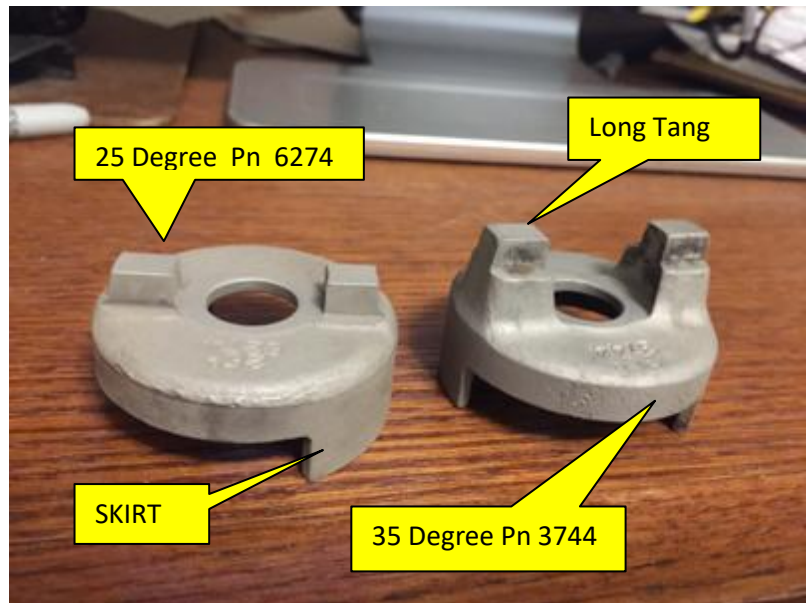


Hand Start Tractor

Timing

Early John Deere hand start tractors use an IMPULSE mechanism to produce a large starting spark. This spark must occur at TDC. Once the tractor starts, the centrifugal force drops out the IMPULSE mechanism and the engine timing drops back to 35 degrees BTDC. The RUN



timing becomes a function of the magneto drive cup once the engine has started. Shown are a 25 degree BTDC short tang (later models) and a 35 degree BTDC long tang (used on early kerosene burning John Deere tractors). The timing is established primarily by the width of the skirt. The long tang 35 degree cup has a skirt width of 1.075 inches, the 25 degree cup has a skirt width of 1.2 inches. The skirt drives the plate that rotates the permanent magnet shaft. The other end of the magnet shaft has the cam for opening the points. If you are running kerosene, with a 35 degree cup, just read the book, time the IMPULSE and you are done. If you have converted to gasoline, and it idles rough, and pre detonates, you will need to break some rules.

TO CHANGE THE TIMING

You will need an inductive timing light, and an external battery. Measure the circumference of the flywheel. Establish marks on the flywheel measuring counterclockwise from the flywheel TDC mark based on the following math-magics.

$$C \times \frac{\text{BTDC}}{360} = \text{distance CCW from TDC}$$



The flywheel circumference of my 36B is 53.75 inches

$$\text{ex: } 53.75" \times 35^{\circ}/360^{\circ} = 5.25"$$

$$53.75 \times 30^{\circ}/360^{\circ} = 4.5"$$

$$53.75 \times 25^{\circ}/360^{\circ} = 3.75"$$



So..... if you want to set the timing for 30 degrees BTDC, place a mark on the flywheel at 4.5" CCW from TDC mark. Connect the timing light and determine the current timing relative to the TDC mark on the transmission cover. It should be around 35° on early tractors.

It would be great if there was a 25 degree long tang cup and a 30 degree long tang cup, but I have not found one so far. The 25° cups are all short tang. The only way to change the timing is to improperly mesh the cam to governor timing gears. Loosen and lift the governor housing and rotate the magneto drive gear ONE TOOTH CCW and re-mesh with the cam drive gear. The factory alignment marks on the cam drive gear and the magneto drive gear should be misaligned by one tooth. Button up and recheck timing. It should be less than 35° now. Reset the IMPULSE timing because now it is not at TDC. It is adjustable by loosening the four screws behind the magneto drive cup and rotating the IMPULSE catch plate CW. Each mark at the top is about 2.5 degrees.