



MANUFACTURERS MOTOR VEHICLE SPECIFICATIONS

METRIC (U.S. Customary)

1991

| | | | |
|-----------------|---|--------------|-----------------|
| Manufacturer | ISUZU MOTORS LIMITED | Vehicle Line | Geo STORM |
| Mailing Address | CHEVROLET-PONTIAC-CANADA GROUP ENGINEERING CENTER GENERAL MOTORS CORPORATION 30003 VAN DYKE WARREN, MICHIGAN 48090-9060 | Issued | Revised |
| | | JUNE, 1990 | SEPTEMBER, 1990 |

Direct questions concerning these specifications to the manufacturer listed above.

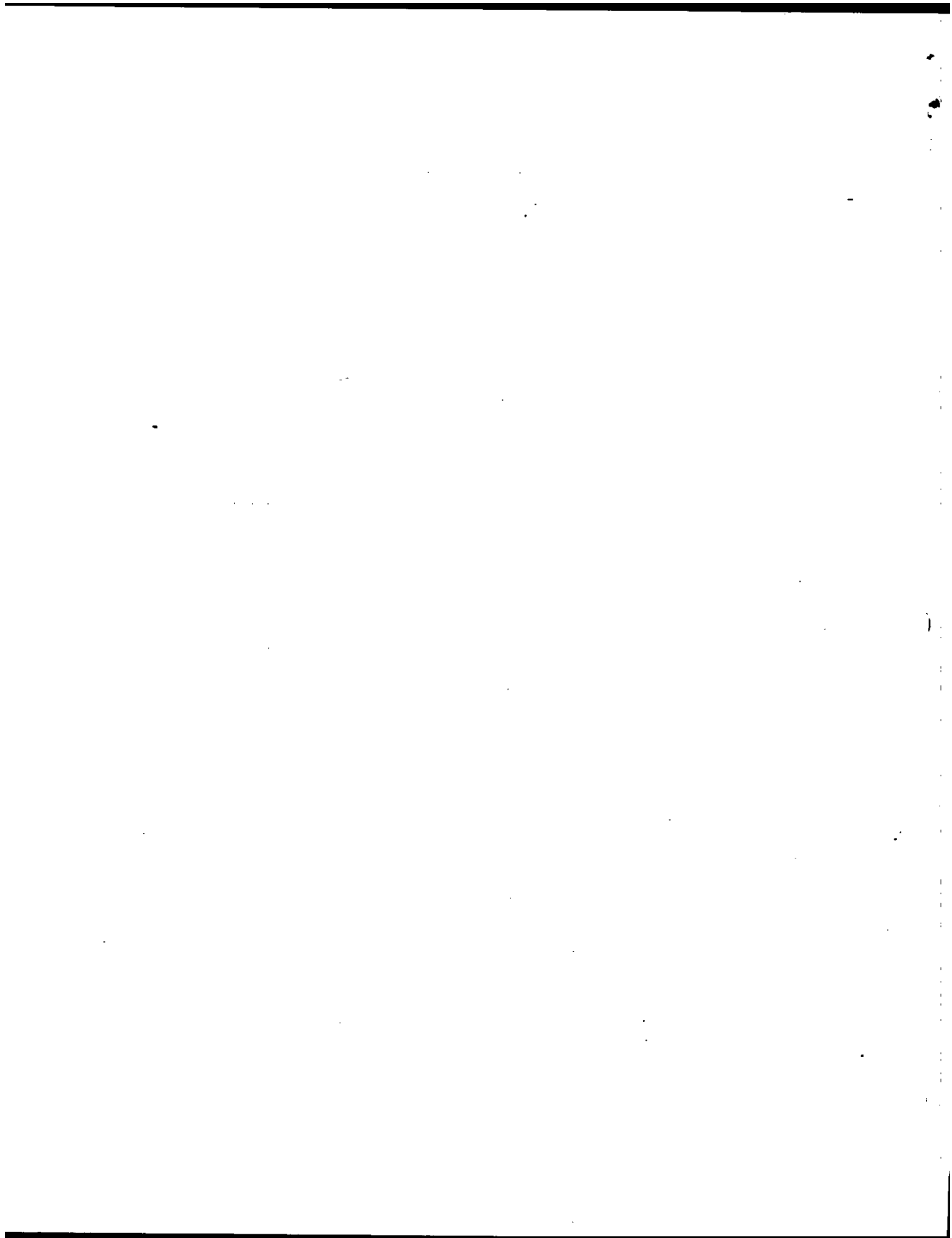
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The General Specifications hereir: are those in effect at date of compilation and are subject to change without notice or incurring obligation by the manufacturer.



Motor Vehicle Manufacturers Association
of the United States, Inc.

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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) specs. 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.

FORM MVMA-91



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MVMA Specifications

Vehicle Line Geo STORM
 Model Year 1991 Issued 6-90 Revised(*) 9-90

METRIC (U.S. Customary)

Vehicle Origin

| | |
|--|----------------------|
| Design & development (company) | Isuzu Motors Limited |
| Where built (country) | Japan |
| Authorized U.S. Sales marketing representative | Chevrolet/Geo |

o Vehicle Models

| Model Description & Drive (FWD/RWD/AWD/4WD)* | Make, Vehicle Models, Series, Body Type (Mfg's Model Code) | No. of Designated Seating Positions (Front/Rear) | Max. Trunk/Cargo Load—Kilograms (Pounds) | EPA Fuel Economy (City/Hwy) |
|--|--|--|--|-----------------------------|
| Geo STORM | | | | |
| 2-Door Hatchback Coupe (FWD) | 1RF15 | 2/2 | 30.0 (66) | Not Applicable |
| 2-Door 2 + 2 Coupe (FWD) | 1RF77 | 2/2 | 30.0 (66) | 30/36 |
| Geo STORM GSi | | | | |
| 2-Door 2 + 2 Coupe (FWD) | 1RT77 | 2/2 | 30.0 (66) | 25/33 |

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

MVMA Specifications

Vehicle Line Geo STORM
 Model Year 1991 Issued 6-90 Revised(*) 9-90

METRIC (U.S. Customary) Power Teams

SAE J1349 Net bhp (brake hrspwr) and Net Torque corrected to 77 deg. F / 25 deg. C and 29.81 in. Hg/100 kPA atmos. press.

| | | A | B | C | D | |
|--|--------------------------------------|-------------------------------------|------------------------------|--------------------------------|------------------------------|------------------|
| E N G I N E | Engine Code | L01 | L01 | LW0 | LW0 | |
| | Displacement Liters (cu. in.) | 1.6 (97) | 1.6 (97) | 1.6 (97) | 1.6 (97) | |
| | Induction system (FI, Carb, etc.) | Multi-Port Fuel Injection | Multi-Port Fuel Injection | Multi-Port Fuel Injection | Multi-Port Fuel Injection | |
| | Compression ratio | 9.1:1 | 9.1:1 | 9.8:1 | 9.8:1 | |
| | SAE Net at RPM | Power kW (bhp) | 71 (95) @ 5800 | 71 (95) @ 5800 | 97 (130) @ 7000 | 97 (130) @ 7000 |
| | | Torque Newton meters (lb.ft.) | 131 (97) @ 4800 | 131 (97) @ 4800 | 138 (102) @ 5800 | 138 (102) @ 5800 |
| Exhaust Single, dual | Single | Single | Single | Single | | |
| T R A N S | Transmission/ Transaxle | Manual Transaxle 5-Speed | Auto Transaxle 3-Speed | Manual Transaxle 5-Speed | Auto Transaxle 4-Speed | |
| | Axle Ratio (std. first) | 3.83 | 3.53 | 4.12 | 4.02 | |

Series Availability

Power Teams (A - B - C - D)

| Model | Code | Standard | Optional |
|-----------------------|-------|----------|----------|
| Geo STORM | | | |
| 2-Dr. Hatchback Coupe | 1RF15 | A | B |
| 2-Dr. 2 + 2 Coupe | 1RF77 | A | B |
| Geo STORM GSi | | | |
| 2-Dr. 2 + 2 Coupe | 1RT77 | C | D |
| | | | |
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MVMA Specifications

Vehicle Line Geo STORM
 Model Year 1991 Issued 6-90 Revised(*)

METRIC (U.S. Customary)

Engine Description
 Engine Code

1.6 LITER L4 (97 CID)
 MULTI-PORT FUEL INJECTION RPO L01

ENGINE - GENERAL

Type & description (inline, V, angle, flat, location, front, mid, rear, transverse, longitudinal, sohc, dohc, ohv, hemi, wedge, pre-chamber, etc.)

Inline, Front, Transverse, SOHC, Hemisphere

| | | |
|---|---|-------------|
| Manufacturer | Isuzu Motors Ltd. | |
| No. of cylinders | 4 | |
| Bore | 80 mm (3.15 in.) | |
| Stroke | 79 mm (3.11 in.) | |
| Bore spacing (C/L to C/L) | 87 mm (3.4 in.) | |
| Cyl block matl & mass kg(lbs.) (machined) | Cast Iron | |
| Cylinder block deck height | 190 mm (7.48 in.) | |
| Cylinder block length | 392 mm (15.4 in.) | |
| Deck clearance (minimum) (above or below block) | 0 | |
| Cyl. head material & mass kg (lbs.) | Aluminum Alloy | |
| Cylinder head volume (cu.cm.) (cu. in.) | 39 (2.38) | |
| Cylinder liner material | - | |
| Head gasket thickness (compressed) | 1.2 mm (0.05 in.) | |
| Minimum combustion chamber total volume (cm. cu.) (cu. in.) | 49.1 (3.0) | |
| Cyl. no. system (front to rear)* | L. Bank | 1-2-3-4 |
| | R. Bank | - |
| Firing order | 1-3-4-2 | |
| Intake manifold matl & mass kg(lbs.)** | Aluminum Alloy | |
| Exh. manifold matl & mass kg(lbs.)** | Cast Iron | |
| Knock sensor (yes/no) | No | |
| Fuel required unleaded, diesel, etc. | Unleaded | |
| Fuel antiknock index (R + M) / 2 | 87 | |
| Engine mounts | Quantity | 4 |
| | Matl and type (elastomeric, hydroelastic, hydraulic damper, etc.) | Elastomeric |
| | Added isolation (sub-frame, crossmember, etc.) | - |
| Total dressed engine mass (wt) dry*** | 109 (240), M/T/104 (229), 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

25.4/8.0 mm (1.0/0.3 in.)

*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:

MVMA Specifications

Vehicle Line Geo STORM
 Model Year 1991 Issued 6-90 Revised(*) 9-90

METRIC (U.S. Customary)

Engine Description
 Engine Code

1.6 LITER L4 (97 CID)
 MULTI-PORT FUEL INJECTION RPO LWO

ENGINE - GENERAL

| | | |
|--|--|--|
| Type & description (inline, V, angle, flat, location, front, mid, rear, transverse, longitudinal, sohc, dohc, ohv, hemi, wedge, pre-chamber, etc.) | | Inline, Front, Transverse, DOHC, Pent Roof |
| Manufacturer | | Isuzu Motors Ltd. |
| No. of cylinders | | 4 |
| Bore | | 80 mm (3.15 in.) |
| Stroke | | 79 mm (3.11 in.) |
| Bore spacing (C/L to C/L) | | 87 mm (3.4 in.) |
| Cyl block matl & mass kg(lbs.) (machined) | | Cast Iron |
| Cylinder block-deck height | | 190 mm (7.48 in.) |
| Cylinder block length | | 392 mm (15.4 in.) |
| Deck clearance (minimum) (above or below block) | | 0.7 mm (0.03 in.) |
| Cyl. head material & mass kg (lbs.) | | Aluminum Alloy |
| Cylinder head volume (cu.cm.) (cu. in.) | | |
| Cylinder liner material | | - |
| Head gasket thickness (compressed) | | 1.20 (0.05) |
| Minimum combustion chamber total volume (cm. cu.) (cu. in.) | | 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 matl & mass kg(lbs.)** | | Aluminum Alloy |
| Exh. manifold matl & mass kg (lbs.)** | | Cast Iron |
| Knock sensor (yes/no) | | No |
| Fuel required unleaded, diesel, etc. | | Unleaded |
| Fuel antiknock index (R + M) / 2 | | 87 |
| Engine mounts | Quantity | 4 |
| | Matl and type (elastomeric, hydroelastastic, 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 | 25.4/8.0 mm (1.0/0.3 in.) |

*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:

MVMA Specifications

Vehicle Line Geo STORM
 Model Year 1991 Issued 6-90 Revised(*)

METRIC (U.S. Customary)

Engine Description
 Engine Code

1.6 LITER L4 (97 CID)
 MULTI-PORT FUEL INJECTION RPO L01

Engine - Valve System

| | | |
|--------------------------------------|--------------------------|--------------------------|
| Hydraulic lifters (std., opt., n.a.) | Not Applicable | |
| Valves | Number intake/exhaust | 8/4 |
| | Head O.D. intake/exhaust | 28/32 mm (1.10/1.26 in.) |

Engine - Connecting Rods

| | |
|---------------------------------------|--------------|
| Material & mass kg., (weight, lbs.)* | Forged Steel |
| Length(axes centerline to centerline) | 122 (4.8) |

Engine - Crankshaft

| | | |
|--|----------------------|----------------------------------|
| Material & mass kg., (weight, lbs.)* | Cast Iron | |
| End thrust taken by bearing (no.) | 2 | |
| Length & number of main bearings | 17.0 mm (.67 in.), 5 | |
| Seal (material, one, two piece design, etc.) | Front | Acryl Rubber, One Piece Design |
| | Rear | Silicon Rubber, One Piece Design |

Engine - Lubrication System

| | |
|--|------------|
| Normal oil pressure kPa(psi) @ eng rpm | 441/5200 |
| Type oil intake (floating, stationary) | Stationary |
| Oil filter sys. (full flow, part, other) | Full Flow |
| Capacity of c/case, less filter-refill-L (qt.) | 3.0 (3.2) |

Engine - Diesel Information

(NOT APPLICABLE)

| | |
|---|----------------------------|
| Diesel engine manufacturer | |
| Glow plug, current drain at 0 deg. F | |
| Injector Nozzle | Type |
| | Opening pressure kPa (psi) |
| Pre-chamber design | |
| Fuel injection pump | Manufacturer |
| | Type |
| Fuel inj. 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

(NOT APPLICABLE)

| | |
|------------------------------|--|
| Turbo charger - manufacturer | |
| Super charger - manufacturer | |
| Intercooler | |

* Finished State

MVMA Specifications

Vehicle Line Geo STORM
 Model Year 1991 Issued 6-90 Revised(*)

METRIC (U.S. Customary)

| | |
|--------------------|-----------------------------------|
| Engine Description | 1.6 LITER L4 (97 CID) |
| Engine Code | MULTI-PORT FUEL INJECTION RPO LWO |

Engine - Valve System

| | | |
|--------------------------------------|--------------------------|---------------------|
| Hydraulic lifters (std., opt., n.a.) | Not Applicable | |
| 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(axis centerline to centerline) | 122 (4.8) |

Engine - Crankshaft

| | | |
|--|----------------------|-----------------------------------|
| Material & mass kg., (weight, lbs.)* | Cast Iron | |
| End thrust taken by bearing (no.) | 2 | |
| Length & number of main bearings | 17.0 mm (.67 in.), 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) @ eng rpm | 490/5200 |
| Type oil intake (floating, stationary) | Stationary |
| Oil filter sys. (full flow, part, other) | Full Flow |
| Capacity of c/case, less filter-refill-L (qt.) | 3.8 (4.0) |

Engine - Diesel Information (NOT APPLICABLE)

| | | |
|---|---------------------------|--|
| Diesel engine manufacturer | | |
| Glow plug, current drain at 0 deg. F | | |
| Injector Nozzle | Type | |
| | Opening pressure kPa(psi) | |
| Pre-chamber design | | |
| Fuel injection pump | Manufacturer | |
| | Type | |
| Fuel inj. 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 (NOT APPLICABLE)

| | |
|------------------------------|--|
| Turbo charger - manufacturer | |
| Super charger - manufacturer | |
| Intercooler | |

* Finished State

MVMA Specifications

Vehicle Line Geo STORM
 Model Year 1991 Issued 6-90 Revised(*)

METRIC (U.S. Customary)

Engine Description
 Engine Code

1.6 LITER L4 (97 CID)
 MULTI-PORT FUEL INJECTION RPO L01

Engine - Cooling System

| | | |
|---|---|--|
| Coolant recovery system (std, opt, n.a.) | | Standard |
| Coolant fill location (rad., bottle) | | Bottle |
| Radiator cap relief valve pressure kPa (psi) | | 103 |
| Circulation thermostat | Type (choke, bypass) | Bypass |
| | Starts to open @ deg's C(F) | 82 (180) |
| Water Pump | Type (centrifugal, other) | Centrifugal |
| | GPM 1000 pump rpm | 6.9 |
| | 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.) | 6.8 (7.2), M/T/7.3 (7.7), A/T |
| | With air conditioner-L (qt.) | 6.8 (7.2), M/T/7.3 (7.7), A/T |
| | Opt. equip. specify-L (qt.) | Not Applicable |
| 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 |
| | Matl., mass kg (wgt., lbs.) | Brass & Copper |
| | Width | 668 mm (26.3 in.) |
| | Height | 350 mm (13.8 in.) |
| | Thickness | 16.0 mm (0.63 in.), M/T; 32.0 mm (1.26 in.), A/T |
| Fins per inch | | 11, M/T/10, A/T |
| Radiator end tank material | | Nylon |
| Fan | Std., elec., opt. | Standard Electric |
| | Number of blades & type (flex, solid, material) | 4, PP, M/T / 7, PP, A/T |
| | Diameter & projected width | 300 mm (11.8 in.) |
| | Ratio (fan to crkshft.rev.) | Not Applicable |
| | Fan outout type | - |
| | Drive type (direct, remote) | - |
| | RPM at idle (elec.) | 2150 M/T 2050 A/T |
| | Motor rating/wattage (elec.) | 80, M/T/180, A/T |
| | Motor switch (type & location/elec.) | Water Temperature, Radiator Tank |
| | Switch point (temp.,/ pressure/elec.) | 85 deg. C (185 deg. F) |
| Fan shroud (material) | | Polypropylene |

MVMA Specifications

Vehicle Line Geo STORM
 Model Year 1991 Issued 6-90 Revised(*) 9-90

METRIC (U.S. Customary)

Engine Description
 Engine Code

1.6 LITER L4 (97 CID)
 MULTI-PORT FUEL INJECTION RPO LWO

Engine - Cooling System

| | | |
|---|--|---|
| Coolant recovery system (std, opt, n.a.) | | Standard |
| Coolant fill location (rad., bottle) | | Bottle |
| Radiator cap relief valve pressure kPa (psi) | | 103 |
| Circulation thermostat | Type (choke, bypass) | Bypass |
| | Starts to open @ deg's C/F | 82 (180) |
| Water Pump | Type (centrifugal, other) | Centrifugal |
| | GPM 1000 pump rpm | 6.9 |
| | 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. equip. specify-L(qt.) | Not Applicable |
| Water jackets full length of cy(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 |
| | Matl., mass kg (wgt., lbs.) | Brass & Copper |
| | Width | 668 mm (26.3 in.) |
| | Height | 350 mm (13.8 in.) |
| | Thickness | 16.0 mm (0.63 in.), M/T/32.0 mm (1.26 in.), A/T |
| Fins per inch | | 11, M/T/10, A/T |
| Radiator end tank material | | Nylon |
| Fan | Std., elec., opt. | Standard Electric |
| | Number of blades & type (flex, solid, material) | 4, M/T 7, A/T Plastic |
| | Diameter & projected width | 300 (11.8) |
| | Ratio(fan to crnkshft.rev.) | Not Applicable |
| | Fan outout type | - |
| | Drive type (direct, remote) | - |
| | RPM at idle (elec.) | 2150 |
| | Motor rating(wattage)(elec) | 80, M/T/160, A/T |
| | Motor switch (type & location/elec.) | Water Temperature |
| | Switch point (temp.,/ pressure/elec.) | 85 deg. C (185 deg. F) |
| Fan shroud (material) | | Polypropylene |

MVMA Specifications

Vehicle Line Geo Storm
 Model Year 1991 Issued 6-90 Revised(*) 9-90

METRIC (U.S. Customary)

Engine Description
 Engine Code

1.8 LITER L4 (97 CID)
 MULTI-PORT FUEL INJECTION RPO L01

Engine - Fuel System (See supplemental page for details of Fuel Inj, 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. | | Preest By Manufacturer |
| Fuel injection | Point of inj. (no.) | 4 |
| | Constant, pulse, flow | Pulse |
| | Control (elec., mech.) | Electronic |
| | Sys. press. 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 Compartment |
| Fuel pump | Type (elec. or mech.) | Electric |
| | Location (eng., tank) | Fuel Tank |
| | Press. range kPa (psi) | |
| | Flow rate at regulate pressure (L (gal)/hr @ kPa (psi)) | |

Fuel Tank

| | | |
|----------------------------------|----------------------|-------------------------------------|
| Capacity refill L (gallons) | | 47 (12.4) |
| Location (describe) | | Under Floor - Rear Seat |
| Attachment | | Bolted |
| Material & Mass kg (weight lbs.) | | Steel 9.8 (21.6) |
| Filler pipe | Location & material | Rear-Left Wheel House, Steel |
| | Connection to tank | Rubber Hose |
| Fuel line (material) | | Copper Plated Steel Pipe |
| Fuel hose (material) | | Rubber Hose With Intermediate Blade |
| Return line (material) | | Copper Plated Steel Pipe |
| Vapor line (material) | | Copper Plated Steel Pipe |
| Extended range tank | Opt., n.a. | Not Applicable |
| | Capacity L (gallons) | " |
| | Location & material | " |
| | Attachment | " |
| Auxiliary tank | Opt., n.a. | Not Applicable |
| | Capacity L (gallons) | " |
| | Location & material | " |
| | Attachment | " |
| | Separate fill | " |

MVMA Specifications

Vehicle Line Geo Storm
 Model Year 1991 Issued 6-90 Revised(*) 9-90

METRIC (U.S. Customary)

Engine Description

1.8 LITER L4 (97 CID)

Engine Code

MULTI-PORT FUEL INJECTION RPO LWO

Engine - Fuel System

(See supplemental page for details of Fuel Inj, 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. | | Preset By Manufacturer |
| Fuel injection | Point of inj. (no.) | 4 |
| | Constant, pulse, flow | Pulse |
| | Control (elec., mech.) | Electronic |
| | Sys. press. 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 Compartment |
| Fuel pump | Type (elec. or mech.) | Electric |
| | Location (eng., tank) | Fuel Tank |
| | Press. 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 Floor - Rear Seat |
| Attachment | | Bolted |
| Material & Mass kg (weight lbs.) | | Steel 9.8 (21.6) |
| Filler pipe | Location & material | Rear-Left Wheel House, Steel |
| | Connection to tank | Rubber Hose |
| Fuel line (material) | | Copper Plated Steel Pipe |
| Fuel hose (material) | | Rubber Hose With Intermediate Blade |
| Return line (material) | | Copper Plated Steel Pipe |
| Vapor line (material) | | Copper Plated Steel Pipe |
| Extended range tank | Opt., n.a. | Not Applicable |
| | Capacity L (gallons) | " |
| | Location & material | " |
| | Attachment | " |
| Auxiliary tank | Opt., n.a. | Not Applicable |
| | Capacity L (gallons) | " |
| | Location & material | " |
| | Attachment | " |
| | Slctr switch or valve | " |
| | Separate fill | " |

MVMA Specifications

Vehicle Line Geo STORM
 Model Year 1991 Issued 6-90 Revised(*) _____

METRIC (U.S. Customary)

Engine Description
 Engine Code

1.6 LITER L4 (97 CID)
 MULTI-PORT FUEL INJECTION RPO L01

Vehicle Emission Control

| | | | |
|------------------------------|--|--|---------------------------------------|
| Exhaust Emission Control | Type (air injection, engine modifications, other) | | EGR + O2S + 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 | Exhaust Manifold |
| | | Point of exh.inj. (spacer, carb., manifold, other) | Intake Manifold |
| | Catalytic Converter | Type | TWC |
| | | Number of | 1 |
| | | Location(s) | Under Floor |
| | | Volume L (cu.in) | 1.76 (104) |
| Substrate type | | Monolith | |
| Noble metal type | | Platinum (Pt) Rhodium (Rh) | |
| 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 inlt(breather cap, other) | | Air Duct |
| 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 | 45.0 - 1.5 mm (1.8 - 0.03 in.) |
| | Main o.d., wall thickness | - |
| | Matl. & Mass kg (wght.lbs.) | Stainless Steel, 3.4 (7.5) |
| Inter-mediate pipe | o.d. & wall thickness | 50.8 - 1.5 mm (2.0 - 0.03 in.) |
| | Matl. & Mass kg (wght.lbs.) | Stainless Steel, 9.8 (21.6) |
| Tail pipe | o.d. & wall thickness | Ft Half: 45-1.5 mm (1.8-0.06 in.) Rr Half: 38.1-1.2 mm (1.5-0.05 in.) |
| | Matl. & Mass kg (wght.lbs.) | Stainless Steel, 6.7 (14.7) |

MVMA Specifications

Vehicle Line Geo STORM
 Model Year 1991 Issued 6-90 Revised(*) _____

METRIC (U.S. Customary)

Engine Description
 Engine Code

1.6 LITER L4 (97 CID)
 MULTI-PORT FUEL INJECTION RPO LW0

Vehicle Emission Control

| | | | |
|------------------------------|--|--|--|
| Exhaust Emission Control | Type (air injection, engine modifications, other) | | EGR + O2S + 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 exh.inj. (specr, carb, manifold, other) | No. 4 Port Of Exhaust Manifold Intake Manifold |
| | Catalytic Converter | Type | TWC |
| | | Number of | 1 |
| | | Location(s) | Under Floor |
| | | Volume L (cu.in) | 1.7 (104) |
| | | Substrate type | Monolith |
| | | Noble metal type | Platinum (Pt); Rhodium (Rh) |
| 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 int(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 Flow, 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 mm - 1.5 (1.7 - 0.06 in.) |
| | Main o.d., wall thickness | 50.8 mm - 1.5 (2.0 - 0.06 in.) |
| | Matl. & Mass kg (wght.lbs.) | Stainless Steel, 3.4 (7.5) |
| Inter-mediate pipe | o.d. & wall thickness | 50.8 mm - 1.5 (2.0 - 0.06 in.) |
| | Matl. & Mass kg (wght.lbs.) | Stainless Steel, 9.8 (21.6) |
| Tail pipe | o.d. & wall thickness | Ft Half: 50.8-1.5 mm (20-.059 in.), Rr Half: 38.1-1.2, (54-0.6) |
| | Matl. & Mass kg (wght.lbs.) | Stainless Steel, 9.6 (21.1) |

MVMA Specifications

Vehicle Line Geo STORM
 Model Year 1991 Issued 6-90 Revised(*) 9-90

METRIC (U.S. Customary)

| | |
|--------------------|-----------------------------------|
| Engine Description | 1.6 LITER L4 (97 CID) |
| Engine Code | MULTI-PORT FUEL INJECTION RPO L01 |

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

| | |
|--|--|
| Manual 3-speed (manufacturer/country) | Not Applicable |
| Manual 4-speed (manufacturer/country) | " |
| Manual 5-speed (manufacturer/country) | Isezumi Motors Ltd./Japan |
| Automatic (manufacturer/country) | Japan Automatic Transmission Co. / Japan |
| Auto. overdrive (manufacturer/country) | Not Applicable |

Manual Transmission/Transaxle

| | | |
|-------------------------------------|------------------|---------------------------|
| Number of forward speeds | | 5 |
| Gear ratios | 1st | 3.91 |
| | 2nd | 2.15 |
| | 3rd | 1.45 |
| | 4th | 1.03 |
| | 5th | 0.83 |
| | Reverse | 3.58 |
| Synchronous meshing (specify gears) | | All Forward Gears |
| 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 (hyd., 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.) | | 4312 (970) |
| Clutch facing | Facing mfr. & mat'l. coding | ASUKU NC80A |
| | Facing mat'l. & construction | Organic Semi-Mold |
| | Rivets per facing | 18 |
| | Outside x inside dia. (nom.) | 200 x 130 mm (7.9 x 5.1 in.) |
| | Total eff. area sq cm (sq in) | 181 (28.1) |
| | Thickness (pressure plate side/fly wheel side) | 3.5 mm (0.14 in.) / 3.2 mm (0.13 in.) |
| | Rivet depth (pressure plate side/fly wheel side) | 1.3-1.9 mm (0.051-0.075 in.) / 1.2-1.8 mm (0.047-0.070 in.) |
| | Engagement cushion method | Cushion Spring |
| Release bearing type & method lub. | | Self-Centering Single Row Ball Bearing Sealed Grease |
| Torsional damping method, springs, hysteresis | | Coil Spring |

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

MVMA Specifications

Vehicle Line Geo STORM
 Model Year 1991 Issued 6-90 Revised(*) 9-90

METRIC (U.S. Customary)

| | |
|--------------------|-----------------------------------|
| Engine Description | 1.6 LITER L4 (97 CID) |
| Engine Code | MULTI-PORT FUEL INJECTION RPO LWO |

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

| | |
|--|--|
| Manual 3-speed (manufacturer/country) | Not Applicable |
| Manual 4-speed (manufacturer/country) | " |
| Manual 5-speed (manufacturer/country) | Isuzu Motors Ltd.,/Japan |
| Automatic (manufacturer/country) | Not Applicable |
| Auto. overdrive (manufacturer/country) | Japan Automatic Transmission Co. / Japan |

Manual Transmission/Transaxle

| | | |
|-------------------------------------|-----------------------|---------------------------|
| Number of forward speeds | 5 | |
| Gear ratios | 1st | 3.91 |
| | 2nd | 2.15 |
| | 3rd | 1.45 |
| | 4th | 1.03 |
| | 5th | 0.83 |
| | Reverse | 3.58 |
| Synchronous meshing (specify gears) | All Forward Gears | |
| 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 (hyd., 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.) | 4312 (970) | |
| Clutch facing | Facing mfr. & mat'l. coding | ASUKU NC80A |
| | Facing mat'l. & construction | Organic Semi-Mold |
| | Rivets per facing | 18 |
| | Outside x inside dia. (nom.) | 200 x 130 mm (7.9 x 5.1 in.) |
| | Total eff. area sq cm (sq in) | 181 (28.1) |
| | Thickness (pressure plate side/fly wheel side) | 3.5 mm (0.14 in.) / 3.2 mm (0.13 in.) |
| | Rivet depth (pressure plate side/fly wheel side) | 1.3-1.9 mm (0.051-0.075 in.) / 1.2-1.8 mm (0.047-0.070 in.) |
| Engagement cushion method | Cushion Spring | |
| Release bearing type & method lub. | Self-Centering Single Row Ball Bearing Sealed Grease | |
| Torsional damping method, springs, hysteresis | Coil Spring | |

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

MVMA Specifications

Vehicle Line Geo STORM
 Model Year 1991 Issued 6-90 Revised(*) 9-90

METRIC (U.S. Customary)

Engine Description
 Engine Code

1.6 LITER L4 (97 CID)
 MULTI-PORT FUEL INJECTION RPO L01

Automatic Transmission/Transaxle

| | | |
|--|-------------------------------------|---|
| Trade Name | | KF400 |
| 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-D-2-1 |
| | Shift interlock (yes, no, describe) | Yes |
| Gear ratios | 1st | 2.84 |
| | 2nd | 1.54 |
| | 3rd | 1.00 |
| | 4th | - |
| | Reverse | 2.40 |
| Max. upshift speed - drive range km/h (mph) | | 58 (36) [1-2], 107 (67) [2-3] |
| Max. kickdown speed - drive range km/h (mph) | | 43 (27) [2-1], 88 (61) [3-2] |
| Min. overdrive speed km/h (mph) | | - |
| Torque converter | Number of elements | 3 |
| | Max. ratio at stall | 2.0 |
| | Type of cooling (air, liquid) | Liquid |
| | Nominal diameter | 224 (8.8) |
| | Capacity factor "K" | |
| Lubricant | Capacity refill L (pt.) | 6.5 |
| | Type recommended | ATF DEXRON-II |
| Oil cooler (std., opt., N.A., internal, external, air, liquid) | | Standard, External, Liquid |
| Trans. mass kg (lbs) & case matl. ** | | 60 (132), Aluminum |

All Wheel / 4 Wheel Drive (NOT APPLICABLE)

| | | |
|--|--|--|
| Desc. & type (part-time, full-time, 2/4 shift while moving, mech., 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 spht(% frt/rear) | |

* Input speed / square root of torque.
 ** Dry weight including torque converter. If other, specify.

MVMA Specifications

Vehicle Line Geo STORM
 Model Year 1991 Issued 12-89 Revised(*) 9-90

METRIC (U.S. Customary)

Engine Description
 Engine Code

1.6 LITER L4 (97 CID)
 MULTI-PORT FUEL INJECTION RPO LWD

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 | 3.03 |
| | 2nd | 1.62 |
| | 3rd | 1.00 |
| | 4th | 0.69 |
| | Reverse | 2.27 |
| 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) | | 48 (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) | Liquid |
| | Nominal diameter | 236 (9.3) |
| Lubricant | Capacity refill L (pt.) | 6.6 |
| | Type recommended | ATF DEXRON-II |
| Oil cooler (std., opt., N.A., internal, external, air, liquid) | | Standard, External, Liquid |
| Trans. mass kg (lbs) & case matl. ** | | 75 (165) |

All Wheel / 4 Wheel Drive

(NOT APPLICABLE)

| | | |
|--|--|--|
| Desc. & type (part-time, full-time, 2/4 shift while moving, mech., 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(% frt/rear) | |

* Input speed / square root of torque.
 ** Dry weight including torque converter. If other, specify.

MVMA Specifications

Vehicle Line Geo STORM
 Model Year 1991 Issued 6-90 Revised(*) 9-90

METRIC (U.S. Customary)

Engine Description
 Engine Code

1.6 LITER L4 (97 CID)
 MULTI-PORT FUEL INJECTION RPO L01

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

| | | | |
|---|----------------|--------------------|--------------------|
| Effec. final drv. ratio (or overall top gear ratio) | | 3.83 (M/T) | 3.53 (A/T) |
| Transr ratio and method(chain,gear,etc) | | - | |
| Front drive unit | Ring gear o.d. | 206.4 mm (8.1 in.) | 194.8 mm (7.7 in.) |
| | No. of teeth | Pinion | 18 |
| | | Ring gear | 69 |

Front Drive Unit

| | | |
|--|-------------------------|--|
| Description (integral to trans., etc.) | | Helical Gear |
| Limited slip differential (type) | | Not Applicable |
| Drive pinion | Type | - |
| | Offset | Helical Gear |
| No. of differential pinions | | 2 |
| Pinion/differential | Adjustment (shim, etc.) | Shim |
| | Bearing adjustment | Shim |
| Driving wheel bearing (type) | | Double Row, Angular Ball Bearing |
| Lubricant | Capacity L (pt.) | Not Applicable (Part Of Transmission Assembly) |
| | Type recommended | |

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 | 24 x 386.6 mm (.94 x 15.22 in.) |
| | | Right | 24 x 658.1 mm (.94 x 25.91 in.) |
| | Automatic transaxle | Left | 24 x 342.5 mm (.94 x 13.48 in.) |
| | | Right | 24 x 701.2 mm (.94 x 27.61 in.) |
| | Optional transaxle | Left | - |
| | | Right | - |
| Slip yoke | Type | Not Applicable | |
| | 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, 82/TRI Port Joint, 82 |
| | | Outer | Bertied Joint, 82 Fixed |
| | Attach (u-bolt, clamp, etc.) | | Snap Ring |
| | Bearing | Type (plain, anti-friction) | Not Applicable |
| Lubrication (fitting, prepacked) | | - | |
| 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 Geo STORM
 Model Year 1991 Issued 6-90 Revised(*) 9-90

METRIC (U.S. Customary)

Engine Description

1.6 LITER L4 (97 CID)

Engine Code

MULTI-PORT FUEL INJECTION RPO LWO

Axle Ratio and Tooth Combinations

(See 'Power Teams' for axle ratio usage)

| | | | |
|---|----------------|--------------------|--------------------|
| Effec. final drv. ratio (or overall top gear ratio) | | 4.12 (M/T) | 4.02 (A/T) |
| Trnsfr ratio and method(chain,gear,etc) | | - | |
| Front drive unit | Ring gear o.d. | 208.6 mm (8.2 in.) | 214.4 mm (8.4 in.) |
| | No. of teeth | Pinion | 17 |
| | | Ring gear | 70 |

Front Drive Unit

| | | |
|--|-------------------------|--|
| Description (integral to trans., etc.) | | Helical Gear |
| Limited slip differential (type) | | Not Applicable |
| Drive pinion | Type | - |
| | Offset | Helical Gear |
| No. of differential pinions | | 2 |
| Pinion/differential | Adjustment (shim, etc.) | Shim |
| | Bearing adjustment | Shim |
| Driving wheel bearing (type) | | Double Row, Angular Ball Bearing |
| Lubricant | Capacity L (pt.) | Not Applicable Part Of Transmission Assembly |
| | Type recommended | |

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 | 32 x 386.6 mm (1.26 x 15.22 in.) |
| | | Right | 32 x 386.6 mm (1.26 x 15.22 in.) |
| | Automatic transaxle | Left | 26 x 386.6 mm (1.02 x 15.22 in.) |
| | | Right | 26 x 358.1 mm (1.02 x 14.1 in.) |
| | Optional transaxle | Left | - |
| | | Right | - |
| Slip yoke | Type | Not Applicable | |
| | 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 | Bertied Joint, 87 Fixed |
| | Attach (u-bolt, clamp, etc.) | | Snap Ring |
| Bearing | Type (plain, anti-friction) | Not Applicable | |
| | 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 Geo STORM
 Model Year 1991 Issued 6-90 Revised(*)

METRIC (U.S. Customary)

Body Type And/Or

Engine Displacement

Geo STORM

Suspension - General Including Electronic Controls

| | | | |
|---------------------------------|---|--|--|
| Car leveling | Std./opt./not avail. | Not | |
| | Manual/automatic control | Applicable | |
| | Type (air/hydraulic) | | |
| | Primary/assist spring | | |
| | Rear only/4 wheel leveling | | |
| | Single/dual rate spring | | |
| | Single/dual ride heights | | |
| Shock absorber damping controls | Provision for jacking | | |
| | Standard/option/not avail. | Not | |
| | Manual/automatic control | Applicable | |
| | Number of damping rates | | |
| | Type of actuation (manual/electric motor/air, etc.) | | |
| | s e n s o r | Lateral acceleration | |
| | | Deceleration | |
| | Acceleration | | |
| | Road surface | | |
| Shock absorber (front & rear) | Type | Double Acting Hydraulic Telescopic | |
| | Make | KAYABA | |
| | Piston diameter | Ft: 30 mm (1.18 in.), Rr: 25 mm (0.98 in.) | |
| | Rod diameter | Ft: 20 mm (0.79 in.), Rr: 18 mm (0.71 in.) | |

Suspension - Front

| | | |
|----------------------|----------------------------------|-------------------------------|
| Type and description | McPherson Strut | |
| Travel* | Full jounce | 89 mm (3.5 in.) |
| | Full rebound | 73 mm (2.9 in.) |
| Spring | Type (coil, leaf, other & matl) | Coil, SUP 7 or SAE 9254 |
| | Insulators (type & matl) | Seat Rubbers (Top & Bottom) |
| | Size (coil design height & i.d.) | 342 x 115 mm (13.5 x 4.5 in.) |
| | Spring rate N/mm (lb./in.) | 23.5 (134) |
| | Rate @ wheel N/mm (lb./in) | 19.4 (111) |
| Stabilizer | Type (link, linkless, frmless) | Link |
| | Material & bar diameter | SUP 6 or SUP 9, 18 |

Suspension - Rear

| | | |
|----------------------|--|-----------------------------------|
| Type and description | McPherson Strut With Two Parallel Transverse Links And One Trailing Link | |
| Travel* | Full jounce | 110 mm (4.33 in.) |
| | Full rebound | 85 mm (3.35 in.) |
| Spring | Type (coil, leaf, other & matl) | Coil, SUP 7 or SAE 9254 |
| | Size (length x width, coil design height & i.d.) | 324.5 x 116.4 mm (13.2 x 4.6 in.) |
| | Spring rate N/mm (lb/in) | 16.7 (95) |
| | Rate @ wheel N/mm (lb/in) | 15.4 (88) |
| | Insulators (type & material) | Seat Rubbers (Top) |
| | If leaf | No. of leaves |
| | Shackle (comp or tens) | " |
| Stabilizer | Type (link, linkless, frmless) | " |
| | Material & bar diameter | - |
| Track bar (type) | Not Applicable | |

* Define load condition:

MVMA Specifications

Vehicle Line Geo STORM
 Model Year 1991 Issued 6-90 Revised(*) _____

METRIC (U.S. Customary)

Body Type And/Or
 Engine Displacement

Geo STORM GSI

Suspension - General Including Electronic Controls

| | | | |
|---------------------------------|---|--|--|
| Car leveling | Std./opt./not avail. | Not | |
| | Manual/automatic control | Applicable | |
| | 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. | Not | |
| | Manual/automatic control | Applicable | |
| | Number of damping rates | | |
| | Type of actuation (manual/ electric motor/air, etc.) | | |
| | a c c e l e r a t i o n s | Lateral acceleration | |
| | | Deceleration | |
| | | Acceleration | |
| Road surface | | | |
| Shock absorber (front & rear) | Type | Double Acting Hydraulic Telescopic | |
| | Make | KAYABA | |
| | Piston diameter | Ft: 30 mm (1.18 in.), Rr: 25 mm (0.98 in.) | |
| | Rod diameter | Ft: 20 mm (0.79 in.), Rr: 18 mm (0.71 in.) | |

Suspension - Front

| | | |
|----------------------|----------------------------------|-------------------------------|
| Type and description | | McPherson Strut |
| Travel* | Full jounce | 89 mm (3.5 in.) |
| | Full rebound | 73 mm (2.9 in.) |
| Spring | Type (coil, leaf, other & matl) | Coil, SUP 7 or SAE 9254 |
| | Insulators (type & matl) | Seat Rubbers (Top & Bottom) |
| | Size (coil design height & i.d.) | 344 x 115 mm (13.5 x 4.5 in.) |
| | Spring rate N/mm (lb./in.) | 24.5 (140) |
| | Rate @ wheel N/mm (lb./in.) | 20.2 (116) |
| Stabilizer | Type (link, linkless, frmless) | Link |
| | Material & bar diameter | SUP 6 or SUP 9, 19 |

Suspension - Rear

| | | |
|------------------------|--|--|
| Type and description | | McPherson Strut With Two Parallel Transverse Links And One Trailing Link |
| Travel* | Full jounce | 110 mm (4.33 in.) |
| | Full rebound | 85 mm (3.35 in.) |
| Spring | Type (coil, leaf, other & matl) | Coil, SUP 7 or SAE 9254 |
| | Size (length x width, coil design height & i.d.) | 319 x 116.2 mm (12.6 x 4.6 in.) |
| | Spring rate N/mm (lb/in) | 17.6 (101) |
| | Rate @ wheel N/mm (lb/in) | 16.3 (93) |
| | Insulators (type & material) | Seat Rubbers (Top) |
| | If leaf | No. of leaves |
| Shackle (comp or tens) | | |
| Stabilizer | Type (link, linkless, frmless) | Link |
| | Material & bar diameter | SUP 6 or SUP 9, 15 |
| Track bar (type) | | Not Applicable |

* Define load condition:

MVMA Specifications

Vehicle Line Geo STORM
 Model Year 1991 Issued 6-90 Revised(*)

METRIC (U.S. Customary)

Body Type And/Or

Engine Displacement

Brakes - Service

ALL MODELS

| | | | | |
|---|-------------------------------|--|---|--|
| 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) | Drum | | |
| Valving type(prop, delay, metering, other) | | Proportioning | | |
| Power brake (std., opt., n.a.) | | Standard | | |
| Booster type(rmt, intgrl, vac., hyd., etc.) | | Integral Vacuum Servo | | |
| Vacuum | Source (inline, pump, etc.) | Inline | | |
| | Reservoir (volume cu. in.) | Not | | |
| | Pump-type | Applicable | | |
| Traction Control | Operational speed range | | | |
| | Type engine intervention | | | |
| Anti-lock device | Front/rear (std., opt., n.a.) | Not | | |
| | Manufacturer | Applicable | | |
| | Type (electronic, mech.) | | | |
| | Number sensors or circuits | | | |
| | No. ant-lock hyd. circuits | | | |
| | Integral or add-on system | | | |
| | Yaw control (yes, no) | | | |
| Hydraulic power source | | | | |
| Effective area sq. cm. (sq. in.)* | | Ft: 145.6 (22.6), Rr: 192 (29.8) | | |
| Gross Lng area sq cm (sq in)** (F/R) | | Ft: 145.6 (22.6), Rr: 192 (29.8) | | |
| Swept area sq cm (sq in)** (F/R) | | Ft: 1069 (165.7), Rr: 314 (48.7) | | |
| Rotor | Outer working diameter | F/R | 246 mm (9.69 in.)/- | |
| | Inner working diameter | F/R | 182.8 mm (6.41 in.)/- | |
| | Thickness | F/R | 22.0 mm (0.87 in.)/- | |
| | Matl & type (vented/sld) | F/R | Cast Iron, Vented/- | |
| Drum | Diameter & width | F/R | -/200 mm (7.87 in.) x 25 mm (0.98 in.) | |
| | Type and material | F/R | -/Cast Iron | |
| Wheel cylinder bore | | Ft: 51.1 mm (2.0 in.), Rr: 15.9 mm (0.6 in.) | | |
| Master cylinder | Bore/stroke | F/R | 20.6mm (0.81 in.)/31.0mm (1.22 in.) 22.2mm (0.87 in.)/31.0mm (1.22 in.) | |
| Pedal arc ratio | | 3.8:1 | | |
| Line pressure at 445 N (100 lb.) pedal load kPa (psi) | | 8924 kPa at 66.7 kPa Vacuum | | |
| Lining clearance | | F/R | Self-Adjusting | |
| Brake lining | Front wheel | Bonded or riveted | | Bonded |
| | | Rivet size | | - |
| | | Manufacturer | | SUMITOMO |
| | | Lining code **** | | M9218HFF |
| | | Material | | Resin Molded (Asbestos Free) |
| | | **** | Pri. or out-brd | 101.0 x 43.0 x 9.8 mm (4.0 x 1.7 x 0.38 in.) |
| | | Size | Sec. or in-brd | 101.0 x 43.0 x 9.8 mm (4.0 x 1.7 x 0.38in.) |
| | Shoe thcknss. (no lng) | | 4.5 mm (0.18 in.) | |
| | Rear wheel | Bonded or riveted | | Bonded |
| | | Manufacturer | | AKEBONO |
| | | Lining code **** | | AKL612FF |
| | | Material | | Resin Molded (Ast. stos Free) |
| | | **** | Pri. or out-brd | 192 x 25 x 4.5 mm (7.56 x 0.98 x 0.18 in.) |
| | | Size | Sec. or in-brd | 192 x 25 x 4.5 mm (7.56 x 0.98 x 0.18 in.) |
| Shoe thcknss (no lng) | | 1.6 mm (0.06 in.) | | |

* 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 circum.)
 (Disc brake: Square of Outer Working Dia. - Square of inner Working Dia. X 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 Geo STORM
 Model Year 1991 Issued 6-90 Revised(*) _____

METRIC (U.S. Customary)

Body Type And/Or
 Engine Displacement

| | |
|-----------|---------------|
| Geo STORM | Geo STORM GSi |
|-----------|---------------|

Tires And Wheels (Standard)

| | | | | |
|---------------|---|-----------------|----------------------------------|----------------|
| Tires | Size (load range, ply) | | P185/60R14 82H | P205/50R15 84V |
| | Type (bias, radial, etc.) | | Radial (Mud And Snow) | Radial |
| | Inflation pressure (cold) for recommended max. vehicle load | Front kPa (psi) | 30 (210) | 32 (220) |
| | | Rear kPa (psi) | 30 (210) | 29 (200) |
| | Rev/mile—at 70 km/h(45mph) | | 818 | 899 |
| Wheels | Type & material | | Wide Rim With Deep Bottom, Steel | Aluminum Alloy |
| | Rim (size & flange type) | | 14 x 5.5J | 15 x 6J |
| | Wheel offset | | 40 (1.57) | |
| | Attachment | Type(bolt,stud) | Nut | |
| | | Circle diameter | 100 mm (3.94 in.) | |
| Number & size | | 4, M12x1.5 | | |
| Spare | Tire and wheel | | Tire: T115/70 D14 Wheel: 14x4T | |
| | 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) | Not Applicable |
| | Drum diameter | - |
| | Lining size (length x width x thickness) | - |

MVMA Specifications

| | | | | | |
|--------------|-----------|--------|------|------------|------|
| Vehicle Line | Geo STORM | | | | |
| Model Year | 1991 | Issued | 6-90 | Revised(*) | 8-90 |

METRIC (U.S. Customary)

Body Type And/Or
Engine Displacement

| | |
|-----------|---------------|
| Geo STORM | Geo STORM GSi |
|-----------|---------------|

Steering

| | | | | |
|--|---|------------------------|--|--------|
| Manual (std., opt., n.a.) | | Not Applicable | | |
| Power (std., opt., n.a.) | | Standard | | |
| Adjustable steering wheel/ column (tilt, telescope, other) | Type | - | | |
| | Manufacturer | - | | |
| | (std., opt., n.a.) | Not Applicable | | |
| Wheel diameter -- (W8) SAE J1100 | Manual | 382 mm (15.0 in.) | | |
| | Power | 382 mm (15.0 in.) | | |
| Turning diameter m (ft.) | Out-side front | Wall to wall (l. & r.) | 11.2 (36.7) | |
| | | Curb to curb (l. & r.) | 9.8 (32.2) | |
| | In-side rear | Wall to wall (l. & r.) | 4.9 (16.1) | |
| | | Curb to curb (l. & r.) | 5.1 (16.7) | |
| Scrub Radius * | | -5.0 mm (-0.20 in.) | | |
| Manual | Gear | Type | - | |
| | | Manufacturer | - | |
| | | Ratios | - | |
| | No. wheel turns(stop to stop) | Gear | - | |
| | | Overall | - | |
| Power | Type (coaxial, elec. hyd., etc.) | | Coaxial | |
| | Manufacturer | | JIDOSHA KIKI AND NIPPON POWER STEERING | |
| | Gear | Type | Rack And Pinion | |
| | | Ratios | Gear | - |
| | | | Overall | 16.0:1 |
| | Pump (drive) | | Belt | |
| | No. wheel turns(stop to stop) | | 2.96 | 2.59 |
| Linkage | Type | | Accar Man. | |
| | Location (front or rear of wheels, other) | | Rear Of Wheels | |
| | Tie Rods (one or two) | | 2 | |
| Steering axis | Inclination at camber (deg.) | | 10.2 | |
| | Bear-ings (type) | Upper | Ball Bearing | |
| | | Lower | Ball Bearing | |
| | | Thrust | Not Applicable | |
| Steering spindle/knuckle & joint type | | - | | |

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

o MVMA Specifications

Vehicle Line Geo STORM
 Model Year 1991 Issued 6-90 Revised(*) 9-90

METRIC (U.S. Customary)

Body Type And/Or
 Engine Displacement

Geo STORM

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. in-spection | 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. in-spection | Camber (deg.) | -30' (+/-) 1 |
| | | Toe-in - mm(in.) | 4 (+/-) 2 |

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

o Electrical - Instruments and Equipment

| | | |
|--|---|---------------------------|
| Speedometer | Type (analog, digital, std., opt.) | Analog, Standard |
| | Trip odometer (std., opt., n.a.) | Standard |
| Head-up display | Std., opt., not avail. | Not Applicable |
| | Type - Secondary, Opto-electronic | " |
| | Speedometer Digital | " |
| | Status/warn. indicators - Turn signals, high beam, low fuel, check gauges | " |
| | Brightness control Day/night mode, adj. | " |
| EGR maintenance indicator | | |
| Charge indicator | Type | - |
| | Warning device (light, audible) | Tell-Tale Warning Light |
| Temperature indicator | Type | Analog Gauge With Pointer |
| | Warning device | - |
| Oil pressure indicator | Type | - |
| | Warning device | Tell-Tale Warning Light |
| Fuel indicator | Type | Analog Gauge With Pointer |
| | Warning device | - |
| Windshield wiper | Type (standard) | Electric 2-Speed |
| | Type (optional) | - |
| | Blade length | 550 mm (21.7 in.) |
| Windshield washer | Swept area sq cm (sq in) | 7390 (1145) |
| | Type (standard) | Electric |
| | Type (optional) | Not Applicable |
| Fluid level indicator | | " |
| Rear window wiper, wiper/washer (std., opt., n.a.) | | " |
| Horn | Type | Electric Resonator |
| | Number used | 2 |
| Other | | |

o MVMA Specifications

Vehicle Line Geo STORM
 Model Year 1991 Issued 6-90 Revised(*) 9-90

METRIC (U.S. Customary)

Body Type And/Or
 Engine Displacement

Geo STORM GSi

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.

o Electrical - Instruments and Equipment

| | | |
|--|---|---------------------------|
| Speedometer | Type (analog, digital, std., opt.) | Analog, Standard |
| | Trip odometer (std., opt., n.a.) | Standard |
| Head-up display | Std., opt., not avail. | Not Applicable |
| | Type - Secondary, Opto-electronic | - |
| | Speedometer | Digital |
| | Status/warn. indicators - Turn signals, high beam, low fuel, check gauges | - |
| | Brightness control | Day/night mode, adj. |
| EGR maintenance indicator | | |
| Charge indicator | Type | Analog Gauge With Pointer |
| | Warning device (light, audible) | - |
| Temperature indicator | Type | Analog Gauge W/Pointer |
| | Warning device | - |
| Oil pressure indicator | Type | Analog Gauge W/Pointer |
| | Warning device | - |
| Fuel indicator | Type | Analog Gauge W/Pointer |
| | Warning device | - |
| Windshield wiper | Type (standard) | Electric 2-Speed |
| | Type (optional) | Intermittent |
| | Blade length | 550 mm (21.7 in.) |
| | Swept area sq cm (sq in.) | 7390 (1145) |
| Windshield washer | Type (standard) | Electric |
| | Type (optional) | Not Applicable |
| | Fluid level indicator | - |
| Rear window wiper, wiper/washer (std., opt., n.a.) | | Standard |
| Horn | Type | Electric Resonator |
| | Number used | 2 |
| Other | | |

MVMA Specifications

Vehicle Line Geo STORM
 Model Year 1991 Issued 6-80 Revised(*) 9-80

METRIC (U.S. Customary)

Engine Description
 Engine Code

Geo STORM

Electrical - Supply System

| | | |
|------------|----------------------------|-----------------------------------|
| Battery | Manufacturer | FURUKAWA, NIHONDENCHI, MATSUSHITA |
| | Model, std., (opt.) | 65D23L |
| | Voltage | 12 |
| | Amps at 0 deg F cold crk | 356 |
| | Minutes-reserve capacity | 99 |
| | Amps/hrs. - 20 hr. rate | 80 |
| | Location | Engine Compartment Left Front |
| Alternator | Manufacturer | NIPPON DENSO |
| | Rating (idle/max. rpm) | 75A |
| | Ratio (alt. crank/rev.) | 133/50 |
| | Output at idle (rpm, park) | - |
| | Optional (type & rating) | Not Applicable |
| Regulator | Type | Non-Contact Voltage Control Relay |

Electrical - Starting System

| | | |
|-------------|-----------------------------------|----------------------|
| Motor | Manufacturer | NIPPON DENSO |
| | Current drain deg C (F) | - |
| | Power rating kw (hp) | 1.0 (M/T), 1.2 (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) | Not Applicable | | |
| Coil | Manufacturer | Delco Remy | | |
| | Model | | | |
| | Current | Engine stopped-A | | |
| | | Engine idling - A | | |
| Spark plug | Manufacturer | Nippon Denso | NGK | AC |
| | Model | W20EXR-UIII | BPR6ES-11 | R42XLS |
| | Thread (mm) | 14 (0.55) | 14 (0.55) | 14 (0.55) |
| | Tightening torque Newton meters (lb. ft.) | 18.6 +/- 4.9 | 18.6 +/- 4.9 | 18.6 +/- 4.9 |
| | Gap | 1.05 mm (0.04 in.) | 1.05 mm (0.04 in.) | 1.05mm (0.04in.) |
| | Number per cylinder | 1 | | |
| Distributor | Manufacturer | Delco Remy | | |
| | Model | | | |

Electrical - Suppression

| | |
|------------------|--|
| Locations & type | Resistive Cord Resistive Spark Plug |
|------------------|--|

MVMA Specifications

Vehicle Line Geo STORM
 Model Year 1991 Issued 6-90 Revised(*) 9-90

METRIC (U.S. Customary)

Engine Description
 Engine Code

Geo STORM GSi

Electrical - Supply System

| | | |
|------------|----------------------------|-----------------------------------|
| Battery | Manufacturer | FURUKAWA, NIHONDENCHI, MATSUSHITA |
| | Model, std., (opt.) | 55D23L |
| | Voltage | 12 |
| | Amps at 0 deg F cold crnk | 356 |
| | Minutes-reserve capacity | 99 |
| | Amps/hrs. - 20 hr. rate | 80 |
| | Location | Engine Compartment Left Front |
| Alternator | Manufacturer | DELCO REMY |
| | Rating (idle/max. rpm) | 75A |
| | Ratio (aft. crank/rev.) | 133/50 |
| | Output at idle (rpm, park) | - |
| | Optional (type & rating) | Not Applicable |
| Regulator | Type | Non-Contact Voltage Control Relay |

Electrical - Starting System

| | | |
|-------------|-----------------------------------|----------------------|
| Motor | Manufacturer | NIPPON DENSO |
| | Current drain deg 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) | Not Applicable | |
| Coil | Manufacturer | Delco Remy | |
| | Model | | |
| | Current | Engine stopped - A | |
| | | Engine idling - A | |
| Spark plug | Manufacturer | Nippon Denso | NGK |
| | Model | K20PRU11 | BKR6E-11 |
| | Thread (mm) | 14 (0.55) | 14 (0.55) |
| | Tightening torque Newton meters (lb. ft.) | 18.6 +/- 4.0 | 18.6 +/- 4.0 |
| | Gap | 1.05 mm (0.04 in.) | 1.05 mm (0.04 in.) |
| | Number per cylinder | 1 | |
| Distributor | Manufacturer | Delco Remy | |
| | Model | | |

Electrical - Suppression

| | |
|------------------|--|
| Locations & type | Resistive Cord Resistive Spark Plug |
|------------------|--|

MVMA Specifications

Vehicle Line Geo STORM
 Model Year 1991 Issued 8-90 Revised(*)

METRIC (U.S. Customary)

| | | |
|-----------|-------------------|-----------------|
| Body Type | 2 + 2 SPORT COUPE | HATCHBACK COUPE |
|-----------|-------------------|-----------------|

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 (int., ext.) | 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) | Counterbalance |
| | 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 | Not Applicable |
| 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 Geo STORM
 Model Year 1991 Issued 6-90 Revised(*) _____

METRIC (U.S. Customary)

Body Type

2 + 2 SPORT COUPE

HATCHBACK COUPE

Restraint System

| Seating Position | | | Left | Center | Right |
|------------------|---|-------------|--|--------|--|
| Active | Type & description (lap & shoulder belt, lap belt, etc.) | First seat | 3-Pl. Seat Belt With E.L.R. - Standard | | 3-Pl. Seat Belt With E.L.R. - Standard |
| | | Second seat | 3-Pl. Seat Belt With E.L.R. - Standard | | 3-Pl. 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 | | |
| | | Second seat | | | |
| | | Third seat | | | |

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

Headlamps

| | |
|--|----------------------|
| Description - sealed beam, halogen, replaceable bulb, etc. | Sealed Beam, Halogen |
| Shape | Rectangular |
| Lo-beam type (2A1, 2B1, 2C1, etc.) | H4703 |
| Quantity | 2 |
| H-beam type (1A1, 2A1, 1C1, 2C1, etc.) | H4701 |
| Quantity | 2 |

Frame

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

MVMA Specifications

Vehicle Line Geo STORM
 Model Year 1991 Issued 8-90 Revised(*)

METRIC (U.S. Customary)

Body Type

Geo STORM

Geo STORM GSi

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

| | | |
|---|---|------------------------------------|
| Air conditioning (manual, auto, temp control) | | Optional, Manual |
| Clock (digital, analog) | | Optional, Digital (In Radio) |
| Compass / thermometer | | Not Applicable |
| Console (floor, overhead) | | Standard, Floor |
| Defroster, elec. backlight | | Standard, Rear Electrical Defogger |
| Electronic | Diagnostic monitor (integrated, individual) | Standard, Tell-Tale Warning Light |
| | Instrument cluster (list instruments) | Not Applicable |
| | Keyless entry | " |
| | Tripminder (avg. spd. fuel) | " |
| | Voice alert (list items) | " |
| | Other | " |
| Fuel door lock (remote, key, electric) | | " |
| Lamps | Auto head on/off delay, dimming | " |
| | Cornering | " |
| | Courtesy (map, reading) | " |
| | Door lock, ignition | " |
| | Engine compartment | " |
| | Fog | " |
| | Glove compartment | " |
| | Trunk | Standard (Luggage) |
| | Illuminated entry system (list lamps, activation) | Not Applicable |
| Other | Standard, Dome Lamp | |
| Mirrors | Day / night (auto, man.) | Standard, Manual |
| | L.H. (remote, pwr., heated) | Standard, Manual Remote |
| | R.H. (convex, rmt, pwr, htd) | Standard, Convex Manual Remote |
| | Visor vanity (RH/LH illum.) | Standard, RH |
| Navigation system (describe) | | Not Applicable |
| Pkg. brake-auto release (warn. light) | | Not Applicable |

MVMA Specifications

Vehicle Line Geo STORM
 Model Year 1991 Issued 6-90 Revised(*) 9-90

METRIC (U.S. Customary)

Engine Description
 Engine Code

ALL

Convenience Equipment (standard, optional, n.a.) NOT APPLICABLE

| | | | |
|---|---|---|--|
| Power equipment | Deck lid (release, pull down) | | |
| | Door locks (manual, auto., describe system) | | |
| | Seats | 2 - 4 - 6 way, etc. | |
| | | Reclining (R.H., L.H.) | |
| | | Memory (R.H., L.H., preset, recline) | |
| | | Support (lumbar, hip, thigh, etc.) | |
| | | Heated (R.H., L.H., other) | |
| | Side windows | | |
| | Vent windows | | |
| | Rear windows | | |
| Radio systems | Antenna (location, whip, w/shield, power) | | Standard, On Roof Front - Left, Non-Power |
| | Stan. | | |
| | Opt. | AM, FM, stereo, tape, compact disc, graphic equalizer, theft deterrent, radio prep package, headphone jacks, etc. | AM/FM Stereo AM/FM Stereo, Cassette |
| | Speaker (number, location) | | Standard, Ft: 2 Speakers Rr: 2 Speakers |
| Roof: open air or fixed (flip-up, sliding, T) | | | Not Applicable |
| Speed control device | | | |
| Speed warn. dev. (light, buzzer, etc.) | | | Not Applicable |
| Tachometer (rpm) | | | Standard |
| Telephone system (describe) | | | Not Applicable |
| Theft deterrent system | | | Lock Mounted On Steering Column, Lock Steering Wheel Automatic Transmission, Shift Lever And Ignition |

Trailer Towing

| | | |
|---------------------------------|-----------|----|
| Towing cable | 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 Geo STORM
 Model Year 1991 Issued 6-90 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

2+2 SPORT CPE

HATCHBACK CPE

GSi 2+2 SPORT CPE

Width

SAE Ref. No.

| | SAE Ref. No. | |
|----------------------------------|--------------|--------------|
| Tread (front) | W101 | 1430 (56.3) |
| Tread (rear) | W102 | 1401 (55.2) |
| Vehicle width | W103 | 1664 (66.00) |
| Body width at Sg RP (front) | W117 | 1683 (66.28) |
| Vehicle width (front doors open) | W120 | 3683 (152.9) |
| Vehicle width (rear doors open) | W121 | - |
| Tumble-home (deg.) | W122 | 26.7 |
| Outside mirror width | W410 | 1849 (76.7) |

Length

| | SAE Ref. No. | |
|-------------------------------|--------------|---------------|
| Wheelbase | L101 | 2450 (96.5) |
| Vehicle length | L103 | 4150 (163.4) |
| Overhang (front) | L104 | 974 (38.3) |
| Overhang (rear) | L105 | 726 (28.6) |
| Upper structure length | L123 | 2712 (106.8) |
| Rear wheel C/L 'X' coordinate | L127 | 2251.5 (88.6) |

Height **

| | SAE Ref. No. | | |
|-------------------------------------|--------------|-------------|-------------|
| Passenger distribution (front/rear) | PD1,2,3 | 2/0 | ** |
| Trunk/cargo load | | 30 (66.0) | ** |
| Vehicle height | H101 | 1298 (51.1) | 1312 (51.7) |
| Cowl point to ground | H114 | 904 (35.6) | |
| Deck point to ground | H138 | 846 (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 (deg.) | H122 | 64.1 | |
| Backlight slope angle (deg.) | H121 | 72.0 | 48.8 |

Ground Clearance **

| | SAE Ref. No. | | |
|---|--------------|------------|-----------------------|
| Front bumper to ground | H102 | 227 (8.9) | 218 (8.6) |
| Rear bumper to ground | H104 | 269 (10.6) | 232 (9.1) |
| Bumper to ground front at curb mass (wt.) | H103 | 246 (9.7) | 237 (9.3) |
| Bumper to ground rear at curb mass (wt.) | H105 | 291 (11.5) | 254 (10.0) |
| Angle of approach (deg.) | H106 | 15.8 | 15.8 |
| Angle of departure (deg.) | H107 | 24.8 | 21.6 |
| Ramp breakover angle (deg.) | H147 | 12.9 | |
| Axle differential to ground (front/rear) | H153 | - | |
| Min. running ground clearance | H156 | 131 (5.2) | |
| Location of min. run. grd. clear. | | | Under Floor Converter |

** All Vehicle Height And Ground Clearance Are Made Using EPA Loaded Vehicle Weight, Loading Conditions.

EPA Loaded Vehicle Weight is the Base Vehicle Weight Plus All Coolant and Fluids Necessary For Operation Plus 100% Of The Fuel Capacity, Plus The Weight Of All Options And Accessories Which Weigh Three Pounds Or More And Which Are Sold On At Least 33% Of The Car Line, Plus Two Occupants.

All Linear Dimensions Are In Millimeters (Inches)

MVMA Specifications

Vehicle Line Geo STORM
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METRIC (U.S. Customary) Vehicle Dimensions

See Key Sheets for Definitions

Body Type

2 + 2 SPORT COUPES

HATCHBACK COUPE

Front Compartment

SAE Ref. No.

| | | |
|--|-----|-------------|
| SgRP front, "X" coordinate | L31 | 1148 (45.2) |
| Effective head room | H81 | 852 (37.5) |
| Max. eff. leg room (accelerator) | L34 | 1113 (43.8) |
| SgRP to heel point | H30 | 177 (7.0) |
| SgRP to heel point | L53 | 838 (36.8) |
| Back angle (deg.) | L40 | 25 |
| Hip angle (deg.) | L42 | 88 |
| Knee angle (deg.) | L44 | 140 |
| Foot angle (deg.) | L48 | 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 | 1282 (50.9) |
| *** Upper body opening to ground | H50 | 1181 (45.7) |
| Steering wheel maximum diameter* | W9 | 382 (15.0) |
| Steering wheel angle (deg.) | 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 | H87 | 25 (1.0) |

Front Compartment Int. Dim. Are Measured With The Seating Ref. Pt.
 (SgRP) mm Forward And 2.3 mm Upward of Rearmost Position.

Rear Compartment

| | | |
|------------------------------------|-----|-------------------------|
| SgRP point couple distance | L50 | 879 (26.7) |
| Effective head room | H83 | 810 (31.9) 920 (36.2) |
| 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) 1330 (52.4) |
| Hip room | W6 | 1084 (42.7) |
| *** Upper body opening to ground | H51 | - |
| Back angle (deg.) | L41 | 28 30 |
| Hip angle (deg.) | L43 | 87.8 |
| Knee angle (deg.) | L45 | 88.6 |
| Foot angle (deg.) | L47 | 141.1 |
| Depressed floor covering thickness | H73 | 10 (0.4) |

Luggage Compartment

| | | |
|--|------|-----------------------|
| Usable luggage capacity [L. (cu. ft.)] | V1 | - |
| *** Liftover height | H185 | 831 (36.7) 728 (28.7) |

Interior Volumes (EPA Classification)

| | | |
|-----------------------------------|--|-------------|
| Vehicle class | | Subcompact |
| Interior volume index (cu. ft.)** | | 89.38 94.31 |
| Trunk / cargo index (cu. ft.) | | 10.97 |

* See page 14.

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

*** EPA Loaded Vehicle Weight, Loading Conditions
 All Linear Dimensions Are in Millimeters (Inches)

MVMA Specifications

Vehicle Line Geo STORM
 Model Year 1991 Issued 8-90 Revised(*) 8-90

METRIC (U.S. Customary)

Vehicle Dimensions

See Key Sheets for Definitions

Body Type

2 + 2 SPORT COUPE

HATCHBACK COUPE

Station Wagon - Third Seat

SAE Ref. No. (NOT APPLICABLE)

| | |
|-----------------------|-----|
| 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 (deg.) | L88 |
| Hip angle (deg.) | L89 |
| Knee angle (deg.) | L90 |
| Foot angle (deg.) | L91 |

Station Wagon - Cargo Space

(NOT APPLICABLE)

| | |
|--|------|
| 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 | H187 |
| Cargo volume index cu. m. (cu.ft.) | V2 |
| Hidden cargo vol. index cu. m.(cu.ft.) | V4 |
| Cargo volume index-rear of 2-seat | V10 |

Hatchback - Cargo Space

| | | | |
|---|------|---------------|--------------|
| Cargo length at front seatback height | L206 | 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 | 726 (28.7) | 706 (27.8) |
| Front seatback to load floor height | H187 | 373 (14.7) | |
| Second seatback to load floor height | H188 | 441 (13.2) | 450 (17.7) |
| Cargo volume index cu. m. (cu. ft.) | V3 | 0.619 (21.84) | 0.626 (22.4) |
| Hidden cargo vol. index cu. m. (cu.ft.) | V4 | - | |
| Cargo volume index-rear of 2-seat | V11 | 0.313 (10.97) | 0.334 (11.7) |

* EPA Loaded Vehicle Weight, Loading Conditions

All Linear Dimensions Are In Millimeters (Inches)

MVMA Specifications

Vehicle Line Geo STORM
 Model Year 1991 Issued 6-90 Revised(*) _____

METRIC (U.S. Customary)

Body Type

ALL MODELS

Vehicle Fiducial Marks

| Fiducial Mark Number * | Define Coordinate Location | |
|------------------------|--|--------------|
| Front | The Center Of The Hole (16) On The Front Side Member | |
| Rear | The Center Of The Hole (13) On The Rear Side Member. (Note: The Rearmost One Of The Drain Holes.) | |
| Fiducial Mark Number | | |
| Front | W21* | 403 (15.9) |
| | L64* | 250 (9.8) |
| | H81* | 336.5 (13.2) |
| | H181* | 177 (7.0) |
| | ** H183* | 157 (6.2) |
| Rear | W22* | 460.5 (18.1) |
| | L65* | 2594 (102.1) |
| | H82* | 563 (22.2) |
| | H182* | 405 (15.9) |
| | ** H184* | 384 (15.1) |

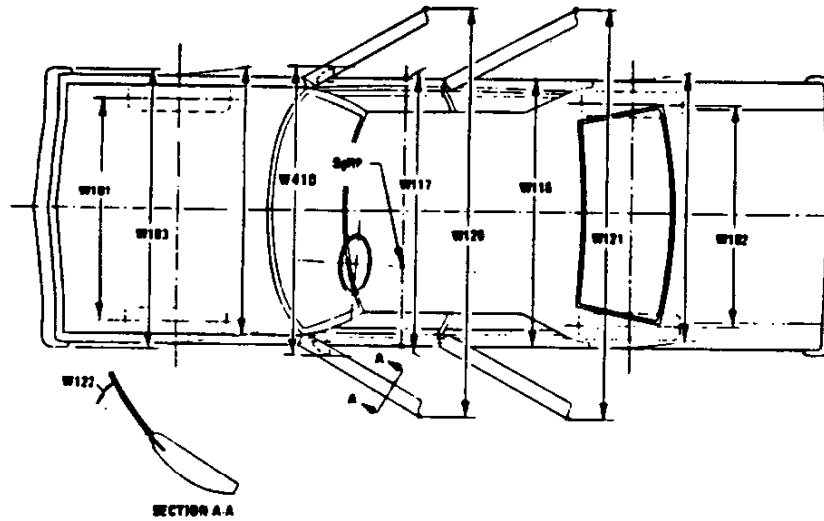
* Reference - SAE Recommended Practice, J182, Motor Vehicle Fiducial Marks.

*** EPA Loaded Vehicle Weight, Loading Conditions
 All Linear Dimensions Are In Millimeters (Inches)

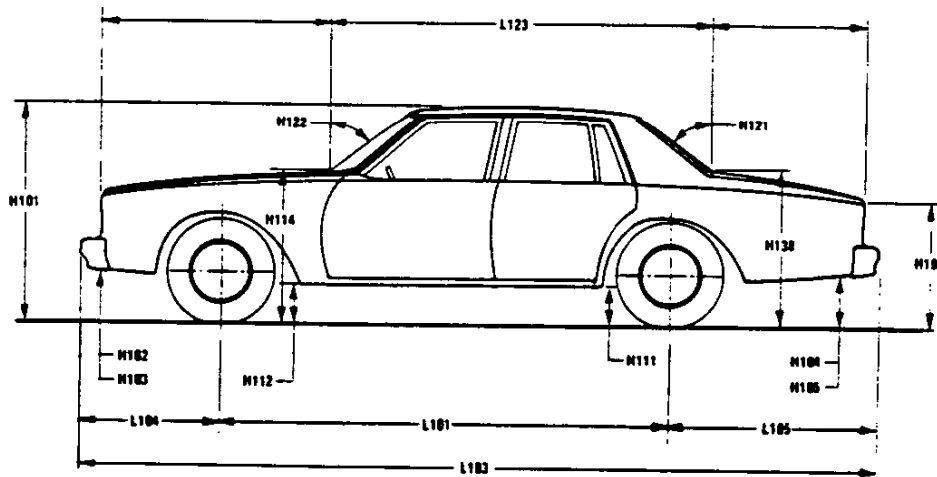
MVMA Specifications
METRIC (U.S. Customary)

Exterior Vehicle And Body Dimensions – Key Sheet

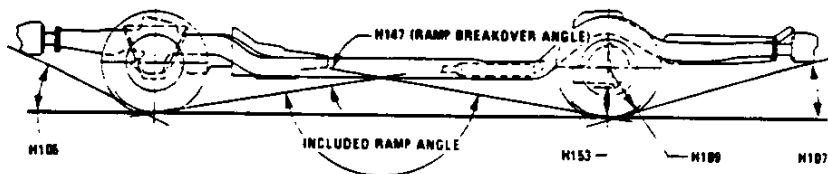
Exterior Width



Exterior Length & Height



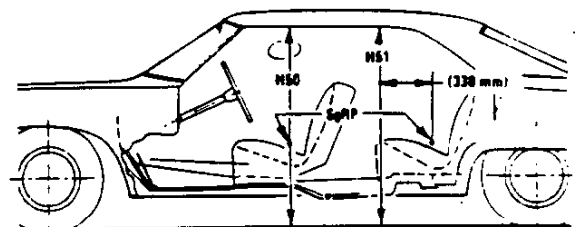
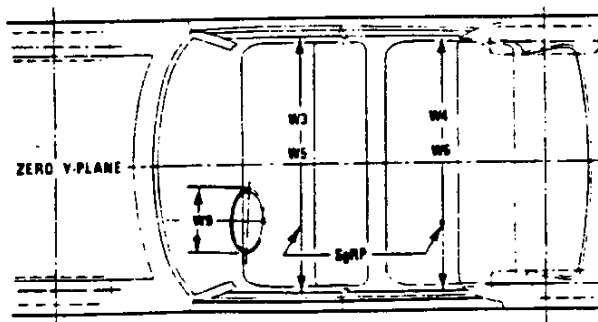
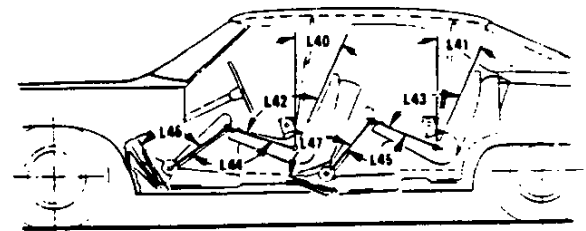
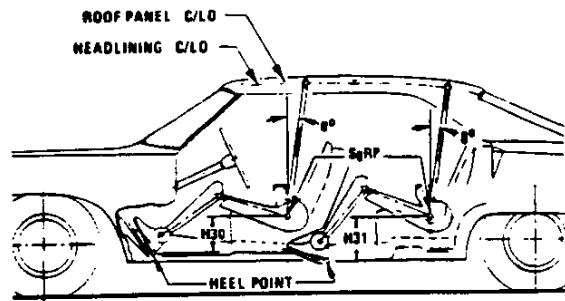
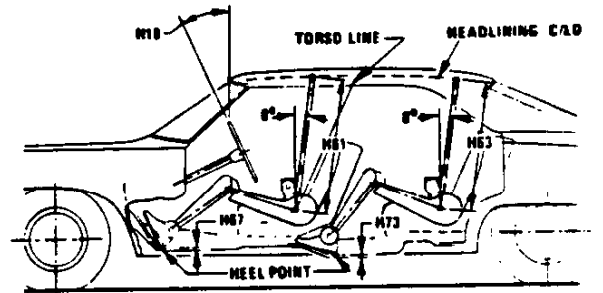
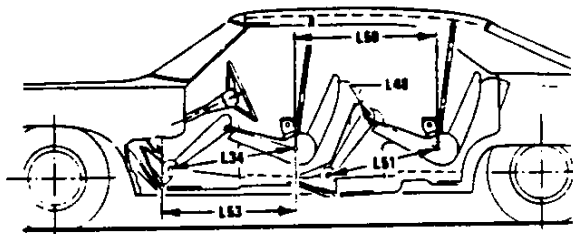
Exterior Ground Clearance



MVMA Specifications Form

METRIC (U.S. Customary)

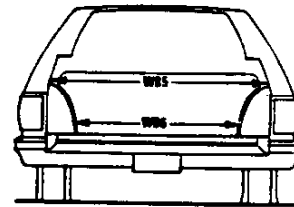
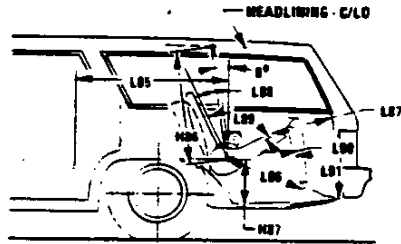
Interior Vehicle And Body Dimensions - Key Sheet



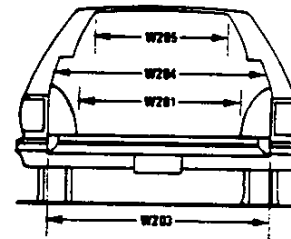
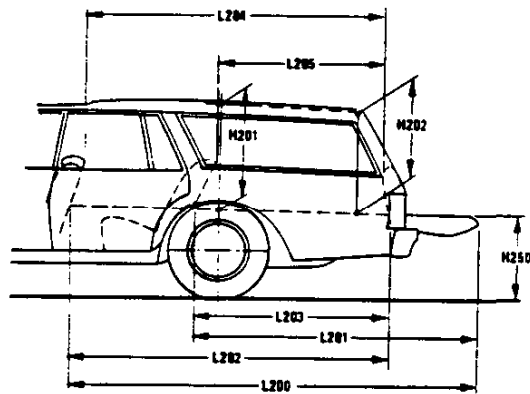
MVMA Specifications Form
METRIC (U.S. Customary)

Interior Vehicle And Body Dimensions – Key Sheet

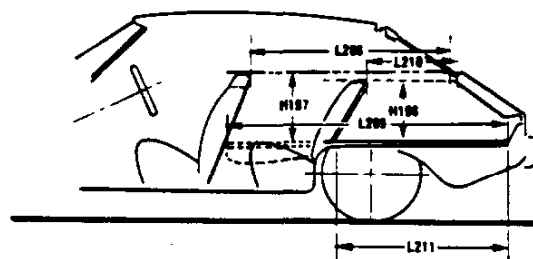
Third Seat



Cargo Space



Station Wagon



Hatchback

MVMA Specifications

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

Rear Compartment Dimensions

- 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 Interior Volume Index is an estimate of the size of the passenger compartment.

The Trunk/Cargo Index is an estimate of the size of the trunk/cargo space. In station wagons and hatchbacks it is an estimate of the space behind the second seat.

Station Wagon - Third Seat Dimensions

- L85 **SgRP COUPLE DISTANCE - THIRD**. The dimension measured horizontally from the SgRP - second to the SgRP - third.
- L86 **EFFECTIVE LEG ROOM - THIRD**. The dimension measured along a line from the ankle pivot center to the SgRP - third plus 254 mm (10.0 in.).
- L87 **KNEE CLEARANCE - THIRD**. The minimum dimension from the knee pivot center to the back of second seatback minus a constant of 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 - 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 wheelhouses 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.

H187 **FRONT SEATBACK TO LOAD FLOOR HEIGHT**. The dimension measured vertically from the horizontal tangent to the top of the seatback to the undepressed floor covering.

H201 **CARGO HEIGHT**. The dimension measured vertically from the top of the undepressed floor covering to the headlining at the rear wheel "X" coordinate on the zero "Y" plane.

H202 **REAR OPENING HEIGHT**. The dimension measured vertically from the top of the undepressed floor covering to the upper trimmed opening on the zero "Y" plane with rear door fully open.

H250 **TAILGATE TO GROUND CURB MASS (WT.)**. The dimension measured vertically from the top of the undepressed floor covering on the lowered tailgate to ground on the zero "Y" plane.

V2 STATION WAGON

Measured in inches:

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

Measured in mm:

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

MVMA Specifications

METRIC (U.S. Customary)

Interior Vehicle And Body Dimensions - Key Sheet Dimensions Definitions

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:

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

Measured in mm:

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

V6 TRUCKS AND MPV'S WITH CLOSED AREA.

Measured in inches:

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

Measured in mm:

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

V8 HIDDEN LUGGAGE CAPACITY - REAR OF SECOND SEAT. The total volume of individual pieces of one set of standard luggage stowed in any hidden cargo area below the load floor rear of the second seat.

V10 STATION WAGON CARGO VOLUME INDEX.

Measured in inches:

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

Measured in mm:

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

Hatchback - Cargo Space Dimensions

All hatchback cargo dimensions are to be taken with the front seat in full down and rear position, and the rear seat folded down. The hatchback door is in the closed position. (For 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 - HATCHBACK. The minimum horizontal dimension measured at floor level from the rear of the front seatback to the normal limiting interference of the hatchback door on the vehicle zero "Y" plane.

L210 CARGO LENGTH AT SECOND SEATBACK HEIGHT - HATCHBACK. The minimum dimension measured from the "X" plane tangent to the rearmost surface of second seatback or the load floor which is stowed at least one half of the H198 dimension height above the rear load floor, to the rearmost inside limiting interference on the zero "X" plane.

L211 CARGO LENGTH AT FLOOR - SECOND HATCHBACK. The minimum horizontal dimension measured at floor level from the rear of the second seatback or load floor panel to the normal limiting interference of the hatchback door on the vehicle zero "Y" plane.

H197 FRONT SEATBACK TO LOAD HEIGHT. The dimension measured vertically from the horizontal tangent to the top of the seatback to the undepressed floor covering.

H198 SECOND SEATBACK TO LOAD FLOOR HEIGHT. The dimension measured vertically from the second seatback to the undepressed floor covering.

V3 HATCHBACK.

Measured in inches:

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

Measured in mm:

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

V4 HIDDEN LUGGAGE CAPACITY - REAR OF FRONT SEAT. The total volumes of individual pieces of one set of standard luggage stowed in any hidden cargo area below the load floor rear of the front seat.

V11 HATCHBACK CARGO VOLUME INDEX. Usable luggage (one (1) stand and luggage set) below floor.
Measured in inches:

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

Measured in mm:

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

MVMA Specifications

METRIC (U.S. Customary)

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