PRODUCT BULLETIN

NISSAN

300ZX

MODEL Z31 SERIES

New Model Introduction

NRD-87

Vol. 119

FOREWORD

This product bulletin has been prepared to provide information necessary for smooth and efficient service activities on the new NISSAN 300ZX, model Z31 series. Please read this bulletin thoroughly in order to gain a proper understanding of the features, specifications and mechanism of this new model.

This bulletin presents descriptions and specifications for only the modified parts, newly introduced mechanisms, etc., and does not deal with items previously introduced.

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

The new NISSAN 300ZX, model Z31 series entered production starting with the following vehicle identifications numbers (Chassis numbers):

Seating capacity	Engine	Chassis number
2 seater	VG30E	JN1HZ14SX*EX000001
	VG30ET	JN1CZ14SX*EX000001
2+2 seater	VG30E	JN1HZ16SX*EX000001
	VG30ET	JN1CZ16SX*EX000001

*: Check digit (0 to 9 or X)

CONTENTS

APPEARANCE

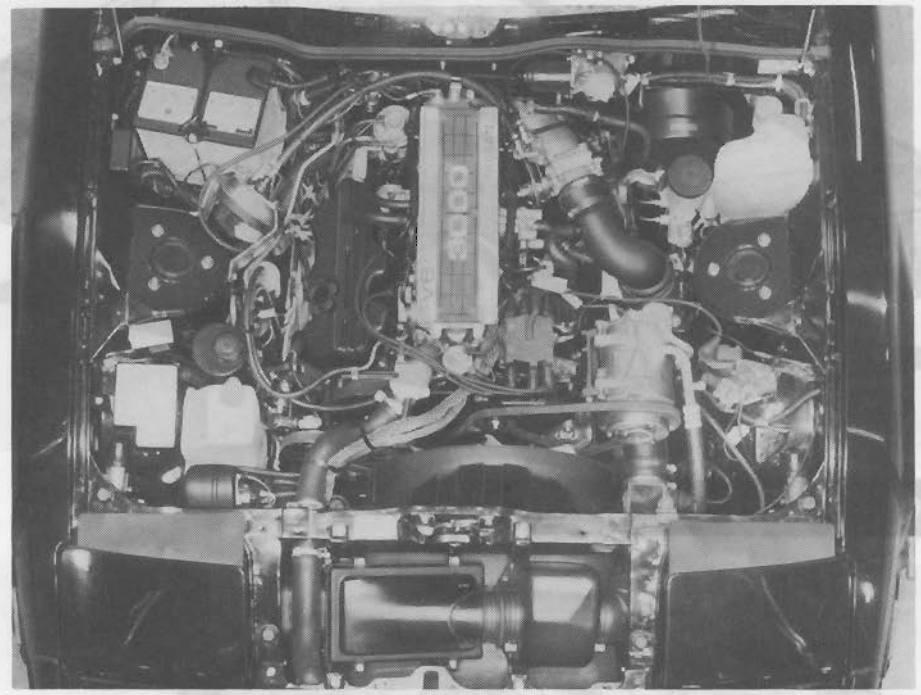
STANDARD ROOF

STANDARD ROOF (Turbocharged model)

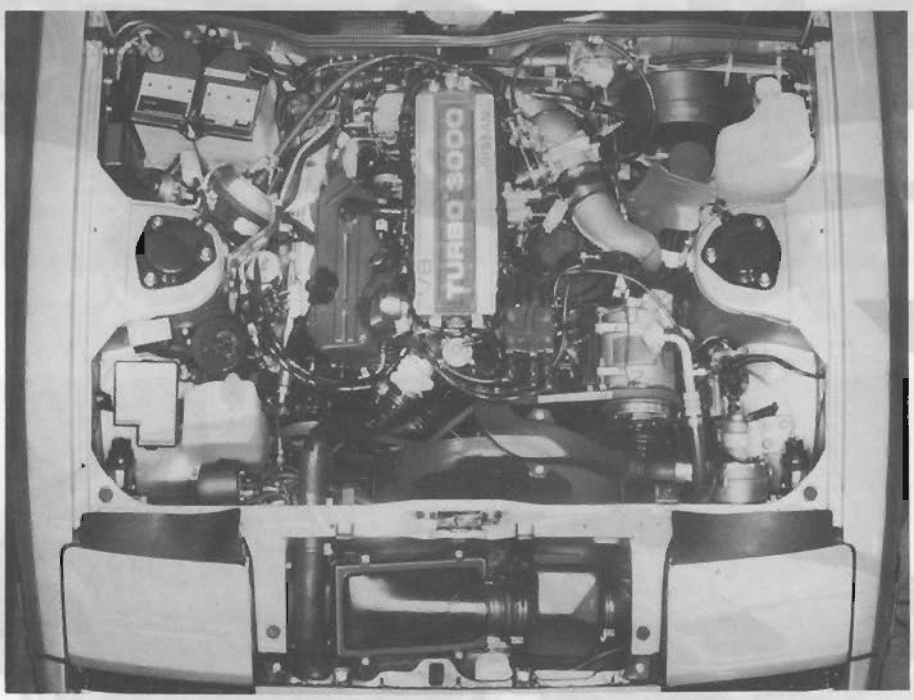
T-BAR ROOF

ENGINE ROOM

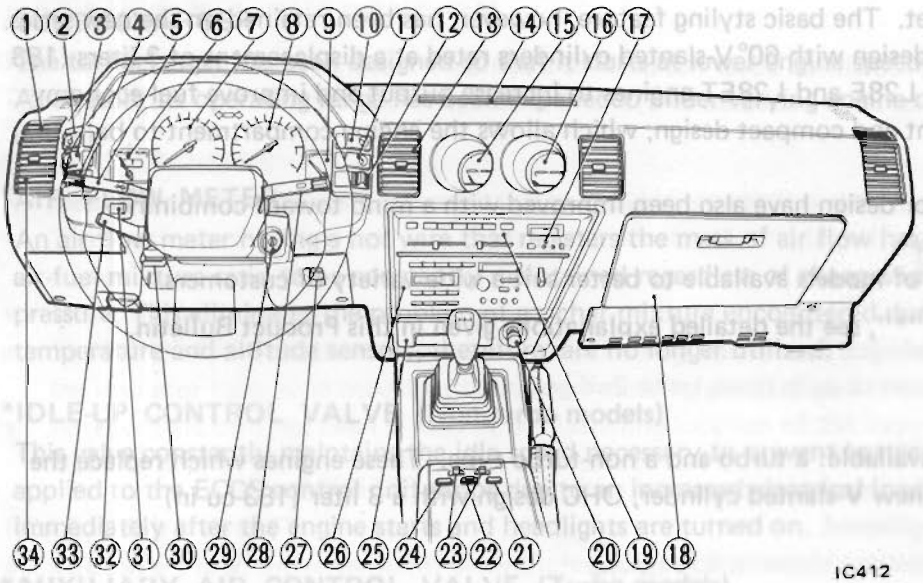
VG30E engine



VG30ET engine



INSTRUMENT



IC412

1 Side defroster
2 Headlight pop-up switch
3 Hazard warning flasher switch
4 Cruise control rheostat
Illumination control rheostat
(Non-cruise control device model)
5 Light and turn signal switch
6 Fuel gauge
7 Speedometer
8 Tachometer
9 Coolant temperature gauge
10 Rear defogger switch
11 Auxiliary driving light switch
12 Rear window wiper and washer switch
13 Center ventilator
14 Upper ventilator
15 Oil pressure gauge (Non-turbo model)
Oil pressure and temperature gauge
(Turbo model)
16 Voltmeter (Non-turbo model)
Boost meter (Turbo model)
17 Clock
18 Glove box
19 Air conditioner control
20 Cigarette lighter
21 Shock absorber adjusting switch
22 Headlight cleaner switch
23 Door mirror remote control switch
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25 Ash tray
26 Radio and cassette stereo player
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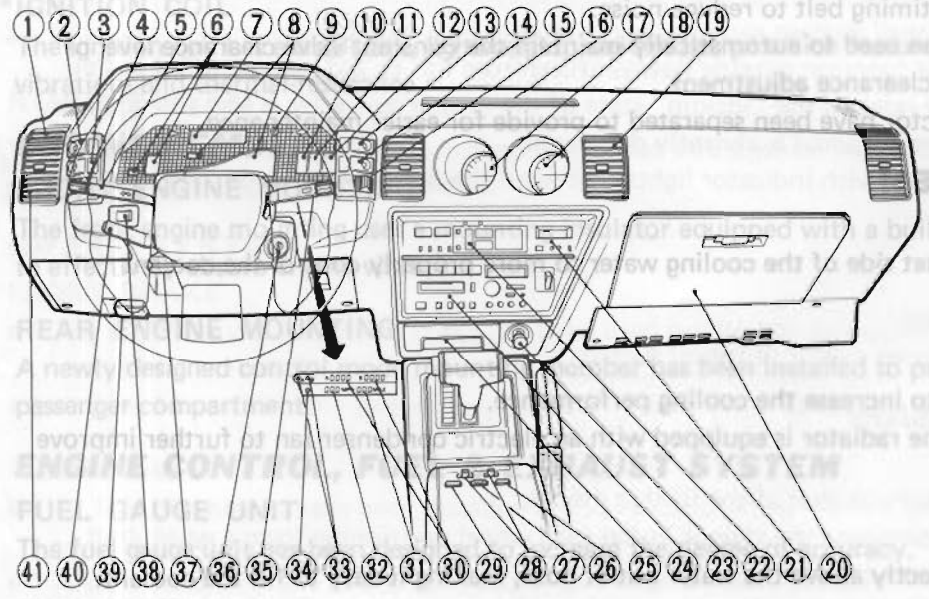
28 Windshield wiper and washer switch
29 Ignition switch
30 Tilt steering wheel adjust lever
31 Illumination control rheostat
(Cruise control device model)
32 Hood release handle
33 Cruise control set switch
34 Side ventilator



IC425

1 Side defroster
2 Headlight pop-up switch
3 Hazard warning flasher switch
4 Cruise control main switch
5 Light and turn signal switch
6 Fuel gauge
7 Speedometer
8 Tachometer
9 MPH/km/h select knob
10 Coolant temperature gauge
11 Oil pressure gauge
12 Voltmeter
13 Rear window defogger switch
14 Auxiliary driving light switch
15 Rear window wiper and washer switch
16 Upper ventilator
17 Accelerator and instant mileage meter
18 Compass
19 Center ventilator
20 Glove box
21 Clock
22 Air conditioner control
23 Cigarette lighter
24 Radio and cassette stereo player
25 Ash tray
26 Shock absorber adjusting switch
27 Headlight cleaner switch
28 Door mirror remote control switch
29 Door mirror defogger switch
30 Twin tripmeter
31 Distance to empty
32 Average speedometer
33 Tripmeter reset knob
34 Average speed set knob
35 Windshield wiper and washer switch
36 Ignition switch
37 Tilt steering wheel adjust lever
38 Illumination control rheostat
39 Hood release handle
40 Cruise control set switch
41 Side ventilator

OUTLINE

The new Nissan 300ZX, model Z31 series, is the successor to the former Datsun 280ZX, model S130 series. It has been designed with a major emphasis on a more refined sporty car image that maintains a stable position in the speciality-car market. The basic styling feature, however, has been retained on the new series. The engine has a 6-cylinder, OHC design with 60° V-slanted cylinders rated at a displacement of 3 liters (183 cu in) and has replaced the former L28E and L28ET engines to increase output and improve fuel economy. In addition, it features a lightweight and compact design, which allows the engine compartment to be smaller.

The interior upholstery and exterior design have also been improved with a mind toward combining function, beauty, and convenience.

There is an increase in the number of models available to better suit a wide variety of customers.

For items indicated by an asterisk "*", see the detailed explanations given in this Product Bulletin.

ENGINE

As before, two engine models are available: a turbo and a non-turbo type. These engines which replace the L28E and L28ET models, are of a new V-slanted cylinder, OHC design with a 3 liter (183 cu in) displacement.

*ENGINE MECHANICAL

- The cylinders are placed in a V-type (60°) arrangement that reduces the size and weight of the cylinder block.
- The beam type bearing cap unitized with the crankshaft has been used to reduce noise and vibration.
- The combustion chamber is of a cross-flow type, which allows for increased engine output.
- The piston and connecting rod have been reduced in weight to increase fuel economy.
- The camshaft is driven by the timing belt to reduce noise.
- A hydraulic valve lifter has been used to automatically maintain the constant valve clearance level of zero, eliminating the need for clearance adjustment.
- The intake manifold and collector have been separated to provide for easier maintenance.

ENGINE COOLING SYSTEM

*THERMOSTAT

The termostat is located on the inlet side of the cooling water to more properly control the coolant temperature, in the engine block.

RADIATOR

- The radiator is tilted forward to increase the cooling performance.
- On the turbocharged model, the radiator is equipped with an electric condenser fan to further improve the cooling performance.

COOLANT FILLER CAP

The filler cap has been located directly above the water outlet hose, making it easy to fill the coolant.

ENGINE FUEL & EMISSION CONTROL SYSTEM

EXHAUST GAS SENSOR

The exhaust gas sensor has a built-in ceramic heater that activates the sensor even when the temperature of exhaust gases is low.

TURBOCHARGER

The turbocharger has been designed so that it starts at lower engine speeds than the former L28ET engine. As a result, its operating range has been expaneded under varying engine operating conditions for increased output.

*AIR FLOW METER

An air flow meter having a hot wire that registers the mass of air flow has been employed. This allows for the air-fuel mixture ratio to be constantly maintained regardless of changes in air temperature or atmospheric pressure. This eliminates the problem of a richer mixture encountered during high altitude operation. The air temperature and altitude sensors, therefore, are no longer utilized.

*IDLE-UP CONTROL VALVE (Non-turbo models)

This valve constantly maintains the idle speed necessary to prevent battery discharge when an input voltage applied to the ECCS control unit drops due to an increased electrical load. This occurs, for example, immediately after the engine starts and headlights are turned on.

*AUXILIARY AIR CONTROL VALVE (Turbo models)

A solenoid type AAC valve has been used to improve operation reliability.

ENGINE ELECTRICAL

*ALTERNATOR

The alternator is equipped with a belt tension adjustment device.

*IGNITION COIL

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

ENGINE REMOVAL

FRONT ENGINE MOUNTING

The front engine mounting uses a mounting insulator equipped with a built-in liquid-filled dampening device to effectively absorb engine vibration.

REAR ENGINE MOUNTING

A newly designed control mode mounting member has been installed to prevent engine vibration in the passenger compartment.

ENGINE CONTROL, FUEL & EXHAUST SYSTEM

FUEL GAUGE UNIT

The fuel gauge unit has been designed to increase the degree of accuracy.

FUEL PUMP

The fuel pump has been built into the fuel tank to increase heat resistance and reduce noise emission.

CHASSIS

CLUTCH

CLUTCH DISC

The 240TBL clutch disc has been installed on all models.

CLUTCH COVER

For increased engine output, the C240S clutch cover has become a standard feature on all models. On turbocharged models, the full load has been increased to 6,375 N (650 kg, 1,433 lb).

*DAMPER

An accumulator-type damper has been placed in the hydraulic control line to increase vibration resistance.

*MANUAL TRANSMISSION

FS5W71C (Non-turbo models)

The synchro mechanism has been enlarged (compared to the FS5W71B transmission) and shift linkages modified, to reduce the effort required to shift from 1st to 2nd gear.

BW T-5 (FS5R90A) (Turbo models)

The following improvements have been made (as compared with the former FS5R90A unit).

- The clutch housing has been lengthened.
- A neutral switch has been installed for emission control.

*AUTOMATIC TRANSMISSION

E4N71B (Non-turbo models)

A newly designed computer-controlled lockup torque converter has been installed.

- The "power" or "normal" shift pattern is automatically selected by the microcomputer, according to the driving condition.
- The torque converter can be "locked up" in all gear positions except reverse.
- Shifting from "normal" to "power" pattern can be made manually by a switch.
- An automatic shiftdown control function governs downshifting from 4th to 3rd and from 3rd to 2nd.
- A mechanism that momentarily releases the "lockup" state of the torque converter is also provided to prevent shocks when the accelerator pedal is abruptly depressed.
- A self-diagnosis system is equipped with indicator lights that warn the driver of an abnormality in any particular system.

4N71B (Turbo models)

- An overdrive gear has been added.
- The overdrive can be released by an overdrive cancel switch.

*FRONT AXLE & SUSPENSION

FRONT AXLE

- The front axle is basically the same as that of the former model.
- A hub has been installed to accomodate the change in the road wheel positioning from a wheel bolt centering to a hub centering method.

FRONT SUSPENSION

- The strut, front suspension design, is essentially the same as that used in the existing model. However, to reduce weight, all parts have been newly designed.
- A high caster design has been used, and the tension rod mounting lowered to reduce a "nose down" tendency when brakes are applied.

- An "offset" caster design has been employed to improve straight road driving and stabilize the steering ability.
- The scrub length has been shortened to stabilize braking performance and prevent wheel shimmy.
- The center of the coil spring and that of the strut bar have been offset to improve riding comfort.

REAR AXLE & SUSPENSION

*REAR AXLE

The rear axle is basically the same as that of the former model.

*REAR SUSPENSION

- Rear suspension has the same semi-trailing arm of independent design as that used in the former model.
- The shock absorber and coil spring have been separated to enlarge the open space of the luggage compartment.
- The suspension member and arm have been redesigned to increase steering stability.
- The performance characteristics of the arm bushing, suspension member insulator and final drive mounting insulator have been modified to increase steering stability and reduce noise and vibration.
- An eccentric cam has been placed at the fastening location of the inner side of the arm and suspension member so that the toe-in can be adjusted easily.

REAR DRIVE SHAFT

- The same tripod universal joint, drive shaft design as that used in the 280ZX model has been installed in the non-turbocharged model.
- On the turbocharged model, a Birfield joint rear drive shaft has been used to accommodate the high output engine.

*ADJUSTABLE SHOCK ABSORBER

- A four-wheel, adjustable shock absorber has been installed on the turbocharged model. It is equipped with a small motor which changes the dampening force in three stages.
- The indicator lights will warn you when the malfunction occurs in the electrical circuit.

ROAD WHEEL

The center hole of the road wheel, instead of the seat of the wheel nut, is used as a reference point in determining the road wheel positioning.

BRAKE SYSTEM

FRONT BRAKE

- The CL28VA ventilated disc brake has been used on the non-turbocharged model while the turbocharged model uses the CL28VB.
- The semi-metallic brake pad is equipped with a wear warning device.

REAR BRAKE

- CL14H disc brakes have been installed on non-turbocharged models, while CL14HB disc brakes used on turbocharged models.
- A semi-metallic brake pad is equipped with a wear warning device.

*MASTER CYLINDER

A newly developed master cylinder equipped with a built-in proportioning valve has been installed.

STEERING SYSTEM

*STEERING COLUMN

The tilt steering system is provided with a memory function for the tilt angle. The steering column can be raised for the driver to easily get in or out of the car.

*POWER STEERING

- The power steering system is a rack-and-pinion ZF PR24S type.
- The power steering pump has a small-size, vanetype design and is installed independently of the reservoir tank.
- A belt tension adjustment device has been attached to the power steering pump for easier maintenance.

BODY

*THEFT WARNING SYSTEM

A theft warning system has been installed. It activates when a door, rear hatch or hood is opened without using the key or when the key cylinder is pulled out from the door or rear hatch. Should the device be activated, the horn will sound and the headlights blink.

SIDE WINDOW

The side windows for the 2 seater and 2+2 seater models are retained with adhesive and cannot be opened.

HOOD

- The hood, a front-end open type, is equipped with gas stay balancers for easy engine access.
- The hood can be opened from 50° (normal) up to 70° by relocating the gas stays.

AIR INTAKE

- On turbocharged models, an air intake has been provided in the hood to cool the turbocharger.

AUTO DOOR LOCK

A newly designed actuator, that does not require a timer, has been installed.

REAR HATCH & FUEL FILLER LID OPENER

To open the rear hatch and gas tank lid, a remote control device has been installed on the left side of the driver's seat. Along with this modification, a remote controlled locking filler lid has replaced the filler cap lock type.

*DOOR MIRROR

To insure proper mirror protection, the door mirror is folded to prevent damage during transit. Before delivering the car to the user, it is placed in the correct position.

INSTRUMENT PANEL

- The basic instrument design has been retained. However, to reduce weight, simplify construction and increase the degree of accuracy during assembly, the instrument panel has been totally padded into a unit construction.
- Improvements have also been made so that noise and vibration are not conveyed via the steering system from the road surface to the instrument panel.
- The mating area of the instrument panel and car body has been modified to prevent the transmission of noise and vibration.

SEAT

Leather trimmed seats have been employed on the GL-L model.

HEAD RESTRAINT

- The up-and-down adjustment mechanism is equipped with a locking device.
- The fore-and-aft adjustment can be made by turning a rotary dial.

MANUAL MULTI-ADJUSTABLE SEAT

The driver's seat of the GL model has an optional feature that allows the seat to be manually set in six positions (seat slide, reclining, lifter, lumbar support, side support and thigh support).

*POWER SEAT

An electrically adjustable driver's seat has been used on the GL-L model. It can adjust the seat for seat sliding, reclining, lifting, lumbar supporting, side supporting and thigh supporting.

REAR SEAT

A foldable rear seat has been employed.

SEAT BELT

FRONT SEAT BELT

- The front seat belt is provided with an inertial and webbing sensitive retractor.
- A tension reducer has been added to the front seat belt to reduce any pressure felt in the shoulder or abdominal areas when the belt is fastened.

HEATER AND AIR CONDITIONER

CONTROL

- The MODE control has a pushbutton design for easier operation.
- A recirculation (RECIRC) switch has been added.
- A bypass line has been placed between the ventilator outlet duct and floor outlet duct.
- *A stepless air flow control device has been adopted so that the desired amount of air flow can be selected.

HEATER

- The capacity of the blower motor has been increased to allow for added air flow.
- The heating system has been designed to not only reduce resistance to the air flow but provide for its quieter operation.

AIR CONDITIONER

MANUAL CONTROLLED AIR CONDITIONER

- A large thermal exchanging evaporator has been employed to increase cooling performance.
- An electronic thermostat has been installed as a temperature control regulator to prevent the evaporator from freezing.
- *A refrigerant leak warning system has been used to warn of an insufficient amount of refrigerant.
- Air-flow performance has been increased by enlarging the ventilator on the instrument panel and also by using a large-capacity blower.
- The MODE control has been changed to a pushbutton type to simplify operating ability.
- In order to operate the vacuum actuator properly, an electric vacuum pump has been adopted for turbo-charged models equipped with ASCD.

AUTOMATICALLY CONTROLLED AIR CONDITIONER

A microcomputer has been employed to automatically control the air-flow mode, outlet air temperature, the amount of air discharged, etc. Correspondingly, the interior temperature is maintained at the set temperature according to temperature changes both inside and outside the vehicle, the amount of sun beam, and car speed.

- Eight sensors have been installed to maintain optimum temperature distribution inside the compartment. Six sensors are placed in the compartment, as well as an ambient temperature sensor and a coolant temperature switch.

- A digital display has been installed in the control section that indicates both the compartment setting temperature and ambient temperature.
- A self-diagnosis system of trouble has been provided to detect a microcomputer malfunction, faulty wiring connection, faulty sensors or actuator malfunction.
- The air-flow mode and the operation of the compressor and blower motor, etc. are displayed in the control section to tell the driver at a glance the condition of the air conditioning system.

ELECTRICAL SYSTEM

*DIGITAL TYPE COMBINATION METER

- The speedometer indicator shows the car speed in a digital and a graphic bar display. The digital display can be switched from "mph" to "km/h" or vice versa.
- The fuel gauge, coolant temperature gauge, oil pressure gauge and voltmeter indicators are shown in graphic-bar displayes.
  The fuel gauge is equipped with a sub-meter. When the amount of fuel falls below 5 US gal (4-1/8 Imp gal) for the U.S. models or 19 liters for Canadian models, this sub-meter registers the remaining amount in a digital display.
- For added driving pleasure, there is a twin tripmeter, average car speed readout and another display showing cruise range available on remaining gas.

COMBINATION METER (Needle type)

- The speedometer, tachometer, fuel meter and coolant temperature gauge are arranged in the same manner as in the existing model. However, the design of the meter and gauge have been simplified for standardization.

*COMPASS

A compass has been installed on the GL-L model that indicates the car's direction in relation to the direction of magnetic north.

*ACCELERATION AND MILEAGE METERS

- An acceleration meter and fuel consumption meter have been installed on the GL-L model. The acceleration meter displays the amount of acceleration/deceleration. The fuel consumption meter shows the rate of fuel usage at 10 second intervals.

AUDIO

- A multi-function electronic tuner radio & stereo tape deck system has been installed on the GL-L model. On the SF and GL models, the electronic tuner radio & stereo tape deck system has the same functions as that used in the 280 ZX model.
  On the multi-function electronic tuner radio & stereo tape deck, the system is equipped with a memory of preset stations, as well as for auto program selection, which quickly searches and stops just ahead of the desired music, during cassette tape operation. Furthermore, it has a space diversity system to improve FM reception.
- A total of eight high quality speakers have been installed in the interior. Placements include the instrument panel, door panels, rear strut towers, etc. (GL-L models only)

CLOCK

A liquid crystal display, multi-function digital clock has been used.

CRUISE CONTROL

A cruise cancel function has been added to the set switch.

ILLUMINATED ENTRY SYSTEM

When the driver's door handle is pulled and released, the interior lights and the light in the door handle key cylinder illuminate.

*HEADLIGHT SYSTEM

A semi-retractable headlight design has been employed.

SWITCH

Switches which have high frequency usage are arranged on each side of the combination meter for easier operation.

AUXILIARY DRIVING LIGHT

Auxiliary driving lights have been installed.

WINDSHIELD WIPER & WASHER

- The wiper has a three-speed, raise-up design.
- The washer operates in combination with the wipers.

HARNESS CONNECTOR AND RELAY

- Relays and harness connectors have been modified to prevent accidental detachment.

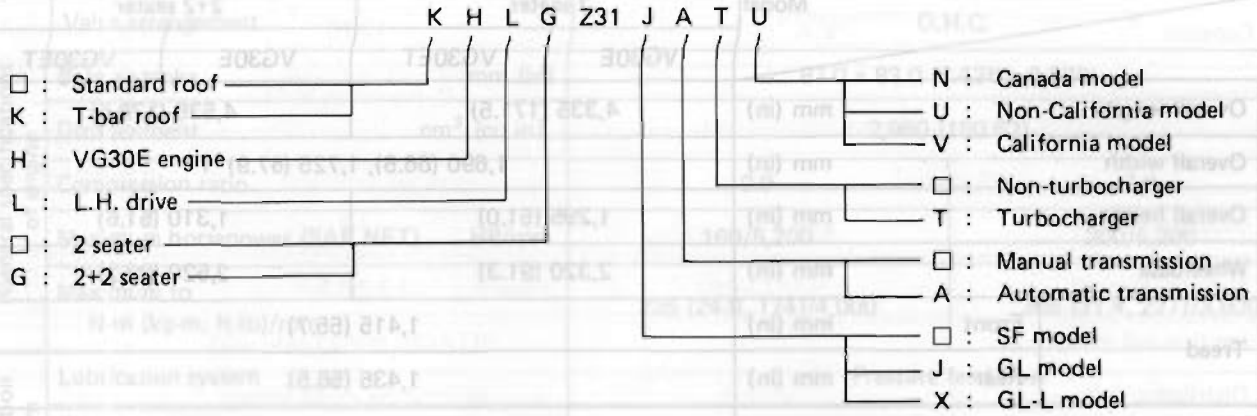
MODEL VARIATION

Body	Destination		Model		Engine	Transmission	Differential carrier	Road wheel size ... offset mm (in)	Tire size
Standard roof	U.S.A.	Non-California	2 seater	HL-U	VG30E	FS5W71C	R200	5-1/2JJ-14 ... 30 (1.18)	P195/70R14
				HL-AU		E4N71B			
				HL-JU		FS5W71C			
				HL-JAU		E4N71B			
				HL-XU		FS5W71C			
				HL-XAU		E4N71B			
				HL-JTU	VG30ET	BW T-5 (FS5R90A)		6-1/2JJ-15 ... 30 (1.18)	P215/60R15
				HL-JATU		4N71B			
				HL-XTU		BW T-5 (FS5R90A)			
				HL-XATU		4N71B			
			2+2 seater	HLG-JU	VG30E	FS5W71C			
				HLG-JAU		E4N71B			
				HLG-XU		FS5W71C			
				HLG-XAU		E4N71B			
		California	2 seater	HL-V	VG30E	FS5W71C		5-1/2JJ-14 ... 30 (1.18)	P195/70R14
				HL-AV		E4N71B			
				HL-JV		FS5W71C			
				HL-JAV		E4N71B			
				HL-XV		FS5W71C			
				HL-XAV		E4N71B			
				HL-JTV	VG30ET	BW T-5 (FS5R90A)		6-1/2JJ-15 ... 30 (1.18)	P215/60R15
				HL-JATV		4N71B			
				HL-XTV		BW T-5 (FS5R90A)			
				HL-XATV		4N71B			
			2+2 seater	HLG-JV	VG30E	FS5W71C			
				HLG-JAV		E4N71B			
				HLG-XV		FS5W71C			
				HLG-XAV		E4N71B			

Body	Destination		Model		Engine	Transmission	Differential carrier	Road wheel size ... offset mm (in)	Tire size
Standard roof	Canada		2 seater	HL-N	VG30E	FS5W71C	R200	5-1/2JJ-14 ... 30 (1.18)	P195/70R14
				HL-AN		E4N71B			
				HL-JN		FS5W71C			
				HL-JAN		E4N71B			
				HL-XN		FS5W71C			
				HL-XAN		E4N71B			
				HL-JTN	VG30ET	BW T-5 (FS5R90A)			
				HL-JATN		4N71B			
				HL-XTN		BW T-5 (FS5R90A)			
				HL-XATN		4N71B			
			2+2 seater	HLG-JN	VG30E	FS5W71C		6-1/2JJ-15 ... 30 (1.18)	P215/60R15
				HLG-JAN		E4N71B			
				HLG-XN		FS5W71C			
				HLG-XAN		E4N71B			
				HLG-JTN	VG30ET	BW T-5 (FS5R90A)			
				HLG-JATN		4N71B			
				HLG-XTN		BW T-5 (FS5R90A)			
				HLG-XATN		4N71B			
T-bar roof	U.S.A.	Non-California	2 seater	KHL-JU	VG30E	FS5W71C			
				KHL-JAU		E4N71B			
				KHL-XU		FS5W71C			
				KHL-XAU		E4N71B			
				KHL-JTU	VG30ET	BW T-5 (FS5R90A)			
				KHL-JATU		4N71B			
				KHL-XTU		BW T-5 (FS5R90A)			
				KHL-XATU		4N71B			
			2+2 seater	KHLG-JU	VG30E	FS5W71C			
				KHLG-JAU		E4N71B			
				KHLG-XU		FS5W71C			
				KHLG-XAU		E4N71B			

Body	Destination		Model		Engine	Transmission	Differential carrier	Road wheel size ... offset mm (in)	Tire size
T-bar roof	U.S.A.	California	2 seater	KHL-JV	VG30E	FS5W71C	R200	6-1/2JJ-15 ... 30 (1.18)	P215/60R15
				KHL-JAV		E4N71B			
				KHL-XV		FS5W71C			
				KHL-XAV		E4N71B			
				KHL-JTV	VG30ET	BW T-5 (FS5R90A)			
				KHL-JATV		4N71B			
				KHL-XTV		BW T-5 (FS5R90A)			
				KHL-XATV		4N71B			
			2+2 seater	KHLG-JV	VG30E	FS5W71C			
				KHLG-JAV		E4N71B			
				KHLG-XV		FS5W71C			
				KHLG-XAV		E4N71B			
	Canada		2 seater	KHL-N	VG30E	FS5W71C		5-1/2JJ-14 ... 30 (1.18)	P195/70R14
				KHL-AN		E4N71B			
				KHL-JN		FS5W71C		6-1/2JJ-15 ... 30 (1.18)	P215/60R15
				KHL-JAN		E4N71B			
				KHL-XN		FS5W71C			
				KHL-XAN		E4N71B			
				KHL-JTN	VG30ET	BW T-5 (FS5R90A)			
				KHL-JATN		4N71B			
				KHL-XTN		BW T-5 (FS5R90A)			
				KHL-XATN		4N71B			
			2+2 seater	KHLG-JN	VG30E	FS5W71C			
				KHLG-JAN		E4N71B			
				KHLG-XN		FS5W71C			
				KHLG-XAN		E4N71B			
				KHLG-JTN	VG30ET	BW T-5 (FS5R90A)			
				KHLG-JATN		4N71B			
				KHLG-XTN		BW T-5 (FS5R90A)			
				KHLG-XATN		4N71B			

Prefix and suffix designations



□ : means no indication.

GENERAL SPECIFICATIONS

Item			Model	2 seater		2+2 seater	
				VG30E	VG30ET	VG30E	VG30ET
Dimensions and weights	Overall length		mm (in)	4,335 (171.5)		4,535 (178.5)	
	Overall width		mm (in)	1,690 (66.5), 1,725 (67.9)*1			
	Overall height		mm (in)	1,295 (51.0)		1,310 (51.6)	
	Wheelbase		mm (in)	2,320 (91.3)		2,520 (99.2)	
	Tread	Front	mm (in)	1,415 (55.7)			
		Rear	mm (in)	1,435 (56.5)			
	Minimum ground clearance (At curb weight)		mm (in)	150 (5.9)			
	Overhang to the body front end		mm (in)	945 (37.2)			
	Overhang to the body rear end		mm (in)	1,070 (42.1)			
	Room space	Length	mm (in)	1,005 (39.6)		1,525 (60.0)	
		Width	mm (in)	1,440 (56.7)			
		Height	mm (in)	1,075 (42.3)		1,090 (42.9)	
	Curb weight*2		kg (lb)	1,351 (2,978)*3 1,371 (3,022)*4	1,385 (3,053)*3 1,391 (3,066)*4	1,392 (3,069)*3 1,424 (3,139)*4	1,424 (3,139)
	Gross vehicle weight (G.V.W.R.)		kg (lb)	1,506 (3,320)*5 1,583 (3,490)*6	1,583 (3,490)	1,723 (3,800)	
	Gross axle weight rating (G.A.W.R.)	Front	kg (lb)	900 (1,985)			
		Rear	kg (lb)	970 (2,139)			
	Minimum turning radius (Wall-to-wall)		m (ft)	5.3 (17.4)		5.7 (18.7)	
General specifications of engine	Model			VG30E		VG30ET	
	Classification			Gasoline			
	Cycle			4			
	No. of cylinders and arrangement			6-cylinder, V-slanted at 60°			

*1: With side moulding
*2: Values are the maximum weight in each model variation.
*3: Manual transmission model
*4: Automatic transmission model
*5: SF model
*6: GL and GLL models

Item			Model	VG30E	VG30ET
General specifications of engine	Valve arrangement			O.H.C.	
	Bore x stroke		mm (in)	87.0 x 83.0 (3.425 x 3.268)	
	Displacement		cm^3 (cu in)	2,960 (180.62)	
	Compression ratio			9.0	7.8
	Maximum horsepower (SAE NET)		HP/rpm	160/5,200	200/5,200
	Maximum to N·m (kg-m, ft-lb)/rpm			235 (24.0, 174)/4,000	308 (31.4, 227)/3,600
Lubrication system	Lubrication system			Pressure feed flow	
	Oil pump type			Gear pump	
	Oil filter type			Paper element (Cartridge)	
Cooling system	Cooling method			Water cooling, forced circulation	
	Engine coolant			Anti-freeze (L.L.C.): 50%	
	Radiator type			Corrugated fin and tube	
	Water pump type			Centrifugal	
	Thermostat	Type		Wax-pellet	
		Temperature °C (°F)		76.5 (170)	
Engine fuel system	Electronic fuel injection type			L-jetronic	
	Fuel pump type			Electrical	
	Air cleaner filter type			Viscous paper	
	Air flow meter	Type		Hot wire	
		Model		A36-000007	
	Injector	Type		Electromagnetic	
	Throttle chamber type			1 barrel	
	Air regulator type			Bimetal	
Battery	Model			55D23R-MF, N70ZR-MF*1	
	Capacity		V-AH	60, 70*1	

*1: For Canada

Item			Model	VG30E	VG30ET
Alternator	Capacity	V-A		12-70	
	Voltage regulator model			I.C. regulator, built-in	
Starter motor	Type			Reduction gear	
	Capacity	kW		1.4	
Ignition system	Firing order			1-2-3-4-5-6	
	Ignition coil model			HITACHI make CM1T-201	
	Distributor type			With Crank Angle Sensor	
	Spark plug model			BCPR5ES-11 ... Hot BCPR6ES-11 ... Standard BCPR7ES-11 ... Cold	BCPR5E-11 ... Hot BCPR6E-11 ... Standard BCPR7E-11 ... Cold
Manual transmission	Model			FS5W71B	BW T-5 (FS5R90A)
	Gear ratio		1st	3.321	3.350
			2nd	1.902	2.056
			3rd	1.308	1.376
			4th	1.000	1.000
			5th	0.759	0.779
			Rev.	3.382	3.153
Automatic transmission	Model			E4N71B	4N71B
	Gear ratio		1st	2.458	2.458
			2nd	1.458	1.458
			3rd	1.000	1.000
			4th	0.686	0.686
			Rev.	2.182	2.182
Propeller shaft model				2S71A	
Differential carrier	Model			R200	
	Gear ratio (Number of teeth)			3.700 (37/10)	3.545 (39/11)
	Gear type & number of pinion gears			Straight bevel gear, 2 side gears and 2 pinion mates	

Item \ Model			VG30E	VG30ET
Front axle and front suspension	Type		Independent strut with coil spring	
	Stabilizer bar type		Torsion bar	
Rear axle and rear suspension	Type		Independent semi-trailing arms with coil spring	
	Stabilizer bar type		Torsion bar	
Brake system	Model and type	Front	Disc-CL28VA	Disc-CL28VB
		Rear	Disc-CL14H	Disc-CL14HB

Item \ Model		2 seater		2+2 seater	
		VG30E	VG30ET	VG30E	VG30ET
Brake system	Master cylinder inner diameter mm (in)	23.81 (15/16)			
	Brake booster model	M20T			
	Pressure control type	Proportioning valve (Within master cylinder)			
	Parking brake type	Mechanical system for rear wheels			
Wheel and tire	Road wheel size [offset mm (in)]	5-1/2-JJ-14* Steel [30 (1.18)] 6-1/2-JJ-15 Aluminum [30 (1.18)]			
	Tire size	P195/70R14*, P215/60R15			
	Spare tire size	C78-14		155/90D15	
Steering system	Type	Rack-and-pinion, Integral power steering			
	Model	PR24S			
Performance	Top gear speed at 1,000 rpm km/h (MPH)	32 (20)		33 (21)	

*: For SF model

VG30E ENGINE

OUTLINE

The VG series engine is provided with six cylinders and has been designed with major emphasis placed on high output, quietness and reliable performance, as well as fuel economy and weight reduction.

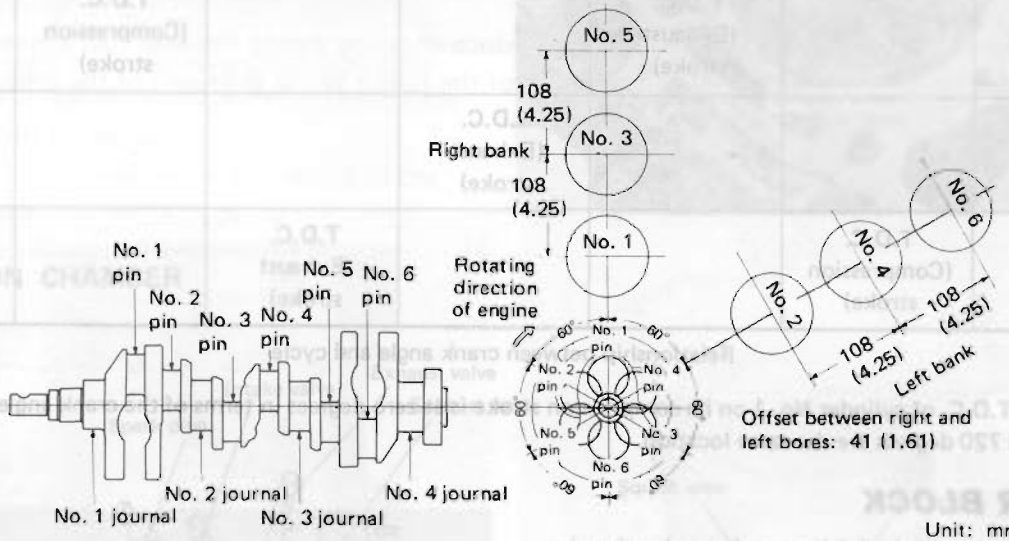
1) Basic construction
   The engine is a water-cooled, 6-cylinder V bank type. It is provided with a single OHC and cross-flow intake and exhaust ports with the valves located in a "V" arrangement system. Two engine models are available: a 3.0 liter (183 cu in) turbocharged engine and a 3.0 liter (183 cu in) non-turbocharged engine. The fuel feed system has a fuel injection design. The fuel injection system, exhaust gas recirculation control system, spark timing control system (turbo model only), idle-up or idle speed control system and fuel pump control system are all controlled by the E.C.C.S. control unit.
2) Compactness and light weight
   The VG series engine is 200 mm (7.87 in) shorter in overall length than the L28E engine. This was accomplished by using the V-bank for cylinder arrangement, relocating auxiliary equipment and shortening the crankshaft.
   In addition, the engine has been reinforced where necessary to provide performance reliability and quiet operation although various parts have been designed for lighter weight, thus reducing the weight by over 10 kg (22 lb).
3) Performance
   Improvement in combustion has been made by adopting a Pent-roof type compact combustion chamber, by locating the spark plug near the bore center, and by the squish and swirl effect. Improvement has also been made in output and fuel economy by reducing the weight of moving parts and the friction of auxiliary equipment.
4) Vibration and noise
   The vibration level has been reduced by improving the combining rigidity of the engine-transmission and optimizing the mounting location. The noise level has been reduced by adopting hydraulic valve lifters, timing belts and long and large port intake manifolds.

SPECIFICATIONS

Items \ Engine		VG30E (Non-turbocharged)	VG30ET (Turbocharged)
Displacement	cm^3 (cu in)	2,960 (180.62)	
Bore x stroke	mm (in)	87 x 83 (3.43 x 3.27)	
No. of cylinders & arrangement		V-6	
Combustion chamber		Pent-roof	
Valve mechanism		O.H.C.	
Compression ratio		9.0	7.8
Fuel metering system		E.C.C.S.	

ENGINE MECHANICAL SYSTEM

CYLINDER ARRANGEMENT AND IGNITION ORDER



Unit: mm (in)

- The right and left cylinder bores are offset by 41 mm (1.61 in) and set at an angle of 60 degrees.
- The cylinder numbers are designated No. 1 through No. 6, located alternately on the right and left bank, starting with the right front.
- Cylinder No. 1 is located ahead of cylinder No. 2 by 41 mm (1.61 in).
- The relationship between the crank angle and the cycle is shown in the following table. Therefore, the firing order takes place in the order of cylinder numbers.

Firing order: 1-2-3-4-5-6

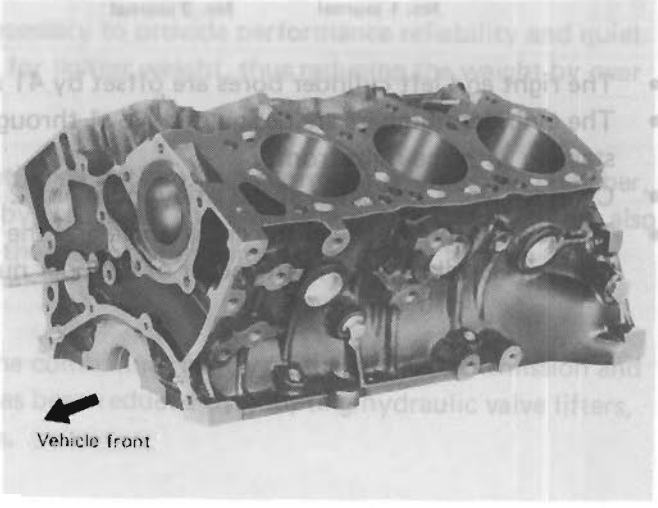
Cyl. No. / Crank angle (deg.)	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
0	T.D.C. (Compression stroke)			T.D.C. (Exhaust stroke)		
120		T.D.C. (Compression stroke)			T.D.C. (Exhaust stroke)	
240			T.D.C. (Compression stroke)			T.D.C. (Exhaust stroke)
360	T.D.C. (Exhaust stroke)			T.D.C. (Compression stroke)		
480		T.D.C. (Exhaust stroke)			T.D.C. (Compression stroke)	
600			T.D.C. (Exhaust stroke)			T.D.C. (Compression stroke)
720	T.D.C. (Compression stroke)			T.D.C. (Exhaust stroke)		

Relationship between crank angle and cycle

The location of T.D.C. of cylinder No. 1 on its compression stroke is at zero degrees in terms of the crank angle. Therefore, zero degrees and 720 degrees are the same location.

CYLINDER BLOCK

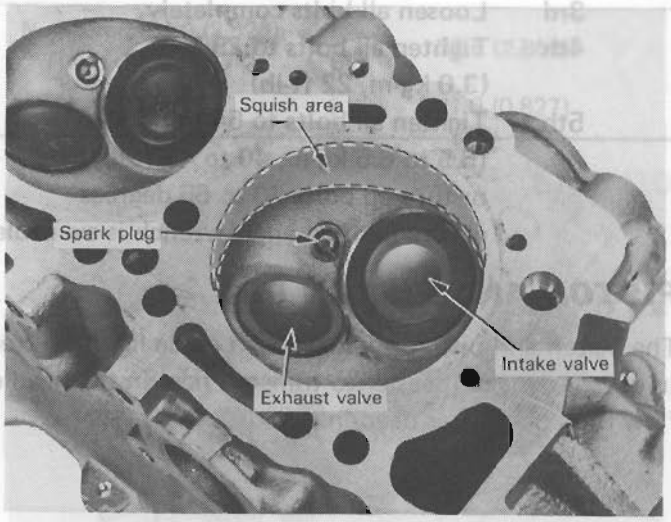
In order to provide high rigidity and a reduction in size and weight, a V-arrangement (60 degrees) cylinder block with half-skirt design has been adopted.



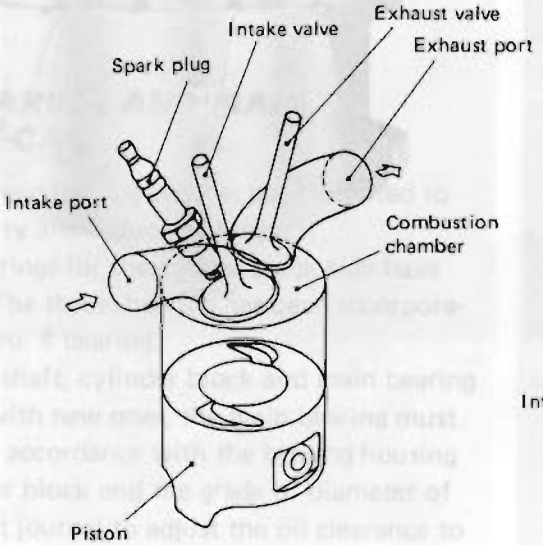
Item			Engine model VG30E	L28E
Cylinder block length	L	mm (in)	390 (15.35)	631 (24.84)
Cylinder block height from crankshaft center	H	mm (in)	227.65 (8.96)	207.85 (8.18)
Pitch between cylinders	P	mm (in)	108 (4.25)	96.5 (3.799) & 98 (3.86)
Offset between right and left cylinders	A	mm (in)	41 (1.61)	–
Cylinder bore diameter	D	mm (in)	87.0 (3.425)	86.0 (3.386)

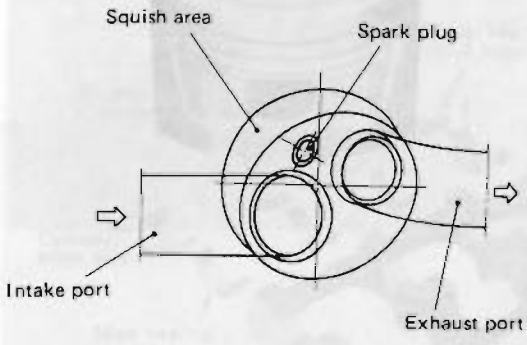
CYLINDER HEAD

Cross-flow intake and exhaust ports, Pent-roof combustion chamber and squish area have been adopted to improve the combustion efficiency.



COMBUSTION CHAMBER



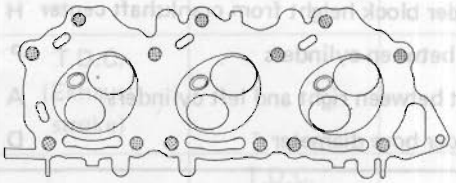


CYLINDER HEAD TIGHTENING

In order to improve the sealing performance, the cylinder head has been tightened with 13 bolts.

Note: In order to stabilize the axial force of the cylinder head bolts, it is necessary to tighten them in 5 stages.

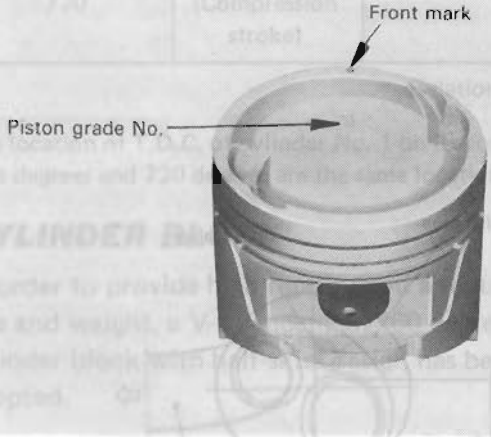
1st	Tighten all bolts to 29 N·m (3.0 kg-m, 22 ft-lb)
2nd	Tighten all bolts to 59 N·m (6.0 kg-m, 43 ft-lb)
3rd	Loosen all bolts completely.
4th	Tighten all bolts to 29 N·m (3.0 kg-m, 22 ft-lb)
5th	Tighten all bolts to 54 to 64 N·m (5.5 to 6.5 kg-m, 40 to 47 ft-lb) or turn all bolts 60 to 65 degrees clockwise if an angle wrench is available.



○ Cylinder head bolt

PISTON AND PISTON PIN

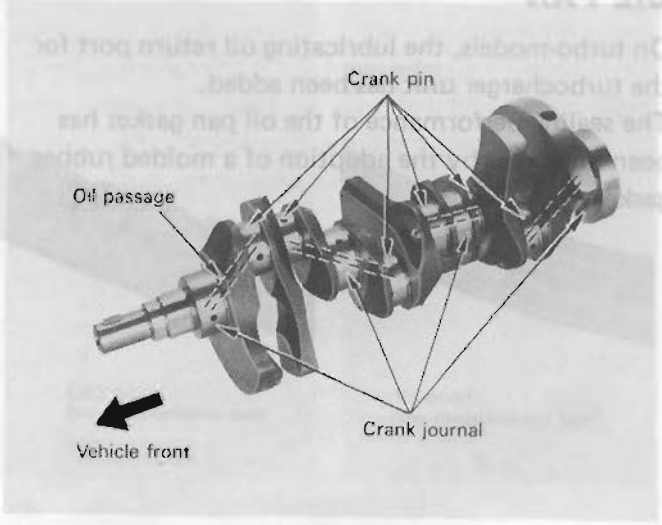
The piston and piston pin have been made lighter to reduce vibration and to improve fuel economy.
In order to make it easier to transmit heat in the head of the piston to the skirt part of the piston, a thermal-flow type piston has been installed.



Item			Engine Model VG30E		L28E	
Piston	Diameter	mm (in)	87.0 (3.425)		86.0 (3.386)	
	Height	mm (in)	67.0 (2.638)		78.2 (3.079)	
	Compression height	mm (in)	32.0 (1.260)		38.1 (1.500)	
			NON-TURBO	TURBO	NON-TURBO	TURBO
	Top land concave depth	mm (in)	0 (0)	2.9 (0.114)	0 (0)	2.7 (0.106)
	Top land concave capacity	cm^3 (cu in)	0.2 (0.012)	11.3 (0.690)	0 (0)	10.7 (0.653)
Piston pin	Length	mm (in)	Non-turbo 64.0 (2.520) Turbo 73.0 (2.874)		72.6 (2.858)	
	Diameter	mm (in)	21.0 (0.827)		21.0 (0.827)	

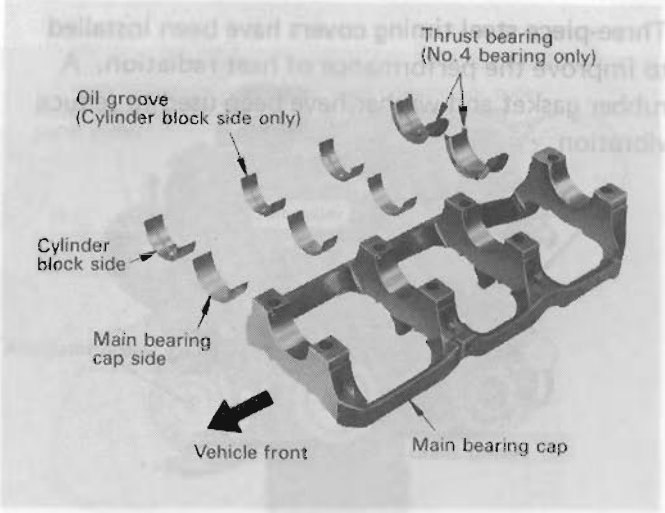
CRANKSHAFT

The crankshaft has been supported by 4 bearings, and 2 crank pins have been located between the journals.
The counterweight has been arranged in the most suitable position and the crankshaft has been made lighter by casting to reduce vibration.
The oil from the cylinder block is supplied to the crank pin as shown in the right picture.



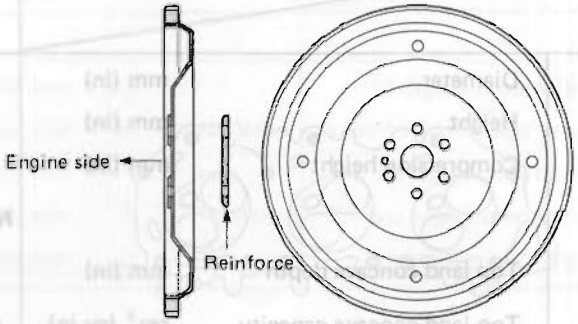
MAIN BEARING AND MAIN BEARING CAP

A unit type main bearing cap has been adopted to increase rigidity and reduce vibration.
The main bearings for the cylider block side have oil grooves. The thrust bearing has been incorporated into the No. 4 bearing.
If all of crankshaft, cylinder block and main bearing are replaced with new ones, the main bearing must be selected in accordance with the bearing housing of the cylinder block and the grade of diameter of the crankshaft journal to adjust the oil clearance to the specified level.



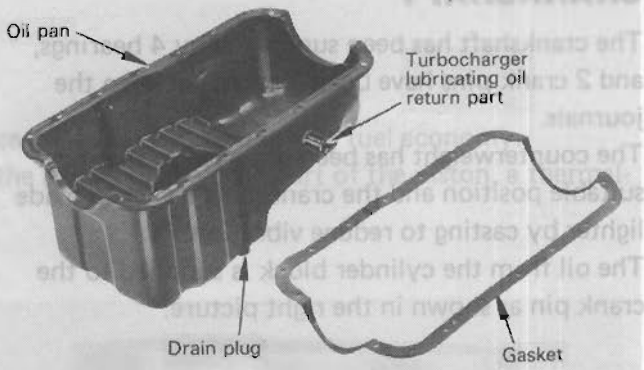
DRIVE PLATE

In order to reduce weight, high strength steel has been adopted in the drive plate.



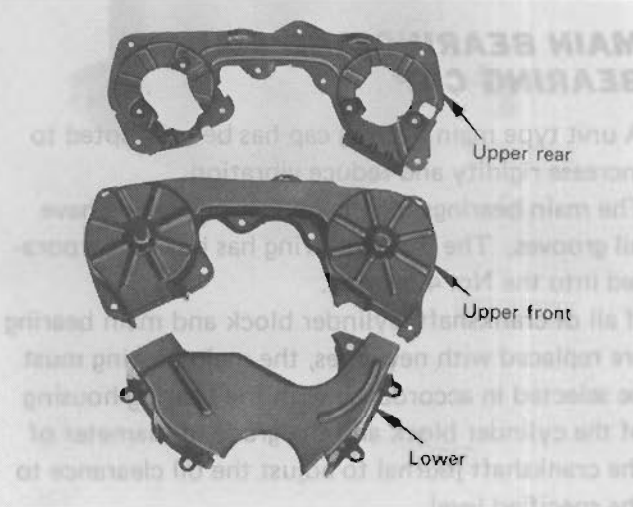
OIL PAN

On turbo-models, the lubricating oil return port for the turbocharger unit has been added.
The sealing performance of the oil pan gasket has been improved by the adoption of a molded rubber gasket.



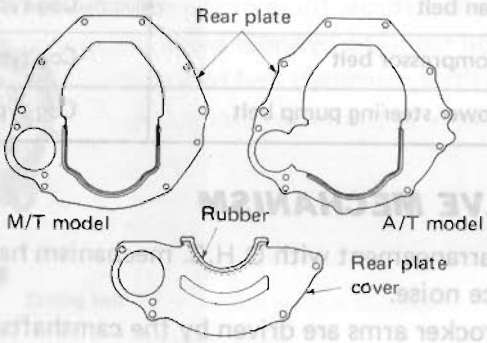
TIMING BELT COVERS

Three-piece steel timing covers have been installed to improve the performance of heat radiation. A rubber gasket and washer have been used to reduce vibration.



REAR PLATE

A rear plate and rear plate cover have been adopted so that the oil pan and oil pump on the car can be removed.

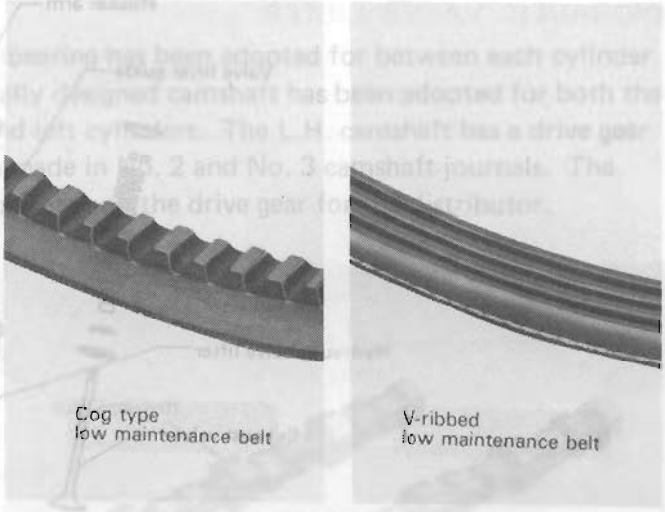


DRIVE BELTS

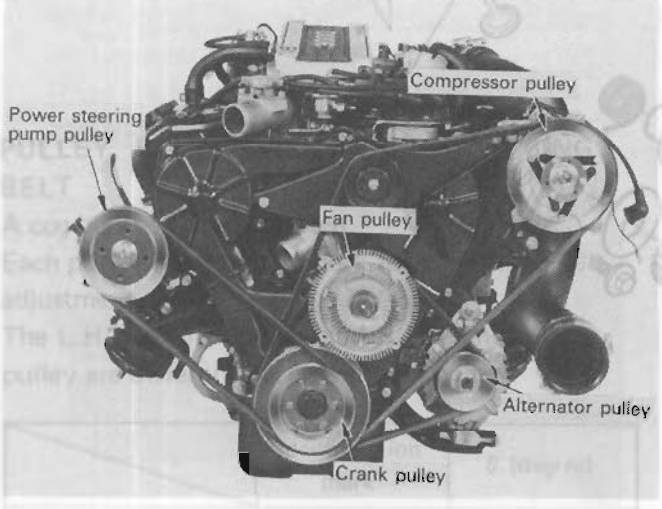
A cog-type low maintenance belt and a V ribbed low maintenance belt are utilized.

FUNCTION OF LOW MAINTENANCE BELTS

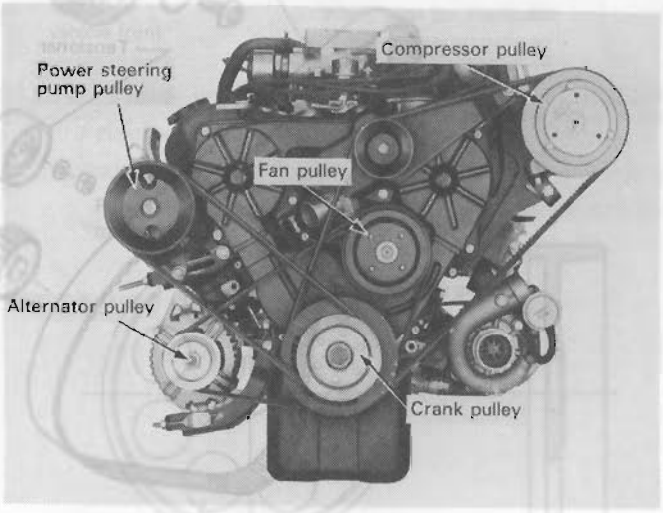
A heat-shrinking cord has been used. In the case of slipping, the cord shrinks due to the frictional heat produced and recovers tension.



BELT LAYOUT



VG30E engine



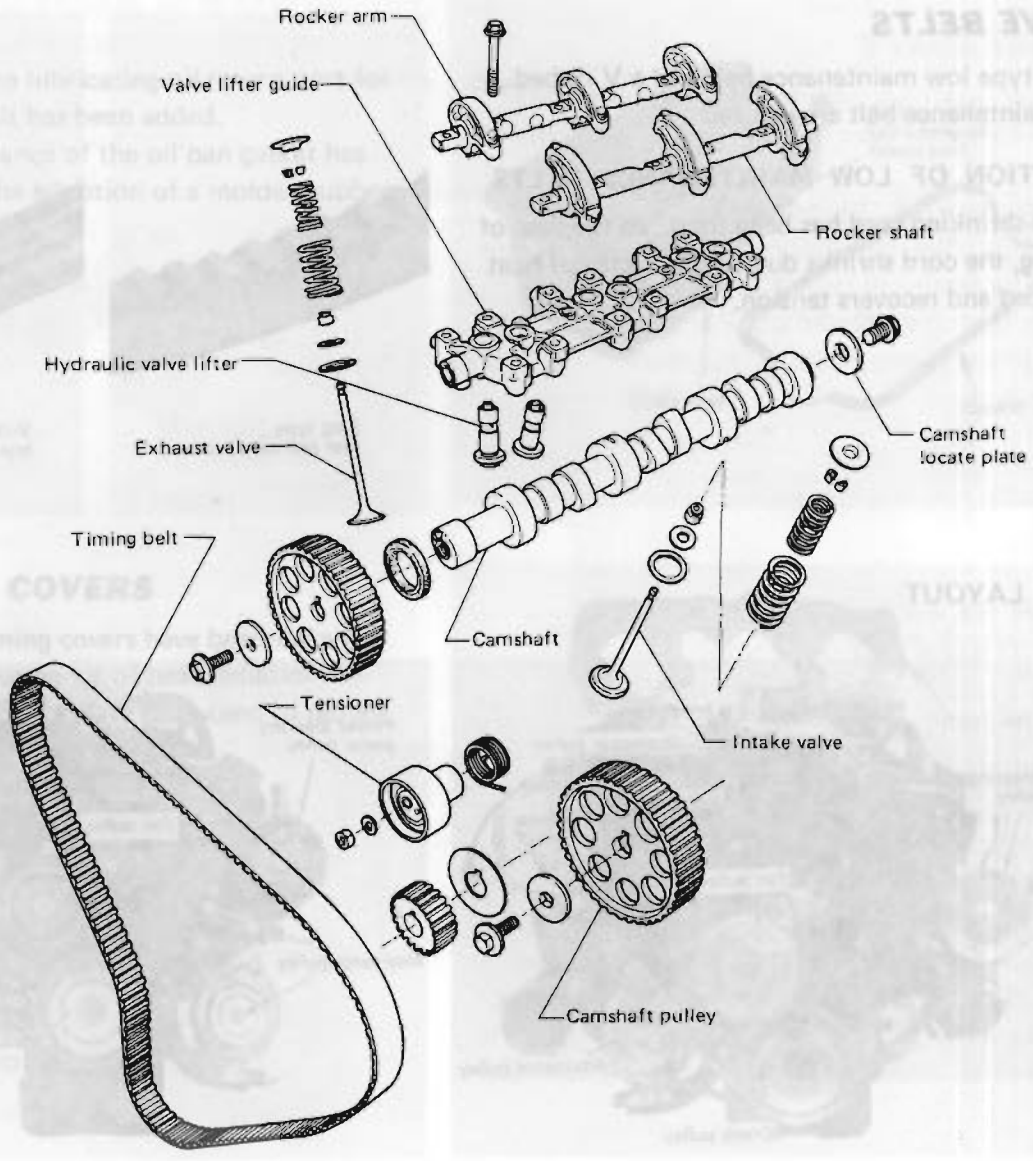
VG30ET engine

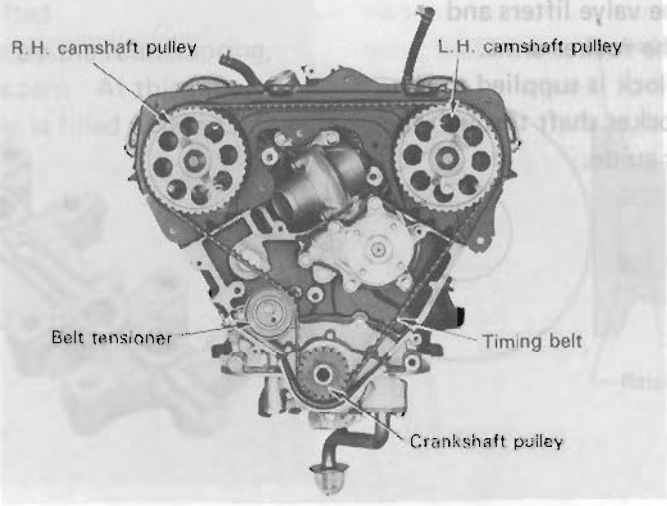
	VG30E	VG30ET
Fan belt	Cog-type low maintenance belt	V ribbed low maintenance belt
Compressor belt	Cog-type low maintenance belt	Cog-type low maintenance belt
Power steering pump belt	Cog-type low maintenance belt	Cog-type low maintenance belt

VALVE MECHANISM

A V-arrangement with O.H.C. mechanism has been adopted and the cog belt drives the two camshafts to reduce noise.

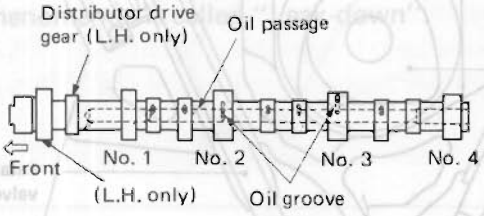
The rocker arms are driven by the camshafts through the hydraulic valve lifters so that adjustment of the valve clearance is not necessary.

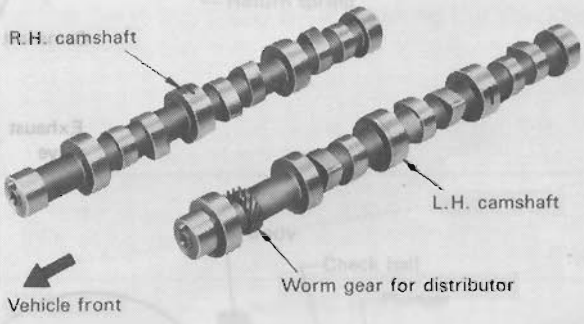




CAMSHAFT

Along with the adoption of the hydraulic valve lifter, a bearing has been adopted for between each cylinder to disperse the power applied to the camshaft. A specially designed camshaft has been adopted for both the right and left to accommodate the offset of the right and left cylinders. The L.H. camshaft has a drive gear for the distributor. Oil grooves and oil holes have been made in No. 2 and No. 3 camshaft journals. The lubricating oil from the cylinder head is supplied to each cam and the drive gear for the distributor.





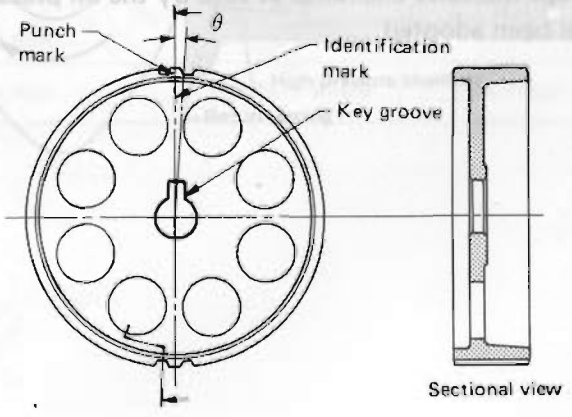
PULLEY, BELT TENSIONER AND TIMING BELT

A cog belt has been adopted.

Each pulley has a punch mark for the timing belt adjustment.

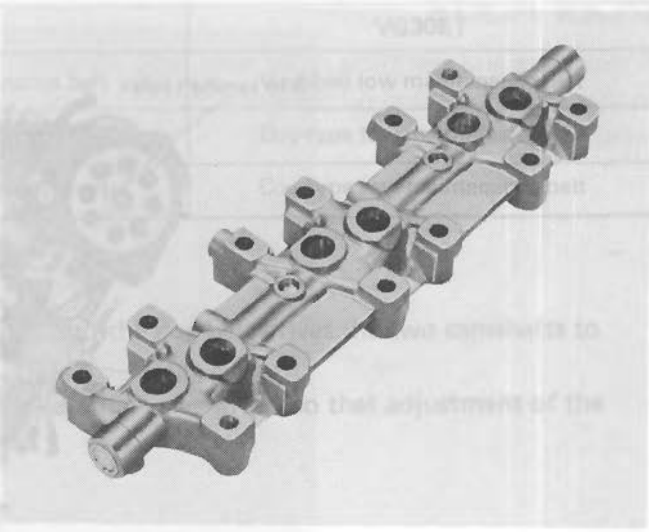
The L.H. camshaft pulley and R.H. camshaft pulley are different parts as shown below.

	Identification mark	θ (degree)
R.H. camshaft	R3	0°53′
L.H. camshaft	L3	−3°27′

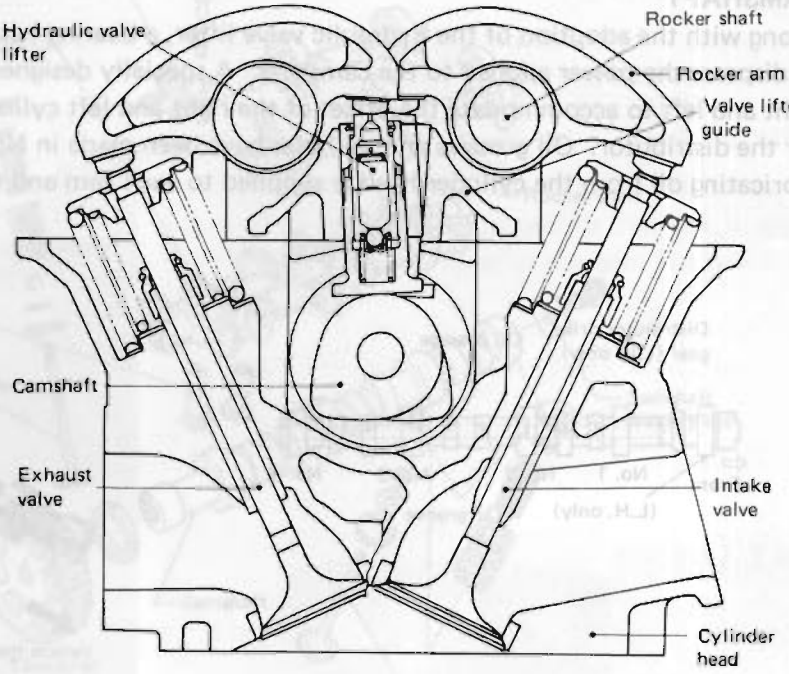


VALVE LIFTER GUIDE

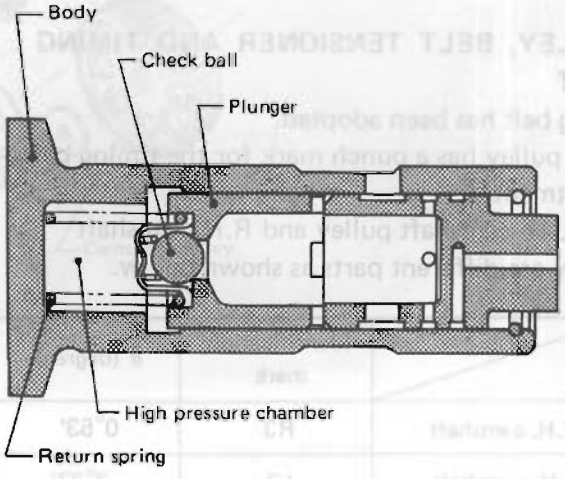
A valve lifter guide holds the valve lifters and supports a thrust force of the rocker arms. The oil from the cylinder block is supplied to the valve lifter, camshaft and rocker shaft through the oil gallery in the valve lifter guide.



HYDRAULIC VALVE LIFTER



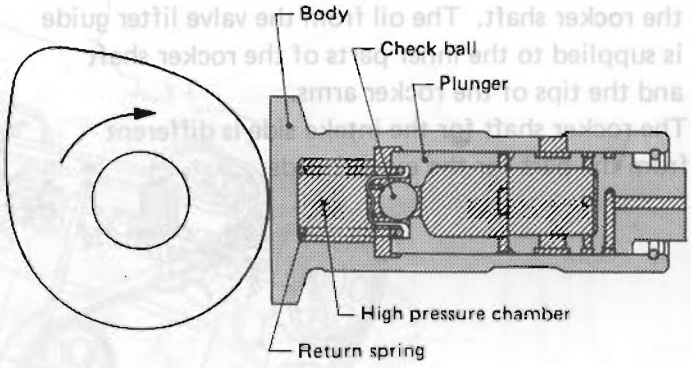
In order to reduce noise and adjust the valve clearance freely, a hydraulic valve lifter, which keeps the valve clearance at zero by the oil pressure, has been adopted.



[Operation]

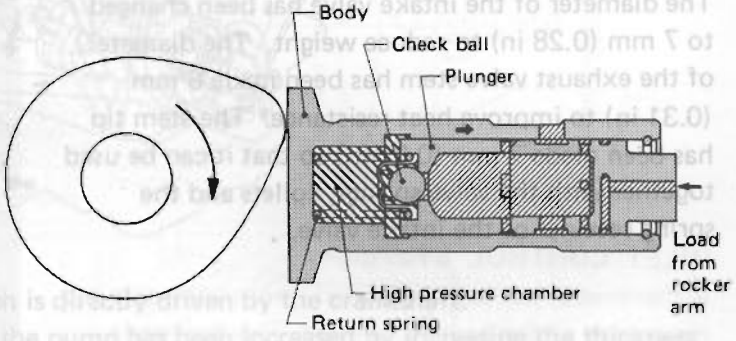
a. Before the cam robe is lifted

The plunger is pushed up by the return spring, and the valve clearance is zero. At this time, the high pressure chamber is filled with oil.



b. When the cam robe is lifted

The load from the valve rocker arm is applied to the plunger and the oil pressure in the high pressure chamber is increased but the plunger keeps pushing up the valve rocker arm because the check ball closes the oil passage. At this time, a little oil leaks from the clearance between the plunger and body. The plunger moves down slightly due to the leakage. This phenomenon is called "Leak-down".

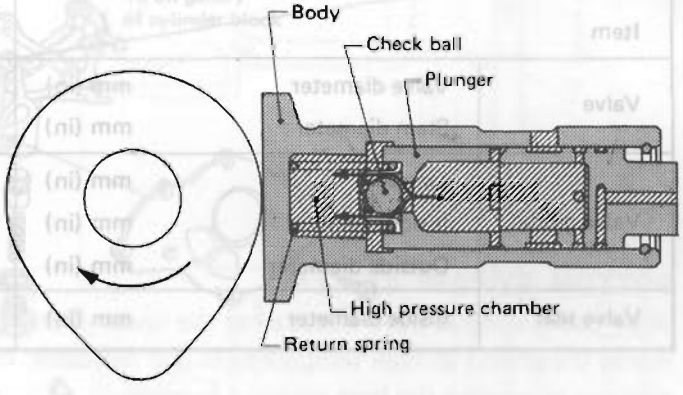


c. After the cam robe is lifted

By the leak-down of the plunger, the valve is seated at its original position before the cam lift becomes zero.

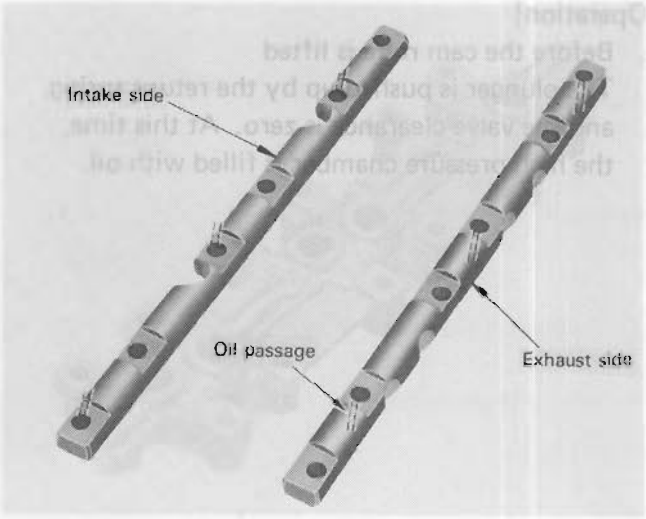
When the load from the valve rocker arm is removed (the valve is seated properly), the plunger is lifted by the amount of the leak-down by the return spring and it returns to its original position.

In order to keep the valve clearance zero, a, b and c are repeated.



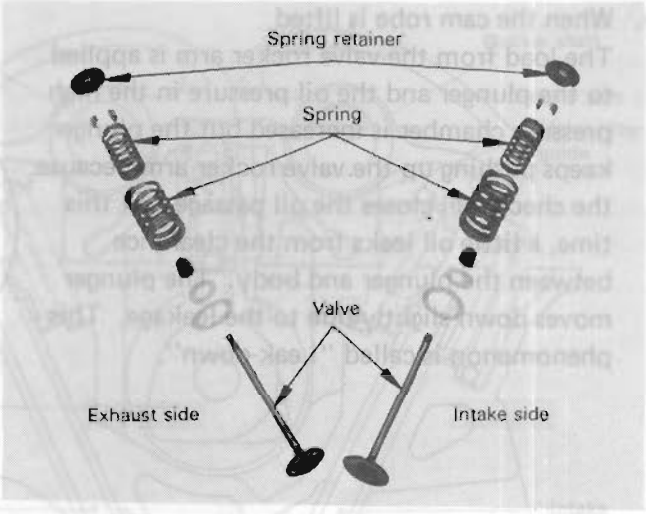
ROCKER SHAFT

The oil passages and oil grooves are opened in or on the rocker shaft. The oil from the valve lifter guide is supplied to the inner parts of the rocker shaft and the tips of the rocker arms.
The rocker shaft for the intake side is different from the part for the exhaust side.



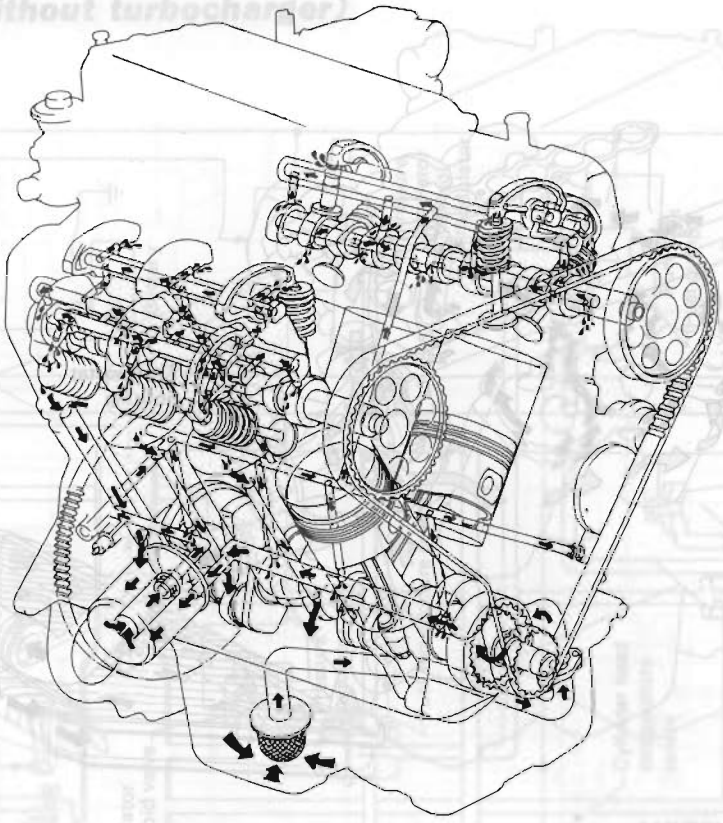
VALVE COMPONENTS PARTS

The diameter of the intake valve has been changed to 7 mm (0.28 in) to reduce weight. The diameter of the exhaust valve stem has been made 8 mm (0.31 in) to improve heat resistance. The stem tip has been made 7 mm (0.28 in) so that it can be used together with the valve springs, collets and the spring retainer of the intake valve.



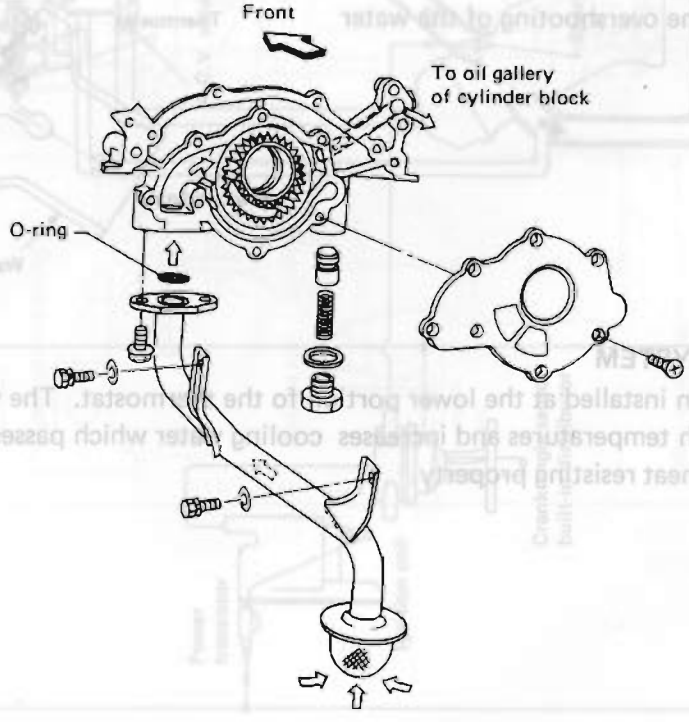
Item			Intake	Exhaust
Valve	Valve diameter	mm (in)	42 (1.65)	35 (1.38)
	Stem diameter	mm (in)	7 (0.28)	8 (0.31) [7 (0.28) at top]
Valve guide	Length	mm (in)	58.8 (2.315)	63.6 (2.504)
	Inside diameter	mm (in)	7 (0.28)	8 (0.31)
	Outside diameter	mm (in)	11 (0.43)	12 (0.47)
Valve seat	Inside diameter	mm (in)	38 (1.50)	30 (1.18)

ENGINE LUBRICATION SYSTEM

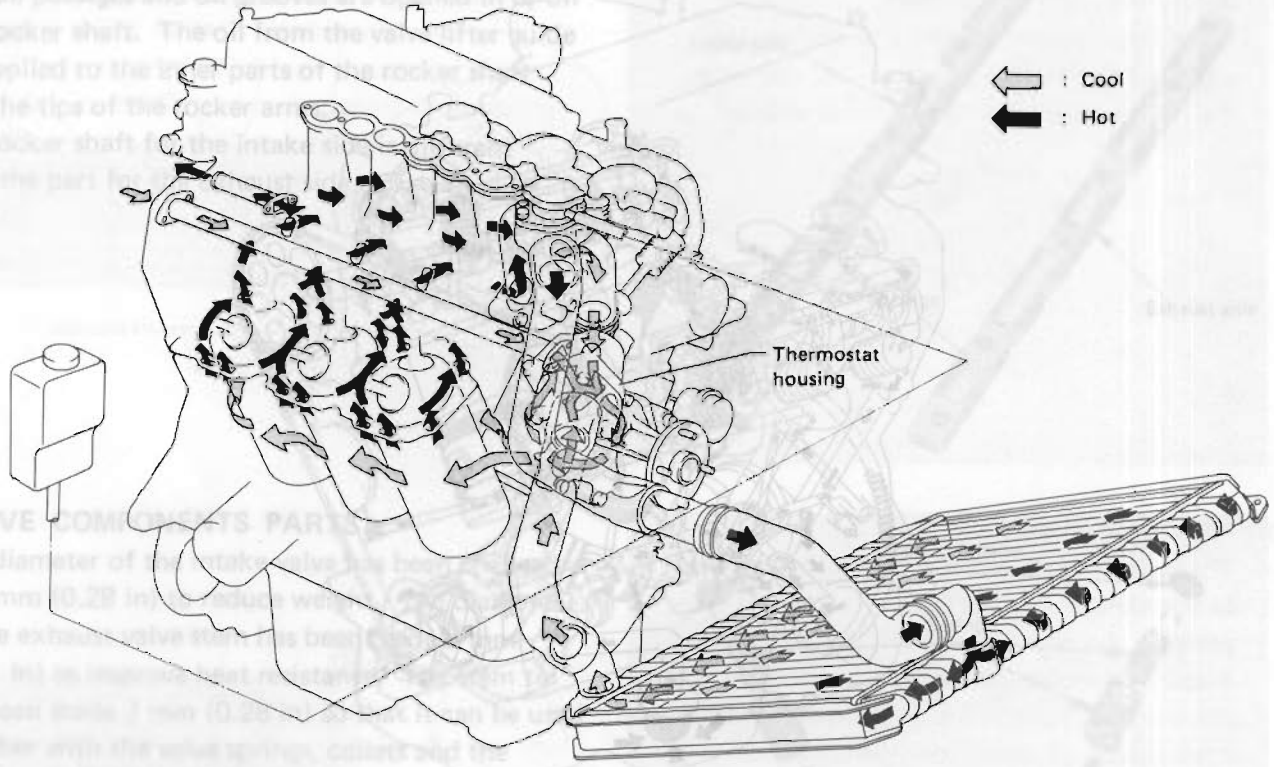


OIL PUMP

An inner gear type oil pump has been adopted which is directly driven by the crankshaft.
In VG30ET engines, the amount of discharge from the pump has been increased by increasing the thickness of the pump gear in order to lubricate the turbocharger.

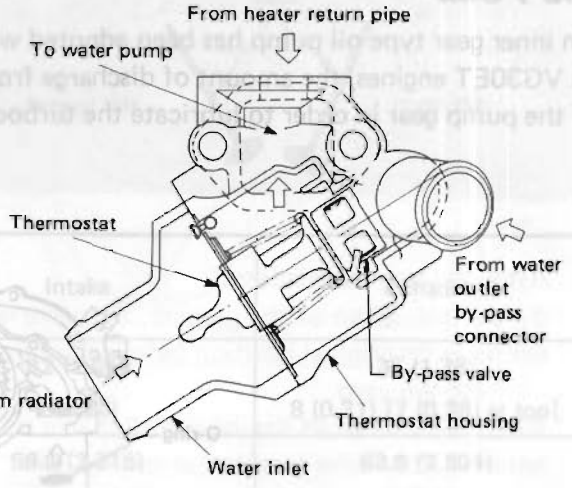


ENGINE COOLING SYSTEM



INLET CONTROL SYSTEM

A thermostat has been provided on the inlet side of the engine of the coolant passage. This has made accurate control of the water temperature possible by decreasing the "hunting" of the water temperature. Also performance against water leakage has been improved by restraining the overshooting of the water pressure.

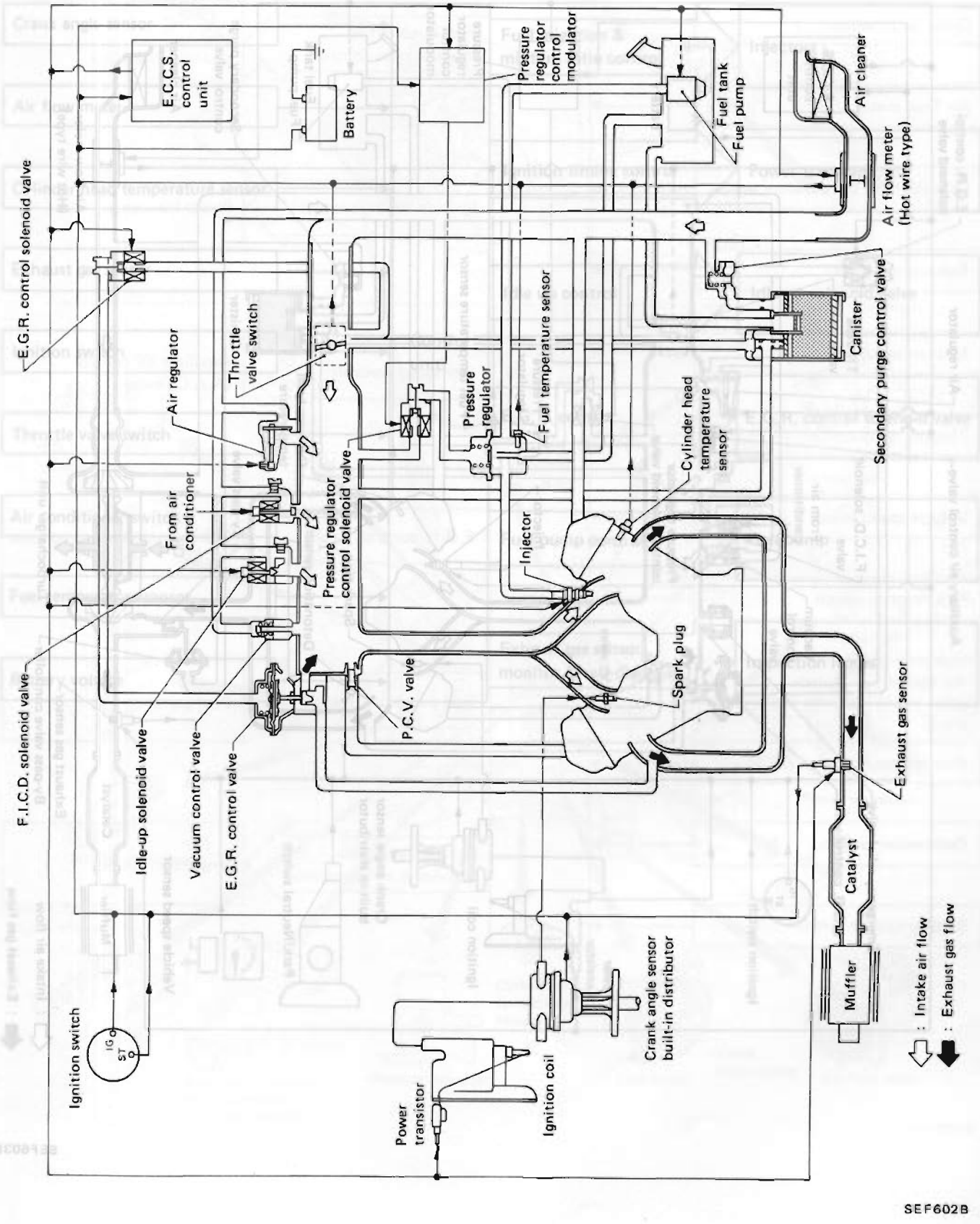


BOTTOM BY-PASS SYSTEM

A by-pass valve has been installed at the lower portion fo the thermostat. The valve closes the by-pass passage inside the engine at high temperatures and increases cooling water which passes through the radiator, thereby increasing the heat resisting property.

E.C.C.S. DIAGRAM

VG30E ENGINE (Without turbocharger)



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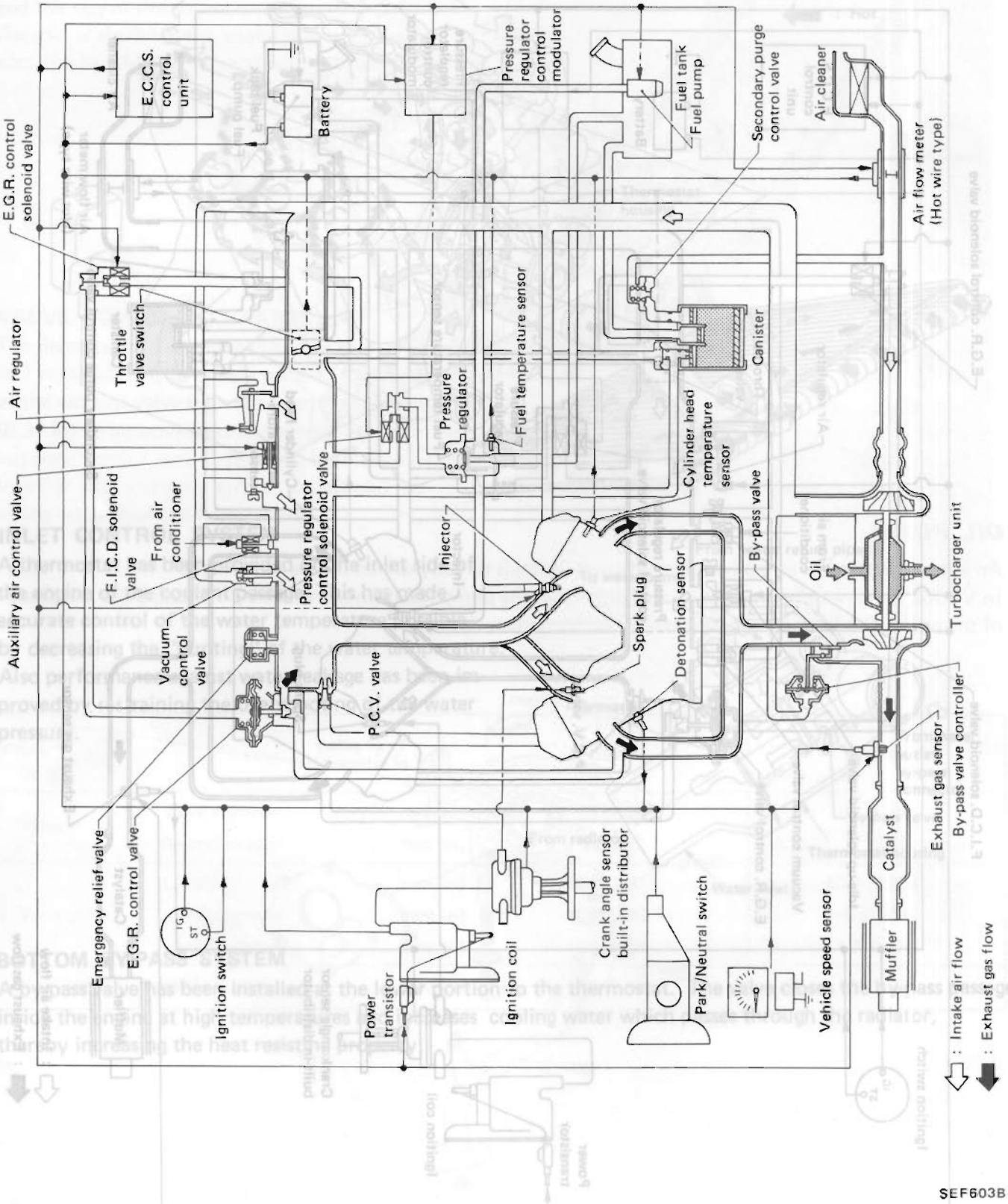
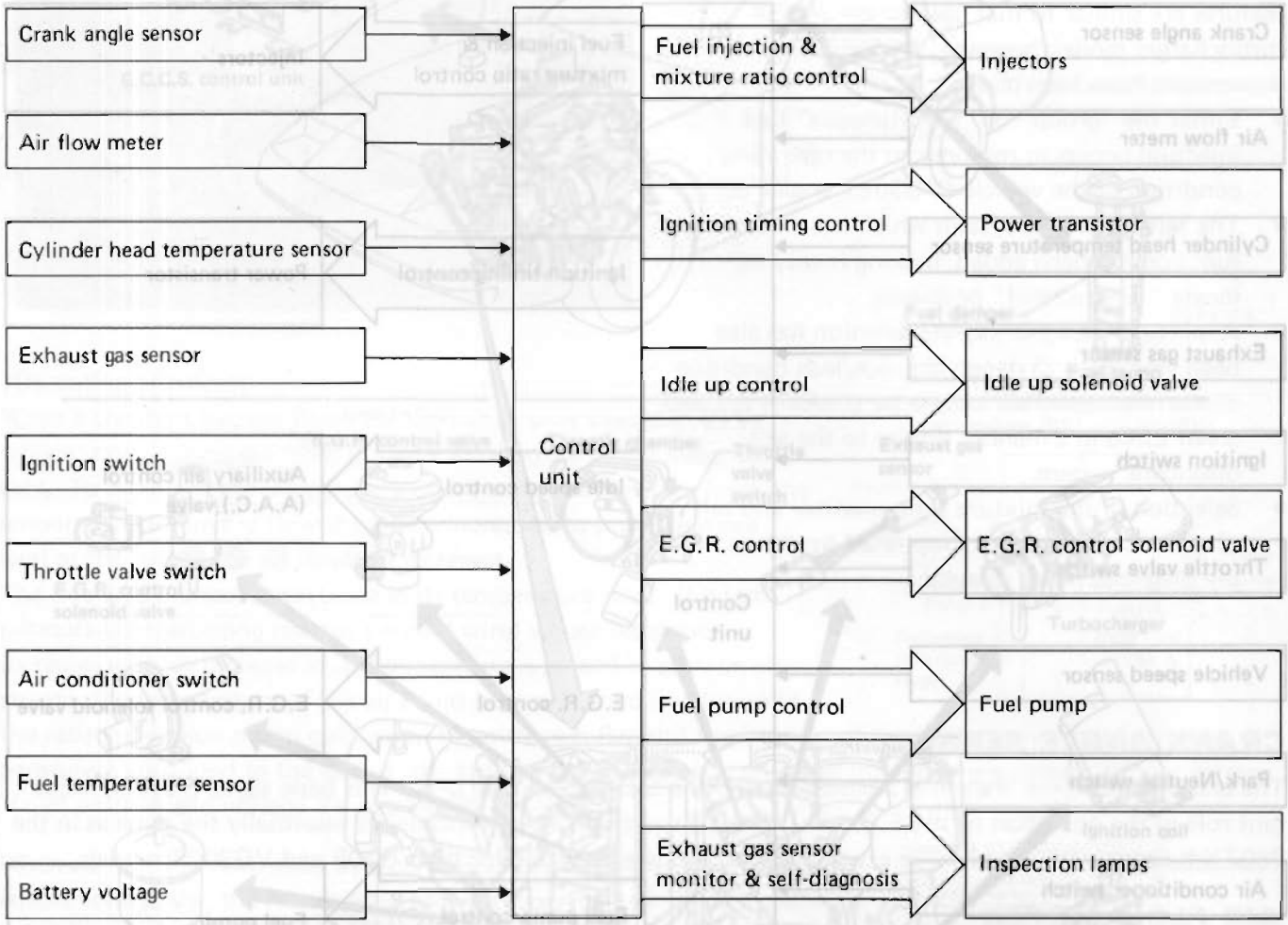
VG30ET ENGINE (With turbocharger)

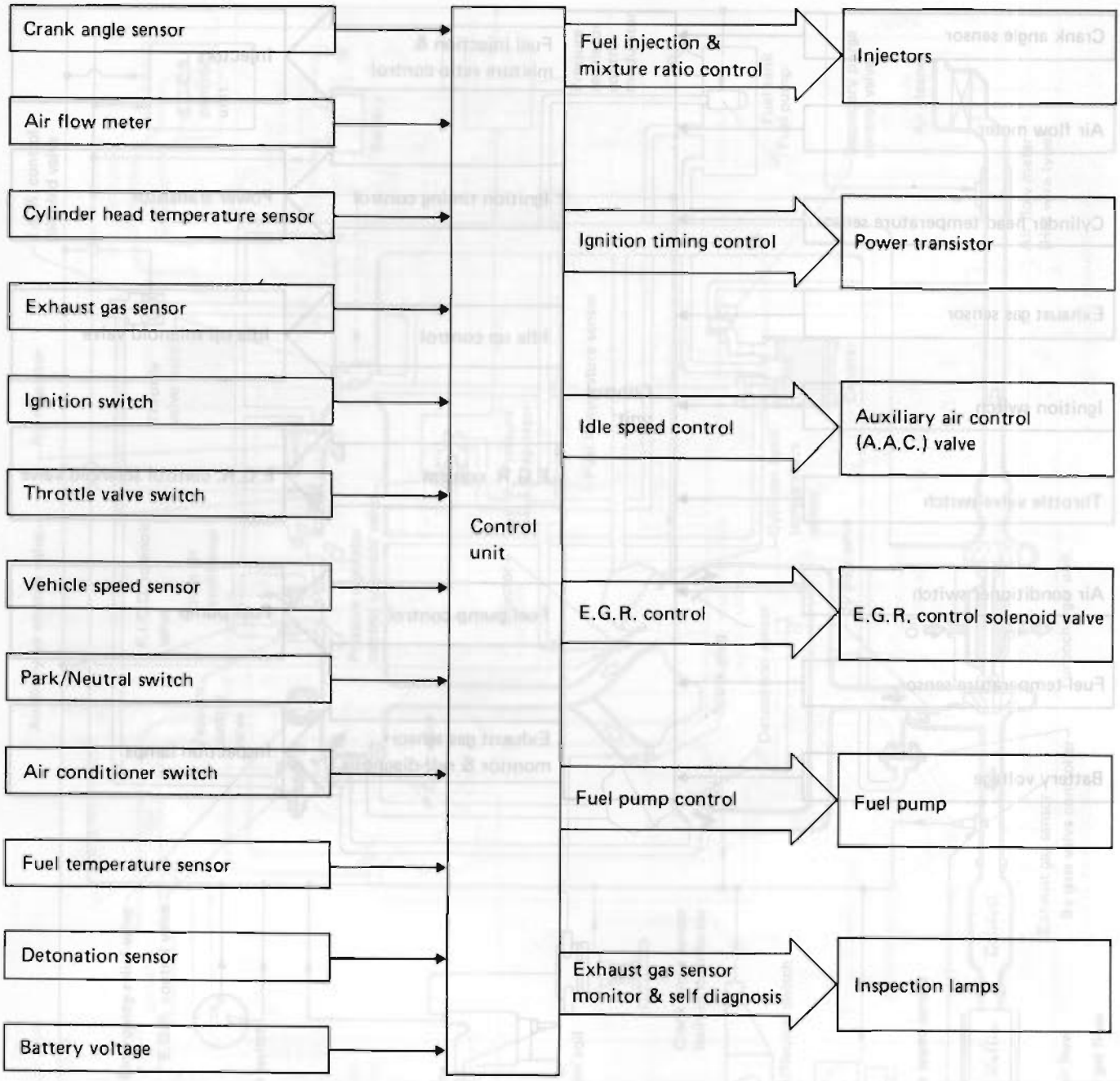


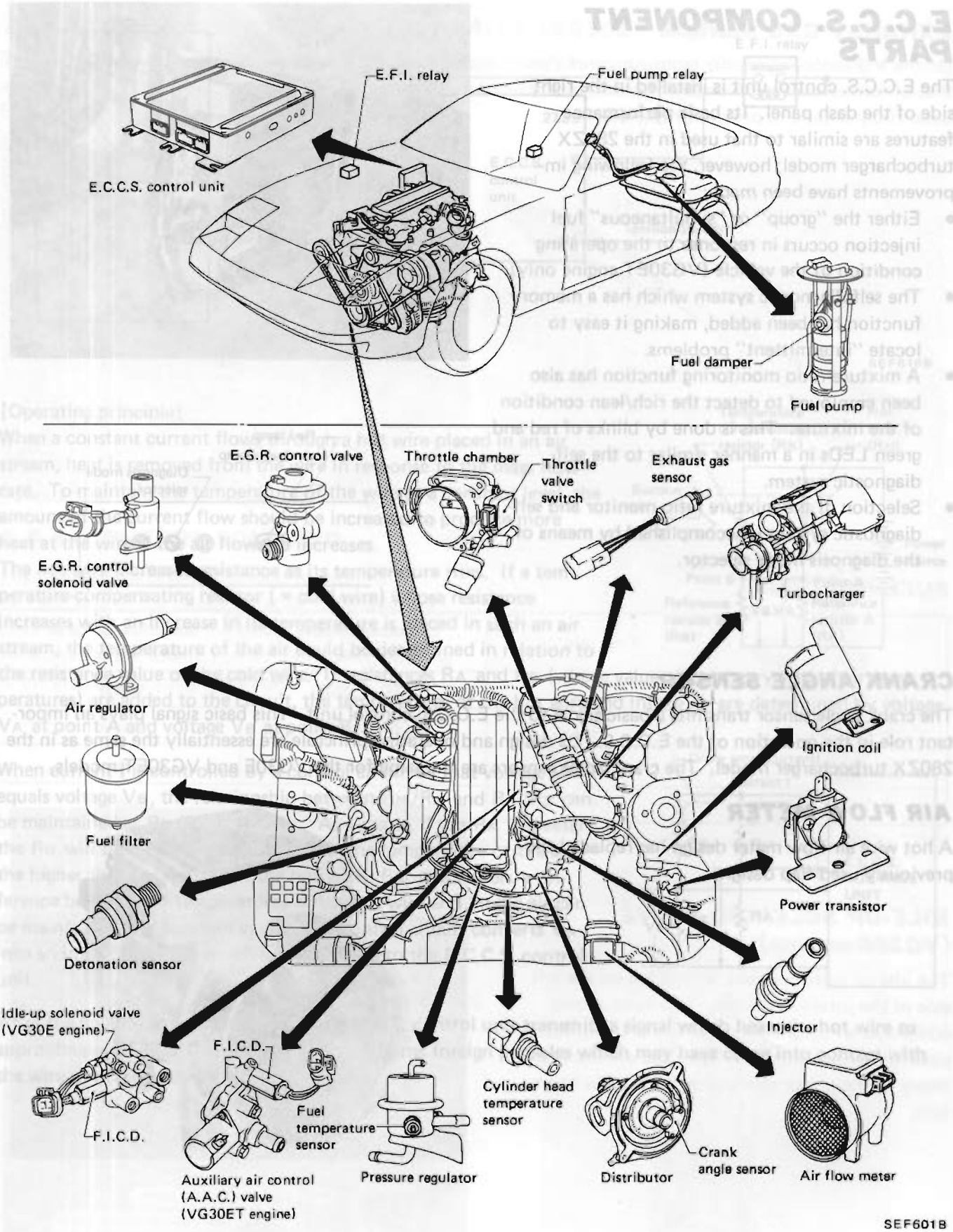
E.C.C.S. CHART

VG30E ENGINE (Without turbocharger)



VG30ET ENGINE (With turbocharger)

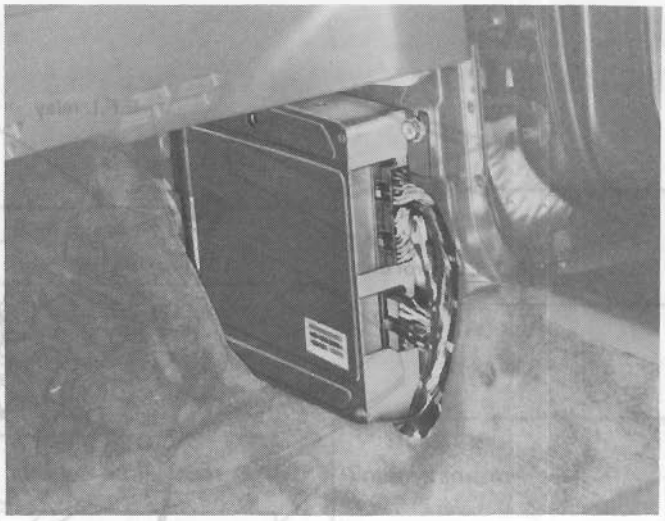


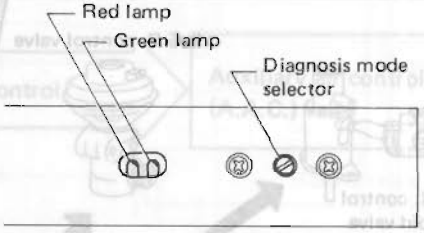

E.F.I. relay
Fuel pump relay
E.C.C.S. control unit
Fuel damper
Fuel pump
E.G.R. control valve
Throttle chamber
Throttle valve switch
Exhaust gas sensor
E.G.R. control solenoid valve
Turbocharger
Air regulator
Ignition coil
Fuel filter
Power transistor
Detonation sensor
Injector
Idle-up solenoid valve (VG30E engine)
F.I.C.D.
Cylinder head temperature sensor
F.I.C.D.
Fuel temperature sensor
Crank angle sensor
Auxiliary air control (A.A.C.) valve (VG30ET engine)
Pressure regulator
Distributor
Air flow meter
SEF601B

E.C.C.S. COMPONENT PARTS

The E.C.C.S. control unit is installed in the right side of the dash panel. Its basic performance features are similar to that used in the 280ZX turbocharger model; however, the following improvements have been made:

- Either the "group" or "simultaneous" fuel injection occurs in response to the operating condition of the vehicle (VG30ET engine only).
- 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.



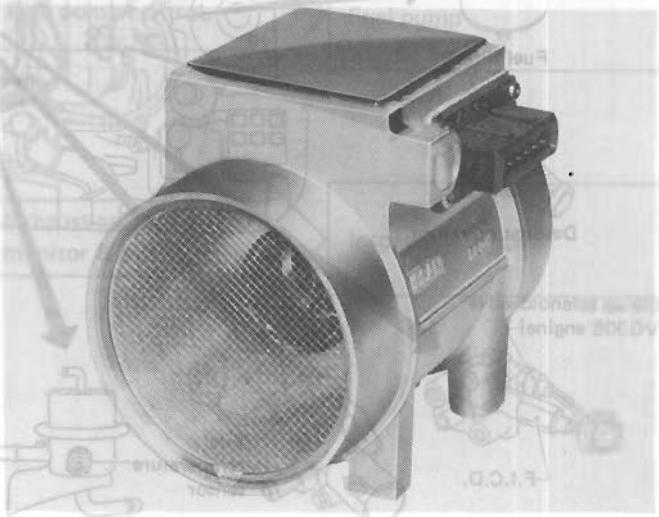


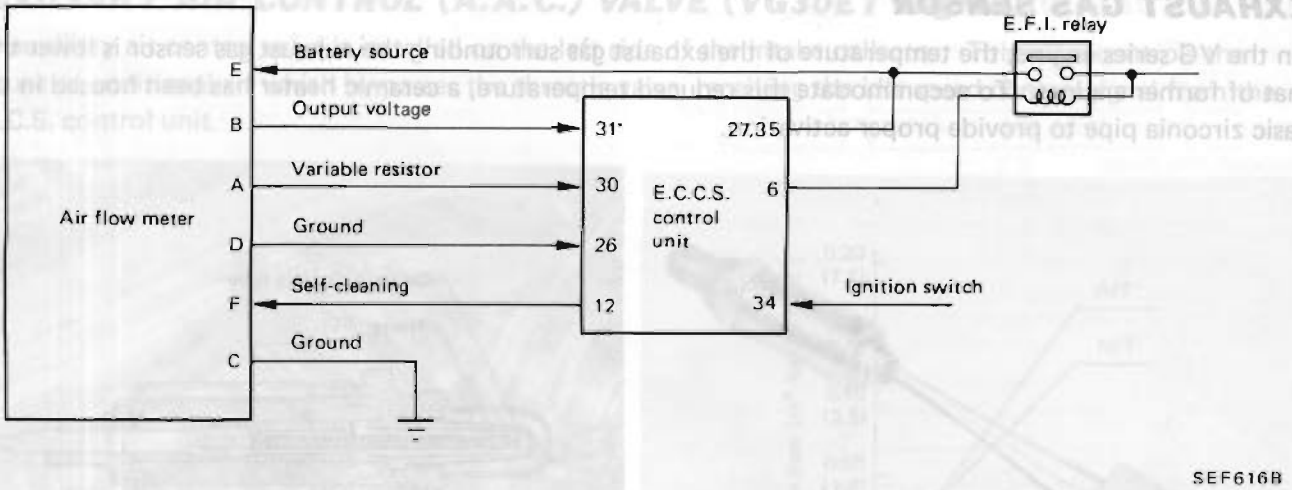
CRANK ANGLE SENSOR

The crank angle sensor transmits a basic signal to the E.C.C.S. control unit. This basic signal plays an important role in the operation of the E.C.C.S. Its design and operating principle are essentially the same as in the 280ZX turbocharger model. The crank angle sensors are the same for the VG30E and VG30ET models.

AIR FLOW METER

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

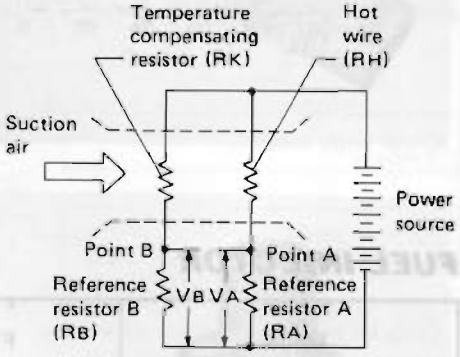




SEF616B

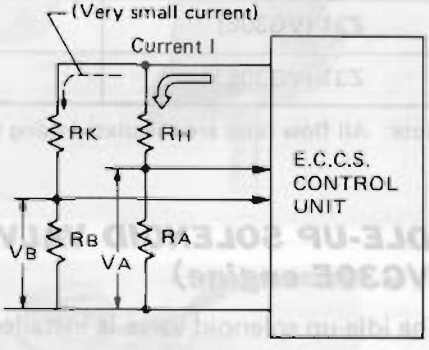
[Operating principle]

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.

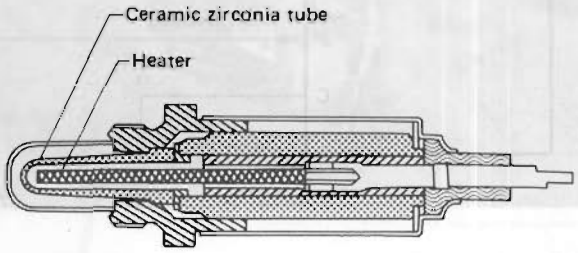
When current I is controlled by a control circuit so that voltage V_A equals voltage V_B, the relationship between R_H/R_A and R_K/R_B can be maintained as $R_H/R_A = R_K/R_B$. As a result, if the R_K is greater, the R_H will be greater. Also, the higher the temperature of the air, the higher the temperature 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.



After the engine has been stopped, the E.C.C.S. control unit transmits a signal which heats the hot wire to approximately 1,000°C (1,832°F) and thus burns foreign particles which may have come into contact with the wire during operation.

EXHAUST GAS SENSOR

On the VG series engine, the temperature of the exhaust gas surrounding the exhaust gas sensor is lower than that of former engines. To accommodate this reduced temperature, a ceramic heater has been housed in the basic zirconia pipe to provide proper activation.



SEF622B

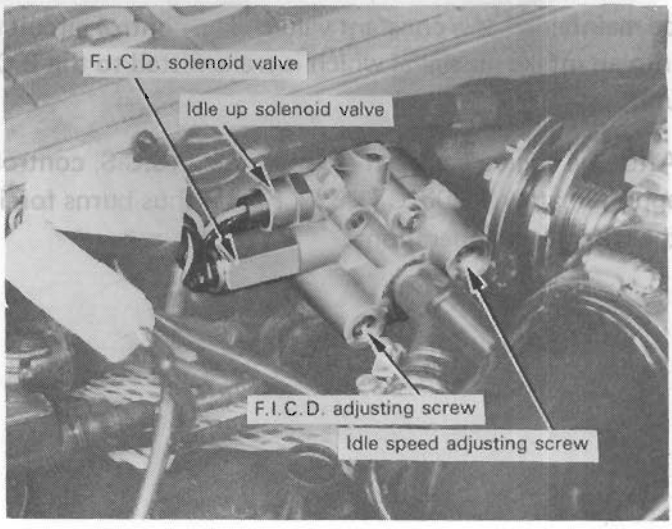
FUEL INJECTOR

Model	Flow rate	Lift of needle valve mm (in)	Identification color (Connector color)
S130 (L28E)	1.0	0.088 (0.0035)	Green
S130 (L28ET)	1.4	0.088 (0.0035)	Brown
Z31 (VG30E)	1.0	0.060 (0.0024)	Beige
Z31 (VG30ET)	1.4	0.088 (0.0035)	Brown

Note: All flow rates are calculated using the L28E engine's fuel injector (S130 series model) at 1.0 as reference.

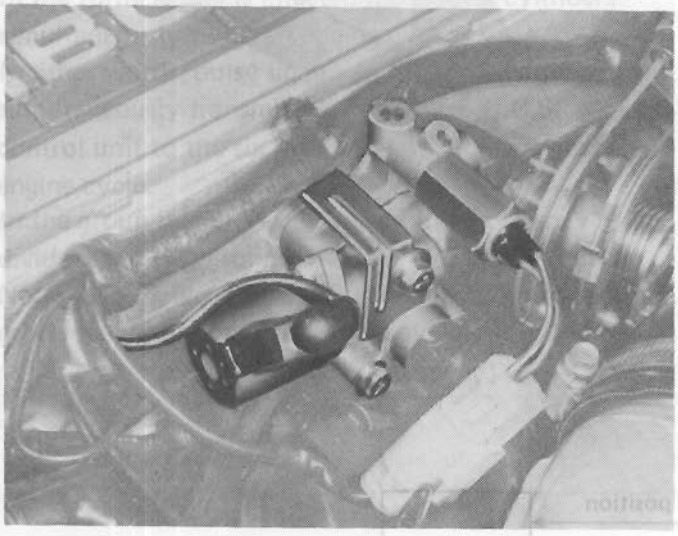
IDLE-UP SOLENOID VALVE (VG30E engine)

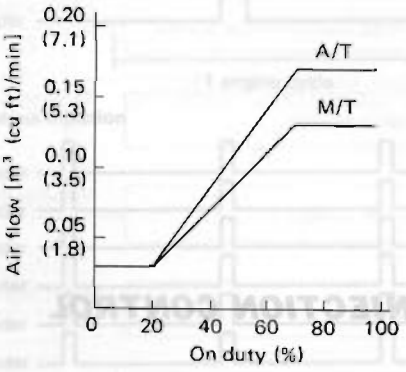
The idle-up solenoid valve is installed on the left side of the intake corrector. This valve allows additional air to flow into the intake manifold, by-passing the throttle valve, when the electric load is heavy or the power steering oil pump is in operation.



AUXILIARY AIR CONTROL (A.A.C.) VALVE (VG30ET engine)

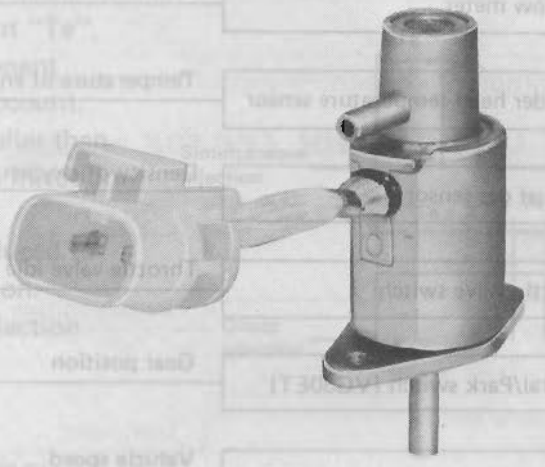
The auxiliary air control valve is installed on the left side of the intake collector. This valve controls the amount of additional air which by-passes the throttle valve, receiving the idle speed control signal from the E.C.C.S. control unit.





E.G.R. CONTROL SOLENOID

The E.G.R. control solenoid valve is installed on the right side of the intake collector. The solenoid valve cuts and connects the intake manifold vacuum signal for the E.G.R. control valve corresponding to the engine operating conditions.

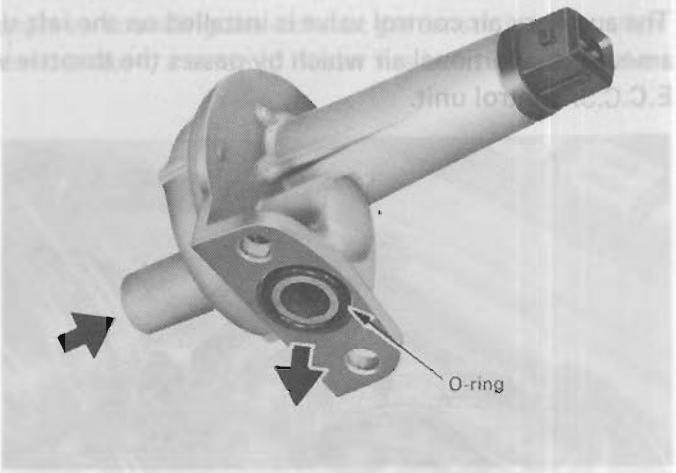


FUEL PUMP

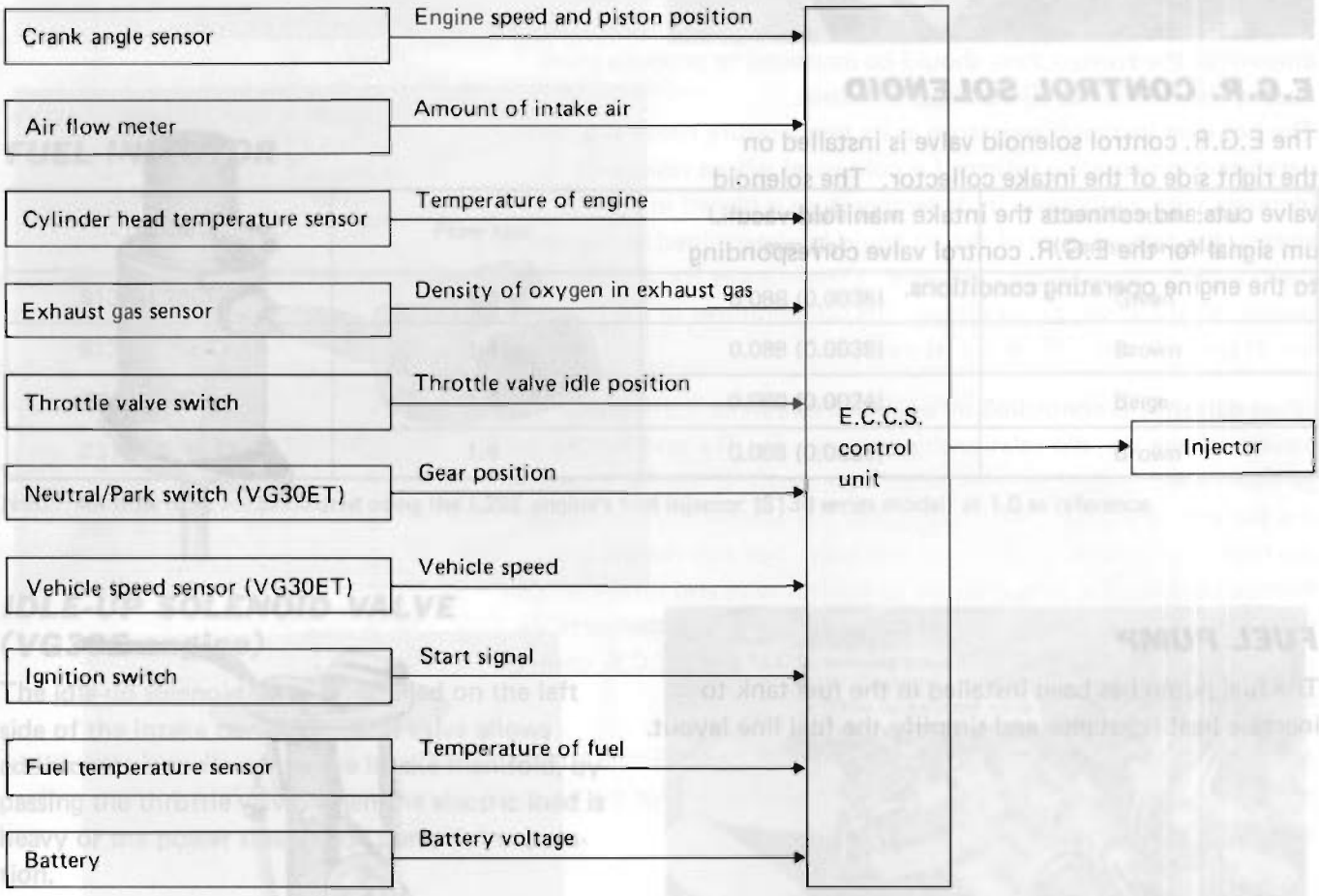
The fuel pump has been installed in the fuel tank to increase heat resistance and simplify the fuel line layout.

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 and not through the hose.



FUEL INJECTION CONTROL



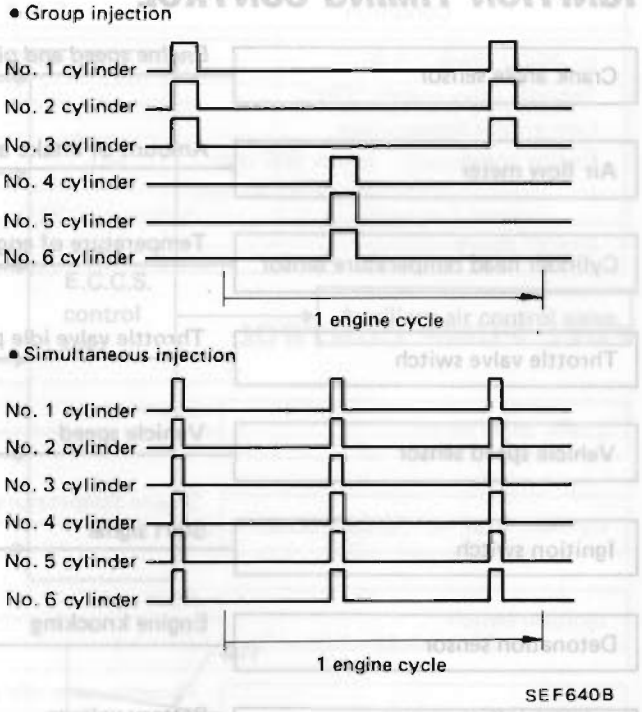
SIMULTANEOUS INJECTION AND GROUP INJECTION (VG30ET)

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

In the former, fuel is injected into all six 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 six injectors two times for each engine cycle.

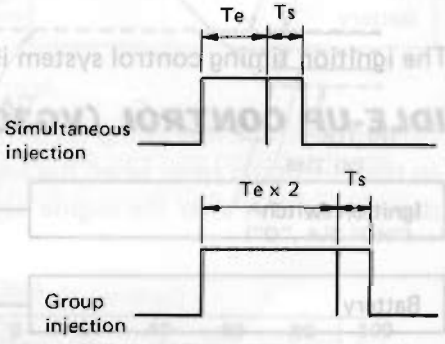
In the group injection system, six injectors are divided into two groups – No. 1, No. 2, No. 3 and No. 4 , No. 5, No. 6. And fuel is injected into each group separately once an engine cycle.



Injection pulse duration "Ti" is the sum of active component "Te", when the fuel is actually injected, and compensation component "Ts", when a delay in the injector operation is taken into account.

In the group injection mode, the rate of "Ts" to "Ti" is smaller than in the simultaneous injection mode. This indicates that fuel injection is controlled more accurately in the group injection mode.

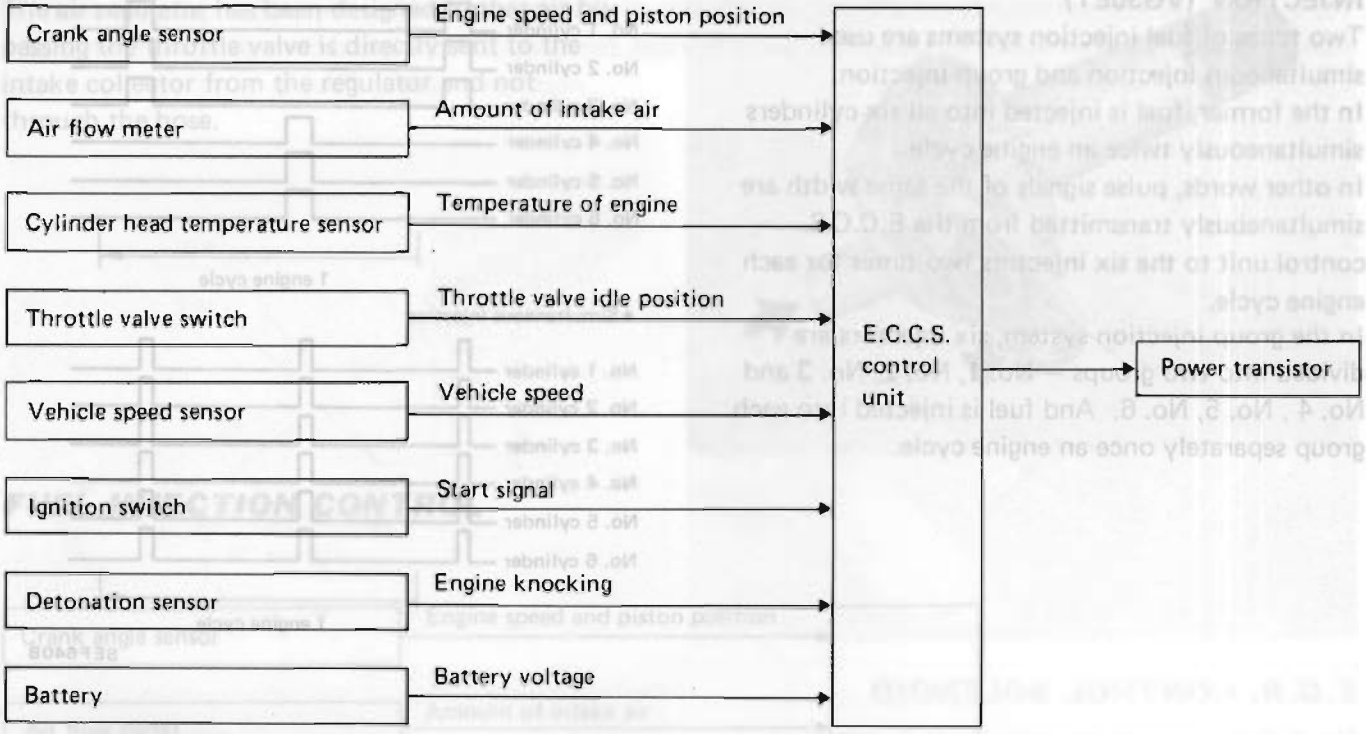
In addition, the number of times the injector operates is reduced to one-half, thus, there is a decrease in noise during fuel injection.



When any of the following conditions are met, the group injection mode is shifted to the simultaneous injection mode.

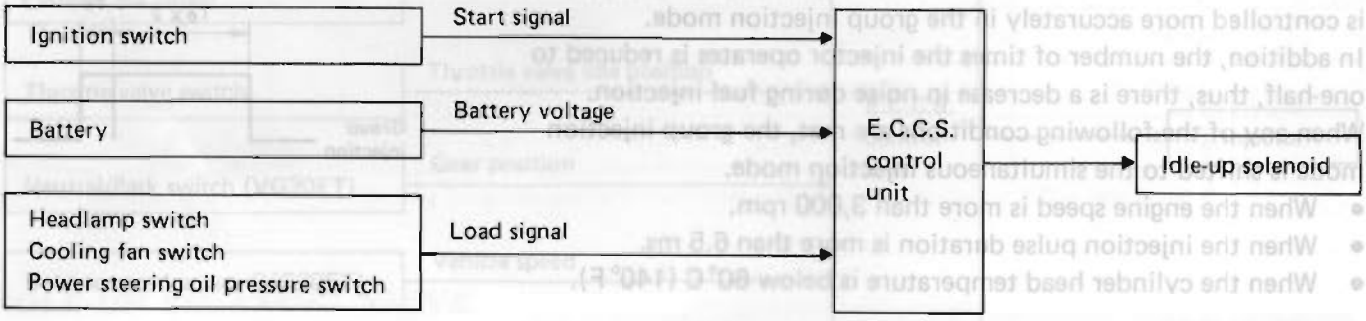
- When the engine speed is more than 3,000 rpm.
- When the injection pulse duration is more than 6.5 ms.
- When the cylinder head temperature is below 60°C (140°F).

IGNITION TIMING CONTROL



The ignition timing control system is the same as that of the 280ZX.

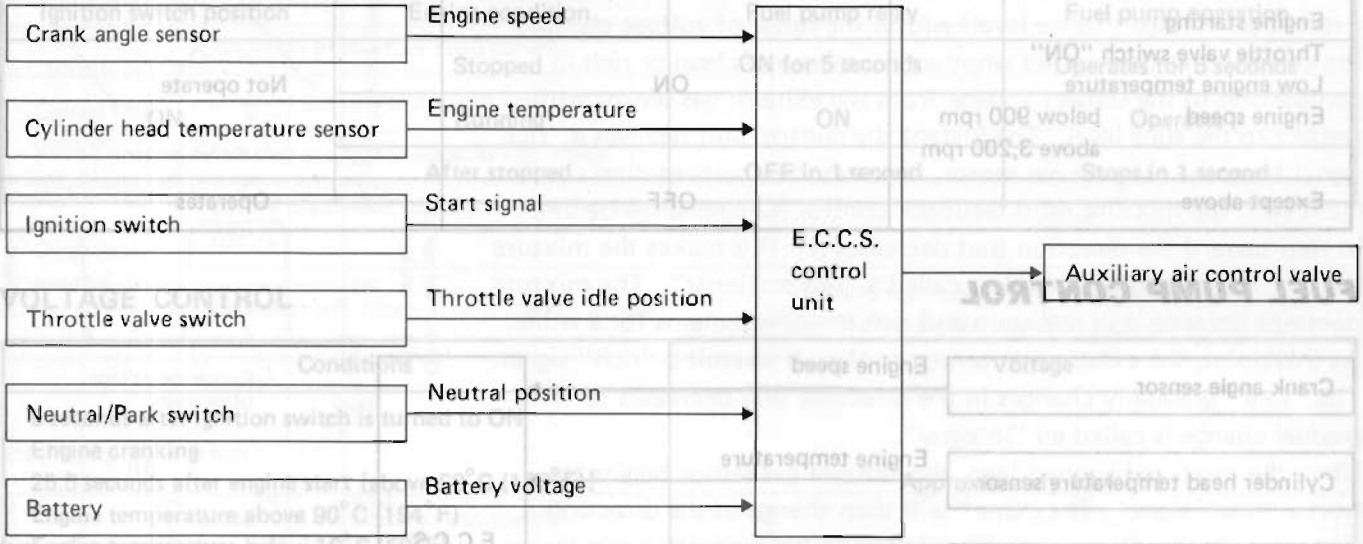
IDLE-UP CONTROL (VG30E engine)



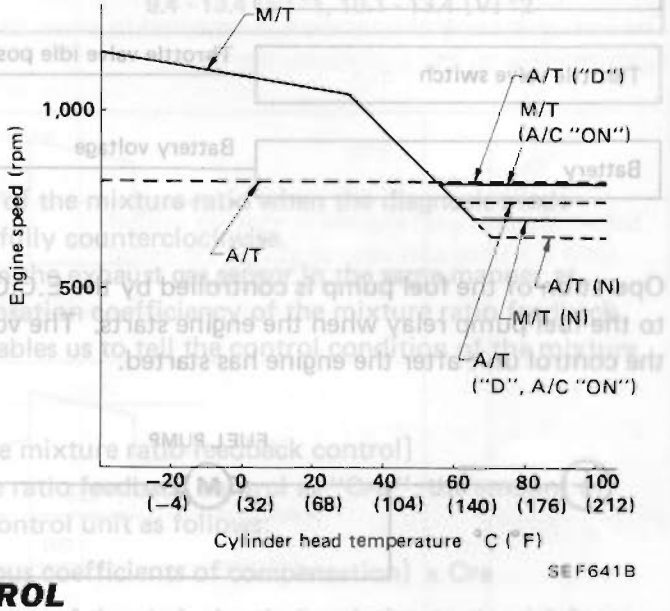
The idle-up solenoid valve actuates to stabilize the engine idle condition when any of the following conditions are met.

Condition	Idle-up Solenoid operation
During engine start 20 seconds after engine start Battery voltage is below 12V Headlamp switch ON Cooling fan switch ON Power steering oil pressure switch	ON
Except above	OFF

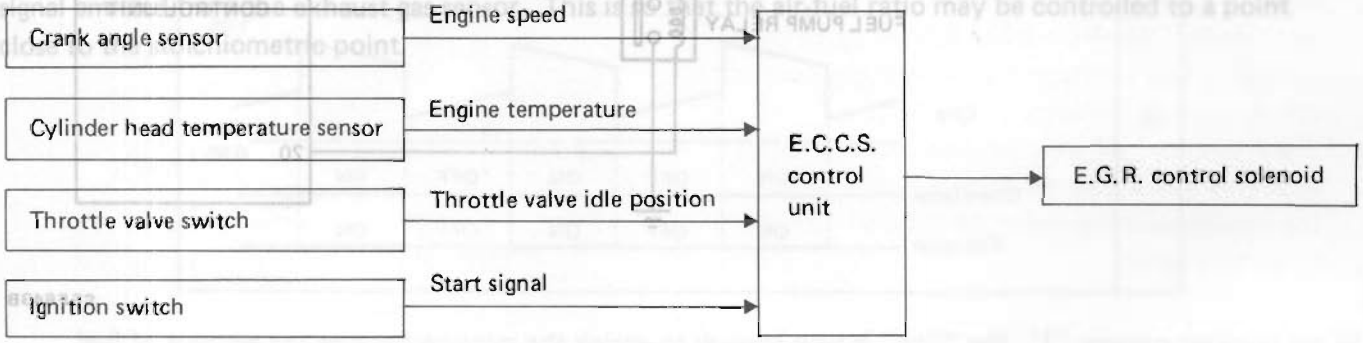
IDLE SPEED CONTROL (VG30ET engine)



The idle speed is controlled by the E.C.C.S. control unit, corresponding to the engine operating conditions. The E.C.C.S. control unit senses the engine condition and determines the best idle speed at each cylinder head temperature and gear position. The control unit then sends an electronic signal corresponding to the difference between the best idle speed and the actual idle speed to the A.A.C. valve.

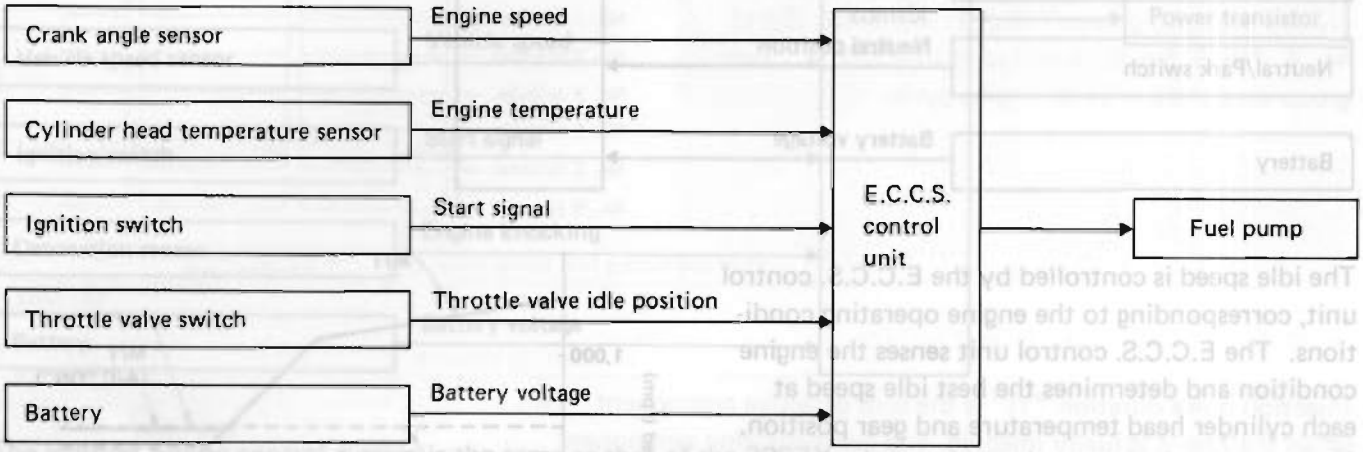


EXHAUST GAS RECIRCULATION CONTROL

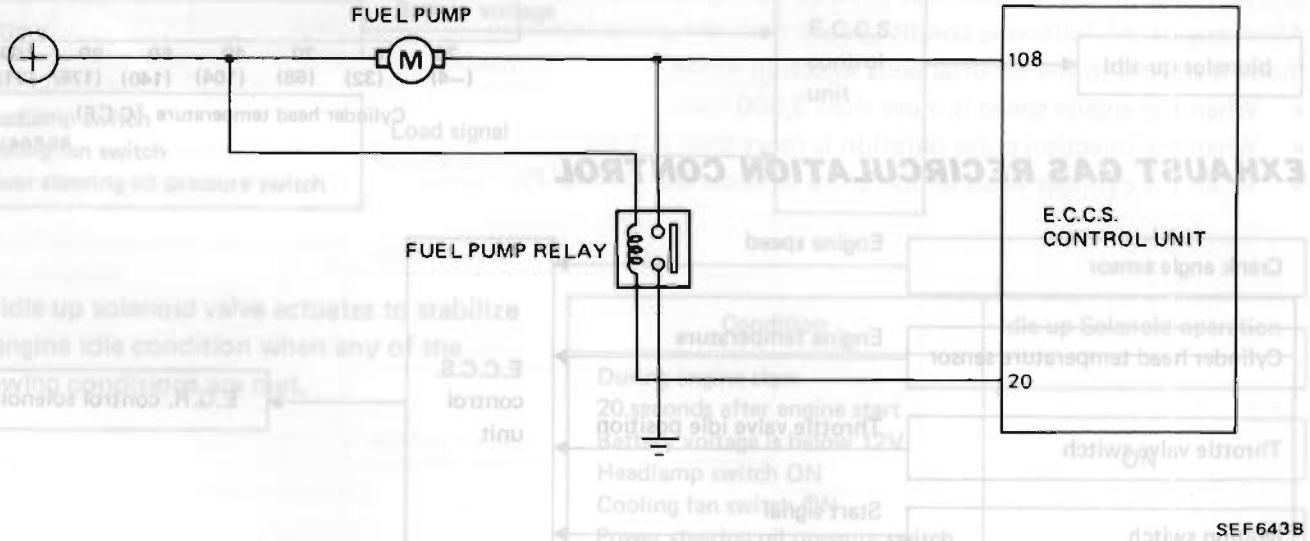


Condition	E.G.R. control solenoid	E.G.R. system
Engine starting Throttle valve switch "ON" Low engine temperature Engine speed below 900 rpm above 3,200 rpm	ON	Not operate
Except above	OFF	Operates

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.



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	9.4 - 13.4 [V] *1, 10.1 - 13.4 [V] *2

*1: VG30E engine *2: VG30ET engine

MIXTURE RATIO MONITOR

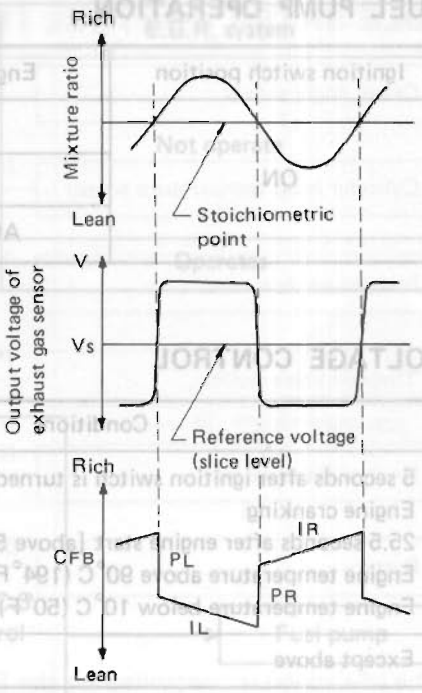
The mixture ratio monitor checks the control condition of the mixture ratio when the diagnosis mode selector (located on the E.C.C.S. control unit) is turned fully counterclockwise.
The green lamp monitors an output voltage emitted from the exhaust gas sensor in the same manner as occurred previously. 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.

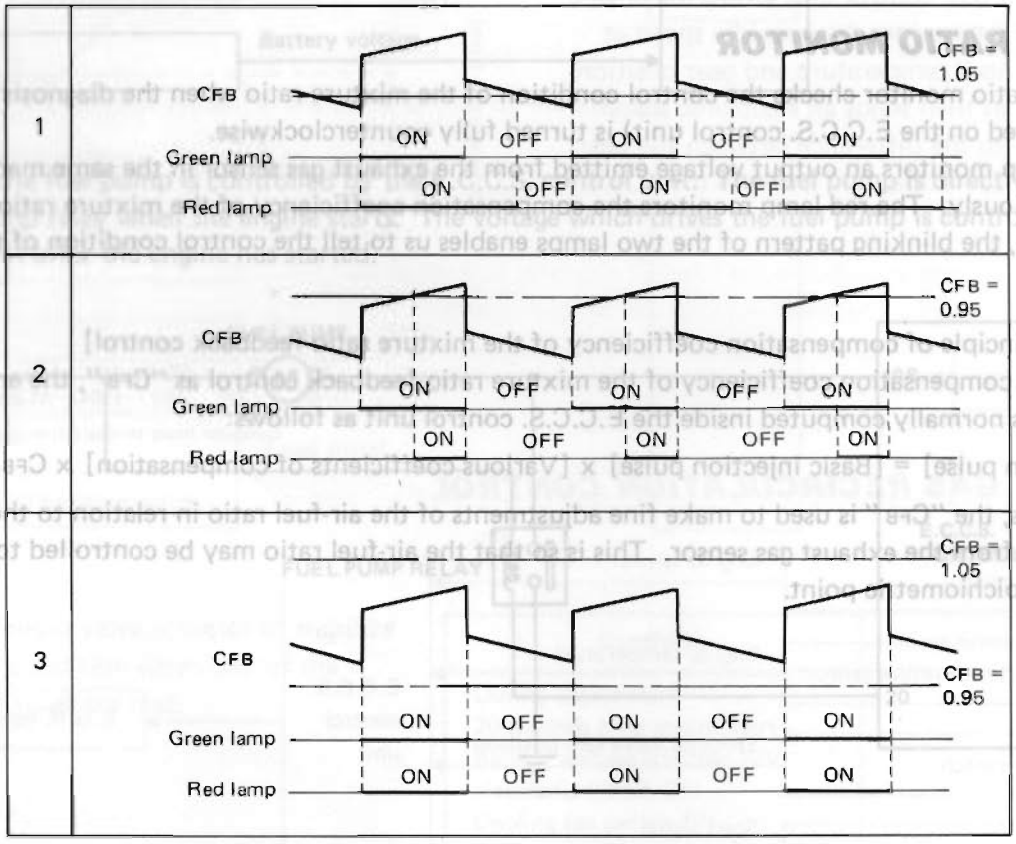
[Operating principle of compensation coefficiency of the mixture ratio feedback control]
Regarding the compensation coefficiency of the mixture ratio feedback control as "C_{FB}", the amount of fuel injected is normally computed inside the E.C.C.S. control unit as follows:

[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.

The output voltage from the exhaust gas sensor has a characteristic that abruptly changes at or near the stoichiometric point. By setting a reference voltage (= slice level) within the range of voltage changes, the control unit determines whether the mixture is lean or rich in comparison to the output voltage from the exhaust gas sensor with respect to the slice level. The instant the control unit receives a "rich" signal from the exhaust gas sensor, it makes the compensation coefficient with the mixture ratio feedback control (C_{FB}) change by "P_L" in step toward the direction that decreases it. This makes the mixture leaner. This change in "C_{FB}" is called a "proportional". The mixture does not become lean real soon and rich mixture remains for a while. At this point, the exhaust gas sensor continues to emit a "rich" signal. The "C_{FB}" gradually changes in the direction that decreases it. This gradual change is called an "integral".
When the mixture becomes lean, the exhaust gas sensor begins to emit a "lean" signal. The "C_{FB}" will then change in the direction that increases it. This causes the mixture to become rich again (as shown by line "I_R" in the figure).
The lean-rich control operation is repeated in order to keep the mixture 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.

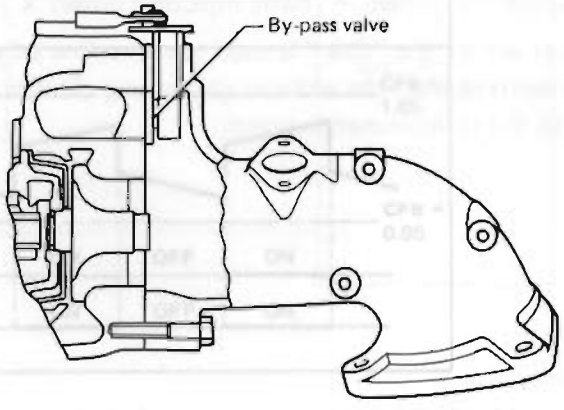
Self-diagnosis code

Blink		Code No.	Malfunctioning area
Red lamp	Green lamp		
•	•	11	Crank angle sensor
•	• •	12	Air flow meter
•	• • •	13	Cylinder head temperature sensor
•	• • • •	14	Car speed sensor (VG30ET only)
• •	•	21	Ignition signal
• •	• •	22	Fuel pump
• •	• • •	23	Idle switch
• •	• • • •	24	Neutral/Park switch (VG30ET only)
• • •	•	31	Air conditioner
• • •	• •	32	Start signal
• • •	• • • •	34	Detonation sensor (VG30ET only)
• • • •	•	41	Fuel temperature sensor
• • • •	• • • •	44	O.K.

TURBOCHARGER

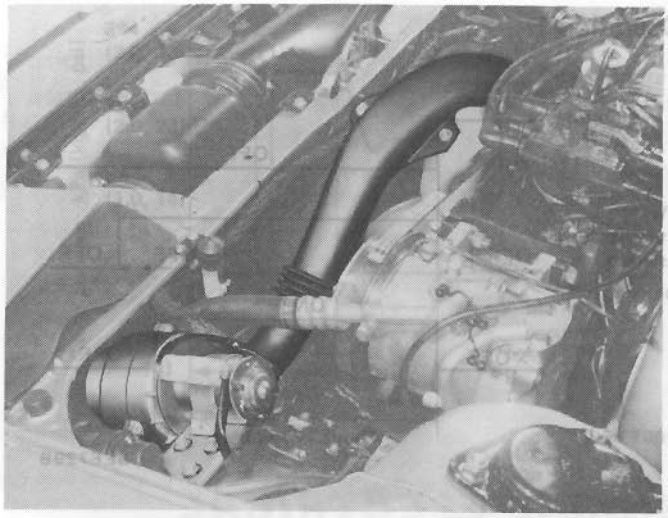
The turbocharger has been improved as follows:

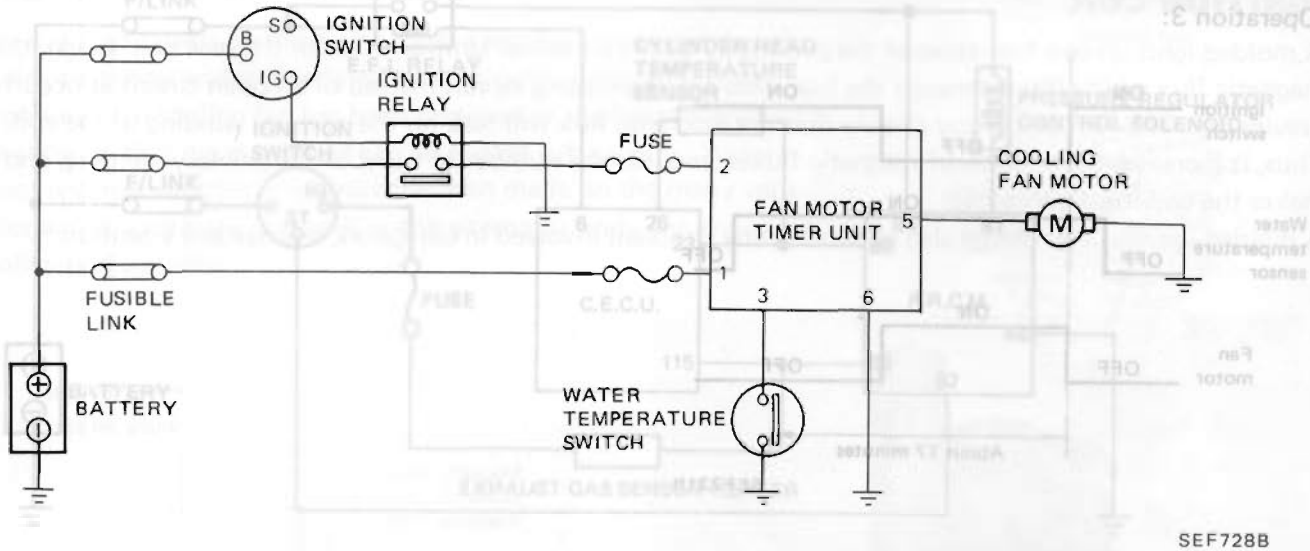
- The bypass valve housing has been unitized with the exhaust outlet to allow for enlargement of the inlet from 54 to 65 mm (2.13 to 2.56 in). This improves the exhaust gas flow and operating efficiency of the turbine.
- The entire turbocharger has been made smaller in size by decreasing the outside diameter of the bypass valve controller from 66 to 49 mm (2.60 to 1.93 in).



INJECTOR COOLING FAN

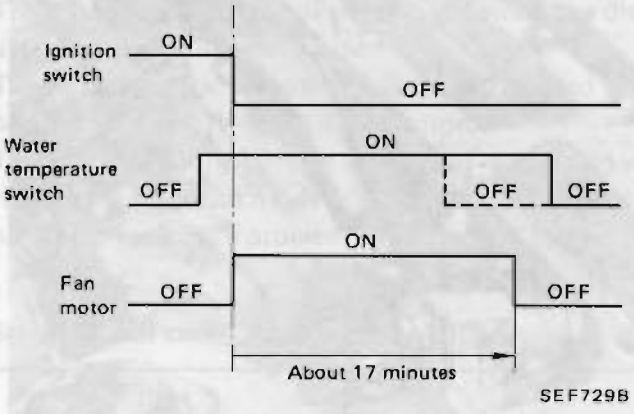
The injector cooling fan operates to cool down the temperature of the fuel in the injector and the fuel gallery when the engine is stopped under high cylinder head temperature condition.



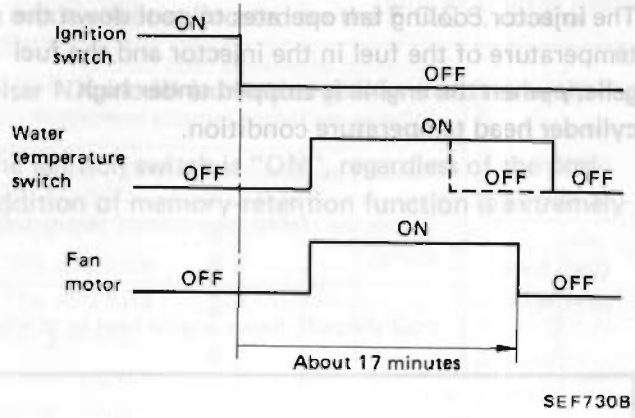


SEF728B

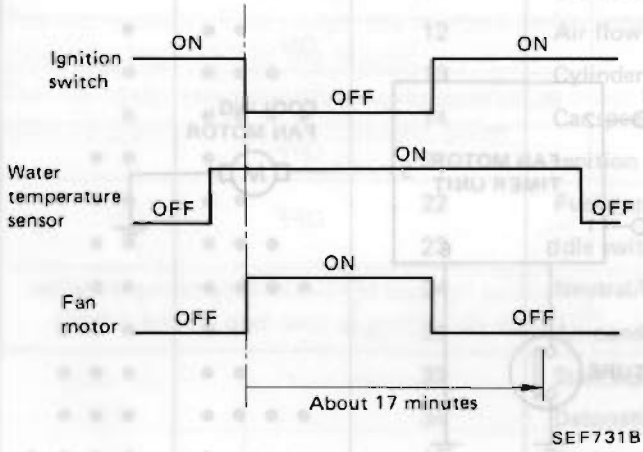
Operation 1:



Operation 2:

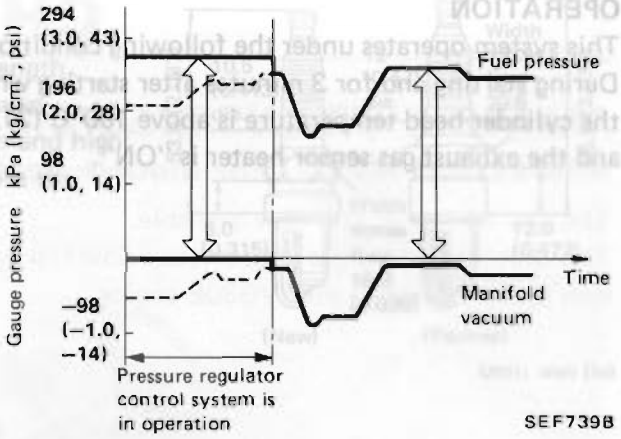


Operation 3:

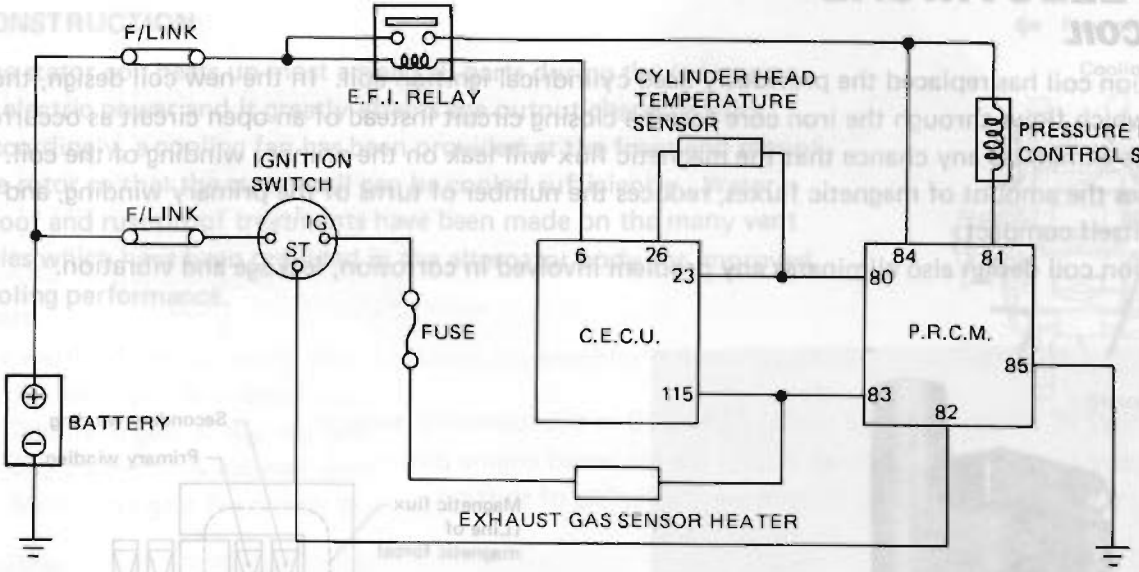


PRESSURE REGULATOR CONTROL

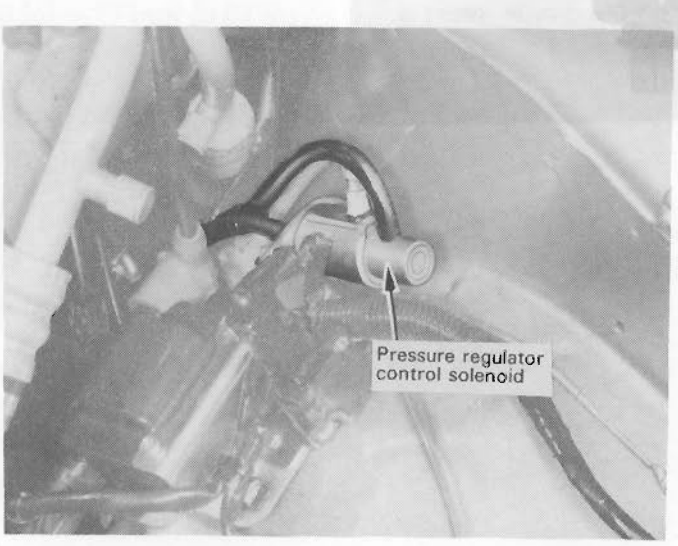
The pressure regulator control has been designed to shut off the intake manifold vacuum produced in the pressure regulator. It also increases the fuel pressure so a hot engine can be easily started.



SEF739B

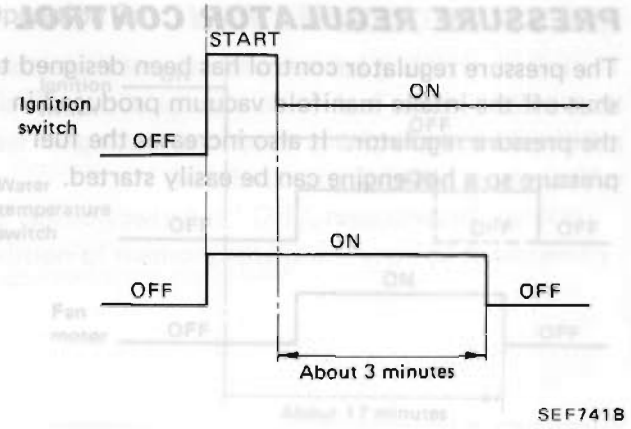


SEF740B



OPERATION

This system operates under the following conditions:
During starting and for 3 minutes after starting when the cylinder head temperature is above 100°C (212°F) and the exhaust gas sensor heater is "ON".

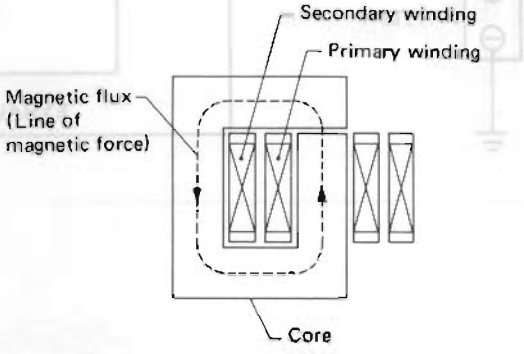


SEF741B

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.

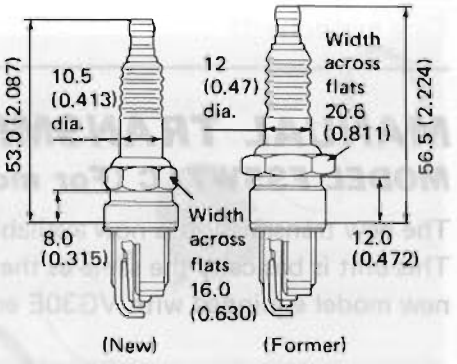


SPARK PLUG

On VG 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 former plug wrench and high tension cable cannot be used as they differ in dimension from the new ones.

Type:

VG30E engine BCPR6ES-11
VG30ET engine BCPR6E-11



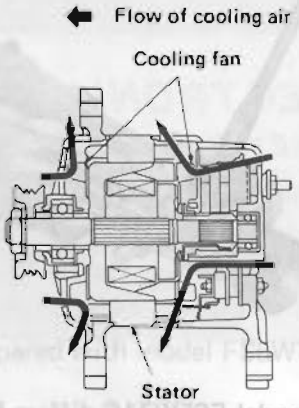
Unit: mm (in)

ALTERNATOR

On VG series engines, a new alternator has been adopted to improve cooling performance and reduce size.

CONSTRUCTION

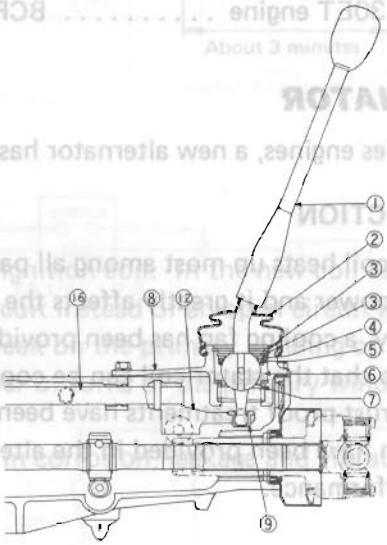
The stator coil heats up most among all parts during the generation of electric power and it greatly affects the output characteristics. Accordingly, a cooling fan has been provided at the front and rear of the rotor so that the stator coil can be cooled sufficiently. Water-proof and rust-proof treatments have been made on the many vent holes which have been provided in the alternator body for improved cooling performance.



MANUAL TRANSMISSION

MODEL FS5W71C (For models equipped with VG30E engine)

The new transmission is now available.
This unit is basically the same as the FS5W71B, but actually some components are redesigned for use with a new model equipped with VG30E engine.



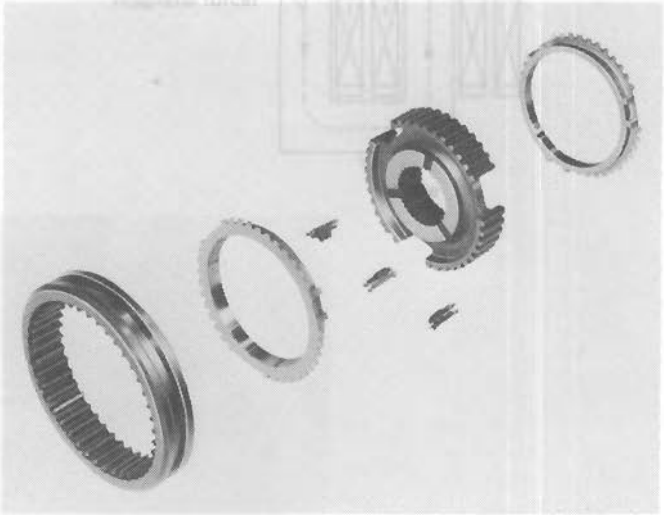
The model FS5W71C differs from the model FS5W71B in the following respects.

- Each component has been strengthen due to the increased engine power.
- Shift control has been redesigned to improve the feeling of shifting.

SYNCHRONIZER

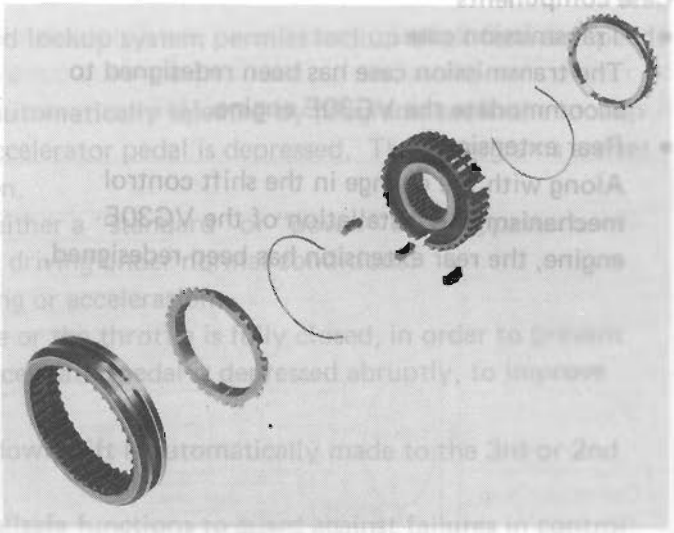
1st & 2nd

- Diameter is bigger than model FS5W71B.
  60 mm (2.36 in) → 67.5 mm (2.657 in)
- Although a Warner type synchronizing mechanism is adopted, a leaf spring type insert is used.



3rd & 4th

The circular clip type spring is used as a spread spring.



SHIFT CONTROL COMPONENTS

- The shift lever has a ball-type pivot supported spring.
- 1st & 2nd shift rod diameter is larger than model FS5W71B.
  14 mm (0.55 in) → 16 mm (0.63 in)

GEARS AND SHAFTS

Gears

The width of the following gears has been increased by 2.4 mm (0.094 in) compared with model FS5W71B.

- 1st main gear & counter gear
- 2nd main gear & counter gear
- 3rd main gear & counter gear
- Main drive gear & counter drive gear

Bearings

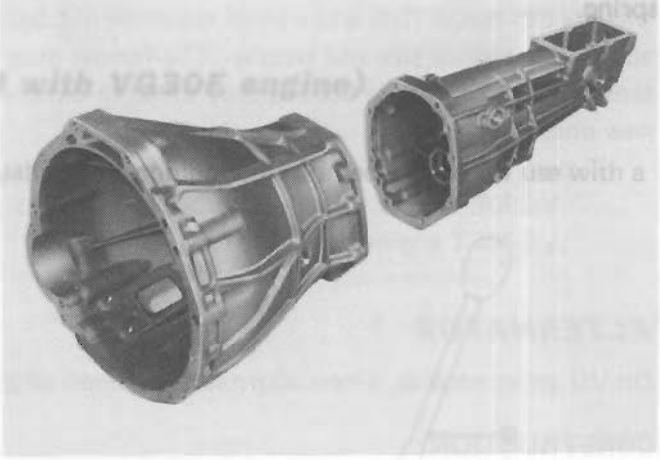
- Main drive bearing and counter rear bearing are stronger than model FS5W71B. The sizes of these are the same as model FS5W71B.
- Counter front bearing is larger than model FS5W71B.
  Diameter: 56 mm (2.20 in) → 62 mm (2.44 in)
  Width: 16 mm (0.63 in) → 17 mm (0.67 in)

Mainshaft

- The length is longer than that of model FS5W71B
  612.5 mm (24.11 in) → 662.5 mm (26.08 in)

Case components

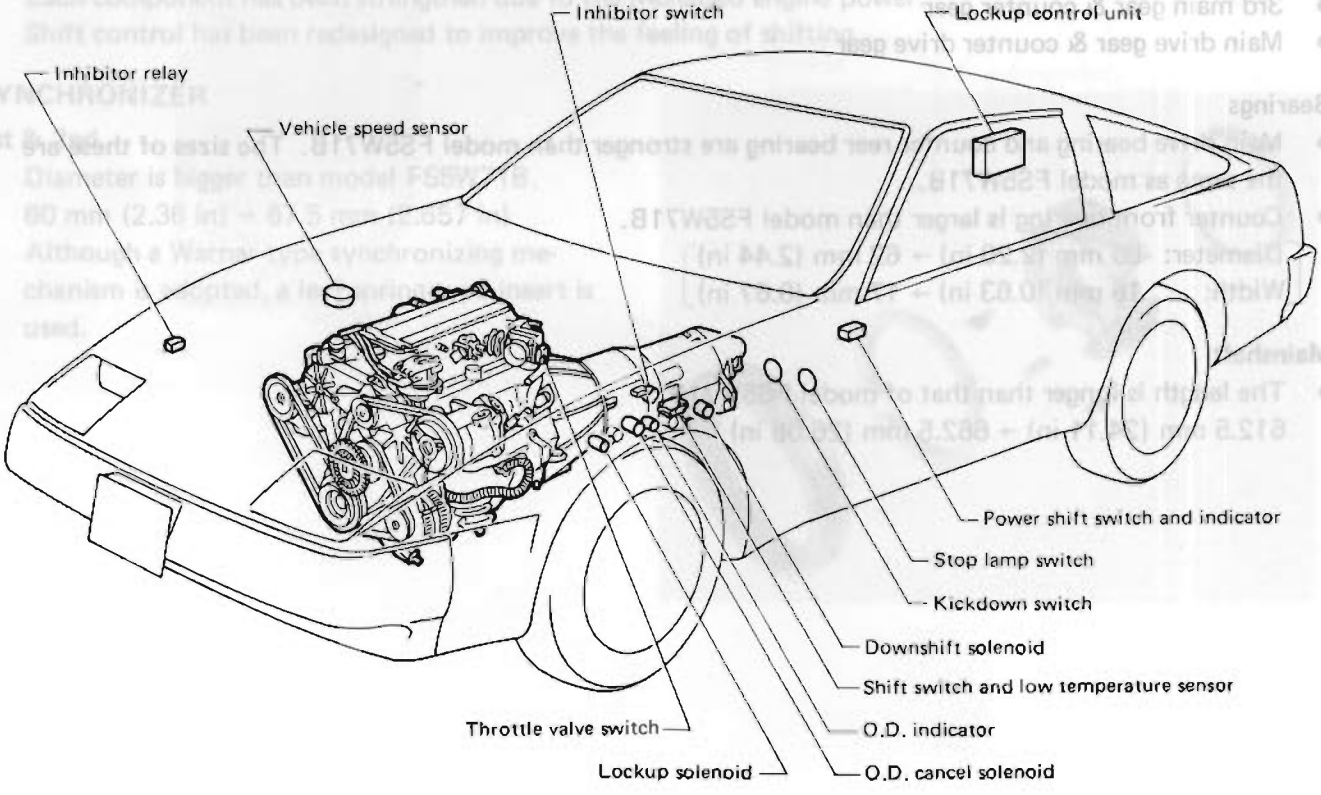
- Transmission case
  The transmission case has been redesigned to accommodate the VG30E engine.
- Rear extension
  Along with the change in the shift control mechanism and installation of the VG30E engine, the rear extension has been redesigned.



ELECTRONIC CONTROLLED AUTOMATIC TRANSMISSION

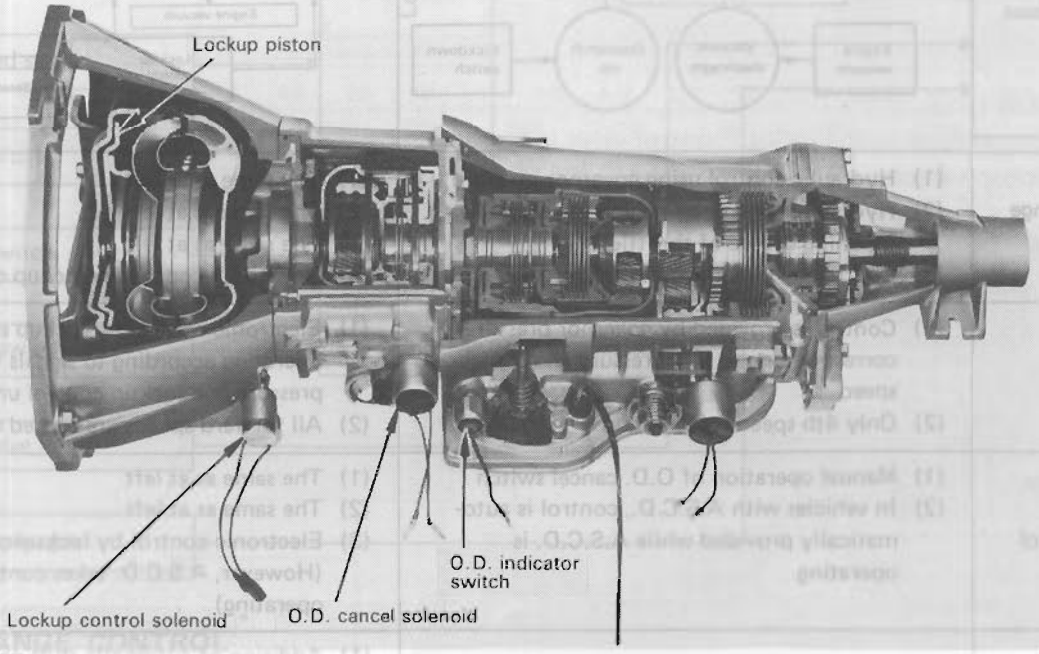
FOREWORD

The Model E4N71B automatic transmission is the latest addition to Nissan's line-up of transmissions. This transmission is based on the model L4N71B (mounted on the 1983 model 810), and can provide lockup of all forward speeds (1st to 4th speed) by electronic control.
Additionally, the E4N71B and 4N71B transmissions for the Z31 model have been strengthened in many sections to match the increased engine torque.



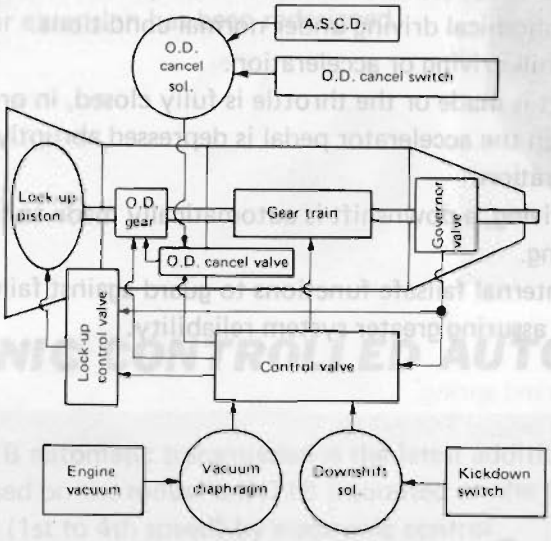
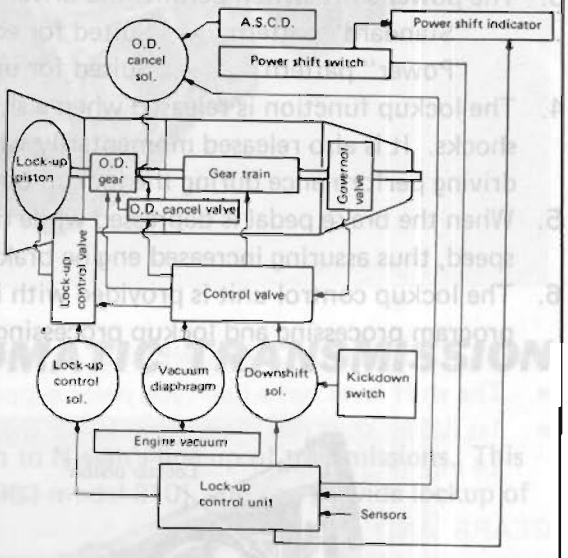
MAJOR FEATURES

1. By use of a microcomputer, the electronic-controlled lockup system permits lockup of all forward speeds (1st to 4th speed).
2. Either shifting pattern ("standard" or "power") is automatically selected by programs set in the lockup control unit depending on the speed at which the accelerator pedal is depressed. These programs are set in response to the vehicle speed and throttle position.
3. The power shift switch permits the driver to select either a "standard" or "power" shifting pattern.
   "Standard" pattern – Suited for economical driving under normal conditions.
   "Power" pattern – Suited for uphill driving or acceleration.
4. The lockup function is released when a shift is made or the throttle is fully closed, in order to prevent shocks. It is also released momentarily when the accelerator pedal is depressed abruptly, to improve driving performance during the lockup operation.
5. When the brake pedal is depressed while driving, a downshift is automatically made to the 3rd or 2nd speed, thus assuring increased engine braking.
6. The lockup control unit is provided with internal failsafe functions to guard against failures in control program processing and lockup processing, assuring greater system reliability.

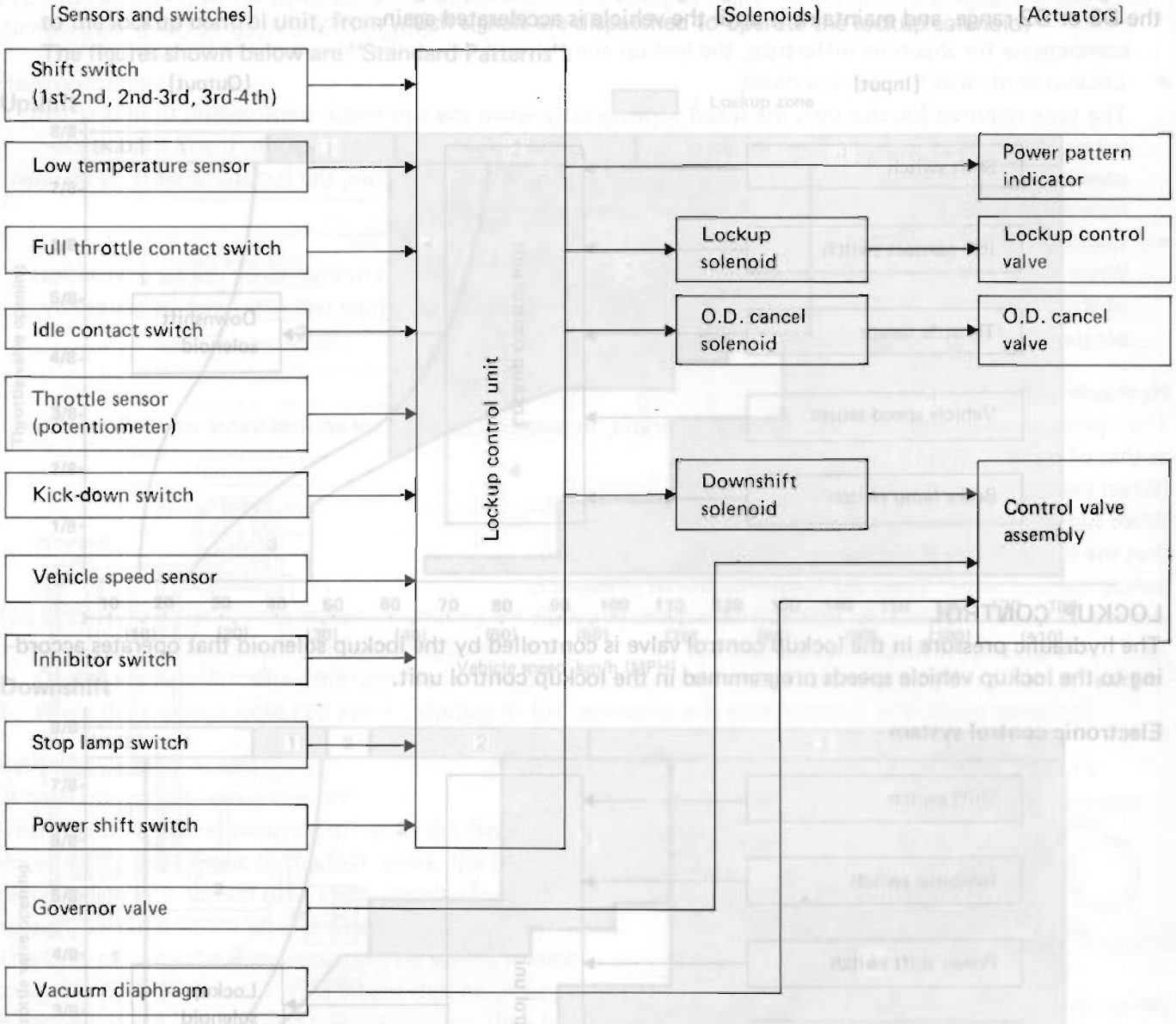


CONTROL MECHANISM

The E4N71B automatic transmission provides control over the speed changes, lockup function and overdrive by means of an electronic circuit using a lockup control unit. The following table describes these control functions in comparison with the L4N71B transmission.

	L4N71B	E4N71B
Control system diagram		
Speed-change control	(1) Hydraulic control using governor pressure (2) Hydraulic control by engine vacuum (opening degree of throttle) (3) Control by kick-down switch	(1) The same as at left (2) The same as at left (3) The same as at left (4) Downshift control by lockup control unit
Lockup control	(1) Control is provided by governor pressure corresponding to line pressure and vehicle speed (2) Only 4th speed is locked up	(1) Electronic control by lockup solenoid valve operating according to signals from line pressure and lockup control unit (2) All forward speeds are locked up
O.D. control	(1) Manual operation of O.D. cancel switch (2) In vehicles with A.S.C.D., control is automatically provided while A.S.C.D. is operating	(1) The same as at left (2) The same as at left (3) Electronic control by lockup control (However, A.S.C.D. takes control when it is operating)
Automatic shift pattern selection control	–	(1) Addition of automatic shift pattern selection (Control by lockup control unit) (2) Manual selection of shift pattern with the power shift switch

SYSTEM COMPOSITION OF E4N71B



SPEED CHANGE CONTROL

In addition to the same hydraulic control using a control valve as in the L4N71B, the E4N71B now employs electronic downshift control of speeds for improved driveability.

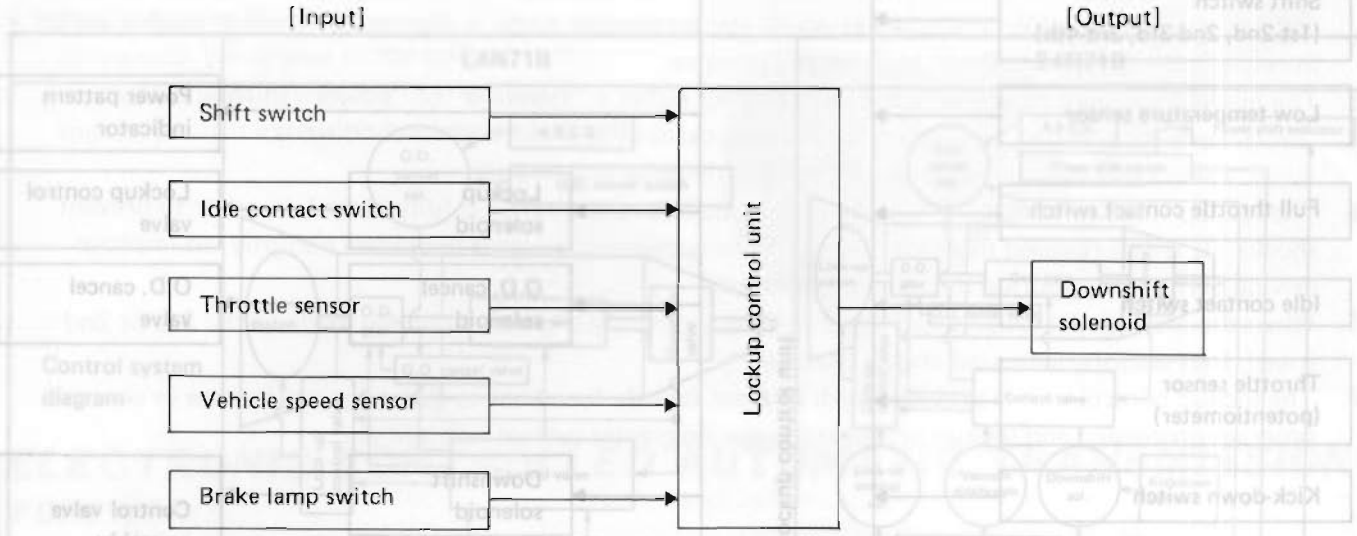
Purposes of control

Greater engine braking in going down slopes

If vehicles with conventional automatic transmissions the D range is held when the vehicle goes downhill, the vehicle speeds up gradually and engine brake provides almost no braking. In this transmission, however, a downshift is automatically made to the 3rd or 2nd range after the driver has depressed the brake pedal, thus assuring increased engine braking.

Contents of control

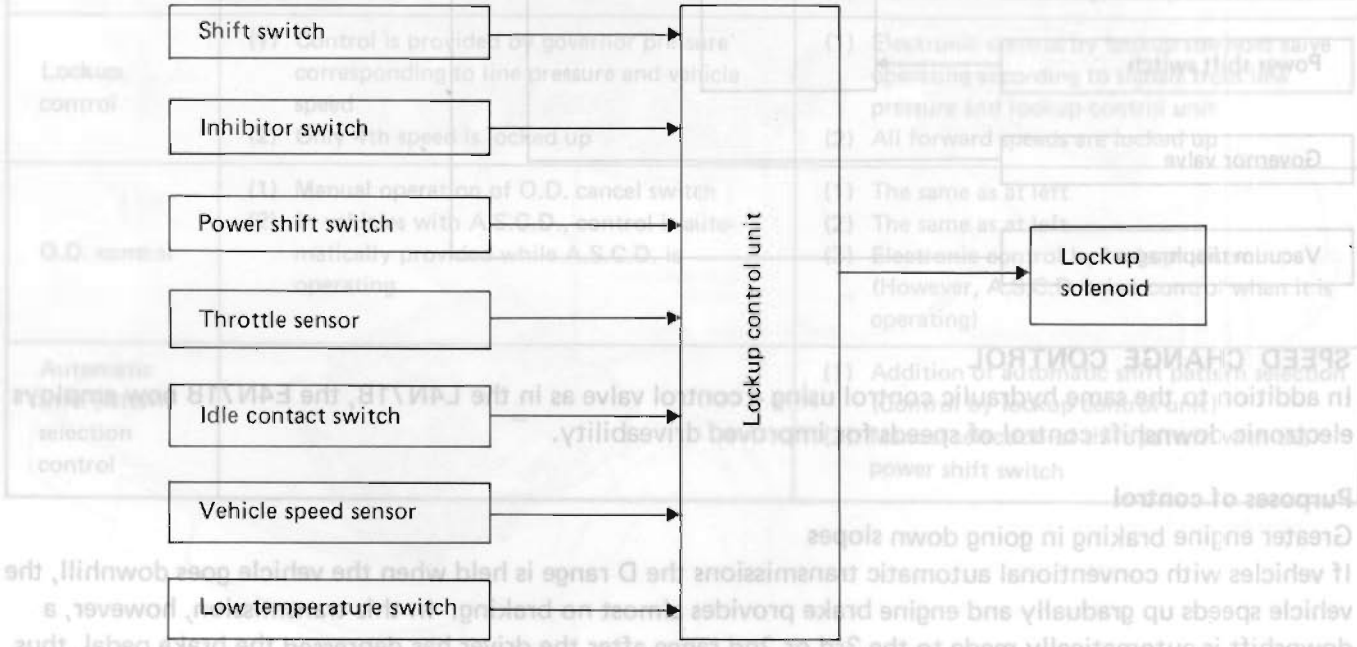
The lockup control unit detects braking signals in the D4 or D3 range, makes the gear position shift down to the D3 or D2 range, and maintains it until the vehicle is accelerated again.



LOCKUP CONTROL

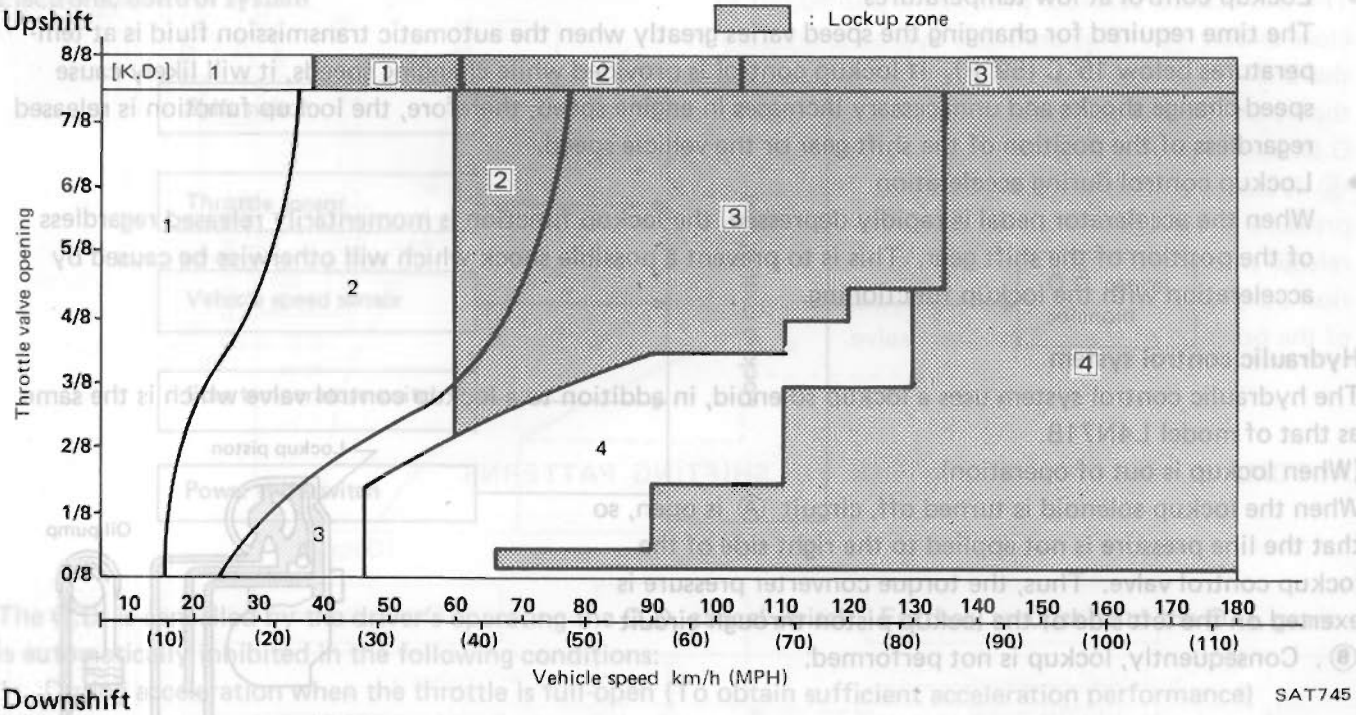
The hydraulic pressure in the lockup control valve is controlled by the lockup solenoid that operates according to the lockup vehicle speeds programmed in the lockup control unit.

Electronic control system



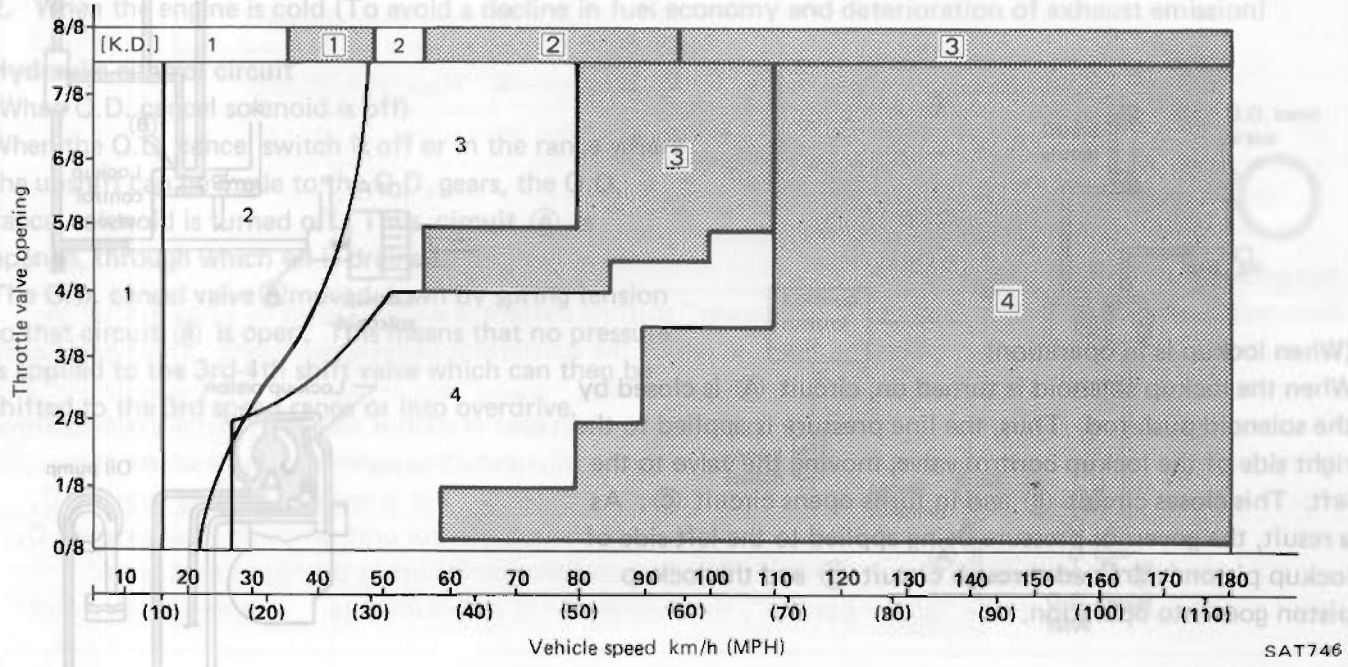
- Lockup control in each gear position
  The switches and sensor detect the gear position and opening degree of the throttle and sends the signals to the lockup control unit, from which signals are dispatched to operate the lockup solenoid.
  The figures shown below are "Standard Patterns".

Upshift



SAT745

Downshift



SAT746

- Lockup control during idling
  When the throttle is fully closed (the idle contact switch is "ON"), the lockup function is released at speeds below 120 km/h (75 MPH) regardless of the gear position for better driveability.
- Lockup control during a change in speed
  (Control of lockup release time)
  Speed change in the lockup condition causes large shocks and therefore reduced riding comfort. To prevent this, the lockup function is released momentarily as soon as a signal from the shift switch is detected.

(Control of delaying lockup release)
When a speed change is made from D_2 to D_3, 2 to D_3 or D_3 to D_4, its actual speed-change operation is delayed by a changeover of the frictional elements, compared to its detection by the shift switch. To compensate for this time difference, the lockup control unit delays the release of the lockup function.

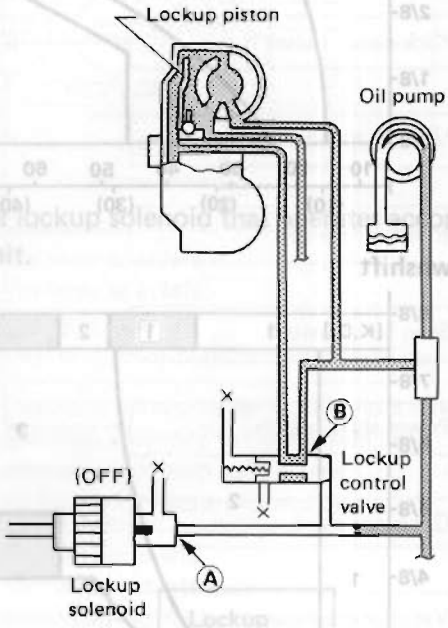
- Lockup control at low temperatures
  The time required for changing the speed varies greatly when the automatic transmission fluid is at temperatures below 15°C (59°F). If lockup control is provided while changing speeds, it will likely cause speed-change shocks and unnecessary increases in engine speed, therefore, the lockup function is released regardless of the position of the shift gear or the vehicle speed.
- Lockup control during acceleration
  When the accelerator pedal is rapidly depressed, the lockup function is momentarily released regardless of the position of the shift gear. This is to prevent a possible shock which will otherwise be caused by acceleration with the lockup functioning.

Hydraulic control system

The hydraulic control system uses a lockup solenoid, in addition to a lockup control valve which is the same as that of model L4N71B.

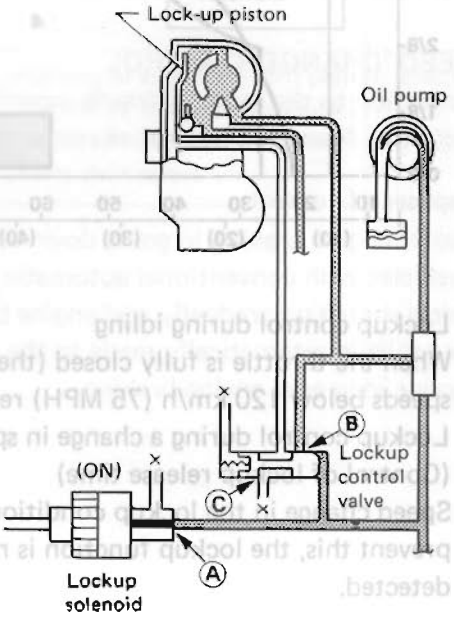
(When lockup is out of operation)

When the lockup solenoid is turned off, circuit Ⓐ is open, so that the line pressure is not applied to the right side of the lockup control valve. Thus, the torque converter pressure is exerted on the left side of the lockup piston through circuit Ⓑ. Consequently, lockup is not performed.



(When lockup is in operation)

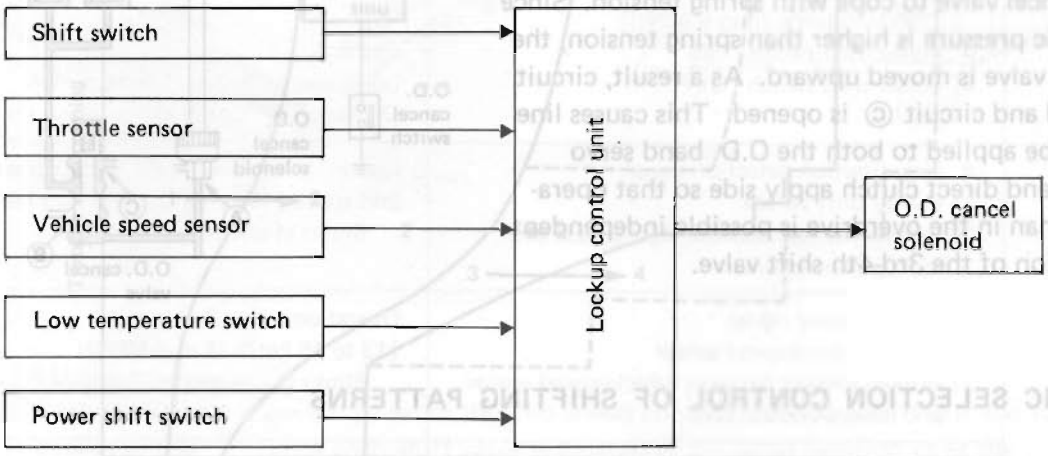
When the lockup solenoid is turned on, circuit Ⓐ is closed by the solenoid push rod. Thus, the line pressure is applied to the right side of the lockup control valve, moving the valve to the left. This closes circuit Ⓑ and in turns opens circuit Ⓒ. As a result, the governor pressure being applied to the left side of lockup piston is drained through circuit Ⓒ and the lockup piston goes into operation.



O.D. CONTROL

The O.D. solenoid, which turns on or off according to the opening degree of the throttle, vehicle speed, etc. changes over the O.D. gears and 3rd gears.

Electronic control system



The O.D. is cancelled by the driver's operating the O.D. cancel switch. Further, an upshift to the O.D. gears is automatically inhibited in the following conditions:

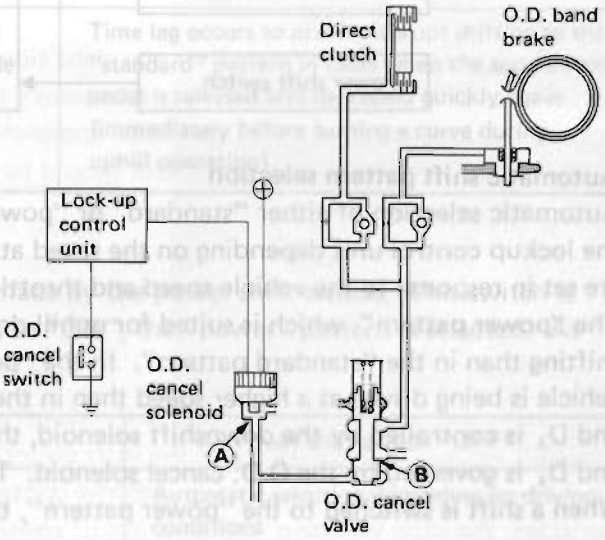
1. During acceleration when the throttle is full-open (To obtain sufficient acceleration performance)
2. When the engine is cold (To avoid a decline in fuel economy and deterioration of exhaust emission)

Hydraulic control circuit

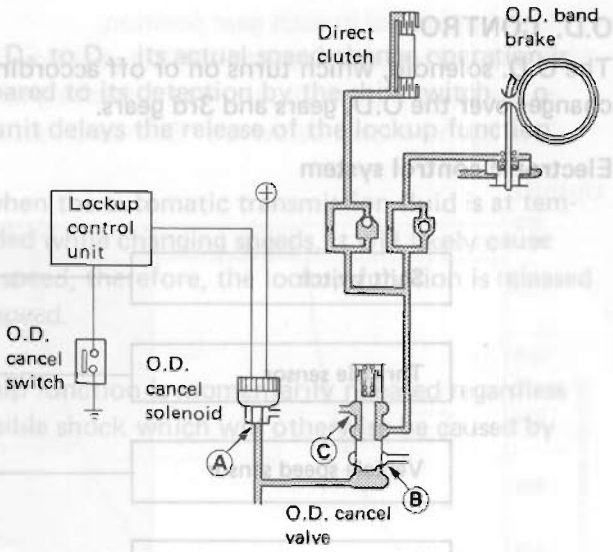
(When O.D. cancel solenoid is off)

When the O.D. cancel switch is off or in the range where the upshift can be made to the O.D. gears, the O.D. cancel solenoid is turned off. Thus, circuit Ⓐ is opened, through which oil is drained.

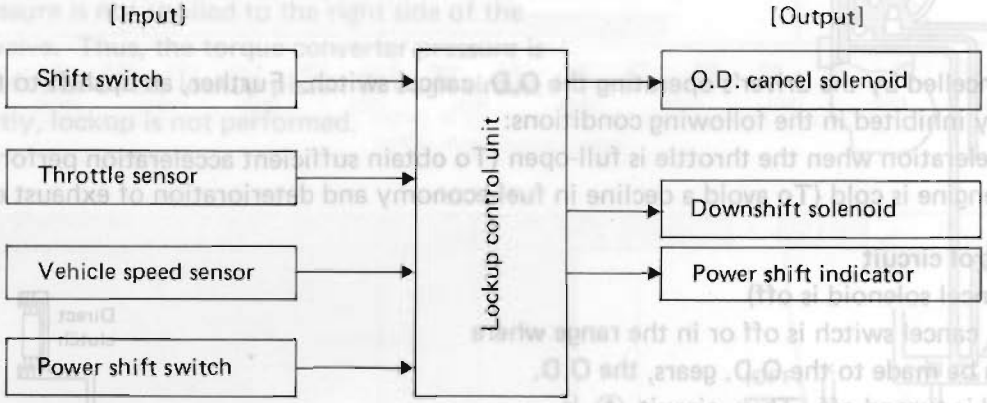
The O.D. cancel valve is moved down by spring tension so that circuit Ⓑ is open. This means that no pressure is applied to the 3rd-4th shift valve which can then be shifted to the 3rd speed range or into overdrive.



(When O.D. cancel solenoid is on)
When the O.D. cancel switch is on or in the range where the upshift to the O.D. gears in inhibited, the O.D. cancel solenoid is turned on.
The O.D. cancel solenoid push rod is pushed out to close circuit Ⓐ. This produces hydraulic pressure in the O.D. cancel valve to cope with spring tension. Since the hydraulic pressure is higher than spring tension, the O.D. cancel valve is moved upward. As a result, circuit Ⓑ is closed and circuit Ⓒ is opened. This causes line pressure to be applied to both the O.D. band servo release side and direct clutch apply side so that operation other than in the overdrive is possible independent of the position of the 3rd-4th shift valve.



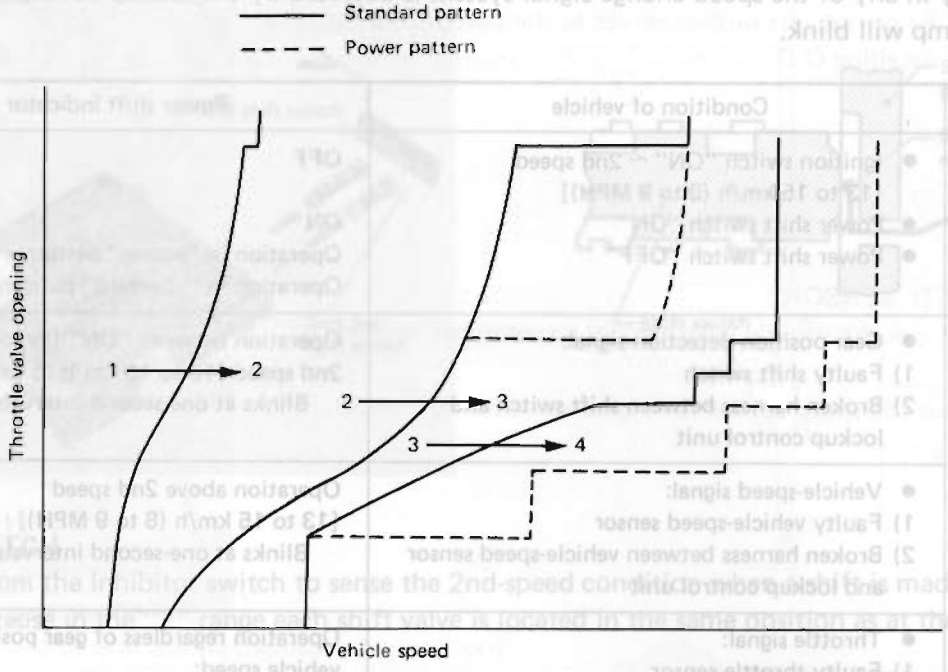
AUTOMATIC SELECTION CONTROL OF SHIFTING PATTERNS



Automatic shift pattern selection

Automatic selection of either "standard" or "power" shifting pattern is accomplished by programs set in the lockup control unit depending on the speed at which the accelerator pedal is depressed. These programs are set in response to the vehicle speed and throttle position.
The "power pattern", which is suited for uphill driving or when acceleration is required, permits easier downshifting than in the "standard pattern". In the "power pattern", upshifting cannot be made unless the vehicle is being driven at a higher speed than in the "standard pattern"; this is because shifting between D_2 and D_3 is controlled by the downshift solenoid, through the lockup control unit, while shifting between D_3 and D_4 is governed by the O.D. cancel solenoid. The lockup function occurs in the high-speed range.
When a shift is switched to the "power pattern", the indicator in it will illuminate.

The shifting schedule during upshifting is shown below.



Conditions for selection of shift patterns

	"standard" → "power"	"power" → "standard"
Condition	When the accelerator pedal is depressed at higher than a certain speed in response to the vehicle speed and throttle position.	When the accelerator pedal is returned to 1/8 full throttle.
Remarks	The lower the vehicle speed and the larger the throttle opening, the easier the shifting is made to the "power" pattern. (This improves performance during uphill driving.)	Time lag occurs to prevent abrupt shifting to the "standard" pattern in cases when the accelerator pedal is released and depressed quickly again (immediately before turning a curve during uphill operation).

Manual selection of shifting patterns

Shifting between the "standard" and "power" patterns is made by the power shift switch. This switch is equipped with an O.D. cancel function; when it is switches to "ON", the "power" pattern is selected. At this point, shifting to the 4th speed can no longer be made.

	Power shift switch "ON"	Power shift switch "OFF"
Shifting characteristic	Fixed in the "power" pattern	Automatic selection depending on driving conditions
Power shift indicator lamp	ON	ON (in the "power" pattern)
Shifting to 4th speed	No	Automatic shifting depending on driving conditions

SELF-DIAGNOSIS FUNCTION

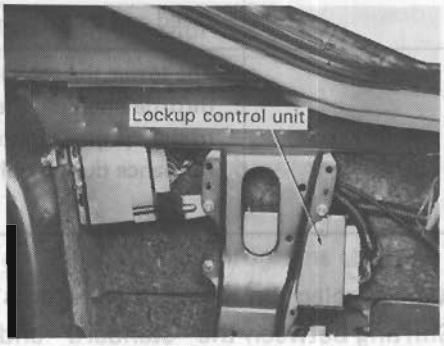
If an abnormality in any of the speed-change signal system is detected by the lockup control unit, the power shift indicator lamp will blink.

	Condition of vehicle	Power shift indicator lamp
Normal	• Ignition switch "ON" ~ 2nd speed [13 to 15 km/h (8 to 9 MPH)] • Power shift switch "ON" • Power shift switch "OFF"	OFF ON Operation in "power" pattern: ON Operation in "standard" pattern: OFF
Abnormal	• Gear position detection signal: 1) Faulty shift switch 2) Broken harness between shift switch and lockup control unit	Operation between "ON" (ignition switch) and 2nd speed [13 to 15 km/h (8 to 9 MPH)]: Blinks at one-second intervals
	• Vehicle-speed signal: 1) Faulty vehicle-speed sensor 2) Broken harness between vehicle-speed sensor and lockup control unit	Operation above 2nd speed [13 to 15 km/h (8 to 9 MPH)]: Blinks at one-second intervals
	• Throttle signal: 1) Faulty throttle sensor 2) Broken harness between throttle sensor and lockup control unit 3) Program processing in lockup control out of order	Operation regardless of gear position and vehicle speed: Blinks at 1/4-second intervals

PARTS RELATED TO ELECTRONIC CONTROL

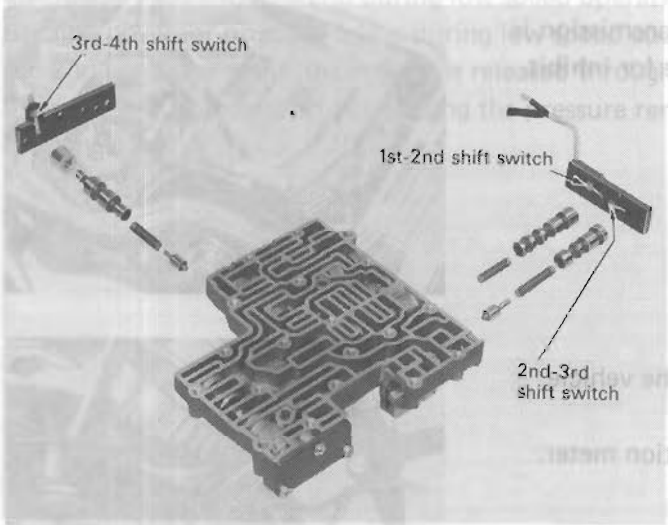
LOCKUP CONTROL UNIT

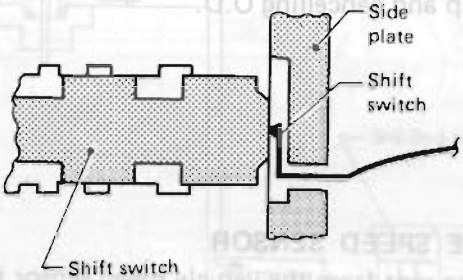
The lockup control unit is located on the right side of the luggage compartment. It receives signals from the sensors and switches, decides how lockup control, O.D. control, speed-change control and automatic shift pattern selection control should be provided, and sends out signals to the respective solenoids.



SHIFT SWITCH

To sense the speed-change position, a shift switch is provided on the side plate of the control valve. When each shift valve is out of operation, the shift switch is grounded to the body and the voltage drops, because the shift valve end face is in contact with the contact point of the shift switch. When each shift valve is in operation, the shift valve end face goes out of contact with the contact point of the shift switch and therefore a voltage is produced.



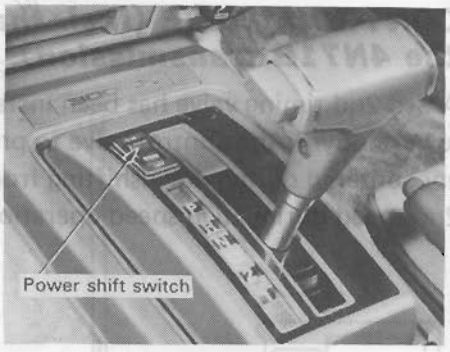


INHIBITOR SWITCH

A signal is sent from the inhibitor switch to sense the 2nd-speed condition when a shift is made to the "2" range. This is because in the "2" range each shift valve is located in the same position as at the 1st speed.

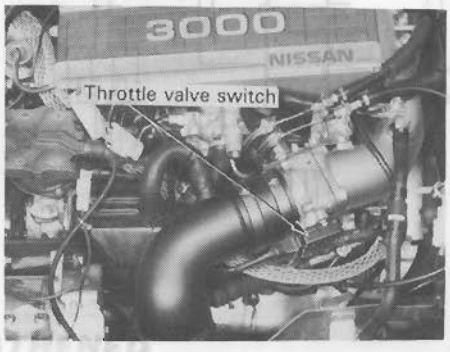
POWER SHIFT SWITCH

When this switch is turned on, the shift pattern is switched to the "power pattern" and the indicator light comes on. When the switch is turned off, the shift pattern is switched automatically either to the "standard pattern" or "power pattern" depending on driving conditions. At this time, the indicator light also comes on during "power pattern" driving.



THROTTLE VALVE SWITCH

In order to decide whether the accelerator pedal is fully depressed or released and to detect the depressing speed of the accelerator pedal, signals are sent from the idle contact switch, full throttle contact switch and potentiometer type throttle sensor which are contained in the throttle valve switch.



KICKDOWN SWITCH

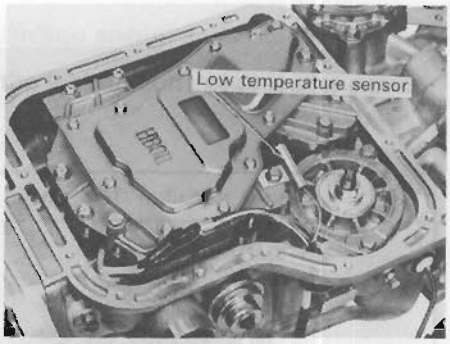
To sense the kickdown range, signals are sent from the kickdown switch.

STOP LAMP SWITCH

Signals are sent from the stop lamp switch to sense if the foot brake is in operation.

LOW TEMPERATURE SENSOR

This sensor senses whether the oil temperature in the transmission is below 15°C (59°F) or not. Its output serves as the base for inhibiting lockup and cancelling O.D.



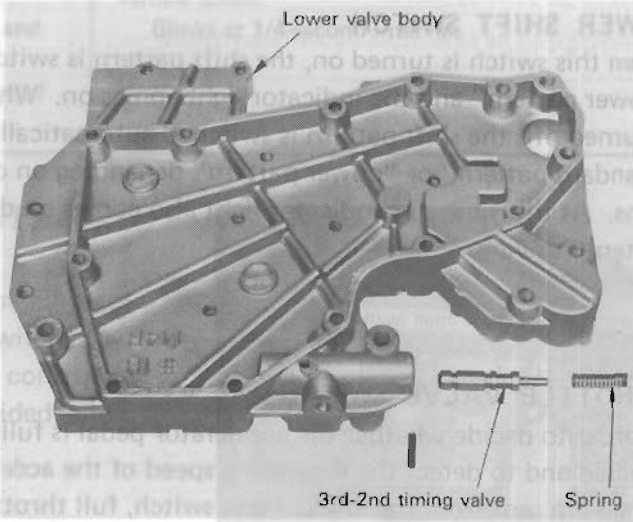
VEHICLE SPEED SENSOR

Signals are sent from the vehicle speed sensor to sense the vehicle speed.

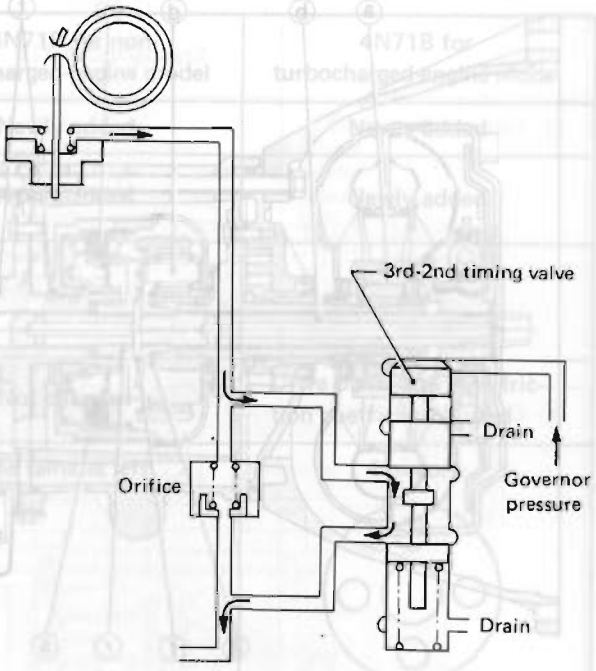
The picture shows the speed sensor for digital combination meter.

CONTROL VALVE (Incl. that used in the 4N71B transmission)

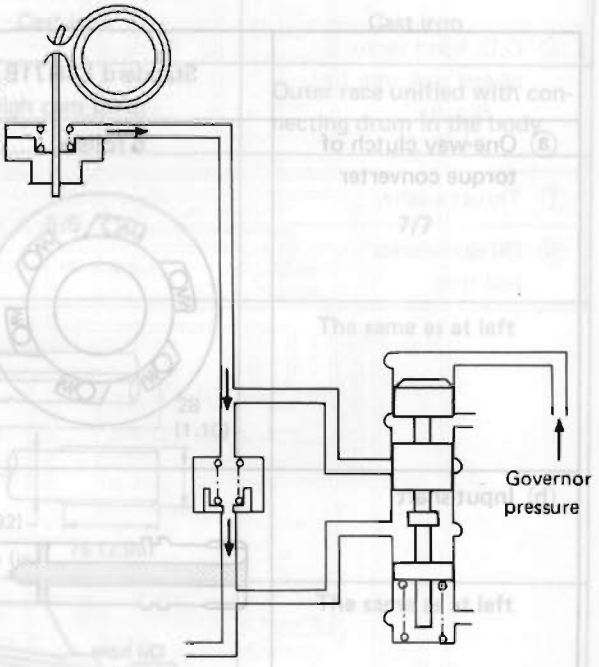
A 3rd-2nd timing valve has been installed on the lower body of the control valve to prevent shocks encountered during downshifting from the 3rd to 2nd speed during high-speed operation.



[Downshift from 3rd to 2nd during low-speed operation]
Because governor pressure is low during low-speed operation, the 2nd band servo release pressure is released through the bypass line. (The method of releasing the pressure remains unchanged.)

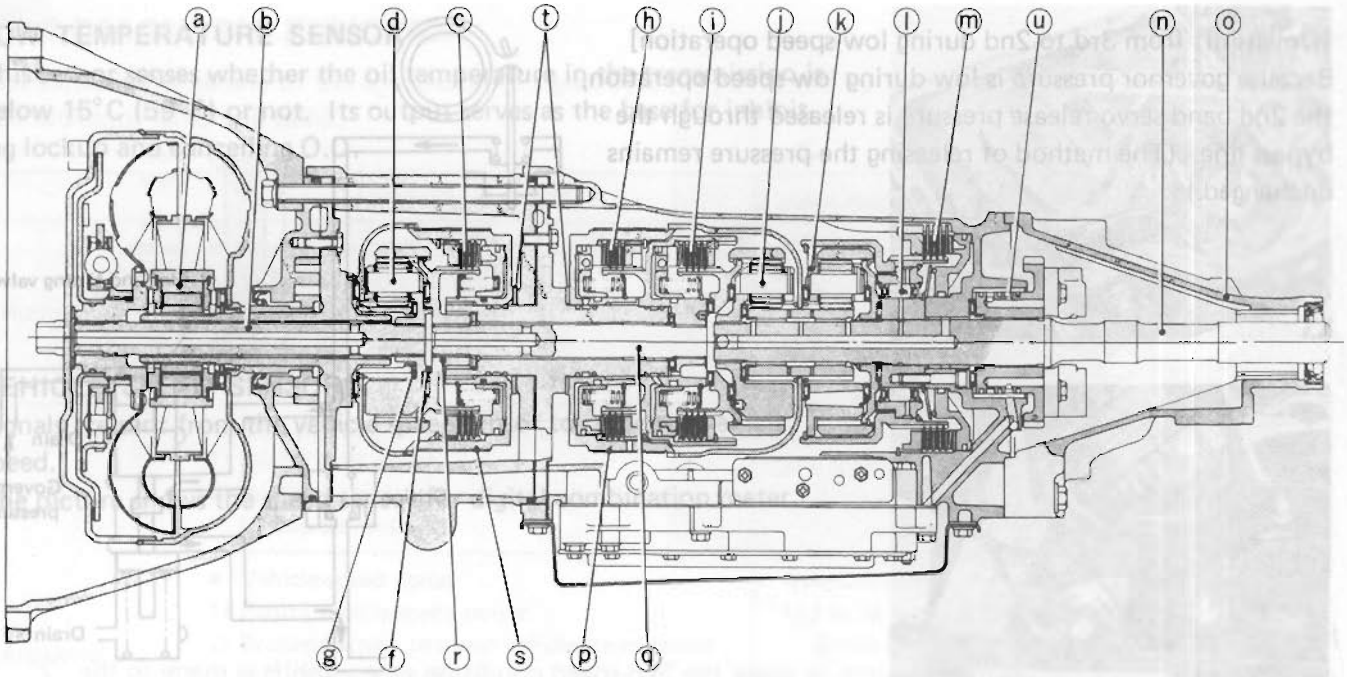


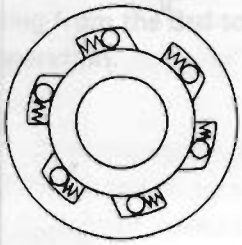
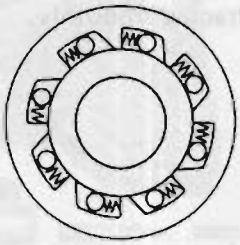
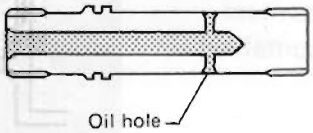
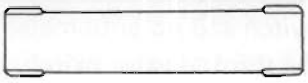
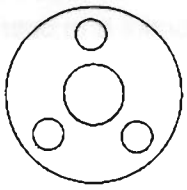
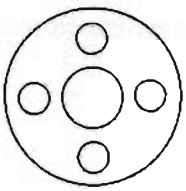
[Downshift from 3rd to 2nd during high-speed operation]
During high-speed operation, the governor pressure is high so that the 3rd-2nd timing valve is pushed down. As a result, the bypass line is closed. This causes the 2nd band servo release pressure to flow through the orifice so that the 2nd band is contracted smoothly.

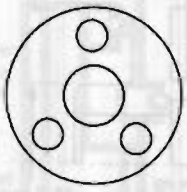
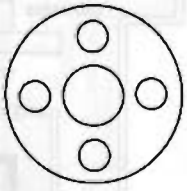
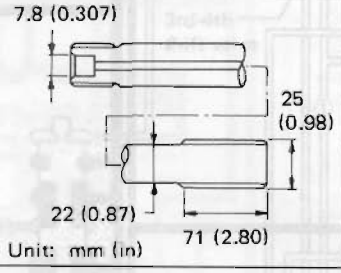
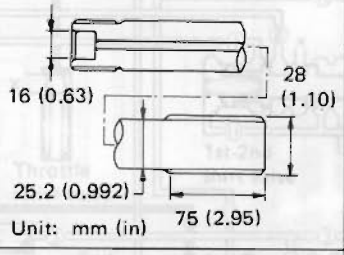
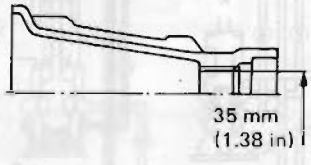
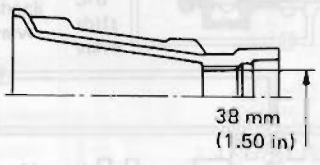


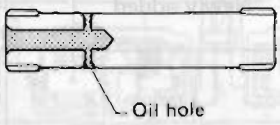
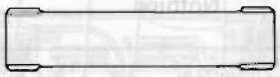
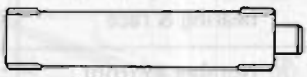
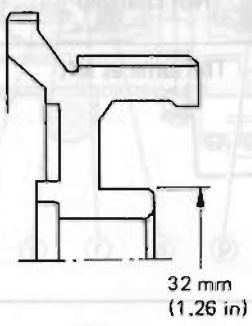
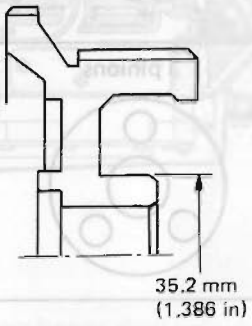
DIFFERENCES BETWEEN STANDARD AND STRENGTHENED TRANSMISSIONS

The Model Z31 employs strengthened types of the standard L4N71B transmission mounted on the 1983 model 810. The details of the strengthened parts are different between the turbocharged-engine and non-turbocharged-models.



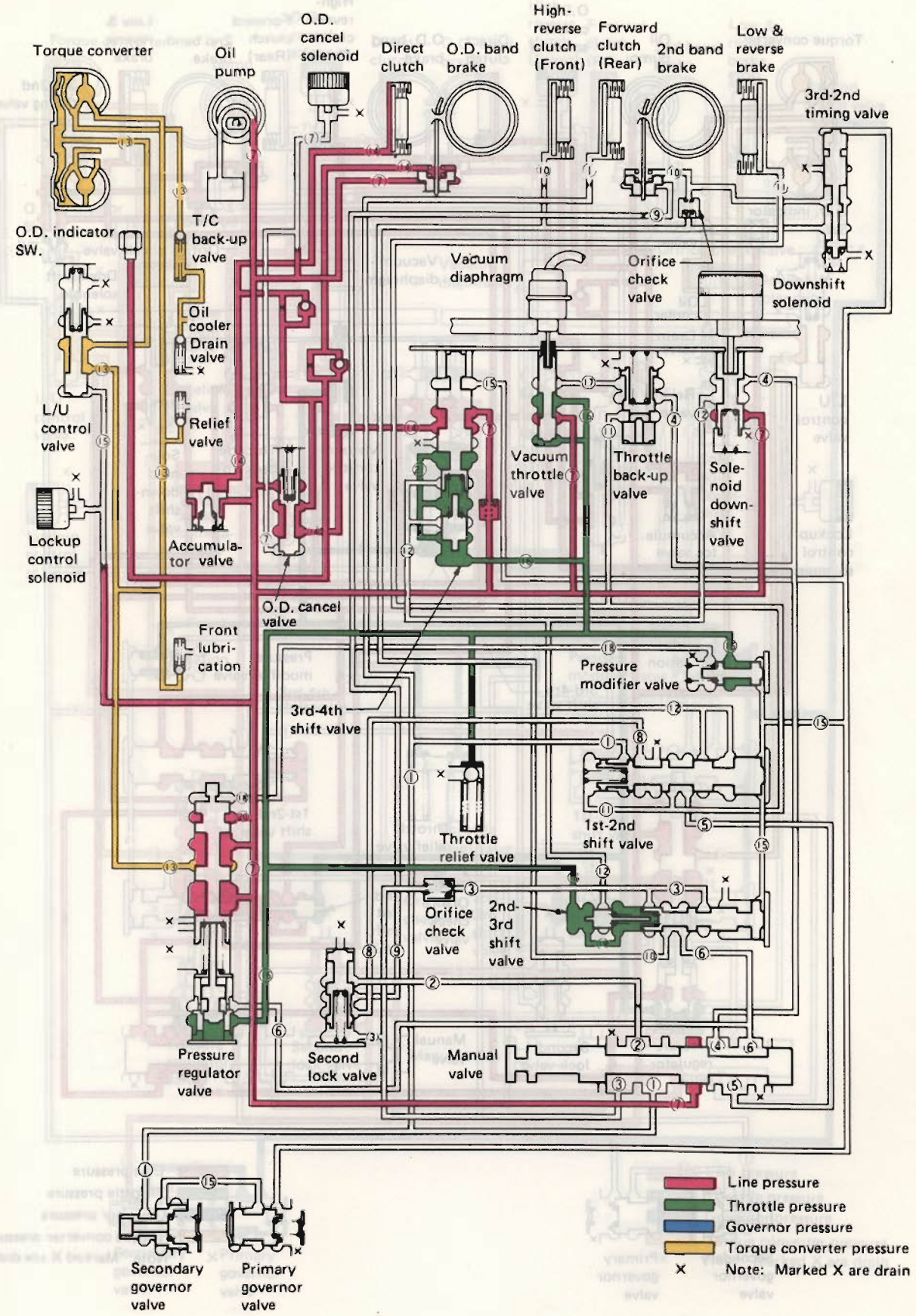
	Standard L4N71B	E4N71B for non-turbocharged-engine model	4N71B for turbocharged-engine model
ⓐ One-way clutch of torque converter	6 rollers 	The same as at left	8 rollers 
ⓑ Input shaft		The same as at left	Oil hole discontinued 
ⓒ Number of direct clutch plates (Drive plate/Driven plate)	2/2	2/2	3/3
ⓓ O.D. planetary carrier	3 pinions 	4 pinions 	The same as at left

	Standard L4N71B	E4N71B for non-turbocharged-engine model	4N71B for turbocharged-engine model
ⓕ O.D. carrier race	Nothing	Newly added	Newly added
ⓖ O.D. sun gear needle bearing & race	Nothing	Newly added	Newly added
ⓗ Number of front clutch plates (Drive plate/Driven plate)	3/3 or 3/5	4/4	4/4
ⓘ Forward clutch (Rear)	–	Not changed	Drive plate with high friction coefficient is used
ⓙ Front planetary	3 pinions 	The same as left	4 pinions 
ⓚ Rear planetary carrier	Alluminum	Cast iron	Cast iron
ⓛ One-way clutch	–	High cam sprag	Outer race unified with connecting drum in the body
ⓜ Number of low & reverse clutch plates (Drive plate/Driven plate)	5/5 or 6/6	6/6	7/7
ⓝ Output shaft			The same as at left
ⓞ Rear extension			The same as at left
ⓟ 2nd band servo piston size mm (in) Big dia. Small dia.	 64 (2.52) 40 or 36 (1.57 or 1.42)	 64 (2.52) 40 or 36 (1.57 or 1.42)	 73 (2.87) 44 (1.73)

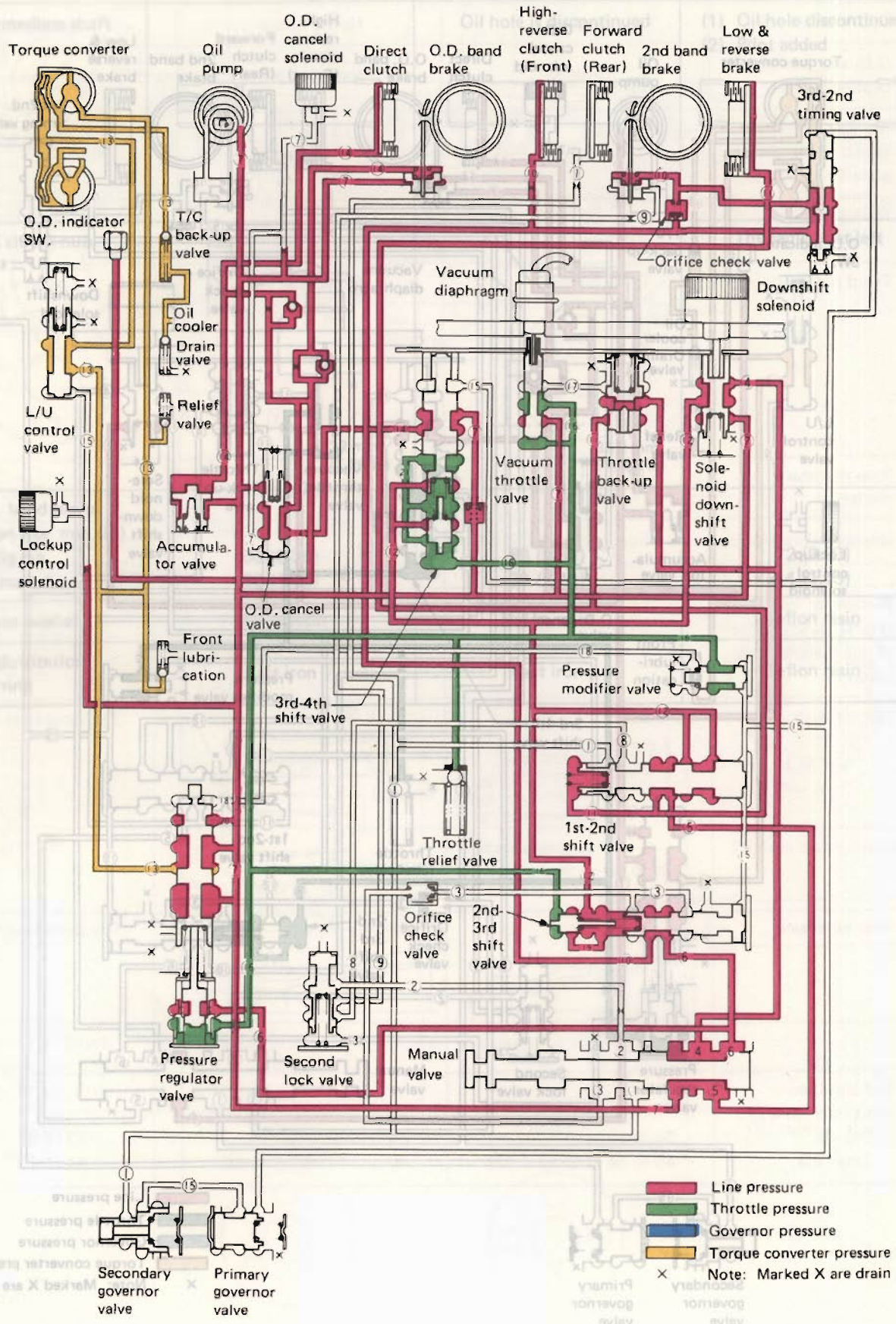
	Standard L4N71B	E4N71B for non-turbocharged-engine model	4N71B for turbocharged-engine model
⑨ Intermediate shaft		Oil hole is discontinued 	(1) Oil hole discontinued (2) Pilot added 
⑰ O.D. clutch hub			The same as at left
⑱ O.D. band servo piston size mm (in) Big dia. Small dia.	 60 (2.36) 36 (1.42)	 60 (2.36) 36 (1.42)	 72 (2.83) 44 (1.73)
⑲ Thrust washer	Nylon resin	Nylon resin	Teflon resin
⑳ Oil distributor seal ring	Cast iron	Cast iron	Teflon resin

HYDRAULIC CONTROL CIRCUIT

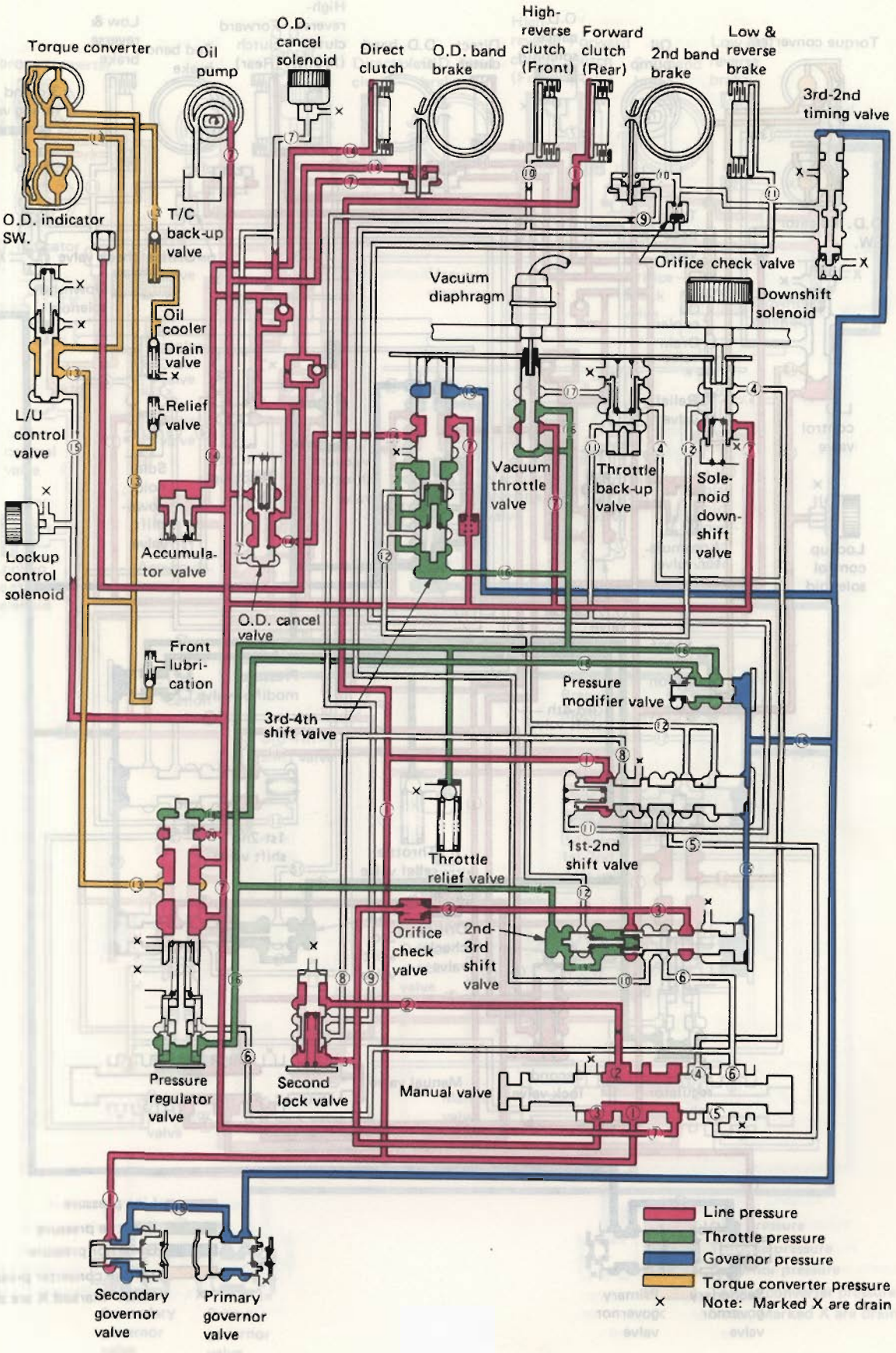
"N" RANGE (Neutral)



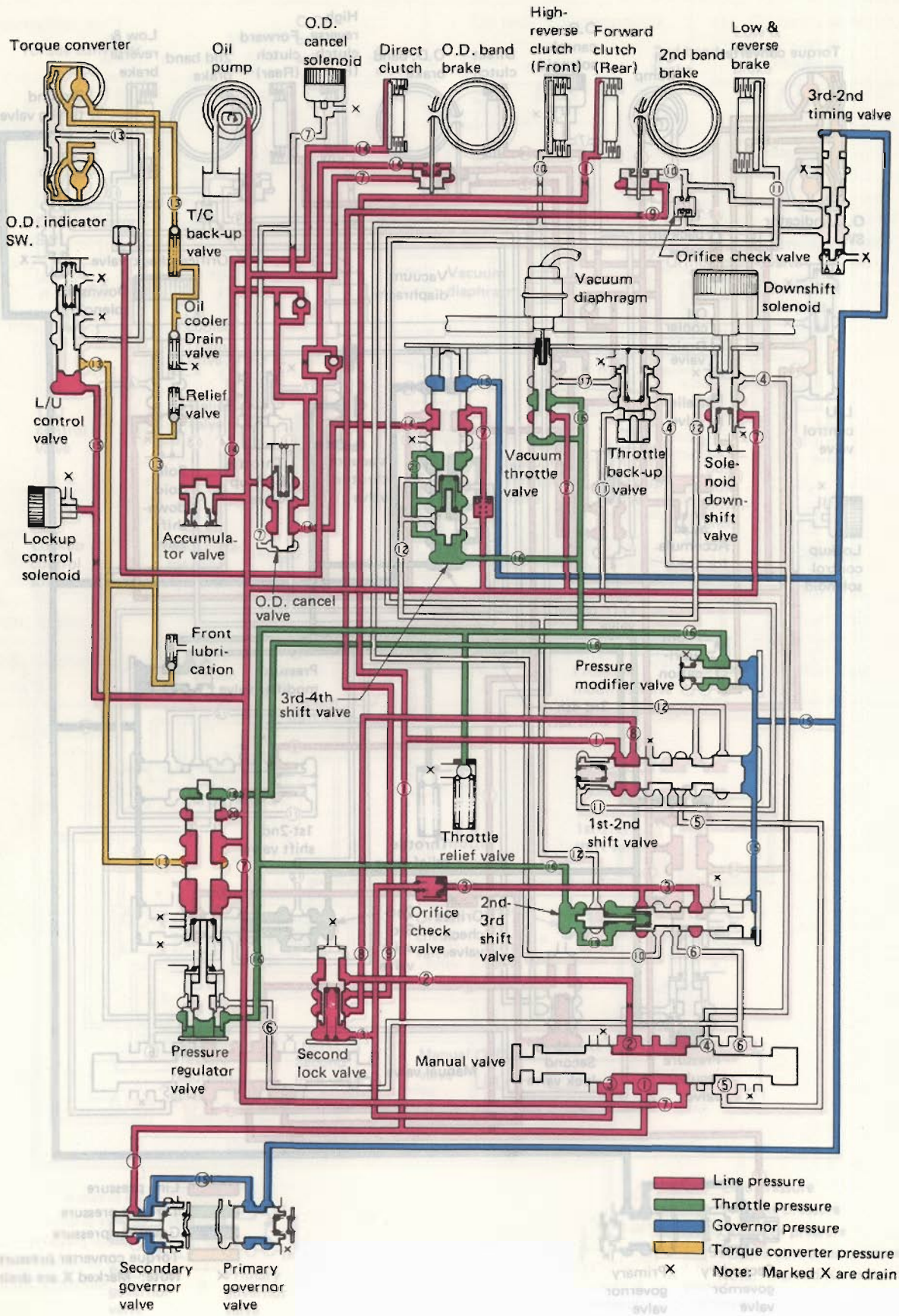
"R" RANGE (Reverse)



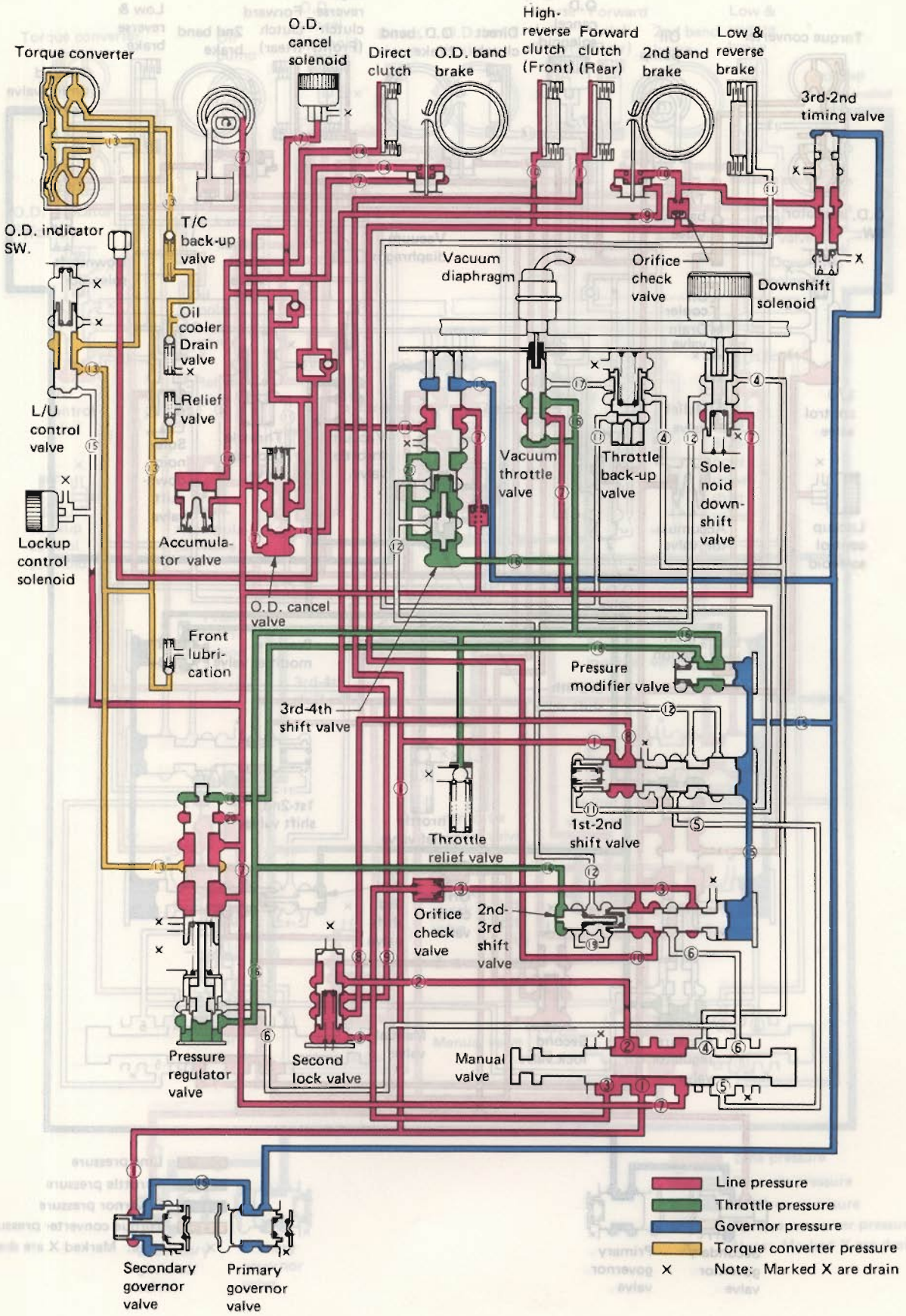
"D_1" RANGE (1st gear)



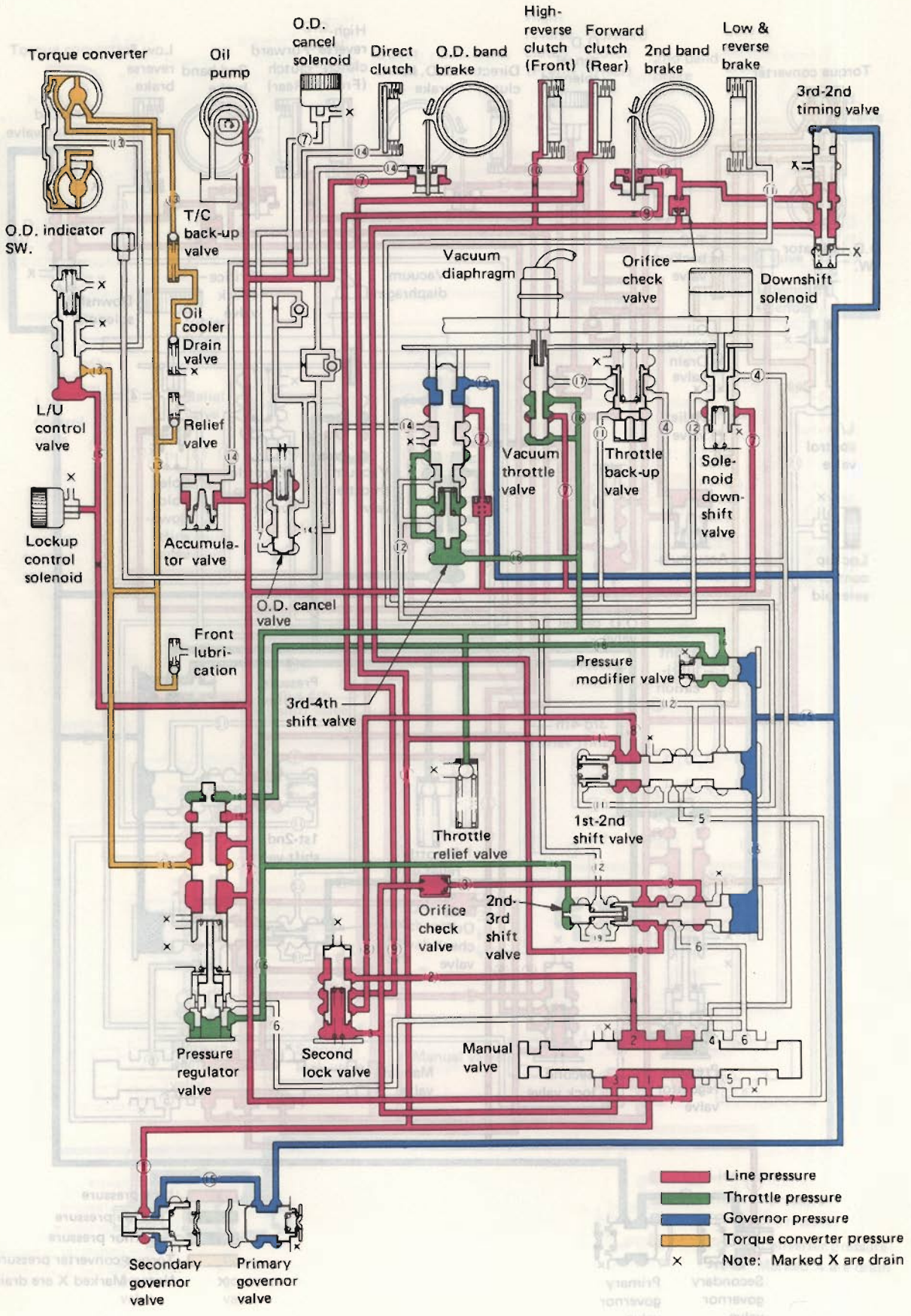
"D_2" RANGE (2nd gear) WITH LOCKUP "ON"



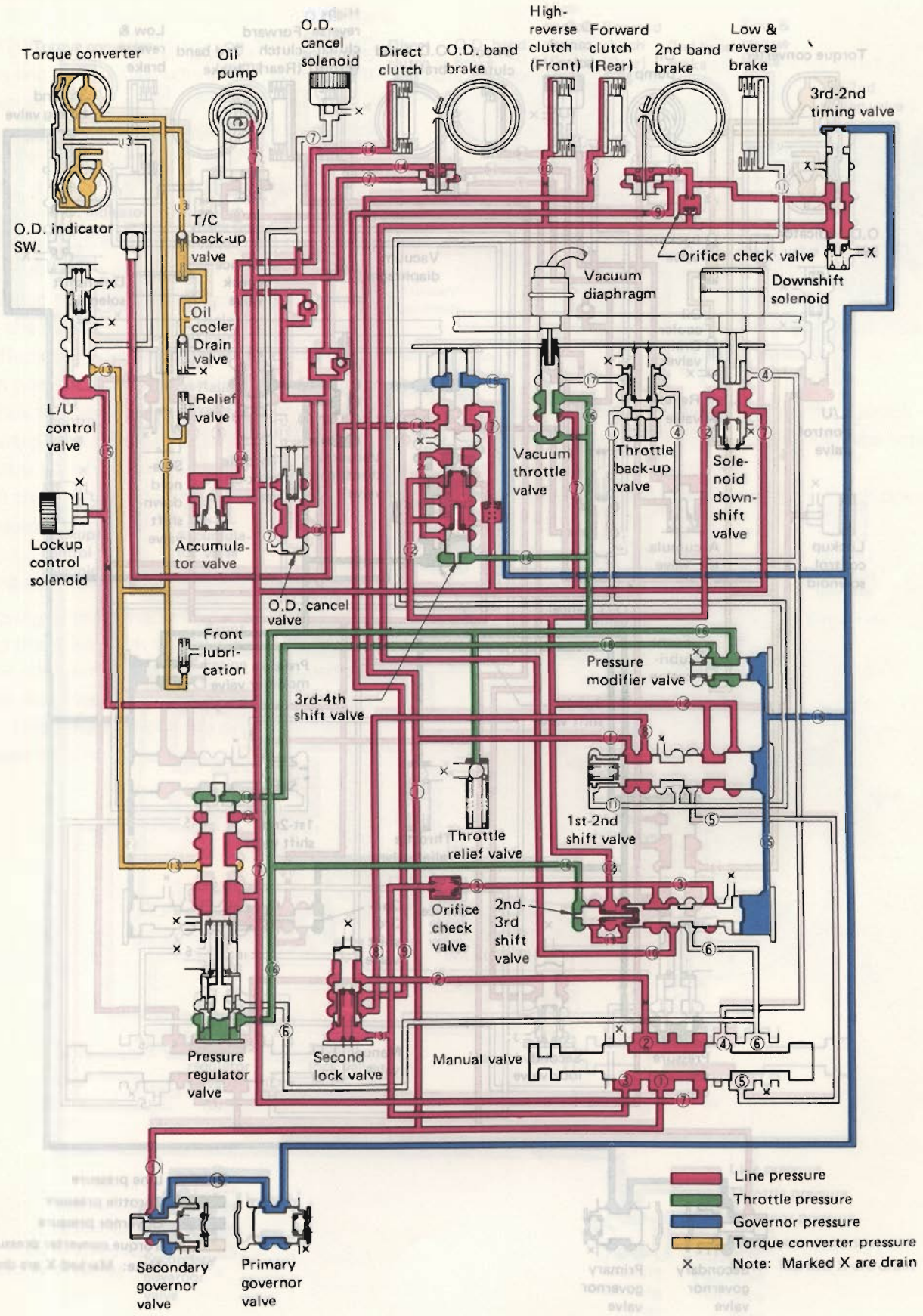
"D_3" RANGE (Top gear) WITH O.D. CANCEL SOLENOID "ON"



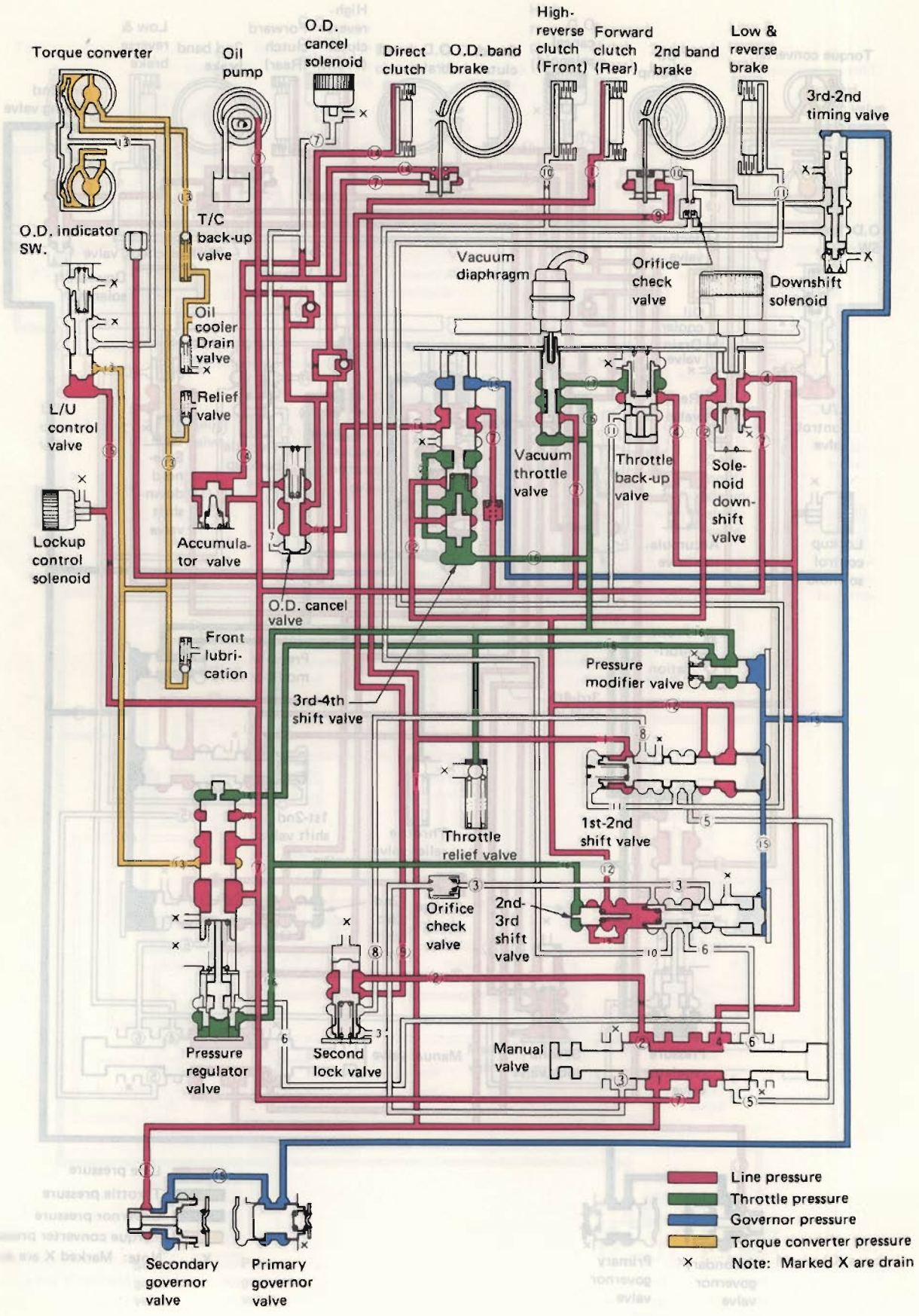
"D_4" RANGE (O.D. gear) WITH LOCKUP "ON"



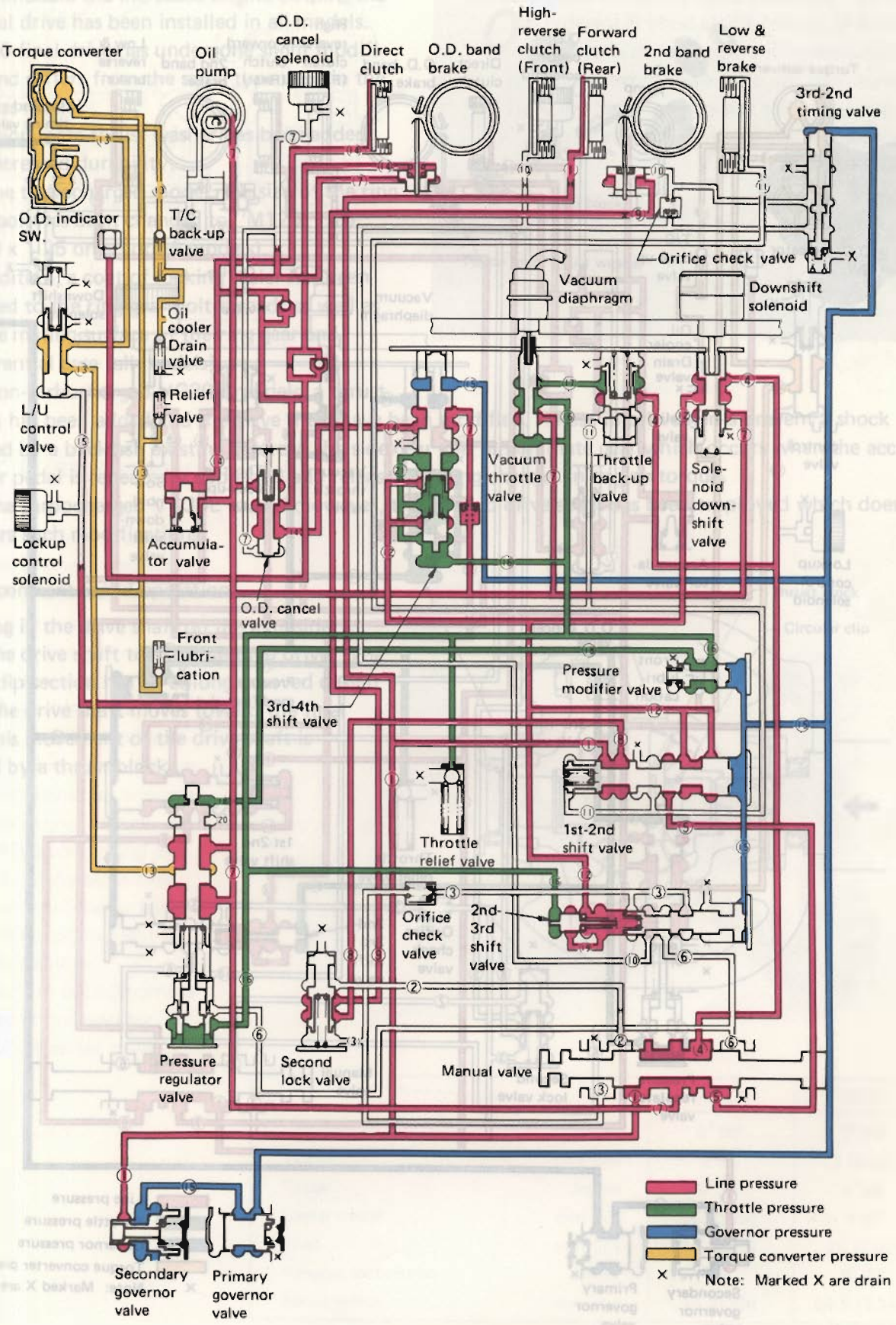
KICKDOWN ($D_4 \rightarrow D_3$) WITH LOCKUP "ON"



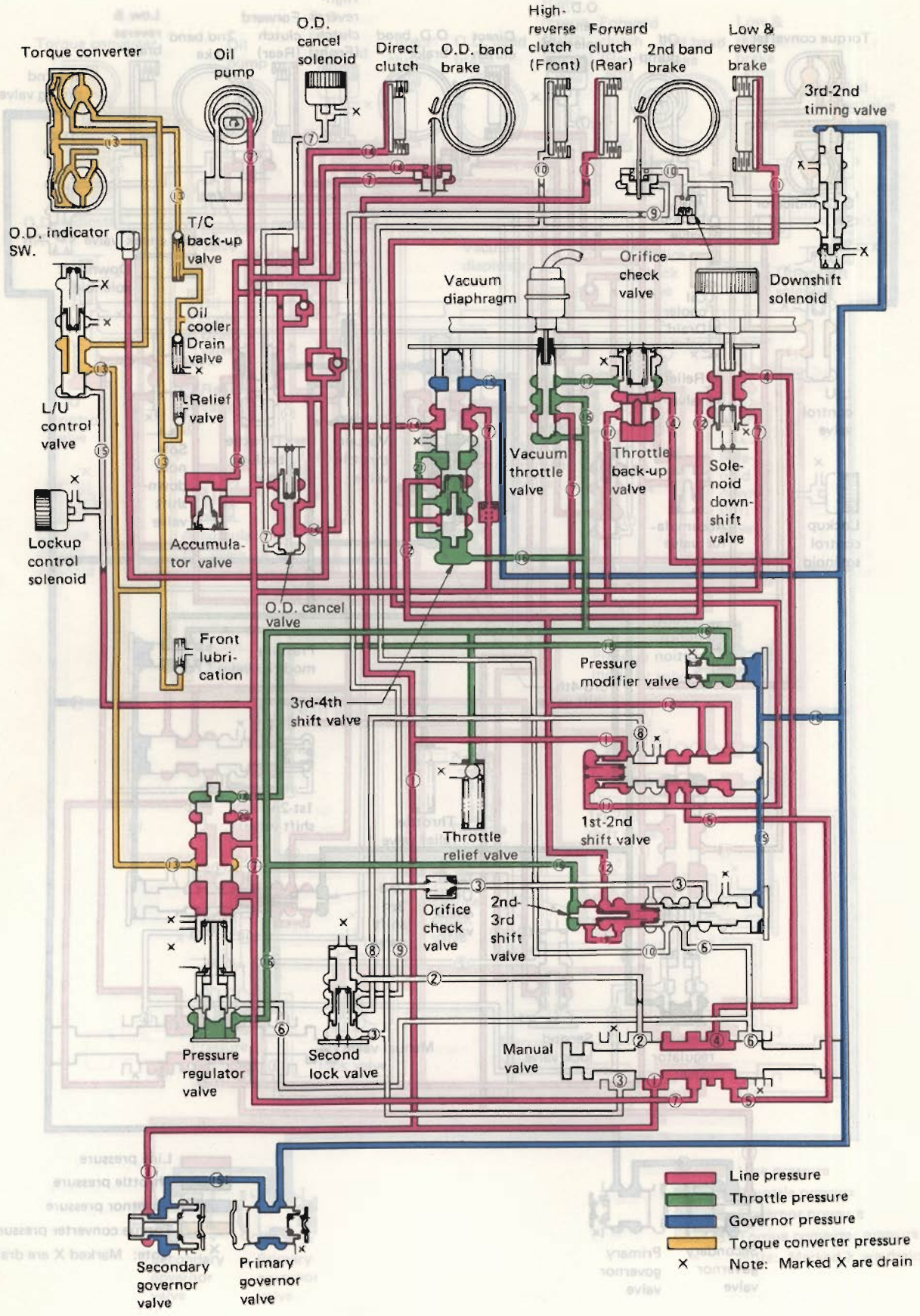
"2" RANGE (2nd gear) WITH LOCKUP



"1_2" RANGE (2nd gear)

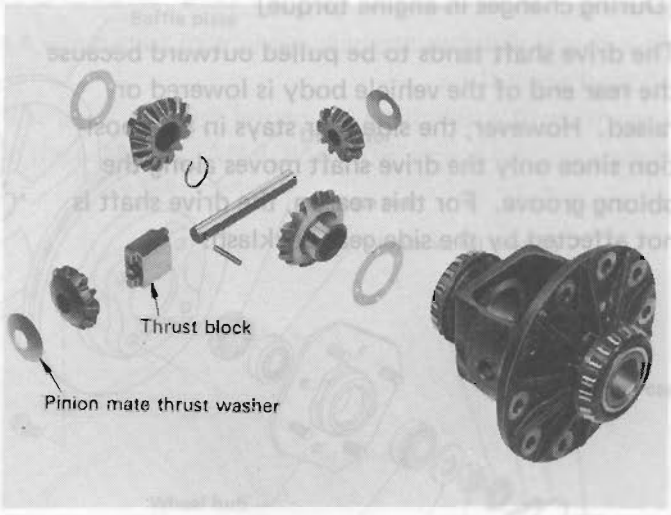


"1_1" RANGE (1st gear)



FINAL DRIVE

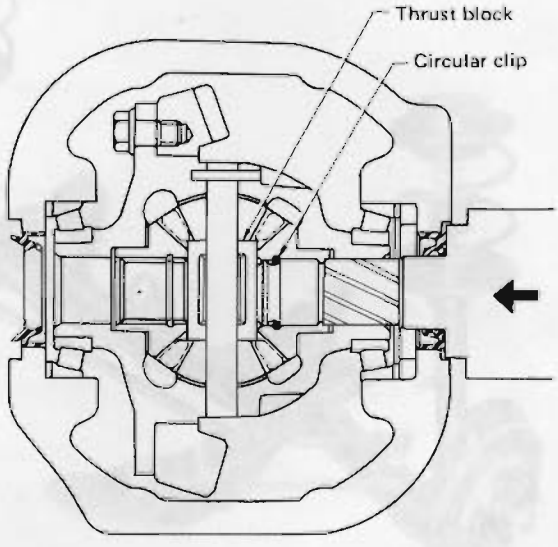
To accommodate the increased engine output, the R200 final drive has been installed in all models. This R200 final drive has undergone slight modifications and differs from the same type used in the S130 series model.



- A pinion mate thrust washer has been added for increased durability.
- On the turbocharged model, the size of the ring gear bolt has been changed to "M12 x 1.25" (M10 x 1.25 on all other models).
  In addition, a coat of locking sealer has been applied to the ring gear bolt threads as well as to the mating surface of the ring gear and differential case (all models).
- On non-turbocharged VG30E models, a thrust block has been added and the drive shaft have been modified. These improvements prevent a shock caused by a backlash existing between the side gear and pinion mate gear which occurs when the accelerator pedal is repeatedly depressed and released causing changes in engine torque.
  On the turbocharged VG30E model, however, the Birfield drive shaft has been employed which does not require such modifications.

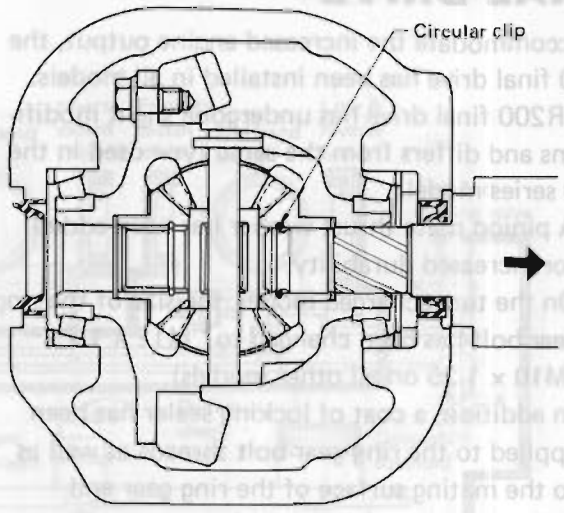
[During constant-speed operation]

The spring in the drive shaft on the axle side presses the drive shaft toward the final drive. The circular clip section has an oblong grooved design so only the drive shaft moves toward the final drive. This movement of the drive shaft is regulated by a thrust block.



[During changes in engine torque]

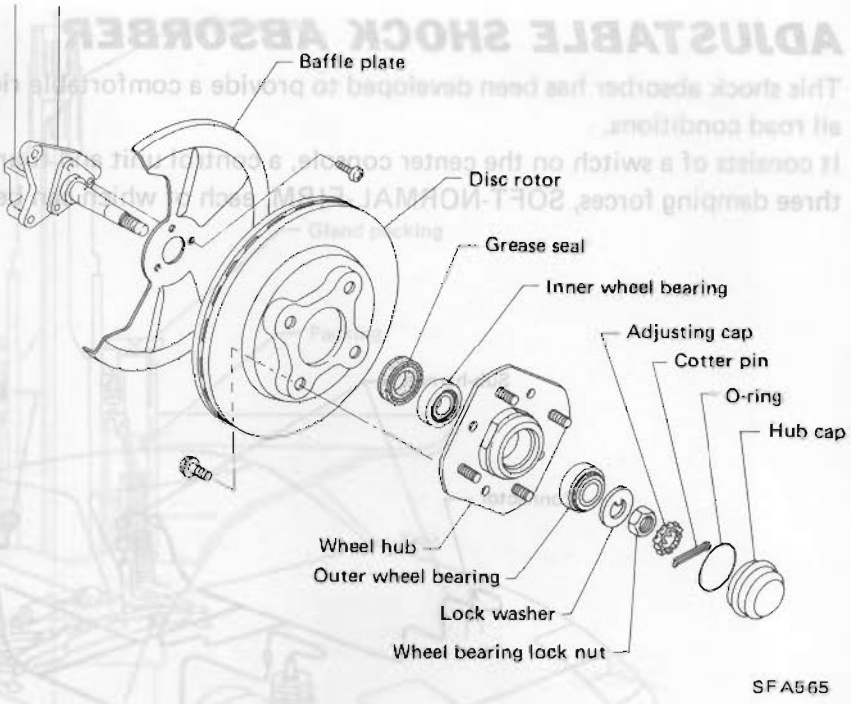
The drive shaft tends to be pulled outward because the rear end of the vehicle body is lowered or raised. However, the side gear stays in that position since only the drive shaft moves along the oblong groove. For this reason, the drive shaft is not affected by the side gear backlash.



FRONT AXLE AND FRONT SUSPENSION

FRONT AXLE

- The front axle is basically the same as the 280ZX model.
- The wheel hub has been improved so that the road wheel can be installed using the wheel hub boss.



FRONT SUSPENSION

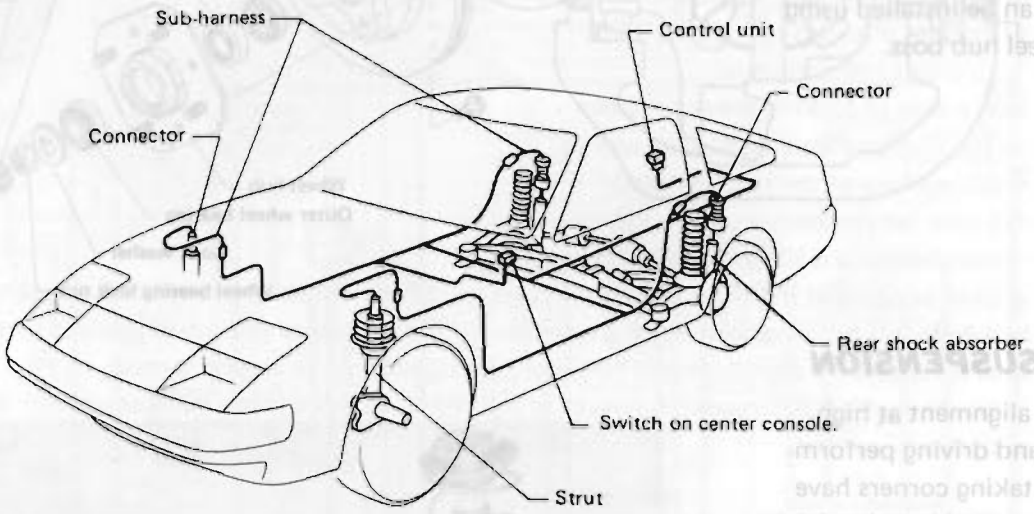
- Driving alignment at high speeds and driving performance in taking corners have been improved by adopting an offset caster.
- The nose dive when braking has been reduced by adopting a higher caster.
- Braking stability and anti-shimmy performance have been improved by adopting a smaller scrub radius.
- The offset coil spring provides a comfortable ride.
- The zero-millimeter toe-in provides improvement in driving stability.
- Precision in taking corners has been improved by adopting a wider tread.

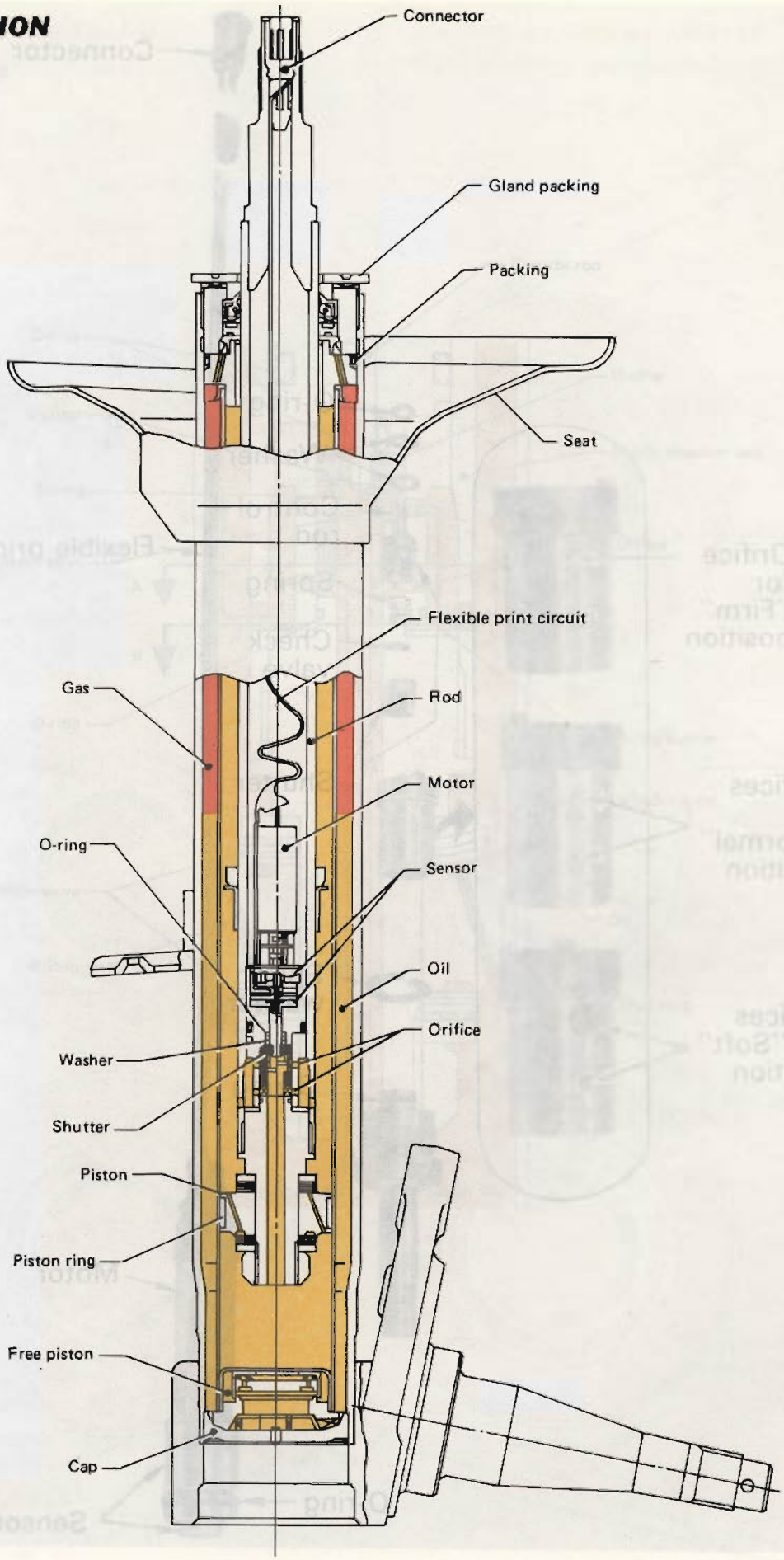
		300ZX	280ZX
Camber	degree	0°10′	0°10′
Toe-in	mm (in)	0 (0)	2 (0.08)
Caster	degree	6°35′	4°55′
Caster offset	mm (in)	20 (0.79)	0 (0)
Trail	mm (in)	16 (0.63)	26 (1.02)
Kingpin inclination	degree	13°	9°20′
Scrub radius	mm (in)	15 (0.59)	54.5 (2.146)

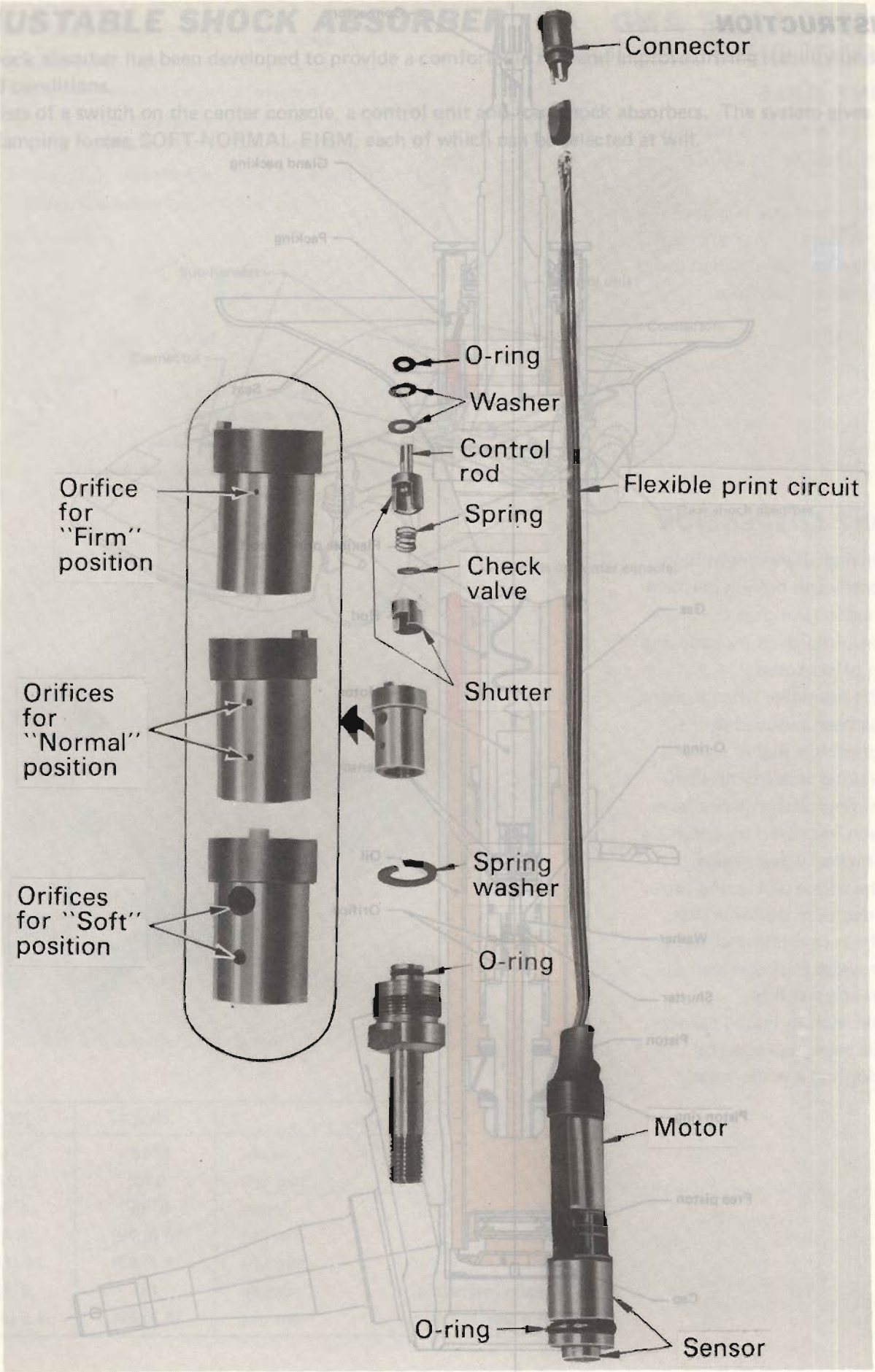
ADJUSTABLE SHOCK ABSORBER

This shock absorber has been developed to provide a comfortable ride and improve driving stability under all road conditions.

It consists of a switch on the center console, a control unit and four shock absorbers. The system gives you three damping forces, SOFT-NORMAL-FIRM, each of which can be selected at will.

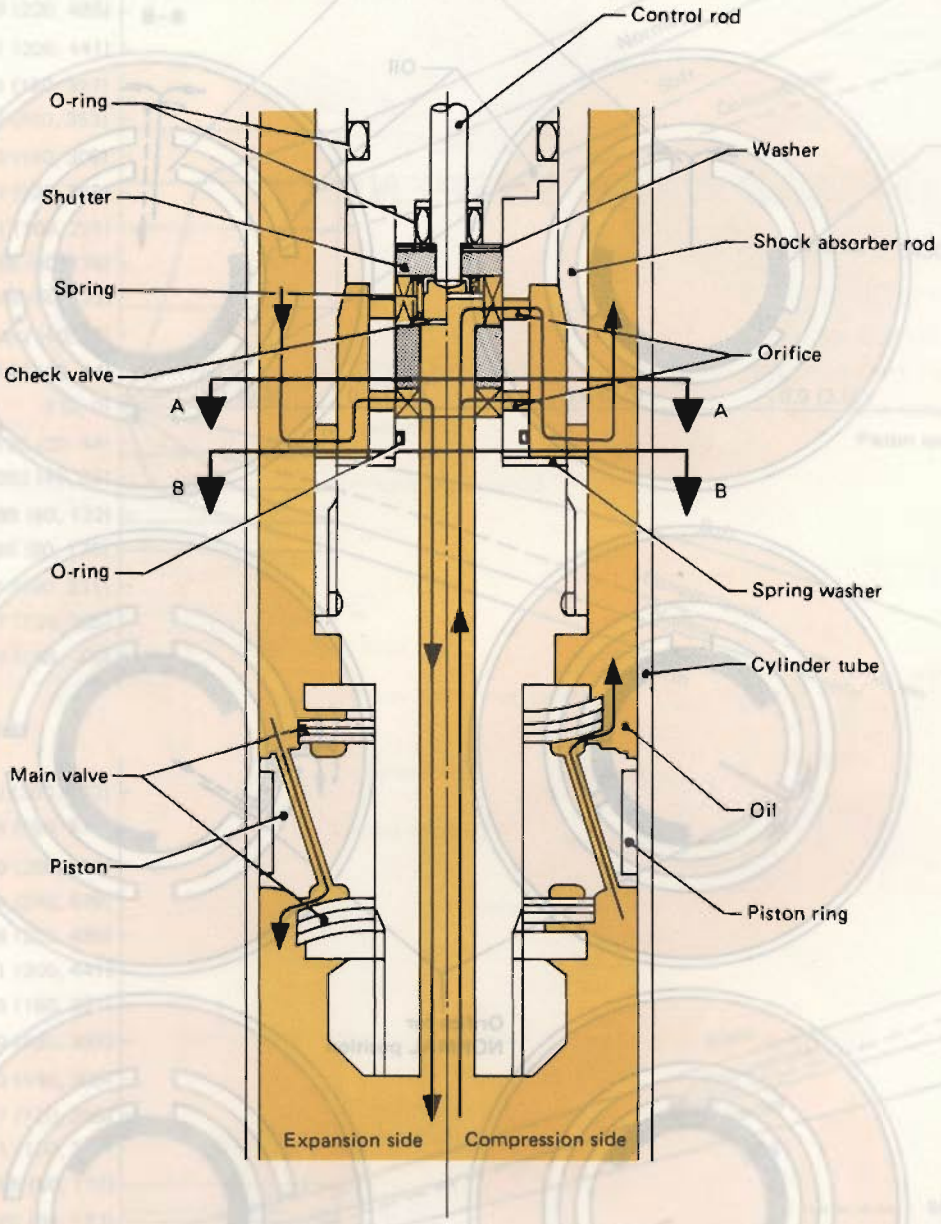



Connector
Gland packing
Packing
Seat
Flexible print circuit
Gas
Rod
Motor
O-ring
Sensor
Oil
Orifice
Washer
Shutter
Piston
Piston ring
Free piston
Cap


Connector
O-ring
Washer
Control rod
Flexible print circuit
Orifice for "Firm" position
Spring
Check valve
Shutter
Orifices for "Normal" position
Spring washer
Orifices for "Soft" position
O-ring
Motor
O-ring
Sensor

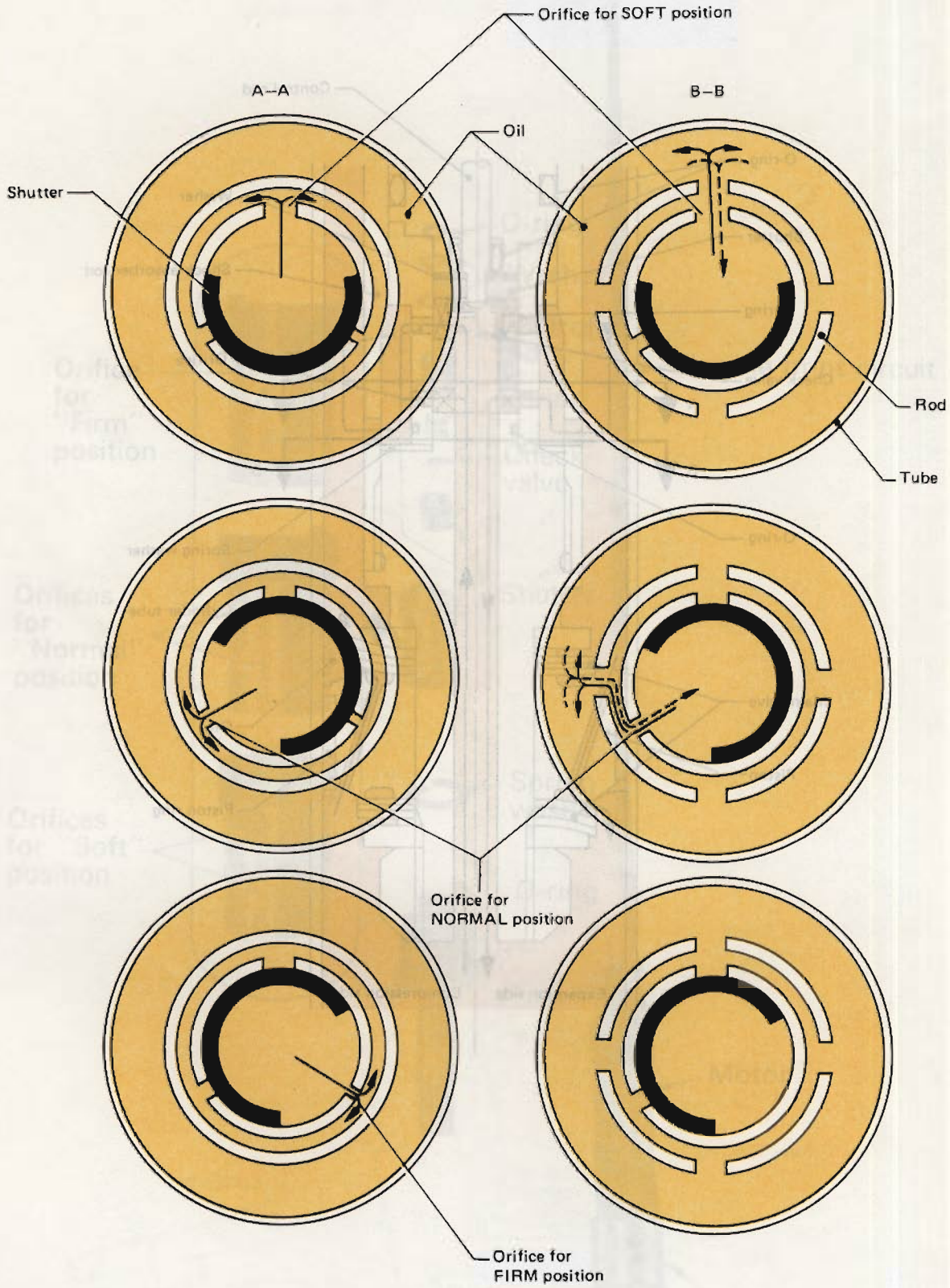
OPERATION

(1) Oil flow image



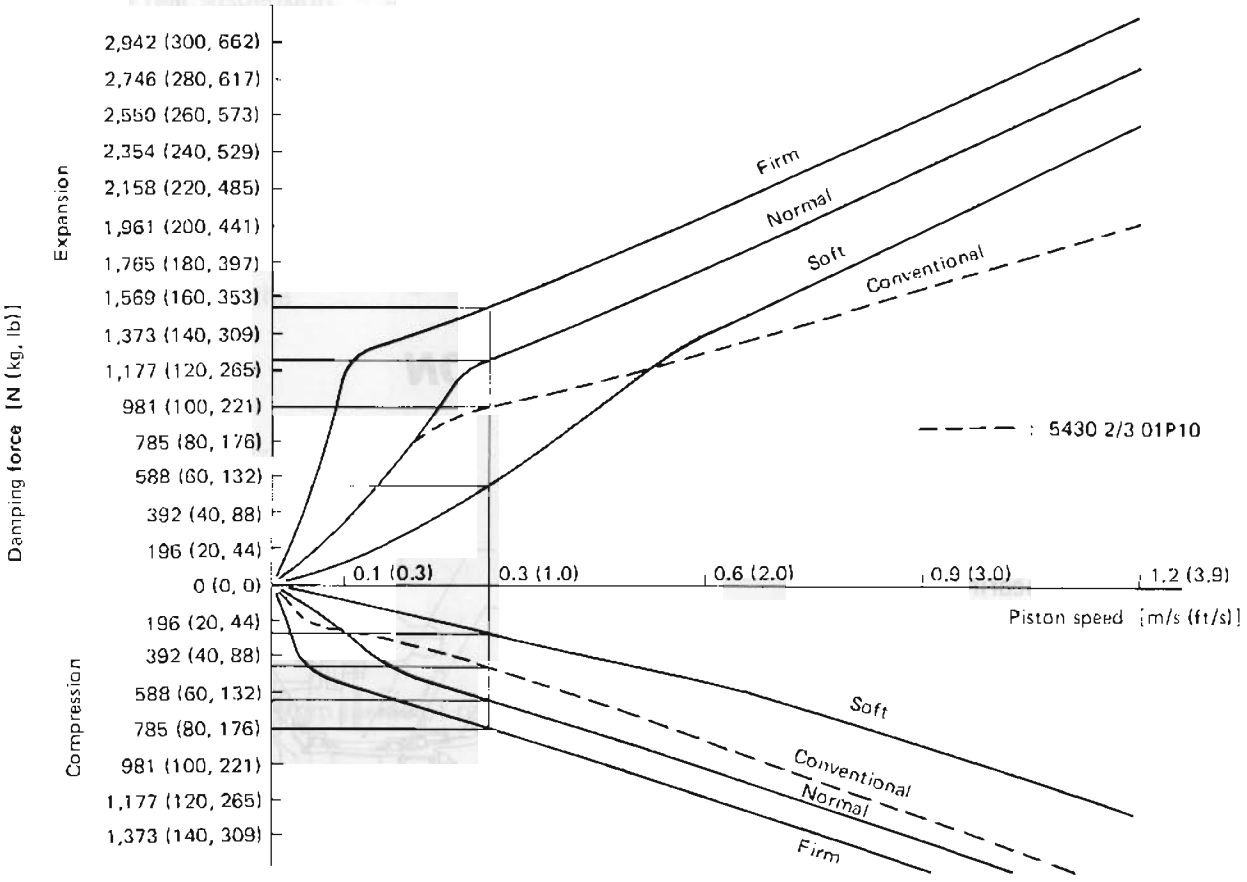
(2) Relationship between Shutter and Orifice

——— Compression – – – – Expansion

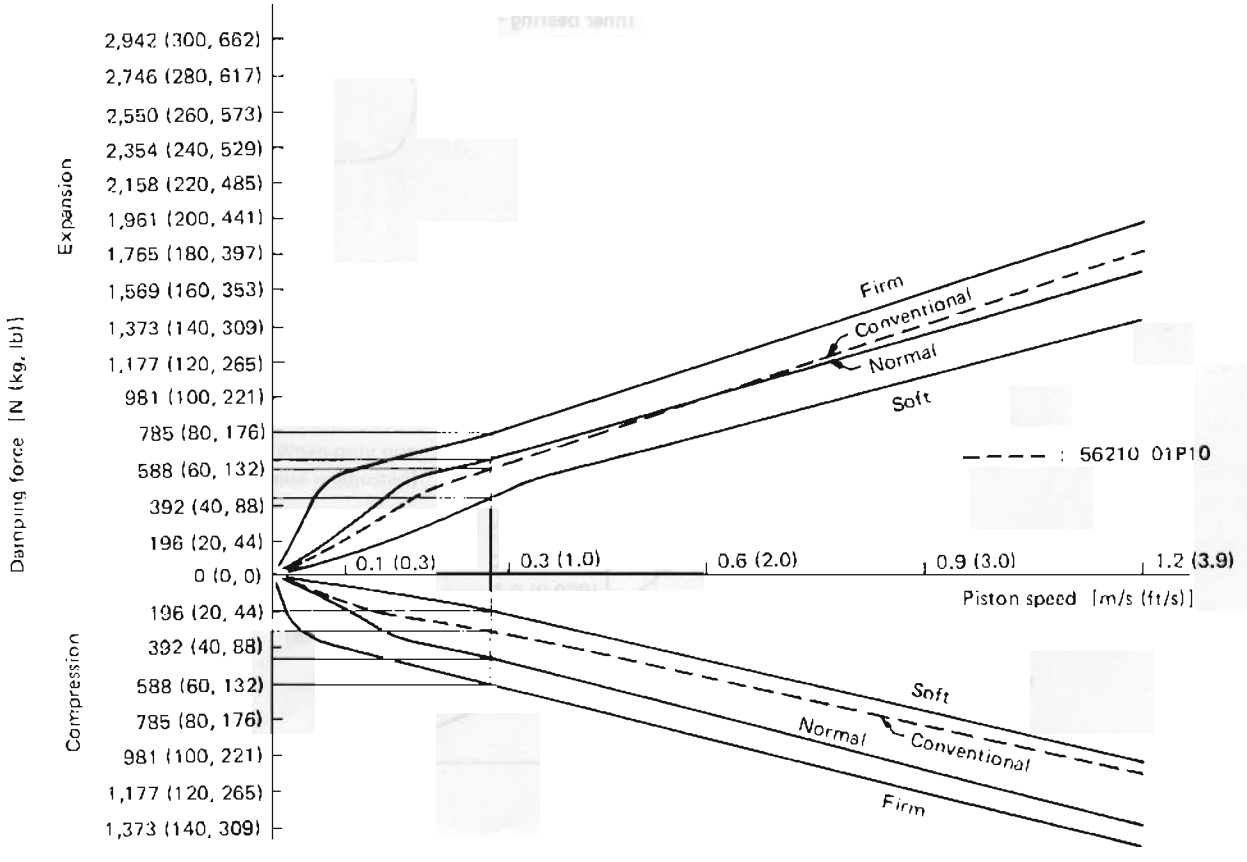


DAMPING FORCE CHART

Front strut

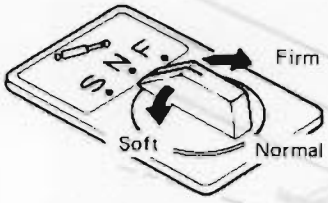


Rear shock absorber



If anything should go wrong with this shock absorber system:

The indicator on the switch goes on and off as shown below and the shock absorbers, except the damaged one, will automatically be set in the normal position by the control unit.

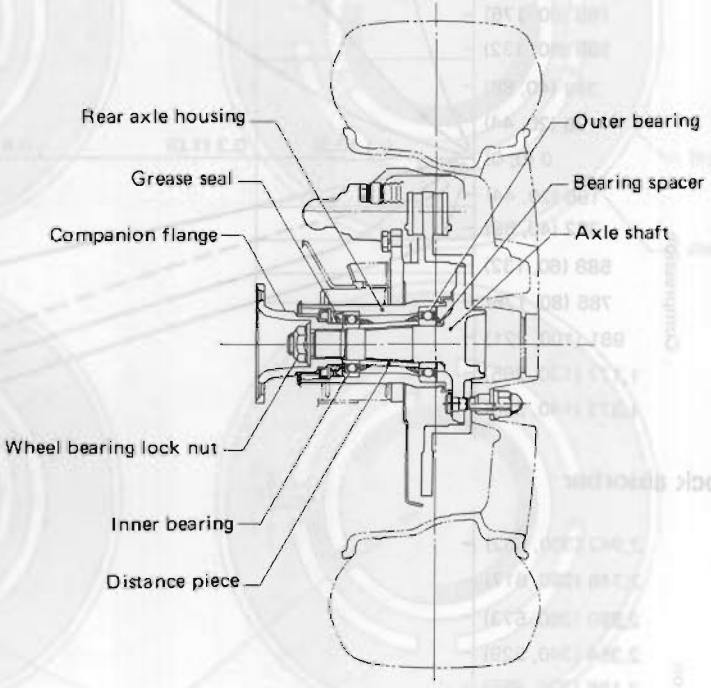


Example:
When you have a problem in the FIRM position, light emitting diodes (LEDs) for the NORMAL and SOFT positions will go on and off. For trouble shooting, refer to the Service Manual.

REAR AXLE AND REAR SUSPENSION

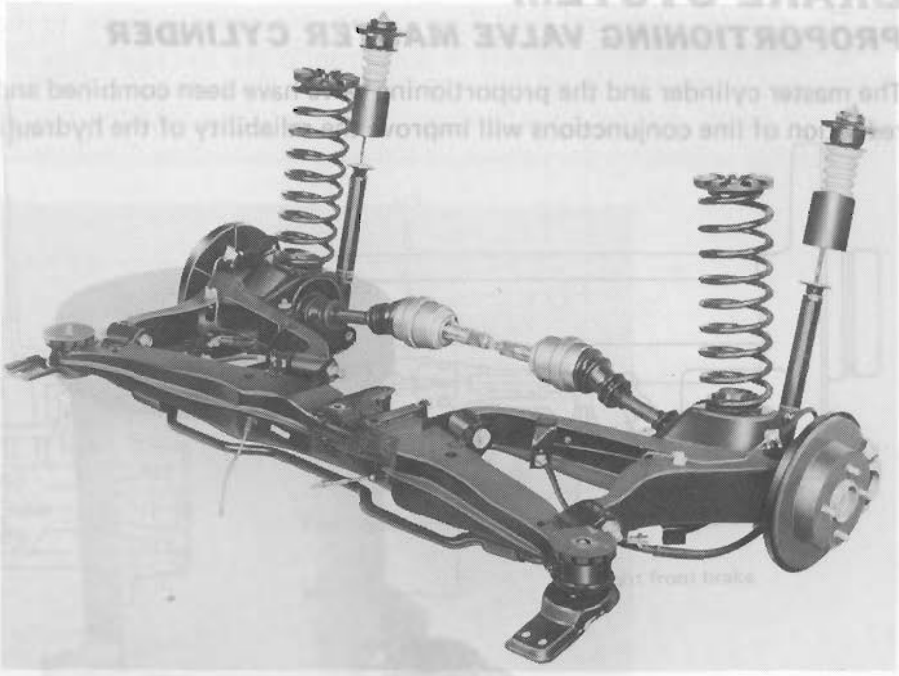
REAR AXLE

- The rear axle is basically the same as the 280ZX model.
- The axle shaft between the inner and outer bearings is tapered.



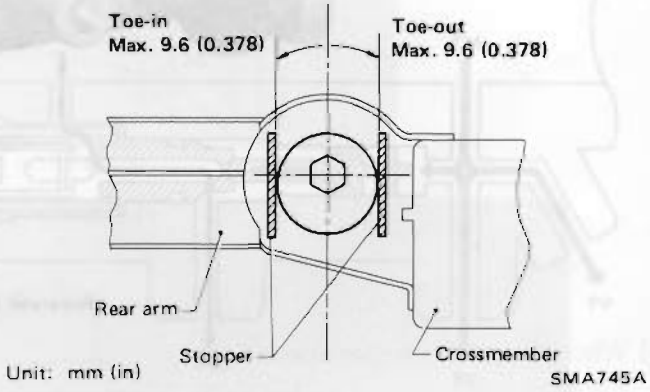
REAR SUSPENSION

- A semi-trailing-type independent rear suspension has been adopted.
- A toe-in adjustment can be made.
- A shock absorber and a coil spring are separately installed.
- An adjustable shock absorber has been adopted for the turbocharged model.

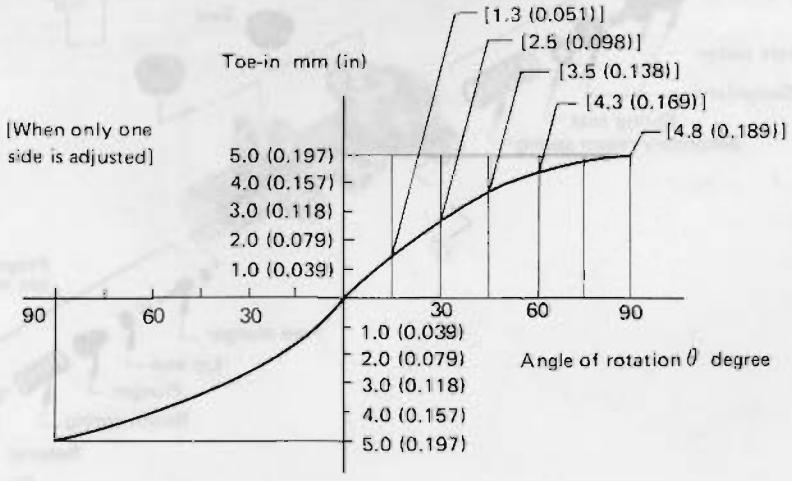


TOE-IN ADJUSTMENT:

- Toe-in can be adjusted from inside of rear arm bushing pins.
- When performing toe adjustment, always set the cams in the same position on the right and left rear arm bushing pins.



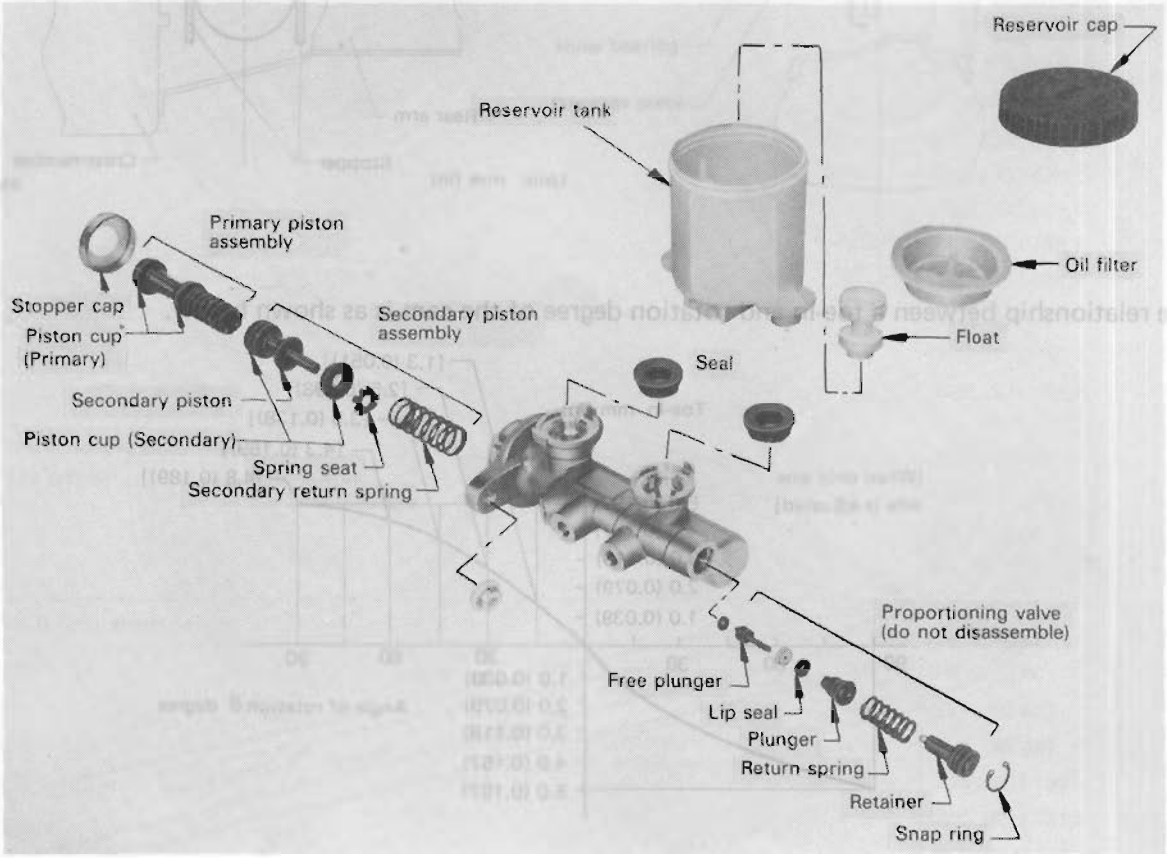
- The relationship between a toe-in and rotation degree of the cam is as shown below.

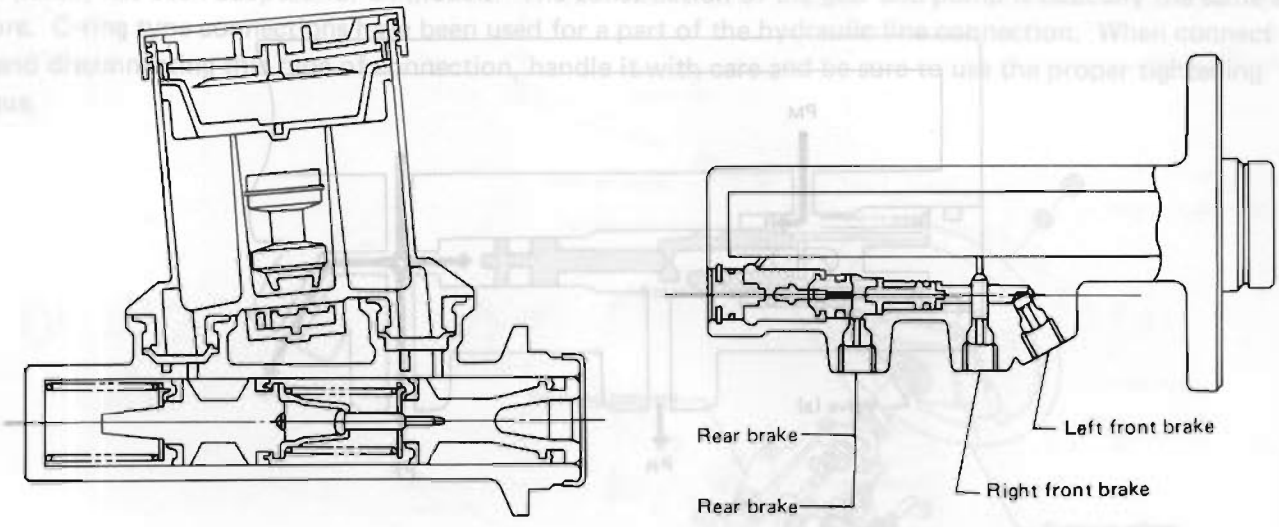


BRAKE SYSTEM

PROPORTIONING VALVE MASTER CYLINDER

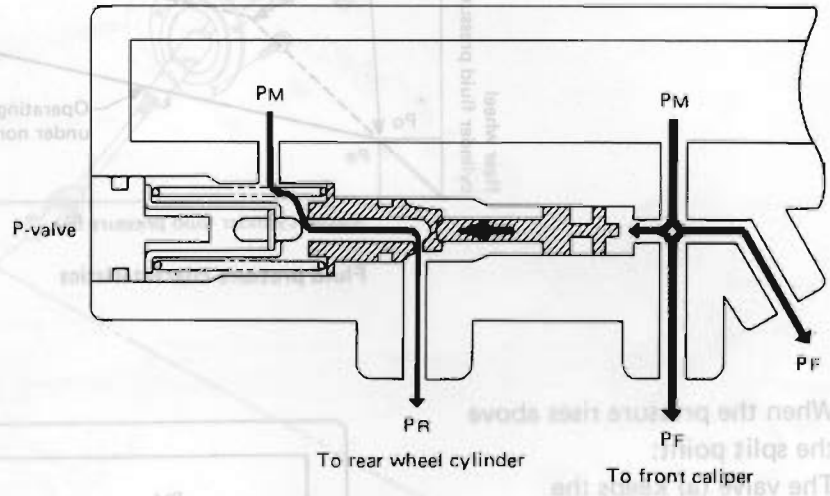
The master cylinder and the proportioning valve have been combined and it is expected that the subsequent reduction of line conjunctions will improve the reliability of the hydraulic system.



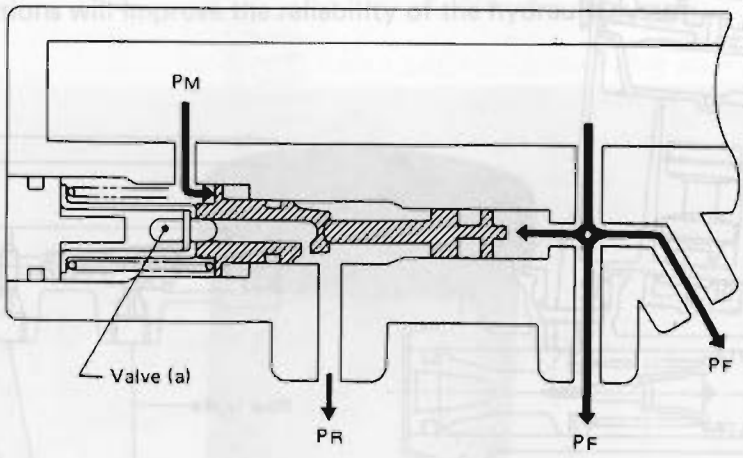


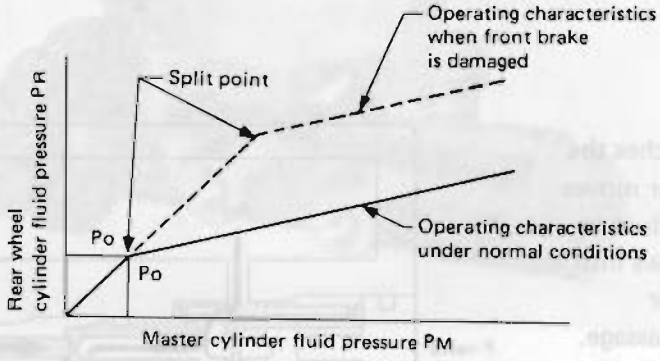
VALVE OPERATION:

(1) Until the pressure reaches the split point, the plunger moves to the left and brake fluid in the secondary line flows into the rear wheel cylinder through the plunger passage. Thus, master cylinder fluid pressure PM equals rear wheel cylinder fluid pressure PR.



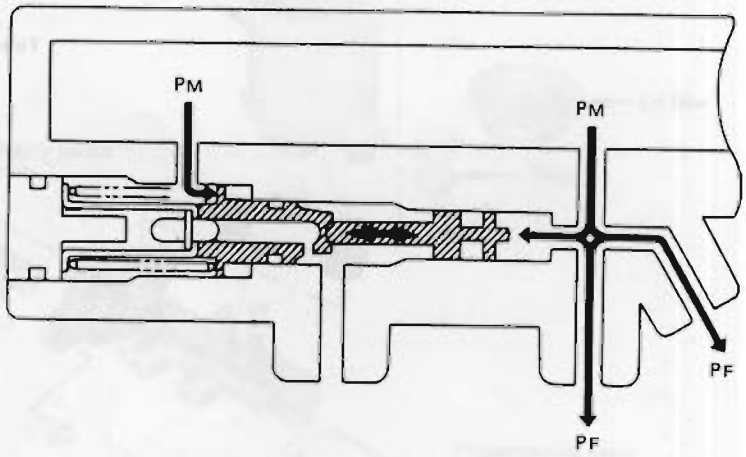
(2) When the pressure reaches the split point:
The valve (a) closes and fluid flowing from the master cylinder to the rear wheel cylinder is shut off. At this time, the fluid pressure in both front-brake and rear-brake wheel cylinders is equal to Po.





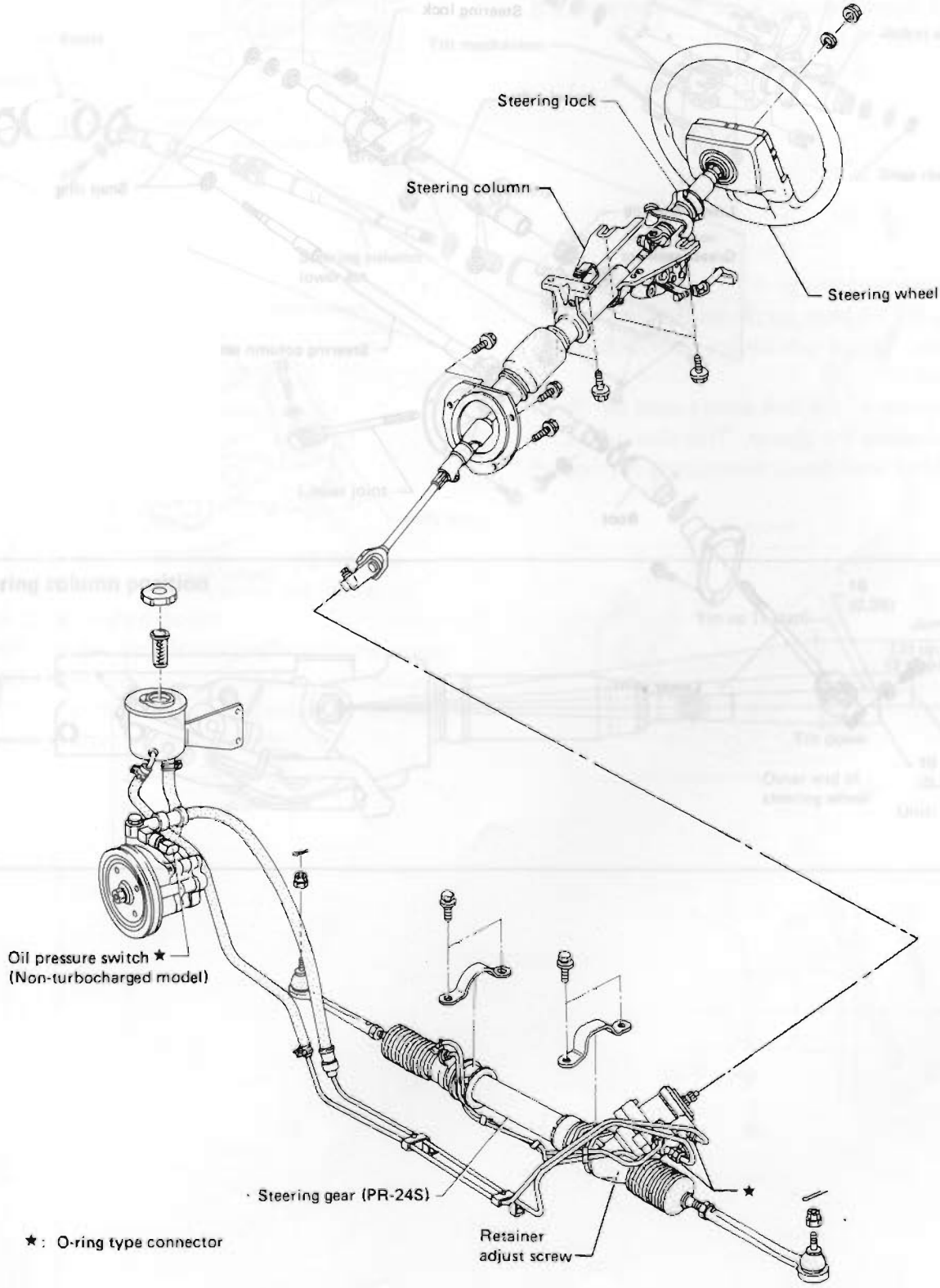
Fluid pressure characteristics

(3) When the pressure rises above the split point:
The valve (a) keeps the pressure increasing ratio on the rear wheel cylinder lower than that of the master cylinder, thereby maintaining the reciprocating motion of the plunger beyond the split point resulting in the anti-lock operation of the rear wheels.



STEERING SYSTEM

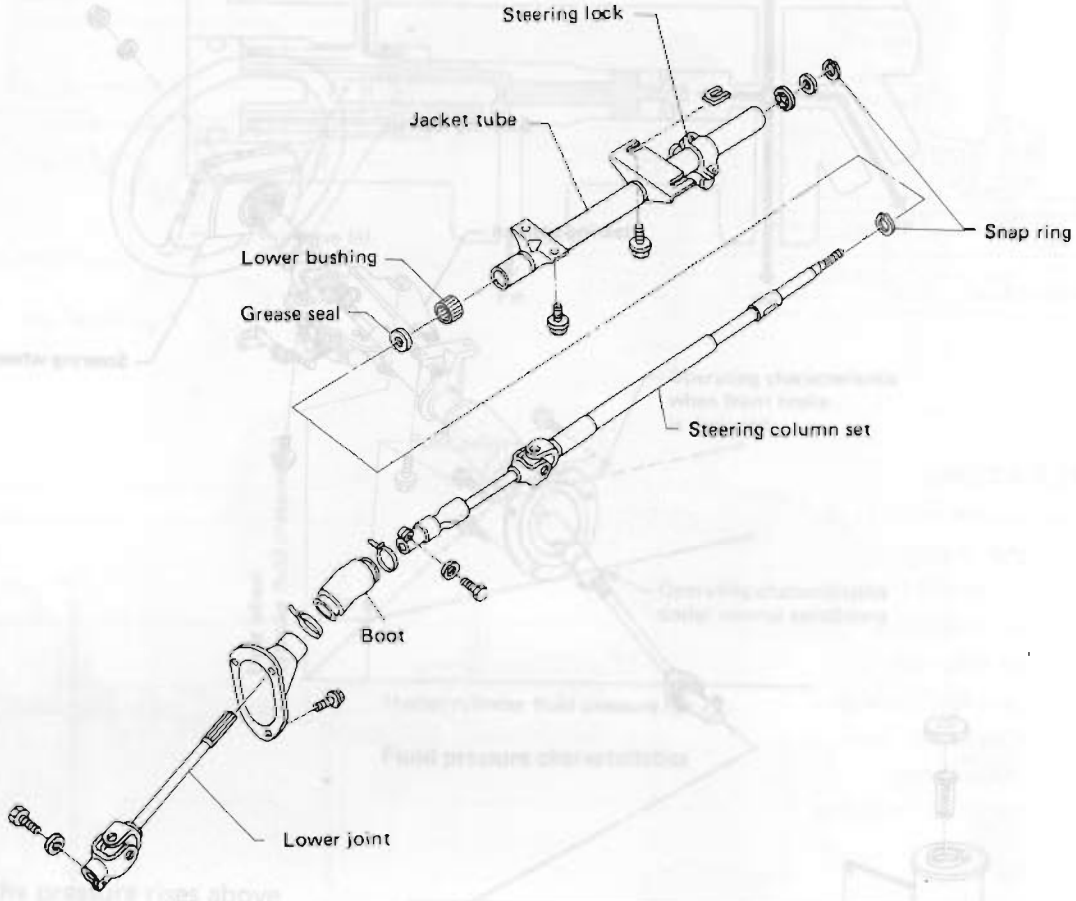
A power steering having a newly designed gear [Rack diameter: 24 mm (0.94 in)] and pump (Small vane type pump) has been adopted for all models. The construction of the gear and pump is basically the same as before. O-ring type connections have been used for a part of the hydraulic line connection. When connecting and disconnecting this type of connection, handle it with care and be sure to use the proper tightening torque.



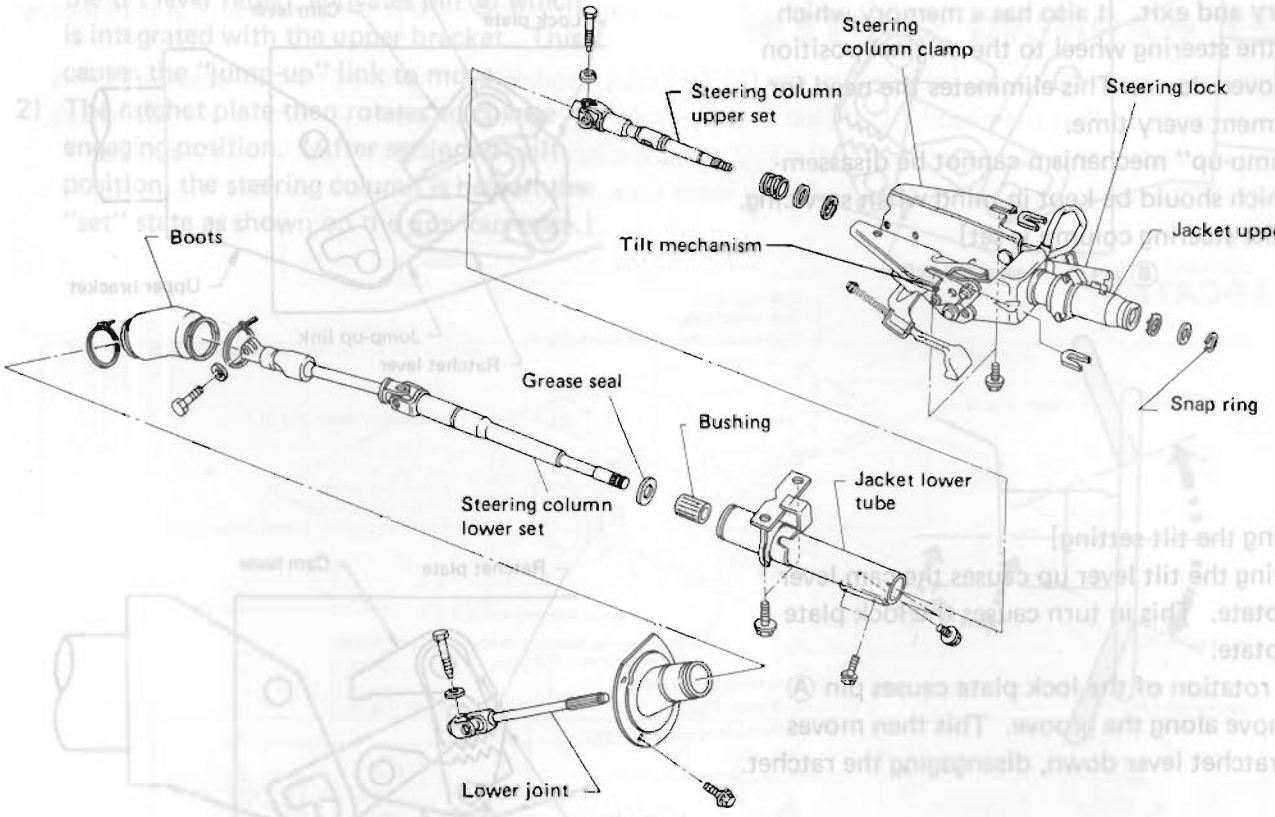
STEERING COLUMN

A newly designed tilt type steering column has been adopted for the GL and GLL models and a non-tilt type steering column for the SF model. This tilt mechanism must not be disassembled.

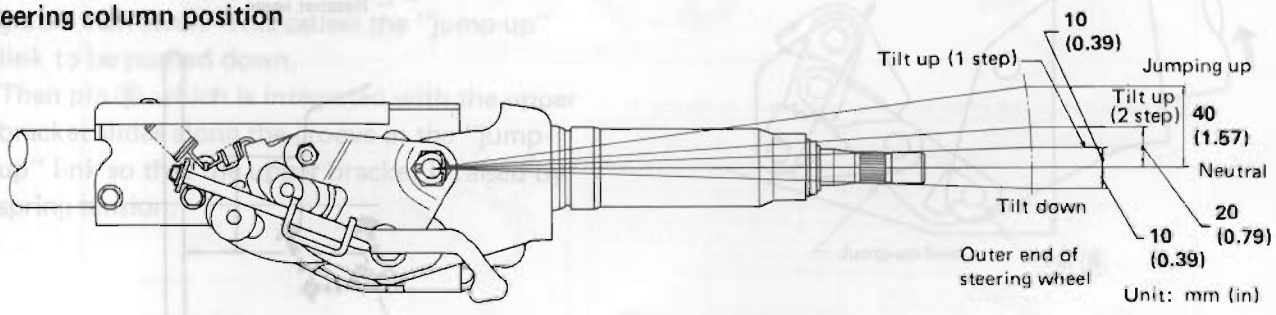
Non-tilt type



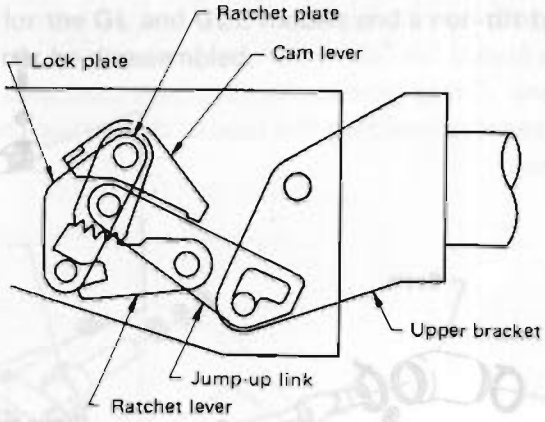
Tilt type



Steering column position

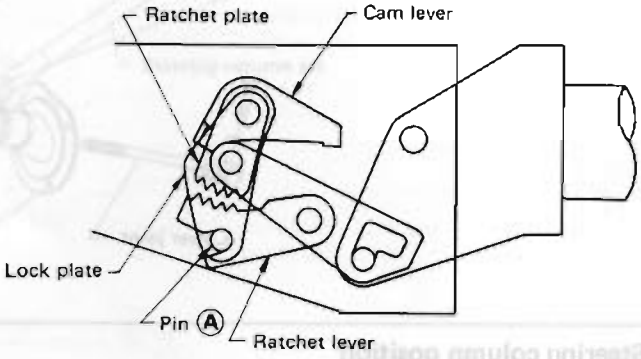


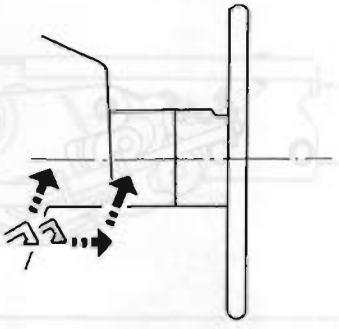
A mechanism which raises the steering wheel has been provided in the tilt steering column to facilitate entry and exit. It also has a memory which returns the steering wheel to the original position when moved down. This eliminates the need for readjustment every time.
This "jump-up" mechanism cannot be disassembled, which should be kept in mind when servicing.
[When the steering column is set]



[Releasing the tilt setting]

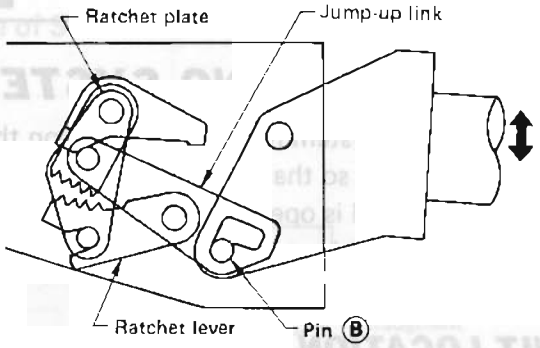
1) Moving the tilt lever up causes the cam lever to rotate. This in turn causes the lock plate to rotate.
2) The rotation of the lock plate causes pin Ⓐ to move along the groove. This then moves the ratchet lever down, disengaging the ratchet.

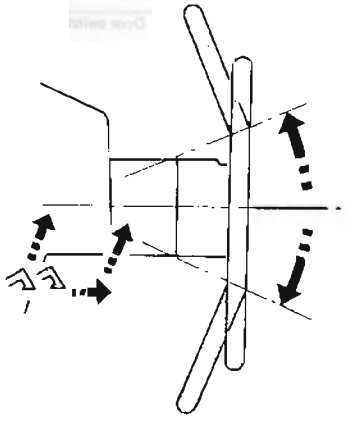




[Tilt operation]

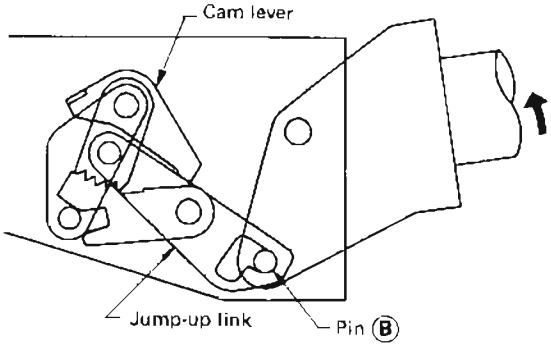
1) Moving the steering wheel up or down with the tilt lever raised, activates pin Ⓑ which is integrated with the upper bracket. This causes the "jump-up" link to move.
2) The ratchet plate then rotates to change its engaging position. (After setting the tilt position, the steering column is held in the "set" state as shown on the previous page.)

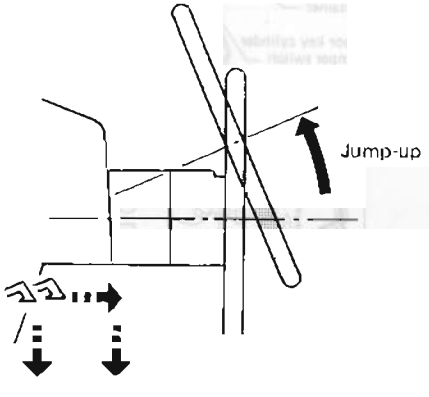




["Jump-up" operation]

1) Moving the tilt lever down rotates the integrated cam lever. This causes the "jump-up" link to be pushed down.
2) Then pin Ⓑ which is integrated with the upper bracket slides along the groove in the "jump-up" link so that the upper bracket is raised by spring tension.

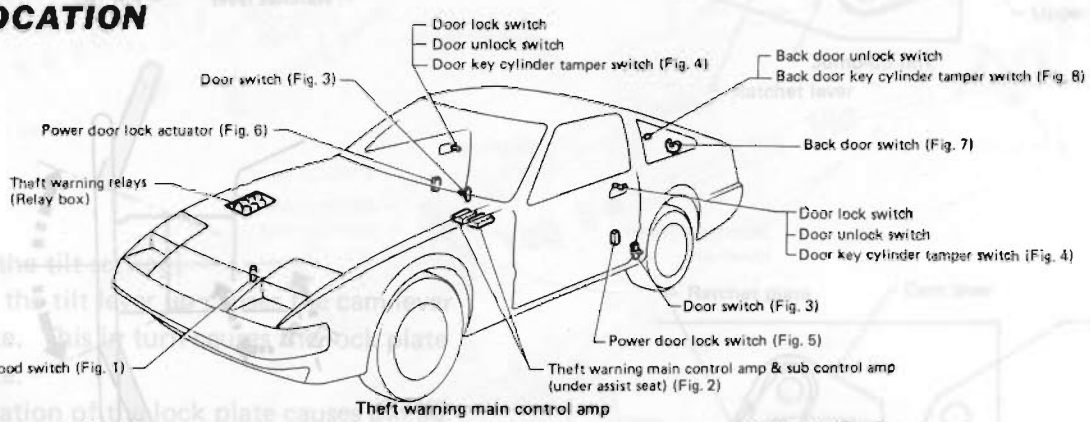




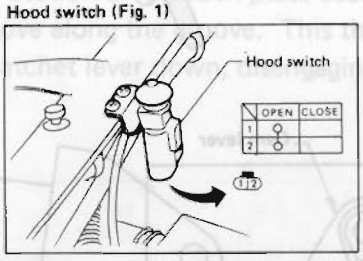
THEFT WARNING SYSTEM

A theft warning system has been installed on the GL and GLL models for improved theft protection. This system is designed so that the headlights flicker and the horn sounds intermittently if any one of the doors, back door or hood is opened without using the key when the ignition switch is in "OFF" and the doors, back door and hood are closed and locked. At the same time, it becomes impossible to start the starter motor.

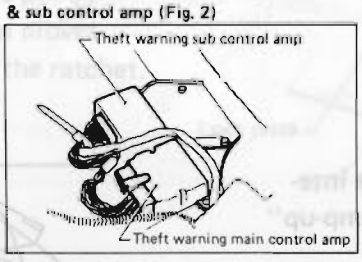
UNIT LOCATION



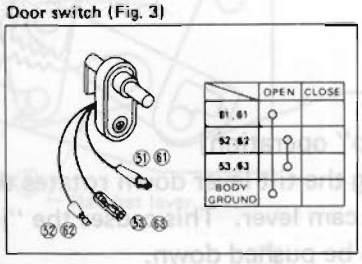
Hood switch (Fig. 1)



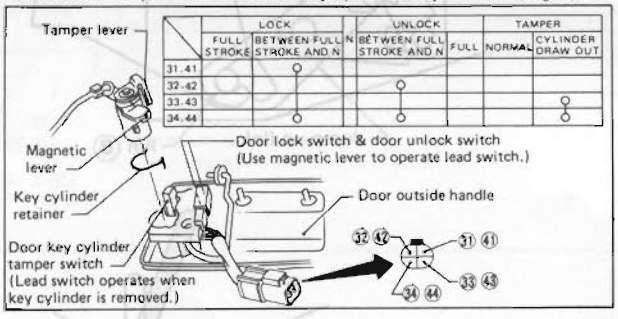
Theft warning main control amp & sub control amp (Fig. 2)



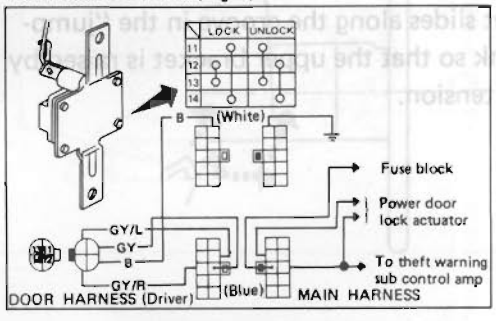
Door switch (Fig. 3)



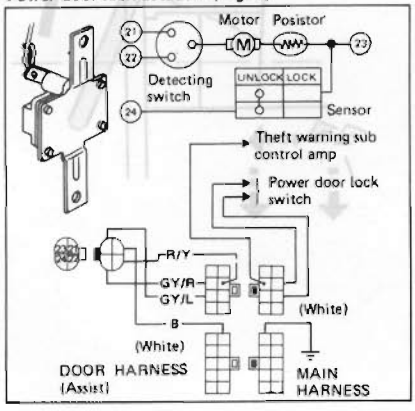
Door lock switch, unlock switch and key cylinder tamper switch (Fig. 4)



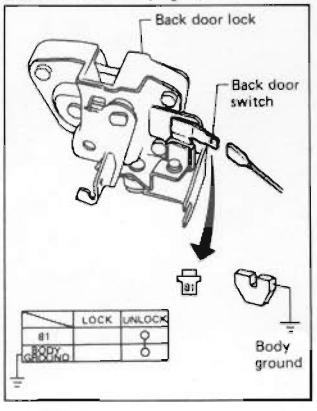
Power door lock switch (Fig. 5)



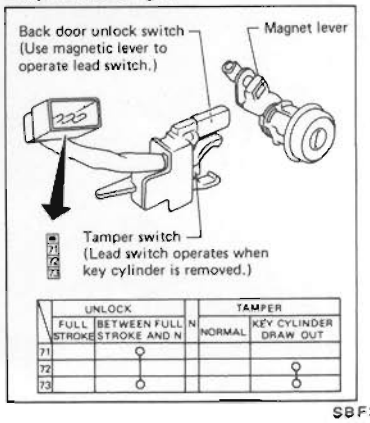
Power door lock actuator (Fig. 6)



Back door switch (Fig. 7)



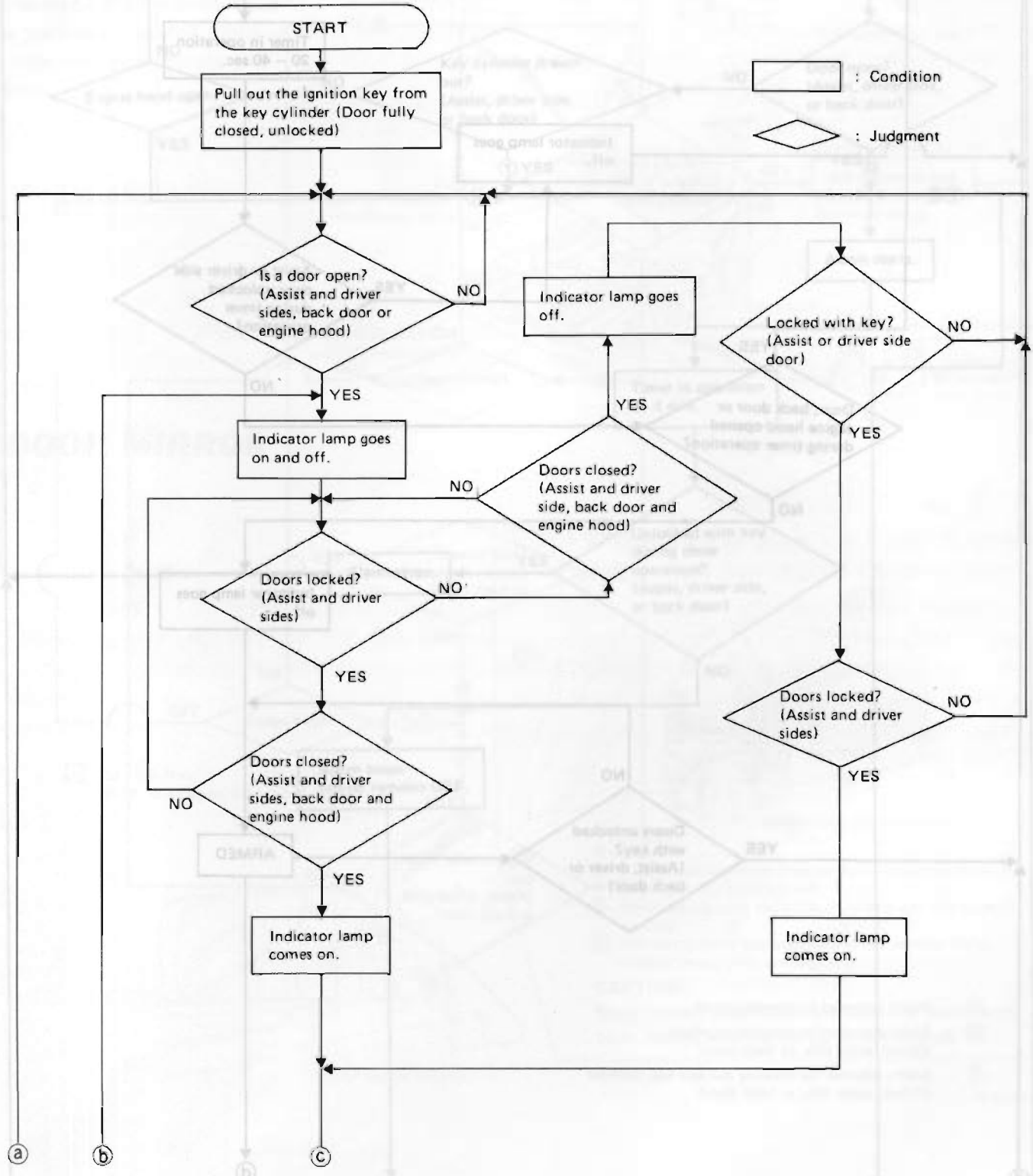
Back door unlock switch & key cylinder tamper switch (Fig. 8)

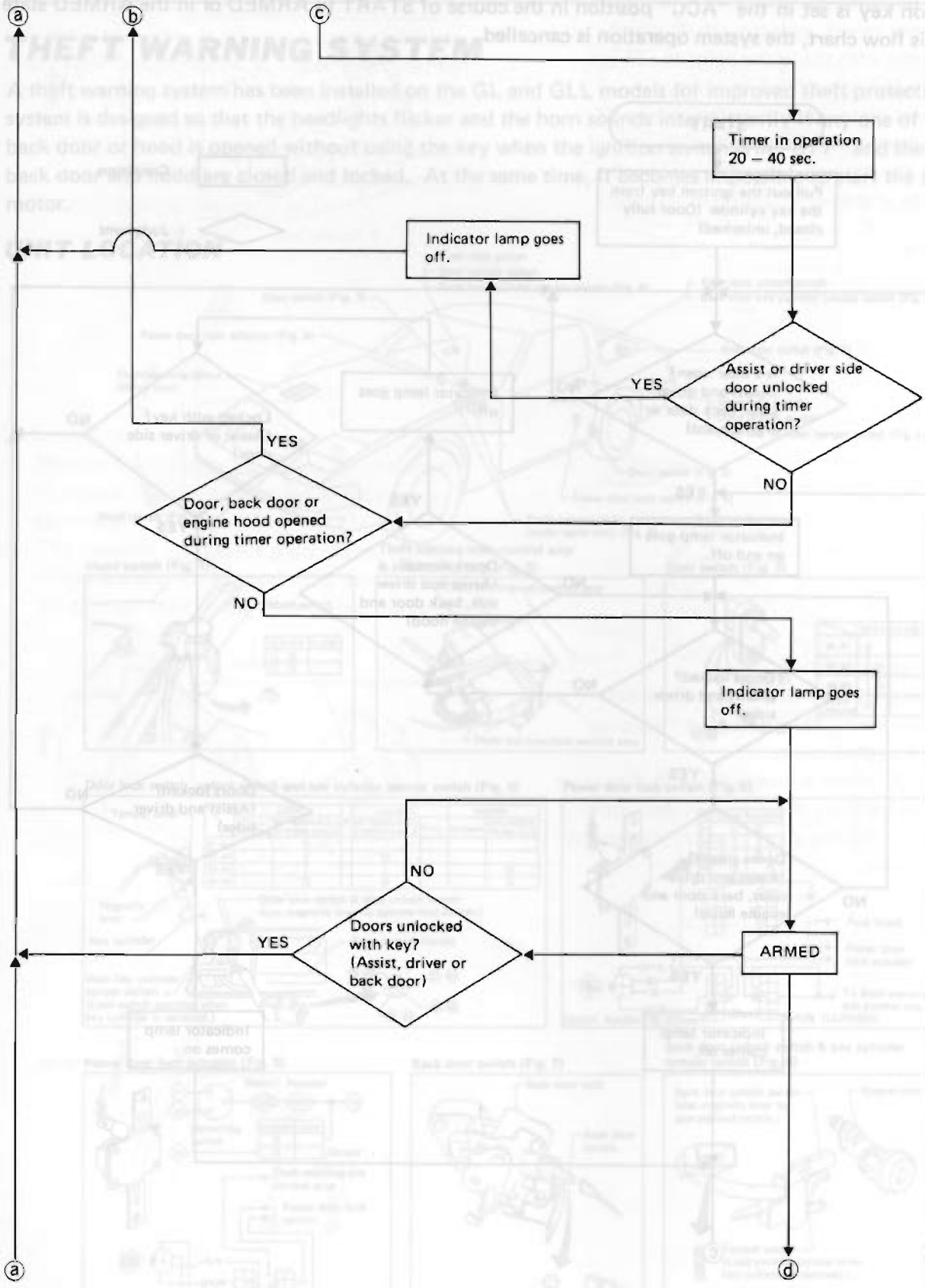


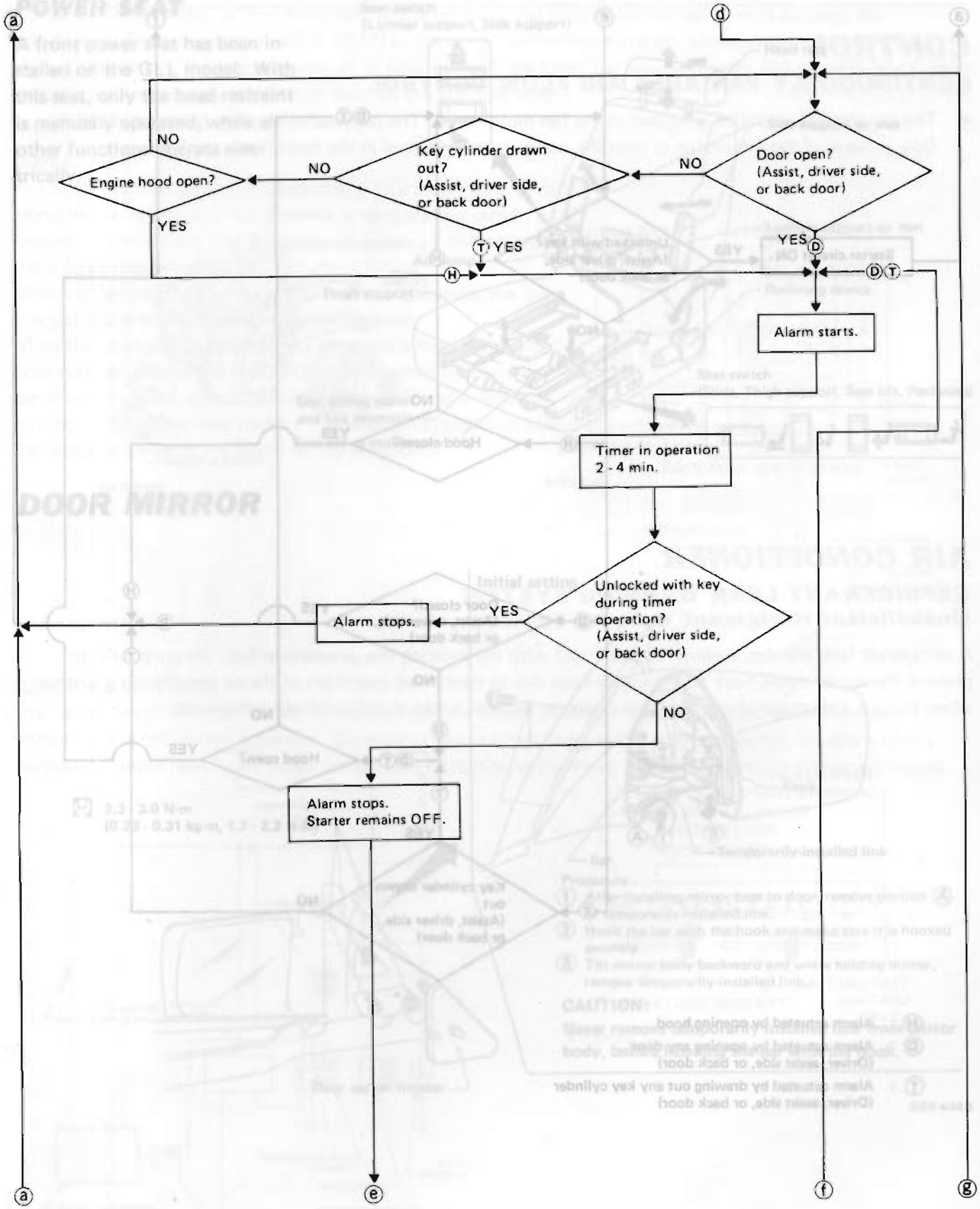
SBF390B

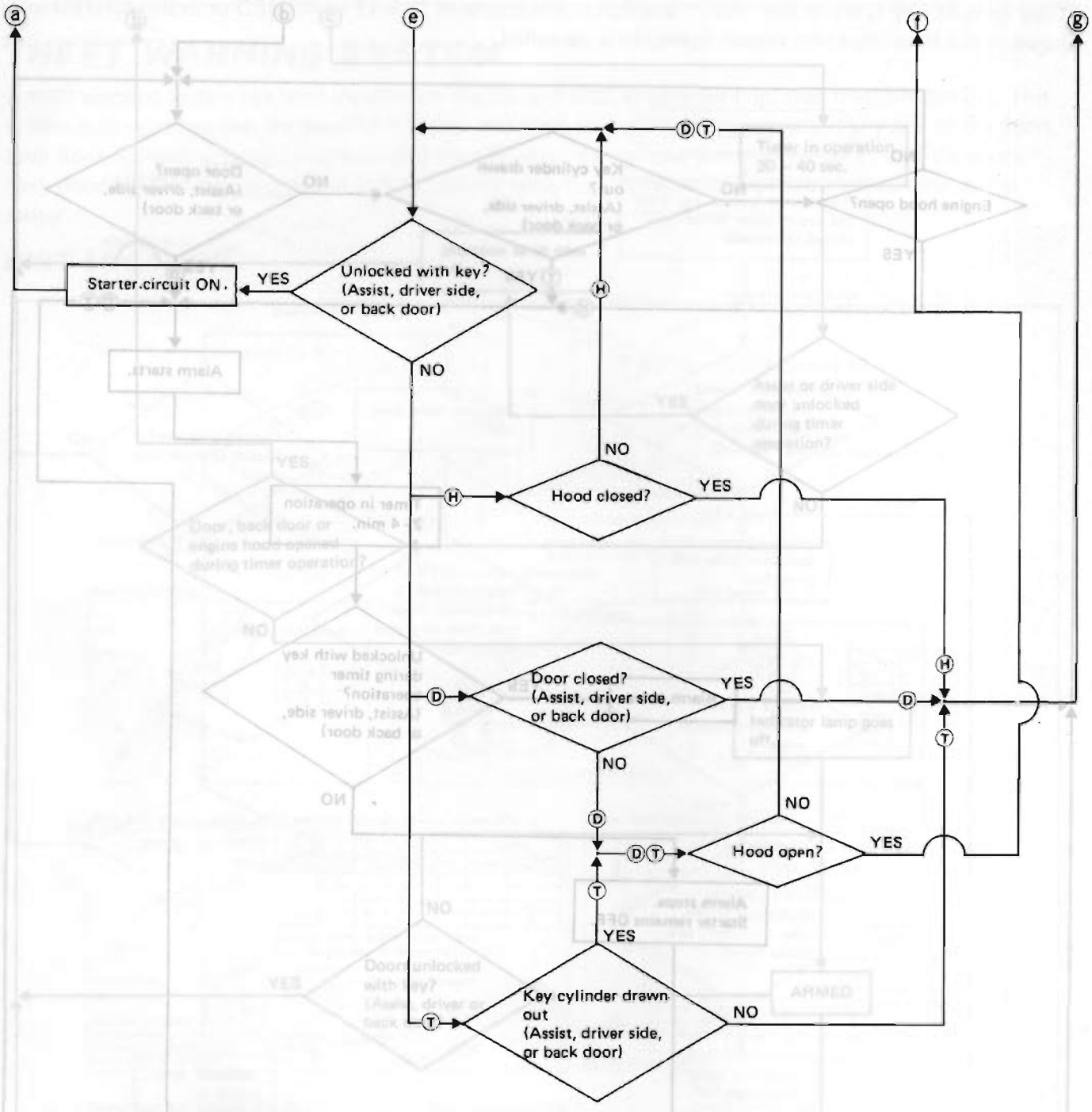
SYSTEM OPERATION

If the ignition key is set in the "ACC" position in the course of START to ARMED or in the ARMED state shown in this flow chart, the system operation is cancelled.




ⓐ
ⓑ
ⓒ
Timer in operation
20 – 40 sec.
Indicator lamp goes off.
YES
Assist or driver side door unlocked during timer operation?
NO
YES
Door, back door or engine hood opened during timer operation?
NO
Indicator lamp goes off.
NO
YES
Doors unlocked with key? (Assist, driver or back door)
ARMED
ⓐ
ⓓ


ⓐ
ⓓ
Door open?
(Assist, driver side,
or back door)
NO
Key cylinder drawn
out?
(Assist, driver side,
or back door)
NO
Engine hood open?
NO
YES
Ⓣ YES
YES Ⓓ
Ⓗ
ⒹⓉ
Alarm starts.
Timer in operation
2 - 4 min.
Unlocked with key
during timer
operation?
(Assist, driver side,
or back door)
YES
Alarm stops.
NO
Alarm stops.
Starter remains OFF.
ⓐ
ⓔ
ⓕ
ⓖ



Ⓗ : Alarm actuated by opening hood

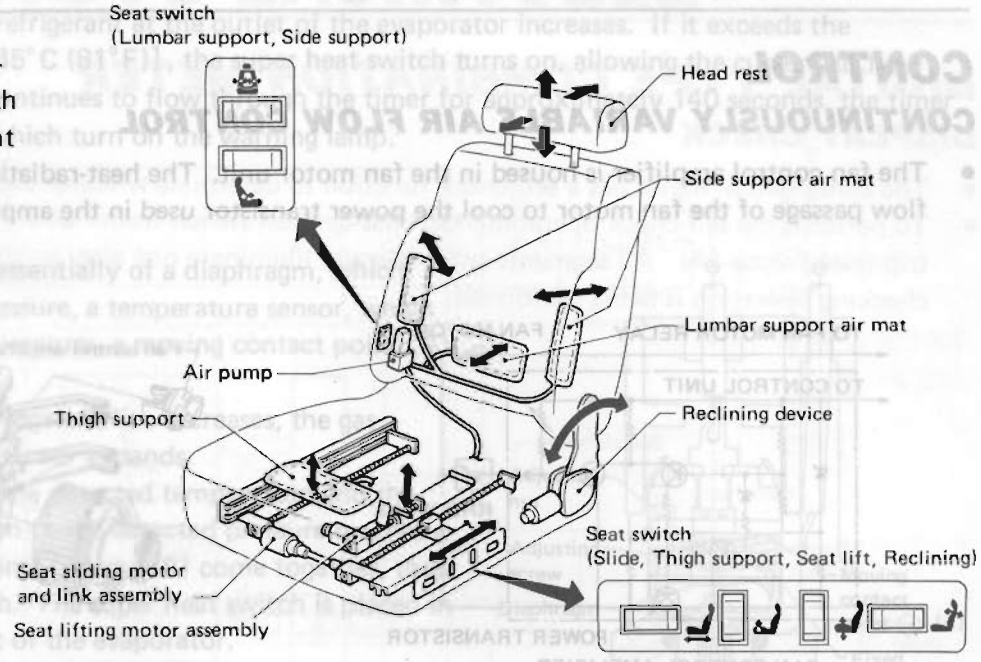
Ⓓ : Alarm actuated by opening any door
(Driver, assist side, or back door)

Ⓣ : Alarm actuated by drawing out any key cylinder
(Driver, assist side, or back door)

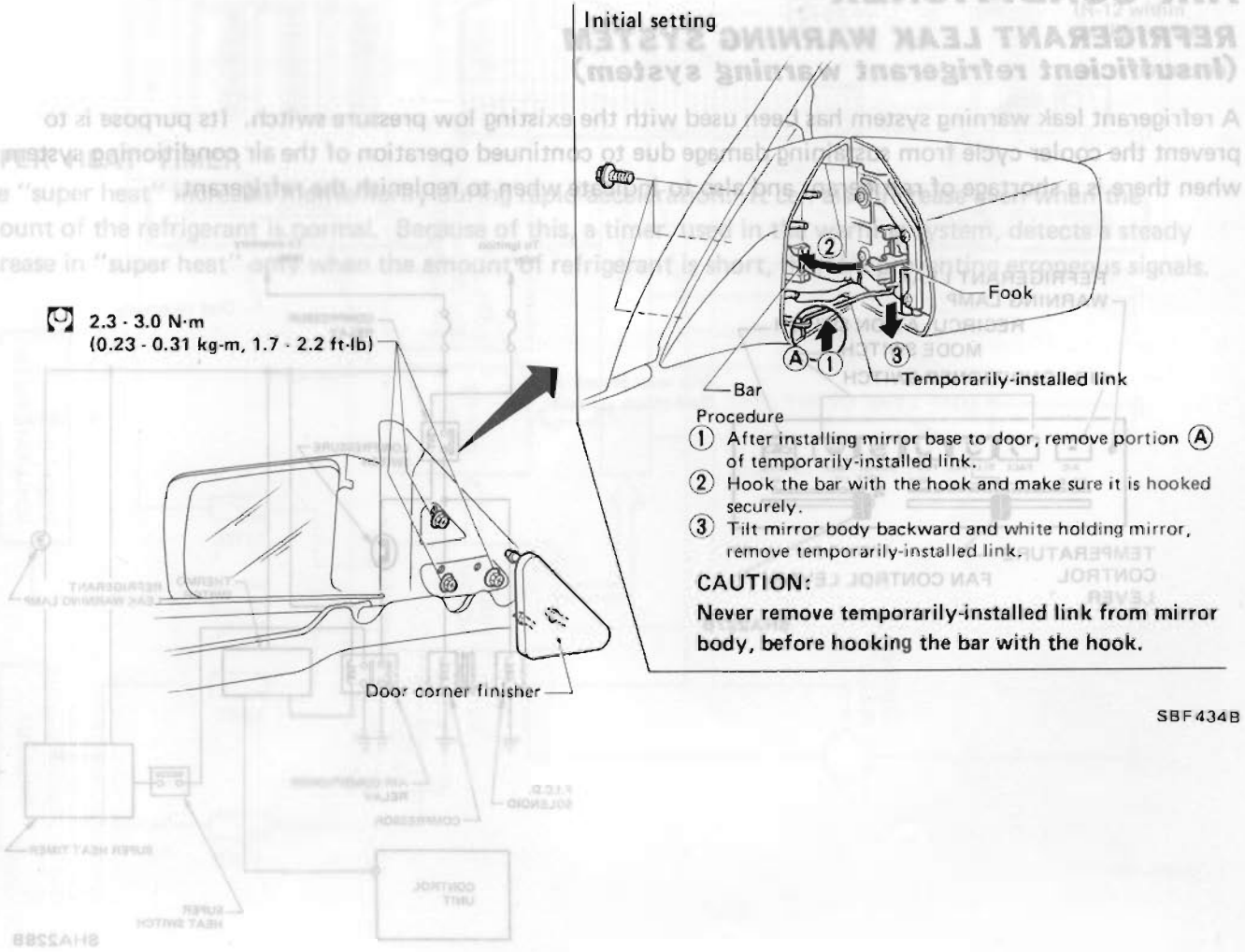
SEAT

POWER SEAT

A front power seat has been installed on the GLL model. With this seat, only the head restraint is manually operated, while all other functions operate electrically.



DOOR MIRROR



Procedure

1. After installing mirror base to door, remove portion (A) of temporarily-installed link.
2. Hook the bar with the hook and make sure it is hooked securely.
3. Tilt mirror body backward and white holding mirror, remove temporarily-installed link.

CAUTION:

Never remove temporarily-installed link from mirror body, before hooking the bar with the hook.

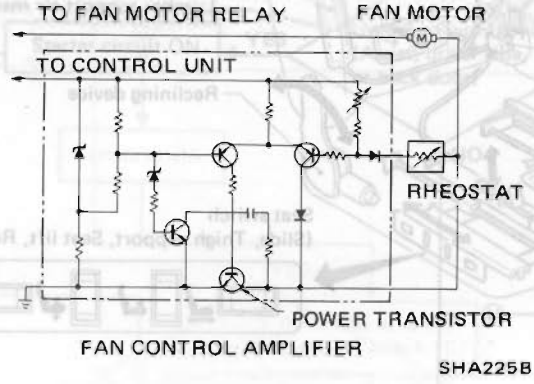
SBF434B

HEATER & AIR CONDITIONER (Manual)

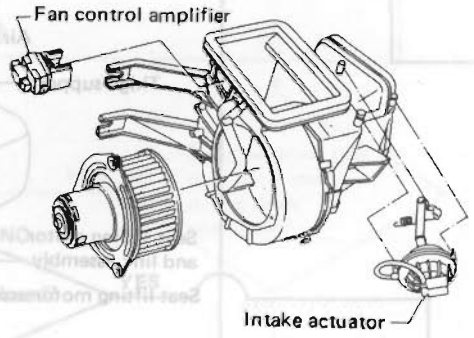
CONTROL

CONTINUOUSLY VARIABLE AIR FLOW CONTROL

- The fan control amplifier is housed in the fan motor unit. The heat-radiating plate is placed in the air flow passage of the fan motor to cool the power transistor used in the amplifier.



SHA225B

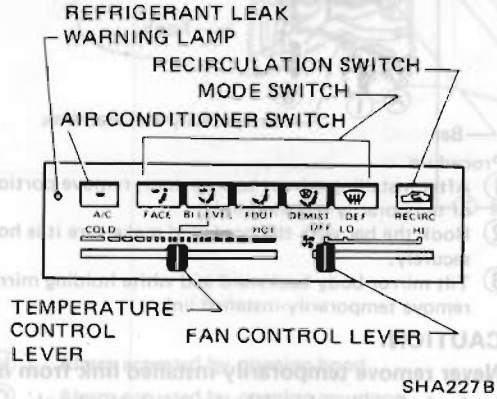


SHA226B

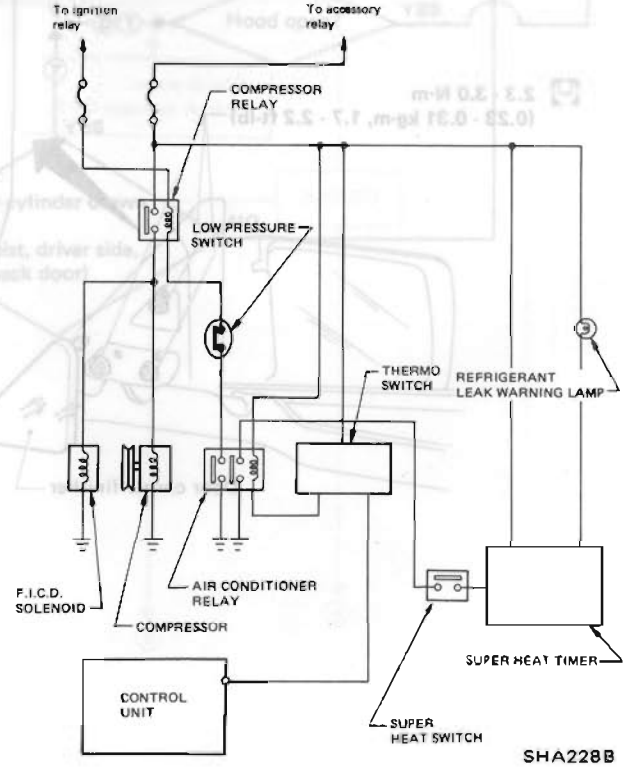
AIR CONDITIONER

REFRIGERANT LEAK WARNING SYSTEM (Insufficient refrigerant warning system)

A refrigerant leak warning system has been used with the existing low pressure switch. Its purpose is to prevent the cooler cycle from sustaining damage due to continued operation of the air conditioning system when there is a shortage of refrigerant and also to indicate when to replenish the refrigerant.



SHA227B



SHA228B

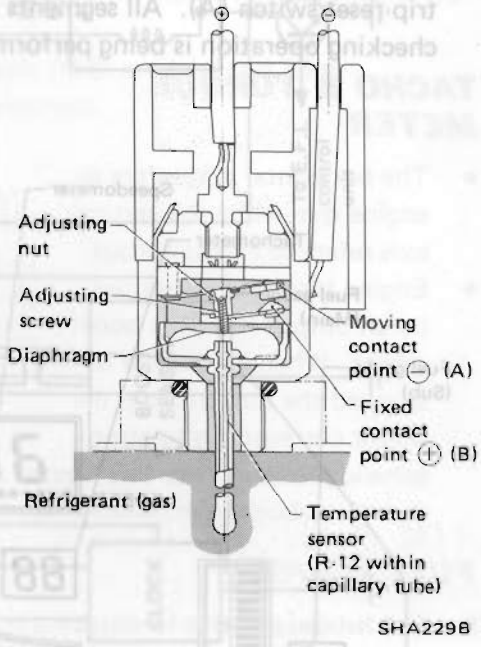
When the refrigerant in the cooler cycle is insufficient, it vaporizes quickly inside the evaporator. As a result, the "super heat" of the refrigerant at the outlet of the evaporator increases. If it exceeds the specified level [approximately 45°C (81°F)], the super heat switch turns on, allowing the current to flow through the timer. If current continues to flow through the timer for approximately 140 seconds, the timer activates to close the contacts which turn on the warning lamp.

SUPER HEAT SWITCH

The super heat switch consists essentially of a diaphragm, which monitors the refrigerant line pressure, a temperature sensor, which detects the refrigerant line temperature, a moving contact point (A) and a fixed contact point (B).

When the temperature in the refrigerant line increases, the gas charged inside the temperature sensor expands.

When the relationship between the detected temperature and the saturated temperature in relation to the detected pressure reaches a specified condition, contact points (A) and (B) come together, thus turning on the super heat switch. The super heat switch is placed in the refrigerant line at the outlet of the evaporator.



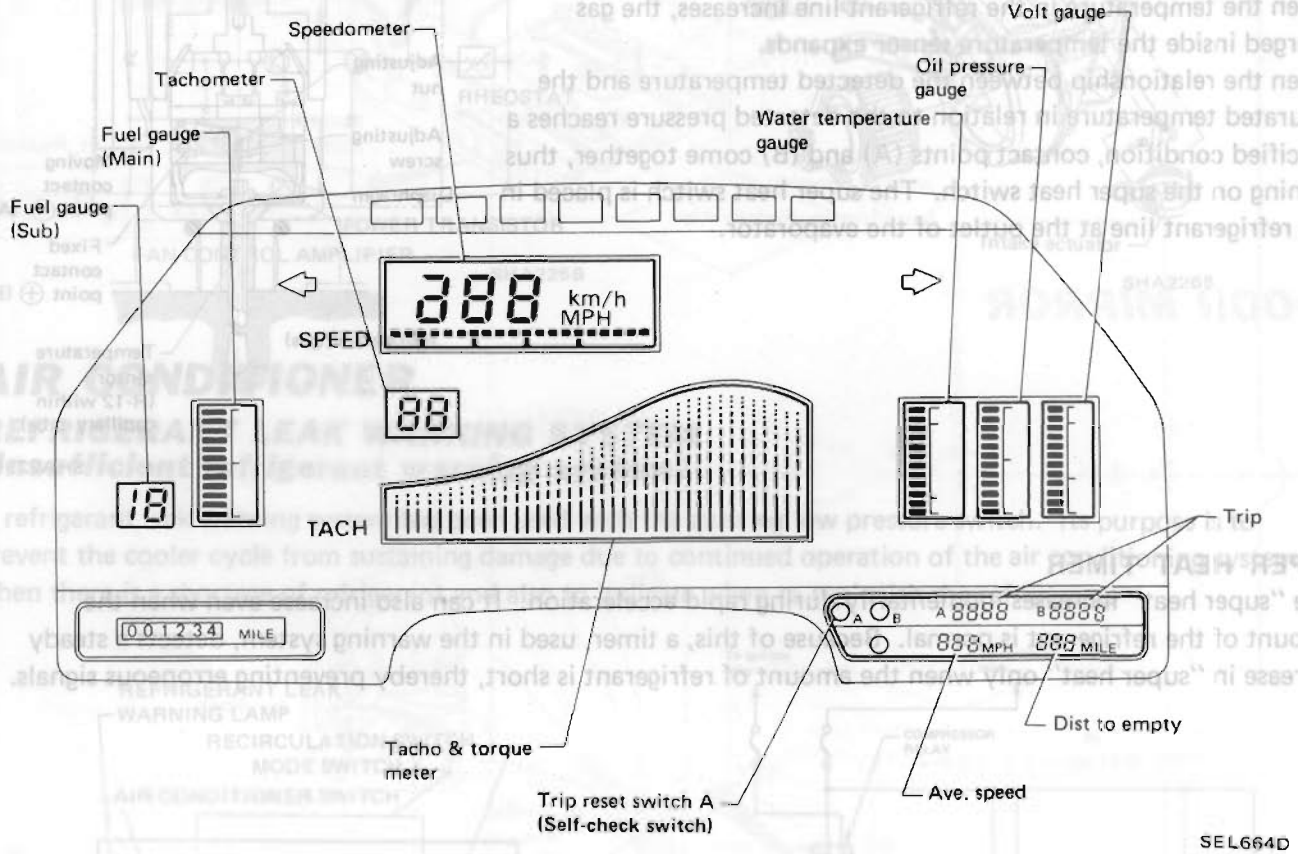
SUPER HEAT TIMER

The "super heat" increases momentarily during rapid acceleration. It can also increase even when the amount of the refrigerant is normal. Because of this, a timer, used in the warning system, detects a steady increase in "super heat" only when the amount of refrigerant is short, thereby preventing erroneous signals.

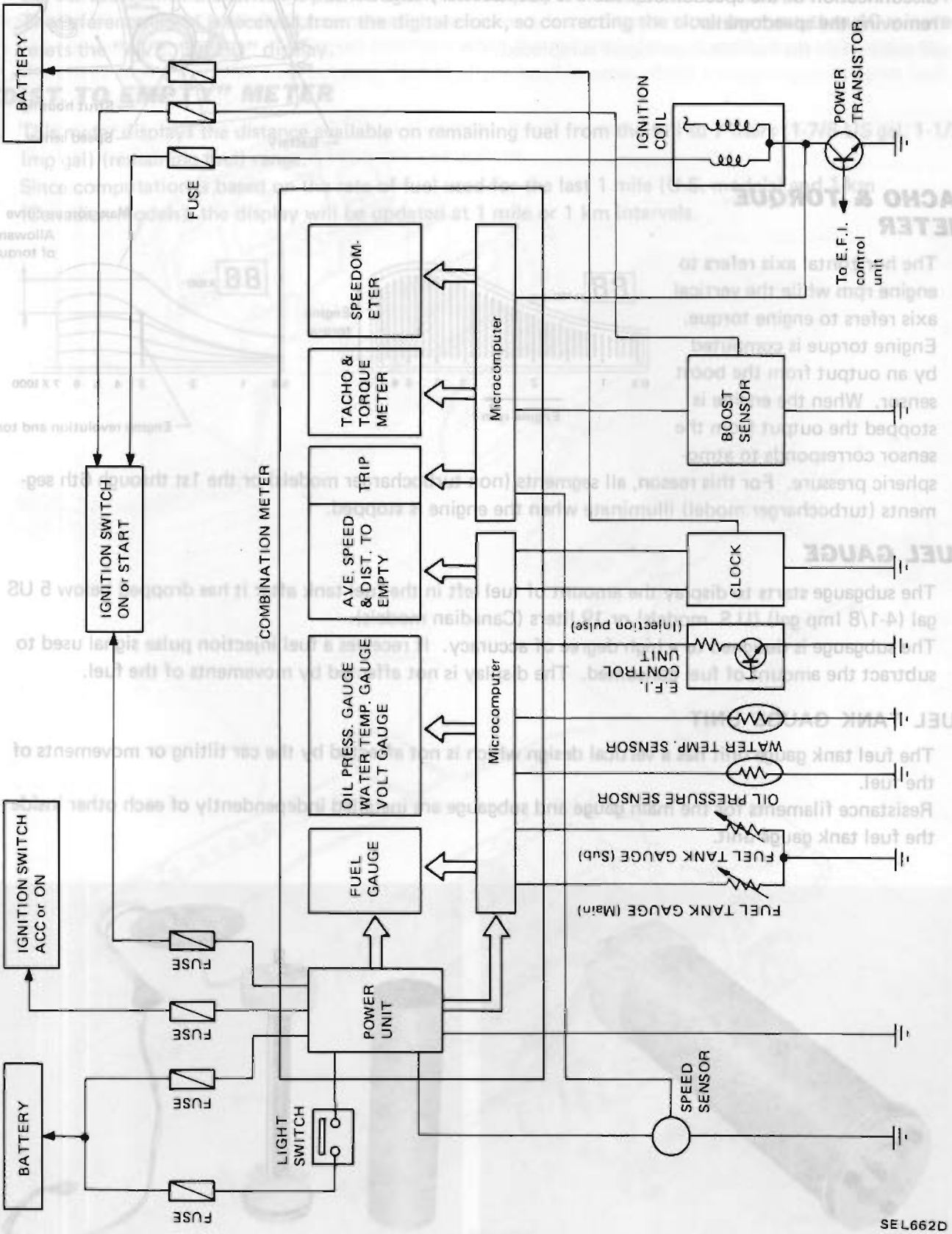
DIGITAL TYPE COMBINATION METER

DISPLAY CHECK

- The combination meter has a self-check function to determine whether the meter itself is working or not.
- To perform the self-check operation, turn the ignition switch from "OFF" to "ON" while pushing the trip reset switch (A). All segments automatically illuminate one after another to indicate that the self-checking operation is being performed.

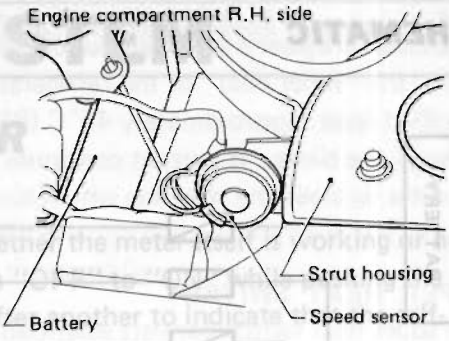


SCHEMATIC


BATTERY
FUSE
IGNITION COIL
POWER TRANSISTOR
To E.F.I. control unit
SPEEDOM-ETER
TACHO & TORQUE METER
TRIP
AVE. SPEED & DIST. TO EMPTY
OIL PRESS. GAUGE WATER TEMP. GAUGE VOLT GAUGE
FUEL GAUGE
Microcomputer
COMBINATION METER
BOOST SENSOR
CLOCK
E.F.I. CONTROL UNIT
(Injection pulse)
WATER TEMP. SENSOR
OIL PRESSURE SENSOR
FUEL TANK GAUGE (Sub)
FUEL TANK GAUGE (Main)
IGNITION SWITCH ON or START
IGNITION SWITCH ACC or ON
POWER UNIT
SPEED SENSOR
LIGHT SWITCH
SEL662D

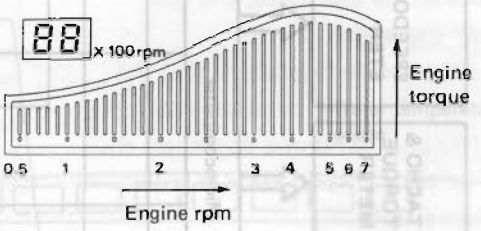
SPEEDOMETER

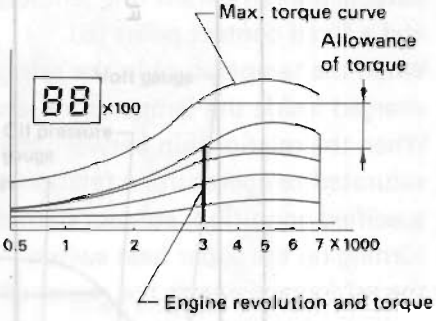
- Since the speed sensor is located inside the engine compartment, disconnection of the speedometer cable is not necessary when removing the speedometer.



TACHO & TORQUE METER

- The horizontal axis refers to engine rpm while the vertical axis refers to engine torque.
- Engine torque is computed by an output from the boost sensor. When the engine is stopped the output from the sensor corresponds to atmospheric pressure. For this reason, all segments (non-turbocharger models) or the 1st through 6th segments (turbocharger model) illuminate when the engine is stopped.



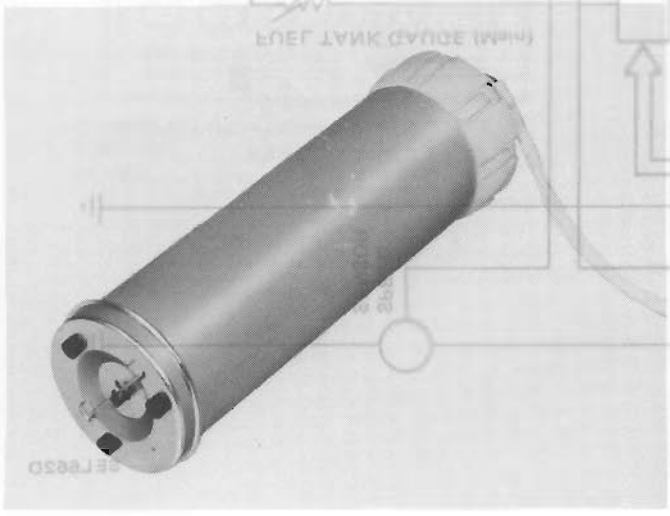


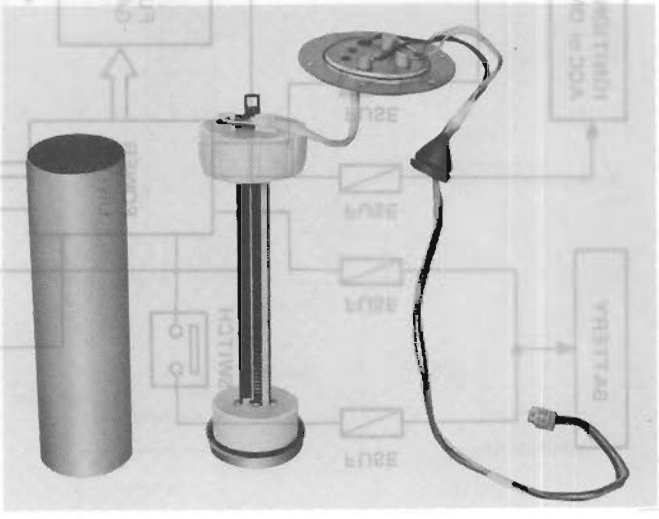
FUEL GAUGE

- The subgauge starts to display the amount of fuel left in the fuel tank after it has dropped below 5 US gal (4-1/8 Imp gal) (U.S. models) or 19 liters (Canadian models).
- The subgauge is designed to a high degree of accuracy. It receives a fuel injection pulse signal used to subtract the amount of fuel consumed. The display is not affected by movements of the fuel.

FUEL TANK GAUGE UNIT

- The fuel tank gauge unit has a vertical design which is not affected by the car tilting or movements of the fuel.
- Resistance filaments for the main gauge and subgauge are installed independently of each other inside the fuel tank gauge unit.



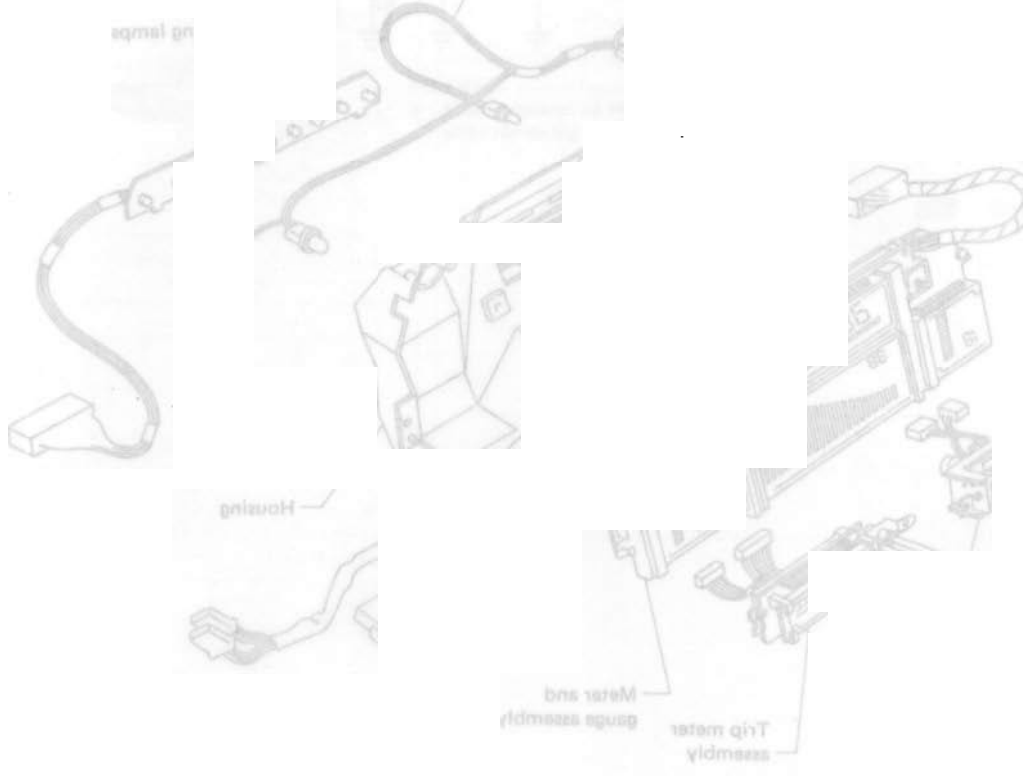


"AVE. SPEED" METER

- When the Display Start switch is pushed once, the "AVE. SPEED" meter continues to display the average car speed until the switch is pushed again. The display will be updated at 1 km (or: 1 mile) intervals.
- The reference signal is received from the digital clock, so correcting the clock by more than 10 minutes resets the "AVE. SPEED" display.

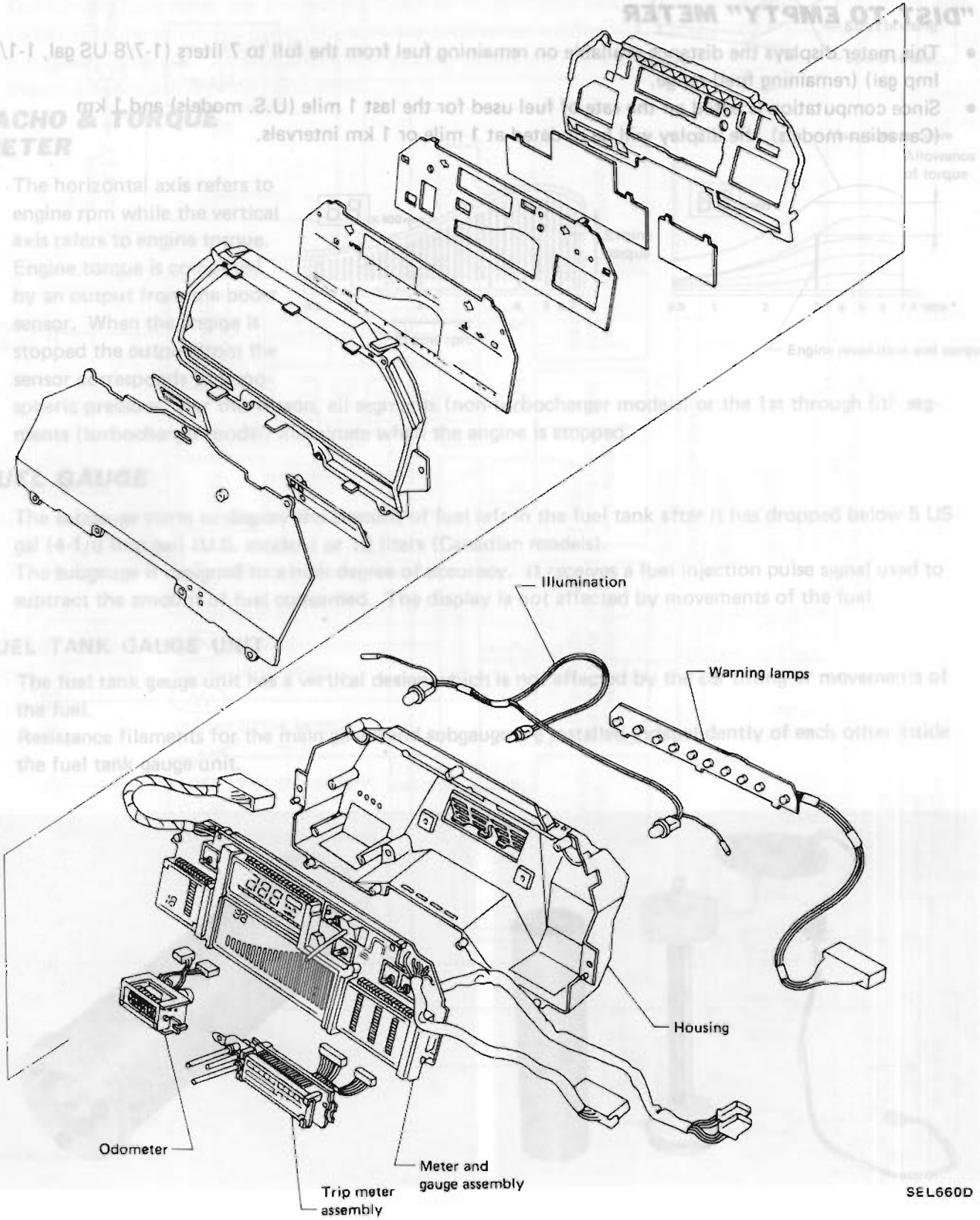
"DIST. TO EMPTY" METER

- This meter displays the distance available on remaining fuel from the full to 7 liters (1-7/8 US gal, 1-1/2 Imp gal) (remaining fuel) range.
- Since computation is based on the rate of fuel used for the last 1 mile (U.S. models) and 1 km (Canadian models), the display will be updated at 1 mile or 1 km intervals.



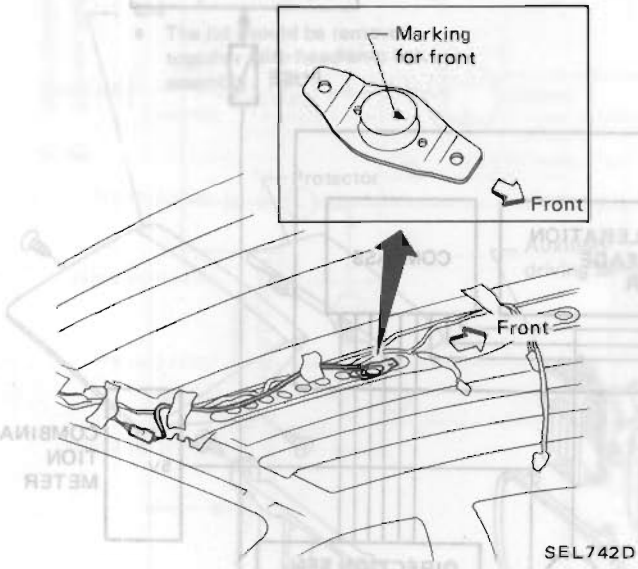
ODOMETER

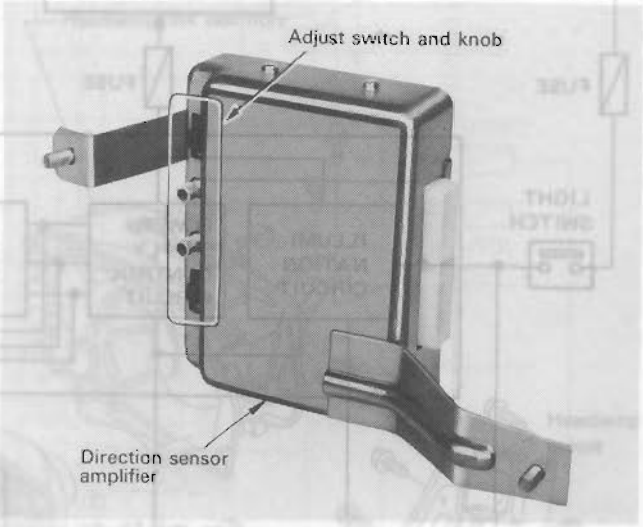
- The odometer is designed so that its motor is driven by counting the number of output pulses emitted from the speed sensor. For this reason, the speedometer cable is no longer connected to the meter.
- The odometer alone can be removed from the combination meter assembly. This allows for continuous use even when the combination meter is replaced.



COMPASS

- A direct sensor is installed in the center of the roof to detect terrestrial magnetism so that the compass indicates the car's direction in relation to magnetic north. Therefore, the compass display may differ slightly from north on the map.
- The compass will not show the correct direction when the magnetic force is weak, such as tunnels, etc.
- The direct sensor amplifier may become "out-of-alignment" in areas where strong magnetic fields (railroads, for instance) exist.
  If the compass display is constantly out of alignment, it will be necessary to re-adjust the amplifier. Refer to the Service Manual for adjustment instructions.

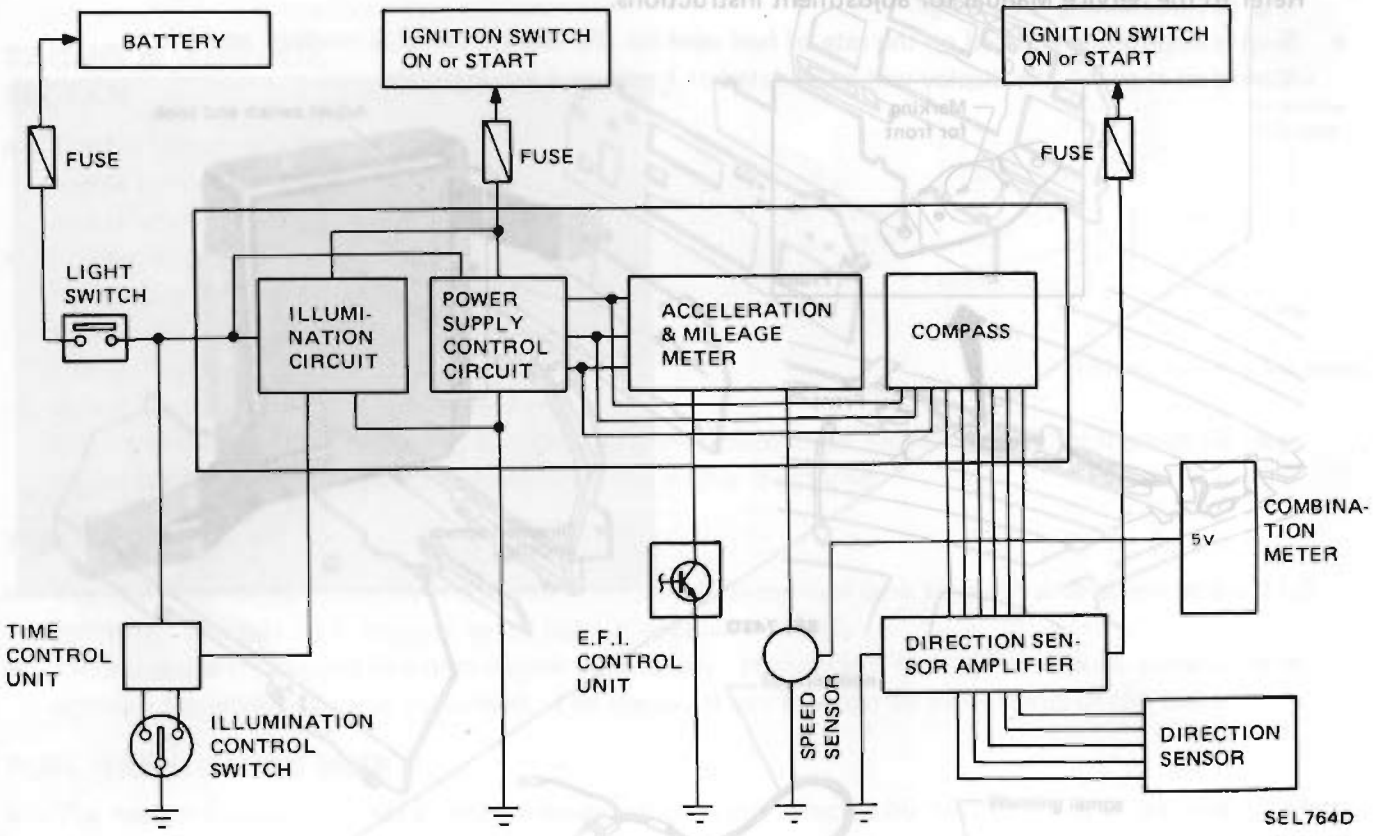




ACCELERATION AND MILEAGE METER

- The acceleration meter displays the rate of acceleration in units of gravitational force. This is computed from speed sensor outputs in relation to the amount of change in car speed.
  The display ranges from −0.5 G to +0.5 G. 0G is shown when the car is driven at a constant speed.
- The mileage meter counts the number of fuel injection pulses and indicates the rate of fuel usage for each 1 mile (U.S. models) or 1 km (Canadian models) of operation.

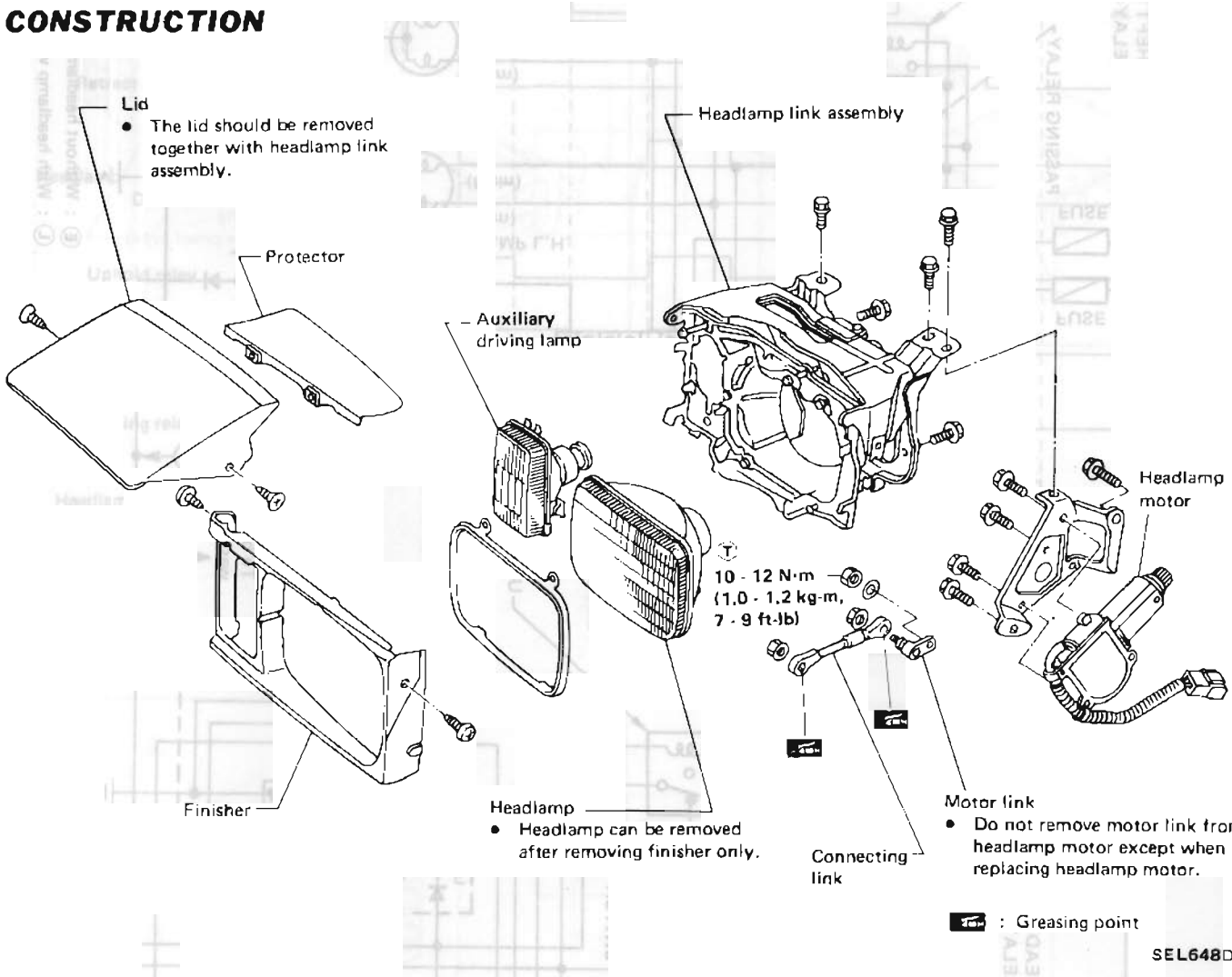
SCHEMATIC



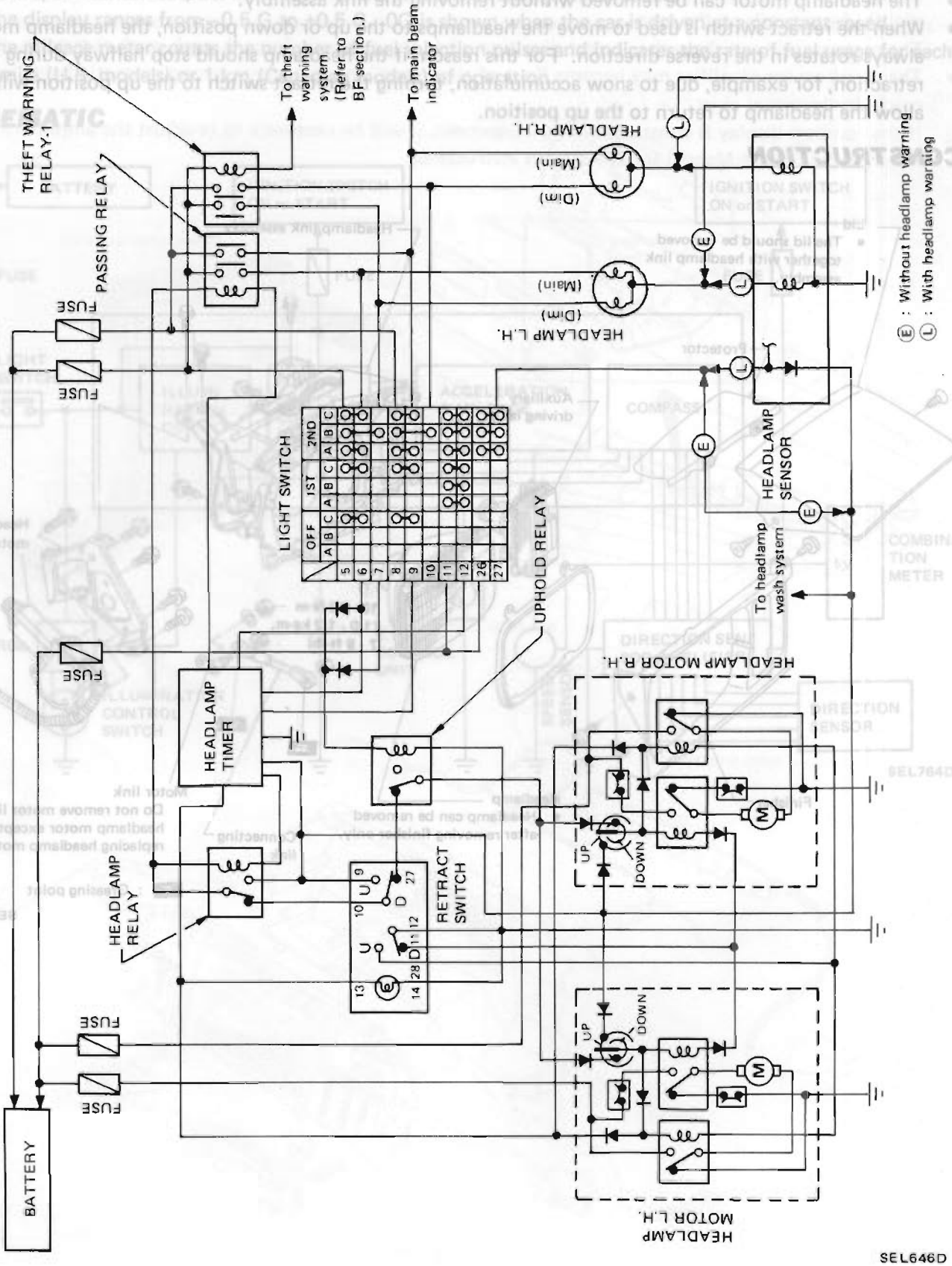
HEADLIGHT

- The headlamp has a retractable design.
- The headlamp motor can be removed without removing the link assembly.
- When the retract switch is used to move the headlamps to the up or down position, the headlamp motor always rotates in the reverse direction. For this reason, if the headlamp should stop halfway during retraction, for example, due to snow accumulation, turning the retract switch to the up position will allow the headlamp to return to the up position.

CONSTRUCTION

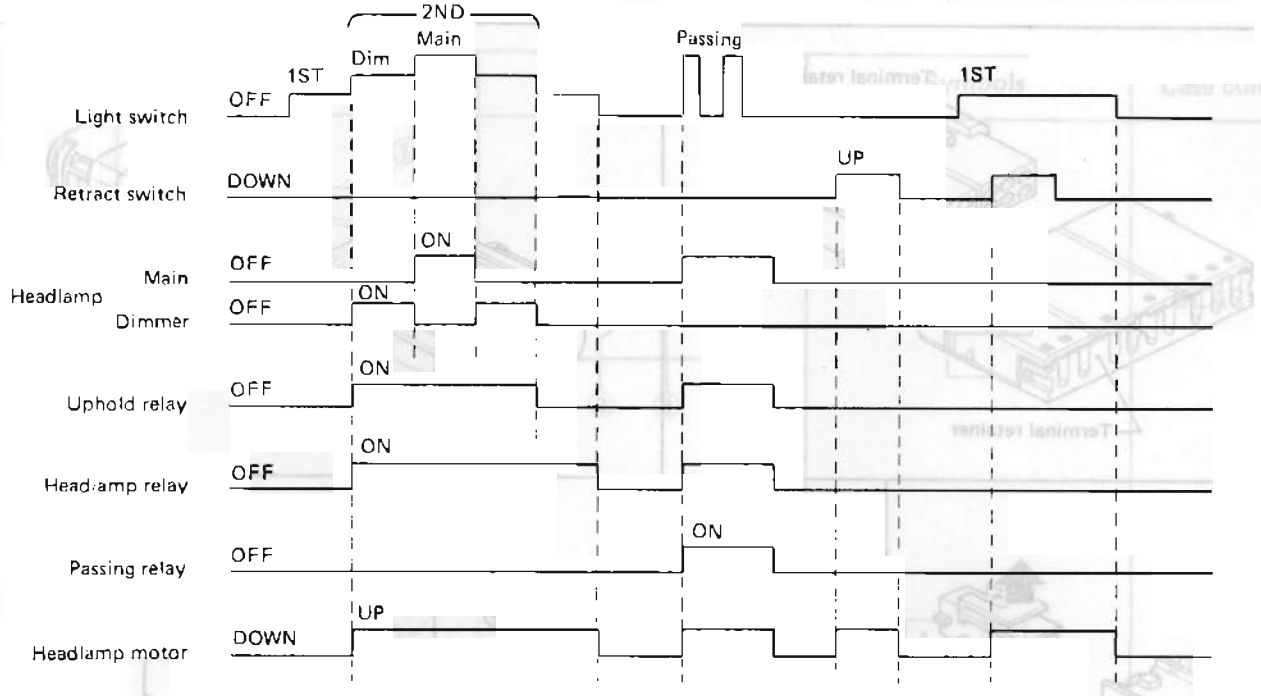


SCHEMATIC


THEFT WARNING RELAY-1
PASSING RELAY
To theft warning system (Refer to BF section.)
To main beam indicator
HEADLAMP R.H.
(Main)
(Dim)
HEADLAMP L.H.
(Main)
(Dim)
Ⓔ : Without headlamp warning
Ⓛ : With headlamp warning
FUSE
FUSE
LIGHT SWITCH
OFF
1ST
2ND
HEADLAMP SENSOR
To headlamp wash system
UPHOLD RELAY
FUSE
HEADLAMP TIMER
HEADLAMP MOTOR R.H.
UP
DOWN
HEADLAMP RELAY
RETRACT SWITCH
FUSE
FUSE
BATTERY
HEADLAMP MOTOR L.H.
SEL646D

OPERATION

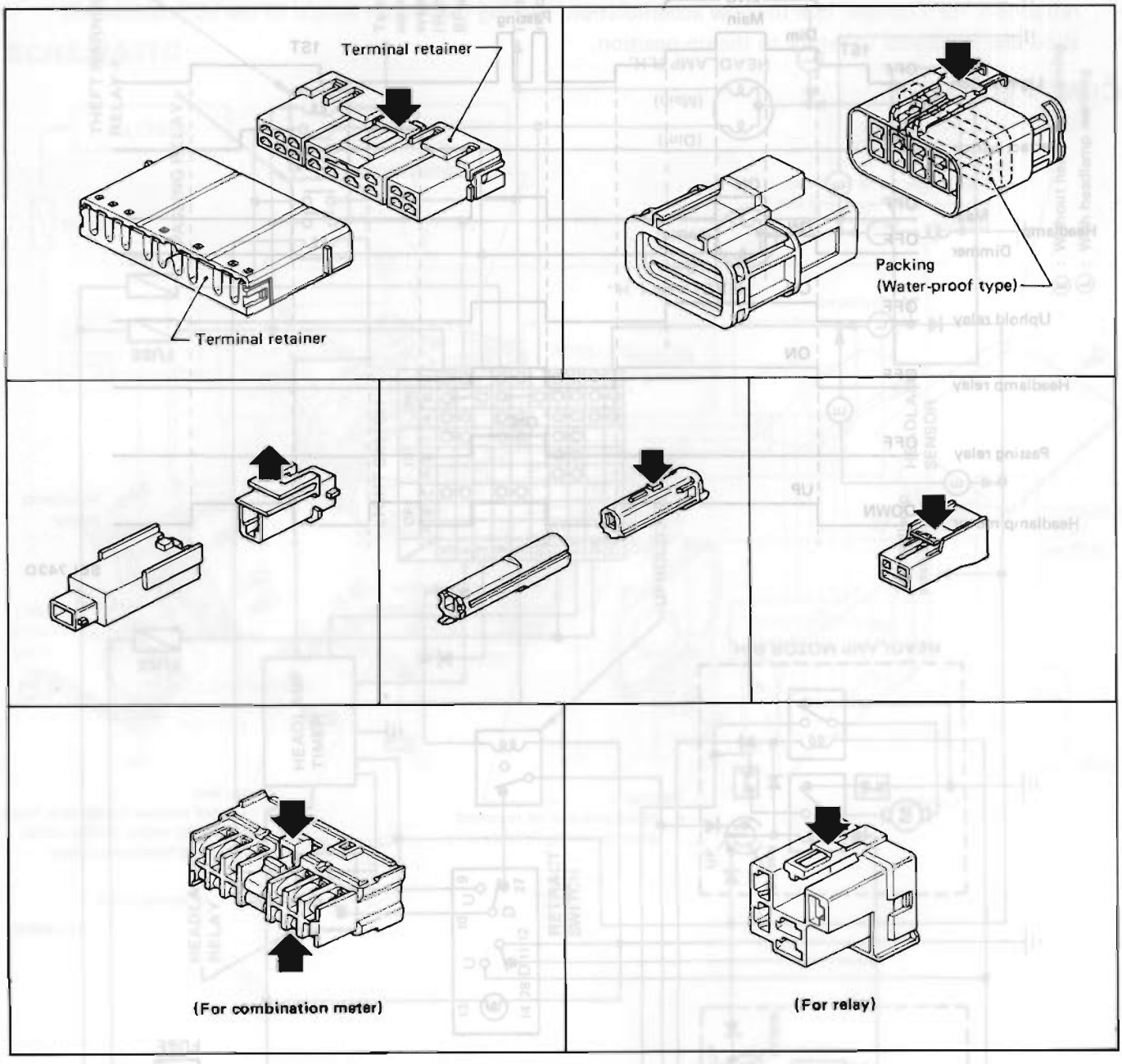
- The following chart depicts the operational modes of relays and the headlamp motor in relation to the positions of the headlamp switch and/or the retract switch.



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.

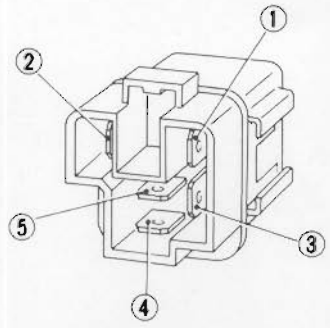
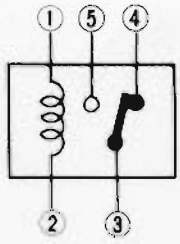
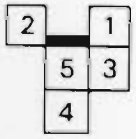
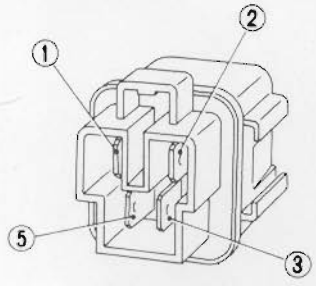
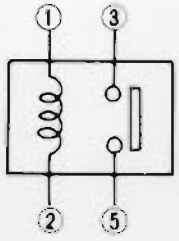
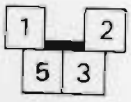
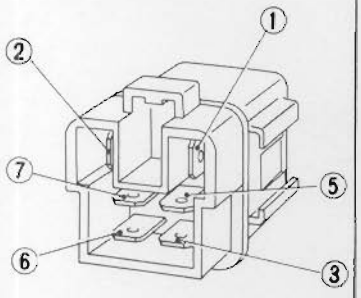
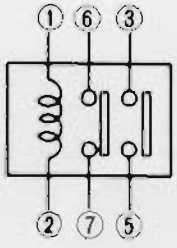
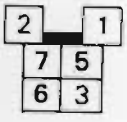
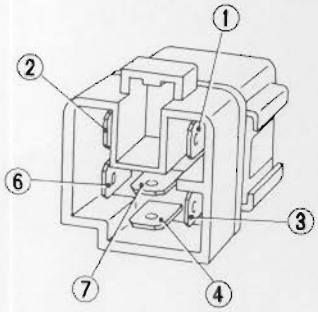
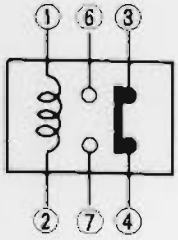
Caution: Do not pull the harness when disconnecting the connector.



SEL769D

NISSAN STANDARDIZED RELAY

- The housing for the connecting portion of the connector has been redesigned to prevent looseness. Terminal arrangements have also been changed.
- All relays for Z31 models have been changed to the new standardized relays as shown in the chart below.

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

SEL639D

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