AMA–40A

AMA Specifications—Passenger Car

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MANUFACTURER	CAR NAME	
OLDSMOBILE	4-4-2	
MAILING ADDRESS	MODEL YEAR	ISSUED: 7-12-68
LANSING, MICHIGAN 48921	1969	REVISED (•) 1-10-69

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

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BODY – TYPES AND STYLE NAMES – Body type, style names; use manufacturer's code for series & body style.

	4-4-2
	34400
67	
Convertible	X
77	
Club Coupe	X
87	
Hardtop Coupe	X

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MAKE OF CAR OLDSMOBILE MODEL YEAR 1969 DATE ISSUED 7-12-68 REVISED (•)

CAR AND BODY DIMENSIONS

See Pages 25, 26 for SAE Dimension Definitions

(All dimensions in inches unless otherwise indicated)

All dimensions to ground are for comparative purposes only. Dimensions are to be shown for:
4-Dr. Sedan; 2-Dr. H.T., 4-Dr. H.T., Convertible and Station Wagon.

MODEL		SAE Ref. No.	4-4-2
WIDTH			
Track – Front		W101	59.0
Track – Rear		W102	59.0
Maximum overall car width		W103	76.2
Body width at No. 2 pillar		W117	73.8
LENGTH			
Body "O" to front of dash		L 30	0.0
Wheelbase		L101	112.0
Overall car length		L103	201.9
Overhang – front		L104	41.0
Overhang – rear		L105	48.9
Body upper structure length		L123	102.8
Body "O" line to ℄ of rear wheel		L127	95.6
Body "O" line to w/s cowl point		L130	NA
HEIGHT			
Passenger Distribution (front & rear)			2-3
Trunk/Cargo load (lbs.)			200
Overall height		H101	52.8
Cowl height		H114	37.7
Deck height		H138	NA
Rocker panel – front	To ground	H112	8.4
	From front wheel ℄		NA
Rocker panel – rear	To ground	H111	7.9
	From rear wheel ℄		NA
Windshield slope angle		H122	53.1°
GROUND CLEARANCE			
Bumper to ground – front		H102	13.3
Bumper to ground – rear		H104	12.9
Angle of approach		H106	24.7
Angle of departure		H107	18.8
Ramp breakover angle		H147	12.5
Min. running clearance (Specify)		H156	5.5

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CAR AND BODY DIMENSIONS

See Pages 25, 26 for SAE Dimension Definitions

(All dimensions in inches unless otherwise indicated)

MODEL	SAE Ref. No.	4-4-2
FRONT COMPARTMENT		
Effective head room	H61	38.2
Max. eff. leg room – accelerator	L34	42.8
H Point to Heel point	H30	7.9
H Point travel	L17	4.8
Shoulder room	W 3	58.3
Hip room	W 5	59.5
Upper body opening to ground	H50	N.A.
REAR COMPARTMENT		
H Point couple distance	L50	30.7
Effective head room	H63	36.3
Min. effective leg room	L51	32.5
H Point to Heel point	H31	9.9
Min. knee room	L48	1.5
Rear Compartment room	L 3	24.3
Shoulder room	W 4	57.0
Hip room	W 6	53.0
Upper body opening to ground	H51	N.A.
LUGGAGE COMPARTMENT		
Usable luggage capacity	V 1	17.0
Liftover height	H195	
Position of spare tire storage		Flat on Right Side of Trunk
Method of holding lid open		Counter Balanced - Torsion Bar
STATION WAGON – THIRD SEAT		
Shoulder Room	W85	
Hip room	W86	
Effective leg room	L86	
Effective head room	H86	
Seat facing direction		
STATION WAGON – CARGO SPACE		
Cargo length at floor – front seat	L202	
Cargo length at belt – front seat	L204	
Cargo width – Wheelhouse	W201	
Opening width at belt	W204	
Maximum cargo height	H201	
Rear opening height	H202	
Cargo volume index (cu. ft.) $\frac{W4 \times L204 \times H201}{1728}$	V2	

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POWER TEAMS

(Indicate whether standard or optional)

MODEL AVAILABILITY	ENGINE					TRANSMISSION	AXLE RATIO (Std. first) (Indicate A C ratio)
	Displ. cu. in.	Carburetor	Compr. Ratio	BHP RPM	Torque RPM		
34467 (Std.) SM 34477 (Std.) SM 34487 (Std.) SM	400	4 Bbl.	10.5	350 @ 4800	440 @ 3200	3-Speed Manual 4-Speed Manual (Wide Ratio) 4-Speed Manual (Close Ratio)	3.23,3.08,3.42,3.91 3.42,3.08,3.23;A/C 3.23,3.08 3.91,3.42
34467 (Std.) AT 34477 (Std.) AT 34487 (Std.) AT	400	4 Bbl.	10.5	325 @ 4600	440 @ 3000	Turbo HMT - 400	3.08,2.56,2.78,3.23,3.42, 3.91
34467 (Opt.) 34477 (Opt.) 34487 (Opt.)	400 (W30)	4 Bbl.	10.5	360 @ 5400	400 @ 3600	4-Speed Manual (Close Ratio) Turbo HMT - 400	4.33, 3.42, 3.91 3.42, 3.91, 4.33

Limited slip axle mandatory with 3.42, 3.91 and 4.33 ratios.
A/C not available with 3.42, 3.91 or 4.33 axle ratios.
4.33 and 4.66 available as dealer option.

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MODEL 4-4-2

ENGINE – GENERAL

Type, no. cyls., valve arr.		90° OHV V-8
Bore and stroke (nominal)		3.870 X 4.250
Piston displacement, cu. in.		400
Bore spacing (℄ to ℄)		4.625
No. system (front to rear)	L. Bank	1-3-5-7
	R. Bank	2-4-6-8
Firing order		1-8-4-3-5-6-7-2
Compres. ratio (nominal)		10.5:1
Cylinder Head Material		Cast Iron
Cylinder Block Material		Cast Iron
Cyl. Sleeve-Wet, dry, none		None
Number of mtg. points	Front	Two
	Rear	One
Engine installation angle		4° 37'
Taxable horsepower $\frac{Dia^2 \times No.\ Cyl.}{2.5}$		47.926
Publishing max. bhp* @ eng. RPM		350 @ 4800 (SMT) 325 @ 4600 (AMT)
Publishing max. torque * (lb. ft. @ RPM)		440 @ 3200 (SMT) 440 @ 3000 (AMT)
Recommended fuel regular – premium		Premium

ENGINE – PISTONS

Material			Aluminum Alloy
Description and finish			Autothermic, Cam Grind, Tin Plate, Steel Strut
Weight (piston only) oz.			21.094
Clearance (limits)	Top land		.032 - .043
	Skirt	Top	----------
		Bottom	.001 - .002 *
Ring groove depth	No. 1 ring		.205 - .212
	No. 2 ring		.205 - .212
	No. 3 ring		.195 - .202
	No. 4 ring		----------

* Max. bhp (brake horsepower) and max. torque corrected to 60° F and 29.92 in. Hg atmospheric pressure.

* Measured .50 Below E of Piston Pin

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MAKE OF CAR OLDSMOBILE MODEL YEAR 1969 DATE ISSUED 7-12-68 REVISED (•)

MODEL		442 (W30)
ENGINE – GENERAL		
Type, no. cyls., valve arr.		
Bore and stroke (nominal)		
Piston displacement, cu. in.		
Bore spacing (℄ to ℄)		
No. system (front to rear)	L. Bank	
	R. Bank	
Firing order		
Compres. ratio (nominal)		
Cylinder Head Material		
Cylinder Block Material		
Cyl. Sleeve-Wet,dry,none		
Number of mtg. points	Front	
	Rear	
Engine installation angle		
Taxable horsepower	$\frac{Dia^2 \times No.\ Cyl.}{2.5}$	
Publishing max. bhp* @ eng. RPM		360 @ 5400
Publishing max. torque * (lb. ft. @ RPM)		440 @ 3600
Recommended fuel regular – premium		
ENGINE – PISTONS		
Material		
Description and finish		
Weight (piston only) oz.		
Clearance (limits)	Top land	
	Skirt Top	
	Skirt Bottom	
Ring groove depth	No. 1 ring	
	No. 2 ring	
	No. 3 ring	
	No. 4 ring	

* Max. bhp (broke horsepower) and max. torque corrected to 60° F and 29.92 in. Hg atmospheric pressure.

Otherwise as Standard 442 (page 4).

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MODEL 4-4-2

ENGINE – RINGS

Function (top to bottom)	No. 1, oil or comp.	Compression
	No. 2, oil or comp.	Compression
	No. 3, oil or comp.	Oil
	No. 4, oil or comp.	None
Compression	Description, material, coating, etc.	Upper Ring - Cast Iron with Crowned andMolybdenum Plated O.D. Lower Ring - Cast Iron with Taper O.D. Face
	Width	.0770 = .0780
	Gap	.010 - .020
Oil	Description - material, coating, etc.	Two Rails - Spring Steel, Black Oxide Finish with Chrome Plated O.D. Spacer - Cold ROlled Spacer Steel
	Width	Rails: .0230 - .0252 Spacer: .1375 - .1335
	Gap	Rails: .015 - .055
Expanders		None

ENGINE – PISTON PINS

Material			SAE # 1019 or #1016
Length			2.980
Diameter			.9803 - .9807
Type	Locked in rod, in piston, floating, etc.		Pressed in Rod
	Bushing	In rod or piston	None
		Material	None
Clearance	In piston		.0003 - .0005 Loose
	In rod		.0008 - .0016 Press
Direction & amount offset in piston			.060 to R.H. of Cylinder Bore Centerline

ENGINE – CONNECTING RODS

Material		SAE #1140 STeel
Weight (oz.)		30.33
Length (center to center)		6.733 - 6.737
Bearing	Material & Type	Moraine 400 (GM 3889 Aluminum) Steel Backed
	Overall length	.821 - .831
	Clearance (limits)	.0004 - .0033
	End play	.002 - .011 2 Rods per Crankpin

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MODEL 4-4-2

ENGINE – CRANKSHAFT

Material			Nodular Iron (STD) AISI #1049 Modified (OPT)
Vibration damper type			Tuned Rubber
End thrust taken by bearing (No.)			#3
Crankshaft end play			.004 - .008
Main bearing	Material & type		Moraine 400 (GM 3889-M Aluminum) Steel Backed
	Clearance		1-2-3-4:.0005 - .0021 5:.0020 - .0034
	Journal dia. and bearing overall length	No. 1	3.00 X .975
		No. 2	3.00 X .975
		No. 3	3.00 X 1.194
		No. 4	3.00 X .975
		No. 5	3.00 X 1.624
		No. 6	----
		No. 7	----
	Dir. & amt. cyl. offset		RH Bank .469 to Rear and LH Bank .469 Forward of Engine
Crankpin journal diameter			2.4988 - 2.4998

ENGINE – CAMSHAFT

Location			Center
Material			GM 6016M Alloy Cast IRon
Bearings	Material		Moraine 100 - Steel Backed Babbit GM 4167M
	Number		5
Type of Drive	Gear or chain		Chain
	Crankshaft gear or sprocket material		Sintered Iron or Hardened Steel
	Camshaft gear or sprocket material		Diecast Aluminum with Nylon Teeth
	Timing chain	No. of links	48
		Width	.875 (STD) .844 (OPT)
		Pitch	.500

ENGINE – VALVE SYSTEM

Hydraulic lifters (Std., opt., NA)		Standard
Valve rotator, type (intake, exhaust)		None
Rocker ratio		1.6:1
Operating tappet clearance (indicate hot or cold)	Intake	None
	Exhaust	None

(Continued)

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MODEL			SM (STD)	442 (Exc. W30)	AT (OPT)
ENGINE – VALVE SYSTEM (cont.)					
Timing (based on top of ramp points)	Intake	Opens (°BTC)	30°		21°
		Closes (°ABC)	76°		77°
		Duration - deg.	286°		278°
	Exhaust	Opens (°BBC)	78°		76°
		Closes (°ATC)	28°		26°
		Duration - deg.	286°		282°
	Valve opening overlap		58°		47°
Intake	Material			SAE # 1047 STeel	
	Overall length			4.703	
	Actual overall head dia.			2.067 - 2.077	
	Angle of seat & face			30°	
	Seat insert material			None	
	Stem diameter			.3432 - .3425	
	Stem to guide clearance			.0010 - .0027	
	Lift (@ zero lash)		.472		.430
	Outer spring press. & length	Valve closed (lb.@in.)		76 - 84 @ 1.670	
		Valve open (lb.@in.)		180 - 194 @ 1.270	
	Inner spring press. & length	Valve closed (lb.@in.)		Damper	
		Valve open (lb.@in.)		--------	
Exhaust	Material			GM #N82152 STeel	
	Overall length			4.695	
	Actual overall head dia.			1.629 - 1.619	
	Angle of seat & face			45° Seat 46° Face	
	Seat insert material			None	
	Stem diameter			.3427 - .3420	
	Stem to guide clearance			.0015 - .0032	
	Lift (@ zero lash)		.472		.432
	Outer spring press. & length	Valve closed (lb.@in.)		76-84 @ 1.670	
		Valve open (lb.@in.)		180-194 @ 1.270	
	Inner spring press. & length	Valve closed (lb.@in.)		Damper	
		Valve open (lb.@in.)		----------	

ENGINE – LUBRICATION SYSTEM

Type of lubrication (splash, pressure, nozzle)	Main bearings	Pressure
	Connecting rods	Pressure
	Piston pins	Splash
	Camshaft bearings	Pressure
	Tappets	Pressure
	Timing gear or chain	Pressure
	Cylinder walls	Pressure

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MODEL 4-4-2 (W30)

ENGINE – VALVE SYSTEM (cont.)

Timing (based on top of ramp points)	Intake	Opens (°BTC)	56°
		Closes (°ABC)	92°
		Duration - deg.	328°
	Exhaust	Opens (°BBC)	96°
		Closes (°ATC)	52°
		Duration - deg.	328°
	Valve opening overlap		108°
Intake	Material		
	Overall length		
	Actual overall head dia.		
	Angle of seat & face		
	Seat insert material		
	Stem diameter		
	Stem to guide clearance		
	Lift (@ zero lash)		
	Outer spring press. & length	Valve closed (lb.@in.)	
		Valve open (lb.@in.)	
	Inner spring press. & length	Valve closed (lb.@in.)	
		Valve open (lb.@in.)	
Exhaust	Material		
	Overall length		
	Actual overall head dia.		
	Angle of seat & face		
	Seat insert material		
	Stem diameter		
	Stem to guide clearance		
	Lift (@ zero lash)		
	Outer spring press. & length	Valve closed (lb.@in.)	
		Valve open (lb.@in.)	
	Inner spring press. & length	Valve closed (lb.@in.)	
		Valve open (lb.@in.)	

ENGINE – LUBRICATION SYSTEM

Type of lubrication (splash, pressure, nozzle)	Main bearings	
	Connecting rods	
	Piston pins	
	Camshaft bearings	
	Tappets	
	Timing gear or chain	
	Cylinder walls	

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OTHERWISE SAME AS STANDARD 4-4-2 (PAGE 7)

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MODEL 4-4-2

ENGINE – LUBRICATION SYSTEM (cont.)

Oil pump type	Gear
Normal oil pressure (lb. engine rpm)	35-50 @ 1500 RPM
Oil press. sending unit (elect. or mech.)	Electric
Type oil intake (floating, stationary)	Stationary
Oil filter system (full flow, part., other)	Full Flow
Filter replacement (element, complete)	Complete
Capacity of c case, less filter-refill (qt.)	4
Oil grade recommended (SAE viscosity and temperature range)	Above 20° F – 20U, 10W30, 10W40, 20W40 0° - 60° F – 10U, 5W30, 10W30, 10W40 Below 20° F – 5U, 5W20, 5W30
Engine Service Reqmt. (MM, MS, etc.)	MS

ENGINE – EXHAUST SYSTEM

Type (single, single with cross-over, dual, other)		Dual
Muffler No. & type (reverse flow, straight thru, separate resonator)		Two Straight Thru Mufflers
Exhaust pipe dia. (O.D., wall thick.)	Branch	None
	Main	2.25 x .076
Tail pipe dia. (O.D. & wall thickness)		2.00 x .060

ENGINE – CRANKCASE VENTILATION SYSTEM

Type (ventilates to atmos., induction system, other)		Standard	Positive Cranckase Ventilation
		Optional	None
Control Unit	Make and model		AC Ventilation Valve CV - 679C
	Location		Valve Cover
	Energy source (manifold vacuum, carburetor air stream, other)		Manifold Vacuum
	Control method (variable orifice, fixed orifice, other)		Variable Orifice
Complete system	Discharges (to intake manifold, carb. air intake, air cleaner intake, other)		Intake Manifold And Air Cleaner
	Air inlet (breather cap, carburetor air cleaner, other)		Ventilation Filter Located in Valve Cover
	Flame arrestor (screen, check valve, other)		Check In Ventilation Valve

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MODEL 4-4-2

ENGINE – EXHAUST EMISSION CONTROL

Type (Air injection, engine modifications, other)			Engine Modification *
Air Injection Pump	Type		None
	Displacement		
	Drive ratio		
	Drive type		
	Relief valve (type)		
	Filter (describe)		
Air Injection System	Air distribution (head, manifold, etc.)		None
	Point of entry		
	Injection tube I.D.		
	Check valve type		
	Backfire protection (type)		
Carburetor	Make		Standard
	Model		
	Barrel size		
	Idle speed	Drive	
		Neutral	
	Idle A/F mixture		
Distributor	Aux. Adv. Systems (type)		None
	Make		Standard
	Model		
	Cent'fgal adv. in crank degrees @ eng. rpm	Start (rpm)	
		Intermed. points deg. @ rpm	
		Max. deg. @ rpm	
	Vacuum adv. in crank degrees @ eng. rpm	Start (in Hg) Intermed. points deg. @ in. Hg Max. deg. @ in.	
	Vacuum Source		Ported
Timing - Crank degrees @ rpm			Standard
Cooling System			None
Exhaust System			None

* Exhaust emission is controlled by means of pre-heated air to carburetor, carburetor adjustment, engine timing, and idle setting.

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MODEL 4-4-2

ENGINE – FUEL SYSTEM

(See supplemental page for Details of Fuel Injection, Supercharger, etc. if used)

Induction type: Carburetor, fuel injection, supercharger.			Carburetor
Fuel Tank	Refill capacity (U.S. gals.)		20
	Filler location		Behind License Plate Rear Bumper
Fuel Pump	Type (elec. or mech.)		Mechanical
	Locations		R.F. on Block
	Pressure range		6 PSI
Vacuum booster (std., optional, none)			None
Fuel Filter	Type		Paper and Saran Type
	Locations		Carburetor and Fuel Tank
Carburetor	Choke type		Automatic
	Intake manifold heat control (exhaust or water)		Exhaust
	Air cleaner type	Standard	Oil Wetted Paper Element (Temperate Controlled)
		Optional	Same As above Except With External Cold Air Intake (W30)
	Idle speed (spec. neutral or drive)	Manual	750 RPM in Nuetral
		Automatic	550 RPM is Drive
		Idle A/F mix.	NA

CARBURETOR SUPPLEMENTARY INFORMATION

Model Usage	Engine Displ.	Transmission	Carburetors		No. Used and Type	Barrel Size
			Make	Model		
34467 (STD) 34477 34487	400	Fully Synch. 3-Speed Std. 4-Speed Opt. Turbo HMT - 400 Optional	Rochester	4MV	1	Prim 1 3/8 Sec. 2 1/4

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MODEL 442 (W30)

ENGINE – FUEL SYSTEM

(See supplemental page for Details of Fuel Injection, Supercharger, etc. if used)

Induction type: Carburetor, fuel injection, supercharger.			
Fuel Tank	Refill capacity (U.S. gals.)		
	Filler location		
Fuel Pump	Type (elec. or mech.)		
	Locations		
	Pressure range		
Vacuum booster (std., optional, none)			
Fuel Filter	Type		
	Locations		
Carburetor	Choke type		
	Intake manifold heat control (exhaust or water)		
	Air cleaner type	Standard	
		Optional	
	Idle speed (spec. neutral or drive)	Manual	800-850 RPM in Neutral
		Automatic	600-650 RPM in Drive
		Idle A/F mix.	

CARBURETOR SUPPLEMENTARY INFORMATION

Model Usage	Engine Displ.	Transmission	Carburetors		No. Used and Type	Barrel Size
			Make	Model		

Otherwise Same As STandard 442 (page 10)

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MODEL 4-4-2

ENGINE – COOLING SYSTEM

Type system (pressure, pressure vented, atmospheric, other)			Pressure
Radiator cap relief valve pressure			15 psi
Circulation thermostat	Type (choke, bypass)		By Pass
	Starts to open at (°F)		195°
Water pump	Type (centrifugal, other)		Centrifugal
	GPM @ 1000 pump rpm		22
	Number of pumps		1
	Drive (V-belt, other)		V-Belt
	Bearing type		Ball
By-pass recirculation type (inter., ext.)			External
Radiator core type (cellular, tube and fin, other)			Tube and Center
Cooling system capacity	With heater (qt.)		16.2
	Without heater (qt.)		15.5
	Opt. equipment-specify (qt.)		17.2 - A/C
Water jackets full length of cyl. (yes, no)			Yes
Water all around cylinder (yes, no)			Yes
Radiator hose	Lower	Number and type (molded, straight)	One Molded
		Inside diameter	1.75
	Upper	Number and type (molded, straight)	One Molded
		Inside diameter	1.50
	By-pass	Number and type (molded, straight)	One Molded
		Inside diameter	.765 - .703
Fan	Number of blades & spacing		4 @ 76° (Std.) / 6 Staggered (A/C)
	Diameter		18.00 (Std.) / 19.00 (A/C)
	Ratio-fan to crankshaft rev.		.9083:1 (Std.) / 1.22:1 (A/C)
	Fan cutout type		Clutch (A/C Only)
	Bearing type		Ball
*Drive belts (indicate belt used by letter)	Fan		A (Std.) / B (A/C)
	Generator or alternator		A (Std.) / B (A/C)
	Water Pump		A (Std.) / B (A/C)
	Power Steering		C (Std.) / D (A/C)
	Air Conditioning		E (A/C)

* Drive Belt Dimensions	A	B	C	D	E	F	G	H	I	J	K
Angle of V	36°	36°	36°	36°	36°						
Nominal length (SAE)	51.50	57.56	44.11	45.19	59.70						
Width	.380	.380	.380	.380	.380						

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MODEL 442 (W30)

ENGINE – COOLING SYSTEM

Type system (pressure, pressure vented, atmospheric, other)			
Radiator cap relief valve pressure			
Circulation thermostat	Type (choke, bypass)		
	Starts to open at (°F)		
Water pump	Type (centrifugal, other)		
	GPM @ 1000 pump rpm		
	Number of pumps		
	Drive (V-belt, other)		
	Bearing type		
By-pass recirculation type (inter., ext.)			
Radiator core type (cellular, tube and fin, other)			
Cooling system capacity	With heater (qt.)		
	Without heater (qt.)		
	Opt. equipment-specify (qt.)		
Water jackets full length of cyl. (yes, no)			
Water all around cylinder (yes, no)			
Radiator hose	Lower	Number and type (molded, straight)	
		Inside diameter	
	Upper	Number and type (molded, straight)	
		Inside diameter	
	By-pass	Number and type (molded, straight)	
		Inside diameter	
Fan	Number of blades & spacing		6 Staggered
	Diameter		19.00
	Ratio-fan to crankshaft rev.		.9083:1
	Fan cutout type		Clutch (STD)
	Bearing type		
*Drive belts (indicate belt used by letter)	Fan		
	Generator or alternator		
	Water Pump		
	Power Steering		
	Air Conditioning		

OTHERWISE SAME AS STANDARD 442 (page 11)

* Drive Belt Dimensions	A	B	C	D	E	F	G	H	I	J	K
Angle of V											
Nominal length (SAE)											
Width											

AMA Specifications—Passenger Car

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MAKE OF CAR Oldsmobile MODEL YEAR 1969 DATE ISSUED 7-12-68 REVISED (*) 1-10-69

MODEL	4-4-2

ELECTRICAL – SUPPLY SYSTEM

Battery	Make and Model			Delco Remy - 1980036
	Voltage Rtg. & Total Plates			12V-66
	SAE Designation & Amp. Hr. Rtg.			25TA - 70 Amp. Hr.
	Location			Engine Compartment - Front LH Side
	Terminal grounded			Negative
Generator or Alternator	Make			Delco Remy
	Model			1100853
	Type and rating			35 Amps
	Output at engine idle (neutral)			26 Amps
	Ratio–Gen. to Cr/s rev.			
Regulator	Make			Built in Alternator End Frame
	Model			
	Type			Solid State
	Cutout relay	Closing voltage - generator rpm		None
		Reverse current to open		None
	Regulated	Voltage		N.A.
		Current		N.A.
	Voltage test conditions	Temperature		N.A.
		Load		N.A.
		Other		Tested with Alternator

ELECTRICAL – STARTING SYSTEM

Starting Motor	Make			Delco Remy
	Model			1108348
	Rotation (drive end view)			Clockwise
Motor control	Switch (solenoid, manual)			Solenoid
	Starting procedure			* 3-Speed and 4-Speed - Place gear shift lever in neutral. Turbo HMT - Leave shift lever in park.
Motor Drive	Engagement type			Solenoid Overrunning Clutch
	Pinion meshes (front, rear)			Front
	Number of teeth	Pinion		9
		Flywheel	Manual	166
			Auto.	166
	Flywheel tooth face width		Manual	.438
			Auto.	.438

* Initial Start - Depress gas pedal to floor to set choke. Turn ignition to start and release as soon as engine starts.

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MAKE OF CAR Oldsmobile MODEL YEAR 1969 DATE ISSUED 7-12-68 REVISED (e)1-10-69

MODEL			4-4-2
ELECTRICAL – IGNITION SYSTEM			
Type	Conventional – Std., Opt., N.A.		Standard
	Transistorized – Std., Opt., N.A.		Dealer Installed Package
	Other (specify)		
Coil	Make		Delco Remy
	Model		1115216
	Amps	Engine stopped	4.0
		Engine idling	2.0
Distributor **	Make		Delco Remy
	Model		1111932 (Std.)
	Cent'fgal adv. in c/shaft degrees@ engine rpm (nominal)	Start (rpm)	0° - 2° @ 850 RPM (Std.)
		Intermediate points deg.@rpm	0° - 4° @ 950 RPM (Std.) 16° - 20° @ 1800 RPM (Std.)
		Max. deg.@rpm	20° - 24° @ 4000 RPM (Std.)
	Vacuum adv. in c/shaft degrees@ in. Hg. (nominal)	Start (in. Hg.)	0° - 3° @ 9 In. Hg. (Std.)
		Intermediate points, deg.@in. Hg.	0° - 5.8° @ 10 In. Hg. (Std.) 11.6° - 18.2° @ 15 In. Hg. (Std.) 19° - 25.5° @ 18.5 In. Hg. (Std.)
		Max. deg. in. Hg.	22.5° - 25.5° @ 20.5 In. Hg. (Std.)
	Breaker gap (in.)		.016
	Cam angle (deg.)		29° - 31°
	Breaker arm tension (oz.)		19 - 32
Timing	Crankshaft deg.@rpm		2° BTC @ 850 RPM (SMT) 8° BTC @ 850 RPM (AMT)
	Mark location		Balancer Assembly
Spark Plug	Make		AC
	Model		AC R44S
	Thread (mm)		14 MM
	Tightening torque (lb. ft.)		30
	Gap		.030
Cable	Conductor type		Resistance
	Insulation type		Neophrene
	Spark plug protector		Hypalon
ELECTRICAL – SUPPRESSION			
Locations & type			*

* Resistance core spark plug leads and coil leads, by pass condensers at alternator and at regulator and coil on radio equipped cars.

** Centrifugal advance and vacuum advance figures are for standard (non-transistorized) ignition only.

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Page 13A

MAKE OF CAR OLDSMOBILE MODEL YEAR 1969 DATE ISSUED 7-12-68 REVISED (*)

MODEL 442 (W30)

ELECTRICAL – IGNITION SYSTEM

Type	Conventional – Std., Opt., N.A.		
	Transistorized – Std., Opt., N.A.		
	Other (specify)		
Coil	Make		
	Model		
	Amps	Engine stopped	
		Engine idling	
Distributor	Make		
	Model		1111933
	Cent'fgal adv. in c/shaft degrees@ engine rpm (nominal)	Start (rpm)	0°-2° @ 650 RPM
		Intermediate points deg.@rpm	1°-5° @ 900 RPM 14°-18° @ 2000 RPM
		Max. deg.@rpm	18°-22° @ 3800 RPM
	Vacuum adv. in c/shaft degrees@ in. Hg. (nominal)	Start (in. Hg.)	0°-3.5° @ 11 IN HG
		Intermediate points, deg.@in. Hg.	0°-6.5° @ 12 IN HG 8°-14.5° @ 15 IN HG 11°-17.5° @ 16.25 IN HG
		Max. deg. in. Hg.	14.5° - 18° @ 17.75 IN HG
	Breaker gap (in.)		
	Cam angle (deg.)		
	Breaker arm tension (oz.)		
Timing	Crankshaft deg.@rpm		14° @ 1250 RPM
	Mark location		
Spark Plug	Make		
	Model		
	Thread (mm)		
	Tightening torque (lb. ft.)		
	Gap		
Cable	Conductor type		
	Insulation type		
	Spark plug protector		

ELECTRICAL – SUPPRESSION

Locations & type	

Otherwise Same As STandard 442 (Page 13)

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MAKE OF CAR Oldsmobile MODEL YEAR 1969 DATE ISSUED 7-12-68 REVISED (*) 1-10-69

MODEL 4-4-2

ELECTRICAL – INSTRUMENTS AND EQUIPMENT

Speedometer	Type	AC
	Trip odometer (yes,no)	No
Charge indicator – type		Indicator Lamp
Temperature indicator – type		Indicator Lamp
Oil pressure indicator – type		Indicator Lamp
Fuel indicator – type		Gauge
Other – Brake		Indicator Lamp
Windshield wiper	Type – Standard	2-Speed Electric
	Type – Optional	--
Windshield washer	Type – Standard	Push Button
	Type – Optional	--
Horn	Type	Vibrating
	Number used	2
	Amp draw (each)	5.2 - 5.7

DRIVE UNITS – CLUTCH (Manual Transmission)

Make & type		Borg & Beck - Single Plate
Type pressure plate springs		Belleville
Total spring load (lb.)		2450 - 2750 Assemblies
No. of clutch driven discs		One
Clutch facing	Material	Woven Asbestos
	Outside & inside dia.	11.0 x 6.5
	Total eff. area (sq.in.)	123.7
	Thickness	One .135 and one .150
	Engagement cushioning method	Flat Springs
Release bearing	Type & method of lubrication	Ball Permanent
Torsional damping	Methods: springs, friction material	Coil Spring - Steel Friction

AMA Specifications—Passenger Car

MAKE OF CAR OLDSMOBILE MODEL YEAR 1969 DATE ISSUED 7-12-68 REVISED (•)

MODEL	4-4-2

DRIVE UNITS – TRANSMISSIONS

Manual 3-speed (std. or opt.)	Standard
Manual 4-speed (std. or opt.)	Optional
Manual with overdrive (std. or opt.)	N.A.
Automatic (std. or opt.)	Optional

DRIVE UNITS – MANUAL TRANS.

Number of forward speeds			3
Transmission ratios	In first		2.42
	In second		1.61
	In third		1.00
	In fourth		--
	In reverse		2.33
Synchronous meshing, specify gears			1-2-3
Shift lever location			Floor
Lubricant	Capacity (pt.)		4.90
	Type recommended		Multipurpose
	SAE viscosity number	Summer	80 or 90
		Winter	80 or 90
		Extreme cold	80 or 90

DRIVE UNITS – MANUAL TRANS. W/OVERDRIVE

(For transmission data see manual transmission section)

Type (planetary or other)			N.A.
Manual lockout (yes, no)			
Downshift accelerator control (yes, no)			
Minimum cut-in speed			
Gear ratio			
Lubricant	Capacity (pt.) (Overdrive only)		
	Separate filler (yes, no)		
	Type recommended		
	SAE viscosity number	Summer	
		Winter	
		Extreme cold	

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MODEL 4-4-2

DRIVE UNITS – AUTOMATIC TRANSMISSION

Trade name		Turbo Hydra-Matic					
Type describe		3-Speed Torque Converter					
Selector location		Lever-Column Mounted					
List gear ratios Selector Pattern and indicate which are used in each selector position		P Park	R Reverse	N Neutral	D Drive	S Super	L Low
		--	2.08	--	2.48	2.48	2.48
		--	--	--	1.48	1.48	--
		--	--	--	1.00	--	--
Max. upshift speed–drive range		1-2 45-50 MPH				2-3 79-84 MPH	
Max. kickdown speed–drive range		2-1 28-33 MPH				3-2 68-73 MPH	
Torque convertor	Number of elements	3					
	Max. ratio at stall	2.30 Fixed Stator					
	Type of cooling (air, liquid)	Water					
	Nominal diameter	13.6					
Lubricant	Capacity–refill (pt.)	8					
	Type recommended	Dexron					
Special transmission features		Part Throttle 3-2 Downshift Up To 45 MPH To Provide Added Performance					

DRIVE UNITS – PROPELLER SHAFT

Number used		One
Type (straight tube, tube-in-tube, internal-external damper, etc.)		Exposed
Outer diam. x length* x wall thickness	Manual 3-speed trans.	3.00 x 56.00 x .065
	Manual 4-speed trans.	3.00 x 56.00 x .065
	Overdrive transmission	N.A.
	Automatic transmission	3.25 x 55.10 x .065

* Center to center of universal joints, or to centerline of rear attachment.

(Continued)

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MODEL 4-4-2

DRIVE UNITS – PROPELLER SHAFT (cont.)

Intermediate bearing	Type (plain, anti-friction)		None	
	Lubrication (fitting, prepack)		None	
Slip Yoke	Type		Involute Spline	
	Number of teeth		27 Manual	32 Automatic
	Spline O.D.		1.1760	1.395
Universal joints	Make and Mfg. No.		Saginaw Steering Gear	
	Number used		Two	
	Type (ball and trunnion, cross)		Cross	
	Rear attach. (u-bolt, clamp, etc.)		U-Bolt	
	Bearing	Type (plain, anti-friction)	Anti-Friction	
		Lubric. (fitting, prepack)	Pre-Pack	
Drive taken through (torque tube or arms, springs)			Arms	
Torque taken through (torque tube or arms, springs)			Arms	

DRIVE UNITS – AXLE

Type (front, rear)			Rear
Description			Salisbury Live Hypoid - Semi-Floating
Limited Slip differential, type			Multiple Plate Clutch - "S" Shaped Pre-Load Spring
Drive Pinion Offset			1.75
No. of differential pinions			2
Pinion adjustment (shim, other)			Shim
Pinion bearing adj. (shim, other)			Collapsing Spacer
Wheel bearing type			Ball
Lubricant	Capacity (pt.)		3.69
	Type recommended		GM 4744M (Standard), Mobile XRP 464-BD-M (L.S.)
	SAE viscosity number	Summer	80 - 90
		Winter	80 - 90
		Extreme cold	80 - 90

AXLE RATIO TOOTH COMBINATIONS

(See page 3 for axle ratio usage)

Axle ratio		3.08	3.23	3.42	3.91	4.33
No. of teeth	Pinion	13	13	12	11	9
	Ring gear	40	42	41	43	39
Ring Gear O.D.		8.560	8.555	8.552	8.543	8.542

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MODEL 4-4-2

DRIVE UNITS – WHEELS

Type & material			Welded Steel
Rim (size & flange type)		Std.	14 x 6JK
		Opt.	None
Attachment	Type (bolt or stud)		Stud
	Circle diameter		4.75
	Number and size		5 x 7/16

MODEL

DRIVE UNITS – TIRES

Standard	Size, ply rating, & ply		F70 x 14 2 Ply 4 Ply Rate
	Type (bias, radial, etc.)		Bias
	Full rated inflation Press.	Front	26
		Rear	26
	Rev./Mile at 50 MPH		796
Optional	Size, ply rating, & ply		G70 x 14 - 2 Ply 4 Ply Rate G78 x 14 - 2 Ply 4 Ply (Belt) 4 Ply Rate (Carcass) 8.25 x 14 - 4 Ply (Nylon) 4 Ply Rate (Export Only)

BRAKES – PARKING

Type of control		Suspended Pedal
Location of control		Left Drivers Compartment
Operates on		Rear Brake
If separate from service brakes	Type (internal or external)	Not Separate
	Drum diameter	
	Lining size (length x width x thickness)	

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MODEL 4-4-2

BRAKES – SERVICE

Type (drum) or (disc & no. of pistons)					Drum
Self adjusting (std., opt., N.A.)					Standard
Special Valving	Type (proportion, delay, metering, other)				
Power brake make & type (remote, int., etc.)		Std.			Optional
		Opt.			Integral
Effective area (sq. in.) *					166.8
Gross lining area (sq. in.) **					173.6
Swept area (sq. in.) ***					298.5
Front to Rear Effectiveness Relationship					60.67 Front
Drum	Diameter (nominal)	Front			9.5
		Rear			9.5
	Type and material				Centrifugal Cast Iron in Steel Shell - Composite Opt. Rear
Rotor	Outer working diameter				
	Inner working diameter				
	Working width				
	Material & type (vented/solid)				
Wheel cylinder bore	Front				1 1/8
	Rear				15/16
Master Cylinder	Bore				1.00
	displacement distribution	Front	%		59%
		Rear	%		41%
Pedal arc ratio					3.5
Line pressure at 100 lb. pedal load					710 psi (Manual) - 1180 psi (Power)
Shoe Clearance	Front				.015
	Rear				.015
Brake lining	Bonded or riveted				Riveted
	Front Wheel	Material			Marshall H3144 Primary - H3122 Secondary
		Size (length x width x thickness)	Prim. or outboard		7.48 x 2.50 x .166
			Second. or inboard		9.88 x 2.50 x .231
		Segments per shoe			One
	Rear Wheel	Material			Marshall H3144 Primary - H3122 Secondary
		Size (length x width x thickness)	Prim. or outboard		7.48 x 2.00 x .166
			Second. or inboard		9.88 x 2.00 x .231
		Segments per shoe			One

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

*** Total swept area for four brakes. (Widest lining contact width for each brake x its contact circumference.)

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MAKE OF CAR OLDSMOBILE MODEL YEAR 1969 DATE ISSUED 7-12-68 REVISED (•)

MODEL 4-4-2

BRAKES – SERVICE

					OPTIONAL DISC BRAKE	
Type (drum) or (disc & no. of pistons)					Disc Single Piston Front	Drum Rear
Self adjusting (std., opt., N.A.)					Standard	
Special Valving	Type (proportion, delay, metering, other)				Metering	
Power brake make & type (remote, int., etc.)		Std.			Standard	
		Opt.			Delco Moraine - Integral	
Effective area (sq. in.) *					36.33	66.1
Gross lining area (sq. in.) **					40.25	69.44
Swept area (sq. in.) ***					216.18	119.38
Front to Rear Effectiveness Relationship					68.0 Front	
Drum	Diameter (nominal)	Front				
		Rear				9.5
	Type and material					Cast Iron Rear (Optional)
Rotor	Outer working diameter				10.88	
	Inner working diameter				7.12	
	Working width				1.06	
	Material & type (vented/solid)				Vented Cast Iron	
Wheel cylinder bore	Front				2 15/16	
	Rear					13/16
Master Cylinder	Bore				1 1/8 Dual	
	displacement distribution	Front	%		75	
		Rear	%		25	
Pedal arc ratio					3.5	
Line pressure at 100 lb. pedal load					960	
Shoe Clearance	Front				.000	
	Rear					.015
Brake lining	Bonded or riveted				Riveted	
	Front Wheel	Material			JM-1499	
		Size (length x width x thickness)	Prim. or outboard		5.40 x 1.92 x .41	
			Second. or inboard		5.40 x 1.92 x .44	
		Segments per shoe			One	
	Rear Wheel	Material				Marshall H-3144 Pri.; H-3152 Sec.
		Size (length x width x thickness)	Prim. or outboard			7.48 x 2.00 x .166
			Second. or inboard			9.88 x 2.00 x .231
		Segments per shoe				One

* Excludes rivet holes, grooves, chamfers, etc. ** Includes rivet holes, grooves, chamfers, etc.
*** Total swept area for four brakes. (Widest lining contact width for each brake x its contact circumference.)

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MODEL 4-4-2

STEERING

Manual (std., opt., NA)				Standard
Power (std., opt., NA)				Optional
Adjustable steering wheel (tilt, swing, other)		Type and description		Tilt-A-Way
		(std., opt., NA)		Optional
Wheel diameter		Manual		15.50
		Power		15.50
Turning diameter (feet)	Outside front	Wall to wall (l. & r.)		43.3
		Curb to curb (l. & r.)		40.0
	Inside rear	Wall to wall (l. & r.)		23.4
		Curb to curb (l. & r.)		24.2
Manual	Gear	Type		Ball Nut
		Make		Saginaw Steering Gear
		Ratios	Gear	24.0:1
			Overall	28.3:1
	No. wheel turns (stop to stop)			5.56 Lock to Lock
Power	Type (coaxial, linkage, etc.)			Integral Gear
	Make			Saginaw Steering Gear
	Gear	Type		Ball Nut
		Ratios	Gear	17.5:1
			Overall	20.7:1
	Pump driven by			Belt from Crank
	No. wheel turns (stop to stop)			4.3 Lock to Lock
Linkage	Type			Parallelogram
	Location (front or rear of wheels, other)			Front
	Drag link (trans. or longit.)			Transverse
	Tie rods (one or two)			Two
Steering Axis	Inclination at camber (deg.)			- 9° at + 1° Camber
	Bearings (type)	Upper		Ball Joint
		Lower		Ball Joint
		Thrust		Ball Joint
Whl. Align. (range at curb wt. & preferred)	Caster (deg.)			Range - 1/2° to -2°
	Camber (deg.)			Range - 1/4° to +1/2°
	Toe-in (outside track inches)			1/8 to 1/4
Steering spindle & joint type				Ball Joint
Wheel Spindle	Diameter	Inner bearing		1.2497 - 1.2492
		Outer bearing		.7496 - .7491
	Thread size			3/4 - 20
	Bearing type			Tapered Roller

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MODEL		4-4-2

SUSPENSION – GENERAL

(See Supplement page for details on Air Suspension)

Provision for car leveling		None
Provision for brake dip control		Counter Dive of Suspension
Provision for acc. squat control		Rear Suspension Upper Control Arms
Special provisions for car jacking		None
Shock absorber front & rear	Type	Direct Acting
	Make	Delco
	Piston dia.	1.00
Other special features		

SUSPENSION – FRONT

Type and description		Independent Coil Spring
Spring	Type	Coil
	Material	SAE 9260
	Size (coil design height & I.D. bar length x dia.)	11.3 Design Height 3.60 I.D. 114.37 Long x .639 Dia.
	Spring rate (lb. per in.)	435
	Rate at wheel (lb. per in.)	158
Stabilizer	Type (link, linkless, frameless)	Link
	Material & bar diameter	SAE 1070 .937 Dia.

SUSPENSION – REAR

Type and description			Link Coil Spring
Drive and torque taken through			Arms
Spring	Type		Coil
	Material		SAE 9260
	Size (length x width, coil design height & I.D.; bar length & dia.)		7.62 Design Height - 5.50 I.D. 85.8 Long x .560 Dia.
	Spring rate (lb. per in.)		109.4
	Rate at wheel (lb. per in.)		150.0
	Mounting insulation type		Rubber
	If leaf	No. of leaves	None
		Shackle (comp. or tens.)	None
Stabilizer	Type (link, linkless, frameless)		Linkless
	Material		SAE 1070 .875 Dia.
Track bar type			None

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MODEL 4-4-2

FRAME

Type and description (Separate frame, unitized frame, partially - unitized frame)	Channel Section Side Rail 4 Cross Bar

BODY – MISCELLANEOUS INFORMATION

Drs. hinged (front, rr.)	Front doors	Front
	Rear doors	Front
Type of finish (lacquer, enamel, other)		Lacquer
Hood counterbalanced (yes, no)		Yes
Hood release control (internal, external)		External
Vehicle Indent. No. location		Instrument Panel (L.H.)
Engine No. location		Left Front Engine Block
Theft protection - type		Key Type Starting - Steering Column Lock
Vent window control method (crank, friction pivot)	Front	Crank (77 Model Only)
	Rear	None
Seat cushion type	Front	Zig Zag
	Rear	Zig Zag
	3rd seat	None
Seat back type	Front	Zig Zag
	Rear	Zig Zag
	3rd seat	None
Windshield glass type (i.e., single curved - laminated plate)		Single Cruved - Laminated Plate
Side glass type (i.e., curved - tempered plate)		Curved - Tempered Plate
Backlight glass type (i.e., compound curved - tempered plate, three piece)		Compound Curved - Tempered Plate
Windshield glass exposed surface area		1290.4
Side glass exposed surface area		2098.8
Backlight glass exposed surface area		1481.4
Total glass exposed surface area		4870.6

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MAKE OF CAR OLDSMOBILE MODEL YEAR 1969 DATE ISSUED 7-12-68 REVISED (*)

MODEL	4-4-2

CONVENIENCE EQUIPMENT

(Indicate whether standard, optional or NA on each series)

Power windows	Side windows	Optional
	Vent windows	NA
	Backlight or tailgate	NA
Power seats (specify type as well as availability)		4 Way Bench Seat And Left Hand Only on Bucket Seats
Reclining front seat back (R-L or both)		NA
Front seat head restrainer (R-L or both)		Standard
Radios (specify type as well as availability)		Deluxe, AM-FM Stero Tape Optional
Rear seat speaker		Optional
Power antenna		Optional
Clock		Optional
Air conditioner (specify type and availability)		Optional
Speed warning device		Optional
Speed control device		Optional
Ignition lock lamp		NA
Dome lamp		Standard
Glove compartment lamp		Optional
Luggage compartment lamp		Optional
Underhood lamp		Optional
Courtesy lamp		Optional (STD in Convertibles)
Map lamp		Optional (STD in Convertibles)
Auto. trans. quad. lamp		Optional
Cornering light lamp		NA
Dual Brake Warning		Standard
Hazzard Flasher		STandard
Anti-Theft Buzzer		Standard
Anti-Theft Lock		Standard

LAMP HEIGHT AND SPACING

Height above ground to center of bulb or marker	Headlamp	Highest *	25.99
		Lowest	25.99
	Tail	Highest	28.63
		Lowest	None
	Sidemarker	Front	23.39
		Rear	27.53
Distance from C/L of car to center of bulb	Headlamp	Inside	23.16
		Outside *	30.67
	Tail	Inside	None
		Outside	29.15
	Directional	Front	28.80
		Rear	-------

* If single headlamps are used enter here.

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WEIGHTS

Model 4-4-2	CURB WEIGHT * POUNDS			# PASS. WEIGHT DISTRIBUTION				LIQUID WEIGHT	
				Pass. In Front		Pass. In Rear			
	Front	Rear	Total	Front	Rear	Front	Rear	Fuel	Coolant
34467	2064	1679	3743	76	74	33	117	122.0	35.7
34477	2026	1639	3665	76	74	33	117	122.0	35.7
34487	2033	1642	3675	76	74	33	117	122.0	35.7

Accessories & Equipment Differential Weights				Remarks
Turby Hydra-Matic			+34	

*Reference – SAE Aerospace-Automotive drawing standards, Section E 1.02 (d).

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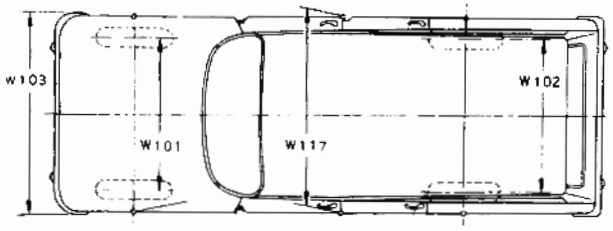
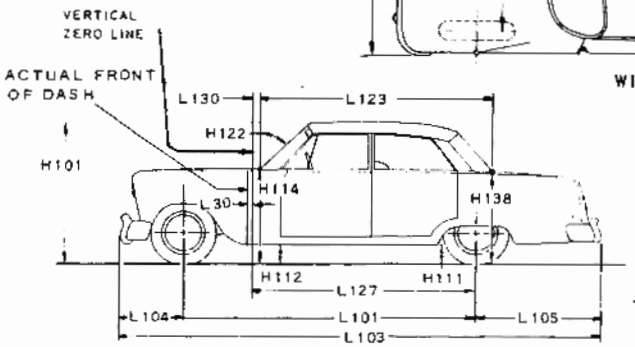
CAR AND BODY DIMENSIONS

KEY SHEET

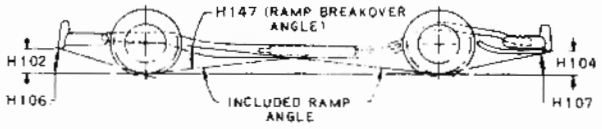
EXTERIOR CAR AND BODY DIMENSIONS



WIDTH

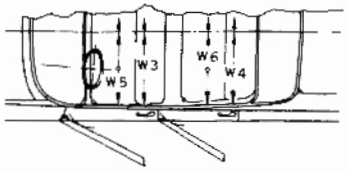


LENGTH & HEIGHT



GROUND CLEARANCE

INTERIOR CAR AND BODY DIMENSIONS



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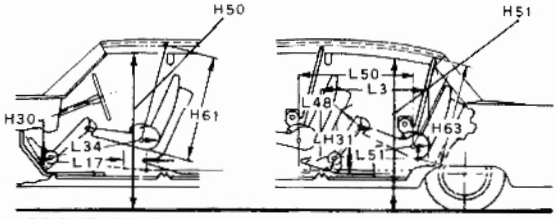
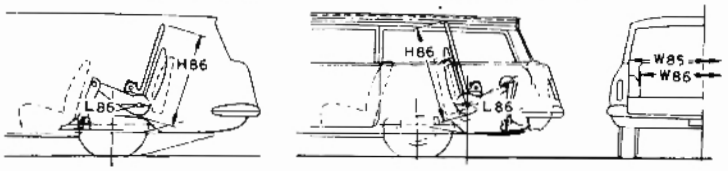
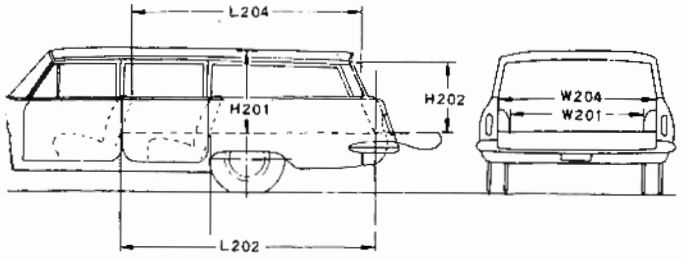


FRONT COMPT. REAR COMPT.



THIRD SEAT



CARGO SPACE

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CAR AND BODY DIMENSIONS

KEY SHEET

DIMENSION DEFINITIONS

EXTERIOR WIDTH DIMENSIONS

W101 WHEEL TREAD – FRONT. Measured at centerline of tires, with nominal camber, at ground.

W102 WHEEL TREAD – REAR. Measured at centerline of tires at ground.

W103 MAXIMUM OVERALL CAR WIDTH. Include bumpers, moldings, or sheet metal protrusions. Measured to outside of metal.

W117 MAXIMUM BODY WIDTH AT #2 PILLAR. Measured across body at #2 pillar, excluding hardware and applied moldings.

EXTERIOR LENGTH DIMENSIONS

L 30 VERTICAL ZERO LINE TO ACTUAL FRONT OF DASH. If actual Front of Dash is to the rear of Body Zero Line, it is identified by a minus (–) sign.

L101 WHEELBASE.

L103 OVERALL LENGTH. Include bumper guards if standard equipment.

L104 OVERHANG – FRONT. Measured from C/L of front wheels to front of car, including bumper guards if standard equipment.

L105 OVERHANG – REAR. Measured from C/L of rear wheels to rear of car, including bumper guards if standard equipment.

L123 BODY UPPER STRUCTURE LENGTH AT CAR CENTERLINE. The horizontal dimension from the Cowl Point to the Deck Point.

L127 VERTICAL ZERO LINE TO CENTERLINE OF REAR WHEELS. A horizontal dimension.

L130 VERTICAL ZERO LINE TO WINDSHIELD COWL POINT. The horizontal dimension from the vertical zero line to the theoretical intersection of extended windshield glass plane and normal cowl surface.

EXTERIOR HEIGHT DIMENSIONS

H101 OVERALL HEIGHT – DESIGN. Measured with the vehicle in Manufacturer's Design Weight attitude.

H114 COWL POINT TO GROUND. Measured at vehicle centerline.

H138 DECK POINT TO GROUND. Measured at vehicle centerline.

H112 ROCKER PANEL TO GROUND – FRONT. The vertical dimension from ground to bottom of rocker panel, excluding flanges. Measured to the outside of sheet metal at foremost point of rocker panel.

H111 ROCKER PANEL TO GROUND – REAR. The vertical dimension from ground to bottom of rocker panel, excluding flanges. Measured to the outside of sheet metal at front of rear wheel opening.

H122 WINDSHIELD SLOPE ANGLE. The angle between a vertical line and the windshield surface at car centerline. On compound-curved windshields the chord of the arc is used and limited to that section of the windshield comprehended by an 18-inch chord.

GROUND CLEARANCE DIMENSIONS

H102 BUMPER TO GROUND – FRONT. Minimum dimension, includes bumper guards.

H104 BUMPER TO GROUND – REAR. Minimum dimension, includes bumper guards.

H106 ANGLE OF APPROACH. The angle between ground and a line tangent to the front tire static loaded radius arc and the first point of interference, i.e., bumper, guard, gravel deflector, fender or other component, excluding license plate. This dimension may be determined graphically for reporting purposes.

H107 ANGLE OF DEPARTURE. The angle between ground and a line tangent to the rear tire static loaded radius arc and the first point of interference, i.e., bumper, guard, gravel deflector, tail pipe, fender or other component, excluding license plate. This dimension may be determined graphically for reporting purposes.

H147 RAMP BREAKOVER ANGLE. The supplement of included ramp angle (180° minus included ramp angle) over which car can pass without interference; measured with car sitting on a level surface, using lines tangent to arcs of front and rear static loaded radii and intersecting at point on underside of car which defines the smallest angle.

H156 MINIMUM RUNNING GROUND CLEARANCE. Location of measurement on the car is to be clearly recorded.

FRONT COMPARTMENT DIMENSIONS

H 61 EFFECTIVE HEAD ROOM – FRONT. The dimension from H Point to the headlining, plus a constant of 4.0 inches, measured along a line 8° to rear of vertical.

L 34 MAXIMUM EFFECTIVE LEG ROOM – ACCELERATOR. Measured along a diagonal line from the Manikin ankle pivot center to the H Point plus a constant of 10.0 inches. For treadle type accelerator pedals, the leg room is measured with the Manikin's right foot on the accelerator pedal and the Manikin Heel Point at Accelerator Heel Point. All other types of accelerator pedals will be measured with the Manikin foot angle set at 87° and the shoe touching the pedal.

H 30 H POINT TO HEEL POINT – FRONT. The vertical dimension from the H Point to the Accelerator Heel Point.

L 17 H POINT TRAVEL. The horizontal dimension between the H Point in the most forward and rearward seat positions.

FRONT COMPARTMENT DIMENSIONS (Cont.)

W 3 SHOULDER ROOM – FRONT. The minimum lateral dimensions between the door garnish moldings or nearest interference, measured at the H Point station.

W 5 HIP ROOM – FRONT. The lateral dimension through the H Point to trimmed body surfaces. Depress loose side wall cloth to trim foundation or other obstruction if such construction exists.

H 50 UPPER BODY OPENING TO GROUND – FRONT. The vertical dimension from a point on the trimmed body opening to the ground, measured at the H Point station.

REAR COMPARTMENT DIMENSIONS

L 50 H POINT COUPLE DISTANCE. The horizontal dimension from the front seat H Point to the rear seat H Point.

H 63 EFFECTIVE HEAD ROOM – REAR. The dimension from the H Point to the headlining, plus a constant of 4.0 inches, measured along a line 8° to rear of vertical.

L 51 MINIMUM EFFECTIVE LEG ROOM – REAR. Measured along a diagonal line from the ankle pivot center to the H Point plus a constant of 10.0 inches, with the foot positioned to the nearest interference between the seat structure and toe, instep or lower leg.

H 31 H POINT TO HEEL POINT – REAR. The vertical dimension from the H Point to the Manikin Heel Point on the depressed floor covering.

L 48 MINIMUM KNEE ROOM – REAR. The minimum dimension from the Manikin knee pivot center to the back of the front seat back.

L 3 REAR COMPARTMENT ROOM. The horizontal dimension from the back of front seat to front of rear seat back at height tangent to the top of rear seat cushion.

W 4 SHOULDER ROOM – REAR. The minimum lateral dimension between the door garnish molding or nearest interference. Measured at H Point station.

W 6 HIP ROOM – REAR. The lateral dimension through H Point to trimmed body surfaces. Depress loose side wall cloth to trim foundation or other obstruction when such construction exists.

H 51 UPPER BODY OPENING TO GROUND – REAR. The vertical dimension from a point on the trimmed body opening to the ground, measured 13.0 inches forward of the H Point.

LUGGAGE COMPARTMENT DIMENSIONS

V 1 LUGGAGE CAPACITY – USABLE. The total luggage compartment luggage capacity in cubic feet with the tire and tools in place

H195 LIFTOVER HEIGHT. Vertical dimension from the highest point on the luggage compartment lower opening to ground, excluding corner radii.

STATION WAGON – THIRD SEAT DIMENSIONS

W 85 SHOULDER ROOM – THIRD SEAT. The minimum lateral dimension between the door garnish moldings or nearest interference. Measured at H Point station.

W 86 HIP ROOM – THIRD SEAT. The lateral dimension through H Point to trimmed surfaces.

L 86 EFFECTIVE LEG ROOM – THIRD SEAT. Measured along a diagonal line from ankle pivot center to H Point plus a constant of 10.0 inches. With rear-facing third seat, foot is positioned in foot well or to nearest interference with rear end or rear closure.

H 86 EFFECTIVE HEAD ROOM – THIRD SEAT. The dimension from H Point to the headlining, plus a constant of 4.0 inches. Measured along a line 8° to rear of vertical.

STATION WAGON – CARGO SPACE DIMENSIONS

L202 CARGO LENGTH AT FLOOR – FRONT SEAT. The horizontal dimension, measured at the floor level from the rear of the front seat back to the normal inside limiting interference on the tailgate, on the car centerline.

L204 CARGO LENGTH AT BELT – FRONT SEAT. The horizontal dimension measured from the top rear of front seat back to a vertical extension line from the normal inside limiting interference at the top of the tailgate, on the car centerline.

W201 CARGO WIDTH – WHEELHOUSE. The minimum horizontal dimension, measured between wheelhousings at floor level.

W204 OPENING WIDTH AT BELT. The minimum horizontal dimension, measured between the nearest normal inside limiting interferences of the rear opening at the top of the tailgate.

H201 MAXIMUM CARGO HEIGHT. The maximum vertical dimension, measured from the top of the floor covering to the headlining, on the car centerline.

H202 REAR OPENING HEIGHT. The vertical dimension measured from the top of the floor covering to the normal inside limiting interference at the top of the rear opening, on the car centerline, with both tail-and liftgates fully open.

V 2 CARGO VOLUME INDEX BEHIND FRONT SEAT. The total volume in cubic feet above the normal load floor and behind the front seat with the liftgate and tailgate closed.

$$\frac{W4 \times L204 \times H201}{1728}$$

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