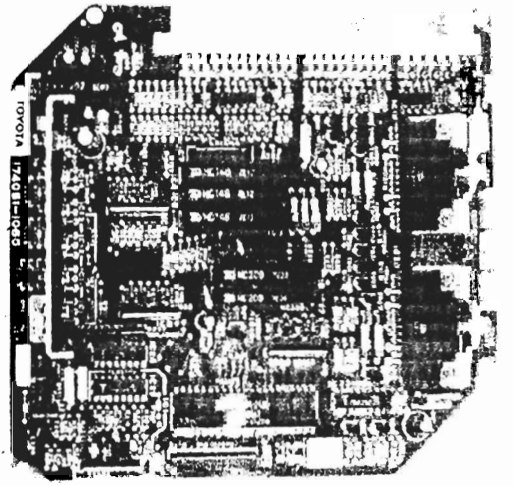

Fig. 5. ECU.

Vertical movement of the suspension arm is converted into rotary movement of a slit disk, which, with LED's and photo-transistors, makes up a photo-interrupter. Thus, mechanical suspension arm movement is converted into electrical signals. Vehicle height is detected in 16 steps between the highest and lowest height levels, by four sets of photo-interrupters. Fig. 6 shows configuration of the height sensor.

To reduce the number of wire harnesses, multiplex signal transmission technology is used between the height sensors and the ECU. Power is supplied sequentially to each of the three sensors, for two ms each. By detecting the signal in synchronization with power supply, the signal lines can be used in common to the three sensors.

The timing chart is shown in Fig. 7.

C. Steering Sensor

The steering sensor detects the amount of relative rotation between the vehicle body and the steering shaft.

The configuration of the steering sensor is shown in Fig. 8. The photo-interrupter consists of a disk, slitted along the circumference, inserted into the steering shaft, together with LED's and photo-transistors fixed to the body. Two sets of a pair of LED and photo-transistor used in combination with the slitted disk detect the direction and amount of steering wheel rotation.

D. Compressor

The system uses a single cylinder reciprocating type compressor driven by a dc motor. Motor characteristics are shown in Table II. The vehicle height adjustment time using the compressor is about 30 s for the height lowered due to two passengers to be recovered to the NORMAL level.

E. Height Control Valve

Solenoid operated height control valves are used to open and close the air passages to adjust vehicle height. The configuration of the height control valve is shown in Fig. 9.

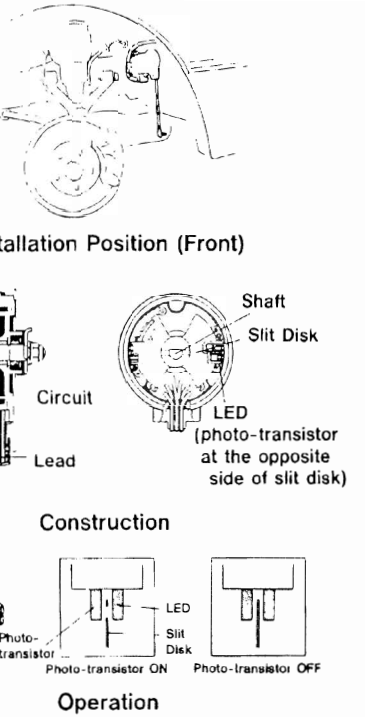

Fig. 6. Height sensor.

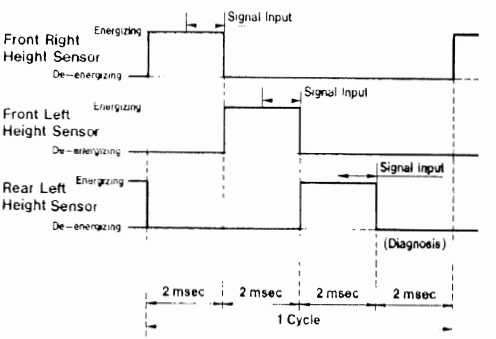

Fig. 7. Height sensor timing chart.

F. Air Spring and Shock Absorber Unit

The basic construction of both the front and rear units is identical. They consist of the shock absorber and the air chamber, consisting of the main and sub chambers, as shown in Fig. 10.

Spring rate is controlled by changing the air passage area in the rotary valve which is provided between the main and sub air chambers. The rotary valve with orifices is used to control the damping force of the absorbers.

G. Spring Rate and Damping Force Control Actuator

Fig. 11 shows the configuration of the actuator. The actuator drives the rotary valves of the shock absorber and air