MANUFACTURERS MOTOR VEHICLE SPECIFICATIONS

METRIC (U.S. Customary)

1991

Manufacturer	OLDSMOBILE DIVISION GENERAL MOTORS CORPORATION	Vehicle Line	CUTLASS CALAIS
Mailing Address	920 TOWNSEND STREET LANSING, MICHIGAN 48921	Issued	Revised

Direct questions concerning these specifications to the manufacturer listed above.

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Motor Vehicle Manufacturers Association
of the United States, Inc.

MVMA Specifications

METRIC (U.S. Customary)

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

Vehicle Origin

Design & development (company)	General Motors Corporation, L.A.D. Lansing
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 (Mfgr's Model Code)	No. of Designated Seating Positions (Front/Rear)	Max. Trunk/Cargo Load-Kilograms (Pounds)	EPA Fuel Economy (City/Hwy)
CUTLASS CALAIS S Notchback Coupe	3NF27	2/3	60 (132)	
CUTLASS CALAIS S Notchback Sedan	3NF69	2/3	60 (132)	
CUTLASS CALAIS SL SL Coupe	3NT27	2/3	60 (132)	
CUTLASS CALAIS SL SL Sedan	3NT69	2/3	60 (132)	
CUTLASS CALAIS INTERNATIONAL Series Coupe	3NK27	2/3	60 (132)	
CUTLASS CALAIS INTERNATIONAL Series Sedan	3NK69	2/3	60 (132)	
CUTLASS CALAIS Notchback Coupe	3NL27	2/3	60 (132)	
CUTLASS CALAIS Notchback Sedan	3NL69	2/3	60 (132)	

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

GMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)
Power Teams

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

			A	B	C	D	E
ENGINE	Engine Code		L68	LD2	LG7	LGO	LGO-W41
	Displacement Liters (cu. in.)		2.5L (151) L4	2.3L (138) L4	3.3L (204) V6	2.3L (138) L4	2.3L (138) L
	Induction system (FI, Carb, etc.)		Electronic Fuel Injection	Multi-Port Fuel Injection	Multi-Port Fuel Injection	Multi-Port Fuel Injection	Multi-Port Fuel Injection
	Compression ratio		8.3:1	9.5:1	9.0:1	10.0:1	10.0:1
	SAE Net at RPM	Power kW (bhp)	78 (105) @ 4800	119 (160) @ 6200	119 (160) @ 5200	134 (180) @ 6200	141 (190) @ 6400
		Torque Newton meters (lb.ft.)	183 (135) @ 3200	210 (155) @ 5200	251 (185) @ 2000	217 (160) @ 5200	217 (160) @ 5200
	Exhaust Single, dual		Single	Single	Single	Single	Single
TRANS	Transmission/ Transaxle		Std. 5-Speed Manual Opt. 3-Speed Auto	3-Speed Auto	3-Speed Auto	5-Speed Manual	5-Speed Manual
	Axle Ratio (std. first)		3.35 2.84	2.84 3.18	2.39	3.61	3.94

Series Availability — Power Teams (A – B – C – D)

Model	Standard	Optional
NFOO	A	B, D, E
NLOO	A	B
NTOO	B	C
NKOO	D	B

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description	2.5 LITER L4 (151 CID)
Engine Code	ELECTRONIC FUEL INJECTION RPO L68

ENGINE – GENERAL

Type & description (inline, V, angle, flat, location, front, mid, rear, transverse, longitudinal, sohc, dohc, ohv, hemi, wedge, pre-chamber, etc.)		In line, Front, Transverse, OHV
Manufacturer		General Motors Engine Division
No. of cylinders		4
Bore		101.648 mm (4.0018 in.)
Stroke		76.20 mm (3.000 in.)
Bore spacing (C/L to C/L)		111.76 mm (4.40 in.)
Cyl blck matl & mass kg(lbs.)(machined)		Cast Iron 41.18 (90.78)
Cylinder block deck height		236.10 mm (9.295 in.)
Cylinder block length		465.5 mm (18.328 in.)
Deck clearance (minimum) (above or below block)		.9144 mm (.036 in.), below
Cyl. head material & mass kg (lbs.)		Cast Iron, 21.82 (48.1)
Cylinder head volume (cu. cm.) (cu.in.)		45.62 (2.78)
Cylinder liner material		Not Applicable
Head gasket thickness (compressed)		1.22 mm (.048 in.)
Minimum combustion chamber total volume (cu. cm.) (cu. in.)		50.2 (3.06)
Cyl. no. system (front to rear)*	L. Bank	1-2-3-4
	R. Bank	-
Firing order		1-3-4-2
Intake manifold matl & mass kg (lbs.)**		Aluminum, 3.76 (8.29)
Exh. manifold matl & mass kg (lbs.)**		Stainless steel, 1.85 (4.07)
Knock sensor (yes/no)		No
Fuel required unleaded, diesel, etc.		Unleaded
Fuel antiknock index (R + M) / 2		87
Engine mounts	Quantity	4
	Matl and type (elastomeric, hydroelastic, hydraulic damper, etc.)	Elastomeric
	Added isolation (sub-frame, crossmember, etc.)	None
Total dressed engine mass (wt) dry***		157 kg. (346 lbs.)

Engine – Pistons

Material & mass, g (weight, oz.) – piston only	Aluminum alloy 600 (21.2)

Engine Camshaft

Location		Cylinder block
Material & mass kg (weight, lbs.)		Austempered Ductile Iron, 3.009 (6.635)
Drive type	Chain/belt	Chain
	Width/pitch	19.1/9.525 mm (.75/.375) 56 pitches

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

MVMA Specifications

Vehicle Line CUTLASS CALAIS

Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description 2.3 LITER L4 (138 CID)

Engine Code MULTI-PORT FUEL INJECTION RPO LD2

O 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		B-O-C Lansing Automotive Division
No. of cylinders		4
Bore		92 (3.63)
Stroke		85 (3.35)
Bore spacing (C/L to C/L)		100 (3.94)
Cyl block matl & mass kg(lbs.)*machined)		Cast Iron 42.83 (94.226)
Cylinder block deck height		222 (8.74)
Cylinder block length		499.5 (19.66)
Deck clearance (minimum) (above or below block)		0
Cyl. head material & mass kg (lbs.)		Aluminum Alloy 8.60 (18.96)
Cylinder head volume cu. cm. (cu. in.)		47.0 +/- 1.5cc
Cylinder liner material		None
Head gasket thickness (compressed)		1.03 - 1.13 (.040 - .044)
Minimum combustion chamber total volume cm. cu. (cu. in.)		66.4
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 Per GM 3950-M 4.80 (10.56)
Exh. manifold matl & mass kg (lbs.) **		Stainless Steel Tube, Steel Flanges 3.72 (8.2)
Knock sensor (yes/no)		YES
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) Hydraulic-Elastomeric (1)
	Added isolation (sub-frame, crossmember, etc.)	Isolated Cross Member Supporting the Front Mount
Total dressed engine mass (wt) dry***		168.8 (371)

Engine – Pistons

Material & mass, g (weight, oz.) – piston only	Aluminum 400 (14.08)

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	22.86	9.525 (.375) Duplex – 130 Pitches

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

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 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		B-O-C Flint – G.M. Corporation
No. of cylinders		6
Bore		93.98 (3.700)
Stroke		80.26 (3.16)
Bore spacing (C/L to C/L)		107.7 (4.24)
Cyl block matl & mass kg(lbs.)(machined)		Cast Iron 49.32 (108.5)
Cylinder block deck height		210.7 (8.295)
Cylinder block length		398 (15.67)
Deck clearance (minimum) (above or below block)		1.02 (0.040) 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 Cubic Inches)
Cylinder liner material		None
Head gasket thickness (compressed)		1.26 (0.049)
Minimum combustion chamber total volume cu. cm. (cu. in.)		69.53 (4.243 Cubic Inches)
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 (yes/no)		Yes
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
	Added isolation (sub-frame, crossmember, etc.)	No
Total dressed engine mass (wt) dry**		186.4 (410.9)

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.

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description	2.3 LITER L4 (138 CID)
Engine Code	MULTI-PORT FUEL INJECTION RPO LG0

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			B-O-C Lansing Automotive Division
No. of cylinders			4
Bore			92 mm (3.63 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 42.83 (94.228)
Cylinder block deck height			222 mm (8.74 in.)
Cylinder block length			499.5 (19.66)
Deck clearance (minimum) (above or below block)			0
Cyl. head material & mass kg (lbs.)			Aluminum Alloy 8.60 (18.96)
Cylinder head volume cu. cm. (cu. in.)			46.9 ± 2.0
Cylinder liner material			None
Head gasket thickness (compressed)			1.03 - 1.13 mm (.040 - .044 in.)
Minimum combustion chamber total volume cu. cm. (cu. in.)			63.154
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 Per GM 3950-M 4.80 (10.56)
Exh. manifold matl & mass kg (lbs.) **			Cast Iron 6.74 (14.86)
Knock sensor (yes/no)			YES
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) Hydraulic-Elastomeric (1)
	Added isolation (sub-frame, crossmember, etc.)		Isolated Cross Member Supporting the Front Mount
Total dressed engine mass (wt) dry***			177.8 (391.16)

Engine – Pistons

Material & mass, g (weight, oz.) – piston only	Aluminum .423 (14.88

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	22.86 mm	9.525 mm (.375 in.) Duplex - 130 Pitches

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

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description	2.5 LITER L4 (151 CID)
Engine Code	ELECTRONIC FUEL INJECTION RPO L68

Engine – Valve System

Hydraulic lifters (std., opt., n.a.)		Standard
Valves	Number intake/exhaust	4/4
	Head O.D. intake/exhaust	I = 43.82 / 43.56 mm E = 38.23 / 37.97 mm

Engine – Connecting Rods

Material & mass kg., (weight, lbs.) *	Arma Steel, .6211 +/- .012 kg. (1.37 +/- .026 lbs.)
Length(axes centerline to centerline)	153.67mm (6.05 in.)

Engine – Crankshaft

Material & mass kg., (weight, lbs.) *		Nodular Iron
End thrust taken by bearing (no.)		5
Length & number of main bearings		** 5 Bearings
Seal (material, one, two piece design, etc.)	Front	One piece fluroelastomer
	Rear	One piece fluroelastomer

Engine – Lubrication System

Normal oil pressure kPa(psi) @ eng rpm	259.0 (37.5) @ 2000
Type oil intake (floating, stationary)	Stationary
Oil filter sys. (full flow,part, other)	Full flow and in sump
Capacity of c/case,less filter–refill–L (qt.)	Refill w/w.o. filter 3.8 (4.0)

Engine – Diesel Information

Diesel engine manufacturer		
Glow plug, current drain at 0 deg. F		
Injector Nozzle	Type	
	Opening pressure kPa(psi)	Not
Pre–chamber design		Applicable
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

Turbo charger – manufacturer	Not
Super charger – manufacturer	Applicable
Intercooler	

* Finished State

** Standard Measurement for Width only:
# 1, 2, 3, 4 = 20.24 – 20.49mm (.797 – .807 in.)
#5 = 25.55 – 25.63mm (1.022 – 1.025 in.)

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description	2.3 LITER L4 (138 CID)
Engine Code	MULTI-PORT 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.) *	Carbon Steel S.A.E. #1141 Modified .673 (1.5) Each
Length(axes centerline to centerline)	147.5 (5.81)

Engine – Crankshaft

Material & mass kg., (weight, lbs.) *		Nodular Iron GM6129 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
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 CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description	3.3 LITER V6 (204 CID)
Engine Code	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 (1.5)

Engine – Connecting Rods

Material & mass kg., (weight, lbs.) *	Pearitic Malleable 0.61 (1.34) each
Length(axes centerline to centerline)	135.68 (5.341)

Engine – Crankshaft

Material & mass kg., (weight, lbs.) *		Nodular Iron 15.12 (33.28)
End thrust taken by bearing (no.)		Two
Length & number of main bearings		21.9 (0.864) Four
Seal (material, one, two piece design, etc.)	Front	One Piece Rubber Lip
	Rear	Two Piece Rope

Engine – Lubrication System

Normal oil pressure kPa(psi) @ eng rpm	(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 CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description	2.3 LITER L4 (138 CID)
Engine Code	MULTI-PORT FUEL INJECTION RPO LGO

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.) *	Carbon Steel S.A.E. #1141 Modified .673 (1.5) Each
Length(axes centerline to centerline)	147.5 (5.81)

Engine – Crankshaft

Material & mass kg., (weight, lbs.) *		Nodular Iron GM6129 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,cart, other)	Full
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 CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description	2.5 LITER L4 (151 CID)
Engine Code	ELECTRONIC FUEL INJECTION RPO L68

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)		103.4 (15) (On Surge Tank)
Circulation thermostat	Type (choke, bypass)	Choke
	Starts to open @ deg's C(F)	90 (195)
Water Pump	Type (centrifugal, other)	Centrifugal
	GPM 1000 pump rpm	6.1
	Number of pumps	1
	Drive (V-belt, other)	Multiple V-Belt
	Bearing type	Ball-roller
	Impeller material	Sintered
	Housing material	Aluminum
By-pass recirculation type (inter., ext.)		External – Thru Heater Core + thru surge tank
Cooling system capacity	With heater – L (qt.)	10.1 (10.7)
	With air conditioner–L(qt.)	10.1 (10.7)
	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)		Yes
Radiator core	Std., A/C, HD	A/C
	Type (cross-flow, etc.)	Cross Flow
	Construction (fin & tube mechanical, braze, etc.)	Serpentine Fin and Tube / Vacuum Braze
	Matl., mass kg (wgt.,lbs.)	Aluminum 3.07 (6.8)
	Width	600 (23.6)
	Height	382 (15.0)
	Thickness	23.5 (.92)
	Fins per inch	20
Radiator end tank material		Nylon 66 – 33% Mineral Filled
Fan	Std., elec., opt.	Electric
	Number of blades & type (flex, axial, material)	6–Nylon 6/6 Mineral Filled
	Diameter & projected width	HTR – 290 (11.4), AC – 373 (14.7)
	Ratio fan to crankshft.rev.)	Not Applicable
	Fan cutout type	Engine Control Module (ECM)
	Drive type (direct, remote)	Direct Drive Electric Motor (All)
	RPM at idle (elec.)	HTR – 2200 A/C – 1900
	Motor rating(wattage(elec)	HTR – 100W A/C – 150W
	Motor switch (type & location/elec.)	ECM Controlled
	Switch point (temp../ pressure/elec.)	On at 108 deg. C. Coolant Temperature, off at 100 deg. C., Fan on with A/C below 70 MPH
	Fan shroud (material)	Plastic

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description 2.3 LITER L4 (138 CID)
Engine Code MULTI-PORT 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)		103.5 (15) (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	One
	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)		No
Water jackets open at head face (yes,no)		Yes
Radiator core	Std., A/C, HD	A/C
	Type (cross-flow, etc.)	Cross Flow
	Construction (fin & tube mechanical, braze, etc.)	Serpentine Fin and Tube Vacuum Brazed
	Matl., mass kg (wgt.,lbs.)	Aluminum 3.65 (8.04)
	Width	600 (23.6)
	Height	382 (15.0)
	Thickness	23.5 (.93)
	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
	Diameter & projected width	381 (15.0), 37.3 (1.5)
	Ratio(fan to crankshft.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 Watts
	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 CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description 3.3 LITER V6 (204 CID)
Engine Code 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)		103.4 (15) (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	One
	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, HO	A/C
	Type (cross-flow, etc.)	Cross Flow
	Construction (fin & tube mechanical, braze, etc.)	Serpentine Fin and Tube Vacuum Brazed
	Matl., mass kg (wgt.,lbs.)	Aluminum 4.87 (10.7)
	Width	600 (23.6)
	Height	382 (15.0)
	Thickness	34.0 (1.3)
	Fins per inch	20
Radiator end tank material		Plastic Nylon 66, 33% Mineral Filled
Fan	Std., elec., opt.	Electric
	Number of blades & type (flex, solid, material)	6 – Nylon 6/6 Mineral Filled
	Diameter & projected width	381 (15.0), 37.3 (1.5)
	Ratio(fan to crankshft.rev.)	Not Applicable
	Fan cutout type	Engine Control Module (ECM)
	Drive type (direct, remote)	Direct Drive Electric Motor
	RPM at idle (elec.)	1900
	Motor rating(wattage)(elec)	150 Watts
	Motor switch (type & location/elec.)	ECM
	Switch point (temp.,/ pressure/elec.)	On at 100 deg. C. Coolant Temperature or 190 PSI A/C Head Pressure.
	Fan shroud (material)	None

MVMA Specifications

Vehicle Line CUTLASS CALAIS

Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description 2.3 LITER L4 (138 CID)

Engine Code MULTI-PORT FUEL INJECTION RPO 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)		103.5 (15) (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	One
	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)		No
Water jackets open at head face (yes,no)		Yes
Radiator core	Std., A/C, HD	A/C
	Type (cross-flow, etc.)	Cross Flow
	Construction (fin & tube mechanical, braze, etc.)	Serpentine Fin and Tube Vacuum Brazed
	Matl., mass kg (wgt.,lbs.)	Aluminum 3.65 (8.04)
	Width	600 (23.6)
	Height	382 (15.0)
	Thickness	23.5 (.93)
	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
	Diameter & projected width	381 (15.0), 37.3 (1.5)
	Ratio fan to crankshft.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 Watts
	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 CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description 2.5 LITER L4 (151 CID)
Engine Code ELECTRONIC FUEL INJECTION RPO L68

Engine – Fuel System

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

Induction type: carburetor, fuel injection system, etc.		Throttle Body Injection
Manufacturer		AC/Rochester Products - GM
Carburetor no. of barrels		None
Idle A/F mix.		Preset - no adjustment provided
Fuel Injection	Point of inj. (no.)	Throttle body above throttle blade (single)
	Constant, pulse, flow	Pulse
	Control (elec., mech.)	Electronic
	Sys. press. kPa (psi)	83 kPa (12 psi)
Idle spd.–rpm (spec. neutral or drive and propane if used)	Manual	950 in neutral
	Automatic	800 in drive
Intake manifold heat control (exhaust or water thermostatic or fixed)		Water
Air cleaner type		Single snorkel
Fuel filter (type/location)		Replaceable enclosed paper element located near fuel tank
Fuel pump	Type (elec. or mech.)	Electric
	Location (eng., tank)	Fuel tank
	Press. range kPa (psi)	Not Applicable
	Flow rate at regulated pressure (L (gal)/hr @ kPa (psi))	85.16 (22.5) @ 83 (12)

Fuel Tank

Capacity refill L (gallons)		51.5 (13.6)
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 GM124M
Fuel hose (material)		Rubber GM6163M
Return line (material)		Steel GM124M
Vapor line (material)		Steel GM124M
Extended range tank	Opt., n.a.	Not
	Capacity L (gallons)	Applicable
	Location & material	
	Attachment	
Auxiliary tank	Opt., n.a.	Not
	Capacity L (gallons)	Applicable
	Location & material	
	Attachment	
	Sictr switch or valve	
	Separate fill	

MVMA Specifications

Vehicle Line CUTLASS CALAIS

Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description	2.3 LITER L4 (138 CID)
Engine Code	MULTI-PORT 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		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	900 Dr. or N
Intake manifold heat control (exhaust or water thermostatic or fixed)		None
Air cleaner type		Replaceable Paper Element
Fuel filter (type/location)		None
Fuel pump	Type (elec. or mech.)	Electric
	Location (eng., tank)	Fuel Tank
	Press. range kPa (psi)	Not Applicable
	Flow rate at regulated pressure (L (gal)/hr @ kPa (psi))	62.4 (16.5) @ 350 (51)

Fuel Tank (SEE PAGE 6)

Capacity refill L (gallons)		
Location (describe)		
Attachment		
Material & Mass kg (weight lbs.)		
Filler pipe	Location & material	
	Connection to tank	
Fuel line (material)		
Fuel hose (material)		
Return line (material)		
Vapor line (material)		
Extended range tank	Opt., n.a.	
	Capacity L (gallons)	
	Location & material	
	Attachment	
Auxiliary tank	Opt., n.a.	
	Capacity L (gallons)	
	Location & material	
	Attachment	
	Sltr switch or valve	
	Separate fill	

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description	3.3 LITER V8 (204 CID)
Engine Code	MULTI-PORT 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		RPO
Carburetor no. of barrels		N/A
Idle A/F mix.		E.C.M. Control
Fuel Injection	Point of inj. (no.)	Port
	Constant, pulse, flow	Pulse
	Control (elec., mech.)	Electronic
	Sys. press. kPa (psi)	38 - 43 PSI
Idle spd.–rpm (spec. neutral or drive and propane if used)	Manual	N/A
	Automatic	675 RPM Drive
		900 RPM Neutral
Intake manifold heat control (exhaust or water thermostatic or fixed)		
Air cleaner type		
Fuel filter (type/location)		
Fuel pump	Type (elec. or mech.)	See Page 6
	Location (eng., tank)	
	Press. range kPa (psi)	
	Flow rate at regulated pressure L (gal)/hr @ kPa (psi)	62.4 (16.5) @ 350 (51)

Fuel Tank

See Page 6

Capacity refill L (gallons)		
Location (describe)		
Attachment		
Material & Mass kg (weight lbs.)		
Filler pipe	Location & material	
	Connection to tank	
Fuel line (material)		
Fuel hose (material)		
Return line (material)		
Vapor line (material)		
Extended range tank	Opt., n.a.	
	Capacity L (gallons)	
	Location & material	
	Attachment	
Auxiliary tank	Opt., n.a.	
	Capacity L (gallons)	
	Location & material	
	Attachment	
	Sletr switch or valve	
	Separate fill	

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description 2.3 LITER L4 (138 CID)
Engine Code MULTI-PORT FUEL INJECTION RPO 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		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 *975
	Automatic	
Intake manifold heat control (exhaust or water thermostatic or fixed)		None
Air cleaner type		Replaceable Paper Element
Fuel filter (type/location)		None
Fuel pump	Type (elec. or mech.)	See Page 6
	Location (eng., tank)	
	Press. range kPa (psi)	
	Flow rate at regulated pressure (L (gal)/hr @ kPa (psi))	62.4 (16.5) @ 350 (51)

Fuel Tank (See Page 6) See Page 6

Capacity refill L (gallons)		*56.78 (15)
Location (describe)		
Attachment		
Material & Mass kg (weight lbs.)		
Filler pipe	Location & material	
	Connection to tank	
Fuel line (material)		
Fuel hose (material)		
Return line (material)		
Vapor line (material)		
Extended range tank	Opt., n.a.	
	Capacity L (gallons)	
	Location & material	
	Attachment	
Auxiliary tank	Opt., n.a.	
	Capacity L (gallons)	
	Location & material	
	Attachment	
	Sictr switch or valve	
	Separate fill	

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description 2.5 LITER L4 (151 CID)
Engine Code ELECTRONIC FUEL INJECTION RPO L68

Vehicle Emission Control

Exhaust Emission Control	Type (air injection, engine modifications, other)		Computer Command Control
	Air injection	Pump or pulse	Not
		Driven by	Applicable
		Air distribution (head, manifold, etc.,)	
		Point of entry	
	Exhaust Gas Recirculation	Type (controlled flow, open orifice, other)	Controlled flow
		Exhaust source	Cylinder Head
		Point of exh.in). (spacer, carb., manifold, other)	Manifold
	Catalytic Converter	Type	Single bed bead
		Number of	One
		Location(s)	Underbody
		Volume L (cu.in)	2.62 (160)
		Substrate type	Ceramic
		Noble metal type	Platinum, Rhodium, Paladium
		Noble metal concentration (g/cu. cm.)	
Crankcase Emission Control	Type (ventilates to atmosphere, induction system, other)		Orifice PVC
	Energy source (manifold vacuum, carburetor, other)		Rocker cover
	Discharges to (intake manifold, other)		Intake manifold
	Air intl/breather cap,other)		Rocker cover
Evaporative Emission Control	Vapor vented to (crankcase, canister,other)	Fuel tank	Canister
		Carburetor	Not applicable
	Vapor storage provision		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 Single Tailpipe
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	None
	Main o.d., wall thickness	50.8 O.D. x 1.37 (2 O.D. x .054)
	Matl. & Mass kg (wght.lbs.)	GM 8125-M Stainless Steel 2.88 (6.34)
Intermediate pipe	o.d. & wall thickness	50.8 O.D. x 1.37 (2 O.D. x .054)
	Matl. & Mass kg (wght.lbs.)	GM 6178-M Aluminized Steel 3.64 (8.02)
Tail pipe	o.d. & wall thickness	50.8 O.D. x 1.09 (2 O.D. x .043)
	Matl. & Mass kg (wght.lbs.)	GM6178 Aluminized

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description 2.3 LITER L4 (138 CID)
Engine Code MULTI-PORT 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	One
		Location(s)	Under Floor
		Volume L (cu.in)	2.786 (170)
		Substrate type	Monolith - Ceramic
		Noble metal type	Platinum/Paladium/Rhodium
		Noble metal concentration (g/cu. cm.)	.00102/ - /.00010
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 inlt/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.)		One/Tri-flow with Single tail pipe.
Resonator no. & type		One/Bottle Type
Exhaust pipe	Branch o.d., wall thickness	44.5 x 1.0 mm (1.75 x .04 in.)
	Main o.d., wall thickness	63.5 x 1.5 mm (2.50 x .059 in.)
	Matl. & Mass kg (wght.lbs.)	409 Stainless 2.75 (6.06)
Intermediate pipe	o.d. & wall thickness	50.8 O.D. x 1.37 (2.00 O.D. x .054)
	Matl. & Mass kg (wght.lbs.)	GM 6178-M Aluminized Steel
Tail pipe	o.d. & wall thickness	44.45 O.D. x 1.09 (1.75 O.D. x .043)
	Matl. & Mass kg (wght.lbs.)	Aluminized Steel

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 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 Monolith
		Number of	One
		Location(s)	Under Floor
		Volume L (cu.in.)	110 in.
		Substrate type	Cordierite Monolith
		Noble metal type	Platinum/Rhodium
		Noble metal concentration (g/cu. cm.)	.00121 Platinum / .00017 Rhodium
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 inlt/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
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 Single Tailpipe
Muffler no. & type (reverse flow, straight thru, separate resonator) Material & Mass kg (weight lbs.)		Reverse Flow
Resonator no. & type		None
Exhaust pipe	Branch o.d., wall thickness	None
	Main o.d., wall thickness	50.8 O.D. x 1.02 (2.00 O.D. x 0.040)
	Matl. & Mass kg (wght.lbs.)	Stainless Steel Per GM 6125–M 2.72 (5.99)
Intermediate pipe	o.d. & wall thickness	50.8 O.D. x 1.09 (2 O.D. x .043)
	Matl. & Mass kg (wght.lbs.)	Steel SAE 1008 or 1010 Aluminum Coated
Tail pipe	o.d. & wall thickness	50.8 O.D. x 1.37 (2 O.D. x .054)
	Matl. & Mass kg (wght.lbs.)	Steel SAE 1008 or 1010 Aluminum Coated

Total Weight of Complete Exhaust System 7.950 (17.5)

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description 2.3 LITER L4 (138 CID) .
Engine Code MULTI-PORT FUEL INJECTION RPO LG0

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	One
		Location(s)	Under Floor
		Volume L (cu.in)	2.788 (170)
		Substrate type	Monolith - Ceramic
		Noble metal type	Platinum/Paladium/Rhodium
		Noble metal concentration (g/cu. cm.)	.00102/ - /.00010
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 inlt/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 Tail Pipes
Muffler no. & type (reverse flow, straight thru, separate resonator) Material & Mass kg (weight lbs.)		Reverse Flow
Resonator no. & type		(1) Bottle
Exhaust pipe	Branch o.d., wall thickness	None
	Main o.d., wall thickness	57.15 x 2.2 mm (2.25 x .090 in.) (1.1/1.1 Laminated)
	Matl. & Mass kg (wght.lbs.)	409 Stainless 3.22 (7.1)
Intermediate pipe	o.d. & wall thickness	57.15 x 1.37 mm (2.25 O.D. x .054)
	Matl. & Mass kg (wght.lbs.)	Steel SAE 1008 or 1010 Aluminum Coated
Tail pipe	o.d. & wall thickness	50.8 O.D. x 1.09 (2.0 O.D. x .043)
	Matl. & Mass kg (wght.lbs.)	Steel SAE 1008 or 1010 Aluminum Coated

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description	2.5 LITER L4 (151 CID)
Engine Code	ELECTRONIC FUEL INJECTION RPO L68

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

Manual 3-speed (manufacturer/country)	--
Manual 4-speed (manufacturer/country)	--
Manual 5-speed (manufacturer/country)	Isuzu, Japan (MT2)
Automatic (manufacturer/country)	Hydra-Matic, U.S.A. (MD9)
Auto. overdrive (manufacturer/country)	--

Manual Transmission/Transaxle

Number of forward speeds		5
Gear ratios	1st	3.73
	2nd	2.04
	3rd	1.45
	4th	1.03
	5th	0.74
	Reverse	3.58
Synchronous meshing (specify gears)		1-5
Shift lever location		Floor
Trans. case mat'l. & mass kg (lbs)*		Aluminum 36.5 (80.3)
Lubricant	Capacity L (pt.)	1.9 (4.0)
	Type recommended	Synchromesh transmission fluid (STF)

Clutch (Manual Transmission)

Clutch manufacturer			Borg Warner Automotive
Clutch type (dry, wet; single, multiple disc)			Dry, single disc
Linkage (hyd., cable, rod, lever, other)			Hydraulic
Max. pedal effort (nom. spring load) N (lbs.)		Depressed	125 (28)
		Released	80 (18)
Assist (spring, power/percent, nominal)			None
Type pressure plate springs			Belleville spring
Total spring load (nominal) N (lbs.)			5249 (1180)
Clutch facing	Facing mfgr. & matl. coding		Borg Warner Automotive
	Facing matl. & construction		Molded woven nonasbestos
	Rivets per facing		8
	Outside x inside dia. (nom.)		216 x 152 mm (8.5 x 6.0 in.)
	Total eff. area sq cm(sq in)		370 (56.9)
	Thickness (pressure plate side/fly wheel side)		3.18 / 3.18 mm (.125 / .125 in.)
	Rivet depth (pressure plate side/fly wheel side)		1.52 mm (.06 in.) / 1.27 mm (.05 in.)
	Engagement cushion method		Driven plate wave spoke spring
Release bearing type & method lub.			Self centering, angular contact ball bearing - prepacked & sealed
Torsional damping method, springs, hysteresis			Coil springs and metal to metal stops

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

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description	2.3 LITER L4 (138 CID)	3.3 LITER V6 (204 CID)
Engine Code	MULTI-PORT FUEL INJECTION RPO LD2	MULTI-PORT FUEL INJECTION RPO LG7

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

Manual 3-speed (manufacturer/country)	Not Available
Manual 4-speed (manufacturer/country)	Not Available
Manual 5-speed (manufacturer/country)	Not Available
Automatic (manufacturer/country)	Standard Hydra-Matic MD9
Auto. overdrive (manufacturer/country)	Not Available

Manual Transmission/Transaxle

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

Clutch (Manual Transmission)

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 mfgr. & matl. coding	
	Facing matl. & 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 CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description	2.3 LITER L4 (138 CID)
Engine Code	MULTI-PORT FUEL INJECTION RPO LG0 *W41

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

Manual 3-speed (manufacturer/country)	Not Applicable
Manual 4-speed (manufacturer/country)	*
Manual 5-speed (manufacturer/country)	Standard Muncie MU1 (New Venture Gear / USA)
Automatic (manufacturer/country)	Not Applicable
Auto. overdrive (manufacturer/country)	*

Manual Transmission/Transaxle

Number of forward speeds		5	
Gear ratios	1st	3.77	*3.50
	2nd	2.19	*2.05
	3rd	1.38	
	4th	1.03	
	5th	.81	
	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 mfgr. & matl. coding	Daikin NC80	
	Facing matl. & construction	NC80	
	Rivets per facing	18	
	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 (.126) Pressure Plate, 3.5 (.138) Fly Wheel	
	Rivet depth (pressure plate side/fly wheel side)	1.6 (.06) Pressure Plate, 1.5 (.06) 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 CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description	2.5 LITER L4 (151 CID)
Engine Code	ELECTRONIC FUEL INJECTION RPO L68

Automatic Transmission/Transaxle

Trade Name		Turbo Hydra-Matic (THM 125C) (MD9)
Type and special features (describe)		3-Speed Automatic
Gear selector	Location (column, floor, other)	Column & Floor
	Ltr./No. designation (e.g. PRND21)	PRND21
	Shift interlock (yes, no, describe)	No
Gear ratios	1st	2.84
	2nd	1.50
	3rd	1.00 (Converter Clutch Engagement)
	4th	-
	Reverse	2.07
Max. upshift speed – drive range km/h (mph)		1 - 2 = 71 (44) 2 - 3 = 129 (80)
Max. kickdown speed – drive range km/h (mph)		3 - 2 = 122 (76) 2 - 1 = 63 (39)
Min. overdrive speed km/h (mph)		Not Applicable
Torque converter	Number of elements	3
	Max. ratio at stall	2.48
	Type of cooling (air, liquid)	Liquid
	Nominal diameter	245 mm (9.7 in.)
	Capacity factor "K"*	203
Lubricant	Capacity (refill L(pt.))	8.5 (18) (Dry Transmission)
	Type recommended	Dexron II
Oil cooler (std., opt., N.A., internal, external, air, liquid)		Standard, Integral With Radiator
Trans. mass (kg(lbs)) & case matl.**		65.7 (144.8), Aluminum

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 coup, torsen, etc.)	
	Torque split(% frt/rear)	

* Input speed / square root of torque.
** Dry weight including torque converter. If other, specify.

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description	2.3 LITER L4 (138 CID)
Engine Code	MULTI-PORT FUEL INJECTION RPO LD2

Automatic Transmission/Transaxle

Trade Name		Turbo Hydra-Matic (THM 125C) (MD9)
Type and special features (describe)		3-Speed with Torque Converter
Gear selector	Location (column, floor, other)	Floor
	Ltr./No. designation (e.g. PRND21)	PRND21
	Shift interlock (yes, no, describe)	No
Gear ratios	1st	2.84
	2nd	1.60
	3rd	1.00 Converter Clutch Engagement
	4th	None
	Reverse	2.07
Max. upshift speed - drive range km/h (mph)		85 MPH (2-3) Wide Open Throttle
Max. kickdown speed - drive range km/h (mph)		78 MPH (3-2)
Min. overdrive speed km/h (mph)		N/A (No 4th Gear)
Torque converter	Number of elements	Three
	Max. ratio at stall	2.48
	Type of cooling (air, liquid)	Liquid
	Nominal diameter	245 (9.65)
	Capacity factor "K"*	203
Lubricant	Capacity (refill L(pt.))	7.2 (15) With Cooler and Converter Lines Full
	Type recommended	ATF Dexron II
Oil cooler (std., opt., N.A., internal, external, air, liquid)		Standard External, Oil to Engine Coolant
Trans. mass (kg(lbs)) & case matl.**		Aluminum 73.1 (161.16)

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 CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

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

Automatic Transmission/Transaxle

Trade Name		Turbo Hydra-Matic (THM 125C) (MD9)
Type and special features (describe)		3-Speed with Torque Converter
Gear selector	Location (column, floor, other)	Floor
	Ltr./No. designation (e.g. PRND21)	PRND21
	Shift interlock (yes, no, describe)	No
Gear ratios	1st	2.84
	2nd	1.60
	3rd	1.00 Converter Clutch Engagement
	4th	None
	Reverse	2.07
Max. upshift speed – drive range km/h (mph)		90
Max. kickdown speed – drive range km/h (mph)		87
Min. overdrive speed km/h (mph)		N/A (No 4th Gear)
Torque converter	Number of elements	Three
	Max. ratio at stall	2.00:1
	Type of cooling (air, liquid)	Liquid
	Nominal diameter	245 (9.65)
	Capacity factor "K"*	140
Lubricant	Capacity (refill L(pt.))	8.5 (18) With Cooler and Converter Lines Full
	Type recommended	ATF Dexron II
Oil cooler (std., opt., N.A., internal, external, air, liquid)		Standard External, Oil to Engine Coolant
Trans. mass (kg(lbs)) & case matl.**		Aluminum 65.7 (144.54)

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 CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description	2.5 LITER L4 (151 CID)
Engine Code	ELECTRONIC FUEL INJECTION RPO L68

Axle Ratio and Tooth Combinations

(See 'Power Teams' for axle ratio usage)

Effective final drive ratio (or overall top gear ratio)			2.84
Trnsfr ratio and method(chain,gear,etc)			1.0 Chain
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	

Axle Shafts – Front Wheel Drive

Manufacturer and number used			Saginaw Division (Two)
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 302.0
		Right	23.8 x 364.3
	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 – 61.8 Stroke Standard / 61.5 Stroke Automatic
		Outer	Rzeppa – Fixed Center
	Attach (u-bolt, clamp, etc.)		Retaining Ring
	Bearing – Type (plain, anti-friction)		Inner – Ball & Roller Outer – Ball
	Bearing – Lubrication (fitting, prepack)		Prepack
Drive taken through (torque tube, arms or springs)			Wishbone Lower Control Arm. Upper McPherson Strut
Torque taken through (torque tube, arms or springs)			Engine Mounting System

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description	2.3 LITER L4 (138 CID)
Engine Code	MULTI-PORT FUEL INJECTION RPO LD2

Axle Ratio and Tooth Combinations

(See 'Power Teams' for axle ratio usage)

Effective final drive ratio (or overall top gear ratio)			2.84
Trnsfr ratio and method(chain,gear,etc)			1.00
Front drive unit	Ring gear o.d.		Not Applicable
	No. of teeth	Pinion	Not Applicable
		Ring gear	Not Applicable

Front Drive Unit

Description (integral to trans., etc.)		Integral with transmission, Front
Limited slip differential (type)		Not Applicable
Drive pinion	Type	*
	Offset	*
No. of differential pinions		2
Pinion/ differential	Adjustment (shim, etc.)	Not Applicable
	Bearing adjustment	Not Applicable
Driving wheel bearing (type)		Integral Double Row Ball Bearing
Lubricant	Capacity L (pt.)	Not Applicable
	Type recommended	ATF Dexron II

Axle Shafts – Front-Wheel Drive

Manufacturer and number used			Saginaw Division (Two)	
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 302.0	** 27.1 x 292.7
		Right	23.8 x 384.3	** 27.1 x 361.0
	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	
	Bearing: Lubrication (fitting, prepack)		Prepack	
Drive taken through (torque tube, arms or springs)			Wishbone Lower Control Arm, Upper McPherson 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 CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description	3.3 LITER V6 (204 CID)
Engine Code	MULTI-PORT FUEL INJECTION LG7

Axle Ratio and Tooth Combinations

(See 'Power Teams' for axle ratio usage)

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

Front Drive Unit

Description (integral to trans., etc.)		Planetary Final Drive Integral With Transmission
Limited slip differential (type)		Not Applicable
Drive pinion	Type	Not Applicable
	Offset	Not Applicable
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 Transmission Specs.
	Type recommended	See Automatic Transmission Specs.

Axle Shafts – Front Wheel Drive

Manufacturer and number used			Saginaw Division (Two)
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 302.0
		Right	23.8 x 364.3
	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
	Bearing: Lubrication (fitting, prepack)		Prepack
Drive taken through (torque tube, arms or springs)			Wishbone Lower Control Arm, Upper McPherson Strut
Torque taken through (torque tube, arms or springs)			Engine Mounting System

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description	2.3 LITER L4 (138 CID)
Engine Code	MULTI-PORT FUEL INJECTION RPO LGO *W41

Axle Ratio and Tooth Combinations

(See 'Power Teams' for axle ratio usage)

Effective final drive ratio (or overall top gear ratio)			MU1 3.61 (2.92)	 *3.94
Trnsfr ratio and method(chain,gear,etc)			Gear	
Front drive unit	Ring gear o.d.		202 (8.0)	*206.10
	No. of teeth	Pinion	18	*18
		Ring gear	65	*71

Front Drive Unit

(NOT APPLICABLE)

Description (integral to trans., etc.)			Planetary Final Drive Integral With Transmission	
Limited slip differential (type)			Not Applicable	*Torsen (optional w/W41)
Drive pinion	Type		Not Applicable	
	Offset		Not Applicable	
No. of differential pinions			2	
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		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 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	Cross Groove - 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 McPherson 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 CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)
Body Type And/Or
Engine Displacement

ALL

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.)		
	sensors	Lateral acceleration	
		Deceleration	
		Acceleration	
		Road surface	
Shock absorber (front & rear)	Type		Front – MacPherson Strut; Rear – Telescopic (Double-Acting)
	Make		Delco Products
	Piston diameter		Front: 32 (1.26) Rear: 25 (.98)
	Rod diameter		Front: 22 (.87) Rear: 13 (.51)

Suspension – Front

Type and description		MacPherson Strut with Coil Spring
Travel*	Full jounce	95 (3.74) (From Design)
	Full rebound	84 (3.31) (From Design)
Spring	Type.(coil,leaf,other&matl)	Coil – Steel
	Insulators (type & matl)	Top & Bottom – Rubber
	Size (coil design height & i.d.)	Spring Computer Selected – Varies with Option Content
	Spring rate N/mm(lb./in.)	20 N/mm (Base Car)
	Rate @ wheel N/mm(lb./in.)	17.5 N/mm (Base Car)
Stabilizer	Type (link,inkless,frmless)	Link
	Material & bar diameter	Steel: 22 (.87) (Base Car)

Suspension – Rear

Type and description			Trailing Crank Arm with Twist Beam
Travel*	Full jounce		93 (3.7) (Base Car From Design)
	Full rebound		99 (3.9) (Base Car From Design)
Spring	Type(coil,leaf,other&matl)		Coil – Steel
	Size (length x width, coil design height & i.d.)		Spring Computer Selected – Varies with Option Content
	Spring rate N/mm (lb/in)		23 N/mm @ Curb – Variable (Base Car)
	Rate @ wheel N/mm (lb/in)		11.1 N/mm @ Curb – Variable (Base Car)
	Insulators(type & material)		Top & Bottom – Rubber
	If leaf	No. of leaves	NA
		Shackle(comp or tens)	NA
Stabilizer	Type(link,inkless,frmless)		NA (Base Car)
	Material & bar diameter		NA (Base Car)

MVMA Specifications

METRIC (U.S. Customary)

Body Type And/Or
Engine Displacement
Brakes – Service

Vehicle Line: CUTLASS CALAIS
Model Year: 1991 Issued: 6-90 Revised(*):

ALL *W41 and I-Series

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.,integ.,vac.,hyd.,etc.)				Tandem Vacuum	
Vacuum	Source (inline, pump, etc.)			Inline	
	Reservoir (volume cu. in.)			None	
	Pump-type			Not Applicable	
Traction Control	Operational speed range			Not Applicable	
	Type engine intervention			*	
Anti-lock device	Front/rear (std., opt., n.a.)			Not Applicable	*ABS
	Manufacturer			*	*Delco Moraine
	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 (elect. motors)
Effective area sq. cm. (sq. in.) *				204 (31.7)	
Gross Lng area sq cm (sq in) ** (F/R)				204 (31.7)	
Swept area sq cm (sq in) *** (F/R)				1175 (182.2)	
Rotor	Outer working diameter		F/R	Front - 261 (10.3)	
	Inner working diameter		F/R		
	Thickness		F/R	Front - 20 (.79)	
	Matl & type (vented/sld)		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 (.69)	
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 Moraine	
		Lining code ****		128 FE	
		Material		Semi-Metallic	
		****	Pri. or out-brd	124 x 46 x 9.7 (4.88 x 1.81 x .38)	
		Size	Sec. or in-brd	124 x 46 x 9.7 (4.88 x 1.81 x .38)	
		Shoe thickness (no lng)		4.85 (.19)	
	Rear wheel	Bonded or riveted		Riveted	
		Manufacturer		Inland 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 thickness (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.)

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Body Type And/Or Engine Displacement ALL

Tires And Wheels (Standard)

Tires	Size (load range, ply)		P185/75R14
	Type (bias, radial, etc.)		Radial
	Inflation pressure (cold) for recommended max. vehicle load	Front kPa (psi)	240 (35 PSI)
		Rear kPa (psi)	240 (35 PSI)
	Rev/mile-at 70 km/h(45mph)		526
Wheels	Type & material		Stamped Steel
	Rim (size & flange type)		14 x 6 JJ
	Wheel offset		47 mm
	Attachment	Type(bolt,stud)	Stud
		Circle diameter	100 mm
		Number & size	5-12 mm
Spare	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 (load range, ply)	P215/60R14
Type (bias, radial, steel, nylon, etc.)	Radial
Wheel (type & material)	Cast Aluminum
Rim (size, flange type and offset)	14 x 6.0 JJ 47 mm Offset
Tire size (load range, ply)	P195/70R14
Type (bias, radial, steel, nylon, etc.)	Radial
Wheel (type & material)	Stamped Steel Or Cast Aluminum
Rim (size, flange type and offset)	14 x 6.0 JJ 47 mm Offset
Tire size (load range, ply)	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 (load range, ply)	P205/60R15
Type (bias, radial, steel, nylon, etc.)	Radial
Wheel (type & material)	Cast Aluminum
Rim (size, flange type and offset)	15 x 6 JJ 47 mm 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		Grip Handle
Location of control		Between Front Seats
Operates on		Rear Service Brakes
If separate from service brakes	Type(internal or external)	NA
	Drum diameter	NA
	Lining size (length x width x thickness)	NA

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Body Type And/Or Engine Displacement ALL

Steering

Manual (std., opt., n.a.)				N/A
Power (std., opt., n.a.)				Std.
Adjustable steering wheel/ column (tilt, telescope, other)		Type		Tilt
		Manufacturer		Saginaw Division
		(std., opt., n.a.)		Opt.
Wheel diameter ** (W9) SAE J1100		Manual		375 mm (14.8)
		Power		375 mm (14.8)
Turning diameter m (ft.)	Outside front	Wall to wall (l. & r.)		11.54 (37.8) 12.3 (40.5)
		Curb to curb (l. & r.)		10.79 (35.4) 11.53 (37.8)
	Inside rear	Wall to wall (l. & r.)		5.9 (19.6) 6.9 (22.9)
		Curb to curb (l. & r.)		6.0 (19.9) 7.0 (23.0)
Scrub Radius *				1.58 (13 Inch 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	16.0:1
	Pump (drive)			Belt Off Crankshaft 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)			Two
Steering axis	Inclination at camber (deg.)			13.5 deg.
	Bearings (type)	Upper		Ball Bearings
		Lower		Ball Joint
		Thrust		Incorporated in Upper Bearing

* 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 CUTLASS CALAIS

Model Year 1991 Issued _____ Revised(*) _____

Body Type And/Or Engine Displacement

ALL *W41

Wheel Alignment

Front wheel at curb mass (wt.)	Service checking	Caster (deg.)	1.7 deg. +/- 1.0 deg. Cross Car Must Be Within 1.0 deg.
		Camber (deg.)	0 +/- .7 deg. Cross Car Must Be Within 1.0 deg. *-1 ± 0.5
		Toe-in outside track - mm (in.)	0 +/- .2 deg. Sum Toe
	Service reset*	Caster (deg.)	-0.8 deg. to 4.2 deg. Cross Car Must Be Within 0.75 deg.
		Camber (deg.)	0 +/- .7 deg. Cross Car Must Be Within 1.0 deg.
		Toe-in - mm(in.)	-.1 to +.1 (Degres Per Wheel)
	Periodic M.V. inspection	Caster (deg.)	Not Applicable
		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

Speedometer	Type (analog, digital, std., opt.)		
	Trip odometer (std., opt., n.a.)		
Head-up display	Std., opt., not avail.		
	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			N/A
Charge indicator	Type		Indicator Lamp Gage Opt.
	Warning device (light, audible)		Indicator Lamp
Temperature indicator	Type		Indicator Lamp Gage Opt.
	Warning device		Indicator Lamp
Oil pressure indicator	Type		Indicator Lamp Gage Opt.
	Warning device		Indicator Lamp
Fuel indicator	Type		Gage
	Warning device		N/A
Windshield wiper	Type (standard)		Electric 2-Speed
	Type (optional)		Controlled Cycle Pulse
	Blade length		479 (19.0)
	Sweep area sq cm (sq in)		5583.7 (865.5)
Windshield washer	Type (standard)		Electric Pump Mounted On Reservoir Bottle
	Type (optional)		N/A
	Fluid level indicator		Indicator Lamp Gage Opt.
Rear window wiper, wiper/washer (std., opt., n.a.)			None
Horn	Type		Electric Vibrating
	Number used		2 Standard
Other			Indicator Lamps For Parking Brake & Brake Failure, Up-Shift, Fasten Belts, Low Coolant & Service Engine Soon. Also, High Beam, Left And Right Turn.

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description	2.5 LITER L4 (151 CID)
Engine Code	ELECTRONIC FUEL INJECTION RPO L68

Electrical – Supply System

Battery	Manufacturer	Delco Remy
	Model, std., (opt.)	1981601
	Voltage	12V
	Amps at 0 deg F cold crnk	630 CCA
	Minutes–reserve capacity	90 RC
	Amps/hrs. – 20 hr. rate	54 AH
	Location	Underhood Front
Alternator	Manufacturer	Delco Remy
	Rating (idle/max. rpm)	28/74 1101320
	Ratio (alt. crank/rev.)	2.55:1
	Output at idle (rpm, park)	48 Amps at 27 deg. C. 950 RPM
	Optional (type & rating)	No Heavy Duty Option
Regulator	Type	Internal to Alternator

Electrical – Starting System

Motor	Manufacturer	Delco Remy
	Current drain –20 deg C(F)	10455022 410 Amps
	Power rating kw (hp)	1.1 kw
Motor drive	Engagement type	Solenoid with Positive Shift
	Pinion engages from (front, rear)	Front

Electrical – Ignition System

Type	Electronic (std, opt,n.a.)		
	Other (specify)		Direct
Coil	Manufacturer		Delco Remy
	Model		1103848 – 1103745
	Current	Engine stopped–A	0
		Engine idling – A	8–10
Spark plug	Manufacturer		AC
	Model		R44TSX
	Thread (mm)		14
	Tightening torque Newton meters (lb. ft.)		20–34 (15–25)
	Gap		1.5 (.060)
	Number per cylinder		One
Distributor	Manufacturer		
	Model		None

Electrical – Suppression

Locations & type	

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description	2.3 LITER L4 (138 CID)
Engine Code	MULTI-PORT FUEL INJECTION RPO LD2

Electrical – Supply System

Battery	Manufacturer		Delco Remy
	Model, std., (opt.)		1981601 Standard
	Voltage		12V
	Amps at 0 deg F cold crnk		630 CCA
	Minutes–reserve capacity		90 Min
	Amps/hrs. – 20 hr. rate		54 AH
	Location		Underhood Front
Alternator	Manufacturer		Delco Remy
	Rating (idle/max. rpm)		30/85 or 36/100
	Ratio (alt. crank/rev.)		2.58:1
	Output at idle(rpm, park)	*	900 RPM – 60 Amps, 68 Amps
	Optional (type & rating)	**	1101277 (85) 1101278 (100)
Regulator	Type		Integral to Alternator

Electrical – Starting System

Motor	Manufacturer	Delco Remy
	Current drain –20 deg C(F)	378 Amps 10455044
	Power rating kw (hp)	1.5 kw
Motor drive	Engagement type	Solenoid 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 9.5 Amps
Spark plug	Manufacturer		A/C Spark Plug
	Model		FR 3LS
	Thread (mm)		14 x 1.25
	Tightening torque Newton meters (lb. ft.)		21 – 24 (15 – 18)
	Gap		.889 (.035)
	Number per cylinder		One
Distributor	Manufacturer		Delco Remy
	Model		

Electrical – Suppression

Locations & type	

* Maximum output at 27 deg. C. of 100 amp unit.

** 1101277 for vehicles with heater only, 1101278 is for vehicles equipped with air conditioning.

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

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

Electrical – Supply System

Battery	Manufacturer	Delco Remy
	Model, std., (opt.)	1981601
	Voltage	12V
	Amps at 0 deg F cold crnk	630 CCA
	Minutes–reserve capacity	90 RC
	Amps/hrs. – 20 hr. rate	54 AH
	Location	Underhood Front
Alternator	Manufacturer	Delco Remy
	Rating (idle/max. rpm)	1101483 28/74 Amps
	Ratio (alt. crank/rev.)	2.97:1
	Output at idle (rpm, park)	800 RPM 54 Amps at 27 deg. C.
	Optional (type & rating)	No Heavy Duty Option
Regulator	Type	Internal to Alternator

Electrical – Starting System

Motor	Manufacturer	Delco Remy
	Current drain –20 deg C (F)	10455024 438 Amps
	Power rating kw (hp)	1.8 kw
Motor drive	Engagement type	Solenoid w/ Positive Shift
	Pinion engages from (front, rear)	Front

Electrical – Ignition System

Type	Electronic (std, opt,n.a.)		Standard
	Other (specify)		
Coil	Manufacturer		Delco Remy
	Model		Direct Ignition
	Current	Engine stopped–A	9 Amps
		Engine idling – A	
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		One
Distributor	Manufacturer		N/A
	Model		

Electrical – Suppression

Locations & type	

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description 2.3 LITER L4 (138 CID)
Engine Code MULTI-PORT FUEL INJECTION RPO LGO

Electrical – Supply System

Battery	Manufacturer	Delco Remy
	Model, std., (opt.)	1981601
	Voltage	12V
	Amps at 0 deg F cold crnk	630 CCA
	Minutes–reserve capacity	90 RC
	Amps/hrs. – 20 hr. rate	54 AH
	Location	Underhood Front
Alternator	Manufacturer	Delco Remy
	Rating (idle/max. rpm) *	1101277 / 85 Amps or 1101278 / 100 Amps
	Ratio (alt. crank/rev.)	2.08:1
	Output at idle/rpm,park) **	900 RPM 60 Amps, 68 Amps
	Optional (type & rating)	No Heavy Duty Option
Regulator	Type	Internal to Alternator

Electrical – Starting System

Motor	Manufacturer	Delco Remy
	Current drain –20 deg C (F)	378 Amps 10455044
	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 9.5 Amps
Spark plug	Manufacturer		A/C Spark Plug
	Model		FR 3LS
	Thread (mm)		14 x 1.25
	Tightening torque Newton meters (lb. ft.)		21 – 24 (15 – 18)
	Gap		.889 mm (.035 in.)
	Number per cylinder		One
Distributor	Manufacturer		Delco Remy
	Model		

Electrical – Suppression

Locations & type	

* First Model # Listed is for Heater only, 2nd Model # is for Air Conditioning.

** Maximum Output at 93 deg. C. of 100 Amp unit. Park Idle Speed is with A/C off.

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Body Type

Body

Structure	Unitized body construction including front end structure with bolted-on fenders and hood.
Bumper system front - rear	Steel Rollformed Impact Bar. Foam Energy Absorbers. Functional Rubber Rub Strips. Body Colored Fascias. Phase 1 - 5 MPH.
Anti-corrosion treatment	Special anticorrosion materials are used on interior and exterior metal panel surfaces. Materials include one and two-sided galvanized and zincrometal steel. Special metal conditioners, primers, protective waxes and sealers are used on interior surfaces. Chip resistant primer or plastisol material is applied to exterior lower body.

Body - Miscellaneous Information

Type of finish (lacquer, enamel, other)			Base Coat/Clear Coat Enamel
Hood	Material & mass		Draw Quality Steel - Hot Dip Galvinized Both Sides 16.28 (35.89)
	Hinge location (front, rear)		Rear
	Type (counterbalance, prop)		Prop Rod - Single Pivot Hinge
	Release control (int., ext.)		Internal
Trunk lid	Material & mass		One Sided Hot Dip Inner, Zincrometal Outer 11.533 (25.43)
	Type (counterbalance, other)		Hinge Mounted in Sail Area W/Extension Spring Counterbalance
	Internal release control (elec., mech., n.a.)		Electrical Solenoid (Opt.)
Hatch-back lid	Material & mass		
	Type (counterbalance, other)		
	Internal release control (elec., mech., n.a.)		
Tailgate	Material & mass		
	Type (drop, lift, door)		
	Internal release control (elec., mech., n.a.)		
Vent window control (crank, friction, pivot, power)		Front	N/A
		Rear	N/A
Window regulator type (cable, tape, flex drive, etc.)		Front	N/A
		Rear	N/A
Seat cushion type (e.g., 60/40, bucket, bench wire, foam, etc.)		Front	Foam
		Rear	Foam
		3rd seat	N/A
Seat back type (e.g., 60/40, bucket, bench, wire, foam, etc.)		Front	Foam
		Rear	Foam
		3rd seat	N/A

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Body Type ALL

Restraint System

Seating Position			Left	Center	Right
Active	Type & description (lap & shoulder belt, lap belt, etc.) Standard/ optional	First seat	Not Available	Not Available	Not Available
		Second seat	Lap/Shoulder Combination	Lap Belt	Lap/Shoulder Combination
		Third seat			
Passive	Type & description (air bag, motorized-2-point belt, fixed belt, knee bolster, manual-lap belt) Standard/ optional	First seat	3 Point Manual	Not Available	3 Point Manual
		Second seat	Not Available	Not Available	Not Available
		Third seat			

Glass

	SAE Ref No		
		27	69
Windshield glass exposed surface area sq. cm. (sq. in.)	S1	8464 (1312)	8464 (1312)
Side glass exposed surface area sq. cm. (sq. in.) - total 2- sides	S2	7177 (1112)	10018 (1553)
Backlight glass exposed surface area sq. cm. sq. in.)	S3	3418 (530)	3418 (530)
Total glass exposed surface area sq. cm. (sq. in.)	S4	19059 (2954)	21900 (3395)
Windshield glass (type)		Curved - Laminated Float	
Side glass (type)		Curved - Tempered Float	
Backlight glass (type)		Curved Tempered Float	

Headlamps

Description - sealed beam, halogen, replaceable bulb, etc.	Replaceable Bulb - 2 Lamps - 2 Bulbs Each
Shape	Rectangular
Lo-beam type (2A1, 2B1, 2C1, etc.)	9004
Quantity	2
Hi-beam type (1A1, 2A1, 1C1, 2C1, etc.)	9004
Quantity	2

Frame

Type and description (separate frame, unitized frame, partially-unitized frame)	

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Body Type ALL

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

Air conditioning (manual, auto, temp control)		(C60) Std. on NK & NT / Opt. on NL & NF Manual
Clock (digital, analog)		Part of Radio Package
Compass / thermometer		
Console (floor, overhead)		(D55) Std. Floor
Defroster, elec. backlight		(C49) Opt.
Electronic	Diagnostic monitor (integrated, individual)	
	Instrument cluster (list instruments)	(UB3) Opt. Oil, Temp, Volts, Trip Odom. & Tach.
	Keyless entry	
	Trip minder (avg. spd. fuel)	(U23) Std.
	Voice alert (list items)	
	Other	
Fuel door lock (remote, key, electric)		
Lamps	Auto head on/off delay, dimming	
	Cornering	
	Courtesy (map, reading)	(C96) Std.
	Door lock, ignition	
	Engine compartment	(U26) Std. NK & NT / Opt. NF
	Fog	(T37) Std. NK Only
	Glove compartment	Std.
	Trunk	Std.
	Illuminated entry system (list lamps, activation)	
	Other	
Mirrors	Day / night (auto, man.)	Std. Manual
	L.H. (remote, pwr., heated)	(DR1) Std. NL Direct (D35) Std. Remote (D68) Opt. Remote
	R.H.(convex, rmt, pwr, htd)	(DR1) Std. NL Direct (D35) Std. Direct (D88) Opt. Remote
	Visor vanity (RH/LH illum.)	(DD2) Std. NF / (DH6) Illum. Std. NK Opt. NT
Navigation system (describe)		
Prkg. brake-auto release (warn. light)		

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Engine Description
Engine Code

ALL

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

Power equipment	Deck lid(release, pull down)		(A90) Release Electric Std. on NK/Opt. NF & NT
	Door locks (manual, auto., descnce system)		(AU3) Opt. Electric
	Seats	2 – 4 – 6 way, etc.	(AC3) Opt. 6 Way On NK & NT (AH3) Std. NK & NT 4 Way Opt. NF & NL
		Reclining(R.H., L.H.)	(AR9) Std.
		Memory (R.H., L.H., preset, recline)	
		Support (lumbar, hip, thigh, etc.)	
		Heated (R.H., L.H., other)	
	Side windows		(A31) Opt. Electric Exc. NL
	Vent windows		
	Rear windows		
Radio systems	Antenna (location, whip, w/shield, power)		(US6) Std. Fixed RH Front Fender (US7) Opt. Power RH Front Fender
	Stan.		(UM6) Std. AM/FM Stereo, Seek/Scan, Clock, ETR & Cassette on NK & NT (UM7) Std. AM/FM Stereo, Seek/Scan, Clock & ETR On NL & NF
	Opt.	AM, FM, stereo, tape, compact disc, graphic equalizer, theft deterrent, radio prep package, headphone jacks, etc.	(UM6) Opt. AM/FM Stereo, Seek/Scan, Clock, ETR & Cassette on NK & NL (UX1) Opt. AM & FM Stereo, Seek/Scan, Clock, ETR, Cassette & Equalizer (U1C) Opt. AM/FM Stereo, Seek/Scan, Clock, ETR & Compact Disc
	Speaker (number, location)		(U64) Std. 4 Front Dash & Rear Quarter on NF & NL (U68) Std. 4 Front Dash & Rear Quarter On NK & NT / Opt. / NF & NL
Roof: open air or fixed (flip-up, sliding, 'T')			(AD3) Opt. Hinged
Speed control device			(K34) Opt.
Speed warn. dev. (light, buzzer, etc.)			
Tachometer (rpm)			(UB3) Opt.
Telephone system (describe)			
Theft deterrent system			

o Trailer Towing

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

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

MVMA Specifications

Vehicle Line CUTLASS CALAIS

Model Year 1991 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.

Body Type		COUPE & ALL	SEDAN
Width	**SAE Ref. No.**		
Tread (front)	W101	1419 (55.9)	
Tread (rear)	W102	1407 (55.4)	
Vehicle width	W103	1699 (66.9)	
Body width at Sg RP (front)	W117	1695 (66.7)	
Vehicle width (front doors open)	W120	3768 (148.3)	3172 (124.9)
Vehicle width (rear doors open)	W121	Not Applicable	3204 (126.1)
Tumble-home (deg.)	W122	22 deg.	
Outside mirror width	W410	1832 (72.1)	
Length			
Wheelbase	L101	2627 (103.4)	
Vehicle length	L103	4555 (179.3)	
Overhang (front)	L104	1003 (39.5)	
Overhang (rear)	L105	925 (36.4)	
Upper structure length	L123	2290 (90.2)	
Rear wheel C/L 'X' coordinate	L127	4410 (173.6)	
Height **			
Passenger distribution (front/rear)	PO1.2.3	2/0	**
Trunk/cargo load		0	**
Vehicle height	H101	1331 (52.4)	
Cowl point to ground	H114	930 (36.6)	
Deck point to ground	H138	962 (37.9)	
Rocker panel-front to ground	H112	213 (8.4)	
Rocker panel-rear to ground	H111	211 (8.3)	
Windshield slope angle (deg.)	H122	60 deg.	
Backlight slope angle (deg.)	H121	32 deg.	
Ground Clearance **			
Front bumper to ground	H102	265 (10.4)	
Rear bumper to ground	H104	301 (11.9)	
Bumper to ground front at curb mass (wt.)	H103	278 (10.9)	
Bumper to ground rear at curb mass (wt.)	H105	332 (13.0)	
Angle of approach (deg.)	H106	19 deg.	
Angle of departure (deg.)	H107	18 deg.	
Ramp breakover angle (deg.)	H147	15 deg.	
Axle differential to ground (front/rear)	H153	166 (6.5)	
Min. running ground clearance	H156	147 (5.8)	
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.

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)
Vehicle Dimensions

See Key Sheets for Definitions

		Body Type	COUPE & ALL	SEDAN
		Front Compartment	**SAE Ref. No.**	
		SgRP front, 'X' coordinate	L31	3128 (44.4)
		Effective head room	H61	962 (37.9)
		Max. eff. leg room (accelerator)	L34	1090 (42.9)
		SgRP to heel point	H30	234 (9.2)
		SgRP to heel point	L53	897 (35.3)
		Back angle (deg.)	L40	26.5 deg.
		Hip angle (deg.)	L42	101 deg.
		Knee angle (deg.)	L44	132 deg.
		Foot angle (deg.)	L46	87 deg.
		Design H-point front travel	L17	193 (7.6)
		Normal driving & riding seat track trvl.	L23	172 (6.8)
		Shoulder room	W3	1367 (53.8)	1356 (53.4)
		Hip room	W5	1242 (48.9)	1243 (48.9)
***		Upper body opening to ground	H50	1173 (46.2)
		Steering wheel maximum diameter*	W9	376 (14.8)
		Steering wheel angle (deg.)	H16	19 deg.
		Accel. heel pt. to steer. whl. cntr	L11	
		Accel. heel pt. to steer. whl. cntr	H17	
		Undepressed floor covering thickness	H67	13 (.5)
		Rear Compartment	**Front Compartment Int. Dim. Are Measured With The Seating Ref. Pt. (SgRP) 21 mm (1 Seat Adjuster Notch) Forward of Rearmost Seat Position.**	
		SgRP point couple distance	L50	769 (30.3)
		Effective head room	H63	943 (37.1)
		Min. effective leg room	L51	859 (33.8)
		SgRP (second to heel)	H31	266 (10.5)
		Knee clearance	L48	5 (.2)
		Shoulder room	W4	1397 (55.0)	1342 (52.8)
		Hip room	W6	1358 (53.5)	1270 (50.0)
***		Upper body opening to ground	H51	Not Applicable	1208 (47.6)
		Back angle	L41	25 deg.
		Hip angle	L43	82 deg.
		Knee angle	L45	87 deg.
		Foot angle	L47	121 deg.
		Depressed floor covering thickness	H73	20 (.8)
		Luggage Compartment		
		Usable luggage capacity L (cu. ft.)	V1	374 (13.2)
***		Liftover height	H195	801 (31.5)
		Interior Volumes (EPA Classification)		
		Vehicle class		
		Interior volume index (cu. ft.)**		
		Trunk / cargo index (cu. ft.)		13.2

* See page 14.
** Includes passenger and trunk / cargo index – see definition page 32.

*** EPA Loaded Vehicle Weight, Loading Conditions

** All Linear Dimensions Are In Millimeters (Inches)

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)
Vehicle Dimensions

See Key Sheets for Definitions

Body Type ALL

Station Wagon – Third Seat

SAE Ref. No.	(NOT APPLICABLE)
Seat facing direction	SD1	
SgRP couple distance	L85	
Shoulder room	W85	
Hip Room	W86	
Effective leg room	L86	
Effective head room	H86	
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 – 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	

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

All Linear Dimensions Are In Millimeters (Inches)

MVMA Specifications

Vehicle Line CUTLASS CALAIS
Model Year 1991 Issued _____ Revised(*) _____

METRIC (U.S. Customary)

Body Type 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). X - 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).

	Fiducial Mark Number	
Front	W21*	505 (19.9)
	L54*	2761 (108.7)
	H61*	248 (9.7)
	H161*	293 (11.5)
**	H163*	272 (10.7)

Rear	W22*	440 (17.3)
	L55*	4953 (195.0)
	H62*	362 (14.3)
	H162*	413 (16.3)
**	H164*	382 (15.0)

* Reference - SAE Recommended Practice, J182, Motor Vehicle Fiducial Marks.

** EPA Loaded Vehicle Weight, Loading Conditions.

All Linear Dimensions Are In Millimeters (Inches).

o MVMA Specifications

METRIC (U.S. Customary)

Vehicle Line CUTLASS CALAIS

Model Year 1991 Issued _____ Revised(*) _____

Code	Model	VEHICLE MASS (weight) CURB MASS, kg. (lb.)* Front	Rear	Total	SHIPPING MASS kg (lb) ***	ETWC** Code	% PASS MASS DISTRIBUTION PASS IN FRONT Front	Rear	PASS IN REAR Front	Rear
3NF27	Coupe	745.0 (1642)	411.0 (906)	1156 (2548)		Q				
3NT27	Coupe	788.0 (1737)	421.0 (9280	1209.0 (2665)		Q				
3NK27	Coupe	794.0 (1750)	444.0 (979)	1238.0 (2729)		R				
3NF69	Sedan	756.0 (1667)	429.0 (946)	1185.0 (2613)		Q				
3NT69	Sedan	795.0 (1753)	441.0 (972)	1236.0 (2725)		R				
3NK69	Sedan	804.0 (1773)	465.0 (1025)	1269.0 (2798)		S				
3NL27	Coupe	747.0 (1647)	411.0 (906)	1158.0 (2553)		Q				
3NL69	Sedan	757.0 (1658)	430.0 (948)	1187.0 (2616)		Q				

* 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.

ETWC LEGEND

A	= 1000	I	= 2000	Q	= 3000	4000	Y	= 4000
B	= 1125	J	= 2125	R	= 3125	4250	Z	= 4250
C	= 1250	K	= 2250	S	= 3250	4500	AA	= 4500
D	= 1375	L	= 2375	T	= 3375	4750	BB	= 4750
E	= 1500	M	= 2500	U	= 3500	5000	CC	= 5000
F	= 1625	N	= 2625	V	= 3625	5250	DD	= 5250
G	= 1750	O	= 2750	W	= 3750	5500	EE	= 5500
H	= 1875	P	= 2875	X	= 3875	5750	FF	= 5750

*** Shipping Mass (weight) = Curb Weight Less:

31.0 (68)

MVMA Specifications

METRIC (U.S. Customary)

Vehicle Line CUTLASS CALAIS

Model Year 1991 Issued _____ Revised(*) _____

		Optional Equipment Differential Mass (weight)*			
		MASS, kg. (lb.)			
Code	Equipment	Front	Rear	Total	Remarks Restrictions, Requirements
AU3	Door Locks, Power	.6 (1.3)	1.0 (2.2)	1.6 (3.5)	Coupe
		1.0 (2.2)	1.4 (3.1)	2.4 (5.3)	Sedan
AD3	Window, Roof Hinged	4.0 (8.8)	4.6 (10.1)	8.6 (19.0)	
A31	Window, Power	1.8 (4.0)	1.0 (2.2)	2.8 (6.2)	Coupe
		2.8 (5.7)	2.5 (5.5)	5.1 (11.2)	Sedan
B37	Mats, Front & Rear	1.2 (2.6)	1.2 (2.6)	2.4 (5.3)	
B88	Molding, Body Side	1.0 (2.2)	1.0 (2.2)	2.0 (4.4)	
C60	Air Conditioning	22.2 (48.9)	-1.0 (-2.2)	21.1 (46.7)	LD2 / LGO / LG7 w/NAOO
C60	Air Conditioning	22.6 (49.8)	-1.0 (-2.2)	21.6 (47.6)	LG8 w/NFOO
FE3	Suspension	2.1 (4.6)	4.5 (9.9)	6.6 (14.5)	
K34	Cruise Control	1.9 (4.2)	0.0 (0.0)	1.9 (4.2)	
LG7	Engine V6 3.3L	15.0 (33.1)	-2.1 (-4.6)	12.9 (28.5)	NT

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

MVMA Specifications

METRIC (U.S. Customary)

Vehicle Line CUTLASS CALAIS

Model Year 1991 Issued _____ Revised(*) _____

Optional Equipment Differential Mass (weight)*

Code	Equipment	MASS, kg. (lb.) Front	Rear	Total	Remarks Restrictions, Requirements
LD2	Engine L4 2.3L	16.0 (35.3)	-.8 (-1.8)	15.2 (33.5)	NFOO
MD9	Transmission, Auto	20.0 (44.0)	-1.0 (-2.2)	19.0 (41.8)	L68
MD9	Transmission, Auto	21.6 (47.6)	-1.0 (-2.2)	20.6 (45.4)	LD2
PD8	Wheel, Aluminum	1.2 (2.6)	1.2 (2.6)	2.4 (5.2)	NFOO

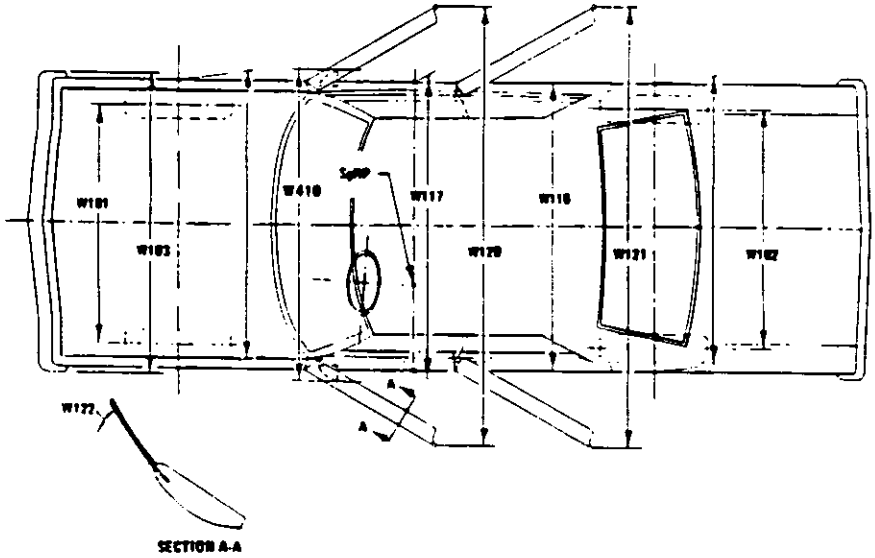
* Also see Engine – General Section for dressed engine mass (weight).

MVMA Specifications

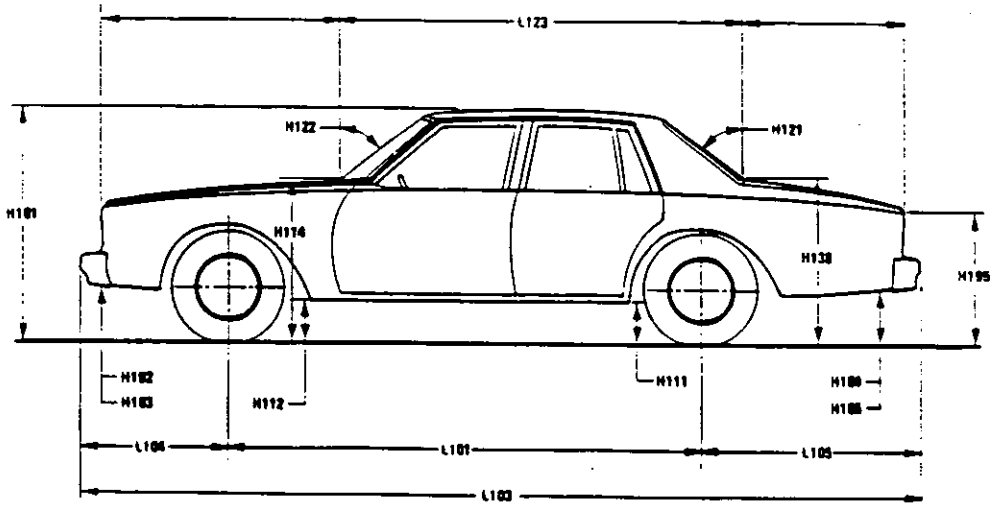
METRIC (U.S. Customary)

Exterior Vehicle And Body Dimensions – Key Sheet

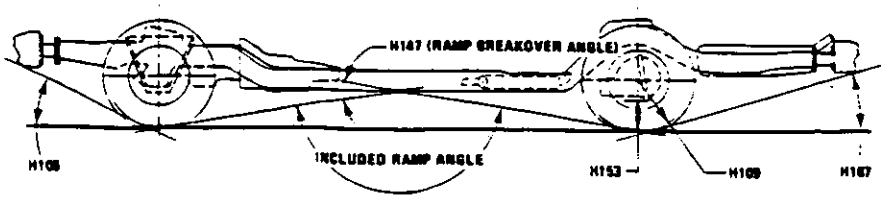
Exterior Width



Exterior Length & Height



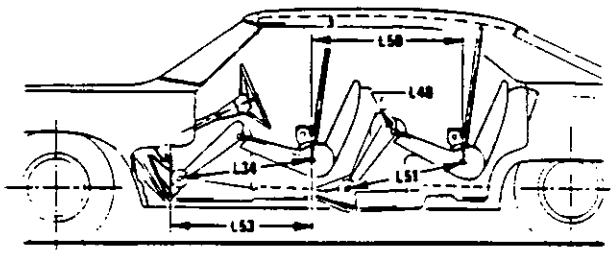
Exterior Ground Clearance

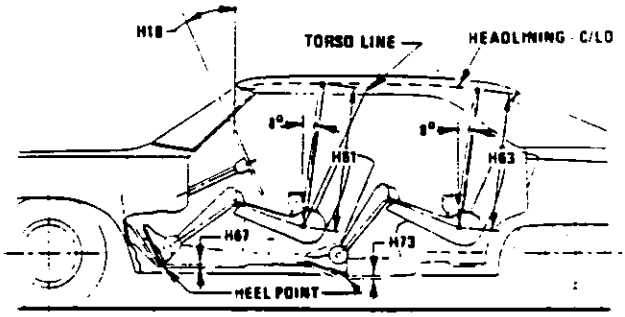


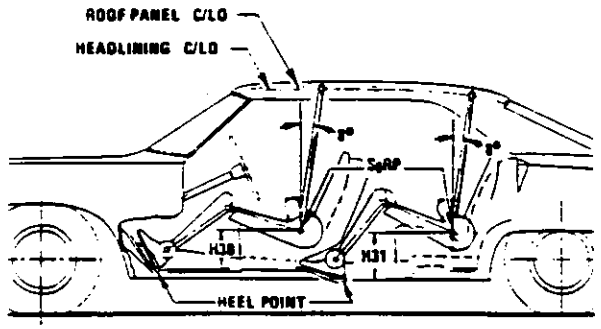
MVMA Specifications Form

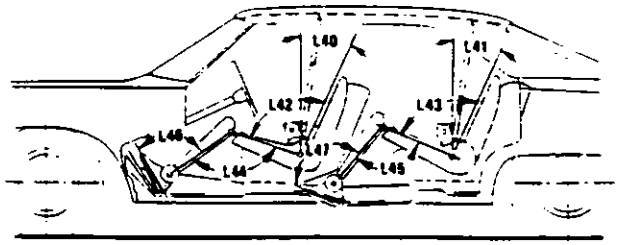
METRIC (U.S. Customary)

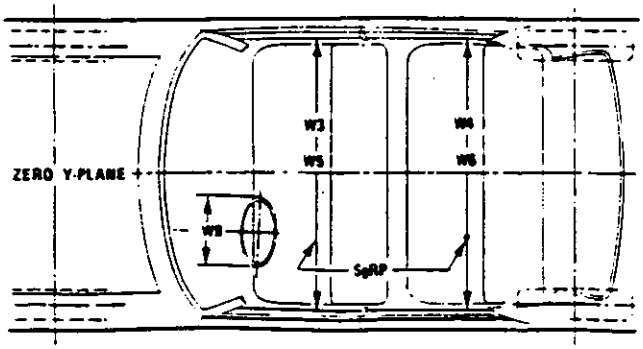
Interior Vehicle And Body Dimensions – Key Sheet

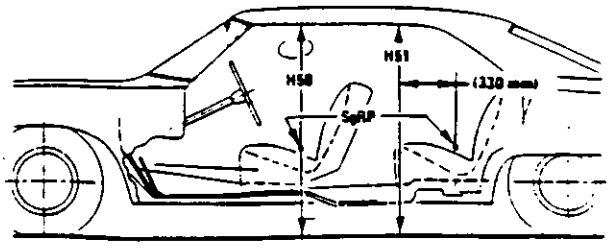










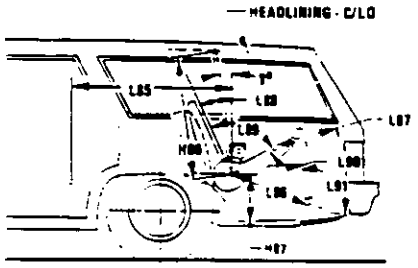


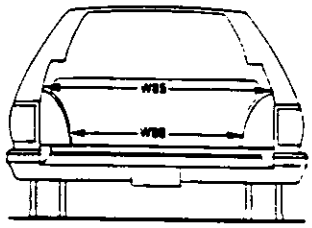
MVMA Specifications Form

METRIC (U.S. Customary)

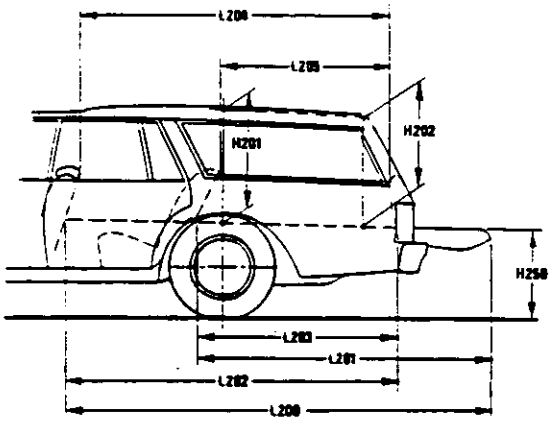
Interior Vehicle And Body Dimensions – Key Sheet

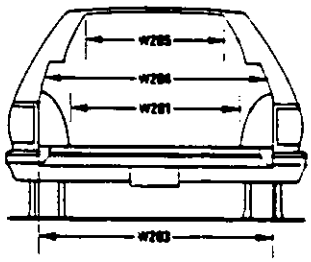
Third Seat



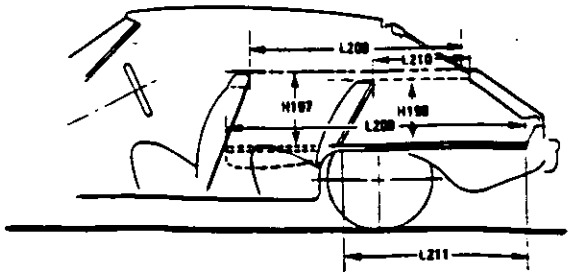


Cargo Space





Station Wagon



Hatchback

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 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 (4.0in.).

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 devices 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 estiamtes 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 Interior Volume Index is an estimate of the size of the passenger compartment.

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 – 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 – 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 wheelhousings 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.

H197 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.

V2 STATION WAGON

Measured in inches:

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

Measured in mm:

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