ORIGINAL

MANUFACTURERS MOTOR VEHICLE SPECIFICATIONS

METRIC (U

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Manufacturer	Chevrolet Motor Division General Motors Corporation	Vehicle Line	BERETTA
Mailing Address	Chevrolet-Pontiac-Canada Group Engineering Center General Motors Corporation 30003 Van Dyke Warren, MI 48090-9060	Issued	June, 1988
		Revised	September, 1988

Direct questions concerning these specifications to the manufacturer listed above.

The information contained herein is prepared, distributed by, and is solely the responsibility of the vehicle manufacturing company to whose products it relates. This specification form was developed by the vehicle manufacturing companies under the auspices of the Motor Vehicle Manufacturers Association of the United States, Inc.

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

mvma
Motor Vehicle Manufacturers Association
of the United States, Inc.

Blank Forms Provided by Technical Affairs Division

MVMA Specifications Form

METRIC (U.S. Customary)

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Ø Indicates Format Change From Previous Year

NOTE:

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

MVMA Specifications Form

METRIC (U.S. Customary)

Vehicle Line BERETTA
Model Year 1989 Issued 6-88 Revised (•) 9-88

Ø Vehicle Origin

Design & development (company)	Chevrolet-Pontiac-GM of Canada Engineering
Where built (country)	U.S.A.
Authorized U.S. sales marketing representative	Chevrolet Motor Division

Ø Vehicle Models

Model Description & Drive (FWD/RWD/AWD/4WD)*	Introduction Date	Make, Vehicle Models, Series, Body Type (Mfgr's Model Code)	No. of Designated Seating Positions (Front/Rear)	Max. Trunk/Cargo Load–Kilograms (Pounds)
BERETTA 2-Door Notchback Coupe (FWD)		1LV37	5 (2/3)	

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

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METRIC (U.S. Customary)

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						Exhaust 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)	SAE Net at RPM: Torque N • m (lb. ft.)			
Base - All States	LL8	L-4 2.0L (121 CID)	EFI +	9.0:1	67 (90) @ 5600	146 (108) @ 3200	S	Man 5-Speed 3.73 Low Base (MR3)	3.83
								Auto '125c' Avail (MD9)	3.18
Opt. - All States	LB6	V6 2.8L (173 CID)	MFI %	8.9:1	97 (130) @ 4700	217 (160) @ 3600	S	Man. 5-Spd. 3.50 Low Base (MG2)	3.61
								Auto '125c' Avail (MD9)	3.18

+ - Electronic Fuel Injection
% - (Multi-Port FI)

* Single/Dual

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Vehicle Line BERETTA
Model Year 1989 Issued 6-88 Revised (•) _____

METRIC (U.S. Customary)

Engine Description/Carb. Engine Code	2.0 LTR L-4 (121 CID) RPO LL8 Electronic Fuel Injection	2.8 LTR V6 (173 CID) RPO LB6 (2.8 Multi-Port FI)

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		Chevrolet	
No. of cylinders		4	6
Bore		89 (3.50)	89 (3.50)
Stroke		80 (3.15)	76 (2.99)
Bore spacing (C / L to C / L)		99 (3.90)	111.8 (4.40)
Cylinder block material & mass kg (lbs.) (machined)		Cast Iron/32.050 (70.7)	Cast Iron/48.2 (106.3)
Cylinder block deck height		215.55 (8.49)	224 (8.819)
Cylinder block length		443 (17.4)	435.5 (17.1)
Deck clearance (minimum) (above or below block)		0.15 (.006) below	0.15 (.006) above
Cylinder head material & mass kg (lbs.)		Aluminum 9.740 (21.5)	Aluminum 5.300 (11.7)
Cylinder head volume (cm^3)		43.3	28.0
Cylinder liner material		Not Available	
Head gasket thickness (compressed)		1.1 (.043)	1.50 (.059)
Minimum combustion chamber total volume (cm^3)		59.988 (3.66)@	59.8481 (3.6515)@
Cyl. no. system (front to rear)*	L. Bank	1-2-3-4	2-4-6
	R. Bank	--	1-3-5
Firing order		1-3-4-2	1-2-3-4-5-6 /2.675 (5.9) Ctr
Intake manifold material & mass [kg (lbs.)]**		Aluminum Cast/3.870 (8.5)	Aluminum Cast/3.810 (8.4) Lwr
Exhaust manifold material & mass [kg (lbs.)]**		Stamped Steel/2.585 (5.7)	Cast Iron-LH/2.630 (5.8), RH/3.670 (8.1)
Fuel required unleaded, diesel, etc.		Unleaded	
Fuel antiknock index (R + M) ÷ 2		87	
Engine mounts	Number		
	Material and type (elastomeric, hydroelastic, hydraulic damper, etc.		
	Added isolation (sub-frame, crossmember, etc.)		
Total dressed engine mass (wt) dry***		146.8 (323.6) Auto 162.4 (358.0) Man	177.2 (390.6) Auto 191.5 (422.2) Man

Engine – Pistons

Material & mass, g (weight, oz.) - piston only	Aluminum alloy 350 (10.9)	Aluminum Alloy 390 (12.1)

Engine – Camshaft

Location		In cylinder block, right side	In block above crankshaft
Material & mass kg (weight, lbs.)		Cast Iron 3.065 (6.8)	Cast Iron/3.098 (6.83)
Drive type	Chain / belt	Chain	Chain
	Width / pitch	19.3 (0.76)/9.53 (0.38)	15.47 (.625)/9.53 (.375)

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

** Finished state.

*** Dressed engine mass (weight) includes the following: All those items necessary to make the engine a complete ready-to-run unit.

· @ - Piston at TDC, spark plug and valves in place, and cylinder head torqued to specifications.

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METRIC (U.S. Customary)

Engine Description/Carb. Engine Code		2.0 LTR L-4 (121 CID) RPO LL8 Electronic Fuel Injection	2.8 LTR V6 (173 CID) RPO LL8 (2.8 Multi-Port FI)
Engine – Valve System			
Hydraulic lifters (std., opt., NA)		Standard	
Valves	Number intake / exhaust	4/4	6/6
	Head O.D. intake / exhaust	43.00 (1.69)/37.00 (1.46)	43.64 (1.72)/36.20 (1.43)
Engine – Connecting Rods			
Material & mass [kg., (weight, lbs.)]*		Cast Steel, .373 (.820)	Cast Steel, .399 (0.880)
∅ Length (axes℄ to℄) mm			
Engine – Crankshaft			
Material & mass [kg., (weight, lbs.)]*		Nod. Cast Iron/13.360(29.5)	Nod. Cast Iron/14.170(31.2)
End thrust taken by bearing (no.)		5	3
Length & number of main bearings		5	4
Seal (material, one, two piece design, etc.)	Front	Silicon, one	Viton/one piece
	Rear	Silicon, one	Viton/one piece
Engine – Lubrication System			
Normal oil pressure [kPa (psi) at engine rpm]		435-530 (63-77) @ 1200	345-450 (50-65) @ 1200
Type oil intake (floating, stationary)		Stationary	
Oil filter system (full flow, part, other)		Full-flow	
Capacity of c/case, less filter-refill-L (qt.)		3.8 (4.0)	3.8 (4.0)
Engine – Diesel Information			
Diesel engine manufacturer			
Glow plug, current drain at 0°F			
Injector nozzle	Type	Not	
	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	
Super charger - manufacturer		Applicable	
Intercooler			

*Finished State

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METRIC (U.S. Customary)

Engine Description/Carb. Engine Code: 2.0 Liter L4 (121 CID) RPO LL8 Electronic Fuel Injection

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)	
Circulation thermostat	Type (choke, bypass)	Choke	
	Starts to open at °C (°F)	91 (195°F)	
Water pump	Type (centrifugal, other)	Centrifugal, with aluminum die cast body	
	GPM 1000 pump rpm	7.3 @ 1000 pump RPM	
	Number of pumps	One	
	Drive (V-belt, other)	V-belt	
	Bearing type	Sealed, ball-roller	
	Impeller material	Cast Iron	
	Housing material	Aluminum	
By-pass recirculation [type (inter., ext.)]		Internal	
Cooling system capacity	With heater–L(qt.)	8.19 (8.6) Auto, 8.29 (8.8) Man	
	With air cond.–L(qt.)	8.23 (8.7) Auto, 8.33 (8.8) Man	
	Opt. equipment [specify–L(qt.)]	8.37 (8.8) Auto, *.37 (8.8) 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)		No	
Radiator core	Std., A/C, HD	Standard	Air Conditioning
	Type (cross-flow, etc.)	Cross-flow	
	Construction (fin & tube mechanical, braze, etc.)	High Efficiency Radiator	
	Material, mass [kg (wgt. lbs.)]	Aluminum	
	Width	499.5	659.5
	Height	382.4	382.4
	Thickness	23.5	34.0
	Fins per inch	3.5*	3.5*
Radiator end tank material		Plastic	
Fan	Std., elec., opt.	Electric	
	Number of blades & type (flex, solid, material)	Std. - 5 flex, plastic (opt. - 7, flex, plastic)	
	Diameter & projected width	Std. - 293.87 (11.57), opt. 360.0 (14.2)	
	Ratio (fan to crankshaft rev.)	Not Applicable	
	Fan cutout type	ECM controlled	
	Drive type (direct, remote)	Direct	
	RPM at idle (elec.)	2200-2400 (constant)	
	Motor rating (wattage) (elec.)	96	
	Motor switch (type & location) (elec.)	Coolant switch, engine cylinder head	
	Switch point (temp., pressure) (elec.)	110°F	
	Fan shroud (material)	Plastic	

* - Distance between top of fins.

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Vehicle Line ~~BERETTA~~
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METRIC (U.S. Customary)

Engine Description/Carb.
Engine Code

2.8 Liter L4 (121 CID) RPO LB6
(2.8 Multi-Port FI)

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)
Circulation thermostat	Type (choke, bypass)	Bypass
	Starts to open at °C (°F)	91 (195°F)
Water pump	Type (centrifugal, other)	Centrifugal, with aluminum die cast body
	GPM 1000 pump rpm	--
	Number of pumps	One
	Drive (V-belt, other)	Serpentine
	Bearing type	Sealed, ball-roller
	Impeller material	Cast Iron
	Housing material	Aluminum
By-pass recirculation [type (inter., ext.)]		Internal
Cooling system capacity	With heater–L(qt.)	10.71 (11.3) Auto, 10.75 (11.4) Man
	With air cond.–L(qt.)	10.67 (11.3) Auto, 10.71 (11.3) Man
	Opt. equipment [specify–L(qt.)]	10.71 (11.3) Auto, 10.71 (11.3) 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	Standard | Air Conditioning
	Type (cross-flow, etc.)	Cross-flow
	Construction (fin & tube mechanical, braze, etc.)	High Efficiency Radiator
	Material, mass [kg (wgt, lbs.)]	Aluminum
	Width	499.5 | 659.5
	Height	382.4 | 382.4
	Thickness	23.5 | 23.5
	Fins per inch	3.5* | 3.5*
Radiator end tank material		Plastic
Fan	Std., elec., opt.	Electric
	Number of blades & type (flex, solid, material)	Std. - 7 flex. plastic (opt. same - 7, flex. plastic)
	Diameter & projected width	Std. and opt. same - 360.0 (14.2)
	Ratio (fan to crankshaft rev.)	Not Applicable
	Fan cutout type	ECM controlled
	Drive type (direct, remote)	Direct
	RPM at idle (elec.)	1800
	Motor rating (wattage) (elec.)	140-150
	Motor switch (type & location) (elec.)	Coolant switch, engine cylinder head
	Switch point (temp., pressure) (elec.)	110°F
	Fan shroud (material)	Plastic

* - Distance between top of fins.

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METRIC (U.S. Customary)

Engine Description/Carb. Engine Code: 2.0 Liter L-4 (121 CID) RPO LL8 Electronic Fuel Injection

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 CCC controlled
Manufacturer		Rochester Products
∅ Carburetor no. of barrels		None
Idle A/F mix.		
Fuel injection	Point of injection (no.)	Throttle body
	Constant, pulse, flow	Pulse
	Control (electronic, mech.)	Electronic
	System pressure [kPa (psi)]	68.95-82.74 (10-12)
Idle spd.-rpm (spec. neutral or drive and propane if used)	Manual	Not Applicable
		" "
	Automatic	Not Applicable
		" "
Intake manifold heat control (exhaust or water thermostatic or fixed)		Water
Air cleaner type		Replaceable paper element single snorkel
Fuel filter (type/location)		
∅ Fuel pump	Type (elec. or mech.)	Electric
	Location (eng., tank)	Tank
	Pressure range [kPa (psi)]	Not Applicable
∅	Flow rate at regulated pressure (L (gal)/hr @ kPa (psi))	

Fuel Tank

Capacity [refill L (gallons)]		51.5 (13.6)
Location (describe)		Underbody - rear center
Attachment		Underbody strap
Material & Mass [kg (weight lbs)]		Steel 8.732 (19.3)
Filler pipe	Location & material	R.H. rear quarter
	Connection to tank	Solid soler
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	"

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METRIC (U.S. Customary)

Engine Description/Carb. Engine Code: 2.8 Liter V6 (173 CID) RPO LB6 (2.8 Multi-Port FI)

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

Induction type: carburetor, fuel injection system, etc.		Multi-Port Fuel Injection
Manufacturer		Rochester Products
∅ Carburetor no. of barrels		None
Idle A/F mix.		Preset - no adjustment provided
Fuel injection	Point of injection (no.)	Fuel Injectors at inlet ports
	Constant, pulse, flow	Pulse
	Control (electronic, mech.)	Electronic
	System pressure [kPa (psi)]	Not Available
Idle spd.-rpm (spec. neutral or drive and propane if used)	Manual	Not Applicable
		" "
	Automatic	Not Applicable
		" "
Intake manifold heat control (exhaust or water thermostatic or fixed)		Water
Air cleaner type		Replaceable paper element single snorkel
Fuel filter (type / location)		
∅ Fuel pump	Type (elec. or mech.)	Electric
	Location (eng., tank)	Tank
	Pressure range [kPa (psi)]	Not Applicable
∅	Flow rate at regulated pressure (L (gal) / hr @ kPa (psi))	

Fuel Tank

Capacity [refill L (gallons)]		51.5 (13.6)
Location (describe)		Underbody - rear center
Attachment		Underbody strap
Material & Mass [kg (weight lbs)]		Steel 8.732 (19.3)
Filler pipe	Location & material	R.H. rear quarter
	Connection to tank	Solid soler
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	"

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Engine Description/Carb. Engine Code	2.0 LTR L-4 (121 CID) RPO LL8 Electronic Fuel Injection	2.8 LTR V6 (173 CID) RPO LB6 2.8 Multi-Port FI

Vehicle Emission Control

Exhaust Emission Control	Type (air injection, engine modifications, other)		CCC control with fuel injection	
	Air Injection	Pump or pulse	None	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	Not available
		Exhaust source	Exhaust manifold	Not available
		Point of exhaust injection (spacer, carburetor, manifold, other)	Inlet manifold	Not available
	Catalytic Converter	Type	Single bed, oxidizing & reducing	
		Number of	One	
		Location(s)	Mounted to center underbody	
		Volume [L (in³)]	2.78 (170)	
		Substrate type	Monolith	
		Noble metal type	Platinum/Rhodium	
		Noble metal concentration (g/cm³)	0.000949	0.000838
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	
		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 (with dual tailpipes 2-doors only)	
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	50.8 x 0.94 (2.0 x .037)*	50.8 x 0.94 (2.0 x .037)
	Material & Mass [kg (weight lbs)]	*	
Intermediate pipe	o.d. & wall thickness	50.8 x 1.09 (2.0 x .043)	
	Material & Mass [kg (weight lbs)]	Aluminum coated steel	
Tail pipe	o.d. & wall thickness	50.8 x 1.09 (2.0 x .043)	50.8 x 1.09 (2.0 x .043)
	Material & Mass [kg (weight lbs)]	Aluminum coated steel	

* - Laminated tubing - steel inner, stainless steel outer.
** - Purchased as unit: 9.000 (19.8)

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METRIC (U.S. Customary)

Engine Description/Carb. Engine Code	2.0 Liter L4 (121 CID) RPO LL8 Electronic Fuel Injection

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

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

Manual Transmission/Transaxle

Number of forward speeds		5
Gear ratios	1st	3.73
	2nd	2.15
	3rd	1.33
	4th	0.92
	5th	0.74
	Reverse	3.50
Synchronous meshing (specify gears)		All forward gears
Shift lever location		Floor
Trans. case mat'l. & mass kg (lbs)*		Aluminum
Lubricant	Capacity [L (pt.)]	5-speed 2.55L (5.36 pts.)
	Type recommended	SAE 5W-30 Engine oil SE, SF/CC OR SF/CD

Clutch (Manual Transmission)

Clutch manufacturer		Isuzu
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 mfgr. & material coding	Isuzu
	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)	7.8 (.307)
	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 pre-packed & 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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METRIC (U.S. Customary)

Engine Description/Carb. Engine Code	2.8 Liter V6 (173 CID) RPO LB6 Multi-Port FI

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

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

Manual Transmission/Transaxle

Number of forward speeds		5
Gear ratios	1st	3.50
	2nd	2.05
	3rd	1.38
	4th	0.94
	5th	0.72
	Reverse	3.41
Synchronous meshing (specify gears)		All forward gears
Shift lever location		Floor
Trans. case mat'l. & mass kg (lbs)*		Aluminum
Lubricant	Capacity [L (pt.)]	2.55L (5.36 pts.)
	Type recommended	SAE 5W-30 Engine oil SE, SF/CC OR SF/CD

Clutch (Manual Transmission)

Clutch manufacturer		LUK
Clutch type (dry, wet; single, multiple disc)		Dry single disc
Linkage (hydraulic, cable, rod, lever, other)		Hydraulic
Max. pedal effort (nom. spring load, new) N (lbs)	Depressed	133.4 (30.0)
	Released	133.4 (30.0)
Assist (spring, power/percent, nominal)		Not Available
Type pressure plate springs		Diaphragm
Total spring load (nominal, new) N (lbs)		5698 (1281)
Clutch facing	Facing mfgr. & material coding	LUK
	Facing material & construction	Non-asbestos
	Rivets per facing	32
	Outside x inside dia. (nominal)	232 x 155 (9.12 x 6.12)
	Total eff. area [cm^2 ($in.^2$)]	232 (35.96)
	Thickness (pressure plate side/ fly wheel side)	7.50 - 8.00 (.295 - .315)
	Rivet depth (pressure plate side/ fly wheel side)	1.4 mm (0.06 in)/1.4 mm (0.06 in)
	Engagement cushion method	Driven plate, wave spoke springs
Release bearing type & method lub. Self		centering, angular contact ball bearing pre-packed & 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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Vehicle Line BERETTA
Model Year 1989 Issued 6-88 Revised (•) 9-88

METRIC (U.S. Customary)

Engine Description/Carb. Engine Code	2.0 LTR L-4 (121 CID) RPO LL8 Electronic Fuel Injection	2.8 LTR V6 (173 CID) RPO LB6 2.8 Multi-Port FI

Automatic Transmission/Transaxle

Trade name		3-speed Automatic	
Type and special features (describe)		Torque converter with clutch 125C	
Selector	Location	Floor	
	Ltr./No. designation	P-R-N-D-2-1	
Gear ratios	1st	2.84	
	2nd	1.60	
	3rd	1.00*	
	4th	Not Applicable	
	Reverse	2.07	
Max. upshift speed - drive range [km/h (mph)]		1-2=63(39), 2-3-111(69)	1-2-66(41), 2-3=117(73)
Max. kickdown speed - drive range [km/h (mph)]		3-2=100(62, 2-1=58(36)	3-2=111(69), 2-1=58(36)
Min. overdrive speed [km/h (mph)]		Not Available	
Torque converter	Number of elements	3	
	Max. ratio at stall	2.7	2.35
	Type of cooling (air, liquid)	Liquid	
	Nominal diameter	245 (9.65)	
∅	Capacity factor "K"*		
Lubricant	Capacity [refill L (pt.)]	5.5 (11.6)	
	Type Recommended	Dexron II	
Oil cooler (std., opt., NA, internal, external, air, liquid)			
∅ Transmission case material & mass kg (lbs)**		Standard, integral part of radiator	

* - Converter clutch engagement

Axle or Front Wheel Drive Unit

Type (front, rear)		Front
Description		Front differential with 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
Lubricant	Capacity [L (pt.)]	Part of auto. trans. lub.
	Type recommended	Transmission lub.

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

Axle ratio (or overall top gear ratio)		3.18	3.61	3.83
No. of teeth	Pinion			
	Ring gear or gear			
Ring gear o.d.		195.2		
Transaxle	Transfer gear ratio	--		
	Final drive ratio	--		

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

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

MVMA Specifications Form

Vehicle Line BERETTA
Model Year 1989 Issued 6-88 Revised (•) _____

METRIC (U.S. Customary)

Engine Description/Carb. Engine Code	2.0 LTR L-4 (121 CID) RPO LL8 Electronic Fuel Injection	2.8 LTR V6 (173 CID) RPO LB6 2.8 Multi-Port FI

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 transaxle	Left	23.81 x 320.0 (A)	27.05 x 315.5 (B)
		Right	46.5 x 663.0 (A)	27.05 x 315.5 (B)
	Automatic transaxle	Left	23.81 x 311.0 (A)	27.05 x 308.0 (B)
		Right	23.81 x 364.3 (A)	27.05 x 357.0 (B)
	Optional transaxle	Left	None	
		Right	None	
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	TRI-POT (C)	Cross-Groove (D) (E)
		Outer	Rzeppa - fixed	
	Attach (u-bolt, clamp, etc.)		Splined	
	Bearing: Type (plain, anti-friction)		Anti-fraction	
	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	

∅ 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.

(A)-Shaft size = 2300 N.m.
(B)-Shaft size = 2700 N.m.
(C)-Plunge = Manual, Left - 24.84
Manual, Right - 33.29
Auto, Left - 24.51mm
Auto, Right - 25.11mm

(D)-Plunge
Manual, left = 21.89mm
Manual, right = 27.59mm
Auto, left = 22.14mm
Auto, right = 25.29mm

(E)-TRI-POT same as "auto" in note C, is used with FE3 suspension and auto transmission

MVMA Specifications Form

Vehicle Line BERETTA
Model Year 1989 Issued 6-88 Revised (•) _____

METRIC (U.S. Customary)

Body Type And/Or Engine Displacement 2-Dr. Notchback Coupe 1LV37

∅ Suspension - General Including Electronic Controls

Car leveling	Standard/optional/not avail.	Not Available
	Manual/automatic control	" "
	Type (air/hydraulic)	" "
	Primary/assist spring	" "
	Rear only/4 wheel leveling	" "
	Single/dual rate spring	" "
	Single/dual ride heights	" "
	Provision for jacking	Body pickup at rocker panels
Shock absorber damping contols	Standard/option/not avail.	Not Available
	Manual/automatic control	" "
	Number of damping rates	" "
	Type of actuation (manual/ electric motor/air, etc.)	" "
	sensors: Lateral acceleration	" "
	sensors: Deceleration	" "
	sensors: Acceleration	" "
	sensors: Road surface	" "
Shock absorber (front & rear)	Type	Front:Mac Pherson strut, rear:double acting hydraulic
	Make	Delco
	Piston diameter	32.0 (1.26) Front, 25.0 (.98) Rear
	Rod diameter	25.0 (.98) Front, 12.7 (.50) Rear

∅ Suspension – Front

Type and description		MacPherson with coil springs, stamped weldment lower control arms and nodular iron steering knuckles.
Travel*	Full jounce	92.5 mm (3.6)
	Full rebound	84.0 mm (3.3)
Spring	Type (coil, leaf, other) & material	Coil, steel
	Insulators (type & material)	Upper and lower, natural rubber
	Size (coil design height & i.d., bar length x dia.)	206.6 (8.1) x 139.0 (5.47) x 2700 (106.3) x 13.3 (.52)
	Spring rate [N/mm (lb./in.)]	22.0 (126.0) Base, 27.0 (154.0) & FE3
	Rate at wheel [N/mm (lb./in.)]	23.2 (132.0) Base, 27.5 (157.0) & FE3
Stabilizer	Type (link, linkless, frameless)	Link
	Material & bar diameter	Steel, 30.0 (1.18), 1

∅ Suspension – Rear

Type and description		Trailing twist axle with tubular control arms and open section transverse beam.
Travel*	Full jounce	111.0 (4.37)
	Full rebound	86.0 (3.4)
Spring	Type (coil, leaf, other) & material	Progressive rate coil, HR steel
	Size (length x width, coil design height & i.d., bar length & dia.)	290 (11.42) x 105 (4.13) x 2626 (103.4) x 13.6 (.54)
	Spring rate [N/mm (lb./in.)]	28 (160)
	Rate at wheel [N/mm (lb./in.)]	16.7 (95)
	Insulators (type & material)	Rubber - top, Rubber & urethane - bottom
	If leaf: No. of leaves	--
	If leaf: Shackle (comp. or tens.)	--
Stabilizer	Type (link, linkless, frameless)	Linkless bolted directly to axle
	Material & bar diameter	Steel, 16.5 mm (.65) solid, 19.0 mm (.75) solid with FE3
Track bar (type)		Not Applicable

* Define load condition:

MVMA Specifications Form

Vehicle Line BERETTA
Model Year 1989 Issued 6-88 Revised (•)

METRIC (U.S. Customary)

Body Type And/Or Engine Displacement: 2-Door Notchback Coupe 1LV37

∅ Brakes - Service

Description			Single caliper disc front, leading trailing drum rear
Manufacturer and brake type (std., opt., n.a.)	Front (disc or drum)		Disc
	Rear (disc or drum)		Drum
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.)		Inline (intake manifold)
	Reservoir (volume in.^{3}) and source		None
	Pump-type (elec, gear driven, belt driven)		"
Traction control	Operational speed range		Not Available
	Type engine intervention (electronic, mech.)		" "
Anti-lock device	Front/rear (std., opt., n.a.)		Not Available
	Manufacturer		" "
	Type (electronic, mech.)		" "
	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})]*			517.8 (80.3)
Gross lining area [cm^2(in.^{2})]**(F/R)			531.8 (82.4)
Swept area [cm^2(in.^{2})]***(F/R)			1669.9 (258.9)
Rotor	Outerworking diameter	F/R	242.4 (9.54)
	Inner working diameter	F/R	149.6 (5.89)
	Thickness	F/R	22.4 (0.88) /--
	Material & type (vented/solid)	F/R	Cast iron, vented /--
Drum	Diameter & width	F/R	-- / 200 x 45 (7.87 x 1.77)
	Type and material	F/R	-- / Cast iron, non-finned
Wheel cylinder bore			57 (2.24) / 19 (.75)
Master cylinder	Bore/stroke	F/R	22.2 (.87) / 35.21 (1.39)
Pedal arc ratio			3.7:1
Line pressure at 445 N(100 lb.) pedal load [kPa (psi)]			Not Available
Lining clearance		F/R	Self adjusting
Brake lining — Front wheel	Bonded or riveted (rivets/seg.)		In-board, outboard-integrally molded
	Rivet size		Not Applicable
	Manufacturer		Delco Moraine
	Lining code*****		128 FE
	Material		Semi-metallic
	**** Primary or out-board		(116.7 x 42.9 x 7.9) (4.59 x 1.69 x .31)
	Size Secondary or in-board		(122.0 x 41.5 x 11.2) (4.80 x 1.63 x .44)
	Shoe thickness (no lining)		4.85 I.B. 3.27 O.B. (.191 I.B., .129 O.B.)
Brake lining — Rear wheel	Bonded or riveted (rivets/seg.)		Riveted, (10)
	Manufacturer		Inland Division
	Lining code*****		242 FE
	Material		Organic
	**** Primary or out-board		187.3 x 43.9 x 5.7 (7.36 x 1.73 x .22)
	Size Secondary or in-board		187.3 x 43.9 x 5.7 (7.36 x 1.73 x .22)
	Shoe thickness (no lining)		1.98 (.07)

*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.

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METRIC (U.S. Customary)

Body Type And/Or Engine Displacement	2-Door Notchback Coupe 1LV37

Tires And Wheels (Standard)

Tires	Size (load range, ply)		P195/70R-14 BW
	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)		
Wheels	Type & material		Steel
	Rim (size & flange type)		14 x 6
	Wheel offset		47.0 (1.89)
	Attachment	Type (bolt or stud)	Stud
		Circle diameter	100.0 (3.94)
		Number & size	5-M12 x 1.5 - 6H, THD. (metric)
∅ Spare	Tire and wheel		T115/70D - 14 BW, Wheel dia. 14 x 4. Inflation 415 (60)
	Storage position & location (describe)		Flat under rear load floor

Tires And Wheels (Optional)

Tire size (load range, ply)	P205/60R-15 BW
Type (bias, radial, steel, nylon, etc.)	Steel Belted Radial
Wheel (type & material)	Steel
Rim (size, flange type and offset)	15 x 6
Tire size (load range, ply)	P205/60R-15 BW
Type (bias, radial, steel, nylon, etc.)	Steel belted radial
Wheel (type & material)	Aluminum
Rim (size, flange type and offset)	15 x 7
Tire size (load range, ply)	
Type (bias, radial, steel, nylon, etc.)	
Wheel (type & material)	
Rim (size, flange type and offset)	
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)	

Brakes – Parking

Type of control		Hand Lever Assembly
Location of control		In console 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 BERETTA
Model Year 1989 Issued 6-88 Revised (•) _____

METRIC (U.S. Customary)

Body Type And/Or Engine Displacement: 2-Door Notchback Coupe 1LV37

Steering

Manual (std., opt., n.a.)				Not Available
Power (std., opt., n.a.)				Standard
Adjustable steering wheel/column (tilt, telescope, other)		Type		Tilt
		Manufacturer		Saginaw Steering Gear
		(Std., opt., n.a.)		Optional
Wheel diameter** (W9) SAE J1100		Manual		--
		Power		378-381mm (14.88 - 15.00 in.)
Turning diameter m (ft.)	Outside front	Wall to wall (l. & r.)		12.41 (40.59 ft.)
		Curb to curb (l. & r.)		11.53 (37.83 ft.)
	Inside rear	Wall to wall (l. & r.)		Not Available
		Curb to curb (l. & r.)		Not Available
Scrub Radius*				
Manual	Gear	Type		--
		Manufacturer		--
		Ratios	Gear	--
			Overall	--
	No. wheel turns (stop to stop)			--
Power	Type (coaxial, elec., hyd., etc.)			Rack and pinion w/center take-off tie rods - integral
	Manufacturer			Saginaw Div. GMC
	Gear	Type		Rack and pinion w/center take-off tie rods - integral
		Ratios	Gear	Not applicable
			Overall	13.96:1
	Pump (drive)			Belt off crankshaft pulley
	No. wheel turns (stop to stop)			2.50
Linkage	Type			Center take off tie rods, rack and pinion
	Location (front or rear of wheels, other)			Rear
	Tie rods (one or two).			Two
Steering axis	Inclination at camber (deg.)			14^0 at $+0.5^0$
	Bearings (type)	Upper		Strut mount
		Lower		Ball joint
		Thrust		Not Applicable
Steering spindle & joint type				"
Wheel spindle/hub	Diameter	Inner bearing		"
		Outer bearing		"
	Thread (size)			M20 x 1.5
	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 22

MVMA Specifications Form

Vehicle Line BERETTA
Model Year 1989 Issued 6-88 Revised (•) _____

METRIC (U.S. Customary)

Body Type And/Or Engine Displacement

2-Door Notchback Coupe 1LV37

Wheel Alignment

Front wheel at curb mass (wt.)	Service checking	Caster (deg.)	Not adjustable
		Camber (deg.)	.6 +/- .6 F41, -.2 +/- .6 FE3
		Toe-in [outside track-mm (in.)]	0 +/- .10
	Service reset*	Caster	Not adjustable
		Camber	.6 +/- .6 F41, -.2 +/- .6 FE3
		Toe-in	0 +/- .10
	Periodic M.V. inspection	Caster	Not adjustable
		Camber	--
		Toe-in	--
Rear wheel at curb mass (wt.)	Service checking	Camber (deg.)	Not Applicable
		Toe-in [cutside track-mm (in.)]	"
	Service reset*	Camber	"
		Toe-in	"
	Periodic M.V. inspection	Camber	"
		Toe-in	"

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

Electrical – Instruments and Equipment		Electric Base Cluster	Opt. Elect Cluster
Speedometer	Type (analog, digital, std., opt.)	Half circle analog dial w/pointer	Digital
	Trip odometer (std., opt., n.a.)	Standard	Digital Bar Graph
EGR maintenance indicator		Not Available	Not Available
Charge indicator	Type	Gauge	Bar Graph
	Warning device (light, audible)	Not Available	Not Available
Temperature indicator	Type	Gauge	Bar Graph
	Warning device (light, audible)	Tell-Tale Warning Light	Not Available
Oil pressure indicator	Type	Gauge	Bar Graph
	Warning device (light, audible)	Not Available	Not Available
Fuel indicator	Type	Electric gauge w/ pointer	Bar Graph
	Warning device (light, audible)	Not Available	Not Available
Windshield wiper	Type (standard)	Electric 2-speed	
	Type (optional)	Intermittent Wiper System	
	Blade length	482.6 (19.0)	
	Swept area [cm^2($in.^2$)]	622.2 (964.4)	
Windshield washer	Type (standard)	Wet-Arm System, sliding switch on RH instrument	
	Type (optional)	Not Available	cluster pod
	Fluid level indicator (light, audible)	"	"
Rear window wiper, wiper/washer (std., opt., n.a.)		"	"
Horn	Type	Vibrator	
	Number used	Two ('A' Note and 'F' Note)	
Other	Headlamp-on Warning	Standard, Chimes	

MVMA Specifications Form

Vehicle Line BERETTA
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METRIC (U.S. Customary)

Engine Description/Carb. Engine Code	2.0 LTR L-4 (121 CID) RPO LL8 Electronic Fuel Injection	2.8 LTR V6 (173 CID) RPO LB6 2.8 Multi-Port FI

Electrical – Supply System

Battery	Manufacturer	Delco Remy
	Model, std., (opt.)	75-525, 75-630 H.D.
	Voltage	12 Volt
	Amps at 0°F cold crank	525, 630 H.D.
	Minutes-reserve capacity	75 minutes base, 90 minutes H.D.
	Amp/hrs. - 20 hr. rate	--
	Location	Engine compartment
Alternator	Manufacturer	Delco Remy
	Rating (idle/max. rpm)	Diode rectified, 42 amps
	Ratio (alt. crank/rev.)	2.3:1
	Output at idle (rpm, park)	
	Optional (type & rating)	None
Regulator	Type	Integral with Alternator

Electrical – Starting System

Start. motor	Manufacturer	Delco Remy
	Current drain at 0°F -20° F	305 @ -20°F
	Power rating [kw (hp)]	1.5 (2.0) 1.4 (1.9)
Motor drive	Engagement type	Solenoid
	Pinion engages from (front, rear)	Front

Electrical – Ignition System

Type	Electronic (std., opt., n.a.)		--
	Other (specify)		Computer controlled - coil ignition (C^3I)
Coil	Manufacturer		Delco Remy
	Model		1103761 | 1103759
	Current	Engine stopped – A	Not Available
		Engine idling – A	" "
Spark plug	Manufacturer		AC spark plug
	Model		FR3LM | R43CTLSE
	Thread (mm)		M14 x 1.25
	Tightening torque (N-m (lb. ft))		9-20 (7-15)
	Gap		0.89 (.035) | 1.14 (.045)
	Number per cylinder		One
Distributor	Manufacturer		Not Applicable
	Model		" "

Electrical – Suppression

Locations & type	Internal alternator 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.

MVMA Specifications Form

Vehicle Models BERETTA
Model Year 1989 Issued 6-88 Revised (•) _____

METRIC (U.S. Customary)

Body Type	2-Door Notchback Coupe 1LV37

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 for collision energy absorption. (Meets G.M. 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, ELPO coating, primers, protective waxes and sealers are used on interior surfaces.

∅ Body – Miscellaneous Information

Type of finish (lacquer, enamel, other)		High solids basecoat/clearcoat enamel
Hood	Material & mass	Two side galvanized steel 17.91 Kg (39.5 lbs.)
	Hinge location (front, rear)	Rear
	Type (counterbalance, prop)	Prop
	Release control (internal, external)	Internal
Trunk lid	Material & mass	Two side galvanized steel 10.6 Kg (23.4 lbs.)
	Type (counterbalance, other)	Torsion rods
	Internal release control (elec., mech., n.a.)	Electrical-Optional
Hatch-back lid	Material & mass	Not Applicable
	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	None
	Rear	"
Window regulator type (cable, tape, flex, drive, etc.)	Front	Not Applicable
	Rear	" "
Seat cushion type (e.g., 60/40, bucket, bench, wire, foam etc.)	Front	Bucket with polyurethane padding
	Rear	Bench with polyurethane padding
	3rd seat	Not Applicable
Seat back type (e.g., 60/40, bucket, bench, wire, foam etc.)	Front	Reclining bucket with polyurethane padding
	Rear	Fixed bench with polyurethane padding*
	3rd seat	Not Applicable
		*For Beretta GT, 60/40 split folding rear seat standard

MVMA Specifications Form

METRIC (U.S. Customary)

Vehicle Line BERETTA
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Body Type 2-Door Notchback Coupe 1LV37

Restraint System

Seating Position			Left	Center	Right
Active	Type & description (lap & shoulder belt, lap belt, etc.) Standard/optional	First seat			
		Second seat			
		Third seat			
Passive	Type & description (air bag, motorized - 2-point belt, fixed belt, knee bolster, manual - lap belt) Standard/optional	First seat	3 point door mounted passive system	--	3 point door mounted passive system
		Second seat	3 point active belt	Adjustable latch 2 point belt (non-retractor)	3 point active belt
		Third seat			

Glass	SAE Ref. No.	
Windshield glass exposed surface area [cm^2(in.^{2})]	S1	10303 cm^2 (1598 in^2)
Side glass exposed surface area [cm^2(in.^{2})] - total 2-sides	S2	1794 cm^2 (278 in^2)
Backlight glass exposed surface area [cm^2(in.^{2})]	S3	4813 cm^2 (746 in^2)
Total glass exposed surface area [cm^2(in.^{2})]	S4	16910 cm^2 (2622 in^2)
Windshield glass (type)		Laminated
Side glass (type)		Tempered
Backlight glass (type)		Tempered

Lamps and Headlamp Locations

Headlamps	Description - sealed beam, halogen, replaceable bulb, etc.	Halogen, replaceable bulb
	Shape	Rectangular
	Lo-beam type (2A1, 2B1, 2C1, etc.)	HB3
	Quantity	2
	Hi-beam type (1A1, 2A1, 1C1, 2C1, etc.)	HB4
	Quantity	2

Frame

Type and description (separate frame, unitized frame, partially-unitized frame)	Body-frame integral with bolt-on power train cradle

MVMA Specifications Form

METRIC (U.S. Customary)

Vehicle Line BERETTA
Model Year 1989 Issued 6-88 Revised (•)

Body Type 2-Door Notchback Coupe 1LV37

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

∅ Air conditioning (manual, auto. temp control)		Optional (manual control)
Clock (digital, analog)		Digital (integ. w/stereo radios)
Compass/thermometer		Outside temp part of U52 cluster
Console (floor, overhead)		Standard, full floor, overhead consolette*
Defroster, elec. backlight		Optional
Electronic	Diagnostic monitor (integrated, individual)	Not Available
	Instrument cluster (list instruments)	Opt.bar graph fuel,temp.,oil pres.,battery charge gauges and bar graph/digital speedo (U52)**
	Keyless entry	Not Available
	Tripminder (avg. spd., fuel)	Part of U52 cluster - optional
	Voice alert (list items)	Not Available
	Other	Digital/bar graph tachometer (U52)
		Digital trip odometer, outside temp.&instant range avg.
Fuel door lock (remote, key, electric)		Not Available
Lamps	Auto head on/off delay, dimming	"
	Comering	"
	Courtesy (map, reading)	Courtesy standard. Map reading optional*
	Door lock, ignition	Not Available
	Engine compartment	*
	Fog	Not Available
	Glove compartment	"
	Trunk	Standard
∅	Illuminated entry system (list lamps, activation)	
	Other	Ash tray lamp standard
Mirrors	Day/night (auto. man.)	Standard (manual)
	L.H. (remote, power, heated)	Standard (remote)
	R. H. (convex, remote, power, heated)	Standard (manual convex)
	Visor vanity (RH / LH, illuminated)	Visor Mirror R.H. ***
∅ Navigation system (describe)		Not Available
Parking brake-auto release (warning light)		Standard (manual release) lower area of speedometer

*-Avail in optional lighting package (TR9).
**-Requires V6 engine
***-Avail in optional custom interior (B18)

MVMA Specifications Form

METRIC (U.S. Customary)

Vehicle Line BERETTA

Model Year 1989 Issued 6-88 Revised (•) _____

Body Type 2-Door Notchback Coupe 1LV37

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

∅	Power equipment	Deck lid (release, pull down)	Optional power release
		Door locks (manual, automatic, describe system)	Optional manual power door locks
		Seats — 2-4-6 way, etc.	Not Applicable
		Seats — Reclining (R.H., L.H.)	" "
		Seats — Memory (R.H., L.H., preset, recline)	" "
		Seats — Lumbar, hip, thigh, support	" "
		Seats — Heated (R.H., L.H., other)	" "
		Side windows	Optional *
		Vent windows	Not Available
		Rear windows	" "
	Radio systems	Antenna (location, whip, w/shield, power)	R. F. Fender fixed mast standard.
∅		Standard	Electronically tuned AM/FM Stereo radio with seek and scan and clock. Includes dual front and extended range rear speakers.
		Optional — AM, FM, stereo, tape, compact disc, graphic equalizer, theft deterrent, radio prep package, headphone jacks, etc.	UM6 **electronically tuned AM/FM Stereo with cassette, seek and scan and clock. Includes dual front and extended range rear speakers. UX1 **electronically tuned AM Stereo/FM Stereo with cassette, seek and scan, clock and graphic equalizer. Includes dual front and extended range rear speakers.
		Speaker (number, location)	4 speakers; two in front and two in rear.
	Roof open air fixed (flip-up, sliding, "T")		Optional flip-up and removable vista vent
	Speed control device		Optional***
	Speed warning device (light, buzzer, etc.)		Not Available
	Tachometer (rpm)		Standard analog dial
	Telephone system (describe)		Not Available
	Theft deterrent system		Auto. trans.-lock mounted on steering column; locks steering wheel, auto trans. shift lever and ignition. Manual trans.-lock mounted on steering column; locks steering wheel and ignition. Plus anti-theft design door lock buttons.

* - Requires AU3 power locks
** - Requires C60 air conditioning
*** - Requires N33 tilt steering wheel

MVMA Specifications Form

Vehicle Models BERETTA
Model Year 1989 Issued 6-88 Revised (e) _____

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.	2-Door Notchback Coupe 1LV37
Width		
Tread (front)	W101	1413 (55.6)
Tread (rear)	W102	1438 (56.6)
Vehicle width	W103	1733 (68.2)
Body width at Sg RP (front)	W117	1726 (68.0)
Vehicle width (front doors open)	W120	3903 (153.7)
Vehicle width (rear doors open)	W121	Not Applicable
Front fender overall width	W106	1677 (66.0)
Rear fender overall width	W107	1733 (68.2)
Tumble-home (deg.)	W122	27.0
Vehicle width including mirrors		
Length		
Wheelbase	L101	2627 (103.4)
Vehicle length	L103	4756 (187.2)
Overhang (front)	L104	1067 (42.0)
Overhang (rear)	L105	1062 (41.8)
Upper structure length	L123	2663 (104.8)
Rear wheel C/L "X" coordinate	L127	2410 (94.9)
Cowl point "X" coordinate	L125	162 (6.4)
Front end length at centerline	L126	1416 (55.7)
Rear end length at centerline	L129	506 (19.9)
Height **		
Passenger distribution (front/rear)	PD1,2,3	**
Trunk/cargo load		**
Vehicle height	H101	1403 (55.3)
Cowl point to ground	H114	955 (37.6)
Deck point to ground	H138	1057 (41.6)
Rocker panel-front to ground	H112	221 (8.7)
Bottom of door closed-front to ground	H133	273 (10.8)
Rocker panel-rear to ground	H111	225 (8.8)
Bottom of door closed-rear to ground	H135	Not Applicable
Windshield slope angle	H122	61.0
Backlight slope angle	H121	60.4
Ground Clearance **		
Front bumper to ground	H102	351 (13.8)
Rear bumper to ground	H104	352 (13.8)
Bumper to ground [front at curb mass (wt.)]	H103	362 (14.3)
Bumper to ground [rear at curb mass (wt.)]	H105	381 (15.0)
Angle of approach (degrees)	H106	13.0°
Angle of departure (degrees)	H107	19.2°
Ramp breakover angle (degrees)	H147	6.0°
Axle differential to ground (front / rear)	H153	Not Available
Min. running ground clearance	H156	148 (5.8)
Location of min. run. grd. clear.		

** *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 Accesories Whic Weigh Three Pounds Or More And Which Are Sold On At Least 33% Of The Car Line. Plus Two Occupants.

MVMA Specifications Form

Vehicle Models BERETTA
Model Year 1989 Issued 6-88 Revised (•) _____

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

Body Type		2-Door Notchback Coupe 1LV37
Front Compartment	**SAE Ref. No.**	
Sg RP front, "X" coordinate	L31	1138 (44.8)
Effective head room	H61	964 (38.0)
Max. eff. leg room (accelerator)	L34	1102 (43.4)
SgRP to heel point	H30	234 (9.2)
SgRP to heel point	L53	912 (35.9)
Back angle	L40	26.5
Hip angle	L42	103.0
Knee angle	L44	136.0
Foot angle	L46	87.0
Design H-point front travel	L17	222 (8.7)
Normal driving & riding seat track trvl.	L23	198 (7.8)
Shoulder room	W3	1404 (55.3)
Hip room	W5	1351 (53.2)
** Upper body opening to ground	H50	987 (38.8)
Steering wheel maximum diameter*	W9	382 (15.0)
Steering wheel angle	H18	18.5
Accel. heel pt. to steer. whl. cntr	L11	Not Available
Accel. heel pt. to steer. whl. cntr	H17	" "
Steering wheel to C/L of thigh	H13	124 (4.9)
Steering wheel torso clearance	L7	371 (14.6)
Headlining to roof panel (front)	H37	18 (0.7)
Undepressed floor covering thickness	H67	15 (0.6)

Front Compartment 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	760 (29.9)
Effective head room	H63	930 (36.6)
Min. effective leg room	L51	880 (34.6)
Sg RP (second to heel)	H31	256 (10.1)
Knee clearance	L48	4 (0.2)
Compartment room	L3	656 (25.8)
Shoulder room	W4	1400 (55.1)
Hip room	W6	1287 (50.7)
** Upper body opening to ground	H51	--
Back angle	L41	24.5
Hip angle	L43	81.0
Knee angle	L45	86.5
Foot angle	L47	122.0
Headlining to roof panel (second)	H38	8 (0.3)
Depressed floor covering thickness	H73	17 (0.7)

Luggage Compartment		
Usable luggage capacity [L (cu. ft.)]	V1	382 (13.5)
** Liftover height	H195	891 (35.1)

Interior Volumes (EPA Classification)		
Vehicle class		Compact
Interior volume index (cu. ft.)		106.7
Trunk/cargo index (cu. ft.)		13.5

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

MVMA Specifications Form

Vehicle Line BERETTA
Model Year 1989 Issued 6-88 Revised (•) _____

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

Body Type 2-Door Notchback Coupe 1LV37

Station Wagon – Third Seat	SAE Ref. No.	
Seat facing direction	SD1	Not
Sg RP couple distance	L85	Applicable
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	Not
Cargo length (open second)	L201	Applicable
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	Not
Cargo length at floor (front)	L209	Applicable
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*	
Wheel lip to ground, front	Not Available
Wheel lip to ground, rear	" "
Frontal area [$m^2(ft^2)$]	1.97 (21.2)
Drag coefficient (Cd)	Not Available

* EPA Loaded Vehicle Weight, Loading Conditions

MVMA Specifications Form

METRIC (U.S. Customary)

Vehicle Line BERETTA
Model Year 1989 Issued 6-88 Revised (•) _____

Body Type 2-Door Notchback Coupe 1LV37

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 th 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 adjust 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 the base grid line to rear fiducial mark located on the rail (compartment pan - longitudinal).

	Fiducial Mark Number	
Front	W21*	346 (13.6)
	L54*	2761 (108.7)
	H81*	2001 (7.9)
	H161*	Not Available
**	H163*	" "
Rear	W22*	340 (13.4)
	L55*	4953 (195.0)
	H82*	362 (14.3)
	H162*	Not Available
**	H164*	" "

* 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

Vehicle Line BERETTA
Model Year 1989 Issued 6-88 Revised (•) _____

METRIC (U.S. Customary)

Vehicle Mass (weight)

Code	Model	CURB MASS, kg. (lb.)*			% PASS. MASS DISTRIBUTION				ETWC**
					Pass In Front		Pass In Rear		
		Front	Rear	Total	Front	Rear	Front	Rear	
Beretta									
1LV37	2-Door Notchback Coupe	765.3 (1687)	428.4 (944)	1193.7 (2631)					3000 (lbs.)

SHIPPING MASS (weight) = Curb Weight Less Kg. (lbs.) 31.2 (68.8)

* Reference – SAE J1100 Motor vehicle dimensions, curb weight definition.

** 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.

MVMA Specifications Form

METRIC (U.S. Customary)

Vehicle Line BERETTA
Model Year 1989 Issued 6-88 Revised (•) _____

Code	Equipment	Optional Equipment Differential Mass (weight)* MASS, kg. (lb.) Front	Rear	Total	Remarks Restrictions, Requirements
AU3	Power Door Lock System	.6 (1.3)	1.2 (2.6)	1.8 (3.9)	
A31	Power Windows	1.4 (3.1)	2.2 (4.8)	3.6 (7.9)	
A90	Power Trunk Opener	-.2 (-0.4)	1.0 (2.2)	.8 (1.8)	
B18	Custom Interior	1.0 (2.2)	1.0 (2.2)	2.0 (4.4)	Standard on 'GT' Model (Z21)
B34	Floor Mats - Front	1.0 (2.2)	.2 (0.4)	1.2 (2.6)	
B35	Floor Mats - Rear	.2 (0.4)	.4 (0.9)	.6 (1.3)	
B84	Body Side Moldings	.8 (1.8)	1.4 (3.1)	2.2 (4.8)	
CD4	Intermittent Windshield Wiper System	.2 (0.4)	0 (0)	.2 (0.4)	
C49	Electric Rear Window Defogger	0 (0)	.6 (1.3)	.6 (1.3)	
C60	Air Conditioning	20.4 (45.0)	-1.4 (-3.1)	19.0 (41.9)	With RPO LL8 Engine & MR3
		20.0 (44.1)	-1.4 (-3.1)	18.6 (41.0)	With RPO LB6 Engine & MG2
K05	Engine Block Heater	.2 (0.4)	0 (0)	.2 (0.4)	
K34	Electronic Speed Control	1.8 (3.9)	0 (0)	1.8 (3.9)	
LB6	2.8 Liter V6 Engine	44.6 (98.3)	-3.0 (-6.6)	41.6 (91.7)	With Manual Transmission
		35.6 (78.5)	-2.8 (-6.2)	32.8 (72.3)	With Automatic Transmission

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

MVMA Specifications Form

Vehicle Line BERETTA
Model Year 1989 Issued 6-88 Revised (e)

METRIC (U.S. Customary)

Code	Equipment	Optional Equipment Differential Mass (weight)* MASS, kg. (lb.) From	Rear	Total	Remarks Restrictions, Requirements
MD9	Automatic Transmission	15.2 (33.5)	-1.4 (-3.1)	13.8 (30.4)	With RPO L18 Engine
		19.6 (43.2)	-1.8 (-4.0)	17.8 (39.2)	With RPO L86 Engine
N33	Comfortilt Steering Wheel	.4 (0.9)	.2 (0.4)	.6 (1.3)	
PD8	Aluminum Wheels - 14"	-4.4 (-9.7)	-4.4 (-9.7)	-8.8 (-19.4)	
PF1	Styled Steel Wheels-15"	5.6 (12.3)	5.8 (12.8)	11.4 (25.1)	
UA1	Heavy Duty Battery	3.0 (6.6)	-0.4 (-0.9)	2.6 (5.7)	Required with Auto. Trans. on L4 Mandatory for Canada
UM6	AM/FM Stereo Radio, Cassette Player with Clock	.8 (1.8)	.2 (0.4)	1.0 (2.2)	
UX1	AM/FM Stereo Radio, Cassette Player, Graphic Equalizer with Clock	1.8 (4.0)	.2 (0.4)	2.0 (4.4)	
U52	Electronic Instrumentation	.2 (0.4)	0 (0)	.2 (0.4)	
VK3	Front License Plate Mounting	.6 (1.3)	0 (0)	.6 (1.3)	
V56	Deck Lid Luggage Rack (Charcoal)	.6 (1.3)	2.6 (5.7)	3.2 (7.0)	
Z21	'Beretta GT' Option	53.8 (118.6)	9.0 (19.8)	62.8 (138.4)	

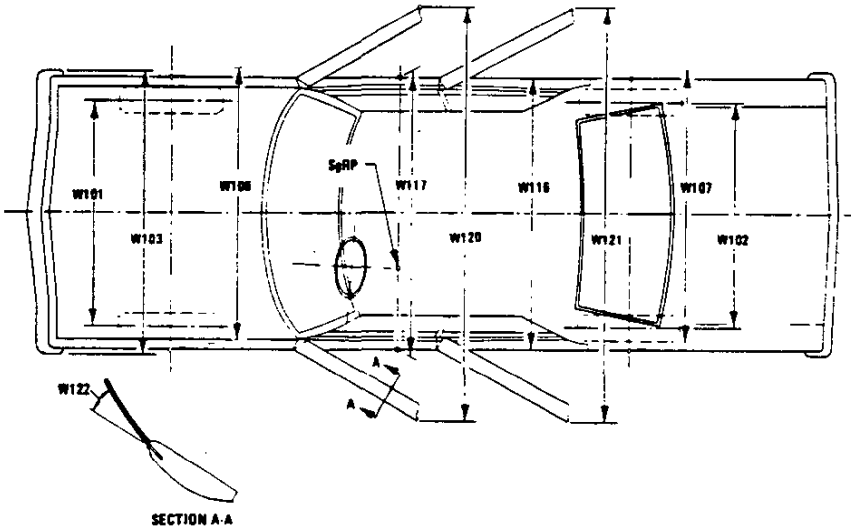
* Also see Engine - General Section for dressed engine mass (weight).

MVMA Specifications Form

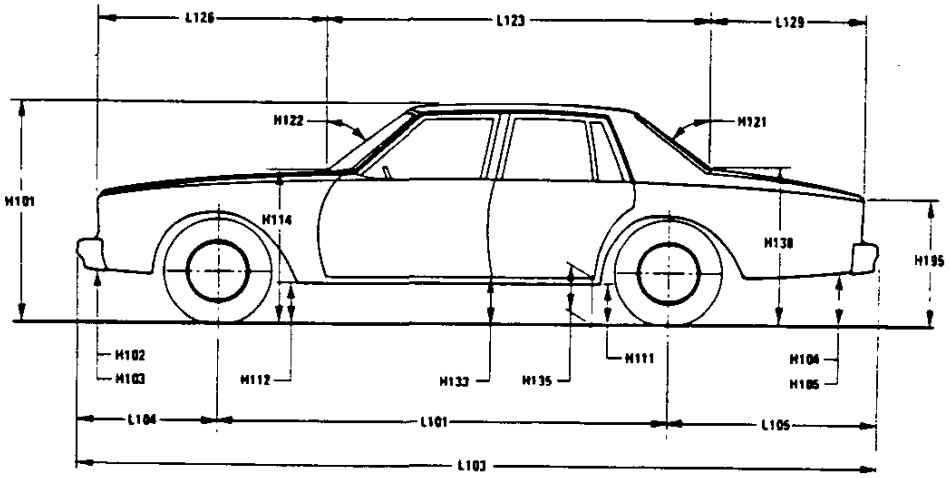
METRIC (U.S. Customary)

Exterior Vehicle And Body Dimensions – Key Sheet

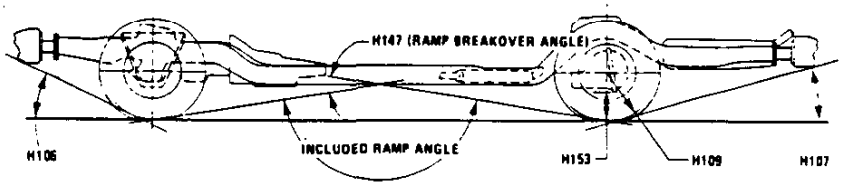
Exterior Width



Exterior Length & Height



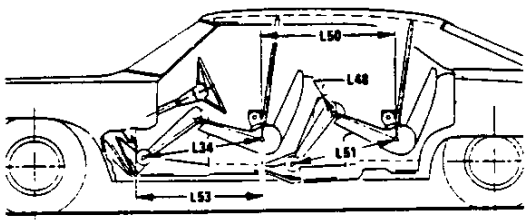
Exterior Ground Clearance

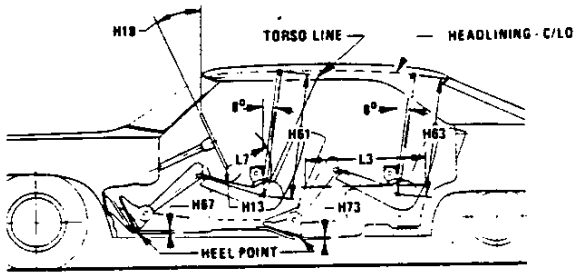


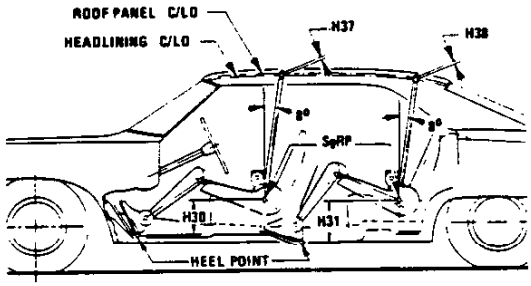
MVMA Specifications Form

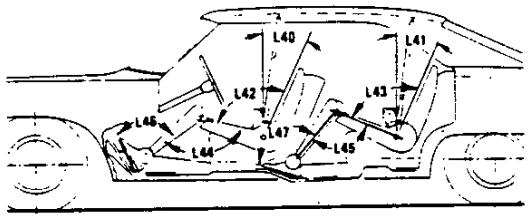
METRIC (U.S. Customary)

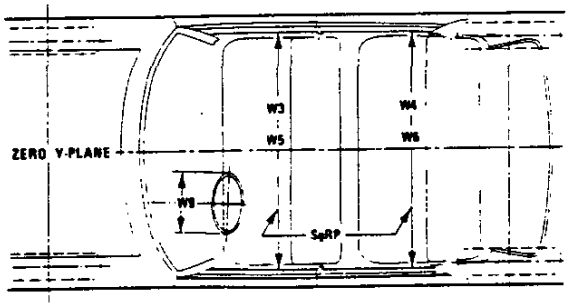
Interior Vehicle And Body Dimensions – Key Sheet

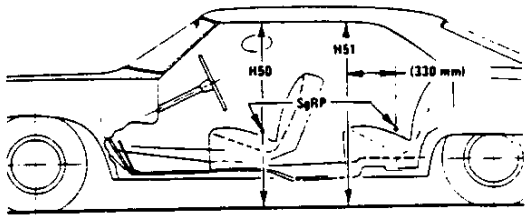










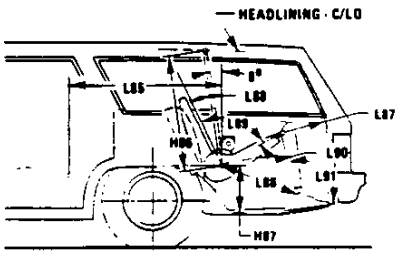


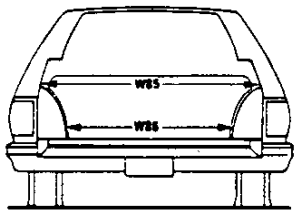
MVMA Specifications Form

METRIC (U.S. Customary)

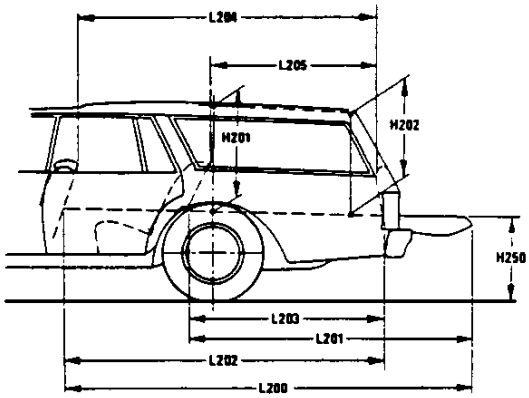
Interior Vehicle And Body Dimensions – Key Sheet

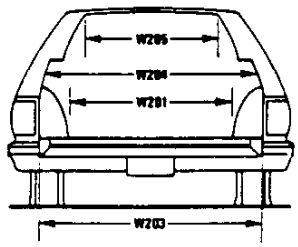
Third Seat



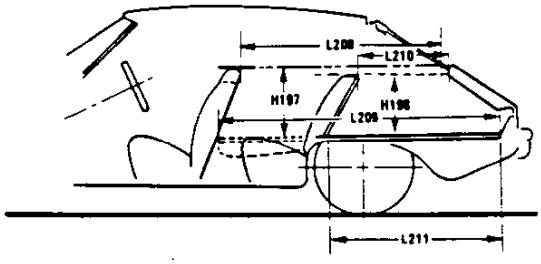


Cargo Space





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.

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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 teh accelerator is depressed, the manufacturer shall place foot flat on pedal and note the depression of the pedal.

L-40 BACK ANGLE–FRONT. The angle measured between a vertical line through the SgRP–front and the torso line. If the seatback is adjustable, use the normal driving and riding position specified by the manufacturer.

L-42 HIP ANGLE–FRONT. The angle measured between torso line and thigh centerline.

L44 KNEE ANGLE–FRONT. The angle measured between thigh centerline and lower leg centerline measured on the right leg.

L46 FOOT ANGLE–FRONT. The angle measured between the lower leg centerline and a line tangent to the ball and heel of the bare foot flesh line measured on the right leg. Ref SAE J826.

L53 SgRP–FRONT TO HEEL. The dimension measured horizontally from the SgRP–front to the accelerator heel point.

W3 SHOULDER ROOM–FRONT. The minimum dimension measured laterally between the trimmed surfaces on the "X" plane through the SgRP–front at height between the belt line and 254 mm (10.0 in.) above the SgRP–front, excluding the door assist strap and attaching parts.

W5 HIP ROOM–FRONT. The minimum dimension measured laterally between the trimmed surfaces on the "X" plane through the SgRP–front within 25 mm (1.0 in.) below and 76 mm (3.0 in.) above the SgRP–front and 76 mm (3.0 in.) fore and aft of the SgRP–front.

W9 STEERING WHEEL MAXIMUM OUTSIDE DIAMETER. Define if other than round.

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 covereing 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.

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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 dimesnion 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 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.

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.

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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:

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

Measured in mm:

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

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:

$$\frac{L506 \times W500 \times H503}{1728} = ft^3$$

Measured in mm:

$$\frac{L506 \times W500 \times H503}{10^9} = m^3 \text{ (cubic meter)}$$

V6 TRUCKS AND MPV'S WITH CLOSED AREA.
Measured in inches:

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

Measured in mm:

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

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:

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

Measured in mm:

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

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:

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

Measured in mm:

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

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:

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

Measured in mm:

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

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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:

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

Measured in mm:

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

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:

$$\frac{L506 \times W500 \times H503}{1728} = ft^3$$

Measured in mm:

$$\frac{L506 \times W500 \times H503}{10^9} = m^3 \text{ (cubic meter)}$$

V6 TRUCKS AND MPV'S WITH CLOSED AREA.

Measured in inches:

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

Measured in mm:

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

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:

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

Measured in mm:

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

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:

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

Measured in mm:

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

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:

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

Measured in mm:

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

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