PRODUCT BULLETIN

NISSAN

BLUEBIRD

MODEL U11 SERIES

New Model Introduction

Vol. 120

FOREWORD

This product bulletin has been prepared to provide information necessary for smooth and efficient service activities on the new NISSAN BLUEBIRD, model U11 series. Please read this bulletin thoroughly in order to have a proper understanding of the features, specifications and mechanism of this new model.

In this bulletin, emphasis is placed on the description of those points that have been changed or modified from the former model 910 series.

The descriptions and specifications contained in this bulletin are based on the vehicle at the time it newly entered production. Rights for alteration at any time of specifications are reserved.

New NISSAN BLUEBIRD, model U11 series entered production starting with the following vehicle identification number (Chassis number).

DESTINATION / PLANT	Except for Europe	For Europe
OPPAMA	U11-000101 RU11-000101 YU11-000101 EU11-000101	JN1000U11U0000101 JN100YU11U0000101 JN100EU11U0000101
HIRATSUKA	U11-800001 RU11-800001 YU11-800001 EU11-800001 WU11-500001 WJU11-000001 WYU11-000001 WEU11-000001 WEJU11-000001	JN1000U11U0800001 JN100YU11U0800001 JN100EU11U0800001 JN10WYU11U0000001 JN10WEU11U0000001

As for detailed specifications particular to your region, please refer to other information such as the price quotations from Nissan's Export Department or the printing concerning the specifications which is contained in the sales kit.

The following materials which describe the units in detail are available as references.

INSTRUCTOR'S MANUAL

- Vol. 26 MODEL RL4F02A AUTOMATIC TRANSAXLE AND MODEL RS5F50A MANUAL TRANSAXLE

CONTENTS

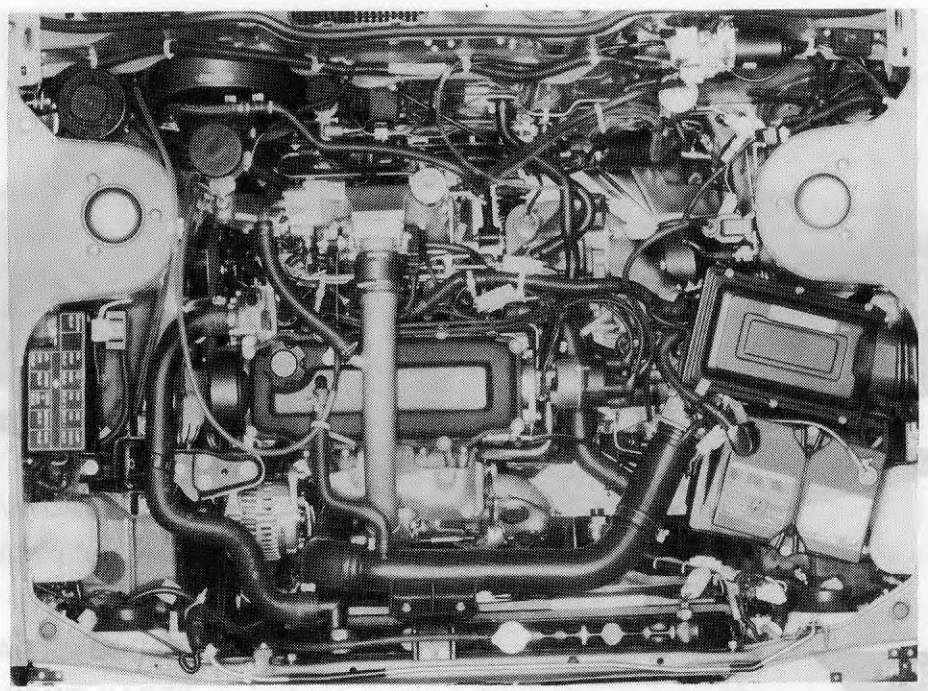
APPEARANCE

SEDAN

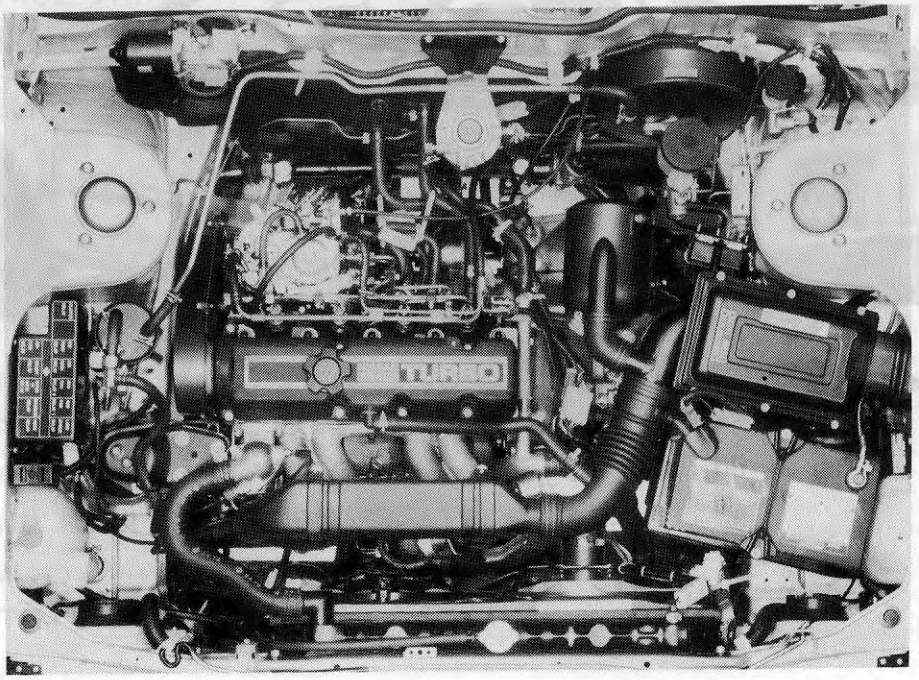
STATION WAGON

ENGINE ROOM

CA18ET engine

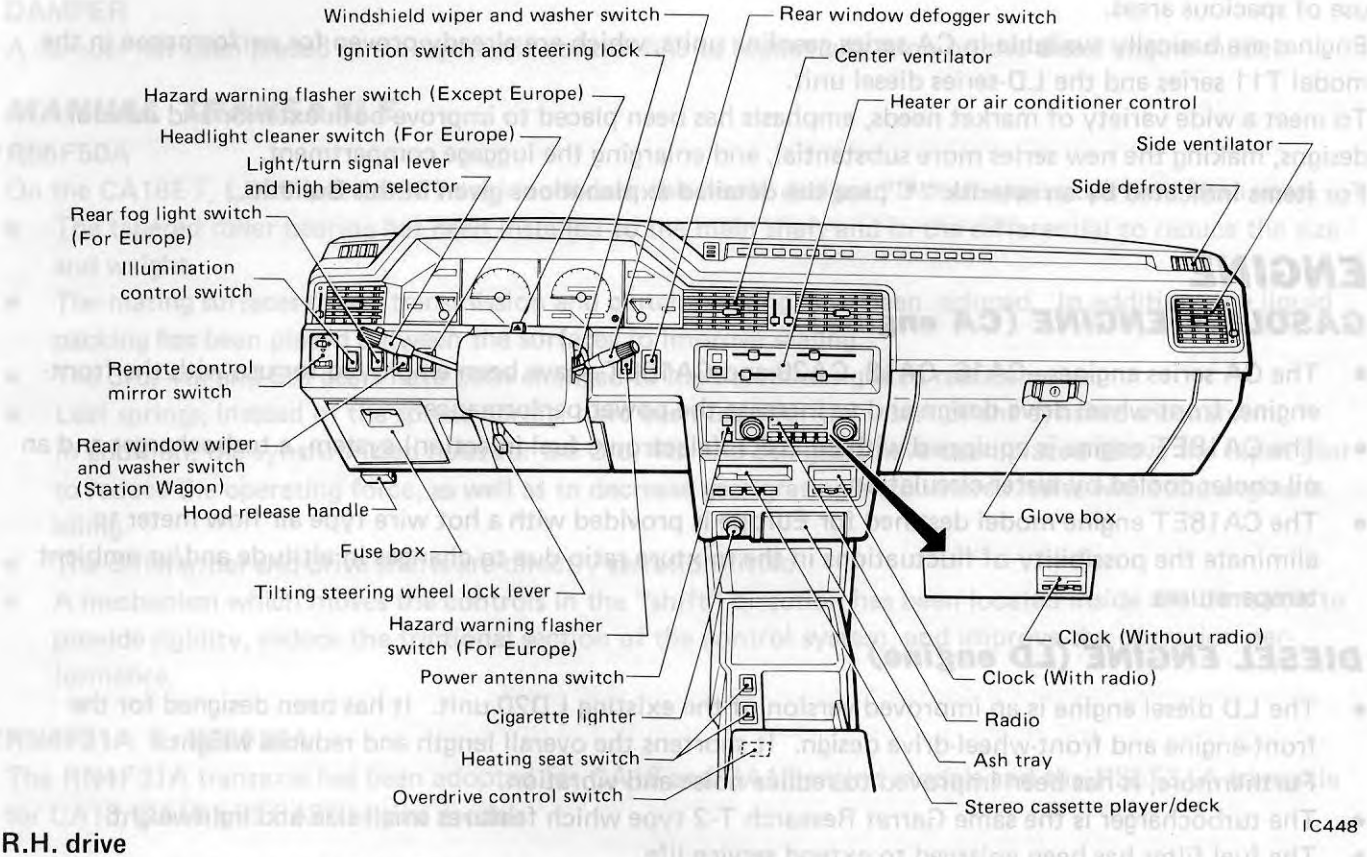


LD20T engine



INSTRUMENT PANEL

L.H. drive



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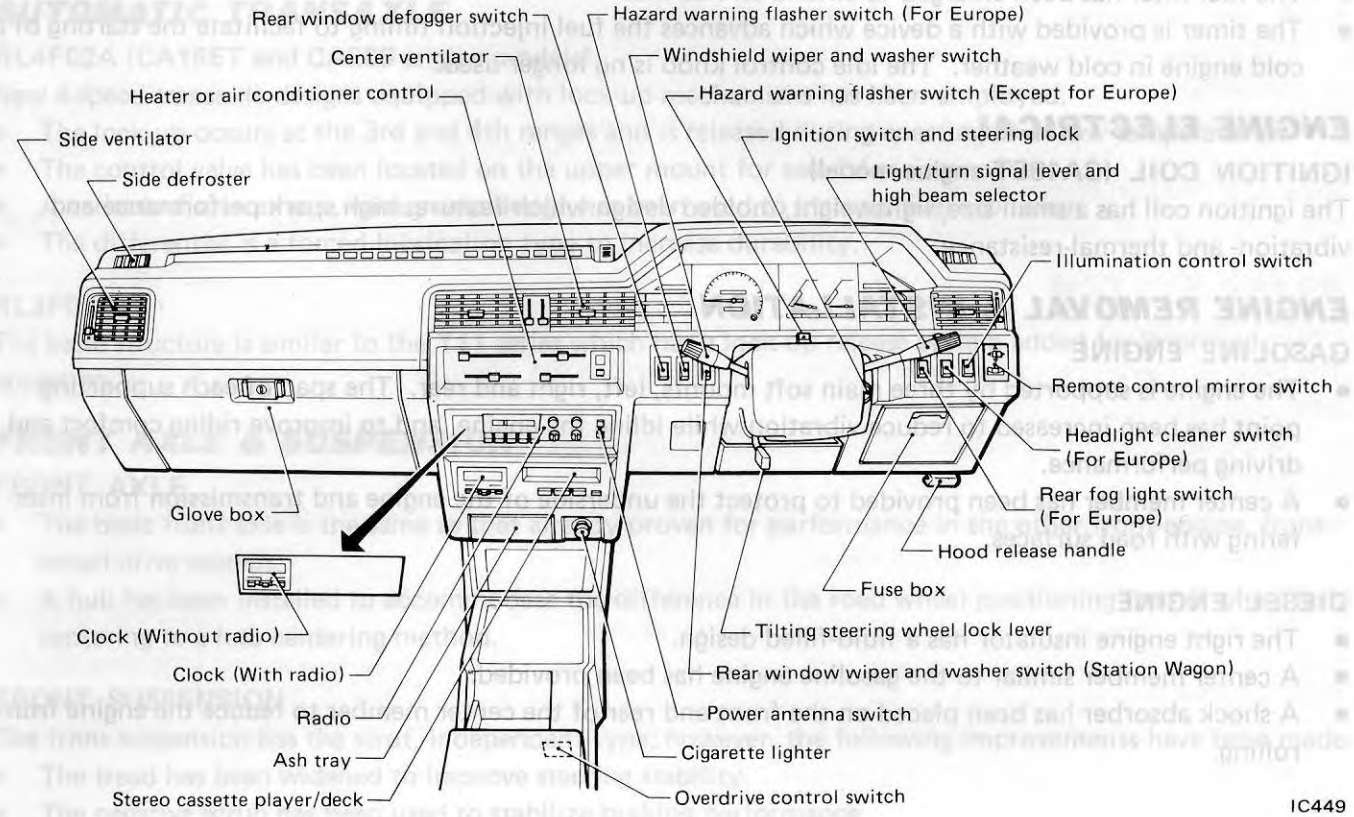
R.H. drive



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OUTLINE

The new Nissan Bluebird, model U11 series, has been developed as the successor to the former model 910 series. It has a front-engine, front-wheel drive design to increase driving performance and provide the best use of spacious areas.
Engines are basically available in CA-series gasoline units, which are already proven for performance in the model T11 series and the LD-series diesel unit.
To meet a wide variety of market needs, emphasis has been placed to improve both exterior and interior designs, making the new series more substantial, and enlarging the luggage compartment.
For items indicated by an asterisk "*", see the detailed explanations given in this Bulletin.

ENGINE

*GASOLINE ENGINE (CA engine)

- The CA series engines—CA16, CA18, CA20 and CA18ET—have been employed for use with the front-engine, front-wheel drive design and to increase the power performance.
- The CA18ET engine is equipped with an E.F.I. (electronic fuel injection) system, a turbocharger and an oil cooler cooled by water circulation.
- The CA18ET engine model destined for Europe is provided with a hot wire type air flow meter to eliminate the possibility of fluctuations in the mixture ratio due to changes in altitude and/or ambient temperatures.

*DIESEL ENGINE (LD engine)

- The LD diesel engine is an improved version of the existing LD20 unit. It has been designed for the front-engine and front-wheel-drive design. It shortens the overall length and reduces weight. Furthermore, it has been improved to reduce noise and vibration.
- The turbocharger is the same Garret Research T-2 type which features small size and lightweight.
- The fuel filter has been enlarged to extend service life.
- The timer is provided with a device which advances the fuel injection timing to facilitate the starting of a cold engine in cold weather. The idle control knob is no longer used.

ENGINE ELECTRICAL

***IGNITION COIL (CA18ET engine model)**

The ignition coil has a small-size, lightweight, molded design which features high spark performance and vibration- and thermal-resistance.

ENGINE REMOVAL & INSTALLATION

GASOLINE ENGINE

- The engine is supported by three main soft mounts, left, right and rear. The span of each supporting point has been increased to reduce vibration while idling the engine, and to improve riding comfort and driving performance.
- A center member has been provided to protect the underside of the engine and transmission from interfering with road surfaces.

DIESEL ENGINE

- The right engine insulator has a fluid-filled design.
- A center member similar to the gasoline engine has been provided.
- A shock absorber has been placed on the front and rear of the center member to reduce the engine from rolling.

CHASSIS

CLUTCH

CLUTCH CONTROL

On models equipped with the CA18ET, LD20 and LD20T engines, the clutch control is a hydraulic type.

DAMPER

A damper has been placed in the hydraulic control line to reduce vibration on the diesel engine model.

MANUAL TRANSAXLE

*RS5F50A

On the CA18ET, LD20 and LD20T engine models, the newly designed 3-shaft transaxles have been used.

- The tapered roller bearing has been installed to the main shaft and in the differential to reduce the size and weight.
- The mating surfaces of the transmission and clutch housing have been reduced. In addition, the liquid packing has been placed between the surfaces to improve sealing.
- The 3rd, 4th and 5th gears have been changed to high-teeth designs to reduce noise.
- Leaf springs, instead of the spread spring, have been used for the insert of the synchro mechanism. In addition, the synchronized hubs for the 3rd, 4th and 5th gears have been placed above the input gear to reduce the operating force, as well as to decrease gear grating encountered noise while the engine is idling.
- The differential and drive shafts are directly serration-fitted.
- A mechanism which moves the controls in the "shift" direction has been located inside the transaxle to provide rigidity, reduce the frictional section of the control system, and improve the operation performance.

*RN4F31A & RS5F31A

The RN4F31A transaxle has been adopted for CA16 and CA18 engine models and the RS5F31A transaxle for CA16, CA18 and CA20 engine models.

AUTOMATIC TRANSAXLE

*RL4F02A (CA18ET and CA20S engine models)

New 4-speed transaxle designs equipped with lock-up mechanisms has been employed.

- The lock-up occurs at the 3rd and 4th ranges and is released during coasting or at low temperatures.
- The control valve has been located on the upper mount for ease of maintenance.
- A variable-displacement, vane pump design has been used to increase fuel economy.
- The differential is a forced lubrication type to increase durability.

*RL3F01A

The basic structure is similar to the T11 series which has a lock-up release system added for improved operation.

*FRONT AXLE & SUSPENSION

FRONT AXLE

- The basic front axle is the same as that already proven for performance in the other front-engine, front-wheel-drive models.
- A hub has been installed to accommodate the difference in the road wheel positioning from a wheel bolt centering to a hub centering method.

FRONT SUSPENSION

The front suspension has the strut, independent type; however, the following improvements have been made:

- The tread has been widened to improve steering stability.
- The negative scrub has been used to stabilize braking performance.

- Performance characteristics of the coil spring, strut and rubber bumper have been improved to heighten steering stability and riding comfort.
- The coil spring is an offset type which reduces friction of various sliding surfaces and increases riding comfort.
- A bearing has been used at the strut mount insulator to decrease the effort required to turn the steering wheel.
- Suspension parts have been treated to prevent rust formation.

DRIVE SHAFT

- A closed, tripod, sliding joint has been employed on the transaxle side. The joint on the road wheel side is the same Rzeppa fixed joint design as in the model B11 series.
- The right drive shaft is provided with support bearings to stabilize steering operation on the CA18ET, CA20S, LD20 and LD20T engine models.

REAR AXLE & SUSPENSION

REAR AXLE

- A hub has been installed to accommodate the difference in the road wheel positioning from a wheel bolt centering to a hub centering method.

*REAR SUSPENSION

I.R.S. (Independent rear suspension)

The basic design is the parallel link, strut type which has already been proven for performance in the T11 model; however, the following modifications have been made:

- The tread has been widened to stabilize the steering operation.
- A rear suspension member has been utilized to reduce road noise.
- A stabilizer has been added to improve steering stability and riding comfort.
- The front and rear spans of the parallel link have been increased for the same reason as above.
- The performance characteristic of the rubber bumper has been changed to a nonlinear curve to improve riding comfort and minimize changes in the car's posture.
- A "toe" adjustment mechanism has been employed.
- The stroke length of the suspension has been increased to improve riding comfort.
- An offset coil spring has been used to reduce friction of various parts and improve riding comfort.
- Suspension parts have been treated to prevent rust formation.

Rigid axle (Station Wagon models)

The ridig axle with semi-elliptical leaf springs, similar to the model 910 series, has been employed.

BRAKE SYSTEM

FRONT BRAKE

The basic 910 series design has been retained. The design is a fist, ventilated disc brake type. However, the following modifications have been made:

- The caliper mounting section has been redesigned to accommodate the front-engine, front-wheel-drive design.
- On European models as well as the CA18ET engine models, the large-sized, CL28VA brake design has been utilized to increase braking force.
- The surface of the disc has been finished with rust-preventive treatment.
- The brake pads are equipped with a wear warning device.

REAR BRAKE

- On the CA18ET engine model, the same CL11H disc brake design as in the 910 series has been employed.

- The surface of the disc has been finished with rust-preventive treatment.
- The brake pads of the disc brakes are equipped with a wear warning device.

*BRAKE PIPING

An X-piping system has been adopted to accommodate the front-engine, front-drive design.

*MASTER CYLINDER

- A newly developed master cylinder equipped with a built-in dual proportioning valve has been installed, except those equipped with dual load sensing valves.
- The same fast-fill mechanism as that already proven in the model B11 series has been built into the master cylinder.

*LOAD SENSING VALVE (European models and rear rigid axle Station Wagon models)

- A newly designed dual load sensing valve has been installed.

VACUUM TANK

On the diesel engine model, a vacuum tank has been used and a vacuum warning switch has been added to the vacuum pump.

STEERING SYSTEM

STEERING COLUMN

- The same shock absorbing design as that already proven for performance in the model T11 series has been used.

*MANUAL STEERING

The steering gears are available in two types. One type has a constant gear ratio design and the other has a variable gear ratio design.

*POWER STEERING

- The PR24SA rack-and-pinion, power steering system, which is small in size and light in weight, has been employed.
- A small-sized vane pump has been installed independently of the oil tank.

*STEERING DAMPER

On diesel engine models, a steering damper has been installed to improve steering stability.

BODY

BODY PANEL

High strength steel has been extensively used as body panel to reduce the overall weight of vehicles.

BUMPER

A polypropylene bumper and a polyurethane bumper, which feature lightweight and a shock-absorbing effect, have been installed.

The polypropylene bumper is used on models for areas except Saudi Arabia, while the polyurethane bumper is for areas except Europe.

DOOR LOCK

The driver's door is now equipped with an override mechanism. This mechanism is designed so the door can be locked only when it is closed from the outside without pulling the door handle and after the lock knob has been pushed down.

AUTO DOOR LOCK

The auto door lock is standard equipment on the European SGL model and optional equipment on GL, SGL and TURBO models destined for areas except Europe.
It is designed to enable all doors, except the driver's, to be locked and unlocked with the LOCK and UNLOCK switches located on the driver's armrest. Also, all doors can be locked by pushing the lock knob on the driver's door.

SUN ROOF

The design is the same electric type as in the 910 series.

TRUNK LID LOCK

A cancel bar has been placed inside the trunk compartment. By switching the lever, it becomes impossible to unlock the trunk lid using the opener. This is an anti-theft feature.

INSTRUMENT PANEL

To reduce weight, simplify construction and increase the degree of accuracy during assembly, the instrument panel has been totally padded into a unit construction.

HEAD RESTRAINT

- Except for European models, a fore-and-aft adjustment mechanism has been added.

*HEATING SEAT (Europe L.H. drive models)

The driver's and passenger's seats featuring built-in electric heaters are available as options to improve the heating effect in extremely cold weather.

REAR SEAT

TRUNK THROUGH (SGL Sedan models)
The trunk through design has been used to facilitate loading and unloading inside the compartment.

RECLINING & SLIDE (Except for European SGL Sedan models)
A reclining & slide mechanism, which moves the seat cushion synchronously with the seatback, has been employed.

RECLINING (Station Wagon models)
The seatback can be folded forward. On the SGL model, a reclining mechanism has also been added.

*POWER WINDOW

The 30-second timer design has been used.
It is designed so the window can be opened by the main switch on the driver's seat within 30 seconds after the ignition key has been turned off (Except for Saudi Arabia and European models).

*HEATER & AIR CONDITIONER

HEATER

The basic 910 model design has been retained; however, the following improvements have been made:

- Resistance to the airflow in the entire system has been decreased in order to increase the airflow and provide quieter operation.
- A small and lightweight heater unit has been used to increase heat-exchange performance.
- A BI-LEVEL door has been added to direct cool air to the head area and hot air to the foot area in the Bi-level mode.

- The effort required to operate the control lever has been reduced.

AIR CONDITIONER

The air conditioner has been improved as follows:

- Resistance to the airflow in the cooling unit has been reduced. In addition, it has been made smaller to increase the airflow and facilitate servicing.
- An electronic thermostat has been used to control the temperature of the evaporator to prevent it from freezing.
- An acceleration-cut system has been added to the compressor to improve economy.
- A large-sized condenser increases cooling performance.

ELECTRICAL SYSTEM

*WIRING HARNESS, HARNESS CONNECTOR & RELAY

- A connector guide has been added to the terminal of the relay for a more thorough retention of the connector and in order to improve waterproofing.
- Terminal arrangements of the relay have been changed.
- Harness connectors have been modified to prevent accidental detachment.
- The harness protector and clips have been extensively used to restrict the harness routing, in order to prevent interference with panel edges, thereby protecting it from damage.

WINDSHIELD WIPER

An arm lock mechanism has been adopted to facilitate removal and installation of the wiper blade.

HEADLIGHT CLEANER

A blade type cleaner has been used with the headlight to remove dirt and dust from the lens whenever necessary.

MODEL VARIATION

Destination	Body	Class	Model		Engine	Transaxle	Road wheel size ... offset mm (in)	Tire size
			R.H. drive	L.H. drive				
Except Europe and Saudi Arabia	Sedan	DX	R-DU	RL-D	CA16	RN4F31A	4-1/2-Jx13 ... 45 (1.77)	6.45-13-4PR 165SR13*1
			R-DFU	–				
		GL	R-HFU	–		RS5F31A	5-Jx14 ... 45 (1.77) 5-1/2-JJx14 ... 45 (1.77)*1	165SR14 175SR14*1 185/70SR14*1
		DX	-DU	L-D	CA18	RN4F31A	4-1/2-Jx13 ... 45 (1.77)	6.45-13-4PR 165SR13*1
			-DFU	L-DF		RS5F31A	4-1/2-Jx13 ... 45 (1.77) 5-1/2-JJx14 ... 45 (1.77)*2	*3
		GL	-HFU	L-HF			5Jx14 ... 45 (1.77) 5-1/2-JJx14 ... 45 (1.77)*1	165SR14 175SR14*1 185/70SR14*1
			-HAU	L-HA		RL3F01A		
		TURBO	-GFTU	L-GFT	CA18ET	RS5F50A		185/70HR14 165SR14*1 175SR14*1 175HR14*1 185/70SR14*1
			-GATU	L-GAT		RL4F02A		
		GL	Y-HFU	YL-HF	CA20	RS5F31A		165SR14 175SR14*1 185/70SR14*1
			Y-HAU	–		RL4F02A		
		SGL	Y-GFU	YL-GF		RS5F31A		
			Y-GAU	YL-GA		RL4F02A		
		GL	E-HFU	EL-HF	LD20	RS5F50A		
		DX	–	EL-DF			5-Jx14 ... 45 (1.77)	
	Wagon	DX	WJ-DU	WLJ-D	CA18	RN4F31A	4-1/2-Jx13 ... 40 (1.57)	5.50-13-8PRLT 165SR13-6PRLT*1
			WJ-DFU	WLJ-DF		RS5F31A		
		GL	W-HFU	WL-HF	CA20		5-Jx14 ... 45 (1.77) 5-1/2-JJx14 ... 45 (1.77)*1	165SR14 175SR14*1 185/70SR14*1
			WY-HFU	WYL-HF				
			WY-HAU	WYL-HA		RL4F02A		
		SGL	WY-GFU	WYL-GF		RS5F31A		
			WY-GAU	WYL-GA		RL4F02A		
		DX	WEJ-DFU	WELJ-DF	LD20	RS5F50A	4-1/2-Jx13 ... 40 (1.57)	5.50-13-8PRLT 165SR13-6PRLT*1
		GL	WE-HFU	WEL-HF			5-Jx14 ... 45 (1.77) 5-1/2-JJx14 ... 45 (1.77)*1	165SR14 175SR14*1 185/70SR14*1

*1: Option
*2: L.H. drive model
*3: R.H. drive ... 6.45-13-4PR (Standard), 165SR13 (Option)
L.H. drive ... 165SR14 (Standard), 175SR14 (Option), 185/70SR14 (Option)

Destination	Body	Class	Model		Engine	Transaxle	Road wheel size ... offset mm (in)	Tire size
			R.H. drive	L.H. drive				
Saudi Arabia	Sedan	DX	–	L-DFJ	CA18	RS5F31A	5-Jx14 ... 45 (1.77) 5-1/2-JJx14 ... 45 (1.77)*1	175SR14
		GL	–	L-HFJ				
		TURBO	–	L-GFTJ	CA18ET	FS5F50A		175HR14
		SGL	–	YL-GFJ	CA20	RS5F31A		175SR14
			–	YL-GAJ		RL4F02A		
	Wagon	DX	–	WL-DFJ	CA18	RS5F31A		
		GL	–	WL-HFJ				
		SGL	–	WYL-GFJ	CA20			
			–	WYL-GAJ		RL4F02A		
Europe	Sedan	DX	-DFQ	L-DFQ	CA18	RS5F31A	*2	165SR14 185/70SR14*1
		GL	-HFQ	L-HFQ			5-Jx14 ... 45 (1.77) 5-1/2-JJx14 ... 45 (1.77)*1 6-JJx15 ... 45 (1.77)*1	185/70SR14 195/60 R15 86H*1
		TURBO	-GFTQ	L-GFTQ	CA18ET	FS5F50A		185/70HR14 195/60 R15 86H*1
			-GATQ	–		RL4F02A		
		GL	Y-HFQ	YL-HFQ	CA20	RS5F31A		
			Y-HAQ	YL-HAQ		RL4F02A		
		SGL	Y-GFQ	YL-GFQ		RS5F31A		
			Y-GAQ	YL-GAQ		RL4F02A		
		GL	E-HFQ	EL-HFQ	LD20	RS5F50A		185/70SR14 195/60 R15 86H*1
		SGL	E-GFTQ	EL-GFTQ	LD20T			

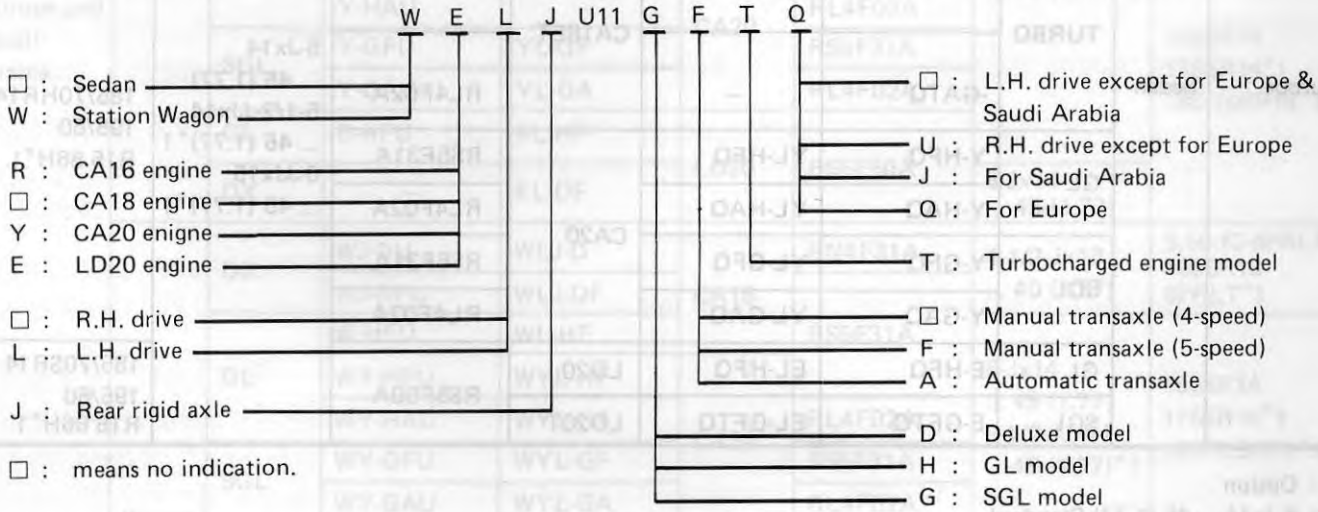
*1: Option
*2: 5-Jx14 ... 45 (1.77) Standard
5-1/2-JJx14 ... 45 (1.77) (Option)

MODEL VARIATION

Destination	Body	Class	Model		Engine	Transaxle	Road wheel size ... offset mm (in)	Tire size
			R.H. drive	L.H. drive				
Europe	Wagon	GL	WY-HFQ	WYL-HFQ	CA20	RS5F31A	5-Jx14 ... 45 (1.77) 5-1/2-JJx14 ... 45 (1.77)*1 6-JJx15 ... 45 (1.77)*1	185/70HR14 195/60 R15 86H*1
			WY-HAQ	–		RL4F02A		
		SGL	WY-GFQ	WYL-GFQ		RS5F31A		
			WY-GAQ	–		RL4F02A		
		GL	WE-HFQ	WEL-HFQ	LD20	RS5F50A		185/70SR14 195/60 R15 86H*1
		SGL	WE-GFTQ	WEL-GFTQ	LD20T			

*1: Option
*2: T135/70 D15 ... T-type spare tire for L.H. drive Europe model

Prefix and suffix designations



GENERAL SPECIFICATIONS

Item \ Model				Sedan	Station Wagon
Dimensions and weights	Overall length		mm (in)	4,360 (171.7)*1, 4,500 (177.2)*2	4,405 (173.4)*1, 4,585 (180.5)*2, 4,425 (174.2)*3
	Overall width		mm (in)	1,690 (66.5), 1,705 (67.1)*4	
	Overall height		mm (in)	1,400 (55.1), 1,410 (55.5)*14	1,425 (56.1), 1,435 (56.5)*3, *5
	Wheelbase		mm (in)	2,550 (100.4)	
	Tread	Front	mm (in)	1,460 (57.5), 1,455 (57.3)*5	1,455 (57.3), 1,465 (57.7)*3, 1,450 (57.1)*5
		Rear	mm (in)	1,450 (57.1), 1,455 (57.3)*5	1,445 (56.9), 1,400 (55.1)*3, 1,440 (56.7)*5
	Min. road clearance		mm (in)	185 (7.3), 195 (7.7)*14	185 (7.3), 190 (7.5)*3, 200 (7.9)*5, 195 (7.7)*14
	Overhang	Front	mm (in)	835 (32.9)*1, 895 (35.2)*2	
		Rear	mm (in)	975 (38.4)*1, 1,055 (41.5)*2	1,020 (40.2)*1, 1,140 (44.9)*2, 1,040 (40.9)*3
	Room space	Length	mm (in)	1,860 (73.2)	1,750 (68.9), 1,850 (72.8)*4, 1,660 (65.4)*3
		Width	mm (in)	1,405 (55.3), 1,400 (55.1)*6, *7	
		Height	mm (in)	1,150 (45.3)	1,160 (45.7)
	Curb weight kg (lb)	Except Europe and Saudi Arabia	CA16S	1,095 (2,415)	–
			CA18S	1,100 (2,425)*8, 1,120 (2,470)*9	1,140 (2,515)
			CA18ET	1,160 (2,560)*8, 1,195 (2,635)*9	–
			CA20S	1,130 (2,490)*8, 1,175 (2,590)*9	1,175 (2,590)*8, 1,220 (2,690)*9
			LD20	1,200 (2,645)	1,245 (2,745)
		For Saudi Arabia	CA18	1,120 (2,470)	1,160 (2,560)
			CA18ET	1,180 (2,600)	–
			CA20	1,155 (2,545)*8, 1,200 (2,645)*9	1,195 (2,635)*8, 1,240 (2,735)*9
		For Europe	CA18S	1,080 (2,380)	–
			CA18ET	1,140 (2,515)*8, 1,175 (2,590)*9	–
			CA20S	1,110 (2,450)*8, 1,155 (2,545)*9	1,155 (2,545)*8, 1,200 (2,645)*9
			LD20	1,180 (2,600)	1,225 (2,700)
			LD20T	1,210 (2,670)	1,260 (2,780)
	Min. turning radius (wall to wall)		m (ft)	5.0 (16.4), 5.6 (18.4)*10, 5.1 (16.7)*11, 5.4 (17.7)*12, 6.1 (20.0)*13	
	Seating capacity		(persons)	5	

*1: With polypropylene bumper
*2: With polyurethane bumper
*3: Rear rigid axle model
*4: With molding
*5: For Saudi Arabia
*6: SGL model for Europe and Saudi Arabia
*7: With power window except for Europe and Saudi Arabia
*8: Manual transaxle model
*9: Automatic transaxle model
*10: Diesel engine model equipped with 14-inch road wheels
*11: Diesel engine model equipped with 13-inch road wheels
*12: Gasoline engine models equipped with 195/60 H15 86H tire
*13: Diesel engine models equipped with 195/60 H15 86H tire
*14: For Middle East

			CA16S	CA18S	CA20S	CA18ET	LD20	LD20T
Engine general specifications	Classification		Gasoline				Diesel	
	Cycle		4					
	No. of cylinders and arrangement		4, in-line					
	Valve arrangement		O.H.C. (Overhead cam)					
	Bore x stroke mm (in)		78 x 83.6 (3.071 x 3.291)	83 x 83.6 (3.268 x 3.291)	84.5 x 88 (3.327 x 3.465)	83 x 83.6 (3.268 x 3.291)	85 x 86 (3.35 x 3.39)	
	Displacement cm^3 (cu in)		1,598 (97.51)	1,809 (110.39)	1,973 (120.39)	1,809 (110.39)	1,952 (119.11)	
	Compression ratio		9.0	8.8, 9.6*1*3	8.5, 9.4*1*3	8.0	22.2	21.0
	Max. horsepower	(SAE) HP/rpm	88/5,200	97/5,200 98/5,200*1	105/5,200 111/5,200*1	134/6,000 144/6,000*1	64/4,600	–
		(DIN) PS/rpm	83/5,200	89/5,200 90/5,200*3	99/5,200 105/5,200*3	125/6,000 135/6,000*3	58.5/4,400	74.8/4,400
	Max. torque	(SAE) N·m (kg-m, ft-lb)/ rpm	131 (13.4, 97)/ 3,200	146 (14.9, 108)/3,200 151 (15.4, 111)/2,800*1	162 (16.5, 119)/3,600 164 (16.7, 121)/3,600*1	193 (19.7, 142)/3,600 196 (20.0, 145)/4,000*1	120 (12.2, 88)/ 2,400	–
		(DIN) N·m (kg-m, ft-lb)/ rpm	130 (13.3, 96)/ 3,200	144 (14.7, 106)/3,200 150 (15.3, 111)/2,800*3	157 (16.0, 116)/3,600 162 (16.5, 119)/3,200*3	186 (19.0, 137)/3,600 191 (19.5, 141)/4,000*3	113 (11.5, 83)/ 2,400	160 (16.3, 118)/ 2,200
Lubrication system	Oil pump type		Trochoid gear					
	Oil filter type		Full-flow cartridge					
Cooling system	Engine coolant anti-freeze (L.L.C.) %		0 ... Except for Europe, 50*2					
	Radiator type		Corrugated					
	Water pump type		Centrifugal					
	Thermostat opening temperature °C (°F)		82 (180), 88 (190) ... for cold areas, 76.5 (170) ... for tropical areas					
Engine fuel system	Air cleaner	Filter type	Viscous paper, Dry paper*1					
		Temperature control type	Automatic		–	Automatic		
	Carburetor type		Downdraft, 2-barrel		Downdraft, 2-barrel	–		
	Fuel injector type		–			Electro-magnetic	–	
	Air flow meter	Type	–			Hot wire	–	
		Model	–			HITACHI make AFH45	–	
	Throttle chamber type		–			1-barrel	–	
	Air regulator type		–			Bimetal	–	

*1: For Saudi Arabia
*2: Standard for Europe
Option except for Europe
*3: For Europe except Switzerland and Sweden

Item \ Model			CA16S	CA18S	CA20S	CA18ET	LD20	LD20T
Engine fuel system	Injection pump assembly	Injection pump type	–				Bosch, VE type (Distribution type)	
		Governor type	–				Half-all speed type (Mechanical)	
		Timer type	–				Hydraulic control	
		Feed pump type	–				Vane type	
	Injection nozzle type		–				Throttle type	
Battery	Model		N50SLMF*1 55D23L*2				N70ZLMF*1 NX120-7LMF*3	
	Capacity V-AH		12-50*1, 12-60*3				12-70*1, 12-80*3	
Alter-nator	Capacity V-A		12-60					
	Voltage regulator type		IC regulator built-in					
Starter motor	Type		Conventional	Conventional reduction*4			Reduction	
	Capacity kW		0.8	1.0 1.2*4			1.6*1, 2.0*3	
Ignition system	Firing order		1-3-4-2					
	Ignition coil	Ignition method	Battery-coil type				–	
		Ignition coil model	HP5-13E C6R-246	HP5-13E*5 C6R-246*5 STC-106*6 CIT-106*6	STC-106 CIT-106	CM1T-201	–	
	Distributor type		Contact point*5 Pick-up coil*6		Pick-up coil	Pick-up coil	–	
	Spark plug		L46PW BP5ES	BP5ES*5 L46PW*5 BP6ES*7 L45PW*7 BPR6ES*3 BPR5ES*3	BCPES*1 L45PS*1 BCPR6ES*3	L45PS-11*1 BCP6ES-11*1 BCPR6ES-11 *3	–	
Clutch	Disc model		200CBL			225CBL	200TBL	225TBL
	Cover	Model	C200S			C225S	C200S	C225S
		Full load N (kg, lb)	3,481 (355, 783)	3,923 (400, 882)		4,413 (450, 992)	3,481 (355, 783)	3,923 (400, 882)
	Clutch control method		Cable			Hydraulic		
	Master cylinder inner diameter mm (in)		15.87 (5/8)					
	Operating cylinder inner diameter mm (in)		19.05 (3/4)					

*1: Except for Europe
*2: Standard for Europe and option except for Europe
*3: For Europe
*4: Models equipped with automatic transaxle
*5: Except for Saudi Arabia and Europe
*6: For Saudi Arabia and Europe

Item		Model	CA16S	CA18S	CA20S	CA18ET	LD20	LD20T
4-speed manual transaxle	Model		RN4F31A	RN4F31A				
	Gear ratio	1st	3.333	3.063				
		2nd	1.955	1.826				
		3rd	1.286	1.207				
		4th	0.902	0.902				
		Rev.	3.417	3.417				
	Final drive	Type	Helical gear					
		Gear ratio	3.895	3.895*1, 4.056				
5-speed manual transaxle	Model		RS5F31A	RS5F31A		RS5F50A		
	Gear ratio	1st	3.333	3.063		3.400		
		2nd	1.826	1.826		1.955		
		3rd	1.207	1.207		1.272		
		4th	0.902	0.902		0.911		
		5th	0.733	0.733		0.740		
		Rev.	3.417	3.417		3.428		
	Final drive	Type	Helical gear					
		Gear ratio	3.895*1, 4.056		3.895		4.167, 4.471*2	
Automatic transaxle	Model			RL3F01A	RL4F02A			
	Gear ratio	1st		2.826	2.786			
		2nd		1.543	1.545			
		3rd		1.000	1.000			
		4th		—	2.272			
		Rev.		2.364	2.272			
	Final drive	Type		Helical gear				
		Gear ratio		3.600	3.876	3.642		
Front axle and suspension	Type		Independent strut with coil spring					
	Stabilizer		Without stabilizer					
Rear axle and suspension	Type		Independent strut parallel link Rigid axle with semi-elliptical leaf spring*2					
	Stabilizer		With stabilizer					

*1: Deluxe model except Europe and Saudi Arabia
*2: Deluxe model of Station Wagon except Europe and Saudi Arabia.

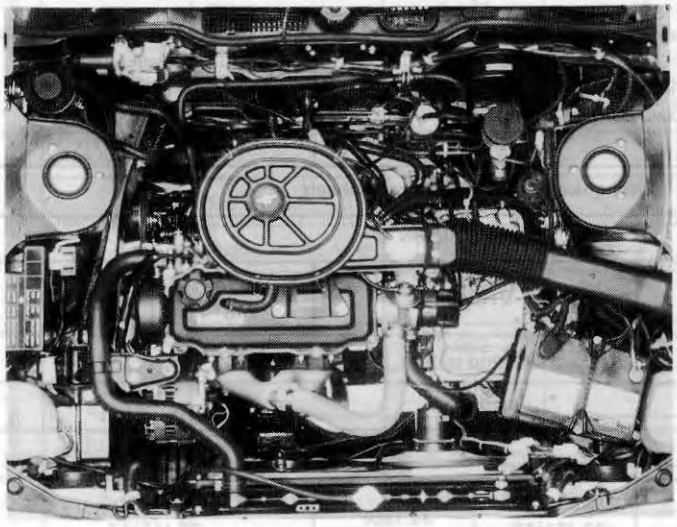
Item \ Model				CA16S	CA18S	CA20S	CA18ET	LD20	LD20T
Brake system	Type-model	Front		Disc-CL22V*2, Disc-CL28VA*3			Disc-CL28VA	Disc-CL22V*2, Disc-CL28VA*3	
		Rear	Sedan	Drum-LT20A*2, Drum-LT23*3			Disc-CL11	Drum-LT20A*2, Drum-LT23*3	
			Station Wagon	–	Drum-LT23				
	Master cylinder inner diameter mm (in)			25.4 (1)*2, 30.16 (1-3/16)			30.16 (1-3/16)	25.4 (1), 28.58 (1-1/8)*1, 30.16 (1-3/16)*3	
	Brake booster model			G20*2, G23*3			G23		
	Pressure control type			DP valve (within master cylinder)*2, DLSV (Dual Load Sensing Valve)*3				DP valve (within master cylinder)*2, DLSV (Dual Load Sensing Valve)*1*2	
	Parking brake type			Mechanically operated on rear wheels					
Steering system	Manual	Gear	Type	Rack-and-pinion					
			Model	VR24S R24S*4		VR24S		VR24S R24S*4	VR24S
	Power	Gear	Type	Rack-and-pinion					
			Model	PR24SA					
Performance	Top gear speed at 1,000 rpm km/h (MPH)	Manual transaxle	4-speed	31 (19)		–			
			5-speed	30 (19) 29 (18)*5	31 (19)	32 (20) 33 (21)*6	32 (20)	30 (19) 28 (17)*7	
		Automatic transaxle		–	31 (19) 32 (20)*6	29 (18) 30 (19)*6	31 (19) 32 (20)*6	–	

*1: Deluxe model of Station Wagon
*2: Except for Europe
*3: For Europe
*4: 13-inch road wheel model except for Saudi Arabia and Europe
*5: DX model
*6: For Saudi Arabia
*7: Station Wagon

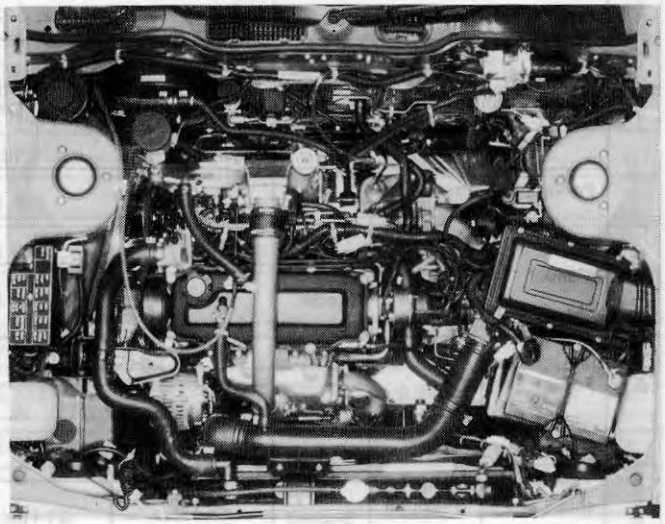
CA ENGINE

OUTLINE

The new CA engines have been designed to accomodate transverse mounting and front wheel drive designs. These engines have their cylinder blocks and crankshafts redesigned to provide quieter operation. Of these, the turbocharged model has been modified for increased dynamic performance.
Other design and construction features, such as compactness, lightweight, low fuel consumption, high output and high response, have been retained from previous CA engines.



Carburetor engine



E.F.I. engine

SPECIFICATIONS

Items \ Engine	CA16	CA18	CA18ET	CA20
Displacement cm³ (cu in)	1,598 (97.51)	1,809 (110.39)	1,809 (110.39)	1,974 (120.45)
Bore x Stroke mm (in)	78.0 x 83.6 (3.071 x 3.291)	83.0 x 83.6 (3.268 x 3.291)		84.5 x 88.0 (3.327 x 3.465)
No. of cylinders & arrangement	4 cylinder in line			
Combustion chamber	Semi-spherical			
Valve mechanism	O.H.C.			
Compression ratio	9.0	8.8* 9.6**	8.0	8.5* 9.4**
Fuel metering system	Carburetor		E.F.I.	Carburetor

*: Except for Saudi Arabia and Europe except Switzerland & Sweden
**: For Saudi Arabia and Europe except Switzerland & Sweden

ENGINE MECHANICAL SYSTEM

CYLINDER BLOCK

The cylinder block has a highly rigid, half-skirt design to reduce weight, size and noise. Each side of the cylinder block has been reinforced with ribs and the main bearing housing locations have also been strengthened.

CYLINDER HEAD

The distributor is now located on the rear of the engine rather than the left front.
The combustion chamber is a semi-spherical type which features optimum combustion efficiency.
On the CA18 and CA20 engines, the diameter of the intake valve has been enlarged to 41 mm (1.61 in) and its port changed to a round design for higher output.

CRANKSHAFT

The crank arm has been thickened to increase rigidity.

CONNECTING ROD

The cross-sectional area of the "I" shape section has been increased for greater strength.

CONNECTING ROD BEARING

On the turbocharged model, the material used for the connecting rod bearing has been changed to increase durability.

PISTON AND PISTON RINGS

Piston

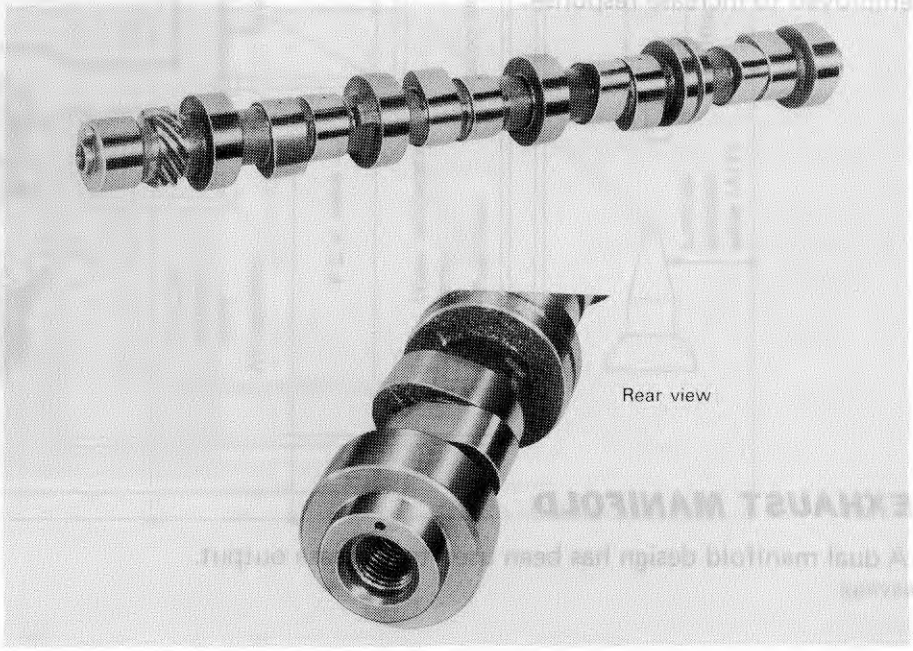
- The weight has been reduced to increase fuel economy and decrease vibration.
- On the turbocharger, as well as all European models, the 2nd land of the piston has been thickened to increase strength. The piston has a thermal flow design to handle thermal load.
  An oil groove has been added to the piston pin location to provide optimum lubrication and reduce undue stress.

Piston rings

The top ring and oil ring spacers are chrome-plated to increase durability.

CAMSHAFT

The rear end of the camshaft has been redesigned to accommodate the distributor drive cam. On the turbocharger, the camshaft has the valve timing revised to increase its output.



FUEL PUMP CAM (Distributor drive cam)

A dowel pin hole has been added to easily locate the distributor drive cam.

OIL PAN

The entire area has been covered with baffle plates to minimize fluctuations of the oil level while the vehicle is rounding a curve or being driven on an upgrade/downgrade.

CRANK PULLEY

On the CA18 and CA20 engines, the crank pulley is equipped with a torsional damper.

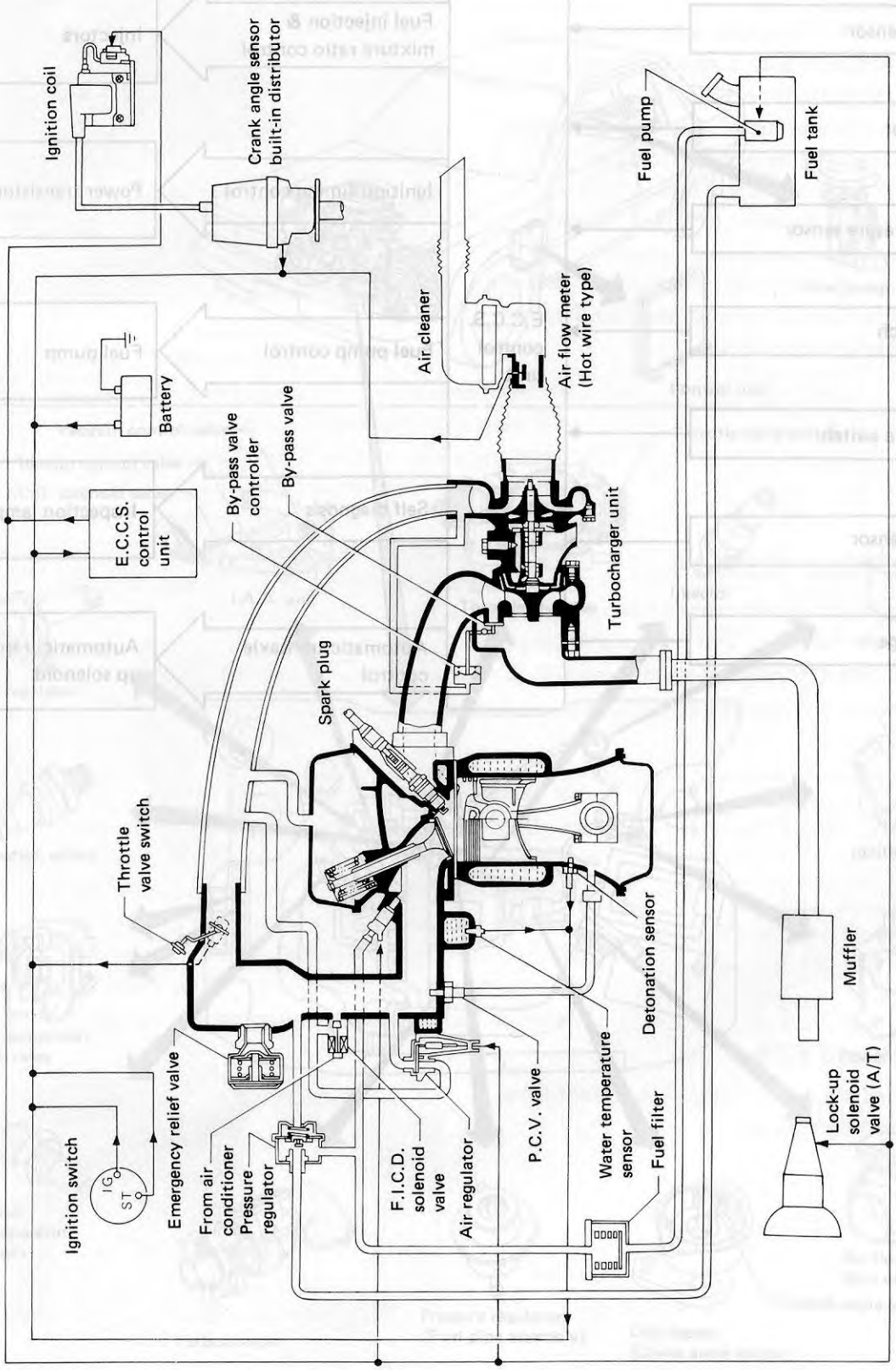
INTAKE MANIFOLD (Turbocharger only)

A one-piece intake manifold design has been employed to increase response.

EXHAUST MANIFOLD

A dual manifold design has been used to increase output.

E.C.C.S. DIAGRAM (Turbocharged engine)



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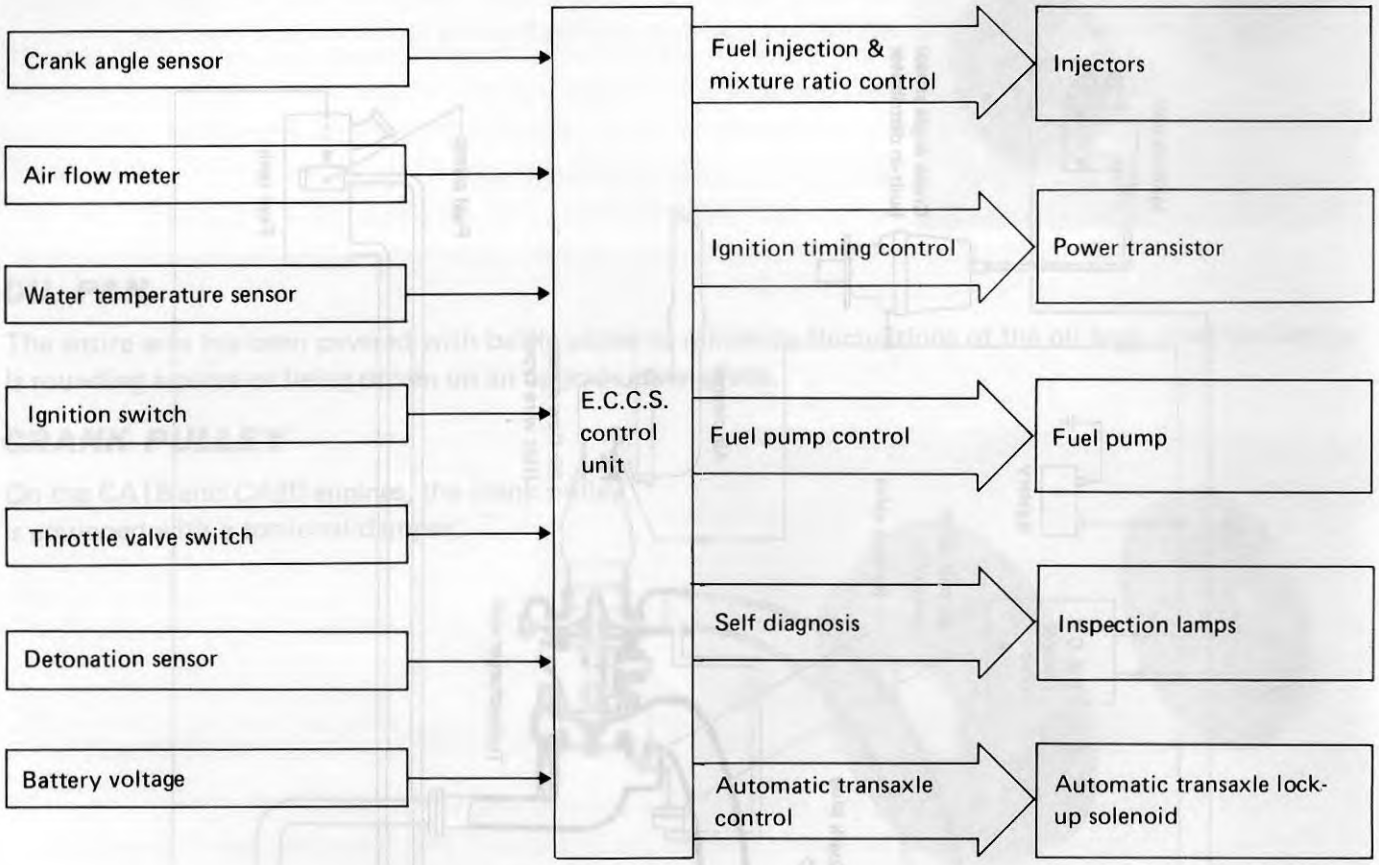
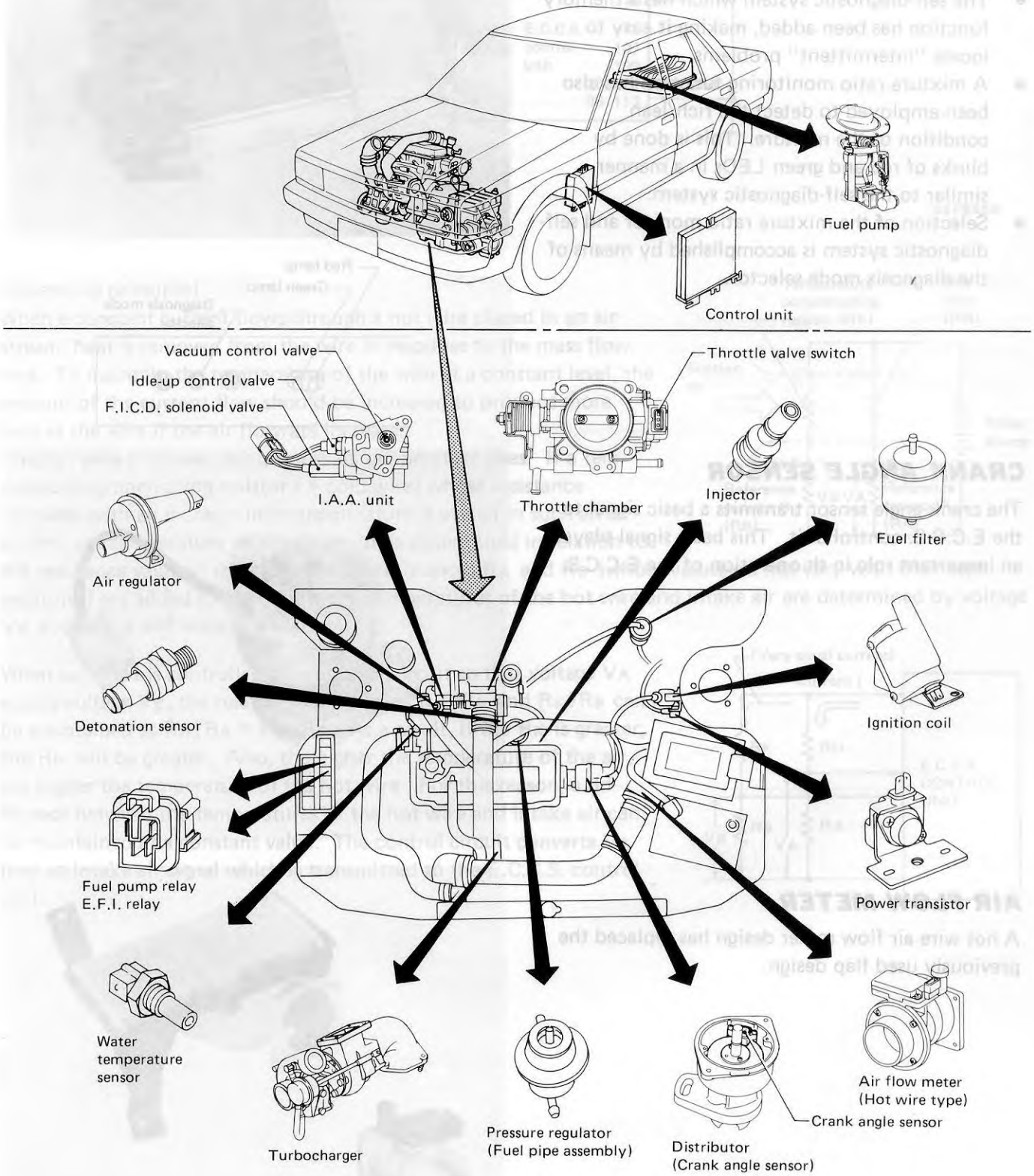
E.C.C.S. CHART (Turbocharged engine)



COMPONENT PARTS LOCATIONS



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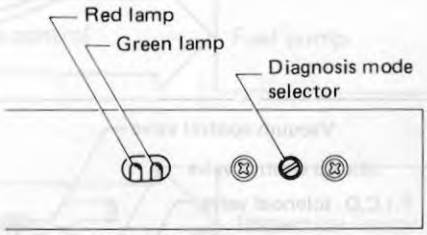
E.C.C.S. COMPONENT PARTS

The E.C.C.S. control unit is installed under the front left side seat.

- The self-diagnostic system which has a memory function has been added, making it easy to locate "intermittent" problems.
- A mixture-ratio monitoring function has also been employed to detect the rich/lean condition of the mixture. This is done by blinks of red and green LEDs in a manner similar to the self-diagnostic system.
- Selection of the mixture ratio monitor and self-diagnostic system is accomplished by means of the diagnosis mode selector.

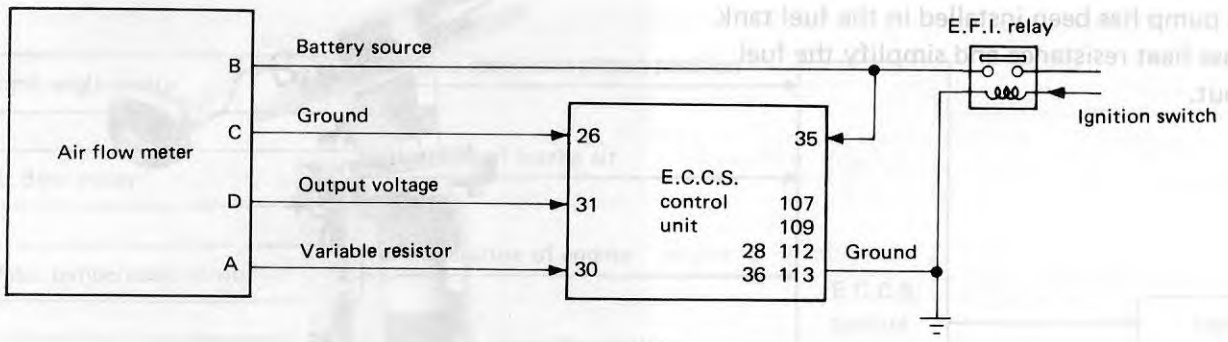


CRANK ANGLE SENSOR

The crank angle sensor transmits a basic signal to the E.C.C.S. control unit. This basic signal plays an important role in th operation of the E.C.C.S.

AIR FLOW METER

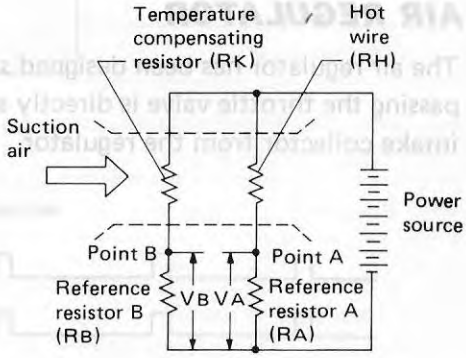
A hot wire air flow meter design has replaced the previously used flap design.



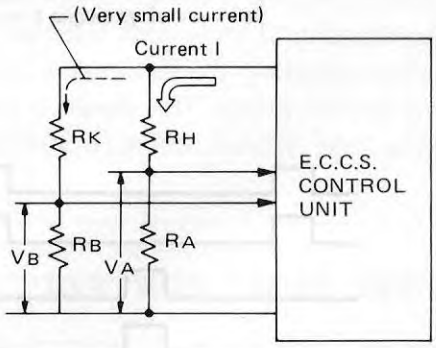
SEF855B

[Operating principle]

When a constant current flows through a hot wire placed in an air stream, heat is removed from the wire in response to the mass flow rate. To maintain the temperature of the wire at a constant level, the amount of the current flow should be increased to produce more heat at the wire if the air flowrate increases.



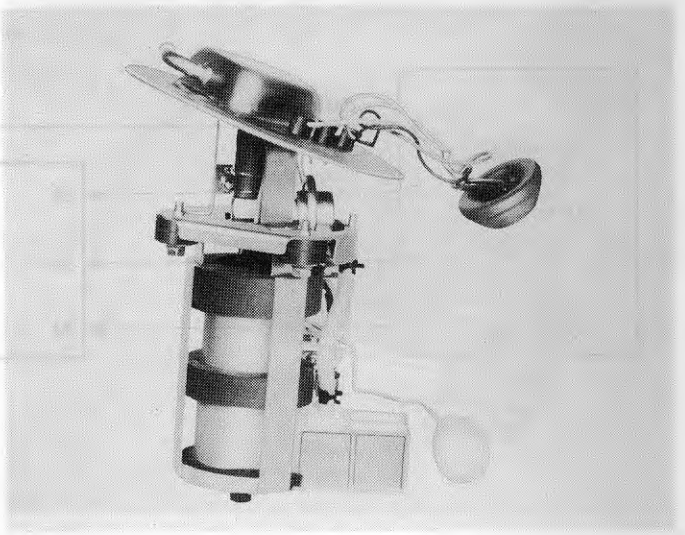
The hot wire increases resistance as its temperature rises. If a temperature-compensating resistor (= cold wire) whose resistance increases with an increase in its temperature is placed in such an air stream, the temperature of the air could be determined in relation to the resistance value of the cold wire. If resistances R_A and R_B (whose values do not vary with their temperatures) are added to the circuit, the temperatures of the hot wire and intake air are determined by voltage V_A at point A and voltage V_B at point B.



When current I is controlled by a control circuit so that voltage V_A equals voltage V_B, the relationship between R_H/R_A and R_K/R_B can be maintained as $R_H/R_A = R_K/R_B$. As a result, if the R_K is greater, the R_H will be greater. Also, the higher the temperature of the air, the higher the temperature of the hot wire. For this reason, a difference between the temperatures of the hot wire and intake air can be maintained at a constant value. The control circuit converts V_A into an intake air signal which is transmitted to the E.C.C.S. control unit.

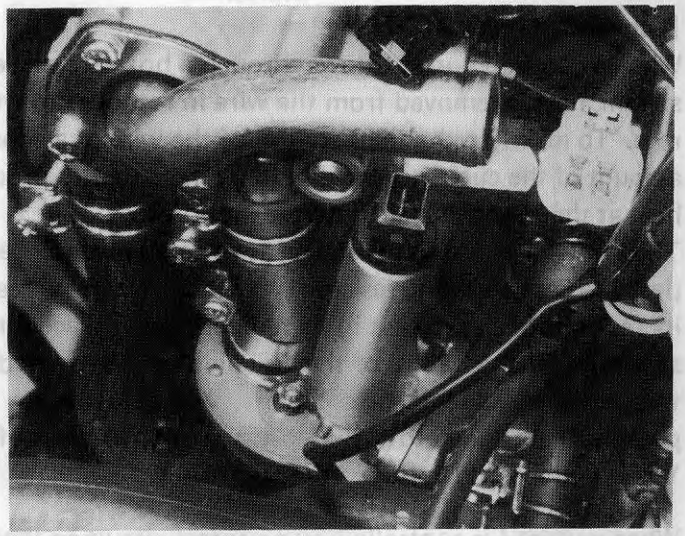
FUEL PUMP

The fuel pump has been installed in the fuel tank to increase heat resistance and simplify the fuel line layout.

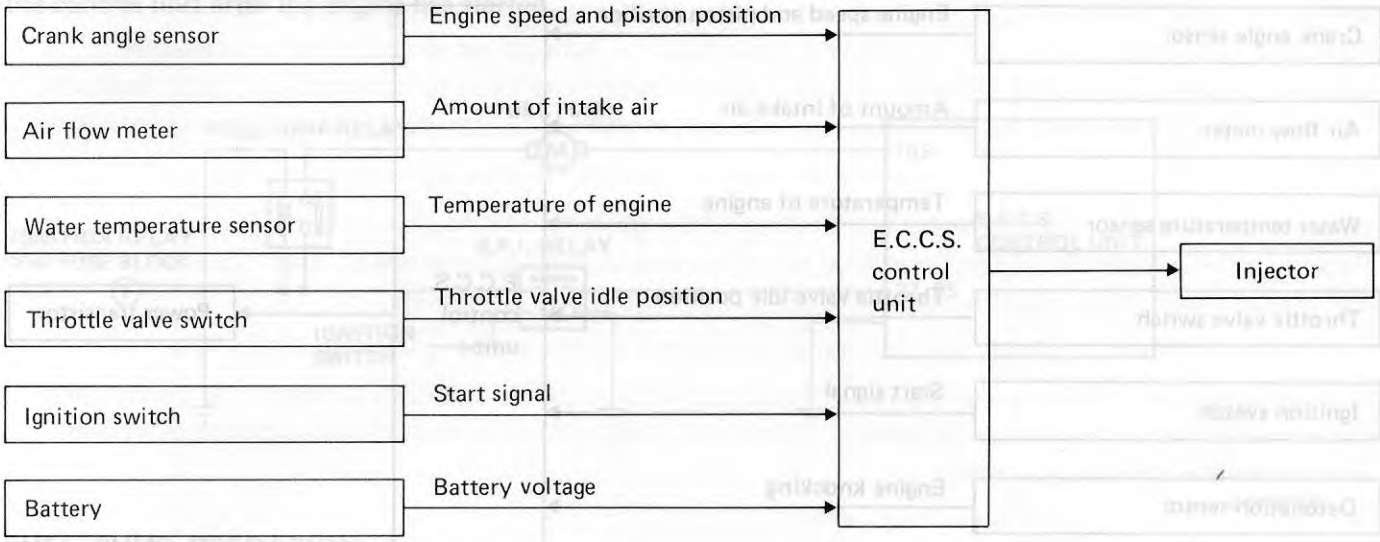


AIR REGULATOR

The air regulator has been designed so that air by-passing the throttle valve is directly sent to the intake collector from the regulator.



FUEL INJECTION CONTROL



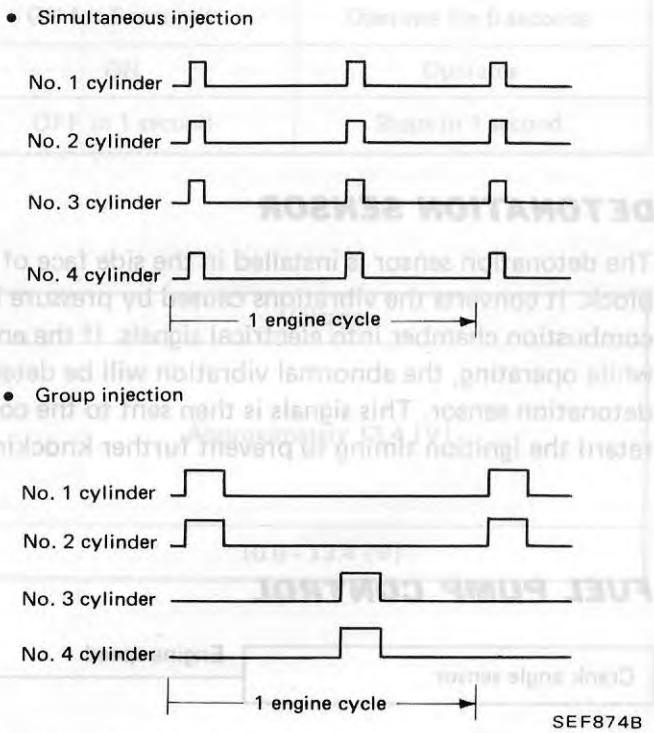
SIMULTANEOUS INJECTION AND GROUP INJECTION

Two types of fuel injection systems are used — simultaneous injection and group injection.

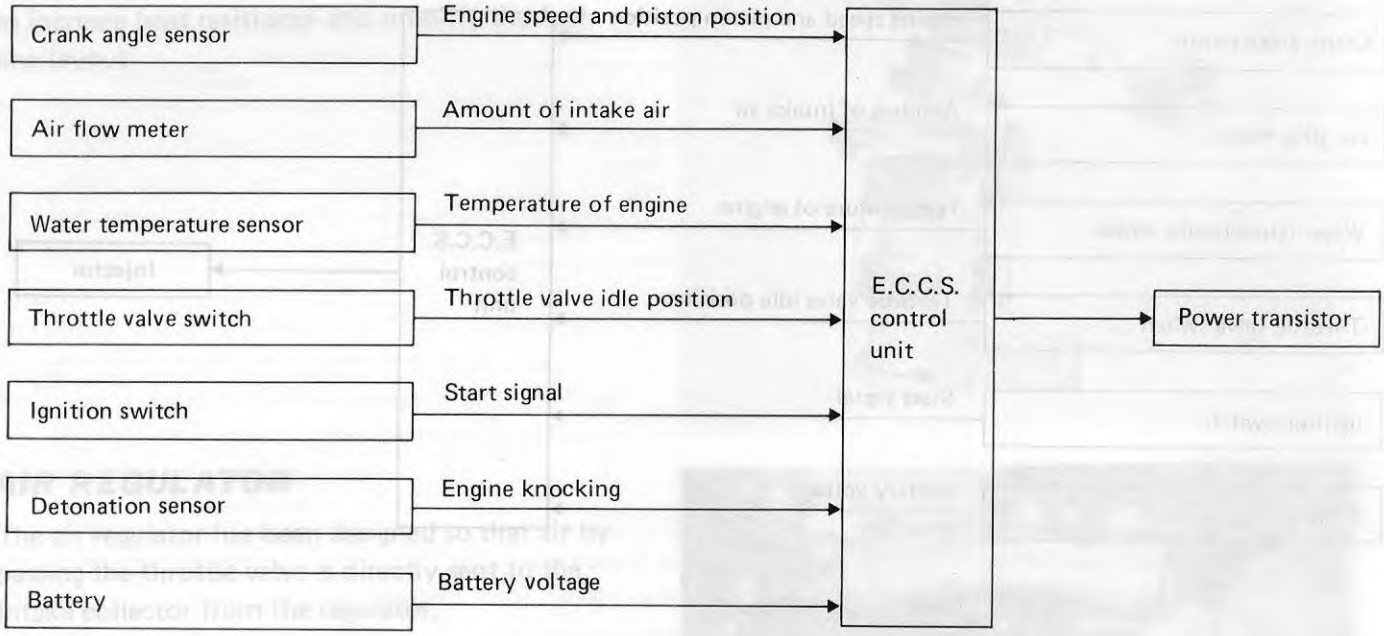
In the former, fuel is injected into all 4 cylinders simultaneously twice an engine cycle.

In other words, pulse signals of the same width are simultaneously transmitted from the E.C.C.S. control unit to the 4 injectors two times for each engine cycle.

In the group injection system, six injectors are divided into two groups — No. 1, No. 2 and No. 3, No. 4. And fuel is injected into each group separately once an engine cycle.

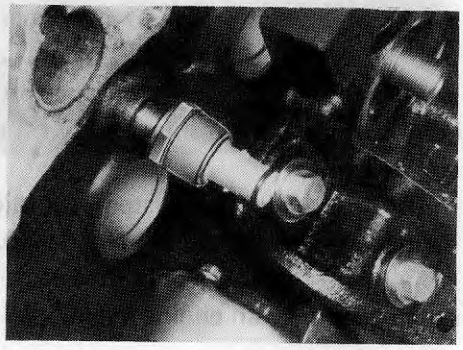


IGNITION TIMING CONTROL

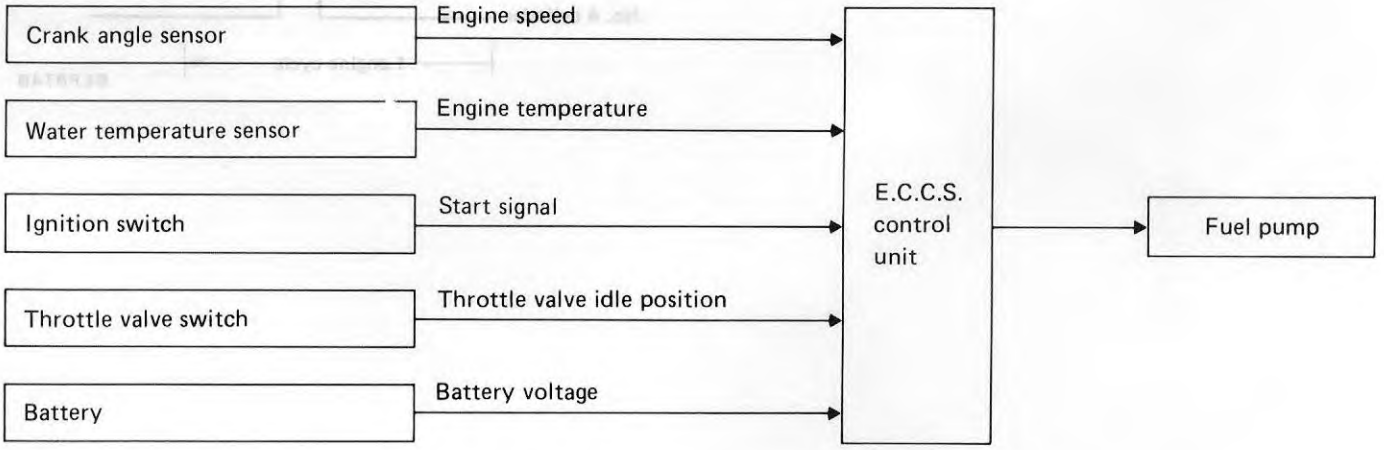


DETONATION SENSOR

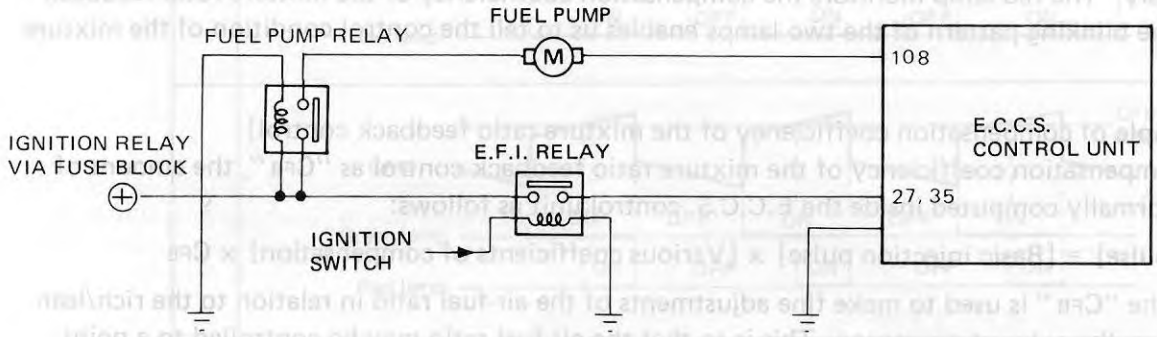
The detonation sensor is installed in the side face of the cylinder block. It converts the vibrations caused by pressure in the combustion chamber into electrical signals. If the engine knocks while operating, the abnormal vibration will be detected by the detonation sensor. This signals is then sent to the control unit to retard the ignition timing to prevent further knocking.



FUEL PUMP CONTROL



Operation of the fuel pump is controlled by the E.C.C.S. control unit. The fuel pump is directly connected to the fuel pump relay when the engine starts. The voltage which drives the fuel pump is controlled inside the control unit after the engine has started.



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FUEL PUMP OPERATION

Ignition switch position	Engine condition	Fuel pump relay	Fuel pump operation
ON	Stopped	ON for 5 seconds	Operates for 5 seconds
	Running	ON	Operates
	After stopped	OFF in 1 second	Stops in 1 second

VOLTAGE CONTROL

Conditions	Voltage
5 seconds after ignition switch is turned to ON Engine cranking 25.5 seconds after engine start [above 50°C (122°F)] Engine temperature above 90°C (194°F) Engine temperature below 10°C (50°F)	Approximately 13.4 [V]
Except above	10.0 - 13.4 [V]

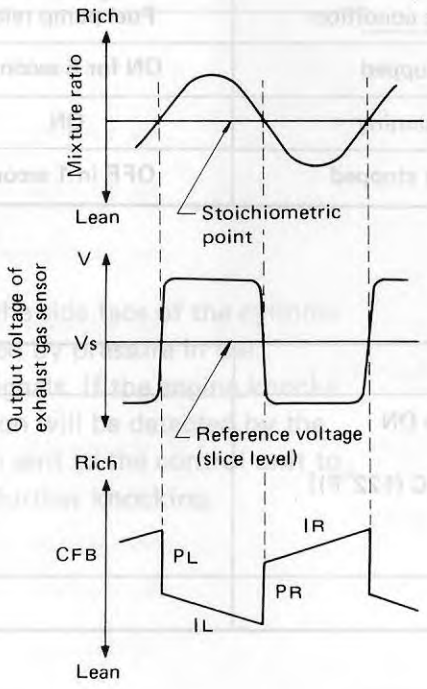
MIXTURE RATIO MONITOR

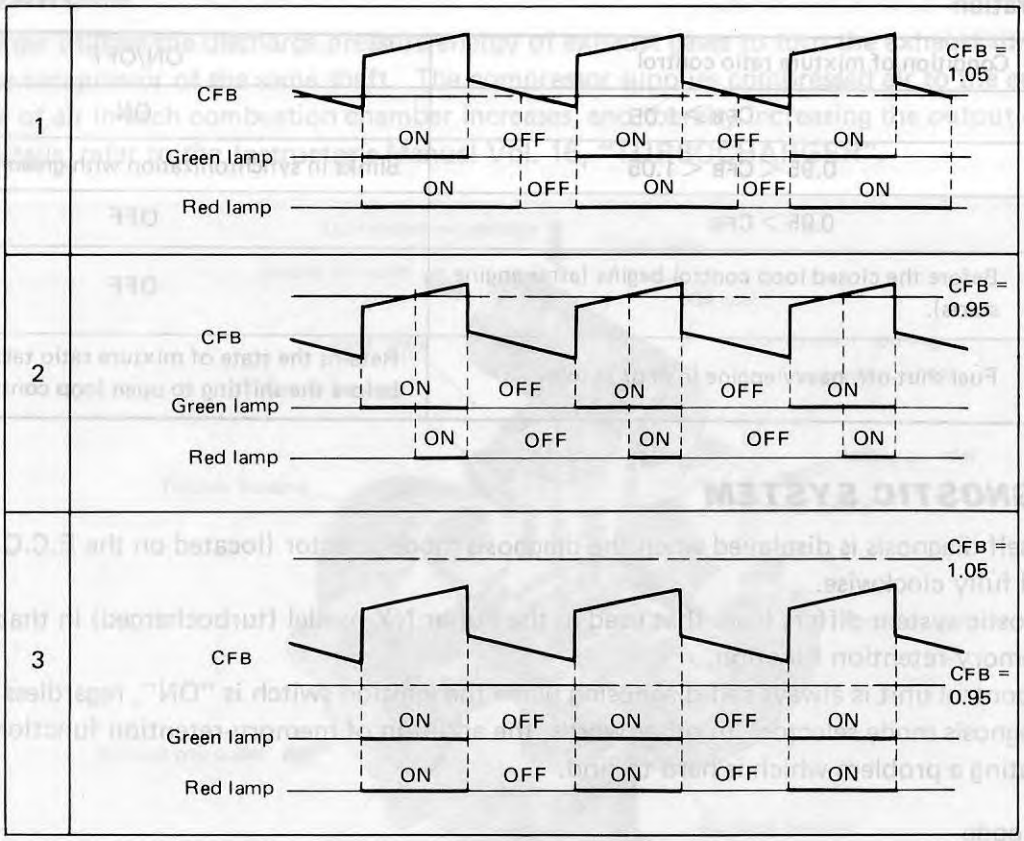
The mixture ratio monitor checks the control condition of the mixture ratio when the diagnosis mode selector (located on the E.C.C.S. control unit) is turned fully counterclockwise.
The green lamp monitors an output voltage emitted from the exhaust gas sensor in the same manner as occurred previously. The red lamp monitors the compensation coefficiency of the mixture ratio feedback control. Thus, the blinking pattern of the two lamps enables us to tell the control condition of the mixture ratio.

[Operating principle of compensation coefficiency of the mixture ratio feedback control]
Regarding the compensation coefficiency of the mixture ratio feedback control as "C_{FB}", the amount of fuel injected is normally computed inside the E.C.C.S. control unit as follows:

[Injection pulse] = [Basic injection pulse] x [Various coefficients of compensation] x C_{FB}

In other words, the "C_{FB}" is used to make fine adjustments of the air-fuel ratio in relation to the rich/lean signal emitted from the exhaust gas sensor. This is so that the air-fuel ratio may be controlled to a point close to the stoichiometric point.





In the blinking pattern "1", the "C_{FB}" is high enough to enrich the mixture because the amount of fuel injected is small.
In pattern "2", the "C_{FB}" is too small to lean out the mixture because the amount of fuel injected is large.
In pattern "3", the "C_{FB}'s" are close the value "1.0" which indicates an ideal mixture ratio. In other words, even when the amount of fuel injected varies, the mixture ratio is properly feedback-controlled to the stoichiometric point.

MIXTURE RATIO MONITOR

Green lamp operation

Condition of mixture ratio control		ON/OFF
Closed loop control	Exhaust gas sensor outputs lean signal	ON
	Exhaust gas sensor outputs rich signal	OFF
Open loop control	Before the closed loop control begins (after engine starts).	OFF
	Fuel shut-off, heavy engine load or at idle	Retains the state of mixture ratio taking place just before the shifting to open loop control is made.

Red lamp operation

Condition of mixture ratio control		ON/OFF
Closed loop control	$C_{FB} > 1.05$	ON
	$0.95 < C_{FB} < 1.05$	Blinks in synchronization with green lamp.
	$0.95 > C_{FB}$	OFF
Open loop control	Before the closed loop control begins (after engine starts).	OFF
	Fuel shut-off, heavy engine load or at idle	Retains the state of mixture ratio taking place just before the shifting to open loop control is made.

SELF-DIAGNOSTIC SYSTEM

The result of self-diagnosis is displayed when the diagnosis mode selector (located on the E.C.C.S. control unit) is turned fully clockwise.

The self-diagnostic system differs from that used in the Pulsar NX model (turbocharged) in that it is equipped with a memory-retention function.

The E.C.C.S. control unit is always self-diagnosing when the ignition switch is "ON", regardless of the position of the diagnosis mode selector. In other words, the addition of memory-retention function is extremely helpful in locating a problem which is hard to find.

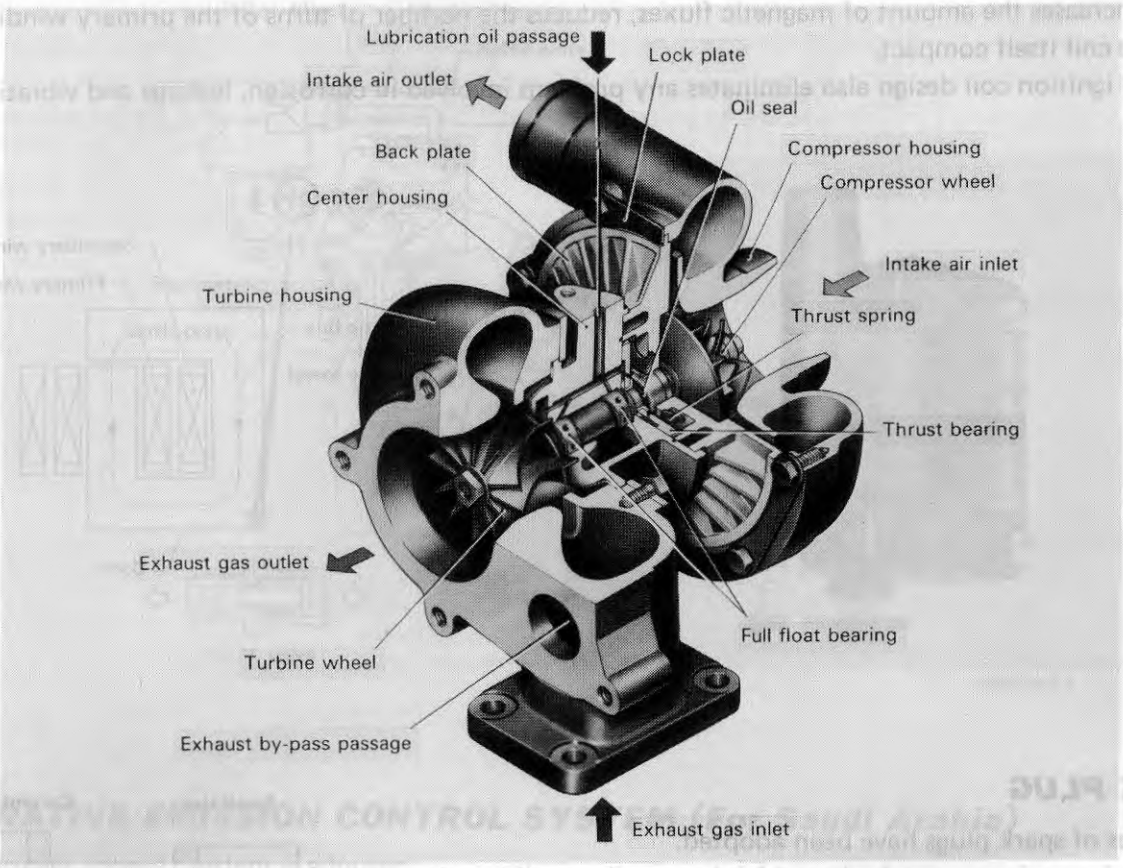
Self-diagnosis code

Blink		Code No.	Malfunctioning area
Red lamp	Green lamp		
●	●	11	Crank angle sensor
●	● ●	12	Air flow meter
●	● ● ●	13	Water temperature sensor
● ●	●	21	Ignition signal
● ●	● ●	22	Fuel pump
● ●	● ● ●	23	Idle switch
● ● ●	●	31	Air conditioner (If air conditioner is not equipped, the code is written "O.K.")
● ● ●	● ●	32	Start signal
● ● ●	● ● ● ●	34	Detonation sensor
● ● ● ●	● ● ● ●	44	O.K. (With air conditioner model)
● ●	● ● ● ●	*24	O.K. (If there is no display except code No. 24)

*: Temporary O.K. code for early production models

TURBOCHARGER

The turbocharger utilizes the discharge pressure energy of exhaust gases to turn the exhaust turbine. This in turn drives the compressor of the same shaft. The compressor supplies compressed air to the engine, so that the filling rate of air in each combustion chamber increases, and thereby increasing the output of the engine. For further details, refer to the Instructor's Manual Vol. 16, "TURBOCHARGER".

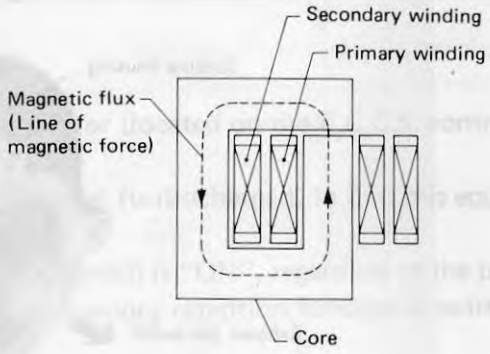


ENGINE ELECTRICAL

IGNITION COIL

A molded ignition coil has replaced the previously used cylindrical ignition coil. In the new coil design, the magnetic flux which flows through the iron core forms a closing circuit instead of an open circuit as occurred previously. This eliminates any chance that the magnetic flux will leak on the primary winding of the coil. Thus, it increases the amount of magnetic fluxes, reduces the number of turns of the primary winding, and makes the coil itself compact.

A molded ignition coil design also eliminates any problem involved in corrosion, leakage and vibration.



SPARK PLUG

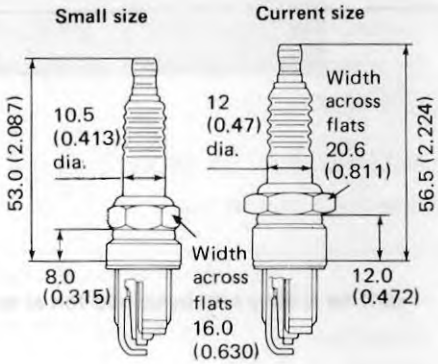
Two types of spark plugs have been adopted.

On CA series engines, a spark plug which has small overall length, small width across flats and a small diameter insulator has been adopted to reduce size and weight. The other plug wrench and high tension cable cannot be used as they differ in dimension from the small ones.

Type:

Small size . . . . . CA18ET and CA20 engine

Current size . . . . . CA16 and CA18 engine

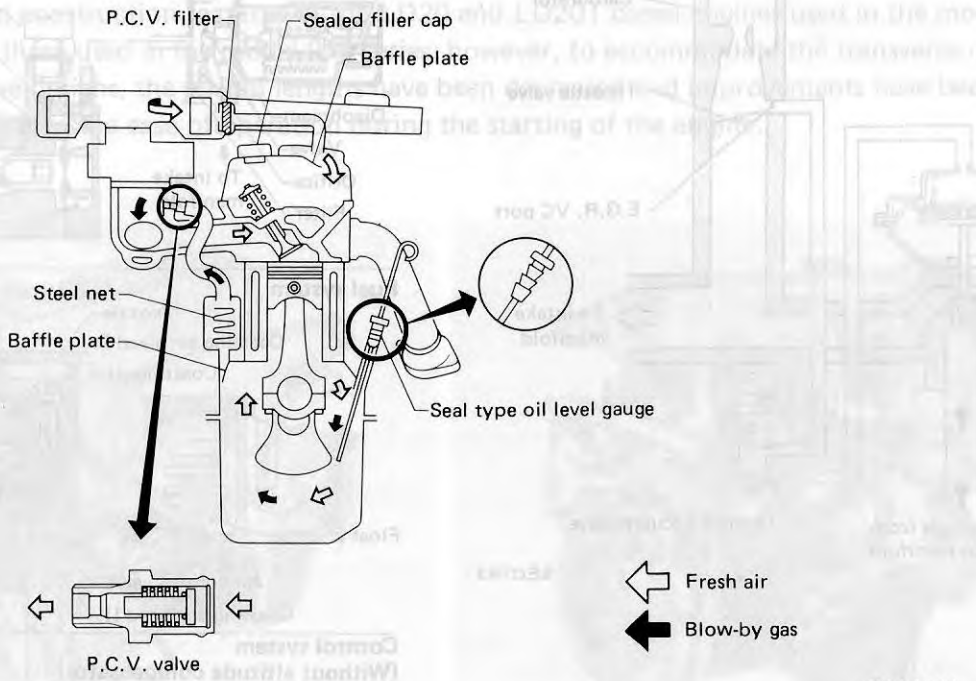


Unit: mm (in)

EMISSION CONTROL SYSTEM

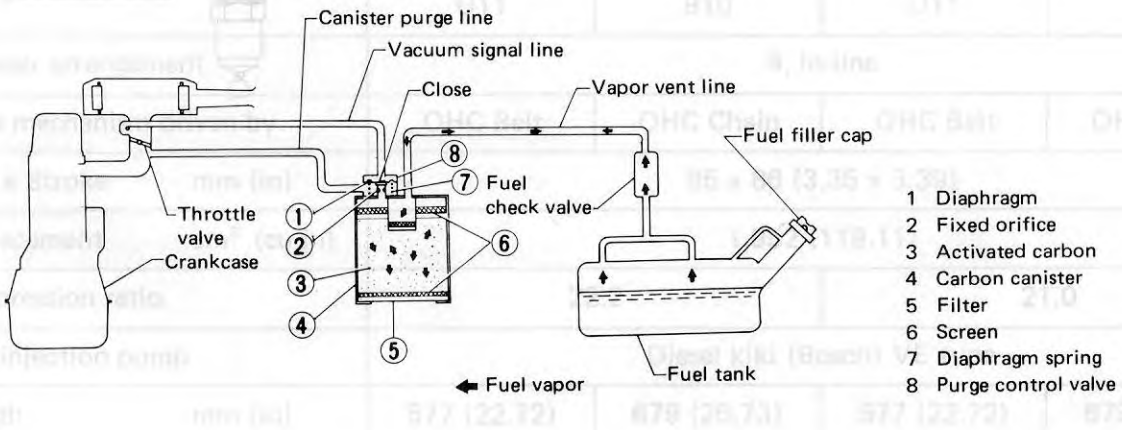
CRANKCASE EMISSION CONTROL SYSTEM

Positive crankcase ventilation (closed) system is adopted.



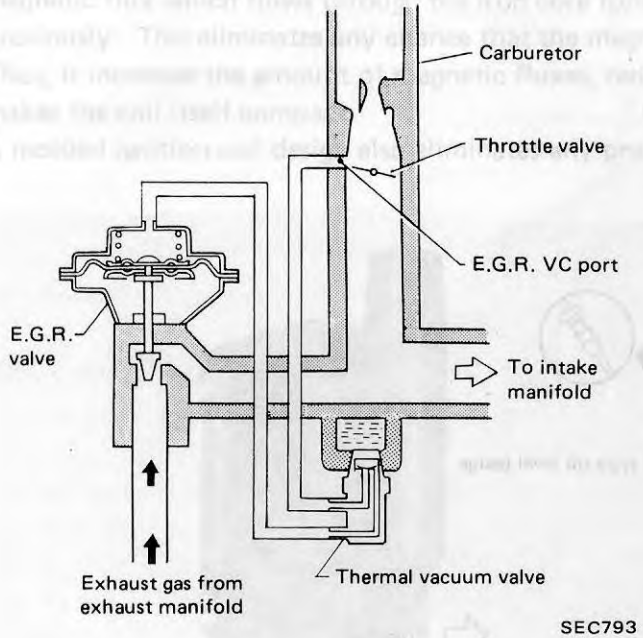
EVAPORATIVE EMISSION CONTROL SYSTEM (For Saudi Arabia)

Canister storage (closed) system is adopted.

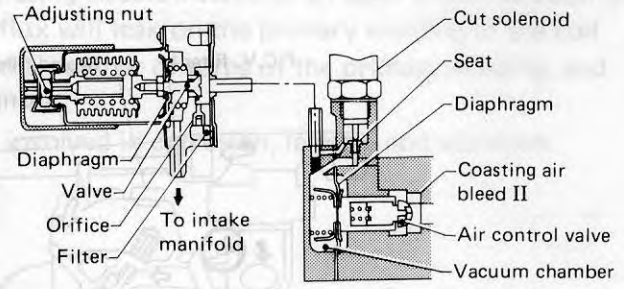


EXHAUST EMISSION CONTROL SYSTEM (For Sweden and Switzerland)

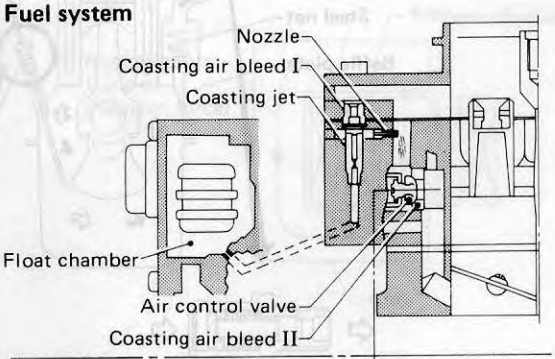
Exhaust gas recirculation system and B.C.D.D. system are adopted.



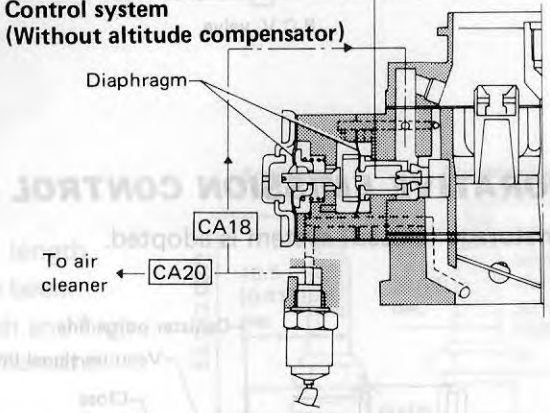
Control system (With altitude compensator)



Fuel system



Control system (Without altitude compensator)



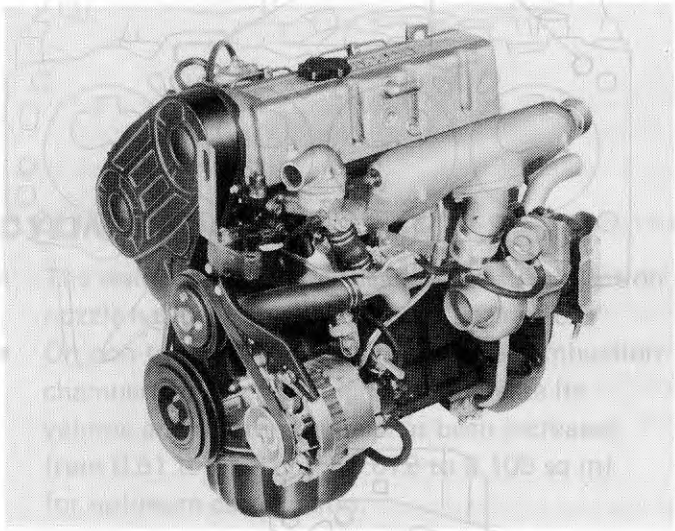
LD20 & LD20T ENGINES

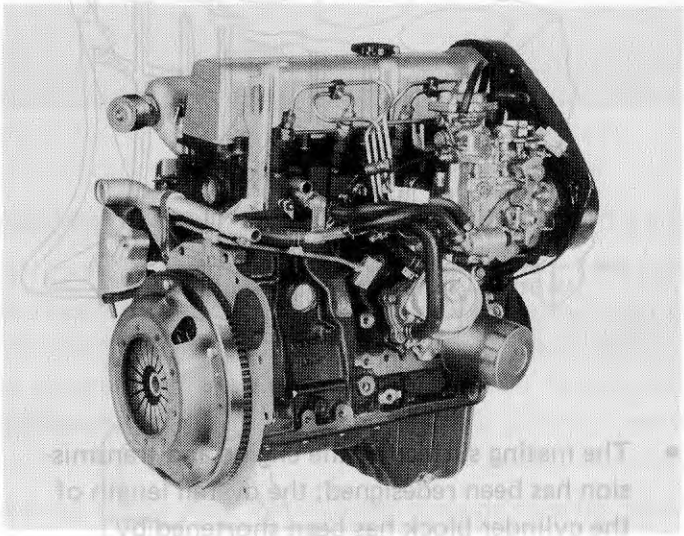
INTRODUCTION

OUTLINE

The basic design and construction features of the LD20 and LD20T diesel engines used in the model U11 series are similar to those used in the model 910 series; however, to accommodate the transverse mounting and front wheel drive designs, the overall lengths have been decreased and improvements have been made to reduce noise and increase the ease of operation during the starting of the engine.

LD20T





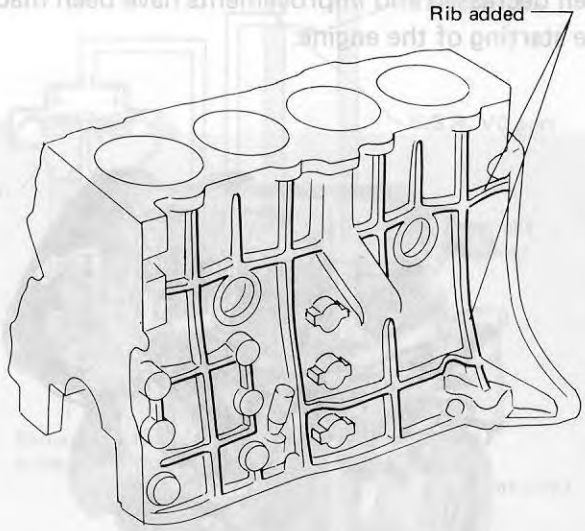
SPECIFICATIONS

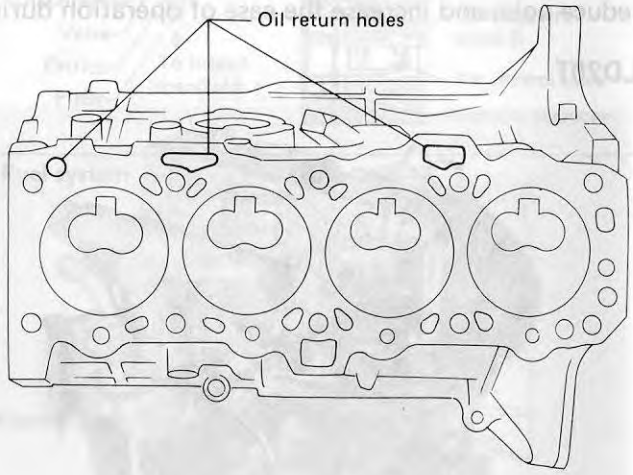
Engine model (for use with)		LD20		LD20T	
		U11	910	U11	910
Cylinder arrangement		4, in-line			
Valve mechanism driven by		OHC Belt	OHC Chain	OHC Belt	OHC Chain
Bore x Stroke	mm (in)	85 x 86 (3.35 x 3.39)			
Displacement	cm^3 (cu in)	1,952 (119.11)			
Compression ratio		22.2		21.0	
Fuel injection pump		Diesel kiki (Bosch) VE type			
Length	mm (in)	577 (22.72)	679 (26.73)	577 (22.72)	679 (26.73)
Width	mm (in)	526 (20.71)	563 (22.17)	558 (21.97)	567 (22.32)
Height	mm (in)	646 (25.43)	673 (26.50)	646 (25.43)	673 (26.50)
Weight	kg (lb)	179 (395)		189 (417)	

ENGINE MECHANICAL SYSTEM

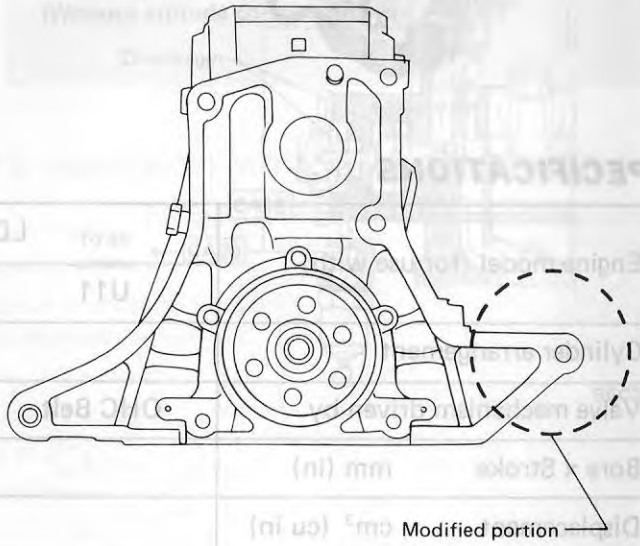
CYLINDER BLOCK

- Ribs have been added to the wall surface of the cylinder block to reduce noise and vibration, as well as to increase rigidity.
- The valve mechanism is now driven by a belt rather than a chain. Because of this, the chain case provided with an oil return passage has been eliminated. Oil return holes have been added to the cylinder block.



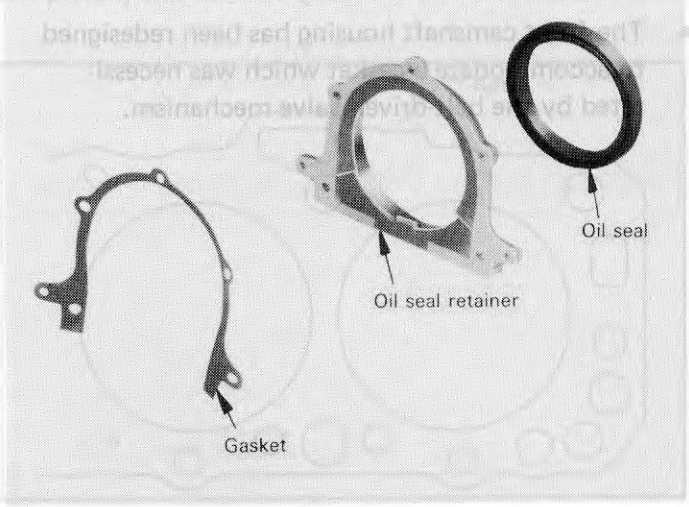


- The mating surface of the engine and transmission has been redesigned; the overall length of the cylinder block has been shortened by 10 mm (0.39 in).



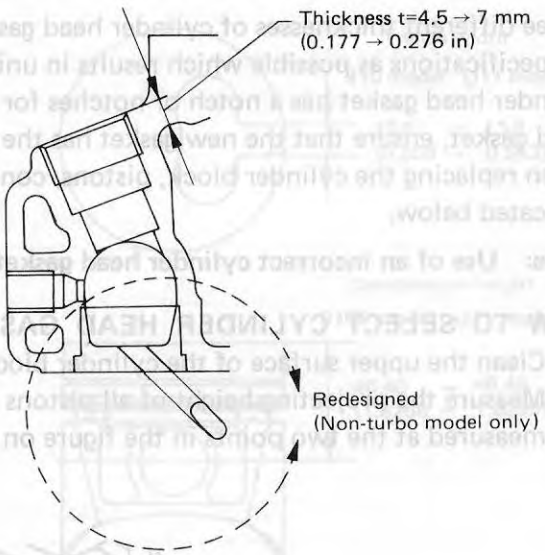
OIL SEAL RETAINER

An aluminum die casted retainer which holds the rear oil seal in place has been newly adopted to shorten the overall length of the cylinder block.

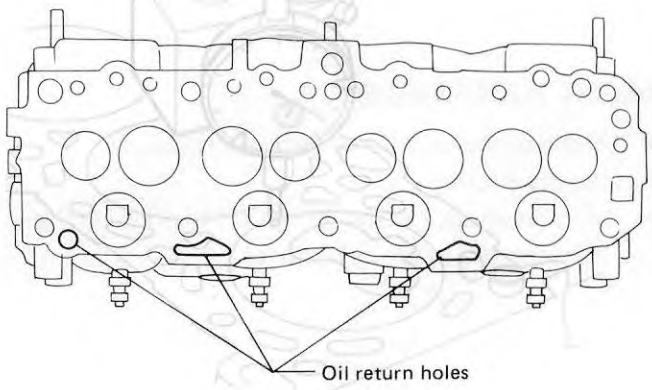


CYLINDER HEAD

- The wall of the cylinder head at the fuel injection nozzle has been thickened to reduce noise.
- On non-turbocharger models, the pre-combustion chamber has been redesigned to increase its volume and the throat area has been increased from 0.51 to 0.68 cm^2 (0.079 to 0.105 sq in) for optimum combustion.

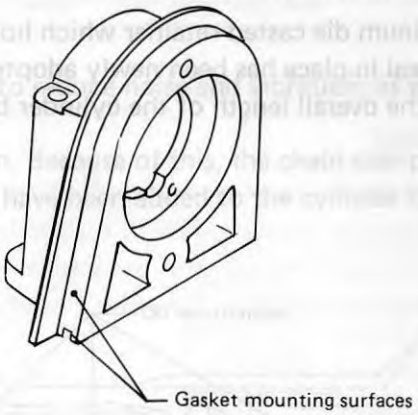


- The cylinder head has been shortened by 44 mm (1.73 in). This was accomplished by eliminating the chain case.
- Oil return holes have been added to the cylinder head.



FRONT CAMSHAFT HOUSING

- The front camshaft housing has been redesigned to accommodate a gasket which was necessitated by the belt-driven valve mechanism.



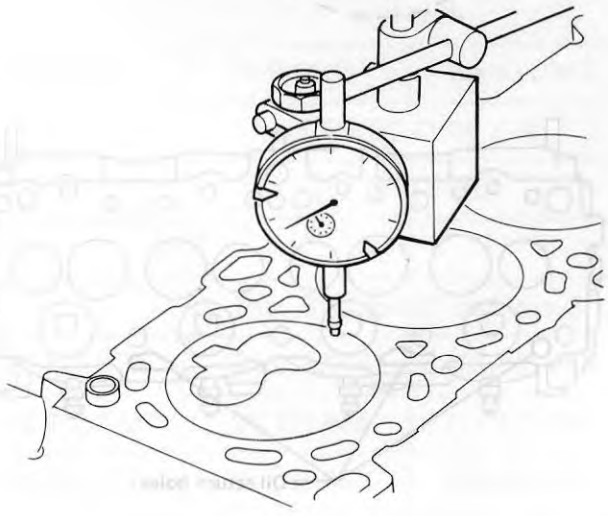
CYLINDER HEAD GASKET (Non-turbocharger models only)

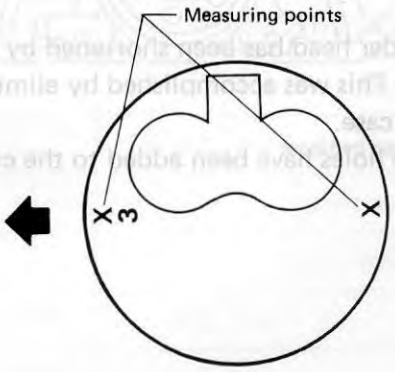
Three different thicknesses of cylinder head gaskets can be used in order to keep compression ratios as close to specifications as possible which results in uniform output and fuel consumption for each engine. Each cylinder head gasket has a notch or notches for easy thickness identification. When replacing the cylinder head gasket, ensure that the new gasket has the same identification mark as the old one.
When replacing the cylinder block, pistons, connecting rods or crankshaft, select the cylinder head gasket as indicated below.

Note: Use of an incorrect cylinder head gasket can cause mutual interference of the valve and piston.

HOW TO SELECT CYLINDER HEAD GASKETS

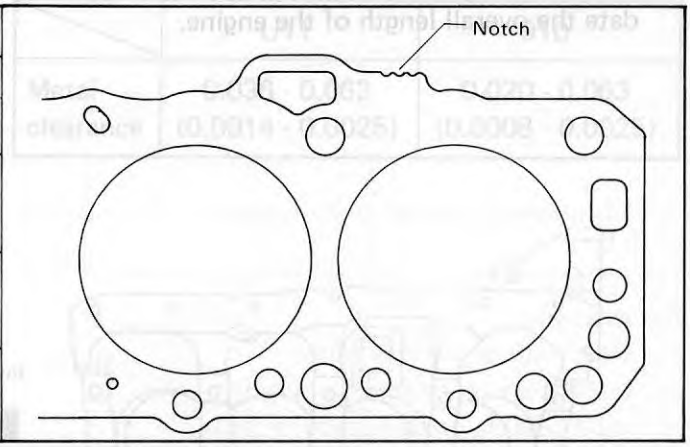
1. Clean the upper surface of the cylinder block and the piston heads.
2. Measure the projecting height of all pistons from the cylinder block. Take the average of the values measured at the two points in the figure on the right as the projecting height of the piston.





3. Determine the average of the projecting height of each piston, and install a gasket with a thickness corresponding to that height.

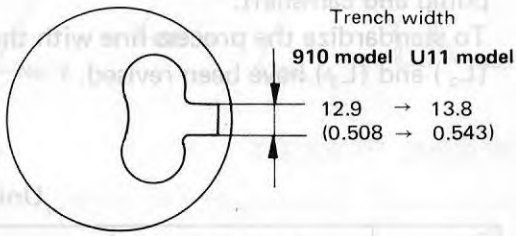
Grade	Average of piston projection height mm (in)	Gasket	
		Thickness mm (in)	No. of notches
A	Less than 0.505 (0.0199)	1.15 (0.0453)	1
B	0.505 - 0.555 (0.0199 - 0.0219)	1.20 (0.0472)	2
C	More than 0.555 (0.0219)	1.25 (0.0492)	3

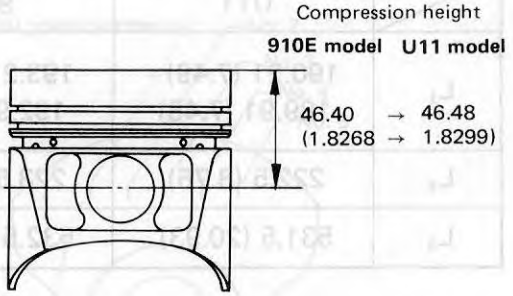


If the maximum of the measured projecting height of any piston exceeds that of the corresponding grade based on the average 0.05 mm (0.0020 in) or more, use the thicker gasket by one grade to prevent interference between the piston and valves.

PISTON (Non-turbocharger models only)

- The "compression height" has been increased by 0.08 mm (0.0031 in) to keep the compression ratio at the specified value accommodating the increased pre-combustion chamber volume. In addition, the select assembly of the cylinder head gasket has been used to eliminate the difference in compression ratio among the cylinders and provide a uniform output and fuel consumption.
- The trench width of the piston's crown for fuel combustion has been selected to provide the optimum performance in relation to the configuration of the throat in the pre-combustion chamber of the cylinder head.

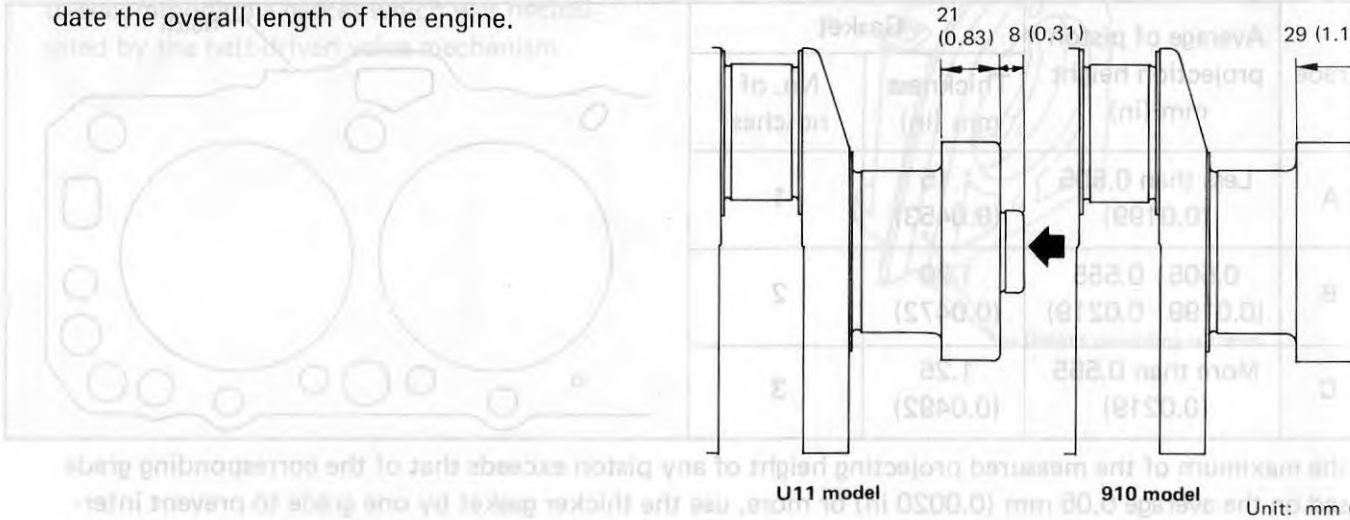




Unit: mm (in)

CRANKSHAFT

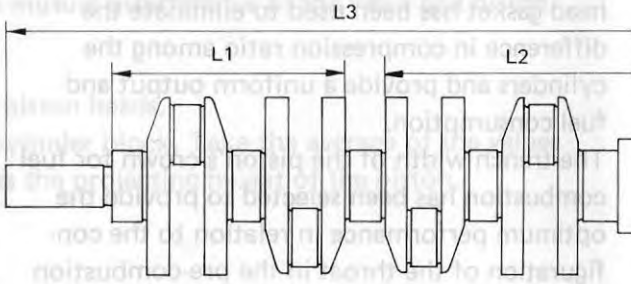
- The rear flange has been redesigned to accommodate the overall length of the engine.



- The length (L_1) of the crankshaft has been changed to accommodate the method used to drive the oil pump and camshaft.
- To standardize the process line with the LD20 engine's crankshaft used with the model 910 series, lengt (L_2) and (L_3) have been revised.

Unit: mm (in)

	U11	910
L_1	190.21 (7.49) - 189.91 (7.48)	193.21 (7.61) - 192.91 (7.59)
L_2	222.5 (8.76)	223.5 (8.80)
L_3	531.5 (20.93)	532.5 (20.96)



MAIN BEARINGS

- The bearing width has been decreased to reduce friction.
- Main bearings for the model U11 series can be used for the model 910 series.

Unit: mm (in)

	U11	910
Front and rear bearing width	24 (0.94)	26 (1.02)
Inter bearing width	24 (0.94)	24 (0.94)
Center bearing width	26 (1.02)	26 (1.02)

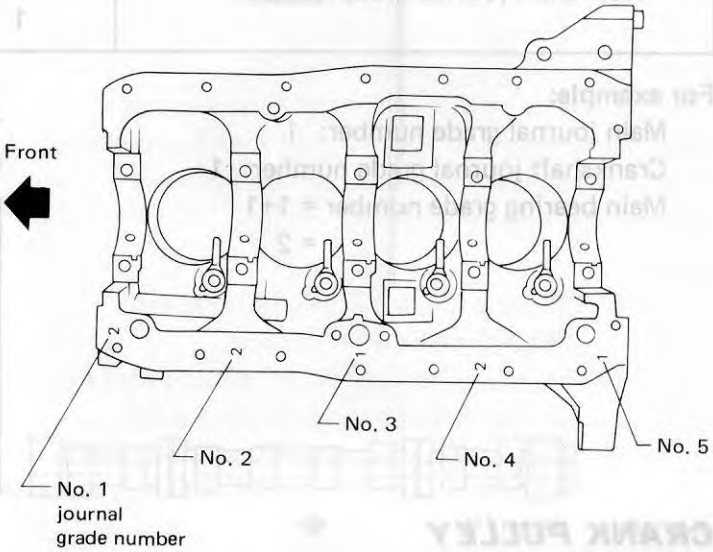
- The thickness of the bearing metal is selectively determined in relation to the diameters of both the crankshaft and cylinder block journals. Due to this, the lower limit of the metal clearance has been increased from 0.020 to 0.036 mm (0.0008 to 0.0014 in) in order to reduce friction.

Unit: mm (in)

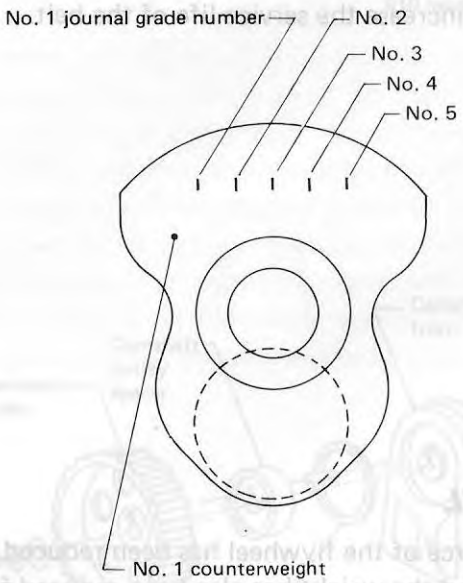
	U11	910
Metal clearance	0.036 - 0.063 (0.0014 - 0.0025)	0.020 - 0.063 (0.0008 - 0.0025)

HOW TO SELECT MAIN BEARINGS

1. Grade number of each cylinder block main journal is punched on the respective cylinder block.



2. Grade number of each crankshaft main journal is punched on the respective crankshaft.



3. Select suitable thickness of main bearing according to the following table.

Crankshaft journal grade number	Main journal grade number		
	0	1	2
	Main bearing grade number		
0	0	1	2
1	1	2	3

For example:

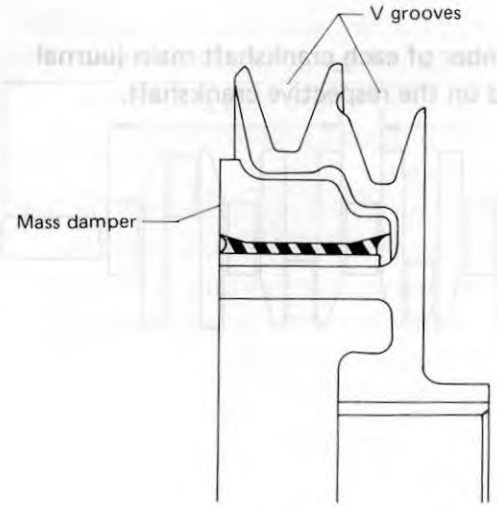
Main journal grade number: 1
Crankshaft journal grade number: 1
Main bearing grade number = 1+1
= 2

The main bearings are colored for identification, as follows:

Main bearing grade number	Color
0	Black or no color
1	Red-brown
2	Green
3	Yellow

CRANK PULLEY

The damper's mass has been separated from the V-groove to reduce the twist amplitude of the V-groove and increase the service life of the belt.



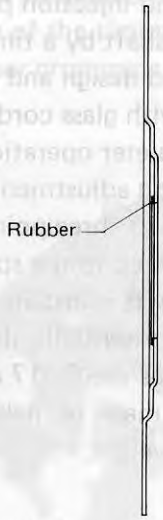
FLYWHEEL

The inertia force of the flywheel has been reduced from 0.199 to 0.184 N·ms^2 (2.03 to 1.88 kg-cms^2, 1.8 to 1.6 in-lbs^2) and the weight has also been reduced from the 15.3 to 13.9 kg (33.7 to 30.6 lb).
The flywheels used with the turbocharger and non-turbocharger models are clearly identified by the bolt hole pitch at the clutch cover location:

Turbocharger model: PCD = 270 mm (10.63 in)
Non-turbocharger model: PCD = 240 mm (9.45 in)

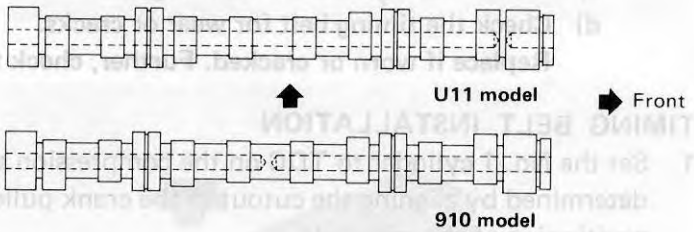
REAR END PLATE

A rubber material has been affixed to the mating surface of the rear end plate at the oil seal retainer location to shut out noise from the transaxle.



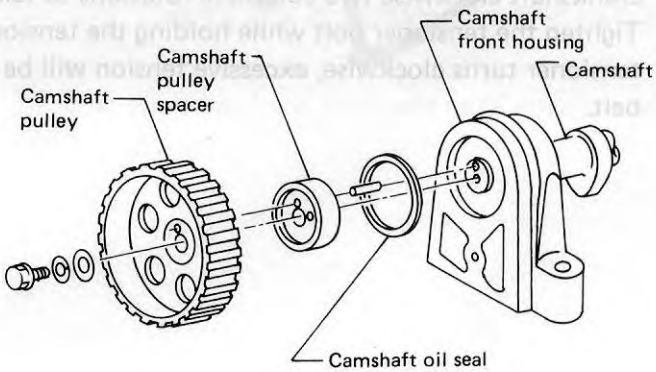
CAMSHAFT

Oil holes have been provided only at the rear of the camshaft to prevent the oil from splashing on the timing belt.

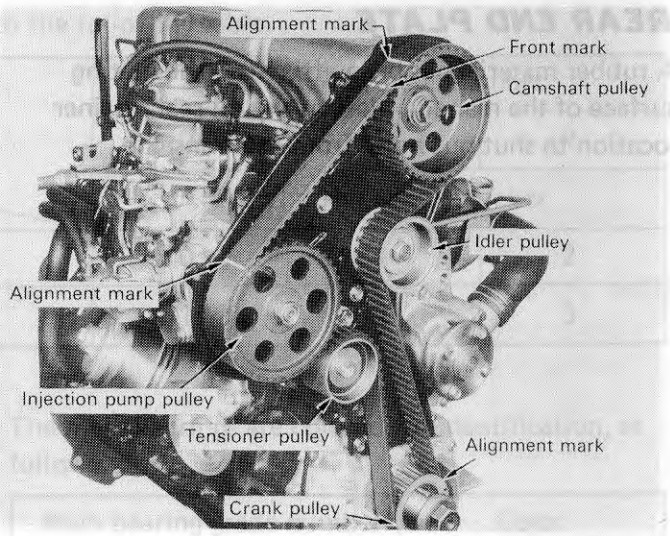


CAMSHAFT OIL SEAL

An oil seal has been used with the camshaft to prevent the timing belt from being splashed with oil.



TIMING BELT AND PULLEY



Drive for the camshaft and injection pump is delivered from the crankshaft by a timing belt. This timing belt is of a toothed design and it is made of a special rubber material with glass cords as the core wires. This results in a quieter operation and longer durability. For easy timing adjustment, the timing belt has a matching mark at three points. The tension of the timing belt is adjusted to the specified value by the tensioner spring when it is installed.
The tensioner pulley has essentially the same self-containing spring design as the CD17 engine; however, modifications have been made to make it more compact and more lightweight.

Notes:

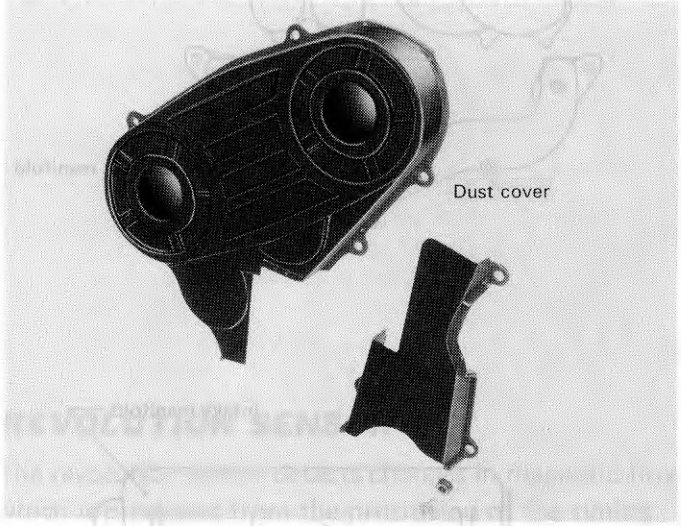
a) **Replace the belt every 100,000 km (60,000 miles) of operation.**
b) **Be careful to keep water, oil and dust away from the timing belt.**
c) **Do not twist or bend the timing belt.**
d) **Check the timing belt for wear or cracks. Replace if worn or cracked. Further, check the pulley for burrs, and replace if there are any.**

TIMING BELT INSTALLATION

1. Set the No. 1 cylinder to TDC on the compression stroke. The TDC on the compression stroke should be determined by aligning the cutout in the crank pulley with the timing mark on the oil pump and positioning of the camshaft.
2. Install the tensioner and temporarily fix it after turning it fully clockwise with a hexagonal wrench.
3. Face front mark "F" on the timing belt toward the front of the engine, set the front mark and Nissan mark between the cam pulley and injection pump pulley and install the belt by aligning the alignment mark on the cam pulley, injection pump pulley and crank pulley with that on the belt.
4. Position the tensioner securely with a hexagonal wrench and loosen the tensioner bolt. Slowly turn the tensioner counterclockwise in relation to the return force of the spring to tighten the belt. Turn the crankshaft clockwise two complete rotations to take up belt slackness for proper tension.
5. Tighten the tensioner bolt while holding the tensioner stationary with a hexagonal wrench. If the tensioner turns clockwise, excessive tension will be applied to the belt which will reduce the life of the belt.

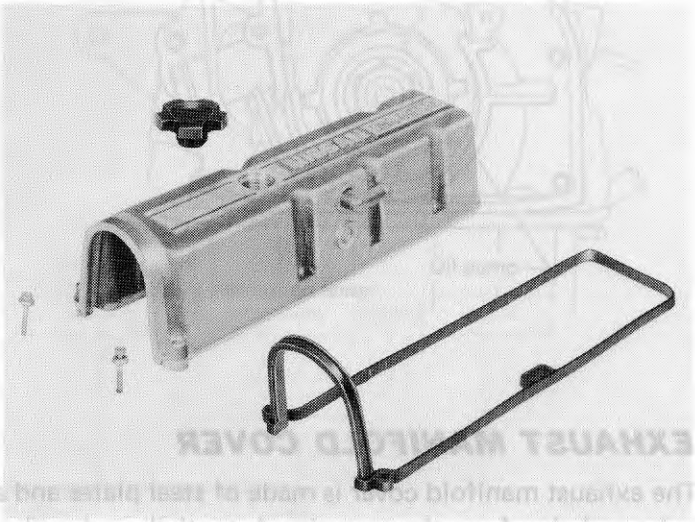
DUST AND BACK COVERS

A dust cover and back cover are provided to protect the timing belts from water and dust. These covers are also made of steel plates with good heat radiation which increases the life of the timing belts. The dust and back covers are attached to the cylinder head and cylinder block via rubber grommets to reduce noise and vibration.



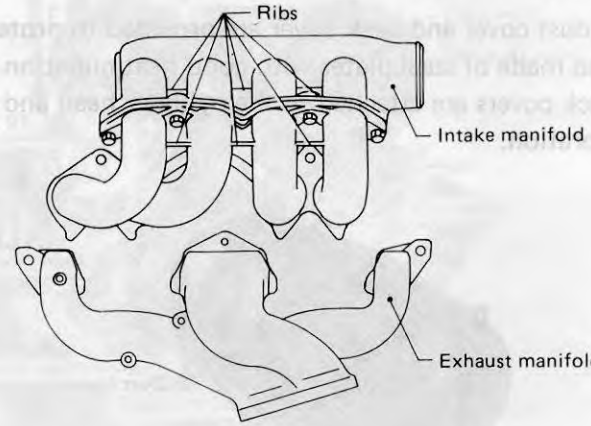
ROCKER COVER

The front section of the rocker cover has been re-designed to accommodate the overall length of the engine and belt-drive valve mechanism, as well as to reduce engine noise.

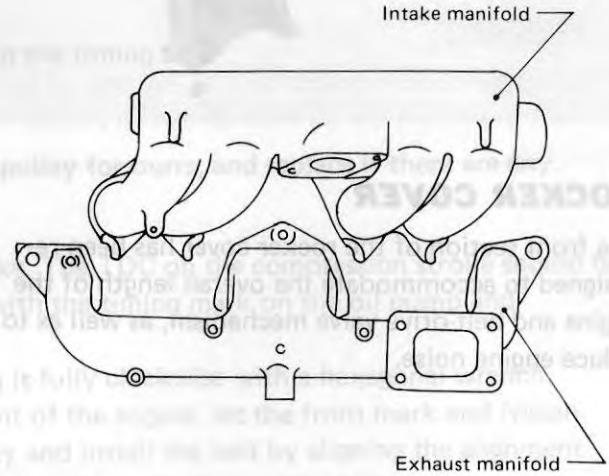


INTAKE AND EXHAUST MANIFOLDS

On the non-turbocharger model, the two-piece branch of the intake manifold has been lengthened as much as possible in order to increase engine torque at low speeds. In addition, a rib has been placed between the branches to reduce noise reflection which occurs in the intake manifold.



On the turbocharger model, the intake manifold has a one-piece design to reduce the size and weight.

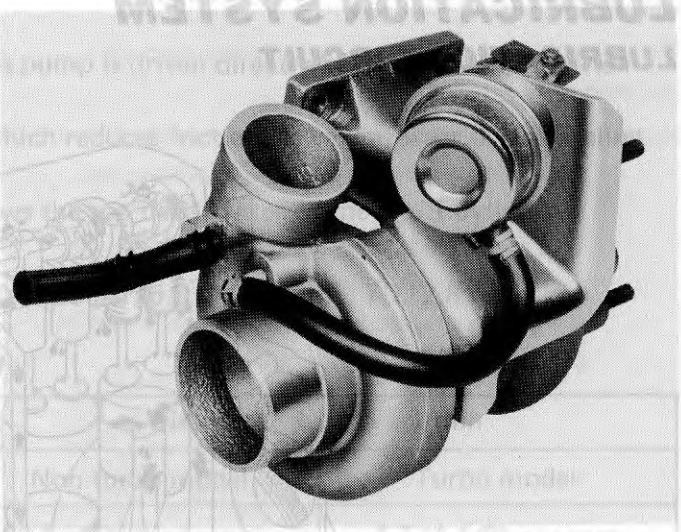


EXHAUST MANIFOLD COVER

The exhaust manifold cover is made of steel plates and asbestos is placed between these plates. Therefore, noise emission from the cover is substantially reduced.

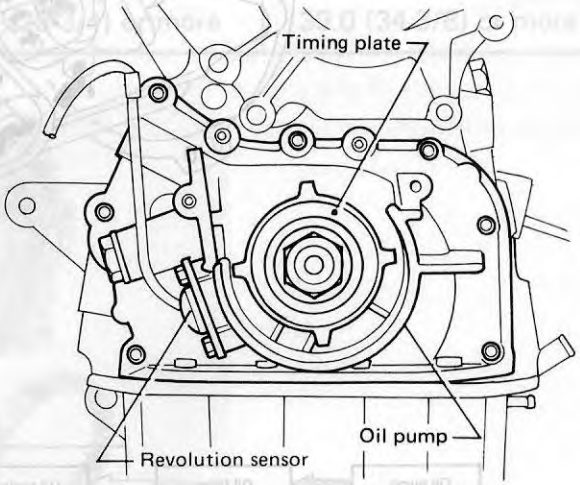
TURBOCHARGER

The T-2 model turbocharger is small, lightweight and quick to respond and has been used to increase torque at low and intermediate speeds. The material used for the turbine housing is Ni-Resist cast iron which is highly durable and resistant to high temperatures.



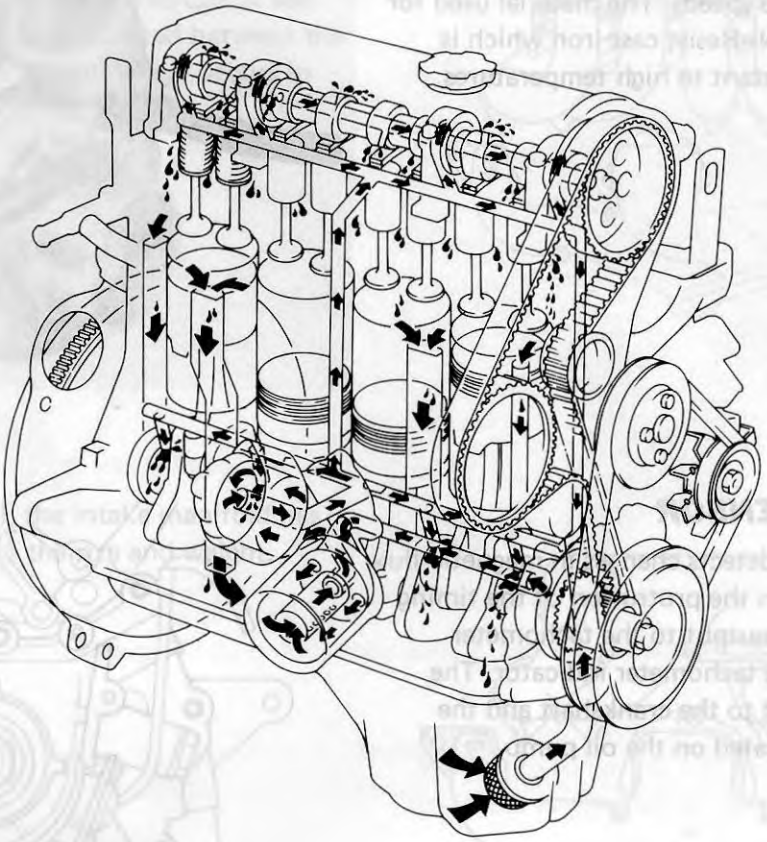
REVOLUTION SENSOR

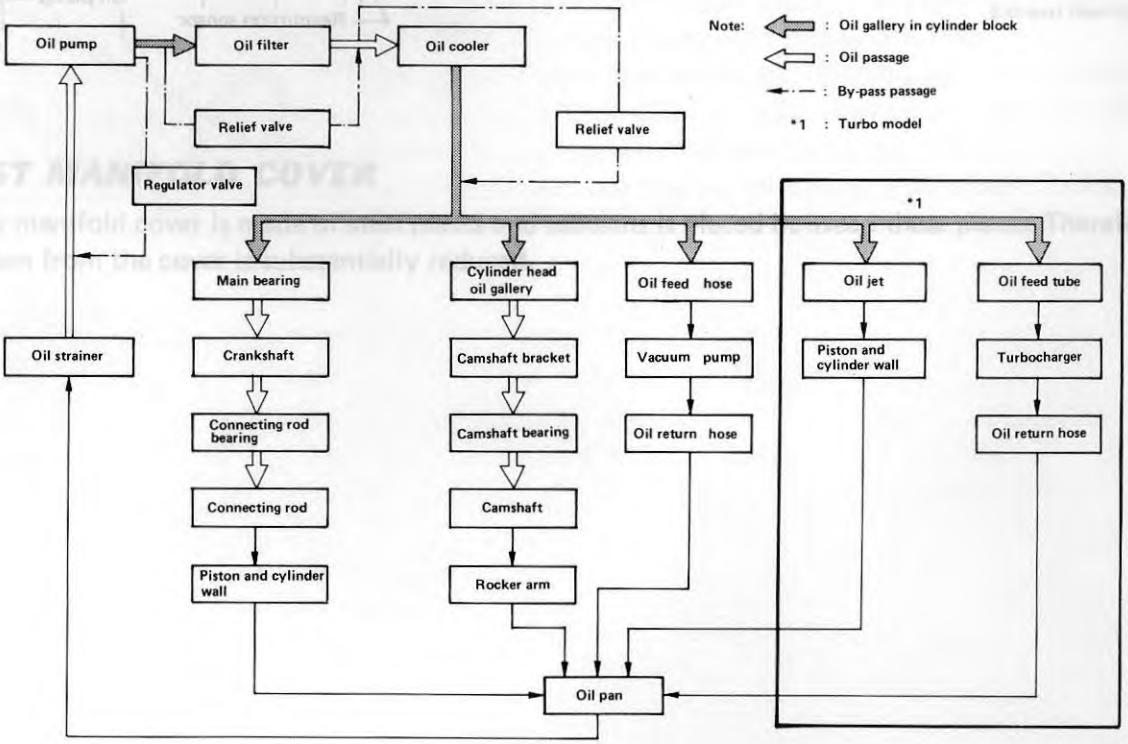
The revolution sensor detects changes in magnetic flux which is produced from the protrusion of the timing plate and transmits its output to the tachometer amplifier to deflect the tachometer indicator. The timing plate is attached to the crankshaft and the revolution sensor is located on the oil pump.



LUBRICATION SYSTEM

LUBRICATION CIRCUIT





OIL PUMP

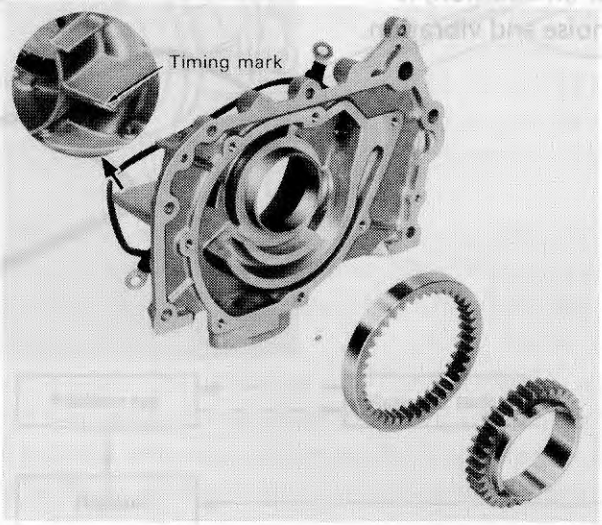
An internal gear oil pump design has been adopted. This pump is driven directly by the crankshaft. The crankshaft front oil seal is installed on the oil pump.
The oil seal is of a low-compression specification type which reduces friction, as well as wear on the sealing lip and shaft.
The oil pump is equipped with a timing mark which shows the top dead center of the No. 1 cylinder.

Performance data

Regulator valve opening pressure: 490±20 kPa (4.90±0.20 bar, 5.0±0.2 kg/cm², 7.1±2.8 psi) at 2,000 rpm

Discharge and discharge pressure

Pump speed rpm	Discharge pressure kPa (bar, kg/cm², psi)	Discharge ℓ (Imp qt)/min	
		Non-turbo model	Turbo model
600	98 (1.0, 1, 14)	3.3 (2-7/8) or more	4.7 (4-1/8) or more
2,000	294 (2.9, 3, 43)	10.5 (9-1/4) or more	15.0 (13-1/4) or more
5,000	392 (3.9, 4, 57)	27.0 (23-3/4) or more	39.0 (34-3/8) or more



OIL FILTER

The same small oil filter design as used in the CD17 engine has been employed.

Maintenance interval

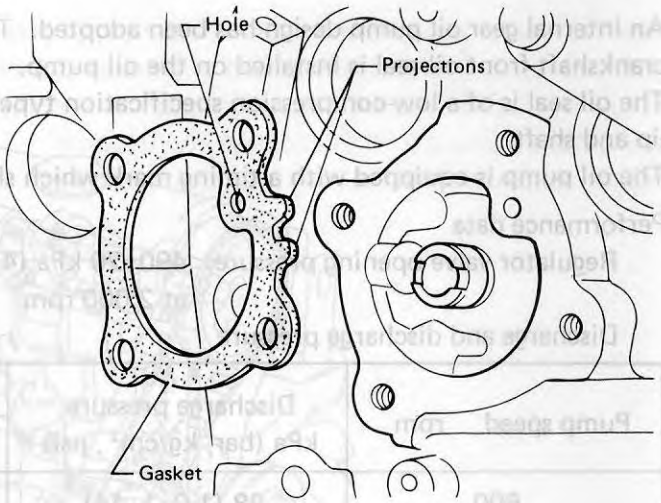
Unit: km (miles)

Item	Interval
Oil	Every 5,000 (3,000)
Oil filter	Every 10,000 (6,000)

OIL COOLER

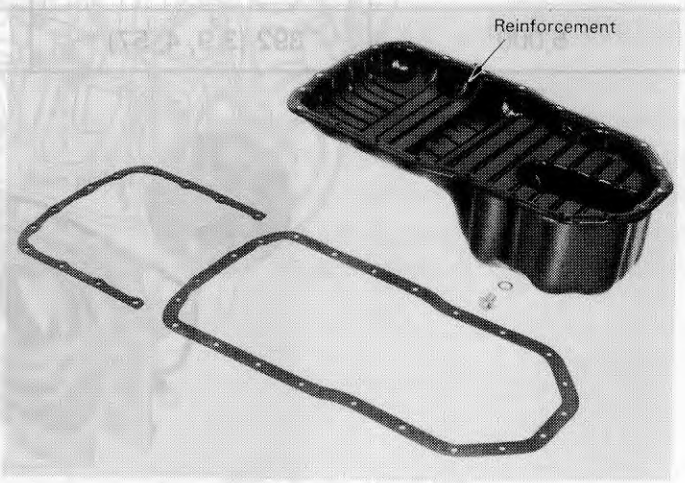
The oil cooler element has been redesigned to increase cooling performance.

Note: When installing the oil cooler bracket gasket, align the hole and the protrusion on the cylinder block.
The gasket used for the model U11 series has two protrusions and the 910 has one. If the former is used in place of the latter, oil pressure will not build up.



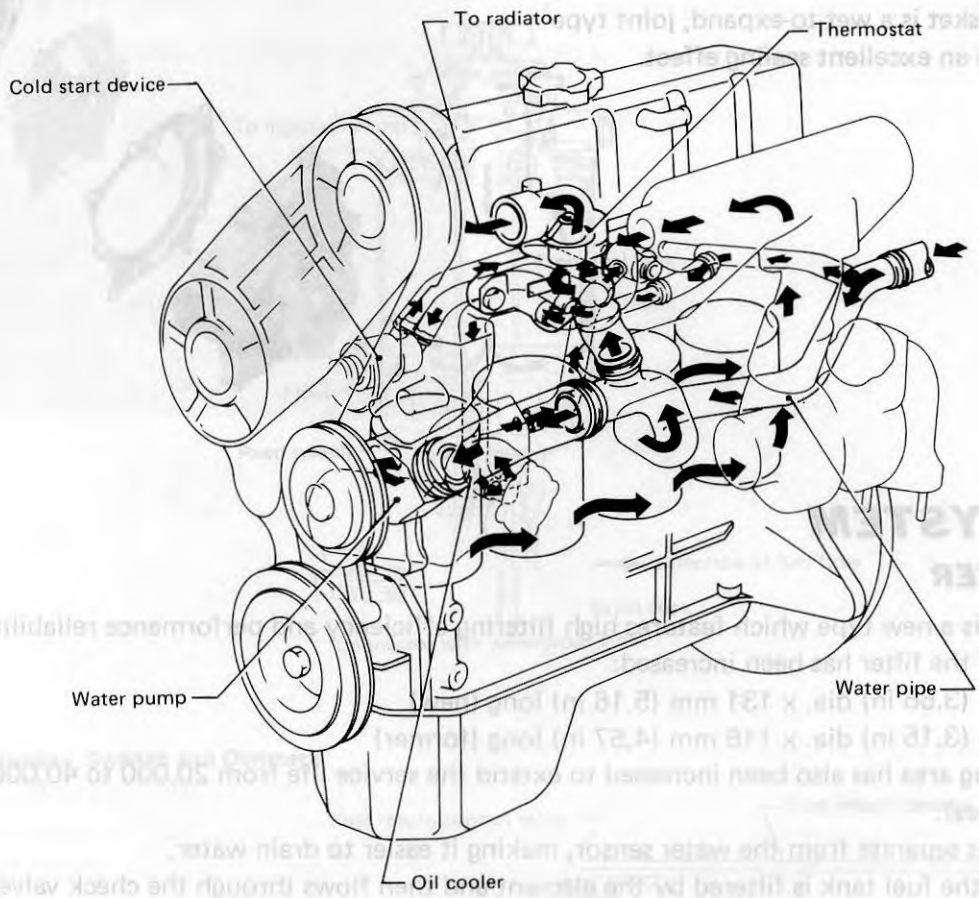
OIL PAN

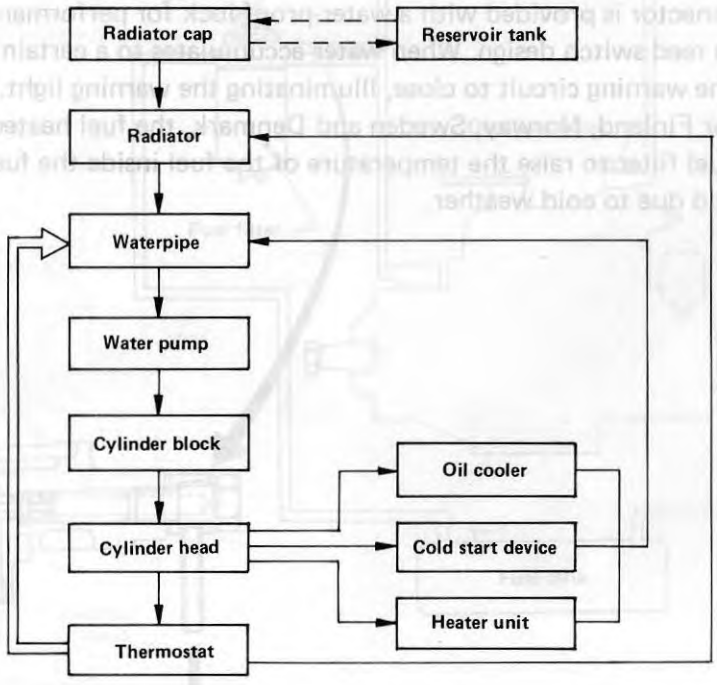
The oil pan has been redesigned to accommodate the overall length of the engine. In addition, it has been reinforced to reduce noise and vibration.



COOLING SYSTEM

COOLING CIRCUIT

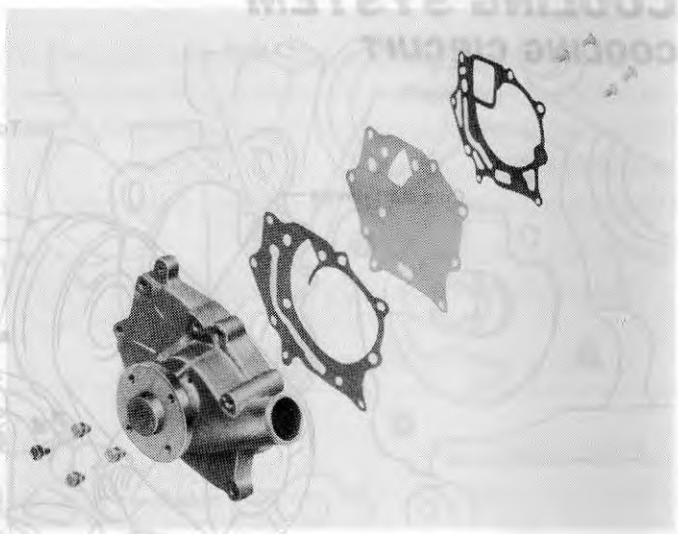




⇦ : By-pass passage

WATER PUMP

The water pump is unitized with a volute chamber to accommodate the overall length of the engine. The water pump gasket is a wet-to-expand, joint type which provides an excellent sealing effect.

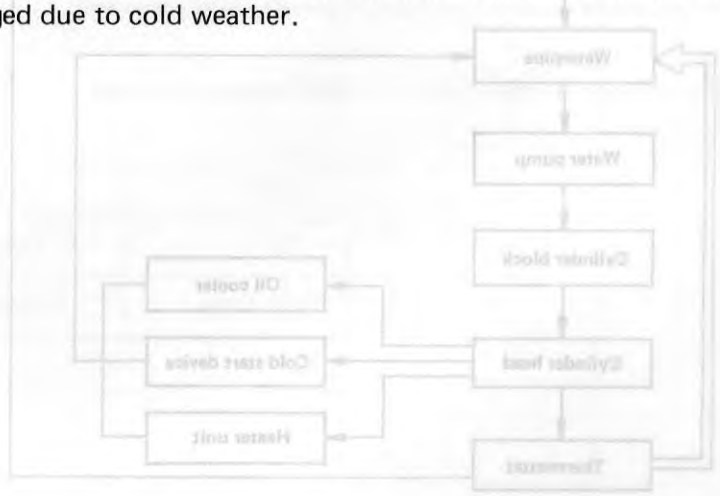


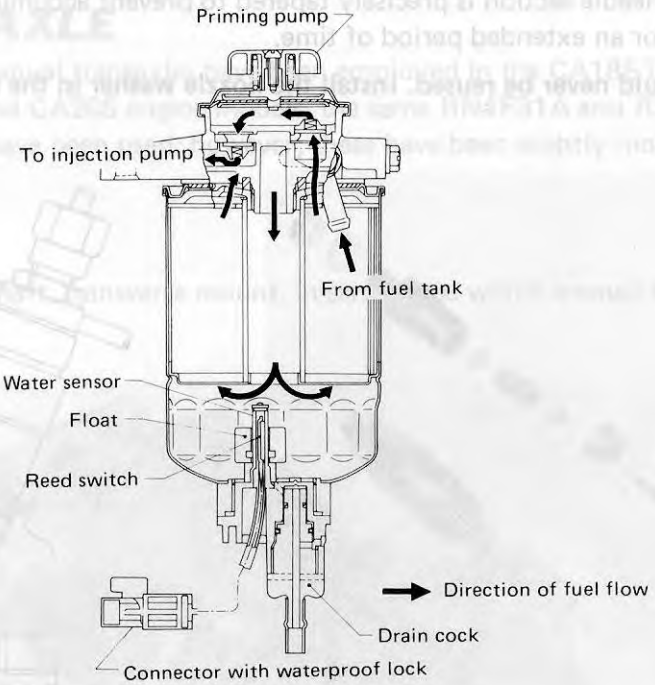
FUEL SYSTEM

FUEL FILTER

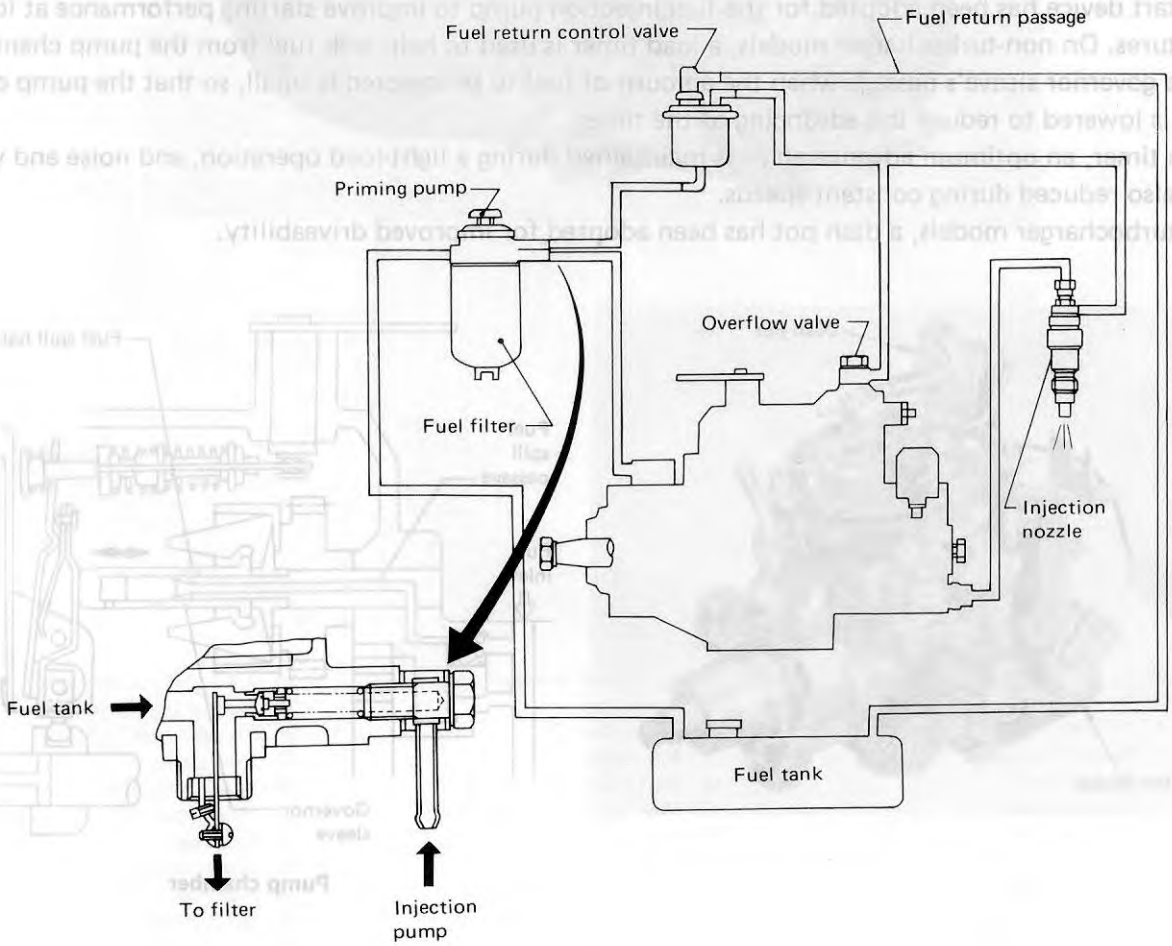
The fuel filter is a new type which features high filtering efficiency and performance reliability.

- The size of the filter has been increased:
  93 mm (3.66 in) dia. x 131 mm (5.16 in) long (new)
  80 mm (3.15 in) dia. x 116 mm (4.57 in) long (former)
  The filtering area has also been increased to extend the service life from 20,000 to 40,000 km (12,000 to 24,000 miles).
- The drain is separate from the water sensor, making it easier to drain water.
- Fuel from the fuel tank is filtered by the element and then flows through the check valve of the priming pump, therefore preventing the possibility of harming the function of the priming pump due to foreign particles caught in the check valve.
- The water sensor's connector is provided with a water-proof lock for performance reliability.
- The water sensor has a reed switch design. When water accumulates to a certain level, the magnet built into the float causes the warning circuit to close, illuminating the warning light.
- On models destined for Finland, Norway, Sweden and Denmark, the fuel heated in the fuel injection pump returns to the fuel filter to raise the temperature of the fuel inside the fuel filter so that the filter will not become clogged due to cold weather.





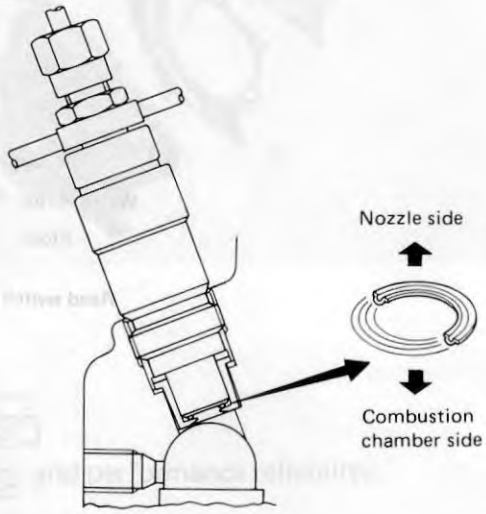
Only for Finland, Norway, Sweden and Denmark



NOZZLE AND NOZZLE HOLDER

The nozzle and nozzle holder assembly is a screw-in type to reduce weight. On the non-turbocharger model, the nozzle body at the needle section is precisely tapered to prevent accumulation of carbon and maintain a stabilized combustion for an extended period of time.

The nozzle washers should never be reused. Install the nozzle washer in the direction shown in the figure on the right.

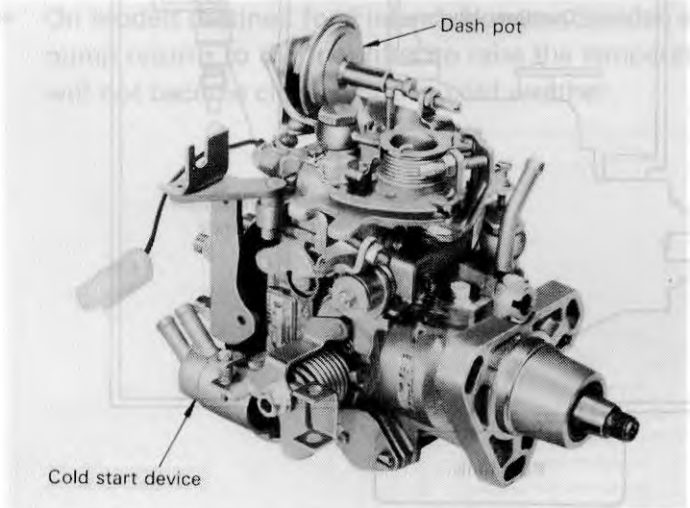


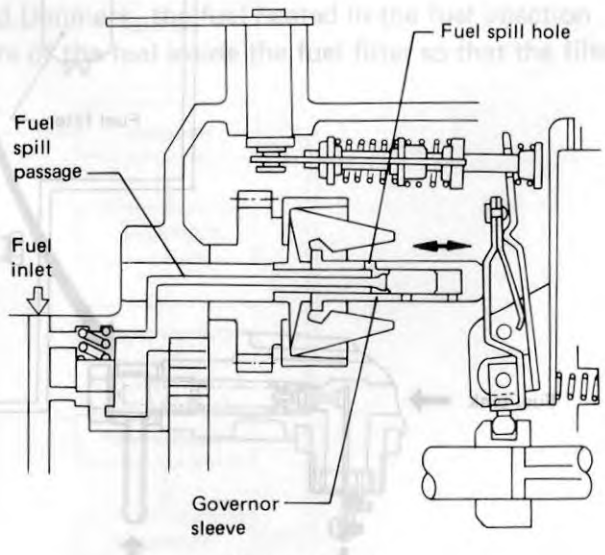
FUEL INJECTION PUMP

A cold start device has been adopted for the fuel injection pump to improve starting performance at low temperatures. On non-turbocharger models, a load timer is used to help leak fuel from the pump chamber along the governor sleeve's passage when the amount of fuel to be injected is small, so that the pump chamber pressure is lowered to reduce the advancing of the timer.

With this timer, an optimum advance angle is maintained during a light-load operation, and noise and vibration are also reduced during constant speeds.

On non-turbocharger models, a dash pot has been adopted for improved driveability.



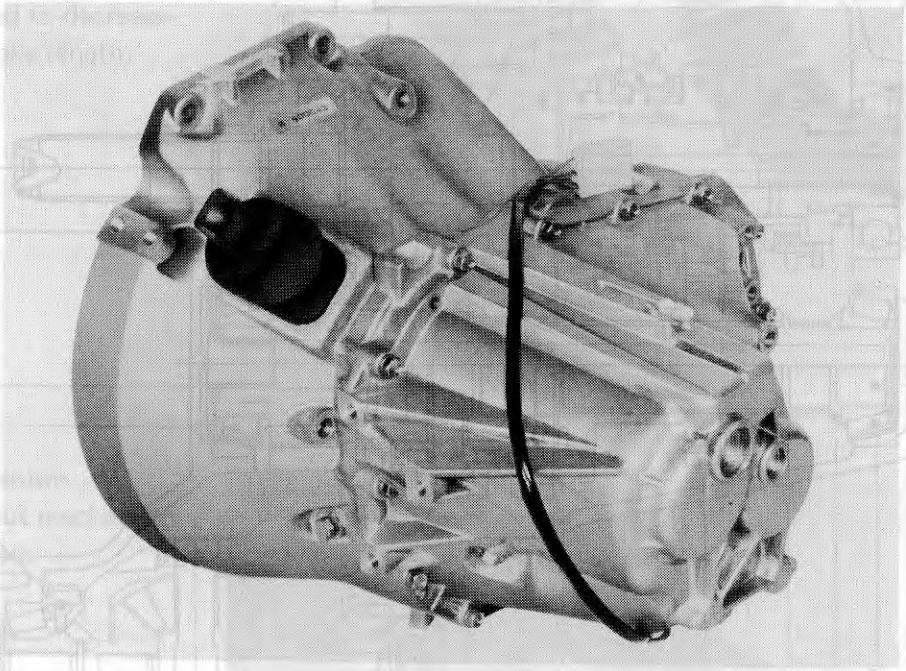


MANUAL TRANSAXLE

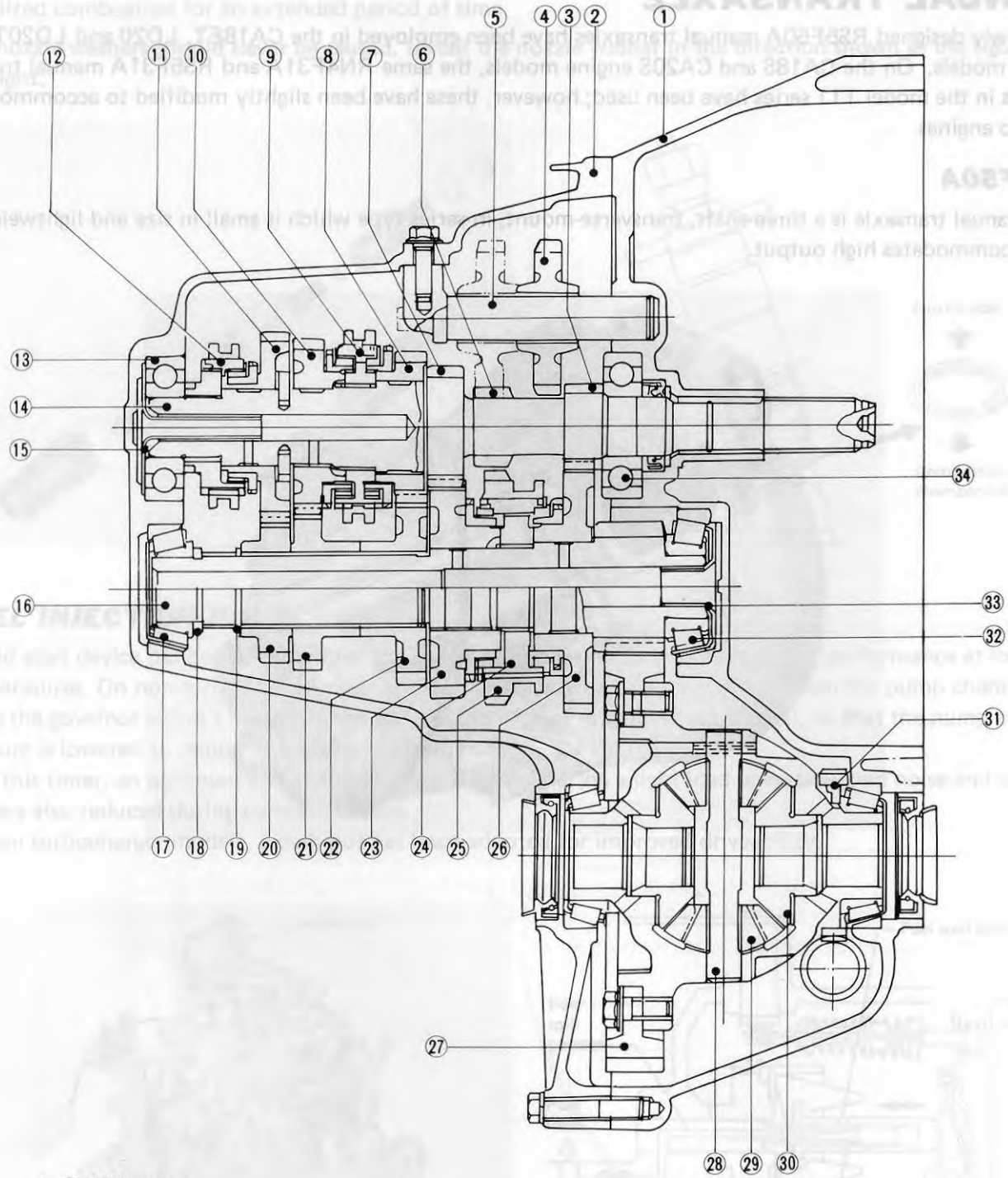
The newly designed RS5F50A manual transaxles have been employed in the CA18ET, LD20 and LD20T engine models. On the CA18S and CA20S engine models, the same RN4F31A and RS5F31A manual transaxles as in the model T11 series have been used; however, these have been slightly modified to accommodate the two engines.

RS5F50A

This manual transaxle is a three-shaft, transverse-mount, in-series type which is small in size and lightweight and accommodates high output.



SECTIONAL VIEW



1 Clutch housing
2 Transmission case
3 1st input gear
4 Reverse idler gear
5 Reverse idler shaft
6 Reverse gear
7 2nd input gear
8 3rd input gear
9 3rd & 4th synchronizer
10 4th input gear
11 5th input gear
12 5th synchronizer
13 Input shaft rear bearing
14 Input shaft
15 Oil channel
16 Main shaft
17 Main shaft rear bearing
18 Main shaft bearing spacer
19 Snap ring
20 5th main gear
21 4th main gear
22 3rd main gear
23 2nd main gear
24 1st & 2nd synchronizer
25 Reverse main gear
26 1st main gear
27 Final gear
28 Pinion mate shaft
29 Pinion mate gear
30 Side gear
31 Speedometer drive gear
32 Main shaft front bearing
33 Oil channel
34 Input shaft front bearing

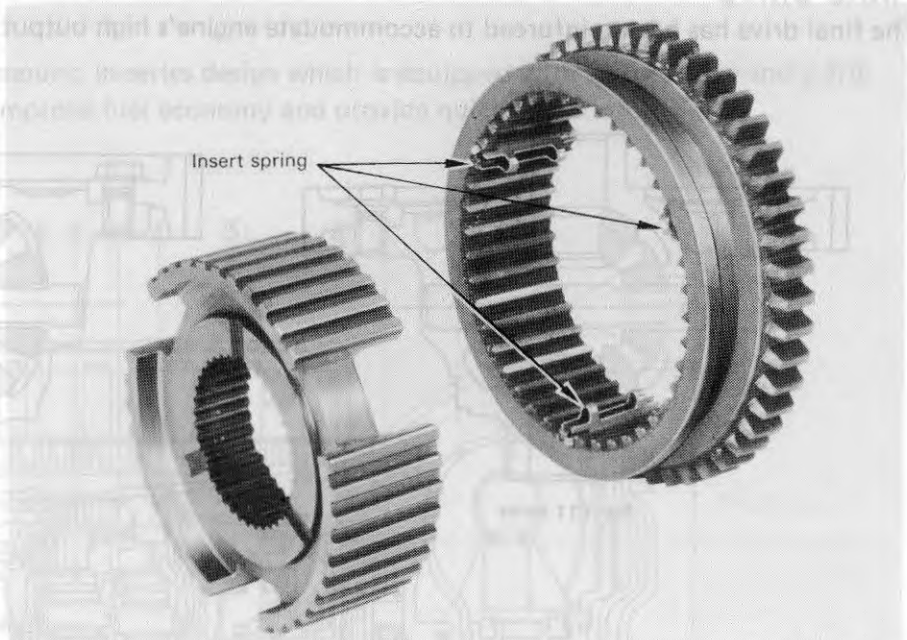
MAIN COMPONENT PARTS AND FEATURES

Gear train

- A ball bearing has been used at the end of the input shaft to reduce operating effort.
- The 3rd, 4th and 5th gears have high-teeth designs to reduce gear noise.

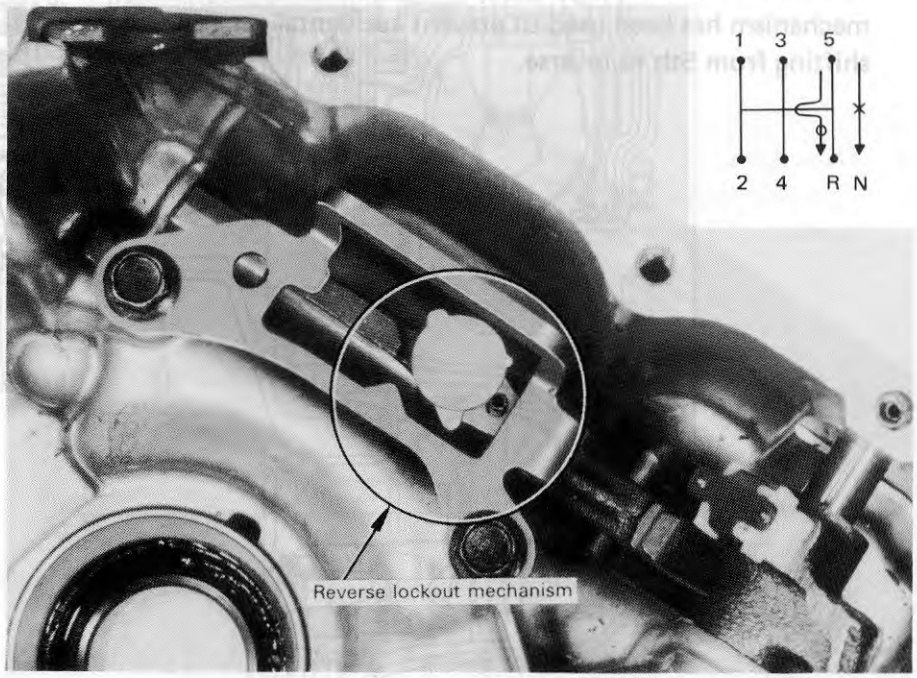
Synchronizer

- The 3rd & 4th and 5th synchronizers have been placed above the input shaft.
- A leaf-spring type insert spring, instead of the combination of a shifting insert and a spread spring, has been utilized to decrease the shifting stroke length.



Shift control mechanism

- A reverse lockout mechanism has been adopted.

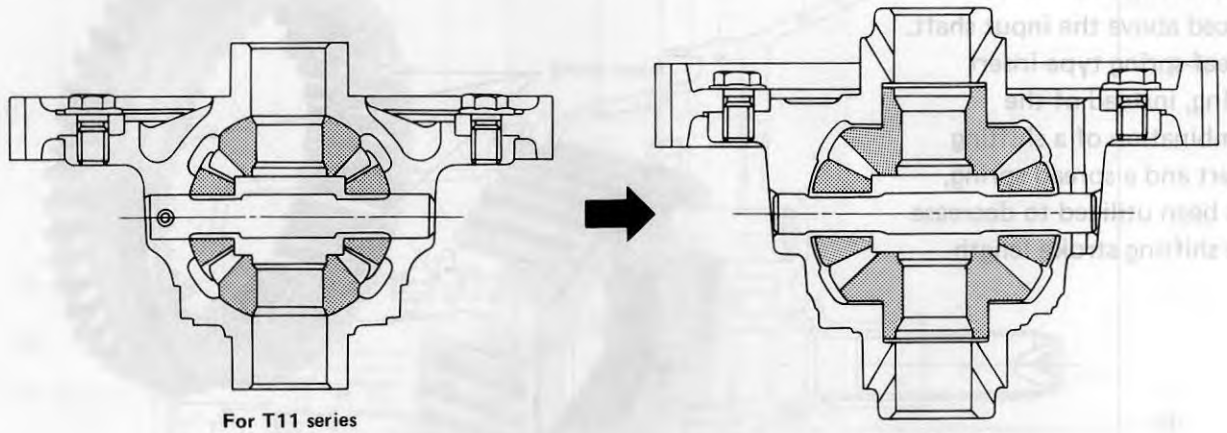


RN4F31A AND RS5F31A

These manual transaxles have the same basic design as in the T11 series; however, the following modifications have been made:

FINAL DRIVE

The final drive has been reinforced to accommodate engine's high output.

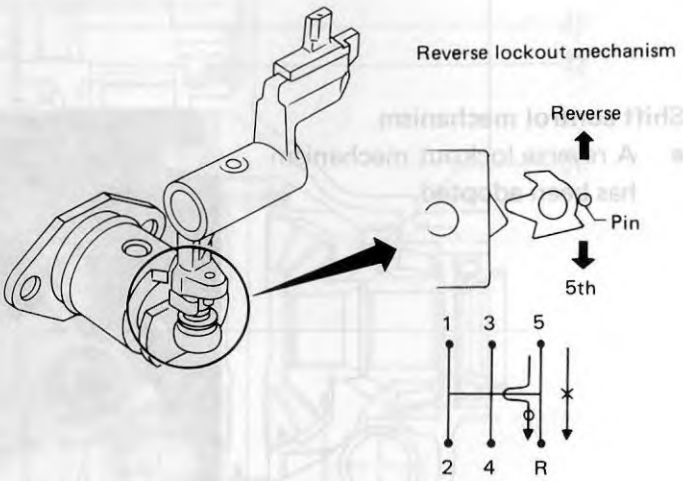


For T11 series

For U11 series

SHIFT CONTROL MECHANISM (RS5F31A only)

- The shift pattern has been designed to improve operation. Additionally, a reverse lockout mechanism has been used to prevent accidental shifting from 5th to reverse.



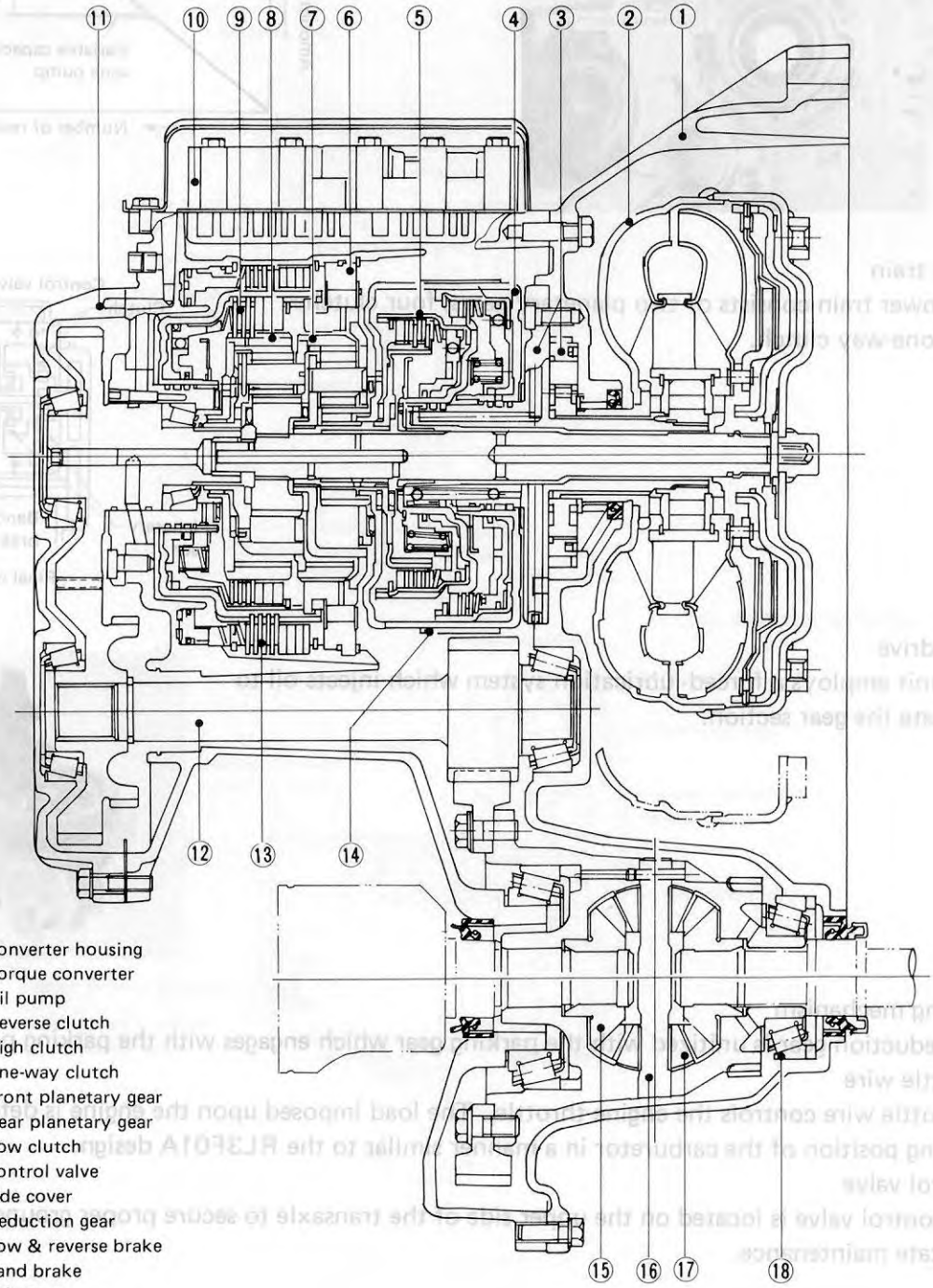
AUTOMATIC TRANSAXLE

The newly designed RL4F02A automatic transaxles have been installed on the CA20S and CA18ET engine models. On the CA18S engine model, the same RL3F01A design as used in the T11 series has been employed.

MODEL RL4F02A

The RL4F02A unit has a transverse-mount, in-series design which is equipped with an overdrive and a 3rd-and-4th lock-up system, in order to improve fuel economy and provide quiet operation.

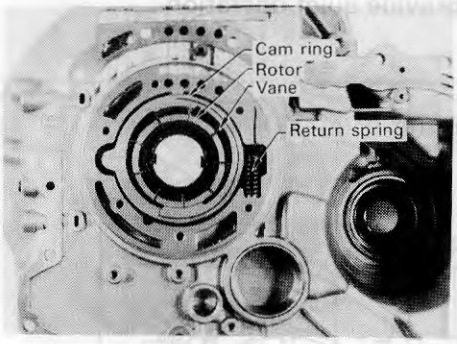
SECTIONAL VIEW

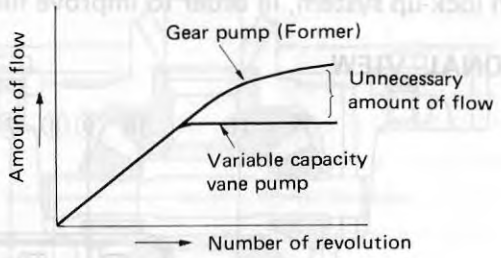


1 Converter housing
2 Torque converter
3 Oil pump
4 Reverse clutch
5 High clutch
6 One-way clutch
7 Front planetary gear
8 Rear planetary gear
9 Low clutch
10 Control valve
11 Side cover
12 Reduction gear
13 Low & reverse brake
14 Band brake
15 Side gear
16 Pinion mate shaft
17 Pinion mate gear
18 Differential side bearing

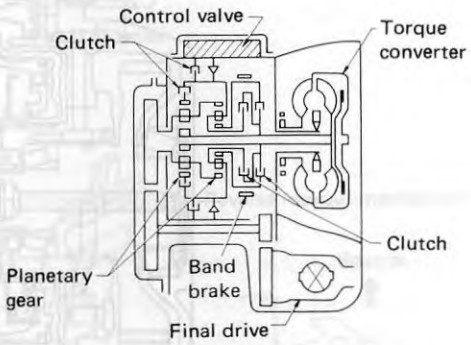
MAIN COMPONENT PARTS

- Torque converter
  This unit has a flat design.
- Oil pump
  This unit is a variable-displacement, vane type.
  It features less energy loss and better fuel economy than a gear pump which causes an excess flow of oil during high-speed operation.

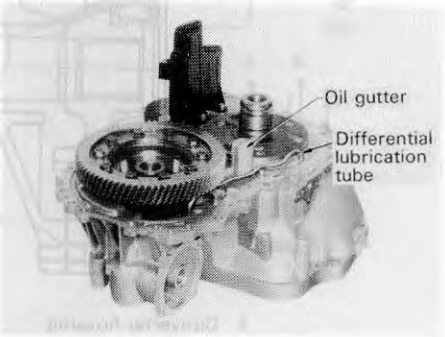




- Power train
  The power train consists of two planetary gears, four clutches and a one-way clutch.



- Final drive
  This unit employs a forced-lubrication system which injects oil to lubricate the gear section.



- Parking mechanism
  The reduction gear is unitized with the parking gear which engages with the parking pawl.
- Throttle wire
  A throttle wire controls the engine throttle. The load imposed upon the engine is detected by the opening position of the carburetor in a manner similar to the RL3F01A design.
- Control valve
  The control valve is located on the upper side of the transaxle to secure proper ground clearance and facilitate maintenance.

LOCK-UP RELEASE SYSTEM

This system improves driving performance.

When the accelerator pedal is released completely while the vehicle is in lock-up, the lock-up piston in the torque converter is disengaged.

The same thing occurs when the water temperature is low.

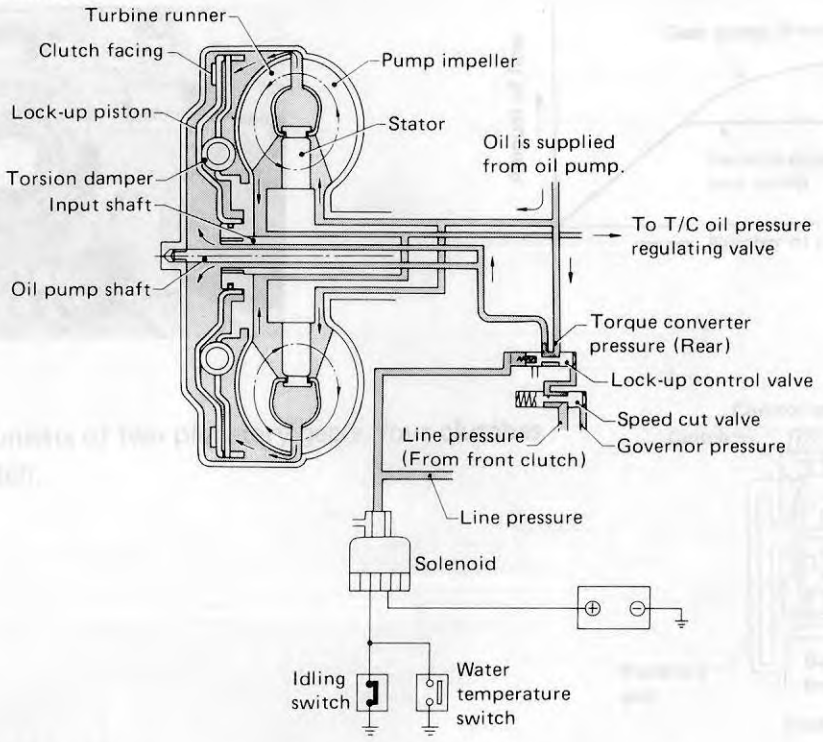
MODEL RL3F01A

LOCK-UP RELEASE SYSTEM

When the accelerator pedal is released completely while the vehicle is in lock-up, the lock-up piston in the torque converter disengaged.

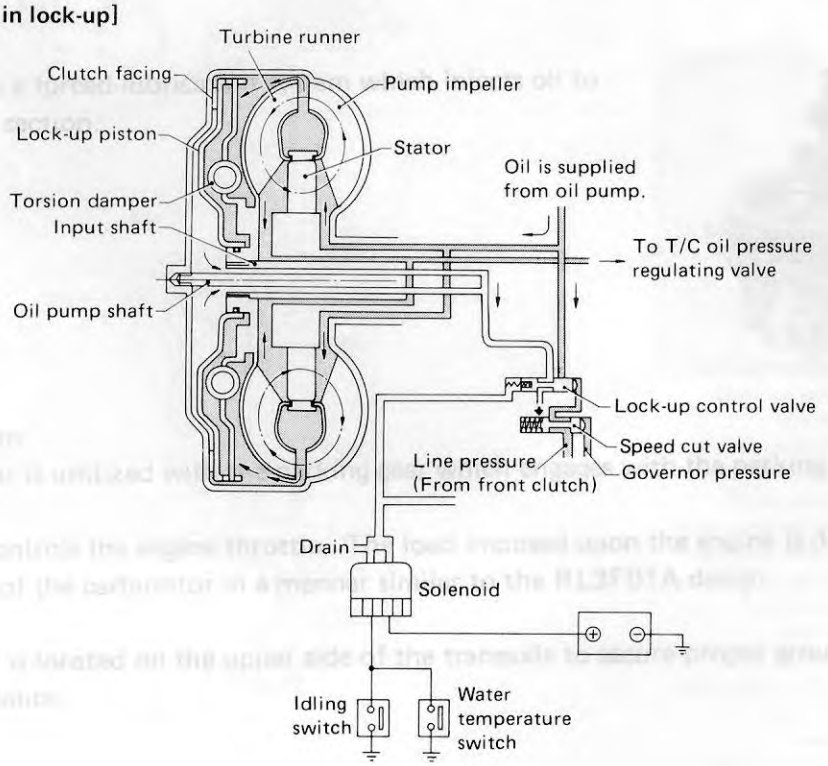
The same thing occurs when the water temperature is low.

[When lock-up system is released]



SAT757

[When torque converter is in lock-up]

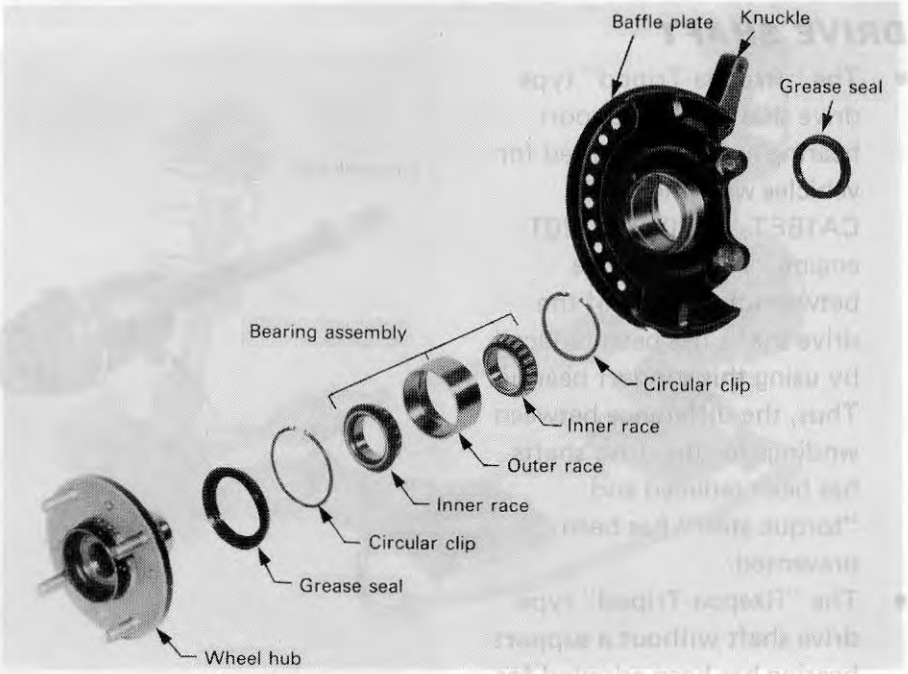


SAT758

FRONT AXLE AND FRONT SUSPENSION

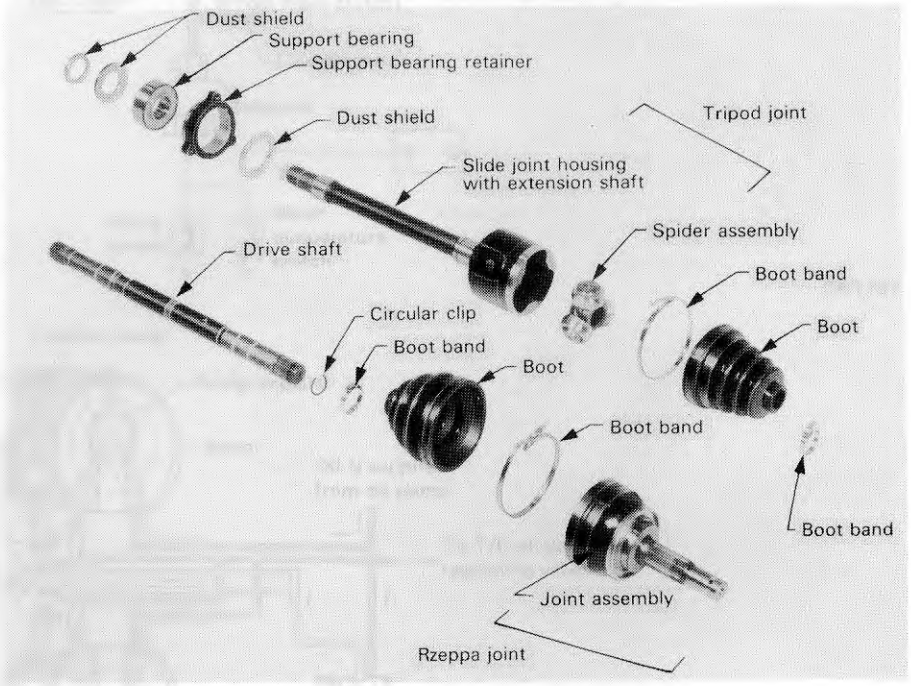
FRONT AXLE

- The front axle construction is basically the same as the front-engine, front-drive vehicles such as the B11 and N12 models.
- A spacer has been eliminated and a unit bearing has been adopted. Therefore, selecting a spacer is not necessary. Consequently, serviceability has been improved.



DRIVE SHAFT

- The "Rzeppa-Tripod" type drive shaft with a support bearing has been adopted for vehicles with the CA20, CA18ET, LD20 or LD20T engine. The difference between the length of the drive shafts has been reduced by using this support bearing. Thus, the difference between wndings for the drive shafts has been reduced and "torque steer" has been prevented.
- The "Rzeppa-Tripod" type drive shaft without a support bearing has been adopted for vehicles with the CA16 or CA18 engine.



FRONT SUSPENSION

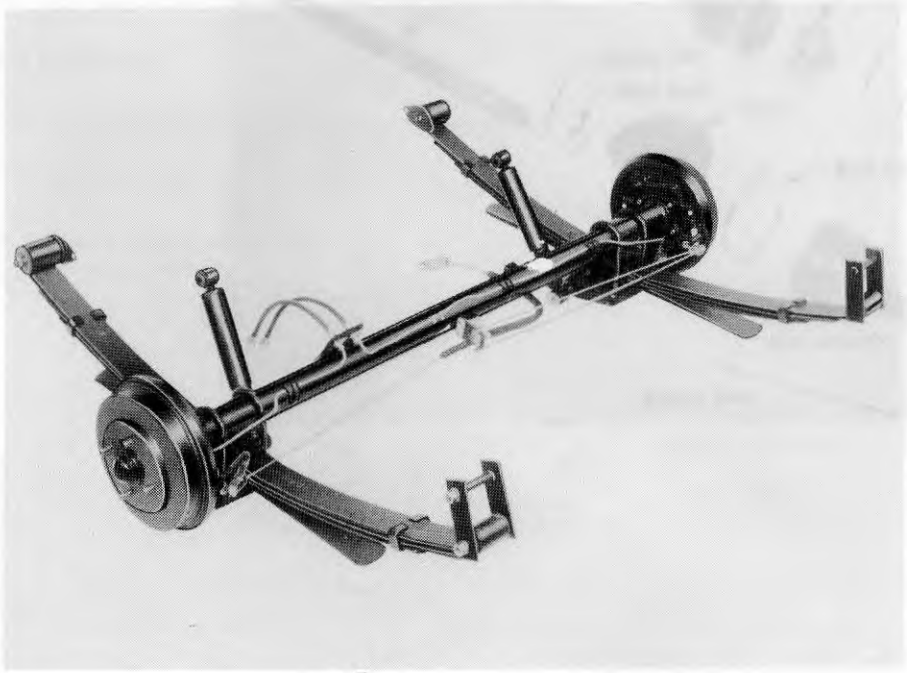
- A strut independent suspension has been adopted.
- Stability in braking has been improved by a negative scrub radius.

REAR AXLE AND REAR SUSPENSION

REAR SUSPENSION

- A parallel link type independent strut suspension has been adopted.
- The Wagon DX model has a leaf spring suspension.

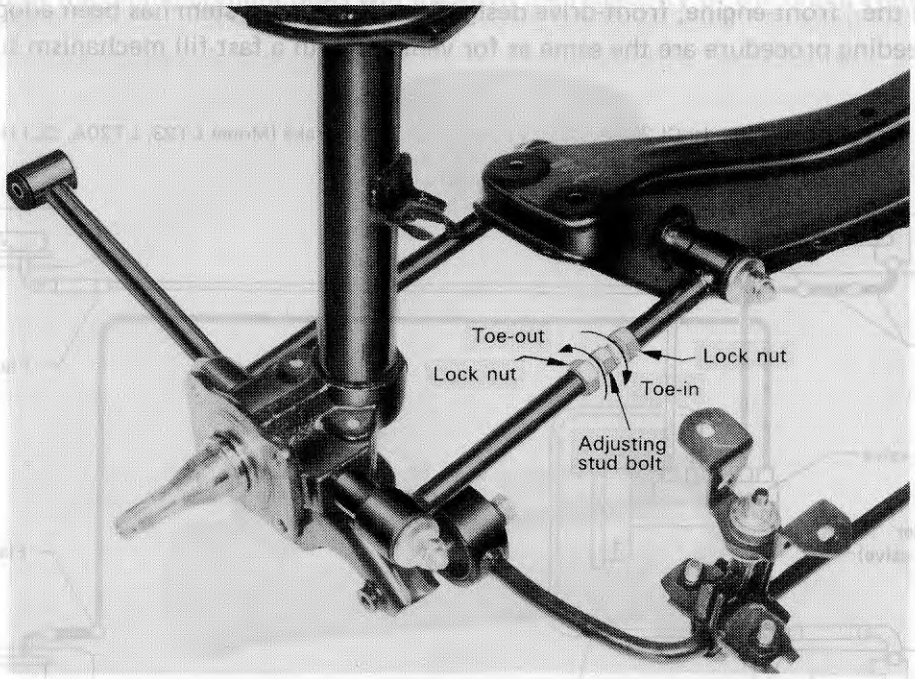
Parallel link type



Leaf spring type

TOE-IN ADJUSTMENT

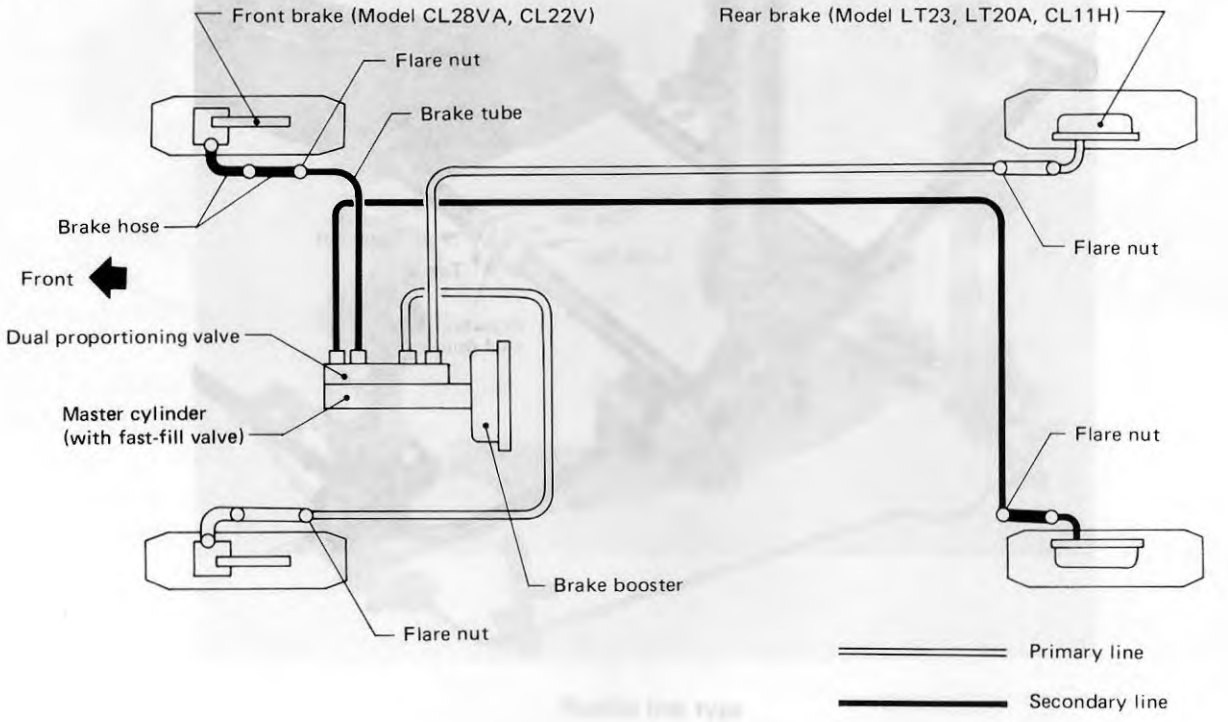
The toe-in can be adjusted using a rear parallel link as shown below.

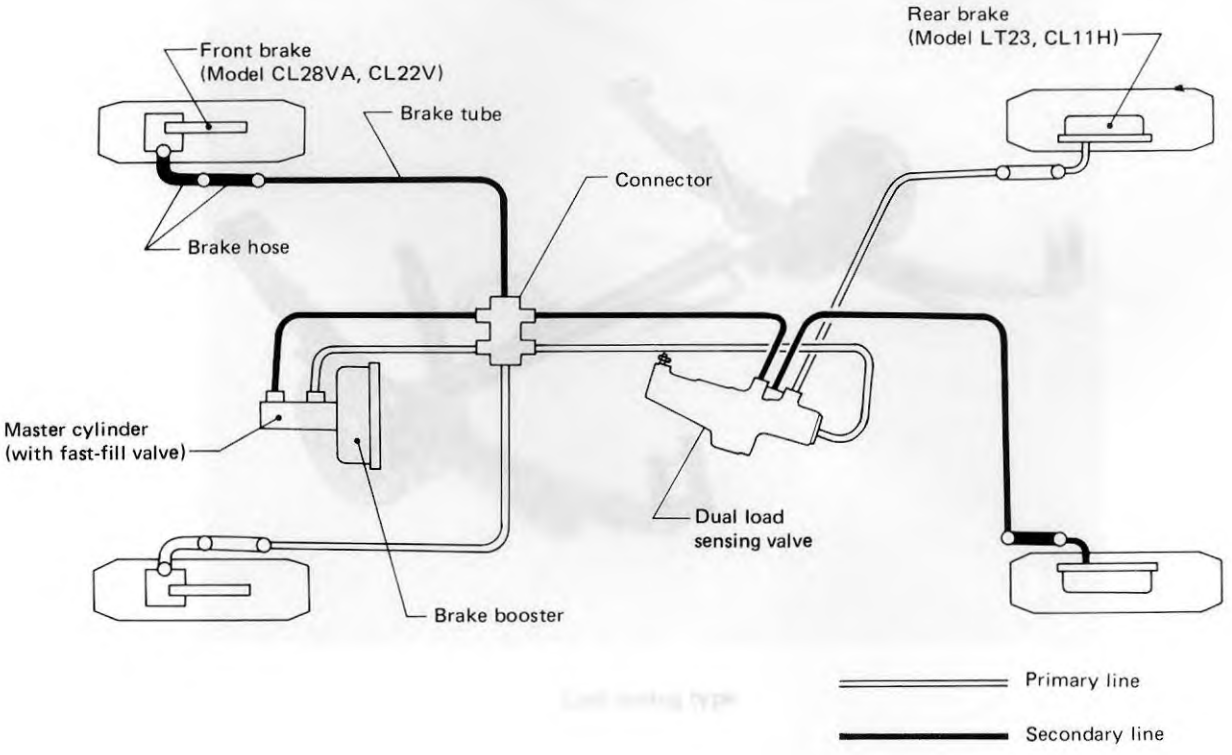


BRAKE SYSTEM

DESCRIPTION

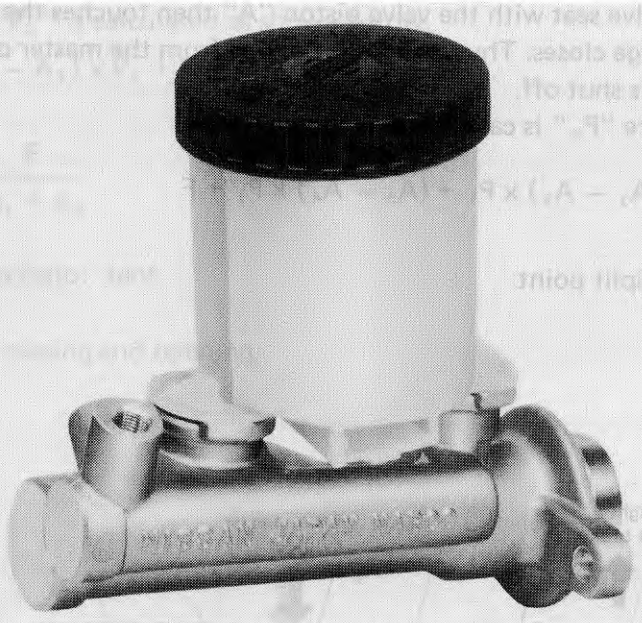
To accommodate the "front-engine, front-drive design", an X-piping system has been adopted. Matters relating to the bleeding procedure are the same as for vehicles with a fast-fill mechanism such as the B11 model.

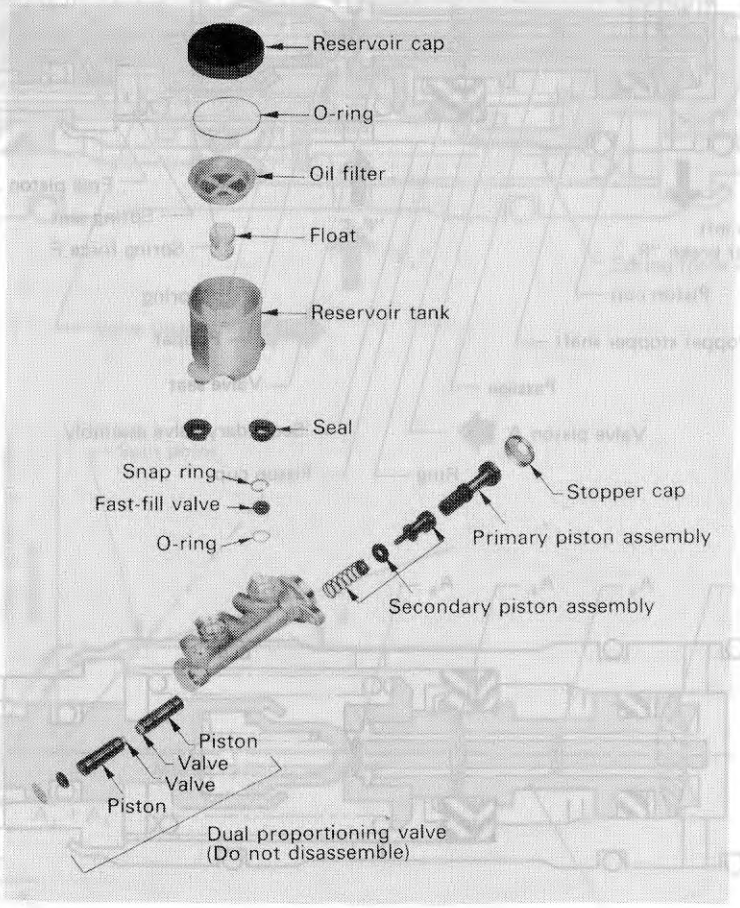




DUAL PROPORTIONING VALVE MASTER CYLINDER

"The dual proportioning valve" and "the master cylinder with fast-fill mechanism" have been combined, thus the reduction of the piping conjunctions will improve the reliability of the brake system.





OPERATION

- When the pressure reaches the split point:
  When the fluid pressure in the master cylinder increases, the valve piston "A" moves to the right overcoming the spring force "F" because of the difference in pressure between the A_1 and A_2 areas as shown in Fig. A. The valve seat with the valve piston "A" then touches the poppet as shown in Fig. B. Consequently, the passage closes. Thus, the fluid flowing from the master cylinder to a left rear brake and a right front brake is shut off.
  At this time, the pressure "P_0" is calculated as shown below.

$$\begin{cases} (A_1 - A_4) \times P_2 = (A_2 - A_3) \times P_1 + (A_3 - A_4) \times P_1 + F \\ P_0 = P_1 = P_2 \end{cases}$$

$$P_0 = \frac{F}{A_1 - A_2} \quad \text{. . . Split point}$$

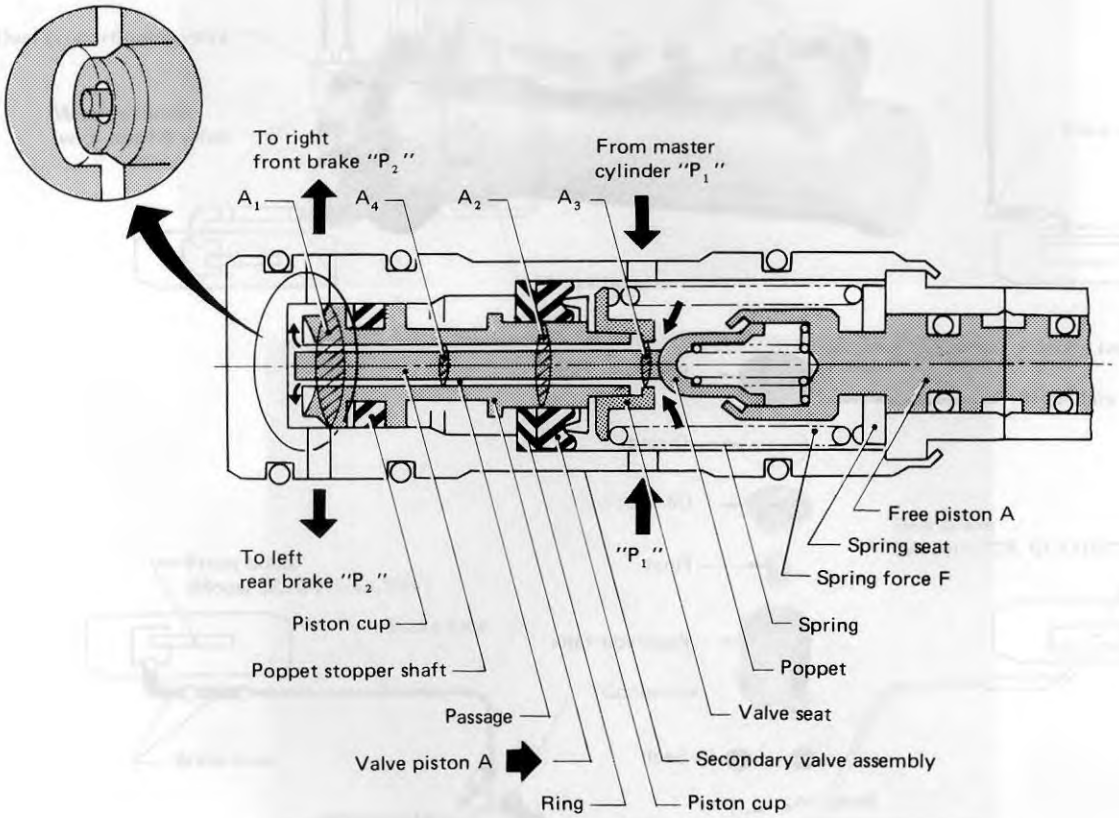


Fig. A

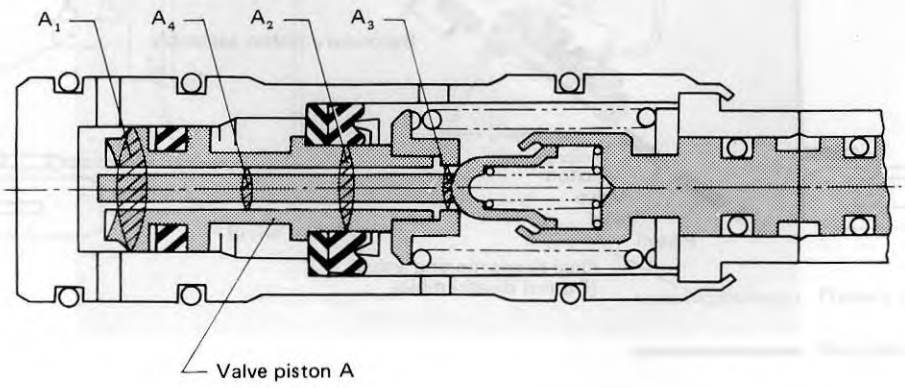


Fig. B

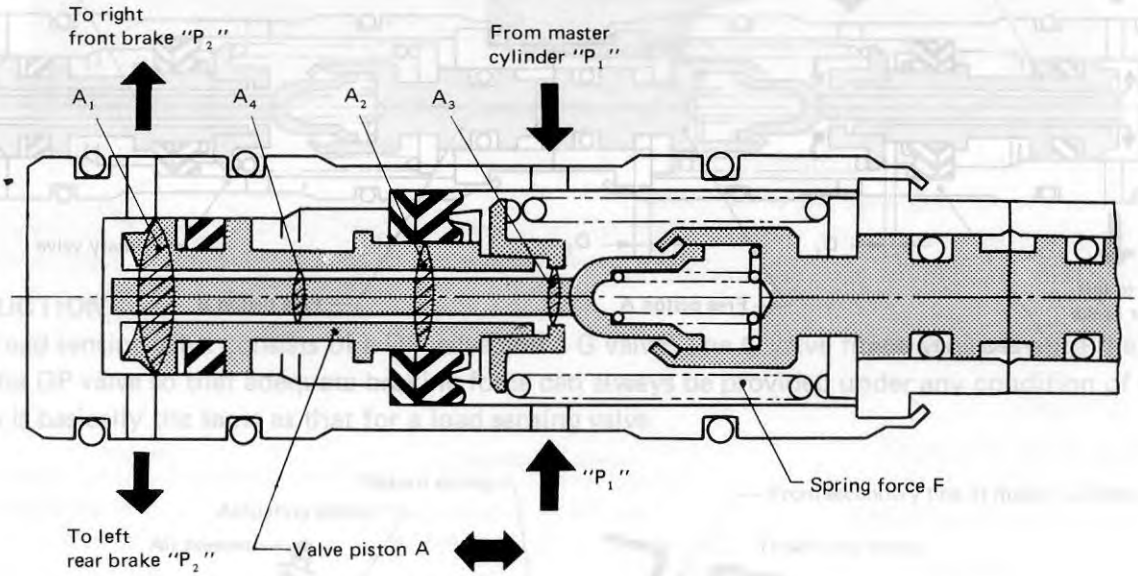
- When the pressure rises above the split point:
  If the brake pedal is depressed still further, P_1 will continue to increase. The valve piston "A" then moves to the left and the passage opens. Consequently the fluid from the master cylinder flows to a left rear brake and a right front brake.
  At this time, the pressure "P_2" is calculated as shown below.

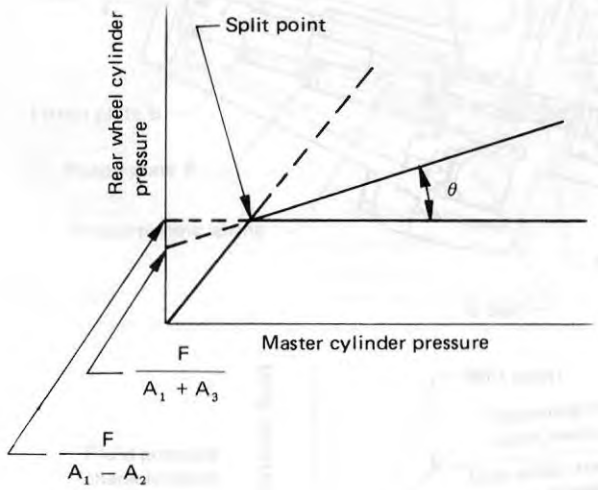
$$\begin{cases} (A_1 - A_3) \times P_2 = (A_2 - A_3) \times P_1 + F \\ P_1 = P_2 \end{cases}$$

$$P_2 = \boxed{\frac{A_2 - A_3}{A_1 - A_3}} P_1 + \frac{F}{A_1 + A_3}$$

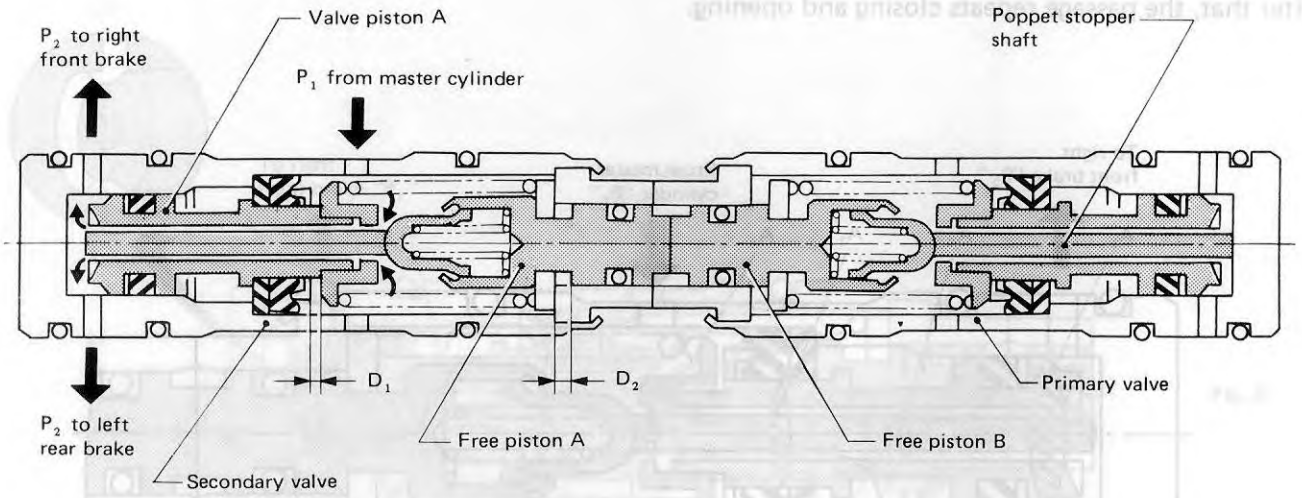
Increasing ratio: $\tan\theta$

After that, the passage repeats closing and opening.



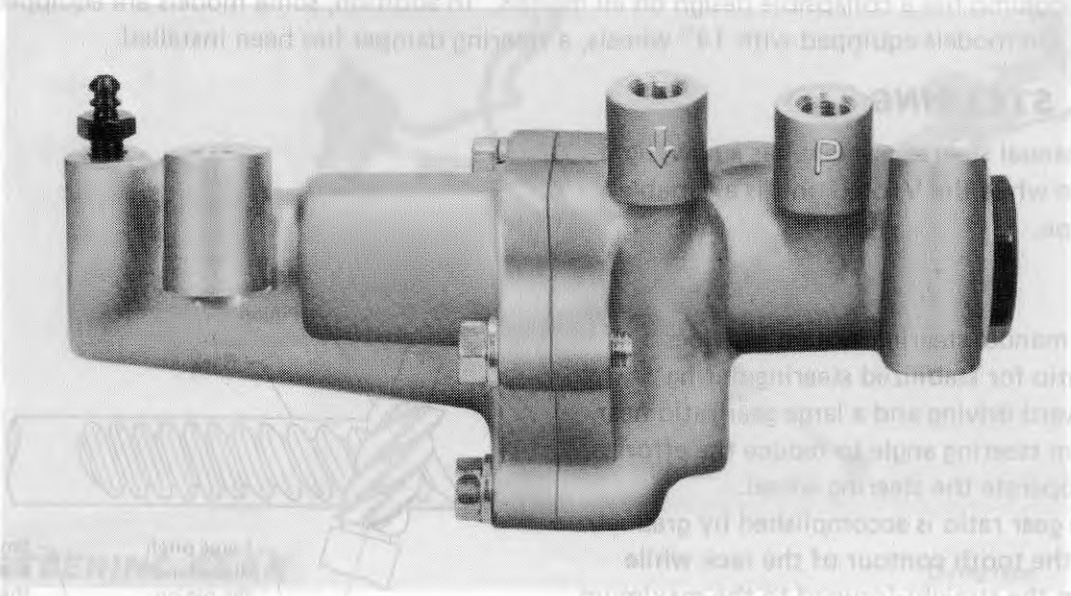


- When one of the X-piping lines is damaged:
  If leakage or damage should occur in one of the X-piping lines such as a right rear brake-left front brake line, the fluid pressure in a primary valve is reduced. The free piston A then moves to the right until it touches the spring seat pushing the free piston B. At this time, the distance "D_1" that the valve piston A moves is shorter than the distance "D_2" that the free piston A moves. Therefore, the passage continues to open and the fluid pressure P_1 from the master cylinder is equal to the fluid pressure P_2 in one of the X-piping lines. Thus, the secondary valve assembly acts merely as a connector, and the left rear brake and the right front brake operate normally. On the other hand, a right rear brake-left front brake line operates normally even if there is a problem with a left rear brake-right front brake line.



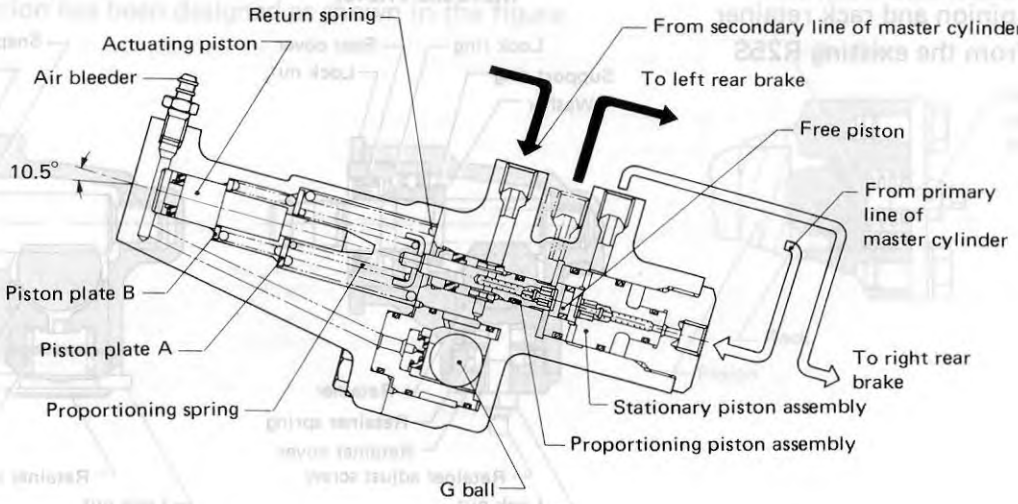
DUAL LOAD SENSING VALVE

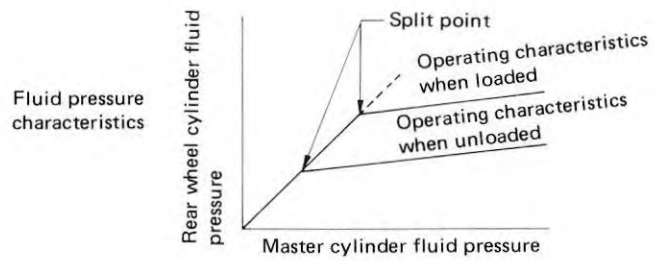
The dual load sensing valve has been adopted for vehicles without the dual proportioning valve master cylinder to improve braking performance.



CONSTRUCTION

The dual load sensing valve consists of a DP valve and a G valve. The G valve functions to change the split point of the DP valve so that adequate braking force can always be provided under any condition of load. Operation is basically the same as that for a load sensing valve.





STEERING SYSTEM

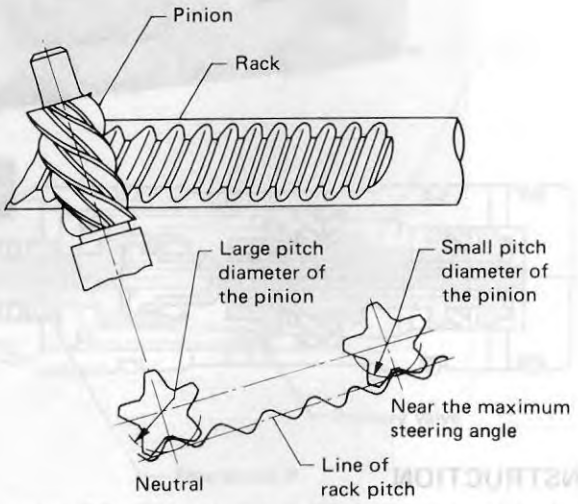
Two manual steering systems and one power steering system are available. The former two are the R24S rack-and-pinion type and the latter is the PR24SA rack-and-pinion type which responds to engine speed. The steering column has a collapsible design on all models. In addition, some models are equipped with a tilt mechanism. On models equipped with 14" wheels, a steering damper has been installed.

MANUAL STEERING

The R24S manual steering system has a new, light-weight design while the VR24S unit is a variable gear ratio type.

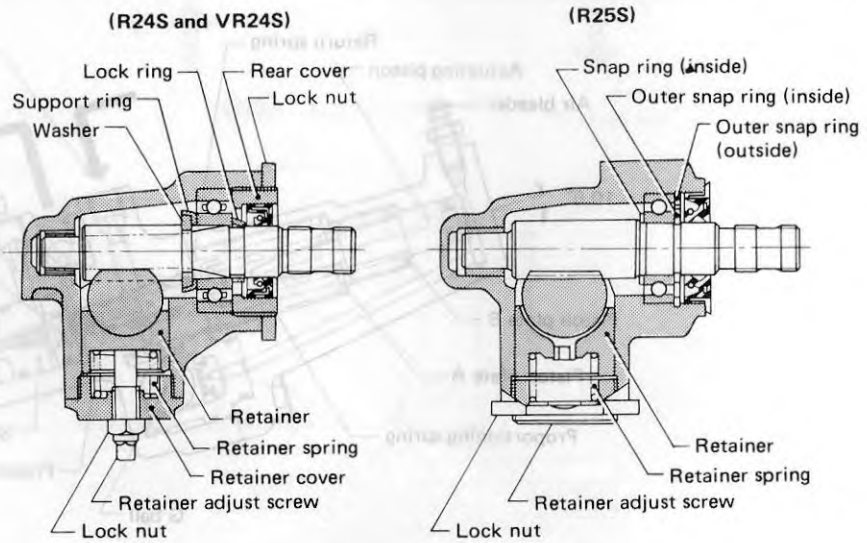
[VR24S]

The VR24S manual steering system provides a small gear ratio for stabilized steering during straight-forward driving and a large gear ratio near the maximum steering angle to reduce the effort required to operate the steering wheel.
The variable gear ratio is accomplished by gradually changing the tooth contour of the rack while steering from the straight-forward to the maximum turning position. This change in tooth contour causes the rack's teeth to change the pitch diameter of the pinion. In other words, the stroke length of the rack changes for each rotation of the pinion.

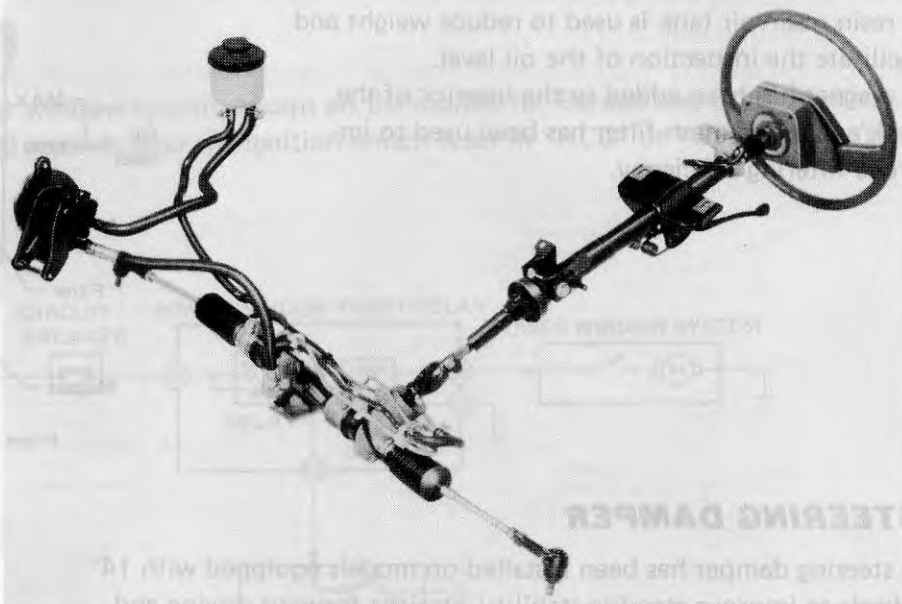


[R24S and VR24S]

These two systems have quite different pinion and rack retainer sections from the existing R25S system.



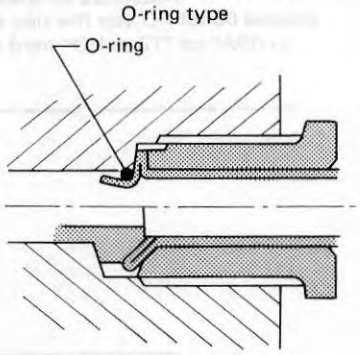
POWER STEERING



POWER STEERING GEAR

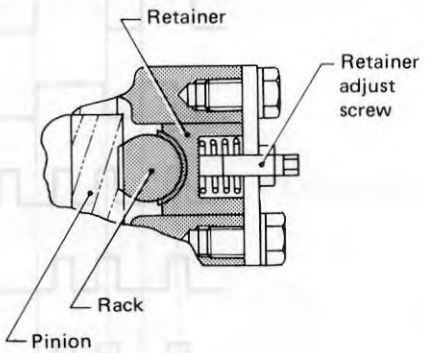
The power steering gear is the new PR24SA model which utilizes a rotary valve.

- An O-ring has been added to the flare nut section of the pressure and return ports in the gear housing to provide improved performance reliability.



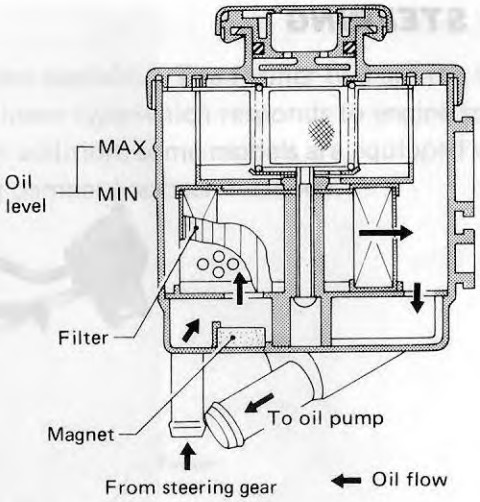
Flare type (Former model)

- The retainer section has been designed as shown in the figure on the right.



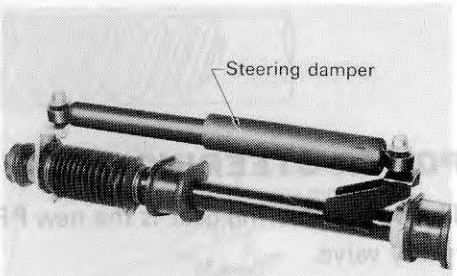
RESERVOIR TANK

A resin reservoir tank is used to reduce weight and facilitate the inspection of the oil level.
A magnet has been added to the interior of the tank and a fine-mesh filter has been used to improve filtering efficiency.



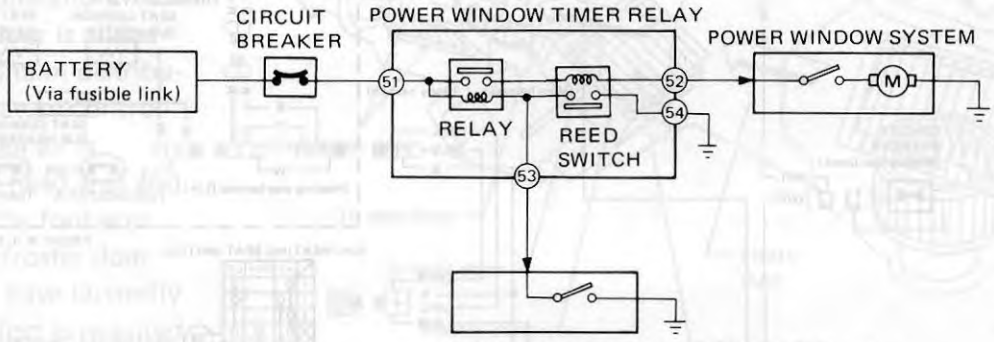
STEERING DAMPER

A steering damper has been installed on models equipped with 14" wheels to improve steering stability, straight-forward driving and kickback performance.



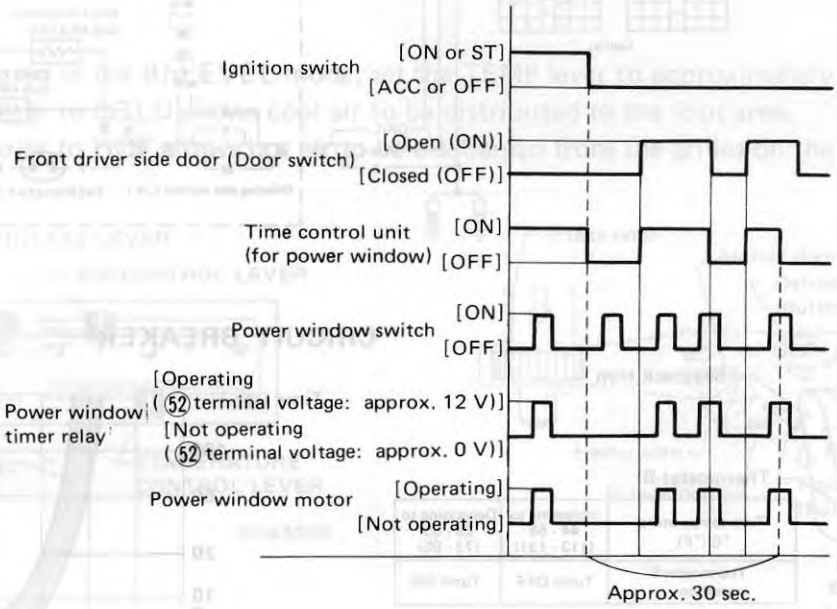
POWER WINDOW

If the driver's door is open, the power window system, except on the models for Europe and Saudi Arabia, can be operated for approximately 30 seconds after the ignition switch is set in "ACC" or "OFF" (driver's power window switch only).



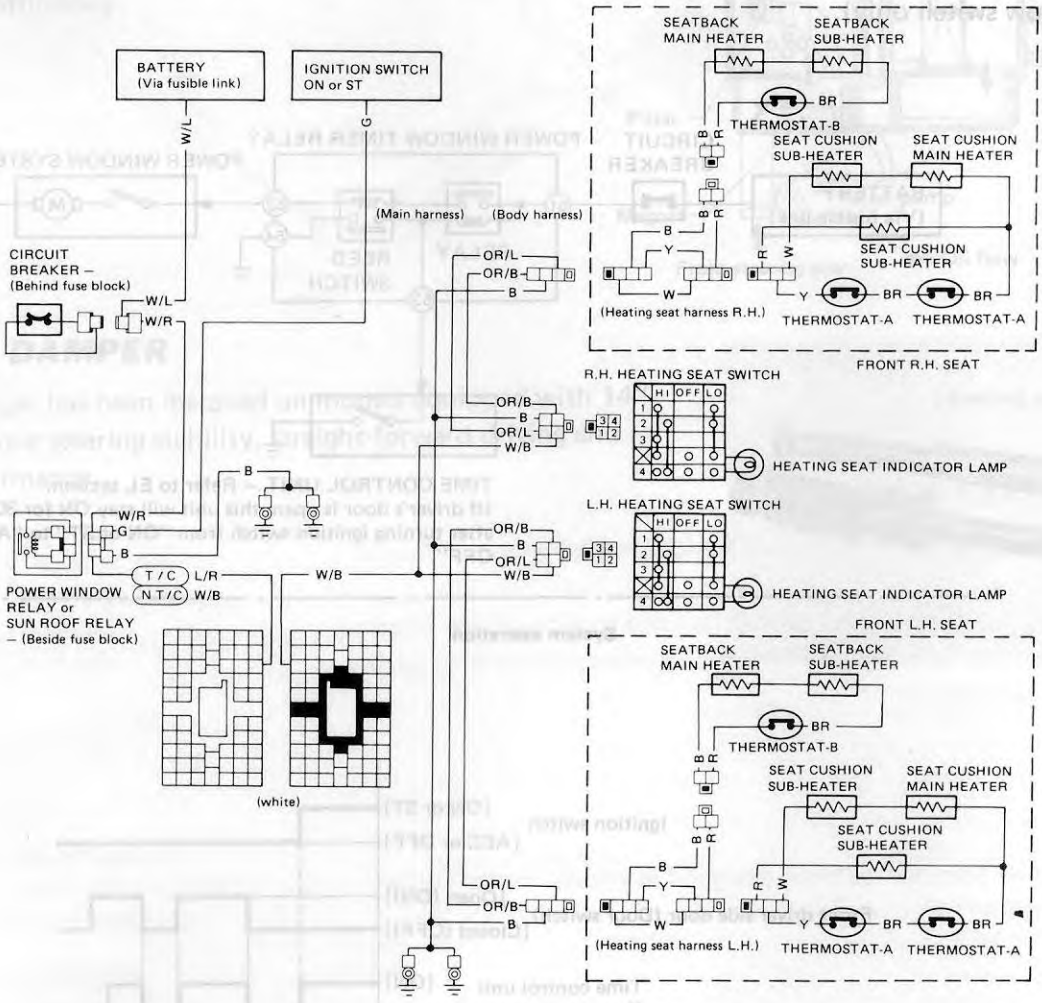
TIME CONTROL UNIT – Refer to EL section.
(If driver's door is open, this unit will stay ON for 30 seconds after turning ignition switch from "ON or ST" to "ACC or OFF".

System operation

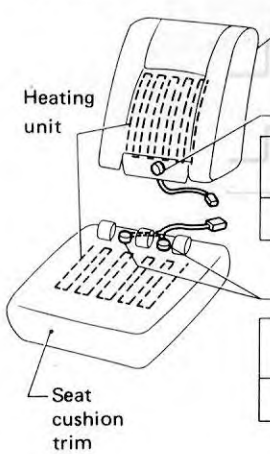


HEATING SEAT

- The heating unit is unitized with the trim. When handling the trim, be extremely careful not to scratch the heating unit.
- Do not use any organic solvent, such as thinner, benzene, alcohol, gasoline, etc. to clean trims.
- Always replace the heating unit and trim as a set.



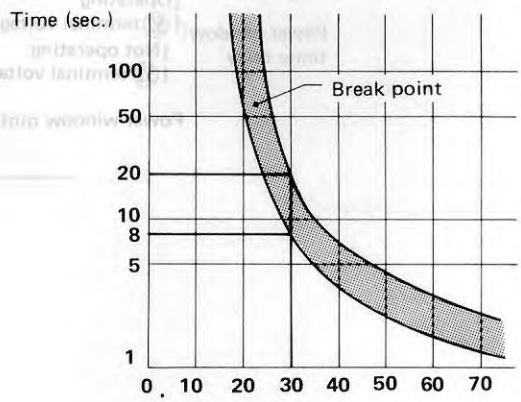
THERMOSTAT



Trim temperature °C (°F)	Increasing to 44 - 55 (113 - 131)	Decreasing to 25 - 35 (77 - 95)
Thermostat-B operation	Turns OFF	Turns ON

Trim temperature °C (°F)	Increasing to 35 - 45 (95 - 113)	Decreasing to 15 - 25 (59 - 77)
Thermostat-A operation	Turns OFF	Turns ON

CIRCUIT BREAKER

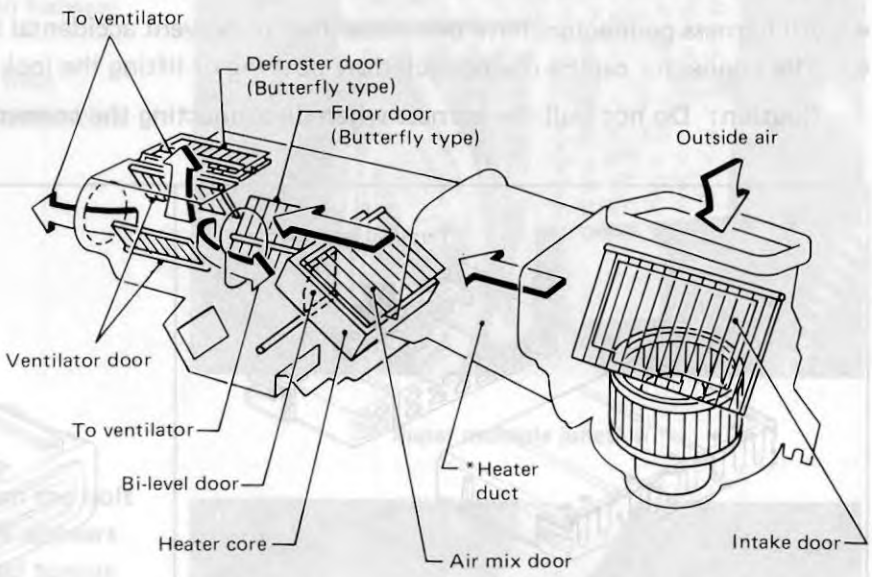


For example, when current is 30A, the circuit is broken within 8 to 20 seconds.

HEATER AND AIR CONDITIONER

The heater unit is a compact and lightweight type and has the following features:

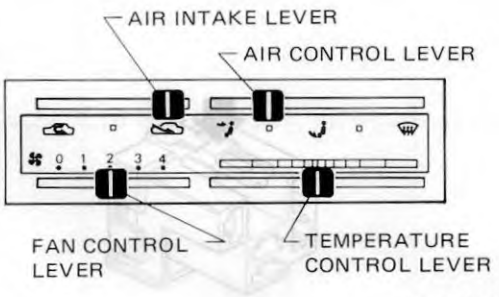
- Resistance to a large amount of air flow is extremely low, allowing the heater unit to provide quiet operation.
- A BI-LEVEL door is added to provide optimum distribution of temperature-controlled air flow; cool air is directed to the head area and the hot air to the foot area.
- Because the defroster door and floor door have butterfly designs, less effort is required to operate the air control lever regardless of whether the fan is on or off.
- Increased performance of air distributed to the foot area provides a pleasant and comfortable ride.



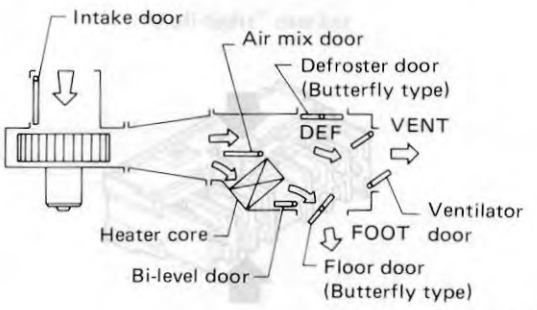
B/L function

- When the heater is used in the BI-LEVEL mode, set the TEMP lever to approximately the mid-position. Moving the TEMP lever to COLD allows cool air to be distributed to the foot area.
- Moving the TEMP lever to HOT allows hot air to be discharged from the grilles on the instrument panel.

L.H.D.



SHA333B

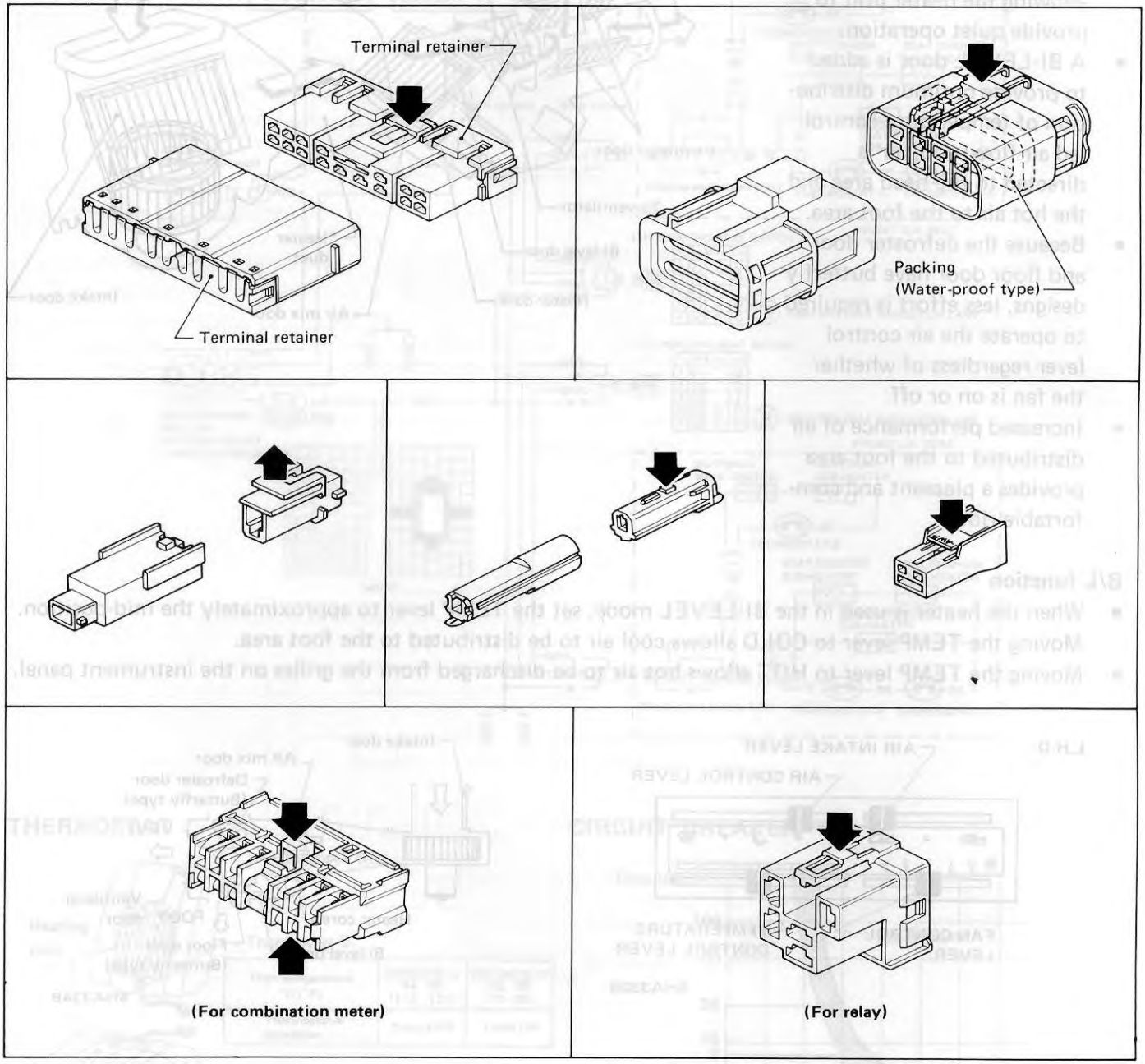


SHA334B

HARNESS CONNECTOR

- All harness connectors have been modified to prevent accidental looseness or disconnection.
- The connector can be disconnected by pushing or lifting the locking section.

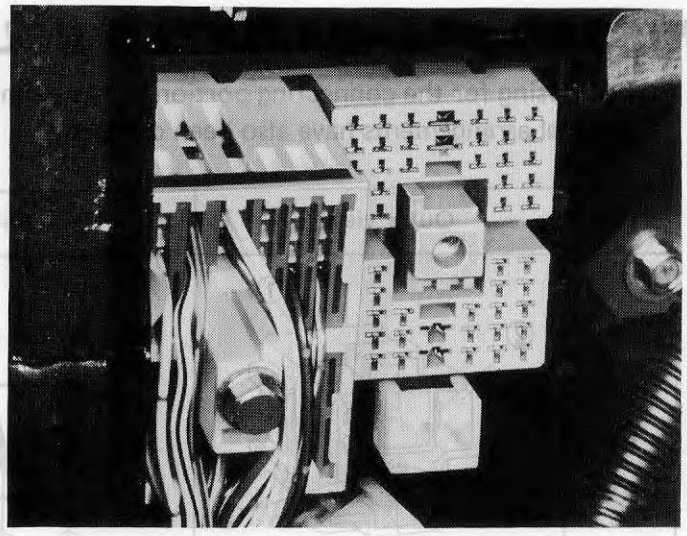
Caution: Do not pull the harness when disconnecting the connector.



SEL769D

SUPER MULTIPLE JUNCTION (S.M.J.)

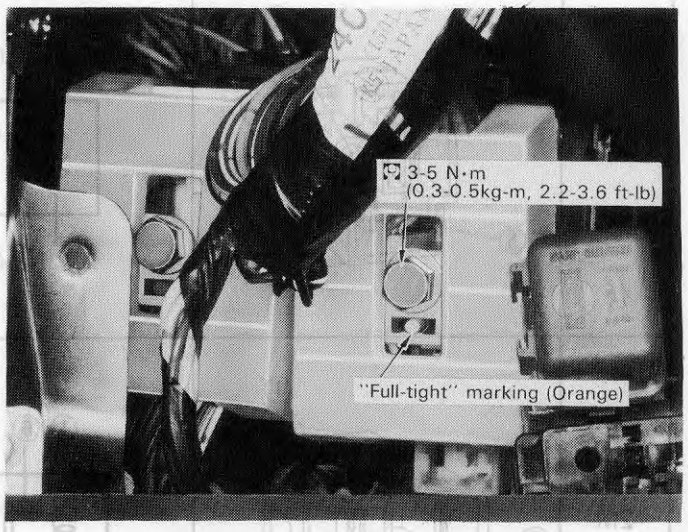
A screw type multi-pole (56 pin) connector located on the dash board side connects the main harness to the instrument and body harnesses.
It connects many poles simultaneously; thus achieving easy and reliable installation and service.



Super multiple junction

Note: **When attaching the S.M.J., tighten the bolt until the orange "full-tight" mark appears and then retighten to the specified torque as required.**

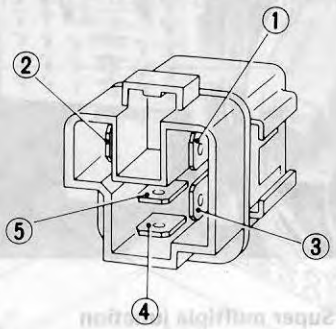
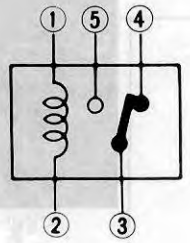
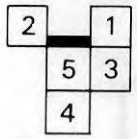
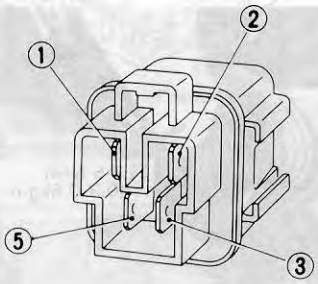
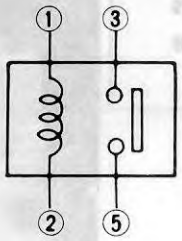
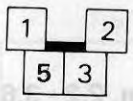
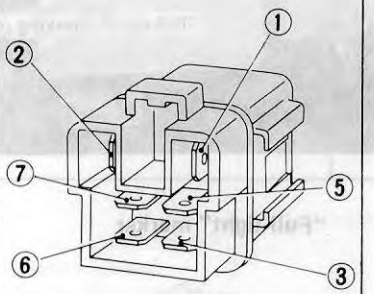
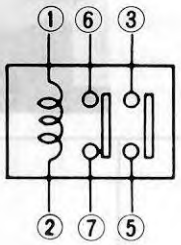
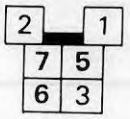
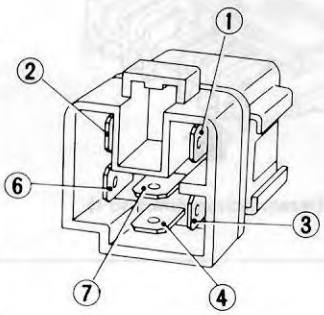
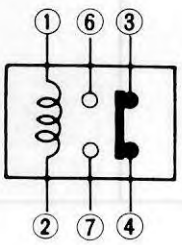
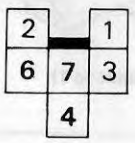
3 - 5 N·m (0.3 - 0.5 kg-m, 2.2 - 3.6 ft-lb)



"Full-tight" marker

NISSAN STANDARDIZED RELAY

- The housing for the connecting portion of the connector has been redesigned to prevent looseness. Terminal arrangements have also been changed.

Type	Outer view	Circuit	Symbols	Case color
1T				BLACK
1M				BLUE
2M				BROWN
1M·1B				GRAY

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