FOREWORD

To assist you in your service activities, this manual explains the main characteristics of the new Camry, in particular providing a technical explanation of the construction and operation of new mechanisms and new technology used.

Applicable models: SXV20, MCV20 series

This manual is divided into 4 sections.

1. **Introduction** —Development objectives of the new model and model line–up.

2. **New Model Outline** —Explanation of the product to give a general understanding of its features.

3. **Technical Descriptions**—Technical explanation of the construction and operation of each new system and component

4. **Appendix** —Major technical specifications of the vehicle.

CAUTION, NOTICE, ***REFERENCE*** and **NOTE** are used in the following ways:

CAUTION	A potentially hazardous situation which could result in injury to people may occur if instructions on what to do or not do are ignored.
NOTICE	Damage to the vehicle or components may occur if instructions on what to do or not do are ignored.
REFERENCE	Explains the theory behind mechanisms and techniques.
NOTE	Notes or comments not included under the above 3 titles.

For detailed service specifications and repair procedures, refer to the following Repair Manuals:

Manual Name	Pub. No.
◀1997 Camry Repair Manual	RM503U
◀1997 Camry Electrical Wiring Diagram	EWD280U

All information contained herein is the most up–to–date at the time of publication. We reserve the right to make changes without prior notice.

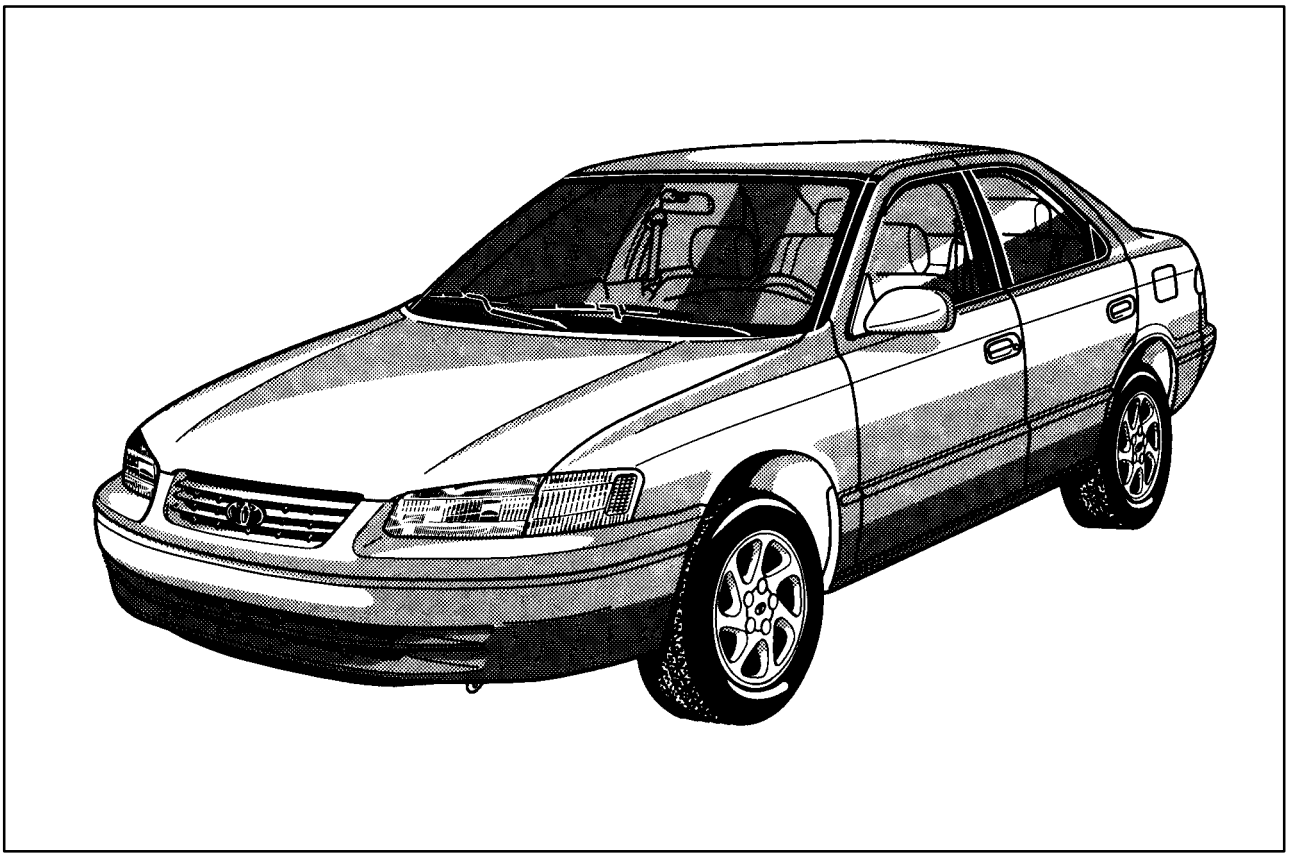
TOYOTA MOTOR CORPORATION

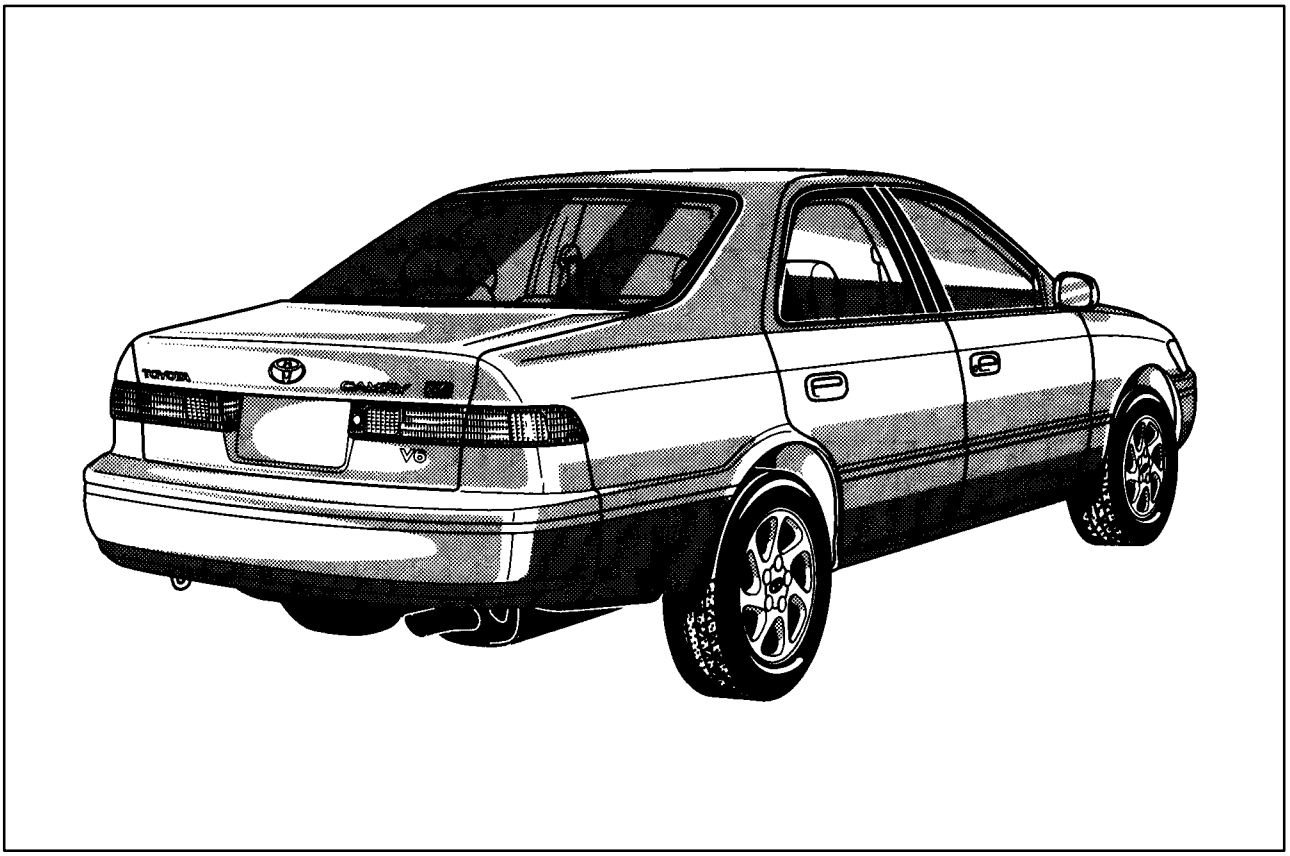
1. Introduction

DEVELOPMENT OBJECTIVES

The new Camry aims to be a car for people of all countries throughout the world in the 21st century. Specifically, the Camry is designed to aims to maintain its renowned levels of high quality, roominess, and quietness while enhancing various vehicle attributes, such as producing a more sporty car to appeal to young people, offering a car with a world class level of safety, and providing vehicle equipment suitable for each target market.

EXTERIOR APPEARANCE





MODEL CODE

MODEL CODE

MCV20 L – C E P G K A

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

	BASIC MODEL CODE
①	SXV20 : With 5S–FE Engine MCV20 : With 1MZ–FE Engine

	STEERING WHEEL POSITION
②	L : Left–Hand Drive

	MODEL NAME
③	A : Camry (Produced by TMC*1) C : Camry (Produced by TMM*2)

	BODY TYPE
④	E : 4–Door Sedan

	GEARSHIFT TYPE
⑤	M : 5– Speed Manual, Floor P : 4–Speed Automatic, Floor

	GRADE
⑥	D : CE N : LE G : XLE

	ENGINE SPECIFICATION
⑦	K : DOHC and SFI

	DESTINATION
⑧	A : U.S.A. K : Canada

*1 TMC (Toyota Motor Corporation)

*2 TMM (Toyota Motor Manufacturing U.S.A. Inc.)

MODEL LINE–UP

MODEL LINE–UP

TRANSAXLE				5–Speed Manual		4–Speed Automatic	
DESTINA-TION	ENGINE	BODY TYPE	GRADE	S51	E153	A140E	A541E*
U.S.A.	5S–FE	4–Door Sedan	CE	SXV20L–CEMDKA		SXV20L–CEPDKA	
			LE			SXV20L–A(C)EPNKA	
			XLE			SXV20L–A(C)EPGKA	
	1MZ–FE		CE		MCV20L–CEMDKA		
			LE				MCV20L–A(C)EPNKA
			XLE				MCV20L–A(C)EPGKA
Canada	5S–FE		CE	SXV20L–CEMDKK		SXV20L–CEPDKK	
			LE	SXV20L–CEMNKK		SXV20L–CEPNKK	
	1MZ–FE		CE				MCV20L–CEPDKK
			LE				MCV20L–CEPNKK

*: Electronically Controlled Transaxle with an intelligent control system

2. New Model Outline

MAJOR COMPONENTS

The basic components of the new and previous Camry are as follows:

Item / Model		NEW	PREVIOUS
Drive System		FF (Front Engine Wheel Drive)	←
In–Line 4 Engine	Type	5S–FE: In–Line 4, 2.2–Liter	←
	Displacement cm^3 (cu. in.)	2164 (132.0)	←
	Valve Mechanism	16 Valves, DOHC	←
	Fuel System	SFI	←
	Max. Output [SAE–NET] kW @ rpm (HP @ rpm)	99 @ 5200 (133 @ 5200) 97 @ 5200 (130 @ 5200)*	93 @ 5400 (125 @ 5400)
	Max. Torque [SAE–NET] N·m @ rpm (ft·lbf @ rpm)	199 @ 4400 (147 @ 4400) 197 @ 4400 (145 @ 4400)*	197 @ 4400 (145 @ 4400)
V6 Engine	Type	1MZ–FE: V6, 3.0–Liter	←
	Displacement cm^3 (cu. in.)	2995 (182.7)	←
	Valve Mechanism	24 Valves, DOHC	←
	Fuel System	SFI	←
	Max. Output [SAE–NET] kW @ rpm (HP @ rpm)	145 @ 5200 (194 @ 5200)	140 @ 5200 (188 @ 5200)
	Max. Torque [SAE–NET] N·m @ rpm (ft·lbf @ rpm)	283 @ 4400 (209 @ 4400)	275 @ 4400 (203 @ 4400)
Clutch		Dry Type Single Plate	←
Transaxle	Manual	S51: 5–Speed (For 5S–FE) E153: 5–Speed (For 1MZ–FE)	S51: 5–Speed (For 5S–FE)
	Automatic	A140E: 4–Speed (For 5S–FE) A541E: 4–Speed (For 1MZ–FE)	←
Brakes	Front	Ventilated Disc	←
	Rear	SXV20 Series : Leading Trailing Drum MCV20 Series : Solid Disc	SXV10 Series without ABS: Leading Trailing Drum SXV10 Series with ABS and MCV10 Series: Solid Disc
Suspension		4–Wheel MacPherson Strut	←
Steering	Gear Type	Rack and Pinion	←
	Power Steering	Engine Revolution Sensing Type	←

*: California Specification Model

ENGINE

ENGINE LINE–UP

2 types of engine are available in the Camry, the 2.2–liter 5S–FE and the 3.0–liter 1MZ–FE engines.

Displace–ment	Engine Type	Max. Output [SAE–NET]	Max. Torque [SAE–NET]	Features
2.2 liters	5S–FE	99 kW @ 5200 rpm (133 HP @ 5200 rpm) 97 kW @ 5200 rpm* (130 HP @ 5200 rpm)*	199 N·m @ 4400 rpm (147 ft·lbf @ 4400 rpm) 197 N·m @ 4400 rpm* (145 ft·lbf @ 4400 rpm)*	The 5S–FE engine offers increased torque in the low– to mid–speed range and reduced exhaust emissions.
3.0 liters	1MZ–FE	145 kW @ 5200 rpm (194 HP @ 5200 rpm)	283 N·m @ 4400 rpm (209 ft·lbf @ 4400 rpm)	The 1MZ–FE engine achieves reduced exhaust emissions.

*: California Specification Models

■ 5S–FE Engine

The 5S–FE engine is a 2.2–liter, 16–valve DOHC engine. Through the use of optimized intake and exhaust systems and combustion chamber, this engine has improved its torque in the low– to mid–speed range. In addition, its exhausts emissions have been reduced through the improvement of the engine control system.

■ 1MZ–FE ENGINE

The 1MZ–FE engine is a V6, 3.0–liter, 24–valve DOHC engine. Through the adoption of the fuel returnless system and the changes made to the EGR control system, the 1MZ–FE engine achieves a reduction of exhaust emissions.

CHASSIS

The new Camry chassis provides outstanding steering stability and is built and laid out basically the same as the previous model. However its excellent drivability, and comfort are further achieved through the improvement of various components, also excellent stability is realized.

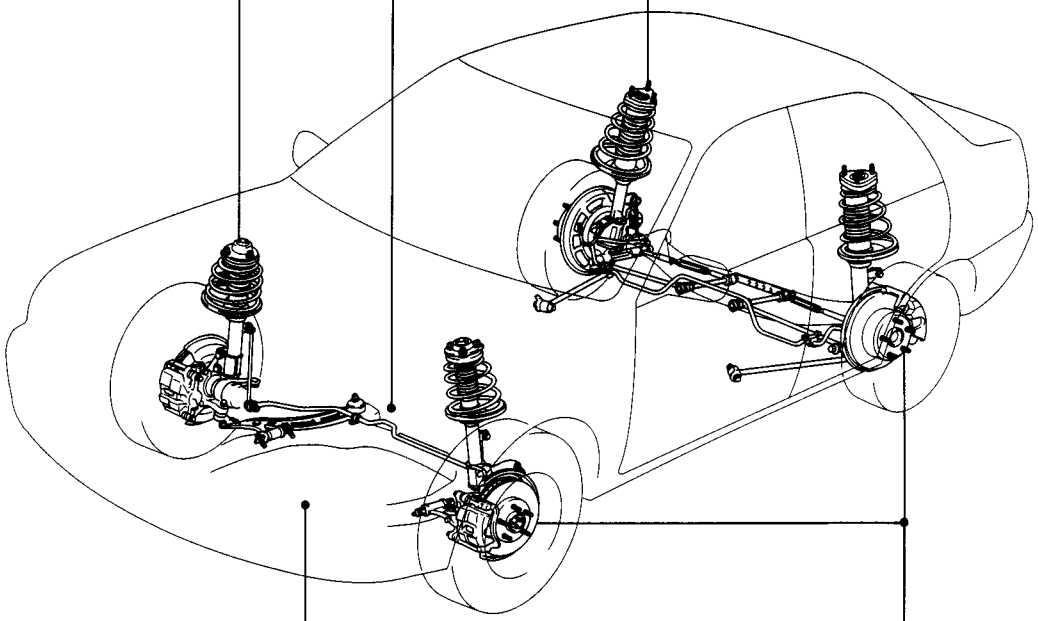
MAJOR COMPONENTS

Suspension

MacPherson strut independent suspension is used for all 4 wheels. The L-shaped lower arm type is used in the front and a dual link type is used in the rear.

Steering

Engine revolution sensing type rack and pinion power steering is used in all models.



Transaxle

- 4 types of transaxle are used.

Transaxle / Engine	Manual		Automatic	
	S51	E153	A140E	A541E
5S-FE	●		●	
1MZ-FE		●		●

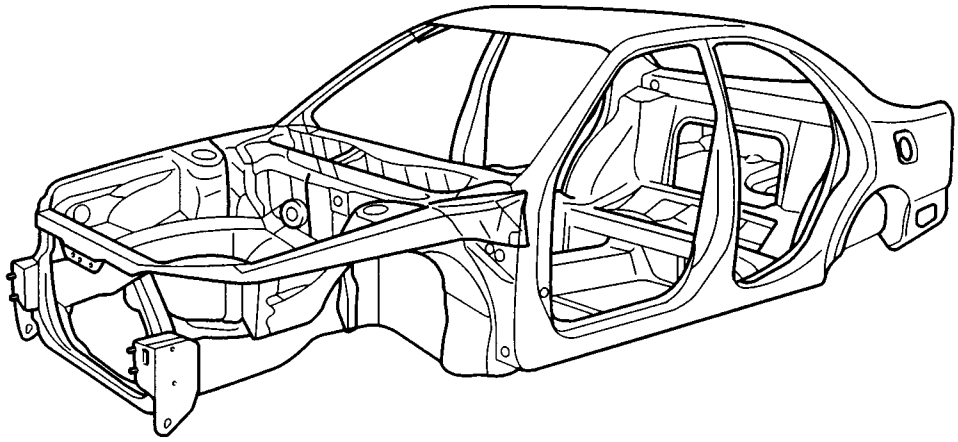
Brake

- Ventilated disc brakes are used for the front wheels on all models. For the rear wheels, drum brakes are used on 5S-FE engine model and disc brakes on the 1MZ-FE engine model.
- The ABS is available as an option on the CE grade for 5S-FE engine model. It is standard equipment on the other model.
- TRAC (Traction Control) system is available as an option on the 1MZ-FE engine model except the CE grade model.

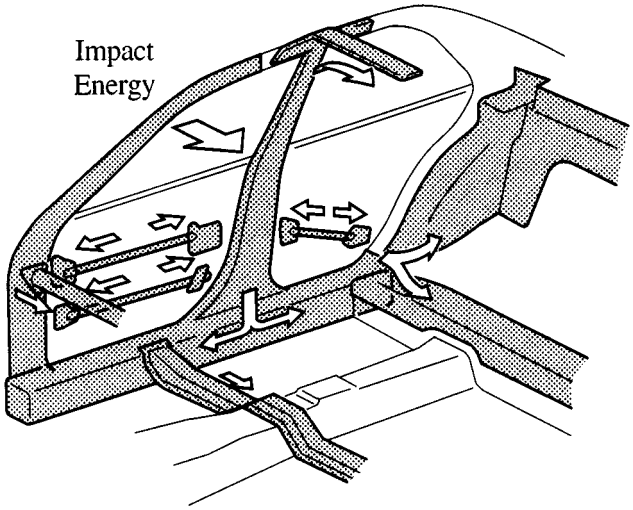
BODY

A crash impact absorbing structure for side collisions is adopted in addition to that for frontal and rear collisions. The body is made highly rigid and lightweight through the optimized allocation of materials and the generous application of high–strength sheet steel, etc. Furthermore, the vehicle creates less noise and vibration through the use of advanced noise insulation technology, and the application of anti–corrosion sheet steel produces a highly rust–resistant body.

Body Shell◀



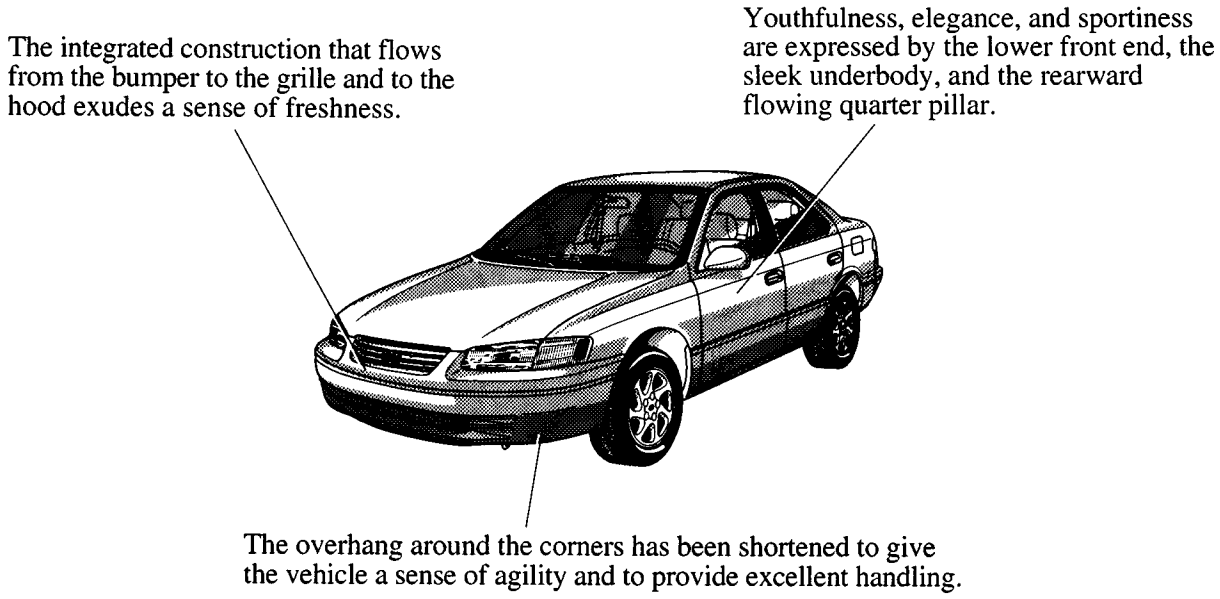
Impact Absorbing Structure for Side Collision◀

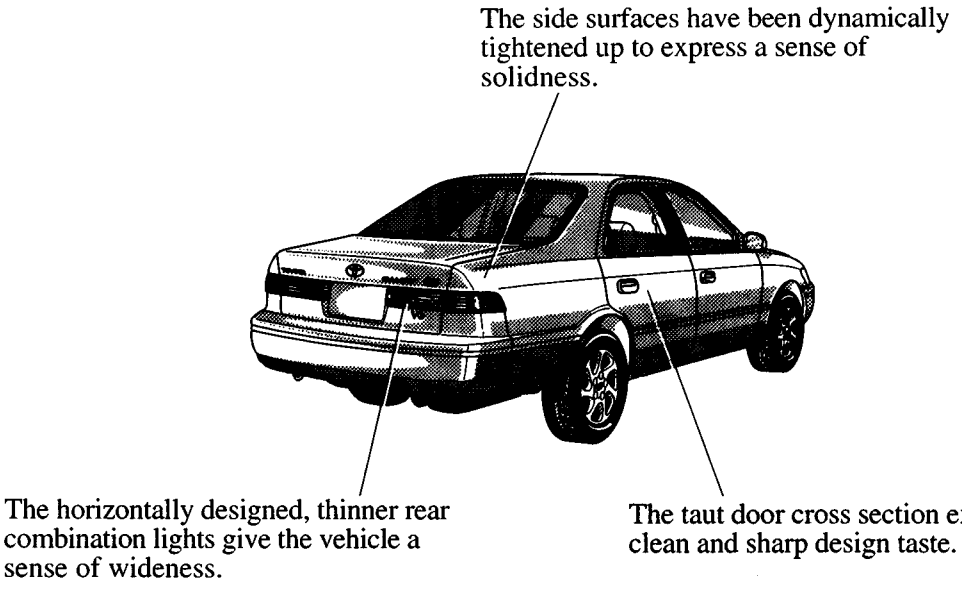


EXTERIOR

STYLING

Based on the “youthful, elegant, and sporty sedan” design concept, the new Camry has realized a design taste that features a sharp surface quality. In addition to this unique character, the new model keeps up with the trend with its longer wheel base and a cab–forward configuration.





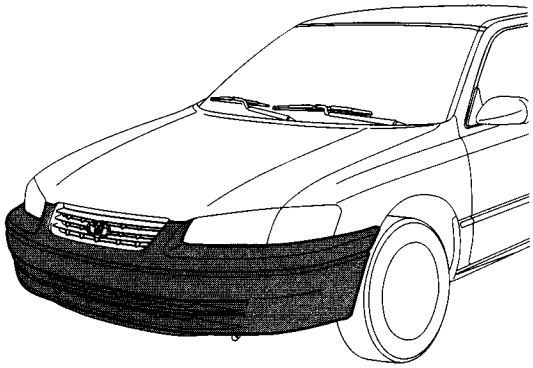
EXTERIOR

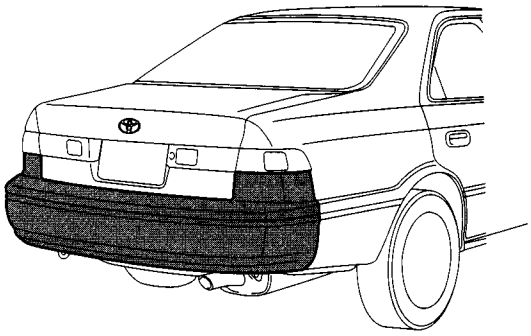
EXTERIOR EQUIPMENT

■ BUMPER

® The Super Olefin Polymer, a material that is light, scratch resistant and highly recyclable, has been adopted in the front bumper.

® Urethane bumper has been adopted for the rear bumper for weight reduction.





■ LIGHTS

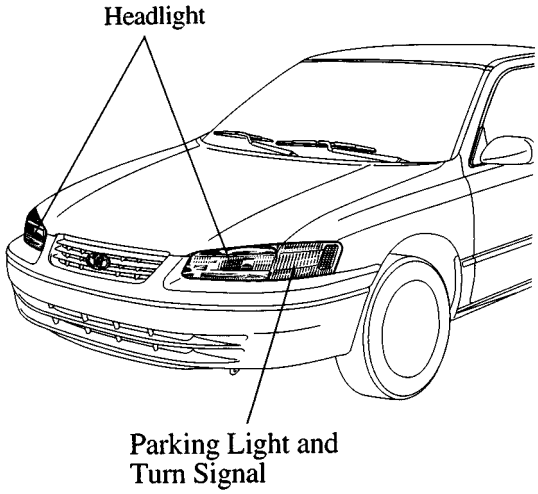
1. Front Lights

® The headlight, parking light, and turn signal light have been concentrated to improve the visibility from other vehicles, while also reducing weight.

® The headlight uses HB2 (H4) type bulb to provide excellent night–time visibility.

® A light auto turn–off system is standard equipment for all models.

® The daytime running light system is standard equipment on models for Canada.

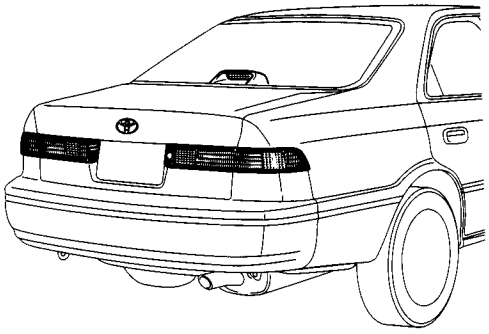


EXTERIOR

2. Rear Lights

® The rear combination light has adopted a construction in which the light extends to the end of the lens. Thus, as a result of expanding the effective luminance area, the visibility from other vehicles has been improved.

® The light diffusion characteristic of the back–up light has been revised to improve further visibility when backing up at night.



■ MOON ROOF

A power tilt–up and sliding moon roof is optional equipment for LE and XLE grade models. A one–touch slide–open function is added.

■ WINDSHIELD GLASS AND WINDOW GLASS

The front windshield, the rear window, and all door windows use the type of glass that dramatically shuts out ultraviolet and infrared rays. As a result, sunburns from ultraviolet rays and heat from infrared rays have been reduced and reduction of heat load to the air conditioning system.

INTERIOR

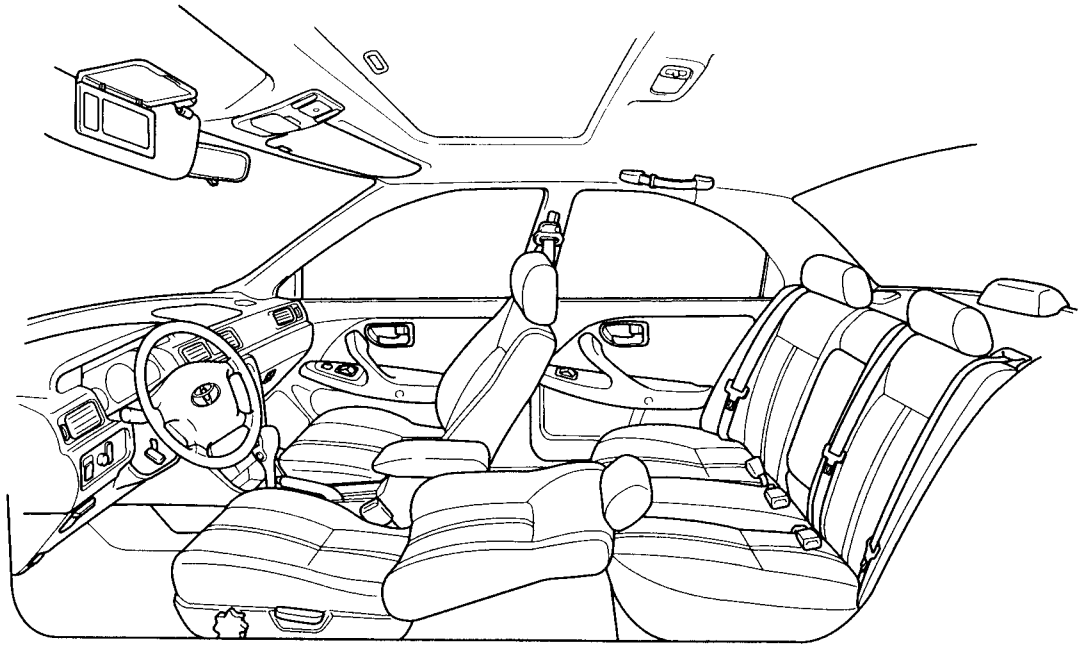
CABIN

The new Camry's interior design expresses youthfulness while pursuing functionality and rational performance.

® By lowering the center of gravity of its form, the instrument panel provides a sense of freedom both in the fore–and–aft and side–to–side directions.

® The door trim design with generous application of fabric provides a sense of continuity from the instrument panel.

® Trims and garnishes have been allocated with safety in mind.



INTERIOR

■ SEATS

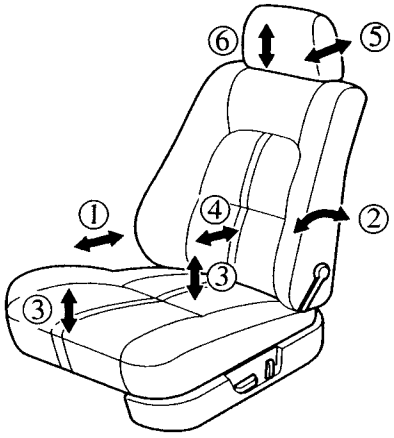
1. Front Seat

® Genuine leather seats are available as an option on the LE and XLE grade models.

® Power seats are available as an option on the LE grade model and as standard equipment on the XLE grade model.

●: Power ○: Manual

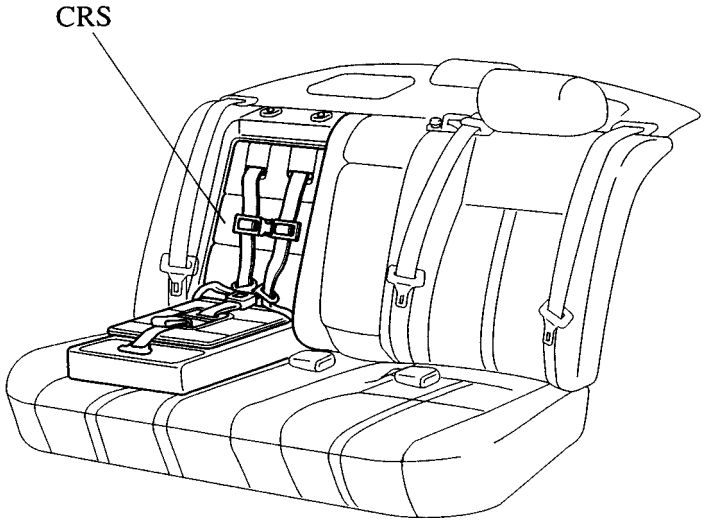
Adjustment Function		Driver	Passenger
①	Fore-and-Aft Slide	●	●
②	Reclining	●	●
③	Vertical	●	●
④	Lumbar Support	○	—
⑤	Headrest Fore-and-Aft Adjustment	○	○
⑥	Headrest Height	○	○



Driver's Seat

2. Rear Seat

Built–in CRS (Child Restraint System) is available as an option on all models.



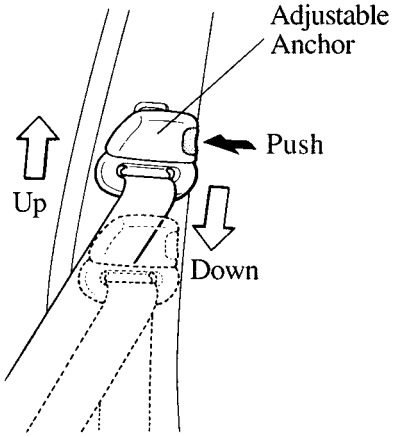
INTERIOR

■ SEAT BELTS

1. Front Seat Belts

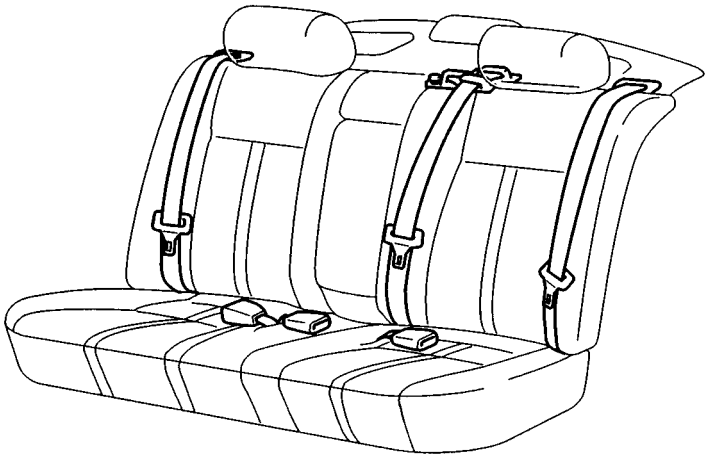
Ⓡ 3–point ELR (Emergency Locking Retractor) seat blets are provided. The passenger seat is additionally provided with an ALR (Auto–Locking Retractor) mechanism.

Ⓡ An adjustable shoulder belt anchor is provided on all models.



2. Rear Seat Belts

In addition to those on the outer seats, a 3–point ELR with ALR seat blet is provided for the center seat.

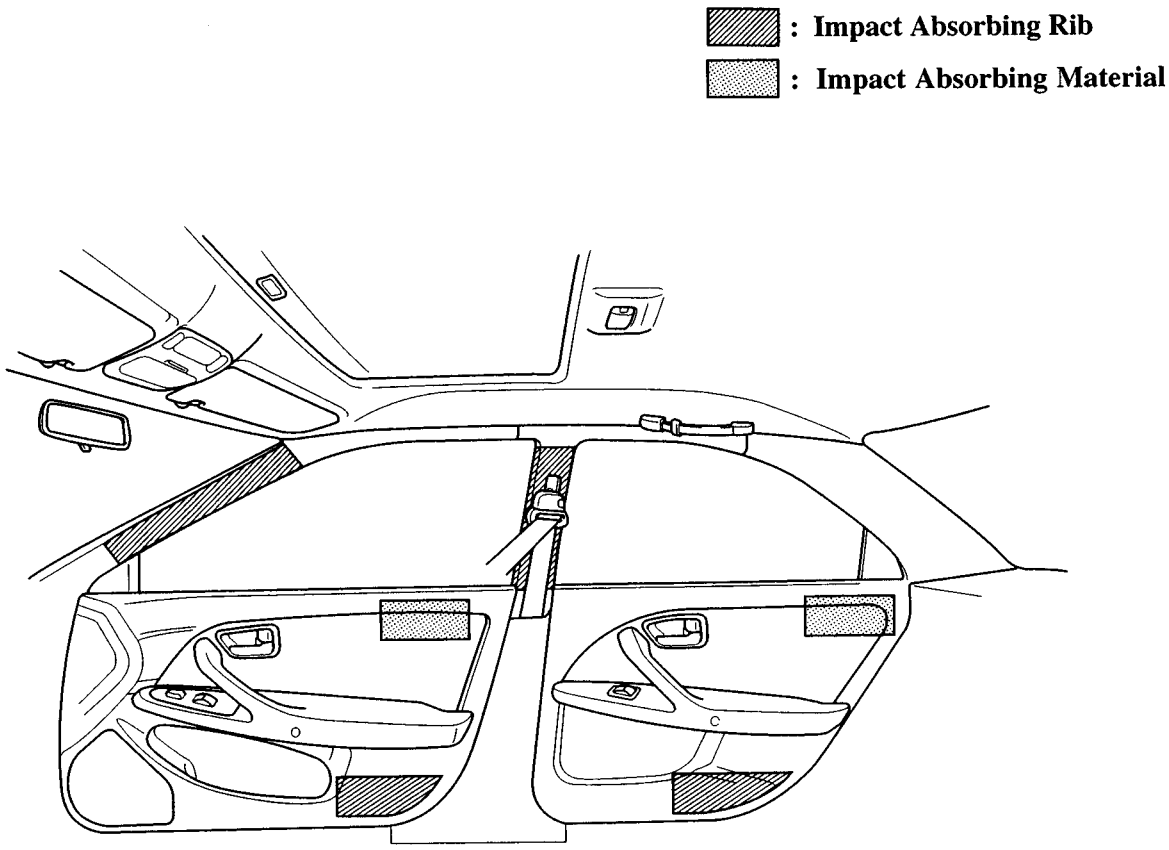


INTERIOR

■ TRIM AND GARNISH

® The door trim design is adapted to the side collision impact absorbing structure. Impact energy absorbing ribs and high impact absorbing material are used at the inside of door trim.

® The front pillar garnish and the center pillar garnish provide an impact–absorbing structure consisting of internal ribs that dampen the impact.



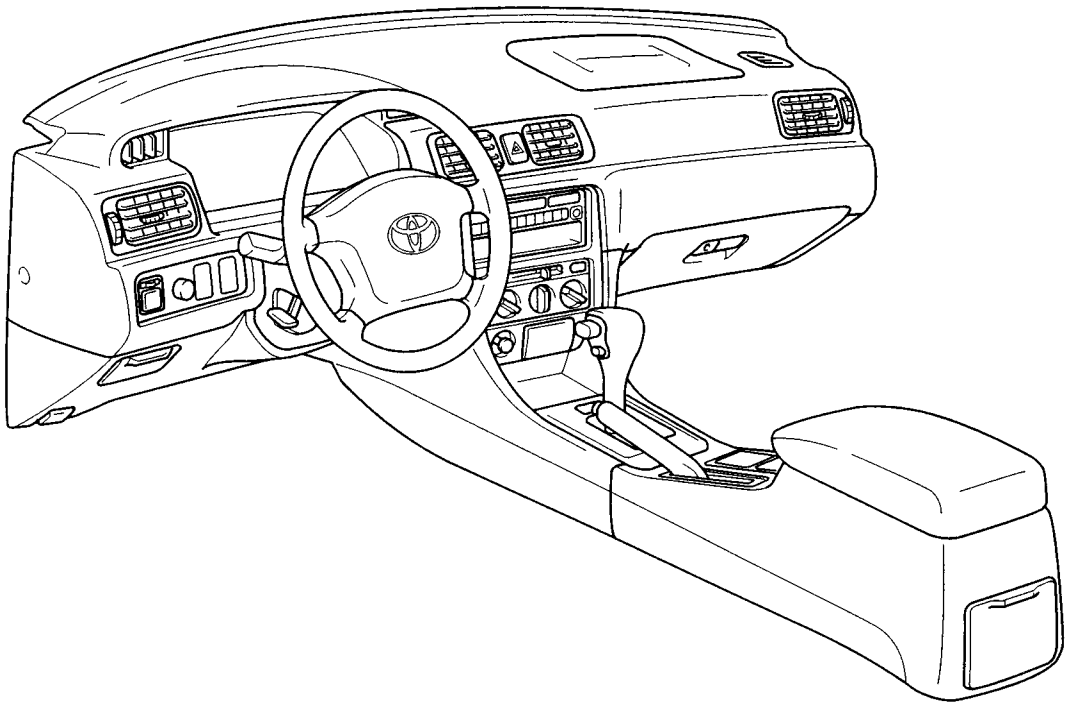
INTERIOR

INSTRUMENT PANEL, SWITCH LAYOUT AND EQUIPMENT

® While maintaining continuity with the door trims and the console, the instrument panel provides a form with a lowered center of gravity to emphasize a sense of freedom.

® The unique, compact meter hood expresses a sense of sportiness.

® The frequently used audio system has been located above the heater control panel, thus improving its ease of use.

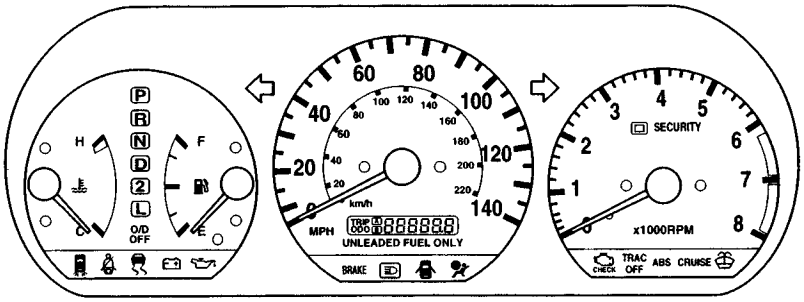


INTERIOR

■ COMBINATION METER

® A triple–eye analog meter provides superb visibility.

® An electronic display odometer and twin–trip meter are used for convenience and good visibility.

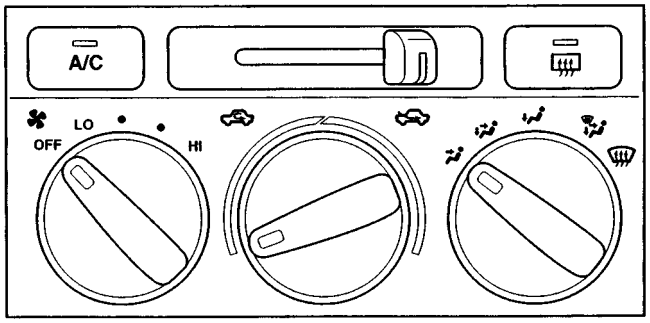


Models for U.S.A.

■ AIR CONDITIONING

® A rotary switch and a lever type control panel are used. The knobs are made larger to improve more ease of their handling.

® The air conditioner is standard equipment on the LE and XLE grade models and option on the CE grade model.



Control Panel

INTERIOR

■ AUDIO SYSTEM

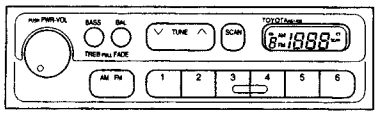
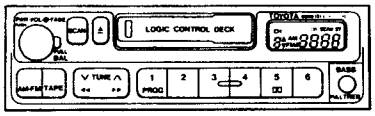
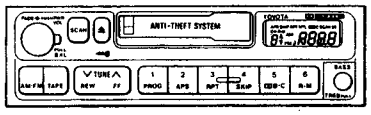
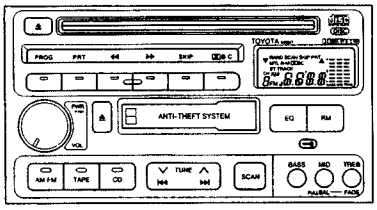
® The same audio system used in the previous model is provided.

® A fixed mast antenna on the CE grade model and a rear window imprinted antenna on the LE and XLE grade models are provided.

® A diversity rear window imprinted antenna system is a set option on models having the 6–speaker system.

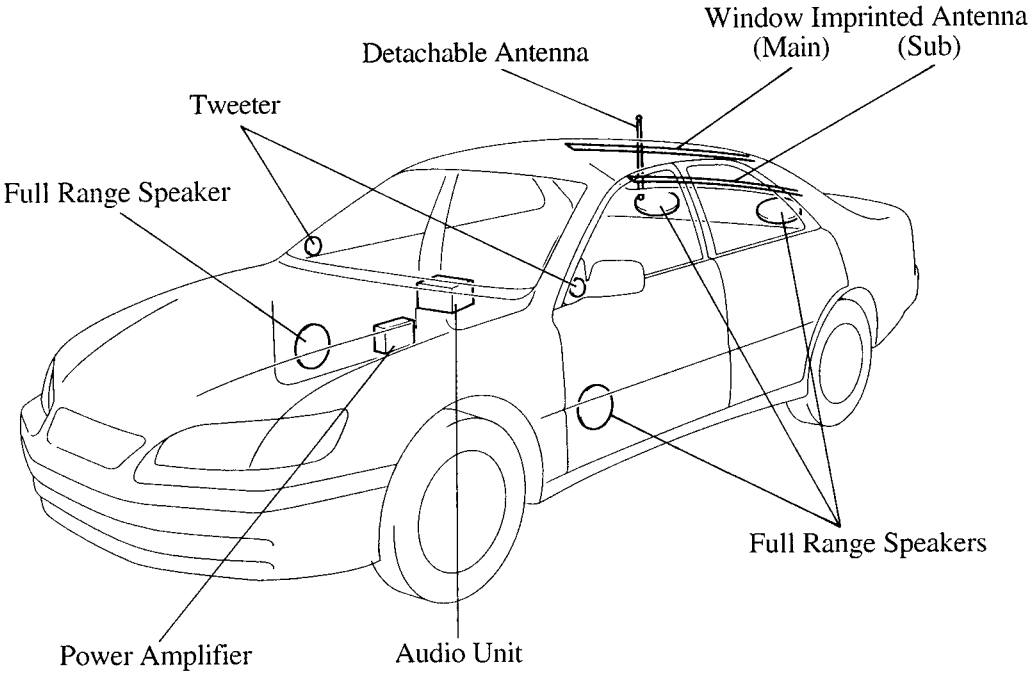
Availability◀

●: STD ○: OPT

Destination & Grade / Audio Unit		U.S.A. and Canada		
		CE	LE	XLE
	• AM/FM ETR 4-Speaker System • Built-in Power Amplifier 21 W (Max.) × 4 Channel	●	—	—
	• AM/FM ETR with Cassette Deck 4-Speaker System • Built-in Power Amplifier 21 W (Max.) × 4 Channel	○	●	●
	• AM/FM ETR with Cassette Deck 6-Speaker System • With Acoustic Flavor Tone Control and Anti-Theft System • With Diversity Antenna System • Separate Power Amplifier 33W (Max.) × 4 Channel	—	○	○
	• AM/FM ETR with Cassette Deck and CD player 6-Speaker System • With Programable Tone Control and Anti-Theft System • With Diversity Antenna System • Separate Power Amplifier 33W (Max.) × 4 Channel	—	○	○

INTERIOR

Layout of Audio System◀



■ TILT STEERING

® The tilt steering is standard on all models.

® The steering wheel position can be changed to any of 6 positions..

■ POWER WINDOW SYSTEM

A power window system is standard on the LE and XLE grade models and optional on the CE grade model. The power window system includes one–touch auto down and key–off operation functions. The one–touch auto down function automatically opens the driver's side window fully. The key–off operation function makes it possible to operate the power windows for approximately 45 seconds after the ignition key is turned to the ACC or LOCK position, if the front doors are not opened.

■ DOOR LOCK CONTROL SYSTEM

® The door lock control system with 2–step unlock function is standard on the LE and XLE grade model and optional as a set with the power window system on the CE grade model. With the 2–step function, turning the key once in the driver's door unlocks the driver's door only. Turning it twice unlocks all the doors.

® A key confinement prevention function is provided. When the door is opened and the door lock button is locked with the key still inserted in the ignition key cylinder, the key confinement prevention mechanism immediately turns the door lock button to unlock. This prevents the key from being inadvertently locked inside the vehicle.

INTERIOR

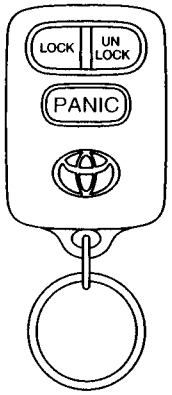
■ WIRELESS DOOR LOCK REMOTE CONTROL SYSTEM

® A wireless door lock remote control system is available as an option on the LE grade model and is standard equipment on the XLE grade model. With the wireless door lock remote control system, all the doors can be locked and unlocked by signals emitted by the transmitter.

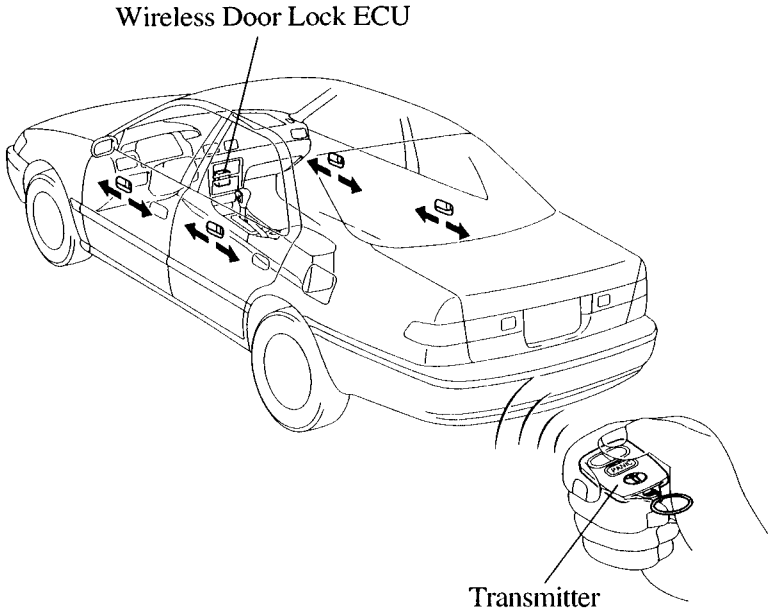
® A 2–step unlock function is provided. When the unlock switch of the transmitter is pressed once, only the driver's door is unlocked. When it is pressed twice, all the doors are unlocked.

® A panic switch is provided in the transmitter to force the theft system by operating the horn, headlight and taillight.

® A wireless door lock ECU with EEPROM (Electrical Erasable Programmable ROM) is used so that the transmitter recognition code can be easily reprogrammed.



Transmitter



■ THEFT DETERRENT SYSTEM

® A theft deterrent system is used to prevent vehicle theft. When the system is set, the horn and headlights operate if the door, hood or trunk is forcibly opened.

® The audio system also has an anti–theft system whereby the radio and cassette deck is disabled if the radio body is stolen from the vehicle.

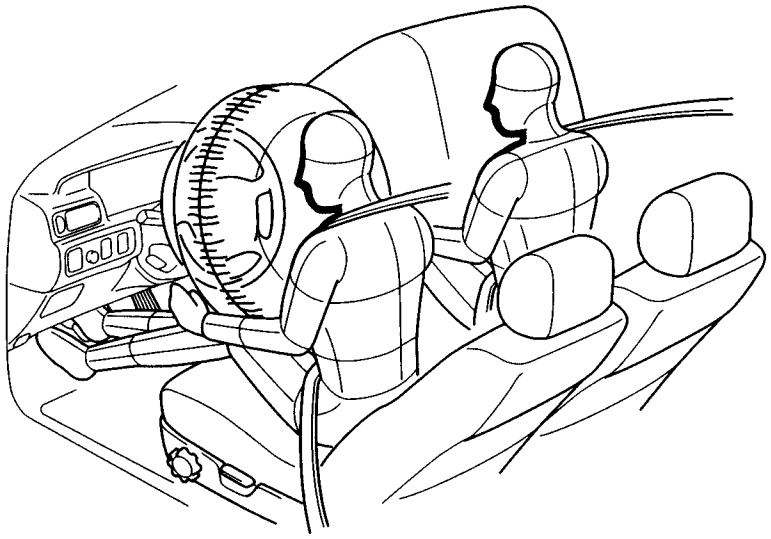
INTERIOR

■ KEY REMINDER SYSTEM

All vehicles have a key reminder system as standard equipment. When the ignition key is left inserted in the ignition key cylinder at ACC or LOCK positioon and the driver's door is opened, this system sounds a warning tone to remind the driver to remove the ignition key.

■ SRS AIRBAG

For all models, the new Camry has as standard equipment a driver's airbag in the steering wheel pad and a front passenger airbag located in the instrument panel above the glove box.



■ CRUISE CONTROL SYSTEM

The cruise control system is standard equipment on the LE and XLE grade model and an option on the CE grade models. The main switch and control switch are on the a single lever, which is installed on the steering wheel and can be operated easily.

■ ILLUMINATED ENTRY SYSTEM

® An illuminated entry system is standard equipment on the LE and XLE models. This system makes it easy to let the Camry in and out at night, etc.

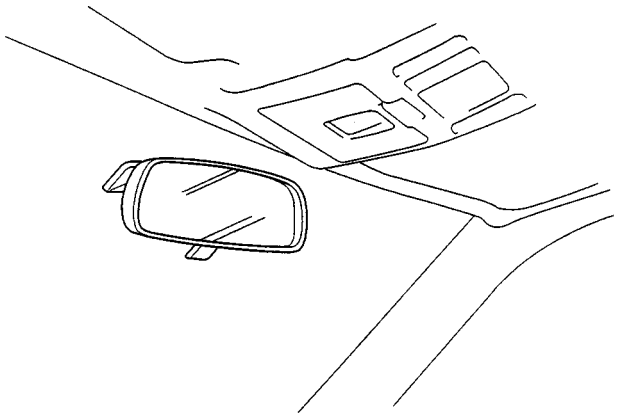
® On the LE grade model, the ignition key cylinder illumination is turned on automatically when the door is opened. When the door is closed, the ignition key cylinder illumination remains on for approximately 5 seconds, then goes off automatically.

® On the XLE grade model, the illuminated entry system turns on the dome light and ignition key cylinder illumination for approximately 15 seconds after either door is closed when passengers are entering or leaving the vehicle. While these lights are on for 15 seconds, if the ignition switch is turned to the ACC or ON position, or if all doors are locked, the dome light and ignition key cylinder illuminatioons go off immediately.

INTERIOR

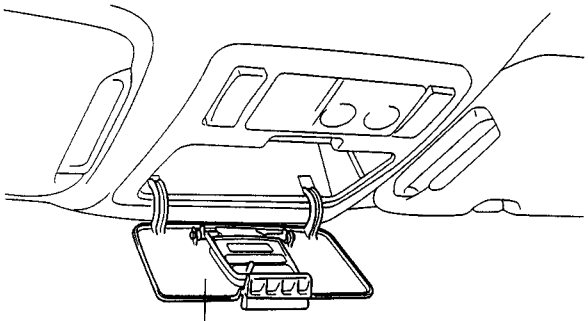
■ INNER REAR VIEW MIRROR

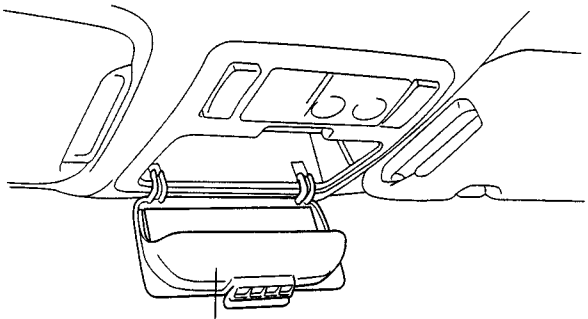
The inner rear view mirror is the type that is mounted on the inside of the front windshield glass.



■ OVERHEAD CONSOLE

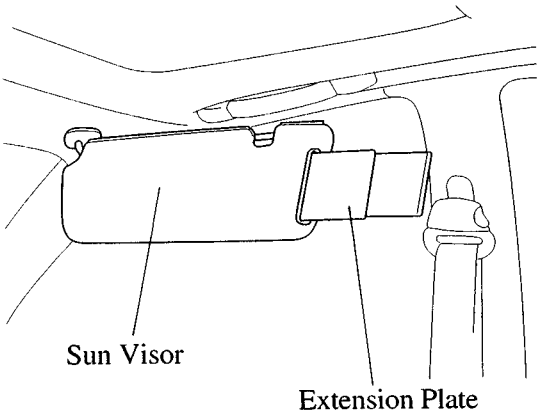
® An overhead console is provided in front of the map lamp to store a garage door opener transmitter. This console is constructed to enable the operation of a transmitter in its stored state.





■ SUN VISOR

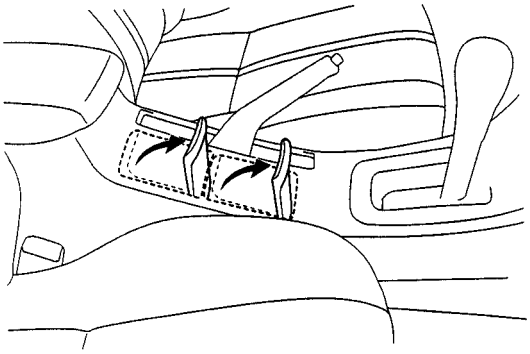
Extension plates have been added to reduce glare coming into the vehicle from the side.



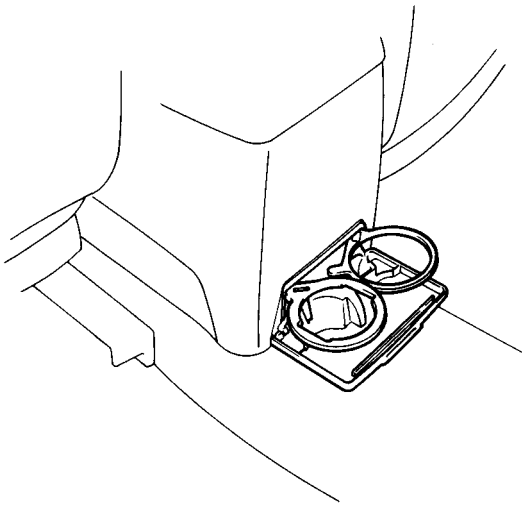
INTERIOR

■ CUP HOLDER

2 cup holders are provided in the front of the console box. 2 cup holders for the rear passengers are provided in the rear of the console.



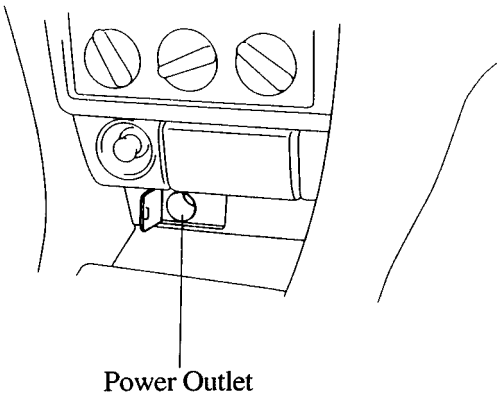
Front



Rear

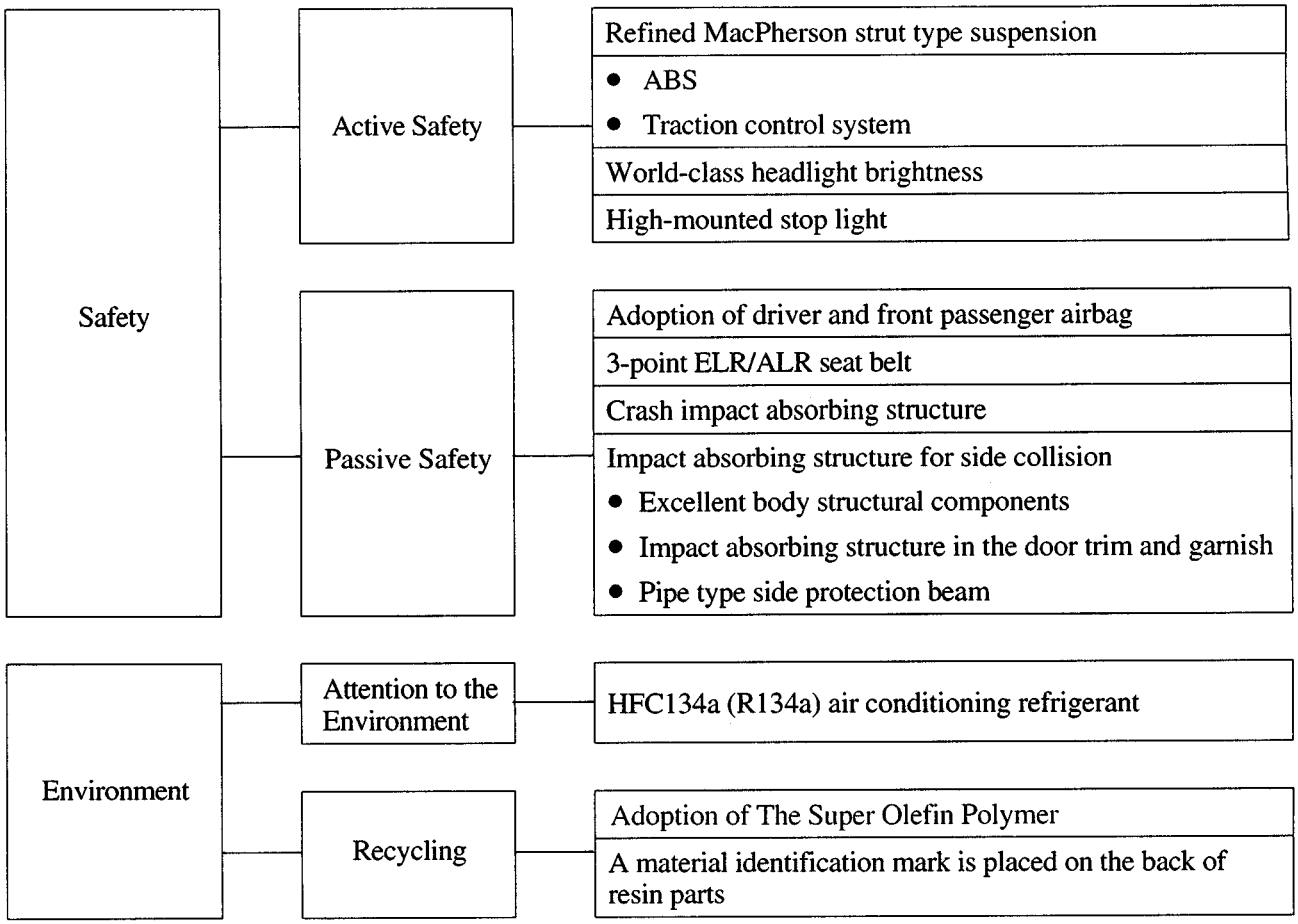
■ POWER OUTLET

A power outlet is provided under the ashtray. The power outlet can be used to supply power to various car accessories.



SAFETY AND ENVIRONMENT

A variety of safety and environmental measures are provided based on the theme of "Gently to People and the Environment."



ENGINE

5S–FE ENGINE

Ⓡ DESCRIPTION

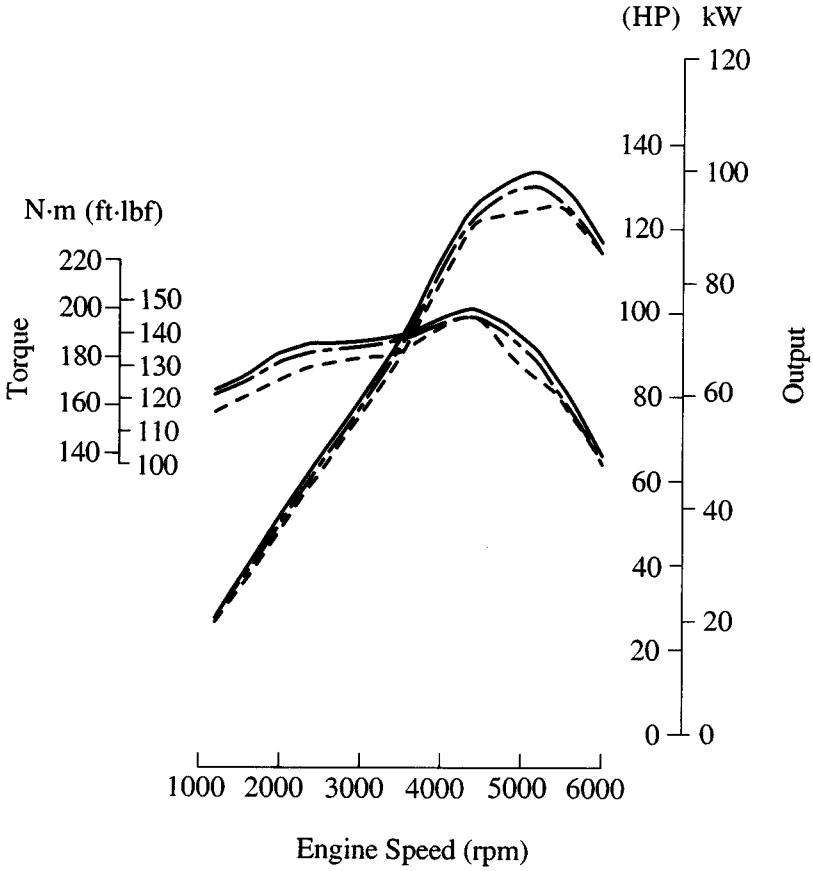
The 5S–FE engine has improved the torque in the low–to–mid–speed range through improvements made for the intake and exhaust systems and the combustion chamber. In addition, its exhaust emissions have been reduced through the improvements made for the exhaust system and the engine control system.

Ⓡ ENGINE SPECIFICATIONS AND PERFORMANCE CURVE

5S–FE Engine Item			New	Previous
No. of Cyls. & Arrangement			6–Cylinder, In–Line	←
Valve Mechanisms			16–Valve DOHC, Belt & Gear Drive	←
Combustion Chamber			Pentroof Type	←
Manifolds			Cross–Flow	←
Fuel System			SFI	←
Displacement	cm^3(cu. in.)		2164 (132.0)	←
Bore x Stroke	mm (in.)		87.0 x 91.0 (3.43 x 3.58)	←
Compression Ratio			9.5 : 1	←
Max. Output	[SAE–NET]		99 kW @ 5200 rpm (133 HP @ 5200 rpm) 97 kW @ 5200 rpm* (130 HP @ 5200 rpm)*	93 kW @ 5400 rpm (125 HP @ 5400 rpm)
Max. Output	[SAE–NET]		199 N·m @ 4400 rpm (147 ft·lbf @ 4400 rpm) 197 N·m @ 4400 rpm* (145 HP @ 4400 rpm)*	197 N·m @ 4400 rpm (145 ft·lbf @ 4400 rpm)
Valve Timing	Intake	Open	3º BTDC	←
		Close	43º ABDC	←
	Exhaust	Open	45º BBDC	←
		Close	3º ATDC	←
Fuel Octane Number	RON		91	←
Oil Grade			API SH EC–II, ILDAC or Better	←

*: California Specification Model

——— : New (Excepet California Specification Model)
—·— : New (California Specification Model)
- - - - - : Previous



Ⓡ MAJOR DIFFERENCES

Major differences between the new 5S–FE engine and previous engine are listed below.

Item	Features
Engine Proper	The squish area of the combustion chamber in the cylinder head has been optimised to improve torque in the low–to mid–speed range.
Cooling System	An aluminum radiator core is used for weight reduction.
Intake and Exhaust System	° The ports of the manifold have been extended to improve torque in the low–to mid–speed range. ° The exhaust manifold is made of stainless steel plates for improve engine performance and weight reduction. ° Through the optimized allocation of the exhaust pipe supports, the number of supports has been reduced from 5 to 4, thus reducing the noise and vibration which are transmitted to the vehicle body.
Fuel System	A fuel returnless system has been adopted to prevent the internal temperature of the fuel tank from rising and to reduce evaporative emissions.
Ignition System	The DIS (Direct Ignition System) contributes to the powerful high output by providing a powerful spark to the engine.
Engine Mounting	To reduce noise and vibration and to improve drivability, the allocation of the engine mounts*1 and their characteristics have been revised.
Engine Control System	° The injection pattern for engine starting have changed form the 2 group injection type to sequential multiport injection type. ° In place of the oxygen sensor (bank 1, sensor 1), a new air fuel ratio sensor has been adopted. *2 ° The power steering idle–up control has been changed from the system using an air control valve to the one using a pressure switch and an IAC valve.
Emission Control System	° The EGR valve body has been changed from cast iron to aluminum alloy for weight reduction. ° A TWC (Three–Way Catalytic Converter) that is integrated with a stainless steel exhaust manifold has been adopted.*2 ° The TWC, which was previously installed below the exhaust manifold has been discontinued.*3

*1: Only for Automatic Transaxle Models.

*2: Only for California Specification Models.

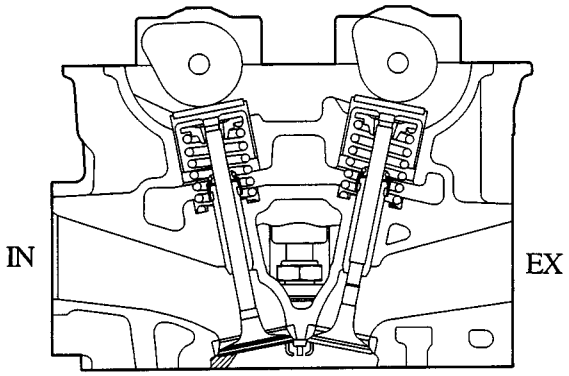
*3: Except for California Specification Models.

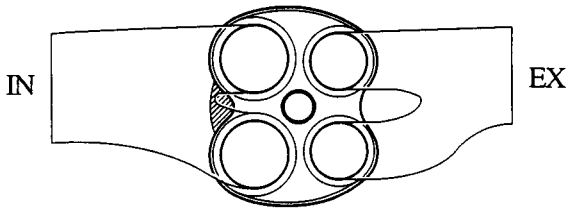
® ENGINE PROPER

1. Cylinder Head

The squish area of the combustion chamber in the cylinder head has been optimized to improve torque in the low– to mid–speed range.

: Sguish Area Eliminated Part

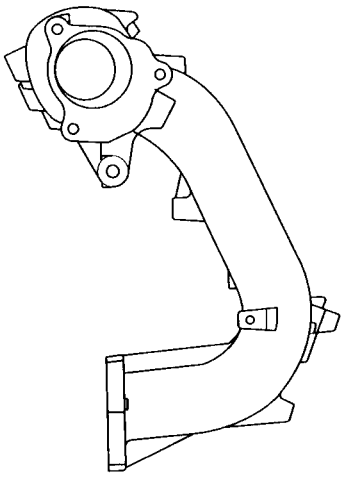




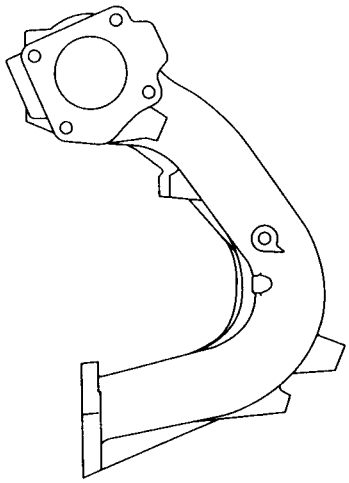
® INTAKE AND EXHAUAST SYSTEM

1. Intake Manifold

The low– to mid–speed range torque has been improved by increasing the length of the intake manifold port and by reducing the intake air chamber capacity.



New

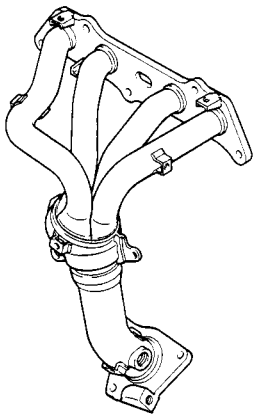


Previous

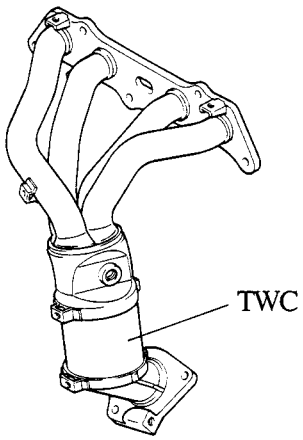
2. Exhaust Manifold

° A stainless steel exhaust manifold is used for improving the engine performance and for reducing weight.

° On the California specification model, the stainless steel exhaust maniflod and the TWC (Three–Way Catalytic Converter) have been integrated to improve the warm–up performance of the TWC, thus reducing exhaust emissions.



Except California Specification Models

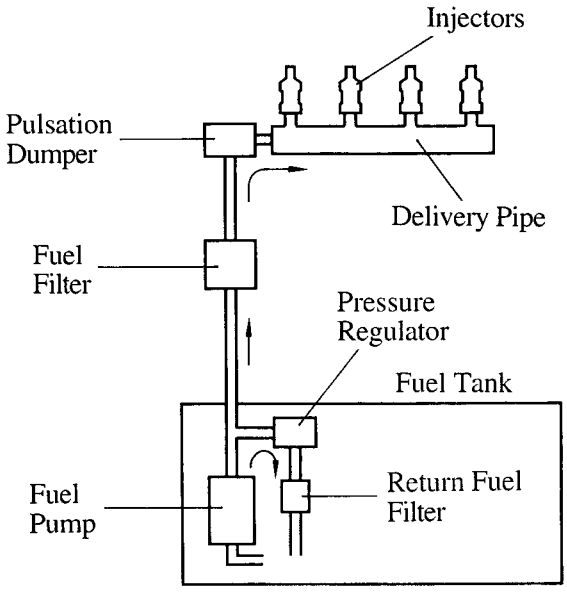


California Specification Models

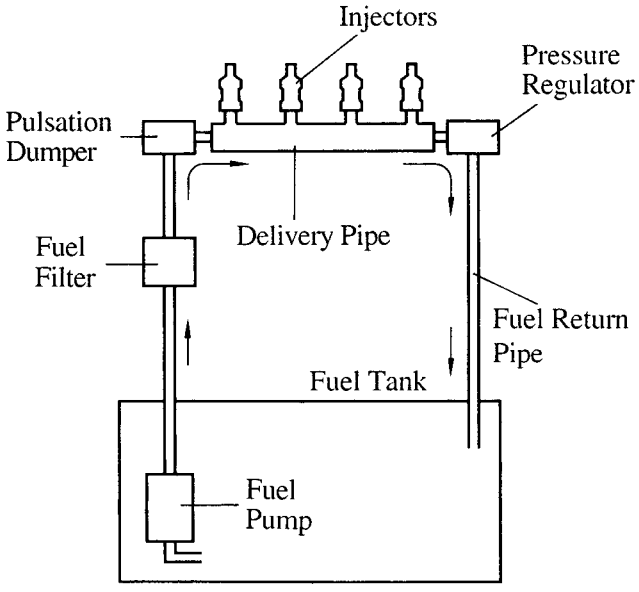
Ⓡ FUEL SYSTEM

1. Fuel Returnless System

The new Camry has adopted a fuel returnless system to reduce evaporative emissions. With the pressure regulator housed inside the fuel tank, this system eliminates the return of fuel from the engine area. This prevents the internal temperature of the fuel tank from risisng, and reduced evaporative emissions.



New

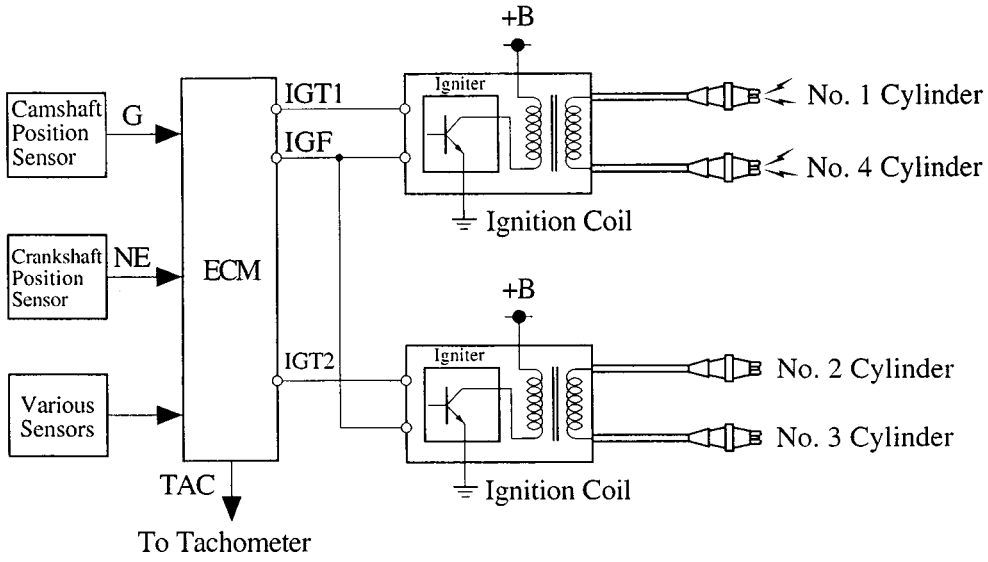


Previous

® IGNITION SYSTEM

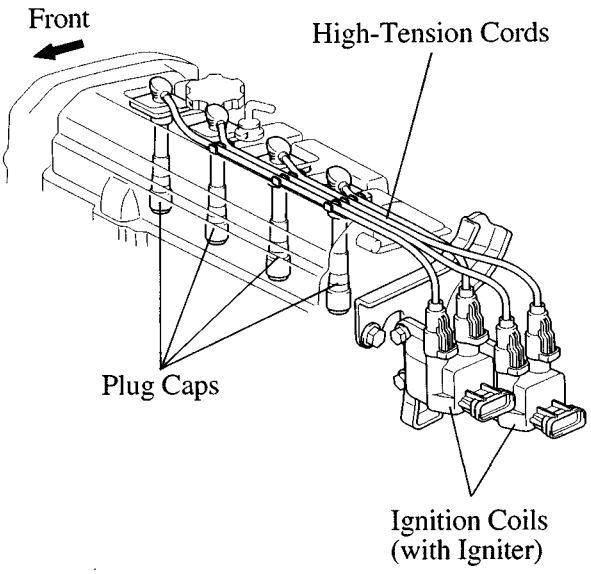
1. General

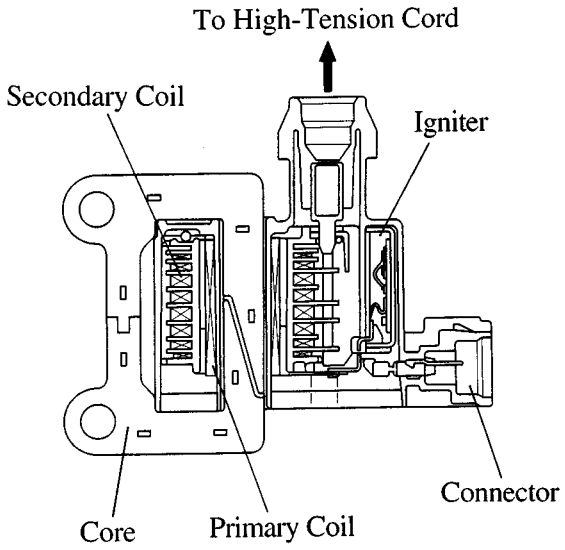
A DIS (Direct Ignition System) has been adopted in the new 5S–FE engine. The DIS in new 5S–FE engine is a 2–cylinder simultaneous ignition system which ignites 2–cyliners simultaneously with one ignition coil. In addition, the igniter is integrated in the ignition coil for simpler system configuration.



2. Ignition Coil

Construction of the DIS system of the 5S–FE engine consists of 2 sets of ignition coils integrated with igniter and with the high–tension cords attached directly onto the ignitioncoil.





Ignition Coil Cross Section

3. Spark Plugs

Twin grouond electrode platinum tipped spar plugs have been adopted to rreflect the change of the DIS system.

◀Recommended Spark Plug Types■

NIPPONDENSO	PK20TR11
NGK	BKR6EKPB11
Plug Gap	1.0 – 1.1 mm (0.039 – 0.043 in.)

Ⓡ ENGINE MOUNTING

1. Manual Transaxle Models

The charasteristics of the front and rear mounts have been optimized.

2. Automatic Transaxle Models

° The fromt and rear mounts have been relocated upward to bring the engine's roll center closer to the engine's center of gravity, resulting in reducing noise and vibration and improving drivability.

° The internal orifices of the front and rear mounts have been modified to improve riding comfort and to ensure a quieter operatioon at idling.

® ENGINE CONTROL SYSTEM

1. General

The engine control system of the new 5S–FE engine is basically the same in construction and operation as that of the previous 5S–FE engine, except fo rthe changed listed bleow.

° The exhaust emissions has been reduced through the adoption of the sequential multiport fuel injection system for engine starting and the air–fuel ratio sensor*2

° The function of an air conditioning amplifier has been internally added to the ECM.

The engine control system of the new 5S–FE engine and previous 5S–FE engine and previous 5S–FE engine are compared below.

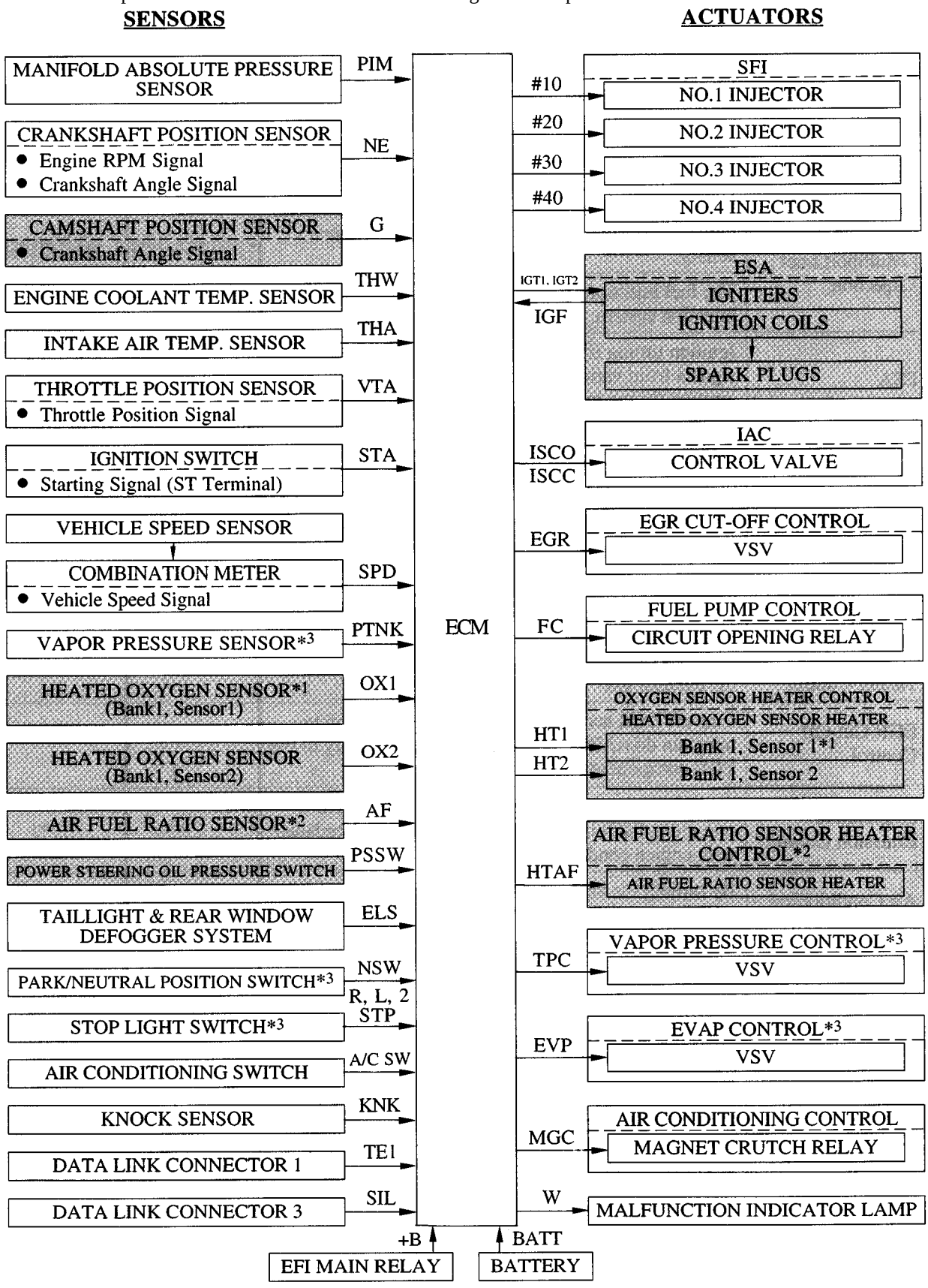
System	Outline	New	Previous
SFI (Sequential Multiport Fuel Injection)	A D–type SFI system is used, which indirectly detects intake air volume by manifold absolute pressure.	○	○
	The fuel injection system is a sequential multiport fuel injection system.	○	○
ESA (Electronic Spark Advance)	Ignition Timing is determined by the ECM based on signals from various sensors. The ECM corrects ignition timing in response to engine knocking.	○	○
	Torque control correction during gear shifting has been used to minimize the shift shock.	○*1	○*1
IAC (Idle Air Control)	A rotary solenoid type IAC valve controls the fast idle and idle speeds.	○	○
Fuel Pump Control	Fuel pump operation is controlled by signal from the ECM.	○	○
Oxygen Sensor (Air Fuel Ratio Sensor*2) Heater Control	Maintains the temperature of the oxygen sensor (or air fuel ratio sensor*2) at an approppiate level to increase accuracy of detection of the oxygen concentration in the exhaust gas.	○	—
EGR Cut–Off Control	Cuts off EGR according to the engine condition to maintain drivability of the vehicle and durability of EGR components.	○	○
Evaporative Emission Control	The ECM controls the purge flow of evaporative emissions (HC) in the charcoal canister in accordance with engine conditions.	○*1	○*1
Air Conditioning Cut–Off Control	By turning the air conditioning compressor ON or OFF in accordance with the engine condition, drivability is maintained	○*3	○
Diagnosis	When the ECM detects a malfunction, the ECM diagnoses and memorized the failed section.	○	○
	The diagnosis system includes a function that detects a malfunction in the evaporative control system.	○*1	○*1
Fail Safe	When the ECM detects a malfunction, the ECM stops or controls the engine according to the data already stored in memory	○	○

*1: Only for Automatic Transaxle Models., *2: Only for California Specification Models,

*3: The air conditioning magnet scutch controled by the ECM.

2. Construction

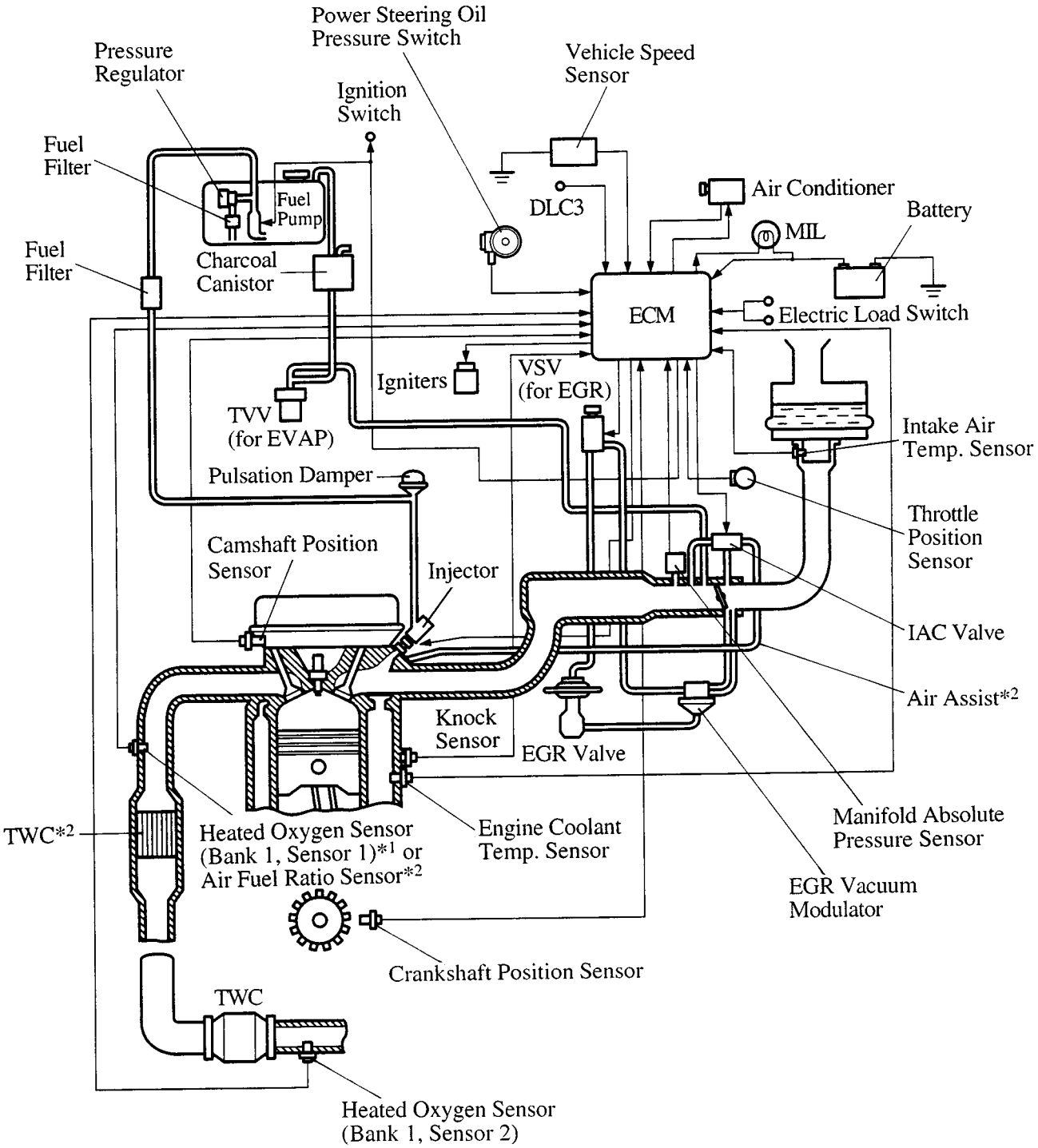
The configuration of the engine control system in the 5S–FE engine in the new CAmry is as shown in the following chart. Shaded protions ▭ differ from the 5S–FE engine on the previous model.



*1: Except for California Specification Models, *2: Only for California Specification Models, *3: Only for Automatic Transaxle Models.

3. Engine Control System Diagram

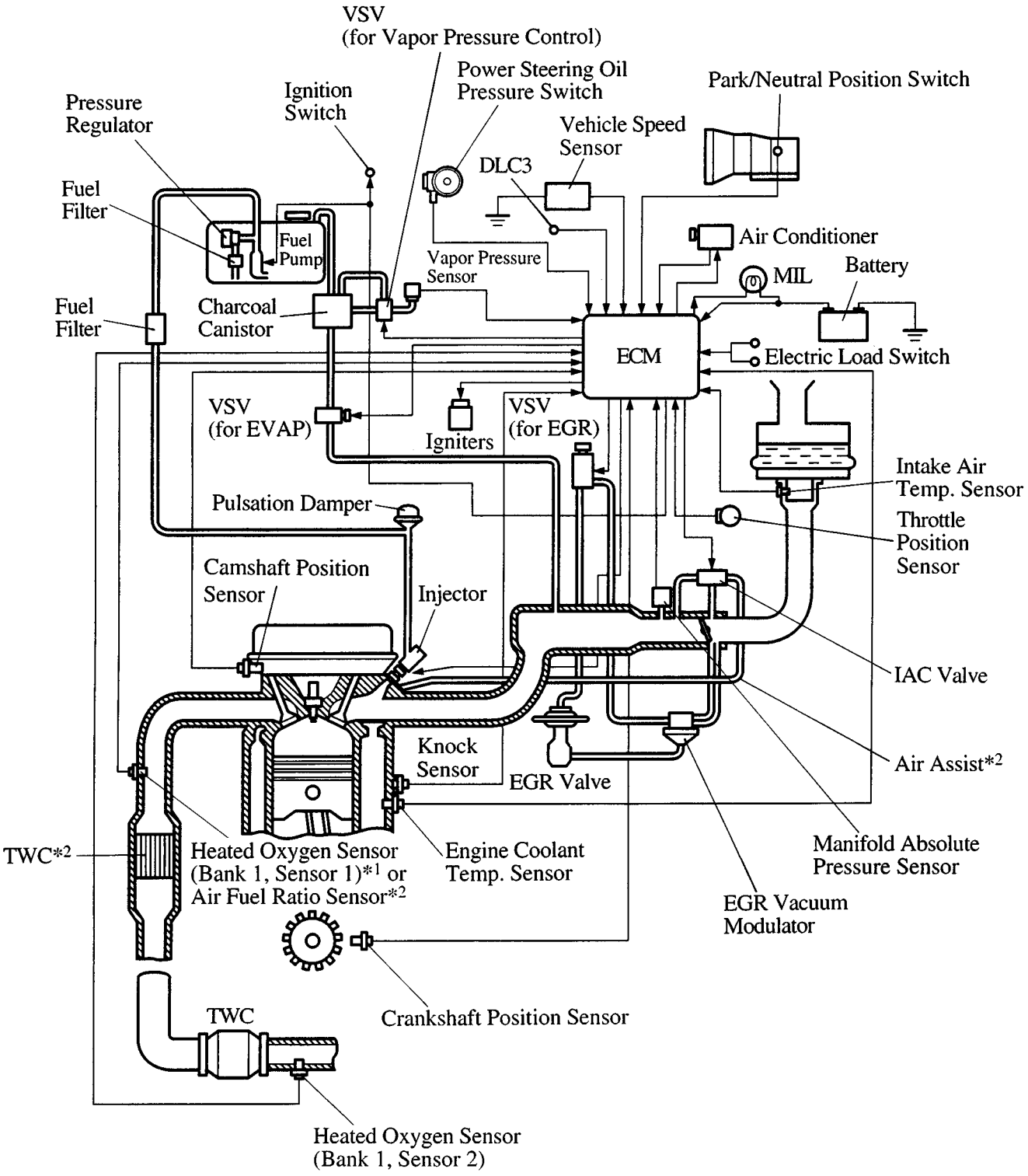
For Manual Transaxle Models



*1 : Except for California Specification Model

*2 : Only for California Specification Model

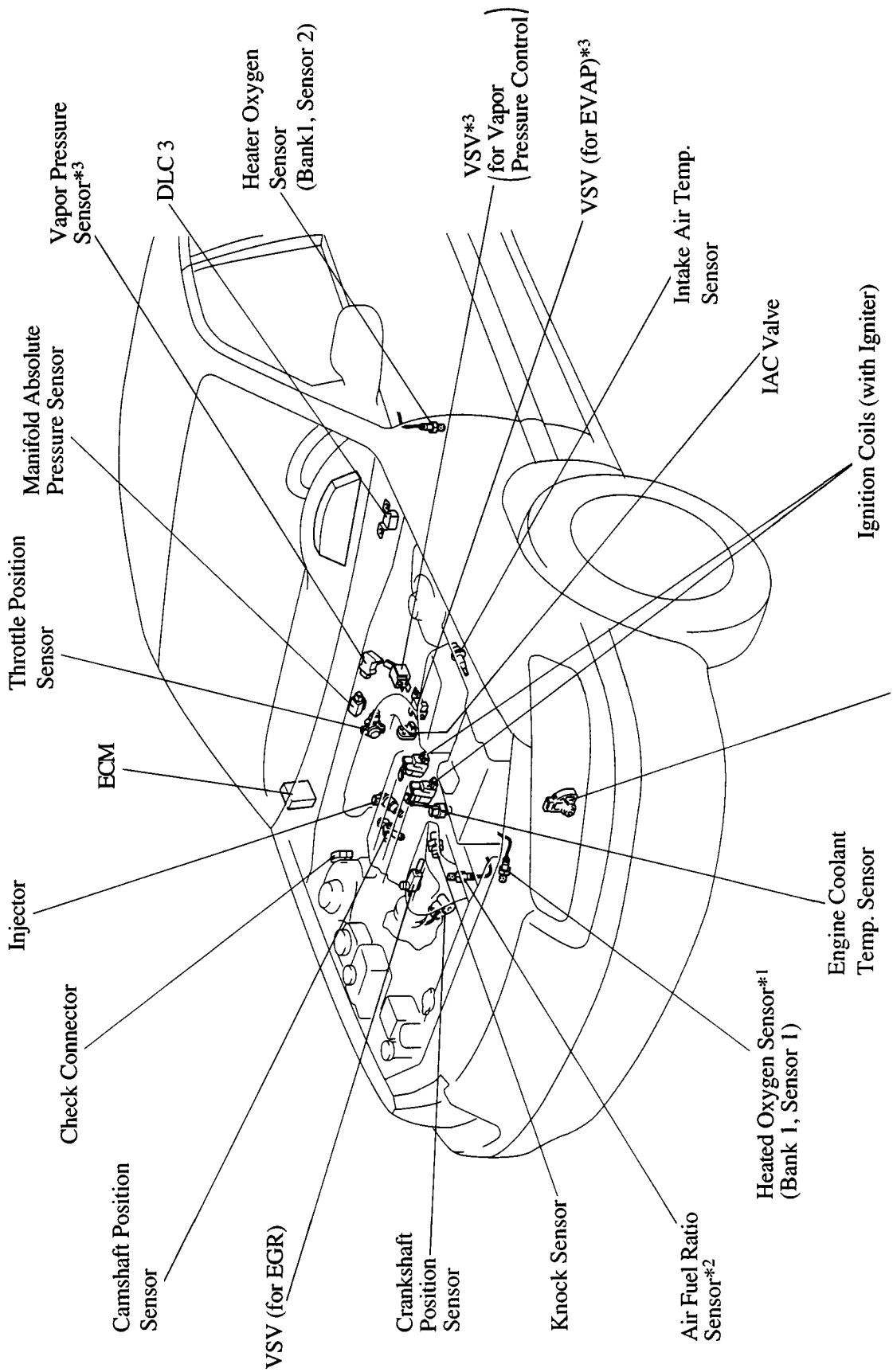
For Automatic Transaxle Models



*1 : Except for California Specification Model

*2 : Only for California Specification Model

4. Layout of Components



*1: Except for California Specification Models.
*2: Only for California Specification Models.
*3: Only for Automatic Transaxle Models.

5. Main Components of Engine Control System

The following table compares the main components of the new 5S–FE engine, and previous 5S–FE engine.

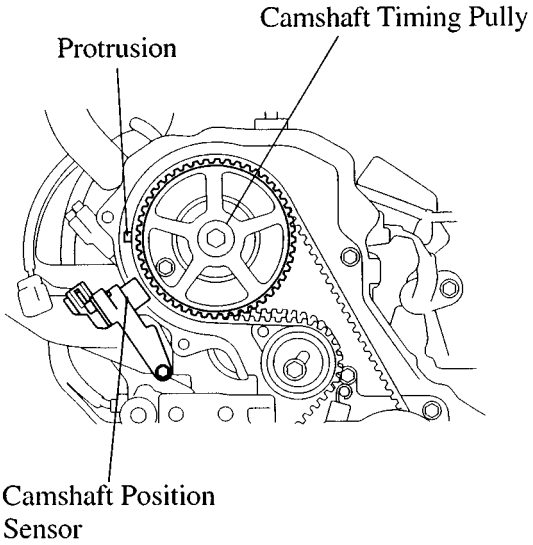
Model / Component		New	Previous
Manifold Absolute Pressure Sensor		Semiconductor	←
Throttle Position Sensor		Linear Type	←
Crankshaft Position Sensor		Pick–Up Coil Type, 1	←
Camshaft Position Sensor		Pick–Up Coil Type, 1	—
Distributor	Camshaft Position Sensor	—	Pick–Up Coil Type, 1
Knock Sensor		Built–In Piezoelectric Element Type 1	←
Oxygen Sensor		Heated Oxygen Sensor (Bank 1, Sensor 1)*1 (Bank 1, Sensor 2) Air Fuel Ratio Sensor*2	Oxygen Sensor (Bank 1, Sensor 1) (Bank 1, Sensor 2)
Injector		2–Hole Type	←
IAC Valve		Rotary Solenoid Type	←

*1: Except for California Specification Models.

*2: Only for California Specification Models.

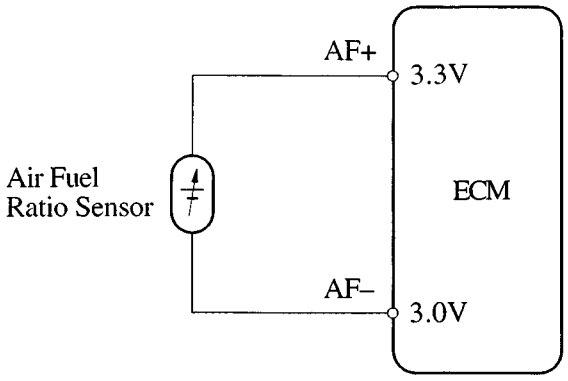
Camshaft Position Sensor

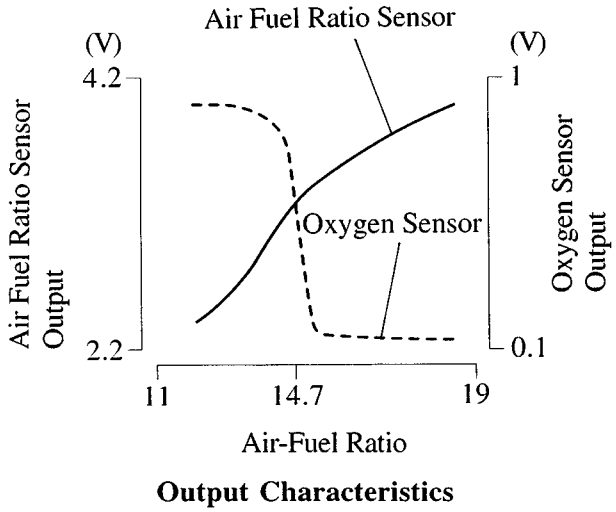
The camshaft position sensor is mounted onto the cylinder head. Using the protusion that is provided on the timing pulley, the sensor generates 1 signal for every revolution. This signal is then sent to the ECM as a cranskshaft angle system.



Air Fuel Ratio Sensor (California Specifications Models Only)

As illustrated below, the conventional oxygen sensor is characterized by a sudden change in its output voltage at the threshold of the stoichiometric air–fuel ration (14.7 to 1). Incontrast, the air–fuel ratio sensor outputs a voltage that is approximately proportionate to the existing air–fuel ratio by converting the oxygen density to the voltage. As a reslut, the detection precision of the air–fuel ratio has been improved.





Output Characteristics

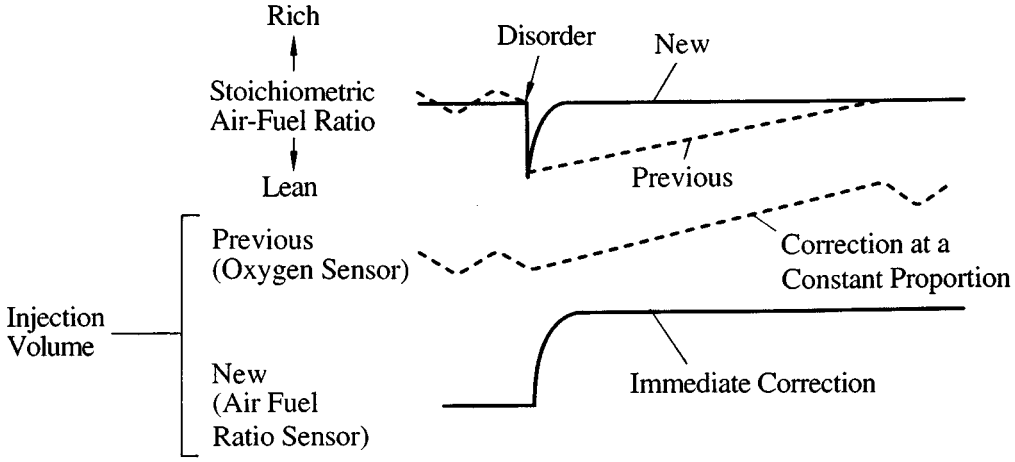
6. SFI (Sequential Multiport Fuel Injection)

Fuel Injection Pattern

The fuel injection pattern during engine starting has been changed from the 2–group injection type to the sequential multiport injection type to reduce exhaust emissions during engine starting.

Air Fuel Ratio Feedback Control (California Specification Models Only)

The precision of the air–fuel ratio feedback control has been improved through the adoption of the air–fuel ratio sensor. As illustrated below, if the existing air–fuel ratio diverts from the stoichiometric air–fuel ratio, the conventional oxygen sensor used to correct the air–fuel ratio at a constant proportion. However, with the air—fuel ratio sensor, the ECM can determine the extent of diversion from the stoichiometric air–fuel ratio and excute an immediate correction.



1MZ–FE ENGINE

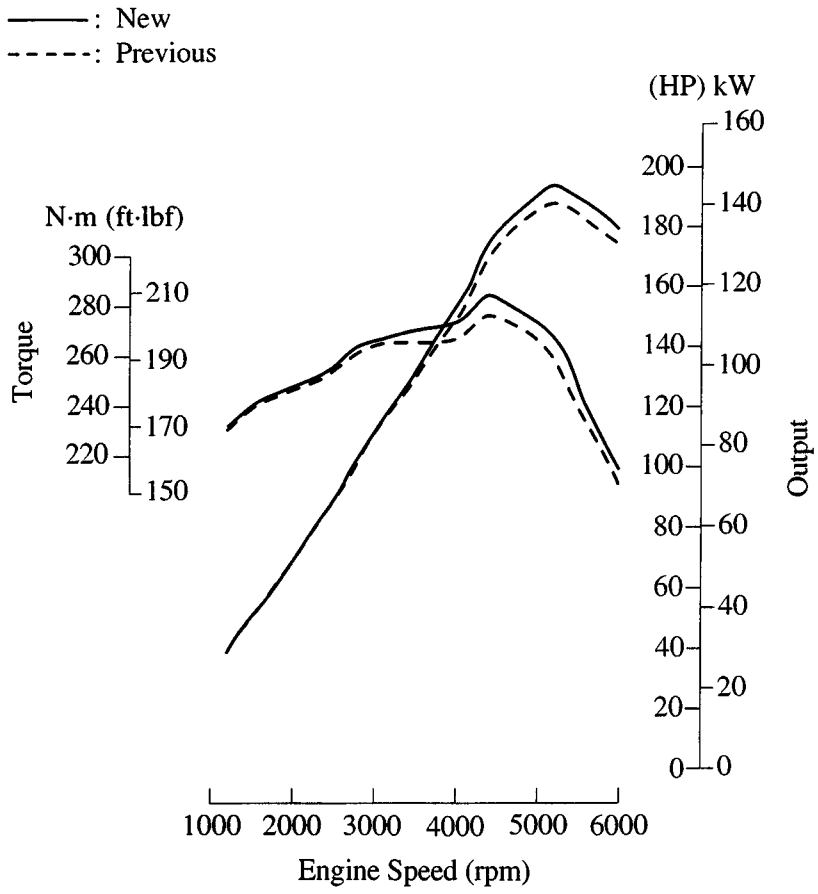
DESCRIPTION

The 1MZ–FE engine has achieved a reduction in exhaust emissions through the adoption of the fuel returnless system and the changes made onto the EGR control system.

ENGINE SPECIFICATIONS AND PERFORMANCE CURVE

1MZ–FE Engine / Item			New	Previous
No. of Cyls. & Arrangement			6–Cylinder, V Type	←
Valve Mechanisms			24–Valve DOHC, Belt & Gear Drive	←
Combustion Chamber			Pentroof Type	←
Manifolds			Cross–Flow	←
Fuel Systems			SFI	←
Displacement cm^3(cu. in.)			2995 (182.7)	←
Bore x Stroke mm (in.)			87.5 x 83.0 (3.44 x 3.27)	←
Compression Ratio			10.5 : 1	←
Max. Output {SAE_NET]			145 kW @ 5200 rpm (194 HP @ 5200 rpm)	140 kW @ 5200 rpm (188 HP @ 5200 rpm)
Max. Output {SAE_NET]			283 N·m @ 4400 rpm (209 ft·lbf @ 4400 rpm)	275 N·m @ 4400 rpm (203 ft·lbf @ 4400 rpm)
Valve Timing	Intake	Open	4º BTDC	←
		Close	44º ABDC	←
	Exhaust	Open	46ºBBDC	←
		Close	2º ATDC	←
Fuel Octane Number RON			91 OR Higher	←
Oil Grade			API SH EC–II, ILDAC or Better	←

Premium unleaded gasoline (96RON) is used for the above specifications.



Premium unleaded gasoline (96RON) is used for the above performance curve.

MAJOR DIFFERNCES

Major differences between the new 1MZ–FE engne and previous engine are listed below.

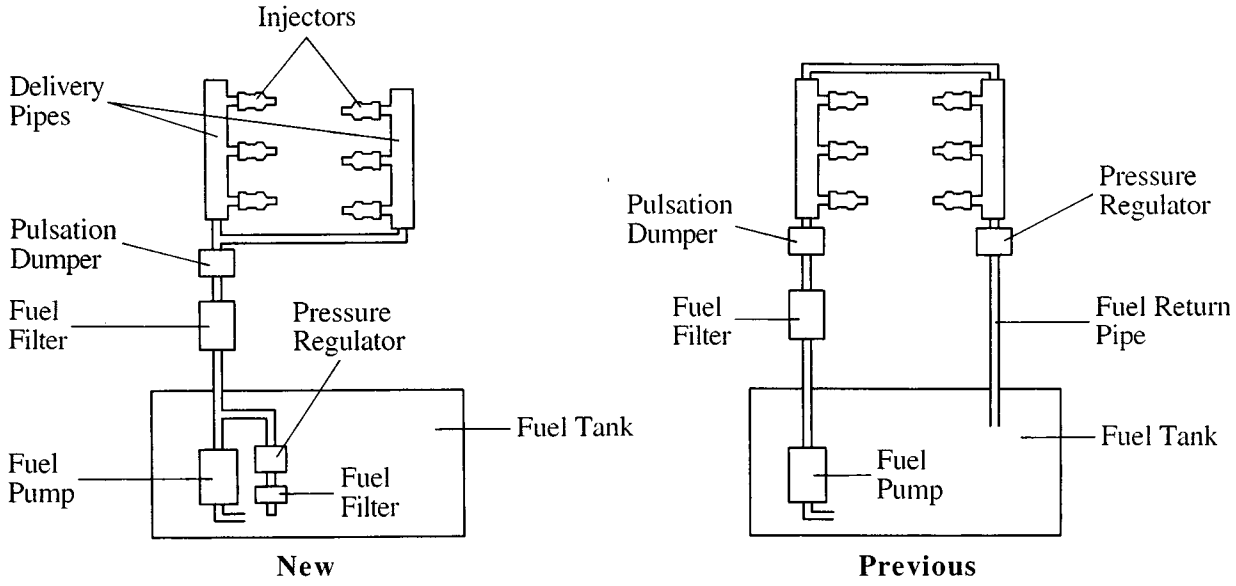
Item	Outline
Cooling System	An aluminum radiator core is used for weight reduction.
Intake and Exhaust System	Through the optimized allocation of the exhaust pipe supports, the number number of supports has been reduced from 5 to 4, thus reducing the noise and vibration which are transmitted to the vehicle body.
Fuel System	A fuel returnless system has been adopted to prevent the internal temperature of the fuel tank from rising, and to reduce evaporative emissions.
Engine Mounting	The characteristics of the engine mounts, torque rod, and absorber have been optimized to reduce noise and vibration.
Engine Control System	◀ A communication circuit has been provided between the ECM and the ABS & TRAC ECU in conjunction with the adoption of the TRAC (Traction Control) system.* ◀ The fuel pressure control has been discontinued in conjunction with the adoption of the fuel returnless system. ◀ Instead of using the IDL signal input from the throttle position sensor, the ECM now uses the VTA signal to detect the completely closed state of the throttle valve. ◀ A new EGR system which uses a EGR valve position sensor is used. ◀ A communication method of the ECM and the hand–held tester has been changed from the SAEJ1962 to the ISO 9141–2.

*: Applicable only to Vehicle Equipped with the TRAC System.

FUEL SYSTEM

1. Fuel Returnless System

The new Camry has adopted a fuel returnless system to reduce evaporative emissions. With the pressure regulator housed inside the fuel tank, this system elimnates the return of fuel from the engine area. This prevents the internal temperature of the fuel tank from risisng, and reduces evaporative emissions.



ENGINE MOUNTING

1. General

◀ The internal ofifice of the fron tmount has been modified to improve the riding comfort and to ensure a quieter operation at idling.

◀ The characteristics of the rear mount, left mount, torque rod, and absorber have been optimized.

ENGINE CONTROL SYSTEM

1. General

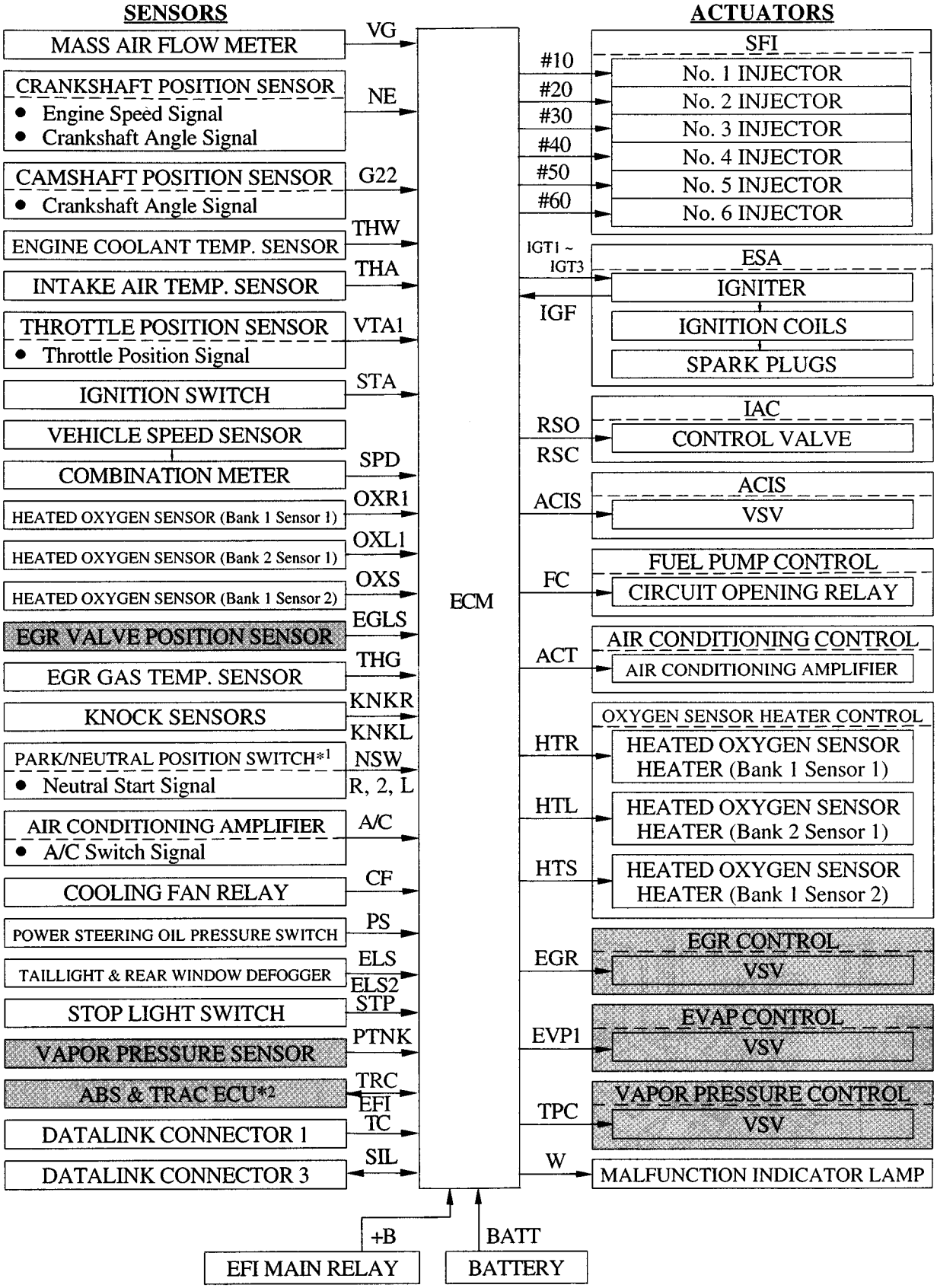
The engine control system of the new 1MZ–FE engine is basically the same in construction and operation as that of the previous 1MZ–FE engine. However, the fuel pressure control has been discontinued and the EGR control system has been changed.

The engine control system of the new 1MZ–FE engine and previous 1MZ–FE engine are compared below.

System	Outline	New	Previous
SFI (Sequential Multiport Fuel Injection)	A L–type SFI system directly detects intake air mass with a hot wire type mass air flow meter.	■	■
	The fuel injection system is a sequential multiport fuel injection system.	■	■
ESA (Electronic Spark Advance)	Ignition Timing is determined by the ECM based on signals from various sensors. The ECM corrects ignition timing in response to engine knocking.	■	■
	2 knock sensors are used to improve knock detection.	■	■
	In vehicles equipped with automatic transaxle, torque control correction during gear shifting has been used to minimize the shift shock.	■	■
IAC (Idle Air Control)	A rotary solenoid type IAC valve controls the fast idle and idle speeds.	■	■
ACIS (Acoustic Control Induction System)	The intake air passages are switched according to the engine speed and throttle valve angle to increase performance in all speed ranges.	■	■
Fuel Pressure Control	In hot engine conditions, the fuel pressure is increased to improve restartability.	■	■
Oxygen Sensor Heater Control	Maintains the temperature of the oxygen sensor at an approppiate level to increase accuracy of detection of the oxygen concentration in the exhaust gas.	■	■
EGR Cut–Off Control	Cuts off EGR according to the engine condition to maintain drivability of the vehicle and durability of EGR components.	—	■
EGR Control	Uses the duty control type VSV and EGR valve position sensor, controlling the EGR volumne in accordance with engine conditions.	■	—
Evaporative Emission Control	The ECM controls the purge flow of evaporative emissions (HC) in the charcoal canister in accordance with engine conditions.	■	■
Diagnosis	When the ECM detects a malfunction, the ECM diagnoses and memorizes the failed section.	■	■
	The diagnosis system includes a function that detects a malfunction in the evaporative control system.	■	—
Fail Safe	When the ECM detects a malfunction, the ECM stops or controls the engine according to the data already stored in memory	■	■

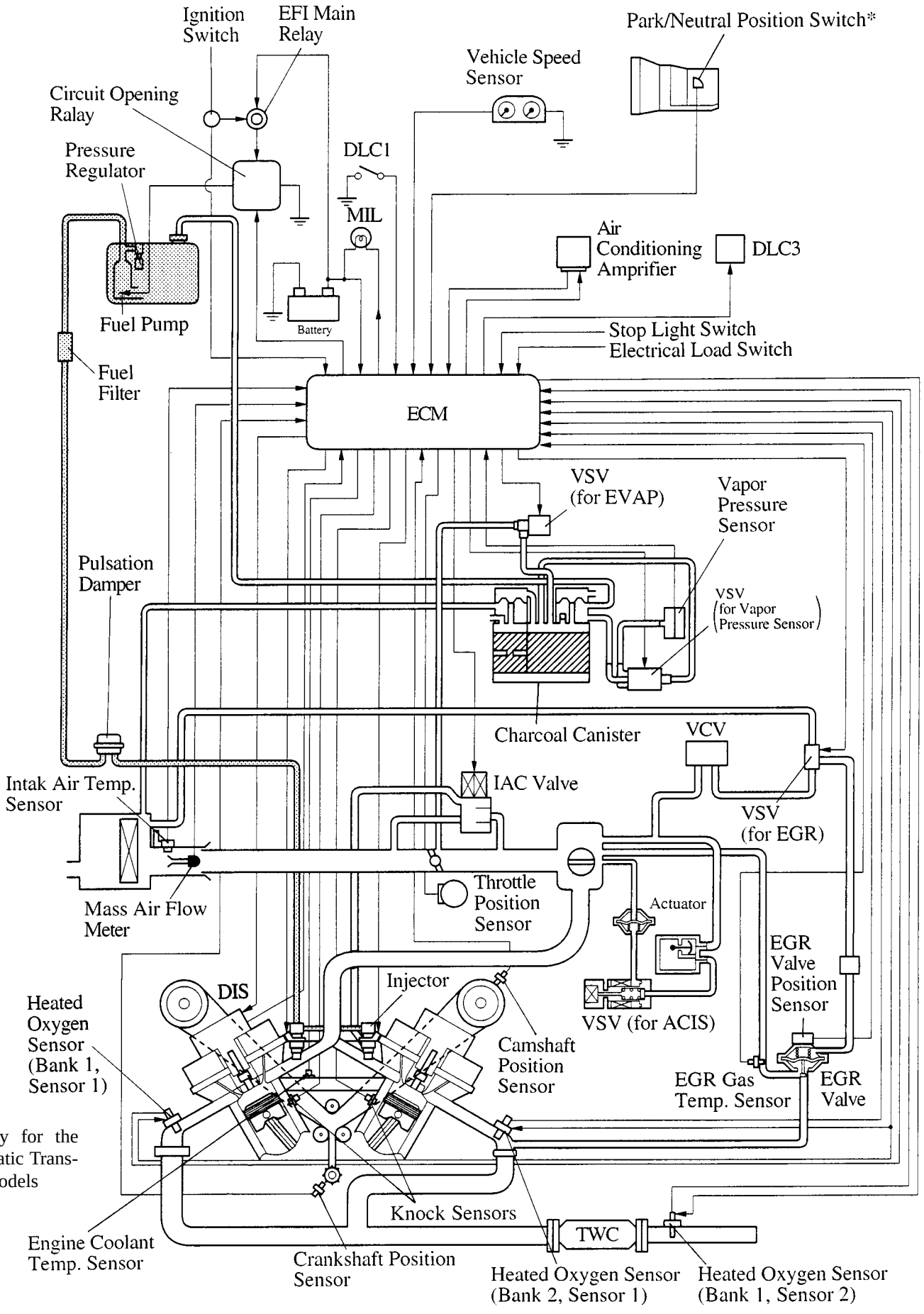
2. Construction

The configuration of the engine control system in the new 1MZ–FE engine is as shown in the following chart. Shaded portions differ from the previous 1MZ–FE engine.



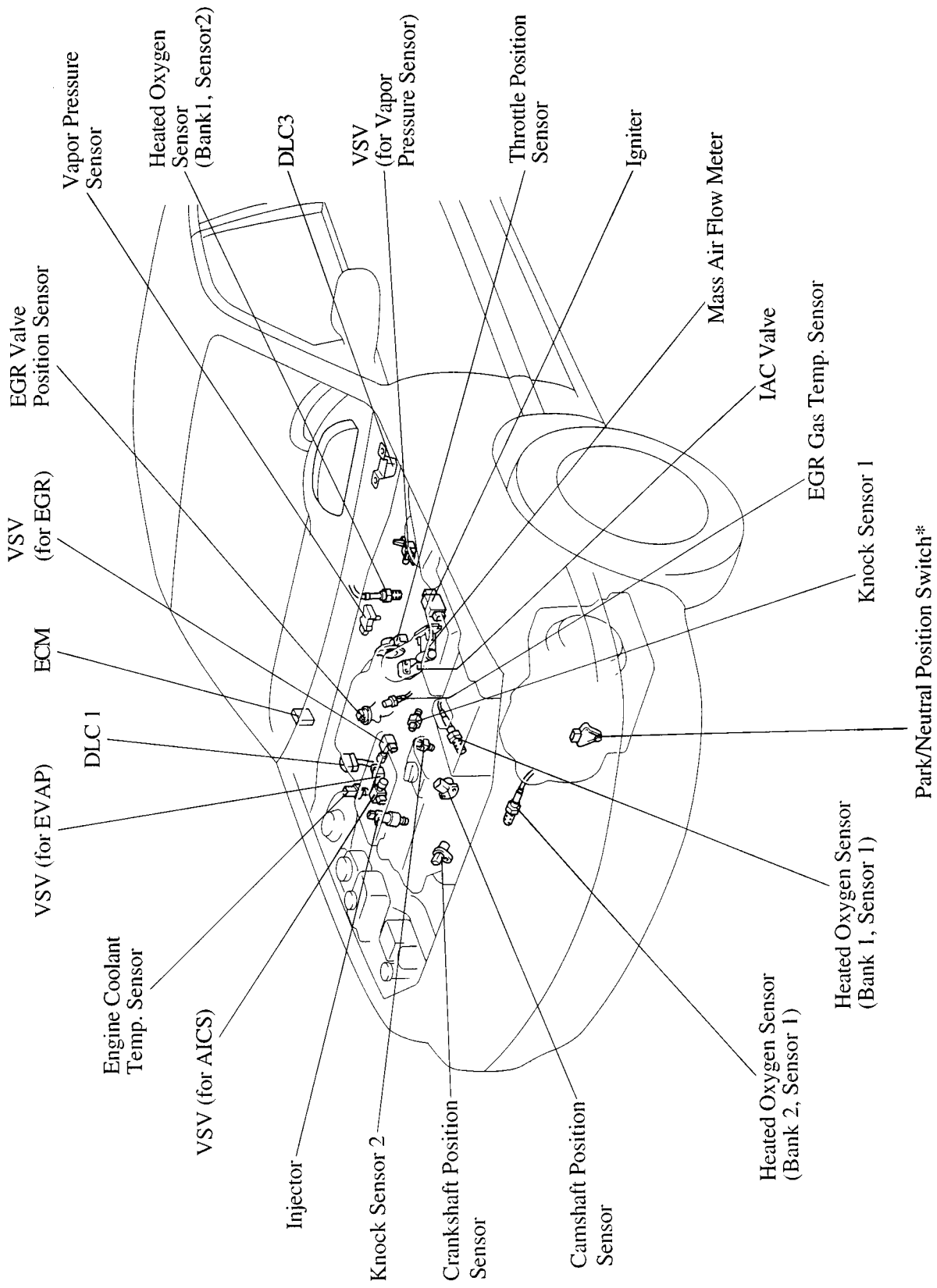
*1: Applicable only to Automatic Transaxle Model.,*2: Applicable only to Vehicles Equipped with the TRAC System.

3. Engine Control System Diagram



*: Only for the Automatic Transaxle Models

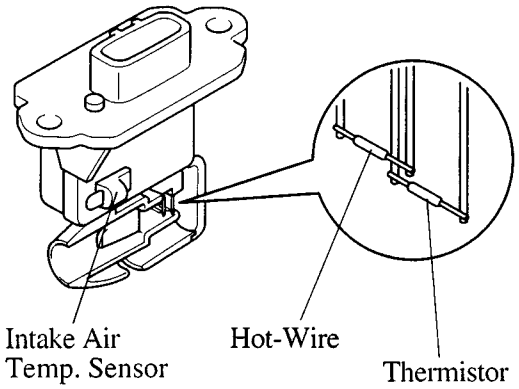
4. Layout of Components



5. Main Components of Engine Control System

Mass Air Flow Meter

The hot wire type mass air flow meter has been changed to the plug–in type. Its basic operation is the same as that of the previous type.



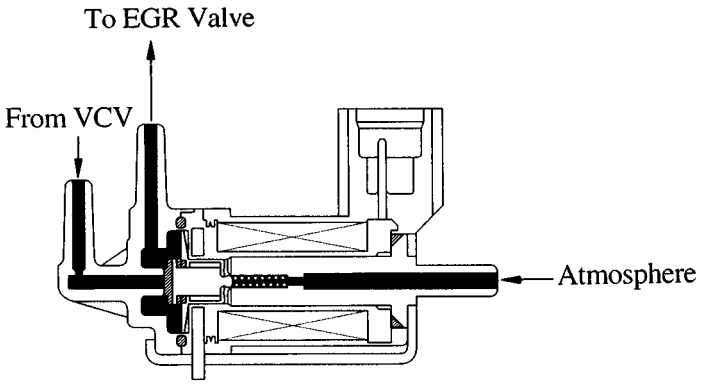
6. EGR Control

In the previous models, an EGR vacuum modulator or a VSV was used to control the EGR gas volume. In the new model, the ECM regulates the VSV to control the vacuum that is applied to the EGR valve, thus ensuring an optimal EGR gas volume according to the engine condition and improving drivability.

Construction

1) VSV

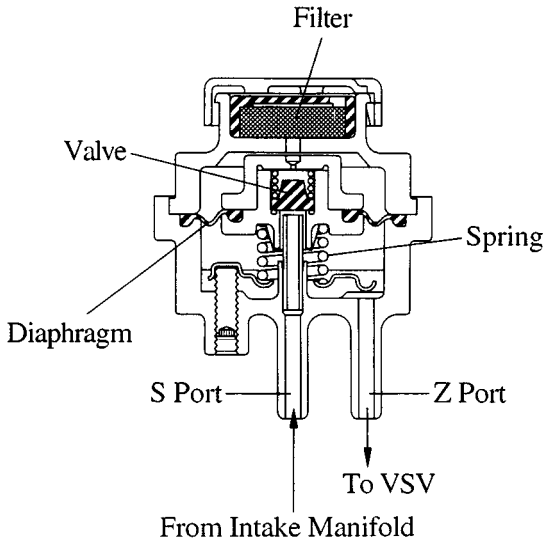
The VSV controls the vacuum from the VCV that is applied to the EGR valve, in accordance with the duty signals received from the ECM.



2) VCV (Vacuum Control Valve)

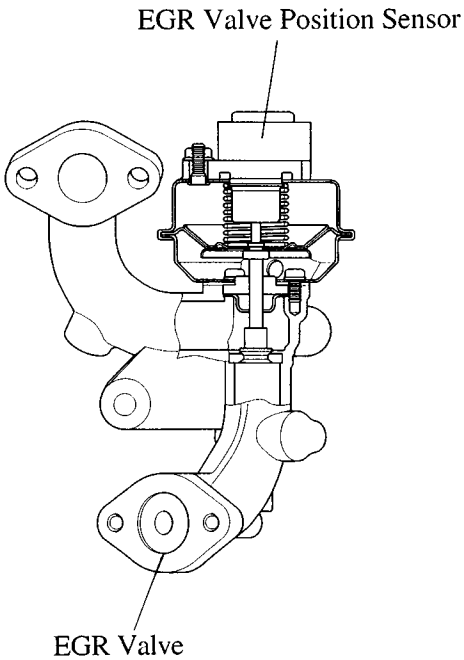
The VCV is a valve that regulates the intake manifold vacuum that is appllied to the VSV to a constant level (–17 kPa, –130 mm Hg.)

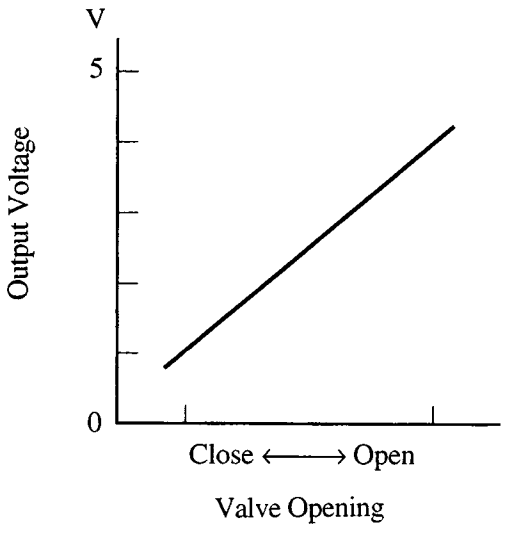
The intake manifold vacuum that is supplied through the S port is applied to the diaphragm. If this force becomes greater than the spring force, the diaphragm moves downward, allowing the valve to close the S port and the atmosphere supplied through the filter. Conversely, if the vacuum that is applied to the diaphragm becomes weaker, the diaphragm moves upward, causing the valve to open and to shut off the atmosphere and supply the intake manifold vacuum. This process is repeated to regulate the vacuum in the Z port to a constant level.



3) EGR Valve Position Sensor

The EGR valve position sensor is mounted on the EGR valve. This sensor converts the EGR valve opening into a voltage and sends it to the ECM as the EGR valve position signal.



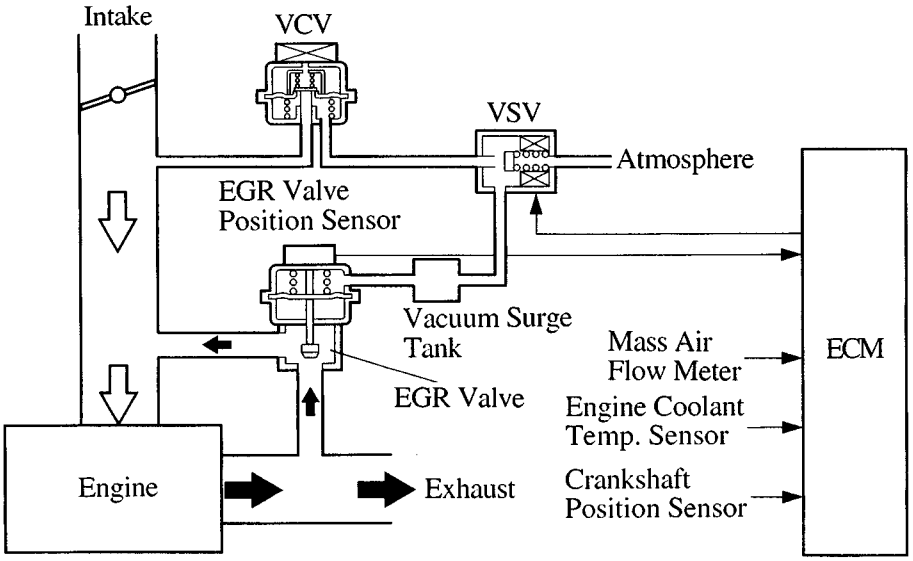


Output Characteristics

Operation

The ECM executes duty control of the VSV to control the vacuum that has been regulated to a constant level by the VCV, thus controlling the vacuum that is applied to the EGR valve.

Also, the EGR valve position sensor in the EGR valve detects the EGR valve opeining to provide feed back control to the ECM, thus achieveing a target opining that is appropriate for the engine condition.



7. Others

A communication circuit has been provided between the ECM and the ABS & TRAC ECU in conjunction with the adoption of the TRAC (Traction Control) system. The ECM sends signals such as the throttle position signal and the engine speed signal to the ABS & TRAC ECU. In addition, the ECM executes fuel cutoff in accordance with the request signals from the ABS & TRAC ECU.

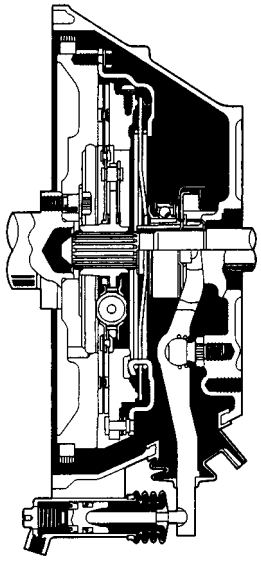
CHASSIS

CLUTCH

■ DESCRIPTION

As in the previous model, a dry type single plate clutch which is operated by hydraulic pressure is used on the new model.

Along with the adoption of the 1MZ–FE engine model with manual transaxle, a release cylinder with a larger cylinder diameter has been newly adopted to reduce the clutch pedal effort.



1MZ-FE Engine Model

Specifications◀

Model		New		Previous
Engine Type		5S–FE	1MZ–FE	5S–FE
Item				
Clutch	Type	Dry Type Single Plate Clutch Diaphragm Spring	←	←
	Operation	Hydraulic	←	←
Clutch Cover	Type	DST*1	←	←
	Size mm (in.)	224 (8.82)	236 (9.29)	224 (8.82)
Clutch Disc	Facing Size*2 mm (in.)	224 x 150 x 3.5 (8.82 x 5.91 x 0.14)	236 x 150 x 3.5 (9.29 x 5.91 x 0.14)	224 x 150 x 3.5 (8.82 x 5.91 x 0.14)
	Facing Area cm^2 ($in.^2$)	217 (33.7)	260 (40.4)	217 (33.7)
Master Cylinder	Type	Conventional	←	←
	Cylinder Dia. mm (in.)	15.87 (0.62)	←	←
Release Cylinder	Type	Non–Adjustable	←	←
	Cylinder Dia. mm (in.)	20.64 (0.81)	22.2 (0.87)	20.64 (0.81)

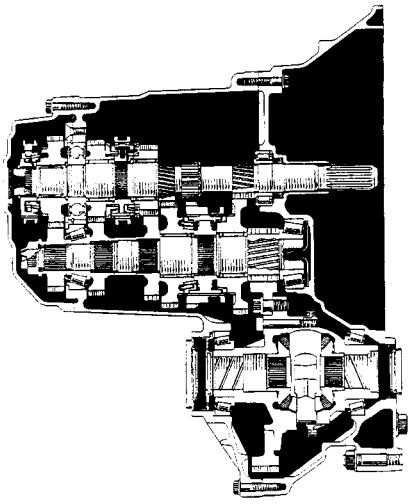
*1: DST (Diaphragm Spring Turnover), *2: Outer Diameter x Inner Diameter x Thickness

MANUAL TRANSAXLE

■ DESCRIPTION

® The 5S–FE engine model uses the same S51 manual transaxle as in the previous model.

® The 1MZ–FE engine model ahs newly adopted the E153 manual transaxle. The basic construction and operation of the E153 manual transaxle are the same as those of the ’95 MR2. However, the differential gear ratio has been changed to accommodate the characteristics of the engine.



E153 Manual Transaxle

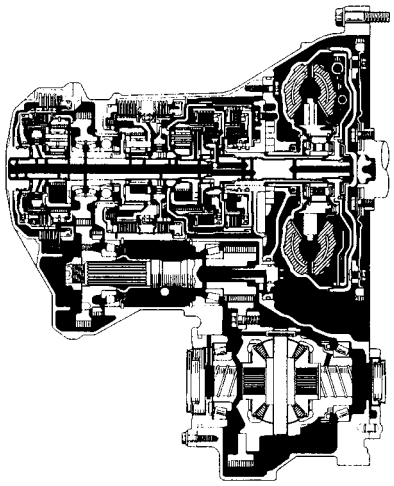
Specifications◀

Model		New		Previous	’95 MR2
Transaxle Type		S51	E153	S51	E153
Engine Type		5S–FE	1MZ–FE	5S–FE	3S–GTE
Item					
Gear Ratio	1st	3.538	3.230	3.538	3.230
	2nd	1.960	1.913	1.960	1.913
	3rd	1.250	1.258	1.250	1.258
	4th	0.945	0.918	0.945	0.918
	5th	0.731	←	←	←
	Reverse	3.153	3.545	3.153	47
Differential Gear Ratio		3.944	3.933	3.944	4.285
Oil Capacity liters (US qts, Imp. qts)		2.6 (2.7, 2.3)	4.2 (4.4, 3.7)	2.6 (2.7, 2.3)	4.2 (4.4, 3.7)
Oil Viscosity		SAE75W–90	←	←	←
Oil Grade		API, GL–4 OR GL–5	←	API GL–3, GL–4 OR GL–5	←

AUTOMATIC TRANSAXLE

■ DESCRIPTION

The A14OE automatic transaxle is used on the 5S–FE engine model, and the A541E automatic transaxle is used ont he 1MZ–FE engine model. The basic construction and operation are the same as those of the previous model. However, the pattern select switch has been discontinued both from the A140E and A541E automatic transaxles.



A541E Automatic Transaxle

Specifications◀

Engine Type		5S–FE	1MZ–FE
Transaxle Type		A140E	A541E
Item			
Gear Ratio	1st	2.810	←
	2nd	1.549	←
	3rd	1.000	←
	Overdrive	0.706	0.735
	Reverse	2.296	←
Counter Gear Ratio		0.945	←
Differential Gear Ratio		3.944	3.933
Fluid Capacity liters (US qts, Imp.qts)	Transmission	5.6 (5.9, 4.9)	6.8 (7.2, 5.9)
	Differential	1.6 (1.7, 1.4)	0.9 (0.9, 0.8)
Fluid Type		SAE75W–90	←

DRIVE SHAFT

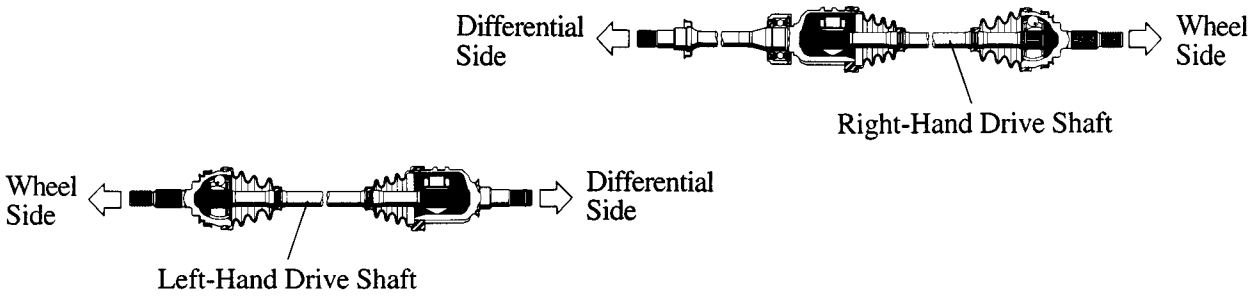
■ DESCRIPTION

® The 5S–FE engine model continues to use the same drive shaft used on the previous model.

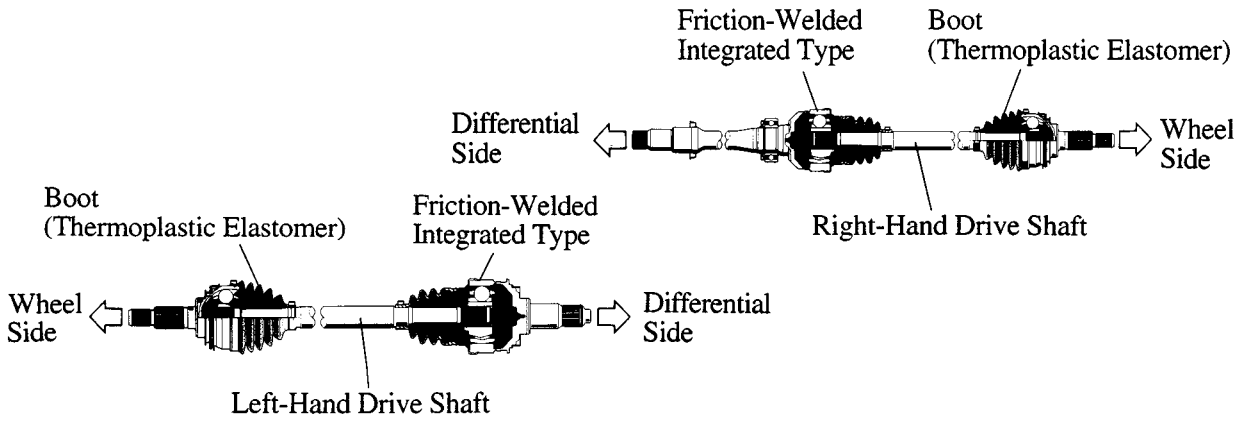
® Previously, the inboard joint of the drive shaft on the 1MZ–FE engine model was the bolt–mounted type. However, on the new model, the inboard joint is the friction–welded integrated type.

® On the new model with 1MZ–FE engine, the boot of the outboard joint are made of thermoplastic elastomer, which has superior durability.

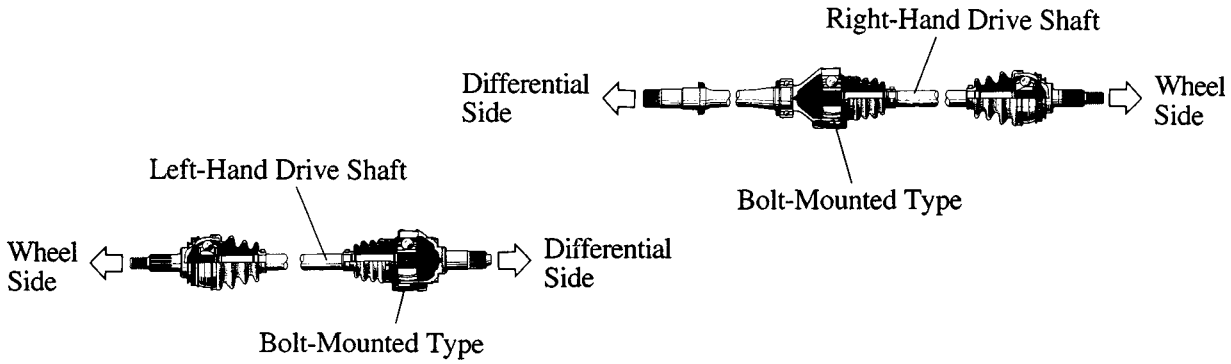
5S–FE Engine Model◀



1MZ–FE Engine Model◀



New

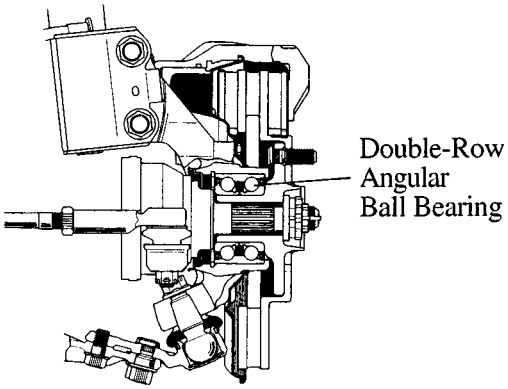


Previous

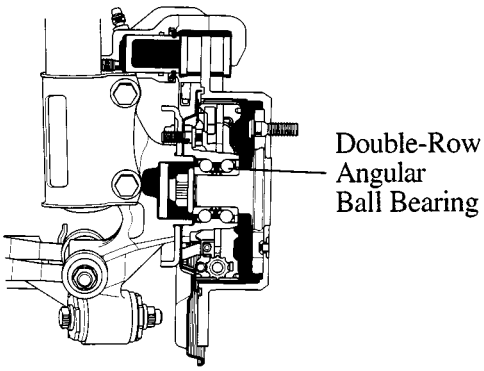
AXLES

■ DESCRIPTION

As in the previous model, a double–row angular ball bearing is used for both the front and rear axles in the new model.



Front Axle



Rear Axle

BRAKES

■ DESCRIPTION

® The ventilated disc brake is used for front brake on all models.

® The rear drum brake is used on the 5S–FE engine model, and the rear solid disc brake is used on the 1MZ–FE engine model.

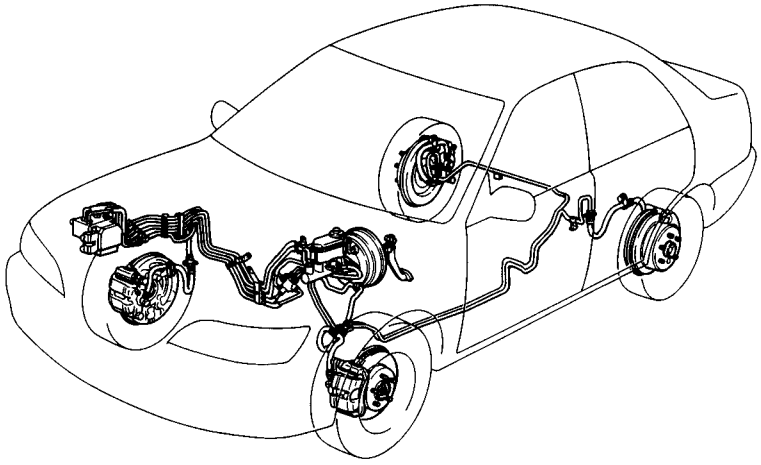
® The ABS is provided on the 5S–FE engine CE grade model as an option and on other models as standard.

® An ABS actuator has been changed to the 2–position solenoid valve type actuator.

® A compact and lightweight ABS & TRAC system, in which the ABS and TRAC functions are integrated, is made available as an option on the LE and XLE grade models with the 1MZ–FE engine.

® A portless and portless type master cylinder is used on the models with ABS & TRAC system.

® The center lever type parking brake is adopted on all models.



Models with ABS & TRAC System

Specifications◀

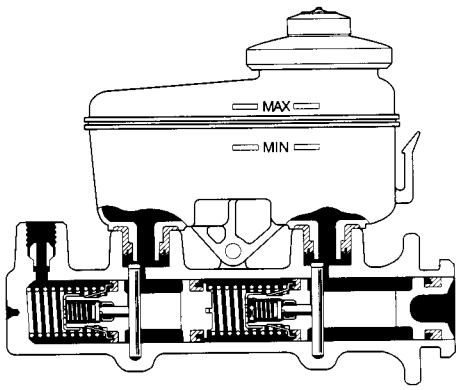
Model		New		Previous	
Engine Type		5S–FE	1MZ–FE	5S–FE	1MZ–FE
Item					
Master Cylinder	Type	Tandem	←	←	←
	Diameter .mm (in.)	25.4 (1.00)	←	←	←
Brake Booster	Type	Tandem	←	←	←
	Diameter .in.	8.5”+ 8.5”, 8”+ 9” *	←	8” + 9”	←
Front Brake	Type	Ventilated Disc	←	←	←
	Pad Area cm^2 ($in.^2$)	48 (7.44)	44 (6.82)	48 (7.44)	57 (8.84)
	Wheel Cylinder Dia. mm (in.)	57.2 (2.25)	60.33 (2.38)	57.2 (2.25)	57.2 (2.25) 42.8 (1.69) x2*1
	Rotor Size (D xT)*2 mm (in.)	255 x 28 (10.04 x 1.10)	275 x 28 (10.83 x 1.10)	255 x 28 (10.04 x 1.10)	275 x 28 (10.83 x 1.10)
Rear Drum Brake	Type	Leading–Trailing		Leading–Trailing	
	Lining Area cm^2 ($in.^2$)	77 (11.94)		77 (11.94)	
	Wheel Cylinder Dia. mm (in.)	19.05 (0.75)		20.64 (0.81)	
	Drum Inner Dia. mm (in.)	228.6 (9.00)		228.6 (9.00)	
Rear Disc Brake	Type		Solid Disc	←*1	←
	Pad Area cm^2 ($in.^2$)		34 (5.27)	←*1	←
	Wheel Cylinder Dia. mm (in.)		34.9 (1.38)	←*1	←
	Rotor Size (D xT)*2 mm (in.)		269 x 10 (10.59 x 0.39)	←*1	←
Brake Control Valve	Type	Dual–P Valve	←	←*1	←
	Deflection Point of Hydraulic Pressure kPa (kgf/cm^2, psi)	1470 (15, 213)	2942 (30, 427)	2452 (25, 356)	2942 (30, 427)
	Pressure Reduction Gradient	0.62	←	0.37	←
Parking Brake	Type	Drum	←	←	←
	Size .mm (in.)	228.6 (9.00)	170.0 (6.69)	228.6 (9.00) 170.0 (6.69)*1	170.0 (6.69)
ABS		STD, OPT*3	STD	OPT, STD*4	←
ABS & TRAC System		—	OPT*5	—	—

*: TMM Produced Model, *1: Model with ABS, *2: D: Outer Diameter, T: Thickness,
*3: CE Grade Model, *4: XLE Grade Model, *5: LE and XLE Grade Model,

■ MASTER CYLINDER

As in the previous model, the lockheed and lockheed type master cylinder is used on the models without ABS, and the portless and lockheed type master cylinder is used on the models with ABS.

The portless and portless type master cylinder is used on the models with ABS & TRAC system.



Models with ABS & TRAC System

■ ABS

1. General

As in the previous model, the braking of each wheel is controlled by the following 3 modes: pressure reduction, pressure holding, and pressure holding mode.

During ABS activation, the ECU controls the fluid pressure of each front left and right wheels independently while the fluid pressure of rear left and right wheels is controlled simultaneously.

However, the ABS actuator has been changed as shown in the table below. In addition, the diagnostic codes have alsom been changed.

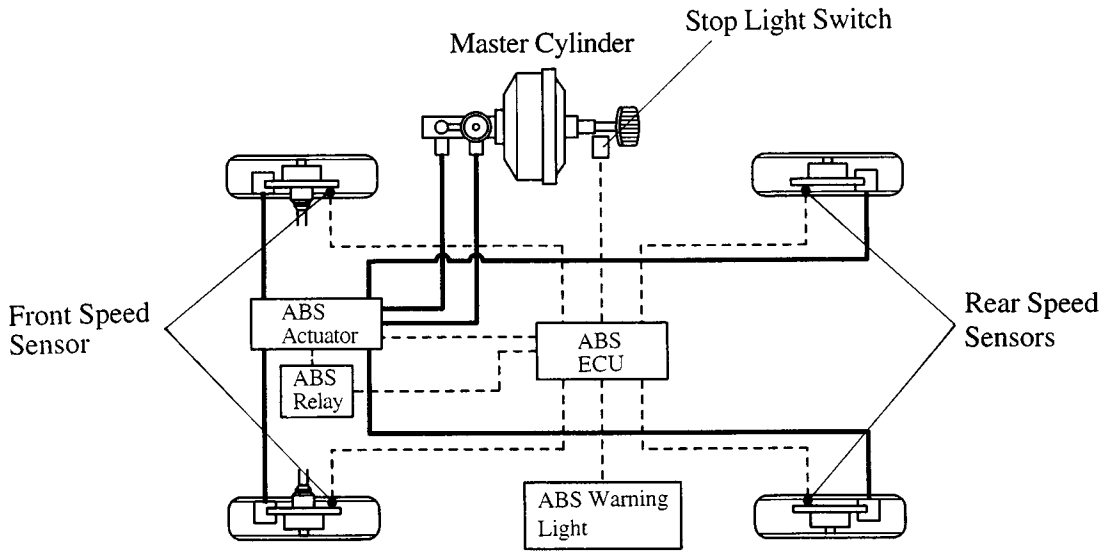
For diagnostic code check method, diagnostic code and diagnostic code clearance, see the 1997 Camry Repair Manual (Pub. No. RM503U).

The operation of the ABS is the same as that of the ’96 Corolla.

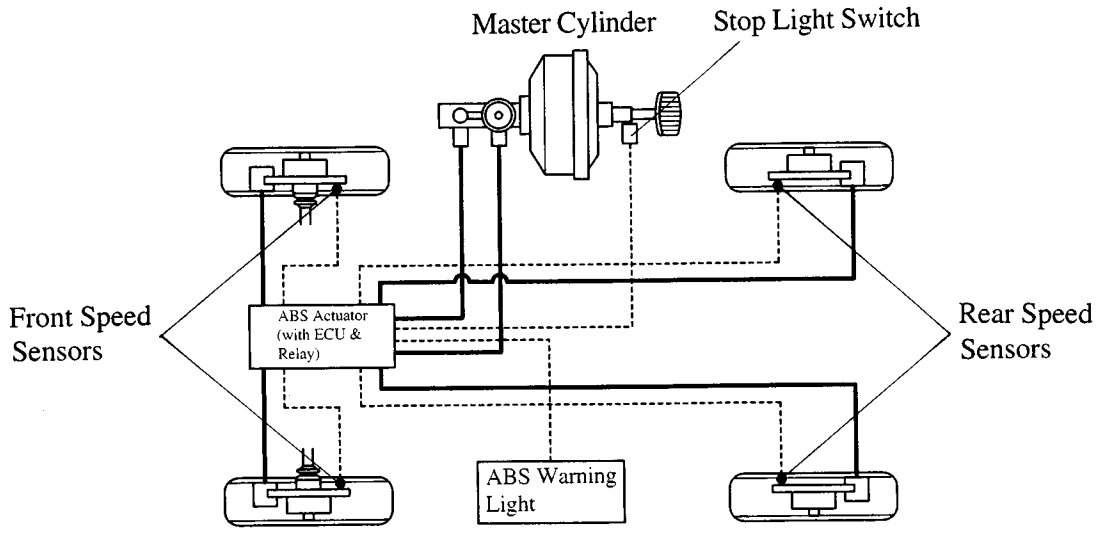
Type of ABS Actuator◀

Model / Type	New	Previous
NIPPONDENSO ABS (TMC Produced Model)	2–Position Solenoid Valve Type Actuator The ECU and realy are separate.	3–Position Solenoid Valve Type Actuato The ECU and relay are separate.
BOSCH ABS (TMM Produced Model)	2–Position Solenoid Valve Type Actuator with ECU and Relay	3–Position Solenoid Valve and Mechanical Valve Type Actuator with ECU and Relay

2. System Diagram



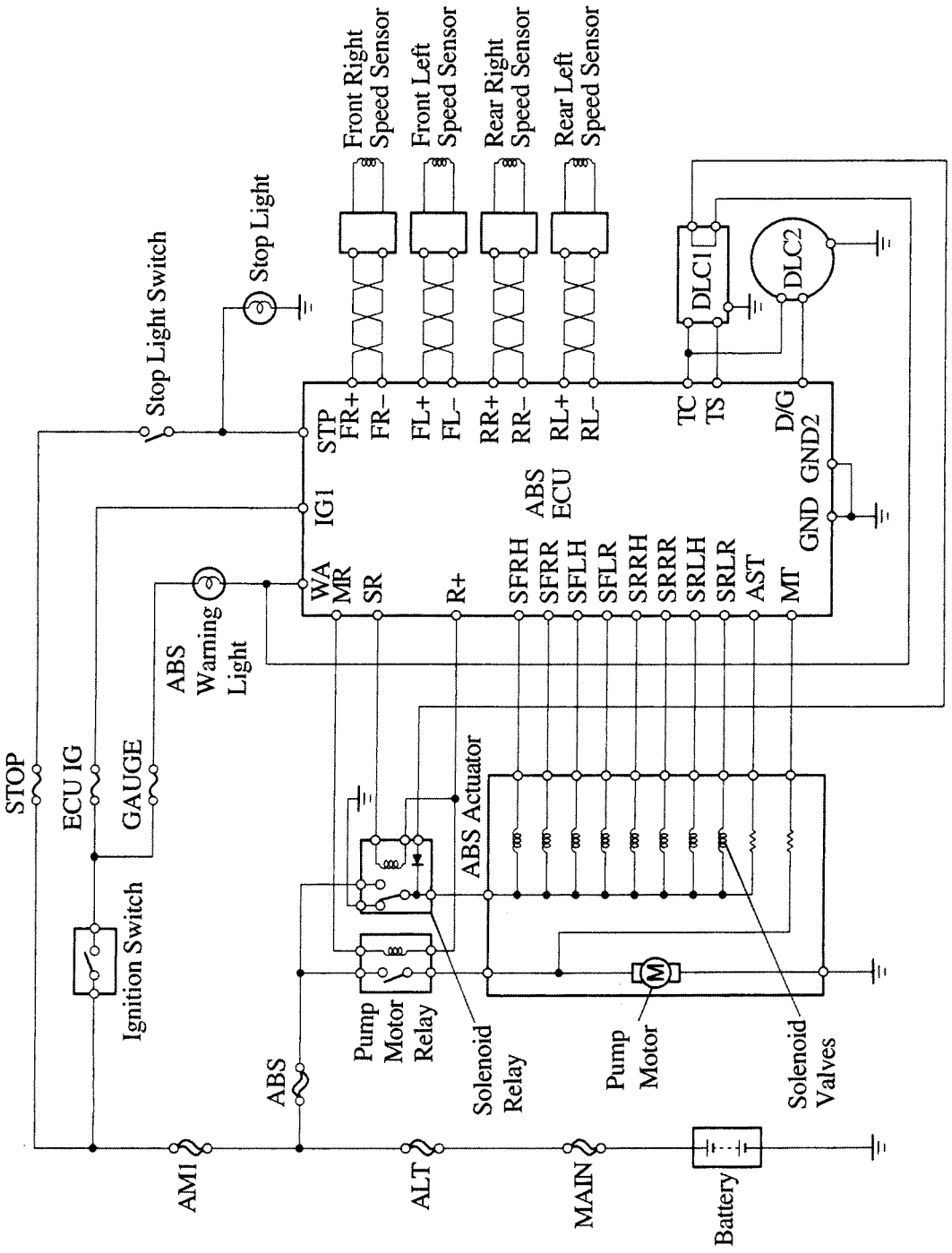
TMC Produced Model



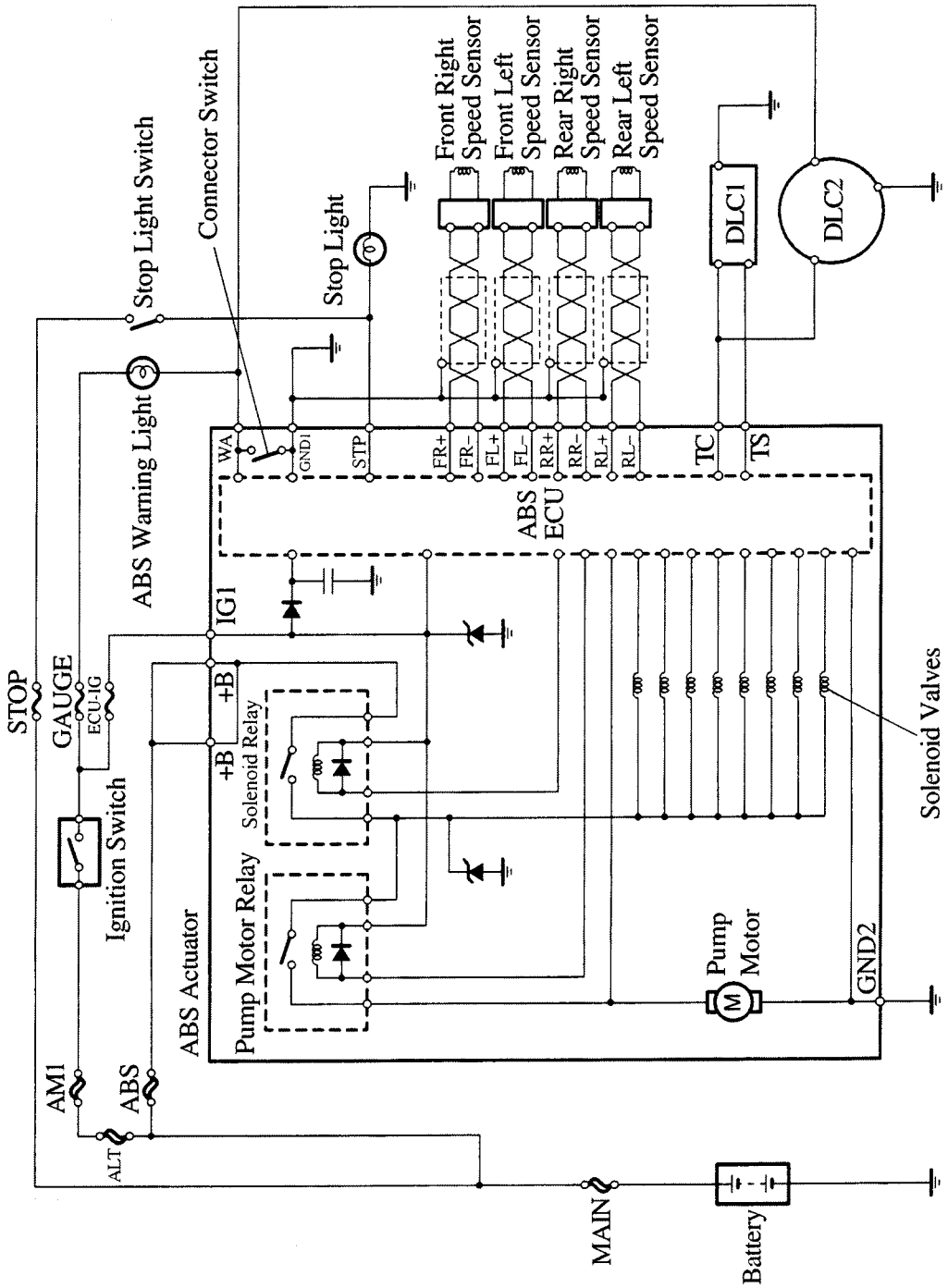
TMM Produced Model

3. Wiring Diagram

TMC Produced Model

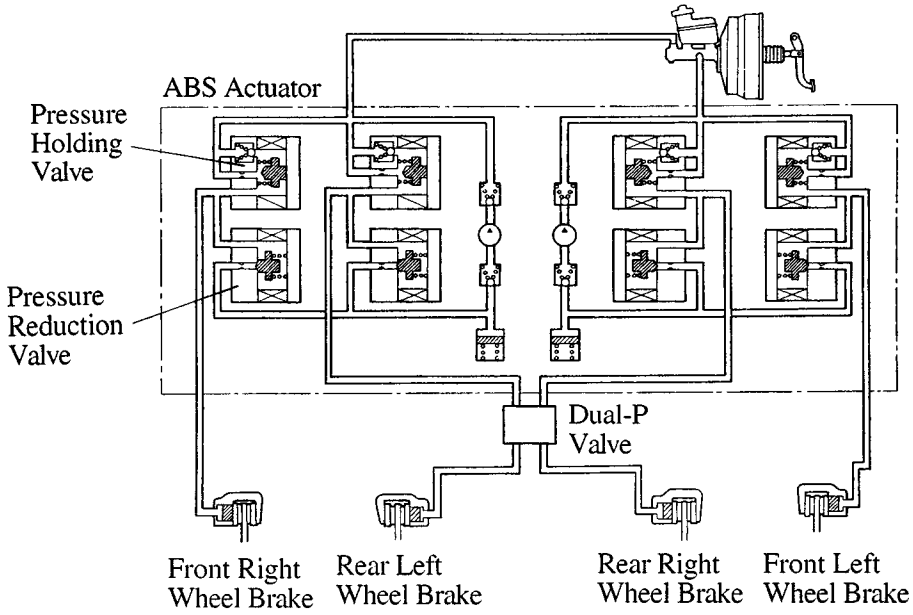


TMM Produced Model



4. Hydraulic Circuit

The hydraulic circuit of the Nippondenso and Bosch systems are the same.



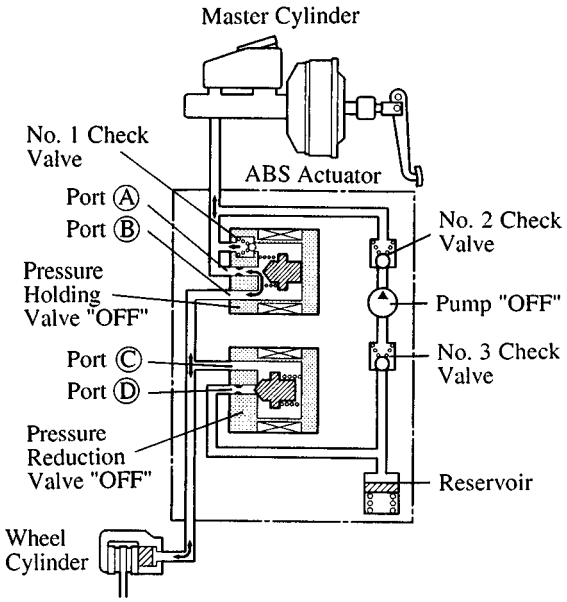
5. Operation

The hydraulic system of the ABS has 4 circuits. Although the hydraulic circuit described below is 1 circuit, it is applicable to other circuits as well.

During Normal Braking (ABS not activated)

During normal braking, the ABS is not activated and the ECU does not send control signal. When the brake pedal is depressed, the fluid pressure in the master cylinder rises, brake fluid passes from port A to port B, and then flows to the brake wheel cylinder. When the brake pedal is released, brake fluid returns from the brake wheel cylinder to the master cylinder through port B to port A and the No. 1 Check Valve.

Hydraulic Circuit◀



Condition of Each Valve and Pump Motor◀

Part Name	Signal from ABS ECU	Operation	
Pressure Holding Valve	OFF	Port **A**	Open
Pressure Reduction Valve	OFF	Port **D**	Closed
Pump Motor	OFF	Rotating	

During Normal Braking (ABS not activated)

1) Pressure Reduction Mode

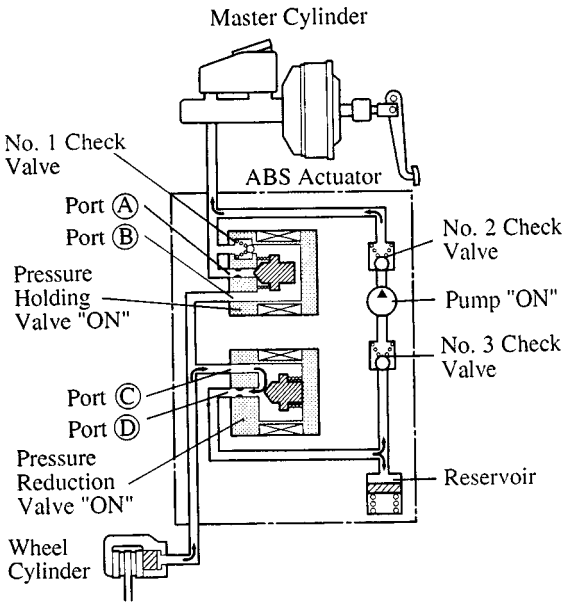
When the wheel is about to lock, the control signal from the ECU causes port A to close, port D to open, thus engaging the pressure reduction mode.

At this time, the brake fluid flows from the wheel cylinder, through ports C and D, to the reservoir, reducing the wheel cylinder pressure. At the same time, the brake fluid is pumped and returned to the master cylinder.

Condition of Each Valve and Pump Motor◀

Part Name	Signal from ABS ECU	Operation	
Pressure Holding Valve	ON	Port **A**	Closed
Pressure Reduction Valve	ON	Port **D**	Open
Pump Motor	ON	Rotating	

Hydraulic Circuit◀



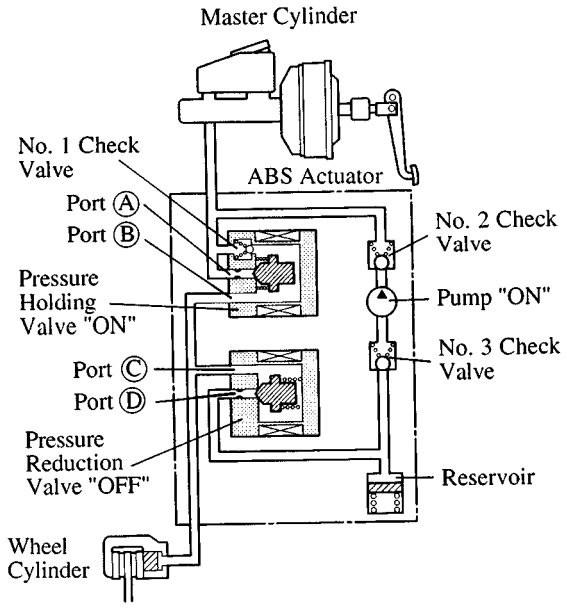
2) Pressure Holding Mode

After the fluid pressure in the wheel cylinder is reduced or increased to the required pressure, a control signal fromt he ECU causes ports A and D to close. As a result, the system engages in the pressure holding mode to maintain the fluid pressure in the wheel cylinder.

Condition of Each Valve and Pump Motor◀

Part Name	Signal from ABS ECU	Operation	
Pressure Holding Valve	ON	Port **A**	Closed
Pressure Reduction Valve	OFF	Port **D**	Closed
Pump Motor	ON	Rotating	

Hydraulic Circuit◀



3) Pressure Increase Mode

When the fluid pressure in the wheel cylinder needs to be increased in order to apply more braking force, a control signal from the ECU causes port A to open, port D to close, thus engaging in the pressure increase mode.

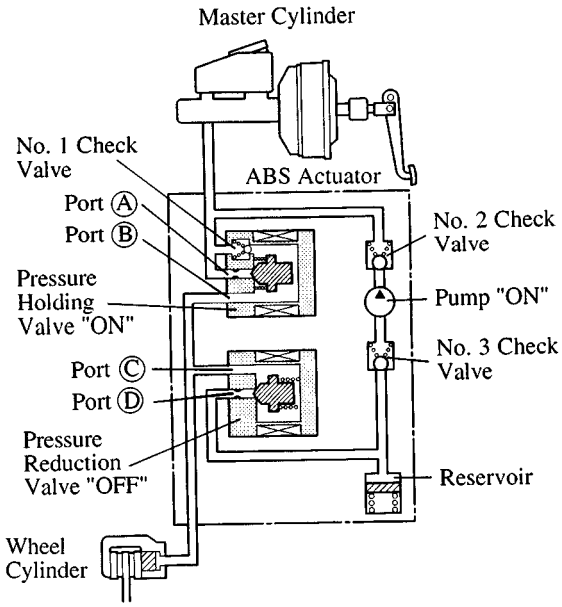
Accordingly, the circuit will be in the same state as in normal braking, in chich the brake fluid is sent from the master cylinder to the wheel cylinder to increase the fluid pressure in the wheel cylinder.

The fluid pressure increase rate is controlled by repetition of the pressure increase and pressure holding mode.

Condition of Each Valve and Pump Motor◀

Part Name	Signal from ABS ECU	Operation	
Pressure Holding Valve	OFF	Port **A**	Open
Pressure Reduction Valve	OFF	Port **D**	Closed
Pump Motor	ON	Rotating	

Hydraulic Circuit◀

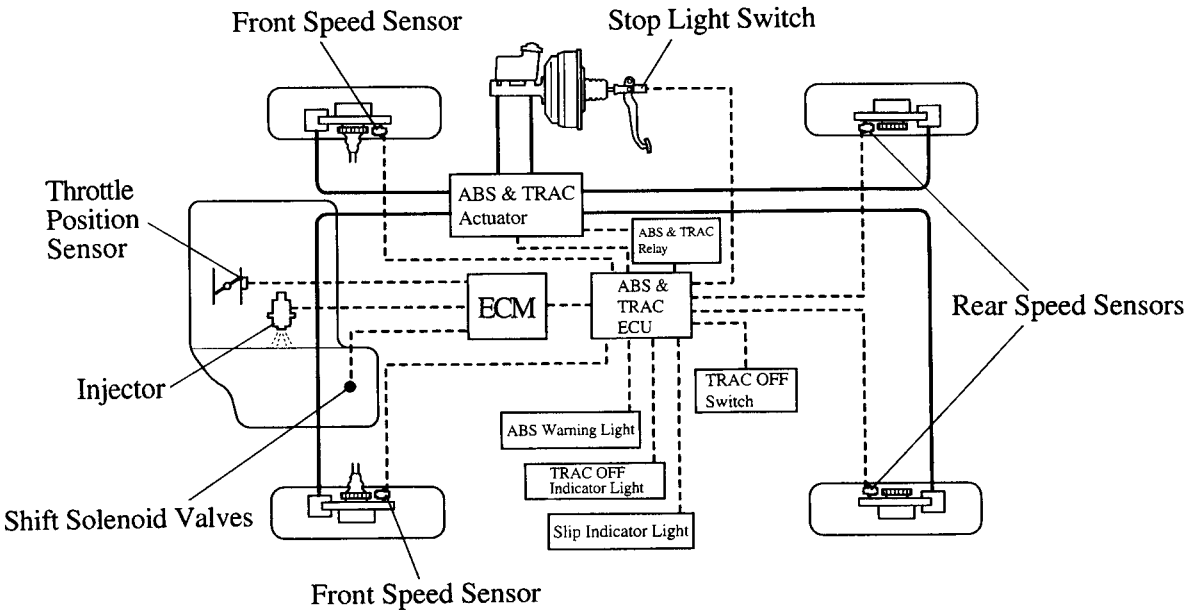


■ ABS & TRAC SYSTEM

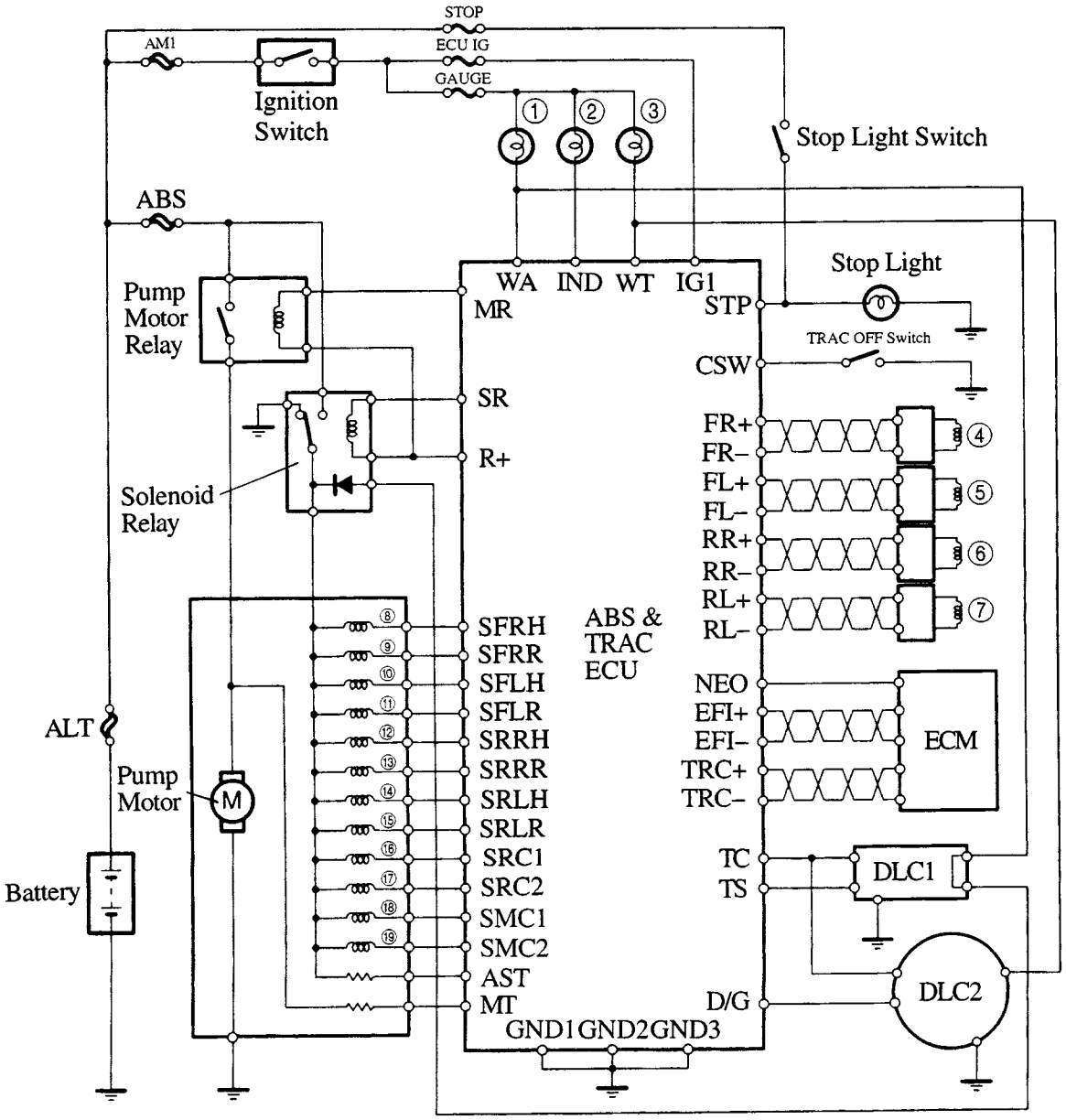
1. General

The ABS & TRAC system totally controls the engine torque control through the fuel cutoff and the braking of the driving wheels (front wheels). If helps to avoid slippage of the driving wheels that tends to happen during starting and acceleration and to maintain an optimal driving force according to the road surface conditions. The system eliminates the need for a subtle accelerator pedal opeation and ensures vehicle stability when starting, accelerating or turning on slippery roads.

2. System Diagram

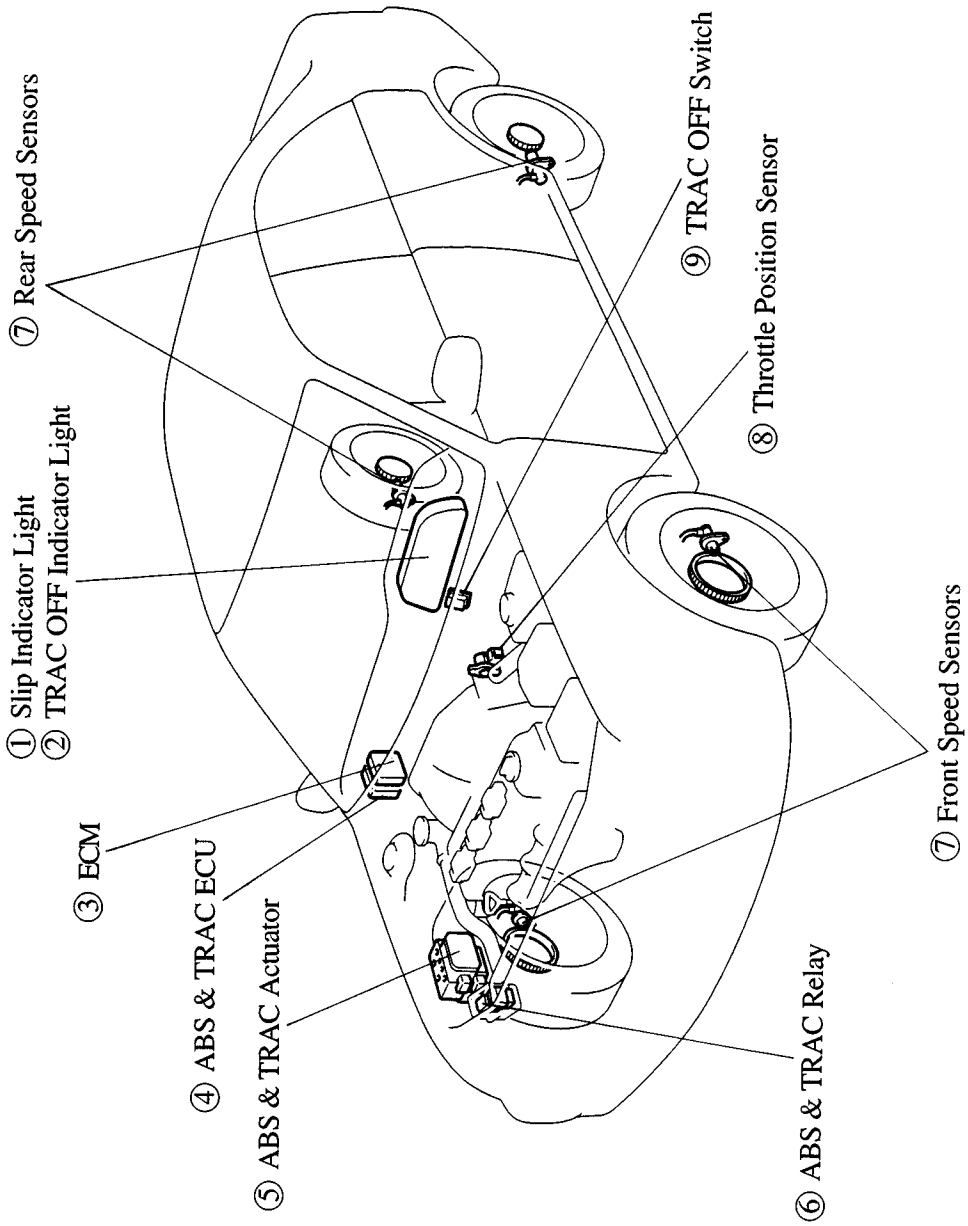


3. Wiring Diagram



① ABS Warning Light
② Slip Indicator Light
③ TRAC OFF Indicator Light
④ Front Right Speed Sensor
⑤ Front Left Speed Sensor
⑥ Rear Right Speed Sensor
⑦ Rear Left Speed Sensor
⑧ Front Right Pressure Holding Valve
⑨ Front Right Pressure Reduction Valve
⑩ Front Left Pressure Holding Valve
⑪ Front Left Pressure Reduction Valve
⑫ Rear Right Pressure Holding Valve
⑬ Rear Right Pressure Reduction Valve
⑭ Rear Left Pressure Holding Valve
⑮ Rear Left Pressure Reduction Valve
⑯ Reservoir Cut Solenoid Valve
⑰ Reservoir Cut Solenoid Valve
⑱ Master Cut Solenoid Valve
⑲ Master Cut Solenoid Valve

4. Layout of Components



5. Function of Components

No.	Component		Function
1	Slip Indicator Light		Blinks to inform the driver when the TRAC system is operated.
2	TRAC OFF Indicator Light		Lights to inform the driver when the TRAC system is turned OFF by the by the TRAC OFF switch. And, blinks to alert the driver when the ECU detects the malfunction in the TRAC system.
3	ECM		® Sends signals to the ABS & TRAC ECU, such as the throttle valve opening angle, specific volume of intake air signal, etc. ® Controls the engine output and shift timing in accordance with the fuel cutoff request and shift timing request that are output by the ABS & TRAC ECU.
4	ABS & TRAC ECU		Judges the vehicle driving condition based on signals from 4 speed sensors and signals from ECM, and sends fuel cut and shift timing demand signals to the ECM and brake control signal to the ABS & TRAC actuator.
5	ABS & TRAC Actuator		Controls the brake fluid pressure to each brake wheel cylinder of the driving wheel (front wheel) by signals from the ABS & TRAC ECU.
6	ABS & TRAC Relay	Solenoid Relay	Directs electricity to the solenoid valves in the actuator.
		Pump Motor Relay	Controls the pump motor operation in the actuator.
7	Speed Sensors (Front and Rear)		Detect the wheel speed of each of four wheels.
8	Throttle Position Sensor		Detects the throttle valve opening angle.
9	TRAC OFF Switch		Turns the TRAC system inoperative.

6. Construction and Operation of Components

TRAC OFF Switch and Indicator Light

1) TRAC OFF Switch

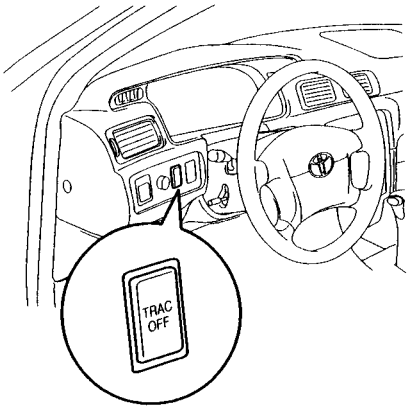
When pressing, this switch turns the TRAC system to be inoperative. Pressing it again changes it to be operative. When turning the ignition switch from “OFF” to “ON”, TRAC system always becomes operative.

2) TRAC OFF Indicator Light

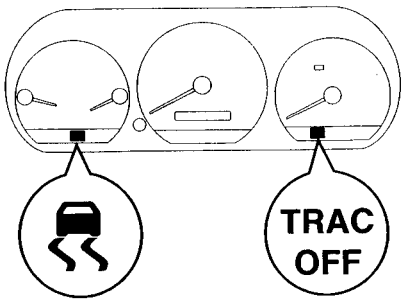
This light comes on when the TRAC system is set inoperative by the TRAC OFF switch, and informs the driver accordingly. And blinks to alert the driver when a malfunction has occurred in the engine and TRAC system.

3) Slip Indicator Light

When the TRAC system is operative, the light blinks and informs the driver accordingly.



TRAC OFF Switch



Slip Indicator Light

TRAC OFF Indicator Light

ABS & TRAC Actuator

1) Construction

The ABS & TRAC actuator consists of 12 two–position solenoid valves, 1 motor, 2 pumps 2 reservoirs and 2 pressure regulator valves.

The 12 two–position solenoid valves consists of 2 master cut solenoid valves, 2 reservoirs cut solenoid valves, 4 pressure holding valves, and 4pressure reduction valves.

Pressure regulator valve is assembled into the master cut solenoid valve.

The basic construction and operation of the pump, reservoir, pressure holding valve, and pressure reduction valve are shared with ABS.

a. Master Cut Solenoid Valve

When the TRAC system is active, a signal from the ABS & TRAC ECU causes the master cut solenoid valve to turn ON in order to shut off the circuit between the master cylinder and the front brake wheel cylinder.

b. Reservoir Cut Solenoid Valve

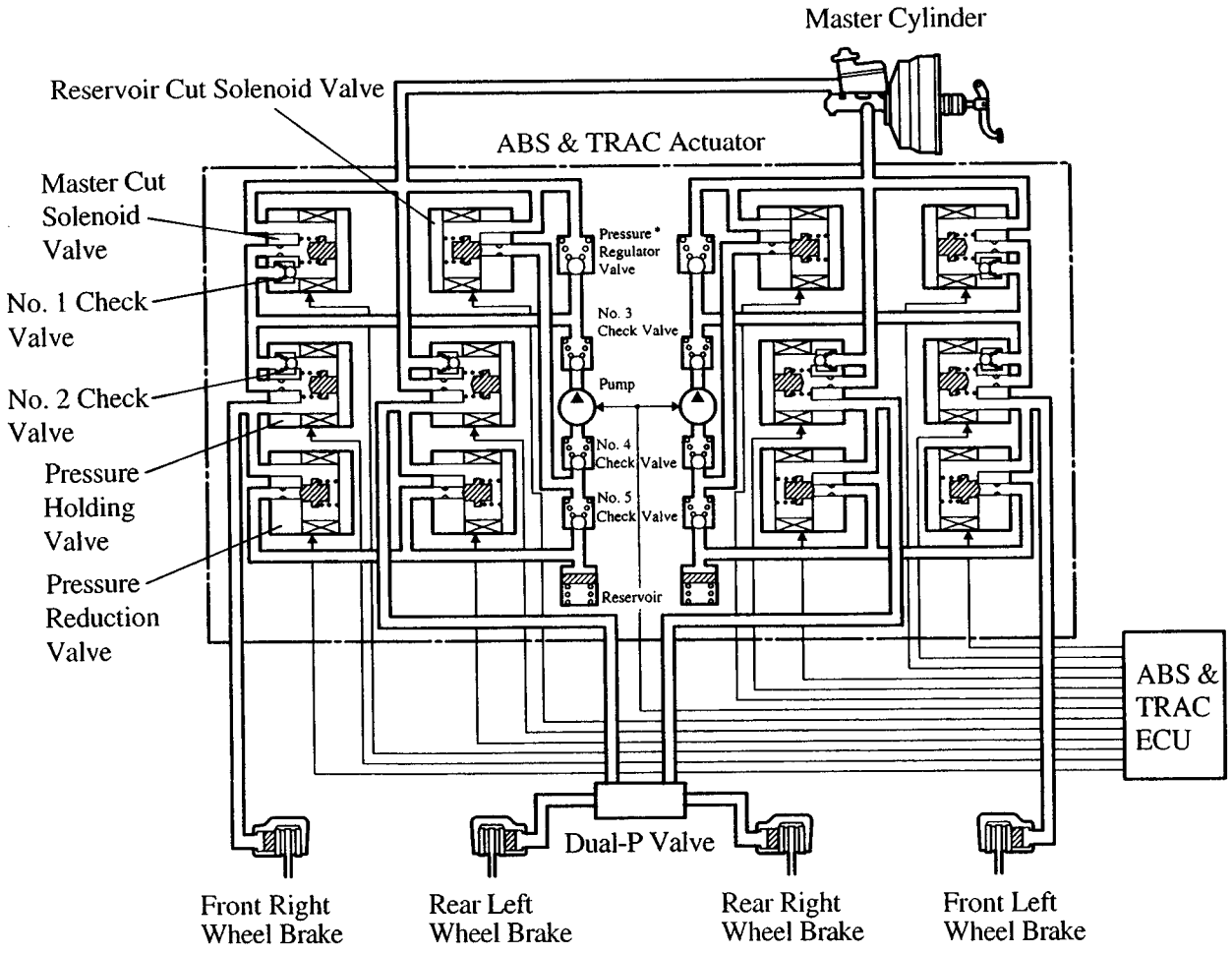
When the TRAC system is active, a signal from the ABS & TRAC ECU causes the reservoir to cut solenoid valve to turn ON in order the circuit from the master cylinder to the pump.

The basic construction and operation are the same as those of the pressure reduction valve.

c. Pressure Regulator Valve

Regulates the brake fluid pressure regulated by the pump to a pressure level needed for TRAC control.

2) Hydraulic Circuit



*: Pressure regulator valve is assembled into the master cut solenoid valve, however, it is illustrated separately to explain its operation.

3) Operation

The hydraulic system of the TRAC system consists of the following 2 circuits; the front right and front left. Although the hydraulic circuit described below is one circuit, it is applicable to other circuits as well.

a. During Normal Operation (TRAC System not Activated)

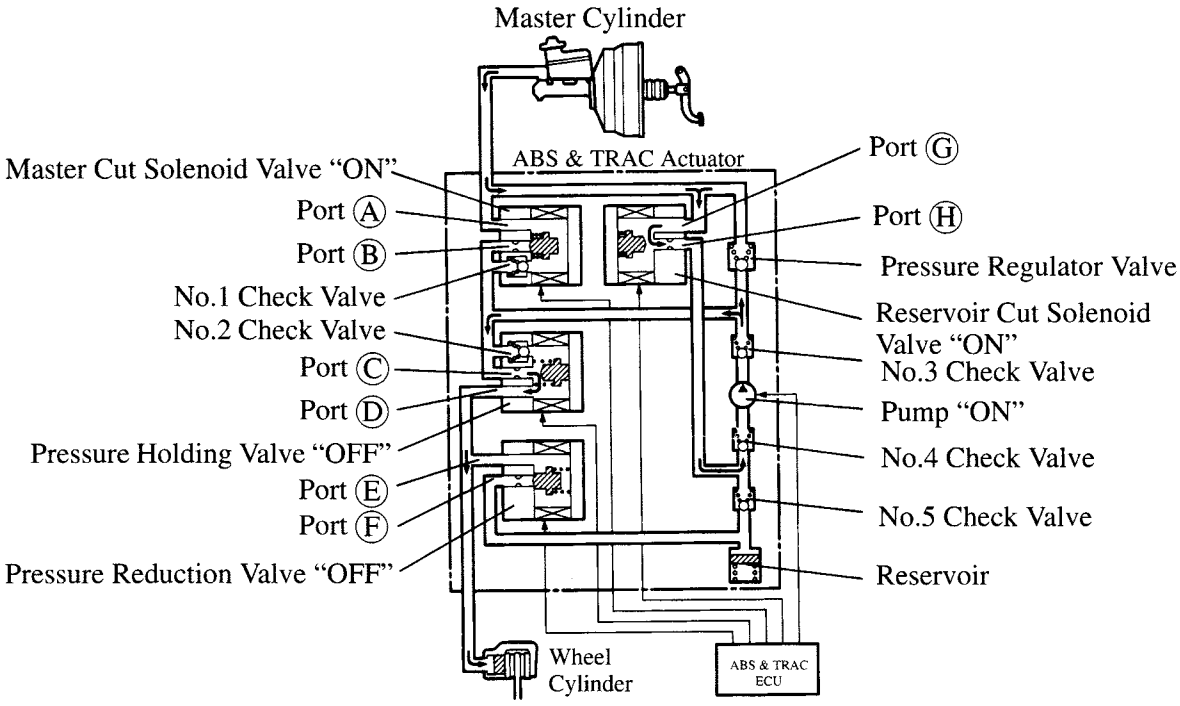
When the TRAC system is inactive, the ABS & TRAC ECU does not output any controls signals. Thus, all valves are OFF.

Accordingly, pressing on the brake pedal causes the brake fluid to flow from the master cylinder to port **A**, port **B**, No. 1 check valve, port **C**, and port **D**, thus applying fluid pressure to the wheel cylinder.

Also, releasing the brake pedal causes the brake fluid to flow from the wheel cylinder to port **D,** port **C**, No. 2 check valve, port **B**, and port **A**, thus returning to the master cylinder.

Thus, the brakes operate in the normal brake mode.

Hydraulic Circuit◀



Condition of Each Valve and Pump Motor◀

Part Name	Signal from ABS & TRAC ECU	Operation	
Master Cut Solenoid Valve	OFF	Port **B**	Open
Reservoir Cut Solenoid Valve	OFF	Port **H**	Closed
Pressure Holding Valve	OFF	Port **C**	Open
Pressure Reduction Valve	OFF	Port **F**	Closed
Pump	OFF	Stop	

b. During Vehicle Acceleration (TRAC System Activated)

When a front wheel slips during acceleration, the TRAC system controls the engine output and braking of the front wheels to help preventing wheel slippage.

The brake fluid pressure applied to the right and left front wheels is controlled separately accordingly to 3 control modes (pressure increase, holding, and pressure reduction) as explained below.

i) Pressure Increase Mode

During sudden acceleration or driving on a slippery surface, if the front wheels start to slip, a control signal from the ABS & TRAC ECU causes the ABS & TRAC actuator to control the valves and pumps as described below, to effect the pressure increase mode.

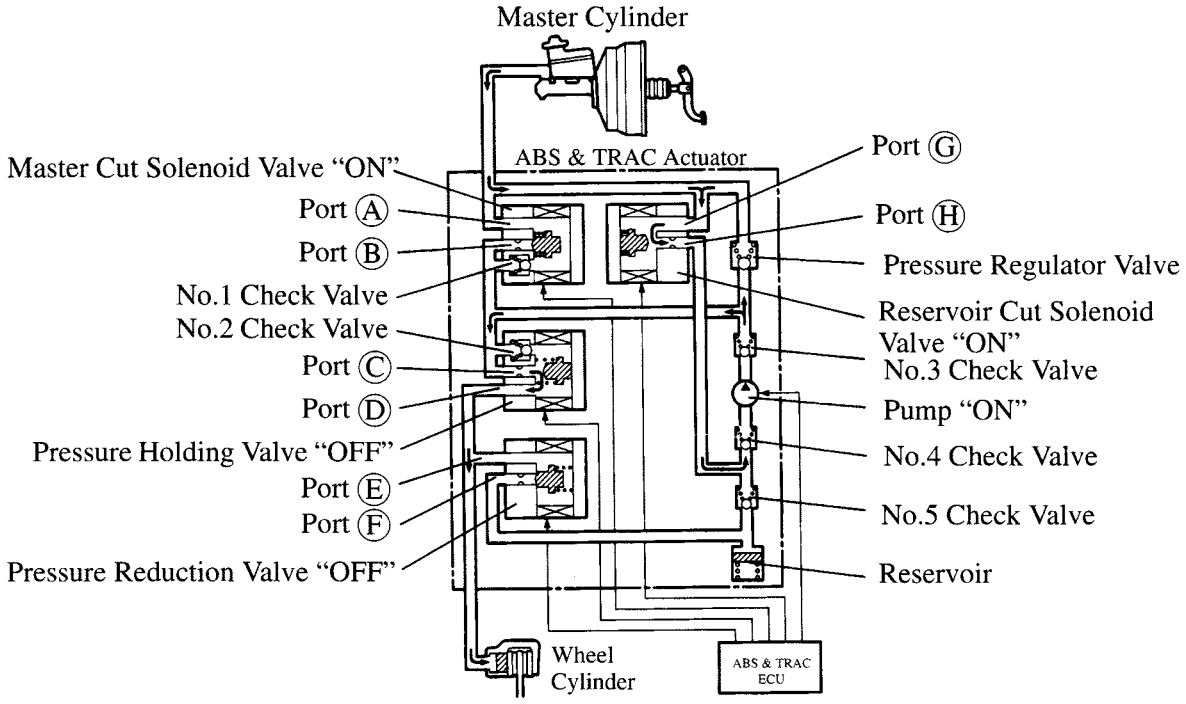
When the master cut and reservoir cut solenoid valves turn ON, port **B** is closed, port **H** is open and the pump operates at the same time.

Accordingly, the brake fluid will be suctioned up from the master cylinder through parts **G** and **H.**

Then the brake fluid that is pressurized by the pump will be applied to the wheel cylinder through **C** and **D**.

Also, the brake fluid that pressurized by the pump is regulated to a constant pressure by the pressure regulator valve.

Hydraulic Circuit◀



Condition of Each Valve and Pump Motor◀

Part Name	Signal from ABS & TRAC ECU	Operation	
Master Cut Solenoid Valve	ON	Port **B**	Closed
Reservoir Cut Solenoid Valve	ON	Port **H**	Open
Pressure Holding Valve	OFF	Port **C**	Open

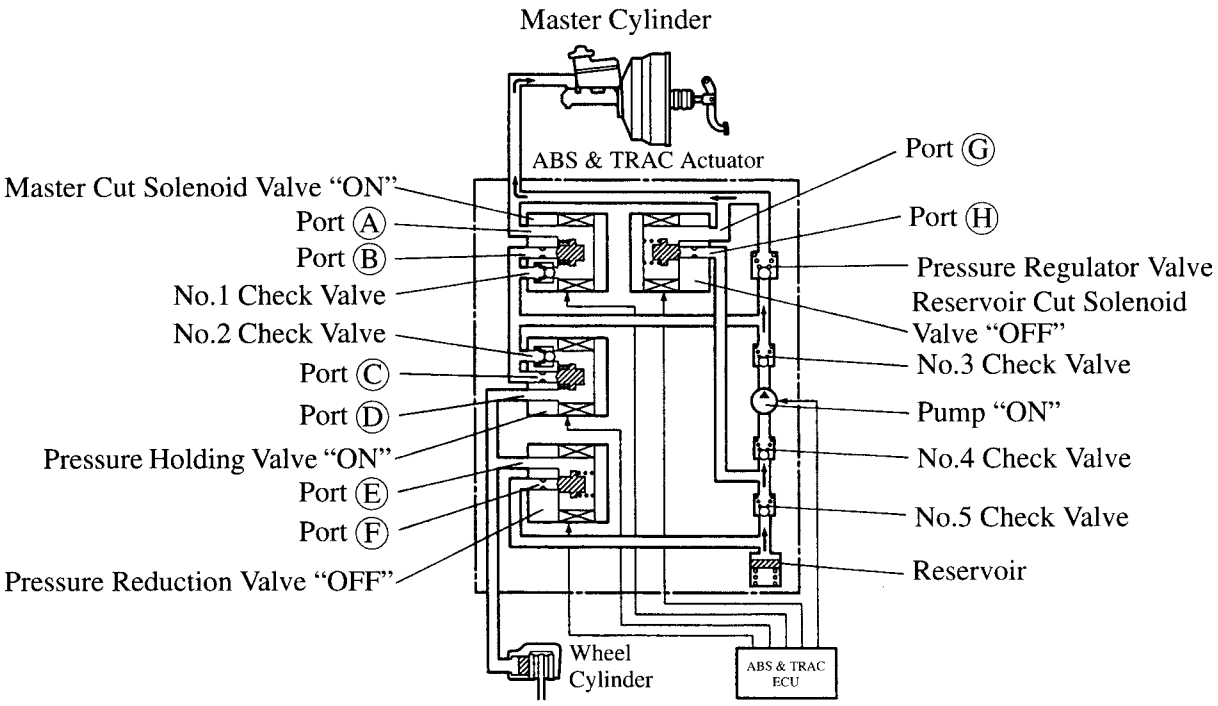
Pressure Reduction Valve	OFF	Port **F**	Closed
Pump	ON	Rotating	

ii) Pressure Holding Mode

When the fluid pressure in the wheel cylinder is increased or decreased to attain the required pressure, the ABS & TRAC ECU sends a control signal to turn ON the pressure holding valve.

Then, the fluid pressure that is applied to the wheel cylinder is cut off to hold the fluid pressure in the wheel cylinder.

Hydraulic Circuit◀



Condition of Each Valve and Pump Motor◀

Part Name	Signal from ABS & TRAC ECU	Operation	
Master Cut Solenoid Valve	ON	Port **B**	Closed
Reservoir Cut Solenoid Valve	OFF	Port **H**	Closed
Pressure Holding Valve	ON	Port **C**	Closed
Pressure Reduction Valve	OFF	Port **F**	Closed
Pump	ON	Rotating	

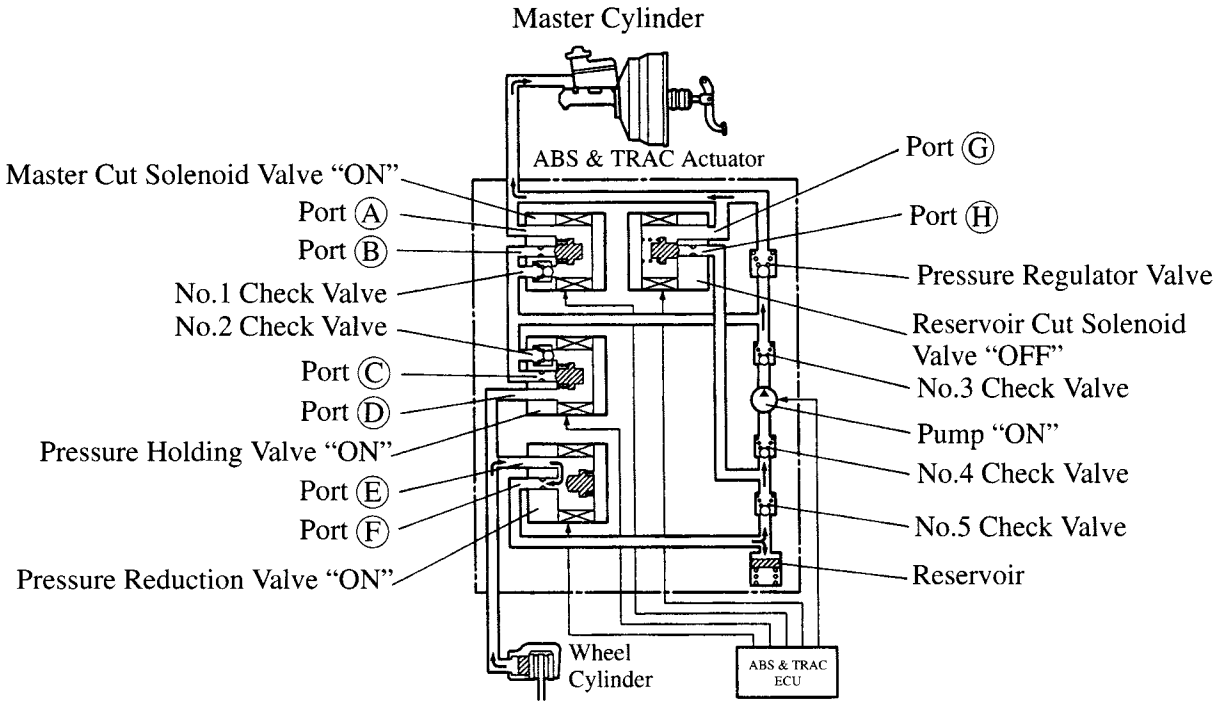
iii) Pressure Reduction Mode

When the fluid pressure in the wheel cylinder needs to be decreased, the ABS & TRAC ECU sends a control signal to turn the pressure reduction valve ON, causing port **F** to open

Accordingly, the brake fluid in the wheel cylinder flows to ports **E** and **F**, reservoir, and pump, to reduce the fluid pressure in the wheel cylinder.

The fluid pressure reduction rate is controlled by repetition of the pressure reduction and holding mode.

Hydraulic Circuit◀



Condition of Each Valve and Pump Motor◀

Part Name	Signal from ABS & TRAC ECU	Operation	
Master Cut Solenoid Valve	ON	Port **B**	Closed
Reservoir Cut Solenoid Valve	OFF	Port **H**	Closed
Pressure Holding Valve	ON	Port **C**	Closed
Pressure Reduction Valve	ON	Port **F**	Open
Pump	ON	Rotating	

ABS & TRAC ECU

1) Wheel Speed Control

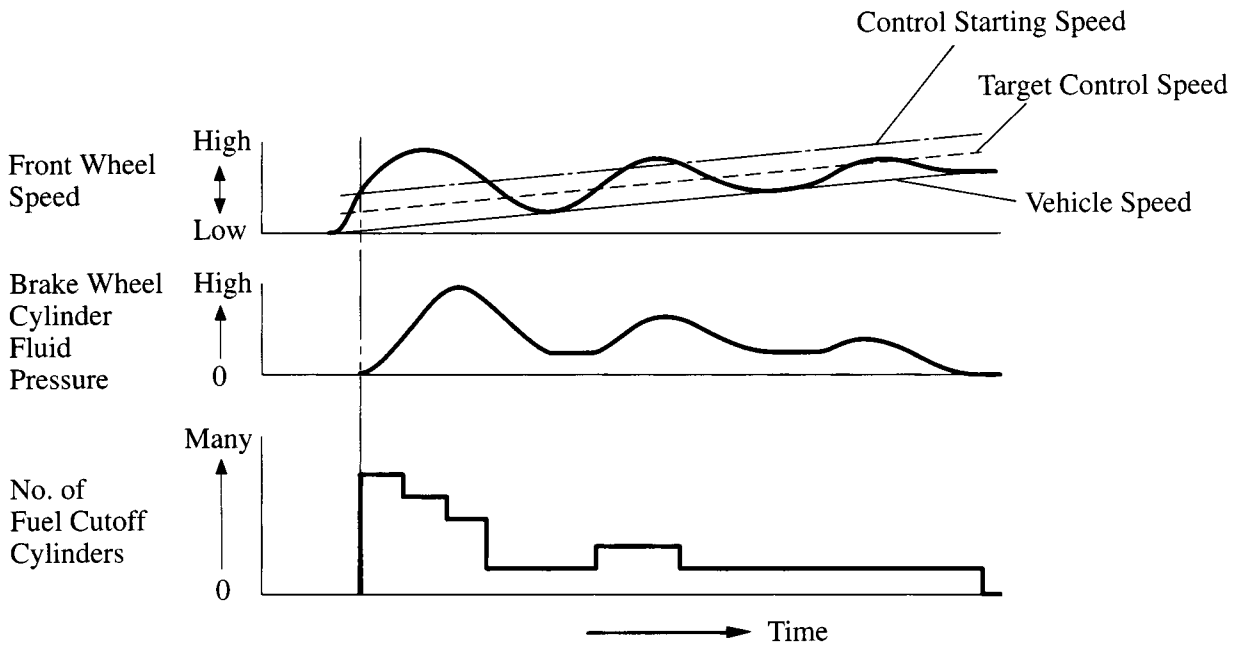
The ABS & TRAC ECU constantly receives signals from 4 speed sensors and calculates the speed of each wheel and vehicle speed.

During sudden acceleration or driving on a slippery surface, if the drive wheels (front wheels) start to slip, the difference in speed between the drive wheels are slipping.

Then, the ABS & TRAC ECU executes the right and left independent control of the front wheel brakes, the engine torque control through fuel cutoff, and shift timing control according to the extent of the slip.

TRAC operation processes are described below.

1. The vehicle speed is determined by way of the rear wheel speed. This speed is then compared to the speed of the front wheels, which are the drive wheels, to determine the slip condition of the drive wheels (front wheels).
2. The target control speed for the drive wheels is set based on the estimated vehicle speed.
3. If the speed of the front wheels, which are the drive wheels, exceeds the control starting speed, the ABS & TRAC ECU determines that a slip has occurred and cuts off fuel according to the number of cylinders. By executing engine torque control and brake control in this manner, the system regulates the speed so that front wheels attain the target control speed. In addition, the system executes control to prohibit the shifting of the automatic transaxle at this time.
4. TRAC control ends when the drive wheels move to non–slippery surface or when the driver releases the accelerator pedal.



2) Initial Check

An initial check is carried out once every a few seconds after the ignition was turned on. The functions of each solenoid valve and pump motor in the actuator are checked on order.

3) Self–Diagnosis

If the ABS & TRAC ECU detects a malfunction in the engine, ABS or TRAC system, it blinks the TRAC OFF indicator light to alert the driver of the malfunction. At the same, the ABS & TRAC 1997 Avalon Repair Manual (Pub. No. RM504U) for the diagnostic code check method, diagnostic code and diagnostic code clearance.

4) Fail–Safe

In the event of a malfunction in the engine, ABS or TRAC system, the ABS & ECU prohibits the TRAC system.

Thus, the brake and engine controls will operate in the same conditions as those without the TRAC system.

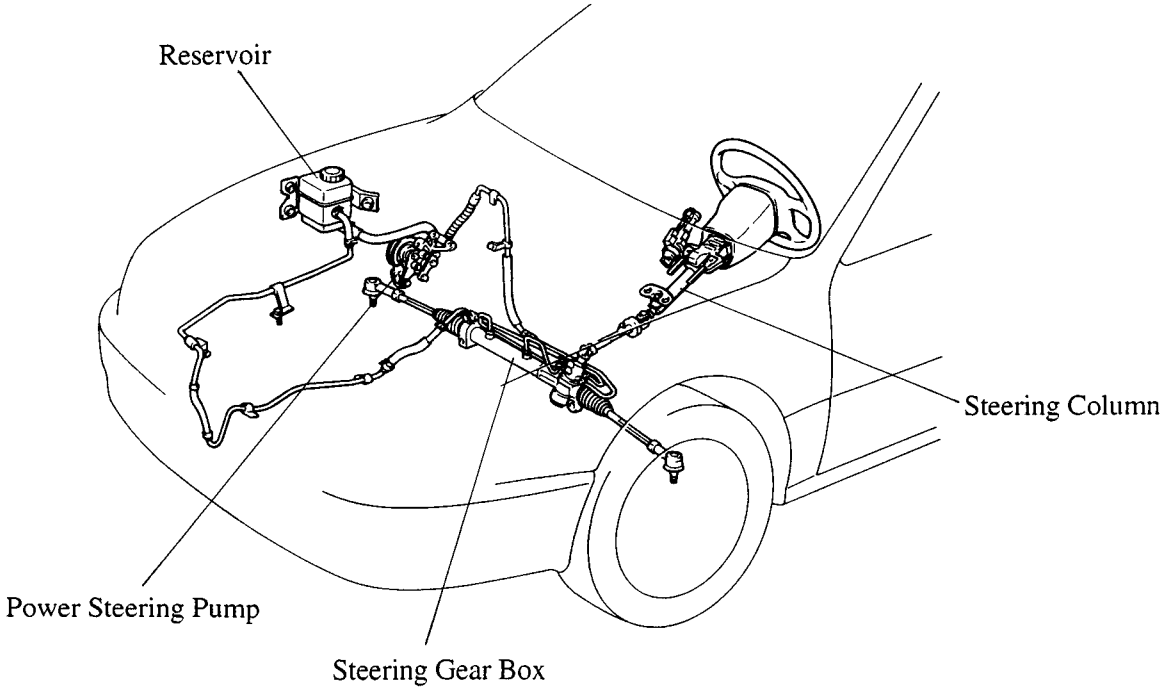
STEERING

■ DESCRIPTION

° As in the previous model, a rack and pinion type steering gear is used. An engine revolution sensing type power steering is used on all models.

° As in the previous model, all models are provided with tilt steering.

° An energy absorbing mechanism has been changed.



1MZ-FE Engine Model

Specifications◀

Model	New		Previous	
Engine Type / Item	5S–FE	1MZ–FE	5S–FE	1MZ–FE
Gear Ratio (Overall)	17.4 : 1	←	←	←
No. of Turns Lock to Lock	3.1	3.0	3.1	3.0
Rack Stroke mm (in.)	149 (5.87)	145 (5.71)	149 (5.87)	←145 (5.71)
Fluid Type	ATF Type DEXRON® II or III	←	←	←

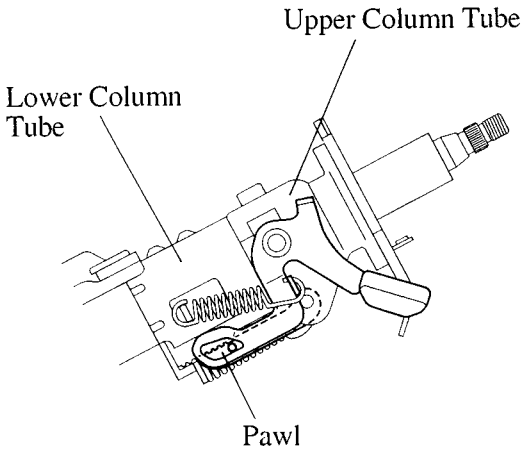
■ STEERING COLUMN

1. Tilt Mechanism

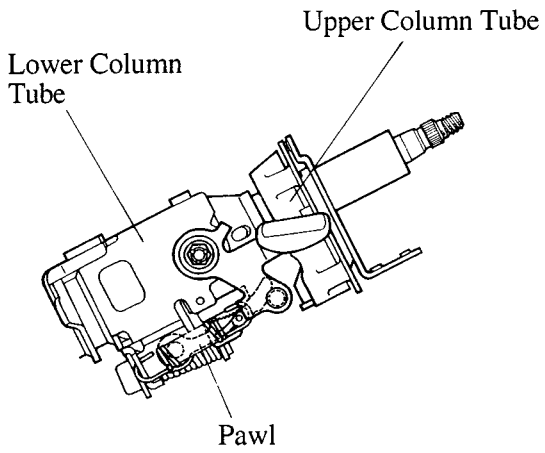
General

Although all models are provided with tilt steering as in the previous model, the lock mechanism has been partially changed.

In the previous model, the pawl was attached on the lower colulmn tube, and the upper column tube was provided with a ratchet cutout. However, in the new model, the pawl is attached to the upper column tube, and the ratchet cutout is provided in the lower column tube.



New

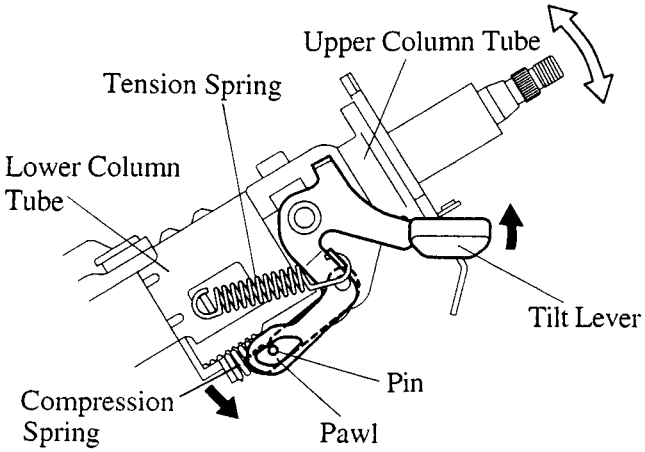


Previous

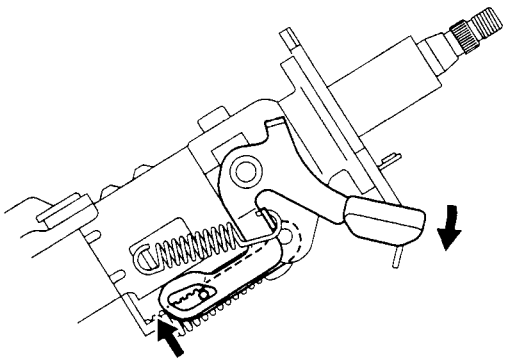
Construction and Operation

The tilt mechanism consists of a tilt lever, pawl, upper column tube, lwoer column tube, tension spring and compression spring.

A hole is provided at the tip of the tilt lever, into which the pawl pin is inserted. As the pawl pin is inserted intor the hole at the tip of the lever, moving the tilt lever causes the pawl to move downward. As a result, the ratchet of the lower column tube and the ratchet of the pawl disengage from each other to release the tilt lock. Releasing the tilt lever causes the lever (which is under spring tension) to return. Accordingly, the pawl is pushed upward, causing the ratchet of the column tube and the ratchet of the pawl to engage with each other, thus locking the tilt lock.



Free



Lock

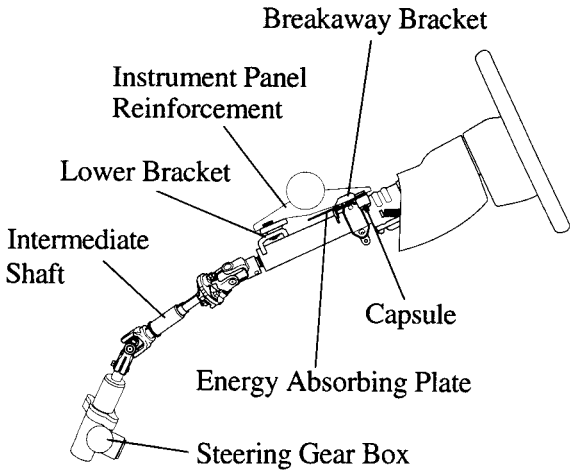
2. Energy Absorbing Mechanism

Construction

The energy absorbing mechanism of the steering column consists of a lower bracket, breakaway bracket, and energy absorbing plate.

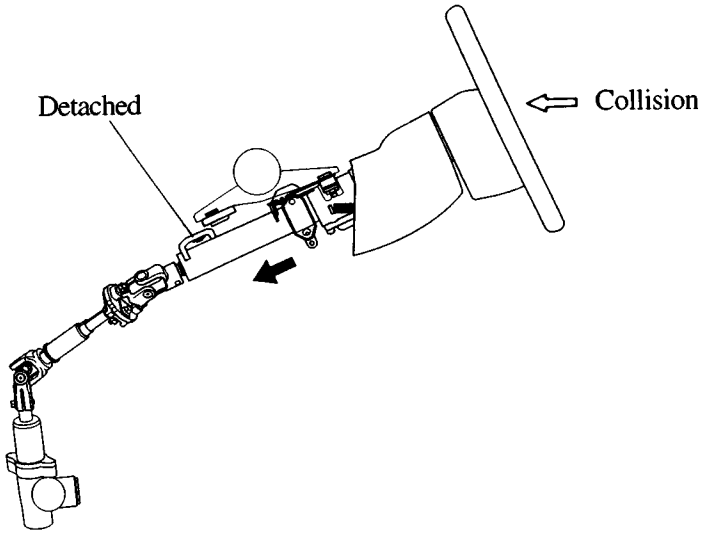
The breakaway bracket is attached to the instrument panel reinforcement vial the capsule and energy absorbing plate.

The steering column and the steering gear box are connected with an elastic intermediate shaft.

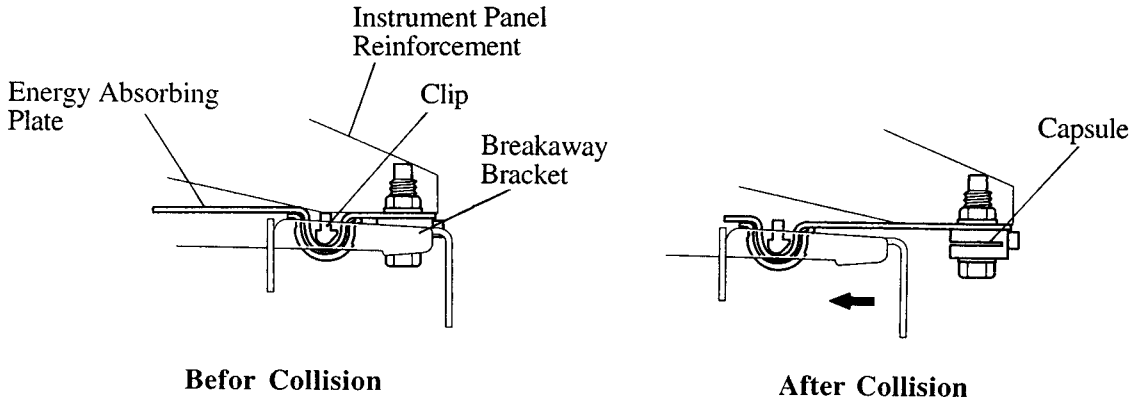


Operation

The collision is transmitted to the steering wheel, and the lower bracket and the breakaway breacket will become detached from each other, thus moving the entire unit forward. At the same time, the energy absorbingt plate becomes deformed to absorb the energy of the impact.



Energy Absorbing Plate◀



Befor Collision **After Collision**

BODY

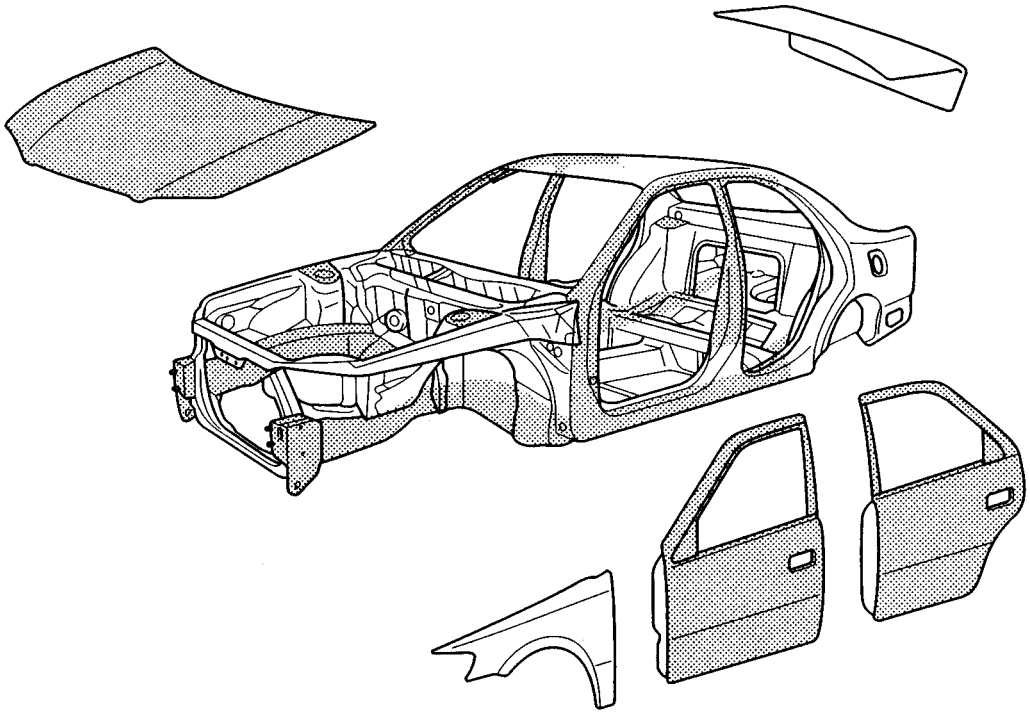
LIGHTWEIGHT AND HIGHLY RIGID BODY

The body of the new Camry is made highly rigid and lightweight through refinement of the shap and construction of each part, improved joint rigidity, and increased use of high strength sheet steel.

■ HIGH STRENGTH SHEET STEEL

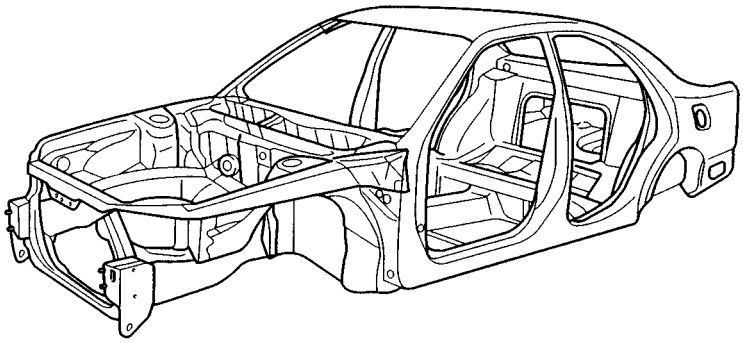
Light and highly rigid high strength sheet steel is used for the hood, door panels and members.

: High Strength Sheet Steel

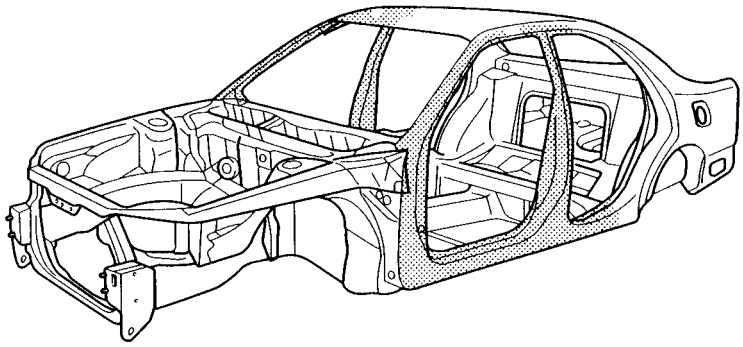


■ BODY SHELL

® The body of the new Camry is made highly rigid through the optimization of the location of reinforcements, the continuity in underbody members, and via excellent joint rigidity.

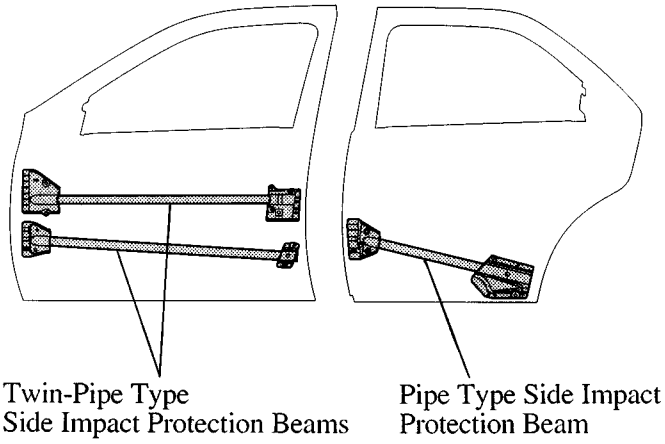


® At each pillar, a continuous einforcement is provided from where the pillar meets the roof, all the way to the rocker, thus resulting in a strong pillar construction. In addition, the areas where the pillar joins the roof side rail and the rocker have been strengthened to realize excellent body rigidity.



■ DOORS

A twin–pipe type side impact protection beams are mounted in the center space between the front door panels. Similarly, a side impact protection beam is provided in the rear door.



■ IMPACT ABSORBING STRUCTURE

1. General

The impact absorbing structure of the new Camry provides a body construction that can effectively absorb the energy of impact in the event of a front, rear, or side collision. Also, it realizes an excellent occupant protection performance through the use of reinforcements and members that help minimize cabin deformation.

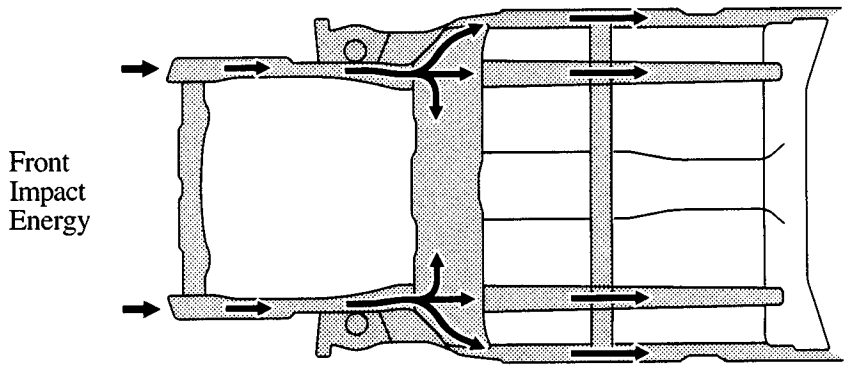
2. Construction

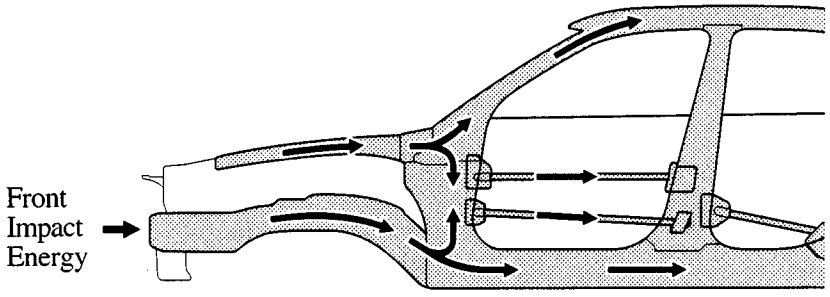
Impact Absorbing Structure for Front/Rear Collision

In conjunction with the evision made to the impact absorbing structure for a front or rear collision, the cross section of the underbody members, pillars, and reinforcements have been increased in size and thickness of the materal used.

Accordingly, the underbody and cabin framework were made to efficienlty absorb and dissipate the impact energy in case of a front or rear collision, thus realizeing a body struture to minimize cabin deformation.

Impact Absorbing Structure for Front Collision◀



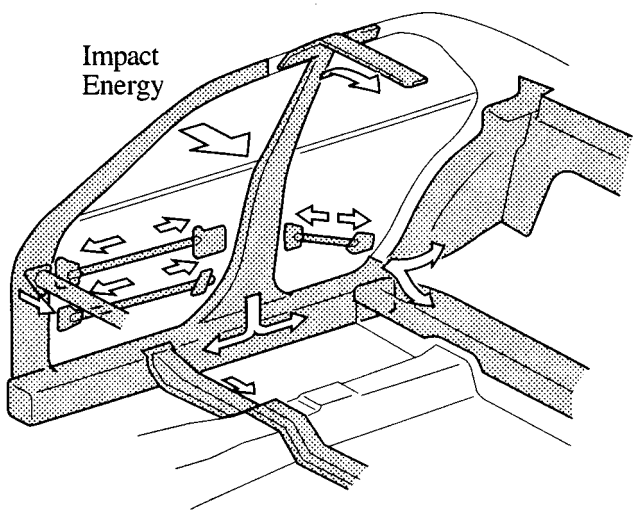


Impact Absorbing Structure for Side Collision

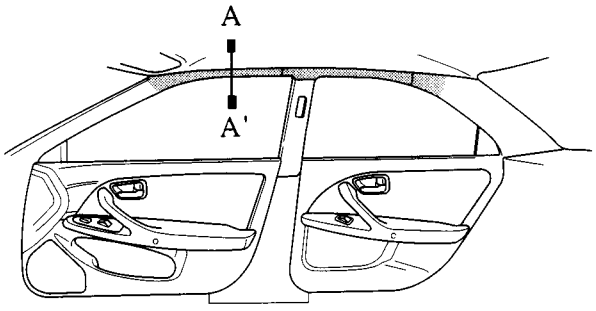
Impact energy of a side collision directed to the cabin area is dispersed throughout the body via pillar reinforcements, side impact protection beams, floor cross members, etc. This dispersion of energy keeps the energy directed to the cabin to a minimum level. In additon, the body is made highly rigid through the cabin space. And, in order to make the door more energy absorbent, a closed cross section configuration is provided at the belt line area of the front and rear doors.

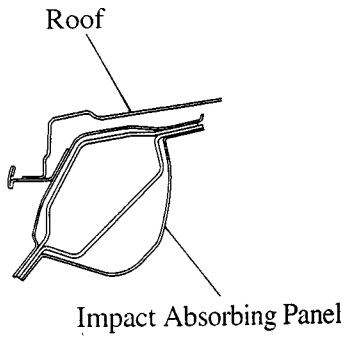
Also, a soft upper interior construction has been adopted. With this type of constrution, if the occupant's head collides against the roof side rail in reaction to a collision, the inner panel of the roof side rail collapses to reduct the impact.

Impact Absorbing Structure for Side Collision◀



Soft Upper Interior Structure◀





A – A' Cross Section

RUST–RESISTANT BODY

Rust–resistant performance is enhanced by extensive use of anti–corrosion sheet steel and is performing and anti–corrosion treatment by applying wax, sealer and anti–chipping paint to easily corroded parts such as the hood, doors and rocker panels.

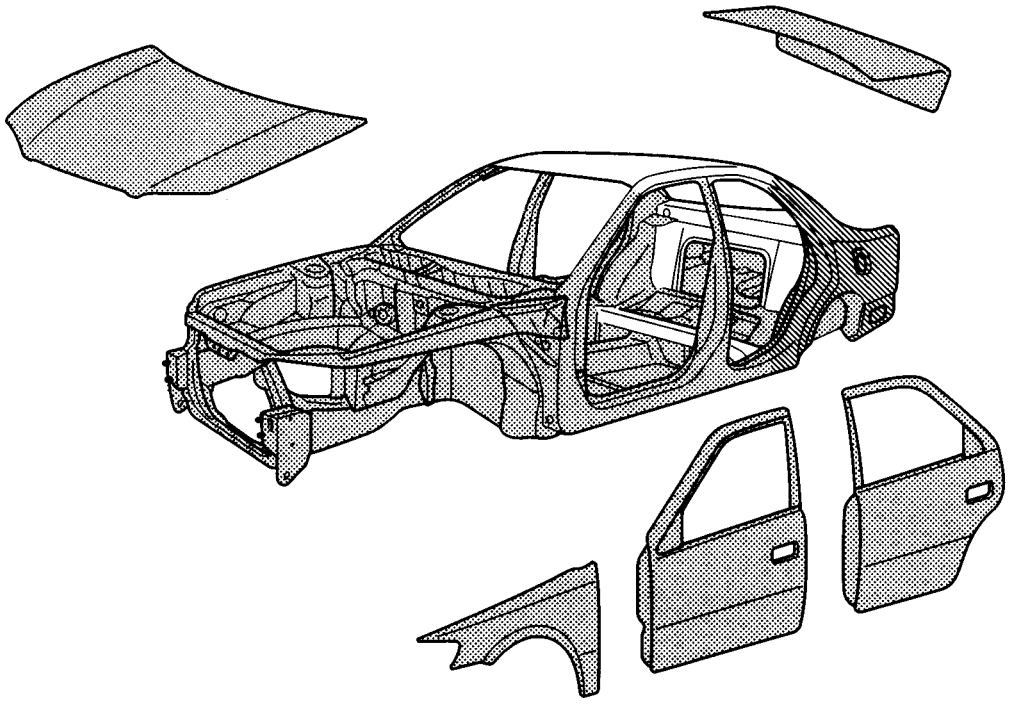
ANTI–CORROSION SHEET STEEL

Galvannealed sheet steel is used in all areas other than the interior parts and the roof. However, on models produced by TMC, zinc–iron alloy double layer galvannealed sheet steel is used for quarter panel.

: Galvannealed Sheet Steel

: Zinc-Iron Alloy Double Layer Galvannealed Sheet Steel (Produced by TMC)

: Galvannealed Sheet Steel (Produced by TMM)

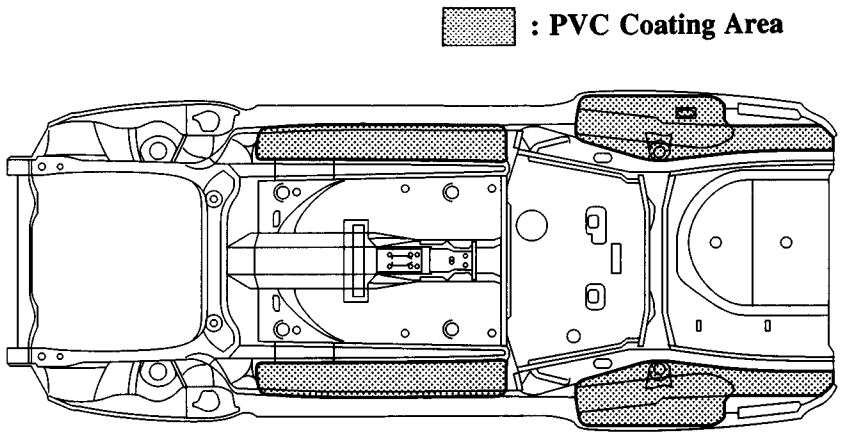


WAX AND SEALER

Wax and sealer are applied to the hemmed portions fo the hood, door panels and luggage compartment door to improve rust–resistant performance.

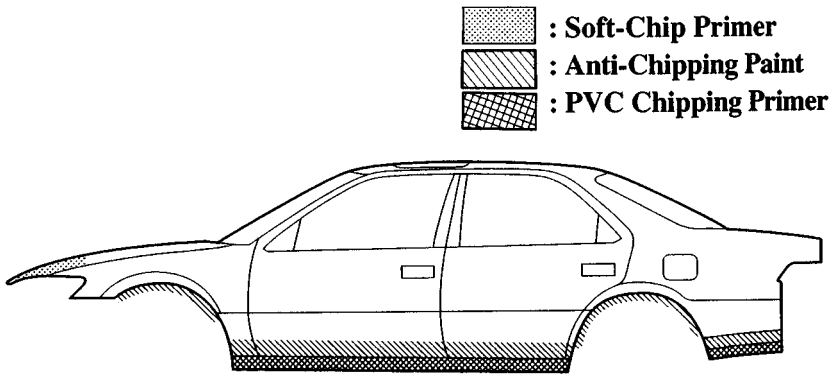
UNDER COAT

PVC (Polyvinyl Chloride) coating is applied to the under side of the body. Athick coating to improve rust resistant performane is applied to the bottome side of the cowl panel, the fender apron and other parts which are subject to damage by flying stones, etc.



ANTI–CHIPPING APPLICATION

Anti–chipping paint and PVC chipping primer are applied to the lower door panel area, front and rear wheel arches and the rocker panel area to protect them from flying stones. In addition, soft–chip primer is applied to the hood.



LOW VIBRATION, LOW NOISE BODY

Effective application of vibration damping and noide suppressant materials reduces engine and road noise.

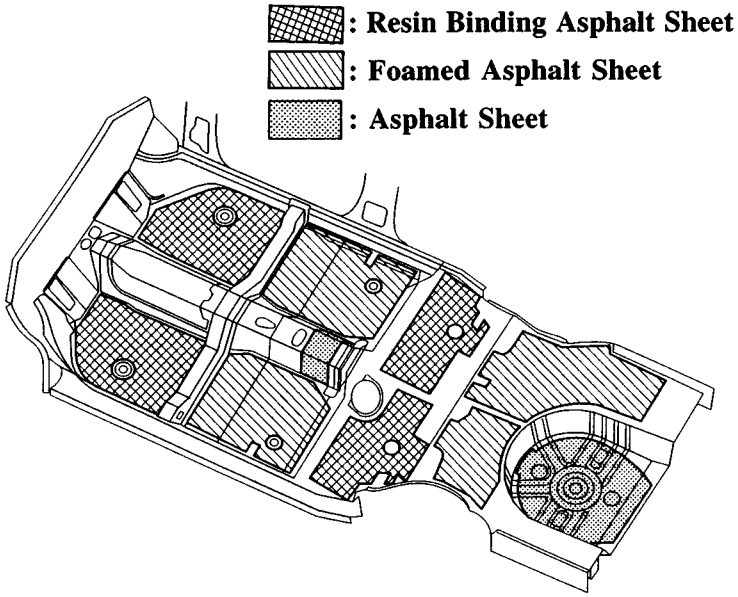
■ SOUND ABSORBING AND VIBRATION DAMPING MATERIALS

® Sandwich panels are ussed in the dash panel, cowl panel, front floor panel and rear wheel housings.

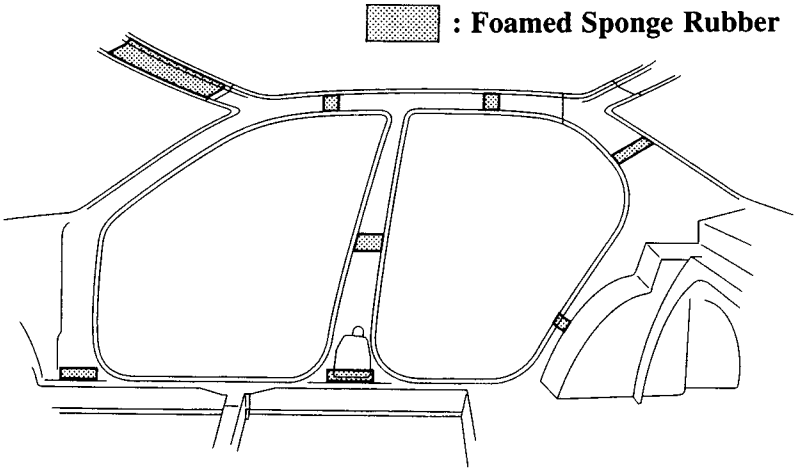
® Resin binding asphalt sheet and foamed asphalt sheet are optimally allocated to reduce engine and road noise for quieter vehicle operation.

® Foamed material is applied onto the roof panel and pillars to reduce wind noise.

Resin Binding Asphalt Sheet and Foamed Asphalt Sheet◀



Foamed Sponge Rubber◀



AERODYMANICS

To improve aerodynamic performance, the following measures have been taken.

1. A large rain gutter has been provided in the front pillar to ensure a smooth airflow from the front to the side.

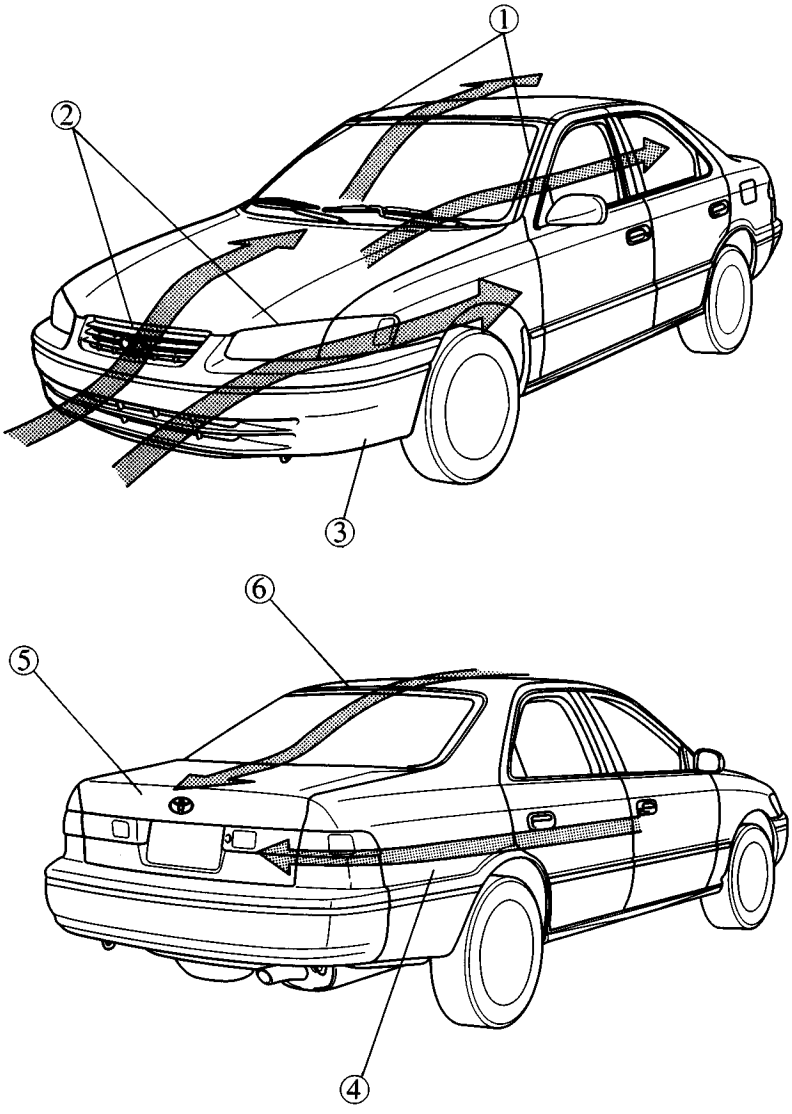
2. The front edge of the hood and the area around the headlights offers a smooth shape with minimal level differences for smooth airflow characteristics.

3. The under shape of the front bumper collcts the flow of air under the floor.

4. To ensure a smooth side airflow, the rear side corners have been provided with a sharper angle.

5. To ensure a smoooth airflow from the roof to the rear, the shape of the luggage compartment door has been optimized.

6. The gody line from the roof to the luggage compartment allwos the air to flow smoothly from the top of the roof to ther rear.

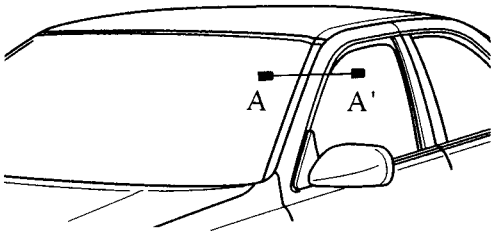


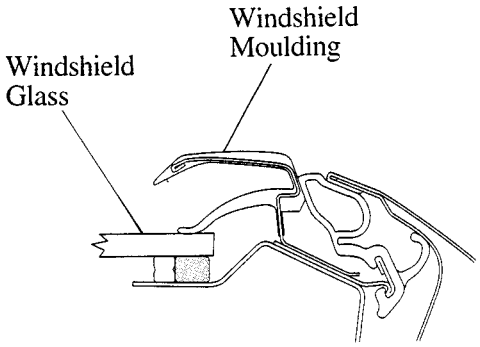
ENHANCEMENT OF PRODUCT APPEAL

MOULDING

A large rain gutter is incorporated in the windshield moulding to prevent the flow of the rain or washer fluid to the side windows.

Also, this rain gutter helps control the airflow to the side window, the minimizing wind noise.

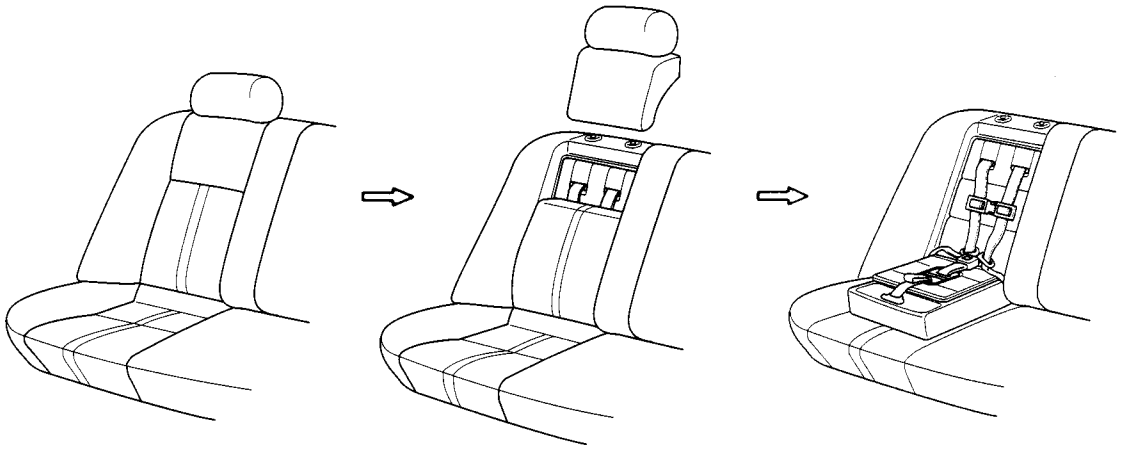




A – A' Cross Section

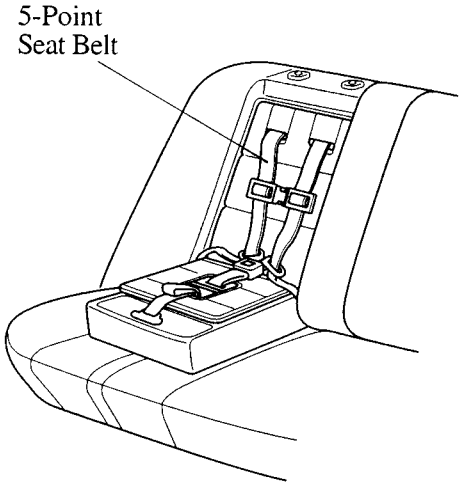
CRS (CHILD RESTRAINT SYSTEM)

◀ The CRS is enclosed in the seatback for the right rear seat in order to provide a comfortable and safe restraint seating for a child in the 22 to 60 lbs. (10.0 to 27.2 kg) range. When the CRS is not being used, it can be retracted to perform the normal seating function of the rear seat.



Normal (Retracted) **In Use (Deployed)**

◀ The CRS uses a 5–point seat belt.



BODY ELECTRICAL

LIGHTING

DESCRIPTION

The new Camry has the following features:

Item	Outline
Daytime Running Light System	This system is designed to automatically activate the headlights during the daytime to keep the car highly visible to other vehicles. As in the previous model, the headlights are activated by reducing the normal high beam brightness. The basic construction and operation are the same as in the previous model.
Light Auto Turn–Off System	When the ignition key is turned from the ON or ACC to LOCK position and the driver's door is opened with the taillights and headlights turned on, this system automatically turns them off. The basic construction and operation are the same as in the previous model.
Light Auto Turn–Off System	This system is useful when entering the vehicle and inserting the ignition key into the cylinder in the dark. 2 types of this system are used in the new Camry. ◀ In the first type, when the doors are opened, this system turns on the illuminations around ignition key cylinder and dome light (only when the control switch is set to the DOOR position) simultaneously. These lights fade out in about 15 seconds. However, under certain conditions such as when all doors are locked, the lights will turn off immediately even if the system is operating. The basic construction and operation are the same as in the '97 Avalon. ◀ In the second type, when the door is opened, this system turns on the illuminations around the ignition key cylinder. This illumination remains on for about 5 seconds after the door is closed.

AIR CONDITIONING

■ DESCRIPTION

1. General

The air conditioning system in the new Camry has the following features:

® The rotary switch and lever type heater control panel is used.

® As in the previous model, an air conditioning unit that incorporates a blower, heater and cooler unit, has been adopted.

® The duct size of the blower unit has been enlarged.

® An aluminum heater core has been adopted on all models.

® The defroster nozzle inner wall is modified into a radial configuration for smoother air flow.

® A defroster–linked air conditioning start up control, which automatically engages the air conditioning when the defroster mode has been selected, is provided.

® The air conditioning amplifier which is integrated with the ECM has been adopted on the 5S–FE engine model.

Performance◀

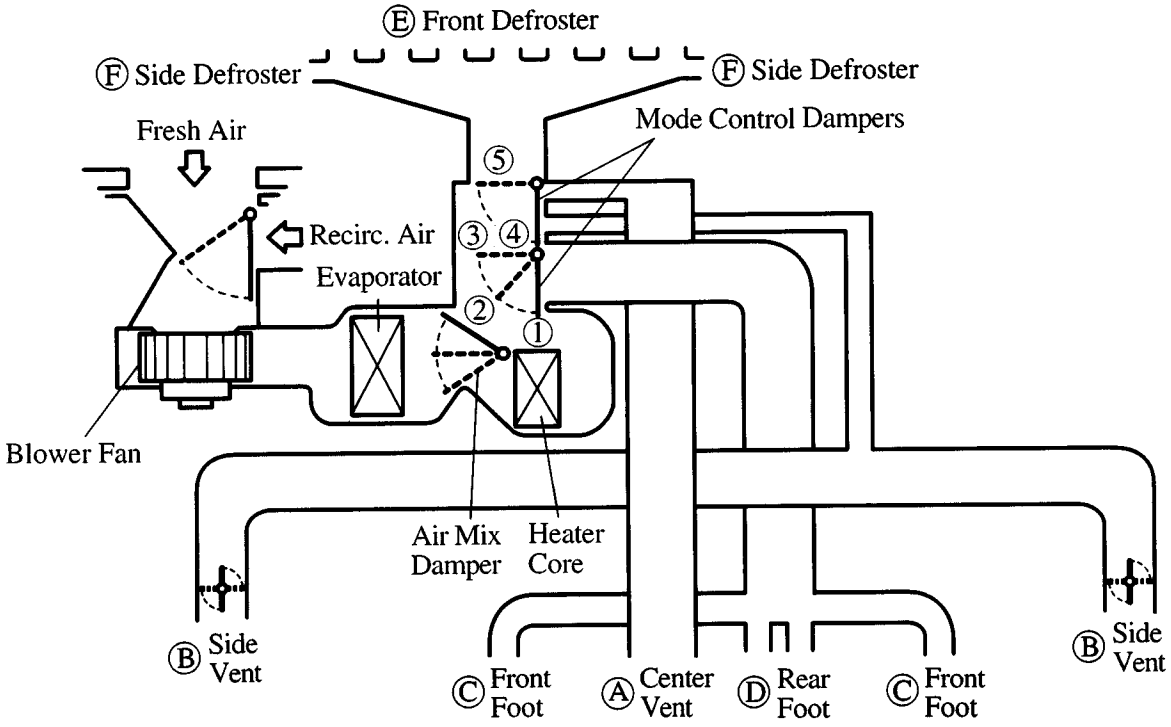
Model / Item		New	Previous
Heater	Heat Output W (Kcal/H)	5580 (4800)	←
	Air Flow Volume* m^3/h	360	←
	Power Consumption W	220	←
Air Conditioner	Heat Output W (Kcal/H)	5300 (4560)	5350 (4600)
	Air Flow Volume m^3/h	520	530
	Power Consumption W	260	←
Defroster	Air Flow Volume* m^3/h	360	←

*: With side vent closed.

Specifications◀

Model / Item			New	Previous
Ventilation and Heater	Heater Core	Type	Dimpled Tube Type	←
		Size WxHxL mm (in.)	160 x 220 x 32 (6.3 x 8.7 x 1.3)	←
		Fin Pitch mm (in.)	1.8 (0.07)	←
	Blower	Motor Type	A80Fs13T	S80Fs12.5T
		Fan Size Dia. xH mm (in.)	150 x 75 (5.9 x 3.0)	←
Air Conditioning	Condenser	Type	3 Passage Flow Type	←
		Size WxHxL mm (in.)	415.6 x 726 x 22 (16.4 x 28.6 x 0.9)	435.2 x 686 x 22 (17.1 x 27.0 x 0.9)
		Fin Pitch mm (in.)	4.5 (0.18)	3.5 (0.14)
	Evaporator	Type	Drawn Cup Type	←
		Size WxHxL mm (in.)	260 x 252 x 90 (10.2 x 9.9 x 3.5)	←
		Fin Pitch mm (in.)	4.0 (0.16)	←
	Compressor	Type	10PA17C	←
	Refrigerand	Type	HFC134a (R134a)	←

2. Damper Position and Air Flow Relationship



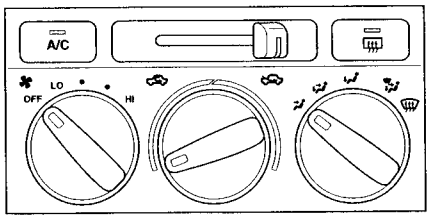
Air Outlet Mode		Mode Control Damper Position	Vent		Foot		Defroster	
			Ⓐ Center	Ⓑ Side	Ⓒ Front	Ⓓ Rear	Ⓔ Front	Ⓕ Side
Face		① ⑤	◯	◯				
Bi-Level		② ⑤	○	○	○	○		
Foot		③ ⑤		○	◯	○	○	○
Foot/Defroster		② ④		○	○	○	○	○
Defroster		① ④		○			◯	○

■ CONSTRUCTION AND OPERATION

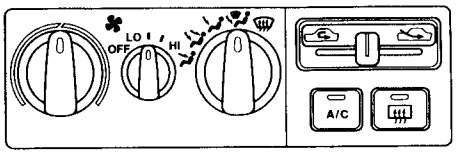
1. Heater Control Panel

® As in the previous model, the rotary switch and lever type heater control panel has been adopted.

® The new model uses a larger rotary switch to realize excellent control.



New



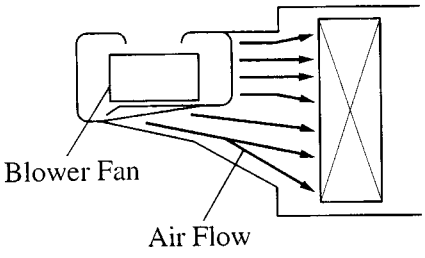
Previous

2. Air Conditioning Unit

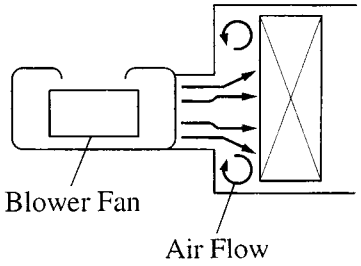
As in the previous model, the air conditioning unit incorporates a blower, heater and cooler units. This provides high rigidity and lower ventilating resistance.

Blower Unit

The duct size of the blower unit has been enlarged to reduce ventilating resistance.



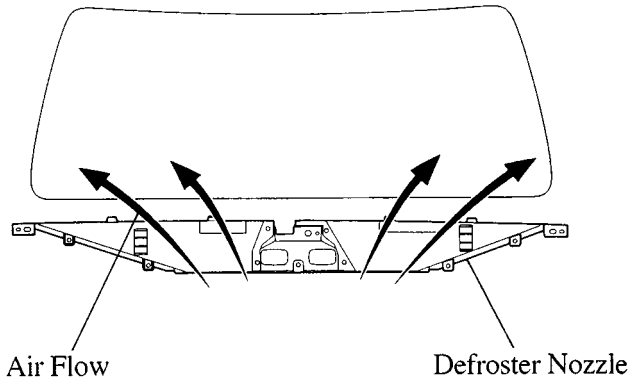
New



Previous

3. Defroster Nozzle

The front defroster nozzle inner wall is modified into a radial configuration for a smoother air flow and improved defroster performance.



4. Air Conditioning Amplifier

On the new Camry, the air conditioning amplifier that is provided on the 1MZ–FE engine model is an individual amplifier unit type and on the 5S–FE engine model is a type that is integrated with the ECM.

The air conditioning amplifier controls the air conditioning system in accordance with the signals received from sensors, switches, etc.

Function	Details
Magnetic Clutch Relay Control	Ⓡ When the blower switch and the air conditioning switch are turned on together, or when the air outlet mode is switched to defroster, the magnetic clutch relay turns on and activates the compressor. Ⓡ When one of the following conditions is met while the compressor is turned on, the magnetic clutch relay is turned off and stops the compressor: i) The air temperature immediately after passing through the evaporator is detected to be below 3°C (37.4°F) by the thermistor. ii) The compressor speed detected by the lock sensor is compared with the engine speed signal, and the compressor's slip rate exceeds a predetermined level (compressor locked). iii) "Air conditioner cut" was requested by the ECM to maintain engine performance or idling speed.
Compressor Delay Control	When the air conditioning switch is turned on, the engagement of the magnetic clutch is delayed.
Air Conditioning Indicator Light Control	Ⓡ When the blower switch and the air conditioning switch are turned on together, or when the air outlet mode is switched to defroster, and the compressor is activated, the indicator lamp of the air conditioning switch is turned on. Ⓡ If compressure lock occurs during compressor operation, the indicator lamp flashes every 1 second.

ACCESSORIES

DESCRIPTION

The new Camry includes the accessory systems shown in the below.

System	Outline
Power Window System	The power window system includes one–touch auto down and key–off operation functions. The one–touch auto down function automatically opens the driver's door window fully. The key–off operation function makes it possible to operate the power windows for approximately 45 seconds after the ignition key is turned to the ACC or LOCK position, if the front doors are not opened. The basic construction and operation of this system are the same as in the previous model.
Door Lock Control System	This system has a "key–linked lock and unlock function" and a "key–confine prevention function". All doors can be locked and unlocked simultaneously by a key operation at the front right or left foor. (The key needs to be operated twice to unlock all the doors at the driver's door.) If the door lock operation is performed when one of the front doors is open and the ignition key is inserted in the key cylinder, doors are unlocked automatically to prevent the ignition key from being left inside the vehicle. The basic construction and operation are the same as in the previous model.
Wireless Door Lock Remote Control System	A remote control system in which the lock and unlock functions of all doors and panic alarm function can be controlled by the signals emitted from a transmitter is adopted. The transmitter is also provided with a 2–step unlock function to unlock all the doors by pressing the switch twice. The basic construction and operation are the same as in the '96 Avalon. However, certain functions have been changed. For details, see page 107.
Theft Deterrent System	When an attempt is made to forcibly enter the vehicle or open the hood or trunk lid without a key, or when the battery terminals are removed and reconnected, this system sounds the horn and flashes the headlights and taillights for about 1 minute to alert the owner. At the same time, it locks all the doors and electronically disconnects the starter. The basic operation is the same as in the '96 Avalon.
Power Seat	As in the previous model, the front seats are power assisted by electric motors so that the seat positions can be adjusted easily by a simple switch operation. The basic construction and operation are the same as in the previous model.

System	Outline
SRS Airbag	The SRS (Supplemental Restraint System) airbag is provided for the driver and front passenger. The SRS airbag has been designed to lessen the shock to the head and chest of the driver and front passenger in the event of a frontal impact collision as a supplement to the seat belt. A 1–sensor type airbag system is used in which the detection of deceleration during a collision as well as control of the airbag system is accomplished by the airbag sensor assembly. The basic construction and operation are the same as in the ’96 Avalon. However, the inflator for front passsenger and airbag sensor assembly have been changed. For details, see page 111.
Cruise Control System	Once it has been set at a desired vehicle speed, this system automatically adjusts the engine throttle position to maintain the vehicle speed at the desired speed without operating the acceleration pedal. The basic construction and operation are the same as in the previous model. However, in the new model, a new type acutator has been adopted. Also, the functions of the cruise control ECU has been changed. For details, see page 116.
Moon Roof	The moon roof is a tilt–up and sliding type the same as in the previous model. This system includes “key–off operation”, which is the same as with the power window system. The new model offers an additional “one–touch slide open” function which enables the moon roof to fully open when the slide switch is pressed toward the opening side for a few seconds.
Electrical Remote Control Mirror	The electrical remote control mirrors used in the previous model are also used in the new model. Also, the internal heater to remove water drops from the mirror surface is provided.
Key Reminder System	When the driver’s door is opened with the ignition key in the ACC or LOCK position, this system sounds a buzzer to warn the driver that the ignition key has not been removed. The basic construction and operation are the same as in the previous model.

■ WIRELESS DOOR LOCK REMOTE CONTROL SYSTEM

1. General

The wireless door lock remote control system is a conventint system for locking and unlocking all the doors at a distance.

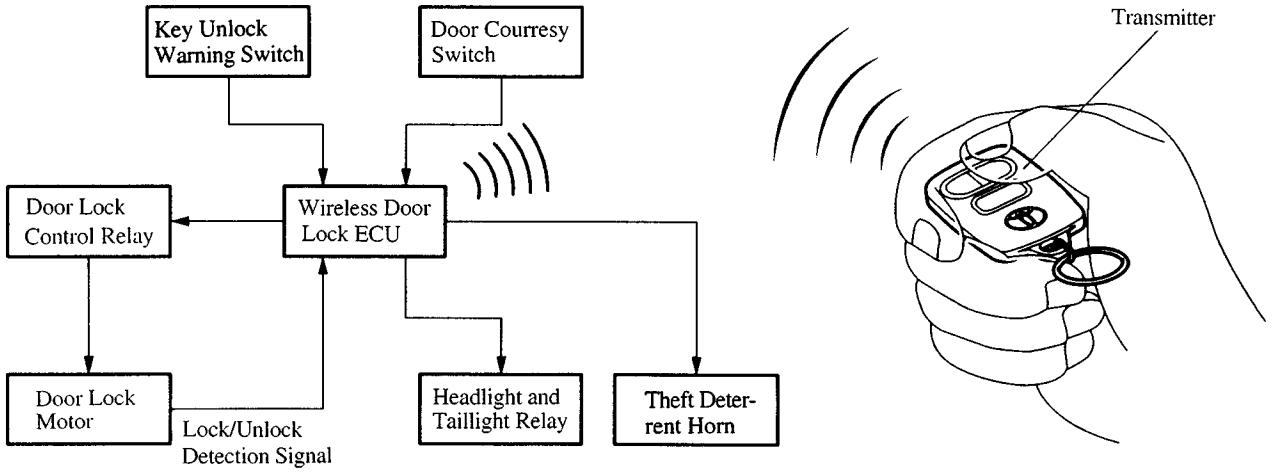
The basic construction and operation of this system are the same as in the ’96 Avalon. However, the following items have been changed.

® The trunk lid open operation, which is provided on the ’96 Avalon, has not been adopted.

® A panic alarm operation, which activates the alarm of the theft–deterrent system, has been newly adopted.

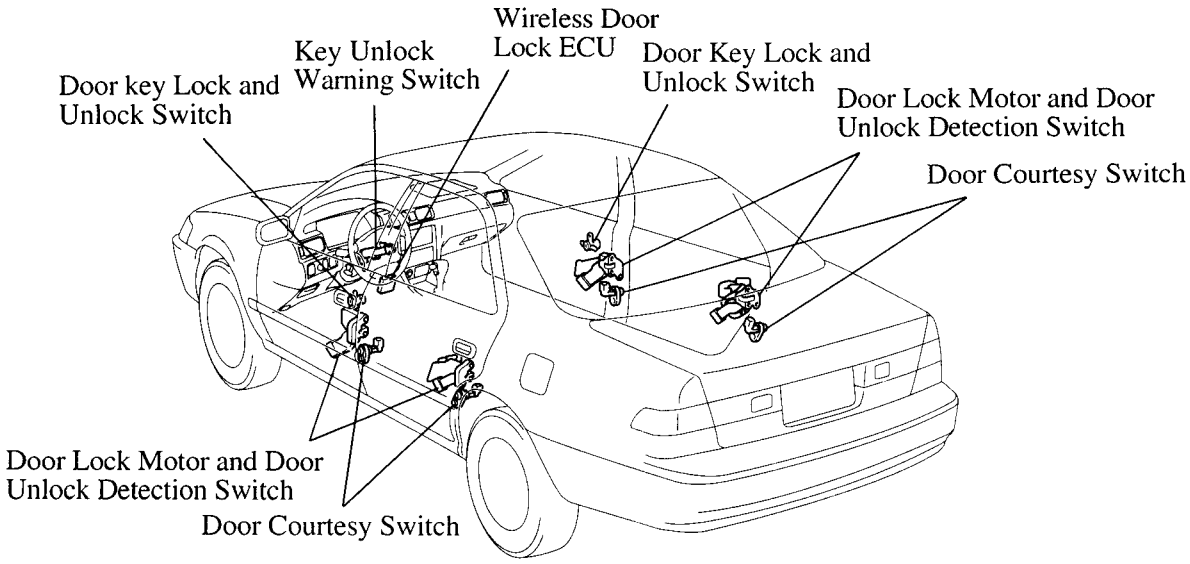
® For ease of verification of the operation of this system, the parking lights and taillights flash to inform that the operation has been completed.

System Diagram◀



2. Layout of Functional Parts

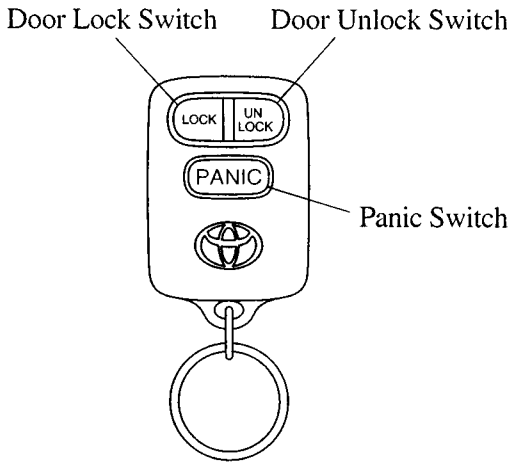
The major functional parts of the wireless door lock remote control system are whown below.



3. Construction

Transmitter

The transmitter is a key–holder type, which is separate from the ignition key. the lock and unlock functions of all doors can be controlled by operating the switches on the ransmitter. Also, this transmitter is equipped with a panic switch which activates the security alarm of the theft deterrent system.



4. Function

The following table is a comparison of the functions of wireless door lock remote control system between the Camry and the '96 Avalon.

Function	Outline	Camry	'96 Avalon
All Doors Lock Operation	Pressing the "door lock" switch of the transmitter locks all doors.	○	○
Driver's Door Unlock Operation	Pressing the "door unlock" switch of the transmitter once unlocks only the driver's door.	○	○
All Doors Unlock Operation	Pressing the "door unlock" switch twice within 3 seconds opens all doors after opening the driver's door.	○	○
Panic Alarm Operation	Pressing the "panic" switch of the transmitter activates the alarm of the theft deterrent system (to sound the horn and flash the headlights and taillights).	○	—
Operation Verification Light Function	When using the transmitter to perform a door lock or unlock operation, the parking lights and taillights flash to inform that the operation has been completed.	○	—
Auto Lock Function	If none of the doors are opened within 30 seconds after they are unlocked by the wireless door lock remote control, all the doors are locked again automatically.	○	○
Transmitter Switch Misoperation Prevention Function	When an ignition key is in the ignition key cylinder or any of the doors is not closed completely, the wireless door lock remote control is temporarily cancelled to prevent misoperation.	○	○
Repeat Function	If the door does not lock or unlock in response to a lock or unlock operation of the transmitter, the wireless door lock ECU will output a lock or unlock signal 3 times at 2-second intervals.	○	○
Anti-Chattering Function	When the wireless door lock ECU receives a correct specified code, it will stop reception until about 0.5 second of minimum idle transmission period, thus preventing chattering.	○	○
Transmitter Recognition Code Registration Function	Enables the registering (writing and storing) of 2 types of transmitter recognition codes in the EEPROM that is contained in the wireless door lock ECU.	○	○

Panic Alarm Operation

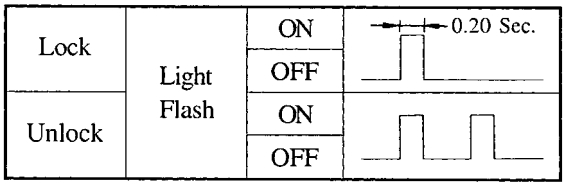
When the “panic” switch of the transmitter is pushed, the theft deterrent system sounds the horns and flaashes the headlights and taillights. To stop the alarm of the theft deterrent system that was triggered through this operation, push the transmitter’s “unlock” switch or “panic” switch again.

Operation Verification Light Function

When the doors are locked by the transmitter switch operation, the parking light and taillight flashes once to confirm that the operation has been completed.

Similarly, the parking light and taillight flashes twice when the doors are unlocked.

Light Flash Patterns◀



Transmitter Recognition code Registration Function

As in the ’96 Avalon, the recognition code for each transmitter is registered in an EEPROM contained in the wieless door lock ECU. Up to 2 different recognition codes can be resistered in teh EEPROM. The procedure for registering a registration code is the same as that used in the ’96 Avalon.

For details of the rrecogition code registration procedure, refer to the 1997 Camry Repair Manual (Pub. No. RM503U).

■ SRS AIRBAG

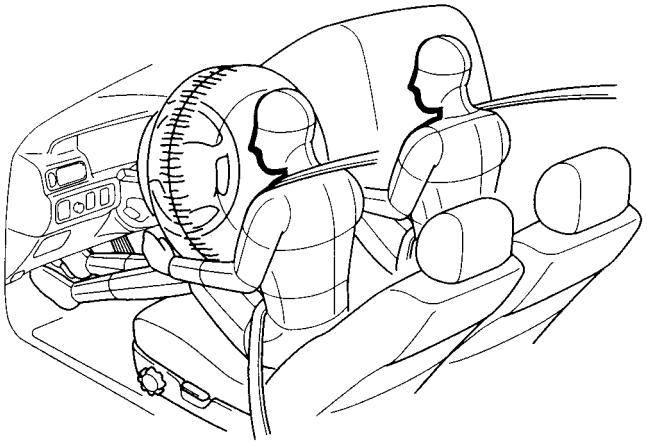
1. General

® The SRS (Supplemental Restraint System) airbag is designed to help lessening the shock to the driver and front passenger as a supplement to the seat belt. In a collision, the aribag sensor detects the shock and if the front–to–rear shock is greater than a specified value, the airbags stored in the steering wheel pad for the driver and above the glove box for the front passenger inflate instantly to help reducing the likelihood of the driver's or front passenger's head and chest directly hitting the steering wheel or instrument panel.

® As in the '96 Avalon, a 1–sensor type airbag system is used, in chich the detection of deceleration during a collision is accomplished by the airbag sensor enclosed in the airbag snesor assembly.

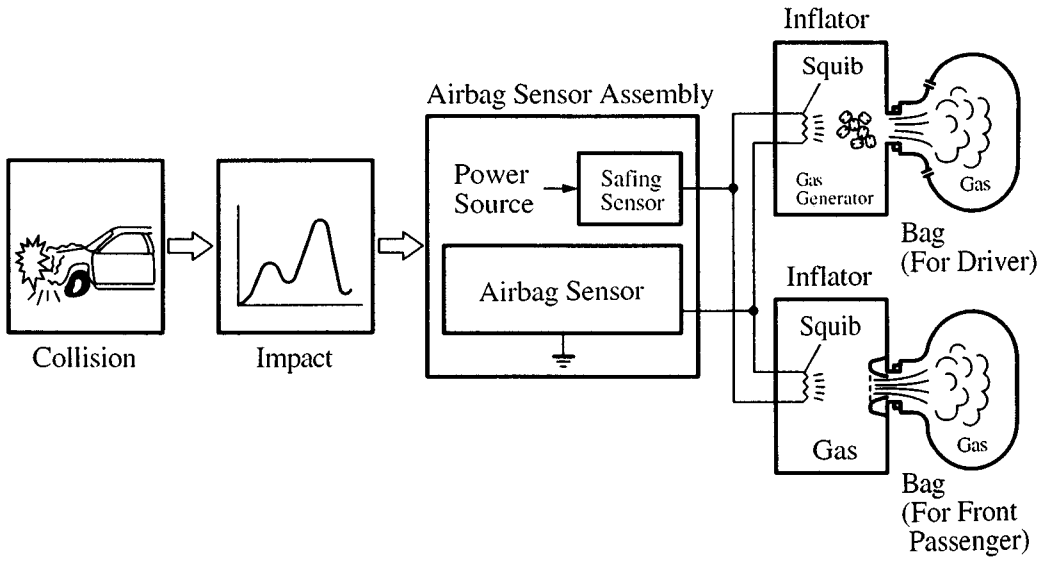
® The airbag system is controlled by the airbag sensor assembly. It has a self–diagnosis function. When it detects a system malfunction, it lights up the SRS warning light on the combination meter to alert the driver.

The basic construction and operation are the same as in teh '96 Avalon. However, 2 types of the inflator for front passenger have been adopted in the new Camry: TRW made and Morton made. Also, the construction of airbag sensor assembly has been changed.



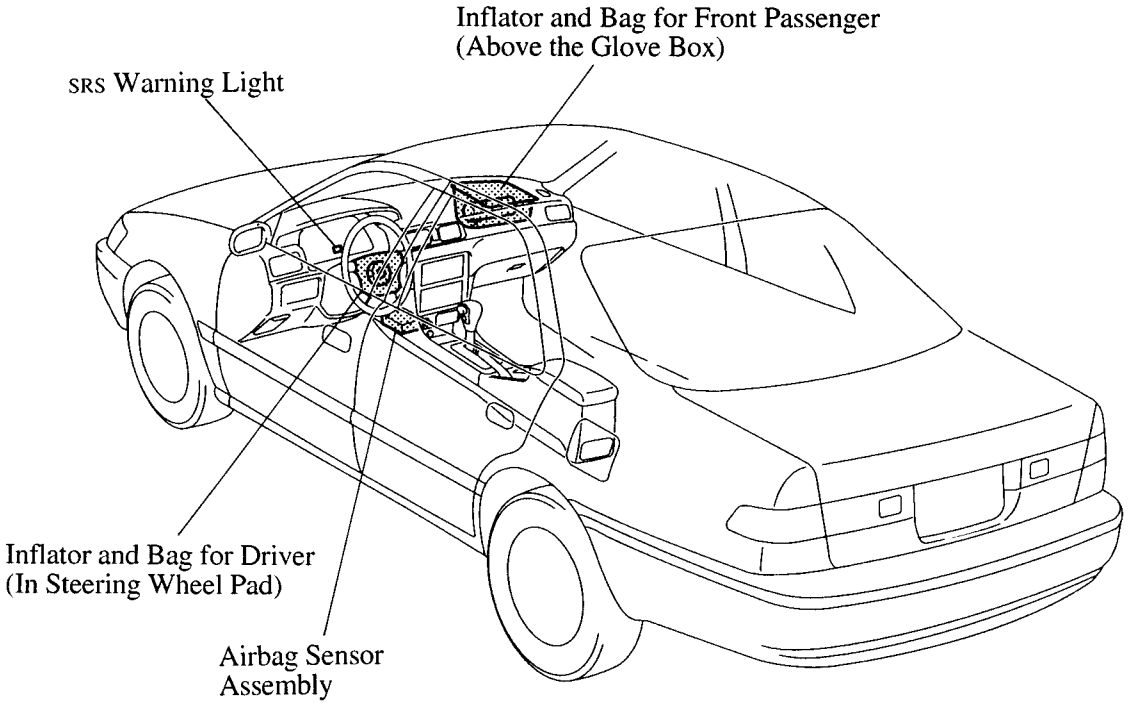
System Diagram◀

The activation processes of the SRS airbag is as illustrated below.

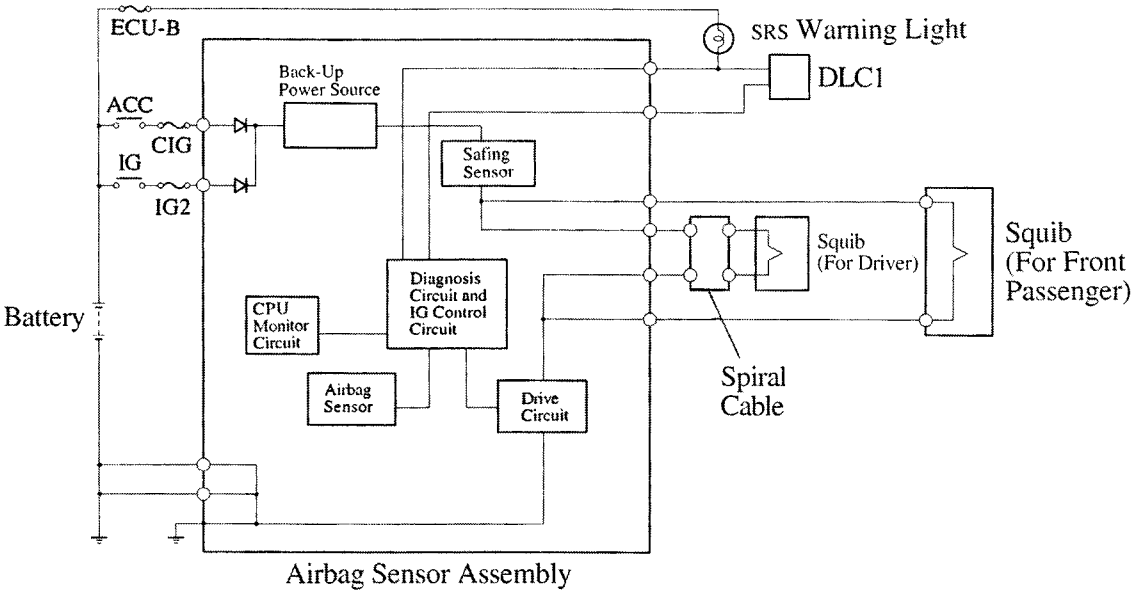


2. Layout of Components

The major function of the airbag system are shown below.



3. Wiring Diagram



4. construction and Operation

Inflator and Bag for Front Passenger

1) General

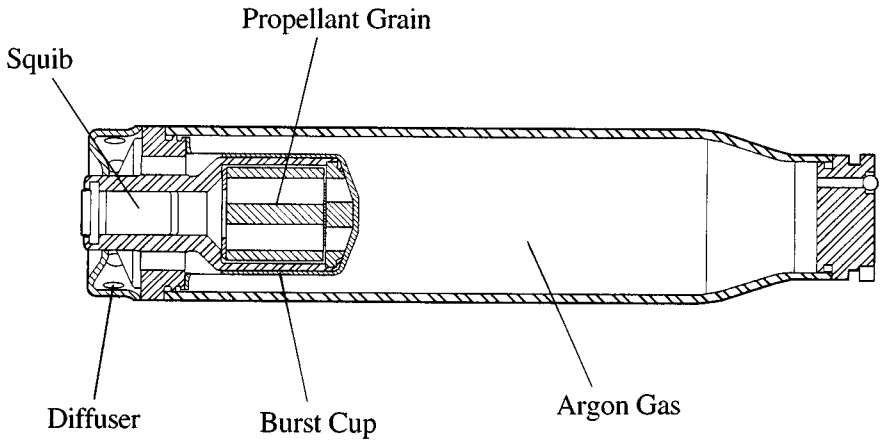
The inflator and ag for front passenger are inserted inside the case, and located in the passenger side instrument panel. the bag is made of strong nylon cloth, and becomes inflated by the argon gas flowed from the inflator. Also, 2 types of the inflator for front passenger have been adopted: TRW made and Morton made.

2) Inflator of TRW Made

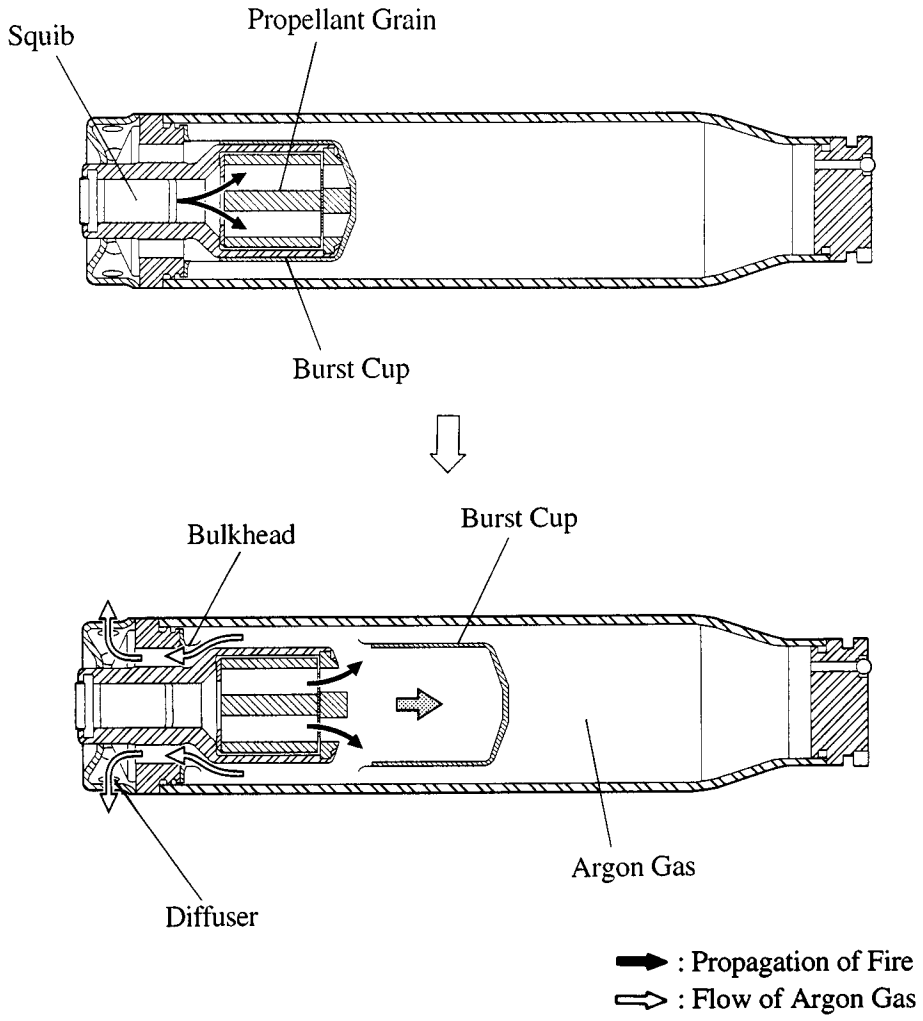
The inflator of TRW made is comprised of a squib, propellant grain, burst cup and high pressure argon gas.

If the airbag sensor is turned on by deceleration due to frontal collision, electric current then ignites the squib located in the inflator. the frame of squib spreads instaneously to the propellant grain. If the internal pressure of the burst cup increases by the combustion of the propellant grain, the burst cup will be released by making its bulkhead break. With this, the gas which expanded by the tgeat of the ignition of the propellant grain flows into the airbag via the diffuser, thus inflating the airbag.

Construction◀



Operation◀

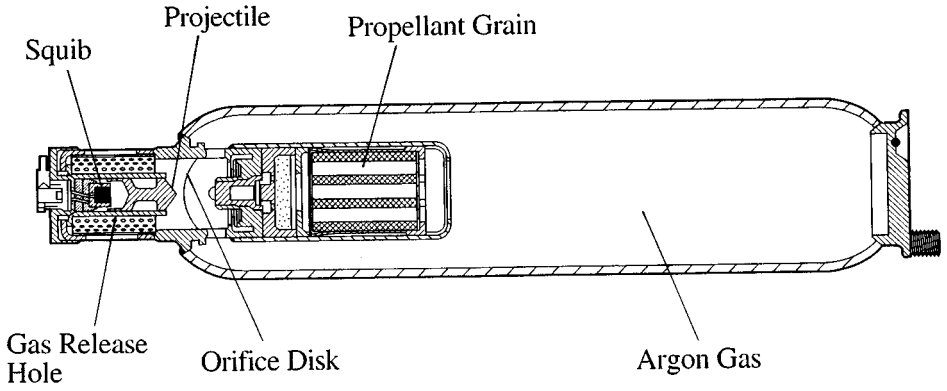


3) Inflator of Morton Made

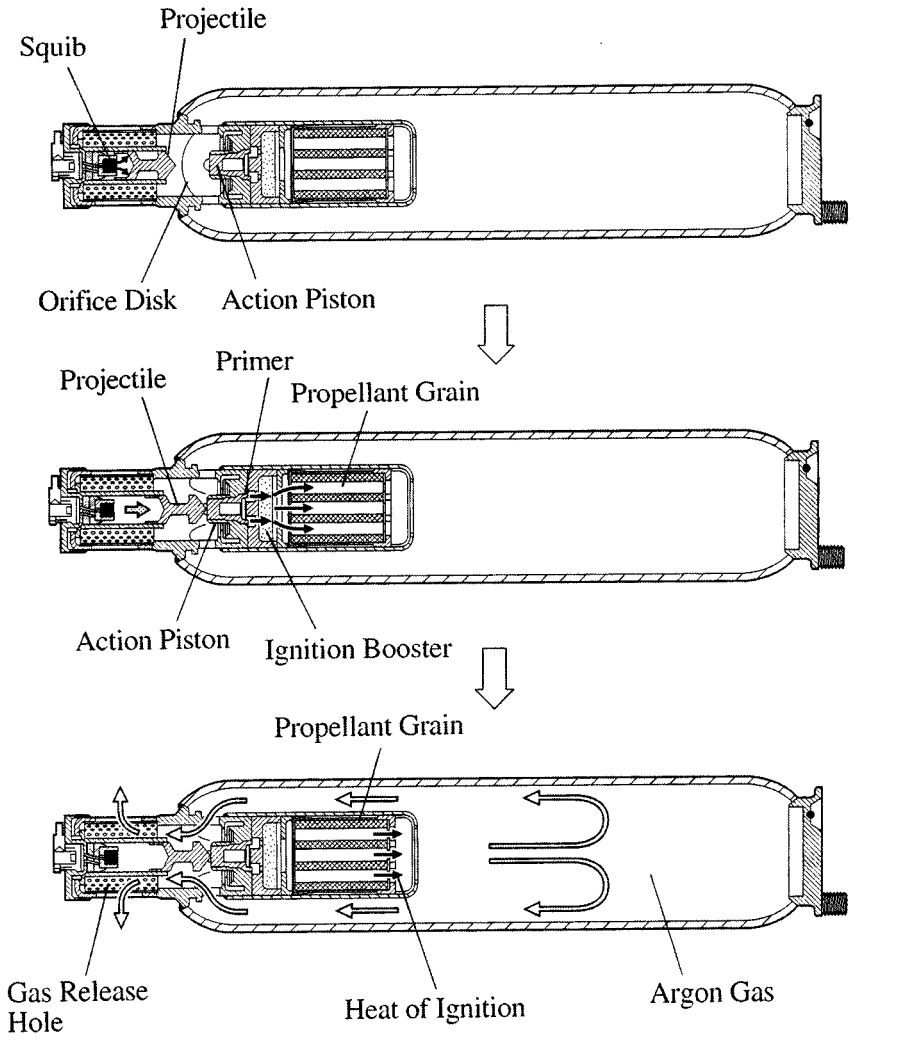
The inflator of Morton made is comprised of a squib, projectile, orifice disk, propellant grain, hight pressure argon gas and etc.

If the airbag sensor is turned on by deceleration due to frntal collision, electric current then ignites the squib located in the inflator. The projectile which fired by the ignition of the squib pierces through the orifice disk and collides with the action piston, which causes the primer to ignite. The flame wo the primer spreads instantaneously to the ignition booser and to the propellant grain. The gas which expanded by the heat of the ignition of the propellant grain flows into the airbag via the gas release hole, thus inflating the airbag.

Construction◀



Operation◀



➡ : Propagation of Fire
⇨ : Flow of Argon Gas

■ CRUISE CONTROL SYSTEM

1. General

Once the system is set to a desired vehicle speed, the engine throttle position is adjusted automatically to maintain the vehicle speed at that speed without depressing the accelerator pedal.

The basic sonstruction and operation of this system are the same as the previous model. However, on the new model, the control method for the manual and auto cancel functions have been changed. Also, a new motor type actuator that is both lightweight and simple in construction has been adopted.

2. Construction and Operation

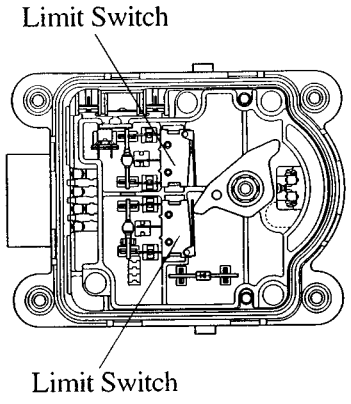
Actuator

The new Camry has adopted a new motor type actuator. The new motor type actuator consists of a motor, control link and limit swit h, etc. as shown belwo.

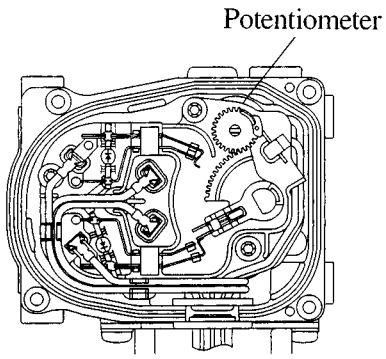
The potentiometer hat measured the opening angle of the control link and transmitted the signals to the cruise control ECU has been discontinued in the new actuator. The new actuator is equipped it with a compact motor. As a result, the new actuator is made both lightweight and simple in construction.

Without the potentiometer, the new actuator contnuously regulates the opening angle of the control link.

This is made possible by the ECU, which compares the curent vehiclespeed input with the desired vehicle speed that is stored in memory, and the result of that comparison is transmitted to the actuator.



New



Previous

Cruise Control ECU

1) Manual Cancel Fucntion

The manual cancel function has been changed as follows:

New	Previous
Transaxle shifted to positions other than “D”.	Transaxle shifted to “N” position.
—	Pull up the parking brake lever.

2) Auto Cancel Function

When the vehicle is being driven under cruise control, if any of th econditions listed below is present, the vehicle speed stored in membor is deleted, the control is lifetd, the current to the actuator is disrupted, and th power indicator ligh is made to flash. The methods to reactivate the cruise control at that time, in accordance with that particular condition (malfunction category A or B), are classified in the chart below.

Other auto cancel functions are basically the same as those of the previous model.

Condition	Malfunction Category	How to reactivate
® Continuous current applied to the motor's acceleration output. ® The motor did not move.	A	Turn off the ignition switch, and turn it back on. Then turn on the main switch.
® Excessive current flowed to the motor or magnetic clutch drive transistor. ® Open circuit in magnetic clutch. ® The vehicle speed signal is not sent for a predetermined period of time (approx. 140 msec.) ® The vehicle speed is equal to the set speed minus approximately 16 km/h (10 mph) or below. ® Short circuit in the control switch. ® An open circuit malfunction of the "decrease" side of the motor (including open circuit in the motor). ® Abnormal vehicle speed signal.	B	Turn the main switch back on.

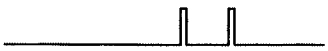
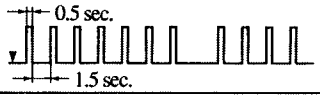
3) Diagnosis Function

a. Wawrning Indication

The cruise control ECU immediately blinks the power indicator light in the combination meter on and off repeatedly to alert the driver of a system malfunction.

When the power indicator light is flashing, and the cruise control is released by pressing on the main switch, the power indicator light will be turned off. When the main switch is turned back on, the power indicator light blinking pattern as shown on the next page outputs according to the malfunction categories A or B. When a category A malfunction is occuring, the power indicator ligh will flash again. This indicates that the system cannot operate. But if it is a category B malfunction, the indicator light will remain on indicating that the system is operating.

Power Indicator Light Blinking Pattern◀

Condition / Operation Method			Actuator power source is off.	Actuator power source is on.
Main Switch		ON		
		OFF		
Power Indicator Light	A*	ON		
		OFF		
	B*	ON		
		OFF		

*: “A” and “B” Indicate the Malfunction Categories.

b. Diagnostic Trouble Code Indication

The diagnostic trouble codes have been modified in the new model. For details of inspection, diagnostic trouble codes and repair procedures, see 1997 Camry Repair Manual (Pub. No. RM 503U).

4. Appendix

MAJOR TECHNICAL SPECIFICATIONS

Item			Area	U.S.A..			
Body Type				4–Door Sedan			
Vehicle Grade				CE		LE	XLE
Model Code				SXV20L–CEMDKA	SXV20L–CEPDKA	SXV20L–A(C)EPNKA	SXV20L–A(C)EPGKA
Major Dimensions & Vehicle Weights	Overall	Length	mm (in.)	4785(188.4)	←	←	←
		Width	mm (in.)	1780(70.1)	←	←	←
		Height*	mm (in.)	1415 (55.7)	←	←	←
	Wheel Base		mm (in.)	2670(105.1)	←	←	←
	Tread	Front	mm (in.)	1545 (60.8)	←	←	←
		Rear	mm (in.)	1520 (59.8)	←	←	←
	Effective Head Room	Front	mm (in.)	1105 (43.5)	←	←	←
		Rear	mm (in.)	902 (35.5)	←	←	←
	Effective Leg Room	Front	mm (in.)	980 (38.6)	←	←	←
		Rear	mm (in.)	940 (37.0)	←	←	←
	Shoulder Room	Front	mm (in.)	1427 (56.2)	←	←	←
		Rear	mm (in.)	1425 (56.1)	←	←	←
	Overhang	Front	mm (in.)	970 (38.2)	←	←	←
		Rear	mm (in.)	1140 (44.9)	←	←	←
	Min.. Running Ground Clearance		mm (in.)	145 (5.7)	←	←	←
	Angle of Approach		degrees	17°	←	←	←
	Angle of Departure		degrees	17°	←	←	←
	Curb Weight	Front	kg (lb)	820 (1808)	840 (11852)	860 (1896)*1, 865 (1970)*2	865 (1907)*1, 870 (1918)*2
		Rear	kg (lb)	530 (1168)	←	530 (1168)*1, 535 (1179)*2	530 (1168)*1, 535 (1179)*2
		Total	kg (lb)	1350 (2976)	1370 (3020)	1390 (3064)*1, 1400 (3086)*2	1395 (3075)*1, 1405 (3097)*2
	Gross Vehicle Weight	Front	kg (lb)	980 (2161)	←	←	←
		Rear	kg (lb)	870 (1918)	←	←	←
		Total	kg (lb)	1850 (4079)	←	←	←
	Fuel Tank Capacity		ℓ(U.S. gal., Imp. gal.)	70 (18.5, 15.4)	←	←	←
	Luggage Compartment Capacity		m^3 (cu. ft.)	0.399 (14.1)	←	←	←
Performance	Max. Speed		km/h (mph)	180 (112)	←	←	←
	Max. Cruising Speed		km/h (mph)	—	—	—	—
	Acceleration	0 to 100 km/h	sec.	—	—	—	—
		0 to 400 m	sec.	—	—	—	—
	Max. Permissible Speed	1st Gear	km/h (mph)	52 (32)	69 (43)	←	←
		2nd Gear	km/h (mph)	93 (58)	125 (78)	←	←
		3rd Gear	km/h (mph)	147 (91)	—	—	—
		4the Gear	km/h (mph)	—	—	—	—
	Turning Diameter (Outside Front)	Wall to Wall	m (ft.)	11.5 (37.7)	←	←	←
		Curb to Curb	m (ft.)	11.0 (36.1)	←	←	←
Engine	Engine Type			5S–FE	←	←	←
	Valve Mechanism			16–Valve, DOHC	←	←	←
	Bore x Stroke		mm (in.)	87.0x91.0(3.43x3.58)	←	←	←
	Displacement		cm^3 (cu. in..)	2164 (132.0)	←	←	←
	Compression Ratio			9.5 : 1	←	←	←
	Carburetor Type			SFI	←	←	←
	Research Octane No.		RON	91	←	←	←
	Max. Output (SAE–NET)		kW/rpm (HP @ rpm)	99/5200(133@5200),97/5200(130@5200)* 3	←	←	←
	Max. Torque (SAE–NET)		N·m/rpm (lb–ft @ rpm)	199/4400(147@4400,197/4400(145@4400 3	←	←	←
Engine Electrical	Battery Capacity (5HR)		Voltage & Amp. hr.	12–52, 12–48*4	←	←	←
	Generator Output		Watts	960	←	←	←
	Starter Output		kW	1.4	←	←	←
Chassis	Clutch Type			Dry, Single Plate	—	—	—
	Transmission Type			S51	A140E	←	←
	Transmission Gear Ratio	In First		3.538	2.810	←	←
		In Second		1.960	1.549	←	←
		In Third		1.250	1.000	←	←
		In Fourth		0.945	0.706	←	←
		In Fifth		0.731	—	—	—
		In Reverse		3.153	2.296	←	←
	Counter Gear Ratio			—	0.945	←	←
	Differential Gear Ratio (Final)			3.944	←	←	←
	Brake Type	Front		Ventilated Disc	←	←	←
		Rear		L.T. Drum	←	←	←
	Parking Brake Type			Drum	←	←	←
	Brake Booster Type and Style		in.	Tandem 8" + 9"	←	Tandem 8.5" + 8.5"*1, 8" + 9"*2	←
	Proportioning Valve Type			Dual–P Valve	←	←	←
	Suspension Type	Front		MacPherson Strut	←	←	←
		Rear		MacPherson Strut	←	←	←
	Stabilizer Bar	Front		STD	←	←	←
		Rear		STD	←	←	←
	Steering Gear Type			Rack & Pinion	←	←	←
	Steering Gear Ratio (Overall)			17.4 : 1	←	←	←
	Power Steering Type			Integral Type	←	←	←

* : Unladen Vehicle, *1 : Produced by TCM, *2 : Produced by TMM, *3 : California Specification Model, *4 : Without Cold Area Specification Model

U.S.A.			Canada		
U.S.A.	4–Door Sedan		Canada.		
CE	LE	XLE	CE	·	LE
MCV20L–CEMDKA	MCV20L–A(C)EPNKA	MCV20L–A(C)EPGKA	SXV20L–CEMDKK	SXV20L–CEPDKK	SXV20L–CEMNKK
←	←	←	←	←	←
←	←	←	←	←	←
1420 (55.9)	←	←	1415 (55.7)	←	←
←	←	←	←	←	←
←	←	←	←	←	←
←	←	←	←	←	←
←	←	←	←	←	←
←	←	←	←	←	←
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←	←	←	←	←	←
←	←	←	←	←	←
←	←	←	←	←	←
←	←	←	←	←	←
148 (5.8)	←	←	145 (5.7)	←	←
←	←	←	←	←	←
←	←	←	←	←	←
860 (1896)	915 (2017)*1, 920 (2028)*2	←	820 (1808)	840 (1852)	845 (1863)
540 (1191)	535 (1179)*1, 540 (1191)*2	540 (1191)*1, 545 (1202)*2	530 (1168)	←	535 (1179)
1400 (3086)	1450 (3197)*1, 1460 (3686)*2	1455 (3208)*1, 1465 (3230)*2	1350 (2976)	1370 (3020)	1380 (3042)
1035 (2282)	←	←	980 (2161)	←	←
875 (1929)	←	←	870 (1918)	←	←
1910 (4211)	←	←	1850 (4079)	←	←
←	←	←	←	←	←
←	←	←	←	←	←
210 (130)	←	←	180 (112)	←	←
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
57 (35)	70 (43)	←	52 (32)	69 (43)	52 (32)
97 (60)	127 (79)	←	93 (58)	125 (78)	93 (58)
148 (92)	—	—	147 (91)	—	147 (91)
—	—	—	—	—	—
11.9 (39.0)	←	←	11.5 (37.7)	←	←
11.4 (37.4)	←	←	11.0 (36.1)	←	←
1MZ–FE	←	←	5S–FE	←	←
24–Valve, DOHC	←	←	16–Valve, DOHC	←	←
87.5x83.0 (3.44x3.27)	←	←	87.0x91.0 (3.43x3.58)	←	←
2995 (182.7)	←	←	2164 (132.0)	←	←
10.5:1	←	←	9.5:1	←	←
←	←	←	←	←	←
91 or higher	←	←	91	←	←
145/5200 (194@5200)	←	←	99/5200 (133@5200)	←	←
283/4400 (209@4400)	←	←	199/4400 (147@4400)	←	←
←	←	←	12–52	←	←
←	←	←	←	←	←
←	←	←	←	←	←
Dry, Single Plate	—	—	Dry, Single	—	Dry, Single Plate
E153	A541E	←	S51	A140E	S51
3.230	2.810	←	3.538	2.810	3.538
1.913	1.549	←	1.960	1.549	1.960
1.258	1.000	←	1.250	1.000	1.250
0.918	0.735	←	0.945	0.706	0.945
0.731	—	—	0.731	—	0.731
3.545	2.296	←	3.153	2.296	3.153
—	0.945	←	—	0.945	—
3.933	←	←	3.944	←	←
←	←	←	←	←	←
Solid Disc	←	←	L.T.Drum	←	←
←	←	←	←	←	←
Tandem 8” + 9”	Tandem 8.5” + 8.5”*1,8”+9”*2	←	Tandem 8” + 9”	←	←
←	←	←	←	←	←
←	←	←	←	←	←
←	←	←	←	←	←
←	←	←	←	←	←
←	←	←	←	←	←
←	←	←	←	←	←
←	←	←	←	←	←
←	←	←	←	←	←

Item			Area	Canada		
Body Type				4–Door Sedan		
Vehicle Grade				LE	CE	LE
Model Code				SXV20L–CEPNKK	MCV20L–CEPDKK	MCV20L–CEPNKK
Major Dimensions & Vehicle Weights	Overall	Length	mm (in.)	4785 (188.4)	←	←
		Width	mm (in.)	1780 (70.1)	←	←
		Height*	mm (in.)	1415 (55.7)	1420 (55.9)	←
	Wheel Base		mm (in.)	2670 (105.1)	←	←
	Tread	Front	mm (in.)	1545 (60.8)	←	←
		Rear	mm (in.)	1520 (59.8)	←	←
	Effective Head Room	Front	mm (in.)	1105 (43.5)	←	←
		Rear	mm (in.)	902 (35.5)	←	←
	Effective Leg Room	Front	mm (in.)	980 (38.6)	←	←
		Rear	mm (in.)	940 (37.0)	←	←
	Shoulder Room	Front	mm (in.)	1427 (56.2)	←	←
		Rear	mm (in.)	1425 (56.1)	←	←
	Overhang	Front	mm (in.)	970 (38.2)	←	←
		Rear	mm (in.)	1140 (44.9)	←	←
	Min.. Running Ground Clearance		mm (in.)	145 (5.7)	148 (5.8)	←
	Angle of Approach		degrees	17°	←	←
	Angle of Departure		degrees	17°	←	←
	Curb Weight	Front	kg (lb)	865 (1907)	890 (1962)	920 (2028)
		Rear	kg (lb)	535 (1179)	540 (1191)	←
		Total	kg (lb)	1400 (3086)	1430 (3153)	1460 (3219)
	Gross Vehicle Weight	Front	kg (lb)	980 (2161)	1035 (2282)	←
		Rear	kg (lb)	870 (1918)	875 (1929)	←
		Total	kg (lb)	1850 (4079)	1910 (4211)	←
	Fuel Tank Capacity		ℓ (U.S. gal., Imp. gal.)	70 (18.5, 15.4)	←	←
	Luggage Compartment Capacity		m^3 (cu. ft.)	0.399 (14.1)	←	←
Performance	Max. Speed		km/h (mph)	180 (112)	210 (130)	←
	Max. Cruising Speed		km/h (mph)	—	—	←
	Acceleration	0 to 100 km/h	sec.	—	—	—
		0 to 400 m	sec.	—	—	—
	Max. Permissible Speed	1st Gear	km/h (mph)	69 (43)	70 (43)	←
		2nd Gear	km/h (mph)	125 (78)	127 (79)	←
		3rd Gear	km/h (mph)	—	—	—
		4th Gear	km/h (mph)	—	—	—
	Turning Diameter (Outside Front)	Wall to Wall	m (ft.)	11.5 (37.7)	11.9 (39.0)	←
		Curb to Curb	m (ft.)	11.0 (36.1)	11.4 (37.4)	←
Engine	Engine Type			5S–FE	1MZ–FE	←
	Valve Mechanism			16–Valve, DOHC	24–Valve, DOHC	←
	Bore x Stroke		mm (in.)	87.0x91.0 (3.43x3.58)	87.5x83.0 (3.44x3.27)	←
	Displacement		cm^3 (cu. in..)	2164 (132.0)	2995 (182.7)	←
	Compression Ratio			9.5 : 1	10.5:1	←
	Carburetor Type			SFI	←	←
	Research Octane No.		RON	91	91 or higher	←
	Max. Output (SAE–NET)		kW/rpm (HP @ rpm)	99/5200(133@5200)	145/5200 (194@5200)	←
	Max. Torque (SAE–NET)		N·m/rpm (lb–ft @ rpm)	199/4400(147@4400)	283/4400 (209@4400)	←
Engine Electrical	Battery Capacity (5HR)		Voltage & Amp. hr.	12–52	←	←
	Generator Output		Watts	960	←	←
	Starter Output		kW	1.4	←	←
Chassis	Clutch Type			—	—	—
	Transmission Type			A140E	A541E	←
	Transmission Gear Ratio	In First		2.810	←	←
		In Second		1.549	←	←
		In Third		1.000	←	←
		In Fourth		0.706	0.375	←
		In Fifth		—	—	—
		In Reverse		2.296	←	←
	Counter Gear Ratio			0.945	←	←
	Differential Gear Ratio (Final)			3.944	3.933	←
	Brake Type	Front		Ventilated Disc	←	←
		Rear		L.T. Drum	Solid Disc	←
	Parking Brake Type			Drum	←	←
	Brake Booster Type and Style		in.	Tandem 8” + 9”	←	←
	Proportioning Valve Type			Dual–P Valve	←	←
	Suspension Type	Front		MacPherson Strut	←	←
		Rear		MacPherson Strut	←	←
	Stabilizer Bar	Front		STD	←	←
		Rear		STD	←	←
	Steering Gear Type			Rack & Pinion	←	←
	Steering Gear Ratio (Overall)			17.4 : 1	←	←
	Power Steering Type			Integral Type	←	←

* : Unladen Vehicle