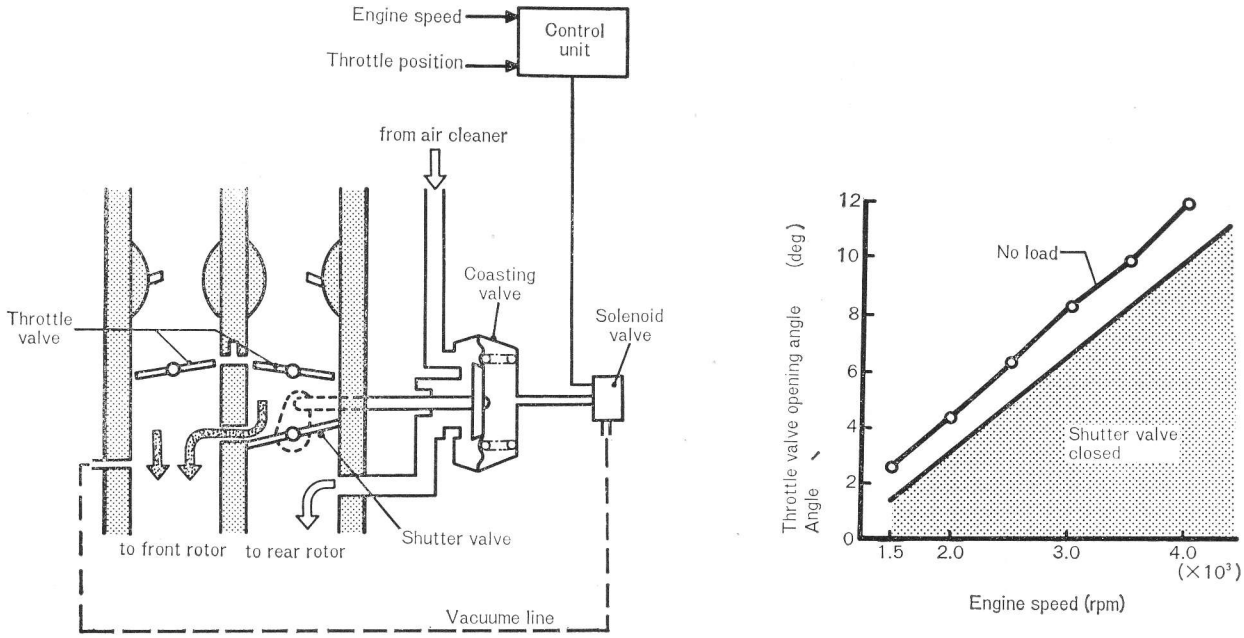

Fig. 4.64 Shutter valve system

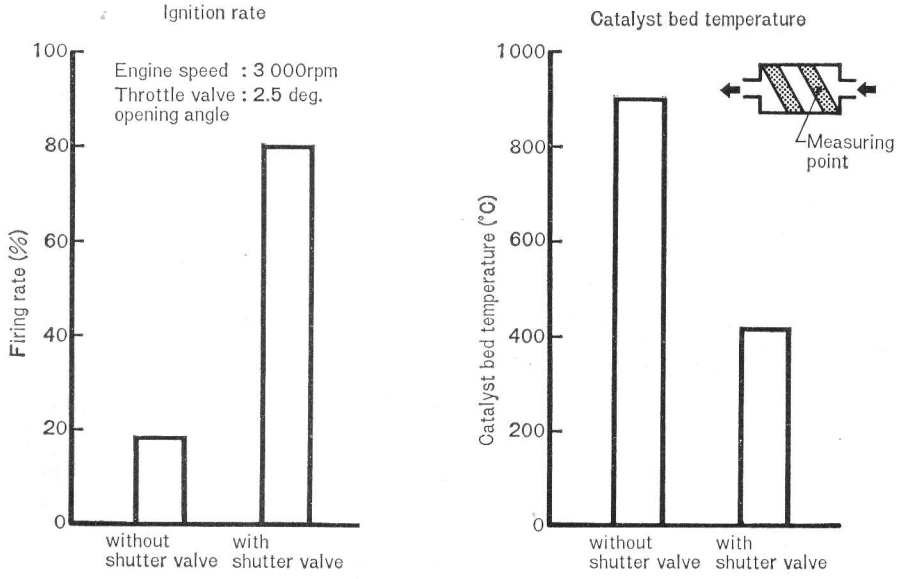

Fig. 4.65 Effects of shutter valve during deceleration

(1) SHUTTER VALVE

In the region of low charging efficiency of the engine during deceleration, the high rate of dilution gas will lower ignitability and cause misfiring. The engine torque will fluctuate and impair driveability. If unburned HC emissions are purified by the catalyst, temperatures will be rise causing heat deterioration. **Fig. 4.64** shows the shutter valve system that improves ignitability by increasing the charging efficiency during deceleration.

The shutter valve is installed beneath the rear side throttle valve of the inlet manifolds independent of the two working chambers. The valve is fully closed during deceleration. The mixture flows into the front side through a bypass hole above the valve. Thus, the charging efficiency and ignitability in the front side working chamber will be improved, and the catalyst temperature lowered. Simultaneously, air supplied to the rear side through the coasting valve directly connected to the shutter valve will keep the proper manifold boost to prevent the mixture from leaking.

Fig. 4.65 shows the effect of the shutter valve on ignitability and catalyst temperature.