

MANUFACTURERS MOTOR VEHICLE SPECIFICATIONS

METRIC (U.S. Customary)

1990

Manufacturer ISUZU MOTORS LIMITED	Vehicle Line IMPULSE	
Mailing Address 22-10 Minami-oi 6-chome Shinagawa-ku, Tokyo, Japan.	Issued 10/4/'89	Revised

Direct questions concerning these specifications to the manufacturer listed above.

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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

MVMA Specifications

METRIC (U.S. Customary)

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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

Vehicle Line IMPULSE
Model Year 1990 Issued _____ Revised (+) _____

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Vehicle Origin

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

Vehicle Models

Model Description & Drive (FWD / RWD / AWD / 4WD)*	Introduction Date	Make, Vehicle Models, Series, Body Type (Mfr's Model Code)	No. of Designated Seating Positions (Front/Rear)	Max. Trunk/Cargo Load-Kilograms (Pounds)
2-Door Coupe (FWD)		JT191F-CWU	2 / 2	30.0 (66)

* 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.

		A	B	C	D	
ENGINE	Engine Code		4XE1-UW	4XE1-UW		
	Displacement Liters (in³)		1.588 (97)	1.588 (97)		
	Induction system (FI, Carb, etc.)		FI	FI		
	Compression ratio		9.8	9.8		
	SAE Net at RPM	Power kW (bhp)	96.9 (130)	96.9 (130)		
		Torque N · m (lb. ft.)	138.3 (102)	138.3 (102)		
	Exhaust single, dual		Dual	Dual		
TRANS	Transmission/ Transaxle		Manual 5-spd.	Auto. 4-spd.		
	Axle Ratio (std. first)		4.117	4.015		

[illegible]

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Engine Description
Engine Code

4XE1-UW

ENGINE - GENERAL

Type & description (inline, V, angle, flat, location, front, mid, rear, transverse, longitudinal, sohc, dohc, ohv, hemi, wedge, pre-chamber, etc.)	In-line Front Transverse, SOHC, Hemisphere	
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 (cm ³)		
Cylinder liner material	-	
Head gasket thickness (compressed)	1.2 (0.05)	
Minimum combustion chamber total volume (cm ³)	45.1 (2.8)	
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.)]**	Cast iron (FCD)	
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***	125(276), 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
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Engine - Valve System

Hydraulic lifters (std., opt., NA)		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 & to &) mm	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	Fluorine 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.)	3.8 (4.0)

Engine - Diesel Information

Diesel engine manufacturer	
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
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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)	82 (180)
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.)	6.9(7.3), M/T / 7.4(7.8), A/T
	With air conditioner - L(qt.)	6.9(7.3), M/T / 7.4(7.8), A/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 & corrugated fin
	Material, mass [kg (wt., lbs.)]	Brass & copper
	Width	668 (26.3)
	Height	350 (13.8)
	Thickness	16(0.63), M/T / 32(1.26), A/T
	Fins per inch	11, M/T / 10, A/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
	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
	Motor rating (wattage) (elec.)	80, M/T / 160, A/T
	Motor switch (type & location) (elec.)	Water temperature, Radiator tank
	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
	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)
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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Vehicle Emission Control

Exhaust Emission Control	Type (air injection, engine modifications, other)		EGR + O ₂ S + 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 ²)	
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	-
Electronic system	Vapor storage provision		Canister
	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 - 2.0 (2.0 - 0.06)
	Material & Mass (kg (weight lbs))	Stainless Steel, 3.4 (7.5)
Inter-mediate 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))	Stainless Steel 9.6 (21.1)

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

Manual 3-speed (manufacturer/country)	N.A.
Manual 4-speed (manufacturer/country)	N.A.
Manual 5-speed (manufacturer/country)	Standard, Isuzu Motors Ltd./Japan
Automatic (manufacturer/country)	Optional, Japan Automatic Transmission Co./Japan
Automatic overdrive (manufacturer/country)	N.A. Optional, Japan Automatic Transmission Co./Japan

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
	Reverse	3.583
Synchronous meshing (specify gears)		All forward gears (1st, 2nd, 3rd, 4th, 5th)
Shift lever location		Floor
Trans. case mat'l. & 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, new) N (lbs)	Depressed	108 (24)
	Released	59 (13)
Assist (spring, power/percent, nominal)		Spring
Type pressure plate springs		Diaphragm
Total spring load (nominal, new) N (lbs)		4312 (970)
Clutch facing	Facing mfg. & material coding	ASUKU NC80A
	Facing material & construction	Organic semi-mold
	Rivets per facing	16
	Outside x inside dia. (nominal)	200 x 130 (7.9 x 5.1)
	Total eff. area [cm ² (in. ²)]	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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☒ 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
	Reverse	2.727
Max. upshift speed - drive range [km/h (mph)]		57 (35) [1-2], 105 (65) [2-3], 169 (105) [3-4]
Max. kickdown speed - drive range [km/h (mph)]		46 (29) [2-1], 89 (56) [3-2], 156 (97) [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.)		-
Transfer case	Manufacturer and model	-
	Type and location	-
Low-range gear ratio		-
System disconnect (describe)		-
Center differential	Type (bevel, planetary, w or w/o viscous bias, torsen, etc.)	-
	Torque split (% front/rear)	-

* Input speed + Torque

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

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⊗ 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	17	17
	Pinion	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	ø32 x 386.6	
		Right	ø32 x 386.6	
	Automatic transaxle	Left	ø26 x 386.6	
		Right	ø26 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, NSK
			Outer	NTN, NSK
	Number used		4	
	Type, size, plunge		Inner	Double Offset Joint 87 / TRI Port Joint, 87
			Outer	Bertiled Joint, 87 fixed
	Attach (u-bolt, clamp, etc)		Snap Ring	
	Bearing	Type (plain, anti-friction)	N.A.	
		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

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Body Type And/Or
Engine Displacement

JT191F-CWU

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.)	-
	s e n s o r s	-
	Lateral acceleration	-
	Deceleration	-
Shock absorber (front & rear)	Acceleration	-
	Road surface	-
	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	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)
	Size (coil design height & i.d.)	348.5x115 (13.7)x(4.5)
	Spring rate [N/mm (lb./in.)]	22.5 (128.7)
	Rate at wheel [N/mm (lb./in.)]	20.5 (117.0)
Stabilizer	Type (link, linkless, frameless)	With link
	Material & bar diameter	SUP 6 or SUP 9, ϕ 18

Suspension - Rear

Type and description		MacPherson strut with two parallel transverse links and one trailing link		
Travel*	Full jounce	110 (4.33)		
	Full rebound	85 (3.35)		
Spring	Type (coil, leaf, other) & material		Coil, SUP 7 or SAE 9254	
	Size (length x width, coil design height & i.d.)		307.5x115 (12.1)x(4.5)	
	Spring rate [N/mm (lb./in.)]		21.6 (123.1)	
	Rate at wheel [N/mm (lb./in.)]		15.4 (88) 20.7 (118.3)	
	Insulators (type & material)		Seat rubbers (top)	
	If leaf	No. of leaves	N.A.	
		Shackle (comp. or tens.)	N.A.	
Stabilizer	Type (link, linkless, frameless)		With link	
	Material & bar diameter		SUP 6 or SUP 9, Ø12 Ø16 PER DAMON DELORENZIS 6-24-92	
Track bar (type)		N.A.		

* Define load condition:

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Body Type And/Or
Engine Displacement

JT191F-CWU

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 intervention (electronic, mech.)		-	
Anti-lock device	Front / rear (std., opt., n.a.)		N.A.	
	Manufacturer		-	
	Type (electronic, mech.)		-	
	Number sensors or circuits		-	
	Number anti-lock hydraulic circuits		-	
	Integral or add-on system		-	
	Yaw control (yes, no)		-	
	Hydraulic power source (elec., vac. mtr., pwr. strg.)		-	
Effective area [cm ² (in. ²)]*			Ft: 145.6 (22.6), Rr: 120 (4.72)	
Gross Lining area [cm ² (in. ²)]**(F/R)			Ft: 145.6 (22.6), Rr: 120 (4.72)	
Swept area [cm ² (in. ²)]*** (F/R)			Ft: 1069 (165.7), Rr: 1020 (158.2)	
Rotor	Outerworking diameter	F/R	248 (9.76) / 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 (0.875) / 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		AKEBONO
		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 1990 Issued _____ Revised (+) _____

METRIC (U.S. Customary)

Body Type And/Or
Engine Displacement

JT191F-CWU

Tires And Wheels (Standard)

Tires	Size (load range, ply)		P185/60R14 82H
	Type (bias, radial, steel, nylon, etc.)		Radial
	Inflation pressure (cold) for recommended max. vehicle load	Front (kPa (psi))	32 (220)
		Rear (kPa (psi))	32 (220)
	Rev./mile-at 70 km/h (45 mph)		925
Wheels	Type & material		Wide rim with deep bottom
	Rim (size & flange type)		14x5.5JJ, Steel or Aluminium
	Wheel offset		40 (1.57)
	Attachment	Type (bolt or stud)	Nut
		Circle diameter	100 (3.94)
		Number & size	4, M12x1.5
Spare	Tire and wheel		Tire: T115/70D14 Wheel: 14x4T
	Storage position & location (describe)		Flat under rear load floor

Tires And Wheels (Optional)

Tire size (load range, ply)	-
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 1990 Issued _____ Revised (-) _____

METRIC (U.S. Customary)

Body Type And/Or
Engine Displacement

JT191F-CWU

Steering

Manual (std., opt., n.a.)			N.A.	
Power (std., opt., n.a.)			Standard	
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)	
		Curb to curb (l. & r.)	9.8 (32.2)	
	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	
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.	
Wheel spindle/hub	Diameter	Inner bearing	34.0 (1.34)	
		Outer bearing	64.0 (2.52)	
	Thread (size)		M20x1	
	Bearing (type)		Double row, angular ball bearing Double row, taper roller bear	

* 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 1990

Issued

Revised (-)

METRIC (U.S. Customary)

Body Type And/Or
Engine Displacement

JT191F-CWU

Wheel Alignment

Front wheel at curb mass (wt.)	Service checking	Caster (deg.)	$3^{\circ} \pm 30'$
		Camber (deg.)	$-30' \pm 1^{\circ}$
		Toe-in (outside track-mm (in.))	0 ± 2
	Service reset*	Caster	$3^{\circ} \pm 30'$
		Camber	$-30' \pm 1^{\circ}$
		Toe-in	0 ± 2
	Periodic M.V. inspection	Caster	$3^{\circ} \pm 30'$
		Camber	$-30' \pm 1^{\circ}$
		Toe-in	0 ± 2
Rear wheel at curb mass (wt.)	Service checking	Camber (deg.)	$-30' \pm 1^{\circ}$
		Toe-in (outside track-mm (in.))	4 ± 2
	Service reset*	Camber	$-30' \pm 1^{\circ}$
		Toe-in	4 ± 2
	Periodic M.V. inspection	Camber	$-30' \pm 1^{\circ}$
		Toe-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
EGR maintenance indicator		N.A.
Charge indicator	Type	Tell-Tale Warning light
	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
	Warning device (light, audible)	Light
Wind-shield wiper	Type (standard)	Electric 2-speed with variable intermittent system
	Type (optional)	-
	Blade length	550 (21.7)
	Swept area (cm ² (in. ²))	7390 (1145)
Wind-shield 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 1990 Issued _____ Revised (-) _____

METRIC (U.S. Customary)

Engine Description
Engine Code

4XE1-UW

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	DELCO REMY
	Rating (idle/max. rpm)	Alternating current 12V-61A(M/T), 12V-85A(A/T)
	Ratio (alt. crank/rev.)	133/62
	Output at idle (rpm, park)	-
Regulator	Optional (type & rating)	N.A.
	Type	Non-contact voltage control relay

Electrical - Starting System

Motor	Manufacturer	NIPPON DENSO
	Current drain _____ °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 1990 Issued _____ Revised (•) _____

METRIC (U.S. Customary)

Body Type

JT191F-CWU

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)
	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 + Foam 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	-

MVMA Specifications

Vehicle Line IMPULSE
Model Year 1990 Issued _____ Revised (+) _____

METRIC (U.S. Customary)

Body Type

JT191F-CWU

Restraint System

Seating Position			Left	Center	Right
Active	Type & description (lap & shoulder belt, lap belt, etc.)	First seat	3-Pt. SEAT BELT WITH E.L.R. - STANDARD	-	3-pt. SEAT BELT WITH E.L.R. - STANDARD
	Standard / optional	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)	First seat	AIR BAG WITH KNEE BOLSTER - STANDARD	-	N.A.
	Standard / optional	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)
Backlight glass exposed surface area (cm ² (in. ²))	S3	14293 (2215)
Total glass exposed surface area (cm ² (in. ²))	S4	33993 (5269)
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.)	ZC1
Quantity	2
Hi-beam type (1A1, 2A1, 1C1, 2C1, etc.)	ICI
Quantity	2

Frame

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

Vehicle Line IMPULSE
 Model Year 1990 Issued _____ Revised (-) _____

METRIC (U.S. Customary)

Body Type

JT191F-CWU

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

Air conditioning (manual, auto, temp control)		Optional, manual
Clock (digital, analog)		Optional, digital (in meter)
Compass / thermometer		N.A.
Console (floor, overhead)		Standard, floor
Defroster, elec. backlight		Standard, rear electrical defogger
Electronic	Diagnostic monitor (integrated, individual)	Standard, Tell-tale Warning light in instrume
	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)		Remote
Lamps	Auto head on / off delay, dimming	N.A.
	Cornering	N.A.
	Courtesy (map, reading)	N.A.
	Door lock, ignition	N.A.
	Engine compartment	N.A.
	Fog	Optional
	Glove compartment	N.A.
	Trunk	Standard (luggage)
	Illuminated entry system (list lamps, activation)	N.A.
	Other	Dome lamp-standard
Mirrors	Map reading	Standard
	Day / night (auto, man.)	Standard, manual
	L.H. (remote, power, heated)	Standard, power
	R.H. (convex, remote, power, heated)	Standard, conver power
	Visor vanity (RH / LH, illuminated)	Standard, RH
Navigation system (describe)		N.A.
Parking brake-auto release (warning light)		N.A.

MVMA Specifications

Vehicle Line IMPULSE
 Model Year 1990 Issued _____ Revised (+) _____

METRIC (U.S. Customary)

Engine Description
 Engine Code

JT191F-CWU

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

Power equipment	Deck lid (release, pull down)		N.A.
	Door locks (manual, automatic, describe system)		Optional
	Seats	2 - 4 - 6 way, etc.	N.A.
		Reclining (R.H., L.H.)	N.A.
		Memory (R.H., L.H., present, recline)	N.A.
		Lumbar, hip, thigh, support	N.A.
		Heated (R.H., L.H., other)	N.A.
	Side windows		Optional
	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, cassette COMP ASM: (AM/FM Stereo, Cassette, Graphic equalizer)
	Speaker (number, location)		Standard Ft 2 speakers Optional 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	

MVMA Specifications

Vehicle Line IMPULSE

Model Year 1990

Issued

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.

JT191F-CWU

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	-
Turn-to-home (deg.)	W122	26.7°
Outside mirror width	W410	1886 (74.3)

Length

Wheelbase	L101	2450 (96.5)
Vehicle length	L103	4215 (165.9)
Overhang (front)	L104	980 (38.6)
Overhang (rear)	L105	785 (30.9)
Upper structure length	L123	2712 (106.8)
Rear wheel C/L "X" coordinate	L127	2251.5 (88.6)

Height*

Passenger distribution (front/rear)	P01.2.3	2/0	**
Trunk/cargo load		30.0 (66)	**
Vehicle height	H101	1298 (51.1)	
Cowl point to ground	H114	904 (35.6)	
Deck point to ground	H138	946 (37.2)	
Rocker panel-front to ground	H112	202 (8.0)	
Rocker panel-rear to ground	H111	202 (8.0)	
Windshield slope angle	H122	64.1°	
Backlight slope angle	H121	72.0°	

Ground Clearance*

Front bumper to ground	H102	225.4 (8.8)
Rear bumper to ground	H104	268.1 (10.5)
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)
Angle of approach (degrees)	H106	15.9°
Angle of departure (degrees)	H107	24.8°
Ramp breakover angle (degrees)	H147	12.9°
Axle differential to ground (front/rear)	H153	-
Min. running round 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. Manufacturer's 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

METRIC (U.S. Customary)

Vehicle Dimensions See Key Sheets for definitions

Vehicle Line IMPULSE
Model Year 1990 Issued _____ Revised (•) _____

Body Type

JT191F-CWU

SAE
Ref.
No.

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	L40	25°
Hip angle	L42	98°
Knee angle	L44	140°
Foot angle	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	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)
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)
Upper body opening to ground	H51	-
Back angle	L41	28°
Hip angle	L43	87.8°
Knee angle	L45	88.6°
Foot angle	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)

Interior Volumes (EPA Classification)

Vehicle class		Subcompact cars
Interior volume index (cu. ft.)**		2.566 m ³ (90.568)
Trunk / cargo index (cu. ft.)		0.313 m ³ (10.968)

* See page 14.

** Includes passenger and trunk / cargo index - see definition page 32.

MVMA Specifications

METRIC (U.S. Customary)

Vehicle Dimensions See Key Sheets for definitions

Vehicle Line **IMPULSE**

Model Year **1990**

Issued

Revised (-)

Body Type

JT191F-CWU

Station Wagon - 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	L88	-
Hip angle	L89	-
Knee angle	L90	-
Foot angle	L91	-

Station Wagon - Cargo Space

Cargo length (open front)	L200	-
Cargo length (open second)	L201	-
Cargo length (closed front)	L202	-
Cargo length (closed second)	L203	-
Cargo length at belt (front)	L204	-
Cargo length at belt (second)	L205	-
Cargo width (wheelhouse)	W201	-
Rear opening width at floor	W203	-
Opening width at belt	W204	-
Min. rear opening width above belt	W205	-
Cargo height	H201	-
Rear opening height	H202	-
Tailgate to ground height	H250	-
Front seat back to load floor height	H197	-
Cargo volume index (m ³ (ft. ³))	V2	-
Hidden cargo volume index (m ³ (ft. ³))	V4	-
Cargo volume index-rear of 2-seat	V10	-

Hatchback - Cargo Space

Cargo length at front seatback height	L208	1153 (45.4)
Cargo length at floor (front)	L209	1394 (54.9)
Cargo length at second seatback height	L210	433 (17.0)
Cargo length at floor (second)	L211	728 (28.7)
Front seatback to load floor height	H197	373 (14.7)
Second seatback to load floor height	H198	441 (16.2)
Cargo volume index (m ³ (ft. ³))	V3	0.619 (21.843)
Hidden cargo volume index (m ³ (ft. ³))	V4	-
Cargo volume index-rear of 2-seat	V11	0.313 (10.968)

• MVMA Specifications

METRIC (U.S. Customary)

Vehicle Line IMPULSE

Model Year 1990

Issued

Revised (-)

Body Type

JT191F-CWU

Vehicle Fiducial Marks

Number*

Define Coordinate Location

Front

The center of the hole (Ø16) on the front side member.

Rear

The center of the hole (Ø13) on the rear side member.
(Note: The rearmost one of the drain holes.)

Fiducial
Mark
Number

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, J182, Motor Vehicle Fiducial Marks.

METRIC (U.S. Customary)

Model Year 1990

Issued

Revised (•)

(40)

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

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:

26 (57)

METRIC (U.S. Customary)

Model Year 1990 Issued

Issued

Revised (-)

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