

# IMPORTANT

## PRECAUTIONARY MEASURES FOR TITAN SERIES 40 AND 60 MOTORS

### READ BEFORE OPERATING •

Your engine has been run a minimum of three and one-half hours and tested for maximum power output, proper functioning of all controls, and the securing of all nuts, bolts and screws. Everything possible has been done to assure a high quality product and trouble free operation. However, it is still possible to damage this motor in the following manner:

1. Racing the engine at speeds higher than 5,000 RPM.
2. Sticking the piston in the cylinder.
3. Using the wrong spark plug.

1. Under the explanation of racing the engine the following notes hold true:

A. These engines develop their power peak between 4,000 to 5,000 RPM. If the engine is turned past 5,000 RPM it will not develop its full horsepower. Have your dealer demonstrate the proper engine speed.

B. Leaning the mixture down by closing the needle valve on the carburetor in order to get the engine to lean out, or two-cycle, with open throttle and no load, causes the motor to operate at very high RPM. This also results in less lubrication for the connecting rod bearings.

C. At very high speeds, above 5,000 RPM, the needle bearing will have a tendency to skid inside the rod causing the connecting rod to run to one side of the throw. This in turn will cause excessive friction between the crankshaft cheek and the rod which may cause both parts to heat up sufficiently to damage the needle bearings as well as the rod and the crank.

D. In attempting to saw with a dull chain the engine is usually turned at much higher RPM than 5,000 as the chain is not cutting but does furnish enough friction to cause the motor to lean out and turn much faster than it normally would if the chain were sharp and cutting.

2. Under the explanation of sticking the piston in the cylinder, the following notes explain this situation:

A. Running a new motor at too high RPM before the rings have been properly seated. Average time needed to seat the rings is approximately three weeks usage.

B. Closing the needle valve adjustment on the carburetor too far, which causes a very lean mixture and creates excessive temperature on the top of the piston.

C. Not enough oil or improper weight oil in the gasoline.

D. Having the cylinder head and cylinder fins plugged up by dirt, leaves, etc. so that the piston will not cool properly in the cylinder.

E. When the piston sticks at high motor RPM a reverse load is placed on the connecting rod cap. This will stretch the rod screws causing them to become loose in time and damage the engine. This may also jerk the piston in two or break a piece out of the bottom of the rod cap.

**3.** Under the explanation of the wrong spark plug the following notes hold true:

A. If a spark plug of a higher heat range than a J-6-J is used in these engines, it will cause detonation. The plug will not cool sufficiently between explosions and some part of it will become incandescent so that the piston fires on the up stroke. All of the load on the piston caused by this premature explosion will then have to be absorbed by the wrist pin bosses. This will cause a failure of the boss and, running too long with the wrist pin loose, eventually will cause the rod to break.

B. Substituting a soft copper gasket for the solid copper gasket the engine is originally equipped with, raises the heat range of the spark plug and may cause detonation.