MANUFACTURERS MOTOR VEHICLE SPECIFICATIONS

METRIC (U.S. Customary)

1992

Manufacturer	Vehicle Line
ISUZU MOTORS LIMITED	IMPULSE
Mailing Address 26-1 Minami-oi 6-chome Shinagawa-ku, Tokyo, Japan	Issued: September 1991 / Revised:

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 suggested 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.

Motor Vehicle Manufacturers Association of the United States, Inc.

Forms Provided by Technical Affairs Division

FORM MVMA-92

MVMA Specifications

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

METRIC (U.S. Customary)

Vehicle Line IMPULSE
Model Year 1992 Issued 9-91 Revised (•) _____

Vehicle Origin

Design & development (company)	ISUZU MOTORS LIMITED
Where built (country)	JAPAN
Authorized U.S. sales marketing representative	AMERICAN ISUZU

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)	EPA Fuel Economy (City/Hwy)
2-Door Coupe (FWD)		JT221F-CWU	2 / 2	30.0 (66)	M/T 23/31 A/T 22/30
2-Door Coupe (4WD)		JT191S-CJU	2 / 2	30.0 (66)	22/28
2-Door Hatch Back (FWD)		JT221F-FWU	2 / 2	30.0 (66)	M/T 23/31 A/T 22/30

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

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Power Teams

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

			IMPULSE XS A	B	C	D
ENGINE	Engine Code		4XF1-W	4XF1-W	4XE1-UWT	
	Displacement Liters (in³)		1.809 (110)	1.809 (110)	1.588 (97)	
	Induction system (FI, Carb, etc.)		FI	FI	FI	
	Compression ratio		9.7	9.7	8.5	
	SAE Net at RPM	Power kW (bhp)	104.4 (140)	104.4 (140)	119.3 (160)	
		Torque N • m (lb. ft.)	162.7 (120)	162.7 (120)	204.2 (150)	
	Exhaust single, dual		Dual	Dual	Dual	
TRANS	Transmission/ Transaxle		Manual 5-spd.	Auto. 4-spd.	Manual 5-spd.	
	Axle Ratio (std. first)		4.117	4.015	4.117	

Series Availability		Power Teams (A - B - C - D)	
Model	Code	Standard	Optional
JT221F-CWU		A	B
JT191S-CJU		C	
JT221F-FWU		A	B

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METRIC (U.S. Customary)

Engine Description / Engine Code	4XF1-W

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, DOHC, Pent roof
Manufacturer		Isuzu Motors Ltd.
No. of cylinders		4
Bore		80 (3.15)
Stroke		90 (3.54)
Bore spacing (C / L to C / L)		87 (3.4)
Cylinder block material & mass kg (lbs.) (machined)		Cast iron
Cylinder block deck height		215.5 (8.48)
Cylinder block length		392 (15.4)
Deck clearance (minimum) (above or below block)		0.7 (0.03)
Cylinder head material & mass kg (lbs.)		Aluminum alloy
Cylinder head volume cm³ (inches³)		
Cylinder liner material		–
Head gasket thickness (compressed)		1.20 (0.05)
Minimum combustion chamber total volume cm³ (inches³)		52.0 (3.17)
Cyl. no. system (front to rear)*	L. Bank	1-2-3-4
	R. Bank	–
Firing order		1-3-4-2
Intake manifold material & mass kg (lbs.)**		Aluminum alloy
Exhaust manifold material & mass kg (lbs.)**		Vermicular cast iron (FCD)
∅ Knock sensor (number & location)		No
Fuel required unleaded, diesel, etc.		Unleaded
Fuel antiknock index (R + M) ÷ 2		87
Engine mounts	Quantity	4
	Material and type (elastomeric, hydroelastic, hydraulic damper, etc.	Elastomeric
	Added isolation (sub-frame, crossmember, etc.)	–
Total dressed engine mass (wt) dry***		139(306), M/T / 120(264), A/T

Engine – Pistons

Material & mass, g (weight, oz.) - piston only	Aluminum alloy

Engine – Camshaft

Location		Over cylinder head
Material & mass kg (weight, lbs.)		Cast iron
Drive type	Chain / belt	Belt
	Width / pitch	25.4(1.0) / 8.0(0.3)

* 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:

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Engine Description / Engine Code	4XE1-UWT

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, DOHC, Pent roof
Manufacturer		Isuzu Motors Ltd.
No. of cylinders		4
Bore		80 (3.15)
Stroke		79 (3.11)
Bore spacing (C / L to C / L)		87 (3.4)
Cylinder block material & mass kg (lbs.) (machined)		Cast iron
Cylinder block deck height		190 (7.48)
Cylinder block length		392 (15.4)
Deck clearance (minimum) (above or below block)		0.7 (0.03)
Cylinder head material & mass kg (lbs.)		Aluminum alloy
Cylinder head volume cm³ (inches³)		
Cylinder liner material		–
Head gasket thickness (compressed)		1.20 (0.05)
Minimum combustion chamber total volume cm³ (inches³)		3.2 (52.9)
Cyl. no. system (front to rear)*	L. Bank	1-2-3-4
	R. Bank	–
Firing order		1-3-4-2
Intake manifold material & mass kg (lbs.)**		Aluminum alloy
Exhaust manifold material & mass kg (lbs.)**		Vermicular Cast iron (FCD)
∅ Knock sensor (number & location)		
Fuel required unleaded, diesel, etc.		Unleaded
Fuel antiknock index (R + M) ÷ 2		91
Engine mounts	Quantity	4
	Material and type (elastomeric, hydroelastic, hydraulic damper, etc.	Elastomeric
	Added isolation (sub-frame, crossmember, etc.)	–
Total dressed engine mass (wt) dry***		145(320), M/T

Engine – Pistons

Material & mass, g (weight, oz.) - piston only	Aluminum alloy

Engine – Camshaft

Location		Over cylinder head
Material & mass kg (weight, lbs.)		Cast iron
Drive type	Chain / belt	Belt
	Width / pitch	25.4(1.0) / 8.0(0.3)

* 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:

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Engine Description / Engine Code >–	4XF1-W

Engine – Valve System

Hydraulic lifters (std., opt., n.a.)		STD
Valves	Number intake / exhaust	8/8
	Head O.D. intake / exhaust	31(1.22) / 28(1.10)

Engine – Connecting Rods

Material & mass kg., (weight, lbs.)*	Forged steel
Length (axes C/L to C/L)	138 (5.4)

Engine – Crankshaft

Material & mass kg., (weight, lbs.)*		Cast iron
End thrust taken by bearing (no.)		No.2
Length & number of main bearings		17, 5
Seal (material, one, two piece design, etc.)	Front	Acryl Rubber, one piece design
	Rear	Fluorine Rubber, one piece design

Engine – Lubrication System

Normal oil pressure kPa (psi) at engine rpm	588/5200
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)

Engine – Diesel Information

Diesel engine manufacturer		N.A.
Glow plug, current drain at 0°F		–
Injector nozzle	Type	–
	Opening pressure kPa (psi)	–
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	N.A.
Super charger - manufacturer	N.A.
Intercooler	N.A.

* Finished State

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Engine Description / Engine Code	4XE1-UWT

Engine – Valve System

Hydraulic lifters (std., opt., n.a.)		N.A.
Valves	Number intake / exhaust	8/8
	Head O.D. intake / exhaust	31(1.22) / 28(1.10)

Engine – Connecting Rods

Material & mass kg., (weight, lbs.)*	Forged steel
Length (axes C/L to C/L)	122 (4.8)

Engine – Crankshaft

Material & mass kg., (weight, lbs.)*		Cast iron
End thrust taken by bearing (no.)		No.2
Length & number of main bearings		17, 5
Seal (material, one, two piece design, etc.)	Front	Acryl Rubber, one piece design
	Rear	Fluorine Rubber, one piece design

Engine – Lubrication System

Normal oil pressure kPa (psi) at engine rpm	490/5200
Type oil intake (floating, stationary)	Stationary
Oil filter system (full flow, part, other)	Full flow
Capacity of c/case, less filter-refill-L (qt.)	5.0 (5.3)

Engine – Diesel Information

Diesel engine manufacturer		N.A.
Glow plug, current drain at 0°F		–
Injector nozzle	Type	–
	Opening pressure kPa (psi)	–
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	Ishikawajima-Harima Heavy Industries Co., Ltd.
Super charger - manufacturer	N.A.
Intercooler	Air Couled Type

* Finished State

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Engine Description / Engine Code	4XF1-W	4XE1-UWT

Engine – Cooling System

Coolant recovery system (std., opt., n.a.)		Std.	
Coolant fill location (rad., bottle)		Bottle	
Radiator cap relief valve pressure kPa (psi)		103	
Circulation thermostat	Type (choke, bypass)	Bypass	
	Starts to open at °C (°F)	76.5 (170)	
Water pump	Type (centrifugal, other)	Centrifugal	
	GPM 1000 pump rpm	26 liter/minute at 1000 rpm	
	Number of pumps	1	
	Drive (V-belt, other)	Timing Belt	
	Bearing type	Sealed type ball bearing	
	Impeller material	Steel	
	Housing material	Aluminum alloy	
By-pass recirculation type (inter., ext.)		External	
Cooling system capacity	With heater – L(qt.)	7.1(7.5), M/T / 7.6(8.0), A/T	7.5(7.9) M/T
	With air conditioner – L(qt.)	7.1(7.5), M/T / 7.6(8.0), A/T	7.5(7.9) M/T
	Opt. equipment specify – L(qt.)	N.A.	
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	
	Type (cross-flow, etc.)	Down-flow	
	Construction (fin & tube mechanical, braze, etc.)	Tube & corrugaged fin	
	Material, mass kg (wgt., lbs.)	Brass & copper	
	Width	668 (26.3)	
	Height	350 (13.8)	
	Thickness	16(0.63), M/T / 32(1.26), A/T	3.5(1.26) M/T
	Fins per inch	11, M/T / 10, A/T	10, M/T
Radiator end tank material		Nylon	
Fan	Std., elec., opt.	Std. Elec.	
	Number of blades & type (flex, solid, material)	4, PP, M/T / 7, PP, A/T	7, PP, M/T
	Diameter & projected width	300 (11.8)	
	Ratio (fan to crankshaft rev.)	N.A.	
	Fan cutout type	–	
	Drive type (direct, remote)	–	
	RPM at idle (elec.)	2150, M/T / 2050, A/T	2050, M/T
	Motor rating (wattage/elec.)	80, M/T / 160, A/T	160, M/T
	Motor switch (type & location/elec.)	Water temperature	
	Switch point (temp./pressure/elec.)	85°C (185°F)	
	Fan shroud (material)	Polypropylene	

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

Induction type: carburetor, fuel injection system, etc.		Fuel Injection
Manufacturer		AC ROCHESTER DIVISION
Carburetor no. of barrels		–
Idle A/F mix.		Present at Mfr.
Fuel injection	Point of injection (no.)	4
	Constant, pulse, flow	Pulse
	Control (electronic, mech.)	Electronic
	System pressure kPa (psi)	300
Idle spd.-rpm (spec. neutral or drive and propane if used)	Manual	850 900
	Automatic	850 (neutral)
Intake manifold heat control (exhaust or water thermostatic or fixed)		–
Air cleaner type		Dry: 1 element
Fuel filter (type/location)		Paper element / Engine Room
Fuel pump	Type (elec. or mech.)	Electric
	Location (eng., tank)	Fuel Tank
	Pressure range kPa (psi)	
	Flow rate at regulated pressure L (gal)/hr @ kPa (psi)	

Fuel Tank

Capacity refill L (gallons)		47 (12.4)
Location (describe)		Under rear seat floor
Attachment		Bolted
Material & Mass kg (weight lbs.)		Lead-tin plating steel 9.8 (21.6) / 10.3(22.7)
Filler pipe	Location & material	Rear-left wheel house, painted steel pipe
	Connection to tank	Rubber hose
Fuel line (material)		Copper plating steel pipe
Fuel hose (material)		Rubber hose with intermediate blade
Return line (material)		Copper plating steel pipe
Vapor line (material)		Copper plating steel pipe
Extended range tank	Opt., n.a.	N.A.
	Capacity L (gallons)	–
	Location & material	–
	Attachment	–
Auxiliary tank	Opt., n.a.	N.A.
	Capacity L (gallons)	–
	Location & material	–
	Attachment	–
	Selector switch or valve	–
	Separate fill	–

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Engine Description	4XF1-W
Engine Code	

Vehicle Emission Control

Exhaust Emission Control	Type (air injection, engine modifications, other)		EGR + O_2S + TWC (UFC)
	Air Injection	Pump or pulse	-
		Driven by	-
		Air distribution (head, manifold, etc.)	-
		Point of entry	-
	Exhaust Gas Recirculation	Type (controlled flow, open orifice, other)	Controlled Flow
		Exhaust source Point of exhaust injection (spacer, carburetor, manifold, other)	The No.4 port of Exh. Mfd. Intake manifold
	Catalytic Converter	Type	TWC
		Number of	1
		Location(s)	Under floor
		Volume L (in^3)	1.7 (104)
		Substrate type	Monolith
		Noble metal type	Pt/Rh
		Noble metal concentration (g/cm^3)	-
Crankcase Emission Control	Type (ventilates to atmosphere, induction system, other)		Closed
	Energy source (manifold vacuum, carburetor, other)		Manifold vacuum Crankcase pressure
	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
Muffler no. & type (reverse flow, straight thru, separate resonator) Material & Mass kg (weight lbs)		2. Ft: Straight thru, Stainless Steel, 4.0 (8.8) Rr: Reverse flow, Stainless Steel, 6.7 (14.7)
Resonator no. & type		-
Exhaust pipe	Branch o.d., wall thickness	42.7 - 1.5 (1.7 - 0.06)
	Main o.d., wall thickness	50.8 - 1.5 (2.0 - 0.06)
	Material & Mass kg (weight lbs)	Stainless Steel,
Intermediate pipe	o.d. & wall thickness	50.8 - 1.5 (2.0 - 0.06)
	Material & Mass kg (weight lbs)	Stainless Steel, 9.8 (21.6)
Tail pipe	o.d. & wall thickness	Ft half: 50.8-1.5, Rr half: 38.1-1.2, 54-0.6
	Material & Mass kg (weight lbs)	Aluminized Steel, Stainless Steel 9.6 (21.1)

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Engine Description
Engine Code

4XE1-UWT

Vehicle Emission Control

Exhaust Emission Control	Type (air injection, engine modifications, other)		EGR + O_2S + TWC (MFC) + TWC (VFC)
	Air Injection	Pump or pulse	-
		Driven by	-
		Air distribution (head, manifold, etc.)	-
		Point of entry	-
	Exhaust Gas Recirculation	Type (controlled flow, open orifice, other)	Controlled Flow
		Exhaust source Point of exhaust injection (spacer, carburetor, manifold, other)	The No.4 port of Exh. Mfd. Intake manifold
	Catalytic Converter	Type	TWC
		Number of	2
		Location(s)	Exh. Manifold / Under floor
		Volume L (in^3)	0.6(37) / 1.7(104)
		Substrate type	Monolith / Monolith
		Noble metal type	Pt/Rh / Pt/Rh
		Noble metal concentration (g/cm^3)	-
Crankcase Emission Control	Type (ventilates to atmosphere, induction system, other)		Closed
	Energy source (manifold vacuum, carburetor, other)		Manifold vacuum Crankcase pressure
	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
Muffler no. & type (reverse flow, straight thru, separate resonator) Material & Mass kg (weight lbs)		1. Ft: Straight thru, Stainless Steel, 4.0 (8.8) Rr: Reverse flow, Stainless Steel, 6.7 (14.7)
Resonator no. & type		-
Exhaust pipe	Branch o.d., wall thickness	-
	Main o.d., wall thickness	50.8 - 1.5 (2.0 - 0.06)
	Material & Mass kg (weight lbs)	Stainless Steel
Intermediate pipe	o.d. & wall thickness	50.8 - 1.5 (2.0 - 0.06)
	Material & Mass kg (weight lbs)	Stainless Steel, 5.7 (12.6)
Tail pipe	o.d. & wall thickness	Ft half: 50.8-1.5, Rr half: 38.1-1.2, 54-0.6
	Material & Mass kg (weight lbs)	Stainless Steel 9.6 (21.1)

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Engine Description / Engine Code	4XF1-W	4XE1-UWT

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

Manual 4-speed (manufacturer/country)	N.A.	
Manual 5-speed (manufacturer/country)	Standard, Isuzu Motors Ltd./Japan	
Manual 6-speed (manufacturer/country)	N.A.	
Automatic (manufacturer/country)	Optional, JATOCO Co./Japan	N.A.
Automatic overdrive (manufacturer/country)	Optional, JATOCO Co./Japan	N.A.

Manual Transmission/Transaxle

Number of forward speeds		5	
∅ Gear ratios	1st	3.909	
	2nd	2.150	
	3rd	1.448	
	4th	1.027	
	5th	0.829	
	6th		
	Reverse	3.583	
Synchronous meshing (specify gears)		All forward gears (1st, 2nd, 3rd, 4th, 5th)	
Shift lever location		Floor	
Trans. case matl. & mass kg (lbs)*		Aluminum, 37.5 (82.7)	
Lubricant	Capacity L (pt.)	1.9 (4.0)	
	Type recommended	SAE 5W-30 SF (Engine oil)	

Clutch (Manual Transmission)

Clutch manufacturer		DAIKIN	
Clutch type (dry, wet; single, multiple disc)		Dry single	
Linkage (hydraulic, cable, rod, lever, other)		Cable	
Max. pedal effort (nom. spring load) N (lbs)	Depressed	108 (24)	
	Released	59 (13)	
Assist (spring, power/percent, nominal)		Spring	
Type pressure plate springs		Diaphragm	
Total spring load (nominal) N (lbs)		4900 (1102)	4900 (1102)
Clutch facing	Facing mfgr. & material coding	ASUKU NC80A	ASUKU JD8
	Facing material & construction	Organic semi-mold	
	Rivets per facing	16	18
	Outside x inside dia. (nominal)	215 x 154 mm (8.5 x 6.1 in.)	225 x 154 (8.9 x 6.1)
	Total eff. area cm^2($in.^2$)	177 (27.4)	181 (28.1)
	Thickness (pressure plate side/fly wheel side)	3.5(0.14) / 3.2(0.13)	
	Rivet depth (pressure plate side/fly wheel side)	1.3-1.9(0.051-0.075) / 1.2-1.8(0.047-0.070)	
	Engagement cushion method	Cushion spring	
Release bearing type & method lub.		Self centering single row ball bearing sealed grea	
Torsional damping method, springs, hysteresis		Coil Spring	

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

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Engine Description		4XF1-W	4XE1-UWT
Engine Code			

Automatic Transmission/Transaxle

Trade Name		FA	-
Type and special features (describe)		Torque converter with automatically operated planetary gear	-
Gear selector	Location (column, floor, other)	Floor	-
	Ltr./No. designation (e.g. PRND21)	P-R-N-D4-D3-2-1	-
	Shift interlock (yes, no, describe)	Yes	-
Gear ratios	1st	3.027	-
	2nd	1.619	-
	3rd	1.000	-
	4th	0.694	-
	5th		
	6th		
	Reverse	2.727	-
Max. upshift speed - drive range km/h (mph)		51(32) [1-2], 95(59) [2-3], 154(96) [3-4]	-
Max. kickdown speed - drive range km/h (mph)		44(27) [2-1], 86(53) [3-2], 149(93) [4-3]	-
Min. overdrive speed km/h (mph)		55 (34)	-
Torque converter	Number of elements	3	-
	Max. ratio at stall	2.3	-
	Type of cooling (air, liquid)	Water	-
	Nominal diameter	236 (9.3)	-
	Capacity factor "K"*		-
Lubricant	Capacity refill L (pt.)	6.6	-
	Type recommended	ATF DEXRON-II	-
Oil cooler (std., opt., N.A., internal, external, air, liquid)		Std., External, water	-
Transmission mass kg (lbs) & case material**		75 (165)	-

All Wheel / 4 Wheel Drive

Description & type (part-time, full-time, 2/4 shift while moving, mechanical, elect., chain/gear, etc.)		-	Full time
Transfer case	Manufacturer and model	-	Tochigi Fuji Sangyo, MW
	Type and location	-	Aluminum Alloy Case, Engine Room
Low-range gear ratio		-	-
System disconnect (describe)		-	N.A.
Center differential	Type (bevel, planetary, w or w/o viscous bias, torsen, etc.)	-	Planetary gear W/Viscous Bias
	Torque split (% front/rear)	-	43 : 57

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

** Dry weight including torque converter. If other, specify.

MVMA Specifications

Vehicle Line IMPULSE
Model Year 1992 Issued 9-91 Revised (•) ____

METRIC (U.S. Customary)

Engine Description / Engine Code	4XF1-W

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

Effective final drive ratio (or overall top gear ratio)			4.117 (M/T)	4.015 (A/T)
Transfer ratio and method (chain, gear, etc.)			–	
Front drive unit	Ring gear o.d.		208.6 (8.2)	214.4 (8.4)
	No. of teeth	Pinion	17	17
		Ring gear	70	76

Front Drive Unit

Description (integral to trans., etc.)			Helical Gear
Limited slip differential (type)			N.A.
Drive pinion	Type		–
	Offset		Helical Gear
No. of differential pinions			2
Pinion / differential	Adjustment (shim, etc.)		Shim adjustment
	Bearing adjustment		Shim adjustment
Driving wheel bearing (type)			Double row, angular ball bearing
Lubricant	Capacity L (pt.)		N.A. Part of transmission assembly
	Type recommended		Transmission lub.

Axle Shafts – Front Wheel Drive

Manufacturer and number used			NTN, NSK
Type (straight, solid bar, tubular, etc.)		Left	Straight Solid Bar
		Right	Straight Solid Bar
Outer diam. x length* x wall thickness	Manual transaxle	Left	ϕ32 x 386.6
		Right	ϕ32 x 386.6
	Automatic transaxle	Left	ϕ26 x 386.6
		Right	ϕ26 x 658.1
	Optional transaxle	Left	–
		Right	–
Slip yoke	Type		N.A.
	Number of teeth		–
	Spline o.d.		–
Universal joints	Make and mfg. no.	Inner	NTN DOJ TRI: NSK TRI PORT
		Outer	B/J
	Number used		4
	Type, size, plunge	Inner	DOJ, 87 / TRI PORT, 87
		Outer	B/J, 87 fixed
	Attach (u-bolt, clamp, etc)		Snap Ring
	Bearing: Type (plain, anti-friction)		N.A.
	Bearing: Lubrication (fitting, prepack)		–
Drive taken through (torque tube, arms or springs)			–
Torque taken through (torque tube, arms or springs)			–

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

MVMA Specifications

Vehicle Line IMPULSE
Model Year 1992 Issued 9-91 Revised (•)

METRIC (U.S. Customary)

Engine Description **Engine Code**	4XE1-UWT

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

Axle ratio (or overall top gear ratio)		3.909
Ring gear o.d.		167
No. of teeth	Pinion	11
	Ring gear	43

Rear Axle Unit

Description		Hypoid Gear
Limited slip differential (type)		VISCOUS
Drive pinion	Type	Hypoid
	Offset	25
No. of differential pinions		4
Pinion / differential	Adjustment (shim, etc.)	Shim
	Bearing adjustment	Collapsible Spacer
Driving wheel bearing (type)		
Lubricant	Capacity L (pt.)	0.65L
	Type recommended	API GL-5
SAE Summer		90
Viscosity Winter		90
Number Extreme Cold		80

Propeller Shaft -- Rear Wheel Drive

Manufacturer Type (straight tube, tube-in-tube, internal-external damper, etc.)			Straight tube
Ø Outer diam. x length* x wall thickness	Manual 4-speed transmission		N.A.
	Manual 5-speed transmission		1st: 75 x 598 x 1.6 mm 2nd: 63.5 x 416 x 1.6 mm ~~3rd: 63.5 x 889.6 x 1.6 mm~~
	Manual 6-speed transmission		N.A.
	Overdrive		N.A.
	Automatic transmission		N.A.
Inter-mediate bearing	Type (plain, anti-friction)		Ball bearing
	Lubrication (fitting, prepack)		Sealed grease
Slip yoke	Type		Sprine
	Number of teeth		14
	Spline o.d.		40
Universal joints	Make and mfg. no.	Front	-
		Rear	Jidosha Buhin Kogyo Co., Ltd.
	Number used		4
	Type (ball and trunnion, cross)		Cross
	Rear attach (u-bolt, clamp, etc)		M8 bolt
	Bearing	Type (plain, anti-friction)	Needle bearing
		Lubrication (fitting, prepack)	Pre-packed
Drive taken through (torque tube, arms or springs)			-
Torque taken through (torque tube, arms or springs)			-

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

MVMA Specifications

Vehicle Line IMPULSE
Model Year 1992 Issued 9-91 Revised (•) _____

METRIC (U.S. Customary)

Model Code/Description And/Or Engine Code/Description	JT221F	JT191S

Suspension – General Including Electronic Controls

Car leveling	Standard/optional/not avail.	N.A.
	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	–
Shock absorber damping controls	Standard/option/not avail.	N.A.
	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	Double acting hydraulic telescopic
	Make	KAYABA
	Piston diameter	Ft: 30 (1.18), Rr: 25 (0.98)
	Rod diameter	Ft: 20 (0.79), Rr: 18 (0.71)

Suspension – Front

Type and description		MacPherson strut	
Travel	Full jounce (define load condition)	89 (3.5)	
	Full rebound	73 (2.9)	
Spring	Type (coil, leaf, other & material)	Coil, SUP 7 or SAE 9254	
	Insulators (type & material)	Seat rubbers (top & bottom)	
Ø Spring	Size (Leaf: length & width; Coil: design height & i.d.; Bar: length & diameter)	348.5x115 (13.7)x(4.5)	354x115 (13.9)x(4.5)
	Spring rate [N/mm (lb./in.)]	24.5 (139.9)	24.5 (139.9)
	Rate at wheel [N/mm (lb./in)]	20.5 (117.0)	22.3 (127.2)
Ø Stabilizer	Type (link, linkless, frameless)	With link	
	Material & O.D. bar/tube, wall thickness	SUP 6 or SUP 9, ϕ16	ϕ 19

Suspension – Rear

Type and description		MacPherson strut with two parallel transverse links and one trailing link	
Travel	Full jounce (define load condition)	110 (4.33)	
	Full rebound	85 (3.35)	
Spring	Type (coil, leaf, other & material)	Coil, SUP 7 or SAE 9254	
Ø Spring	Size (Leaf: length & width; Coil: design height & i.d.; Bar: length & diameter)	307.5x115 (12.1)x(4.5)	316x114 (12.4)x(4.5)
	Spring rate [N/mm (lb./in.)]	22.5 (128.5)	23.5 (134.3)
	Rate at wheel [N/mm (lb./in.)]	15.4 (88) 20.7 (118.3)	22.6 (129.1)
	Insulators (type & material)	Seat rubbers (top)	
	If leaf: No. of leaves	N.A.	
	If leaf: Shackle (comp. or tens.)	N.A.	
Ø Stabilizer	Type (link, linkless, frameless)	With link	
	Material & O.D. bar/tube, wall thickness	SUP 6 or SUP 9, ϕ14	ϕ18
Track bar (type)		N.A.	

MVMA Specifications

Vehicle Line IMPULSE
Model Year 1992 Issued 9-91 Revised (•) _____

METRIC (U.S. Customary)

Model Code/Description And/Or Engine Code/Description	JT221F	JT191S

Brakes – Service

Description				Hydraulic, front disc, rear leading trailing Self-adjusting
Manufacturer and brake type (std., opt., n.a.)	Front (disc or drum)			Disc
	Rear (disc or drum)			Disc
Valving type (proportion, delay, metering, other)				Proportion
Power brake (std., opt., n.a.)				Standard
Booster type (remote, integral, vac., hyd., etc.)				Integral vacuum servo
Vacuum	Source (inline, pump, etc.)			Inline
	Reservoir (volume in.³)			N.A.
	Pump-type (elec, gear driven, belt driven)			N.A.
Traction control	Operational speed range			–
	Type (engine or brake intervention)			–
Anti-lock device	Front / rear (std., opt., n.a.)			N.A. OPT
	Manufacturer			– NIPPON ABS
	Type (electronic, mech.)			– Electronic
	Number sensors or circuits			– 4
	Number anti-lock hydraulic circuits			– 2
	Integral or add-on system			– Add-on
	Yaw control (yes, no)			– Yes
	Hydraulic power source (elec., vac. mtr., pwr. strg.)			–
Effective area cm²(in.²)*				Ft: 145.6 (22.6), Rr: 120 (4.72)
Gross Lining area cm²(in.²)**(F/R)				Ft: 145.6 (22.6), Rr: 120 (4.72)
Swept area cm²(in.²)***(F/R)				Ft: 1069 (165.7), Rr: 1020 (158.2)
Rotor	Outer working diameter	F/R		246 (9.69) / 256 (10.08)
	Inner working diameter	F/R		162.8 (6.41) / 177.6 (6.99)
	Thickness	F/R		22.0 (0.87) / 9 (0.35)
	Material & type (vented/solid)	F/R		Cast iron, vented / Cast iron, Solid
Drum	Diameter & width	F/R		– / –
	Type and material	F/R		– / –
Wheel cylinder bore				Ft: 51.1 (2.0), Rr: 30.2 (1.19)
Master cylinder	Bore/stroke	F/R		22.2 (0.87) / 31.0 (1.22)
Pedal arc ratio				3.9 : 1
Line pressure at 445 N(100 lb.) pedal load [kPa (psi)]				9218 kPa at 66.7 kPa vacuum
Lining clearance		F/R		Self-adjusting
Brake lining	Front wheel	Bonded or riveted (rivets/seg.)		Bonded
		Rivet size		–
		Manufacturer		SUMITOMO
		Lining code*****		M9218HFF
		Material		Resin molded (Asbestos Free)
		**** Primary or out-board		101.0(4.0) x 43.0(1.7) x 9.8(0.38)
		Size Secondary or in-board		101.0(4.0) x 43.0(1.7) x 9.8(0.38)
		Shoe thickness (no lining)		4.5 (0.18)
	Rear wheel	Bonded or riveted (rivets/seg.)		Bonded
		Manufacturer		AKEBOND
		Lining code*****		NS507EE
		Material		Resin molded (Asbestos Free)
		**** Primary or out-board		97.4(3.83) x 36(1.42) x 9(0.35)
		Size Secondary or in-board		97.4(3.83) x 36(1.42) x 9(0.35)
		Shoe thickness (no lining)		6.0 (0.24)

* 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 for formulation designation and coefficient of friction classification.

MVMA Specifications

Vehicle Line IMPULSE
Model Year 1992 Issued 9-91 Revised (•) _____

METRIC (U.S. Customary)

Body Type And/Or Engine Displacement	JT221F	JT191S

Tires And Wheels (Standard)

Tires	Size (load range, ply)		P185/60R14 82H	P205/50R15 84V
	Type (bias, radial, steel, nylon, etc.)		Radial	
	Inflation pressure (cold) for recommended max. vehicle load	Front kPa (psi)	30 (210)	32 (220)
		Rear kPa (psi)	30 (210)	32 (220)
	Rev./mile-at 70 km/h (45 mph)		925	908
Wheels	Type & material		Wide rim with deep bottom	
	Rim (size & flange type)		14x5.5JJ,Steel or Aluminium	15x6JJ, Aluminium
	Wheel offset		40 (1.57)	
	Attachment	Type (bolt or stud)	Nut	
		Circle diameter	100 (3.94)	
		Number & size	4, M12 x 1.5	
Spare	Tire and wheel		Tire : T115/70D14 Wheel: 14 x 4T	Tire : T115/70D16 Wheel: 16 x 4T
	Storage position & location (describe)		Flat under rear load floor	

Tires And Wheels (Optional)

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)	–
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		Grip handle
Location of control		In console between front seats
Operates on		Rear service brakes
If separate from service brakes	Type (internal or external)	N.A.
	Drum diameter	–
	Lining size (length x width x thickness)	–

MVMA Specifications

Vehicle Line IMPULSE
Model Year 1992 Issued 9-91 Revised (-)

METRIC (U.S. Customary)

Body Type And/Or Engine Displacement	JT221F	JT191S

Steering

Manual (std., opt., n.a.)					N.A.	
Power (std., opt., n.a.)					Standard	
Ø Speed-sensitive (std., opt., n.a.)					N.A.	
Ø 4-wheel steering (std., opt., n.a.)					N.A.	
Adjustable steering wheel/column (tilt, telescope, other)		Type			–	
		Manufacturer			–	
		(std., opt., n.a.)			N.A.	
Wheel diameter** (W9) SAE J1100		Manual			382 (15.0)	
		Power			382 (15.0)	
Turning diameter m (ft.)	Outside front	Wall to wall (l. & r.)			11.2(36.7)	11.8 (38.7)
		Curb to curb (l. & r.)			9.8(32.2)	10.4 (34.1)
	Inside rear	Wall to wall (l. & r.)			4.9(16.1)	
		Curb to curb (l. & r.)			5.1(16.7)	
Scrub Radius*					-5.0(-0.20)	
Manual	Gear	Type			–	
		Manufacturer			–	
		Ratios	Gear		–	
			Overall		–	
	No. wheel turns (stop to stop)				–	
Power	Type (coaxial, elec., hyd., etc.)				Coaxial	
	Manufacturer				JIDOSHA KIKI and NIPPON POWER STEERING	
	Gear	Type			Rack and Pinion	
		Ratios	Gear		∞	
			Overall		16.1	
	Pump (drive)				Belt	
	No. wheel turns (stop to stop)				2.96	2.77
Linkage	Type				Accar man	
	Location (front or rear of wheels, other)				Rear of wheels	
	Tie rods (one or two)				Two	
Steering axis	Inclination at camber (deg.)				10°10'	
	Bearings (type)	Upper			Ball bearing	
		Lower			Ball bearing	
		Thrust			N.A.	
Steering spindle/knuckle & joint type					N.A.	

* The horizontal distance in the front elevation between wheel centerline and kingpin (ball joint) axis at ground.
** See Page 22.

∅MVMA Specifications

Vehicle Line IMPULSE
Model Year 1992 Issued 9-91 Revised (·) _____

METRIC (U.S. Customary)

Body Type And/Or Engine Displacement	JT221F

Wheel Alignment

Front wheel at curb mass (wt.)	Service checking	Caster (deg.)	3° ± 30'
		Camber (deg.)	-30' ± 1°
		Toe-in outside track-mm (in.)	0 ± 2
	Service reset*	Caster (deg.)	3° ± 30'
		Camber (deg.)	-30' ± 1°
		Toe-in - mm (in.)	0 ± 2
	Periodic M.V. inspection	Caster (deg.)	3° ± 30'
		Camber (deg.)	-30' ± 1°
		Toe-in - mm (in.)	0 ± 2
Rear wheel at curb mass (wt.)	Service checking	Camber (deg.)	-30' ± 1°
		Toe-in outside track-mm (in.)	4 ± 2
	Service reset*	Camber (deg.)	-30' ± 1°
		Toe-in - mm (in.)	4 ± 2
	Periodic M.V. inspection	Camber (deg.)	-30' ± 1°
		Toe-in - mm (in.)	4 ± 2

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

∅Electrical – Instruments and Equipment

Speedometer	Type (analog, digital, std., opt.)		Analogue, round Standard
	Trip odometer (std., opt., n.a.)		Standard
Head-up display	Standard, optional, not available		N.A.
	Type	Secondary, opto-electronic	-
	Speedometer	Digital	-
	Status / warning indicators	Turn signals, high beam, low fuel, check gauges	-
	Brightness control	Day / night mode, adjustable	-
EGR maintenance indicator			N.A.
Charge indicator	Type		Tell-Tale Warning light & Electrical gauge with pointer
	Warning device (light, audible)		Light
Temperature indicator	Type		Electrical gauge with pointer
	Warning device (light, audible)		-
Oil pressure indicator	Type		Tell-Tale warning light
	Warning device (light, audible)		Light
Fuel indicator	Type		Electrical gauge with pointer &Tell-Tale warning light
	Warning device (light, audible)		Light
Windshield wiper	Type (standard)		Electric 2-speed
	Type (optional)		-
	Blade length		550 (21.7)
	Swept area cm²(in.²)		7390 (1145)
Windshield washer	Type (standard)		Electric
	Type (optional)		N.A.
	Fluid level indicator (light, audible)		N.A.
Rear window wiper, wiper/washer (std., opt., n.a.)			Standard
Horn	Type		Vibrator
	Number used		2
Other			

⌀MVMA Specifications

Vehicle Line IMPULSE

Model Year 1992 Issued 9-91 Revised (-)

METRIC (U.S. Customary)

Body Type And/Or Engine Displacement	JT191S-CJU

Wheel Alignment

Front wheel at curb mass (wt.)	Service checking	Caster (deg.)	3° ± 30'
		Camber (deg.)	-30' ± 1°
		Toe-in outside track-mm (in.)	0 ± 2
	Service reset*	Caster (deg.)	3° ± 30'
		Camber (deg.)	-30' ± 1°
		Toe-in - mm (in.)	0 ± 2
	Periodic M.V. inspection	Caster (deg.)	3° ± 1°
		Camber (deg.)	-30' ± 1°
		Toe-in - mm (in.)	0 ± 2
Rear wheel at curb mass (wt.)	Service checking	Camber (deg.)	-30' ± 1°
		Toe-in outside track-mm (in.)	4 ± 2
	Service reset*	Camber (deg.)	-30' ± 1°
		Toe-in - mm (in.)	4 ± 2
	Periodic M.V. inspection	Camber (deg.)	-30' ± 1°
		Toe-in - mm (in.)	4 ± 2

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

⌀Electrical – Instruments and Equipment

Speedometer	Type (analog, digital, std., opt.)		Analog, round Standard
	Trip odometer (std., opt., n.a.)		Standard
Head-up display	Standard, optional, not available		
	Type	Secondary, opto-electronic	
	Speedometer	Digital	
	Status / warning indicators	Turn signals, high beam, low fuel, check gauges	
	Brightness control	Day / night mode, adjustable	
EGR maintenance indicator			N.A.
Charge indicator	Type		Tell-Tale Warning Light & Electrical gauge with pointer
	Warning device (light, audible)		Light
Temperature indicator	Type		Electrical gauge with pointer
	Warning device (light, audible)		-
Oil pressure indicator	Type		Electrical gauge with pointer
	Warning device (light, audible)		-
Fuel indicator	Type		Electrical gauge with pointer & Tell-Tale Warning light
	Warning device (light, audible)		Light
Windshield wiper	Type (standard)		Electric 2-speed
	Type (optional)		Intermittent windshield wiper system
	Blade length		550 (21.7)
	Swept area cm²(in.²)		7390 (1145)
Windshield washer	Type (standard)		Electric
	Type (optional)		N.A.
	Fluid level indicator (light, audible)		N.A.
Rear window wiper, wiper/washer (std., opt., n.a.)			Standard
Horn	Type		Vibrator
	Number used		2
Boost Indicator	Type		Electrical gauge with pointer
	Warning device (light, audible)		-

MVMA Specifications

Vehicle Line IMPULSE
Model Year 1992 Issued 9-91 Revised (•) ____

METRIC (U.S. Customary)

Engine Description **Engine Code**	4XF1-W

Electrical – Supply System

Battery	Manufacturer	FURUKAWA, NIHONDENCHI, MATSUSHITA
	Model, std., (opt.)	55D23L
	Voltage	12
	Amps at 0°F cold crank	356
	Minutes-reserve capacity	99
	Amps/hrs.-20 hr. rate	60
	Location	Engine compartment left front
Alternator	Manufacturer	NIPPON DENSO
	Rating (idle/max. rpm)	Alternating current 12V-75A(M/T), 12V-80A(A/T)
	Ratio (alt. crank/rev.)	133/57.5
	Output at idle (rpm, park)	–
	Optional (type & rating)	N.A.
Regulator	Type	Non-contact voltage control relay

Electrical – Starting System

Motor	Manufacturer	NIPPON DENSO
	Current drain ____ °C(°F)	–
	Power rating kw (hp)	1.0 (M/T), 1.4 (A/T)
Motor drive	Engagement type	Solenoid
	Pinion engages from (front, rear)	Front

Electrical – Ignition System

Type	Electronic (std., opt., n.a.)		Standard	
	Other (specify)		N.A.	
Coil	Manufacturer		DELCO REMY	
	Model		–	
	Current	Engine stopped – A	–	
		Engine Idling – A	–	
Spark plug	Manufacturer		NIPPON DENSO	NGK
	Model		KZOPR-U11	BPR6ES-11
	Thread (mm)		14 (0.55)	14 (0.55)
	Tightening torque N-m (lb. ft)		18.6 ± 4.9	18.6 ± 4.9
	Gap		1.05 (0.04)	1.05 (0.04)
	Number per cylinder		1	
Distributor	Manufacturer		DELCO REMY	
	Model			

Electrical – Suppression

Locations & type	Resistive cord Resistive spark plug

MVMA Specifications

Vehicle Line IMPULSE
Model Year 1992 Issued 9-91 Revised (-) _____

METRIC (U.S. Customary)

Engine Description / Engine Code	4XE1-WT

Electrical – Supply System

Battery	Manufacturer	FURUKAWA, NIHONDENCHI, MATSUSHITA
	Model, std., (opt.)	55D23L
	Voltage	12
	Amps at 0°F cold crank	356
	Minutes-reserve capacity	99
	Amps/hrs.-20 hr. rate	60
	Location	Engine compartment left front
Alternator	Manufacturer	NIPPON DENSO
	Rating (idle/max. rpm)	Alternating current 12V-75A
	Ratio (alt. crank/rev.)	133/50
	Output at idle (rpm, park)	-
	Optional (type & rating)	N.A.
Regulator	Type	Non-contact voltage control relay

Electrical – Starting System

Motor	Manufacturer	NIPPON DENSO
	Current drain _____ °C(°F)	-
	Power rating kw (hp)	1.2
Motor drive	Engagement type	Solenoid
	Pinion engages from (front, rear)	Front

Electrical – Ignition System

Type	Electronic (std., opt., n.a.)		Standard	
	Other (specify)		Direct Ignition Type	
Coil	Manufacturer		Delco Remy	
	Model			
	Current	Engine stopped – A		
		Engine idling – A		
Spark plug	Manufacturer		NIPPON DENSO	NGK
	Model		K20PR-U11	BKR6E-11
	Thread (mm)		14 (0.55)	14 (0.55)
	Tightening torque N-m (lb. ft)		18.6 ± 4.9	18.6 ± 4.9
	Gap		0.75 (0.03)	0.75 (0.03)
	Number per cylinder		1	
Distributor	Manufacturer		Delco Remy (Cam angle sensor)	
	Model			

Electrical – Suppression

Locations & type	Resistive cord Resistive spark plug

MVMA Specifications

Vehicle Line IMPULSE

Model Year 1992 Issued 9-91 Revised (·) _____

METRIC (U.S. Customary)

Body Type	JT221F-CWU JT191S-CJU	JT221F-FWU

Body

Structure	Monocoque body
Bumper system front - rear	Large plastic type
Anti-corrosion treatment	Various sealer, wax coat, under coat, galvanized steel

Body – Miscellaneous Information

Type of finish (lacquer, enamel, other)			Enamel
Hood	Material & mass		Steel 11.9 (26.2)
	Hinge location (front, rear)		Rear
	Type (counterbalance, prop)		Prop
	Release control (internal, external)		Internal
Trunk lid	Material & mass		–
	Type (counterbalance, other)		–
	Internal release control (elec., mech., n.a.)		–
Hatch-back lid	Material & mass		Steel, Glass 29 (64) Steel Glass 17 (38
	Type (counterbalance, other)		Counter balance
	Internal release control (elec., mech., n.a.)		Mechanical
Tailgate	Material & mass		–
	Type (drop, lift, door)		–
	Internal release control (elec., mech., n.a.)		–
Vent window control (crank, friction, pivot, power)		Front	Crank
		Rear	N.A.
Window regulator type (cable, tape, flex drive, etc.)		Front	X-Arm Type
		Rear	–
Seat cushion type (e.g., 60/40 bucket, bench, wire, foam, etc.)		Front	Spring + Form pad
		Rear	Wire frame + Foam pad
		3rd seat	–
Seat back type (e.g., 60/40, bucket, bench, wire, foam, etc.)		Front	Spring + Foam pad
		Rear	Panel frame + Foam pad
		3rd seat	–

∅ Frame

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

MVMA Specifications

Vehicle Line IMPULSE
Model Year 1992 Issued 9-91 Revised (·) _____

METRIC (U.S. Customary)

Body Type	JT221F-CWU JT191S-CJU	JT221F-FWU

Restraint System

Seating Position			Left	Center	Right
Active	Type & description (lap & shoulder belt, lap belt, etc.) Standard / optional	First seat	3-Pt. SEAT BELT WITH E.L.R. - STANDARD	-	3-pt. SEAT BELT WITH E.L.R. - STANDARD
		Second seat	3-Pt. SEAT BELT WITH E.L.R. - STANDARD	-	3-pt. SEAT BELT WITH E.L.R. - STANDARD
		Third seat	-	-	-
Passive	Type & description (air bag, motorized - 2-point belt, fixed belt, knee bolster, manual - lap belt) Standard / optional	First seat	AIR BAG WITH KNEE BOLSTER - STANDARD	-	N.A.
		Second seat	N.A.	-	N.A.
		Third seat	-	-	-

Glass	SAE Ref. No.		
Windshield glass exposed surface area $cm^2(in.^2)$	S1	10642 (1650)	
Side glass exposed surface area $cm^2(in.^2)$ - total 2-sides	S2	9058 (1404)	15212 (2358)
Backlight glass exposed surface area $cm^2(in.^2)$	S3	14293 (2215)	6690 (1037)
Total glass exposed surface area $cm^2(in.^2)$	S4	33993 (5269)	32544 (5045)
Windshield glass (type)		Laminated glass	
Side glass (type)		Temperated glass	
Backlight glass (type)		Temperated glass	

Headlamps

Description (sealed beam, halogen, replaceable bulb, etc.)	Sealed beam, Halogen
Shape	Circle
Lo-beam type (2A1, 2B1, 2C1, etc.	2C1
Quantity	2
Hi-beam type (1A1, 2A1, 1C1, 2C1, etc.)	1C1
Quantity	2

MVMA Specifications

Vehicle Line IMPULSE
Model Year 1992 Issued _____ Revised (•) _____

METRIC (U.S. Customary)

Engine Code/Description All

∅ Climate Control System

Air conditioning (std., opt., man., auto.)		
Condenser	Type	Parallel Flow Type
	Eff. face area (sq. mm.)	21 x 303 x 596
	Fins per inch	14 (Fin Pitch 1.8)
Evaporator	Type	Laminate Louver Fin Type
	Eff. face area (sq. mm.)	235 x 224 x 74
	Fins per inch	7 (Fin Pitch 3.6)
Heater core	Material	Al
	Eff. face area (sq. mm.)	161 x 163 x 45
	Fins per inch	21 (Fin Pitch 1.2)
Compressor	Type	Vane rotary type
	Displacement (cc.)	140
	Manufacturer	ZEXEL USA
	A/C pulley ratio	1.064
Accumulator	Type	
	Height (mm.)	
	Diameter (mm.)	
Receiver	Type	Assembly includes sight glass with triple pressure switch
	Height (mm.)	156.5
	Diameter (mm.)	ø60.5
Refrigerant control (CCOT, TVS, etc.)		CCEV
Heater water valve (yes / no)		No
Refrigerant (R - 12, R - 134a, etc.)		R-12
Charge level (lbs. - oz.)		1.32 lbs. (21.12 OZ)
Cold engine lockout switch (yes / no)		No
Wide open throttle cutout switch (yes / no)		Yes

MVMA Specifications

Vehicle Line STYLUS
Model Year 1992 Issued 9-91 Revised (·)

METRIC (U.S. Customary)

Body Type	JT191F-NSU	JT221F-NWU

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

Clock (digital, analog)		Standard, digital (in METER)	
Compass / thermometer		N.A.	
Console (floor, overhead)		Standard, floor	
Defroster, elec. backlight		Standard, rear electrical defoger	
Electronic	Diagnostic monitor (integrated, individual)	Standard, Tell-tale Warning light in instrument	
	Instrument cluster (list instruments)	N.A.	
	Keyless entry	N.A.	
	Tripminder (avg. spd., fuel)	N.A.	
	Voice alert (list items)	N.A.	
	Other	-	
Fuel door lock (remote, key, electric)		N.A.	
Lamps	Auto head on / off delay, dimming	N.A.	
	Cornering	N.A.	
	Courtesy	N.A.	Optional
	Door lock, ignition		
	Engine compartment		
	Fog	N.A.	Optional
	Glove compartment	N.A.	
	Trunk	N.A.	Optional
	Illuminated entry system (list lamps, activation)	N.A.	
	Other	Dome lamp-standard	
	Map reading	N.A.	Optional
Mirrors	Day / night (auto. man.)	Standard, manual	
	L.H. (remote, power, heated)	Standard, manual	Standard, power
	R.H. (convex, remote, power, heated)	Standard, convex manual	Standard, convex power
	Visor vanity (RH / LH, illuminated)	N.A.	Standard
Navigation system (describe)		N.A.	
Parking brake-auto release (warning light)		N.A.	

MVMA Specifications

Vehicle Line IMPULSE

Model Year 1992 Issued 9-91 Revised (-)

METRIC (U.S. Customary)

Body Type	JT221F-CWU JT221F-FWU

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

Power equipment	Deck lid (release, pull down)		N.A.
	Door locks (manual, automatic, describe system)		N.A.
	Seats	2 - 4 - 6 way, etc.	N.A.
		Reclining (R.H., L.H.)	N.A.
		Memory (R.H., L.H., preset recline)	N.A.
		Support (lumbar, hip, thigh, etc.)	N.A.
		Heated (R.H., L.H., other)	N.A.
	Side windows		N.A.
	Vent windows		N.A.
	Rear windows		N.A.
Radio systems	Antenna (location, whip, w / shield, power)		Standard, on roof front-left, non-power
	Standard	AM, FM, stereo, tape, compact disc, graphic equalizer, theft deterrent, radio prep package, headphone jacks, etc.	-
	Optional		AM/FM stereo AM/FM stereo, W/Casstte Tape COMP ASM: (AM/FM stereo, Cassette, Graphic equalizer)
	Speaker (number, location)		Optional Ft 2 speakers Rr 2 speakers
Roof: open air or fixed (flip-up, sliding, "T")			Optional tilt up and slide
Speed control device			Optional
Speed warning device (light, buzzer, etc.)			N.A.
Tachometer (rpm)			Standard
Telephone system (describe)			N.A.
Theft deterrent system			Lock mounted on steering column: Lock steering wheel automatic transmission shift lever and ignition

Trailer Towing

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

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

MVMA Specifications

Vehicle Line IMPULSE
Model Year 1992 Issued 9-91 Revised (•) _____

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

All dimensions to ground are for comparative purposes only. Dimensions are to be shown for all base body models of each vehicle line.
SAE Ref. no. refers to the definition published in SAE Recommended Practice J1100 "Motor Vehicle Dimensions," unless otherwise specified.

Body Type	SAE Ref. No.	JT221F-CWU	JT191S-CJU	JT221F-FWU
Width				
Tread (front)	W101	1430 (56.3)		
Tread (rear)	W102	1405 (55.3)		
Vehicle width	W103	1694 (66.69)		
Body width at Sg RP (front)	W117	1683 (66.26)		
Vehicle width (front doors open)	W120	3883 (152.9)		
Vehicle width (rear doors open)	W121	-		
Tumble-home (degrees)	W122	26.7°		
Outside mirror width	W410	1886 (74.3)		
Length				
Wheelbase	L101	2450 (96.5)		
Vehicle length	L103	4215 (166.0)		4168 (164.1)
Overhang (front)	L104	980 (38.6)		
Overhang (rear)	L105	785 (30.9)		738 (29.0)
Upper structure length	L123	2712 (106.8)		
Rear wheel C/L "X" coordinate	L127	2251.5(88.6)		
Height **				
Passenger distribution (front/rear)	PD1,2,3	2/0	**	
Trunk/cargo load		30.0 (66)	**	
Vehicle height	H101	1298 (51.1)		1312 (51.7)
Cowl point to ground	H114	904 (35.6)		
Deck point to ground	H138	946 (37.2)		876 (34.5)
Rocker panel-front to ground	H112	202 (8.0)		
Rocker panel-rear to ground	H111	202 (8.0)		
Windshield slope angle (degrees)	H122	64.1°		
Backlight slope angle (degrees)	H121	72.0°		48.8°
Ground Clearance **				
Front bumper to ground	H102	225.4 (8.8)		
Rear bumper to ground	H104	268.1 (10.5)		232 (9.1)
Bumper to ground front at curb mass (wt.)	H103	244.7 (9.5)		
Bumper to ground rear at curb mass (wt.)	H105	290.0 (11.3)		254 (10.0)
Angle of approach (degrees)	H106	15.9°		
Angle of departure (degrees)	H107	21.3°		
Ramp breakover angle (degrees)	H147	12.9°	12.7°	12.9°
Axle differential to ground (front/rear)	H153	-	144.3 (5.6)	-
Min. running ground clearance	H156	131 (5.2)		
Location of min. run. grd. clear.		Under Floor Converter		

* All vehicle **height** and **ground** clearances are measured at the Manufacturer's Design Load Weight.
Manufacturers Design Load Weight is defined with indicated passenger distribution and trunk/cargo load, unless otherwise specified.
All linear dimensions are in millimeters (inches) unless otherwise noted.

MVMA Specifications

Vehicle Line IMPULSE
Model Year 1992 Issued 9-91 Revised (•) _____

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

Body Type	SAE Ref. No.	JT221F-CWU JT191S-CJU	JT221F-FWU
Front Compartment			
SgRP front, "X" coordinate	L31	1149 (45.2)	
Effective head room	H61	952 (37.5)	
Max. eff. leg room (accelerator)	L34	1113 (43.8)	
SgRP to heel point	H30	177 (7.0)	
SgRP to heel point	L53	940 (37.0)	
Back angle (degrees)	L40	25°	
Hip angle (degrees)	L42	98°	
Knee angle (degrees)	L44	140°	
Foot angle (degrees)	L46	87°	
Design H-point front travel	L17	230 (9.1)	
Normal driving & riding seat track trvl.	L23	230 (9.1)	
Shoulder room	W3	1354 (53.3)	
Hip room	W5	1292 (50.9)	
Upper body opening to ground	H50	1161 (45.7)	
Steering wheel maximum diameter*	W9	382 (15.0)	
Steering wheel angle (degrees)	H18	20.1°	
Accel. heel pt. to steer. whl. cntr	L11	554 (21.8)	
Accel. heel pt. to steer. whl. cntr	H17	564 (22.2)	
Undepressed floor covering thickness	H67	25 (1.0)	
Rear Compartment			
SgRP point couple distance	L50	679 (26.7)	
Effective head room	H63	810 (31.9)	
Min. effective leg room	L51	771 (30.4)	920 (36.2)
SgRP (second to heel)	H31	283 (11.0)	
Knee clearance	L48	-23 (-0.91)	
Shoulder room	W4	1301 (51.2)	
Hip room	W6	1084 (42.7)	1330 (52.4)
Upper body opening to ground	H51	–	
Back angle (degrees)	L41	28°	30°
Hip angle (degrees)	L43	87.8°	
Knee angle (degrees)	L45	88.6°	
Foot angle (degrees)	L47	141.1°	
Depressed floor covering thickness	H73	10 (0.4)	
Luggage Compartment			
Usable luggage capacity L (cu. ft.)	V1	–	
Liftover height	H195	931 (36.7)	728 (28.7)
Interior Volumes (EPA Classification)			
Vehicle class		Subcompact cars	
Interior volume index (cu. ft.)**		2.566 m³ (90.568)	2.672 m³ (94.314)
Trunk / cargo index (cu. ft.)		0.313 m³ (10.968)	

* See page 14.
** See definition page 33.
All linear dimensions are in millimeters (inches) unless otherwise noted.

MVMA Specifications

Vehicle Line IMPULSE
Model Year 1992 Issued 9-91 Revised (-)

METRIC (U.S. Customary)

Vehicle Dimensions See Key Sheets for definitions

Model Code/Description		JT221F-CWU JT191S-CJU	JT221-FWU
Station Wagon / MPV* – Third Seat	SAE Ref. No.		
Seat facing direction	SD1	–	
SgRP couple distance	L85	–	
Shoulder room	W85	–	
Hip room	W86	–	
Effective leg room	L86	–	
Effective head room	H86	–	
SgRP to heel point	H87	–	
Knee clearance	L87	–	
Back angle (degrees)	L88	–	
Hip angle (degrees)	L89	–	
Knee angle (degrees)	L90	–	
Foot angle (degrees)	L91	–	
Station Wagon / MPV* – Cargo Space			
Cargo length (open front)	L200	–	
Cargo length (open second)	L201	–	
Cargo length (closed front)	L202	–	
Cargo length (closed second)	L203	–	
Cargo length at belt (front)	L204	–	
Cargo length at belt (second)	L205	–	
Cargo width (wheelhouse)	W201	–	
Rear opening width at floor	W203	–	
Opening width at belt	W204	–	
Min. rear opening width above belt	W205	–	
Cargo height	H201	–	
Rear opening height	H202	–	
Tailgate to ground height	H250	–	
Front seat back to load floor height	H197	–	
Cargo volume index $m^3(ft.^3)$	V2	–	
Hidden cargo volume index $m^3(ft.^3)$	V4	–	
Cargo volume index-rear of 2-seat	V10	–	
∅ Cargo volume index*	V6	–	
∅ Cargo width at floor*	W500	–	
∅ Maximum cargo height*	H505	–	
Hatchback – Cargo Space			
Cargo length at front seatback height	L208	1153 (45.4)	1141 (44.9)
Cargo length at floor (front)	L209	1394 (54.9)	
Cargo length at second seatback height	L210	433 (17.0)	410 (16.1)
Cargo length at floor (second)	L211	728 (28.7)	706 (27.8)
Front seatback to load floor height	H197	373 (14.7)	
Second seatback to load floor height	H198	441 (16.2)	450 (17.7)
Cargo volume index $m^3(ft.^3)$	V3	0.619(21.843)	0.629(22.4)
Hidden cargo volume index $m^3(ft.^3)$	V4	–	
Cargo volume index-rear of 2-seat	V11	0.313(10.968)	0.334(11.7)

All linear dimensions are in millimeters (inches) unless otherwise noted.

*MPV - Multipurpose Vehicle

MVMA Specifications

METRIC (U.S. Customary)

Vehicle Line IMPULSE
Model Year 1992 Issued 9-91 Revised (•)

Model Code/ Description: ALL MODELS

Vehicle Fiducial Marks

Fiducial Mark Number*	Define Coordinate Location
Front(1)	The center of the hole (ø16) on the front side member.
Front(2)	
Rear(1)	The center of the hole (ø13) on the rear side member. (Note: The rearmost one of the drain holes.)
Rear(2)	

Note: Provide 3 of 4 Fiducial Mark Locations

Front	W21**	403 (15.9)
	L54**	250 (9.8)
	H81**	336.5 (13.2)
	H161**	177 (7.0)
	H163**	157 (6.2)
Rear	W22**	460.5(18.1)
	L55**	2594 (102.1)
	H82**	563 (22.2)
	H162**	405 (15.9)
	H164**	384 (15.1)

* Reference – SAE Recommended Practice, J182a, Motor Vehicle Fiducial Marks.
** Reference – SAE Recommended Practice J1100 - Motor Vehicle Dimensions.
All linear dimensions are in millimeters (inches) unless otherwise noted.

MVMA Specifications

METRIC (U.S. Customary)

Vehicle Line IMPULSE

Model Year 1992 Issued 9-91 Revised (•) _____

Code	Model	Vehicle Mass (weight)					% PASS MASS DISTRIBUTION			
		CURB MASS, kg. (lb.)*			SHIPPING MASS kg(lb)***	ETWC** Code	Pass.in Front		Pass in Rear	
		Front	Rear	Total			Front	Rear	Front	Rear
2-Door Coupe M/T		694	415	1109	1079	P	45	55	25	75
(JT221F-CWU)		(1530)	(915)	(2445)	(2379)					
2-Door Coupe A/T		739	414	1153	1123	P	45	55	25	75
(JT221F-CWU)		(1629)	(913)	(2542)	(2476)					
2-Door Coupe M/T		761	481	1242	1212	R	45	55	25	75
(JT191S-SJU)		(1678)	(1060)	(2738)	(2672)					
2-Door Hatch Back M/T		704	423	1127	1097	P	45	55	25	75
(JT221F-FWU)		(1552)	(933)	(2485)	(2418)					
2-Door Hatch Back A/T		774	417	1161	1131	P	45	55	25	75
(JT221F-FWU)		(1640)	(919)	(2559)	(2493)					

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

** ETWC – Equivalent Test Weight Class – basis for U.S. Environmental Protection Agency emission certifications. Refer to ETWC code legend below for test weight class.

ETWC LEGEND

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

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

MVMA Specifications

METRIC (U.S. Customary)

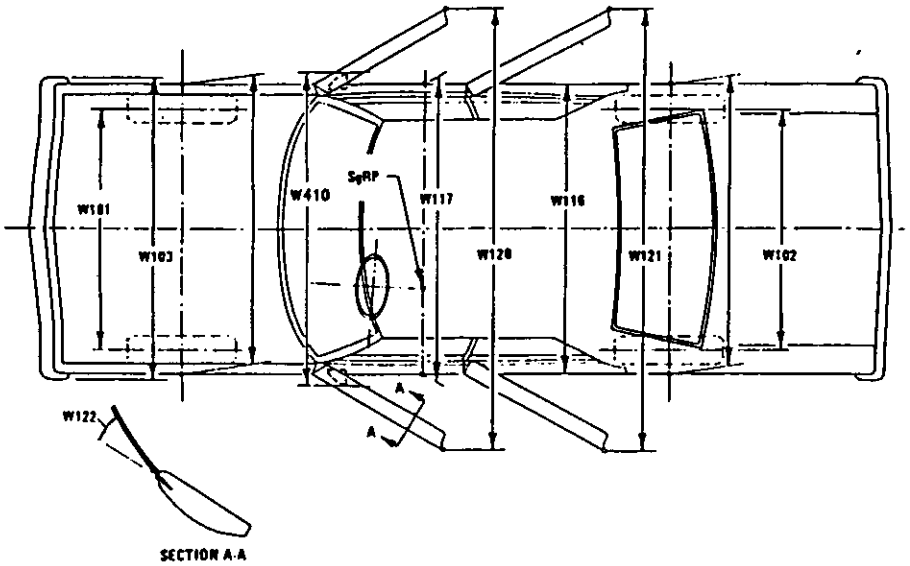
Vehicle Line IMPULSE
Model Year 1992 Issued 9-91 Revised (·)

Code	Equipment	Optional Equipment Differential Mass (weight)* MASS, kg. (lb.) Front	Rear	Total	Remarks Restrictions, Requirements
	Air Conditioning	20.4	-2.0	18.4	
	Fog Lamp	2.0	-0.5	1.5	
	Anti Theft	0.8	0.4	1.2	JT191S-CJU Only
	Cruse Control	2.2	-0.2	2	
	AM/FM Stereo radio (ETR) & 2 Speaker	0.6	0.2	0.8	
	AM/FM Stereo Radio (ETR) Cassette & 4 Speaker	1.2	0.5	1.7	
	AM/FM Stereo Radio (ETR) Cassette Equalizer & 4 Speaker	1.6	0.7	2.3	
	Sun Roof	6.1	8.0	14.1	
	Anti Brake System	9.9	1.9	11.8	JT191S-CJU Only
	Power Window	1.4	1.9	3.3	

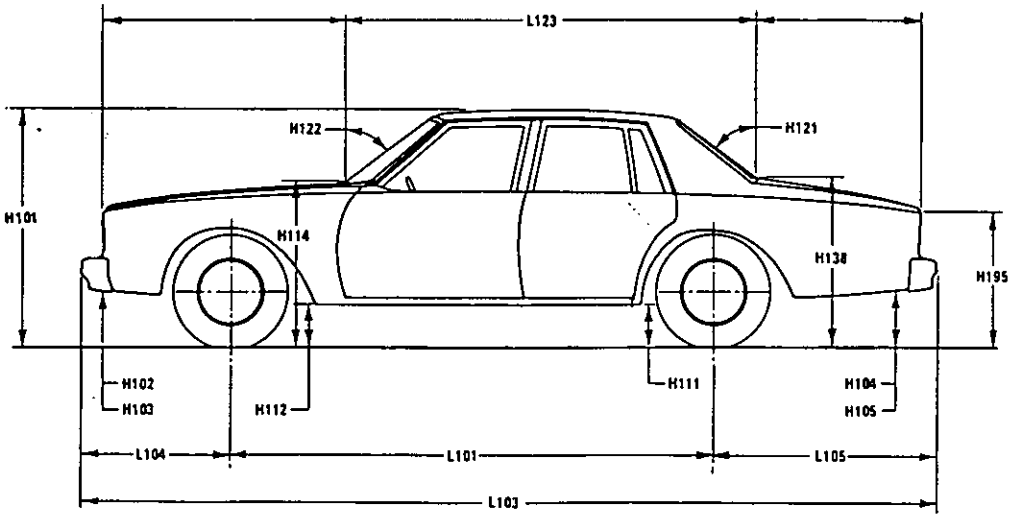
* Also see Engine - General Section for dressed engine mass (weight).

Exterior Vehicle And Body Dimensions – Key Sheet

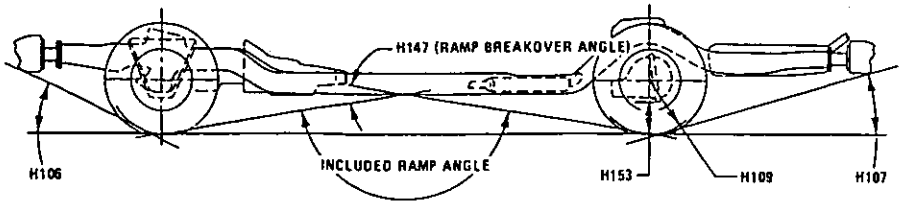
Exterior Width



Exterior Length & Height



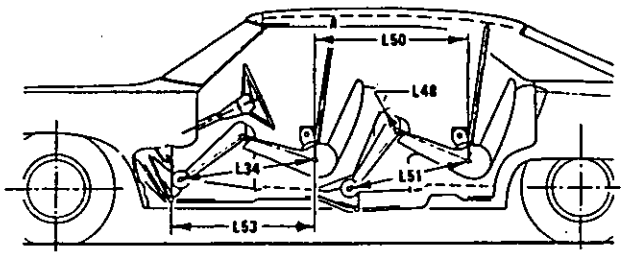
Exterior Ground Clearance

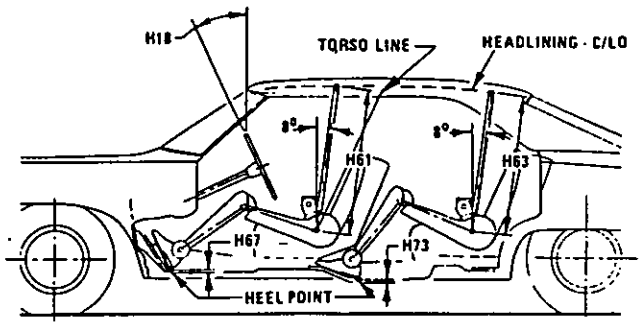


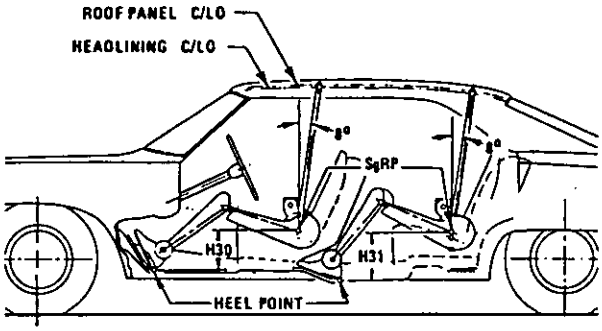
MVMA Specifications Form

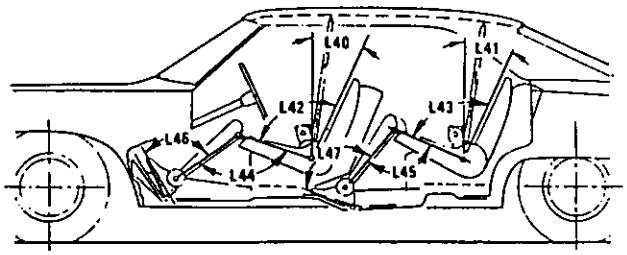
METRIC (U.S. Customary)

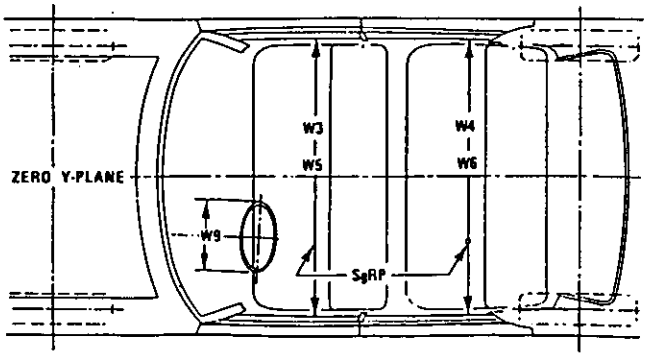
Interior Vehicle And Body Dimensions – Key Sheet

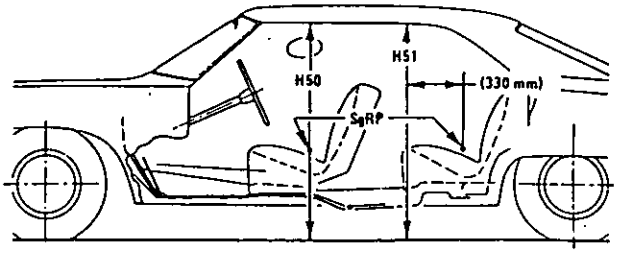






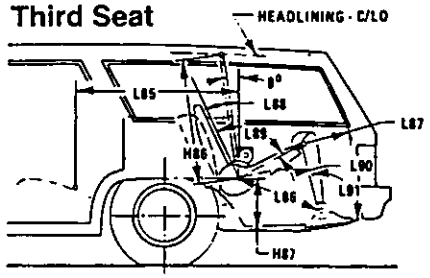


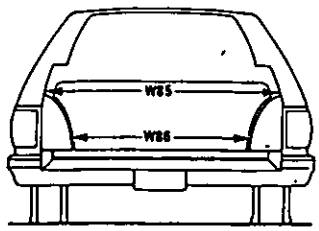




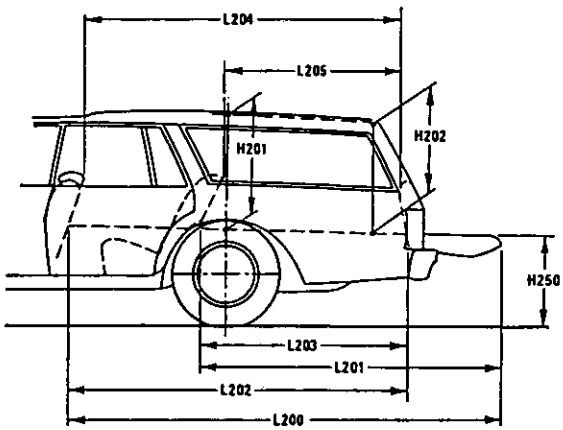
Interior Vehicle And Body Dimensions – Key Sheet

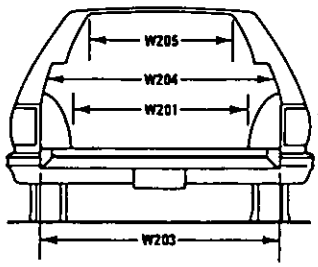
Third Seat



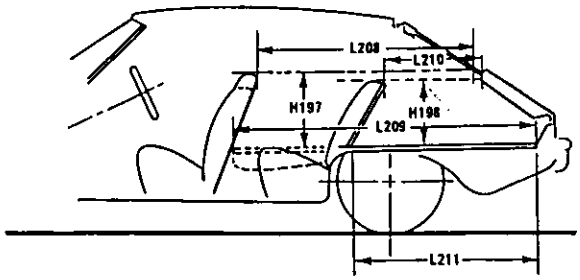


Cargo Space

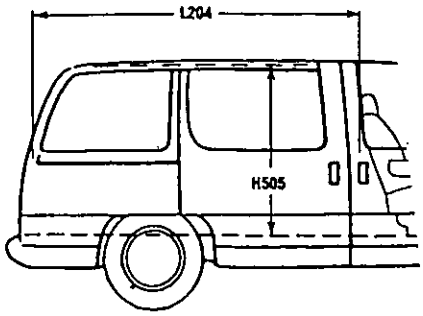


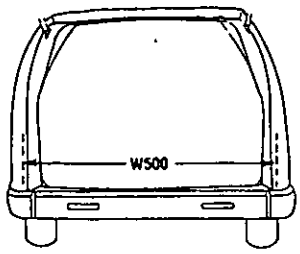


Station Wagon



Hatchback





∅ Multipurpose Vehicle

MVMA Specifications

METRIC (U.S. Customary)

Exterior Vehicle And Body Dimensions – Key Sheet Dimensions Definitions

Seating Reference Point

SEATING REFERENCE POINT means the manufacturer's design reference point which –
(a) Establishes the rearmost normal design driving or riding position of each designated seating position in a vehicle;
(b) Has coordinates established relative to the design vehicle structure;
(c) Simulates the position of the pivot center of the human torso and thigh; and
(d) Is the reference point employed to position the two dimensional templates described in SAE Recommended Practice J826, "Devices for Use in Defining and Measuring Vehicle Seating Accommodations,"

Width Dimensions

W101 TREAD – FRONT. The dimension measured between the tire centerlines at the ground.

W102 TREAD – REAR. The dimension measured between the tire centerlines at the ground. In case of dual wheels, the dimension will be measured to the centerline of tire and wheel assemblies.

W103 VEHICLE WIDTH. The maximum dimension measured between the widest point on the vehicle, excluding exterior mirrors, flexible mud flaps, marker lamps, but including bumpers, moldings, sheet metal protrusions or dual wheels, if standard equipment.

W117 BODY WIDTH AT SgRP – FRONT. The dimension measured laterally between the widest points on the body at the SgRP-front, excluding door handles, applied moldings, or appliques.

W120 VEHICLE WIDTH – FRONT DOORS OPEN. The dimension measured between the widest point on the front doors in maximum hold-open position.

W121 VEHICLE WIDTH – REAR DOORS OPEN. The dimension measured between the widest point on the rear doors in maximum hold-open position. For vehicles with a rear door on only one side, this dimension is to the zero "Y" plane.

W122 TUMBLE – HOME. STRAIGHT SIDE GLASS. The angle measured from a vertical to the outside surface of the front door glass at the SgRP "X" plane.
CURVED SIDE GLASS. The angle measured from a vertical to a chord extending from the upper DLO to the lower DLO at the outside surface of the front door glass at the front SgRP "X" plane.

W410 OUTSIDE MIRROR WIDTH: The dimension between the widest point on the outside mirrors. The standard right and left mirror adjusted for normal driving will be shown unless otherwise noted. When only one outside mirror is standard, the dimension will be to the zero "Y" plane.

Length Dimensions

L101 WHEELBASE (WB). The dimension measured longitudinally between front and rear wheel centerlines. In case of dual rear axles, the dimension shall be to the midpoint of the centerlines of the rear wheels.

L103 VEHICLE LENGTH. The maximum dimension measured longitudinally between the foremost point and the rearmost point on the vehicle, including bumper, bumper guards, tow hooks and/or rub strips, if standard equipment.

L104 OVERHAND – FRONT. The dimension measured longitudinally from the centerline of the front wheels to the foremost point on the vehicle including bumper, bumper guards, tow hooks and/or rub strips, if standard equipment.

L105 OVERHANG – REAR. The dimension measured longitudinally from the centerline of the rear wheels; or in the case of dual rear axles, the dimension shall be the midpoint of the centerlines of the rear wheels, to the rearmost point on the vehicle including rear bumpers, bumper guards, tow hooks and rub strips, if standard equipment.

L123 UPPER STRUCTURE LENGTH. The dimension measured longitudinally from the cowl point to the deck point.

L127 REAR WHEEL CENTERLINE "X" COORDINATE or in the case of dual rear axles, the coordinate shall be the midpoint of the distance between the rear axle centerlines.

Height Dimensions

H101 VEHICLE HEIGHT. The dimension measured vertically from the highest point on the vehicle body to ground.

H111 ROCKER PANEL – REAR TO GROUND. The dimension measured vertically from the bottom of the rocker or side quarter panel at the front of the rear wheel opening, excluding flanges, to ground.

H112 ROCKER PANEL – FRONT TO GROUND. The dimension measured vertically from the foremost point on the bottom of the rocker panels, excluding flanges, to ground.

H114 COWL POINT TO GROUND. Measured at zero "Y" plane.

H121 BACKLIGHT SLOPE ANGLE. The angle between the vertical reference line and the surface of backlight at vehicle zero "Y" plane. For curve backlight, the angle is to chord of backlight arc from lower DLO to upper DLO.

H122 WINDSHIELD SLOPE ANGLE. The angle between the vertical reference line and a chord of the windshield arc running from the lower DLO to the upper DLO at the vehicle zero "Y" plane. In the case of wrap over glass, the angle to be measured will be formed by a chord 457 mm (18.0 in.) long drawn from the lower DLO to the intersecting point on the windshield.

H138 DECK POINT TO GROUND. Measured at zero "Y" plane.

H109 STATIC LOAD – TIRE RADIUS – REAR. Specified by the manufacturer in accordance with composite TIRE SECTION STANDARD.

Ground Clearance Dimensions

H102 FRONT BUMPER TO GROUND. The minimum dimension measured vertically from the lowest point on the front bumper to ground, including bumper guards, if standard equipment.

H103 FRONT BUMPER TO GROUND – CURB MASS (WT.). Measured in the same manner as H102.

H104 REAR BUMPER TO GROUND. The minimum dimension measured vertically from the lowest point on the rear bumper to ground, including bumper guards, if standard equipment.

H105 REAR BUMPER TO GROUND – CURB MASS (WT.). Measured in the same manner as H104.

H106 ANGLE OF APPROACH. The angle measured between a line tangent to the front tire static loaded radius arc and the initial point of structural interference forward of the front tire to ground. The limiting structural component shall be designated.

H107 ANGLE OF DEPARTURE. The angle measured between a line tangent to the rear tire static loaded radius arc and the initial point structural interference rearward of the rear tire to ground. The limiting component shall be designated.

H147 RAMP BREAKOVER ANGLE. The angle measured between two lines tangent to the front and rear tire static loaded radius and intersecting at a point on the underside of the vehicle which defines the largest ramp over which the vehicle can roll.

H153 REAR AXLE DIFFERENTIAL TO GROUND. The minimum dimension measured from the rear axle differential to ground.

H156 MINIMUM RUNNING GROUND CLEARANCE. The minimum dimension measured from the sprung vehicle to ground. Specify location.

MVMA Specifications

METRIC (U.S. Customary)

Interior Vehicle And Body Dimensions – Key Sheet Dimensions Definitions

Glass Areas

S1 Windshield area.
S2 Side windows area. Includes the front door, rear door, vents, and rear quarter windows on both sides of the vehicle.
S3 Backlight areas.
S4 Total area. Total of all areas (S1 + S2 + S3).

Fiducial Mark Dimensions

Fiducial Mark – Number 1

L54 "X" coordinate.
W21 "Y" coordinate.
H81 "Z" coordinate.
H161 Height "Z" coordinate to ground at curb weight.
H163 Height "Z" coordinate to ground.

Fiducial Mark – Number 2

L55 "X" coordinate.
W22 "Y" coordinate.
W82 "Z" coordinate.
H162 Height "Z" coordinate to ground at curb weight.
H164 Height "Z" coordinate to ground.

Front Compartment Dimensions

L11 ACCELERATOR HEEL POINT TO STEERING WHEEL CENTER. The dimension measured horizontally from the AHP to the intersection of the steering column centerline and a plane tangent to the upper surface of the steering wheel rim.

L17 DESIGN H-POINT – FRONT TRAVEL. The dimension measured horizontally between the design H-point – front in the foremost and rearmost seat track positions. (See SAE J1100)

L23 NORMAL DRIVING AND RIDING SEAT TRACK TRAVEL. The dimension measured horizontally between a point on the design H-point travel line from the SgRP to the displaced point on the design H-point travel line with the seat moved to the foremost seat position, but not to include seat track travel used for purposes other than normal driving and riding positions. (See SAE J1100).

L31 SgRP – FRONT. "X" COORDINATED.

L34 MAXIMUM EFFECTIVE LEG ROOM – ACCELERATOR. The dimension measured along a line from the ankle pivot center to the SgRP – front plus 254 mm (10.0 in.) measured with right foot on the undepressed accelerator pedal. For vehicles with SgRP to heel (H30) greater than 18 in., the accelerator pedal may be depressed as specified by the manufacturer. If the accelerator is depressed, the manufacturer shall place foot flat on pedal and note the depression of the pedal.

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

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

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

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

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

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

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

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

H7 ACCELERATOR HEEL POINT TO THE STEERING WHEEL CENTER. The dimension measured vertically from the AHP – front to the intersection of the steering column centerline to a plane tangent to the upper surface of the steering wheel rim.

H18 STEERING WHEEL ANGLE. The angle measured from a vertical to the surface plane of the steering wheel.

H30 SgRP – FRONT TO HEEL. The dimension measured vertically from the SgRP – front to the accelerator heel point.

H50 UPPER BODY OPENING TO GROUND – FRONT. The dimension measured vertically from the trimmed body opening to the ground on the SgRP – front "X" plane.

H61 EFFECTIVE HEAD ROOM – FRONT. The dimension measured along a line 8 deg. rear of vertical from the SgRP – front to the headlining plus 102 mm (4.0in.).

H67 FLOOR COVERING THICKNESS – UNDEPRESSED – FRONT. The dimension measured vertically from the surface of the undepressed floor covering to the underbody sheet metal at the accelerator heel point.

Rear Compartment Dimensions

L-41 BACK ANGLE – SECOND. The angle measured between a vertical line through the SgRP – second and the torso line.

L43 HIP ANGLE – SECOND. The angle measured between torso line and thigh centerline.

L45 KNEE ANGLE – SECOND. The angle measured between thigh centerline and lower leg centerline.

L47 FOOT ANGLE – SECOND. The angle measured between the lower leg centerline and a line tangent to the ball and heel of the three-dimensional devices bare foot flesh line (Reference J826).

L48 KNEE CLEARANCE – SECOND. The minimum dimension measured from the knee pivot center to the back of the front seatback minus 51 mm (2.0 in.).

L50 SgRP COUPLE DISTANCE – SECOND. The dimension measured horizontally from the driver SgRP – front to the SgRP – second.

L51 MINIMUM EFFECTIVE LEG ROOM – SECOND. The dimension measured along a line from the ankle pivot center to the SgRP – second plus 254 mm (10.0 in.).

W4 SHOULDER ROOM – SECOND. The minimum dimension measured laterally between door or quarter trimmed surfaces on the "X" plane through the SgRP – second at height between 254-406 mm (10.0-16.0 in.) above the SgRP – second, excluding the door assist straps and attaching parts.

W6 HIP ROOM – SECOND. Measured in the same manner as W5.

H31 SgRP – SECOND TO HEEL. The dimension measured vertically from the SgRP – second to the two dimensional device heel point on the depressed floor covering.

H51 UPPER BODY OPENING TO GROUND – SECOND. The dimension measured vertically from the trimmed body opening to the ground on the "X" plane 330 mm (13.0 in.) forward of the SgRP – second.

H63 EFFECTIVE HEAD ROOM – SECOND. The dimension measured along a line 8 deg. rear of vertical from the SgRP to the headlining, plus 102 mm (4.0 in.).

H73 FLOOR COVERING – DEPRESSED – SECOND. The dimension measured vertically from the heel point to the underbody sheet metal.

MVMA Specifications

METRIC (U.S. Customary)

Interior Vehicle And Body Dimensions – Key Sheet Dimensions Definitions

Luggage Compartment Dimensions

V1 USABLE LUGGAGE CAPACITY – Total of volumes of individual pieces of standard luggage set plus H-boxes stowed in the luggage compartment in accordance with the procedure described in paragraph 8.2 of SAE-J1100a.

Interior Volumes (EPA Classification)

The Interior Volume Index is listed for each body style except two seaters. The Interior Volume Index 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 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 / MPV – Third Seat Dimensions

L85 SgRP COUPLE DISTANCE – THIRD. The dimension measured horizontally from the SgRP – second to the SgRP – third.

L86 EFFECTIVE LEG ROOM – THIRD. The dimension measured along a line from the ankle pivot center to the SgRP – third plus 254 mm (10.0 in.).

L87 KNEE CLEARANCE – THIRD. The minimum dimension from the knee pivot center to the back of second seatback minus a constant of 51 mm (2.0 in.). With rear-facing third seat, dimension is measured to closure.

L88 BACK ANGLE – THIRD. Measured in the same manner as L41.

L89 HIP ANGLE – THIRD. Measured in the same manner as L43.

L90 KNEE ANGLE – THIRD. Measured in the same manner as L45

L91 FOOT ANGLE – THIRD. Measured in the same manner as L47.

W85 SHOULDER ROOM – THIRD. Measured in the same manner as W4.

W86 HIP ROOM – THIRD. Measured in the same manner as W5.

H86 EFFECTIVE HEAD ROOM – THIRD. The dimension, measured along a line 8 deg. from the SgRP – third to the headlining rear of vertical plus a constant of 102 mm (4.0 in.).

H87 SgRP – THIRD TO HEEL POINT.

SD1 SEAT FACING DIRECTION – THIRD.

Station Wagon / MPV – Cargo Space Dimensions

L200 CARGO LENGTH – OPEN – FRONT. The minimum dimension measured longitudinally from the back of the front seatback at the height of the undepressed floor covering to the rearmost point on the undepressed floor covering on the open tailgate or cargo surface if the rear closure is a conventional door type tailgate at the zero "Y" plane.

L201 CARGO LENGTH – OPEN – SECOND. The dimension measured longitudinally from the back of the second seatback at the height of the undepressed floor covering to the rearmost point on the undepressed floor covering on the open tailgate or cargo floor surface if the rear closure is a conventional door type tailgate, at the zero "Y" plane.

L202 CARGO LENGTH – CLOSED – FRONT. The minimum dimension measured horizontally from the back of the front seat at the height of the undepressed floor covering to the rearmost point on the undepressed floor covering on the closed tailgate or taildoor for station wagons, trucks and mpv's at the zero "Y" plane.

L203 CARGO LENGTH – CLOSED – SECOND. The dimension measured horizontally from the back of the second seat at the height of the undepressed floor covering to the rearmost point on the undepressed floor covering on the closed tailgate or taildoor for station wagons, trucks and mpv's at the zero "Y" plane.

L204 CARGO LENGTH AT BELT – FRONT. The minimum dimension measured horizontally from the back of the front seatback at the seatback top to the foremost normal surface of the closed tailgate or inside surface of the cab backpanel at the height of the belt, on the zero "Y" plane.

L205 CARGO LENGTH AT BELT – SECOND. The minimum dimension measured horizontally from the back of the second seatback at the seatback top to the foremost normal surface of the closed tailgate at the height of the belt, on the zero "Y" plane.

W201 CARGO WIDTH – WHEELHOUSE. The minimum dimension measured laterally between the trimmed wheelhousings at floor level. For any vehicle not trimmed, measure to the sheet metal.

W203 REAR OPENING WIDTH AT FLOOR. The minimum dimension measured laterally between the limiting interferences of the rear opening at floor level.

W204 REAR OPENING WIDTH AT BELT. The minimum dimension measured laterally between the limiting interferences of the rear opening at belt height or top of pick up box.

W205 REAR OPENING WIDTH ABOVE BELT. The minimum dimension measured laterally between the limiting interferences of the rear opening above the belt height.

∅ W500 CARGO WIDTH AT FLOOR. The maximum dimension measured laterally between the limiting interferences at the floor level. This dimension shall include ribs and pillars, but will exclude wheelhouses.

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.

∅ H505 MAXIMUM CARGO HEIGHT. The maximum vertical dimension rear of the front seat from the cargo floor to roof bow or headlining at the zero "Y" plane.

Interior Vehicle And Body Dimensions – Key Sheet Dimensions Definitions

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:

$$\frac{L506 \times W505 \times H503}{1728} = ft^3$$

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 electronically 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. 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. 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 "X" plane.

L211 CARGO LENGTH AT FLOOR – SECOND SEATBACK. 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 seatback 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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