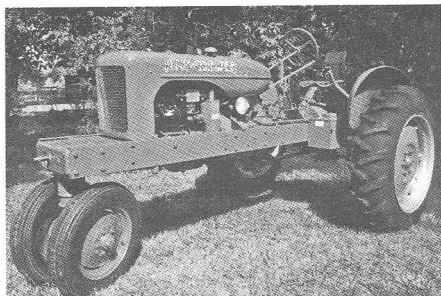




THE ALLIS-CHALMERS RC

“STUCK IN THE MIDDLE”

by Tom Foss



Tom Foss's 1939 RC

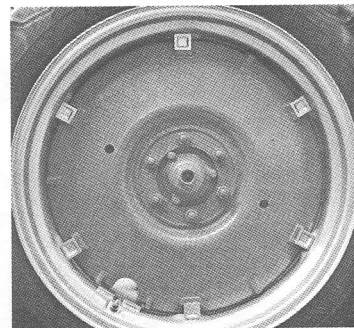
Allis-Chalmers came out with the model B in 1937. With their own engine still in the design phase, a Waukesha engine (113 cubic inches) was used on the first 96 tractors. The engine Allis-Chalmers designed for the B tractor was ready to be installed at the beginning of 1938 and used a 3.5 inch stroke and a 3.25 inch bore (116 cubic inches). Since the model B was marketed as a one-row tractor, a small two-row tractor was needed, something that was in-between the B and the WC in performance, weight and cost. It was decided to put this new model B engine in a WC frame. This on the surface seems like a very simple idea and should have been an inexpensive, fairly quick method of making an intermediate model. Hoping for another sales success, this was being done very soon after the B engine was complete with the first three RC prototypes being built already in 1938.

They needed the horsepower increased over the B to make this an actual midsize choice that could use the WC implements. The solution to increasing the horsepower was fairly simple, only requiring a thinner sleeve allowing a 3.375 inch bore increasing the cubic inch displacement from 116 in the B, to 125 in the RC, and raising the rpm from 1400 to 1500. Serial

numbers for the 116 ci B engines started with “BE”, the 125 ci RC engines had an “R” prefix.

The engineers wanted a weight difference between these models as well. In 1939 the sales literature lists the rubber tired WC at 3480 lbs., the RC at 2950 lbs., and the B at 2000 lbs. The RC weighed 530 lbs. less than the WC and 950 lbs. more than the B. This shows it must have been tough to take enough weight off the WC chassis to make up for the lower horsepower of the RC. To help compensate the smaller horsepower output, the differential was geared lower, which resulted in about 20% slower forward speeds. The final steps in designing the RC were the use of smaller tires/rims front and back to help keep the cost down.

Many marketing brochures and ads show pictures of the first three RC prototype tractors with their unique rear hub and rear rim. From these ads, there appears to be eight clamps to attach the rim. The production RC's started the use of the rear cast hub (with single-mouse hole) and six wedge bolts to attach the rim. Even though the Allis-Chalmers popular WC was styled in late 1938, it was still using the stamped steel disc wheels; the use of the cast hub and 28" rim on the WC did not start until mid-1939 (#81757). So it would be fair to say the WC adopted the RC rear cast hub (except with a double-mouse hole) and gave it the same part #208916 as the RC. The use of a double-mouse hole on the RC could have started when this change was made to the WC. Perhaps the production of all 1939 RC models could have been done by mid-1939, given they only



The early RC used a cast center wheel with a single mousehole, when the WC got this wheel it was changed to two mouseholes.

made 4,388 of them. This would have resulted in the double-mouse hole not appearing on the RC until the 1940 models were produced. There is no documentation for this change on the RC and so much user interchangeability over the years between the RC and WC, but it does seem that the later RC (1940 & up) have the double-mouse hole cast hubs.

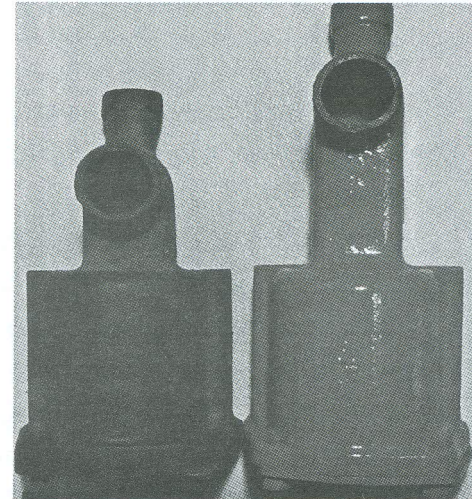
Since the Model C came out already in 1940 using the RC 125 ci engine with a “CE” prefix, the RC has also been referred to as an interim model, allowing time to complete the design of the C. The B didn't get the larger engine displacement until serial number 64501 in 1943. The model C was 800 pounds lighter and more competitively priced than the RC. Advertisements from 1939 show pricing of the models - B (\$495), RC (\$785 non-electric, \$810 electric) and WC (\$860 non-electric, \$960 electric). Similar advertisements from 1940 show the B (\$518), C (\$595) and WC (\$960). The model C was a success with 84,030 tractors sold over ten years, compared to the mediocre 5,501 RC tractors sold over 3 years.

Anyone that has restored an RC comes to realize that Allis-Chalmers

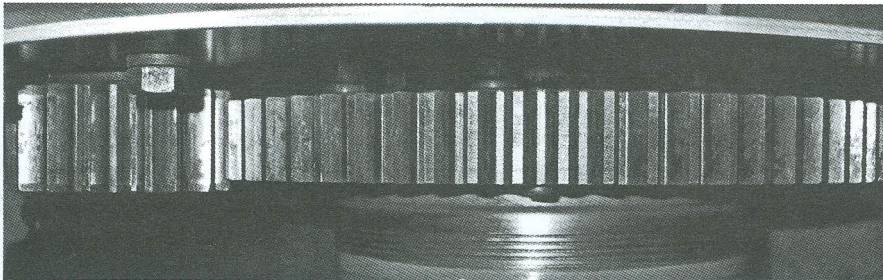
engineers didn't just drop the B engine into a WC frame and stamp it with an RC serial number. There are many unique parts that make up the RC, you cannot simply start with a B and a WC and combine them to get an RC. Some of these unique parts can be seen from the outside; others require disassembly to get to. I am going to try and describe these unique parts here, some of these may be contested and others may be missed. That is all part of the fun of trying to restore these old treasures.

Wheel rims - Front (3x15" versus 4x16" on the WC), Wheel rims - Rear (9x28" versus 10x28" on the WC), Cast rear wheel center and wedge mounting bolts, Radiator, Radiator shell, Frame apron, Thermostat

housing, Water outlet elbow (used when tractor is not equipped with a thermostat), Front motor support, Frame rails, Gas tank, Gas tank support, Hood strap, Flywheel, Flywheel cover, Fan drive pulley, Governor control rod, Clutch housing (the WC changed to this one when the RC came out), Differential gear ratio (5-33 [6.6:1] ratio vs. the 7-32 [4.57:1] ratio of the WC), Differential carrier bearings, No differential drive pinion bearing, Pinion shafts, Final drive hub, Brake housing cover (also used on the first styled WC's, the RC changed also late in production to the WC part), Starting crank extension, Belt pulley is smaller and stamped like on a B, Generator mounting bracket. 🚗

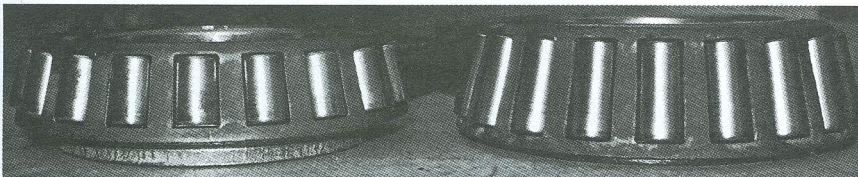
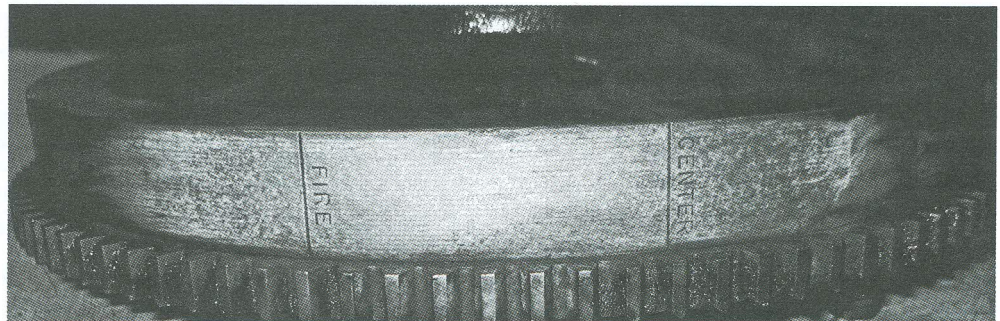


The RC thermostat housing on the right needed to be taller than the B housing on the left



The final drive gear is narrower than the WC, it runs centered on the pinion shaft.

The flywheel is unique to the RC and nicely marked, but the timing marks cannot be seen when the engine is installed.



The RC final drive bearing on the left is smaller than the WC bearing on the right.

The flywheel front cover; easily manufactured, but one more part number.

