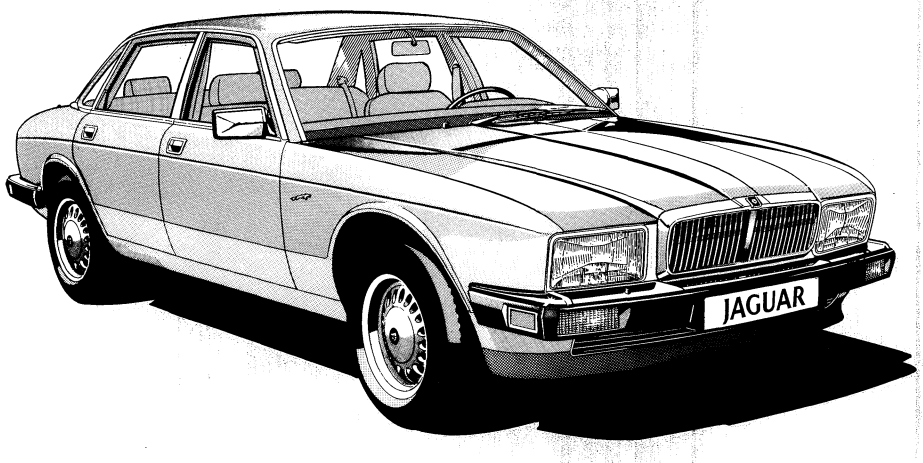
JAGUAR

SEDAN RANGE

UPDATE

1990

1990 SEDAN RANGE



Publication number S-66

CONTENTS

INTRODUCTION

The 1990 Jaguar sedan range has undergone major changes and improvements to produce a vehicle which is vastly superior to its predecessors. This publication serves as an introduction to these changes and improvements. Changes introduced during the previous year are also described in this publication.

1990 MY	VIN 594576–ON
1989 MY FEATURE CHANGES	
DRIVER'S SEAT ADJUSTMENT	VIN 578777–ON
"LIGHTS ON" AUDIBLE WARNING	VIN 582183–ON
CIGAR LIGHTERS	VIN 582183–ON

Wiring color code

N	Brown	Y	Yellow
B	Black	O	Orange
W	White	S	Slate
K	Pink	L	Light
G	Green	U	Blue
R	Red	P	Purple

When a wire has two or more color code letters, the first letter indicates the main color and the subsequent letter(s) indicate the tracer color(s).

1990 SEDAN RANGE

The 1990 Model Year Sedan Range consists of four distinct models: XJ6, Sovereign, Vanden Plas, and Majestic.

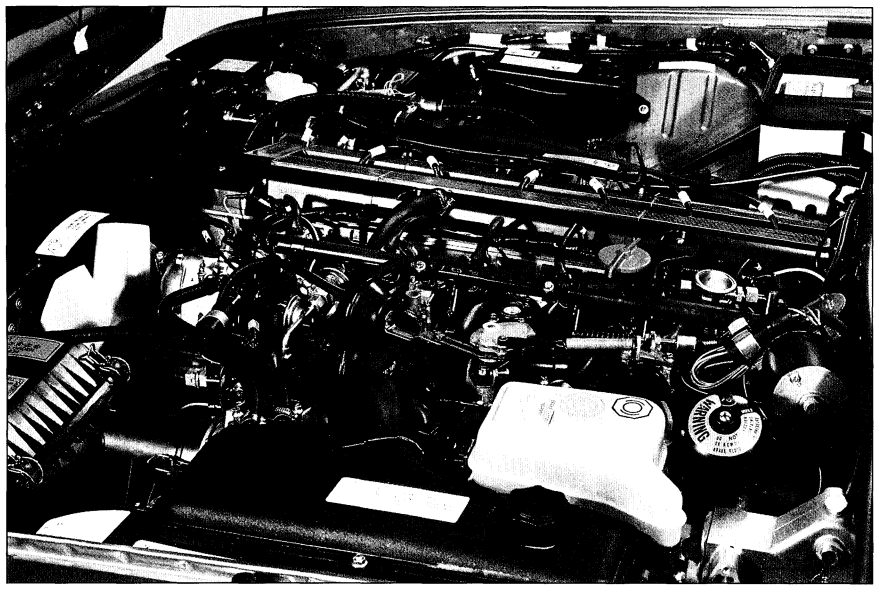
FEATURE CHANGES [as compared to 1989 MY XJ6 and Vanden Plas]

FEATURE	XJ6	SOV	VDP	MAJ
1990 MY Feature changes [described in this publication]	X	X	X	X
Sun roof		X	X	X
Rear suspension–ride leveling		X	X	X
Differential–Powr Lok			X	X
Styled headlights		X	X	X
Dual headlights	X			
Front fog lights [factory installed]			X	X
Headlight power wash			X	X
Rear bright trim–upper, lower, tail light surround			X	X
Rear bright trim–upper		X		
Door frames–bright finish		X	X	X
Door frames–black finish	X			
Front seats–heated			X	X
Rear seat headrests		X	X	X
Rear seat reading lights			X	X
Burl walnut with inlay wood trim		X	X	X
Figured walnut wood trim	X			
Steering wheel center pad–leather trim with cat emblem		X	X	X
Steering wheel center pad–moulded with cat emblem	X			
Vanden Plas interior trim package			X	X
Vanden Plas exterior trim package			X	X
Majestic package				X

FEATURES

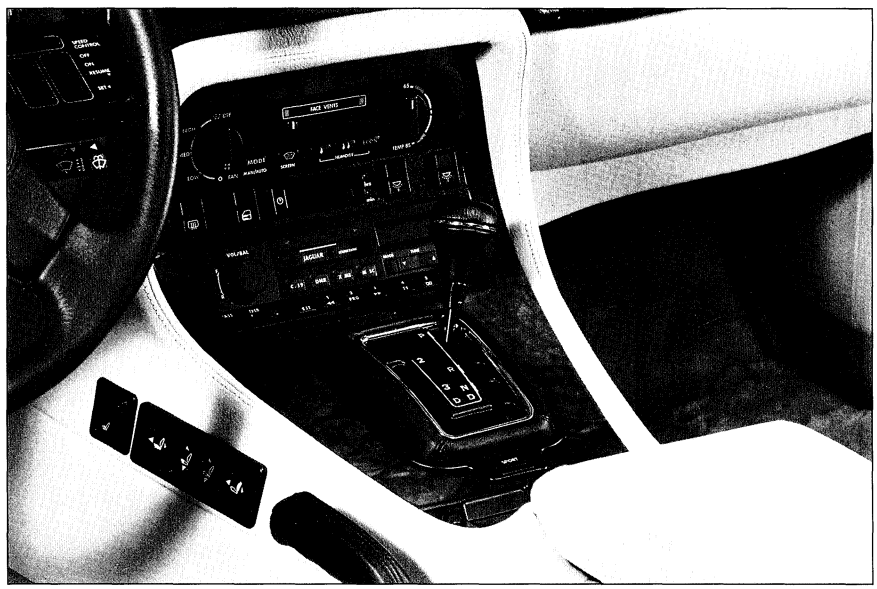
ENGINE AND ENGINE MANAGEMENT

The 223 hp 4.0 litre engine delivers improved horsepower and torque and features a new crankshaft, new connecting rods, pistons, and camshafts. The engine management system has been revised and includes control of air injection, exhaust gas recirculation, and canister purge.



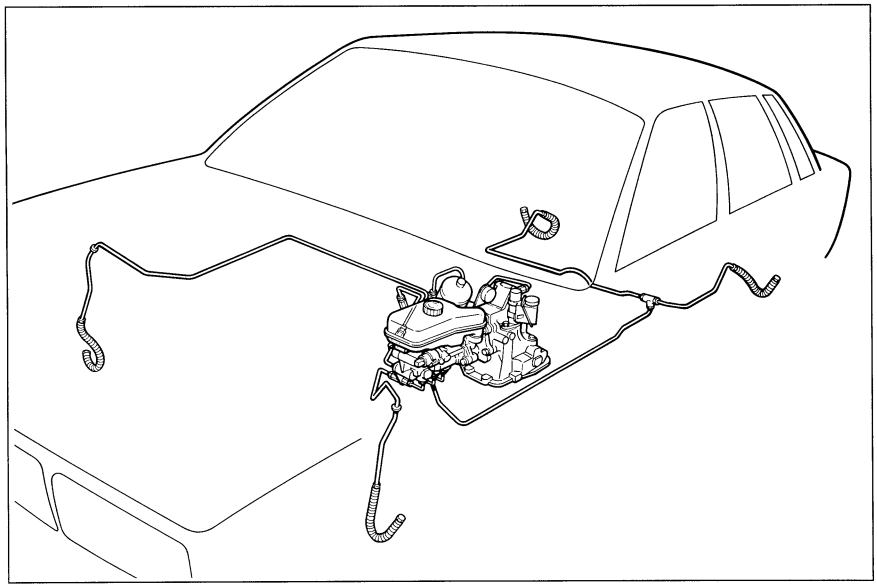
TRANSMISSION

The transmission is an electronically controlled four-speed gearbox with driver selected SPORT and NORMAL modes. The transmission ECU interfaces with the engine management system.



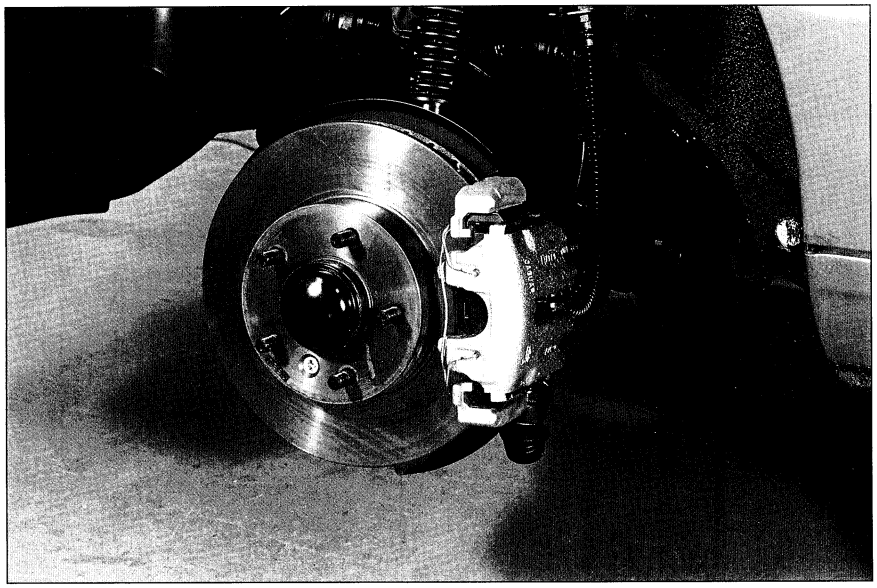
ANTI-LOCK BRAKING

The new anti-lock braking system operates the same as the 1989 XJ-S system. The booster, master cylinder, anti-lock module, and pump are combined into a single unit.



BRAKE DISCS AND CALIPERS

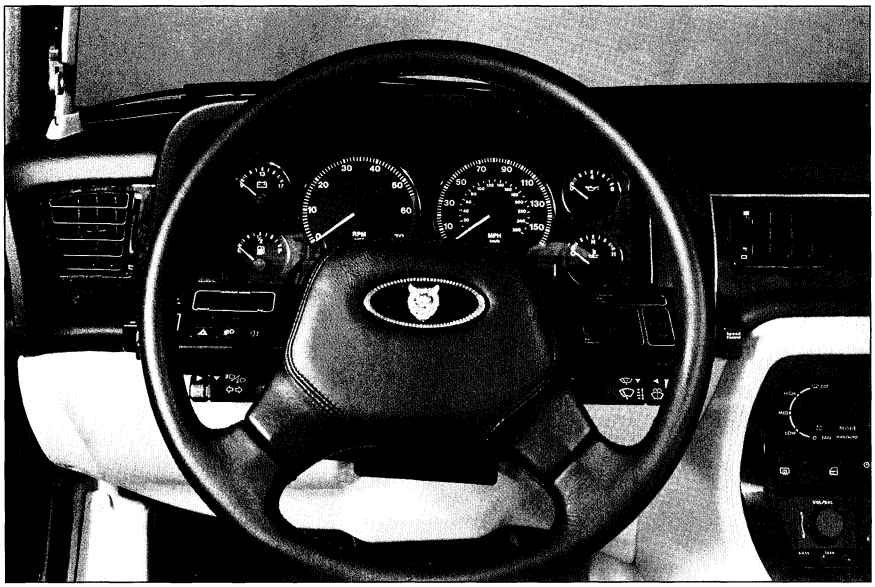
The brake discs, calipers, and parking brakes have been changed to match the anti-lock braking system.



FEATURES

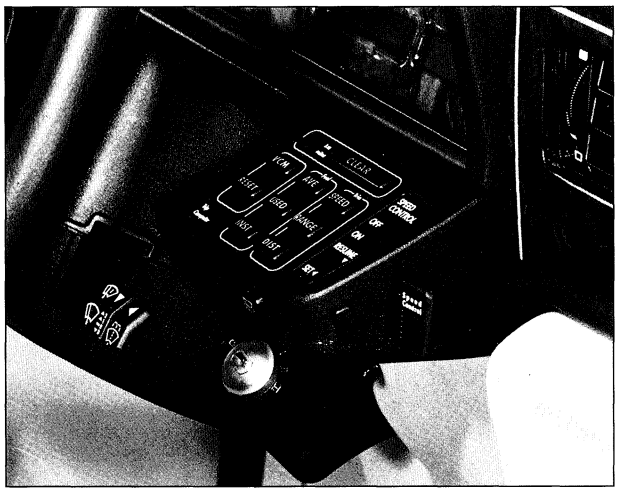
INSTRUMENT PACK

The new instrument pack has analog supplementary gauges and replaces the VCM with twenty-two warning lights. An LCD unit incorporates odometer, trip computer, and failure message functions.



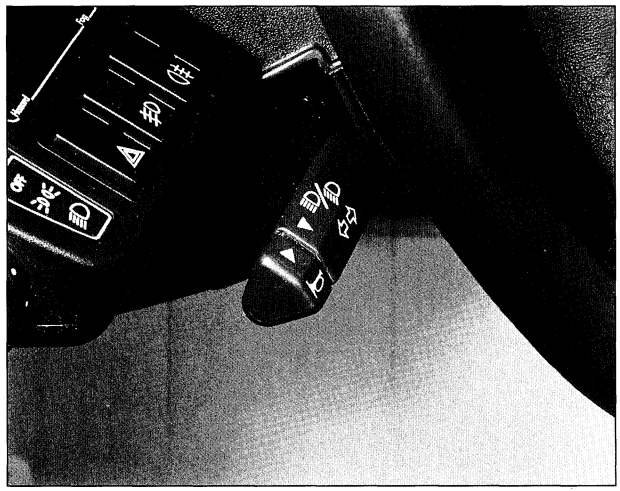
TRIP COMPUTER

The trip computer is changed to a single-function-per-key format. Six functions are available and the display overrides the odometer.



TURN SIGNALS

The turn signals are mechanically latched and canceled. Timing and repeat rate remain controlled through the central microprocessor.



DOOR LOCKS AND HANDLES

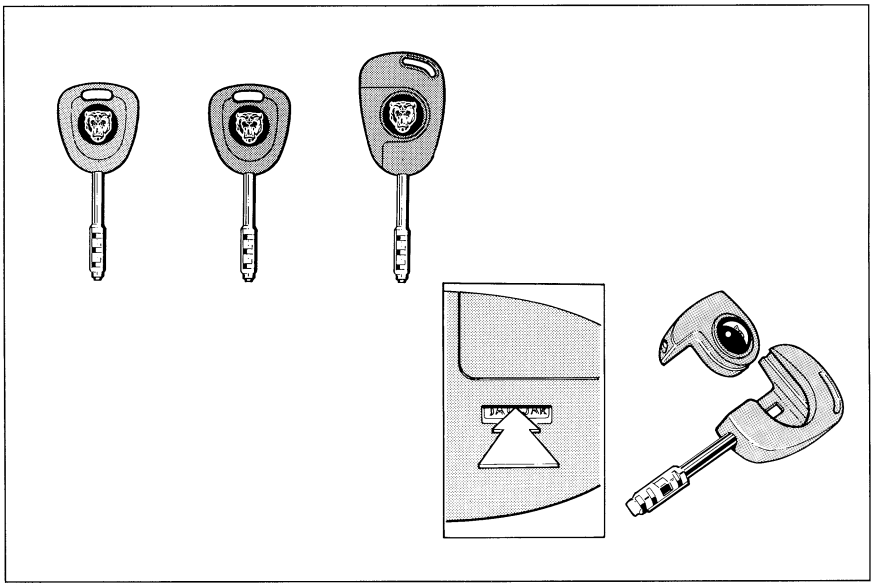
The design of the door locks and handles has been changed. The infrared feature and key barrel heaters have been eliminated.

KEY OPERATION

The vehicle key set includes three keys:

- Master key with integral flashlight
- Master key with plain black head
- Service key with plain green head

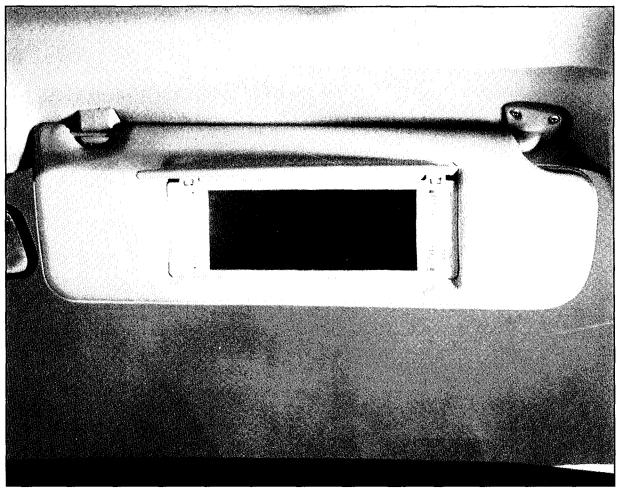
The master keys open the doors, glove box, and trunk, and operate the ignition. The service key opens the doors only, and operates the ignition. The bulb and battery of the flashlight key are built together in a replaceable sealed cartridge.



FEATURES

ILLUMINATED VANITY MIRRORS

Illuminated vanity mirrors are incorporated into the sun visors. The visors are leather covered in VDP and Majestic models.

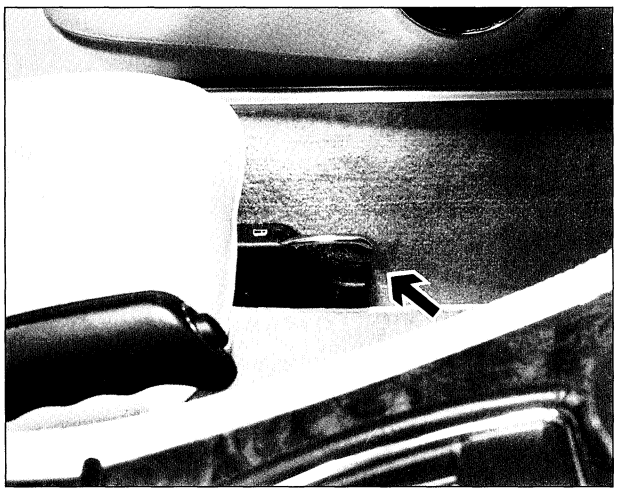


DRIVER'S WINDOW SWITCH PACK

The driver's window switch now has a raised bar so that it can be clearly identified by touch.

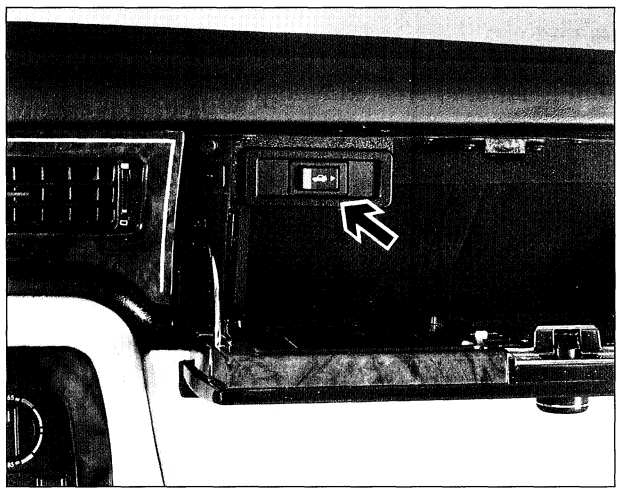
FUEL FILLER FLAP RELEASE

A mechanical interior lever located on the driver's door sill side rail releases the filler flap. The filler flap is no longer controlled by the central locking system.



REMOTE TRUNK RELEASE

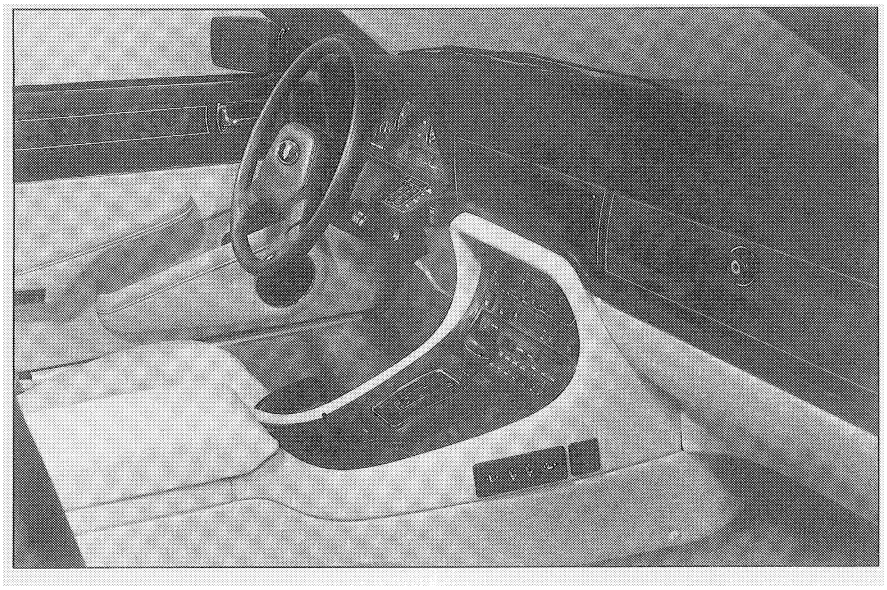
The switch located in the glove box provides remote trunk release.



INTERIOR REFINEMENTS

The following refinements have been made to the passenger environment:

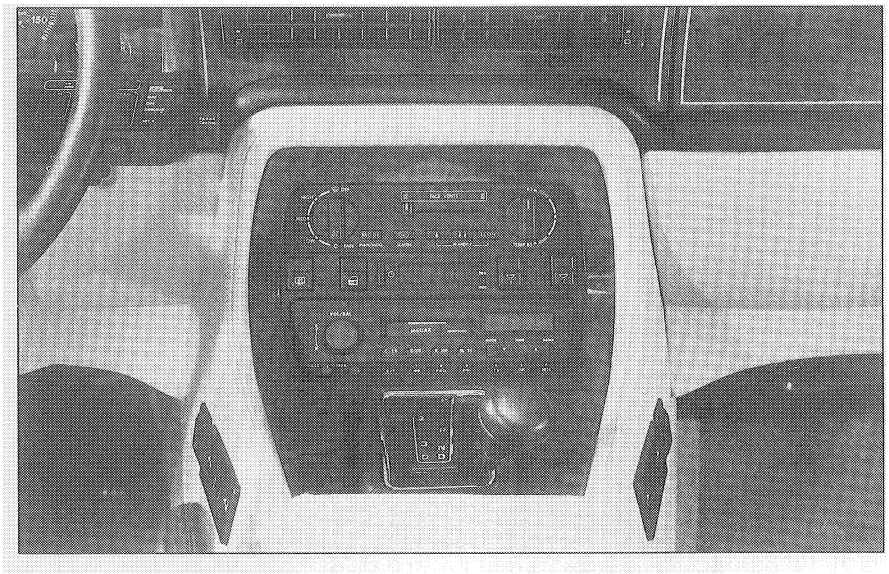
- Teroson, moulded sound deadening material applied to the interior panels offers improved high frequency noise reduction
- Improved retention of the front footwell carpets
- Soft feel facia and door top roll material
- Color keyed seat belts to match the interior trim
- Leather covered "J" gate surround



CLIMATE CONTROL

Revisions to the climate control system have been made in the following areas:

- Revised control panel graphics
- New air conditioning compressor
- Revised evaporator

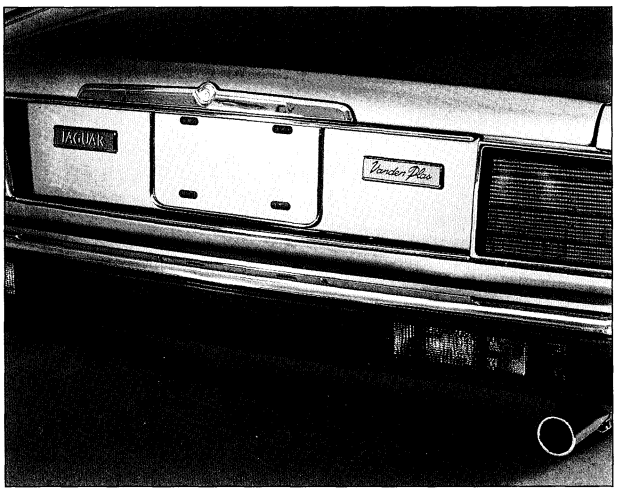


HEADLIGHTS / FOG LIGHTS

Styled headlights replace the dual headlights on Sovereign, VDP, and Majestic models. Factory installed fog lights are standard on VDP and Majestic models.

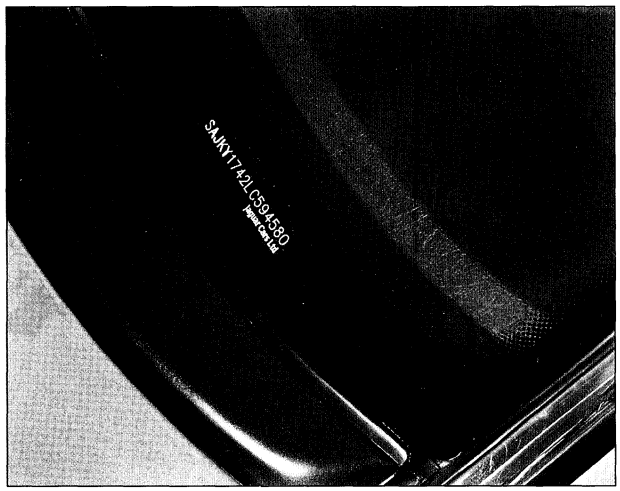
REAR TRIM

Sovereign models have a bright trim finisher on the trunk lid. VDP (shown) and Majestic models have additional bright trim around the tail lights and trunk opening.



VIN PLATES

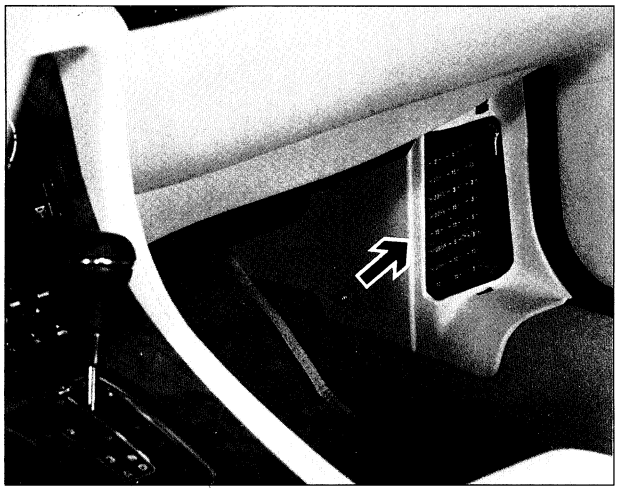
The "A" post VIN plate has been relocated to the base of the windshield and is viewed through a cut out in the masked area. The driver's door VIN plate includes a bar code.

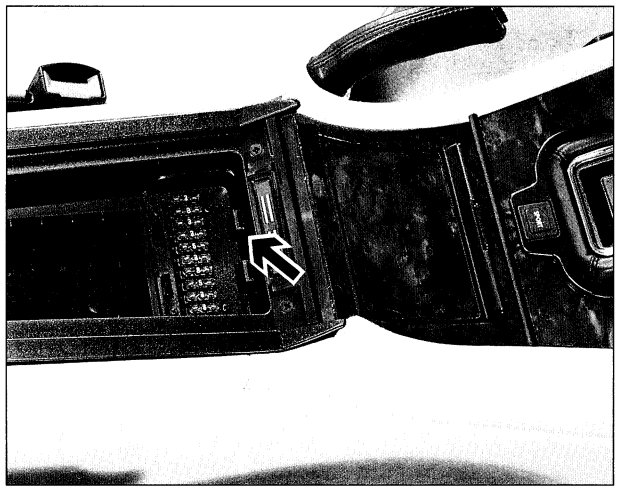


ELECTRICAL SYSTEM

The electrical system has undergone considerable revision. In addition to the features already covered in this section, the following changes have been made:

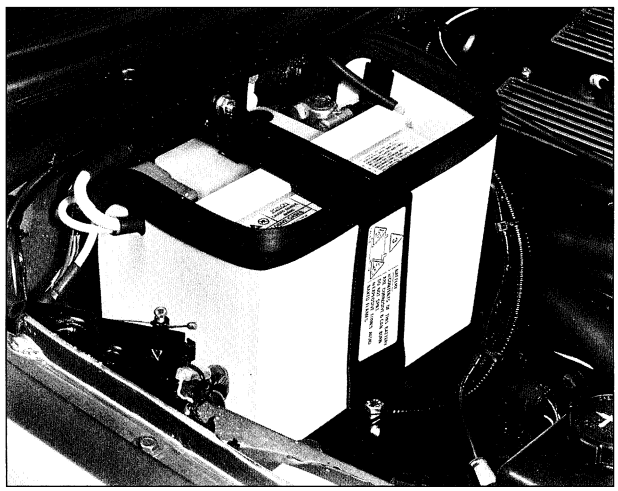
- New 24-way "A" post fuse panels with the fuses arranged in three rows labeled A, B, C
- New 10-way center fuse panel
- New 10-way accessory fuse panel [dealer installed option]
- The transmission rotary switch eliminates the "J" gate linear gear position switch
- New design brake light / cruise control switch
- "Lights on" audible warning revision
- Cigar lighter(s) circuit revision
- Bulkhead, left, and right side harness changes to accommodate the electrical features





Battery, alternator, transit isolation device

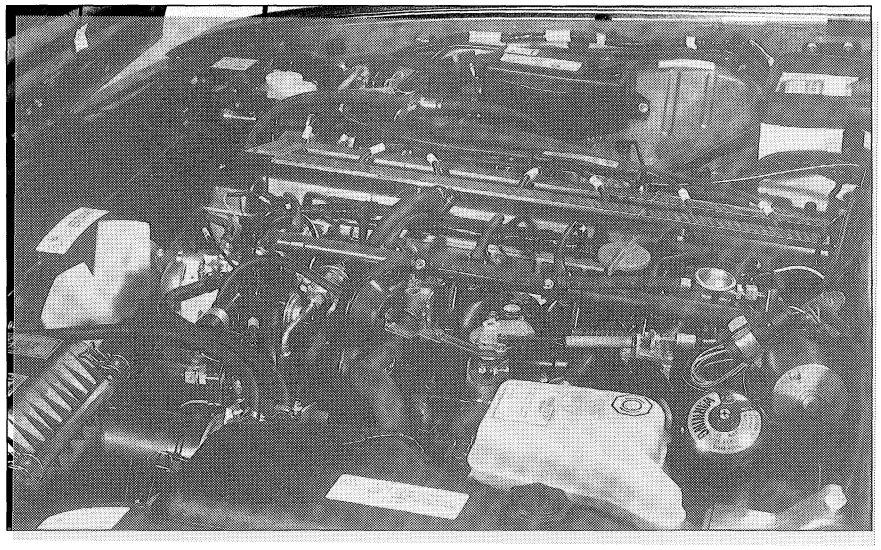
A new battery rated at 50 amp hours is used in the 1990 MY range. Although this battery has a lower capacity than the previous battery, it will maintain a higher percentage of charge in similar operating conditions. The alternator output has been raised to 115 amps. A transit isolation device is used to reduce quiescent current flow during shipping and storage. This must be removed at PDI.



POWER TRAIN, ACCESSORIES, AND SUSPENSION

Changes have been made to accommodate the new and revised features, and to improve performance, serviceability, and reliability. Areas of change include the following:

- Power steering and ride leveling [power hydraulics]
- Radiator header tank
- Engine air cleaner
- Exhaust system
- Climate control vacuum tank

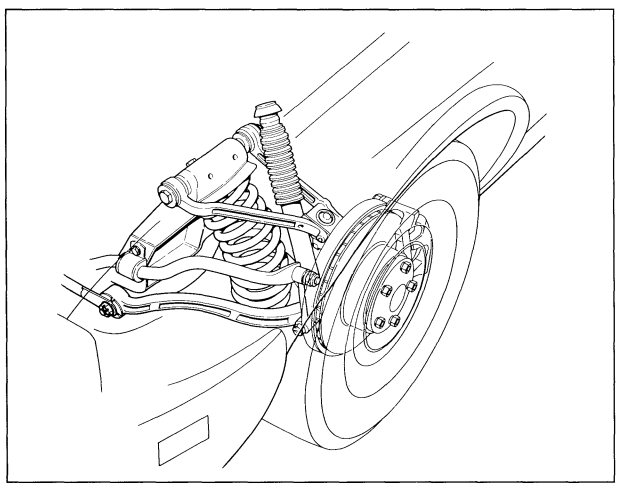


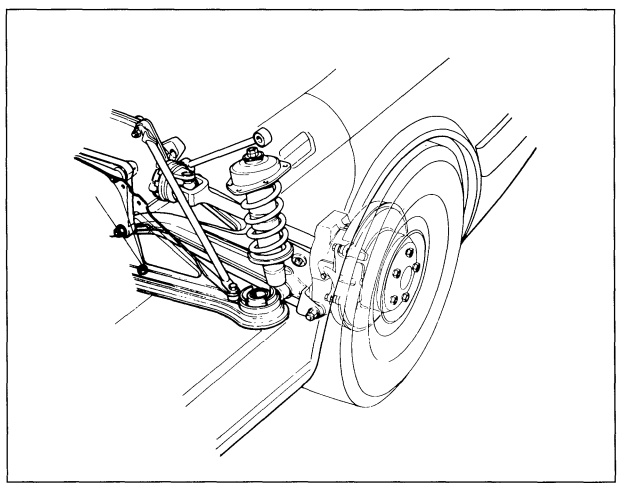
Propeller shaft

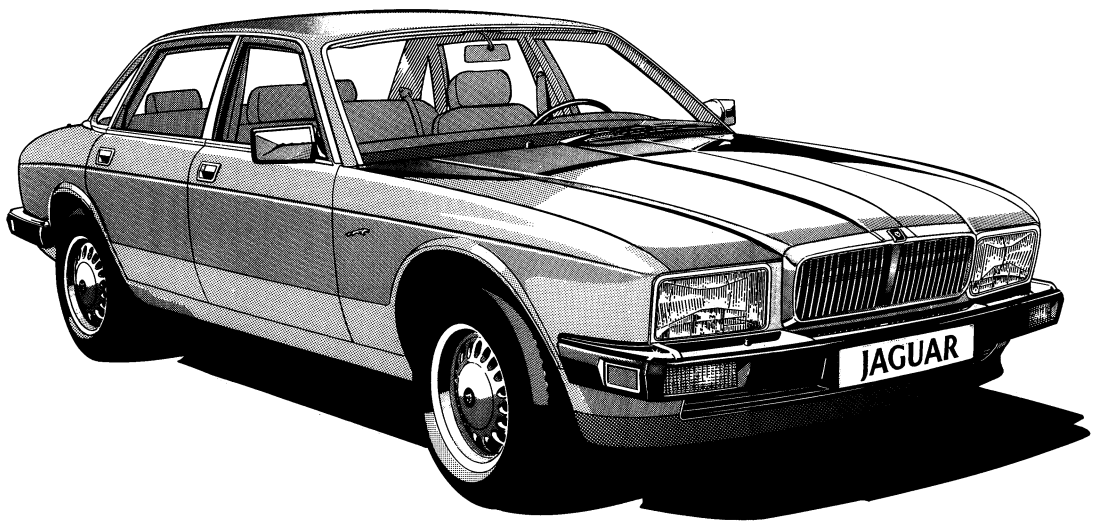
The propeller shaft is shorter to accept the new transmission. The isolation sleeve has been retained and a new heavy duty Jurid coupling has been installed.

Front and rear suspension

The front and rear suspension have been revised to accept the new brake system. The front suspension uses new upper wishbone bushings to improve durability and simplify installation.






JAGUAR

4.0 LITRE ENGINE

The 4.0 litre engine produces increased maximum power and torque at lower engine speeds. The cylinder block is the same as the 3.6 engine with an identical bore of 91 mm. A new, forged steel, eight counterweight crankshaft with the stroke increased from 92 mm to 102 mm provides the increase in displacement to 3980 cc. New connecting rods and pistons are used. The camshafts have revised intake and exhaust lobe profiles to increase both lift and duration, improving bottom end performance. Larger diameter, lightweight tappets reduce the valve train weight.

Engine specifications

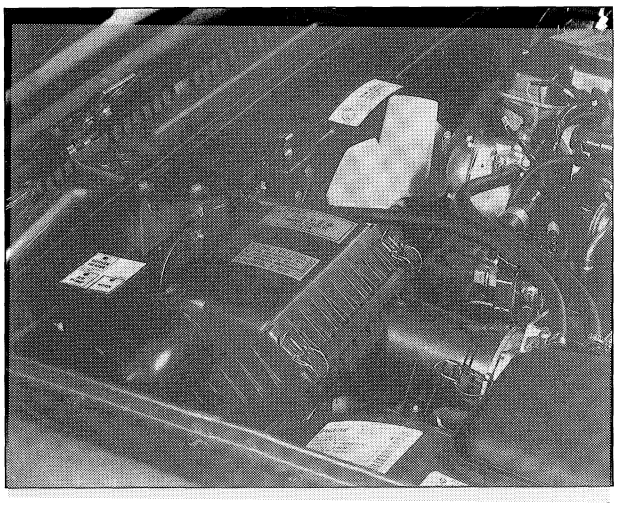
BORE 91 mm	**STROKE 102 mm**
DISPLACEMENT 3980 cc	**COMP. RATIO 9.5 : 1**
DIN POWER 223 hp @ 4750 rpm	**DIN TORQUE 278 lb ft @ 3650 rpm**

Exhaust system

The exhaust down-pipes have been redesigned to optimize the gas flow characteristics of the new engine. A new "low loss" catalyst system reduces back pressure by approximately 25%, resulting in increased engine power.

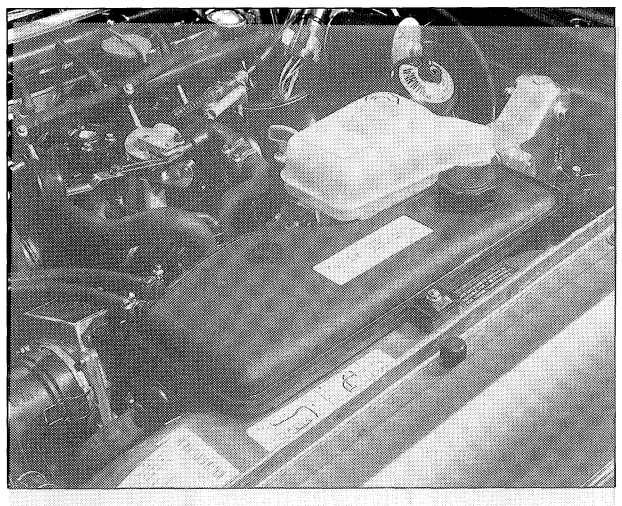
Air cleaner

The air cleaner has an intake area 90% larger than the previous system. In redesigning the interior baffles, no increase in induction noise has occurred. The less restrictive air cleaner increases engine power.



Radiator header tank

The radiator header tank volume has been increased and the shape modified to accommodate the installation of the anti-lock braking reservoir. The recovery bottle and associated vent tubes have been eliminated.



ENGINE MANAGEMENT

A revised and upgraded engine management system is used with the 4.0 litre engine. Changes and new functions are as follows:

- Revised electronic control unit
- Air injection reintroduced
- Exhaust gas recirculation introduced
- Supplementary air valve deleted
- Revised idle speed control valve
- Two-track throttle potentiometer introduced [the second track inputs to the transmission ECU]

Engine management ECU

The revised ECU provides expanded capabilities and the following benefits: quicker response to throttle changes, improved idle speed stability, shortened starting time, and improved engine braking response.

Increased strategy capacity The ECU now has 256 memory locations [previously 128] containing ignition timing angles for 16 engine loads [previously 8] at 16 different engine speeds. This produces improved interpolation of overall engine operating requirements.

Fault codes The number of fault codes transmitted to the VCM has been expanded. These codes are retained after the engine is started and can be retrieved for future diagnosis. Refer to page 35.

Cranking enrichment Cranking enrichment is canceled at an engine speed of 200 rpm when the coolant temperature is at or above 75°C [167°F] and at 500 rpm when the coolant temperature is below 75°C.

JDS diagnostic link A JDS diagnostic link has been added to allow a new JDS pod to communicate with the engine management and transmission control ECUs.

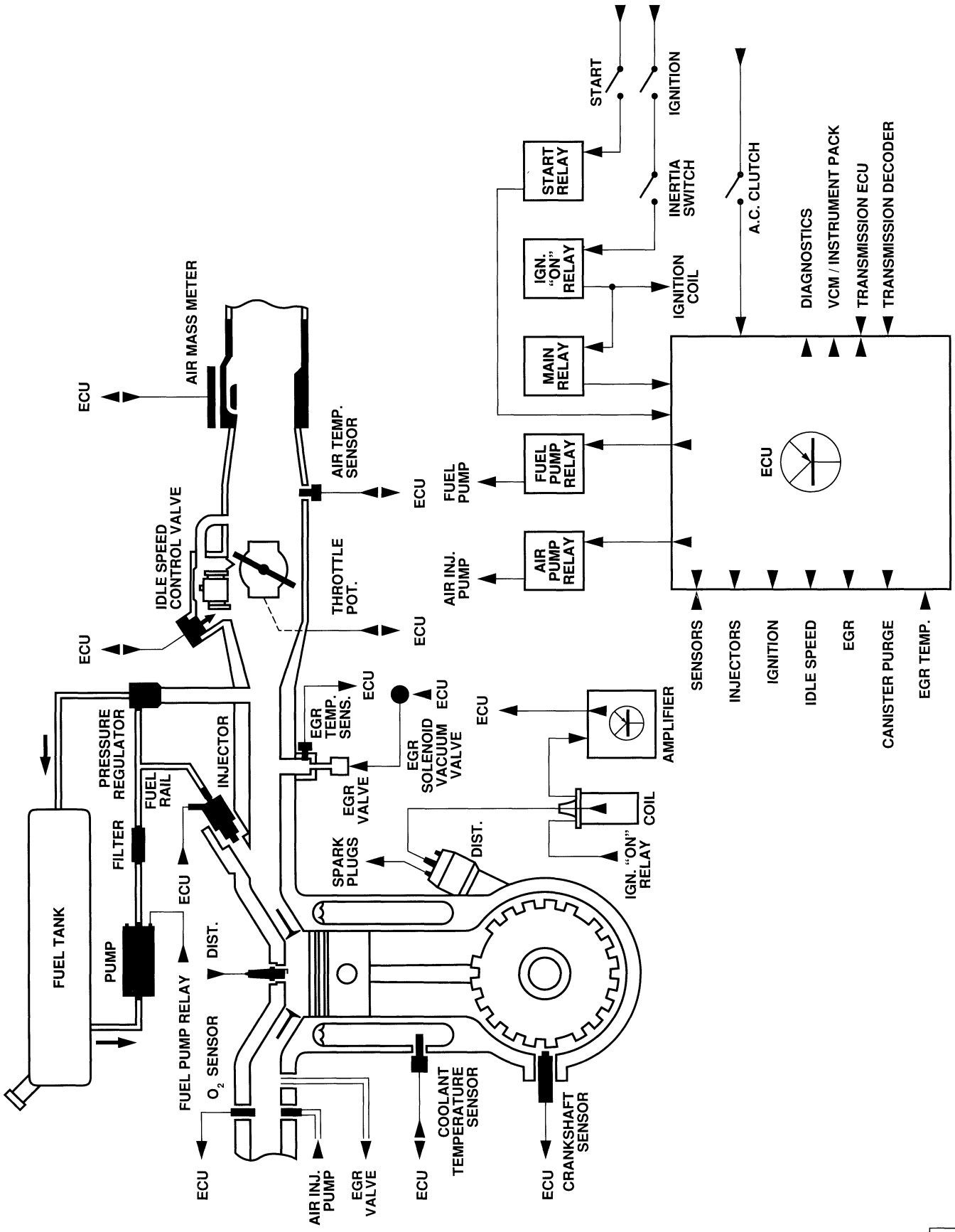
Evaporative emissions purge control The ECU activates the electronic evaporative purge control valve. Refer to page 16 for details.

Exhaust gas recirculation control The ECU activates the EGR solenoid valve. Refer to page 17 for details.

Transmission control interface An interface to the transmission control ECU has been added. Refer to page 20 for details.

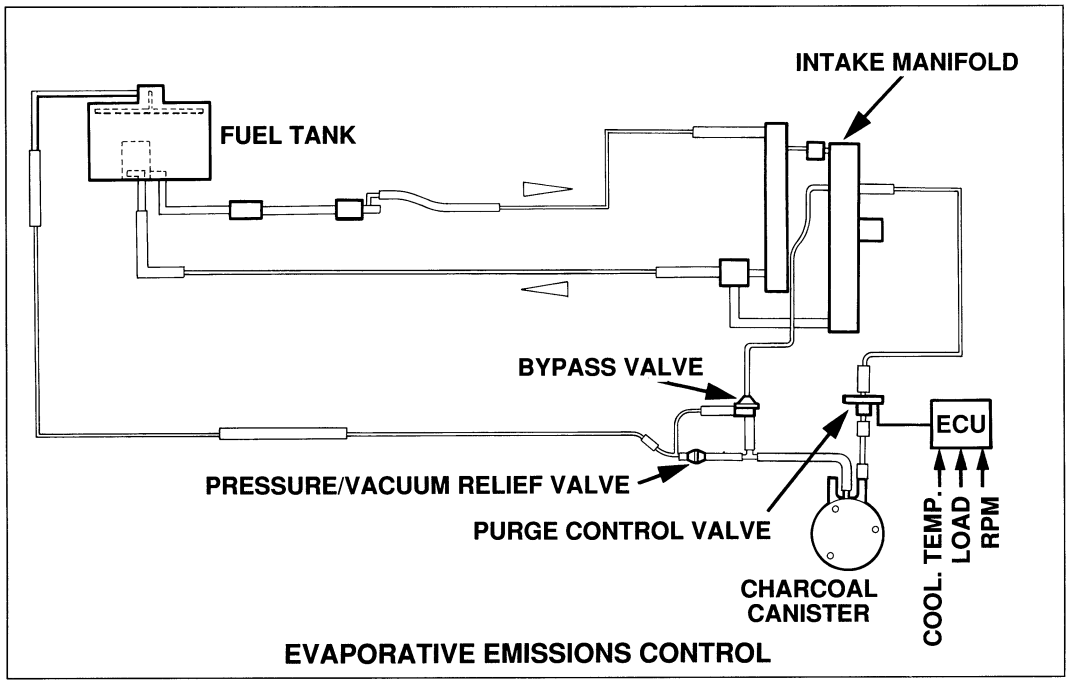
Future capabilities Provision for future installation of knock sensing is included in the revised ECU.

4.0 LITRE ENGINE MANAGEMENT



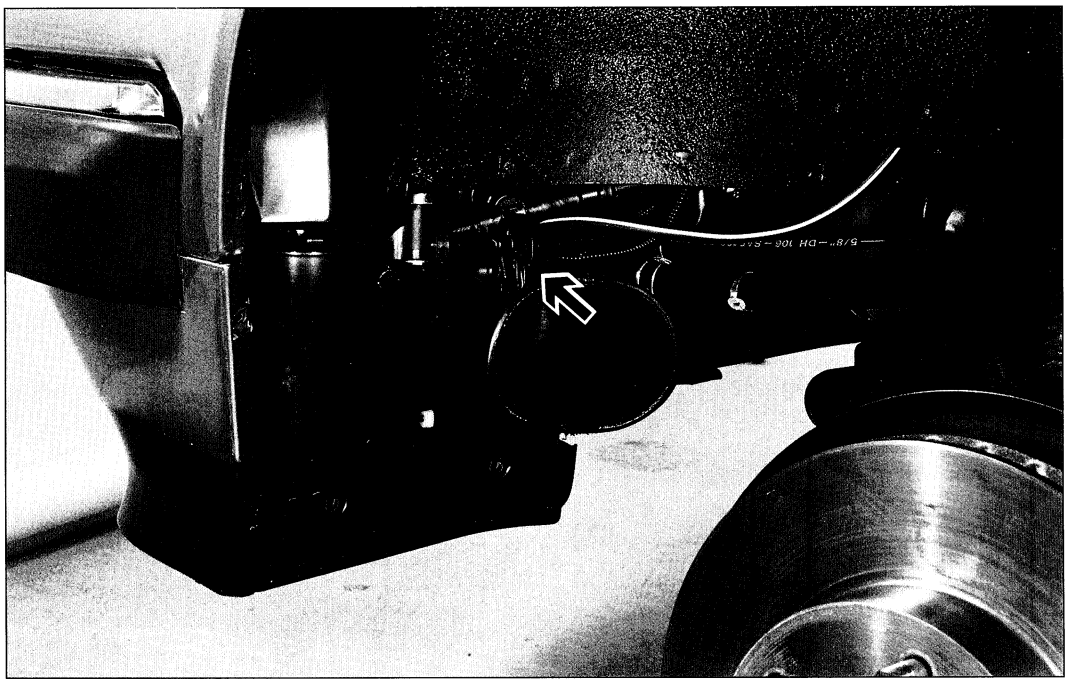
EVAPORATIVE EMISSIONS CONTROL

The operation of the electronic purge control valve is controlled by the engine management ECU. The ECU activates the valve to control the rate of purge flow dependant on engine speed, load, and temperature.



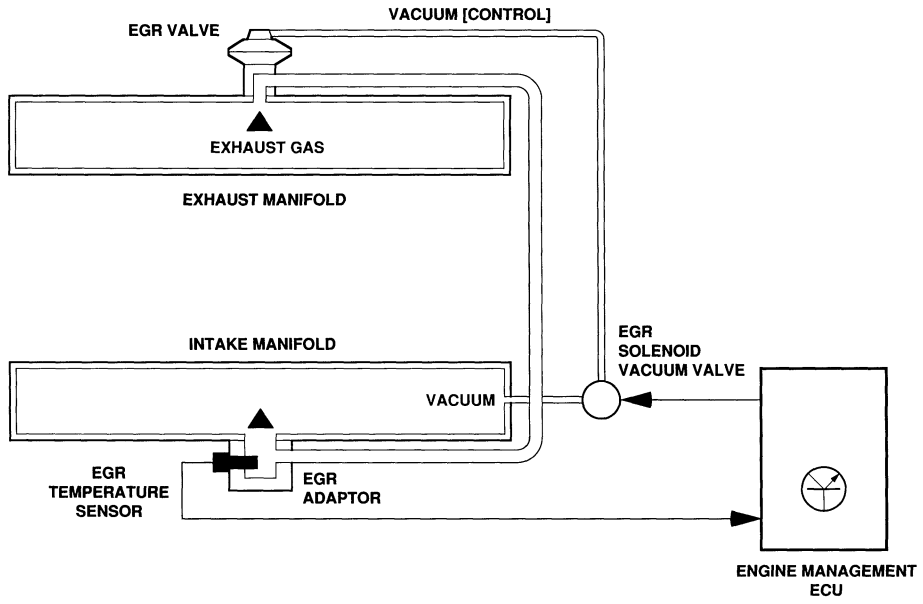
EVAPORATIVE EMISSIONS CONTROL

The charcoal canister, purge control valve, bypass valve, and pressure/vacuum relief valve are located ahead of the left front wheel arch.



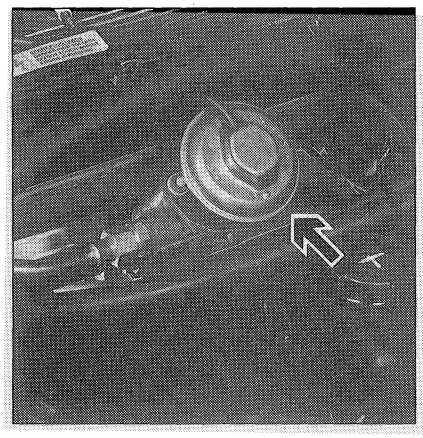
EXHAUST GAS RECIRCULATION

EGR is used to lower the temperature of the combustion chambers thereby reducing the output of oxides of nitrogen. The engine management ECU receives inputs from engine speed, load, and coolant temperature as well as EGR temperature to control the system.



EXHAUST GAS RECIRCULATION

EGR valve



Location Exhaust manifold.

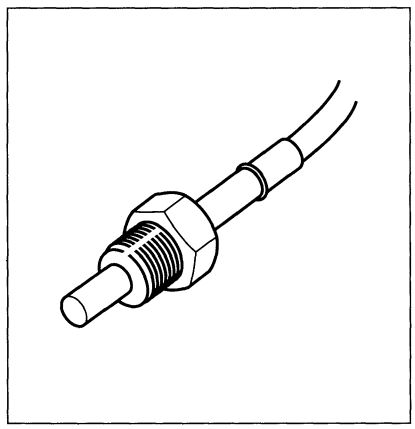
Description The EGR valve controls exhaust flow between the exhaust and the intake manifolds. Flow through the valve is proportional to the exhaust back pressure.

EGR solenoid vacuum valve

Location Rear of intake manifold.

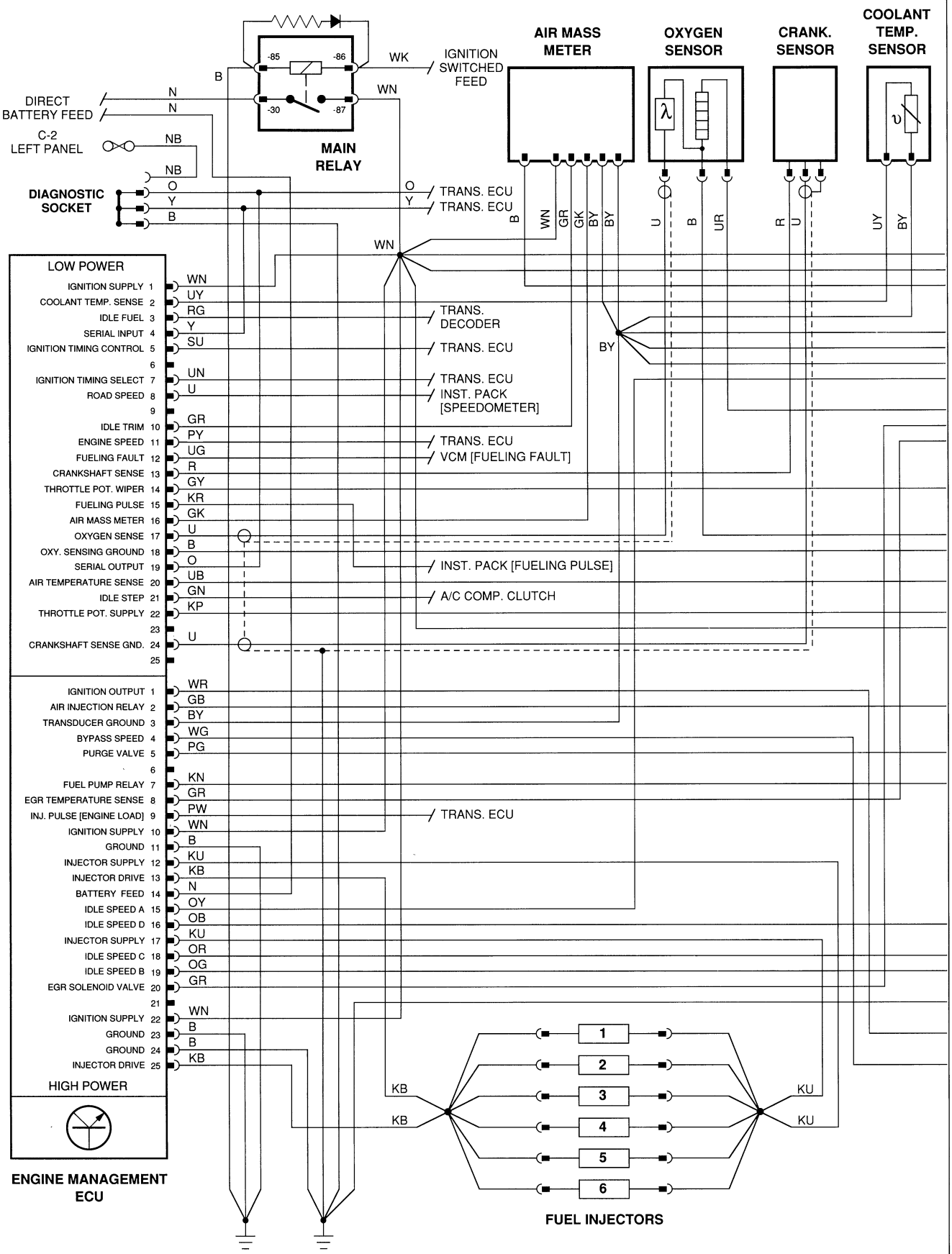
Description When activated by the ECU, the solenoid applies manifold vacuum to open the EGR valve.

EGR temperature sensor

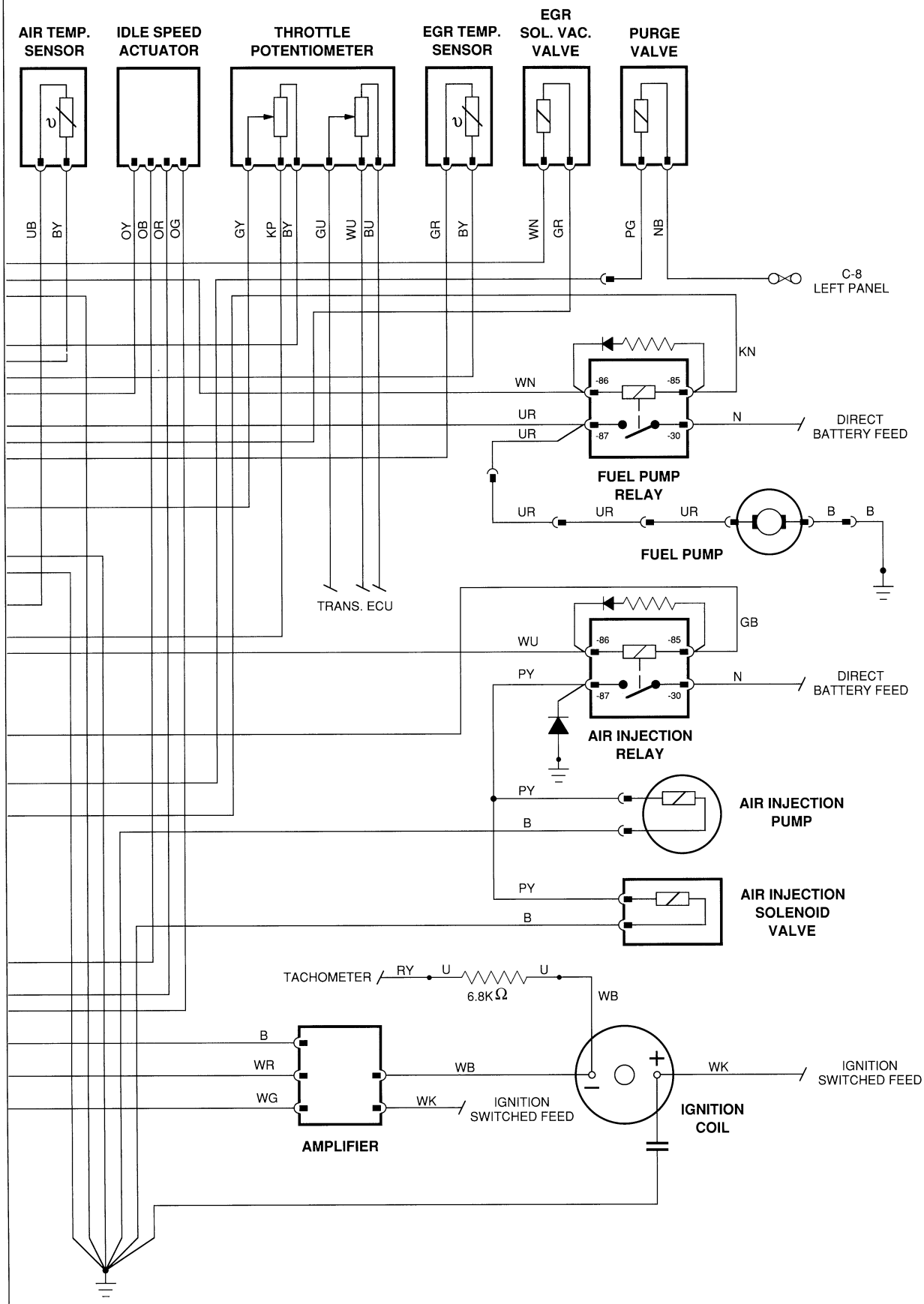


Location In the EGR adaptor under the intake manifold.

Description The sensor provides a temperature signal to the engine management ECU. EGR is canceled if the exhaust temperature is too low or too high.



PROVISIONAL WIRING DIAGRAM
REFER TO PAGE 1 FOR WIRING COLOR CODE


AIR TEMP. SENSOR
IDLE SPEED ACTUATOR
THROTTLE POTENTIOMETER
EGR TEMP. SENSOR
EGR SOL. VAC. VALVE
PURGE VALVE
UB
BY
OY
OB
OR
OG
GY
KP
BY
GU
WU
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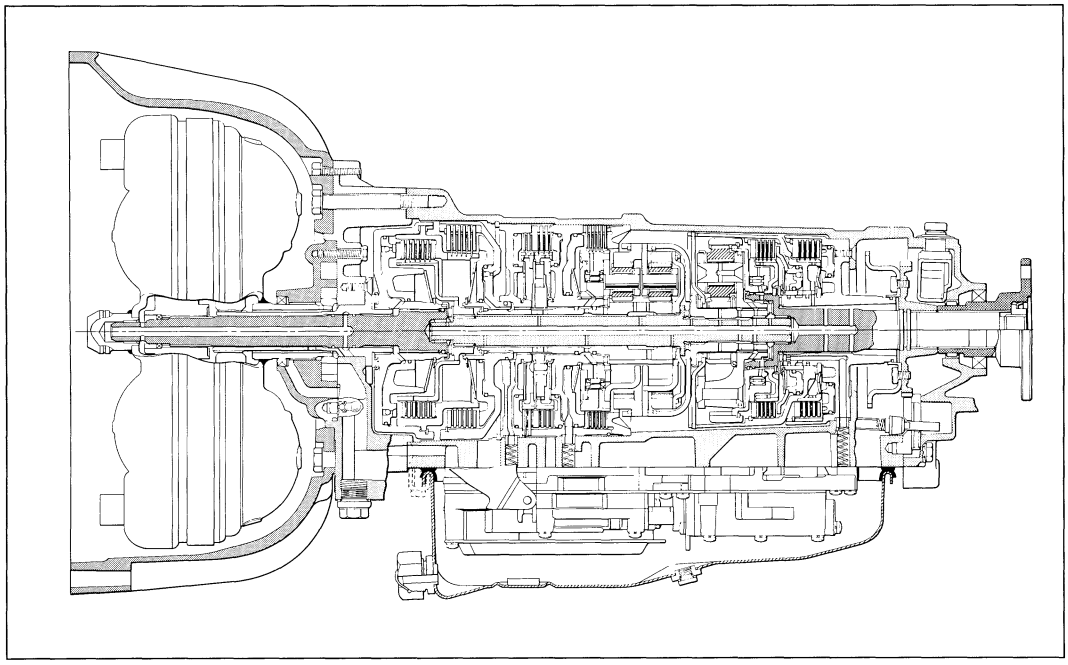
GR
BY
WN
GR
PG
NB
C-8 LEFT PANEL
KN
WN
UR
UR
-86
-85
-87
-30
N
DIRECT BATTERY FEED
FUEL PUMP RELAY
UR
UR
UR
B
B
FUEL PUMP
TRANS. ECU
GB
WU
PY
AIR INJECTION RELAY
PY
B
AIR INJECTION PUMP
PY
B
AIR INJECTION SOLENOID VALVE
TACHOMETER
RY
U
U
6.8KΩ
WB
B
WR
WG
WB
WK
IGNITION SWITCHED FEED
AMPLIFIER
IGNITION COIL

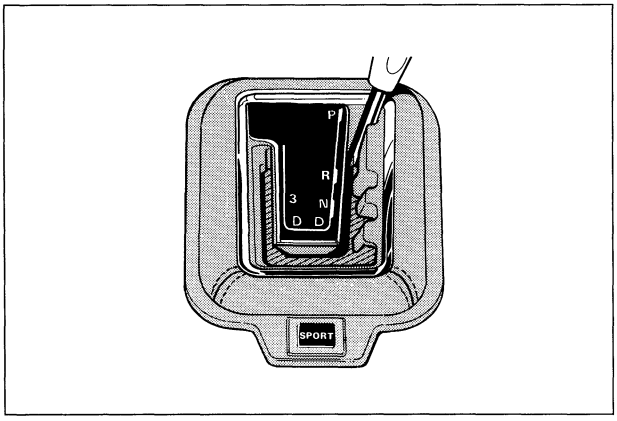
TRANSMISSION

An electronically controlled automatic transmission is used with the 4.0 litre engine. A microprocessor equipped ECU activates solenoid and pressure control valves in the valve body resulting in refined gear shifting. When the driver selects a gear, the selected position is input to the ECU, which in turn controls the transmission valve body. The transmission ECU uses inputs from throttle position, engine speed, engine load, kickdown switch, and vehicle speed to determine gear selection from the programed strategy in it's memory. The performance control switch on the "J" gate surround allows the driver to select SPORT or NORMAL modes of operation.



Performance control switch

The performance control switch selects one of two preprogramed strategies in the ECU. When pressed to the SPORT mode, the switch indicator will light and an instrument pack warning light will come on.



NORMAL mode This strategy is designed for everyday use. With "D" selected, torque converter lock-up occurs in fourth gear only; with "3" selected, lock-up occurs in third gear.

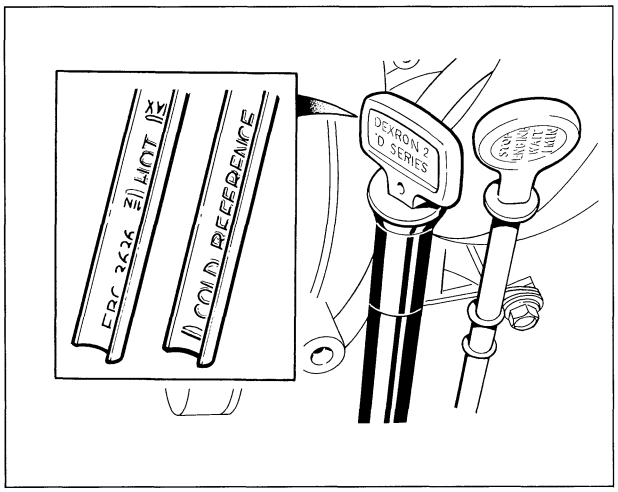
SPORT mode This strategy makes the transmission more sensitive to changes in throttle position. Kickdown occurs more readily and at higher engine speeds. During acceleration, gears are held longer. Part throttle downshift to first gear is possible. Torque converter lock-up occurs only in fourth gear.

Mechanical layout and components

The mechanical layout and components of the new transmission are similar to the previous transmission with the following additions and changes:

- A kickdown switch replaces the mechanical kickdown cable.
- A transmission speed sensor [toothed disc and magnetic sensor] replaces the governor.
- The torque converter has a larger diameter and a lengthened bearing face to accommodate the increased engine power and torque. The bell housing is enlarged to house the larger torque converter.
- The valve body has revised characteristics to operate with the new modulation and working pressures.
- The "A" clutch diameter is enlarged as are the six steel and six lined friction plates.
- The second gear stator is strengthened by riveted construction.
- The third gear stator is changed from a roller clutch to a one-way clutch.
- The fourth gear planet carrier is reinforced.
- The output shaft and flange are reinforced.
- The oil pan is deeper to prevent oil foaming and an additional sleeve is included to improve oil pick-up.
- The fluid level dipstick is changed to a curved profile.

Fluid capacity and level



Fluid capacity 10.75 qt [10.2 L]

Fluid type Dexron II D

Fluid level The fluid level is checked with the transmission at normal operating temperature. The vehicle must be driven at least 15 miles to achieve normal transmission operating temperature.

TRANSMISSION OPERATION

Gear selection A cable operated rotary switch, mounted on the transmission, converts the gear selector movement into electrical signals that are transmitted to the transmission ECU and the decoder unit. The decoder unit allows the switch to communicate with the engine management ECU, the centralmicroprocessor, the gear position indicator module and the speed control relay.

Valve body operation The valve body is controlled by a hydraulic pressure regulator and three solenoid valves. The solenoid valves are activated by the ECU as determined from the selected strategy [SPORT or NORMAL]. The pressure regulator in not adjustable in service.

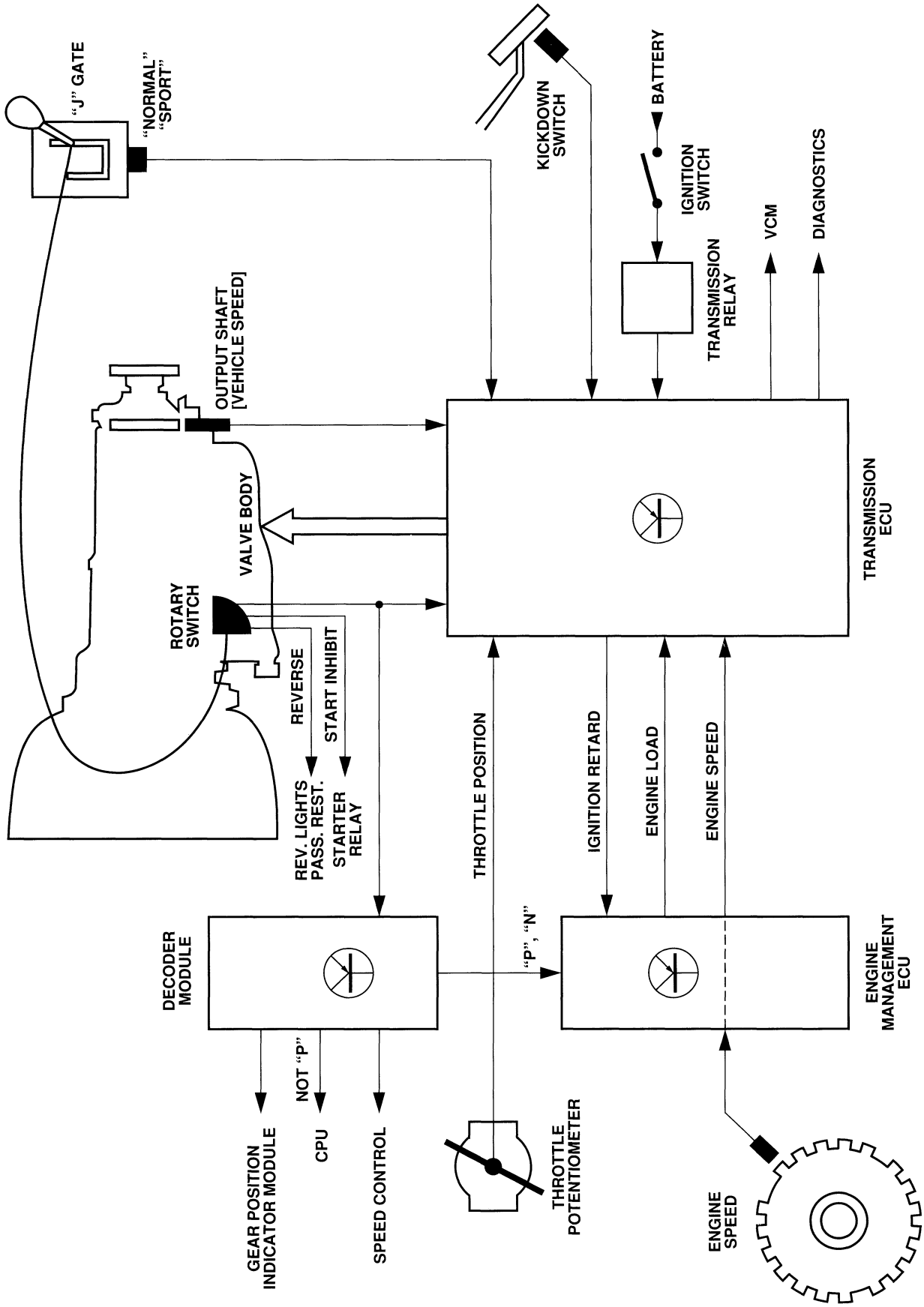
Upshifting The transmission ECU interfaces with the engine management ECU to receive engine speed and load inputs. Ignition timing is momentarily retarded on upshifts to reduce torque input to the transmission resulting in a smoother upshift.

"Limp home" mode In case of a failure occurring in the electronic circuit, a "limp home" mode is provided. The TRANSMISSION FAILURE warning light on the instrument pack [refer to pages 32, 33] will come on and the transmission ECU records a failure code if an electronic failure occurs.

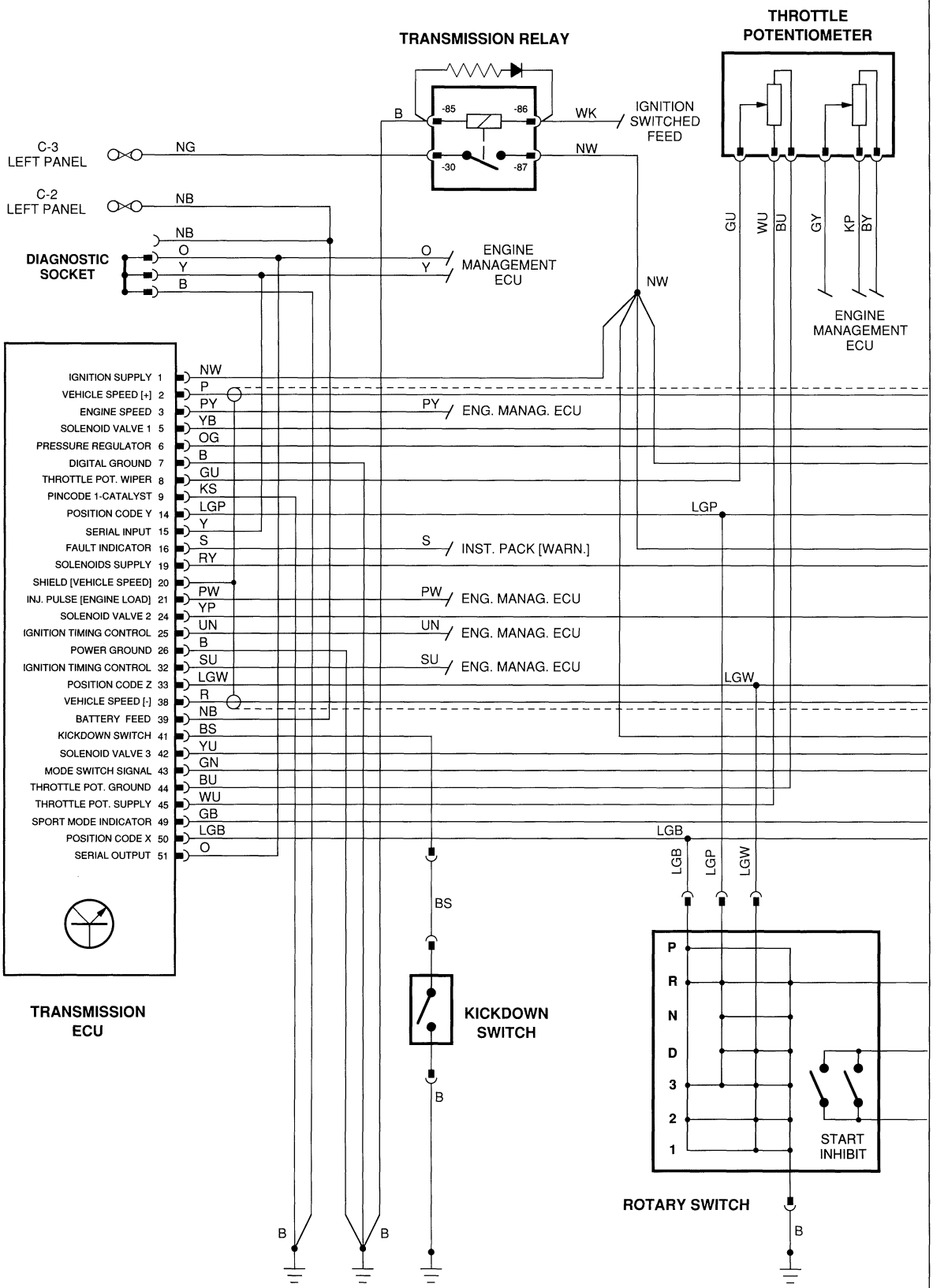
The "limp home" mode operates as follows:

> If a failure occurs while the transmission is in fourth gear, fourth will remain engaged until the vehicle is brought to a stop. Then, third gear will be engaged and held as long as the selector remains in DRIVE.
>
> If a failure occurs while the transmission is in first, second, or third gear, third will immediately be engaged and/or held.
>
> "Limp home" is canceled when the ignition switch is cycled. Normal operation of the transmission will resume if the fault has been corrected or is intermittent and not present.
>
> The fault code, ambient temperature, engine speed, and gear position indicated at the time of the failure may be recalled using JDS.

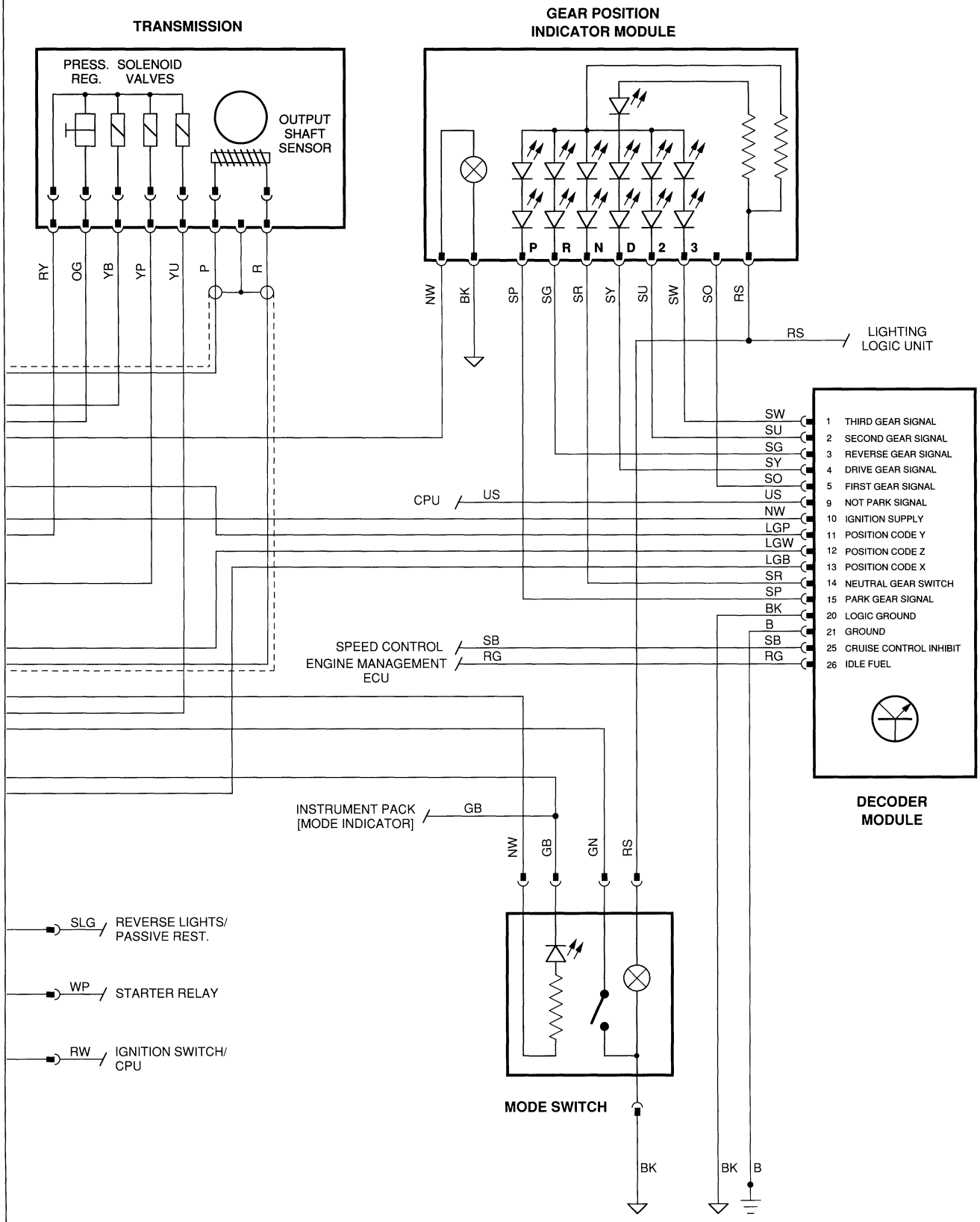
Diagnostics A JDS diagnostic link is combined with the engine management diagnostic link. Pod 7 and modifications to the JDS driver are required to retrieve the 20 different fault codes. Up to five fault codes can be stored in the transmission ECU at a time.



TRANSMISSION CONTROL

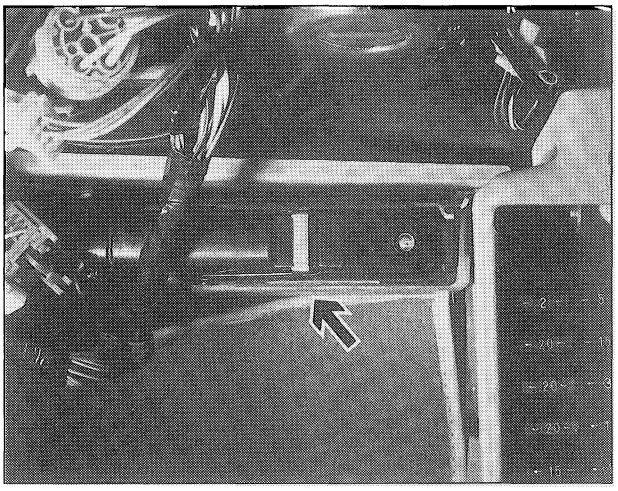


PROVISIONAL WIRING DIAGRAM
REFER TO PAGE 1 FOR WIRING COLOR CODE


TRANSMISSION
PRESS. REG.
SOLENOID VALVES
OUTPUT SHAFT SENSOR
RY
OG
YB
YP
YU
P
R
GEAR POSITION INDICATOR MODULE
P R N D 2 3
NW
BK
SP
SG
SR
SY
SU
SW
SO
RS
RS
LIGHTING LOGIC UNIT
SW
SU
SG
SY
SO
US
NW
LGP
LGW
LGB
SR
SP
BK
B
SB
RG
1 THIRD GEAR SIGNAL
2 SECOND GEAR SIGNAL
3 REVERSE GEAR SIGNAL
4 DRIVE GEAR SIGNAL
5 FIRST GEAR SIGNAL
9 NOT PARK SIGNAL
10 IGNITION SUPPLY
11 POSITION CODE Y
12 POSITION CODE Z
13 POSITION CODE X
14 NEUTRAL GEAR SWITCH
15 PARK GEAR SIGNAL
20 LOGIC GROUND
21 GROUND
25 CRUISE CONTROL INHIBIT
26 IDLE FUEL
DECODER MODULE
CPU
US
SPEED CONTROL
ENGINE MANAGEMENT ECU
SB
RG
INSTRUMENT PACK [MODE INDICATOR]
GB
NW
GB
GN
RS
SLG
REVERSE LIGHTS/ PASSIVE REST.
WP
STARTER RELAY
RW
IGNITION SWITCH/ CPU
MODE SWITCH
BK
BK
B

TRANSMISSION CONTROL COMPONENTS

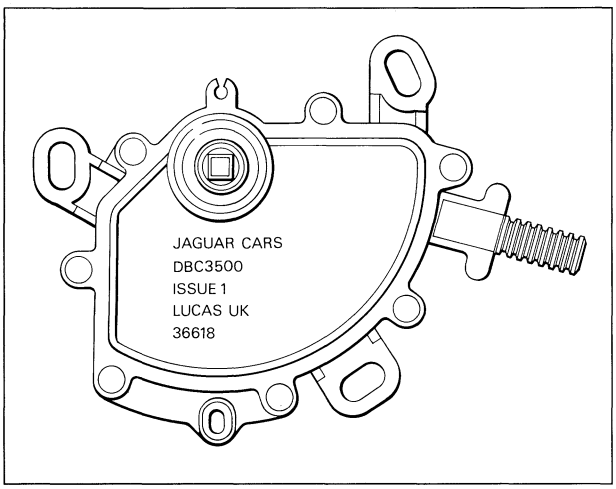
Electronic Control Unit

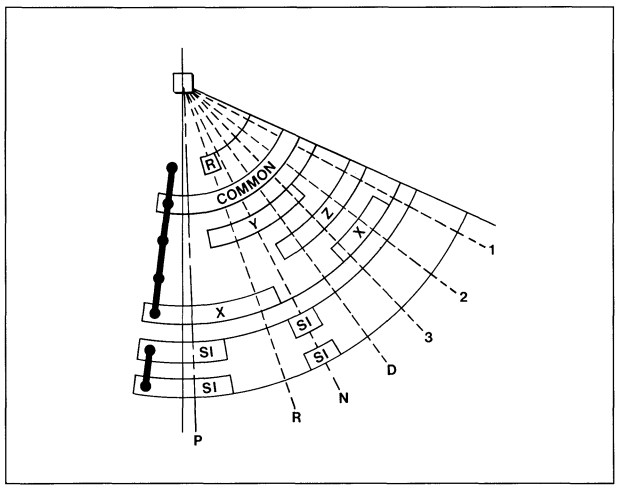


Location Passenger footwell, behind the dash liner.

Description The ECU contains a microprocessor and electronic components. Interpolating from a pre-programmed control strategy, the ECU continuously monitors the gear position, throttle position, output shaft speed, engine speed, and engine load to select the most suitable gear for the prevailing conditions.

Rotary transmission switch



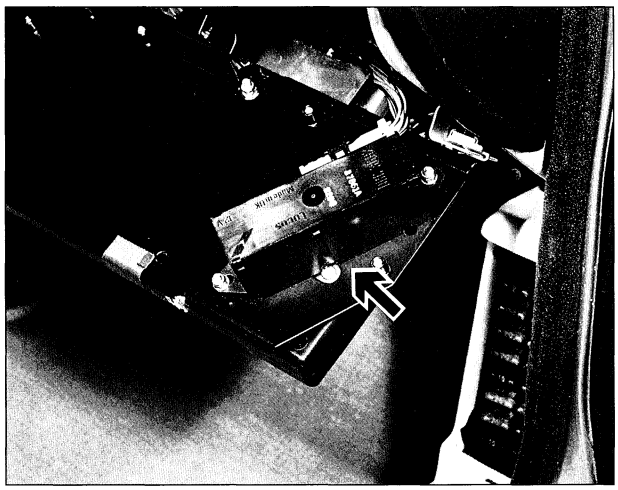


Location Left side of transmission.

Description The rotary switch receives mechanical gear selection inputs from the driver via the selector cable and outputs gear selection to the decoder module and the transmission ECU via electronic signals. A selector bar moves across quadrant copper segments to generate the signal.

When the driver selects a gear, the selector bar moves across the quadrant to a pre-determined position to contact the copper segment(s). The copper segments are set out in seven bands across the quadrant with each band providing an output or combinations of outputs to the decoder module. Outputs are in the form of a three-digit XYZ code. Three quadrant segments are used for the three-digit code; the remaining four segments are used for REVERSE, ground [common], and start inhibit [SI].

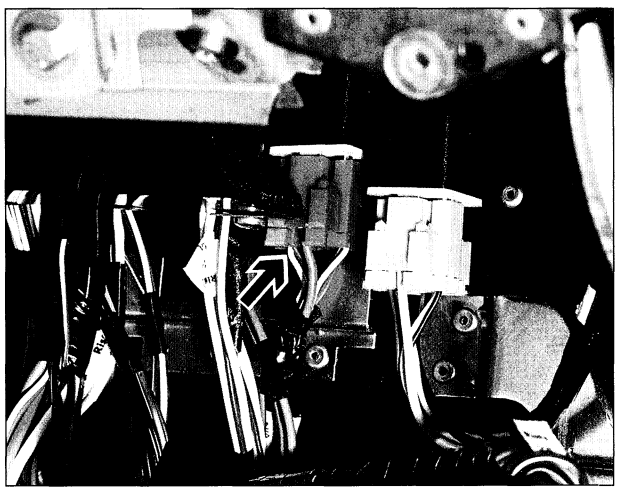
Decoder module



Location Passenger footwell; behind the dash liner.

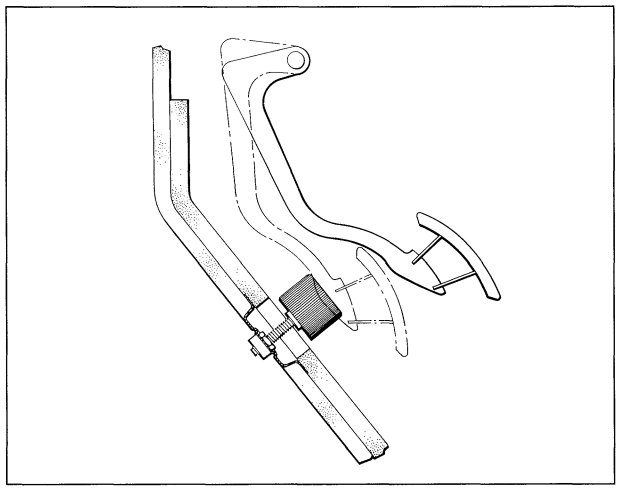
Description The decoder module "translates" the three-digit XYZ codes from the rotary switch into single line signals. The single line signals are fed to the CPU, the gear position indicator, the speed control relay, and the engine management ECU.

Transmission relay



Location Passenger side blower housing; violet connector; black relay.

Kickdown switch



Location Under accelerator pedal.

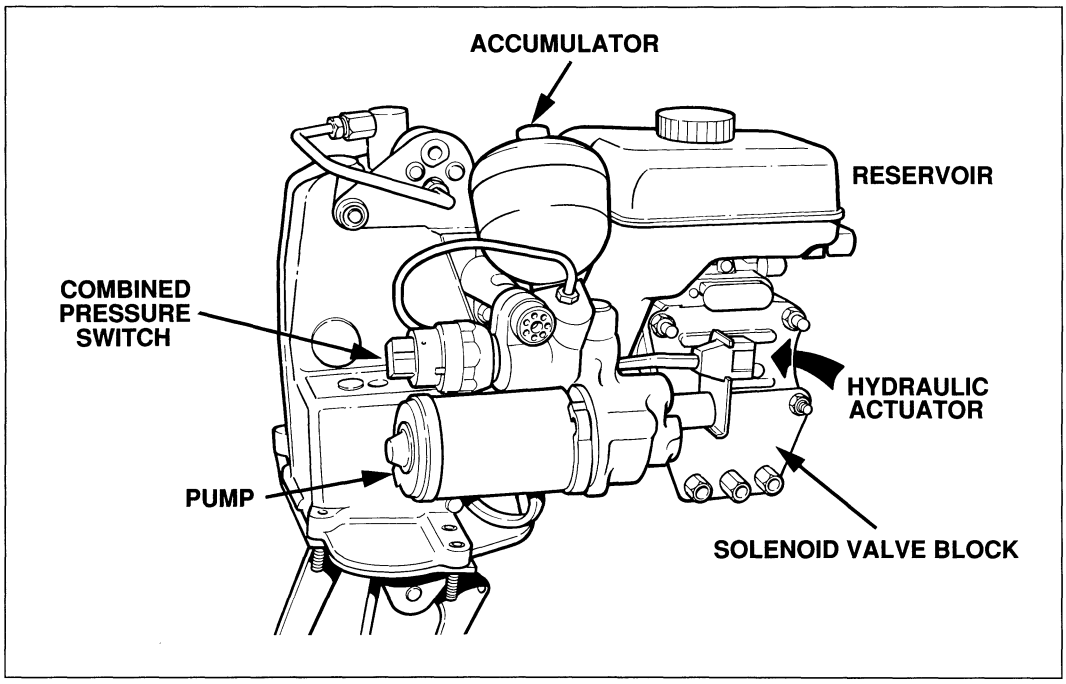
Description The kickdown switch replaces the mechanical cable mechanism. The switch is adjustable and is activated by pressure from the accelerator pedal.

ANTI-LOCK BRAKING

The new anti-lock braking system is identical in operation to the 1989 XJ-S system. This eliminates the power hydraulic booster system. In the Sedan Range, the system is more compact in that the motor, pump, reservoir, and the hydraulic actuation unit are all integrated on the brake pedal and accelerator housing. The system combines normal operation, power boost, and anti-lock braking. The previous power hydraulic booster arrangement has been eliminated.

Anti-lock unit

The anti-lock unit integrates the motor, pump, reservoir, and the hydraulic actuation unit on the brake pedal and accelerator housing. A steel pipe connects the motor-pump unit to the hydraulic actuation unit.



Anti-lock warning

The BRAKE WARNING and ABS WARNING lights operate in the opposite order to those in the XJ-S. During system charging, the ABS WARNING goes off first, then the BRAKE WARNING. The reason for this sequence is that the ABS WARNING goes off at 95±5 bar, and the BRAKE WARNING goes off at 105±4 bar. The warning light blink fault codes are the same as for the XJ-S.

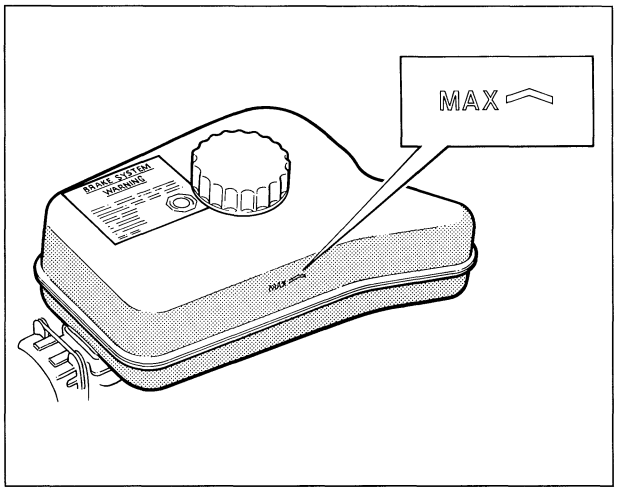
Discs and calipers

The previous Girling discs, calipers, and parking brakes have been replaced by a Teves system [the anti-lock system manufacturer]. These components complement the anti-lock system and feature brake discs with increased thickness to improve thermal capacity and reduce the possibility of brake fade. Pad wear sensors are incorporated into two of the four pad sets; one at the left front wheel and one at the right rear wheel.

ANTI-LOCK BRAKING

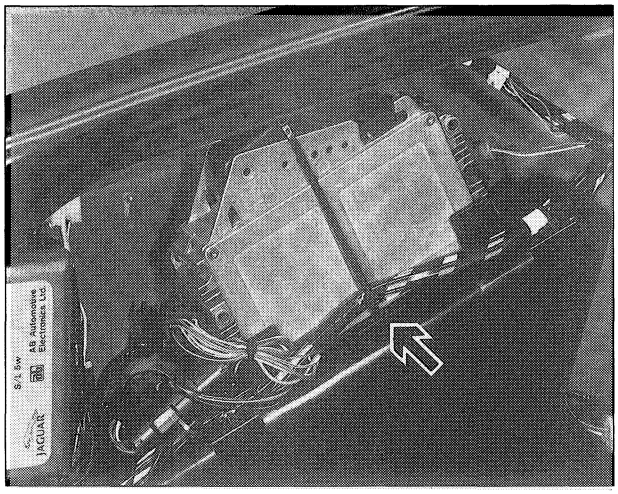
Fluid reservoir

A common operating fluid, DOT 4 BRAKE FLUID, is used for both power boost and brake application.



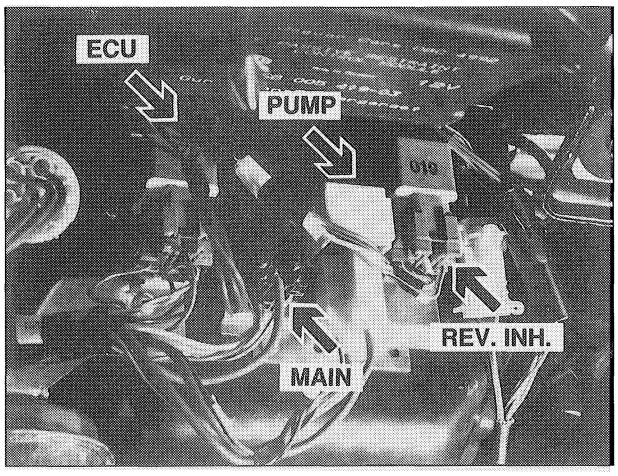
Electronic control unit

The ECU has a 55-way connector and is located in the trunk behind the left trim panel.



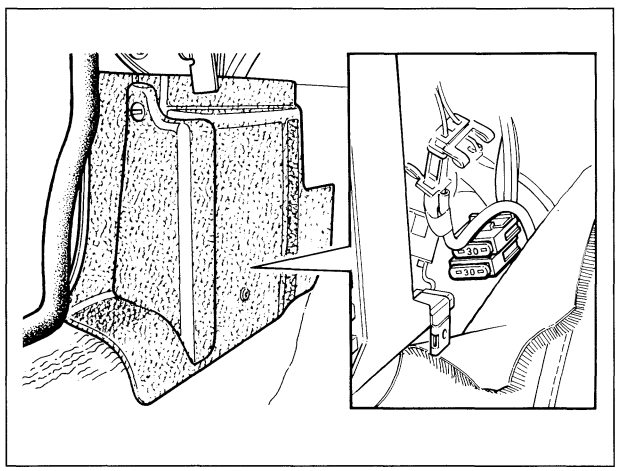
Relays

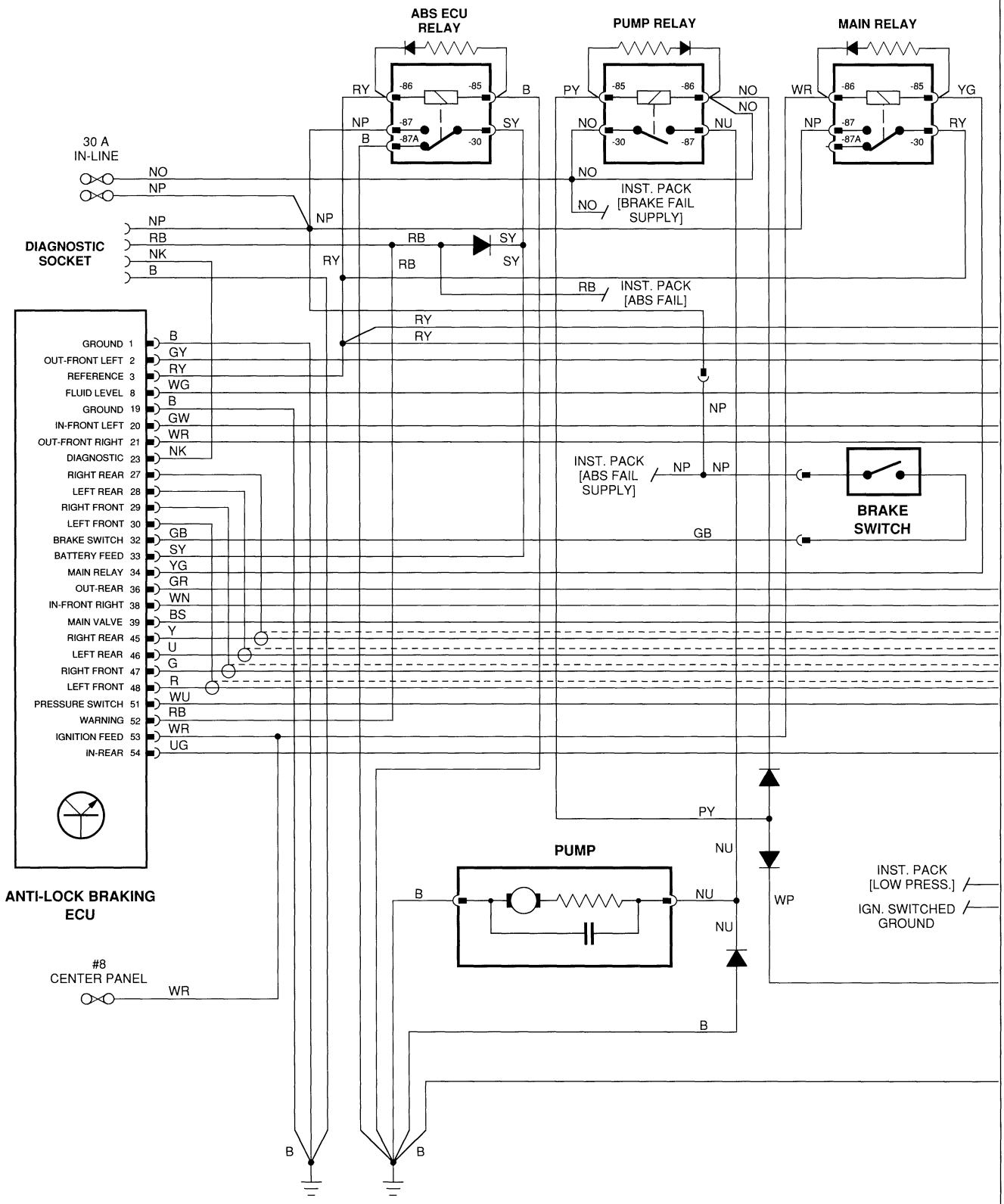
Three relays are used: main-black relay, black connector; ECU-green relay, blue connector; and pump-yellow relay, yellow connector. These are mounted on the driver's side blower housing.



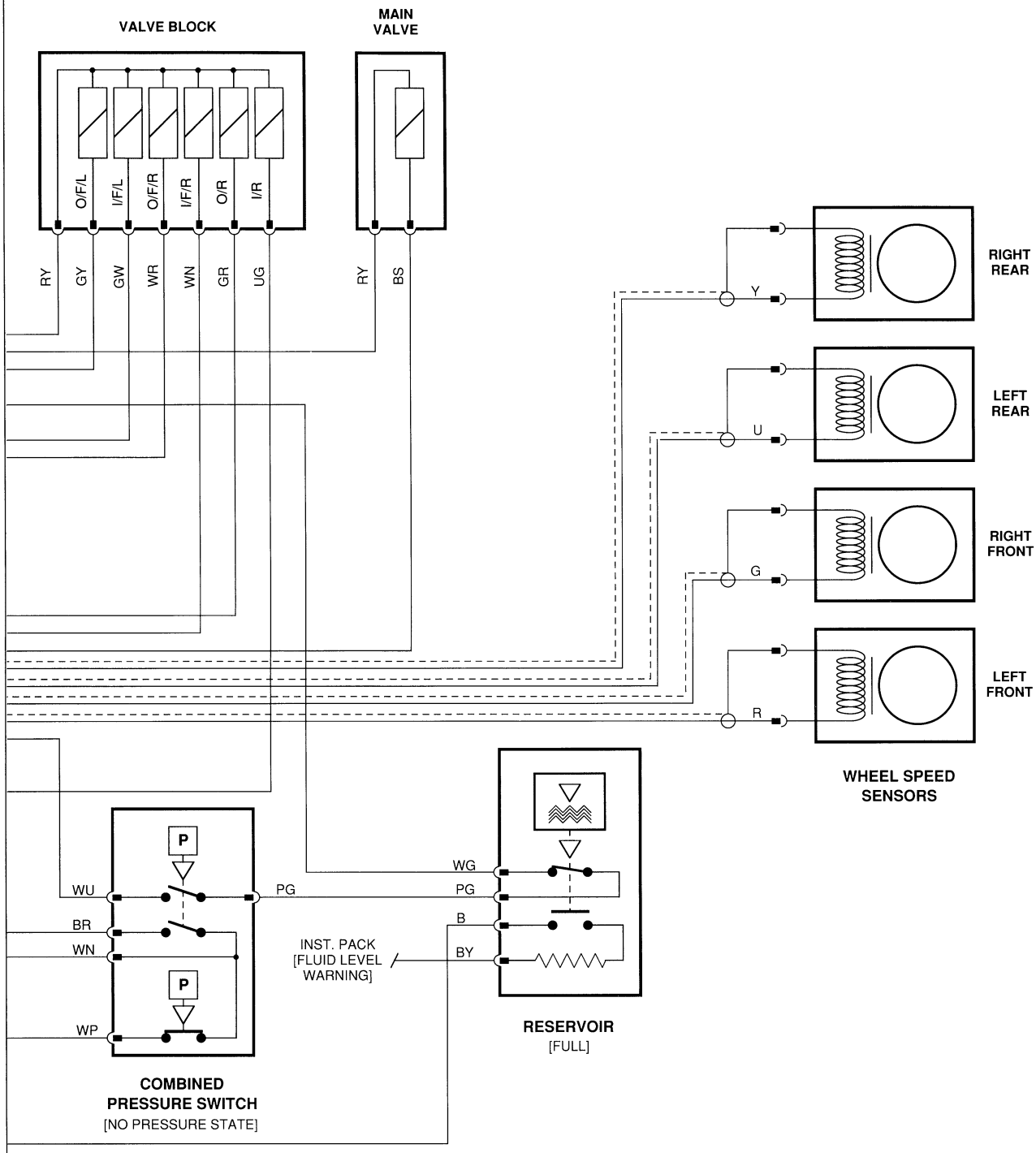
Fuses

Two in-line fuses and one panel fuse protect the anti-lock circuit. The in-line fuses are located behind the driver's "A" post fuse panel.



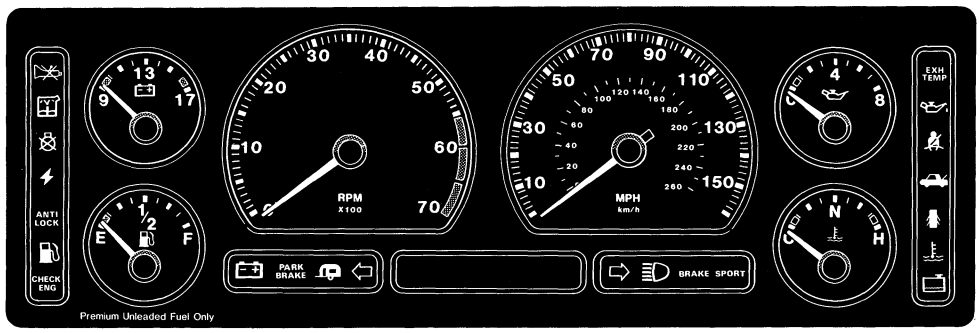


PROVISIONAL WIRING DIAGRAM
REFER TO PAGE 1 FOR WIRING COLOR CODE


VALVE BLOCK
MAIN VALVE
O/F/L
I/F/L
O/F/R
I/F/R
O/R
I/R
RY
GY
GW
WR
WN
GR
UG
RY
BS
Y
U
G
R
RIGHT REAR
LEFT REAR
RIGHT FRONT
LEFT FRONT
WHEEL SPEED SENSORS
P
WU
BR
WN
WP
PG
WG
PG
B
BY
INST. PACK [FLUID LEVEL WARNING]
RESERVOIR [FULL]
COMBINED PRESSURE SWITCH [NO PRESSURE STATE]

INSTRUMENT PACK

The main function of the instrument pack is to provide the driver with information about the state of the vehicle by receiving inputs from all areas of the vehicle. A secondary function is to perform trip computer calculations and display trip computer information.



The "state of the vehicle" information can be divided into two categories: information required during normal operation and information required to indicate a hazard or fault condition.

Information required during normal operation This information is provided by the six analog instruments and the LCD message display. The analog instruments include the tachometer, speedometer, voltage gauge, fuel level gauge, oil pressure gauge, and coolant temperature gauge. The odometer, trip meter, and trip computer messages are displayed on the LCD message display.

Information required to indicate a hazard or fault condition This information is provided by the twenty-two warning and indicator lights. The primary warnings are on the right side of the instrument pack and show in red. The secondary warnings are on the left side of the instrument pack and show in amber. The LCD message display also provides VCM [vehicle condition monitor] messages associated with certain warnings.

Vehicle condition monitor [VCM]

Additional information is available from the VCM when three warnings are lit. These include: BRAKE SYSTEM FAULT, CHECK ENGINE, and CIRCUIT FAILURE.

By pressing the VCM button on the trip computer panel when one of the these warning lights come on, a fault message and code will be displayed on the LCD message display.

INSTRUMENT PACK

Analog gauges

The six analog gauges are "slaves" that are driven by air cored indicators controlled by the instrument pack microprocessor. When the ignition is switched on, the needles may move around the gauges briefly, then return to zero automatically. The needles of the four minor gauges — voltage, fuel level, oil pressure, and coolant temperature — move from minimum to maximum in 58 increments. These incremental movements should not be interpreted as gauge flicker. The coolant temperature gauge will move rapidly up the scale to "N" when the thermostat opens. This is due to the close proximity of the sensor to the thermostat, and to the sensitivity of the gauge.

All of the analog gauges are sealed units and are not serviceable; however, they can be replaced in pairs; speedometer and tachometer, battery and fuel, oil and coolant.

Instrument pack bulbs

All the bulbs are of the long life type and are driven by the instrument pack microprocessor.

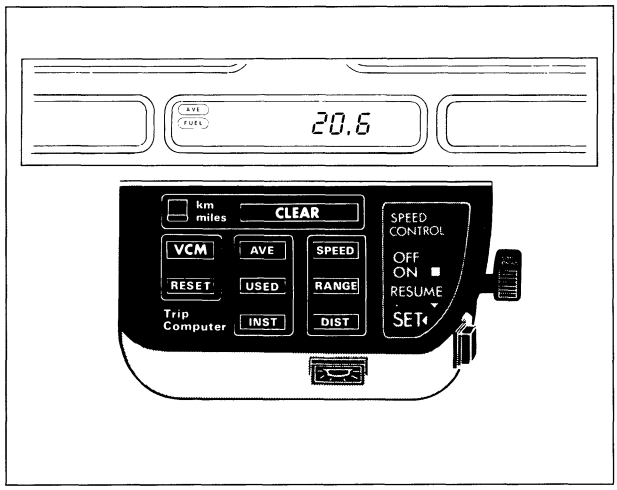
Trip computer

The trip computer operation has been simplified so that each function is selected by a dedicated button.

The functions available are:

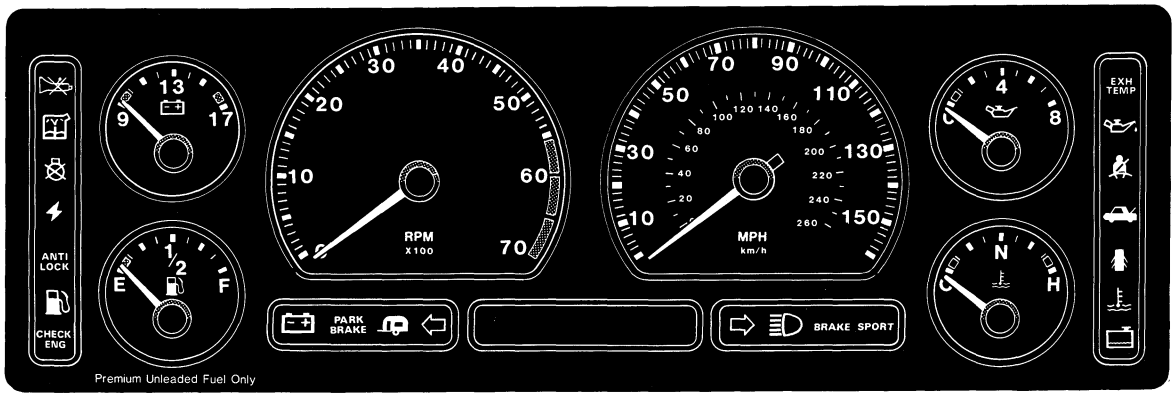
- Average fuel consumption
- Average speed
- Fuel used
- Range
- Instantaneous fuel consumption
- Distance traveled

The information is displayed on the LCD message display and supercedes the odometer display. The CLEAR button restores the odometer display. The RESET button performs the same function as the previous M/C button.



SECONDARY WARNINGS [AMBER]

PRIMARY WARNINGS [RED]



AUTO. TRANS. FAILURE
W/S RESERVOIR LOW
BULB FAILURE
CIRCUIT FAILURE
ABS SYSTEM
LOW FUEL LEVEL
CHECK ENGINE

EXHAUST TEMP. [NOT USED]
LOW OIL PRESSURE
SEAT BELT
TRUNK OPEN
DOOR OPEN
HIGH COOLANT TEMP.
LOW COOLANT LEVEL

IGNITION
PARKING BRAKE
TRAILER
LEFT TURN SIGNAL

LCD MESSAGE DISPLAY

TRANSMISSION SPORT MODE
BRAKE SYSTEM FAULT
HIGH BEAMS
RIGHT TURN SIGNAL

WARNINGS

The warning lights function in the same way as the previous VCM warnings with the following exceptions:

Automatic Transmission Failure If this warning remains on while the vehicle is running, an electronic failure in the automatic transmission is indicated. Refer to page 22 for a description of "limp home" mode.

Circuit Failure This warning indicates a fuse failure. When the VCM button is pressed, a circuit code will appear on the LCD message display:

1	right fuse panel	4	accessory fuse panel [optional equip.]
2	left fuse panel	5	ABS main fuse
3	center fuse panel	6	ABS pump fuse

ABS System Failure When illuminated alone while operating the vehicle, this warning indicates a partial or complete failure of the anti-lock braking system. If a partial failure occurs, the ABS system will compensate automatically and continue to operate the remainder of the circuit. The brake system will operate without ABS, providing normal boosted braking to all road wheels.

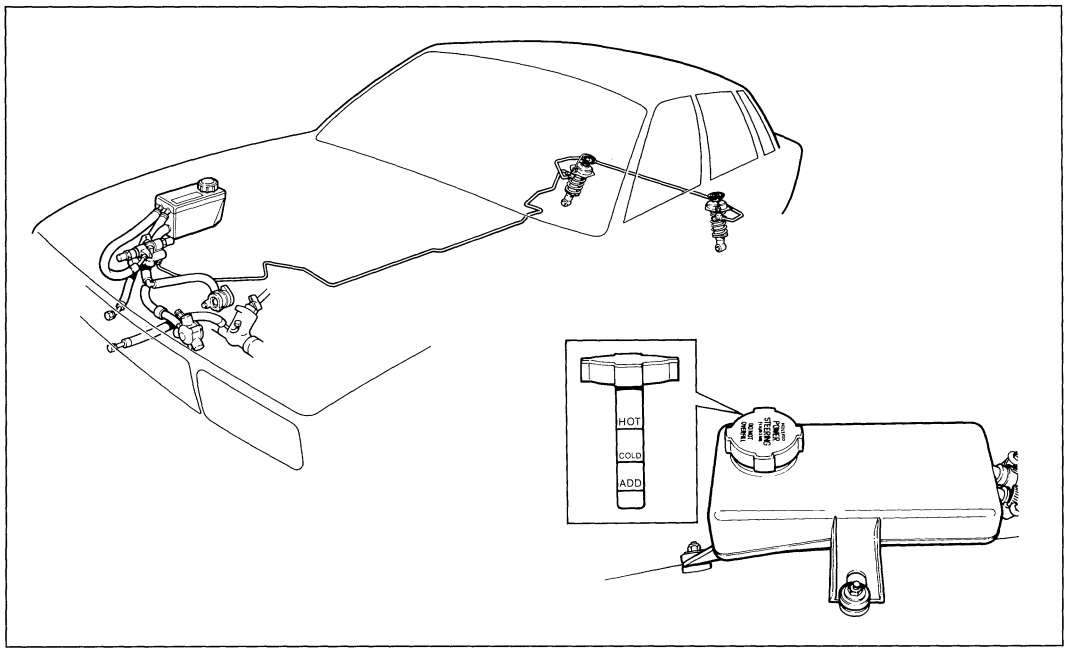
Check Engine This warning indicates an engine management failure. The warning will remain lit with the ignition switched on until the failure is corrected. Two codes associated with fueling are exceptions to this rule. The warning light and fault codes will be displayed, then extinguished when the ignition is turned to the crank position. This prevents a continuous warning if the vehicle runs out of fuel.

Fault codes can be retrieved for diagnostic purposes by switching off the ignition for at least five seconds, then switching to position II. DO NOT START THE ENGINE. Press the VCM button to display the fault code[s]. All recorded fault codes will be stored in the ECU memory until cleared by JDS.

Brake System Failure One of three fault conditions is indicated when the warning is on: low brake fluid level, low boost pressure, or brake pad wear. The warning will remain on to indicate low fluid level and low boost pressure. The warning will go on and off as the brakes are applied to indicate pad wear. By pressing the VCM button, the failure will be shown on the LCD message display.

POWER STEERING / RIDE LEVELING

With the elimination of the previous braking system, the power steering and ride leveling systems now share a common reservoir and use the same fluid: Hydraulic System Mineral Oil [HSMO]. DO NOT USE POWER STEERING FLUID. The power steering and ride leveling circuits are independent except for sharing the same reservoir.



Ride leveling

A revised pump is used in the ride leveling circuit and the filter has been relocated from the reservoir to an in-line position between the reservoir and the ride leveling pump. Without the requirements of braking, an accumulator is not used in the circuit. The ride leveling relay has been relocated to the trunk and now uses connector code RS134.

Rear Suspension — XJ6 models

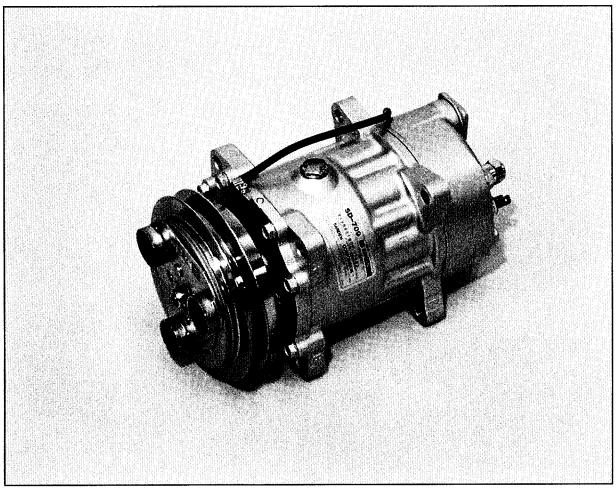
XJ6 models use coil shock units in place of the ride leveling struts used on the Sovereign, VDP, and Majestic models.

CLIMATE CONTROL

The climate control system has the following minor changes:

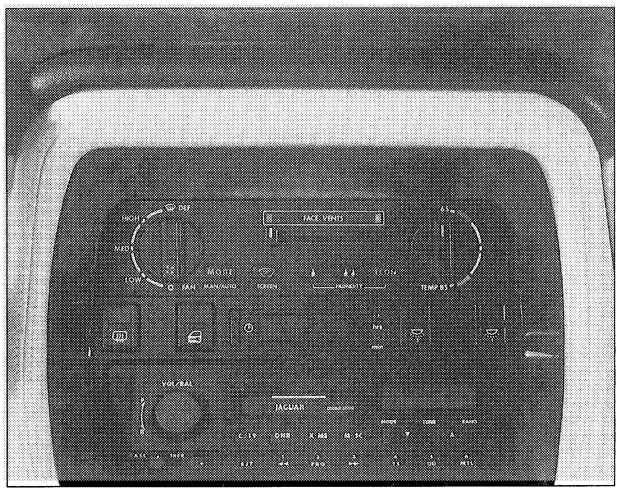
Compressor

To increase smoothness and reduce noise, the compressor has been changed to a seven cylinder configuration. The suction muffler has been relocated to the back of the compressor.



Control panel

The control panel graphics have been revised, however, all controls and functions remain the same.



Other changes

The evaporator inlet and outlet locations have been switched to invert the expansion valve thereby reducing operating noise. The new arrangement also allows better access to the schrader valve for servicing.

The size of the vacuum tank has been increased to accommodate the new brake pedal closing panel.

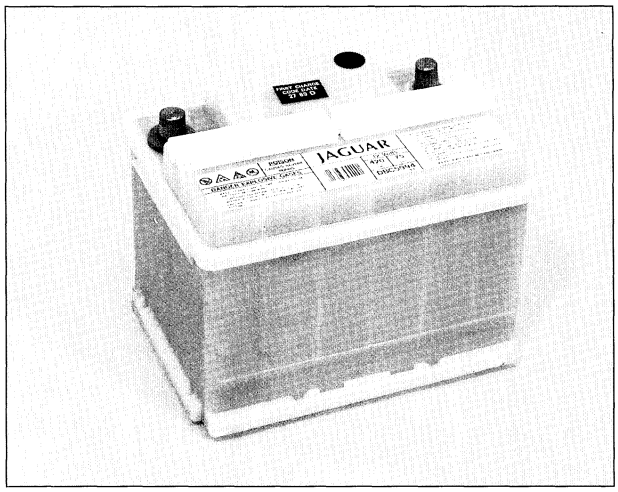
The vacuum solenoid operated coolant flow control valve has been eliminated.

ELECTRICAL SYSTEM

The electrical system revisions incorporate all of the systems described before this section. Additional revisions as well as fuse/circuit identification are included in this section.

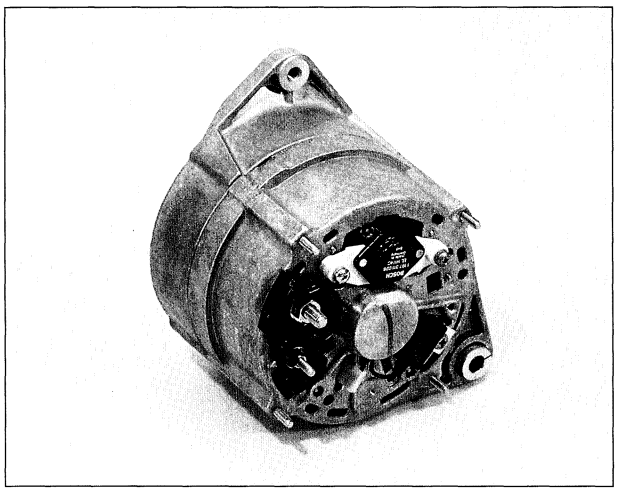
Battery

The new type 440 battery in the 1990 Sedan range is used as a replacement for the battery in previous model years; however, the previous battery must not be used in the 1990 MY vehicles. The type 440 battery has a capacity of 50 amp hours and requires a different charging procedure and rate. Details on the new procedure will be issued in a service bulletin.



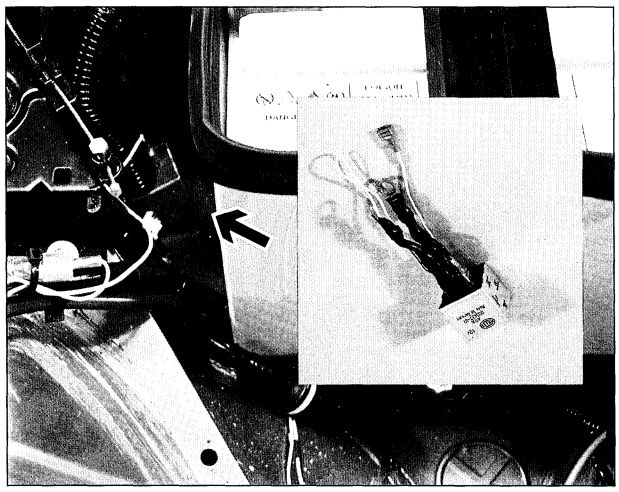
Alternator

The 1990 MY alternator has an increased output of 115 amps.



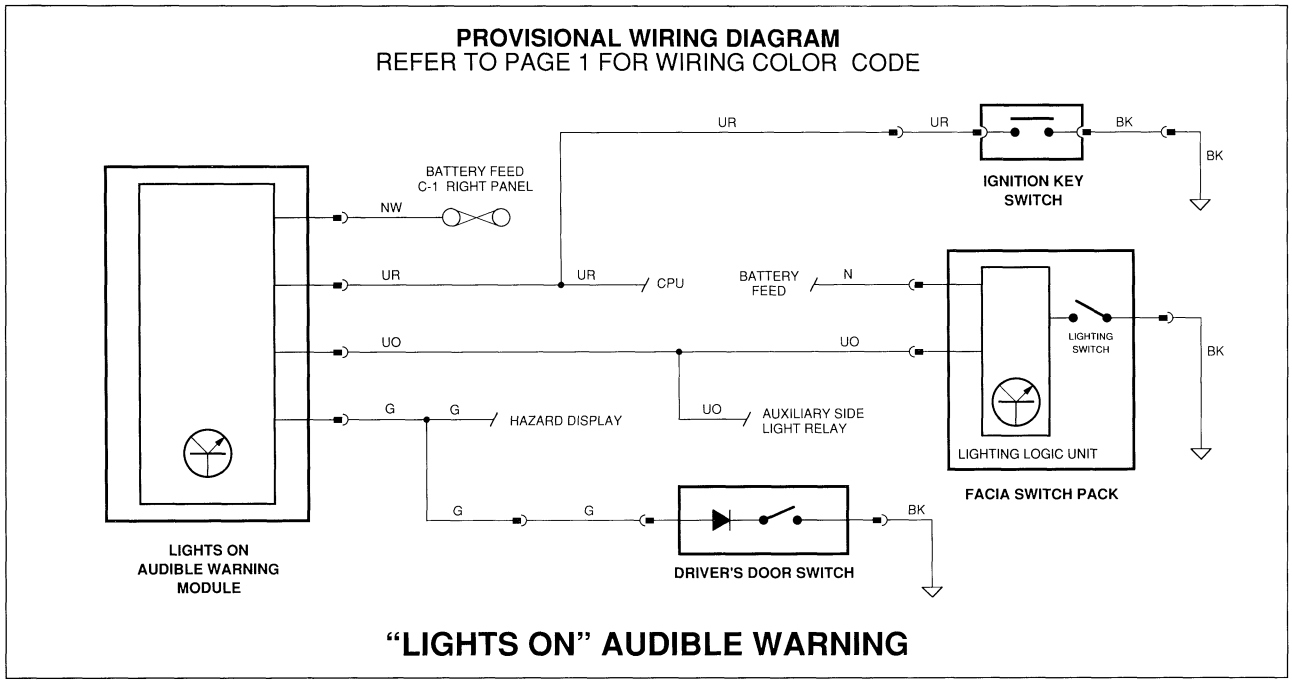
Transit isolation device

A transit isolation device is used to reduce quiescent current drain during shipment and storage. With this installed, the following normal conditions may occur when the ignition turned off: some instrument gauges may move to full scale and the odometer reading may appear corrupted. Central door locking is not available; therefore, the doors must be locked manually and may become out of sequence. Complete details for removal of the device will be issued in a service bulletin.



"Lights on" audible warning

The "lights on" audible warning circuit introduced as a 1989 running change, [page 43] has been revised so that the ignition key must be removed to activate the warning. The warning tone is now integrated with the speaker on the steering column.



"LIGHTS ON" AUDIBLE WARNING

Bulb failure and relay modules [styled headlights]

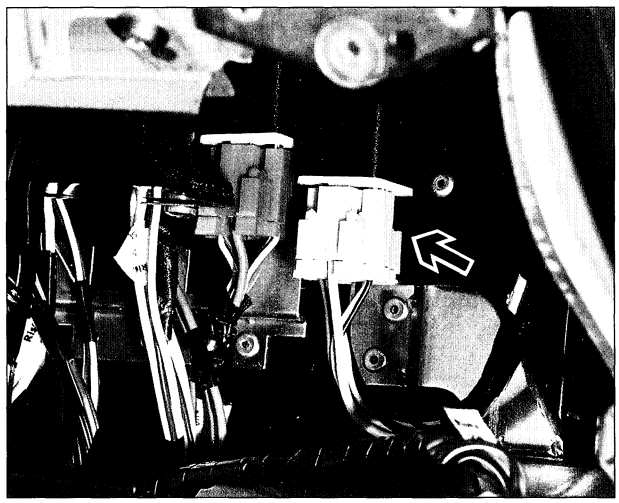
The bulb failure and relay modules used with the styled headlights are revised to interface with the different plug style and the replaceable high and low beam bulbs.

Ten-way accessory fuse panel [optional equipment]

The dealer installed optional accessory fuse panel has been expanded to a ten-way arrangement. Fuses 1,3,5,7, and 9 are battery feeds; fuses 2,4,6,8, and 10 are ignition switched feeds. THE TOTAL PANEL MAXIMUM FUSE RATING IS 20 AMPS.

Cigar lighter circuit

The cigar lighter circuit wire color coding has been revised from the 1989 MY running change described on page 43. The cigar lighter relay is now located on the passenger's blower housing beside the transmission relay. The relay is black with a red connector.



Fuse panels

The fuse panels have been expanded to accommodate the revised and new circuits and provide room for future circuits.

LEFT FUSE PANEL [battery power]

Number	Color	Value	Circuit[s]
A1	Lt. green	30 A	Left front seat: movement and heater
A2	Yellow	20 A	Left blower
A3	Violet	3 A	Not used
A4	Yellow	20 A	Left passive restraint
A5	Red	10 A	Horns
A6	White	25 A	Accessory fuse panel [optional]
A7	Red	10 A	Left rear lights: stop, reverse, turn signal, fog lights
A8	Violet	3 A	Not used
B1	Lt. green	30 A	Right front seat: movement and heater
B2	Lt. blue	15 A	Driver's door: power window, mirror
B3	Tan	5 A	Instrument pack
B4	Yellow	20 A	Sunroof
B5	Lt. blue	15 A	Left rear power window
B6	Tan	5 A	Left front lights: side, side marker, turn signals
B7	Lt. blue	15 A	Windshield wiper
B8	Lt. blue	15 A	Left headlight high beam
C1	Violet	3 A	Not used
C2	Gray	2 A	Transmission ECU [memory]
C3	Red	10 A	Transmission control main feed
C4	Violet	3 A	Not used
C5	Violet	3 A	Left rear lights: tail, license, side marker
C6	Violet	3 A	Engine breather heater
C7	Red	10 A	Left headlight low beam; left front fog light
C8	Violet	3 A	Not used

CENTER FUSE PANEL [ignition switched power]

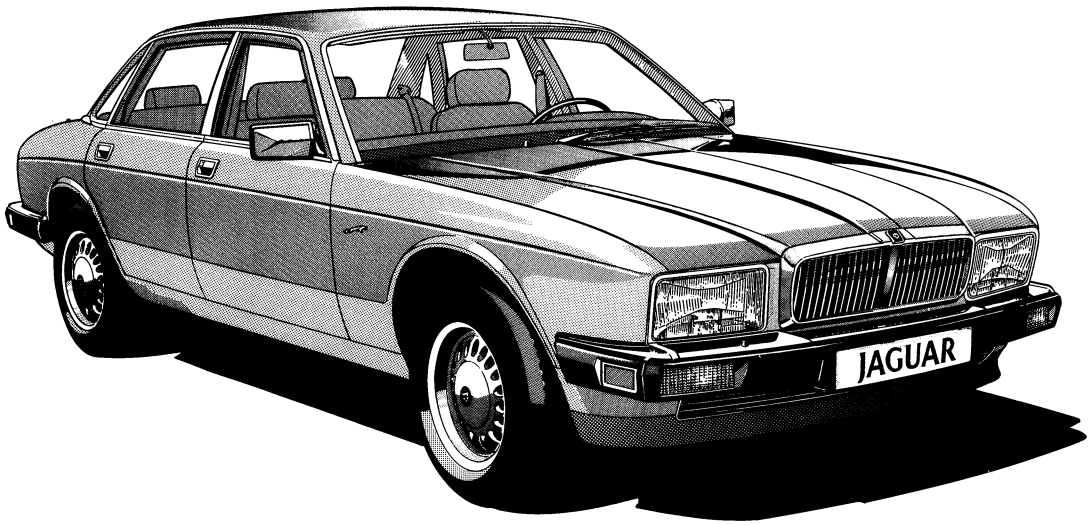
Number	Color	Value	Circuit[s]
1	Violet	3 A	Left front and right rear bulb failure modules; alternator control
2	Violet	3 A	Right front and left rear bulb failure modules; radio lighting
3	Tan	5 A	Speed control
4	Violet	3 A	Ride leveling
5	Violet	3 A	Cooling fan relay; windshield washer heated jets; engine breather heater relay
6	Tan	5 A	Instrument pack
7	Violet	3 A	Cigar lighter relay
8	Violet	3 A	ABS ECU ignition supply; ABS main relay coil
9	Violet	3 A	Not used
10	Violet	3 A	Not used

RIGHT FUSE PANEL [battery power]

Number	Color	Value	Circuit[s]
A1	Gray	2 A	Ride leveling
A2	Yellow	20 A	Right blower
A3	Yellow	20 A	Cigar lighters
A4	Yellow	20 A	Right passive restraint
A5	Lt. blue	15 A	cooling fan; A/C compressor clutch
A6	White	25 A	Headlight power wash
A7	Yellow	20 A	Heated rear window
A8	Red	10 A	Trailer
B1	Tan	5 A	Trunk release
B2	Lt. blue	15 A	Passenger's door: power window, mirror
B3	Violet	5 A	Not used
B4	Lt. blue	15 A	Door and trunk locks
B5	Lt. blue	15 A	Right rear power window
B6	Tan	5 A	Windshield washer
B7	Red	10 A	Right rear lights: stop, reverse, turn signal, fog; high mount stop light
B8	Lt. blue	15 A	Right headlight high beam
C1	Red	10 A	Radio
C2	Brown	7.5 A	Interior lights; trunk lights; under hood lights; door guard lights
C3	Violet	3 A	Right rear lights: tail, license, side marker
C4	Violet	3 A	Instrument lighting dimmer; auxiliary side light relay
C5	Tan	5 A	Right front lights: side, side marker, turn signals
C6	Violet	3 A	Radio antenna
C7	Red	10 A	Right headlight low beam; right front fog light
C8	Violet	5 A	Door mirror heaters

IN-LINE FUSES

Circuit	Location	Color	Value
Wiper logic unit	Wiper logic module	Brown	7.5 A
ABS main feed	Behind driver's "A" post fuse panel	Lt. green	30 A
ABS pump	Behind driver's "A" post fuse panel	Lt. green	30 A
Radio	Below center console	—	5 A
Radio Memory	Below center console	—	1 A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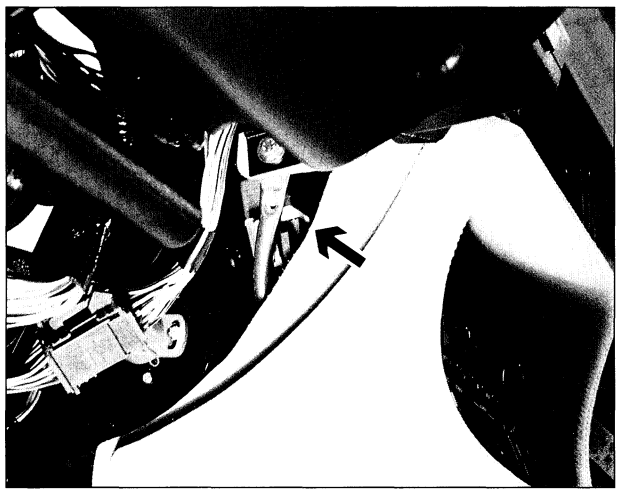
1989 MY FEATURE CHANGES

DRIVER'S SEAT ADJUSTMENT

Starting with VIN 578777, the powered seats circuit was revised to incorporate a driver's seat entry switch. When activated by the switch, the driver's seat will move rearward to allow increased entry room. When the switch is released, normal operation is returned to the circuit. Refer to the wiring diagram on page 44.

Driver's seat entry relay

The relay is located on the left side of the climate control unit and has a red connector.



"LIGHTS ON" AUDIBLE WARNING

Starting with VIN 582183, a "lights on" audible warning system was introduced. This system warns the driver if the parking lights are left on when the driver's door is open. A separate warning module, incorporating an audible tone, is used for this system. Refer to the wiring diagram on page 45.

"Lights on" warning module

The warning module is located on the left hand dash bracket.

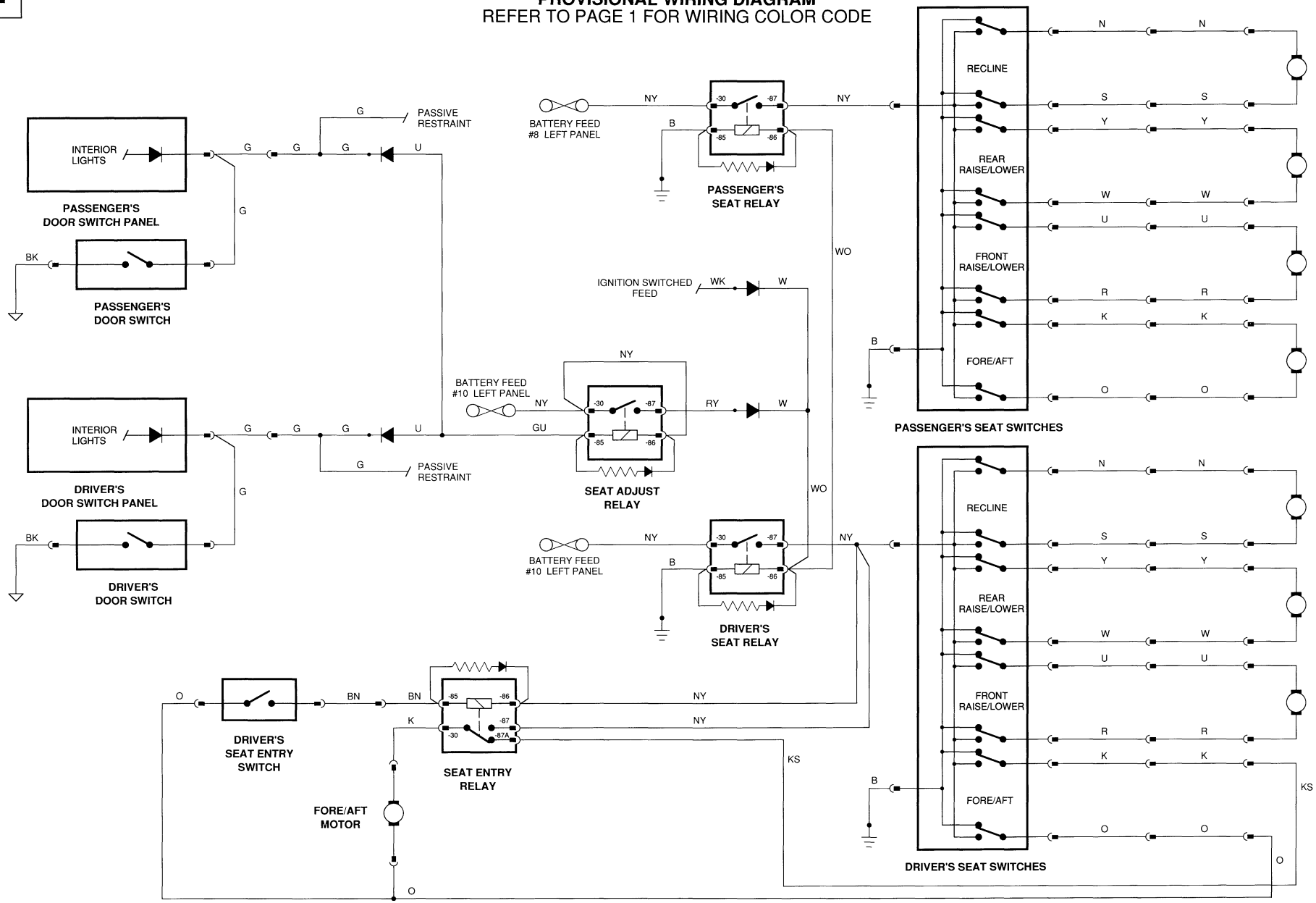
CIGAR LIGHTERS

Starting with VIN 582183, the cigar lighter circuit was revised to operate only when the ignition is on. Refer to the wiring diagram on page 45.

Cigar lighter relay

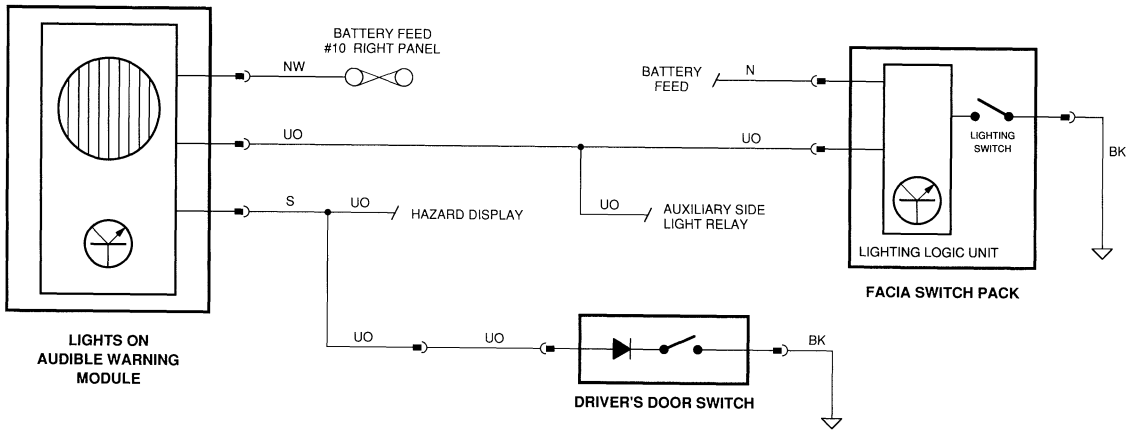
The relay is located under the trim panel at the right front of the trunk and has a white connector.

PROVISIONAL WIRING DIAGRAM
REFER TO PAGE 1 FOR WIRING COLOR CODE



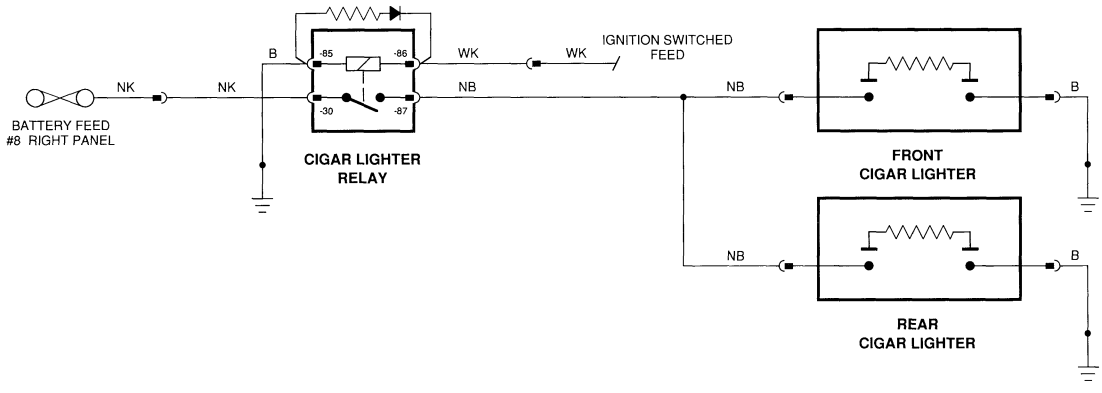
POWERED SEATS

PROVISIONAL WIRING DIAGRAM
REFER TO PAGE 1 FOR WIRING COLOR CODE



"LIGHTS ON" AUDIBLE WARNING

PROVISIONAL WIRING DIAGRAM
REFER TO PAGE 1 FOR WIRING COLOR CODE



CIGAR LIGHTERS

NOTES

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