

MANUFACTURERS MOTOR VEHICLE SPECIFICATIONS

METRIC (U.S. Customary)

1989

Manufacturer Pontiac Motor Division General Motors Corporation		Vehicle Line Sunbird	
Mailing Address	Chevrolet-Pontiac-Canada Group Engineering Center General Motors Corporation 30003 VanDyke Warren, Michigan 48090-9060	Issued June, 1988	Revised

Direct questions concerning these specifications to the manufacturer listed above.

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Motor Vehicle Manufacturers Association
of the United States, Inc.

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MVMA Specifications Form

METRIC (U.S. Customary)

Vehicle Line Sunbird
Model Year 1989 Issued _____ Revised (e) _____

Vehicle Origin

Design & development (company)	General Motors, L.A.D. Lansing
Where built (country)	United States
Authorized U.S. sales marketing representative	Pontiac Motor Division

Vehicle Models

Model Description & Drive (FWD/RWD/4WD/4WD)*	Introduction Date	Make, Vehicle Models, Series, Body Type (Mfr's Model Code)	No. of Designated Seating Positions (Front/Rear)	Max. Trunk/Cargo Load—Kilograms (Pounds)
Front Wheel Drive 2-Door Notchback Coupe		2JB37	2/3	60 (132)
Front Wheel Drive 4-Door Notchback Sedan		2JB69	2/3	60 (132)
Front Wheel Drive 2-Door SE Notchback Coupe		2JD37	2/3	60 (132)
Front Wheel Drive 2-Door GT Notchback Coupe		2JU37	2/3	60 (312)
Front Wheel Drive 2-Door GT Convertible		2JU67	2/2	60 (132)

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

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Power Teams (Indicate whether standard or optional)

SAE J1349 Net bhp (brake horsepower) and net torque corrected to 77°F/25° C and 29.61 in. Hg/100 kPa atmospheric pressure.

SERIES AVAILABILITY	ENGINE						E x h a u s t S/D*	TRANSMISSION/ TRANSAXLE	AXLE RATIO (std. first)
	Code	Displ. Liters (in³)	Induction (FI, CARB/ BBL, etc.)	Compr. Ratio	SAE Net at RPM				
					Power kW (bhp)	Torque N • m (lb. ft.)			
2JB00 & 2JD00 (Std.) 2JU00 (Opt.)	LT2	2.0L (121) L4	EFI	8.8:1	72 (96) @ 4800	160 (118) @ 3600	S	(Std.) 5-Speed Manual (Opt.) 3-Speed Auto	3.45 3.18
2JU00 (Std.) 2JD00 (Opt.)	LT3	2.0L (121) L4	MFI	8.0:1	123 (165) @ 5600	237 (175) @ 4000	S	(Std.) 5-Speed Manual (Opt.) 3-Speed Auto	3.61 3.18

* Single / Dual:

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Engine Description/Carb.
Engine Code

2.0L (121) L4 LT2

ENGINE - GENERAL

Type & description (inline, V, angle, flat, location, front, mid, rear, transverse, longitudinal, sohc, dohc, ohv, hemi, wedge, pre-camber, etc.)	Incline, Front, Transverse	
Manufacturer	Chevrolet-Pontiac-GM of Canada (GM Do Brasil)	
No. of cylinders	4	
Bore	86 (3.38)	
Stroke	86 (3.38)	
Bore spacing (C / L to C / L)	93.0 (3.66)	
Cylinder block material & mass kg (lbs.) (machined)	Cast Iron	
Cylinder block deck height	216.0 (8.5)	
Cylinder block length	418 (16.5)	
Deck clearance (minimum) (above or below block)	0.36 Above 0.14 Below	
Cylinder head material & mass kg (lbs.)	Aluminum	
Cylinder head volume (cm ³)	43.3	
Cylinder liner material	None	
Head gasket thickness (compressed)	1.25 (.049)	
Minimum combustion chamber total volume (cm ³)	64.05	
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	
Exhaust manifold material & mass [kg (lbs.)]**	Cast Iron	
Fuel required unleaded, diesel, etc.	Unleaded	
Fuel antiknock index (R + M) + 2	87	
Engine mounts	Number	3
	Material and type (elastomeric, hydroelastolic, hydraulic damper, etc.)	Elastomeric
	Added isolation (sub-frame, crossmember, etc.)	None
Total dressed engine mass (wt) dry***	506.2 (229.6) Auto*	
	532.9 (241.7) Manual*	

Engine - Pistons

Material & mass, g (weight, oz.) - piston only	Cast Aluminum Alloy 310 ± 5 (10.9 ± .18)
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Engine - Camshaft

Location	Overhead Camshaft	
Material & mass kg (weight, lbs.)	Hardened Alloy Cast Iron	
Drive type	Chain / belt	Belt
	Width / pitch	20 (.78) x 9.525 (.375)

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

** Finished state.

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

* With Accessories Add 95.7 (+43.4)

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Engine Description/Carb.
Engine Code

2.0L (121) L4 LT3

ENGINE - GENERAL

Type & description (inline, V, angle, flat, location, front, mid, rear, transverse, longitudinal, sohc, dohc, ohv, hemi, wedge, pre-camber, etc.)	Inline, Front, Transverse	
Manufacturer	Brazil & Pontiac PLT 9	
No. of cylinders	4	
Bore	86 (3.39)	
Stroke	86 (3.39)	
Bore spacing (C/L to C/L)	93.0 (3.66)	
Cylinder block material & mass kg (lbs.) (machined)	Cast Iron	
Cylinder block deck height	216.0 (8.5)	
Cylinder block length	418 (16.5)	
Deck clearance (minimum) (above or below block)	0.36 Above 0.14 Below	
Cylinder head material & mass kg (lbs.)	Aluminum	
Cylinder head volume (cm ³)	43.3	
Cylinder liner material	None	
Head gasket thickness (compressed)	1.25 (.049)	
Minimum combustion chamber total volume (cm ³)	64.05	
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	
Exhaust manifold material & mass [kg (lbs.)]**	Cast Iron	
Fuel required unleaded, diesel, etc.	Unleaded	
Fuel antiknock index (R + M) + 2	87	
Engine mounts	Number	3
	Material and type (elastomeric, hydroelastic, hydraulic damper, etc.)	Elastomeric
	Added isolation (sub-frame, crossmember, etc.)	No
Total dressed engine mass (wt) dry***	506.2 (229.6) Auto*	
Engine - Pistons	532.9 (241.7) Manual*	
Material & mass, g (weight, oz.) - piston only	Cast Aluminum Alloy 310 + 5 (10.9 + .18)	
Engine - Camshaft		
Location	Overhead Camshaft	
Material & mass kg (weight, lbs.)	Hardened Alloy Cast Iron	
Drive type	Chain / belt	Belt
	Width / pitch	20 (.78) x 9.525 (0.38)

* 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: *With Accessories Add 95.7 (+43.4)

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Engine Description/Carb.
Engine Code

2.0L (121) L4 LT2

Engine - Valve System

Hydraulic lifters (std., opt., NA)	Standard
Valves	Number intake / exhaust
	4/4
	Head O.D. intake / exhaust
	43 (1.69)/36.5 (1.44)

Engine - Connecting Rods

Material & mass [kg., (weight, lbs.)]*	Cast Iron
Length (axes to axes) mm	

Engine - Crankshaft

Material & mass [kg., (weight, lbs.)]*	Nodular Cast Iron 16.2 (35.71)
End thrust taken by bearing (no.)	Three
Length & number of main bearings	Five
Seal (material, one, two piece design, etc.)	Front
	One Piece-Viton
	Rear
	One Piece-Viton

Engine - Lubrication System

Normal oil pressure [kPa (psi) at engine rpm]	448 (65) @ 2500 RPM
Type oil intake (floating, stationary)	Stationary
Oil filter system (full flow, part, other)	Full Flow
Capacity of c/case, less filter-refill-L (qt.)	3.5 (3.7)

Engine - Diesel Information

Diesel engine manufacturer		
Glow plug, current drain at 0°F		
Injector nozzle	Type	
	Opening pressure [kPa (psi)]	
Pre-chamber design		
Fuel in-jection 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	
Super charger - manufacturer	
Intercooler	

*Finished State

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Engine Description/Carb.
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Engine - Valve System

Hydraulic lifters (std., opt., NA)		Standard
Valves	Number intake / exhaust	4/4
	Head O.D. intake / exhaust	43 (1.69)/36.5 (1.44)

Engine - Connecting Rods

Material & mass [kg., (weight, lbs.)]*	Cast Iron
Length (axes E to E) mm	

Engine - Crankshaft

Material & mass [kg., (weight, lbs.)]*		Nodular Cast Iron 16.2 (35.71)
End thrust taken by bearing (no.)		Three
Length & number of main bearings		Five
Seal (material, one, two piece design, etc.)	Front	One Piece-Viton
	Rear	One Piece-Viton

Engine - Lubrication System

Normal oil pressure [kPa (psi) at engine rpm]	448 (65) @ 2500 RPM
Type oil intake (floating, stationary)	Stationary
Oil filter system (full flow, part, other)	Full Flow
Capacity of c/case, less filter-refill-L (qt.)	3.5 (3.7)

Engine - Diesel Information

Diesel engine manufacturer	
Glow plug, current drain at 0°F	
Injector nozzle	
Type	
Opening pressure [kPa (psi)]	
Pre-chamber design	
Fuel in-jection 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	Garrett
Super charger - manufacturer	None
Intercooler	None

*Finished State

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METRIC (U.S. Customary)Engine Description/Carb.
Engine Code

2.0L (121) L4 LT2

Engine - Cooling System

Coolant recovery system (std., opt., n.a.)	Standard
Coolant fill location (rad., bottle)	Recovery Tank
Radiator cap relief valve pressure (kPa (psi))	103.4 (15 psi)
Circulation thermostat	Type (choke, bypass) Choke
	Starts to open at °C (°F) 91°C (195°F)
Water pump	Type (centrifugal, other) Centrifugal
	GPM 1000 pump rpm 8.45
	Number of pumps One
	Drive (V-belt, other) Tooth Belt
	Bearing type Sealed Double Row
	Impeller material Cast Iron
	Housing material Aluminum
By-pass recirculation (type (inter., ext.))	External-Thru Intake Manifold Internal
Cooling system capacity	With heater-L(qt.) 7.4 (7.8)
	With air cond.-L(qt.) 7.6 (8.0)
	Opt. equipment (specify-L(qt.))
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
	Type (cross-flow, etc.) Cross Flow
	Construction (fin & tube mechanical, braze, etc.) Tube and Fin; Soldered
	Material, mass [kg (wgt, lbs.)]
	Width 387 (15.24)
	Height 600 (23.6)
	Thickness
	Fins per inch
Radiator end tank material	Copper/Brass
	Std., elec., opt. Electric
Fan	Number of blades & type (flex, solid, material)
	Diameter & projected width
	Ratio (fan to crankshaft rev.) Not Applicable
	Fan cutout type ECM Controlled
	Drive type (direct, remote) Direct - Electric Motor
	RPM at idle (elec.)
	Motor rating (wattage) (elec.) 100
	Motor switch (type & location) (elec.) Engine Block
	Switch point (temp., pressure) (elec.) on 108°C off 102.5°C
	Fan shroud (material)

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Engine Description/Carb.
Engine Code

2.0L
(121) L4 LT3

Engine - Cooling System

Coolant recovery system (std., opt., n.a.)	Standard		
Coolant fill location (rad., bottle)	Recovery Tank		
Radiator cap relief valve pressure [kPa (psi)]	103.4 (15 PSI)		
Circulation thermostat	Type (choke, bypass)		
	Starts to open at °C (°F)	91°C (195°F)	
Water pump	Type (centrifugal, other)		
	GPM 1000 pump rpm		
	Number of pumps		
	Drive (V-belt, other)		
	Bearing type		
	Impeller material		
	Housing material		
By-pass recirculation [type (inter., ext.)]	External - Thru Intake Manifold Internal		
Cooling system capacity	With heater-L(qt.)	7.4L (7.8)	
	With air cond.-L(qt.)	7.5 (7.9)	
	Opt. equipment [specify-L(qt.)]		
Water jackets full length of cyl. (yes, no)			
Water all around cylinder (yes, no)			
Water jackets open at head face (yes, no)			
Radiator core	Std., A/C, HD	Standard	A/C
	Type (cross-flow, etc.)	Cross Flow	
	Construction (fin & tube mechanical, braze, etc.)	Tube and Fin; Soldered	
	Material, mass [kg (wgt, lbs.)]	Copper/Brass 4.48 (9.9)	Copper/Brass 7.27 (16.0)
	Width	387.5 (15.25)	387.5 (15.25)
	Height	600.0 (23.6)	600.0 (23.6)
	Thickness	25.0 (.98)	40.0 (1.58)
	Fins per inch	20.3	14.5
Radiator end tank material	Copper/Brass		
	Std., elec., opt.	Electric	
Fan	Number of blades & type (flex, solid, material)	6 (Solid)*	
	Diameter & projected width	373 (14.7)	
	Ratio (fan to crankshaft rev.)	Not Applicable	
	Fan cutout type	ECM Controlled	
	Drive type (direct, remote)	Direct - Electric Motor	
	RPM at idle (elec.)	1800	
	Motor rating (wattage) (elec.)	150	
	Motor switch (type & location) (elec.)	Engine Block	
	Switch point (temp., pressure) (elec.)	On 109; Off 104	
Fan shroud (material)	Plastic		

* Mineral/Glass Filled Nylon

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Engine Description/Carb.
Engine Code

2.0L (121) L4 LT2

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		Rochester
<input checked="" type="checkbox"/> Carburetor no. of barrels		
Idle A/F mix.		
Fuel injection	Point of injection (no.)	Throttle Body
	Constant, pulse, flow	Pulse
	Control (electronic, mech.)	Electronic
	System pressure (kPa (psi))	69 KPA (10PSI)
Idle spd.-rpm (spec. neutral or drive and propane if used)	Manual	Automatically ECM Controlled No-Adjustment
		Automatically ECM Controlled No-Adjustment
	Automatic	Automatically ECM Controlled No-Adjustment
		Automatically ECM Controlled No-Adjustment
Intake manifold heat control (exhaust or water thermostatic or fixed)		Water - Fixed
Air cleaner type		Replaceable Paper Element
Fuel filter (type/location)		Replaceable/Inline Rear of Tank
<input checked="" type="checkbox"/> Fuel pump	Type (elec. or mech.)	Electric
	Location (eng., tank)	Tank
	Pressure range (kPa (psi))	Not Applicable
<input checked="" type="checkbox"/>	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.	NA
	Capacity [L (gallons)]	
	Location & material	
	Attachment	
Auxiliary tank	Opt., n.a.	NA
	Capacity [L (gallons)]	
	Location & material	
	Attachment	
	Selector switch or valve	
	Separate fill	

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Engine Description/Carb.
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2.0L (121) L4 LT3

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

Induction type: carburetor, fuel injection system, etc.		Multi Point
Manufacturer		Bosch
<input checked="" type="checkbox"/>	Carburetor no. of barrels	None
Idle A/F mix.		
Fuel injection	Point of injection (no.)	4
	Constant, pulse, flow	Pulse
	Control (electronic, mech.)	Electronic
	System pressure [kPa (psi)]	
Idle spd.-rpm (spec. neutral or drive and propane if used)	Manual	
	Automatic	
Intake manifold heat control (exhaust or water thermostatic or fixed)		
Air cleaner type		
Fuel filter (type/location)		Replaceable/Inline Rear of Tank
<input checked="" type="checkbox"/>	Fuel pump	See Page 6
<input checked="" type="checkbox"/>	Type (elec. or mech.)	
	Location (eng., tank)	
	Pressure range [kPa (psi)]	
	Flow rate at regulated pressure (L (gal)/hr @ kPa (psi))	58.28 (15.4) @ 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	
	Selector switch or valve	
	Separate fill	

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Engine Description/Carb.
Engine Code

2.0L
(121) L4 LT3

Vehicle Emission Control

Exhaust Emission Control	Type (air injection, engine modifications, other)		Engine Modifications
	Air Injection	Pump or pulse	
		Driven by	
		Air distribution (head, manifold, etc.)	
		Point of entry	
	Exhaust Gas Recirculation	Type (controlled flow, open orifice, other)	Back Pressure EGR
		Exhaust source	Exhaust Manifold
		Point of exhaust injection (spacer, carburetor, manifold, other)	Manifold
	Catalytic Converter	Type	Single Bed Pellet
		Number of	One
Location(s)		Underfloor	
Volume [L (in ³)]		2623.0 CM ³	
Substrate type		Alumina Pellet	
Noble metal type			
Noble metal concentration (g/cm ³)			
Crankcase Emission Control	Type (ventilates to atmosphere, induction system, other)		Induction System
	Energy source (manifold vacuum, carburetor, other)		Manifold Vacuum
	Discharges (to intake manifold, other)		Intake Manifold
	Air inlet (breather cap, other)		Air Cleaner
Evaporative Emission Control	Vapor vented to (crankcase, canister, other)	Fuel tank	Canister
	Vapor storage provision	Carburetor	Canister
Electronic system	Closed loop (yes/no)		Yes
	Open loop (yes/no)		No

Engine - Exhaust System

Type (single, single with cross-over, dual, other)		Tri-Flow with Dual Tailpipes
Muffler no. & type (reverse flow, straight thru, separate resonator) Material & Mass [kg (weight lbs)]		One Reverse Flow
Resonator no. & type		None
Exhaust pipe	Branch o.d., wall thickness	None
	Main o.d., wall thickness	57.1 O.D. x 1.37 (2.25 x .054)
	Material & Mass [kg (weight lbs)]	Stainless Steel GM 6125-M 3.64 (8.02)
Intermediate pipe	o.d. & wall thickness	50.8 O.D. x 1.37 (2 O.D. x .054)
	Material & Mass [kg (weight lbs)]	Aluminized Steel Tubing GM 6178-M 3.64 (8.02)
Tail pipe	o.d. & wall thickness	50.8 O.D. x 1.09 (2 O.D. x .043)
	Material & Mass [kg (weight lbs)]	Aluminum Coated Steel Tubing

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Engine Description/Carb.
Engine Code2.0L
(121) 14 LT2

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

Manual 3-speed (manufacturer/country)	Not Available
Manual 4-speed (manufacturer/country)	" "
Manual 5-speed (manufacturer/country)	Standard Daikin (MK7)
Automatic (manufacturer/country)	Optional Hydramatic (MD9)
Automatic overdrive (manufacturer/country)	Not Available

Manual Transmission/Transaxle

Number of forward speeds		5
Gear ratios	1st	3.91
	2nd	2.15
	3rd	1.45
	4th	1.03
	5th	0.74
	Reverse	3.58
Synchronous meshing (specify gears)		All Forward Gears
Shift lever location		Floor
Trans. case mat'l. & mass kg (lbs)*		Aluminum
Lubricant	Capacity (L (pt.))	1.9 (4.0)
	Type recommended	STF - Synchromesh Transmission Fluid #9985648

Clutch (Manual Transmission)

Clutch manufacturer		Daikin
Clutch type (dry, wet; single, multiple disc)		Dry Disc
Linkage (hydraulic, cable, rod, lever, other)		Hydraulic
Max. pedal effort (nom. spring load, new) N (lbs)	Depressed	133.4 (30.0)
	Released	115.6 (26.0)
Assist (spring, power/percent, nominal)		Not Available
Type pressure plate springs		Diaphragm
Total spring load (nominal, new) N (lbs)		5391 (1212)
Clutch facing	Facing mfr. & material coding	Daikin
	Facing material & construction	Non-asbestos
	Rivets per facing	16
	Outside x inside dia. (nominal)	215.0 x 154.0 (8.46 x 6.06)
	Total eff. area (cm ² (in. ²))	176.6 (23.37)
	Thickness (pressure plate side/fly wheel side)	3.5 (.14) Pressure Plate Side, 3.2 (.13) Flywheel Side
	Rivet depth (pressure plate side/fly wheel side)	1.3 mm (0.05 In)/1.2 mm (0.05 In)
	Engagement cushion method	Driven Plate, Wave Spoke Springs
Release bearing type & method lub.		Self Centering, Angular Contact Ball Bearing Prepacked and Sealed
Torsional damping method, springs, hysteresis		Coil Springs with Non-metal Friction Control

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

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Engine Description/Carb.
Engine Code

2.0L
(121) L4 LT3 Turbo

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)	Standard Muncie (282) (MG1)
Automatic (manufacturer/country)	Optional Hydramatic (MD9)
Automatic overdrive (manufacturer/country)	Not Available

Manual Transmission/Transaxle

Number of forward speeds	5
Gear ratios	1st 3.50
	2nd 2.19
	3rd 1.38
	4th .94
	5th .72
	Reverse 3.41
Synchronous meshing (specify gears)	All Forward Gears
Shift lever location	Floor - Console
Trans. case mat'l. & mass kg (lbs)*	Aluminum
Lubricant	Capacity [L (pt.)] 1.9 (4.0)
	Type recommended STF - Synchromesh Trans Fluid 9985648

Clutch (Manual Transmission)

Clutch manufacturer	Borg Warner Automotive
Clutch type (dry, wet; single, multiple disc)	Single Dry Disc
Linkage (hydraulic, cable, rod, lever, other)	Hydraulic
Max. pedal effort (nom. spring load, new) N (lbs)	Depressed 120 (27)
	Released 80 (18)
Assist (spring, power/percent, nominal)	None
Type pressure plate springs	Belleville Spring (Diaphragm)
Total spring load (nominal, new) N (lbs)	5540 (1245)
Clutch facing	Facing mfr. & material coding Valeo F-202
	Facing material & construction Non-asbestos
	Rivets per facing 16
	Outside x inside dia. (nominal) 215.5 x 152.5 (8.48 x 6.00)
	Total eff. area [cm ² (in. ²)] 183 (28.3)
	Thickness (pressure plate side/fly wheel side) 3.56 (.14) Pressure Plate 3.30 (.13) Flywheel
	Rivet depth (pressure plate side/fly wheel side)
	Engagement cushion method Driven Plate Cushion Spring
Release bearing type & method lub.	Prelubed and Sealed, Self Centering, Angular Contact Ball Bearing
Torsional damping method, springs, hysteresis	Coil Springs with Metallic Friction Washers

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

MVMA Specifications Form

METRIC (U.S. Customary)

Vehicle Line Sunbird
Model Year 1989 Issued _____ Revised (e) _____

Engine Description/Carb.
Engine Code

2.0L (121) L4 LT2

Automatic Transmission/Transaxle

Trade name	Turbo Hydramatic (THM 125C) (MD9)	
Type and special features (describe)	3-Speed with Torque Converter	
Selector	Location	Floor
	Ltr./No. designation	PRND21
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)]		123 (77)
Max. kickdown speed - drive range [km/h (mph)]		118 (74)
Min. overdrive speed [km/h (mph)]		N/A (No 4th Gear)
Torque converter	Number of elements	Three
	Max. ratio at stall	2.38
	Type of cooling (air, liquid)	Liquid
	Nominal diameter	245 (9.65)
	Capacity factor "K"	240
Lubricant	Capacity [refill L (pt.)]	7.2 (15) With Cooler and Cooler Lines Full
	Type Recommended	ATF Dexron II
Oil cooler (std., opt., NA, internal, external, air, liquid)		Std. External, Oil to Engine Coolant
Transmission case material & mass kg (lbs)**		Aluminum 73.1 (161.16)

Axle or Front Wheel Drive Unit

Type (front, rear)	Front	
Description	Integral with Transmission	
Limited slip differential (type)	None Available	
Drive pinion offset	N/A	
Drive pinion (type)	N/A	
No. of differential pinions	Two	
Pinion/differential adjustment (shim, other)	N/A	
Pinion/differential bearing adjustment (shim, other)	N/A	
Driving wheel bearing (type)	Integral Double Row Ball Bearing	
Lubricant	Capacity [L (pt.)]	N/A
	Type recommended	ATF Dexron II

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

Axle ratio (or overall top gear ratio)		3.18
No. of teeth	Pinion	N/A
	Ring gear or gear	N/A
Ring gear o.d.		None
Transaxle	Transfer gear ratio	1.12
	Final drive ratio	2.84

* Input speed + $\sqrt{\text{torque}}$

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

MVMA Specifications Form

Vehicle Line SunbirdModel Year 1989

Issued _____

Revised (e) _____

METRIC (U.S. Customary)

Engine Description/Carb.
Engine Code

2.0L (121) L4 LT3

Automatic Transmission/Transaxle

Trade name		Turbo Hydramatic (THM 125C) (MD9)
Type and special features (describe)		3-Speed with Torque Converter
Selector	Location	Floor
	Ltr./No. designation	PRND21
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)]		123 (77)
Max. kickdown speed - drive range [km/h (mph)]		118 (74)
Min. overdrive speed [km/h (mph)]		N/A (No 4th Gear)
Torque converter	Number of elements	Three
	Max. ratio at stall	2.38
	Type of cooling (air, liquid)	Liquid
	Nominal diameter	245 (9.65)
	Capacity factor "K"	240
Lubricant	Capacity [refill L (pt.)]	7.2 (15) With Cooler and Cooler Lines Full
	Type Recommended	ATF Dexron II
Oil cooler (std., opt., NA, internal, external, air, liquid)		Std. External, Oil to Engine Coolant
Transmission case material & mass kg (lbs)**		Aluminum 73.1 (161.16)

Axle or Front Wheel Drive Unit

Type (front, rear)		Front
Description		Integral with Transmission
Limited slip differential (type)		None Available
Drive pinion offset		N/A
Drive pinion (type)		N/A
No. of differential pinions		Two
Pinion/differential adjustment (shim, other)		N/A
Pinion/differential bearing adjustment (shim, other)		N/A
Driving wheel bearing (type)		Integral Double Row Ball Bearing
Lubricant	Capacity [L (pt.)]	N/A
	Type recommended	ATF Dexron II

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

Axle ratio (or overall top gear ratio)		3.18
No. of teeth	Pinion	N/A
	Ring gear or gear	N/A
Ring gear o.d.		None
Transaxle	Transfer gear ratio	1.12
	Final drive ratio	2.84

* Input speed + $\sqrt{\text{torque}}$

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

MVMA Specifications Form

METRIC (U.S. Customary)

Vehicle Line Sunbird

Model Year 1989

Issued _____

Revised (●) _____

Engine Description/Carb.
Engine Code

2.0L (121) L4 LT2

Axle Shafts – Front Wheel Drive

Manufacturer and number used

Saginaw, Two

Type (straight, solid bar,
tubular, etc.)

Left

Straight Solid Bar

Right

Straight Solid Bar

Outer
diam. x
length* x
wall
thickness

Manual transaxle

Left

23.9 x 320.0 (.94 x 12.59)

Right

23.9 x 663.0 (.94 x 26.22)

Automatic transaxle

Left

23.9 x 311.0 (.94 x 12.24)

Right

23.9 x 364.3 (.94 x 14.34)

Optional transaxle

Left

-

Right

-

Slip
yoke

Type

None

Number of teeth

None

Spline o.d.

None

Universal
joints

Make and mfg. no.

Inner

Saginaw

Outer

Saginaw

Number used

Two on Each Drive Shaft

Type, size, plunge

Inner

Tripot, 61.0, Plunge

Outer

RZEPPA - Fixed

Attach (u-bolt, clamp, etc.)

Retaining Ring

Bearing

Type (plain,
anti-friction)

Ball and Roller (Inner)
Ball (Outer)

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

All Wheel / 4 Wheel Drive

Description and type (part-time, full-time, 2/4 shift
while moving, mechanical, elect., chain/gear, etc.)

Transfer
case

Manufacturer

Type

Model

Low-range gear ratio

System disconnect (describe)

Center
differential

Type (bevel, planetary, w or w/o
viscous bias, torsen, etc.)

Torque split (% front/rear)

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

MVMA Specifications Form

Vehicle Line Sunbird

Model Year 1989

Issued _____

Revised (e) _____

METRIC (U.S. Customary)

Engine Description/Carb.
Engine Code

2.0L
(121) L4 LT3

Axle Shafts – Front Wheel Drive

Manufacturer and number used		Saginaw, Two	
Type (straight, solid bar, tubular, etc.)	Left	Straight Solid Bar	
	Right	Straight Solid Bar	
Outer diam. x length* x wall thickness	Manual transaxle	Left	27.2 x 313.0 (1.07 x 12.32)
		Right	27.2 x 418.0 (1.07 x 16.46)
	Automatic transaxle	Left	23.9 x 311.0 (.94 x 12.24)
		Right	23.9 x 364.3 (.94 x 14.34)
	Optional transaxle	Left	-
		Right	-
Slip yoke	Type	None	
	Number of teeth	None	
	Spline o.d.	None	
Universal joints	Make and mfg. no.	Inner	Saginaw
		Outer	Saginaw
	Number used	Two on Each Drive Shaft	
	Type, size, plunge	Inner	Tripot, 66.0 and 61.0, Plunge
		Outer	RZEPPA - Fixed
	Attach (u-bolt, clamp, etc.)	Retaining Ring	
	Bearing	Type (plain, anti-friction)	Ball and Roller (Inner) Ball (Outer)
		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		

All Wheel / 4 Wheel Drive

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

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

MVMA Specifications Form

METRIC (U.S. Customary)

Vehicle Line Sunbird
Model Year 1989 Issued _____ Revised (●) _____

Body Type And/Or
Engine Displacement

ALL

☒ Suspension - General Including Electronic Controls

Car leveling	Standard/optional/not avail.	NA
	Manual/automatic control	NA
	Type (air/hydraulic)	NA
	Primary/assist spring	
	Rear only/4 wheel leveling	
	Single/dual rate spring	
	Single/dual ride heights	
	Provision for jacking	Body Jack & Pads on Rocker
Shock absorber damping controls	Standard/option/not avail.	
	Manual/automatic control	
	Number of damping rates	
	Type of actuation (manual/electric motor/air, etc.)	
	s e n s o r s	
	Lateral acceleration	
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 Sprint
Travel*	Full jounce	95 (3.74) (From Design)
	Full rebound	84 (3.31) (From Design)
Spring	Type (coil, leaf, other) & material	Coil - Steel
	Insulators (type & material)	Top & Bottom - Rubber
	Size (coil design height & i.d., bar length x dia.)	Spring Computer Selected - Varies with Option Content
	Spring rate [N/mm (lb./in.)]	20 N/mm (Base Car)
	Rate at wheel [N/mm (lb./in.)]	17.5 N/mm (Base Car)
Stabilizer	Type (link, linkless, frameless)	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) & material		Coil - Steel
	Size (length x width, coil design height & i.d., bar length & dia.)		Spring Computer Selected - Varies with Option Content
	Spring rate [N/mm (lb./in.)]		23 N/mm @ Curb - Variable (Base Car)
	Rate at wheel [N/mm (lb./in.)]		11.1 N/mm @ Curb - Variable (Base Car)
	Insulators (type & material)		Top & Bottom - Rubber
	H leaf	No. of leaves	NA
		Shackle (comp. or tens.)	NA
Stabilizer	Type (link, linkless, frameless)		NA (Base Car)
	Material & bar diameter		NA (Base Car)
Track bar (type)			NA

* Define load condition:

MVMA Specifications Form

METRIC (U.S. Customary)

Vehicle Line Sunbird

Model Year 1989

Issued

Revised (●)

Body Type And/Or
Engine Displacement

ALL

Brakes - Service

Description			Power Assisted Hydraulic Brakes
Manufacturer and brake type (std., opt., n.a.)	Front (disc or drum)		Std. - Disc
	Rear (disc or drum)		Std. - Drum
Valving type (proportion, delay, metering, other)			Proportioning, Diagonal Split Circuit
Power brake (std., opt., n.a.)			Std.
Booster type (remote, integral, vac., hyd., etc.)			Tandem Vacuum
Vacuum	Source (inline, pump, etc.)		Inline
	Reservoir (volume in. ³) and source		None
	Pump-type (elec, gear driven, belt driven)		NA
Traction control	Operational speed range		NA
	Type engine intervention (electronic, mech.)		
Anti-lock device	Front/rear (std., opt., n.a.)		
	Manufacturer		
	Type (electronic, mech.)		NA
	Number sensors or circuits		
	Number anti-lock hydraulic circuits		
	Integral or add-on system		
	Yaw control (yes, no)		
Hydraulic power source (elect., vac. mtr., pwr. strg.)			
Effective area [cm ² (in. ²)]*			309 (47.9)
Gross lining area [cm ² (in. ²)]**(F/R)			381 (59.1)
Swept area [cm ² (in. ²)]*** (F/R)			1624 (251.8)
Rotor	Outerworking diameter	F/R	Front - 247 (9.72)
	Inner working diameter	F/R	
	Thickness	F/R	Front - 22.4 (.88)
	Material & type (vented/solid)	F/R	Front - Vented Cast Iron
Drum	Diameter & width	F/R	Front - 200 x 45 (7.87 x 1.77)
	Type and material	F/R	Cast Iron
Wheel cylinder bore			Front - 57 (2.24) Rear - 16 (.63)
Master cylinder	Bore/stroke	F/R	Bore - 22.2 (.874) Stroke 35.7 (1.41)
Pedal arc ratio			3.7:1
Line pressure at 445 N(100 lb.) pedal load [kPa (psi)]			10,900
Lining clearance			F/R Both - Self Adjusting
Brake lining	Front wheel	Bonded or riveted (rivets/seg.)	Inboard Integrally Molded - Inboard and Outboard
		Rivet size	NA
		Manufacturer	Delco Moraine
		Lining code*****	128 FE
		Material	Semi-Metallic
		**** Primary or out-board	116.7 x 47 x 10.92
		Size Secondary or in-board	125 x 47 x 10.2
	Shoe thickness (no lining)		4.72 IB (.186), 3.14 OB (1.23)
	Rear wheel	Bonded or riveted (rivets/seg.)	Riveted
		Manufacturer	Inland Division
		Lining code*****	235 FE
		Material	Organic
		**** Primary or out-board	167.7 x 43.9 x 6 mm
		Size Secondary or in-board	194 x 43.9 x 7 mm
Shoe thickness (no lining)		2.75 (.11)	

*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.

MVMA Specifications Form

METRIC (U.S. Customary)

Vehicle Line Sunbird

Model Year 1989

Issued

Revised (e)

Body Type And/Or
Engine Displacement

ALL

Tires And Wheels (Standard)

Tires	Size (load range, ply)		P185/80R13
	Type (bias, radial, steel, nylon, etc.)		Steel Belted Radial
	Inflation pressure (cold) for recommended max. vehicle load	Front (kPa (psi))	240 (35)
		Rear (kPa (psi))	240 (35)
	Rev./mile—at 70 km/h (45 mph)		526 (847)
Wheels	Type & material		Stamped/Steel
	Rim (size & flange type)		13 x 5.5 JB
	Wheel offset		48.0 (1.9)
	Attachment	Type (bolt or stud)	Stud
		Circle diameter	100.0 (3.94)
		Number & size	5 - 12
Spare	Tire and wheel		T115/70D - 14, Wheel Diameter 14 x 4, Inflation 415 (60)
	Storage position & location (describe)		Under Deck of Luggage Compartment

Tires And Wheels (Optional)

Tire size (load range, ply)		P195/70R14
Type (bias, radial, steel, nylon, etc.)		Steel Belted Radial
Wheel (type & material)		Stamped Steel
Rim (size, flange type and offset)		14 x 6 x 47
Tire size (load range, ply)		
Type (bias, radial, steel, nylon, etc.)		
Wheel (type & material)		Aluminum
Rim (size, flange type and offset)		13 x 5.5 JB
Tire size (load range, ply)		P215/60R14
Type (bias, radial, steel, nylon, etc.)		Radial
Wheel (type & material)		Hi-Tech, Aluminum
Rim (size, flange type and offset)		14 x 6 JJ 47 mm
Tire size (load range, ply)		
Type (bias, radial, steel, nylon, etc.)		
Wheel (type & material)		
Rim (size, flange type and offset)		
Spare tire and wheel size (if configuration is different than road tire or wheel, describe optional spare tire and/or wheel location & storage position)		T125/70D - 15, Wheel Diameter 14 x 4, Inflates 415 (60)
		Under Deck of Luggage Compartment

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)	
	Drum diameter	
	Lining size (length x width x thickness)	

MVMA Specifications Form

Vehicle Line Sunbird

Model Year 1989

Issued _____

Revised (e) _____

METRIC (U.S. Customary)

Body Type And/Or
Engine Displacement

ALL

Steering

Manual (std., opt., n.a.)		Std.	
Power (std., opt., n.a.)		Opt.	
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.)	11.3 (37.2)
		Curb to curb (l. & r.)	10.5 (34.3)
	Inside rear	Wall to wall (l. & r.)	5.8 (19.2)
		Curb to curb (l. & r.)	5.9 (19.4)
Scrub Radius*			
Manual	Gear	Type	Rack & Pinion
		Manufacturer	Saginaw Division
		Ratios	-
	Gear	Overall	22.0:1
No. wheel turns (stop to stop)		3.96	
Power	Type (coaxial, elec., hyd., etc.)		Rack & Pinion w/Integral Unit
	Manufacturer		Saginaw Division
	Gear	Type	Rack & Pinion
		Ratios	-
		Gear	Overall
	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°
	Bearings (type)	Upper	Ball Bearings
		Lower	Ball Joint
		Thrust	Incorporated in Upper Bearing
Steering spindle & joint type		McPherson Strut	
Wheel spindle/hub	Diameter	Inner bearing	N/A
		Outer bearing	N/A
	Thread (size)		M20 x 1.5
	Bearing (type)		Integral Double Row Ball, Permanently Lubed

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

**See Page 22

MVMA Specifications Form

METRIC (U.S. Customary)

Vehicle Line Sunbird

Model Year 1989

Issued _____

Revised (●) _____

Body Type And/Or
Engine Displacement

ALL

Wheel Alignment

Front wheel at curb mass (wt.)	Service checking	Caster (deg.)	-0.8° to 4.2° Cross Car Must be Within 0.75°
		Camber (deg.)	-0.2° to 1.8° Cross Car Must be Within 1.0°
		Toe-in (outside track-mm (in.))	-.3° to +.3° Sum Toe
	Service reset*	Caster	-0.8° to 4.2° Cross Car Must be Within 0.75°
		Camber	-0.2° to 1.8° Cross Car Must be Within 1.0°
		Toe-in	-.2° to +.2° (Degrees Per Wheel)
	Periodic M.V. inspection	Caster	Not Applicable
		Camber	Not Applicable
		Toe-in	Not Applicable
Rear wheel at curb mass (wt.)	Service checking	Camber (deg.)	Not Applicable
		Toe-in (outside track-mm (in.))	Not Applicable
	Service reset*	Camber	Not Applicable
		Toe-in	Not Applicable
	Periodic M.V. inspection	Camber	Not Applicable
		Toe-in	Not Applicable

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

Electrical - Instruments and Equipment

Speedometer	Type (analog, digital, std., opt.)	Electronic - Analog Dial
	Trip odometer (std., opt., n.a.)	Optional
EGR maintenance indicator		Not Available
Charge indicator	Type	Telltale Generator Output Voltage
	Warning device (light, audible)	Telltale, Gage Optional
Temperature indicator	Type	Over Temp Sender/Switch
	Warning device (light, audible)	Gage Standard with Check Gage T.T.
Oil pressure indicator	Type	Telltale
	Warning device (light, audible)	Telltale Standard, Gage with Check Gage T.T. Optional
Fuel indicator	Type	Electric Gage
	Warning device (light, audible)	Not Available
Windshield wiper	Type (standard)	Electric 2-Speed
	Type (optional)	Pulse Wiper
	Blade length	430 (16)
	Swept area (cm ² (in. ²))	5074.2 (787) Coupe, 5085 (788) Sedan
Windshield washer	Type (standard)	Electric Pump Mounted on Reservoir Bottle
	Type (optional)	None
	Fluid level indicator (light, audible)	None
Rear window wiper, wiper/washer (std., opt., n.a.)		Not Available
Horn	Type	Electric Vibrating
	Number used	One
Other	Tachometer	Optional
	High Beam, Turn Signals	Telltale
	Brake, Fasten Belts	Telltale
	Service Engine Soon	Telltale

Turbo Boost

Included with Turbo Option

MVMA Specifications Form

Vehicle Line SunbirdModel Year 1989

Issued _____

Revised (e) _____

METRIC (U.S. Customary)

Engine Description/Carb.
Engine Code2.0L
(121) L4 LT3-Turbo

Electrical – Supply System

Battery	Manufacturer	Delco Remy
	Model, std., (opt.)	1981601
	Voltage	12V
	Amps at 0°F cold crank	630 CCA
	Minutes-reserve capacity	90 RC
	Amp/hrs. - 20 hr. rate	54 AH
	Location	Underhood Front
Alternator	Manufacturer	Delco Remy
	Rating (idle/max. rpm) *	28/74, 1101321 or 36/100 1101145
	Ratio (alt. crank/rev.)	2.22:1
	Output at idle (rpm, park)	900 RPM 45 AMPS 27°C, 59 AMPS at 27°C
Regulator	Optional (type & rating)	None
	Type	Integral to Alternator

Electrical – Starting System

Start, motor	Manufacturer	
	Current drain at 0°F	10455021 379 Amps
	Power rating [kw (hp)]	
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)	
Coil	Manufacturer	
	Model	
	Current	Engine stopped – A
		Engine idling – A
Spark plug	Manufacturer	
	Model	
	Thread (mm)	
	Tightening torque [N·m (lb, ft)]	
	Gap	
Distributor	Number per cylinder	
	Manufacturer	
	Model	

Electrical – Suppression

Locations & type	
------------------	--

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

MVMA Specifications Form

METRIC (U.S. Customary)

Vehicle Line Sunbird

Model Year 1989

Issued

Revised (●)

Engine Description/Carb.
Engine Code

2.0L
(121) L4 LT2

Electrical - Supply System

Battery	Manufacturer	Delco Remy
	Model, std., (opt.)	1981601
	Voltage	12V
	Amps at 0°F cold crank	630 CCA
	Minutes-reserve capacity	90 RC
	Amp/hrs. - 20 hr. rate	54 AH
	Location	Underhood Front
Alternator	Manufacturer	Delco Remy
	Rating (idle/max. rpm)	28/74 1101321
	Ratio (alt. crank/rev.)	2.22:1
	Output at idle (rpm, park)	45 Amps at 27°C 900 RPM
	Optional (type & rating)	None
Regulator	Type	Integral to Alternator

Electrical - Starting System

Start, motor	Manufacturer	
	Current drain at 0°F	10455021/379 Amps
	Power rating [kw (hp)]	
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)	
Coil	Manufacturer	
	Model	
	Current	Engine stopped - A
		Engine idling - A
Spark plug	Manufacturer	
	Model	
	Thread (mm)	
	Tightening torque [N-m (lb, ft)]	
	Gap	
	Number per cylinder	
Distributor	Manufacturer	
	Model	

Electrical - Suppression

Locations & type

MVMA Specifications Form

METRIC (U.S. Customary)

Vehicle Models Sunbird

Model Year 1989

Issued

Revised (e)

Body Type

Body

Structure

Unitized body construction including front end structure with bolted-on fenders and hood.

☒ Bumper system
front - rear

Bumper fascias are attached to steel impact bar and dual enersorbers rear and plastic honeycomb energy absorber front for collision energy absorption. (Meets GM 5 MPH impact standard.)

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)		Acrylic Lacquer or Base Coat/Clear Coat Enamel
Hood	Material & mass	
	Hinge location (front, rear)	Rear
	Type (counterbalance, prop)	Prop Rod - Single Pivot Hinge
	Release control (internal, external)	Internal
Trunk lid	Material & mass	
	Type (counterbalance, other)	Torque Rods on Coupe and Sedan
	Internal release control (elec., mech., n.a.)	Electrical (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
		Left Topside of I/P

MVMA Specifications Form

METRIC (U.S. Customary)

Vehicle Line Sunbird
 Model Year 1989 Issued _____ Revised (●) _____

Body Type

ALL

Restraint System

Seating Position			Left	Center	Right
Active	Type & description (lap & shoulder belt, lap belt, etc.) Standard / optional	First seat	Lap/Shoulder Combination	Not Available	Lap/Shoulder Combination
		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			
		Second seat			
		Third seat			

Glass	SAE Ref. No.	37	69
Windshield glass exposed surface area [cm ² (in. ²)]	S1	7487 (1161)	7487 (1161)
Side glass exposed surface area [cm ² (in. ²)] - total 2-sides	S2	9050 (1403)	10678 (1655)
Backlight glass exposed surface area [cm ² (in. ²)]	S3	5154 (799)	5691 (882)
Total glass exposed surface area [cm ² (in. ²)]	S4	21691 (3363)	23856 (3698)
Windshield glass (type)		Curved - Laminated Float	
Side glass (type)		Curved - Tempered Float	
Backlight glass (type)		Curved - Tempered Float	

Lamps and Headlamp Locations JB Models

Headlamps	Description - sealed beam, halogen, replaceable bulb, etc.	Replaceable Bulb - 2 Lamps - 2 Bulbs Each
	Shape	Rectangular
	Lo-beam type (2A1, 2B1, 2C1, etc.)	9006
	Quantity	2
	Hi-beam type (1A1, 2A1, 1C1, 2C1, etc.)	9005
	Quantity	2

Frame

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

METRIC (U.S. Customary)

Vehicle Line Sunbird
 Model Year 1989 Issued _____ Revised (•) _____

Body Type

☒ Restraint System

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

Glass	SAE Ref. No.	
		67
Windshield glass exposed surface area [cm ² (in. ²)]	S1	7487 (1161)
Side glass exposed surface area [cm ² (in. ²)] - total 2-sides	S2	7794 (1208)
Backlight glass exposed surface area [cm ² (in. ²)]	S3	4671 (724)
Total glass exposed surface area [cm ² (in. ²)]	S4	19952 (3093)
Windshield glass (type)		Curved - Laminated Float
Side glass (type)		Curved - Tempered Float
Backlight glass (type)		Super Ultralight Plastic

☒ Lamps and Headlamp Locations JD & JU Models

Headlamps	Description - sealed beam, halogen, replaceable bulb, etc.	Sealed Beam
	Shape	Rectangular
	Lo-beam type (2A1, 2B1, 2C1, etc.)	LF
	Quantity	2
	Hi-beam type (1A1, 2A1, 1C1, 2C1, etc.)	UF
	Quantity	2

Frame

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

METRIC (U.S. Customary)

Vehicle Line Sunbird
 Model Year 1989 Issued _____ Revised (●) _____

Body Type

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

<input checked="" type="checkbox"/>	Air conditioning (manual, auto. temp control)	(C60) Opt. Manual
	Clock (digital, analog)	Part of Radio Package
	Compass/thermometer	
	Console (floor, overhead)	(D06) & (D07) Std. JU Opt. JB & JD Floor
	Defroster, elec. backlight	(C49) Opt.
Electronic	Diagnostic monitor (integrated, individual)	
	Instrument cluster (list instruments)	(UH7) Std. JB Temp; (UB3) Opt. JU Oil, Temp, Volts, Trip Odom. & Tach.; (UB0) Std. JU Opt. JD Oil, Temp, Tach, & Turbo Boost; (U39) Std. JD Opt. JB Oil, Temp, Volts & *
	Keyless entry	
	Tripminder (avg. spd., fuel)	
	Voice alert (list items)	
	Other	
	Fuel door lock (remote, key, electric)	
Lamps	Auto head on/off delay, dimming	
	Cornering	
	Courtesy (map, reading)	(U27) Opt. (U29) Opt. (U25) Opt.
	Door lock, ignition	
	Engine compartment	
	Fog	
	Glove compartment	
	Trunk	(U25) Opt.
	Illuminated entry system (list lamps, activation)	
<input checked="" type="checkbox"/>	Other	
Mirrors	Day/night (auto. man.)	
	L.H. (remote, power, heated)	(D51) Std. JB & JD Dir. (D35) Std. JU Opt. JB & JD Remote
	R. H. (convex, remote, power, heated)	(D35) Std. JU Opt. JB & JD Direct
	Visor vanity (RH / LH, illuminated)	
<input checked="" type="checkbox"/>	Navigation system (describe)	
	Parking brake-auto release (warning light)	

* Trip Odom.

MVMA Specifications Form

METRIC (U.S. Customary)

Vehicle Line Sunbird
 Model Year 1989 Issued _____ Revised (●) _____

Body Type

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

Power equipment	Deck lid (release, pull down)		(A90) Opt Release
	Door locks (manual, automatic, describe system)		(AU3) Std. 67 Opt. JB, JD & JU37 Electric
	Seats	2 - 4 - 6 way, etc.	
		Reclining (R.H., L.H.)	(AR9) Std.
		Memory (R.H., L.H., preset, recline)	
		Lumbar, hip, thigh, support	
		Heated (R.H., L.H., other)	
	Side windows		(A31) Std. 67 Opt. JB, JD & JU37
	Vent windows		
	Rear windows		
Radio systems	Antenna (location, whip, w/shield, power)		(US6) Std. Fixed RH Front Fender
	Standard	AM, FM, stereo, tape, compact disc, graphic equalizer, theft deterrent, radio prep package, headphone jacks, etc.	(UM7) AM/FM Stereo, Seek/Scan, Clock & ETR
	Optional		(UN6) AM/FM Stereo, Seek/Scan, Clock, ETR & Cassette (U1C) AM/FM Stereo, Seek/Scan, Clock, ETR & Compact Disc
	Speaker (number, location)		(U66) Std. 4 Dash & Rear Quarter
	Roof open air fixed (flip-up, sliding, "T")		(AD3) Opt. Hinged
Speed control device		(K34) Opt.	
Speed warning device (light, buzzer, etc.)			
Tachometer (rpm)		Opt.	
Telephone system (describe)			
Theft deterrent system			

MVMA Specifications Form

Vehicle Models Sunbird

Model Year 1989

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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	SAE Ref. No.	COUPE & ALL	CONVERTIBLE	SEDANS
Width				
Tread (front)	W101	1412 (55.6)		
Tread (rear)	W102	1402 (55.2)		
Vehicle width	W103	1685 (66.3)		
Body width at Sg RP (front)	W117	1652 (65.0)		
Vehicle width (front doors open)	W120	3684 (145.0)		3218 (126.7)
Vehicle width (rear doors open)	W121	Not Applicable		2832 (111.5)
Front fender overall width	W106	1664 (65.5)		
Rear fender overall width	W107	1677 (66.0)		1685 (66.3)
Turn-in angle (deg.)	W122	21.5°		
Vehicle width including mirrors		1862 (73.3)		

Length

Wheelbase	L101	2571 (101.2)		
Vehicle length	L103	4604 (181.3)		
Overhang (front)	L104	1022 (40.2)		
Overhang (rear)	L105	1011 (39.8)		
Upper structure length	L123	2335 (91.9)	2340 (92.1)	2363 (93.0)
Rear wheel C/L "X" coordinate	L127	2354 (92.7)		
Cowl point "X" coordinate	L125	247 (9.7)		245 (9.6)
Front end length at centerline	L126	1086 (42.8)		
Rear end length at centerline	L129	570 (22.4)	590 (23.2)	595 (23.4)

Height **

Passenger distribution (front/rear)	PD1.2.3	2/0		**
Trunk/cargo load		0		**
Vehicle height	H101	1321 (52.0)	1323 (52.1)	1361 (53.6)
Cowl point to ground	H114			
Deck point to ground	H138	958 (37.7)		944 (37.2)
Rocker panel-front to ground	H112	223 (8.8)	182 (7.2)	191 (7.5)
Bottom of door closed-front to ground	H133	284 (11.2)		283 (11.1)
Rocker panel-rear to ground	H111	206 (8.1)		205 (8.1)
Bottom of door closed-rear to ground	H135	Not Applicable		282 (11.1)
Windshield slope angle	H122	58.5°	58.75°	55.0°
Backlight slope angle	H121	51.0°	54.5°	49.0°

Ground Clearance **

Front bumper to ground	H102	242 (9.5)		
Rear bumper to ground	H104	287 (11.3)		
Bumper to ground (front at curb mass (wt.))	H103	256 (10.1)		
Bumper to ground (rear at curb mass (wt.))	H105	317 (12.5)		
Angle of approach (degrees)	H106	18°		
Angle of departure (degrees)	H107	22°		
Ramp breakover angle (degrees)	H147	14°		
Axle differential to ground (front / rear)	H153	172 (6.8)		
Min. running ground clearance	H156	141 (5.6)		
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 FormVehicle Models SunbirdModel Year 1989

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Revised (●) _____

METRIC (U.S. Customary)**Vehicle Dimensions** See Key Sheets for definitions

Body Type

SAE
Ref.
No.

COUPE

Front Compartment

Sg RP front, "X" coordinate	L31	1128 (44.4)
Effective head room	H61	961 (37.8)
Max. eff. leg room (accelerator)	L34	1090 (42.9)
SgRP to heel point	H30	230 (9.1)
SgRP to heel point	L53	897 (35.3)
Back angle	L40	25°
Hip angle	L42	99°
Knee angle	L44	133°
Foot angle	L46	87°
Design H-point front travel	L17	192 (7.6)
Normal driving & riding seat track trvl.	L23	171 (6.7)
Shoulder room	W3	1364 (53.7)
Hip room	W5	1248 (49.1)
* Upper body opening to ground	H50	1196 (47.1)
Steering wheel maximum diameter*	W9	368 (14.5)
Steering wheel angle	H18	18.5°
Accel. heel pt. to steer. whl. cntr	L11	
Accel. heel pt. to steer. whl. cntr	H17	
Steering wheel to C/L of thigh	H13	108 (4.3)
Steering wheel torso clearance	L7	380 (15.0)
Headlining to roof panel (front)	H37	10 (.4)
Undepressed floor covering thickness	H67	16 (.6)

Front Compartment Interior Dimensions Are Measured With The Seating Reference Point (SgRP) 21 mm
(1 Seat Adjuster Notch) Forward Of Rearmost Seat Position.**Rear Compartment**

Sg RP Point couple distance	L50	705 (27.8)
Effective head room	H63	931 (36.7)
Min. effective leg room	L51	774 (30.5)
Sg RP (second to heel)	H31	259 (10.2)
Knee clearance	L48	-41 (-1.6)
Compartment room	L3	609 (24.0)
Shoulder room	W4	1335 (52.6)
Hip room	W6	1265 (49.8)
* Upper body opening to ground	H51	Not Applicable
Back angle	L41	25°
Hip angle	L43	78°
Knee angle	L45	76.5°
Foot angle	L47	114.5°
Headlining to roof panel (second)	H38	9 (.4)
Depressed floor covering thickness	H73	18 (.7)

Luggage Compartment

Usable luggage capacity [L (cu. ft.)]	V1	356 (12.6)
* Liftover height	H195	819 (32.2)

Interior Volumes (EPA Classification)

Vehicle class		Compact
Interior volume index (cu. ft.)		100.8
Trunk/cargo index (cu. ft.)		12.6

All linear dimensions are in millimeters (inches).

** EPA Loaded Vehicle Weight, Loading Conditions

MVMA Specifications Form

Vehicle Models Sunbird

METRIC (U.S. Customary)

Model Year 1989

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Revised (•)

Vehicle Dimensions See Key Sheets for definitions

Body Type

SEDAN

SAE
Ref.
No.

Front Compartment

Sg RP front, "X" coordinate	L31	1113 (43.8)
Effective head room	H61	980 (38.6)
Max. eff. leg room (accelerator)	L34	1072 (42.2)
SgRP to heel point	H30	257 (10.1)
SgRP to heel point	L53	866 (34.1)
Back angle	L40	25°
Hip angle	L42	98°
Knee angle	L44	127°
Foot angle	L46	87°
Design H-point front travel	L17	192 (7.6)
Normal driving & riding seat track trvl.	L23	171 (6.7)
Shoulder room	W3	1363 (53.7)
Hip room	W5	1240 (48.8)
Upper body opening to ground	H50	1236 (48.7)
Steering wheel maximum diameter*	W9	370 (14.6)
Steering wheel angle	H18	20°
Accel. heel pt. to steer. whl. cntr	L11	- -
Accel. heel pt. to steer. whl. cntr	H17	- -
Steering wheel to C/L of thigh	H13	36 (3.4)
Steering wheel torso clearance	L7	380 (15.0)
Headlining to roof panel (front)	H37	10 (0.4)
Undepressed floor covering thickness	H67	16 (.6)

Front Compartment Interior Dimensions Are Measured With The Seating Reference Point (SgRP) 21 mm
(1 Seat Adjuster Notch) Forward Of Rearmost Seat Position.

Rear Compartment

Sg RP Point couple distance	L50	758 (29.8)
Effective head room	H63	964 (38.0)
Min. effective leg room	L51	871 (34.3)
Sg RP (second to heel)	H31	272 (10.7)
Knee clearance	L48	9 (0.4)
Compartment room	L3	657 (25.9)
Shoulder room	W4	1364 (53.7)
Hip room	W6	1241 (48.9)
Upper body opening to ground	H51	1238 (48.7)
Back angle	L41	26°
Hip angle	L43	83°
Knee angle	L45	85°
Foot angle	L47	118°
Headlining to roof panel (second)	H38	8 (.3)
Depressed floor covering thickness	H73	18 (.7)

Luggage Compartment

Usable luggage capacity [L (cu. ft.)]	V1	381 (13.5)
Liftover height	H195	819 (32.2)

Interior Volumes (EPA Classification)

Vehicle class		Compact
Interior volume index (cu. ft.)		100.8
Trunk/cargo index (cu. ft.)		13.5

All linear dimensions are in millimeters (inches).

** EPA Loaded Vehicle Weight, Loading Conditions

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METRIC (U.S. Customary)**Vehicle Dimensions** See Key Sheets for definitions

Body Type

CONVERTIBLE**Front Compartment**SAE
Ref.
No.

Sg RP front, "X" coordinate	L31	1128 (44.4)
Effective head room	H61	992 (39.1)
Max. eff. leg room (accelerator)	L34	1090 (42.9)
SgRP to heel point	H30	230 (9.1)
SgRP to heel point	L53	897 (35.3)
Back angle	L40	25°
Hip angle	L42	99°
Knee angle	L44	133°
Foot angle	L46	87°
Design H-point front travel	L17	192 (7.6)
Normal driving & riding seat track trvl.	L23	Not Applicable
Shoulder room	W3	1364 (53.7)
Hip room	W5	1230 (48.4)
Upper body opening to ground	H50	1216 (47.9)
Steering wheel maximum diameter*	W9	368 (14.5)
Steering wheel angle	H18	18.5°
Accel. heel pt. to steer. whl. cntr	L11	
Accel. heel pt. to steer. whl. cntr	H17	
Steering wheel to C/L of thigh	H13	108 (4.3)
Steering wheel torso clearance	L7	380 (15.0)
Headlining to roof panel (front)	H37	
Undepressed floor covering thickness	H67	17 (.7)

Front Compartment Interior Dimensions Are Measured With The Seating Reference Point (SgRP) 21 mm
(1 Seat Adjuster Notch) Forward Of Rearmost Seat Position.**Rear Compartment**

Sg RP Point couple distance	L50	705 (27.8)
Effective head room	H63	949 (37.4)
Min. effective leg room	L51	791 (31.1)
Sg RP (second to heel)	H31	259 (10.2)
Knee clearance	L48	-39 (-1.5)
Compartment room	L3	593 (23.3)
Shoulder room	W4	964 (38.0)
Hip room	W6	964 (38.0)
Upper body opening to ground	H51	Not Applicable
Back angle	L41	19°
Hip angle	L43	73°
Knee angle	L45	79.5°
Foot angle	L47	115.5°
Headlining to roof panel (second)	H38	Not Applicable
Depressed floor covering thickness	H73	19 (.7)

Luggage Compartment

Usable luggage capacity [L (cu. ft.)]	V1	294 (10.4)
Liftover height	H195	819 (32.2)

Interior Volumes (EPA Classification)

Vehicle class		Sub-Compact
Interior volume index (cu. ft.)		87.9
Trunk/cargo index (cu. ft.)		10.4

All linear dimensions are in millimeters (inches).

** EPA Loaded Vehicle Weight, Loading Conditions

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Vehicle Line Sunbird

METRIC (U.S. Customary)

Model Year _____ Issued _____ Revised (●) _____

Vehicle Dimensions See Key Sheets for definitions

Body Type

SAE
Ref.
No.

Station Wagon - Third Seat

Seat facing direction	SD1	
Sg RP couple distance	L85	
Shoulder room	W85	
Hip room	W86	
Effective leg room	L86	
Effective head room	H86	
Sg RP to heel point	H87	
Knee clearance	L87	
Back angle	L88	
Hip angle	L89	
Knee angle	L90	
Foot angle	L91	

Station Wagon - Cargo Space

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 [m ³ (ft. ³)]	V2	
Hidden cargo volume index [m ³ (ft. ³)]	V4	
Cargo volume, index-rear of 2-seat	V10	

Hatchback - Cargo Space

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 [m ³ (ft. ³)]	V3	
Hidden cargo volume index [m ³ (ft. ³)]	V4	
Cargo volume index-rear of 2-seat	V11	

Aerodynamics*

	COUPE	CONV.	SEDAN
Wheel lip to ground, front	646 (25.4)		
Wheel lip to ground, rear	622 (24.5)		
Frontal area [m ² (ft. ²)]	1.88 (20.24)		1.92 (20.67)
Drag coefficient (Cd)			

* EPA Loaded Vehicle Weight, Loading Conditions

MVMA Specifications Form
METRIC (U.S. Customary)

Vehicle Line Sunbird
 Model Year 1989 Issued _____ Revised (e) _____

Body Type

ALL

Vehicle Fiducial Marks

Fiducial Mark Number*		Define Coordinate Location		
Front	X	Fiducial mark to vertical base grid line - front, measured horizontally from 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 of car to the 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 the 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 rear fiducial mark located on the rail (compartment pan - longitudinal).		
Fiducial Mark Number		ALL-COUPE	SEDAN	CONVERTIBLE
Front	W21*	504 (19.8)		505 (19.9)
	L54*	2746 (108.1)		
	H81*	246 (9.7)		264 (10.4)
	H161*	287 (11.3)		305 (12.0)
	** H163*	266 (10.5)		286 (11.3)
Rear	W22*	440 (17.3)		
	L55*	4900 (192.9)	4951 (194.9)	4900 (192.9)
	H82*	362 (14.3)		
	H162*	407 (16.0)		
	** H164*	377 (14.8)		

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

All linear dimensions are in millimeters (inches).

** EPA Loaded Vehicle Weight, Loading Conditions

METRIC (U.S. Customary)

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SHIPPING MASS (weight) = Curb Weight Less Kg. (lbs.)

** ETWC - Equivalent Test Weight Class - U.S. Environmental Protection Agency emission certifications are based on the ETWC's shown.

NA - Not Applicable - applies to model/series combinations not requiring testing.

METRIC (U.S. Customary)

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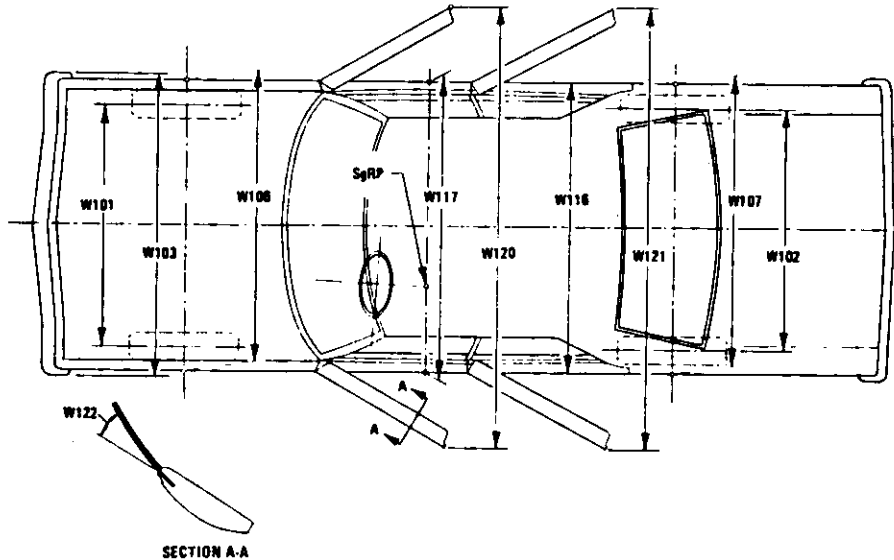
* Also see Engine - General Section for dressed engine mass (weight).

MVMA Specifications Form

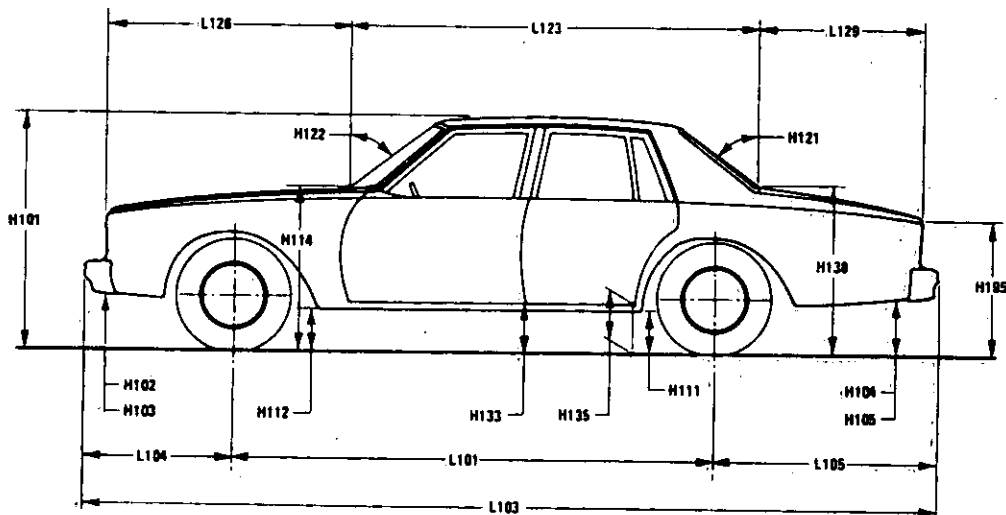
METRIC (U.S. Customary)

Exterior Vehicle And Body Dimensions – Key Sheet

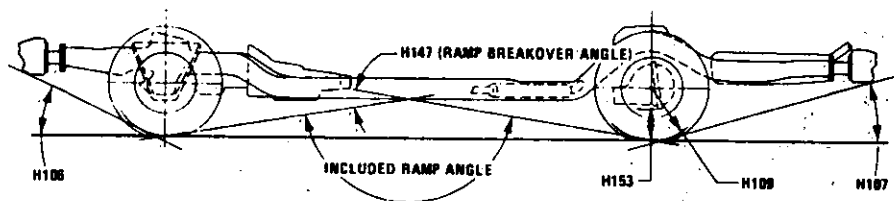
Exterior Width



Exterior Length & Height



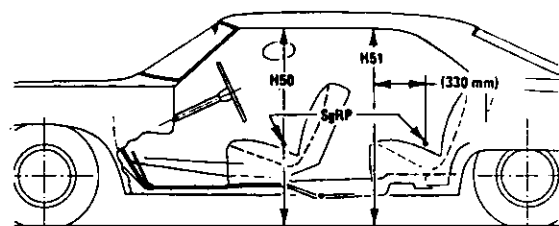
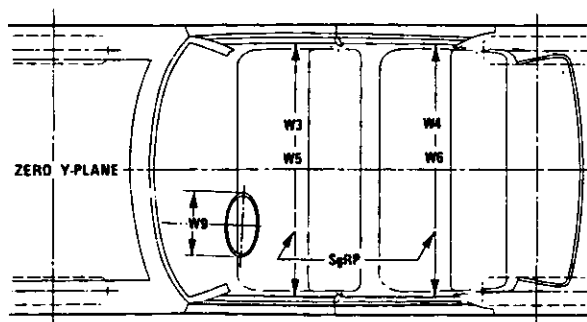
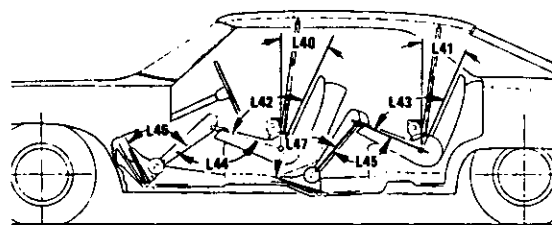
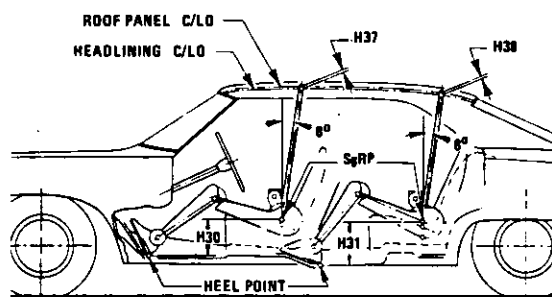
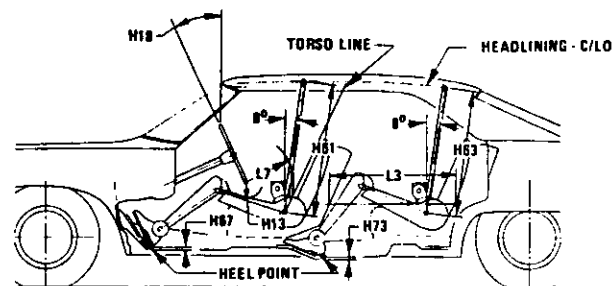
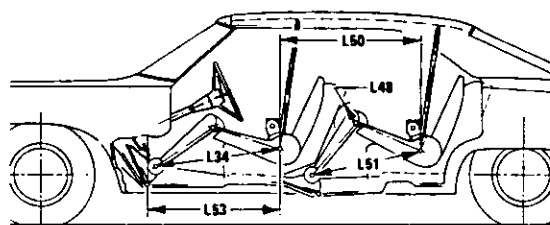
Exterior Ground Clearance



MVMA Specifications Form

METRIC (U.S. Customary)

Interior Vehicle And Body Dimensions – Key Sheet

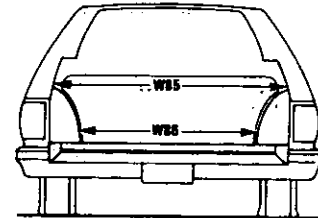
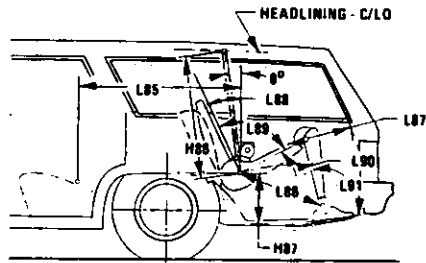


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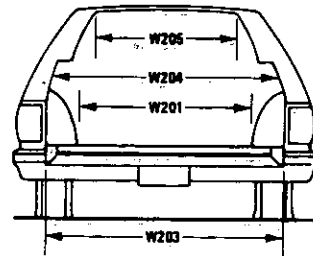
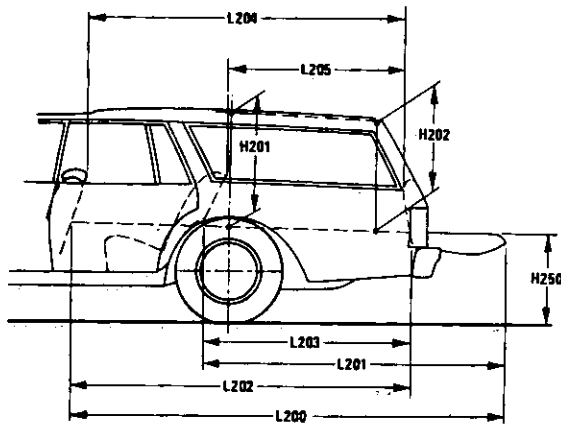
METRIC (U.S. Customary)

Interior Vehicle And Body Dimensions – Key Sheet

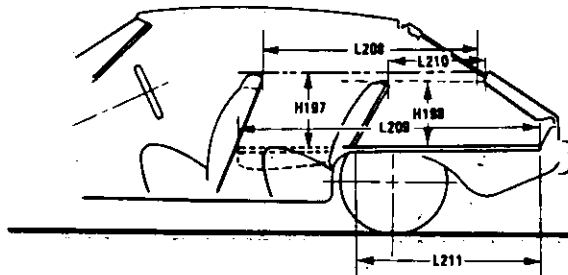
Third Seat



Cargo Space



Station Wagon



Hatchback

MVMA Specifications Form

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.
- 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.
- 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.

MVMA Specifications Form

METRIC (U.S. Customary)

Interior Vehicle And Body Dimensions - Key Sheet Dimensions Definitions

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

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

- L7 STEERING WHEEL TORSO CLEARANCE. The minimum dimension measured in the side view from the rearmost edge of the steering wheel, with front wheels in the straight ahead position, to the torso line.
- 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.
- L40 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.
- L42 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.
- H13 STEERING WHEEL TO CENTERLINE OF THIGH. The minimum dimension measured from the bottom of steering wheel, with front wheels in the straight position, to the thigh centerline.
- H17 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.
- H37 HEADLINING TO ROOF PANEL-FRONT. The dimension measured from the intersection of the headlining and the extended effective head room line normal to the sheet metal.
- H50 UPPER BODY OPENING TO GROUND-FRONT. The dimension measured vertically from the trimmed body opening to the ground on the SgRP-front "X" plane.
- H61 EFFECTIVE HEAD ROOM-FRONT. The dimension measured along a line 8 deg. rear of vertical from the SgRP-front to the headlining plus 102 mm (4.0 in.).
- H67 FLOOR COVERING THICKNESS-UNDEPRESSED-FRONT. The dimension measured vertically from the surface of the undepressed floor covering to the underbody sheet metal at the accelerator heel point.

Rear Compartment Dimensions

- L3 COMPARTMENT ROOM-SECOND. The dimension measured horizontally from the back of the front seat to the front of the second seatback at a height tangent to the top of the second seat cushion.

MVMA Specifications Form

METRIC (U.S. Customary)

Interior Vehicle And Body Dimensions – Key Sheet Dimensions Definitions

- 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 dimension measured vertically from the heel point to the underbody sheet metal.

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 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 wheelhouseings at floor level. For any vehicle not trimmed, measure to the sheet metal.

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Interior Vehicle And Body Dimensions – Key Sheet Dimensions Definitions

- 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:

$$\frac{W4 \times H201 \times L204}{1728} = \text{ft}^3$$
 Measured in mm:

$$\frac{W4 \times H201 \times L204}{10^9} = \text{m}^3 \text{ (cubic meter)}$$
- V4 HIDDEN LUGGAGE CAPACITY-REAR OF FRONT SEAT.** The total volumes of individual pieces of one set of standard luggage stowed in any hidden cargo area below the load floor rear of the front seat.
- V5 TRUCKS AND MPV'S WITH OPEN AREA.**
Measured in inches:

$$\frac{L506 \times W500 \times H503}{1728} = \text{ft}^3$$
 Measured in mm:

$$\frac{L506 \times W500 \times H503}{10^9} = \text{m}^3 \text{ (cubic meter)}$$
- V6 TRUCKS AND MPV'S WITH CLOSED AREA.**
Measured in inches:

$$\frac{L204 \times W500 \times H505}{1728} = \text{ft}^3$$
 Measured in mm:

$$\frac{L204 \times W500 \times H505}{10^9} = \text{m}^3 \text{ (cubic meter)}$$
- V8 HIDDEN LUGGAGE CAPACITY-REAR OF SECOND SEAT.** The total volume of individual pieces of one set of standard luggage stowed in any hidden cargo area below the load floor rear of the second seat.
- V10 STATION WAGON CARGO VOLUME INDEX.**
Measured in inches:

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

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

Hatchback – Cargo Space Dimensions

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

- L208 CARGO LENGTH AT FRONT SEATBACK HEIGHT.** The minimum horizontal dimension from the "X" plane tangent to the rearmost surface of the driver's seatback to the inside limiting interference of the hatchback door on the vehicle zero "Y" plane.
- L209 CARGO LENGTH AT FLOOR-FRONT-HATCHBACK.** The minimum horizontal dimension measured at floor level from the rear of the front seatback to the normal limiting interference of the hatchback door on the vehicle zero "Y" plane.
- L210 CARGO LENGTH AT SECOND SEATBACK HEIGHT-HATCHBACK.** The minimum dimension measured from the "X" plane tangent to the rearmost surface of second seatback or the load floor which is stowed at least one half of the H198 dimension height above the rear load floor, to the rearmost inside limiting interference on the zero "Y" plane.
- L211 CARGO LENGTH AT FLOOR-SECOND HATCHBACK.** The minimum horizontal dimension measured at floor level from the rear of the second seatback or load floor panel to the normal limiting interference of the hatchback door on the vehicle zero "Y" plane.
- H197 FRONT SEATBACK TO LOAD HEIGHT.** The dimension measured vertically from the horizontal tangent to the top of the seatback to the undepressed floor covering.
- H198 SECOND SEATBACK TO LOAD FLOOR HEIGHT:** The dimension measured vertically from the second seat back to the undepressed floor covering.
- V3 HATCHBACK.**
Measured in inches:

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

$$\frac{\frac{L208 + L209}{2} \times W4 \times H197}{10^9} = \text{m}^3 \text{ (cubic meter)}$$
- V4 HIDDEN LUGGAGE CAPACITY-REAR OF FRONT SEAT.** The total volumes of individual pieces of one set of standard luggage stowed in any hidden cargo area below the load floor rear of the front seat.
- V11 HATCHBACK CARGO VOLUME INDEX.** Usable luggage (one (1) stand and luggage set) below floor:
Measured in inches:

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

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

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METRIC (U.S. Customary)

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