

# FOREWORD

This product bulletin has been prepared to provide information necessary for smooth and efficient service activities on the DATSUN 1982 280ZX models. Please read this bulletin thoroughly in order to gain a proper understanding of the features, specifications and mechanism of this new model.

In this bulletin, emphasis is placed on the description of those points that have been changed or modified from the DATSUN 1981 former models.

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 DATSUN 280ZX model entered production starting with the following vehicle identification numbers (VIN):

JN1HZ06S□CX420001 . . . . . (Non-turbo, 2+2 seater)

JN1HZ04S□CX430001 . . . . . (Non-turbo, 2 seater)

JN1CZ06S□CX600001 . . . . . (Turbo, 2+2 seater)

JN1CZ04S□CX620001 . . . . . (Turbo, 2 seater)

□: Check digit (0 to 9 or X)

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# OUTLINE

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To enhance the value of the 1982 S130 series, the model variation has been modified, the steering stability has been improved and various equipment/accessories have been substantially increased.

Major features of the new S130 series are summarized below:

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

## **MODEL VARIATION**

- The turbocharged L28ET engine family has been expanded by the addition of a 2+2 seater model and a manual transmission model.
- The specifications for the emission systems and vehicles have been consolidated for both California and Federal models.

## **ENGINE**

### **L28E ENGINE**

#### **ENGINE FUEL SYSTEM**

- \*• To comply with the high altitude regulation, a high altitude compensator circuit has been installed on the Federal model.
- \*• To increase performance reliability, the drive system of the fuel pump has been modified.
- To increase fuel economy, the electric power required to activate the fuel injector has been lowered.
- To improve the cold engine starts, the rate of fuel enrichment immediately after engine starts is now controlled in two stages depending upon engine coolant temperature.

#### **ENGINE ELECTRICAL SYSTEM**

##### **Distributor**

- \*• A phase control circuit has been built into the ignitor to simplify the operation of the ignition timing control system and increase performance.

### **L28ET ENGINE**

#### **ELECTRONIC CONCENTRATED ENGINE CONTROL SYSTEM (E.C.C.S.)**

- \*• A module signal has been utilized to control the fuel pump operation.
- A function to control the current flow through the fuel injector has been added.

##### **Distributor**

- \*• A crank angle sensor has been built into the distributor to reduce weight and improve servicing.

## **CHASSIS**

### **MANUAL TRANSMISSION**

- \*• The 5-speed manual transmission FS5R90A is used with the L28ET turbocharged engine. (This transmission is manufactured by Borg-Warner in the U.S.A. and designated as the T-5 model.)

### **FRONT AXLE AND SUSPENSION**

The basic construction is the same as the McFarson strut suspension design; however, the following modifications have been made to increase the straight-ahead driving stability and steering performance:

- The damping force of the strut has been increased.
- On the turbo model, the spring constant has been increased.
- On the non-turbo model, the diameter of the stabilizer bar has been enlarged.

## **REAR AXLE AND SUSPENSION**

The basic semi-trailing arm suspension design has been retained. To stabilize the steering performance, however, the following modifications have been made:

- The damping force of the shock absorber has been increased.
- The spring constant has been revised.

## **DRIVE SHAFT**

- The 2+2 seater models used constant-speed drive shaft.

## **BRAKES**

- The front and rear disc brakes are now equipped with an audible wear indicator.
- The "fist" rear disc brake design has been adopted. Its basic construction is the same as that used with the 1982 Datsun 200SX series.
- The master cylinder with a single reservoir tank has been unitized. Its basic structure is the same as that used in the Datsun 810 series.

## **STEERING SYSTEM**

The rack and pinion type power steering is standard equipment on all models except Deluxe models.

## **WHEEL AND TIRE**

The P205/70R14 radial tire has been adopted on non-turbo models equipped with T-bar roofs.

## **REAR ENGINE MOUNT MEMBER**

\*To accommodate the FS5R90A transmission (manufactured as the T-5 model by Borg-Warner in the U.S.A.), the rear engine mount member has been redesigned.

## **ENGINE COOLING SYSTEM**

To provide sufficient capacity of the reservoir tank under severe operating conditions (such as high speed highway driving), a sub-reservoir tank has been added on turbo models.

## **BODY**

- The side window remote control system is available as optional equipment on the 2+2-seater model. Its basic design is the same as that used in the Datsun 310 series.
- A 4-way head restraint, which can be adjusted both vertically and horizontally, has been used on the GL model. (In the former design, only the vertical adjustment could be made.) Its basic design is the same as that used in the Datsun 200SX series.

## **BODY ELECTRICAL**

- \*• Power supply routing, fuse capacity and load distribution have been modified to increase safety.
- The auto-fuse design has been adopted to increase performance reliability and facilitate servicing.
- A voice warning system is available as optional equipment on the GL model. Its basic design is the same as the Datsun 810 series'.
- The battery warning display has been eliminated because of the adoption of a maintenance free battery.
- A door edge warning light has been added.
- \*• An illuminated entry system has been adopted on the GL model.
- \*• A power door lock system has also been adopted on the GL model.
- The same resume-accelerate function which is utilized in the Datsun 810 series has been added to the A.S.C.D. system.

- On turbo models, a vacuum pump and vacuum tank are used in the A.S.C.D. system as the vacuum pressure source.
- A cassette deck equipped with Dolby noise reduction is available as an option.
- A radio with an ambience control is available as an option.

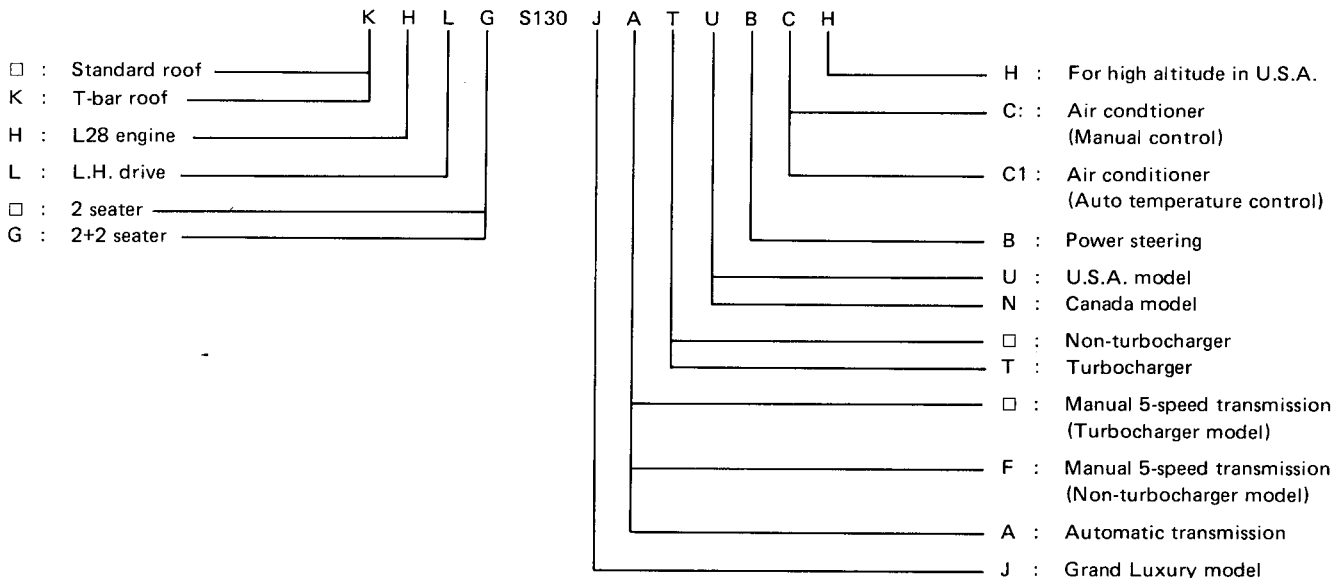
# MODEL VARIATION

Destination	Model		Engine	Transmission	Differential carrier	Road wheel size ... offset mm (in)	Tire size	
U.S.A.	2 seater	HLS130FU	L28E	FS5W71B	R180	5-1/2JJ-14 ... 15 (0.59)	195/70HR14	
		HLS130JFU			R200			
		HLS130JAU			R180			
	T-bar roof	KHLS130JFU		FS5W71B	R200	6JJ-14*2 ... 10 (0.39)	P205/70R14	
		KHLS130JAU		3N71B	R180			
	Turbo	KHLS130JTU		L28ET	FS5R90A*1	R200	6JJ-15*2 ... 10 (0.39)	P205/60R15
		KHLS130JATU	L28ET	3N71B				
	2+2 seater	2+2 seater	HLGS130JFU	L28E	FS5W71B	R180	6JJ-14*2 ... 10 (0.39)	195/70HR14
			HLGS130JAU		3N71B			
			KHLGS130JFU		FS5W71B			
		T-bar roof	KHLGS130JAU		3N71B	R180	P205/70R14	
			KHLGS130JTU		L28ET	FS5R90A*1		R200
		Turbo	KHLGS130JATU		L28ET	3N71B		
	Canada	2 seater	HLS130FN	L28E	FS5W71B	R180	5-1/2JJ-14 ... 15 (0.59)	195/70HR14
T-bar roof			KHLS130FN			R200		
			KHLS130JFN				R180	
KHLS130JAN			3N71B					
Turbo		KHLS130JTN	L28ET	FS5R90A*1	R200	6JJ-15*2 ... 10 (0.39)	P205/60R15	
		KHLS130JATN	L28ET	3N71B				
2+2 seater		T-bar roof	KHLGS130JFN	L28E	FS5W71B	R180	6JJ-14*2 ... 10 (0.39)	195/70HR14
			KHLGS130JAN		3N71B			
		Turbo	KHLGS130JTN	L28ET	FS5R90A*1	R200	6JJ-15*2 ... 10 (0.39)	P205/60R15
			KHLGS130JATN	L28ET	3N71B			

\*1: Borg-Warner T-5 manual transmission

\*2: Aluminum wheel (2-piece type)

## Prefix and suffix designations



Note: □ means no indication.

# GENERAL SPECIFICATIONS

Item	Car model		2 seater		2+2 seater	
	Engine model	Destination	L28E	L28ET	L28E	L28ET
Weight	M/T kg (lb)		U.S.A.	Canada	U.S.A.	Canada
Curb weight *1	M/T kg (lb)		1,291 (2,846)	1,318 (2,907)	1,339 (2,952)	1,366 (3,013)
	A/T kg (lb)		1,282 (2,828)	1,323 (2,917)	1,329 (2,930)	1,370 (3,020)
Battery	Model		N60MF	N70Z-MF	N60MF	N70Z-MF
	Capacity	V-AH	12-60	12-70	12-60	12-70
Clutch	Disc model		225CBL		240TBL	
	Cover	Model	C225S		C240S	
Manual transmission	Model	Full load N (kg, lb)	5,394 (550, 1,213)	5,884 (600, 1,323)	4,904 (500, 1,103)	5,884 (600, 1,323)
	Gear ratio	Model	FS5W71B	FS5R90A (Borg-Warner T-5)	FS5W71B	FS5R90A (Borg-Warner T-5)
		1st	3.062	3.500	3.062	3.500
		2nd	1.858	2.144	1.858	2.144
		3rd	1.308	1.356	1.308	1.356
		4th	1.000	1.000	1.000	1.000
5th	0.745	0.780	0.745	0.780		
Rev.	3.026	3.393	3.026	3.393		
Brake system	Type-model	Front	Disc-CL28V		Disc-CL28V	
		Rear	Disc-CL14H		Disc-CL14H	
Brake booster model	Master cylinder inner diameter mm (in)		23.8 (15/16)		23.8 (15/16)	
	Pressure control type		M90		M90	
Parking brake type	Pressure control type		NP-valve		NP-valve	
	Parking brake type		Mechanically operated on rear wheel			
Wheel and tire	Road wheel	Size	6-JJx14 (Aluminum) 5-1/2-JJx14 (Steel)*2	6-JJx15 (Aluminum)	6-JJx14 (Aluminum)	6-JJx15 (Aluminum)
		Offset mm (in)	10 (0.39) 15 (0.59)*2	10 (0.39)	10 (0.39)	10 (0.39)
Tire size			195/70HR14 P205/70R14*3	195/70HR14	195/70HR14 P205/70R14*3	195/70HR14 P205/60R15
						P205/60R15

\*1: Values are the max. weight in each model variation. \*2: Deluxe models \*3: T-bar roof models

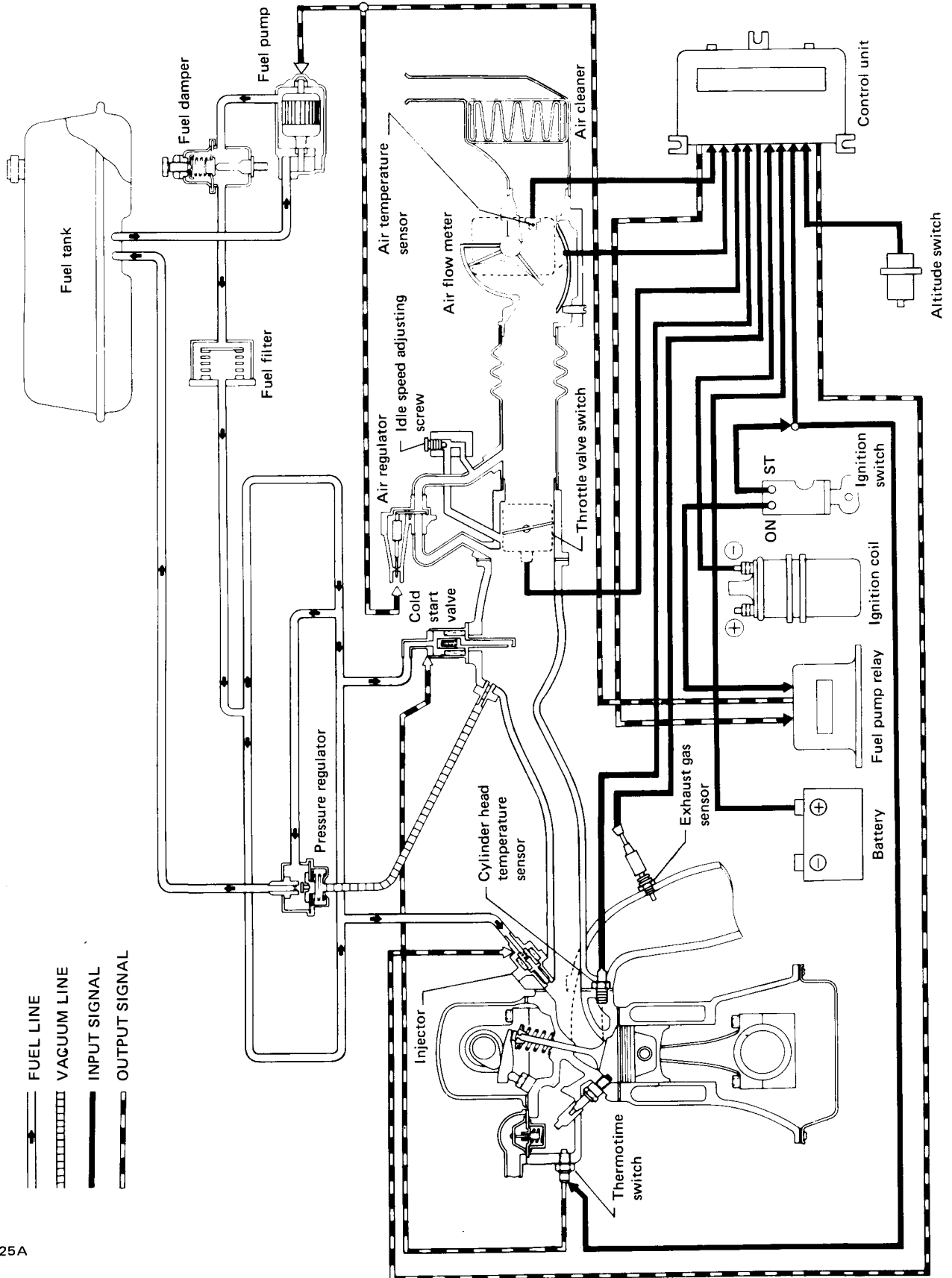
Car model		2 seater				2+2 seater			
Engine model		L28E		L28ET		L28E		L28ET	
Destination		U.S.A.	Canada	U.S.A.	Canada	U.S.A.	Canada	U.S.A.	Canada
Item	Type	Rack and pinion							
	Model	RP15L							
Manual	Type	Rack and pinion, integral power steering							
	Model	IPRP15L							
Power	Type	Rack and pinion, integral power steering							
	Model	IPRP15L							



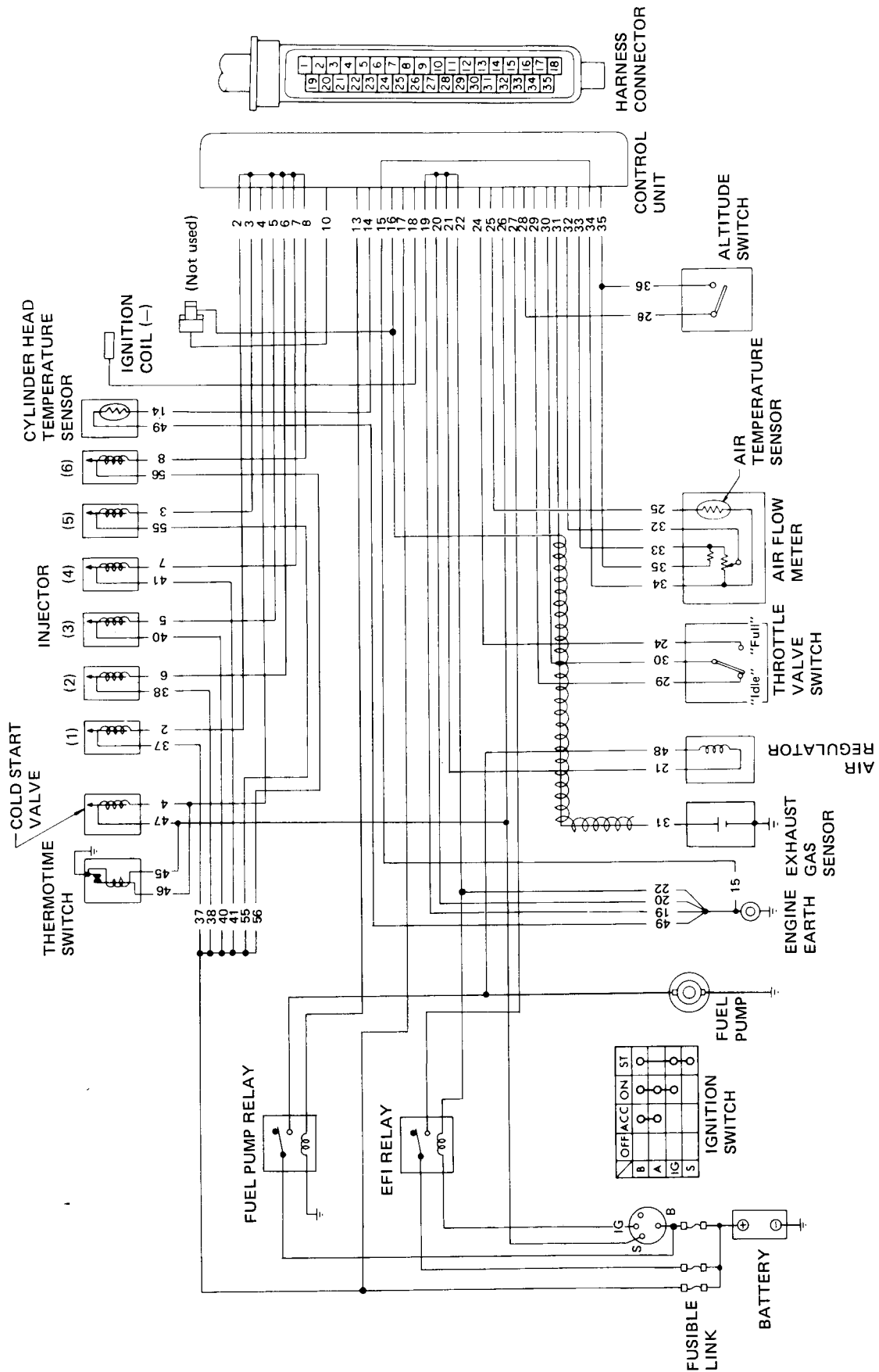
# L28E ENGINE

## ENGINE FUEL SYSTEM

### E.F.I. SYSTEM DIAGRAM



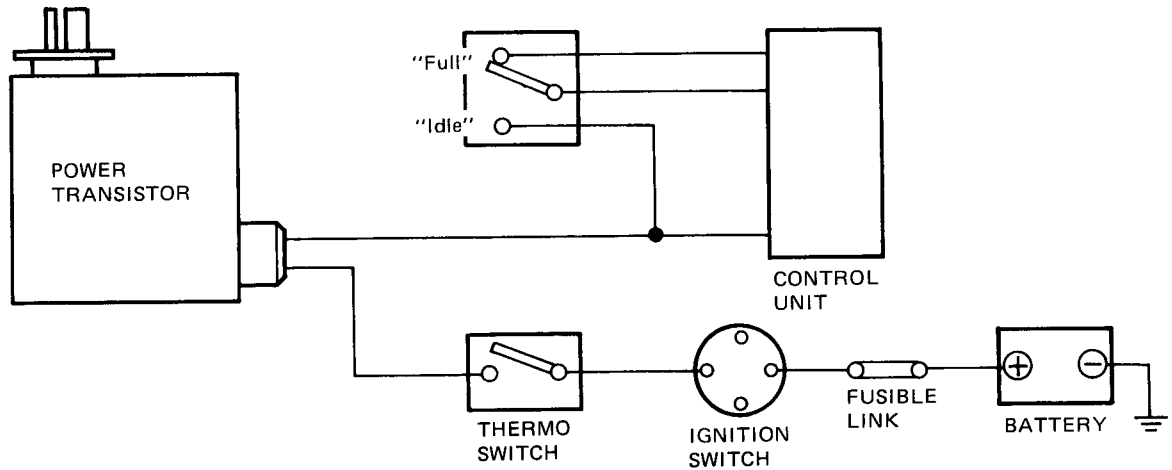
# E.F.I. CIRCUIT DIAGRAM



# ENGINE ELECTRICAL

## DISTRIBUTOR

A phase control circuit, which advances the ignition timing at a definite angle in response to an idle signal or water temperature signal, has been added to the power transistor. The advance characteristics of the vacuum and governor remain unchanged.



### Operational modes

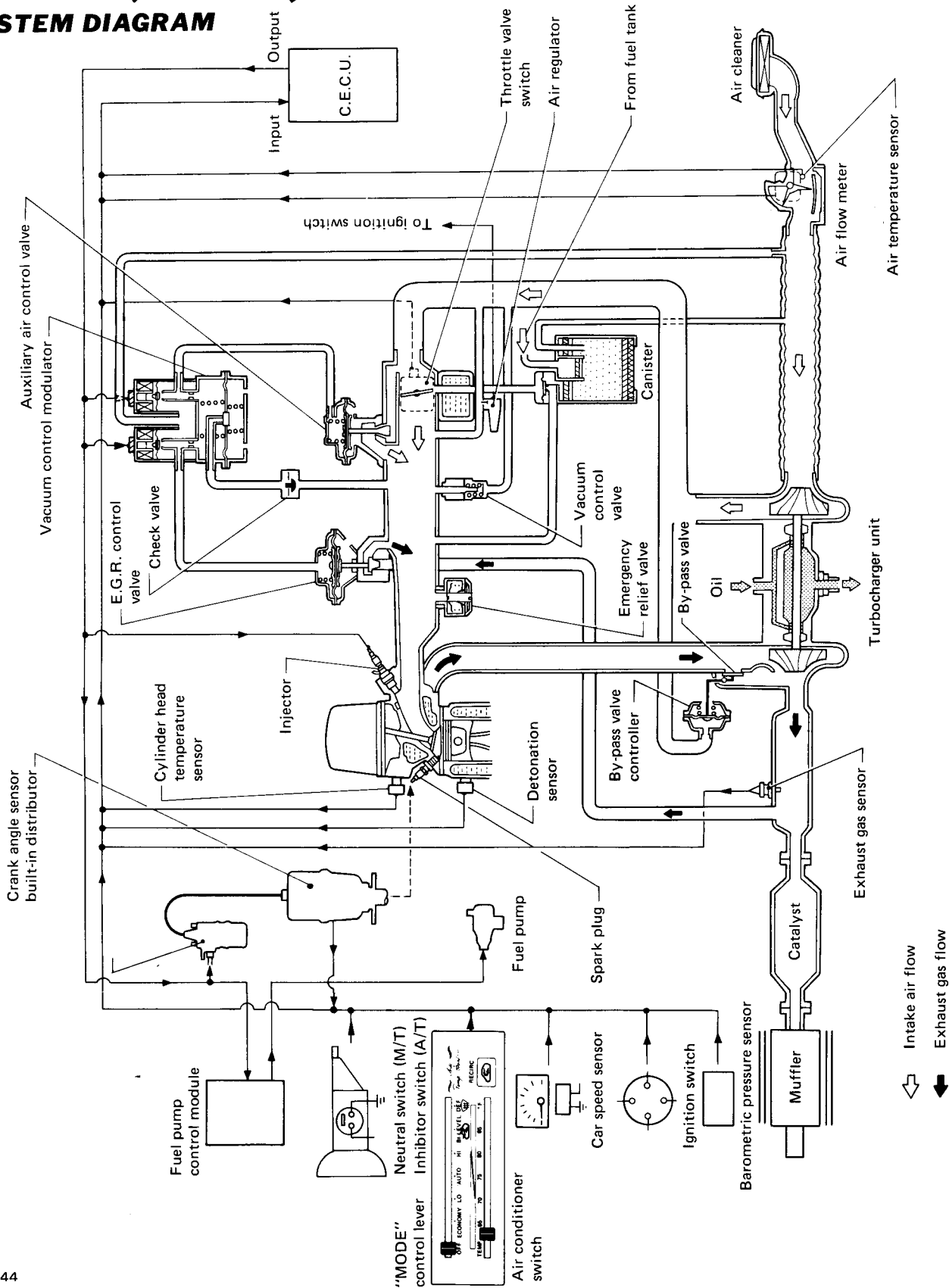
Idle switch	Thermo switch	Advance (distributor) angle
OFF	OFF	0°
OFF	ON	5°
ON	OFF	5°
ON	ON	5°

Idle switch "ON": When engine idles

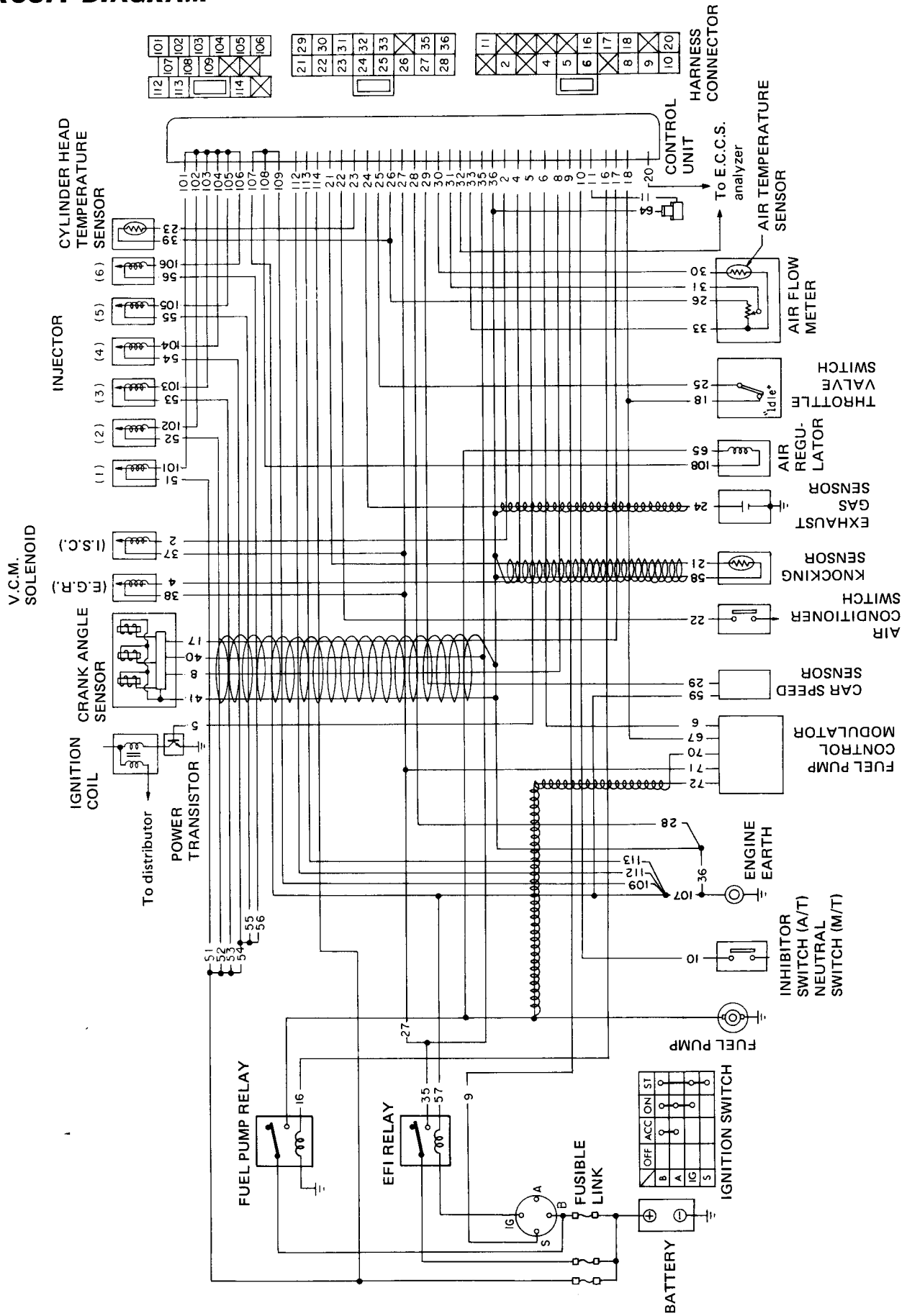
Thermo switch "ON": When engine coolant temperature is below 35°C (95°F)

# L28ET ENGINE

## ELECTRONIC CONCENTRATED ENGINE CONTROL SYSTEM (E.C.C.S.) SYSTEM DIAGRAM

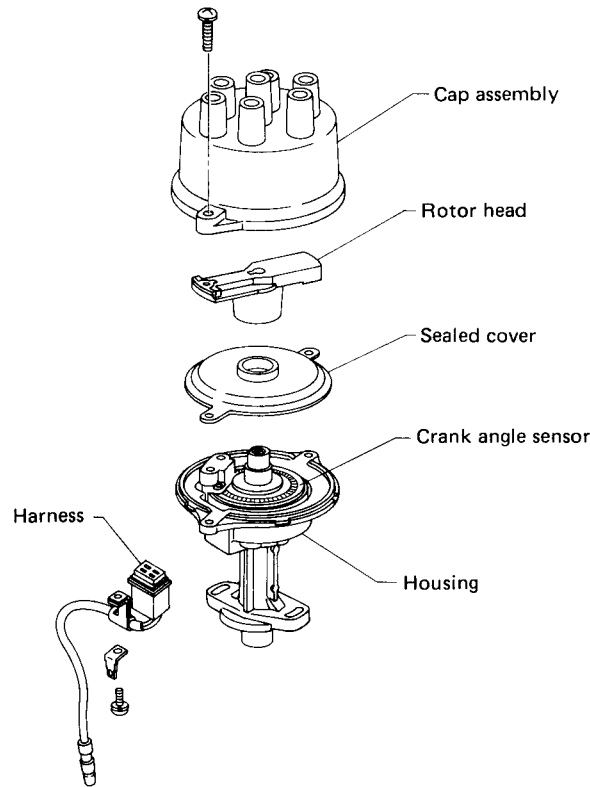


# CIRCUIT DIAGRAM



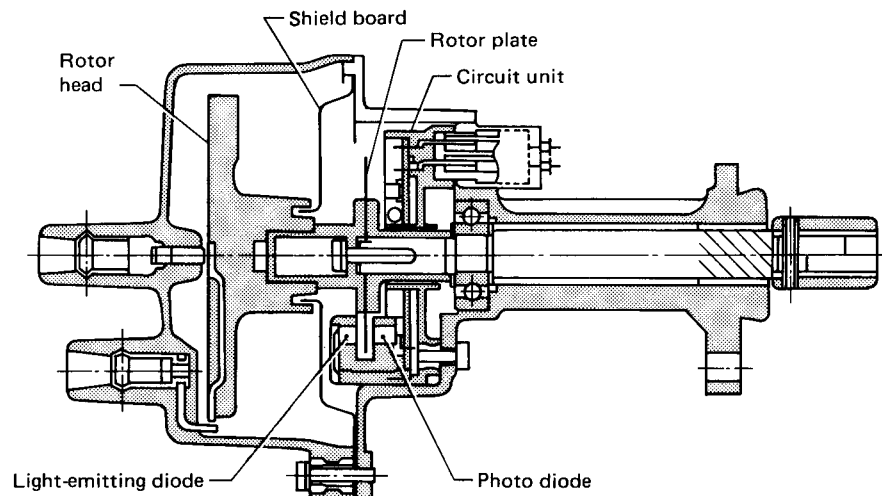
## DISTRIBUTOR

- A crank angle sensor has been built into the distributor.
- The engagement method used to rotate the drive shaft has been changed to an involute spline design to reduce the backlash and to increase its accuracy.
- A photo-electric pickup of the crankangle sensor has replaced the electric-magnetic design resulting in a stabilized, highly accurate signal which is not affected by magnetic disturbance.



### CRANK ANGLE SENSOR

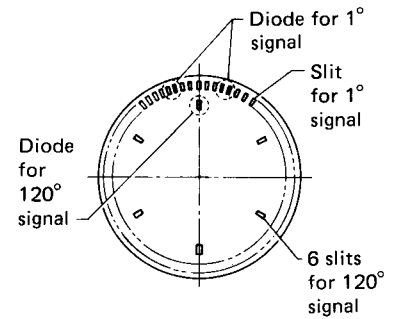
In the signal process circuit, the rotor plate which is fixed to the shaft is placed between a light-emitting diode and a light-receiving diode inside the distributor housing.



Structure of the distributor

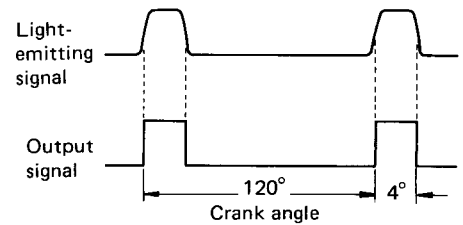
## ROTOR PLATE

The rotor plate has six slits used for cylinder detection ( $120^\circ$  signal) and three hundred and sixty slits used for crank angle detection ( $1^\circ$  signal). The light-emitting diode is located over the plate in which the slits are arranged circumferentially while the light-receiving diode is located on the lower side.



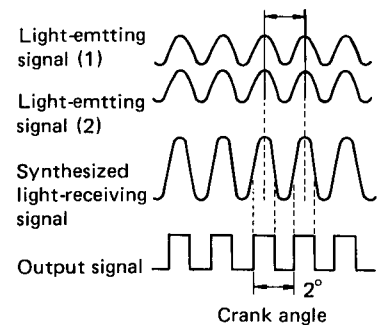
## OPERATION

The light-receiving diode is a photo-electric cell which produces an electromotive force when it receives light from the light-emitting diode. When the engine is in operation, the rotor plate continues to rotate. As the light passes through the slits of the rotor plate and hits the light-receiving diode, the electromotive force is produced as an output signal source to the control unit.



Two diodes are used to detect the crank angle. They are activated synchronously to ensure a high degree of accuracy.

### Signal used to detect cylinder



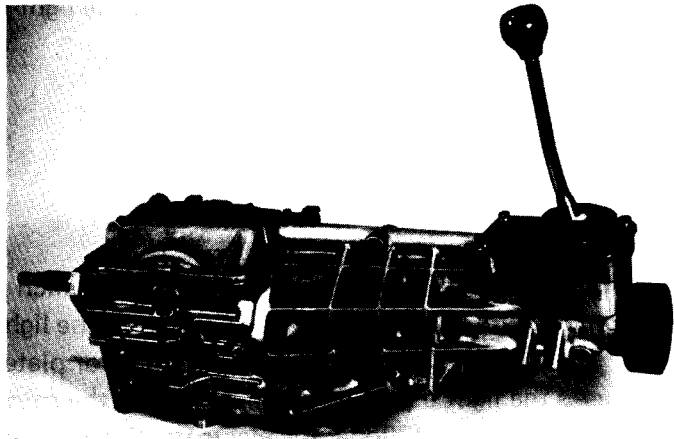
### Signal used to detect the crank angle

# CHASSIS

## FS5R90A (Borg-Warner T-5) MANUAL TRANSMISSION

### FS5R90A Transmission

A 5-speed manual transmission has been adopted for Turbocharged 280ZX models.

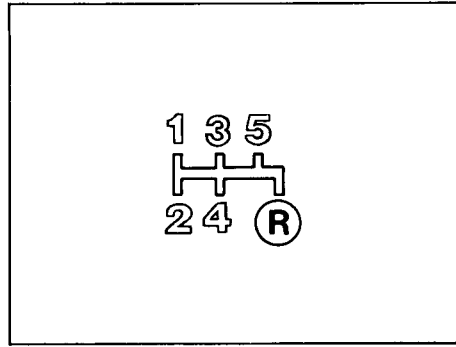


### SPECIFICATIONS AND SERVICE INFORMATION

Type of transmission	FS5R90A (Borg-Warner T-5 Transmission made in U.S.A.)
Number of forward speeds	5
Weight (dry)	Approximately 33 kg (72 lbs)
Construction materials	Alloy steel – gears, bearings, shafts Aluminum alloy – case, extension housing, front bearing retainer, shift cover, shift forks (except reverse)
Bearing types	Tapered roller – input and mainshafts Straight roller – countershaft
Synchromesh type	Warner
Rated input torque	313 NM (230 lbs.ft)
Controls	Integral shift lever
Recommended lubricant	“Dexron” type automatic transmission fluid
Oil capacity	1.9 liters (4.5 U.S. pints)
Speedometer gear ratio	17/6

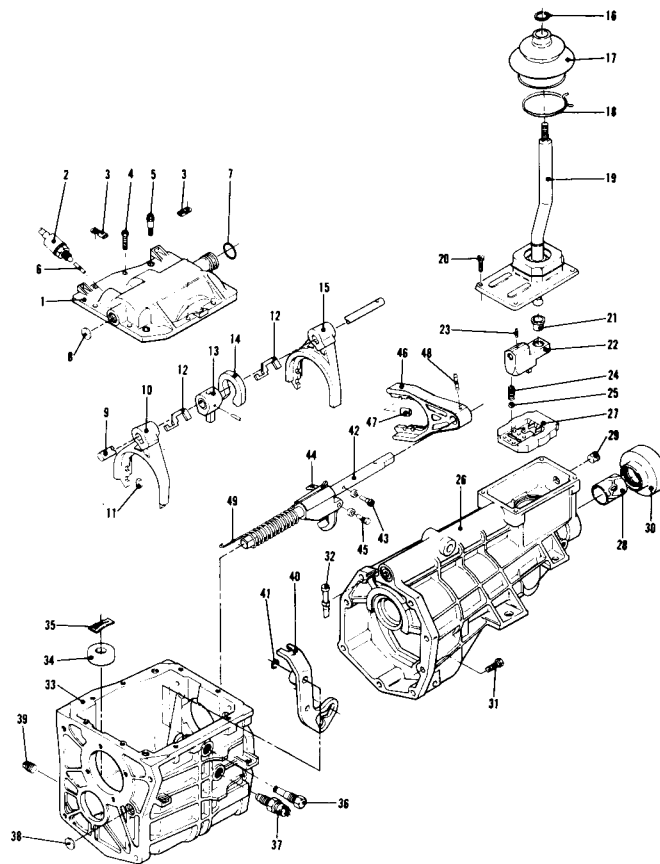


# SHIFT PATTERN



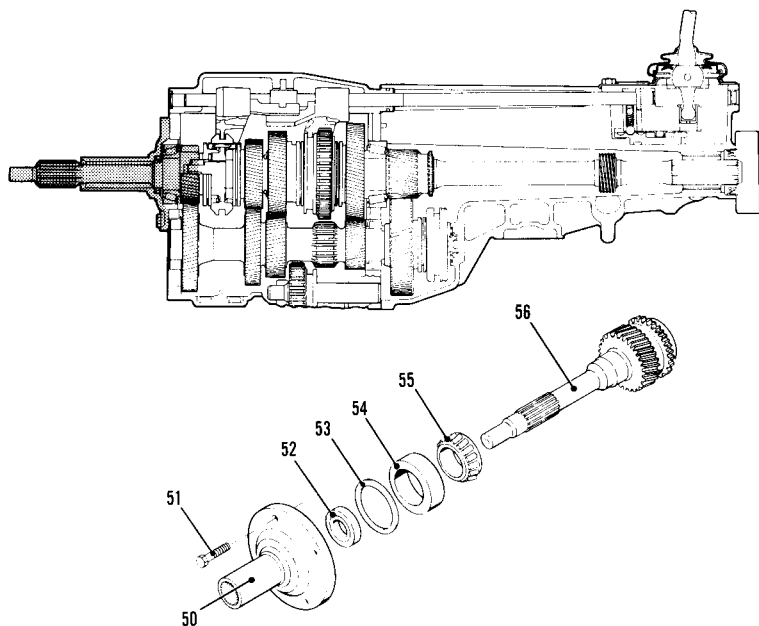
## COMPONENT PARTS IDENTIFICATION

### Case, Shift Cover, Extension Housing



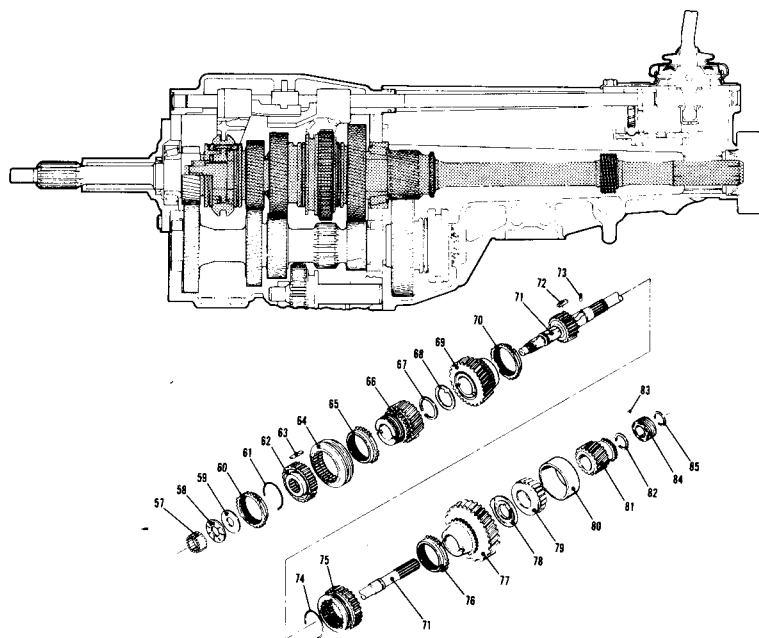
- |                          |                                   |                                |                           |
|--------------------------|-----------------------------------|--------------------------------|---------------------------|
| 1 Case cover             | 17 Boot                           | 33 Case                        | 49 Spring                 |
| 2 Neutral switch         | 18 Boot retainer                  | 34 Magnet                      |                           |
| 3 Wiring clip            | 19 Control lever/housing assembly | 35 Clip                        |                           |
| 4 Hex head bolt          | 20 Control housing screw          | 36 Pivot pin                   |                           |
| 5 Hex head shoulder bolt | 21 Damper sleeve                  | 37 Back-up lamp switch         |                           |
| 6 Pin                    | 22 Offset lever                   | 38 Welsh plug                  |                           |
| 7 "O"-ring               | 23 Spring-pin                     | 39 Pipe plug                   |                           |
| 8 Welsh plug             | 24 Detent spring                  | 40 5th and reverse relay lever |                           |
| 9 Shifter shaft          | 25 Ball                           | 41 Retaining ring              |                           |
| 10 3-4 shift fork        | 26 Extension housing              | 42 5th and reverse shift rail  | } Not serviced separately |
| 11 Shift fork insert     | 27 Detent & guide plate           | 43 Roller cam and pin          |                           |
| 12 Selector plate        | } Not serviced separately         | 44 Reverse shift fork          | } Not serviced separately |
| 13 Control selector arm  |                                   | 45 Roller cam and pin          |                           |
| 14 Interlock plate       | 28 Bushing                        | 46 5th gear shift fork         |                           |
| 15 1-2 shift fork        | 29 Cup plug                       | 47 Insert                      |                           |
| 16 Boot retainer         | 30 Oil seal                       | 48 Spring-pin                  |                           |
|                          | 31 Hex head flanged bolt          |                                |                           |
|                          | 32 Breather                       |                                |                           |

## INPUT SHAFT ASSEMBLY



- 50 Input shaft bearing retainer
- 51 Hex head bolt
- 52 Seal
- 53 Shim
- 54 Bearing cup
- 55 Bearing cone
- 56 Input shaft (main drive gear)

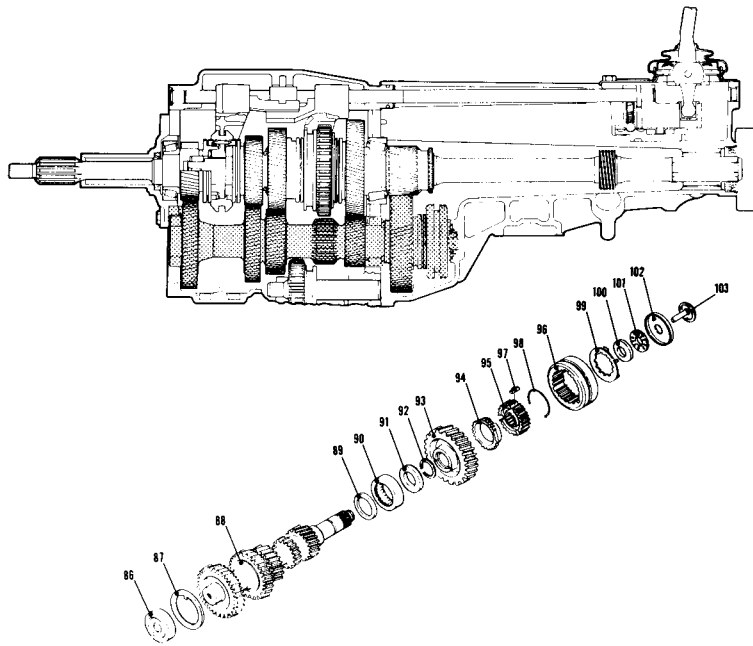
## OUTPUT SHAFT ASSEMBLY



- 57 Needle rollers
- 58 Needle thrust bearing
- 59 Thrust bearing race
- 60 Blocking ring
- 61 Spring
- 62 Hub
- 63 Insert
- 64 Sleeve
- 65 Blocking ring
- 66 3rd speed gear
- 67 Snap ring
- 68 2nd speed thrust washer
- 69 2nd speed gear
- 70 Blocking ring
- \*71 Output shaft and hub assembly
- 72 Insert
- 73 Pin
- 74 Spring
- \*75 Reverse sliding gear
- 76 Blocking ring
- 77 1st speed gear
- 78 Thrust washer
- 79 Bearing cone
- 80 Bearing cup
- 81 5th speed driven gear
- 82 Snap ring
- 83 Ball
- 84 Speedometer gear
- 85 Snap ring

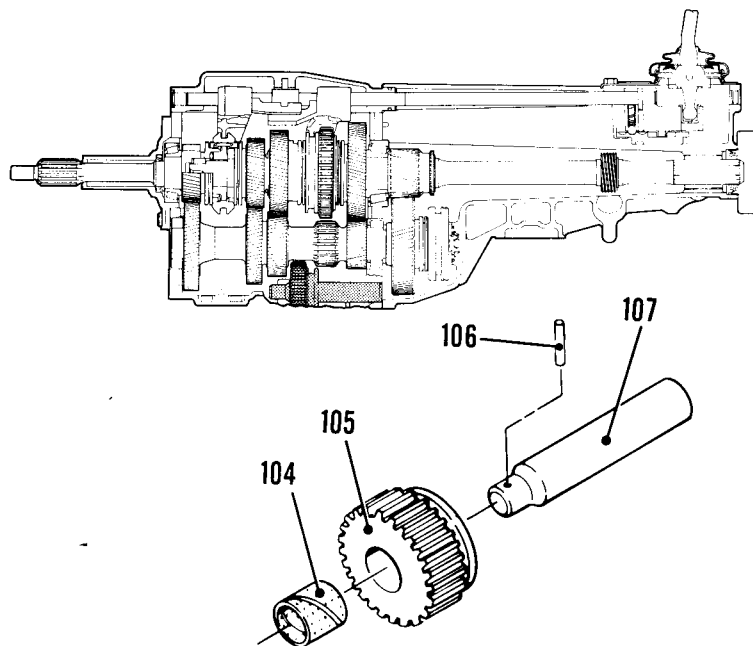
\*71, \*75 Not serviced separately

## COUNTERSHAFT ASSEMBLY



- 86 Roller bearing
  - 87 Thrust washer
  - 88 Countershaft gear
  - 89 Spacer
  - 90 Roller bearing
  - 91 Spacer
  - 92 Snap ring
  - 93 5th speed drive gear
  - 94 Blocking ring
  - 95 Hub
  - 96 Sleeve
  - 97 Insert
  - 98 Spring
  - 99 Insert retainer
  - 100 Thrust race
  - 101 Needle thrust bearing
  - 102 Thrust race
  - 103 Funnel
- } Not serviced separately

## REVERSE IDLER ASSEMBLY



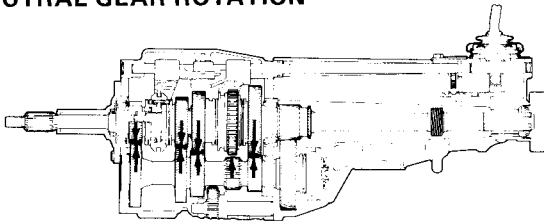
- 104 Reverse idler bushing
  - 105 Reverse idler gear
  - 106 Reverse idler shaft
  - 107 Spring pin
- } Not serviced separately

## GEAR RATIO INFORMATION

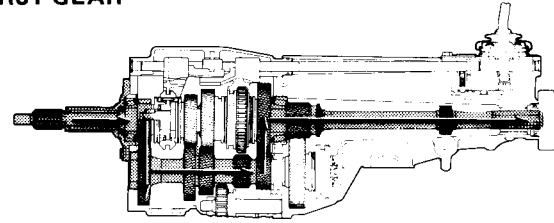
	Gear Ratio	No. of Teeth Mainshaft	No. of Teeth Countershaft	No. of Teeth Reverse Idler
Input		22	35	
1st	3.500	33	15	
2nd	2.144	31	23	
3rd	1.356	29	34	
4th	1.000			
5th	0.780	25	51	
Reverse	3.393	32	15	20

## POWER FLOW

### NEUTRAL GEAR ROTATION

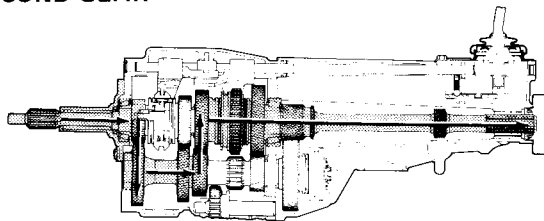


### FIRST GEAR



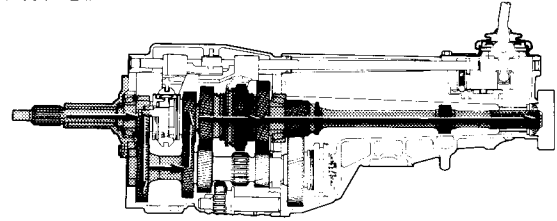
For first gear operation, the 1st and 2nd speed synchronizer sleeve (reverse sliding gear) is moved to the rear, where it engages the clutch teeth of the 1st speed mainshaft gear. The gears under power in 1st speed are input shaft, countershaft drive gear, countershaft 1st gear, 1st mainshaft gear, and output shaft.

### SECOND GEAR



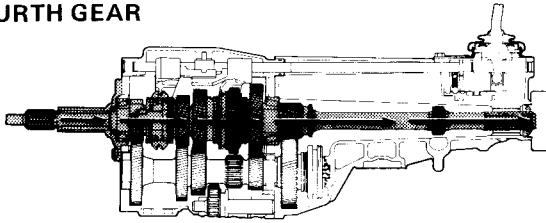
For 2nd gear operation, the 1st and 2nd speed synchronizer sleeve (reverse sliding gear) is moved forward, where it engages the clutch teeth of the 2nd speed mainshaft gear. The gears under power in 2nd speed are input shaft, countershaft drive gear, countershaft 2nd gear, 2nd mainshaft gear, and output shaft.

### THIRD GEAR



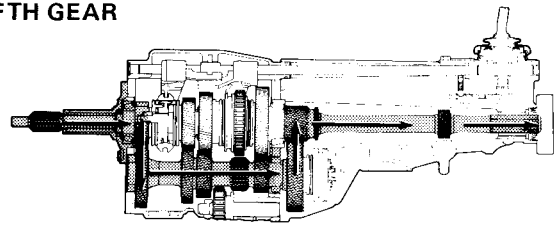
For 3rd gear operation, the 3rd and 4th speed synchronizer sleeve is moved to the rear, where it engages the clutch teeth of the 3rd speed mainshaft gear. The gears under power in 3rd speed are input shaft, countershaft drive gear, countershaft 3rd gear, 3rd mainshaft gear, and output shaft.

## FOURTH GEAR



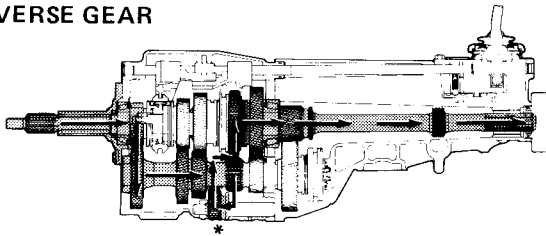
For 4th gear operation, the 3rd and 4th speed synchronizer sleeve is moved forward, where it engages the clutch teeth of the input shaft (main drive gear). The power flow is then transferred straight through the transmission, directly from input shaft to output shaft.

## FIFTH GEAR



For 5th gear operation, the 5th speed synchronizer sleeve is moved forward, where it engages the clutch teeth of the 5th speed countershaft gear. The gears under power in 5th speed are input shaft, countershaft drive gear, 5th speed countershaft gear, 5th speed mainshaft gear, and output shaft.

## REVERSE GEAR

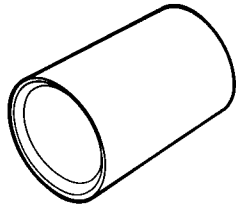


For reverse gear operation the reverse idler gear is moved to the rear, where it engages the reverse countershaft gear and the reverse sliding gear on the output shaft. The gears under power in reverse are input shaft, countershaft drive gear, reverse countershaft gear, reverse idler gear, reverse sliding gear, and output shaft.

\* Note: This is not the actual location of the reverse idler gear in the case. It is placed in the drawing in this location for diagrammatic purposes only.

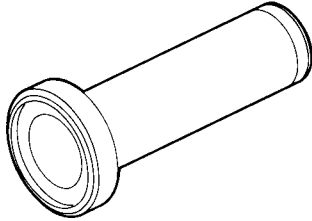
SPECIAL SERVICE TOOLS

J-33032



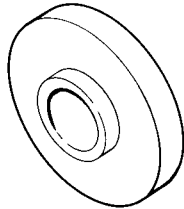
Tapered sleeve –  
for installing countershaft rear bearing.

J-29895



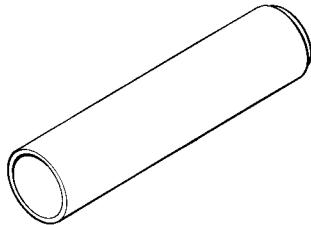
Countershaft rear bearing installer –  
for pressing bearing to correct depth.

J-26060-01



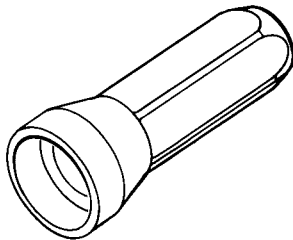
Press tool –  
for installing 5th speed gear on output  
shaft and for installing roller bearing  
on main drive gear.

J-25863-01



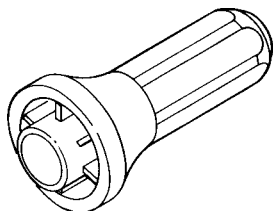
Press tool –  
for installing 3rd and 4th synchromesh  
on output shaft.

J-23096



Front bearing retainer seal installer.

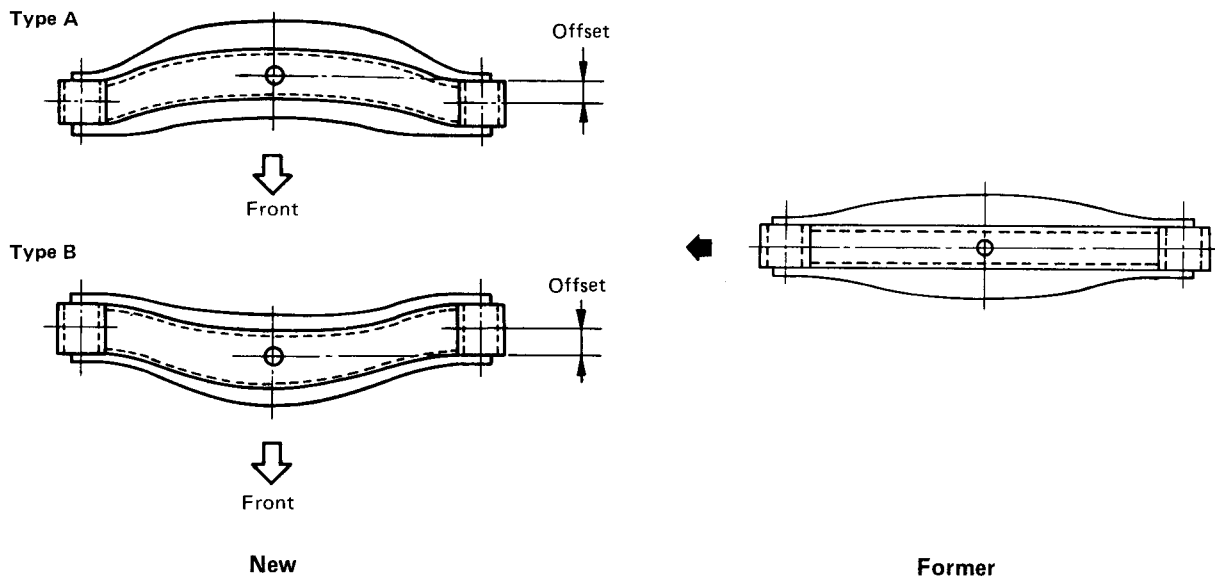
J-28894



Extension housing seal installer.

# REAR ENGINE MOUNT MEMBER

To accommodate the different specifications for the transmission, the rear engine mount members have been modified into Types A and B.



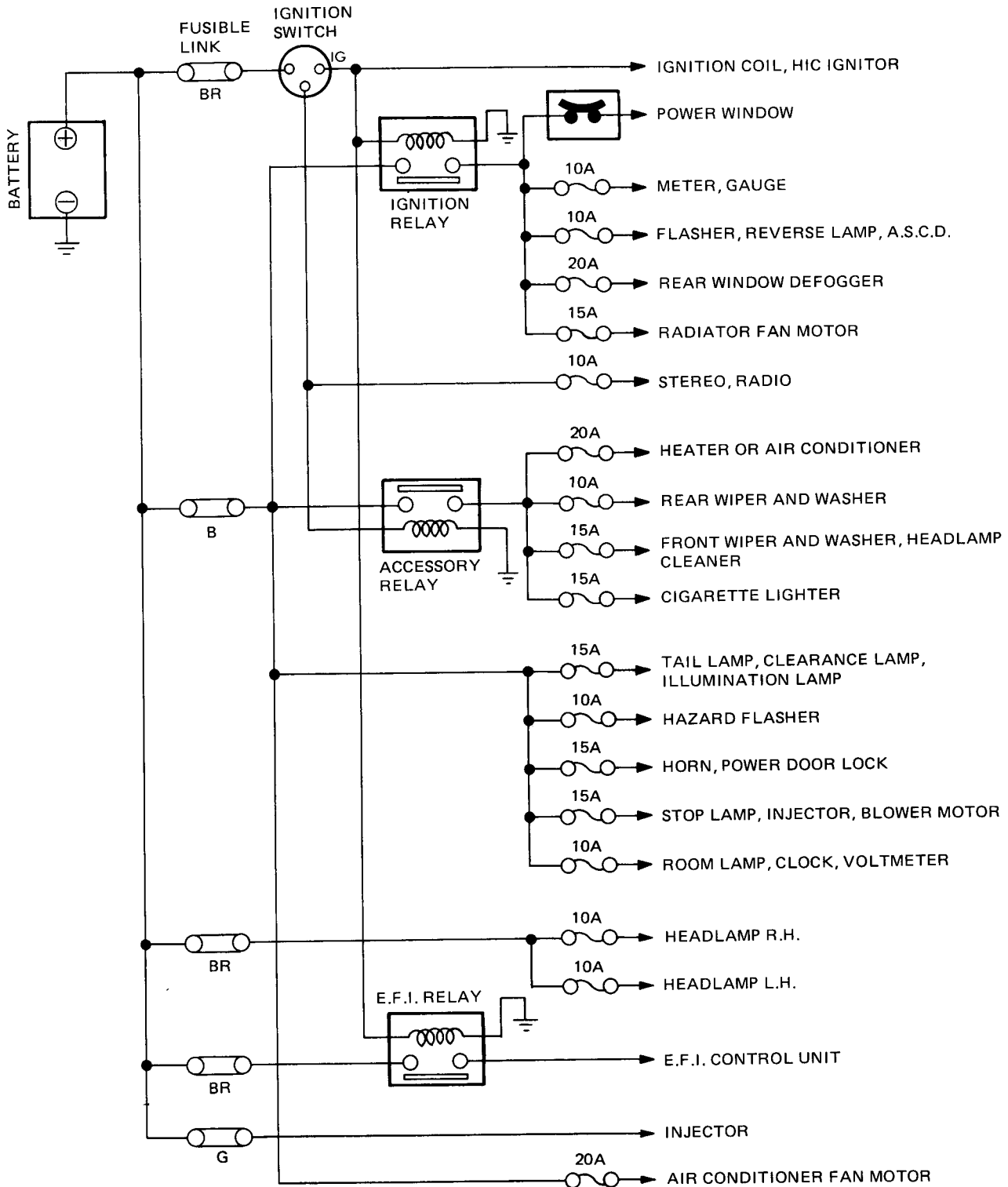
Type A: Models equipped with FS5R90A (Borg-Warner T-5) transmission

Type B: Other models

**Note:** Types A and B are the same in design except the installation direction

# BODY ELECTRICAL

## POWER SUPPLY ROUTING

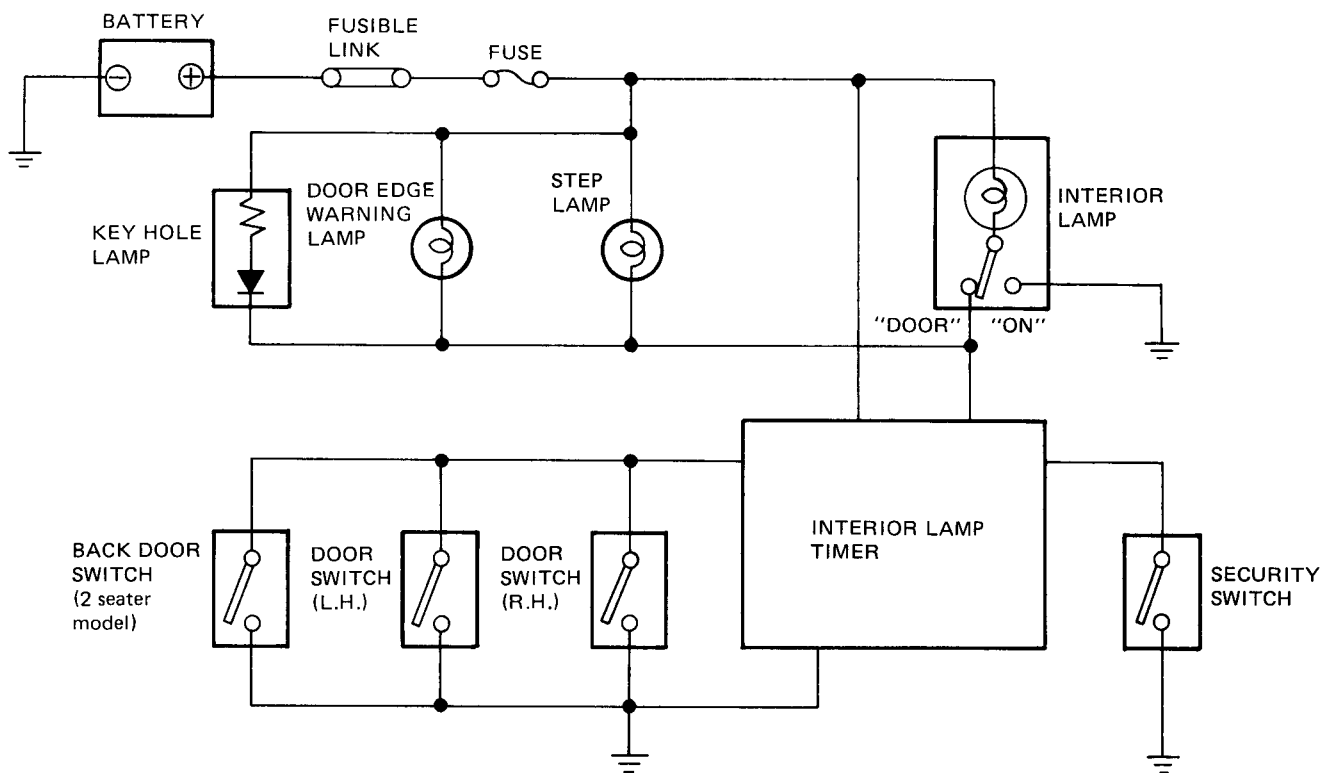




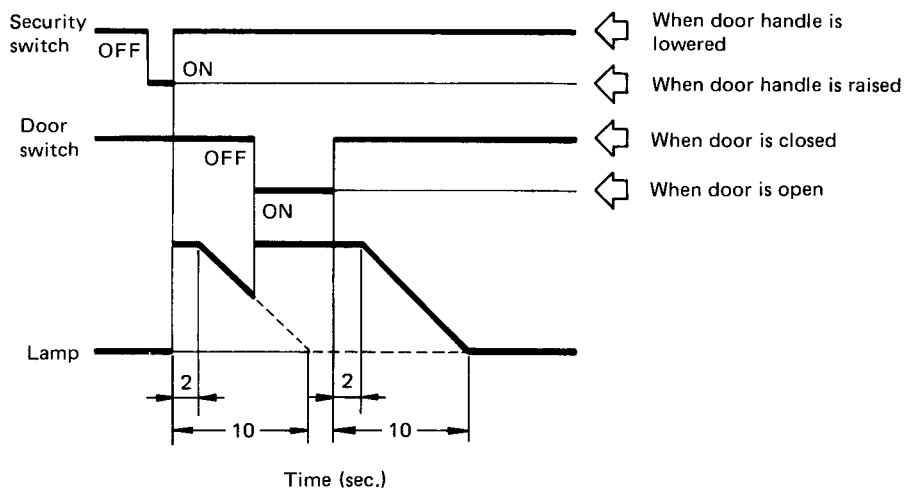
# ILLUMINATED ENTRY SYSTEM

The illuminated entry system is designed to enable the driver to check the interior from the outside at night before unlocking the door as well as to facilitate inserting the key into the door lock.

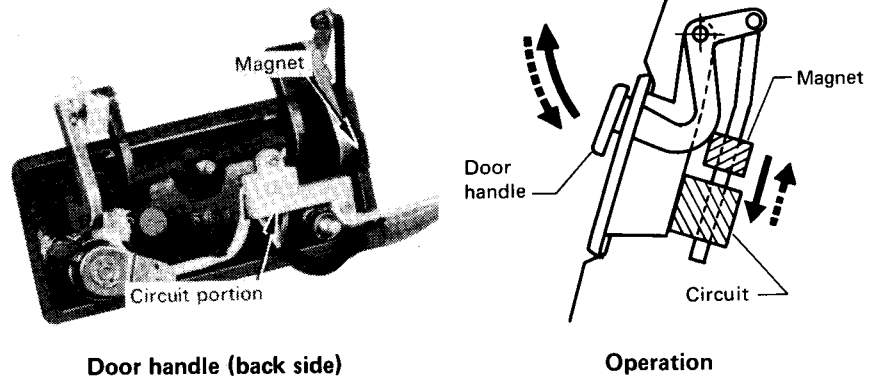
In operation, pulling up the outer handle of the driver's door and returning it to the original position causes the security switch to activate. This then causes the key hole illumination light, the interior light (if the interior light switch is set in the "DOOR" position), step light and door edge warning light to illuminate for a predetermined length of time. The illumination will begin to diminish at a constant rate and go out.



## OPERATIONAL MODES



## SECURITY SWITCH



### Operation

When the door handle is moved up and down, a magnet moves across the circuit, activating the security switch in the circuit.

## POWER DOOR LOCK SYSTEM

A power door lock system has been installed on the GL model. When the door lock knob (inside) on the driver's side or the key cylinder (outside) is locked or unlocked, the front passenger door is also locked or unlocked simultaneously. The front passenger door can also be locked or unlocked by hand independently.

