

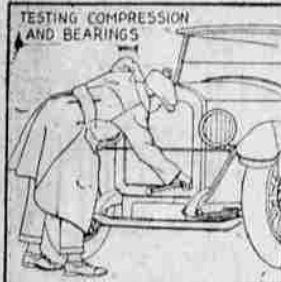


How to Tune Up the Engine for Power and Economy

To tune up and obtain the maximum amount of power from your engine, the compression in all cylinders must be good. Perhaps you do not know exactly what this term means, yet the amount of power your engine develops depends to a very large extent on the amount of "compression" in each cylinder. An explanation of the way an engine operates will make the meaning of "compression" clear.

An automobile engine operates on what is called the four-stroke principle. Starting, we will say, with the piston at the top of the cylinder, as soon as the engine starts, the piston commences to move down. As it does so, the intake valve opens, and through this valve a charge of gasoline mixture is drawn into the cylinder.

When the piston reaches the bottom of the cylinder, the intake valve closes and the piston commences to move up the cylinder, and compresses the charge drawn in on the intake stroke into a small space at the top of the cylinder. This is called the "compression stroke." The more highly the mixture is compressed, the more power the engine develops. If the valves, piston rings, cylinder head gaskets or spark plug gaskets leak, part of the mixture escapes, then the pressure is reduced, causing a loss of power, and uneven running of the engine.



To test the compression, first let the engine warm up by running for a short time, then remove all spark plugs but the one in No. 1 cylinder. Now turn off the ignition switch, but open the throttle wide open, then insert the starting crank and "feel" the amount of compression or resistance there is in the cylinder, when you press down on the crank. Do not force the handle right down at first, but "see saw" it up and down, and "feel" the resistance, which should be quite strong and "springy." Test each cylinder in turn in this way. The resistance should be the same in each cylinder. Poor compression may be caused by (1) Leaking Piston Rings, (2) Pitted or Sticking Valves, (3) Insufficient clearance between the Valve Stem and Tappet, (4) Cylinder Head or Spark Plug Gaskets leaking.

Worn, stuck, or broken piston rings or scored cylinder walls allow a loss of compression between the piston and the cylinder wall. This trouble can be detected by having some one turn the engine over slowly with the starting crank while you place your ear near the oil filler hole and listen. If there is a leak at the piston you will hear a hissing sound in the crank case. This trouble can only be cured by an expert mechanic. If there appears to be no hissing sound in the crank case when the engine is turned over, then you are fairly safe in concluding that the piston rings are all right, but that the valves require grinding in.



To grind in the valves, first drain the radiator, and while it is draining, remove all spark plugs. Next disconnect the hose at the cylinder head, then remove all cylinder head nuts or bolts. The cylinder head can now be removed. The first thing you will notice is a heavy deposit of carbon on top of the pistons and the cylinder head. This must be removed before you start to grind in the valves. Be careful not to allow any chips of carbon to get into the bolt holes or into the water jacket holes.

When you have the carbon cleaned out, remove the valve springs. The illustration shows a very simple and quick way to do this. Hold down the head of the valve while you pry up the spring to remove the cotter or washer under the valve retaining washer. Now pull out the valve, then the valve spring can be pulled out. Replace the valve for the time being in the cylinder until you are ready to grind it in. Make sure that the valve is seated. First clean the valve and the valve seat with some gasoline, and make sure the stem is free from carbon. Smear a little grinding compound on the face of the valve, then put a light spring under the valve head, so that when pressure is released, the valve will be raised. Grind the valve by rotating it and fro with a brace and bit or one of the special valve grinding tools. Bear firmly but not heavily, and be careful not to make more than one-third to one-half turn before reversing direction, and occasionally let the valve rise up so as to give the grinding compound a chance to spread evenly, and also to prevent grooves being ground in the valve face and seat. When the valve presents a smooth silvery appearance all round, and all pits and black spots are removed, the valve is finished. Be VERY CAREFUL you do not let any of the grinding compound get down the valve guides or into the cylinder. If the valve is in such bad condition that grinding will not remove the pits, a new seat will have to be cut, an operation that can only be performed by an expert mechanic.

Clean the valve thoroughly with gasoline, then replace the valve spring. When all valves are ground in, clean the cylinder head with some gasoline, but use a NEW cylinder head gasket, for it is more than likely the old one was damaged when you took it off, and will leak if you use it again. After replacing the cylinder head, the clearance of the valves must be checked. This is a most important adjustment, and will be described in detail in next week's article.

NEXT WEEK—HOW TO CHECK VALVE CLEARANCE AND ADJUST FOR MAXIMUM POWER AND ECONOMY
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MORE SHEEP ARE SHIPPED NORTH

The Western Pacific Livestock Co., an Oregon corporation, has been organized for the purpose of stocking Utah, one of the Abilene group, with breeding ewes, says a Portland newspaper. It made its first shipment of selected stock on the steamer Odessa, which sailed from Seattle yesterday. The trip will take about eight days. The ewes, which were selected by G. M. Blakely, its half-brother, Lincoln and Merino cross. The rains were selected by Peter L. Jensen, and are full blooded ewes.

The directorate of this company is composed of prominent Oregon and Washington business and livestock men.

The company expects to become one of the greatest producers of wool and mutton in the world. It holds a concession on the Island of Unalakleet from the United States government to exceed half a million acres of perpetually green grass, which is free from predatory animals and all other pests which are detrimental to the growth of sheep. This concession is free for three years, thereafter the fee is not to exceed that charged on the government reserves.

Peter L. Jensen, an experienced and successful sheep man of Toppenish, Wash., accompanied by Mrs. Jensen, will reside permanently on the island. Mr. and Mrs. Jensen are heavy investors in the company. G. M. Blakely, another director, who is a well known, successful sheep man, is making the trip to render any assistance that may be necessary to get this project under way. Mr. Blakely will return in about 20 days.

Contrary to the general opinion, the climatic conditions are moderate. The island lies 110 miles westerly from the mouth of the Columbia river, in the same latitude as Idaho.

END SEEN FOR CATTLE FEEDERS

Industry Is in Danger of Becoming Extinct Due to Low Prices Offered for Cattle.

Hymen Cohen, probably one of the very best market editors on the Pacific coast, sees an end to the cattle feeding industry as is evidenced by the following article from his pen which appeared in the Portland Journal recently:

Protection to the public as well as to cattle producers appears to be one solution of the present serious problem that today confronts the industry. While in some foreign countries a movement has been started to check the declining tendency of the cattle industry, the American situation is in a most serious condition.

Greatly increased expense of producing livestock with lower instead of advanced prices, are the portion served the industry in the United States. Taxes alone in some of the so-called cow counties in Oregon are said to be nearly five times as heavy today as previous to the war while the advance in the price of cattle has been very limited.

Everywhere in the west the cattle situation today is the most serious in the history of the industry. Something must be done without further delay or the supply of cattle will dwindle still further. Already total holdings are very limited.

Cow Meat Sold as Steer.

The public has been forced to accept cow meat in many instances instead of the steer product simply because there is no law to protect consumers against fraud. While many retailers do not say they are selling other than steer beef, the general public has been led to believe it is getting steer beef at very low prices. Some butchers make a specialty of steer beef and others utilize nothing but cow offerings. Few are willing to pay the extra cost of producing the better class steers.

Recent sales of steers at the stockyards have been most unsatisfactory to feeders. Some of the best cattlemen say they can no longer afford to send their good quality steers to Portland because of the discrimination in favor of cheap cows.

"They compel the labeling of products with the name of the product and its quality," said a prominent cattle raiser, "but there is no law that compels meat men from selling cow meat without proper labeling."

Foreign Industry Aided.
The Commonwealth Government of Australia has decided to renew the bonus granted on exports of beef during 1922, according to the Portland Review for July 16. The bonus provides for the payment of 3d (1¢) per lb. on frozen and canned beef the bonus on the latter being calculated upon the weight of fresh beef from which it is produced. Under last year's regulations 30 lbs. of canned meat were reckoned as being the produce of 100 lbs. fresh, and presumably the same applies this season. In addition to frozen and preserved beef the federal government is paying a bonus of 10s

(\$2.43) per head on live cattle exported from the commonwealth for slaughter purposes. It is believed that this subsidy will generally assist the industry which has been threatened with ruin owing to the low prices prevailing in English markets upon which exporters depend as their principal outlet. The total amount paid under the bonus last season was 121,000 pounds (\$547,000) and this year it is estimated at 160,000 pounds (\$725,000).

In order to relieve the difficult financial position of cattle raisers in South Africa, the South Africa government has provided for the payment of a bounty on export beef amounting to 2d (1¢) per lb. and 1d (1/2¢) per lb. on live stock, reports Consul C. J. Pike at Cape Town. Cattle prices are reported as being very low, and the country is faced with a large cattle surplus on account of the poor demand for beef during 1922 and the abundant rainfall during the latter part of the year, which provided excellent grazing.

Read the Observer Want Ads.



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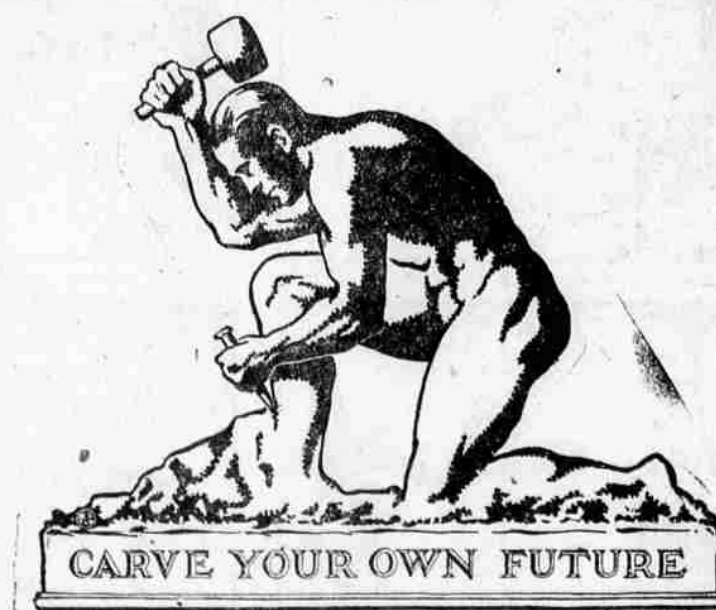
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