Governor

PRINCIPLES OF OPERATION

The engine governor is of the fly-ball, variable-speed type. It is designed to maintain a selected engine speed within reasonably constant limits under varying load conditions, by proportioning the fuel to the load.

For its action, the governor depends upon centrifugal force developed by weights rotating about a shaft. A variable governor spring is used to counteract the centrifugal force or outward movement of the weights. This movement of the governor weights, through suitable linkage, controls the carburetor throttle opening.

When the operator starts the engine and sets the engine speed control lever for a desired speed, the governor weights move outward with the increasing speed until the centrifugal force on the weights counterbalances the tension of the governor spring. When this condition is reached, the carburetor throttle has also been moved to a position where the air-fuel mixture admitted is sufficient to maintain this desired speed.

The operator controls engine speed by use of the engine speed control lever, increasing or decreasing the governor spring tension -- not by direct connection with the carburetor throttle valve.

Increasing the governor spring tension moves the governor weights inward which, in turn, moves the throttle further open, thereby increasing the engine speed until the increased centrifugal force of the governor weights counterbalances the greater spring tension.

Decreasing the governor spring tension allows the centrifugal force to move the weights outward, closing the throttle and thereby decreasing the engine speed until the decreasing centrifugal force and the reduced spring tension again balance each other.

When a change in load occurs, there is a momentary change in engine speed. This causes the governor weights to move inward or outward, thereby opening or closing the throttle sufficiently to maintain a reasonably constant engine speed up to the full load capacity of the engine. The speed variation between fast idle and rated load speed will normally be about 10 percent in these tractor governors.

Adjustment is provided in the linkage between the governor and the carburetor to synchronize the position of the throttle with a position of the governor weights. This adjustment is most important, since it insures the full power response of a wide open throttle when the governor weights are collapsed by the reduction in speed due to application of a full load to the engine.

In review: With an engine supporting its load and maintaining a desired governed speed, three factors have reached an almost perfect balance. These are the forces of (1) governor spring tension (2) centrifugal force on governor weights, counteracting the effects of (3) load on the engine speed. Slight changes in load (within engine capacity) will cause slight changes in engine speed, upsetting the balance of forces and thereby opening or closing the carburetor throttle until the forces are again brought into balance.