MANUFACTURERS MOTOR VEHICLE SPECIFICATIONS

METRIC (U.S. Customary)

1993

Manufacturer	Vehicle Line	
FORD MOTOR COMPANY	FORD THUNDERBIRD	
Mailing Address		
P.O. BOX 2053 DEARBORN, MICHIGAN 48121	Issued JUNE 15, 1992	Revised OCTOBER 30, 1992

Direct questions concerning these specifications to the manufacturer listed above.

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

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

Motor Vehicle Manufacturers Association of the United States, Inc.
Forms Provided by Technical Affairs Division

FORM MVMA-93

MVMA Specifications

METRIC (U.S. Customary)

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∅ **Indicates Format Change From Previous Year**

NOTE:

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

MVMA Specifications

METRIC (U.S. Customary)

Vehicle Line THUNDERBIRD
Model Year 1993 Issued 6/15/92 Revised (•) 10/30/92

Vehicle Origin

Design & development (company)	Ford Motor Company
Where built (country)	U.S.A.
Authorized U.S. sales marketing representative	Ford Division, Ford Motor Company

Vehicle Models

	Model Description & Drive (FWD/RWD/AWD/4WD)*	Introduction Date	Make, Vehicle Models, Series, Body Type (Mfgr's Model Code)	No. of Designated Seating Positions (Front/Rear)	Max. Trunk/Cargo Load-Kilograms (Pounds)	EPA Fuel Economy (City/Hwy)
	REAR WHEEL DRIVE (RWD)					
	LX	9/24/92				
(•)	2-Door		BA/VS-AI	2/3	68.0 (150)	3.8L (19/27) 5.0L H.O. (17/24)
	SUPER COUPE	9/24/92				
	2-Door		BA/VS-BB	2/3	68.0 (150)	3.8L SC (17/24)

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

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METRIC (U.S. Customary)

Power Teams

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

			A	B	C	D
ENGINE	Engine Code		994	99R	99R	99T
	Displacement Liters (in³)		3.8 (232)	3.8 (232)	3.8 (232)	5.0 HO (302)
	Induction System (FI, Carb, etc.)		Sequential Electronic Fuel Injection	Sequential Electronic Fuel Injection (SC)	Sequential Electronic Fuel Injection (SC)	Sequential Electronic Fuel Injection
	Compression Ratio		9.0	8.2	8.2	9.0
	SAE Net at RPM	Power kW (bhp)	104 (140) @ 3800	157 (210) @ 4000	157 (210) @ 4000	149 (200) @ 4000
		Torque N•m (lb. ft.)	292 (215) @ 2400	427 (315) @ 2600	427 (315) @ 2600	373 (275) @ 3000
	Exhaust *single, dual*		Single	Quasi-Dual	Quasi-Dual	Quasi-Dual
TRANS	Transmission/ Transaxle		4-Spd. Automatic Overdrive (AOD)	5-Spd. Manual Overdrive (M5R2)	4-Spd. Automatic Overdrive (AOD)	4-Spd. Automatic Overdrive (AOD)
	Effective Final Drive/ Axle Ratio (std. first)		3.27 $	2.73 %	3.27 %	3.08 $

$ — Traction-Lok Available
% — 8.8 Inch Rear Locker Axle Standard

Series Availability		Power Teams (A - B - C - D)	
Model	Code	Standard	Optional
2-Door LX	63D	A	D
2-Door Super Coupe	63D	B	C

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Vehicle Line THUNDERBIRD
Model Year 1993 Issued 6/15/92 Revised (*)

METRIC (U.S. Customary)

Engine Description / Engine Code	3.8L	3.8L SC

ENGINE – GENERAL

Type and description (inline, V, angle, flat, location, front, mid, rear, transverse, longitudinal, sohc, dohc, ohv, hemi, wedge, pre-chamber, etc.)		90° V, Front, Longitudinal Overhead Valve Engine with Modified Wedge Combustion Chamber	
Manufacturer		Ford Motor Company	
No. of cylinders		Six	
Bore		96.8 (3.8)	
Stroke		86.0 (3.4)	
Bore spacing (C/L to C/L)		106.5	
Cylinder block material & mass kg (lbs.) (machined)		Cast Iron, 54.5 (120.0)	
Cylinder block deck height		234.5 (9.2)	
Cylinder block length		411.0 (16.2)	
Deck clearance (minimum) (above or below block)		0.255 (0.010) Above	
Cylinder head material & mass kg (lbs.)		SAE 331, Aluminum 7.2 (15.9)	SAE 331, Aluminum 8.0 (17.5)
Cylinder head volume cm^3 ($inches^3$)		61.2	
Cylinder liner material		N/A	
Head gasket thickness (compressed)		1.04-1.19 (0.041-0.047)	1.07 (0.042)
Minimum combustion chamber total volume cm^3 ($inches^3$)		73.2	
Cyl. no. system (front to rear)*	L. Bank	4, 5, 6	
	R. Bank	1, 2, 3	
Firing order		1, 4, 2, 5, 3, 6	
Intake manifold material & mass kg (lbs.)**		Aluminum 11.3 (24.8)	Aluminum 11.06 (24.0)
Exhaust manifold material & mass kg (lbs.)**		Cast Iron 7.1 (15.6)	
Knock sensor (number & location)		No	Yes
Fuel required unleaded, diesel, etc.		Unleaded	
Fuel antiknock index (R + M) ÷ 2		87 Minimum Octane	92 Minimum Octane
Engine mounts	Quantity	Three	
	Material and type (elastomeric, hydroelastic, hydraulic damper, etc.)	Hydroelastic	
	Added isolation (sub-frame, crossmember, etc.)	Crossmember at Transmission	
Total dressed engine mass (wt) dry ***		204.5 (450.9)	246.1 (542.6)

Engine – Pistons

Material & mass, g (weight, oz.) - piston only	Zolloy 16, Aluminum Alloy, 521 (18.4)	Zolloy 16, Aluminum Alloy, 524 (18.5)

Engine – Camshaft

Location	In Block	
Material & mass kg (weight, lbs.)	SAE 1050 Steel Bar Stock 3.82 (8.4)	
Drive type: Chain/belt	Chain (Silent)	
Drive type: Width/pitch	14.91-13.63(0.587-0.537)/9.525 (0.375)	

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

** Finished state.

*** Dressed engine mass (weight) includes the following: Front End Dress, All Engine Mounted Components and Flex Plate; Excludes Starter and Alternator.

MVMA Specifications

Vehicle Line THUNDERBIRD
Model Year 1993 Issued 6/15/92 Revised (•)

METRIC (U.S. Customary)

Engine Description / **Engine Code**	5.0L HO

ENGINE – GENERAL

Type and description (inline, V, angle, flat, location, front, mid, rear, transverse, longitudinal, sohc, dohc, ohv, hemi, wedge, pre-chamber, etc.)		90° V, Front, Longitudinal (OHV) Overhead Valve Engine with Modified Wedge Combustion Chamber
Manufacturer		Ford Motor Company
No. of cylinders		Eight
Bore		101.6 (4.00)
Stroke		76.2 (3.00)
Bore spacing (C/L to C/L)		111.25 (4.38)
Cylinder block material & mass kg (lbs.) (machined)		Cast Iron, 56.7 (125)
Cylinder block deck height		208.4 (8.21)
Cylinder block length		529.3 (20.84)
Deck clearance (minimum) (above or below block)		0.34 (.0135) Above
Cylinder head material & mass kg (lbs.)		Cast Iron, 20.9 (46.0)
Cylinder head volume cm^3 ($inches^3$)		60.6-63.6
Cylinder liner material		*N/A*
Head gasket thickness (compressed)		1.14-1.30 (0.045-0.051)
Minimum combustion chamber total volume cm^3 ($inches^3$)		71.8
Cyl. no. system (front to rear)*	L. Bank	5, 6, 7, 8
	R. Bank	1, 2, 3, 4
Firing order		1, 3, 7, 2, 6, 5, 4, 8
Intake manifold material & mass kg (lbs.)**		Upper Aluminum 8.8 (19.4); Lower Aluminum 7.0 (15.5)
Exhaust manifold material & mass kg (lbs.)**		Stainless Steel 5.0 (11.0)
Knock sensor (number & location)		No
Fuel required unleaded, diesel, etc.		Unleaded
Fuel antiknock index (R + M) ÷ 2		87.0 Minimum Octane
Engine mounts	Quantity	Three
	Material and type (elastomeric, hydroelastic, hydraulic damper, etc.)	Hydroelastic
	Added isolation (sub-frame, crossmember, etc.)	Crossmember at Transmission
Total dressed engine mass (wt) dry ***		247 (543.7)

Engine – Pistons

Material & mass, g (weight, oz.) - piston only	*Hypereutectic Alloy, 565 (19.93)*

Engine – Camshaft

Location		In Block
Material & mass kg (weight, lbs.)		SAE 1050 or 1053 Steel, Induction Hardened and 4.54 (10)
Drive type	Chain/belt	Chain, Double Roller
	Width/pitch	22.1 (0.87)/9.52 (0.37)

* 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: Front End Dress, All Engine Mounted Components and Flex Plate; Excludes Starter and Alternator.

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METRIC (U.S. Customary)

Engine Description / Engine Code	3.8L	3.8L SC

Engine – Valve System

Hydraulic lifters (std., opt., n.a.)		Hydraulic Roller	
Valves	Number intake/exhaust	6/6	
	Head O.D. intake/exhaust	45/37	44/36

Engine – Connecting Rods

Material & mass kg., (weight, lbs.)*		Forged Steel (SAE-1151-M) .665-.667 (1.46-1.47)
Length (axes C/L to C/L)		150.17-150.24

Engine – Crankshaft

Material & mass kg., (weight, lbs.)*		Nodular Cast Iron Alloy 14.06 (31)	Forged Micro Alloy Steel 20.45 (45)
End thrust taken by bearing (no.)		#3	
Length & number of main bearings		4	
Seal (material, one, two piece design, etc.)	Front	One Piece, Fluorocarbon	
	Rear	Fluorocarbon, Dual Lip	

Engine – Lubrication System

Normal oil pressure kPa (psi) at engine rpm	276-414 (40-60) @ 2000 RPM
Type oil intake (floating, stationary)	Stationary Shrouded Screen in Sump
Oil filter system (full flow, part, other)	Full Flow
Capacity of c/case, less filter-refill-L (qt.)	4.5 (4.5) Plus 0.5 (0.5) for Filter

Engine – Diesel Information (NOT OFFERED)

Diesel engine manufacturer		
Glow plug, current drain at 0°F		
Injector nozzle	Type	
	Opening pressure kPa (psi)	
Pre-chamber design		
Fuel injection pump	Manufacturer	
	Type	
Fuel injection pump drive (belt, chain, gear)		
Supplementary vacuum source (type)		
Fuel heater (yes/no)		
Water separator, description (std., opt.)		
Turbo manufacturer		
Oil cooler-type (oil to engine coolant; oil to ambient air)		
Oil filter		

Engine – Intake System (NOT OFFERED)

Turbo charger - manufacturer		
Super charger - manufacturer		Eaton (a)
Intercooler		Air to Air — Engine Mounted

* Finished state.

(a) 2 Rotors, 3 Lobes each W/60° Helical Twist:
Dimensions — 152.4 (6.0) x 284.5 (11.2)
Weight — 3.64 (8.0)
Maximum Boost Pressure — 12 PSI

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METRIC (U.S. Customary)

Engine Description	5.0L HO
Engine Code	

Engine – Valve System

Hydraulic lifters (std., opt., n.a.)		Standard with Roller Tappets
Valves	Number intake/exhaust	8/8
	Head O.D. intake/exhaust	45.2 (1.78)/36.8 (1.45)

Engine – Connecting Rods

Material & mass kg., (weight, lbs.)*	Forged Steel 0.55 (1.23)
Length (axes C/L to C/L)	129.3 (5.09)

Engine – Crankshaft

Material & mass kg., (weight, lbs.)*		Nodular Cast Iron Alloy 17.3 (38.2)
End thrust taken by bearing (no.)		#3
Length & number of main bearings		5
Seal (material, one, two piece design, etc.)	Front	Viton, One Piece
	Rear	Viton, One Piece

Engine – Lubrication System

Normal oil pressure kPa (psi) at engine rpm	276-414 (40-60) @ 2000 RPM
Type oil intake (floating, stationary)	Stationary Shrouded Screen in Sump
Oil filter system (full flow, part, other)	*Full Flow*
Capacity of c/case, less filter-refill-L (qt.)	3.8 (4.0) Plus 0.9 (1.0) for Filter

Engine – Diesel Information (NOT OFFERED)

Diesel engine manufacturer		
Glow plug, current drain at 0°F		
Injector nozzle	Type	
	Opening pressure kPa (psi)	
Pre-chamber design		
Fuel injection pump	Manufacturer	
	Type	
Fuel injection pump drive (belt, chain, gear)		
Supplementary vacuum source (type)		
Fuel heater (yes/no)		
Water separator, description (std., opt.)		
Turbo manufacturer		
Oil cooler-type (oil to engine coolant; oil to ambient air)		
Oil filter		

Engine – Intake System (NOT OFFERED)

Turbo charger - manufacturer	
Super charger - manufacturer	
Intercooler	

* Finished state.

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Vehicle Line THUNDERBIRD
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METRIC (U.S. Customary)

Engine Description / Engine Code	3.8L	3.8L SC

Engine – Cooling System

Coolant recovery system (std., opt., n.a.)		Standard	
Coolant fill location (rad., bottle)		Radiator Coolant Fill; Bottle Coolant Add	
Radiator cap relief valve pressure kPa (psi)		110.3 (16.0)	
Circulation thermostat	Type (choke, bypass)	Reverse Poppet	
	Starts to open at °C (°F)	91 (197)	
Water pump	Type (centrifugal, other)	Centrifugal	
	GPM 1000 pump rpm	10	
	Number of pumps	One	
	Drive (V-belt, other)	Six Rib Poly-V	Eight Rib Poly-V
	Bearing type	Double Row, Sealed, Ball and Roller	
	Impeller material	Steel	
	Housing material	Aluminum	
By-pass recirculation type (inter., ext.)		External	
Cooling system capacity	With heater – L(qt.)	10.5 (11.1) Plus 1.5 Quart in Overflow Bottle	
	With air conditioner – L(qt.)	Standard	
	Opt. equipment specify – L(qt.)	N/A	
Water jackets full length of cyl. (yes, no)		No	
Water all around cylinder (yes, no)		Yes	
Water jackets open at head face (yes, no)		No	
Radiator core	Std., A/C, HD	A/C Standard	
	Type (cross-flow, etc.)	Crossflow	Downflow
	Construction (fin & tube mechanical, braze, etc.)	Tube and Slit Fin, Vacuum Brazed Aluminum, 1 Row	Tube and Slit Fin, Copper & Brass, 2 Row
	Material, mass kg (wgt., lbs.)	Aluminum, 3.31 (7.29)	Copper/Brass
	Width	571.9 (22.5)	508.0 (20.0)
	Height	469.8 (18.5)	384.0 (15.1)
	Thickness	25.9 (1.0)	37.1 (1.5)
	Fins per inch	10	15
Radiator end tank material		Plastic	Brass
Ø Fan	Std., elec., opt.	Standard	Electric, Two Speed
	Number of blades & type (flex, solid, material)	7 Blade Solid, Steel	8 Blade, Plastic
	Number & location (front, rear of radiator)		
	Diameter & projected width	406 (16.0); 68.5 (2.7)	
	Ratio (fan to crankshaft rev.)	1.35:1	
	Fan cutout type	Clutch	
	Drive type (direct, remote)	Direct	
	RPM at idle (elec.)	N/A	
	Motor rating (wattage/elec.)	N/A	400
	Motor switch (type & location/elec.)	N/A	EEC Control
	Switch point (temp./pressure/elec.)	N/A	221° F
	Fan shroud (material)	Plastic	

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Model Year 1993 Issued 6/15/92 Revised (•)

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Engine Description / **Engine Code**	5.0L HO

Engine – Cooling System

Coolant recovery system (std., opt., n.a.)		Standard
Coolant fill location (rad., bottle)		Radiator Coilant Fill; Bottle Coilant Add
Radiator cap relief valve pressure kPa (psi)		97-124 (14-18)
Circulation thermostat	Type (choke, bypass)	Reverse Poppet
	Starts to open at °C (°F)	89-92 (192-197)
Water pump	Type (centrifugal, other)	Centrifugal — Vane
	GPM 1000 pump rpm	11
	Number of pumps	One
	Drive (V-belt, other)	Poly-V-Belt
	Bearing type	Double Row, Sealed, Roller/Ball
	Impeller material	Low Carbon Steel
	Housing material	Aluminum
By-pass recirculation type (inter., ext.)		External
Cooling system capacity	With heater – L(qt.)	13.3 (14.1) Includes Overflow Bottle Capacity, Cold
	With air conditioner – L(qt.)	A/C Standard
	Opt. equipment specify – L(qt.)	N/A
Water jackets full length of cyl. (yes, no)		Yes
Water all around cylinders (yes, no)		Yes
Water jackets open at head face (yes, no)		No
Radiator core	Std., A/C, HD	Standard
	Type (cross-flow, etc.)	Crossflow
	Construction (fin & tube mechanical, braze, etc.)	Tube and Fin, 1 Row
	Material, mass kg (wgt., lbs.)	Aluminum 3.3 (7.3)
	Width	571.9 (22.5)
	Height	469.8 (18.5)
	Thickness	25.9 (1.0)
	Fins per inch	10
Radiator end tank material		Plastic
Ø Fan	Std., elec., opt.	Standard
	Number of blades & type (flex, solid, material)	7, Uneven, (Spacing) Steel
	Number & location (front, rear of radiator)	
	Diameter & projected width	438.2 (17.75); 68.0 (2.68)
	Ratio (fan to crankshaft rev.)	1.30:1
	Fan cutout type	Clutch
	Drive type (direct, remote)	Belt, Direct
	RPM at idle (elec.)	N/A
	Motor rating (wattage/elec.)	N/A
	Motor switch (type & location/elec.)	N/A
	Switch point (temp./pressure/elec.)	N/A
	Fan shroud (material)	Talc Filled Polypropylene

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Model Year 1993 Issued 6/15/92 Revised (•) _____

METRIC (U.S. Customary)

Engine Description / Engine Code	3.8L	3.8L SC

Engine – Fuel System

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

Induction type: carburetor, fuel injection system, etc.		Sequential Electronic Port Fuel Injection System	
Manufacturer		Ford Motor Company	
Carburetor no. of barrels		N/A	
Idle A/F mix.		14.6:1 Closed Loop	
Fuel Injection	Point of injection (no.)	Intake Ports (6)	
	Constant, pulse, flow	Timed	
	Control (electronic, mech.)	Electronic	
	System pressure kPa (psi)	270 (39.5)	
Idle spd.-rpm (spec. neutral or drive and propane if used)	Manual	N/A	750
	Automatic	600 Drive	
		750 Neutral	
Intake manifold heat control (exhaust or water thermostatic or fixed)		N/A	
Air cleaner type		Dry, Remote Paper Element	
Fuel filter (type/location)			
Fuel Pump	Type (elec. or mech.)	Electric	
	Location (eng., tank)	In-Tank	
	Pressure range kPa (psi)	30-45	30-60
	Flow rate at regulated pressure L (gal)/hr @ kPa (psi)	60 L/hr	110 L/hr

Fuel Tank

Capacity refill L (gallons)		68.1 (18.0)	
Location (describe)		Underside Rear Center — In Front of Rear Suspension	
Attachment		Steel Support Tray with Two Straps Bolt at Front and Rear	
Material & Mass kg (weight lbs.)		HDPE, 16.1 (35.5)	
Filler pipe	Location & material	Right Hand Quarter Panel — Steel (Terne)	
	Connection to tank	Rubber Hose	
Fuel line (material)		Steel w/Nylon Jumpers	
Fuel hose (material)		N/A	
Return line (material)		Steel w/Nylon Jumpers	
Vapor line (material)		Steel w/Nylon Jumpers	
Extended range tank	Opt., n.a.	N/A	
	Capacity L (gallons)		
	Location & material		
	Attachment		
Auxiliary tank	Opt., n.a.	N/A	
	Capacity L (gallons)		
	Location & material		
	Attachment		
	Selector switch or valve		
	Separate fill		

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Vehicle Line THUNDERBIRD
Model Year 1993 Issued 6/15/92 Revised (•)

METRIC (U.S. Customary)

Engine Description / **Engine Code**	5.0L HO

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

Induction type: carburetor, fuel injection system, etc.		Sequential Electronic Port Fuel Injection System
Manufacturer		Ford Motor Company
Carburetor no. of barrels		N/A
Idle A/F mix.		14.6:1
Fuel Injection	Point of injection (no.)	Intake Port Eight
	Constant, pulse, flow	Timed
	Control (electronic, mech.)	Electronic
	System pressure kPa (psi)	206.9-275.8 (30-40)
Idle spd.-rpm (spec. neutral or drive and propane if used)	Manual	N/A
	Automatic	N/A
Intake manifold heat control (exhaust or water thermostatic or fixed)		N/A
Air cleaner type		Dry, Paper Element
Fuel filter (type/location)		Inline Replaceable Canister
Fuel Pump	Type (elec. or mech.)	Electric
	Location (eng., tank)	Fuel Tank
	Pressure range kPa (psi)	206.9-275.8 (30-40)
	Flow rate at regulated pressure L (gal)/hr @ kPa (psi)	

Fuel Tank

Capacity refill L (gallons)		68.1 (18.0)
Location (describe)		Underside Rear Center — In Front of Rear Suspension
Attachment		Steel Support Tray with Two Straps Bolt at Front and Rear
Material & Mass kg (weight lbs.)		HDPE, 16.1 (35.5)
Filler pipe	Location & material	Right Hand Quarter Panel — Steel (Terne)
	Connection to tank	Rubber Hose
Fuel line (material)		Steel w/Nylon Jumper
Fuel hose (material)		N/A
Return line (material)		Steel w/Nylon Jumper
Vapor line (material)		Steel w/Nylon Jumper
Extended range tank	Opt., n.a.	N/A
	Capacity L (gallons)	
	Location & material	
	Attachment	
Auxiliary tank	Opt., n.a.	N/A
	Capacity L (gallons)	
	Location & material	
	Attachment	
	Selector switch or valve	
	Separate fill	

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METRIC (U.S. Customary)

Engine Description / Engine Code	3.8L	3.8L SC

Vehicle Emission Control

Exhaust Emission Control	Type (air injection, engine modifications, other)		Vehicle and Engine Modifications Plus Exhaust Gas Recirculation and Air Injection (a)	
	Air Injection	Pump or pulse	N/A	
		Driven by	N/A	
		Air distribution (head, manifold, etc.)	N/A	
		Point of entry	N/A	
	Exhaust Gas Recirculation	Type (controlled flow, open orifice, other)	Electronic (PFE)	N/A
		Exhaust source	R.H. Exhaust Manifold	N/A
		Point of exhaust injection (spacer, carburetor, manifold, other)	Intake Manifold	N/A
	Catalytic Converter	Type	TWC Toeboard (2)	
		Number of	Two	
		Location (s)	Toeboard (L.O.)	
		Volume L (in³)	Toeboard 2 x 2 x 38	
		Substrate type	Coated Ceramic Monolith	
		Noble metal type	TWC — Palladium/Rhodium	
		Noble metal concentration (g/cm³)	TWC — 19.1/2.12 ÷ 10,000 TWC — 12.71/1.41 ÷ 10,000	TWC — 11.77/2.35 ÷ 10,000 (AOD) TWC — 8.25/1.65 ÷ 10,000 (Man.)
Crankcase Emission Control	Type (ventilates to atmosphere, induction system, other)		Closed Induction System	
	Energy source (manifold vacuum, carburetor, other)		Manifold Vacuum	
	Discharges to (intake manifold, other)		Intake Manifold	
	Air inlet (breather cap, other)		Air Inlet Tube	
Evaporative Emission Control	Vapor vented to (crankcase, canister, other)	Fuel tank	Externally Vented to Carbon Canister	
		Carburetor	N/A	
	Vapor storage provision		Carbon Canister	
Electronic system	Closed loop (yes/no)		Yes	
	Open loop (yes/no)		Yes	No

Engine – Exhaust System

Type (single, single with cross-over, dual, other)		Single with Dual Catalyst System	Dual with Dual Catalyst System Mufflers
Muffler no. & type (reverse flow, straight thru, separate resonator) Material & Mass kg (weight lbs)		One, Straight Through Flow (b)	Two, Straight Through Flow (b)
Resonator no. & type		One Cross Flow	See Below (c)
Exhaust pipe	Branch o.d., wall thickness	50.8 x 1.37 (2.00 x .054)	
	Main o.d., wall thickness	63.0 x 1.37 (2.50 x .054)	
	Material & Mass kg (weight lbs)	Stainless Steel (b)	
Intermediate pipe	o.d. & wall thickness	50.8 x 1.37 (2.00 x .054)	
	Material & Mass kg (weight lbs)	Stainless Steel (b)	Aluminized Stainless Steel (b)
Tail pipe	o.d. & wall thickness	50.8 x 1.37 (2.00 x .054)	
	Material & Mass kg (weight lbs)	Aluminized Stainless Steel (b)	

(a) Components May Vary According to Engine Calibration

(b) Purchased in Assembly (PIA) Muffler and Pipe Assembly 11.0 (24.5)

(c) One Cross Flow (AOD); One Straight Through (Manual)

MVMA Specifications

Vehicle Line THUNDERBIRD

Model Year 1993 Issued 6/15/92 Revised (•)

METRIC (U.S. Customary)

Engine Description / Engine Code | 5.0L HO

Vehicle Emission Control

Exhaust Emission Control	Type (air injection, engine modifications, other)		Vehicle and Engine Modification, Exhaust Gas Recirculation and Air Injection (a)
	Air Injection	Pump or pulse	Pump
		Driven by	Belt
		Air distribution (head, manifold, etc.)	Cylinder Head
		Point of entry	Cylinder Head Exhaust Ports
	Exhaust Gas Recirculation	Type (controlled flow, open orifice, other)	Electronic
		Exhaust source	Exhaust Manifold
		Point of exhaust injection (spacer, carburetor, manifold, other)	Intake Manifold, Upper
	Catalytic Converter	Type	TWC Toeboard (2)
		Number of	Three
		Location (s)	Toeboard (L.O.) + Underbody
		Volume L (in^3)	Toeboard 2 x 2 x 38 — Underbody 1 x 78
		Substrate type	Coated Ceramic Monolith
		Noble metal type	TWC/Toeboard: Palladium/Rhodium; Underbody: Platinum/Rhodium
		Noble metal concentration (g/cm^3)	TWC — 11.77/2.35 ÷ 10,000 TWC — 8.24/1.65 ÷ 10,000 8.24/1.65 ÷ 10,000
Crankcase Emission Control	Type (ventilates to atmosphere, induction system, other)		Closed System
	Energy source (manifold vacuum, carburetor, other)		Intake Manifold Vacuum
	Discharges to (intake manifold, other)		Intake Manifold
	Air inlet (breather cap, other)		Air Inlet Tube
Evaporative Emission Control	Vapor vented to (crankcase, canister, other)	*Fuel tank*	*Carbon Canister*
		Carburetor	N/A
	Vapor storage provision		Carbon Canister
Electronic system	Closed loop (yes/no)		Yes (Stabilized)
	Open loop (yes/no)		Yes (Cold & Heavy Load)

Engine – Exhaust System

Type (single, single with cross-over, dual, other)		Dual with Dual Catalyst System Mufflers
Muffler no. & type (reverse flow, straight thru, separate resonator) Material & Mass kg (weight lbs)		Two, Straight Through Flow (b)
Resonator no. & type		One, Straight Through Flow
Exhaust pipe	Branch o.d., wall thickness	50.8 x 1.37 (2.00 x .054)
	Main o.d., wall thickness	63.0 x 1.37 (2.50 x .054)
	Material & Mass kg (weight lbs)	Aluminized Stainless Steel (b)
Intermediate pipe	o.d. & wall thickness	50.8 x 1.37 (2.00 x .054)
	Material & Mass kg (weight lbs)	Aluminized Stainless Steel (b)
Tail pipe	o.d. & wall thickness	50.8 x 1.37 (2.00 x .054)
	Material & Mass kg (weight lbs)	Aluminized Stainless Steel (b)

(a) Components May Vary According to Engine Calibration

(b) Purchased in Assembly (PIA) Muffler and Pipe Assembly 11.0 (24.5)

MVMA Specifications

Vehicle Line THUNDERBIRD
Model Year 1993 Issued 6/15/92 Revised (•) _____

METRIC (U.S. Customary)

Engine Description / Engine Code	3.8L	3.8L SC	5.0L HO

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

Manual 4-speed (manufacturer/country)	N/A		
Manual 5-speed (manufacturer/country)	N/A	Standard (Mazda/Japan)	N/A
Manual 6-speed (manufacturer/country)	N/A		
Automatic (manufacturer/country)	—		
Automatic overdrive (manufacturer/country)	Standard (Ford/USA)	Optional (Ford/USA)	Standard (Ford/USA)

Manual Transmission/Transaxle		(NOT OFFERED)	2.73 AXLE RATIO ONLY	(NOT OFFERED)
Number of forward speeds			Five — M5R2	
Gear ratios	1st		3.75	
	2nd		2.32	
	3rd		1.43	
	4th		1.00	
	5th		0.75	
	6th		—	
	Reverse		3.26	
Synchronous meshing (specify gears)			All Fwd. & Rev. Gears	
Shift lever location			Floor	
Trans. case mat'l. & mass kg (lbs)*			Aluminum 51.3 (113.0)	
Lubricant	Capacity L (pt.)		3.0 (6.3)	
	Type recommended		Dexron II (95% by Volume) Plus Friction Modifier (5% by Volume)	

Clutch (Manual Transmission)		(NOT OFFERED)		(NOT OFFERED)
Clutch manufacturer			LUK	
Clutch type (dry, wet; single, multiple disc)			Dry Plate, Single Disc	
Linkage (hydraulic, cable, rod, lever, other)			Hydraulic	
Max. pedal effort (nom. spring load) N (lbs)	Depressed		151 (34)	
	Released		98 (22)	
Assist (spring, power/percent, nominal)			No	
Type pressure plate springs			Belleville	
Total spring load (nominal) N (lbs)			9050 (2034)	
Clutch facing	Facing mfgr. & material coding		Valeo F-202	
	Facing material & construction		Woven Non-Asbestos	
	Rivets per facing		16	
	Outside x inside dia. (nominal)		280 x 198 (11 x 7.8)	
	Total eff. area cm^2 ($in.^2$)		615 (95.3)	
	Thickness (pressure plate side/fly wheel side)		3.30 (0.13)/3.30 (0.13)	
	Rivet depth (pressure plate side/fly wheel side)		1.2 (0.047)/1.2 (0.047)	
	Engagement cushion method		Segmented	
Release bearing type & method lub.			(a)	
Torsional damping method, springs, hysteresis			(b)	

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

(a) Self-Centering, Angular Contact, Constant Running, Pre-Packed
(b) Multi-Stage, Springs & Friction Material

MVMA Specifications

Vehicle Line THUNDERBIRD
Model Year 1993 Issued 6/15/92 Revised (•)

METRIC (U.S. Customary)

Engine Description / Engine Code	3.8L	3.8L SC	5.0L HO

Automatic Transmission/Transaxle

Trade Name		Automatic Overdrive (AOD)		
Type and special features (describe)		4-Speed Torque Converter, Planetary Gear Set with Mechanical Split Torque Arrangement		
Ø Shift mechanics		1-2/2-3 Non-Synchronous; 3-4 Synchronous		
Gear selector	Location (column, floor, other)	Floor		
	Ltr./No. designation (e.g. PRND21)	P R N (D) D 1		
	Shift interlock (yes, no, describe)	Yes, Locks Shift Selector in "PARK" Position until Service Brakes are Applied		
Gear ratios	1st	2.40:1		
	2nd	1.47:1		
	3rd	1.00:1		
	4th	0.67:1		
	Reverse	2.00:1		
Ø	Final drive ratio	2.19		2.06
Max. upshift vehicle speed - drive range km/h (mph)		108 (66.8), 2-3	110 (69.0)	118 (73.0)
Ø Max. upshift engine speed RPM		4600	4550	4700
Max. kickdown speed - drive range km / h (mph)		91 (56.6), 3-2	98 (61)	101 (63)
Min. overdrive speed km / h (mph)		67 (42.0)	71.6 (44.5)	68.5 (42.6)
Ø Torque converter	Type	Open w/Split Torque Mechanical Arrangement 3rd & 4th Gear		
	Torus design	Full		
	Number of elements	Three		
	Max. ratio at stall	2.50	2.30	
	Type of cooling (air, liquid)	Liquid		
	Nominal diameter	305 (12)		
	Capacity factor "K"	165	140	
Ø Pump type		Crescent Gear		
Lubricant	Capacity refill L (pt.)	11.7 (24.7)		
	Type recommended	ESP-M2C138-CJ (Mercon® for Service)		
Oil cooler (std., opt., N.A., internal, external, air, liquid)		Standard, External, Oil to Engine Coolant		
Transmission mass kg (lbs) & case material**		Aluminum 87.1 (192.0)	87.4 (192.7)	

All Wheel / 4 Wheel Drive (NOT OFFERED)

Description & type (part-time, full-time, 2/4 shift while moving, mechanical, elect., chain/gear, etc.)		
Transfer case	Manufacturer and model	
	Type and location	
Low-range gear ratio		
System disconnect (describe)		
Center differential	Type (bevel, planetary, w or w/o viscous bias, torsen, etc.)	
	Torque split (% front/rear)	

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

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

MVMA Specifications

Vehicle Line THUNDERBIRD
Model Year 1993 Issued 6/15/92 Revised (•)

METRIC (U.S. Customary)

Engine Description / Engine Code	3.8L	3.8L SC	5.0L HO

Axle Ratio and Tooth Combinations

(See 'Power Teams' for axle ratio usage)

Axle ratio (or overall top gear ratio)		3.27	3.27	2.73 (M/T)	3.08
Ring gear o.d.		198.1 (7.8)	223.5 (8.8)	221.0 (8.7)	223.5 (8.8)
No. of teeth	Pinion	11	11	15	13
	Ring gear	36	36	41	40

Rear Axle Unit

Description		IRS Type with Cast Center and Overhung Pinion	
Limited slip differential (type)		Friction Plate	
Drive Pinion	Type	Hypoid	
	Offset	25.4 (1.0)	38.1 (1.5)
No. of differential pinions		Two	
Pinion / differential	Adjustment (shim, etc.)	Shim	
	Bearing adjustment	Collapsible Spacer	
Driving wheel bearing (type)		Double Row, Tapered Roller; Cartridge Type	
Lubricant	Capacity L (pt.)	1.42 (3.0) (a)	1.65 (3.50) (a)
	Type recommended	ESP-M2C154-A, SAE 90, GL-5	

Propeller Shaft — Rear Wheel Drive

Manufacturer Type (straight tube, tube-in-tube, internal-external damper, etc.)			Ford, Collapsible Tube with Internal Tuned Damper	Ford, Collapsible Tube with Cardboard Liner
Outer diam. x length* x wall thickness	Manual 4-speed transmission		N/A	
	Manual 5-speed transmission (M5R2)		N/A	88.90 x 1361 x 1.65 (3.5 x 53.6 x .065)
	Manual 6-speed transmission		—	
	Overdrive (AOD)		88.90 x 1468 x 1.65 (3.5 x 57.8 x .065)	88.90 x 1468 x 1.65 (3.5 x 57.8 x .065)
	Automatic transmission		N/A	
Intermediate bearing	Type (plain, anti-friction)		N/A	
	Lubrication (fitting, prepack)		N/A	
Slip yoke	Type		Plain	
	Number of teeth		28	
	Spline o.d.		30.99 (1.22)	
Universal joints	Make and mfg. no.	Front	Ford 1310	Ford 1330
		Rear	Ford 1310	Ford 1330
	Number used		Two	
	Type (ball and trunnion, cross)		Cross	
	Rear attach (u-bolt, clamp, etc.)		Circular Flange	
	Bearing	Type (plain, anti-friction)	Needle Roller	
		Lubrication (fitting, prepack)	Prepack	
Drive taken through (torque tube, arms or springs)			Rear Subframe	
Torque taken through (torque tube, arms or springs)			Rear Subframe	

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

MVMA Specifications

Vehicle Line THUNDERBIRD
Model Year 1993 Issued 6/15/92 Revised (•)

METRIC (U.S. Customary)

Engine Description / Engine Code	3.8L	3.8L SC	5.0L HO

Axle Ratio and Tooth Combinations

(See 'Power Teams' for axle ratio usage)

Effective final drive ratio (or overall top gear ratio)			
Transfer ratio and method (chain, gear, etc.)			
Front drive unit	Ring gear o.d.		
	No. of teeth	Pinion	
		Ring gear	

Front Drive Unit

(NOT OFFERED)

Description (integral to trans., etc.)		
Limited slip differential (type)		
Drive pinion	Type	
	Offset	
No. of differential pinions		
Pinion / differential	Adjustment (shim, etc.)	
	Bearing adjustment	
Driving wheel bearing (type)		
Lubricant	Capacity L (pt.)	
	Type recommended	

Axle Shafts — Rear Wheel Drive

Manufacturer and number used			GKN, Two — One Each RH & LH		
Type (straight, solid bar, tubular, etc.)		Left	Solid Bar		
		Right	Solid Bar		
Outer diam. x length* x wall thickness	Manual transaxle	Left	N/A	27.52 x 470.2 (1.08 x 18.51)	N/A
		Right	N/A	38.10 x 470.2 (1.50 x 18.51)	N/A
	Automatic transaxle	Left	24.35 x 481.3 (0.96 x 18.95)	27.52 x 470.2 (1.08 x 18.51)	25.55 x 470.2 (1.01 x 18.51)
		Right	24.35 x 481.3 (0.96 x 18.95)	27.52 x 470.2 (1.08 x 18.51)	25.55 x 470.2 (1.01 x 18.51)
	Optional transaxle	Left	N/A		
		Right	N/A		
Slip yoke	Type		N/A		
	Number of teeth		N/A		
	Spline o.d.		N/A		
Universal joints	Make and mfg. no.	Inner	GKN		
		Outer	GKN		
	Number used		Four — Two Inboard Plunging and Two Outboard Fixed		
	Type, size, plunge	Inner	Tripod, C2650 36 (1.42)	C4000 44 (1.73)	
		Outer	Rzeppa, C2650 36 (1.42)	C4000 44 (1.73)	
	Attach (u-bolt, clamp, etc.)		I/B to Axle Spline and Snap Ring; O/B to Hub-Spline and Nut		
	Bearing	Type (plain, anti-friction)	N/A		
		Lubrication (fitting, prepack)	N/A		
Drive taken through (torque tube, arms or springs)			N/A		
Torque taken through (torque tube, arms or springs)			N/A		

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

MVMA Specifications

Vehicle Line THUNDERBIRD
Model Year 1993 Issued 6/15/92 Revised (•) 10/30/92

METRIC (U.S. Customary)

Model Code/Description And/Or Engine Code/Description | **LX MODEL**

Suspension – General Including Electronic Controls

Car leveling	Standard/optional/not avail.		N/A
	Manual/automatic control		
	Type (air/hydraulic)		
	Primary/assist spring		
	Rear only/4 wheel leveling		
	Single/dual rate spring		
	Single/dual ride heights		
	Provision for jacking		Notched Rocker Panel Positions, Front and Rear
Shock absorber damping controls	Standard/option/not avail.		N/A
	Manual/automatic control		
	Number of damping rates		
	Type of actuation (manual/ electric motor/air, etc.)		
	sensors	Lateral acceleration	
		Deceleration	
		Acceleration	
		Road surface	
Shock absorber (front & rear)	Type		(a) See Page 11B
	Make		Motorcraft
	Piston diameter		30.2 (1.2) Front and Rear
	Rod diameter		16.0 (0.63) Front; 12.5 (0.49) Rear

Suspension – Front

Type and description			Short/Long Arm Design with Double Isolated Tension Strut
Travel	Full jounce (define load condition)		100.3 (3.95)
	Full rebound		104.7 (4.12)
Spring	Type (coil, leaf, other & material)		Coil SAE-5160-H Steel (Variable Rate)
	Insulators (type & material)		Top-Steel Bonded in Rubber; Bottom Steel Bonded to Rubber
	Size (Leaf: length & width; Coil: design height & i.d.; Bar: length & diameter)		(c) and (d) See Page 11B
	Spring rate [N/mm (lb./in.)]		3.8L, 39.1 (223) — 49.4 (282); 5.0L HO, 47.3 (270) — 57.8 (330)
	Rate at wheel [N/mm (lb./in.)]		3.8L, 18.1 (103.4); 5.0L HO, 21.2 (121.1)
Stabilizer	Type (link, linkless, frameless)		Link
	Material & O.D. bar/tube, wall thickness		SAE-5160, 27.0 (1.06)

Suspension – Rear

(•) Type and description			H-Arm, IRS
Travel	Full jounce (define load condition)		113.6 (4.47)
	Full rebound		123.4 (4.85)
Spring	Type (coil, leaf, other & material)		Coil, SAE-5160-H (Variable Rate)
	Size (Leaf: length & width; Coil: design height & i.d.; Bar: length & diameter)		Check Height: 233.3 (9.2) ID: 108 (4.3), Bar Dia.: 16.81 (0.662) — 15.28 (0.602) Length: 2935 (115.6)
	Spring rate [N/mm (lb./in.)]		63.2 (361) — 87.7 (501)
	Rate at wheel [N/mm (lb./in.)]		19.2 (109.6)
	Insulators (type & material)		Rubber Top and Bottom
	If leaf	No. of leaves	None
		Shackle (comp. or tens.)	None
Stabilizer	Type (link, linkless, frameless)		Link
	Material & O.D. bar/tube, wall thickness		3.8L, SAE-4130 26.5 (1.04) Tubular; 5.0L, SAE-5160 24.0 (0.94) Solid
Track bar (type)			None

MVMA Specifications

Vehicle Line THUNDERBIRD
Model Year 1993 Issued 6/15/92 Revised (•)

METRIC (U.S. Customary)

Model Code/Description And/Or Engine Code/Description

SUPER COUPE

Suspension – General Including Electronic Controls

Car leveling	Standard/optional/not avail.		N/A
	Manual/automatic control		
	Type (air/hydraulic)		
	Primary/assist spring		
	Rear only/4 wheel leveling		
	Single/dual rate spring		
	Single/dual ride heights		
	Provision for jacking		Notched Rocker Panel Positions, Front and Rear
Shock absorber damping controls	Standard/option/not avail.		Standard
	Manual/automatic control		*Both*
	Number of damping rates		Two
	Type of actuation (manual/ electric motor/air, etc.)		Electric Actuator
	sensors	Lateral acceleration	Turn Angle
		Deceleration	Brake Fluid Pressure
		Acceleration	Degree of Pedal Depression
		Road surface	Transmission
Shock absorber (front & rear)	Type		(b) See Page 11B
	Make		Motorcraft
	Piston diameter		32.0 (1.26) Front; 30.0 (1.2) Rear
	Rod diameter		16.0 (0.63) Front; 12.5 (0.49) Rear

Suspension – Front

Type and description		Short/Long Arm Design with Double Isolated Tension Strut
Travel	Full jounce (define load condition)	104.4 (4.11)
	Full rebound	100.6 (3.96)
Spring	Type (coil, leaf, other & material)	Coil SAE-5160-H Steel (Variable Rate)
	Insulators (type & material)	Top-Steel Bonded in Rubber; Bottom Steel Bonded to Rubber
	Size (Leaf: length & width; Coil: design height & i.d.; Bar: length & diameter)	Check Height: 291.3 (11.5) ID: 94 (3.7) Bar Diameter: 16.75 (0.659) — 15.10 (0.595) Bar Length: 3650 (143.7)
	Spring rate [N/mm (lb./in.)]	61.1 (349) — 70.6 (403)
	Rate at wheel [N/mm (lb./in.)]	26.1 (149)
Stabilizer	Type (link, linkless, frameless)	Link
	Material & O.D. bar/tube, wall thickness	SAE-5160, 28.0 (1.10) Solid

Suspension – Rear

Type and description			H-Arm, IRS
Travel	Full jounce (define load condition)		120.9 (4.76)
	Full rebound		105.7 (4.16)
Spring	Type (coil, leaf, other & material)		Coil, SAE-5160-H (Variable Rate)
	Size (Leaf: length & width; Coil: design height & i.d.; Bar: length & diameter)		Bar Length: 2765 (108.9) Check Height: 231.3 (9.1) ID: 108 (4.3) Bar Dia.: 17.98 (0.708) — 16.40 (0.646)
	Spring rate [N/mm (lb./in.)]		89.1 (509) — 111.6 (637)
	Rate at wheel [N/mm (lb./in.)]		25.1 (143)
	Insulators (type & material)		Rubber Top and Bottom
	If leaf	No. of leaves	None
		Shackle (comp. or tens.)	None
Stabilizer	Type (link, linkless, frameless)		Link
	Material & O.D. bar/tube, wall thickness		SAE-5160 23.0 (0.90) Solid
Track bar (type)			None

Suspension: (Cont'd)

(a) Direct, double-acting nitrogen gas pressurized hydraulic front and rear shocks.

(a) Direct, double-acting nitrogen gas pressurized hydraulic front and rear shocks.

Automatic Ride Control (Computer-Controlled Adjustable Damping Shock Absorbers) —

A mode select switch on the instrument panel will allow the driver to select between "automatic" and "firm" (firm damping rate). During automatic operation, the system control module monitors signals from speed, brake pressure and steering sensors and an acceleration signal from the EEC-IV engine control module. The shock absorber damping will normally be soft, automatically switching to firm when the control module anticipates excessive vehicle roll, pitch, dive or speed. During firm operation, the shock absorber damping will always be firm.

The module changes damping rates by energizing 2 relays which control 4 feedback actuators, one on top of each shock absorber. The actuators rotate a valve inside the shock absorbers to change the damping rate, and provide a signal to the module indicating whether the shocks are in the firm or soft mode. This allows the module to detect malfunctions and notify the customer by flashing a warning light. The feedback signals also allow the module to flash an error code during diagnostics to isolate the location of the malfunction for the service technician.

(c) 3.8L Engine —

Check Height: 294.3 (11.6) ID: 94 (3.7) Bar Diameter: 15.38 (0.606) — 14.62 (0.576) Bar Length: 4120 (162.2)

(d) 5.0L HO Engine —

Check Height: 294.3 (11.6) ID: 94 (3.7) Bar Diameter: 15.74 (0.620) — 14.22 (0.600) Bar Length: 3730 (146.9)

MVMA Specifications

METRIC (U.S. Customary)

Vehicle Line THUNDERBIRD
Model Year 1993 Issued 6/15/92 Revised (*)

Model Code/Description And/Or Engine Code/Description

LX MODEL

Brakes — Service

Description				Four Wheel Hydraulic Actuated System
Manufacturer and brake type (std., opt., n.a.)	Front (disc or drum)			Disc, Vented, Standard
	Rear (disc or drum)			Drum, Standard
Valving type (proportion, delay, metering, other)				Proportioning (Rear)
Power brake (std., opt., n.a.)				Standard
Booster type (remote, integral, vac., hyd., etc.)				Single Diaphragm, Integral Vacuum
Vacuum	Source (inline, pump, etc.)			Engine
	Reservoir (volume in.³)			N/A
	Pump-type (elec, gear driven, belt driven)			N/A
Ø Traction assist	Operational speed range			N/A
	Type (engine or brake intervention)			N/A
Anti-lock device	Front / rear (std., opt., n.a.)			Four Wheel Disc Anti-Lock Brake System, Optional (Refer to Page 12A)
	Manufacturer			—
	Type (electronic, mech.)			—
	Number sensors or circuits			—
	Number anti-lock hydraulic circuits			—
	Integral or add-on system			—
	Yaw control (yes, no)			—
	Hydraulic power source (elec., vac. mtr., pwr. strg.)			—
Effective area cm²(in.²)*				Front 203.0 (31.4) Rear 446.1 (69.1)
Gross lining area cm²(in.²)**(F/R)				Front 204.0 (31.6) Rear 468.8 (72.7)
Swept area cm²(in.²)***(F/R)				Front 1422.8 (220.5) Rear 706.8 (109.6)
Rotor	Outer working diameter		F/R	274.3 (10.8)
	Inner working diameter		F/R	163.0 (6.4)
	Thickness		F/R	26.0 (1.0)
	Material & type (vented/solid)		F/R	Cast Iron, Vented
Drum	Diameter & width		F/R	250.0 (9.8) x 45.0 (1.8)
	Type and material		F/R	Cast Iron/Steel Finned
Wheel cylinder bore				Front 66.0 (2.6) Rear 25.4 (1.0)
Master cylinder	Bore/stroke		F/R	25.4 (1.0)/39.0 (1.5)
Pedal arc ratio				2.8:1 (Non-ABS)
Line pressure at 445 N(100 lb.)pedal load [kPa (psi)]				9074 (1315) @ 20" Hg Vacuum
Lining clearance			F/R	*Front 0.20 (.008) Rear 0.29 (.011)*
Brake lining	Front wheel	Bonded or riveted (rivets/seg.)		Riveted (6/Lining)
		Rivet size		
		Manufacturer		Allied Bendix FMD
		Lining code*****		
		Material		Non Asbestos, Low Metallic
		****	Primary or out-board	113.1 x 51.7 x 10.0 (4.5 x 2.0 x 0.39)
		Size	Secondary or in-board	113.1 x 51.7 x 10.0 (4.5 x 2.0 x 0.39)
		Shoe thickness (no lining)		6.4 (0.25)
	Rear wheel	Bonded or riveted (rivets/seg.)		Riveted (10 PRI, 10 SEC)
		Manufacturer		Allied Bendix FMD
		Lining code*****		*BX-UA-FF*
		Material		Organic Non Asbestos
		****	Primary or out-board	247 x 45 x 6.35 (9.72 x 1.77 x 0.25)
		Size	Secondary or in-board	247 x 45 x 6.35 (9.72 x 1.77 x 0.25)
		Shoe thickness (no lining)		1.89 (0.074)

* Excludes rivet holes, grooves, chamfers, etc. **Includes rivet holes, grooves, chamfers, etc.
*** Total swept area for four brakes. (Drum brake: Widest lining contact width for each brake x its contact circumference.)
(Disc brake: Square of Outer Working Dia. minus Square of inner Working Dia. multiplied by Pi/2 for each brake.)
**** Size for drum brakes includes length x width x thickness. *****Manufacturer I.D., catalog for formulation designation and coefficient of friction classification.

MVMA Specifications

METRIC (U.S. Customary)

Vehicle Line THUNDERBIRD

Model Year 1993 Issued 6/15/92 Revised (•)

Model Code/Description And/Or Engine Code/Description

SUPER COUPE

Brakes — Service

Description				Four Wheel Hydraulic Anti-Lock Brake System
Manufacturer and brake type (std., opt., n.a.)	Front (disc or drum)			Disc, Standard
	Rear (disc or drum)			Disc, Standard
Valving type (proportion, delay, metering, other)				Proportioning (Rear)
Power brake (std., opt., n.a.)				Standard
Booster type (remote, integral, vac., hyd., etc.)				Tandem Diaphragm, Integral, Vacuum
Vacuum	Source (inline, pump, etc.)			Intake Manifold Vacuum
	Reservoir (volume in.³)			N/A
	Pump-type (elec, gear driven, belt driven)			N/A
Traction assist	Operational speed range			N/A
	Type (engine or brake intervention)			N/A
Anti-lock device	Front / rear (std., opt., n.a.)			Four Wheel Anti-Lock Brake System, Standard
	Manufacturer			Alfred Teve
	Type (electronic, mech.)			Electronic
	Number sensors or circuits			4 Sensors
	Number anti-lock hydraulic circuits			3 Circuits
	Integral or add-on system			Integral
	Yaw control (yes, no)			Yes
	Hydraulic power source (elec., vac. mtr., pwr. strg.)			Electric Motor Pump
Effective area cm²(in.²)*				Front 204.0 (31.6) Rear 112.0 (17.4)
Gross Lining area cm²(in.²)**(F/R)				Front 204.0 (31.6) Rear 127.6 (19.8)
Swept area cm²(in.²)***(F/R)				Front 1422.8 (220.5) Rear 1039.0 (161.1)
Rotor	Outer working diameter		F/R	Front 274.3 (10.8) Rear 258.0 (10.2)
	Inner working diameter		F/R	Front 163.0 (6.4) Rear 173.5 (6.8)
	Thickness		F/R	Front 26.0 (1.02) Rear 18.0 (0.71)
	Material & type (vented/solid)		F/R	Front/Rear: Cast Iron, Steel Vented
Drum	Diameter & width		F/R	N/A
	Type and material		F/R	N/A
Wheel cylinder bore				Front 66.0 (2.60) Rear 45.4 (1.79)
Master cylinder	Bore/stroke		F/R	25.4 (1.00)/40.0 (1.57)
Pedal arc ratio				3.5:1
Line pressure at 445 N(100 lb.)pedal load [kPa (psi)]				17900 (2600) 11440 (1600) @ 20" Hg Vacuum
Lining clearance			F/R	Front and Rear 0.20 (0.008)
Brake lining	Front wheel	Bonded or riveted (rivets/seg.)		Integrally Molded
		Rivet size		
		Manufacturer		Ferodo
		Lining code*****		NT-9-FE
		Material		Non Metallic, Non Asbestos
		****	Primary or out-board	113.1 x 51.7 x 10.0 (4.5 x 2.0 x 0.39)
		Size	Secondary or in-board	113.1 x 51.7 x 10.0 (4.5 x 2.0 x 0.39)
		Shoe thickness (no lining)		6.4 (0.25)
	Rear wheel	Bonded or riveted (rivets/seg.)		Riveted (5 Rivets/Lining)
		Manufacturer		Ferodo
		Lining code*****		NT-8-FF Yellow Stripe
		Material		Organic Non Asbestos
		****	Primary or out-board	99.3 x 38.5 x 12.0 (3.91 x 1.5 x 0.47)
		Size	Secondary or in-board	99.3 x 38.5 x 12.0 (3.91 x 1.5 x 0.47)
		Shoe thickness (no lining)		5.0 (0.197)

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

*** Total swept area for four brakes. (Drum brake: Widest lining contact width for each brake x its contact circumference.) (Disc brake: Square of Outer Working Dia. minus Square of inner Working Dia. multiplied by Pi/2 for each brake.)

**** Size for drum brakes includes length x width x thickness. *****Manufacturer I.D., catalog for formulation designation and coefficient of friction classification.

MVMA Specifications

Vehicle Line THUNDERBIRD
Model Year 1993 Issued 6/15/92 Revised (•)

METRIC (U.S. Customary)

Model Code/Description And/Or Engine Code/Description

LX MODEL	SUPER COUPE

Tires And Wheels (Standard)

Ø	Tires	Size (service description)		P205/70R15	P225/60ZR16 BSW, All Season Performance
		Type (bias, radial, steel, nylon, etc.)		Steel Belted Radial	
		Inflation pressure (cold) for recommended max. vehicle load	Front kPa (psi)	207 (30)	
			Rear kPa (psi)	207 (30)	
		Rev./mile-at 70 km/h (45 mph)		792	784
	Wheels	Type & material		Stamped Steel Disc	Cast Aluminum
		Rim (size & flange type)		15 x 6.0J	16 x 7.0 — 5 Spoke
Ø		Wheel offset		39.0 (1.54)	
		Attachment	Type (bolt or stud & nut)	Stud and Nut	
			Circle diameter	107.9 (4.25)	
			Number & size	Five — M12 x 1.5	
	Spare	Tire and wheel		T125/90R15 BSW, 413.7 kPa 60 PSI with 15 x 4 Wheel (Steel) High Pressure Mini-Spare and Forged Aluminum Mini-Spare	
		Storage position & location (describe)		Left Hand Quarter Panel	

Tires and Wheels (Optional)

Ø	Tire size (service description)	P225/60ZR16 BSW, All Season Handling (Available on Super Coupe Only)
	Type (bias, radial, steel, nylon, etc.)	Steel Belted Radial
	Wheel (type & material)	
	Rim (size, flange type and offset)	
Ø	Tire size (service description)	P215/70R15 (Not Available on Super Coupe)
	Type (bias, radial, steel, nylon, etc.)	Steel Belted Radial
	Wheel (type & material)	Cast Aluminum - 7 Spoke
	Rim (size, flange type and offset)	15 x 6.5, 39.0 (1.54) Offset
Ø	Tire size (service description)	
	Type (bias, radial, steel, nylon, etc.)	
	Wheel (type & material)	
	Rim (size, flange type and offset)	
Ø	Tire size (service description)	
	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)	Conventional Spare Tire and Wheel, 15 x 6.0 Steel Stamped (Requires P205/70R15 Tire) or Mini-Spare with Aluminum Wheel

Brakes — Parking

Type of control		Foot-Operated	Hand Operated
Location of control		LH Side Under Inst. Panel	Tunnel
Operates on		Rear Service Brakes	
If separate from service brakes	Type (internal or external)	—	
	Drum diameter	—	
	Lining size (length x width x thickness)	—	

MVMA Specifications

Vehicle Line THUNDERBIRD
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METRIC (U.S. Customary)

Model Code/Description And/Or Engine Code/Description

ALL MODELS

Steering

Manual (std., opt., n.a.)				N/A
Power (std., opt., n.a.)				Standard
Speed-sensitive (std., opt., n.a.)				# Speed Sensitive Variable Assist
4-wheel steering (std., opt., n.a.)				N/A
Adjustable steering wheel/column (tilt, telescope, other)		Type		Steering Wheel Tilt — Five Positions
		Manufacturer		Ford
		(std., opt., n.a.)		Optional
Wheel diameter** (W9) SAE J1100		Manual		N/A
		Power		380 (15.0)
Turning diameter m (ft.)	Outside front	Wall to wall (l. & r.)		
		Curb to curb (l. & r.)		11.15 (36.6)
	Inside rear	Wall to wall (l. & r.)		
		Curb to curb (l. & r.)		
Scrub Radius*				2.85 (0.11)
Manual	Gear	Type		N/A
		Manufacturer		—
		Ratios	Gear	—
			Overall	—
	No. wheel turns (stop to stop)			—
Power	Type (coaxial, elec., hyd., etc.)			Integral Rack and Pinion, # (Refer to Speed Sensitive)
	Manufacturer			Gear (Ford) and Pump (Ford); Fluid ESP-M2C138-CJ
	Gear	Type		Rack and Pinion, Constant Ratio
		Ratios	Gear	55.9/mm/rev
			Overall	14.1:1 On Center, 11.0:1 At Stops
	Pump (drive)			Multi-Rib Belt Off Crankshaft Pulley
	No. wheel turns (stop to stop)			2.76
Linkage	Type			Rack and Pinion (Rod and Ball Joint Directly Attached to Gear)
	Location (front or rear of wheels, other)			Front of Wheels
	Tie rods (one or two)			Two (Integral with Gear)
Steering axis	Inclination at camber (deg.)			15.7°
	Bearings (type)	Upper		Prelubricated Ball Joint Spring Loaded
		Lower		Prelubricated Ball Joint
		Thrust		Teflon Coated Fabric Wash in Lower Ball Joint
Steering spindle/knuckle & joint type				Internal with Wheel Spindle Ball Socket Joints

* The horizontal distance in the front elevation between wheel centerline and kingpin (ball joint) axis at ground.
** See Page 23.

MVMA Specifications

Vehicle Line THUNDERBIRD
Model Year 1993 Issued 6/15/92 Revised (•)

METRIC (U.S. Customary)

Model Code/Description And/Or Engine Code/Description

LX MODEL

Wheel Alignment

Front wheel at curb mass (wt.)	Service checking	Caster (deg.)	5.5° ± 0.75° (a)
		Camber (deg.)	-0.5° ± 0.75° (a)
		Toe-in outside track-mm (in.)	0.15° ± 0.25° (1.6 ± 3.2) (0.06 ± 0.12) (b)
	Service reset*	Caster (deg.)	5.5° ± 0.75° (a)
		Camber (deg.)	-0.5° ± 0.75° (a)
		Toe-in - mm (in.)	0.15° ± 0.25° (1.6 ± 3.2) (0.06 ± 0.12) (b)
	Periodic M.V. inspection	Caster (deg.)	5.5° ± 0.75° (a)
		Camber (deg.)	0.5° ± 0.75° (a)
		Toe-in - mm (in.)	0.15° ± 0.25° (1.6 ± 3.2) (0.06 ± 0.12) (b)
Rear wheel at curb mass (wt.)	Service checking	Camber (deg.)	-0.5° ± 0.5° (a)
		Toe-in outside track-mm (in.)	Left & Right: .06° ± .25° (.03 ± .12)
	Service reset*	Camber (deg.)	-0.5 ± 0.5° (a)
		Toe-in - mm (in.)	Left & Right: .06° ± .25° (.03 ± .12)
	Periodic M.V. inspection	Camber (deg.)	-0.5° ± 0.5° (a)
		Toe-in - mm (in.)	Left & Right: .06° ± .25° (.03 ± .12)

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

Electrical – Instruments and Equipment

Speedometer	Type (analog, digital, std., opt.)		Electronic Digital
	Trip odometer (std., opt., n.a.)		Electronic Digital
Head-up display	Standard, optional, not available		N/A
	Type	Secondary, opto-electronic	—
	Speedometer	Digital	—
	Status / warning *indicators*	Turn signals, high beam, *low fuel, check gauges*	—
	Brightness control	Day / night mode, adjustable	—
EGR maintenance indicator			N/A
Charge indicator	Type		Electronic Analog
	Warning device (light, audible)		Light and Audible
Temperature indicator	Type		Electronic
	Warning device (light, audible)		Light and Audible
Oil pressure indicator	Type		Electronic Analog
	Warning device (light, audible)		Light and Audible
Fuel indicator	Type		Electronic Analog
	Warning device (light, audible)		Light
Windshield wiper	Type (standard)		Interval Wipe (Column-Mounted Control), Standard
	Type (optional)		N/A
	Blade length		L.H and R.H. 558.8 (22.0)
	Swept area cm^2(in.^{2})		7661.8 (1187.6)
Windshield washer	Type (standard)		Electric Pump (Impeller Type) Dual Fluidic Spray
	Type (optional)		None
	Fluid level indicator (light, audible)		Warning Light, Optional
Rear window wiper, wiper/washer (std., opt., n.a.)			N/A
Horn	Type		Air Electric
	Number used		Two — 1 Lo-Pitch, 1 Hi-Pitch
Other			See Page 15B

(a) Maximum side-to-side difference between wheels (left minus right) to be within ± 0.75° w/caster & camber set to specification

(b) Steering wheel must be within ±3° of straight-ahead position after toe setting

MVMA Specifications

Vehicle Line THUNDERBIRD
Model Year 1993 Issued 6/15/92 Revised (•)

METRIC (U.S. Customary)

Model Code/Description And/Or Engine Code/Description

SUPER COUPE

Wheel Alignment

Front wheel at curb mass (wt.)	*Service* checking	Caster (deg.)	5.5° ± 0.75° (a)
		Camber (deg.)	-0.5° ± 0.75° (a)
		Toe-in outside track-mm (in.)	0.15° ± 0.25° (1.6 ± 3.2) (0.06 ± 0.12) (b)
	Service reset*	Caster (deg.)	5.5° ± 0.75° (a)
		Camber (deg.)	-0.5° ± 0.75° (a)
		Toe-in - mm (in.)	0.15° ± 0.25° (1.6 ± 3.2) (0.06 ± 0.12) (b)
	Periodic M.V. inspection	Caster (deg.)	5.5° ± 0.75° (a)
		Camber (deg.)	0.5° ± 0.75° (a)
		Toe-in - mm (in.)	0.15° ± 0.25° (1.6 ± 3.2) (0.06 ± 0.12) (b)
Rear wheel at curb mass (wt.)	Service checking	Camber (deg.)	-0.5° ± 0.5° (a)
		Toe-in outside track-mm (in.)	Left & Right: .06° ± .25° (.03 ± .12)
	Service reset*	Camber (deg.)	-0.5 ± 0.5° (a)
		Toe-in - mm (in.)	Left & Right: .06° ± .25° (.03 ± .12)
	Periodic M.V. inspection	Camber (deg.)	-0.5° ± 0.5° (a)
		Toe-in - mm (in.)	Left & Right: .06° ± .25° (.03 ± .12)

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

Electrical – Instruments and Equipment

Speed-ometer	Type (analog, digital, std., opt.)		Electronic Analog, Standard
	Trip odometer (std., opt., n.a.)		Standard
Head-up display	Standard, optional, not available		N/A
	Type	Secondary, opto-electronic	—
	Speedometer	Digital	—
	Status / warning indicators	Turn signals, high beam, low fuel, check gauges	—
	Brightness control	Day / night mode, adjustable	—
EGR maintenance indicator			N/A
Charge indicator	Type		N/A
	Warning device (light, audible)		Light
Temperature indicator	Type		90° Pointer Type, Standard (MAG Gauge)
	Warning device (light, audible)		Light
Oil pressure indicator	Type		90° Pointer Type, Standard (MAG Gauge)
	Warning device (light, audible)		N/A
Fuel *indicator*	Type		86° Magnetic Guage, Standard
	Warning device (light, audible)		N/A
Wind-shield wiper	Type (standard)		Interval Wipe (Column-Mounted Control), Standard
	Type (optional)		N/A
	Blade length		L.H and R.H. 558.8 (22.0)
	Swept area $cm^2(in.^2)$		7661.8 (1187.6)
Wind-shield washer	Type (standard)		Electric Pump (Impeller Type) Dual Fluidic Spray
	Type (optional)		None
	Fluid level indicator (light, audible)		Warning Light, Optional
Rear window wiper, wiper/washer (std., opt., n.a.)			N/A
Horn	Type		Air Electric
	Number used		Two — 1 Lo-Pitch, 1 Hi-Pitch
Other			See Page 15B

(a) Maximum side-to-side difference between whells (left minus right) to be within ± 0.75° w/caster & camber set to specification
(b) Steering wheel must be within ±3° of straight-ahead position after toe setting

Electrical — Instruments and Equipment: (Cont'd)

- Brake System Warning Light
- Emergency Flashers
- Directional Turn Signal Lights
- Hi-Beam Indicator Light
- Fasten Seat Belts Warning Light
- Automatic Lamp System
- Illuminated Entry System
- Vehicle Maintenance Monitor (Low Fluids: Fuel, Oil, Windshield Washer and Radiator) and Oil Change Indicator — LX Model
- Check Gauge Light (Low Fluids: Fuel, Oil and Coolant) and Oil Change Indicator — Super Coupe
- Firm Ride Light w/3.8L SC Engine
- Anti-Lock Brake Warning Light
- EEC Malfunction Warning Light
- Door Ajar Warning Lamp
- Overheat/Shift Indicator Light w/3.8L, SC Engine
- Anti-Theft Alarm Warning Light

MVMA Specifications

Vehicle Line THUNDERBIRD
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METRIC (U.S. Customary)

Engine Code/Description	3.8L	3.8L SC

Electrical – Supply System

Battery	Manufacturer		Motorcraft	
	Model, (std., opt.)		Standard	
	Voltage		12 Volt	
	Amps at 0°F cold crank		540	540 (Manual) 650 (Auto)
	Minutes-reserve capacity		100	100 (Manual) 130 (Auto)
	Amps/hrs.-20 hr. rate		58 AH	58 AH (Manual) 72 AH (Auto)
	Location		Left Front Engine Compartment	
Alternator	Manufacturer		Ford (EED Rawsonville)	Mitsubishi
	Rating (idle/max. rpm)	10300	E9SF-BA (75 Amp)	E9SF-DA (110 Amp)
	Ratio (alt. crank/rev.)		3.36:1	
	Output at idle (rpm, park)		N/A	
	Optional (type & rating)		N/A	
Regulator	Type	10316	Electronic Integral with Alternator	

Electrical – Starting System

Motor	Manufacturer		Ford	
	Current drain ____ °C(°F)		245-270 Amps	
	Power rating kw (hp)			
Motor drive	Engagement type	11000	Positive (E9SF-BA)	
	Pinion engages from (front, rear)		Front	

Electrical – Ignition System

Type	Electronic (std., opt., n.a.)		Standard	
	Other (specify)		N/A	
Coil	Manufacturer		Motorcraft	
	Mode	12029I	E73F-AB	F1SU-AA
	Current – Engine stopped – A			
	Current – Engine idling – A		6.5	5.9 to 7.1
Spark plug	Manufacturer		Motorcraft	
	Model		AWSF-44C	AWSF-34PP
	Thread (mm)		14	
	Tightening torque N•m (lb.-ft)		7-15 (5-11)	
	Gap		1.32-1.42 (.052-.056)	
	Number per cylinder		One	
Distributor	Manufacturer		Motorcraft	N/A
	Model		Universal	N/A

Electrical – Suppression

Locations & type	Capacitor in Alternator, Resistor Spark Plugs, Resistance Ignition Wire, Ground Cable — Engine to Dash, Hood Bond, Cowl to Engine Strap, Ignition Coil Capacitor, Cowl Bracket to Body Strap

MVMA Specifications

Vehicle Line THUNDERBIRD
Model Year 1993 Issued 6/15/92 Revised (•)

METRIC (U.S. Customary)

Engine Code/Description	5.0L HO

Electrical – Supply System

Battery	Manufacturer		Motorcraft
	Model, std., (opt.)		Standard
	Voltage		12 Volt
	Amps at 0°F cold crank		650
	Minutes-reserve capacity		130
	Amps/hrs.-20 hr. rate		72 AH
	Location		Right Front Engine Compartment
Alternator	Manufacturer		Ford (EED Rawsonvile)
	Rating (idle/max. rpm)	10300	F1SU-A (95 Amp)
	Ratio (alt. crank/rev.)		2.77:1
	Output at idle (rpm, park)		N/A
	Optional (type & rating)		N/A
Regulator	Type	10316	Electronic Integral with Alternator

Electrical – Starting System

Motor	Manufacturer		Ford
	Current drain _____ °C(°F)		265-290 Amps
	Power rating kw (hp)		
Motor drive	Engagement type	11000	Positive — E9SF-BA
	Pinion engages from (front, rear)		Front

Electrical – Ignition System

Type	Electronic (std., opt., n.a.)		Standard
	Other (specify)		N/A
Coil	Manufacturer		Motorcraft
	Model		E-Core
	Current	Engine stopped – A	Less Than 0.5
		Engine Idling – A	Less Than 2.0
Spark plug	Manufacturer		Motorcraft
	Model		ASF-42C
	Thread (mm)		14
	Tightening torque N•m (lb.-ft)		7-14 (5-10)
	Gap		1.37 (.054)
	Number per cylinder		One
Distributor	Manufacturer		Motorcraft
	Model		Universal-Hall Effect

Electrical – Suppression

Locations & type	Capacitor in Alternator, Resistor Spark Plugs, Resistance Ignition Wire, Ground Cable — Engine to Dash, Hood Bond, Ignition Coil Capacitor, Capacitor at Voltage Regulator (100 Amp Only)

MVMA Specifications

Vehicle Line THUNDERBIRD
Model Year 1993 Issued 6/15/92 Revised (*)

METRIC (U.S. Customary)

Model Code/Description	ALL MODELS

Body

Structure	Unitized Body Construction with Bolt-On Front and Rear Subframes and Energy--Absorbing Front and Rear Structures with Anchors for Engine, Suspension, Steering and Driveline Components
Bumper system front - rear (Five (5) Mile Per Hour Bumper Frt./Rr. -- Requirements)	Full RMP Urethane Rim Front and Rear Bumper Covers (Wheel Opening to Wheel Opening) with Stamped Steel Front and Rolled Martinsitic Steel Rear Reinforcing Beams. Egg Crate EVA Energy Absorbers.
Anti-corrosion treatment	Selected Critical Body Parts are Protected by the Use of Galvanized Steel or Through Application of Zinc-Rich Primer. During Body Assembly, Vinyl Sealers and Aluminum Wax are Used, Each for Selected Body Parts

Body -- Miscellaneous Information

Type of finish (lacquer, enamel, other)			Acrylic Enamel for Non-Metallic Colors (a)
Hood	Material & mass		Steel
	Hinge location (front, rear)		Rear
	Type (counterbalance, prop)		Counterbalance — Gas Spring
	Release control (internal, external)		Primary-Internal Remote Cable; Secondary-External
Trunk lid	Material & mass		Steel
	Type (counterbalance, other)		Counterbalance — Torsion Bar
	Internal release control (elec., mech., n.a.)		Electric, Optional
Hatck-back lid	Material & mass		N/A
	Type (counterbalance, other)		N/A
	Internal release control (elec., mech., n.a.)		N/A
Tailgate	Material & mass		N/A
	Type (drop, lift, door)		N/A
	Internal release control (elec., mech., n.a.)		N/A
Vent window control (crank, friction, pivot, power)		Front	N/A
		Rear	N/A
Window regulator type (cable, tape, flex drive, etc.)		Front	Cross Arm, Electric
		Rear	N/A
Seat cushion type (e.g., 60/40 bucket, bench, wire, foam, etc.)		Front (b)	Deep Polyurethane Foam on Flat Wire Grid Susp. By Coil Springs — Bucket Seat
		Rear	Integral Frame and Polyurethane Foam Pad
		3rd seat	N/A
Seat back type (e.g., 60/40 bucket, bench, wire, foam, etc.)		Front (b)	Full Polyurethane Foam Pad and Steel Stamped Frame — Bucket Seat
		Rear	Integral Steel Frame and Polyurethane Foam Pad
		3rd seat	N/A

Frame

Type and description (separate frame, unitized frame, partially-unitized frame)	Unitized Construction with Bolt-On Front and Rear Subframes

(a) Acrylic Base Coat/Acrylic Clearcoat for Metallic Colors

(b) Split Fold Down Rear Seat Available on SuperCoupe Only

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Model Year 1993 Issued 6/15/92 Revised (•)

METRIC (U.S. Customary)

Model Code/Description ALL MODELS

Restraint System

Seating Position			Left	Center	Right
Active	Type & description (lap & shoulder belt, lap belt, etc.) Standard / optional	First seat	Type 1 & Lap only, Standard	N/A	Type 1 & Lap only, Standard
		Second seat	3-Point Continuous Loop Lap & Shoulder Belt, Standard	Lap Belt	3-Point Continuous Loop Lap & Shoulder Belt, Standard
		Third seat	N/A	N/A	N/A
Passive	Type & description (air bag, motorized - 2-point belt, fixed belt, knee bolster, manual lap belt) Standard / optional	First seat	Motorized — 2-Point Belt, Knee Bolster, Manual Lap Belt, Standard	N/A	Motorized — 2-Point Belt, Knee Bolster, Manual Lap Belt, Standard
		Second seat	N/A	N/A	N/A
		Third seat	N/A	N/A	N/A

Glass	SAE Ref. No.	
Windshield glass exposed surface area $cm^2(in.^2)$	S1	11,878 (1841)
Side glass exposed surface area $cm^2(in.^2)$ - total 2-sides	S2	12,321 (1911) Side Door — 7590 (1177) Quarter — 4731 (734)
Backlight glass exposed surface area $cm^2(in.^2)$	S3	10,874 (1686)
Total glass exposed surface area $cm^2(in.^2)$	S4	35,073 (5438)
Ø Windshield glass (type / thickness)		Laminated — Safety
Ø Side glass (type / thickness)		Tempered
Ø Backlight glass (type / thickness)		Tempered
Ø Tinted (yes / no, location)		
Ø Solar control (yes / no, coated / batched, location		

Headlamps

Description (sealed beam, halogen, replaceable bulb, etc.)	Replaceable Bulb, Halogen
Shape	Low Profile Aerodynamic
Lo-beam type (2A1, 2B1, 2C1, *etc.*)	9006
Quantity	Two
Hi-beam type (1A1, 2A1, 1C1, 2C1, etc.)	9005
Quantity	Two (Combined with Low Beam Assy.)

MVMA Specifications

Vehicle Line THUNDERBIRD
Model Year 1993 Issued 6/15/92 Revised (•)

METRIC (U.S. Customary)

Engine Code/Description | **ALL MODELS**

Climate Control System		3.8L	3.8L SC	5.0L HO
Air conditioning (std., opt., man., auto.)		Standard Manual, Optional Automatic		
Condenser	Type	Fin and Tube		
	Eff. face area (sq. mm.)	246450		
	Fins per inch	18		
Evaporator	Type	Shell and Plate		
	Eff. face area (sq. mm.)	38710		
	Fins per inch	18		
Heater core	Material	Aluminum		
	Eff. face area (sq. mm.)	28390		
	Fins per inch	20.5		
Compressor	Type	Swashplate		
	Displacement (cc.)	170		
	Manufacturer	Ford		
	A/C pulley ratio	1.47:1	1.42:1	1.44:1
Accumulator	Type	Domed		
	Height (mm.)	178		
	Diameter (mm.)	89		
Receiver	Type	N/A		
	Height (mm.)	N/A		
	Diameter (mm.)	N/A		
Refrigerant control (CCOT, TVS, etc.)		CCOT		
Heater water valve (yes / no)		No		
Refrigerant (R - 12, R - 134a, etc.)		R-12		
Charge level (lbs. - oz.)		2 Lbs. 4 Oz.		
Cold engine lockout switch (yes / no)		Yes, with Automatic Control Only		
Wide open throttle cutout switch (yes / no)		Yes		

MVMA Specifications

Vehicle Line THUNDERBIRD
Model Year 1993 Issued 6/15/92 Revised (*)

METRIC (U.S. Customary)

Model Code/Description | **ALL MODELS**

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

Clock (digital, analog)		Digital (Part of Radio Assy.)
Compass / thermometer		N/A
Console (floor, overhead)		Standard, Floor
Ø Defroster, electric windshield		N/A
Defroster, electric backlight		Optional (Mandatory in New York State)
Electronic	Diagnostic monitor (integrated, individual)	Optional, Integrated
	Instrument cluster (list instruments)	Standard: LCD Speedometer, Trip Odometer, Fuel, Temperature, Oil and Volts Gauges
	Keyless entry	Optional
	Tripminder (avg. spd., fuel)	Standard with Electronic Cluster
	Voice alert (list items)	N/A
	Other	Standard, Interval Windshield Wipers
Fuel door lock (remote, key, electric)		Optional, Electric (Included with Power Locks)
Lamps	Auto head on / off delay, dimming	Optional
	Cornering	N/A
	Courtesy (map, reading)	Optional
	Door lock, ignition	Optional, Illuminated Door Locks
	Engine compartment	Optional
	Fog	Standard
	Glove compartment	Standard
	Trunk	Standard
	Illuminated entry system (list lamps, activation)	(a)
	Other	
Mirrors	Day / night (auto., man.)	Standard Day/Night Manual; Optional Automatic Day/Night (b)
	L.H. (remote, power, heated)	Standard, Power Remote Control
	R.H. (convex, remote, power, heated)	Standard, Power Remote Control
	Visor vanity (RH / LH, illuminated)	Optional, L.H. and R.H. Illuminated
Navigation system (describe)		N/A
Parking brake-auto release (warning light)		Manual Release Standard (c)

(a) Included and Only Available with Keyless Entry. Raising Either Front Door Outside Handle Turns on All Interior Courtesy Lamps (Not Map/Reading) and Front Door Lock Cylinder L.E.D's, Optional.
(b) Includes Interior Lamp on Moonroof Equipped Cars Only.
(c) Super Coupe Model Equipped with Tunnel Mounted Hand Brake.

MVMA Specifications

Vehicle Line THUNDERBIRD
Model Year 1993 Issued 6/15/92 Revised (•)

METRIC (U.S. Customary)

Model Code/Description | **ALL MODELS**

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

Power equipment	Deck lid (release, pull down)		Electric Release, Included with Optional Power Door Locks
	Door locks (manual, automatic, describe system)		Optional Electric
	Seats	2 - 4 - 6 way, etc.	Optional, 6-Way Seat Power Track
		Reclining (R.H., L.H.)	N/A
		Memory (R.H., L.H., preset recline)	N/A
		Support (lumbar, hip, thigh, etc.)	Lumbar & Bolster Standard on Super Coupe
		Heated (R.H., L.H., other)	N/A
	Side windows		Standard
	Vent windows		N/A
	Rear windows		N/A
Radio systems	Antenna (location, whip, w/shield, power)		RF Fender Whip Standard; Power Optional
	Standard	AM, FM, stereo, tape, compact disc, graphic equalizer, theft deterrent, radio prep package, headphone jacks, etc.	Electronic AM/FM Stereo Search
	Optional		• Electronic AM/FM Stereo Search with Cassette and Clock • Electronic Premium Cassette Radio w/Clock (EPC) and Premium Sound (80 Watt Amp) • Electronic Premium Cassette (EPC) with Ford JBL System Incudes One 60 Watt Equalized Amplifier & One 85 Watt Subwoofer Amplifier For a Total of 145 Watts (with or without Compact Disc Player)
	Speaker (number, location)		See Page 21A (a)
Roof: open air or fixed (flip-up, sliding, "T")			Optional, Power Sliding
Speed control device			Optional
Speed warning device (light, buzzer, etc.)			Digital Speedo Audible Tone for Speed Set Warning
Tachometer (rpm)			LX Model, 6000 RPM; 8000 RPM on Super Coupe Model
Telephone system (describe)			N/A
Theft deterrent system			Optional, See Below (b)

(b) Anti-Theft System is Triggered when Any Door is Opened Without the Key or Keyless Entry Code or if the Trunk Lock Cylinder is Tampered with if the System was Previously Armed or Activated. The Car Won't Start, Lights Flash and Horn Sounds.

Trailer Towing

Towing capable	Yes/No	Yes for LX Model Vehicle; No for Super Coupe
Engine/transmission/axle	Std/Opt	3.8L/AOD/3.27:1; 5.0L HO/AOD/3.08:1
Tow class (I, II, III)*	Std/Opt	Class I
Max. gross trailer wgt. (lbs.)	Std/Opt	2000 Lbs. 3.27:1 and 3.08:1
Max. trailer tongue load (lbs.)	Std/Opt	200 Lbs. 3.27:1 and 3.08:1
Towing package available	Yes/No	No

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

(a) Two Door Speakers and Two Quarter Panel Speakers with Upgrade For Premium Sound and JBL Option — 2-Ways in All Four Locations with One Subwoofer In Package Tray.

MVMA Specifications

Vehicle Line THUNDERBIRD
Model Year 1993 Issued 6/15/92 Revised (•) 10/30/92

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

Model Code/Description	SAE Ref. No.	LX MODEL	SUPER COUPE
Width			
Tread (front)	W101	1565 (61.6)	
Tread (rear)	W102	1530 (60.2)	
Vehicle width	W103	1847 (72.7)	
Body width at Sg RP (front)	W117	1824 (71.8)	
Vehicle width (front doors open)	W120	4409 (173.6)	
Vehicle width (rear doors open)	W121	—	
Tumble-home (degrees)	W122	25.7°	
(•) Outside mirror width	W410	2032.0 (80.0)	
Length			
Wheelbase	L101	2870 (113.0)	
Vehicle length	L103	5047 (198.7)	
Overhang (front)	L104	1068 (42.0)	
Overhang (rear)	L105	1109 (43.7)	
Upper structure length	L123	2893 (113.9)	
Rear wheel C/L "X" coordinate	L127	4462 (96.9)	
Height*			
Passenger distribution (front/rear)	PD1,2,3	2/2	
Trunk/cargo load		0	
Vehicle height	H101	1333 (52.5)	1346 (53.0)
Cowl point to ground	H114	910 (35.9)	921 (36.3)
Deck point to ground	H138	967 (38.1)	981 (38.6)
Rocker panel-front to ground	H112		
Rocker panel-rear to ground	H111		
Windshield slope angle (degrees)	H122	63.9°	
Backlight slope angle (degrees)	H121	66.6°	
Ground Clearance*			
Front bumper to ground	H102	360.7 (14.2)	368.3 (14.5)
Rear bumper to ground	H104	335.3 (13.2)	340.1 (13.4)
Bumper to ground front at curb mass (wt.)	H103	386.1 (15.2)	
Bumper to ground rear at curb mass (wt.)	H105	396.2 (15.6)	
Angle of approach (degrees)	H106	20.2°	20.9°
Angle of departure (degrees)	H107	18.9°	19.8°
Ramp breakover angle (degrees)	H147	11.9°	12.7°
Axle differential to ground (front/rear)	H153	173.3 (6.8)	185.6 (7.3)
Min. running ground clearance	H156	136.4 (5.4)	145.4 (5.7)
Location of min. run. grd. clear.		Converter Grass Shield	

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

MVMA Specifications

Vehicle Line THUNDERBIRD
Model Year 1993 Issued 6/15/92 Revised (•)

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

Model Code/Description		LX MODEL	SUPER COUPE
Front Compartment	**SAE Ref. No.**		
SgRP front, "X" coordinate	L31	3050 (41.3)	
Effective head room	H61	967 (38.1)	
Max. eff. leg room (accelerator)	L34	1081 (42.5)	
SgRP to heel point	H30	224 (8.8)	
SgRP to heel point	L53	886 (34.9)	
Back angle (degrees)	L40	25.0°	
Hip angle (degrees)	L42	96.9°	
Knee angle (degrees)	L44	129.3°	
Foot angle (degrees)	L46	87.0°	
Design H-point front travel	L17	218 (8.6)	
Normal driving & riding seat track trvl.	L23	195 (7.7)	
Shoulder room	W3	1502 (59.1)	
Hip room	W5	1464 (57.6)	
Upper body opening to ground	H50	1195 (47.1)	1207 (47.5)
Steering wheel maximum diameter*	W9	379 (14.9)	
Steering wheel angle (degrees)	H18	20.0°	
Accel. heel pt. to steer. whl. cntr	L11	527 (20.8)	
Accel. heel pt. to steer. whl. cntr	H17	609 (24.0)	
Undepressed floor covering thickness	H67	38 (1.5)	
Rear Compartment			
SgRP point couple distance	L50	795 (31.3)	
Effective head room	H63	953 (37.5)	
Min. effective leg room	L51	909 (35.8)	
SgRP (second to heel)	H31	273 (10.8)	
Knee clearance	L48	35 (1.4)	
Shoulder room	W4	1500 (59.1)	
Hip room	W6	1438 (56.6)	
Upper body opening to ground	H51	N/A	
Back angle (degrees)	L41	26.0°	
Hip angle (degrees)	L43	85.5°	
Knee angle (degrees)	L45	91.4°	
Foot angle (degrees)	L47	122.8°	
Depressed floor covering thickness	H73	20 (0.8)	
Luggage Compartment			
Usable luggage capacity L (cu. ft.)	V1	427.5 (15.1)	
Liftover height	H195	619 (24.4)	633 (24.9)
Interior Volumes (EPA Classification)			
Vehicle class		Mid-Size	
*Interior volume index including trunk/cargo (cu. ft.)***		116.4	
Trunk/cargo index (cu. ft.)		15.1	

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

MVMA Specifications

Vehicle Line THUNDERBIRD
Model Year 1993 Issued 6/15/92 Revised (•)

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

Model Code/Description

Station Wagon/MPV* – 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 (degrees)	L88	
Hip angle (degrees)	L89	
Knee angle (degrees)	L90	
Foot angle (degrees)	L91	

Station Wagon/MPV* – 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 seatback to load floor height	H197	
Cargo volume index $m^3(ft.^3)$	V2	
Hidden cargo volume index $m^3(ft.^3)$	V4	
Cargo volume index-rear of 2-seat	V10	
Cargo volume index*	V6	
Cargo width at floor*	W500	
Maximum cargo height*	H505	

Hatchback – Cargo Space		(NOT APPLICABLE)
Cargo length at front seatback height	L208	
Cargo length at floor (front)	L209	
Cargo length at second seatback height	L210	
Cargo length at floor (second)	L211	
Front seatback to load floor height	H197	
Second seatback to load floor height	H198	
Cargo volume index $m^3(ft.^3)$	V3	
Hidden cargo volume index $m^3(ft.^3)$	V4	
Cargo volume index-rear of 2-seat	V11	

All linear dimensions are in millimeters (inches) unless otherwise noted.
* MPV - Multipurpose Vehicle

MVMA Specifications

METRIC (U.S. Customary)

Vehicle Line THUNDERBIRD
Model Year 1993 Issued 6/15/92 Revised (•)

Model Code/ Description | ALL MODELS

Vehicle Fiducial Marks

Fiducial Mark Number*	Define Coordinate Location
Front(1)	The rear vertical edge of the master control notch on the underside of the front door rocker panels locates the "X" coordinate relative to body grid. X = 2434 Y = 818.5 Z = 428.7
Front(2)	
Rear(1)	The intersection of the horizontal-vertical surfaces on the rocker panel door rabbet locates the "Y" and "Z" coordinates relative to body grid at particular fore-aft inch lines. The fore-aft location can be determined by the reference dimension from Fiducial Mark 1 and 2. X = 3300 Y = 833.3 Z = 423.5
Rear(2)	
Note: Provide 3 of 4 Fiducial Mark Locations	

Front	W21**	—
	L54**	—
	H81**	—
	H161**	—
	H163**	—
Rear	W22**	—
	L55**	—
	H82**	—
	H162**	—
	H164**	—

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

MVMA Specifications

METRIC (U.S. Customary)

Vehicle Line THUNDERBIRD

Model Year 1993 Issued 6/15/92 Revised (•) _____

Code	Model	Vehicle Mass (weight) CURB MASS, kg. (lb.)* Front	Rear	Total	SHIPPING MASS kg(lb)***	ETWC** Code	% PASS MASS DISTRIBUTION Pass in Front Front	Rear	Pass in Rear Front	Rear
994/44T										
3.8L SEFI V-6 Engine w/Automatic										
Overdrive Transmission (AOD)										
2-Door LX	BA/VS-AI	921	686	1607	1534	X	44	56	18	82
		(2026)	(1510)	(3536)	(3394)					
99R/445										
3.8L SEFI SC w/5-Speed										
Manual Transmission (M5R2)										
2-Door Super	BA/VS-BB	985	724	1709	1645	Y	44	56	18	82
Coupe		(2167)	(1593)	(3760)	(3618)					
99R/44T										
3.8L SEFI SC w/Automatic										
Overdrive Transmission (AOD)										
2-Door Super	BA/VS-BB	998	723	1721	1657	Z	44	56	18	82
Coupe		(2197)	(1590)	(3787)	(3645)					
99R/44T										
5.0 EFI V-8 Engine										
w/Automatic Overdrive										
Transmission (AOD)										
2-Door LX	BA/VS-AI	976	701	1677	1609	Y	44	56	18	82
		(2146)	(1543)	(3689)	(3540)					

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

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

ETWC LEGEND

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

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

3.8L 64 (142)

5.0L 68 (149)

MVMA Specifications

METRIC (U.S. Customary)

Vehicle Line THUNDERBIRD

Model Year 1993 Issued 6/15/92 Revised (•)

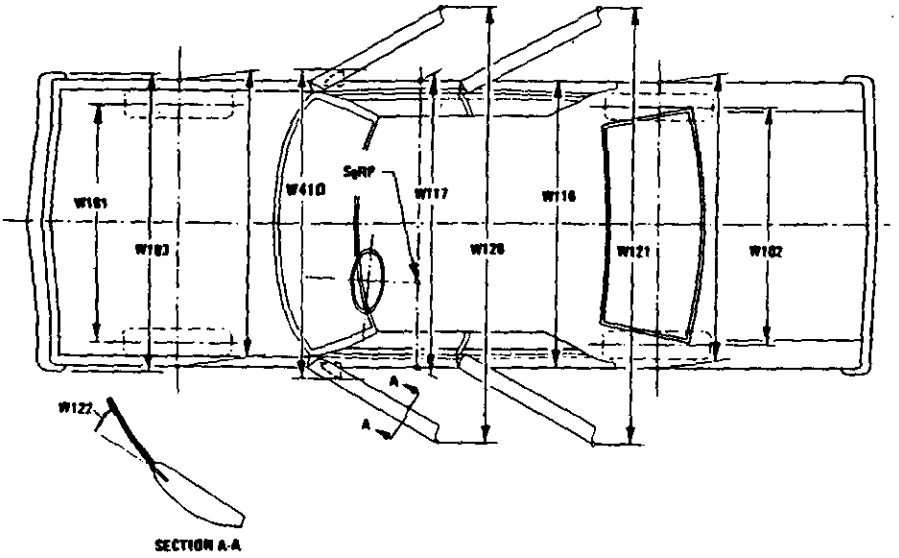
Optional Equipment Differential Mass (weight)*

Code	Equipment	MASS, kg. (lb.) Front	Rear	Total	Remarks Restrictions, Requirements
Audio Equipment:					
58Y	Radio Credit Option	–2.3	1.4	–3.7	N/A with Other Audio Options
		(–5)	(–3)	(–8)	
588	Radio Electronic Premium	1.4	1.4	2.8	
	Cassette w/Premium Sound	(3)	(3)	(6)	
589	Radio, Electronic AM/FM Stereo	0.5	0	0.5	
	w/Cassette Player and Clock	(1)	(0)	(1)	
916	Ford JBL Audio System	3.6	8.2	11.8	Requires 588 Premium Cassette Radio
		(8)	(18)	(26)	
917	Compact Disc Player	1.0	0.6	1.6	Requires 916 JBL and 588 Radio
		(2.3)	(1.3)	(3.6)	
91H	Power Antenna	0.9	0	0.9	
		(2)	(0)	(2)	
Miscellaneous Options:					
18A	Anti-Theft System	0.5	0	0.5	Requires 903 Power Locks
		(1)	(0)	(1)	
13B	Moonroof, Power	9.1	9.1	18.2	Includes Illum. Visor Vanity Mirror
		(20)	(20)	(40)	
47J	Illuminated Entry	0.5	0.4	0.9	Super Coupe
		(1)	(1)	(2)	
52N	Speed Control and	2.3	0	2.3	Super Coupe
	Tilt Steering Wheel	(5)	(0)	(5)	
57Q	Defroster, Rear Window	0	0.2	0.2	
		(0)	(0.5)	(0.5)	
59R	Light Convenience Group	1.1	0	1.1	LX Model
		(2.5)	(0)	(2.5)	
144	Keyless Entry System	0.3	0.3	0.6	LX Model
		(0.7)	(0.6)	(1.3)	
153	Bracket, Front License Plate	0.2	0	0.2	
		(0.5)	(0)	(0.5)	

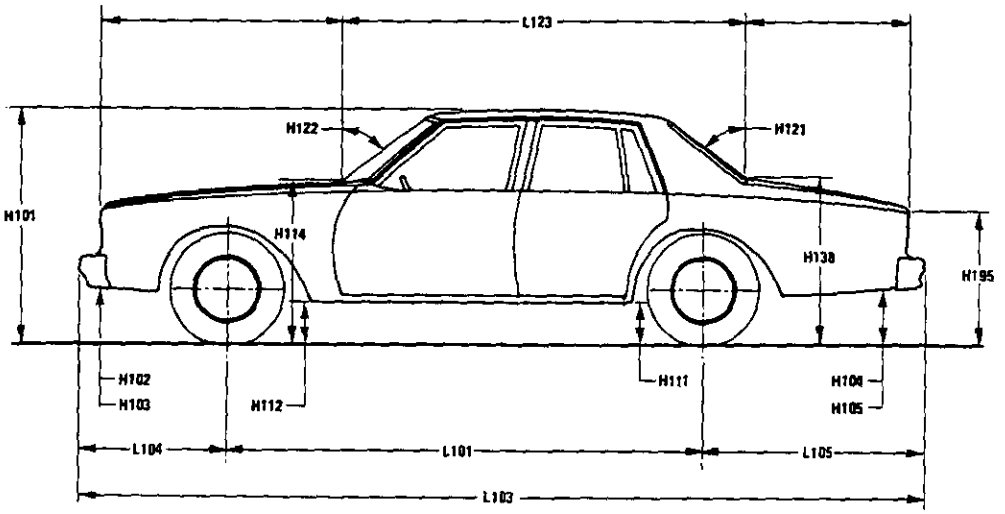
* Also see Engine - General Section for dressed engine mass (weight).

Exterior Vehicle And Body Dimensions – Key Sheet

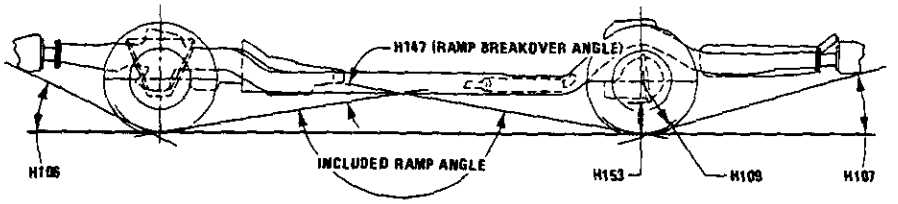
Exterior Width



Exterior Length & Height



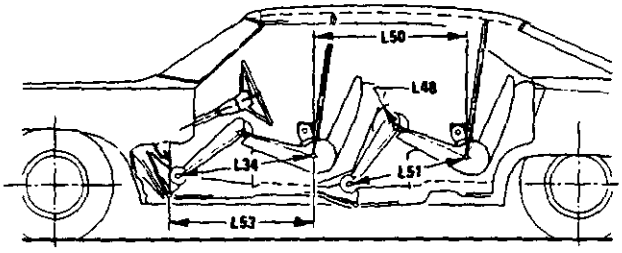
Exterior Ground Clearance

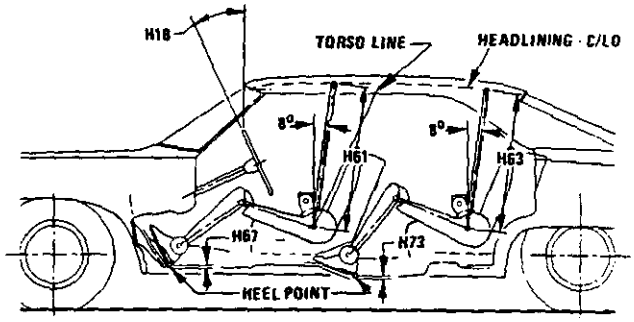


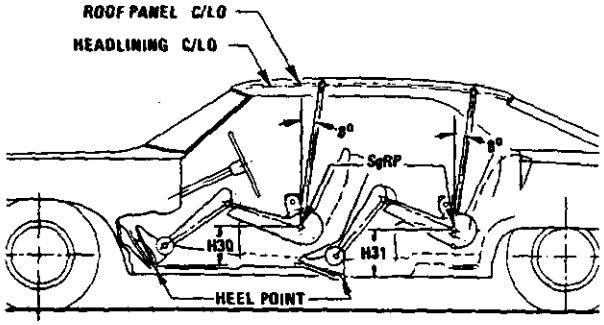
MVMA Specifications Form

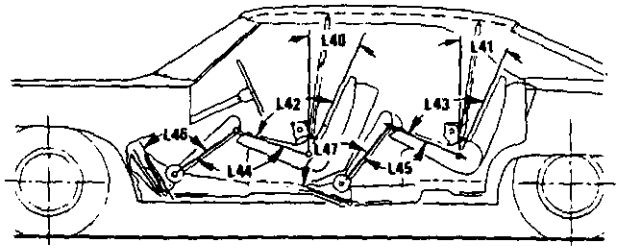
METRIC (U.S. Customary)

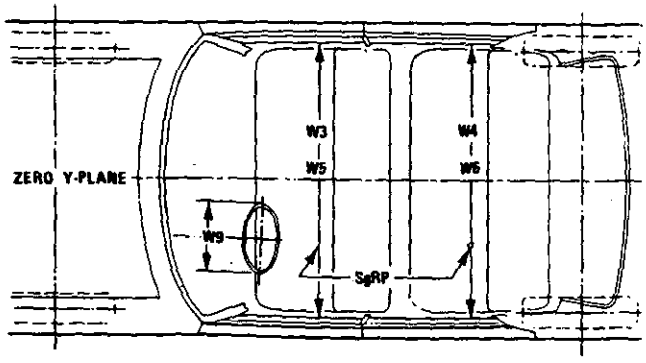
Interior Vehicle And Body Dimensions – Key Sheet

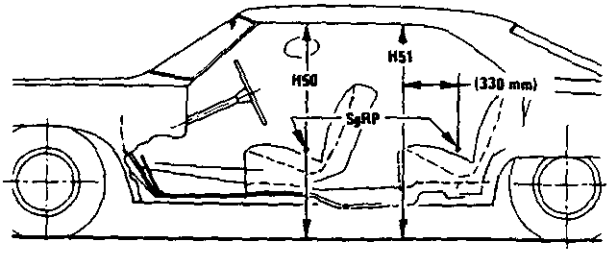






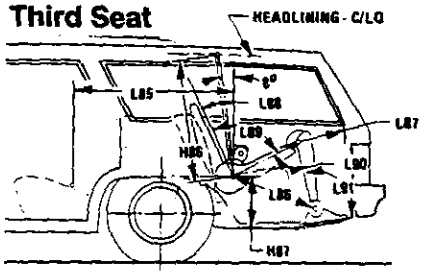


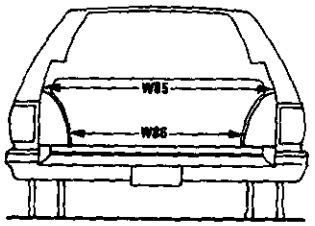




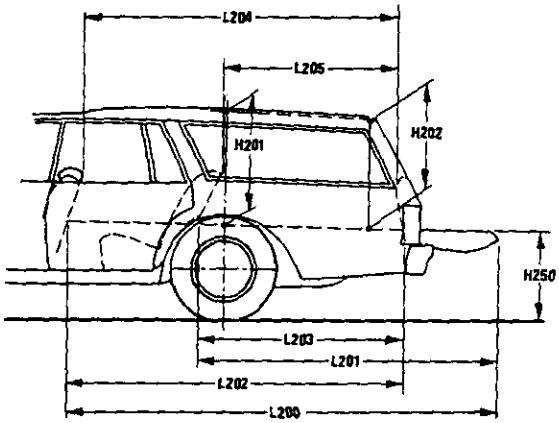
Interior Vehicle And Body Dimensions – Key Sheet

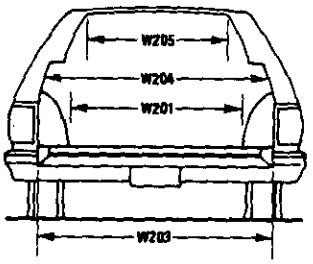
Third Seat



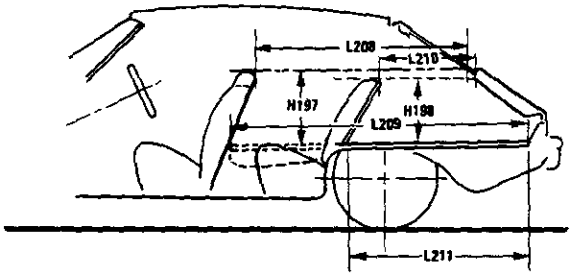


Cargo Space

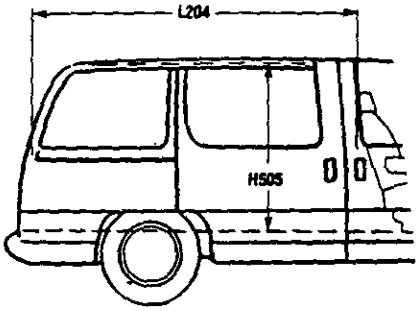


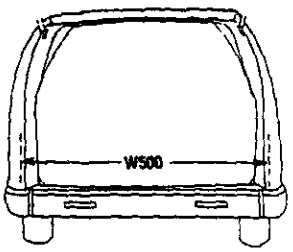


Station Wagon



Hatchback





Multipurpose Vehicle

MVMA Specifications

METRIC (U.S. Customary)

Exterior Vehicle And Body Dimensions – Key Sheet Dimensions Definitions

Seating Reference Point

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

Width Dimensions

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

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

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

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

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

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

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

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

Length Dimensions

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

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

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

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

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

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

Height Dimensions

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

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

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

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

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

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

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

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

Ground Clearance Dimensions

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

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

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

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

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

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

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

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

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

MVMA Specifications

METRIC (U.S. Customary)

Interior Vehicle And Body Dimensions – Key Sheet Dimensions Definitions

Glass Areas

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

Fiducial Mark Dimensions

Fiducial Mark – Number 1

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

Fiducial Mark – Number 2

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

Front Compartment Dimensions

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

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

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

L31 SgRP – FRONT. "X" COORDINATED.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Rear Compartment Dimensions

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

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

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

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

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

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

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

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

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

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

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

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

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

MVMA Specifications

METRIC (U.S. Customary)

Interior Vehicle And Body Dimensions – Key Sheet Dimensions Definitions

Luggage Compartment Dimensions

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

Interior Volumes (EPA Classification)

The Interior Volume Index is listed for each body style except two seaters. The Interior Volume Index estimates the space in a car. It is based on four measurements – head room, shoulder room, hip room, and leg room – for the front and rear seats, plus trunk capacity.

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

Station Wagon / MPV – Third Seat Dimensions

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

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

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

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

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

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

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

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

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

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

H87 SgRP – THIRD TO HEEL POINT.

SD1 SEAT FACING DIRECTION – THIRD.

Station Wagon / MPV – Cargo Space Dimensions

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Interior Vehicle And Body Dimensions – Key Sheet Dimensions Definitions

V2 STATION WAGON

Measured in inches:

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

Measured in mm:

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

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

V5 TRUCKS AND MPV'S WITH OPEN AREA.

Measured in inches:

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

Measured in mm:

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

V6 TRUCKS AND MPV'S WITH CLOSED AREA.

Measured in inches:

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

Measured in mm:

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

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

V10 STATION WAGON CARGO VOLUME INDEX.

Measured in inches:

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

Measured in mm:

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

Hatchback – Cargo Space Dimensions

All hatchback cargo dimensions are to be taken with the front seat in full down and rear position, and the rear seat folded down. The hatchback door is in the closed position. (For electronically adjusted seats, see the manufacturer's specifications for Design "H" Point).

L208 CARGO LENGTH AT FRONT SEATBACK HEIGHT. The minimum horizontal dimension from the "X" plane tangent to the rearmost surface of the driver's seatback to the inside limiting interference of the hatchback door on the vehicle zero "Y" plane.

L209 CARGO LENGTH AT FLOOR – FRONT. The minimum horizontal dimension measured at floor level from the rear of the front seatback to the normal limiting interference of the hatchback door on the vehicle zero "Y" plane.

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

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

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

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

V3 HATCHBACK.

Measured in inches:

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

Measured in mm:

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

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

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

Measured in inches:

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

Measured in mm:

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

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