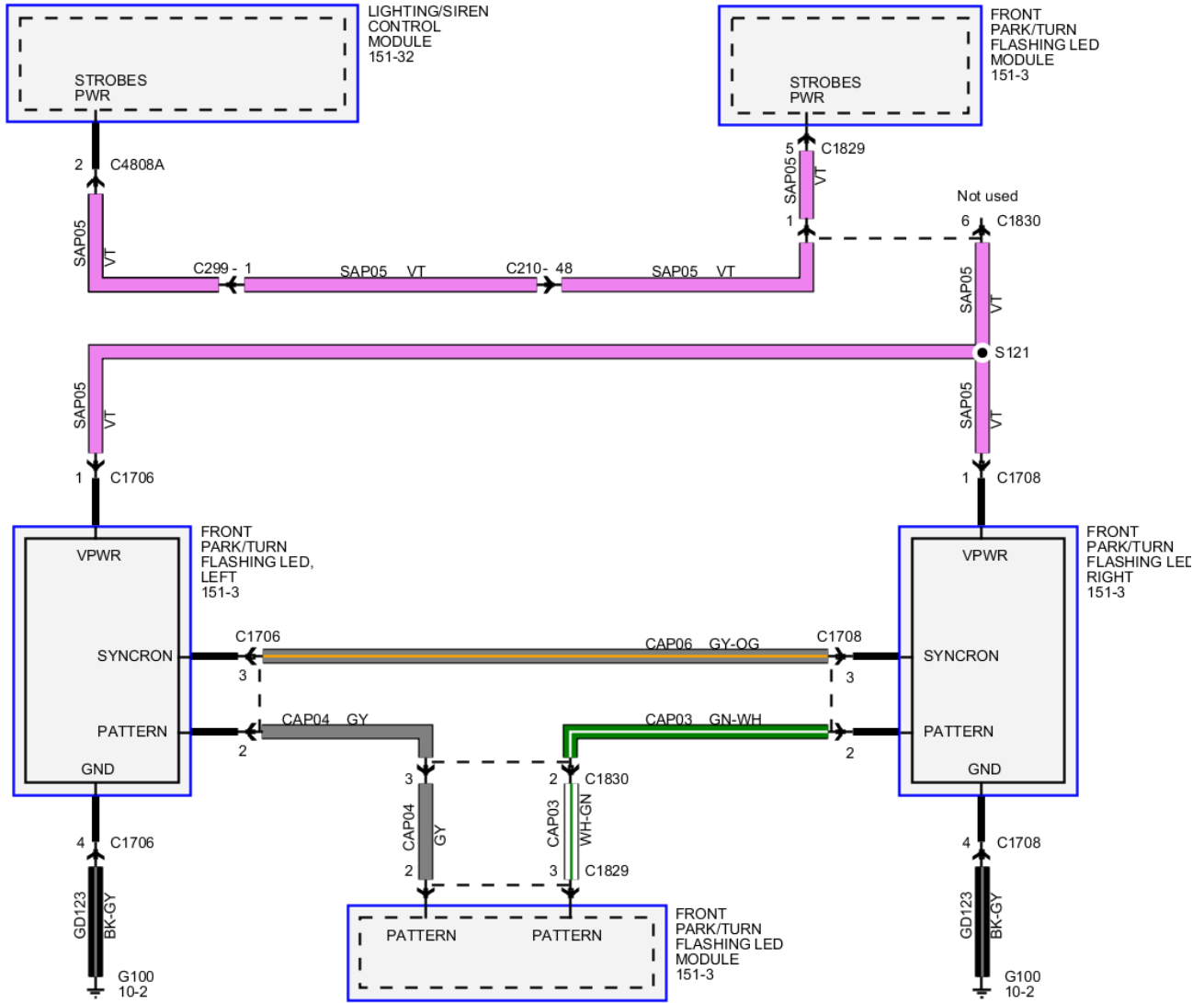
# Section 2: Electrical



N0163446

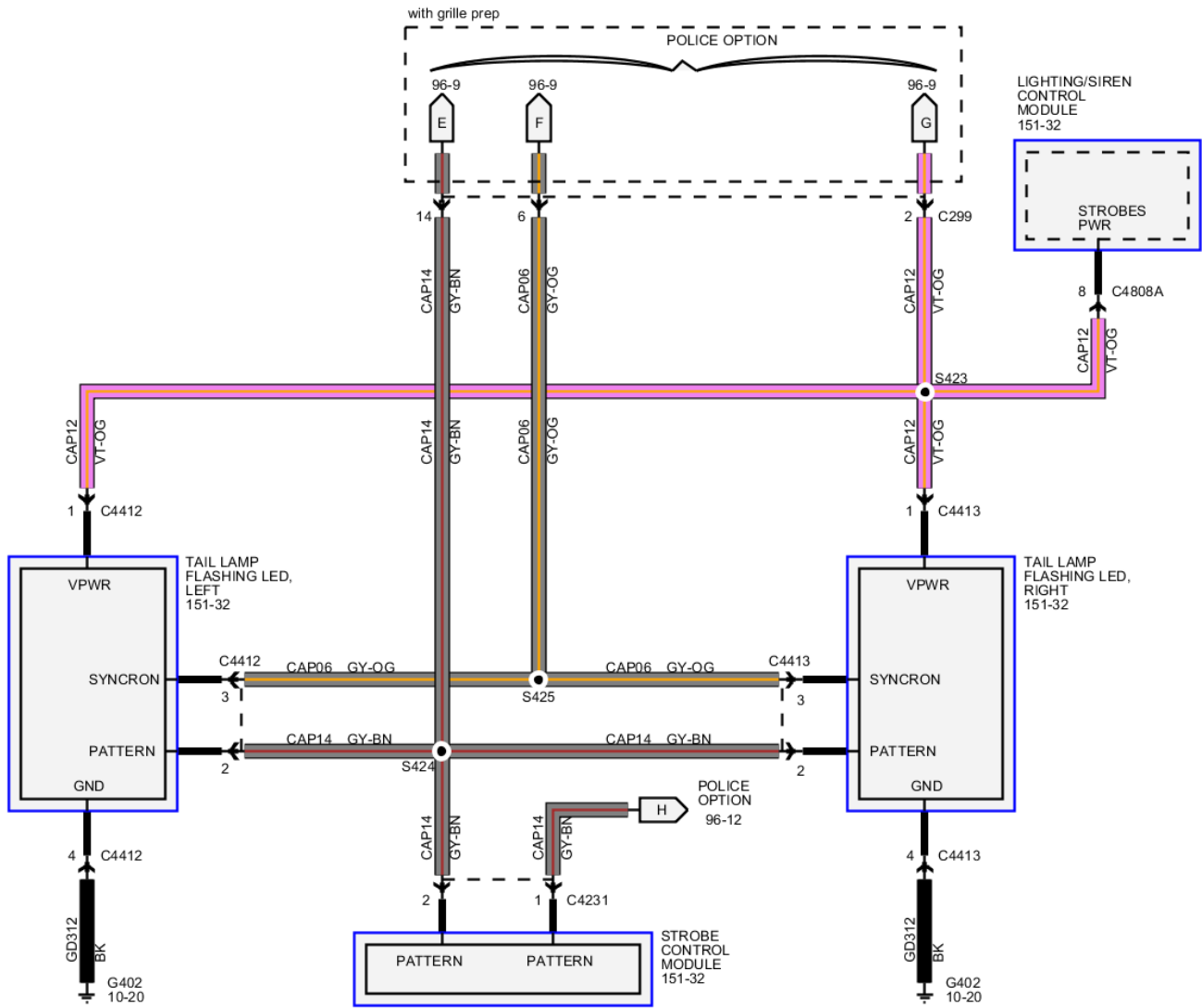
# Section 2: Electrical

WITH GRILLE PREP



N0163447

# Section 2: Electrical

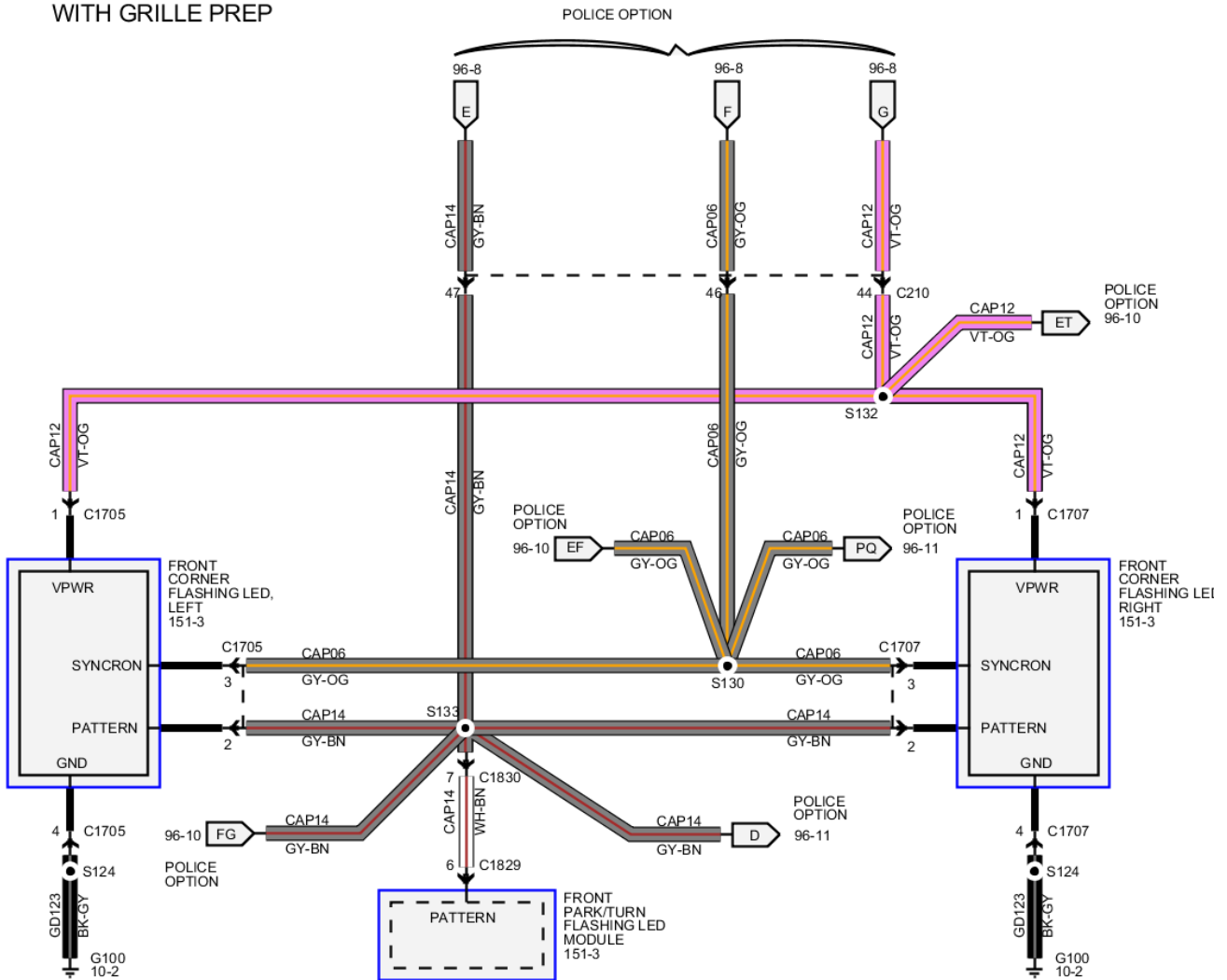


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# Section 2: Electrical

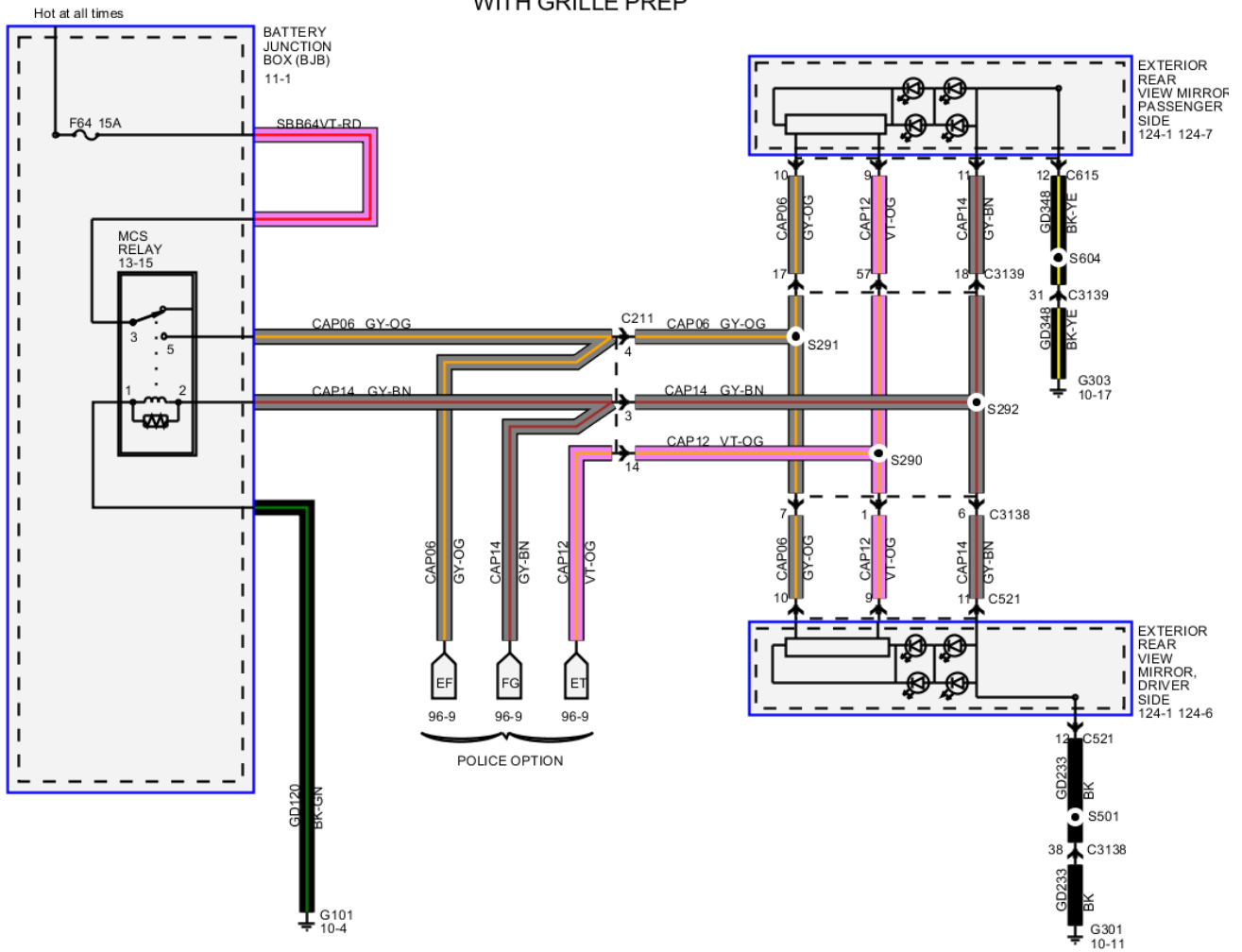
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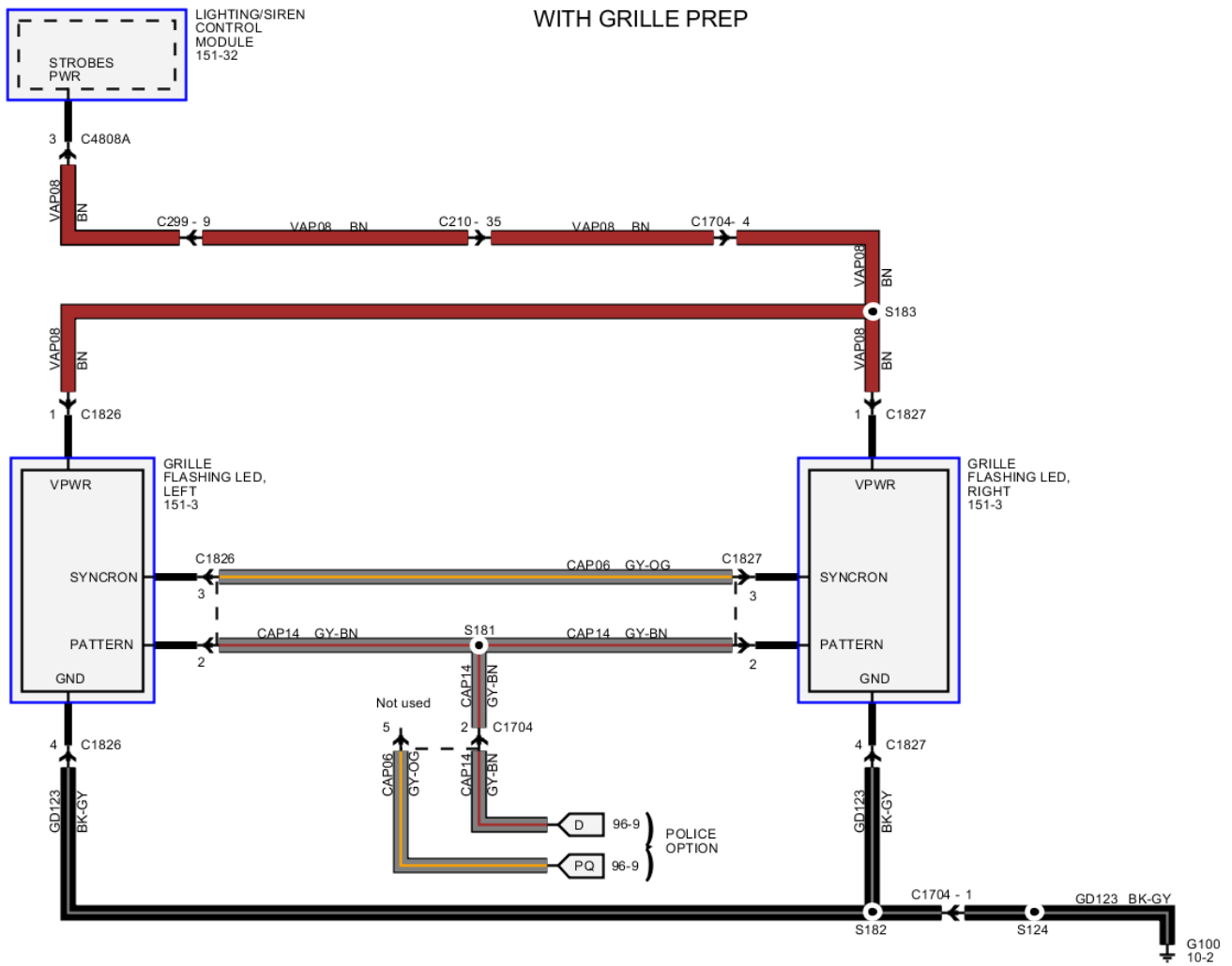
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WITH GRILLE PREP



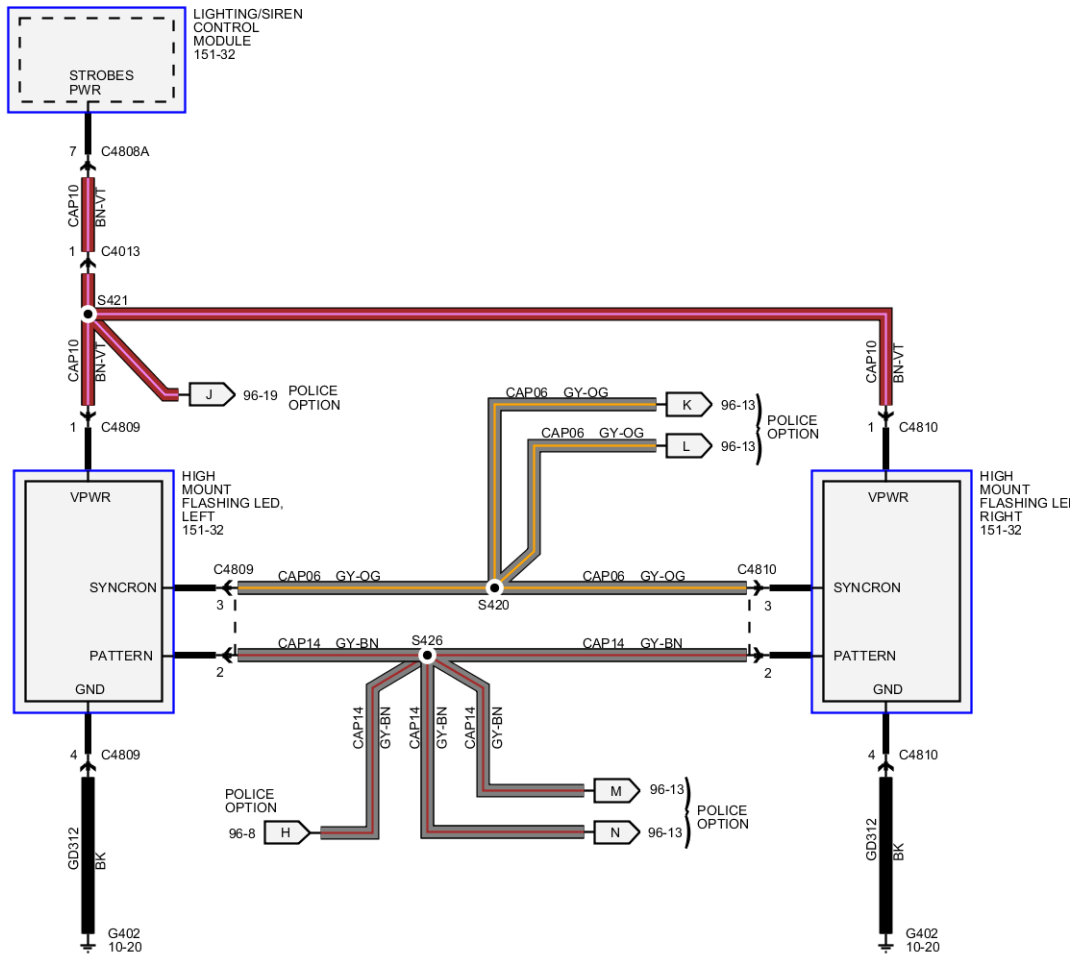
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# Section 2: Electrical



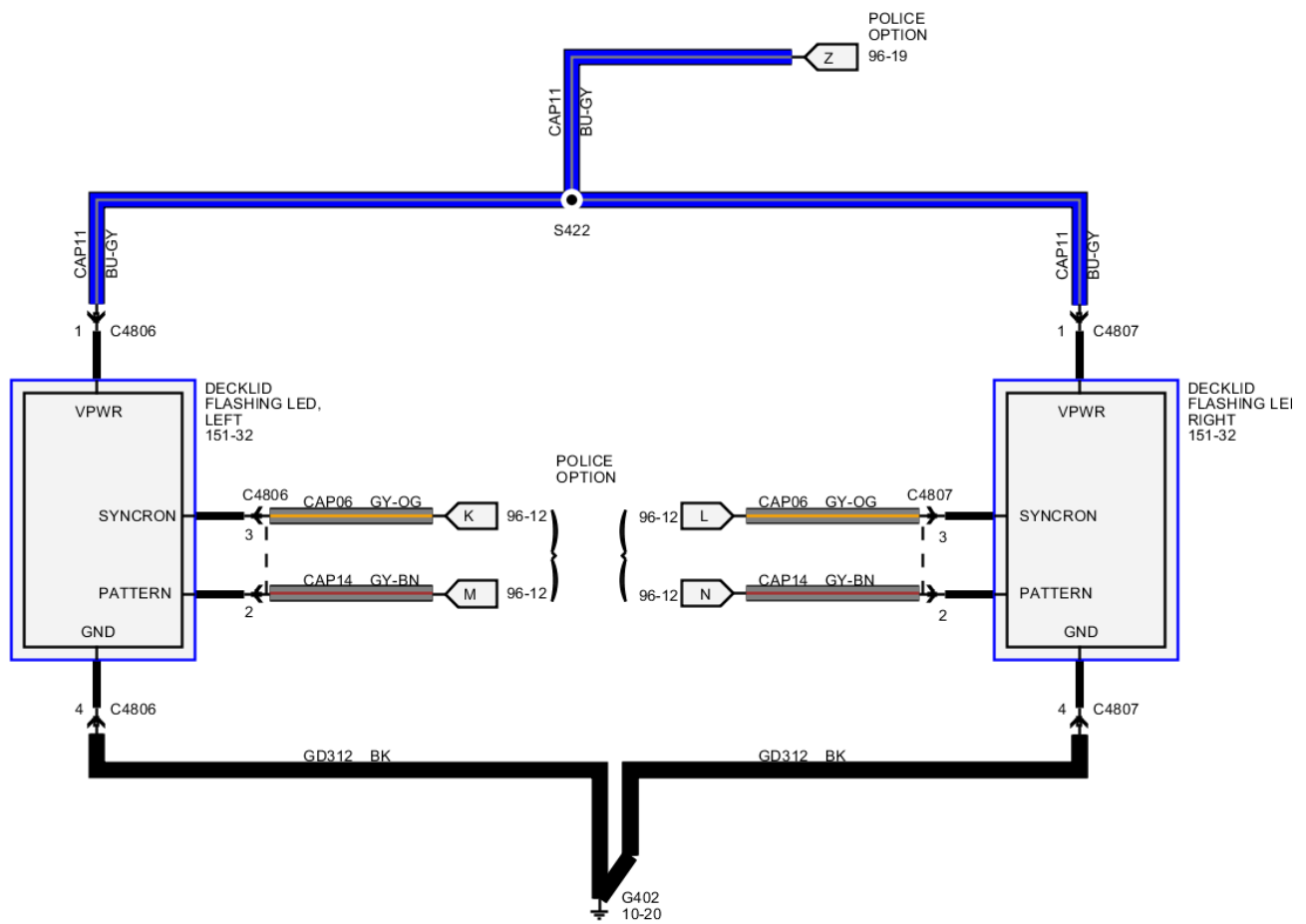
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# Section 2: Electrical



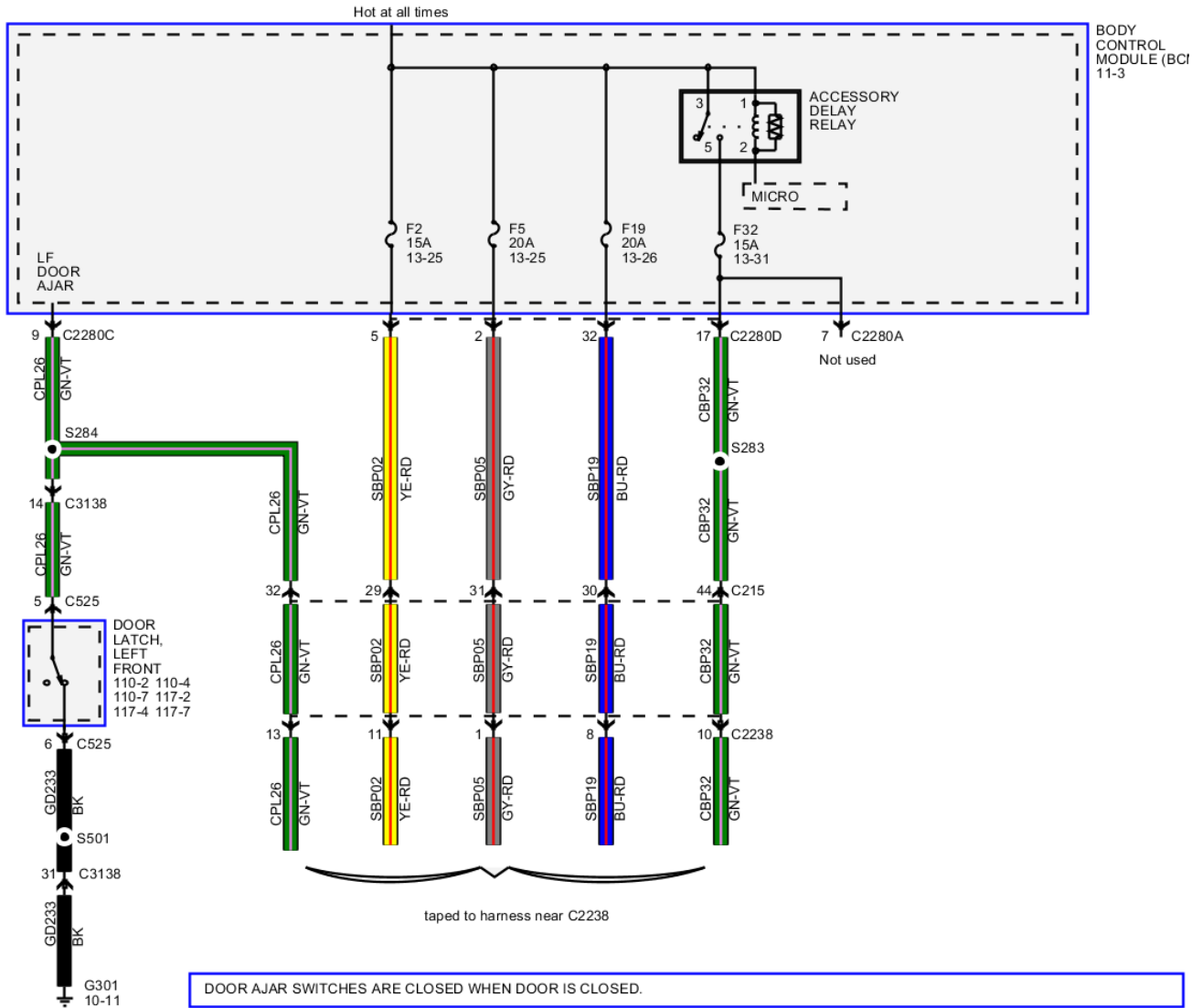
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# Section 2: Electrical



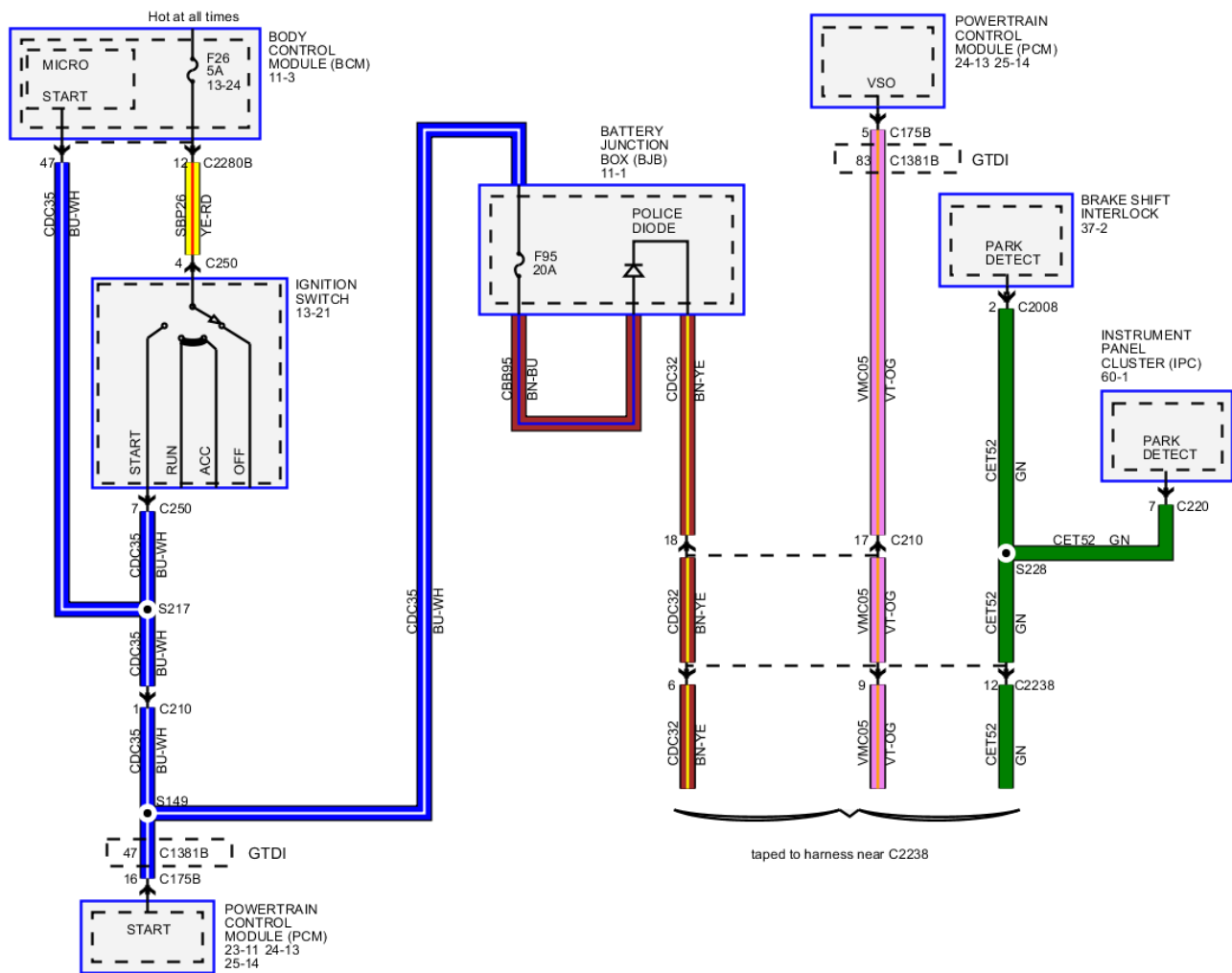
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# Section 2: Electrical



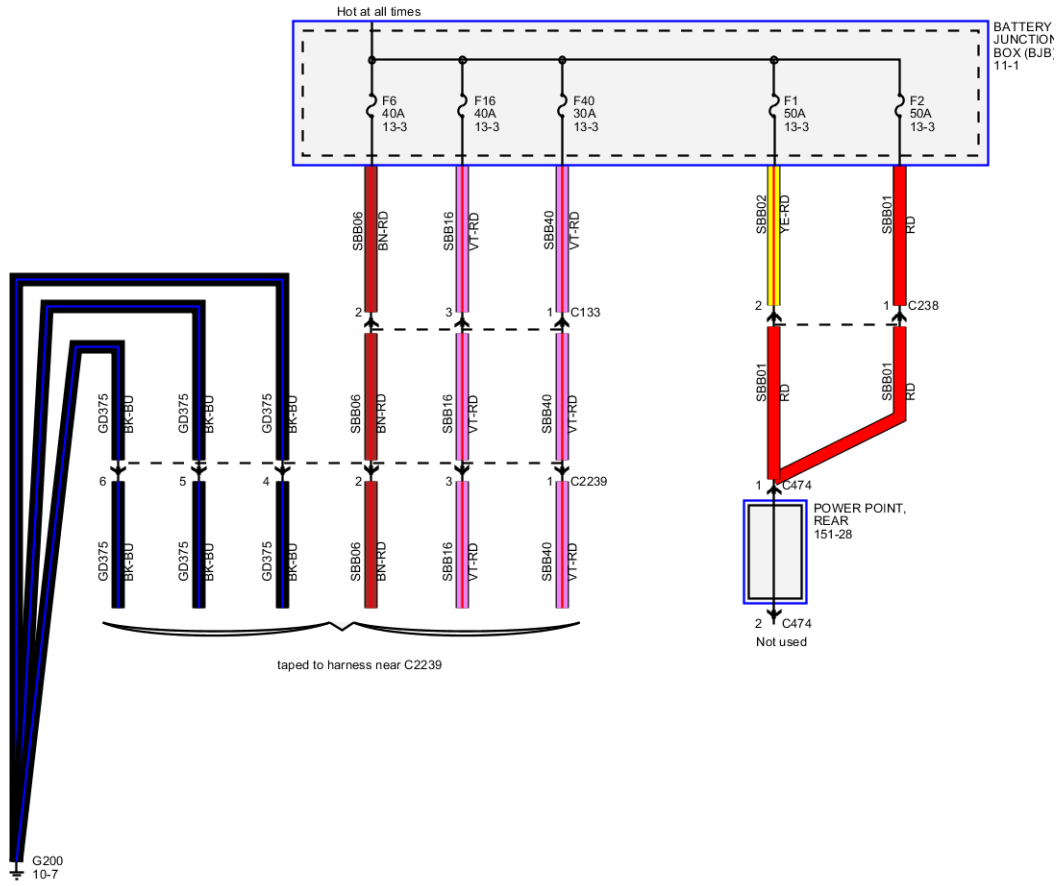
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## Section 2: Electrical



N0163455

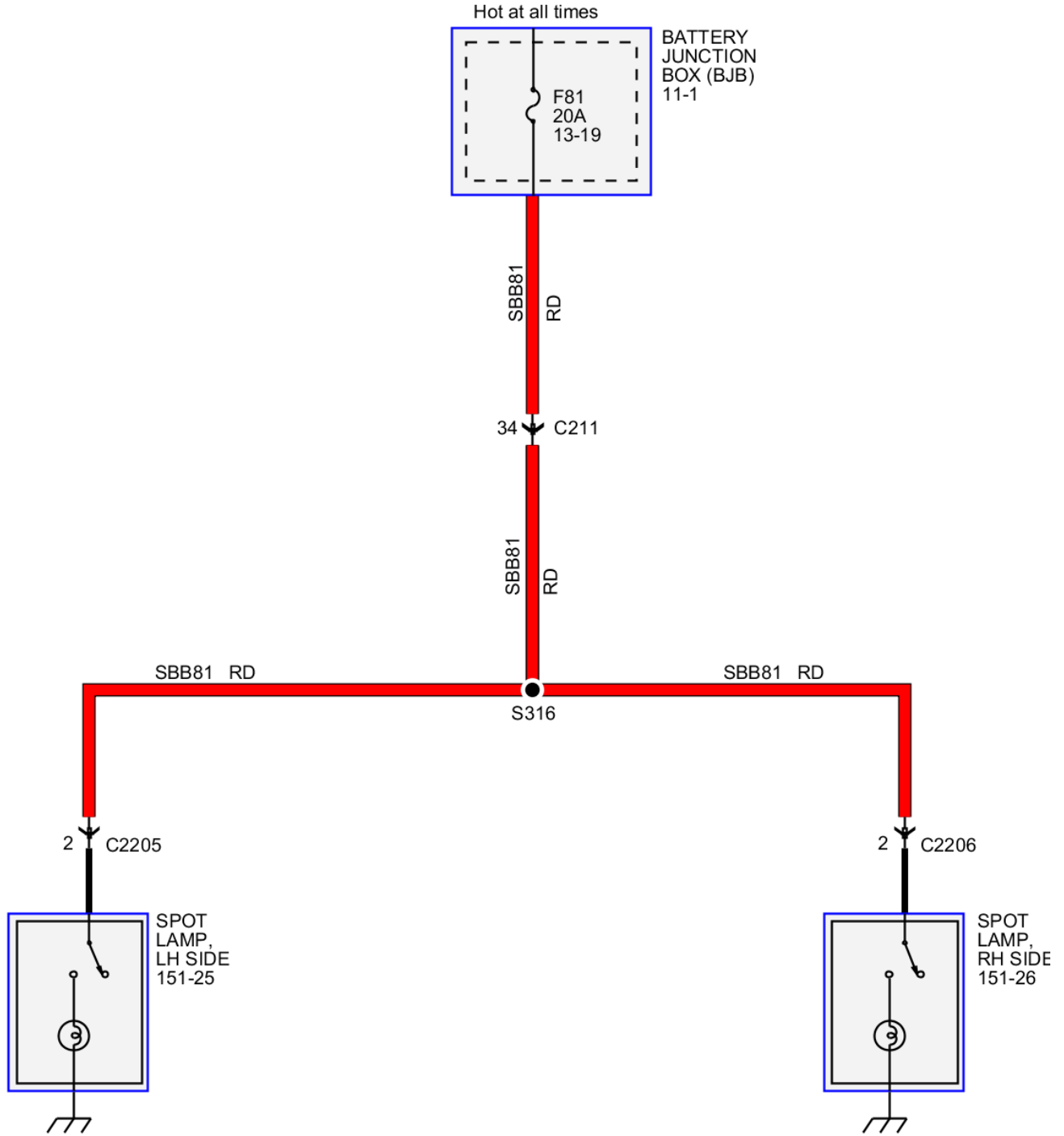
# Section 2: Electrical



N0163456

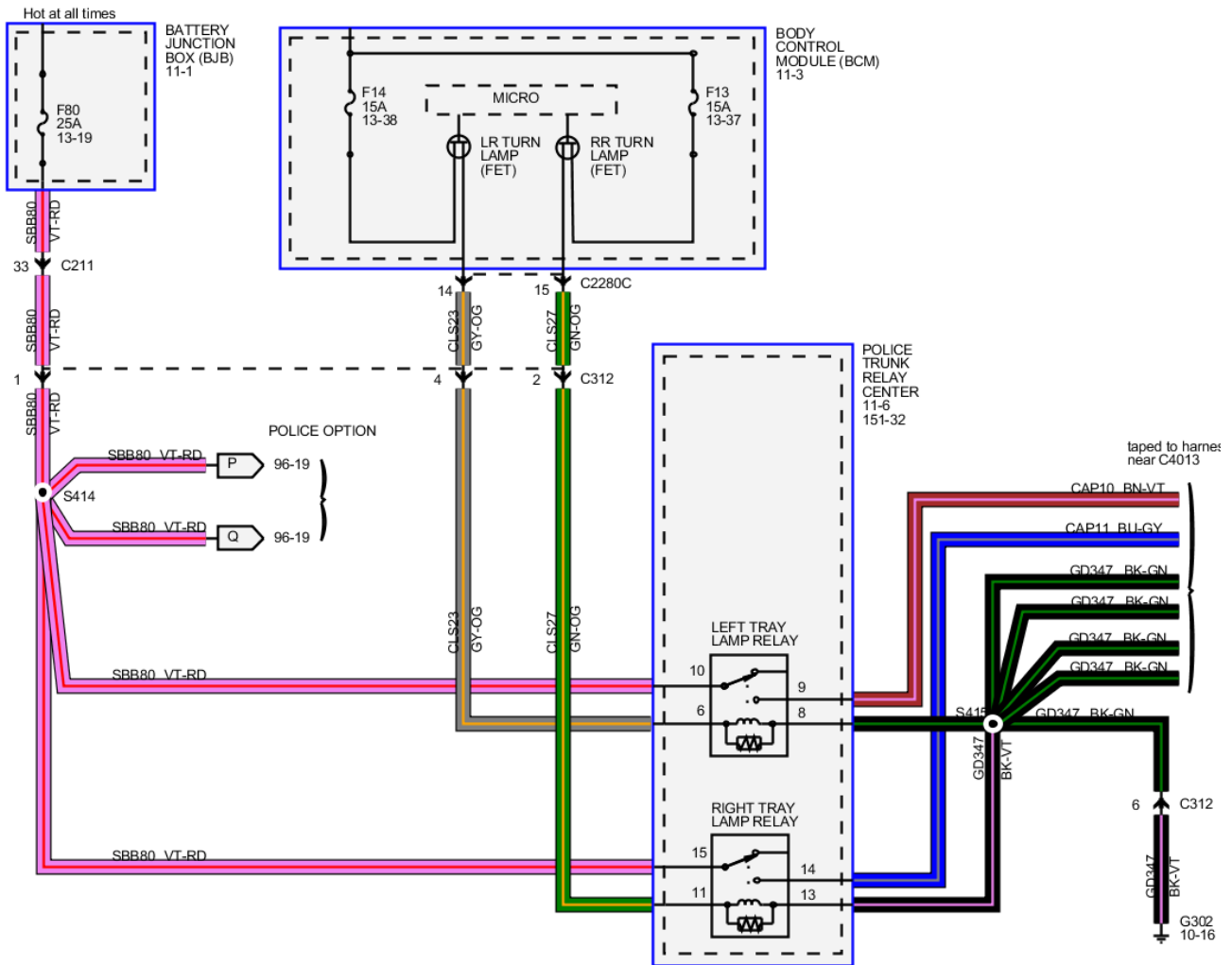


## Section 2: Electrical



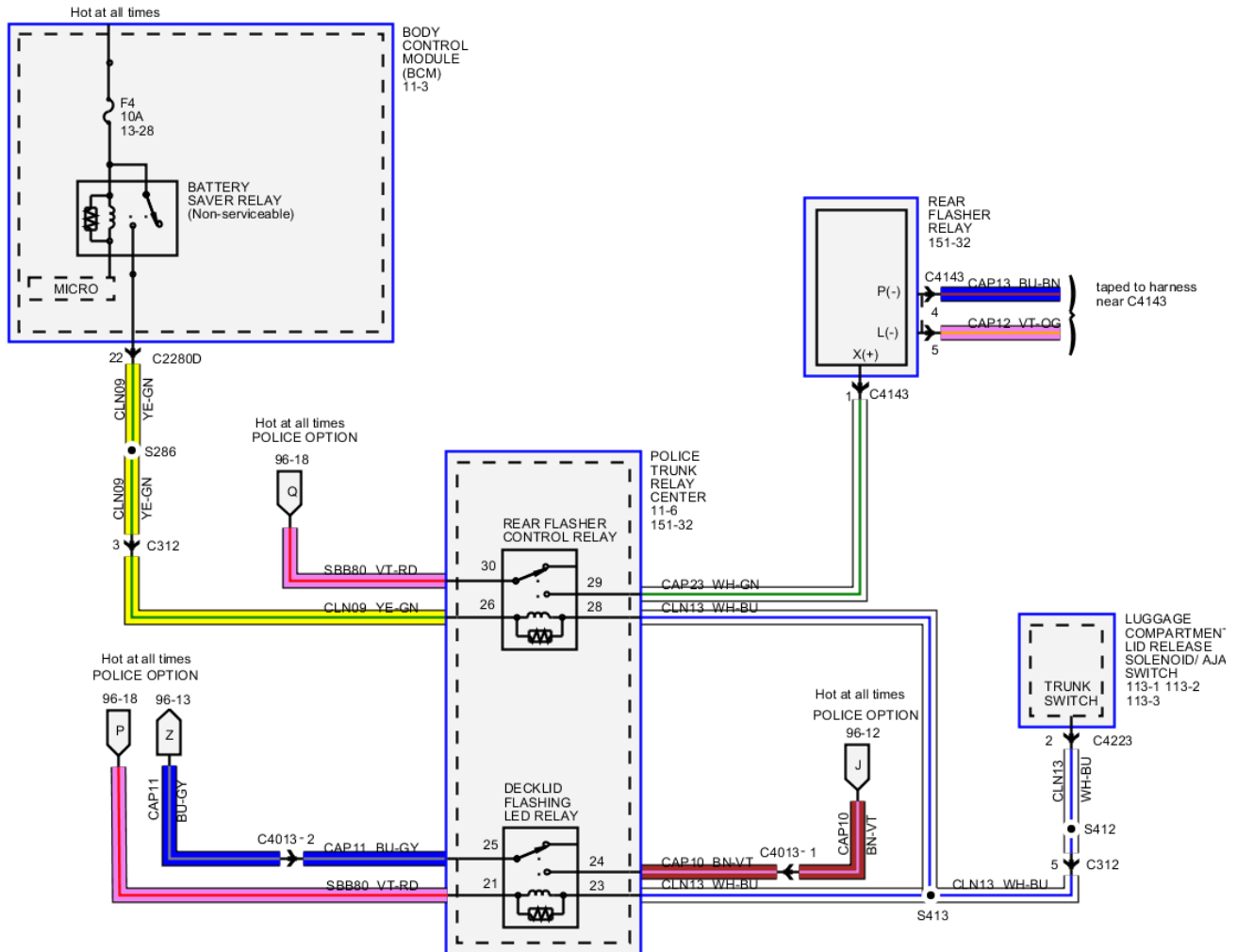
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# Section 2: Electrical



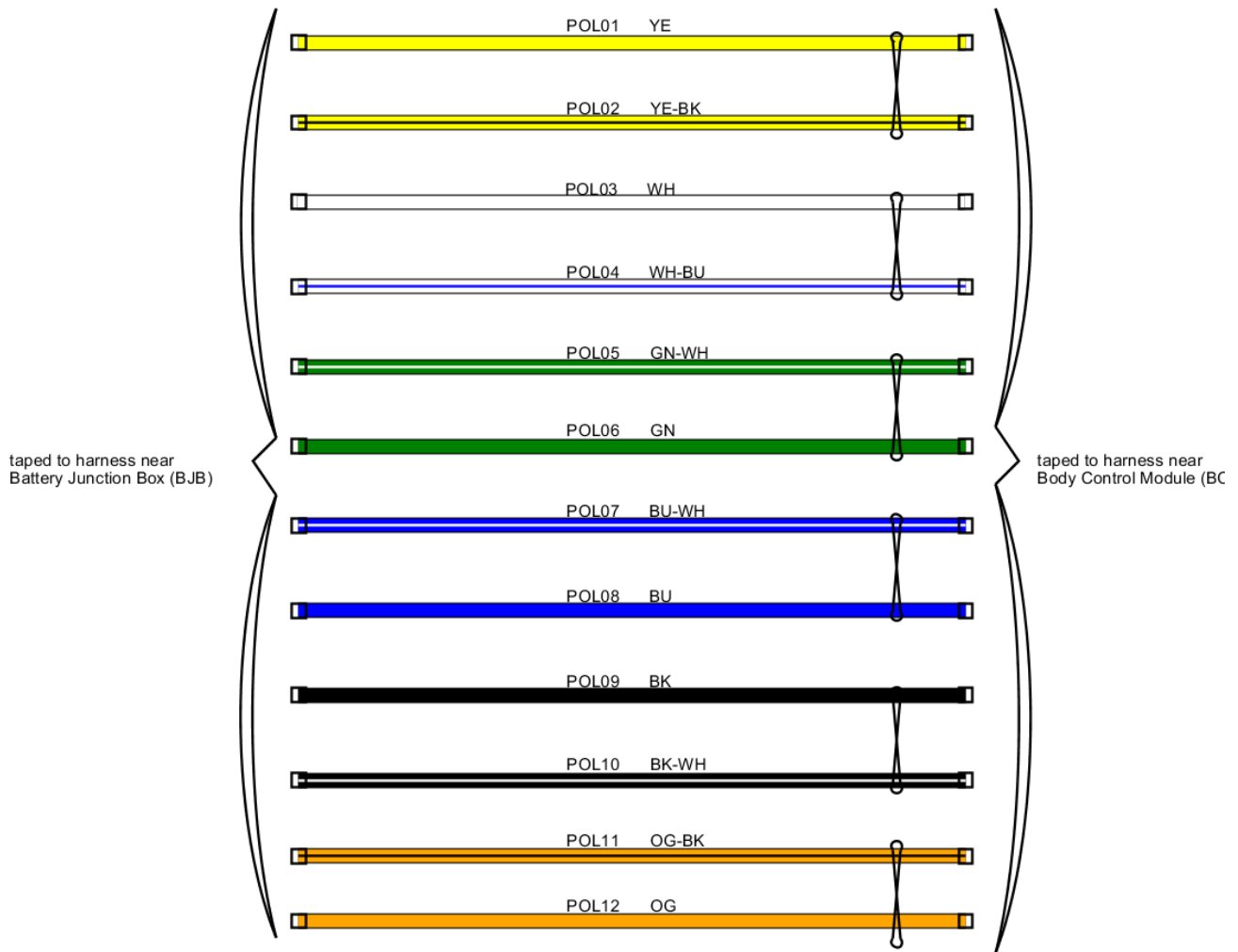
N0163458

## Section 2: Electrical



N0163459

# Section 2: Electrical



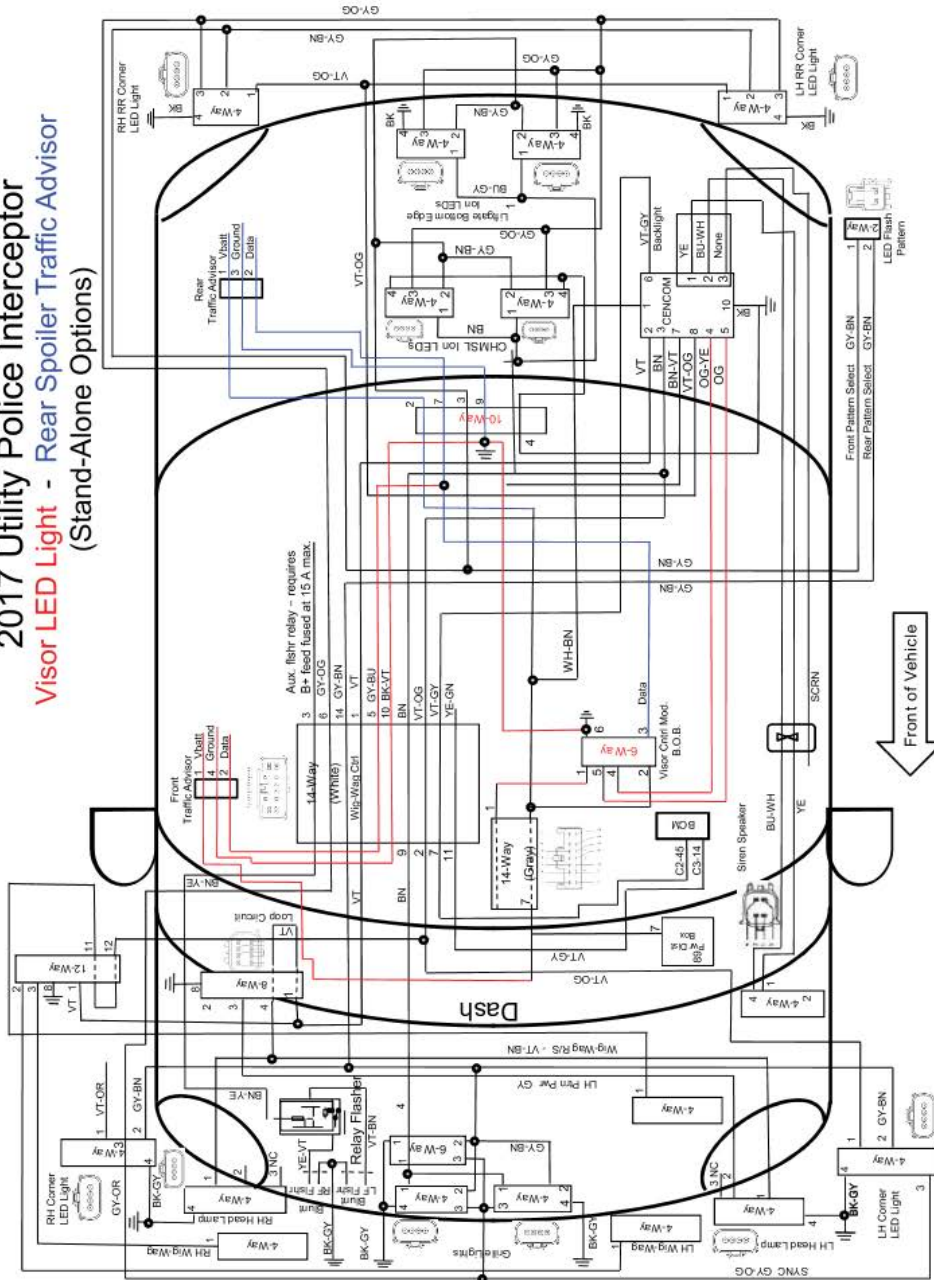
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## NEW Utility — Wiring Diagrams: Police Interceptor Battery Junction Box (BJB)

Utility Wiring Package Options

# Section 2: Electrical

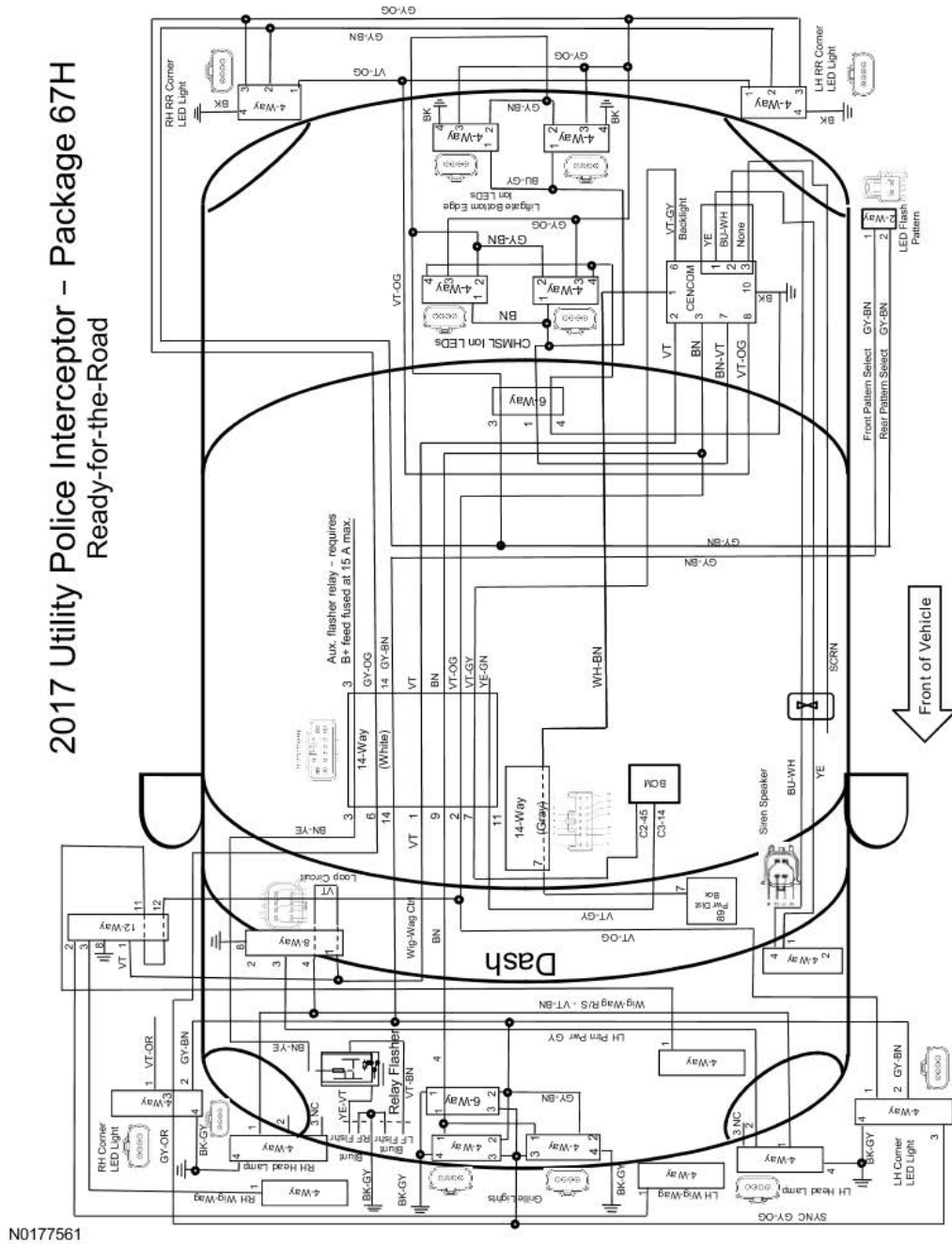
## 2017 Utility Police Interceptor Visor LED Light - Rear Spoiler Traffic Advisor (Stand-Alone Options)



N0177560

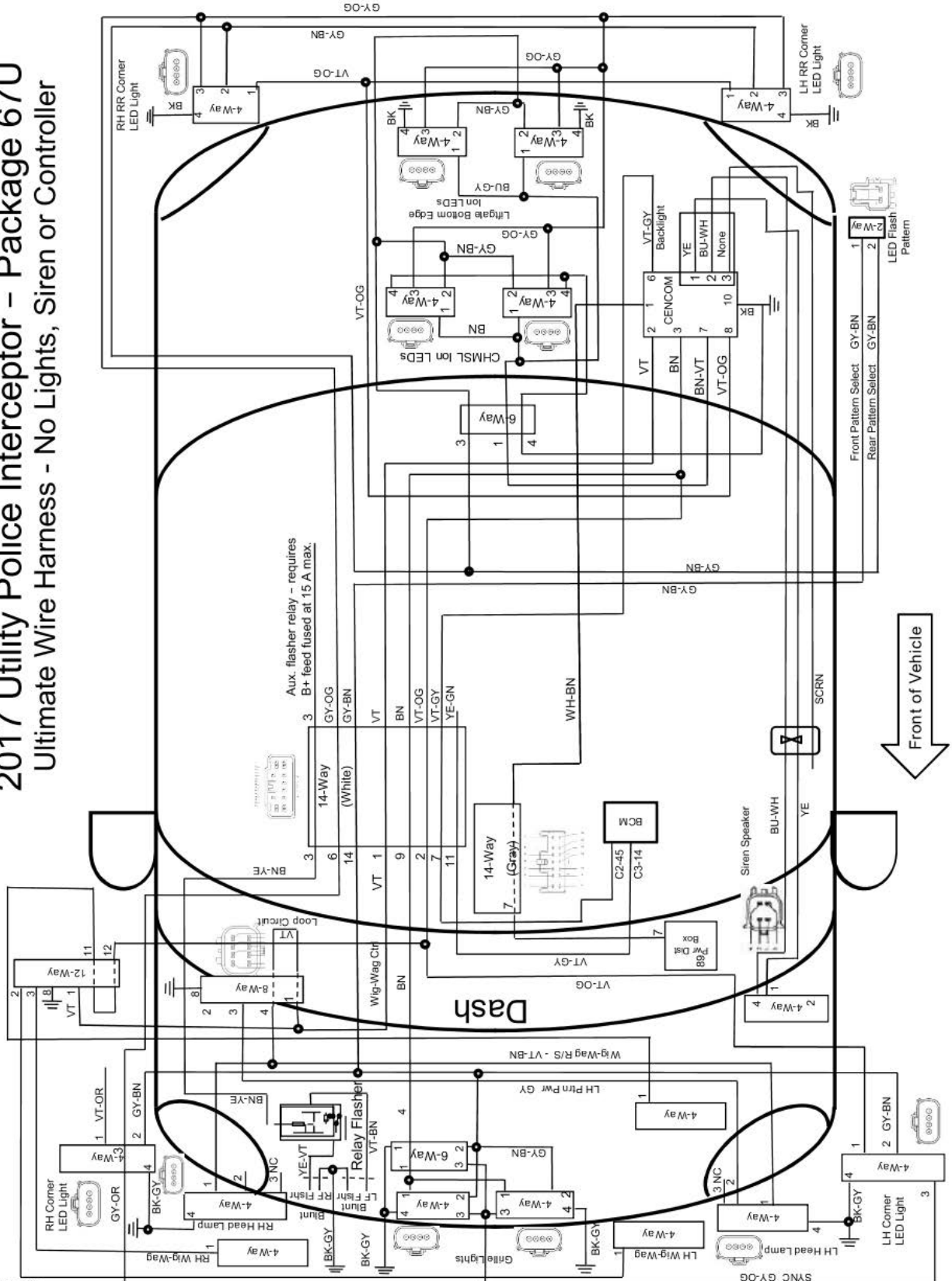
# Section 2: Electrical

## 2017 Utility Police Interceptor – Package 67H Ready-for-the-Road



# Section 2: Electrical

## 2017 Utility Police Interceptor - Package 67U Ultimate Wire Harness - No Lights, Siren or Controller

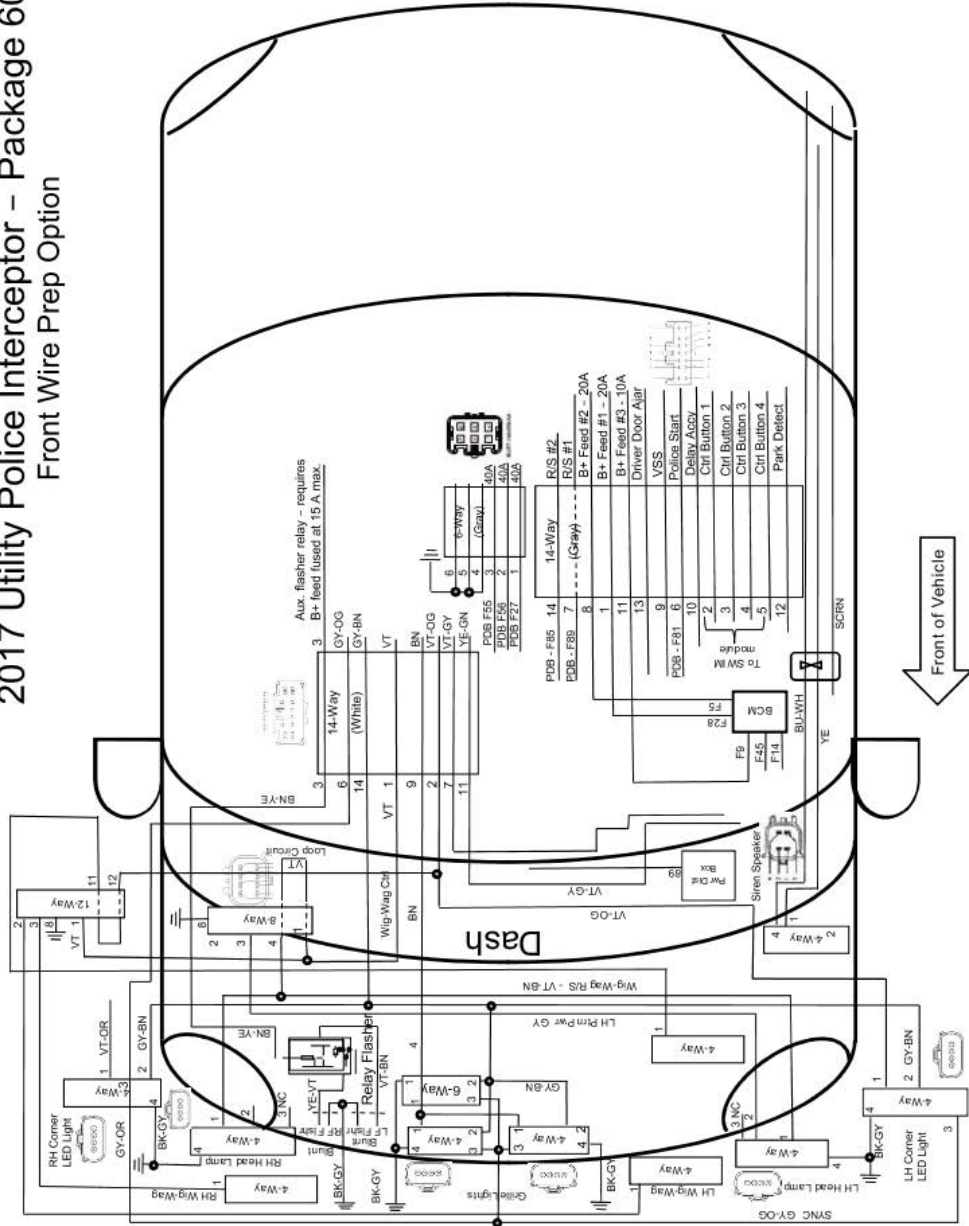






# Section 2: Electrical

## 2017 Utility Police Interceptor – Package 60A Front Wire Prep Option

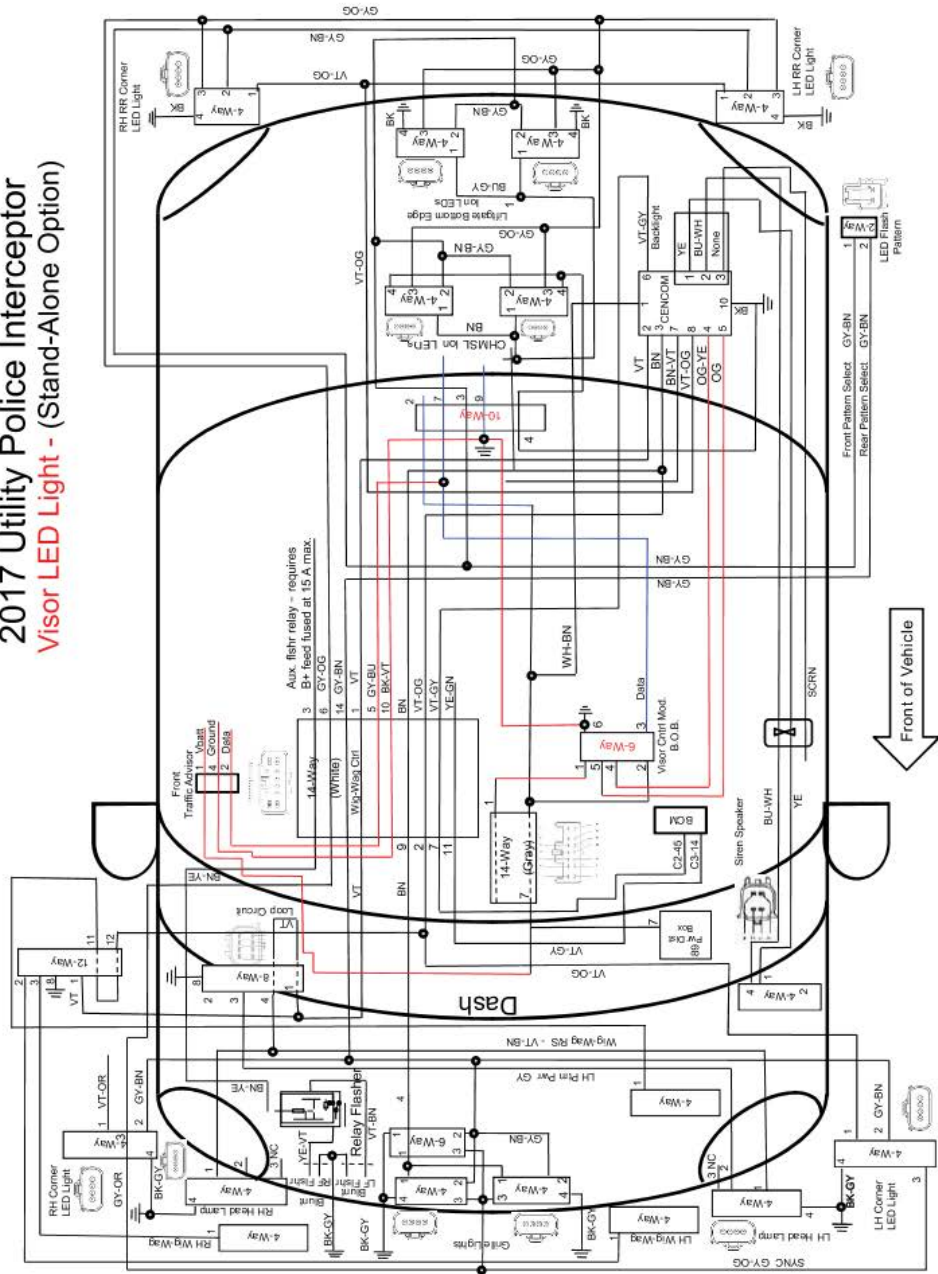


N0177566



# Section 2: Electrical

## 2017 Utility Police Interceptor Visor LED Light - (Stand-Alone Option)

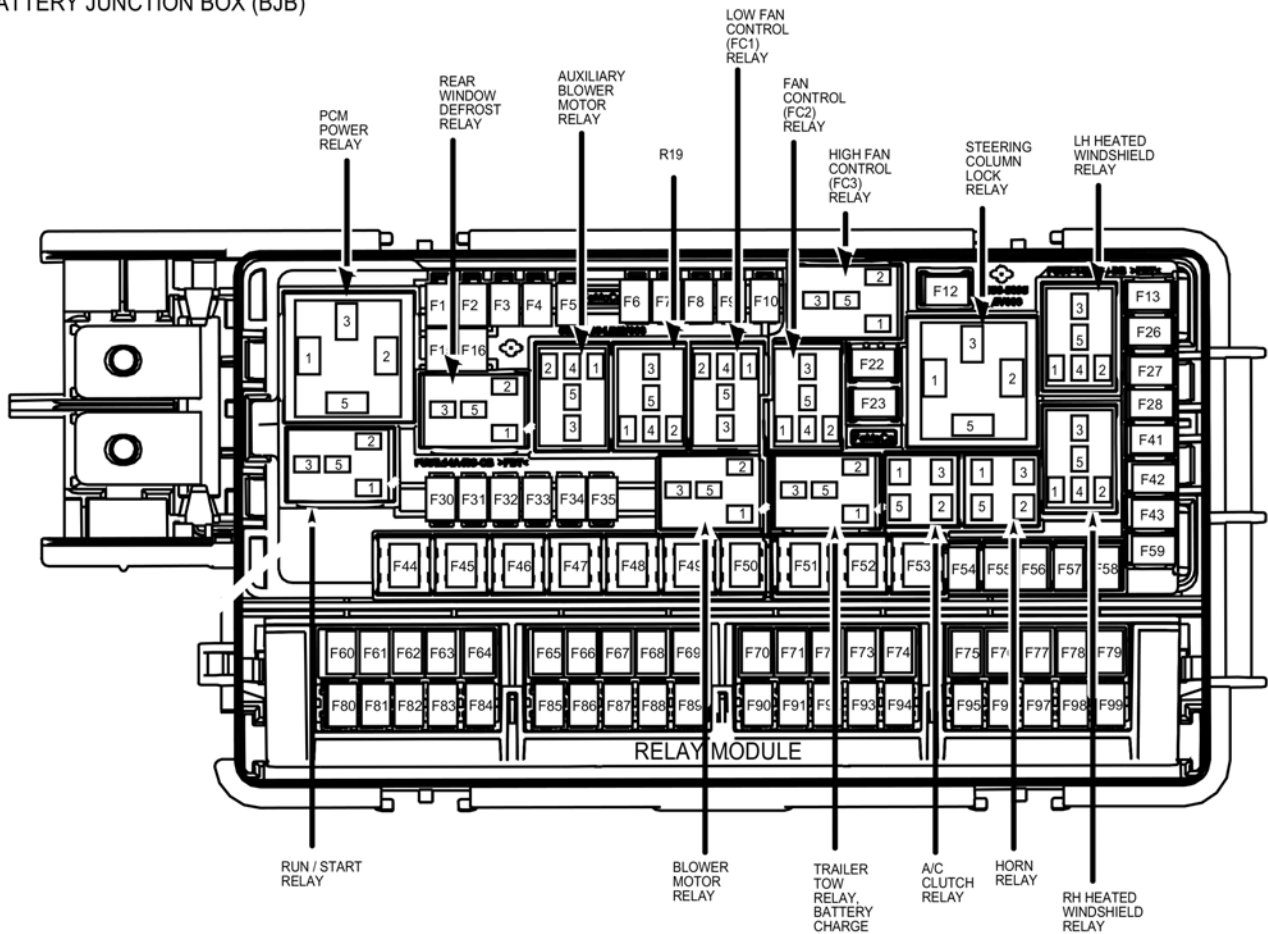


N0177568

# Section 2: Electrical

## Battery Junction Box (BJB)

### BATTERY JUNCTION BOX (BJB)

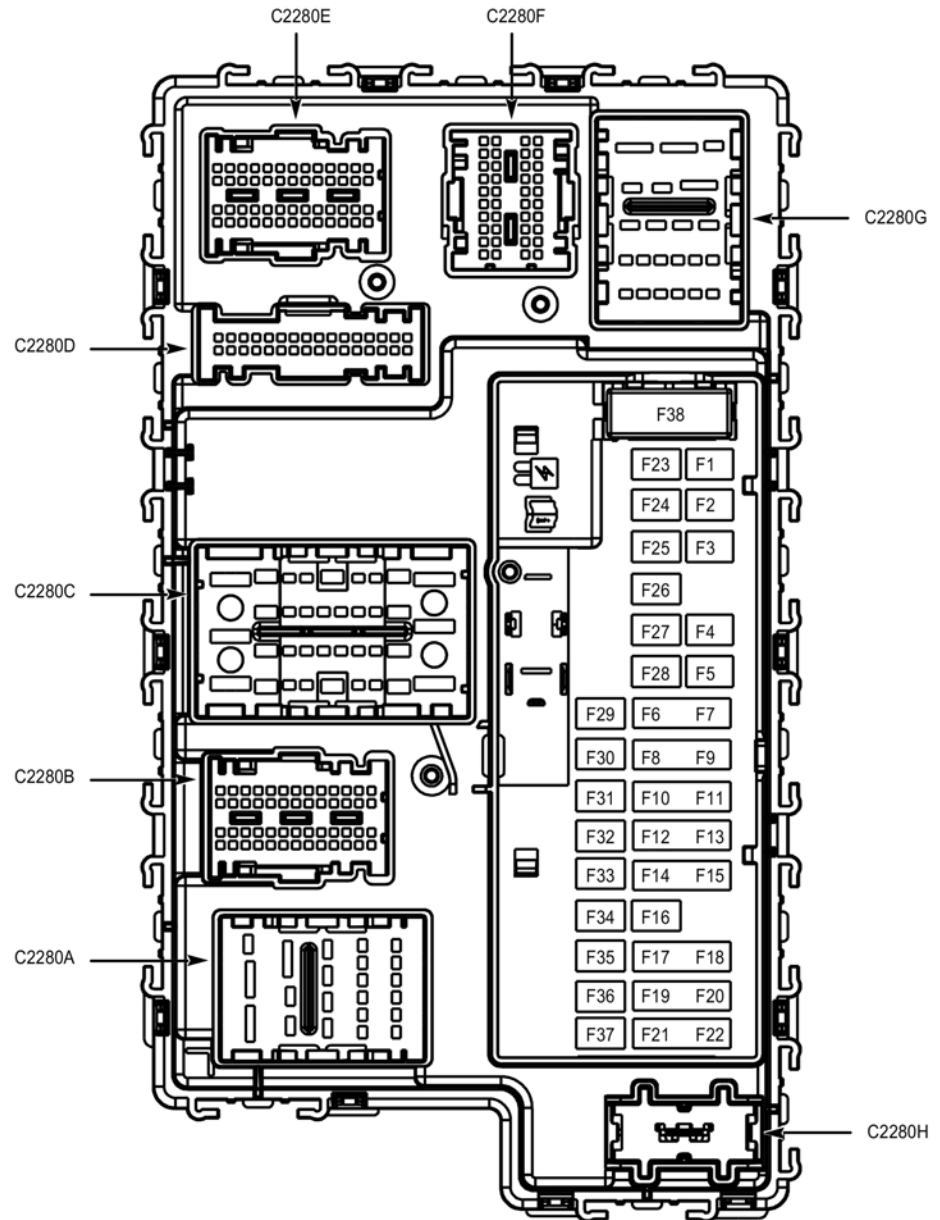


N0165772

## Body Control Module (BCM)

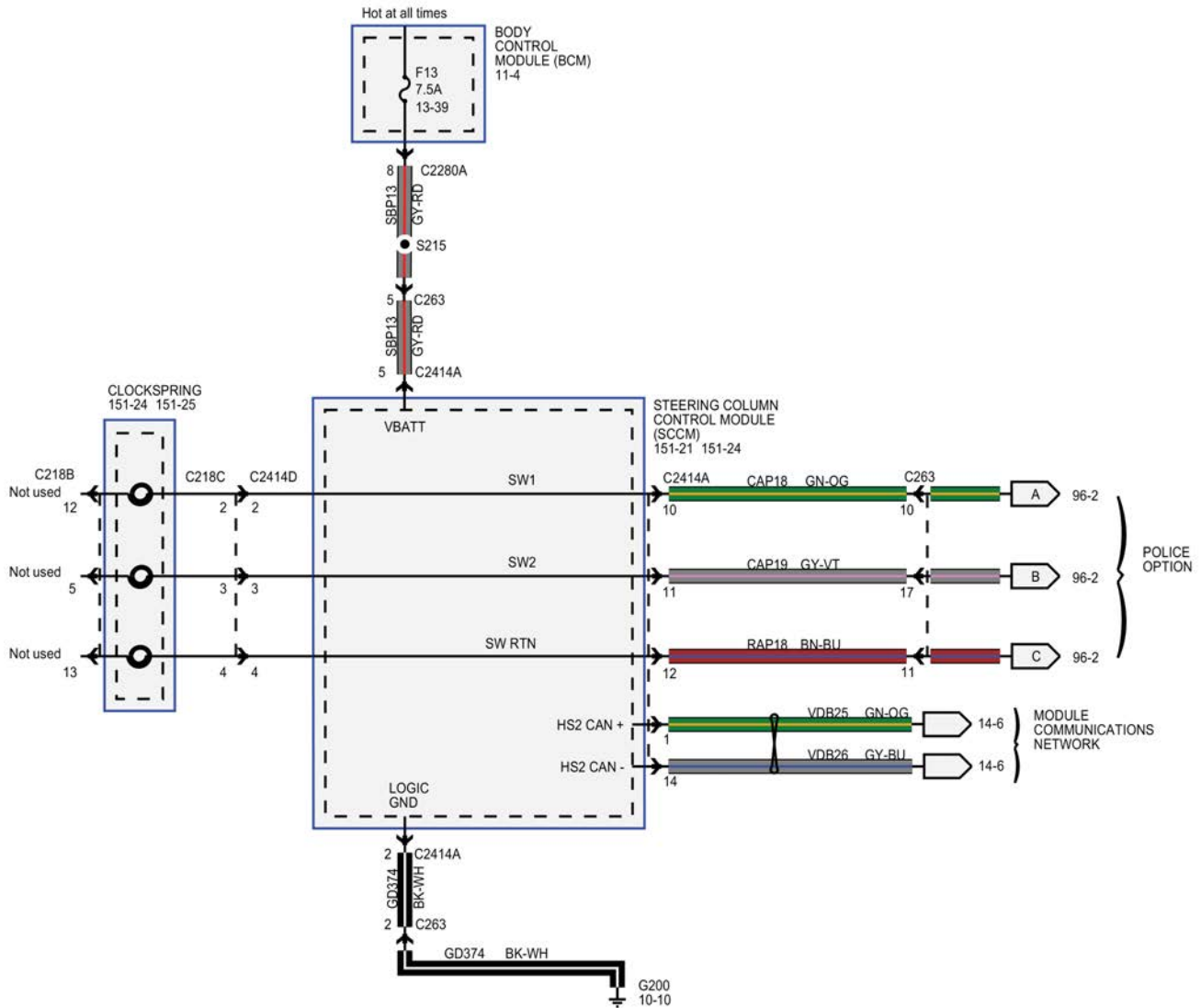
## Section 2: Electrical

### BODY CONTROL MODULE (BCM)



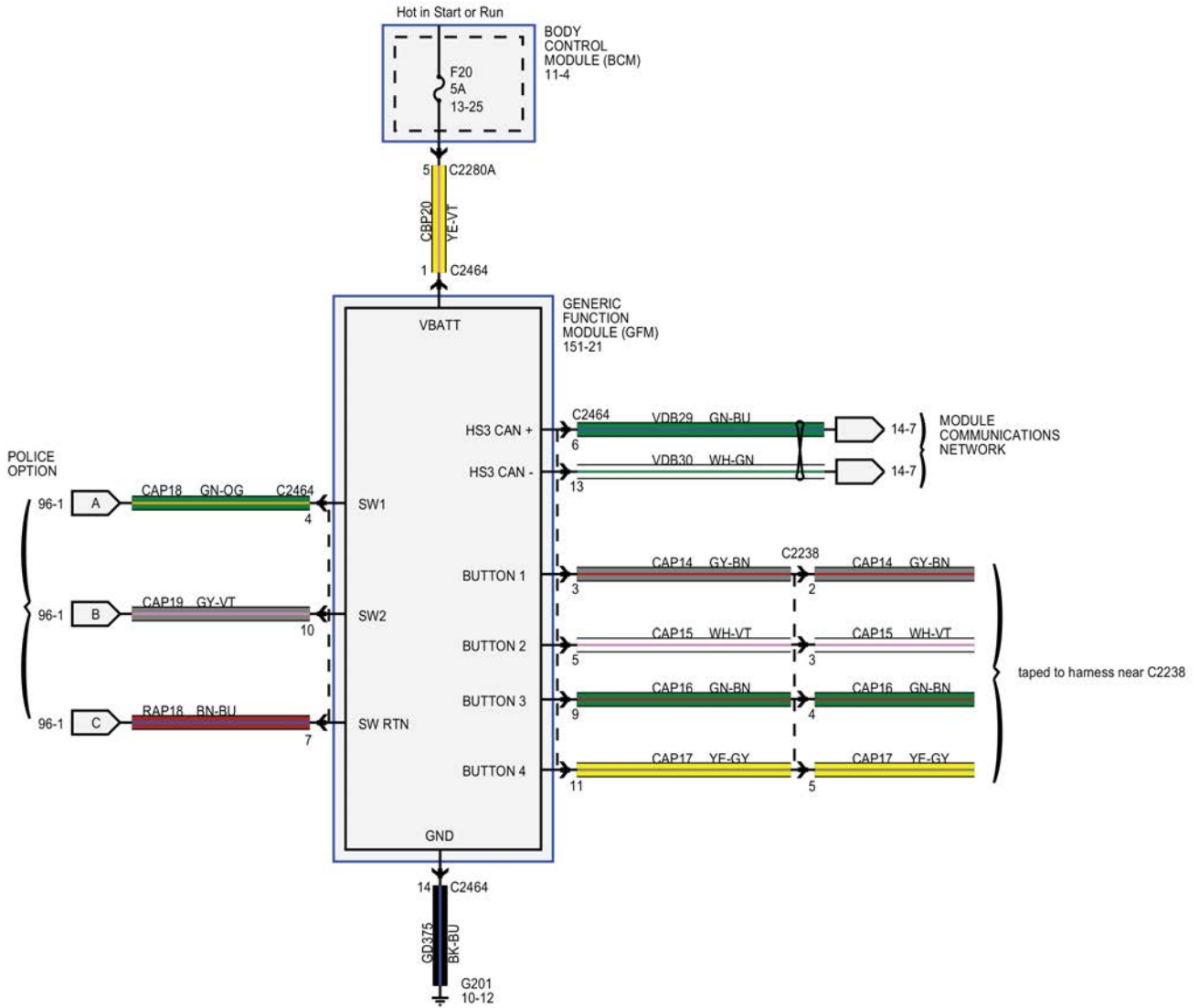
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## Section 2: Electrical



N0165619

## Section 2: Electrical

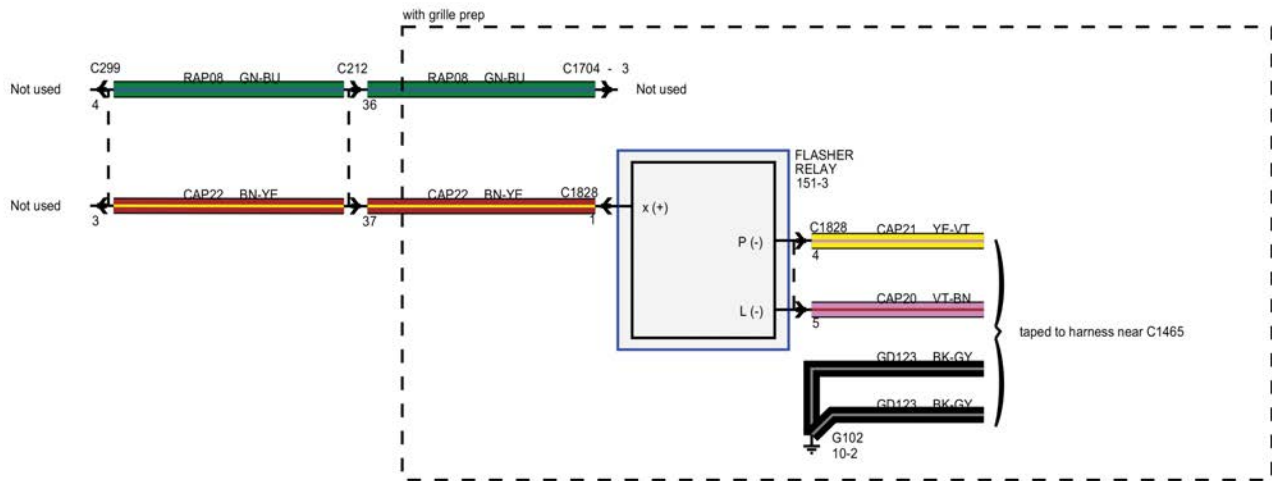
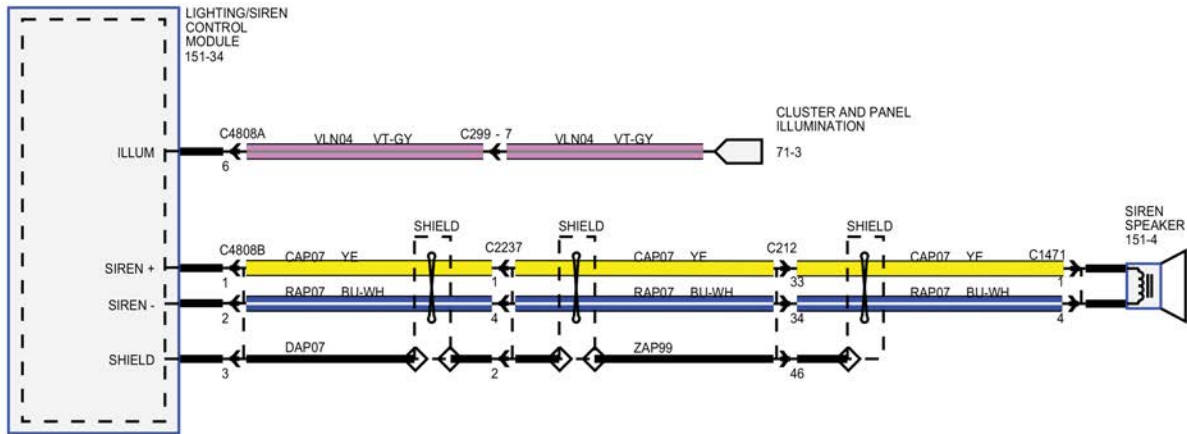


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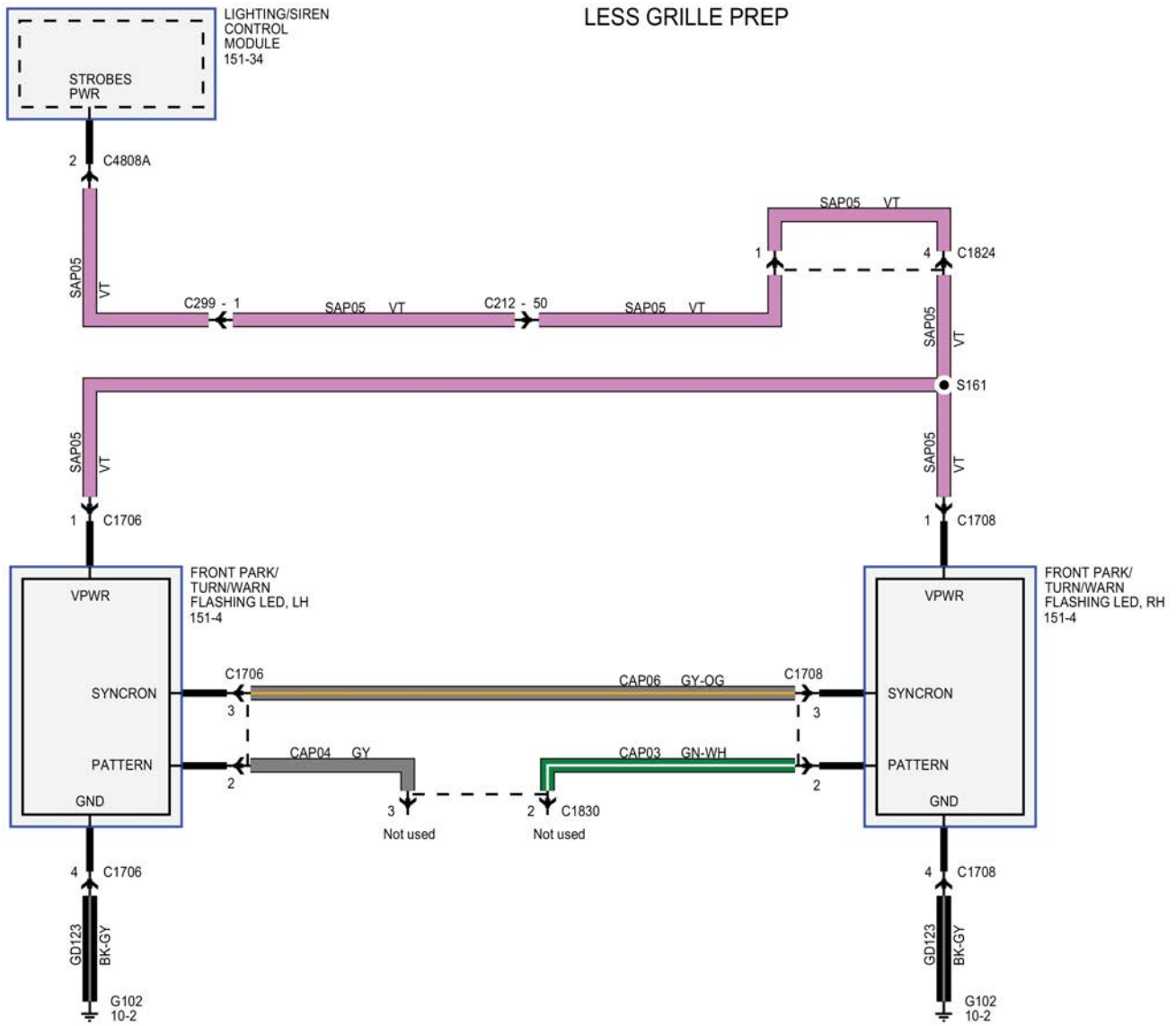


# Section 2: Electrical



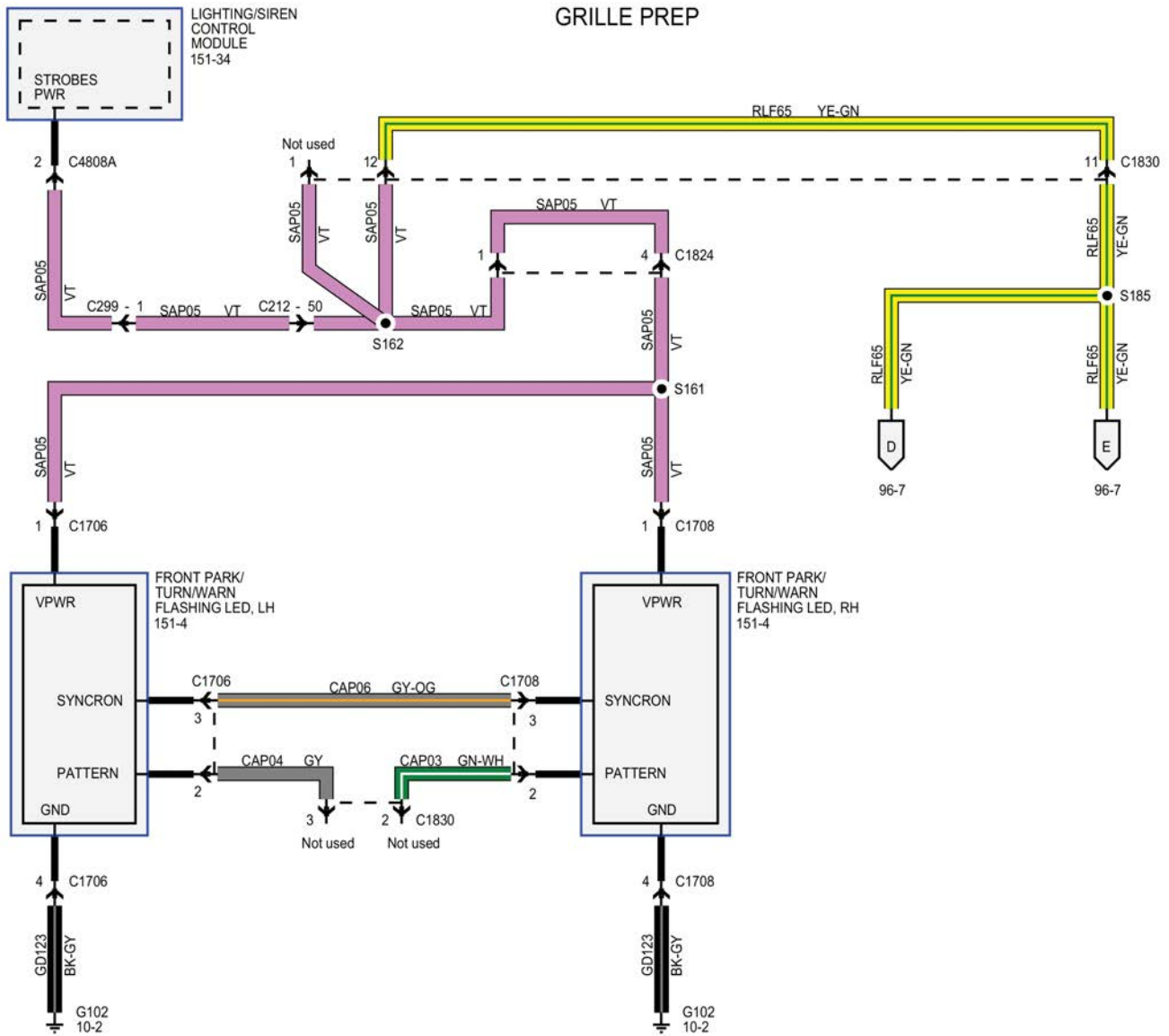
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# Section 2: Electrical



N0165615

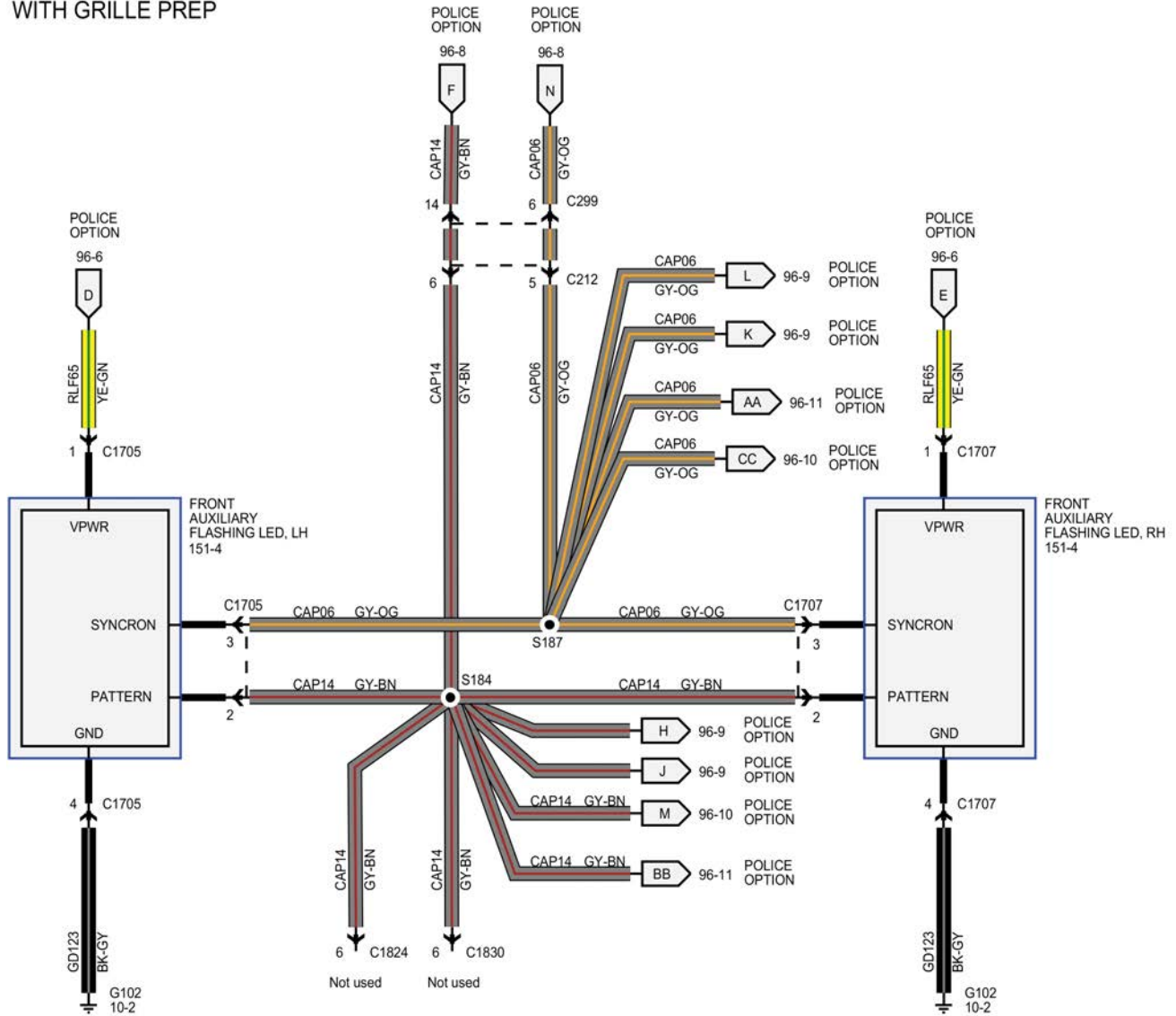
# Section 2: Electrical



N0165614

# Section 2: Electrical

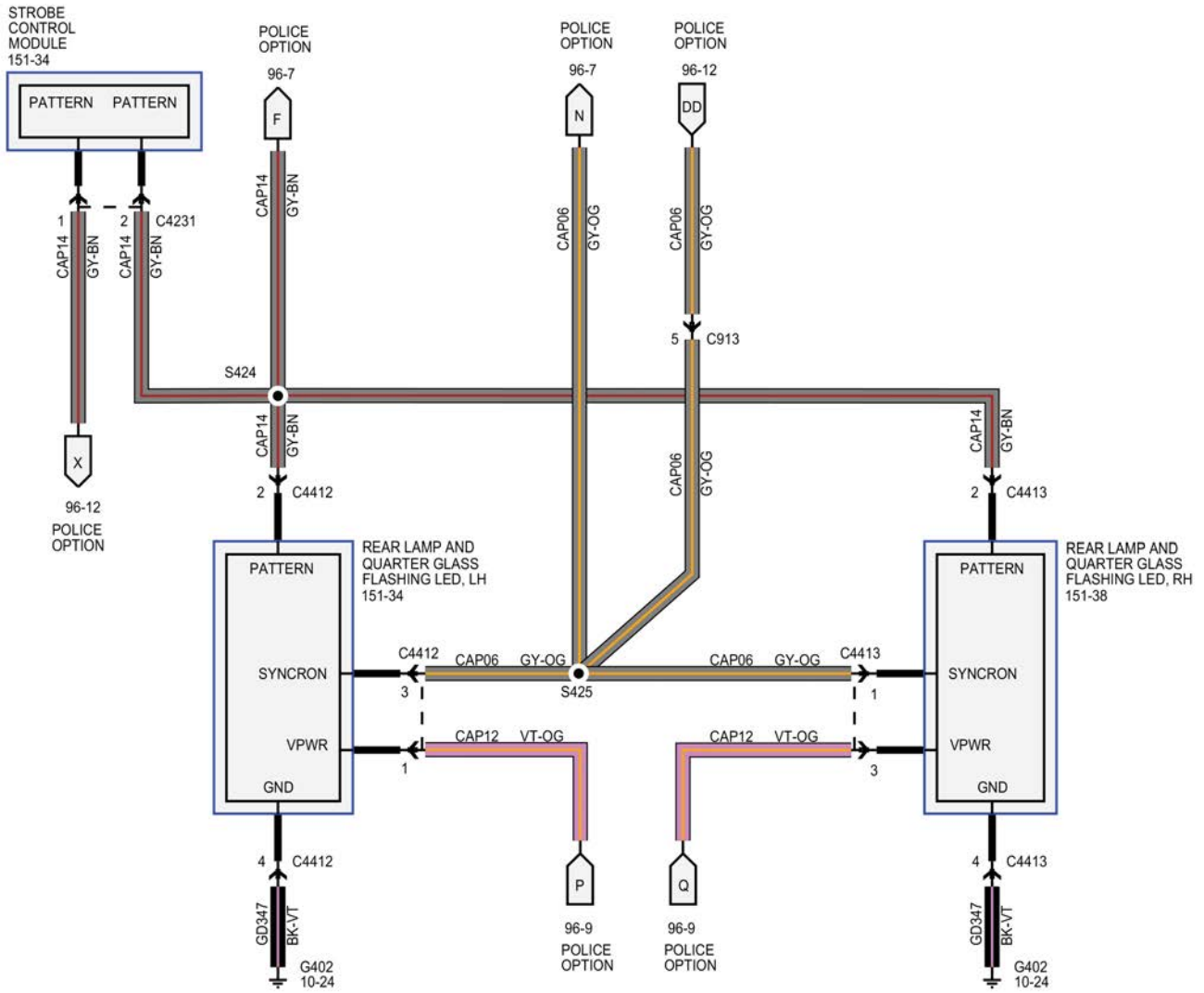
WITH GRILLE PREP



N0165613

# Section 2: Electrical

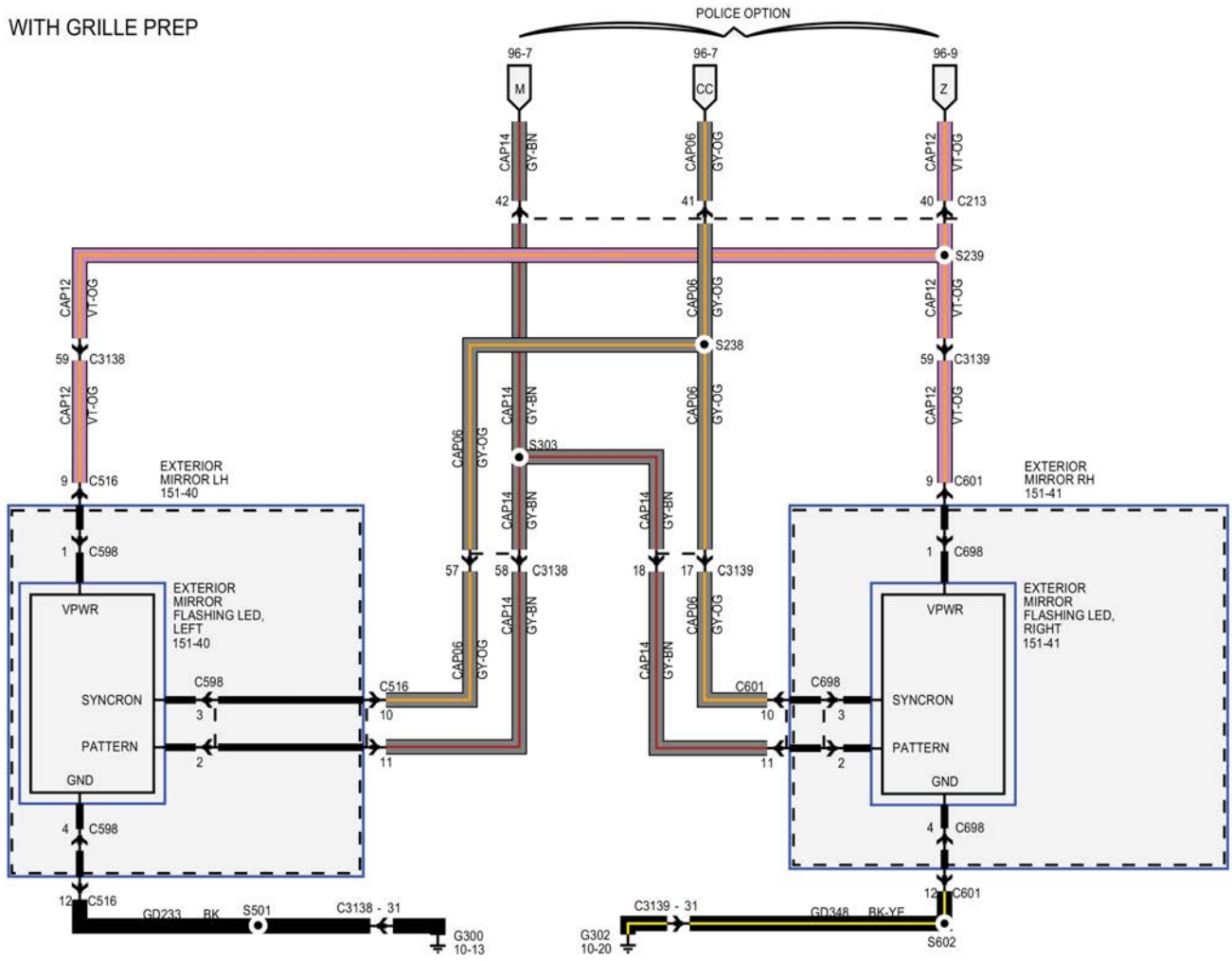
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N0165612

# Section 2: Electrical

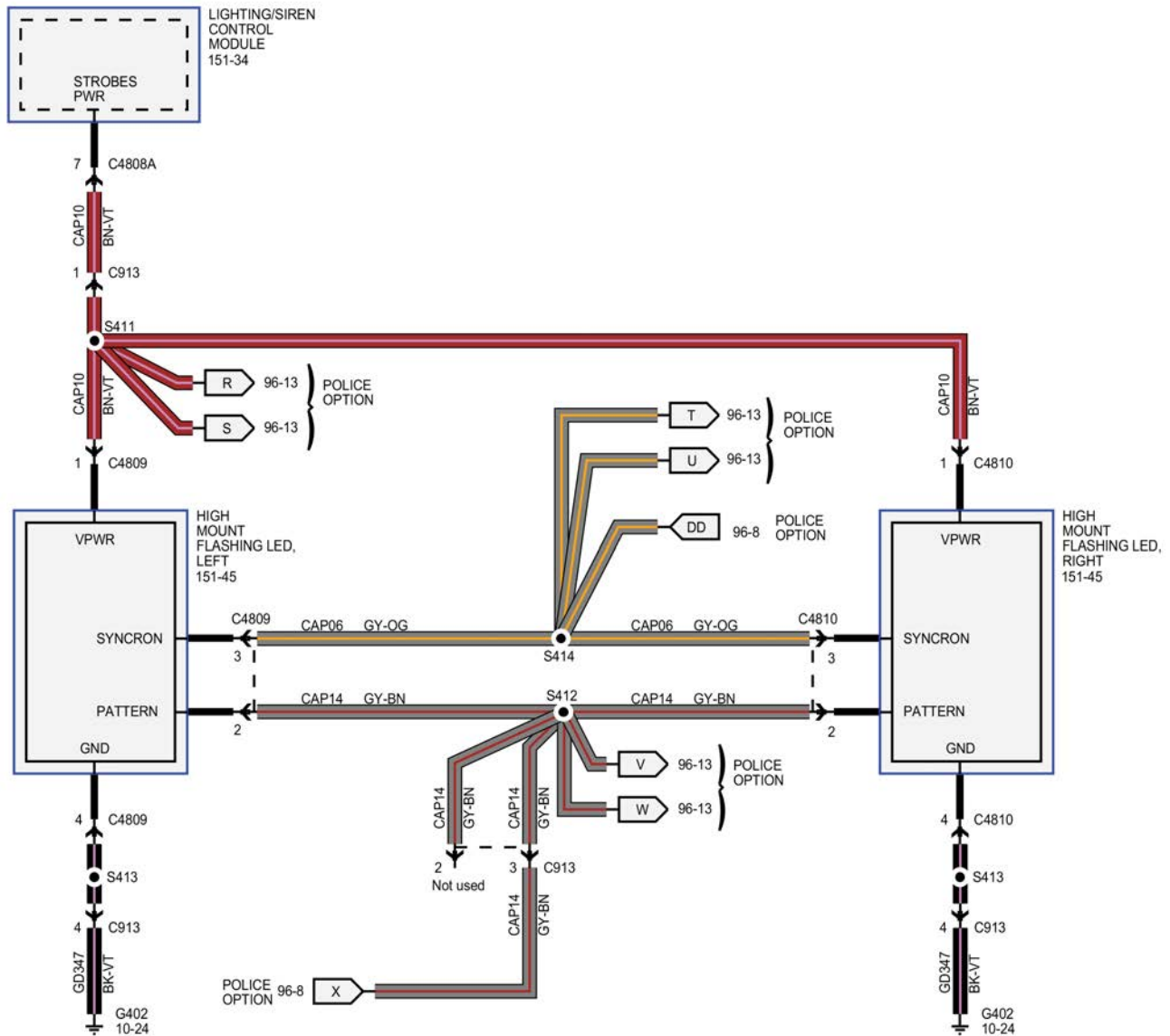
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N0165611



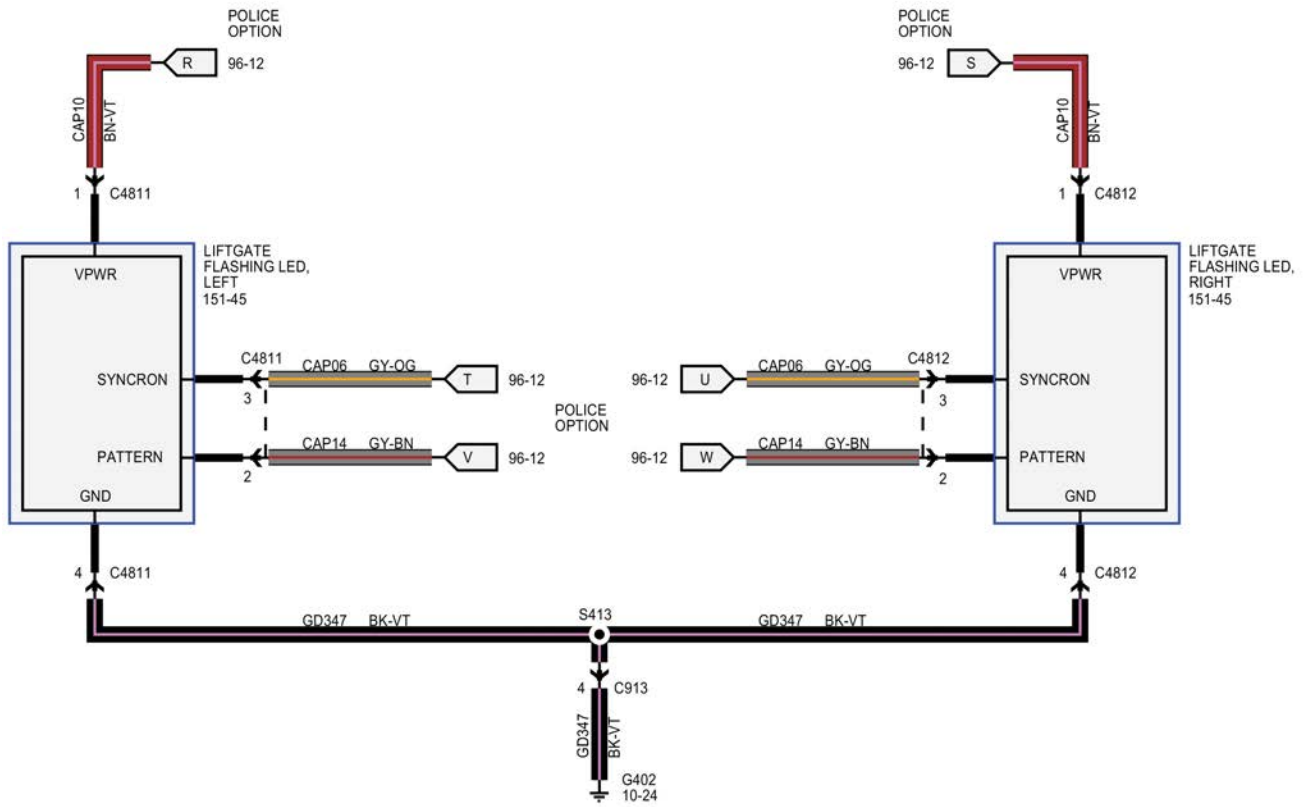
## Section 2: Electrical



N0165609



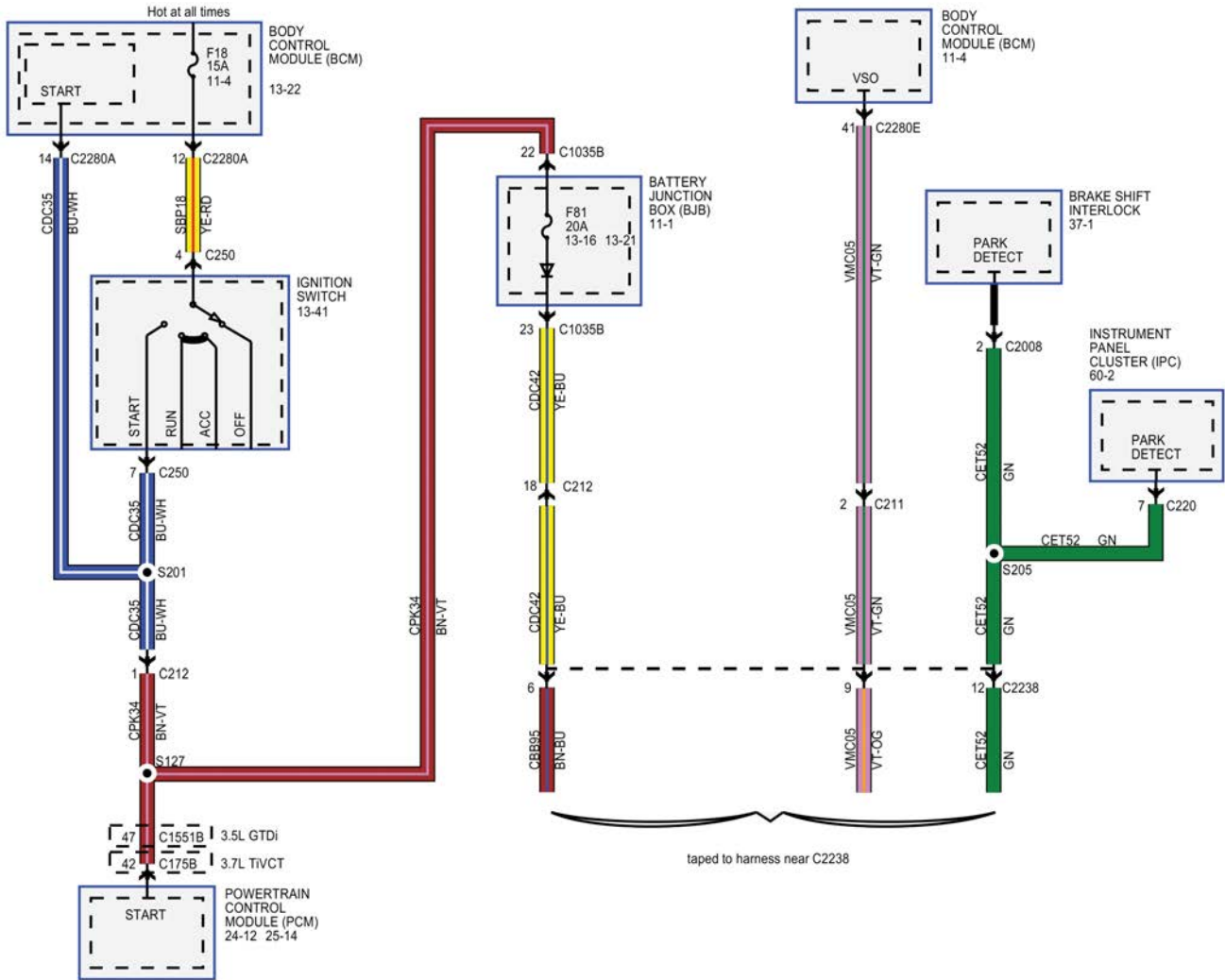
# Section 2: Electrical



N0165579

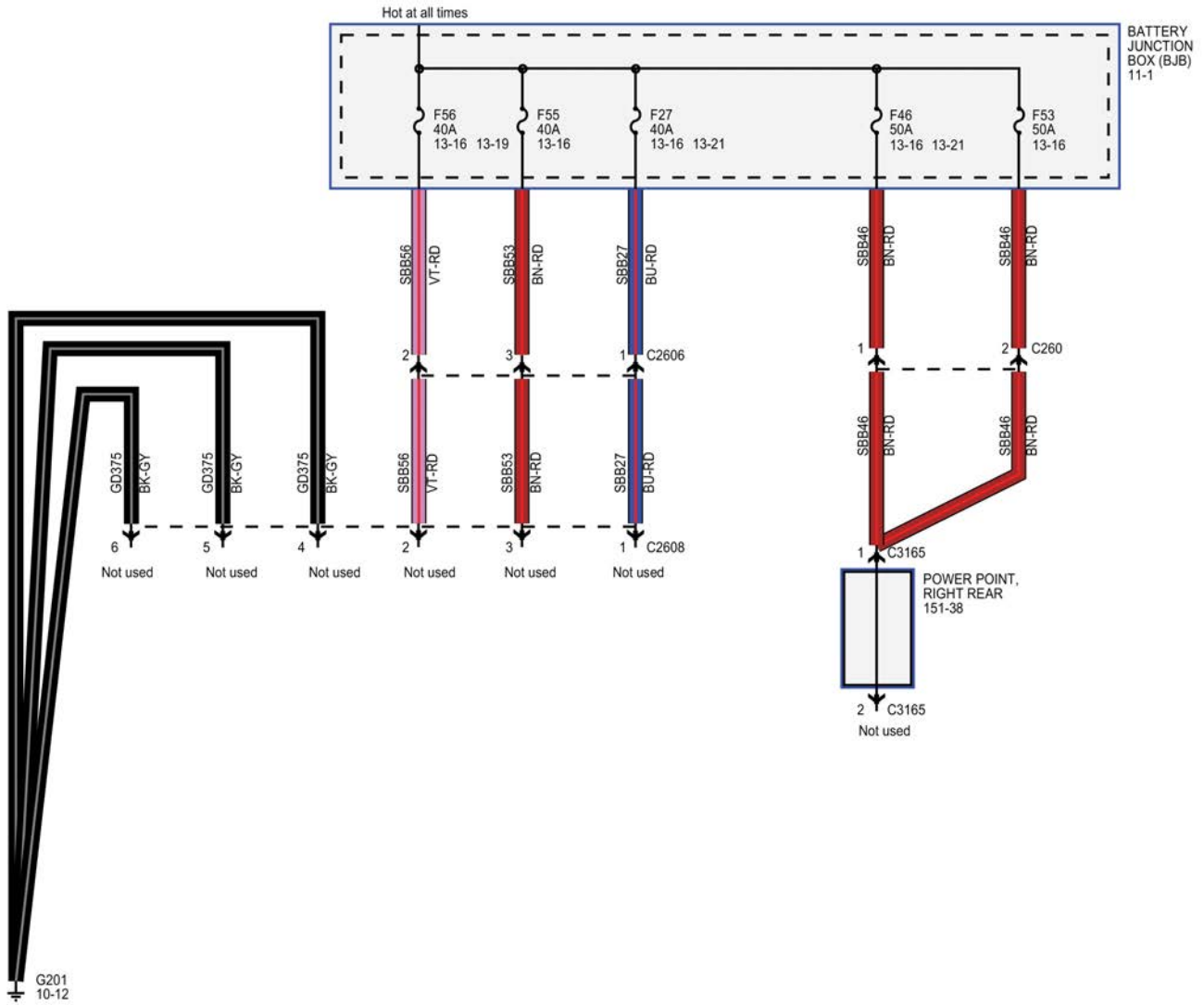


# Section 2: Electrical



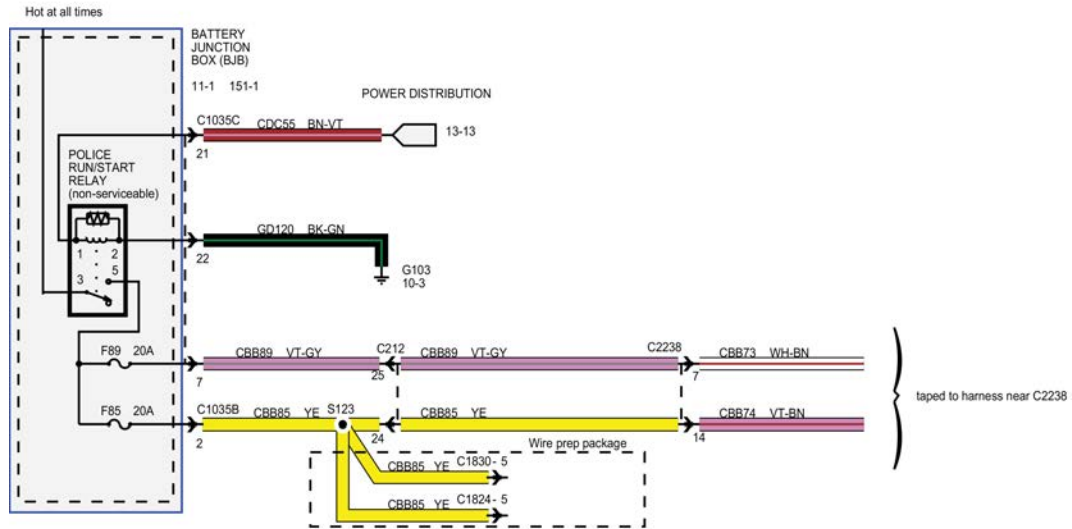
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# Section 2: Electrical



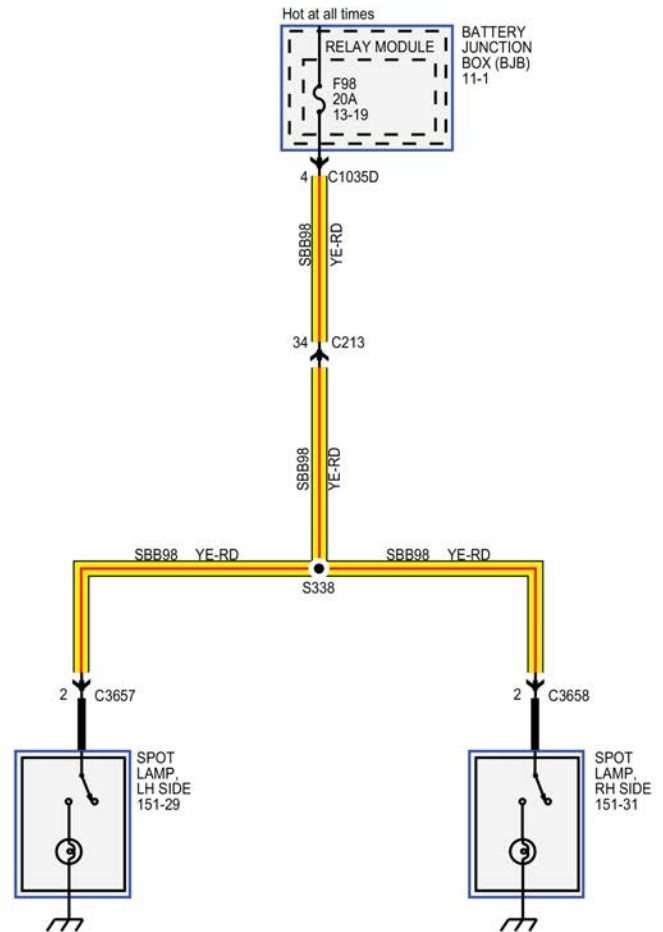
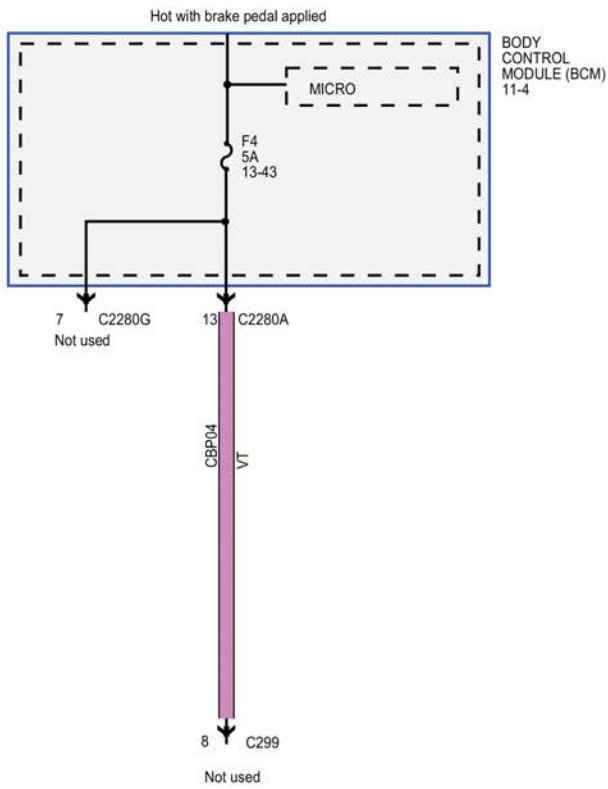
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# Section 2: Electrical



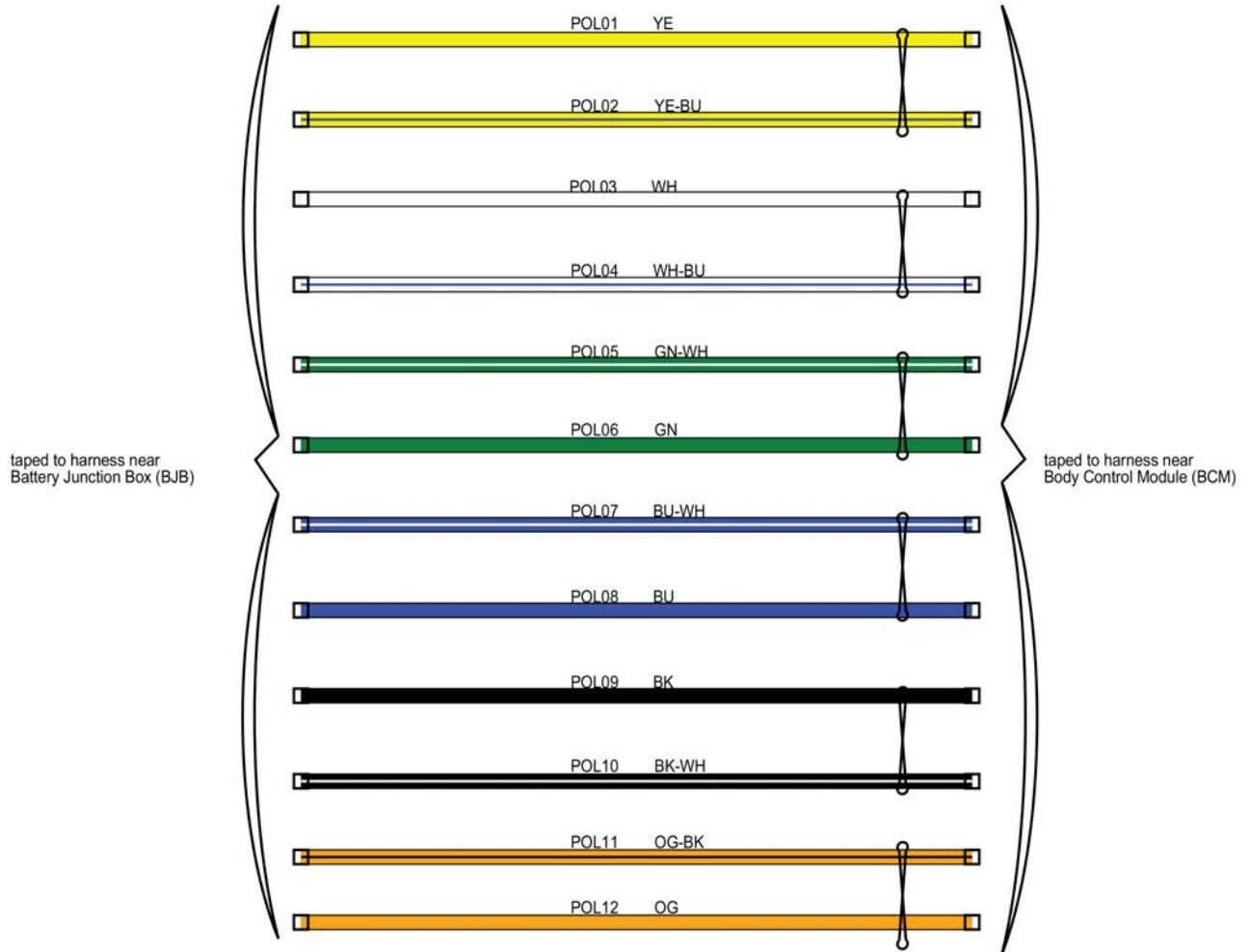
N0165583

# Section 2: Electrical



N0165584

# Section 2: Electrical



N0165585

## SECTION 3: Installation Considerations

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## Section 3: Installation Considerations

### Section 3: Installation Considerations

#### Push Bumpers

##### Effect On Airbag Deployment

Different push bumper designs may each have different deformation characteristics in a crash situation that may or may not affect the deployment of airbags. 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 airbag deployment. Use of a push bumper that mounts solely to the vehicle's bumper should not have a significant effect on airbag 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. Elevated temperatures may also result in a reduced performance mode of operation intended to prevent temperature increase that may operate in a reduced power mode. During the installation process, keep the placement of components away from the grille area of the vehicle. For any components mounted in grille area above bumper, use factory installed locations and do not exceed sizing of factory-installed components to maintain required airflow. Do not mount equipment below the bumper in front of the lower front fascia opening.

##### 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 components in the powertrain system and shorten the operational life of related components. Operation at excessive temperatures may result in a reduced performance mode to assist in preventing temperature increase.

##### 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.

#### 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:

The partition and the installation hardware of the partition must not interfere with the operation and deployment of the Safety Canopy and side airbags. Failure to follow these instructions may cause 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 Utility and Sedan

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 airbag deployment, pretensioners provide improved occupant protection by rapidly removing slack

## Section 3: Installation Considerations

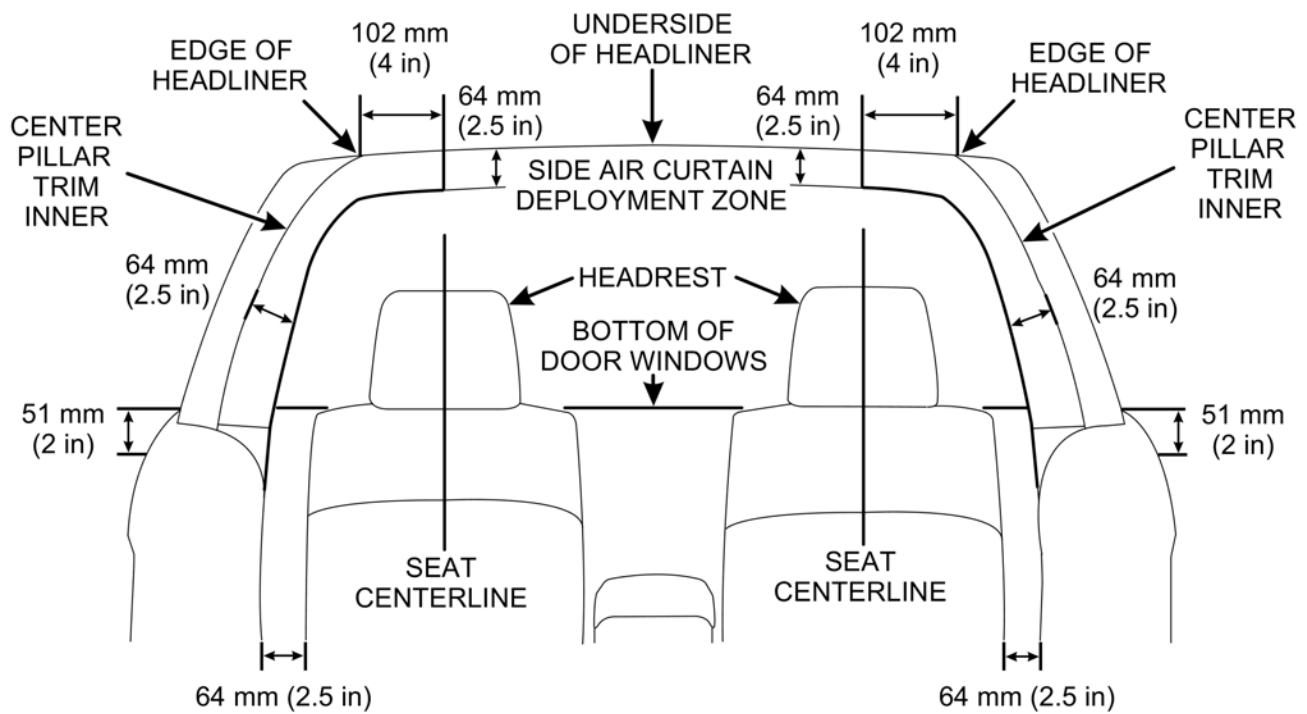
from the safety belt. Removing slack from the safety belt helps to properly position the occupant and allows for maximum effectiveness of the safety belts and the airbags.

- 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.
- Do not cover or attach to trim along top of front/rear side (driver side and passenger side) windows that will prevent or alter deployment of curtain airbags.

### Airbag and Safety Belt Pretensioner SRS Components

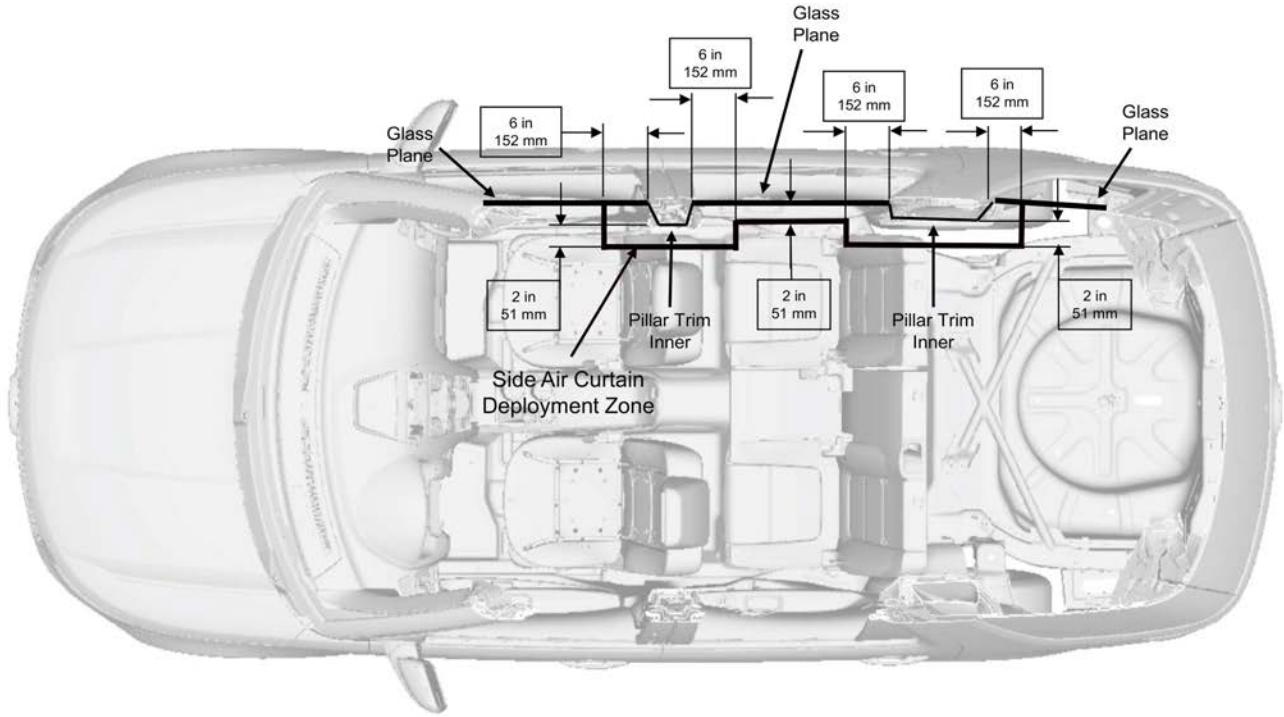
Refer to the following illustrations for locations that must not be used for partition or equipment mounting:

CURTAIN AIRBAG DEPLOYMENT ZONE



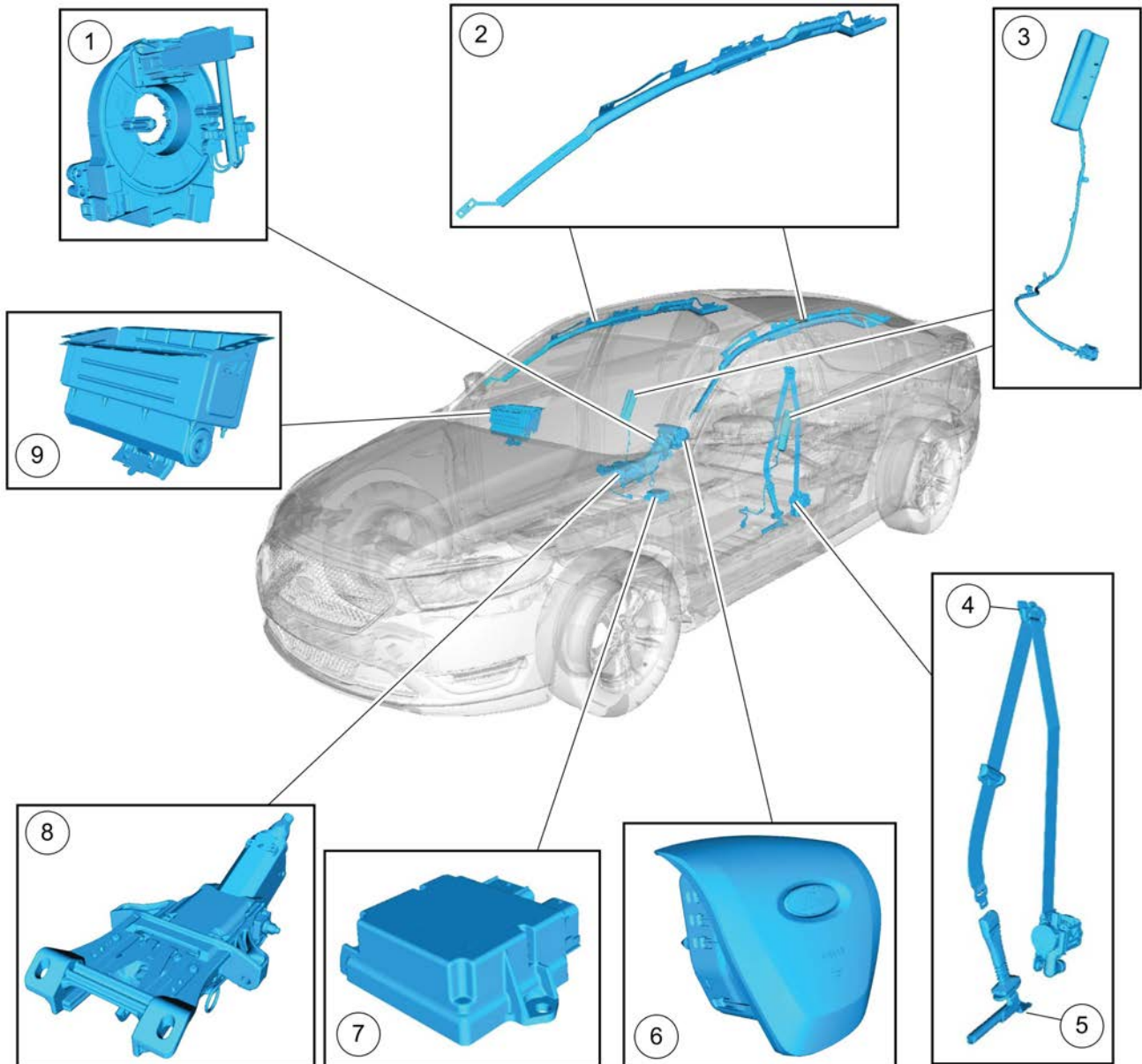
N0146301

### Section 3: Installation Considerations



N0146530

# Section 3: Installation Considerations



N0144808

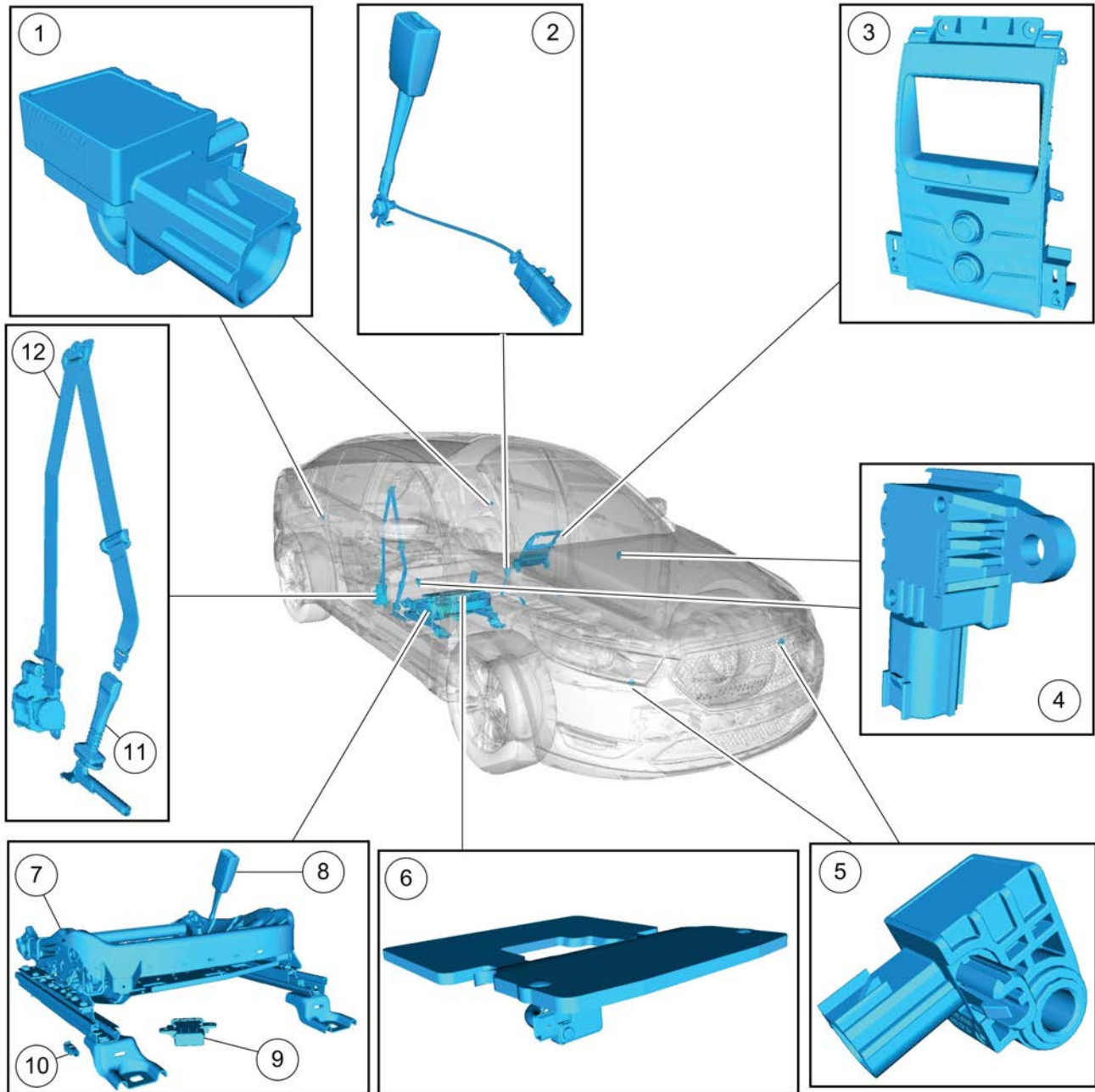
Item	Part Number	Description
1	14A664	Clockspring

## Section 3: Installation Considerations

(Continued)

Item	Part Number	Description
2	042D94 RH/042D95 LH	Safety Canopy module
3	611D10 RH/611D11 LH	Side airbag module
4	611B09	Safety belt retractor and pretensioner
5	610E45	Safety belt anchor and pretensioner
6	043B13	Driver airbag module
7	14B321	RCM
8	3C529	Deployable steering column
9	044A74	Passenger airbag module

## Section 3: Installation Considerations



N0144809

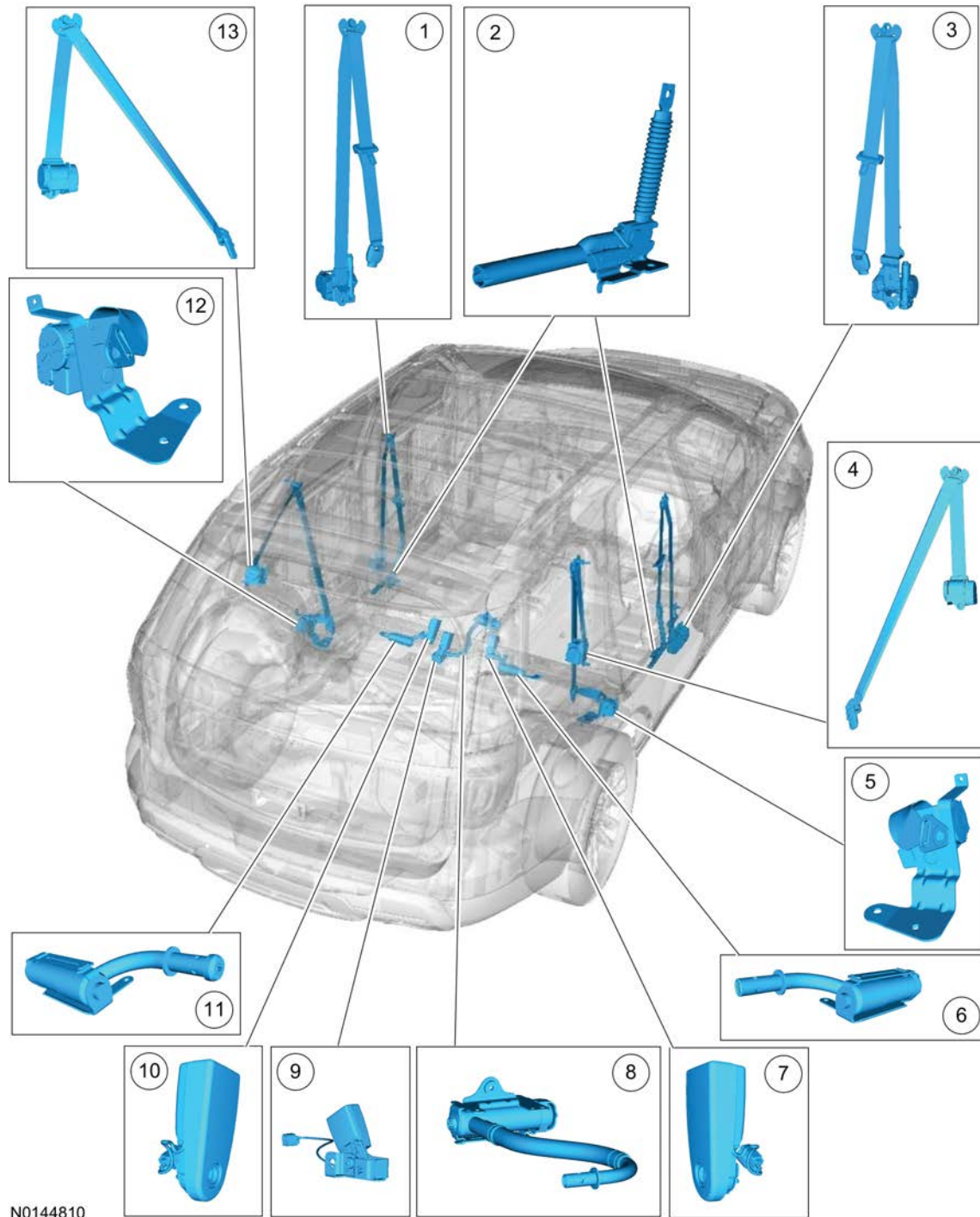
Item	Part Number	Description
1	14B004	C-pillar side impact sensor

## Section 3: Installation Considerations

(Continued)

Item	Part Number	Description
2	61203	Safety belt buckle (includes buckle switch)
3	-	PAD indicator (part of 18842)
4	14B345	Front door side impact sensor
5	14B004	Front impact severity sensor
6	632A22	OCS sensor (bladder system)
7	61710	Passenger seat track assembly (includes OCS weight sensor bolts)
8	61202	Safety belt buckle (includes BTS and buckle switch)
9	14B056	OCSM (part of OCS weight sensor bolt system)
10	14B416	Seat position sensor (driver and passenger seat)
11	610E44	Safety belt anchor and pretensioner
12	611B08	Safety belt retractor and pretensioner

## Section 3: Installation Considerations



Item	Part Number	Description
1	611B09	Safety belt retractor and pretensioner

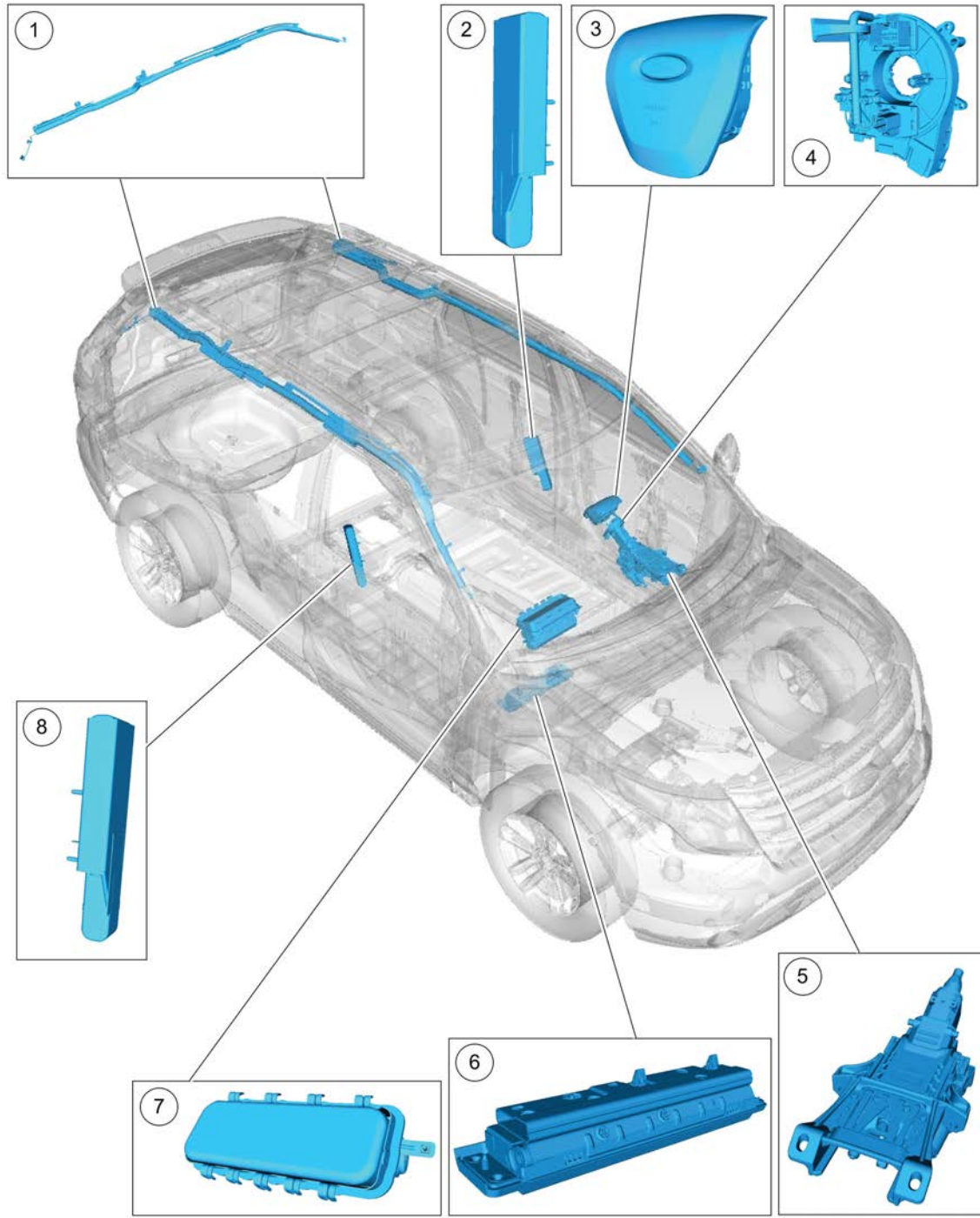


## Section 3: Installation Considerations

(Continued)

Item	Part Number	Description
2	610E44 RH/61E45 LH	Safety belt anchor and pretensioner
3	611B08	Safety belt retractor and pretensioner with adaptive load limiter
4	611B68	Safety belt retractor with inflatable shoulder belt
5	611B68	Safety belt retractor lap belt (part of inflatable safety belt system)
6	61202	Safety belt inflator (40 percent seat)
7	60044	Safety belt buckle (40 percent seat) (part of inflatable safety belt system)
8	Part of 61203	Safety belt inflator (60 percent seat)
9	Part of 61203	Safety belt buckle (60 percent seat) (part of inflatable safety belt system)
10	60045	Safety belt buckle (40 percent seat) (part of inflatable safety belt system)
11	61203	Safety belt inflator (40 percent seat)
12	611B69	Safety belt retractor lap belt (part of inflatable safety belt system)
13	611B69	Safety belt retractor with inflatable shoulder belt

## Section 3: Installation Considerations



N0144811

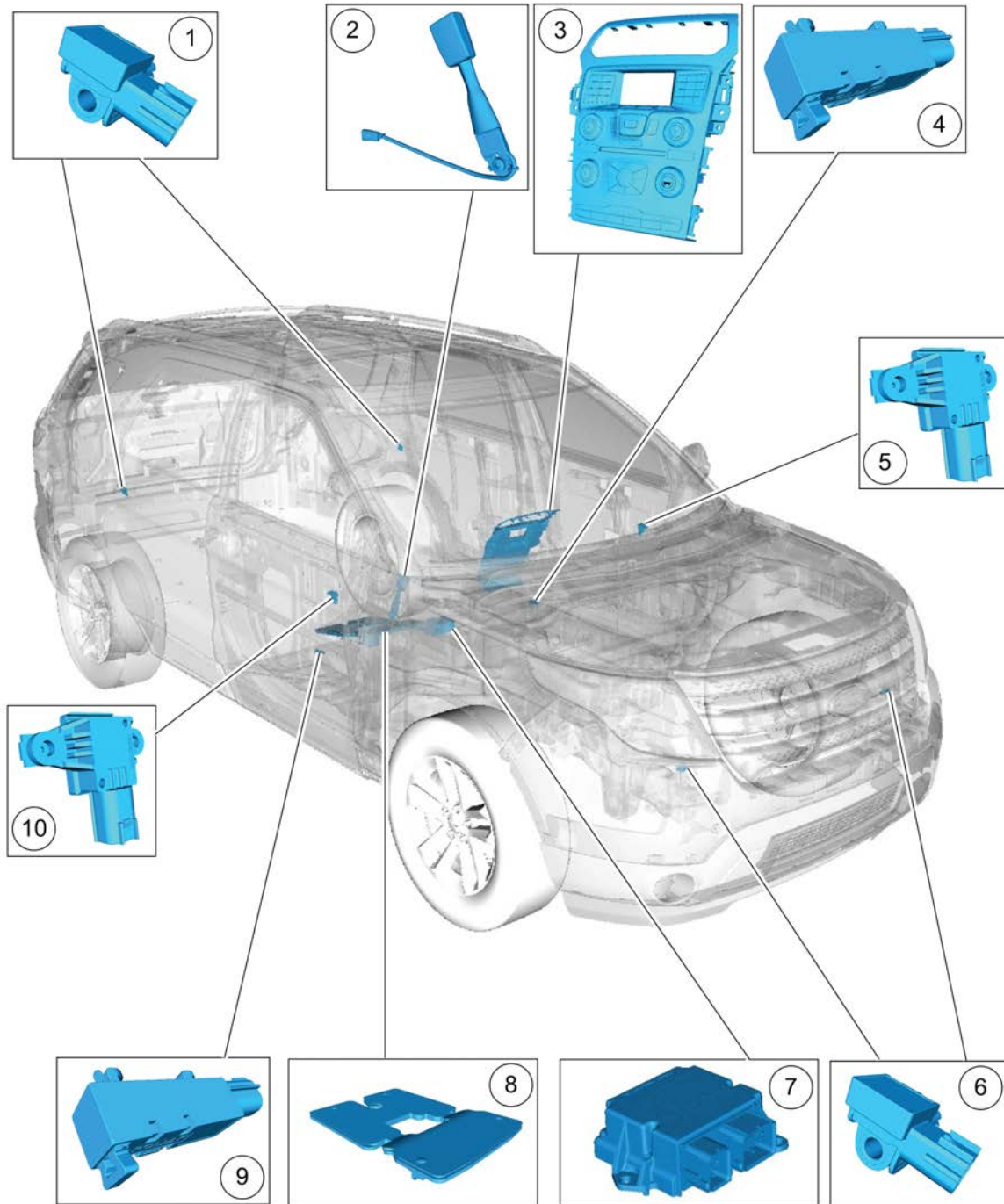
Item	Part Number	Description
1	042D94 RH/042D95 LH	Safety Canopy module

## Section 3: Installation Considerations

(Continued)

Item	Part Number	Description
2	611D11	Safety Canopy module
3	043B13	Driver airbag module
4	14A664	Clockspring
5	3C529	Deployable steering column
6	045J76	Knee airbag module
7	044A74	Passenger airbag module
8	611D10	Passenger airbag module

## Section 3: Installation Considerations



N0144812

Item	Part Number	Description
1	14B345	C-pillar side impact sensor

## Section 3: Installation Considerations

(Continued)

Item	Part Number	Description
2	61202	Passenger safety belt buckle with BTS
3	Part of 18842	PAD indicator
4	14B416	Seat position sensor (driver)
5	14B345	Front door side impact sensor
6	14B345	Front impact severity sensor
7	14B321	RCM
8	632A22	OCS sensor
9	14B416	Front passenger seat position sensor
10	14B345	Front door side impact sensor

### Center Console Mounting Plate Sedan Police Interceptor



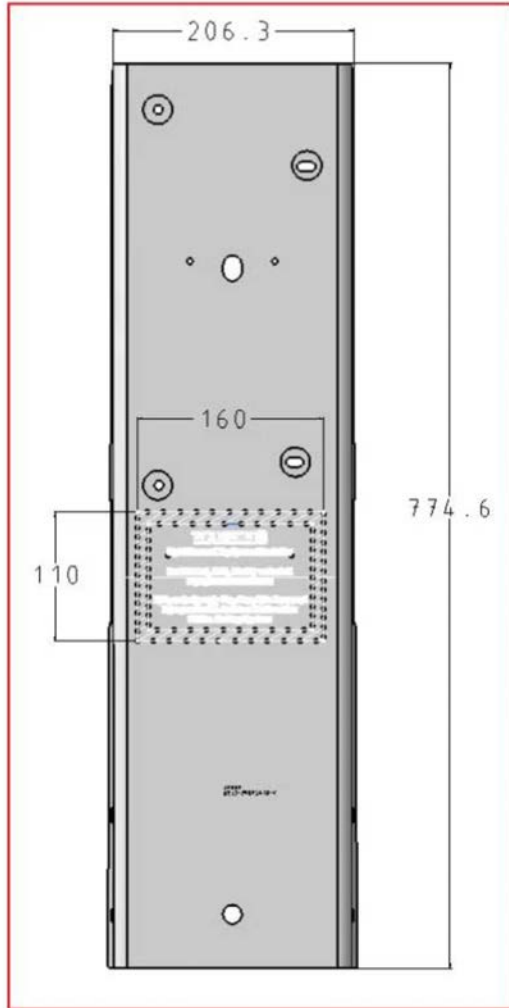
#### **WARNING:**

Remove console mounting plate from vehicle prior to drilling and/or modification for preparation and/or mounting of police equipment. The Restraints Control Module (RCM) is mounted beneath the console mounting plate. Damage to the RCM can affect airbag deployment and stability control system and may result in personal injury.

- Do not drill or perform any modification of the console mounting plate while in vehicle.
- Do not exceed total weight of 75 lbs for items mounted to the console mounting plate.
- Do not use fasteners that extend through the console mounting plate and contact the RCM or wiring located below the console mounting plate.
- Do not use self-tapping screws.
- Use blunt head fasteners only. Rivets, round-head carriage bolts with threads inboard of sheet metal.

### Sedan Center Console Mounting Plate (dimensions in mm)

# Section 3: Installation Considerations

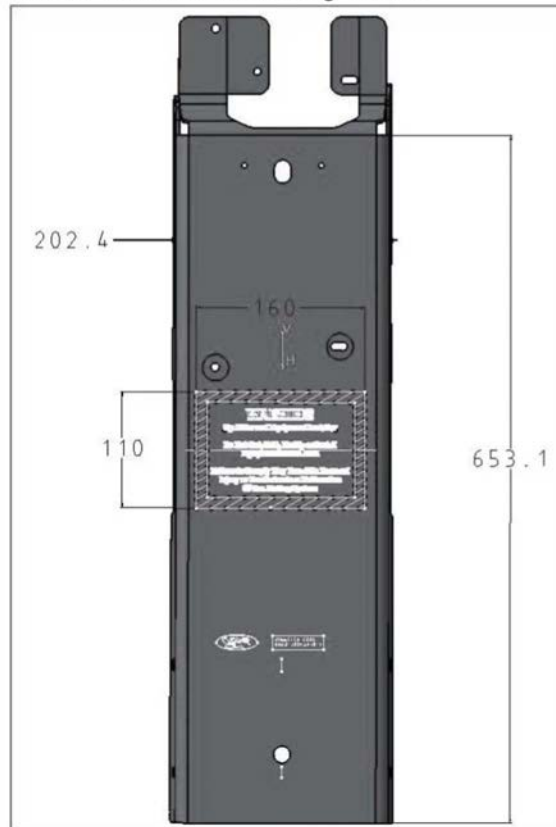


N0140573

Utility Center Console Mounting Plate (dimensions in mm)

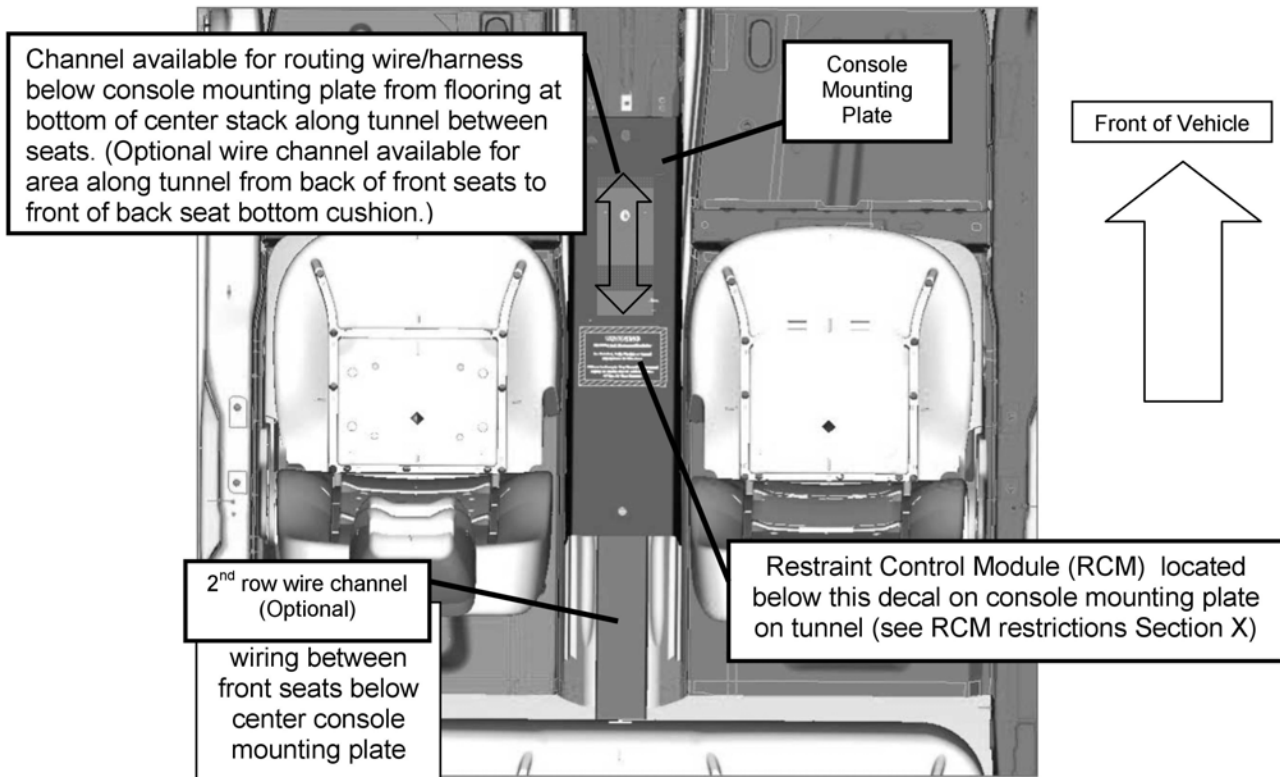
### Section 3: Installation Considerations

Center Console Mounting Plate



N0140576

## Section 3: Installation Considerations



N0140572

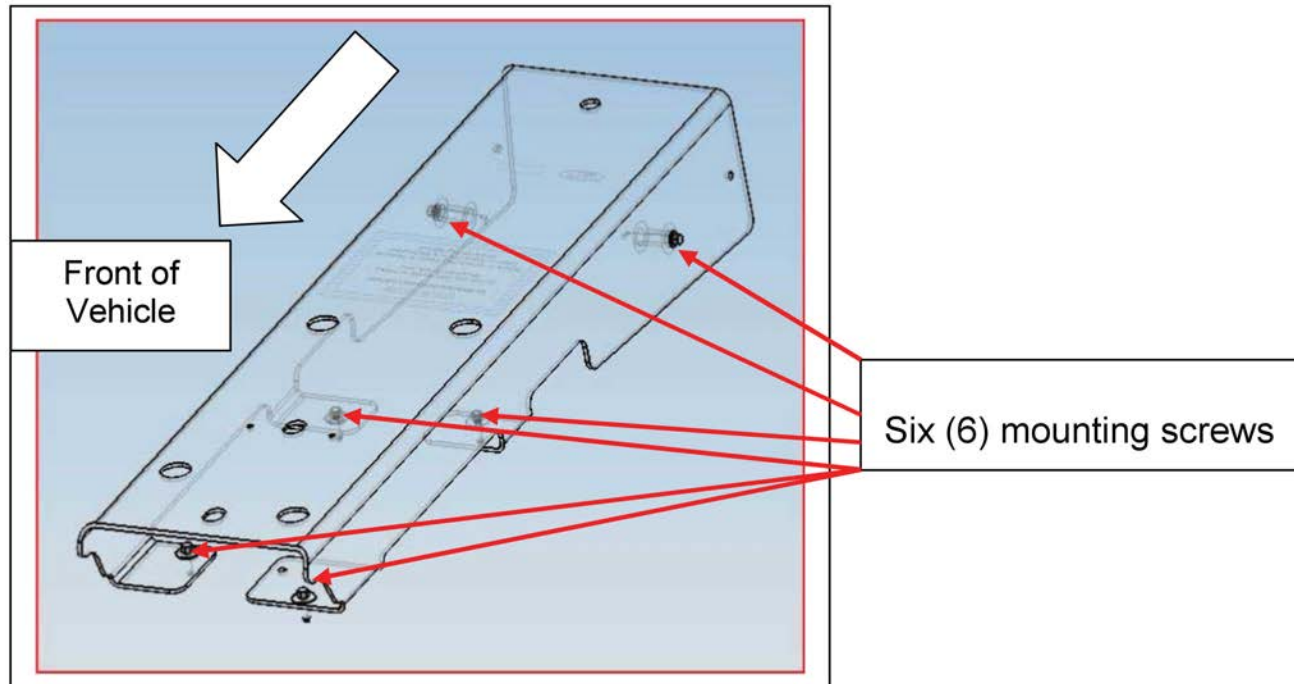
### Requirements when routing wire through the console mounting plate or replacing the factory installed console mounting plate between the front seats:

- Maintain a minimum of 6 mm clearance to a fixed position hard surface, console and/or plate with no relative motion with respect to the Restraints Control Module (RCM) and/or connector/wiring.
- Maintain a minimum of 20 mm clearance to a surface that has relative motion with respect to the RCM and/or connector/wiring. Wiring routed near the RCM and/or connector/wiring should be retained to eliminate contact under all vehicle operating conditions. Wiring harness should not be loose in proximity of the RCM, connector or wiring.



## Section 3: Installation Considerations

### Removal Process For Center Console Mounting Plates



N0140574

1. Remove the six screws securing the console mounting plate to the body.
  - Front and middle attaching bolts tighten to 9.0 Nm.
  - Rear attachment bolts tighten to 12 Nm.
2. Slide the console mounting plate forward in vehicle approximately 13 mm (0.5 in.) until contact is made with the instrument panel.
3. Lift the rearward end of the console mounting plate at approximately 45 degree angle upwards while holding the front end of the console mounting plate down.
4. Remove the console mounting plate by lifting it rearward along the 45 degree angle.
5. To install reverse the removal procedure.

### Console Design and Installation

#### Restraints Control Module (RCM) Sedan and Utility



#### **WARNING:**

The RCM is mounted on the center tunnel under the instrument panel. The RCM orientation and location are 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.

#### NEW Extended Power Module (BECMB) Sedan and Utility

## Section 3: Installation Considerations

### **WARNING:**

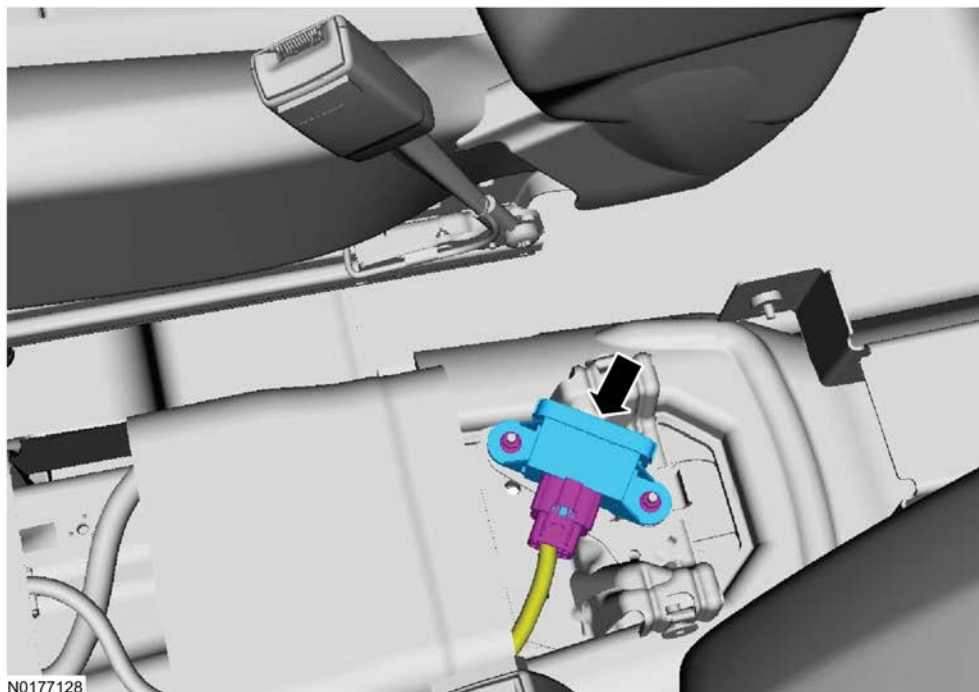
The BECMB is mounted just forward of the RCM on the center tunnel. The BECMB location can be relocated but the length of the wire harness can not be changed.

The BECMB provides system voltage to the RCM and Occupant Classification System Module (OCSM) when the ignition is ON. Additionally, the BECMB is designed to ensure that the RCM and OCSM remain powered if the ignition is turned off while the vehicle is moving at a speed greater than 4 Km/h (2.5mph).

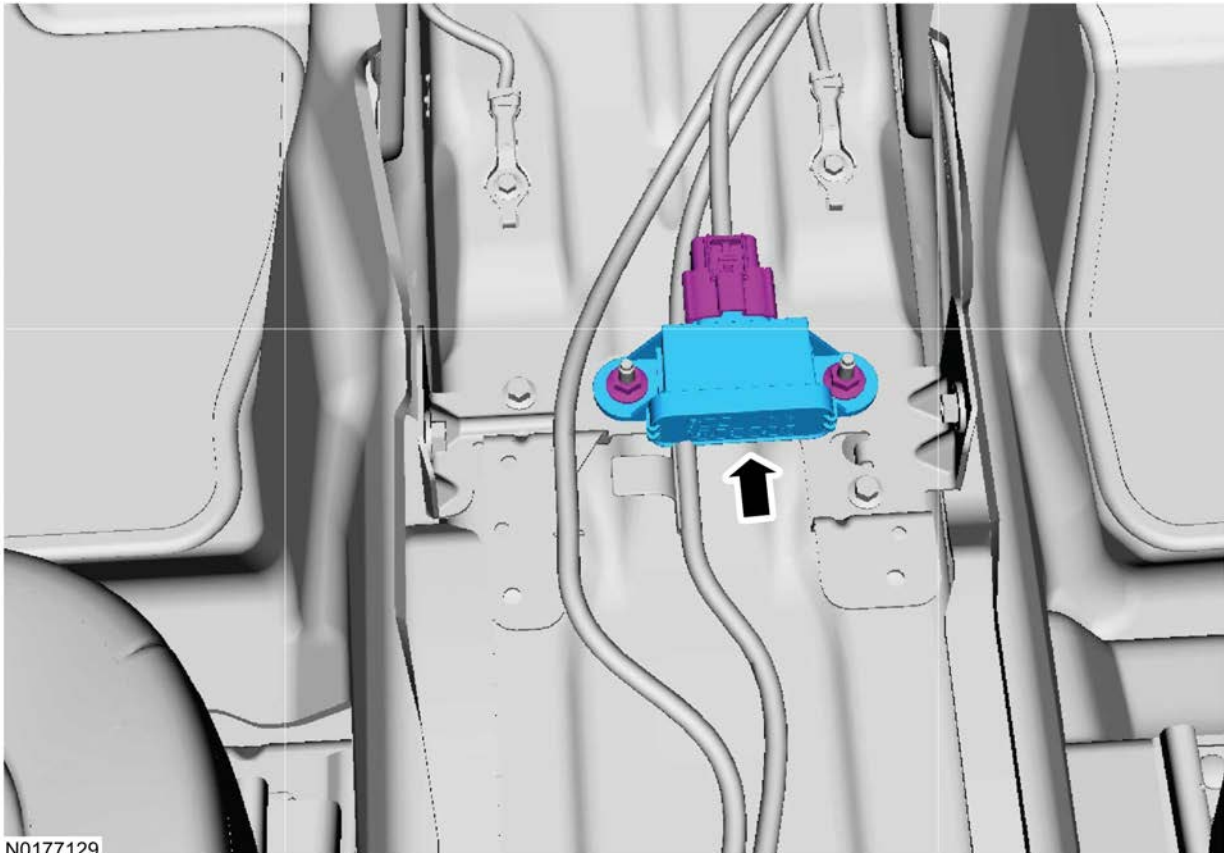
If the ignition is turned off while the vehicle is travelling at a speed above 4 km/h (2.5 mph), the BECMB maintains system voltage on the RCM and OCSM power supply circuits. Once the vehicle speed drops below the threshold while the ignition is off, the BECMB powers down the RCM and OCSM. If the vehicle speed rises above the threshold again, the BECMB does not reactivate the power supply to the RCM and OCSM. They remain off until the ignition is turned on again.

If a vehicle is parked, with the ignition off, the BECMB does not provide power to the RCM and OCSM. If the vehicle begins to move, while the ignition is still off, the BECMB does not power the RCM or OCSM.

When the vehicle has been started using the remote start feature (if equipped), the ignition status is off, but the BECMB powers the RCM in order to detect a collision and disable the fuel pump, if necessary.



## Section 3: Installation Considerations



N0177129

### Airbag Deployment Interference

**⚠ WARNING:**

Do not place objects or mount equipment in front of the airbag module cover or in front seat areas that may come in contact with a deploying airbag. 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.

**⚠ WARNING:**

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

**⚠ WARNING:**

The partition and the installation hardware of the partition must not interfere with the operation and deployment of the roll curtain airbags and side airbags. Failure to follow these instructions may cause personal injury.

**⚠ WARNING:**

Do not remove or change the torque on the fasteners attaching the accessory bracket to the vehicle.

**⚠ WARNING:**

## Section 3: Installation Considerations

**Restraints system is designed to function optimally with a center console. If a partition is used in the vehicle, a center console is not required. Without a partition a center console or structure similar to a center console is required for optimal function of the second row restraints system.**

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

Airbag 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 airbag deployment.

### Sedan and Utility Police Interceptor

#### Universal Top Tray

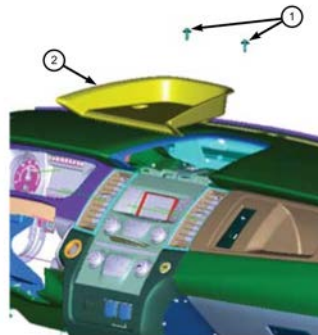


#### **WARNING:**

**Universal Top Tray available for mounting police equipment. Police equipment mounted on universal access/mounting tray must not obstruct visibility and/or front passenger airbag deployment path.**

Police equipment mounted to universal top tray must not exceed 6 lbs. Weight should be distributed evenly over surface of the universal top tray. Remove the universal top tray prior to preparation and/or mounting police equipment to the universal top tray. Removal process for universal top tray from the instrument panel

1. Remove 2 bolts from universal top tray.
2. Slide the Universal Top Tray (UTT) rearward then lift upward.

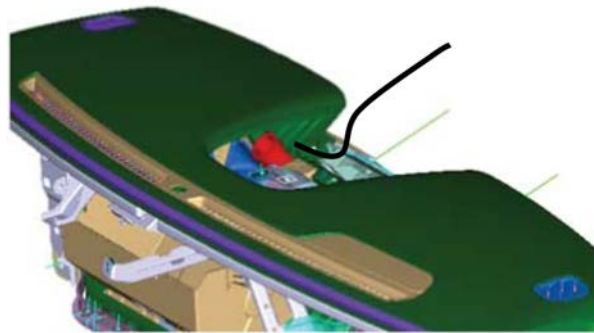


N0145266

3. Mount police component to universal top tray.
  - Police equipment mounted to universal top tray must not exceed 6 lbs.
  - Weight should be distributed evenly over surface of the universal top tray.
  - Use self-locking hardware.
  - Drill holes only when tray is out of the vehicle.
4. If wire will be routed through tube from top of instrument panel under universal top tray, locate tube, insert wire in tube and pull the wire out through bottom of tube.

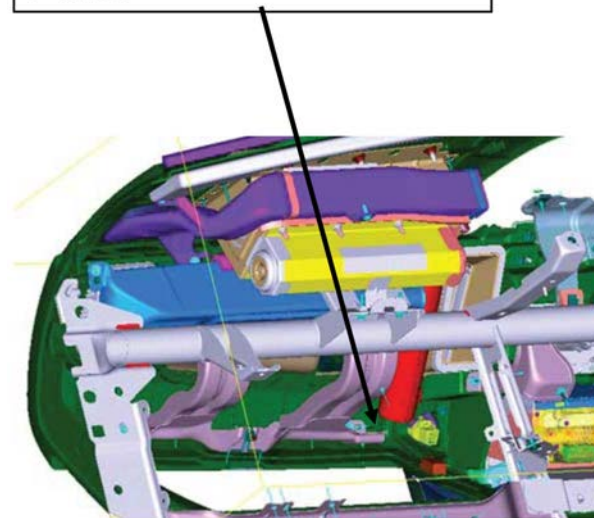
## Section 3: Installation Considerations

Universal routing tube.



N0140577

Pull wiring out bottom end of tube, directing it toward Console Mounting Plate.

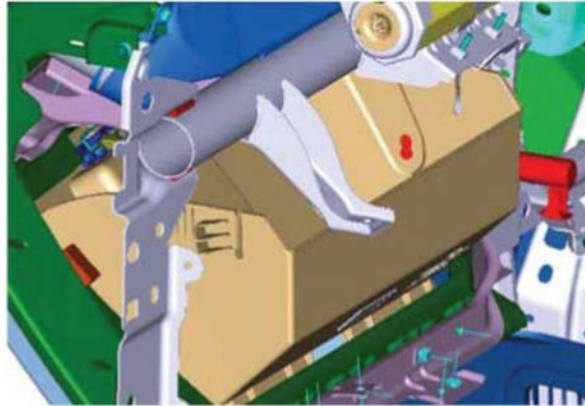


N0140578

5. For easier wire routing, the glove box maybe removed.
  - Open glove box.

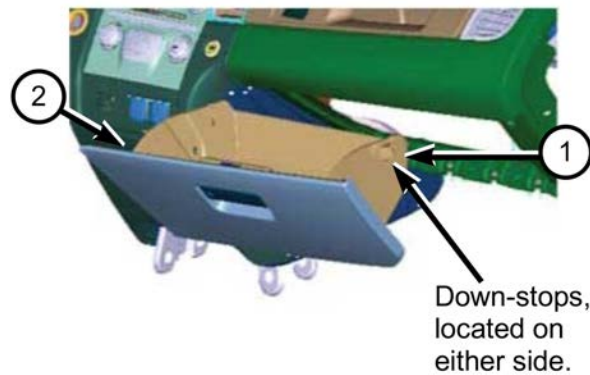
## Section 3: Installation Considerations

- Prior to glove box removal, always pop glove box damper out of retaining hole inside glove box.



N0140582

- Simultaneously push 1 and 2 in back sides of glove box, disengaging down-stops.
- Tip glove box down on the bottom hooks over the pins and remove.

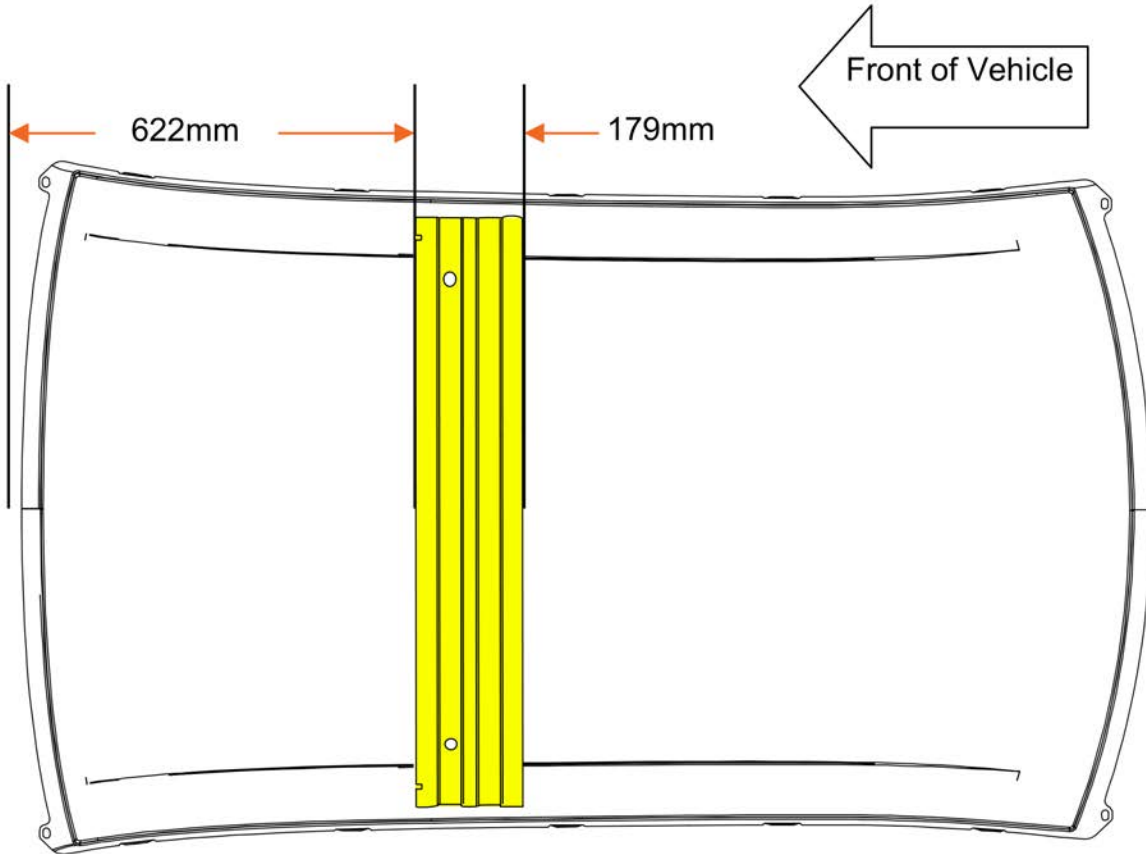


N0140583

### Sedan Interceptor Light Bar Installation Considerations

Approximate location of roof bow.

# Section 3: Installation Considerations

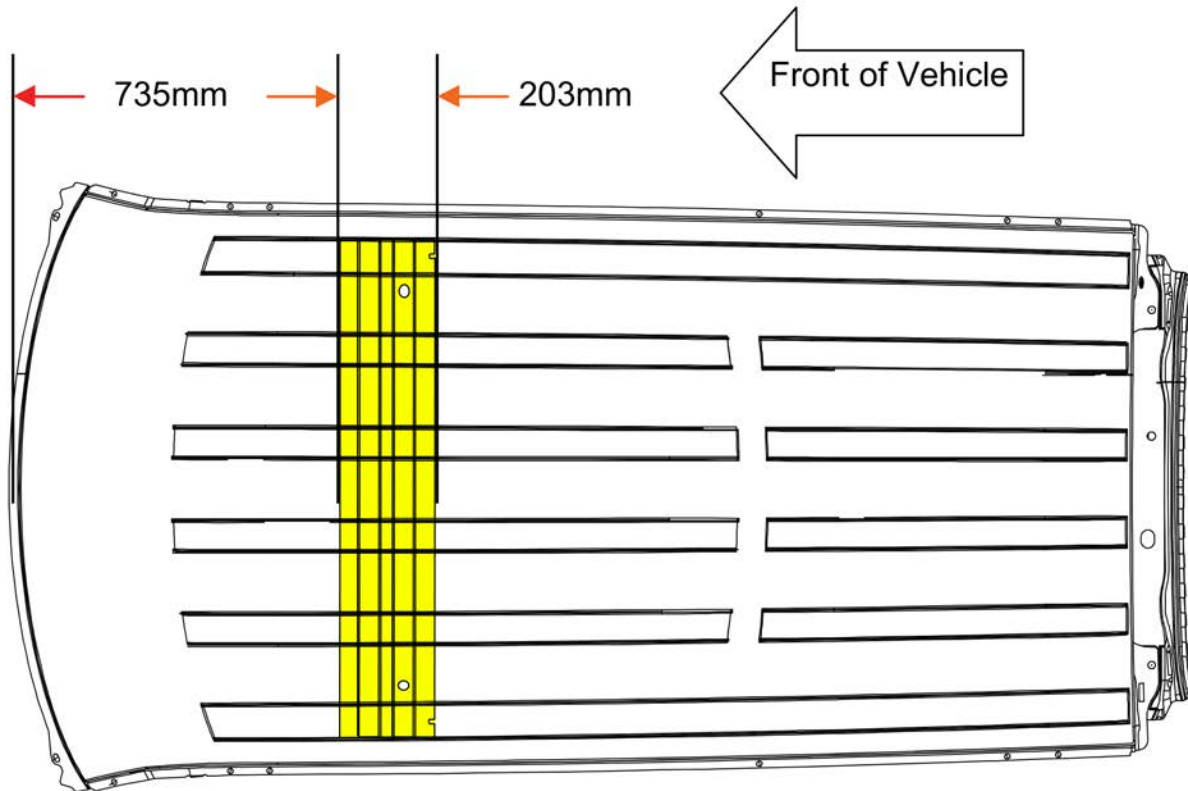


N0146529

## Utility Interceptor Light Bar Installation Considerations

Approximate location of roof bow.

## Section 3: Installation Considerations



N0146528

### 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.

### Accessory Bracket

The accessory bracket must not be removed from the vehicle. Both the Sedan Interceptor and Utility Interceptor were developed with the accessory bracket.

### High Strength Steel

High strength Boron steel is used in the A and B pillars of both the Sedan Interceptor and Utility Interceptor vehicles. Welding and other repair processes should not be performed.

### Electrical

### Park Signal

### NOTICE:



## Section 3: Installation Considerations

**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 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 signal, it can be accessed at the 14 way base signal power connector (pin 12) as illustrated in the Wiring Diagram manual.

### 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 in the 14 way base signal power connector (pin 9). This is the only recommended access to the vehicle speed signal. For additional information on the vehicle speed signal, refer to the Wiring Diagrams manual.

### 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:  $\pm 1.0$  Volt
- Rise Time ( $t_r$ ): 10  $\mu$  sec less than or equal to  $t_f$  less than or equal to 250  $\mu$  sec
- Fall Time ( $t_f$ ): 10  $\mu$  sec less than or equal to  $t_r$  less than or equal to 250  $\mu$  sec
- Duty Cycle: 50%  $\pm$  10%
- Pulse Rate: 1.3808 Hz/kph (2.22 Hz/mph)

### Driver Door Ajar

**NOTICE:**

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

When adding police equipment that requires a door ajar signal input, use the available vehicle speed signal connection from the 14-way connector located behind the valence panel at the bottom of the electronic finish panel where the driveline tunnel meets the instrument panel. This is the only recommended access to the door ajar signal.

### Transmission Sensors

The 6F50 automatic transmission is used on a majority of retail Sedan and Utility Interceptor retail applications, however, some applications use the 6F55 transmission. All retail Sedan and Utility Interceptor vehicles are equipped with a heavy-duty transmission cooler. The police interceptor transmission is unique in the following areas:

- Torque converter
- PCM programming to produce unique transmission shift characteristics
- Auxiliary transmission cooler

Mobile communication systems may harm the operation of a 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 the automatic 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.

## Section 3: Installation Considerations

### Delay Accessory

All Sedan Police Interceptors and Utility Police Interceptors are equipped with delay accessory feature, which is a function of the Body Control Module (BCM). The delay accessory feature disrupts power to the interior lamps and demand lamps after 10 minutes or immediately upon opening the door. 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 terminates the battery saver feature by disabling the interrupt timers and power to the lamps.

A reset event sets 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 sets 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).

### Spot Lamp Installation - Sedan and Utility Police Interceptors

**NOTE:**

The following steps apply to both the RH and LH side of the vehicle.

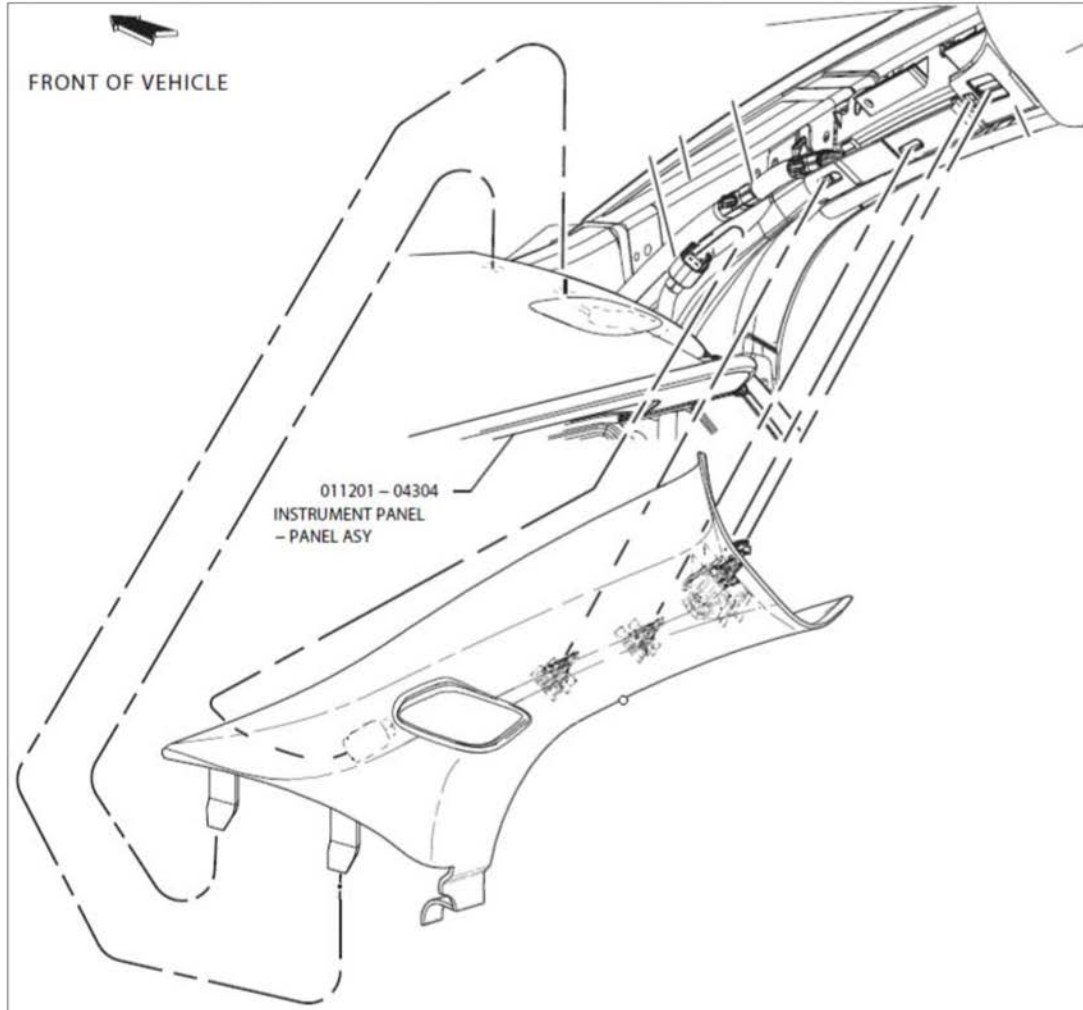
1. Wearing latex gloves, grasp the A pillar trim cover at the top and pull inboard to release the trim retention clips from the pillar, continue to work down until all 3 retention clips are released. Once all three clips are released continue to pull the trim inboard while lifting up on the trim to release the guide/alignment tabs from the top of the instrument panel. Disconnect any electrical connectors connected to the trim. Repeat process for remaining A-pillar trim.

**NOTE:**

Metal retention clips may remain in the sheet metal, use needle nose pliers to remove and reinstall back on to the plastic trim.

2. Obtain the protective cover, install the cover over the top of the instrument panel tuck the cover into the right or left hand side to prevent metal chips from damaging the instrument panel during drilling.

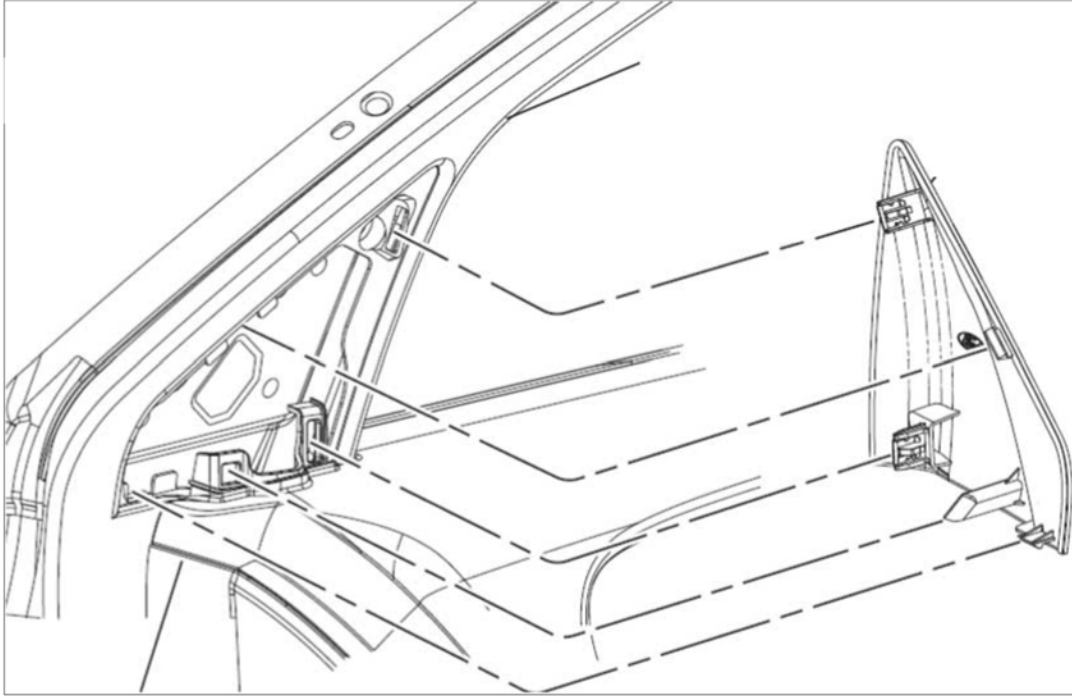
## Section 3: Installation Considerations



N0140590

3. Using a fiber stick, gently pry back on the outside mirror cover, grasp the cover with your hands and pull the cover straight off to release the clips. Place cover on parts cart for reinstallation.

## Section 3: Installation Considerations



N0140591

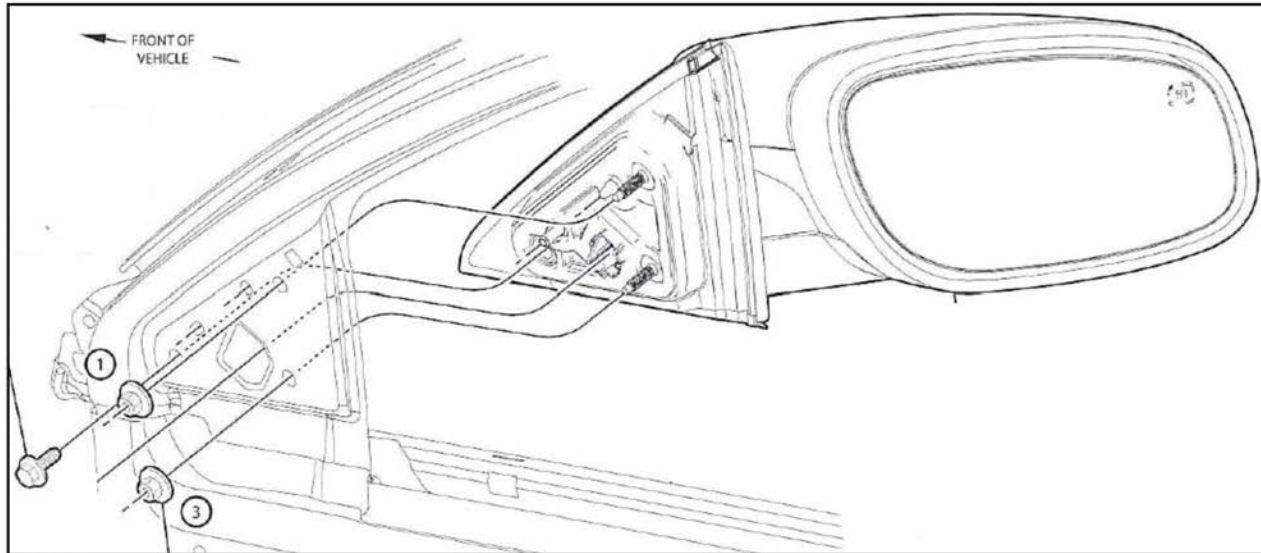
4. Locate the mirror electrical connector, disconnect connector.



N0140592

5. Remove the 3 nuts retaining the mirror to the door. Grasp the mirror and slide it rearward and out to remove from the door. Wrap the mirror in bubble wrap or similar material and place it and retaining nuts on a parts cart for reinstallation.

## Section 3: Installation Considerations



N0140610

6. Open the hood, disconnect the negative battery cable.
7. Wrap guard the RH / LH front doors, top of the hood, and the A-pillar.
8. Drill through the A-pillar (do not force the drill bit through, allow the bit to slowly cut through) from the outside to the inside of the vehicle. Once through the first layer of sheet metal, slow down until contact is made with the second layer of metal, continue slowly and at a steady pace. Repeat process on the other side of the vehicle.
9. Install the spot lamp shaft from the outside of the vehicle through the previously drilled hole and into the inside of the vehicle.

### NOTE:

The shaft should move freely through the hole in the A-pillar while sliding it in and out. If the shaft binds at all, remove the shaft.

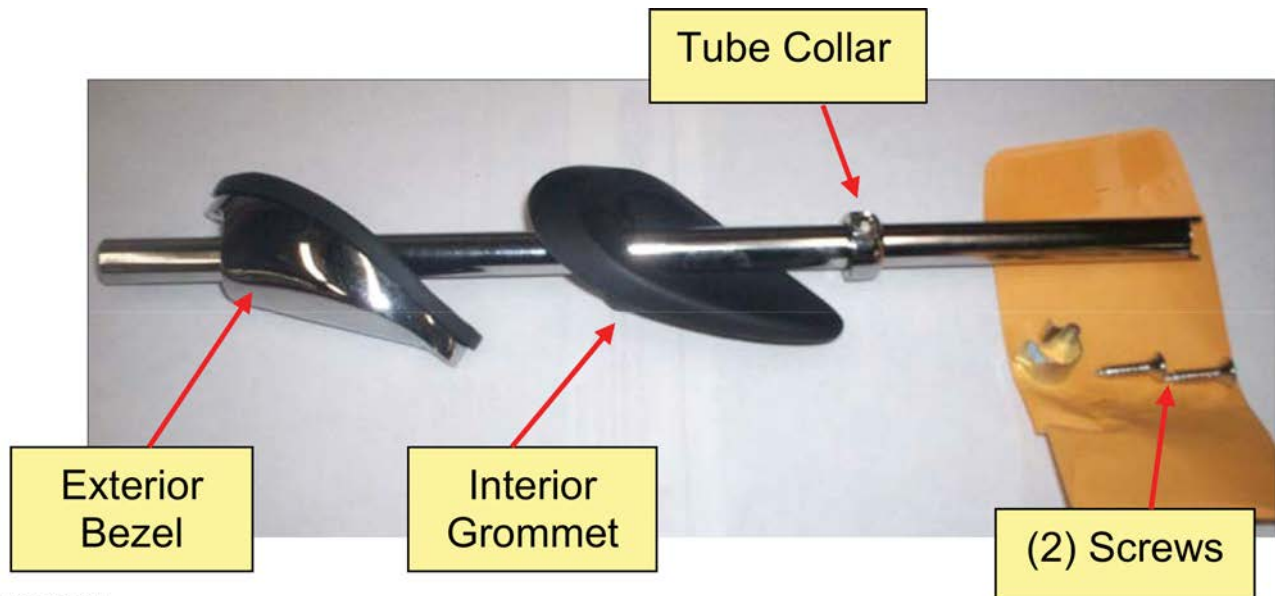
10. If the test shaft binds use a pencil grinder and begin to remove any burrs from both the inside and outside of the A-pillar. Repeat the process until the shaft slides through the hole without binding.
11. Obtain spot lamp bezel drill fixture and make sure there are no metal chips on the exterior of the A-pillar and ensure the rubber gasket is attached to the fixture and install the shaft on the fixture through the previously drilled A-pillar hole.
12. Protect the A-pillar. Hold fixture tight to the A-pillar and drill an 1/8 inch hole through the bushings in the fixture and into the first layer of metal. Remove fixture.

## Section 3: Installation Considerations



N0140593

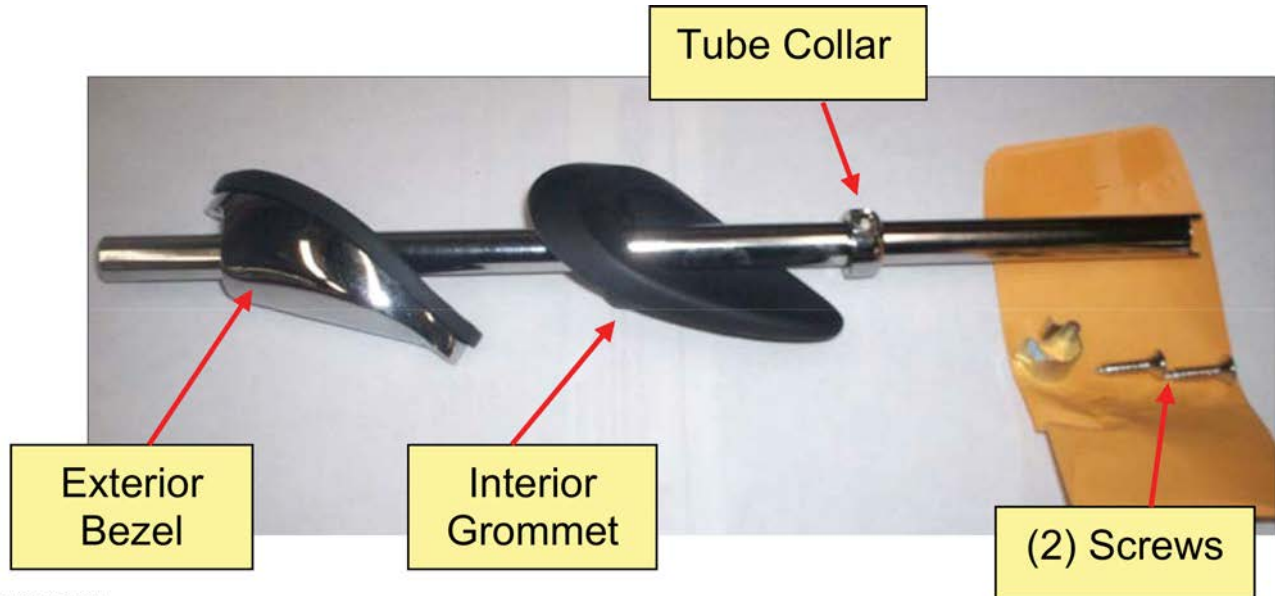
13. De-burr the previously drilled holes. Use PM-13 on all bare metal.
14. Gather the RH spot lamp assembly (See build router for correct P/N) and installation kit P/N DG1315301AB. The installation kit will include, tube sleeve, exterior bezel with rubber gasket, interior A-pillar grommet, tube collar locking ring, 2 screws and wire harness retainer.



N0140595

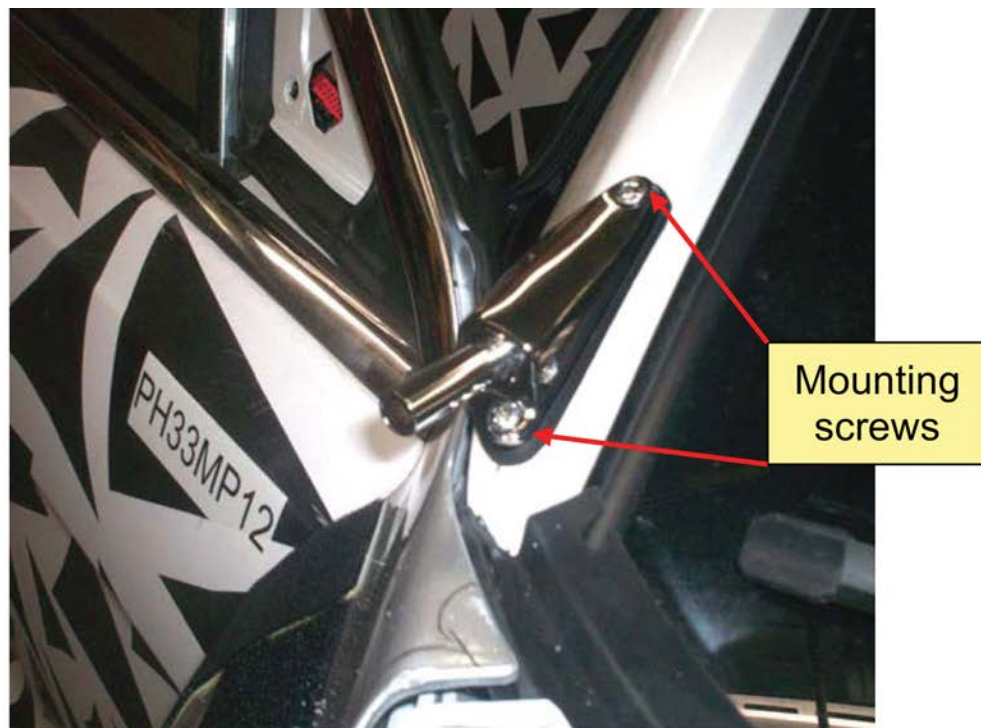
15. Gather the exterior tube sleeve and loosen the Allen set screw on the tube collar locking ring. Remove and retain the locking ring and the interior A-pillar grommet. Retain all parts.

## Section 3: Installation Considerations



N0140595

16. Retrieve the exterior mounting bezel / tube sleeve and 2 mounting screws from the outside of the vehicle. Slide the tube sleeve into the A-pillar hole and into the inside of the vehicle.
17. Align the screw holes in the bezel to the corresponding holes in the outside of the A-pillar, from the kit and install 2 screws to retain the bezel to the pillar as shown.



N0140596

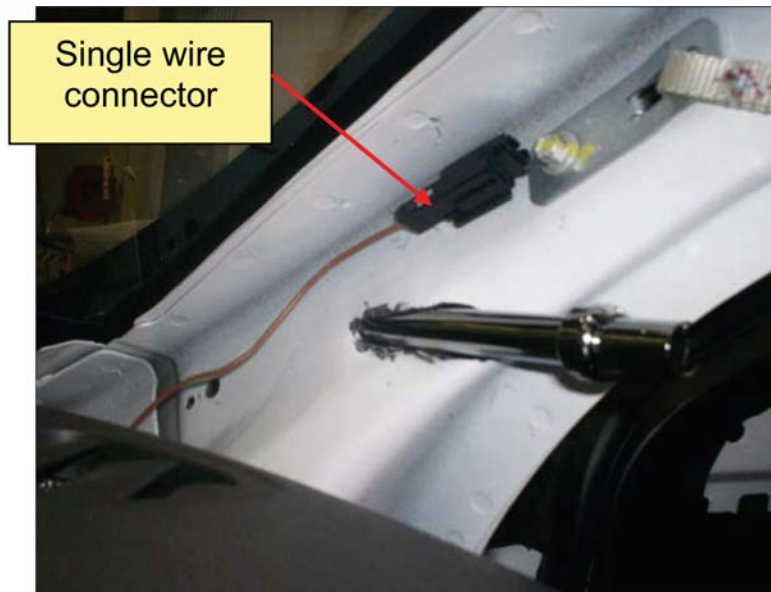
18. Obtain the RH / LH FA-3007-210 collar depth tool and the collar from the kit. Install the collar into the end of the tool as shown from the inside of the vehicle. Slide the tool onto the end of tube sleeve with the set screw pointing to the outside of the vehicle. Using an Allen wrench, securely tighten the set screw. Remove depth tool.

## Section 3: Installation Considerations



N0140597

19. On the inside of the A-pillar, locate the single wire connector as shown. Remove the dummy plug from the connector by pressing the tab on the plug and removing the plug from the connector, discard plug.



N0140598

20. Spot lamp assembly. On the handle end remove the screw and wedge retaining the handle to the shaft. Retain screw and wedge for reinstall.



## Section 3: Installation Considerations



N0140599

21. Insert the shaft of the spot lamp into the previously installed tube sleeve. Continue to push in until it snaps / seats into the bezel.



N0140600

22. Tighten the hex set screw on the end of the chrome lamp housing, tighten enough to create light tension while rotating the spot lamp from left to right.

## Section 3: Installation Considerations



N0140601

23. Gather spot lamp handle, screw, wedge, grommet and A-pillar trim. Install the A-pillar trim over the spot lamp shaft sticking out of the A-pillar. Feed the harness on the end of the spot lamp handle through the rubber grommet and through the A-pillar.



N0140602

## Section 3: Installation Considerations



N0140603

24. With harness through the grommet and the A-pillar trim, connect the connector to the existing mating connector on the inside of the A-pillar as shown.



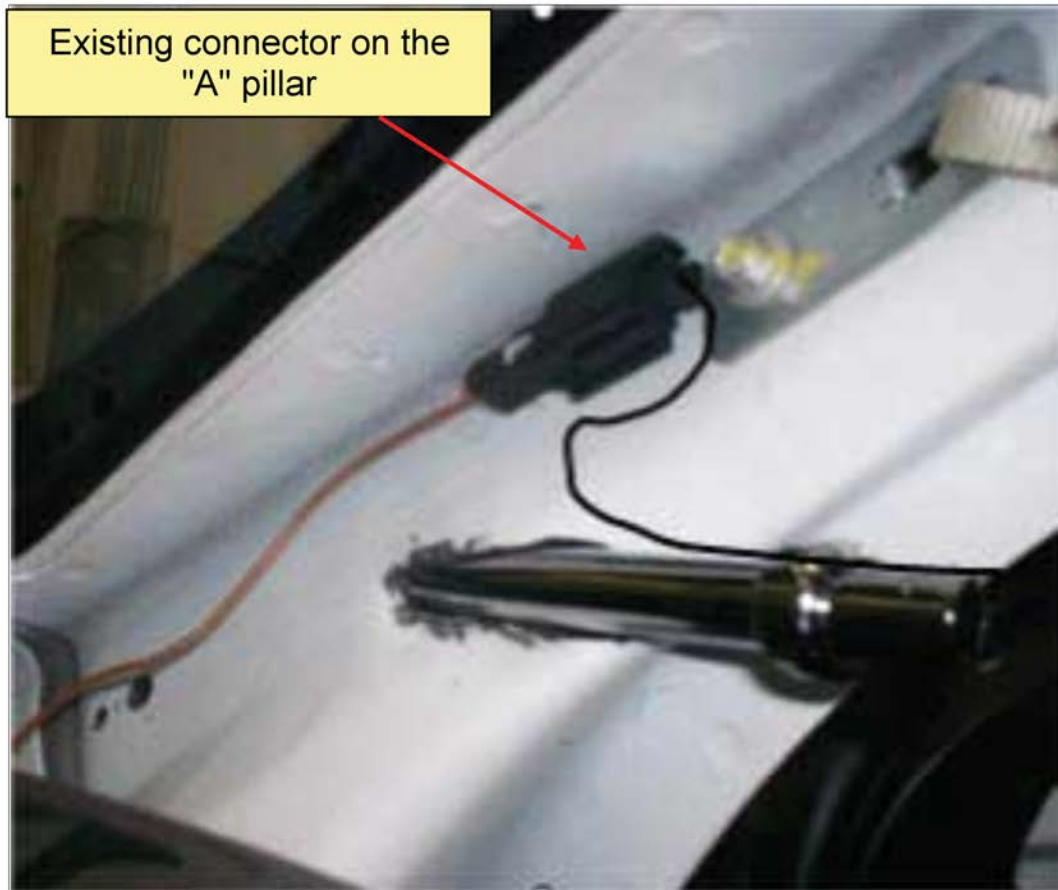
N0140604

## Section 3: Installation Considerations

25. Install the handle onto the shaft. Rotate the handle on the shaft side to side while pushing forward until the flat on the shaft aligns to the flat on the inside of the handle.

**NOTE:**

When the flats are aligned, the handle will move fully forward and stop.



N0140611

26. With the handle fully installed on the shaft, reinstall the wedge into the handle hole and move the handle left to right as needed to fully seat the wedge. Once the wedge is seated, reinstall the previously removed screw by hand until secure. Tighten the screw to  $7 \pm 1\text{Nm}$

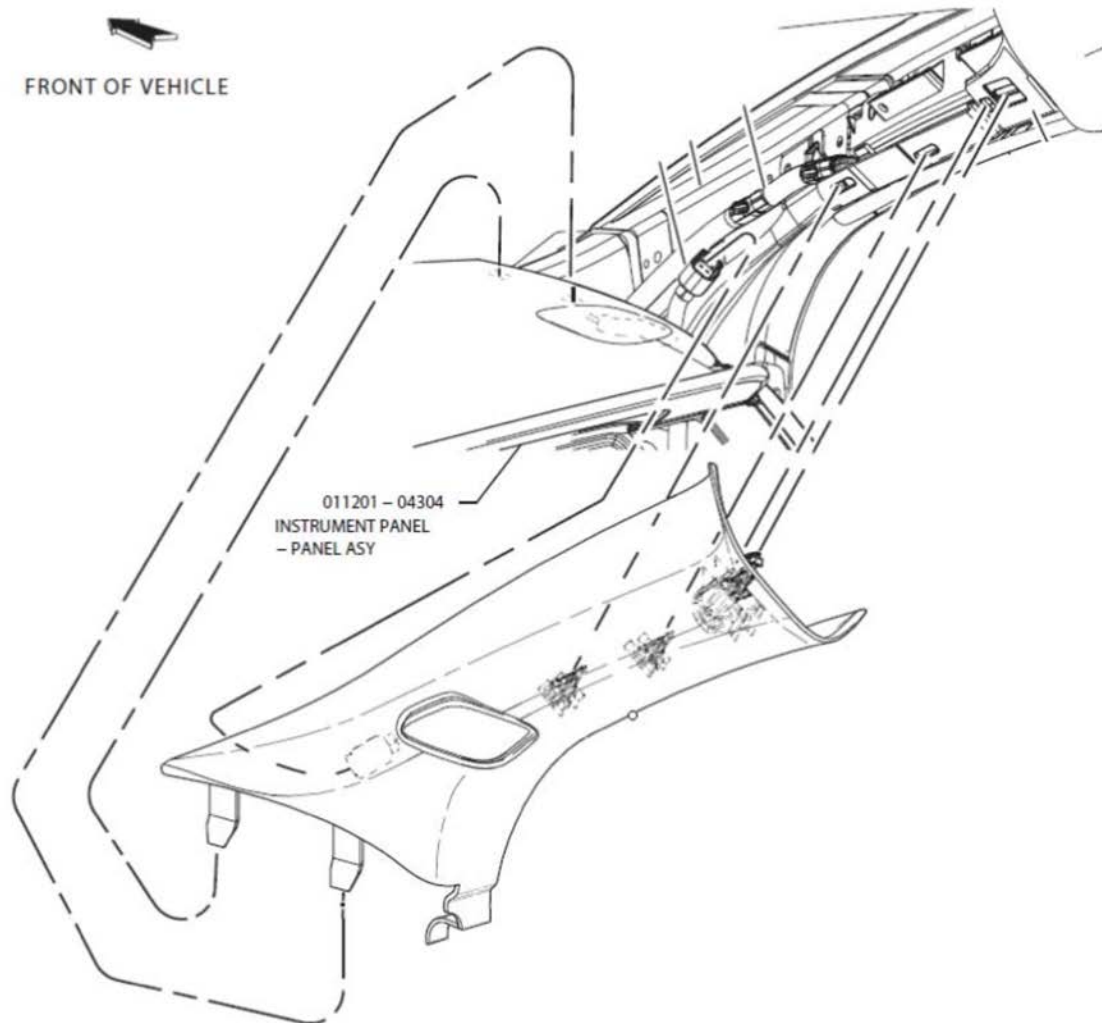
## Section 3: Installation Considerations



N0140613

27. Grasp the A-pillar trim insert the bottom end in first. Align the tabs on the pillar trim to the corresponding slots in the top of the instrument panel, align the 3 retention clips on the pillar trim to the corresponding slots in the sheet metal and snap the cover into position.

## Section 3: Installation Considerations



N0140605

The 6F50 automatic transmission is used on all retail Taurus and Explorer retail applications. All retail Taurus and Explorer vehicles are equipped with a heavy-duty transmission cooler. The police interceptor transmission is unique in the following areas:

28. Push the rubber grommet over the collar on the spot lamp shaft and into the previously routed hole in the A-pillar. Continue to fit the grommet around the periphery of the hole until the grommet is fully seated in the A-pillar trim without any gaps.

## Section 3: Installation Considerations



N0140606

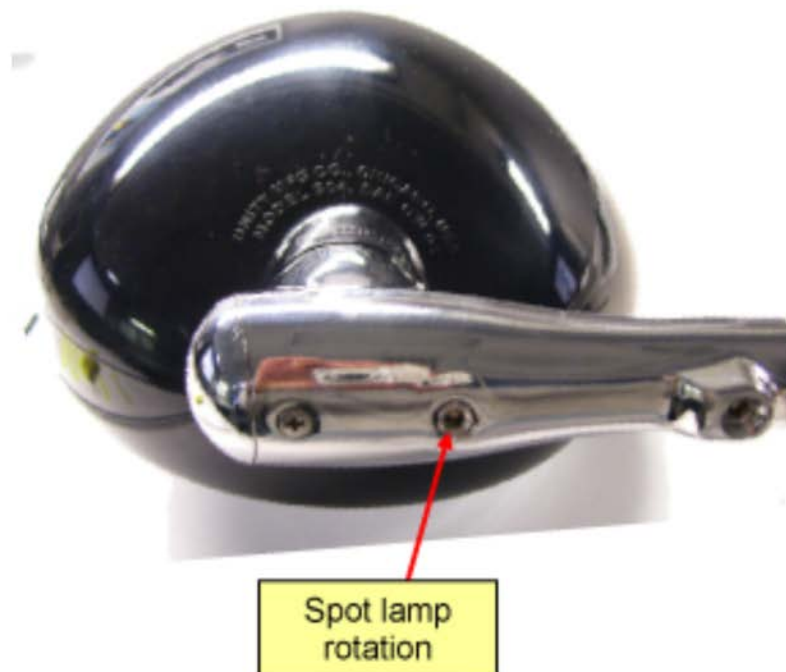
29. Ensure door weather seal is not trapped under the A-pillar. If it is, pull the weatherstrip out and over the top of the A pillar trim.
30. Open hood and reconnect negative battery cable. Tighten cable fastener to  $9 \pm 1.4$  Nm paint mark, close hood.

## Section 3: Installation Considerations



N0140612

31. With the battery reconnected, turn both the RH / LH spot lamps on to test function.
32. Check spot lamp rotation by twisting the spot lamp handle. It is difficult to rotate the spot lamp from side to side smoothly, use a hex wrench to loosen the set screw on the bottom of the lamp only loosen a 1/4 turn at a time and recheck function.

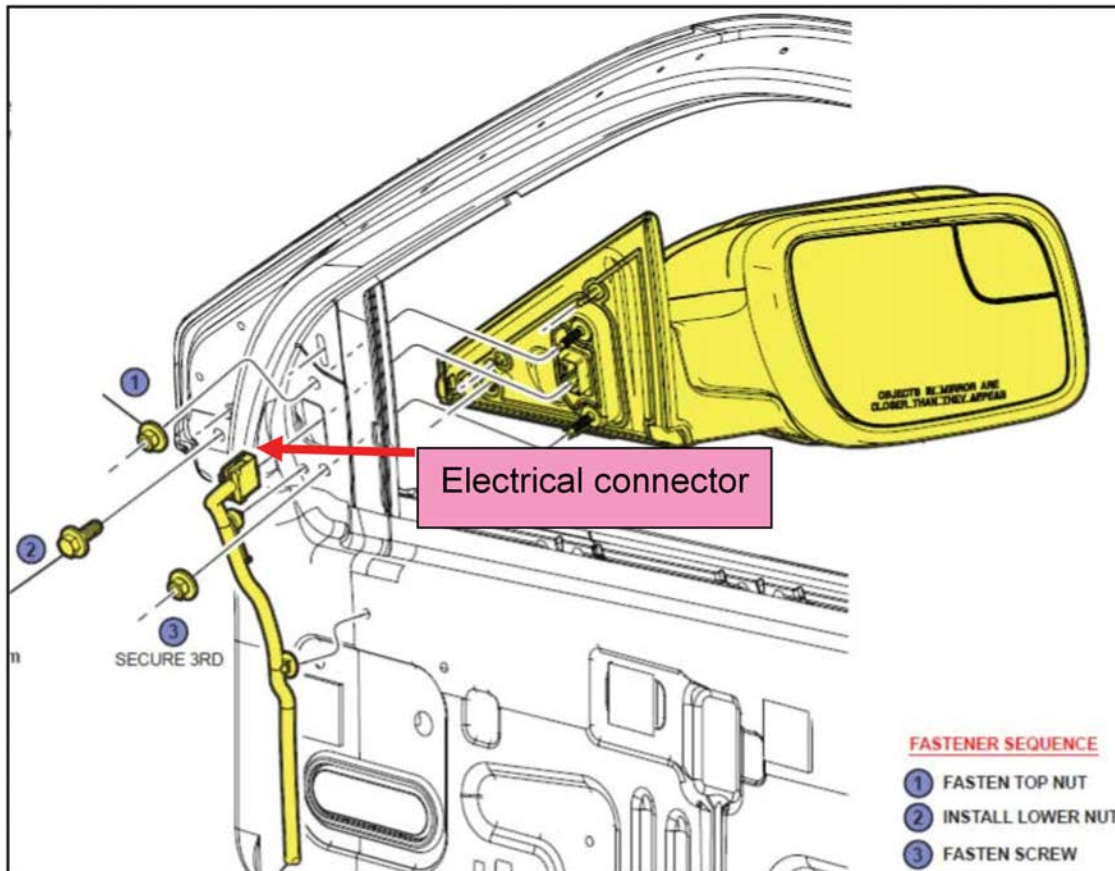


N0140607



## Section 3: Installation Considerations

33. Obtain the mirror from the parts cart and align the studs on the mirror into the corresponding holes in the door. Slide the mirror forward and then inboard to temporarily secure.
34. Using a ratchet and a 10 mm socket, hand start the 2 nuts and 1 bolt retaining the mirror to the door. Tighten the 3 fasteners to  $10.5 \pm 1.6$  Nm in the sequence shown:
35. Reconnect 1 electrical connector to the mirror. Use the push-click-pull technique to make sure the connector is secure.



N0140608

36. Retrieve the previously removed outside mirror cover. Align the clips on the cover to the matching slots in the door and push the cover in to secure. Make sure all clips are secure.

### Vehicle Loading With and Without a Trailer

This section will guide you in the proper loading of your vehicle and/or trailer. To keep your loaded vehicle weight within its design rating capability, with or without a trailer. Properly loading your vehicle will provide maximum return of vehicle design performance. Before loading your vehicle, familiarize yourself with the following terms for determining your vehicle's weight ratings, with or without a trailer from the Vehicle's Tire Label or Safety Compliance Certification Label.

#### Base Curb Weight

The weight of the vehicle including a full fuel tank of fuel and all standard equipment. It does not include passengers, cargo, or optional equipment.

Base Curb Weight is the weight of the vehicle including a full fuel tank of fuel and all standard equipment. It does not include passengers, cargo, or optional equipment.

#### Vehicle Curb Weight

The weight of your new vehicle when you picked it up from your authorized dealer plus any aftermarket equipment.

## Section 3: Installation Considerations



N0140566

### Payload


The combined weight of cargo and passengers that the vehicle is carrying. The maximum payload for your vehicle can be found on the Tire Label on the B-Pillar of the edge of the driver's door (vehicles exported outside of the US and Canada may not have a Tire Label). Look for **The Combined Weight Of Occupants And Cargo Should Never Exceed xxx kg Or xxx lb.** for maximum payload. The payload listed on the Tire Label is the maximum payload for the vehicle as built by the assembly plant. If any aftermarket or authorized dealer installed equipment must be subtracted from the payload listed on the Tire Label in order to determine the new payload.

### **WARNING:**

The appropriate loading capacity of your vehicle can be limited either by volume capacity (how much space is available) or by payload capacity (how much weight the vehicle should carry). Once you have reached the maximum payload of your vehicle, do not add more cargo, even if there is space available. Overloading or improperly loading your vehicle can contribute to loss of vehicle control and vehicle rollover.

Example Only

## Section 3: Installation Considerations





### TIRE AND LOADING INFORMATION

SEATING CAPACITY	TOTAL 5	FRONT 2	REAR 3
------------------	---------	---------	--------

The combined weight of occupants and cargo should never exceed : **XXX kg or XXX lbs.**

(XXX) XX-XXXX-XXXX	TIRE	SIZE	COLD TIRE PRESSURE	<b>SEE OWNERS MANUAL FOR ADDITIONAL INFORMATION</b>
	FRONT	LT225/75R 16.5E	200 KPA, 29 PSI	
	REAR	LT225/75R 16.5E	200 KPA, 29 PSI	
	SPARE	T145/80D16 P225/60R17	420 KPA, 60 PSI 200 KPA, 29 PSI	






### TIRE AND LOADING INFORMATION RENSEIGNEMENTS SUR LES PNEUS ET LE CHARGEMENT

SEATING CAPACITY NOMBRE DE PLACES	TOTAL 5	FRONT AVANT 2	REAR ARRIÈRE 3
--------------------------------------	---------	------------------	-------------------

The combined weight of occupants and cargo should never exceed **492 kg or 1085 lbs.**  
 Le poids total des occupants et du chargement ne doit jamais dépasser **492 kg ou 1085 lb.**

(XXX) XX-XXXX-XXXX	TIRE PNEU	SIZE DIMENSIONS	COLD TIRE PRESSURE PRESSION DES PNEUS A FROID	<b>SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION</b>  <b>VOIR LE MANUEL DE L'USAGER POUR PLUS DE RENSEIGNEMENTS</b>
	FRONT AVANT	P235/70R16	240 KPA, 35 PSI	
	REAR ARRIÈRE	P235/70R16	240 KPA, 35 PSI	
	SPARE DE SECOURS	T145/90R17	415 KPA, 60 PSI	



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### Cargo Weight

Includes all weight added to the Base Curb Weight, including cargo and optional equipment. When towing, trailer tongue load weight is also part of cargo weight.

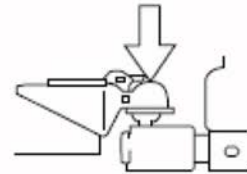
## Section 3: Installation Considerations

**CARGO**

**=**



**+**



N0140567

### Gross Axle Weight (GAW)

The total weight placed on each axle (front and rear) including vehicle curb weight and all payload.

### Gross Axle Weight Rating (GAWR)

The maximum allowable weight that can be carried by a single axle (front or rear). **These numbers are shown on the Safety Compliance Certification Label located on the B-Pillar or the edge of the driver's door. The total load on each axle must never exceed its GAWR.**

#### NOTE:

For trailer towing information, refer to Trailer Towing found in this chapter or the RV and Trailer Towing Guide provided by your authorized dealer.

### Gross Vehicle Weight (GVW)

the Vehicle Curb Weight + cargo + passengers.

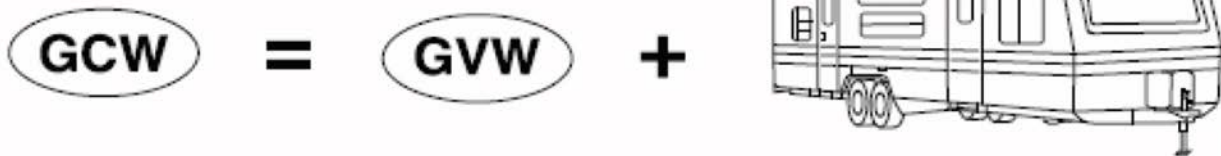
### Gross Vehicle Weight Rating (GVWR)

The maximum allowable weight of the fully loaded vehicle (including all options, equipment, passengers and cargo). **The GVWR is shown on the Safety Compliance Certification Label located on the B-Pillar or the edge of the driver's door. The GVW must never exceed the GVWR.**

#### Example Only



## Section 3: Installation Considerations



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### Gross Combined Weight Rating (GCWR)

The maximum allowable weight of the vehicle and the loaded trailer - including all cargo and passengers - that the vehicle can handle without risking damage. (Important: The towing vehicle's braking system is rated for operation at GVWR, not at GCWR. Separate functional brakes should be used for safe control of towed vehicles and for trailers where the GCW of the towing vehicle plus the trailer exceed the GVWR of the towing vehicle. The GCW must never exceed the GCWR.)

### Maximum Loaded Trailer Weight

The highest possible weight of a fully loaded trailer the vehicle can tow. It assumes a vehicle with only mandatory options, no cargo (internal or external a tongue load of 10 to 15% (conventional trailer), and driver only (150 lb. JGB kg). Consult your authorized dealer (or the RV and Trailer Towing Guide provided by your authorized dealer) for more detailed information.

#### **WARNING:**

**Do not exceed the GVWR or the GAWR specified on the Safety Compliance Certification Label.**

#### **WARNING:**

**Do not use replacement tires with lower load carrying capacities than the original tires because they may lower the vehicles GVWR limitations. Replacement tires with a higher limit than the original tires do not increase the GVWR and GAWR limitations.**

#### **WARNING:**

**Exceeding any vehicle weight rating limitation could result in serious damage to the vehicle and/or personal injury.**

### Steps For Determining The Correct Load Limit:

1. Locate the statement "The combined weight of occupants and cargo should never exceed XXX kg or XXX ls." on your vehicle's placard.
2. Determine the combined weight of the driver and passengers that will be riding in your vehicle.
3. Subtract the combined weight of the driver and passengers from XXX kg or XXX ls.
4. The resulting figure equals the available amount of cargo and luggage load capacity. For example, if the "XXX" equals 1,400 ls. and there will be five 150 lb. passengers in your vehicle, the amount of available cargo and luggage load capacity is 650 ls. (1400-750 (5 x 150) = 650 lbs.). In metric units (635 to 340 (5 x 68) = 295 kg.)
5. Determine the combined weight of luggage and cargo being loaded on the vehicle. That weight may not safely exceed the available cargo and luggage load capacity calculated in Step 4.
6. If your vehicle will be towing a trailer, load from your trailer will be transferred to your vehicle. Consult this manual to determine how this reduces the available cargo and luggage load capacity of your vehicle.

The following gives you a few examples on how to calculate the available amount of cargo and luggage load capacity:

## Section 3: Installation Considerations

- Another example for your vehicle with 1,400 lb. (635 kg) of cargo and luggage capacity. You decide to go golfing. Is there enough load capacity to carry you, 4 of your friends and all the golf bags? You and four friends average 220 lb. (99 kg) each and the golf bags weigh approximately 30 lb. (13.5 kg) each. The calculation would be:  $1,400 - (5 \times 220) - (5 \times 30) = 1,400 - 1,100 - 150 = 150$  lb. Yes, you have enough load capacity in your vehicle to transport four friends and your golf bags. In metric units, the calculation would be:  $635 \text{ kg} - (5 \times 99 \text{ kg}) - (5 \times 13.5 \text{ kg}) = 635 - 495 - 67.5 = 72.5$  kg
- A final example for your vehicle with 1,400 lb. (635 kg) of cargo and luggage capacity. You and one of your friends decide to pick up cement from the local home improvement store to finish that patio you have been planning for the past 2 years. Measuring the inside of the vehicle with the rear seat folded down, you have room for 12-100 lb. (45 kg) bags of cement. Do you have enough load capacity to transport the cement to your home? If you and your friend each weigh 220 lb. (99 kg), the calculation would be:  $1,400 - (2 \times 220) - (12 \times 100) = 1,400 - 440 - 1,200 = -240$  lb. No, you do not have enough cargo capacity for that much weight. In metric units, the calculation would be:  $635 \text{ kg} - (2 \times 99 \text{ kg}) - (12 \times 45 \text{ kg}) = 635 - 198 - 540 = -103$  kg. You will need to reduce the load weight by at least 240 lb. (104 kg). If you remove 3-100 lb. (45 kg) cement bags, then the load calculation would be:  $1,400 - (2 \times 220) - (9 \times 100) = 1,400 - 440 - 900 = 60$  lb. Now you have the load capacity to transport the cement and your friend home. In metric units, the calculation would be:  $635 \text{ kg} - (2 \times 99 \text{ kg}) - (9 \times 45 \text{ kg}) = 635 - 198 - 405 = 32$  kg.

The above calculations also assume that the loads are positioned in your vehicle in a manner that does not overload the Front or the Rear Gross Axle Weight Rating specified for your vehicle on the Safety Compliance Certification Label. The label shall be affixed to either the door hinge pillar door latch post, or the door edge that meets the door-latch post, next to the driver's seating position.



### **WARNING:**

**Loaded vehicles may handle differently than unloaded vehicles. Extra precautions, such as slower speeds and increased stopping distance, should be taken when driving a heavily loaded vehicle.**



### **WARNING:**

**Do not exceed the GVWR or the GAWR specified on the certification label.**



### **WARNING:**

**Towing trailers beyond the maximum recommended gross trailer weight exceeds the limit of the vehicle and could result in engine damage, transmission damage, structural damage, loss of vehicle control, vehicle rollover and personal injury.**

Your vehicle's load capacity is designated by weight, not by volume, so you cannot necessarily use all available space when loading a vehicle. Towing a trailer places an additional load on your vehicle's engine, transmission, axle, brakes, tires and suspension. Inspect these components periodically during, and after, any towing operation.

## **Recommended Towing Weights**

### **NOTE:**

Do not tow a trailer during patrol or pursuit situations.

**Sedan:** Your vehicle is capable of towing a trailer up to 1,000 lb (454 kg) gross trailer weight with a maximum tongue load of 100 lb (45 kg).

**Utility:** Your vehicle is capable of towing a trailer up to 2500 lb (1134 kg) gross trailer weight with a maximum tongue load of 250 lb (113 kg).

## **Essential Towing Checks**

Follow these guidelines to ensure safe towing:

- Do not tow a trailer with your vehicle until it has been driven at least 1,000 miles (1,600 kilometers).
- Consult your local motor vehicle laws for towing a trailer.
- Refer to the instructions included with towing accessories for the proper installation and adjustment specifications.
- Service your vehicle more frequently if you tow a trailer. Refer to your scheduled maintenance information.

For load specification terms found on the label and instructions on calculating your vehicle's load, refer to the Load Carrying chapter. Remember to figure in the tongue load of your loaded vehicle when Figuring the total weight.

## **Hitches**

## Section 3: Installation Considerations

Do not use a hitch that either clamps onto the bumper or attaches to the axle. Distribute the trailer load so 10 to 15% of the total trailer weight is on the tongue.

### Safety chains

Always connect the safety chains to the vehicle's hook retainers. To connect the safety chains, cross them under the trailer tongue and allow slack for turning corners. If you use a rental trailer, follow the rental agency's instructions.

#### NOTE:

Never attach safety chains to the bumper

### Trailer brakes

the Vehicle Curb Weight + cargo + passengers.



#### WARNING:

**Do not connect a trailer's hydraulic brake system directly to your vehicle's brake system. Your vehicle may not have enough braking power and your chances of having a collision greatly increase.**

Electric brakes and manual, automatic or surge-type trailer brakes are safe if installed properly and adjusted to the manufacturer's specifications. The trailer brakes must meet local and Federal regulations. The braking system of the tow vehicle is rated for operation at the GVWR not GCWR.

### Trailer lamps

Trailer lamps are required on most towed vehicles. Ensure all running lights, brake lights, turn signals and hazard lights are working. Contact your authorized dealer or trailer rental agency for proper instructions and equipment for hooking up the lamps.

### Before towing a trailer

Practice turning, stopping and backing-up to get the feel of the vehicle-trailer combination before starting on a trip. When turning, make wider turns so the trailer wheels will clear curbs and other obstacles.

### When towing a trailer

- Do not drive faster than 70 mph (113 km/h) during the first 500 miles (800 kilometers) and do not make full-throttle starts.
- Check your hitch, electrical connections and trailer wheel lug nuts thoroughly after you have traveled 50 miles (80 kilometers).
- Place the gearshift lever in P (Park) to aid in engine/transmission cooling and NC efficiency during hot weather while stopped in traffic.
- Turn off the speed control. The speed control may turn off automatically when you are towing on long, steep grades.
- Shift to a lower gear when driving down a long or steep hill. Do not apply the brakes continuously, as they may overheat and become less effective.
- If your transmission is equipped with the grade assist feature, use this feature when towing. This provides engine braking and helps eliminate excessive transmission shifting for optimum fuel economy and transmission cooling.
- Allow more distance for stopping with a trailer attached; anticipate stops and brake gradually.
- Avoid parking on a grade. However, if you must park on a grade, place wheel chocks under the trailer's wheels.

Always connect the safety chains to the vehicle's hook retainers. To connect the safety chains, cross them under the trailer tongue and allow slack for turning corners. If you use a rental trailer, follow the rental agency's instructions.

### Wrecker Towing

If you need to have your vehicle towed, contact a professional towing service or, if you are a member of a roadside assistance program, your roadside assistance service provider. It is recommended that your vehicle be towed with a wheel lift and dollies or flatbed equipment. Do not tow with a slingbelt. Ford Motor Company has not approved a slingbelt towing procedure. Ford Motor Company produces a turning manual for all authorized tow truck operators. Have your tow truck operator refer to this manual for proper hook-up and towing procedures for your vehicle. Front-wheel drive (FWD) vehicles can be towed from the front if proper wheel lift equipment is used to raise the front wheels off the ground. The rear wheels can be left on the ground when towed in this fashion. FWD vehicles can also be towed from the rear using wheel lift equipment; however, the front wheels need to be placed on a dolly to prevent damage to the transmission. All-wheel drive (AWD)/Four-wheel drive (4WD) vehicles must be towed with a wheel lift and dollies or flatbed equipment, with all the wheels off the ground, to prevent damage to the transmission, AWD/4WD system or vehicle. If the vehicle is towed by other means or incorrectly, vehicle damage may occur.

### Towing The Vehicle On Four Wheels

#### Emergency towing



## Section 3: Installation Considerations

In the event your vehicle becomes disabled (without access to wheel dollies, car-hauling trailer, or flatbed transport vehicle), it can be flat-towed (all wheels on the ground, regardless of the powertrain transmission configuration) under the following conditions:

- The vehicle is facing forward so that it is towed in a forward direction.
- The transmission is placed in N (Neutral). Refer to Automatic transmission in the Transmission chapter if you cannot move the transmission into N (Neutral).
- Maximum speed is 35 mph (56 kmp/h).
- Maximum distance is 50 miles (80 kilometers).

### Recreational towing

#### NOTE:

Put your climate control system in recirculated air mode to prevent exhaust fumes from entering the vehicle. Refer to the Climate Control chapter.

Follow these guidelines for your specific powertrain combination to tow your vehicle for personal travel (such as behind a motor home or a truck). These guidelines are designed to prevent damage to your vehicle after it is hooked-up to the RV or tow dolly. Front-wheel drive (FWD) vehicles can be towed with all four wheels on the ground or with the front wheels off the ground by using a tow dolly. If you are using a tow dolly follow the instructions specified by the equipment provider. If you are towing with all four wheels on the ground, refer to the towing instructions found at the end of this section. All-wheel drive (AWD)/Four-wheel drive (4WD) vehicles can be towed with all four wheels on the ground or with all four wheels off the ground using a vehicle transport trailer. Do not tow your AWD/4WD vehicle with the front wheels off the ground (by using a tow dolly) and the rear wheels on the ground; this will cause damage to your AWD/4WD system. If you are using a vehicle transport trailer, follow the instruction specified by the equipment provider. If you are towing with all four wheels on the ground, refer to the towing instructions found at the end of this section.

If you tow your vehicle with all four wheels on the ground:

- Have your transmission fluid level checked by an authorized dealer. For the correct transmission fluid level when flat towing (all four wheels on the ground), refer to Automatic transmission fluid check in the Maintenance chapter.
- Tow only in the forward direction.
- Release the parking brake.
- Place the transmission in N (Neutral).
- Place the ignition in the accessory position. Refer to ignition switch in the Starting and Stopping the Engine chapter.
- Do not exceed 65 mph (105 km/h).
- Start the engine and allow it to run for five minutes at the beginning of each day and every six hours thereafter. With the engine running and your foot on the brake, shift into D (Drive) and then into R (Reverse) before shifting back into N (Neutral).

### Before towing a trailer

Practice turning, stopping and backing-up to get the feel of the vehicle-trailer combination before starting on a trip. When turning, make wider turns so the trailer wheels will clear curbs and other obstacles.

## SECTION 4: Trunk Mounting Considerations

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## Section 4: Trunk Mounting Considerations

### 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 location of the fuel tank, fuel lines, brake lines, evaporative emissions canister, electronic modules, and wiring harnesses.

**NOTE:**

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

**NOTE:**

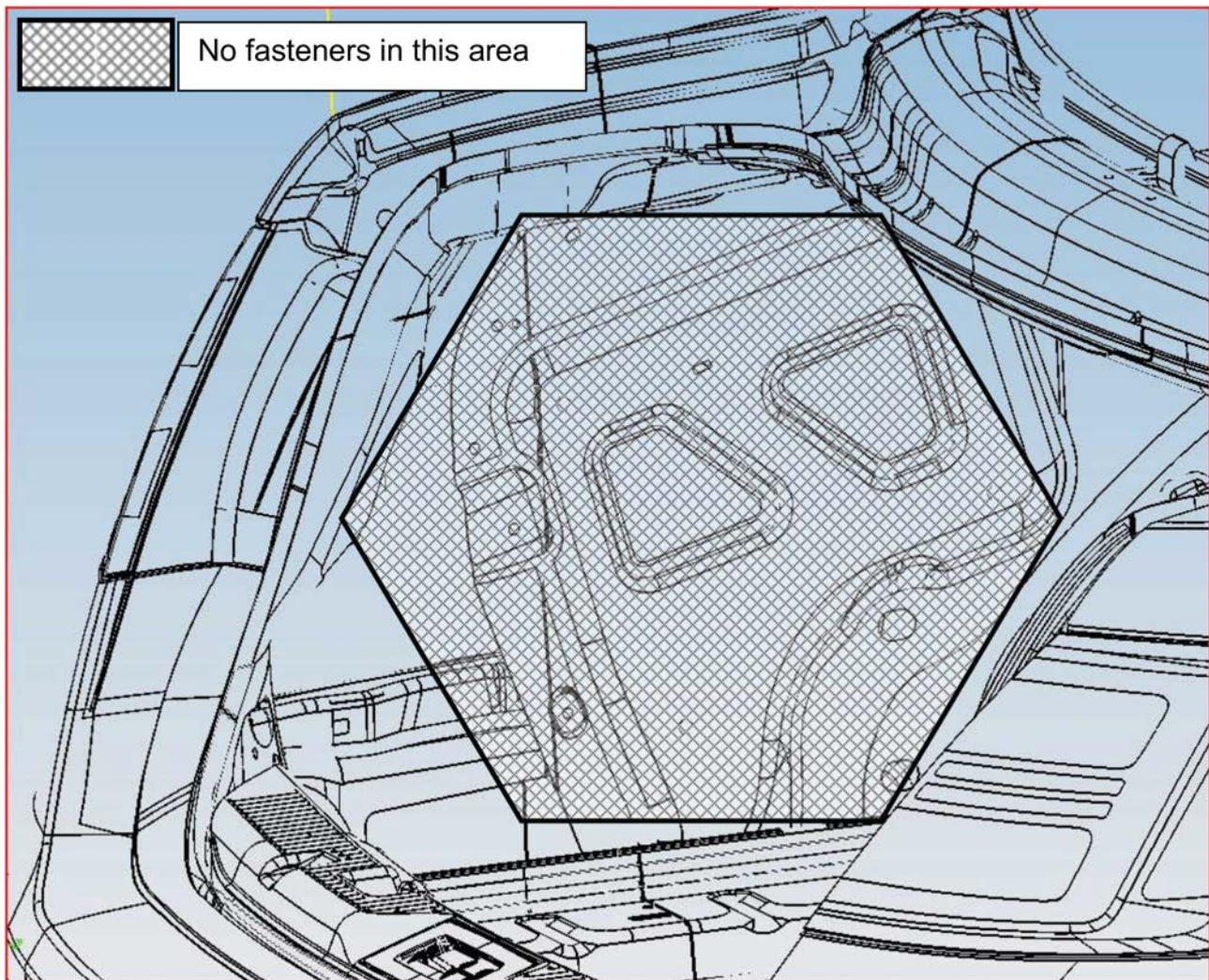
Maintain minimum part-to-part clearances of 6 mm unless otherwise noted when mounting any non-factory installed equipment.

**NOTE:**

Utilize self-locking fasteners when mounting equipment.

**Trunk Sides Sedan Left Side Shown Applies To Right Side Also.**

## Section 4: Trunk Mounting Considerations



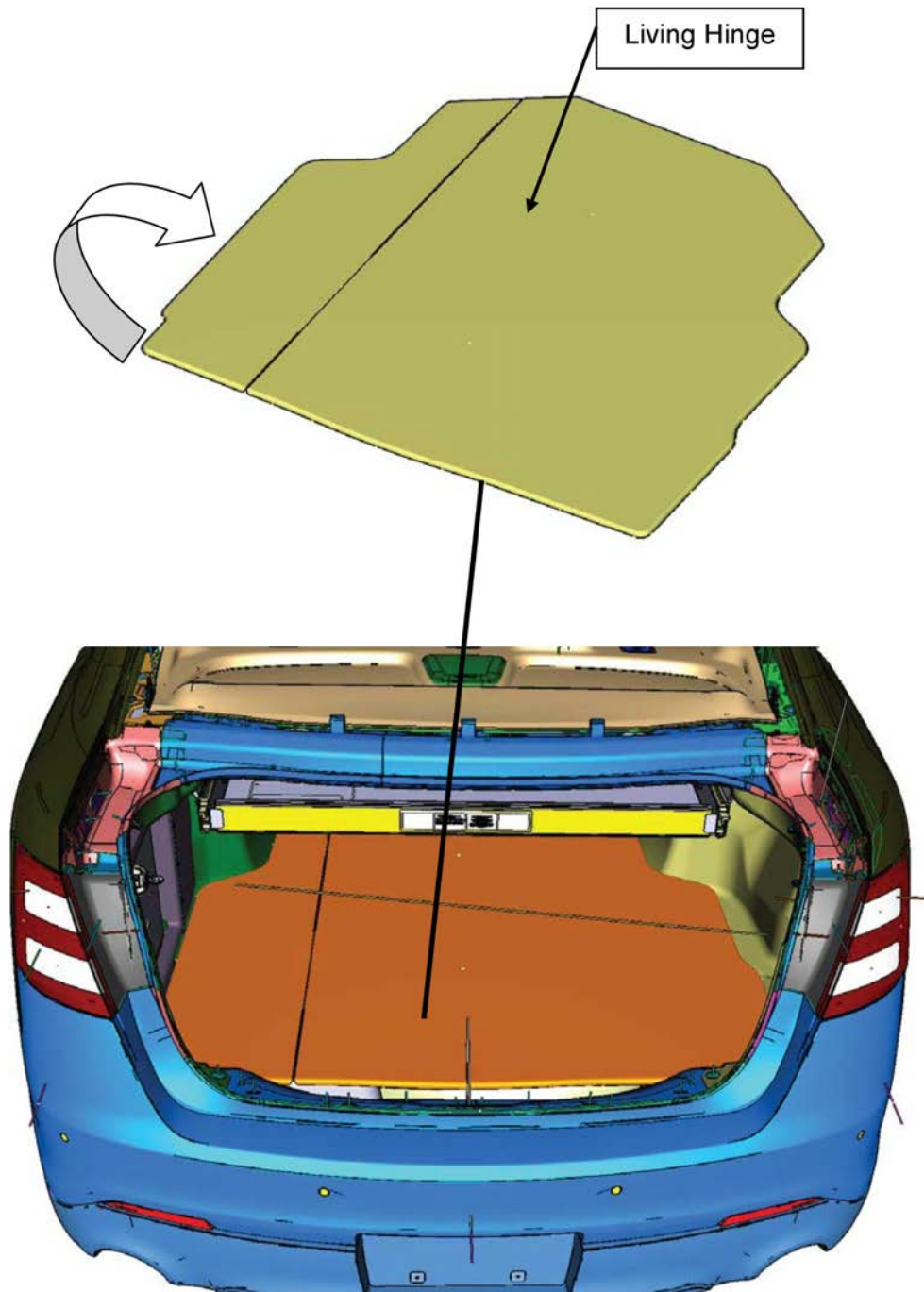
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### Trunk Load Floor

The trunk load floor is capable of supporting up to 181 Kg (400 lbs). Weight should be evenly distributed over the surface of the load floor.

Combined weight of occupants and cargo should not exceed the payload capacity as stated on the tire label and must not exceed the Gross Axle Weight Rating (GAWR).

## Section 4: Trunk Mounting Considerations



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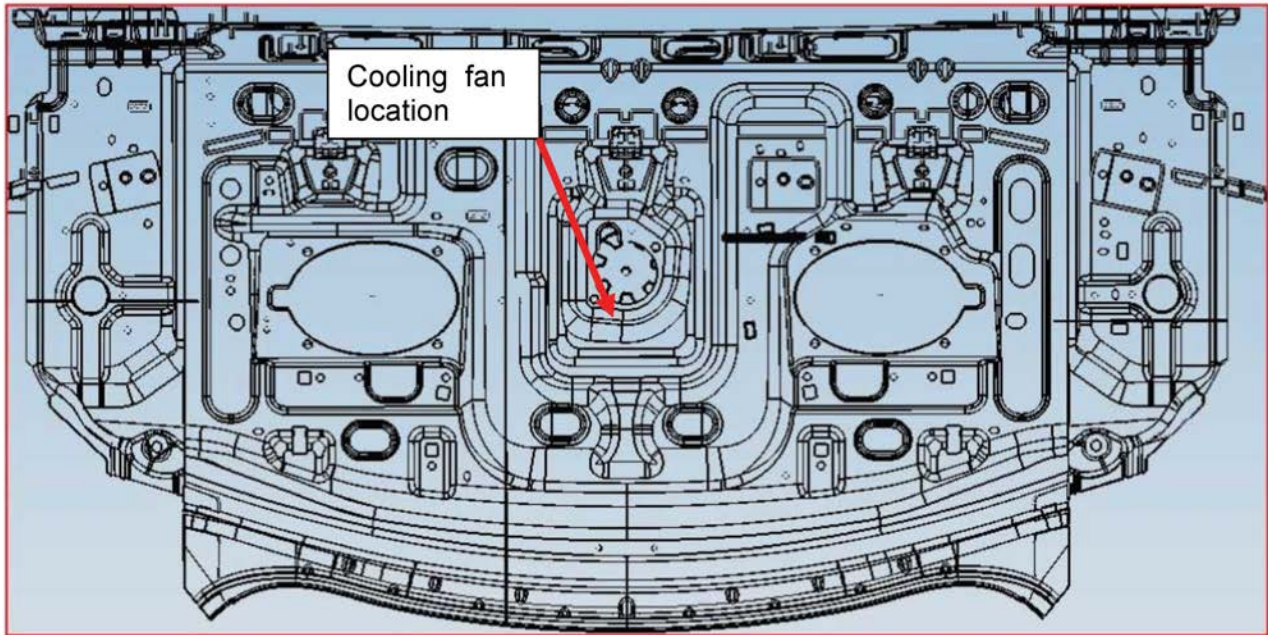
The trunk load floor is capable of supporting up to 400 lbs. Weight should be evenly distributed over the surface of the load floor.

Combined weight of occupants and cargo should not exceed the payload capacity as stated on the tire label and must not exceed the Gross Axle Weight Rating.

### Package Tray

## Section 4: Trunk Mounting Considerations

Do not mount equipment to package tray in rear window of sedan

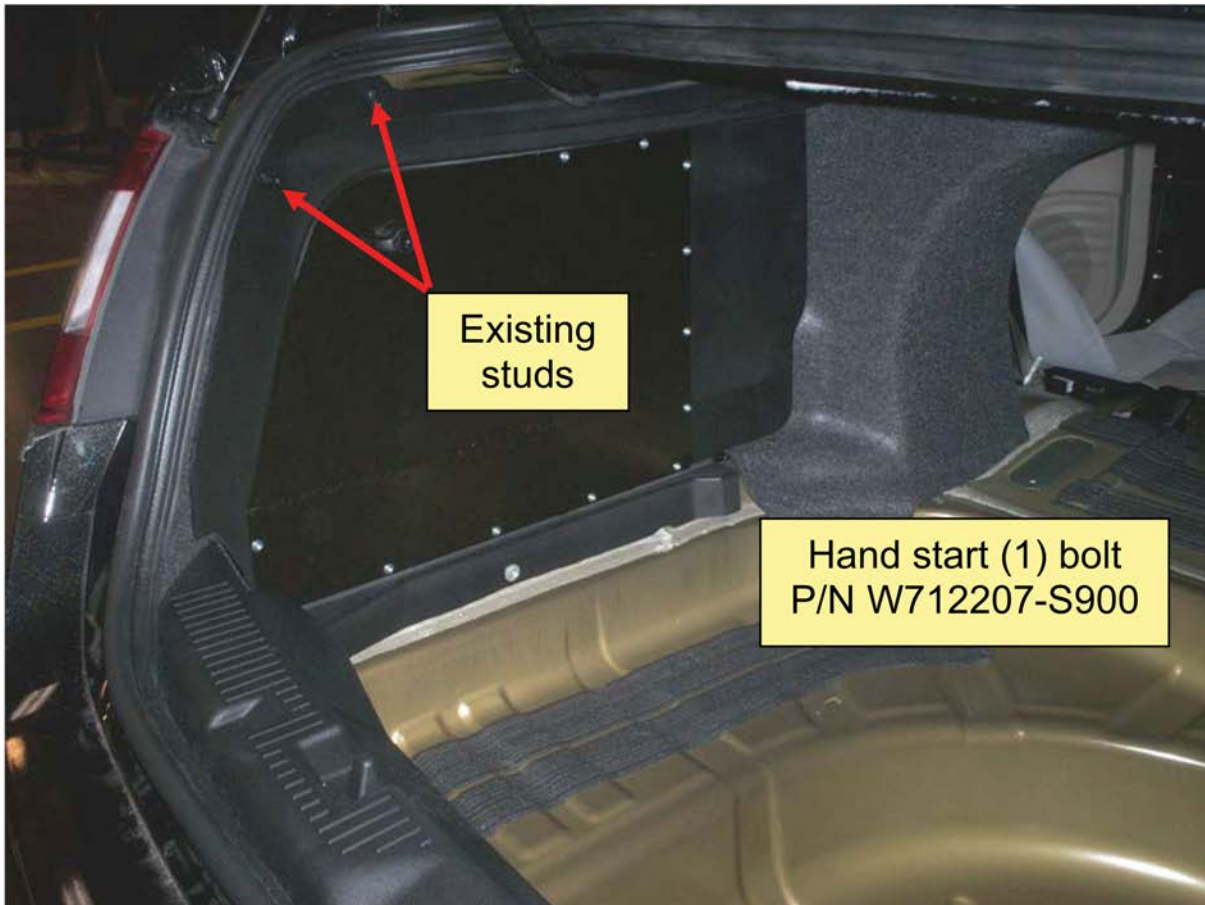


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### Sedan Trunk Lockable Storage

1. Obtain 1 storage box P/N DG135431149ABW and install into the driver side of the trunk as shown, make sure the 2 upper rear holes in the plastic storage box are aligned to the 2 existing studs in the trunk.
2. Obtain 1 bolt P/N W712207-S900, hand start 1 bolt in the lower outside of the storage box as shown.

## Section 4: Trunk Mounting Considerations



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3. Open metal door on storage box, install 2 bolts P/N W710330-S439 through the storage box to the existing weld nuts in the body as shown, tighten the 3 previously installed bolts to  $9 \text{ Nm} \pm 1.4 \text{ Nm}$ .

## Section 4: Trunk Mounting Considerations



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4. Obtain 2 push on caps P/N W714241-S300 and install to the existing studs protruding through the storage box, push the caps on over the studs until secure.



## Section 4: Trunk Mounting Considerations



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### 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.fleet.ford.com](http://www.fleet.ford.com) web site, which provides recommended fastener mounting types and locations.

Following the trunk packing recommendations (also on the [www.fleet.ford.com](http://www.fleet.ford.com) web site) 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.

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

- 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.fleet.ford.com](http://www.fleet.ford.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.fleet.ford.com](http://www.fleet.ford.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".

## Section 4: Trunk Mounting Considerations

LOAD	SAFE
Lateral	Soft
Orientation	And
And	Fixed
Direction	Equipment

### 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.

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), rotolape 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 forward package shelf and side 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.fleet.ford.com](http://www.fleet.ford.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



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## Section 4: Trunk Mounting Considerations



N0140559

### Headlamp Adjustment

**NOTE:**

Refer to the Owner Literature for the headlamp adjustment screw location.

**NOTE:**

Consult your state vehicle inspection manual for recommended tolerance ranges for visual aiming.

**NOTE:**

Horizontal aim is not adjustable.

1. Identify the headlamp type. Vehicles are equipped with visually optically aligned left (VOL) or visually optically aligned right (VOR) headlamps. Molded in small letters on the headlamp lens is one of the following:
  - VOL and SAE.

## Section 4: Trunk Mounting Considerations

- VOR and SAE.
2. Aim the headlamps using one of the following methods:
    - Photometric aimers (preferred method).
    - Visual or screen method aiming (acceptable method).

### Photometric Aiming

For the photometric aiming procedure, refer to the appropriate photometric headlamp aimer instruction manual.

### Screen Method Aiming

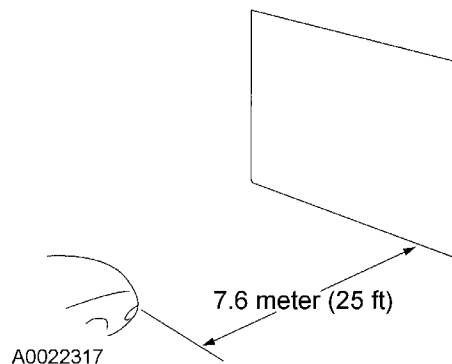
#### All headlamp types

1. Before starting headlamp adjustment:
  - vehicle must be on level ground.
  - tires must be correctly inflated.
  - vehicle must be normally loaded.
  - headlamps must be clean.
  - air suspension switch must be on (if equipped).
2. **NOTE:**  
The vertical wall or screen must be a minimum of 2.4 m (8 ft) wide.

#### **NOTE:**

This procedure should be done in a dark environment to effectively see the headlamp beam pattern.

Park the vehicle on a level surface with the low beam headlamp lens surface approximately 7.6 m (25 ft) from the vertical wall or screen directly in front of it.



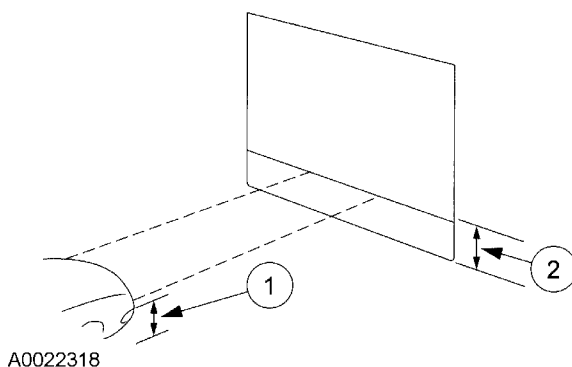
3. **NOTE:**  
The bulb center of the low beam bulb is sometimes marked on the lens (circle, crosshair or other mark) or is the center of the low beam reflector, bulb shield or the low beam projector inner lens.

Mark a horizontal reference line on the vertical wall or screen.

- Measure the distance between the center of the low beam headlamp bulb and ground. Record the measurement.
- Make a 2.4 m (8 ft) horizontal mark (using masking tape) on the vertical wall or screen at the height as follows:

## Section 4: Trunk Mounting Considerations

Headlamp bulb center height	Horizontal reference line height
below 95 cm (37.5 inches)	same as bulb center height
95 cm - 105 cm (37.5 inches - 41.5 inches)	bulb center height minus 1.3 cm (.5 inch)
above 105 cm (41.5 inches)	bulb center height minus 2.5 cm (1.0 inch)



4. Turn on the low beam headlamps to illuminate the wall or screen and open the hood.

5. **NOTE:**

The cut off of the beam pattern is the horizontal line of the beam pattern where there is MAXIMUM change between light & dark. On the wall or screen, locate the cut off of the beam pattern.

**VOR Type Headlamps**

**NOTE:**

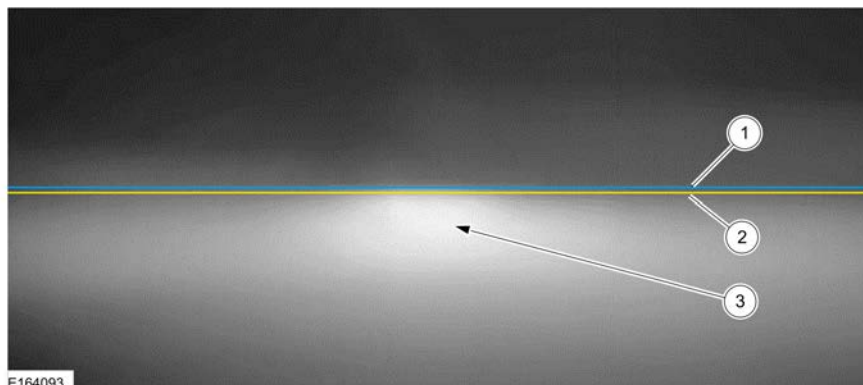
Procedure applies to both left and right headlamps with VOR molded on lens.

6. **NOTE:**

The appearance of the VOR beam pattern may vary between vehicles.

There is a distinct cutoff in the right portion of the beam pattern.

1. Horizontal reference line.
2. Cut off.
3. High intensity zone.



7. **NOTE:**

Align one headlamp while covering the other headlamp.

## Section 4: Trunk Mounting Considerations

Align the headlamps to the horizontal reference line.

Adjust the headlamp as necessary using the headlamp adjusting screw.  
Repeat this step for the remaining headlamp.

### VOL type headlamps

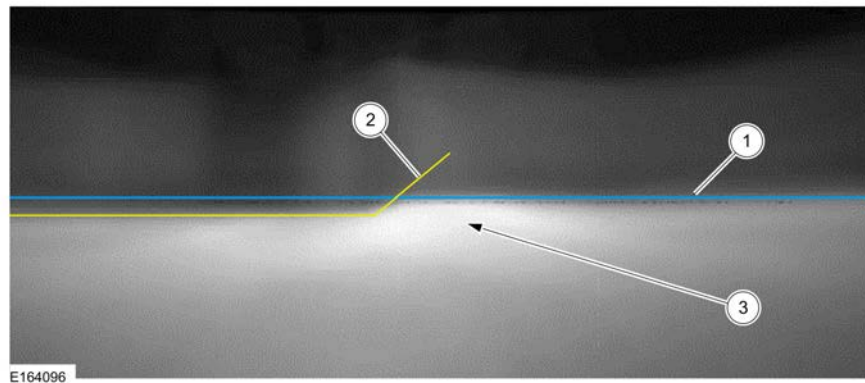
#### NOTE:

Procedure applies to both left and right headlamps with "VOL" molded on lens.

#### 8. NOTE:

The appearance of the VOL beam pattern may vary between vehicles.

1. Horizontal reference line.
2. Cut off.
3. High intensity zone.



#### 9. NOTE:

Align one headlamp while covering the other headlamp.

Align the headlamps to the horizontal reference line.

Adjust the headlamp as necessary using the headlamp adjusting screw.  
Repeat this step for the remaining headlamp.

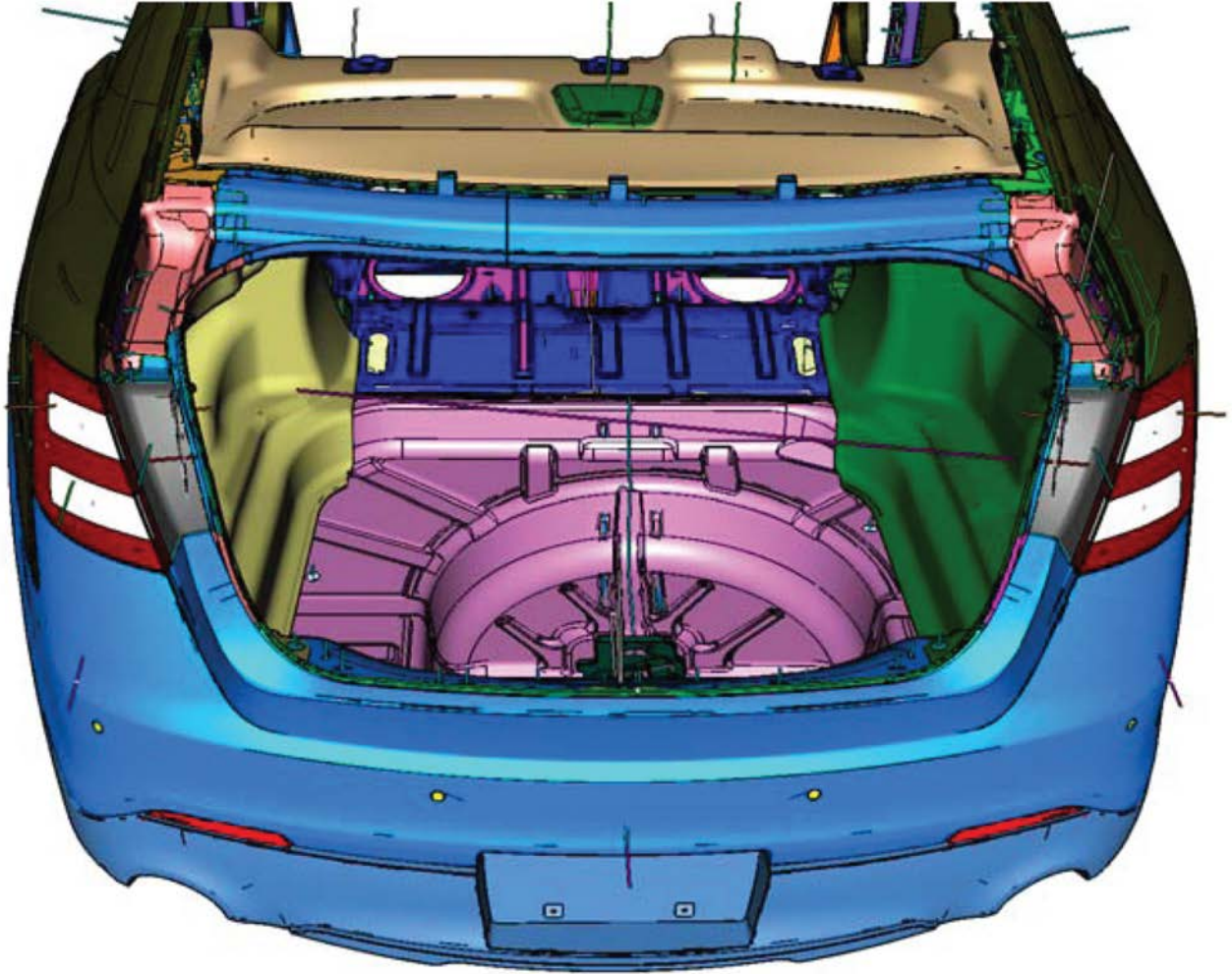
### Trunk Weight

The vehicle's high-speed handling and curb height will become increasingly affected as weight is added to the trunk or cargo area. The more weight that is placed in the trunk or cargo area, 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 or cargo area of the vehicle.

Vehicle weight can be impacted considerably based on final upfit content and as a result of changes in the weight distribution headlamp aim may require adjustment. Upon final upfit, it is recommended that headlamp aim is inspected and adjusted as necessary following the Ford headlamp aim procedure.

The Vehicle Certification (VC) label on the driver door lists a maximum load for the vehicle (occupants + luggage + police equipment).

## Section 4: Trunk Mounting Considerations

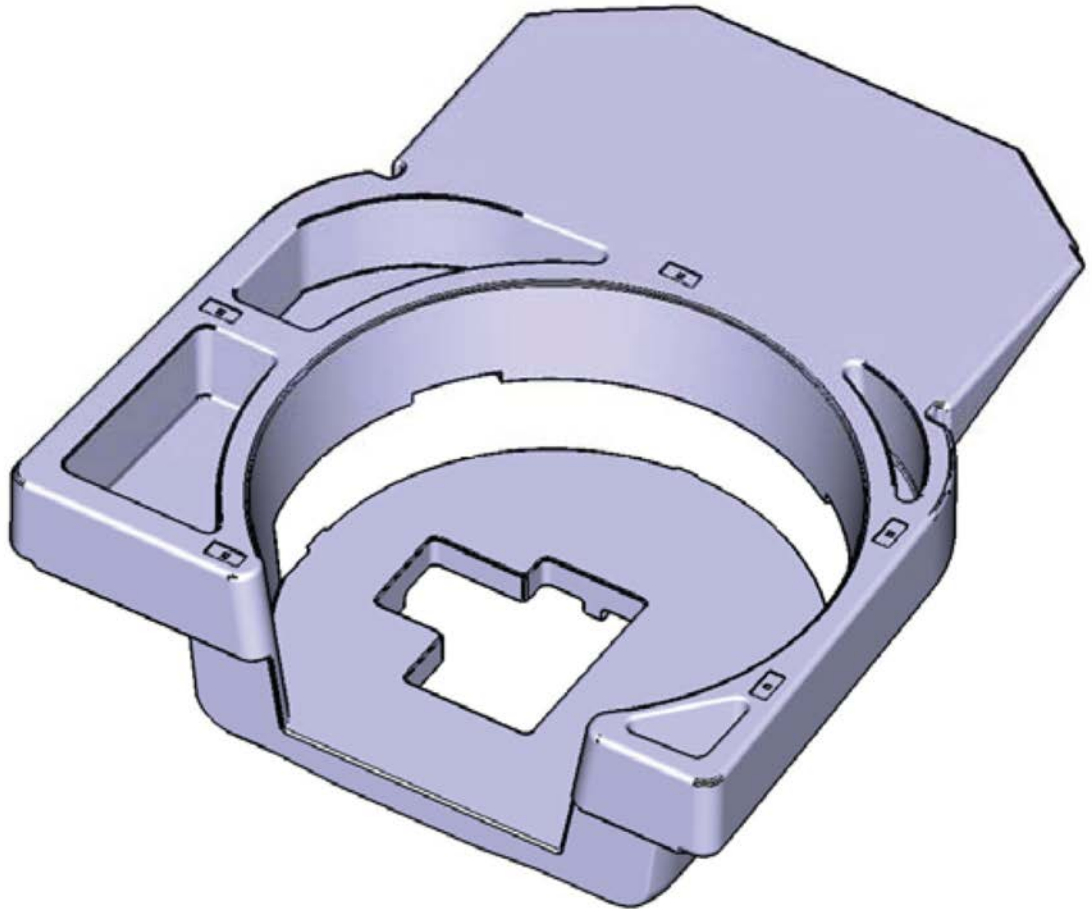


N0140560



## Section 4: Trunk Mounting Considerations

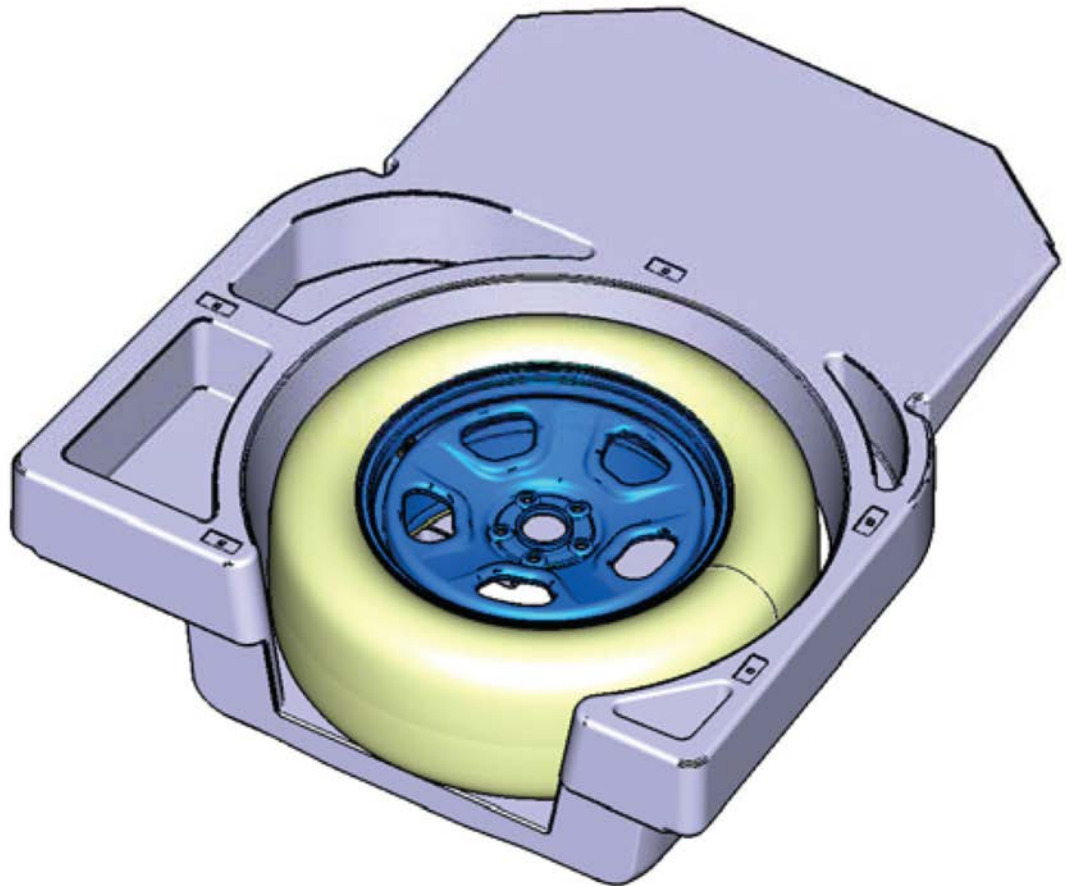
### Sedan Trunk Full-Size Spare Tire Retainer



N0140561

## Section 4: Trunk Mounting Considerations

### Sedan Full-Size Tire in Foam/Wheel Well

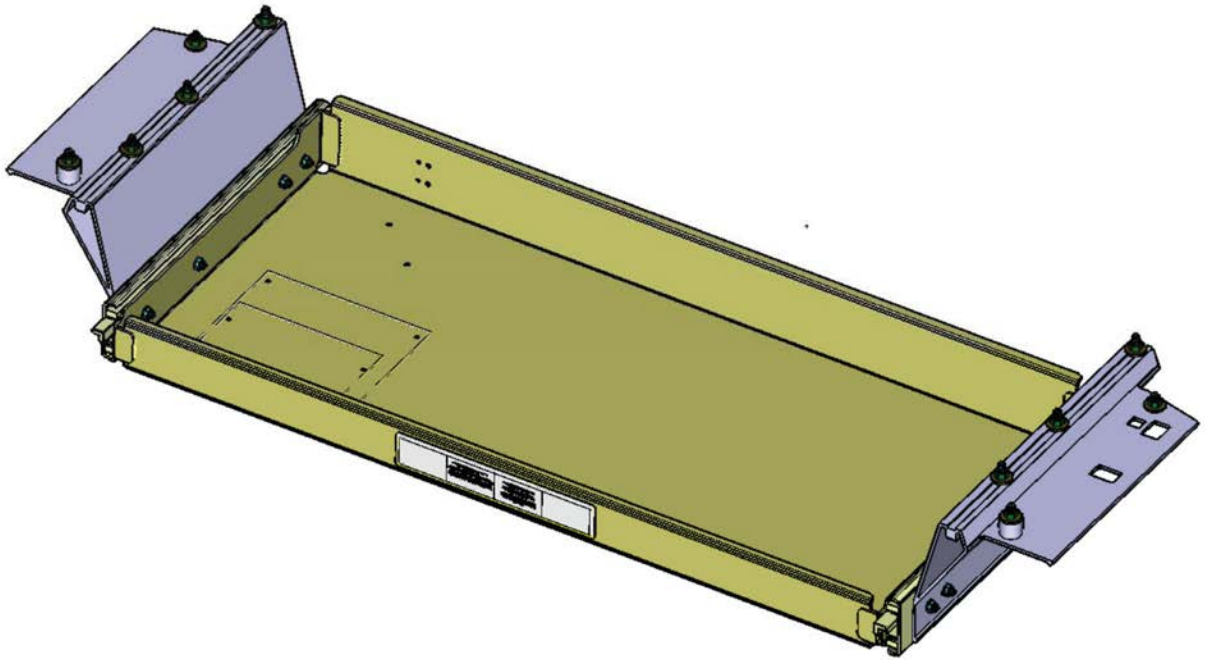


N0140562

### Sedan Trunk Electronics Tray

Weight should be distributed evenly over the horizontal mounting surface of the electronics trunk tray.

## Section 4: Trunk Mounting Considerations



N0140563

## SECTION 5: Reference Information

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## Section 5: Reference Information

### Section 5: Reference Information

#### Airbag Deployment Interference

#### Engineering Drawings

 **WARNING:**

Do not place objects or mount equipment in front of the airbag module cover or in front seat areas that may come in contact with a deploying airbag. 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 the specified zone. Failure to follow these instructions may result in personal injury.

 **WARNING:**

Do not mount equipment by the side of the front seat to the door trim that would block deployment of the side airbag. Failure to follow these instructions may result in personal injury.

 **WARNING:**

Do not mount equipment by inside the roof line along the upper edge of the side windows from front to rear of the vehicle that would block deployment of the Safety Canopy® Airbag. Failure to follow these instructions may result in personal injury.

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

Some approximate dimensions for airbags, 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 illustrations in this section represent available police equipment mounting zones. These zones are shown for police vehicles equipped with standard bucket seats.

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

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

Mount no equipment inside the upper edge of the roof line or along side windows trim panels from front to rear of vehicle that would block deployment of the Safety Canopy® airbag.

 **WARNING:**

Do not attempt to service, repair, or modify the airbag, its fuses or the seat cover on a seat containing an airbag. Contact your authorized dealer as soon as possible.

 **WARNING:**

If the side airbag has deployed, the airbag will not function again. The side airbag system (including the seat) must be inspected and serviced by an authorized dealer. If the airbag is not replaced, the unrepaired area will increase the risk of injury in a collision.

The side airbags will deploy on the side affected by the collision during significant lateral collisions. The airbags will inflate within a few thousandths of a second and deflate on contact with occupants, thus providing protection for the chest and shoulder areas. During minor lateral collisions, roll-overs, front collisions and rear collisions, the side airbags will not deploy.

**NOTE:**

The passenger sensing system will deactivate the passenger seat-mounted side airbag if it detects an empty, unbuckled passenger seat.

**The system consists of the following**

## Section 5: Reference Information

- A label or embossed side panel indicating that side airbags are fitted to your vehicle.
- Side airbags located inside the seatback of the driver and front passenger seatbacks.
- Canopy curtain airbag.
- Knee airbag module (Utility Only)
- The same warning light, electronic control and diagnostic unit as used for the front airbags.
- Crash sensors located within the vehicle.

### **WARNING:**

Do not place objects or mount equipment in an area that may come into contact with a deploying curtain airbag. Failure to follow these instructions may increase the risk of personal injury in the event of a collision.

### **WARNING:**

Do not lean your head on the door. The curtain airbag could injure you as it deploys from the headliner.

### **WARNING:**

Do not attempt to service, repair, or modify the curtain airbags, its fuses, the A, B, or C pillar trim, or the headliner on a vehicle containing curtain airbags. Contact your authorized dealer as soon as possible.

### **WARNING:**

All occupants of the vehicle including the driver should always wear their safety belts even when an airbag SRS and Curtain airbag is provided.

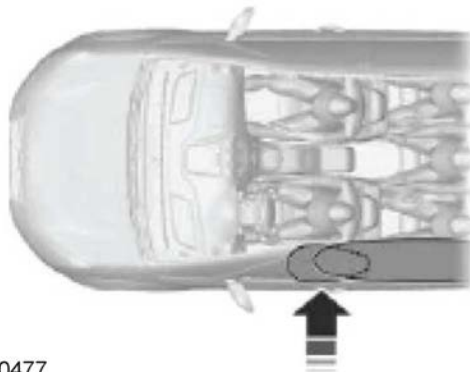
### **WARNING:**

To reduce risk of injury, do not obstruct or place objects of the deployment path of the canopy curtain airbag.

### **WARNING:**

If the canopy air curtain has deployed, the air curtain will not function again. The side curtain system (including the A, B and C pillar trim and headliner) must be inspected and serviced by an authorized dealer. If the curtain airbag is not replaced, the unrepaired area will increase the risk of injury in a collision. The curtain airbags will deploy during significant lateral collisions or when the likelihood of a rollover event is detected by the rollover sensor. The airbag will inflate within a few thousandths of a second and deflate within a brief period, thus providing protection for the head. During minor lateral collisions, front collisions or rear collisions the curtain airbags will not deploy.

The system consists of the following:



- Curtain airbags fitted above the trim panels over the front and rear side windows.
- A flexible headliner which opens above the side doors to allow air curtain deployment.
- The same warning light, electronic control and diagnostic unit as used for the front airbags.

## Section 5: Reference Information

- Crash, rollover and pressure sensors located within the vehicle.

### Police Equipment Mounting and Airbag Locations

Dual driver/passenger airbags, side airbags and knee airbags affect the way police equipment can be mounted in police vehicles. Any surfaces that could come into contact with an airbag, once it has deployed, must not damage the airbag or alter its deployment path.

Once the airbag has fully deployed, any peripheral equipment surfaces that could come into contact with the airbag (such as when the airbag deflates with the loading of an occupant) must not damage the airbag or alter its deployment path. Sharp edges, corners or protrusions could damage the nylon airbag material and reduce the effectiveness of the airbag.

 **WARNING:**

Do not place objects or mount equipment in front of the airbag module cover or in front of the seat areas that may come in contact with a deploying airbag. Failure to follow this instruction could result in personal injury. For equipment placed within the air bag deployment zone the path of the deploying air bag must be considered so as not to affect the air bag deployment. Also, occupant positions in a collision or event causing air bag deployment must be considered. Failure to follow this instruction could result in personal injury.

 **WARNING:**

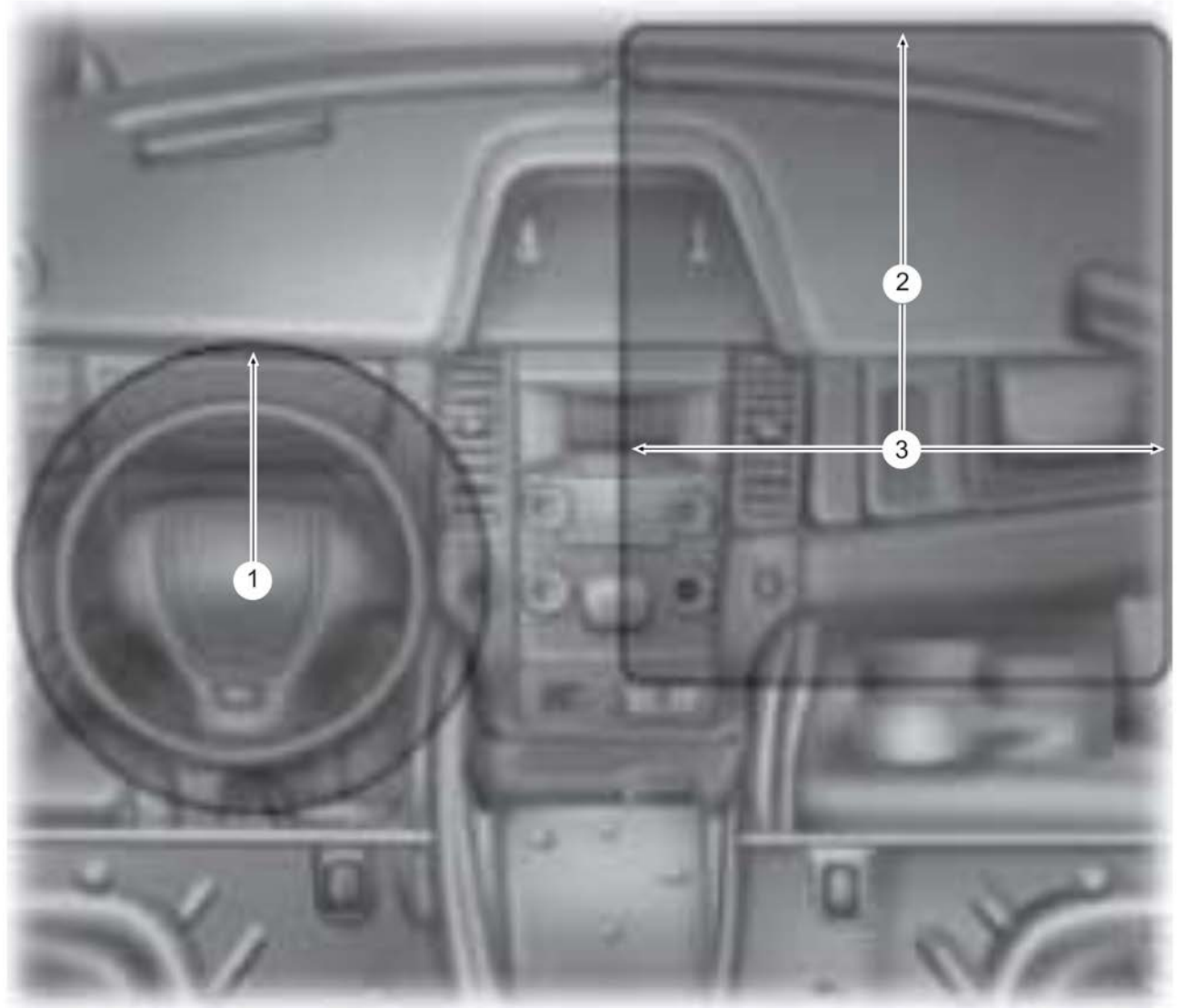
Dash, tunnel or console mounted equipment should be placed outside of the specified zone. Failure to follow this instruction could result in personal injury.

 **WARNING:**

Do not mount equipment by the side of front seat to the door trim to block deployment of the side airbag. Failure to follow this instruction could result in personal injury. Some approximate dimensions for airbags, at full inflation, are provided in the illustrations in this section. These dimension are somewhat flexible and represent free form deployments without the loading of occupants. The shaded areas represent airbag deployment zones and should be avoided. Consideration of airbag deployment paths and occupant positions must be considered when mounting equipment near these areas. These zones are shown for police vehicles equipped with standard bucket seats. The zone dimensions provided are approximate and will vary with the loading of the occupants in the seats. All airbag and equipment mounting zone dimensions are approximate due to different airbag deployment characteristics. No equipment will mount between the side of the front seat and the door trim to block deployment of the side airbag.

### Sedan Police Interceptor — Front Airbag Deployment Zones

## Section 5: Reference Information

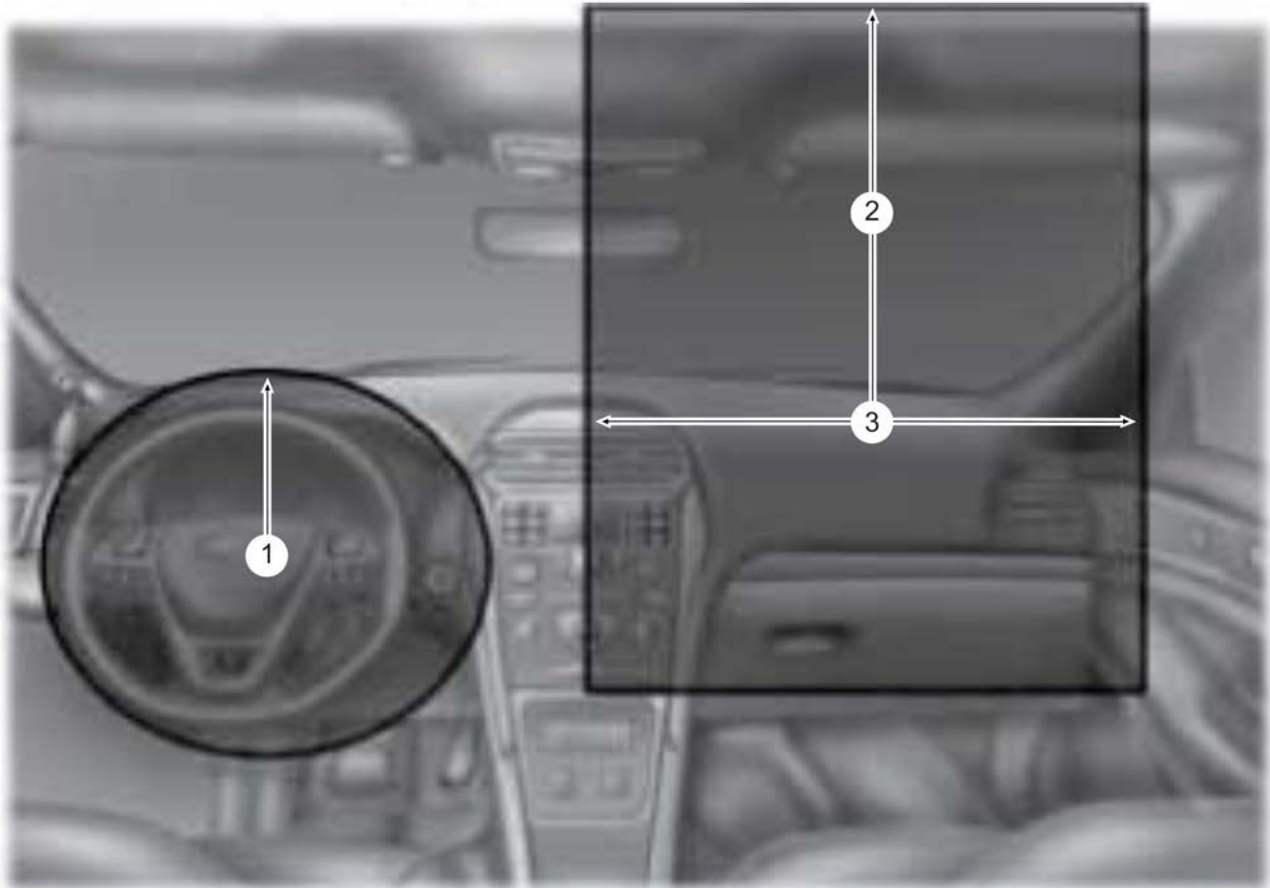


N0146348

**Utility Police Interceptor — Front Airbag Deployment Zones**



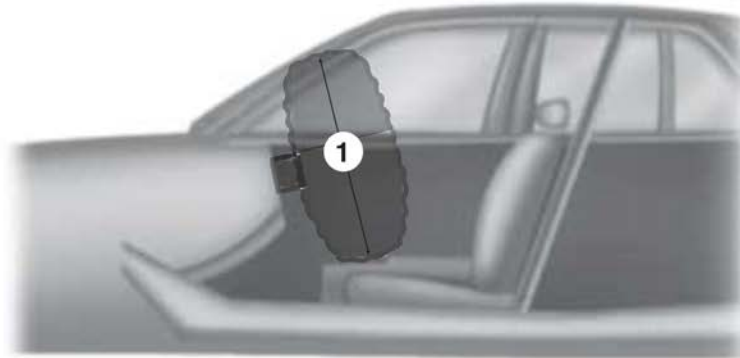
## Section 5: Reference Information



N0146349

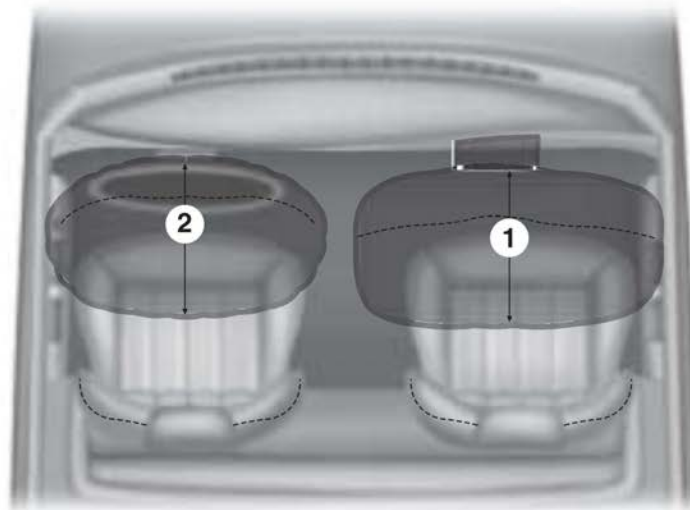
Item	Description Sedan	Description Utility
1	From the center of emblem. 13 inches (330 mm)	From the center of emblem. 9.5 inches (240 mm)
2	From the center of airbag door. 13.2 inches (335 mm)	From the center of airbag door. 13.8 inches (350 mm)
3	No objects should be placed between the airbags due to airbag variability. 29.5 inches (750 mm)	No objects should be placed between the airbags due to airbag variability. 28.3 inches (720 mm)

## Section 5: Reference Information



N0146250

Item	Description Sedan	Description Utility
1	760 mm (29.9 in)	700 mm (27.5 in)



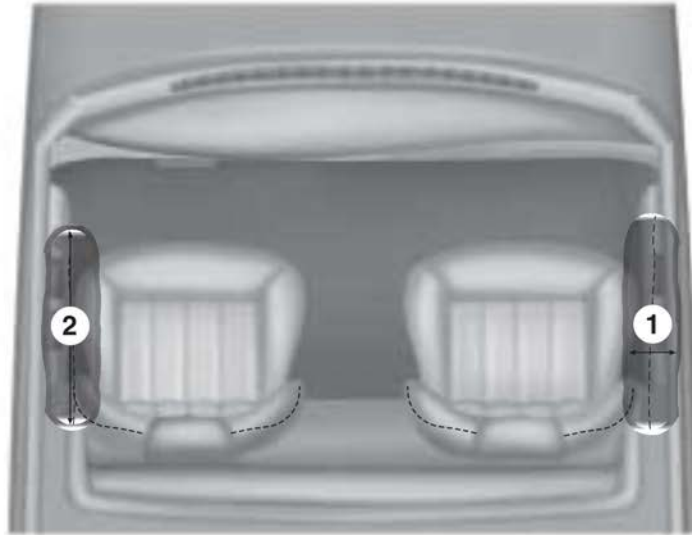
N0146351

**NOTE:**

No objects should be placed between the driver side steering wheel airbag and the passenger side dash airbag.

Item	Description Sedan	Description Utility
1	Front passenger airbag 27.5 inches (700 mm)	Front passenger airbag 22.8 inches (580 mm)
2	Front driver 17 inches (430 mm)	Front driver 17 inches (430 mm)

## Section 5: Reference Information

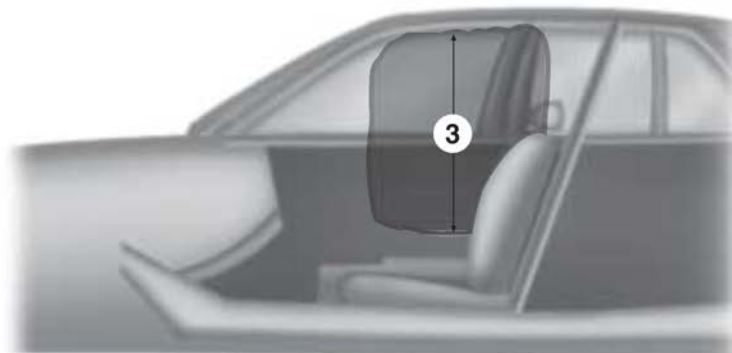


N0146352

Item	Description Sedan	Description Utility
1	From outboard side of seat 6 inches (152 mm)	From outboard side of seat 8 inches (200 mm)
2	Forward of seat back 14 inches (356 mm)	Forward of seat back 15 inches (380 mm)

**⚠ WARNING:**

The partition and the installation hardware of the partition must not interfere with the operation and deployment of the Safety Canopy® Airbag and seat side airbags. Failure to follow these instructions may cause personal injury.

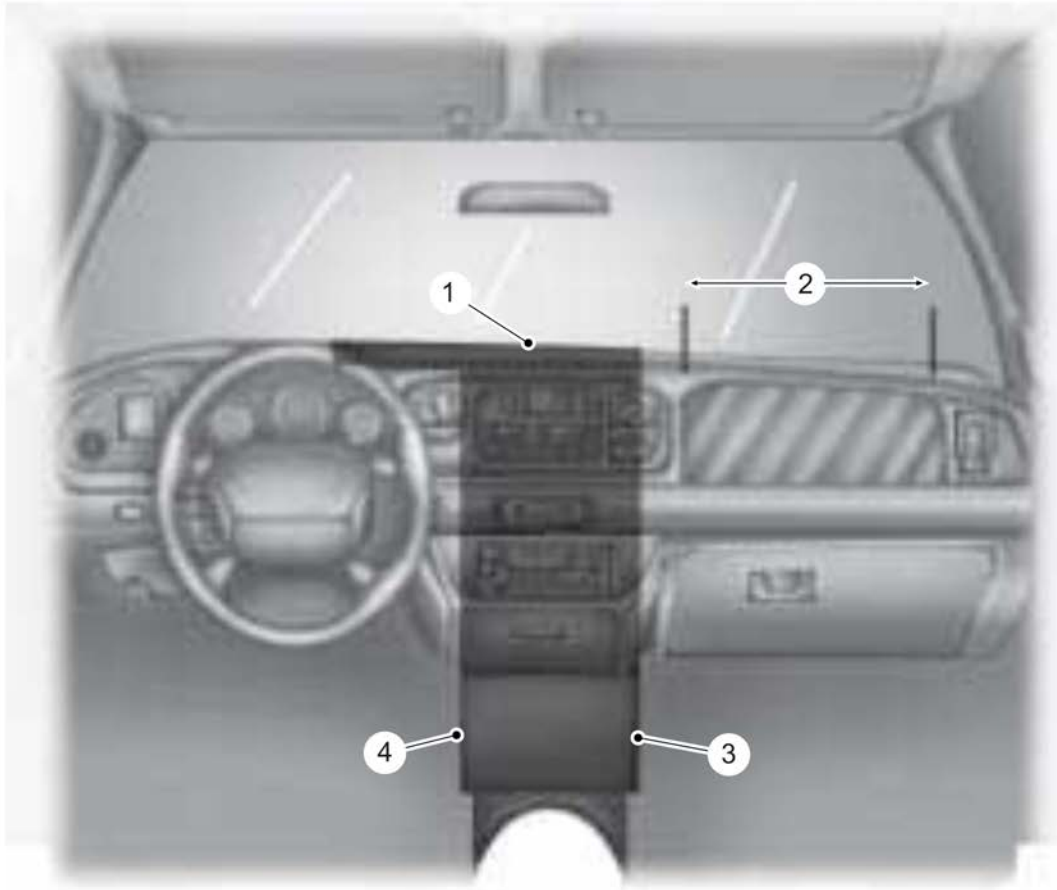


N0146353

Item	Description Sedan	Description Utility
3	Up from the side airbag module 16 inches (406 mm)	Up from the side airbag module 27.5 inches (700 mm)

Sedan Police Interceptor

## Section 5: Reference Information



N0146354

Utility Police Interceptor



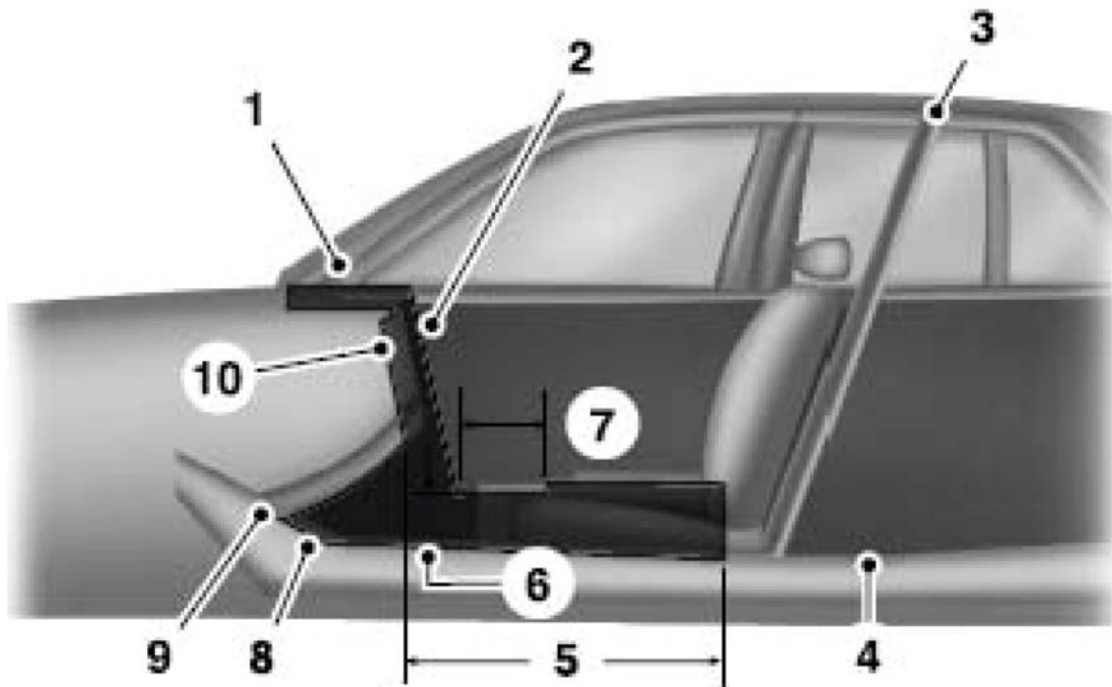
N0140484

Item	Description Sedan	Description Utility
1	Area on top of instrument panel <b>Equipment must not interfere with driver visibility</b>	Area on top of instrument panel <b>Equipment must not interfere with driver visibility</b>

## Section 5: Reference Information

(Continued)

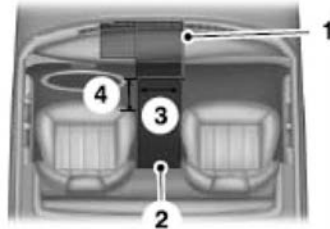
Item	Description Sedan	Description Utility
2	Airbag door must be kept clear for deployment of airbag	Airbag door must be kept clear for deployment of airbag
3	Area in front of electronic finish panel from the bottom of the ashtray to the top of the instrument panel	Area in front of the center console from bottom of ashtray to top of the instrument panel
4	—	Area in front of the electronic finish panel from the bottom to the top of the instrument panel



N0140485

Item	Description
1	Area on top of instrument panel
2	Area in front of center console from tunnel to instrument panel
3	Prisoner screen
4	10 inches (254 mm)
5	Area on tunnel between seats
6	Height: 8.5 inches (216 mm)
7	12 inches (305 mm)
8	Area on tunnel beneath center console
9	Tunnel
10	Depth: 1.5 inches (38 mm)

## Section 5: Reference Information

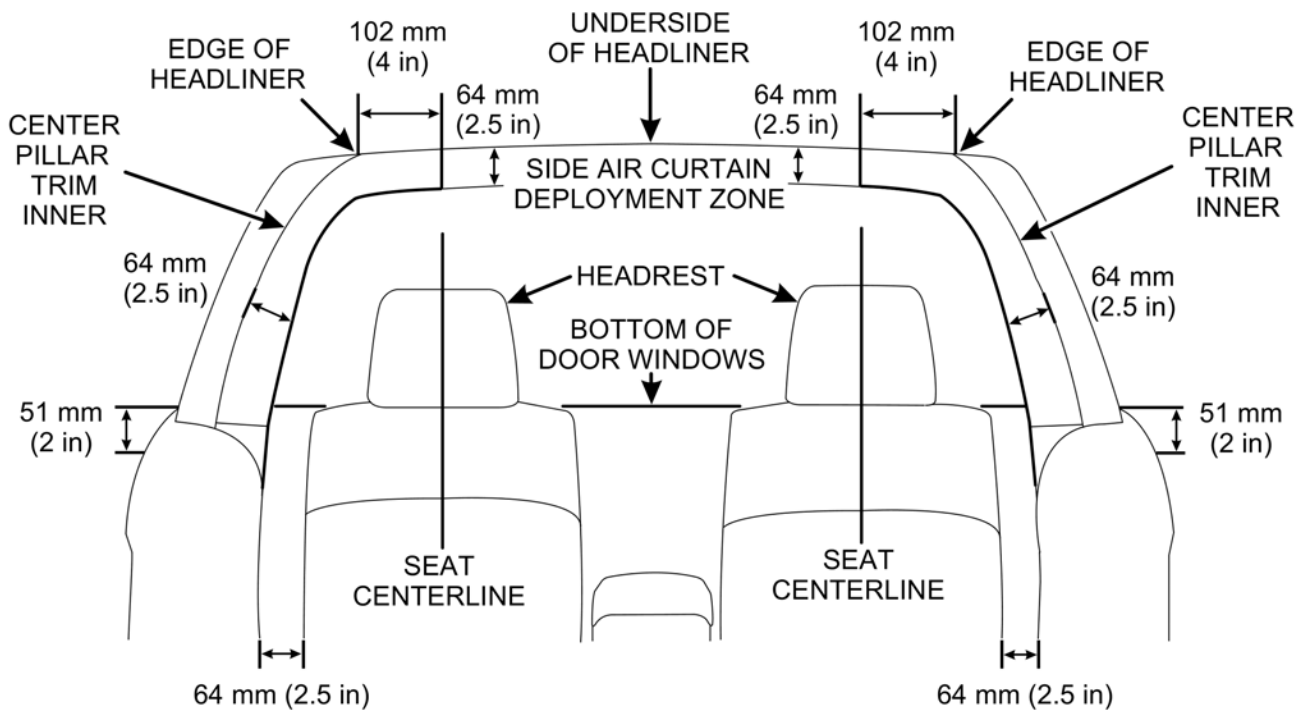


N0140487

Item	Description
1	Area on top of instrument panel. <b>Equipment must not interfere with driver visibility</b>
2	Area on tunnel between seats
3	229 mm (9 in)

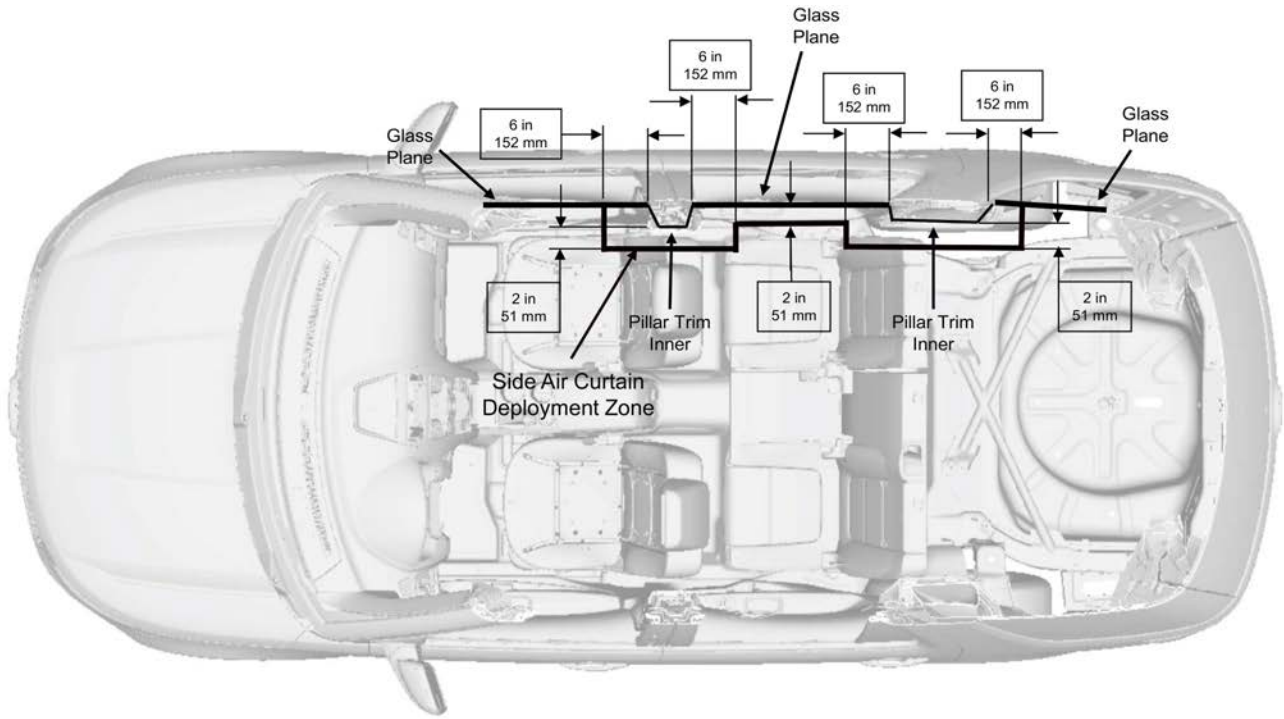
### Air Curtain Deployment Zones

#### CURTAIN AIRBAG DEPLOYMENT ZONE



N0146301

## Section 5: Reference Information



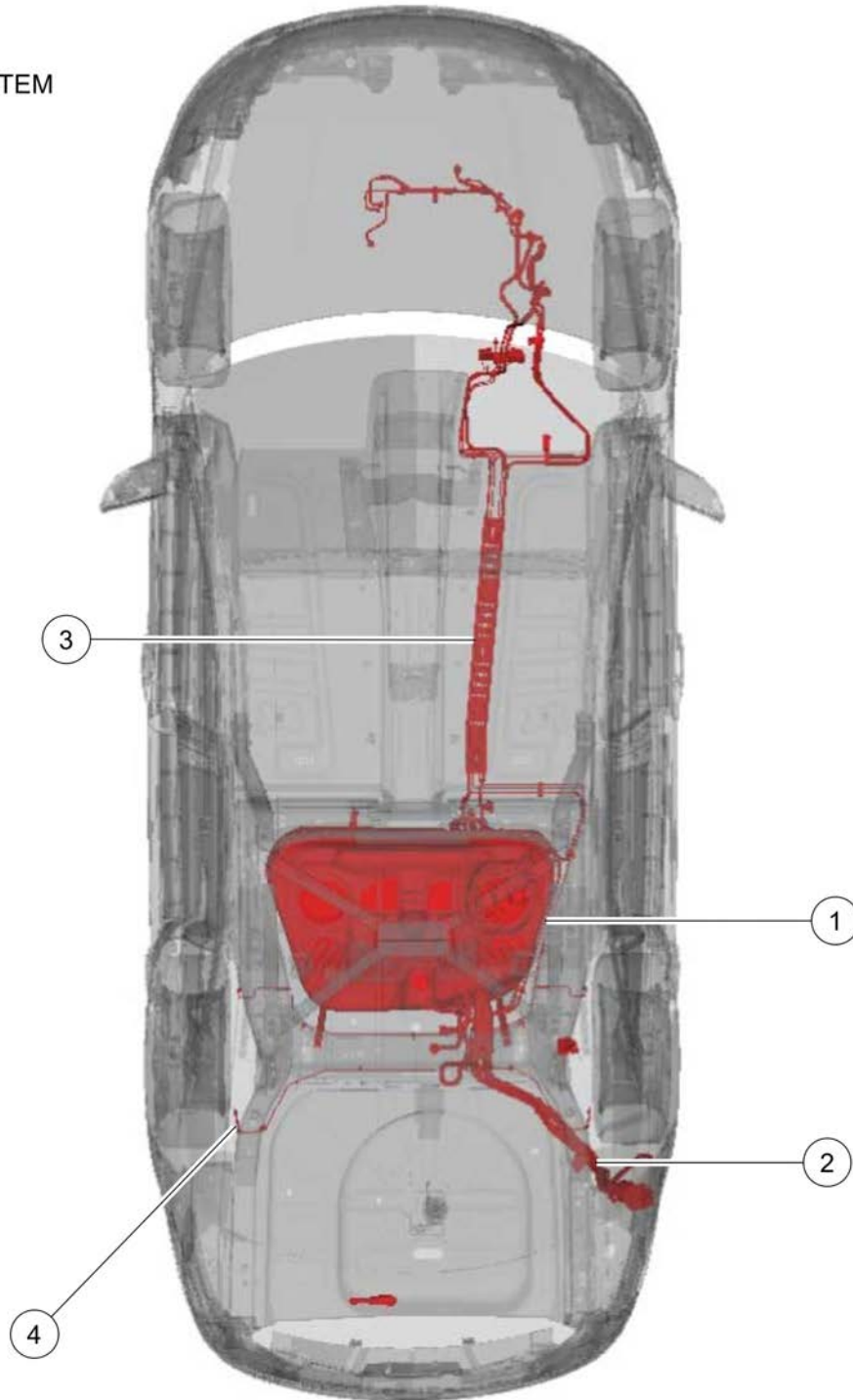
N0146530

### Under Vehicle Components

Sedan

## Section 5: Reference Information

FUEL SYSTEM



N0146458

Item	Description
1	Fuel Tank



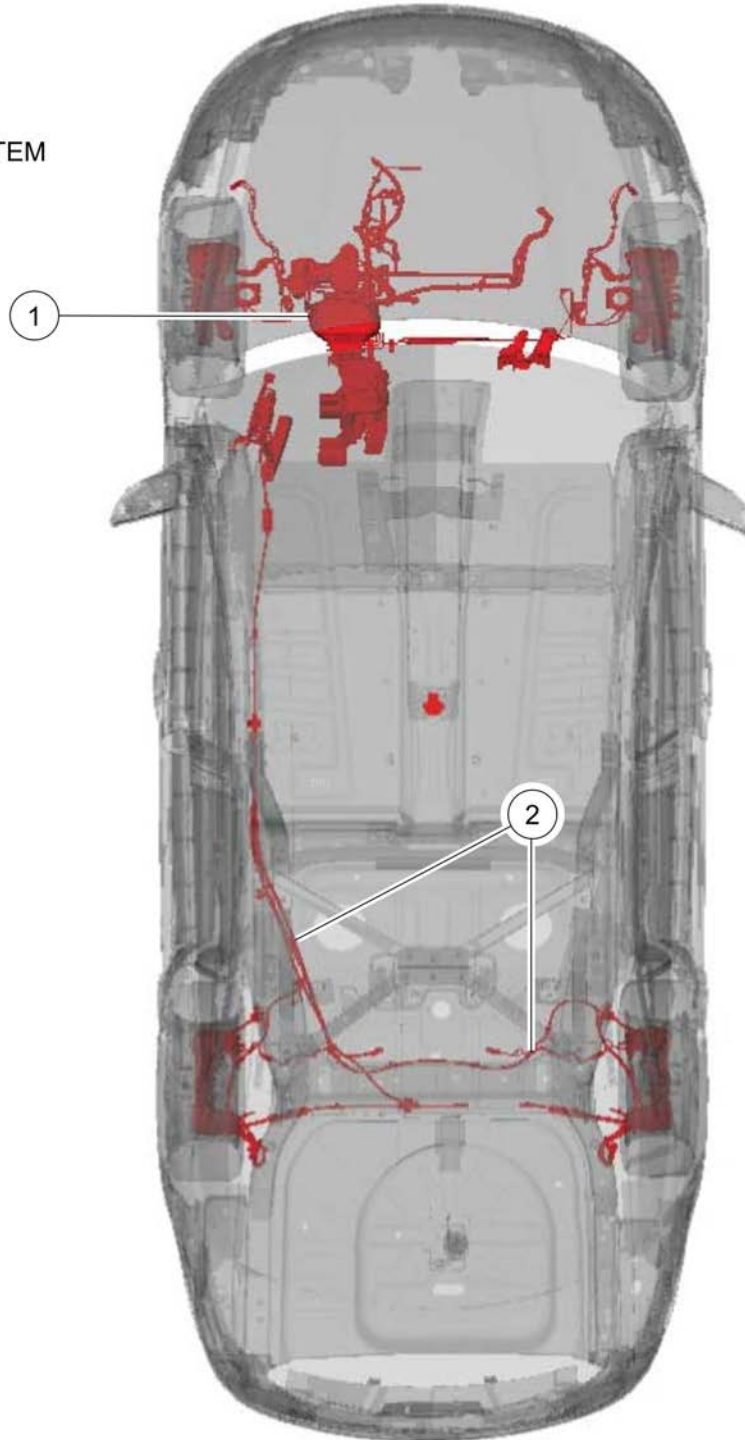
## Section 5: Reference Information

(Continued)

Item	Description
2	Fuel Fill Pipe
3	Fuel Lines/Brake Lines
4	Brake Lines

## Section 5: Reference Information

**BRAKE SYSTEM**



N0146459

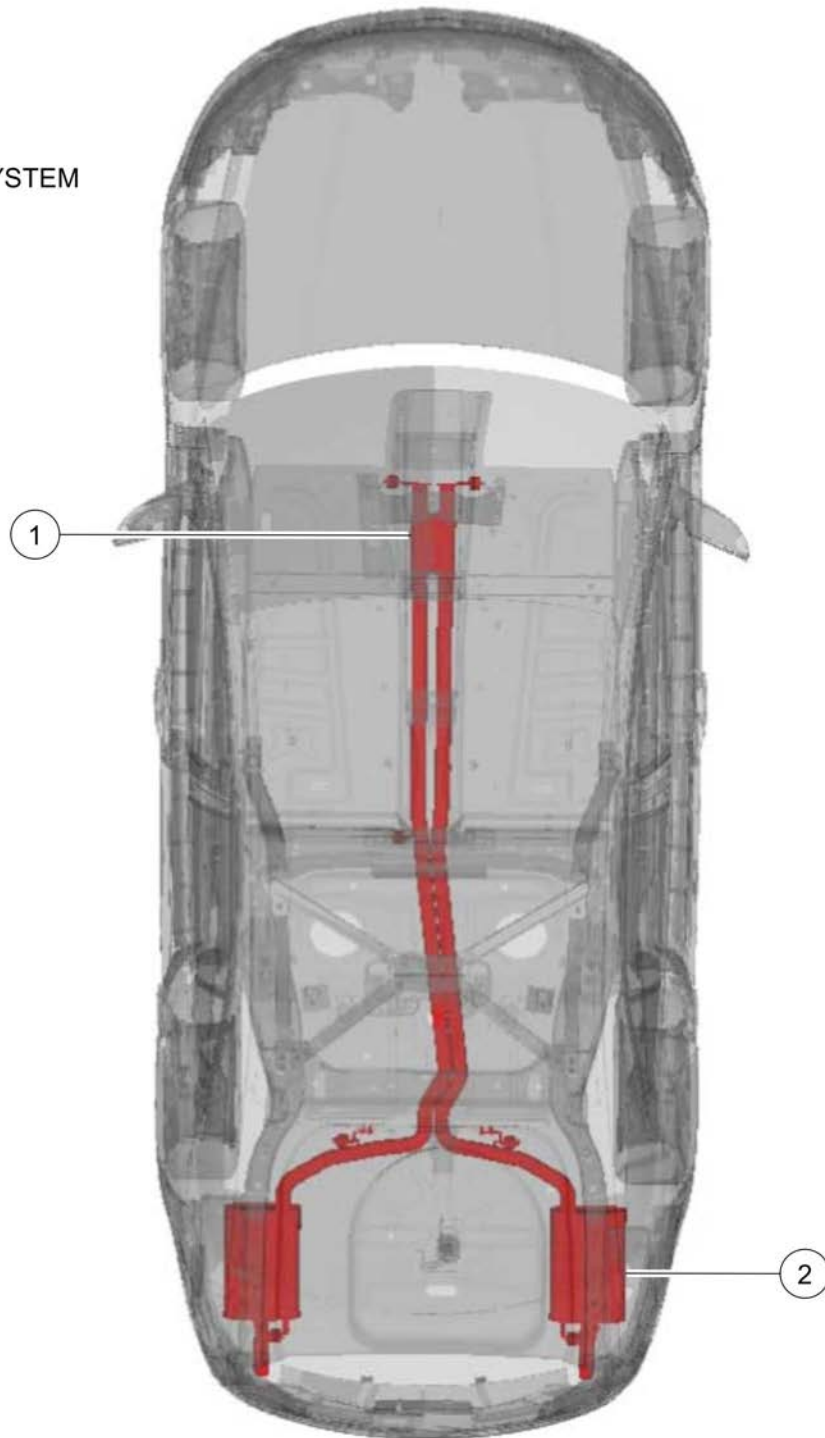
Item	Description
1	Brake Master Cylinder

## Section 5: Reference Information

(Continued)

Item	Description
2	Park Brake Cable

EXHAUST SYSTEM



N0146460

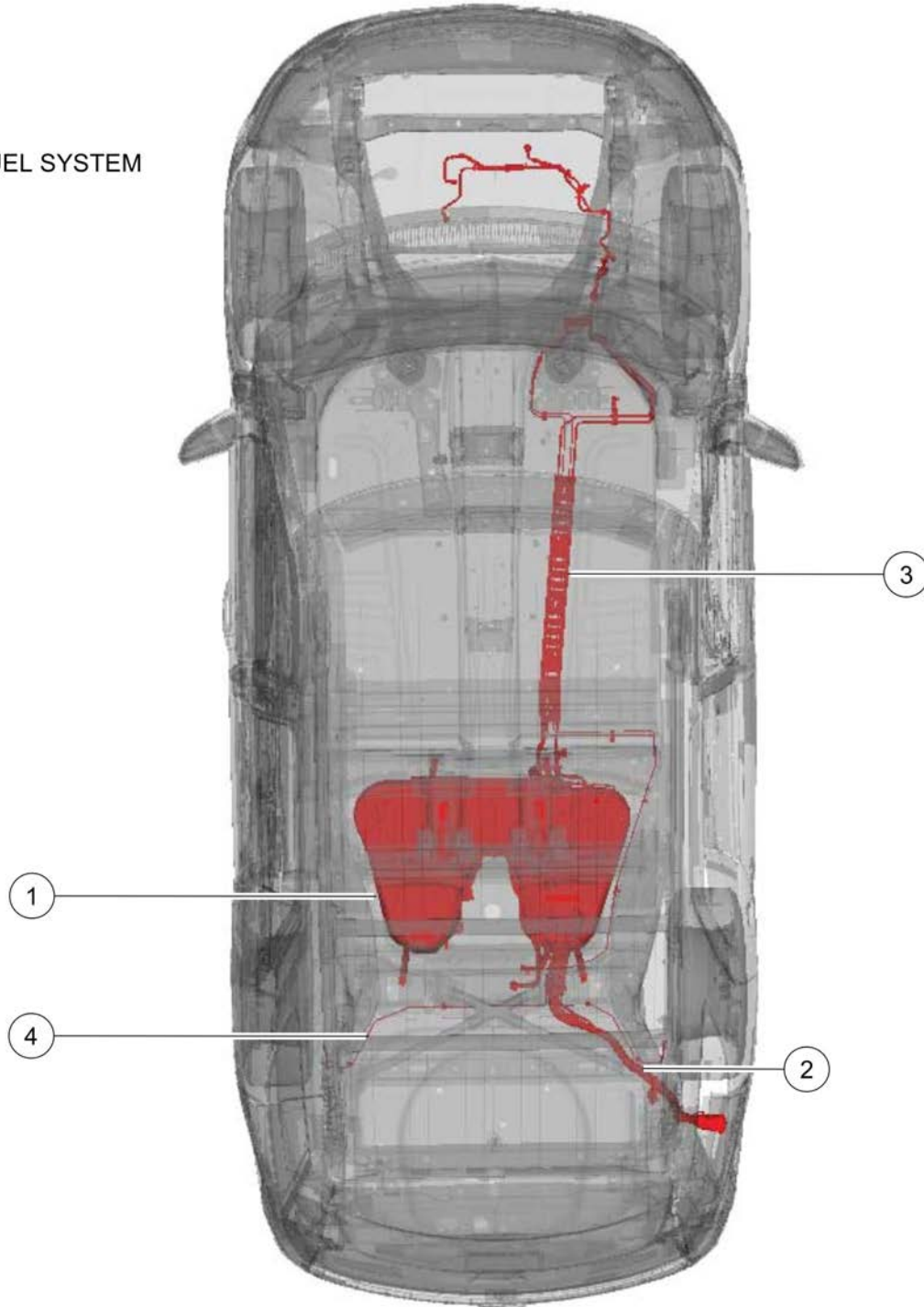
## Section 5: Reference Information

Item	Description
1	Catalytic Converter
2	Muffler

### Utility

## Section 5: Reference Information

FUEL SYSTEM



N0146461

Item	Description
1	Fuel Tank

## Section 5: Reference Information

(Continued)

Item	Description
2	Fuel Fill Pipe
3	Fuel Lines/Brake Lines
4	Brake Lines

# Section 5: Reference Information

BRAKE SYSTEM



N0146462

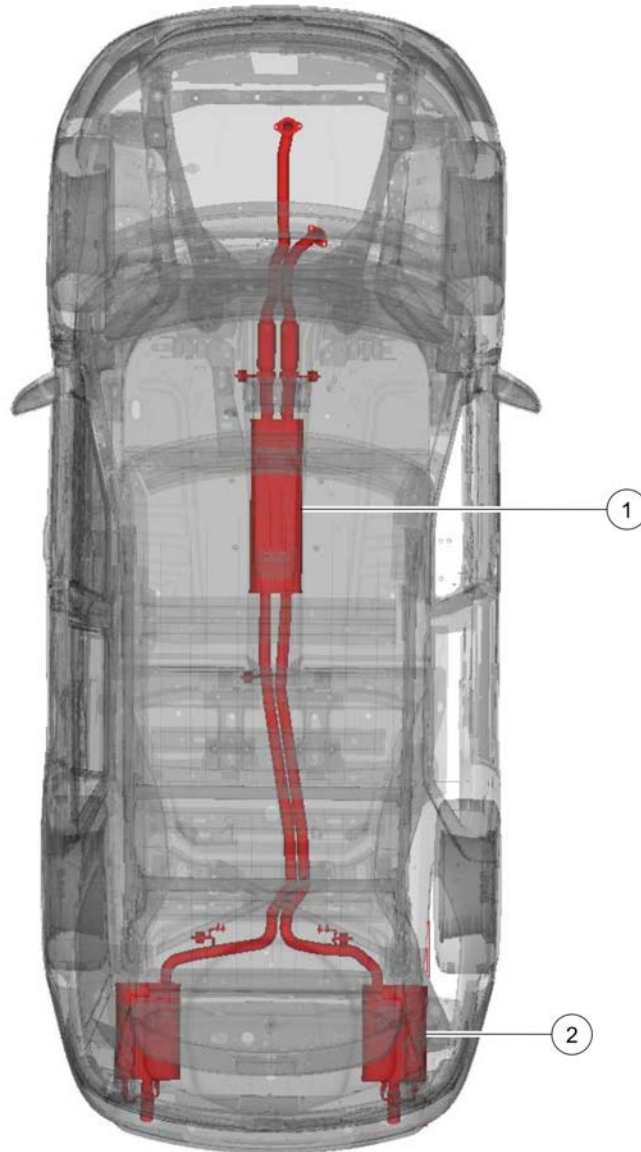
Item	Description
1	Brake Master Cylinder

## Section 5: Reference Information

(Continued)

Item	Description
2	Park Brake Cable

EXHAUST SYSTEM



N0146463

Item	Description
1	Catalytic Converter
2	Muffler

**DISPOSAL OF AIRBAGS AND AIRBAG EQUIPPED VEHICLES (INCLUDING PRETENSIONERS)**

Contact your authorized dealer as soon as possible. Airbags MUST BE disposed of by qualified personnel.



## Section 5: Reference Information

### SOS POST-CRASH ALERT SYSTEM

The system flashes the turn signal lamps and sounds the horn (intermittently) in the event of a serious impact that deploys an airbag (front, side, side curtain or safety canopy) or the safety belt pretensioner.

The horn and lamps will turn off when:

- The hazard control button is pressed or
- The vehicle runs out of power.

### Fuel Pump (FP) Shut-off Feature

#### NOTE:

Refer to the Description and Operation, Intelligent Access with Push Button Start in Section 419-01A to review the procedures for achieving the various ignition states (ignition OFF, ignition in ACCESSORY, ignition ON and ignition START) on vehicles with this feature.

In the event of a moderate to severe collision, the vehicle is equipped with a Fuel Pump (FP) shut-off feature that is initiated by the event notification signal.

The event notification signal is a signal provided by the Restraints Control Module (RCM) to the FP control module. Signal communication between the RCM and the FP control module allows the PCM to shut-off the FP.

Should the vehicle shut off after a collision due to this feature, the vehicle may be restarted by first turning the ignition to the OFF position and then turn the ignition to the ON position. In some instances the vehicle may not start the first time and may take one additional ignition cycle.