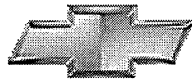


Chevrolet



Blazer



2005

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Product Information

2005 Blazer – Durability And Dependability Among Compact Suvs

Blazer has earned a strong reputation both within the Chevy truck line and among all compact sport-utility vehicles as being durable, dependable and one of the best values in the segment.

For 2005, Blazer is offered to retail customers as a two-door model only. Four-door Blazer models will be produced for fleet sales only, as Chevrolet introduces the all-new Equinox compact SUV to the retail market.

Two-door Blazers are offered in three versions: a base model, the popular low-stance sporty Xtreme, and the higher-stance ZR2 for serious off-road enthusiasts. With its capable and durable Vortec 4300 4.3L V-6 engine, two transmission choices and available Autotrac four-wheel-drive system on 4x4 models, Blazer can be equipped to meet a wide range of driver needs.

Tried-and-true SUV

Blazer is available as a two-door with two- and four-wheel-drive configurations. All models can be ordered with a convenience group that includes cruise control, tilt steering, power door locks and windows, and electric remote-heated exterior mirrors. Blazer has generous room for both passengers and cargo. With the rear seat up, Blazer has almost 30 cubic feet (845L) of cargo room. Folding the rear seat forward opens up almost 61 cubic feet (1,717L) of capacity.

Blazer Xtreme

Blazer Xtreme blends bold exterior styling with a special Sport Suspension for a sporty appearance and responsive handling. Blazer Xtreme features:

- Z87 Sport Suspension
- P235/60R16 Eagle LS low-profile tires
- Xtreme deep-dish, five-spoke aluminum wheels
- Lower front fascia with fog lamps
- Lower bodyside cladding and large wheel flares
- Body-colored grille, bumpers, lower cladding and flares
- Special "Xtreme" badging
- Deep-tint windows
- Leather-wrapped steering wheel
- Heavy-duty, weight-distributing platform hitch; maximum towing capacity with manual or automatic transmission is 2,000 pounds (900 kg)
- Available sunroof
- Full range of audio systems available, including an in-dash, six-disc CD changer
- Available stripe or the new Flame/Heat decal packages

Blazer ZR2

The off-road ZR2 wide-stance package is available in two- and four-wheel-drive versions of the two-door Blazer for enhanced off-road capability as well as excellent on-road performance. Features include:

- 46-mm Bilstein pressurized shocks
- 3.9-inch-wider tread in front and rear
- P265/R75R15 on-/off-road steel-belted radial blackwall tires
- Specific strengthened front differential gears and drive axles
- Specific rear axle with an 8.5-inch ring gear
- Larger rear wheel bearings
- Longer, larger diameter axle shafts
- A specifically tuned rear suspension with revised rear multileaf springs
- Rear axle track bar
- Skid plate package
- Locking rear differential

2005 Chevrolet Blazer Restoration Kit

- Large front and rear wheel flares
- The two-wheel-drive version of the Blazer ZR2 also includes brush guards and tubular side steps.

Plenty of power

Blazer's highly capable performance comes from its standard Vortec 4300 SFI V-6 engine that generates 190 horsepower (142 kw) and 250 lb.-ft. (339 Nm) of torque. To meet low-emission requirements in various states, a National Low Emission Vehicle (NLEV) system is also available on Blazer.

Transmission choices include a standard five-speed manual or optional four-speed electronic automatic. An available Autotrac four-wheel-drive system automatically shifts power to all four wheels.

Safe and secure

In addition to its standard anti-lock brake system and front-passenger air bags, Blazer features an optional programmable auto door lock/unlock feature that enables customers to set the locking and unlocking functions to their preferences. On- or off-road, Chevy Blazer is a confident performer, thanks to its standard Z85 sporty/firm suspension, which accommodates a variety of driving needs.

New For 2005

- Two-door Blazer models
- Smoker's package (includes ashtray and lighter) standard on all models

Model Lineup

	Engine	Transmissions	
	Vortec 4300 4.3L V-6	4-spd auto (Hydra-Matic 4L60-E)	5-spd man (M50)
Blazer 2-Door	s	o	s
Blazer Xtreme (2WD)	s	o	s
ZR2	s	o	s

Standard s
Optional o
Not available -

Specifications

Overview		
Models:	Chevy Blazer base, Xtreme and ZR2 (2-door models only for retail; 4-door models for fleet only)	
Body / driveline:	rear-drive / 4-wheel drive, front-engine	
Construction:	welded steel, ladder-type frame; hot-dipped steel, 2-sided galvanized steel (on strategic panels)	
EPA vehicle class:	compact sport utility	
Manufacturing location:	Linden, New Jersey	
Key competitors:	Ford Escape, Jeep Liberty, Toyota 4-Runner	
Engine		
Type:	Vortec 4300 4.3L V-6 (LU3)	
Displacement (cu in / cc):	262 / 4300	
Bore & stroke (in / mm):	4 x 3.48 / 102 x 88	
Block material:	cast iron	
Cylinder head material:	cast iron	
Valvetrain:	OHV, 2 valves per cylinder	
Ignition system:	direct	
Fuel delivery:	sequential fuel injection	
Compression ratio:	9.2:1	
Horsepower (hp / kw @ rpm):	190 / 142 @ 4400	
Torque (lb-ft / Nm @ rpm):	250 / 339 @ 2800	
Recommended fuel:	87 octane	
Maximum engine speed (rpm):	5600	
Emissions controls:	evaporative system, catalytic converter, exhaust gas recirculation, positive crankcase ventilation	
Estimated fuel economy:	2WD	4WD
MPG (city / hwy / combined)	automatic: 17 / 23 / 20 manual: 15 / 21 / 18	automatic: 15 / 19 / 17 manual: 15 / 20 / 17
MPIG (city / hwy / combined)	N/A	automatic: 16 / 22 / 19 manual: 18 / 26 / 21
L/100km (city / hwy / combined)	N/A	automatic: 17.3 / 12.6 / 15.2 manual: 15.6 / 10.9 / 13.4
Transmissions		
Type:	M50	Hydra-Matic 4L60-E
	5-speed manual	4-speed automatic
Gear ratios (:1):		
First:	3.49	3.06
Second:	2.16	1.63
Third:	1.40	1.00
Fourth:	1.00	0.70
Fifth:	0.78	-
Reverse:	3.55	2.29
Final drive ratio:	NA	3.42:1

Chassis/Suspension	
Front:	independent short/long arm (SLA) front suspension, computer-selected, friction-free coil springs (rear-wheel drive only); computer-selected torsion bars (4-wheel drive only); 35-mm stabilizer bar (with standard suspension)
Rear:	live rear axle and variable-rate, 2-stage multileaf springs; 23-mm stabilizer bar (with standard suspension)
Suspension packages:	touring suspension standard on 4WD models Xtreme Z87 Sport Suspension ZR2 Wide-Stance Sport Performance Package (optional on 2-door 4WD models only)
Steering type:	variable, integral power, recirculating ball
Steering ratio:	16.13:1
Steering wheel turns, lock-to-lock:	2WD: 3.38 4WD: 2.97
Turning circle, curb-to-curb (ft / m):	2WD: 34.8 / 10.6 4WD: 35.2 / 10.7
Brakes	
Type:	power-assisted with ABS, front and rear
Rotor diameter x thickness (in / mm):	front: 10.82 x 1.14 / 275 x 29 rear: 11.6 x 0.79 / 295 x 20
Wheels/Tires	
Wheel size and type:	<ul style="list-style-type: none"> • LS 2-door: 15-inch aluminum 5-spoke wheel • Xtreme: 16-inch deep-dish aluminum wheel
Tires:	<ul style="list-style-type: none"> • std: P235/70R15 all-season steel-belted highway radial-ply blackwall • opt: P235/70R15 all-season steel-belted highway radial-ply white outline-lettered • ZR2: P265/75R15 on-/off-road steel-belted radial blackwall • Xtreme: P235/60R16 Goodyear Eagle LS all season steel belted radial-ply

Dimensions

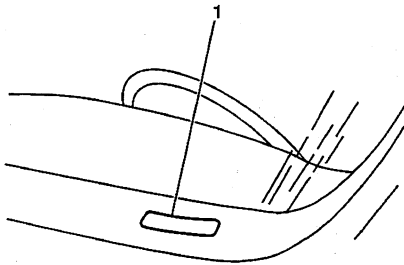
Exterior	2 door
Wheelbase (in / mm):	100.5 / 2553
Overall length (in / mm):	176.8 / 4491
Overall width (in / mm):	67.8 / 1723
Overall height (in / mm):	2WD: 64.9 / 1648 4WD: 64.3 / 1633
Track (in / mm):	
Front:	2WD: 54.9 / 1396 4WD: 57.2 / 1454
Rear:	2WD: 54.6 / 1388 4WD: 54.6 / 1388
Minimum ground clearance (in/mm):	8 / 204
Ground to top of load floor (in/mm):	2WD: 39.9 / 760 4WD: 29.5 / 749
Curb weight (lb / kg):	2WD: 3591 / 1629 4WD: 3866 / 1754

Interior	
Seating capacity:	
Front:	2
Rear:	2
Head room (in / mm):	
Front:	39.6 / 1005
Rear:	38.3 / 973
Leg room (in / mm):	
Front:	42.4 / 1078
Rear:	35.6 / 904
Shoulder room (in / mm):	
Front:	57.7 / 1466
Rear:	55.6 / 1413
Hip room (in / mm):	
Front:	52.1 / 1322
Rear:	40.5 / 1027
Capacities	
Cargo volume (cu ft / L):	
Rear seat up:	29.8 / 845
Rear seat folded:	60.6 / 1717
Payload, base (lb / kg):	2WD: 838 / 380 4WD: 966 / 438
Trailer towing maximum (lb / kg):	2WD*: 5700 / 2585 4WD: 5400 / 2449
Fuel tank (gal / L):	18.7 / 70.8
Engine oil (qt / L):	4.5 / 4.3
Cooling system (qt / L):	automatic: 11.7 / 11.1 manual: 11.9 / 11.3

* 2-dr / 2WD Xtreme = 2,000 lb. (900 kg)

Vehicle Identification

Vehicle Identification Number (VIN)



The vehicle identification number (VIN) plate is the legal identifier of the vehicle. The VIN plate is located on the upper LH corner of the Instrument Panel and can be seen through the windshield from the outside of the vehicle:

Position	Definition	Character	Description
1	Country of Origin	1,4	U.S. Built
2	Manufacturer	G	General Motors
3	Make	C N	Chevrolet Truck Chevrolet MPV
4	GVWR/Brake System	C D	4,001-5,000 HYD Brakes 5,001-6,000 HYD Brakes
5	Truck Line/Chassis Type	S T	Sm Conventional Cab-4x2 Sm Conventional Cab-4x4
6	Series	1 6	½ Ton Nominal ½ Ton Luxury
7	Body Type	4 9 8	Two Door Cab Two Door Extended Cab Two Door Utility
8	Engine Type	W	4.3L V6 CPI (L35)
9	Check Digit	--	Check Digit
10	Model Year	5	2005
11	Plant Location	8 K	Shreveport, LA Linden, NJ
12-17	Plant Sequence Number	--	Plant Sequence Number

VIN Derivative

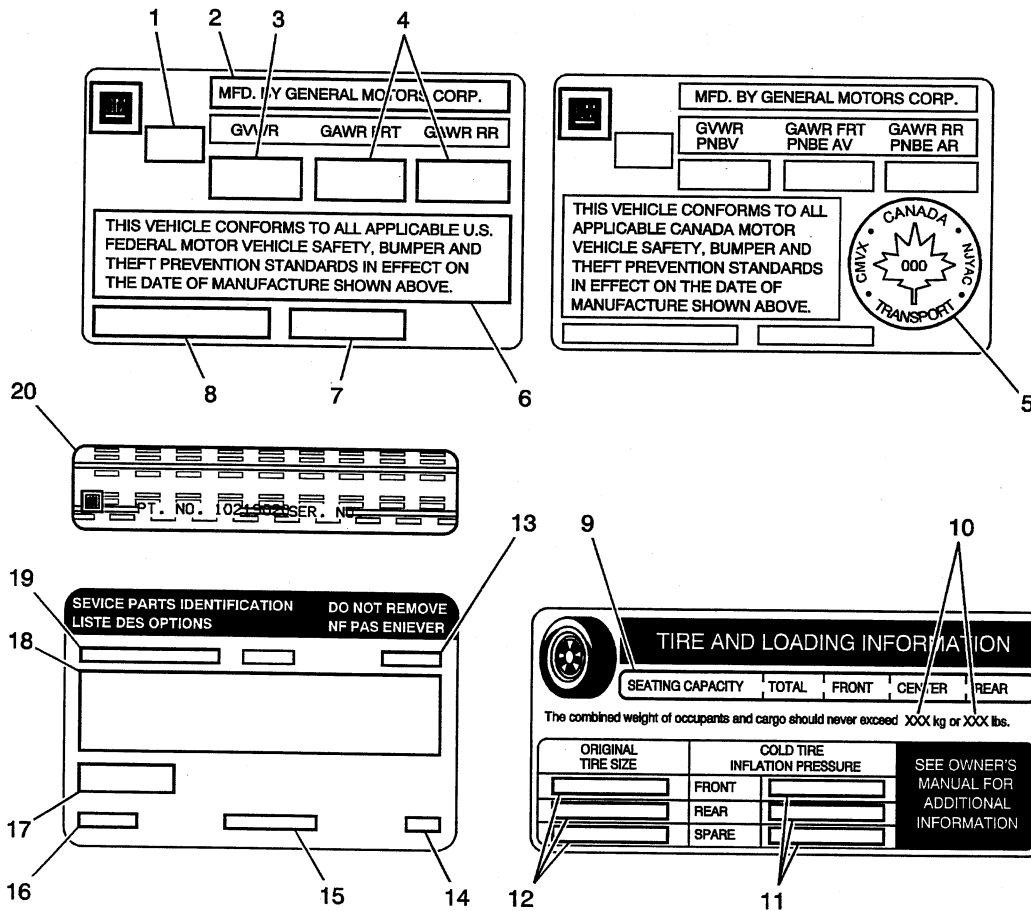
All engines and transmissions are stamped or laser etched with a partial vehicle identification number (VIN), which was derived from the complete VIN. A VIN derivative contains the following nine positions:

Position	Definition	Character	Description
1	GM Division Identifier	C N	Chevrolet Truck Chevrolet MPV
2	Model Year	5	2005
3	Assembly Plant	K 8	Linden, NJ Shreveport, LA
4-9	Plant Sequence Number	--	Plant Sequence Number

A VIN derivative can be used to determine if a vehicle contains the original engine or transmission, by matching the VIN derivative positions to their accompanying positions in the complete VIN:

VIN Derivative Position	Equivalent VIN Position
1	3
2	10
3	11
4-9	12-17

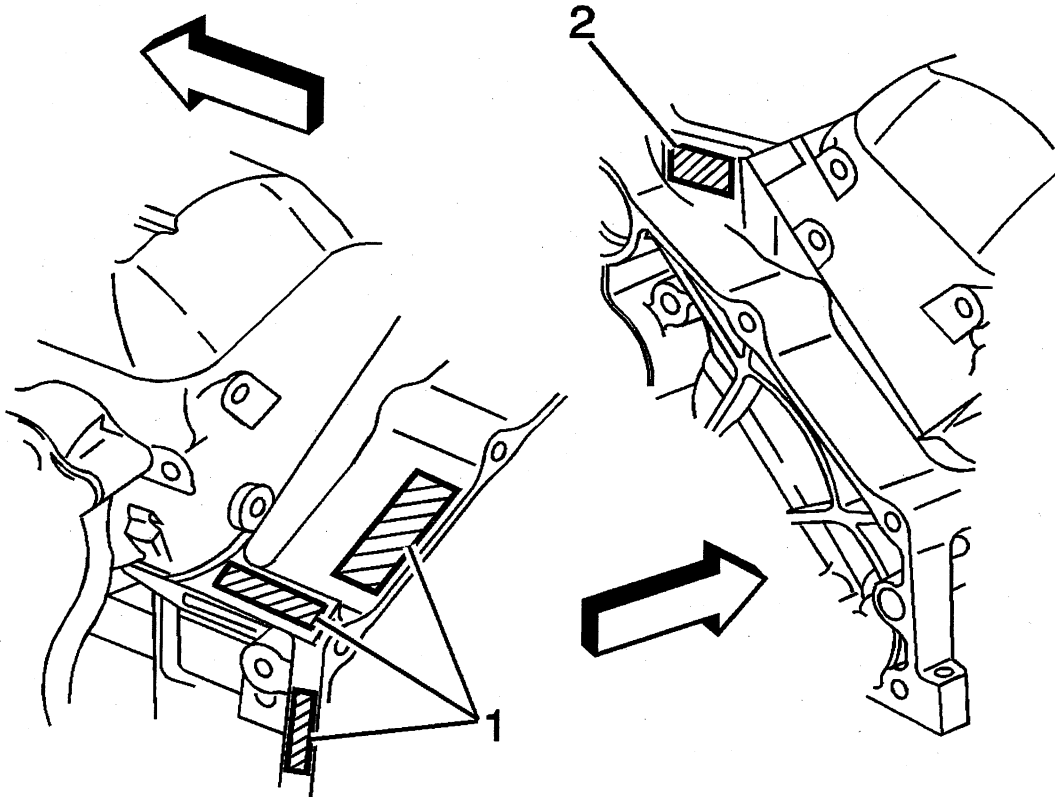
Label - Vehicle Certification, Tire Placard, Anti-Theft and Service Parts ID



Callout	Description
<p>The vehicle certification label is located on the driver door and displays the following assessments:</p> <ul style="list-style-type: none"> • Gross Vehicle Weight Rating (GVWR) • Gross Axle Weight Rating (GAWR), front and rear • The gross vehicle weight (GVW) is the weight of the vehicle and everything it carries. The gross vehicle weight must not exceed the Gross Vehicle Weight Rating. Include the following items when figuring the GVW: <ul style="list-style-type: none"> ○ The base vehicle weight (factory weight) ○ The weight of all vehicles accessories ○ The weight of the driver and the passengers ○ The weight of the cargo 	
1	Name of Manufacturer
2	Gross Vehicle Weight Rating
3	Gross Axle Weight Rating (FRONT, REAR)
4	Canadian Safety Mark (w/RPO Z49)
5	Certification Statement
6	Vehicle Class Type (Pass Car, etc.)
7	Vehicle Identification Number
8	Date of Manufacture (Mo/Yr)

Callout	Description
Tire Placard	
The tire placard label is located on the driver door and displays the following assessments:	
9	Specified Occupant Seating Positions
10	Maximum Vehicle Capacity Weight
11	Original equipment tires size
12	Tire pressure, Front, Rear, and Spare (Cold)
Service Parts ID Label	
The vehicle service parts identification label is located on the front passenger door frame. The label is use to help identify the vehicle original parts and options.	
13	Vehicle Identification Number
14	Engineering Model Number (Vehicle Division, Line and Body Style)
15	Interior Trim Level and Decor
16	Exterior (Paint Color) WA Number
17	Paint Technology
18	Special Order Paint Colors and Numbers
19	Vehicle Option Content
Anti-Theft Label	
20	<p>The Federal law requires that General Motors label certain body parts on this vehicle with the vehicle identification number (VIN). The purpose of the law is to reduce the number of motor vehicle thefts by helping in the tracing and recovery of parts from stolen vehicles.</p> <p>Labels are permanently affixed to an interior surface of the part. The label on the replacement part contains the letter R, the manufacture's logo, and the DOT symbol.</p> <p>The anti-theft label must be covered before any painting, and rustproofing procedures, and uncovered after the procedures. Failure to follow the precautionary steps may result in liability for violation of the Federal Vehicle Theft Prevention Standard and possible suspicion to the owner that the part was stolen.</p>

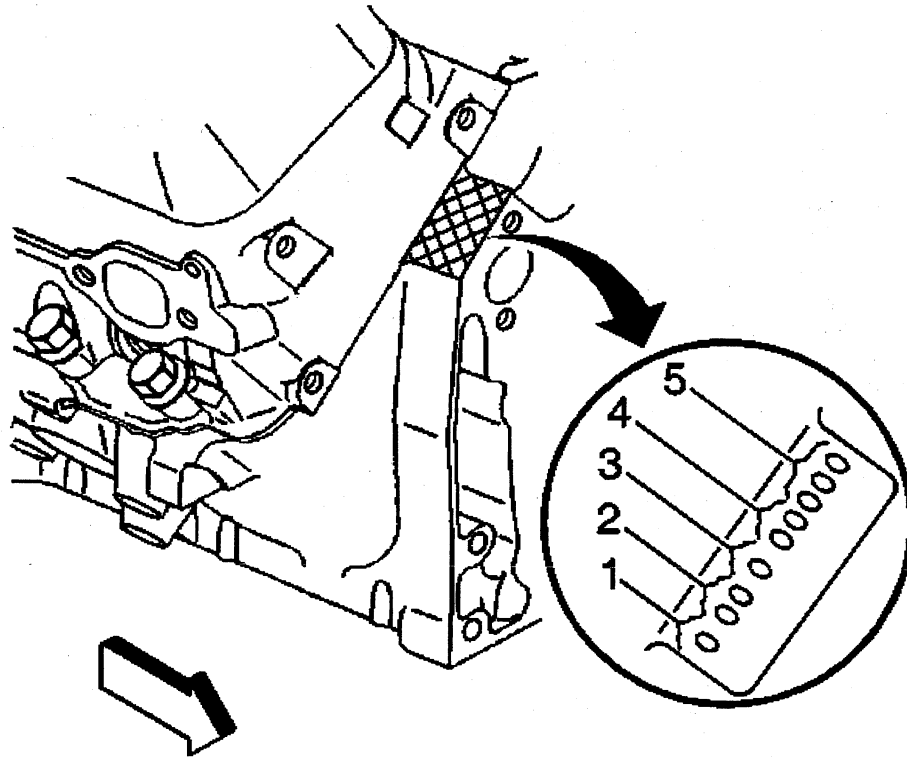
VIN Derivative Location 4.3L



The Vehicle Identification Number (VIN) Derivative is located on the left side rear of the engine block (1) or on the right side rear (2) and typically is a 9 digit number stamped or laser etched onto the engine at the vehicle assembly plant.

- The first digit identifies the division.
- The second digit identifies the model year.
- The third digit identifies the assembly plant.
- The fourth through ninth digits are the last six digits of the VIN.

Engine ID Location – 4.3L

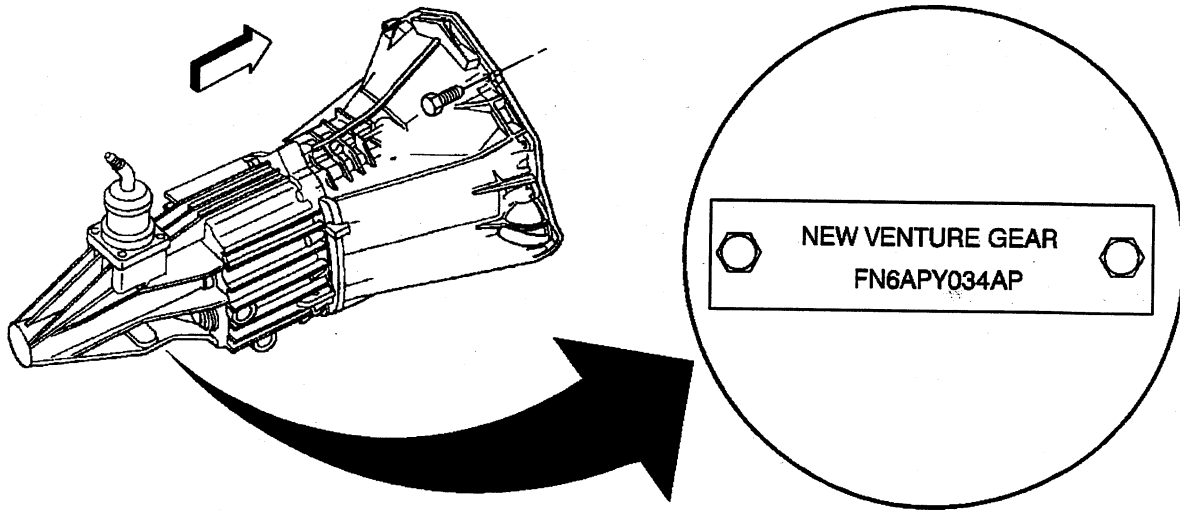


Engines built at the Romulus engine plant have the engine identification number located at the right front top of the engine block.

- The first digit (1) is the source code.
- The second and third digits (2) are the month of build.
- The fourth digit (3) is the hour of the build.
- The fifth and sixth digits (4) are the date of build.
- The seventh, eighth, and ninth digits (5) are the broadcast code.

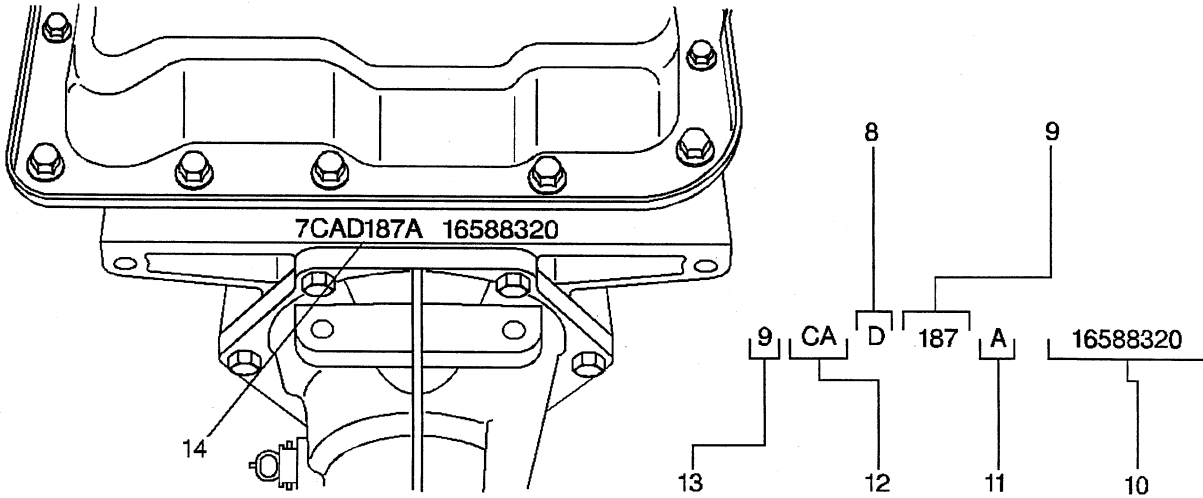
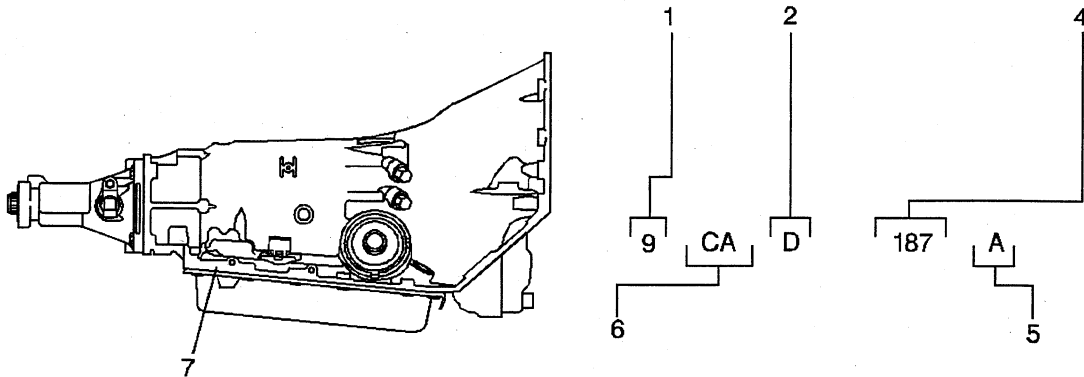
Transmission ID and VIN Derivative Location

Manual Transmission



The transmission model identification is located on a label or tag on the transmission case. If this label is missing or unreadable, use the service parts identification label in order to identify the vehicle's transmission.

4L60-E Transmission ID Location

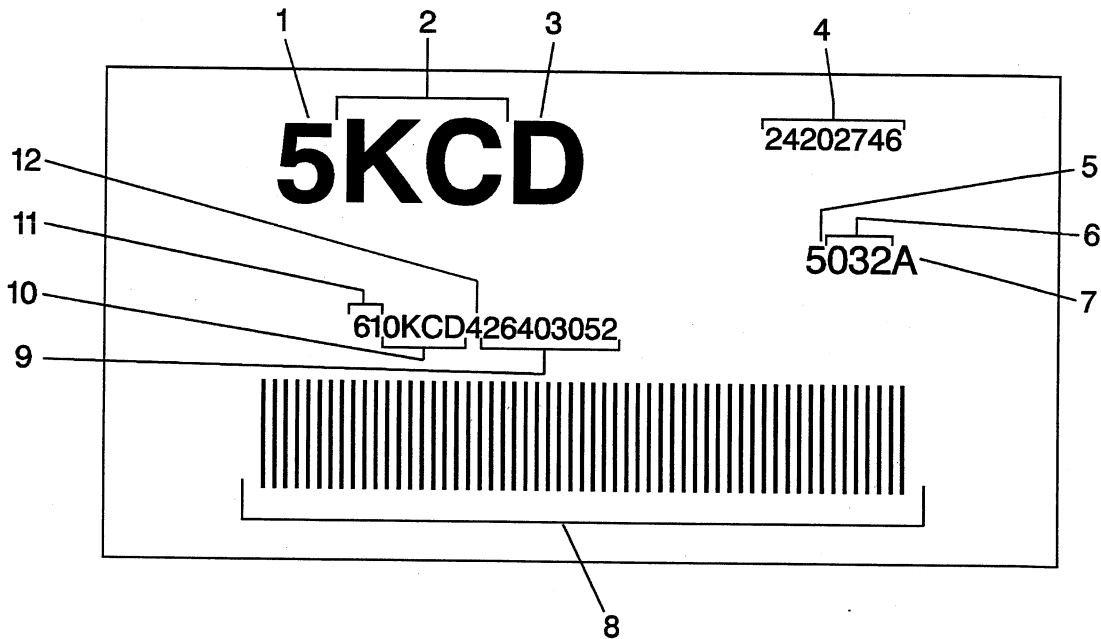


- (1) Model Year
- (2) Hydra-Matic 4L60-E
- (4) Julian Date (or Day of the Year)
- (5) Shift Built (A, B, J = First Shift; C, H, W = Second Shift)
- (6) Model
- (7) Transmission ID Location
- (8) Hydra-Matic 4L60-E
- (9) Julian Date (or Day of the Year)
- (10) Serial No.
- (11) Shift Built (A, B, J = First Shift; C, H, W = Second Shift)
- (12) Model
- (13) Model Year
- (14) Transmission ID Location

Plant and Shift Build

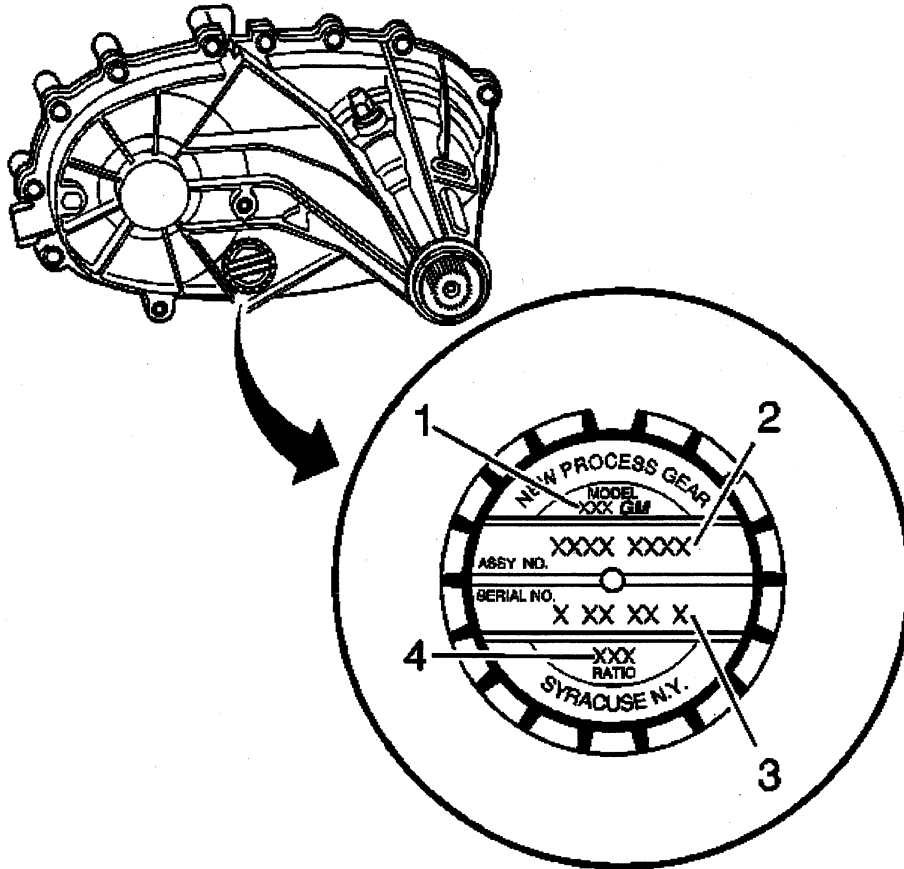
Plant	Build Line	1st Shift	2nd Shift	3rd Shift
Toledo, OH	ML1	J	W	X
	ML2	A	C	Not Used
	ML3	B	H	Not Used
	ML4	S	L	V
	ML5	K	E	Z
Romulus, MI	1	A	--	B
Ramos Arizpe, Mexico	1	A	--	--

Barcode Contents



- (1) 5 = 2005
- (2) Model
- (3) Hydra-Matic 4L60-E
- (4) Transmission Asm. as Shipped Number
- (5) 5 = Model Year
- (6) Julian Date or Day of the Year
- (7) Letter After Julian Date Identifies the Plant Shift Build, See Shift Build
- (8) Bar Code
- (9) Serial Number
- (10) Broadcast Code
- (11) Transmission ID
- (12) Build Location Y = Toledo, OH, R = Romulus, MI, 4 = Ramos Arizpe, Mexico

Transfer Case Identification

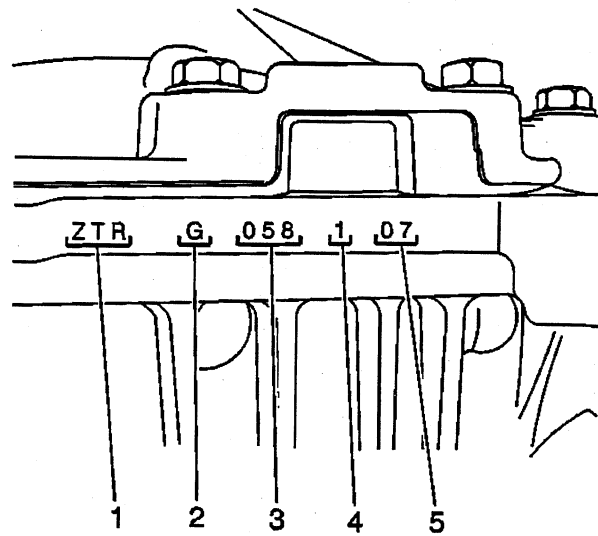


An identification tag is attached to the rear half of the transfer case. The tag provides the following information:

- 1 Model number (1)
 - A First Digit-1 =Single Speed, 2=Two-Speed
 - B Second Digit-2 = T Utility, 3 =T-Truck, L-Van, 4 or 6 = K Truck and Utility
 - C Third Digit-1 = Manual, 3 = Electric Shift, 6 = Automatic, 9 = All Wheel Drive
- 2 Assembly number (2)
- 3 Serial number (Date and Shift Code) (3)
- 4 Low range reduction ratio (4)

The information on this tag is necessary for servicing the transfer case. If the tag is removed or becomes dislodged during service operations, keep the identification tag with the unit.

Axle Identification – Front



- (1) Broadcast Code
- (2) Supplier Code (G = American Axle)
- (3) Julian Date (Day of Year)
- (4) Shift Built (1 = First Shift; 2 = Second Shift) (Optional for 8.25" and 9.25" axles)
- (5) Hour Built

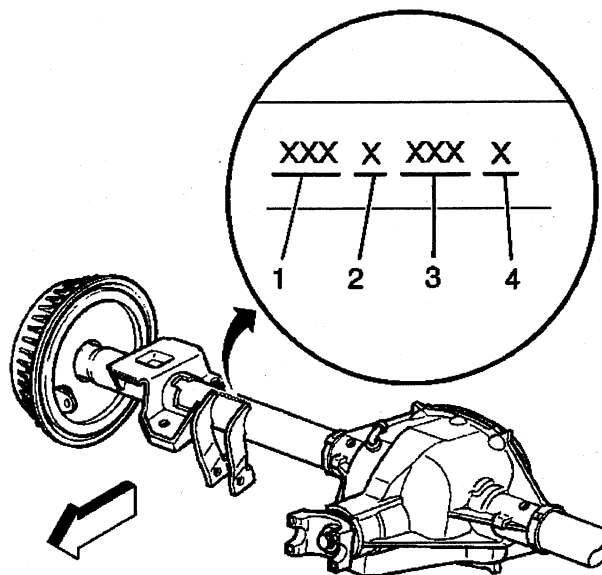
Front axle identification information is stamped on the top of the differential carrier assembly.

The following broadcast codes identifies the axle ratio:

Broadcast Code	Ratio
ZTM	3.08
ZTN, ZTU, ZTW, ZSY, ZA2, ZC2	3.42
ZTP, ZTR, ZTS, ZTX, ZSZ, ZB2, ZD2	3.73
ZTT, ZF2	4.10
ZH2	4.56

The information on the differential carrier assembly is necessary for servicing.

Axle Identification – Rear



- (1) Rear Axle Ratio
- (2) Build Source (C = Buffalo; K = Canada)
- (3) Julian Date
- (4) Shift Built (1 = First; 2 = Second)

All rear axles are identified by a broadcast code on the right axle tube near the carrier. The rear axle identification and manufacturer's codes must be known before attempting to adjust or to repair axle shafts or the rear axle case assembly. Rear axle ratio, differential type, manufacturer, and build date information is stamped on the right axle tube on the forward side.

RPO Code List

The production/process codes provide the description of the Regular Production Options (RPOs) used on the vehicle. The RPO list is printed on the Service Parts Identification Label. The following is a list of the RPO abbreviations and the description of each:

RPO	Description
AA3	Window Tinted - Deep, All Except Windshield, Front Door, and Rear End Door
AG1	Adjuster Front Seat - Power, Multi-Directional, Driver
AG2	Adjuster Passenger Seat - Power, Multi-Directional
AH5	Adjuster Front Seat - Power, 8-Way, No Memory, Driver
AH8	Adjuster Passenger Seat - Power, 8-Way
AJ1	Window Tinted - Deep, All Except Windshield and Doors
AM6	Seat - Front Split Bench
AM7	Seat Rear - Folding
ANL	Sales Package - Air Deflector, Fog Lamp
AN3	Seat - Front, Individual (Non-Bucket)
AU0	Lock Control, Entry - Remote Entry
AU3	Lock Control - Side Door, Electric
AV5	Seat - Front Bucket, High Back
A31	Window - Power Operated, All Doors
BAG	Parts Package - Export
BNB	Ornamentation - Exterior Unpainted
BVE	Steps, Runningboard - Side
BVS	Steps, Runningboard - Side, Color
B30	Covering Floor - Carpet
B32	Covering Front - Floor Mats, Aux
B84	Molding Bodyside - Exterior
B94	Ornamentation - Exterior, Emblem, Body, Var 1
CF5	Roof - Sun, Glass, Sliding, Electric
C25	Wiper System - Rear Window, Intermittent
C3G	GVW Rating - 4,450 lbs
C3T	GVW Rating - 5,350 lbs
C49	Defogger - Rear Window, Electric
C5C	GVW Rating - 5,000 lbs
C6I	GVW Rating - 4,850 lbs
C60	HVAC System - Air Conditioner Front, Manual Controls
DD0	Mirror Outside - LH & RH, Remote Control, Electric, Heated, Light Sensitive
DD8	Mirror Inside Rearview - Light Sensitive
DH6	Mirror Inside Front Van - LH & RH, Sunshade, Illum
DK2	Mirror Outside - LH & RH, Remote Control, Electric, Heated, Color
DT4	Ashtray - Cigarette Lighter
D07	Console - Front Compartment, Floor, Custom
D32	Mirror Inside Front Van - RH, Sunshade
D44	Mirror Outside - Color
D55	Console - Front Compartment, Floor
D98	Stripe - Accent
E55	Body Equipment - End Gate
FE9	Certification - Emission Federal
FF4	Arm LH - Tors Bar Spring Adj (C)
FF5	Arm RH - Tors Bar Spring Adj (D)
FF6	Arm LH - Tors Bar Spring Adj (E)
FF7	Arm RH - Tors Bar Spring Adj (F)
FK2	Arm LH - Tors Bar Spring Adj (A)

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RPO	Description
FK3	Arm RH - Tors Bar Spring Adj (B)
GT4	Axle Rear 3.73 Ratio
GU6	Axle Rear 3.42 Ratio
G75	GVW Rating - 4,550 lbs
G80	Axle Positraction - Limited Slip
JC1	Brake - Vac Power, 4 Wheel Disc, 5,500 lbs
KA1	Heater - Seat, Front
K05	Heater Engine - Block
K34	Cruise Control - Automatic, Electronic
K60	Generator - 100 Amp
LIN	Plant Code - Linden, NJ, USA
LU3	Engine - Gas, 6 Cyl, 4.3L, MFI, V6, 90 Deg
M30	Transmission - Auto 4-Speed, HMD, 4L60-E, Electronic
M50	Transmission - Manual 5-Speed, NVG, 85MM, 3.49 1st, O/D
NE1	Certification - Emission, Geographically Restricted Registration for Vehicles up to 14,000 lbs GVW (Use 2003 Model Year)
NF4	Emission System Clean Fuel Fleet
NF9	Emission System - General, OBD MIL Suppression
NG1	Certification - Emission, Geographically Restricted Registration for Vehicles up to 6,000 lbs GVW
NP1	Transfer Case - Electric Shift Control, Two Speed
NP5	Steering Wheel - Leather Wrapped
NP8	Transfer Case - Active, Two Speed, Push Button Control
NT9	Emission System - Federal, Tier 2, Phase-Out
NU4	Emission System - California Lev2 Plus
N33	Steering Column - Tilt Type
N40	Steering - Power, Non-Variable Ratio
N41	Steering - Power, Variable Ratio
N60	Wheel - Aluminum Plated
N90	Wheel - 15x7, Aluminum Cast, 4.75 in Bolt Circle
N96	Wheel - 16x8, Aluminum Cast
PA3	Wheel - 15x7, Aluminum, Styled
PH1	Wheel - 15x7, Steel
PNV	Carrier - Outside Spare Tire Mount Not Desired (Retain Inside Tire Mounting)
P16	Carrier - Rear Mounted, Spare Tire
QBF	Tire All - P235/70R15-102S BW R/PE ST TL ALS
QBG	Tire All - P235/70R15-102S WOL R/PE ST TL ALS
QEB	Tire All - P235/75R15/N WOL R/PE ST TL OOR
QQX	Tire All - P235/60R16 BW R/PE ST TL AL3
QWU	Tire All - P265/75R15-112S BW TL OOR
T61	Lamp System - Daytime Running
T62	Lamp System - Daytime Running - Delete
UA1	Battery - High Capacity, Wet
UC2	Speedometer - Inst, Kilo and Miles, Kilo Odometer, Positive Bias
UC6	Radio - AM/FM Stereo, Seek/Scan, RDS, Multiple Compact Disc, Auto Tone Control, Clock, ETR
UK3	Control - Steering Wheel, Accessory
UL5	Radio - Delete
UM7	Radio -AM/FM Stereo, Seek/Scan, Clock, ETR
UN0	Radio -AM/FM Stereo, Seek/Scan, CD, Auto Tone, Clock, ETR
UP0	Radio - AM/FM Stereo, Seek/Scan, Auto Rev Music Search Cassette, CD, Auto Tone, Clock, ETR

2005 Chevrolet Blazer Restoration Kit

RPO	Description
UP8	Radio, Provisions, AM/FM Stereo, Instrumentation
UY7	Wiring Harness - Truck Trailer, HD
U16	Tachometer - Engine
U19	Speedometer - Inst, Kilo and Miles, Kilo Odometer
U73	Antenna - Fixed, Radio
U89	Wiring Harness - Car Trailer
VCL	Certification - Emission Clean Fuel Vehicle, Fleet
VC5	Label - Shipping, Except US, US Possessions, or Japan
VC7	Label - Price/Fuel Econ, Guam
VGC	Protector - Film, Paint Etch Preventive
VG8	Vehicle Label, Notice to Buyer
VJ4	Label, Export - Child Seat Location
VK3	License Plate Front - Front Mounting Package
VPH	Vehicle Preparation - Overseas Delivery
VP6	Noise Control
VR4	Trailer Hitch - Weight Distribution Platform
VR6	Hook - Tie-Down Shipping
VZ3	Label - Mercury Disposal Notification
V10	Provision Options - Cold Weather
V20	Guard - Radiator, Grille, Black
V4A	Performance Package - Chevy XTREME
V54	Luggage Carrier - Roof, Painted
V73	Vehicle Statement - USA/Canada
V76	Hook - Tow
V78	Vehicle Statement - Delete
V85	Guard - Radiator, Grille, Aluminum
XBF	Tire Front - P235/70R15-102S BW R/PE ST TL ALS
XBG	Tire Front - P235/70R15-102S WOL R/PE ST TL ALS
XEB	Tire Front- P235/75R15/N WOL R/PE ST TL OOR
XQX	Tire Front - P235/60R16-99H BW R/PE ST TL AL3
XWU	Tire Front- P265/75R15-112S BW TL OOR
X52	Equipment - Misc for Guam, Puerto Rico, and US Virgin Islands
YBF	Tire Rear - P235/70R15-102S BW R/PE ST TL ALS
YBG	Tire Rear - P235/70R15-102S WOL R/PE ST TL ALS
YEB	Tire Rear - P235/75R15/N WOL R/PE ST TL OOR
YF5	Certification - Emission California
YQX	Tire Rear - P235/60R16-99H BW R/PE ST TL AL3
YWU	Tire Rear - P265/75R15-112S BW TL OOR
ZAA	Tire Spare - Compact
ZA7	Package - Value Leader - Canadian
ZBF	Tire Spare - P235/70R15-102S BW R/PE ST TL ALS
ZBG	Tire Spare - P235/70R15-102S WOL R/PE ST TL ALS
ZCE	Tire Spare - P205/75R15/N BL R/PE ST TL ALS
ZEB	Tire Spare - P235/75R15/N WOL R/PE ST TL OOR
ZM8	Sales Package - Combination - Electric Tailgate Release/Rear Window Defogger
ZR2	Chassis Package - High Wider Performance, 4x4 Sport
ZWU	Tire Spare - P265/75R15-112S BW TL OOR
Z49	Export - Canadian Modif Mandatory Base Equip
Z82	Trailer Provisions - Special Equipment, HD
Z85	Chassis Package - Increased Capacity
Z87	Chassis Package - Low Rider Performance
8E1	Fuel - Additional - 3 gallons

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RPO	Description
8P2	Window Tinted - Deep, All Except Windshield and Doors (SEO)
8U4	Heater Engine - Block (SEO)
8X1	Vehicle - Label, Fasten Seat Belts
9N5	Console - Front Compartment, Floor - Delete (SEO)

Technical Information

Maintenance and Lubrication

Capacities - Approximate Fluid

Application	Specification	
	Metric	English
Axles		
Front Axle	1.2 liters	1.27 quarts
Rear Axle-7.625	1.7 liters	1.8 quarts
Rear Axle-8.6	1.9 liters	2.0 quarts
Engine Cooling System		
4.3 L Automatic	13.1 liters	13.8 quarts
4.3 L Manual	13.3 liters	14.0 quarts
Engine Crankcase		
4.3 L (VIN W)	4.3 liters	4.5 quarts
Fuel Tank		
2-Door Models	72.0 liters	19.0 gallons
4-Door Models	68.0 liters	18.0 gallons
Transmission		
4L60-E After Filter/Pan Removal	4.7 liters	5.0 quarts
After Complete Overhaul-4L60-E	10.6 liters	11 quarts
New Venture Gear 3500 Manual Transmission	2.0 liters	2.2 quarts
Power Steering Capacity	0.99 liters	1.05 quarts

Maintenance Items

Part	GM Part Number	ACDelco Part Number
Air Cleaner Filter	25098463	A1163C
Automatic Transmission Filter Kit	24200796	--
Fuel Filter	15050894	GF481
Oil Filter	25010792	PF47
PCV Valve -- 4300 Engine	6487532	CV769C
Spark Plugs	25162556	41-932
Windshield Wiper Assembly -- Hook Type		
Driver's Side -- 20 inches (51 cm)	15757007	--
Passenger's Side -- 20 inches (51 cm)	15757008	--
Rear -- 14 inches (35 cm)	15010221	--

Fluid and Lubricant Recommendations

Usage	Fluid/Lubricant
Engine Oil	Engine Oil with the American Petroleum Institute Certified For Gasoline Engines Starburst symbol of the proper viscosity.
Engine Coolant	A 50/50 mixture of clean, drinkable water and use only GM Goodwrench DEX-COOL® or Havoline® DEX-COOL® (orange-colored, silicate-free) coolant conforming to GM specification 6277M.
Engine Coolant Supplemental Sealer	DO NOT use cooling system seal tabs, or similar compounds, unless otherwise instructed. The use of cooling system seal tabs, or similar compounds, may restrict coolant flow through the passages of the cooling system or the engine components. Restricted coolant flow may cause engine overheating and/or damage to the cooling system or the engine components/assembly.
Hydraulic Brake System	Delco Supreme 11® Brake Fluid (GM P/N 12377967 or equivalent DOT-3 Brake Fluid).
Windshield Washer Solvent	GM Optikleen® Washer Solvent (GM P/N 1051515 or equivalent).
Hydraulic Clutch System	Hydraulic Clutch Fluid (GM P/N 12345347 or equivalent DOT-3 Brake Fluid).
Park Brake Cable Guides	Chassis Lubricant (GM P/N 12377985 or equivalent) or lubricant meeting requirements of NLGI Grade 2, Category LB or GC-LB.
Power Steering System	GM Power Steering Fluid (GM P/N 1052884-1 pint, 1050017-1 quart, or equivalent).
Manual Transmission	<ul style="list-style-type: none"> • L4 engine: Manual Transmission Fluid with 5% Friction modifier (GM P/N 12377916). • V6 engine: Synchromesh Transmission Fluid (GM P/N 12345349).
Automatic Transmission	DEXRON®-III Automatic Transmission Fluid with a G-License Number (G-xxxx). The G-License Number will be found on the back label.
Key Lock Cylinders	Multi-Purpose Lubricant, Superlube® (GM P/N 12346241 or equivalent).
Chassis Lubrication	Chassis Lubricant (GM P/N 12377985 or equivalent) or lubricant meeting requirements of NLGI Grade 2, Category LB or GC-LB.
Front Wheel Bearings-RWD	Wheel Bearing Lubricant meeting requirements of NLGI Grade 2, Category GC or GC-LB (GM P/N 1051344 or equivalent).
Rear Axle (Standard)	Axle Lubricant (GM P/N 1052271) or SAE 80W-90 GL-5 Gear Lubricant.
Rear Axle (Locking Differential)	Axle Lubricant, use only GM Part No. 1052271 (in Canada use Part No. 10950849). Do not add friction modifier.
Transfer Case	DEXRON®-III Automatic Transmission Fluid.
Automatic Transfer Case	Automatic Transfer Case Fluid (GM P/N 12378396 or equivalent).
Column Shift Linkage	Chassis Lubricant (GM P/N 12377985 or equivalent) meeting requirements of NLGI Grade 2, Category LB or GC-LB.
Floor Shift Linkage	Chassis Lubricant (GM P/N 12377985 or equivalent) meeting requirements of NLGI Grade 2, Category LB or GC-LB.
Propeller Shaft Slip Splines and Universal Joints	Chassis Lubricant (GM P/N 12377985 or equivalent) or lubricant meeting requirements of NLGI Grade 2, Category LB or GC-LB.
Clutch Pushrod to Fork Joint	Chassis Lubricant (GM P/N 12377985 or equivalent) or lubricant meeting requirements of NLGI Grade 2, Category LB or GC-LB.
Constant Velocity Universal Joint	Chassis Lubricant (GM P/N 12377895 or equivalent) or lubricant meeting requirements of NLGI Grade 2, Category LB or GC-LB.
Hood Latch Assembly, Pivots and Spring Anchor, Release Pawl	Lubriplate® Lubricant Aerosol (GM P/N 12346293 or equivalent) or lubricant meeting requirements of NLGI Grade 2, Category LB or GC-LB.
Hood and Door Hinges	Multi-Purpose Lubricant, Superlube® (GM P/N 12346241 or equivalent).

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Usage	Fluid/Lubricant
Endgate Mounted Spare Tire Carrier (if equipped), Outer Endgate Handle Pivot Points and Hinges	Multi-Purpose Lubricant, Superlube® (GM P/N 12346241 or equivalent).
Weatherstrip conditioning	Dielectric Silicone Grease (GM P/N 12345579 or equivalent).
Weatherstrip squeaks	Synthetic Grease with Teflon, Loctite Superlube® (GM P/N 12371287 or equivalent).

Descriptions and Operations

Steering

Power Steering System

The hydraulic power steering pump is a constant displacement vane-type pump that provides hydraulic pressure and flow for the power steering gear. The hydraulic power steering pumps are either belt-driven or direct-drive, cam-driven.

The power steering fluid reservoir holds the power steering fluid and may be integral with the power steering pump or remotely located. The following locations are typical locations for the remote reservoir:

- Mounted to the front of the dash panel
- Mounted to the inner fender
- Mounted to a bracket on the engine

The 2 basic types of power steering gears are listed below:

- A recirculating ball system
- A rack and pinion system

In the recirculating ball system, a worm gear converts steering wheel movement to movement of a sector shaft. A pitman arm attached to the bottom of the sector shaft actually moves one tie rod and an intermediate rod move the other tie rod.

In the rack and pinion system, the rack and the pinion are the 2 components that convert steering wheel rotation to lateral movement. The steering shaft is attached to the pinion in the steering gear. The pinion rotates with the steering wheel. Gear teeth on the pinion mesh with the gear teeth on the rack. The rotating pinion moves the rack from side to side. The lateral action of the rack pushes and pulls the tie rods in order to change the direction of the vehicle's front wheels.

The power steering pressure hose connects the power steering pump union fitting to the power steering gear and allows pressurized power steering fluid to flow from the pump to the gear.

The power steering return hose returns fluid from the power steering gear back to the power steering fluid reservoir. The power steering return line may contain an integral fin-type or line-type power steering fluid cooler.

In a typical power steering system, a pump generates hydraulic pressure, causing fluid to flow, via the pressure hose, to the steering gear valve assembly. The steering gear valve assembly regulates the incoming fluid to the right and left chambers in order to assist in right and left turns.

Turning the steering wheel activates the valve assembly, which applies greater fluid pressure and flow to 1 side of the steering gear piston, and lower pressure and flow to the other side of the piston. The pressure assists the movement of the gear piston. Tie rods transfer this force to the front wheels, which turn the vehicle right or left.

Steering Linkage Description and Operation

The steering linkage consists of the following components:

- A pitman arm
- An idler arm
- A relay rod
- 2 adjustable tie rods

When you turn the steering wheel, the steering gear rotates the pitman arm which forces the relay rod to one side. The tie rods connect to the relay rod with the ball studs. The tie rods transfer the steering force to the wheels. Use the tie rods in toe adjustments. The tie rods are adjustable. The pitman arm support the relay rod. The idler arm pivots on a support attached to the frame rail and the ball stud attaches to the relay rod.

The 2 tie rod are threaded into the tube and secured with jam nuts. Right and left hand threads are used in order to permit the adjustment of toe.

Steering Wheel and Column

The steering wheel and column has 4 primary functions:

- Vehicle steering
- Vehicle security
- Driver convenience
- Driver safety

Vehicle Steering

The steering wheel is the first link between the driver and the vehicle. The steering wheel is fastened to a steering shaft within the column. At the lower end of the column, the intermediate shaft connects the column to the steering gear.

Vehicle Security

Theft deterrent components are mounted and designed into the steering column. The following components allow the column to be locked in order to minimize theft:

- The ignition switch
- The steering column lock
- The ignition cylinder

Driver Convenience

The steering wheel and column may also have driver controls attached for convenience and comfort. The following controls may be mounted on or near the steering wheel or column.

- The turn signal switch
- The hazard switch
- The headlamp dimmer switch
- The wiper/washer switch
- The horn pad/cruise control switch
- The redundant radio/entertainment system controls
- The tilt or tilt/telescoping functions
- The HVAC controls

Driver Safety

The energy-absorbing steering column compresses in the event of a front-end collision, which reduces the chance of injury to the driver. The mounting capsules break away from the mounting bracket in the event of an accident.

Suspension Description and Operation

Front Suspension

Coil Spring

The front suspension has 2 primary purposes:

- Isolate the driver from irregularities in the road surface.
- Define the ride and handling characteristics of the vehicle.

The front suspension absorbs the impact of the tires travelling over irregular road surfaces and dissipates this energy throughout the suspension system. This process isolates the vehicle occupants from the road surface. The rate at which the suspension dissipates the energy and the amount of energy that is absorbed is how the suspension defines the vehicle's ride characteristics. Ride characteristics are designed into the suspension system and are not adjustable. The ride characteristics are mentioned in this description in order to aid in the understanding of the functions of the suspension system. The suspension system must allow for the vertical movement of the tire and wheel assembly as the vehicle travels over irregular road surfaces while maintaining the tire's horizontal relationship to the road.

This requires that the steering knuckle be suspended between an upper and a lower control arm. The lower control arm attaches from the steering Knuckle at the outermost point of the control arm. The attachment is through a ball and socket type joint. The innermost end of the control arm attached at 2 points to the vehicle frame, through semi-rigid bushings. The upper control arm attaches to the frame in the same fashion. Between the lower control arm and a spring seat on the vehicle's frame, under tension, is a coil spring.

This up and down motion of the steering knuckle as the vehicle travels over bumps is absorbed predominantly by the coil spring. The vertical movement of the steering knuckle as the vehicle travels over irregular road surfaces will tend to compress the spring and spring tension will lead the spring to return to the original, at-rest state. This action isolates the vehicle from the road surface. The upper and lower control arms are allowed to pivot at the vehicle frame in a vertical fashion. The ball joint allows the steering knuckle to maintain the perpendicular relationship to the road surface.

A shock absorber is used in conjunction with this system in order to dampen out the oscillations of the coil spring. A shock absorber is a basic hydraulic cylinder. The shock is filled with oil and has a moveable shaft that connects to a piston inside the shock absorber. Valves inside the shock absorber offer resistance to oil flow and consequently inhibit rapid movement of the piston and shaft. Each end of the shock absorber is connected in such a fashion to utilize this recoil action of a spring alone.

Front suspensions systems utilize a stabilizer shaft. The stabilizer bar connects between the left and right lower control arm assemblies through the stabilizer link and stabilizer shaft insulators. This bar controls the amount of independent movement of the suspension when the vehicle turns. Limiting the independent movement defines the vehicle's handling characteristics on turns.

Torsion Bar

The front suspension has 2 primary purposes:

- Isolate the driver from irregularities in the road surface.
- Define the ride and handling characteristics of the vehicle.

The front suspension absorbs the impact of the tires travelling over irregular road surfaces and dissipates this energy throughout the suspension system. This process isolates the vehicle occupants from the road surface. The rate at which the suspension dissipates the energy and the amount of energy that is absorbed is how the suspension defines the vehicle's ride characteristics. Ride characteristics are designed into the suspension system and are not adjustable. The ride characteristics are mentioned in this description in order to aid in the understanding of the functions of the suspension system. The suspension system must allow for the vertical movement of the tire and wheel assembly as the vehicle travels over irregular road surfaces while maintaining the tire's horizontal relationship to the road.

This requires that the steering knuckle be suspended between an upper and a lower control arm. The lower control arm attaches from the steering knuckle at the outermost point of the control arm. The attachment is through a ball and socket type joint. The innermost end of the control arm is attached at 2 points to the vehicle frame through semi-rigid bushings. The upper control arm attaches to the frame in the same fashion. Attached to the lower control arm is a torsion bar. Torsion bars are steel or steel composite shaft that connects from the lower control arm an adjustable mount at the torsion bar crossmember. The torsion bar functions as a spring in this suspension system. The torsion bar absorbs energy from irregular road surfaces by twisting force along the center axis. The torsion bar has a resistance to this twisting motion and will return to the original, at-rest position similar to that of a spring.

A shock absorber is used in conjunction with this system in order to dampen out the oscillations of the torsion bar. A shock absorber is a basic hydraulic cylinder. The shock is filled with oil and has a moveable shaft that connects to a piston inside the shock absorber. Valves inside the shock absorber offer resistance to oil flow and consequently offer resistance to rapid movement of the piston and shaft. Each end of the shock absorber is connected in such a fashion in order to utilize this recoil action of a torsion bar alone.

Front suspension systems utilize a stabilizer shaft. The stabilizer bar connects between the left and right lower control arm assemblies through the stabilizer link and stabilizer shaft insulators. This bar controls the amount of independent movement of the suspension when the vehicle turns. Limiting the independent movement defines the vehicle's handling characteristics on turns.

Rear Suspension

These vehicles use a leaf spring and a solid rear axle suspension system.

The rear axle assembly is attached to multi-leaf springs with U-bolts. The front ends of the springs are attached to the frame at the front hangers with rubber bushings. The rear ends of the springs are attached to the frame with shackles that use rubber bushings. Shackles allow the springs to change position while the vehicle is in motion.

Two direct double-acting shock absorbers provide ride control. The shock absorbers are angle-mounted between the frame. The shock absorbers are attached with brackets. The brackets are attached to the anchor plate.

The rear spring steel stabilizing shaft helps minimize body roll and sway during cornering. The rear stabilizer shaft is connected to the rear axle and the frame with the following components:

- The rubber insulators
- The clamps
- The link assemblies

Wheels and Tires

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Spare Tire Carrier Mounting Bolts (4WD Utility)	30 N·m	22 lb ft
Spare Tire Carrier to Body Side Inner Panel Mounting Bolts (2-Door Utility)	30 N·m	22 lb ft
Spare Tire Carrier to Frame Mounting Nuts (4-Door Utility)	37 N·m	27 lb ft
Spare Tire Carrier to Rear Crossmember Mounting Bolts (4-Door Utility)	11 N·m	100 lb in
Spare Tire Carrier to Rear Crossmember Mounting Nuts (Pickup)	26 N·m	19 lb ft
Spare Tire to Spare Tire Carrier Mounting Nuts (4WD Utility)	100 N·m	74 lb ft
Wheel Nut	136 N·m	100 lb ft

General Description

The factory installed tires are designed to operate satisfactorily with loads up to and including the full rated load capacity when these tires are inflated to the recommended pressures.

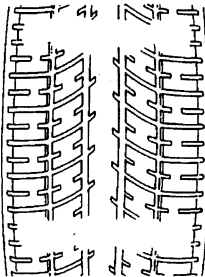
The following factors have an important influence on tire life:

- Correct tire pressures
- Correct wheel alignment
- Proper driving techniques
- Tire rotation

The following factors increase tire wear:

- Heavy cornering
- Excessively rapid acceleration
- Heavy braking

Tread Wear Indicators Description



The original equipment tires have tread wear indicators that show when you should replace the tires.

The location of these indicators are at 72 degree intervals around the outer diameter of the tire. The indicators appear as a 6 mm (0.25 in) wide band when the tire tread depth becomes 1.6 mm (2/32 in).

Metric Wheel Nuts and Bolts Description

Metric wheel/nuts and bolts are identified in the following way:

- The wheel/nut has the word Metric stamped on the face.
- The letter M is stamped on the end of the wheel bolt.

The thread sizes of metric wheel/nuts and the bolts are indicated by the following example: M12 x 1.5.

- M = Metric
- 12 = Diameter in millimeters
- 1.5 = Millimeters gap per thread

Tire Inflation Description

When you inflate the tires to the recommended inflation pressures, the factory-installed wheels and tires are designed in order to handle loads to the tire's rated load capacity. Incorrect tire pressures, or under-inflated tires, can cause the following conditions:

- Vehicle handling concerns
- Poor fuel economy
- Shortened tire life
- Tire overloading

Inspect the tire pressure when the following conditions apply:

- The vehicle has been sitting at least 3 hours.
- The vehicle has not been driven for more than 1.6 km (1 mi).
- The tires are cool.

Inspect the tires monthly or before any extended trip. Adjust the tire pressure to the specifications on the tire label. Install the valve caps or the extensions on the valves. The caps or the extensions keep out dust and water.

The kilopascal (kPa) is the metric term for pressure. The tire pressure may be printed in both kilopascal (kPa) and psi. One psi equals 6.9 kPa.

Inflation Pressure Conversion (Kilopascals to PSI)

kPa	psi	kPa	psi
140	20	215	31
145	21	220	32
155	22	230	33
160	23	235	34
165	24	240	35
170	25	250	36
180	26	275	40
185	27	310	45
190	28	345	50
200	29	380	55
205	30	415	60
Conversion: 6.9 kPa = 1 psi			

Tires with a higher than recommended pressure can cause the following conditions:

- A hard ride
- Tire bruising
- Rapid tread wear at the center of the tire

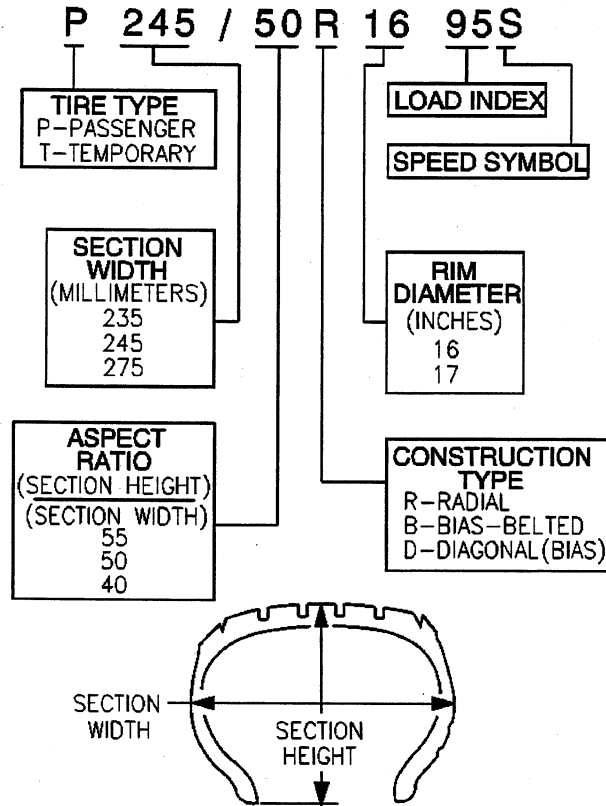
Tires with a lower than recommended pressure can cause the following conditions:

- A tire squeal on turns
- Hard steering
- Rapid wear and uneven wear on the edge of the tread
- Tire rim bruises and tire rim rupture
- Tire cord breakage
- High tire temperatures
- Reduced vehicle handling
- High fuel consumption
- Soft riding

Unequal pressure on the same axle can cause the following conditions:

- Uneven braking
- Steering lead
- Reduced vehicle handling

P-Metric Sized Tires Description



Most P-metric tire sizes do not have exact corresponding alphanumeric tire sizes. Replacement tires should be of the same tire performance criteria (TPC) specification number including the same size, the same load range, and the same construction as those originally installed on the vehicle. Consult a tire dealer if you must replace the P-metric tire with other sizes. Tire companies can best recommend the closest match of alphanumeric to P-metric sizes within their own tire lines.

Driveline System Description and Operation

Driveline/Axle – Propeller Shaft

The propeller shaft is a tube with universal joints at both ends which do not require periodic maintenance, that transmit power from the transfer case or transmission output shaft to the differential.

Front Propeller Shaft Description

The front propeller shaft transmits rotating force from the transfer case to the front differential when the transfer case is engaged. The front propeller shaft connects to the transfer case using a splined slip joint.

One Piece Propeller Shaft Description

A 1 piece propeller shaft uses a splined slip joint to connect the driveline to the transmission or transfer case.

Two Piece Propeller Shaft Description

There are 3 universal joints used on the two piece propeller shaft, A center bearing assembly is used to support the propeller shaft connection point, and help isolate the vehicle from vibration.

Propeller Shaft Phasing Description

The propeller shaft is designed and built with the yoke lugs (ears) in line with each other. This produces the smoothest running shaft possible. A propeller shaft designed with built in yoke lugs in line is known as in - phase. An out of phase propeller shaft often causes vibration. The propeller shaft generates vibration from speeding up and slowing down each time the universal joint goes around. The vibration is the same as a person snapping a rope and watching the wave reaction flow to the end. An in phase propeller shaft is similar to 2 persons snapping a rope at the same time and watching the waves meet and cancel each other out. A total cancellation of vibration produces a smooth flow of power in the drive line. All splined shaft slip yokes are keyed in order to ensure proper phasing.

Universal Joint Description

The universal joint is connected to the propeller shaft. The universal consist of 4 caps with needle bearings and grease seals mounted on the trunnions of a cross or spider. These bearings and caps are greased at the factory and no periodic maintenance is required. There are 2 universal joints used in a one piece propeller shaft and 3 used in two piece propeller shaft. The bearings and caps are pressed into the yokes and held in place with snap rings, except for 2 bearings on some models witch are strapped onto the pinion flange of the differential. Universal joints are designed to handle the effects of various loads and rear axle windup conditions during acceleration and braking. The universal joint operates efficiently and safely within the designed angle variations. when the design angles are exceeded, the operational life of the joint decreases.

Center Bearing Description

Center bearings support the driveline when using 2 or more propeller shafts. The center bearing is a ball bearing mounted in a rubber cushion that attaches to a frame crossmember. The manufacturer prelubricates and seals the bearing. The cushion allows vertical motion at the driveline and helps isolate the vehicle from vibration.

Wheel Drive Shafts Description and Operation

Front Wheel Drive Shafts are flexible assemblies which consist of the following components:

- Front wheel drive shaft constant velocity joint outer joint.
- Front wheel drive shaft tri-pot joint inner joint.
- The front wheel drive shaft connects the front wheel drive shaft tri-pot joint and the front wheel drive shaft constant velocity joint.
- Wheel Drive Shaft Seal Cover 15 Series

- The front wheel drive shaft tri-pot joint is completely flexible, and moves with an in and out motion.
- The front wheel drive shaft constant velocity joint is flexible but can not move in and out.

The Wheel Drive Shaft is a balanced shaft that transmits rotational force from the front differential to the front wheels when the transfer case is engaged. The wheel drive shaft is mounted to the front differential by bolting the flange of the wheel drive shaft to the flange on the inner output shaft of the front differential. The other end of the wheel drive shaft is splined to fit into and drive the hub assembly when the transfer case is engaged. The tri-pot joint and constant velocity joint on the wheel drive shaft allows the shaft to be flexible to move with the suspension travel of the vehicle.

Front Drive Axle Description and Operation

The Front Drive Axle consist of the following components:

- Differential Carrier Housing
- Differential Assembly
- Left and Right Output Shafts
- Inner Axle Shaft Housing
- Inner Axle Shaft

The front axle on the four-wheel-drive model vehicle does not have a central disconnect feature. The axle uses a conventional ring and pinion gear set in order to transmit the driving force of the engine to the wheels. The open differential allows the wheels to turn at different rates of speed while the axle continues to transmit the driving force. This prevents tire scuffing when going around corners and premature wear on internal axle parts. The ring and pinion set and the differential are contained within the carrier. The axle identification number on top of the differential carrier assembly or on a label on the right half of differential carrier assembly. The drive axles are completely flexible assemblies consisting of inner and outer constant velocity CV joints protected by thermoplastic boots and connected by a wheel drive shaft.

Rear Drive Axle Description and Operation

Rear Axles for this vehicle consist of the following components:

- Differential axle housing
- Differential carrier
- Right and left axle tubes
- Right and left axle shafts

A open differential has a set of 4 gears. Two are side gears and 2 are pinion gears. Some differentials have more than 2 pinion gears. Each side gear is splined to an axle shaft so each axle shaft ; so that each axle shaft turns when its side gear rotates. The pinion gears are mounted on a differential pinion shaft, and the gears are free to rotate on this shaft. The pinion shaft is fitted into a bore in the differential case and is at right angles to the axle shafts. Power is transmitted through the differential as follows: the drive pinion rotates the ring gear. The ring gear being bolted to the differential case, rotates the case, The differential pinion, as it rotates the case, forces the pinion gears against the side gears. When both wheels have equal traction, the pinion gears do not rotate on the pinion shaft because of input force on the pinion gear is equally divided between the 2 side gears. Therefore, the pinion gears revolve with the pinion shaft, but do not rotate around the shaft itself. The side gears, being splined to the axle shafts and in mesh with the pinion gears rotate the axle shafts. If a vehicle were always driven in a straight line, the ring and pinion gears would be sufficient. The axle shaft could be solidly attached to the ring gear and both driving wheels would turn at equal speed. However, if it became necessary to turn a corner, the tires would scuff and slide because the differential allows the axle shafts to rotate at different speeds. When the vehicle turns a corner, the inner wheel turns slower than the out wheel and slows its rear axle side gear (as the shaft is splined to the side gear). The rear axle pinion gears will roll around the slowed rear axle side gear, driving the rear axle side gear wheel faster.

Locking Differential Description and Operation

The locking differential consists of the following components:

- Differential case - 1 or 2 piece
- Locking differential spider - 2 piece case only
- Pinion gear shaft - 1 piece case only
- Differential pinion gear shaft lock bolt - 1 piece case only
- 2 clutch discs sets
- Locking differential side gear
- Thrust block
- Locking differential clutch disc guides
- Differential side gear shim
- Locking differential clutch disc thrust washer
- Locking differential governor
- Latching bracket
- Cam plate assembly
- Differential pinion gears
- Differential pinion gear thrust washers

The optional locking differential (RPO G80) enhances the traction capability of the rear axle by combining the characteristics of a limited-slip differential and the ability of the axle shafts to "lock" together when uneven traction surfaces exist. The differential accomplishes this in 2 ways. First by having a series of clutch plates at each side of the differential case to limit the amount of slippage between each wheel. Second, by using a mechanical locking mechanism to stop the rotation of the right differential side gear, or the left differential side gear on the 10.5 inch axle, in order to transfer the rotating torque of the wheel without traction to the wheel with traction. Each of these functions occur under different conditions.

Limited-Slip Function

Under normal conditions, when the differential is not locked, a small amount of limited-slip action occurs. The gear separating force developed in the right-hand (left-hand side on 10.5 inch axle) clutch pack is primarily responsible for this.

The operation of how the limited-slip function of the unit works can be explained when the vehicle makes a right-hand turn. Since the left wheel travels farther than the right wheel, it must rotate faster than the ring gear and differential case assembly. This results in the left axle and left side gear rotating faster than the differential case. The faster rotation of the left-side gear causes the pinion gears to rotate on the pinion shaft. This causes the right-side gear to rotate slower than the differential case.

Although the side gear spreading force produced by the pinion gears compresses the clutch packs, primarily the right side, the friction between the tires and the road surface is sufficient to overcome the friction of the clutch packs. This prevents the side gears from being held to the differential case.

Locking Function

Locking action occurs through the use of some special parts:

- A governor mechanism with 2 flyweights
- A latching bracket
- The left side cam plate and cam side gear

When the wheel-to-wheel speed difference is 100 RPM or more, the flyweights of the governor will fling out and one of them will contact an edge of the latching bracket. This happens because the left cam side gear and cam plate are rotating at a speed different, either slower or faster, than that of the ring gear and differential case assembly. The cam plate has teeth on its outer diameter surface in mesh with teeth on the shaft of the governor.

As the side gear rotates at a speed different than that of the differential case, the shaft of the governor rotates with enough speed to force the flyweights outward against spring tension. One of the flyweights

catches its edge on the closest edge of the latching bracket, which is stationary in the differential case. This latching process triggers a chain of events.

When the governor latches, it stops rotating. A small friction clutch inside the governor allows rotation, with resistance, of the governor shaft while one flyweight is held to the differential case through the latching bracket. The purpose of the governor's latching action is to slow the rotation of the cam plate as compared to the cam side gear. This will cause the cam plate to move out of its detent position.

The cam plate normally is held in its detent position by a small wave spring and detent humps resting in matching notches of the cam side gear. At this point, the ramps of the cam plate ride up on the ramps of the cam side gear, and the cam plate compresses the left clutch pack with a self-energizing action.

As the left clutch pack is compressed, it pushes the cam plate and cam side gear slightly toward the right side of the differential case. This movement of the cam side gear pushes the thrust block which compresses the right-hand side gear clutch pack.

At this point, the force of the self-energizing clutches and the side gear separating force combine to hold the side gears to the differential case in the locking stage.

The entire locking process occurs in less than 1 second. The process works with either the left or right wheel spinning, due to the design of the governor and cam mechanism. A torque reversal of any kind will unlatch the governor, causing the cam plate to ride back down to its detent position. Cornering or deceleration during a transmission shift will cause a torque reversal of this type. The differential unit returns to its limited-slip function.

The self-energizing process would not occur if it were not for the action of one of the left clutch discs. This energizing disc provides the holding force of the ramping action to occur. It is the only disc which is splined to the cam plate itself. The other splined discs fit on the cam side gear.

If the rotating speed of the ring gear and differential case assembly is high enough, the latching bracket will pivot due to centrifugal force. This will move the flyweights so that no locking is permitted. During vehicle driving, this happens at approximately 32 km/h (20 mph) and continues at faster speeds.

When comparing the effectiveness of the locking differential, in terms of percent-of-grade capability to open and limited-slip units, the locking differential has nearly 3 times the potential of the limited-slip unit under the same conditions.

Locking Differential Torque-Limiting Disc

The locking differential design was modified in mid-1986 to include a load-limiting feature to reduce the chance of breaking an axle shaft under abusive driving conditions. The number of tangs on the energizing disc in the left-hand clutch pack was reduced allowing these tangs to shear in the event of a high-torque engagement of the differential locking mechanism.

At the time of failure of the load-limiting disc, there will be a loud bang in the rear axle and the differential will operate as a standard differential with some limited-slip action of the clutch packs at low torques.

The service procedure, when the disc tangs shear, involves replacing the left-hand clutch plates and the wave spring. It is also necessary to examine the axle shafts for twisting because at high torques it is possible to not only shear the load-limiting disc, but to also twist the axle shafts.

Transfer Case Description – NVG233 (NP1)

The NVG 233 transfer case features a 3 button shift control switch, located on the instrument panel. When the ignition is in the RUN position, the transfer case shift control module starts monitoring the transfer case shift control switch, to determine if a new mode/gear position has been selected. At a single press of the transfer case shift control switch, the lamp of the new position begins flashing to inform the driver that the transfer case shift control module has received the request for a new mode/gear position. The lamp continues to flash until all shifting criteria has been met and the new mode/gear position has been reached, or has engaged. Once the new mode/gear position is fully active, the switch indicator lamp for the new position remains ON constantly.

The NVG 233 transfer case provides the driver with 3 manual mode/gear positions:

- 2HI - 2 Wheel Drive high range
- 4HI - 4 Wheel Drive high range
- 4LO - 4 Wheel Drive low range

Any of these mode/gear positions may be selected while driving the vehicle. However, the transfer case will not allow a shift into, or out of, 4LO unless the following criteria has been met:

- The engine is running.
- The automatic transmission is in Neutral, or the clutch pedal is applied on manual transmissions.
- The vehicle speed is below 5 km/h (3 mph).

Below, is a list of major components that make up the automatic transfer case system:

Front Axle Indicator Switch

The front axle indicator switch is mounted to the front axle assembly. When 4WD is selected and all conditions have been met to complete the shift, the transfer case encoder motor shifts the transfer case. The front axle then engages via a cable, and the front axle switch closes. This sends ignition voltage from the 4WD fuse, through the switch, to the PCM. This input informs the PCM that the front axle has been engaged.

Transfer Case Encoder

The encoder is mounted to the transfer case encoder motor assembly and is replaced only as an assembly. The encoder converts the sector shaft position into electrical signal inputs to the transfer case shift control module. The module detects the position that the transfer case is in, by monitoring the 4 encoder channels, P, A, B, and C. These inputs translate into 2HI, 4HI, and 4LO, or whether the motor is still in transition between gears.

Transfer Case Encoder Motor

The transfer case encoder motor consists of a permanent magnet (PM) DC motor and gear reduction assembly. It is located on the left hand side of the transfer case. When activated, it turns the sector shaft of the transfer case clockwise or counter clockwise to shift the transfer case. The sector shaft also applies the clutch, which engages the front propshaft. The encoder motor is controlled with a pulse width modulated (PWM) circuit, provided by the transfer case shift control module. This circuit consists of a driver on both the Motor Control A and Motor Control B circuits. The encoder motor is bi-directional, to allow the motor to shift the transfer case from 2HI or 4HI, to 4LO positions.

Transfer Case Shift Control Module

The transfer case shift control module receives input signals, processes the signal information, develops output signals, and sends the output signal, in order to control the shifting of the transfer case.

The transfer case shift control module receives input signals from the transfer case control switch buttons, the park/neutral position (PNP) switch for vehicles with automatic transmissions, the clutch position switch for vehicles with manual transmissions, the powertrain control module (PCM) that supplies the vehicle speed signals, the encoder motor that provides actual mode and range information signals, the data link connector pin D3 that actuates diagnostic enable, power for the module and motor supplies, and the ground used for return lines at the module.

The transfer case shift control module sends signals to the transfer case encoder motor to initiate mode and range shifts, the transfer case control switch indicator lamps to provide transfer case status information, the diagnostic DTCs which are outputted via the shift control switch indicator lamps, and the encoder power.

In order to ensure the electronic shift system is operating properly, the transfer case shift control module continually performs diagnostics tests on itself, and other parts of the electronic shift system, when the ignition switch is in the RUN position.

Transfer Case Description – NVG236/246 (NP8)

The NVG 236/246 transfer case features a 4 button shift control switch located on the instrument panel. When the vehicle has the ignition key in the RUN position, the transfer case shift control module starts monitoring the transfer case shift control switch to determine if the driver desires a new mode/gear position. At a single press of the transfer case shift control switch, the lamp of the new desired position will begin flashing to inform the driver that the transfer case shift control module has received the request for a new mode/gear position. The lamp will continue to flash until all shifting criteria has been met and the new mode/gear position has been reached, or has been engaged. Once the new mode/gear position is fully active, the switch indicator lamp for the new position will remain ON constantly.

During normal driving situations the transfer case can operate in the Auto 4WD mode. In the Auto 4WD mode the transfer case shift control module monitors rear wheel slip speed, based on the inputs from both the front and rear propshaft speed sensors. When the vehicle experiences a rear wheel slip condition, the transfer case shift control module sends a pulse width modulated (PWM) signal to an electronic motor, which is the transfer case encoder motor. This motor rotates the transfer case sector shaft, applying a clutch pack. This clutch pack is designed to deliver a variable amount of torque, normally delivered to the rear wheels, and transfers it to the front wheels. Torque is then ramped up to the front wheels until the front propshaft speed sensor matches that of the rear propshaft speed sensor. Torque is then ramped down until torque is completely removed from the front wheels or until rear wheel slip is once again detected. The process would then repeat.

The NVG 236/246 transfer case has the added feature of also providing the driver with 3 manual mode/gear positions:

- 4HI - 4 Wheel Drive high range
- 2HI - 2 Wheel Drive high range
- 4LO - 4 Wheel Drive low range

The driver may choose to select any of these mode/gear positions while driving the vehicle. However, the transfer case will not allow a shift into or out of 4LO unless the following criteria has been met:

- The engine is running.
- The automatic transmission is in Neutral, clutch depressed on manual transmissions.
- The vehicle speed is below 5 km/h (3 mph).

This transfer case also has a Neutral position. A shift to the Neutral position allows the vehicle to be towed without the rear axle rotating the transfer case main shaft and the transmission output shaft. Neutral position may be obtained only if the following criteria has been met:

- The key is ON.
- The automatic transmission is in Neutral, clutch depressed on manual transmissions.
- The vehicle speed is below 5 km/h (3 mph).
- The transfer case is in 2HI mode.

Once these conditions have been met, press and hold both the 2HI and 4LO buttons for 10 seconds. When the system completes the shift to neutral, the red neutral lamp will illuminate.

View the list of major components that make up the automatic transfer case (ATC) system below.

Transfer Case Shift Control Module

The transfer case shift control module uses the VIN information for calculations that are required for the different calibrations used based on axle ratio, transmission, tire size, and engine. The system does not know which calibration to use without this information. This information is provided to the transfer case shift control module via Class 2 data bus from the powertrain control module (PCM).

The transfer case shift control module monitors front and rear propshaft speed as well as controlling the operation of the transfer case encoder motor assembly and the engaging and disengaging of the front axle.

Transfer Case Encoder Motor

The transfer case encoder motor consists of a permanent magnet (PM) DC motor and gear reduction assembly. It is located on the left hand side of the transfer case. When activated it turns the sector shaft of the transfer case, clockwise or counterclockwise to shift the transfer case and to apply the clutch that applies the front propshaft. The encoder motor is controlled with a pulse width modulated (PWM) circuit provided by the transfer case shift control module. This circuit consists of a driver on both the Motor Control A and Motor Control B circuits. The encoder motor is bi-directional to allow the motor to shift the transfer case from 2HI or 4HI to NEUTRAL and 4LO positions.

The transfer case encoder motor can be turned ON and OFF using a scan tool. You may also monitor Motor Control A and B circuits using a scan tool.

Transfer Case Encoder

The encoder is mounted to the transfer case encoder motor assembly and is replaced only as an assembly. The encoder converts the sector shaft position, representing a mode or range, into electrical signal inputs to the transfer case shift control module. The module detects what position the transfer case is in by monitoring the 4 encoder channels (P, A, B, and C). These inputs translate into AUTO 4WD, 2HI, 4HI, NEUTRAL, and 4LO or whether the motor is still in transition between gears.

The transfer case encoder channel circuits may be monitored using a scan tool.

Transfer Case Motor Lock

The transfer case motor lock is used to prevent the transfer case from changing mode/gear positions or popping out of position when the vehicle is in 2HI, 4HI, and 4LO. When the lock circuit is energized, the transfer case encoder motor is allowed to rotate. When the transfer case is placed 2HI, 4HI, or 4LO the motor lock circuit has no voltage provided to it, applying the lock which assures that the transfer case remains in the current mode/gear position. When AUTO 4WD is selected the motor lock remains applied until an adaptive mode, torque being applied to the front propshaft is required. During an adaptive mode the motor lock circuit is energized, the locking mechanism is released, enabling the encoder motor to turn and apply torque to the front propshaft.

The transfer case motor lock circuit can be turned ON and OFF using a scan tool. You may also monitor the lock circuit using a scan tool.

Transfer Case Speed Sensors

There are three speed sensors mounted on the transfer case, two on the rear output shaft and one on the front output shaft. Each speed sensor is a permanent magnet (PM) generator. The PM generator produces a AC voltage. The AC voltage level and number of pulses increases as speed increases.

Vehicle Speed Sensor

One of the two speed sensors on the rear output shaft is the vehicle speed sensor (VSS) input to the powertrain control module (PCM). The PCM sends this information to the transfer case shift control module via the Class 2 serial data bus.

Rear Propshaft Speed Sensor

The transfer case shift control module converts the pulsating AC voltage from the rear transfer case speed sensor to a rear propshaft speed in RPM to be used for calculations. The rear propshaft speed can be displayed with a scan tool.

Front Propshaft Speed Sensor

The transfer case shift control module converts the pulsating AC voltage from the front transfer case speed sensor to front propshaft speed in RPM to be used for calculations, and to monitor the difference between the front and rear sensor speed. It is also used in the AUTO 4WD mode to determine the amount of slip and the percent of torque to apply to the front axle. The front propshaft speed can be displayed with a scan tool.

SERVICE 4WD Indicator

The SERVICE 4WD message is displayed on the driver information center and is an integral part of the cluster and cannot be serviced separately. This message is used to inform the driver of the vehicle of malfunctions within the automatic transfer case (ATC) system. The SERVICE 4WD message is controlled by the transfer case shift control module via a Class 2 message.

Braking System Description and Operation

Hydraulic Brake System Description and Operation

System Component Description

The hydraulic brake system consists of the following:

Hydraulic Brake Master Cylinder Fluid Reservoir

Contains supply of brake fluid for the hydraulic brake system.

Hydraulic Brake Master Cylinder

Converts mechanical input force into hydraulic output pressure.

Hydraulic output pressure is distributed from the master cylinder through two hydraulic circuits, supplying diagonally-opposed wheel apply circuits.

Hydraulic Brake Pressure Balance Control System

Regulates brake fluid pressure delivered to hydraulic brake wheel circuits, in order to control the distribution of braking force.

Pressure balance control is achieved through dynamic rear proportioning (DRP), which is a function of the ABS modulator.

Hydraulic Brake Pipes and Flexible Brake Hoses

Carries brake fluid to and from hydraulic brake system components.

Hydraulic Brake Wheel Apply Components

Converts hydraulic input pressure into mechanical output force.

System Operation

Mechanical force is converted into hydraulic pressure by the master cylinder, regulated to meet braking system demands by the pressure balance control system, and delivered to the hydraulic brake wheel circuits by the pipes and flexible hoses. The wheel apply components then convert the hydraulic pressure back into mechanical force which presses linings against rotating brake system components.

Brake Assist System Description and Operation

System Component Description

The brake assist system consists of the following:

Brake Pedal

Receives, multiplies and transfers brake system input force from driver.

Brake Pedal Pushrod

Transfers multiplied input force received from brake pedal to brake booster.

Vacuum Brake Booster

Uses source vacuum to decrease effort required by driver when applying brake system input force.

2005 Chevrolet Blazer Restoration Kit

When brake system input force is applied, air at atmospheric pressure is admitted to the rear of both vacuum diaphragms, providing a decrease in brake pedal effort required. When input force is removed, vacuum replaces atmospheric pressure within the booster.

Vacuum Source

Supplies force used by vacuum brake booster to decrease brake pedal effort.

Vacuum Source Delivery System

Enables delivery and retention of source vacuum for vacuum brake booster.

System Operation

Brake system input force is multiplied by the brake pedal and transferred by the pedal pushrod to the hydraulic brake master cylinder. Effort required to apply the brake system is reduced by the vacuum brake booster.

Disc Brake System Description and Operation

System Component Description

The disc brake system consists of the following components:

Disc Brake Pads

Applies mechanical output force from the hydraulic brake calipers to friction surfaces of brake rotors.

Disc Brake Rotors

Uses mechanical output force applied to friction surfaces from the disc brake pads to slow speed of tire and wheel assembly rotation.

Disc Brake Pad Hardware

Secures disc brake pads firmly in proper relationship to the hydraulic brake calipers. Enables a sliding motion of brake pads when mechanical output force is applied.

Disc Brake Caliper Hardware

Provides mounting for hydraulic brake caliper and secures the caliper firmly in proper relationship to caliper bracket. Enables a sliding motion of the brake caliper to the brake pads when mechanical output force is applied.

System Operation

Mechanical output force is applied from the hydraulic brake caliper pistons to the inner brake pads. As the pistons press the inner brake pads outward, the caliper housings draw the outer brake pads inward. This allows the output force to be equally distributed. The brake pads apply the output force to the friction surfaces on both sides of the brake rotors, which slows the rotation of the tire and wheel assemblies. The correct function of both the brake pad and brake caliper hardware is essential for even distribution of braking force.

Park Brake System Description and Operation

System Component Description

The park brake system consists of the following:

Park Brake Lever Assembly

Receives, multiplies, and transfers park brake system apply input force from operator to park brake cable system.

Releases applied park brake system when lever is returned to at-rest, lowered, position.

Park Brake Cables

Transfers input force received from park brake lever, through park brake cable equalizer, to park brake apply levers.

Park Brake Cable Equalizer

Evenly distributes input force to both the left and right park brake units.

Park Brake Apply Lever

Multiplies and transfers input force to park brake actuator/adjuster.

Park Brake Actuator/Adjuster

Uses multiplied input force from apply lever to expand park brake shoe (rear disc, drum-in-hat system), or drum brake shoes toward the friction surface of the drum-in-hat of the rear brake rotor, or the brake drum.

Threaded park brake actuators/adjusters are also used to control clearance between the park brake shoe (rear disc, drum-in-hat system), or the drum brake shoes and the friction surface of the drum-in-hat (of the rear brake rotor), or the brake drum.

Park Brake Shoe (Rear Disc, Drum-In-Hat System)

Applies mechanical output force from park brake actuator to friction surface of the drum-in-hat (of the rear brake rotor).

System Operation

Park brake apply input force is received by the park brake pedal assembly being depressed, transferred and evenly distributed, through the park brake cables and the park brake cable equalizer, to the left and right park brake apply levers. The park brake apply levers multiply and transfer the apply input force to the park brake actuators/adjusters which expand the park brake shoe (rear disc, drum-in-hat system), or the drum brake shoes toward the friction surface of the drum-in-hat (of the rear brake rotor), or the brake drum in order to prevent the rotation of the rear tire and wheel assemblies. The park brake release handle assembly releases an applied park brake system when it is pulled rearward.

ABS Description and Operation

Antilock Brake System

When wheel slip is detected during a brake application, the ABS enters antilock mode. During antilock braking, hydraulic pressure in the individual wheel circuits is controlled to prevent any wheel from slipping. A separate hydraulic line and specific solenoid valves are provided for each wheel. The ABS can decrease, hold, or increase hydraulic pressure to each wheel brake. The ABS cannot, however, increase hydraulic pressure above the amount which is transmitted by the master cylinder during braking.

During antilock braking, a series of rapid pulsations is felt in the brake pedal. These pulsations are caused by the rapid changes in position of the individual solenoid valves as the EBCM responds to wheel speed sensor inputs and attempts to prevent wheel slip. These pedal pulsations are present only during antilock braking and stop when normal braking is resumed or when the vehicle comes to a stop. A ticking or popping noise may also be heard as the solenoid valves cycle rapidly. During antilock braking on dry pavement, intermittent chirping noises may be heard as the tires approach slipping. These noises and pedal pulsations are considered normal during antilock operation.

Vehicles equipped with ABS may be stopped by applying normal force to the brake pedal. Brake pedal operation during normal braking is no different than that of previous non-ABS systems. Maintaining a constant force on the brake pedal provides the shortest stopping distance while maintaining vehicle stability.

Engine Description and Operation

Engine Mechanical – 4.3L

General Specifications

Application	Specification	
	Metric	English
General		
Engine Type	90 degree V6	
Displacement	4.3 L	262 CID
RPO	LU3	
VIN	X	
Bore	101.60 mm	4.012 in
Stroke	88.39 mm	3.480 in
Compression Ratio	9.2:1	
Firing Order	1-6-5-4-3-2	
Spark Plug Gap	1.52 mm	0.060 in
Balance Shaft		
Bearing Journal Diameter - Rear	38.085-38.100 mm	1.4994-1.500 in
Bushing Bore Diameter - Rear	0.050-0.088 mm	0.0020-0.0035 in
Block		
Crankshaft Main Bearing Bore Out-of-Round	0.050 mm	0.002 in
Cylinder Bore Diameter	101.618-101.643 mm	4.0007-4.0017 in
Cylinder Bore Out-of-Round - Production	0.017 mm	0.0007 in
Cylinder Bore Out-of-Round - Service	0.05 mm	0.002 in
Cylinder Bore Taper - Production Relief Side	0.025 mm	0.0010 in
Cylinder Bore Taper - Production Thrust Side	0.012 mm	0.0005 in
Cylinder Bore Taper - Service	0.025 mm	0.0010 in
Cylinder Head Deck Surface Flatness	0.050-0.152 mm	0.002-0.006 in
Camshaft		
Camshaft End Play	0.0254-0.2286 mm	0.0010-0.0090 in
Camshaft Journal Diameter	47.440-47.490 mm	1.8677-1.8696 in
Camshaft Journal Out-of-Round	0.008 mm	0.0003 in
Camshaft Lobe Lift - Exhaust	7.0953 mm	0.2793 in
Camshaft Lobe Lift - Intake	6.8678 mm	0.2704 in
Camshaft Runout	0.100 mm	0.0039 in
Connecting Rod		
Connecting Rod Bearing Clearance - Production	0.038-0.078 mm	0.0015-0.0031 in
Connecting Rod Bearing Clearance - Service	0.025-0.063 mm	0.0010-0.0025 in
Connecting Rod Side Clearance	0.15-0.44 mm	0.006-0.017 in
Crankshaft		
Connecting Rod Journal Diameter	57.116-57.148 mm	2.2487-2.2497 in
Connecting Rod Journal Out-of-Round - Production	0.008 mm	0.0003 in
Connecting Rod Journal Out-of-Round - Service	0.025 mm	0.0010 in
Connecting Rod Journal Taper - Production	0.010 mm	0.0004 in
Connecting Rod Journal Taper - Service	0.025 mm	0.0010 in
Crankshaft End Play	0.050-0.20 mm	0.002-0.008 in
Crankshaft Main Bearing Clearance #1 - Production	0.02-0.05 mm	0.0008-0.0020 in
Crankshaft Main Bearing Clearance #2, #3, and #4 - Production	0.028-0.058 mm	0.0011-0.0023 in
Crankshaft Main Bearing Clearance #1 - Service	0.0254-0.05 mm	0.0010-0.0020 in

Application	Specification	
	Metric	English
Crankshaft Main Bearing Clearance #2, #3, and #4 - Service	0.025-0.063 mm	0.0010-0.0025 in
Crankshaft Main Journal Diameter #1	62.199-62.217 mm	2.4488-2.4495 in
Crankshaft Main Journal Diameter #2 and #3	62.191-62.215 mm	2.4485-2.4494 in
Crankshaft Main Journal Diameter #4	62.179-62.203 mm	2.4480-2.4489 in
Crankshaft Main Journal Out-of-Round - Production	0.005 mm	0.0002 in
Crankshaft Main Journal Out-of-Round - Service	0.025 mm	0.0010 in
Crankshaft Main Journal Taper	0.007 mm	0.0003 in
Exhaust Manifold		
Surface Flatness - Flange to Flange	0.25 mm	0.010 in
Surface Flatness - Individual Flange	0.05 mm	0.002 in
Intake Manifold		
Surface Flatness	0.10 mm	0.004 in
Lubrication System		
Oil Capacity for C/K, G/H with Filter	4.3 L	4.5 qt
Oil Capacity for C/K, G/H without Filter	3.8 L	4 qt
Oil Capacity for S/T, M/L with Filter	4.7 L	5 qt
Oil Capacity for S/T, M/L without Filter	4.3 L	4.5 qt
Oil Pressure - at 1,000 RPM	42 kPa	6 psi
Oil Pressure - at 2,000 RPM	125 kPa	18 psi
Oil Pressure - at 4,000 RPM	166 kPa	24 psi
Piston Rings		
Piston Ring End Gap - First Compression Ring - Production	0.25-0.40 mm	0.010-0.016 in
Piston Ring End Gap - Second Compression Ring - Production	0.38-0.58 mm	0.015-0.023 in
Piston Ring End Gap - Oil Control Ring - Production	0.25-0.76 mm	0.010-0.029 in
Piston Ring End Gap - First Compression Ring - Service	0.25-0.50 mm	0.010-0.020 in
Piston Ring End Gap - Second Compression Ring - Service	0.38-0.80 mm	0.015-0.031 in
Piston Ring End Gap - Oil Control Ring - Service	0.005-0.090 mm	0.0002-0.0035 in
Piston Ring to Groove Clearance - First Compression Ring - Production	0.030-0.070 mm	0.0012-0.0027 in
Piston Ring to Groove Clearance - Second Compression Ring - Production	0.076-0.280 mm	0.0030-0.0110 in
Piston Ring to Groove Clearance - Oil Control Ring - Production	0.046-0.196 mm	0.0018-0.0077 in
Piston Ring to Groove Clearance - First Compression Ring - Service	0.030-0.085 mm	0.0012-0.0033 in
Piston Ring to Groove Clearance - Second Compression Ring - Service	0.030-0.085 mm	0.0012-0.0033 in
Piston Ring to Groove Clearance - Oil Control Ring - Service	0.076-0.200 mm	0.0030-0.0079 in
Pistons and Pins		
Piston - Piston to Bore Clearance - Production	0.018-0.061 mm	0.0007-0.0024 in
Piston - Piston to Bore Clearance - Service	0.075 mm	0.0029 in
Pin - Piston Pin Clearance to Connecting Rod Bore - Press Fit	0.012-0.048 mm	0.0005-0.0019 in

Application	Specification	
	Metric	English
Pin - Piston Pin Clearance to Piston Pin Bore - Production	0.013-0.023 mm	0.0005-0.0009 in
Pin - Piston Pin Clearance to Piston Pin Bore - Service	0.025 mm	0.0010 in
Pin - Piston Pin Diameter	23.545-23.548 mm	0.9270-0.9271 in
Valve System		
Valves - Valve Face Angle	45 degrees	
Valves - Valve Seat Angle	46 degrees	
Valves - Valve Seat Runout	0.05 mm	0.002 in
Valves - Valve Seat Width - Intake	1.016-1.651 mm	0.040-0.065 in
Valves - Valve Seat Width - Exhaust	1.651-2.489 mm	0.065-0.098 in
Valves - Valve Stem Oil Seal Installed Height	1-2 mm	0.03937-0.07874 in
Valves - Valve Stem-to-Guide Clearance - Intake - Production	0.025-0.069 mm	0.0010-0.0027 in
Valves - Valve Stem-to-Guide Clearance - Intake - Service	0.025-0.094 mm	0.0010-0.0037 in
Valves - Valve Stem-to-Guide Clearance - Exhaust - Production	0.025-0.069 mm	0.0010-0.0027 in
Valves - Valve Stem-to-Guide Clearance - Exhaust - Service	0.025-0.094 mm	0.0010-0.0037 in
Rocker Arms - Valve Rocker Arm Ratio	1.5:1	
Valve Springs - Valve Spring Free Length	51.3 mm	2.02 in
Valve Springs - Valve Spring Installed Height - Intake	42.92-43.43 mm	1.670-1.700 in
Valve Springs - Valve Spring Installed Height - Exhaust	42.92-43.43 mm	1.670-1.700 in
Valve Springs - Valve Spring Load - Closed	338-374 N @ 43.2 mm	76-84 lb @ 1.70 in
Valve Springs - Valve Spring Load - Open	832-903 N @ 32.3 mm	187-203 lb @ 1.27 in

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Accelerator Control Cable and Cruise Control Cable Bracket Nut	9 N·m	80 lb in
Accelerator Control Cable Bracket Nut	12 N·m	106 lb in
Accelerator Control Cable Bracket Stud to Intake Manifold	6 N·m	53 lb in
Accelerator Control Cable Bracket Stud to Throttle Body	12 N·m	106 lb in
Air Cleaner Adapter Stud	10 N·m	89 lb in
Air Cleaner Outlet Duct Hose Clamp	4 N·m	32 lb in
Air Cleaner Outlet Duct Wingnut	2 N·m	18 lb in
Balance Shaft Driven Gear Bolt		
• First Pass	20 N·m	15 lb ft
• Final Pass	35 degrees	
Balance Shaft Retainer Bolt	12 N·m	106 lb in
Battery Negative Cable Bolt to Engine	17 N·m	13 lb ft
Belt Idler Pulley Bolt	50 N·m	37 lb ft
Camshaft Retainer Bolt	12 N·m	106 lb in
Camshaft Sprocket Bolt	25 N·m	18 lb ft
Connecting Rod Nut		
• First Pass	27 N·m	20 lb ft
• Final Pass	70 degrees	
Crankshaft Balancer Bolt	95 N·m	70 lb ft
Crankshaft Balancer Remover/Installer Bolt	25 N·m	18 lb ft
Crankshaft Bearing Cap Bolt - Preferred Method		
• First Pass	20 N·m	15 lb ft
• Final Pass	73 degrees	
Crankshaft Bearing Cap Bolt - Optional Strategy	105 N·m	77 lb ft
Crankshaft Position Sensor Bolt	9 N·m	80 lb in
Crankshaft Pulley Bolt	58 N·m	43 lb ft
Crankshaft Rear Oil Seal Housing Bolt and Nut	12 N·m	106 lb in
Crankshaft Rear Oil Seal Housing Retainer Stud	6 N·m	53 lb in
Cylinder Head Bolt - Preferred Method		
• All Bolts First Pass in Sequence	30 N·m	22 lb ft
• Long Bolt Final Pass in Sequence	75 degrees	
• Medium Bolt Final Pass in Sequence	65 degrees	
• Short Bolt Final Pass in Sequence	55 degrees	
Cylinder Head Bolt - Optional On-Vehicle Strategy		
• First Pass in Sequence	35 N·m	26 lb ft
• Second Pass in Sequence	60 N·m	44 lb ft
• Final Pass in Sequence	90 N·m	66 lb ft
Cylinder Head Core Hole Plug	20 N·m	15 lb ft
Distributor Cap Bolt	2.4 N·m	21 lb in
Distributor Clamp Bolt	25 N·m	18 lb ft
Drive Belt Idler Pulley Bolt	50 N·m	37 lb ft
Drive Belt Tensioner Bolt	50 N·m	37 lb ft
Engine Block Coolant Drain Hole Plug	20 N·m	15 lb ft
Engine Block Left Rear Oil Gallery Plug	30 N·m	22 lb ft
Engine Block Left Side Oil Gallery Plug	20 N·m	15 lb ft
Engine Block Oil Gallery Plug	20 N·m	15 lb ft
Engine Block Right Rear Oil Gallery Plug	20 N·m	15 lb ft
Engine Coolant Heater Bolt/Screw	2 N·m	18 lb in
Engine Coolant Temperature (ECT) Sensor	20 N·m	15 lb ft

2005 Chevrolet Blazer Restoration Kit

Application	Specification	
	Metric	English
Engine Coolant Temperature Gage Sensor	20 N·m	15 lb ft
Engine Flywheel Bolt	100 N·m	74 lb ft
Engine Front Cover Bolt	12 N·m	106 lb in
Engine Lift Bracket Bolt	15 N·m	11 lb ft
Engine Lift Front Bracket Stud	35 N·m	26 lb ft
Engine Mount Bolt - Through-bolt	74 N·m	55 lb ft
Engine Mount Bolt to Engine	54 N·m	40 lb ft
Engine Mount Bracket Bolt to Frame	45 N·m	33 lb ft
Engine Mount Nut - Through-bolt	63 N·m	46 lb ft
Engine Oil Cooler Pipe Clip Bolt to Oil Pan	9 N·m	80 lb in
Engine Oil Level Sensor	13 N·m	115 lb in
Engine Oil Pressure Gage Sensor	30 N·m	22 lb ft
Engine Oil Pressure Gage Sensor Fitting - Plus Required Angle	15 N·m	11 lb ft
Engine Wiring Harness Bracket Bolt to Generator and Drive Belt Tensioner Bracket	25 N·m	18 lb ft
Engine Wiring Harness Bracket Bolt to Rear of Cylinder Head	35 N·m	26 lb ft
Engine Wiring Harness Bracket Nut to Intake Manifold	12 N·m	106 lb in
Evaporative Emission (EVAP) Canister Purge Solenoid Valve Nut to Intake Manifold	10 N·m	89 lb in
Exhaust Manifold Bolt/Stud		
• First Pass	15 N·m	11 lb ft
• Final Pass	30 N·m	22 lb ft
Fan and Water Pump Pulley Bolt	25 N·m	18 lb ft
Fuel Meter Body Bracket Bolt	10 N·m	89 lb in
Fuel Pipe Bracket Bolt	6 N·m	53 lb in
Fuel Pipe Bracket Bolt to Rear of Cylinder Head	30 N·m	22 lb ft
Fuel Pipe Retainer Nut	3 N·m	27 lb in
Fuel Supply Pipe Nut - Fuel Tank Side	30 N·m	22 lb ft
Generator and Drive Belt Tensioner Bracket Bolt to Engine	41 N·m	30 lb ft
Generator and Drive Belt Tensioner Bracket Stud Nut	41 N·m	30 lb ft
Generator and Drive Belt Tensioner Bracket Stud to Engine	20 N·m	15 lb ft
Ground Wire or Strap Bolt to Rear of Cylinder Head	35 N·m	26 lb ft
Heater Inlet Hose Fitting	25 N·m	18 lb ft
Ignition Coil Stud	12 N·m	106 lb in
Knock Sensor	25 N·m	18 lb ft
Lower Intake Manifold Bolt		
• First Pass in Sequence	3 N·m	27 lb in
• Second Pass in Sequence	12 N·m	106 lb in
• Final Pass in Sequence	15 N·m	11 lb ft
Oil Filter	30 N·m	22 lb ft
Oil Filter Adapter Bolt	21 N·m	15 lb ft
Oil Filter Fitting	35 N·m	26 lb ft
Oil Level Indicator Tube Bolt	12 N·m	106 lb in
Oil Pan Baffle Bolt	12 N·m	106 lb in
Oil Pan Bolt and Nut in Sequence	25 N·m	18 lb ft
Oil Pan Drain Plug	25 N·m	18 lb ft
Oil Pump Bolt to Rear Crankshaft Bearing Cap	90 N·m	66 lb ft
Oil Pump Cover Bolt	12 N·m	106 lb in
Power Steering Fluid Reservoir Filler Neck Bolt to Power Steering Pump Bracket	20 N·m	15 lb ft
Power Steering Pump Bolt	50 N·m	37 lb ft

Application	Specification	
	Metric	English
Power Steering Pump Bracket Bolt to Engine	41 N·m	30 lb ft
Power Steering Pump Bracket Stud Nut	41 N·m	30 lb ft
Power Steering Pump Bracket Stud to Engine	20 N·m	15 lb ft
Power Steering Pump Nut to Engine	41 N·m	30 lb ft
Power Steering Pump Rear Bracket Nut to Engine Stud	41 N·m	30 lb ft
Power Steering Pump Rear Bracket Nut to Power Steering Pump	50 N·m	37 lb ft
Radiator Inlet Hose Support Bracket Nut to Exhaust Manifold Stud	36 N·m	27 lb ft
Remote Oil Filter Adapter Mounting Bracket Bolt	30 N·m	22 lb ft
Remote Oil Filter Adapter Nut	25 N·m	18 lb ft
Remote Oil Filter Inlet and Outlet Hose Clip Bolt	10 N·m	89 lb in
Remote Oil Filter Inlet and Outlet Hose to Remote Oil Filter Adapter Bolt	35 N·m	26 lb ft
Remote Oil Filter Inlet and Outlet Hose to Remote Oil Filter Pipe Adapter Bolt	35 N·m	26 lb ft
Remote Oil Filter Pipe Clip Bolt to Oil Pan	9 N·m	80 lb in
Secondary Air Injection (AIR) Check Valve Pipe Bracket Bolt to Engine	40 N·m	29 lb ft
Secondary Air Injection (AIR) Check Valve Pipe Stud Nut	25 N·m	18 lb ft
Secondary Air Injection (AIR) Reactor Pipe Bracket Nut	41 N·m	37 lb ft
Spark Plug		
• Initial Installation - NEW Cylinder Head	30 N·m	22 lb ft
• All Subsequent Installations	15 N·m	11 lb ft
Spark Plug Wire Support Bolt	12 N·m	106 lb in
Starter Motor Wiring Harness/Transmission Cooler Pipe Bracket Bolt to Oil Pan	9 N·m	80 lb in
Throttle Body Stud	9 N·m	80 lb in
Transmission Bolt to Oil Pan	47 N·m	35 lb ft
Transmission Cover Bolt	12 N·m	106 lb in
Upper Intake Manifold Stud		
• First Pass	5 N·m	44 lb in
• Final Pass	9 N·m	80 lb in
Valve Lifter Pushrod Guide Bolt	16 N·m	12 lb ft
Valve Rocker Arm Bolt	30 N·m	22 lb ft
Valve Rocker Arm Cover Bolt	12 N·m	106 lb in
Water Outlet Stud	25 N·m	18 lb ft
Water Pump Bolt	45 N·m	33 lb ft

Engine Component Description

Balance Shaft

The cast iron balance shaft is mounted in the crankcase above and in-line with the camshaft. A camshaft gear drives the gear attached to the balance shaft. The front end of the balance shaft is supported by a ball-type bearing. The rear end of the balance shaft uses a sleeve-type bearing.

Camshaft

The steel camshaft is supported by four bearings pressed into the engine block. The camshaft timing chain sprocket mounted to the front of the camshaft is driven by the crankshaft sprocket through a camshaft timing chain.

Crankshaft

The cast nodular iron crankshaft is supported by four crankshaft bearings. The number four crankshaft bearing at the rear of the engine is the end thrust bearing. The crankshaft bearings are retained by bearing caps that are machined with the engine block for proper alignment and clearances. The crankshaft position sensor reluctor ring has three lugs used for crankshaft timing and is constructed of

powdered metal. The crankshaft position sensor reluctor ring has a slight interference fit onto the crankshaft and an internal keyway for correct positioning.

Cylinder Heads

The cast iron cylinder heads have one intake and one exhaust valve for each cylinder. A spark plug is located between the valves in the side of the cylinder head. The valve guides and seats are integral to the cylinder head. The 4.3L heavy duty applications have pressed in exhaust valve seats. The valve rocker arms are positioned on the valve rocker arm supports and retained by a bolt.

Engine Block

The cast iron engine block has six cylinders arranged in a V shape with three cylinders in each bank. Starting at the front side of the engine block, the cylinders in the left bank are numbered 1-3-5 and cylinders in the right bank are numbered 2-4-6 (when viewed from the rear). The firing order of the cylinders is 1-6-5-4-3-2. The cylinders are encircled by coolant jackets.

Exhaust Manifolds

The cast iron exhaust manifolds direct exhaust gases from the combustion chambers to the exhaust system. The left side exhaust manifold has a port for the EGR valve inlet pipe.

Intake Manifold

The intake manifold is a two-piece design. The upper portion is made from a composite material and the lower portion is cast aluminum. The throttle body attaches to the upper manifold. The lower manifold has an exhaust gas recirculation (EGR) port cast into the manifold for mixture. The (EGR) valve bolts into the lower intake manifold. The Central Sequential Multiport Fuel Injection system uses multiple fuel injectors to meter and distribute fuel to each engine cylinder. The Central (SFI) is retained by a bracket bolted to the lower intake manifold. The fuel meter body also houses the pressure regulator. Metal inlet and outlet fuel lines and nylon delivery tubes connect to the Central (SFI) unit. The delivery tubes independently distribute fuel to each cylinder through nozzles located at the port entrance of each manifold runner where the fuel is atomized.

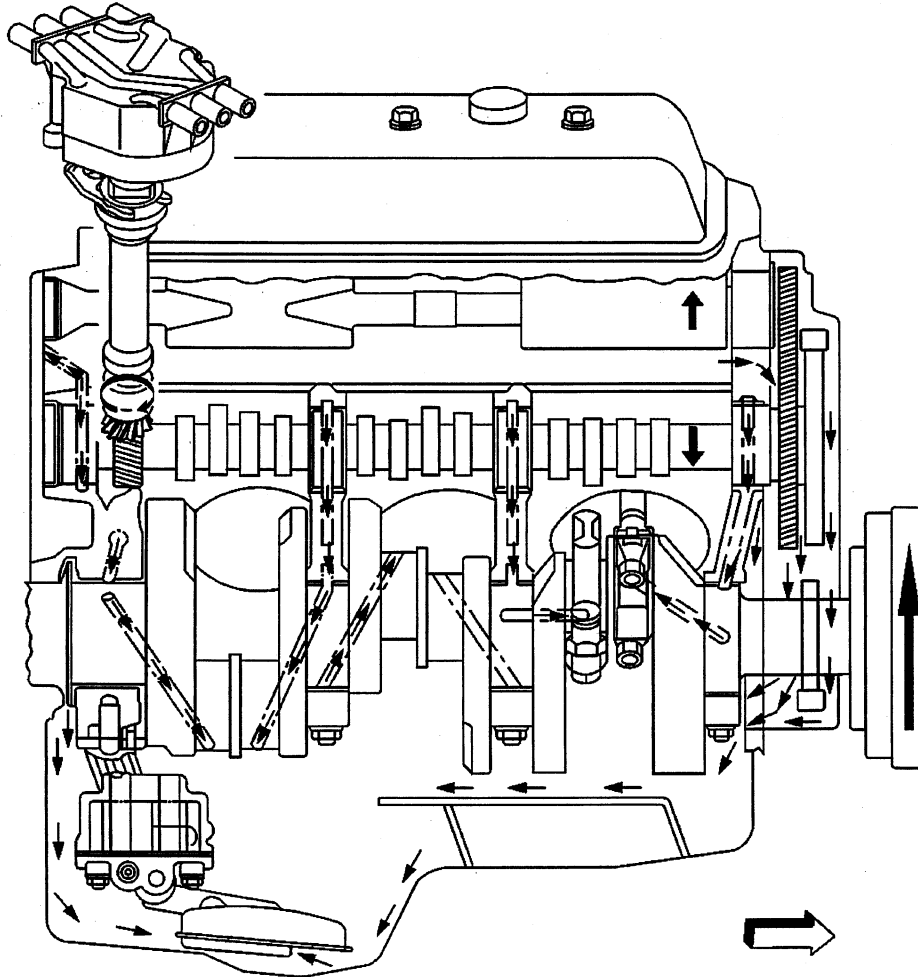
Piston and Connecting Rod Assemblies

The cast aluminum pistons use two compression rings and one oil control assembly. The piston is a low friction, lightweight design with a flat top and barrel shaped skirt. The piston pins are offset 0.9 mm (0.0354 in) toward the major thrust side (right side) to reduce piston slap as the connecting rod travels from one side of the piston to the other side after a stroke. The piston pins have a floating fit in the piston and are retained by a press fit in the connecting rod. The connecting rods are forged steel. The connecting rods are machined with the rod cap installed for proper clearances and alignments.

Valve Train

Motion is transmitted from the camshaft through the hydraulic roller valve lifters and the tubular valve pushrods to the roller type valve rocker arms. The roller type valve rocker arm pivots on a needle type bearing in order to open the valve. The valve rocker arms for each bank of cylinders are mounted to a one piece valve rocker arm support. Each valve rocker arm is retained on the valve rocker arm support and the cylinder head by a bolt. The hydraulic valve lifters keep all the parts of the valve train in constant contact. Each hydraulic valve lifter acts as an automatic adjuster and maintains zero lash in the valve train. This eliminates the need for periodic valve adjustment.

Lubrication Description



Full pressure lubrication, through a full-flow oil filter is supplied by a gear-type oil pump. Oil is drawn up through the oil pump screen and passes through the pump to the oil filter. The oil filter is a full-flow paper element unit with an anti-drain back valve. An oil filter bypass valve is used to ensure adequate oil supply, in the event the filter becomes plugged or develops excessive pressure drop. Filtered oil flows into the main gallery and then to the camshaft, the balance shaft, the rear bearing, and the crankshaft bearings. The valve lifter oil gallery supplies oil to the valve lifters. Oil flows from the valve lifters through the hollow valve pushrods to the valve rocker arms. Oil drains back to the crankcase through the oil drain holes in the cylinder head. The camshaft timing chain is drip fed from the front camshaft bearing. The pistons and piston pins are lubricated by oil splash.

Drive Belt System Description

The drive belt system consists of the following components:

- The drive belt
- The drive belt tensioner
- The drive belt idler pulley
- The crankshaft balancer pulley
- The accessory drive component mounting brackets
- The accessory drive components
 - The power steering pump, if belt driven
 - The generator
 - The A/C compressor, if equipped
 - The engine cooling fan, if belt driven
 - The water pump, if belt driven
 - The vacuum pump, if equipped
 - The air compressor, if equipped

The drive belt system may use one belt or two belts. The drive belt is thin so that it can bend backwards and has several ribs to match the grooves in the pulleys. There also may be a V-belt style belt used to drive certain accessory drive components. The drive belts are made of different types of rubbers (chloroprene or EPDM) and have different layers or plys containing either fiber cloth or cords for reinforcement.

Both sides of the drive belt may be used to drive the different accessory drive components. When the back side of the drive belt is used to drive a pulley, the pulley is smooth.

The drive belt is pulled by the crankshaft balancer pulley across the accessory drive component pulleys. The spring loaded drive belt tensioner keeps constant tension on the drive belt to prevent the drive belt from slipping. The drive belt tensioner arm will move when loads are applied to the drive belt by the accessory drive components and the crankshaft.

The drive belt system may have an idler pulley, which is used to add wrap to the adjacent pulleys. Some systems use an idler pulley in place of an accessory drive component when the vehicle is not equipped with the accessory.

Crankcase Ventilation System Description

General Description

A crankcase ventilation system is used to consume crankcase vapors in the combustion process instead of venting them to the atmosphere. Fresh air from the intake system is supplied to the crankcase, mixed with blow by gases and then passed through a calibrated orifice into the intake manifold.

Operation

The primary control is through the positive crankcase ventilation (PCV) orifice which meters the flow at a rate depending on inlet vacuum. The PCV orifice is an integral part of the valve cover. If abnormal operating conditions occur, the system is designed to allow excessive amounts of blow by gases to back flow through the crankcase vent into the intake system to be consumed by normal combustion.

Results of Incorrect Operation

A plugged orifice may cause the following conditions:

- Rough idle
- Stalling or slow idle speed
- Oil leaks
- Sludge in engine

A leaking orifice may cause the following conditions:

- Rough idle
- Stalling
- High idle speed

Engine Cooling

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Coolant Recovery Reservoir Nuts	8-11 N·m	6-8 lb ft
Engine Coolant Heater Cord Bolt	8 N·m	71 lb in
Engine Coolant Heater Mounting Screw	1.9 N·m	17 lb in
Engine Oil Cooler Line Clamp Bolt	10 N·m	89 lb in
Engine Oil Cooler Line to Adapter Bolt	35 N·m	26 lb ft
Engine Oil Cooler Line to Radiator Connectors	31 N·m	23 lb ft
Engine Oil Cooler Lines to Oil Filter Adapter Retaining Bolt	35 N·m	26 lb ft
Fan Clutch Assembly Nut to Water Pump Pulley Stud	56 N·m	40 lb ft
Fan Clutch Mounting Bolts	33 N·m	24 lb ft
Fan Shroud Bolts	10 N·m	89 lb in
Intake Air Duct Clamp	5 N·m	44 lb in
Remote Filter Housing Bracket to Radiator Core Support	30 N·m	22 lb ft
Remote Filter Housing to Bracket Nuts	25 N·m	18 lb ft
Steering Linkage Shield Bolts	32 N·m	24 lb ft
Throttle Body Bracket Nuts	10 N·m	89 lb in
Water Outlet Housing Bolts 4.3 L	19 N·m	14 lb ft
Water Pump Bolt and Stud 4.3L	41 N·m	30 lb ft
Water Pump Pulley Bolts	25 N·m	18 lb ft

Cooling System Description and Operation

Coolant Heater

The optional engine coolant heater (RPO K05) operates using 110-volt AC external power and is designed to warm the coolant in the engine block area for improved starting in very cold weather (-29°C (-20°F)). The coolant heater helps reduce fuel consumption when a cold engine is warming up. The unit is equipped with a detachable AC power cord. A weather shield on the cord is provided to protect the plug when not in use.

Cooling System

The cooling system's function is to maintain an efficient engine operating temperature during all engine speeds and operating conditions. The cooling system is designed to remove approximately one-third of the heat produced by the burning of the air-fuel mixture. When the engine is cold, the coolant does not flow to the radiator until the thermostat opens. This allows the engine to warm quickly.

Cooling Cycle

Coolant flows from the radiator outlet and into the water pump inlet. Some coolant flows from the water pump, to the heater core, then back to the water pump. This provides the passenger compartment with heat and defrost capability as the coolant warms up.

Coolant also flows from the water pump outlet and into the engine block. In the engine block, the coolant circulates through the water jackets surrounding the cylinders where it absorbs heat.

The coolant then flows through the cylinder head gasket openings and into the cylinder heads. In the cylinder heads, the coolant flows through the water jackets surrounding the combustion chambers and valve seats, where it absorbs additional heat.

From the cylinder heads, the coolant flows to the thermostat. The flow of coolant will either be stopped at the thermostat until the engine reaches normal operating temperature, or it will flow through the thermostat and into the radiator where it is cooled. At this point, the coolant flow cycle is completed.

Efficient operation of the cooling system requires proper functioning of all cooling system components. The cooling system consists of the following components:

Coolant

The engine coolant is a solution made up of a 50-50 mixture of DEX-COOL and suitable drinking water. The coolant solution carries excess heat away from the engine to the radiator, where the heat is dissipated to the atmosphere.

Radiator

The radiator is a heat exchanger. It consists of a core and two tanks. The aluminum core is a tube and fin crossflow design that extends from the inlet tank to the outlet tank. Fins are placed around the outside of the tubes to improve heat transfer to the atmosphere.

The inlet and outlet tanks are a molded, high temperature, nylon reinforced plastic material. A high temperature rubber gasket seals the tank flange edge to the aluminum core. The tanks are clamped to the core with clinch tabs. The tabs are part of the aluminum header at each end of the core.

The radiator also has a drain cock located in the bottom of the left hand tank. The drain cock unit includes the drain cock and drain cock seal.

The radiator removes heat from the coolant passing through it. The fins on the core transfer heat from the coolant passing through the tubes. As air passes between the fins, it absorbs heat and cools the coolant.

Pressure Cap

The pressure cap seals the cooling system. It contains a blow off or pressure valve and a vacuum or atmospheric valve. The pressure valve is held against its seat by a spring, which protects the radiator from excessive cooling system pressure. The vacuum valve is held against its seat by a spring, which permits opening of the valve to relieve vacuum created in the cooling system as it cools off. The vacuum, if not relieved, might cause the radiator and/or coolant hoses to collapse.

The pressure cap allows cooling system pressure to build up as the temperature increases. As the pressure builds, the boiling point of the coolant increases. Engine coolant can be safely run at a temperature much higher than the boiling point of the coolant at atmospheric pressure. The hotter the coolant is, the faster the heat transfers from the radiator to the cooler, passing air.

The pressure in the cooling system can get too high. When the cooling system pressure exceeds the rating of the pressure cap, it raises the pressure valve, venting the excess pressure.

As the engine cools down, the temperature of the coolant drops and a vacuum is created in the cooling system. This vacuum causes the vacuum valve to open, allowing outside air into the surge tank. This equalizes the pressure in the cooling system with atmospheric pressure, preventing the radiator and coolant hoses from collapsing.

Coolant Recovery System

The coolant recovery system consists of a plastic coolant recovery reservoir and overflow tube. The recovery reservoir is also called a recovery tank or expansion tank. It is partially filled with coolant and is connected to the radiator fill neck with the overflow tube. Coolant can flow back and forth between the radiator and the reservoir.

In effect, a cooling system with a coolant recovery reservoir is a closed system. When the pressure in the cooling system gets too high, it will open the pressure valve in the pressure cap. This allows the coolant, which has expanded due to being heated, is allowed to flow through the overflow tube and into the recovery reservoir. As the engine cools down, the temperature of the coolant drops and a vacuum is created in the cooling system. This vacuum opens the vacuum valve in the pressure cap, allowing some of the coolant in the reservoir to be siphoned back into the radiator. Under normal operating conditions,

no coolant is lost. Although the coolant level in the recovery reservoir goes up and down, the radiator and cooling system are kept full. An advantage to using a coolant recovery reservoir is that it eliminates almost all air bubbles from the cooling system. Coolant without bubbles absorbs heat much better than coolant with bubbles.

Air Baffles and Seals

The cooling system uses deflectors, air baffles and air seals to increase cooling system capability. Deflectors are installed under the vehicle to redirect airflow beneath the vehicle and through the radiator to increase engine cooling. Air baffles are also used to direct airflow through the radiator and increase cooling capability. Air seals prevent air from bypassing the radiator and A/C condenser, and prevent recirculation of hot air for better hot weather cooling and A/C condenser performance.

Water Pump

The water pump is a centrifugal vane impeller type pump. The pump consists of a housing with coolant inlet and outlet passages and an impeller. The impeller is mounted on the pump shaft and consists of a series of flat or curved blades or vanes on a flat plate. When the impeller rotates, the coolant between the vanes is thrown outward by centrifugal force.

The impeller shaft is supported by one or more sealed bearings. The sealed bearings never need to be lubricated. Grease cannot leak out, dirt and water cannot get in as long as the seal is not damaged or worn.

The purpose of the water pump is to circulate coolant throughout the cooling system. The water pump is driven by the crankshaft via the drive belt.

Thermostat

The thermostat is a coolant flow control component. Its purpose is to help regulate the operating temperature of the engine. It utilizes a temperature sensitive wax-pellet element. The element connects to a valve through a small piston. When the element is heated, it expands and exerts pressure against the small piston. This pressure forces the valve to open. As the element is cooled, it contracts. This contraction allows a spring to push the valve closed.

When the coolant temperature is below the rated thermostat opening temperature, the thermostat valve remains closed. This prevents circulation of the coolant to the radiator and allows the engine to warm up. After the coolant temperature reaches the rated thermostat opening temperature, the thermostat valve will open. The coolant is then allowed to circulate through the thermostat to the radiator where the engine heat is dissipated to the atmosphere. The thermostat also provides a restriction in the cooling system, after it has opened. This restriction creates a pressure difference which prevents cavitation at the water pump and forces coolant to circulate through the engine block.

Engine Oil Cooler

The engine oil cooler is a heat exchanger. It is located inside the left side end tank of the radiator. The engine oil temperature is controlled by the temperature of the engine coolant that surrounds the oil cooler in the radiator.

The engine oil pump, pumps the oil through the engine oil cooler line to the oil cooler. The oil then flows through the cooler where the engine coolant absorbs heat from the oil. The oil is then pumped through the oil cooler return line, to the oil filter, to the engine block oil system.

Transmission Oil Cooler

The transmission oil cooler is a heat exchanger. It is located inside the right side end tank of the radiator. The transmission fluid temperature is regulated by the temperature of the engine coolant in the radiator.

The transmission oil pump, pumps the fluid through the transmission oil cooler line to the transmission oil cooler. The fluid then flows through the cooler where the engine coolant absorbs heat from the fluid. The fluid is then pumped through the transmission oil cooler return line, to the transmission.

Engine Electrical

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Battery Hold Down Retainer Nut	17 N·m	13 lb ft
Battery Negative Cable to Engine Block Bolt (4.3L)	17 N·m	13 lb ft
Battery Negative Cable to Frame (4.3L)	9 N·m	80 lb in
Battery Negative Cable to Radiator Support (4.3L)	9 N·m	80 lb in
Battery Positive Cable Harness to Engine (4.3L)	9 N·m	80 lb in
Battery Positive Cable Nut	6 N·m	80 lb in
Battery Positive Cable to Generator Nut	17 N·m	13 lb ft
Battery Positive Cable to Starter Nut	9 N·m	80 lb in
Battery Positive Cable to Underhood Fuse Block Bolt	10 N·m	89 lb in
Battery Terminal Bolt	15 N·m	11 lb ft
Battery Tray Bolt	25 N·m	18 lb ft
Differential Carrier Shield Bolt	25 N·m	18 lb ft
Engine to Transmission Brace Bolt and Nut	50 N·m	37 lb ft
Engine Wiring Harness to Starter	1.9 N·m	17 lb in
Engine Wiring Harness Bracket to Generator Mounting Bracket Bolt	25 N·m	18 lb ft
Generator Mounting Bolt (4.3L)	50 N·m	37 lb ft
Generator Mounting Bracket Bolt and Nut (4.3L)	41 N·m	30 lb ft
Generator Output (Bat) Terminal Nut	17 N·m	12 lb ft
Ground Strap to Cowl Bolt	17 N·m	12 lb ft
Ground Strap to Cowl Bolt/Nut	50 N·m	37 lb ft
Heater Hose Bracket to Generator Bolt (4.3L)	25 N·m	18 lb ft
Starter Motor Mounting Bolt (4.3L)	50 N·m	37 lb ft

Battery Usage

Option	Catalog No.	Cold Cranking Amps (CCA)	Reserve Capacity (Minutes)	Load Test (A)	Recommended Replacement
Standard	670	525	90	260	75-60
Optional	674	690	90	340	75B-84

Battery Temperature vs Minimum Voltage

Estimated Temperature °F	Estimated Temperature °C	Minimum Voltage
70 or above	21 or above	9.6
50	10	9.4
32	0	9.1
15	-10	8.8
0	-18	8.5
Below 0	Below -18	8.0

Starter Motor Usage

Applications	Starter Type
4.3L (L35)	PG-260G

Generator Usage

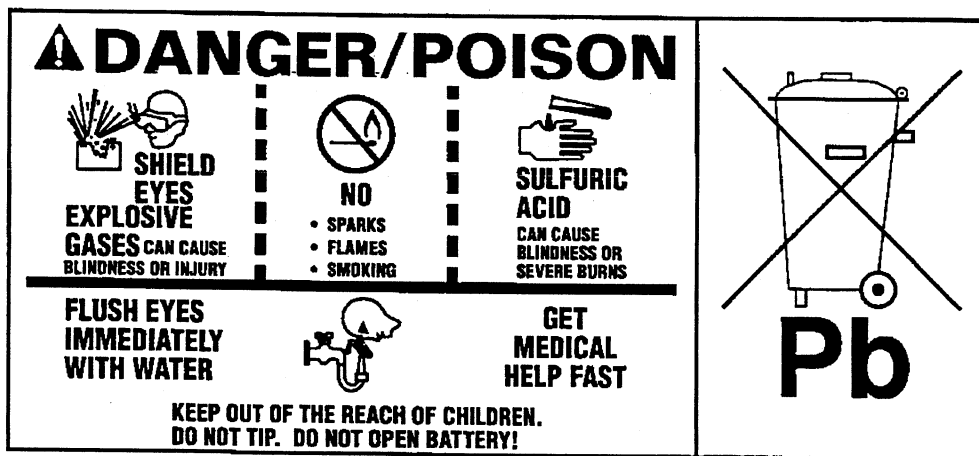
Engine	Generator Model	Option Code	Rated Output AMPS	Load Test Output AMPS
Gasoline Engine	CS130D	K60	100 A	70 A

Battery Description and Operation

Caution

Batteries produce explosive gases, contain corrosive acid, and supply levels of electrical current high enough to cause burns. Therefore, to reduce the risk of personal injury when working near a battery:

- Always shield your eyes and avoid leaning over the battery whenever possible.
- Do not expose the battery to open flames or sparks.
- Do not allow the battery electrolyte to contact the eyes or the skin. Flush immediately and thoroughly any contacted areas with water and get medical help.
- Follow each step of the jump starting procedure in order.
- Treat both the booster and the discharged batteries carefully when using the jumper cables.



The maintenance free battery is standard. There are no vent plugs in the cover. The battery is completely sealed except for two small vent holes in the side. These vent holes allow the small amount of gas that is produced in the battery to escape.

The battery has three functions as a major source of energy:

- Engine cranking
- Voltage stabilizer
- Alternate source of energy with generator overload.

The battery specification label (example below) contains information about the following:

- The test ratings
- The original equipment catalog number
- The recommended replacement model number

CATALOG NO.

1819

CCA 770	LOAD TEST 380
REPLACEMENT MODEL 100 – 6YR	

A battery has 2 ratings:

- Reserve capacity
- Cold cranking amperage

When a battery is replaced use a battery with similar ratings. Refer to the battery specification label on the original battery or refer to Battery Usage .

Reserve Capacity

Reserve capacity is the amount of time in minutes it takes a fully charged battery, being discharged at a constant rate of 25 amperes and a constant temperature of 27°C (80°F) to reach a terminal voltage of 10.5 V. Refer to Battery Usage for the reserve capacity rating of the original equipment battery.

Cold Cranking Amperage

The cold cranking amperage is an indication of the ability of the battery to crank the engine at cold temperatures. The cold cranking amperage rating is the minimum amperage the battery must maintain for 30 seconds at -18°C (0°F) while maintaining at least 7.2 volts. Refer to Battery Usage for the cold cranking amperage rating for this vehicle.

Circuit Description

The battery positive terminal supplies Battery Positive voltage to the under hood fuse block and the rear fuse block. The under hood fuse block provides a cable connection for the generator and a cable connection for the starter.

The battery negative terminal is connected to chassis ground G305 and supplies ground for the AD converter in the DIM.

Starting System Description and Operation

The PG-260 is a non-repairable starter motor. It has pole pieces that are arranged around the armature within the starter housing. When the solenoid windings are energized, the pull-in winding circuit is completed to ground through the starter motor. The hold-in winding circuit is completed to ground through the solenoid. The windings work together magnetically to pull in and hold in the plunger. The plunger moves the shift lever. This action causes the starter drive assembly to rotate on the armature shaft spline as it engages with the flywheel ring gear on the engine. At the same time, the plunger closes the solenoid switch contacts in the starter solenoid. Full battery voltage is then applied directly to the starter motor and it cranks the engine.

As soon as the solenoid switch contacts close, current stops flowing through the pull-in winding as battery voltage is now applied to both ends of the windings. The hold-in winding remains energized; its magnetic field is strong enough to hold the plunger, shift lever, starter drive assembly, and solenoid switch contacts in place to continue cranking the engine. When the engine starts, the pinion gear overrun sprag protects the armature from excessive speed until the switch is opened.

When the ignition switch is released from the CRANK position, voltage is removed from the starter solenoid S terminal. Current flows from the motor contacts through both windings to ground at the end of the hold-in winding. However, the direction of the current flow through the pull-in winding is now in the opposite direction of the current flow when the winding was first energized.

The magnetic fields of the pull-in and hold-in windings now oppose one another. This action of the windings, along with the help of the return spring, cause the starter drive assembly to disengage and the solenoid switch contacts to open simultaneously. As soon as the contacts open, the starter motor is turned off.

Charging System Description and Operation

Generator

The generator features the following major components:

- The delta stator
- The rectifier bridge
- The rotor with slip rings and brushes
- A conventional pulley
- Dual internal fans
- The regulator

The pulley and the fan cool the slip ring and the frame.

The generator features permanently lubricated bearings. Service should only include tightening of mount components. Otherwise, replace the generator as a complete unit.

Regulator

The voltage regulator controls the rotor field current in order to limit the system voltage. When the field current is on, the regulator switches the current on and off at a rate of 400 cycles per second in order to perform the following functions:

- Radio noise control
- Obtain the correct average current needed for proper system voltage control

At high speeds, the on-time may be 10 percent with the off-time at 90 percent. At low speeds, the on-time may be 90 percent and the off-time 10 percent.

Circuit Description

The generator provides voltage to operate the vehicle's electrical system and to charge its battery. A magnetic field is created when current flows through the rotor. This field rotates as the rotor is driven by the engine, creating an AC voltage in the stator windings. The AC voltage is converted to DC by the rectifier bridge and is supplied to the electrical system at the battery terminal.

When the engine is running, the generator turn-on signal is sent to the generator from the PCM, turning on the regulator. The generator's voltage regulator controls current to the rotor, thereby controlling the output voltage. The rotor current is proportional to the electrical pulse width supplied by the regulator. When the engine is started, the regulator senses generator rotation by detecting AC voltage at the stator through an internal wire. Once the engine is running, the regulator varies the field current by controlling the pulse width. This regulates the generator output voltage for proper battery charging and electrical system operation. The generator F terminal is connected internally to the voltage regulator and externally to the PCM. When the voltage regulator detects a charging system problem, it grounds this circuit to signal the PCM that a problem exists. The PCM monitors the generator field duty cycle signal circuit. The

system voltage sense circuit receives battery positive voltage that is Hot At All Times through a fuse link that is connected to the starter motor. This voltage is used by the regulator as the reference for system voltage control.

Engine Controls

Engine Controls – 4.3L

Ignition System Specifications

Application	Specification	
	Metric	English
Firing Order	1-6-5-4-3-2	
Spark Plug Wire Resistance	1,000 ohms per ft	
Spark Plug Torque	15 N·m	11 lb ft
Spark Plug Gap	1.52 mm	0.060 in
Spark Plug Type	R41-932 [AC plug type]	

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Accelerator Cable Routing Bracket Mounting Nuts	9 N·m	80 lb in
Accelerator Control Cable Bracket Mounting Studs and Nuts	12 N·m	106 lb in
Accelerator Pedal Mounting Nuts	9 N·m	80 lb in
Air Cleaner Adapter Stud	9 N·m	80 lb in
Air Cleaner Housing Mounting Nut	10 N·m	89 lb in
Air Cleaner Outlet Duct Hose Clamp	4 N·m	35 lb in
Air Cleaner Outlet Duct Retaining Wingnut	2 N·m	18 lb in
Camshaft Position (CMP) Sensor Screws	2.2 N·m	19 lb in
Coolant Hose Nipple	17 N·m	13 lb ft
Crankshaft Position (CKP) Sensor Mounting Bolt	9 N·m	80 lb in
Distributor Cap Screws	2.4 N·m	21 lb in
Distributor Mounting Clamp Bolt	25 N·m	18 lb ft
Distributor Rotor Hold Down Screws	1.9 N·m	17 lb in
Engine Coolant Temperature (ECT) Sensor	20 N·m	15 lb ft
Evaporative emissions (EVAP) Canister Mount Bolt	12 N·m	106 lb in
Fuel Fill Hose Clamp	2.5 N·m	22 lb in
Fuel Fill Pipe to Fill Pipe Housing Attaching Screws	1.9 N·m	17 lb in
Fuel Pipe Bracket Bolt-Rear	6 N·m	53 lb in
Fuel Pipe Bracket to Frame Bolt	15 N·m	11 lb ft
Fuel Pipe Fittings	27 N·m	20 lb ft
Fuel Pipe Ground Strap Bolt	15 N·m	11 lb ft
Fuel Pipe Retainer Clip Bolt	30 N·m	22 lb ft
Fuel Pipe Retainer Nuts	3 N·m	27 lb in
Fuel Pipe to Fuel Rail Retaining Screw	3 N·m	27 lb in
Fuel Pressure Regulator Bracket	3.5 N·m	31 lb in
Fuel Rail Attaching Bolts	10 N·m	89 lb in
Fuel Tank Front Shield Nut-Pickup	25 N·m	18 lb ft
Fuel Tank Shield Bolts-2-Door	11 N·m	97 lb in
Fuel Tank Shield Bolts-4-Door	33 N·m	24 lb ft
Fuel Tank Shield to Crossmember Bolts and Nuts-Pickup	23 N·m	17 lb ft
Fuel Tank Shield to Frame Bolts-Pickup	11 N·m	97 lb in
Fuel Tank Shield to Frame Nut-Pickup	25 N·m	18 lb ft
Fuel Tank Strap Bolt and Nut-Pickup and 4-Door Utility	18 N·m	13 lb ft

Application	Specification	
	Metric	English
Fuel Tank Strap Nuts-2-Door Utility	91 N·m	67 lb ft
Fuel Vent Hose Clamp	1.7 N·m	15 lb in
Heated Oxygen (HO2S) Sensor	42 N·m	31 lb ft
Idle Air Control (IAC) Valve Attaching Screws	3 N·m	27 lb in
Ignition Coil Mounting Screws	11 N·m	97 lb in
Ignition Control Module (ICM) Mounting Screws	3.5 N·m	31 lb in
Knock Sensor (KS)	25 N·m	18 lb ft
Mass Air Flow (MAF) Sensor Clamps	4 N·m	35 lb in
Powertrain Control Module (PCM) Electrical Connector Screws	8 N·m	71 lb in
Power Brake Fitting	13 N·m	115 lb in
Pressure Regulator Screw	9.5 N·m	84 lb in
Purge Valve Mounting Bracket Attaching Bolt	8 N·m	71 lb in
Steering Linkage Shield Mounting Bolts	33 N·m	24 lb ft
Throttle Body Assembly Retaining Studs	9 N·m	80 lb in
Throttle Cable Bracket Bolts	25 N·m	18 lb ft
Throttle Position (TP) Sensor Screws	2 N·m	18 lb in
Upper Manifold Bolts	8 N·m	71 lb in
Upper Manifold Nuts	8 N·m	71 lb in
Vacuum Module Attaching Bolts	8 N·m	71 lb in

Fuel System Specifications

Use regular unleaded gasoline rated at 87 octane or higher. It is recommended that the gasoline meet specifications which have been developed by the American Automobile Manufacturers Association (AAMA) and endorsed by the Canadian Motor Vehicle Manufacturers Association for better vehicle performance and engine protection. Gasoline meeting the AAMA specification could provide improved driveability and emission control system performance compared to other gasolines. For more information, write to: American Automobile Manufacturer's Association, 7430 Second Ave, Suite 300, Detroit MI 48202.

Be sure the posted octane is at least 87. If the octane is less than 87, you may get a heavy knocking noise when you drive. If the knocking is bad enough, the knocking can damage your engine.

If you are using fuel rated at 87 octane or higher and you hear heavy knocking, your engine needs service. But do not worry if you hear a little pinging noise when you are accelerating or driving up a hill. That is normal, and you do not have to buy a higher octane fuel to get rid of the pinging. However, if there is a heavy, constant knock, that means you have a problem.

Notice

Your vehicle was not designed for fuel that contains methanol. Do not use methanol fuel which can corrode metal parts in your fuel system and also damage plastic and rubber parts. This kind of damage would not be covered under your warranty.

If your vehicle is certified to meet California Emission Standards, indicated on the under hood emission control label, your vehicle is designed to operate on fuels that meet California specifications. If such fuels are not available in states adopting California emissions standards, your vehicle will operate satisfactorily on fuels meeting federal specifications, but emission control system performance may be affected. The malfunction indicator lamp on your instrument panel may turn ON and/or your vehicle may fail a smog-check test. If this occurs, return to your authorized dealer for diagnosis to determine the cause of failure. In the event there is a determination that the cause of the condition is the type of fuels used, repairs may not be covered by your warranty.

Some gasolines that are not reformulated for low emissions may contain an octane-enhancing additive called methylcyclopentadienyl manganese tricarbonyl (MMT). Ask your service station operator whether or not the fuel contains MMT.

Exhaust System

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Catalytic Converter to Exhaust Manifold Stud Nuts (4.3L)	53 N·m	39 lb ft
Catalytic Converter to Muffler Flange nuts (4.3L)	40 N·m	30 lb ft
Exhaust Manifold Bolts and Stud (4.3L)		
• First Pass	15 N·m	11 lb ft
• Final Pass	30 N·m	22 lb ft
Exhaust Manifold Heat Shield Bolts	12 N·m	106 lb in
Hanger to Frame Bolts	17 N·m	13 lb ft
Oil Level Indicator Tube Bolt (4.3L)	12 N·m	106 lb in
Radiator Inlet Hose Support Bracket Nut (4.3L)	36 N·m	27 lb ft

Exhaust System Description

Important

Use of non-OEM parts may cause driveability concerns.

The exhaust system design varies according to the model designation and the intended use of the vehicle.

In order to secure the exhaust pipe to the exhaust manifold, the exhaust system utilizes a flange and seal joint coupling. A flange and gasket coupling secures the catalytic converter assembly to the muffler assembly.

Hangers suspend the exhaust system from the underbody, allowing some movement of the exhaust system and disallowing the transfer of noise and vibration into the vehicle.

Heat shields protect the vehicle from the high temperatures generated by the exhaust system.

Resonator

Some exhaust systems are equipped with a resonator. The resonator, located either before or after the muffler, allows the use of mufflers with less back pressure. Resonators are used when vehicle characteristics require specific exhaust tuning.

Catalytic Converter

The catalytic converter is an emission control device added to the engine exhaust system in order to reduce hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (NOx) pollutants from the exhaust gas.

The catalytic converter is comprised of a ceramic monolith substrate, supported in insulation and housed within a sheet metal shell. The substrate may be washcoated with 3 noble metals:

- Platinum (Pt)
- Palladium (Pd)
- Rhodium (Rh)

The catalyst in the converter is not serviceable.

Muffler

The exhaust muffler reduces the noise levels of the engine exhaust by the use of tuning tubes. The tuning tubes create channels inside the exhaust muffler that lower the sound levels created by the combustion of the engine.

Transmission/Transaxle Description and Operation

Manual Transmission – NV 3500

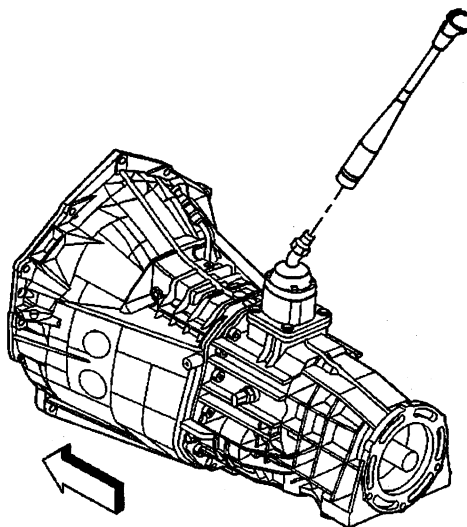
Fastener Tightening Specifications

Application	Specification	
	Metric	English
Backup Lamp Switch	37 N·m	27 lb ft
Clutch Actuator Bolt	8 N·m	71 lb in
Clutch Housing Cover Bolts	14 N·m	10 lb ft
Front Bearing Retainer Bolts	14 N·m	10 lb ft
Oil Drain and Fill Plugs	30 N·m	22 lb ft
Shift Boot Screws	2 N·m	18 lb in
Shift Housing to Transmission Bolts	20 N·m	15 lb ft
Shift Lever Adjusting Nut	48 N·m	35 lb ft
Transmission-to-Engine Studs and Bolts	47 N·m	35 lb ft
Transmission Mount to Crossmember Nut	57 N·m	42 lb ft
Transmission Mount to Transmission Bolt - (4.3L)	50 N·m	37 lb ft
Vehicle Speed Sensor Bolt	16 N·m	12 lb ft

Lubrication Specifications

Application	Specification	
	Metric	English
New Venture Gear NV3500 Manual Transmission Recommended Lubricant: Synchronesh Transmission Fluid GM P/N 12345349	2.0 liters	2.2 quarts

Description



The New Venture Gear NV 3500 is a 5 speed manual transmission used on light duty trucks with the 4.3L engine. The NV 3500 is identified by RPO M50 and RPO MG5. The difference between the RPO codes is the first speed gear ratios that the transmission has. The shift assembly design inside the NV 3500 transmission installed on C/K trucks is different than the NV 3500 transmissions installed in smaller S/T trucks. The distance between the input shaft and the countershaft is 85 mm (0.132 in). The transmission is available in rear wheel drive and four wheel drive.

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The transmission has the following features:

- Constant mesh helical gearing for reduced noise
- A 2 piece aluminum housing
- Synchronized shifting in all forward gears
- A shift tower mounted shift lever
- Single rail shift system

Hydraulic Clutch

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Clutch Housing Cover Bolts	14 N·m	10 lb ft
Clutch Pedal Bolt and nut	25 N·m	19 lb ft
Clutch Plate to Flywheel Bolts NV 1500	44 N·m	33 lb ft
Clutch Plate to Flywheel Bolts NV 3500	40 N·m	29 lb ft
Concentric Slave Cylinder Bolts	8 N·m	71 lb in

Hydraulic Clutch Description

The S/T model vehicle uses two different clutch variations.

4.3L Clutch

The 4.3L clutch system is described as the following:

- Size - 280 mm (11 in)
- Clutch pressure plate - Diaphragm spring plate, non-self adjusting
- Clutch disc - Damper spring style
- Hydraulic system

Clutch Driving Members

The clutch driving members are 2 flat surfaces machined to a smooth finish:

- The rear face of the engine flywheel
- The front face of the clutch pressure plate

Clutch Driven Members

The driven member is the clutch driven plate. The clutch driven plate has a splined hub. The splined hub slides lengthwise along the splines of the input shaft. The splined hub drives the input shaft through these same splines. The driving and driven members are held together with a spring pressure. This pressure is exerted by a diaphragm spring in the clutch pressure plate.

Hydraulic Clutch Fluid

Notice: Do not use mineral or paraffin-base oil in the clutch hydraulic system. These fluids may damage the rubber parts in the cylinders.

When refilling the system or adding fluid after service, use GM Delco Supreme No. 2 Brake Fluid, or equivalent that meets DOT 3 specifications.

Hydraulic Clutch Operating Members

The clutch system consists of the following components:

- A master cylinder with a reservoir
- A switch
- A concentric slave cylinder connected to hydraulic tubing
- A pressure plate
- A clutch cover
- Diaphragm springs

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- A release bearing
- A clutch disc
- Torsional springs

With the depression of the clutch pedal, the clutch master cylinder becomes pressurized from the force of the push rod into the master cylinder. This forces hydraulic fluid into the tubing from the master cylinder to the concentric slave cylinder. The concentric slave cylinder then engages by pushing the releasing bearing into the diaphragm spring and release the clutch. A hole in the cowl panel accommodates the master cylinder. A quick connect coupling helps route the hydraulic tubing. the concentric slave cylinder is inside the transmission and on the input bearing retainer. The hydraulic control system can be replaced without having to gain access to the clutch system internal components , simply engage the quick connect coupling mounted through the transmission housing. No adjustments to the clutch system are necessary. As the clutch wears, the fluid level in the master cylinder reservoir changes to compensates for clear wear. A new system will have fluid in the reservoir. An electrical switch on the push rod has 2 functions. One function is a clutch interlock, ensuring the engine does not start unless the clutch pedal is engaged (positioned to the floor). The second function is to cut off the cruise-control system (if so equipped) when the clutch pedal is engaged.

Automatic Transmission - 4L60-E**Fastener Tightening Specifications**

Application	Specification	
	Metric	English
Accumulator Cover to Case Bolt	8.0-14.0 N·m	6-10 lb ft
Case Extension to Case Bolt	42.0-48.0 N·m	31-35 lb ft
Case Extension to Case Bolt (4WD Shipping)	11.2-22.6 N·m	8.3-16.7 lb ft
Converter Cover Bolt	10 N·m	89 lb in
Converter Housing to Case Screw	65.0-75.0 N·m	48-55 lb ft
Cooler Pipe Connector	35.0-41.0 N·m	26-30 lb ft
Detent Spring to Valve Body Bolt	20.0-27.0 N·m	15-20 lb ft
Floorshift Control Bolt	10 N·m	89 lb in
Flywheel to Torque Converter Bolt	63 N·m	46 lb ft
Forward Accumulator Cover to Valve Body Bolt	8.0-14.0 N·m	6-10 lb ft
Heat Shield to Transmission Bolt	17 N·m	13 lb ft
Line Pressure Plug	8.0-14.0 N·m	6-10 lb ft
Manual Shaft to Inside Detent Lever Nut	27.0-34.0 N·m	20-25 lb ft
Negative Battery Cable Bolt	15 N·m	11 lb ft
Oil Level Indicator Bolt	47 N·m	35 lb ft
Oil Pan to Transmission Case Bolt	11 N·m	97 lb in
Oil Passage Cover to Case Bolt	8-14.0 N·m	6-10 lb ft
Park Brake Bracket to Case Bolt	27.0-34.0 N·m	20-25 lb ft
Park/Neutral Position Switch Screw	3 N·m	27 lb in
Plate to Case Bolt (Shipping)	27.0-34.0 N·m	20-25 lb ft
Plate to Converter Bolt (Shipping)	27.0-34.0 N·m	20-25 lb ft
Plug Assembly, Automatic Transmission Oil Pan (C/K)	30-40 N·m	22.1-29.5 lb ft
Plug Assembly, Automatic Transmission Oil Pan (Y)	28-32 N·m	20.7-23.6 lb ft
Pressure Control Solenoid Bracket to Valve Body Bolt	8.0-14.0 N·m	6-10 lb ft
Pump Assembly to Case Bolt	26.0-32.0 N·m	19-24 lb ft
Pump Cover to Pump Body Bolt	20.0-27.0 N·m	15-20 lb ft
Shift Cable Grommet Screw	1.7 N·m	15 lb in
Shift Control Cable Attachment	20 N·m	15 lb ft
Speed Sensor Retainer Bolt	10.5-13.5 N·m	7.7-10 lb ft
Stud, Automatic Transmission Case Extension (Y-car)	18.0-22.0 N·m	13-16 lb ft
TCC Solenoid Assembly to Case Bolt	8.0-14.0 N·m	6-10 lb ft
Trans Mount to Transmission Bolt	25 N·m	18 lb ft
Transmission Fluid Pressure Manual Valve Position Switch to Valve Body Bolt	8.0-14.0 N·m	6-10 lb ft
Transmission Oil Cooler Pipe Fitting	35.0-41.0 N·m	26-30 lb ft
Transmission Oil Pan to Case Bolt	9.5-13.8 N·m	7-10 lb ft
Transmission to Engine Bolt	47 N·m	35 lb ft
Valve Body to Case Bolt	8.0-14.0 N·m	6-10 lb ft

Transmission General Specifications

Name	Hydra-matic 4L60-E
RPO Codes	M30
Production Location	Toledo, Ohio Romulus, MI Ramos Arizpe, Mexico
Vehicle Platform (Engine/Transmission) Usage	S/T
Transmission Drive	Longitudinally-Mounted Rear Wheel Drive
1st Gear Ratio	3.059:1
2nd Gear Ratio	1.625:1
3rd Gear Ratio	1.000:1
4th Gear Ratio	0.696:1
Reverse	2.294:1
Torque Converter Size (Diameter of Torque Converter Turbine)	245 mm 298 mm
Pressure Taps	Line Pressure
Transmission Fluid Type	DEXRON® III
Transmission Fluid Capacity (Approximate)	245 mm Converter Dry: 8.3 l (8.8 qt) 298 mm Converter Dry: 11.25 l (11.9 qt)
Transmission Type: 4	Four Forward Gears
Transmission Type: L	Longitudinal Mount
Transmission Type: 60	Product Series
Transmission Type: E	Electronic Controls
Position Quadrant	P, R, N, Overdrive, D, 2, 1 P, R, N, Overdrive, 3, 2, 1
Case Material	Die Cast Aluminum
Transmission Weight Dry (Approximate)	245 mm Converter 65.4 kg (144.30 lb) 298 mm Converter 70.5 kg (155.70 lb)
Transmission Weight Wet (Approximate)	245 mm Converter 72.4 kg (159.55 lb) 298 mm Converter 80.5 kg (176.16 lb)
Maximum Trailer Towing Capacity	6 130 kg (13,500 lb)
Maximum Gross Vehicle Weight (GVW)	3 900 kg (8,600 lb)

Fluid Capacity Specifications

Application	Specification	
	Metric	English
Bottom Pan Removal	4.7 liters	5 quarts
Complete Overhaul	10.6 liters	11 quarts
(measurements are approximate)		

Transmission Component and System Description

The 4L60E transmission consists primarily of the following components:

- Torque converter assembly
- Servo assembly and 2-4 band assembly
- Reverse input clutch and housing
- Overrun clutch
- Forward clutch
- 3-4 clutch
- Forward sprag clutch assembly
- Lo and reverse roller clutch assembly
- Lo and reverse clutch assembly
- Two planetary gear sets: Input and Reaction
- Oil pump assembly
- Control valve body assembly

The electrical components of the 4L60-E are as follows:

- 1-2 and 2-3 shift solenoid valves
- 3-2 shift solenoid valve assembly
- Transmission pressure control (PC) solenoid
- Torque converter clutch (TCC) solenoid valve
- TCC pulse width modulation (PWM) solenoid valve
- Automatic transmission fluid pressure (TFP) manual valve position switch
- Automatic transmission fluid temperature (TFT) sensor
- Vehicle speed sensor assembly

Adapt Function

Transmission Adapt Function

The 4L60-E transmission uses a line pressure control system, which has the ability to continuously adapt the system's line pressure. This compensates for normal wear of the following parts:

- The clutch fiber plates
- The seals
- The springs

The PCM maintains the Upshift Adapt parameters for the transmission. The PCM monitors the AT ISS sensor and the AT OSS during commanded shifts in order to determine if a shift is occurring too fast or too slow. The PCM adjusts the signal from the transmission pressure control solenoid in order to maintain a set shift feel.

Transmission adapts must be reset whenever the transmission is overhauled or replaced.

Automatic Transmission Shift Lock Control Description

The automatic transmission shift lock control is a safety device that prevents an inadvertent shift out of PARK when the ignition is ON. The driver must press the brake pedal before moving the shift lever out of the PARK position. The system consists of the following components:

- The automatic transmission shift lock control solenoid.
- The automatic transmission shift lock control switch.
- The park/neutral position switch.

With the ignition in the ON position battery positive voltage is supplied to the park/neutral position switch. With the transmission in the PARK position the contacts in the park/neutral position switch are closed. This allows current to flow through the switch to the automatic transmission shift lock control switch. The circuit continues through the normally-closed switch to the automatic transmission shift lock control

solenoid. The automatic transmission shift lock control solenoid is permanently grounded. This energizes the automatic transmission shift lock control solenoid, locking the shift linkage in the PARK position. When the driver presses the brake pedal the contacts in the automatic transmission shift lock control switch open, causing the automatic transmission shift lock control solenoid to release. This allows the shift lever to move from the PARK position.

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Abbreviations and Meanings

Abbreviation	Meaning
A	
A	Ampere(s)
ABS	Antilock Brake System
A/C	Air Conditioning
AC	Alternating Current
ACC	Accessory, Automatic Climate Control
ACL	Air Cleaner
ACR4	Air Conditioning Refrigerant, Recovery, Recycling, Recharging
AD	Automatic Disconnect
A/D	Analog to Digital
ADL	Automatic Door Lock
A/F	Air/Fuel Ratio
AH	Active Handling
AIR	Secondary Air Injection
ALC	Automatic Level Control, Automatic Lamp Control
AM/FM	Amplitude Modulation/Frequency Modulation
Ant	Antenna
AP	Accelerator Pedal
APCM	Accessory Power Control Module
API	American Petroleum Institute
APP	Accelerator Pedal Position
APT	Adjustable Part Throttle
ASM	Assembly, Accelerator and Servo Control Module
ASR	Acceleration Slip Regulation
A/T	Automatic Transmission/Transaxle
ATC	Automatic Transfer Case, Automatic Temperature Control
ATDC	After Top Dead Center
ATSLC	Automatic Transmission Shift Lock Control
Auto	Automatic
avg	Average
A4WD	Automatic Four-Wheel Drive
AWG	American Wire Gage
B	
B+	Battery Positive Voltage
BARO	Barometric Pressure
BATT	Battery
BBV	Brake Booster Vacuum
BCA	Bias Control Assembly
BCM	Body Control Module
BHP	Brake Horsepower
BLK	Black
BLU	Blue
BP	Back Pressure
BPCM	Battery Pack Control Module
BPMV	Brake Pressure Modulator Valve
BPP	Brake Pedal Position
BRN	Brown

BTDC	Before Top Dead Center
BTM	Battery Thermal Module
BTSI	Brake Transmission Shift Interlock
Btu	British Thermal Units
C	
°C	Degrees Celsius
CAC	Charge Air Cooler
CAFE	Corporate Average Fuel Economy
Cal	Calibration
Cam	Camshaft
CARB	California Air Resources Board
CC	Coast Clutch
cm ³	Cubic Centimeters
CCM	Convenience Charge Module, Chassis Control Module
CCOT	Cycling Clutch Orifice Tube
CCP	Climate Control Panel
CD	Compact Disc
CE	Commutator End
CEAB	Cold Engine Air Bleed
CEMF	Counter Electromotive Force
CEX	Cabin Exchanger
cfm	Cubic Feet per Minute
cg	Center of Gravity
CID	Cubic Inch Displacement
CKP	Crankshaft Position
CKT	Circuit
C/Ltr	Cigar Lighter
CL	Closed Loop
CLS	Coolant Level Switch
CMC	Compressor Motor Controller
CMP	Camshaft Position
CNG	Compressed Natural Gas
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
Coax	Coaxial
COMM	Communication
Conn	Connector
CPA	Connector Position Assurance
CPP	Clutch Pedal Position
CPS	Central Power Supply
CPU	Central Processing Unit
CRT	Cathode Ray Tube
CRTC	Cathode Ray Tube Controller
CS	Charging System
CSFI	Central Sequential Fuel Injection
CTP	Closed Throttle Position
cu ft	Cubic Foot/Feet
cu in	Cubic Inch/Inches
CV	Constant Velocity Joint
CVRSS	Continuously Variable Road Sensing Suspension

Cyl	Cylinder(s)
D	
DAB	Delayed Accessory Bus
dB	Decibels
dBA	Decibels on A-weighted Scale
DC	Direct Current, Duty Cycle
DCM	Door Control Module
DE	Drive End
DEC	Digital Electronic Controller
DERM	Diagnostic Energy Reserve Module
DI	Distributor Ignition
dia	Diameter
DIC	Driver Information Center
Diff	Differential
DIM	Dash Integration Module
DK	Dark
DLC	Data Link Connector
DMCM	Drive Motor Control Module
DMM	Digital Multimeter
DMSDS	Drive Motor Speed and Direction Sensor
DMU	Drive Motor Unit
DOHC	Dual Overhead Camshafts
DR, Drvr	Driver
DRL	Daytime Running Lamps
DTC	Diagnostic Trouble Code
E	
EBCM	Electronic Brake Control Module
EBTCM	Electronic Brake and Traction Control Module
EC	Electrical Center, Engine Control
ECC	Electronic Climate Control
ECI	Extended Compressor at Idle
ECL	Engine Coolant Level
ECM	Engine Control Module, Electronic Control Module
ECS	Emission Control System
ECT	Engine Coolant Temperature
EEPROM	Electrically Erasable Programmable Read Only Memory
EEVIR	Evaporator Equalized Values in Receiver
EFE	Early Fuel Evaporation
EGR	Exhaust Gas Recirculation
EGR TVV	Exhaust Gas Recirculation Thermal Vacuum Valve
EHPS	Electro-Hydraulic Power Steering
EI	Electronic Ignition
ELAP	Elapsed
ELC	Electronic Level Control
E/M	English/Metric
EMF	Electromotive Force
EMI	Electromagnetic Interference
Eng	Engine
EOP	Engine Oil Pressure
EOT	Engine Oil Temperature

EPA	Environmental Protection Agency
EPR	Exhaust Pressure Regulator
EPROM	Erasable Programmable Read Only Memory
ESB	Expansion Spring Brake
ESC	Electronic Suspension Control
ESD	Electrostatic Discharge
ESN	Electronic Serial Number
ETC	Electronic Throttle Control, Electronic Temperature Control, Electronic Timing Control
ETCC	Electronic Touch Climate Control
ETR	Electronically Tuned Receiver
ETS	Enhanced Traction System
EVAP	Evaporative Emission
EVO	Electronic Variable Orifice
Exh	Exhaust
F	
°F	Degrees Fahrenheit
FC	Fan Control
FDC	Fuel Data Center
FED	Federal All United States except California
FEDS	Fuel Enable Data Stream
FEX	Front Exchanger
FF	Flexible Fuel
FFH	Fuel-Fired Heater
FI	Fuel Injection
FMVSS	Federal U.S. Motor Vehicle Safety Standards
FP	Fuel Pump
ft	Foot/Feet
FT	Fuel Trim
F4WD	Full Time Four-Wheel Drive
4WAL	Four-Wheel Antilock
4WD	Four-Wheel Drive
FW	Flat Wire
FWD	Front Wheel Drive, Forward
G	
g	Grams, Gravitational Acceleration
GA	Gage, Gauge
gal	Gallon
gas	Gasoline
GCW	Gross Combination Weight
Gen	Generator
GL	Gear Lubricant
GM	General Motors
GM SPO	General Motors Service Parts Operations
gnd	Ground
gpm	Gallons per Minute
GRN	Green
GRY	Gray
GVWR	Gross Vehicle Weight Rating

H	
H	Hydrogen
H2O	Water
Harn	Harness
HC	Hydrocarbons
H/CMPR	High Compression
HD	Heavy Duty
HDC	Heavy Duty Cooling
hex	Hexagon, Hexadecimal
Hg	Mercury
Hi Alt	High Altitude
HO2S	Heated Oxygen Sensor
hp	Horsepower
HPL	High Pressure Liquid
HPS	High Performance System
HPV	High Pressure Vapor
HPVS	Heat Pump Ventilation System
Htd	Heated
HTR	Heater
HUD	Head-up Display
HVAC	Heater-Ventilation-Air Conditioning
HVACM	Heater-Vent-Air Conditioning Module
HVIL	High Voltage Interlock Loop
HVM	Heater Vent Module
Hz	Hertz
I	
IAC	Idle Air Control
IAT	Intake Air Temperature
IC	Integrated Circuit, Ignition Control
ICCS	Integrated Chassis Control System
ICM	Ignition Control Module
ID	Identification, Inside Diameter
IDI	Integrated Direct Ignition
IGBT	Insulated Gate Bi-Polar Transistor
ign	Ignition
ILC	Idle Load Compensator
in	Inch/Inches
INJ	Injection
inst	Instantaneous, Instant
IP	Instrument Panel
IPC	Instrument Panel Cluster
IPM	Instrument Panel Module
I/PEC	Instrument Panel Electrical Center
ISC	Idle Speed Control
ISO	International Standards Organization
ISS	Input Speed Shaft, Input Shaft Speed
K	
KAM	Keep Alive Memory
KDD	Keyboard Display Driver
kg	Kilogram

kHz	Kilohertz
km	Kilometer
km/h	Kilometers per Hour
km/l	Kilometers per Liter
kPa	Kilopascals
KS	Knock Sensor
kV	Kilovolts
L	
L	Liter
L4	Four Cylinder Engine, In-Line
L6	Six-Cylinder Engine, In-Line
lb	Pound
lb ft	Pound Feet Torque
lb in	Pound Inch Torque
LCD	Liquid Crystal Display
LDCL	Left Door Closed Locking
LDCM	Left Door Control Module
LDM	Lamp Driver Module
LED	Light Emitting Diode
LEV	Low Emissions Vehicle
LF	Left Front
lm	Lumens
LR	Left Rear
LT	Left
LT	Light
LT	Long Term
LTPi	Low Tire Pressure Indicator
LTPWS	Low Tire Pressure Warning System
M	
MAF	Mass Air Flow
Man	Manual
MAP	Manifold Absolute Pressure
MAT	Manifold Absolute Temperature
max	Maximum
M/C	Mixture Control
MDP	Manifold Differential Pressure
MFI	Multiport Fuel Injection
mi	Miles
MIL	Malfunction Indicator Lamp
min	Minimum
MIN	Mobile Identification Number
mL	Milliliter
mm	Millimeter
mpg	Miles per Gallon
mph	Miles per Hour
ms	Millisecond
MST	Manifold Surface Temperature
MSVA	Magnetic Steering Variable Assist, Magnasteer®
M/T	Manual Transmission/Transaxle
MV	Megavolt

mV	Millivolt
N	
NAES	North American Export Sales
NC	Normally Closed
NEG	Negative
Neu	Neutral
NI	Neutral Idle
NiMH	Nickel Metal Hydride
NLGI	National Lubricating Grease Institute
N·m	Newton-meter Torque
NO	Normally Open
NOx	Oxides of Nitrogen
NPTC	National Pipe Thread Coarse
NPTF	National Pipe Thread Fine
NOVRAM	Non-Volatile Random Access Memory
O	
O ₂	Oxygen
O ₂ S	Oxygen Sensor
OBD	On-Board Diagnostics
OBD II	On-Board Diagnostics Second Generation
OC	Oxidation Converter Catalytic
OCS	Opportunity Charge Station
OD	Outside Diameter
ODM	Output Drive Module
ODO	Odometer
OE	Original Equipment
OEM	Original Equipment Manufacturer
OHC	Overhead Camshaft
ohms	Ohm
OL	Open Loop, Out of Limits
ORC	Oxidation Reduction Converter Catalytic
ORN	Orange
ORVR	On-Board Refueling Vapor Recovery
OSS	Output Shaft Speed
oz	Ounce(s)
P	
PAG	Polyalkylene Glycol
PAIR	Pulsed Secondary Air Injection
PASS, PSGR	Passenger
PASS-Key®	Personalized Automotive Security System
P/B	Power Brakes
PC	Pressure Control
PCB	Printed Circuit Board
PCM	Powertrain Control Module
PCS	Pressure Control Solenoid
PCV	Positive Crankcase Ventilation
PEB	Power Electronics Bay
PID	Parameter Identification
PIM	Power Inverter Module
PM	Permanent Magnet Generator

P/N	Part Number
PNK	Pink
PNP	Park/Neutral Position
PRNDL	Park, Reverse, Neutral, Drive, Low
POA	Pilot Operated Absolute Valve
POS	Positive, Position
POT	Potentiometer Variable Resistor
PPL	Purple
ppm	Parts per Million
PROM	Programmable Read Only Memory
P/S, PS	Power Steering
PSCM	Power Steering Control Module, Passenger Seat Control Module
PSD	Power Sliding Door
PSP	Power Steering Pressure
psi	Pounds per Square Inch
psia	Pounds per Square Inch Absolute
psig	Pounds per Square Inch Gauge
pt	Pint
PTC	Positive Temperature Coefficient
PWM	Pulse Width Modulated
Q	
QDM	Quad Driver Module
qt	Quart(s)
R	
R-12	Refrigerant-12
R-134a	Refrigerant-134a
RAM	Random Access Memory, Non-permanent memory device, memory contents are lost when power is removed.
RAP	Retained Accessory Power
RAV	Remote Activation Verification
RCDLR	Remote Control Door Lock Receiver
RDCM	Right Door Control Module
Ref	Reference
Rev	Reverse
REX	Rear Exchanger
RIM	Rear Integration Module
RF	Right Front, Radio Frequency
RFA	Remote Function Actuation
RFI	Radio Frequency Interference
RH	Right Hand
RKE	Remote Keyless Entry
Rly	Relay
ROM	Read Only Memory, Permanent memory device, memory contents are retained when power is removed.
RPM	Revolutions per Minute Engine Speed
RPO	Regular Production Option
RR	Right Rear
RSS	Road Sensing Suspension
RTD	Real Time Damping
RT	Right

RTV	Room Temperature Vulcanizing Sealer
RWAL	Rear Wheel Antilock
RWD	Rear Wheel Drive
S	
s	Second(s)
SAE	Society of Automotive Engineers
SC	Supercharger
SCB	Supercharger Bypass
SCM	Seat Control Module
SDM	Sensing and Diagnostic Module
SEO	Special Equipment Option
SFI	Sequential Multiport Fuel Injection
SI	System International Modern Version of Metric System
SIAB	Side Impact Air Bag
SIR	Supplemental Inflatable Restraint
SLA	Short/Long Arm Suspension
sol	Solenoid
SO2	Sulfur Dioxide
SP	Splice Pack
S/P	Series/Parallel
SPO	Service Parts Operations
SPS	Service Programming System, Speed Signal
sq ft, ft ²	Square Foot/Feet
sq in, in ²	Square Inch/Inches
SRC	Service Ride Control
SRI	Service Reminder Indicator
SRS	Supplemental Restraint System
SS	Shift Solenoid
ST	Scan Tool
STID	Station Identification Station ID
S4WD	Selectable Four-Wheel Drive
Sw	Switch
SWPS	Steering Wheel Position Sensor
syn	Synchronizer
T	
TAC	Throttle Actuator Control
Tach	Tachometer
TAP	Transmission Adaptive Pressure, Throttle Adaptive Pressure
TBI	Throttle Body Fuel Injection
TC	Turbocharger, Transmission Control
TCC	Torque Converter Clutch
TCS	Traction Control System
TDC	Top Dead Center
TEMP	Temperature
Term	Terminal
TFP	Transmission Fluid Pressure
TFT	Transmission Fluid Temperature
THM	Turbo Hydro-Matic
TIM	Tire Inflation Monitoring, Tire Inflation Module
TOC	Transmission Oil Cooler

TP	Throttle Position
TPA	Terminal Positive Assurance
TPM	Tire Pressure Monitoring, Tire Pressure Monitor
TR	Transmission Range
TRANS	Transmission/Transaxle
TT	Tell Tail Warning Lamp
TV	Throttle Valve
TVRS	Television and Radio Suppression
TVV	Thermal Vacuum Valve
TWC	Three Way Converter Catalytic
TWC+OC	Three Way + Oxidation Converter Catalytic
TXV	Thermal Expansion Valve
U	
UART	Universal Asynchronous Receiver Transmitter
U/H	Underhood
U/HEC	Underhood Electrical Center
U-joint	Universal Joint
UTD	Universal Theft Deterrent
UV	Ultraviolet
V	
V	Volt(s), Voltage
V6	Six-Cylinder Engine, V-Type
V8	Eight-Cylinder Engine, V-Type
Vac	Vacuum
VAC	Vehicle Access Code
VATS	Vehicle Anti-Theft System
VCIM	Vehicle Communication Interface Mode
VCM	Vehicle Control Module
V dif	Voltage Difference
VDOT	Variable Displacement Orifice Tube
VDV	Vacuum Delay Valve
vel	Velocity
VES	Variable Effort Steering
VF	Vacuum Fluorescent
VIO	Violet
VIN	Vehicle Identification Number
VLR	Voltage Loop Reserve
VMV	Vacuum Modulator Valve
VR	Voltage Regulator
V ref	Voltage Reference
VSES	Vehicle Stability Enhancement System
VSS	Vehicle Speed Sensor
W	
w/	With
W/B	Wheel Base
WHL	Wheel
WHT	White
w/o	Without
WOT	Wide Open Throttle
W/P	Water Pump

W/S	Windshield
WSS	Wheel Speed Sensor
WU-OC	Warm Up Oxidation Converter Catalytic
WU-TWC	Warm Up Three-Way Converter Catalytic
X	
X-valve	Expansion Valve
Y	
yd	Yard(s)
YEL	Yellow

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Conversion - English/Metric

English	Multiply/ Divide by	Metric
In order to calculate English measurement, divide by the number in the center column. In order to calculate metric measurement, multiply by the number in the center column.		
Length		
in	25.4	mm
ft	0.3048	m
yd	0.9144	
mi	1.609	km
Area		
sq in	645.2	sq mm
	6.45	sq cm
sq ft	0.0929	sq m
sq yd	0.8361	
Volume		
cu in	16,387.00	cu mm
	16.387	cu cm
	0.0164	L
qt	0.9464	
gal	3.7854	cu m
cu yd	0.764	
Mass		
lb	0.4536	kg
ton	907.18	
	0.907	tonne (t)
Force		
Kg F	9.807	newtons (N)
oz F	0.278	
lb F	4.448	
Acceleration		
ft/s ²	0.3048	m/s ²
ln/s ²	0.0254	
Torque		
Lb in	0.11298	N·m
lb ft	1.3558	
Power		
hp	0.745	kW
Pressure (Stress)		
inches of H ₂ O	0.2488	kPa
lb/sq in	6.895	
Energy (Work)		
Btu	1055	J (J= one Ws)
lb ft	1.3558	
kW hour	3,600,000.00	
Light		
Foot Candle	10.764	lm/m ²

Velocity		
mph	1.6093	km/h
Temperature		
(°F - 32) 5/9	=	°C
°F	=	(9/5 °C + 32)
Fuel Performance		
235.215/mpg	=	100 km/L

Equivalents - Decimal and Metric

Fraction (in)	Decimal (in)	Metric (mm)
1/64	0.015625	0.39688
1/32	0.03125	0.79375
3/64	0.046875	1.19062
1/16	0.0625	1.5875
5/64	0.078125	1.98437
3/32	0.09375	2.38125
7/64	0.109375	2.77812
1/8	0.125	3.175
9/64	0.140625	3.57187
5/32	0.15625	3.96875
11/64	0.171875	4.36562
3/16	0.1875	4.7625
13/64	0.203125	5.15937
7/32	0.21875	5.55625
15/64	0.234375	5.95312
1/4	0.25	6.35
17/64	0.265625	6.74687
9/32	0.28125	7.14375
19/64	0.296875	7.54062
5/16	0.3125	7.9375
21/64	0.328125	8.33437
11/32	0.34375	8.73125
23/64	0.359375	9.12812
3/8	0.375	9.525
25/64	0.390625	9.92187
13/32	0.40625	10.31875
27/64	0.421875	10.71562
7/16	0.4375	11.1125
29/64	0.453125	11.50937
15/32	0.46875	11.90625
31/64	0.484375	12.30312
1/2	0.5	12.7
33/64	0.515625	13.09687
17/32	0.53125	13.49375
35/64	0.546875	13.89062
9/16	0.5625	14.2875
37/64	0.578125	14.68437
19/32	0.59375	15.08125
39/64	0.609375	15.47812
5/8	0.625	15.875
41/64	0.640625	16.27187

Fraction (in)	Decimal (in)	Metric (mm)
21/32	0.65625	16.66875
43/64	0.671875	17.06562
11/16	0.6875	17.4625
45/64	0.703125	17.85937
23/32	0.71875	18.25625
47/64	0.734375	18.65312
3/4	0.75	19.05
49/64	0.765625	19.44687
25/32	0.78125	19.84375
51/64	0.796875	20.24062
13/16	0.8125	20.6375
53/64	0.828125	21.03437
27/32	0.84375	21.43125
55/64	0.859375	21.82812
7/8	0.875	22.225
57/64	0.890625	22.62187
29/32	0.90625	23.01875
59/64	0.921875	23.41562
15/16	0.9375	23.8125
61/64	0.953125	24.20937
31/32	0.96875	24.60625
63/64	0.984375	25.00312
1	1.0	25.4

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Fasteners

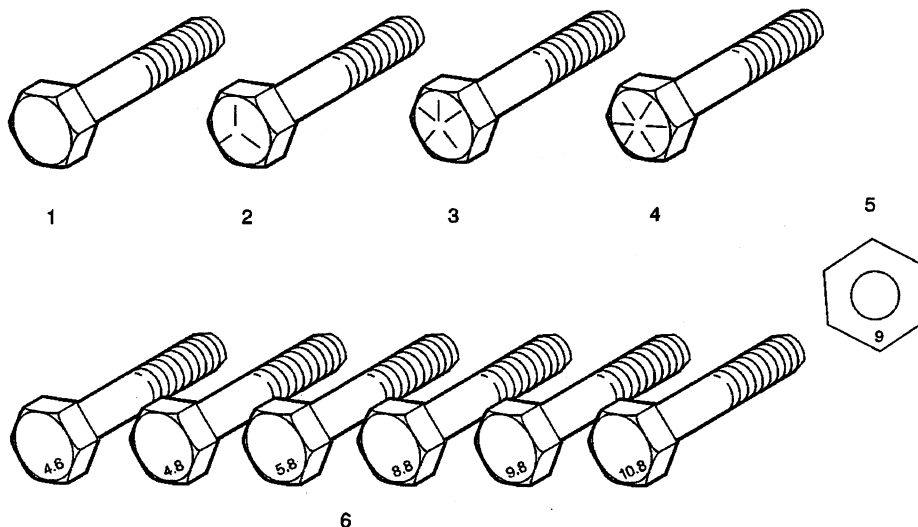
Metric Fasteners

This vehicle provides fastener dimensions using the metric system. Most metric fasteners are approximate in diameter to equivalent English fasteners. Make replacements using fasteners of the same nominal diameter, thread pitch, and strength.

A number marking identifies the OE metric fasteners except cross-recess head screws. The number also indicates the strength of the fastener material. A Posidrive® or Type 1A cross-recess identifies a metric cross-recess screw. For best results, use a Type 1A cross-recess screwdriver, or equivalent, in Posidrive® recess head screws.

GM Engineering Standards and North American Industries have adopted a portion of the ISO-defined standard metric fastener sizes. The purpose was to reduce the number of fastener sizes used while retaining the best thread qualities in each thread size. For example, the metric M6.0 X 1 screw, with nearly the same diameter and 25.4 threads per inch replaced the English 1/4-20 and 1/4-28 screws. The thread pitch is midway between the English coarse and fine thread pitches.

Fastener Strength Identification



1. English Bolt, Grade 2 (Strength Class)
2. English Bolt, Grade 5 (Strength Class)
3. English Bolt, Grade 7 (Strength Class)
4. English Bolt, Grade 8 (Strength Class)
5. Metric Nut, Strength Class 9
6. Metric Bolts, Strength Class Increases as Numbers Increase

The most commonly used metric fastener strength property classes are 9.8 and 10.9. The class identification is embossed on the head of each bolt. The English, inch strength classes range from grade 2 to grade 8. Radial lines are embossed on the head of each bolt in order to identify the strength class. The number of lines on the head of the bolt is 2 lines less than the actual grade. For example, a grade 8 bolt will have 6 radial lines on the bolt head. Some metric nuts are marked with a single digit strength identification number on the nut face.

The correct fasteners are available through GM SPO. Many metric fasteners available in the aftermarket parts channels are designed to metric standards of countries other than the United States, and may exhibit the following:

- Lower strength
- No numbered head marking system
- Wrong thread pitch

The metric fasteners on GM products are designed to new, international standards. The following are the common sizes and pitches, except for special applications:

- M6.0 X 1
- M8 X 1.25
- M10 X 1.5
- M12 X 1.75
- M14 X 2.00
- M16 X 2.00

Prevailing Torque Fasteners

Prevailing torque fasteners create a thread interface between the fastener and the fastener counterpart in order to prevent the fastener from loosening.

All Metal Prevailing Torque Fasteners

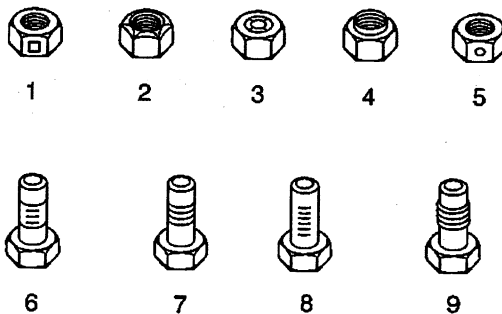
These fasteners accomplish the thread interface by a designed distortion or deformation in the fastener.

Nylon Interface Prevailing Torque Fasteners

These fasteners accomplish the thread interface by the presence of a nylon material on the fastener threads.

Adhesive Coated Fasteners

These fasteners accomplish the thread interface by the presence of a thread-locking compound on the fastener threads. Refer to the appropriate repair procedure in order to determine if the fastener may be reused and the applicable thread-locking compound to apply to the fastener.



1. Prevailing Torque Nut, Center Lock Type
2. Prevailing Torque Nut, Top Lock Type
3. Prevailing Torque Nut, Nylon Patch Type
4. Prevailing Torque Nut, Nylon Washer Insert Type
5. Prevailing Torque Nut, Nylon Insert Type

6. Prevailing Torque Bolt, Dry Adhesive Coating Type
7. Prevailing Torque Bolt, Thread Profile Deformed Type
8. Prevailing Torque Bolt, Nylon Strip Type
9. Prevailing Torque Bolt, Out-of-Round Thread Area Type

A prevailing torque fastener may be reused **ONLY** if:

- The fastener and the fastener counterpart are clean and not damaged
- There is no rust on the fastener
- The fastener develops the specified minimum torque against its counterpart prior to the fastener seating

Metric Prevailing Torque Fastener Minimum Torque Development

Application	Specification	
	Metric	English
All Metal Prevailing Torque Fasteners		
6 mm	0.4 N·m	4 lb in
8 mm	0.8 N·m	7 lb in
10 mm	1.4 N·m	12 lb in
12 mm	2.1 N·m	19 lb in
14 mm	3 N·m	27 lb in
16 mm	4.2 N·m	37 lb in
20 mm	7 N·m	62 lb in
24 mm	10.5 N·m	93 lb in
Nylon Interface Prevailing Torque Fasteners		
6 mm	0.3 N·m	3 lb in
8 mm	0.6 N·m	5 lb in
10 mm	1.1 N·m	10 lb in
12 mm	1.5 N·m	13 lb in
14 mm	2.3 N·m	20 lb in
16 mm	3.4 N·m	30 lb in
20 mm	5.5 N·m	49 lb in
24 mm	8.5 N·m	75 lb in

English Prevailing Torque Fastener Minimum Torque Development

Application	Specification	
	Metric	English
All Metal Prevailing Torque Fasteners		
1/4 in	0.5 N·m	4.5 lb in
5/16 in	0.8 N·m	7.5 lb in
3/8 in	1.3 N·m	11.5 lb in
7/16 in	1.8 N·m	16 lb in
1/2 in	2.3 N·m	20 lb in
9/16 in	3.2 N·m	28 lb in
5/8 in	4 N·m	36 lb in
3/4 in	7 N·m	54 lb in
Nylon Interface Prevailing Torque Fasteners		
1/4 in	0.3 N·m	3 lb in
5/16 in	0.6 N·m	5 lb in
3/8 in	1 N·m	9 lb in
7/16 in	1.3 N·m	12 lb in
1/2 in	1.8 N·m	16 lb in
9/16 in	2.5 N·m	22 lb in
5/8 in	3.4 N·m	30 lb in
3/4 in	5 N·m	45 lb in

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Codes listed in the shaded column titled Ref. Only RPO Code are for internal use only and should not be ordered.

Free Flow RPO Code	Ref. Only RPO Code	Description 1 - Equipment groups 1SA, 1SB and 1SC available on Models CS10516 and CT10516.	2-Door		
			1SA ¹	1SB ¹	1SC ¹
		Air bags, frontal, driver and right front passenger 1 - Always use safety belts and proper child restraints, even with air bags. Children are safer when properly secured in a rear seat. See the Owner's Manual for more safety information.	S ¹	S ¹	S ¹
	C60	Air conditioning, front manual	S	S	S
		Armrests, driver and passenger doors, padded	S	S	S
		Assist handles, driver and front passenger, rear outboard passenger	S	S	S
		Coat hooks, driver and passenger side, rear seat	S	S	S
	D55	Console, floor, includes CD/cassette storage, 2 cupholders 1 - With automatic transmission (D07) Console floor shift replaces (D55).	S	S ¹	S ¹
		Cupholders, center console, door and rear armrests	S	S	S
		Door trim, with integral padded armrest and front door map pockets	S	S	S
	B30	Floor covering, color-keyed carpeting	S	S	S
		Glovebox, passenger side of instrument panel	S	S	S
		Headliner, color-keyed cloth, with matching retainer moldings	S	S	S
		Heater and defogger, includes front and side front door window defoggers and rear passenger heating ducts	S	S	S
		Instrumentation, analog, includes speedometer, odometer with trip odometer, fuel level, voltmeter, engine temperature, oil pressure gauges, tachometer, liftgate ajar, warning light for safety belt, ABS/parking brake, directional hazard signals and high beam	S	S	S
		Lighting, dome lamp, includes door- and tailgate-activated switches	S	S	S
		Key, single, 2-sided	S	S	S
		Mirror, inside rearview, manual day/night	S	S	S
	AV5	Seats, front reclining buckets, includes head restraints and folding seatbacks, and center floor console, passenger seats include easy entry feature on 2-door	S	S	S
	AM7	Seats, rear split-folding	S	S	S
		Seat trim, Custom Cloth	S	S	S
	UN0	Sound system, ETR AM/FM stereo with CD player, includes seek-and-scan, digital clock, auto-tone control, TheftLock, speed-compensated volume, Radio Data System (RDS) and 6-speakers 1 - May be substituted with (UC6) Sound System, ETR AM/FM stereo with 6-disc CD changer or (UPO) Sound System, ETR AM/FM stereo with CD player and cassette.	S	□ ¹	□ ¹

Free Flow RPO Code	Ref. Only RPO Code	Description 1 - Equipment groups 1SA, 1SB and 1SC available on Models CS10516 and CT10516.	2-Door		
			1SA ¹	1SB ¹	1SC ¹
	U16	Tachometer	S	S	S
		Theft-deterrent system, PASSlock II	S	S	S
		Tools, mechanical jack and wheel wrench	S	S	S
	D34	Visors, padded, driver and passenger side with cloth trim	S	S	S
		Warning tones, headlamp on, key-in-ignition	S	S	S
		Windows, rear quarter swing-out	S	S	S
	E55	Body, tailgate	S	S	S
		Bumpers, front and rear, body-color, rear step includes pad 1 - Spectra gray with (ZR2) Suspension package, Wide Stance Sport Performance.	S ¹	S ¹	S ¹
	TG1	Daytime running lamps, includes automatic exterior lamp control	S	S	S
		Glass, Solar-Ray deep tinted, (all windows except light tinted glass on windshield, driver, front passenger, and rear windows)	S	S	--
		Grille, body-color with chrome bar	S	S	S
		Headlamps, dual halogen composite, includes flash-to-pass feature and automatic lamp control	S	S	S
		Horn, dual note, high and low	S	S	S
		Mirrors, outside rearview, foldaway, manual, Black	S	--	--
	N60	Wheels, 4 - 15" x 7" (38.1 cm x 17.8 cm) aluminum, includes center caps 1 - CS10516 Models only.	S ¹	S ¹	S ¹
	PA3	Wheels, 4 - 15" x 7" (38.1 cm x 17.8 cm) aluminum, includes center caps 1 - Standard on CT10516 4x4 Models only. Also included with (ZR2) Suspension Package, 4x4 Wide Stance Sport Performance.	S ¹	S ¹	S ¹
		Wipers, intermittent, front, includes pulse washers	S	S	S
		Alternator, 100 amps	S	S	S
		Battery, heavy-duty, 525 cold-cranking amps, includes rundown protection	S	S	S
	JC1	Brakes, 4-wheel antilock	S	S	S
	LU3	Engine, Vortec 4300 V6 MFI (190 HP [141.7 kW] @ 4400 rpm, 250 lb.-ft. [339.5 N-m] @ 2800 rpm)	S	S	S
		Exhaust, aluminized stainless-steel muffler and tailpipe	S	S	S
	C3G	GVWR, 4450 lbs. (2018 kg) 1 - CS10516 LS only.	S ¹	S ¹	S ¹
	C6I	GVWR, 4850 lbs. (2200 kg) 1 - CT10516 only.	S ¹	S ¹	S ¹
	GU6	Rear axle, 3.42 ratio	S	S	S
		Stabilizer bars, front and rear, front 1.30" (33mm), rear .91" (23mm)	S	S	S

Free Flow RPO Code	Ref. Only RPO Code	Description 1 - Equipment groups 1SA, 1SB and 1SC available on Models CS10516 and CT10516.	2-Door		
			1SA ¹	1SB ¹	1SC ¹
		Steering, power	S	S	S
		Suspension, front, independent coil springs and stabilizer bar 1 - CS10516 Models only.	S ¹	S ¹	S ¹
		Suspension, front, independent torsion bar, and stabilizer bar 1 - CT10506 Models only.	S ¹	S ¹	S ¹
		Suspension, rear, semi-floating axle with 2-stage multi-leaf springs	S	S	S
	Z85	Suspension Package, Touring, Sporty/Firm for ride/trailer usage on paved/improved roads, front and rear stabilizer bars 1 - May be upgraded to (ZR2) Suspension Package, 4x4 Wide Stance Sport Performance.	S ¹	S ¹	S ¹
	M50	Transmission, 5-speed manual with overdrive 1 - Not available with brake/transmission shift interlock.	S ¹	S ¹	S ¹

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Free Flow RPO Code	Ref. Only RPO Code	Description 1 - Equipment groups 1SA, 1SB and 1SC available on Models CS10516 and CT10516.	2-Door		
			1SA ¹	1SB ¹	1SC ¹
DK7		Console , overhead custom, includes compass and temperature gauge 1 - Requires (DH6) Visors, illuminated vanity mirrors. 2 - Upgradeable to (DK8) Console, Deluxe overhead.	--	A ¹	□ ²
	D07	Console , floor mounted shift 1 - Requires (M30) Transmission, 4-speed automatic.	--	■ ¹	■ ¹
	ZQ6	Convenience Package , power windows and door locks, programmable, with lighted switches and driver's express-down window and (DK2) Mirrors, outside rearview, foldaway, power, heated	--	■	■
	ZQ3	Convenience Package , Tilt-Wheel and cruise control	--	■	■
ZM8		Convenience Package , electric rear glass release, rear defogger and rear-window wiper/washer	--	A	■
C49		Defogger , rear-window, electric 1 - Included with (ZM8) Convenience Package, electric rear glass release, rear defogger and rear-window wiper/washer.	A	A ¹	■
B32		Floormats carpeted, front and rear	A	■	■
	AU0	Keyless entry , remote, includes 2 transmitters, panic button and content theft alarm	--	■	■
	AG1	Seat adjuster , power, driver 6-way	--	--	■
	UN0	Sound system , ETR AM/FM stereo with CD player, includes seek-and-scan, digital clock, auto-tone control, TheftLock, speed-compensated volume, Radio Data System (RDS) and 6-speakers 1 - May be substituted with (UC6) Sound System, ETR AM/FM stereo with 6-disc CD changer or (UPO) Sound System, ETR AM/FM stereo with CD player and cassette.	S	□ ¹	□ ¹
	NP5	Steering wheel , leather-wrapped rim, Black, steel sleeve	--	■	■
	D32	Visors , passenger side with vanity mirror	--	■	--
DH6		Visors , illuminated vanity mirrors 1 - Required and only available with (DK7) Console, overhead custom.	--	A ¹	■
AJ1		Glass , Solar-Ray deep tinted (all windows except light tinted glass on windshield, driver and front passenger) 1 - Requires (ZM8) Convenience Package.	--	A ¹	■
V54		Luggage rack , rooftop, includes side rails and crossbars	A	■	■
	DK2	Mirrors , outside rearview, foldaway, power, heated	--	■	■
V76		Recovery hooks , 2 front, frame-mounted 1 - CT10516 only.	A ¹	■ ¹	■ ¹

Free Flow RPO Code	Ref. Only RPO Code	Description 1 - Equipment groups 1SA, 1SB and 1SC available on Models CS10516 and CT10516.	2-Door		
			1SA ¹	1SB ¹	1SC ¹
	QES	Tires, P235/75R15, blackwall 1 - May be substituted with (QEB) Tires, P235/75R15, White outlined-letter.	<input type="checkbox"/> ¹	<input type="checkbox"/> ¹	<input type="checkbox"/> ¹
		Tire, spare, compact 1 - Not available with (ZR2) Suspension Package, 4x4 Wide Stance Sport Performance or (P16) Tire carrier, outside spare, exterior tailgate mounted. Upgradeable to (ZES) Tire, spare, full-size P235/75R15 blackwall or (ZEB) Tire, spare, full-size P235/75R15 White outlined-letter. Requires (P16) Tire carrier, outside spare, exterior tailgate mounted when upgrading to (ZES) or (ZEB) spare tires.	<input type="checkbox"/> ¹	<input type="checkbox"/> ¹	<input type="checkbox"/> ¹
	NP1	Transfer case, electronic shift, Insta-Trac 1 - May be substituted with (NP8) transfer case, electronic autotrac -CT10516 only.	■	<input type="checkbox"/> ¹	<input type="checkbox"/> ¹

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Free Flow RPO Code	Ref. Only RPO Code	Description 1 - Equipment groups 1SA, 1SB and 1SC available on Models CS10516 and CT10516.	2-Door		
			1SA ¹	1SB ¹	1SC ¹
DK7		Console , overhead custom, includes compass and temperature gauge 1 - Requires (DH6) Visors, illuminated vanity mirrors. 2 - Upgradeable to (DK8) Console, Deluxe overhead.	--	A ¹	□ ²
	D07	Console , floor mounted shift 1 - Requires (M30) Transmission, 4-speed automatic.	--	■ ¹	■ ¹
	ZQ6	Convenience Package , power windows and door locks, programmable, with lighted switches and driver's express-down window and (DK2) Mirrors, outside rearview, foldaway, power, heated	--	■	■
	ZQ3	Convenience Package , Tilt-Wheel and cruise control	--	■	■
ZM8		Convenience Package , electric rear glass release, rear defogger and rear-window wiper/washer	--	A	■
C49		Defogger , rear-window, electric 1 - Included with (ZM8) Convenience Package, electric rear glass release, rear defogger and rear-window wiper/washer.	A	A ¹	■
B32		Floor mats carpeted, front and rear	A	■	■
	AU0	Keyless entry , remote, includes 2 transmitters, panic button and content theft alarm	--	■	■
	AG1	Seat adjuster , power, driver 6-way	--	--	■
	UN0	Sound system , ETR AM/FM stereo with CD player, includes seek-and-scan, digital clock, auto-tone control, TheftLock, speed-compensated volume, Radio Data System (RDS) and 6-speakers 1 - May be substituted with (UC6) Sound System, ETR AM/FM stereo with 6-disc CD changer or (UPO) Sound System, ETR AM/FM stereo with CD player and cassette.	S	□ ¹	□ ¹
	NP5	Steering wheel , leather-wrapped rim, Black, steel sleeve	--	■	■
	D32	Visors , passenger side with vanity mirror	--	■	--
DH6		Visors , illuminated vanity mirrors 1 - Required and only available with (DK7) Console, overhead custom.	--	A ¹	■
AJ1		Glass , Solar-Ray deep tinted (all windows except light tinted glass on windshield, driver and front passenger) 1 - Requires (ZM8) Convenience Package.	--	A ¹	■
V54		Luggage rack , rooftop, includes side rails and crossbars	A	■	■
	DK2	Mirrors , outside rearview, foldaway, power, heated	--	■	■
V76		Recovery hooks , 2 front, frame-mounted 1 - CT10516 only.	A ¹	■ ¹	■ ¹

Free Flow RPO Code	Ref. Only RPO Code	Description 1 - Equipment groups 1SA, 1SB and 1SC available on Models CS10516 and CT10516.	2-Door		
			1SA ¹	1SB ¹	1SC ¹
	QES	Tires, P235/75R15, blackwall 1 - May be substituted with (QEB) Tires, P235/75R15, White outlined-letter.	□ ¹	□ ¹	□ ¹
		Tire, spare, compact 1 - Not available with (ZR2) Suspension Package, 4x4 Wide Stance Sport Performance or (P16) Tire carrier, outside spare, exterior tailgate mounted. Upgradeable to (ZES) Tire, spare, full-size P235/75R15 blackwall or (ZEB) Tire, spare, full-size P235/75R15 White outlined-letter. Requires (P16) Tire carrier, outside spare, exterior tailgate mounted when upgrading to (ZES) or (ZEB) spare tires.	□ ¹	□ ¹	□ ¹
	NP1	Transfer case, electronic shift, Insta-Trac 1 - May be substituted with (NP8) transfer case, electronic autotrac -CT10516 only.	■	□ ¹	□ ¹
ADDITIONAL OPTIONS					
Free Flow RPO Code	Ref. Only RPO Code	Description 1 - Equipment groups 1SA, 1SB and 1SC available on Models CS10516 and CT10516.	2-Door		
			1SA ¹	1SB ¹	1SC ¹
DK7		Console, overhead custom, includes compass and temperature gauge 1 - Requires (DH6) Visors, illuminated vanity mirrors. 2 - Upgradeable to (DK8) Console, Deluxe overhead.	--	A ¹	□ ²
DK8		Console, overhead deluxe, includes outside temperature gauge, compass, trip computer and universal garage door opener 1 - Includes (DD0) Mirrors, interior and driver side exterior electrochromic and (DD8) Mirrors, inside/outside driver's side rearview.	--	--	A ¹
ZM8		Convenience Package, electric rear glass release, rear defogger and rear-window wiper/washer	--	A	■
C49		Defogger, rear-window, electric 1 - Included with (ZM8) Convenience Package, electric rear glass release, rear defogger and rear-window wiper/washer.	A	A ¹	■
B32		Floormats carpeted, front and rear	A	■	■
DT4		Smoker's Package, includes ashtray and lighter	A	A	A
UP0		Sound system, ETR AM/FM stereo with CD player and cassette, includes seek-and-scan, digital clock, auto-tone control, speed-compensated volume, TheftLock, Radio Data System (RDS) and 6-speakers	--	A	A
UC6		Sound system, ETR AM/FM stereo with 6-disc CD changer, includes seek-and-scan, digital clock and auto-tone control, speed-compensated volume, TheftLock, Radio Data System (RDS) and 6-speakers	--	A	A
UK3		Sound system feature, steering wheel mounted radio controls 1 - Requires (M30) Transmission, 4-speed automatic.	--	A ¹	A ¹
CF5		Sunroof, power, tilt-sliding, electric with express-open and wind deflector 1 - Requires (DK7) Console, overhead custom.	--	A ¹	A ¹
DH6		Visors, illuminated vanity mirrors 1 - Required and only available with (DK7) Console, overhead custom.	--	A ¹	■
ANL		Fog lamps, front, halogen, incorporated into headlamp assembly	--	A	A

ADDITIONAL OPTIONS					
Free Flow RPO Code	Ref. Only RPO Code	Description 1 - Equipment groups 1SA, 1SB and 1SC available on Models CS10516 and CT10516.	2-Door		
			1SA ¹	1SB ¹	1SC ¹
AJ1		Glass, Solar-Ray deep tinted (all windows except light tinted glass on windshield, driver and front passenger) 1 - Requires (ZM8) Convenience Package.	--	A ¹	■
V54		Luggage rack, rooftop, includes side rails and crossbars	A	■	■
V76		Recovery hooks, 2 front, frame-mounted 1 - CT10516 only.	A ¹	■ ¹	■ ¹
PNV		Tire carrier, outside spare, delete 1 - Included with 2WD 2-door models, not available with (ZEB) Tires, spare, full-size P235/75R15 White outlined-letter.	A ¹	A ¹	A ¹
P16		Tire carrier, outside spare, exterior tailgate mounted, includes cover 1 - Required with (ZES) Tire, spare, full-size, P235/75R15, blackwall or (ZEB) Tire, spare, full-size P235/75R15 White outlined-letter.	A ¹	A ¹	A ¹
QEB		Tires, P235/75R15, White outlined-letter 1 - Not available with (ZR2) Suspension Package, 4x4 Wide Stance Sport Performance.	A ¹	A ¹	A ¹
ZES		Tire, spare, P235/75R15, blackwall 1 - Requires (P16) Tire carrier, outside spare, exterior tailgate mounted.	A ¹	A ¹	A ¹
ZEB		Tires, spare, full-size, P235/75R15 White outlined-letter 1 - Requires (P16) outside spare tire, exterior tailgate mounted and (QEB) Tires, P235/75R15, White outlined-letter.	A ¹	A ¹	A ¹
UA1		Battery, heavy-duty, 690 cold-cranking amps 1 - Included with (V10) Cold Climate Package.	A ¹	A ¹	A ¹
V10		Cold Climate Package, includes engine block heater and (UA1) Battery, heavy-duty 690 cold-cranking amps	A	A	A
G80		Differential, locking, rear 1 - Required with (GT4) Rear axle, 3.73 ratio on CT10516 4x4 models and requires (GU6) Rear axle, 3.42 ratio.	A ¹	A ¹	A ¹
FE9		Emissions, Federal requirements	A	A	A
NE1		Emissions, Maine, Massachusetts, New York or Vermont state requirements	A	A	A
YF5		Emissions, California state requirements	A	A	A
VCL		Emissions Certification, CFF (Clean Fuel Fleet) LEV (Low Emission Vehicle). Option (VCL) should ONLY be ordered to receive the CFF LEV certification. If (VCL) is not ordered, the vehicle will be produced with your normally selected emission system and may not be CFF LEV certified. Products ordered with the (VCL) option may not be certified to California emission requirements. Therefore, they may not be legal for registration in California, New York, Maine, Massachusetts and Vermont. Option (YF5) should be ordered for all vehicles ordered in California. Option (NE1) should be ordered for all vehicles ordered in Maine or Vermont. 1 - Requires (M30) Transmission, 4-speed automatic.	A ¹	A ¹	A ¹

ADDITIONAL OPTIONS					
Free Flow RPO Code	Ref. Only RPO Code	Description 1 - Equipment groups 1SA, 1SB and 1SC available on Models CS10516 and CT10516.	2-Door		
			1SA ¹	1SB ¹	1SC ¹
NB8		Emissions override , California, Massachusetts or New York (for vehicles ordered by dealers in states of California, Massachusetts or New York with Federal emissions) 1 - Requires (FE9) Emission, Federal requirements.	A ¹	A ¹	A ¹
NC7		Emissions override , Federal (for vehicles ordered by dealers in Federal emission states with California, New York, Vermont, Massachusetts or Maine emissions; may also be used by dealers in states of California, New York, Vermont, Massachusetts or Maine to order different state-specific emissions) 1 - Requires (YF5) Emissions, California state requirements or (NE1) Emissions, New York, Vermont, Massachusetts or Maine state requirements.	A ¹	A ¹	A ¹
C5C		GVWR , 5000 lbs. (2268 kg) 1 - Requires (ZR2) Suspension Package, 4x4 Wide Stance Sport Performance.	A ¹	A ¹	A ¹
GT4		Rear axle , 3.73 ratio 1 - Requires (G80) Differential, locking, rear.	A ¹	A ¹	A ¹
ZM5		Skid Plate Package , includes transfer case, differential, fuel tank and steering linkage 1 - Requires CT10516, included with (ZR2) Suspension package, 4x4 Wide Stance Sport Performance.	A ¹	A ¹	A ¹
ZR2		Suspension Package , 4x4 Wide Stance Sport Performance includes revised wide-tread frame, strengthened front differential gears and drive axles, large bearings and longer, large rear axle shafts, revised multi-leaf springs and added rear axle track bar, front stabilizer bar, Bilstein gas-pressurized shock absorbers, (ZM5) Skid Plate Package, outside Tailgate mounted spare tire carrier 1 - Require CT10516 Model, (GT4) Rear axle ratio, 3.73 (G80) Differential, locking, rear.	A ¹	A ¹	A ¹
Z82		Trailing equipment , heavy-duty, includes trailing hitch platform and 8-lead wiring harness only 1 - 2WD requires (GU6) Rear axle, 3.42 ratio and (M30) Transmission, 4-speed automatic.	A ¹	A ¹	A ¹
NP8		Transfer case , electronic Autotrac (4WD Models) 1 - CT10516 only and requires (M30) Transmission, 4-speed automatic.	--	A ¹	A ¹
M30		Transmission , 4-speed automatic, electronically controlled with overdrive 1 - Includes brake/transmission shift interlock - column shift. 2 - Includes brake/transmission shift interlock - Floor shift.	A ¹	A ²	A ²

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			1SA ¹	1SB ¹	1SC ¹
		Tire, spare, compact 1 - Not available with (ZR2) Suspension Package, 4x4 Wide Stance Sport Performance or (P16) Tire carrier, outside spare, exterior tailgate mounted. Upgradeable to (ZES) Tire, spare, full-size P235/75R15 blackwall or (ZEB) Tire, spare, full-size P235/75R15 White outlined-letter. Requires (P16) Tire carrier, outside spare, exterior tailgate mounted when upgrading to (ZES) or (ZEB) spare tires.	□ ¹	□ ¹	□ ¹
	QES	Tires, P235/75R15, blackwall 1 - May be substituted with (QEB) Tires, P235/75R15, White outlined-letter.	□ ¹	□ ¹	□ ¹
	NP1	Transfer case, electronic shift 1 - May be substituted with (NP8) transfer case, electronic autotrac -CT10516 only.	■	□ ¹	□ ¹
	D07	Console, floor		■	■
	ZQ6	Convenience Package		■	■
	ZQ3	Convenience Package		■	■
B32		Floormats carpeted, front		■	■
	AU0	Keyless entry, remote		■	■
V54		Luggage rack, rooftop		■	■
	DK2	Mirrors, outside rearview, foldaway, power, heated		■	■
V76		Recovery hooks, 2 front, frame-mounted		■	■
	UN0	Sound system, ETR AM/FM stereo with CD player 1 - May be substituted with (UC6) Sound System, ETR AM/FM stereo with 6-disc CD changer or (UPO) Sound System, ETR AM/FM stereo with CD player and cassette.		□ ¹	□ ¹
	NP5	Steering wheel, leather-wrapped rim		■	■
	D32	Visors, passenger side with vanity mirror		■	
DK7		Console, overhead custom 1 - Upgradeable to (DK8) Console, Deluxe overhead.			□ ¹
ZM8		Convenience Package, electric rear glass release			■
C49		Defogger, rear-window, electric			■
AJ1		Glass, Solar-Ray deep tinted			■
	AG1	Seat adjuster, power, driver 6-way			■
DH6		Visors, illuminated vanity mirrors			■

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Free Flow RPO Code	Ref. Only RPO Code	Description 1 - Equipment groups 1SA, 1SB and 1SC available on Models CS10516 and CT10516.	2-Door		
			1SA ¹	1SB ¹	1SC ¹
		Air bags , frontal, driver and right front passenger 1 - Always use safety belts and proper child restraints, even with air bags. Children are safer when properly secured in a rear seat. See the Owner's Manual for more safety information.	S ¹	S ¹	S ¹
	C60	Air conditioning , front manual	S	S	S
		Armrests , driver and passenger doors, padded	S	S	S
		Assist handles , driver and front passenger, rear outboard passenger	S	S	S
		Coat hooks , driver and passenger side, rear seat	S	S	S
	D55	Console , floor, includes CD/cassette storage, 2 cupholders 1 - With automatic transmission (D07) Console floor shift replaces (D55).	S	S ¹	S ¹
DK7		Console , overhead custom, includes compass and temperature gauge 1 - Requires (DH6) Visors, illuminated vanity mirrors. 2 - Upgradeable to (DK8) Console, Deluxe overhead.	--	A ¹	□ ²
DK8		Console , overhead deluxe, includes outside temperature gauge, compass, trip computer and universal garage door opener 1 - Includes (DD0) Mirrors, interior and driver side exterior electrochromic and (DD8) Mirrors, inside/outside driver's side rearview.	--	--	A ¹
	D07	Console , floor mounted shift 1 - Requires (M30) Transmission, 4-speed automatic.	--	■ ¹	■ ¹
	ZQ6	Convenience Package , power windows and door locks, programmable, with lighted switches and driver's express-down window and (DK2) Mirrors, outside rearview, foldaway, power, heated	--	■	■
	ZQ3	Convenience Package , Tilt-Wheel and cruise control	--	■	■
ZM8		Convenience Package , electric rear glass release, rear defogger and rear-window wiper/washer	--	A	■
		Cupholders , center console, door and rear armrests	S	S	S
C49		Defogger , rear-window, electric 1 - Included with (ZM8) Convenience Package, electric rear glass release, rear defogger and rear-window wiper/washer.	A	A ¹	■
		Door trim , with integral padded armrest and front door map pockets	S	S	S
	B30	Floor covering , color-keyed carpeting	S	S	S
B32		Floormats carpeted, front and rear	A	■	■
		Glovebox , passenger side of instrument panel	S	S	S
		Headliner , color-keyed cloth, with matching retainer moldings	S	S	S
		Heater and defogger , includes front and side front door window defoggers and rear passenger heating ducts	S	S	S

Free Flow RPO Code	Ref. Only RPO Code	Description 1 - Equipment groups 1SA, 1SB and 1SC available on Models CS10516 and CT10516.	2-Door		
			1SA ¹	1SB ¹	1SC ¹
		Instrumentation , analog, includes speedometer, odometer with trip odometer, fuel level, voltmeter, engine temperature, oil pressure gauges, tachometer, liftgate ajar, warning light for safety belt, ABS/parking brake, directional hazard signals and high beam	S	S	S
	AU0	Keyless entry , remote, includes 2 transmitters, panic button and content theft alarm	--	■	■
		Lighting , dome lamp, includes door- and tailgate-activated switches	S	S	S
		Key , single, 2-sided	S	S	S
		Mirror , inside rearview, manual day/night	S	S	S
	DD8	Mirrors , inside/outside driver's side rearview, electrochromic (light-sensitive auto dimming) 1 - Included and only available with (DK8) Console, overhead deluxe.	--	--	A ¹
	AV5	Seats , front reclining buckets, includes head restraints and folding seatbacks, and center floor console, passenger seats include easy entry feature on 2-door	S	S	S
	AM7	Seats , rear split-folding	S	S	S
		Seat trim , Custom Cloth	S	S	S
	AG1	Seat adjuster , power, driver 6-way	--	--	■
DT4		Smoker's Package , includes ashtray and lighter	A	A	A
	UN0	Sound system , ETR AM/FM stereo with CD player, includes seek-and-scan, digital clock, auto-tone control, TheftLock, speed-compensated volume, Radio Data System (RDS) and 6-speakers 1 - May be substituted with (UC6) Sound System, ETR AM/FM stereo with 6-disc CD changer or (UPO) Sound System, ETR AM/FM stereo with CD player and cassette.	S	□ ¹	□ ¹
UP0		Sound system , ETR AM/FM stereo with CD player and cassette, includes seek-and-scan, digital clock, auto-tone control, speed-compensated volume, TheftLock, Radio Data System (RDS) and 6-speakers	--	A	A
UC6		Sound system , ETR AM/FM stereo with 6-disc CD changer, includes seek-and-scan, digital clock and auto-tone control, speed-compensated volume, TheftLock, Radio Data System (RDS) and 6-speakers	--	A	A
UK3		Sound system feature , steering wheel mounted radio controls 1 - Requires (M30) Transmission, 4-speed automatic.	--	A ¹	A ¹
	NP5	Steering wheel , leather-wrapped rim, Black, steel sleeve	--	■	■
CF5		Sunroof , power, tilt-sliding, electric with express-open and wind deflector 1 - Requires (DK7) Console, overhead custom.	--	A ¹	A ¹
	U16	Tachometer	S	S	S
		Theft-deterrent system , PASSlock II	S	S	S
		Tools , mechanical jack and wheel wrench	S	S	S
	D34	Visors , padded, driver and passenger side with cloth trim	S	S	S

Free Flow RPO Code	Ref. Only RPO Code	Description 1 - Equipment groups 1SA, 1SB and 1SC available on Models CS10516 and CT10516.	2-Door		
			1SA ¹	1SB ¹	1SC ¹
	D32	Visors, passenger side with vanity mirror	--	■	--
DH6		Visors, illuminated vanity mirrors 1 - Required and only available with (DK7) Console, overhead custom.	--	A ¹	■
		Warning tones, headlamp on, key-in-ignition	S	S	S
		Windows, rear quarter swing-out	S	S	S

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Free Flow RPO Code	Ref. Only RPO Code	Description 1 - Equipment groups 1SA, 1SB and 1SC available on Models CS10516 and CT10516.	2-Door		
			1SA ¹	1SB ¹	1SC ¹
	E55	Body, tailgate	S	S	S
		Bumpers, front and rear, body-color, rear step includes pad 1 - Spectra gray with (ZR2) Suspension package, Wide Stance Sport Performance.	S ¹	S ¹	S ¹
	TG1	Daytime running lamps, includes automatic exterior lamp control	S	S	S
ANL		Fog lamps, front, halogen, incorporated into headlamp assembly	--	A	A
		Glass, Solar-Ray deep tinted, (all windows except light tinted glass on windshield, driver, front passenger, and rear windows)	S	S	--
AJ1		Glass, Solar-Ray deep tinted (all windows except light tinted glass on windshield, driver and front passenger) 1 - Requires (ZM8) Convenience Package.	--	A ¹	■
		Grille, body-color with chrome bar	S	S	S
		Headlamps, dual halogen composite, includes flash-to-pass feature and automatic lamp control	S	S	S
		Horn, dual note, high and low	S	S	S
V54		Luggage rack, rooftop, includes side rails and crossbars	A	■	■
		Mirrors, outside rearview, foldaway, manual, Black	S	--	--
	DK2	Mirrors, outside rearview, foldaway, power, heated	--	■	■
	DD0	Mirrors, interior and driver side exterior electrochromic, power, heated 1 - Included and only available with (DK8) Console, overhead deluxe.	--	--	A ¹
V76		Recovery hooks, 2 front, frame-mounted 1 - CT10516 only.	A ¹	■ ¹	■ ¹
PNV		Tire carrier, outside spare, delete 1 - Included with 2WD 2-door models, not available with (ZEB) Tires, spare, full-size P235/75R15 White outlined-letter.	A ¹	A ¹	A ¹
P16		Tire carrier, outside spare, exterior tailgate mounted, includes cover 1 - Required with (ZES) Tire, spare, full-size, P235/75R15, blackwall or (ZEB) Tire, spare, full-size P235/75R15 White outlined-letter.	A ¹	A ¹	A ¹
	QES	Tires, P235/75R15, blackwall 1 - May be substituted with (QEB) Tires, P235/75R15, White outlined-letter.	□ ¹	□ ¹	□ ¹
	QEB	Tires, P235/75R15, White outlined-letter 1 - Not available with (ZR2) Suspension Package, 4x4 Wide Stance Sport Performance.	A ¹	A ¹	A ¹
	QWU	Tires, P265/75R15, blackwall 1 - Included and only available with (ZR2) Suspension Package, 4x4 Wide Stance Sport Performance.	A ¹	A ¹	A ¹

Free Flow RPO Code	Ref. Only RPO Code	Description 1 - Equipment groups 1SA, 1SB and 1SC available on Models CS10516 and CT10516.	2-Door		
			1SA ¹	1SB ¹	1SC ¹
		Tire, spare, compact 1 - Not available with (ZR2) Suspension Package, 4x4 Wide Stance Sport Performance or (P16) Tire carrier, outside spare, exterior tailgate mounted. Upgradeable to (ZES) Tire, spare, full-size P235/75R15 blackwall or (ZEB) Tire, spare, full-size P235/75R15 White outlined-letter. Requires (P16) Tire carrier, outside spare, exterior tailgate mounted when upgrading to (ZES) or (ZEB) spare tires.	□ ¹	□ ¹	□ ¹
ZES		Tire, spare, P235/75R15, blackwall 1 - Requires (P16) Tire carrier, outside spare, exterior tailgate mounted.	A ¹	A ¹	A ¹
ZEB		Tires, spare, full-size, P235/75R15 White outlined-letter 1 - Requires (P16) outside spare tire, exterior tailgate mounted and (QEB) Tires, P235/75R15, White outlined-letter.	A ¹	A ¹	A ¹
	ZWU	Tire, spare, P265/75R15 White outlined-letter 1 - Included and only available with (ZR2) Suspension Package, 4x4 Wide Stance Sport Performance.	A ¹	A ¹	A ¹
	N60	Wheels, 4 - 15" x 7" (38.1 cm x 17.8 cm) aluminum, includes center caps 1 - CS10516 Models only.	S ¹	S ¹	S ¹
	PA3	Wheels, 4 - 15" x 7" (38.1 cm x 17.8 cm) aluminum, includes center caps 1 - Standard on CT10516 4x4 Models only. Also included with (ZR2) Suspension Package, 4x4 Wide Stance Sport Performance.	S ¹	S ¹	S ¹
		Wipers, intermittent, front, includes pulse washers	S	S	S

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Free Flow RPO Code	Ref. Only RPO Code	Description 1 - Equipment groups 1SA, 1SB and 1SC available on Models CS10516 and CT10516.	2-Door		
			1SA ¹	1SB ¹	1SC ¹
		Alternator, 100 amps	S	S	S
		Battery, heavy-duty, 525 cold-cranking amps, includes rundown protection	S	S	S
UA1		Battery, heavy-duty, 690 cold-cranking amps 1 - Included with (V10) Cold Climate Package.	A ¹	A ¹	A ¹
	JC1	Brakes, 4-wheel antilock	S	S	S
V10		Cold Climate Package, includes engine block heater and (UA1) Battery, heavy-duty 690 cold-cranking amps	A	A	A
G80		Differential, locking, rear 1 - Required with (GT4) Rear axle, 3.73 ratio on CT10516 4x4 models and requires (GU6) Rear axle, 3.42 ratio.	A ¹	A ¹	A ¹
FE9		Emissions, Federal requirements	A	A	A
NE1		Emissions, Maine, Massachusetts, New York or Vermont state requirements	A	A	A
YF5		Emissions, California state requirements	A	A	A
VCL		Emissions Certification, CFF (Clean Fuel Fleet) LEV (Low Emission Vehicle). Option (VCL) should ONLY be ordered to receive the CFF LEV certification. If (VCL) is not ordered, the vehicle will be produced with your normally selected emission system and may not be CFF LEV certified. Products ordered with the (VCL) option may not be certified to California emission requirements. Therefore, they may not be legal for registration in California, New York, Maine, Massachusetts and Vermont. Option (YF5) should be ordered for all vehicles ordered in California. Option (NE1) should be ordered for all vehicles ordered in Maine or Vermont. 1 - Requires (M30) Transmission, 4-speed automatic.	A ¹	A ¹	A ¹
NB8		Emissions override, California, Massachusetts or New York (for vehicles ordered by dealers in states of California, Massachusetts or New York with Federal emissions) 1 - Requires (FE9) Emission, Federal requirements.	A ¹	A ¹	A ¹
NC7		Emissions override, Federal (for vehicles ordered by dealers in Federal emission states with California, New York, Vermont, Massachusetts or Maine emissions; may also be used by dealers in states of California, New York, Vermont, Massachusetts or Maine to order different state-specific emissions) 1 - Requires (YF5) Emissions, California state requirements or (NE1) Emissions, New York, Vermont, Massachusetts or Maine state requirements.	A ¹	A ¹	A ¹

Free Flow RPO Code	Ref. Only RPO Code	Description 1 - Equipment groups 1SA, 1SB and 1SC available on Models CS10516 and CT10516.	2-Door		
			1SA ¹	1SB ¹	1SC ¹
	LU3	Engine, Vortec 4300 V6 MFI (190 HP [141.7 kW] @ 4400 rpm, 250 lb.-ft. [339.5 N-m] @ 2800 rpm)	S	S	S
		Exhaust, aluminized stainless-steel muffler and tailpipe	S	S	S
	C3G	GVWR, 4450 lbs. (2018 kg) 1 - CS10516 LS only.	S ¹	S ¹	S ¹
	C6I	GVWR, 4850 lbs. (2200 kg) 1 - CT10516 only.	S ¹	S ¹	S ¹
C5C		GVWR, 5000 lbs. (2268 kg) 1 - Requires (ZR2) Suspension Package, 4x4 Wide Stance Sport Performance.	A ¹	A ¹	A ¹
	GU6	Rear axle, 3.42 ratio	S	S	S
GT4		Rear axle, 3.73 ratio 1 - Requires (G80) Differential, locking, rear.	A ¹	A ¹	A ¹
ZM5		Skid Plate Package, includes transfer case, differential, fuel tank and steering linkage 1 - Requires CT10516, included with (ZR2) Suspension package, 4x4 Wide Stance Sport Performance.	A ¹	A ¹	A ¹
		Stabilizer bars, front and rear, front 1.30" (33mm), rear .91" (23mm)	S	S	S
		Steering, power	S	S	S
		Suspension, front, independent coil springs and stabilizer bar 1 - CS10516 Models only.	S ¹	S ¹	S ¹
		Suspension, front, independent torsion bar, and stabilizer bar 1 - CT10506 Models only.	S ¹	S ¹	S ¹
		Suspension, rear, semi-floating axle with 2-stage multi-leaf springs	S	S	S
	Z85	Suspension Package, Touring, Sporty/Firm for ride/trailer usage on paved/improved roads, front and rear stabilizer bars 1 - May be upgraded to (ZR2) Suspension Package, 4x4 Wide Stance Sport Performance.	S ¹	S ¹	S ¹
ZR2		Suspension Package, 4x4 Wide Stance Sport Performance includes revised wide-tread frame, strengthened front differential gears and drive axles, large bearings and longer, large rear axle shafts, revised multi-leaf springs and added rear axle track bar, front stabilizer bar, Bilstein gas-pressurized shock absorbers, (ZM5) Skid Plate Package, outside Tailgate mounted spare tire carrier 1 - Require CT10516 Model, (GT4) Rear axle ratio, 3.73 (G80) Differential, locking, rear.	A ¹	A ¹	A ¹
Z82		Trailer equipment, heavy-duty, includes trailering hitch platform and 8-lead wiring harness only 1 - 2WD requires (GU6) Rear axle, 3.42 ratio and (M30) Transmission, 4-speed automatic.	A ¹	A ¹	A ¹
	NP1	Transfer case, electronic shift, Insta-Trac 1 - May be substituted with (NP8) transfer case, electronic autotrac -CT10516 only.	■	□ ¹	□ ¹

Free Flow RPO Code	Ref. Only RPO Code	Description 1 - Equipment groups 1SA, 1SB and 1SC available on Models CS10516 and CT10516.	2-Door		
			1SA ¹	1SB ¹	1SC ¹
NP8		Transfer case, electronic Autotrac (4WD Models) 1 - CT10516 only and requires (M30) Transmission, 4-speed automatic.	--	A ¹	A ¹
	M50	Transmission, 5-speed manual with overdrive 1 - Not available with brake/transmission shift interlock.	S ¹	S ¹	S ¹
M30		Transmission, 4-speed automatic, electronically controlled with overdrive 1 - Includes brake/transmission shift interlock - column shift. 2 - Includes brake/transmission shift interlock - Floor shift.	A ¹	A ²	A ²

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Model	Engine	Transmissions		Axles		GVWR lbs. (kg)		
		M50 5-Speed Manual	M30 4-Speed Automatic	GU6 3.42	GT4 3.73	C3G 4450 (2018)	C6I 4850 (2200)	C5C 5000 (2268)
CS10516	LU3 Vortec 4300 V6 MFI	S	-	S	-	S	-	-
	LU3 Vortec 4300 V6 MFI	-	A	A	-	A	-	-
	LU3 Vortec 4300 V6 MFI	S	-	-	A ²	-	-	A ¹
	LU3 Vortec 4300 V6 MFI	-	A	-	A ²	-	-	A ¹
CT10516	LU3 Vortec 4300 V6 MFI	S	-	S	-	-	S	-
	LU3 Vortec 4300 V6 MFI	-	A	A	A ²	-	A	-
	LU3 Vortec 4300 V6 MFI	S	-	-	A ²	-	-	A ¹
	LU3 Vortec 4300 V6 MFI	-	A	-	A ²	-	-	A ¹

1 - Requires (ZR2) suspension package, wide stance.
2 - Requires (G80) differential, locking, rear.

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Decor Level	Seat Type	Seat Code	Seat Trim	Interior	
				Medium Gray	Graphite
All Models	Reclining high-back buckets	AV5	Custom Cloth	92H	12H

Exterior Solid Paint	Color Code	Touch Up Paint Number	Interior	
			Medium Gray	Graphite
Light Pewter Metallic	11U	WA-382E	A	A
Indigo Blue Metallic	39U	WA-9792	A	A
Black	41U	WA-8555	A	A
Dark Green Metallic	47U	WA-9539	A	A
Summit White	50U	WA-8624	A	A
Sandalwood	58U	WA-711J	A	A
Victory Red	74U	WA-9260	A	A
Dark Cherry Red Metallic	94U	WA-9088	A	A

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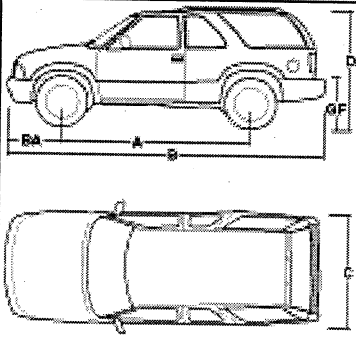
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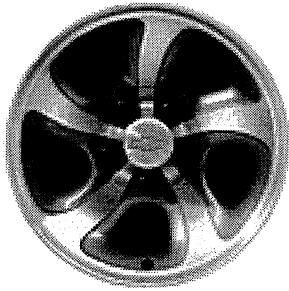
Free Flow RPO Code	Ref. Only RPO Code	Description 1 - Equipment groups 1SA, 1SB and 1SC available on Models CS10516 and CT10516.	2-Door		
			1SA ¹	1SB ¹	1SC ¹
		Exterior			
8E1		Fuel, additional 3 gallons (MSRP = \$8.00) Fleet Option. 3 gallons of fuel in addition to the normal assembly plant fill. 1 - Requires a Fleet or Federal Government sales order.	A ¹	A ¹	A ¹
8X1		Label, fasten safety belts (MSRP = \$2.00) "Fasten Safety Belts" reminder label on the front door glass.	A	A	A
9V9		Paints, solid (MSRP = No Charge), Doeskin Tan 1 - Includes Dark Gray or Black front and rear fascia components in lieu of color keyed. Requires SEO (TGK) Special Paint, one color. Not available with RPO (ANL) Fog lamps, front. Requires RPO (Z85) Suspension Package, Touring on Model CT10516.	A ¹	A ¹	A ¹
9W4		Paints, solid (MSRP = No Charge), Tangier Orange 1 - Includes Dark Gray or Black front and rear fascia components in lieu of color keyed. Requires SEO (TGK) Special Paint, one color. Not available with RPO (ANL) Fog lamps, front. Requires RPO (Z85) Suspension Package, Touring on Model CT10516.	A ¹	A ¹	A ¹
9W3		Paints, solid (MSRP = No Charge), Wheatland Yellow 1 - Includes Dark Gray or Black front and rear fascia components in lieu of color keyed. Requires SEO (TGK) Special Paint, one color. Not available with RPO (ANL) Fog lamps, front. Requires RPO (Z85) Suspension Package, Touring on Model CT10516.	A ¹	A ¹	A ¹
9V5		Paints, solid (MSRP = No Charge), Woodland Green 1 - Includes Dark Gray or Black front and rear fascia components in lieu of color keyed. Requires SEO (TGK) Special Paint, one color. Not available with RPO (ANL) Fog lamps, front. Requires RPO (Z85) Suspension Package, Touring on Model CT10516.	A ¹	A ¹	A ¹
TGK		Solid Paint SEO solid paint, one color 1 - Required with any SEO paint selection.	A ¹	A ¹	A ¹
		Mechanical			
8U4		Engine block heater (MSRP = \$35.00) Engine block heater with hook-up cord. 1 - Not available with RPO (V10) Cold Climate Package.	A ¹	A ¹	A ¹

All dimensions in inches (mm) unless otherwise stated.

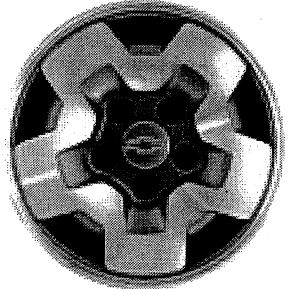
	Specifications	2-Door	2-Door	
		ZWD CS10516	4WD CT10516	
	A	Wheelbase	100.50 (2553)	100.50 (2553)
	B	Overall length	177.30 (4503)	177.30 (4503)
	C	Body width	67.80 (1722)	67.80 (1722)
	D	Overall height	65.20 (1656)	64.70 (1643)
		Head room, front	39.60 (1006)	39.60 (1006)
		Head room, rear	38.20 (970)	38.20 (970)
		Shoulder room, front	57.70 (1466)	57.70 (1466)
		Shoulder room, rear	55.60 (1412)	55.60 (1412)
		Hip room, front	52.10 (1323)	52.10 (1323)
		Hip room, rear	40.50 (1029)	40.50 (1029)
		Leg room, front	42.40 (1077)	42.40 (1077)
		Leg room, rear	35.60 (904)	35.60 (904)
	BA	Front bumper to axle	34.80 (884)	34.80 (884)
	GF	Ground to top of rear load floor	30.30 (770)	29.40 (747)
		Load floor length, with rear seat, at belt line	28.50 (724)	28.50 (724)
		Load floor length, with rear seat folded, at belt line	68.50 (1740)	68.50 (1740)
		Load floor length, with rear seat folded, at floor	68.50 (1740)	68.50 (1740)
		Inside width, between wheelhousing	38.70 (983)	38.70 (983)
		Cargo area height	33.50 (851)	33.50 (851)
		Ground clearance, front	8.40 (213)	8.30 (211)
	Ground clearance, rear	8.10 (206)	8.00 (203)	

All dimensions in inches (mm) unless otherwise stated.			
	Specifications	2-Door 2WD CS10516	2-Door 4WD CT10516
	Sign panel area	8.25 (210) x 46.25 (1175)	8.25 (210) x 46.25 (1175)
Published dimensions indicated are without optional equipment or accessories. Additional accessories or equipment ordered at the customer's request can result in a minor change in these dimensions.			

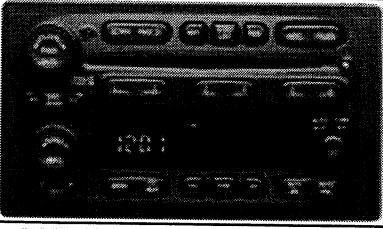
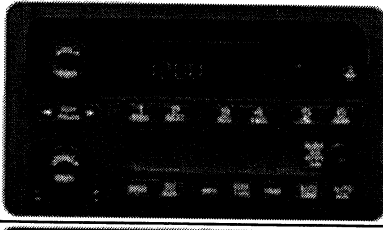
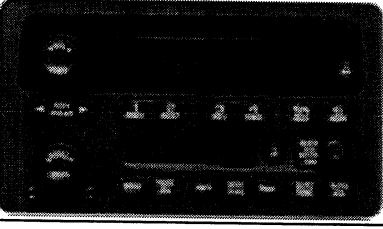
	2-Door 2WD CS10516	2-Door 4WD CT10516
Specifications		
Front shock absorber diameter, in. (mm)	1.81 (46)	1.81 (46)
Front stabilizer bar diameter, in. (mm)	1.30 (33)	1.30 (33)
Rear shock absorber diameter, in. (mm)	1.81 (46)	1.42 (36)
Rear stabilizer bar diameter, in. (mm)	0.91 (23)	0.91 (23)
Turning diameter, curb-to-curb, ft. (m)	34.8 (10.6)	35.2 (10.7)
Capacities		
Curb weight, lbs. (kg)	3611 (1638)	3885 (1762)
Cargo volume, with rear seat up, to top of roof, cu. ft. (liters)	29.8 (843.9)	29.8 (843.9)
Cargo volume, with rear seat folded, cu. ft. (liters)	60.6 (1716.2)	60.6 (1716.2)
Payload ¹ , lbs. (kg)	838 (380)	966 (438)
Gross Vehicle Weight Rating (GVWR), lbs. (kg)	4450 (2019)	4850 (2200)
Front Gross Axle Weight Rating (GAWR), lbs. (kg)	2200 (998)	2500 (1134)
Rear Gross Axle Weight Rating (GAWR), lbs. (kg)	2600 (1179)	2600 (1179)
Fuel capacity, approximate, gallon (liters)	19 (72)	19 (72)
Seating capacity (front/rear)	2/2	2/2
1. Maximum payload capacity includes weight of driver, passengers, optional equipment and cargo.		



N60
Wheels, 4 - 15" x 7" (38.1 cm x 17.8 cm) aluminum, includes center caps



PA3
Wheels, 4 - 15" x 7" (38.1 cm x 17.8 cm) aluminum, includes center caps

	<p>UC6 Sound system, ETR AM/FM stereo with 6-disc CD changer, includes seek-and-scan, digital clock and auto-tone control, speed-compensated volume, TheftLock, Radio Data System (RDS) and 6-speakers</p>
	<p>UN0 Sound system, ETR AM/FM stereo with CD player, includes seek-and-scan, digital clock, auto-tone control, TheftLock, speed-compensated volume, Radio Data System (RDS) and 6-speakers</p>
	<p>UP0 Sound system, ETR AM/FM stereo with CD player and cassette, includes seek-and-scan, digital clock, auto-tone control, speed-compensated volume, TheftLock, Radio Data System (RDS) and 6-speakers</p>

Maximum trailer ratings are calculated assuming standard equipped vehicle, driver and required trailering equipment. The weight of optional equipment, passengers and cargo will reduce the maximum trailer weight your vehicle can tow. 10 to 15% of the trailer weight is the recommended trailer tongue load.

Automatic Transmission Ratings with Ball Hitch		
Model	(LU3) Vortec 4300 V6 MFI	
	Axle Ratio	Maximum Trailer Weight lbs. (kg)
CS10516	3.42	5500 (2495)
CT10516	3.42	4900 (2223)
	3.73	4900 (2223)
CT10516+ZR2	3.73	4300 (1950)

Addition of trailer tongue weight cannot cause vehicle weights to exceed Rear Gross Axle Weight Rating (RGAWR) or Gross Vehicle Weight Rating (GVWR).

Base cooling system includes all content required to attain maximum trailer rating.

GCWR For Engine/Rear Axle Ratio Combination with Automatic Transmission		
Engine	(GCWR) Gross Combination Weight Ratings lbs. (kg)	
	9000 (4082)	9500 (4309)
(LU3) Vortec 4300 V6 MFI	3.73 ¹	3.42

1 - With (ZR2) Suspension Package, Wide Stance Sport Performance.

Maximum trailer ratings are calculated assuming standard equipped vehicle, driver and required trailering equipment. The weight of optional equipment, passengers and cargo will reduce the maximum trailer weight your vehicle can tow. 10 to 15% of the trailer weight is the recommended trailer tongue load.

Manual Transmission with Ball Hitch		
Model	(LU3) Vortec 4300 V6 MFI	
	Axle Ratio	Maximum Trailer Weight lbs. (kg)
CS10516	3.42	4100 (1860)
CT10516	3.42	3900 (1769)
	3.73	4200 (1905)

Addition of trailer tongue weight cannot cause vehicle weights to exceed Rear Gross Axle Weight Rating (RGAWR) or Gross Vehicle Weight Rating (GVWR).

Base cooling system includes all content required to attain maximum trailer rating.

GCWR For Engine/Rear Axle Ratio Combination with Manual Transmission		
Engine	(GCWR) Gross Combination Weight Ratings lbs. (kg)	
	8000 (3629)	8500 (3856)
(LU3) Vortec 4300 V6 MFI	3.42	3.73 ¹

1 - CT10516 with (ZR2) Suspension Package, Wide Stance Sport Performance.