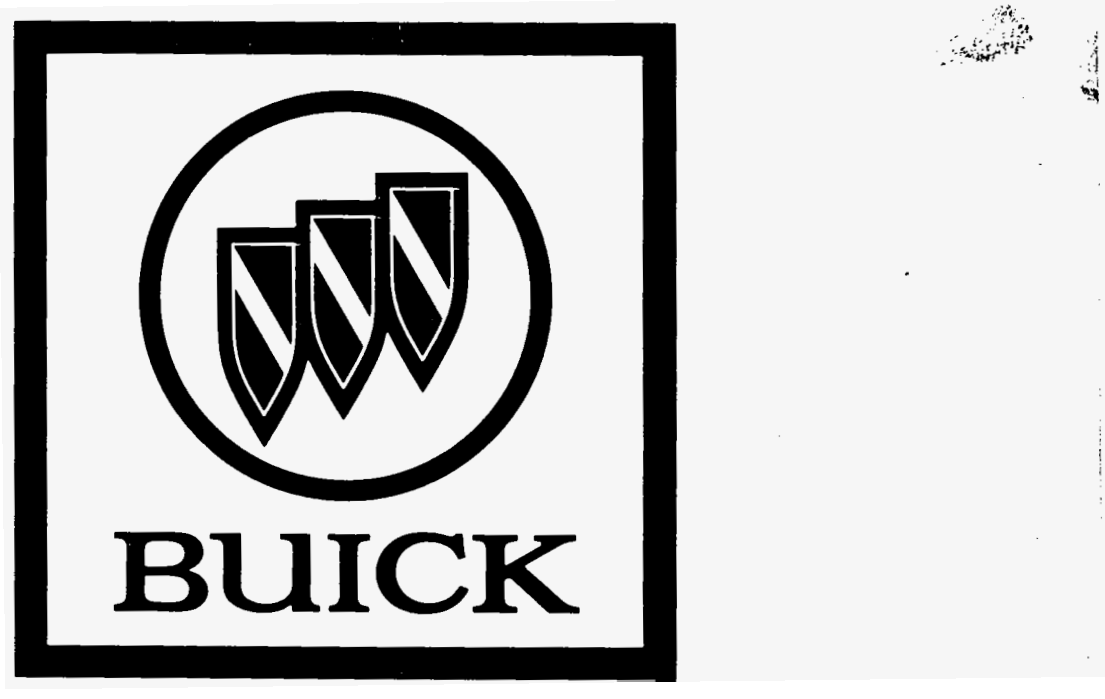
1987
CHASSIS SERVICE MANUAL

Volume I



1987
BUICK
CHASSIS
SERVICE MANUAL
REVISION

This package contains new and revised pages to be inserted into the 1987 Buick Chassis Service Manual.

Before inserting these pages and or sections, check to make sure that the 1987 SERVICE MANUAL SUPPLEMENT mailed out after the initial Service Manual printing has been incorporated into the Service Manual.

1987 BUICK CHASSIS SERVICE MANUAL

This manual includes procedures for diagnosis, maintenance, adjustments and service operations of components and systems. All information, illustrations and specifications contained in this publication are based on the latest product information available at the time of publication approval.,

Summaries of Special Tools and specifications, where required, may be found at the end of major sections. .

Any reference to brand names in this manual is intended merely as an example of the types of tools, lubricants, materials, etc. recommended for use. Equivalents if available may be used. The right is reserved to make changes at any time without notice.

CAUTION

Buick vehicles contain many parts dimensioned in the metric system as well as in the customary system. Many fasteners are metric and are very close in dimension to familiar customary fasteners in the inch system. It is important to note that, during any vehicle maintenance procedures, replacement fasteners must have the same measurements and strength as those removed, whether metric or customary. (Numbers on the heads of metic bolts and on surfaces of metric nuts indicate their strength. Customary bolts use radial lines for this purpose, while most customary nuts do not have strength markings.) Mismatched or incorrect fasteners can result in vehicle damage or malfunction, or pessibly personal injury. Therefore, fasteners removed from the vehicle should be saved for re-use in the same locations whenever possible. Where the fasteners are not satisfactory for re-use, care should be taken to select a replacement that matches the original.

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• LITHO IN U.S.A.

BUICK MOTOR DIVISION
GENERAL MOTORS CORPORATION
FLINT, MICHIGAN

Pages from 1987 Buick Chassis Service Manual relating to Turbocharged Regals

NO COPY OF:	REASON
OB	Maintenance-Covered in Owner's Manual
1B-19 • 1B-46	Non "G" Carline
IC-1 • 1D3	Riveria A/C & A/C Compressor Overhaul
3B2	Manual Rack & Pinion
3B4	Non "G" Carline
3D1	Non "G" Carline
3D3	Non "G" Carline
4c	Does Not Exist
4D	Front Wheel Drive only
5A1 • 5C2	Non "G" Carline
5c4	Non "G" Carline
5D1	Doe Not Exist
5D2	Non "G" Carline
5E	Anti-Lock Brakes
6A1 • 6A4	Non-VIN "7" engine data
6A5A • 6A6	Non-VIN "7" engine data
6C1	Carburetor info
6C2	Carburetor info
6E1 • 6E3-A3	Non-VIN "7" engine data
6E3-C2B	Non-VIN "7" engine data
6E3-C3	Non-VIN "7" engine data, EECS
6E3-C4	Non-VIN "7" engine data, Ignition
6E3-C4C	Non-VIN "7" engine data, Ignition
6E3-C5B	Non-VIN "7" engine data, ESC
6E3-C6	Non-VIN "7" engine data, AIR pump
6E3-C7	Non-VIN "7" engine data, EGR
6E3-C7B	Non-VIN "7" engine data, EGR
6E3-C8-9 • 20	Non-VIN "7" engine data, TCC
6E3-C8A	Non-VIN "7" engine data, TCC
6E3-C8B	Non-VIN "7" engine data, TCC
6E3-C8C	Non-VIN "7" engine data, TCC
6E3-C9	Does not Exist
6E3-C11	Does not Exist
6E3-C12-3 • 36	Non-VIN "7" engine data, Fans
6F-5 • 8	Non-VIN "7" engine data, Exhaust
6F-11 • 21	Non-VIN "7" engine data, Exhaust
6G, 6H, & 6I	Do not exist
7A1	Front Wheel Drive Transaxle

1987
BUICK
SERVICE MANUAL
SUPPLEMENT

THE ENCLOSED SECTIONS ARE TO BE ADDED TO THE 1987 BUICK SERVICE MANUAL.

1B - Air Conditioning

1C1 - Electronic Touch Climate Control (A Carline)
1c2 - Electronic Touch Climate Control (C-H Carline)
1C3 - Climate Control (E Carline)

3B1 - Power Rack and Pinion
3B3 - Power Steering Pumps
3B4 - Steering Wheel and Columns (A-C-E-H-J-N Carlines)
3C1 - Front Suspension (A-C-E-H-J-N Carlines)
3D1 - Rear Suspension (A-C-H-J-N Carlines)

4A - Propeller Shaft
4B - Rear Axle

5E - Antilock Brake System

6A - General Engine Mechanical
6A1 - 2.0 Litre, L4 VIN M & K
6A3 - 2.5 Litre, L4 VIN R & U
6B - Cooling System
6D - Engine Electrical
6J - Turbo Charger

7A1 - Auto-Transaxle On-Car Service

200c - Unit Repair

7B3A - Muncie 5 Speed Transaxle Unit Repair

8B - Lighting Systems
8C1 - Instrument Panel, Console, and Gages (A Carline)
8C3 - Instrument Panel, Console, and Gages (C-H Carline)
8C8 - Instrument Panel, Console, and Gages (N Carline)

8E1 - D.P. Pulse and Standard Wiper-Washer System
8E2 - Non-Depressed Positive Park Pulse Wiper-Washer System (J Carline)
8E3 - D.P. Multiplex Pulse and Standard Wiper-Washer System (B Carline)
8E5 - Rear Window Wiper-Washer System J35 (Wagon)
8E7 - Rear Window Wiper-Washer System J77 (Hatchback)
8F - Quartz Electronic Speedometer (C and H Carline)

9A - Radio-Tape Player
9B - Resume Cruise Control
9C - Twilight Sentinel
9D - Theft Deterrent
9E - Miscellaneous Accessories

6E1 - Driveability and Emissions-Carbureted
6E2 - Driveability and Emissions-Fuel Injection (TBI)
6E3 - Driveability and Emissions-Fuel Injection (Port)

CAUTION

To reduce the chance of personal injury and/or property damage, the following instructions must be carefully observed:

Proper service and repair are important to the safety of the service technician and the safe, reliable operation of all motor vehicles. If part replacement is necessary, the part must be replaced with one of the same part number or with an equivalent part. Do not use a replacement part of lesser quality.

The service procedures recommended and described in this service manual are effective methods of performing service and repair. Some of these procedures require the use of tools specially designed for the purpose.

Accordingly, anyone who intends to use a replacement part, service procedure or tool, which is not recommended by the vehicle manufacturer, must first determine that neither his safety or safe operation of the vehicle will be jeopardized by the replacement part, service procedure or tool selected.

It is important to note that this manual contains various 'Cautions' and 'Notices' that must be carefully observed in order to reduce the risk of personal injury during service or repair, or the possibility that improper service or repair may damage the vehicle or render it unsafe. It is also important to understand that these 'Cautions' and 'Notices' are not exhaustive, because it is impossible to warn of all the possible hazardous consequences that might result from failure to follow these instructions.

INTRODUCTION

This Chassis Service Manual contains information on all 1987 Buick vehicles and is organized to correspond with currer servicing techniques.

The various chassis components and systems have bet. classified into nine (9) **GROUPS.**

Every Group contains one or more **SECTIONS.** Each **SECTION** deals with a specific version of a component or system.

The service information included in a **SECTION** is divided into five (5) basic **DIVISIONS.** The titles of each **DIVISION** are:

General Description

Diagnosis

On-Car Service

Unit Repair

Specifications

A DIVISION contains one or more **PARAGRAPHS** which can be identified by their specific headings.

SUB-PARAGRAPHS are used when necessary for clarity or to provide distinction between component procedures.

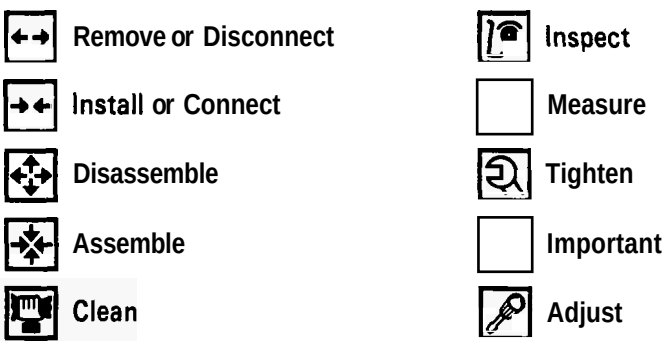
SPECIAL TOOLS

References are made throughout the manual to special tool numbers, designated by the prefix letters "J" or "BT".

ACTION SYMBOL USAGE

A new writing style is being utilized in portions of this manual.

The general narrative has been replaced with step by step procedures. To improve readibility and to provide emphasis where needed, the following symbols are used in the text:



GROUP 0

GENERAL INFORMATION, MAINTENANCE AND LUBRICATION

CONTENTS

SECTION 0A

GENERAL INFORMATION

CONTENTS

GENERAL INFORMATION

BODY NUMBER PLATE

The body number plate identifies the model year, car division, series, style, body assembly plant, body number, trim combination, modular seat code, paint code and date build code. See Figure 1 and **2.**

This plate is located on the upper horizontal surface of the shroud on B and ***G*** series or on the upper radiator **support** assembly on **A, *C*, E,** H, J and N Series. See Figure **3.**

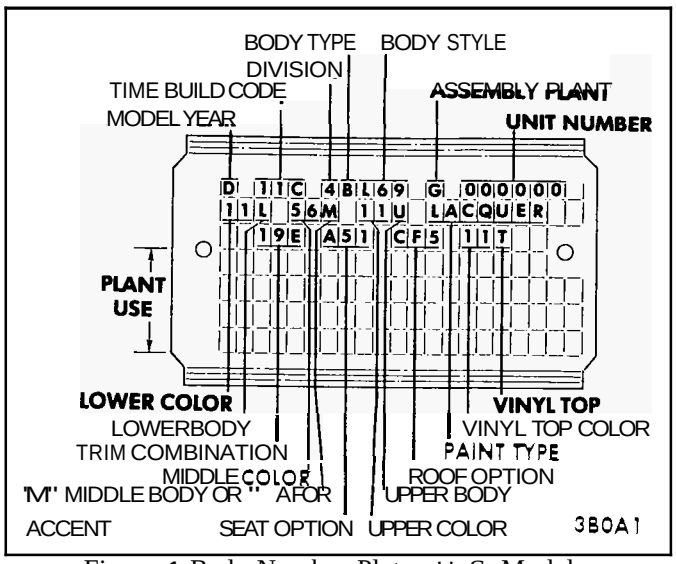


Figure **1** Body Number Plate - U. S. Models

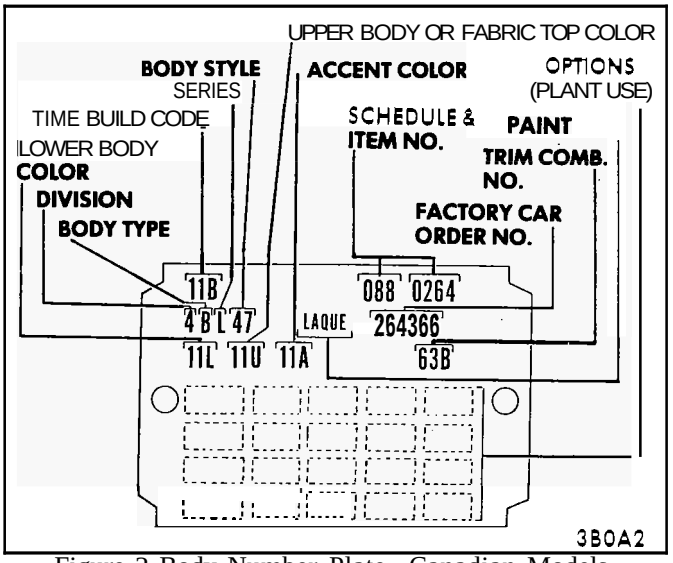


Figure 2 Body Number Plate - Canadian Models

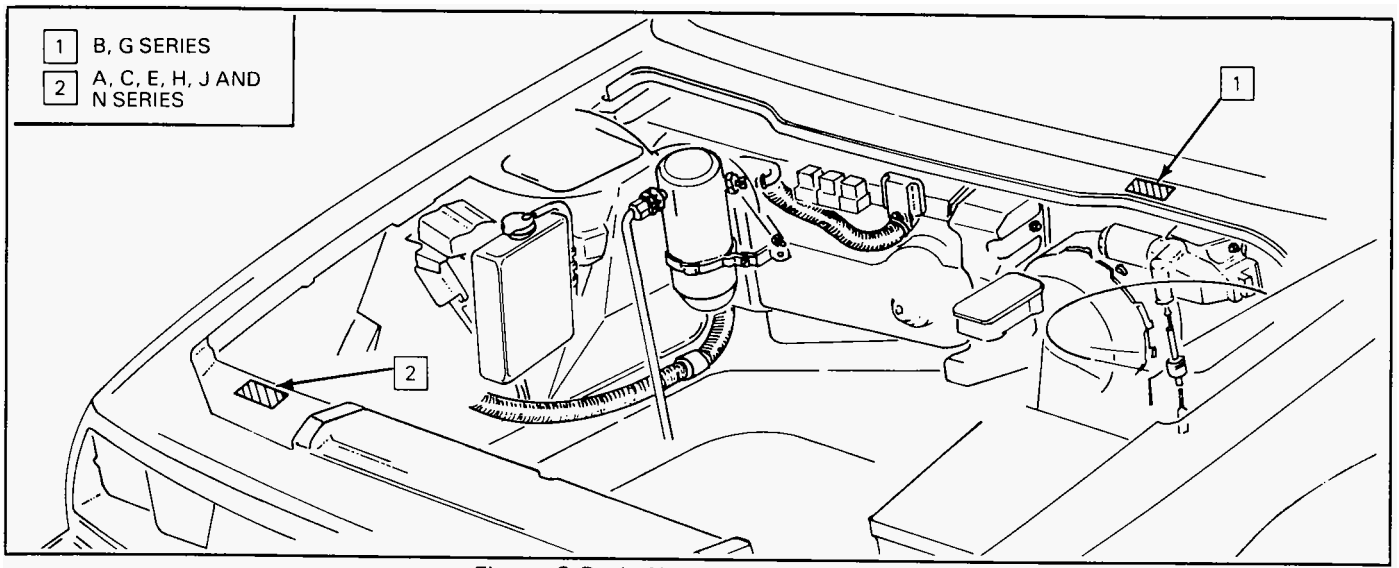


Figure 3 Body Number Plate Location

FEDERAL VEHICLE THEFT PREVENTION STANDARD:

Theft Deterrent Labeling

Beginning with **1987,** federal law requires General Motors to place a VIN label on certain parts on selected cars. The Buick models affected are the LeSabre, Electra and Riviera.

The purpose of the standard is to reduce motor vehicle thefts by helping in the tracing and recovery of parts removed from stolen vehicles.

The label will be permanently affixed to an interior surface of the part and will contain the complete **VIN.** The label on replacement parts will contain the letter R, the manufacturers logo, and the symbol "DOT".

The parts involved:

- Front and rear bumper assemblies
- Hood
- Right and left front doors (Certification label on driver's door qualifies as a theft deterrent label.)
- Right and left rear doors
- Right and left quarter panel assemblies
- Rear compartment lid/hatch
- Right and left front fenders

THESE LABELS ARE NOT TO BE DEFACED, REMOVED, OR COVERED OVER.

NOTICE: The theft deterrent label found on some major sheet metal, engines, and transmissions must be masked prior to painting, rustproofing, undercoating, etc. The mask must be removed following the above operations. Failure to keep the label clean and readable may result in liability for violation of Federal Vehicle Theft Prevention Standard, and subject the vehicle owner to possible suspicion that the part was stolen.

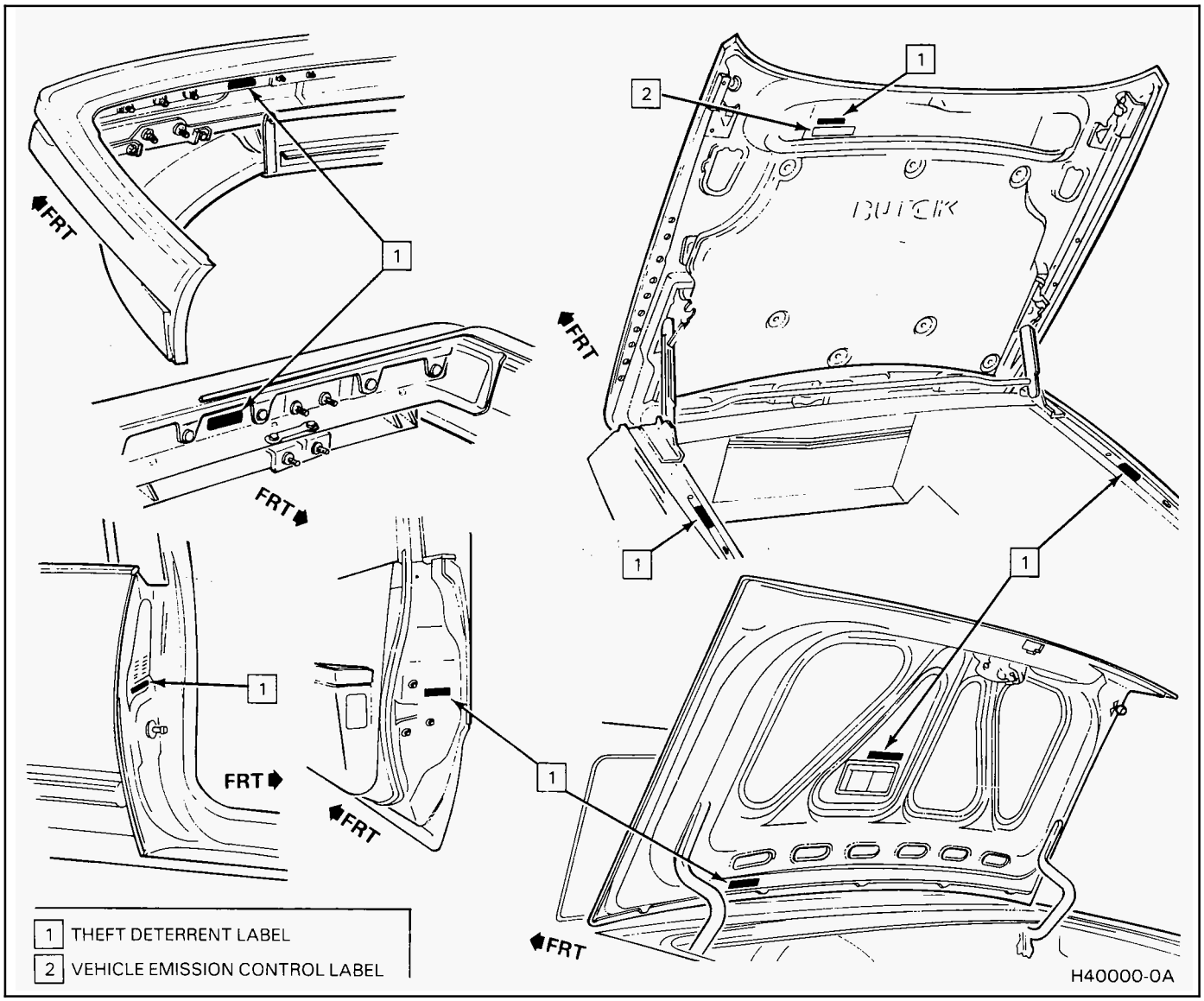
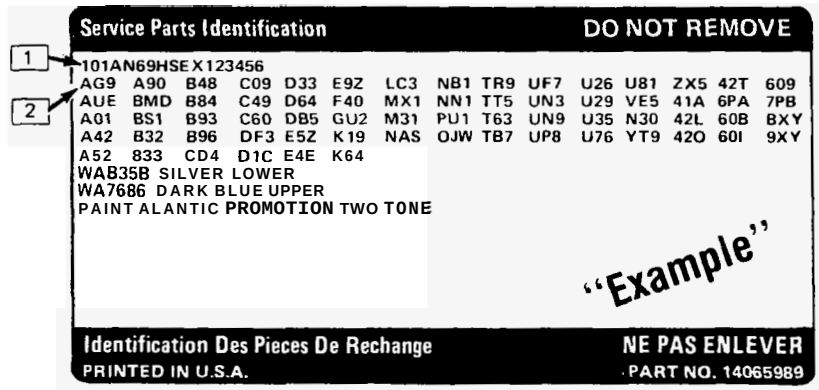


Figure **3A** Theft Deterrent Label Location

1 VEHICLE IDENTIFICATION NUMBER
2 REGULAR PRODUCTION OPTIONS IN ALPHA NUMERIC SEQUENCE
3 LABEL LOCATION– TRUNK LID– C, E, G, **H,** N SERIES
4 LABEL LOCATION–REAR COMPARTMENT COVER– B SERIES WAGON
5 LABEL LOCATION– SPARE TIRE COVER– A-EXCEPT WAGON, **J SERIES**
6 LABEL LOCATION– A SERIES WAGON–

FOR MORE DETAILED INFORMATION– SEE PARTS BOOK



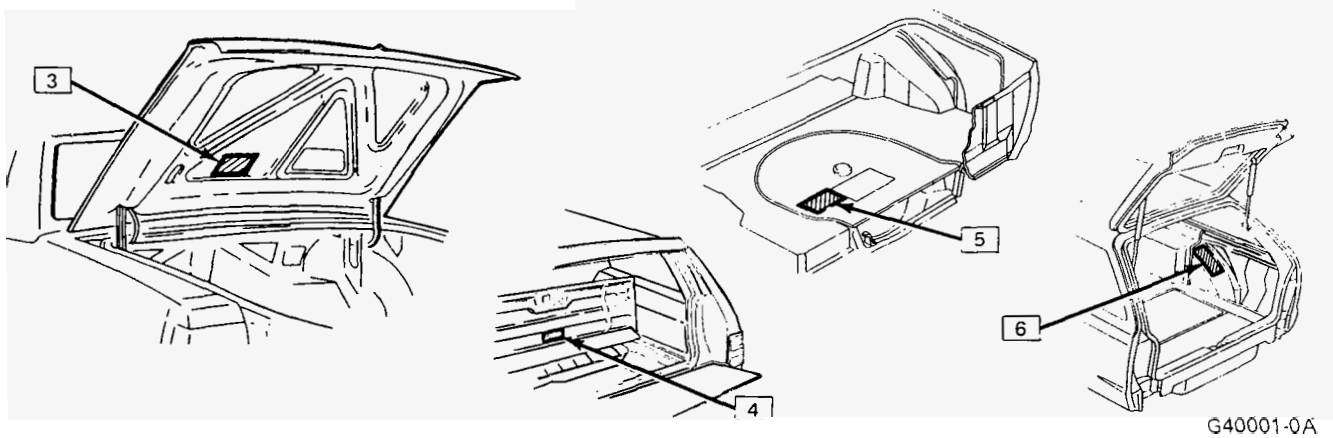


Figure **4** Service Parts Label and Location

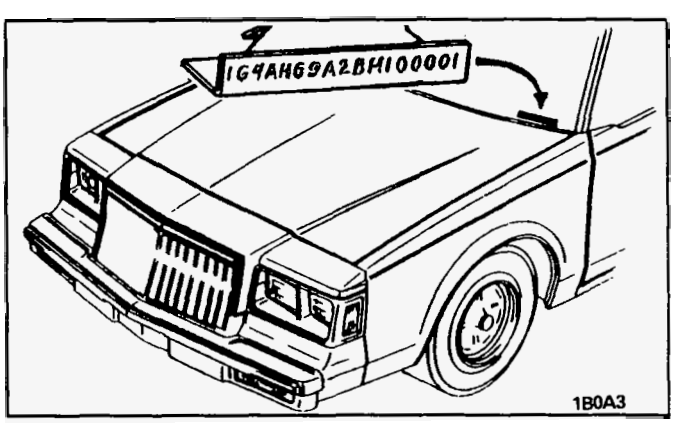


Figure 5 **VIN** Plate Location

SERVICE PARTS LABEL

The Service Parts Identification Label provides identification of vehicle equipment to assist in servicing and determining replacement parts. Included on this label will be regular production options (RPO's) as well as standard and mandatory options. The label will be affixed to the inside of each passenger car vehicle at the assembly plant. See Figure **4.**

VEHICLE IDENTIFICATION NUMBER

All vehicles are required by law to display a seventeen (17) digit identification number.

This is the legal identification of the vehicle. It is stamped on a plate which is attached to the left top of the instrument panel and can be seen through the windshield from outside the car. See Figure *5.* A brief description of each digit is shown in Figure 6. The VIN also appears on the vehicle certificates of Title and Registration.

GENERAL VEHICLE LIFTING

For lifting a vehicle with equipment other than the original equipment jack, various lift points have been established and are recommended for the different car lines.

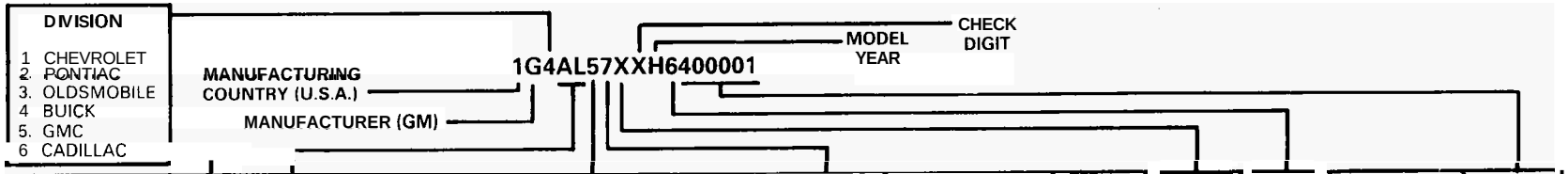
NOTICE: When jacking or lifting a vehicle at the frame side rails or other prescribed lift points, be certain that lift pads do not contact the catalytic converter, brake pipes or gas lines. Such contact may result in damage or unsatisfactory vehicle performance.

The centerline of gravity on front wheel drive vehicles is further forward than on rear wheel drive vehicles. Therefore, whenever removing major components from the rear of a front wheel drive vehicle, while supported on a hoist, it is mandatory to support the vehicle in a manner to prevent the possibility of the vehicle tipping forward.

CAUTION: Failure to follow the preventive measures outlined may result in personal injury and/or vehicle damage.

The following figures show the recommended lifting points for each body series.

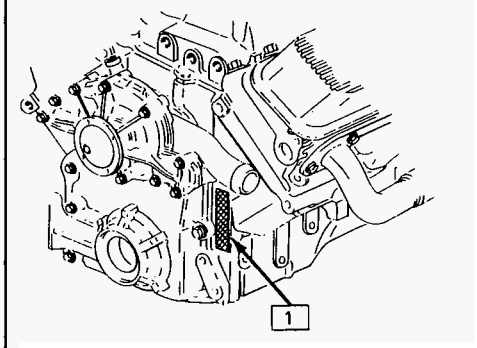
Series	Figure
A	10
B, G	11
C, H	12
E	13
J, N	**14**



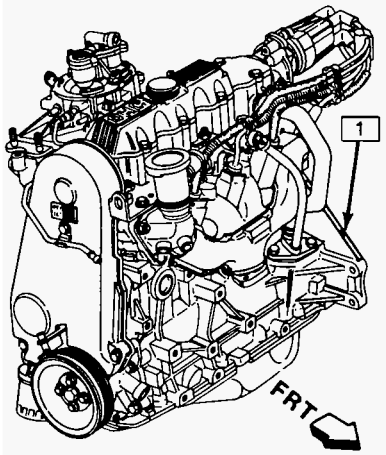
NAME	SERIES	SALES & VIN CODE	BODY TYPE	BODY VIN CODE	RESTRAINT SYSTEM	RESTRAIN1 VIN CODE	ENGINE DESCRIPTION	ENGINE OPTION	ENGINE VIN CODE	PLANT CODE	PLANT	STARTING VIN
SKYHAWK CUSTOM	J	S	2-DOOR COUPE	1	AS8 MANUAL BELTS	1	2.0L 121 L4 TBI 2.0L HO L4 TBI 2.0L MFI TURBO	LT2 LL8 LT3	K 1 M	K	LEEDS	400001
			4-DOOR SEDAN	5								
			4-DOOR WAGON	8								
SKYHAWK SPORT			3-DOOR HATCHBACK	2								
SKYHAWK LIMITED		T	2-DOOR COUPE	1								
			4-DOORSEDAN									
			4-DOOR WAGON									
SKYLARK CUSTOM	N	C	4-DOOR SEDAN		AR4 MANUAL BELTS WITH BUILT-IN SAFETY	2	2.5L L4 TBI 3.0L V6 MFI	L68 LN7	U L	M	LANSING (A	400001
SKYLARK LIMITED		D	4-DOORSEDAN	5								
SOMERSET CUSTOM		J	2-DOOR COUPE	1								
SOMERSET LIMITED		M	2-DOOR COUPE	1								
CENTURY CUSTOM	A		2-DOOR COUPE	1	AS8 MANUAL BELTS	1	2.5L 151 L4 EFI 2.8L 173 V6 2 3.8L V6 SFI	LR8 LB6 LG3	R W 3	D T 6	DORAVILLE TARRYTOWN OKLAHOMA CITY	400001
		H	4-DOORSEDAN	5								
			4-DOOR WAGON	8								
CENTURY LIMITED		L	2-DOOR COUPE									
			4-DOOR SEDAN									
CENTURY ESTATE WAGON			4-DOOR WAGON	8								
REGAL	G	J	2-DOOR COUPE	1	AS8 MANUAL BELTS	1	3.8L 231 V6 2 3.8L V6 SFI 5.0L 307 V84	LD5 LC2 LV2	A 7 Y	P	PONTIAC MOTOR	400001
REGAL LIMITED		M	2-DOOR COUPE	1								
REGAL GRAND NATIONAL		D	2-DOOR COUPE	1								
LESABRE	H	H	2-DOOR COUPE	1	AR4 MANUAL BELTS WITH BUILT-IN SAFETY	2	3.8L V6 SFI	LG3	3	H	FLINT	400001
			4-DOOR SEDAN	5								
LESABRE CUSTOM		P	2-DOOR COUPE	1								
			4-DOOR SEDAN	5								
LESABRE LIMITED		R	2-DOOR COUPE	1								
			4-DOOR SEDAN	5								
LESABRE T TYPE		L	2-DOOR COUPE	1								
ESTATE WAGON — LESABRE	B	R	4-DOORWAGON	8	AS8 MANUAL BELTS	1	5.0L 307 V8 4	LV2	Y	X	FAIRFAX	400001
ESTATE WAGON — ELECTRA		V	4-DOOR WAGON	8								
ELECTRA LIMITED	C	X	4-DOOR SEDAN	5	AS8 MANUAL BELTS	1	3.8L V6 SFI	LG3	3	1	WENTZVILLE	400301
ELECTRA PARK AVENUE		W	2-DOOR SEDAN	1								
			4-DOOR SEDAN	5								
ELECTRA T TYPE			4-DOOR SEDAN									
RIVIERA (LUXURY)	E		2-DOOR COUPE		AS8 MANUAL BELTS	1	3.8L V6 SFI	LG3	3	U	HAMTRAMCK	400001
RIVIERA (T TYPE)												

Figure 6 Vehicle Identification Plate Data

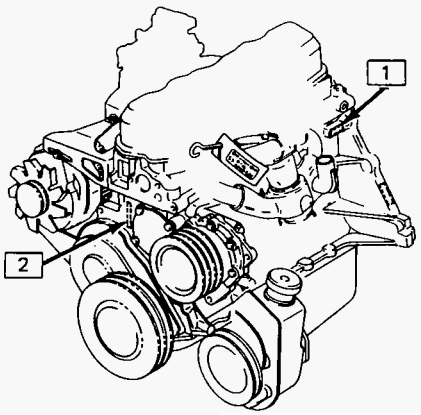
G43004-OA



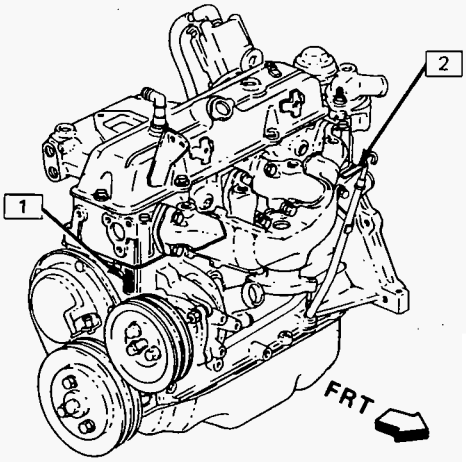
LN7, LG2, LG3



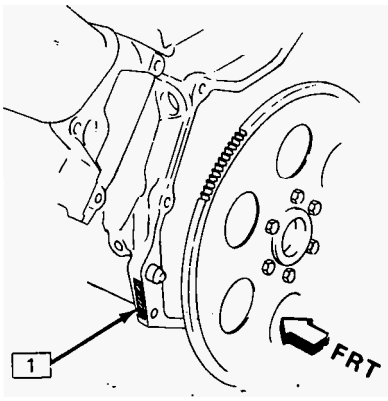
LT3, LT2



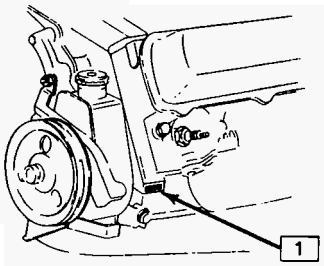
LR8



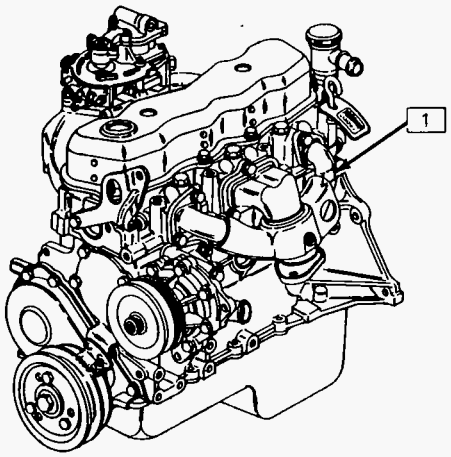
LL8



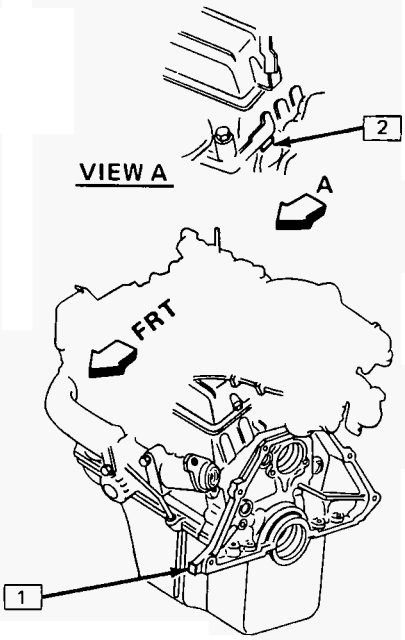
LD5, LC2



LV2

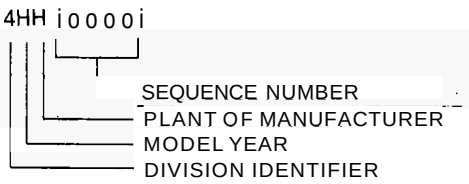


L68



LE2

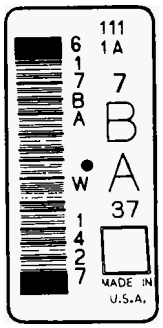
1	PRIMARY ENGINE VIN LOCATION
2	OPTIONAL VIN LOCATION



TYPICAL VIEW OF DERIVATIVE NUMBERS ON TRANSMISSION & ENGINE

H40005-0A

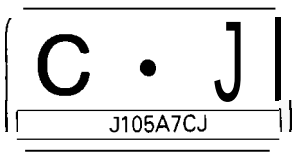
Figure 7 Engine VIN Location



TRANSMISSION NAMEPLATE
WARREN PLANT, MICHIGAN
THM 440-T4

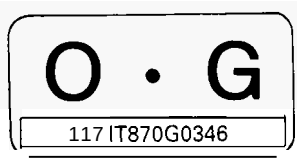
111 = JULIAN DATE
78A = 7– MODEL YEAR
BA – MODEL
1427 = SERIALNO.

TRANSMISSION NAMEPLATE
WINDSOR PLANT, CANADA
THM 125C



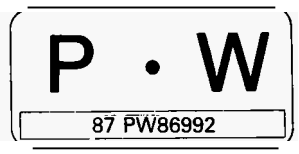
J = WINDSOR PLANT
105 = JULIAN DATE
A = SHIFT (A = FIRST SHIFT)
7CJ = MODEL CODE (1987CJO)

TRANSMISSION NAMEPLATE
THREE RIVERS PLANT, MICHIGAN
THM 200-4R



117 = JULIAN DATE
1 = SHIFT
T = THREE RIVERS
a7 = MODELYEAR
OG = MODEL
0346 = SERIALNO.

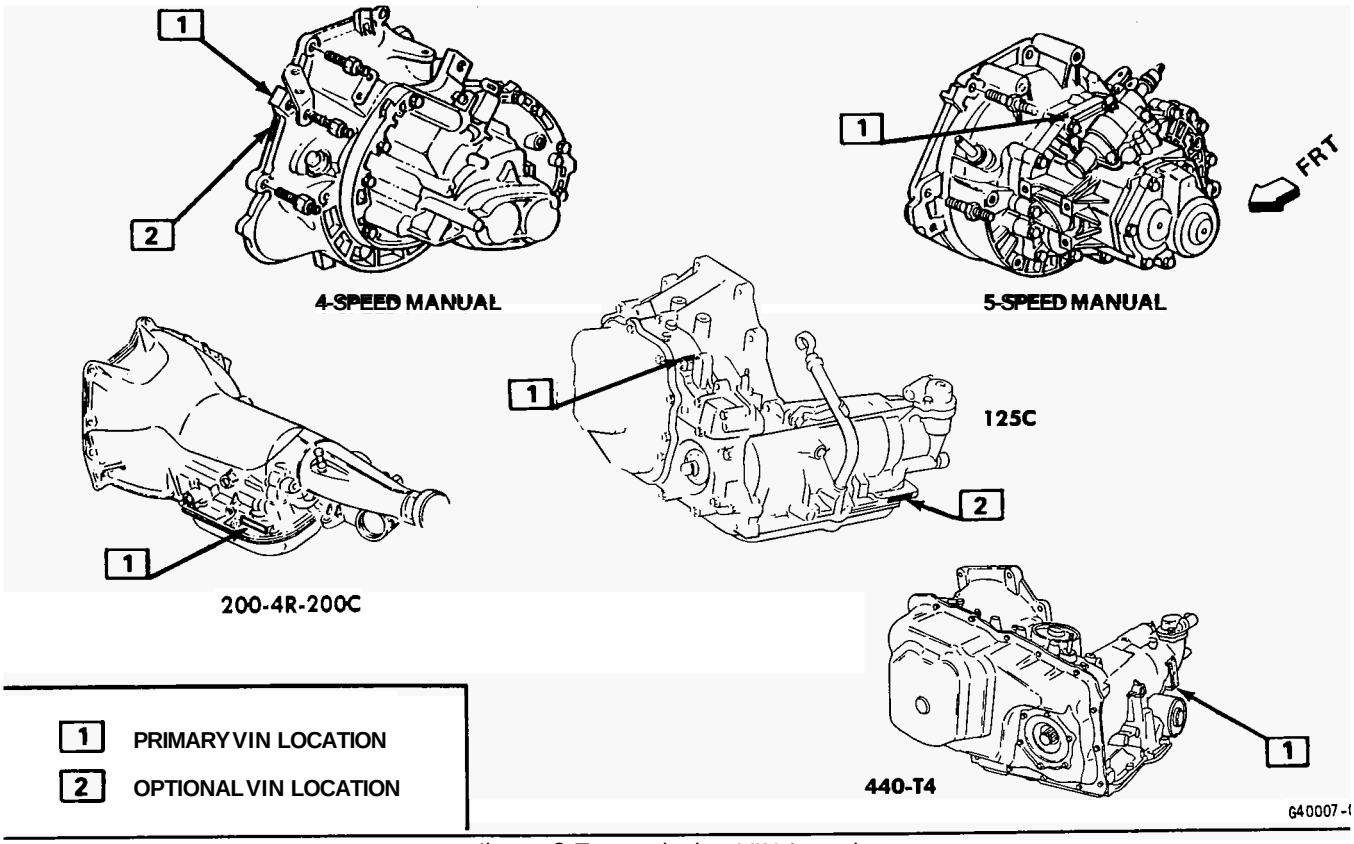
TRANSMISSION NAMEPLATE
YPSILANTI PLANT, MICHIGAN
THM 125-C
THM 200C



a7 = MODELYEAR
PW = MODEL
86992 = SERIALNO.

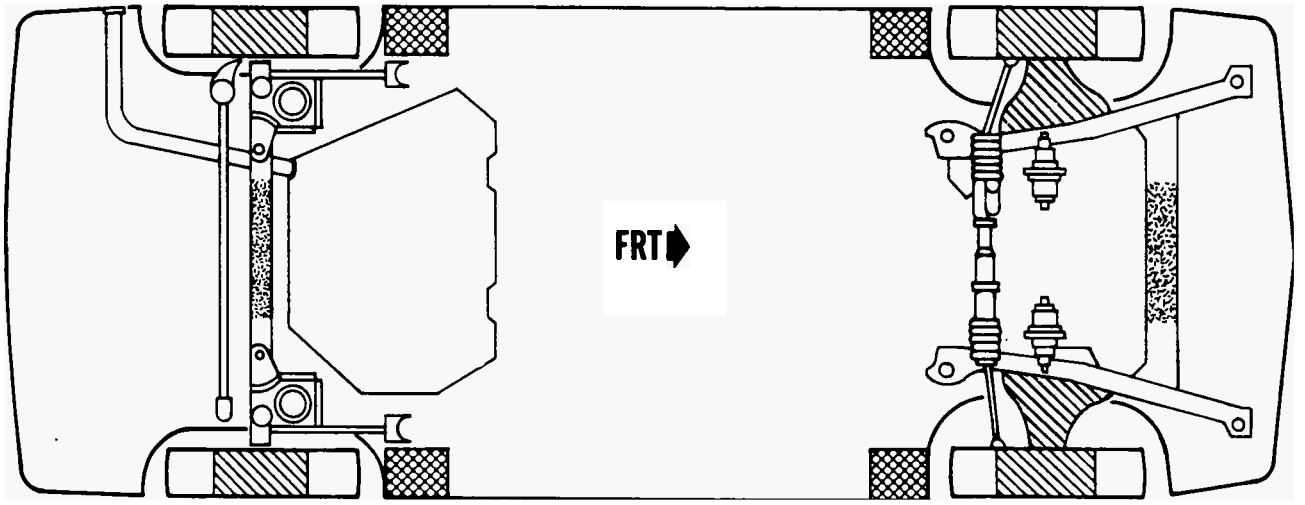
G40006-0A

Figure 8 Transmission Identification

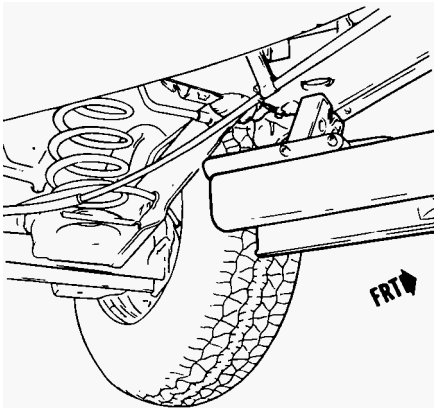


G40007-(

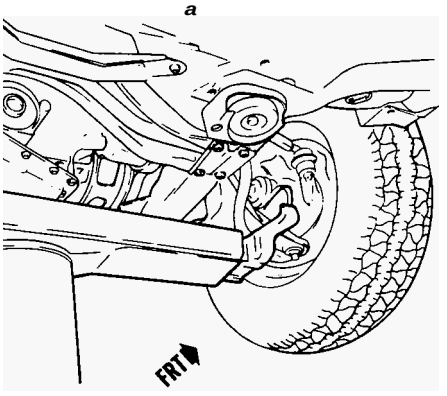
'igure 9 Transmission VIN Location



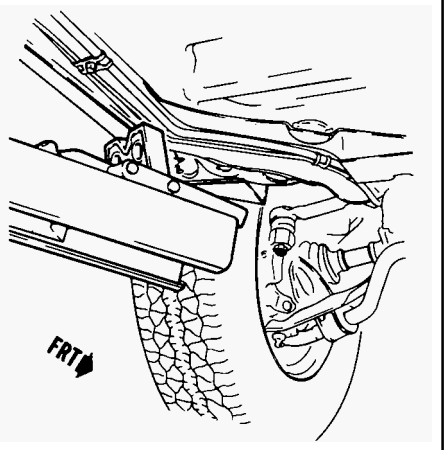
FLOOR JACK SUSPENSION CONTACT HOIST FRAME CONTACT HOIST



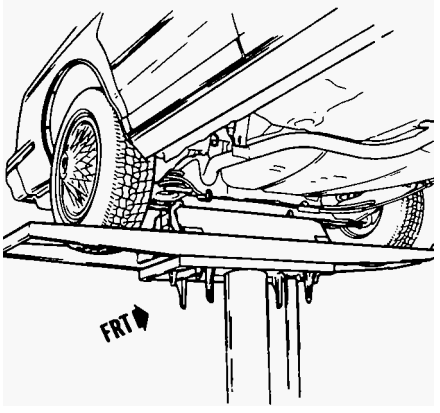
FRAME CONTACT HOIST
(FORWARD OF REAR TIRE)



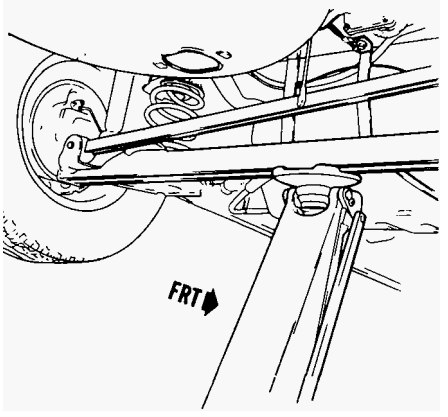
SUSPENSION CONTACT HOIST
(UNDER FRONT LOWER CONTROL ARM)



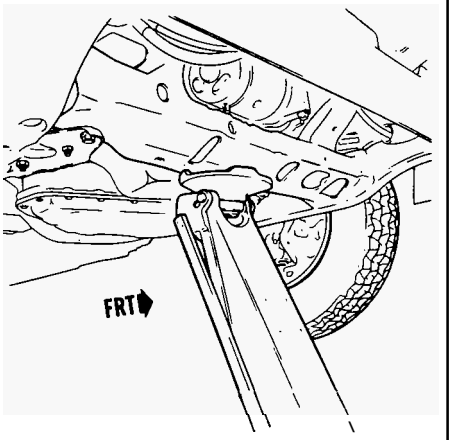
FRAME CONTACT HOIST
(REARWARD OF FRONT TIRE)



SUSPENSION CONTACT HOIST
(LIFTING ON REAR TIRES)

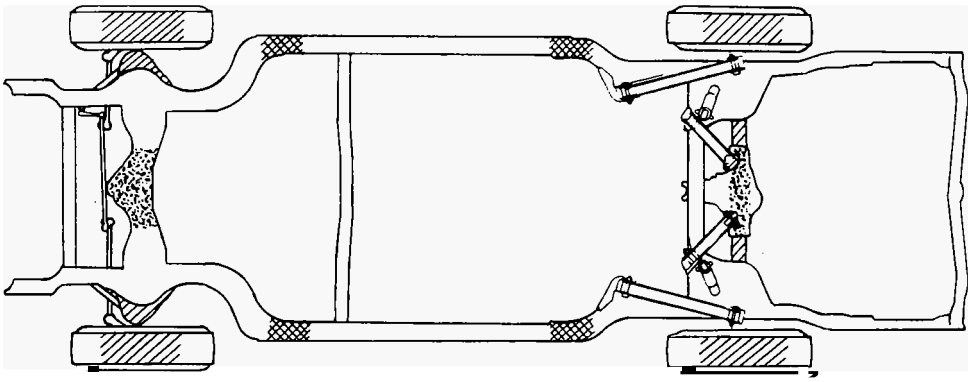


WHEN USING FLOOR JACK, LIFT
ON REAR SUSPENSION AXLE

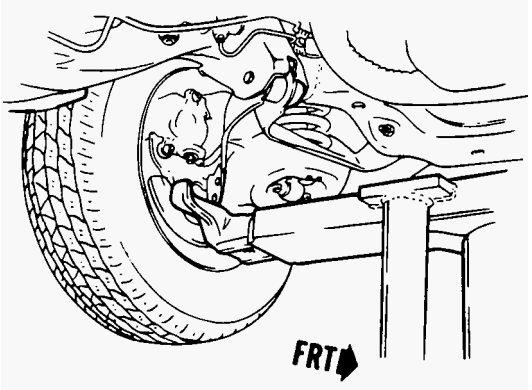


WHEN USING FLOOR JACK, LIFT
ON CENTER OF FRONT CROSSMEMBER

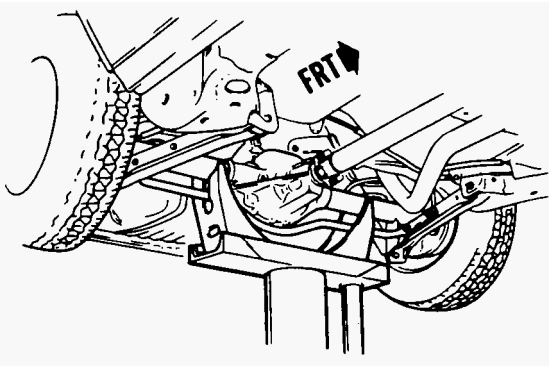
Figure 10 A Series Lifting Points



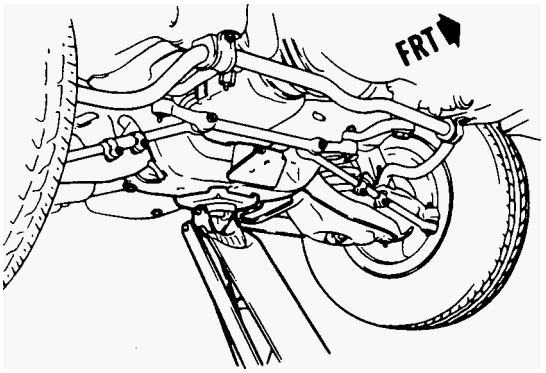
SUSPENSION CONTACT HOIST FLOOR JACK FRAME CONTACT HOIST



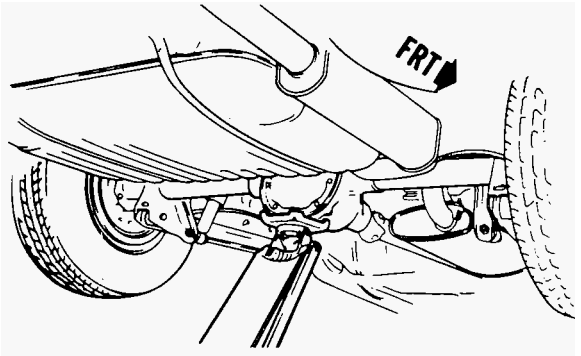
SUSPENSION CONTACT HOIST, UNDER FRONT LOWER CONTROL ARM



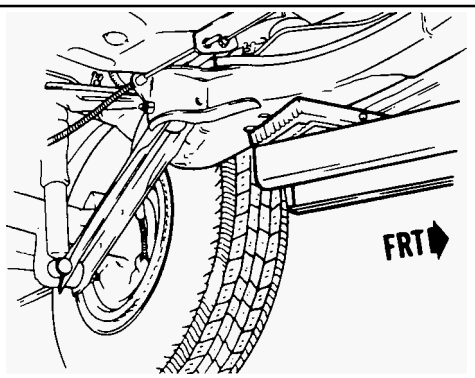
SUSPENSION CONTACT HOIST, LIFTING ON DIFFERENTIAL HOUSING (DO NOT LIFT ON STABILIZER BAR IF PRESENT)



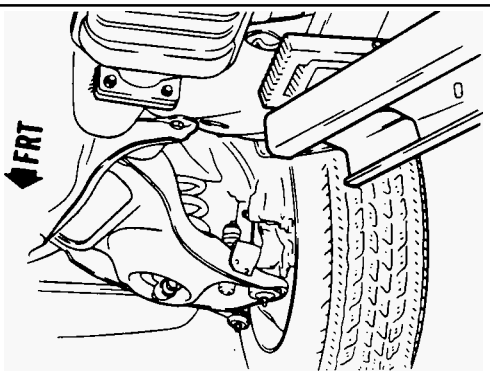
WHEN USING FLOOR JACK, LIFT ON CENTER OF FRONT CROSSMEMBER



WHEN USING FLOOR JACK, LIFT AT CENTER OF DIFFERENTIAL HOUSING– NOT ON STABILIZER BAR (IF PRESENT)

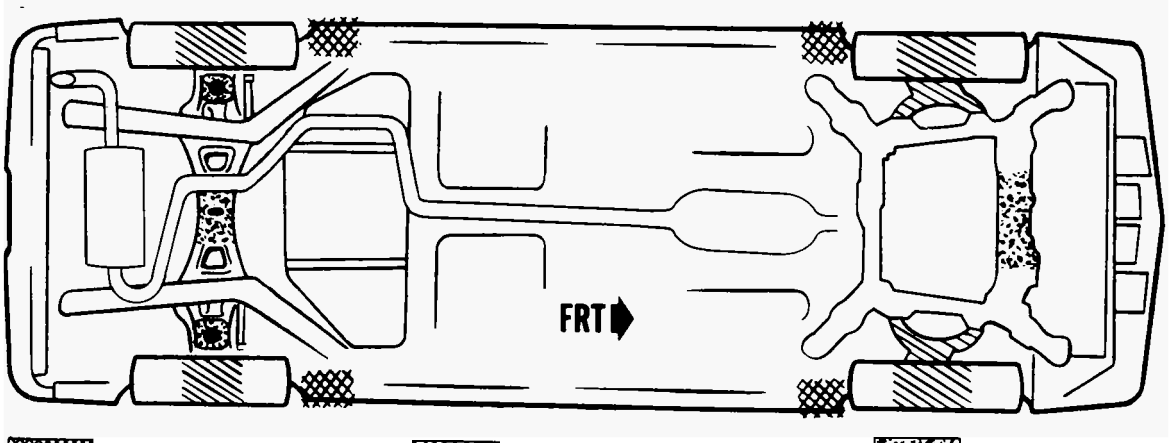


FRAME CONTACT HOIST, FORWARD OF REAR TIRE

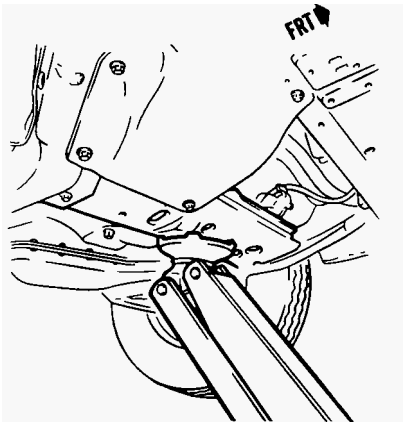


FRAME CONTACT HOIST, REARWARD OF FRONT TIRE

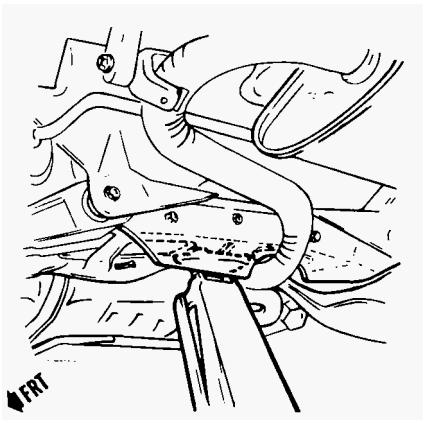
Figure 11 B-G Series Lifting Points



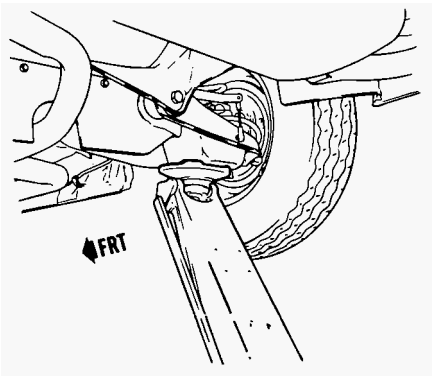
FRAME CONTACT HOIST SUSPENSION CONTACT HOIST FLOOR JACK



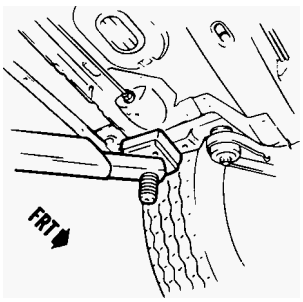
WHEN USING FLOOR JACK, LIFT ON CENTER OF FRONT CROSSMEMBER



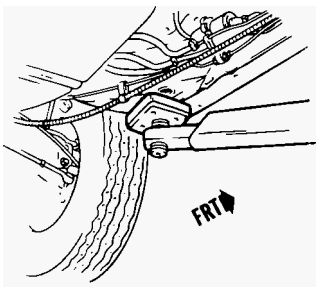
WHEN USING FLOOR JACK, LIFT ON REAR SUSPENSION CENTER SUPPORT



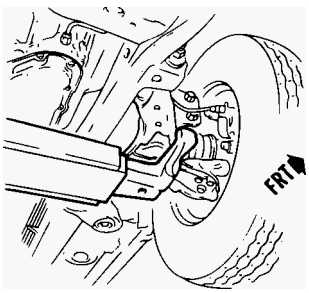
USING FLOOR JACK UNDER REAR CONTROL ARM



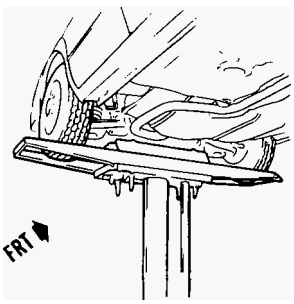
FRAME CONTACT HOIST (REARWARD OF FRONT TIRE)



FRAME CONTACT HOIST (FORWARD OF REAR TIRE)

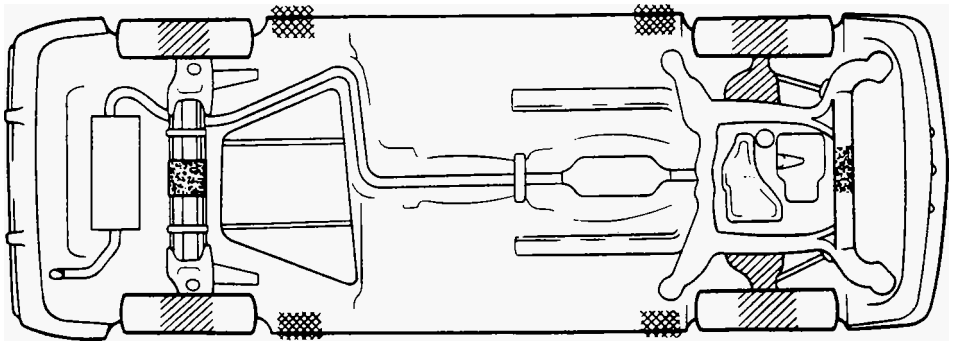


SUSPENSION CONTACT HOIST (UNDER FRONT LOWER CONTROL ARM)

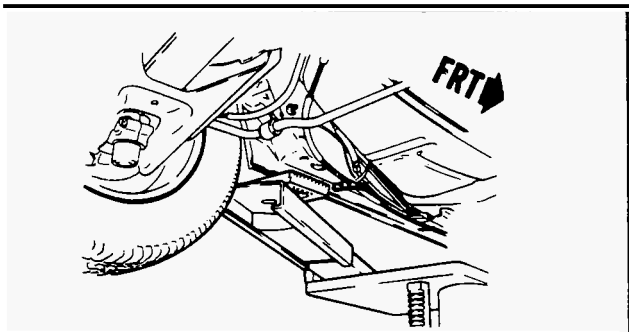


SUSPENSION CONTACT HOIST (LIFTING ON REAR TIRES)

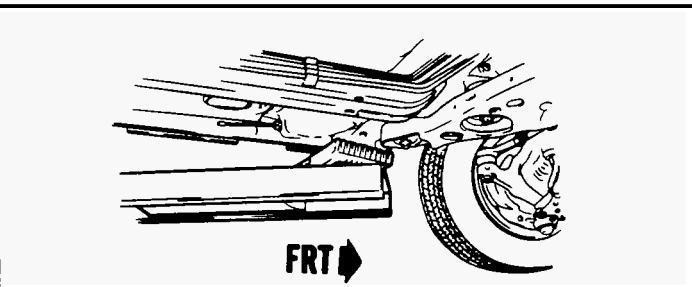
Figure 12 C-H Series Lifting Points



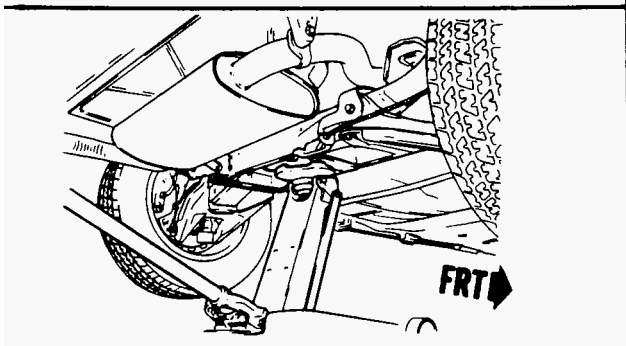
FRAME CONTACT HOIST FLOOR JACK SUSPENSION CONTACT HOIST



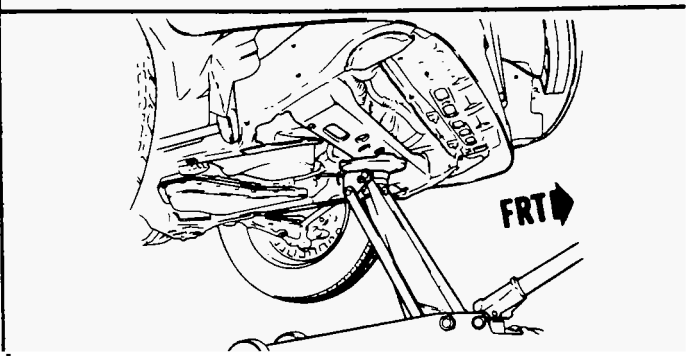
FRAME CONTACT HOIST
(FORWARD OF REAR TIRE)



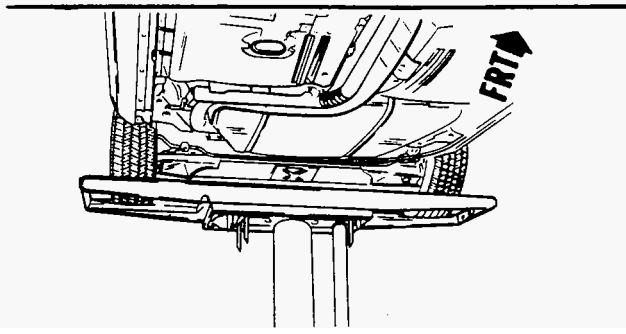
FRAME CONTACT HOIST
(REARWARD OF FRONT TIRE)



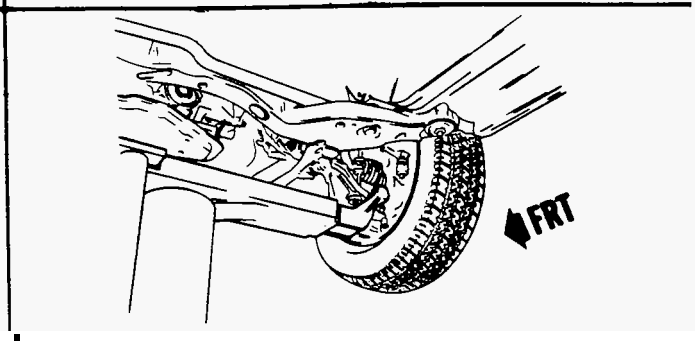
WHEN USING FLOOR JACK, LIFT
ON REAR SUPPORT ASSEMBLY



WHEN USING FLOOR JACK, LIFT
ON CENTER OF FRONT SUPPORT

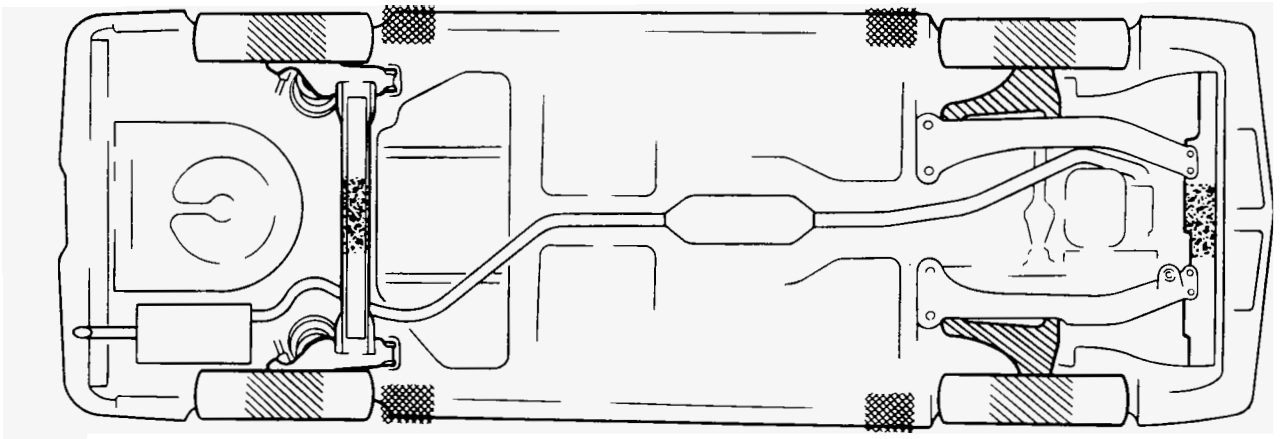


SUSPENSION CONTACT HOIST
(LIFTING ON REAR TIRES)

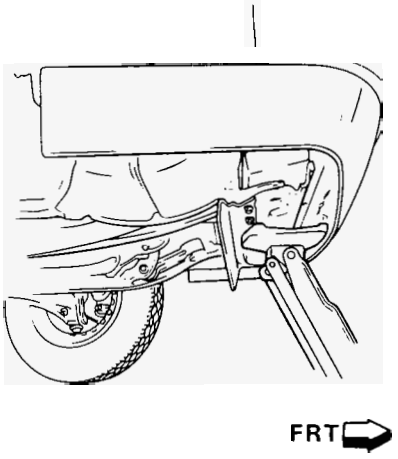


SUSPENSION CONTACT HOIST
(UNDER FRONT LOWER CONTROL ARM)

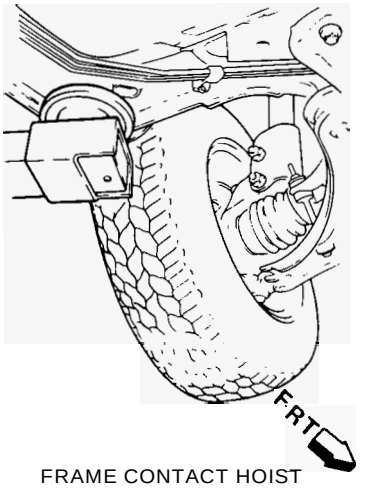
Figure 13 E Series Lifting Points



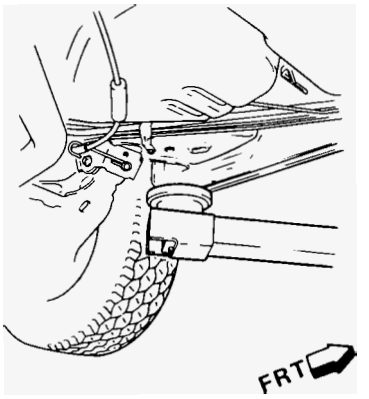
FRAME CONTACT HOIST FLOOR JACK SUSPENSION CONTACT HOIST



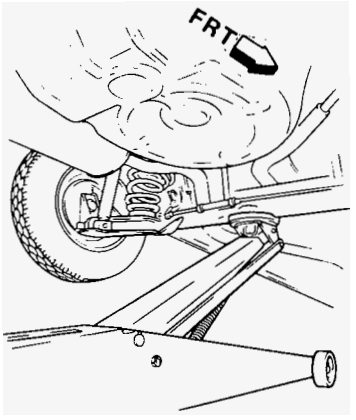
WHEN USING FLOOR JACK, LIFT ON CENTER OF FRONT SUPPORT



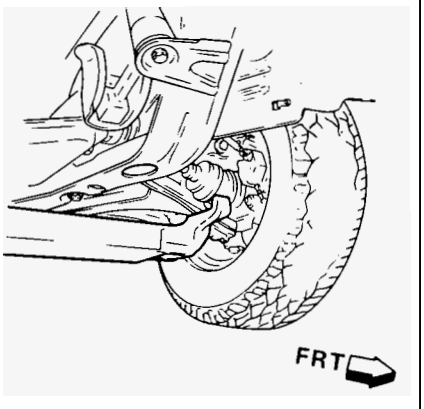
FRAME CONTACT HOIST (REARWARD OF FRONT TIRE)



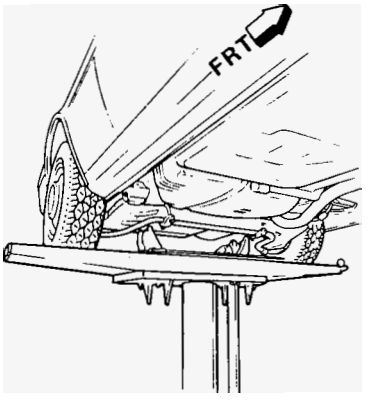
FRAME CONTACT HOIST (FORWARD OF REAR TIRE)



WHEN USING FLOOR JACK, LIFT ON CENTER OF REAR TORQUE ARM



SUSPENSION CONTACT HOIST (UNDER FRONT LOWER CONTROL ARM)



SUSPENSION CONTACT HOIST (LIFTING ON REAR TIRES)

Figure 14 J-N Series Lifting Points

Acc. – Accessory
A/C – Air Conditioning
ADJ – Adjust
ADL – Automatic Doorlock
ADRC – Adaptive Ride Control
A/F – Air Fuel Ratio
AIR – Air Injection Reaction System
ALCL – Assembly Line Communication Link
Alt. – Altitude
AM – Amplitude Modulation
AMP – Ampere(s)
ANT – Antenna
APS – Absolute Pressure Sensor
AT – Automatic Transmission/Teansaxle
ATDC – After Top Dead Center
Auth – Authority

BARO – Barometric Pressure Sensor
Bat. – Battery
Bat+ – Battery Positive Terminal
B+ – Battery Voltage
Bbl – Barrel
BCM – Body Computer Module
BP – Back Pressure
Brk – Brake
BTDC – Before Top Dead Center

°C – Degrees Celsius
Calif – California
CALPAK – Prom (Engine Calibrator)
Cat. Conv. – Catalytic Converter
CCC – Computer Command Control
CCOT – Cycling Clutch Orifice Tube
CCP – Controlled Canister Purge
CDVR – Crankcase Depression Regulator Valve
CID – Cubic Inch Displacement
CKT – Circuit
CL – Closed Loop
CLCC – Closed Loop Carburetor Control
CNS – Console
CO – Carbon Monoxide
Conn. – Connector
Conv. – Converter
CP – Canister Purge
CPS – Central Power Supply
CRT – Cathode Ray Tube
CRTC – Cathode Ray Tube Controller
CTR – Center
CTS – Coolant Temperature Signal
– Coolant Temperature Sensor
CTSY – Courtesy
CV – Constant Velocity
Cyl – Cylinder(s)

Da – Dash
DBM – Dual Bed Monolith
DECS – Diesel Electronic Control System
Diff – Differential
Dist – Distributor
DVM – Digital Voltmeter (10 meg)
DVDV – Differential Vacuum Delay Valve

EAC – Electric Air Control
EAS – Electric Air Switching
ECM – Electronic Control Module
ECU – Engine Calibration Unit (PROM)
EE – Electronically Eraseable
EECS – Evaporative Emission Control System
EFE – Early Fuel Evaporation
EFI – Electronic Fuel Injection
EGR – Exhaust Gas Recirculation
EGR/TVS – Exhaust Gas Recirculation1 Thermostatic Vacuum Switch
EL – Electroluminescent
ELC – Electronic Level Control
ENG – Engine
EPR – Exhaust Pressure Regulator
EPR-DV – Exhaust Pressure Regulator Delay Valve
ESC – Electronic Spark Control
ESC – Electrostatic Discharge
EST – Electronic Spark Timing
ETR – Electronically Tuned Receiver
EVRV – Electronic Vacuum Regulator Valve
EXH – Exhaust

°F – Degrees Fahrenheit
FED – Federal (All States Except Calif)
FL – Fusible Link
FM – Frequency Modulation
ft. lb. – foot pounds
FWD – Front Wheel Drive
FWL – Forward Lamps

g – grams
GND – Ground

Harn – Harness
HC – Hydrocarbons
HD – Heavy Duty
HEI – High Energy Ignition
HG – Mercury
HiAlt – High Altitude
HP – Horsepower
HPAA – Housing Pressure Altitude Advance
HPCS – Housing Pressure Cold Advance
Htd – Heated
HTR – Heater
HVAC – Heating Ventilation Air Conditioning
Conditioning
IAC – Idle Air Control
IC – Integrated Circuit
ID – Identification
– Inside Diameter
IGN – Ignition
ILC – Idle Load Compensator
in. lbs. – inch pounds
INJ – Injection
IP – Instrument Control Panel
IPC – Instrument Panel Cluster
ISC – Idle Speed Control
ISS – Idle Speed Solenoid

KAM – Keep Alive Memory
km – kilometer
km/h – kilometer per hour
kPa – Kilopascals
KV – Kilovolts (thousands of volts)

L – Liter
LED – Light Emitting Diode
LF – Left Front
LH – Left Hand
LR – Left Rear
LS – Left Side
Ltr – Lighter
L4 – In-Line four cylinder

MAF – Mass Air Flow
MAP – Manifold Absolute Pressure
Max – Maximum
M/C – Mixture Control
Mm – Minimum
mi – Millilitres
mm – millimeter
MFI – Multi-Port Fuel Injection
MPG – Miles Per Gallon
MPH – Miles Per Hour
MT – Manual Transaxle/Transmission
Mtr – Motor
MUX – Multiplexing
MVS – Metering Valve Sensor
NC – Normally closed
NEG – Negative
N·m – Newton Meters
NO – Normally open
NOx – Nitrogen, Oxides of

OD – Outside Diameter
OHC – Overhead Camshaft
OL – Open Loop
O_2 – Oxygen

PAIR – Pulse Air Injection System
P/B – Power Brakes
PCB – Printed Circuit Board
POS – Positive
Pri – Primary
PROM – Programmable Read Only Memory
PIS – Power Steering
PSI – Pounds per Square Inch
Pt. – Pint
PWM – Pulse Width Modulated

Qt. – Quart
QTU – Quick Take Up
QVR – Quick Vacuum Response

R-12 – Refrigerant -12
RAP – Retained Accessory Power
REF – Reference
RF – Right Front
RH – Right Hand
Rly – Relay
RPM – Revolutions per minute
RPO – Regular Production Option
RR – Right rear
RS – Right side
RTV – Room Temperature Vulcanizing
RVB – Rear Vacuum Break
RVR – Response Vacuum Reducer
RWD – Rear Wheel Drive

SAE – Society of Automotive Engineers
Sec – Secondary
SFI – Sequential Fuel Injection
SI – System International
Sol – Solenoid
Spkr – Speaker
Spl – Splice
Stg – Steering
Sync – Synchronization
sw – Switch

TAC – Thermostatic Air Cleaner
Tach – Tachometer
TBI – Throttle Body Injection
TCC – Transmission/Transaxle Converter Clutch
TDC – Top Dead Center
Temp – Temperature
Term – Terminal
Therrno – Thermostatic Air Cleaner
TPS – Throttle Position Sensor
TT – Telltail
TV – Throttle Valve
TVRS – Television & Radio Suppression
TVS – Thermal Vacuum Switch
Twi – Twilight

U-Joint – Universal Joint

V – Volt(s)
VAC – Vacuum
VF – Vacuum Fluorescent
VIN – Vehicle Identification Number
V-ref – Reference Voltage
VSS – Vehicle Speed Sensor
V6 – Six Cylinder "V" Engine
V8 – Eight Cylinder "V" Engine

w/ – With
w/b – Wheel Base
wdo – Window
w/o – without
wot – Wide Open Throttle

H40015-OA

Figure 15 Abbreviations Chart

METRIC AND FASTENER INFORMATION

USE OF METRIC AND CUSTOMARY NUTS, BOLTS AND SCREWS

Some of the 1987 model cars present special service requirements to the technician due to the use of both metric and customary (inch) type nuts, bolts and screws on the same car. Many are metric and some are very close in dimension to customary nuts, bolts and screws in the inch system. Mismatched or incorrect nuts, bolts and screws can result in damage, malfunction or possible personal injury. Nuts, bolts and screws removed from the car should be saved for re-use whenever possible. If they are not re-usable, care should be taken to select a replacement that matches the original.

General Motors Engineering Standards have adopted a portion of the standard metric fastener sizes defined by SI (Systeme International). This was done to reduce the number of sizes used and yet retain the best strength characteristics in each thread size. For example, the customary 1/4–20 and 1/4–28 screws are replaced by the metric M6.0 x 1 screw which has nearly the same diameter and 25.4 threads per inch. The thread pitch is in between the customary coarse and fine thread pitches.

Metric and customary thread notation differ slightly. The difference is illustrated below.

METRIC	CUSTOMARY
M6.0	1/4
Thread Major Diameter in Millimetres	Thread Major Diameter in Inches
1	20
Distance Between Threads in Millimetres	Number of Threads per Inch

Care should be taken when servicing the car to guard against cross threading or improper retention due to interchanged metric and inch nuts and bolts.

When obtaining metric or customary nuts, bolts, and screws locally for servicing the car, care must be exercised in selecting parts that are equivalent to the original parts in dimensions, strength, and pitch of threads.

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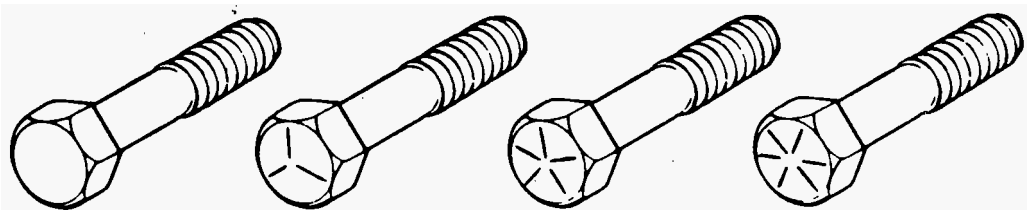
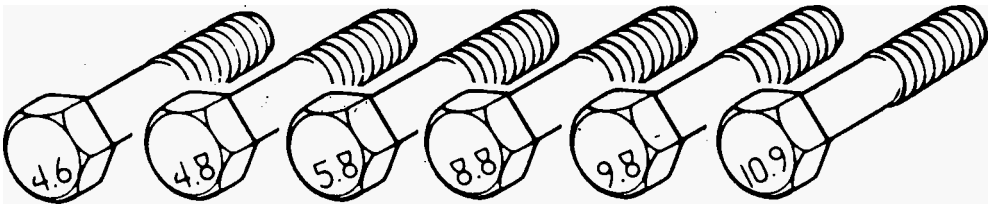
Metric Chart 1

METRIC BOLT AND NUT IDENTIFICATION

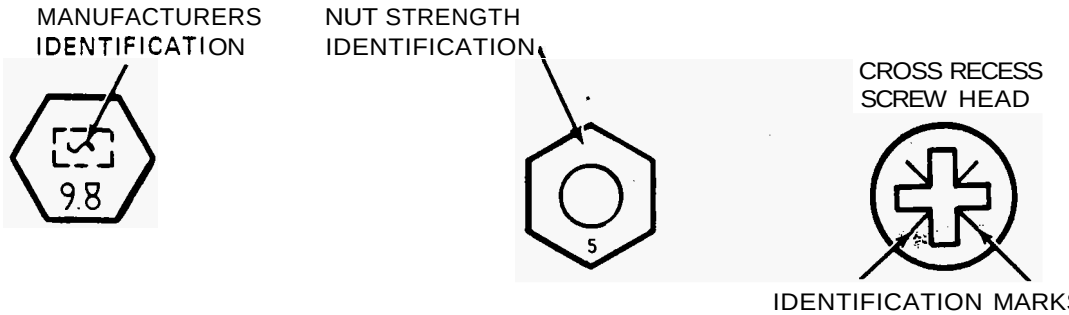
Common metric fastener strength property classes are 9.8 and 10.9 with the class identification embossed on the head of each bolt. Customary (inch) strength classes range from grade 2 to 8 with line identification embossed on each bolt head. Markings correspond to two lines less than the actual grade (i.e. grade 7 bolt will exhibit 5 embossed lines on the bolt head). Some metric nuts will be marked with single digit strength identification numbers on the nut face. The following figure illustrates the different strength markings.



Customary (inch) bolts - Identification marks correspond to bolt strength - Increasing numbers represent increasing strength.



Metric Bolts - Identification class numbers correspond to bolt strength - Increasing numbers represent increasing strength.



12B102

REUSE OF PREVAILING TORQUE NUT(S) AND BOLT(S)

'REVAILING TORQUE NUTS ARE THOSE NUTS WHICH NCORPORATE A SYSTEM TO DEVELOP AN INTERFERENCE ;ETWEEN NUT AND BOLTTHREADS INTERFERENCE IS MOST :OMMONLY ACHIEVED BY DISTORTING TOP OF ALL-METAL JUT, BUT ALSO MAY BE ACHIEVED BY DISTORTING AT MIDDLE OF HEX FLAT, BY NYLON PATCH ON THREADS, BY JYLON WASHER INSERT AT TOP OF NUT AND BY NYLON NSERTTHROUGH NUT.

PREVAILING TORQUE BOLTS ARE THOSE BOLTS WHICH INCORPORATE A SYSTEM TO DEVELOP AN INTERFERENCE BETWEEN BOLT AND NUT OR TAPPED HOLE THREADS. INTERFERENCE IS ACHIEVED BY DISTORTING SOME OF THE THREADS (SEVERAL METHODS EXIST), BY APPLYING A NYLON PATCH OR STRIP OR BY ADHESIVE COATING ON THREADS.

PREVAILING TORQUE NUTS

TOP LOCK MANY TYPES

CENTER LOCK

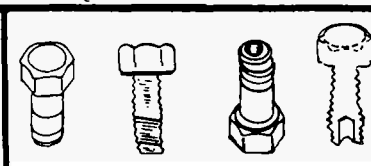
NYLON INSERT

NYLON PATCH

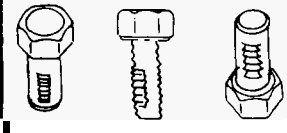
NYLON WASHER INSERT

PREVAILING TORQUE BOLTS

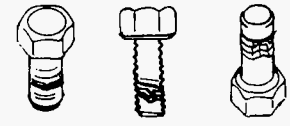
DRY ADHESIVE COATING



OUT OF ROUND THREAD AREA



NYLON STRIP OR PATCH



THREAD PROFILE DEFORMED

RECOMMENDATIONS FOR REUSE

A CLEAN UNRUSTLD PREVAILING TORQUI BOLTS AND NUTS MAY BI REUSED AS FOLLOWS

1. CLEAN DIRT AND OTHER FOREIGN MATERIAL OFF NUT AND BOLT.
2. INSPECT BOLT AND NUT TO ASSURE THERE ARE NO CRACKS. ELONGATION OR OTHEK SIGNS OF ABUSE OR OVERTIGHTENING. LIGHTLY LUBRICATE THREADS. (IF ANY DOUBT. REPLACE WITH NEW PREVAILING TORQUE FASTENER OF EQUAL OR GREATER STRENCTII.)
3. ASSEMBLE PARTS AND START BOLT OR NUT.
4. OBSERVE THAT BEFORE FASTENER SI'ATS. IT DEVELOPS PREVAILING TORQUE PER CHART BELOW. (IF ANY DOUBT. INSTALL NI W PREVAILING TORQUE FASTENER OF EQUAL OR GREATER STRENGTH).
5. TIGHTEN TO TORQUE SPECIFIED IN SERVICE MASI'AL.

B. BOLTS AND NUTS WHICH ARE RUSTY OR DAMAGED SHOULD BE REPLACED WITH NEW PARTS OF EQUAL OR GREATER STRENGTH.

METRIC SIZES

		6 & 6.3	8	10	12	14	16	20
NUTS AND ALL METAL BOLTS	N·m	0.4	0.8	1.4	2.2	3.0	4.2	7.0
	In. Lbs.	4.0	7.0	12	18	25	35	57
ADHESIVE OR NYLON COATED BOLTS	N·m	0.4	0.6	1.2	1.6	2.4	3.4	5.6
	In. Lbs.	4.0	5.0	10	14	20	28	46

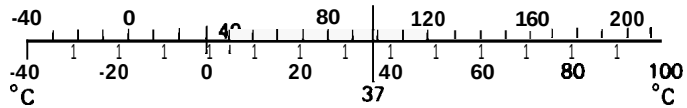
INCH SIZES

		.250	.312	.375	.437	.500	.562	.625	.750
NUTS AND ALL METAL BOLTS	N·m	0.4	0.6	1.4	1.8	2.4	3.2	4.2	6.2
	In. Lbs.	4.0	5.0	12	15	20	27	35	51
ADHESIVE OR NYLON COATED BOLTS	N·m	0.4	0.6	1.0	1.4	1.8	2.6	3.4	5.2
	In. Lbs.	4.0	5.0	9.0	12	15	22	28	43

0B103

SI METRIC-CUSTOMARY CONVERSION TABLE

Multiply	by	to get equivalent number of:
LENGTH		
Inch	25 4	millimetres (mm)
Foot	0.304 8	metres (m)
Yard	0914 4	metres
Mile	I 609	kilometres (km)
AREA		
Inch'	645 2	millimetres^2 (mm^2)
	6 45	centimetres^2 (cm^2)
Foot'	0092 9	metres^2 (m^2)
Yard^2	0836 I	metres^2
VOLUME		
Inch'	16 387	mm^3
	16 387	cm^3
	0016 4	litres (l)
Quart	0946 4	litres
Gallon	3785 4	litres
Yard'	0764 6	metres' (m^3)
MASS		
Pound	0453 6	kilograms (kg)
Ton	907 18	kilograms (kg)
Ton	0 907	tonne (t)
FORCE		
Kilogram	9 807	newtons (N)
Ounce	0278 0	newtons
Pound	4 448	newtons
TEMPERATURE		
Degree Fahrenheit	(OF-32) ÷ 1.8	degree Celsius (C)



Multiply	by	to get equivalent number of:
ACCELERATION		
Foot/sec^2	0.304 8	metre/sec^2 (m/s^2)
Inch/sec^2	0.025 4	metre/sec^2
TORQUE		
Pound-inch	0.112 98	newton-metres (N-m)
Pound-foot	1.355 8	newton-metres
POWER		
Horsepower	0.746	kilowatts (kW)
PRESSURE OR STRESS		
Inches of mercury	3.377	kilopascals (kPa)
Pounds/sq. in.	6.895	kilopascals
ENERGY OR WORK		
BTU	I 055.	joules (J)
Foot-pound	1.355 8	joules
Kilowatt-hour	3 600 000. or 3.6x10^6	joules (J = one W's)
LIGHT		
Foot candle	10.764	lumens/metre^2 (lm/m^2)
FUEL PERFORMANCE		
Miles/gal	0.425 I	kilometres/litre (km/l)
Gal/mile	2.352 7	litres/kilometre (l/km)
VELOCITY		
Miles/hour	1.609 3	kilometres/hr. (km/h)

0B 104

DECIMAL AND METRIC EQUIVALENTS

Fractions	Decimal In.	Metric MM.	Fractions	Decimal In.	Metric MM.
1/64	.015625	.39688	33/64	.515625	13.09687
1/32	.03125	.79375	17/32	.53125	13.49375
3/64	.046875	1.19062	35/64	.546875	13.89062
1/16	.0625	1.58750	9/16	.5625	14.28750
5/64	.078125	1.98437	37/64	.578125	14.68437
3/32	.09375	2.38125	19/32	.59375	15.08125
7/64	.109375	2.77812	39/64	.609375	15.47812
1/8	.125	3.1750	5/8	.625	15.87500
9/64	.140625	3.57187	41/64	.640625	16.27187
5/35	.15625	3.96875	21/32	.65625	16.66875
11/64	.171875	4.36562	43/64	.671875	17.06562
3/16	.1875	4.76250	11/16	.6875	17.46250
13/64	.203125	5.15937	45/64	.703125	17.85937
7/32	.21875	5.55625	23/32	.71875	18.25625
15/64	.234375	5.95312	47/64	.734375	18.65312
1/4	.250	6.35000	3/4	.750	19.05000
17/64	.265625	6.74687	49/64	.765625	19.44687
9/32	.28125	7.14375	25/32	.78125	19.84375
19/64	.296875	7.54062	51/64	.796875	20.24062
5/16	.3125	7.93750	13/16	.8125	20.63750
21/64	.328125	8.33437	53/64	.828125	21.03437
11/32	.34375	8.73125	27/32	.84375	21.43125
23/64	.359375	9.12812	55/64	.859375	21.82812
3/8	.375	9.52500	7/8	.875	22.22500
25/64	.390625	9.92187	57/64	.890625	22.62187
13/32	.40625	10.31875	29/32	.90625	23.01875
27/64	.421875	10.71562	59/64	.921875	23.41562
7/16	.4375	11.11250	15/16	.9375	23.81250
29/64	.453125	11.50937	61/64	.953125	24.20937
15/32	.46875	11.90625	31/32	.96875	24.60625
31/64	.484375	12.30312	63/64	.984375	25.00312
1/2	.500	12.70000	1	1.00	25.40000

0B105

	LESS FILTER	HEATER	WITH A/C	H. DUTY		MANUAL	AUTOMATIC..
SKYHAWK 2.0 - LT2 - K	3.8L (4.0 QTS.)	7.5L (8 QTS.)	7.5L (8 QTS.)	-	51.5L (13.6 GAL.)	4 SPD. FX126 2500 rnl 5 SPD 2550 ml	125C OIL PAN R&R 3.8L 14.0 QTS.) OVERHAUL 5.7L 16 QTS.) 440T4 OIL PAN R&R 3.8L 14.0 QTS.) OVERHAUL 5.5L
2.0 - LT3 . M	3.8L (4.0 QTS.)	7.5L (8 QTS.)	7.5L 18 QTS.)				
SKYLARK/ SOMERSET - 2.5L-L68-U AUTO	2.8L 13.0 QTS.)	7.42L 17.8 QTS.)	7.46L 17.9 QTS.)				
MANUAL	3.8L (4.0 QTS.)	7.42L 17.8 QTS.)	7.46L (7.9 QTS.)				
3.0 - LN7 - L	3.8L 14.0 QTS.)	9.7L 110.25 QTS.)	10.36L (10.9 QTS.)				
CENTURY 2.5 - LR8 - R	2.8L (3.0 QTS.)	8.92L (9.4 QTS.)	9.20L (9.7 QTS.)	11.4L (12.0 QTS.)	COUPE & SEDAN 64.4L 116.6 GAL.) WAGON 59.4L (15 7 GAL.)		
2.8 - LB6 - W	3.8L (4.0 QTS.)	10.8L 111.4 QTS.)	11.2L (11.8 QTS.)	8.4L 18.8 QTS.)			
3.8 - LG3 . 3	3 78L 14 0 QTS.)		11.28L (11.9 QTS.)	11 86L (12.6 QTS.)			
LESABRE 3.8 - LG3 - 3	3.78L (4 0 QTS.)	-	12.52L 113.2 QTS)	12.62L (12 3 QTS)	68 1L (18.0 GAL)		
ELECTRA 3.8 - LG3 - 3	3.78L (4.0 QTS.)	-	11.70L (12.4 QTS.)	11.78L (12.4 QTS.)	68.1L (18.0 GAL.)		
RIVIERA 3.8 - LG3 - 3	3 78L (4.0 QTS.)		11.32L (12.0 QTS.)	11.48L (12.1 QTS.)	68.1L (18.0 GAL.)	TRANSMISSION**	DIFFERENTIAL
REGAL 3.8 - LD5 - A	3.8L (4 0 QTS.)	12.28L (12.9 QTS.)	12.3L (13.0 QTS)	12.8L 113.5QTS.)	68.5L (18.1 GAL.)	200C OIL PAN R&R 3.3L (3.48 QTS.) OVERHAUL 8 YL 19.40 QTS.)	7 1/2" 1.66L (3.5 PTS.)
3.8 - LC2 - 7	4 73L (5.0 QTS.)	12.3L (13.0 QTS.)	12.3L (13.0 QTS.)	12.8L (13.5 QTS.)		200-4R OIL PAN R&R 3.3L 13.48 QTS.) OVERHAUL 10.46L (11.05 QTS.)	8 1/2" 2.0L (4.25 PTS.)
5.0 - LV2 - V	3 75L 14 0 QTS)	141L 1149 QTS.)	14.8L (15.6 QTS.)	14.7L (15.5 QTS.)			
"B" WAGON 5.0 - LV2 - Y	3 75L (4.0 QTS)	14 6L (15.4 QTS.)	15.4L (16.0 QTS.)	15.2L (16.0 QTS.)	83.3L (22.0 GAL.)		

'WHEN CHANGING OIL FILTER. ADDITIONAL ENGINE OIL MAY BE REQUIRED TO BRING OIL LEVEL TO FULL MARK.
** WHEN DRAINING OR REPLACING TORQUE CONVERTER, ADDITIONAL TRANSMISSION FLUID MAY BE REQUIRED TO BRING LEVEL TO FULL MARK.

HG0008-0B

Figure 2 Capacities Chart

Carburetor Choke and Hoses

If car is equipped with a carburetor, verify that choke and vacuum break work properly and are within specifications. Correct any binding caused by damage or gum on the choke shaft. Inspect hoses for proper hook up, cracks, rubbing or decay. Correct as necessary.

Carburetor or Throttle Body Mounting Torque

- Tighten carburetor mounting bolts or nuts to 16 N·m (12 lbs. ft.)
- Tighten 2.5L TBI mounting bolts or nuts to 20 N·m (15 lbs. ft.).
- Tighten 2.0L TBI mounting bolts or nuts to 35 N·m (26 lbs. ft.).
- Tighten MFI/SFI throttle body mounting bolts or nuts to 27 N·m (20 lbs. ft.)

Engine Idle Speed Adjustment

(Engines without Idle Speed Control or Idle Air Control)– Adjust to specifications shown on the underhood label. If no specifications are shown, no adjustment is necessary. Calibrated test equipment must used.

A.I.R. Pump Drive Belt Inspection

When a separate belt is used to drive the A.I.R. pump, inspect it for cracks, fraying, wear and proper tension. Adjust or replace as needed.

Cooling System Refill

Drain, flush and refill system with new coolant. See Recommended Fluids and Lubricants, or Section 6B.

Wheel Bearing Repack

Clean and repack front-wheel bearings at each brake relining or 15,000 miles (24 000 km), whichever comes first when car is used in such service as police, taxi or door-to-door delivery. If the car is not used in such service, clean and repack bearings at each brake relining or 30,000 miles (48 000 km), whichever comes first.

Transmission/Transaxle Service

The manual transaxle fluid does not require changing.

For automatic transmission/transaxle, change both the fluid and filter every 15,000 miles (25 000 km) if the car is mainly driven under one or more of these conditions.

1987

	FUEL FILTER	OIL FILTER	OXYGEN SENSOR	PCV FILTER	PCV VALVE	RADIATOR CAP	SPARK PLUGS	SPARK PLUG GAP
SKYHAWK								
2.0 - LT2 - K	A785C	GF 481	PF 47	AFS-16P	FB-102	CV869C	RC 27	R44XLS	.035
2.0 - LT3 - M	A905C	GF 481	PF 47	AFS-16P	—	CV873C	RC 27	R42CXLS	.035
2.0 - LL8 - I	A875C	GF 481	PF 52	AFS-16P	—	CV892C	RC 27	FR3LM	.035
SKYLARK/ SOMERSET								
2.5 - L68 - U AUTO	A785C	GF 481	PF 47	AFS-16P	FB-82	CV895C	RC 27	R43TS6	.060
2.5 - L68 - U MANUAL	A785C	GF 481	PF 1072	AFS-16P	FB-82	CV895C	RC 27	R43TS6	.060
3.0 - LN7 - L	A875C	GF 431	PF 47	AFS-16P	—	CV781C	RC 27	R44LTS	.045
CENTURY								
2.5 - LR8 - R	A785C	GF 431	PF 47	AFS-16P	FB-82	CV895C	RC 27	R43TS6	.060
2.8 - L86 - W	A-1098C	GF 481	PF 47	AFS-16P	—	CV892C	RC 27	R43LTSE	.045
3.8 - LG3 - 3	A633C	GF 483	PF 47	AFS-16P	—	CV781C	RC 27	R44LTS	.045
LESABRE								
3.8 - LG3 - 3	A974C	GF 483	PF 47	AFS-16P	—	CV781C	RC 27	R44LTS	045
ELECTRA								
3.8 - LG3 - 3	A974C	GF 483	PF 47	AFS-16P	—	CV781C	RC 27	R44LTS	045
RIVIERA								
3.8 - LG3 - 3	A974C	GF 483	PF 47	AFS-16P	—	CV781C	RC 27	R44LTS	.045
REGAL								
3.8 - LD5 - A	A178C	GF 471	PF 47	AFS-16P	FB-73	CV770C	RC 27	R45TSX	.060
3.0 - LC2 - 7	A633C	GF 483	PF 47	AFS-16P	—	CV893C	RC 27	R44TS	.035
5.0 - LV2 - 8	A348C	GF 471	PF45 + BASE	AFS-16P	—	CV851C	RC 27	FR3LS6	.060
"B" WAGON								
5.0 - LV2 - 8	A348C	GF 471	PF 45 + BASE	AFS-16P	—	CV851C	RC 27	FR3LS6	.060

140009-0B

Figure 3 Maintenance Items

	5/16" WIDE	3/8" &13/32" WIDE	7/16" WIDE
NEW BELT	350 N Max. 80 Lbs. Max.	620 N Max. 140 Lbs. Max.	750 N Max. 165 Lbs. Max.
USED BELT	200 N Min. 50 Lbs. Min.	300 N Min. 70 Lbs. Min.	400 N Min. 90 Lbs. Min.

4B0A12

Figure 4 Belt Tensions

- In heavy city traffic where the outside temperature regularly reaches 90° F (32° C) or higher.
- In hilly or mountainous terrain.
- Frequent trailer pulling.
- Uses such as found in taxi, police car or delivery service.

If the car is not used under any of these conditions, change both the fluid and filter (or service the screen) every 100,000 miles (160 000 km). See Section 7A for more information.

Vacuum Advance System Inspection

Applies only to Canadian cars without Computer Command Control.

Check system for proper operation. Check hoses for proper hookup, cracks, rubbing or decay. Replace parts as needed.

g and Wire Service

Replace spark plugs with type listed in Section 0A. Clean wires and inspect for burns, cracks or other damage. Check the wire boot fit at the distributor and/or coil, and at the spark plugs. Replace the wires as needed.

Positive Crankcase Ventilation (PCV) Inspection

Inspect valve for proper function. Replace valve if necessary as well as any worn, plugged or collapsed hoses.