

MANUFACTURERS MOTOR VEHICLE SPECIFICATIONS

1993

Manufacturer OLDSMOBILE DIVISION GENERAL MOTORS CORPORATION	Vehicle Line  ACHIEVA	
Mailing Address 920 TOWNSEND STREET LANSING, MICHIGAN 48920	Issued NOVEMBER, 1992	Revised

Direct questions concerning these specifications to the manufacturer listed above.

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The General Specifications herein are those in effect at date of compilation and are subject to change without notice or incurring obligation by the manufacturer.



Motor Vehicle Manufacturers Association
of the United States, Inc.

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MVMA Specifications

METRIC (U.S. Customary)

Table of Contents

	1	Vehicle Models/Origin	○ Indicates Format Change From Previous Year
○	2	Power Teams	
	3	Engine	
	4	Lubrication System	
	4	Diesel Information	
○	5	Cooling System	
	6	Fuel System	
	7	Vehicle Emission Control	
	7	Exhaust System	
○	8-10	Transmission, Axles and Shafts	
	11	Suspension	
○	12-13	Brakes, Tires and Wheels	
	14	Steering	
	15-16	Electrical	
	17	Body — Miscellaneous Information	
	17	Frame	
	18	Restraint System	
○	18	Glass	
	18	Headlamps	
	19	Climate Control System	
○	20-21	Convenience Equipment	
	21	Trailer Towing	
	22-24	Vehicle Dimensions	
	25	Vehicle Fiducial Marks	
	26	Vehicle Mass (Weight)	
	27	Optional Equipment Differential Mass (Weight)	
	28-34	Vehicle Dimensions Definitions - Key Sheets	
	35	Index	

NOTE:

1. This form uses both SI metric units and U.S. Customary units. The metric unit of measure is presented first, and the U S Customary unit follows in parentheses.
2. UNLESS OTHERWISE INDICATED:
 - a. Specifications apply to standard models without optional equipment. Significant deviations are noted.
 - b. Nominal design dimensions are used throughout these specifications.
 - c. All linear dimensions are in millimeters (inches), and all mass (weight) specifications are in kilograms (pounds).
3. The General Specifications herein are those in effect at date of compilation and are subject to change without notice or incurring obligation by the manufacturer.
4. Additional Vehicle Dimensions (based in part on SAE J1100 "Motor Vehicle Dimensions") may be available from the manufacturer.

MVMA Specifications

Vehicle Line ACHIEVA

Model Year 1993

Issued

Revised

METRIC (U.S. Customary)

Vehicle Origin

Design & development (company)	General Motors Corporation, L.A.D.
Where built (country)	United States
Authorized U.S. Sales marketing representative	Oldsmobile Division

Vehicle Models

Model Description & Drive (FWD/RWD/AWD/4WD)*	Make, Vehicle Models, Series, Body Type (Mfr's Model Code)	No. of Designated Seating Positions (Front/Rear)	Max. Trunk/Cargo Load-Kilograms (Pounds)	EPA Fuel Economy (City/Hwy)
ACHIEVA S				
Notchback Coupe (FWD)	3NL37	2/3	60 (132)	22/32
Notchback Sedan (FWD)	3NL69	2/3	60 (132)	22/32
ACHIEVA SL				
Notchback Coupe (FWD)	3NF37	2/3	60 (132)	22/32
Notchback Coupe (FWD)	3NF69	2/3	60 (132)	22/32
ACHIEVA (Value Leader)				
2-Dr. Notchback Coupe	3NV37 W/W44	2/3	60 (132)	22/32

* FWD - Front Wheel Drive RWD - Rear Wheel Drive AWD - All Wheel Drive 4WD - Four Wheel Drive

MVMA Specifications

Vehicle Line **ACHIEVA**

Model Year	1993
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Issued

Revised

METRIC (U.S. Customary)

Power Teams

SAE J1349 Net bhp (brake hrspwr) and Net Torque corrected to 77 deg. F / 25 deg. C and 29.61 in. Hg/100 kPA atmos. press.

		E			
E N G I N E	Engine Code		LG7		
	Displacement Liters (cu. in.)		3.3L (204)V6		
	Induction system (FI, Carb. etc.)		MULTI-PORT FUEL INJECTION		
	Compression ratio		9.0:1		
	SAE Net at RPM	Power kW (bhp)	119 (160) @ 5200		
		Torque Newton meters (lb.ft.)	251 (185) @ 2000		
Exhaust Single, dual		Single			
T R A N S	Transmission/ Transaxle		3-Speed Auto		
	Axle Ratio (std. first)		2.39		

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MVMA Specifications

Vehicle Line ACHIEVA
Model Year 1993 Issued Revised

METRIC (U.S. Customary)

Engine Description

Engine Code

2.3 LITER L4 (138 CID)
ELECTRONIC FUEL INJECTION RPO L40

ENGINE - GENERAL

Type & description (inline, V, angle, flat, location, front, mid, rear, transverse, longitudinal, sohc, dohc, ohv, hemi, wedge, pre-chamber, etc.)	Inline, Front, Transverse, Pent Roof	
Manufacturer	General Motors Powertrain Division	
No. of cylinders	4	
Bore	92 mm (3.62 in.)	
Stroke	85 mm (3.35 in.)	
Bore spacing (C/L to C/L)	100 mm (3.94 in.)	
Cyl block matl & mass kg(lbs.) (machined)	Cast Iron, 43.99 (96.98)	
Cylinder block deck height	222 mm (8.74 in.)	
Cylinder block length	499.5 mm (19.66 in.)	
Deck clearance (minimum) (above or below block)	0	
Cyl. head material & mass kg (lbs.)	Aluminum Alloy, 7.68 (16.93)	
Cylinder head volume cu. cm. (cu. in.)	57.5 +/- 1.5 cc	
Cylinder liner material	None	
Head gasket thickness (compressed)	1.17 - 1.22 (.046 - .048)	
Minimum combustion chamber total volume cu. cm. (cu. in.)	66.4 (4.05)	
Cyl. no. system (front to rear)*	L. Bank	1-2-3-4
	R. Bank	None
Firing order	1-3-4-2	
Intake manifold matl & mass kg (lbs.)**	Aluminum, 4.80 (10.56)	
Exh. manifold matl & mass kg (lbs.)**	Cast Nodular Iron, 7.02 (15.48)	
Knock sensor (number & location)	One, Rear Face Of Block	
Fuel required unleaded, diesel, etc.	Unleaded	
Fuel antiknock index (R + M) / 2	87	
Engine mounts	Quantity	3, Manual; 2, Auto
	Matl and type (elastomeric, hydroelastic, hydraulic damper, etc.)	Hydroelastic, Manual; Elastomeric, Auto.
	Added isolation (sub-frame, crossmember, etc.)	No
Total dressed engine mass (wt) dry***	146.50 kg. (322.98 in.)	

Engine - Pistons

Material & mass, g (weight, oz.) - piston only	Aluminum, .402
--	----------------

Engine Camshaft

Location	Overhead	
Material & mass kg (weight, lbs.)	Cast Iron, 3.045 (6.713)	
Drive type	Chain/belt	Chain
	Width/pitch	12.7 9.525 (.375) - 124 Pitches

*Rear of engine - drive takeoff. View from drive takeoff end to determine left & right side of engine.

**Finished state.

***Dressed engine mass (weight) includes the following:

MVMA Specifications

Vehicle Line ACHIEVA

Model Year 1993

Issued

Revised

METRIC (U.S. Customary)

Engine Description

Engine Code

2.3 LITER L4 (138 CID)

ELECTRONIC FUEL INJECTION RPO LD2

ENGINE - GENERAL

Type & description (inline, V, angle, flat, location, front, mid, rear, transverse, longitudinal, sohc, dohc, ohv, hemi, wedge, pre-chamber, etc.)

Inline, Front, Transverse, Pent Roof

Manufacturer

General Motors Powertrain Division

No. of cylinders

4

Bore

92 mm (3.62 in.)

Stroke

85 mm (3.35 in.)

Bore spacing (C/L to C/L)

100 mm (3.94 in.)

Cyl block matl & mass kg(lbs.) (machined)

Cast Iron, 43.99 (96.98)

Cylinder block deck height

222 mm (8.74 in.)

Cylinder block length

499.5 mm (19.66 in.)

Deck clearance (minimum) (above or below block)

0

Cyl. head material & mass kg (lbs.)

Aluminum Alloy, 8.46 (18.65)

Cylinder head volume cu. cm. (cu. in.)

47.0 +/- 1.5 cc

Cylinder liner material

None

Head gasket thickness (compressed)

1.17 - 1.22 (.046 - .048)

Minimum combustion chamber total volume cu. cm. (cu. in.)

66.4 (4.05)

Cyl. no. system (front to rear)*

L. Bank

1-2-3-4

R. Bank

None

Firing order

1-3-4-2

Intake manifold matl & mass kg (lbs.)**

Aluminum, 4.94 (10.89)

Exh. manifold matl & mass kg (lbs.)**

Cast Nodular Iron, 7.02 (15.48)

Knock sensor (number & location)

1, Rear Face Of Block

Fuel required unleaded, diesel, etc.

Unleaded

Fuel antiknock index (R + M) / 2

87

Engine mounts

Quantity

2

Matl and type (elastomeric, hydroelastic, hydraulic damper, etc.)

Elastomeric, Hydroelastic

Added isolation (sub-frame, crossmember, etc.)

Total dressed engine mass (wt) dry***

146.50 kg. (322.98 lbs.)

Engine - Pistons

Material & mass, g (weight, oz.) - piston only

Aluminum, 402 (14.18)

Engine Camshaft

Location

Overhead

Material & mass kg (weight, lbs.)

Cast Iron

Intake, 3.045 (6.713)

Exhaust 2.948 (6.499)

Drive type

Chain/belt

Chain

Width/pitch

12.7

9.525 (.375) - 130 Pitches

*Rear of engine - drive takeoff. View from drive takeoff end to determine left & right side of engine.

**Finished state.

***Dressed engine mass (weight) includes the following:

MVMA Specifications

Vehicle Line ACHIEVA

Model Year 1993

Issued

Revised

METRIC (U.S. Customary)

Engine Description

Engine Code

2.3 LITER L4 (138 CID)

ELECTRONIC FUEL INJECTION RPO LGO & LGO - W41

ENGINE - GENERAL

Type & description (inline, V, angle, flat, location, front, mid, rear, transverse, longitudinal, sohc, dohc, ohv, hemi, wedge, pre-chamber, etc.)

Inline, Front, Transverse, Pent Roof

Manufacturer

General Motors Powertrain Division

No. of cylinders

4

Bore

92 mm (3.62 in.)

Stroke

85 mm (3.35 in.)

Bore spacing (C/L to C/L)

100 mm (3.94 in.)

Cyl block matl & mass kg(lbs.) (machined)

Cast Iron, 43.99 (96.98)

Cylinder block deck height

222 mm (8.74 in.)

Cylinder block length

499.5 mm (19.66 in.)

Deck clearance (minimum) (above or below block)

0

Cyl. head material & mass kg (lbs.)

Aluminum Alloy, 8.46 (18.65)

Cylinder head volume cu. cm. (cu. in.)

47.0 +/- 1.5 (2.87 +/- 0.092)

Cylinder liner material

None

Head gasket thickness (compressed)

1.17 - 1.22 (.046 - .048)

Minimum combustion chamber total volume cu. cm. (cu. in.)

62.8 (3.83)

Cyl. no. system (front to rear)*

L. Bank

1-2-3-4

R. Bank

None

Firing order

1-3-4-2

Intake manifold matl & mass kg (lbs.)**

Aluminum, 5.44 (11.99)

Exh. manifold matl & mass kg (lbs.)**

Cast Nodular Iron, 7.02 (15.48)

Knock sensor (number & location)

1, Rear Face Of Block

Fuel required unleaded, diesel, etc.

Unleaded

Fuel antiknock index (R + M) / 2

87

Engine mounts

Quantity

3

Matl and type (elastomeric, hydroelastic, hydraulic damper, etc.)

Elastomeric (2), Hydroelastic (1)

Added isolation (sub-frame, crossmember, etc.)

No

Total dressed engine mass (wt) dry***

157.53 kg. (347.29 lbs.)

Engine - Pistons

Material & mass, g (weight, oz.) - piston only

Aluminum, 421 (14.85)

Engine Camshaft

Location

Overhead

Material & mass kg (weight, lbs.)

Cast Iron

Intake, 3.045 (6.713)

Exhaust, 2.948 (6.499)

Drive type

Chain/belt

Chain

Width/pitch

12.7

9.525 mm (.375 in.) - 130 Pitches

*Rear of engine - drive takeoff. View from drive takeoff and to determine left & right side of engine.

**Finished state.

***Dressed engine mass (weight) includes the following:

MVMA Specifications

Vehicle Line ACHIEVA

Model Year 1993 Issued Revised

METRIC (U.S. Customary)

Engine Description

3.3 LITER V6 (204 CID)

Engine Code

MULTI-PORT FUEL INJECTION RPO LG7

ENGINE - GENERAL

Type & description (inline, V, angle, flat, location, front, mid, rear, transverse, longitudinal, sohc, dohc, ohv, hemi, wedge, pre-chamber, etc.)

90 deg. V

Manufacturer

General Motors Powertrain Division

No. of cylinders

6

Bore

93.98 mm (3.700 in.)

Stroke

80.26 mm (3.16 in.)

Bore spacing (C/L to C/L)

107.7 mm (4.24 in.)

Cyl block matl & mass kg(lbs.)(machined)

Cast Iron, 49.32 (108.5)

Cylinder block deck height

210.7 mm (8.295 in.)

Cylinder block length

398 mm (15.67 in.)

Deck clearance (minimum) (above or below block)

1.02 mm (0.040 in.), Above

Cyl. head material & mass kg (lbs.)

Cast Iron, 13.18 (29.0) - Each

Cylinder head volume cu. cm. (cu. in.)

37.36 (2.28)

Cylinder liner material

None

Head gasket thickness (compressed)

1.26 mm (0.049 in.)

Minimum combustion chamber total volume cu. cm. (cu. in.)

69.53 (4.243)

Cyl. no. system (front to rear)*

L. Bank

1-3-5

R. Bank

2-4-6

Firing order

1-6-5-4-3-2

Intake manifold matl & mass kg (lbs.)**

Aluminum, 5.53 (12.17)

Exh. manifold matl & mass kg (lbs.)**

Stainless Steel, Left - 2.04 (4.49); Right - 3.23 (7.11)

Knock sensor (number & location)

Yes

Fuel required unleaded, diesel, etc.

Unleaded

Fuel antiknock index (R + M) / 2

87

Engine mounts

Quantity

2

Matl and type (elastomeric, hydroelastic, hydraulic damper, etc.)

Hydroelastic, Elastomeric

Added isolation (sub-frame, crossmember, etc.)

No

Total dressed engine mass (wt) dry***

186.4 kg. (410.9 lbs.)

Engine - Pistons

Material & mass, g (weight, oz.) - piston only

Cast Aluminum Alloy, 397 (14.0) - Each

Engine Camshaft

Location

Above Crankshaft At Center Of V

Material & mass kg (weight, lbs.)

5150 Steel, 2.99 (6.58)

Drive type

Chain/belt

Chain

Width/pitch

17.78 (.700) / 9.53 (.375)

*Rear of engine - drive takeoff. View from drive takeoff end to determine left & right side of engine.

**Finished state.

***Dressed engine mass (weight) includes the following:

MVMA Specifications

Vehicle Line ACHIEVA
Model Year 1993 Issued Revised

METRIC (U.S. Customary)

Engine Description

2.3 LITER L4 (138 CID)

Engine Code

ELECTRONIC FUEL INJECTION RPO L40

Engine - Valve System

Hydraulic lifters (std., opt., n.a.)		Standard
Valves	Number intake/exhaust	4/4
	Head O.D. intake/exhaust	36.50 mm (1.44 in.)/31.50 mm (1.24 in.)

Engine - Connecting Rods

Material & mass kg., (weight, lbs.)*	Steel, .689 (1.5) - Each
Length (axes centerline to centerline)	147.5 mm (5.81 in.)

Engine - Crankshaft

Material & mass kg., (weight, lbs.)*		Nodular Iron, 19.0 (41.9)
End thrust taken by bearing (no.)		#3
Length & number of main bearings		#1,2,4, & 5, 21.25 (.84); #3, 27.25 (1.09)/5
Seal (material, one, two piece design, etc.)	Front	One Piece, Viton
	Rear	One Piece, Viton

Engine - Lubrication System

Normal oil pressure kPa (psi) @ eng rpm	207 (30) @ 2000
Type oil intake (floating, stationary)	Stationary Pick-Up
Oil filter sys. (full flow, part, other)	Full Flow
Capacity of c/case, less filter-refill-L (qt.)	3.79 (4)

Engine - Diesel Information

(NOT APPLICABLE)

Diesel engine manufacturer		
Glow plug, current drain at 0 deg. F		
Injector Nozzle	Type	
	Opening pressure kPa (psi)	
Pre-chamber design		
Fuel injection pump	Manufacturer	
	Type	
Fuel inj. pump drive (belt, chain, gear)		
Supplementary vacuum source (type)		
Fuel heater (yes/no)		
Water separator, description (std., opt.)		
Turbo manufacturer		
Oil cooler-type (oil to engine coolant; oil to ambient air)		
Oil filter		

Engine - Intake System

(NOT APPLICABLE)

Turbo charger - manufacturer		
Super charger - manufacturer		
Intercooler		

* Finished State

MVMA Specifications

Vehicle Line ACHIEVAModel Year 1993

Issued _____

Revised _____

METRIC (U.S. Customary)

Engine Description

Engine Code

2.3 LITER L4 (138 CID)

ELECTRONIC FUEL INJECTION RPO LD2

Engine - Valve System

Hydraulic lifters (std., opt., n.a.)		Standard
Valves	Number intake/exhaust	8/8
	Head O.D. intake/exhaust	36.50 mm (1.44 in.) / 31.50 mm (1.24 in.)

Engine - Connecting Rods

Material & mass kg., (weight, lbs.)*	Steel, .689 (1.5) - Each
Length (axes centerline to centerline)	147.5 mm (5.81 in.)

Engine - Crankshaft

Material & mass kg., (weight, lbs.)*		Nodular Iron, 19.0 (41.9)
End thrust taken by bearing (no.)		#3
Length & number of main bearings		#1, 2, 4 & 5, 21.25 (.84); #3, 27.25 (1.09)/5
Seal (material, one, two piece design, etc.)	Front	One Piece, Viton
	Rear	One Piece, Viton

Engine - Lubrication System

Normal oil pressure kPa (psi) @ eng rpm	207 (30) @ 2000
Type oil intake (floating, stationary)	Stationary Pick-Up
Oil filter sys. (full flow, part, other)	Full Flow
Capacity of c/case, less filter-refill-L (qt.)	3.79 (4)

Engine - Diesel Information

(NOT APPLICABLE)

Diesel engine manufacturer		
Glow plug, current drain at 0 deg. F		
Injector Nozzle	Type	
	Opening pressure kPa (psi)	
Pre-chamber design		
Fuel injection pump	Manufacturer	
	Type	
Fuel inj. pump drive (belt, chain, gear)		
Supplementary vacuum source (type)		
Fuel heater (yes/no)		
Water separator, description (std., opt.)		
Turbo manufacturer		
Oil cooler-type (oil to engine coolant; oil to ambient air)		
Oil filter		

Engine - Intake System

(NOT APPLICABLE)

Turbo charger - manufacturer		
Super charger - manufacturer		
Intercooler		

* Finished State

MVMA Specifications

Vehicle Line ACHIEVA
Model Year 1993 Issued Revised

METRIC (U.S. Customary)

Engine Description

Engine Code

2.3 LITER L4 (138 CID)

ELECTRONIC FUEL INJECTION RPO LGO & LGO - W41

Engine - Valve System

Hydraulic lifters (std., opt., n.a.)	Standard
Valves	Number intake/exhaust 8/8
	Head O.D. intake/exhaust 38.50 mm (1.44 in.) / 31.50 mm (1.24 in.)

Engine - Connecting Rods

Material & mass kg., (weight, lbs.)*	Steel, .689 (1.5) - Each
Length (axes centerline to centerline)	147.5 mm (5.81 in.)

Engine - Crankshaft

Material & mass kg., (weight, lbs.)*	Nodular Iron, 19.0 (41.9)
End thrust taken by bearing (no.)	#3
Length & number of main bearings	#1, 2, 4 & 5, 21.25 mm (.84 in.); #3, 27.25 mm (1.09 in.) / 5
Seal (material, one, two piece design, etc.)	Front One Piece, Viton
	Rear One Piece, Viton

Engine - Lubrication System

Normal oil pressure kPa (psi) @ eng rpm	207 (30) @ 2000
Type oil intake (floating, stationary)	Stationary Pick-Up
Oil filter sys. (full flow, part, other)	Full Flow
Capacity of c/case, less filter-refill-L (qt.)	3.79 (4)

Engine - Diesel Information

(NOT APPLICABLE)

Diesel engine manufacturer	
Glow plug, current drain at 0 deg. F	
Injector Nozzle	Type
	Opening pressure kPa (psi)
Pre-chamber design	
Fuel in-jection pump	Manufacturer
	Type
Fuel in. pump drive (belt, chain, gear)	
Supplementary vacuum source (type)	
Fuel heater (yes/no)	
Water separator, description (std., opt.)	
Turbo manufacturer	
Oil cooler-type (oil to engine coolant; oil to ambient air)	
Oil filter	

Engine - Intake System

(NOT APPLICABLE)

Turbo charger - manufacturer	
Super charger - manufacturer	
Intercooler	

* Finished State

MVMA Specifications

Vehicle Line ACHIEVA
Model Year 1993 Issued _____ Revised _____

METRIC (U.S. Customary)

Engine Description

Engine Code

3.3 LITER V6 (204 CID)
MULTI-PORT FUEL INJECTION RPO LG7

Engine - Valve System

Hydraulic lifters (std., opt., n.a.)		Standard (Roller)
Valves	Number intake/exhaust	6/6
	Head O.D. intake/exhaust	43.40 (1.71) / 38.10 (1.30)

Engine - Connecting Rods

Material & mass kg., (weight, lbs.)*	Pearlitic Malleable, 0.596 (1.31)
Length (axes centerline to centerline)	135.66 mm (5.341 in.)

Engine - Crankshaft

Material & mass kg., (weight, lbs.)*		Nodular Iron, 14.66 (32.3)
End thrust taken by bearing (no.)		2
Length & number of main bearings		21.9 mm (0.864 in.)/4
Seal (material, one, two piece design, etc.)	Front	One Piece Rubber Lip
	Rear	One Piece Rubber Lip

Engine - Lubrication System

Normal oil pressure kPa (psi) @ eng rpm	414 (60) @ 2000
Type oil intake (floating, stationary)	Stationary
Oil filter sys. (full flow, part, other)	Full Flow
Capacity of c/case, less filter-refill-L (qt.)	3.78 (4)

Engine - Diesel Information

(NOT APPLICABLE)

Diesel engine manufacturer		
Glow plug, current drain at 0 deg. F		
Injector Nozzle	Type	
	Opening pressure kPa (psi)	
Pre-chamber design		
Fuel in-jection pump	Manufacturer	
	Type	
Fuel inj. pump drive (belt, chain, gear)		
Supplementary vacuum source (type)		
Fuel heater (yes/no)		
Water separator, description (std., opt.)		
Turbo manufacturer		
Oil cooler-type (oil to engine coolant; oil to ambient air)		
Oil filter		

Engine - Intake System

(NOT APPLICABLE)

Turbo charger - manufacturer		
Super charger - manufacturer		
Intercooler		

* Finished State

MVMA Specifications

Vehicle Line ACHIEVA

Model Year 1993 Issued Revised

METRIC (U.S. Customary)

Engine Description

Engine Code

2.3 LITER L4 (138 CID)

ELECTRONIC FUEL INJECTION RPO L40

Engine - Cooling System

Coolant recovery system (std, opt, n.a.)		Standard
Coolant fill location (rad., bottle)		Surge Tank
Radiator cap relief valve pressure kPa (psi)		124.1 (18), On Surge Tank
Circulation thermostat	Type (choke, bypass)	Bypass
	Starts to open @ deg's C(F)	89 (192)
Water Pump	Type (centrifugal, other)	Centrifugal
	GPM 1000 pump rpm	6.5
	Number of pumps	1
	Drive (V-belt, other)	Chain
	Bearing type	2 Row Ball
	Impeller material	Sheet Metal
Housing material		Die Cast Aluminum
By-pass recirculation type (inter., ext.)		External - Heater Water Flow & Throttle Body Water Flow
Cooling system capacity	With heater - L (qt.)	9.8 (10.4)
	With air conditioner-L(qt.)	9.8 (10.4)
	Opt. equip. specify-L(qt.)	None
Water jackets full length of cyl(yes,no)		Yes
Water all around cylinder (yes, no)		Partial
Water jackets open at head face (yes,no)		Partial
Radiator core	Std., A/C, HD	A/C
	Type (cross-flow, etc.)	Cross-Flow
	Construction (fin & tube mechanical, braze, etc.)	Serpentine Fin & Tube / Vacuum Brazed
	Matl., mass kg (wgt.,lbs.)	Aluminum. 3.08 (6.79), Manual Trans.; 3.75 (8.27), Auto Trans.
	Width	660 mm (26.0 in.)
	Height	383 mm (15.1 in.)
	Thickness	24 mm (.94 in.)
	Fins per inch	12.7 Fins Per Inch
Radiator end tank material		Nylon 66, 33% Mineral Filled
Fan	Std., elec., opt.	Electric
	Number of blades & type (flex, solid, material)	6- Nylon 6/6 Mineral Filled
	Number & location (front, rear of radiator)	
	Diameter & projected width	3.81 mm (15.0 in.), 37.3 mm (1.5 in.)
	Ratio(fan to crnkshft.rev.)	Not Applicable
	Fan cutout type	Engine Control Module (ECM)
	Drive type (direct, remote)	Electric - Direct
	RPM at idle (elec.)	1900
	Motor rating(wattage/elec.)	150 W
	Motor switch (type & location/elec.)	ECM
	Switch point (temp./ pressure/elec.)	On At 106 deg. (223) Coolant Temperature Or 190 PSI A/C Head Pressure
	Fan shroud (material)	None

MVMA Specifications

Vehicle Line ACHIEVA

Model Year 1993 Issued Revised

METRIC (U.S. Customary)

Engine Description

Engine Code

2.3 LITER L4 (138 CID)

ELECTRONIC FUEL INJECTION RPO LD2

Engine - Cooling System

Coolant recovery system (std, opt, n.a.)		Standard
Coolant fill location (rad., bottle)		Surge Tank
Radiator cap relief valve pressure kPa (psi)		124.1 (18), On Surge Tank
Circulation thermostat	Type (choke, bypass)	Bypass
	Starts to open @ deg's C(F)	89 (192)
Water Pump	Type (centrifugal, other)	Centrifugal
	GPM 1000 pump rpm	6.5
	Number of pumps	1
	Drive (V-belt, other)	Chain
	Bearing type	2 Row Ball
	Impeller material	Sheet Metal
	Housing material	Die Cast Aluminum
By-pass recirculation type (inter., ext.)		External - Heater Water Flow & Throttle Body Water Flow
Cooling system capacity	With heater - L (qt.)	9.8 (10.4)
	With air conditioner-L (qt.)	9.8 (10.4)
	Opt. equip. specify-L (qt.)	None
Water jackets full length of cyl (yes, no)		Yes
Water all around cylinder (yes, no)		Partial
Water jackets open at head face (yes, no)		Partial
Radiator core	Std., A/C, HD	A/C
	Type (cross-flow, etc.)	Cross-Flow
	Construction (fin & tube mechanical, braze, etc.)	Serpentine Fin & Tube/Vacuum Brazed
	Matl., mass kg (wgt., lbs.)	Aluminum, 3.75 (8.27)
	Width	660 mm (26.0 in.)
	Height	383 mm (15.1 in.)
	Thickness	24 mm (.94 in.)
Fan	Fins per inch	12.7 Fins Per Inch
	Radiator end tank material	Nylon 66, 33% Mineral Filled
	Std., elec., opt.	Electric
	Number of blades & type (flex, solid, material)	6 - Nylon 6/6 Mineral Filled
	Number & location (front, rear of radiator)	
	Diameter & projected width	381 (15.0), 37.3 (1.5)
	Ratio (fan to crnkshft. rev.)	Not Applicable
	Fan cutout type	Engine Control Module (ECM)
	Drive type (direct, remote)	Electric - Direct
	RPM at idle (elec.)	1900
	Motor rating (wattage/elec.)	150 W
	Motor switch (type & location/elec.)	ECM
	Switch point (temp.,/ pressure/elec.)	On At 106 deg. (223) Coolant Temperature Or 190 PSI A/C Head Pressure
	Fan shroud (material)	None

MVMA Specifications

Vehicle Line ACHIEVA
Model Year 1993 Issued Revised

METRIC (U.S. Customary)

Engine Description
Engine Code

2.3 LITER L4 (138 CID)
ELECTRONIC FUEL INJECTION RPO LGO & LGO - W41

Engine - Cooling System

Coolant recovery system (std., opt., n.a.)		Standard
Coolant fill location (rad., bottle)		Surge Tank
Radiator cap relief valve pressure kPa (psi)		124.1 (18), On Surge Tank
Circulation thermostat	Type (choke, bypass)	Bypass
	Starts to open @ deg's C(F)	89 (192)
Water Pump	Type (centrifugal, other)	Centrifugal
	GPM 1000 pump rpm	6.5
	Number of pumps	1
	Drive (V-belt, other)	Chain
	Bearing type	2 Row Ball
	Impeller material	Sheet Metal
	Housing material	Die Cast Aluminum
By-pass recirculation type (inter., ext.)		External - Heater Water Flow & Throttle Body Water Flow
Cooling system capacity	With heater - L (qt.)	9.8 (10.4)
	With air conditioner-L(qt.)	9.8 (10.4)
	Opt. equip. specify-L(qt.)	None
Water jackets full length of cyl(yes,no)		Yes
Water all around cylinder (yes, no)		Partial
Water jackets open at head face (yes,no)		Partial
Radiator core	Std., A/C, HO	A/C
	Type (cross-flow, etc.)	Cross-Flow
	Construction (fin & tube mechanical, brazes, etc.)	Serpentine Fin & Tube/Vacuum Brazed
	Matl., mass kg (wgt., lbs.)	Aluminum, 3.08 (6.79)
	Width	660 mm (26.0 in.)
	Height	383 mm (15.1 in.)
	Thickness	24 mm (.94 in.)
Fan	Fins per inch	12.7 Fins Per Inch
	Radiator end tank material	Nylon 66, 33% Mineral Filled
	Std., elec., opt.	Electric
	Number of blades & type (flex, solid, material)	6 - Nylon 6/6 Mineral Filled
	Number & location (front, rear of radiator)	
	Diameter & projected width	381 (15.0), 37.3 (1.5)
	Ratio(fan to crnkshft.rev.)	Not Applicable
	Fan cutout type	Engine Control Module (ECM)
	Drive type (direct, remote)	Electric - Direct
	RPM at idle (elec.)	1900
	Motor rating(wattage/elec.)	150 W
	Motor switch (type & location/elec.)	ECM
	Switch point (temp.,/ pressure/elec.)	On At 106 deg. (223) Coolant Temperature Or 190 PSI A/C Head Pressure
	Fan shroud (material)	None

MVMA Specifications

Vehicle Line ACHIEVA

Model Year 1993

Issued

Revised

METRIC (U.S. Customary)

Engine Description

Engine Code

3.3 LITER V6 (204 CID)

MULTI-PORT FUEL INJECTION RPO LG7

Engine - Cooling System

Coolant recovery system (std., opt., n.a.)		Standard
Coolant fill location (rad., bottle)		Surge Tank
Radiator cap relief valve pressure kPa (psi)		124.1 (18), On Surge Tank
Circulation thermostat	Type (choke, bypass)	Bypass
	Starts to open @ deg's C(F)	91 (195)
Water Pump	Type (centrifugal, other)	Centrifugal
	GPM 1000 pump rpm	8.0
	Number of pumps	1
	Drive (V-belt, other)	Poly V-Belt
	Bearing type	2 Row Ball
	Impeller material	Stamped Steel
	Housing material	Aluminum
By-pass recirculation type (inter., ext.)		External - Thru Heater Core And Internal Thru Manifold
Cooling system capacity	With heater - L (qt.)	12.0 (12.7)
	With air conditioner-L(qt.)	12.0 (12.7)
	Opt. equip. specify-L(qt.)	None
Water jackets full length of cyl(yes,no)		Yes
Water all around cylinder (yes, no)		Yes
Water jackets open at head face (yes,no)		No
Radiator core	Std., A/C, HD	A/C
	Type (cross-flow, etc.)	Cross-Flow
	Construction (fin & tube mechanical, braze, etc.)	Serpentine Fin & Tube/Vacuum Brazed
	Matl., mass kg (wgt., lbs.)	Aluminum, 3.99 (8.8)
	Width	660 mm (26.0 in.)
	Height	383 mm (15.1 in.)
	Thickness	24 mm (.94 in.)
	Fins per inch	20
Radiator end tank material		Nylon 66, 33% Mineral Filled
Fan	Std., elec., opt.	Electric
	Number of blades & type (flex, solid, material)	6 - Nylon 6/6 Mineral Filled
	Number & location (front, rear of radiator)	
	Diameter & projected width	381 (15.0), 37.3 (1.5)
	Ratio(fan to crnkshft.rev.)	Not Applicable
	Fan cutout type	Engine Control Module (ECM)
	Drive type (direct, remote)	Electric - Direct
	RPM at idle (elec.)	1900
	Motor rating(wattage/elec.)	150 W
	Motor switch (type & location/elec.)	ECM
	Switch point (temp.,/ pressure/elec.)	On At 100 deg. (212) Coolant Temperature Or 190 PSI A/C Head Pressure
	Fan shroud (material)	None

MVMA Specifications

Vehicle Line ACHIEVA

Model Year 1993

Issued

Revised

METRIC (U.S. Customary)

Engine Description

Engine Code

2.3 LITER L4 (138 CID)

ELECTRONIC FUEL INJECTION RPO L40

Engine - Fuel System

(See supplemental page for details of Fuel Inj. Supercharger, Turbocharger, etc. if used)

Induction type: carburetor, fuel injection system, etc.		Port Fuel Injection
Manufacturer		A/C Rochester Products
Carburetor no. of barrels		None
Idle A/F mix.		ECM Controlled
Fuel Injection	Point of inj. (no.)	4 Injectors At Ports In Cylinder Head
	Constant, pulse, flow	Pulse
	Control (elec., mech.)	Electronic
	Sys. press. kPa (psi)	300 (43)
Idle spd.-rpm (spec. neutral or drive and propane if used)	Manual	900
	Automatic	700 Dr. or N
Intake manifold heat control (exhaust or water thermostatic or fixed)		None
Air cleaner type		Single Snorkel, Remote Mounted, Replaceable Paper Element
Fuel filter (type/location)		Replaceable Enclosed Paper Element Located Near Fuel Tank
Fuel pump	Type (elec. or mech.)	Electrical
	Location (eng., tank)	Fuel Tank
	Press. range kPa (psi)	Pressure Depends On Flow Rate and System Voltage
	Flow rate at regulated pressure (L (gal)/hr @ kPa (psi))	62.4 @ 350 (Figures for Wide Open Throttle, 16.51 @ 50.8)

Fuel Tank

Capacity refill L (gallons)		57.5 (15.2)
Location (describe)		Rear Center Underside, R.H. Rear Quarter Panel
Attachment		Underbody Strap
Material & Mass kg (weight lbs.)		Steel
Filler pipe	Location & material	Right Rear Quarter Panel - Steel
	Connection to tank	Hoses
Fuel line (material)		Steel
Fuel hose (material)		Rubber
Return line (material)		Steel
Vapor line (material)		Steel
Extended range tank	Opt., n.a.	Not Applicable
	Capacity L (gallons)	"
	Location & material	"
	Attachment	"
Auxiliary tank	Opt., n.a.	Not Applicable
	Capacity L (gallons)	"
	Location & material	"
	Attachment	"
	Slctr switch or valve	"
	Separate fill	"

MVMA Specifications

Vehicle Line ACHIEVA
Model Year 1993 Issued _____ Revised _____

METRIC (U.S. Customary)

Engine Description

Engine Code

2.3 LITER L4 (138 CID)

ELECTRONIC FUEL INJECTION RPO LD2

Engine - Fuel System

(See supplemental page for details of Fuel Inj. Supercharger, Turbocharger, etc. if used)

Induction type: carburetor, fuel injection system, etc.		Port Fuel Injection
Manufacturer		A/C Rochester Products
Carburetor no. of barrels		None
Idle A/F mix.		ECM Controlled
Fuel Injection	Point of inj. (no.)	4 Injectors At Ports in Cylinder Head
	Constant, pulse, flow	Pulse
	Control (elec., mech.)	Electronic
	Sys. press. kPa (psi)	300 (43)
Idle spd.-rpm (spec. neutral or drive and propane if used)	Manual	
	Automatic	700 Dr. or N
Intake manifold heat control (exhaust or water thermostatic or fixed)		None
Air cleaner type		Single Snorkel, Remote Mounted, Replaceable Paper Element
Fuel filter (type/location)		Replaceable Enclosed Paper Element Located Near Fuel Tank
Fuel pump	Type (elec. or mech.)	Electrical
	Location (eng., tank)	Fuel Tank
	Press. range kPa (psi)	Pressure Depends On Flow Rate And System Voltage
	Flow rate at regulated pressure (L (gal)/hr @ kPa (psi))	62.4 @ 350 (Figures For Wide Open Throttle, 16.51 @ 50.8)

Fuel Tank

Capacity, refill L (gallons)		57.5 (15.2)
Location (describe)		Rear Center Underside, R.H. Rear Quarter Panel
Attachment		Underbody Strap
Material & Mass kg (weight lbs.)		Steel
Filler pipe	Location & material	Right Rear Quarter Panel - Steel
	Connection to tank	Hoses
Fuel line (material)		Steel
Fuel hose (material)		Rubber
Return line (material)		Steel
Vapor line (material)		Steel
Extended range tank	Opt., n.a.	Not Applicable
	Capacity L (gallons)	"
	Location & material	"
	Attachment	"
Auxiliary tank	Opt., n.a.	Not Applicable
	Capacity L (gallons)	"
	Location & material	"
	Attachment	"
	Sictr switch or valve	"
	Separate fill	"

MVMA Specifications

Vehicle Line ACHIEVA

Model Year 1993

Issued _____

Revised _____

METRIC (U.S. Customary)

Engine Description

Engine Code

2.3 LITER L4 (138 CID)

ELECTRONIC FUEL INJECTION RPO LGO & LGO - W41

Engine - Fuel System

(See supplemental page for details of Fuel Inj. Supercharger, Turbocharger, etc. if used)

Induction type: carburetor, fuel injection system, etc.		Port Fuel Injection
Manufacturer		A/C Rochester Products
Carburetor no. of barrels		None
Idle A/F mix.		ECM Controlled
Fuel Injection	Point of inj. (no.)	4 Injectors At Ports In Cylinder Head
	Constant, pulse, flow	Pulse
	Control (elec., mech.)	Electronic
	Sys. press. kPa (psi)	300 (43)
Idle spd.-rpm (spec. neutral or drive and propane if used)	Manual	900
	Automatic	
Intake manifold heat control (exhaust or water thermostatic or fixed)		None
Air cleaner type		Single Snorkel, Remote Mounted, Replaceable Paper Element
Fuel filter (type/location)		Replaceable Enclosed Paper Element Located Near Fuel Tank
Fuel pump	Type (elec. or mech.)	Electrical
	Location (eng., tank)	Fuel Tank
	Press. range kPa (psi)	Pressure Depends On Flow Rate And System Voltage
	Flow rate at regulated pressure (L (gal)/hr @ kPa (psi))	62.4 @ 350 (Figures For Wide Open Throttle, 16.51 @ 50.8)

Fuel Tank

Capacity refill L (gallons)		57.5 (15.2)
Location (describe)		Rear Center Underside, R.H. Rear Quarter Panel
Attachment		Underbody Strap
Material & Mass kg (weight lbs.)		Steel
Filler pipe	Location & material	Right Rear Quarter Panel - Steel
	Connection to tank	Hoses
Fuel line (material)		Steel
Fuel hose (material)		Rubber
Return line (material)		Steel
Vapor line (material)		Steel
Extended range tank	Cap., n.a.	Not Applicable
	Capacity L (gallons)	"
	Location & material	"
	Attachment	"
Auxiliary tank	Cap., n.a.	Not Applicable
	Capacity L (gallons)	"
	Location & material	"
	Attachment	"
	Select switch or valve	"
	Separate fill	"

MVMA Specifications

Vehicle Line ACHIEVA

Model Year 1993 Issued Revised

METRIC (U.S. Customary)

Engine Description

Engine Code

3.3 LITER V6 (204 CID)

ELECTRONIC FUEL INJECTION RPO LG7

Engine - Fuel System

(See supplemental page for details of Fuel Inj, Supercharger, Turbocharger, etc. if used)

Induction type: carburetor, fuel injection system, etc.		Port Fuel Injection
Manufacturer		A/C Rochester Products
Carburetor no. of barrels		None
Idle A/F mix.		ECM Controlled
Fuel Injection	Point of inj. (no.)	4 Injectors At Ports In Cylinder Head
	Constant, pulse, flow	Pulse
	Control (elec., mech.)	Electronic
	Sys. press. kPa (psi)	300 (43)
Idle spd. -rpm (spec. neutral or drive and propane if used)	Manual	
	Automatic	675 RPM Drive
		900 RPM Neutral
Intake manifold heat control (exhaust or water thermostatic or fixed)		None
Air cleaner type		Single Snorkel
Fuel filter (type/location)		Replaceable Enclosed Paper Element Located Near Fuel Tank
Fuel pump	Type (elec. or mech.)	Electrical
	Location (eng., tank)	Fuel Tank
	Press. range kPa (psi)	Pressure Depends On Flow Rate And System Voltage
	Flow rate at regulated pressure (L (gal)/hr @ kPa (psi))	62.4 @ 350 (Figures For Wide Open Throttle, 16.51 @ 50.8)

Fuel Tank

Capacity refill L (gallons)		57.5 (15.2)
Location (describe)		Rear Center Underside, R.H. Rear Quarter Panel
Attachment		Underbody Strap
Material & Mass kg (weight lbs.)		Steel
Filler pipe	Location & material	Right Rear Quarter Panel - Steel
	Connection to tank	Hoses
Fuel line (material)		Steel
Fuel hose (material)		Rubber
Return line (material)		Steel
Vapor line (material)		Steel
Extended range tank	Opt., n.a.	Not Applicable
	Capacity L (gallons)	"
	Location & material	"
	Attachment	"
Auxiliary tank	Opt., n.a.	Not Applicable
	Capacity L (gallons)	"
	Location & material	"
	Attachment	"
	Sictr switch or valve	"
	Separate fill	"

MVMA Specifications

Vehicle Line ACHIEVA
Model Year 1993 Issued Revised

METRIC (U.S. Customary)

Engine Description

2.3 LITER L4 (138 CID)

Engine Code

ELECTRONIC FUEL INJECTION RPO L40

Vehicle Emission Control

Exhaust Emission Control	Type (air injection, engine modifications, other)		C3 Engine Modification
	Air injection	Pump or pulse	None
		Driven by	
		Air distribution (head, manifold, etc.,)	
		Point of entry	
	Exhaust Gas Recirculation	Type (controlled flow, open orifice, other)	None
		Exhaust source	
		Point of exh.inj. (spacer, carb., manifold, other)	
	Catalytic Converter	Type	Single Bed
		Number of	1
		Location(s)	Under Floor
		Volume L (cu.in)	2.671 (163)
		Substrate type	Monolith - Ceramic
		Noble metal type	Platinum (Pt), Palladium (Pd), Rhodium (Rh)
		Noble metal concentration (g/cu. cm.)	.00082 / - / .00006
Crankcase Emission Control	Type (ventilates to atmosphere, induction system, other)		Orifice + Bypass. No PCV Valve Closed - Ventilates To Induction System
	Energy source (manifold vacuum, carburetor, other)		Orificed Connection To Manifold Vacuum Open Hose Connection To Clean Side Of A/C
	Discharges to (intake manifold, other)		Induction System
	Air inlet (breather cap, other)		None
Evaporative Emission Control	Vapor vented to (crankcase, canister, other)	Fuel tank	Canister
		Carburetor	None
	Vapor storage provision		Charcoal Canister
Electronic System	Closed loop (yes/no)		Yes
	Open loop (yes/no)		No

Engine - Exhaust System

Type (single, single with cross-over, dual, other)		Tri-Flow With Dual Tailpipes
Muffler no. & type (reverse flow, straight thru, separate resonator) Material & Mass kg (weight lbs.)		Reverse Flow 8.13 (17.92)
Resonator no. & type		None
Exhaust pipe	Branch o.d., wall thickness	44.5 x 1.9 mm (1.75 x .075 in.)
	Main o.d., wall thickness	44.5 x 1.0 mm (1.75 x .040 in.)
	Matl. & Mass kg (wght.lbs.)	409 Stainless Steel, 1.73 (3.81)
Inter-mediate pipe	o.d. & wall thickness	44.5 x 1.37 mm (1.75 x .054 in.)
	Matl. & Mass kg (wght.lbs.)	409 Stainless Steel
Tail pipe	o.d. & wall thickness	50.8 x 1.09 mm (2.0 x .043 in.)
	Matl. & Mass kg (wght.lbs.)	409 Stainless Steel

MVMA Specifications

Vehicle Line ACHIEVA

Model Year 1993

Issued

Revised

METRIC (U.S. Customary)

Engine Description

Engine Code

2.3 LITER L4 (138 CID)

ELECTRONIC FUEL INJECTION RPO LD2

Vehicle Emission Control

Exhaust Emission Control	Type (air injection, engine modifications, other)		C3 Engine Modification
	Air injection	Pump or pulse	None
		Driven by	
		Air distribution (head, manifold, etc.,)	
		Point of entry	
	Exhaust Gas Recirculation	Type (controlled flow, open orifice, other)	None
		Exhaust source	
		Point of exh.inj. (spacer, carb., manifold, other)	
	Catalytic Converter	Type	Single Bed
		Number of	1
		Location(s)	Under Floor
		Volume L (cu.in)	2.671 (163)
		Substrate type	Monolith - Ceramic
		Noble metal type	Platinum (Pt), Palladium (Pd), Rhodium (Rh)
		Noble metal concentration (g/cu. cm.)	.00082 / - / .00006
Crankcase Emission Control	Type (ventilates to atmosphere, induction system, other)		Orifice + Bypass. No PCV Valve Closed - Ventilates To Induction System
	Energy source (manifold vacuum, carburetor, other)		Orificed Connection To Manifold Vacuum Open Hose Connection To Clean Side Of A/C
	Discharges to (intake manifold, other)		Induction System
	Air int.(breather cap, other)		None
Evaporative Emission Control	Vapor vented to (crankcase, canister, other)	Fuel tank	Canister
		Carburetor	None
	Vapor storage provision		Charcoal Canister
Electronic System	Closed loop (yes/no)		Yes
	Open loop (yes/no)		No

Engine - Exhaust System

Type (single, single with cross-over, dual, other)		4 Into 2 Into 1 (TRI-Y)
Muffler no. & type (reverse flow, straight thru, separate resonator) Material & Mass kg (weight lbs.)		1, Tri-Flow With Dual Tail Pipes
Resonator no. & type		None
Exhaust pipe	Branch o.d., wall thickness	44.5 x 1.9 mm (1.75 x .075 in.)
	Main o.d., wall thickness	44.5 x 1.0 mm (1.75 x .040 in.)
	Matl. & Mass kg (wght.lbs.)	409 Stainless Steel, 1.73 (3.81)
Inter-mediate pipe	o.d. & wall thickness	50.8 x 1.37 mm (2.00 x .054 in.)
	Matl. & Mass kg (wght.lbs.)	409 Stainless Steel
Tail pipe	o.d. & wall thickness	44.45 x 1.09 mm (1.75 x .043 in.)
	Matl. & Mass kg (wght.lbs.)	409 Stainless Steel

MVMA Specifications

Vehicle Line ACHIEVA
Model Year 1993 Issued Revised

METRIC (U.S. Customary)

Engine Description
Engine Code

2.3 LITER L4 (138 CID)
ELECTRONIC FUEL INJECTION RPO LGO & LGO - W41

Vehicle Emission Control

Exhaust Emission Control	Type (air injection, engine modifications, other)		C3 Engine Modification
	Air injection	Pump or pulse	None
		Driven by	
		Air distribution (head, manifold, etc.)	
		Point of entry	
	Exhaust Gas Recirculation	Type (controlled flow, open orifice, other)	None
		Exhaust source	
	Catalytic Converter	Point of exh.inj. (spacer, carb., manifold, other)	
		Type	Single Bed
		Number of	1
		Location(s)	Under Floor
		Volume L (cu.in)	2.671 (163)
		Substrate type	Monolith - Ceramic
		Noble metal type	Platinum (Pt), Palladium (Pd), Rhodium (Rh)
		Noble metal concentration (g/cu. cm.)	.00082 / - / .00006
Crankcase Emission Control	Type (ventilates to atmosphere, induction system, other)		Orifice + Bypass. No PCV Valve Closed - Ventilates To Induction System
	Energy source (manifold vacuum, carburetor, other)		Orificed Connection To Manifold Vacuum Open Hose Connection To Clean Side Of A/C
	Discharges to (intake manifold, other)		Induction System
	Air inlet (breather cap, other)		None
Evaporative Emission Control	Vapor vented to (crankcase, canister, other)	Fuel tank	Canister
		Carburetor	None
	Vapor storage provision		Charcoal Canister
Electron-ic System	Closed loop (yes/no)		Yes
	Open loop (yes/no)		No

Engine - Exhaust System

Type (single, single with cross-over, dual, other)		Tri-Flow With Dual Tail Pipes
Muffler no. & type (reverse flow, straight thru, separate resonator) Material & Mass kg (weight lbs.)		Reverse Flow. Two
Resonator no. & type		None
Exhaust pipe	Branch o.d., wall thickness	50.8 x 1.9 mm (2.00 x .075 in.)
	Main o.d., wall thickness	63.5 x 1.5 mm (2.50 x .059 in.)
	Matl. & Mass kg (wght.lbs.)	409 Stainless Steel. 2.75 (6.06)
Inter- mediate pipe	o.d. & wall thickness	50.8 x 1.37 mm (2.00 x .054 in.)
	Matl. & Mass kg (wght.lbs.)	409 Stainless Steel
Tail pipe	o.d. & wall thickness	50.8 O.D. x 1.09 mm (2.0 O.D. x .043 in.)
	Matl. & Mass kg (wght.lbs.)	409 Stainless Steel

MVMA Specifications

Vehicle Line ACHIEVA
Model Year 1993 Issued Revised

METRIC (U.S. Customary)

Engine Description

3.3 LITER V6 (204 CID)

Engine Code

MULTI-PORT FUEL INJECTION RPO LG7

Vehicle Emission Control

Exhaust Emission Control	Type (air injection, engine modifications, other)		Port Fuel Injection
	Air injection	Pump or pulse	None
		Driven by	
		Air distribution (head, manifold, etc..)	
		Point of entry	
	Exhaust Gas Recirculation	Type (controlled flow, open orifice, other)	None
		Exhaust source	
		Point of exh.inj. (spacer, carb., manifold, other)	
	Catalytic Converter	Type	Single Bed
		Number of	1
		Location(s)	Under Floor
		Volume L (cu.in)	1.8 (110)
		Substrate type	Cordierite Monolith
		Noble metal type	Platinum (Pt), Rhodium (Rh)
		Noble metal concentration (g/cu. cm.)	.00121/ - / .00017
Crankcase Emission Control	Type (ventilates to atmosphere, induction system, other)		Induction System
	Energy source (manifold vacuum, carburetor, other)		Manifold Vacuum
	Discharges to (intake manifold, other)		Intake Manifold
	Air inlet (breather cap, other)		Inlet Duct To Rocker Cover
Evaporative Emission Control	Vapor vented to (crankcase, canister, other)	Fuel tank	Canister
		Carburetor	None
	Vapor storage provision		Charcoal Canister
Electronic System	Closed loop (yes/no)		Yes
	Open loop (yes/no)		No

Engine - Exhaust System

Type (single, single with cross-over, dual, other)		Tri-Flow With Dual Tail Pipes
Muffler no. & type (reverse flow, straight thru, separate resonator)		Reverse Flow
Material & Mass kg (weight lbs.)		
Resonator no. & type		None
Exhaust pipe	Branch o.d., wall thickness	50.8 x 1.9 mm (2.00 x .075 in.)
	Main o.d., wall thickness	63.5 x 1.5 mm (2.50 x .059 in.)
	Matl. & Mass kg (wght.lbs.)	409 Stainless Steel, 2.75 (6.06)
Inter-mediate pipe	o.d. & wall thickness	50.8 x 1.09 mm (2.00 x .043 in.)
	Matl. & Mass kg (wght.lbs.)	409 Stainless Steel
Tail pipe	o.d. & wall thickness	50.8 O.D. x 1.37 mm (2.0 O.D. x .054 in.)
	Matl. & Mass kg (wght.lbs.)	409 Stainless Steel

MVMA Specifications

Vehicle Line ACHIEVA
Model Year 1993 Issued Revised

METRIC (U.S. Customary)

Engine Description

Engine Code

2.3 LITER L4 (138 CID)
ELECTRONIC FUEL INJECTION RPO L40

Transmissions/Transaxle (Std., Opt., N.A.)

Manual 4-speed (manufacturer/country)	
Manual 5-speed (manufacturer/country)	Isuzu /
Manual 6-speed (manufacturer/country)	
Automatic (manufacturer/country)	3T40 Optional General Motors Powertrain/U.S.A.
Auto. overdrive (manufacturer/country)	Not Applicable

Manual Transmission/Transaxle

Number of forward speeds		5
Gear ratios	1st	3.73
	2nd	2.043
	3rd	1.33
	4th	.923
	5th	.704
	6th	
	Reverse	3.578
Synchronous meshing (specify gears)		All Forward Gears
Shift lever location		Floor - Console
Trans. case mat'l. & mass kg (lbs)*		Aluminum, 30.314 (13.75)
Lubricant	Capacity L (pt.)	1.9 (4.0)
	Type recommended	Standard Transmission Fluid (STF)

Clutch (Manual Transmission)

Clutch manufacturer		Daikin
Clutch type (dry, wet; single, multiple disc)		Dry, Single
Linkage (hyd., cable, rod, lever, other)		Hydraulic
Max. pedal effort (nom. spring load) N (lbs.)	Depressed	151 (34)
	Released	0 (0)
Assist (spring, power/percent, nominal)		None
Type pressure plate springs		Diaphragm
Total spring load (nominal) N (lbs)		5688 (1279)
Clutch facing	Facing mfg. & mat'l. coding	Valeo F202
	Facing mat'l. & construction	F202
	Rivets per facing	16
	Outside x inside dia. (nom.)	225 x 150 mm (8.86 x 5.91 in.)
	Total eff. area sq cm (sq in)	220.89 (34.25)
	Thickness (pressure plate side/fly wheel side)	3.5 mm (.138 in.), Pressure Plate/ 3.2 mm (.126 in.), Fly Wheel
	Rivet depth (pressure plate side/fly wheel side)	1.6 mm (.06 in.), Pressure Plate / 1.5 mm (.06 in.), Fly Wheel
	Engagement cushion method	Driven Plate Cushion, Wave Spoke Springs
Release bearing type & method lub.		Ball Thrust - Prepacked & Sealed
Torsional damping method, springs, hysteresis		Coil Spring With Friction Washer

* Includes shift linkage, lubricant, and clutch housing. If other specify.

MVMA Specifications

Vehicle Line ACHIEVA
Model Year 1993 Issued _____ Revised _____

METRIC (U.S. Customary)

Engine Description
Engine Code

2.3 LITER L4 (138 CID)
ELECTRONIC FUEL INJECTION RPO LD2

Transmissions/Transaxle (Std., Opt., N.A.)

Manual 4-speed (manufacturer/country)	Not Applicable
Manual 5-speed (manufacturer/country)	"
Manual 6-speed (manufacturer/country)	"
Automatic (manufacturer/country)	Standard Hydra-Matic MD9
Auto. overdrive (manufacturer/country)	Not Applicable

Manual Transmission/Transaxle (NOT APPLICABLE)

Number of forward speeds		
Gear ratios	1st	
	2nd	
	3rd	
	4th	
	5th	
	6th	
	Reverse	
Synchronous meshing (specify gears)		
Shift lever location		
Trans. case mat'l. & mass kg (lbs)*		
Lubricant	Capacity L (pt.)	
	Type recommended	

Clutch (Manual Transmission) (NOT APPLICABLE)

Clutch manufacturer		
Clutch type (dry, wet; single, multiple disc)		
Linkage (hyd., cable, rod, lever, other)		
Max. pedal effort (nom. spring load) N (lbs.)	Depressed	
	Released	
Assist (spring, power/percent, nominal)		
Type pressure plate springs		
Total spring load (nominal) N (lbs)		
Clutch facing	Facing mfr. & mat'l. coding	
	Facing mat'l. & construction	
	Rivets per facing	
	Outside x inside dia. (nom.)	
	Total eff. area sq cm (sq in)	
	Thickness (pressure plate side/fly wheel side)	
	Rivet depth (pressure plate side/fly wheel side)	
Engagement cushion method		
Release bearing type & method lub.		
Torsional damping method, springs, hysteresis		

* Includes shift linkage, lubricant, and clutch housing. If other specify.

MVMA Specifications

Vehicle Line ACHIEVA
Model Year 1993 Issued Revised

METRIC (U.S. Customary)

Engine Description

Engine Code

2.3 LITER L4 (138 CID)
ELECTRONIC FUEL INJECTION RPO LGO

Transmissions/Transaxle (Std., Opt., N.A.)

Manual 4-speed (manufacturer/country)	Not Applicable
Manual 5-speed (manufacturer/country)	Standard MV5
Manual 6-speed (manufacturer/country)	Not Applicable
Automatic (manufacturer/country)	Not Applicable
Auto. overdrive (manufacturer/country)	Not Applicable

Manual Transmission/Transaxle

Number of forward speeds		5
Gear ratios	1st	3.50
	2nd	2.05
	3rd	1.38
	4th	1.03
	5th	.81
	6th	
	Reverse	3.41
Synchronous meshing (specify gears)		All Forward Gears
Shift lever location		Floor - Console
Trans. case mat'l. & mass kg (lbs)*		Aluminum, 30.314 (13.75)
Lubricant	Capacity L (pt.)	1.9 (4.0)
	Type recommended	Standard Transmission Fluid (STF)

Clutch (Manual Transmission)

Clutch manufacturer		Daikin
Clutch type (dry, wet; single, multiple disc)		Dry, Single
Linkage (hyd., cable, rod, lever, other)		Hydraulic
Max. pedal effort (nom. spring load) N (lbs.)	Depressed	151 (34)
	Released	0 (0)
Assist (spring, power/percent, nominal)		None
Type pressure plate springs		Belleville Spring
Total spring load (nominal) N (lbs)		5892 (1325)
Clutch facing	Facing mfr. & mat'l. coding	Daikin NC80
	Facing mat'l. & construction	NC80
	Rivets per facing	16
	Outside x inside dia. (nom.)	232 x 150 mm (9.13 x 5.91 in.)
	Total eff. area sq cm (sq in)	442 (68.5)
	Thickness (pressure plate side/fly wheel side)	3.2 mm (.126 in.), Pressure Plate/ 3.5 mm (.138 in.), Fly Wheel
	Rivet depth (pressure plate side/fly wheel side)	1.6 mm (.06 in.), Pressure Plate / 1.5 mm (.06 in.), Fly Wheel
	Engagement cushion method	Driven Plate Cushion
Release bearing type & method lub.		Ball Thrust - Prepacked & Sealed
Torsional damping method, springs, hysteresis		Coil Spring With Friction Washer

* Includes shift linkage, lubricant, and clutch housing. If other specify.

MVMA Specifications

Vehicle Line ACHIEVA
Model Year 1993 Issued _____ Revised _____

METRIC (U.S. Customary)

Engine Description

Engine Code

2.3 LITER L4 (138 CID)

ELECTRONIC FUEL INJECTION RPO L40

Automatic Transmission/Transaxle

Trade Name		3T40 Transaxle Assembly
Type and special features (describe)		3-Speed Automatic, Fully Automatic Shifted Planetary Gear W/Torque Converter And Lock-Up Clutch
☐ Shift mechanics		
Gear selector	Location (column, floor, other)	Column & Floor
	Ltr./No. designation (e.g. PRND21)	P-R-N-D-2-1
	Shift interlock (yes, no, describe)	No
Gear ratios	1st	2.84
	2nd	1.60
	3rd	1.00 (Converter Clutch Engagement)
	4th	--
	5th	--
	6th	--
	Reverse	2.07
☐ Final drive ratio		
Max. upshift vehicle speed - drive range km/h (mph)		2 - 3 = 157 (94)
☐ Max. upshift engine speed RPM		
Max. kickdown speed - drive range km/h (mph)		3 - 2 = 146 (91)
Min. overdrive speed km/h (mph)		--
☐ Torque converter	Type	
	Torus design	
	Number of elements	3
	Max. ratio at stall	2.48
	Type of cooling (air, liquid)	Liquid
	Nominal diameter	245 (9.8)
	Capacity factor "K"	203
☐ Pump type		
Lubricant	Capacity refill L (pt.)	8.5 (17.85) Dry Transmission, Original Filling
	Type recommended	Dexron II
Oil cooler (std., opt., N.A., internal, external, air, liquid)		Standard, Integral Part Of Radiator
Trans. mass kg (lbs) & case matl.**		65.7 (144.54) Dry Weight

All Wheel / 4 Wheel Drive

(NOT APPLICABLE)

Desc. & type (part-time, full-time, 2/4 shift while moving, mech., elect., chain/gear, etc.)		
Transfer case	Manufacturer and model	
	Type and location	
Low-range gear ratio		
System disconnect (describe)		
Center differential	Type (bevel, planetary, w or w/o viscous bias, torsen, etc.)	
	Torque split(% frt/rear)	

* Input speed / square root of torque.

** Dry weight including torque converter. If other, specify.

MVMA Specifications

Vehicle Line ACHIEVA
Model Year 1993 Issued Revised

METRIC (U.S. Customary)

Engine Description

2.3 LITER L4 (138 CID)

Engine Code

ELECTRONIC FUEL INJECTION RPO LD2

Automatic Transmission/Transaxle

Trade Name		3T40 Transaxle Assembly
Type and special features (describe)		3-Speed Automatic, Fully Automatic Shifted Planetary Gear W/Torque Converter And Lock-Up Clutch
☐ Shift mechanics		
Gear selector	Location (column, floor, other)	Column & Floor
	Ltr./No. designation (e.g. PRND21)	P-R-N-D-2-1
	Shift interlock (yes, no, describe)	No
Gear ratios	1st	2.84
	2nd	1.60
	3rd	1.00 (Converter Clutch Engagement)
	4th	--
	5th	--
	6th	--
	Reverse	2.07
☐ Final drive ratio		
Max. upshift vehicle speed - drive range km/h (mph)		142 (88), 3.18 Axle Ratio
☐ Max. upshift engine speed RPM		
Max. kickdown speed - drive range km/h (mph)		138 (86)
Min. overdrive speed km/h (mph)		--
☐ Torque converter	Type	
	Torus design	
	Number of elements	3
	Max. ratio at stall	2.48
	Type of cooling (air, liquid)	Liquid
	Nominal diameter	245 (9.8)
	Capacity factor K_m	203
☐ Pump type		
Lubricant	Capacity refill L (pt.)	8.5 (17.85) Dry Transmission, Original Filling
	Type recommended	Dexron II
Oil cooler (std., opt., N.A., internal, external, air, liquid)		Standard, Integral Part Of Radiator
Trans. mass kg (lbs) & case mat'l.**		65.7 (144.54) Dry Weight

All Wheel / 4 Wheel Drive

(NOT APPLICABLE)

Desc. & type (part-time, full-time, 2/4 shift while moving, mech., elect., chain/gear, etc.)		
Transfer case	Manufacturer and model	
	Type and location	
Low-range gear ratio		
System disconnect (describe)		
Center differential	Type (bevel, planetary, w or w/o viscous bias, torsen, etc.)	
	Torque split (% frt/rear)	

* Input speed / square root of torque.

** Dry weight including torque converter, if other, specify.

MVMA Specifications

Vehicle Line ACHIEVA

Model Year 1993

Issued

Revised

METRIC (U.S. Customary)

Engine Description

Engine Code

3.3 LITER V6 (204 CID)

MULTI-PORT FUEL INJECTION RPO LG7

Automatic Transmission/Transaxle

Trade Name		3T40 Transaxle Assembly
Type and special features (describe)		3-Speed Automatic, Fully Automatic Shifted Planetary Gear W/Torque Converter And Lock-Up Clutch
☐ Shift mechanics		
Gear selector	Location (column, floor, other)	Column & Floor
	Ltr./No. designation (e.g. PRND21)	P-R-N-D-2-1
	Shift interlock (yes, no, describe)	No
Gear ratios	1st	2.84
	2nd	1.60
	3rd	1.00 (Converter Clutch Engagement)
	4th	--
	5th	--
	6th	--
	Reverse	2.07
☐ Final drive ratio		
Max. upshift vehicle speed - drive range km/h (mph)		2 - 3 = 145 (90)
☐ Max. upshift engine speed RPM		
Max. kickdown speed - drive range km/h (mph)		2 - 3 = 138 (86)
Min. overdrive speed km/h (mph)		--
☐ Torque converter	Type	
	Torus design	
	Number of elements	3
	Max. ratio at stall	2.00
	Type of cooling (air, liquid)	Liquid
	Nominal diameter	245 (9.8)
	Capacity factor "K"	140
☐ Pump type		
Lubricant	Capacity refill L (pt.)	8.5 (17.85) Dry Transmission, Original Filling
	Type recommended	Dexron II
Oil cooler (std., opt., N.A., internal, external, air, liquid)		Standard, Integral Part Of Radiator
Trans. mass kg (lbs) & case matl.**		65.7 (144.54) Dry Weight

All Wheel / 4 Wheel Drive

(NOT APPLICABLE)

Desc. & type (part-time, full-time, 2/4 shift while moving, mech., elect., chain/gear, etc.)		
Transfer case	Manufacturer and model	
	Type and location	
Low-range gear ratio		
System disconnect (describe)		
Center differential	Type (bevel, planetary, w or w/o viscous bias, torsen, etc.)	
	Torque split% frt/rear)	

* Input speed / square root of torque.

** Dry weight including torque converter. If other, specify.

MVMA Specifications

Vehicle Line ACHIEVA
Model Year 1993 Issued _____ Revised _____

METRIC (U.S. Customary)

Engine Description

2.3 LITER L4 (138 CID)

Engine Code

ELECTRONIC FUEL INJECTION RPO L40

Axle Ratio and Tooth Combinations

(See 'Power Teams' for axle ratio usage)

Effective final drive ratio (or overall top gear ratio)		2.84, 3T40	3.58, MG2
Transr ratio and method(chain,gear,etc)		1.0	Gear
Front drive unit	Ring gear o.d.		Not Applicable
	No. of teeth	Pinion	"
		Ring gear	"

Front Drive Unit

Description (integral to trans., etc.)		Planetary Final Drive
		Integral With Transmission
Limited slip differential (type)		Not Applicable
Drive pinion	Type	"
	Offset	"
No. of differential pinions		2
Pinion/differential	Adjustment (shim, etc.)	Not Applicable
	Bearing adjustment	"
Driving wheel bearing (type)		
Lubricant	Capacity L (pt.)	See Automatic Trans. Spec. 1.9
	Type recommended	See Automatic Trans. Spec. STF

Axle Shafts - Front Wheel Drive

Manufacturer and number used			Saginaw Division (2)	
Type (straight, solid bar, tubular, etc.)		Left	Straight - Solid	
		Right	Straight - Solid	
Outer diam. x length* x wall thickness	Manual transaxle	Left	27.1 x 308.0 mm (1.07 x 12.13 in.)	
		Right	27.1 x 665.0 mm (1.07 x 26.18 in.)	
	Automatic transaxle	Left	23.8 x 297.0 mm (.94 x 11.69 in.)	
		Right	23.8 x 365.4 mm (.94 x 14.39 in.)	
	Optional transaxle	Left		
		Right		
Slip yoke	Type			
	Number of teeth			
	Spline o.d.			
Universal joints	Make and mfg. no.		Inner	Saginaw Division
			Outer	Saginaw Division
	Number used		Inboard & Outboard On Each Axle Shaft	
	Type, size, plunge		Inner	Free Motion - 61.5 Stroke
			Outer	Rzeppa - Fixed Center
	Attach (u-bolt, clamp, etc.)		Retaining Ring	
	Bearing	Type (plain, anti-friction)	Inner - Ball & Roller Outer - Ball	
		Lubrication (fitting, prepack)	Prepacked	
Drive taken through (torque tube, arms or springs)			Wishbone Lower Control Arm, Upper MacPherson Strut	
Torque taken through (torque tube, arms or springs)			Engine Mounting System	

* Centerline to centerline of universal joints, or to centerline of attachment.

MVMA Specifications

Vehicle Line **ACHIEVA**

Model Year **1993**

Issued

Revised

METRIC (U.S. Customary)

Engine Description

Engine Code

2.3 LITER L4 (138 CID)

ELECTRONIC FUEL INJECTION RPO L40

Axle Ratio and Tooth Combinations

(See 'Power Teams' for axle ratio usage)

Effective final drive ratio (or overall top gear ratio)		2.84	3.18
Transfr ratio and method(chain,gear,etc)		1.0	1.12
Front drive unit	Ring gear o.d.	Not Applicable	
	No. of teeth	Pinion	"
		Ring gear	"

Front Drive Unit

Description (integral to trans., etc.)		Planetary Final Drive
		Integral With Transmission
Limited slip differential (type)		Not Applicable
Drive pinion	Type	"
	Offset	"
No. of differential pinions		2
Pinion/differential	Adjustment (shim, etc.)	Not Applicable
	Bearing adjustment	"
Driving wheel bearing (type)		
Lubricant	Capacity L (pt.)	See Automatic Trans. Spec.
	Type recommended	See Automatic Trans. Spec.

Axle Shafts - Front Wheel Drive

Manufacturer and number used			Saginaw Division (2)		
Type (straight, solid bar, tubular, etc.)		Left	Straight - Solid		
		Right	Straight - Solid		
Outer diam. x length* x wall thickness	Manual transaxle	Left			
		Right			
	Automatic transaxle	Left	23.8 x 297.0 mm (.94 x 11.69 in.); **27.1 X 292.7 mm (1.07 x 11.52 in.)		
		Right	23.8 x 365.4 mm (.94 x 14.38 in.); **27.1 x 361.0 mm (1.07 x 14.21 in.)		
	Optional transaxle	Left			
		Right			
Slip yoke	Type				
	Number of teeth				
	Spline o.d.				
Universal joints	Make and mfg. no.		Inner	Saginaw Division	
			Outer	Saginaw Division	
	Number used		Inboard & Outboard On Each Axle Shaft		
	Type, size, plunge		Inner	Free Motion - 61.5 Stroke; ** 61.8 Stroke	
			Outer	Rzeppa - Fixed Center	
	Attach (u-bolt, clamp, etc.)		Retaining Ring		
	Bearing	Type (plain, anti-friction)		Inner - Ball & Roller Outer - Ball	
		Lubrication (fitting, prepack)		Prepacked	
Drive taken through (torque tube, arms or springs)				Wishbone Lower Control Arm, Upper MacPherson Strut	
Torque taken through (torque tube, arms or springs)				Engine Mounting System	

* Centerline to centerline of universal joints, or to centerline of attachment.

** For 16" Wheels Only

MVMA Specifications

Vehicle Line ACHIEVA
Model Year 1993 Issued Revised

METRIC (U.S. Customary)

Engine Description

Engine Code

2.3 LITER L4 (138 CID)

ELECTRONIC FUEL INJECTION RPO LGO & LGO - W41

Axle Ratio and Tooth Combinations

(See 'Power Teams' for axle ratio usage)

Effective final drive ratio (or overall top gear ratio)			3.19, MV5	3.19, MY5
Transr ratio and method(chain, gear, etc)			Gear	Gear
Front drive unit	Ring gear o.d.		206.10	206.10
	No. of teeth	Pinion	18	18
		Ring gear	71	71

Front Drive Unit

Description (integral to trans., etc.)		Planetary Final Drive Integral With Transmission
Limited slip differential (type)		MV5 (Open) MY5 (Torsen)
Drive pinion	Type	
	Offset	
No. of differential pinions		2 6
Pinion/differential	Adjustment (shim, etc.)	Shim
	Bearing adjustment	Not Applicable
Driving wheel bearing (type)		Sealed Ball Bearing (Integral Part Of Bolt In Hub Unit)
Lubricant	Capacity L (pt.)	1.9 (4)
	Type recommended	MV5 STF MY5 Red Line MTL

Axle Shafts - Front Wheel Drive

Manufacturer and number used			Saginaw Division (2)	
Type (straight, solid bar, tubular, etc.)		Left	Straight - Solid	
		Right	Straight - Solid	
Outer diam. x length* x wall thickness	Manual transaxle	Left	27.1 x 302.0 mm (1.07 x 11.89 in.)	
		Right	27.1 x 308.0 mm (1.07 x 12.13 in.)	
	Automatic transaxle	Left		
		Right		
	Optional transaxle	Left		
		Right		
Slip yoke	Type			
	Number of teeth			
	Spline o.d.			
Universal joints	Make and mfg. no.		Inner	Saginaw Division
			Outer	Saginaw Division
	Number used		Inboard & Outboard On Each Axle Shaft	
	Type, size, plunge		Inner	Free Motion - 61.2 Stroke
			Outer	Rzeppa - Fixed Center
	Attach (u-bolt, clamp, etc.)		Retaining Ring	
	Bearing	Type (plain, anti-friction)	Inner - Ball Outer - Ball	
		Lubrication (fitting, prepack)	Prepacked	
Drive taken through (torque tube, arms or springs)			Wishbone Lower Control Arm, Upper MacPherson Strut	
Torque taken through (torque tube, arms or springs)			Engine Mounting System	

* Centerline to centerline of universal joints, or to centerline of attachment.

MVMA Specifications

Vehicle Line ACHIEVA
Model Year 1993 Issued Revised

METRIC (U.S. Customary)

Engine Description

3.3 LITER V6 (204 CID)

Engine Code

MULTI-PORT FUEL INJECTION RPO LG7

Axle Ratio and Tooth Combinations

(See 'Power Teams' for axle ratio usage)

Effective final drive ratio (or overall top gear ratio)			2.39
Transfr ratio and method(chain,gear,etc)			.8919
Front drive unit	Ring gear o.d.		Not Applicable
	No. of teeth	Pinion	"
		Ring gear	"

Front Drive Unit

Description (integral to trans., etc.)		Planetary Final Drive
		Integral With Transmission
Limited slip differential (type)		Not Applicable
Drive pinion	Type	"
	Offset	"
No. of differential pinions		2
Pinion/differential	Adjustment (shim, etc.)	None
	Bearing adjustment	Shim
Driving wheel bearing (type)		Sealed Ball Bearing (Integral Part Of Bolt In Hub Unit)
Lubricant	Capacity L (pt.)	See Automatic Trans. Spec.
	Type recommended	See Automatic Trans. Spec.

Axle Shafts - Front Wheel Drive

Manufacturer and number used			Saginaw Division (2)
Type (straight, solid bar, tubular, etc.)		Left	Straight - Solid
		Right	Straight - Solid
Outer diam. x length* x wall thickness	Manual transaxle	Left	
		Right	
	Automatic transaxle	Left	23.8 x 297.0 mm (.94 x 11.69 in.); **27.1 X 292.7 mm (1.07 x 11.52 in.)
		Right	23.8 x 365.4 mm (.94 x 14.38 in.); **27.1 x 361.0 mm (1.07 x 14.21 in.)
	Optional transaxle	Left	
		Right	
Slip yoke	Type		
	Number of teeth		
	Spline o.d.		
Universal joints	Make and mfg. no.	Inner	Saginaw Division
		Outer	Saginaw Division
	Number used		Inboard & Outboard On Each Axle Shaft
	Type, size, plunge	Inner	Free Motion - 61.5 Stroke; ** 61.8 Stroke
		Outer	Rzeppa - Fixed Center
	Attach (u-bolt, clamp, etc.)		Retaining Ring
	Bearing	Type (plain, anti-friction)	Inner - Ball & Roller Outer - Ball
		Lubrication (fitting, prepack)	Prepacked
Drive taken through (torque tube, arms or springs)			Wishbone Lower Control Arm, Upper MacPherson Strut
Torque taken through (torque tube, arms or springs)			Engine Mounting System

* Centerline to centerline of universal joints, or to centerline of attachment.

** For 16" Wheels Only

MVMA Specifications

Vehicle Line ACHIEVA

Model Year 1993

Issued

Revised

METRIC (U.S. Customary)

Model Code/Description And/Or

Engine Code/Description

BASE

Suspension - General Including Electronic Controls

Car leveling	Std./opt./not avail.	--
	Manual/automatic control	--
	Type (air/hydraulic)	--
	Primary/assist spring	--
	Rear only/4 wheel leveling	--
	Single/dual rate spring	--
	Single/dual ride heights	--
	Provision for jacking	Body Jack & Pads On Rocker
Shock absorber damping controls	Standard/option/not avail.	--
	Manual/automatic control	--
	Number of damping rates	--
	Type of actuation (manual/electric motor/air, etc.)	--
	s Lateral acceleration	--
	n Deceleration	--
	s Acceleration	--
Shock absorber (front & rear)	r Road surface	--
	Type	Front - MacPherson Strut; Rear - Double Acting Hydraulic
	Make	Delco Products
	Piston diameter	Front: 32 mm (1.26 in.); Rear: 25 mm (.98 in.)
	Rod diameter	Front: 22 mm (.87 in.); Rear: 13 mm (.51 in.)

Suspension - Front

Type and description		MacPherson Strut With Coil Spring
Travel	Full jounce (define load condition)	82 (3.23), From Design
	Full rebound	81 (3.19), From Design
Spring	Type (coil, leaf, other & matl)	Coil, Steel
	Insulators (type & matl)	Top & Bottom - Rubber
	Size (Leaf: length & width; Coil: design height & i.d.; Bar: length & diameter)	Spring Computer Selected - Varies With Option Content
	Spring rate N/mm (lb./in.)	20
	Rate @ wheel N/mm (lb./in.)	17.5
	Type (link, inkless, frmless)	Link
Stabilizer	Matl. & O.D. bar/tube, wall thickness	Steel, 30 mm (1.18 in.)

Suspension - Rear

Type and description		Trailing Stamped Control Arms With Twist Beam
Travel	Full jounce (define load condition)	100.8 (3.97), From Design
	Full rebound	91 (3.58), From Design
Spring	Type (coil, leaf, other & matl)	Coil, Steel
	Size (Leaf: length & width; Coil: design height & i.d.; Bar length & diameter)	Spring Computer Selected - Varies With Option Content
	Spring rate N/mm (lb/in)	23, Variable
	Rate @ wheel N/mm (lb/in)	11.1, Variable
	Insulators (type & material)	Top & Bottom - Rubber
	If leaf	No. of leaves
		Shackle (comp or tens)
	Type (link, inkless, frmless)	--
Stabilizer	Matl. & O.D. bar/tube, wall thickness	--
Track bar (type)		--

MVMA Specifications

METRIC (U.S. Customary)

Model Code/Description And/Or

Engine Code/Description

Brakes - Service

Vehicle Line ACHIEVA

Model Year 1993

Issued

Revised

ALL

Description		Power Assisted Hydraulic Brakes	
Manufacturer and brake type (std., opt., n.a.)	Front (disc or drum)	Standard - Disc	
	Rear (disc or drum)	Standard - Drum	
Valving type(prop, delay, metering, other)		Proportioning, Diagonal Split Circuit	
Power brake (std., opt., n.a.)		Standard	
Booster type(rmt, intgrl, vac., hyd., etc.)		Tandem Vacuum	
Vacuum	Source (inline, pump, etc.)	Inline	
	Reservoir (volume cu. in.)	None	
	Pump-type	Not Applicable	
Traction assist	Operational speed range	Not Applicable	
	Type (engine or brake intervention)		
Anti-lock device	Front/rear (std., opt., n.a.)	Standard	
	Manufacturer	Delco Chassis Division	
	Type (electronic, mech.)	Electronic	
	Number sensors or circuits	4	
	No. anti-lock hyd. circuits	3	
	Integral or add-on system	Add-On	
	Yaw control (yes, no)	Yes	
Hydraulic power source		No	
Effective area sq. cm. (sq. in.)*		204 (31.7), Front; 614 (95.2), Rear	
Gross Lng area sq cm (sq in)** (F/R)		204 (31.7), Front; 650 (100.8), Rear	
Swept area sq cm (sq in)*** (F/R)		1175 (182.2), Front; 556 (86.2), Rear	
Rotor	Outer working diameter	F/R	Front - 259.5 (10.2)
	Inner working diameter	F/R	
	Thickness	F/R	Front - 20 (.79)
	Matl & type (vented/sid)	F/R	Front - Vented Cast Iron
Drum	Diameter & width	F/R	Rear - 200 x 45 mm (7.87 x 1.77 in.)
	Type and material	F/R	Cast Iron
Wheel cylinder bore		Front - 57 mm (2.24 in.); Rear - 17.5 mm (.69 in.)	
Master cylinder	Bore/stroke	F/R	Bore - 22.2 mm (.874 in.); Stroke - 35.7 mm (1.41 in.)
Pedal arc ratio		3.35:1	
Line pressure at 445 N (100 lb.) pedal load kPa (psi)		(1,600) Max	
Lining clearance		F/R	Both - Self Adjusting
Brake lining	Front wheel	Bonded or riveted	Integrally Molded - Inboard And Outboard
		Rivet size	Not Applicable
		Manufacturer	Delco Chassis Division
		Lining code *****	128 FE
		Material	Semi-Metallic
		**** Pri. or out-brd	124 x 46 x 8.6 mm (4.88 x 1.81 x .34 in.)
		Size Sec. or in-brd	124 x 46 x 9.7 mm (4.88 x 1.81 x .38 in.)
		Shoe thcknss.(no lng)	4.85 (.19)
	Rear wheel	Bonded or riveted	Riveted
		Manufacturer	Delco Chassis Division
		Lining code *****	235 FE
		Material	Organic
		**** Pri. or out-brd	167.7 x 43.9 x 6 mm (6.602 x 1.728 x .236 in.)
		Size Sec. or in-brd	194 x 43.9 x 7 mm (7.638 x 1.728 x .28 in.)
		Shoe thcknss (no lng)	2.75 mm (.11 in.)

* Excludes rivet holes, grooves, chamfers, etc.

*** Includes rivet holes, grooves, chamfers, etc.

**** Total swept area for four brakes. (Drum brake: Widest lining contact width for each brake x its contact circum.) (Disc brake: Square of Outer Working Dia. - Square of inner Working Dia. multiplied by Pi/2 for each brake).

***** Size for drum brakes includes length x width x thickness.

***** Manufacturer I.D., catalog for formulation designation and coefficient of friction classification.

MVMA Specifications

Vehicle Line ACHIEVA

Model Year 1993 Issued Revised

METRIC (U.S. Customary)

Model Code/Description And/Or
Engine Code/Description

ALL

Tires And Wheels (Standard)

Tires	Size (service description)		P185/75R14
	Type (bias, radial, etc.)		Radial
	Inflation pressure (cold) for recommended max. vehicle load	Front kPa (psi)	240 (35)
		Rear kPa (psi)	240 (35)
	Rev/mile—at 70 km/h(45mph)		519
Wheels	Type & material		Stamped Steel
	Rim (size & flange type)		14 x 6 JJ
	Wheel offset		47 mm
	Attachment	Type (bolt or stud & nut)	Stud
		Circle diameter	100 mm
Spare	Number & size		5-12 mm
	Tire and wheel		T115/70D14 Wheel 14 x 4T Inflation 415 (60 psi)
	Storage position & location (describe)		Under Deck Of Luggage Compartment

Tires And Wheels (Optional)

○	Tire size (service description)	P195/70R15
	Type (bias, radial, steel, nylon, etc.)	Radial
	Wheel (type & material)	Stamped Steel
	Rim (size, flange type and offset)	14 x 6.0 JJ 47 mm Offset
○	Tire size (service description)	P195/65R15
	Type (bias, radial, steel, nylon, etc.)	Radial
	Wheel (type & material)	Aluminum
	Rim (size, flange type and offset)	15 x 6.0 J 47 mm Offset
○	Tire size (service description)	P205/55R16
	Type (bias, radial, steel, nylon, etc.)	Radial
	Wheel (type & material)	Cast Aluminum
	Rim (size, flange type and offset)	16 x 6 JJ 47 mm Offset
○	Tire size (service description)	
	Type (bias, radial, steel, nylon, etc.)	
	Wheel (type & material)	
	Rim (size, flange type and offset)	
	Spare tire and wheel size (if configuration is different than road tire or wheel, describe optional spare tire and/or wheel location & storage position)	

Brakes – Parking

Type of control		Foot Apply
Location of control		To Left Of Service Brake Pedal
Operates on		Rear Service Brakes
If separate from service brakes	Type (internal or external)	Not Applicable
	Drum diameter	"
	Lining size (length x width x thickness)	"

MVMA Specifications

Vehicle Line ACHIEVA
 Model Year 1993 Issued Revised

METRIC (U.S. Customary)

Model Code/Description And/Or
 Engine Code/Description

BASE

Steering

Manual (std., opt., n.a.)			Not Applicable		
Power (std., opt., n.a.)			Standard		
Speed-sensitive (std., opt., n.a.)			Optional		
4-wheel steering (std., opt., n.a.)			N/A		
Adjustable steering wheel/ column (tilt, telescope, other)		Type	Tilt		
		Manufacturer	Saginaw Division		
		(std., opt., n.a.)	Optional		
Wheel diameter ** (W9) SAE J1100		Manual	--		
		Power	375 mm (14.8 in.)		
Turning diameter m (ft.)	Out-side front	Wall to wall (l. & r.)	11.3 (37.2)		
		Curb to curb (l. & r.)	10.75 (35.3)		
	In-side rear	Wall to wall (l. & r.)	5.8 (19.2)		
		Curb to curb (l. & r.)	7.5 (24.6)		
Scrub Radius *			-1.69 (14" Tires)		
Manual	Gear	Type	Not Applicable		
		Manufacturer	"		
		Ratios	Gear	"	
			Overall	"	
	No. wheel turns(stop to stop)		"		
Power	Type (coaxial,elec.hyd.,etc.)		Rack & Pinion W/Integral Unit		
	Manufacturer		Saginaw Division		
	Gear	Type	Rack & Pinion		
		Ratios	Gear	--	
			Overall	16.12:1	
	Pump (drive)		Belt Off Camshaft Pulley		
No. wheel turns(stop to stop)		2.88			
Linkage	Type		Center Take-Off Tie Rods, Rack & Pinion		
	Location (front or rear of wheels, other)		Rear		
	Tie Rods (one or two)		2		
Steering axis	Inclination at camber (deg.)		13.2		
	Bear-ings (type)	Upper	Ball Bearings		
		Lower	Ball Joint		
		Thrust	Incorporated In Upper Bearing		
Steering spindle/knuckle & joint type			MacPherson Strut		

* The horizontal distance in the front elevation between wheel centerline and kingpin (ball joint) axis at ground.
 ** See Page 22.

MVMA Specifications

METRIC (U.S. Customary)

Vehicle Line ACHIEVA

Model Year 1993

Issued

Revised

Model Code/Description And/Or
Engine Code/Description

BASE

Wheel Alignment

Front wheel at curb mass (wt.)	Service checking	Caster (deg.)	Not Adjustable
		Camber (deg.)	0 (+/-) .7 Cross Car Must Be Within 1.0
		Toe-in outside track - mm (in.)	0 (+/-) .2 Sum Toe
	Service reset*	Caster (deg.)	Not Adjustable
		Camber (deg.)	0 (+/-) .7 Cross Car Must Be Within 1.0
		Toe-in - mm (in.)	-.1 to +.1 (Degrees Per Wheel)
	Periodic M.V. inspection	Caster (deg.)	Not Available
		Camber (deg.)	"
		Toe-in - mm (in.)	"
Rear wheel at curb mass (wt.)	Service checking	Camber (deg.)	"
		Toe-in outside track - mm (in.)	"
	Service reset*	Camber (deg.)	"
		Toe-in - mm (in.)	"
	Periodic M.V. inspection	Camber (deg.)	"
		Toe-in - mm (in.)	"

* Indicates pre-set, adjustable, trend set or other.

Electrical - Instruments and Equipment

Electrical and Equipment			
Speedometer	Type (analog, digital, std., opt.)		Analog
	Trip odometer (std., opt., n.a.)		Standard
Head-up display	Std., opt., not avail.		Not Available
	Type - Secondary, Opto-electronic		"
	Speedometer	Digital	"
	Status/warn. indicators - Turn signals, high beam, low fuel, check gauges		"
	Brightness control	Day/night mode, adj.	"
EGR maintenance indicator			Not Available
Charge indicator	Type		Tell-Tale & Gage
	Warning device (light, audible)		Tell-Tale
Temperature indicator	Type		Gage
	Warning device		Tell-Tale
Oil pressure indicator	Type		Gage
	Warning device		Tell-Tale
Fuel indicator	Type		Gage
	Warning device		Tell-Tale
Windshield wiper	Type (standard)		Electric 2-Speed
	Type (optional)		Controlled Cycle Pulse
	Blade length		479 mm (19 in.)
	Swept area sq cm (sq in)		5583.7 (865.5)
Windshield washer	Type (standard)		Wet-Arm Electric Pump Mounted On Reservoir Bottle
	Type (optional)		None
	Fluid level indicator		Electric
Rear window wiper, wiper/washer (std., opt., n.a.)			Not Available
Horn	Type		Electric Vibrating
	Number used		2 Standard

MVMA Specifications

Vehicle Line ACHIEVA
Model Year 1993 Issued Revised

METRIC (U.S. Customary)

Engine Code/Description

2.3 LITER L4 (138 CID)
ELECTRONIC FUEL INJECTION RPO L40

Electrical - Supply System

Battery	Manufacturer	Delco Remy
	Model, std., (opt.)	Standard
	Voltage	12
	Amps at 0 deg F cold crnk	600
	Minutes-reserve capacity	90
	Amps/hrs. - 20 hr. rate	54
	Location	Under Hood Front
Alternator	Manufacturer	Delco Remy
	Rating (idle/max. rpm)	36/100; 42/105*
	Ratio (alt. crank/rev.)	2.56:1
	Output at idle (rpm, park)	70 Amps @ 27 Deg. C 900 RPM; 56 Amps @ 27 Deg. C. 700 RPM
	Optional (type & rating)	
Regulator	Type	Internal to Alternator

Electrical - Starting System

Motor	Manufacturer	Delco Remy
	Curr. dr. -29 (-20) deg C(F)	375 Amps
	Power rating kw (hp)	1.5 kw
Motor drive	Engagement type	Solenoid With Positive Shift
	Pinion engages from (front, rear)	
		Front

Electrical - Ignition System

Type	Electronic (std, opt, n.a.)	Standard/Direct Ignition System
	Other (specify)	Composite Unit With Two Coils & Electronic Control
Coil	Manufacturer	Delco Remy
	Model	1103915
	Current	Engine stopped-A 300 MA
		Engine idling - A Peak 8.25 Amps
Spark plug	Manufacturer	A/C
	Model	.FR3LSK
	Thread (mm)	14 x 1.25
	Tightening torque Newton meters (lb. ft.)	21 - 24 (15 - 18)
	Gap	.889 (.035)
	Number per cylinder	1
Distributor	Manufacturer	Not Applicable
	Model	"

Electrical - Suppression

Locations & type	
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* 36/100 Rating Is For Vehicles Equipped With Manual Transmissions
42/105 Rating Is For Vehicles Equipped With Automatic Transmissions

MVMA Specifications

Vehicle Line ACHIEVAModel Year 1993 Issued Revised

METRIC (U.S. Customary)

Engine Code/Description

2.3 LITER L4 (138 CID) ELECTRONIC FUEL INJECTION RPO LD4

Electrical - Supply System

Battery	Manufacturer	Delco Remy
	Model, std., (opt.)	Standard
	Voltage	12
	Amps at 0 deg F cold crnk	600
	Minutes-reserve capacity	90
	Amps/hrs. - 20 hr. rate	54
	Location	Under Hood Front
Alternator	Manufacturer	Delco Remy
	Rating (idle/max. rpm)	42/105
	Ratio (alt. crank/rev.)	2.56:1
	Output at idle (rpm, park)	56 Amps @ 27 Deg. C. 700 RPM
	Optional (type & rating)	
Regulator	Type	Internal to Alternator

Electrical - Starting System

Motor	Manufacturer	Delco Remy
	Curr.dr. -29 (-20) deg C(F)	375 Amps
	Power rating kw (hp)	1.5 kw
Motor drive	Engagement type	Solenoid With Positive Shift
	Pinion engages from (front, rear)	
		Front

Electrical - Ignition System

Type	Electronic (std, opt, n.a.)	Standard/Direct Ignition System
	Other (specify)	Composite Unit With Two Coils & Electronic Control
Coil	Manufacturer	Delco Remy
	Model	1103907
	Current	Engine stopped-A 300 MA
		Engine idling - A Peak 8.25 Amps
Spark plug	Manufacturer	A/C
	Model	.FR3LSK
	Thread (mm)	14 x 1.25
	Tightening torque Newton meters (lb. ft.)	21 - 24 (15 - 18)
	Gap	.889 (.035)
	Number per cylinder	1
Distributor	Manufacturer	Not Applicable
	Model	"

Electrical - Suppression

Locations & type	
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MVMA Specifications

Vehicle Line ACHIEVAModel Year 1993 Issued _____

Revised _____

METRIC (U.S. Customary)

Engine Code/Description

2.3 LITER L4 (138 CID)
ELECTRONIC FUEL INJECTION RPO LGO

Electrical - Supply System

Battery	Manufacturer	Delco Remy
	Model, std., (opt.)	Standard
	Voltage	12
	Amps at 0 deg F cold crnk	630
	Minutes-reserve capacity	90
	Amps/hrs. - 20 hr. rate	54
	Location	Under Hood Front
Alternator	Manufacturer	Delco Remy
	Rating (idle/max. rpm)	36/100
	Ratio (alt. crank/rev.)	2.56:1
	Output at idle (rpm, park)	70 Amps @ 27 Deg. C. 900 RPM
	Optional (type & rating)	
Regulator	Type	Internal to Alternator

Electrical - Starting System

Motor	Manufacturer	Delco Remy
	Curr.dr. -29 (-20) deg C(F)	378 Amps
	Power rating kw (hp)	1.5 kw
Motor drive	Engagement type	Solenoid With Positive Shift
	Pinion engages from (front, rear)	Front

Electrical - Ignition System

Type	Electronic (std, opt, n.a.)	Standard/Direct Ignition System
	Other (specify)	None
Coil	Manufacturer	Delco Remy (2)
	Model	
	Current	Engine stopped-A 300 MA
		Engine idling - A Peak 8.35 Amps
Spark plug	Manufacturer	A/C
	Model	.FR3LSK
	Thread (mm)	14 x 1.25
	Tightening torque Newton meters (lb. ft.)	21 - 24 (15 - 18)
	Gap	.889 (.035)
	Number per cylinder	1
Distributor	Manufacturer	Not Applicable
	Model	"

Electrical - Suppression

Locations & type	Not Available
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MVMA Specifications

Vehicle Line ACHIEVA
Model Year 1993 Issued Revised

METRIC (U.S. Customary)

Engine Code/Description

3.3 LITER V6 (204 CID)
MULTI-PORT FUEL INJECTION RPO LG7

Electrical – Supply System

Battery	Manufacturer	Delco Remy
	Model, std., (opt.)	Standard
	Voltage	12
	Amps at 0 deg F cold crnk	600
	Minutes-reserve capacity	90
	Amps/hrs. - 20 hr. rate	54
	Location	Under Hood Front
Alternator	Manufacturer	Delco Remy
	Rating (idle/max. rpm)	36/100
	Ratio (alt. crank/rev.)	2.74:1
	Output at idle (rpm, park)	48 Amps @ 27 Deg. C. 650 RPM
	Optional (type & rating)	
Regulator	Type	Internal to Alternator

Electrical – Starting System

Motor	Manufacturer	Delco Remy
	Curr.dr. -29 (-20) deg C(F)	400 Amps
	Power rating kw (hp)	1.6 kw
Motor drive	Engagement type	Solenoid With Positive Shift
	Pinion engages from (front, rear)	
		Front

Electrical – Ignition System

Type	Electronic (std, opt, n.a.)	Standard
	Other (specify)	Direct Ignition System
Coil	Manufacturer	Delco Remy
	Model	1103917
	Current	Engine stopped-A 300 MA
		Engine idling - A 9 Amps
Spark plug	Manufacturer	A/C
	Model	R44-LTS6
	Thread (mm)	14
	Tightening torque Newton meters (lb. ft.)	27 (20)
	Gap	1.5 (.060)
	Number per cylinder	1
Distributor	Manufacturer	Not Applicable
	Model	"

Electrical – Suppression

Locations & type	Not Available
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MVMA Specifications

Vehicle Line ACHIEVA
Model Year 1993 Issued Revised

METRIC (U.S. Customary)

Model Code/Description

ALL

Body

Structure	Unitized Body Construction Including Front End Structure With Bolted-On Fenders And Hood.
Bumper system front - rear	Bumper Fascias Are Attached to Steel Impact Bar And Guideflex Absorbers For Collision Energy Absorption. (Meets GM 5 MPH Impact Standard).
Anti-corrosion treatment	Special Anti-Corrosion Materials Are Used On Interior And Exterior Metal Panel Surfaces. Materials Include One And Two-Sided Galvanized Steel, Special Metal Conditioners, Primers, And Sealers. Protective Moldings Are Applied To Exterior Lower Body.

Body - Miscellaneous Information

Type of finish (lacquer, enamel, other)		High Solids Base Coat/Clear Coat Enamel
Hood	Material & mass	Two-Sided Electro-Galvanized, 35 lb. 14 oz.
	Hinge location (front, rear)	Rear
	Type (counterbalance, prop)	Gas Strut Single Pivot Hinge
	Release control (int., ext.)	Internal
Trunk lid	Material & mass	Two-Sided Electro-galvanized Outer, Two-Sided Hot Dip Inner 11.756 (25.92)
	Type (counterbalance, other)	Hinge Mounted To Shelf With Clock Spring Counterbalance
	Internal release control (elec., mech., n.a.)	Mechanical; Optional, Electrical With Keyless Entry
Hatch-back lid	Material & mass	Not Applicable
	Type (counterbalance, other)	"
	Internal release control (elec., mech., n.a.)	"
Tailgate	Material & mass	Not Applicable
	Type (drop, lift, door)	"
	Internal release control (elec., mech., n.a.)	"
Vent window control (crank, friction, pivot, power)	Front	Not Applicable
	Rear	"
Window regulator type (cable, tape, flex drive, etc.)	Front	"
	Rear	"
Seat cushion type (e.g., 60/40, bucket, bench wire, foam, etc.)	Front	Foam
	Rear	Foam
	3rd seat	Not Applicable
Seat back type (e.g., 60/40, bucket, bench, wire, foam, etc.)	Front	Foam
	Rear	Foam
	3rd seat	Not Applicable

Frame

Type and description (separate frame, unitized frame, partially-unitized frame)	Unitized Frame
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MVMA Specifications

Vehicle Line ACHIEVA

Model Year 1993

Issued

Revised

METRIC (U.S. Customary)

Model Code/Description

BASE

Restraint System

Seating Position			Left	Center	Right
Active	Type & description (lap & shoulder belt, lap belt, etc.)	First seat			
		Second seat	Lap/Shoulder Belt Combination	Lap Belt	Lap/Shoulder Belt Combination
	Standard/optional	Third seat			
Passive	Type & description (air bag, motorized-2-point belt, fixed belt, knee bolster, manual-lap belt)	First seat	3-Point Door Mounted		3-Point Door Mounted
		Second seat			
	Standard/optional	Third seat			

Glass	SAE Ref No	COUPE	SEDAN
Windshield glass exposed surface area sq. cm. (sq. in.)	S1	8184 (1268.5)	8464 (1311.9)
Side glass exposed surface area sq. cm. (sq. in.) - total 2-sides	S2	9762 (1513.1)	12010 (1861.6)
Backlight glass exposed surface area sq. cm. (sq. in.)	S3	6843 (1060.7)	4634 (718.3)
Total glass exposed surface area sq. cm. (sq. in.)	S4	24789 (9759.4)	25108 (3891.7)
Windshield glass (type/ thickness)		Curved - Laminated Float; 5.4 mm, Soft Ray	
Side glass (type/ thickness)		Curved - Tempered Float; 4.0 mm, Soft Ray	
Backlight glass (type/ thickness)		Curved - Tempered Float; 4.0 mm, Soft Ray	
Tinted (yes/no, location)			
Solar control (yes/no, coated/batched, location)			

Headlamps

Description - sealed beam, halogen, replaceable bulb, etc.	Replaceable Bulb - 2 Lamps, 1 Bulb Each
Shape	Rectangular
Lo-beam type (2A1, 2B1, 2C1, etc.)	HB1
Quantity	2 (Common Bulb)
Hi-beam type (1A1, 2A1, 1C1, 2C1, etc.)	HB1
Quantity	2 (Common Bulb)

MVMA Specifications

Vehicle Line ACHIEVA
Model Year 1993 Issued Revised

METRIC (U.S. Customary)

Engine Code/Description

BASE

Climate Control System

Air conditioning (std., opt., man., auto.)		Optional
Condenser	Type	Tube & Fin
	Eff. face area (sq. mm.)	261,950
	Fins per inch	17
Evaporator	Type	3-S-S Parallel Rib S Flow
	Eff. face area (sq. mm.)	45,468
	Fins per inch	14
Heater Core	Material	Aluminum
	Eff. face area (sq. mm.)	29,256
	Fins per inch	38
Compressor	Type	V5 Compressor
	Displacement (cc)	9.2
	Manufacturer	Harrison Division
	A/C pulley ratio	1.30 Exc.; LG7 1.25
Accumulator	Type	None
	Height (mm.)	
	Diameter (mm.)	
Receiver	Type	Aluminum
	Height (mm.)	169
	Diameter (mm.)	77
Refrigerant control (CCOT, TVS, etc.)		TXV
Heater water valve (yes / no)		No
Refrigerant (R - 12, R - 134a, etc.)		R12
Charge level (lbs. - oz.)		2.63
Cold engine lockout switch (yes / no)		Yes - ECM Controlled
Wide open throttle cutout switch (yes / no)		Yes - ECM Controlled

MVMA Specifications

Vehicle Line ACHIEVA
Model Year 1993 Issued Revised

METRIC (U.S. Customary)

Model Code/Description

BASE

Convenience Equipment (standard, optional, n.a.)

Clock (digital, analog)		Part Of Radio Package
Compass / thermometer		
Console (floor, overhead)		(D55) Standard Floor
Electronic	Defroster, electric windshield	
	Defroster, electric backlight	(C49) Optional
	Diagnostic monitor (integrated, individual)	
	Instrument cluster (list instruments)	(UB3) Optional Oil, Temp, Volts, Trip Odometer & Tachometer (U2E) Standard Temp & Trip Odometer
	Keyless entry	(AX3) Optional
	Tripminder (avg. spd. fuel)	
	Voice alert (list items)	
	Other	Key Out - Lights On, Rear Seat Shld. Belt Rerouter
Fuel door lock (remote, key, electric)		Standard Mechanical
Lamps	Auto head on/off delay, dimming	
	Cornering	
	Courtesy (map, reading)	Standard
	Door lock, ignition	
	Engine compartment	(U26) Optional
	Fog	(T37) Optional On NL37 Only
	Glove compartment	Standard
	Trunk	Standard
	Illuminated entry system (list lamps, activation)	Courtesy, Map/Reading, Trunk
	Other	
Mirrors	Day / night (auto. man.)	Standard Manual
	L.H. (remote, pwr., heated)	(D35) Standard Remote; (DG7) Optional Remote Electric
	R.H. (convex, rmt, pwr, htd)	(D35) Standard Dir.; (DG7) Optional Remote Electric
	Visor vanity	Standard
Navigation system (describe)		
Prkg. brake-auto release (warn. light)		

MVMA Specifications

Vehicle Line ACHIEVA
 Model Year 1993 Issued _____ Revised _____

METRIC (U.S. Customary)

Model Code/Description

BASE

Convenience Equipment (standard, optional, n.a.)

Power equipment	Deck lid(release, pull down)		(A59) Standard Release
	Door locks (manual, auto., describe system)		(AX3) Optional Power
	Seats	2 - 4 - 6 way, etc.	(AC3) Optional 6 Way Power Adjuster
		Reclining(R.H., L.H.)	
		Memory (R.H., L.H., preset, recline)	Not Available
		Support (lumbar, hip, thigh, etc.)	Not Available
		Heated (R.H., L.H., other)	Not Available
	Side windows		(A31) Optional
	Vent windows		
Rear windows			
Radio systems	Antenna (location, whip, w/shield, power)		(US6) Standard Fixed RH Rear Quarter (U75) Optional Power; (U77) Optional Rear Defogger
	Stan.	AM, FM, stereo, tape, compact disc, graphic equalizer, theft deterrent, radio prep package, headphone jacks, etc.	(UM6) AM/FM Stereo, Seek/Scan, Clock, ETR & Cassette On NF (UM7) AM/FM Stereo, Seek/Scan, Clock & ETR On NL
	Opt.		(UM6) AM/FM Stereo, Seek/Scan, Cassette, Clock & ETR On NL (U1C) AM/FM Stereo, Seek/Scan, Compact Disc, Clock & ETR
	Speaker (number, location)		(UW6) Opt. DL F/D Tweet & Woof, DL Ext. Rge., (UQ8) Opt. 401 Frt. Ext. Rge. (UX7) Standard 4 DL Frt. Door Mtd., DL Extd. Rge.
Roof: open air or fixed (flip-up, sliding, 'T')			
Speed control device			(K34) Optional
Speed warn. dev. (light, buzzer, etc.)			
Tachometer (rpm)			(UB3) Standard
Telephone system (describe)			
Theft deterrent system			

Trailer Towing

Towing capable	Yes / No	Yes
Engine/transmission/axle	Std / Opt	LGO, Opt; LG7, Opt.
Tow class (I, II, III)*	Std / Opt	
Max. gross trailer wgt. (lbs.)	Std / Opt	1000 lbs.
Max. trailer tongue load (lbs.)	Std / Opt	100 lbs.
Towing package available	Yes / No	No

* Class I - 2,000 lbs. Class II - 3,500 lbs. Class III - 5,000 lbs.

MVMA Specifications

Vehicle Line ACHIEVA

Model Year 1993 Issued

Revised

METRIC (U.S. Customary)

Vehicle Dimensions

See Key Sheets for definitions

All dimensions to ground are for comparative purposes only. Dimensions are to be shown for all base body models of each vehicle line. SAE Ref. no. refers to the definition published in SAE Recommended Practice J1100 'Motor Vehicle Dimensions,' unless otherwise specified.

Model Code/Description

COUPE & ALL BASE

SEDAN

Width

SAE Ref. No.

Tread (front)	W101	1417 (55.8)	
Tread (rear)	W102	1438 (56.6)	
Vehicle width	W103	1715 (67.5)	
Body width at Sg RP (front)	W117	1707 (67.2)	
Vehicle width (front doors open)	W120	3828 (150.7)	3259 (128.3)
Vehicle width (rear doors open)	W121	Not Applicable	3482 (137.1)
Tumble-home (deg.)	W122	30	
Outside mirror width	W410	1882 (74.1)	

Length

Wheelbase	L101	2627 (103.4)	
Vehicle length	L103	4772 (187.9)	
Overhang (front)	L104	1064 (41.9)	
Overhang (rear)	L105	1081 (42.6)	
Upper structure length	L123	2666 (105.0)	
Rear wheel C/L 'X' coordinate	L127	4410 (173.6)	

Height **

Passenger distribution (front/rear)	PD1,2,3	2/0	**
Trunk/cargo load		0	**
Vehicle height	H101	1351 (53.2)	
Cowl point to ground	H114	917 (36.1)	
Deck point to ground	H138	978 (38.5)	
Rocker panel-front to ground	H112	217 (8.5)	
Rocker panel-rear to ground	H111	217 (8.5)	
Windshield slope angle (deg.)	H122	61	
Backlight slope angle (deg.)	H121	63	57

Ground Clearance **

Front bumper to ground	H102	225 (8.8)	
Rear bumper to ground	H104	282 (11.1)	
Bumper to ground front at curb mass (wt.)	H103	243 (9.6)	
Bumper to ground rear at curb mass (wt.)	H105	256 (12.1)	
Angle of approach (deg.)	H108	17	
Angle of departure (deg.)	H107	17	
Ramp breakover angle (deg.)	H147	15	
Axis differential to ground (front/rear)	H153	N/A	
Min. running ground clearance	H158	144 (5.7)	
Location of min. run. grd. clear.		Front Suspension	

** All Vehicle Height And Ground Clearance Are Made Using EPA Loaded Vehicle Weight, Loading Conditions.

EPA Loaded Vehicle Weight is the Base Vehicle Weight Plus All Coolant and Fluids Necessary For Operation Plus 100% Of The Fuel Capacity, Plus The Weight Of All Options And Accessories Which Weigh Three Pounds Or More And Which Are Sold On At Least 33% Of The Car Line, Plus Two Occupants.

All linear dimensions are in millimeters (inches) unless otherwise noted.

MVMA Specifications

Vehicle Line ACHIEVA

Model Year 1993

Issued

Revised

METRIC (U.S. Customary)

Vehicle Dimensions

See Key Sheets for Definitions

Model Code/Description

COUPE & ALL BASE

SEDAN

Front Compartment

SAE Ref. No.

SgRP front, 'X' coordinate	L31	3138 (123.5)	
Effective head room	H81	961 (37.8)	
Max. eff. leg room (accelerator)	L34	1099 (43.3)	
SgRP to heel point	H30	233 (9.2)	
SgRP to heel point	L53	905 (35.6)	
Back angle (deg.)	L40	25.5	
Hip angle (deg.)	L42	101	
Knee angle (deg.)	L44	135	
Foot angle (deg.)	L48	91	
Design H-point front travel	L17	208 (8.2)	
Normal driving & riding seat track trvl.	L23	188 (7.4)	
Shoulder room	W3	1350 (53.1)	
Hip room	W5	1246 (49.1)	1257 (49.5)
*** Upper body opening to ground	H50	1236 (48.7)	
Steering wheel maximum diameter*	W9	375 (14.8)	
Steering wheel angle (deg.)	H18	19	
Accel. heel pt. to steer. whl. cntr	L11		
Accel. heel pt. to steer. whl. cntr	H17		
Undepressed floor covering thickness	H87	14 (0.6)	

Front Compartment Int. Dim. Are Measured With The Seating Ref. Pt.

Rear Compartment

(SgRP) 21 mm (1 Seat Adjuster Notch) Forward of Rearmost Seat Position.

SgRP point couple distance	L50	759 (29.9)	782 (30.8)
Effective head room	H83	928 (36.5)	940 (37.0)
Min. effective leg room	L51	863 (34.0)	888 (35.0)
SgRP (second to heel)	H31	281 (11.1)	
Knee clearance	L48	16 (0.6)	35 (1.4)
Shoulder room	W4	1381 (54.4)	1346 (53.0)
Hip room	W8	1277 (50.3)	1276 (52.2)
*** Upper body opening to ground	H51	Not Applicable	1250 (49.2)
Back angle (deg.)	L41	28	
Hip angle (deg.)	L43	86	
Knee angle (deg.)	L45	86	90
Foot angle (deg.)	L47	119	121
Depressed floor covering thickness	H73	14 (0.6)	

Luggage Compartment

Usable luggage capacity [L (cu. ft.)]	V1	396 (14)
*** Lifter height	H195	653 (25.7)

Interior Volumes (EPA Classification)

Vehicle class		Compact
Interior volume index (cu. ft.)**		103
Trunk / cargo index (cu. ft.)		14

* See page 14.

** Includes passenger and trunk / cargo index - see definition page 33.

*** EPA Loaded Vehicle Weight, Loading Conditions.

All linear dimensions are in millimeters (Inches) unless otherwise noted.

MVMA Specifications

Vehicle Line ACHIEVA
Model Year 1993 Issued Revised

METRIC (U.S. Customary) Vehicle Dimensions

See Key Sheets for Definitions

Model Code/Description

BASE

Station Wagon / MPV**

- Third Seat

SAE Ref. No.

(NOT APPLICABLE)

Seat facing direction	SD1	
SgRP couple distance	L85	
Shoulder room	W85	
Hip Room	W88	
Effective leg room	L88	
Effective head room	H88	
SgRP to heel point	H87	
Knee clearance	L87	
Back angle (deg.)	L88	
Hip angle (deg.)	L89	
Knee angle (deg.)	L90	
Foot angle (deg.)	L91	

Station Wagon / MPV** - Cargo Space

(NOT APPLICABLE)

Cargo length (open front)	L200	
Cargo length (open second)	L201	
Cargo length (closed front)	L202	
Cargo length (closed second)	L203	
Cargo length at belt (front)	L204	
Cargo length at belt (second)	L205	
Cargo width (wheelhouse)	W201	
Rear opening width at floor	W203	
Opening width at belt	W204	
Min. rear opening width above belt	W205	
Cargo height	H201	
Rear opening height	H202	
* Tailgate to ground height	H250	
Front seat back to load floor height	H197	
Cargo volume index cu. m (cu. ft.)	V2	
Hidden cargo vol. index cu. m (cu. ft.)	V4	
Cargo volume index-rear of 2-seat	V10	
Cargo volume index**	V8	
Cargo width at floor**	W500	
Maximum cargo height**	H505	

Hatchback - Cargo Space

(NOT APPLICABLE)

Cargo length at front seatback height	L208	
Cargo length at floor (front)	L209	
Cargo length at second seatback height	L210	
Cargo length at floor (second)	L211	
Front seatback to load floor height	H197	
Second seatback to load floor height	H198	
Cargo volume index cu. m (cu. ft.)	V3	
Hidden cargo vol. index cu. m (cu. ft.)	V4	
Cargo volume index-rear of 2-seat	V11	

* EPA Loaded Vehicle Weight, Loading Conditions

** MPV - Multipurpose Vehicle

All linear dimensions are in millimeters (inches) unless otherwise noted.

MVMA Specifications

Vehicle Line ACHIEVA
Model Year 1993 Issued Revised

METRIC (U.S. Customary)

Model Code/
Description

ALL

Vehicle Fiducial Marks

Fiducial Mark Number*		Define Coordinate Location
Front		X - Fiducial Mark To Vertical Zero Grid Line - Front Measured Horizontally, From The Zero Grid Line To The Front Fiducial Mark Located On Top Of The Front Seat Adjuster Mounting Bolt.
		Y - Fiducial Mark To Centerline Of Car - Front, Width Measurement Made From Centerline Car To Fiducial Mark Located On Top Of The Front Seat Adjuster Mounting Bolt.
		Z - Fiducial Mark To Horizontal Zero Grid Line - Front, Measured Vertically From Zero Grid Line To Front Fiducial Mark Located On Top Of The Front Seat Adjuster Mounting Bolt.
Rear		X - Fiducial Mark To Vertical Zero Grid Line - Rear, Measured Horizontally From The Zero Grid Line To Rear Fiducial Mark Located On The Rail (Compartment Pan - Longitudinal).
		Y - Fiducial Mark To Centerline Of Car - Rear, Width Measurement Made From Centerline Of Car To Fiducial Mark Located On The Rail (Compartment Pan - Longitudinal).
		Z - Fiducial Mark To Horizontal Zero Grid Line - Rear, Measured Vertically From The Zero Grid Line To Rear Fiducial Mark Located On The Rail (Compartment Pan - Longitudinal).
NOTE: Provide 3 of 4 Fiducial Mark Locations		
Front	W21**	505 (19.9)
	L54**	2761 (108.7)
	H81**	246 (9.7)
	*** H181**	292 (11.5)
	*** H183**	271 (10.7)
Rear	W22**	440 (17.3)
	L55**	4953 (195.0)
	H82**	362 (14.3)
	*** H182**	414 (16.3)
	*** H184**	387 (15.2)

* Reference - SAE Recommended Practice, J182a, Motor Vehicle Fiducial Marks.

** Reference - SAE Recommended Practice J1100 - Motor Vehicle Dimensions.

*** EPA Loaded Vehicle Weight, Loading Conditions.

All linear dimensions are in millimeters (Inches) unless otherwise noted.

METRIC (U.S. Customary)

Model Year 1993

Issued

Revised

* Reference - SAE J1100 Motor vehicle dimensions, curb weight definition.
 ** ETWC - Equivalent Test Weight Class - basis for U.S. Environmental Protection Agency emission certifications.
 Refer to ETWC code legend below for test weight class.

A	=	1000	I	=	2000	Q	=	3000	Y	=	4000
B	=	1125	J	=	2125	R	=	3125	Z	=	4125
C	=	1250	K	=	2250	S	=	3250	AA	=	4500
D	=	1375	L	=	2375	T	=	3375	BB	=	4750
E	=	1500	M	=	2500	U	=	3500	CC	=	5000
F	=	1625	N	=	2625	V	=	3625	DD	=	5250
G	=	1750	O	=	2750	W	=	3750	EE	=	5500
H	=	1875	P	=	2875	X	=	3875	FF	=	5750

31.0 (68)

MVMA Specifications

METRIC (U.S. Customary)

Vehicle Line ACHIEVA

Model Year 1993

Issued

Revised

		Optional Equipment Differential Mass (weight)*			
Code	Equipment	MASS, kg. (lb.)			Remarks Restrictions, Requirements
		Front	Rear	Total	
A31	Window, Power	1.8 (4.0)	1.0 (2.2)	2.8 (6.2)	Coupe
		2.6 (5.7)	2.5 (5.5)	5.1 (11.2)	Sedan
AC3	Power Seat	3.1 (6.8)	.9 (2.0)	4.0 (8.8)	
B37	Mats, Front & Rear	1.2 (2.6)	1.2 (2.6)	2.4 (5.3)	
C60	Air Conditioning	22.2 (48.9)	-1.0 (-2.2)	21.2 (46.7)	
FE3	Suspension	2.1 (4.6)	4.5 (9.9)	6.6 (14.5)	
K34	Cruise Control	1.9 (4.2)	0 (0)	1.9 (4.2)	
LG7	Engine V6 3.3L	26.0 (57.3)	-1.1 (-2.4)	24.9 (54.9)	NF
LD2	Engine L4 2.3L	8.4 (18.5)	-.4 (-.8)	8.0 (17.6)	NL37
MD9	Transmission, Auto	21.6 (47.6)	-1.0 (-2.2)	20.6 (45.4)	NL

* Also see Engine - General Section for dressed engine mass (weight).

1

Exterior Length & Height

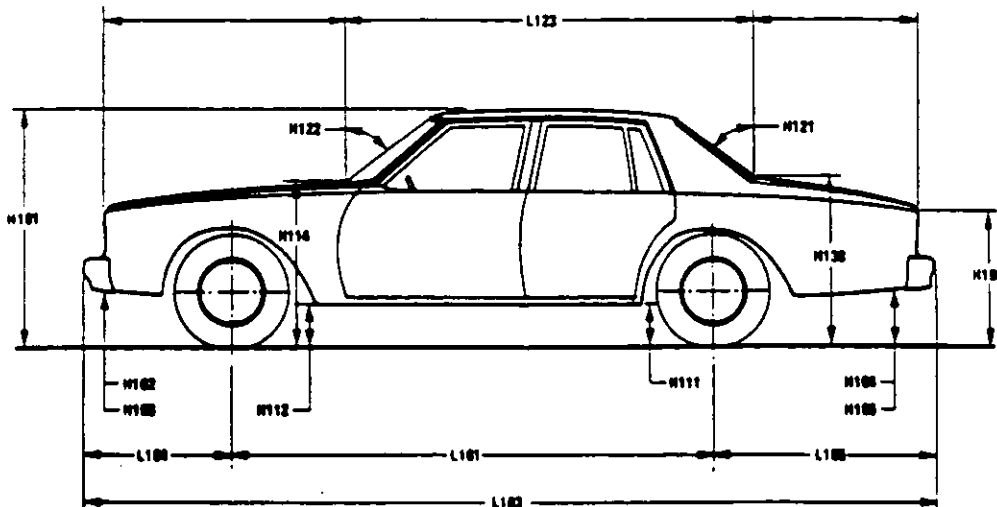


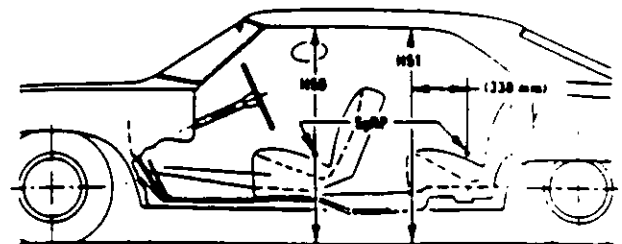
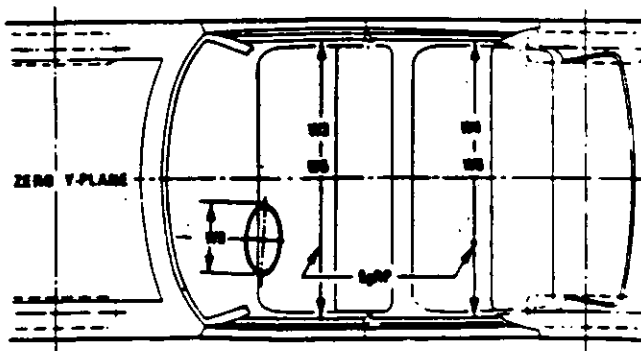
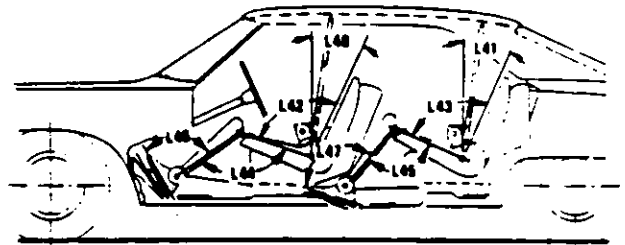
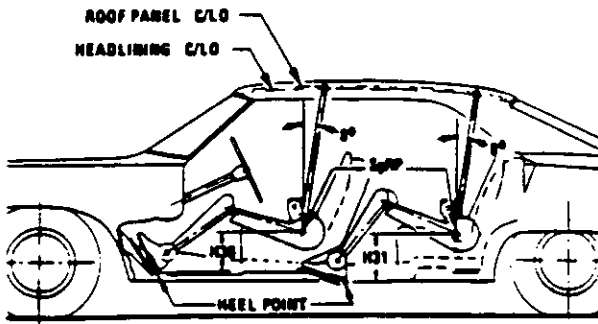
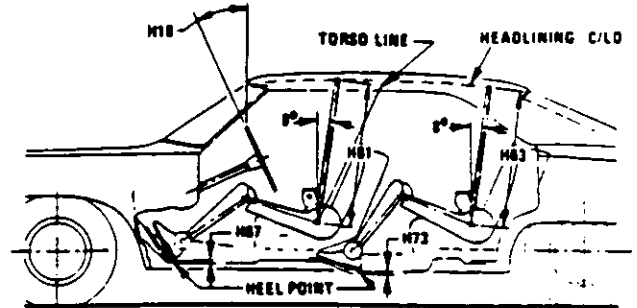
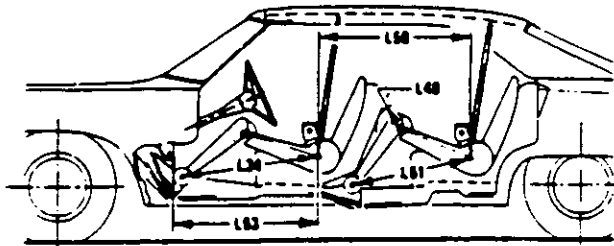
Diagram illustrating the ramp breakover angle. The diagram shows a cross-section of a ramp structure with a central breakover point. Key dimensions and angles are labeled:

- H147 (RAMP BREAKOVER ANGLE)**: The angle between the ramp surface and the horizontal line at the breakover point.
- INCLUDED RAMP ANGLE**: The angle between the two ramp surfaces meeting at the breakover point.
- H100**: The height of the ramp structure at the ends.
- H152**: The height of the ramp structure at the breakover point.
- H10**: The height of the ramp structure at the ends (labeled on the right side).

MVMA Specifications Form

METRIC (U.S. Customary)

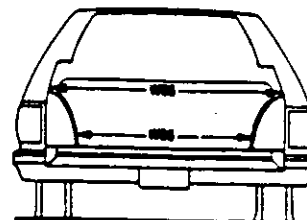
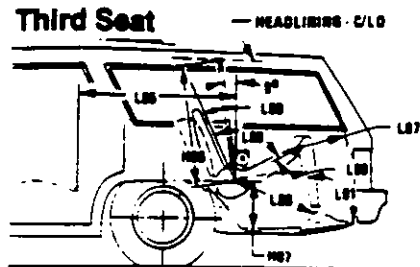
Interior Vehicle And Body Dimensions - Key Sheet



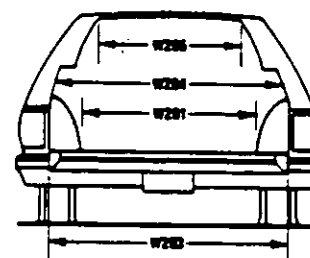
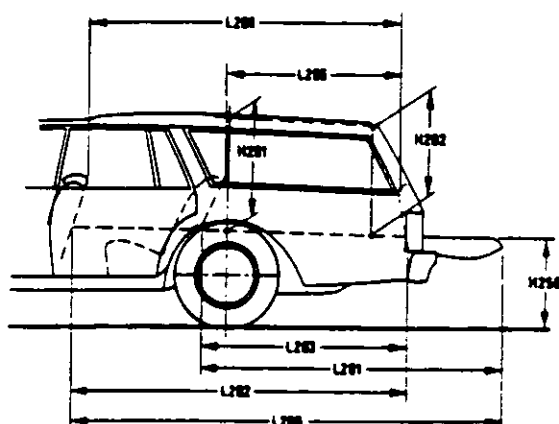
METRIC (U.S. Customary)

Interior Vehicle And Body Dimensions – Key Sheet

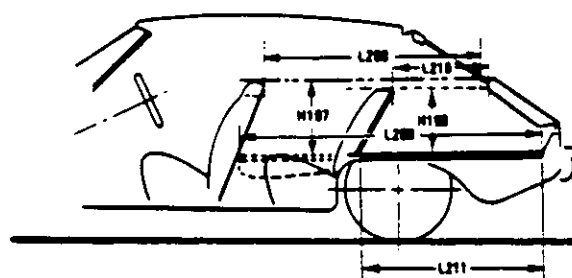
Third Seat



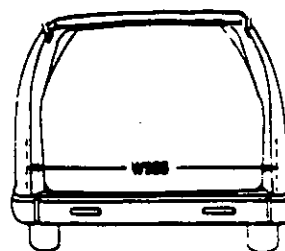
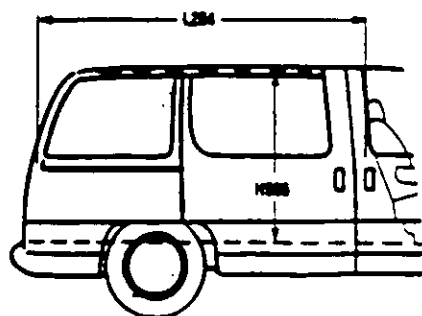
Cargo Space



Station Wagon



Hatchback



Multipurpose Vehicle

MVMA Specifications

METRIC (U.S. Customary)

Exterior Vehicle And Body Dimensions - Key Sheet Dimensions Definitions

Seating Reference Point

SEATING REFERENCE POINT means the manufacturer's design reference point which -

- (a) Establishes the rearmost normal design driving or riding position of each designated seating position in a vehicle;
- (b) Has coordinates established relative to the design vehicle structure;
- (c) Simulates the position of the pivot center of the human torso and thigh; and
- (d) Is the reference point employed to position the two dimensional templates described in SAE Recommended Practice J826, "Devices for Use in Defining and Measuring Vehicle Seating Accommodations."

Width Dimensions

- W101 TREAD - FRONT. The dimension measured between the tire centerlines at the ground.
- W102 TREAD - REAR. The dimension measured between the tire centerlines at the ground. In case of dual wheels, the dimension will be measured to the centerline of tire and wheel assemblies.
- W103 VEHICLE WIDTH. The maximum dimension measured between the widest point on the vehicle, excluding exterior mirrors, flexible mud flaps, marker lamps, but including bumpers, moldings, sheet metal protrusions or dual wheels, if standard equipment.
- W117 BODY WIDTH AT SgRP - FRONT. The dimension measured laterally between the widest points on the body at the SgRP-front, excluding door handles, applied moldings, or appliques.
- W120 VEHICLE WIDTH - FRONT DOORS OPEN. The dimension measured between the widest point on the front doors in maximum hold-open position.
- W121 VEHICLE WIDTH - REAR DOORS OPEN. The dimension measured between the widest point on the rear doors in maximum hold-open position. For vehicles with a rear door on only one side, this dimension is to the zero "Y" plane.
- W122 TUMBLE - HOME. STRAIGHT SIDE GLASS. The angle measured from a vertical to the outside surface of the front door glass at the SgRP "X" plane.
CURVED SIDE GLASS. The angle measured from a vertical to a chord extending from the upper DLO to the lower DLO at the outside surface of the front door glass at the front SgRP "X" plane.
- W410 OUTSIDE MIRROR WIDTH: The dimension between the widest point on the outside mirrors. The standard right and left mirror adjusted for normal driving will be shown unless otherwise noted. When only one outside mirror is standard, the dimension will be to the zero "Y" plane.

Length Dimensions

- L101 WHEELBASE (WB). The dimension measured longitudinally between front and rear wheel centerlines. In case of dual rear axles, the dimension shall be to the midpoint of the centerlines of the rear wheels.
- L103 VEHICLE LENGTH: The maximum dimension measured longitudinally between the foremost point and the rearmost point on the vehicle, including bumper, bumper guards, tow hooks and/or rub strips, if standard equipment.
- L104 OVERHAND - FRONT. The dimension measured longitudinally from the centerline of the front wheels to the foremost point on the vehicle including bumper, bumper guards, tow hooks and/or rub strips, if standard equipment.
- L105 OVERHANG - REAR. The dimension measured longitudinally from the centerline of the rear wheels; or in the case of dual rear axles, the dimension shall be the midpoint of the centerlines of the rear wheels, to the rearmost point on the vehicle including rear bumpers, bumper guards, tow hooks and rub strips, if standard equipment.

- L123 UPPER STRUCTURE LENGTH. The dimension measured longitudinally from the cowl point to the deck point.
- L127 REAR WHEEL CENTERLINE "X" COORDINATE or in the case of dual rear axles, the coordinate shall be the midpoint of the distance between the rear axle centerlines.

Height Dimensions

- H101 VEHICLE HEIGHT. The dimension measured vertically from the highest point on the vehicle body to ground.
- H111 ROCKER PANEL - REAR TO GROUND. The dimension measured vertically from the bottom of the rocker or side quarter panel at the front of the rear wheel opening, excluding flanges, to ground.
- H112 ROCKER PANEL - FRONT TO GROUND. The dimension measured vertically from the foremost point on the bottom of the rocker panels, excluding flanges, to ground.
- H114 COWL POINT TO GROUND. Measured at zero "Y" plane.
- H121 BACKLIGHT SLOPE ANGLE. The angle between the vertical reference line and the surface of backlight at vehicle zero "Y" plane. For curve backlight, the angle is to chord of backlight arc from lower DLO to upper DLO.
- H122 WINDSHIELD SLOPE ANGLE. The angle between the vertical reference line and a chord of the windshield arc running from the lower DLO to the upper DLO at the vehicle zero "Y" plane. In the case of wrap over glass, the angle to be measured will be formed by a chord 457 mm (18.0 in.) long drawn from the lower DLO to the intersecting point on the windshield.
- H138 DECK POINT TO GROUND. Measured at zero "Y" plane.
- H109 STATIC LOAD - TIRE RADIUS - REAR. Specified by the manufacturer in accordance with composite TIRE SECTION STANDARD.

Ground Clearance Dimensions

- H102 FRONT BUMPER TO GROUND. The minimum dimension measured vertically from the lowest point on the front bumper to ground, including bumper guards, if standard equipment.
- H103 FRONT BUMPER TO GROUND - CURB MASS (WT) Measured in the same manner as H102.
- H104 REAR BUMPER TO GROUND. The minimum dimension measured vertically from the lowest point on the rear bumper to ground, including bumper guards, if standard equipment.
- H105 REAR BUMPER TO GROUND - CURB MASS (WT) Measured in the same manner as H104.
- H106 ANGLE OF APPROACH. The angle measured between a line tangent to the front tire static loaded radius arc and the initial point of structural interference forward of the front tire to ground. The limiting structural component shall be designated.
- H107 ANGLE OF DEPARTURE. The angle measured between a line tangent to the rear tire static loaded radius arc and the initial point of structural interference rearward of the rear tire to ground. The limiting component shall be designated.
- H147 RAMP BREAKOVER ANGLE. The angle measured between two lines tangent to the front and rear tire static loaded radius and intersecting at a point on the underside of the vehicle which defines the largest ramp over which the vehicle can roll.
- H153 REAR AXLE DIFFERENTIAL TO GROUND. The minimum dimension measured from the rear axle differential to ground.
- H156 MINIMUM RUNNING GROUND CLEARANCE. The minimum dimension measured from the sprung vehicle to ground. Specify location.

MVMA Specifications

METRIC (U.S. Customary)

Interior Vehicle And Body Dimensions - Key Sheet Dimensions Definitions

Glass Areas

- S1 Windshield area.
- S2 Side windows area. Includes the front door, rear door, vents, and rear quarter windows on both sides of the vehicle.
- S3 Backlight areas.
- S4 Total area. Total of all areas (S1 + S2 + S3).

Fiducial Mark Dimensions

- Fiducial Mark - Number 1**
- L54 "X" coordinate.
- W21 "Y" coordinate.
- H81 "Z" coordinate.
- H161 Height "Z" coordinate to ground at curb weight.
- H163 Height "Z" coordinate to ground.
- Fiducial Mark - Number 2**
- L55 "X" coordinate.
- W22 "Y" coordinate.
- W82 "Z" coordinate.
- H162 Height "Z" coordinate to ground at curb weight.
- H164 Height "Z" coordinate to ground.

Front Compartment Dimensions

- L11 ACCELERATOR HEEL POINT TO STEERING WHEEL CENTER. The dimension measured horizontally from the AHP to the intersection of the steering column centerline and a plane tangent to the upper surface of the steering wheel rim.
- L17 DESIGN H-POINT - FRONT TRAVEL. The dimension measured horizontally between the design H-point - front in the foremost and rearmost seat track positions. (See SAE J1100)
- L23 NORMAL DRIVING AND RIDING SEAT TRACK TRAVEL. The dimension measured horizontally between a point on the design H-point travel line from the SgRP to the displaced point on the design H-point travel line with the seat moved to the foremost seat position, but not to include seat track travel used for purposes other than normal driving and riding positions. (See SAE J1100).
- L31 SgRP - FRONT. "X" COORDINATED.
- L34 MAXIMUM EFFECTIVE LEG ROOM - ACCELERATOR. The dimension measured along a line from the ankle pivot center to the SgRP - front plus 254 mm (10.0 in.) measured with right foot on the undepressed accelerator pedal. For vehicles with SgRP to heel (H30) greater than 18 in., the accelerator pedal may be depressed as specified by the manufacturer. If the accelerator is depressed, the manufacturer shall place foot flat on pedal and note the depression of the pedal.
- L-40 BACK ANGLE - FRONT. The angle measured between a vertical line through the SgRP - front and the torso line. If the seatback is adjustable, use the normal driving and riding position specified by the manufacturer.
- L-42 HIP ANGLE - FRONT. The angle measured between torso line and thigh centerline.
- L44 KNEE ANGLE - FRONT. The angle measured between thigh centerline and lower leg centerline measured on the right leg.
- L46 FOOT ANGLE - FRONT. The angle measured between the lower leg centerline and a line tangent to the ball and heel of the bare foot flesh line measured on the right leg. Ref SAE J826.
- L53 SgRP - FRONT TO HEEL. The dimension measured horizontally from the SgRP - front to the accelerator heel point.
- W3 SHOULDER ROOM - FRONT. The minimum dimension measured laterally between the trimmed surfaces on the "X" plane through the SgRP - front at height between the belt line and 254 mm (10.0 in.) above the SgRP - front, excluding the door assist strap and attaching parts.

- W5 HIP ROOM - FRONT. The minimum dimension measured laterally between the trimmed surfaces on the "X" plane through the SgRP - front within 25 mm (1.0 in.) below and 76 mm (3.0 in.) above the SgRP - front and 76 mm (3.0 in.) fore and aft of the SgRP - front.
- W9 STEERING WHEEL MAXIMUM OUTSIDE DIAMETER. Define if other than round.
- H7 ACCELERATOR HEEL POINT TO THE STEERING WHEEL CENTER. The dimension measured vertically from the AHP - front to the intersection of the steering column centerline to a plane tangent to the upper surface of the steering wheel rim.
- H18 STEERING WHEEL ANGLE. The angle measured from a vertical to the surface plane of the steering wheel.
- H30 SgRP - FRONT TO HEEL. The dimension measured vertically from the SgRP - front to the accelerator heel point.
- H50 UPPER BODY OPENING TO GROUND - FRONT. The dimension measured vertically from the trimmed body opening to the ground on the SgRP - front "X" plane.
- H61 EFFECTIVE HEAD ROOM - FRONT. The dimension measured along a line 8 deg. rear of vertical from the SgRP - front to the headlining plus 102 mm (4.0 in.).
- H67 FLOOR COVERING THICKNESS - UNDEPRESSED - FRONT. The dimension measured vertically from the surface of the undepressed floor covering to the underbody sheet metal at the accelerator heel point.

Rear Compartment Dimensions

- L-41 BACK ANGLE - SECOND. The angle measured between a vertical line through the SgRP - second and the torso line.
- L43 HIP ANGLE - SECOND. The angle measured between torso line and thigh centerline.
- L45 KNEE ANGLE - SECOND. The angle measured between thigh centerline and lower leg centerline.
- L47 FOOT ANGLE - SECOND. The angle measured between the lower leg centerline and a line tangent to the ball and heel of the three-dimensional device bare foot flesh line (Reference J826).
- L48 KNEE CLEARANCE - SECOND. The minimum dimension measured from the knee pivot center to the back of the front seatback minus 51 mm (2.0 in.).
- L50 SgRP COUPLE DISTANCE - SECOND. The dimension measured horizontally from the driver SgRP - front to the SgRP - second.
- L51 MINIMUM EFFECTIVE LEG ROOM - SECOND. The dimension measured along a line from the ankle pivot center to the SgRP - second plus 254 mm (10.0 in.).
- W4 SHOULDER ROOM - SECOND. The minimum dimension measured laterally between door or quarter trimmed surfaces on the "X" plane through the SgRP - second at height between 254-406 mm (10.0-16.0 in.) above the SgRP - second, excluding the door assist straps and attaching parts.
- W6 HIP ROOM - SECOND. Measured in the same manner as W5.
- H31 SgRP - SECOND TO HEEL. The dimension measured vertically from the SgRP - second to the two dimensional device heel point on the depressed floor covering.
- H51 UPPER BODY OPENING TO GROUND - SECOND. The dimension measured vertically from the trimmed body opening to the ground on the "X" plane 330 mm (13.0 in.) forward of the SgRP - second.
- H63 EFFECTIVE HEAD ROOM - SECOND. The dimension measured along a line 8 deg. rear of vertical from the SgRP to the headlining, plus 102 mm (4.0 in.).
- H73 FLOOR COVERING - DEPRESSED - SECOND. The dimension measured vertically from the heel point to the underbody sheet metal.

MVMA Specifications

METRIC (U.S. Customary)

Interior Vehicle And Body Dimensions - Key Sheet Dimensions Definitions

Luggage Compartment Dimensions

- V1 USABLE LUGGAGE CAPACITY - Total of volumes of individual pieces of standard luggage set plus H-boxes stowed in the luggage compartment in accordance with the procedure described in paragraph 8.2 of SAE-J1100a.

Interior Volumes (EPA Classification)

The Interior Volume Index is listed for each body style except two seaters. The Interior Volume Index estimates the space in a car. It is based on four measurements - head room, shoulder room, hip room, and leg room - for the front and rear seats, plus trunk capacity.

The Trunk/Cargo Index is an estimate of the size of the trunk/cargo space. In station wagons and hatchbacks it is an estimate of the space behind the second seat.

Station Wagon / MPV - Third Seat Dimensions

- L85 SGRP COUPLE DISTANCE - THIRD. The dimension measured horizontally from the SGRP - second to the SGRP - third.
- L86 EFFECTIVE LEG ROOM - THIRD. The dimension measured along a line from the ankle pivot center to the SGRP - third plus 254 mm (10.0 in.).
- L87 KNEE CLEARANCE - THIRD. The minimum dimension from the knee pivot center to the back of second seatback minus a constant of 51 mm (2.0 in.). With rear-facing third seat, dimension is measured to closure.
- L88 BACK ANGLE - THIRD. Measured in the same manner as L41.
- L89 HIP ANGLE - THIRD. Measured in the same manner as L43.
- L90 KNEE ANGLE - THIRD. Measured in the same manner as L45.
- L91 FOOT ANGLE - THIRD. Measured in the same manner as L47.
- W85 SHOULDER ROOM - THIRD. Measured in the same manner as W4.
- W86 HIP ROOM - THIRD. Measured in the same manner as W5.
- H86 EFFECTIVE HEAD ROOM - THIRD. The dimension, measured along a line 8 deg. from the SGRP - third to the headlining rear of vertical plus a constant of 102 mm (4.0 in.).
- H87 SGRP - THIRD TO HEEL POINT.
- SD1 SEAT FACING DIRECTION - THIRD.

Station Wagon / MPV - Cargo Space Dimensions

- L200 CARGO LENGTH - OPEN - FRONT. The minimum dimension measured longitudinally from the back of the front seatback at the height of the undepressed floor covering to the rearmost point on the undepressed floor covering on the open tailgate or cargo surface if the rear closure is a conventional door type tailgate at the zero "Y" plane.
- L201 CARGO LENGTH - OPEN - SECOND. The dimension measured longitudinally from the back of the second seatback at the height of the undepressed floor covering to the rearmost point on the undepressed floor covering on the open tailgate or cargo floor surface if the rear closure is a conventional door type tailgate, at the zero "Y" plane.

- L202 CARGO LENGTH - CLOSED - FRONT. The minimum dimension measured horizontally from the back of the front seat at the height of the undepressed floor covering to the rearmost point on the undepressed floor covering on the closed tailgate or taildoor for station wagons, trucks and mpv's at the zero "Y" plane.
- L203 CARGO LENGTH - CLOSED - SECOND. The dimension measured horizontally from the back of the second seat at the height of the undepressed floor covering to the rearmost point on the undepressed floor covering on the closed tailgate or taildoor for station wagons, trucks and mpv's at the zero "Y" plane.
- L204 CARGO LENGTH AT BELT - FRONT. The minimum dimension measured horizontally from the back of the front seatback at the seatback top to the foremost normal surface of the closed tailgate or inside surface of the cab backpanel at the height of the belt, on the zero "Y" plane.
- L205 CARGO LENGTH AT BELT - SECOND. The minimum dimension measured horizontally from the back of the second seatback at the seatback top to the foremost normal surface of the closed tailgate at the height of the belt, on the zero "Y" plane.
- W201 CARGO WIDTH - WHEELHOUSE. The minimum dimension measured laterally between the trimmed wheelhouseings at floor level. For any vehicle not trimmed, measure to the sheet metal.
- W203 REAR OPENING WIDTH AT FLOOR. The minimum dimension measured laterally between the limiting interferences of the rear opening at floor level.
- W204 REAR OPENING WIDTH AT BELT. The minimum dimension measured laterally between the limiting interferences of the rear opening at belt height or top of pick up box.
- W205 REAR OPENING WIDTH ABOVE BELT. The minimum dimension measured laterally between the limiting interferences of the rear opening above the belt height.
- W500 CARGO WIDTH AT FLOOR. The maximum dimension measured laterally between the limiting interferences at the floor level. This dimension shall include ribs and pillars, but will exclude wheelhouses.
- H187 FRONT SEATBACK TO LOAD FLOOR HEIGHT. The dimension measured vertically from the horizontal tangent to the top of the seatback to the undepressed floor covering.
- H201 CARGO HEIGHT. The dimension measured vertically from the top of the undepressed floor covering to the headlining at the rear wheel "X" coordinate on the zero "Y" plane.
- H202 REAR OPENING HEIGHT. The dimension measured vertically from the top of the undepressed floor covering to the upper trimmed opening on the zero "Y" plane with rear door fully open.
- H250 TAILGATE TO GROUND CURB MASS (WT.). The dimension measured vertically from the top of the undepressed floor covering on the lowered tailgate to ground on the zero "Y" plane.
- H505 MAXIMUM CARGO HEIGHT. The maximum vertical dimension rear of the front seat from the cargo floor to roof bow or headlining at the zero "Y" plane.

MVMA Specifications

METRIC (U.S. Customary)

Interior Vehicle And Body Dimensions - Key Sheet Dimensions Definitions

V2 STATION WAGON

Measured in inches:

$$\frac{W4 \times H201 \times L204}{1728} = \text{ft}^3$$

Measured in mm:

$$\frac{W4 \times H201 \times L204}{10^9} = \text{m}^3 \text{ (cubic meter)}$$

V4 HIDDEN LUGGAGE CAPACITY - REAR OF FRONT SEAT.

The total volumes of individual pieces of one set of standard luggage stowed in any hidden cargo area below the load floor rear of the front seat.

V5 TRUCKS AND MPV'S WITH OPEN AREA.

Measured in inches:

$$\frac{L506 \times W505 \times H503}{1728} = \text{ft}^3$$

Measured in mm:

$$\frac{L506 \times W505 \times H503}{10^9} = \text{m}^3 \text{ (cubic meter)}$$

V6 TRUCKS AND MPV'S WITH CLOSED AREA.

Measured in inches:

$$\frac{L204 \times W500 \times H505}{1728} = \text{ft}^3$$

Measured in mm:

$$\frac{L204 \times W500 \times H505}{10^9} = \text{m}^3 \text{ (cubic meter)}$$

V8 HIDDEN LUGGAGE CAPACITY - REAR OF SECOND SEAT.

The total volume of individual pieces of one set of standard luggage stowed in any hidden cargo area below the load floor rear of the second seat.

V10 STATION WAGON CARGO VOLUME INDEX.

Measured in inches:

$$\frac{H201 \times L205 \times \frac{W4 + W201}{2}}{1728} = \text{ft}^3$$

Measured in mm:

$$\frac{H201 \times L205 \times \frac{W4 + W201}{2}}{10^9} = \text{m}^3 \text{ (cubic meter)}$$

Hatchback - Cargo Space Dimensions

All hatchback cargo dimensions are to be taken with the front seat in full down and rear position, and the rear seat folded down. The hatchback door is in the closed position. (For electronically adjusted seats, see the manufacturer's specifications for Design "H" Point).

L208 CARGO LENGTH AT FRONT SEATBACK HEIGHT. The minimum horizontal dimension from the "X" plane tangent to the rearmost surface of the driver's seatback to the inside limiting interference of the hatchback door on the vehicle zero "Y" plane.

L209 CARGO LENGTH AT FLOOR - FRONT. The minimum horizontal dimension measured at floor level from the rear of the front seatback to the normal limiting interference of the hatchback door on the vehicle zero "Y" plane.

L210 CARGO LENGTH AT SECOND SEATBACK HEIGHT. The minimum dimension measured from the "X" plane tangent to the rearmost surface of second seatback or the load floor which is stowed at least one half of the H198 dimension height above the rear load floor, to the rearmost inside limiting interference on the zero "X" plane.

L211 CARGO LENGTH AT FLOOR - SECOND SEATBACK. The minimum horizontal dimension measured at floor level from the rear of the second seatback or load floor panel to the normal limiting interference of the hatchback door on the vehicle zero "Y" plane.

H197 FRONT SEATBACK TO LOAD HEIGHT. The dimension measured vertically from the horizontal tangent to the top of the seatback to the undepressed floor covering.

H198 SECOND SEATBACK TO LOAD FLOOR HEIGHT. The dimension measured vertically from the second seatback to the undepressed floor covering.

V3 HATCHBACK.

Measured in inches:

$$\frac{\frac{L208 + L209}{2} \times W4 \times H197}{1728} = \text{ft}^3$$

Measured in mm:

$$\frac{\frac{L208 + L209}{2} \times W4 \times H197}{10^9} = \text{m}^3 \text{ (cubic meter)}$$

V4 HIDDEN LUGGAGE CAPACITY - REAR OF FRONT SEAT. The total volumes of individual pieces of one set of standard luggage stowed in any hidden cargo area below the load floor rear of the front seat.

V11 HATCHBACK CARGO VOLUME INDEX. Usable luggage (one (1) stand and luggage set) below floor:

$$\frac{\frac{L210 + L211}{2} \times W4 \times H198}{1728} = \text{ft}^3$$

Measured in mm:

$$\frac{\frac{L210 + L211}{2} \times W4 \times H198}{10^9} = \text{m}^3 \text{ (cubic meter)}$$

MVMA Specifications

METRIC (U.S. Customary)

Index

Subject	Page No.
Alternator	16
Axle Drive, Front, Rear, All Four	2, 9, 10
Axle Shafts	10
Battery	16
Body and Miscellaneous Information	17
Brakes - Parking Service	12, 13
Camber	15
Camshaft	3
Capacities	
Cooling System	5
Fuel Tank	6
Lubricants	
Engine Crankcase	4
Transmission / Transaxle	8, 9
Rear Axle	10
Carburetor	2, 6
Caster	15
Climate Control System	19
Clutch - Pedal Operated	8
Coil, Ignition	16
Connecting Rods	4
Convenience Equipment	20-21
Cooling System	5
Crankshaft	4
Cylinders and Cylinder Head	3
Diesel Information	4
Dimension Definitions	
Key Sheet - Exterior	28, 31, 32
Key Sheet - Interior	29, 30, 32, 33, 34
Electrical System	15, 16
Emission Controls	7
Engine - General	
Bore, Stroke, Type	3
Compression Ratio	2
Displacement	2, 3
Firing Order, Cylinder Numbering	3
General Information, Power & Torque	2
Intake System	4
Power Teams	2
Exhaust System	7
Equipment Availability, Convenience	20
Fan, Cooling	5
Filters - Engine Oil, Fuel System	4
Four Wheel Drive	10
Frame	17
Front Suspension	11
Front Wheel Drive Unit	10
Fuel Economy, EPA	1
Fuel Injection	6
Fuel System	6
Fuel Tank	6
Glass	18
Headlamps	18
Headroom - Body	23, 24
Height	22
Horns	15
Horsepower - Brake	2
Ignition System	16
Inflation - Tires	13
Interior Volumes	23
Instruments	15
Lagroom	23, 24
Lengths	22
Leveling, Suspension	11
Lifters, Valve	4
Linings - Clutch, Brake	8, 12
Lubrication - Engine Transmission / Transaxle	4, 8, 9
Luggage Compartment	23
Models	1
Motor Starting	16
Muffler	?
Origin	1

Subject	Page No.
Passenger Capacity	1
Passenger Mass Distribution	26
Pistons	3
Power Brakes	12
Power, Engine	2
Power Steering	14
Power Teams	2
Propeller Shaft	10
Pumps - Fuel	6
Water	5
Radiator - Cap, Hoses, Core	5
Ratios - Axle, Transaxle	2, 9, 10
Compression	2
Steering	14
Transmission / Transaxle	2, 8, 9
Rear Axle	2, 10
Regulator - Alternator	16
Restraint System	18
Rims	13
Rods - Connecting	4
Scrub Radius	14
Seats	17
Shock Absorbers, Front & Rear	11
Spark Plugs	16
Speedometer	15
Springs - Front & Rear Suspension	11
Stabilizer (Sway Bar) - Front & Rear	11
Starting System	16
Steering	14
Suppression - Ignition, Radio	16
Suspension - Front & Rear	11
Tail Pipe	7
Theft Protection	21
Thermostat, Cooling	5
Tires	13
Toe-In	15
Torque Converter	9
Torque - Engine	2, 8, 9
Trailer Towing	21
Transaxle	9
Transmission - Types	2, 8, 9
Transmission - Automatic	2, 9
Transmission - Manual	2, 8
Transmission - Ratios	2, 8, 9
Tread	22
Trunk Cargo Load	1
Trunk Luggage Capacity	23
Turning Diameter	14
Unitized Construction	18
Universal Joints, Propeller Shaft	10
Valve System	4
Vehicle Dimensions	
Width	22
Length	22
Height	22
Ground Clearance	22
Front Compartment	23
Rear Compartment	23
Luggage Compartment	23
Station Wagon - Third Seat	24
Station Wagon - Cargo Space	24
Hatchback - Cargo Space	24
Fiducial Marks	25
Voltage Regulator	16
Water Pump	5
Weights	26, 27
Wheel Alignment	15
Wheelbase	22
Wheels & Tires	13
Wheel Spindle	14
Widths	22
Windshield	18
Windshield Wiper and Washer	15