MANUFACTURERS MOTOR VEHICLE SPECIFICATIONS

PRELIMINARY

METRIC(U.S. Customary)

Passenger Car

1987

Manufacturer	Car Line
Oldsmobile Division	Cutlass Ciera Cutlass Cruiser Wagon
Mailing Address 920 Townsend Street Lansing, Michigan 48921	Issued / Revised

Questions concerning these specifications should be directed to the manufacturer whose address is shown above.

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

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Motor Vehicle Manufacturers Association of the United States, Inc.

MVMA-C-87

MVMA Specifications Form
Passenger Car

METRIC (U.S. Customary)

Car Line Cutlass Ciera

Model Year 1987 Issued 6-86 Revised (•) _____

PRELIMINARY

Car Models

Model Description & Drive (FWD/RWD)	Introduction Date	Make, Car Line, Series, Body Type (Mfgr's Model Code)	No. of Designated Seating Positions (Front/Rear)			Max. Trunk/Cargo Load–Kilograms (Pounds)
FRONT WHEEL DRIVE						
Cutlass Ciera		MODEL NUMBER	FRONT/REAR - 3RD			
2-Door S Coupe		AJ37	3	3		72.5 (159.8)
4-Door Sedan		AJ19	3	3		72.5 (159.8)
4-Door Station Wagon		AJ35	3	3		136.2 (300)
4-Door Station Wagon with RPO AQ4-3rd seat		AJ35 with AQ4	3	3	2	0

Note: Any specifications on the following pages that are specific to California requirements are indicated accordingly.

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Car Line: Cutlass Ciera

Model Year: 1987 Issued: 6-86 Revised (•):

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Engine Description/Carb.	2.5 Liter L-4 (151 CID) Electronic Fuel Inj.
Engine Code	LI68

ENGINE – GENERAL

Type & description (inline, V, angle, flat, location, front, mid, rear, transverse, longitudinal, sohc, dohc, ohv, hemi, wedge, pre-camber, etc.)		In-line Front Transverse, front of engine faces right side of vehicle
Manufacturer		Pontiac
No. of cylinders		4
Bore		101.6 (4.0)
Stroke		76.2 (3.0)
Bore spacing (C/L to C/L)		111.8 (4.40
Cylinder block material & mass kg (lbs.) (machined)		Cast Alloy Iron 42.554 (93.8)
Cylinder block deck height		236.1 (9.3)
Cylinder block length		
Deck clearance (minimum) (above or below block)		.64 (.025)-Below)
Cylinder head material & mass kg (lbs.)		Cast Alloy Iron 19.140 (42.2)
Cylinder head volume (cm^3)		45.62 (2.78)
Cylinder liner material		
Head gasket thickness (compressed)		0.97 (.038)
Minimum combustion chamber total volume (cm^3)		70.82 (4.32)
Cyl. no. system (front to rear)*	L. Bank	1-2-3-4
	R. Bank	--
Firing order		1-3-4-2
Intake manifold material & mass [kg (lbs.)]**		Aluminum Cast 6.580 (14.5)
Exhaust manifold material & mass [kg (lbs.)]**		Stainless Steel 1.980 (4.4)
Recommended fuel (leaded, unleaded, diesel)		Unleaded
Fuel antiknock index $\frac{(R+M)}{2}$		98
Total dressed engine mass (wt) dry***		154.9 (341.7) Auto 165.5 (364.9) Man

Engine – Pistons

Material & mass, g (weight, oz.) - piston only	Cast Aluminum Alloy .660 (23.3)

Engine – Camshaft

Location		Right side of block
Material & mass kg (weight, lbs.)		Cast Iron 3.411 (7.519)
Drive type	Chain / belt	Gear
	Width / pitch	--

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

** Finished state.

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

All those items necessary to make the engine a complete ready to run unit.

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Engine Description/Carb. Engine Code	2.5 Liter L4 (151 CID) Electronic Fuel Injection RPO L68

Engine – Valve System

Hydraulic lifters (std., opt., NA)		Standard
Valves	Number intake / exhaust	4/4
	Head O.D. intake / exhaust	43.69 (1.72)/38.10 (1.50)

Engine – Connecting Rods

Material & mass [kg., (weight, lbs.)]*	Cast arma steel/.555 (1.224)

Engine – Crankshaft

Material & mass [kg., (weight, lbs.)]*		Nodular cast iron/12.519(27.59)
End thrust taken by bearing (no.)		5
Number of main bearings		5
Seal (material, one, two piece design, etc.)	Front	
	Rear	

Engine – Lubrication System

Normal oil pressure [kPa (psi) at engine rpm]	2.59 (37.5)
Type oil intake (floating, stationary)	Stationary
Oil filter system (full flow, part, other)	Full flow
Capacity of c/case, less filter-refill-L (qt.)	2.8 (3.0)

Engine – Diesel Information

Diesel engine manufacturer		
Glow plug, current drain at 0°F		Not
Injector nozzle	Type	
	Opening pressure [kPa (psi)]	Applicable
Pre-chamber design		
Fuel injection pump	Manufacturer	
	Type	
Fuel injection 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 Applicable
Super charger - manufacturer	
Charge cooler	

*Finished State

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Engine Code

2.5 Liter L4 (151 CID)
Electronic Fuel Injection
RPO L68

Engine – Cooling System

Coolant recovery system (std., opt., n.a.)		Standard		
Coolant fill location (rad., bottle)		Bottle, coolant recovery		
Radiator cap relief valve pressure [kPa (psi)]		103.4 (15.0)		
Circulation thermostat	Type (choke, bypass)	Choke		
	Starts to open at °C (°F)	90 (195°)		
Water pump	Type (centrifugal, other)	Centrifugal		
	GPM 1000 pump rpm	--		
	Number of pumps	One		
	Drive (V-belt, other)	V-belt		
	Bearing type	Sealed double row ball		
	Impeller material			
	Housing material			
By-pass recirculation [type (inter., ext.)]		Internal		
Cooling system capacity	With heater–L(qt.)	9.24(9.8)Auto, 9.34(9.9)Man		
	With air cond.–L(qt.)	9.48(10.0)Auto,9.58(10.1)Man		
	Opt. equipment [specify–L(qt.)]	9.30(9.8)Auto, 9.40(9.9) Man		
Water jackets full length of cyl. (yes, no)		Yes		
Water all around cylinder (yes, no)		Yes		
Water jackets open at head face (yes, no)				
Radiator core	Std., A/C, HD	STD.	A/C	H.D.
	Type (cross-flow, etc.)	Cross-flow		
	Construction (fin & tube mechanical, braze, etc.)			
	Material, mass [kg (wgt. lbs.)]	Copper-brass, high efficiency radiator		
	Width	430.0	668.0	668.0
	Height	429.7	429.7	429.7
	Thickness	25.0	40.2	40.2
	Fins per inch @	3.5	4.0	4.0
Radiator end tank material		Copper		
Fan	Std., elec., opt.	Standard/Optional		
	Number of blades & type (flex, solid, material)	Standard 4-blade, A/C 7-blade, A/C & HD 5-blade (Plastic)		
	Diameter & projected width	Std. 291.0 (11.5), A/C 352.5 (13.9), A/C & HD 390.5 (15.4)		
	Ratio (fan to crankshaft rev.)	--		
	Fan cutout type	ECM Controlled		
	Drive type (direct, remote)	Electric, standard/optional (a)		
	RPM at idle (elec.)	1900 (2700 with A/C and heavy duty cooling)		
	Motor rating (wattage) (elec.)	97 (150 with A/C and heavy duty cooling)		
	Motor switch (type & location) (elec.)	Engine temperature switch, engine cylinder head		
	Switch point (temp., pressure) (elec.)	110°C		
	Fan shroud (material)	None		

@ - Distance between top of fins.

(a) - With rotating reinforcement ring, shrouded.

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Engine – Fuel System (See supplemental page for details of Fuel Injection, Supercharger, Turbocharger, etc. if used)

Induction type: carburetor, fuel injection system, etc.			Fuel Injection
Manufacturer			None
Carburetor	Choke (type)		"
	Idle spd.-rpm (spec. neutral or drive and propane if used)	Manual	"
			"
		Automatic	"
			"
Idle A/F mix.			Preset - no adjustment provided
Fuel injection	Point of injection (no.)		Throttle Body
	Constant, pulse, flow		Pulse
	Control (electronic, mech.)		Electronic
	System pressure [kPa (psi)]		83.0 (12.0)
Intake manifold heat control (exhaust or water thermostatic or fixed)			Water
Air cleaner type	Standard		(*)
	Optional		--
Fuel pump	Type (elec. or mech.)		Electrical
	Location (eng., tank)		Fuel Tank
	Pressure range [kPa (psi)]		83.0 (12.0)

Fuel Tank

Capacity [refill L (gallons)]		59.4 (15.7) approx.
Location (describe)		Underside - rear center
Attachment		Underbody strap
Material & Mass [kg (weight lbs)]		Steel
Filler pipe	Location & material	Driver side rear quarter
	Connection to tank	Solder
Fuel line (material)		Steel
Fuel hose (material)		Rubber
Return line (material)		Steel
Vapor line (material)		Steel
Extended range tank	Opt., n.a.	Not available
	Capacity [L (gallons)]	"
	Location & material	"
	Attachment	"
Auxiliary tank	Opt., n.a.	"
	Capacity [L (gallons)]	"
	Location & material	"
	Attachment	"
	Selector switch or valve	"
	Separate fill	"

(*) - Replaceable paper element, single snorkel.
(+) - Oil wetted paper element.

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Vehicle Emission Control

Exhaust Emission Control	Type (air injection, engine modifications, other)		CCC control
	Air Injection	Pump or pulse	None
		Driven by	None
		Air distribution (head, manifold, etc.)	None
		Point of entry	None
	Exhaust Gas Recirculation	Type (controlled flow, open orifice, other)	Controlled Flow
		Exhaust source	Manifold
		Point of exhaust injection (spacer, carburetor, manifold, other)	Inlet manifold
	Catalytic Converter	Type	Oxid-Red, Sng bed
		Number of	One
		Location(s)	Mounted to Underbody
		Volume [L (in³)]	2.6 (160)
		Substrate type	Pellets
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)		Inlet manifold
	Air inlet (breather cap, other)		Air cleaner
Evaporative Emission Control	Vapor vented to (crankcase, canister, other)	Fuel tank	Canister
		Carburetor	--
	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)		Single
Muffler no. & type (reverse flow, straight thru, separate resonator) Material & Mass [kg (weight lbs)]		One-reverse flow
Resonator no. & type		None
Exhaust pipe	Branch o.d., wall thickness	--
	Main o.d., wall thickness	50.8x1.12(2.0x.044)
	Material & Mass [kg (weight lbs)]	Stainless steel
Intermediate pipe	o.d. & wall thickness	50.8x1.12(2.0x.044)
	Material & Mass [kg (weight lbs)]	Alumn.coated steel
Tail pipe	o.d. & wall thickness	50.8x1.4(2.0x.055)
	Material & Mass [kg (weight lbs)]	Alumn.coated steel

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Transmissions/Transaxle

Manual 3-speed (std., opt., n.a.) (mfr.)	Not Available
Manual 4-speed (std., opt., n.a.) (mfr.)	Not Available
Manual 5-speed (std., opt., n.a.) (mfr.)	Not Available
Manual overdrive (std., opt., n.a.) (mfr.)	Not Available
Automatic (std., opt., n.a.) (mfr.)	Standard
Automatic overdrive (std., opt., n.a.) (mfr.)	Optional

Manual Transmission/Transaxle

Number of forward speeds			3
Transmission ratios	In first		3.53
	In second		1.95
	In third		
	In fourth		0.81
	In fifth		--
	In overdrive		--
	In reverse		3.42
Synchronous meshing (specify gears)			All forward gears
Shift lever location			Column
Lubricant	Capacity [L (pt.)]		2.8L (6.0)
	Type recommended		SAE 5W-30 Engine Oil SF/SF/CC or SF/CD
	SAE viscosity number	Summer	SAE 5W-30
		Winter	SAE 5W-30
		Extreme cold	SAE 5W-30

Clutch (Manual Transmission)

Make, type, engagement (describe) – (hydraulic, cable, rod)		Borg & Beck dry single plate
Assist (yes, no / percent)		No
Type pressure plate springs		Diaphragn
Total spring load [N (lb.)]		6049 (1360)
No. of clutch driven discs		
Clutch facing	Material	Non-asbestos
	Manufacturer	Valeo
	Part number	F202
	Rivets/plate	36
	Rivet size	3.6 x 5.4 (.143 x .213)
	Outside & inside dia.	232 x 155 (9.125 x 6.125)
	Total eff. area [cm^2($in.^2$)]	232 (35.94)
	Thickness	7.49 x 8.00 (.295-.315)
	Engagement cushion method	Driven plate, cushion springs
Release bearing	Type & method of lubrication	Ball Thrust Prepacked and Sealed
Torsional damping	Method: springs, friction material	Coil Springs & Metal - to-Metal friction

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Engine Description/Carb. Engine Code	2.5L L4 (151 CID) Electronic Fuel Inj. RPO L68

Automatic Transmission/Transaxle

Trade name		3-speed automatic
Type and special features (describe)		Torque converter with clutch 125c
Selector	Location	Column or floor
	Ltr./No. designation	P-R-N-D-2-1
Gear ratios	1st	2.07
	2nd	1.00
	3rd	1.60
	4th	2.84
	Reverse	Not Available
Max. upshift speed - drive range [km/h (mph)]		1-2=76(47), 2-3=124(77)
Max. kickdown speed - drive range [km/h (mph)]		2-1=69(43), 3-2=117(73)
Min. overdrive speed [km/h (mph)]		Not Available
Torque converter	Number of elements	3
	Max. ratio at stall	2.35
	Type of cooling (air, liquid)	Liquid
	Nominal diameter	245 (9.65)
Lubricant	Capacity [refill L (pt.)]	4.6 (10.0)
	Type Recommended	Dexron II
Oil cooler (std., opt., NA, internal, external, air, liquid)		Standard, integral part of radiator

* - Converter clutch engagement

Axle or Front Wheel Drive Unit

Type (front, rear)			Front		
Description			Front differential w/helical gears and tapered roller bearings		
Limited slip differential (type)			Not available		
Drive pinion offset			"		
Drive pinion (type)			"		
No. of differential pinions			2		
Pinion / differential adjustment (shim, other)			None		
Pinion / differential bearing adjustment (shim, other)			Shim		
Driving wheel bearing (type)			Sealed ball bearings (integral part of bolt-in hub units)		
Lubricant	Capacity [L (pt.)]		Part of automatic trans. lub.		
	Type recommended		Transmission same as auto.		
	SAE viscosity number	Summer	"	"	"
		Winter	"	"	"
		Extreme cold	"	"	"

Axle or Transaxle Ratio and Tooth Combinations (See 'Power Teams' for axle ratio usage.)

Axle ratio (or overall top gear ratio)		2.84	3.65	2.39
No. of teeth	Pinion or drive gear	35	23	
	Ring gear or drive gear	35	84	
Ring gear o.d. or drive gear o.d.		195.2		
Transaxle	Transfer gear ratio	--	--	--
	Final drive ratio	--	--	--

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Engine Description/Carb. Engine Code	2.5L L4 (151 CID) Elect. Fuel Inj. RPO L68

Axle Shafts – Front Wheel Drive

Manufacturer and number used			Two
Type (straight, solid bar, tubular, etc.)		Left	Straight, solid bar
		Right	Straight, solid bar
Outer diam. x length* x wall thickness	Manual transmission	Left	
		Right	
	Automatic transmission	Left	23.91x346.40(3-spd)(2)@ 23.91x341.90(4-spd)(3)@
		Right	23.91x456.40(3-spd)(2)@ 23.91x418.45(4-spd)(3)@
	Optional transmission	Left	None
		Right	None
Stp yoke	Type		None
	Number of teeth		None
	Spline o.d.		None
Universal joints	Make and mfg. no.	Inner	Saginaw
		Outer	Saginaw
	Number used		Four 2 each shaft
	Type, size, plunge	Inner	Tripot (4)
		Outer	Rzeppa, fixed
	Attach (u-bolt, clamp, etc.)		Splined
	Bearing – Type (plain, anti-friction)		Anti-friction
	Bearing – Lubrication (fitting, prepack)		Prepacked
Drive taken through (torque tube, arms or springs)			Wishbone lower control arm, upper MacPherson strut
Torque taken through (torque tube, arms or springs)			Engine mounting system

@ - Shaft capacity = 2300 N.m

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

(1) Heavy duty suspension = Left - 27.05 x 366.60%
Right - 27.05 x 771.60%

(2) Heavy duty suspension = Left - 27.05 x 346.60%
Right - 27.05 x 462.60%

(3) Heavy duty suspension = Left - 27.05 x 346.60%
Right - 27.05 x 428.60%

(4) Plunge = Manual, Left - 17.73 Manual, Right - 22.00
Auto-3, Left - 21.88 Auto-3, Right - 24.58
Auto-4, Left - 21.38 Auto-4, Right - 20.08

% - Shaft capacity = 2700 N.m

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Body Type And/Or Engine Displacement	ALL

Suspension – General

Car leveling	Std./opt./n.a.	Optional G67
	Type (air, hyd., etc.)	Air Inflatable
	Manual/auto. controlled	Manual
Provision for brake dip control		Front suspension geometry
Provision for accl. squat control		Rear suspension geometry
Provisions for car jacking		Body pickup at rocker panels
Shock absorber (front & rear)	Type	Front: MacPherson strut; Rear: direct, double acting
	Make	Delco
	Piston diameter	Front: 32 (1.26); Rear: 25 (1.00)
	Rod diameter	Front 20.0 (.80), ZV8 22.0 (.87), rear 12.5 (.50)

Suspension – Front

Type and description		MacPherson strut with coil springs, stamped lower control arms and nodular iron steering knuckles
Travel	Full jounce	95.0 mm (3.7 in)
	Full rebound	89.0 mm (3.5 in)
Spring	Type (coil, leaf, other) & material	Coil, Steel
	Insulators (type & material)	
	Size (coil design height & i.d., bar length x dia.)	260 (10.3) height at checking load; 165.1 (6.5) I.D.; 2768 (108.9) length; 136 (0.54) dia.
	Spring rate [N/mm (lb./in.)]	Base 14.5(83.0)F40-23.5(134.0)F41-16.0(91.0)
	Rate at wheel [N/mm (lb./in.)]	Base 17.6(100.0)F40-26.08(149.0)F41-19.0(108.0)
Stabilizer	Type (link, linkless, frameless)	Link
	Material & bar diameter	Steel; Base 22 (.87), ZV8 28 (1.10), wagon 24 (.94)

Suspension – Rear

Type and description			Trailing arm with stamped control arms and open section transverse beam
Travel	Full jounce		105.0 mm (4.1 in)
	Full rebound		95.0 mm (3.7 in)
Spring	Type (coil, leaf, other) & material		Coil, Steel
	Size (length x width, coil design height & i.d., bar length & dia.)		254 (10) height at checking load; 108.0 (4.3) I.D.; 2282 (89.8) length; 12.4 (0.49) dia.
	Spring rate [N/mm (lb./in.)]		Base & F41-26.9 (153.7), F40-40.5 (231.0)
	Rate at wheel [N/mm (lb./in.)]		Base & F41-15.5 (88.7), F40-22.72 (130.0)
	Insulators (type & material)		Rubber insulator top and bottom
	If leaf	No. of leaves	--
		Shackle (comp. or tens.)	--
Stabilizer	Type (link, linkless, frameless)		Linkless, function performed by axle beam (specific design
	Material & bar diameter		Steel, 20 mm (.79) with F41)
Track bar (type)			Transverse link-open section

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Body Type And Or Engine Displacement	Station Wagon Base	Station Wagon

Brakes - Service

Description				Single caliper disc front, duo-servo drum rear	
Manufacturer and brake type (std., opt., n.a.)	Front (disc or drum)			Disc	
	Rear (disc or drum)			Drum	
Self-adjusting (std., opt., n.a.)				Standard	
Special valving	Type (proportion, delay, metering, other)			Proportioning, diagonal split circuit	
Power brake (std., opt., n.a.)				Standard	
Booster type (remote, integral, vac., hyd., etc.)				Tandem vacuum	
Vacuum source (inline, pump, etc.)				In line (intake manifold)	
Vacuum reservoir (volume in.³)				None	
Vacuum pump-type (elec, gear driven, belt driven, if other so state)				None	
Anti-lock device type (std., opt., n.a.) (F/R)				Not Available	
Effective area [cm²(in.²)]*				558 (86.5)	
Gross lining area [cm²(in.²)]**(F/R)				553 (85.7)	
Swept area [cm²(in.²)]***(F/R)				1787 (277.0)	
Rotor	Outerworking diameter		F/R	256.4mm (10.1)	
	Inner working diameter		F/R	177mm (6.97 in) outer, 166.6mm (6.56 in) inner	
	Thickness		F/R	26 mm (1.02 in)	
	Material & type (vented/solid)		F/R	Cast iron, vented	
Drum	Diameter & width		F/R	225 x 45 mm (8.85 x 1.77 in)	
	Type and material		F/R	Composite, cast iron, finned	
Wheel cylinder bore				64mm(2.50in)/20.6mm(0.81in)	
Master cylinder	Bore/stroke		F/R	%	#
Pedal arc ratio				3.5:1	
Line pressure at 445 N(100 lb.) pedal load [kPa (psi)]				12366 (1793)	
Lining clearance			F/R	Self adjusting; Front-0, Rear-.381	
Brake lining	Front wheel	Bonded or riveted (rivets/seg.)		Riveted-Front/Integrally Molded-Rear	
		Rivet size		5.33x9.63 mm (0.210)	
		Manufacturer		Delco Moraine	
		Lining code*****		DM 8032	
		Material		Semi-Metallic	
		**** Primary or out-board		125 x 46 x 10 mm (4.92 x 1.81 x .39 in)	
		Size Secondary or in-board		125 x 46 x 11 mm (4.92 x 1.81 x .43 in)	
		Shoe thickness (no lining)		Inboard 5, Outboard 3	
	Rear wheel	Bonded or riveted (rivets/seg.)		Riveted	
		Manufacturer		Inland	
		Lining Code*****		235 FF	
		Material		Organic	
		**** Primary or out-board		176 x 44 x 6 mm (6.39 x 1.73 x .24 in)	
		Size Secondary or in-board		208 x 44 x 7.6 mm (8.19 x 1.73 x .30 in)	
		Shoe thickness (no lining)		2 mm (0.0787 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 circumference.)
(Disc brake: Square of Outer Working Dia.minus Square of inner Working Dia. multiplied by Pi/2 for each brake.)
****Size for drum brakes includes length x width x thickness.
*****Manufacturer I.D., catalog or formulation designation and coefficient of friction classification.

%-22.2 & 31.8(0.87 & 1.25)/35.75(1.41)
#-24.0 & 31.8(0.94 & 1.25)/35.75(1.41)

MVMA Specifications Form
Passenger Car

METRIC (U.S. Customary)

Car Line Cutlass Ciera
Model Year 1987 Issued 6-86 Revised (•) _____

PRELIMINARY

Body Type And/Or Engine Displacement: ALL

Steering

Manual (std., opt., n.a.)				Not available
Power (std., opt., n.a.)				Standard
Adjustable steering wheel/column (tilt, telescope, other)		Type		Tilt
		Manufacturer		
		(Std., opt., n.a.)		Optional
Wheel diameter** (W9) SAE J1100		Manual		--
		Power		375.0 (14.76)
Turning diameter m (ft.)	Outside front	Wall to wall (l. & r.)		12.190 (39.99)
		Curb to curb (l. & r.)		11.268 (36.96)
	Inside rear	Wall to wall (l. & r.)		Not available
		Curb to curb (l. & r.)		Not available
Scrub Radius*				Not available
Manual	Gear	Type		Not available
		Manufacturer		Not available
		Ratios	Gear	Not available
			Overall	Not available
	No. wheel turns (stop to stop)			Not available
Power	Type (coaxial, linkage, etc.)			Rack and pinion, integral pump
	Manufacturer			Saginaw Steering Gear
	Gear	Type		Rack and pinion with Integral Power Unit
		Ratios	Gear	"c" Factor=45.13 mm per degree of revolution (17.56:1 ratio)
			Overall	15.7:1 c = 50 for Eurosport
	Pump (drive)			Belt off crankshaft pulley
	No. wheel turns (stop to stop)			3.05
Linkage	Type			End take-off tie rods
	Location (front or rear of wheels, other)			Rear of front wheel centerline
	Tie rods (one or two)			Two
Steering axis	Inclination at camber (deg.)			14.6°
	Bearings (type)	Upper		Ball bearing
		Lower		Ball joint
		Thrust		Ball bearing
Steering spindle & joint type				MacPherson strut with lower ball joint
Wheel spindle/hub	Diameter	Inner bearing		Not applicable to integral bearings. Service only
		Outer bearing		Assassembly
	Thread (size)			Not applicable
	Bearing (type)			Integral double row ball, permanently lubricated

*The horizontal distance in the front elevation between wheel centerline and kingpin (ball joint) axis at ground.
**See Page 21.

MVMA Specifications Form
Passenger Car

METRIC (U.S. Customary)

Car Line Cutlass Ciera

Model Year 1987 Issued 6-86 Revised (•) _____

PRELIMINARY

Engine Description/Carb. Engine Code	2.5L L4 (151 CID) Elect. Fuel Inj. RPO L68

Electrical – Supply System

Battery	Manufacturer	Delco Remy
	Model, std., (opt.)	75-630 Std, N.A., Opt
	Voltage	12 Volt
	Amps at 0°F cold crank	630 Std, N.A. Opt.
	Minutes-reserve capacity	90 Std, N.A. Opt.
	Amp/hrs. - 20 hr. rate	--
	Location	Engine compartment
Alternator	Manufacturer	
	Rating	(a,b,c)
	Ratio (alt. crank/rev.)	Not Available
	Optional (type & rating)	None
Regulator	Type	Integral with alternator

Electrical – Starting System

Start. motor	Current drain at 0°F	270*
Motor drive	Engagement type	Overrunning clutch
	Pinion engages from (front, rear)	Front

Electrical – Ignition System

Type	Electronic (std., opt., n.a.)		Not available
	Other (specify)		Computer controlled coil ignition (C^{3}I)
Coil	Make		Delco-Remy
	Model		Not Available
	Current	Engine stopped – A	Not Available
		Engine idling – A	Not Available
Spark plug	Make		AC
	Model		R44TSX
	Thread (mm)		14
	Tightening torque (N-m (lb. ft))		20 (15)
	Gap		1.52 (.060)
	Number per cylinder		One
Distributor	Make		Not Applicable
	Model		Not Applicable

Electrical – Suppression

Locations & type	Internal alt. capacitor, non-metallic high-tension ignition cables, resistor spark plugs, ignition coil by-pass capacitor, internal AC blower motor by-pass capacitor & A/C compression diode, with radio provisions; hood grounding clip, engine to dash panel ground strap, fuse block capacitor and on "heater only" blower motors and coax capacitor.

(a) - 56 amp with heater, 10 SI (22 amp @ idle).
(b) - 66 amp with heater and heated backlite, 10 SI (23 amp @ idle).
(c) - 78 amp with A/C, 15 SI (40 amp @ idle).
* - Current drain for starting motor is at -20°F.

MVMA Specifications Form
Passenger Car

METRIC (U.S. Customary)

Car Line Cutlass Ciera

Model Year 1987 Issued 6-86 Revised (•) _____

PRELIMINARY

Body Type	2-Door S Coupe AJ37	4-Door Sedan AJ19	4-Door Station Wagon AJ35

Body

Structure	Integral steel body/frame construction incorporating welded front end structural framing for mounting front sheet metal. Halo roof design, double panel deck lid (sedan, coupe). Slim profile door construction with rolled-section upper frame; bolted-on hinges.
Bumper system front - rear	Steel facebar/impact bar design supported by energy absorbing cylinders for impact management.
Anti-corrosion treatment	High level of corrosion protection through extensive use of zinc-rich precoated metal and underbody primer, augmented by wax-base spray on doors, deck lid lower surfaces and hinge pillars. Plastisol applied to selected lower body areas.

Body – Miscellaneous Information

Type of finish (lacquer, enamel, other)		Acrylic lacquer or waterbase acrylic enamel	
Hood	Hinge location (front, rear)	Rear	
	Type (counterbalance, prop)	No counterbalance, Prop rod type	
	Release control (internal, external)	Internal	
Trunk lid	Type (counterbalance, other)	Torsion bar counterbalance	
	Internal release control (elec., mech., n.a.)	External mechanical std; Internal elect. opt.	
Hatch-back lid	Type (counterbalance, other)	Not Applicable	
	Internal release control (elec., mech., n.a.)	Not Applicable	
Station wagon			
Vent window control (crank, friction, pivot, power)	Front	None	
	Rear	None	Rear quarter, pivot
Seat cushion type (e.g., 60/40, bucket, bench, wire, foam etc.)	Front	Molded polyurethane padding	
	Rear	Molded polyurethane padding	
	3rd seat	--	Molded poly. padding
Seat back type (e.g., 60/40, bucket, bench, wire, foam etc.)	Front	Molded polyurethane padding	
	Rear	Molded polyurethane padding	
	3rd seat	--	Molded poly. padding

MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)

Car Line Cutlass Ciera
Model Year 1987 Issued 6-86 Revised (•) _____

PRELIMINARY

Body Type	2-Door S Coupe	4-Door Sedan	4-Door Station Wagon

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

Air conditioning (manual, auto. temp control)		Optional - manual control
Clock (digital, analog)		Digital-opt. with mono radios; incl. w/stereo radio equip.
Compass / thermometer		Not Available
Console (floor, overhead)		Optional (floor)
Defroster, elec. backlight		Optional
Electronic	Diagnostic monitor (integrated, individual)	Not Available
	Instrument cluster (list instruments)	"
	Keyless entry	"
	Tripminder (avg. spd., fuel)	"
	Voice alert (list items)	"
	Other	"
		--
Fuel door lock (remote, key, electric)		Not Available
Lamps	Auto head on / off delay, dimming	"
	Cornering	"
	Courtesy (map, reading)	Optional
	Door lock, ignition	"
	Engine compartment	"
	Fog	Not Available
	Glove compartment	Standard
	Trunk	Optional
	Other	Ash tray lamp - standard
		--
Mirrors	Day/night (auto. man.)	Standard - manual
	L.H. (remote, power, heated)	Standard - manual, Remote optional
	R. H. (convex, remote, power, heated)	Optional - convex
	Visor vanity (RH / LH, illuminated)	Optional - RH, illuminated or non-illuminated
Parking brake-auto release (warning light)		Warning light, standard
Power equipment	Door locks / deck lid - specify	Optional-power (both door & deck lid & wagon gate release)
	Seat (2-4-6 way) heated (driver, pass, other) lumbar, hip, thigh support (power, manual) reclining (driver, pass) memory (1-2 preset, recline)	Optional - 6-way power bench seat - 6-way 45/45 power bench seat, power driver seat only. Recliner, left & right.
	Side windows	Optional
	Vent windows	Not Available
	Rear window	" | Rear quarter, manual
		--
Radio systems	Antenna (location, whip, w/shield, power)	Mast, fender
	AM, FM, stero, tape, CB	Standard AM, optional FM/FM, AM/FM stereo, AM/FM cassette
	Speaker (number, location) Premium sound	Optional, extended range rear
Roof open air/fixed (flip-up, sliding, "T")		Sunroof, optional
Speed control device		Optional, includes resume speed & acceleration feature
Speed warning device (light, buzzer,etc.)		Not Available
Tachometer (rpm)		Optional
Telephone system - mobile		
Theft protection-type		Lock mounted on steering column; locks steering wheel, transmission shift lever and ignition.

MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)
Car and Body Dimensions

See Key Sheets for definitions

Car Line Cutlass Ciera
Model Year 1987 Issued 6-86 Revised (•)

PRELIMINARY

Body Type	SAE Ref. No.	2-Door AJ37S Coupe	4-Door AJ19 Sedan	4-Door Station Wagon AJ35
Front Compartment				
Sg RP front, "X" coordinate	L31	1138 (44.8)		
Effective head room	H61	980 (38.6)		
Max. eff. leg room (accelerator)	L34	1070 (42.1)		
SgRP to heel point	H30	258 (10.2)		
SgRP to heel point	L53	862 (33.9)		
Back angle	L40	26.0		
Hip angle	L42	99.5	99.0	
Knee angle	L44	127.0		
Foot angle	L46	87.0		
Design H-point front travel	L17	192 (7.6)		
Normal driving & riding seat track trvl.	L23	172 (6.8)		
Shoulder room	W3	1421 (55.9)	1427 (56.2)	
Hip room	W5	1329 (52.3)	1330 (52.4)	
** Upper body opening to ground	H50			
Steering wheel maximum diameter	W9	375 (14.8)		
Steering wheel angle	H16	22.0		
Accel. heel pt. to steer. whl. cntr	L11			
Accel. heel pt. to steer. whl. cntr	H17			
Steering wheel to C / L of thigh	H13	98 (3.9)	95 (3.7)	
Steering wheel torso clearance	L7	364 (14.3)	365 (14.4)	
Headlining to roof panel (front)	H37	13 (0.5)	12 (0.5)	
Undepressed floor covering thickness	H67	15 (0.6)		

All Interior Dimensions Are Measured With The Seating Reference Point (SgRP) _____ mm (1 Seat Adjuster Notch) Forward Of Rearmost Seat Position.

Rear Compartment				
Sg RP Point couple distance	L50	809 (31.9)		786 (30.9)
Effective head room	H63	963 (37.9)	965 (38.0)	987 (38.9)
Min. effective leg room	L51	910 (35.8)	925 (36.4)	903 (35.6)
Sg RP (second to heel)	H31	260 (10.2)	261 (10.3)	
Knee clearance	L48	34 (1.3)	44 (1.7)	25 (1.0)
Compartment room	L3	687 (27.0)	709 (27.9)	710 (28.0)
Shoulder room	W4	1447 (57.0)	1427 (56.2)	
Hip room	W6	1362 (53.6)	1338 (52.7)	
** Upper body opening to ground	H51			
Back angle	L41	24.5		
Hip angle	L43	83.5	84.5	83.0
Knee angle	L45	91.5	94.5	90.6
Foot angle	L47	128.5	130.0	127.0
Headlining to roof panel (second)	H38	14 (0.6)	13 (0.5)	14 (0.6)
Depressed floor covering thickness	H73	18 (0.7)	19 (0.7)	18 (0.7)

Luggage Compartment				
Usable luggage capacity [L (cu. ft.)]	V1	460 (16.2)		--
** Liftover height	H196	900 (35.4)	810 (31.9)	821 (32.3)

Interior Volumes (EPA Classification)				
Vehicle class (subcompact, compact, etc.)		Mid-size		
Interior volume index (cu. ft.)		97.4	97.8	97.9
Trunk/cargo index (cu. ft.)		16.2		41.6

All linear dimensions are in millimeters (inches).
** EPA Loaded Vehicle Weight, Loading Conditions

MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)

Car Line Cutlass Ciera

Model Year 1987 Issued 6-86 Revised (•) _____

PRELIMINARY

Body Type	2-Door S Coupe AJ37	4-Door Sedan AJ19	4-Door Station Wagon AJ35

Vehicle Fiducial Marks

Fiducial Mark Number*	Define Coordinate Location
Front	X - Fiducial mark to vertical base grid line - front measured horizontally, from the base 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 base grid line - front, measured vertically from base grid line to front fiducial mark located on top of the front seat adjuster mounting bolt.
Rear	X - Fiducial mark to vertical base grid line - rear, measured horizontally from base grid line to rear fiducial mark located on the rail (compartment pan-longitudinal). Y - Fiducial mark to centerline of car - rear, width measurement made from centerline of car to fiducial mark located on the rail (compartment pan-longitudinal). Z - Fiducial mark to horizontal base grid line - rear, measured vertically from base grid line to the rear fiducial mark located on the rail (compartment pan-longitudinal).

	Fiducial Mark Number		
Front	W21	564 (22.2)	
	L54	771 (30.4) *	
	H81	58 (2.3) #	
	H161	308 (12.1)	302 (11.9)
**	H163	286 (11.3)	287 (11.3)
Rear	W22	489 (19.3)	510 (20.1)
	L55	2980 (117.3) *	2215 (87.2) *
	H82	187 (7.4) #	- 14 (-0.6) #
	H162	441 (17.4)	440 (17.3)
**	H164	416 (16.4)	425 (16.7)

* Vertical Base Grid 2000 mm line.
\# Horizontal Base Grid 200 mm line.

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

All linear dimensions are in millimeters (inches).

** EPA Loaded Vehicle Weight, Loading Conditions

MVMA Specifications Form
Passenger Car

METRIC (U.S. Customary)

Car Line Cutlass Ciera

Model Year 1987 Issued 6-86 Revised (•) _____

PRELIMINARY

Model	Vehicle Mass (weight)							
	CURB MASS, kg. (weight, lb.)*			% PASS. MASS DISTRIBUTION				SHIPPING MASS kg (weight, lb.)**
				Pass In Front		Pass In Rear		
	Front	Rear	Total	Front	Rear	Front	Rear	
2-Door S Coupe AJ37	767.1 (1691)	450.7 (994)	1217.8 (2685)					1181.4 (2604)
4-Door Sedan AJ19	766.3 (1689)	465.2 (1026)	1231.5 (2715)					1195.1 (2635)
4-Door Station Wagon AJ35	752.9 (1660)	538.4 (1187)	1291.3 (2847)					1254.9 (2766)

Curb Weight - The calculated weight of a vehicle with standard equipment only as designed with the additional load of oil, lubes, coolants, and fuel all filled to capacity.

Shipping Weight - Same as base curb weight, except 3 gallons of gasoline.

* Reference – SAE J1100 Motor vehicle dimensions, curb weight definition.
** Shipping mass (weight) definition –

MVMA Specifications Form
Passenger Car

METRIC (U.S. Customary)

Car Line Cutlass Ciera
Model Year 1987 Issued 6-86 Revised (•)

PRELIMINARY

Optional Equipment Differential Mass (weight)*

Equipment	MASS, kg. (weight, lb.) Front	Rear	Total	Remarks
Reclining Driver &	1.0	1.0	2.0	2-door model
Passenger, seat back	(2.2)	(2.2)	(4.4)	
(Feature included with				
AR9 bucket seat option)	1.0	1.2	2.2	4-door model
RPO A78	(2.2)	(2.6)	(4.8)	
Color-Keyed Floor Mats	1.4	1.0	2.4	All models
Front RPO B32	(3.1)	(2.2)	(5.3)	
Color-Keyed Floor Mats	.4	.6	1.0	All models
Rear RPO B33	(0.9)	(1.3)	(2.2)	
Rubber Floor Mats				All models
Front RPO B34				
Rubber Floor Mats				All models
Rear RPO B35				
Deluxe Luggage Comp Trim	0	3.0	3.0	AJ19&37 models
RPO B48	(0)	(6.6)	(6.6)	
Intermittent Windshield	.2	0	.2	All models
Wiper System RPO CD4	(0.4)	0	(0.4)	
Tailgate window				
wiper/washer RPO C25	2.8	1.8	4.6	AJ35 only
	(6.2)	(4.0)	(10.2)	
Electric Rear Window	0	.6	.6	All models
Defogger RPO C49	(0)	(1.3)	(1.3)	
Rear Window Air	- .8	3.0	2.2	AJ35 only
Deflector RPO C51	(-1.8)	(6.6)	(4.8)	
Air Conditioning	20.2	.8	21.0	AJ19 & AJ35 with RPO LB6, MD9,
RPO C60	(44.5)	(1.8)	(46.3)	ME9 & M19
	22.0	1.0	23.0	AJ37 & RPO LB6
	(48.5)	(2.2)	(50.7)	
	25.4	1.2	26.6	1AW00 & RPO L68
	(56.0)	(2.6)	(58.6)	
Dome Reading Lamp	0	.2	.2	All models
RPO C95	(0)	(0.4)	(0.4)	

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

MVMA Specifications Form
Passenger Car

METRIC (U.S. Customary)

Car Line Cutlass Ciera

Model Year 1987 Issued 6-86 Revised (•) _____

PRELIMINARY

Optional Equipment Differential Mass (weight)*

Equipment	MASS. kg. (weight, lb.)			Remarks
	Front	Rear	Total	
Engine 2.8 Liter MFI	35.0	3.0	38.0	All models
(173 C.I.D.) V6	(77.2)	(6.6)	(83.8)	
High Output RPO LB6				
Automatic Transmission	21.4	.6	22.0	All models
3-speed (THM-125c)RPO MX1	(47.2)	(1.3)	(48.5)	
Automatic Transmission	38.3	0	38.3	All models, all engines, except
4-speed (440-T4) RPO MX0	(84.4)	(0)	(84.4)	2.5 Liter L4 (RPO L98)
Wheel Cover Locking	.4	.4	.8	All models, used with RPO N95
Package RPO N18	(0.9)	(0.9)	(1.8)	wire wheel covers
Comfortilt Steering Wheel	.6	.4	1.0	All models, intermittent wipers
RPO N33	(1.3)	(0.9)	(2.2)	required RPO CD4
Wire Wheel Covers	3.2	3.2	6.4	All models
	(7.0)	(7.0)	(14.0)	
Sport Wheel Covers	.8	.6	1.4	All models.
RPO PB2	(1.8)	(1.3)	(3.1)	
Auxiliary Lighting	.2	0	.2	All models
Package RPO TR9	(0.4)	(0)	(0.4)	
Heavy Duty Battery	3.0	- .6	2.4	With RPO LB6 engines
RPO UA1	(6.6)	(-1.3)	(5.3)	
Gauge Package	.2	0	.2	All models
RPO UF7	(0.4)	(0)	(0.4)	
AM/FM Stereo Radio w/o	.4	0	.4	All models, includes 4-speaker
clock EIR type full	(0.9)	(0)	(0.9)	system.
feature RPO UK4,				
AM Mono Radio with Clock				All models
RPO UL6				

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

MVMA Specifications Form
Passenger Car

METRIC (U.S. Customary)

Car Line Cutlass Ciera

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PRELIMINARY

Optional Equipment Differential Mass (weight)*

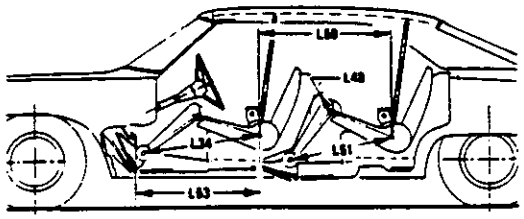
Equipment	MASS, kg. (weight, lb.)			Remarks
	Front	Rear	Total	
Roof Luggage Carier	.8	5.6	6.4	AJ35 only
RPO V55	(1.8)	(12.3)	(14.1)	
Deck Lid Luggage Carrier	-.4	2.8	2.4	AJ19,AJ37 Black
RPO V56	(-0.9)	(6.2)	(5.3)	or chrome.
Rally Wheels	2.2	2.2	4.4	All models, included with
RPO ZJ7	(4.8)	(4.8)	(9.6)	
Exterior Molding Package	.6	1.0	1.6	All models.
Bright. (Consists of	(1.3)	(2.2)	(3.5)	
RPO B51 and B96)RPO Z17				

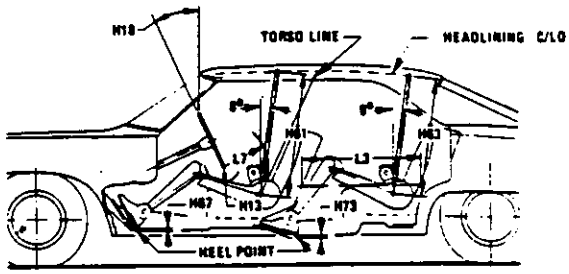
*Also see Engine - General Section for dressed engine mass (weight).

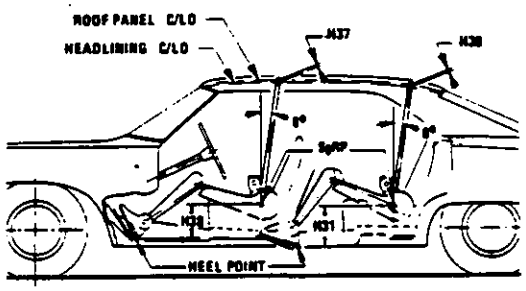
MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)

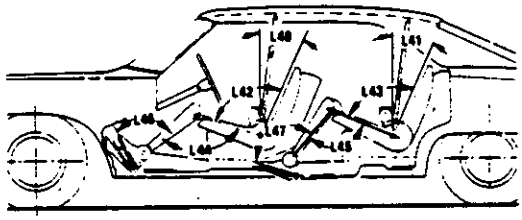
PRELIMINARY

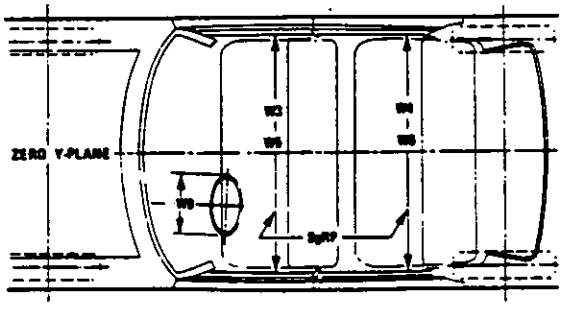
Interior Car And Body Dimensions – Key Sheet

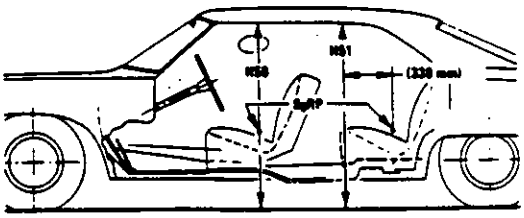












MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)

Exterior Car And Body Dimensions – Key Sheet
Dimensions Definitions

PRELIMINARY

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.

W106 FRONT FENDER WIDTH. The dimension measured between the widest points at the front wheel centerline, excluding moldings.

W107 REAR FENDER WIDTH. The dimension measured between the widest points at the rear wheel centerline, excluding moldings.

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.

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 OVERHANG–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.

L125 COWL POINT "X" COORDINATE.

L126 FRONT END LENGTH. The dimension measured longitudinally from the cowl point to the foremost point on the vehicle at the zero "Y" plane excluding ornamentation or bumpers. In cases where bumpers and/or grills are integrated with the profile, measurement is made at the foremost point of front end contour.

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.

L129 REAR END LENGTH. The dimension measured longitudinally from the deck point to the rearmost visible point of the body sheet metal at the zero "Y" plane, excluding ornamentation or bumpers.

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.

H127 HEADLAMP TO GROUND–CURB MASS (WT.). The dimension measured vertically from the centerline of the lowest headlamp lens to ground.

H128 TAILLAMP TO GROUND–CURB MASS (WT.). The dimension measured vertically from the centerline of the upper bulb to ground.

H133 BOTTOM OF DOOR CLOSED–FRONT TO GROUND. The dimension measured vertically from the bottom outside corner of the door on the lock pillar side, in maximum closed position, to ground.

H135 BOTTOM OF DOOR CLOSED–REAR TO GROUND. The dimension measured vertically from the bottom outside corner of the door on the lock pillar side, in maximum closed position, to ground.

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.

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 254mm (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.

H38 HEADLINING TO ROOF PANEL–SECOND. The dimension measured from the intersection of the headlining and the extended effective head room line normally to the roof sheet metal.

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 dimesnion measured vertically from the heel point to the underbody sheet metal.

PD2 PASSENGER DISTRIBUTION–SECOND.

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.

H195 LIFTOVER HEIGHT. The dimension measured vertically from the luggage compartment lower opening at the zero "Y" plane to ground.

Interior Volumes (EPA Classification)

The Interior Volume Index is listed for each body style except two seaters. The interior volume index estimates the space in a car. It is based on four measurements – head room, shoulder room, hip room, and leg room – for the front and rear seats, plus trunk capacity. The 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 51mm (2.0 in.). With rear-facing third seat, dimension is measured to closure.

L88 BACK ANGLE–THIRD. Measured in the same mannere 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.

PD3 PASSENGER DIRECTION–THIRD.

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 he 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.

MVMA Specifications Form
Passenger Car
METRIC (U.S. Customary)

PRELIMINARY

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