ROTATE TRACTOR VALVES for longer valve life

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just them for check-

over them for experience

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for four

Circular 736

UNIVERSITY OF ILLINOIS - COLLEGE OF AGRICULTURE
EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS
YOU'RE RIGHT IN THE MIDDLE of planting or harvesting—and your tractor valves play out. The time lost for overhaul means reduced yields and added expense. To make reasonably sure your exhaust valves will see you through your busiest seasons, try rotating them. Studies of ten test tractors at the University of Illinois show that exhaust valve rotation will prolong the life of valves to equal the normal life of rings and pistons. You can then schedule all major overhauls in a slack season.

Positive type rotator

You can see the valves turn when positive type rotators are used. With release type rotators, the turning cannot be seen.
What is valve rotation?

There are two types of valve rotation. The release type rotator leaves the valve free to turn while it is open. The positive type, which is more common in farm tractors, actually turns the valve a part of a revolution each time the valve is opened. While the engine is running the valve turns in the guide at the rate of about five revolutions per minute.

What does rotation do?

First, it prevents deposits on valve stems, faces, and seats. Such deposits cause practically all tractor exhaust valve failures. They hold the valve away from the seat so that exhaust gases leak by the valve face. The valve then burns, making an overhaul necessary. Valve rotation, by keeping stems, faces, and seats clean, insures proper seating and prevents destructive blow-by.

As the valve rotates, the seating surfaces are constantly changing. This, as well as the freedom from deposits, keeps the valve from developing hot spots. Adequate cooling through the seat is necessary for satisfactory valve life.

What valve life can you expect?

With rotation, valves should last as long as pistons and rings. The Agricultural Engineering Department installed valve rotators in 10 tractors in 1949 and 1950. After four years and as much as 3,000 hours of service, three of these tractors were still operating without any valve failure or overhaul. Rings and pistons had to be replaced in five tractors, but valves were in good condition. One valve failed in each of two tractors, but the average life on all the tractors was doubled or tripled by the use of rotators.

Are rotators available for your tractor?

About 75 percent of the new tractors are now equipped with valve rotators. Rotators are also available for older-model tractors. If your tractor needs valve overhauls between ring replacements ask your local dealer about rotators.

What do they cost?

Rotators cost about $2 a piece; a total of $8 for the exhaust valves of a four-cylinder tractor.

Do rotators need special maintenance?

No maintenance should be required between major overhauls. The release type rotator should be adjusted by a mechanic when the...
To insure long life for valves and rotators, adjust them properly. Your instruction book gives directions for checking clearances.

Tractor is overhauled. According to experience with Illinois test tractors, positive type rotators should be replaced at the time of major overhaul if they have more than 2,000 hours or four years of service.

Do rotators ever stop turning?

Yes, some positive type rotators do stop turning because of wear and engine sludge. Rotators can be inspected when valve clearances are checked. If they're not turning when the engine is running they should be replaced. A rotator that is stopped does no harm but it is no longer doing you any good. Your mechanic can put in new rotators without removing the cylinder head.

Sludge shortens the life of valve rotators and other engine parts.

Rotation alone is not enough

Valve rotation does not take the place of proper maintenance and operation. These practices plus valve rotation are necessary for long valve life:

1. Do not overload your tractor.
2. After heavy work let the engine idle for a few minutes before shutting it off.
3. Keep the cooling system clean and in first-class repair.
4. Make sure the exhaust system is not restricted by a damaged exhaust pipe or plugged muffler.
5. Put a tin can over the exhaust stack when tractor is not in use.
6. Carefully check valve adjustment at least once a year. If in doubt about procedure have a mechanic do it.
7. Do not store gasoline more than four months.
8. Drain storage tanks that are not in use. Also, drain carburetors and fuel tanks of engines that will not be used for several months.
9. If a valve overhaul is necessary, see that your mechanic does a good repair job and uses standard replacement parts.
10. Have your ignition checked once a year and avoid using an extra-lean carburetor setting.

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